LICENTIATE THESIS

Towards a Method to Improve Road Safety for Pedestrians and Cyclists, Especially in Child Pedestrian Environments

A Case Study in Borås, Sweden

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ABSTRACT

This licentiate thesis deals with the traffic safety of pedestrians and cyclists and focuses on how changes of the traffic environment influence the safety and security of children in urban areas. The first aim of this thesis is to develop a method of describing road safety and mobility for pedestrians and cyclists, especially children, at intersections in urban areas. The method is mainly based on video recordings at intersections, from which the behaviour is coded with respect to different variables. Behaviour is here defined as both that displayed by the pedestrians and cyclists as well as that of the car drivers towards the pedestrians and cyclists. The method is used in before and after studies at intersections that have been rebuilt according to the "Lugna Gatan" traffic calming principles. The Highway Code concerning car drivers giving way to pedestrians was strengthened on May 1st, 2000 in Sweden. Since then the car drivers must give way to pedestrians on zebra crossings. The effect of changing the Code and traffic calming has also been studied.

At the studied intersections the reconstruction have resulted in lower vehicle speeds and fewer potential incidents and conflicts. The goal of traffic calming of a 90-percentile driving speed below 30 km/h was only fulfilled at one of the test sites, but the speeds had decreased "significantly" also at the other test site.

The design of an intersection influences the different road users' behaviour. If pedestrians are walking on the zebra crossing or not depends on the traffic environment's design. This has a strong influence on car drivers' behaviour towards pedestrians. A raised intersection can lead to pedestrians crossing the street not only on the zebra crossing. At this raised intersection the proportion of car drivers giving way to pedestrians was low, even if the vehicle speeds were low. Before reconstruction the proportion of car drivers giving way to pedestrians were low and independent of the pedestrian's age.

At the other test site, where speed cushions were implemented, pedestrians began to use the zebra crossing to a greater extent, the mobility improved most for the child age group, both after reconstruction and change of Code. At the site where fewer pedestrians used the zebra crossing after reconstruction and change of Code, the children were given priority more often after reconstruction and change of Code but the increase was not larger than for other age groups. Children and the elderly had the smallest increase in frequency of being given way to by any car driver.

At the sites were no changes were made except for the change of Code the children were given way more frequently after change of Code, but the increase was not larger than for other age groups.

The change of Code as an isolated change increased the frequency of pedestrians given priority to for pedestrians as a whole at all sites, but at no site was it the children that benefited the most. The frequency of car drivers giving way also increased but children were not benefited more than any other pedestrian age group.

A questionnaire has been sent to experts in the field of traffic safety. The questionnaire deals with the validity of the studied parameters. The experts' ranking of the most important parameters according to their usefulness in describing children's safety are speed of vehicle, speed of the vulnerable road user, at what distances evasive actions are taken, if the pedestrian or cyclist look around before crossing the street and whether or not the vulnerable road user stops at the kerb before crossing the street. Vehicle speed is ranked as the most important of these.

School children's opinions of the road reconstructions and change of Code were gathered by a questionnaire. At the site where there was no reconstruction but change of Code, 63 % of the school children stated that the safety had improved. However, 89 % expressed the view that the safety had increased at the two sites, which were reconstructed.

GLOSSARY

Accident/collision	An interaction where two road users have collided.
Adult	Person of age 20-64 years.
Before reconstruction	The period before reconstruction. Also called Period 1.
After reconstruction, before change of Code	The period after reconstruction, but before the change of Code concerning car drivers giving way to pedestrians at zebra crossings. Also called Period 2.
After reconstruction, after Code of change	The period after reconstruction and after the change of Code. Also called Period 3.
Child	Person of age younger than 13 years.
Collision course	Unless the speed or the direction of the road users changes they will collide.
Comparison site	Site where no changes have been made. If the assignment is random then it is called a control site.
Conflict	Two or more road users are on a collision course. If no of the road users adjust their speed or direction there will be a collision.
Conflict speed	Speed at the moment of evasive action.
Conflict distance	Distance to collision point at the moment of evasive action.
Elderly	Person older than 64 years.
Encounter	A meeting between two road users.
Free passage	A pedestrian or cyclist crosses the street without "meeting" a car driver.
High Severity Situations	Interaction when at least one of the road users takes an evasive action to avoid a collision or an encounter with a small PET-value. Does not have to be a collision course.
Interaction	A meeting between two road users when any of the road users adjust their behaviour to the other road user.
PET value	Post Encroachment Time. Time measured from the moment the first road user leaves the potential collision point to the moment the other road user enters the conflicting point.
Safe	No risk of traffic accident.
Safety	The expected number of accidents or of accident consequences occurring on an entity per unit of time during a specified time period.
Security	The road user's feeling of safety concerning the traffic environment.
Severe conflict, serious conflict	An interaction where the evasive action starts late or the impression is such that the situation easily could have ended up in an accident instead.
Severity level	Level in the severity hierarchy.
Severity hierarchy	The safety hierarchy transferred into measurable parameters based on certain presumptions.
Significant	In this thesis used with the meaning of a "major" increase or decrease. It does not mean that a test is performed as suggested by statistical theory. In this thesis a Bayesian approach is used.
Youth	Person of age 13-19 years.

SUMMARY

Background

Our traffic environment is designed to suit grown-ups rather than children. According to the UN Convention on Children's Rights, what is best for the children should be the target for all governmental decisions affecting children. The Swedish National Road Administration has, therefore, initiated research as a base for developing guidelines "towards a safe environment for children". It should be noted that a safe traffic environment for a child, as a vulnerable road user, is typically safe for people of all ages. This licentiate thesis is based on the present guidelines the Swedish Vision Zero and the Swedish design document for urban areas called Calm Street. One of the main principles of the Swedish Vision Zero states: The level of violence that the human body can tolerate without being killed or seriously injured shall be the basic parameter in the design of the road transport system.

The Swedish law concerning car drivers giving way to pedestrians was strengthened May 1, 2000. Now, car drivers must give way to pedestrians who intend to cross the street at zebra crossings. Before, the law stated that the car driver should, if possible, give way to pedestrians. The rule of giving way also says that the car driver must, by his or her way of driving, show the pedestrian that he intends to stop by decreasing the speed, slowing down, and stopping. Still, the pedestrian does have the responsibility to cross the street safely.

Places are being rebuilt in the traffic environment to increase traffic safety for pedestrians and cyclists. This is especially important in areas near schools where children often cross the streets, while it is stated that the traffic safety should be increased especially for children. For practical reasons this is also often the best place to study school children's behaviour and safety. Of interest is if and how these changes increase the safety of children within the traffic environment. At Luleå Technical University, a methodology is being developed based on before and after studies of children's behaviour and safety. Places that are to be rebuilt are filmed simultaneously from various angles to capture the different road-users' behaviour. Close-up pictures of vulnerable road users as well as of car drivers are captured. Overviews of the traffic environment are also filmed.

Aim

The first aim of this thesis is to develop a method to describe the traffic safety of vulnerable road users, especially children, at intersections in urban areas. The method is used in before and after studies at intersections that are rebuilt according to the Calm Street principles. The coded parameters are used to describe the traffic situation at different intersections where different measures have been implemented.

The longterm aim of the development of this method is to examine and quantify from the coded behaviours the differences between behaviour and safety before and after the reconstruction or Code changes or both. Also, contrasts in behaviour between different ages of the vulnerable road users before and after the changes in the traffic environment are examined. The car driver's behaviour towards vulnerable road users of different ages before and after the changes are made to the traffic environment is also studied.

The topic for the thesis is how the changes of the traffic environment influence the safety and security for children. This will lead to a safe and good design of the traffic environment, one that is safe for children. A traffic environment that is safe for children can be assumed to be safe to all persons of different ages.

Method

This thesis presents a before and after approach. Intersections that are to be rebuilt are studied from the pedestrian's and cyclist's point of view, before and after the changes are made. The intersections are video filmed to capture the different road users' behaviours, which are coded and quantified. The effect on the studied parameters is evaluated. The aim of the study design is to evaluate hypotheses on the effects of countermeasures in the traffic environment. In the thesis the pedestrians and cyclists age is an important background parameter. The studied parameters such as tempo, frequency of stopping at the kerb, waiting at the kerb, and weather or not crossing at the zebra crossing, describe the pedestrians and cyclists behaviours when crossing the street on a zebra crossing. The car driver's behaviour is also described in terms of speed and giving way to the pedestrians and cyclists. Conflicts and High Severity Situations are registered before and after changes are made in the traffic environment.

Problem formulation

The problem analysis and formulation is based on a literature review. The behaviours of children and elderly persons are different from the age group 20 to 64 years. The traffic environment is, to a large extent, designed for the adult age group 20 to 64 years.

Results

Results from two different studies are presented. The pilot study was to test the method and to initially describe the road users' behaviour with the method. The pilot study deals with data from Regementsgatan in Malmö, Sweden and Hultagatan in Borås, Sweden. The method was tested in the pilot study. The second study, the Borås study, is larger and was conducted at four sites in Borås, one site where changes had been earlier made, two where countermeasures were taken during the period, and one comparison site.

At the four sites in Borås the following countermeasures have been implemented in the traffic environment:

Hulta

50/30-street

- Speed cushions
- Refuge
- 30 km/h speed limit

Sjöbo

30-street

- Removal of zebra crossing
- Elevated intersection with paving stone
- Narrow the street at elevated area
- 30 km/h speed limit

Trandared upper

30-street

- Elevated intersection with paving stone
- Refuge
- Railings at intersection
- 30 km/h speed limit

Trandared lower

- Elevated area at zebra crossing with paving stone
- Refuge
- Railings at intersection
- 30 km/h speed limit

Källbäcksrydsgatan

50-street

- No countermeasures

The main goal with the second study was to describe the different road users' behaviour and to examine differences between each age group and before and after reconstruction. The result

of both studies is focused on traffic safety for pedestrians. The traffic safety for bicycle commuters is commented on briefly.

At the Hulta crossing the mobility and safety for pedestrians have increased as indicated by the stated parameters. At the Sjöbo crossing the mobility has not increased as much as at the Hulta crossing. Pedestrians cross the street differently than before, they cross the street not only on the marked zebra crossing. They are given way more often than before the changes were made, but not as often as in the other sites. No pedestrians' High Severity Situations or conflicts were observed after changes were made at the Sjöbo crossing.

The two crossings at Trandared School have the highest number of High Severity Situations before the change of Code. After the change of Code the High Severity Situations decreased for pedestrians as a group. The mobility increased, but at the lower crossing, for example, pedestrians had to wait at the kerb as much as before.

The data was divided in the pedestrian and cyclist age groups children 0 to 12 years, youths 13 to 19 years, adults 20 to 64 years and elderly, older than 64 years.

The welfare of children should be the target of all governmental decisions affecting children, and to see how the changes made within the traffic environments have improved the traffic situation for children compared with the norm, the adult age group 20 to 64 years. Also the elderly were compared with the adult age group.

At the Hulta crossing the frequency of children given way to has increased more than for the adult age group. The frequency of car drivers giving way to children has also increased more. The frequency of looking in both directions at the kerb has decreased more for children than for the adult age group.

At the Sjöbo crossing, children are not benefiting more by being given way. The change of car drivers giving way is on the same level for children and the adult age group. Children also look around more at the kerb than before; but the frequency of children stopping at the kerb and waiting has decreased more than for the adult age group.

At the upper crossing in Trandared children are not benefiting more than the adult age group after the change of Code. The frequency of car drivers giving way increased most for the adult age group, though children waited more at the kerb than the adult age group after the change of Code.

At the lower crossing in Trandared after the change of Code the frequency of being given way has increased more for the adult age group than for the children age group.

At the Hulta site the elderly are given way to more than the adult age group, but car drivers are passing the elderly more often than the adult age group before a car driver finally gives way. The frequency of stopping at the kerb and waiting decreased more for the elderly than for the adult age group after reconstruction, but after the new law was enacted, the elderly stopped and waited more than the adult age group.

At the Sjöbo site the situation for the elderly can be compared with the situation for children. The elderly stopped more often at the kerb, waited more at the kerb, and were not given way by car drivers as often as the adult age group.

At the upper crossing in Trandared no elderly persons were observed after the change of Code. At the lower crossing it is the elderly that have the largest increase in being given way and that are given way to the highest extent after the change of Code. Car drivers most often also give way to an elderly pedestrian at the kerb.

In the beginning of the thesis some hypotheses were stated about the before and after reconstruction results. Therefore, the results from the two crossings in Trandared are not commented on by all hypotheses. A short description of the hypothesis and results of the hypothesis testing is given below. If the results vary between each studied site, the different results are presented.

H 1. Fewer High Severity Situations and conflicts after the reconstruction and Code change.

At Hulta and Sjöbo sites the number of situations per studied hour decreased after reconstruction at the. This number also decreased after the change of Code at the Hulta and Sjöbo sites, and the two crossings in Trandared.

H 2. Before the reconstruction more children stop at the kerb for cars than after.

At both the Hulta and Sjöbo sites more children stopped at the kerb before the reconstruction than after.

H 3. Less head movements of children after the reconstruction. It is easier for children to cope with the interactions.

At the Hulta site there were less head movements of children after the reconstruction. However, at the Sjöbo site there were more.

H 4. The children's tempo is changed after the reconstruction to less running over first and second lane.

There was less running over first and second lane at both the Hulta site and the Sjöbo site.

H 5. The walking tempo of the children is higher when entering the intersection after the reconstruction.

The tempo was lower at both reconstructed sites.

H 6. More children are looking over their shoulders after the reconstruction to look if vehicles are coming to the intersection from the minor road, as it is easier for children to cope with the interactions after the reconstruction.

It was not possible with the present method to assess the head movements that precisely.

H 7. The reconstruction and Code change has improved the mobility more for children than pedestrians of other ages. The parameter pedestrians given way to by car driver describes mobility.

At the Hulta site the increase in children given way by car drivers is larger than for other age groups, both after reconstruction and Code change.

At the Sjöbo site the children are given way to a higher extent after reconstruction and change of Code, but the increase is not larger than for other age groups. In fact, children

and the elderly have the smallest increases in frequency of being given way to by any car driver.

At the Trandared upper and Trandared lower crossings the children are given way to a higher extent after the change of Code, but the increase is not larger than for other age groups.

H 8. The flow of pedestrians crossing the main road increase after reconstruction.

At both the Hulta and the Sjöbo sites the flow of pedestrians has increased after reconstruction, however the flow of pedestrians is almost unchanged at the Sjöbo site after reconstruction.

H 9. Overtaking occur at the zebra crossings in the before situation. This will not be possible after the reconstruction.

Overtaking situations were very few at the Sjöbo site, both before and after reconstruction and Code change. At the other sites no overtaking situations occurred.

H 10. After the reconstruction the speeds of the vehicles are lower than before.

At both the Hulta and the Sjöbo site, the vehicle speeds were lower after reconstruction.

At the Hulta site the 90-percemtile deceased with 27 km/h in the morning and 23 km/h in the afternoon. At the Sjöbo site the 90-percentile decreased with 15 km/h in the morning and with 20 km/h in the afternoon. The 90-percentile of the speeds decreased by 5 km/h at the control site Källbäcksryd.

H 11. After the reconstruction more car drivers are giving way to children and other pedestrians.

More car drivers are giving way to both children and other pedestrians at both the Hulta and Sjöbo sites.

H 12. The right turning car drivers from the minor road do head movements to the right earlier and more often after reconstruction while it is easier to judge the traffic from the left due to the lower speeds.

It was not possible with the present method to assess the head movements that precisely.

H 13. The car drivers driving straight ahead do head movements earlier and more often after reconstruction while it is easier to judge the traffic due to the lower speeds.

It was not possible with the present method to assess the head movements that precisely.

H 14. A group of people are more often given way by car drivers than a single person.

At all sites, a group of people are more often given way by car drivers than a single person.

Persons walking in a group are given way to a higher extent than persons walking alone, both before and after reconstruction and Code change.

H 15. After the Code change more car drivers are giving way to pedestrians.

The results show that more drivers are giving way to pedestrians at all sites.

From the comments to the hypothesis we see that there are differences in the effect of the different countermeasures that were implemented at the different sites.

Conclusions and discussion

Construction of the method, the data collection, and mainly, the coding of data have been very time consuming. Many parameters are collected in the method.

A way of making the coding of parameters faster is to exclude some of the coded parameters that are not important in the traffic environment that is studied. Before the coding starts, the parameters that are to be studied are chosen. This can vary between different traffic environments. The amount of adult's behaviours that is coded could also be decreased. A stratified way of data collection for the different age groups is to collect the same amount of data about adults as is found for children. In this way the time of coding is reduced.

The collection of High Severity Situations is not time consuming and it gives important information concerning the studied traffic environments. Therefore, this part of the method should not be reduced. If possible, it could be increased, however this is dependent how much fieldwork can be done and how much video material can be collected.

The method with the coding of parameters gives a lot of information about the traffic situation for pedestrians and cyclists of different ages, ages that can be compared with each other. In the comparison differences between various age groups are shown. The results from a site tell us initially if the traffic situation is improved for pedestrians as a group. The goal with reconstruction of the studied sites has been to improve the traffic situation for all pedestrians and cyclists, but especially for children. The differences between children and the other age groups are also shown in the results. The parameters waiting time at the kerb, frequency of pedestrian given way to by car drivers, and if the children are running over the street gives a lot of information of the mobility and security for pedestrians and how the car driver's behaviour has changed towards the pedestrians. The relationship between safety and these types of parameters is still a problem though. Explorative data analysis based on these parameters can give important clues towards a safe traffic environment for children, as shown above.

The expert questionnaire was sent to the recipients by e-mail. The advantage with sending by e-mail is that the distribution is very easy. The big disadvantage with digital video cuts is that the sizes of the files become large very fast, so large that not all e-mail servers can receive them. A shorter questionnaire may have resulted in more answers.

School children's opinions of the road reconstructions in the questionnaire show that at the site where there was no reconstruction but change of Code, 63 % of the school children stated that the safety had improved. However, 89 % expressed the view that the safety had increased at the two sites, which were reconstructed.

At all sites the given way frequency has increased for children, but it is only at the Hulta crossing that the increase is largest for children. Speed cushions and elevated areas decreased the vehicle speeds at all sites. The goal of traffic calming with the 90-percentile below 30 km/h is unfulfilled; however, the speeds decreased strongly in the after situations.

The change of Code as an isolated change increased the frequency of pedestrians as a group being given way at all sites, but at no site was it the children who benefited the most. The frequency of car drivers giving way also increased, but children did not benefited more than any other pedestrian age group.

The proportion of pedestrians walking on the marked zebra crossing is dependent on the traffic environments design. This also has a strong influence on the car drivers' behaviours towards pedestrians. An interesting observation was at the Sjöbo crossing where the intersection was elevated and a zebra crossing was removed, changing the proportion or pedestrians walking on the marked zebra crossing dramatically (according to Calm Street guidelines both zebra crossings should be removed). The pedestrians crossed the street wherever and less at the remaining zebra crossing. At this site the pedestrians were given way to a lower extent and car drivers also gave way to a lower extent compared with the other sites. The children and elderly also benefited less than adults. The numbers of High Severity Situations and conflicts were very low, though, and the vehicle speeds were the lowest observed in this study.

At the other sites with marked zebra crossings, pedestrians walked on the zebra crossing to a much higher extent. At the crossings at Trandared School, there are also railings at the kerb to prevent pedestrians from crossing the street at the links. The pedestrians benefited, they had to stop and wait less and were given way to more often. The numbers of High Severity Situations and conflicts were very low.

Therefore, a conclusion is that a zebra crossing is a strong signal in 30-streets, both for pedestrians and car drivers. This area is designed to the benefit of pedestrians indicating where pedestrians should cross the street and, that if a pedestrian intends to cross the street at this area, the car driver must give way. To provide traffic environments with clear signals and guidelines to all road users, the zebra crossings should possibly be kept at the intersections with traffic calming also implemented; however, further research is needed before firm conclusions can be drawn.

Further research

The data collected and presented in this thesis are from sites with some specific types of physical measures taken to improve the mobility, security, and safety for pedestrians and cyclists. The reliability and validity of the method are important research topics for the future. The expert survey can be seen as a first attempt to assess the validity. More data should be collected at sites with other types of physical measures taken, e.g. roundabouts, four-way stops, and sites where a new type of pedestrian crossing zone, "Gångpassager"[1], has been implemented. The effect of remaining or removed zebra crossings in traffic calmed intersections should also be studied more.

Based on the results of the data analysis and the results of the expert questionnaire there is reason to believe that the method in coding the behaviours of the road users can be more efficient in the future. The coding of the road users' behaviours can be concentrated on fewer specific parameters. The most important ones seem to be the speed of vehicles, pedestrians,

[1] Areas provided for pedestrians to cross the street but not necessary marked as zebra crossings. For design of "Gångpassager", Pedestrian crossing zone, see SNRA.s report Säkra Gångpassagen! (1998).

and cyclists, if the pedestrian or cyclist stops at the kerb or not, and if the pedestrian or cyclist looks around before crossing the road. Also, the data can be stratified with respect to the pedestrians or cyclists age. The traffic safety, or lack thereof, is then described in an efficient way, taking all the road users under consideration.

The analyses that have been done so far with the purpose of exploring data to find a clue to a safe traffic environment for children. However, data has so far only been analysed from one city, Borås. We have already started gathering data from sites in Malmö, Trollhättan, Luleå, and Storuman. If funding is provided we will continue by analysing the effect and combinations of different types of countermeasures to find the track to a safe and good design of the traffic environment. This means that the traffic environment is safe for children. A traffic environment that is safe for children should be safe to all persons of different ages.

TABLE OF CONTENTS

REFERENCES

APPENDICES

1 BACKGROUND AND AIM

This licentiate report deals with traffic safety for pedestrians and cyclists, especially children, in urban areas.

1.1 Background

Our traffic environment is designed to suit grown-up people rather than children. According to the UN Convention about Children's Rights, what is best for children should be the target for all governmental decisions affecting children. Therefore, The Swedish National Road Administration has initiated research as a base for developing guidelines "towards a safe environment for children". It should be noted that a traffic environment that is safe for a child as a vulnerable road user typically, should be safe for people of all ages. When designing roadways, it should be remembered that children of different ages have different needs and abilities. The very young may in most environments be under adult supervision, whereas preteens typically are allowed to move around freely, even outside their immediate neighbourhood. These children, whose sight, hearing, intellect and understanding are not fully developed, are often shorter. Older teenagers may have the same ability to judge situations as adults, but their attitude is often different; they take greater risks and are inexperienced with traffic. Children should be able to be a part of the traffic environment in a safe way. The traffic environment should be designed for children. The elderly can also have problems adjusting to a too complex traffic situation.

The base for urban road design in Sweden is Vision Zero and the principles in the Swedish design document for urban areas called Calm Street (Svenska Kommunförbundet, 1998). One main principle of the Swedish Vision Zero states: The level of violence that the human body can tolerate without being killed or seriously injured shall be the basic parameter in the design of the road transport system.

The following hierarchical division of roads and streets is described in Calm Streets and is suggested to fulfil the principles in the Vision Zero:

1. Through traffic route (70-km/h-road or shorter 70-road) with only grade separated crossings
2. 50/30-km/h-street or shorter 50/30-street. 30 km/h at pedestrian and cycle crossings. 40 - 50 km/h elsewhere **(**Main street/Urban arterial road)
3. 30-km/h-street or shorter 30-street **(**Residential Street/Wohnstrasse/Rue Residentielle)
4. Walking speed street (Woonerf)
5. Car-free areas such as pavements, footpaths, squares, cycle-tracks, cycle-lanes, etc.

This means that in built-up areas the standard 50-streets are changed to 50/30-streets or 30-streets, depending if pedestrians and cyclists need to cross at certain points with specific safety features or anywhere along the street. The carriageway on a 50/30-street normally has

two lanes for ordinary car traffic, one lane in each direction. The 50/30-street also has wide cycle-tracks and wide pedestrian pavements, affording pedestrians and bicyclists good accessibility, safety and security. An intersection between two 50/30-streets always has marked pedestrian and bicyclist crossings and is designed so that cars should not be driven through at speeds exceeding 30 km/h. The pedestrian and cycle crossings should be designed to meet the needs of children, the elderly, and disabled persons (Wramborg, 1998). Children find intersections to be appreciably more troublesome than sections of road, providing that the speed is kept low. Therefore, it is preferable for children if pedestrian crossings are located mid-block rather than at intersections. Excellent sight conditions at these locations are also important (Leden, 1988). However, it should be kept in mind that crossing facilities at intersections also have to be provided if there are substantial pedestrian flows along the street. This is typically the case in older neighbourhoods where separate walkways away from the street network do not exist.

The Swedish law concerning car drivers giving way to pedestrians was strengthened May 1, 2000 in. Now, car drivers must give way to pedestrians who intend to cross the street at zebra crossings, whereas the previous law stated that the car driver should, if possible, give way to pedestrians. The rule of giving way also says that the car driver must, by his or her way of driving, show the pedestrian that he intends to stop by decreasing the speed, slowing down, and stopping. Still, the pedestrian has the responsibility to safely cross the street. The law regarding car drivers giving way at zebra crossings does not pertain to giving way to people going by bicycle. However, a person walking with the bicycle at a zebra crossing is regarded as a pedestrian.

Places are rebuilt within the traffic environment to increase the traffic safety for pedestrians and cyclists. This is especially important in areas near schools where children cross the streets, while it is stated that the traffic safety should be increased especially for children. If and how these changes increase the safety of the children in the traffic environment is of importance.

At Luleå Technical University, a method is being developed based on before and after studies of children's behaviour and safety. Places that are to be rebuilt are filmed simultaneously from different angles to capture the different road-users' behaviour. Close-up pictures of vulnerable road users as well as car drivers are captured, and also overviews of the traffic environment are filmed.

1.2 Aim

The first aim of this thesis is to establish a good base for developing a method of how to describe traffic safety to pedestrians and cyclists, especially children, at an intersection in urban areas. This method is based on video recordings at intersections and school surveys. From the video recordings the shown behaviours are coded into different parameters on purpose in a comprehensive way exploring a wide range of parameters. An expert survey was performed to highlight the problems and countermeasures for children in traffic and the experts' view of the most important coded parameters "towards a method of improving road safety for pedestrian and cyclists, especially in child pedestrian environments". Together with other results presented in this thesis, this will be the basis for developing the method further. From the coded behaviours come the following differences examined and quantified:

- The road users behaviours before and after the reconstruction and/or Code change.

- Behaviours of pedestrians and cyclists of different ages before and after the changes are made in the traffic environment.

- The car driver's behaviour towards pedestrians and cyclists of different ages before and after the changes is made in the traffic environment.

Of note is to determine how the changes of the traffic environment will influence the safety and security for children, leading to a safe and good design of the traffic environment. A traffic environment that is safe for children is safe to all persons of all ages.

1.3 Boundaries

The prime focus of this work has been the area in and around intersections. The links between the intersections are not studied. The studies are done to improve traffic safety for pedestrians and cyclists, especially for children as vulnerable road users. Most of the presented results describe the situation for pedestrians. At the studied intersections specific reconstructions have been made. The studies are done in urban areas. The method is applied mainly during peak morning and afternoon traffic, i.e. not the whole day. In this licentiate thesis results from studies at four intersections in Borås are presented.

1.4 Instructions to the reader

The first chapter, which you just have read, describes the background and aim of the field of survey that this licentiate thesis deals with. **The second chapter** is a literature review of mainly the traffic safety for child pedestrians. In the **third chapter** is the hypothesis for the research stated. In the **fourth chapter** are the methods, which have been used, described in detail. In the **fifth chapter** are the test sites and data collection. The largest chapter is the **sixth chapter**, which contains the results. It is divided into six parts, the first that gives the results of the initial study conducted. At this point the method was tested. The main ambition with the second study, the Borås study, was to describe the different road users' behaviour and to examine differences between the various age groups along with the differences before and after reconstruction. The third part studies the conflicts and High Severity Situations found in the Borås study. The fourth part gives the results of an expert questionnaire conducted to test the validity of the parameters in the survey. The fifth part is a school survey that was conducted at some schools close to the studied sites. The sixth part describes the effects of the different countermeasures studied. Most of the parts of chapter six are ended with a summary. Conclusions and discussion is presented in **chapter seven**.

The interested reader will, of course, read the whole thesis. The reader who wishes to get a picture of the survey conducted, but maybe not read the entire document, may read chapters one, three, four, five, part six in chapter six, and chapter seven.

2 TRAFFIC SAFETY AND BEHAVIOURS OF ROAD USERS

This chapter is based on a literature review and is the basis for the problem description and hypothesis that is later stated. The databases used for the literature review were:

- Psycinfo with key words cognitive, cognitive + children, crossing + behaviour, pedestrians + children, intersections, intersections + children.
- Applied Science and Technology with key words pedestrians, pedestrians + children, pedestrians + elderly, cognitive, intersections + pedestrians, intersections + behaviour + traffic.
- Compendex with key words traffic + safety + children, cognitive, crossing + behaviour, crossing + behaviour + pedestrians, traffic + safety, pedestrians + children.

2.1 Background

Children and the elderly are disproportionally represented in accident data for vulnerable road users when compared with their exposure to traffic. Epidemiological analysis in the USA suggests that the characteristics and circumstances of pedestrian injuries differ by age (Malak *et al.*, 1990). The elderly are commonly injured during daylight hours, typically at intersections near their place of residence. Children younger than 15 sustain injuries as pedestrians while at play near their homes. Adults between the ages of 15 and 65 years are usually injured at night, when the victims are often inebriated. The pattern of pedestrian injuries cannot be understood without examining the children's exposure to the traffic environment. Howarth et al. (1974) and Routledge et al. (1974) (presented by Malek *et al.*, 1990) found that children aged 5 to 7 years, which were the age group most over represented as accidents victims, were actually exposed to traffic less than older children. Therefore, the conclusion is that the increased injury rate was due to behavioural factors rather than to greater traffic exposure. The risk of injury declined with age throughout the childhood years, with the 0 to 4 year olds having the highest risk of all age strata. In Australia, 1991 pedestrians accounted for 19 % of all road fatalities and approximately 30 % of these pedestrian deaths were people aged over 65 years (Oxley *et al.*, 1997). Pedestrian casualty rates increased sharply for those aged 75 years and older, particularly those with a fatal or serious injury as the outcome. In an analysis of police-reported pedestrian accidents in urban areas, the majority of collisions with pedestrians of all ages occurred as the pedestrian stepped off the kerb into the path of an oncoming near side vehicle.

Swedish travel survey and self reported accident data have been compared with accident data from the Swedish Road Authority (Thulin and Kronberg, 2000). The data is used to calculate the risk for vulnerable road users of different ages as killed or severely injured per million kilometres. The main result from this study is that elderly people in Sweden, 64 years or older, have more than 20 times higher risk of getting killed in urban areas as pedestrians compared with the age groups that have the lowest risk of getting killed, 15 to 24 and 25 to 44 year olds, see Figure 2.1. The risk of severe injury (including death) in urban areas for elderly was five times greater than for the age groups 15 to 24 and 25 to 44 year olds. Children as pedestrians in urban areas also have a higher risk of being killed, about three times higher risk

than for adults (25 to 64). The risk of children being severely injured compared with the age groups 15 to 24 and 25 to 44 year olds are between two and three times larger. Elderly cyclists, older than 64 years, have more than 20 times higher risk of being killed in urban areas compared with the age group that has the lowest risk of getting killed, 15 to 24 year olds. The risk of severe injury for elderly cyclists (including death) was two to three times higher. The risk for children cyclists, aged 7 to 14 year olds, to get killed or severely injured is higher also compared with the adult age groups younger than 64 year old, but not nearly as high as the elderly, see Figure 2.1.

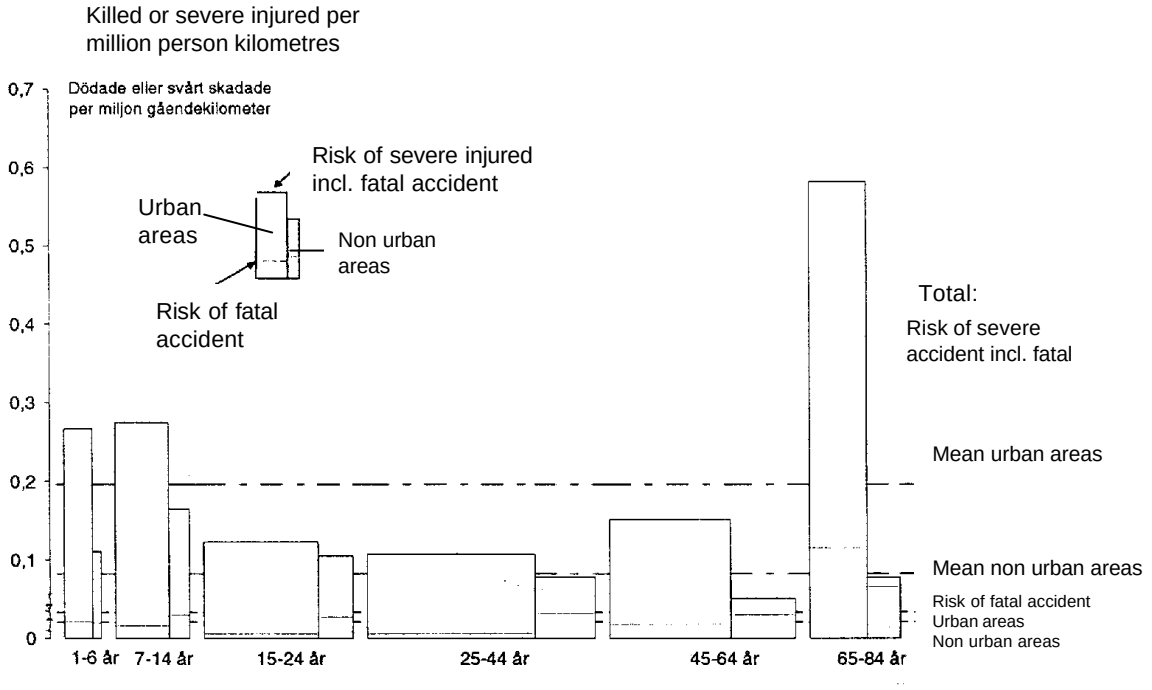

Figure 2.1. Risk accident and severe injury. (Thulin & Kronberg 2000)

Compared with the adult groups, younger pedestrians aged 1 to 14 years crossed streets just as much. Elderly pedestrians crossed streets less than other age groups. For all pedestrian age groups most of the crossings were made at unsignalised crossings at intersections or links. Elderly cyclists crossed the street less than other age groups. For all cyclists of all age groups, most of the crossings were made in crossings that were not signalised and at street level (not crossed over the street on a bridge or under the street through a tunnel).

The risk of being killed or seriously injured for pedestrians is highest at unsignalised intersections (Thulin and Kronberg, 2000). It is also at that type of crossing where most of the pedestrians' passages are made. Two-thirds of all pedestrian fatalities when crossing at an intersection involved elderly people. The share is somewhat higher at signalised intersections where 80% of all pedestrian fatalities at zebra crossings were elderly people. It was also shown that the elderly walk on the zebra crossing more than other age groups. Very few children were killed at zebra crossings. Of all severe injuries at zebra crossings on a link, 20% concerned children younger than 15 years. At zebra crossing intersections, 10% were children younger than 15 years. The risk of getting killed or severely injured as a pedestrian was, for children younger than 15 years and elderly older than 64 years, higher than the mean value for all pedestrians, both in urban areas and in non-urban areas. The risk of getting killed or seriously injured for cyclists is highest at unsignalised intersections. It is also at that type of crossing where most of the cyclist passages are made. Half of all fatal accidents with a cyclist

crossing at an intersection concerned elderly people. Elderly do not use marked cyclist crossings more than other age groups. Of all cyclists that were severely injured or killed when crossing the street at unsignalised streets, 9% were younger than 15 years; 16% of all cyclists that were severely injured or killed when crossing the street at signalised streets were younger than 15 years. Of all cyclists that were severely injured or killed when crossing the street outside a marked cycle crossings, 12% were younger than 15 years; 16% all cyclists that were severely injured or killed when crossing the street with marked cycle crossings were younger than 15 years. These figures are lower than for the other age groups. However, the risk of being killed or severely injured as a cyclist was higher for children younger than 15 years and elderly older than 64 years, especially in urban areas. Putzén and Lundberg (1984) found that (presented by Briem, 1988) one-third of the children's travelling during one school day was to and from school, and most of this travelling was by foot.

2.2 Cognitive development of children

The ability to cross a street safely develops with age; international road accident statistics clearly show that young child pedestrians are at a higher risk of death or injury (MacGregor *et al.,* 1999, Connely *et al.,* 1998). British data reveals that children aged 5 to 7 are most at risk. In New Zeeland, the United States, and Canada, child pedestrian accidents peak between the ages of 5 and 9 years, coinciding with the early elementary school years (Connely *et al.,*1998). It has been estimated that traffic maturity is reached at around 12 years of age (MacGregor *et al.,* 1999). With age comes increased exposure to traffic education, but also exposure to actual traffic as children are permitted to travel further from home on their own or with friends. Such exposure should lead to increases in the understanding of traffic hazards and the experience in making the required estimates. It is suggested that children below the age of 14 are over represented in pedestrian accidents. It is suggested that the high rate of pedestrian accidents among children could be related to the limitations in their developing perceptual and cognitive abilities. These cognitive factors contribute to their ability to perform an adequate visual search, to estimate time and distance of approaching vehicles, and to attend to auditory cues of approaching vehicles. Children under the age of 12 have been found to have particular problems perceiving the direction of moving traffic, estimating the speed of oncoming vehicles, and performing adequate auditory estimates of approaching vehicles.

The pattern of school-age children's pedestrian casualties also follows that of the school year, with rates falling during periods of school closures for vacations. The children's view and perception of oncoming traffic may be affected by their height, thereby restricting their range of view (Connely *et al.,*1998). This together with parked cars, trees, or buildings makes it even more difficult to survey the traffic. Children may also have more difficulty in judging speed and distance than adults. The concepts of time, speed, and distance also undergo a lengthy developmental sequence.

In a study by Jarvis and Van der Molen (presented by Cross, 1988) the unpredictability in the behaviour of young children is the dominating feature in child pedestrian accidents. They state that children often run across in front of approaching traffic rather than letting it pass and in an otherwise stable road environment, the unpredictable behaviour of a child is the major casual factor of child accidents. In the study presented by Cross (1988), all children do not know or understand the link between the speed, time, and travelled distance for a car. The younger the children are the greater the naivety regarding the concept of speed. Therefore, dash-out pedestrian accidents due to impulsive behaviour may be entirely logical from the child's point of view. The feeling of being insecure can also be important. Children may run over the street, especially over the second lane, when they feel insecure in the traffic

environment. Unaccompanied children had an increased risk of accident due to the increase in running, which is the single most important lack of safe traffic behaviour. (Räämä, 1993, Gaskell *et. al*., 1989).

Children and the elderly behave more cautiously than other adults (Arnold *et al.*, 1990). It has been suggested that it is developmental and ageing changes make them vulnerable road users. Road crossing is a cognitively difficult task and it is not until the age of 11 or 12 years that children will have developed all the required abilities fully. For the elderly, these physical and cognitive resources decline with age.

Piagets study (1969) (presented by Demetre and Lee, 1992) theorises that young children make hazardous decisions concerning vehicle approach times because they are unable to understand the relationships among duration, velocity, and distance until around the age of 10 years. Von Hofstens (1980 and 1983) results (presented by Demetre and Lee, 1992) have the ecological view that the developmental task rests on the child gaining sufficient experience in the world, so that the temporal information can be calibrated to the requirements of different kinds of action. Young children lack the experience in crossing roads and cannot be expected to make safe judgements if they are unaware of what to look out for in traffic (Foot *et al.*, 1999).

Epidemiological studies note that infants are at an increased risk of pedestrian injuries in driveways and other relatively protected areas (Schieber, 1996). Two factors contribute to this risk: children may be drawn towards rather than away from moving vehicles and for infants who have not yet fully developed the concept of object permanence, an object still exists even though it has moved out of sight. The second stage of development spans from eighteen months to seven years. They acquire the ability to fantasize and to also escape the immediate environment and experience new events. During this time motoric skills such as running and jumping expand. Preschool children cannot depart from their own point of view. If the child can see himself, the car driver can also see him even he is standing between two parked cars. The third stage spans from about seven years to adolescence. Skills in judging the environment are structured according to principles of logic and are trained in forming hypotheses. Such skills enhance the ability to identify dangerous situations. The performance is inconsistent while these skills are developing. A child who can judge well in one dimension may have difficulty judging in another dimension. For example, a child may have difficulty determining whether it is safe to cross the street between two parked cars (learned dangerous) and when the cars are located close to a crosswalk (learned safe). The final stage of cognitive development begins in adolescence. Youths can think abstractly about events not experienced or even contemplated. Their decisions can now be based on simultaneous consideration of two or more variables. It now becomes possible to judge both the speed and the distance of an oncoming car.

The differences between children of 6 to 7 years and older children, regarding safe performance of the pedestrian task, seem substantial (Midtland, 1995). The differences mainly pertain to the attention and cognitive parts of the task, and only to a lesser degree to its perceptual aspects.

Children's development of pedestrian skills is highly variable (Whitebread and Neilson, 1999). This was shown in a study with 180 children equally divided between three age groups of 4 to 5, 7 to 8 and 10 to 11 years. The children's information sampling and decision making showed identifiable different patterns of behaviour in those with weak and strong pedestrian skills. These different strategic approaches involved changes in the frequency and pattern of looking in the relevant different directions. The changes shown were a gradual development away from a strategy of sampling the traffic conditions on a moment by moment basis and

more towards a strategy of making predictions. There were large individual differences, but for many children, clear developments were occurring by the age of 7 to 8 years.

In a study presented by Rothengatter (1984) children aged between four and six years old were trained in traffic-knowledge and traffic behaviour. The training was conducted under normal traffic conditions, supplemented with audio-visual presentations. The tasks they were trained in were crossing on quiet streets, crossing near parked cars, and crossing a street at intersections. The result was that the children's actual traffic behaviour improved considerably after being trained.

In a study by van Schagen (1988) it was shown that first grade children were, after training, better at judging safe time gaps to an oncoming car compared with an untrained comparison group. The children were trained with an adult commenting if the time gaps verbally chosen by the children were correct or not. Before training 69% of the children were willing to cross at unsafe time gaps (in this case 7 seconds or less) and 92% were willing to cross at safe time gaps (in this case 8 seconds or more). In the comparison group 60% were willing to cross at unsafe time gaps and 76% at safe time gaps. Conversely, after training 36% were willing to cross at unsafe time gaps and 94% at safe time gaps.

In the untrained comparison group the shares were more or less unchanged. In a theoretical study made by Vinjé (1981) it was found that too little was known of the children's functional processes in traffic situations. The aim was to find what behaviours that are and are not desired in the traffic environment. The following question was what functions are required for the desired behaviour and the last question was at which age has a child developed these functions. The impulsiveness of children is a problem leading to poor search behaviour in the traffic environment. This is shown by the difficulty children have in dividing their attention between several motor and visual activities, therefore making them unreliable road users. The visual acuity develops gradually over the first ten years; auditory capability improves over the first twelve years. It was not possible to give certain answers to the questions stated. It was found, though, that for children younger than seven years cognitive training methods seemed useless. They should have only a limited number of destinations where they are allowed to go on their own using a specified route, and which is trained in detail. They should stay well away from the kerb, stop for a crossing and look out for traffic by moving the head, cross only when no traffic is coming and, in case of parked cars, stop at the line of vision. The training should be as concrete as possible. They should be trained in the actual traffic situation. Educational campaigns directed at children can improve their knowledge about street crossing, but does not necessarily translate into improved behaviour. For this reason child road education is an important component of pedestrian safety campaigns, but one that can prevent only a small fraction of accidents.

Sandels (1974) found that children under 10 years cannot be adapted to the traffic environment because they are biologically incapable of managing its many demands. Ampofo-Boatang *et al.* (1993) write:

´The assumption is important because, if true, it would imply that there is only a limited amount that can be achieved with younger children through education and training. This would shift the emphasis in road safety away from education altogether to other areas such as engineering and urban design. The view has gained many adherents and appears to underlie much current thinking in road safety.´

An alternative possibility could be that for training children in road skills is useful, but that the problem now is that the children are not taught the skills, only the knowledge and attitudes towards road safety (Ampofo-Boatang *et al.*, 1993). In traffic safety, the children as pedestrians need procedural rather than declarative knowledge. Children do not always

understand the link between the safe behaviours that are verbally taught in classrooms and how to later apply this knowledge as a road user. This is not acquired through verbal methods, rather children must instead be taught how to behave in practice.

Howarth (1980) suggests (presented by Arnold *et al.* 1990) that as young children have not yet developed the necessary cognitive skills or been adequately educated in how to use these skills in road crossing, the alternative target for child pedestrian safety measures is the car driver. Given the physical or cognitive limitations of children and the elderly, it is suggested that the responsibility for pedestrian safety be placed more upon drivers and parents (Arnold *et al.* 1990). Therefore, it is suggested that drivers should show more responsibility by adopting appropriate driving strategies on roads most frequently used by pedestrians.

2.3 Description of behaviours of children

MacGregor *et al.* (1999) found significant differences between the behaviours of males and females and among the three age groups 5 to 7 year olds, 8 to 10 year olds, and 11 to 12 year olds when crossing at non signalised intersections. One difference found pertains stopping at the kerb prior to crossing. Older children were less likely to stop at the kerb before crossing than were younger children. Before crossing the intersection 21% checked to both the left and the right. During the crossing of the intersection 32% looked both ways. Children who were not accompanied were less likely to stop at the kerb than those who were accompanied by hand and by those who were accompanied, but not by hand. Unaccompanied children were more likely to perform a visual search than accompanied children.

Connely *et al.* (1998) used the age groups 5 to 6 years, 8 to 9 years, and 11 to 12 years to test the children's hearing, vision, and time to walk over a 12-m wide urban street and back. Overall, the results indicated that distance gap thresholds remain constant regardless of vehicle approach speed. Children consistently allowed smaller safety thresholds as the speed of approaching vehicles increased. In fact, the mean data showed a tendency for the children to allow a little more distance for vehicles with slower speeds. Most children were safest at the slower vehicle approach speed. Once vehicle approach speeds reached speeds of over 56 km/h, the children of the youngest age groups were on average often making risky distance judgements. Accepted distance gaps of 15 m or less indicates that many accepted gaps were insufficient for either optimally safe crossing or vehicle braking. Children aged 8 to 9 years often made judgements that were more risky than those of the age 5 to 6 years. Children of the age 5 to 6 years, especially boys, were constantly making very conservative distance judgements that gave the impression of an ability to reliably make safe decisions. The majority, though, made inconsistent and unpredictable judgements. Connely *et al.* (1998) shows that children younger than 9 years are not capable of safe judgements. It is evident that child pedestrians cannot be relied upon to consistently make safe estimations of gaps in approaching traffic, especially as vehicle speeds rise beyond 50 km/h.

Oudejans *et al.* (1996) videotaped a pedestrian crossing near a shopping mall to measure the accepted and non-accepted time gaps to an oncoming car for pedestrians (not shown of which ages) at a pedestrian crossing. The street was divided in by a safety island. The pedestrians were divided in two groups: those who stopped at the kerb and looked and those who did not stop at the kerb. The transition point for the time gap for walking pedestrians was 3.02 s (i.e., the point at which the probability of crossing was 0.5.) and for pedestrians standing still the time gap transition point was 4.63 s. The difference of 1.61 s is not explained in longer walking times to cross the first lane for pedestrians standing still. The crossing times for pedestrians standing still were 2.78 s and for pedestrians walking it were 2.60 s. This is a

difference of 0.18 s. It leaves 1.43 s to due to perceptual differences and/or response bias. The safety margin for pedestrians standing still was 1.85 s and for pedestrians walking was 0.42 s. The results indicate that walking has a positive influence on the perception of the possibility to cross a road safely. The results are, however, ambiguous. On the one hand one wants pedestrians, especially children, to stop at the kerb before crossing the street, a more conservative crossing strategy. On the other hand perceiving the traffic situation while in motion may lead to a more accurate perception of whether a safe crossing is possible. The second option may indicate that the pedestrians should have a clear view of the road so that they can decide while they still in motion whether or not crossing is possible.

In a study by Vinje (1982) (presented by Demetre and Lee 1992) children, aged seven and ten, and adults performed similarly in terms of risky understatements of accepted time gaps. The children younger than seven years underestimated arrival times, meaning that they judge the time period shorter than it really is. This suggests that young children are likely to be overcautious in their decisions about traffic gaps. Demetre and Lee (1992) conducted tests with pretend road tasks of crossing the street for children of the ages 5 and 6 years. The child was standing next to a pretend road parallel with (next to) a real road. They also conducted the test with children standing at a street shouting when they were not willing to cross in front of an oncoming car. The incidence of missed opportunities was significantly less on the shout task than on the pretend road. The explanation is that the child was making judgements on a double-width criterion (width of the pretend road plus the width of the real road). The findings of the study also indicate that, statistically, five-year old children were only marginally more likely to commit a tight fit in judging time gaps. The children, though, missed many more opportunities to cross the street than the adults did. The conservatism shown by the children in judging time gaps can result in feelings of frustration and impulsive decisions, but the correlation in the study was non-significant between missed opportunities and tight fits.

Lee *et al.* (1984) simulated the task to choose a time gap between two cars for the pedestrian to cross the street in. In the method used the child is asked to choose time gaps and cross a pretend road, next to and parallel a real road, in time gaps between cars on the real road. The result was that children were generally more cautious than the adults. Although the children were generally cautious they occasionally accepted gaps that were too short. On 6.5% of their crossings, the 5 year olds were theoretically hit, insofar as they did not reach the barrier, symbol for a road island, before the vehicle defining the end of the gap passed. For the 7 and 9 year olds, the figures were 8.1 and 4.7%, respectively. A proportion of the children made no such errors, a proportion that increased with age. 26 % of the 5 year olds made no errors, 35 % of the 7 year olds, and 42 % of the 9 year olds. Thereby, the authors mean that children could benefit from practice in judging the size of the gaps in traffic.

Ampofo-Boatang *et al. (*1993) studied the children's ability to choose a safe route to cross a street. The children studied were in the age groups 5, 7, 9, and 11 years old and their tasks were to choose a safe route to a spot on the other side of a street. An example of unsafe is walking diagonally across the road at an intersection leading directly to the destination or a straight route across the road not aimed directly at the destination, but one that ignores dangerous road features. A slightly safer route avoids some, but not every dangerous position. Safe is a route that avoids all the dangerous road configurations. The child was accompanied by an adult observer in real traffic and was asked to explain the route he or she would choose to a spot on the other side of the street without actually crossing the street. The findings demonstrate that children's ability to find a safe route across the street increases with age. See Table 2.1. Half of the five year olds found a very unsafe route across the street and none of the eleven year olds found one as well in this study.

Table 2.1. Mean proportion of routes falling into each safety category by age, standard deviation in parenthesis. (Ampofo-Boatang et al.1993).

Safety category/ Age	5	7	9	11
Very unsafe	.50	.15	.02	.00
	(.29)	(.29)	(.04)	(.00)
Unsafe	.33	.60	.36	.24
	(.27)	(.28)	(.27)	(.21)
More safe	.09	.07	.05	.00
	(.12)	(.10)	(.03)	(.01)
Safe	.10	.21	.56	.75
	(.15)	(.20)	(.28)	(.20)

Accident statistics show that a disproportionate number of young children have accidents whilst attempting to cross a road near parked cars **(**Demetre and Gaffin, 1994) in urban areas. Figures vary, but between 40 and 70 percentage of 5- to 6-year-old children's accidents involve attempts to cross the street near parked vehicles. For 13- to 14-year-olds, the share is about 20 percent. In the study conducted by Demetre and Gaffin (1994), 17 of 32 children aged 6 years old chose a place for crossing the street occluded by parked cars before a place with free sight. For 8 years old children, 9 out of 30 chose an occluded place for crossing the street. For 10 year-old children, 3 out of 36 chose the occluded place. Few of the youngest children, 3 out the 15 that chose the free place, explained that the other place had bad sight. The two older groups almost always gave the reason for their choice. These findings support the hypothesis that occluding vehicles are not salient in early childhood. The study also shows that experience of independent use of the roads contributes to the salience of occluding vehicles in decision-making.

2.4 Description of behaviours of elderly

Using observational studies, Knoblauch *et al.* (1996) studied the pedestrians start up time and walking speed at signalised intersections with zebra crossings. The pedestrians were divided into age groups of pedestrians both younger and older pedestrians than 65 years. Children under 13 years of age were not studied. Younger male pedestrians had the fastest mean walking speeds, 1.56 m/s. Older females had the slowest, 1.19 m /s. Younger females walk 0.1 m/s more slowly than younger males and older females are 0.12 m/s slower than older males. Single pedestrians tend to walk quicker than pedestrians that walk in a group. Pedestrians that start or end their crossing outside the crosswalk tend to walk quicker. The mean walking speed for younger pedestrians was 1.46 m/s and the 15-percentile was 1.19 m/s. For older pedestrians the mean walking speed was 1.21 m/s and the 15-percentile was 0.94 m/s. The start up time was defined as the elapsed time from the onset of a walk signal to the moment when the pedestrian steps off the kerb and starts to cross. The mean start up time for young pedestrians was 1.93 s and for older pedestrians 2.5 s.

An observational study was conducted to understand how the crossing actions of older people might put them at risk of crash involvement on a two-way traffic, undivided roadway (Oxley *et al*., 1997). The observed pedestrians were divided in two groups, older than 65 years and 30 to 45 years. The older pedestrians took longer to leave the kerb after a vehicle had passed their line of crossing. The pedestrian's tempo vas compared with the time of a car arrival to the pedestrian. The result was that it is the slower elderly walkers, rather than the faster elderly walkers, who are at great risk of being involved in a crash. Two major groups of

crossing styles were determined. Non-interactive crossers refer to those who adapted an extra safe strategy. They waited until the road was clear in both directions. Interactive crossers had a less safe strategy, more willing to cross with close moving traffic. The observed pedestrians were also divided into close side interactive, far side interactive, and interactive with both sides' traffic. Older people were over represented in the far side and whole road interactive groups. The results suggest that on two-way roads older adults placed themselves at greater risk as a result of wrongly estimating the time of arrival of moving vehicles, and/or the under-compensation of slower walking speeds. The older pedestrians were also more likely to interact with the traffic, particularly the far side traffic. The solution to this problem can be a road island.

2.5 Guidelines to safe design of road environment

It has in the previous part of this chapter been shown that children are not always capable of making safe judgements during the task of being a responsible road user. Children are, for example, often not able to find safe routes when crossing a street. In a study in Scotland, the features associated with child traffic accidents were junctions, parked cars, fast traffic, and bend (Gaskell *et al*., 1989). Older children were more at risk in wide roads, at bus stops and in fast traffic. This reflects the older children doing longer journeys on major roads and using busses.

Physical measures in road design are needed to increase the safety, security, and mobility of child pedestrians, so as to decrease the risk factors that the pedestrians meet.

Midtland (1995) presents some typical risk factors for young children as pedestrians in traffic. The speeds of the vehicles indicate a strong correlation between vehicle speeds and the number and severity of the accidents to vulnerable road users. Lighting conditions are also of importance, when lightning of the traffic area reduces the accident rate by 50 %. Vulnerable road users, especially of a young age, and vehicles should be separated and crossings should be provided at special intersections. These intersections, designed for vulnerable road users, should be elevated crossing areas, refuges, and other traffic calming devices.

Midtland developed a checklist for finding the risk factors in a traffic environment for children going to and from school. According to Midtland the following is crucial:

- To prevent children from crossing the street spontaneously, the children should be walking along the street on the kerb or on walking and pedestrian lanes.
- Children and car drivers should be visible to each other where the children cross the street.
- The childrens' attention should not be disturbed on the task of crossing the street.
- The children should not cross the street at places where the car driver's attention is occupied with other things in the traffic environment.
- Children should not cross the street at places where there is a risk that the car drivers are driving too fast.
- Crossing the street should not occur where the children are at risk of coming in contact with the traffic in a dangerous way before crossing.

The checklist is divided in two major parts covering children walking along the street and crossing the street. When walking, the street traffic type and speed limits of the studied roads are described. Traffic types are divided into walking speed streets, residential streets, and

main streets. When crossing the street, speed limits and traffic situation are described. Traffic situation means the number of lanes in each direction, and if there are marked crossings' facilities, traffic signals, or roundabouts in the studied traffic situation. Another part studied is if there are other risk factors in the traffic environment. Examples of this are if there are situations when extra concentration and attention is needed from the children or the car drivers, i.e. if there are areas such as playgrounds close to the street. Restrictions are given for each of the parts on what type of countermeasures the traffic environment should hold to be acceptably traffic safe for children. Examples are walking lanes separated from the traffic, acceptable lighting conditions, and speed reducing devices.

Another attempt to increase safety, security, and mobility, but not only for child pedestrians, is the handbook from the Swedish National Road Administration, "Säkra gångpassagen!". It is an analysis and design aid for pedestrian crossings. Different criteria about designing the pedestrian crossings are defined in the first step. The criteria are based on what types of pedestrians cross at the intersection, e.g. many children, elderly, or disabled persons, the flow of pedestrians, vehicle speeds, and measurements in the road design. The different road users' demands regarding clearness and visibility in the road environment are also considered. The second step is a description of what is lacking in the traffic environment as based on the road users' demands and in the third step are the countermeasures suggested in the traffic environment to better suit these demands. The safety of the pedestrians are classified as good at car speeds less than 30 km/h, fair at speeds between 30 and 40 km/h, and unsatisfactory if the speeds are higher than 40 km/h.

In the Norwegian traffic safety handbook by Elvik *et al.* (1997) is a meta analysis presented on research regarding an extensive range of traffic safety measures. In Table 2.2 are the change in accidents with persons injured presented for different measurements in urban areas.

Table 2.2. Effect on number of accidents with persons injured. (Elvik et al. 1997)

	Change in accidents with persons injured	Unreliability
Speed reduction from 50 to 30 km/h.	-20 %	(-77 to – 56)
Speed cushions	-48 %	(-54 to –42)
Elevated intersection	+5 %	(-34 to +68)
Rumble strips	-33 %	(-40 to –25)
Zones with speed limit 30 km /h	-27 %	(-30 to –24)
Zebra crossings	+28 %	(+19 to +39)
Signalised zebra crossings on links	-12 %	(-18 to –4)
Elevated zebra crossing	-49 %	(-75 to +3)
Refuge at zebra crossing	-18 %	(-30 to –3)
Pedestrian railings	-24 %	(-35 to –11)
Increased sight conditions	-33 %	(-47 to –15)
School crossing patrol	-35 %	(-67 to +30)
Whitened kerb at crossings	-5 %	(-58 to 117)
Bicycle path	-10 %	(-20 to +1)

In a doctoral thesis presented by Towliat (2001), a before and after study is made on physical measures with speed cushions. The results show that drivers decreased their speed just before the speed cushions, and that the speeds are even lower at the pedestrian crossings themselves. However, the drivers do not reduce their speed further when unprotected road users are in the

vicinity, but the vulnerable road users at pedestrian crossings are more often given way to. The degree of seriousness of conflicts type car – pedestrian, car – cycle, and car – car decreases. It has not been fully verified that the number of serious conflicts is reduced. Although the number of serious conflicts car – car and the trend for serious conflicts car-unprotected road users were reduced, it was not significantly shown by the results. The vulnerable road users became less attentive after the speed cushions were implemented. It is described that car drivers can better interact with vulnerable road users. Another example of speed reducing devices are variable message signs that are lit to inform car drivers if a vulnerable road user is about to cross the street at a zebra crossing. The results from these studies indicate that the car driver's speed is lower if the sign is lit, though the speeds are not lower if the sign is off. It has been verified that car driver gives way to vulnerable road users to a higher extent when the signs are lit.

In a study conducted by Retting *et al.* (1996) special signs and pavement markings were used to prompt pedestrians to look for turning vehicles. Signs were initially installed and markings were added later. Before installation of the sign, 18% did not look for threats, 8% did not look for threats after the sign was installed, and 3% did not look after the pavement markings were added. At the 11 month follow up 3% did not look for turning vehicles. It was also tested when pavement markings were initially placed and signs were added later. Then, 15% did not look for threats before the pavement markings, 5% did not look for threats after the pavement markings was installed, and 3% did not look after the signs were added. At the 11 month follow up, 3% did not look for turning vehicles. Where signs and pavement markings were added simultaneously, 15% did not look for turning cars in the before situation, 4% looked for cars after the sign and markings were installed. In the 12 month follow up, 7% of the pedestrians did not look for cars. With all three countermeasures tests the pedestrian looked more for vehicles after the markings and signs were implemented and conflicts between pedestrians and vehicles declined substantially at all places. It may be possible to achieve improvements in the observation behaviour of pedestrians and reduce pedestrian-vehicle conflicts by designing signals that prompt people to look for turning vehicles, or at least adults. Railings can be implemented that prevent pedestrians from crossing the street at links or other unsuitable places. If railings are placed next to the crossing they should be transparent so they do not block the view of both pedestrians and car drivers (Oudejans *et al.* 1996).

The road geometry that provides visual cues is also important for the car driver to understand how to behave in a traffic environment. Sagberg *et al.*, (1999) presents an extensive literature review on the effect of a driver's behaviour on speed, course holding, yielding behaviour, and interactions between car drivers and other road users. Information in the road environment on the levels of the driving task regards:

- The type or function of the road: rules, regulations, corresponding traffic conditions, traffic modes, etc.
- The presence and behaviour of other road users
- The course and lay out properties of the road

2.6 Summary with problem description

To summarize the previous chapter, the drivers' behaviour is often not one that is safe for pedestrians and cyclists. Children should be trained in how to behave safely in traffic, though children do not have the cognitive skills needed for safe traffic behaviour. The physical and cognitive resources of the elderly decline by age. Below, some key conclusions and problems are mentioned:

- Children and the elderly are over represented in accident data for vulnerable road users when compared with their exposure in traffic (Thulin and Kronberg, 2000).

- International road accident statistics clearly show that young child pedestrians are at high risk based on deaths or injuries per walked kilometres. (Connely *et al., 1998*).

- The ability to cross a street safely develops with age. It has been estimated that traffic maturity is reached at around 12 years of age (MacGregor *et al.,* 1999).

- Children younger than 9 years are not capable of safe judgements in traffic (Ampofo-Boatang *et al.,* 1993).

- The unpredictable behaviour of young children is the dominating feature in child pedestrian accidents (Cross, 1988).

- Children's development of pedestrian skills is highly variable (Whitebread and Neilson, 1999).

- It has been suggested that it is the developmental changes for children and the ageing changes for the elderly that make them extra vulnerable as road users compared with other age groups. Road crossing is a cognitively difficult task. Until 11 or 12 year old children have developed all the required abilities fully, young children who lack experience in crossing roads cannot be expected to make safe judgements if they do not even know what to look out for in traffic. The physical and cognitive resources decline for the elderly by age (Arnold *et al.,* 1990).

- Young children make hazardous decisions about vehicle approach times because they are unable to understand the relationships among duration, velocity and distance until around the age of 10 years (Cross, 1988).

- Accident statistics show that a disproportionate number of young children have accidents whilst attempting to cross a road near parked cars **(**Demetre and Gaffin, 1994).

- An important behaviour shown by children is the running over a street and especially the second lane when they feel insecure in a traffic environment. (Räämä, 1993).

- Older adults placed themselves at greater risk as a result of wrongly estimating the arrival time of moving vehicles, and/or under-compensating of slower walking speeds. The elderly have lower walking speed than younger adults. (Oxley *et al*., 1997).

3 HYPOTHESES

Hypotheses that the research design in this thesis is based on are described below. The hypotheses are:

1. Fewer High Severity Situations and conflicts after the reconstruction and Code change.

2. Before the reconstruction more children stop at the kerb for cars than after.

3. Less head movements of children after the reconstruction. It is easier for children to cope with the interactions.

4. The children's tempo is changed after the reconstruction to less running over first and second lanes.

5. The tempo of the children is higher when entering the intersection after the reconstruction.

6. More children are looking over their shoulder after the reconstruction to see if vehicles are coming to the intersection from the minor road, as it is easier for children to cope with the interactions after the reconstruction.

7. The reconstruction and Code change has improved the mobility more for children pedestrians than of other ages. The parameter pedestrians given way by car driver describes mobility.

8. The flow of pedestrians crossing the main road increase after reconstruction.

9. Overtaking occur at the zebra crossings in the before situation. This will not be possible after the reconstruction.

10. After the reconstruction the speeds of the vehicles are lower than before.

11. After the reconstruction are more care drivers giving way to children and other pedestrians.

12. The right turning car drivers from the minor road do head movements to the right earlier and more often after reconstruction while it is easier to judge the traffic from the left due to the lower speeds.

13. The car drivers driving straight ahead do head movements earlier and more often after reconstruction while it is easier to judge the traffic due to the lower speeds.

14. A group of people is more often given way by car drivers than to a single person.

15. After the Code change more care drivers are giving way to pedestrians.

4 METHOD

4.1 Video filming

The intersections were filmed with Sony Hi8 system video cameras. The advantages with these cameras are that they are light and small. Most importantly is that the image quality is better than with a conventional VHS system. When filming traffic situations it is most important that road users do not easily detect the cameras. If the road users detect the cameras it might influence their behaviour. Therefore, the cameras are placed on posts and walls of houses that were hopefully invisible to drivers as well as to pedestrians and cyclists. Up to five cameras were used to capture all road users' behaviour. Figure 2.1 shows the placing of some of the cameras at the intersection. One or two cameras were used for filming close ups of the pedestrians crossing and the road at the zebra crossing and one or two cameras were used for overview pictures of the intersection.

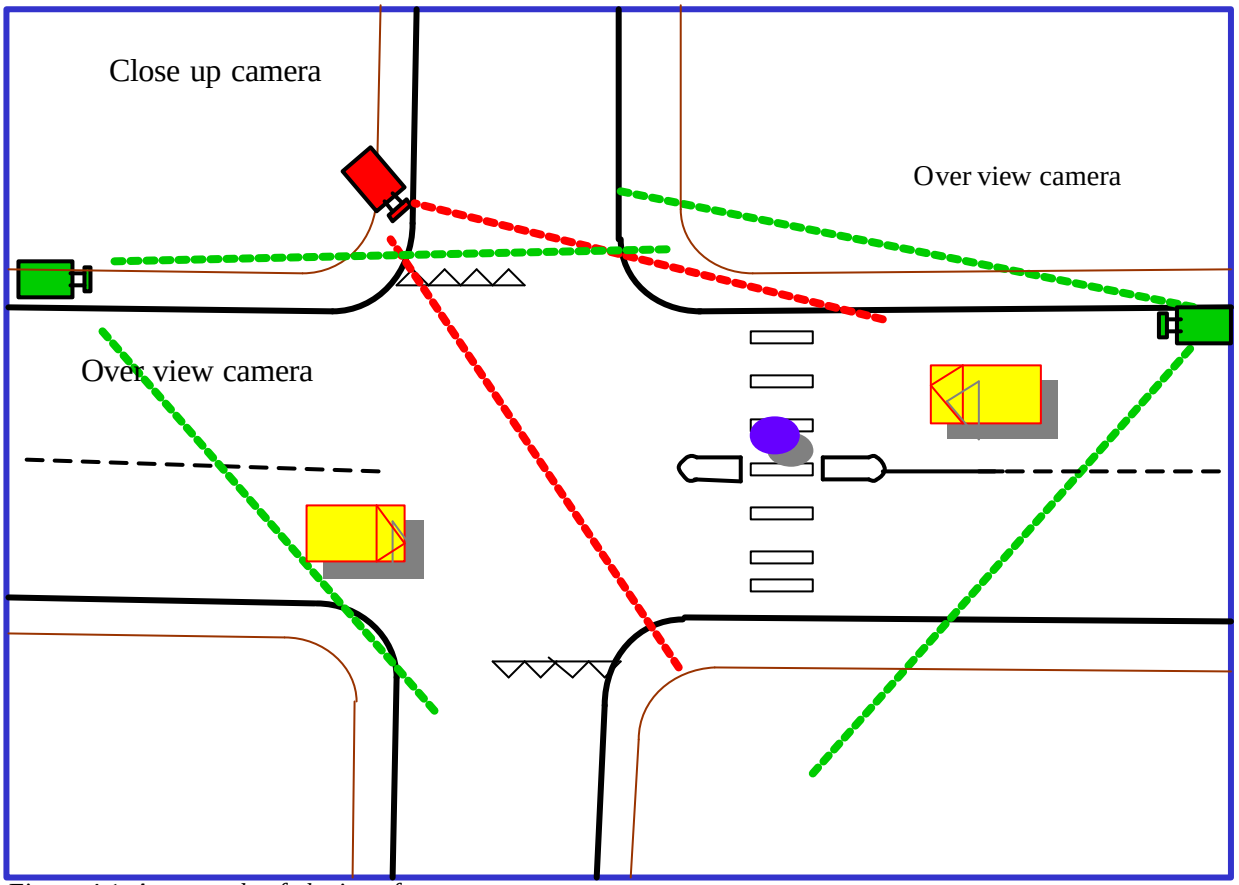

Figure 4.1. An example of placing of cameras.

It is important to include vehicles coming in both directions to the intersection. That is why it often is necessary to use two overview cameras. This enables us to see whether the brake lights of the vehicles are activated. The overview cameras must be placed high; otherwise it would not be possible to get a good picture of the traffic situation. A fifth camera can be used to capture the car drivers' head movements. Car drivers driving through the intersection in to

the studied zebra crossing as well as coming to the intersection on the minor street and turning right were filmed in a pilot study. The aim was to detect if and how these car drivers look around to detect vulnerable road users in the intersection. In a study about driver's head movement to detect cyclists at intersections, three video cameras were used successfully to capture the different road users' behaviour at an intersection (Räsänen and Summula 1998). One camera captured the car drivers' head movements, one the car location in the intersection, and the third captured the cyclists' location in the intersection. Two video cameras were used in a study on the same issue (Summula, 1996). No camera was then used to cover the cyclists. The filming periods are chosen to capture the hours of the day when children are travelling to and from school. This is also the time of the day when other vulnerable road users are travelling. The flow of children on their way to school is strongly directed towards the school in the morning and from the school in the afternoon. In the morning this coincides with the peak hour for traffic. School often starts at 8.10 to 8.30 a.m. Hence, the morning filming period is chosen to be 7.30 to 9.00 a.m. In the afternoon the situation is a little bit different, depending on the age of the children their school day ends at different hours. Therefore, the filming period in the afternoon is longer, most often between 1.30 and 4.30 p.m., in some few cases the filming period is between 2.00 and 5.00 p.m. The later filming period was chosen at places when few pedestrians and cyclists were out between 1.30 and 2.00 p.m.

Figure 4.2. Camera on post.

4.2 Coding of parameters, behavioural studies

The traffic situations with pedestrians and cyclists stored on videotapes are manually analysed and coded. The coding is based on Øvstedals and Ryengs (1999) work, where they studied the behaviour of children and car drivers at intersections. Behaviour means the observed behaviours of the pedestrians and cyclists and that of the car drivers towards the pedestrians and cyclists. The method is used in before and after studies at intersections that are rebuilt

according to Calm Street. Some adjustments are made to better describe the traffic situation in question. All passages by pedestrians and cyclists at the studied intersection are coded for one day on collected video recordings. For the second days' collected video material only passages with children and youth is coded. If the child is walking or cycling with an adult the behaviour of the adult is also coded. In Appendix Z are the coded parameters described in detail. The studied parameters are:

- Gender
- Age
- Modes of transport
- Number of people in the group
- Gender of oldest in group
- Age of oldest in group
- If the person stops at kerb
- If the person stops at refuge
- If the person is walking or cycling on the zebra crossing
- Straight angle across the street
- The person's tempo, before intersection
- The person's tempo, first lane
- The person's tempo, second lane
- Tempo after intersection
- The person's head movements before kerb
- Head movements at kerb
- Head movements when passing first lane
- Head movements at refuge
- Head movements when passing second lane
- No. of cars passing on first lane before the person reaches the kerb
- No. of cars passing on first lane when the person is standing at kerb
- No. of cars passing on second lane before the person reaches the refuge
- No. of cars passing on second lane when person standing at refuge
- Traffic situation, where the first vehicle/ interaction come from
- Which car give way, no. of
- Type of vehicle that the person meets first
- Zebra crossing located at entrance or exit to intersection for the driver
- Overtaking close to zebra crossing
- Type of interaction, vehicle from the left, if vehicle from the left is closely oncoming
- If vehicle from the left give way
- Type of interaction, vehicle from the right, if vehicle from the right is closely oncoming
- If vehicle from the right give way
- Yielding behaviour of car driver
- Accepted time gap between cars
- Waiting time for pedestrian at kerb and refuge
- Time it takes to cross the street
- Comments

No test of reliability for the coding of the parameters was done. However, in the pilot study a small test on the reliability of observers' speeds and time to accident were done with acceptable results, see Johansson *et al.* (1999).

4.3 Speed measurement with radar

The speeds of free cars are measured with radar at the intersection, just before the zebra crossing, i.e. the hypothetical point of collision. The measures are conducted during the video recording of the intersection. It is important that the drivers do not sense that their speeds are being measured, otherwise their behaviour might change. As mentioned before the flow of children on their way to school is strongly directed in the morning and in the afternoon. The speeds of the car drivers with the children coming from the driver's right side are therefore, if possible, measured. These drivers have the shortest time to detect pedestrians and cyclists. If it is not possible, the speeds of the drivers in the other direction are measured. At a collision speed of 50 km/h the risk of fatal injury for a pedestrian is almost 8 times higher compared to a speed of 30 km/h. This is found in a study by Pasanen (1992) (presented by Várhelyi 1998).

4.4 The Swedish conflict technique

Hydén (1987) has developed the Swedish Conflict Technique. Conflicts are studied at the different sites using the Swedish Traffic Conflict Technique according to the manual written by Almqvist and Ekman (1999). One or two persons are handling the video filming, speed measurement, and conflict study at each site. The advantage is that the costs of the field work is lower, the disadvantages is that the speed measurement cannot be done in parallel with conflict studies when checking and taking care of the video cameras. Therefore, trained observers estimated manually TA-values, speeds, and distances by observing the filmed interactions on video. Besides the parameters collected in the behavioural study the following parameters are collected in conflicts:

- TA-value
- Who makes evasive action
- Vehicle speed when evasive action is made
- Vehicle distance to collision point
- Vulnerable road user speed when evasive action is made
- Vulnerable road user distance to collision point
- Severity level
- Comments

If there is no collision course between conflicting road users, the encounter is not defined as a conflict. Still, small time gaps between the road users, the Post Encroachment Time (PET), can be measured. PET values <1 sec are experienced as critical, whereas PET value >2 sec are considered to be normal in interactive situations between cars (Van der Horst, 1990; presented by Várhelyi, 1998). PET means the time measured from the moment the first road user leaves the potential collision point to the moment the other road user enters the conflict point.

Serious conflicts are those when an evasive action is made and the remaining time to the conflict area is at the highest, i.e. the time it takes to brake on a wet road plus 0.5 seconds (Gårder, 1982). The half-second is considered reaction time. Hence, the line between serious and non-serious conflicts changes by speed. For example, at the speed 50 km/h, the time is 2.0 s, and at 90 km/h, the time is 3.7s. See suggestion to divide conflicts into severity levels in Figure 4.3. Serious conflicts have security levels above or equal to 26 (Svensson, 1998). The thicker line represents the line between serious and not serious conflicts.

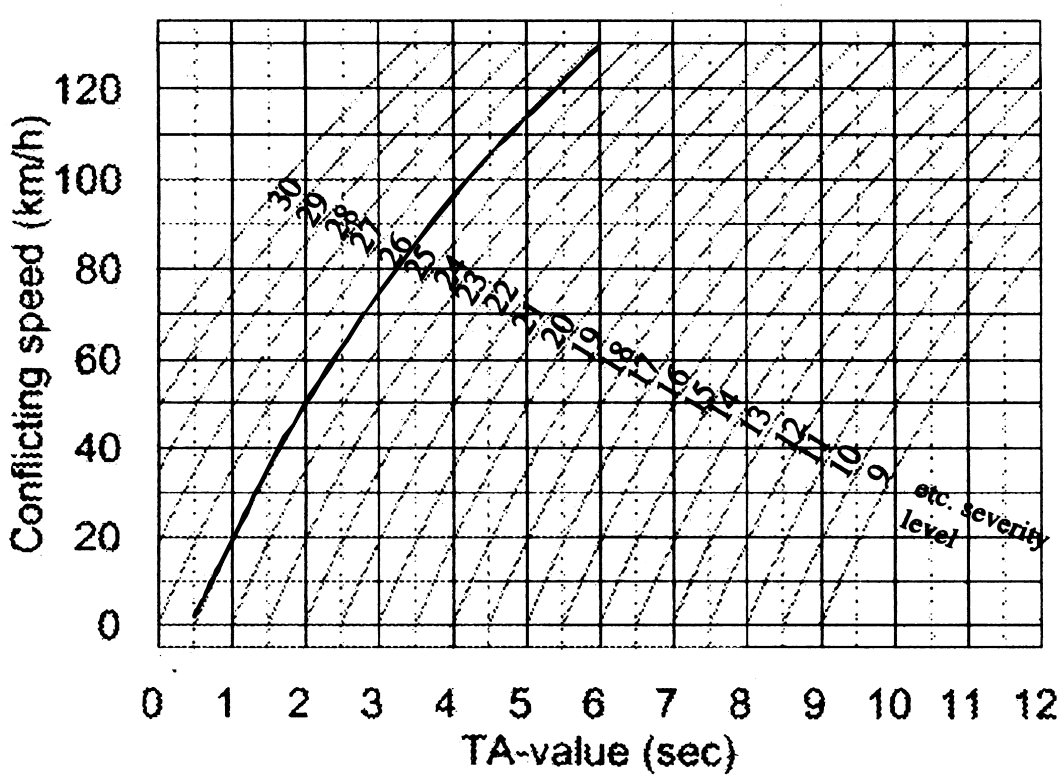

Figure 4.3. Definition of severity levels (Svensson 1998).

4.5 High Severity Situations

Another detailed way to measure how the traffic situation has changed, besides the conflict technique, is to analyse the encounters when a car is "closely" oncoming to a pedestrian or cyclist. These situations of higher severity are most often less severe than a serious conflict, but can still give important clues to describe the traffic situation, see e.g. Svensson (1998). Even if conflicting road users do not have a collision course, the encounters can be defined as an High Severity Situations. The interactions that are coded "a car closely oncoming to a vulnerable road user" are specially analysed.

4.6 Expert questionnaire

As described in part 4.2 the captured video material was coded in specific parameters. It is not only important to determine the validity and importance of these coded parameters, but also to see if some of the parameters could be excluded from the analysis due to the low importance in describing the different road users' behaviour. Therefore, a questionnaire was sent to persons working in the field of traffic safety and/or pedestrian behaviours, and is known by the persons working in this research project. In Appendix U is the letter to the respondents and also the list of persons that the questionnaire was sent to. The questions that were sent are found in Appendix T. The questionnaire was sent by e- mail to the respondents and was based on five video cuts containing High Severity Situations that involve children. Also, a situation with high severity level with an adult was included. These video cuts were also sent by e-mail to the respondents. The High Severity Situations that were sent in the questionnaire are described in Appendix Q.

A more extensive questionnaire was tested at a seminar before the questionnaire was sent out. At the seminar it was found that the questionnaire should be shorter to increase the chance of the respondents answering the questions. The questionnaire that finally was sent out was therefore shorter than the initial version.

4.7 School survey

School children's opinions of the road reconstructions and change of Highway Code were gathered by questionnaires. The school principles were contacted at the schools close to the test sites, *i.e.* the following three schools were contacted: Ekarängsskolan, Sjöboskolan and Trandaredskolan. Earlier research by Leden (1988) had indicated that 11-13 year old school children could be the most appropriate age group for assessing effects of countermeasures, this age group was therefore chosen.

As a pilot study some pupils at Ekarängsskolan and pupils from one class at Sjöboskolan were interviewed individually. The questionnaire is in Appendix Y:1. Ekarängsskolan is close to the Hulta site, but few pupils at Ekarängsskolan cross the street at the Hulta site. Therefore only those pupils which were passing the site on a regular bases were chosen for interviews.

The questionnaire was determined to be satisfactory and the same one was therefore used for the two remaining classes at Sjöboskolan and Trandaredskolan (Appendix Y:1 and Y:2.). Teachers in classes with school children of age 11to13 were contacted. The pupils were interviewed as a class project. Table 2.1 shows the total number of pupils interviewed in each school.

After the Borås study, the questionnaire has been modified somewhat, with the purpose of assessing the barrier effect of the road reconstructions more accurately, *i.e.* how it has affected children's crossing frequencies, see Appendix Y:3.

Table 2.1. Number of school children answering the questionnaire.

Site	Number
Hulta	6
Sjöbo	28
Trandared upper[1]	17
Trandared lower[2]	23
Total	74

[1] Trandaredsgatan – Trandareds ring
[2] Trandaredsgatan - Söderkullagatan

5 DESIGN OF SURVEY, SITES AND DATA COLLECTION

Two different studies are presented in this licentiate thesis. Both studies are explorative. Never the less some hypothesis was set, on the basis of which the structure of the system for data collection was determined. These hypotheses were also explored. The pilot study was to test the method and to initially describe the road users' behaviour with the method. This study deals with data from Regementsgatan in Malmö, Sweden and Hultagatan in Borås, Sweden.

The Borås study, the second study, is larger and was conducted at three test and one comparison sites in Borås. The test sites are Hultagatan, Sjöbotorggatan and Trandaredsgatan in Borås. It is vital to compare the data from the sites that have been changed with a comparison crossing where no changes have been made, except for, in this case, the change of Code. However, it was difficult to find a suitable comparison site. At the comparison site, Källbäcksrydsgatan in Borås, the pedestrian and cycle flow turned out to be too low (see passage 6.5). Therefore the design was not optimal as no studies could be done at a suitable comparison sites. *Due to the incomplete research design some of the detected differences below may partly be due to a general changed behavior and not an effect of the reconstruction or change of Code.*

The main ambition with the Borås study was to describe the different road users' behaviour, and to examine the differences between different age groups, and differences before and after reconstruction. The method used is before-and-after studies, i.e. crossings are studied before and after the changes are made. As also the effect of the Code change is studied. There is three studied periods: *Before reconstruction and Code change (first period)*, *After reconstruction (second period)* and *After reconstruction and Code change (third period)*. Hultagatan was studied at all three time periods. Sjöbotorggatan was studied before reconstruction and Code change and after reconstruction and Code change because the reconstruction was completed at the same time as the new law was enacted. At Trandaredsgatan the traffic calming measures were implemented eight years ago and no data from the before situation was available. If data from before reconstruction was available the study would have been complete with a before and after study also of the measures taken at Trandaredsgatan. However, Trandaredsgatan was studied before and after the change of Code.

Hauer (1991) compares the before-and-after study design with a cross-section approach. The before-and-after approach examines how the safety has changed at sites where changes in traffic control or physical changes have been made. The cross-section approach compares the safety of sites that differ in traffic control, meaning that the threats to the validity of conclusions drawn from before-and-after studies are many, but that they seem to be better known and easier to avoid the threats to the validity of conclusions drawn. Hauer also discusses if it is always desirable to use a control group, if for practicality reasons a sufficiently large comparison group in terms of police reported accidents is not available, it is better not to use one at all than to use one that is too small. Therefore, Källbäcksrydsgatan was excluded in the analysis of the different road users' behaviours. When studying traffic environments close to schools and with a lot of children, it is difficult to find areas that are not already traffic calmed in any way. If using a control crossing it should be comparable with the

other studied intersections. Finding a control crossing is also difficult because the flow of pedestrians, cyclists and vehicles and the design of the road environment should be comparable with the intersections where the countermeasures are to be made.

5.1 Sites

5.1.1 Test site Hultagatan, Borås

Hultagatan is a major street with approximately 5000 vehicles per day and about 3 km from the centre of Borås, see Figure 5.1. The minor street is named Månsingsgatan. The speed limit before reconstruction was 50 km/h, however, after the reconstruction the limit is 30 km/h at the intersection. To the north of the road, above the zebra crossing, is an open park area with trees. To the south is Hulta Centre with a housing area, a supermarket and a school named Ekerängskolan. People of all ages cross Hultagatan by foot or by bicycle at the zebra crossing on their way to Hulta Centre.

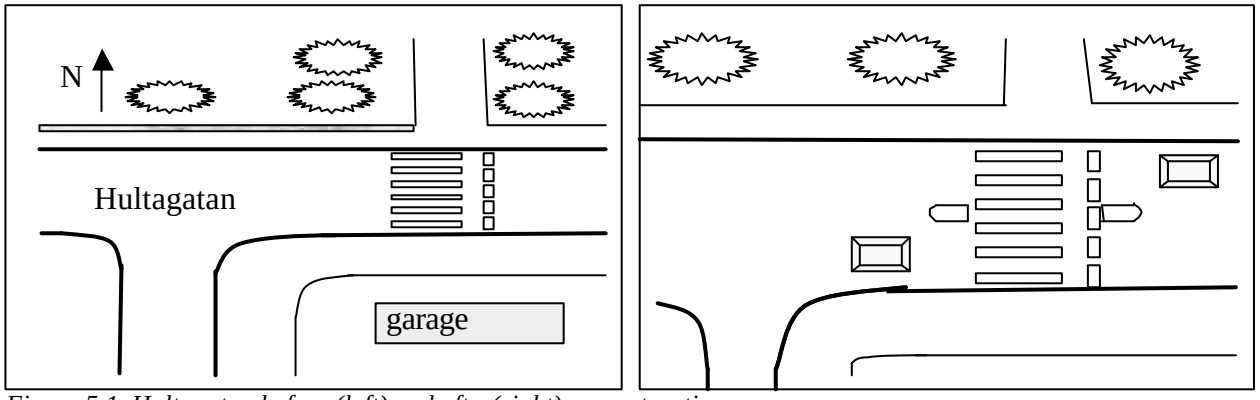

Figure 5.1. Hultagatan before (left) and after(right) reconstruction.

After reconstruction, the intersection has a refuge to narrow the street and speed cushions specially designed to be less of a hindrance for bus traffic than for other motor traffic (see e.g. Towliat, 2001). No police reported accidents have occurred during the period 1996-2000.

Figure 5.2. Hultagatan after reconstruction.

5.1.2 Test site Sjöbotorggatan, Borås

The Sjöbotorggatan site is a T-intersection with about 3000 vehicles per day, see Figure 5.3 and 5.4. The minor street is named Nolhagagatan. The speed limit was 50 km/h before reconstruction. Sjöbotorggatan was rebuilt to a 30-street. On the south side of the street is a square with small shops called Sjöbo Centre. The school is situated on the north side of Sjöbotorggatan. After the reconstruction the intersection is elevated with paving stone and one zebra crossing remains to the west near the school. No police reported accidents have occurred during the period 1996-2000.

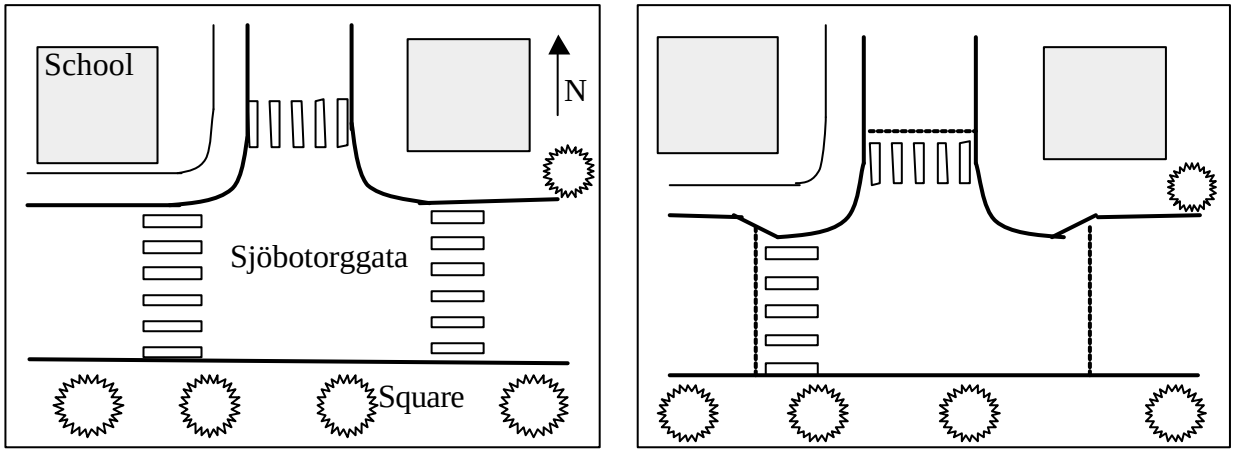

Figure 5.3. Sjöbotorggatan before (left) and after (right) reconstruction.

Figure 5.4. Sjöbotorggatan after reconstruction.

5.1.3 Test site Trandaredsgatan, Borås

At Trandaredsgatan two crossings are studied: the first is situated on the upper side of the Trandared School, the intersection Trandaredsgatan – Trandareds ring, the second is on the lower side of the school, Trandaredsgatan – Söderkullagatan, see Figures 5.5, 5.6 and 5.7. At both intersections the speed limit was 30 km/h during the whole studied time period. The upper intersection has a refuge and zebra crossing and is elevated with paving stones. At the lower intersection the area at the zebra crossing is elevated and has a refuge. On the same side of Trandaredsgatan, as with the school, are railings that lead people to the zebra crossings. No changes except the change of Code were made during the studied time period. One police reported cycle accident had occurred in the upper intersection in 1996, but the severity was unknown. That is the only police reported accident between 1996-2000.

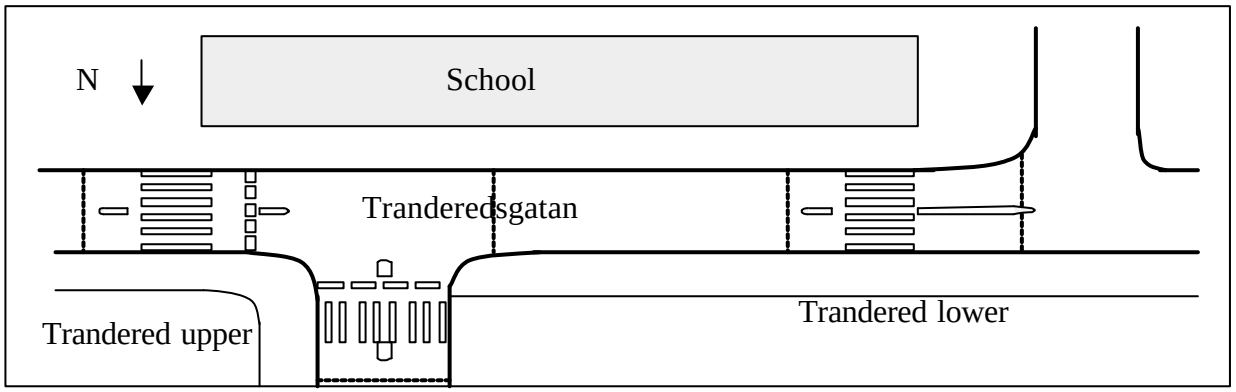

Figure 5.5. Trandaredsgatan, the upper and the lower crossings.

Figure 5.6. Trandaredsgatan, the upper crossing.

As the Trandared site was reconstructed already 1993 no before study could be done with the method proposed in this thesis. However Hydén and Almqvist (1982) did a before- and after study on traffic signals that were earlier implemented, before the reconstruction, at the upper

intersection at Trandared School. The result was that children used the signal to cross the street but car drivers did not always detect the red signal and the crossing was therefore not safe. The signals were removed when the intersection was reconstructed.

Figure 5.7. Trandaredsgatan, the lower crossing.

5.1.4 Comparison site Källbäcksrydsgatan

At the studied site Källbäcksrydsgatan, a pedestrian- and bicycle track crosses the street mid-block, see Figure 5.8. The cycle track goes parallel with the street on the north side. The street speed limit is 50 km/h. No changes except the change of Code were made during the studied time period. No police reported accidents have occurred during the period 1996-2000.

Figure 5.8. Picture of Källbäcksrydsgatan.

5.1.5 Pilot site Regementsgatan, Malmö

Three intersections were studied on the Regementsgatan in Malmö. However, this thesis focuses on the results from the intersection between Regementsgatan and Skvadronsgatan. The traffic on Regementsgatan is about 14000 vehicles per day and about 600 vehicles per day on Skvadronsgatan. The intersection has one zebra crossing to the west of Regementsgatan, Figure 5.9. A three-meter wide refuge island divides the zebra crossing into two parts (with one-way traffic on each side of the island). There are no zebra crossings across Skvadronsgatan. Bus stops on both sides of Regementsgatan are situated just west of the intersection with Skvadronsgatan. To the south is a school named Ribergsborgsskolan. Regementsgatan is 17.5 meters wide west of Skvadronsgatan, narrowing to 16 meters east of Skvadronsgatan. There is only one lane marked in each direction, though the lane is so wide that it is possible for one motor vehicle to overtake another, especially when there are no parked vehicles. No police reported accidents involving pedestrians or cyclists had occurred in the intersection between 1990-1998. Two hospital-reported accidents occurred in the intersection, one pedestrian accident and one accident involving a cyclist. Neither one was severe.

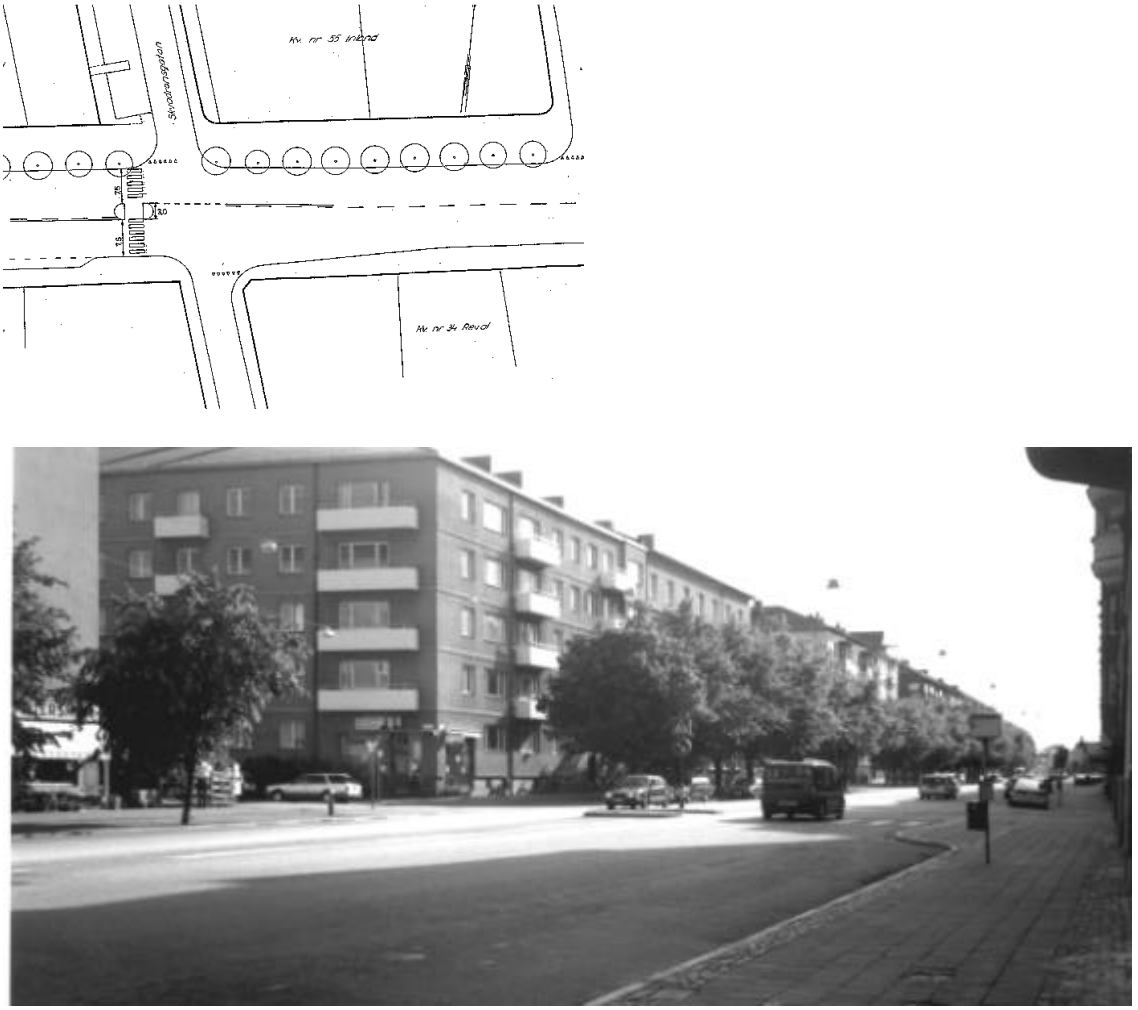

Figure 5.9. The intersection Regementsgatan – Skvadronsgatan before reconstruction.

5.2 Type of countermeasures studied

In the table below is an overview of the different countermeasures that are implemented at the sites presented. Note that at the Trandared site the countermeasures were already implemented during the 1990s.

Table 5.1. Type of countermeasures studied.

	Refuge	Narrowing the street at pedestrian crossing	Speed cushions	Elevated area/ elevated crossing with paving stone	Railings	Speed limit 30 km/h	Removal of zebra crossing
Hultagatan	*		*			*	
Sjöbotorggatan		*		*		*	*
Trandared upper	*			*	*	*	
Trandared lower	*			*	*	*	

5.3 Data collection

5.3.1 Pilot study

First one day's data from Malmö were analysed, then two different days in Malmö were compared to see if there were any differences in behaviour. Data from Malmö were compared with data from Borås to examine what the differences between the two cities were. High Severity Situations levels in Malmö were compared with the whole data from the studied intersection to detect any differences.

Table 5.2. Data collected for the first analysis.

	Malmö Day 1	Malmö Day 2	High Severity Situations levels in Malmö	Borås
Date	March 25 1999	March 26 1999	March 24 1999 March 25 1999 March 26 1999	May 4 1999
Time	2.00 to 5.00 p m	1.30 to 4.30 p m	1.30 to 5.00 p m	2.00 to 5.00 p m

5.3.2 Borås study

The intersections in the Hultagatan, in the Sjöbotorggatan, the two intersections in the Tranderedsgatan, and a fifth intersection, the Källbäcksrydsgatan, are studied in the Borås study. During the studied time period physical changes were made in the road design at the Hulta and the Sjöbo intersections, while no changes were made except the change of Code at Trandaredsgatan and Källbäcksrydsgatan. At the two intersections at Trandaredsgatan physical changes had been made earlier. In this study the crossing Källbäcksrydsgatan is regarded as comparision crossing.

In appendix A, the collected data are described. At the Hulta site the data were collected for two days during each of the three studied periods (before reconstruction and Code change, after reconstruction, and after reconstruction and Code change). At the Sjöbo site the data were collected for two days in each of the two studied periods (before reconstruction and Code change and after reconstruction and Code change). Each day 4,5 hours of video film was recorded. At the two crossings in Trandaredsgatan data were collected for one day at each of the two studied time periods (after reconstruction and after reconstruction and Code change). Here too was 4,5 hours of video film recorded each day. The vulnerable road user passages are Coded from the video material according to the table in Appendix A. High Severity Situations is searched and presented for all the collected data.

6 RESULTS

6.1 Pilot study

The pilot study was conducted with the method at Regementsgatan in Malmö[3] and Hultagatan in Borås. The aim was to describe differences between children's, adults', and elderly people's interactions with motor traffic at a crossing in urban areas. The pedestrians', cyclists', and car drivers' behaviours were all studied. The analysis was divided into "overview pictures" and "close up pictures" based on simultaneous filming using over view and close-up, see Figure 4.1.

6.1.1 Results of pilot study

The habit of pedestrians stopping at the kerb[4] or on the refuge island has a typical age structure. The percent share that stops and waits declines with age until the group 65-years and older, then it increases, Figure 6.1. The percentages shown are related to all events including crossing behaviour when no motor traffic is present. If these events are excluded a slightly lower percentage of pedestrians stop at the kerb or refuge.

The average accepted time gap by children is just over 10 seconds, but falls towards 5 seconds for youths and adults. For the group of elderly the average accepted time gap was almost 15 seconds. One explanation is the elderly people's lower walking speed, hence, the need for more time to cross the street.

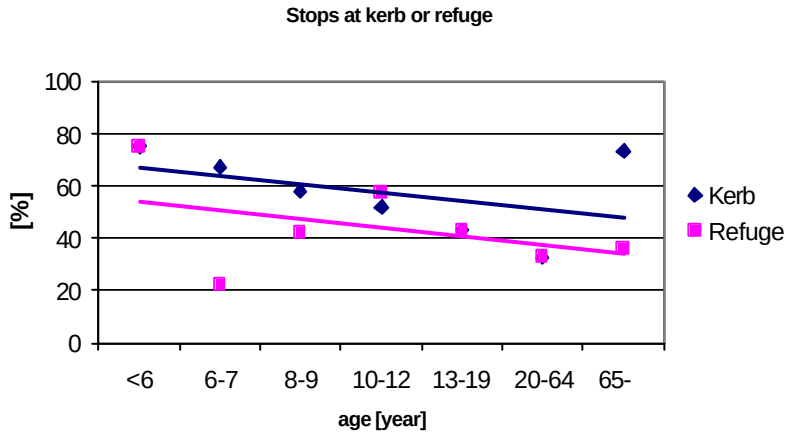

Figure 6.1 Frequency different age groups of pedestrians stop at kerb and refuge at Regementsgatan - Skvadronsgatan, Malmö Day .

The average waiting time was 6.1 seconds. Here as well, children and elderly have the longer waiting times. One group that stands out is adults travelling with children. Their waiting time was much longer than that of any other group, Table 6.1.

[3] A starting point was Wlhelmsson's (1999) master thesis analysing Regementsgatan in Malmö.
[4] At the kerb or close to it (on the sidewalk or in the carriageway)

Table 6.1. Waiting times, all passages with interaction at Regementsgatan - Skvadronsgatan, Malmö Day 1.

	Children	Youth	Adults	Elderly	Adult + children
Average (s)	10.0	4.8	5.9	9.8	15.9
Standard derivation (s)	5.9	2.2	4.8	5.9	5.9
Maximum (s)	39	25	22	43	42
Number	33	11	70	36	16

Out of 449 vehicle drivers, only 20 gave way to pedestrians waiting to cross at zebra crossings, i.e. a frequency of giving way of only 4%. 45% of the drivers who stopped did so for elderly people. Of the studied passages 21% were with elderly people crossing the street. Only 5% of the drivers stopped to give way to adults and adults travelling with children, representing the lowest shares.

Observations of overtaking at the zebra crossing were also made. Both flying overtaking, when both cars were travelling forward, and overtaking of a stopped vehicle was observed. In total, 22 overtaking or overtaking-like situations were observed when analysing 3 hours of video recordings. Such situations are prohibited by law and should not occur at all.

The average vehicle speed at the zebra crossings was 50 km/h (with a standard deviation 5 km/h for the whole sample) for eastbound traffic and 48 km/h (with a standard deviation 6 km/h for the whole sample) for westbound traffic. The 85-percentile was 56 km/h for eastbound traffic and 53 km/h for westbound traffic, both very high speeds.

6.1.2 Comparison of results from two different days and different sites

The differences between two separate days at one specific intersection or if the behaviour pattern remains consistent are examined. As seen, there are both differences and similarities. Data from Day 1 is presented in Figure 6.1, Day 2 is in Figure 6.2 below, both from Regementsgatan – Skvadronsgatan in Malmö. Not a single pedestrian 65 years or older was observed during Day 2 in the study based on close-ups. The remaining frequency shows a decreasing pattern of pedestrians stopping at the kerb and refuge with an increasing age up to adult for the two days. Some ages show similarities in frequency between the two days: ages younger than 6 years had a stopping frequency of 60 to 80% and ages 8-9 years had a frequency of 40 to 60%. Events chosen for the study based on close ups are those where a child is to cross the street, alone or with another person.

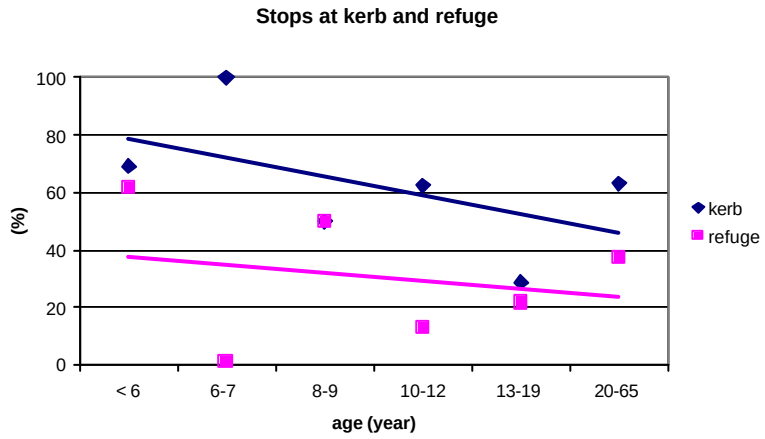

Figure 6.2. Frequency different pedestrian age groups stop at kerb and refuge. Regementsgatan – Skvadronsgatan, Malmö Day 2, study based on close-ups.

Children was the group with the longest waiting time both days, see Tables 6.1 and 6.2. The intervals for all age groups overlap, even for youths, with the biggest difference in average. A difference in the analysis of Day 1 compared to Day 2 is that adults with children are not analysed separately.

Table 6.2. Waiting time for passages divided into age groups, all passages with interaction. Regementsgatan – Skvadronsgatan, Malmö Day 2.

	Children	Youth	Adults	Elderly
Average (s)	12.2	10.8	10.4	9.0
Standard deviation (s)	6.4	4.7	7.3	5.0
Maximum (s)	27	16	41	21
Number	25	7	120	27

Below, age distribution data from two afternoons at Regementsgatan and one afternoon at Hultagatan in Borås are compared to each other based on overview pictures. Age distribution for the total data of pedestrians involved in High Severity Situations at the Malmö intersection is also shown. Table 6.3 shows the distribution by age.

Table 6.3. Age groups, overview study.

Age	Malmö, 1	%	Malmö, 2	%	Borås	%	High Severity Situations in Malmö 1 and Malmö 2	%
Children (-12 years)	69	*23*	42	*12*	39	*16*	4	*10*
Youth (13-19 years)	16	*5*	14	*4*	54	*22*	4	*10*
Adults (20-64 years)	136	*44*	236	*69*	137	*57*	24	*60*
Elderly (65- years)	56	*18*	40	*12*	10	*4*	8	*20*
Unknown	29	*10*	12	*3*	1	*0.4*	0	*0*
Sum	306	*100*	344	*100*	241	*100*	40	*100*

In the overview study there is a difference in distribution in the age groups, especially between Days 1 and 2 from Malmö. Events chosen for the study based on close ups are those where a child is to cross the street, alone or with another person. The differences in age groups in the overview study might be explained partly because they differ one-half hour in the filming period for the two days. The High Severity Situations levels involving adults are 60%, which is almost exactly their proportion of exposure as well. Roughly 10% of the High Severity Situations levels involve children; elderly pedestrians seem to be over-represented in High Severity Situations.

There are differences by means of transport between Malmö and Borås; people walk to the same extent, but it is more prevalent to walk with the bike over the zebra crossing in Malmö, see Table 6.4. These figures are based on close-up pictures. There are small differences by means of transport between the two days in Malmö, but walking was the most common form for both days. For High Severity Situations levels, 80% are pedestrians and 17% are walking with a bike. Most of persons walking with a bike are adults.

Table 6.4. Means of transport, close-ups.

	Malmö, 1	%	Malmö, 2	%	Borås	%	High Severity Situations in Malmö 1 and Malmö 2	%
Walking	100	*87*	42	*63*	21	*40*	32	*80*
Bike	9	*8*	5	*8*	19	*37*	1	*3*
Walking with bike	4	*3*	6	*9*	1	*2*	7	*17*
Walking with pram	1	*1*	5	*7*	6	*11*	0	*0*
Walking with wheelchair	0	*0*	0	*0*	0	*0*	0	*0*
in wheelchair	0	*0*	0	*0*	0	*0*	0	*0*
sitting on bike	1	*1*	5	*7*	3	*6*	0	*0*
Rullator (walker)	0	*0*	0	*0*	0	*0*	0	*0*
Other, ex inlines	0	*0*	4	*6*	2	*4*	0	*0*
Sum	115	*100*	67	*100*	52	*100*	40	*100*

On the second day in Malmö the average vehicle speed for eastbound traffic was 51 km/h (with a standard deviation 5 km/h for the whole sample) and the 90 percentile was 57 km/h. The average speed for westbound traffic was 44 km/h (with a standard deviation 5 km/h for the whole sample) and the 90 percentile was 52 km/h. One important explanation of the disparity between the two directions can be that eastbound traffic was measured in the morning and westbound in the afternoon. The traffic intensity can be higher in the afternoon; however, the differences are not significant.

The speeds on Hultagatan in Borås did not differ much from those in Malmö, the average vehicle speed in the morning was 53 km/h (with a standard deviation 8 km/h for the whole sample) and the 90 percentile was 61 km/h. The average speed in the afternoon was 49 km/h (with a standard deviation 7 km/h for the whole sample), and the 90 percentile was 57 km/h.

Below is an overview of vehicles if they stop when a pedestrian or cyclist is present at the kerb or refuge. There is a difference between the two days in Malmö, 7% more occasions on the second day; when one or more vulnerable road users are standing at the kerb or at the refuge, a car will stop for them. Borås shows the lowest figure, of all car drivers gives only one out of ten pedestrians or cyclists the right-of-way. The interactions with higher severity show the same pattern as other encounters in Malmö.

Table 6.5. Driver behaviour when a pedestrian or cyclist are present at kerb or refuge. Overview study.

Any driver stops	Malmö, 1	%	Malmö, 2	%	Borås	%	High Severity Situations in Malmö 1 and Malmö 2	%
Yes	20	*13*	48	*20*	20	*11*	8	*20*
No	138	*87*	195	*80*	160	*89*	31	*80*
Sum	158	*100*	243	*100*	180	*100*	39	*100*
Crossing and no car present	73	*32*	44	*15*	61	*25*	0	
Total sum	231		287		241		39	

In Figures 6.1 and 6.2 we can see the pedestrian behaviour of stopping at the kerb and refuge when crossing Regementsgatan in Malmö. Below is the stopping frequency shown for one afternoon at Hultagatan in Borås. Hultagatan has no refuge and no persons older than 65 years were observed in the study based on close-ups.

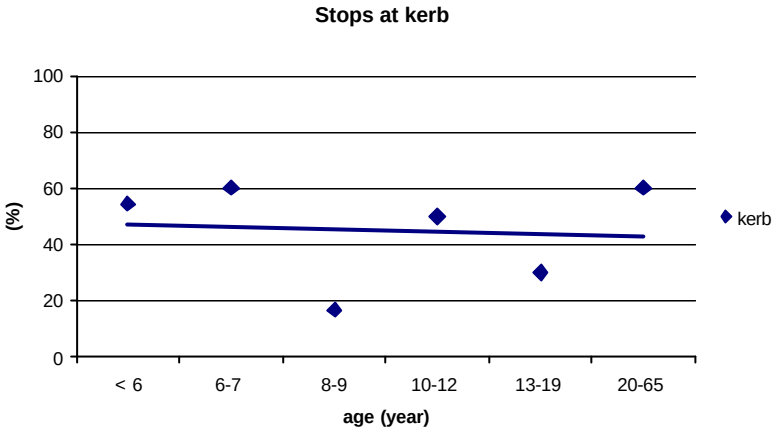

Figure 6.3. Frequency different age groups of pedestrians stop at kerb, Borås, study based on close-ups.

Children and teenagers showed similar behaviour on both of the days in Malmö and the day in Borås. The other ages showed no clear similarities. The pedestrians in Borås did not show the same pattern as those in Malmö, the frequency of stopping obviously does not decrease with increasing age. The stopping frequency at kerb side for pedestrians is 20% lower in Borås than in Malmö.

The drivers' tendency to give way to vulnerable road users at the kerb or on the refuge island is presented in Table 6.6. In Borås the drivers gave way to children to a higher extent (18%) than in Malmö (8%). However, in general, it was the contrary where 11% of the car drivers in Borås gave way, 20% of the car drivers in Malmö.

Table 6.6. Driver behaviour when pedestrian or cyclist present at kerb or refuge in Malmö Day 2and in Borås divided into age groups. Overview study.

	Malmö 2					Borås				
	Driver stops	%	Driver continue	%	Sum	Driver stops	%	Driver continue	%	Sum
Children	3	*8*	35	*92*	38	5	*19*	22	*81*	27
Youth	2	*17*	10	*83*	12	4	*10*	35	*90*	39
Adults	45	*23*	153	*77*	198	9	*9*	94	*91*	103
Elderly	9	*23*	31	*78*	40	2	*20*	8	*80*	10
Sum	59	*20*	229	*80*	288	20	*11*	159	*89*	179

In Malmö on Day 2, l0% of all children, 14% of the youths, and 16% of the adults crossed the street when no vehicle was present. When elderly people crossed there was always a vehicle present. In Borås 31% of all children, 28% of the youths, and 25% of the adults crossed the street when no vehicle was present. As in Malmö, when elderly people crossed, there was always a vehicle present. The higher amount of free passages in Borås is a reflection of lower traffic intensity.

From the drivers' point of view, only 4% (49 out of a total 1,146 car drivers) of those that had a pedestrian or cyclist waiting at the crossing gave way to them in Malmö on Day 2, see Table 6.7. In Borås 17 out of 331 car drivers, 5%, gave way to a pedestrian or cyclist at the crossing. In the table below we see that the drivers seem to show more respect to children and youths in Borås than in Malmö. Still, the majority of drivers do not give way even to children.

Table 6.7. From the driver point of view, giving way to pedestrians and cyclists. Overview study at Regementsgatan – Skvadronsgatan in Malmö and Hultagatan in Borås.

	Malmö 2		Borås	
		%		*%*
One or more children	1	*2*	4	*24*
Child with adult	1	*2*	0	*0*
One or more youths	1	*2*	3	*18*
One or more adults	34	*69*	8	*47*
Adult with pram	2	*4*	0	*0*
Elderly	8	*16*	2	*12*
Unknown	2	*4*	0	*0*
Total	49	*100*	17	*100*

When comparing the behaviour of the 40 High Severity Situations in Malmö (collected from video recordings during 3 different afternoons) with results from analyses of all situations, i.e. when a pedestrian or cyclist meets a car on only Day 2 in Malmö, the frequency with which vulnerable road users stop is higher than usual in High Severity Situations levels, see Table 6.8. As seen in the table, 17 of the 40 persons involved in High Severity Situations met a car when the person was on or next to the kerb. 30 persons involved in High Severity Situations met a car when the person was on or next to the refuge. It should be noted that in 7 of the 40 High Severity Situations the vulnerable road user has an interaction of higher severity level with cars coming from both the pedestrians left and right, i.e. both directions.

Table 6.8. Percentage of pedestrians and cyclists, which stopped at kerb or refuge, when meeting a car Study based on close-ups.

	Malmö, 2				High Severity Situations			
	Kerb		Refuge		Kerb		Refuge	
Vulnerable road user stops		%		%		%		%
Yes	37	*55*	22	*33*	11	*65*	17	*57*
No	29	*43*	40	*60*	6	*35*	13	*43*
Unknown	1	*2*	5	*7*	0	*0*	0	*0*
	67	*100*	67	*100*	17	*100*	30	*100*

Of interest to note is whether car drivers are more likely to stop or slow down at High Severity Situations than at other situations when pedestrians or cyclists meet a car, see Table 6.9. As the results show, the car drivers stop less frequently in High Severity Situations. They slow down slightly more than usual at situations when meeting pedestrians or cyclists.

Table 6.9. Behaviour of driver when pedestrian or cyclist was present.

	Malmö, 2				High Severity Situations			
	Kerb		Refuge		Kerb		Refuge	
		%		%		%		%
No car	10	*15*	17	*25*	0	*0*	0	*0*
No car stops	47	*70*	40	*60*	14	*82*	25	*84*
First car stops	1	*2*	0	*0*	0	*0*	1	*3*
Second or later stops	2	*3*	2	*3*	1	*6*	0	*0*
First car slows down	0	*0*	0	*0*	1	*6*	1	*3*
Second later slows down	0	*0*	0	*0*	1	*6*	3	*10*
Unknown	7	*10*	8	*12*	0	*0*	0	*0*
Sum	67	*100*	67	*100*	17	*100*	30	*100*

6.2 Borås study

The second study was conducted at three sites: Hultagatan, Sjöbotorggatan, and Trandaredsgatan in Borås. A comparison crossing named Källbäcksrydsgatan was also studied. Differences between how children, grownups and the elderly interact with motor vehicle traffic at a crossing in urban areas were analysed. The pedestrians', cyclists', and car drivers' behaviour were studied. Now, the analysis is not divided into overview and close up studies, all passages with vulnerable road users are coded similarly, almost as in the close up study from the pilot study.

The studied crossings, except the comparison crossing, have been reconstructed in order to increase the traffic safety and mobility for pedestrians and cyclists. However, the two crossings at Trandaredsgatan were reconstructed in the early 1990s. The purpose with the change of law concerning car drivers giving way to pedestrians is to increase the mobility and safety for pedestrians. Below is the analysis of how the behaviour of pedestrians, cyclists, and car drivers was influenced by the reconstruction and the inaction of the new law. Parameters that can be used to describe the pedestrians' feelings of security and safety when approaching a crossing are the speed at which they walk and how they move their heads when approaching the crossing. Also studied is how the frequency of pedestrians that are given way to by car drivers has changed after both reconstruction and the enactment of the new law. How and where pedestrians cross the street is also of interest, i.e. if pedestrians begin to cross the street on the actual zebra crossing after the reconstruction. The result can be that the pedestrians are crossing the street at areas other than the zebra crossing. Johansson and Leden (2000) have earlier presented interim results from the four different sites. More data has been coded, the results presented here are based on all the collected data from the four sites.

6.2.1 Flow of road users

Appendix B is the flow of pedestrians and cyclists presented for each site. There is at all sites a peak of pedestrians and cyclists between quarter to eight and quarter past eight (this is not shown in the appendix, but found in the analysis). In the afternoon traffic, there are no clear peaks of pedestrians and cyclists as in the morning. At the Hulta site the flow of pedestrians increased after reconstruction, but the flow for the elderly has decreased. The flow of other age groups has increased. At the Sjöbo site the total flow of pedestrians is similar to the before situation. The flow of children and youths has increased somewhat, but here the flow of elderly has also decreased. At the upper crossing in Trandared, the total flow is more or

less unchanged, but the flow of children has increased by 41%. The flow of other age groups has decreased. At the lower crossing the total flow of pedestrians has decreased and for each individual age group except adults.

One of the goals with reconstruction of the traffic environment is to decrease the barrier effect that a street can be for pedestrians and one of the reasons behind the change of Code is to increase the pedestrians' mobility. An increased flow of pedestrians after reconstruction and Code change can be an indicator of increased mobility. In the table below the mean flows of pedestrians from one studied day are presented with the after situations being compared with the before situations, which is given an index 100. At both intersections at Trandared School the flows are unknown at the time period one, before reconstruction. For the Hulta and Sjöbo intersections where data were collected for two days, the flows of children are also presented for the second day.

At the Hulta site the flow of pedestrians has increased, but for the elderly the flow has decreased somewhat. However, the flow of other age groups has increased. At the Sjöbo site the total flow of pedestrians is similar to the before situation. The flow of children and youths has increased slightly; here the flow of elderly has also decreased. At the upper crossing in Trandared the total flow is similar to before, but the flow of children has increased by 41%, see Table 6.10. The flow of other age groups has decreased. At the lower intersection the total flow of pedestrians for each age group individual except adults has decreased. Comparing the data from two different days, child flows are similar at Hulta, but have decreased at Sjöbo. At the Hulta site the flow of children in time period two, Day 2 is lower than Day 1. This is also the case at the Sjöbo site after all the changes were implemented. The data collection was made the same week at each time period, and the weather conditions were good during all the data collection.

Table 6.10. Flow of pedestrians, before situation index 100. Index is based on the passages.

	Hulta				**Sjöbo**				**Trand upp**		**Trand low**	
	Index		Flow Pedestr./h		Index		Flow Pedestr./h		Index	Flow Pedestr./h	Index	Flow Pedestr./h
	Day 1	*Day 2*	Day 1	Day 2	*Day 1*	*Day 2*	Day 1	Day 2	Day 1	Day 1	Day 1	Day 1
Before changes												
Children	*100*	*100*	5	4	*100*	*100*	18	13	-	-	-	-
Youths	*100*		10		*100*		9		-	-	-	-
Adults	*100*		24		*100*		46		-	-	-	-
Elderly	*100*		5		*100*		15		-	-	-	-
Total	*100*		44		*100*		87		-	-	-	-
After reconstruction												
Children	*143*	*68*	7	3	-	-	-	-	*100*	21	*100*	27
Youths	*119*		12		-	-	-		*100*	4	*100*	11
Adults	*155*		36		-	-	-		*100*	14	*100*	16
Elderly	*57*		3		-	-	-		*100*	2	*100*	4
Total	*134*		58		-	-	-		*100*	40	*100*	58
After Code change												
Children	*138*	*131*	6	6	*115*	*67*	20	9	*141*	30	*80*	22
Youths	*140*		15		*123*		11		*83*	3	*71*	8
Adults	*122*		29		*105*		48		*79*	11	*110*	17
Elderly	*39*		2		*73*		11		*0*	0	*95*	4
Total	*118*		52		*104*		90		*109*	44	*88*	51

In Appendix C, the flow of vehicles is presented. The data from Hulta and Sjöbo is based on the mean flows of two days, 4,5 h per day of data. The data from the intersections in Trandared is based on data from one day, 4,5 h per day of data. Vehicle flow from Källbäcksrydsgatan is also presented based on 4,5 h of data collection from the first day and 3 h of data collection from the second day. In the Hulta site a decrease of 8% is shown for vehicles travelling westbound through the intersection after reconstruction compared with before. Vehicles travelling eastbound through the intersection show a similar decrease, 10%. After change of Code, no changes in the flow of vehicles are shown. In the Sjöbo intersection a 20% vehicle flow decrease through the intersection is shown after reconstruction and Code change compared with before. At the upper intersection in Trandared a minor decrease of car flows is shown. At the lower intersection in Trandared an increase of 15% of vehicles travelling through the intersection is shown. The large difference in car flows in Källbäcksrydsgatan is explained by the difference in the time of day during data collection. In the after situation the peak hour in the afternoon was not filmed. The car flows show the same pattern as the pedestrians and cyclists in the morning, when there is a peak around eight o'clock in all intersections. In the early afternoon the flow of cars is rather low, but it increases to an afternoon peak at four o'clock.

Summary

The pedestrian flows have increased with 4% at the Sjöbo site and with 34% at the Hulta site after reconstruction. The change of Code might also have an effect on pedestrian flows, but at the Trandared site, where there was no reconstruction, the pedestrian flow increased with 9% at one crossing and decreased with 12% at the other so there are no clear evidence about the effect.

At the Hulta site a decrease is shown for vehicles travelling westbound through the intersection after reconstruction compared with before. Vehicles travelling eastbound through the intersection show a minor decrease. After change of Code there was no changes in the flow of vehicles. In the Sjöbo intersection a decrease of vehicle flow is shown after reconstruction and Code change compared with before. At the upper intersection in Trandared no "significant" change in car flows are shown. At the lower intersection in Trandared an increase of vehicles travelling through the intersection is shown.

6.2.2 Data description

The breakdown of different modes of transport is presented in Appendix D. At the Hulta site it is most common to walk, then cycle. Few of the vulnerable road users are walking with a bike (2%) or with a pram (3%). In the before situation 64% walked and 31% cycled. After the reconstruction 76% walked and 18% cycled. After the reconstruction and Code change the proportion between walking and cycling is like in the before situation, 65% walk and 30% cycle. An explanation as to why fewer people cycle after the reconstruction can be that the data was then collected in March when fewer people go by bike. Data from the before and after situations were collected in May when more people go by bike. Most of the youngest children, younger than 9 years, walk. Children 10 to 12 years cycle more often. About one-third of the adults went by bike. One-fourth of the elderly went by bike in the collected data from the before and after situation. No elderly biked after reconstruction, when data were collected in March.

At the Sjöbo site only 7% go by bike in the before situation and most of those who do are children 11 to 12 years, youth, and adults. Almost half of the elderly walked with a walker, more common the older the person is. In the after situation 17% went by bike, a noticeable increase especially among children cycling. In the after situation around 50% of the elderly walked with walkers. In the intersections at Trandared School few people cycle. In both the intersections cycling slightly increased after the change of Code, which can most certainly be explained by the data in the before situation being collected in March when fewer people go cycling. The data in the after situation were collected in May when more people are go cycling. Not many children cycled in the Trandared intersections. Children sitting in pram is not counted or coded because they do not do any actions by them selves.

In Appendix E the age structure of the pedestrians and cyclists in the collected data is described. The ages are presented as children younger than six years, then the child' ages are given for each year up to 12 years. The youths are presented as the age interval 13 to 19 years and the adults are presented as persons 20 to 64 years old. Elderly are divided in three age groups: 65 to 75 years, 76 to 85 years, and 85 years and older. In the before situation 51% of all vulnerable road users in all sites are adults. 18% are children (12 years or younger), 18% are youth, and 12% are 64 years or older. After the reconstruction 39% of all vulnerable road users is adults, 31% are children, 23% are youth, and 7% are older than 64 years. After the reconstruction and Code change 41% are adults, 33% are children, 19% are youth, and 6% are older than 64 years. For all sites few elderly people were observed, especially in the two crossings at Trandared School. In Table 6.11 are the total numbers of pedestrians in each age group presented and the percent of them that meet a car at the site.

Table 6.11. Total no. of pedestrians in each age group observed at the four sites at each studied period. No. of pedestrians and percentage that meet a car.

	0-12 yrs		13-19 yrs		20-64 yrs		>64 yrs	
	No. of pedestrians	Meets a car (%)	No. of pedestrians	Meets a car (%)	No. of pedestrians	Meets a car (%)	No. of pedestrians	Meets a car (%)
Hulta May 1999	43	*65*	83	*46*	133	*71*	32	*78*
Hulta March 2000	47	*77*	112	*55*	173	*74*	25	*88*
Hulta May 2000	50	*78*	114	*57*	134	*64*	17	*71*
Sjöbo April 1999	139	*62*	68	*50*	367	*57*	103	*66*
Sjöbo May 2000	131	*41*	56	*41*	227	*48*	58	*55*
Trandered upper March 2000	96	*66*	18	*67*	61	*62*	7	*71*
Trandered upper May 2000	135	*73*	15	*67*	48	*67*	-	-
Trandered lower March 2000	121	*62*	49	*67*	70	*74*	20	*55*
Trandered lower May 2000	97	*72*	35	*74*	77	*81*	19	*84*

In Appendix F is the gender structure divided in ages of all vulnerable road users for all sites. At the Hulta site it is approximately 50% for both women and men in all three time periods. At the Sjöbo site in the before situation 61% are female and 38% are male. For one per cent it was not possible to determine if it was a female or male. All except one of these were younger than 6 years. In the after situation 47% were women, 47% were men, and 6% were gender unknown. Of these persons all were children 7 to 12 years old. In the two crossings at Trandered School before the change of Code around 60% were female and 40% were male. After the change of Code, 44% were female, 43% were male, and 13% gender unknown.

Most of these persons were children. At the lower crossing 55% were female, 42% were male, and 2% gender unknown.

In Appendix H is presented the proportion of persons walking in a group with two or more persons and the proportion of all children, youth, and adults walking with an adult. Before the reconstruction at the Hulta site, 86% of all children younger than 6 years are walking in a group and all are walking with an adult. After the reconstruction 94% are walking in a group, and 82% of all children younger than 6 years are walking with an adult. After the change of Code 84% walk in a group and 79% walk with an adult. The differences between the different time periods show no pattern. At the Sjöbo site 90% of the children younger than 6 years walk in a group and 75% walk with an adult. After the reconstruction and Code change 81% walk in groups and 69% with an adult. The percentage of very young children walking in groups has decreased by 9% at the Sjöbo site after reconstruction and Code change. The upper crossing at Trandared School is near a children's day care at the school area. 95% of the youngest children walk with somebody else, 80% with an adult. After the Code change 91% are walking in a group and all of them walk with an adult. At the lower crossing at Trandared School few children younger than 6 years cross the street. In the before situation all five of them walk in a group, in the after situation four out of seven walk in group with some other person who is an adult.

6.2.3 Waiting time for pedestrians

The mean waiting time and its standard deviation for pedestrians who meet a car is presented in Appendix I. The data are presented for all pedestrians who meet a car and pedestrians who have to stop and wait at the kerb. As seen in the Appendix, the mean values of waiting time for all pedestrians, i.e. children, youth, and adults, who meet a car decrease after reconstruction and Code change. For the elderly at the Hulta site, it decreases after reconstruction, but increases after change of Code. At the Sjöbo site, the waiting time for the elderly also increases after reconstruction and change of Code. No elderly were observed at the upper crossing on Trandared in the "after" situation. The mean waiting time at the lower crossing increased after change of Code. The reconstruction seems to have the strongest impact on the total mean waiting time. Below are the waiting times presented for the pedestrians who have to stop and wait at the kerb (with waiting time > 0 s) divided in age groups.

After reconstruction and Code change at the Hulta site, both the mean waiting time and maximum waiting time observed for children decreases. The mean waiting time after change of Code is 5 s and the maximum is 12 s. At the Sjöbo site, the mean waiting time also decreased, from 8 s to 4,7 s. The observed maximum waiting time decreased from 25 s to 12 s. At the Trandered upper crossing, both the mean waiting time and observed maximum waiting time increased, mean from 4 s to 5.4 s and maximum from 10 to 21 s. At the lower crossing, the mean waiting time is unchanged at 5 s, but the maximum waiting time before change of Code was 18 s, after it was 9 s. For all sites, but the Trandared upper, the standard deviations have decreased after change of Code and reconstruction compared with the before situation.

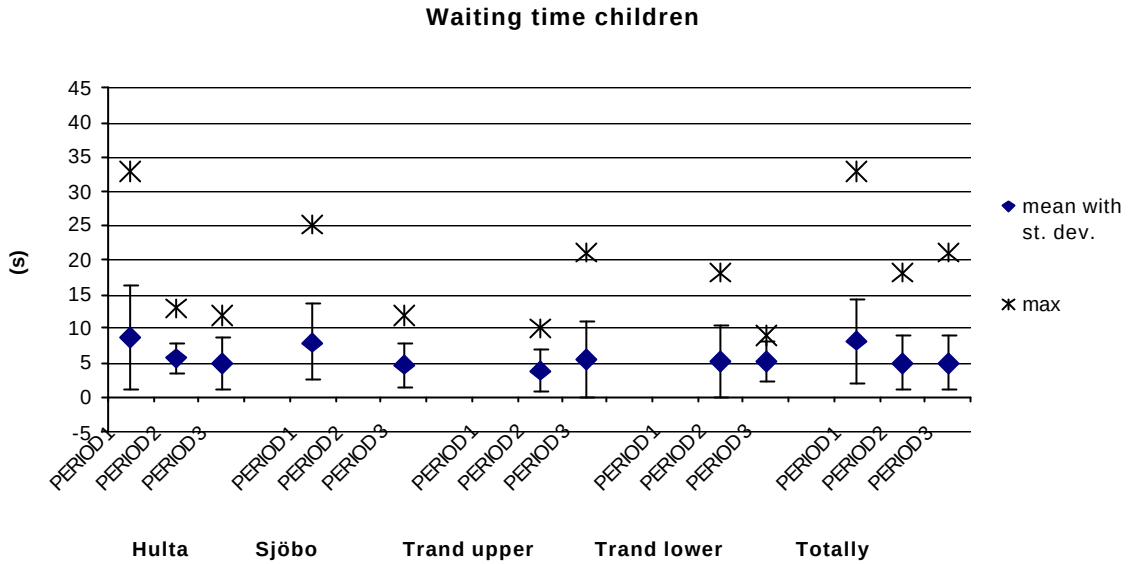

Figure 6.4. Waiting time for children 0-12 years that stop at kerb and wait divided in sites and time periods (s). Period 1 = Before reconstruction, Period 2 = After reconstruction, Period 3 = After reconstruction and Code change. The whiskers indicate the range of the standard deviation from the mean.

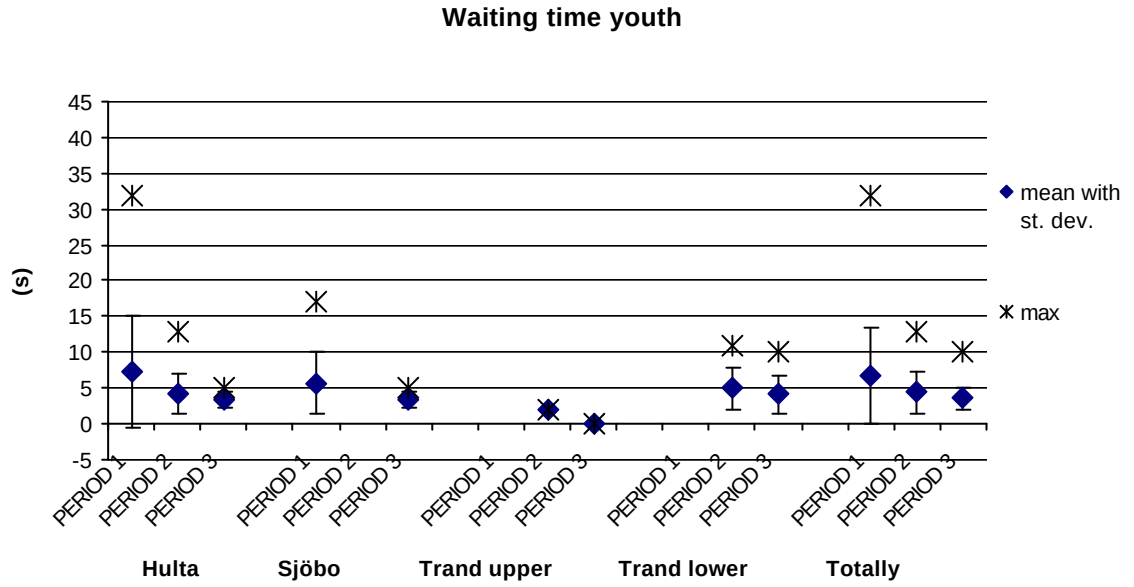

Figure 6.5. Waiting time for youth 13-19 years that stop at kerb and wait divided in sites and time periods (s). Period 1 = Before reconstruction, Period 2 = After reconstruction, Period 3 = After reconstruction and Code change. The whiskers indicate the range of the standard deviation from the mean.

The waiting time at the Hulta site for youths is similar to that for children at all three time periods. The difference is that the youths' waiting time is lower during the third time period, after reconstruction and Code change. At the Sjöbo site the waiting time for youths is also lower than that for children. Few youths were observed at the Trandared upper crossing and only one had to stop and wait before change of Code, whereas none had to stop and wait after change of Code. At the lower crossing in Trandared, the waiting mean time is similar to the children's, but differs from before the change of Code in that the maximum waiting time was much lower.

At the Hulta site, the waiting times for adults are similar to the children's, however, in the before situation the adults observed maximum waiting time is higher, 42 s. At the Sjöbo site, as well as the upper crossing in Trandared, the waiting time for adults is similar to the

children's waiting time. At the lower crossing, the adults waiting time is slightly lower than for children, in the before situation the adults mean waiting time was 3.6 s and the children's was 5.2 s. After the change of Code the mean waiting time for adults was 4.6 s and the children was 5.2 s.

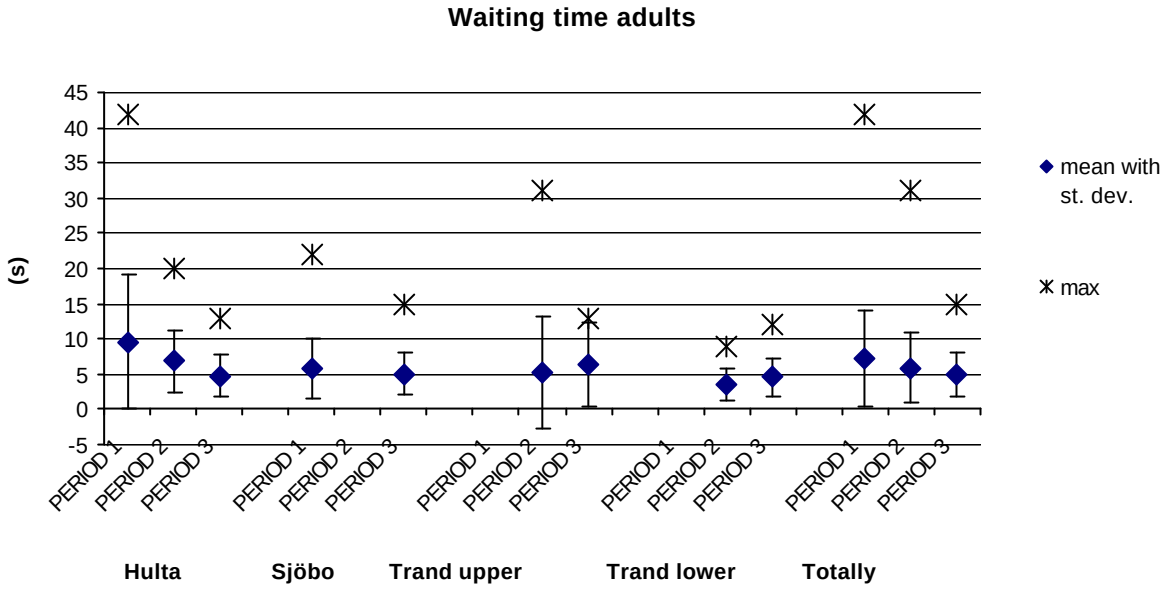

Figure 6.6. Waiting time for adults 20-64 years that stop at kerb and wait divided in sites and time periods (s). Period 1 = Before reconstruction, Period 2 = After reconstruction, Period 3 = After reconstruction and Code change. The whiskers indicate the range of the standard deviation from the mean.

For the elderly the reconstruction and change of Code has not decreased the waiting time at any site, see figure below. However, the standard deviation decreased, but not as much as for adults. At the Hulta site, the maximum waiting time decreased, but the mean waiting time increased from 8.1 s to 9.8 s.

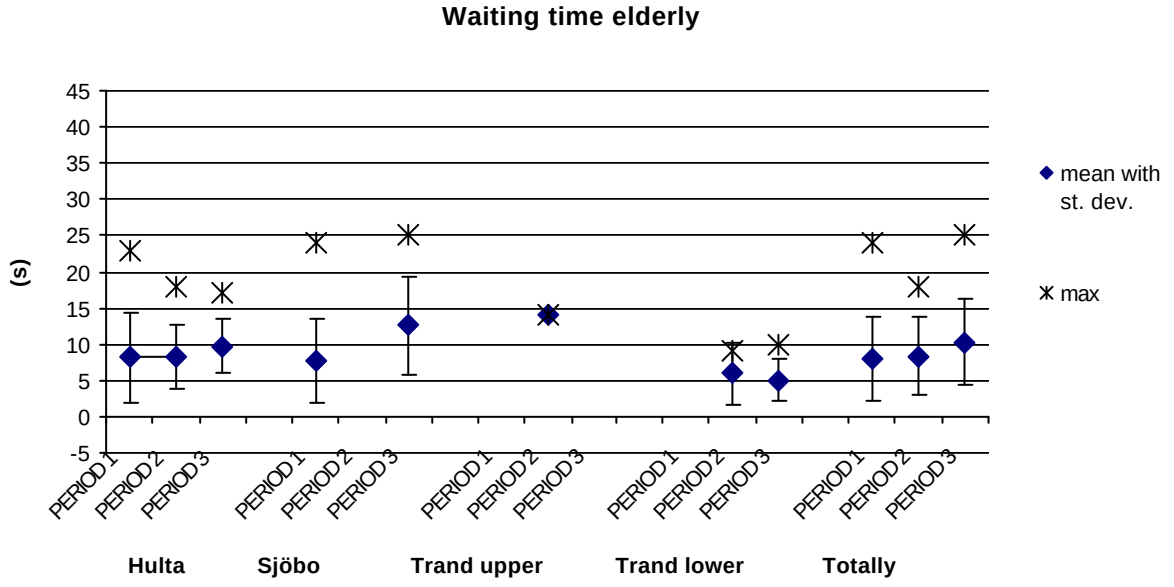

Figure 6.7. Waiting time for the elderly, persons older than 64 years that stop at kerb and wait divided in sites and time periods (s). Period 1 = Before reconstruction, Period 2 = After reconstruction, Period 3 = After reconstruction and Code change. The whiskers indicate the range of the standard deviation from the mean.

At the Sjöbo site, the mean also increased from 7.8 s to 12.6 s after reconstruction and change of Code. The maximum increased from 24 s to 25 s. At the Trandared upper crossing, few elderly were observed before change of Code, but the mean waiting time was much higher than for any other age group. No elderly persons were observed after change of Code. At the lower crossing, the waiting time is similar to the other age groups.

However, if the mean waiting times have not decreased, the percentage of people that meet a car and have to wait at the kerb has decreased. This is the case for the children presented in the Figure 6.8.

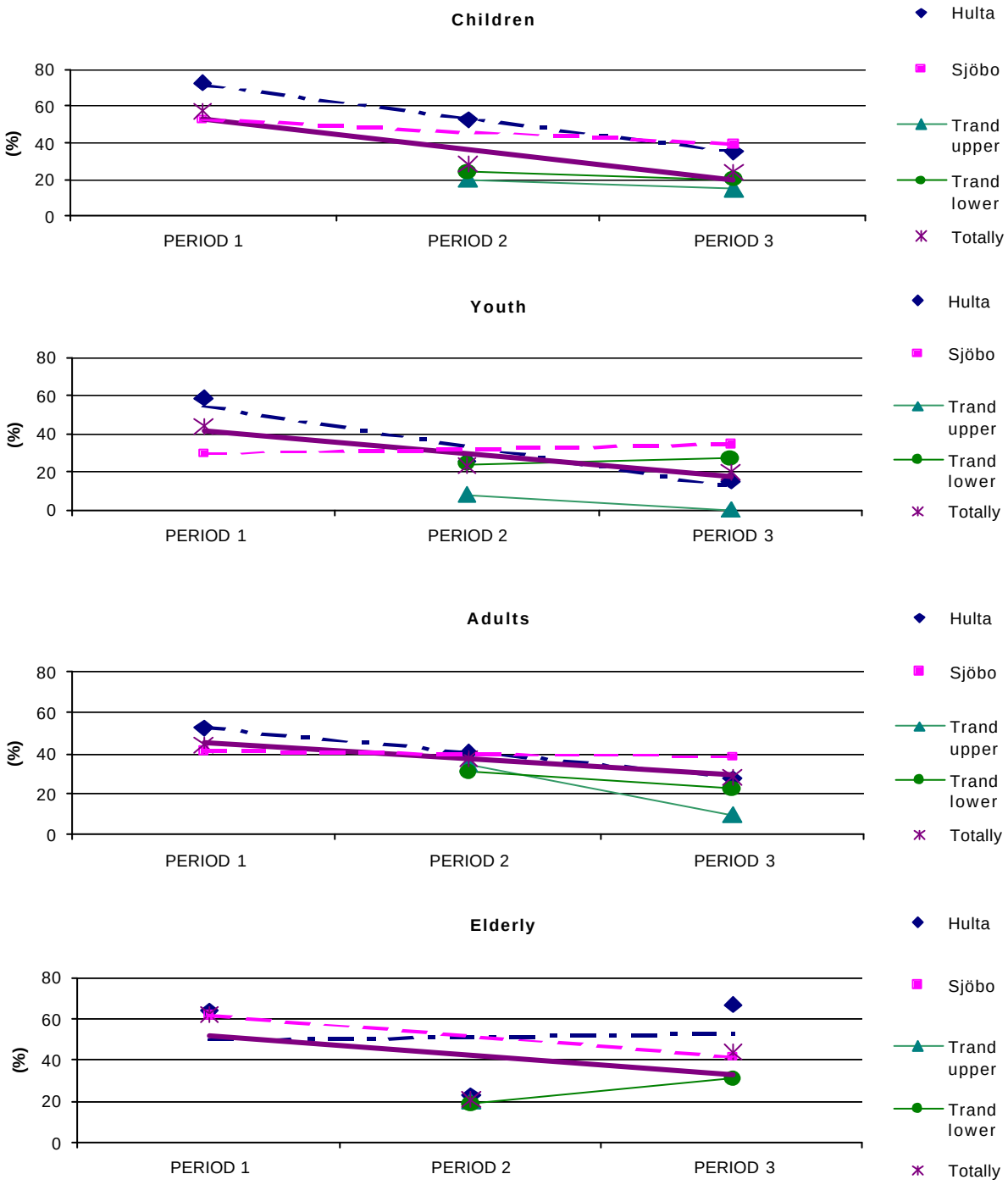

Figure 6.8. Percentage of pedestrians that meet a car and has to stop and wait at the kerb. The thinner lines present the trend, linear regression line, at each site. The thick line presents the trend for all sites together.

The trend relating to the proportion of children that have to stop and wait at kerb side has substantially decreased from 50% to 20% from the before situation to the after reconstruction and Code change.

For youths the percentage also decreased from 40% to 19%. For adults the percentage of having to wait at the kerb decreased, from 43% before reconstruction to 28% after reconstruction and Code change. The percentage also decreased for elderly people from 50% to 30%, but the separate percentage for Hulta and one of the crossings at Trandered School indicates an increased waiting time. (The number of observations, though, is low. At the Hulta site, 16 out of 25 elderly that had to wait at the kerb were observed in period 1, 5 out of 22 in period 2, and 8 out of 12 elderly in period 3. At the lower Trandared crossing, 2 out of 11 elderly in period 2 had to stop and wait at the kerb, and 5 out of 16 in period 3.) The share of those having to wait at the kerb before crossing the street was, before reconstruction, higher for children than the other age groups. After reconstruction the proportion of children with waiting time is similar to the other age groups.

Summary

At none of the sites waiting times at the kerb decreased "significantly" for any pedestrian age group. The frequency of pedestrians that have to stop and wait is another way of expressing the waiting at the kerb. The data of each age group that has to stop and wait at the kerb at each site are presented in Table 6.12. The Sjöbo site had the highest share of the pedestrians to stop and wait in the after situation. Small figures in the table present data based on less than ten observations.

Table 6. 12. Percentage pedestrians that has to stop and wait at kerb.

	Hulta			Sjöbo			Trandared upper			Trandared lower		
	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code
Children	72	52	35	52	-	40	-	20	15	-	22	20
Youth	59	25	18	30	-	36	-	8	0	-	23	28
Adults	53	40	28	41	-	39	-	38	8	-	30	21
Elderly	62	22	65	60	-	40	-	0	-	-	20	30

(small numbers presents data based on less than ten observations)

The speed cushions and refuge at the Hulta site have reduced the share for all age groups having to stop and wait. After change of Code for all age groups, except the elderly, the share of waiting at kerb was reduced even more, see Table 6.13.

Table 6.13. Change in frequency of waiting at the kerb for pedestrians at the Hulta site.

Hulta	After reconstruction compared with before situation.	After reconstruction and change of Code compared with before situation.	After change of Code compared with before change of Code
Children	-38 %	-52 %	-33 %
Youth	-58 %	-60 %	-28 %
Adults	-25 %	-47 %	-30 %
Elderly	-65 %	+5 %	+195 %

The largest reduction is for the youth at 60%, followed by children with a reduction of 52%.

At the Sjöbo site, the removal of a zebra crossing, elevating the intersection, narrowing of the street, and change of Code has reduced the percentage needing to stop and wait at the kerb for

all ages, but youths. The reduction is smaller than at the Hulta site, but the changes at the Sjöbo site benefited mostly the elderly and children.

Table 6.14. Change in frequency of waiting at the kerb for pedestrians at Sjöbo site.

Sjöbo	After reconstruction and change of Code compared with before situation.
Children	-23%
Youth	+20 %
Adults	-5 %
Elderly	-33 %

(small numbers presents data based on less than ten observations)

The percent of pedestrians at the upper crossing in Trandared that have to wait at the kerb was low before change of Code, after it was even lower. At the lower crossing at Trandared School, the share having to stop and wait increased for the elderly and adults.

Table 6.15. Change in frequency of waiting at the kerb for pedestrians in Trandared.

		After change of Code compared with before change of Code.			After change of Code compared with before change of Code..
Trandared upper	Children	-25 %	Trandared lower	Children	-9 %
	Youth	from 8 to 0%		Youth	+21 %
	Adults	-79 %		Adults	-30 %
	Elderly	-		Elderly	+50 %

(small numbers presents data based on less than ten observations)

Children had the largest reduction of those having to wait at the kerb at the Hulta site. At the Sjöbo site, children and the elderly are the age groups that benefited in less waiting time of the reconstruction, but the reduction is not as high as at the Hulta site. The largest reduction is shown for adults at the Trandared upper crossing, where pedestrians have to wait to the lowest extent.

6.2.4 Share pedestrians using the zebra crossing

For different age groups, the share of pedestrians actually walking on the zebra crossing when crossing the street is presented in Appendix J. In Figure 6.9 the share of all pedestrians, meeting any car or none and walking on the zebra crossing, is presented for each site. The solid line is based on all sites together. In the before situation, children 6 to 8 years are those who walk on the zebra crossing to the highest extent. Children younger than 6 years do not show high values, but it has been shown earlier that almost all children younger than 6 years walk with somebody else, often an adult. Children 8 to 9 years and youths are those who walk on the zebra crossing to the lowest extent, around 70%.

After the reconstruction the share of pedestrians walking on the zebra crossing increased for all ages. It should be noted that data from Sjöbo after reconstruction, before change of Code, are not available. For the children of all ages the share has increased. For the 3 youngest age groups the share is 100%, for children 10 to 12 years it has also increased to around 90%. The share of youth walking on the actual zebra crossing has increased from around 70% to 80%.

After the change of Code the Hulta site still has high proportions of children walking on the zebra crossing. Although, the children 10 to 12 years have increased from 88% to 100%, the shares for youngest children have decreased from 100% to just above 80%. The share of walking at the zebra crossing at the Trandared School's upper crossing differs from before Code change, but is still high for all ages. Data is not available for elderly people. At the lower crossing, the share is less than before change of Code except for children 6 to 7 years and adults. At the Sjöbo site the frequency of walking on the actual zebra crossing has

strongly decreased. The large difference from before reconstruction and change of Code is that after reconstruction, fewer pedestrians are walking on the only zebra crossing remaining. Before reconstruction the shares for all ages were similar to the Hulta site, but after reconstruction the shares are between 20 to 40% for all ages.

At the Hulta site, where refuges and speed cushions were implemented, the pedestrians began to walk on the zebra crossing. At the two crossings at Trandared School, no countermeasures were implemented, but the change of Code. Railings that lead people to the zebra crossings are on the same side of Trandaredsvägen as the school, see Figures 5.6 and 5.7. At the upper crossing no changes were shown after the change of Code. By contrast, the shares of walking on the zebra crossing at the lower crossing were lowered by 30% for children younger than 6 years, 10% for children 8 to 9 years, and 10% for youth. The share of walking on the zebra crossing is still high for children at both the Trandared crossings, indicating that railings are efficient in this respect.

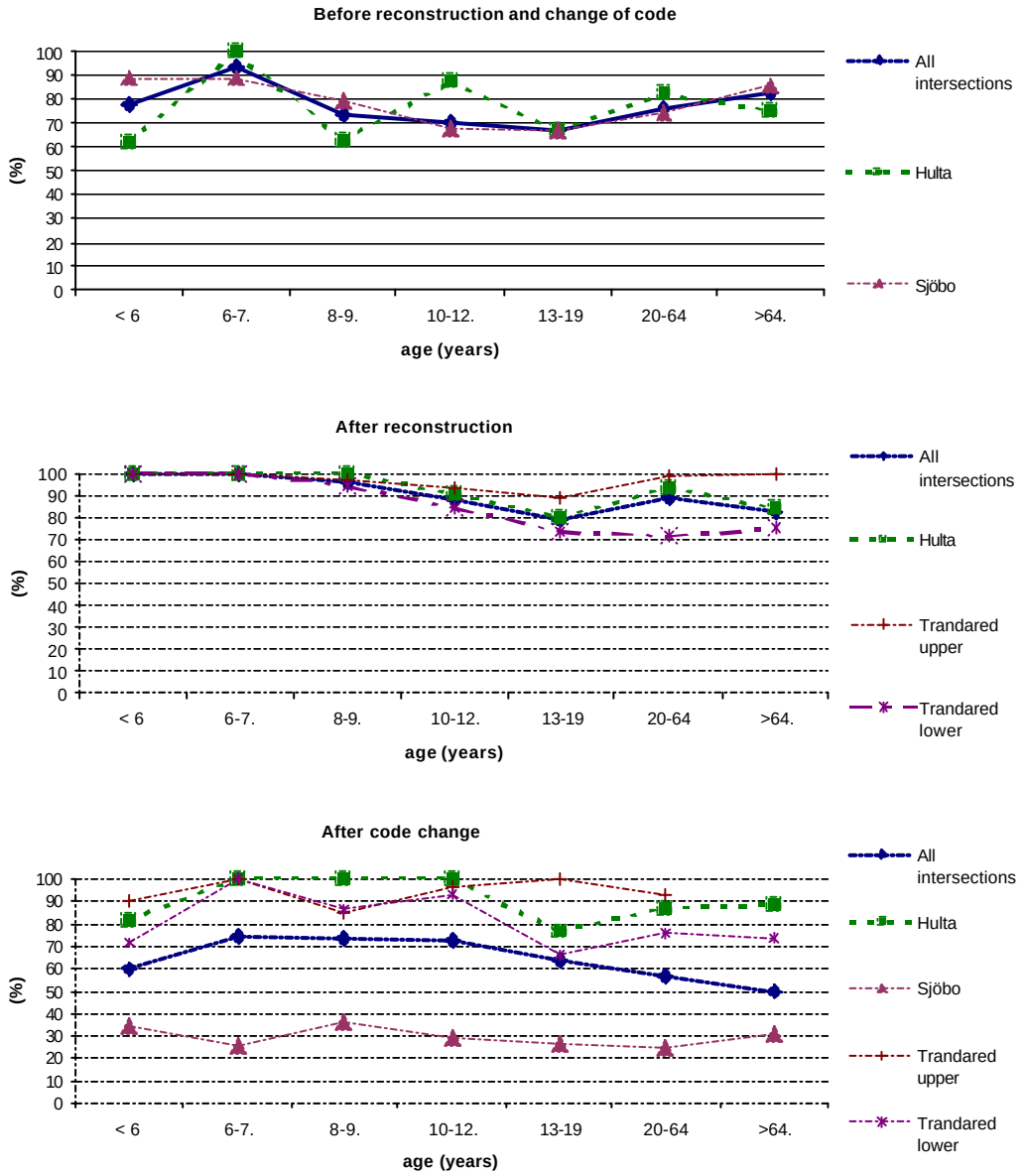

Figure 6.9. Percentage of pedestrians walking on the zebra crossing.

At the Sjöbo site were two zebra crossings before the reconstruction, during reconstruction one zebra crossing were removed and the whole intersection was elevated. As shown in the previous figures the percent of pedestrians walking on the zebra crossing decreased. Shown in Figure 6.10 are the crossing areas pedestrians used at the Sjöbo site. The proportions are based on observations of all pedestrians passing and shows that the crossing pattern has changed after reconstruction and Code change. More people than before walk on the remaining zebra crossing, but not as many as in the before situation. People still walk on the surface that used to be zebra crossing, especially young children and elderly people. Children 8 to12 years and youth have also started to walk on the surface close to the school and outside the elevated area in the intersection marked "outside present zebra crossing".

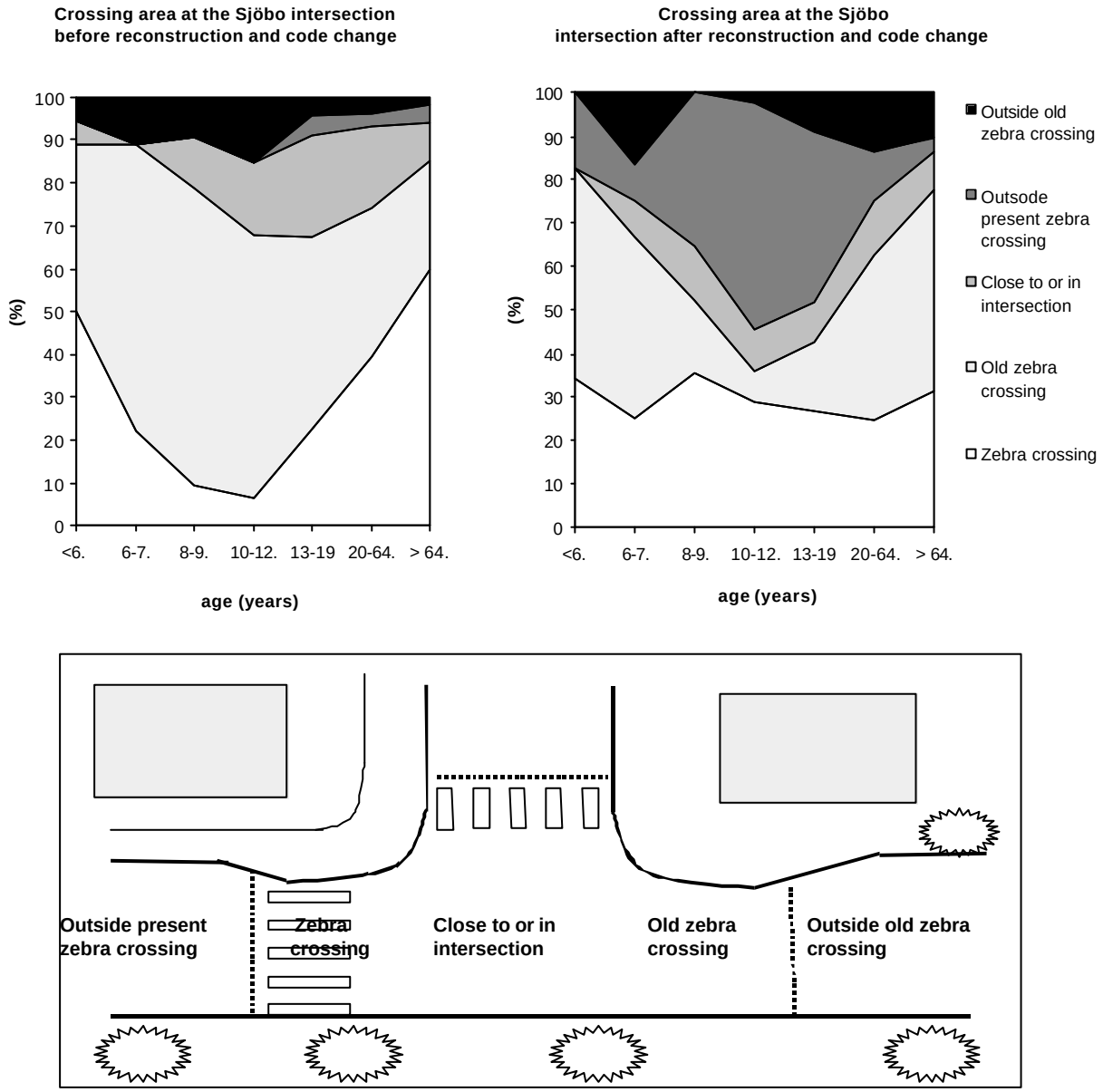

Figure 6.10. Pedestrians' crossing area before and after reconstruction and Code change at the Sjöbo site.

The pedestrian crossing area might be correlated to the proportion of pedestrians that are given way to; the following is described in Appendix J and is illustrated in the Figures 6.11

and 6.12 below. The figures indicate those who are given way to by a car driver and walking on the zebra crossing. A proportion lower than 100% means that pedestrians are given way, but are not walking on the zebra crossing. At the Hulta site, the share of pedestrians given way to while walking on the zebra crossing is high for all ages in all of the three time periods. After the reconstruction some youths are given way to, though they walk somewhere else than on the zebra crossing. After the change of Code some adults and elderly also are given way, though they too walk somewhere else other than on the zebra crossing.

At the site at the Sjöbo site it was earlier shown that not many pedestrians walk on the remaining zebra crossing after the reconstruction and Code change. It is therefore a good opportunity to study if the pedestrians walk on the area that used to be a zebra crossing and what the car drivers' behaviour towards them is at that time. In the before situation at the Sjöbo site, especially children 8 to 9 years, 10 to 12 years and youth were walking somewhere else than the zebra crossing and were given way to. After the reconstruction and change of Code, this pattern is now even stronger for all ages of pedestrians, especially children. Of all of the youngest children (younger than 6 years) that are given way to 50 % walk at the zebra crossing that is left after the reconstruction and Code change, the remaining 50 % walk in the area where the previous zebra crossing used to be (the figures for all age groups are shown in Appendix J:3. The number of observed persons is low, though when divided especially in the child age groups.). No 6 to 7 year old children were given way to after reconstruction and Code change. Of the 8 to 9 year old children that are given way to, 80% walk on the remaining zebra crossing. None of the 8 to 12 year olds that are given way to walk on the zebra crossing. As seen in the figure not many children 8 to 12 years old and youths that are given way to are walking on the area that used to be a zebra crossing. Of the adult pedestrians that are given way to, 52 % walk in the area that used to be a zebra crossing with only 27 % walking on the actual zebra crossing. All of the elderly that are given way to walk in the area that used to be a zebra crossing. The share of pedestrians given way to while walking on the zebra crossing is high for all ages at both crossings at the Trandared School. Before the change of Code 20% of both the youths and adults and 32% of the elderly that are given way to walk somewhere else other than the zebra crossing. After change of Code, the lower crossing's lowest share is shown for youth, 80% of the youth that are given way to walk on the zebra crossing. For pedestrians of all other ages that are given way to at the Trandared crossings 100% or slightly less walk on the zebra crossing.

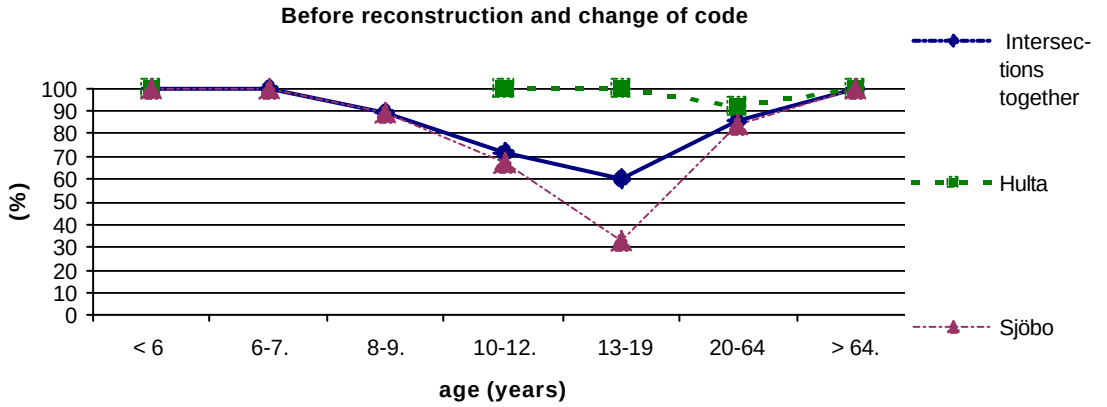

Figure 6.11. Percentage of the pedestrians that is given way to by a car driver and that is walking on the zebra crossing. Before reconstruction and Code change.

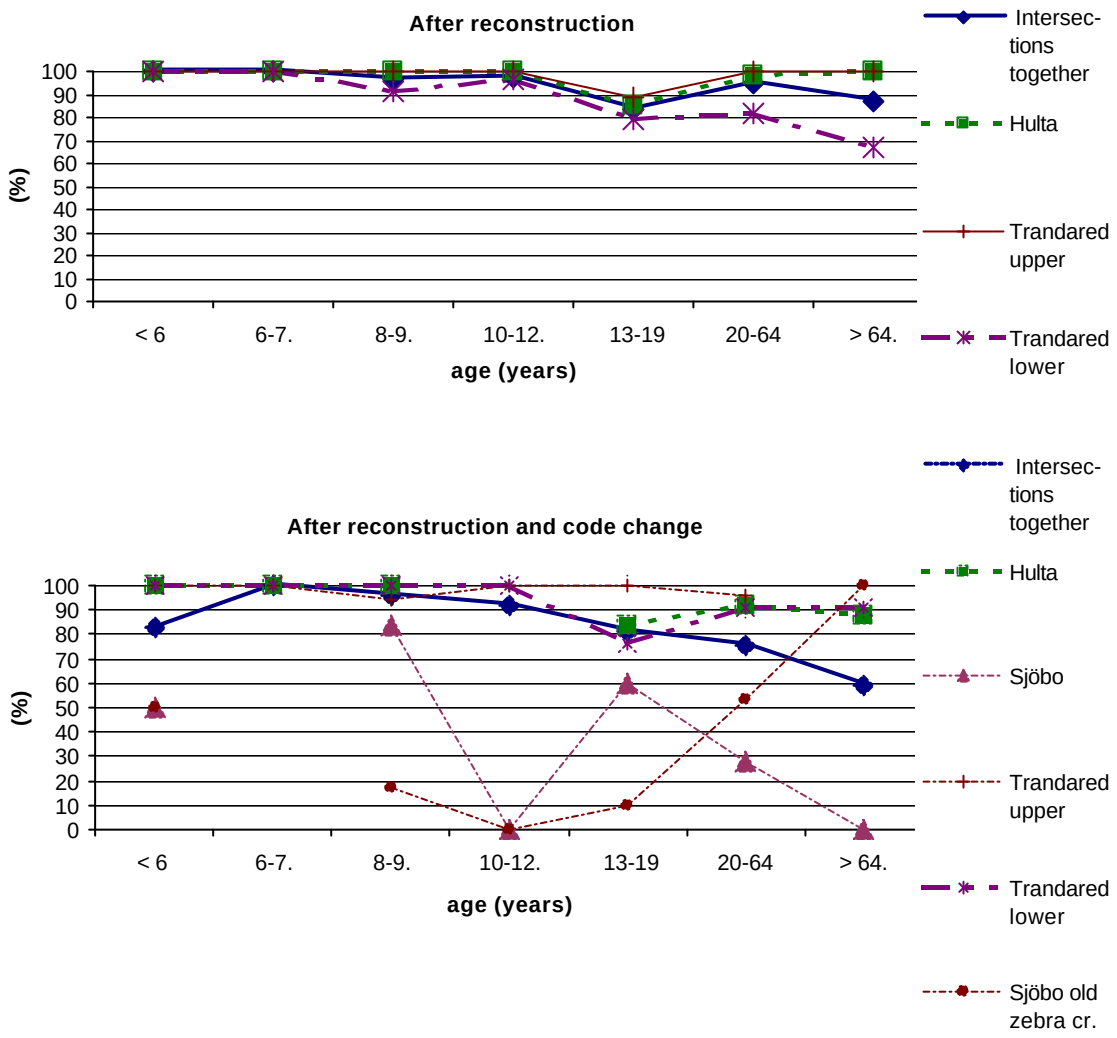

Figure 6.12. Percentage pedestrians walking on zebra crossing and are given way to by a car driver. After reconstruction (above) and after reconstruction and Code change (below).

Next is investigated how pedestrians who are not given way to walk, shown in Figure 6.13. Many walked on the zebra crossing before the reconstruction, indicating that the car drivers should give way. After the reconstruction many of those that walk on the zebra crossing at all sites are still not given way to. The lowest proportions are shown at the Trandared lower crossing for youth and adults.

After the reconstruction and change of Code the shares of people not given way to and walking on the zebra crossing is more complex. High percentages are shown at the Hulta site, where 50% of the youngest children and 100% of both the 6 to 9 year olds and 10 to 12 year olds are not given way to while walking on the zebra crossing. At the Sjöbo site 22% of the youngest children, 20% of 6 to 7 year olds, 27% of the 8 to 9 year olds, and 42% of the 10 to 12 year olds were given way to while walking on the zebra crossing. Higher shares of those that not were given way to were walking in the area that used to be a zebra crossing.

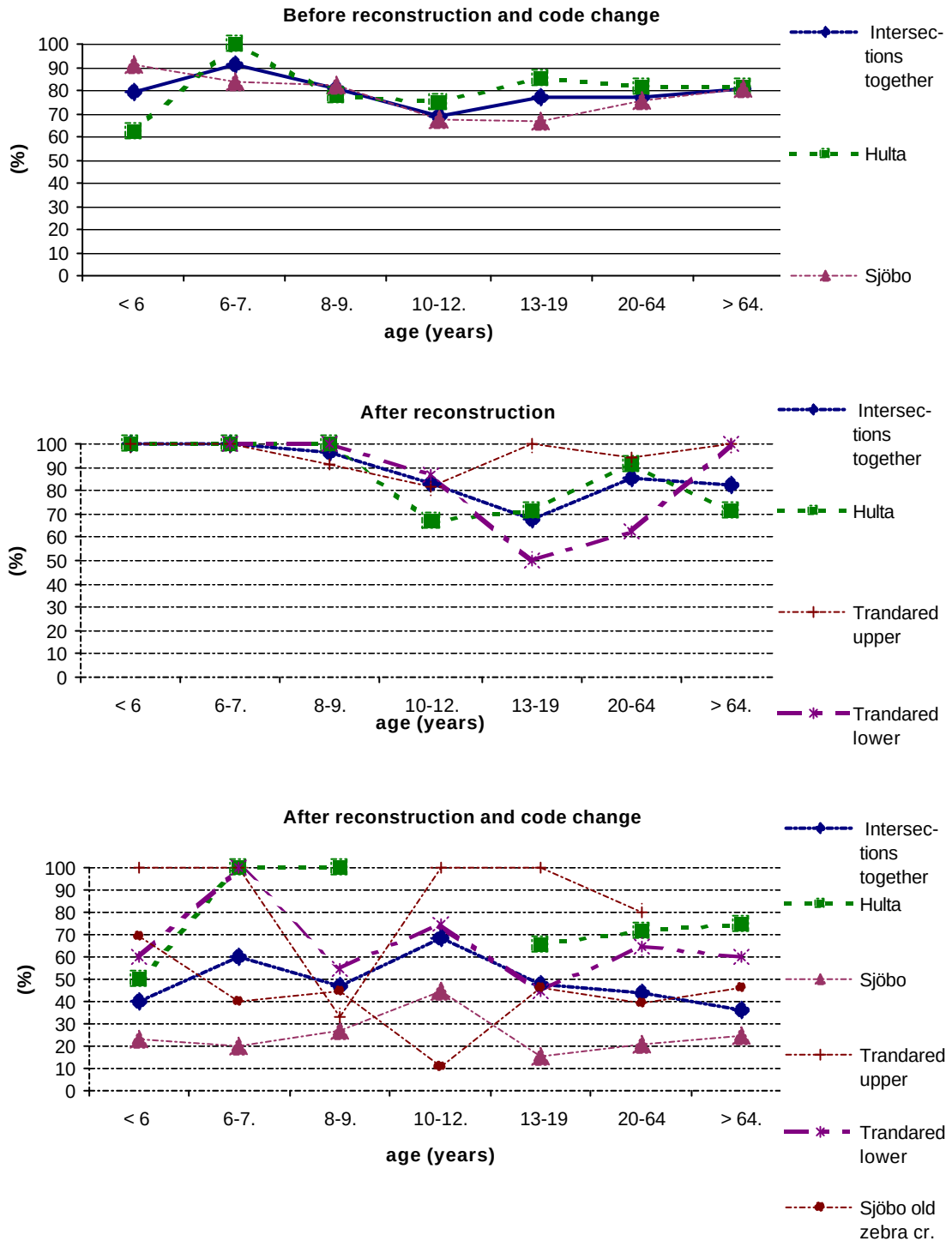

Figure 6.13. Percentage pedestrians walking on zebra crossing and no car driver give way.

At the upper crossing at Trandareds School 100% of the youngest children, 6 to 7 years, 10 to 12 years, and youths were given way to walking on the zebra crossing. At the lower crossing 100% of the 6 to 7 year olds that not were given way to was crossing the street at the zebra crossing. For the other ages the shares ranged from 45 to 75%.

Summary

Walking on the zebra crossing, when crossing the street, increased at the Hulta site for all ages after reconstruction. After change of Code a small reduction is noticed for all age groups, but the elderly. Obviously, the pedestrians sees the benefits with a strongly marked pedestrian crossing, see Table 6.15. Small figures in the table present data based on less than ten observations. At the Sjöbo site walking on the zebra crossing was greatly reduced for all age groups. This is reflected in the shares of pedestrians that are given way to by car drivers, and is presented in part 6.2.8 and 6.2.11.

Table 6.15. Percentage walking on zebra crossing (%).

	Hulta			Sjöbo			Trandared upper		Trandared lower	
	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	After reconst-ruction	After change of Code	After reconst-ruction	After change of Code
Children (range)	72 (60-90)	97 (90-100)	94 (80-100)	74 (66-90)	-	32 (24-35)	97 (95-100)	89 85-100	90 (82-100)	87 (70-100)
Youth	67	80	76	67	-	26	90	100	72	66
Adults	82	94	87	72	-	22	98	94	71	75
Elderly	74	84	89	85	-	30	100	-	74	74

(small numbers presents data based on less than ten observations)

At the two Trandared school crossings the change of Code did not affect the share, though high, of people walking on the zebra crossing in an obvious way. Obviously, the pedestrians see the benefits with well-marked pedestrian crossings and the railing preventing them from crossing at the links. At all sites it is the child age group that shows the highest frequencies of walking on the zebra crossing, but the values are not clearly separated from the other age groups.

6.2 5 Car speeds

The speeds of the vehicles were measured with a radar gun at the zebra crossings, the results are presented in Appendix G. At Hultagatan the average speed of the vehicles before the intersection was reconstructed was 53 km/h (with standard deviation 8 km/h) for the whole sample and the 90 percentile was 61 km/h in the morning traffic. In the afternoon traffic, the average speed was 49 km/h (with standard deviation 7 km/h) with 90 percentile 57 km/h. In March 2000, after reconstruction of the intersection, the average afternoon speed was 30 km/h (with standard deviation 5 km/h) with 90 percentile 36 km/h, which is a significant difference from the before situation. In May 2000, after reconstruction of the intersection and after the new law was enacted, the morning traffic speed was 28 km/h (with standard deviation 5 km/h) with 90 percentile 34 km/h and 29 km/h (with standard deviation 5 km/h) in the afternoon with 90 percentile 34 km/h. The average is a little bit lower than before the new law. See Figure 6.14 below.

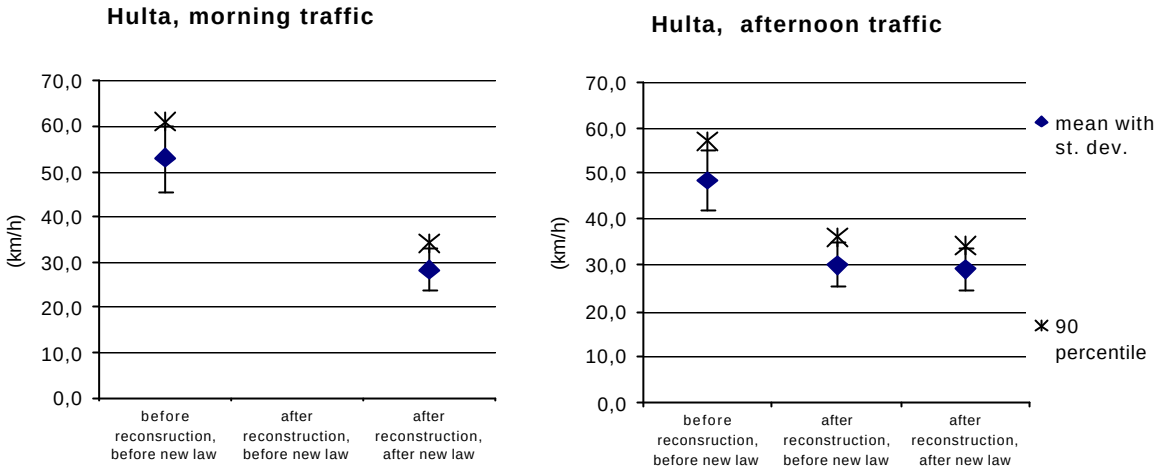

Figure 6.14. Car speeds at the Hulta site divided in morning and afternoon traffic.

The speed measurements at Sjöbotorggatan also show a significant decrease between the before and after situation, see Figure 6.15.

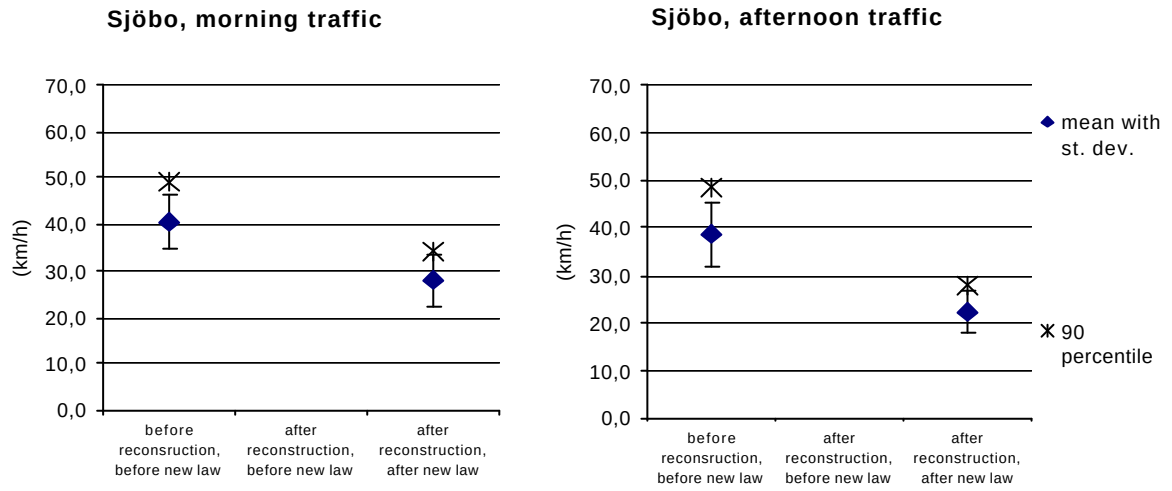

Figure 6.15. Car speeds at the Sjöbo site divided in morning and afternoon traffic.

In the before situation, the average morning speed was 40 km/h with a standard deviation 6 km/h for the whole sample, and the 90 percentile was 49 km/h. The average afternoon speed was 39 km/h (with standard deviation 7 km/h) and 90 percentile 48 km/h. In the after situation, the average morning speed was 28 km/h (with standard deviation 6 km/h) with 90 percentile 34 km/h, and, in the afternoon, 22 km/h (with standard deviation 5 km/h) with 90 percentile 28 km/h. See figure below.

In Trandared the speeds were only measured in May 2000 after the new law was enacted. At the upper zebra crossing, the average afternoon speed of the vehicles was 33 km/h with a standard deviation 5 km/h for the whole sample. The 90 percentile was 39 km/h. At the lower zebra crossing, the average speed was 29 km/h (with standard deviation 2 km/h) with 90 percentile 35 km/h. When comparing the three different sites, after two of them were

reconstructed and the third unchanged, the average speed was less than or around 30 km/h. For Sjöbotorggatan the 90 percentile is less than 30 km/h in the afternoon.

At all the four sites the car drivers reduced speed at the zebra crossings was because of the car drivers having to brake before driving over the speed cushion or elevated area in the sites. Driving over the speed cushions or elevated areas at faster speeds would cause at least an inconvenience for the car driver and maybe damage to the car.

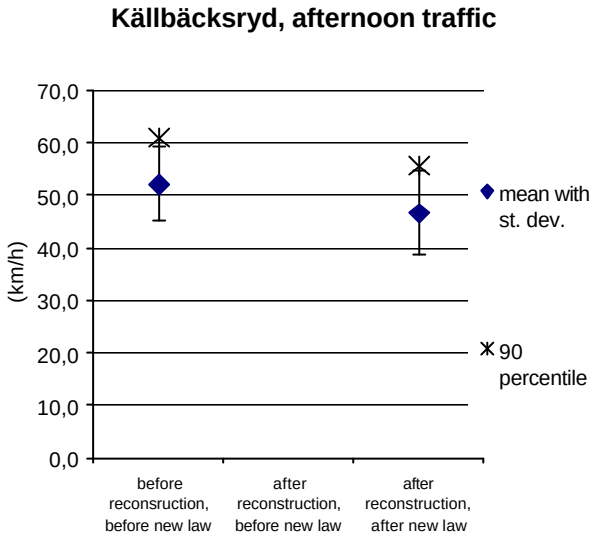

Figure 6.16. Car speeds at the site at Källbäcksrydsgatan afternoon traffic.

At the comparision crossing Källbäcksrydsgatan, the average afternoon speed in the before situation was 52 km/h with standard deviation 7 km/h for the whole sample and 90 percentile 61 km/h. After the new law was enacted, the average speed was 47 km/h with a standard deviation 8 km/h and 90 percentile 56 km/h. Both the average speed and 90 percentile decreased by 5 km/h, see Figure 6.16.

Summary

At both the Hulta and the Sjöbo sites the vehicle speed has decreased after reconstruction and change of Code. At the Hulta site the largest reduction came after the reconstruction, but only a small reduction after change of Code. It is, therefore, justified to believe that the speed reduction at the Sjöbo site is due to the reconstruction. The reconstruction of the Sjöbo site was implemented at the same time as the change of Code. Consequently, no measurements could be made between reconstruction and change of Code. At the Hulta the average speed decreased from 50 km/h to 30 km/h, and from 40 km/h to around 25 km/h at the Sjöbo site. At the two intersections at Trandared School the average speeds were roughly 30 km/h after reconstruction and change of Code. It is said, though, that the goal with traffic calming in intersections is that the 90–percentile should be 30 km/h or less. This case only applies for afternoon traffic at the Sjöbo site, and not anywhere else. As Hultagatan and the Trandared sites are examples of 50/30-streets and the Sjöbo site an example of a 30-street, this result suggests that even on 50/30 streets there are certain problems fulfilling the criteria set in the Calm Street principles. At the Hulta site the 90-percemtile deceased with 27 km/h in the morning and 23 km/h in the afternoon. At the Sjöbo site the 90-percentile decreased with 15

km/h in the morning and with 20 km/h in the afternoon. The 90-percentile of the speeds decreased by 5 km/h at the control site Källbäcksryd.

6.2.6 Pedestrian tempo

Pedestrian tempo has been assessed before the kerb, when they pass the first and the second lane, and when a car is or is not present (as was observed on the video). According to the expert survey, tempo is an important parameter to describe pedestrian safety , see Table 6.49. The pedestrians' tempo is divided into age groups, as they approach and walk through the intersection, and is presented in Appendix K. When no car is present most of the pedestrians, including children, walk in a normal tempo at the Hulta site during all three time periods. In fact, very few children ran before they reached the kerb in all three studied time periods at the studied sites. At the Sjöbo site it is also quite common to walk in a normal tempo, but some children started to run when crossing the street, see Figure 6.17. None of the youngest children ran before or after reconstruction. The children 6 to 7 years ran more over first and second lanes after reconstruction and the Code change. Before none of the children ran, after 30% ran. It is the opposite for children 8 to 9 years, 44% ran before reconstruction and Code change, after less than 10% ran over first lane and 10% ran over second lane. For children 10 to 12 years old there is no change.

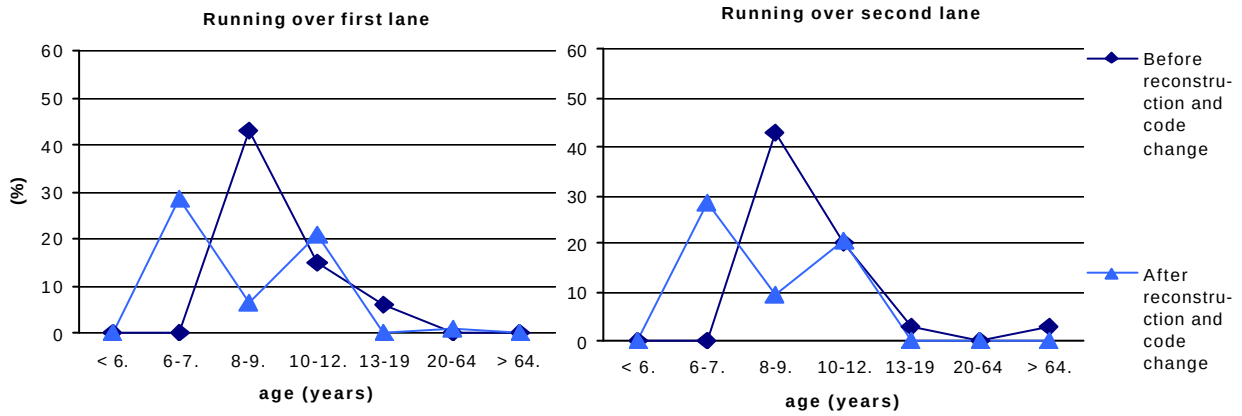

Figure 6.17. Percentage of pedestrians running over the street when no car is present at the Sjöbo site divided into age groups and time periods.

At the lower intersection at Trandared School most pedestrians walk in a normal tempo, but some children walk fast or run when crossing the street. After the change of Code fewer children run and none walk fast when crossing the street, Figure 6.18.

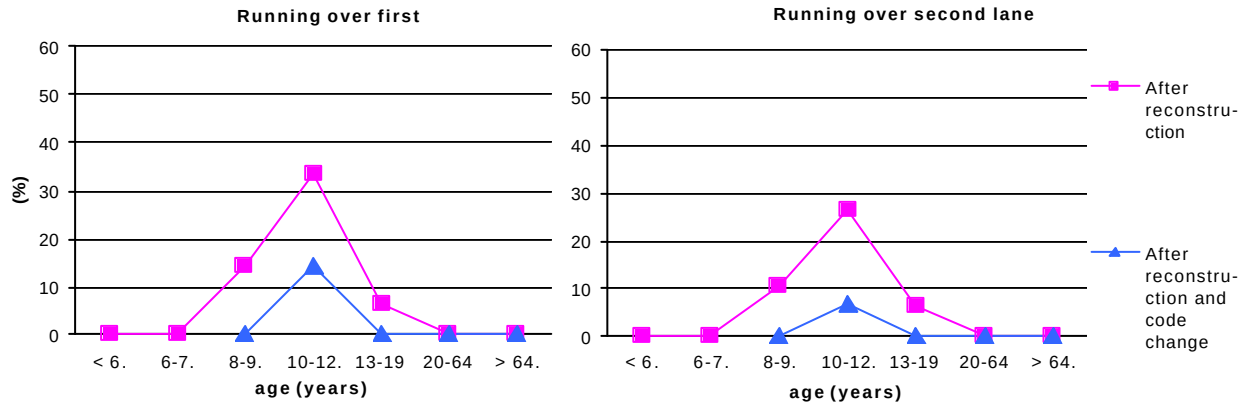

Figure 6.18. Percentage of pedestrians running over the street when no car is present at the Trandared lower intersection divided into age groups and time periods.

At the upper intersection at Trandared School most people, independent of age, walk in a normal tempo.

When a car is present and the pedestrian is crossing the street, more children are running over the street. As shown in the table below, the frequency of running over the street has decreased at the Hulta site after reconstruction and the change of Code, Figure 6.19.

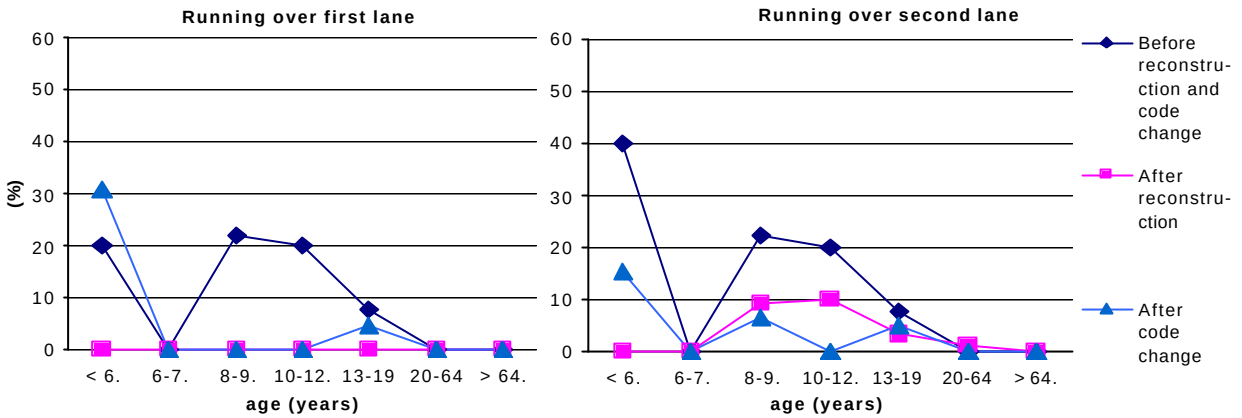

Figure 6.19. Percentage pedestrians running over the street when a car is present at the Hulta site divided into age groups and time periods.

At the Sjöbo site, running over the street has also decreased when a car is present, see Figure 6.20. As shown in the figure below, children ran over both the first and second lanes, before reconstruction. A higher share In the before and after situations 8% of the youngest children ran over the first lane. For children 6 to 7 years old, running over first lane has decreased by 25 percentage units to 0% after reconstruction and the Code change. For children 8 to 9 years old, running over the first lane has decreased from 46% to 12%. 10 to 12 years old also ran less over the first lane; it has decreased from 13% to 0%. No youths ran after the reconstruction and few, just 9%, ran before the reconstruction and Code change. No adults or elderly ran over the first lane before and after the reconstruction and Code change, which is also the case for the second lane. Here as well has the running decreased for children and youth. In the before situation, 14% of the youngest children ran over the second lane, in the after situation 10% ran over the second lane. As shown before many of these children walked with an older person.

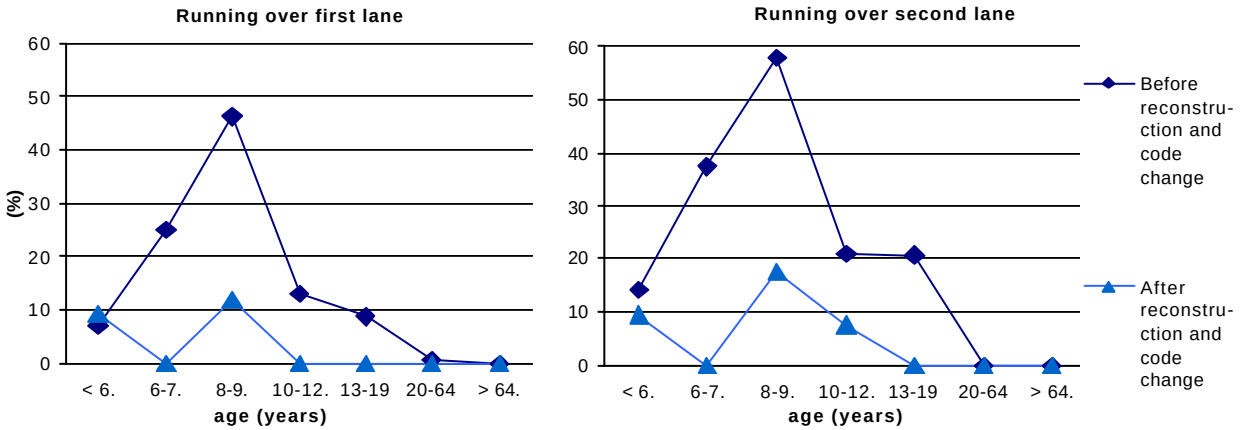

Figure 6.20. Percentage pedestrians running over the street when a car is present at the Sjöbo site divided into age groups and time periods.

None of the children 6 to 7 years old ran over the second lane after reconstruction and Code change; before, 38 % ran. At the second lane 8 to 9 year olds were those who also ran to the

highest extent, running 58% before the changes were made and 18% after, a decrease of 40 percentage units. For both children 10 to 12 years and youths, 21% ran over the second lane before reconstruction versus none ran after reconstruction.

At the upper crossing at Trandared School running over the street was not that common before the change of Code and remained unchanged even after, see Figure 6.21. The highest frequency of running over the first lane, 22%, was for children 6 to 7 years before the change of Code. After the change of Code, no 8 to 9 year olds ran. For all other ages the frequency has not changed and is either 0% or at least below 10%.

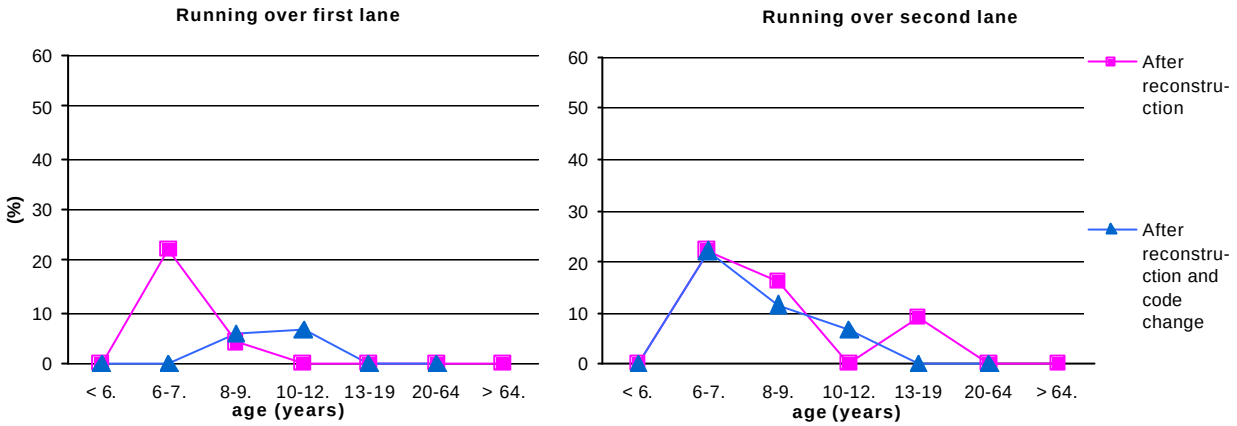

Figure 6.21. Percentage pedestrians running over the street when a car is present at the Trandared upper intersection divided into age groups and time periods.

Running over the second lane showed no clear changes. None of the youngest children ran over the second lane before or after the change of Code. 22% of the 6 to 7 year olds ran both before and after the change of Code. 16% of the 8 to 9 year olds ran before the change of Code and 12% ran after. For the 10 to 12 year olds it has increased by 7 percentage units from none running before the change of Code. For the youths it has decreased by 9 percentage units to 0% after the change of Code. None of the adults or elderly ran over the street before or after the change of Code.

At the lower crossing few children ran over the first lane, see Figure 6.22. Before the change of Code none of the youngest ran, 17% of the 6 to 7 year olds, 17% of the 8 to 9 year olds, and 21% of the 10 to 12 year olds ran. None of the youths, adults, and elderly ran.

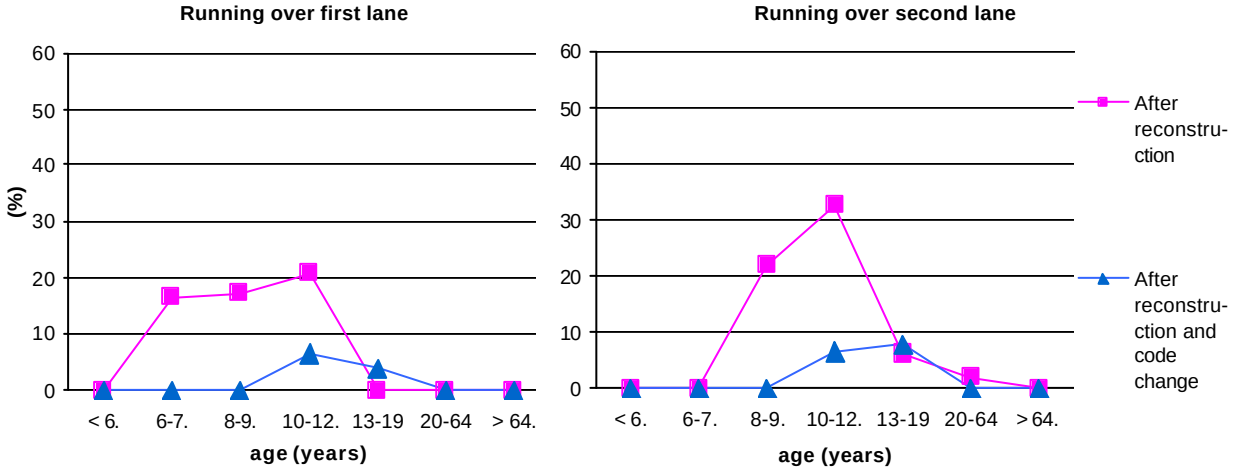

Figure 6.22. Percentage pedestrians running over the street when a car is present at the Trandared lower intersection divided into age groups and time periods.

After reconstruction very few ran; only the 10 to 12 year olds, 6%, and youths, 4%, ran. In the second lane none of the youngest up to 7 years old ran. 22% of the 8 to 9 year olds, 33% of the 10 to 12 year olds, and 6% of the youths ran before the change of Code. After the change of Code, only 6% of the 10 to 12 year olds and 8% of the youths ran. None of the other age groups ran after the change of Code.

Summary

Very few children ran before they reached the kerb in all three studied time periods at the studied sites. Children running over the street decreased at all sites except the Trandared upper crossing where the shares stayed unchanged after the change of Code. For youths the percentage of running over the street also decreased at all sites, but the Trandared lower crossing. The values were low even before.

Table 6.16. Percentage of pedestrian running over first lane when car present.

	Hulta			Sjöbo			Trandared upper		Trandared lower	
	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	After reconst-ruction	After change of Code	After reconst-ruction	After change of Code
Children (range)	10 (0-22)	0	10 (0-30*)	23 (8-46)	-	7 (0-11)	9 (0-24)	3 (0-6)	18 (0-21)	1 (0-5)
Youth	8	0	5	9	-	0	6	0	0	4
Adults	0	0	0	0	-	0	0	0	0	0
Elderly	0	0	0	0	-	0	0	-	0	0

30 % of the youngest age group ran, none of the other child age groups. None of them were a conflict situation.

(small numbers presents data based on less than ten observations)

Table 6.17. Percentage of pedestrian running over second lane when car present.

	Hulta			Sjöbo			Trandared upper		Trandared lower	
	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	After reconst-ruction	After change of Code	After reconst-ruction	After change of Code
Children (range)	24 (0-40)	6 (0-10)	2 (0-6)	31 (14-57)	-	8 (0-17)	10 (0-22)	10 (0-22)	25 (0-32)	1 (0-5)
Youth	7	3	3	20	-	0	9	0	6	6
Adults	0	0	0	0	-	0	0	0	0	0
Elderly	0	0	0	0	-	0	0	-	0	0

(small numbers presents data based on less than ten observations)

6.2.7 Pedestrian's head movements

Pedestrian's head movements have been assessed before and at the kerb when a car is or is not present (as was observed on the video). According to the expert survey, pedestrian head movements is an important parameter to describe safety for pedestrians, see Table 6.49, and are presented in detail in Appendix L. The Table 6.18 presents the percentage of pedestrians looking in both directions before the intersection during the three different time periods. Cells with no share means that no study, at that time period, was made or no person of that age group was observed meeting a car. Zero means that none of the observed persons looked in both directions. At the Hulta no clear pattern is shown. At the Sjöbo site the head movements had decreased after reconstruction and Code change, for all ages, but children 6 to 7 years old and the elderly people. At the Trandered upper crossing the head movements also had decreased except for children 6 to 7 years. At the Trandared lower crossing no children of the youngest age groups were observed. After the change of Code, none of the observed children looked in both directions before the crossing. Adults and the elderly looked more in both directions.

*Table 6.18. Percentage of pedestrians looking in both directions **before** the kerb when **no** car is present.*

	Hulta	Sjöbo	Trand upper	Trand lower
Before reconstruction				
< 6.	*0*	*40*	-	-
6-7.	*0*	*0*	-	-
8-9.	*43*	*43*	-	-
10-12.	*33*	*18*	-	-
13-19	*9*	*12*	-	-
20-64	*11*	*27*	-	-
64-	*0*	*14*	-	-
After reconstruction				
< 6.	*0*	-	*14*	*0*
6-7.	*100*	-	*0*	*0*
8-9.	*0*	-	*33*	*18*
10-12.	*100*	-	*15*	*7*
13-19	*22*	-	*0*	*25*
20-64	*11*	-	*9*	*0*
64-	*0*	-	*50*	*0*
After reconstruction and Code change				
< 6.	*0*	*0*	*0*	-
6-7.	*67*	*14*	*50*	-
8-9.	*20*	*10*	*7*	*0*
10-12.	*20*	*10*	*0*	*0*
13-19	*12*	*3*	*0*	*11*
20-64	*13*	*19*	*13*	*7*
64-	*40*	*17*	-	*33*

(small numbers presents data based on less than ten observations)

When no car is present, the share of looking in both directions at the kerb is higher than before the crossing, see Table 6.19. At the Hulta site it has decreased for the youngest age group and increased for the 6 to 7 year olds after the new law was enacted. For the age group 8 to 9 years old, it has decreased from 86% to 20% after reconstruction and the Code change. It has increased strongly from 0% to 80% for the age group 10 to 12 years. For youths in the before situation 63% looked in both directions, after reconstruction and Code change, it decreased to 43%. For adults and the elderly no pattern is shown. At the Sjöbo site looking in both directions has decreased for all ages, but the group children 6 to 7 years and 10 to 12 years. At the Trandered upper crossing no change in pattern could be observed.

*Table 6.19. Percentage of pedestrians looking in both directions **at** the kerb when **no** car is present.*

	Hulta	Sjöbo	Trand upper	Trand lower
Before reconstruction				
< 6.	*33*	*20*	-	-
6-7.	*0*	*0*	-	-
8-9.	*86*	*29*	-	-
10-12.	*0*	*28*	-	-
13-19	*63*	*47*	-	-
20-64	*67*	*65*	-	-
64-	*57*	*63*	-	-
After reconstruction				
< 6.	*25*	-	*29*	*0*
6-7.	*0*	-	*0*	*0*
8-9.	*67*	-	*42*	*29*
10-12.	*0*	-	*31*	*33*
13-19	*40*	-	*17*	*38*
20-64	*49*	-	*9*	*39*
64-	*67*	-	*50*	*44*
After reconstruction and Code change				
< 6.	*0*	*0*	*0*	-
6-7.	*67*	*29*	*50*	-
8-9.	*20*	*19*	*33*	*15*
10-12.	*80*	*38*	*40*	*36*
13-19	*43*	*21*	*0*	*22*
20-64	*58*	*39*	*44*	*53*
64-	*60*	*50*	-	*100*

(small numbers presents data based on less than ten observations)

At the lower crossing no children of the youngest age groups were observed not meeting a car. Looking in both directions decreased for children 8 to 9 years, but for this age group there were only 11 observations before reconstruction, see Appendix L. Also, the youths' share of looking in both directions at the kerb has decreased, for all other ages it has increased.

It was of interest to determine how the pedestrians' behaviour of looking around, when approaching the crossing and if a car is present, was modified after the changes had been made in the traffic environment. The data are presented in Appendix L. In Tables 6.20 and 6.21, below, are pedestrians looking in both directions and a car is present, divided into age groups presented. At the Hulta site it has both increased and decreased depending on the age group. No clear pattern was observed. At the Sjöbo site looking in both directions with a car present has increased from 13% to 40% for the age group 6 to 7 years and slightly for the age group 10 to 12 years, from 13% to 15%. For the other age groups it has decreased. At the Trandered upper crossing the shares of looking in both directions before the crossing were low before the change of Code and are the same for all ages after. At the Tarndared lower crossing also few pedestrians looked in both directions before the crossing with no children younger than 6 years looking, 17% of the 6 to 7 year olds, 4% of the 8 to 9 year olds, and 14% of the 10 to 12 year olds. After the change of Code very few children looked in both directions, where none of the two youngest age groups and 3% of the other child age groups. For youths it increased slightly from 3% to 8%. Few of the adults looked, around 3% in the before situation and 4% in the after situation. None of the elderly looked in the before situation, 6% in the after situation.

The share looking in both directions is higher at the kerb with a car present. For all ages at the Hulta site the share decreased after reconstruction and the Code change. The largest decrease is for the children; the decrease is smaller for adults and the elderly. At the Sjöbo site looking in both directions had increased for all child ages except for the youngest. For the youths it decreased slightly, and it decreased a little more for adults and the elderly.

*Table 6.20. Percentage of pedestrians looking in both directions **before** the kerb when **a** car is present.*

	Hulta	Sjöbo	Trand upper	Trand lower
Before reconstruction				
< 6.	*30*	*7*	-	-
6-7.	*20*	*13*	-	-
8-9.	*33*	*27*	-	-
10-12.	*20*	*13*	-	-
13-19	*20*	*41*	-	-
20-64	*24*	*30*	-	-
elderly	*20*	*32*	-	-
After reconstruction				
< 6.	*8*	-	*0*	*0*
6-7.	*33*	-	*22*	*17*
8-9.	*64*	-	*12*	*4*
10-12.	*10*	-	*12*	*14*
13-19	*16*	-	*8*	*3*
20-64	*24*	-	*16*	*4*
elderly	*9*	-	*20*	*0*
After reconstruction and Code change				
< 6.	*0*	*0*	*0*	*0*
6-7.	*17*	*40*	*22*	*0*
8-9.	*13*	*18*	*0*	*3*
10-12.	-	*15*	*10*	*3*
13-19	*12*	*4*	*0*	*8*
20-64	*13*	*14*	*16*	*3*
elderly	*25*	*9*	-	*6*

(small numbers presents data based on less than ten observations)

*Table 6.21. Percentage of pedestrians looking in both directions **at** the kerb when **a** car is present.*

Age	Hulta	Sjöbo	Trand upper	Trand lower
Before reconstruction				
< 6.	*50*	*36*	-	-
6-7.	*100*	*38*	-	-
8-9.	*78*	*62*	-	-
10-12.	*80*	*32*	-	-
13-19	*73*	*56*	-	-
20-64	*79*	*80*	-	-
elderly	*84*	*81*	-	-
After reconstruction				
< 6.	*8*	-	*0*	*0*
6-7.	*67*	-	*33*	*17*
8-9.	*64*	-	*28*	*22*
10-12.	*60*	-	*29*	*19*
13-19	*53*	-	*17*	*15*
20-64	*60*	-	*34*	*40*
elderly	*73*	-	*20*	*18*
After reconstruction and Code change				
< 6.	*15*	*24*	*0*	*0*
6-7.	*50*	*100*	*22*	*33*
8-9.	*40*	*71*	*13*	*17*
10-12.		*62*	*27*	*23*
13-19	*45*	*48*	*20*	*42*
20-64	*66*	*65*	*34*	*61*
elderly	*75*	*74*	-	*63*

(small numbers presents data based on less than ten observations)

At the Trandared upper crossing, looking in both directions decreased slightly for the children, increased slightly for the youths, and is unchanged for adults and the elderly after

the change of Code. At the Trandared lower crossing it has increased for all ages, but for the youngest, it is unchanged at 0% and has slightly decreased for the children. When comparing the different sites, Hulta is the place where pedestrians look in both directions at the kerb and a car is present to the highest extent. This is also the case after reconstruction. After the change of Code Trandared upper is the intersection with the lowest share of looking in both directions at the kerb. The Sjöbo site is the site where children look in both directions to the highest extent after reconstruction and change of Code. See comparison in Figure 6.23 below.

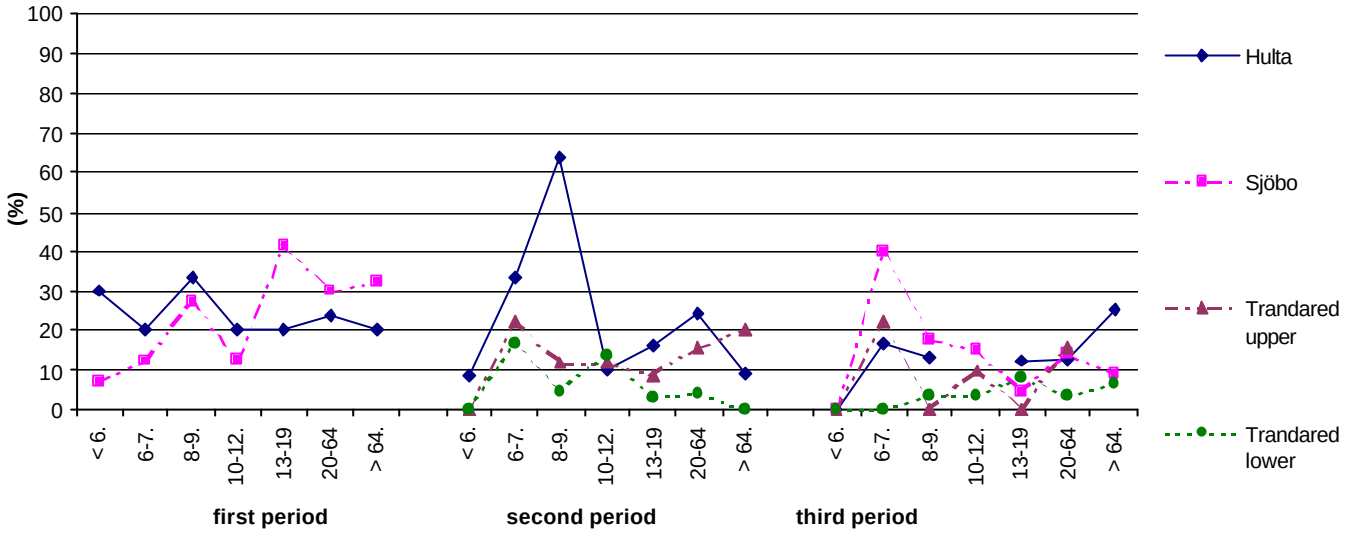

Figure 6.23. Percentage of pedestrians looking in both directions at kerb when a car is present.

When crossing the street the pedestrian should at least look to the left before the intersection and at the kerb to detect cars. The pedestrian should, therefore, at least also look to the right at the kerb or when walking in the first lane to detect oncoming cars in the second lane. Table 6.22 presents looking only to the left when approaching the intersection. At the Hulta site are low shares of looking only to the left before the crossing for all ages at all three time periods. These shares are lower than looking in both directions except for children 6 to 7 years after reconstruction and Code change. 33% of them look only to the left before the crossing. For all ages, except the elderly, looking only to the left at the kerb increased after reconstruction and Code change at the Hulta site. At the Sjöbo site there is no change in looking only to the left before the crossing. Looking only to the left at the kerb decreased for all ages.

Table 6.22. Percentage pedestrians looking only to the left before intersection and at the kerb when a car is present.

	Hulta		Sjöbo		Trand upper		Trand lower	
	Before intersection	At kerb	Before intersection	At kerb	Before intersection	At kerb	Before intersection	At kerb
Before reconstruction								
< 6.	*10*	*10*	*7*	*7*	-	-	-	-
6-7.	*20*	*0*	*13*	*13*	-	-	-	-
8-9.	*0*	*0*	*12*	*15*	-	-	-	-
10-12.	*0*	*0*	*15*	*0*	-	-	-	-
13-19	*0*	*8*	*15*	*18*	-	-	-	-
20-64	*2*	*7*	*12*	*7*	-	-	-	-
> 64	*4*	*8*	*9*	*3*	-	-	-	-
After reconstruction								
< 6.	*0*	*0*	-	-	*50*	*33*	*33*	*0*
6-7.	*0*	*33*	-	-	*56*	*22*	*67*	*83*
8-9.	*0*	*9*	-	-	*60*	*28*	*48*	*48*
10-12.	*10*	*20*	-	-	*35*	*35*	*33*	*33*
13-19	*3*	*19*	-	-	*50*	*8*	*27*	*30*
20-64	*5*	*23*	-	-	*55*	*39*	*19*	*29*
> 64	*9*	*18*	-	-	*60*	*60*	*18*	*18*
After reconstruction and Code change								
< 6.	*0*	*23*	*5*	*0*	*43*	*14*	*0*	*0*
6-7.	*33*	*50*	*20*	*0*	*67*	*33*	*67*	*67*
8-9.	*7*	*40*	*6*	*6*	*46*	*33*	*34*	*28*
10-12.			*15*	*0*	*30*	*23*	*23*	*26*
13-19	*9*	*8*	*17*	*4*	*70*	*40*	*27*	*31*
20-64	*5*	*13*	*16*	*6*	*63*	*31*	*21*	*15*
> 64	*0*	*0*	*0*	*0*	-	-	*6*	*6*

(small numbers presents data based on less than ten observations)

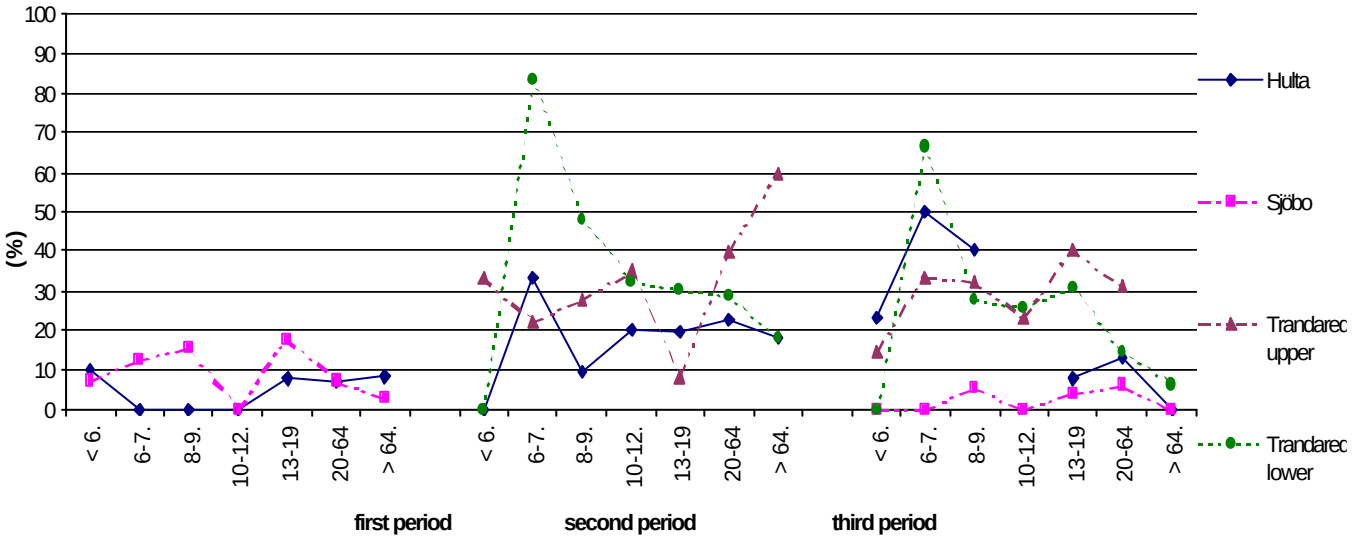

Figure 6.24. Percentage pedestrians looking only to the left at kerb when a car is present.

When meeting a car, looking only to the right at the kerb does not change much at the Hulta and Sjöbo sites and at the upper crossing at Trandared. At the lower sites at Trandared School the age group 8 to 9 year olds especially look more to the right only, for the other ages the frequencies are similar to before the change of Code.

Table 6.23. Percentage pedestrians looking only to the right at the kerb and at the first lane when a car is present.

Age	Hulta At kerb	Hulta First lane	Sjöbo At kerb	Sjöbo First lane	Trand upper At kerb	Trand upper First lane	Trand lower At kerb	Trand lower First lane
Before reconstruction								
< 6.	20	30	36	7	-	-	-	-
6-7.	0	0	0	0	-	-	-	-
8-9.	0	33	4	23	-	-	-	-
10-12.	0	20	5	18	-	-	-	-
13-19	5	30	9	26	-	-	-	-
20-64	2	25	4	24	-	-	-	-
> 64	0	12	4	9	-	-	-	-
After reconstruction								
< 6.	17	17	-	-	0	17	0	0
6-7.	0	0	-	-	11	33	0	33
8-9.	9	0	-	-	20	40	0	48
10-12.	10	20	-	-	6	41	33	58
13-19	8	23	-	-	33	42	27	58
20-64	2	29	-	-	11	45	8	54
> 64	0	23	-	-	20	60	9	36
After reconstruction and Code change								
< 6.	8	8	14	14	0	14	0	0
6-7.	0	33	0	20	22	56	0	100
8-9.	7	20	0	0	10	35	24	45
10-12.			0	8	13	20	19	61
13-19	17	20	4	22	0	40	19	50
20-64	6	19	3	18	6	50	8	50
> 64	0	8	0	0	-	-	6	44

(small numbers presents data based on less than ten observations)

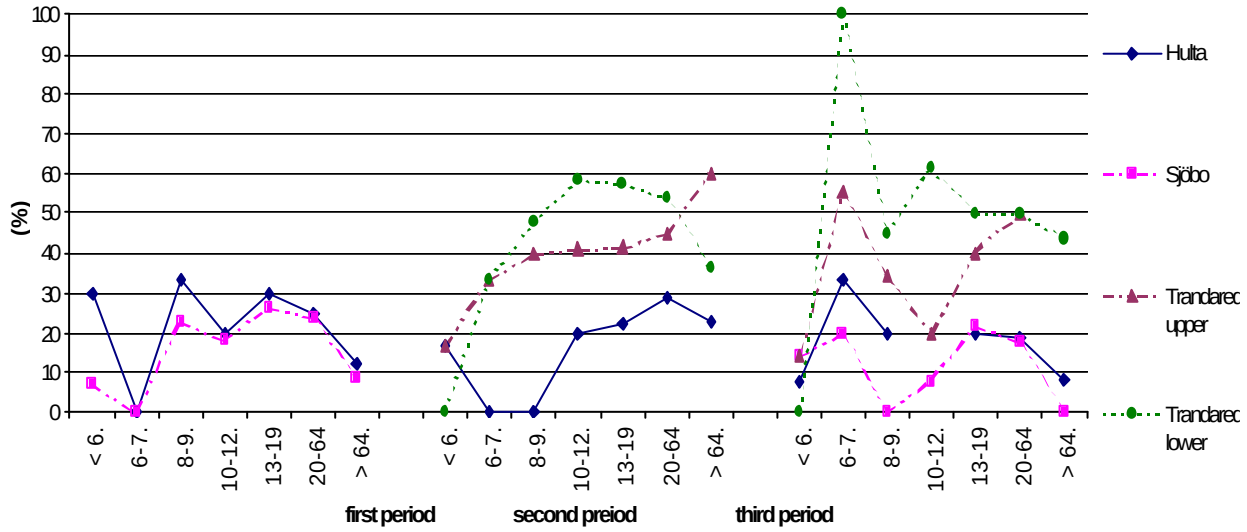

Figure 6.25. Percentage pedestrians looking only to the right when crossing first lane when a car is present.

When crossing the first lane while meeting a car, looking only to the right does not change much at the Hulta and Sjöbo sites. For the child age groups at the Trandared upper crossing the frequencies both increased and decreased. At the Trandared lower crossing the frequency of looking to the right increased substantially from 33 to 100% for the age group 6 to 7 years. For the other age groups the frequencies are similar to before the change of Code.

Summary

At the Hulta site there were less head movements of children after the reconstruction. However, at the Sjöbo site there were more. At the two crossings at Trandared School the looking in both directions was as before and increased somewhat after change of Code.

6.2.8 Pedestrian's stopping behaviour in relation to if car driver give way

The pedestrian's stopping behaviour was assessed (as observed on the video). According to the expert survey the pedestrian's stopping behaviour is an important parameter to describe pedestrian safety, see Table 6.49. Appendix M contains all the occasions when a pedestrian will meet a car at a crossing. The data are divided into a pedestrian stopping at kerb or not and a car driver giving way or not. The data are also divided into ages for children 0 to 12 years, youths 13 to 19 years, adults 20 to 64 years, and the elderly 65 years or older.

At the Hulta site the share of pedestrians stopping at the kerb decreases for all ages, but the elderly, see Table 6.24. For children it decreases from 61% to 41%, for youths from 40% to 14%, and for adults from 49% to 32%. Children still stop more often at the kerb than youths and adults. For the elderly, the stopping at the kerb frequency increases from 56% to 77%, which is much higher than for the other age groups. In Table 6.25 is the share of pedestrians given way to by car drivers presented.

Table 6.24. Percentage pedestrians that stops at kerb.

	Hulta			Sjöbo			Trandared upper			Trandared lower		
	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code
Children	61	55	41	52	-	29	-	32	19	-	22	16
Youth	40	27	14	30	-	38	-	7	0	-	17	24
Adults	49	39	32	40	-	39	-	31	9	-	29	22
Elderly	56	40	77	61	-	32	-	17	-	-	36	33

(small numbers presents data based on less than ten observations)

It shows that at all sites, the frequency of pedestrians given way to increased after changes were made for all age groups, except for youths in the Trandared upper crossing where it remained unchanged.

Table 6.25. Percentage pedestrians given way to by a car driver.

	Hulta			Sjöbo			Trandared upper			Trandared lower		
	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code
Children	9	47	54	21	-	25	-	47	72	-	51	58
Youth	10	36	59	16	-	39	-	64	64	-	53	59
Adults	12	42	51	16	-	34	-	50	78	-	51	70
Elderly	11	40	61	19	-	27	-	17	-	-	43	73

(smaller numbers presents data based on less than ten observations)

The share of persons who stop at the kerb *and are given way to* by car drivers is also presented in Appendix M. For children in Hulta in the before situation, 9% had stopped at the kerb and were given way to by a car driver, this increased to 23% in the after situation. The figures for youths, the age group with the lowest figures, were 4% in the before situation and 10% in the after situation. For adults in the before situation 8% stopped at the kerb and any car gave way,

in the after situation 18% were given way to. The highest figures are shown for the elderly, where 11% rose to 38% from the before situation to the after situation when they were standing at the kerb and were given way to. The highest shares of being given way to in the after situation are all pedestrians except the elderly who always have to stop at the kerb and are given way to by a car driver.

In total 54% of the children are given way to in the after situation, 59% of the youths, 51% of the adults, and 61% of the elderly. In the before situation 9% of all children, 10% of the youth, 12% of the adults, and 11% of the elderly had to stop at the kerb before they were given way to in the before situation. Also, all the elderly that were given way to had stopped at the kerb.

At the Sjöbo site the percent of stopping at the kerb decreased for children from 52% to 29% after the reconstruction and Code change. For the youth the share increased from 30% to 38%. For adults the share was unchanged, 40% stopped at the kerb in the before situation and 39% in the after situation. The largest decrease is shown for the elderly where 61% stopped at the kerb in the before situation and 32% after the reconstruction and Code change. The share of pedestrians that has stopped at the kerb and is given way to has not changed much after reconstruction and Code change. For children it is unchanged at 11%, for youths it increases from 8% to 12%, and for adults it increases from 6% to 14%. For the elderly it decreases from 19% to 8%. The share of pedestrians that never have to stop and are given way to has increased for all ages. For children in the before situation the share is 10%, after reconstruction and Code change the share is 14%, the lowest share for any age group that is given way to, but never has to stop at the kerb. Of the youth 8% never have to stop at the kerb and are given way to in the before situation, in the after situation 27% are given way to, the highest share shown. For the adults the share is 10% in the before situation, 20% in the after. None of the elderly that did not stop at the kerb were given way in the before situation, in the after situation, though, 19 % of the elderly stopped and were given way to. Totally, 25% of the children, 39% of the youth, 34% of the adults, and 27% of the elderly were given way after the reconstruction and Code change. The lowest share was shown for children, then the elderly. In the before situation 22% of all children, 16% of the youth, 16% of the adults, and 19% of the elderly were given way to by a car driver. Here, the highest share was for the children. This means that the increase for pedestrians who were given way to was lowest for the children, an increase of only 3 percentage units. For youths the increase was 23 percentage units, adults 18 percentage units, and for the elderly an increase of 8 percentage units.

At the upper crossing in Trandared the share of stopping at the kerb did decrease after the change of Code. In the before situation where people had to stop at the kerb, versus after the change of Code, the percentages are as follows: for children, 32% before and 19% after; for youths, 7% before, 0% after; for adults, 31% before versus 9% after; the elderly, 17% before change of Code, after no elderly were observed. The share of pedestrians that has stopped at the kerb and is given way to by a car driver has decreased as follows: for children 14% before down to 11% after; for youth, 7% to 0%; for adult, 19% versus 9%; for elderly 0% for before change of Code and no elderly were observed after change of Code. The share of pedestrians that never stopped at the kerb increased after change of Code as evidenced with the following shares: for children, 33% before increased to 61% after; for youth, 57% to 64%; for adult, 31% versus 69%. The total of children given way to was 47% before the change of Code, 72% after. For youths the share was 64% for both before and after. Before the change of Code, 50% of the adults were given way to, after 78%. 17% of the elderly were given way to in the before situation, and no elderly were observed in the after situation.

At the lower crossing in Trandared 22% of the children stopped at the kerb before the change of Code, 16 % after; for youth, 17 % before increased to 24% after; for adults, 29% before

then down to 22% after; for the elderly, the highest share, 36% before versus 33% after. For all age groups except youths the share of pedestrians that had stopped at the kerb and were given way to decreased. The share of pedestrians who did not stop at kerb and was given way to increased for all age groups.

Totally, pedestrians given way to have increased for all age groups after the change of Code at the Trandered lower crossing. For children the share were 51 % in the before situation and 58 % in the after situation; The share of youths, 53% before and 59% after; for adults the share was 51% before and 70% after. 43 % of all elderly were given way to in the before situation and 73 % in the after situation, this is the largest increase with 30 percentage units.

Summary

At the Hulta site the frequency of pedestrians stopping at the kerb decreased for all age groups after reconstruction. For children it decreased by 10 %, by more for the older age groups. The largest reduction was for youths, which was also the case after the change of Code. The change of Code made the elderly stop at the kerb more often.

Table 6.26. Change in frequency of stopping at the kerb for pedestrians at the Hulta site.

Hulta		After reconstruction compared with before situation.	After reconstruction and change of Code compared with before situation.	After change of Code compared with before change of Code.
	Children	-10 %	-33 %	-25 %
	Youth	-32 %	-65 %	-48 %
	Adults	-20 %	-35 %	-18 %
	Elderly	-29 %	+37 %	+92 %

The reconstruction and change of Code at the Sjöbo site reduced the children stopping at the kerb by 44% and by 48% for the elderly. Youths stopped more often than before, for adults the stopping frequency was almost unchanged.

Table 6.27. Change in frequency of stopping at the kerb for pedestrians at the Sjöbo site.

Sjöbo		After reconstruction and change of Code compared with before situation.
	Children	-44 %
	Youth	+26 %
	Adults	-2 %
	Elderly	-48 %

The frequency of stopping at the kerb at the upper crossing in Trandared decreased for the observed age groups, but mostly for adults. At the lower crossing it decreased most for children by 33%. It also decreased for adults and the elderly, but increased for youths, see Table 6.27. Small figures in the table present data based on less than ten observations.

Table 6.28. Change in frequency of stopping at the kerb for pedestrians in Trandared.

		After change of Code compared with before change of Code.			After change of Code compared with before change of Code.
Trandared upper	Children	-41%	Trandared lower	Children	-33 %
	Youth	From 7% to 0%		Youth	+41 %
	Adults	-71%		Adults	-24 %
	Elderly	-		Elderly	-8 %

(small numbers presents data based on less than ten observations)

The frequency of children stopping at the kerb decreased at all sites, most at the Sjöbo site. At that site the stopping frequency also decreased mainly for the elderly.

The frequency of being given way to by a car driver at the Hulta site has improved mostly for children, both after reconstruction and the change of Code, Table 6.29. The change of Code itself gave most to the youths, though. The elderly are those who are given way to the most after all changes are made, 61%.

Table 6.29. Change in frequency of given way for pedestrians at the Hulta site.

Hulta		After reconstruction compared with before situation.	After reconstruction and change of Code compared with before situation.	After change of Code compared with before change of Code.
	Children	Five times more	Six times more	+15 %
	Youth	More than tree times more	Close to six times more	+64 %
	Adults	More than tree times more	More than four times more	+21 %
	Elderly	More than tree times more	More than five times more	+52 %

At the Sjöbo site the frequency of being given way increased mostly for youths and adults after the changes were made. It is also those groups that are given way, to the highest extent.

Table 6.30. Change in frequency of given way for pedestrians at the Sjöbo site.

Sjöbo	After reconstruction and change of Code compared with before situation.
Children	+19 %
Youth	More than two times more
Adults	More than two times more
Elderly	+42 %

At the upper crossing in Trandared after the change of Code, the given way frequency increased most for adults, the group that is given way to the highest extent with 78%. 72% of the children are given way to by a car driver.

Table 6.31. Change in frequency of given way for pedestrians in Trandared.

		After change of Code compared with before change of Code.			After change of Code compared with before change of Code.
Trandared upper	Children	+53 %	Trandared lower	Children	+14 %
	Youth	No change		Youth	+11 %
	Adults	+56 %		Adults	+37 %
	Elderly	-		Elderly	+70 %

(small numbers presents data based on less than ten observations)

At the lower crossing the frequency increased mostly for the elderly. It is also this group that is most often is given way to, 73% of the elderly are given way by a car driver. In this crossing the children are those who are given way to the lowest extent.

6.2.9 Accepted time gap

Two different types of accepted time gaps were calculated, as observed from the video. The first type, “car-car”, means the time gap between two cars travelling in the same direction that the pedestrian chooses in order to cross the street. It is the occasions when the pedestrian meets one or more cars, but when no car driver gives way to the pedestrian. The second time gap “pedestrian-car” is the time gaps from the pedestrian, who starts to cross the street, to the

car, which enters the collision area. The result is shown in Appendix R. The times are divided in the intervals less than 5 s, 5 to 10 s, and more than 10 s. Most often when the pedestrian choose to cross the street at a time gap more than 10 s it means at an uninfluenced crossing. If the car is travelling in 50 km/h a time gap of 10 s means a distance of 139 m, if the speed is 30 km/h the distance is 83 m. How easy it is to cross the street is, of course, dependent on the flow of vehicles. At the Hulta crossing most of the children at all three time periods choose to cross the street at a long time gap. At no time period did children, as well youth and the elderly, cross the street in a time gap between two cars or between themselves and an oncoming car of less than 5 s. It is adults that cross the street in a time gap of less than 5 s before and after reconstruction. After the change of Code no person crossed the street in a time gap of less than 5 s. At the Sjöbo site some of the children crossed the street in time gaps of less than 5 s, but few persons of older age did. After reconstruction no child or any older persons crossed the street at a time gap of less than 5 s. At the Trandared upper crossing some adults crossed the street at a time gap of less than 5 s before the change of Code. Nobody did after the change of Code. At the Trandared lower crossing all persons before and after the change of Code crossed the street at time gaps of more than 10 s. At all sites most of the pedestrians crossed the street at time gaps of more than 10 s. How easy it is to cross the street is dependent on the flow of vehicles. At all the studied sites the vehicle flow is low, therefore, indicating long time gaps between cars. It is also dependent on the speeds of the cars. After reconstruction more car drivers were giving way to the pedestrians.

Summary

It was only at the Sjöbo site that some children crossed the street with a time gap of less than 5 s between cars. Other persons except the elderly also did. Most of the pedestrians crossed the street in time gaps higher than 5 s, however, after reconstruction and the change of Code nobody crossed at time gaps of less than 5 s.

6.2.10 Pedestrian's who are given way in relation to the direction of motor traffic

A vehicle approaching from a pedestrian's right or left can have an effect on whether the car driver gives way or not. If the car is coming from the left it is driving on the first and closest lane, if it is coming from the right it is driving on the second or furthest lane. The car driver can also be influenced when coming to or leaving the intersection and he or she meets the pedestrian. There can also be differences in the frequency pedestrians are given way between turning vehicles and vehicles driving through the intersection. All these "hypotheses" are explored below. The data are presented in detail in Appendix N and Appendix O. In Figures the below, 6.26a and 6.26b, are the percentages of pedestrians given way to by the first car driver that the pedestrian meet coming to and leaving the intersection presented. Due to the low number of observations for each intersection the figure shows only the data based on all sites together. Totally and before reconstruction, the shares given way to are low for all age groups. After reconstruction the youngest children and the elderly are those that are given way, to the lowest extent in both directions. The youngest children are regularly in a group with an adult person.

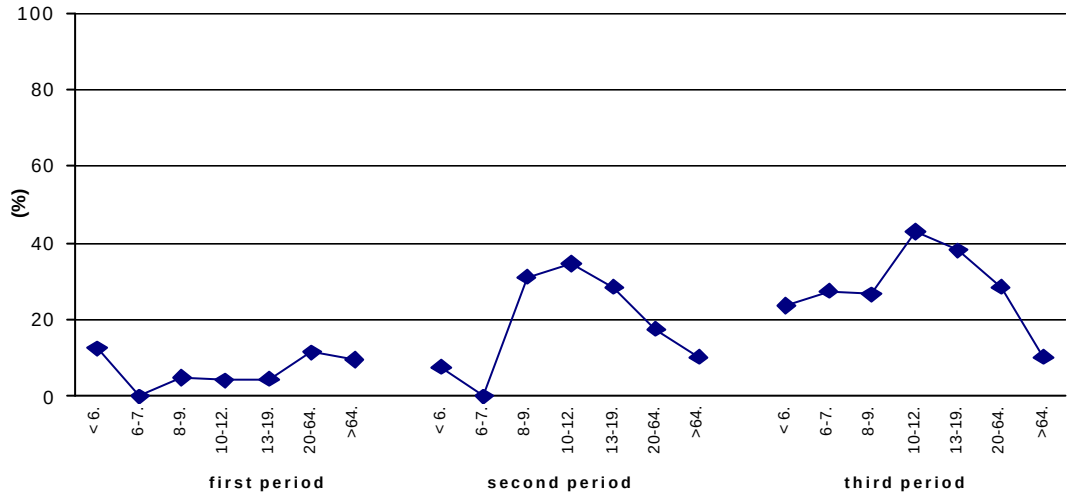

Figure 6.26a. Percentage of pedestrians given way to by the first car driver with direction coming to the intersection, data for all sites.

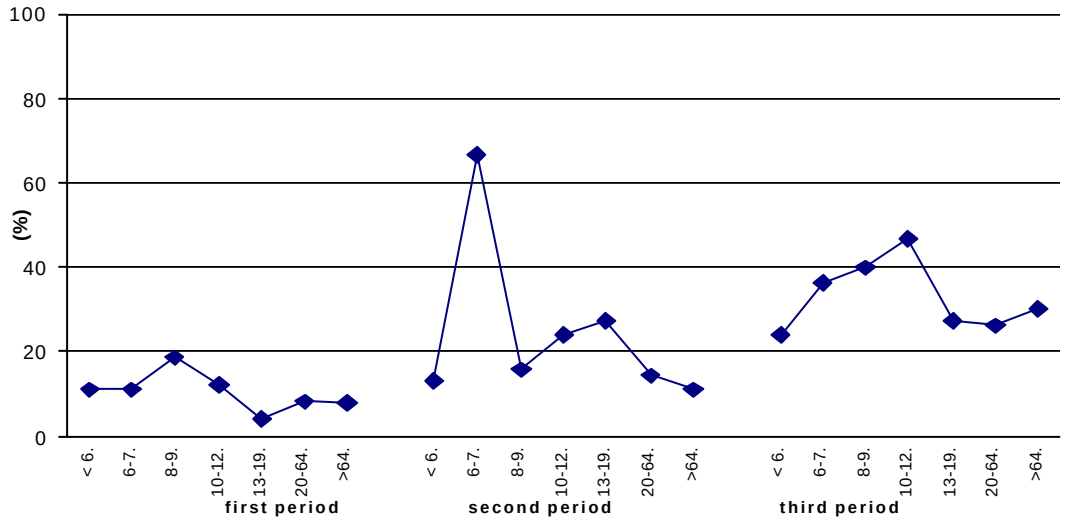

Figure 6.26b. Percentage of pedestrians given way to by the first car driver with direction leaving the intersection, data for all sites.

It has been shown that car drivers give way to a higher extent after reconstruction and after the change of Code, both car drivers leaving the intersection and arriving to the intersection. In Figures 6.27a and 6.27b are presented the combined data based on all sites. In the two intersections at Trandared School (see Appendix N) it is clear that after reconstruction the car driver leaving the intersection gives way to a greater extent than the car driver coming to the intersection. After the change of Code the difference is minimal between the two vehicle directions at the Trandared intersections. There is no discernible difference between the vehicle directions at the Hulta site during the three time periods. Car drivers coming to the Sjöbo site compared with those leaving give way to a higher extent to pedestrians older than seven years. Before reconstruction and the change of Code the giving way frequencies were low for both vehicle directions at the Sjöbo site.

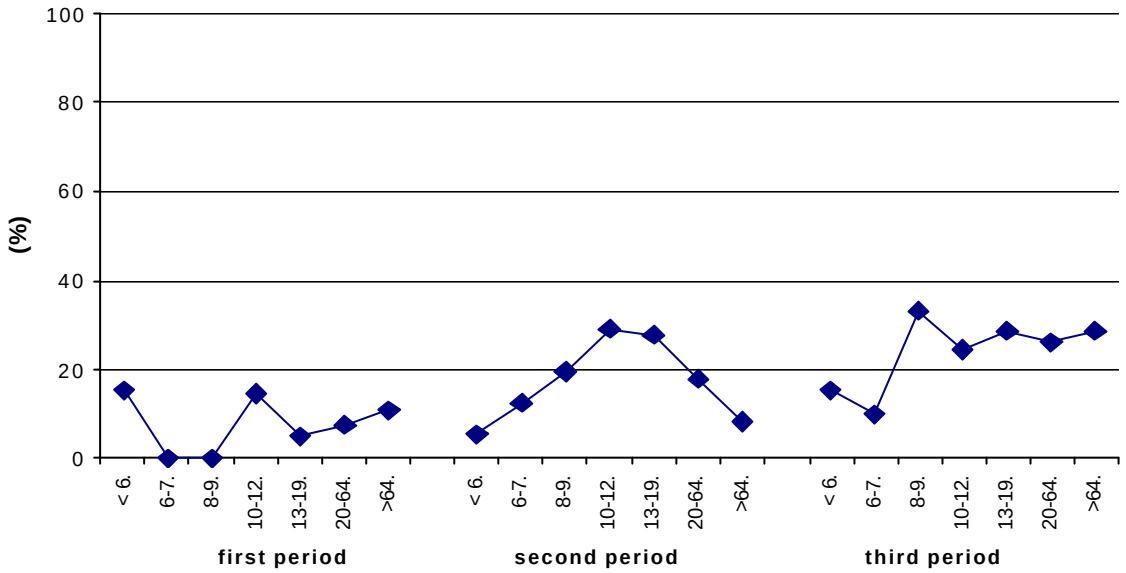

Figure 6.27a. Percentage of pedestrians given way to by the first car drivers with direction coming from the left, data for all sites.

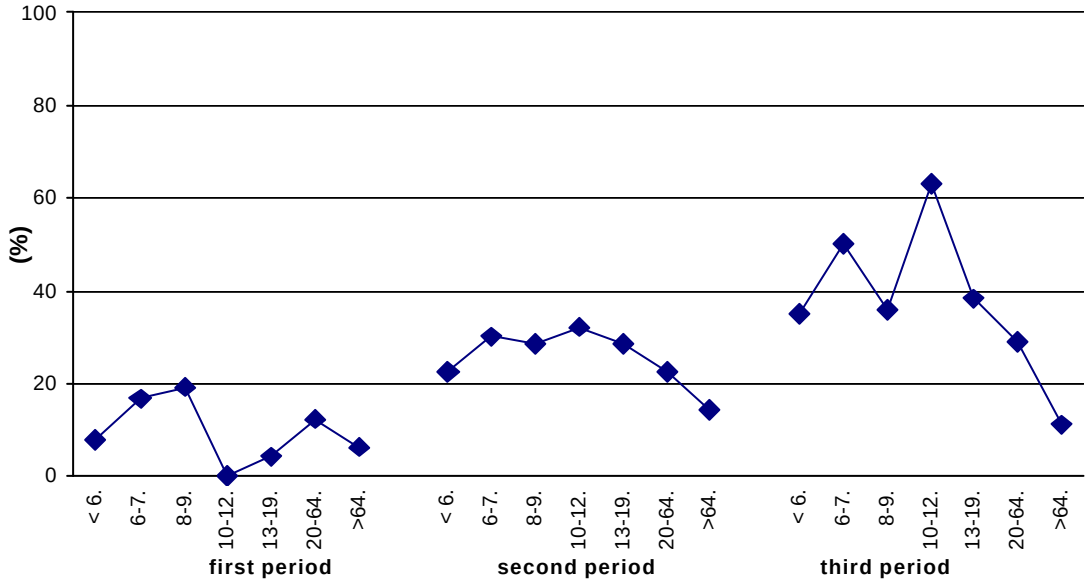

Figure 6.27b. Percentage of pedestrians given way to by the first car driver with direction coming from the righ, data for all sites.

There are also differences between the pedestrians given way to dependent on if the car driver is coming from the right or left. After reconstruction and change of Code the percentage of pedestrians given way by the first car driver is greater if the car driver is coming from the right. There was no difference before the changes were made. In total, after reconstruction and the Code change, to the lowest extent it is the youngest and oldest age groups that are given way for both directions. Before the changes the frequency was lower for all age groups.

There are no significant differences when comparing the frequency of pedestrians given way to by cars coming to or leaving the intersection, for all sites together. However, there are differences for distinct age groups for various time periods, but not for the whole material, see Figure 6.28 below. The figure below also shows the percentage difference between pedestrians given way to by a car driver and by the first car driver; sometimes the first car driver may or may not give way to the pedestrian No differences are shown between the two vehicle directions. After reconstruction and the change of Code it is the oldest and the youngest age groups that are given way to the lowest extent.

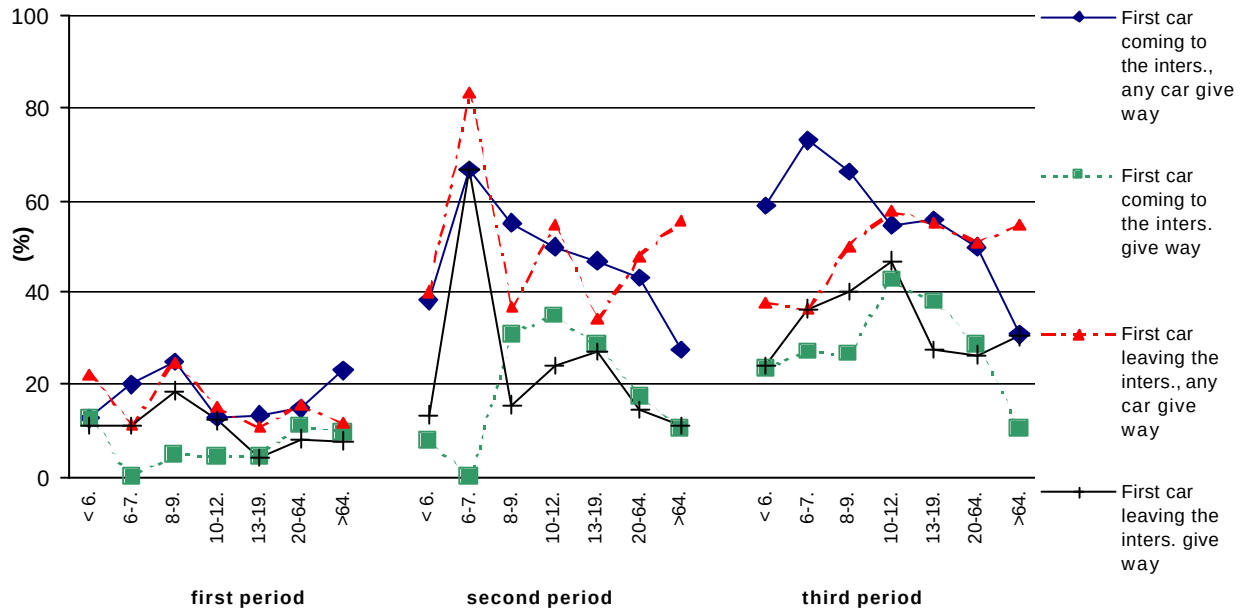

Figure 6.28. Percentage pedestrians given way to by car drivers leaving and coming to the intersection. Data based on all sites together.

After the change of Code it is the first car drivers coming from the right who give way more often than car drivers coming from the left. This is the case for the age groups children and youths. The elderly are more often given way to by the first vehicle coming from the left, shown below in Figure 6.29. As for cars leaving and coming to the intersection, whether coming from the right or left, it is the first car driver that the pedestrian meets who occasionally gives way.

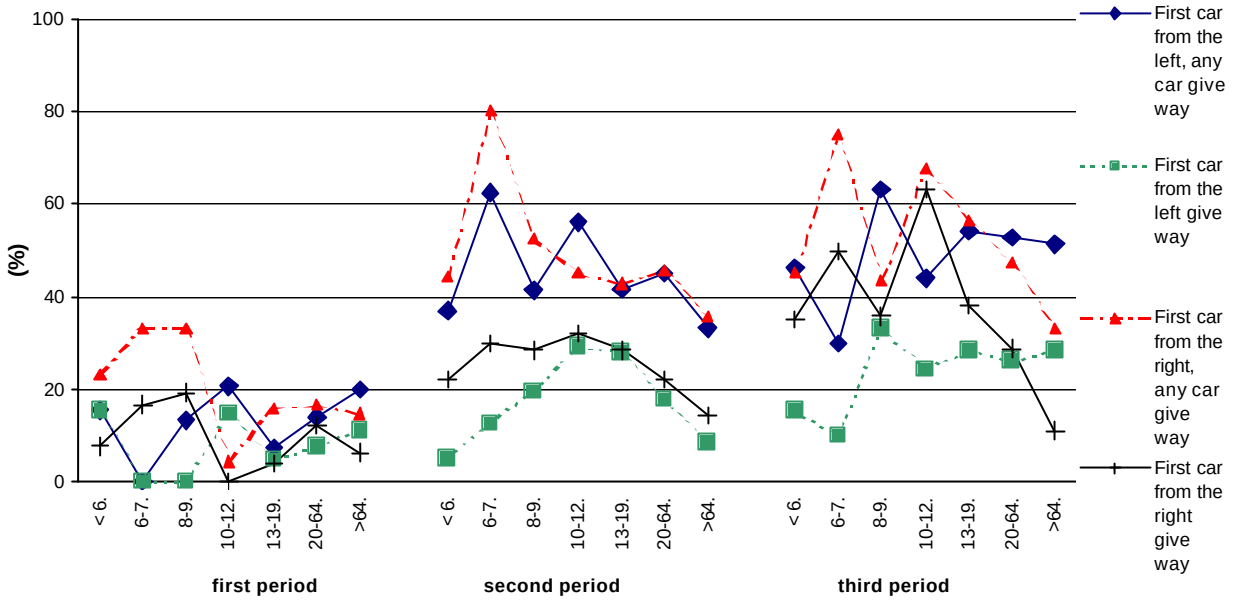

Figure 6.29. Percentage pedestrians given way to by car drivers coming from the right and from the left. Based on data from all sites together.

In the studied sites, not many of the vehicles were turning; therefore, few pedestrians met a turning vehicle as the first vehicle. It is clear, though, that turning vehicles give way to a higher extent after reconstruction. Although the percentages are based on a low number of after the change of Code observations, the shares are still somewhat low, but much higher than before reconstruction and the Code change. Differences between ages cannot be examined. See Figure 6.30 below.

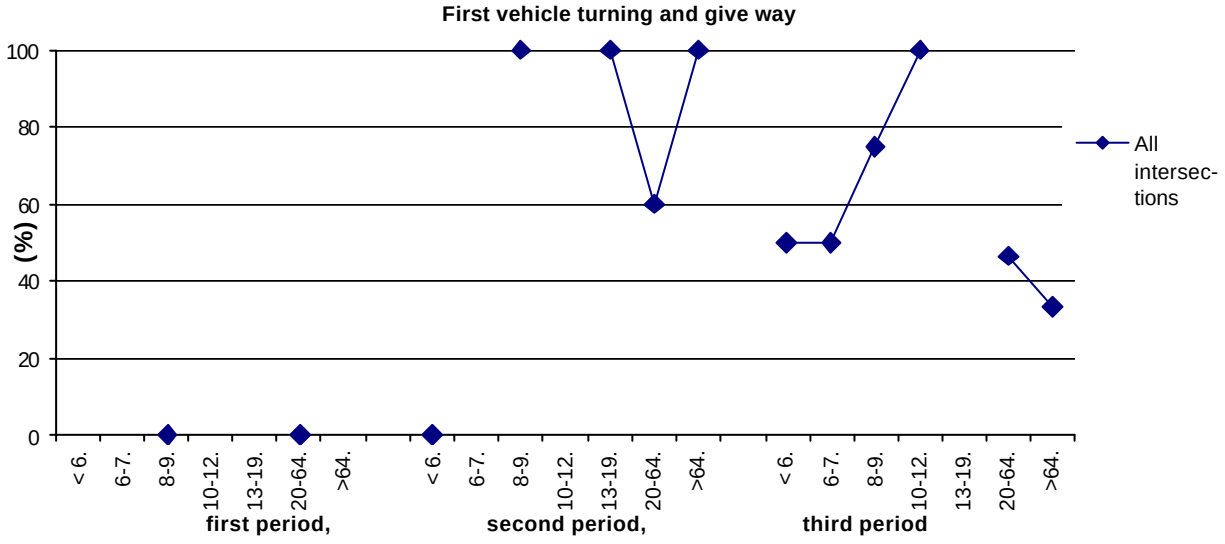

Figure 6.30. Percentage pedestrians given way to turning vehicles. Based on data from all sites together.

Summary

The share of pedestrians given way to by car drivers increases both if the car drivers coming from the left and right, and also if the car driver is coming to or leaving the intersection. No "significant" differences are shown between the car directions.

6.2.11 Number or cars passing when pedestrian intend to cross the road

The car drivers' behaviour towards pedestrians can be expressed as the number of cars passing over the zebra crossing when the pedestrians intend to cross the road, i.e. when the pedestrians are walking at the kerb or waiting at the kerb. It can also be expressed as the percentage of all car drivers who meet and give way to a pedestrian. In Appendix P are presented the detailed data. In Figure 6.31 are the results shown for all sites when a pedestrian intends to pass through the site.

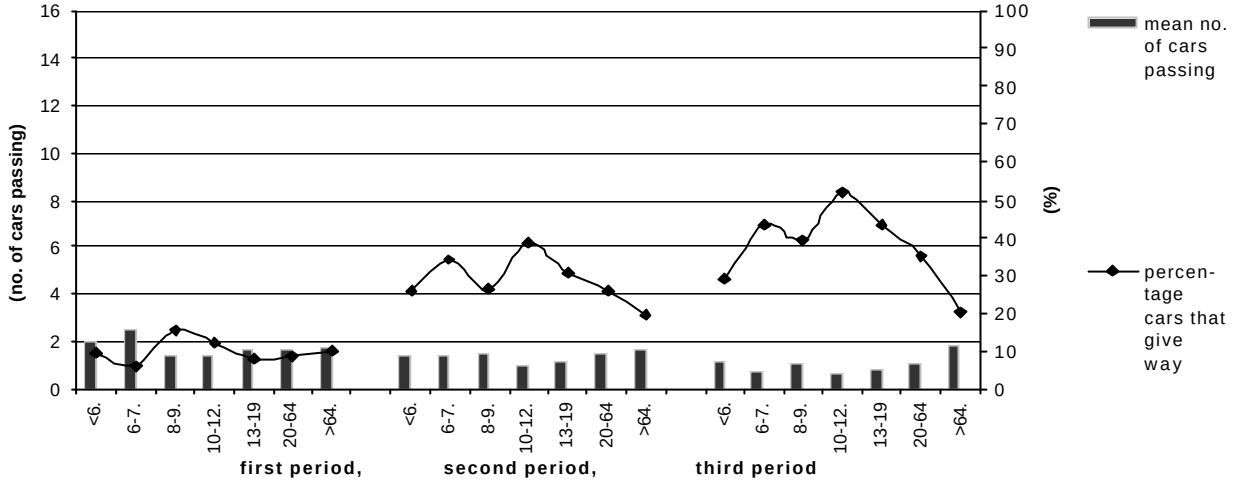

Figure 6.31. Mean number of cars passing the zebra crossing and percentage of car drivers giving way when a pedestrian intends to cross the intersection.

As shown in Figure 6.31 the share of car drivers giving way increases from around 10% for all ages before reconstruction, to between 20 and 52% after reconstruction and the Code change, depending on the pedestrians' age. Before reconstruction around 10% of all car drivers gave way to a pedestrian that intended to cross the road. There are some small differences between the age groups: children 6 to 7 years are those that the car drivers give way to the lowest extent, 6%. Children 8 to 9 years and 10 to 12 years are those that the car drivers give way to the highest extent, 15% and 12% respectively. After reconstruction the percentage of car drivers giving way increases, but now there are larger differences between the age groups of the pedestrians. Children 10 to 12 years are given way to the highest extent, 38%, children younger than six years, 25%, and the elderly, 20% are given way to the lowest extent. An adult person most often accompanies the youngest children, 25% of the car drivers give way to the adults after reconstruction.

After the change of Code the differences are even larger between the each age group. Children of the ages 10 to 12 years are given way the most often, 52%. For the youngest children the percentage of car drivers giving way has increased 5 percentage units to 30%; for the elderly the car driver does not give way more than before the change of Code.

The mean number of cars passing over the zebra crossing when a pedestrian intends to cross the road decreases from between 1.5 to 2 cars before reconstruction to between 0.5 to 1 car after reconstruction and the Code change. After reconstruction and the change of Code the highest values are shown for elderly people.

The number of car drivers that pass over the zebra crossing when a pedestrian is walking or standing at the kerb is presented in the figures below. For all sites combined the shares of car drivers giving way to pedestrians at the kerb are the same as for the total pedestrian passes shown in the figure on previous page. After the change of Code and reconstruction the

percentage of car drivers giving way to pedestrians is higher than for the total pedestrian passes. At the kerb it is the youngest children and the elderly that the car drivers give way to the lowest extent, meaning that the highest share of car drivers are passing when an elderly is present. The mean number of car drivers passing over the zebra crossing when pedestrians are present at the kerb is also lower than for the total pedestrian passes.

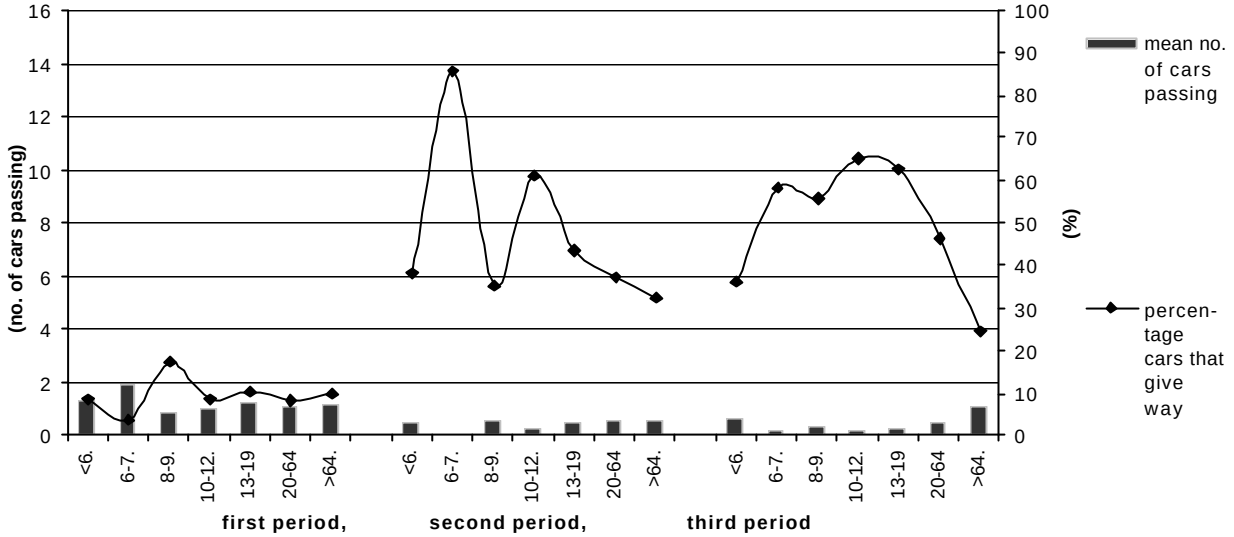

Figure 6.32. Number of cars passing the zebra crossing and percentage of car drivers giving way when pedestrian standing or walking at zebra crossing.

When dividing the data into the different sites, it is possible to also show the maximum number of cars passing when a pedestrian intends to cross the road; though, the maximum number of cars passing is of no interest as a sum for all sites. In Figure 6.33 is presented the data for the Hulta site. The mean number of cars passing decreases from 1 to 3 depending on the age of the pedestrian before reconstruction, and from 0.5 to 1.8 after reconstruction and the change of Code; the highest number of cars that pass is when an elderly person is standing at the kerb. The maximum numbers of cars passing when a pedestrian is present at the kerb also decreases from an interval of 3 to 8 before reconstruction to 1 to 6 after reconstruction; again the highest number of cars that pass is when an elderly person is standing at the kerb. The share of car drivers giving way increases from below 10% to the interval 20 to 63%; the lowest percentage is when an elderly person is standing at the kerb.

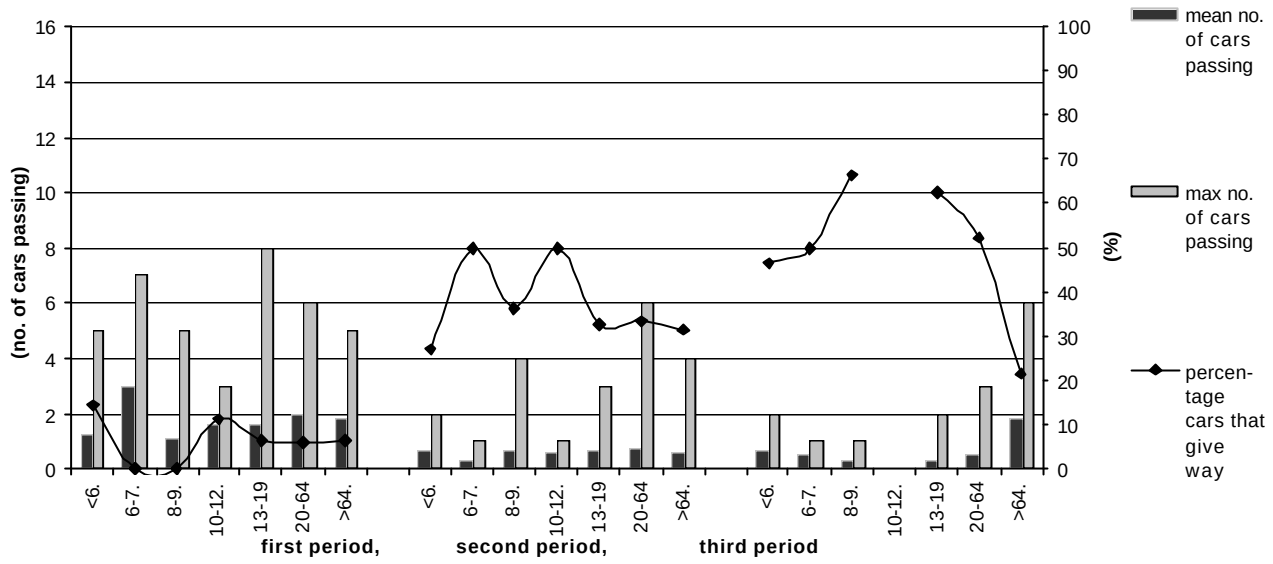

Figure 6.33. Number of cars passing the zebra crossing and percentage of car drivers giving way when pedestrian standing or walking at zebra crossing at the Hulta site.

At the Sjöbo site the maximum number of car drivers passing without giving way increases after reconstruction and the change of Code for the elderly and youngest age group. The percentage of car drivers giving way increases, but not as much as at the Hulta site. Also, it is here the youngest and oldest age groups that car drivers give way to the lowest extent.

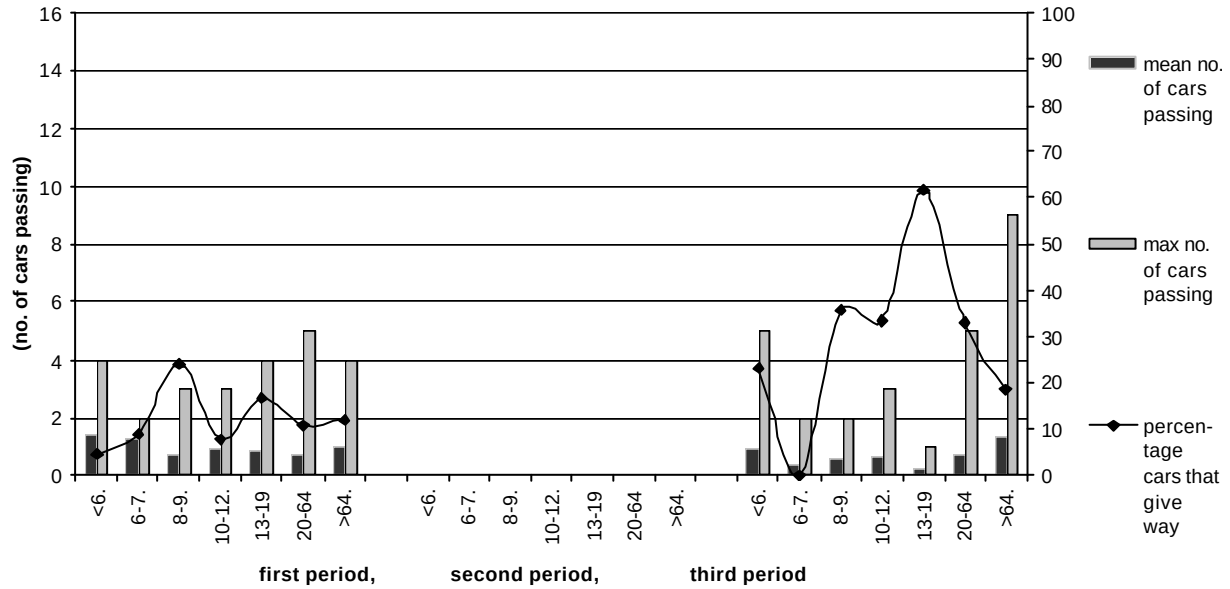

Figure 6.34. Number of cars passing the zebra crossing and percentage of car drivers giving way when pedestrian standing or walking at zebra crossing at the Sjöbo site.

At the Trandared upper intersection before the change of Code, 48% and more of all car drivers gave way to the pedestrian waiting at the kerb with the exception of the elderly. None of the few elderly persons observed were given way by a car driver. After the change of Code the first car driver that the pedestrian met almost always gave way. No elderly were observed after the change of Code.

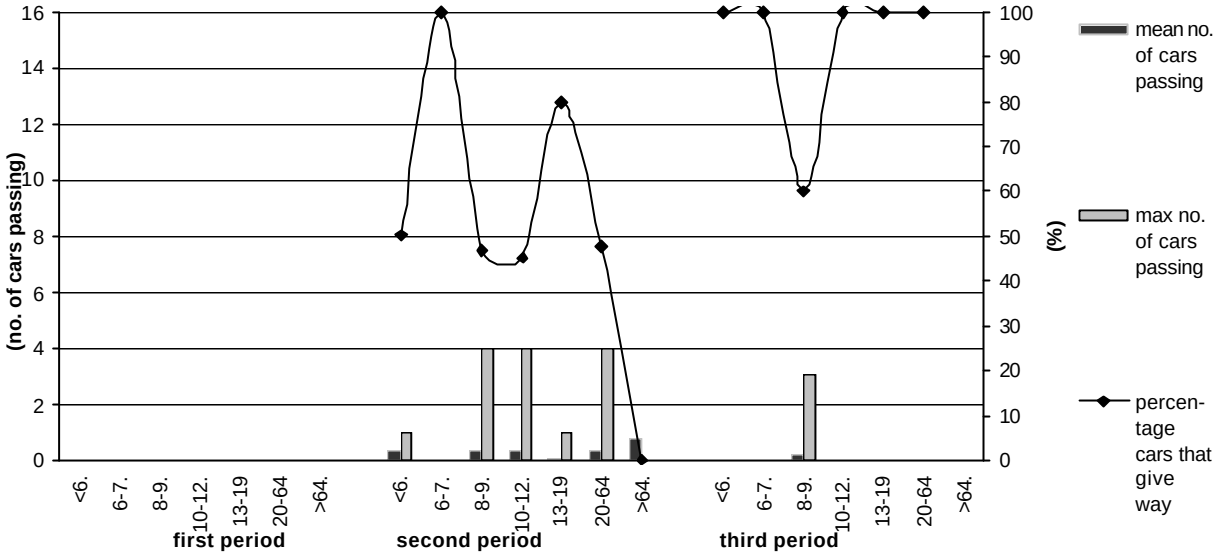

Figure 6.35. Number of cars passing the zebra crossing and percentage of car drivers giving way when pedestrian standing or walking at zebra crossing at the Trandared upper intersection.

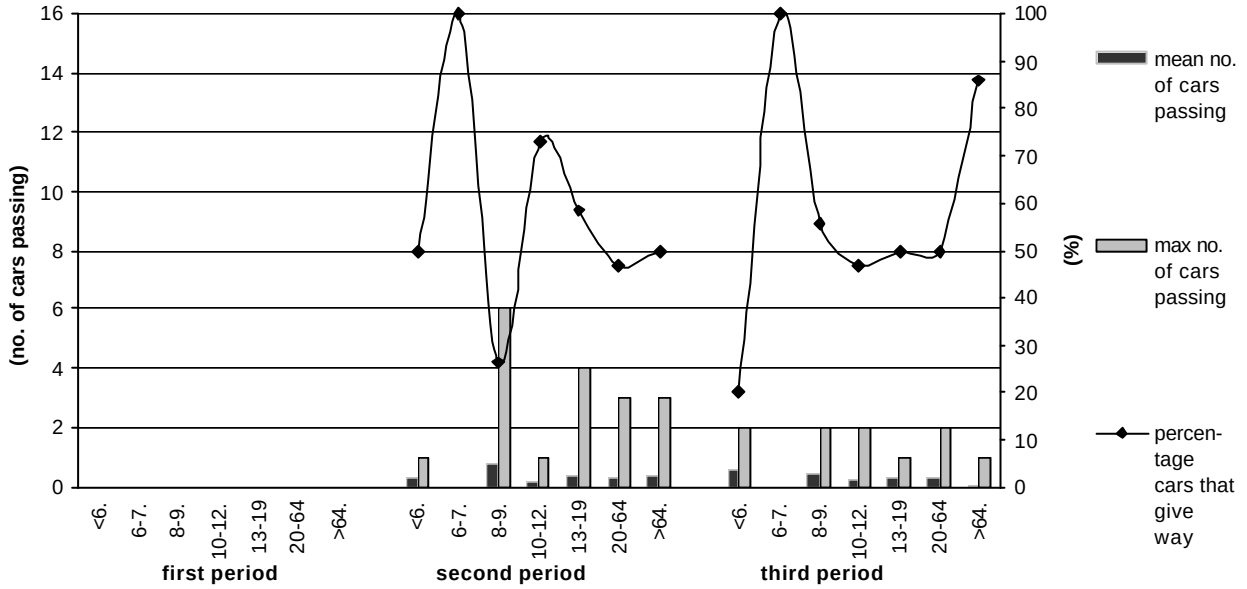

Figure 6.36. Number of cars passing the zebra crossing and percentage of car drivers giving way when pedestrian standing or walking at zebra crossing at the Trandared lower intersection.

At the lower intersection the percentage of car drivers giving way to pedestrians did not change much after the change of Code. The maximum number of cars passing when pedestrians were present at the kerb did decrease for all age groups after the change of Code.

Summary

When comparing the percentage car drivers giving way with the percentage of pedestrians given way to, the frequencies are lower. This means that it is not always the first car driver met by the pedestrian who gives way.

The largest change at the Hulta site came after reconstruction, see Table 6.32. Car drivers are giving way to children, youth, and adults to the same extent after reconstruction and Code change, only 22% of the car drivers give way to the elderly after the change of Code. The elderly are those who are given way to the highest extent. This "contradiction" is that, compared with other age groups, the elderly are given way to more often, but more car drivers are passing over the zebra crossing before one finally gives way.

Table 6.32. Car drivers meeting a pedestrian that is approaching the kerb intends to cross the road, percentage of giving way.

	Hulta			Sjöbo			Trandared upper		Trandared lower	
	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	After reconst-ruction	After change of Code	After reconst-ruction	After change of Code
Children (range)	2 (0-9)	22 (16-35)	42 33-50	14 (10-21)	-	21 (0-25)	31 (26-54)	48 (38-66)	37 (22-50)	45 (22-66)
Youth	5	26	44	13	-	39	34	53	38	40
Adults	5	23	36	13	-	25	32	59	31	38
Elderly	4	20	22	14	-	13	7	-	28	39

(small numbers presents data based on less than ten observations)

No such "contradiction" is found at the Sjöbo site, where the youths and adults age groups are given way most often. The Trandared upper intersection shows the highest frequency of car drivers giving way to pedestrians. At the lower intersection it is children, except the youngest age group, that car drivers give way to the highest extent.

Table 6.33 describes the percentages of car drivers that give way to a pedestrian standing at or walking at the kerb, i.e. the number of cars giving way divided by the sum of car drivers passing when a pedestrian is present at the kerb. For all ages at all sites, but the elderly at the Hulta site and the youngest age group, the frequency of car drivers that give way to pedestrians at the kerb is greater than compared with the above case, if a car driver at all gives way.

Table 6.33. Percentage of car drivers giving way meeting a pedestrian that is at the kerb and intends to cross the road.

	Hulta			Sjöbo			Trandared upper		Trandared lower	
	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	After reconst-ruction	After change of Code	After reconst-ruction	After change of Code
Children (range)	6 (0-14)	39 (27-50)	56 (46-65)	12 (5-24)	-	28 (0-33)	51 (45-100)	80 (60-100)	52 (25-100)	50 (20-100)
Youth	7	34	60	17	-	60	80	100	60	50
Adults	7	25	52	11	-	32	45	100	46	50
Elderly	7	33	21	12	-	19	0	-	50	86

(small numbers presents data based on less than ten observations)

It is often the first car driver who the pedestrian almost always meets at the kerb that gives way at the Trandered upper intersection.

6.2.12 PET-values

Few occasions with low PET-values were observed at the studied sites. At the Hulta site before reconstruction, 3 encounters with PET-value 1.5 s or less were observed, PET –values between 1.5 and 2.5 s were observed twice. After reconstruction, PET-values in the interval 1.5 and 2.5 s were observed twice. After the change of Code no encounters with low PET-values were observed. The involved persons were youth or adults.

At the Sjöbo site before reconstruction, the zebra crossing, which later was removed, had encounters with low PET-values. Encounters with PET-values lower than 1.5 s involved 3 adults; 16 persons, which included one child, were involved in encounters with PET-values in the interval 1.5 to 2.5 s. After reconstruction, 3 encounters were observed with PET-values in the interval 1.5 to 2.5 s.

At the Trandared upper intersection before the change of Code 2 encounters were observed with PET-values lower than 1.5 s, none was observed after the change of Code. At the lower intersection in Trandared no low PET-values were observed.

Summary

Very few occasions with low PET-values were observed at the studied sites at all three studied time periods.

6.2.13 Overtaking at zebra crossings

Sjöbo was the only site that had any overtaking situations, only three, in the before situation. After reconstruction, only one overtaking situation was observed at the Sjöbo site. At the other sites no overtaking situations were observed at any of the three time periods, before reconstruction, after reconstruction, and after reconstruction and Code change.

Summary

Very few overtaking situations at the zebra crossings were observed at the studied sites at all three studied time periods.

6.2.14 Pedestrians walking in group and alone given way to by a car driver

In Appendix S is a comparison between the frequencies of pedestrians walking alone and in a group that is given way to by a car driver present. In Figure 6.37 are the data shown for each crossing. At the Hulta site, children walking in a group are given way to a higher extent both before and after reconstruction and Code change. After reconstruction youths, adults, and elderly in a group are also given way to a greater extent. At the Sjöbo site the differences are smaller, but here persons walking in a group are also given way to a greater extent. At all sites, very few or no children younger than six years old were observed walking alone when crossing the street. At the Trandared upper crossing no clear differences are shown before the change of Code; however, after the change of Code persons walking alone are given way to a lesser extent. At the Trandared lower crossing children walking alone were given way to a much lesser extent both before and after the change of Code, differing as much as 50 percentage units for age groups up to ten years old.

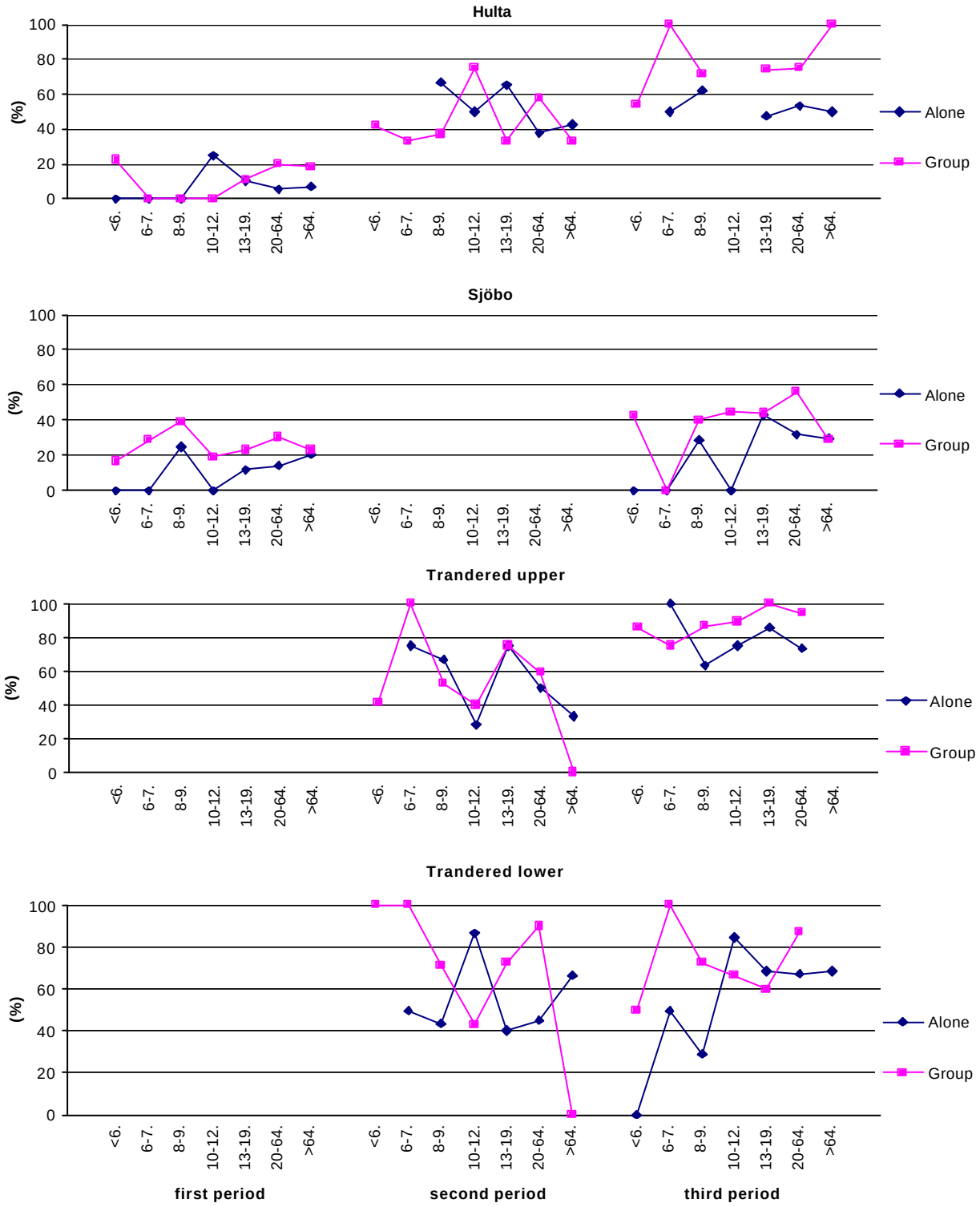

Figure 6.37. Percentage of pedestrians walking in a group and alone that are given way to by a car driver when crossing the street.

Summary

Pedestrians in a group are more often, however slight, given way to by a car driver than a person walking alone.

6.2.15 Waiting times and share pedestrians given way to at comparison site Källbäcksrydsgatan

The Källbäcksrydsgatan showed to not be as good as comparision crossings because of too low a flow of cyclists and pedestrians. Totally 61 persons crossed the street in the before study. Of these 22 persons (36%) were walking, see Table 6.34. Of the pedestrians, 2 out of 13 persons (15 %) who met a car driver were given way. More people were cycling than pedestrians were walking at the site. Of the remaining 39 persons, 23 or 59% met a car driver. In the before situation none of these 23 people were given way to. Of the total 61 persons crossing the street in the before situation, 32 of them were adults, 25 were youth, and only 4 were 12 years or younger.

In the after situation, after the change of Code, totally 46 people crossed the street. Of the total 18 persons (39 %) were walking. Of the pedestrians, 11 persons or 61% did meet a car, but only one person (9 %) was given way. Of the 28 persons going by bike, 19 of them (67 %) met a car, and of these cyclists, only 4 or 21 % were given way. Of the 46 persons who crossed the street in the after situation 25 of them were adults, 17 were youths, and only 4 children. No elderly were observed at the two time periods. The data is not enough to divide into age groups and free passes and passes where the pedestrian meets a car when crossing the street.

Table 6.34. Share pedestrians and cyclists that meet a car and is given way by a car driver at Källbäcksrydsgatan.

		No of persons	*%*	Meet a car *(%)*	Given way by a car driver (%)
Before change of Code, Period 1	Walking	22	*36*	*59*	*15* (2 out of 13)
	Cycling	39	*64*	*59*	0
	Total	61	*100*	*59*	6
After change of Code, Period 3	Walking	18	*39*	*61*	*9* (1 out of 11)
	Cycling	28	*61*	*67*	*21* (4 out of 19)
	Total	46	*100*	*65*	17

The frequency of waiting at the kerb and the waiting times decreased for both pedestrians and cyclists after the change of Code. Before countermeasures were taken, 77% or 10 pedestrians had to wait at the kerb. After the change of Code, 5 persons or 45% had to wait. Of the cyclists, 17 persons or 74% had to wait at the kerb before crossing the road. After the change of Code 12 persons or 63% had to wait at the kerb. The waiting times in seconds are presented below in Figure 6.38. Averages for waiting time and maximum waiting time decreased for pedestrians and cyclists. The largest reduction is shown for cyclists in average waiting time, and the largest reduction of maximum waiting time is shown for pedestrians after the change of Code.

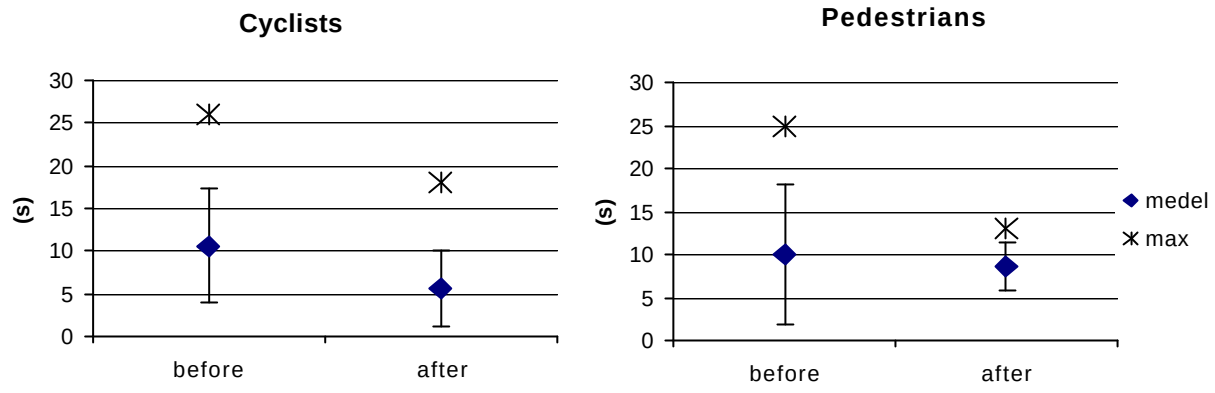

Figure 6.38. Waiting time at kerb for pedestrians and cyclists at the comparison crossing, Källbäcksrydsgatan before and after change of Code.

One High Severity Situation was observed in the after situation at the comparison crossing. It was between an adult man and an oncoming car from the pedestrians left. The car driver did not give way, and the pedestrian slowed down at the kerb. There was no conflict.

6.3 High Severity Situations

Some interactions observed between car drivers and pedestrians and car drivers and cyclists were coded as High Severity Situations. It means that either the car driver or pedestrian/cyclist or both have taken an evasive action to avoid a collision, or where the PET-value was low (<1 s.). If there is a collision course between road users it is defined as a conflict, otherwise it is only defined as a High Severity Situation. Conflict studies were also made in the field while doing the video recordings; these observed High Severity Situations were analysed manually from the videotapes. In the table in Appendix Q are the High Severity Situations described. If a cell is empty in Appendix Q it means that this parameter is unimportant for that specific interaction. For example, if there is no refuge on the street no values for waiting time at the refuge are given. Similarly, if no value for pedestrians waiting time at the kerb is given it means that a car driver gave way and that the waiting time was small and, therefore, difficult to measure. Also, if a cell in the column accepted time gap is empty, it means that no time gap could be measured between cars if the vulnerable road user was given way.

The results in the number of interactions and persons involved are presented in Table 6.35. Some of these interactions are conflicts and can be severe, i.e. the road users are on a collision course and unless the speed or directions of the road users change they will collide. Severe conflict means that the evasive action starts late and the conflict has a level in the severity hierarchy of higher than 25, see Figure 6.38 and glossary. Before reconstruction, a total of nine Situations between pedestrians and cars and five between cyclists and cars were observed. The observation time was 16.5 hours. After reconstruction, but before the Code change, 17 Situations between pedestrians and cars were observed, and one between a cyclist and a car. The observation time was 18 hours. After reconstruction and the Code change five Situations between pedestrians and cars were observed and four between cyclists and cars. The observation time was 27 hours.

This passage will deal most with data about pedestrians involved in High Severity Situations and conflicts due to the higher number observed. Situations involving cyclists will be described in the beginning of the passage but also shortly at each studied parameter.

6.3.1 Data description

As seen in Table 6.35 the number of High Severity Situations is low during all three time periods, both for pedestrians and cyclists. Moreover, the number of conflicts is even lower with 5 pedestrian conflicts in the before situation, 10 after reconstruction, and 2 after reconstruction and the Code change. Severe pedestrian – car conflicts are even fewer, totalling one before reconstruction, two after reconstruction, and zero after reconstruction and the Code change. The number of cyclists - car drivers conflicts are even lower, totalling one before reconstruction, one after reconstruction and two after reconstruction and the Code change. One severe conflict between a cyclist and car was observed at the Hulta site after reconstruction, but before the change of Code.

The High Severity Situations between cyclists and cars were lower than between pedestrians and cars as seen in Table 6.35. No Situations or conflicts car-cyclist were observed at the two crossings at Trandared School and no conflicts were observed at the Sjöbo site. The conflict at the Hulta site before reconstruction was between an eight-year old boy on a bicycle and a car driver. The one severe conflict observed was between an adult woman and a car driver at the Hulta site after reconstruction, but before the change of Code. The two conflicts after reconstruction and Code change at the Hulta site were between a youth on a bike and a car driver and between a seven-year old girl on a bike and a car driver.

Table 6.35. Number of High Severity Situations, number of persons involved and number of conflicts.

Before reconstruction and Code change		Hulta	Sjöbo	Trandered upper	Trandered lower
	Collected video data (h)	9	7.5	-	-
Pedestrians	No. of High Severity Situations	4	5	-	-
	No. of pedestrians involved	9	6	-	-
	No. of conflicts	1	4	-	-
	No. of severe conflicts	0	1	-	-
Cyclists	No. of High Severity Situations	5	0	-	-
	No. of cyclists involved	5	0	-	-
	No. of conflicts	1	0	-	-
	No. of severe conflicts	0	0	-	-
After reconstruction					
	Collected video data (h)	9	0	4.5	4.5
Pedestrians	No. of High Severity Situations	7	-	5	5
	No. of pedestrians involved	11	-	8	7
	No. of conflicts	5	-	3	2
	No. of severe conflicts	1	-	0	1
Cyclists	No. of High Severity Situations	1	-	0	0
	No. of cyclists involved	1	-	0	0
	No. of conflicts	1	-	0	0
	No. of severe conflicts	1	-	0	0
After reconstruction and Code change					
	Collected video data (h)	9	9	4.5	4.5
Pedestrians	No. of High Severity Situations	2	0	2	1
	No. of pedestrians involved	2	0	2	1
	No. of conflicts	2	0	0	0
	No. of severe conflicts	0	0	0	0
Cyclists	No. of High Severity Situations	3	1	0	0
	No. of cyclists involved	4	1	0	0
	No. of conflicts	2	0	0	0
	No. of severe conflicts	0	0	0	0

At all sites the flow of pedestrians is larger than that of cyclists. This is especially true at the two crossings in Trandared, where very few cyclists were observed. The number of Situations and conflicts between cyclists and cars is also much lower than the number of interactions and conflicts between pedestrians and cars. In total, the share of cyclist Situations was 35% (5 out of 14) *before reconstruction*. The share of cyclist conflicts was 17% (1 out of 6). The share of cyclists for the whole data was 16%. The percentage of Situations that involves cyclists is higher than that of cyclists, 19 percent units higher for the whole analysis. The share of cyclists in conflicts is very close to the percentage of cyclist for the whole study.

After reconstruction the share of cyclists in the Situations is 6% (1 of 18), the share of cyclist conflicts is 9% (1 out of 11), and the share of cyclists for all analysed data is 10%. The percentage of cyclists involved in interaction of higher severity is lower than the total share of cyclists, a difference of 3 percentage units. Still the share of conflicts is similar with the total study.

After reconstruction and the change of Code the share of cyclists in Situations is 44% (4 out of 9) and the share of cyclists in conflicts is 50% (2 out of 4). Totally, after reconstruction and Code change the share of cyclists is 19%, see Appendix B. The number of cyclists involved in higher severity interactions is much higher than the total amount of cyclist; it differs 25 percentage units. The share of conflicts is even higher, 31 percentage units higher.

Table 6.36 shows all pedestrians that are involved in all High Severity Situations, all conflicts and severe conflicts (that is a part of the conflicts) are presented and divided into age groups. The data concerning age group adults are not presented separately, but are included in the total sum. As mentioned before, the number of interactions and conflicts is low and when divided into age groups the numbers become even lower. Nevertheless, from a methodical viewpoint, it is important to discuss which kind of analysis a more extensive database could be a foundation for. In the before situation at the Hulta site two pedestrian children were involved in non-severe conflicts; after reconstruction and Code change no children were involved in Situations. At the Sjöbo site no children were involved in Situations or conflicts at any studied time period. At the two crossings at Trandared School the number of conflicts decreased after the change of Code from three to zero in the upper crossing and from two to zero in the lower crossing (see Table 6.17). In total, the number of persons involved were five in the before situation at Trandared upper and three at Trandared lower (see table 6.36). The number of Situations has also decreased at the two crossings after the change of Code.

Table 6.36. No. of pedestrians involved in High Severity Situations, conflicts and severe conflict (that is a part of the conflicts) divided in age groups.

	Children			**Youth**			**Elderly**			**Total**	**incl. adults**	
	Severe conflicts	Conflicts	High Severity Situations	Severe conflicts	Conflicts	High Severity Situations	Severe conflicts	Conflicts	High Severity Situations	Severe conflicts	Conflicts	High Severity Situations
Before												
Hulta	0	2	2	0	0	1	0	0	0	0	4	9
Sjöbo	0	0	0	0	2	2	0	1	1	1	5	6
Trandered upper	-	-	-	-	-	-	-	-	-	-	-	-
Trandered low	-	-	-	-	-	-	-	-	-	-	-	-
After reconstruction												
Hulta	0	0	0	2	4	6	0	0	0	2	8	11
Sjöbo	-	-	-	-	-	-	-	-	-	-	-	-
Trandered upper	0	2	4	0	2	3	0	0	0	0	5	8
Trandered low	1	3	6	0	0	0	0	0	0	1	3	6
After reconstruction and Code change												
Hulta	0	0	0	0	1	1	0	0	0	0	2	2
Sjöbo	0	0	0	0	0	0	0	0	0	0	0	0
Trandered upper	0	0	2	0	0	0	0	0	0	0	0	2
Trandered low	0	0	0	0	0	1	0	0	0	0	0	1

At the Hulta site the number of youths involved in conflicts increased after reconstruction. After the change of Code one youth was involved in a conflict. Totally, for all studied sites, the number of Situations and conflicts involving pedestrians and car drivers decreased after reconstruction and the change of Code.

The age structure in the conflicts, severe conflicts, and Situations compared with all collected data is presented below in Table 6.37. The share of the different age groups in conflict matches very well with the shares in all collected data before reconstruction and the change of Code. The shares of High Severity Situations match rather well.

Table 6.37. Age (%) of pedestrians and cyclists involved in conflicts.

	Severe conflicts (%)	Conflicts (%)	All High Severity Situations (%)	Total analysed data (%)
Before reconstruction				
Children	*0*	*22*	*13*	*18*
Youth	*0*	*22*	*20*	*18*
Adults	*100*	*45*	*60*	*51*
Elderly	*0*	*11*	*7*	*13*
Total	*100*	*100*	*100*	*100*
After reconstruction				
Children	*33*	*31*	*40*	*31*
Youth	*67*	*38*	*36*	*23*
Adults	*0*	*31*	*24*	*39*
Elderly	*0*	*0*	*0*	*7*
Total	*100*	*100*	*100*	*100*
After reconstruction and Code change				
Children	-	*0*	*40*	*33*
Youth	-	*50*	*20*	*19*
Adults	-	*50*	*20*	*41*
Elderly	-	*0*	*20*	*7*
Total	-	*100*	*100*	*100*

(small numbers presents data based on less than ten observations)

As the number of severe conflicts is low and random variations therefore are high, they are difficult to compare due to methodical reasons with the age groups for the total data, though such a comparison would be important. After reconstruction the conflicts differ more from the total share. Children and the elderly are less represented in conflicts while youth and adults are more represented compared with the share of the total analysed data. In Situations, children and youths are more represented compared with the total data while adults and the elderly are less represented. After reconstruction and the change of Code the number of conflicts and Situations is low. The shares of conflicts and Situations also differ from the total data.

6.3.2 Severity levels

In Figure 6.39 below are the conflicts with the measurable TA-values and speeds of evasive road users (pedestrian, cyclists or car driver) plotted. The prefixes are the interaction numbers found in Appendix Q. Above security level 25, the conflicts are defined as severe (see Gårder, 1982, and Svensson, 1998). As seen in the picture before the reconstruction, the values of TA are more spread compared with the after situations. The TA-values span from 0.5 s to almost 5 s. After reconstruction the TA-values are all between 1 and 3 s, after reconstruction and Code change the TA-values are all between 1 and 2.1 s. The interval is narrowed after reconstruction and the change of Code. The reason might be that before the reconstruction, it is most often the pedestrian or cyclist who takes the evasive action. After reconstruction more car drivers are doing evasive actions, and after the change of Code, car drivers are taking even more evasive actions in the conflicts. Pedestrians and cyclists have lower speeds, which most often gives high TA-values; car drivers have higher speeds than pedestrians and cyclists that give lower TA-values easier.

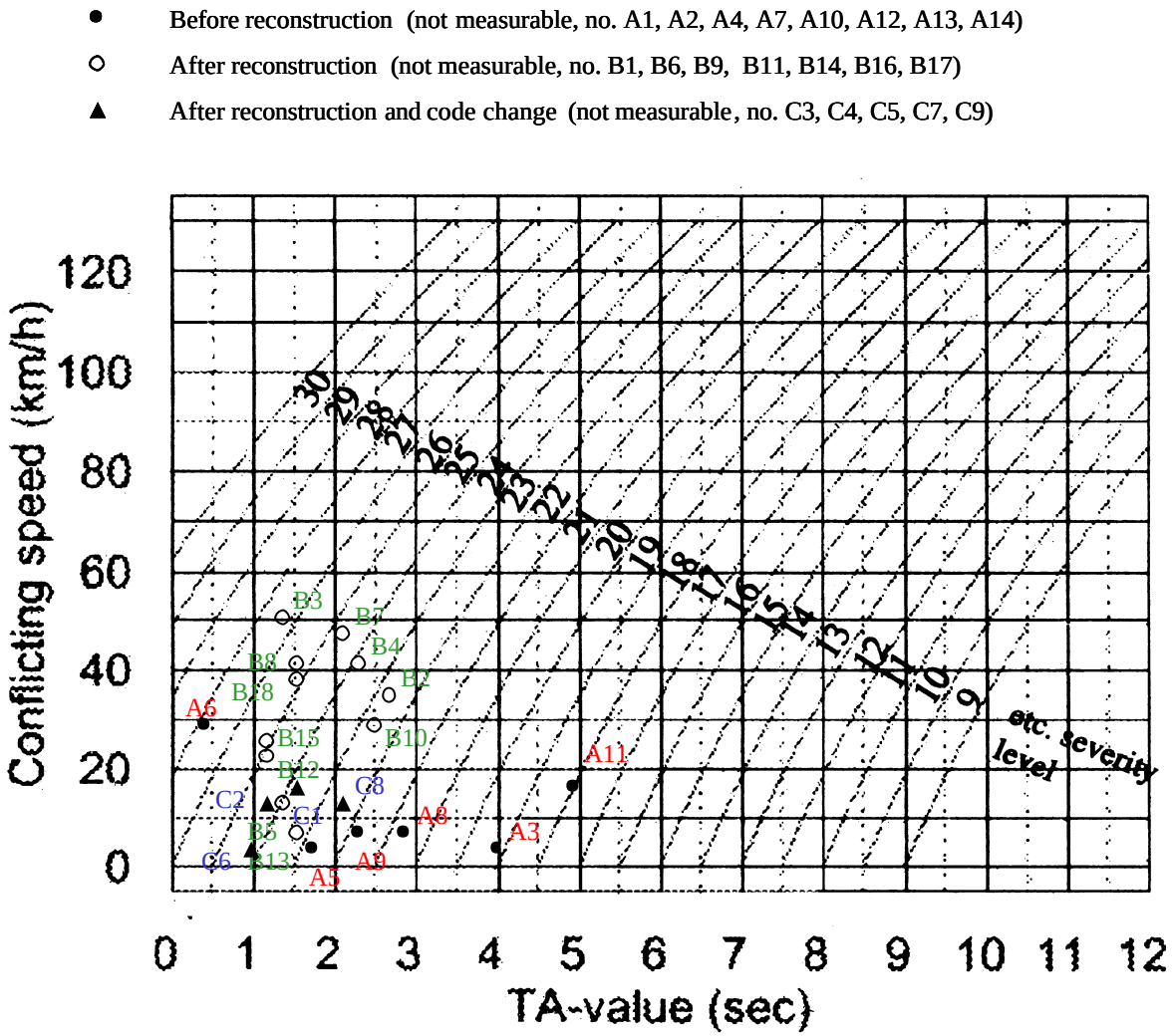

Figure 6.39. Security levels for all observed measurable conflicts.

6.3.3 Pedestrians and cyclists given way

Table 6.38 shows if pedestrians involved in High Severity Situations and conflicts are given way by car drivers. Adults are presented as a part of the values for the total data. Totally, the share of pedestrians given way increases after reconstruction and change of Code. Before reconstruction, three out of nine persons involved in conflicts are given way to by the involved car driver, which shows that it is the car driver that takes the evasive action. After reconstruction and Code change, two out of the two involved in conflicts are given way to. Before reconstruction and Code change, six out of the fifteen involved in Situations were given way to. After reconstruction and the Code change, four out of five were given way to. In the before situation, no children or youths are given way to in conflicts and Situations. After reconstruction three out of five children in conflicts and seven out of ten children in Situations with a car are given way to. After the change of Code two children were involved in Situations, 0 in conflicts, and both were given way to. The proportion of youths given way to after reconstruction is four out of six in conflicts and four out of nine in Situations. Adults were the group that had the highest number of interactions and conflicts before reconstruction and the Code change. Half involved in conflicts and six of the nine adults involved in

interactions were given way to. After reconstruction almost all of adults were given way to. After change of Code, only one person, who was given way, was involved in an interaction of higher severity, and it was a conflict. In total, one elderly person was involved in an interaction of higher severity, a conflict at the Sjöbo site before reconstruction and the change of Code. The trend for the age groups children, youths, and adults at all sites is that they are given way to a higher extent after reconstruction and after the change of Code.

Table 6.38. Number of pedestrians involved in conflicts and High Severity Situations when a car driver gives way. In parenthesis total number of pedestrian in age group involved in conflict or Situations.

	Children		**Youth**		**Elderly**		**Total incl. adults**	
	Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations
Before reconstruction								
Hulta	0(2)	0(2)	-	0(1)	-	-	0(4)	3(9)
Sjöbo	-	-	0(2)	0(2)	1(1)	1(1)	3(5)	3(6)
Trandered upper	-	-	-	-	-	-	-	-
Trandered low	-	-	-	-	-	-	-	-
After reconstruction								
Hulta	-	-	2(4)	2(6)	-	-	6(8)	6(11)
Sjöbo	-	-	-	-	-	-	-	-
Trandered upper	2(2)	4(4)	2(2)	2(3)	-	-	5(5)	7(8)
Trandered low	1(3)	3(6)			-	-	1(3)	3(6)
After reconstruction and Code change								
Hulta	-	-	1(1)	1(1)	-	-	2(2)	2(2)
Sjöbo	-	-	-	-	-	-	-	-
Trandered upper	-	2(2)	-	-	-	-	-	2(2)
Trandered low	-	-	-	0(1)	-	-	-	0(1)

6.3.4 Pedestrians and cyclists in group

There are totally 31 Situations with pedestrians involved. In 20 of the Situations, or 66%, the persons are walking alone. Before the reconstruction, half of the pedestrians walking alone were given way. After the reconstruction, two-thirds or 67% were given way after the change of Code, see Table 6.39. Of all three groups of pedestrians, one was given way to before reconstruction. After reconstruction, five out of eight groups were given way to. After the change of Code, no groups were involved in Situations. As seen in the table, when divided into the different sites, the numbers are very low.

In one of the five Situations before reconstruction, a car driver gave the cyclist way. After reconstruction in the one interaction, the car driver gave way. In three of the four Situations after the change of Code, the car driver gave way.

Table 6.39. Number of High Severity Situations divided whether a pedestrian is walking alone or in a group.

	Hulta		**Sjöbo**		**Trandered up**		**Tranderd low**		**Total**	
	One person	More than one person	One person	More than one person	One person	More than one person	One person	More than one person	One person	More than one person
Before reconstruction										
Car driver give way or take evasive action	0	1	3	0	-	-	-	-	3	1
Pedestrian give way or take evasive action	2	1	1	1	-	-	-	-	3	2
After reconstruction										
Car driver give way or take evasive action	2	2	-	-	1	3	3	0	6	5
Pedestrian give way or take evasive action	1	2	-	-	1	0	1	1	3	3
After reconstruction and Code change										
Car driver give way or take evasive action	2	0	0	0	2	-	0	-	4	0
Pedestrian give way or take evasive action	0	0	0	0	0	-	1	-	1	0

6.3.5 Pedestrians given way to in conflicts, Situations and all analysed data

The share of pedestrians that is given way to in Situations and conflicts follows the same pattern as for all the collected data, see the comparison in Table 6.40 (though the number of observations of Situations and conflicts are low). The pedestrians are more often given way to after reconstruction and the change of Code. There are differences between the various age groups. Before reconstruction no children and youths involved in Situations and conflicts were given way to, but adults and the elderly were.

Table 6.40. Percentage of pedestrians given way to in conflicts, High Severity Situations and the total analysed data.

	Conflicts (%)	All High Severity Situations (%)	Total analysed data (%)
Before reconstruction			
Children	*0*	*0*	*18*
Youth	*0*	*0*	*12*
Adults	*50*	*67*	*15*
Elderly	*100*	*100*	*17*
After reconstruction			
Children	*60*	*70*	*49*
Youth	*67*	*44*	*44*
Adults	*100*	*83*	*46*
Elderly	-	-	*38*
After reconstruction and Code change			
Children	-	*100*	*55*
Youth	*100*	*50*	*55*
Adults	*100*	*100*	*51*
Elderly	-	-	*45*

(small numbers presents data based on less than ten observations)

After reconstruction and Code change, children and youths involved in Situations and conflicts were also given way. Except for youths, the shares of pedestrians given way are *higher* in Situations and conflicts compared to all the collected data Youths have the *lowest* share of given way to in High Severity Situations of the studied age groups. The shares of pedestrians given way to in Situations and conflicts have increased for all age groups, but it has increased the most for children. Before reconstruction none of the children in Situations were given way to. However, after reconstruction 70% were given way to and 100% after the change of Code. For the youths none were given way to before reconstruction, 44% after reconstruction, and 50% after change of Code. Before reconstruction, 67% of the adults were given way to, 83% after reconstruction, and 100% after the change of Code.

6.3.6 Stopping at the kerb

For all High Severity Situations, the children stop to a lower extent after reconstruction and the change of Code. This is seen in Table 6.41. Adults are presented as a part of the values for the total data. For the youths and adults, it is difficult to draw any firm conclusions because the number of conflicts is low. The shares of stopping at the kerb are lower for Situations after reconstruction and the change of Code except that the numbers are low. Totally, only one elderly was observed in a Situation.

Table 6.41. Number of pedestrians divided in age group involved in conflicts and High Severity Situations that stops at kerb. In parenthesis total number of pedestrian involved in conflict or Situations.

	Children		**Youth**		**Elderly**		**Total**	**incl. adults**
	Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations
Before reconstruction								
Hulta	2(2)	2(2)	-	0(1)	-	-	4(4)	5(9)
Sjöbo	-	-	0(2)	0(2)	0(1)	0(1)	1(5)	1(6)
Trandared low	-	-	-	-	-	-	-	-
Trandared upper	-	-	-	-	-	-	-	-
After reconstruction								
Hulta	-	-	0(4)	2(6)	-	-	0(8)	2(11)
Sjöbo	-	-	-	-	-	-	-	-
Trandared low	2(3)	3(6)	-	-	-	-	2(3)	3(6)
Trandared upper	2(2)	2(4)	0(2)	0(3)	-	-	3(5)	3(8)
After reconstruction and Code change								
Hulta	-	-	1(1)	1(1)	-	-	1(2)	1(2)
Sjöbo	-	-	-	-	-	-	-	-
Trandared low	-	-	-	0(1)	-	-	-	0(1)
Trandared upper	-	0(2)	-	-	-	-	-	0(2)

The trend is for each site, both for conflicts and Situations that the pedestrians stop less at the kerb after reconstruction and Code change, see the figures in Table 6.41. In all sites together (when summarising the values for the sites at each studied time period), five of nine pedestrians (56%) involved in conflicts stopped at the kerb before reconstruction and Code change, see Table 6.41. After reconstruction, 5 out of 16 (31%) stop at the kerb and after the Code change 1 out of 2 (50%) stops at the kerb. In all Situations the share of stopping at the kerb is lower: 6 out of 15 (40%) stop at the kerb before reconstruction, 8 out of 25 (32%) after reconstruction, and 1 out of 5 (20 %) after reconstruction and the change of Code. Pedestrians

stop to a lower extent at the kerb after reconstruction and the change of Code. Also in the table are the figures for each age group at each site shown. The trend for children and adults is that they stop at the kerb to a lower extent after reconstruction and the change of Code. Before and after reconstruction no youths stopped at the kerb in Situations and conflicts.

In two of the five Situations before reconstruction, the cyclist stopped at the kerb; one of them was given way to. The one cyclist that was involved in an interaction of higher severity after reconstruction did not stop at the kerb or refuge and was given way to. After the change of Code all cyclists, but one involved in a Situation, stopped at the kerb. The one who did not stop at the kerb was given way to.

For all data the pattern for all age groups is that they have to stop and wait at the kerb to a lower extent after reconstruction and the change of Code. There are different shares between the different age groups and at the different sites, but the trend is the same, see passage 6.2.8.

6.3.7 Using the zebra crossing or not

As seen in the Table 6.42 most of the pedestrians involved in High Severity Situations and conflicts are walking on the actual zebra crossing. Adults are presented as a part of the values for the total data. There are no differences between the age groups. The only person involved in a Situation at the Trandared lower crossing after reconstruction (and who was not walking on the zebra crossings) was a child. The conflict at the Sjöbo site was an adult and one adult at the Hulta site was involved in an interaction of higher severity.

The share of pedestrians walking on the zebra crossing and involved in Situations is high during all three time periods. The share of walking on the zebra crossing is also high for the conflicts for all age groups. At the Hulta site the shares of walking on the zebra crossing increased in the total data for all age groups after reconstruction. At the two crossings at the Trandared School the shares in the total data were also high. The shares decreased at the Sjöbo site after reconstruction.

Table 6.42. Number of pedestrians that is walking on the zebra crossing. In parenthesis total number of pedestrian involved in conflict or Situations.

	Children		**Youth**		**Elderly**		**Total**	**incl. adults**
	Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations
Before reconstruction								
Hulta	2(2)	2(2)	-	1(1)	-	-	4(4)	8(9)
Sjöbo	-	-	2(2)	2(2)	1(1)	1(1)	4(5)	5(6)
Trandered upp	-	-	-	-	-	-	-	-
Trandered low	-	-	-	-	-	-	-	-
After reconstruction								
Hulta	-	-	4(4)	6(6)	-	-	8(8)	11(11)
Sjöbo	-	-	-	-	-	-	-	-
Trandered upp	2(2)	4(4)	2(2)	3(3)	-	-	5(5)	8(8)
Trandered low	2(3)	5(6)		-	-	-	2(3)	5(6)
After reconstruction and Code change								
Hulta	-	-	1(1)	1(1)	-	-	2(2)	2(2)
Sjöbo	-	-	-	-	-	-	-	-
Trandered upp	-	1(2)	-	-	-	-	-	1(2)
Trandered low	-	-	-	1(1)	-	-	-	1(1)

When comparing the total analysed data and the Situations, the difference is that the shares of walking on the zebra crossing have not changed for the Situations, but they have changed for the total analysed data, see passage 6.2.4.

Three of the five cyclists before reconstruction crossed the street on the zebra crossing; the other two did not and were not given way to. The one cyclist after reconstruction crossed the street at the zebra crossing. One of the five cyclists after the change of Code did not cross on the zebra crossing, though she was given way to.

6.3.8 Pedestrians and cyclists head movements

Very few of the pedestrians involved in Situations or conflicts look in both directions before reaching the kerb; this is the case for all age groups at all sites during all time periods. Some persons looked in both directions before reaching the kerb in the after reconstruction situation. For details see Appendix Q. If not looking to in both directions the pedestrian should at least look to the left before crossing the street. In Table 6.43 are those who either looked only to the left or both to the left and right before reaching the kerb presented. Of those who looked most looked in both directions, few looked only to the left. Adults are presented as a part of the values for the total data.

*Table 6.43. Number of pedestrians looking only to the left or in both directions **before** the kerb. In parenthesis total number of pedestrian involved in conflict or Situations.*

	Children		**Youth**		**Elderly**		**Total incl. adults**	
	Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations
Before reconstruction								
Hulta	0(2)	0(2)	-	0(1)	-	-	0(4)	1(9)
Sjöbo	-	-	0(2)	0(2)	0(1)	0(1)	0(5)	1(6)
Trandered upper	-	-	-	-	-	-	-	-
Trandered low	-	-	-	-	-	-	-	-
After reconstruction								
Hulta	-	-	0(4)	2(6)	-	-	0(4)	2(11)
Sjöbo	-	-	-	-	-	-	-	-
Trandered upper	0(2)	2(4)	0(2)	0(3)	-	-	0(5)	2(3)
Trandered low	1(3)	2(6)	-	-	-	-	0(3)	0(6)
After reconstruction and Code change								
Hulta	-	-	0(1)	0(1)	-	-	0(2)	0(2)
Sjöbo	-	-	-	-	-	-	-	-
Trandered upper	-	0(2)	-	-	-	-	-	0(2)
Trandered low	-	-	-	0(1)	-	-	-	0(1)

In Table 6.44 are those who either looked only to the left or both to the left and right at the kerb presented. Of those who looked most looked in both directions, few looked only to the left. Adults are presented as a part of the values for the total data.

Half of the children involved in Situations looked in both directions at the kerb before the change of Code, see Appendix Q. After reconstruction and Code change, none of the children looked in both directions at the kerb. All of the youths looked in both directions at the kerb before reconstruction, and around half looked both ways after reconstruction. After the change of Code all observed youth, though the number was so small that “all” may be far

from 100%, looked in both directions while still at the kerb. For the adults most or all of them looked in both directions before and after reconstruction and after the change of Code.

*Table 6.44. Number of pedestrians looking only to the left or in both directions **at** the kerb. In parenthesis total number of pedestrian involved in conflict or Situations.*

	Children		**Youth**		**Elderly**		**Total**	**Incl. adults**
	Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations
Before reconstruction								
Hulta	1(2)	1(2)	-	1(1)	-	-	3(4)	8(9)
Sjöbo	-	-	2(2)	2(2)	0(1)	0(1)	4(5)	5(6)
Trandered upper	-	-	-	-	-	-	-	-
Trandered low	-	-	-	-	-	-	-	-
After reconstruction								
Hulta			1(4)	6(6)	-	-	7(8)	11(11)
Sjöbo	-	-	-	-	-	-	-	-
Trandered upper	0(2)	0(4)	0(2)	1(3)	-	-	1(5)	2(8)
Trandered low	1(3)	2(6)	-	-	-	-	1(3)	2(6)
After reconstruction and Code change								
Hulta	-	-	1(1)	1(1)	-	-	2(2)	2(2)
Sjöbo	-	-	-	-	-	-	-	-
Trandered upper	-	1(2)	-	-	-	-	-	1(2)
Trandered low	-	-	-	1(1)	-	-	-	1(1)

Of all the cyclists before reconstruction, two looked in both directions before the kerb, two only to the right, and one did not turn the head. At the kerb all except one looked in both directions. The one cyclist after reconstruction looked only to the left, both before the kerb and at the kerb. Of all the cyclists after the change of Code, three looked in both directions, one only to the right, and one did not turn the head. At the kerb three looked in both directions, one only to the left, and one did not turn the head.

The percentage of persons looking in both directions in the Situations differs from all the collected data. Not many pedestrians look in both directions before reaching the crossing, which is the case for all age groups, time periods, and sites. For the entire data, the share of looking in both directions decreases after reconstruction and Code change. It differs between the sites where it clearly decreases at the Hulta site, and at the two crossings at Trandared, see Table 6.44. At the Sjöbo site it is unclear that looking in both directions decreases.

The share of looking in both directions at the kerb is low for children during all three time periods in the Situations, though the shares are higher for youths and adults. The shares are more alike between the age groups in the total data. There is a trend that looking in both directions decreases after reconstruction and Code change, yet no such trend is shown in the Situations or conflicts.

6.3.9 Pedestrians and cyclists tempo

As earlier stated, almost all pedestrians are walking slowly or in a normal tempo before reaching the kerb at the sites. Of note is if the pedestrians who were involved in Situations and conflicts had a higher tempo when approaching the street than other pedestrians. Very few pedestrians walk fast or run when approaching the crossing, see Table 6.45. None of the adults or elderly did. One child was running and one who was walking fast was involved in an

interaction of higher severity after reconstruction at the lower Trandared crossing. After reconstruction and Code change, one of the two children involved in interaction of higher severity was running while the other one was walking fast. Of the two youths that involved in a conflict at Sjöbo before reconstruction, both were running. The numbers are low, but some of the children involved in Situations were running before reaching the crossing. Adults are presented as a part of the values for the total data.

Running when entering and crossing the first lane is more common than when crossing the second lane in Situations and conflicts, see appendix Q. Very few persons involver in Situations or conflicts ran over the second lane, therefore is the data for the second lane not shown on a table. Few persons ran before entering the crossing, these figures are shown in table 6.45. It is still few, but somewhat more persons that run when crossing the first lane, this is shown in Table 6.46.

The child age group shows the highest share of running to and over the first lane. One of the two children involved in a conflict before reconstruction was running over the first lane. Three out of the five children involved in conflicts were either walking fast or running after reconstruction and both children in High Severity Situations after the change of Code were running over the first lane.

Two of the six youths in conflicts were running after reconstruction. The youth involved in a conflict after the change of Code was walking fast over the first lane. Only one of the adults involved in a conflict was walking fast. The shares of running before the crossing were 2%, 3%, and 1% for the three different time periods for all the analysed data. For the High Severity Situations, the shares were 13%, 4%, and 20% for the three different time periods.

Running over first lane decreases for children and youth after reconstruction and Code change. Very few adults and no elderly ran over the street in the whole analysed data. The number of Situations is low and, therefore, the comparison between different age groups is not done. In total for all the analysed data, 5% ran over first lane before reconstruction, 8% after reconstruction, and 4, % after the change of Code. For the Situations, the shares are 6% before reconstruction, 28% after reconstruction, and 40% after the change of Code. The shares of running are higher for all time periods in High Severity Situations.

*Table 6.45. Number of pedestrians that are walking fast or running **before** the kerb. In parenthesis total number of pedestrian involved in conflict or Situations.*

		Children		**Youth**		**Elderly**		**Total**	**incl. adults**
		Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations
Before reconstruction									
Hulta	fast	0(2)	0(2)	-	0(1)	-	-	0(4)	0(9)
	running	0(2)	0(2)	-	0(1)	-	-	0(4)	0(9)
Sjöbo	fast	-	-	0(2)	0(2)	0(1)	0(1)	0(5)	0(6)
	running	-	-	2(2)	2(2)	0(1)	0(1)	2(5)	2(6)
Trandered upper	fast	-	-	-	-	-	-	-	-
	running	-	-	-	-	-	-	-	-
Trandered low	fast	-	-	-	-	-	-	-	-
	running	-	-	-	-	-	-	-	-
Total	fast	0(2)	0(2)	0(2)	0(3)	0(1)	0(1)	0(9)	0(15)
	running	0(2)	0(2)	2(2)	2(3)	0(1)	0(1)	2(9)	2(15)
After reconstruction									
Hulta	fast	-	-	0(4)	0(6)	-	-	0(8)	0(11)
	running	-	-	0(4)	0(6)	-	-	0(8)	0(11)
Sjöbo	fast	-	-	-	-	-	-	-	-
	running	-	-	-	-	-	-	-	-
Trandered upper	fast	0(2)	0(4)	0(2)	0(3)	-	-	0(5)	0(8)
	running	0(2)	0(4)	0(2)	0(3)	-	-	0(5)	0(8)
Trandered low	fast	0(3)	1(6)	-	-	-	-	0(3)	1(6)
	running	0(3)	1(6)	-	-	-	-	0(3)	1(6)
Total	fast	0(5)	1(10)	0(6)	0(9)	-	-	0(16)	1(25)
	running	0(5)	1(10)	0(6)	0(9)	-	-	0(16)	1(25)
After reconstruction and Code change									
Hulta	fast	-	-	0(1)	0(1)	-	-	0(2)	0(2)
	running	-	-	0(1)	0(1)	-	-	0(2)	0(2)
Sjöbo	fast	-	-	-	-	-	-	-	-
	running	-	-	-	-	-	-	-	-
Trandered upper	fast	-	1(2)	-	-	-	-	-	1(2)
	running	-	1(2)	-	-	-	-	-	1(2)
Trandered low	fast	-	-	-	0(1)	-	-	-	0(1)
	running	-	-	-	0(1)	-	-	--	0(1)
Total	fast	-	1(2)	0(1)	0(2)	-	-	0(2)	1(5)
	running	-	1(2)	0(1)	0(2)	-	-	0(2)	1(5)

*Table 6.46. Number of pedestrians that are walking fast or running when **crossing the first lane**. In parenthesis total number of pedestrian involved in conflict or Situations.*

		Children		**Youth**		**Elderly**		**Total**	**Incl. adults**
		Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations	Conflicts	High Severity Situations
Before reconstruction									
Hulta	fast	0(2)	0(2)	-	0(1)	-	-	0(4)	0(9)
	running	1(2)	1(2)	-	0(1)	-	-	1(4)	1(9)
Sjöbo	fast	-	-	0(2)	0(2)	0(1)	0(1)	0(5)	1(6)
	running	-	-	0(2)	0(2)	0(1)	0(1)	0(5)	0(6)
Trandered upper	fast	-	-	-	-	-	-	-	-
	running	-	-	-	-	-	-	-	-
Trandered low	fast	-	-	-	-	-	-	-	-
	running	-	-	-	-	-	-	-	-
Total	fast	0(2)	0(2)	0(2)	0(3)	0(1)	0(1)	0(9)	1(15)
	running	1(2)	1(2)	0(2)	0(3)	0(1)	0(1)	1(9)	1(15)
After reconstruction									
Hulta	running	-	-	0(4)	0(6)	-	-	1(8)	0(11)
	fast	-	-	0(4)	0(6)	-	-	0(8)	1(11)
Sjöbo	fast	-	-	-	-	-	-	-	-
	running	-	-	-	-	-	-	-	-
Trandered upper	fast	0(2)	2(4)	0(2)	0(3)	-	-	0(5)	2(8)
	running	1(2)	1(4)	2(2)	2(3)	-	-	3(5)	3(8)
Trandered low	fast	1(3)	2(6)	-	-	-	-	1(3)	2(6)
	running	1(3)	3(6)	-	-	-	-	1(3)	3(6)
Total	fast	1(5)	4(10)	0(6)	0(9)	-	-	2(15)	4(25)
	running	2(5)	4(10)	2(6)	2(9)	-	-	4(15)	7(25)
After reconstruction and Code change									
Hulta	fast	-	-	1(1)	1(1)	-	-	1(2)	1(2)
	running	-	-	0(1)	0(1)	-	-	0(2)	0(2)
Sjöbo	fast	-	-	-	-	-	-	-	-
	running	-	-	-	-	-	-	-	-
Trandered upper	fast	-	0(2)	-	-	-	-	-	0(2)
	running	-	2(2)	-	-	-	-	-	2(2)
Trandered low	fast	-	-	-	0(1)	-	-	-	0(1)
	running	-	-	-	0(1)	-	-	-	0(1)
Total	fast	-	0(2)	1(1)	1(2)	-	-	1(2)	1(5)
	running	-	2(2)	0(1)	0(2)	-	-	0(2)	2(5)

The cyclists speeds before reconstruction were normal both before the crossing and when crossing the first lane, but for one who increased the speed in the first lane. The single cyclist after reconstruction had a normal tempo. After the change of Code, three had a normal tempo through the intersection, one cycled slowly, and one rode quickly.

Summary

As described before the number of observed High Severity Situations and conflicts are low at all the studied sites. The average number of Situations increased for the elderly at the Hulta site and for youths at the Trandared lower crossing. At the Hulta site for youths the average

number of High Severity Situations after reconstruction and change of Code is identical to before the changes are made. Totally, the number of Situations has decreased.

Table 6.47. Average no. of High Severity Situations with pedestrians per studied hour.

	Hulta			Sjöbo			Trandared upper			Trandared lower		
	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code
Children	0.22	0	0	0	-	0	-	0.89	0.44	-	1.33	0
Youth	0.11	0.67	0.11	0.27	-	0	-	0.67	0	-	0	0.22
Adults	0.67	0.56	0.11	0.4	-	0	-	0.22	0	-	0	0
Elderly	0	0	0.11	0.13	-	0	-	0	-	-	0	0
Total	1	1.23	0.33	0.8	-	0	-	1.78	0.44	-	1.33	0.22

The average number of conflicts for youths is the same at the Hulta site as before the changes were made. For the other age groups at all site the average number of conflicts decreased after the changes were made.

Table 6.48. Average no. of conflicts with pedestrians per studied hour.

	Hulta			Sjöbo			Trandared upper			Trandared lower		
	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code	Before	After reconst-ruction	After change of Code
Children	0.22	0	0	0	-	0	-	0.44	0	-	0.67	0
Youth	0.11	0.44	0.11	0.27	-	0	-	0.44	0	-	0	0
Adults	0.22	0.44	0.11	0.27	-	0	-	0.22	0	-	0	0
Elderly	0	0	0	0.13	-	0	-	0	-	-	0	0
Total	0.55	0.88	0.22	0.67	-	0	-	1.1	0	-	0.67	0

The trend for stopping at the kerb in Situations and conflicts is that it decreases for all age groups after reconstruction and after change of Code at the studied sites. The trend is also that the pedestrians are given way to, viz. the car driver takes the evasive action so that the pedestrian can pass, more often after reconstruction and after change of Code at the studied sites.

6.4 Expert questionnaire

The questionnaire was sent out to 26 experts working in the field of traffic safety and road users behaviour. The questionnaire is found in Appendix T. Nine persons answered the questionnaire. Six persons answered that they found the questions interesting but could not answer the questions due to lack of time. Attached to the expert questionnaire five video cuts were sent to the respondents. The questionnaire dealt with these video cuts. Below is a short description of each video cut, they are also described in Appendix Q:

First video cut, no. 1: A group intends to cross the road at the marked zebra crossing at the Hulta site before reconstruction. Two adult women, one with a pram, are walking with two children, one boy around 9 years old and a child younger than six years old. The woman with pram starts to cross the road but has to stop while a car coming from the right does not stop and give way. The group has to wait until a group of cars has passed, then they can cross the road.

Second video cut, no. 4: An adult woman starts to cross the road at the zebra crossing that later was removed at the Sjöbo site. A car is coming from the left that the woman does not see. The car brakes.

Third video cut, no. 6: A boy on bike cross the road at the marked zebra crossing at the Hulta site before reconstruction. When he reaches the kerb he accelerates out in front of a car coming from the right and the car slow down.

Fourth video cut, no. 12: A boy run down the stairs at the Trandared school at the lower crossing in Trandared. It is before change of Code. He continues running over the street in front of a car coming from the left. At this crossing the sight is not good.

Fifth video cut, no. 13&14: Two girls intend to cross the road at the lower crossing in Trandared. It is before change of Code. Suddenly one girl run out on the street, beside the zebra crossing, in front of a car coming from the left. The car brakes. A car from the right also brakes. The second girl walks to the zebra crossing and cross the road there.

Some of the experts who answered the questionnaire did not answer all questions, mainly due to difficulties in receiving the files with video cuts. The problems were due to large file sizes. The presented results are based on the answers that were received.

6.4.1 Ranking the parameters usefulness for describing the safety for children based on the video cuts

The experts were asked to rank each studied parameter in importance of how useful it is to describe the safety for children as pedestrians or cyclists from (1) very important to (5) not relevant. The value (9), ´can not assess´ was also available. The result is presented in Appendix V. The 20 most important parameters for the total data are presented below in Table 6.49. As seen in the table it is the vehicle speed that is the most important parameter for the total data. That is also the most important parameter in each single cut. The second important parameter is the distance from the car to collision point when the car driver or vulnerable road user makes the evasive action.

Table 6.49. Experts ranking of important parameters to describe traffic safety for pedestrians and cyclists.

Rank	Parameter	Score	No. of answers
1	Vehicle speed	1,2	37
2	Vehicle distance	1,3	37
3	Pedestr. and cyclist distance	1,3	37
4	Pedestr. and cyclist head movements at kerb	1,4	37
5	Security level	1,5	21
6	Pedestr. and cyclist speed	1,5	37
7	Pedestr. or cyclist mode of transport	1,5	37
8	Who makes evasive action	1,6	37
9	Post encroachment time (s)	1,6	35
10	Conflict; Comments	1,6	13
11	Pedestr. and cyclist stops or does not stop at kerb	1,6	37
12	Pedestr. and cyclist tempo crossing 1st lane	1,7	37
13	TA-value	1,7	37
14	Visibility	1,8	31
15	Pedestr. and cyclist head movements at 1st lane	1,8	37
16	Pedestr. and cyclist head movements before kerb	1,9	37
17	Crossing, on zebra crossing or somewhere else	1,9	37
18	Crossing 2nd lane	1,9	37
19	Pedestr. and cyclist tempo before kerb	2,0	37
20	Pedestr. and cyclist straight or slant across the street	2,1	37

The experts ranking of important parameters can be summarised in speed of vehicle, speed or tempo of the vulnerable road user especially at first lane (but also elsewhere), at what distances the evasive actions are made, if the vulnerable road user look around before crossing the street and if the vulnerable road user stops at the kerb or not before crossing the street. The 20 most important parameters for each cut are presented in Appendix X. It differs between the different video cuts in ranking of the important parameters, bur speed, distances, looking around and stopping at kerb or not is always ranked among the 20 most important parameters. At the sites where visibility has been a problem it is ranked to be important.

On the open question, not based on a specific video cut, what the five most important parameters are to describe the road users behaviour the respondents' answers can be divided in to four groups, see Table 6.50.

Table 6.50. The experts ranking of the five most important parameters to describe traffic safety for pedestrians and cyclists.

	Parameter	**No. of answers**
Description of situation or conflict	TA	6
	Speed	6
	Tempo	4
	Distance between car and pedestr. and cyclist	4
	PET	3
	DST	1
	Conflict description	1
	Who makes evasive action	1
Description of vulnerable road user	Stops at kerb and crossing behaviour	3
	Look around	4
	Accepted time gaps between cars	2
	Usage of surface	1
	Giving attention to the situation or not at all	1
	Age	1
Description of car driver	Car driver slowing down or giving way	2
	Type of vehicle	2
	Giving attention to the situation or not at all	1
Description of the environment	Visibility	2
	Type of nearby environment	1

The first type is parameters to describe the interaction or conflict. Of these parameters are the TA-vale and speed given most often, by five persons. The parameter pedestrian or cyclist tempo is given by four persons as an important parameter. The parameter conflict description are given by one person, which includes the parameters that is used when describing a conflict; speed and distance, resulting in a TA-value. The DST-value (Deceleration to Safety Time) is also given by one person as an important parameter to describe the interactions. The two parameters that are given most often to describe the vulnerable road user are if the pedestrian stops at kerb before crossing the street, and if the pedestrian is looking around before and while crossing the street to detect cars. Important parameters to describe the car drivers' behaviour are if the car drivers slow down or give way at the zebra crossing and what type of vehicle it is. Parameters describing the environment are given by three persons, two find the visibility in the intersection important and one person find the type of nearby environment, e.g. school, play area, shopping i.e., important.

6.4.2 Missing parameters to describe the severity of the interactions

Of the eight experts that answered the questionnaire four persons thought that no parameters were missing in describing the severity of the interactions shown. One expert thought that the studied parameters were more than he imagine anyone could analyse. Three experts gave parameters that they thought were missing. The parameters are:

- General visibility conditions, including day-light, car-headlight as well as clothing of vulnerable road user
- Child(ren) crossing with or without adult(s) (though this parameter is not missing)
- Potential "handicaps" (luggage, dog, baby carried on arm or in pram)
- Potential distractions (ice-cream van etc.)
- If there is a bus stop close to, before the crossing.
- Time gap to the next coming cars of each direction, this is the time gap which is used for the decision to cross the street if there is no refuge in the middle (though this parameter is not missing)
- DST (Deceleration to Safety Time)
- The dimension of the infrastructure; the width of the lane/the street, number of lanes, some details describing the visibility (distance to parking cars, bushes, trees, signs which are taking the visibility; this will give some indication to rebuilt or redesign the infrastructure and will give a tool to systematizes the analysis of the infrastructure
- If the involved road users is giving attention to the situation or not at all
- Subjective remarks describing "the feeling" of the trained observer as an indicator for some improvements which ought to be done of the infrastructure

It was also commented that it maybe would be useful to separate the indicators in the groups basic variables (speeds, distances), calculated variables (TA, PET, Security Level) and subjective variables (visibility, comments).

6.4.3 Describing safety problems in the studied interactions

The experts were also asked what the safety problems in the studied interactions. The answers were of the type road design and wrong behaviours of the involved road users. The speeds of the vehicles are too high and the car drivers show lack in respect to the pedestrians. The visibility is also given as a problem. The children are acting unpredictable or irresponsible and sometimes have too high speed before crossing the road. The experts' answers are here presented for each video cut:

First video cut, no. 1:

Safety problems: The adult persons were not safe guarding the children, drivers lack of respect, visibility, too high vehicle speed, lack in education and enforcement, difficult to detect the zebra crossing for the car driver.

Measures: Speed reducing devices; cushions, elevated zebra crossing, refuges and education of car driver.

Second video cut, no. 4:

Safety problems: Both pedestrian and car driver concerning themselves having right-of-way, speed of vehicle, drivers lack of respect, visibility, bus stop before zebra crossing. Difficult to detect the zebra crossing for the car driver.

Measures: Speed reducing devices; cushions, elevated zebra crossing, refuges, signalised crossing. Improve visibility. Car driver should approach smoother. Move the bus stop.

Third video cut, no. 6:

Safety problems: Young child, aggressive car driver, vehicle speed, visibility, the cyclist does not follows the rules, cyclist not forced to slow down and cyclist is not forced to get of the bike before crossing. Difficult to detect the zebra crossing for the car driver.

Measures: Reducing speed with cushions and refuges. Traffic education of cycling children. Improve visibility.

Fourth video cut, no. 12:

Safety problems: Speed of vehicles, visibility and monotone straight road. Unpredictable children, running to fast and does not look around.

Measures: Speed reducing devices, narrowing the zebra crossing, place the zebra crossing so that the pedestrians have to take a detour and hopefully slow down, improve the visibility.

Fifth video cut, no. 13&14:

Safety problems: The child is acting irresponsible, misjudgement of speed and distance and crossing outside the planned zebra crossing, to high speed of running pedestrian. Visibility and monotone straight road.

Measures: Teach children safer behaviour, railings to prevent pedestrian to cross outside zebra crossing, narrowing the zebra crossing, measures to reduce vehicle speeds to 30km/h.

Summary

The experts ranking of important parameters can be summarised in speed of vehicle, speed or tempo of the vulnerable road user especially at first lane (but also elsewhere), at what distances the evasive actions are taken, if the vulnerable road user look around before crossing the street and if the vulnerable road user stops at the kerb or not before crossing the street.

6.5 School survey

To improve the relevance of the answers only answers from children with a certain experience of the test sites were analysed. So only answers from children who have walked or bicycled through the sites for several months were included in the study, i.e. they had checked off the first or the second alternative on question 5, in Appendix Y:1, or question 4 in Appendix Y:2.

At the Hulta and Sjöbo site the school children assessed the safety effect of the reconstruction and change of Code. At the Trandared site, the effect of the change of Code was assessed, as there was no reconstruction. At this site, 63 % of the school children stated that the safety had improved, viz. they stated that the risk was cut in half or to a lower level or that it became somewhat safer than before, see Appendix Y:4. However, 89 % expressed the view that the safety had increased at the two sites, which were reconstructed, see Table 6.51.

Table 6.51. Proportion of school children assessing a certain safety effect of reconstruction and change of Code (%). "Total number" stands for total number of school children.

Site	Safer	About as dangerous/safe as before	More dangerous	Total number
Hulta and Sjöbo	*89*	*11*	*0*	18
Trandared	*63*	*37*	*0*	30
Total number	*35*	*13*	*0*	48

Most school children thought that reconstruction and change of Code had about equal contribution to the change in risk. However some stated that the change in rules mostly contributed to the change in risk, see Table 6.52.

Table 6.52. Number of school children assessing if there is a change in risk, is that caused by the reconstruction or by the new rules or by a combination of the two.

Site	Just the reconstruction	Mostly on reconstruction but not entirely	Equal distribution of the two changes	Mostly on the change in rules but not intirely	Only on the change in rules.	Total
Hulta		1	1	3		5
Sjöbo			9	2		11
Total		1	10	5		16

Most school children also thought that it had been somewhat easier to cross the street or that there was no obvious change, see Table 6.53.

Table 6.53. Number of school children assessing a certain safety effect of reconstruction and change of Code.

Site	Double difficulty, or worse	Somewhat more difficult than before	About the same as before	Somewhat of an improvement compared to before	At least double as easy as before	Total number
Hulta	1		1	2	1	5
Sjöbo		1	6	4	3	14
Trandared lower[5]		1	5	10	1	17
Trandared upper[6]		1	6	1	2	10
Total	1	3	18	17	7	46

The school children were also asked to illustrate problems they have experienced before and after the reconstruction. Before the reconstruction the most common problem stated was that car drivers did not stop. After the reconstruction and change of Code, the most common problem indicated was that not all car drivers stop. For example one child expressed that there could be misunderstandings, as some car drivers do not care about the change of Code.

Finally school children were asked to give suggestions to improve the safety still further at the sites. The most common suggestion was to install traffic signals at the site.

[5] Trandaredsgatan - Söderkullagatan
[6] Trandaredsgatan – Trandareds ring

Summary

School children's opinions of the road reconstructions in the questionnaire show that at the site where there was no reconstruction but change of Code, 63 % of the school children stated that the safety had improved. However, 89 % expressed the view that the safety had increased at the two sites, which were reconstructed.

6.6 Effect of different countermeasures on pedestrian safety

At the test sites different countermeasures have been implemented to increase safety for pedestrians and cyclists. Changes in the behaviour of road users have been observed after reconstruction and change of Code compared with the before situation. This chapter summarises the effects of the various countermeasures on the different road users' behaviour. There is two ways of analysing the results: by the results of the countermeasures for the safety of pedestrians as a group, and by the changes for children and elderly compared with the changes for adults.

At the sites the following changes have been made in the traffic environment:

Hulta	Sjöbo	Trandared upper	Trandared lower
- Speed cushions - Refuge - 30 km/h speed limit	- Removal of zebra crossing - Elevated intersection with paving stone - Narrowing of carriageway - 30 km/h speed limit	- Elevated intersection with paving stone - Refuge - Railings - 30 km/h speed limit	- Elevated area at zebra crossing with paving stone - Refuge - Railings - 30 km/h speed limit

At the Hulta site the mobility and safety for pedestrians has increased, as expressed in all the stated parameters. At the Sjöbo site, though, the mobility has not increased as much. The pedestrians cross the street differently than before because after the reconstruction, only one of the zebra crossings remained (according to Calm Street principles both zebra crossings should be removed). Hence, they are given way to more often than before the changes were made, but not as often as in the other sites. No pedestrian High Severity Situations or conflicts, though, were observed after the changes were made at the Sjöbo site.

The two intersections at Trandared School have the highest number of High Severity Situations before the change of Code. After the change of Code the High Severity Situations decreased (for the pedestrians as a group). The mobility in terms of waiting at the kerb has increased, but, for example, at the lower intersection pedestrians had to wait at the kerb just as before, see Table 6.54.

Table 6.54. Effect of the changes made for pedestrians as a group.

	Hulta 50/30-street			**Sjöbo** 30-street	**Trandared upper** 30-street	**Trandared lower** 30-street
Parameter	Reconstruction	Change of Code	Reconstr. and change of Code	Reconstr. and change of Code	Change of Code	Change of Code
Flow of pedestrians	Increased	Decreased	Increased	As before	As before	Decreased
Vehicle flow	Decrease	As before	Decrease	Decrease	As before	Increase
Vehicle speed	Decreased, average 30 km/h, 90-perc 36 km/h	-	Decreased, average 28-29 km/h, 90-perc 34 km/h	Decreased, average 22-28 km/h, 90-perc 28-34 km/h	-	-
Stopping at kerb	Decreased	Decreased	Increased for elderly, decreased for the other age groups	Decreased for children and elderly, unchanged for other age groups	Decreased	As before
Waiting at kerb	Decreased	Decreased	Decreased	As before	Decreased	As before
Walking on zebra crossing	Increased	As before	Increased	Decreased strongly	As before	As before
Running over the street	Decreased	As before	Decreased	Decreased	As before	Decreased
Looking in both directions at kerb	Decreased	As before	Decreased	Increased for children, decreased for the other age groups	As before	Increased
Pedestrians given way to	Increased	Increased	Increased	Increased	Increased	Increased
Car drivers giving way	Increased	Increased	Increased	Increased	Increased	Increased
Accepted time gap	As before	As before	As before	As before	As before	As before
High Severity Situations	Decreased	Decreased	Decreased	Decreased	Decreased	Decreased
Conflicts	Decreased	Decreased	Decreased	Decreased	Decreased	Decreased

The best for children should be the target of all governmental decisions affecting children; it is now important to see how the changes made in the traffic environments have improved the traffic situation for children compared with the norm, the age group 20 to 64 years. See Table 6.55.

Table 6.55. Effect of the changes made for children compared with the age group 20-64 years.

	Hulta			**Sjöbo**	**Trandared upper**	**Trandared lower**
	50/30-street			30-street	30-street	30-street
Parameter	Reconstruction	Change of Code	Reconstr. and change of Code	Reconstr. and change of Code	Change of Code	Change of Code
Flow of pedestrians	Increased more	Decreased	Same level	Increased less	Children increased, the age group 20-64 years decreased	Children decreased, the age group 20-64 years increased
Stopping at kerb	Decreased less	Decreased more	Same level	Decreased more	Decreased less	Decreased more
Waiting at kerb	Decreased more	Decreased more	Same level	Decreased more	Decreased less	Decreased less
Walking on zebra crossing	Same level	Same level	Same level	Decreased less	Same level	Same level
Running over the street	None in the age group 20-64 years ran, children running has decreased	None in the age group 20-64 years ran, children running has decreased	None in the age group 20-64 years ran, children running has decreased	None in the age group 20-64 years ran, children running has decreased	None in the age group 20-64 years ran, children runnin g is unchanged	None in the age group 20-64 years ran, children running has decreased
Looking in both directions at kerb	Decreased more	Decreased for children, but increased for the age group 20-64 years	Decreased more	Increased for children, but decreased for the age group 20-64 years	Same level	Increased less
Pedestrians given way to	Increased more	Increased less	Increased more	Increased less	Same level	Increased less
Car drivers giving way	Increased more	Same level	Increased more	Same level	Increased less	No clear change for either
Accepted time gap	No clear change for either age group	No clear change for either age group	No clear change for either age group	No clear change for either age group	No clear change for either age group	No clear change for either age group
High Severity Situations	Decreased more	Children 0*	Children 0*	Children 0* before and after	Children decreased, the age group 20-64 years 0*	Children unchanged, adults decreased
Conflicts	Children 0*	Children 0*	Children 0*	Children 0*	Both decreased to 0*	Children decreased to 0, the age group 20-64 years unchanged 0*

* In both the before and after situations the number of High severity Situations or conflicts were zero, 0.

At the Hulta site the frequency of children given way to has increased more than for the age group 20 to 64 years. The frequency of car drivers giving way to children has also increased more. The frequency of children looking in both directions at the kerb has decreased more for children than for the age group 20 to 64 years.

At the Sjöbo site, children are not benefiting more by being given way. The change of car drivers giving way is on the same level for children and the age group 20 to 64 years. Children also look around more at the kerb than before where the frequency of children stopping at the kerb and waiting has decreased more than for the age group 20 to 64 years.

At the upper crossing at Trandared children are not benefiting more than the age group 20 to 64 years after the change of Code. The frequency of car drivers giving way increased most for the age group 20 to 64 years and children waited longer at the kerb than the age group 20 to 64 years after change of Code.

At the lower crossing the effect of the change of Code for children compared with the age group 20 to 64 years is, for some aspects, unclear. Although children who are given way have increased, the frequency of being given way has increased more for the age group 20 to 64 years.

Examining the effect of the changes made (i.e. differences in behaviour) for elderly compared with the age group 20 to 64 years is important.

At the Hulta site the elderly are given way more than the age group 20 to 64 years, though more often car drivers are passing the elderly than the age group 20 to 64 years before a car driver finally gives way. The frequency of stopping and waiting at the kerb decreased more for the elderly than for the age group 20 to 64 years after reconstruction, but after the new law was enacted the elderly stopped and waited more than the age group 20 to 64 years.

At the Sjöbo site the situation for the elderly can be compared to the situation for children. The elderly stopped more often at the kerb, waited more at the kerb, and were not given way by car drivers as often as the age group 20 to 64 years. No High Severity Situations was observed in any time period.

No elderly persons were observed at the upper crossing in Trandared after the change of Code. At the lower crossing it is the elderly that have the largest increase in being given way and are given way the most after the change of Code. Car drivers most often also give way to an elderly pedestrian at the kerb. See Table 6.56.

Table 6.56. Effect of the changes made for elderly compared with the age group 20-64 years.

	Hulta 50/30-street			**Sjöbo** 30-street	**Trandared upper** 30-street	**Trandared lower** 30-street
Parameter	Reconstruction	Change of Code	Reconstr. and change of Code	Reconstr. and change of Code	Change of Code	Change of Code
Flow of pedestrians	Elderly decreased, the age group 20-64 years increased	Decreased more	Decreased for elderly, but increased for the age group 20-64 years	Decreased for elderly, but increased for the age group 20-64 years	No elderly observed	Decreased for Elderly, but increased for the age group 20-64 years
Stopping at kerb	Decreased more	Elderly increased, the age group 20-64 years decreased	Increased for elderly, But decreased for the age group 20-64 years	Decreased more	No elderly observed	Decreased less
Waiting at kerb	Decreased more	Elderly increased, adults decreased	Increased for elderly, but decreased for the age group 20-64 years	Decreased more	No elderly observed	Increased for elderly, but decreased for the age group 20-64 years
Walking on zebra crossing	Same level	Elderly increased, adults decreased	Increased more	Same level	No elderly observed	Same level
Running over the street	Nobody ran	Nobody ran	Nobody ran	Nobody ran	No elderly observed	Nobody ran
Looking in both directions at kerb	Decreased less	Same level	Same level	Decreased less	No elderly observed	Increased more
Pedestrians given way to	Same level	Increased more	Increased more	Increased less	No elderly observed	Increased more
Car drivers giving way	Same level	Increased less	Increased less	Unchanged for elderly, the age group 20-64 years increased	No elderly observed	Same level
Accepted time gap	No clear change for either	No clear change for either	No clear change for either	No clear change for either	No elderly observed	No clear change for either
High Severity Situations	Elderly 0*, the age group 20-64 years decreased	Elderly slightly increased, the age group 20-64 years decreased	Elderly slightly increased, the age group 20-64 years decreased	Both decreased to 0*	No elderly observed	Both 0*
Conflicts	Elderly 0*	Elderly 0*	Elderly 0*	Both decreased to 0*	No elderly observed	Both 0*

* In both the before and after situations the number of High Severity Situations. or conflicts were zero, 0.

7. CONCLUSIONS AND DISCUSSION

This chapter initially presents conclusions and discussion about the method that has been developed in this research project. The results of the studies are then discussed. Some thoughts about further research are presented at the end of the chapter.

7.1 About the method

This research project has, up to today, had a practical approach with the first aim to develop a method to collect data about pedestrians and cyclists, with a focus on the safety of child pedestrians. The data collection and, in particular, the coding of data have been time consuming.

In the initial study the coding of behaviours was divided into two parts, the overview recordings were coded for a larger set of data, and the close ups were Coded from a smaller set of the same data where interactions with children were mainly selected. Overall, the whole of the site is filmed. In this picture it is possible to see all the road users and in what direction they are travelling. In the close up pictures, only the pedestrian crossing is filmed. With these pictures it is possible to Code the age and gender of the pedestrian and cyclists, as well as Code their head movements. It was found to give more information if, in the following studies, the whole data was coded as for the close up pictures while the children's interactions were compared with persons of all ages. This way of coding is more time consuming, but more information is gathered during this time. Therefore, the material in the Borås study is coded with all parameters.

The most common pedestrian is an adult person. Children are not as common, even in traffic environments close to schools. Interactions with adults in the Borås study are coded for some of the material, while for children and the elderly, interactions are coded for the whole material. However, High Severity Situations were searched and coded also for adults for whole of the material.

A way of quickening the coding of parameters is to exclude some of the coded parameters dependent on the studied traffic environment. Before the coding starts, the parameters to be studied are chosen. This can differ between various traffic environments. The amount of adult behaviours that is coded could also be decreased. A more efficient way of collecting data for the different age groups would be stratified samples by age; the same amount of data collected for adults as for children. In this way the time for coding would be significantly reduced.

Any observer who has had an introduction to this method can do the coding of parameters. It takes quite a while to be that trained that the coding is done at a less time consuming tempo. The time it takes to do the coding is, of course, also dependent of the flow of pedestrians and cyclists at the studied site.

In the studied traffic environments the number of High Severity Situations per studied hour has been very low. The search for High Severity Situations in the material is not time consuming and gives important information about these environments. Therefore, this part of

the method should not be reduced. It could possibly be increased, but this is dependent on how much fieldwork can be done, and how much video material resources there are to collect.

The first part of the method is the fieldwork, i.e. collecting video data at the studied sites. In this study, data from Malmö and Borås in Sweden have been presented. Gathering data requires travelling to another city to collect video data, and the costs of the fieldwork increase. Consequently, the balance between costs and the amount of collected data must be kept in mind.

The method for the coding of parameters gives a lot of information about the car drivers' behaviours and the behaviours of pedestrians and cyclists of different ages. The results from a site tell us if the traffic situation is improved for the pedestrians as a group. The goal with reconstruction of the studied sites is to improve the traffic safety, security, and mobility for all pedestrians and cyclists, but also especially for children, the elderly, and disabled people. The differences between children and the other age groups are shown in the results. The parameters waiting time at a kerb, percentage of pedestrians given way to by car drivers, and if the children are running over the street, gives a lot of information regarding the mobility and security for pedestrians and how the car driver's behaviours have changed towards the pedestrians. Expressing the relationship with safety in these types of parameters is still a problem, though. However, explorative data analysis based on these parameters can give important clues toward a safe traffic environment for children.

The parameters on coding head movements of car drivers showed to be difficult in this design of the method. It was difficult to determine if the car drivers moved their heads because of reflections in the windscreen and it was most often dark in the car. It was not possible, via this design of the method, to determine where the car was situated in relation to either the zebra crossing or the pedestrians when the car drivers' head movements were observed. In a study by Räsänen and Summula (1998) regarding driver's head movement to detect cyclists at intersections, video cameras were used to capture the different road users' behaviour. Summula (1996) also used video cameras in a study on the same issue. In both these studies they succeeded in describing the car drivers' head movements with video filming. The difference between their studies and this study is that their car drivers' head movements were the only or one of very few parameters that were collected. In this study the methods were conceived to cover many types of parameters, not only the car drivers head movements; therefore, the method design in the field was less than optimal for collecting the car drivers head movements.

Coding the pedestrians' head movements precisely enough to determine if the pedestrian looked over the shoulder to detect cars from the secondary streets was not possible in the method design. It was possible to detect if the pedestrian moved the head to look left or right, but it was not possible to determine exactly if the pedestrians looked for cars coming from the side streets.

The coding of parameters is made from the pedestrians' and cyclists' point of view. From these results, the behaviour of the car driver is also extracted. For example, how many car drivers pass the zebra crossing when a pedestrian or cyclist intends to cross the road or if a car driver gives way more or less to pedestrians of different ages. A crucial parameter in describing the car drivers' behaviour is the vehicle speed at the zebra crossing. The measuring of vehicle speed can easily be done while collecting video data in the field and it tells us a lot about the car driver's behaviours.

The expert questionnaires and the video cuts were sent to the recipients by e-mail. The advantage with e-mail is that the distribution is very easy. The big disadvantage with digital video cuts is that the size of the files quickly becomes large, so large that not all e-mail

servers can receive them. The file size must be compared with the quality of the picture and, in this case, the quality of the picture was set to a rather low standard and there was still trouble with the distribution. Low picture quality results in difficulties in watching the sequences. Another big disadvantage is that there is no norm for software used when viewing video sequences. In this case the video digitalizing was made in a later version of software with the big advantage of making the files small in size (making it possible to send the sequences by e-mail). However, a disadvantage was that it was not compatible with the older versions of viewing software that the recipients normally have in their computers.

Before the questionnaire finally was sent out, a more extensive questionnaire was tested at a seminar at the Department of Psychology at Lund University. At the seminar it was found that the questionnaire should be shortened to increase the chance of the respondents answering the questions. Hence, the questionnaire that finally was sent out was shorter than the initial version, but due to the respondent's comments, the questionnaire should have possibly been even shorter to increase the number of answers. The time it was said that answering the questionnaire would take was set to 40 minutes, but recipients spent more time than that on answering the questionnaire. The questionnaire was sent out to 26 persons. Nine persons answered the questionnaire. Five persons answered that the questions were interesting, but they could not answer due to lack of time. A shorter questionnaire maybe would have resulted in more answers.

7.2 Results

In the beginning of the thesis some hypotheses were stated. Many of the hypotheses are statements about the results before and after reconstruction. Therefore, the results from the two crossings in Trandared are not commented by all hypotheses. A short description of the hypothesis and the results of the hypothesis testing are given below. The different results are presented if they vary between the different studied sites. Sometimes a short comment is also given.

H 1. Fewer High Severity Situations and conflicts after the reconstruction and Code change.

At the Hulta and Sjöbo sites the number of situations per studied hour decreased after reconstruction at. This number also decreased after the change of Code at the Hulta and Sjöbo sites, and the two crossings in Trandared, see Table 6.47.

H 2. Before the reconstruction more children stop at the kerb for cars than after.

At both the Hulta and Sjöbo sites more children stopped at the kerb before the reconstruction than after, see passage 6.2.8.

Before reconstruction the speeds of the vehicles were higher and the pedestrians were given way less compared to after reconstruction, the pedestrians had to stop at the kerb. The lower vehicle speeds made it easier to cross the street between cars and car drivers gave way to a higher extent. The pedestrians had to stop to a lower extent. The child pedestrians at Sjöbo stopped more often than the children at the Hulta site.

H 3. Less head movements of children after the reconstruction. It is easier for children to cope with the interactions.

At the Hulta site there were less head movements of children after the reconstruction. However, at the Sjöbo site there were more.

At the Hulta site the head movements most likely decreased because it is easier to cross the street after reconstruction, see Tables 6.18-6.21. At the Sjöbo site the children's head movements most likely increased because they crossed the street more often at other places than at the zebra crossing, see Figure 6.10. It is unclear how road users will interact with each other, therefore, it is still important to scan the street and other road users before crossing the street.

H 4. The children's tempo is changed after the reconstruction to less running over the first and second lanes.

There was less running over first and second lane at both the Hulta site and the Sjöbo site, see Figures 6.19 and 6.20.

Rämä (1998) stated that children running over the street, especially the second street, is an indicator of insecure feelings, less running after reconstruction is therefore a sign of the children feel more secure when crossing the street. The result in this study is that after reconstruction fewer children run over the street. The reconstructions have reduced the children's feelings of being insecure provided Rämä is right.

H 5. The walking tempo of the children is higher when entering the intersection after the reconstruction.

The tempo was lower at both sites, see Appendix K.

The children's tempo before crossing the street did not change after reconstruction.

H 6. More children are looking over their shoulders after the reconstruction to look if vehicles are coming to the intersection from the minor road, as it is easier for children to cope with the interactions after the reconstruction.

It was not possible with the present method to assess the head movements that precisely.

H 7. The reconstruction and Code change has improved the mobility more for children than pedestrians of other ages. The parameter pedestrians given way to by car driver describes mobility.

At the Hulta site the increase in children given way by car drivers is larger than for other age groups, both after reconstruction and Code change, see passage 6.2.8.

At the Sjöbo site the children are given way to a higher extent after reconstruction and change of Code, but the increase is not larger than for other age groups, see passage 6.2.8. In fact, children and the elderly have the smallest increase in frequency of being given way to by car drivers.

At the Trandared upper and Trandared lower crossings the children are given way to a higher extent after the change of Code, but the increase is not larger than for other age groups.

H 8. The flow of pedestrians crossing the main road increases after reconstruction.

At both the Hulta and the Sjöbo sites the flow of pedestrians has increased after reconstruction, however the flow of pedestrians is almost unchanged at the Sjöbo site after reconstruction.

The flow of pedestrians has increased after reconstruction, however the flow of pedestrians is almost unchanged at the Sjöbo site after reconstruction. The pedestrian flows have increased with 4% at one test site and with 34% at the other test site after reconstruction. The change of Code might also have an effect on pedestrian flows, but at the Trandared site, where there was no reconstruction, the pedestrian flow increased with 9% at one crossing and decreased with 12% at the other so there are no clear evidence about the effect.

After the change of Code no changes in the flow of vehicles are shown. In the Sjöbo site a decrease of vehicle flow is shown after reconstruction and Code change compared with before the changes were made. At the upper intersection in Trandared no significant changes in car flows are shown. At the lower intersection in Trandared an increase of vehicles travelling through the intersection is shown.

H 9. Overtaking occurs at the zebra crossings in the before situation. This will not be possible after the reconstruction.

Sjöbo was the only site that had overtaking situations in the before situation, a total of three, in other words very few. After reconstruction one overtaking situation was observed. At the Sjöbo site overtaking is still possible after reconstruction of the intersection. At the sites at the Hulta site and Trandared no overtaking situations were observed at any time period. At the Hulta site overtaking was possible before reconstruction, but is not possible after reconstruction due to the refuge that was built. In the crossings at Trandared overtaking is not possible due to the refuges.

H 10. After the reconstruction the speeds of the vehicles are lower than before.

At both the Hulta and the Sjöbo site, the vehicle speeds were lower after reconstruction.

At the Hulta site the 90-percemtile deceased with 27 km/h in the morning and 23 km/h in the afternoon. At the Sjöbo site the 90-percentile decreased with 15 km/h in the morning and with 20 km/h in the afternoon. The 90-percentile of the speeds decreased by 5 km/h at the control site Källbäcksryd.

Varhelyi (1998) shows that car drivers use a higher speed when a pedestrian is about to cross the street at a zebra crossing when the car and pedestrian have a collision course, compared with cars driving with no pedestrians present at the zebra crossing. The car driver signals to the pedestrian that he wants priority. When a pedestrian arrives to the zebra crossing before the car driver and can theoretically cross the street before the car driver reaches the zebra crossing, the car drivers speed are significantly lower than cars driving with no pedestrians present at the zebra crossing.

At all the studied sites the speed cushions and elevated areas decreased the vehicle speeds. At the Sjöbo site the car drivers had the lowest average speeds, below 30 km/h. At the intersections at Trandared school the speeds were higher, above 30 km/h. Only at the Sjöbo site during afternoon traffic the 90-percentile was below 30 km/h. The goal of traffic calming with the 90-percentile below 30 km/h is not fulfilled, however, the speeds have decreased sharply in the after situations. At the Hulta site a decrease is shown for vehicles travelling through the intersection after reconstruction compared with before reconstruction.

H 11. After the reconstruction more car drivers are giving way to children and other pedestrians.

More car drivers are giving way to both children and other pedestrians at both the Hulta and Sjöbo sites.

H 12. The right turning car drivers from the minor road do head movements to the right earlier and more often after reconstruction while it is easier to judge the traffic from the left due to the lower speeds.

It was not possible with the present method to assess the head movements that precisely.

H 13. The car drivers driving straight ahead do head movements earlier and more often after reconstruction while it is easier to judge the traffic due to the lower speeds.

It was not possible with the present method to assess the head movements that precisely.

H 14. A group of people are more often given way by car drivers than a single person.

At all sites, a group of people are more often given way by car drivers than a single person, see Figure 6.37.

Persons walking in a group are given way to a higher extent than persons walking alone, both before and after reconstruction and Code change.

H 15. After the Code change more car drivers are giving way to pedestrians.

The results show that more drivers are giving way to pedestrians at all sites, see passage 6.2.8.

From the comments to the hypothesis we see that there are differences in the effect of the various countermeasures that were implemented at the different sites. However, many findings from earlier research is confirmed.

Vinjé (1982) suggested that young children and the elderly are likely to be overcautious in their decisions regarding traffic gaps. The results in this thesis also indicate that the youngest children do seldom accept time gaps in the interval less than 5 s and 5 to 10 s and most often only accept time gaps longer than 10 s.

MacGregor (1999) found that older children were less likely to stop at the kerb before crossing than younger children and of all the children, 21% checked both to the left and the

right before crossing the street. It is also found in this thesis that younger children stop at the kerb to a higher extent than older children.

In this thesis, it was also found that the youngest children, younger than 6 years, seldom looked in both directions at the kerb. This was the case at all three studied time periods. Children of the age groups 6 to 9 years looked the most, between 13 to 64 % dependent on age and site. Children in the age group 10 to 12 years looked less than the 6 to 9 years, but more than the youngest children.

The change of Code, as an isolated change, increased the frequency of pedestrians as a group given way to at all sites, but at no site was it the children who benefited the most. The frequency of car drivers giving way also increased, but children did not benefit more than any other pedestrian age group.

Whether the pedestrians were walking on the marked zebra crossing or not, was dependent on the traffic environment's design. This also has a strong influence on the car drivers' behaviours towards the pedestrians. At the Sjöbo site, where the intersection was elevated and a zebra crossing was removed, the pedestrians crossed the street more seldom at the remaining zebra crossing. At this site the pedestrians were given way to a lower extent and car drivers gave way to a lower extent as compared with the other sites. Children and the elderly also benefited less than adults did. The numbers of High Severity Situations and conflicts were very low. The vehicle speeds were the lowest observed at this study. At the other sites with marked zebra crossings the pedestrians walked on the zebra crossing to a much higher extent. At the intersections at Trandared school there are also railings at the kerb to prevent pedestrians from crossing the street at the links. The pedestrians benefited, they had to stop and wait less and they were more often given way. The numbers of High Severity Situations and conflicts were very low. Ekman (1997) showed in a literature study and an individual study (1996) that the risk of accident and conflict for a pedestrian when crossing a street is highest at zebra crossings, especially for children and the elderly. At zebra crossings with refuges the risk of conflicts were lower. Traffic calming measures have about the same effect in lowering the risk of conflict and accidents as refuges according to a meta analysis by Elvik *et al.* (1997) of the effect of a variety of traffic safety measures.

Therefore, the conclusion is that a zebra crossing is a strong signal to both pedestrians and car drivers that this area is designed to the benefit of pedestrians. It is where the pedestrians should cross the street and, if a pedestrian intends to cross the street at this area, the car driver must give way. To provide traffic environments with clear signals and guidelines to all road users maybe the zebra crossings should be kept also at the intersections with traffic calming implemented.

The application of the Calm Street, Lugna Gatan, traffic calming principles seems to increase the mobility, security, and safety for pedestrians as a group and especially for children and the elderly. However, this is dependent on if the pedestrians cross the street at the zebra crossing or not. The Midtland´s (1995) check list for safer traffic environments for children should also be mentioned.

The result of the expert questionnaire was that speed is the most important parameter in describing accident risk for pedestrians and cyclists. That is also assessed as the most important parameter in each single cut that was used in the expert questionnaire. The second important parameter is the distance from the car to the collision point when the car driver or pedestrian or cyclist makes the evasive action. The experts ranking of important parameters can be summarised as speed of vehicle, speed or tempo of the pedestrian or cyclist (especially at the first lane), at what distances the evasive actions are made, if the pedestrian and cyclist

look around before crossing the street, and whether or not the pedestrian or cyclist stops at the kerb before crossing the street.

School children's opinions of the road reconstructions in the questionnaire show that at the site where there was no reconstruction but change of Code, 63 % of the school children stated that the safety had improved. However, 89 % expressed the view that the safety had increased at the two sites, which were reconstructed.

7.3 Further research

The data collected and presented in this thesis are from sites with some specific types of physical measures taken to improve the mobility, security and safety for pedestrians and cyclists. The reliability and validity of the method are important research topics for the future. The expert survey can be seen as a first attempt to assess the method's validity. More data should be collected at sites with other types of physical measures taken, e.g. roundabouts, four-way stops and sites, and "Gångpassager"[7]. The effect of remaining zebra crossings or removed zebra crossings in traffic calmed intersections should also be studied more.

Based on the results of the data analysis and of the expert questionnaire there is reason to believe that the method in coding the behaviours of the road users can be more efficient in the future. The coding of the road users' behaviours can be concentrated on a lower number of parameters. The most important ones seem to be the speed of vehicles and pedestrians and cyclists, whether or not the pedestrian or cyclist stops at the kerb, and if the pedestrian or cyclist looks around before crossing the road. Also, the data can be stratified with respect to the pedestrian's or cyclist's age. The traffic safety, or lack thereof, is then described in a comprehensive way taking all the road users under consideration.

The analyses of the collected data that have been done so far have been made with the purpose of exploring the data to find a clue to a safe traffic environment for children. However, the data so far has only been analysed from one city, Borås, but we have already started gathering data from sites in Malmö, Trollhättan, Luleå and Storuman. If funding is provided we will continue to analyse the effects of different types of countermeasures and combinations of different countermeasures, thereby leading to the safe and good design of the traffic environment. This means that the traffic environment is safe for children. A traffic environment that is safe for children should be safe to all persons of different ages.

[7] Areas provided for pedestrians to cross the street but not necessaryly marked as zebra crossings. For design of "Gångpassager", Pedestrian crossing zones, see SNRA.s report Säkra Gångpassagen! (1998).

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APPENDICES

A	**Collected video data in Borås**
B	**Flow of pedestrians and cyclists**
C	**Flow of vehicles**
D	**Modes of transport**
E	**Age structure**
F	**Gender structure**
G	**Speed of vehicles at zebra crossing**
H	**Pedestrians walking in a group**
I	**Pedestrian waiting time at kerb**
J	**Pedestrian crossing area**
K	**Pedestrian tempo**
L	**Pedestrian head movements**
M	**Pedestrian stops at kerb or not, car driver give way or not**
N	**Pedestrians given way to by car drivers coming to or leaving the intersection**
O	**Pedestrians given way to by car drivers coming from the left or from the right**
P	**No. of cars passing when pedestrian intend to cross the road**
Q	**High Severity Situations and conflicts**
R	**Accepted time gap**
S	**pedestrians walking in a group or alone given way to by any car driver**
T	**Expert questionnaire**
U	**Letter to experts**
V	**Experts ranking of parameters**
X	**20 most important parameters**
Y	**School survey**
Z	**Coded parameters**

Collected video data from Borås **Appendix A**

Intersection	Description		Date	Time	Coded passages
HULTA	Period 1	Before reconstruction and code change	1999-05-04	7.30-9.00, 13.30-16.30	Morning: All passages vulnerable road users Afternoon: Children and youth and interactions of higher severity vehicle flows
			1999-05-05	13.30-16.30	All passages vulnerable road users, vehicle flows
			1999-05-06	7.30-9.00	All passages vulnerable road users
	Period 2	After reconstruction	2000-03-20	7.30-9.00, 13.30-16.30	All passages vulnerable road users, vehicle flows
			2000-03-21	7.30-9.00, 13.30-16.30	All passages vulnerable road users, vehicle flows
	Perid 3	After reconstruction and code change	2000-05-08	7.30-9.00, 13.30-16.30	All passages vulnerable road users, vehicle flows
			2000-05-09	7.30-9.00, 13.30-16.30	Children and youth and interactions of higher severity, vehicle flows
SJÖBO	Period 1	Before reconstruction and code change	1999-04-20	13.30-16.30	All passages vulnerable road users, vehicle flows
			1999-04-21	7.30-9.00, 13.30-16.30	All passages vulnerable road users, vehicle flows
	Period 3	After reconstruction and code change	2000-05-09	7.30-9.00, 13.30-16.30	First part of afternoon: All passages vulnerable road users, vehicle flows Second part of afternoon: Children, youth and interactions of higher severity
			2000-05-10	7.30-9.00, 13.30-16.30	Children, youth and interactions of higher severity, vehicle flows
TRANDRED UPPER INTERSECTION	Period 2	After reconstruction	2000-03-22	7.30-9.00, 13.30-16.30	All passages vulnerable road users, vehicle flows
	Period 3	After reconstruction and code change	2000-05-10	7.30-9.00, 13.30-16.30	All passages vulnerable road users, vehicle flows
TRANDRED LOWER INTERSECTION	Period 2	After reconstruction	2000-03-23	7.30-9.00, 13.30-16.30	All passages vulnerable road users, vehicle flows
	Period 3	After reconstruction and code change	2000-05-08	7.30-9.00, 13.30-16.30	All passages vulnerable road users vehicle flows
KÄLLBÄCKS-RYDSGATAN	Period 1	Controll crossing No changes made	1999-05-05	7.30-9.00	All passages vulnerable road users, vehicle flows
			1999-05-06	13.30-16.30	All passages vulnerable road users, vehicle flows
	Perid 3	Controll crossing No changes made	2000-05-11	7.30-9.00, 13.30-15.00	All passages vulnerable road users, vehicle flows

Flow of pedestrians

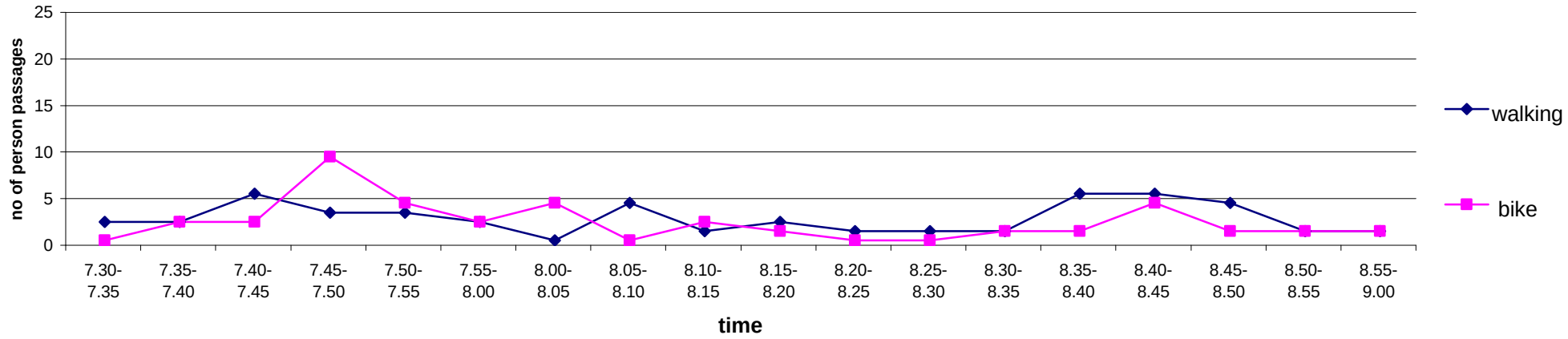
Appendix B:1

		Hulta			**Sjöbo**			**Trandred**			**Trandared**		
				Flow			Flow	**upper**		Flow	**lower**		Flow
	age	Total no.	*Index*	pedestr./h	Total no.	*Index*	pedestr./h	Total no.	*Index*	pedestr./h	Total no.	*Index*	pedestr./h
Before	0-12	21	*100*	5	79	*100*	18	-	-	-	-	-	-
reconstruction	13-19.	47	*100*	10	39	*100*	9	-	-	-	-	-	-
	20-64.	106	*100*	24	207	*100*	46	-	-	-	-	-	-
	>64.	23	*100*	5	66	*100*	15	-	-	-	-	-	-
	Total	197	*100*	44	391	*100*	87	-	-	-	-	-	-
After	0-12	30	*143*	7	-	-	-	96	*100*	21	121	*100*	27
reconstruction	13-19.	56	*119*	12	-	-	-	18	*100*	4	49	*100*	11
	20-64.	164	*155*	36	-	-	-	61	*100*	14	70	*100*	16
	>64.	13	*57*	3	-	-	-	7	*100*	2	20	*100*	4
	Total	263	*134*	58	-	-	-	182	*100*	40	260	*100*	58
After	0-12	29	*138*	6	91	*115*	20	135	*141*	30	97	*80*	22
reconstruction	13-19.	66	*140*	15	48	*123*	11	15	*83*	3	35	*71*	8
and change	20-64.	129	*122*	29	218	*105*	48	48	*79*	11	77	*110*	17
of code	>64.	9	*39*	2	48	*73*	11	0	*0*	0	19	*95*	4
	Total	233	*118*	52	405	*104*	90	198	*109*	44	228	*88*	51

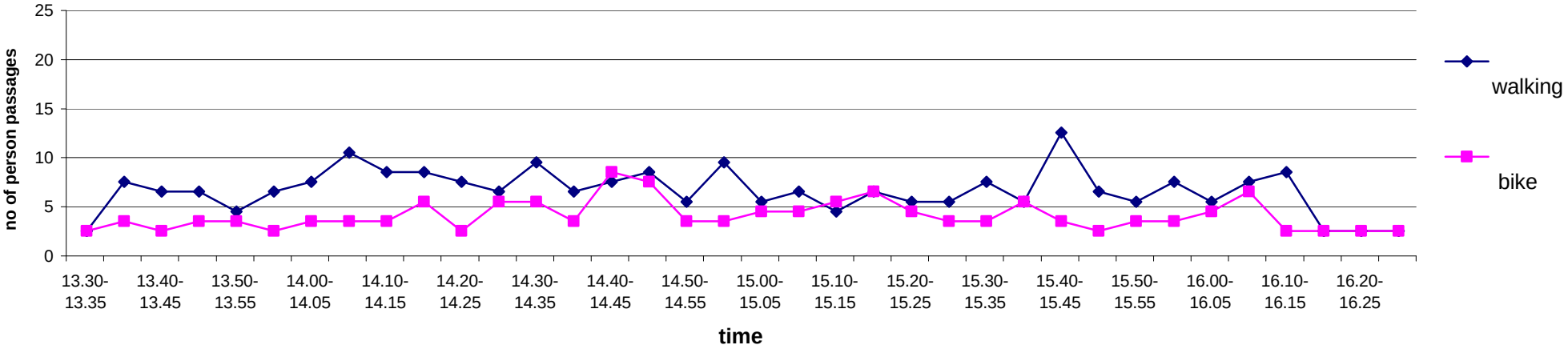
Flow of cyclists

	Hulta			**Sjöbo**			**Trandred**			**Trandared**		
			Flow			Flow	**upper**		Flow	**lower**		Flow
	Total no.	*Index*	cyclists/h	Total no.	*Index*	cyclists/h	Total no.	*Index*	cyclists/h	Total no.	*Index*	cyclists/h
Before reconstruction	91	*100*	20	33	*100*	7	-	-	-	-	-	-
After reconstruction	58	*64*	13	-	-	-	10	*100*	2	5	*100*	1
After reconstruction and code change	118	*130*	26	77	*233*	17	38	*380*	8	12	*240*	3

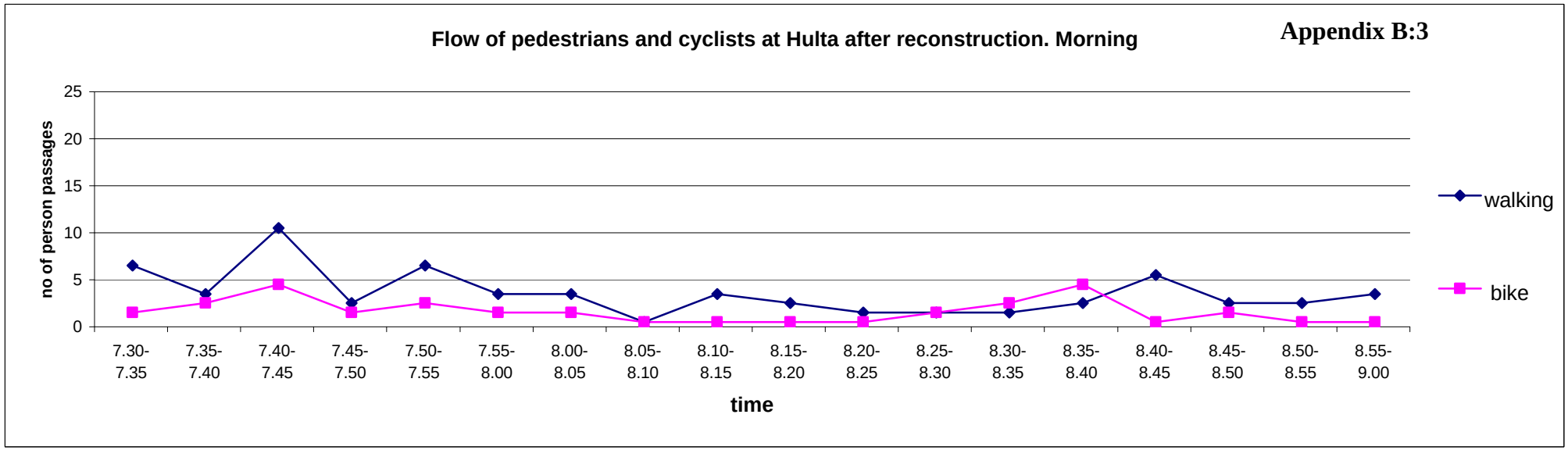
Flow of pedestrians and cyclists at Hulta before reconstruction. Morning **Appendix B:2**

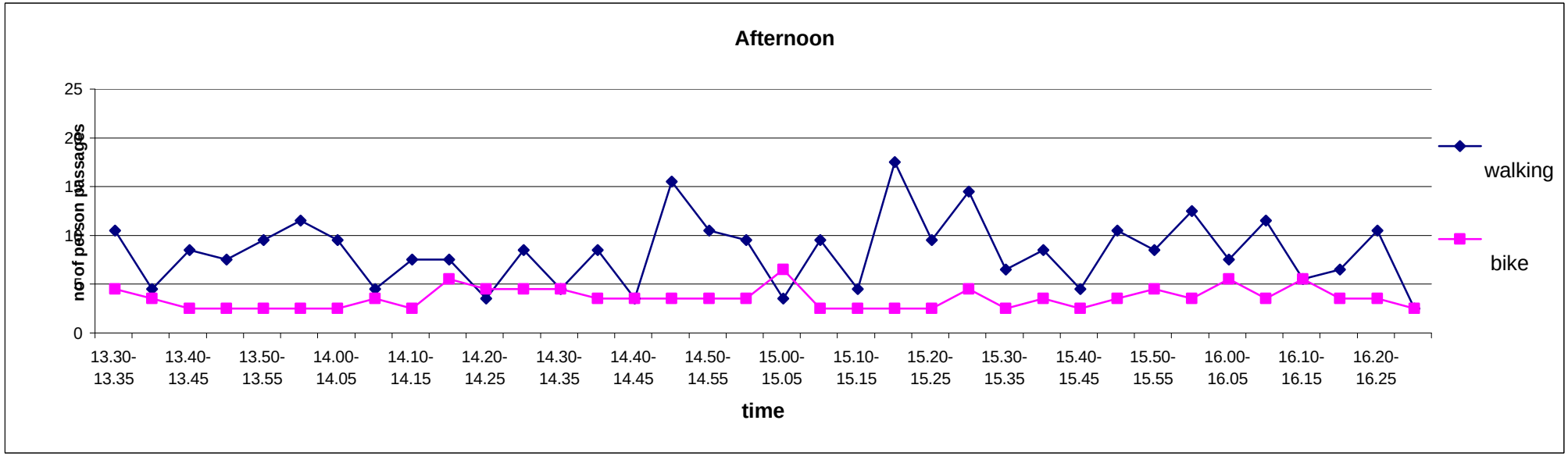


Afternoon

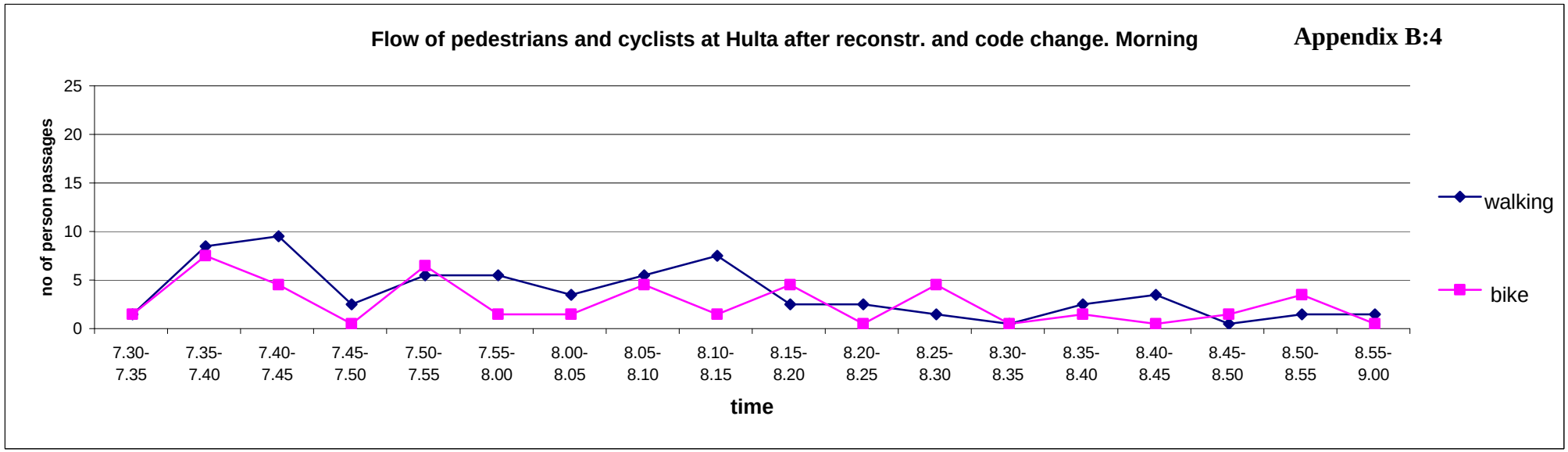


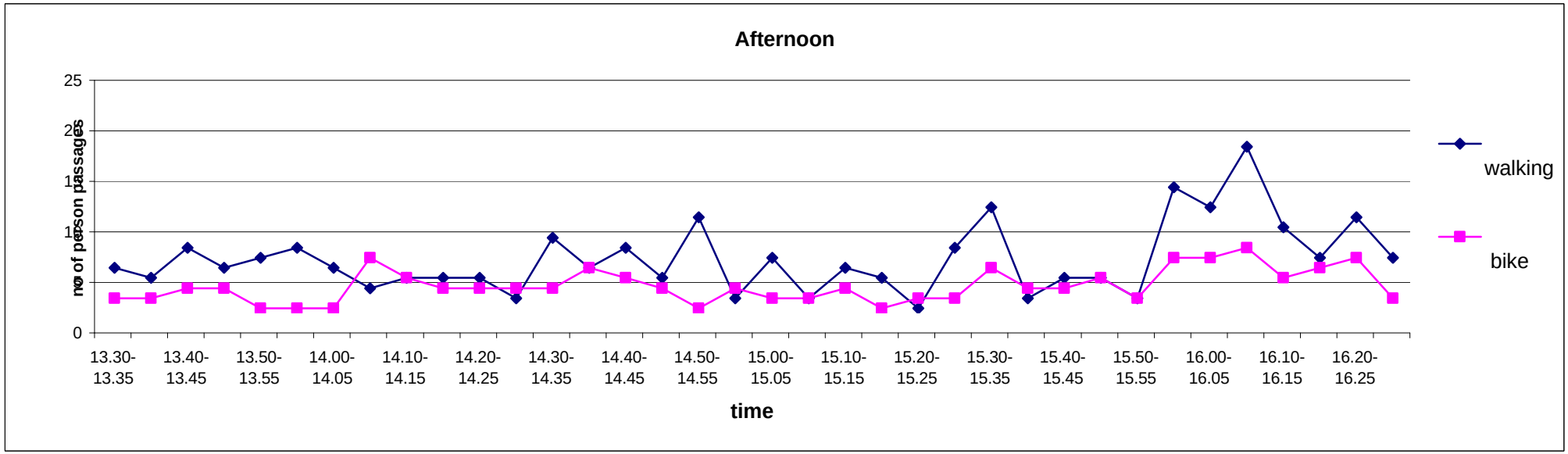
Appendix B:3


Flow of pedestrians and cyclists at Hulta after reconstruction. Morning
no of person passages
25
20
15
10
5
0
7.30-7.35
7.35-7.40
7.40-7.45
7.45-7.50
7.50-7.55
7.55-8.00
8.00-8.05
8.05-8.10
8.10-8.15
8.15-8.20
8.20-8.25
8.25-8.30
8.30-8.35
8.35-8.40
8.40-8.45
8.45-8.50
8.50-8.55
8.55-9.00
time
walking
bike


Afternoon
no of person passages
25
0
13.30-13.35
13.40-13.45
13.50-13.55
14.00-14.05
14.10-14.15
14.20-14.25
14.30-14.35
14.40-14.45
14.50-14.55
15.00-15.05
15.10-15.15
15.20-15.25
15.30-15.35
15.40-15.45
15.50-15.55
16.00-16.05
16.10-16.15
16.20-16.25
time
walking
bike

Appendix B:4


Flow of pedestrians and cyclists at Hulta after reconstr. and code change. Morning
no of person passages
25
20
15
10
5
0
7.30-7.35
7.35-7.40
7.40-7.45
7.45-7.50
7.50-7.55
7.55-8.00
8.00-8.05
8.05-8.10
8.10-8.15
8.15-8.20
8.20-8.25
8.25-8.30
8.30-8.35
8.35-8.40
8.40-8.45
8.45-8.50
8.50-8.55
8.55-9.00
time
walking
bike


Afternoon
no of person passages
25
20
15
10
5
0
13.30-13.35
13.40-13.45
13.50-13.55
14.00-14.05
14.10-14.15
14.20-14.25
14.30-14.35
14.40-14.45
14.50-14.55
15.00-15.05
15.10-15.15
15.20-15.25
15.30-15.35
15.40-15.45
15.50-15.55
16.00-16.05
16.10-16.15
16.20-16.25
time
walking
bike

Appendix C:1

FLOW OF VEHICLES

Hulta **Before reconstruction**

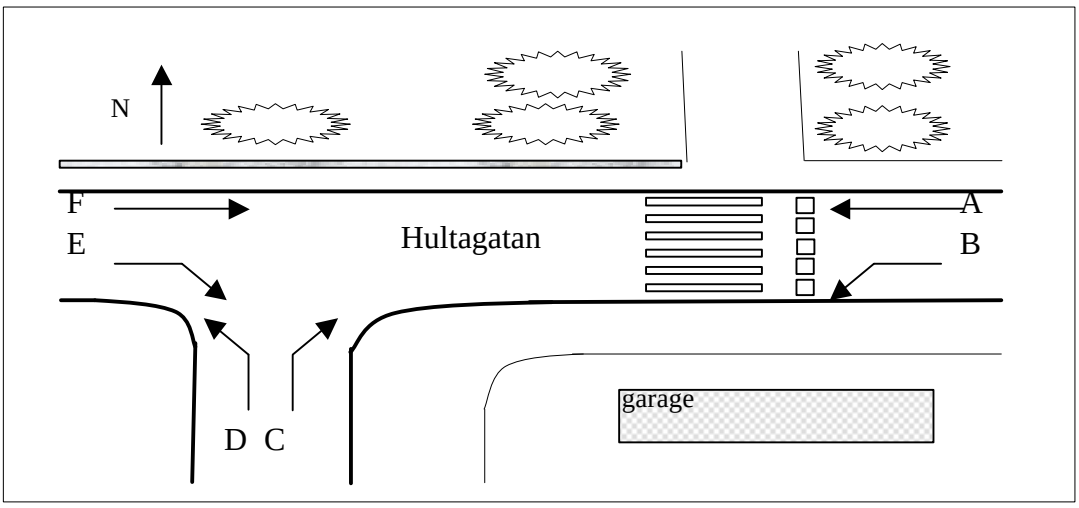
		A	B	C	D	E	F
Morning	Total	182	47	19	25	18	165
	Flow/h	*121*	*31*	*13*	*17*	*12*	*110*
Afternoon	Total	438	102	123	60	84	441
	Flow/h	*175*	*41*	*49*	*24*	*34*	*176*
Total	Total	620	149	142	85	102	606
	Flow/h	*155*	*37*	*36*	*21*	*26*	*152*

Hulta **After reconstruction**

		A	B	C	D	E	F
Morning	Total	146	22	14	30	24	136
	Flow/h	*97*	*15*	*9*	*20*	*16*	*91*
Afternoon	Total	394	134	132	102	76	520
	Flow/h	*131*	*45*	*44*	*34*	*25*	*173*
Total	Total	540	156	146	132	100	656
	Flow/h	*120*	*35*	*32*	*29*	*22*	*146*

Hulta **After reconstruction and change of code**

		A	B	C	D	E	F
Morning	Total	122	40	30	30	30	130
	Flow/h	*81*	*27*	*20*	*20*	*20*	*87*
Afternoon	Total	438	88	152	86	110	500
	Flow/h	*146*	*29*	*51*	*29*	*37*	*167*
Total	Total	560	128	182	116	140	630
	Flow/h	*124*	*28*	*40*	*26*	*31*	*140*



Appendix C:2

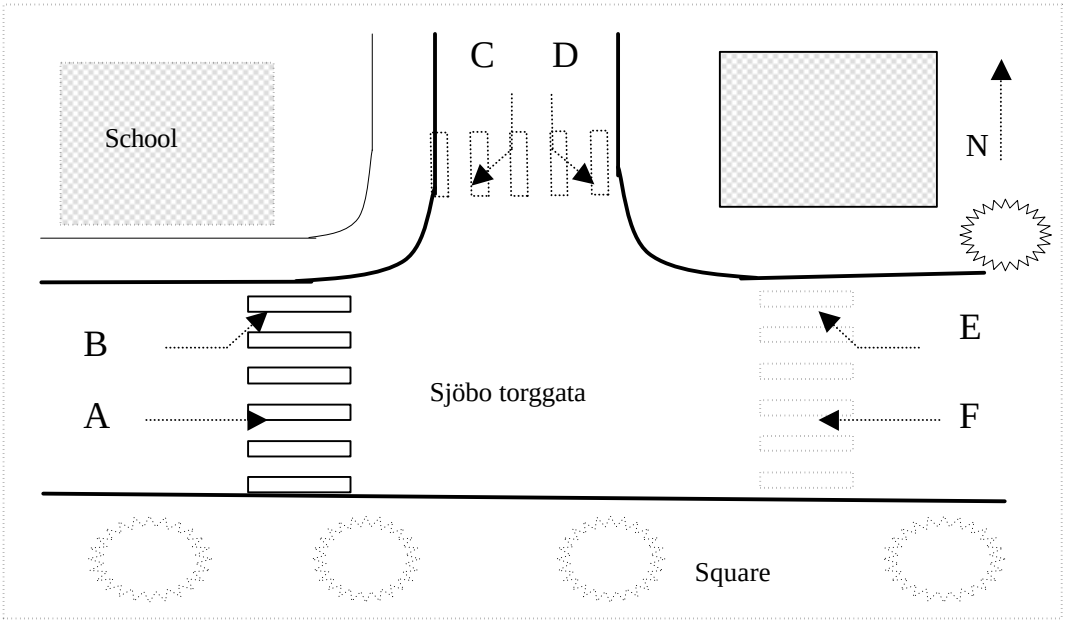
FLOW OF VEHICLES

Sjöbo Before reconstruction

		A	B	C	D	E	F
Morning	Total no.	134	14	8	68	88	86
	Flow/h	*89*	*9*	*5*	*45*	*59*	*57*
Afternoon	Total no.	255	11	15	131	119	336
	Flow/h	*85*	*4*	*5*	*44*	*40*	*112*
Total	Total no.	389	25	23	199	207	422
	Flow/h	*86*	*6*	*5*	*44*	*46*	*94*

Sjöbo After reconstruction and change of code

		A	B	C	D	E	F
Morning	Total	108	10	9	57	59	61
	Flow/h	*72*	*7*	*6*	*38*	*39*	*41*
Afternoon	Total	207	11	18	122	108	252
	Flow/h	*69*	*4*	*6*	*41*	*36*	*84*
Total	Total	315	21	27	179	167	313
	Flow/h	*70*	*5*	*6*	*40*	*37*	*70*



Appendix C:3

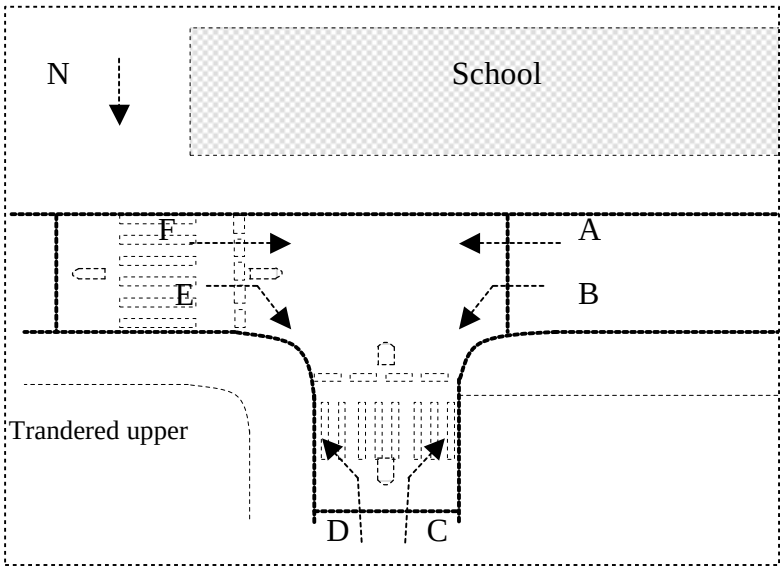
FLOW OF VEHICLES

Trandared upper Before change of code

		A	B	C	D	E	F
Morning	Total	222	24	56	26	8	288
	Flow/h	*148*	*16*	*37*	*17*	*5*	*192*
Afternoon	Total	537	107	74	19	38	529
	Flow/h	*179*	*36*	*25*	*6*	*13*	*176*
Total	Total	759	131	130	45	46	817
	Flow/h	*169*	*29*	*29*	*10*	*10*	*182*

Trandared upper After change of code

		A	B	C	D	E	F
Morning	Total	260	22	40	10	24	272
	Flow/h	*173*	*15*	*27*	*7*	*16*	*181*
Afternoon	Total	548	114	62	20	36	560
	Flow/h	*183*	*38*	*21*	*7*	*12*	*187*
Total	Total	808	136	102	30	60	832
	Flow/h	*180*	*30*	*23*	*7*	*13*	*185*



Appendix C:4

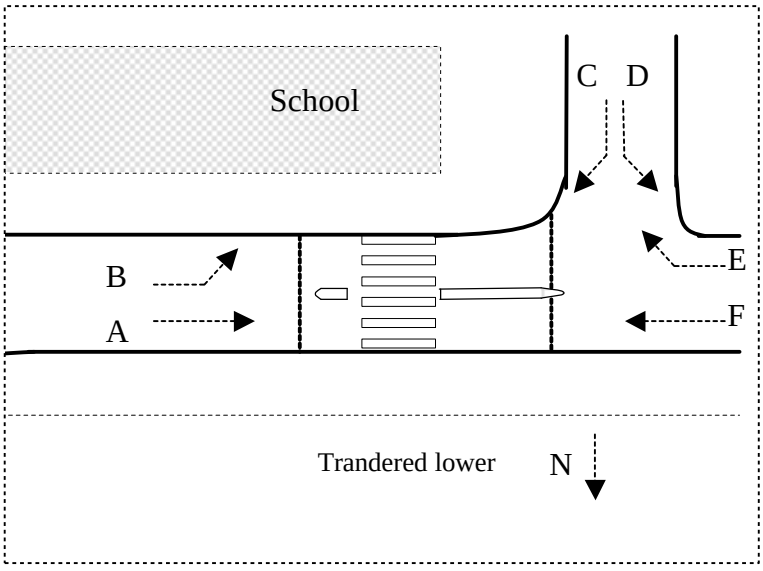
FLOW OF VEHICLES

Trandared lower Before change of code

		A	B	C	D	E	F
Morning	Total	284	11	48	55	53	235
	Flow/h	*189*	*7*	*32*	*37*	*35*	*157*
Afternoon	Total	518	68	66	102	178	592
	Flow/h	*173*	*23*	*22*	*34*	*59*	*197*
Total	Total	802	79	114	157	231	827
	Flow/h	*178*	*18*	*25*	*35*	*51*	*184*

Trandared lower After change of code

		A	B	C	D	E	F
Morning	Total	303	26	53	46	67	248
	Flow/h	*202*	*17*	*35*	*31*	*45*	*165*
Afternoon	Total	624	59	55	116	135	698
	Flow/h	*208*	*20*	*18*	*39*	*45*	*233*
Total	Total	927	85	108	162	202	946
	Flow/h	*206*	*19*	*24*	*36*	*45*	*210*



Appendix C:5

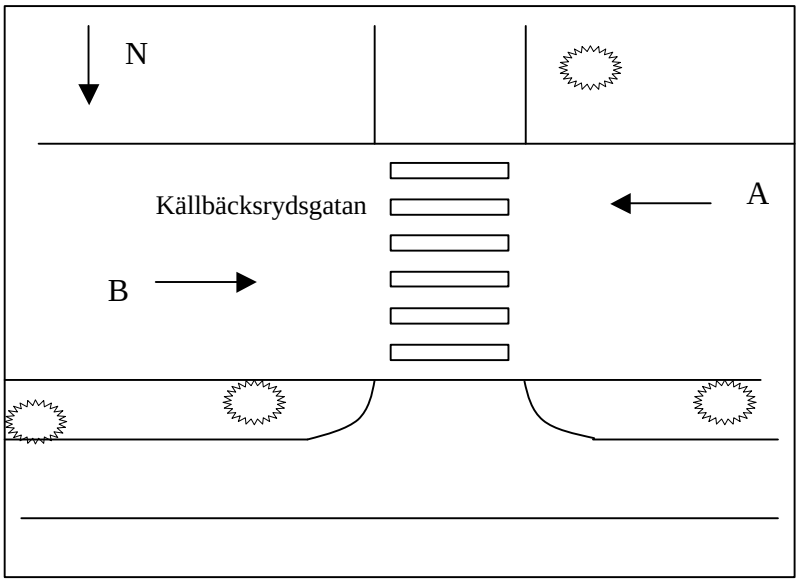
FLOW OF VEHICLES

Källbäcksrydsgatan **Before change of code**

		A	B
Morning	Total	214	496
	Flow/h	*143*	*331*
Afternoon	Total	872	770
		291	*257*
Total	Total	1086	1266
	Flow/h	*241*	*281*

Källbäcksrydsgatan **After change of code**

		A	B
Morning	Total	212	464
	Flow/h	*141*	*309*
Afternoon	Total	290	312
	Flow/h	*193*	*208*
Total	Total	502	776
	Flow/h	*167*	*259*



Modes of transport per age groups (%) **period 1= before reconstruction, 2=after reconstruction, 3=after reconstruction and code change**

Appendix D:1

		All intersections								
period	age (years)	walking	bike	walking with bike	walking with pram	walking with wheelchair	sitting in wheelchair	walking with rullator	other	Total
1	< 6	*82*	*6*	*3*	*9*	*0*	*0*	*0*	*0*	34
	6	*100*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	1
	7	*88*	*13*	*0*	*0*	*0*	*0*	*0*	*0*	16
	8	*88*	*12*	*0*	*0*	*0*	*0*	*0*	*0*	17
	9	*87*	*13*	*0*	*0*	*0*	*0*	*0*	*0*	39
	10	*80*	*20*	*0*	*0*	*0*	*0*	*0*	*0*	25
	11	*70*	*30*	*0*	*0*	*0*	*0*	*0*	*0*	33
	12	*81*	*19*	*0*	*0*	*0*	*0*	*0*	*0*	53
	13-19	*71*	*27*	*0*	*0*	*0*	*0*	*0*	*1*	204
	20-64	*78*	*14*	*1*	*7*	*0*	*0*	*0*	*0*	584
	65-75	*93*	*3*	*1*	*1*	*0*	*0*	*3*	*0*	116
	75-85	*62*	*5*	*0*	*0*	*0*	*0*	*33*	*0*	21
	>85	*50*	*0*	*0*	*0*	*0*	*0*	*50*	*0*	2
	unknown	*100*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	1
1 Total		*78*	*16*	*1*	*4*	*0*	*0*	*1*	*0*	1146
2	< 6	*90*	*5*	*2*	*0*	*0*	*0*	*0*	*2*	42
	6	*100*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	2
	7	*95*	*5*	*0*	*0*	*0*	*0*	*0*	*0*	20
	8	*95*	*5*	*0*	*0*	*0*	*0*	*0*	*0*	42
	9	*92*	*5*	*0*	*0*	*0*	*0*	*0*	*3*	65
	10	*94*	*6*	*0*	*0*	*0*	*0*	*0*	*0*	52
	11	*91*	*9*	*0*	*0*	*0*	*0*	*0*	*0*	22
	12	*91*	*6*	*0*	*0*	*0*	*0*	*0*	*3*	32
	13-19	*85*	*14*	*0*	*0*	*0*	*0*	*0*	*0*	209
	20-64	*76*	*12*	*2*	*10*	*0*	*0*	*0*	*0*	347
	65-75	*96*	*0*	*0*	*2*	*0*	*2*	*0*	*0*	47
	75-85	*80*	*0*	*0*	*0*	*0*	*0*	*20*	*0*	5
	>85									0
	unknown	*20*	*60*	*0*	*0*	*0*	*20*	*0*	*0*	5
2 Total		*84*	*10*	*1*	*4*	*0*	*0*	*0*	*0*	890
3	< 6	*81*	*10*	*6*	*3*	*0*	*0*	*0*	*0*	69
	6									0
	7	*72*	*26*	*2*	*0*	*0*	*0*	*0*	*0*	47
	8	*89*	*8*	*3*	*0*	*0*	*0*	*0*	*0*	97
	9	*81*	*17*	*1*	*1*	*0*	*0*	*0*	*0*	121
	10	*72*	*27*	*1*	*0*	*0*	*0*	*0*	*0*	79
	11	*61*	*39*	*0*	*0*	*0*	*0*	*0*	*0*	49
	12	*90*	*7*	*2*	*0*	*0*	*0*	*0*	*0*	42
	13-19	*75*	*24*	*1*	*0*	*0*	*0*	*0*	*0*	289
	20-64	*71*	*20*	*3*	*6*	*0*	*0*	*0*	*0*	611
	65-75	*87*	*6*	*5*	*0*	*0*	*0*	*0*	*1*	78
	75-85	*43*	*0*	*0*	*0*	*5*	*0*	*52*	*0*	21
	>85									0
	unknown	*100*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	4
3 Total		*75*	*19*	*2*	*2*	*0*	*0*	*1*	*0*	1507
Total		*78*	*16*	*1*	*3*	*0*	*0*	*1*	*0*	3543

Modes of transport per age groups (%) **period 1= before reconstruction, 2=after reconstruction, 3=after reconstruction and code change**

Appendix D:2

		Hulta								**sjöbo**								
period	age (years)	walking	bike	walking with bike	walking with pram	walking with wheelcha	sitting in wheelchair	other	Total	walking	bike	walking with bike	walking with pram	walking with wheelchair	sitting in wheelchair	walking with rullator	other	Total
1	< 6	*86*	*7*	*7*	*0*	*0*	*0*	*0*	14	*80*	*5*	*0*	*15*	*0*	*0*	*0*	*0*	20
	6								0	*100*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	1
	7	*86*	*14*	*0*	*0*	*0*	*0*	*0*	7	*89*	*11*	*0*	*0*	*0*	*0*	*0*	*0*	9
	8	*78*	*22*	*0*	*0*	*0*	*0*	*0*	9	*100*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	8
	9	*69*	*31*	*0*	*0*	*0*	*0*	*0*	13	*96*	*4*	*0*	*0*	*0*	*0*	*0*	*0*	26
	10	*44*	*56*	*0*	*0*	*0*	*0*	*0*	9	*100*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	16
	11	*17*	*83*	*0*	*0*	*0*	*0*	*0*	6	*81*	*19*	*0*	*0*	*0*	*0*	*0*	*0*	27
	12	*50*	*50*	*0*	*0*	*0*	*0*	*0*	6	*85*	*15*	*0*	*0*	*0*	*0*	*0*	*0*	47
	13-19	*61*	*36*	*1*	*0*	*0*	*0*	*2*	127	*87*	*12*	*0*	*1*	*0*	*0*	*0*	*0*	77
	20-64	*61*	*31*	*1*	*5*	*1*	*1*	*0*	194	*86*	*6*	*1*	*7*	*0*	*0*	*0*	*0*	390
	65-75	*90*	*6*	*3*	*0*	*0*	*0*	*0*	31	*94*	*1*	*0*	*1*	*0*	*0*	*4*	*0*	85
	75-85	*75*	*25*	*0*	*0*	*0*	*0*	*0*	4	*59*	*0*	*0*	*0*	*0*	*0*	*41*	*0*	17
	>85								0	*50*	*0*	*0*	*0*	*0*	*0*	*50*	*0*	2
	unknown								0	*100*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	1
1 Total		*64*	*31*	*1*	*2*	*0*	*0*	*1*	420	*87*	*7*	*1*	*5*	*0*	*0*	*2*	*0*	726
2	< 6	*94*	*6*	*0*	*0*	*0*	*0*	*0*	17									
	6								0									
	7	*100*	*0*	*0*	*0*	*0*	*0*	*0*	4									
	8	*82*	*18*	*0*	*0*	*0*	*0*	*0*	11									
	9	*83*	*17*	*0*	*0*	*0*	*0*	*0*	6									
	10	*80*	*20*	*0*	*0*	*0*	*0*	*0*	10									
	11								0									
	12	*40*	*40*	*0*	*0*	*0*	*0*	*20*	5									
	13-19	*79*	*21*	*0*	*0*	*0*	*0*	*0*	141									
	20-64	*71*	*17*	*2*	*9*	*0*	*0*	*0*	209									
	65-75	*92*	*0*	*0*	*4*	*0*	*4*	*0*	24									
	75-85	*100*	*0*	*0*	*0*	*0*	*0*	*0*	1									
	>85								0									
	unknown	*0*	*75*	*0*	*0*	*0*	*25*	*0*	4									
2 Total		*76*	*18*	*1*	*5*	*0*	*0*	*0*	432									
3	< 6	*79*	*16*	*5*	*0*	*0*	*0*	*0*	19	*78*	*9*	*9*	*3*	*0*	*0*	*0*	*0*	32
	6								0									0
	7	*64*	*36*	*0*	*0*	*0*	*0*	*0*	14	*65*	*29*	*6*	*0*	*0*	*0*	*0*	*0*	17
	8	*79*	*7*	*14*	*0*	*0*	*0*	*0*	14	*85*	*15*	*0*	*0*	*0*	*0*	*0*	*0*	27
	9	*75*	*13*	*0*	*13*	*0*	*0*	*0*	8	*64*	*36*	*0*	*0*	*0*	*0*	*0*	*0*	39
	10	*60*	*40*	*0*	*0*	*0*	*0*	*0*	5	*44*	*56*	*0*	*0*	*0*	*0*	*0*	*0*	25
	11	*0*	*100*	*0*	*0*	*0*	*0*	*0*	7	*58*	*42*	*0*	*0*	*0*	*0*	*0*	*0*	24
	12	*67*	*33*	*0*	*0*	*0*	*0*	*0*	3	*89*	*11*	*0*	*0*	*0*	*0*	*0*	*0*	19
	13-19	*72*	*27*	*1*	*0*	*0*	*0*	*0*	156	*74*	*23*	*1*	*0*	*0*	*0*	*0*	*1*	73
	20-64	*57*	*35*	*4*	*2*	*0*	*0*	*0*	207	*79*	*11*	*2*	*7*	*1*	*0*	*0*	*0*	258
	65-75	*71*	*19*	*10*	*0*	*0*	*0*	*0*	21	*95*	*2*	*0*	*0*	*0*	*0*	*0*	*2*	44
	75-85								0	*40*	*0*	*0*	*0*	*7*	*0*	*53*	*0*	15
	>85								0									0
	unknown	*100*	*0*	*0*	*0*	*0*	*0*	*0*	3									0
3 Total		*65*	*30*	*3*	*1*	*0*	*0*	*0*	457	*75*	*17*	*2*	*3*	*1*	*0*	*1*	*1*	573
Total		*68*	*26*	*2*	*3*	*0*	*0*	*0*	1309	*82*	*11*	*1*	*4*	*0*	*0*	*1*	*0*	1299

Modes of transport per age groups (%) **period 1= before reconstruction, 2=after reconstruction, 3=after reconstruction and code change** **Appendix D:3**

		Trandered upper intersection						Trandered lower intersection					
period	age (years)	walking	bike	walking with bike	walking with pram	other	Total	walking	bike	walking with bike	walking with pram	walking with rullator	Total
1	< 6												
	6												
	7												
	8												
	9												
	10												
	11												
	12												
	13-19												
	20-64												
	65-75												
	75-85												
	>85												
	unknown												
1 Total													
2	< 6	*85*	*5*	*5*	*0*	*5*	20	*100*	*0*	*0*	*0*	*0*	5
	6						0	*100*	*0*	*0*	*0*	*0*	2
	7	*91*	*9*	*0*	*0*	*0*	11	*100*	*0*	*0*	*0*	*0*	5
	8	*100*	*0*	*0*	*0*	*0*	10	*100*	*0*	*0*	*0*	*0*	21
	9	*89*	*4*	*0*	*0*	*7*	28	*97*	*3*	*0*	*0*	*0*	31
	10	*93*	*7*	*0*	*0*	*0*	15	*100*	*0*	*0*	*0*	*0*	27
	11	*100*	*0*	*0*	*0*	*0*	3	*89*	*11*	*0*	*0*	*0*	19
	12	*100*	*0*	*0*	*0*	*0*	13	*100*	*0*	*0*	*0*	*0*	14
	13-19	*89*	*5*	*5*	*0*	*0*	19	*100*	*0*	*0*	*0*	*0*	49
	20-64	*73*	*8*	*3*	*17*	*0*	66	*90*	*3*	*1*	*6*	*0*	72
	65-75	*100*	*0*	*0*	*0*	*0*	7	*100*	*0*	*0*	*0*	*0*	16
	75-85						0	*75*	*0*	*0*	*0*	*25*	4
	>85						0						0
	unknown	*100*	*0*	*0*	*0*	*0*	1						0
2 Total		*85*	*5*	*2*	*6*	*2*	193	*96*	*2*	*0*	*2*	*0*	265
3	< 6	*82*	*9*	*0*	*9*	*0*	11	*100*	*0*	*0*	*0*	*0*	7
	6						0						0
	7	*85*	*15*	*0*	*0*	*0*	13	*100*	*0*	*0*	*0*	*0*	3
	8	*95*	*3*	*3*	*0*	*0*	37	*89*	*11*	*0*	*0*	*0*	19
	9	*86*	*12*	*2*	*0*	*0*	49	*100*	*0*	*0*	*0*	*0*	25
	10	*95*	*5*	*0*	*0*	*0*	20	*83*	*14*	*3*	*0*	*0*	29
	11	*88*	*13*	*0*	*0*	*0*	8	*90*	*10*	*0*	*0*	*0*	10
	12	*100*	*0*	*0*	*0*	*0*	9	*91*	*0*	*9*	*0*	*0*	11
	13-19	*65*	*35*	*0*	*0*	*0*	23	*95*	*5*	*0*	*0*	*0*	37
	20-64	*59*	*27*	*3*	*11*	*0*	66	*88*	*4*	*4*	*5*	*0*	80
	65-75						0	*85*	*0*	*15*	*0*	*0*	13
	75-85						0	*50*	*0*	*0*	*0*	*50*	6
	>85						0						0
	unknown						0	*100*	*0*	*0*	*0*	*0*	1
3 Total		*79*	*16*	*2*	*3*	*0*	236	*89*	*5*	*3*	*2*	*1*	241
Total		*82*	*11*	*2*	*4*	*1*	429	*93*	*3*	*2*	*2*	*1*	506

Age structure

Appendix E

period	age (years)	Hulta (%)	Sjöbo (%)	Trandered upper intersection (%)	Trandered lower intersection (%)	Total (%)
1	< 6	*3*	*3*			*3*
	6	*0*	*0*			*0*
	7	*2*	*1*			*1*
	8	*2*	*1*			*1*
	9	*3*	*4*			*3*
	10	*2*	*2*			*2*
	11	*1*	*4*			*3*
	12	*1*	*6*			*5*
	13-19	*31*	*11*			*18*
	20-64	*46*	*54*			*51*
	65-75	*7*	*12*			*10*
	75-85	*1*	*2*			*2*
	>85	*0*	*0*			*0*
	unknown	*0*	*0*			*0*
1 Total		422	726			1148
2	< 6	*4*		*10*	*2*	*5*
	6	*0*		*0*	*1*	*0*
	7	*1*		*6*	*2*	*2*
	8	*3*		*5*	*8*	*5*
	9	*1*		*15*	*12*	*7*
	10	*2*		*8*	*10*	*6*
	11	*0*		*2*	*7*	*2*
	12	*1*		*7*	*5*	*4*
	13-19	*33*		*10*	*18*	*23*
	20-64	*48*		*34*	*27*	*39*
	65-75	*6*		*4*	*6*	*5*
	75-85	*0*		*0*	*2*	*1*
	>85	*0*		*0*	*0*	*0*
	unknown	*1*		*1*	*0*	*1*
2 Total		432		193	265	890
3	< 6	*4*	*6*	*5*	*3*	*5*
	6	*0*	*0*	*0*	*0*	*0*
	7	*3*	*3*	*6*	*1*	*3*
	8	*3*	*5*	*16*	*8*	*6*
	9	*2*	*7*	*21*	*10*	*8*
	10	*1*	*4*	*8*	*12*	*5*
	11	*2*	*4*	*3*	*4*	*3*
	12	*1*	*3*	*4*	*5*	*3*
	13-19	*34*	*13*	*10*	*15*	*19*
	20-64	*45*	*45*	*28*	*33*	*41*
	65-75	*5*	*8*	*0*	*5*	*5*
	75-85	*0*	*3*	*0*	*2*	*1*
	>85	*0*	*0*	*0*	*0*	*0*
	unknown	*1*	*0*	*0*	*0*	*0*
3 Total		457	573	236	241	1507
Total		1311	1299	429	506	3545

Gender structure

Appendix F

period	age (years)	HULTA Female	HULTA Male	HULTA Unknown	HULTA Total	SJÖBO Female	SJÖBO Male	SJÖBO Unknown	SJÖBO Total	TRAND UPPER Female	TRAND UPPER Male	TRAND UPPER Unknown	TRAND UPPER Total	TRAND LOWER Female	TRAND LOWER Male	TRAND LOWER Unknown	TRAND LOWER Total	TOTAL Female	TOTAL Male	TOTAL Unknown	TOTAL Total
1	< 6	*57*	*14*	*29*	14	*40*	*35*	*25*	20									*47*	*27*	*26*	34
	6				0	*100*	*0*	*0*	1									*100*	*0*	*0*	1
	7	*14*	*86*	*0*	7	*78*	*22*	*0*	9									*50*	*50*	*0*	16
	8	*22*	*78*	*0*	9	*38*	*63*	*0*	8									*29*	*71*	*0*	17
	9	*0*	*100*	*0*	13	*27*	*69*	*4*	26									*18*	*79*	*3*	39
	10	*11*	*89*	*0*	9	*63*	*38*	*0*	16									*44*	*56*	*0*	25
	11	*50*	*50*	*0*	6	*41*	*59*	*0*	27									*42*	*58*	*0*	33
	12	*17*	*67*	*17*	6	*47*	*53*	*0*	47									*43*	*55*	*2*	53
	13-19	*48*	*52*	*0*	129	*52*	*47*	*1*	77									*50*	*50*	*0*	206
	20-64	*58*	*41*	*1*	194	*66*	*34*	*0*	390									*63*	*36*	*0*	584
	65-75	*58*	*42*	*0*	31	*72*	*28*	*0*	85									*68*	*32*	*0*	116
	75-85	*50*	*50*	*0*	4	*76*	*24*	*0*	17									*71*	*29*	*0*	21
	>85				0	*50*	*50*	*0*	2									*50*	*50*	*0*	2
	unknown				0	*0*	*100*	*0*	1									*0*	*100*	*0*	1
1 Total		*50*	*49*	*2*	422	*61*	*38*	*1*	726									*57*	*42*	*1*	1148
2	< 6	*41*	*29*	*29*	17					*55*	*25*	*20*	20	*20*	*40*	*40*	5	*45*	*29*	*26*	42
	6				0								0	*0*	*0*	*100*	2	*0*	*0*	*100*	2
	7	*75*	*0*	*25*	4					*18*	*73*	*9*	11	*20*	*80*	*0*	5	*30*	*60*	*10*	20
	8	*9*	*64*	*27*	11					*50*	*50*	*0*	10	*48*	*48*	*5*	21	*38*	*52*	*10*	42
	9	*17*	*83*	*0*	6					*57*	*39*	*4*	28	*65*	*32*	*3*	31	*57*	*40*	*3*	65
	10	*20*	*80*	*0*	10					*67*	*33*	*0*	15	*52*	*48*	*0*	27	*50*	*50*	*0*	52
	11				0					*33*	*67*	*0*	3	*42*	*58*	*0*	19	*41*	*59*	*0*	22
	12	*60*	*20*	*20*	5					*69*	*31*	*0*	13	*79*	*21*	*0*	14	*72*	*25*	*3*	32
	13-19	*26*	*74*	*0*	141					*26*	*74*	*0*	19	*73*	*27*	*0*	49	*37*	*63*	*0*	209
	20-64	*61*	*39*	*0*	209					*71*	*29*	*0*	66	*67*	*33*	*0*	72	*64*	*36*	*0*	347
	65-75	*54*	*46*	*0*	24					*71*	*29*	*0*	7	*63*	*38*	*0*	16	*60*	*40*	*0*	47
	75-85	*100*	*0*	*0*	1								0	*25*	*75*	*0*	4	*40*	*60*	*0*	5
	>85				0								0								0
	unknown	*0*	*0*	*100*	4					*0*	*0*	*100*	1					*0*	*0*	*100*	5
2 Total		*45*	*51*	*3*	432					*58*	*39*	*4*	193	*60*	*37*	*2*	265	*52*	*44*	*3*	890
3	< 6	*47*	*42*	*11*	19	*38*	*63*	*0*	32	*55*	*45*	*0*	11	*57*	*14*	*29*	7	*45*	*49*	*6*	69
	6				0				0				0				0				0
	7	*36*	*64*	*0*	14	*29*	*59*	*12*	17	*31*	*69*	*0*	13	*67*	*33*	*0*	3	*34*	*62*	*4*	47
	8	*36*	*64*	*0*	14	*41*	*37*	*22*	27	*38*	*62*	*0*	37	*63*	*37*	*0*	19	*43*	*51*	*6*	97
	9	*25*	*63*	*13*	8	*8*	*74*	*18*	39	*29*	*29*	*43*	49	*24*	*68*	*8*	25	*21*	*54*	*26*	121
	10	*20*	*80*	*0*	5	*24*	*76*	*0*	25	*25*	*50*	*25*	20	*55*	*45*	*0*	29	*35*	*58*	*6*	79
	11	*0*	*100*	*0*	7	*17*	*46*	*38*	24	*25*	*75*	*0*	8	*70*	*30*	*0*	10	*27*	*55*	*18*	49
	12	*33*	*67*	*0*	3	*26*	*42*	*32*	19	*67*	*33*	*0*	9	*73*	*27*	*0*	11	*48*	*38*	*14*	42
	13-19	*32*	*68*	*0*	156	*42*	*53*	*4*	73	*30*	*65*	*4*	23	*46*	*51*	*3*	37	*36*	*62*	*2*	289
	20-64	*64*	*36*	*0*	207	*60*	*40*	*0*	258	*70*	*26*	*5*	66	*60*	*40*	*0*	80	*62*	*37*	*0*	611
	65-75	*48*	*52*	*0*	21	*59*	*36*	*5*	44				0	*62*	*38*	*0*	13	*56*	*41*	*3*	78
	75-85				0	*60*	*40*	*0*	15				0	*83*	*17*	*0*	6	*67*	*33*	*0*	21
	>85				0				0				0				0				0
	unknown	*0*	*0*	*100*	3				0				0	*0*	*0*	*100*	1	*0*	*0*	*100*	4
3 Total		*47*	*52*	*1*	457	*47*	*47*	*6*	573	*44*	*43*	*13*	236	*55*	*42*	*2*	241	*48*	*47*	*5*	1507
Total		*47*	*51*	*2*	1311	*55*	*42*	*3*	1299	*50*	*41*	*9*	429	*58*	*40*	*2*	506	*52*	*45*	*3*	3545

Appendix G

Speed of the vehicles at zebra crossing

Intersection Borås	Time of the day	Parameter (km/h)	April , May 1999 Before reconstruction	March 2000 After reconstruction	May 2000 After change of code
Hulta	morning	average	53,0	n/a	28,4
		st. dev.	7,3	n/a	4,7
		90-perc	61,0	n/a	34,4
	afternoon	average	48,5	30,1	29,2
		st. dev.	6,6	4,9	4,7
		90-perc	57,0	36,2	34,4
Sjöbo	morning	average	40,4	n/a	27,9
		st. dev.	6,0	n/a	5,5
		90-perc	49,0	n/a	34,3
	afternoon	average	38,6	n/a	22,4
		st. dev.	6,9	n/a	4,4
		90-perc	48,4	n/a	28,0
Trandared upper	morning	average	n/a	n/a	31,1
		st. dev.	n/a	n/a	4,7
		90-perc	n/a	n/a	37,7
	afternoon	average	n/a	n/a	33,0
		st. dev.	n/a	n/a	4,9
		90-perc	n/a	n/a	39,0
Trandared lower	morning	average	n/a	n/a	n/a
		st. dev.	n/a	n/a	n/a
		90-perc	n/a	n/a	
	afternoon	average	n/a	n/a	28,8
		st. dev.	n/a	n/a	5,0
		90-perc	n/a	n/a	35,0
Källbäcksryd	morning	average	n/a	n/a	46,0
		st. dev.	n/a	n/a	6,1
		90-perc	n/a	n/a	54,0
	afternoon	average	52,1	n/a	46,6
		st. dev.	7,1	n/a	8,1
		90 perc	61,0	n/a	55,6

Percentage of pedestrians walking in a group and percentage where the oldest is an adult

period 1= before reconstruction, 2=after reconstruction, 3=after reconstruction and code change

Appendix H

		All intersections			Hulta			Sjöbo			Trandered upper			Trandered lower		
period no.	Age (yeras)	Total no.	In group (%)	with adult (%)	Total no.	In group (%)	with adult (%)	Total no.	In group (%)	with adult (%)	Total no.	In group (%)	with adult (%)	Total no.	In group (%)	with adult (%)
1	< 6.	34	*88*	*79*	14	*86*	*86*	20	*90*	*75*						
	6	1	*100*	*0*	0			1	*100*	*0*						
	7	16	*56*	*25*	7	*29*	*14*	9	*78*	*33*						
	8	17	*47*	*18*	9	*44*	*22*	8	*50*	*13*						
	9	39	*54*	*15*	13	*15*	*15*	26	*73*	*15*						
	10	25	*52*	*4*	9	*11*	*0*	16	*75*	*6*						
	11	33	*55*	*18*	6	*0*	*0*	27	*67*	*22*						
	12	53	*62*	*0*	6	*0*	*0*	47	*70*	*0*						
	13-19	206	*38*	*5*	129	*32*	*2*	77	*48*	*9*						
	20-64	584	*23*	*21*	194	*30*	*28*	390	*20*	*17*						
	65-75	116	*43*	*0*	31	*48*	*0*	85	*41*	*0*						
	75-85	21	*14*	*0*	4	*0*	*0*	17	*18*	*0*						
	> 85.	2	*50*	*0*	0			2	*50*	*0*						
	unknown	1	*0*	*0*	0			1	*0*	*0*						
1 Totalt		1148	*35*	*16*	422	*32*	*18*	726	*37*	*14*						
2	< 6.	42	*95*	*81*	17	*94*	*82*				20	*95*	*80*	5	*100*	*80*
	6	2	*0*	*0*	0									2	*0*	*0*
	7	20	*60*	*45*	4	*100*	*100*				11	*45*	*36*	5	*60*	*20*
	8	42	*50*	*21*	11	*55*	*45*				10	*70*	*20*	21	*38*	*10*
	9	65	*62*	*14*	6	*50*	*17*				28	*75*	*29*	31	*52*	*0*
	10	52	*60*	*8*	10	*60*	*20*				15	*87*	*0*	27	*44*	*7*
	11	22	*36*	*0*	0						3	*33*	*0*	19	*37*	*0*
	12	32	*53*	*3*	5	*40*	*20*				13	*62*	*0*	14	*50*	*0*
	13-19	209	*53*	*2*	141	*54*	*4*				19	*58*	*0*	49	*47*	*0*
	20-64	347	*33*	*31*	209	*33*	*31*				66	*47*	*45*	72	*22*	*21*
	65-75	47	*47*	*0*	24	*67*	*0*				7	*29*	*0*	16	*25*	*0*
	75-85	5	*0*	*0*	1	*0*	*0*				0			4	*0*	*0*
	> 85.	0			0						0			0		
	unknown	5	*40*	*20*	4	*25*	*25*				1	*100*	*0*	0		
2 Totalt		890	*47*	*20*	432	*46*	*22*				193	*62*	*31*	265	*38*	*9*
3	< 6.	69	*81*	*74*	19	*84*	*79*	32	*81*	*69*	11	*91*	*91*	7	*57*	*57*
	6	0			0			0			0			0		
	7	47	*45*	*23*	14	*14*	*7*	17	*47*	*18*	13	*77*	*54*	3	*33*	*0*
	8	97	*58*	*22*	14	*50*	*29*	27	*56*	*19*	37	*57*	*22*	19	*68*	*21*
	9	121	*47*	*3*	8	*38*	*13*	39	*38*	*3*	49	*45*	*0*	25	*68*	*8*
	10	79	*42*	*3*	5	*60*	*0*	25	*20*	*0*	20	*45*	*10*	29	*55*	*0*
	11	49	*31*	*0*	7	*0*	*0*	24	*29*	*0*	8	*38*	*0*	10	*50*	*0*
	12	42	*57*	*5*	3	*0*	*0*	19	*53*	*11*	9	*78*	*0*	11	*64*	*0*
	13-19	289	*44*	*1*	156	*46*	*1*	73	*51*	*0*	23	*17*	*0*	37	*41*	*5*
	20-64	611	*22*	*22*	207	*16*	*16*	258	*22*	*22*	66	*39*	*39*	80	*23*	*23*
	65-75	78	*14*	*0*	21	*19*	*0*	44	*16*	*0*	0			13	*0*	*0*
	75-85	21	*14*	*0*	0			15	*20*	*0*	0			6	*0*	*0*
	> 85.	0			0			0			0			0		
	unknown	4	*75*	*0*	3	*100*	*0*	0			0			1	*0*	*0*
3 Totalt		1507	*36*	*15*	457	*32*	*12*	573	*33*	*16*	236	*47*	*22*	241	*40*	*12*
Totalt		3545	*38*	*17*	1311	*36*	*18*	1299	*35*	*15*	429	*54*	*26*	506	*39*	*11*

Appendix I

period 1= before reconstruction, 2=after reconstruction, 3=after reconstruction and code change

PEDESTRIANS that meet any car WAITING TIME AT KERB (s)			HULTA			SJÖBO		TRAND UPPER		TRAND LOWER		ALL PLACES TOGETHER		
			PERIOD 1	PERIOD 2	PERIOD 3	PERIOD 1	PERIOD 3	PERIOD 2	PERIOD 3	PERIOD 2	PERIOD 3	PERIOD 1	PERIOD 2	PERIOD 3
CHILDREN	all pedestrians	No of pedestrians	29	36	34	86	54	64	98	75	71	115	175	257
0-12 YEARS	that meet a car	mean (s)	6,3	3,0	1,8	4,2	1,8	0,8	0,8	1,2	1,0	4,7	1,4	1,2
		STDV (s)	7,4	3,6	3,2	5,7	3,1	2,1	2,9	3,4	2,4	6,2	3,1	2,9
	waiting time >0 s	No of pedestrians	21	19	12	45	21	13	15	18	14	66	50	62
		mean (s)	8,7	5,6	5,0	8,0	4,7	4,0	5,4	5,2	5,2	8,2	5,0	5,0
		STDV (s)	7,5	2,2	3,7	5,6	3,3	3,0	5,7	5,3	2,8	6,2	4,0	3,9
		Maximum waiting time (s)	33	13	12	25	12	10	21	18	9	33	18	21
YOUTH	all pedestrians	No of pedestrians	36	62	65	34	23	12	10	33	26	70	107	124
13-19 YEARS	that meet a car	mean (s)	4,3	1,1	0,5	1,7	1,2	0,2	0,0	1,2	1,1	3,0	1,0	0,7
		STDV (s)	6,9	2,3	1,3	3,5	1,5	0,6	0,0	2,6	2,3	5,6	2,3	1,6
	waiting time >0 s	No of pedestrians	21	16	10	10	8	1	0	8	7	31	25	25
		mean (s)	7,3	4,2	3,3	5,7	3,4	2,0		5,0	4,1	6,8	4,4	3,6
		STDV (s)	7,7	2,8	1,1	4,4	1,1			2,9	2,7	6,8	2,8	1,6
		Maximum waiting time (s)	32	13	5	17	5	2		11	10	32	13	10
ADULTS	all pedestrians	No of pedestrians	96	128	86	208	110	38	32	52	62	304	218	290
20-64 YEARS	that meet a car	mean (s)	5,0	2,8	1,3	2,4	1,9	1,8	0,6	1,1	1,0	3,2	2,2	1,4
		STDV (s)	8,3	4,4	2,7	3,9	3,1	5,1	2,4	2,1	2,3	5,8	4,2	2,8
	waiting time >0 s	No of pedestrians	50	52	24	85	42	13	3	16	14	135	81	83
		mean (s)	9,6	6,8	4,8	5,8	5,0	5,2	6,3	3,6	4,6	7,2	5,9	4,9
		STDV (s)	9,5	4,4	3,0	4,2	3,0	7,9	5,9	2,3	2,8	6,9	4,9	3,1
		Maximum waiting time (s)	42	20	13	22	15	31	13	9	12	42	31	15
ELDERLY	all pedestrians	No of pedestrians	25	22	12	68	34	5	x	11	16	93	38	62
> 64 YEARS	that meet a car	mean (s)	5,2	1,9	7,3	4,8	5,2	2,8	x	1,1	1,6	4,9	1,8	4,7
		STDV (s)	6,3	4,4	5,4	5,9	7,6	6,3	x	2,8	2,8	6,0	4,2	6,5
	waiting time >0 s	No of pedestrians	16	5	8	42	14	1	x	2	5	58	8	27
		mean (s)	8,1	8,2	9,8	7,8	12,6	14,0	x	6,0	5,0	7,9	8,4	10,3
		STDV (s)	6,1	4,4	3,6	5,8	6,7		x	4,2	2,9	5,8	5,3	5,9
		Maximum waiting time (s)	23	18	17	24	25	14		9	10	24	18	25

PEDESTRIANS' CROSSING AREA AND INTERACTIONS WITH CAR DRIVERS AT THE HULTA INTERSECTION (%).

Appendix J:1

All inters.		All pedestrians					Pedestrians that meet no car					Pedestrian meet a car and no car give way					Pedestrian meet a car and a car give way				
Period		Zebra	Close	Closer to	Outside	Total	Zebra	Close	Closer to	Outside	Total	Zebra	Close	Closer to	Outside	Total	Zebra	Close	Closer to	Outside	Total
no.	age	crossing	zebra cr.	inters.	zebra cr.	no.	crossing	zebra cr.	inters.	zebra cr.	no.	crossing	zebra cr.	inters.	zebra cr.	no.	crossing	zebra cr.	inters.	zebra cr.	no.
1	< 6	77	3	6	13	13	63	13	25	0	3	79	0	0	21	8	100	0	0	0	2
	6	100	0	0	0	0					0					0	100	0	0	0	0
	7	93	0	0	7	6	100	0	0	0	1	91	0	0	9	5	100	0	0	0	0
	8	53	13	0	33	7	33	17	0	50	4	71	0	0	29	5	50	50	0	0	1
	9	82	6	6	6	9	63	13	13	13	5	84	5	5	5	5	100	0	0	0	0
	10	63	11	5	21	4	83	0	0	17	3	56	0	11	33	3	50	50	0	0	2
	11	87	0	9	4	1	80	0	13	7	1	100	0	0	0	1	100	0	0	0	0
	12	63	2	16	19	3	59	0	27	14	4	63	5	5	26	2	100	0	0	0	1
	13-19	67	5	11	17	80	60	3	16	22	43	77	3	7	13	35	60	40	0	0	8
	20-64	76	9	7	8	133	72	12	5	11	53	77	8	8	7	100	86	4	10	0	13
	65-75	81	6	2	11	29	76	3	0	22	10	80	10	3	7	22	100	0	0	0	2
	75-85	90	0	10	0	3	100	0	0	0	1	83	0	17	0	3	100	0	0	0	1
	>85	100	0	0	0	0					0	100	0	0	0	0	100	0	0	0	0
	unknown	0	0	0	100	0	0	0	0	100	1					0					0
1 Total		75	7	7	11	288	69	8	9	15	129	78	6	6	10	189	86	9	5	0	30
2	< 6	100	0	0	0	40	100	0	0	0	13	100	0	0	0	14	100	0	0	0	13
	6	100	0	0	0	2					0					0	100	0	0	0	2
	7	100	0	0	0	19	100	0	0	0	3	100	0	0	0	5	100	0	0	0	11
	8	98	3	0	0	40	95	5	0	0	21	100	0	0	0	10	100	0	0	0	9
	9	95	0	2	3	62	95	0	0	5	22	94	0	0	6	18	95	0	5	0	22
	10	90	0	4	6	49	92	0	8	0	13	80	0	0	20	15	95	0	5	0	21
	11	80	0	5	15	20	64	0	9	27	11	100	0	0	0	3	100	0	0	0	6
	12	90	0	10	0	30	80	0	20	0	5	82	0	18	0	11	100	0	0	0	14
	13-19	79	2	6	13	179	85	0	1	14	72	67	2	12	19	52	84	4	7	5	55
	20-64	89	0	6	5	304	88	0	7	5	86	85	1	6	8	109	94	0	5	1	109
	65-75	85	0	6	9	47	83	0	17	0	12	82	0	0	18	22	92	0	8	0	13
	75-85	60	0	40	0	5	50	0	50	0	2	100	0	0	0	1	50	0	50	0	2
	>85					0					0					0					0
	unknown	100	0	0	0	2					0					0	100	0	0	0	2
2 Total		88	1	5	6	799	88	0	5	7	260	83	1	5	10	260	93	1	5	1	279
3	< 6	60				62	57				14	40				25	83				23
	6		Because of differences in			0		Because of differences in			0		Because of differences in			0		Because of differences in			0
	7	74	coding at the Sjöbo			35	58	coding at the Sjöbo			12	60	coding at the Sjöbo			10	100	coding at the Sjöbo			13
	8	84	intersection after reconst-			89	75	intersection after reconst-			32	75	intersection after reconst-			16	95	intersection after reconst-			41
	9	62	ruction data is only shown			87	55	ruction data is only shown			38	25	ruction data is only shown			20	97	ruction data is only shown			29
	10	83	for pedestrians			53	73	for pedestrians			22	73	for pedestrians			11	100	for pedestrians			20
	11	60	walking on the actual			30	44	walking on the actual			9	50	walking on the actual			6	73	walking on the actual			15
	12	67	zebra crossing.			39	45	zebra crossing.			22	80	zebra crossing.			5	100	zebra crossing.			12
	13-19	63				218	56				94	48				46	81				78
	20-64	56				484	48				197	44				124	75				163
	65-75	55				73	61				23	43				28	64				22
	75-85	33				21	44				9	0				5	43				7
	>85					0					0					0					0
	unknown	100				4	100				1	100				3					0
3 Total		62				1195	54				473	46				299	82				423
Total		73	0	0	0	2956	67	0	1	5	1114	70	0	1	5	1040	86	0	0	2	802

PEDESTRIANS' CROSSING AREA AND INTERACTIONS WITH CAR DRIVERS AT THE HULTA INTERSECTION (%).

Appendix J:2

Hulta		All pedestrians					Pedestrians that meet no car					Pedestrian meet a car and no car give way					Pedestrian meet a car and a car give way				
Period		Zebra	Close	Closer to	Outside	Total	Zebra	Close	Closer to	Outside	Total	Zebra	Close	Closer to	Outside	Total	Zebra	Close	Closer to	Outside	Total
no.	age	crossing	zebra cr.	inters.	zebra cr.	no.	crossing	zebra cr.	inters.	zebra cr.	no.	crossing	zebra cr.	inters.	zebra cr.	no.	crossing	zebra cr.	inters.	zebra cr.	no.
1	< 6	62	0	15	23	13	33	0	67	0	3	63	0	0	38	8	100	0	0	0	2
	6					0					0					0					0
	7	100	0	0	0	6	100	0	0	0	1	100	0	0	0	5					0
	8	43	14	0	43	7	0	50	0	50	2	60	0	0	40	5					0
	9	78	0	11	11	9	60	0	20	20	5	100	0	0	0	4					0
	10	75	0	0	25	4	100	0	0	0	2	50	0	0	50	2					0
	11	100	0	0	0	1					0	100	0	0	0	1					0
	12	100	0	0	0	3	100	0	0	0	1	100	0	0	0	1	100	0	0	0	1
	13-19	66	1	9	24	80	49	0	12	40	43	85	3	6	6	33	100	0	0	0	4
	20-64	82	3	5	10	133	81	3	6	11	36	81	2	6	11	85	92	8	0	0	12
	65-75	72	3	3	21	29	33	0	0	67	6	81	5	5	10	21	100	0	0	0	2
	75-85	100	0	0	0	3	100	0	0	0	1	100	0	0	0	1	100	0	0	0	1
	>85					0					0					0					0
	unknown					0					0					0					0
1 Total		75	2	6	16	288	61	2	10	27	100	81	2	5	11	166	95	5	0	0	22
2	< 6	100	0	0	0	16	100	0	0	0	4	100	0	0	0	7	100	0	0	0	5
	6					0					0					0					0
	7	100	0	0	0	4	100	0	0	0	1	100	0	0	0	2	100	0	0	0	1
	8	100	0	0	0	9	100	0	0	0	3	100	0	0	0	3	100	0	0	0	3
	9	100	0	0	0	5					0	100	0	0	0	3	100	0	0	0	2
	10	88	0	0	13	8	100	0	0	0	1	0	0	0	100	1	100	0	0	0	6
	11					0					0					0					0
	12	100	0	0	0	3					0	100	0	0	0	2	100	0	0	0	1
	13-19	80	2	1	17	112	84	0	0	16	50	71	3	3	23	35	85	4	0	11	27
	20-64	94	0	1	5	173	91	0	2	7	45	91	0	1	7	68	98	0	0	2	60
	65-75	83	0	0	17	24	100	0	0	0	3	71	0	0	29	14	100	0	0	0	7
	75-85	100	0	0	0	1					0					0	100	0	0	0	1
	>85					0					0					0					0
	unknown	100	0	0	0	1					0					0	100	0	0	0	1
2 Total		89	1	1	9	356	89	0	1	10	107	84	1	1	13	135	96	1	0	4	114
3	< 6	81	0	0	19	16	100	0	0	0	3	50	0	0	50	6	100	0	0	0	7
	6					0					0					0					0
	7	100	0	0	0	9	100	0	0	0	3	100	0	0	0	2	100	0	0	0	4
	8	100	0	0	0	13	100	0	0	0	2	100	0	0	0	4	100	0	0	0	7
	9	100	0	0	0	7	100	0	0	0	3	100	0	0	0	1	100	0	0	0	3
	10	100	0	0	0	3	100	0	0	0	3					0					0
	11					0					0					0					0
	12	100	0	0	0	2	100	0	0	0	2					0					0
	13-19	76	0	2	22	114	76	0	4	20	49	65	0	0	35	23	83	0	0	17	42
	20-64	87	0	1	12	134	92	0	2	6	48	71	0	3	26	35	92	0	0	8	51
	65-75	88	0	6	6	17	100	0	0	0	5	75	0	25	0	4	88	0	0	13	8
	75-85					0					0					0					0
	>85					0					0					0					0
	unknown	100	0	0	0	3	100	0	0	0	1	100	0	0	0	2					0
3 Total		84	0	2	14	318	87	0	3	11	119	71	0	3	26	77	90	0	0	10	122
Total		83	1	3	13	962	79	1	4	16	326	80	1	3	15	378	93	1	0	6	258

PEDESTRIANS' CROSSING AREA AND INTERACTIONS WITH CAR DRIVERS AT THE HULTA INTERSECTION (%).

Appendix J:3

Sjöbo		All pedestrians					Pedestrians that meet no car					Pedestrian meet a car and no car give way					Pedestrian meet a car and a car give way				
Period no.	age	Zebra crossing	Close zebra cr.	or in inters.	Outside zebra cr.	Total no.	Zebra crossing	Close zebra cr.	Closer to inters.	Outside zebra cr.	Total no.	Zebra crossing	Close zebra cr.	Closer to inters.	Outside zebra cr.	Total no.	Zebra crossing	Close zebra cr.	Closer to inters.	Outside zebra cr.	Total no.
1	< 6	*89*	*6*	*0*	*6*	18	*80*	*20*	*0*	*0*	5	*91*	*0*	*0*	*9*	11	*100*	*0*	*0*	*0*	2
	6	*100*	*0*	*0*	*0*	1					0					0	*100*	*0*	*0*	*0*	1
	7	*88*	*0*	*0*	*13*	8	*100*	*0*	*0*	*0*	1	*83*	*0*	*0*	*17*	6	*100*	*0*	*0*	*0*	1
	8	*63*	*13*	*0*	*25*	8	*50*	*0*	*0*	*50*	4	*100*	*0*	*0*	*0*	2	*50*	*50*	*0*	*0*	2
	9	*84*	*8*	*4*	*4*	25	*67*	*33*	*0*	*0*	3	*80*	*7*	*7*	*7*	15	*100*	*0*	*0*	*0*	7
	10	*60*	*13*	*7*	*20*	15	*75*	*0*	*0*	*25*	4	*57*	*0*	*14*	*29*	7	*50*	*50*	*0*	*0*	4
	11	*86*	*0*	*9*	*5*	22	*80*	*0*	*13*	*7*	15	*100*	*0*	*0*	*0*	6	*100*	*0*	*0*	*0*	1
	12	*60*	*3*	*18*	*20*	40	*57*	*0*	*29*	*14*	21	*61*	*6*	*6*	*28*	18	*100*	*0*	*0*	*0*	1
	13-19	*67*	*10*	*13*	*9*	67	*74*	*6*	*21*	*0*	34	*67*	*4*	*7*	*22*	27	*33*	*67*	*0*	*0*	6
	20-64	*74*	*11*	*8*	*7*	367	*70*	*14*	*5*	*11*	158	*75*	*11*	*9*	*5*	171	*84*	*3*	*13*	*0*	38
	65-75	*84*	*7*	*1*	*7*	83	*84*	*3*	*0*	*13*	31	*80*	*13*	*3*	*5*	40	*100*	*0*	*0*	*0*	12
	75-85	*88*	*0*	*12*	*0*	17	*100*	*0*	*0*	*0*	4	*82*	*0*	*18*	*0*	11	*100*	*0*	*0*	*0*	2
	>85	*100*	*0*	*0*	*0*	2					0	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1
	unknown	*0*	*0*	*0*	*100*	1	*0*	*0*	*0*	*100*	1					0					0
1 Total		*75*	*9*	*8*	*8*	674	*72*	*10*	*8*	*10*	281	*76*	*8*	*7*	*9*	315	*83*	*10*	*6*	*0*	78

Sjöbo		All pedestrians						Pedestrians that meet no car						Pedestrian meet a car and no car give way						Pedestrian meet a car and a car give way					
Period no.	age	Zebra crossing	Closer to or in inters.	Where the zebra cr. used to be	Outside old zebra cr.	Outside present zebra cr.	Total no.	Zebra crossing	Closer to or in inters.	Where the zebra cr. used to be	Outside old zebra cr.	Outside present zebra cr.	Total no.	Zebra crossing	Closer to or in inters.	Where the zebra cr. used to be	Outside old zebra cr.	Outside present zebra cr.	Total no.	Zebra crossing	Closer to or in inters.	Where the zebra cr. used to be	Outside old zebra cr.	Outside present zebra cr.	Total no.
3	< 6	*34*	*0*	*48*	*0*	*17*	29	*38*	*0*	*13*	*0*	*50*	8	*23*	*0*	*69*	*0*	*8*	13	*50*	*0*	*50*	*0*	*0*	8
	6						0						0						0						0
	7	*25*	*8*	*42*	*17*	*8*	12	*29*	*14*	*43*	*14*	*0*	7	*20*	*0*	*40*	*20*	*20*	5						0
	8	*52*	*17*	*9*	*0*	*22*	23	*47*	*27*	*7*	*0*	*20*	15	*60*	*0*	*0*	*0*	*40*	5	*67*	*0*	*33*	*0*	*0*	3
	9	*20*	*8*	*24*	*0*	*48*	25	*13*	*13*	*6*	*0*	*69*	16	*0*	*0*	*83*	*0*	*17*	6	*100*	*0*	*0*	*0*	*0*	3
	10	*36*	*0*	*0*	*0*	*64*	11	*50*	*0*	*0*	*0*	*50*	8	*0*	*0*	*0*	*0*	*100*	3						0
	11	*29*	*0*	*14*	*0*	*57*	14	*29*	*0*	*14*	*0*	*57*	7	*67*	*0*	*33*	*0*	*0*	3	*0*	*0*	*0*	*0*	*100*	4
	12	*24*	*24*	*6*	*6*	*41*	17	*14*	*29*	*7*	*7*	*43*	14	*67*	*0*	*0*	*0*	*33*	3						0
	13-19	*27*	*9*	*16*	*9*	*39*	56	*21*	*15*	*6*	*0*	*58*	33	*15*	*0*	*46*	*23*	*15*	13	*60*	*0*	*10*	*20*	*10*	10
	20-64	*25*	*12*	*38*	*14*	*11*	228	*25*	*14*	*32*	*16*	*13*	118	*21*	*13*	*39*	*13*	*13*	67	*28*	*7*	*53*	*7*	*5*	43
	65-75	*33*	*12*	*47*	*9*	*0*	43	*50*	*19*	*25*	*6*	*0*	16	*29*	*10*	*48*	*14*	*0*	21	*0*	*0*	*100*	*0*	*0*	6
	75-85	*27*	*0*	*47*	*13*	*13*	15	*50*	*0*	*25*	*13*	*13*	8	*0*	*0*	*33*	*33*	*33*	3	*0*	*0*	*100*	*0*	*0*	4
	>85						0						0						0						0
	unknown						0						0						0						0
3 Total		*28*	*10*	*32*	*10*	*20*	473	*28*	*14*	*22*	*9*	*27*	250	*23*	*8*	*42*	*12*	*15*	142	*33*	*4*	*48*	*6*	*9*	81

PEDESTRIANS' CROSSING AREA AND INTERACTIONS WITH CAR DRIVERS AT THE HULTA INTERSECTION (%).

Appendix J:4

Trand upper		All pedestrians					Pedestrians that meet no car					Pedestrian meet a car and no car give way					Pedestrian meet a car and a car give way				
Period		Zebra	Close	Closer to	Outside	Total	Zebra	Close	Closer to	Outside	Total	Zebra	Close	Closer to	Outside	Total	Zebra	Close	Closer to	Outside	Total
no.	age	crossing	zebra cr.	inters.	zebra cr.	no.	crossing	zebra cr.	inters.	zebra cr.	no.	crossing	zebra cr.	inters.	zebra cr.	no.	crossing	zebra cr.	inters.	zebra cr.	no.
1	< 6																				
	6																				
	7																				
	8																				
	9																				
	10																				
	11																				
	12																				
	13-19																				
	20-64																				
	65-75																				
	75-85																				
	>85																				
	unknown																				
1 Total																					
2	< 6	*100*	*0*	*0*	*0*	19	*100*	*0*	*0*	*0*	7	*100*	*0*	*0*	*0*	7	*100*	*0*	*0*	*0*	5
	6					0					0					0					0
	7	*100*	*0*	*0*	*0*	10	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	8
	8	*100*	*0*	*0*	*0*	10	*100*	*0*	*0*	*0*	5	*100*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	3
	9	*96*	*0*	*0*	*4*	27	*100*	*0*	*0*	*0*	7	*89*	*0*	*0*	*11*	9	*100*	*0*	*0*	*0*	11
	10	*93*	*0*	*0*	*7*	14	*100*	*0*	*0*	*0*	8	*83*	*0*	*0*	*17*	6					0
	11	*100*	*0*	*0*	*0*	3	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1
	12	*92*	*0*	*8*	*0*	13	*100*	*0*	*0*	*0*	4	*75*	*0*	*25*	*0*	4	*100*	*0*	*0*	*0*	5
	13-19	*89*	*6*	*0*	*6*	18	*83*	*0*	*0*	*17*	6	*100*	*0*	*0*	*0*	3	*89*	*11*	*0*	*0*	9
	20-64	*98*	*0*	*0*	*2*	61	*100*	*0*	*0*	*0*	23	*94*	*0*	*0*	*6*	17	*100*	*0*	*0*	*0*	21
	65-75	*100*	*0*	*0*	*0*	7	*100*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	4	*100*	*0*	*0*	*0*	1
	75-85					0					0					0					0
	>85					0					0					0					0
	unknown	*100*	*0*	*0*	*0*	1					0					0	*100*	*0*	*0*	*0*	1
2 Total		*97*	*1*	*1*	*2*	183	*98*	*0*	*0*	*2*	64	*93*	*0*	*2*	*6*	54	*98*	*2*	*0*	*0*	65
3	< 6	*90*	*0*	*0*	*10*	10	*67*	*0*	*0*	*33*	3	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	6
	6					0					0					0					0
	7	*100*	*0*	*0*	*0*	11	*100*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	7
	8	*94*	*0*	*0*	*6*	36	*100*	*0*	*0*	*0*	11	*67*	*0*	*0*	*33*	3	*95*	*0*	*0*	*5*	22
	9	*73*	*0*	*23*	*3*	30	*80*	*0*	*10*	*10*	10	*17*	*0*	*83*	*0*	6	*93*	*0*	*7*	*0*	14
	10	*93*	*0*	*0*	*7*	14	*75*	*0*	*0*	*25*	4	*100*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	8
	11	*100*	*0*	*0*	*0*	7	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	5
	12	*100*	*0*	*0*	*0*	9					0	*100*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	7
	13-19	*100*	*0*	*0*	*0*	13	*100*	*0*	*0*	*0*	3	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	9
	20-64	*93*	*0*	*2*	*4*	45	*94*	*0*	*0*	*6*	16	*80*	*0*	*20*	*0*	5	*96*	*0*	*0*	*4*	24
	65-75					0					0					0					0
	75-85					0					0					0					0
	>85					0					0					0					0
	unknown					0					0					0					0
3 Total		*91*	*0*	*5*	*4*	175	*90*	*0*	*2*	*8*	50	*70*	*0*	*26*	*4*	23	*97*	*0*	*1*	*2*	102
Total		*94*	*0*	*3*	*3*	358	*95*	*0*	*1*	*4*	114	*86*	*0*	*9*	*5*	77	*98*	*1*	*1*	*1*	167

PEDESTRIANS' CROSSING AREA AND INTERACTIONS WITH CAR DRIVERS AT THE HULTA INTERSECTION (%).

Appendix J:5

Trand lower		All pedestrians					Pedestrians that meet no car					Pedestrian meet a car and no car give way					Pedestrian meet a car and a car give way				
Period no.	age	Zebra crossing	Close zebra cr.	Closer to inters.	Outside zebra cr.	Total no.	Zebra crossing	Close zebra cr.	Closer to inters.	Outside zebra cr.	Total no.	Zebra crossing	Close zebra cr.	Closer to inters.	Outside zebra cr.	Total no.	Zebra crossing	Close zebra cr.	Closer to inters.	Outside zebra cr.	Total no.
1	< 6																				
	6																				
	7																				
	8																				
	9																				
	10																				
	11																				
	12																				
	13-19																				
	20-64																				
	65-75																				
	75-85																				
	>85																				
	unknown																				
1 Total																					
2	< 6	*100*	*0*	*0*	*0*	5	*100*	*0*	*0*	*0*	2					0	*100*	*0*	*0*	*0*	3
	6	*100*	*0*	*0*	*0*	2					0					0	*100*	*0*	*0*	*0*	2
	7	*100*	*0*	*0*	*0*	5	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	2
	8	*95*	*5*	*0*	*0*	21	*92*	*8*	*0*	*0*	13	*100*	*0*	*0*	*0*	5	*100*	*0*	*0*	*0*	3
	9	*93*	*0*	*3*	*3*	30	*93*	*0*	*0*	*7*	15	*100*	*0*	*0*	*0*	6	*89*	*0*	*11*	*0*	9
	10	*89*	*0*	*7*	*4*	27	*75*	*0*	*25*	*0*	4	*88*	*0*	*0*	*13*	8	*93*	*0*	*7*	*0*	15
	11	*76*	*0*	*6*	*18*	17	*60*	*0*	*10*	*30*	10	*100*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	5
	12	*86*	*0*	*14*	*0*	14	*0*	*0*	*100*	*0*	1	*80*	*0*	*20*	*0*	5	*100*	*0*	*0*	*0*	8
	13-19	*73*	*0*	*20*	*6*	49	*88*	*0*	*6*	*6*	16	*50*	*0*	*36*	*14*	14	*79*	*0*	*21*	*0*	19
	20-64	*71*	*1*	*21*	*6*	70	*67*	*0*	*28*	*6*	18	*63*	*4*	*21*	*13*	24	*82*	*0*	*18*	*0*	28
	65-75	*81*	*0*	*19*	*0*	16	*71*	*0*	*29*	*0*	7	*100*	*0*	*0*	*0*	4	*80*	*0*	*20*	*0*	5
	75-85	*50*	*0*	*50*	*0*	4	*50*	*0*	*50*	*0*	2	*100*	*0*	*0*	*0*	1	*0*	*0*	*100*	*0*	1
	>85					0					0					0					0
	unknown					0					0					0					0
2 Total		*81*	*1*	*14*	*5*	260	*79*	*1*	*13*	*7*	89	*75*	*1*	*15*	*8*	71	*87*	*0*	*13*	*0*	100
3	< 6	*71*	*0*	*29*	*0*	7					0	*60*	*0*	*40*	*0*	5	*100*	*0*	*0*	*0*	2
	6					0					0					0					0
	7	*100*	*0*	*0*	*0*	3					0	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	2
	8	*94*	*0*	*0*	*6*	17	*100*	*0*	*0*	*0*	4	*75*	*0*	*0*	*25*	4	*100*	*0*	*0*	*0*	9
	9	*80*	*8*	*8*	*4*	25	*89*	*0*	*11*	*0*	9	*43*	*29*	*14*	*14*	7	*100*	*0*	*0*	*0*	9
	10	*96*	*0*	*0*	*4*	25	*86*	*0*	*0*	*14*	7	*100*	*0*	*0*	*0*	6	*100*	*0*	*0*	*0*	12
	11	*78*	*0*	*0*	*22*	9	*100*	*0*	*0*	*0*	1	*0*	*0*	*0*	*100*	2	*100*	*0*	*0*	*0*	6
	12	*100*	*0*	*0*	*0*	11	*100*	*0*	*0*	*0*	6					0	*100*	*0*	*0*	*0*	5
	13-19	*66*	*3*	*17*	*14*	35	*67*	*0*	*0*	*33*	9	*44*	*11*	*44*	*0*	9	*76*	*0*	*12*	*12*	17
	20-64	*75*	*1*	*16*	*8*	77	*40*	*7*	*40*	*13*	15	*65*	*0*	*24*	*12*	17	*91*	*0*	*4*	*4*	45
	65-75	*85*	*0*	*8*	*8*	13	*50*	*0*	*0*	*50*	2	*100*	*0*	*0*	*0*	3	*88*	*0*	*13*	*0*	8
	75-85	*50*	*0*	*50*	*0*	6	*0*	*0*	*100*	*0*	1	*0*	*0*	*100*	*0*	2	*100*	*0*	*0*	*0*	3
	>85					0					0					0					0
	unknown	*100*	*0*	*0*	*0*	1					0	*100*	*0*	*0*	*0*	1					0
3 Total		*79*	*2*	*11*	*7*	229	*70*	*2*	*15*	*13*	54	*61*	*5*	*23*	*11*	57	*92*	*0*	*4*	*3*	118
Total		*80*	*1*	*13*	*6*	489	*76*	*1*	*14*	*9*	143	*69*	*3*	*19*	*9*	128	*90*	*0*	*8*	*2*	218

ALL INTERSECTIONS. PEDESTRIAN TEMPO DIVIDED IN AGE GROUPS WHEN CROSSING THE STREET AND NO CAR IS PRESENT.

Percent different tempo and total no. of persons per age group.

Appendix K:1

ALL INTERS.		Before the kerb						Crossing first lane						Crossing second lane						After the intersection					
	age	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total
period	(years)	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.
1	< 6.	13	88	0	0	0	8	13	88	0	0	0	8	13	75	0	13	0	8	13	63	0	25	0	8
	6						0						0						0						0
	7	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2
	8	17	83	0	0	0	6	17	50	0	33	0	6	17	50	0	33	0	6	17	50	0	33	0	6
	9	0	75	0	13	13	8	0	75	0	13	13	8	13	75	0	13	0	8	13	75	0	13	0	8
	10	17	83	0	0	0	6	0	83	0	17	0	6	0	83	0	17	0	6	0	83	0	17	0	6
	11	0	87	0	7	7	15	0	53	13	33	0	15	0	47	13	40	0	15	0	60	0	7	33	15
	12	0	55	0	0	45	22	0	86	0	0	14	22	0	86	0	5	9	22	0	86	0	5	9	22
	13-19	6	73	5	8	8	77	8	78	3	12	0	77	8	79	3	10	0	77	5	75	5	4	10	77
	20-64	5	91	2	0	3	194	5	93	2	0	1	194	5	92	2	0	2	194	5	92	2	0	1	194
	65-75	24	73	0	0	3	37	22	76	3	0	0	37	22	76	0	3	0	37	22	78	0	0	0	37
	75-85	60	40	0	0	0	5	60	40	0	0	0	5	60	40	0	0	0	5	60	40	0	0	0	5
	> 85.						0						0						0						0
	unknown	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1
1 Total		8	82	2	2	6	381	7	84	2	5	1	381	8	83	2	6	1	381	7	83	2	3	4	381
2	< 6.	38	54	8	0	0	13	31	62	0	8	0	13	31	38	0	31	0	13	38	54	0	8	0	13
	6						0						0						0						0
	7	0	100	0	0	0	3	0	100	0	0	0	3	33	67	0	0	0	3	0	100	0	0	0	3
	8	10	81	0	10	0	21	0	86	5	10	0	21	0	86	10	5	0	21	0	86	0	14	0	21
	9	9	82	5	5	0	22	0	73	9	18	0	22	0	73	14	14	0	22	0	95	0	5	0	22
	10	0	100	0	0	0	13	15	77	8	0	0	13	15	77	8	0	0	13	15	85	0	0	0	13
	11	0	45	36	18	0	11	9	36	9	45	0	11	9	45	9	36	0	11	9	55	27	9	0	11
	12	0	100	0	0	0	5	0	100	0	0	0	5	0	100	0	0	0	5	0	100	0	0	0	5
	13-19	10	86	0	3	1	72	10	78	1	11	0	72	10	76	1	13	0	72	10	86	1	3	0	72
	20-64	7	91	1	1	0	86	6	88	5	1	0	86	6	86	6	2	0	86	7	91	1	1	0	86
	65-75	33	67	0	0	0	12	33	67	0	0	0	12	33	67	0	0	0	12	33	67	0	0	0	12
	75-85	50	50	0	0	0	2	50	50	0	0	0	2	50	50	0	0	0	2	50	50	0	0	0	2
	> 85.						0						0						0						0
	unknown						0						0						0						0
2 Total		10	83	3	3	0	260	9	79	4	8	0	260	10	77	5	9	0	260	10	85	2	3	0	260
3	< 6.	14	79	7	0	0	14	14	79	0	7	0	14	14	79	0	7	0	14	14	79	0	7	0	14
	6						0						0						0						0
	7	0	75	25	0	0	12	0	58	8	25	8	12	8	58	17	17	0	12	8	67	17	8	0	12
	8	9	88	0	3	0	32	9	78	6	6	0	32	9	75	6	9	0	32	9	84	0	6	0	32
	9	23	73	2	2	0	44	23	68	0	9	0	44	25	61	0	9	5	44	25	66	0	9	0	44
	10	9	77	0	14	0	22	9	59	5	27	0	22	9	59	9	23	0	22	9	64	14	14	0	22
	11	0	100	0	0	0	9	0	89	11	0	0	9	0	100	0	0	0	9	0	100	0	0	0	9
	12	0	95	5	0	0	22	0	86	5	9	0	22	0	86	5	9	0	22	0	86	5	9	0	22
	13-19	10	90	0	0	0	96	8	90	0	0	2	96	10	88	0	0	2	96	13	88	0	0	0	96
	20-64	3	93	4	1	0	197	3	92	3	1	1	197	3	92	4	1	1	197	3	93	3	1	1	197
	65-75	22	78	0	0	0	23	22	78	0	0	0	23	22	74	0	0	4	23	22	78	0	0	0	23
	75-85	78	22	0	0	0	9	89	11	0	0	0	9	89	11	0	0	0	9	89	11	0	0	0	9
	> 85.						0						0						0						0
	unknown	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1
3 Total		9	87	3	1	0	481	9	83	2	4	1	481	10	82	3	4	1	481	10	84	2	3	0	481
Total		9	84	2	2	2	1122	9	83	3	5	1	1122	9	81	3	6	1	1122	9	84	2	3	2	1122

HULTA. PEDESTRIAN TEMPO DIVIDED IN AGE GROUPS WHEN CROSSING THE STREET AND NO CAR IS PRESENT.

Percent different tempo and total no. of persons per age group.

Appendix K:2

HULTA		Before the kerb						Crossing first lane						Crossing second lane						After the intersection					
	age	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total
period	(years)	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.
1	< 6.	0	100	0	0	0	3	0	100	0	0	0	3	0	67	0	33	0	3	0	100	0	0	0	3
	6						0						0						0						0
	7	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1
	8	50	50	0	0	0	2	50	50	0	0	0	2	50	50	0	0	0	2	50	50	0	0	0	2
	9	0	100	0	0	0	5	0	100	0	0	0	5	0	100	0	0	0	5	0	100	0	0	0	5
	10	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2
	11						0						0						0						0
	12	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1
	13-19	12	74	5	7	2	43	14	70	0	16	0	43	14	70	0	16	0	43	9	72	5	7	7	43
	20-64	8	86	3	0	3	36	8	86	3	0	3	36	8	86	3	0	3	36	8	86	3	0	3	36
	65-75	17	83	0	0	0	6	0	100	0	0	0	6	0	100	0	0	0	6	0	100	0	0	0	6
	75-85	100	0	0	0	0	1	100	0	0	0	0	1	100	0	0	0	0	1	100	0	0	0	0	1
	> 85.						0						0						0						0
	unknown						0						0						0						0
1 Total		11	81	3	3	2	100	11	80	1	7	1	100	11	79	1	8	1	100	9	81	3	3	4	100
2	< 6.	25	50	25	0	0	4	0	75	0	25	0	4	0	50	0	50	0	4	25	50	0	25	0	4
	6						0						0						0						0
	7	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1
	8	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3
	9						0						0						0						0
	10	0	100	0	0	0	1	0	0	100	0	0	1	0	0	100	0	0	1	0	100	0	0	0	1
	11						0						0						0						0
	12						0						0						0						0
	13-19	12	86	0	0	2	50	12	76	0	12	0	50	12	74	0	14	0	50	12	88	0	0	0	50
	20-64	7	89	2	2	0	45	4	87	7	2	0	45	4	82	9	4	0	45	7	89	2	2	0	45
	65-75	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3
	75-85						0						0						0						0
	> 85.						0						0						0						0
	unknown						0						0						0						0
2 Total		9	87	2	1	1	107	7	81	4	7	0	107	7	78	5	10	0	107	9	88	1	2	0	107
3	< 6.	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3
	6						0						0						0						0
	7	0	100	0	0	0	3	0	67	33	0	0	3	0	67	33	0	0	3	0	100	0	0	0	3
	8	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2
	9	0	67	0	33	0	3	0	67	0	33	0	3	0	67	0	33	0	3	0	67	0	33	0	3
	10	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3
	11						0						0						0						0
	12	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2
	13-19	2	98	0	0	0	49	2	98	0	0	0	49	2	98	0	0	0	49	2	98	0	0	0	49
	20-64	4	94	2	0	0	48	4	94	2	0	0	48	4	94	2	0	0	48	4	94	2	0	0	48
	65-75	20	80	0	0	0	5	20	80	0	0	0	5	20	80	0	0	0	5	20	80	0	0	0	5
	75-85						0						0						0						0
	> 85.						0						0						0						0
	unknown	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1
3 Total		3	95	1	1	0	119	3	94	2	1	0	119	3	94	2	1	0	119	3	95	1	1	0	119
Total		8	88	2	2	1	326	7	86	2	5	0	326	7	84	2	6	0	326	7	88	2	2	1	326

SJÖBO. PEDESTRIAN TEMPO DIVIDED IN AGE GROUPS WHEN CROSSING THE STREET AND NO CAR IS PRESENT.

Percent different tempo and total no. of persons per age group.

Appendix K:3

SJÖBO		Before the kerb						Crossing first lane						Crossing second lane						After the intersection					
	age	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total
period	(years)	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.
1	< 6.	20	80	0	0	0	5	20	80	0	0	0	5	20	80	0	0	0	5	20	40	0	40	0	5
	6						0						0												0
	7	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1
	8	0	100	0	0	0	4	0	50	0	50	0	4	0	50	0	50	0	4	0	50	0	50	0	4
	9	0	33	0	33	33	3	0	33	0	33	33	3	33	33	0	33	0	3	33	33	0	33	0	3
	10	25	75	0	0	0	4	0	75	0	25	0	4	0	75	0	25	0	4	0	75	0	25	0	4
	11	0	87	0	7	7	15	0	53	13	33	0	15	0	47	13	40	0	15	0	60	0	7	33	15
	12	0	52	0	0	48	21	0	86	0	0	14	21	0	86	0	5	10	21	0	86	0	5	10	21
	13-19	0	71	6	9	15	34	0	88	6	6	0	34	0	91	6	3	0	34	0	79	6	0	15	34
	20-64	4	92	1	0	3	158	4	94	2	0	0	158	4	93	2	0	1	158	4	94	2	0	1	158
	65-75	26	71	0	0	3	31	26	71	3	0	0	31	26	71	0	3	0	31	26	74	0	0	0	31
	75-85	50	50	0	0	0	4	50	50	0	0	0	4	50	50	0	0	0	4	50	50	0	0	0	4
	> 85.						0						0						0						0
	unknown	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1	0	100	0	0	0	1
1 Total		7	82	1	2	8	281	6	86	3	4	1	281	6	85	2	5	1	281	6	84	2	3	5	281
2	< 6.																								
	6																								
	7																								
	8																								
	9																								
	10																								
	11																								
	12																								
	13-19																								
	20-64																								
	65-75																								
	75-85																								
	> 85.																								
	unknown																								
2 Total																									
3	< 6.	25	75	0	0	0	8	25	75	0	0	0	8	25	75	0	0	0	8	25	75	0	0	0	8
	6						0						0						0						0
	7	0	71	29	0	0	7	0	57	0	29	14	7	14	57	0	29	0	7	14	57	29	0	0	7
	8	20	80	0	0	0	15	20	67	7	7	0	15	20	67	0	13	0	15	20	73	0	7	0	15
	9	0	100	0	0	0	16	0	94	0	6	0	16	0	94	0	6	0	16	0	94	0	6	0	16
	10	0	75	0	25	0	8	0	50	0	50	0	8	0	50	0	50	0	8	0	50	25	25	0	8
	11	0	100	0	0	0	7	0	86	14	0	0	7	0	100	0	0	0	7	0	100	0	0	0	7
	12	0	93	7	0	0	14	0	79	7	14	0	14	0	79	7	14	0	14	0	79	7	14	0	14
	13-19	21	79	0	0	0	33	21	79	0	0	0	33	21	79	0	0	0	33	21	79	0	0	0	33
	20-64	3	92	3	1	0	118	3	92	3	1	1	118	3	92	4	0	1	118	3	92	3	0	1	118
	65-75	25	75	0	0	0	16	25	75	0	0	0	16	25	75	0	0	0	16	25	75	0	0	0	16
	75-85	75	25	0	0	0	8	88	13	0	0	0	8	88	13	0	0	0	8	88	13	0	0	0	8
	> 85.						0						0						0						0
	unknown						0						0						0						0
3 Total		10	86	3	1	0	250	11	81	3	4	1	250	11	82	2	4	0	250	11	82	4	2	0	250
Total		8	84	2	2	4	531	8	84	3	4	1	531	9	83	2	5	1	531	9	83	3	3	3	531

TRANDERED UPPER CROSSING. PEDESTRIAN TEMPO DIVIDED IN AGE GROUPS WHEN CROSSING THE STREET AND NO CAR IS PRESENT.

Percent different tempo and total no. of persons per age group.

Appendix K:4

TRAND. UPP.		Before the kerb						Crossing first lane						Crossing second lane						After the intersection					
	age	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total
period	(years)	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.
1	< 6.																								
	6																								
	7																								
	8																								
	9																								
	10																								
	11																								
	12																								
	13-19																								
	20-64																								
	65-75																								
	75-85																								
	> 85.																								
	unknown																								
1 Total																									
2	< 6.	*43*	*57*	*0*	*0*	*0*	7	*43*	*57*	*0*	*0*	*0*	7	*43*	*29*	*0*	*29*	*0*	7	*43*	*57*	*0*	*0*	*0*	7
	6						0						0						0						0
	7	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1
	8	*0*	*100*	*0*	*0*	*0*	5	*0*	*100*	*0*	*0*	*0*	5	*0*	*100*	*0*	*0*	*0*	5	*0*	*100*	*0*	*0*	*0*	5
	9	*0*	*100*	*0*	*0*	*0*	7	*0*	*71*	*0*	*29*	*0*	7	*0*	*71*	*14*	*14*	*0*	7	*0*	*86*	*0*	*14*	*0*	7
	10	*0*	*100*	*0*	*0*	*0*	8	*25*	*75*	*0*	*0*	*0*	8	*25*	*75*	*0*	*0*	*0*	8	*25*	*75*	*0*	*0*	*0*	8
	11	*0*	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	*0*	1
	12	*0*	*100*	*0*	*0*	*0*	4	*0*	*100*	*0*	*0*	*0*	4	*0*	*100*	*0*	*0*	*0*	4	*0*	*100*	*0*	*0*	*0*	4
	13-19	*0*	*83*	*0*	*17*	*0*	6	*0*	*83*	*0*	*17*	*0*	6	*0*	*83*	*0*	*17*	*0*	6	*0*	*83*	*0*	*17*	*0*	6
	20-64	*9*	*91*	*0*	*0*	*0*	23	*9*	*91*	*0*	*0*	*0*	23	*9*	*91*	*0*	*0*	*0*	23	*9*	*91*	*0*	*0*	*0*	23
	65-75	*0*	*100*	*0*	*0*	*0*	2	*0*	*100*	*0*	*0*	*0*	2	*0*	*100*	*0*	*0*	*0*	2	*0*	*100*	*0*	*0*	*0*	2
	75-85						0						0						0						0
	> 85.						0						0						0						0
	unknown						0						0						0						0
2 Total		*8*	*91*	*0*	*2*	*0*	64	*13*	*83*	*0*	*5*	*0*	64	*14*	*78*	*2*	*6*	*0*	64	*13*	*84*	*0*	*3*	*0*	64
3	< 6.	*0*	*67*	*33*	*0*	*0*	3	*0*	*67*	*0*	*33*	*0*	3	*0*	*67*	*0*	*33*	*0*	3	*0*	*67*	*0*	*33*	*0*	3
	6						0						0						0						0
	7	*0*	*50*	*50*	*0*	*0*	2	*0*	*50*	*0*	*50*	*0*	2	*0*	*50*	*50*	*0*	*0*	2	*0*	*50*	*0*	*50*	*0*	2
	8	*0*	*91*	*0*	*9*	*0*	11	*0*	*82*	*9*	*9*	*0*	11	*0*	*73*	*18*	*9*	*0*	11	*0*	*91*	*0*	*9*	*0*	11
	9	*63*	*31*	*6*	*0*	*0*	16	*63*	*25*	*0*	*13*	*0*	16	*63*	*25*	*0*	*13*	*0*	16	*63*	*25*	*0*	*13*	*0*	16
	10	*0*	*100*	*0*	*0*	*0*	4	*0*	*75*	*25*	*0*	*0*	4	*0*	*75*	*25*	*0*	*0*	4	*0*	*75*	*25*	*0*	*0*	4
	11	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1
	12						0						0						0						0
	13-19	*0*	*100*	*0*	*0*	*0*	5	*0*	*100*	*0*	*0*	*0*	5	*0*	*100*	*0*	*0*	*0*	5	*0*	*100*	*0*	*0*	*0*	5
	20-64	*0*	*88*	*13*	*0*	*0*	16	*0*	*88*	*6*	*6*	*0*	16	*0*	*88*	*6*	*6*	*0*	16	*0*	*88*	*6*	*6*	*0*	16
	65-75						0						0						0						0
	75-85						0						0						0						0
	> 85.						0						0						0						0
	unknown						0						0						0						0
3 Total		*17*	*72*	*9*	*2*	*0*	58	*17*	*67*	*5*	*10*	*0*	58	*17*	*66*	*9*	*9*	*0*	58	*17*	*69*	*3*	*10*	*0*	58
Total		*12*	*82*	*4*	*2*	*0*	122	*15*	*75*	*2*	*7*	*0*	122	*16*	*72*	*5*	*7*	*0*	122	*15*	*77*	*2*	*7*	*0*	122

TRANDERED LOWER CROSSING. PEDESTRIAN TEMPO DIVIDED IN AGE GROUPS WHEN CROSSING THE STREET AND NO CAR IS PRESENT.

Percent different tempo and total no. of persons per age group.

Appendix K:5

TRAND. LOW.		Before the kerb						Crossing first lane						Crossing second lane						After the intersection					
	age	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total
period	(years)	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.
1	< 6.																								
	6																								
	7																								
	8																								
	9																								
	10																								
	11																								
	12																								
	13-19																								
	20-64																								
	65-75																								
	75-85																								
	> 85.																								
	unknown																								
1 Total																									
2	< 6.	*50*	*50*	*0*	*0*	*0*	2	*50*	*50*	*0*	*0*	*0*	2	*50*	*50*	*0*	*0*	*0*	2	*50*	*50*	*0*	*0*	*0*	2
	6						0						0						0						0
	7	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1
	8	*15*	*69*	*0*	*15*	*0*	13	*0*	*77*	*8*	*15*	*0*	13	*0*	*77*	*15*	*8*	*0*	13	*0*	*77*	*0*	*23*	*0*	13
	9	*13*	*73*	*7*	*7*	*0*	15	*0*	*73*	*13*	*13*	*0*	15	*0*	*73*	*13*	*13*	*0*	15	*0*	*100*	*0*	*0*	*0*	15
	10	*0*	*100*	*0*	*0*	*0*	4	*0*	*100*	*0*	*0*	*0*	4	*0*	*100*	*0*	*0*	*0*	4	*0*	*100*	*0*	*0*	*0*	4
	11	*0*	*40*	*40*	*20*	*0*	10	*0*	*40*	*10*	*50*	*0*	10	*0*	*50*	*10*	*40*	*0*	10	*0*	*60*	*30*	*10*	*0*	10
	12	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1
	13-19	*6*	*88*	*0*	*6*	*0*	16	*6*	*81*	*6*	*6*	*0*	16	*6*	*81*	*6*	*6*	*0*	16	*6*	*81*	*6*	*6*	*0*	16
	20-64	*6*	*94*	*0*	*0*	*0*	18	*6*	*89*	*6*	*0*	*0*	18	*6*	*89*	*6*	*0*	*0*	18	*6*	*94*	*0*	*0*	*0*	18
	65-75	*57*	*43*	*0*	*0*	*0*	7	*57*	*43*	*0*	*0*	*0*	7	*57*	*43*	*0*	*0*	*0*	7	*57*	*43*	*0*	*0*	*0*	7
	75-85	*50*	*50*	*0*	*0*	*0*	2	*50*	*50*	*0*	*0*	*0*	2	*50*	*50*	*0*	*0*	*0*	2	*50*	*50*	*0*	*0*	*0*	2
	> 85.						0						0						0						0
	unknown						0						0						0						0
2 Total		*13*	*74*	*6*	*7*	*0*	89	*9*	*73*	*7*	*11*	*0*	89	*9*	*74*	*8*	*9*	*0*	89	*9*	*81*	*4*	*6*	*0*	89
3	< 6.						0						0						0						0
	6						0						0						0						0
	7						0						0						0						0
	8	*0*	*100*	*0*	*0*	*0*	4	*0*	*100*	*0*	*0*	*0*	4	*0*	*100*	*0*	*0*	*0*	4	*0*	*100*	*0*	*0*	*0*	4
	9	*0*	*100*	*0*	*0*	*0*	9	*0*	*100*	*0*	*0*	*0*	9	*11*	*67*	*0*	*0*	*22*	9	*11*	*89*	*0*	*0*	*0*	9
	10	*29*	*57*	*0*	*14*	*0*	7	*29*	*43*	*0*	*29*	*0*	7	*29*	*43*	*14*	*14*	*0*	7	*29*	*57*	*0*	*14*	*0*	7
	11	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1
	12	*0*	*100*	*0*	*0*	*0*	6	*0*	*100*	*0*	*0*	*0*	6	*0*	*100*	*0*	*0*	*0*	6	*0*	*100*	*0*	*0*	*0*	6
	13-19	*22*	*78*	*0*	*0*	*0*	9	*0*	*78*	*0*	*0*	*22*	9	*22*	*56*	*0*	*0*	*22*	9	*44*	*56*	*0*	*0*	*0*	9
	20-64	*0*	*100*	*0*	*0*	*0*	15	*0*	*100*	*0*	*0*	*0*	15	*0*	*100*	*0*	*0*	*0*	15	*0*	*100*	*0*	*0*	*0*	15
	65-75	*0*	*100*	*0*	*0*	*0*	2	*0*	*100*	*0*	*0*	*0*	2	*0*	*50*	*0*	*0*	*50*	2	*0*	*100*	*0*	*0*	*0*	2
	75-85	*100*	*0*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	*0*	1
	> 85.						0						0						0						0
	unknown						0						0						0						0
3 Total		*9*	*89*	*0*	*2*	*0*	54	*6*	*87*	*0*	*4*	*4*	54	*11*	*76*	*2*	*2*	*9*	54	*15*	*83*	*0*	*2*	*0*	54
Total		*12*	*80*	*3*	*5*	*0*	143	*8*	*78*	*4*	*8*	*1*	143	*10*	*75*	*6*	*6*	*3*	143	*11*	*82*	*3*	*4*	*0*	143

ALL INTERSECTIONS. PEDESTRIAN TEMPO DIVIDED IN AGE GROUPS WHEN CROSSING THE STREET AND MEET ONE OR MORE CARS.

Percent different tempo and total no. of persons per age group.

Appendix K:6

ALL INTERS.		Before the kerb						Crossing first lane						Crossing second lane						After the intersection					
	age	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total
period	(years)	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.
1	< 6.	29	58	0	0	13	24	8	75	4	13	0	24	8	67	0	25	0	24	17	83	0	0	0	24
	6	100	0	0	0	0	1	0	100	0	0	0	1	0	0	0	100	0	1	0	0	0	0	100	1
	7	0	62	31	0	8	13	8	75	0	17	0	12	8	75	0	17	0	12	8	83	0	0	8	12
	8	22	78	0	0	0	9	11	33	11	44	0	9	11	22	11	56	0	9	11	78	0	11	0	9
	9	12	58	0	0	31	26	0	62	0	38	0	26	0	50	4	46	0	26	0	58	0	31	12	26
	10	0	100	0	0	0	14	0	93	0	7	0	14	0	86	0	14	0	14	0	86	0	7	7	14
	11	13	88	0	0	0	8	0	88	0	13	0	8	0	75	0	25	0	8	13	50	0	13	25	8
	12	0	71	0	5	24	21	0	81	0	19	0	21	0	71	0	24	5	21	0	90	0	0	5	21
	13-19	11	79	1	1	7	72	15	71	4	8	1	73	15	68	4	14	0	74	14	72	1	4	5	74
	20-64	12	84	2	0	3	304	9	86	4	0	1	304	9	86	5	0	0	306	9	86	4	0	1	306
	65-75	41	59	0	0	0	75	38	59	1	0	1	76	36	63	1	0	0	76	38	61	1	0	0	76
	75-85	47	47	0	0	7	15	47	53	0	0	0	15	40	53	0	0	7	15	47	47	0	0	7	15
	> 85.						0	0	50	0	0	50	2	50	50	0	0	0	2	50	50	0	0	0	2
	unknown						0						0						0						0
1 Total		16	76	2	0	5	582	13	77	3	5	1	585	13	76	3	8	1	588	14	78	2	3	3	588
2	< 6.	52	41	0	4	4	27	41	59	0	0	0	27	39	61	0	0	0	28	39	61	0	0	0	28
	6	0	50	50	0	0	2	0	50	0	50	0	2	0	100	0	0	0	2	0	100	0	0	0	2
	7	19	63	13	0	6	16	13	63	13	13	0	16	13	69	6	13	0	16	13	69	6	13	0	16
	8	21	68	5	5	0	19	16	68	11	5	0	19	16	58	11	16	0	19	26	53	5	16	0	19
	9	5	83	0	3	10	40	8	75	5	10	3	40	5	60	15	18	3	40	5	75	5	8	8	40
	10	6	56	3	31	6	36	3	69	3	22	3	36	0	61	3	33	3	36	0	67	3	31	3	36
	11	11	67	22	0	0	9	11	56	33	0	0	9	11	44	33	11	0	9	11	44	33	11	0	9
	12	4	92	0	4	0	25	4	80	12	4	0	25	0	84	8	8	0	25	0	92	0	8	0	25
	13-19	2	90	1	2	5	105	4	88	9	0	0	107	5	88	3	5	0	106	6	92	1	2	0	106
	20-64	13	83	1	0	2	220	10	88	2	0	0	218	9	87	3	1	0	218	9	88	2	0	0	218
	65-75	37	63	0	0	0	35	31	69	0	0	0	35	31	69	0	0	0	35	34	66	0	0	0	35
	75-85	100	0	0	0	0	3	100	0	0	0	0	3	100	0	0	0	0	3	100	0	0	0	0	3
	> 85.						0						0						0						0
	unknown	50	50	0	0	0	2	50	50	0	0	0	2	0	100	0	0	0	2	50	50	0	0	0	2
2 Total		14	78	2	3	3	539	12	79	5	3	0	550	11	78	4	6	0	539	12	81	3	5	1	539
3	< 6.	13	88	0	0	0	48	8	79	4	13	0	48	8	77	6	6	2	48	8	88	0	4	0	48
	6						0						0						0						0
	7	4	96	0	0	0	23	0	91	13	0	0	23	0	91	0	9	0	23	0	91	9	0	0	23
	8	7	91	2	0	0	57	2	88	4	4	4	57	2	89	2	7	0	57	2	91	7	0	0	57
	9	2	96	0	2	0	56	4	86	5	5	0	56	4	86	0	11	0	56	4	84	5	7	0	56
	10	0	94	6	0	0	36	0	92	3	6	0	36	0	75	17	6	3	36	0	92	3	6	0	36
	11	0	100	0	0	0	21	5	95	0	0	0	21	0	95	0	5	0	21	0	100	0	0	0	21
	12	0	100	0	0	0	17	0	88	0	12	0	17	0	88	0	12	0	17	0	88	0	12	0	17
	13-19	2	91	3	4	0	124	2	88	6	3	0	124	2	89	6	4	0	124	3	89	5	3	0	124
	20-64	7	92	1	0	0	291	7	90	3	0	0	291	7	89	4	0	0	291	7	91	2	0	0	291
	65-75	38	60	2	0	0	50	34	64	2	0	0	50	34	64	2	0	0	50	34	64	2	0	0	50
	75-85	92	8	0	0	0	12	92	8	0	0	0	12	92	8	0	0	0	12	92	8	0	0	0	12
	> 85.						0						0						0						0
	unknown	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3
3 Total		9	89	1	1	0	738	8	86	4	2	0	738	8	85	4	3	0	738	8	87	3	2	0	738
Total		13	82	2	1	3	1859	11	81	4	3	1	1873	10	80	4	6	0	1865	11	82	3	3	1	1865

HULTA. PEDESTRIAN TEMPO DIVIDED IN AGE GROUPS WHEN CROSSING THE STREET AND MEET ONE OR MORE CARS.

Percent different tempo and total no. of persons per age group.

Appendix K:7

HULTA		Before the kerb						Crossing first lane						Crossing second lane						After the intersection					
	age	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total
period	(years)	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.
1	< 6.	60	40	0	0	0	10	10	70	0	20	0	10	10	50	0	40	0	10	30	70	0	0	0	10
	6						0						0						0						0
	7	0	80	0	0	20	5	20	80	0	0	0	5	20	80	0	0	0	5	20	80	0	0	0	5
	8	40	60	0	0	0	5	20	20	20	40	0	5	20	20	20	40	0	5	20	80	0	0	0	5
	9	0	100	0	0	0	4	0	100	0	0	0	4	0	100	0	0	0	4	0	100	0	0	0	4
	10	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2
	11	0	100	0	0	0	1	0	0	0	100	0	1	0	0	0	100	0	1	0	0	0	100	0	1
	12	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2
	13-19	21	69	3	0	8	39	28	62	3	8	0	39	28	63	3	8	0	40	25	73	3	0	0	40
	20-64	27	69	1	0	2	95	21	77	2	0	0	95	20	78	2	0	0	97	22	76	1	0	1	97
	65-75	57	43	0	0	0	23	43	57	0	0	0	23	35	65	0	0	0	23	43	57	0	0	0	23
	75-85	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2
	> 85.						0						0						0						0
	unknown						0						0						0						0
1 Total		29	66	1	0	3	188	23	70	2	4	0	188	21	71	2	5	0	191	24	74	1	1	1	191
2	< 6.	58	25	0	8	8	12	50	50	0	0	0	12	50	50	0	0	0	12	50	50	0	0	0	12
	6						0						0						0						0
	7	67	33	0	0	0	3	33	67	0	0	0	3	33	67	0	0	0	3	33	67	0	0	0	3
	8	33	67	0	0	0	6	33	50	17	0	0	6	33	50	17	0	0	6	67	33	0	0	0	6
	9	20	80	0	0	0	5	20	80	0	0	0	5	20	60	0	20	0	5	20	80	0	0	0	5
	10	0	86	0	0	14	7	14	86	0	0	0	7	0	86	0	14	0	7	0	86	0	14	0	7
	11						0						0						0						0
	12	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3
	13-19	2	90	0	0	8	62	6	89	5	0	0	62	6	89	2	3	0	62	8	92	0	0	0	62
	20-64	15	80	1	0	4	128	12	87	2	0	0	128	10	88	2	1	0	128	10	88	1	1	0	128
	65-75	38	62	0	0	0	21	29	71	0	0	0	21	29	71	0	0	0	21	33	67	0	0	0	21
	75-85	100	0	0	0	0	1	100	0	0	0	0	1	100	0	0	0	0	1	100	0	0	0	0	1
	> 85.						0						0						0						0
	unknown	100	0	0	0	0	1	100	0	0	0	0	1	0	100	0	0	0	1	100	0	0	0	0	1
2 Total		17	78	0	0	5	249	15	82	2	0	0	249	14	83	2	2	0	249	16	83	0	1	0	249
3	< 6.	8	92	0	0	0	13	8	77	0	31	0	13	8	69	0	15	8	13	8	92	0	0	0	13
	6						0						0						0						0
	7	0	100	0	0	0	6	0	100	0	0	0	6	0	100	0	0	0	6	0	100	0	0	0	6
	8	27	64	9	0	0	11	9	64	9	0	18	11	9	82	0	9	0	11	9	73	18	0	0	11
	9	0	100	0	0	0	4	0	100	0	0	0	4	0	100	0	0	0	4	0	75	0	25	0	4
	10						0						0						0						0
	11						0						0						0						0
	12						0						0						0						0
	13-19	2	94	0	5	0	65	0	92	3	5	0	65	0	92	3	5	0	65	2	92	2	5	0	65
	20-64	7	93	0	0	0	86	6	90	3	0	1	86	6	91	3	0	0	86	6	93	1	0	0	86
	65-75	58	42	0	0	0	12	58	42	0	0	0	12	58	42	0	0	0	12	58	42	0	0	0	12
	75-85						0						0						0						0
	> 85.						0						0						0						0
	unknown	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2	0	100	0	0	0	2
3 Total		9	89	1	2	0	199	7	86	3	4	2	199	7	87	3	3	1	199	8	88	2	2	0	199
Total		18	78	1	1	3	636	15	80	3	2	0	636	14	81	2	3	0	639	16	82	1	1	0	639

SJÖBO. PEDESTRIAN TEMPO DIVIDED IN AGE GROUPS WHEN CROSSING THE STREET AND MEET ONE OR MORE CARS.

Percent different tempo and total no. of persons per age group.

Appendix K:8

SJÖBO		Before the kerb						Crossing first lane						Crossing second lane						After the intersection					
	age	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total
period	(years)	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.
1	< 6.	7	71	0	0	21	14	7	79	7	7	0	14	7	79	0	14	0	14	7	93	0	0	0	14
	6	100	0	0	0	0	1	0	100	0	0	0	1	0	0	0	100	0	1	0	0	0	0	100	1
	7	0	50	50	0	0	8	0	71	0	29	0	7	0	71	0	29	0	7	0	86	0	0	14	7
	8	0	100	0	0	0	4	0	50	0	50	0	4	0	25	0	75	0	4	0	75	0	25	0	4
	9	14	50	0	0	36	22	0	55	0	45	0	22	0	41	5	55	0	22	0	50	0	36	14	22
	10	0	100	0	0	0	12	0	92	0	8	0	12	0	83	0	17	0	12	0	83	0	8	8	12
	11	14	86	0	0	0	7	0	100	0	0	0	7	0	86	0	14	0	7	14	57	0	0	29	7
	12	0	68	0	5	26	19	0	79	0	21	0	19	0	68	0	26	5	19	0	89	0	0	5	19
	13-19	0	91	0	3	6	33	0	82	6	9	3	34	0	74	6	21	0	34	0	71	0	9	12	34
	20-64	5	90	2	0	3	209	3	89	5	0	1	209	4	90	6	0	0	209	3	90	5	0	1	209
	65-75	35	65	0	0	0	52	36	60	2	0	2	53	36	62	2	0	0	53	36	62	2	0	0	53
	75-85	54	38	0	0	8	13	54	46	0	0	0	13	46	46	0	0	8	13	54	38	0	0	8	13
	> 85.						0	0	50	0	0	50	2	50	50	0	0	0	2	50	50	0	0	0	2
	unknown						0						0						0						0
1 Total		10	80	2	1	6	394	9	80	4	6	2	397	9	78	4	9	1	397	9	79	3	4	4	397
2	< 6.																								
	6																								
	7																								
	8																								
	9																								
	10																								
	11																								
	12																								
	13-19																								
	20-64																								
	65-75																								
	75-85																								
	> 85.																								
	unknown																								
2 Total																									
3	< 6.	14	86	0	0	0	21	14	76	0	10	0	21	14	76	0	10	0	21	14	76	0	10	0	21
	6						0						0						0						0
	7	0	100	0	0	0	5	0	100	0	0	0	5	0	100	0	0	0	5	0	100	0	0	0	5
	8	0	100	0	0	0	8	0	88	13	0	0	8	0	88	0	13	0	8	0	100	0	0	0	8
	9	0	100	0	0	0	9	0	78	0	22	0	9	0	78	0	22	0	9	0	78	0	22	0	9
	10	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3
	11	0	100	0	0	0	7	14	86	0	0	0	7	0	86	0	14	0	7	0	100	0	0	0	7
	12	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3	0	100	0	0	0	3
	13-19	0	87	9	4	0	23	9	83	9	0	0	23	9	83	9	0	0	23	9	78	9	4	0	23
	20-64	7	93	0	0	0	111	7	93	0	0	0	111	10	90	0	0	0	111	9	90	0	0	1	111
	65-75	30	67	4	0	0	27	26	70	4	0	0	27	26	70	4	0	0	27	26	70	4	0	0	27
	75-85	86	14	0	0	0	7	86	14	0	0	0	7	86	14	0	0	0	7	86	14	0	0	0	7
	> 85.						0						0						0						0
	unknown						0						0						0						0
3 Total		11	87	0	1	0	224	12	84	4	0	0	224	13	83	1	3	0	224	13	83	1	2	0	224
Total		11	83	2	1	4	618	10	82	4	4	1	621	10	80	3	7	0	621	10	81	2	3	3	621

TRANDERED UPPER CROSSING. PEDESTRIAN TEMPO DIVIDED IN AGE GROUPS WHEN CROSSING THE STREET AND MEET ONE OR MORE CARS.

Percent different tempo and total no. of persons per age group.

Appendix K:9

TRAND. UPP.		Before the kerb						Crossing first lane						Crossing second lane						After the intersection					
	age	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total
period	(years)	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.
1	< 6.																								
	6																								
	7																								
	8																								
	9																								
	10																								
	11																								
	12																								
	13-19																								
	20-64																								
	65-75																								
	75-85																								
	> 85.																								
	unknown																								
1 Total																									
2	< 6.	*58*	*42*	*0*	*0*	*0*	12	*42*	*58*	*0*	*0*	*0*	12	*38*	*62*	*0*	*0*	*0*	13	*38*	*62*	*0*	*0*	*0*	13
	6						0						0						0						0
	7	*11*	*78*	*0*	*0*	*11*	9	*11*	*56*	*11*	*22*	*0*	9	*11*	*67*	*0*	*22*	*0*	9	*11*	*78*	*0*	*11*	*0*	9
	8	*20*	*80*	*0*	*0*	*0*	5	*20*	*80*	*0*	*0*	*0*	5	*20*	*60*	*0*	*20*	*0*	5	*20*	*60*	*0*	*20*	*0*	5
	9	*5*	*85*	*0*	*0*	*10*	20	*5*	*75*	*10*	*5*	*5*	20	*5*	*65*	*10*	*15*	*5*	20	*5*	*65*	*10*	*5*	*15*	20
	10	*33*	*50*	*0*	*0*	*17*	6	*0*	*83*	*0*	*0*	*17*	6	*0*	*83*	*0*	*0*	*17*	6	*0*	*100*	*0*	*0*	*17*	6
	11	*0*	*50*	*50*	*0*	*0*	2	*0*	*0*	*100*	*0*	*0*	2	*0*	*0*	*100*	*0*	*0*	2	*0*	*0*	*100*	*0*	*0*	2
	12	*0*	*100*	*0*	*0*	*0*	9	*0*	*100*	*0*	*0*	*0*	9	*0*	*100*	*0*	*0*	*0*	9	*0*	*89*	*0*	*11*	*0*	9
	13-19	*0*	*100*	*0*	*0*	*0*	10	*0*	*83*	*25*	*0*	*0*	12	*0*	*82*	*9*	*9*	*0*	11	*0*	*100*	*0*	*0*	*0*	11
	20-64	*20*	*80*	*0*	*0*	*0*	40	*16*	*82*	*3*	*0*	*0*	38	*16*	*82*	*3*	*0*	*0*	38	*16*	*82*	*3*	*0*	*0*	38
	65-75	*20*	*80*	*0*	*0*	*0*	5	*20*	*80*	*0*	*0*	*0*	5	*20*	*80*	*0*	*0*	*0*	5	*20*	*80*	*0*	*0*	*0*	5
	75-85						0						0						0						0
	> 85.						0						0						0						0
	unknown	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1
2 Total		*18*	*78*	*1*	*0*	*3*	119	*12*	*75*	*8*	*3*	*2*	130	*13*	*75*	*5*	*6*	*2*	119	*13*	*77*	*4*	*3*	*3*	119
3	< 6.	*14*	*86*	*0*	*0*	*0*	7	*0*	*100*	*0*	*0*	*0*	7	*0*	*100*	*0*	*0*	*0*	7	*0*	*100*	*0*	*0*	*0*	7
	6						0						0						0						0
	7	*11*	*89*	*0*	*0*	*0*	9	*0*	*78*	*33*	*0*	*0*	9	*0*	*78*	*0*	*22*	*0*	9	*0*	*78*	*22*	*0*	*0*	9
	8	*4*	*96*	*0*	*0*	*0*	25	*0*	*92*	*0*	*8*	*0*	25	*0*	*88*	*4*	*8*	*0*	25	*0*	*92*	*8*	*0*	*0*	25
	9	*0*	*96*	*0*	*4*	*0*	27	*4*	*81*	*11*	*4*	*0*	27	*4*	*81*	*0*	*15*	*0*	27	*4*	*81*	*11*	*4*	*0*	27
	10	*0*	*87*	*7*	*7*	*0*	15	*0*	*87*	*0*	*13*	*0*	15	*0*	*53*	*33*	*13*	*0*	15	*0*	*87*	*0*	*13*	*0*	15
	11	*0*	*100*	*0*	*0*	*0*	6	*0*	*100*	*0*	*0*	*0*	6	*0*	*100*	*0*	*0*	*0*	6	*0*	*100*	*0*	*0*	*0*	6
	12	*0*	*100*	*0*	*0*	*0*	9	*0*	*100*	*0*	*0*	*0*	9	*0*	*100*	*0*	*0*	*0*	9	*0*	*100*	*0*	*0*	*0*	9
	13-19	*10*	*90*	*0*	*0*	*0*	10	*10*	*80*	*10*	*0*	*0*	10	*10*	*80*	*10*	*0*	*0*	10	*10*	*80*	*10*	*0*	*0*	10
	20-64	*13*	*88*	*0*	*0*	*0*	32	*9*	*88*	*3*	*0*	*0*	32	*9*	*88*	*3*	*0*	*0*	32	*9*	*88*	*3*	*0*	*0*	32
	65-75						0						0						0						0
	75-85						0						0						0						0
	> 85.						0						0						0						0
	unknown						0						0						0						0
3 Total		*6*	*92*	*1*	*1*	*0*	140	*4*	*88*	*6*	*3*	*0*	140	*4*	*84*	*6*	*6*	*0*	140	*4*	*88*	*6*	*2*	*0*	140
Total		*11*	*86*	*1*	*1*	*2*	259	*8*	*82*	*7*	*3*	*1*	270	*8*	*80*	*6*	*6*	*1*	259	*8*	*83*	*5*	*3*	*2*	259

TRANDERED LOWER CROSSING. PEDESTRIAN TEMPO DIVIDED IN AGE GROUPS WHEN CROSSING THE STREET AND MEET ONE OR MORE CARS.

Percent different tempo and total no. of persons per age group.

Appendix K:10

TRAND. LOW.		Before the kerb						Crossing first lane						Crossing second lane						After the intersection					
	age	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total	walking	normal	walking		varying	total
period	(years)	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.	slowly	tempo	fast	running	tempo	no.
1	< 6.																								
	6																								
	7																								
	8																								
	9																								
	10																								
	11																								
	12																								
	13-19																								
	20-64																								
	65-75																								
	75-85																								
	> 85.																								
	unknown																								
1 Total																									
2	< 6.	*0*	*100*	*0*	*0*	*0*	3	*0*	*100*	*0*	*0*	*0*	3	*0*	*100*	*0*	*0*	*0*	3	*0*	*100*	*0*	*0*	*0*	3
	6	*0*	*50*	*50*	*0*	*0*	2	*0*	*50*	*0*	*50*	*0*	2	*0*	*100*	*0*	*0*	*0*	2	*0*	*100*	*0*	*0*	*0*	2
	7	*0*	*50*	*50*	*0*	*0*	4	*0*	*75*	*25*	*0*	*0*	4	*0*	*75*	*25*	*0*	*0*	4	*0*	*50*	*25*	*25*	*0*	4
	8	*13*	*63*	*13*	*13*	*0*	8	*0*	*75*	*13*	*13*	*0*	8	*0*	*63*	*13*	*25*	*0*	8	*0*	*63*	*13*	*25*	*0*	8
	9	*0*	*80*	*0*	*7*	*13*	15	*7*	*73*	*0*	*20*	*0*	15	*0*	*53*	*27*	*20*	*0*	15	*0*	*87*	*0*	*13*	*0*	15
	10	*0*	*48*	*4*	*48*	*0*	23	*0*	*61*	*4*	*35*	*0*	23	*0*	*48*	*4*	*48*	*0*	23	*0*	*52*	*4*	*43*	*0*	23
	11	*14*	*71*	*14*	*0*	*0*	7	*14*	*71*	*14*	*0*	*0*	7	*14*	*57*	*14*	*14*	*0*	7	*14*	*57*	*14*	*14*	*0*	7
	12	*8*	*85*	*0*	*8*	*0*	13	*8*	*62*	*23*	*8*	*0*	13	*0*	*69*	*15*	*15*	*0*	13	*0*	*92*	*0*	*8*	*0*	13
	13-19	*3*	*88*	*3*	*6*	*0*	33	*0*	*88*	*12*	*0*	*0*	33	*3*	*88*	*3*	*6*	*0*	33	*3*	*88*	*3*	*6*	*0*	33
	20-64	*4*	*92*	*4*	*0*	*0*	52	*2*	*94*	*4*	*0*	*0*	52	*2*	*90*	*6*	*2*	*0*	52	*2*	*92*	*6*	*0*	*0*	52
	65-75	*44*	*56*	*0*	*0*	*0*	9	*44*	*56*	*0*	*0*	*0*	9	*44*	*56*	*0*	*0*	*0*	9	*44*	*56*	*0*	*0*	*0*	9
	75-85	*100*	*0*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	*0*	2
	> 85.						0						0						0						0
	unknown						0						0						0						0
2 Total		*7*	*77*	*5*	*9*	*1*	171	*6*	*78*	*8*	*8*	*0*	171	*5*	*74*	*8*	*13*	*0*	171	*5*	*79*	*5*	*11*	*0*	171
3	< 6.	*14*	*86*	*0*	*0*	*0*	7	*0*	*71*	*29*	*0*	*0*	7	*0*	*71*	*29*	*0*	*0*	7	*0*	*100*	*0*	*0*	*0*	7
	6						0						0						0						0
	7	*0*	*100*	*0*	*0*	*0*	3	*0*	*100*	*0*	*0*	*0*	3	*0*	*100*	*0*	*0*	*0*	3	*0*	*100*	*0*	*0*	*0*	3
	8	*0*	*100*	*0*	*0*	*0*	13	*0*	*100*	*0*	*0*	*0*	13	*0*	*100*	*0*	*0*	*0*	13	*0*	*100*	*0*	*0*	*0*	13
	9	*6*	*94*	*0*	*0*	*0*	16	*6*	*94*	*0*	*0*	*0*	16	*6*	*94*	*0*	*0*	*0*	16	*6*	*94*	*0*	*0*	*0*	16
	10	*0*	*100*	*0*	*0*	*0*	18	*0*	*94*	*6*	*0*	*0*	18	*0*	*89*	*6*	*0*	*6*	18	*0*	*94*	*6*	*0*	*0*	18
	11	*0*	*100*	*0*	*0*	*0*	8	*0*	*100*	*0*	*0*	*0*	8	*0*	*100*	*0*	*0*	*0*	8	*0*	*100*	*0*	*0*	*0*	8
	12	*0*	*100*	*0*	*0*	*0*	5	*0*	*60*	*0*	*40*	*0*	5	*0*	*60*	*0*	*40*	*0*	5	*0*	*60*	*0*	*40*	*0*	5
	13-19	*0*	*88*	*8*	*4*	*0*	26	*0*	*85*	*12*	*4*	*0*	26	*0*	*88*	*12*	*8*	*0*	26	*0*	*92*	*8*	*0*	*0*	26
	20-64	*5*	*92*	*3*	*0*	*0*	62	*6*	*85*	*8*	*0*	*0*	62	*3*	*85*	*11*	*0*	*0*	62	*2*	*94*	*5*	*0*	*0*	62
	65-75	*36*	*64*	*0*	*0*	*0*	11	*27*	*73*	*0*	*0*	*0*	11	*27*	*73*	*0*	*0*	*0*	11	*27*	*73*	*0*	*0*	*0*	11
	75-85	*100*	*0*	*0*	*0*	*0*	5	*100*	*0*	*0*	*0*	*0*	5	*100*	*0*	*0*	*0*	*0*	5	*100*	*0*	*0*	*0*	*0*	5
	> 85.						0						0						0						0
	unknown	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1	*0*	*100*	*0*	*0*	*0*	1
3 Total		*8*	*89*	*3*	*0*	*0*	175	*7*	*85*	*6*	*2*	*0*	175	*6*	*85*	*7*	*2*	*1*	175	*6*	*90*	*3*	*1*	*0*	175
Total		*8*	*83*	*4*	*5*	*1*	346	*7*	*82*	*7*	*5*	*0*	346	*6*	*79*	*8*	*8*	*0*	346	*5*	*84*	*4*	*6*	*0*	346

ALL INTERSECTIONS. PEDESTRIAN HEAD MOVEMENTS WHEN CROSSING THE STREET AND NO CAR IS PRESENT.

Percent head movements in different directions divided in age groups and total no. of persons.

Appendix L:1

ALL INTERS.		Before kerb					At kerb					Crossing first lane					At refuge					Crossing second lane				
Period	Age (years)	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.
1	< 6.	17	33	17	33	6	33	33	0	33	6	33	0	33	33	6						67	0	0	33	6
	6					0					0					0										0
	7	100	0	0	0	2	0	0	100	0	1	50	50	0	0	2						100	0	0	0	1
	8	25	50	25	0	4	50	50	0	0	4	50	0	33	17	6						67	0	0	33	6
	9	29	57	14	0	7	14	86	0	0	7	57	0	29	14	7						100	0	0	0	6
	10	17	33	17	17	6	0	40	0	60	5	50	0	25	25	4						67	0	0	33	3
	11	20	30	30	20	10	17	50	17	17	12	67	8	8	17	12						55	0	9	36	11
	12	27	27	0	45	11	38	19	19	25	16	59	6	6	29	17						56	0	25	19	16
	13-19	46	15	15	23	52	12	64	12	12	67	59	7	18	16	61						69	3	8	20	61
	20-64	44	28	10	19	167	14	68	9	9	187	69	7	10	14	181						77	3	4	16	184
	65-75	58	13	13	16	31	28	69	3	0	32	79	3	6	12	34						88	0	3	9	34
	75-85	60	20	20	0	5	20	80	0	0	5	100	0	0	0	5						80	0	0	20	5
	> 85.					0					0					0										0
	unknown					0					0					0										0
Total 1		43	25	12	19	299	17	63	9	11	342	67	6	12	15	335						75	2	6	17	333
2	< 6.	55	9	27	9	11	58	25	8	8	12	83	0	0	17	12	83	0	0	17	12	83	8	0	8	12
	6					0					0					0					0					0
	7	0	33	33	33	3	0	0	67	33	3	67	0	33	0	3	33	0	33	33	3	67	33	0	0	3
	8	25	20	30	25	20	38	33	10	19	21	62	5	19	14	21	67	5	10	19	21	76	0	0	24	21
	9	11	28	44	17	18	19	38	29	14	21	50	5	9	36	22	45	5	0	50	22	64	5	0	32	22
	10	10	20	50	20	10	23	23	23	31	13	23	0	23	54	13	23	0	8	69	13	23	0	15	62	13
	11	33	11	22	33	9	45	36	18	0	11	55	0	0	45	11	64	0	0	36	11	82	0	0	18	11
	12	0	20	40	40	5	0	40	60	0	5	20	0	0	80	5	60	0	0	40	5	40	0	20	40	5
	13-19	23	25	16	36	61	23	41	21	15	66	61	7	9	23	70	70	3	6	22	69	75	1	7	17	71
	20-64	30	10	27	33	73	26	38	28	7	81	71	2	4	23	84	69	0	5	26	84	81	0	2	16	85
	65-75	40	10	20	30	10	30	60	10	0	10	67	0	0	33	12	75	0	0	25	12	83	0	0	17	12
	75-85	50	0	0	50	2	50	50	0	0	2	50	0	0	50	2	50	0	0	50	2	50	0	0	50	2
	> 85.					0					0					0					0					0
	unknown					0					0					0					0					0
Total 2		26	17	27	30	222	27	38	23	12	245	62	4	7	27	255	65	2	5	29	254	74	2	4	21	257
3	< 6.	40	0	40	20	10	50	0	38	13	8	63	0	25	13	8	80	0	0	20	5	63	0	13	25	8
	6					0					0					0					0					0
	7	30	40	20	10	10	40	50	0	10	10	60	20	10	10	10	100	0	0	0	5	60	0	20	20	10
	8	38	8	38	17	24	28	28	8	36	25	22	7	26	44	27	50	6	13	31	16	56	0	26	19	27
	9	30	17	35	17	23	28	44	16	12	25	56	4	19	22	27	42	0	16	42	19	67	0	15	19	27
	10	33	6	50	11	18	16	58	11	16	19	48	10	10	33	21	36	7	0	57	14	52	0	10	38	21
	11	50	17	17	17	6	0	83	17	0	6	50	17	0	33	6	0	0	0	100	2	33	17	0	50	6
	12	23	15	38	23	13	13	40	27	20	15	40	20	7	33	15	75	0	0	25	8	67	20	0	13	15
	13-19	48	11	30	11	73	29	38	21	12	78	48	0	35	18	80	72	0	15	13	54	68	2	25	5	85
	20-64	39	19	16	27	161	22	52	14	11	170	58	4	14	24	178	68	0	5	27	77	70	2	11	17	177
	65-75	55	25	5	15	20	28	67	0	6	18	74	0	0	26	19	100	0	0	0	7	95	0	0	5	19
	75-85	25	50	0	25	4	0	100	0	0	6	43	29	14	14	7	100	0	0	0	1	57	14	14	14	7
	> 85.					0					0					0					0					0
	unknown	0	0	0	100	1	0	100	0	0	1	100	0	0	0	1	100	0	0	0	1	100	0	0	0	1
Total 3		40	17	24	20	363	24	48	15	13	381	53	5	18	24	399	65	1	8	26	209	67	3	14	16	403
Total		38	20	20	22	884	22	51	15	12	968	60	5	13	22	989	65	1	6	28	463	72	2	9	18	993

HULTA. PEDESTRIAN HEAD MOVEMENTS WHEN CROSSING THE STREET AND NO CAR IS PRESENT.

Percent head movements in different directions divided in age groups and total no. of persons.

Appendix L:2

HULTA		Before kerb					At kerb					Crossing first lane					At refuge					Crossing second lane				
Period	Age (years)	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.
1	< 6.	0	0	33	67	3	0	33	0	67	3	0	0	33	67	3						33	0	0	67	3
	6					0					0					0										0
	7	100	0	0	0	1	0	0	100	0	1	100	0	0	0	1						100	0	0	0	1
	8	50	50	0	0	2	50	50	0	0	2	100	0	0	0	2						100	0	0	0	2
	9	40	40	20	0	5	0	100	0	0	5	60	0	20	20	5						100	0	0	0	4
	10	0	0	50	50	2	0	0	0	100	2	50	0	0	50	2						50	0	0	50	2
	11					0					0					0										0
	12	0	100	0	0	1	100	0	0	0	1	100	0	0	0	1						100	0	0	0	1
	13-19	56	11	3	31	36	12	66	7	15	41	64	3	15	18	39						79	0	8	13	38
	20-64	60	13	3	23	30	15	71	15	0	34	71	3	9	17	35						71	3	6	20	35
	65-75	0	0	75	25	4	20	60	20	0	5	67	0	33	0	6						67	0	17	17	6
	75-85	100	0	0	0	1	0	100	0	0	1	100	0	0	0	1						100	0	0	0	1
	> 85.					0					0					0										0
	unknown					0					0					0										0
Total 1		51	14	9	26	85	14	65	11	11	95	66	2	14	18	95						75	1	6	17	93
2	< 6.	67	0	0	33	3	50	25	25	0	4	75	0	0	25	4	100	0	0	0	4	100	0	0	0	4
	6					0					0					0					0					0
	7	0	100	0	0	1	0	0	100	0	1	0	0	100	0	1	0	0	100	0	1	100	0	0	0	1
	8	67	0	0	33	3	33	67	0	0	3	33	0	33	33	3	67	0	0	33	3	67	0	0	33	3
	9					0					0					0					0					0
	10	0	100	0	0	1	100	0	0	0	1	100	0	0	0	1	100	0	0	0	1	0	0	0	100	1
	11					0					0					0					0					0
	12					0					0					0					0					0
	13-19	24	26	10	40	42	24	44	20	11	45	67	8	8	16	49	73	4	8	15	48	82	2	8	8	49
	20-64	50	13	3	35	40	19	52	21	7	42	77	2	5	16	43	79	0	5	16	43	93	0	2	5	44
	65-75	67	0	0	33	3	0	67	33	0	3	67	0	0	33	3	100	0	0	0	3	100	0	0	0	3
	75-85					0					0					0					0					0
	> 85.					0					0					0					0					0
	unknown					0					0					0					0					0
Total 2		39	19	5	37	93	23	47	21	8	99	70	5	8	17	104	77	2	7	15	103	87	1	5	8	105
3	< 6.	67	0	0	33	3	67	0	0	33	3	100	0	0	0	3	67	0	0	33	3	67	0	0	33	3
	6					0					0					0					0					0
	7	33	67	0	0	3	33	67	0	0	3	67	33	0	0	3	100	0	0	0	3	67	0	0	33	3
	8	100	0	0	0	2	50	0	0	50	2	100	0	0	0	2	50	0	0	50	2	50	0	50	0	2
	9	50	50	0	0	2	50	50	0	0	2	100	0	0	0	2	100	0	0	0	2	100	0	0	0	2
	10	33	0	0	67	3	0	67	0	33	3	33	0	0	67	3	33	33	0	33	3	33	0	0	67	3
	11					0					0					0					0					0
	12	50	50	0	0	2	0	100	0	0	2	50	50	0	0	2	100	0	0	0	2	50	50	0	0	2
	13-19	63	15	3	20	40	22	51	15	12	41	52	0	31	17	42	77	0	16	7	44	85	2	13	0	47
	20-64	44	13	4	38	45	18	62	11	9	45	72	4	4	19	47	77	0	4	19	47	85	0	4	11	47
	65-75	60	40	0	0	5	20	60	0	20	5	60	0	0	40	5	100	0	0	0	5	100	0	0	0	5
	75-85					0					0					0					0					0
	> 85.					0					0					0					0					0
	unknown	0	0	0	100	1	0	100	0	0	1	100	0	0	0	1	100	0	0	0	1	100	0	0	0	1
Total 3		53	17	3	27	106	21	56	10	12	107	65	4	14	18	110	78	1	8	13	112	83	2	8	8	115
Total		48	17	6	30	284	20	56	14	10	301	67	4	12	18	309	53	1	5	10	315	82	1	6	11	313

SJÖBO. PEDESTRIAN HEAD MOVEMENTS WHEN CROSSING THE STREET AND NO CAR IS PRESENT.

Percent head movements in different directions divided in age groups and total no. of persons.

Appendix L:3

SJÖBO		Before kerb					At kerb					Crossing first lane					Crossing second lane				
Period	Age (years)	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.
1	< 6.	*33*	*67*	*0*	*0*	3	*67*	*33*	*0*	*0*	3	*67*	*0*	*33*	*0*	3	*100*	*0*	*0*	*0*	3
	6					0					0					0					0
	7	*100*	*0*	*0*	*0*	1					0	*0*	*100*	*0*	*0*	1					0
	8	*0*	*50*	*50*	*0*	2	*50*	*50*	*0*	*0*	2	*25*	*0*	*50*	*25*	4	*50*	*0*	*0*	*50*	4
	9	*0*	*100*	*0*	*0*	2	*50*	*50*	*0*	*0*	2	*50*	*0*	*50*	*0*	2	*100*	*0*	*0*	*0*	2
	10	*33*	*67*	*0*	*0*	3	*0*	*67*	*0*	*33*	3	*50*	*0*	*50*	*0*	2	*100*	*0*	*0*	*0*	1
	11	*20*	*30*	*30*	*20*	10	*17*	*50*	*17*	*17*	12	*67*	*8*	*8*	*17*	12	*55*	*0*	*9*	*36*	11
	12	*30*	*20*	*0*	*50*	10	*33*	*20*	*20*	*27*	15	*56*	*6*	*6*	*31*	16	*53*	*0*	*27*	*20*	15
	13-19	*25*	*25*	*44*	*6*	16	*12*	*62*	*19*	*8*	26	*50*	*14*	*23*	*14*	22	*52*	*9*	*9*	*30*	23
	20-64	*40*	*31*	*11*	*18*	137	*14*	*67*	*8*	*11*	153	*68*	*8*	*10*	*13*	146	*78*	*3*	*4*	*15*	149
	65-75	*67*	*15*	*4*	*15*	27	*30*	*70*	*0*	*0*	27	*82*	*4*	*0*	*14*	28	*93*	*0*	*0*	*7*	28
	75-85	*50*	*25*	*25*	*0*	4	*25*	*75*	*0*	*0*	4	*100*	*0*	*0*	*0*	4	*75*	*0*	*0*	*25*	4
	> 85.					0					0					0					0
	unknown					0					0					0					0
Total 1		*40*	*30*	*13*	*17*	215	*18*	*63*	*9*	*11*	247	*67*	*8*	*11*	*14*	240	*75*	*3*	*5*	*18*	240
2	< 6.																				
	6																				
	7																				
	8																				
	9																				
	10																				
	11																				
	12																				
	13-19																				
	20-64																				
	65-75																				
	75-85																				
	> 85.																				
	unknown																				
Total 2																					
3	< 6.	*20*	*0*	*60*	*20*	5	*33*	*0*	*67*	*0*	3	*33*	*0*	*33*	*33*	3	*33*	*0*	*33*	*33*	3
	6					0					0					0					0
	7	*20*	*20*	*40*	*20*	5	*40*	*40*	*0*	*20*	5	*60*	*0*	*20*	*20*	5	*60*	*0*	*20*	*20*	5
	8	*50*	*13*	*25*	*13*	8	*22*	*33*	*11*	*33*	9	*9*	*9*	*45*	*36*	11	*45*	*0*	*36*	*18*	11
	9	*40*	*40*	*20*	*0*	5	*33*	*50*	*0*	*17*	6	*50*	*13*	*13*	*25*	8	*63*	*0*	*25*	*13*	8
	10	*60*	*20*	*20*	*0*	5	*20*	*80*	*0*	*0*	5	*43*	*29*	*29*	*0*	7	*71*	*0*	*29*	*0*	7
	11	*75*	*25*	*0*	*0*	4	*0*	*100*	*0*	*0*	4	*50*	*25*	*0*	*25*	4	*25*	*25*	*0*	*50*	4
	12	*0*	*17*	*67*	*17*	6	*0*	*43*	*57*	*0*	7	*43*	*29*	*14*	*14*	7	*71*	*29*	*0*	*0*	7
	13-19	*26*	*4*	*70*	*0*	23	*37*	*26*	*30*	*7*	27	*32*	*0*	*54*	*14*	28	*43*	*4*	*50*	*4*	28
	20-64	*43*	*25*	*15*	*18*	89	*29*	*48*	*11*	*11*	96	*54*	*6*	*20*	*20*	101	*63*	*4*	*16*	*17*	100
	65-75	*62*	*15*	*8*	*15*	13	*36*	*64*	*0*	*0*	11	*75*	*0*	*0*	*25*	12	*92*	*0*	*0*	*8*	12
	75-85	*25*	*50*	*0*	*25*	4	*0*	*100*	*0*	*0*	5	*33*	*33*	*17*	*17*	6	*50*	*17*	*17*	*17*	6
	> 85.					0					0					0					0
	unknown					0					0					0					0
Total 3		*40*	*20*	*26*	*14*	167	*28*	*47*	*15*	*10*	178	*48*	*8*	*24*	*20*	192	*60*	*5*	*21*	*14*	191
Total		*40*	*26*	*19*	*15*	382	*22*	*56*	*11*	*10*	425	*58*	*8*	*17*	*17*	432	*68*	*3*	*13*	*16*	431

TRANDARED UPPER CROSSING. PEDESTRIAN HEAD MOVEMENTS WHEN CROSSING THE STREET AND NO CAR IS PRESENT.

Percent head movements in different directions divided in age groups and total no. of persons.

Appendix L:4

TRAND. UPPER		Before kerb					At kerb					Crossing first lane					At refuge					Crossing second lane				
Period	Age (years)	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.
1	< 6.																									
	6																									
	7																									
	8																									
	9																									
	10																									
	11																									
	12																									
	13-19																									
	20-64																									
	65-75																									
	75-85																									
	> 85.																									
	unknown																									
Total 1																										
2	< 6.	*57*	*14*	*29*	*0*	7	*57*	*29*	*0*	*14*	7	*86*	*0*	*0*	*14*	7	*71*	*0*	*0*	*29*	7	*71*	*14*	*0*	*14*	7
	6					0					0					0					0					0
	7	*0*	*0*	*100*	*0*	1	*0*	*0*	*100*	*0*	1	*100*	*0*	*0*	*0*	1	*0*	*0*	*0*	*100*	1	*0*	*100*	*0*	*0*	1
	8	*0*	*20*	*80*	*0*	5	*40*	*20*	*40*	*0*	5	*60*	*0*	*40*	*0*	5	*80*	*0*	*20*	*0*	5	*100*	*0*	*0*	*0*	5
	9	*14*	*43*	*14*	*29*	7	*14*	*57*	*14*	*14*	7	*43*	*0*	*14*	*43*	7	*57*	*0*	*0*	*43*	7	*71*	*0*	*0*	*29*	7
	10	*0*	*20*	*40*	*40*	5	*0*	*38*	*25*	*38*	8	*13*	*0*	*13*	*75*	8	*13*	*0*	*13*	*75*	8	*0*	*0*	*25*	*75*	8
	11	*0*	*0*	*0*	*100*	1	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1
	12	*0*	*25*	*50*	*25*	4	*0*	*25*	*75*	*0*	4	*25*	*0*	*0*	*75*	4	*75*	*0*	*0*	*25*	4	*50*	*0*	*25*	*25*	4
	13-19	*0*	*0*	*67*	*33*	3	*40*	*20*	*20*	*20*	5	*60*	*20*	*0*	*20*	5	*80*	*0*	*0*	*20*	5	*83*	*0*	*17*	*0*	6
	20-64	*4*	*9*	*78*	*9*	23	*39*	*9*	*39*	*13*	23	*65*	*4*	*4*	*26*	23	*52*	*0*	*9*	*39*	23	*78*	*0*	*4*	*17*	23
	65-75	*0*	*50*	*50*	*0*	2	*50*	*50*	*0*	*0*	2	*50*	*0*	*0*	*50*	2	*50*	*0*	*0*	*50*	2	*100*	*0*	*0*	*0*	2
	75-85					0					0					0					0					0
	> 85.					0					0					0					0					0
	unknown					0					0					0					0					0
Total 2		*10*	*17*	*57*	*16*	58	*32*	*24*	*30*	*14*	63	*56*	*3*	*8*	*33*	63	*56*	*0*	*6*	*38*	63	*67*	*3*	*8*	*22*	64
3	< 6.	*50*	*0*	*50*	*0*	2	*50*	*0*	*50*	*0*	2	*50*	*0*	*50*	*0*	2	*100*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	2
	6					0					0					0					0					0
	7	*50*	*50*	*0*	*0*	2	*50*	*50*	*0*	*0*	2	*50*	*50*	*0*	*0*	2	*100*	*0*	*0*	*0*	2	*50*	*0*	*50*	*0*	2
	8	*27*	*9*	*45*	*18*	11	*27*	*27*	*9*	*36*	11	*18*	*9*	*18*	*55*	11	*45*	*9*	*18*	*27*	11	*64*	*0*	*18*	*18*	11
	9	*0*	*11*	*44*	*44*	9	*0*	*67*	*22*	*11*	9	*56*	*0*	*22*	*22*	9	*22*	*0*	*0*	*78*	9	*56*	*0*	*11*	*33*	9
	10	*25*	*0*	*75*	*0*	4	*0*	*50*	*0*	*50*	4	*25*	*0*	*0*	*75*	4	*0*	*0*	*0*	*100*	4	*25*	*0*	*0*	*75*	4
	11	*0*	*0*	*100*	*0*	1	*0*	*0*	*100*	*0*	1	*100*	*0*	*0*	*0*	1	*0*	*0*	*0*	*100*	1	*100*	*0*	*0*	*0*	1
	12					0					0					0					0					0
	13-19	*33*	*0*	*67*	*0*	3	*33*	*0*	*67*	*0*	3	*33*	*0*	*0*	*67*	3	*33*	*0*	*33*	*33*	3	*67*	*0*	*33*	*0*	3
	20-64	*20*	*13*	*53*	*13*	15	*13*	*47*	*33*	*7*	15	*60*	*0*	*13*	*27*	15	*67*	*0*	*7*	*27*	15	*100*	*0*	*0*	*0*	15
	65-75					0					0					0					0					0
	75-85					0					0					0					0					0
	> 85.					0					0					0					0					0
	unknown					0					0					0					0					0
Total 3		*21*	*11*	*51*	*17*	47	*17*	*40*	*26*	*17*	47	*45*	*4*	*15*	*36*	47	*47*	*2*	*9*	*43*	47	*72*	*0*	*11*	*17*	47
Total		*15*	*14*	*54*	*16*	105	*25*	*31*	*28*	*15*	110	*51*	*4*	*11*	*35*	110	*52*	*1*	*7*	*40*	110	*69*	*2*	*9*	*20*	111

TRANDARED LOWER CROSSING. PEDESTRIAN HEAD MOVEMENTS WHEN CROSSING THE STREET AND NO CAR IS PRESENT.

Percent head movements in different directions divided in age groups and total no. of persons.

Appendix L:5

TRAND. LOW.		Before kerb					At kerb					Crossing first lane					At refuge					Crossing second lane				
Period	Age (years)	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.
1	< 6.																									
	6																									
	7																									
	8																									
	9																									
	10																									
	11																									
	12																									
	13-19																									
	20-64																									
	65-75																									
	75-85																									
	> 85.																									
	unknown																									
Total 1																										
2	< 6.	*0*	*0*	*100*	*0*	1	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1
	6					0					0					0					0					0
	7	*0*	*0*	*0*	*100*	1	*0*	*0*	*0*	*100*	1	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1
	8	*25*	*25*	*17*	*33*	12	*38*	*31*	*0*	*31*	13	*69*	*8*	*8*	*15*	13	*62*	*8*	*8*	*23*	13	*69*	*0*	*0*	*31*	13
	9	*9*	*18*	*64*	*9*	11	*21*	*29*	*36*	*14*	14	*53*	*7*	*7*	*33*	15	*40*	*7*	*0*	*53*	15	*60*	*7*	*0*	*33*	15
	10	*25*	*0*	*75*	*0*	4	*50*	*0*	*25*	*25*	4	*25*	*0*	*50*	*25*	4	*25*	*0*	*0*	*75*	4	*75*	*0*	*0*	*25*	4
	11	*38*	*13*	*25*	*25*	8	*40*	*40*	*20*	*0*	10	*50*	*0*	*0*	*50*	10	*60*	*0*	*0*	*40*	10	*80*	*0*	*0*	*20*	10
	12	*0*	*0*	*0*	*100*	1	*0*	*100*	*0*	*0*	1	*0*	*0*	*0*	*100*	1	*0*	*0*	*0*	*100*	1	*0*	*0*	*0*	*100*	1
	13-19	*25*	*25*	*25*	*25*	16	*13*	*38*	*25*	*25*	16	*44*	*0*	*13*	*44*	16	*56*	*0*	*0*	*44*	16	*50*	*0*	*0*	*50*	16
	20-64	*10*	*0*	*10*	*80*	10	*25*	*44*	*31*	*0*	16	*67*	*0*	*0*	*33*	18	*67*	*0*	*0*	*33*	18	*56*	*0*	*0*	*44*	18
	65-75	*40*	*0*	*20*	*40*	5	*40*	*60*	*0*	*0*	5	*71*	*0*	*0*	*29*	7	*71*	*0*	*0*	*29*	7	*71*	*0*	*0*	*29*	7
	75-85	*50*	*0*	*0*	*50*	2	*50*	*50*	*0*	*0*	2	*50*	*0*	*0*	*50*	2	*50*	*0*	*0*	*50*	2	*50*	*0*	*0*	*50*	2
	> 85.					0					0					0					0					0
	unknown					0					0					0					0					0
Total 2		*23*	*14*	*30*	*34*	71	*29*	*36*	*20*	*14*	83	*57*	*2*	*7*	*34*	88	*57*	*2*	*1*	*40*	88	*63*	*1*	*0*	*36*	88
3	< 6.					0					0					0					0					0
	6					0					0					0					0					0
	7					0					0					0					0					0
	8	*0*	*0*	*67*	*33*	3	*33*	*33*	*0*	*33*	3	*33*	*0*	*0*	*67*	3	*67*	*0*	*0*	*33*	3	*67*	*0*	*0*	*33*	3
	9	*57*	*0*	*43*	*0*	7	*50*	*13*	*25*	*13*	8	*50*	*0*	*25*	*25*	8	*50*	*0*	*38*	*13*	8	*75*	*0*	*13*	*13*	8
	10	*17*	*0*	*83*	*0*	6	*29*	*43*	*29*	*0*	7	*71*	*0*	*0*	*29*	7	*57*	*0*	*0*	*43*	7	*57*	*0*	*0*	*43*	7
	11	*0*	*0*	*0*	*100*	1	*0*	*100*	*0*	*0*	1	*0*	*0*	*0*	*100*	1	*0*	*0*	*0*	*100*	1	*0*	*0*	*0*	*100*	1
	12	*40*	*0*	*20*	*40*	5	*33*	*17*	*0*	*50*	6	*33*	*0*	*0*	*67*	6	*67*	*0*	*0*	*33*	6	*67*	*0*	*0*	*33*	6
	13-19	*43*	*14*	*43*	*0*	7	*43*	*29*	*0*	*29*	7	*86*	*0*	*0*	*14*	7	*57*	*0*	*0*	*43*	7	*57*	*0*	*0*	*43*	7
	20-64	*8*	*8*	*17*	*67*	12	*0*	*57*	*21*	*21*	14	*33*	*0*	*7*	*60*	15	*40*	*0*	*7*	*53*	15	*40*	*0*	*7*	*53*	15
	65-75	*0*	*50*	*0*	*50*	2	*0*	*100*	*0*	*0*	2	*100*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	2	*100*	*0*	*0*	*0*	2
	75-85					0	*0*	*100*	*0*	*0*	1	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1
	> 85.					0					0					0					0					0
	unknown					0					0					0					0					0
Total 3		*26*	*7*	*37*	*30*	43	*24*	*41*	*14*	*20*	49	*52*	*0*	*6*	*42*	50	*54*	*0*	*8*	*38*	50	*58*	*0*	*4*	*38*	50
Total		*24*	*11*	*32*	*32*	114	*27*	*38*	*18*	*17*	132	*55*	*1*	*7*	*37*	138	*56*	*1*	*4*	*39*	138	*61*	*1*	*1*	*37*	138

ALL INTERSECTIONS. PEDESTRIAN HEAD MOVEMENTS WHEN CROSSING THE STREET AND MEET ONE OR MORE CARS.

Percent head movements in different directions divided in age groups and total no. of persons.

Appendix L:6

ALL INTERS.		Before kerb					At kerb					Crossing first lane					At refuge					Crossing second lane				
Period	Age (years)	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.
1	< 6.	44	22	11	22	18	21	42	8	29	24	58	0	21	21	19						76	0	0	24	21
	6					0					0					0										0
	7	50	20	20	10	10	0	89	11	0	9	67	22	11	0	9						50	13	0	38	8
	8	43	43	0	14	7	0	86	14	0	7	67	17	0	17	6						83	0	0	17	6
	9	35	30	13	22	23	9	74	13	4	23	46	13	8	33	24						79	8	0	13	24
	10	14	29	14	50	14	0	91	0	9	11	36	9	18	36	11						50	0	20	30	10
	11	75	0	25	0	4	25	75	0	0	4	43	29	29	0	7						80	20	0	0	5
	12	27	13	20	40	15	67	28	0	6	36	56	0	19	25	16						73	0	13	13	15
	13-19	26	36	8	30	61	7	72	13	7	67	53	6	9	32	66						64	2	13	22	64
	20-64	29	33	10	27	258	5	84	8	4	292	56	12	7	25	280						70	3	4	22	293
	65-75	39	32	9	20	69	6	86	6	3	70	67	17	6	10	70						74	4	3	19	70
	75-85	43	36	7	14	14	0	100	0	0	15	47	40	7	7	15						73	7	7	13	15
	> 85.					0	0	50	0	50	2	50	0	0	50	2						50	0	0	50	2
	unknown					0					0					0										0
Total 1		32	32	11	26	495	10	77	8	5	560	56	12	8	23	525						70	4	5	21	533
2	< 6.	35	5	35	25	20	67	5	19	10	21	67	10	5	19	21	55	9	9	27	22	55	9	5	32	22
	6	0	50	50	0	2	0	0	100	0	2	50	0	50	0	2	0	0	0	100	2	0	0	0	100	2
	7	13	20	53	13	15	13	40	40	7	15	60	0	7	33	15	47	7	7	40	15	73	7	13	7	15
	8	28	22	28	22	18	32	42	21	5	19	42	16	5	37	19	37	11	5	47	19	76	0	0	24	17
	9	6	22	66	6	32	16	30	41	14	37	58	0	8	35	40	43	0	3	55	40	54	3	3	41	39
	10	37	7	33	22	27	11	37	26	26	35	53	0	8	39	36	56	3	9	32	34	76	3	3	18	34
	11	13	25	25	38	8	0	38	50	13	8	11	0	11	78	9	0	0	0	100	9	44	0	0	56	9
	12	19	24	48	10	21	22	13	39	26	23	39	0	4	57	23	61	4	0	35	23	77	5	0	18	22
	13-19	32	13	18	37	92	18	40	23	18	99	49	1	13	38	101	46	3	5	47	101	76	0	3	21	101
	20-64	21	21	20	39	189	11	54	29	5	204	50	5	5	40	204	66	2	1	31	204	78	2	3	17	204
	65-75	33	11	22	33	27	3	60	30	7	30	53	9	6	31	32	65	0	3	32	34	88	0	3	9	34
	75-85	50	0	50	0	2	67	33	0	0	3	0	33	0	67	3	50	0	0	50	2	50	0	0	50	2
	> 85.					0					0					0					0					0
	unknown	50	0	0	50	2	50	0	50	0	2	100	0	0	0	1	100	0	0	0	2	100	0	0	0	2
Total 2		24	17	27	31	455	16	43	29	11	498	50	4	8	39	506	55	3	3	38	507	74	2	3	21	503
3	< 6.	58	0	12	30	33	56	21	12	12	34	74	6	6	15	34	76	5	10	10	21	82	0	3	15	33
	6					0					0					0					0					0
	7	27	23	50	0	22	9	48	35	9	23	52	0	0	48	23	67	0	6	28	18	78	0	0	22	23
	8	33	2	46	20	46	23	31	33	13	52	54	4	8	35	52	41	2	2	54	46	65	0	4	31	52
	9	31	14	43	11	35	17	33	36	14	42	55	0	7	38	42	45	0	9	45	33	76	0	0	24	42
	10	19	14	33	33	21	26	39	23	13	31	45	3	6	45	31	43	7	0	50	28	65	0	6	29	31
	11	14	14	21	50	14	35	41	18	6	17	59	0	6	35	17	57	0	0	43	14	71	0	0	29	17
	12	13	7	53	27	15	7	27	33	33	15	47	13	0	40	15	79	0	0	21	14	73	0	0	27	15
	13-19	31	11	24	34	100	17	50	17	16	106	60	4	4	31	113	64	0	1	35	95	77	0	5	18	114
	20-64	31	14	22	33	246	8	71	15	6	251	53	9	5	32	258	55	1	3	41	159	76	1	4	19	259
	65-75	39	19	3	39	36	7	90	2	0	41	72	7	5	16	43	59	5	5	32	22	84	0	2	14	43
	75-85	50	0	0	50	8	20	70	0	10	10	80	10	0	10	10	40	0	0	60	5	80	0	10	10	10
	> 85.					0					0					0					0					0
	unknown	0	0	100	0	2	0	0	100	0	3	33	67	0	0	3	33	0	33	33	3	33	0	33	33	3
Total 3		32	12	26	30	578	16	55	19	10	625	57	6	5	32	641	56	2	3	39	458	75	0	4	20	642
Total		30	20	21	29	1528	14	59	18	9	1683	54	8	7	31	1672	56	2	3	39	965	73	2	4	21	1678

HULTA. PEDESTRIAN HEAD MOVEMENTS WHEN CROSSING THE STREET AND MEET ONE OR MORE CARS.

Percent head movements in different directions divided in age groups and total no. of persons.

Appendix L:7

HULTA		Before kerb					At kerb					Crossing first lane					At refuge					Crossing second lane				
Period	Age (years)	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.
1	< 6.	20	30	10	40	10	11	56	11	22	9	33	0	33	33	9						70	0	0	30	10
	6					0					0					0										0
	7	60	20	20	0	5	0	100	0	0	5	60	20	20	0	5						40	20	0	40	5
	8	33	67	0	0	3	0	100	0	0	3	67	33	0	0	3						100	0	0	0	3
	9	50	25	0	25	4	0	100	0	0	4	0	25	0	75	4						75	25	0	0	4
	10	50	50	0	0	2	0	100	0	0	2	100	0	0	0	2						100	0	0	0	2
	11					0					0	100	0	0	0	1						100	0	0	0	1
	12	100	0	0	0	2	0	100	0	0	2	50	0	0	50	2						100	0	0	0	2
	13-19	43	23	0	34	35	8	78	8	5	37	51	11	5	32	37						72	3	6	19	36
	20-64	38	29	3	30	79	4	86	8	2	90	63	7	4	26	94						78	2	1	19	94
	65-75	30	22	4	43	23	5	86	9	0	22	61	17	9	13	23						61	13	4	22	23
	75-85	100	0	0	0	1	0	100	0	0	2	50	50	0	0	2						50	50	0	0	2
	> 85.					0					0					0										0
	unknown					0					0					0										0
Total 1		39	27	3	31	164	5	84	7	3	176	58	10	7	25	182						74	5	2	19	182
2	< 6.	44	11	0	44	9	70	10	0	20	10	70	0	10	20	10	64	0	18	18	11	64	0	9	27	11
	6					0					0					0					0					0
	7	0	33	0	67	3	0	67	33	0	3	100	0	0	0	3	67	0	33	0	3	67	0	33	0	3
	8	17	33	0	50	6	17	67	17	0	6	50	33	17	0	6	83	0	17	0	6	83	0	0	17	6
	9	0	100	0	0	5	20	60	0	20	5	100	0	0	0	5	100	0	0	0	5	100	0	0	0	5
	10	33	0	0	67	6	0	86	14	0	7	71	0	0	29	7	100	0	0	0	7	100	0	0	0	7
	11					0					0					0					0					0
	12	33	33	33	0	3	33	0	33	33	3	100	0	0	0	3	100	0	0	0	5	100	0	0	0	3
	13-19	39	18	4	39	56	15	56	20	8	59	57	0	19	24	58	60	0	9	31	58	88	0	5	7	58
	20-64	26	26	5	42	118	11	63	24	2	123	62	3	5	30	123	85	0	2	14	123	85	1	3	11	123
	65-75	50	11	11	28	18	0	79	21	0	19	53	16	11	21	19	81	0	5	14	21	86	0	5	10	21
	75-85	100	0	0	0	1	0	100	0	0	1	0	0	0	100	1	0	0	0	100	1	0	0	0	100	1
	> 85.					0					0					0					0					0
	unknown	0	0	0	100	1	0	0	100	0	1	100	0	0	0	1	100	0	0	0	1	100	0	0	0	1
Total 2		31	23	5	40	226	14	60	21	5	237	62	4	9	25	236	78	0	5	17	241	85	0	4	10	239
3	< 6.	70	0	0	30	10	40	20	30	10	10	70	10	10	10	10	70	0	10	20	10	73	0	9	18	11
	6					0					0					0					0					0
	7	50	17	33	0	6	0	50	50	0	6	67	0	0	33	6	83	0	17	0	6	67	0	0	33	6
	8	45	9	9	36	11	9	45	36	9	11	82	0	0	18	11	64	9	0	27	11	73	0	9	18	11
	9	50	25	0	25	4	25	25	50	0	4	75	0	0	25	4	100	0	0	0	4	100	0	0	0	4
	10					0					0					0					0					0
	11					0					0					0					0					0
	12					0					0					0					0					0
	13-19	31	15	11	43	54	18	53	9	20	55	73	2	3	22	59	78	0	2	20	59	83	0	3	13	60
	20-64	48	15	5	32	75	3	76	15	7	75	64	3	12	21	75	71	1	4	24	75	91	0	1	8	76
	65-75	40	30	0	30	10	10	90	0	0	10	83	0	8	8	12	67	0	8	25	12	75	0	0	25	12
	75-85					0					0					0					0					0
	> 85.					0					0					0					0					0
	unknown	0	0	100	0	2	0	0	100	0	2	0	100	0	0	2	50	0	50	0	2	50	0	50	0	2
Total 3		43	15	9	34	172	11	61	17	10	173	69	3	7	20	179	73	1	4	21	179	84	0	3	13	182
Total		37	22	6	36	562	10	68	16	6	586	63	6	8	24	597	76	0	5	19	420	81	2	3	14	603

SJÖBO. PEDESTRIAN HEAD MOVEMENTS WHEN CROSSING THE STREET AND MEET ONE OR MORE CARS.

Percent head movements in different directions divided in age groups and total no. of persons.

Appendix L:8

SJÖBO		Before kerb					At kerb					Crossing first lane					Crossing second lane				
Period	Age (years)	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.	No head movement	Both directions	Only left	Only right	Tot. no.
1	< 6.	*75*	*13*	*13*	*0*	8	*27*	*33*	*7*	*33*	15	*80*	*0*	*10*	*10*	10	*82*	*0*	*0*	*18*	11
	6					0					0					0					0
	7	*40*	*20*	*20*	*20*	5	*0*	*75*	*25*	*0*	4	*75*	*25*	*0*	*0*	4	*67*	*0*	*0*	*33*	3
	8	*50*	*25*	*0*	*25*	4	*0*	*75*	*25*	*0*	4	*67*	*0*	*0*	*33*	3	*67*	*0*	*0*	*33*	3
	9	*32*	*32*	*16*	*21*	19	*11*	*68*	*16*	*5*	19	*55*	*10*	*10*	*25*	20	*80*	*5*	*0*	*15*	20
	10	*8*	*23*	*15*	*54*	13	*0*	*89*	*0*	*11*	9	*22*	*11*	*22*	*44*	9	*38*	*0*	*25*	*38*	8
	11	*75*	*0*	*25*	*0*	4	*25*	*75*	*0*	*0*	4	*33*	*33*	*33*	*0*	6	*75*	*25*	*0*	*0*	4
	12	*15*	*15*	*23*	*46*	13	*71*	*24*	*0*	*6*	34	*57*	*0*	*21*	*21*	14	*69*	*0*	*15*	*15*	13
	13-19	*4*	*54*	*19*	*23*	26	*7*	*63*	*20*	*10*	30	*55*	*0*	*14*	*31*	29	*54*	*0*	*21*	*25*	28
	20-64	*26*	*35*	*14*	*25*	179	*5*	*83*	*7*	*4*	202	*52*	*15*	*8*	*25*	186	*67*	*4*	*6*	*23*	199
	65-75	*43*	*37*	*11*	*9*	46	*6*	*85*	*4*	*4*	48	*70*	*17*	*4*	*9*	47	*81*	*0*	*2*	*17*	47
	75-85	*38*	*38*	*8*	*15*	13	*0*	*100*	*0*	*0*	13	*46*	*38*	*8*	*8*	13	*77*	*0*	*8*	*15*	13
	> 85.					0	*0*	*50*	*0*	*50*	2	*50*	*0*	*0*	*50*	2	*50*	*0*	*0*	*50*	2
	unknown					0					0					0					0
Total 1		*28*	*34*	*14*	*23*	330	*12*	*74*	*8*	*6*	384	*55*	*13*	*9*	*22*	343	*69*	*3*	*7*	*22*	351
2	< 6.																				
	6																				
	7																				
	8																				
	9																				
	10																				
	11																				
	12																				
	13-19																				
	20-64																				
	65-75																				
	75-85																				
	> 85.																				
	unknown																				
Total 2																					
3	< 6.	*53*	*0*	*7*	*40*	15	*38*	*38*	*0*	*23*	13	*77*	*0*	*0*	*23*	13	*91*	*0*	*0*	*9*	11
	6					0					0					0					0
	7	*40*	*40*	*20*	*0*	5	*0*	*100*	*0*	*0*	5	*80*	*0*	*0*	*20*	5	*80*	*0*	*0*	*20*	5
	8	*100*	*0*	*0*	*0*	4	*17*	*67*	*17*	*0*	6	*50*	*0*	*50*	*0*	6	*50*	*0*	*17*	*33*	6
	9	*56*	*33*	*11*	*0*	9	*11*	*89*	*0*	*0*	9	*100*	*0*	*0*	*0*	9	*100*	*0*	*0*	*0*	9
	10	*67*	*0*	*33*	*0*	3	*0*	*100*	*0*	*0*	3	*67*	*0*	*33*	*0*	3	*67*	*0*	*33*	*0*	3
	11	*33*	*33*	*33*	*0*	3	*0*	*100*	*0*	*0*	3	*67*	*0*	*0*	*33*	3	*33*	*0*	*0*	*67*	3
	12	*50*	*50*	*0*	*0*	2	*0*	*100*	*0*	*0*	2	*0*	*100*	*0*	*0*	1	*100*	*0*	*0*	*0*	1
	13-19	*63*	*6*	*25*	*6*	16	*19*	*69*	*6*	*6*	16	*61*	*0*	*11*	*28*	18	*78*	*0*	*22*	*0*	18
	20-64	*39*	*17*	*19*	*25*	93	*10*	*79*	*8*	*3*	91	*63*	*14*	*3*	*20*	99	*74*	*2*	*9*	*15*	99
	65-75	*50*	*15*	*0*	*35*	20	*0*	*100*	*0*	*0*	21	*86*	*14*	*0*	*0*	21	*95*	*0*	*5*	*0*	21
	75-85	*80*	*0*	*0*	*20*	5	*20*	*80*	*0*	*0*	5	*80*	*20*	*0*	*0*	5	*80*	*0*	*20*	*0*	5
	> 85.					0					0					0					0
	unknown					0					0					0					0
Total 3		*47*	*15*	*15*	*22*	175	*11*	*79*	*5*	*4*	174	*68*	*10*	*5*	*16*	183	*78*	*1*	*9*	*12*	181
Total		*35*	*28*	*15*	*23*	505	*12*	*76*	*7*	*6*	558	*60*	*12*	*8*	*20*	526	*72*	*2*	*8*	*18*	532

TRANDARED UPPER CROSSING. PEDESTRIAN HEAD MOVEMENTS WHEN CROSSING THE STREET AND MEET ONE OR MORE CARS.

Percent head movements in different directions divided in age groups and total no. of persons.

Appendix L:9

TRAND. UPPER		Before kerb					At kerb					Crossing first lane					At refuge					Crossing second lane				
Period	Age (years)	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.
1	< 6.																									
	6																									
	7																									
	8																									
	9																									
	10																									
	11																									
	12																									
	13-19																									
	20-64																									
	65-75																									
	75-85																									
	> 85.																									
	unknown																									
Total 1																										
2	< 6.	*33*	*0*	*67*	*0*	9	*60*	*0*	*40*	*0*	10	*60*	*20*	*0*	*20*	10	*50*	*20*	*0*	*30*	10	*50*	*20*	*0*	*30*	10
	6					0					0					0					0					0
	7	*13*	*25*	*63*	*0*	8	*25*	*38*	*25*	*13*	8	*63*	*0*	*0*	*38*	8	*50*	*0*	*0*	*50*	8	*75*	*13*	*0*	*13*	8
	8	*20*	*20*	*40*	*20*	5	*20*	*40*	*20*	*20*	5	*20*	*20*	*0*	*60*	5	*0*	*20*	*0*	*80*	5	*67*	*0*	*0*	*33*	3
	9	*6*	*12*	*76*	*6*	17	*21*	*26*	*32*	*21*	19	*50*	*0*	*15*	*35*	20	*45*	*0*	*5*	*50*	20	*45*	*5*	*5*	*45*	20
	10	*25*	*50*	*0*	*25*	4	*20*	*80*	*0*	*0*	5	*50*	*0*	*17*	*33*	6	*17*	*17*	*17*	*50*	6	*50*	*17*	*17*	*17*	6
	11	*50*	*0*	*0*	*50*	2	*0*	*0*	*50*	*50*	2	*0*	*0*	*50*	*50*	2	*0*	*0*	*0*	*100*	2	*50*	*0*	*0*	*50*	2
	12	*13*	*0*	*75*	*13*	8	*25*	*13*	*63*	*0*	8	*50*	*0*	*0*	*50*	8	*56*	*11*	*0*	*33*	9	*78*	*11*	*0*	*11*	9
	13-19	*25*	*8*	*50*	*17*	12	*42*	*17*	*8*	*33*	12	*50*	*8*	*0*	*42*	12	*25*	*25*	*0*	*50*	12	*100*	*0*	*0*	*0*	12
	20-64	*9*	*18*	*64*	*9*	33	*9*	*37*	*43*	*11*	35	*29*	*11*	*11*	*49*	35	*31*	*9*	*0*	*60*	35	*57*	*9*	*6*	*29*	35
	65-75	*0*	*25*	*75*	*0*	4	*0*	*20*	*60*	*20*	5	*40*	*0*	*0*	*60*	5	*20*	*0*	*0*	*80*	5	*100*	*0*	*0*	*0*	5
	75-85					0					0					0					0					0
	> 85.					0					0					0					0					0
	unknown	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1					0	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1
Total 2		*16*	*15*	*60*	*10*	103	*23*	*28*	*35*	*15*	110	*42*	*7*	*8*	*42*	111	*35*	*10*	*2*	*53*	113	*64*	*8*	*4*	*24*	111
3	< 6.	*43*	*0*	*43*	*14*	7	*86*	*0*	*14*	*0*	7	*57*	*14*	*14*	*14*	7	*71*	*14*	*14*	*0*	7	*71*	*0*	*0*	*29*	7
	6					0					0					0					0					0
	7	*11*	*22*	*67*	*0*	9	*22*	*22*	*33*	*22*	9	*44*	*0*	*0*	*56*	9	*56*	*0*	*0*	*44*	9	*78*	*0*	*0*	*22*	9
	8	*14*	*0*	*73*	*14*	22	*30*	*17*	*35*	*17*	23	*39*	*9*	*4*	*48*	23	*30*	*0*	*4*	*65*	23	*61*	*0*	*0*	*39*	23
	9	*18*	*0*	*73*	*9*	11	*7*	*21*	*64*	*7*	14	*50*	*0*	*0*	*50*	14	*50*	*0*	*0*	*50*	14	*71*	*0*	*0*	*29*	14
	10	*20*	*20*	*20*	*40*	10	*20*	*40*	*30*	*10*	10	*70*	*0*	*0*	*30*	10	*50*	*10*	*0*	*40*	10	*90*	*0*	*0*	*10*	10
	11	*17*	*17*	*17*	*50*	6	*50*	*33*	*17*	*0*	6	*100*	*0*	*0*	*0*	6	*83*	*0*	*0*	*17*	6	*83*	*0*	*0*	*17*	6
	12	*11*	*0*	*67*	*22*	9	*11*	*22*	*33*	*33*	9	*67*	*0*	*0*	*33*	9	*100*	*0*	*0*	*0*	9	*100*	*0*	*0*	*0*	9
	13-19	*30*	*0*	*70*	*0*	10	*40*	*20*	*40*	*0*	10	*60*	*0*	*0*	*40*	10	*50*	*0*	*0*	*50*	10	*100*	*0*	*0*	*0*	10
	20-64	*4*	*19*	*74*	*4*	27	*18*	*39*	*36*	*7*	28	*32*	*11*	*0*	*57*	28	*50*	*4*	*0*	*46*	28	*79*	*4*	*0*	*18*	28
	65-75					0					0					0					0					0
	75-85					0					0					0					0					0
	> 85.					0					0					0					0					0
	unknown					0					0					0					0					0
Total 3		*15*	*9*	*62*	*14*	111	*27*	*26*	*36*	*11*	116	*50*	*5*	*2*	*43*	116	*53*	*3*	*2*	*42*	116	*78*	*1*	*0*	*21*	116
Total		*15*	*12*	*61*	*12*	214	*25*	*27*	*35*	*13*	226	*46*	*6*	*5*	*43*	227	*45*	*6*	*2*	*48*	229	*71*	*4*	*2*	*22*	227

TRANDARED LOWER CROSSING. PEDESTRIAN HEAD MOVEMENTS WHEN CROSSING THE STREET AND MEET ONE OR MORE CARS.

Percent head movements in different directions divided in age groups and total no. of persons.

Appendix L:10

TRAND. LOW.		Before kerb					At kerb					Crossing first lane					At refuge					Crossing second lane				
Period	Age (years)	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.	No head movement	Both di-rections	Only left	Only right	Tot. no.
1	< 6.																									
	6																									
	7																									
	8																									
	9																									
	10																									
	11																									
	12																									
	13-19																									
	20-64																									
	65-75																									
	75-85																									
	> 85.																									
	unknown																									
Total 1																										
2	< 6.	*0*	*0*	*50*	*50*	2	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1	*0*	*0*	*0*	*100*	1	*0*	*0*	*0*	*100*	1
	6	*0*	*50*	*50*	*0*	2	*0*	*0*	*100*	*0*	2	*50*	*0*	*50*	*0*	2	*0*	*0*	*0*	*100*	2	*0*	*0*	*0*	*100*	2
	7	*25*	*0*	*75*	*0*	4	*0*	*25*	*75*	*0*	4	*25*	*0*	*25*	*50*	4	*25*	*25*	*0*	*50*	4	*75*	*0*	*25*	*0*	4
	8	*43*	*14*	*43*	*0*	7	*50*	*25*	*25*	*0*	8	*50*	*0*	*0*	*50*	8	*25*	*13*	*0*	*63*	8	*75*	*0*	*0*	*25*	8
	9	*10*	*0*	*80*	*10*	10	*8*	*23*	*69*	*0*	13	*53*	*0*	*0*	*47*	15	*20*	*0*	*0*	*80*	15	*50*	*0*	*0*	*50*	14
	10	*41*	*0*	*53*	*6*	17	*13*	*13*	*35*	*39*	23	*48*	*0*	*9*	*43*	23	*52*	*0*	*10*	*38*	21	*76*	*0*	*0*	*24*	21
	11	*0*	*33*	*33*	*33*	6	*0*	*50*	*50*	*0*	6	*14*	*0*	*0*	*86*	7	*0*	*0*	*0*	*100*	7	*43*	*0*	*0*	*57*	7
	12	*20*	*40*	*30*	*10*	10	*17*	*17*	*25*	*42*	12	*17*	*0*	*8*	*75*	12	*44*	*0*	*0*	*56*	9	*70*	*0*	*0*	*30*	10
	13-19	*17*	*4*	*38*	*42*	24	*14*	*18*	*36*	*32*	28	*32*	*0*	*6*	*61*	31	*26*	*0*	*0*	*74*	31	*45*	*0*	*0*	*55*	31
	20-64	*13*	*5*	*26*	*55*	38	*13*	*46*	*33*	*9*	46	*33*	*4*	*2*	*61*	46	*41*	*4*	*0*	*54*	46	*74*	*0*	*2*	*24*	46
	65-75	*0*	*0*	*20*	*80*	5	*17*	*33*	*33*	*17*	6	*63*	*0*	*0*	*38*	8	*50*	*0*	*0*	*50*	8	*88*	*0*	*0*	*13*	8
	75-85	*0*	*0*	*100*	*0*	1	*100*	*0*	*0*	*0*	2	*0*	*50*	*0*	*50*	2	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	1
	> 85.					0					0					0					0					0
	unknown					0					0					0					0					0
Total 2		*18*	*9*	*40*	*33*	126	*16*	*28*	*38*	*19*	151	*37*	*2*	*5*	*56*	159	*35*	*3*	*1*	*61*	153	*64*	*0*	*1*	*35*	153
3	< 6.	*100*	*0*	*0*	*0*	1	*100*	*0*	*0*	*0*	4	*100*	*0*	*0*	*0*	4	*100*	*0*	*0*	*0*	4	*100*	*0*	*0*	*0*	4
	6					0					0					0					0					0
	7	*0*	*0*	*100*	*0*	2	*0*	*33*	*67*	*0*	3	*0*	*0*	*0*	*100*	3	*67*	*0*	*0*	*33*	3	*100*	*0*	*0*	*0*	3
	8	*33*	*0*	*44*	*22*	9	*25*	*25*	*33*	*17*	12	*58*	*0*	*0*	*42*	12	*42*	*0*	*0*	*58*	12	*75*	*0*	*0*	*25*	12
	9	*18*	*9*	*55*	*18*	11	*27*	*13*	*27*	*33*	15	*27*	*0*	*20*	*53*	15	*27*	*0*	*20*	*53*	15	*60*	*0*	*0*	*40*	15
	10	*0*	*13*	*50*	*38*	8	*33*	*28*	*22*	*17*	18	*28*	*6*	*6*	*61*	18	*39*	*6*	*0*	*56*	18	*50*	*0*	*6*	*44*	18
	11	*0*	*0*	*20*	*80*	5	*38*	*25*	*25*	*13*	8	*25*	*0*	*13*	*63*	8	*38*	*0*	*0*	*63*	8	*75*	*0*	*0*	*25*	8
	12	*0*	*0*	*50*	*50*	4	*0*	*0*	*50*	*50*	4	*20*	*20*	*0*	*60*	5	*40*	*0*	*0*	*60*	5	*20*	*0*	*0*	*80*	5
	13-19	*5*	*10*	*35*	*50*	20	*4*	*44*	*32*	*20*	25	*31*	*15*	*4*	*50*	26	*38*	*0*	*0*	*62*	26	*54*	*0*	*0*	*46*	26
	20-64	*8*	*4*	*25*	*63*	51	*9*	*67*	*16*	*9*	57	*34*	*7*	*4*	*55*	56	*38*	*0*	*2*	*61*	56	*59*	*0*	*2*	*39*	56
	65-75	*0*	*17*	*17*	*67*	6	*20*	*70*	*10*	*0*	10	*30*	*0*	*10*	*60*	10	*50*	*10*	*0*	*40*	10	*70*	*0*	*0*	*30*	10
	75-85	*0*	*0*	*0*	*100*	3	*20*	*60*	*0*	*20*	5	*80*	*0*	*0*	*20*	5	*40*	*0*	*0*	*60*	5	*80*	*0*	*0*	*20*	5
	> 85.					0					0					0					0					0
	unknown					0	*0*	*0*	*100*	*0*	1	*100*	*0*	*0*	*0*	1	*0*	*0*	*0*	*100*	1	*0*	*0*	*0*	*100*	1
Total 3		*9*	*6*	*33*	*52*	120	*18*	*44*	*23*	*15*	162	*36*	*6*	*6*	*53*	163	*40*	*1*	*2*	*56*	163	*61*	*0*	*1*	*38*	163
Total		*14*	*7*	*37*	*42*	246	*17*	*36*	*30*	*17*	313	*36*	*4*	*5*	*54*	322	*37*	*2*	*2*	*59*	316	*62*	*0*	*1*	*36*	316

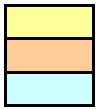
SHARE PEDESTRIANS THAT STOPS OR DO NOT STOP AT THE KERB AND ARE GIVEN WAY TO BY ANY CAR DRIVER

ALL INTERSECTIONS

Divided in age groups:

Children 0-12 years
Youth 13-19 years
Adults 20-64 years
Elderly >64 years

Before reconstruction
Before reconstr., after code change
After reconstr. and code change



No. of pedestrians that meet a car

All persons	children	youth	adults	elderly
673	133	92	344	104
601	199	125	237	40
825	293	141	326	65

Share pedestrian stops at kerb (%)

All persons	children	youth	adults	elderly
47	*54*	*36*	*42*	*60*
31	*32*	*22*	*35*	*35*
27	*23*	*19*	*30*	*42*

Share pedestrian do not stop at kerb (%)

All persons	children	youth	adults	elderly
52	*46*	*64*	*55*	*40*
69	*70*	*78*	*65*	*65*
73	*77*	*81*	*70*	*58*

Share any car give way (%)

All persons	children	youth	adults	elderly
9	*11*	*5*	*6*	*17*
14	*16*	*6*	*17*	*15*
13	*12*	*11*	*14*	*17*

Share no car give way (%)

All persons	children	youth	adults	elderly
38	*44*	*30*	*36*	*42*
17	*16*	*16*	*18*	*20*
14	*12*	*8*	*16*	*25*

Share any car give way (%)

All persons	children	youth	adults	elderly
7	*8*	*7*	*8*	*0*
32	*34*	*38*	*28*	*23*
39	*43*	*44*	*36*	*28*

Share no car give way (%)

All persons	children	youth	adults	elderly
45	*38*	*58*	*47*	*40*
37	*35*	*40*	*37*	*43*
34	*33*	*37*	*33*	*31*

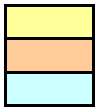
SHARE PEDESTRIANS THAT STOPS OR DO NOT STOP AT THE KERB AND ARE GIVEN WAY TO BY ANY CAR DRIVER

HULTA

Divided in age groups:

Children 0-12 years
Youth 13-19 years
Adults 20-64 years
Elderly >64 years

Before reconstruction
Before reconstr., after code change
After reconstr. and code change



No. of pedestrians that meet a car

All persons	children	youth	adults	elderly
217	33	52	105	27
273	38	75	140	20
225	39	72	101	13

Share pedestrian stops at kerb (%)

All persons	children	youth	adults	elderly
49	*61*	*40*	*49*	*56*
38	*55*	*27*	*39*	*40*
30	*41*	*14*	*32*	*77*

Share pedestrian do not stop at kerb (%)

All persons	children	youth	adults	elderly
51	*39*	*60*	*51*	*44*
62	*45*	*73*	*61*	*60*
70	*59*	*86*	*68*	*23*

Share any car give way (%)

All persons	children	youth	adults	elderly
7	*9*	*4*	*8*	*11*
16	*29*	*8*	*18*	*10*
17	*23*	*10*	*18*	*38*

Share no car give way (%)

All persons	children	youth	adults	elderly
42	*52*	*37*	*41*	*44*
22	*26*	*19*	*21*	*30*
13	*18*	*4*	*14*	*38*

Share any car give way (%)

All persons	children	youth	adults	elderly
3	*0*	*6*	*4*	*0*
25	*18*	*28*	*24*	*30*
37	*31*	*49*	*33*	*23*

Share no car give way (%)

All persons	children	youth	adults	elderly
47	*39*	*54*	*48*	*44*
37	*26*	*45*	*37*	*30*
33	*28*	*38*	*36*	*0*

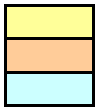
SHARE PEDESTRIANS THAT STOPS OR DO NOT STOP AT THE KERB AND ARE GIVEN WAY TO BY ANY CAR DRIVER

SJÖBO

Divided in age groups:

Children 0-12 years
Youth 13-19 years
Adults 20-64 years
Elderly >64 years

Before reconstruction
Before reconstr., after code change
After reconstr. and code change



No. of pedestrians that meet a car

All persons	children	youth	adults	elderly
456	100	40	239	77
260	70	26	127	37

Share pedestrian stops at kerb (%)

All persons	children	youth	adults	elderly
45	*52*	*30*	*40*	*61*
35	*29*	*38*	*39*	*32*

Share pedestrian do not stop at kerb (%)

All persons	children	youth	adults	elderly
53	*48*	*70*	*56*	*39*
65	*71*	*62*	*61*	*68*

Share any car give way (%)

All persons	children	youth	adults	elderly
9	*11*	*8*	*6*	*19*
12	*11*	*12*	*14*	*8*

Share no car give way (%)

All persons	children	youth	adults	elderly
36	*41*	*23*	*34*	*42*
23	*17*	*27*	*25*	*24*

Share any car give way (%)

All persons	children	youth	adults	elderly
8	*10*	*8*	*10*	*0*
19	*14*	*27*	*20*	*19*

Share no car give way (%)

All persons	children	youth	adults	elderly
45	*38*	*63*	*46*	*39*
46	*57*	*35*	*41*	*49*

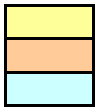
SHARE PEDESTRIANS THAT STOPS OR DO NOT STOP AT THE KERB AND ARE GIVEN WAY TO BY ANY CAR DRIVER

TRANDERED UPPER INTERSECTION

Divided in age groups:

Children 0-12 years
Youth 13-19 years
Adults 20-64 years
Elderly >64 years

Before reconstruction
Before reconstr., after code change
After reconstr. and code change



No. of pedestrians that meet a car

All persons	children	youth	adults	elderly
131	69	14	42	6
157	108	14	35	0

Share pedestrian stops at kerb (%)

All persons	children	youth	adults	elderly
28	*32*	*7*	*31*	*17*
15	*19*	*0*	*9*	

Share pedestrian do not stop at kerb (%)

All persons	children	youth	adults	elderly
72	*68*	*93*	*69*	*83*
85	*81*	*100*	*91*	

Share any car give way (%)

All persons	children	youth	adults	elderly
15	*14*	*7*	*19*	*0*
10	*11*	*0*	*9*	

Share no car give way (%)

All persons	children	youth	adults	elderly
14	*17*	*0*	*12*	*17*
5	*7*	*0*	*0*	

Share any car give way (%)

All persons	children	youth	adults	elderly
34	*33*	*57*	*31*	*17*
63	*61*	*64*	*69*	

Share no car give way (%)

All persons	children	youth	adults	elderly
37	*35*	*36*	*38*	*67*
22	*20*	*36*	*23*	

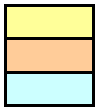
SHARE PEDESTRIANS THAT STOPS OR DO NOT STOP AT THE KERB AND ARE GIVEN WAY TO BY ANY CAR DRIVER

TRANDERED LOWER INTERSECTION

Divided in age groups:

Children 0-12 years
Youth 13-19 years
Adults 20-64 years
Elderly >64 years

Before reconstruction
Before reconstr., after code change
After reconstr. and code change



No. of pedestrians that meet a car

All persons	children	youth	adults	elderly
197	92	36	55	14
183	76	29	63	15

Share pedestrian stops at kerb (%)

All persons	children	youth	adults	elderly
24	*22*	*17*	*29*	*36*
21	*16*	*24*	*22*	*33*

Share pedestrian do not stop at kerb (%)

All persons	children	youth	adults	elderly
78	*82*	*83*	*71*	*64*
79	*84*	*76*	*78*	*67*

Share any car give way (%)

All persons	children	youth	adults	elderly
11	*11*	*0*	*15*	*29*
12	*7*	*21*	*13*	*20*

Share no car give way (%)

All persons	children	youth	adults	elderly
13	*11*	*17*	*15*	*7*
9	*9*	*3*	*10*	*13*

Share any car give way (%)

All persons	children	youth	adults	elderly
40	*40*	*53*	*36*	*14*
51	*51*	*38*	*57*	*53*

Share no car give way (%)

All persons	children	youth	adults	elderly
37	*38*	*31*	*35*	*50*
28	*33*	*38*	*21*	*13*

ALL INTERSECTIONS. Percent pedestrians given way by vehicles coming in to the intersection, leaving the intersection and turning vehicles

		First interaction vehicles coming to the intersection				First interaction vehicles leaving the intersection				First interaction turning vehicles			
Period	age (years)	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car
		meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)
1. Before	< 6	8	13	13	0	18	22	11	0	0			
reconstruction	6	1	100	0	0	0				0			
and code change	7	4	0	0	0	9	11	0	11	0			
	8	4	25	25	0	6	17	0	0	0			
	9	16	25	0	0	10	30	0	30	1	0	0	0
	10	7	0	0	0	10	50	10	30	0			
	11	5	20	0	0	7	0	0	0	0			
	12	11	18	9	0	16	0	0	0	0			
	youth 13-19	45	13	2	2	47	11	0	4	0			
	adults 20-64	168	15	7	4	159	16	6	3	4	0	0	0
	elderly 65-75	44	20	11	0	42	12	10	0	0			
	elderly 75-85	6	33	0	0	9	11	0	0	0			
	>85	2	50	0	0	0				0			
	unknown	0				0				0			
Total no period 1		321	17	6	2	333	15	5	4	5	0	0	0
2. After	< 6	13	38	0	8	15	40	7	7	2	100	0	0
reconstruction	6	0				2	100	100	0	0			
	7	12	67	0	0	4	75	50	0	0			
	8	11	55	9	0	11	27	0	0	0			
	9	18	56	28	17	27	41	15	7	5	100	100	0
	10	26	46	15	8	14	64	14	7	0			
	11	4	50	50	0	9	44	11	0	0			
	12	16	56	50	0	10	50	40	0	0			
	youth 13-19	77	47	13	16	44	34	25	2	4	100	100	0
	adults 20-64	114	43	13	4	118	47	14	7	5	60	60	0
	elderly 65-75	26	27	4	8	8	50	13	0	2	100	100	0
	elderly 75-85	3	33	0	0	1	100	0	0	0			
	>85	0				0				0			
	unknown	0				1	100	0	0	0			
Total no period 2		320	45	14	8	264	45	17	5	18	89	89	0
3. After	< 6	17	59	18	6	29	38	24	0	2	50	0	50
reconstruction	6	0				0				0			
and code change	7	11	73	27	0	11	36	27	9	2	50	50	0
	8	22	86	23	5	32	59	38	3	4	75	75	0
	9	34	53	21	6	38	42	34	5	0			
	10	19	63	42	5	17	53	41	6	4	100	100	0
	11	13	62	54	0	11	64	45	0	0			
	12	10	30	20	0	17	59	47	0	0			
	youth 13-19	79	56	34	4	62	55	19	8	0			
	adults 20-64	136	50	17	12	175	51	22	5	15	53	33	13
	elderly 65-75	25	28	0	8	25	56	28	8	2	50	0	0
	elderly 75-85	4	50	25	0	8	50	0	13	1	100	0	100
	>85	0				0				0			
	unknown	0				0				0			
Total no period 3		370	54	23	7	425	51	26	5	30	63	43	13
Total		1011	39	15	6	1022	38	17	5	53	66	55	8

HULTA Percent pedestrians given way by vehicles coming in to the intersection, leaving the intersection and turning vehicles

		First interaction vehicles coming to the intersection				First interaction vehicles leaving the intersection				First interaction turning vehicles			
Period	age (years)	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car
		meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)
1. Before	< 6	3	*0*	*0*	*0*	9	*22*	*0*	*0*	0			
reconstruction	6	0				0				0			
and code change	7	1	*0*	*0*	*0*	4	*0*	*0*	*0*	0			
	8	3	*0*	*0*	*0*	2	*0*	*0*	*0*	0			
	9	4	*0*	*0*	*0*	1	*0*	*0*	*0*	0			
	10	2	*0*	*0*	*0*	0				0			
	11	0				1	*0*	*0*	*0*	0			
	12	2	*50*	*50*	*0*	1	*0*	*0*	*0*	0			
	youth 13-19	30	*13*	*0*	*0*	22	*5*	*0*	*0*	0			
	adults 20-64	58	*14*	*5*	*5*	47	*9*	*0*	*0*	0			
	elderly 65-75	18	*11*	*0*	*0*	7	*0*	*0*	*0*	0			
	elderly 75-85	2	*50*	*0*	*0*	0				0			
	>85	0				0				0			
	unknown	0				0				0			
Total no period 1		123	*13*	*3*	*2*	94	*7*	*0*	*0*	0			
2. After	< 6	11	*36*	*0*	*9*	3	*33*	*0*	*0*	0			
reconstruction	6	0				0				0			
	7	2	*50*	*0*	*0*	1	*0*	*0*	*0*	0			
	8	2	*100*	*0*	*0*	4	*25*	*0*	*0*	0			
	9	0				5	*40*	*20*	*0*	0			
	10	4	*75*	*0*	*25*	3	*100*	*0*	*0*	0			
	11	0				0				0			
	12	2	*0*	*0*	*0*	1	*100*	*100*	*0*	0			
	youth 13-19	47	*45*	*11*	*17*	28	*21*	*11*	*0*	0			
	adults 20-64	75	*40*	*15*	*1*	65	*45*	*5*	*8*	0			
	elderly 65-75	14	*29*	*7*	*7*	5	*60*	*0*	*0*	0			
	elderly 75-85	0				1	*100*	*0*	*0*	0			
	>85	0				0				0			
	unknown	0				1	*100*	*0*	*0*	0			
Total no period 2		157	*41*	*11*	*8*	117	*41*	*7*	*4*	0			
3. After	< 6	4	*75*	*25*	*0*	10	*40*	*20*	*0*	0			
reconstruction	6	0				0				0			
and code change	7	3	*67*	*33*	*0*	4	*50*	*25*	*25*	0			
	8	2	*50*	*50*	*0*	9	*67*	*33*	*0*	0			
	9	1	*100*	*0*	*0*	3	*67*	*67*	*0*	0			
	10	2	*0*	*0*	*0*	0				0			
	11	0				0				0			
	12	1	*0*	*0*	*0*	0				0			
	youth 13-19	40	*63*	*40*	*0*	32	*53*	*22*	*6*	0			
	adults 20-64	36	*53*	*28*	*0*	65	*49*	*23*	*3*	0			
	elderly 65-75	5	*60*	*0*	*0*	8	*63*	*38*	*0*	0			
	elderly 75-85	0				0				0			
	>85	0				0				0			
	unknown	0				0				0			
Total no period 3		94	*57*	*31*	*0*	131	*52*	*25*	*4*	0			
Total		374	*36*	*13*	*4*	342	*36*	*12*	*3*	0			

SJÖBO. Percent pedestrians given way by vehicles coming in to the intersection, leaving the intersection and turning vehicles

Appendix N:3

		First interaction vehicles coming to the intersection				First interaction vehicles leaving the intersection				First interaction turning vehicles			
Period	age (years)	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car
		meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)
1. Before	< 6	5	*20*	*20*	*0*	9	*22*	*22*	*0*	0			
reconstruction	6	1	*100*	*0*	*0*	0				0			
and code change	7	3	*0*	*0*	*0*	5	*20*	*0*	*20*	0			
	8	1	*100*	*100*	*0*	4	*25*	*0*	*0*	0			
	9	12	*33*	*0*	*0*	9	*33*	*0*	*33*	1	*0*	*0*	*0*
	10	5	*0*	*0*	*0*	10	*50*	*10*	*30*	0			
	11	5	*20*	*0*	*0*	6	*0*	*0*	*0*	0			
	12	9	*11*	*0*	*0*	15	*0*	*0*	*0*	0			
	youth 13-19	15	*13*	*7*	*7*	25	*16*	*0*	*8*	0			
	adults 20-64	110	*15*	*8*	*4*	112	*19*	*8*	*4*	4	*0*	*0*	*0*
	elderly 65-75	26	*27*	*19*	*0*	35	*14*	*11*	*0*	0			
	elderly 75-85	4	*25*	*0*	*0*	9	*11*	*0*	*0*	0			
	>85	2	*50*	*0*	*0*	0				0			
	unknown	0				0				0			
Total no period 1		198	*19*	*8*	*3*	239	*18*	*7*	*5*	5	*0*	*0*	*0*
2. After	< 6												
reconstruction	6												
	7												
	8												
	9												
	10												
	11												
	12												
	youth 13-19												
	adults 20-64												
	elderly 65-75												
	elderly 75-85												
	>85												
	unknown												
Total no period 2													
3. After	< 6	9	*33*	*11*	*0*	10	*40*	*20*	*0*	2	*50*	*0*	*50*
reconstruction	6	0				0				0			
and code change	7	2	*0*	*0*	*0*	2	*0*	*0*	*0*	1	*0*	*0*	*0*
	8	4	*50*	*25*	*25*	3	*33*	*33*	*0*	0			
	9	6	*33*	*33*	*0*	8	*13*	*0*	*0*	0			
	10	1	*0*	*0*	*0*	2	*0*	*0*	*0*	0			
	11	7	*57*	*57*	*0*	3	*0*	*0*	*0*	0			
	12	4	*0*	*0*	*0*	6	*0*	*0*	*0*	0			
	youth 13-19	13	*31*	*23*	*8*	13	*46*	*0*	*15*	0			
	adults 20-64	61	*36*	*10*	*16*	56	*32*	*14*	*5*	10	*30*	*0*	*20*
	elderly 65-75	15	*13*	*0*	*7*	11	*27*	*9*	*0*	2	*50*	*0*	*0*
	elderly 75-85	3	*33*	*0*	*0*	5	*40*	*0*	*20*	1	*100*	*0*	*100*
	>85	0				0				0			
	unknown	0				0				0			
Total no period 3		125	*32*	*14*	*10*	119	*29*	*10*	*5*	16	*38*	*0*	*25*
Total		323	*24*	*11*	*6*	358	*22*	*8*	*5*	21	*29*	*0*	*19*

TRANDERED UPPER CROSSING. Percent pedestrians given way by vehicles coming in to the intersection, leaving the intersection and turning vehicles

		First interaction vehicles coming to the intersection				First interaction vehicles leaving the intersection				First interaction turning vehicles			**Appendix N:4**
Period	age (years)	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car
		meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)
1. Before	< 6												
reconstruction	6												
and code change	7												
	8												
	9												
	10												
	11												
	12												
	youth 13-19												
	adults 20-64												
	elderly 65-75												
	elderly 75-85												
	>85												
	unknown												
Total no period 1													
2. After	< 6	2	*50*	*0*	*0*	8	*25*	*13*	*0*	2	*100*	*0*	*0*
reconstruction	6	0				0				0			
	7	7	*86*	*0*	*0*	2	*100*	*50*	*0*	0			
	8	4	*75*	*25*	*0*	1	*0*	*0*	*0*	0			
	9	5	*60*	*20*	*0*	13	*38*	*0*	*15*	5	*100*	*100*	*0*
	10	7	*0*	*0*	*0*	1	*0*	*0*	*0*	0			
	11	1	*0*	*0*	*0*	1	*100*	*100*	*0*	0			
	12	8	*50*	*50*	*0*	2	*50*	*50*	*0*	0			
	youth 13-19	12	*58*	*17*	*0*	2	*100*	*100*	*0*	0			
	adults 20-64	21	*52*	*5*	*14*	18	*44*	*17*	*0*	3	*67*	*67*	*0*
	elderly 65-75	6	*17*	*0*	*0*	0				0			
	elderly 75-85	0				0				0			
	>85	0				0				0			
	unknown	0				0				0			
Total no period 2		73	*49*	*12*	*4*	48	*44*	*19*	*4*	10	*90*	*90*	*0*
3. After	< 6	4	*100*	*25*	*25*	3	*67*	*67*	*0*	0			
reconstruction	6	0				0				0			
and code change	7	5	*100*	*20*	*0*	3	*33*	*33*	*0*	1	*100*	*100*	*0*
	8	13	*100*	*15*	*0*	10	*60*	*40*	*10*	4	*75*	*75*	*0*
	9	22	*64*	*18*	*9*	12	*33*	*25*	*8*	0			
	10	11	*82*	*55*	*9*	5	*80*	*60*	*20*	0			
	11	0				6	*83*	*67*	*0*	0			
	12	2	*0*	*0*	*0*	7	*100*	*100*	*0*	0			
	youth 13-19	8	*63*	*38*	*0*	6	*67*	*17*	*17*	0			
	adults 20-64	19	*84*	*16*	*26*	13	*62*	*15*	*23*	3	*100*	*100*	*0*
	elderly 65-75	0				0				0			
	elderly 75-85	0				0				0			
	>85	0				0				0			
	unknown	0				0				0			
Total no period 3		84	*79*	*24*	*11*	65	*63*	*42*	*11*	8	*88*	*88*	*0*
Total		157	*65*	*18*	*8*	113	*55*	*32*	*8*	18	*89*	*89*	*0*

TRANDERED LOWER CROSSING. Percent pedestrians given way by vehicles coming in to the intersection, leaving the intersection and turning vehicles

		First interaction vehicles coming to the intersection				First interaction vehicles leaving the intersection				First interaction turning vehicles			**Appendix N:5**
Period	age (years)	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car
		meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)
1. Before	< 6												
reconstruction	6												
and code change	7												
	8												
	9												
	10												
	11												
	12												
	youth 13-19												
	adults 20-64												
	elderly 65-75												
	elderly 75-85												
	>85												
	unknown												
Total no period 1													
2. After	< 6												
reconstruction	6	0				2	*100*	*100*	*0*	0			
	7	3	*33*	*0*	*0*	1	*100*	*100*	*0*	0			
	8	5	*20*	*0*	*0*	6	*33*	*0*	*0*	0			
	9	13	*54*	*31*	*23*	9	*44*	*33*	*0*	0			
	10	15	*60*	*27*	*7*	10	*60*	*20*	*10*	0			
	11	3	*67*	*67*	*0*	8	*38*	*0*	*0*	0			
	12	6	*83*	*67*	*0*	7	*43*	*29*	*0*	0			
	youth 13-19	18	*44*	*17*	*22*	14	*50*	*43*	*7*	4	*100*	*100*	*0*
	adults 20-64	18	*44*	*17*	*6*	35	*54*	*31*	*9*	2	*50*	*50*	*0*
	elderly 65-75	6	*33*	*0*	*17*	3	*33*	*33*	*0*	2	*100*	*100*	*0*
	elderly 75-85	3	*33*	*0*	*0*	0				0			
	>85	0				0				0			
	unknown	0				0				0			
Total no period 2		90	*49*	*22*	*11*	99	*52*	*28*	*6*	8	*88*	*88*	*0*
3. After	< 6	0				6	*17*	*17*	*0*	0			
reconstruction	6	0				0				0			
and code change	7	1	*100*	*100*	*0*	2	*50*	*50*	*0*	0			
	8	3	*100*	*33*	*0*	10	*60*	*40*	*0*	0			
	9	5	*20*	*20*	*0*	15	*60*	*53*	*7*	0			
	10	5	*60*	*40*	*0*	10	*50*	*40*	*0*	4	*100*	*100*	*0*
	11	6	*67*	*50*	*0*	2	*100*	*50*	*0*	0			
	12	3	*100*	*67*	*0*	4	*75*	*25*	*0*	0			
	youth 13-19	18	*56*	*28*	*11*	11	*64*	*36*	*0*	0			
	adults 20-64	20	*55*	*20*	*5*	41	*76*	*32*	*0*	2	*100*	*100*	*0*
	elderly 65-75	5	*40*	*0*	*20*	6	*100*	*50*	*33*	0			
	elderly 75-85	1	*100*	*100*	*0*	3	*67*	*0*	*0*	0			
	>85	0				0				0			
	unknown	0				0				0			
Total no period 3		67	*58*	*30*	*6*	110	*66*	*36*	*3*	6	*100*	*100*	*0*
Total		157	*54*	*25*	*9*	209	*59*	*33*	*4*	14	*93*	*93*	*0*

ALL INTERSECTIONS. Percent pedestrians given way by vehicles from the right, vehicles from the left and turning vehicles

		First interaction vehicles from the left				First interaction vehicles from the right				First interaction turning vehicles			
period no.	age (years)	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car
		meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)
1. Before	< 6	13	*15*	*15*	*0*	13	*23*	*8*	*0*	0			
reconstruction	6	0				1	*100*	*0*	*0*	0			
and code change	7	8	*0*	*0*	*0*	5	*20*	*0*	*20*	0			
	8	6	*17*	*0*	*0*	4	*25*	*25*	*0*	0			
	9	9	*11*	*0*	*0*	17	*35*	*0*	*18*	1	*0*	*0*	*0*
	10	12	*33*	*8*	*25*	5	*20*	*0*	*0*	0			
	11	7	*14*	*0*	*0*	5	*0*	*0*	*0*	0			
	12	15	*13*	*7*	*0*	12	*0*	*0*	*0*	0			
	youth 13-19	41	*7*	*2*	*2*	51	*16*	*0*	*4*	0			
	adults 20-64	171	*14*	*6*	*1*	156	*17*	*6*	*6*	4	*0*	*0*	*0*
	elderly 65-75	45	*18*	*13*	*0*	41	*15*	*7*	*0*	0			
	elderly 75-85	8	*25*	*0*	*0*	7	*14*	*0*	*0*	0			
	>85	2	*50*	*0*	*0*	0				0			
	unknown	0				0				0			
Total no period 1		337	*15*	*6*	*2*	317	*17*	*5*	*5*	5	*0*	*0*	*0*
2. After	< 6	19	*37*	*5*	*0*	9	*44*	*0*	*22*	2	*100*	*0*	*0*
reconstruction	6	0				2	*100*	*100*	*0*	0			
	7	8	*63*	*13*	*0*	8	*75*	*13*	*0*	0			
	8	14	*43*	*7*	*0*	8	*38*	*0*	*0*	0			
	9	32	*41*	*25*	*0*	13	*62*	*8*	*38*	5	*100*	*100*	*0*
	10	21	*67*	*5*	*10*	19	*37*	*26*	*5*	0			
	11	10	*30*	*20*	*0*	3	*100*	*33*	*0*	0			
	12	17	*59*	*53*	*0*	9	*44*	*33*	*0*	0			
	youth 13-19	86	*42*	*20*	*8*	35	*43*	*11*	*17*	4	*100*	*100*	*0*
	adults 20-64	151	*45*	*13*	*5*	81	*46*	*16*	*6*	5	*60*	*60*	*0*
	elderly 65-75	22	*32*	*5*	*5*	12	*33*	*8*	*8*	2	*100*	*100*	*0*
	elderly 75-85	2	*50*	*0*	*0*	2	*50*	*0*	*0*	0			
	>85	0				0				0			
	unknown	1	*100*	*0*	*0*	0				0			
Total no period 2		383	*45*	*16*	*5*	201	*47*	*15*	*10*	18	*89*	*89*	*0*
3. After	< 6	26	*46*	*12*	*4*	20	*45*	*35*	*0*	2	*50*	*0*	*50*
reconstruction	6	0				0				0			
and code change	7	10	*30*	*10*	*0*	12	*75*	*42*	*8*	2	*50*	*50*	*0*
	8	36	*78*	*28*	*3*	18	*56*	*39*	*6*	4	*75*	*75*	*0*
	9	51	*53*	*29*	*6*	21	*33*	*24*	*5*	0			
	10	17	*59*	*35*	*6*	19	*58*	*47*	*5*	4	*100*	*100*	*0*
	11	11	*45*	*27*	*0*	13	*77*	*69*	*0*	0			
	12	13	*23*	*0*	*0*	14	*71*	*71*	*0*	0			
	youth 13-19	70	*54*	*21*	*7*	71	*56*	*34*	*4*	0			
	adults 20-64	176	*53*	*21*	*5*	135	*47*	*18*	*11*	15	*53*	*33*	*13*
	elderly 65-75	30	*50*	*20*	*10*	20	*30*	*5*	*5*	2	*50*	*0*	*0*
	elderly 75-85	5	*60*	*0*	*20*	7	*43*	*14*	*0*	1	*100*	*0*	*100*
	>85	0				0				0			
	unknown	0				0				0			
Total no period 3		445	*53*	*22*	*5*	350	*51*	*29*	*7*	30	*63*	*43*	*13*
Total		1165	*39*	*15*	*4*	868	*38*	*17*	*371*	53	*66*	*55*	*8*

HULTA. Percent pedestrians given way by vehicles from the right, vehicles from the left and turning vehicles

Appendix O:2

		First interaction vehicles from the left				First interaction vehicles from the right				First interaction turning vehicles			
Period	age (years)	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car
		meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)
1. Before	< 6	2	*0*	*0*	*0*	10	*20*	*0*	*0*	0			
reconstruction	6	0				0				0			
and code change	7	4	*0*	*0*	*0*	1	*0*	*0*	*0*	0			
	8	4	*0*	*0*	*0*	1	*0*	*0*	*0*	0			
	9	3	*0*	*0*	*0*	2	*0*	*0*	*0*	0			
	10	0				2	*0*	*0*	*0*	0			
	11	0				1	*0*	*0*	*0*	0			
	12	3	*33*	*33*	*0*	0				0			
	youth 13-19	24	*4*	*0*	*0*	28	*14*	*0*	*0*	0			
	adults 20-64	54	*11*	*0*	*4*	51	*12*	*6*	*2*	0			
	elderly 65-75	10	*0*	*0*	*0*	15	*13*	*0*	*0*	0			
	elderly 75-85	2	*50*	*0*	*0*	0				0			
	>85	0				0				0			
	unknown	0				0				0			
Total no period 1		106	*8*	*1*	*2*	111	*13*	*3*	*1*	0			
2. After	< 6	8	*38*	*0*	*0*	6	*33*	*0*	*17*	0			
reconstruction	6	0				0				0			
	7	1	*0*	*0*	*0*	2	*50*	*0*	*0*	0			
	8	3	*33*	*0*	*0*	3	*67*	*0*	*0*	0			
	9	4	*25*	*0*	*0*	1	*100*	*100*	*0*	0			
	10	6	*83*	*0*	*17*	1	*100*	*0*	*0*	0			
	11	0				0				0			
	12	2	*50*	*50*	*0*	1	*0*	*0*	*0*	0			
	youth 13-19	53	*34*	*13*	*6*	22	*41*	*5*	*23*	0			
	adults 20-64	93	*40*	*6*	*4*	47	*47*	*17*	*4*	0			
	elderly 65-75	9	*44*	*0*	*11*	10	*30*	*10*	*0*	0			
	elderly 75-85	0				1	*100*	*0*	*0*	0			
	>85	0				0				0			
	unknown	1	*100*	*0*	*0*	0				0			
Total no period 2		180	*39*	*8*	*5*	94	*45*	*12*	*9*	0			
3. After	< 6	7	*71*	*14*	*0*	7	*29*	*29*	*0*	0			
reconstruction	6	0				0				0			
and code change	7	4	*50*	*25*	*0*	3	*67*	*33*	*33*	0			
	8	7	*86*	*43*	*0*	4	*25*	*25*	*0*	0			
	9	3	*100*	*67*	*0*	1	*0*	*0*	*0*	0			
	10	2	*0*	*0*	*0*	0				0			
	11	0				0				0			
	12	1	*0*	*0*	*0*	0				0			
	youth 13-19	30	*57*	*23*	*0*	42	*60*	*38*	*5*	0			
	adults 20-64	55	*55*	*29*	*0*	46	*46*	*20*	*4*	0			
	elderly 65-75	9	*44*	*33*	*0*	4	*100*	*0*	*0*	0			
	elderly 75-85	0				0				0			
	>85	0				0				0			
	unknown	0				0				0			
Total no period 3		118	*57*	*28*	*0*	107	*51*	*27*	*5*	0			
Total		404	*36*	*12*	*3*	312	*36*	*14*	*4*	0			

SJÖBO. Percent pedestrians given way by vehicles from the right, vehicles from the left and turning vehicles

Appendix O:3

		First interaction vehicles from the left				First interaction vehicles from the right				First interaction turning vehicles			
Period	age (years)	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car
		meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)
1. Before	< 6	11	*18*	*18*	*0*	3	*33*	*33*	*0*	0			
reconstruction	6	0				1	*100*	*0*	*0*	0			
and code change	7	4	*0*	*0*	*0*	4	*25*	*0*	*25*	0			
	8	2	*50*	*0*	*0*	3	*33*	*33*	*0*	0			
	9	6	*17*	*0*	*0*	15	*40*	*0*	*20*	1	*0*	*0*	*0*
	10	12	*33*	*8*	*25*	3	*33*	*0*	*0*	0			
	11	7	*14*	*0*	*0*	4	*0*	*0*	*0*	0			
	12	12	*8*	*0*	*0*	12	*0*	*0*	*0*	0			
	youth 13-19	17	*12*	*6*	*6*	23	*17*	*0*	*9*	0			
	adults 20-64	117	*15*	*9*	*0*	105	*19*	*7*	*8*	4	*0*	*0*	*0*
	elderly 65-75	35	*23*	*17*	*0*	26	*15*	*12*	*0*	0			
	elderly 75-85	6	*17*	*0*	*0*	7	*14*	*0*	*0*	0			
	>85	2	*50*	*0*	*0*	0				0			
	unknown	0				0				0			
Total no period 1		231	*17*	*9*	*2*	206	*19*	*6*	*7*	5	*0*	*0*	*0*
2. After	< 6												
reconstruction	6												
	7												
	8												
	9												
	10												
	11												
	12												
	youth 13-19												
	adults 20-64												
	elderly 65-75												
	elderly 75-85												
	>85												
	unknown												
Total no period 2													
3. After	< 6	10	*40*	*10*	*0*	9	*33*	*22*	*0*	2	*50*	*0*	*50*
reconstruction	6	0				0				0			
and code change	7	4	*0*	*0*	*0*	0				1	*0*	*0*	*0*
	8	3	*67*	*33*	*33*	4	*25*	*25*	*0*	0			
	9	8	*25*	*25*	*0*	6	*17*	*0*	*0*	0			
	10	1	*0*	*0*	*0*	2	*0*	*0*	*0*	0			
	11	5	*0*	*0*	*0*	5	*80*	*80*	*0*	0			
	12	8	*0*	*0*	*0*	2	*0*	*0*	*0*	0			
	youth 13-19	12	*58*	*25*	*17*	14	*21*	*0*	*7*	0			
	adults 20-64	70	*41*	*14*	*10*	47	*23*	*9*	*13*	10	*30*	*0*	*20*
	elderly 65-75	12	*33*	*0*	*8*	14	*7*	*7*	*0*	2	*50*	*0*	*0*
	elderly 75-85	4	*50*	*0*	*25*	4	*25*	*0*	*0*	1	*100*	*0*	*100*
	>85	0				0				0			
	unknown	0				0				0			
Total no period 3		137	*36*	*12*	*9*	107	*23*	*11*	*7*	16	*38*	*0*	*25*
Total		368	*24*	*10*	*4*	313	*21*	*8*	*7*	21	*29*	*0*	*19*

TRANDERED UPPER CROSSING. Percent pedestrians given way by vehicles from the right, vehicles from the left and turning vehicles

Appendix O:4

		First interaction vehicles from the left				First interaction vehicles from the right				First interaction turning vehicles			
Period	age (years)	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car
		meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)
1. Before	< 6												
reconstruction	6												
and code change	7												
	8												
	9												
	10												
	11												
	12												
	youth 13-19												
	adults 20-64												
	elderly 65-75												
	elderly 75-85												
	>85												
	unknown												
Total no period 1													
2. After	< 6	9	*33*	*11*	*0*	1	*0*	*0*	*0*	2	*100*	*0*	*0*
reconstruction	6	0				0				0			
	7	4	*75*	*0*	*0*	5	*100*	*20*	*0*	0			
	8	4	*50*	*25*	*0*	1	*100*	*0*	*0*	0			
	9	12	*42*	*8*	*0*	6	*50*	*0*	*33*	5	*100*	*100*	*0*
	10	1	*0*	*0*	*0*	7	*0*	*0*	*0*	0			
	11	1	*0*	*0*	*0*	1	*100*	*100*	*0*	0			
	12	8	*50*	*50*	*0*	2	*50*	*50*	*0*	0			
	youth 13-19	6	*83*	*33*	*0*	8	*50*	*25*	*0*	0			
	adults 20-64	25	*52*	*12*	*4*	14	*43*	*7*	*14*	3	*67*	*67*	*0*
	elderly 65-75	5	*20*	*0*	*0*	1	*0*	*0*	*0*	0			
	elderly 75-85	0				0				0			
	>85	0				0				0			
	unknown	0				0				0			
Total no period 2		75	*48*	*16*	*1*	46	*46*	*13*	*9*	10	*90*	*90*	*0*
3. After	< 6	3	*67*	*0*	*33*	4	*100*	*75*	*0*	0			
reconstruction	6	0				0				0			
and code change	7	1	*100*	*0*	*0*	7	*71*	*29*	*0*	1	*100*	*100*	*0*
	8	14	*86*	*14*	*0*	9	*78*	*44*	*11*	4	*75*	*75*	*0*
	9	27	*52*	*15*	*7*	7	*57*	*43*	*14*	0			
	10	7	*86*	*43*	*14*	9	*78*	*67*	*11*	0			
	11	5	*80*	*60*	*0*	1	*100*	*100*	*0*	0			
	12	0				9	*78*	*78*	*0*	0			
	youth 13-19	10	*60*	*30*	*10*	4	*75*	*25*	*0*	0			
	adults 20-64	14	*71*	*7*	*14*	18	*78*	*22*	*33*	3	*100*	*100*	*0*
	elderly 65-75	0				0				0			
	elderly 75-85	0				0				0			
	>85	0				0				0			
	unknown	0				0				0			
Total no period 3		81	*68*	*20*	*9*	68	*76*	*46*	*13*	8	*88*	*88*	*0*
Total		156	*58*	*18*	*5*	114	*64*	*32*	*11*	18	*89*	*89*	*0*

TRANDERED LOWER CROSSING. Percent pedestrians given way by vehicles from the right, vehicles from the left and turning vehicles

Appendix O:5

		First interaction vehicles from the left				First interaction vehicles from the right				First interaction turning vehicles			
Period	age (years)	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car	No of people	any car	1st car	1 st car
		meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)	meet any car	give way (%)	stops (%)	slow down (%)
1. Before	< 6												
reconstruction	6												
and code change	7												
	8												
	9												
	10												
	11												
	12												
	youth 13-19												
	adults 20-64												
	elderly 65-75												
	elderly 75-85												
	>85												
	unknown												
Total no period 1													
2. After	< 6	2	*50*	*0*	*0*	2	*100*	*0*	*50*	0			
reconstruction	6	0				2	*100*	*100*	*0*	0			
	7	3	*67*	*33*	*0*	1	*0*	*0*	*0*	0			
	8	7	*43*	*0*	*0*	4	*0*	*0*	*0*	0			
	9	16	*44*	*44*	*0*	6	*67*	*0*	*50*	0			
	10	14	*64*	*7*	*7*	11	*55*	*45*	*9*	0			
	11	9	*33*	*22*	*0*	2	*100*	*0*	*0*	0			
	12	7	*71*	*57*	*0*	6	*50*	*33*	*0*	0			
	youth 13-19	27	*48*	*30*	*15*	5	*40*	*20*	*20*	4	*100*	*100*	*0*
	adults 20-64	33	*55*	*30*	*9*	20	*45*	*20*	*5*	2	*50*	*50*	*0*
	elderly 65-75	8	*25*	*13*	*0*	1	*100*	*0*	*100*	2	*100*	*100*	*0*
	elderly 75-85	2	*50*	*0*	*0*	1	*0*	*0*	*0*	0			
	>85	0				0				0			
	unknown	0				0				0			
Total no period 2		128	*50*	*27*	*6*	61	*51*	*23*	*13*	8	*88*	*88*	*0*
3. After	< 6	6	*17*	*17*	*0*	0				0			
reconstruction	6	0				0				0			
and code change	7	1	*0*	*0*	*0*	2	*100*	*100*	*0*	0			
	8	12	*67*	*33*	*0*	1	*100*	*100*	*0*	0			
	9	13	*62*	*54*	*8*	7	*29*	*29*	*0*	0			
	10	7	*57*	*43*	*0*	8	*50*	*38*	*0*	4	*100*	*100*	*0*
	11	1	*100*	*0*	*0*	7	*71*	*57*	*0*	0			
	12	4	*75*	*0*	*0*	3	*100*	*100*	*0*	0			
	youth 13-19	18	*44*	*11*	*11*	11	*82*	*64*	*0*	0			
	adults 20-64	37	*65*	*27*	*0*	24	*75*	*29*	*4*	2	*100*	*100*	*0*
	elderly 65-75	9	*78*	*33*	*22*	2	*50*	*0*	*50*	0			
	elderly 75-85	1	*100*	*0*	*0*	3	*67*	*33*	*0*	0			
	>85	0				0				0			
	unknown	0				0				0			
Total no period 3		109	*60*	*28*	*5*	68	*69*	*44*	*3*	6	*100*	*100*	*0*
Total		237	*54*	*27*	*5*	129	*61*	*34*	*8*	14	*93*	*93*	*0*

Cars passing when pedestrian present at zebra crossing divided in age groups. Mean no. of cars passing, max. no. of cars passing and share cars giving way

Appendix P:1

ALL INTERSECTIONS		No car give way to the pedestrian				Any car giver way to the pedestrian					All encounters				
period	age (years)	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing		Totalt no. of persons	Total no. of cars passing	mean no. of cars passing		*share cars that give way (%)*	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing		*share cars that give way (%)*
1	< 6.	19	43	2,3		5	5	1,0		*50*	24	48	2,0		*9*
	6	0	0			1	3	3,0		*25*	1	3	3,0		*25*
	7	11	29	2,6		1	0	0,0		*100*	12	29	2,4		*3*
	8	7	12	1,7		2	1	0,5		*67*	9	13	1,4		*13*
	9	19	24	1,3		7	12	1,7		*37*	26	36	1,4		*16*
	10	9	18	2,0		5	4	0,8		*56*	14	22	1,6		*19*
	11	7	10	1,4		1	3	3,0		*25*	8	13	1,6		*7*
	12	19	21	1,1		2	3	1,5		*40*	21	24	1,1		*8*
	13-19	61	106	1,7		10	11	1,1		*48*	71	117	1,6		*8*
	20-64	256	460	1,8		50	58	1,2		*46*	306	518	1,7		*9*
	65-75	62	128	2,1		14	13	0,9		*52*	76	141	1,9		*9*
	75-85	12	10	0,8		3	7	2,3		*30*	15	17	1,1		*15*
	< 85.	1	2	2,0		1	3	3,0		*25*	2	5	2,5		*17*
	unknown	0	0			0	0				0	0			
1 Total		483	863	1,8		102	123	1,2		*45*	585	986	1,7		*9*
2	< 6.	14	24	1,7		13	13	1,0		*50*	27	37	1,4		*26*
	6	0	0			2	0	0,0		*100*	2	0	0,0		*100*
	7	5	5	1,0		11	20	1,8		*35*	16	25	1,6		*31*
	8	10	32	3,2		9	13	1,4		*41*	19	45	2,4		*17*
	9	18	28	1,6		22	13	0,6		*63*	40	41	1,0		*35*
	10	15	17	1,1		21	20	1,0		*51*	36	37	1,0		*36*
	11	3	4	1,3		6	5	0,8		*55*	9	9	1,0		*40*
	12	11	19	1,7		14	1	0,1		*93*	25	20	0,8		*41*
	13-19	52	93	1,8		55	32	0,6		*63*	107	125	1,2		*31*
	20-64	109	193	1,8		109	117	1,1		*48*	218	310	1,4		*26*
	65-75	22	47	2,1		13	10	0,8		*57*	35	57	1,6		*19*
	75-85	1	1	1,0		2	4	2,0		*33*	3	5	1,7		*29*
	< 85.	0	0			0	0				0	0			
	unknown	0	0			2	3	1,5		*40*	2	3	1,5		*40*
2 Total		260	463	1,8		279	251	0,9		*53*	539	714	1,3		*28*
3	< 6.	25	35	1,4		23	21	0,9		*52*	48	56	1,2		*29*
	6	0	0			0	0				0	0			
	7	10	12	1,2		13	5	0,4		*72*	23	17	0,7		*43*
	8	16	20	1,3		41	37	0,9		*53*	57	57	1,0		*42*
	9	23	36	1,6		33	21	0,6		*61*	56	57	1,0		*37*
	10	11	19	1,7		25	6	0,2		*81*	36	25	0,7		*50*
	11	6	6	1,0		15	3	0,2		*83*	21	9	0,4		*63*
	12	5	6	1,2		12	8	0,7		*60*	17	14	0,8		*46*
	13-19	46	59	1,3		78	44	0,6		*64*	124	103	0,8		*43*
	20-64	124	171	1,4		166	136	0,8		*55*	290	307	1,1		*35*
	65-75	28	63	2,3		22	33	1,5		*40*	50	96	1,9		*19*
	75-85	5	11	2,2		7	6	0,9		*54*	12	17	1,4		*29*
	< 85.	0	0			0	0				0	0			
	unknown	3	5	1,7		0	0				3	5	1,7		*0*
3 Total		302	443	1,5		435	320	0,7		*58*	737	763	1,0		*36*
Total		1045	1769	1,7		816	694	0,9		*54*	1861	2463	1,3		*25*

Cars passing when pedestrian present at zebra crossing divided in age groups. Mean no. of cars passing, max. no. of cars passing and share cars giving way

HULTA		No car give way to the pedestrian				Any car giver way to the pedestrian					All encounters				**Appendix P:2**
period	age (years)	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	*share cars that give way (%)*	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	*share cars that give way (%)*
1	< 6.	8	20	2,5	5	2	2	1,0	1	*50*	10	22	2,2	5	*8*
	6	0	0				0				0	0			
	7	5	18	3,6	7		0				5	18	3,6	7	*0*
	8	5	9	1,8	2		0				5	9	1,8	2	*0*
	9	4	9	2,3	5		0				4	9	2,3	5	*0*
	10	2	5	2,5	3		0				2	5	2,5	3	*0*
	11	1	2	2,0	2		0				1	2	2,0	2	*0*
	12	1	1	1,0	1	1	1	1,0	1	*50*	2	2	1,0	1	*33*
	13-19	33	74	2,2	8	4	4	1,0	1	*50*	37	78	2,1	8	*5*
	20-64	85	231	2,7	14	12	35	2,9	8	*26*	97	266	2,7	14	*4*
	65-75	21	64	3,0	7	2	4	2,0	2	*33*	23	68	3,0	7	*3*
	75-85	1	0	0,0	0	1	2	2,0	2	*33*	2	2	1,0	2	*33*
	< 85.	0	0				0				0	0			
	unknown	0	0				0				0	0			
1 Total		166	433	2,6		22	48	2,2		*31*	188	481	2,6		*4*
2	< 6.	7	12	1,7	4	5	8	1,6	4	*38*	12	20	1,7	4	*20*
	6		0				0				0	0			
	7	2	2	1,0	1	1	2	2,0	2	*33*	3	4	1,3	1	*20*
	8	3	13	4,3	8	3	7	2,3	3	*30*	6	20	3,3	8	*13*
	9	3	5	1,7	3	2	1	0,5	1	*67*	5	6	1,2	3	*25*
	10	1	1	1,0	1	6	9	1,5	2	*40*	7	10	1,4	1	*38*
	11		0				0				0	0			
	12	2	3	1,5	2	1	0	0,0	0	*100*	3	3	1,0	2	*25*
	13-19	35	58	1,7	8	27	18	0,7	4	*60*	62	76	1,2	8	*26*
	20-64	68	132	1,9	4	60	72	1,2	5	*45*	128	204	1,6	4	*23*
	65-75	14	24	1,7	6	7	6	0,9	2	*54*	21	30	1,4	6	*19*
	75-85		0			1	2	2,0	2	*33*	1	2	2,0		*33*
	< 85.		0				0				0	0			
	unknown		0			1	2	2,0	2	*33*	1	2	2,0	2	*33*
2 Total		135	250	1,9		114	127	1,1		*47*	249	377	1,5		*23*
3	< 6.	6	8	1,3	2	7	6	0,9	2	*54*	13	14	1,1	2	*33*
	6		0				0				0	0			
	7	2	3	1,5	2	4	1	0,3	1	*80*	6	4	0,7	2	*50*
	8	4	4	1,0	1	7	4	0,6	1	*64*	11	8	0,7	1	*47*
	9	1	1	1,0	1	3	1	0,3	1	*75*	4	2	0,5	1	*60*
	10		0				0				0	0			
	11		0				0				0	0			
	12		0				0				0	0			
	13-19	23	30	1,3	2	42	23	0,5	2	*65*	65	53	0,8	2	*44*
	20-64	35	46	1,3	3	51	42	0,8	5	*55*	86	88	1,0	5	*37*
	65-75	4	14	3,5	1	8	15	1,9	6	*35*	12	29	2,4	6	*22*
	75-85		0				0				0	0			
	< 85.		0				0				0	0			
	unknown	2	4	2,0	2		0				2	4	2,0	2	*0*
3 Total		77	110	1,4		122	92	0,8		*57*	199	202	1,0		*38*
Total		378	793	2,1		258	267	1,0		*49*	636	1060	1,7		*20*

Cars passing when pedestrian present at zebra crossing divided in age groups. Mean no. of cars passing, max. no. of cars passing and share cars giving way

SJÖBO		No car give way to the pedestrian				Any car giver way to the pedestrian					All encounters				**Appendix P:3**
period	age (years)	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	*share cars that give way (%)*	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	*share cars that give way (%)*
1	< 6.	11	23	2,1	4	3	3	1,0	3	*50*	14	26	1,9	4	*10*
	6	0	0			1	3	3,0	3	*25*	1	3	3,0	3	*25*
	7	6	11	1,8	4	1	0	0,0	0	*100*	7	11	1,6	4	*8*
	8	2	3	1,5	2	2	1	0,5	1	*67*	4	4	1,0	2	*33*
	9	15	15	1,0	3	7	12	1,7	3	*37*	22	27	1,2	3	*21*
	10	7	13	1,9	3	5	4	0,8	3	*56*	12	17	1,4	3	*23*
	11	6	8	1,3	3	1	3	3,0	3	*25*	7	11	1,6	3	*8*
	12	18	20	1,1	2	1	2	2,0	2	*33*	19	22	1,2	2	*4*
	13-19	28	32	1,1	4	6	7	1,2	3	*46*	34	39	1,1	4	*13*
	20-64	171	229	1,3	6	38	23	0,6	4	*62*	209	252	1,2	6	*13*
	65-75	41	64	1,6	4	12	9	0,8	3	*57*	53	73	1,4	4	*14*
	75-85	11	10	0,9	2	2	5	2,5	3	*29*	13	15	1,2	3	*12*
	< 85.	1	2	2,0	2	1	3	3,0	3	*25*	2	5	2,5	3	*17*
	unknown	0	0			0	0				0	0			
1 Total		317	430	1,4		80	75	0,9		*52*	397	505	1,3		*14*
2	< 6.														
	6														
	7														
	8														
	9														
	10														
	11														
	12														
	13-19														
	20-64														
	65-75														
	75-85														
	< 85.														
	unknown														
2 Total															
3	< 6.	13	19	1,5	2	8	13	1,6	5	*38*	21	32	1,5	5	*20*
	6	0	0			0	0				0	0			
	7	5	6	1,2	2	0	0				5	6	1,2	2	*0*
	8	5	6	1,2	2	3	0	0,0	0	*100*	8	6	0,8	2	*33*
	9	6	9	1,5	2	3	1	0,3	1	*75*	9	10	1,1	2	*23*
	10	3	5	1,7	2	0	0				3	5	1,7	2	*0*
	11	3	3	1,0	1	4	0	0,0	0	*100*	7	3	0,4	1	*57*
	12	3	4	1,3	2	0	0				3	4	1,3	2	*0*
	13-19	13	14	1,1	2	10	2	0,2	1	*83*	23	16	0,7	2	*38*
	20-64	67	90	1,3	4	43	37	0,9	5	*54*	110	127	1,2	5	*25*
	65-75	21	43	2,0	4	6	13	2,2	5	*32*	27	56	2,1	9	*10*
	75-85	3	7	2,3	3	4	4	1,0	3	*50*	7	11	1,6	3	*27*
	< 85.	0	0			0	0				0	0			
	unknown	0	0			0	0				0	0			
3 Total		142	206	1,5		81	70	0,9		*54*	223	276	1,2		*23*
Total		459	636	1,4		161	145	0,9		*53*	620	781	1,3		*17*

Cars passing when pedestrian present at zebra crossing divided in age groups. Mean no. of cars passing, max. no. of cars passing and share cars giving way

Appendix P:4

TRANDERED		No car give way to the pedestrian				Any car giver way to the pedestrian					All encounters				
UPPER INTERS.		Totalt no. of	Total no. of	mean no. of	max. no. of	Totalt no. of	Total no. of	mean no. of	max. no. of	*share cars that*	Totalt no. of	Total no. of	mean no. of	max. no. of	*share cars that*
period	age (years)	persons	cars passing	cars passing	cars passing	persons	cars passing	cars passing	cars passing	*give way (%)*	persons	cars passing	cars passing	cars passing	*give way (%)*
1	< 6.														
	6														
	7														
	8														
	9														
	10														
	11														
	12														
	13-19														
	20-64														
	65-75														
	75-85														
	< 85.														
	unknown														
1 Total															
2	< 6.	7	12	1,7	2	5	2	0,4	1	*71*	12	14	1,2	2	*26*
	6	0	0			0	0				0	0			
	7	1	1	1,0	1	8	6	0,8	2	*57*	9	7	0,8	2	*53*
	8	2	6	3,0	4	3	5	1,7	3	*38*	5	11	2,2	4	*21*
	9	9	15	1,7	4	11	8	0,7	2	*58*	20	23	1,2	4	*32*
	10	6	6	1,0	2	0	0				6	6	1,0	2	*0*
	11	1	2	2,0	2	1	0	0,0	0	*100*	2	2	1,0	2	*33*
	12	4	8	2,0	4	5	0	0,0	0	*100*	9	8	0,9	4	*38*
	13-19	3	8	2,7	3	9	10	1,1	2	*47*	12	18	1,5	3	*33*
	20-64	17	28	1,6	5	21	18	0,9	3	*54*	38	46	1,2	5	*31*
	65-75	4	13	3,3	6	1	2	2,0	2	*33*	5	15	3,0	6	*6*
	75-85	0	0			0	0				0	0			
	< 85.	0	0				0				0	0			
	unknown	0	0			1	1	1,0	1	*50*	1	1	1,0		*50*
2 Total		54	99	1,8		65	52	0,8		*56*	119	151	1,3		*30*
3	< 6.	1	1	1,0	1	6	2	0,3	1	*75*	7	3	0,4	1	*67*
	6	0	0			0	0				0	0			
	7	2	2	1,0	1	7	1	0,1	1	*88*	9	6	0,7	1	*54*
	8	3	4	1,3	2	22	24	1,1	3	*48*	25	28	1,1	3	*44*
	9	9	18	2,0	5	18	18	1,0	3	*50*	27	36	1,3	5	*33*
	10	2	4	2,0	3	13	3	0,2	2	*81*	15	7	0,5	3	*65*
	11	1	1	1,0	1	5	1	0,2	1	*83*	6	2	0,3	1	*71*
	12	2	2	1,0	1	7	2	0,3	1	*78*	9	4	0,4	1	*64*
	13-19	1	1	1,0	1	9	7	0,8	2	*56*	10	8	0,8	2	*53*
	20-64	5	6	1,2	2	27	13	0,5	2	*68*	32	19	0,6	2	*59*
	65-75	0	0			0	0				0	0			
	75-85	0	0			0	0				0	0			
	< 85.	0	0			0	0				0	0			
	unknown	0	0			0	0				0	0			
3 Total		26	39	1,5		114	74	0,6		*61*	140	113	0,8		*50*
Total		80	138	1,7		179	126	0,7		*59*	259	264	1,0		*40*

Cars passing when pedestrian present at zebra crossing divided in age groups. Mean no. of cars passing, max. no. of cars passing and share cars giving way

TRANDERED		No car give way to the pedestrian				Any car giver way to the pedestrian					All encounters				
LOWER INTERS.		Totalt no. of	Total no. of	mean no. of	max. no. of	Totalt no. of	Total no. of	mean no. of	max. no. of	*share cars that*	Totalt no. of	Total no. of	mean no. of	max. no. of	*share cars that*
period	age (years)	persons	cars passing	cars passing	cars passing	persons	cars passing	cars passing	cars passing	*give way (%)*	persons	cars passing	cars passing	cars passing	*give way (%)*
1	< 6.														
	6														
	7														
	8														
	9														
	10														
	11														
	12														
	13-19														
	20-64														
	65-75														
	75-85														
	< 85.														
	unknown														
1 Total															
2	< 6.					3	3	1,0	2	*50*	3	3	1,0	2	*50*
	6		0			2	0	0,0	0	*100*	2	0	0,0	0	*100*
	7	2	2	1,0	1	2	12	6,0	10	*14*	4	14	3,5	10	*13*
	8	5	13	2,6	6	3	1	0,3	1	*75*	8	14	1,8	6	*18*
	9	6	8	1,3	2	9	4	0,4	2	*69*	15	12	0,8	2	*43*
	10	8	10	1,3	1	15	11	0,7	2	*58*	23	21	0,9	2	*42*
	11	2	2	1,0	1	5	5	1,0	2	*50*	7	7	1,0	2	*42*
	12	5	8	1,6	2	8	1	0,1	1	*89*	13	9	0,7	2	*47*
	13-19	14	27	1,9	5	19	4	0,2	2	*83*	33	31	0,9	5	*38*
	20-64	24	33	1,4	3	28	27	1,0	10	*51*	52	60	1,2	10	*32*
	65-75	4	10	2,5	3	5	2	0,4	1	*71*	9	12	1,3	3	*29*
	75-85	1	1	1,0	1	1	2	2,0	2	*33*	2	3	1,5	2	*25*
	< 85.		0				0				0	0			
	unknown		0				0				0	0			
2 Total		71	114	1,6	6	100	72	0,7	10	*58*	171	186	1,1	10	*35*
3	< 6.	5	7	1,4	2	2	0	0,0	0	*100*	7	7	1,0	2	*22*
	6		0				0				0	0			
	7	1	1	1,0	1	2	0	0,0	0	*100*	3	1	0,3	1	*67*
	8	4	6	1,5	3	9	9	1,0	2	*50*	13	15	1,2	3	*38*
	9	7	8	1,1	2	9	1	0,1	1	*90*	16	9	0,6	2	*50*
	10	6	10	1,7	2	12	3	0,3	2	*80*	18	13	0,7	2	*48*
	11	2	2	1,0	1	6	2	0,3	1	*75*	8	4	0,5	1	*60*
	12		0			5	6	1,2	3	*45*	5	6	1,2	3	*45*
	13-19	9	14	1,6	3	17	12	0,7	3	*59*	26	26	1,0	3	*40*
	20-64	17	29	1,7	4	45	44	1,0	3	*51*	62	73	1,2	4	*38*
	65-75	3	6	2,0	2	8	5	0,6	2	*62*	11	11	1,0	2	*42*
	75-85	2	4	2,0	3	3	2	0,7	1	*60*	5	6	1,2	3	*33*
	< 85.		0				0				0	0			
	unknown	1	1	1,0	1		0				1	1	1,0	1	*0*
3 Total		57	88	1,5	4	118	84	0,7	3	*58*	175	172	1,0	4	*41*
Total		128	202	1,6	6	218	156	0,7	10	*58*	346	358	1,0	10	*38*

Cars passing when pedestrian present at kerb divided in age groups. Mean no. of cars passing, max. no. of cars passing and share cars giving way

ALL INTERSECTIONS		No car give way to the pedestrian at the kerb				Any car giver way to the pedestrian at the kerb						All encounters at the kerb				
period	age (years)	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing		Totalt no. of persons	No. of persons given way	Total no. of cars passing	mean no. of cars passing		*share cars that give way (%)*	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing		*share cars that give way (%)*
1	< 6.	19	27	1,4		5	3	5			*38*	24	32	1,3		*9*
	6	0	0			1	1	2	2,0		*33*	1	2	2,0		*33*
	7	11	23	2,1		1	0	0				12	23	1,9		*0*
	8	7	5	0,7		2	2	0	0,0		*100*	9	5	0,6		*29*
	9	19	15	0,8		7	4	9	2,3		*31*	26	24	0,9		*14*
	10	9	13	1,4		5	1	4	4,0		*20*	14	17	1,2		*6*
	11	7	7	1,0		1	1	3	3,0		*25*	8	10	1,3		*9*
	12	19	14	0,7		2	2	2	1,0		*50*	21	16	0,8		*11*
	13-19	61	82	1,3		10	10	6	0,6		*63*	71	88	1,2		*10*
	20-64	256	298	1,2		50	31	44	1,4		*41*	306	342	1,1		*8*
	65-75	62	84	1,4		14	8	10	1,3		*44*	76	94	1,2		*8*
	75-85	12	6	0,5		3	3	7	2,3		*30*	15	13	0,9		*19*
	< 85.	1	1	1,0		1	1	3	3,0		*25*	2	4	2,0		*20*
	unknown	0	0			0	0	0				0	0			
1 Total		483	575	1,2		102	67	95	1,4		*41*	585	670	1,1		*9*
2	< 6.	14	9	0,6		13	8	4	0,5		*67*	27	13	0,5		*38*
	6	0	0			2	1	0	0,0		*100*	2	0	0,0		*100*
	7	5	1	0,2		11	5	0	0,0		*100*	16	1	0,1		*83*
	8	10	17	1,7		9	5	2	0,4		*71*	19	19	1,0		*21*
	9	18	11	0,6		22	13	3	0,2		*81*	40	14	0,4		*48*
	10	15	3	0,2		21	15	8	0,5		*65*	36	11	0,3		*58*
	11	3	1	0,3		6	5	0	0,0		*100*	9	1	0,1		*83*
	12	11	7	0,6		14	10	0	0,0		*100*	25	7	0,3		*59*
	13-19	52	42	0,8		55	40	10	0,3		*80*	107	52	0,5		*43*
	20-64	109	92	0,8		109	72	30	0,4		*71*	218	122	0,6		*37*
	65-75	22	16	0,7		13	8	3	0,4		*73*	35	19	0,5		*30*
	75-85	1	0	0,0		2	2	2	1,0		*50*	3	2	0,7		*50*
	< 85.	0	0			0	0	0				0	0			
	unknown	0	0			2	2	1	0,5		*67*	2	1	0,5		*67*
2 Total		260	199	0,8		279	186	63	0,3		*75*	539	262	0,5		*42*
3	< 6.	25	15	0,6		23	18	17	0,9		*51*	48	32	0,7		*36*
	6	0	0			0	0	0				0	0			
	7	10	4	0,4		13	7	1	0,1		*88*	23	5	0,2		*58*
	8	16	13	0,8		41	24	8	0,3		*75*	57	21	0,4		*53*
	9	23	11	0,5		33	21	4	0,2		*84*	56	15	0,3		*58*
	10	11	11	1,0		25	15	0	0,0		*100*	36	11	0,3		*58*
	11	6	2	0,3		15	10	0	0,0		*100*	21	2	0,1		*83*
	12	5	1	0,2		12	5	2	0,4		*71*	17	3	0,2		*63*
	13-19	46	19	0,4		78	54	13	0,2		*81*	124	32	0,3		*63*
	20-64	124	79	0,6		166	118	58	0,5		*67*	290	137	0,5		*46*
	65-75	28	36	1,3		22	17	23	1,4		*43*	50	59	1,2		*22*
	75-85	5	4	0,8		7	5	4	0,8		*56*	12	8	0,7		*38*
	< 85.	0	0			0	0	0				0	0			
	unknown	3	2	0,7		0	0	0				3	2	0,7		*0*
3 Total		302	197	0,7		435	294	130	0,4		*69*	737	327	0,4		*47*
Total		1045	971	0,9		816	547	288	0,5		*66*	1861	1259	0,7		*30*

Cars passing when pedestrian present at kerb divided in age groups. Mean no. of cars passing, max. no. of cars passing and share cars giving way

HULTA		No car give way to the pedestrian at the kerb				Any car giver way to the pedestrian at the kerb						All encounters at the kerb				**Appendix P:7**
period	age (years)	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	Totalt no. of persons	No. of persons given way	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	*share cars that give way (%)*	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	*share cars that give way (%)*
1	< 6.	8	10	1,3	5	2	2	2	1,0	1	*50*	10	12	1,2	5	*14*
	6	0	0			0	0	0				0	0			
	7	5	15	3,0	7	0	0	0				5	15	3,0	7	*0*
	8	5	3	0,6	2	0	0	0				5	3	0,6	2	*0*
	9	4	7	1,8	5	0	0	0				4	7	1,8	5	*0*
	10	2	5	2,5	3	0	0	0				2	5	2,5	3	*0*
	11	1	2	2,0	2	0	0	0				1	2	2,0	2	*0*
	12	1	1	1,0	1	1	1	0	0,0	0	*100*	2	1	0,5	1	*50*
	13-19	33	57	1,7	8	4	4	1	0,3	1	*80*	37	58	1,6	8	*6*
	20-64	85	159	1,9	2	12	12	30	2,5	6	*29*	97	189	1,9	6	*6*
	65-75	21	41	2,0	5	2	2	2	1,0	1	*50*	23	43	1,9	5	*4*
	75-85	1	0	0,0	1	1	1	2	2,0	2	*33*	2	2	1,0	2	*33*
	< 85.	0	0			0	0	0				0	0			
	unknown	0	0			0	0	0				0	0			
1 Total		166	300	1,8	8	22	22	37	1,7	6	*37*	188	337	1,8	8	*6*
2	< 6.	7	6	0,9	2	5	3	2	0,7	2	*60*	12	8	0,7	2	*27*
	6		0					0				0	0			
	7	2	1	0,5	1	1	1	0	0,0	0	*100*	3	1	0,3	1	*50*
	8	3	4	1,3	4	3	3	1	0,3	1	*75*	6	5	0,8	4	*38*
	9	3	1	0,3	1	2	1	1	1,0	1	*50*	5	2	0,4	1	*33*
	10	1	0	0,0		6	5	4	0,8	1	*56*	7	4	0,6	1	*56*
	11		0					0				0	0			
	12	2	2	1,0	1	1	1	0	0,0	0	*100*	3	2	0,7	1	*33*
	13-19	35	30	0,9	3	27	19	9	0,5	3	*68*	62	39	0,6	3	*33*
	20-64	68	73	1,1	6	60	47	21	0,4	2	*69*	128	94	0,7	6	*33*
	65-75	14	9	0,6	4	7	5	2	0,4	1	*71*	21	11	0,5	4	*31*
	75-85		0			1	1	2	2,0	2	*33*	1	2	2,0	2	*33*
	< 85.		0					0				0	0			
	unknown		0			1	1	1	1,0	1	*50*	1	1	1,0	1	*50*
2 Total		135	126	0,9	6	114	87	43	0,5	3	*67*	249	169	0,7	6	*34*
3	< 6.	6	3	0,5	2	7	7	5	0,7	1	*58*	13	8	0,6	2	*47*
	6	0	0					0				0	0			
	7	2	2	1,0	1	4	3	1	0,3	1	*75*	6	3	0,5	1	*50*
	8	4	3	0,8	1	7	7	1	0,1	1	*88*	11	4	0,4	1	*64*
	9	1	0	0,0	0	3	3	1	0,3	1	*75*	4	1	0,3	1	*75*
	10	0	0			0	0	0				0	0			
	11	0	0			0	0	0				0	0			
	12	0	0			0	0	0				0	0			
	13-19	23	9	0,4	2	42	32	10	0,3	1	*76*	65	19	0,3	2	*63*
	20-64	35	22	0,6	2	51	47	21	0,4	3	*69*	86	43	0,5	3	*52*
	65-75	4	12	3,0	5	8	6	10	1,7	6	*38*	12	22	1,8	6	*21*
	75-85	0	0					0				0	0			
	< 85.	0	0			0	0	0				0	0			
	unknown	2	2	1,0	1	0	0	0				2	2	1,0	1	*0*
3 Total		77	53	0,7	5	122	105	49	0,5	6	*68*	199	102	0,5	6	*51*
Total		378	479	1,3	8	258	214	129	0,6	6	*62*	636	608	1,0	8	*26*

Cars passing when pedestrian present at kerb divided in age groups. Mean no. of cars passing, max. no. of cars passing and share cars giving way

SJÖBO		No car give way to the pedestrian at the kerb				Any car giver way to the pedestrian at the kerb						All encounters at the kerb				**Appendix P:8**
period	age (years)	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	Totalt no. of persons	No. of persons given way	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	*share cars that give way (%)*	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	*share cars that give way (%)*
1	< 6.	11	17	1,5	4	3	1	3	3,0	3	*25*	14	20	1,4	4	*5*
	6	0	0			1	1	2	2,0	2	*33*	1	2	2,0	2	*33*
	7	6	8	1,3	2	1	0	0	0,0			7	8	1,1	2	*0*
	8	2	2	1,0	1	2	2	0	0,0	0	*100*	4	2	0,5	1	*50*
	9	15	8	0,5	2	7	4	9	2,3	3	*31*	22	17	0,8	3	*19*
	10	7	8	1,1	3	5	1	4	4,0	3	*20*	12	12	1,0	3	*8*
	11	6	5	0,8	3	1	1	3	3,0	3	*25*	7	8	1,1	3	*11*
	12	18	13	0,7	2	1	1	2	2,0	2	*33*	19	15	0,8	2	*6*
	13-19	28	25	0,9	4	6	6	5	0,8	2	*55*	34	30	0,9	4	*17*
	20-64	171	139	0,8	5	38	19	14	0,7	2	*58*	209	153	0,7	5	*11*
	65-75	41	43	1,0	4	12	6	8	1,3	3	*43*	53	51	1,0	4	*11*
	75-85	11	6	0,5	2	2	2	5	2,5	3	*29*	13	11	0,8	3	*15*
	< 85.	1	1	1,0	1	1	1	3	3,0	3	*25*	2	4	2,0	3	*20*
	unknown	0	0			0	0	0				0	0			
1 Total		317	275	0,9	5	80	45	58	1,3	3	*44*	397	333	0,8	5	*12*
2	< 6.															
	6															
	7															
	8															
	9															
	10															
	11															
	12															
	13-19															
	20-64															
	65-75															
	75-85															
	< 85.															
	unknown															
2 Total																
3	< 6.	13	8	0,6	2	8	6	12	2,0	5	*33*	21	20	1,0	5	*23*
	6	0	0			0		0				0	0			
	7	5	2	0,4	2	0		0				5	2	0,4	2	*0*
	8	5	5	1,0	2	3	3	0	0,0	0	*100*	8	5	0,6	2	*38*
	9	6	4	0,7	1	3	2	0	0,0	0	*100*	9	4	0,4	1	*33*
	10	3	5	1,7	3	0		0				3	5	1,7	3	*0*
	11	3	2	0,7	1	4	4	0	0,0	0	*100*	7	2	0,3	1	*67*
	12	3	1	0,3	2	0		0				3	1	0,3	2	*0*
	13-19	13	5	0,4	1	10	8	0	0,0	0	*100*	23	5	0,2	1	*62*
	20-64	67	47	0,7	4	43	36	26	0,7	5	*58*	110	73	0,7	5	*33*
	65-75	21	24	1,1	9	6	6	12	2,0	5	*33*	27	36	1,3	9	*14*
	75-85	3	4	1,3	3	4	4	4	1,0	3	*50*	7	8	1,1	3	*33*
	< 85.	0	0			0	0	0				0	0			
	unknown	0	0			0	0	0				0	0			
3 Total		142	107	0,8	9	81	69	54	0,8	5	*56*	223	161	0,7	9	*30*
Total		459	382	0,8	9	161	114	112	1,0	5	*50*	620	494	0,8	9	*19*

Cars passing when pedestrian present at kerb divided in age groups. Mean no. of cars passing, max. no. of cars passing and share cars giving way

TRANDERED UPPER		No car give way to the pedestrian at the kerb				Any car giver way to the pedestrian at the kerb						All encounters at the kerb				
INTERSECTION		Totalt no. of	Total no. of	mean no. of	max. no. of	Totalt no. of	No. of persons	Total no. of	mean no. of	max. no. of	*share cars that*	Totalt no. of	Total no. of	mean no. of	max. no. of	*share cars that*
period	age (years)	persons	cars passing	cars passing	cars passing	persons	given way	cars passing	cars passing	cars passing	*give way (%)*	persons	cars passing	cars passing	cars passing	*give way (%)*
1	< 6.															
	6															
	7															
	8															
	9															
	10															
	11															
	12															
	13-19															
	20-64															
	65-75															
	75-85															
	< 85.															
	unknown															
1 Total																
2	< 6.	7	3	0,4	1	5	4	1	0,3	1	*80*	12	4	0,3	1	*50*
	6	0	0			0	0	0				0	0			
	7	1	0	0,0	0	8	3	0	0,0	0	*100*	9	0	0,0	0	*100*
	8	2	3	1,5	3	3	2	0	0,0	0	*100*	5	3	0,6	3	*40*
	9	9	5	0,6	4	11	6	1	0,2	1	*86*	20	6	0,3	4	*50*
	10	6	0	0,0	0			0		0		6	0	0,0	0	
	11	1	1	1,0	1	1	1	0	0,0	0	*100*	2	1	0,5	1	*50*
	12	4	5	1,3	4	5	4	0	0,0		*100*	9	5	0,6	4	*44*
	13-19	3	0	0,0	0	9	4	1	0,3	1	*80*	12	1	0,1	1	*80*
	20-64	17	8	0,5	4	21	11	4	0,4	2	*73*	38	12	0,3	4	*48*
	65-75	4	4	1,0	0	1	0	0				5	4	0,8	0	*0*
	75-85	0	0			0	0	0				0	0			
	< 85.	0	0					0				0	0			
	unknown	0	0			1	1	0	0,0	0	*100*	1	0	0,0	0	*100*
2 Total		54	29	0,5	4	65	36	7	0,2	2	*84*	119	36	0,3	4	*50*
3	< 6.	1	0	0,0	0	6	4	0	0,0	0	*100*	7	0	0,0	0	*100*
	6	0	0			0	0	0				0	0			
	7	2	0	0,0	0	7	3	0	0,0	0	*100*	9	0	0,0	0	*100*
	8	3	1	0,3	1	22	7	2	0,3	1	*78*	25	3	0,1	1	*70*
	9	9	5	0,6	3	18	8	2	0,3	1	*80*	27	7	0,3	3	*53*
	10	2	0	0,0	0	13	11	0	0,0	0	*100*	15	0	0,0	0	*100*
	11	1	0	0,0	0	5	5	0	0,0	0	*100*	6	0	0,0	0	*100*
	12	2	0	0,0	0	7	3	0	0,0	0	*100*	9	0	0,0	0	*100*
	13-19	1	0	0,0	0	9	6	0	0,0	0	*100*	10	0	0,0	0	*100*
	20-64	5	0	0,0	0	27	14	0	0,0	0	*100*	32	0	0,0	0	*100*
	65-75	0	0			0	0	0				0	0			
	75-85	0	0			0	0	0				0	0			
	< 85.	0	0			0	0	0				0	0			
	unknown	0	0			0	0	0				0	0			
3 Total		26	6	0,2	3	114	61	4	0,1	1	*94*	140	10	0,1	3	*86*
Total		80	35	0,4	4	179	97	11	0,1	2	*90*	259	46	0,2	4	*68*

Cars passing when pedestrian present at kerb divided in age groups. Mean no. of cars passing, max. no. of cars passing and share cars giving way

TRANDERED LOWER INTERSECTION		No car give way to the pedestrian at the kerb				Any car giver way to the pedestrian at the kerb						All encounters at the kerb				
period	age (years)	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	Totalt no. of persons	No. of persons given way	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	*share cars that give way (%)*	Totalt no. of persons	Total no. of cars passing	mean no. of cars passing	max. no. of cars passing	*share cars that give way (%)*
1	< 6.															
	6															
	7															
	8															
	9															
	10															
	11															
	12															
	13-19															
	20-64															
	65-75															
	75-85															
	< 85.															
	unknown															
1 Total																
2	< 6.	0	0			3	1	1	1,0	1	*50*	3	1	0,3	1	*50*
	6	0	0			2	1	0	0,0	0	*100*	2	0	0,0	0	*100*
	7	2	0	0,0	0	2	1	0	0,0	0	*100*	4	0	0,0	0	*100*
	8	5	10	2,0	6	3		1		1	*0*	8	11	1,4	6	*0*
	9	6	5	0,8	2	9	6	1	0,2	1	*86*	15	6	0,4	2	*50*
	10	8	3	0,4	1	15	10	4	0,4	1	*71*	23	7	0,3	1	*59*
	11	2	0	0,0	0	5	4	0	0,0	0	*100*	7	0	0,0	0	*100*
	12	5	0	0,0	0	8	5	0	0,0	0	*100*	13	0	0,0	0	*100*
	13-19	14	12	0,9	4	19	17	0	0,0	0	*100*	33	12	0,4	4	*59*
	20-64	24	11	0,5	3	28	14	5	0,4	2	*74*	52	16	0,3	3	*47*
	65-75	4	3	0,8	3	5	3	1	0,3	1	*75*	9	4	0,4	3	*43*
	75-85	1	0	0,0	0	1	1	0	0,0	0	*100*	2	0	0,0	0	*100*
	< 85.	0	0			0	0	0				0	0			
	unknown	0	0			0	0	0				0	0			
2 Total		71	44	0,6	6	100	63	13	0,2	2	*83*	171	57	0,3	6	*53*
3	< 6.	5	4	0,8	2	2	1	0	0,0	0	*100*	7	4	0,6	2	*20*
	6	0	0			0	0	0				0	0			
	7	1	0	0,0	0	2	1	0	0,0	0	*100*	3	0	0,0	0	*100*
	8	4	4	1,0	1	9	7	5	0,7	2	*58*	13	9	0,7	2	*44*
	9	7	2	0,3	2	9	8	1	0,1	1	*89*	16	3	0,2	2	*73*
	10	6	6	1,0	2	12	4	0	0,0	0	*100*	18	6	0,3	2	*40*
	11	2	0	0,0	0	6	1	0	0,0	0	*100*	8	0	0,0	0	*100*
	12	0	0			5	2	2	1,0	0	*50*	5	2	0,4	0	*50*
	13-19	9	5	0,6	1	17	8	3	0,4	1	*73*	26	8	0,3	1	*50*
	20-64	17	10	0,6	2	45	21	11	0,5	2	*66*	62	21	0,3	2	*50*
	65-75	3	0	0,0	0	8	5	1	0,2	1	*83*	11	1	0,1	1	*83*
	75-85	2	0	0,0	0	3	1	0	0,0	0	*100*	5	0	0,0	0	*100*
	< 85.	0	0			0	0	0				0	0			
	unknown	1	0	0,0	0	0	0	0				1	0	0,0	0	
3 Total		57	31	0,5	2	118	59	23	0,4	2	*72*	175	54	0,3	2	*52*
Total		128	75	0,6	6	218	122	36	0,3	2	*77*	346	111	0,3	6	*52*

Appendix Q:1

HIGH SEVERITY SITUATIONS BEFORE RECONSTRUCTION

Before reconstruction Pedestrians	Interaction no.	Expert quest. cut no.	Date	Time	TO-value	Aversive action	Vehicle speed (km/h)	Vehicle distance (m)	vulnerable road user speed (km/h)	vulnerable road user distance (m)	Security level	Comments
HULTA	A1		19990506	73813		vehicle						aversive action, not collision course
	A2		19990506	75201		pedestr.						aversive action, not collision course
	A3	1	19990504	143935								
			19990504	143935								
			19990504	143935	4	pedestr.	-	-	3	4	19	woman with pram stops when being on the first lane, car on second alne do not give way
			19990504	143935								
	A4		19990505	135946		pedestr.						not collision course
			19990505	135946								
			19990505	135946								
SJÖBO, zebra crossing	A5		19990420	150110	1,7	pedestr.	-	-	3	1,5	23	severe conflict
at high buliding	A6	4	19990420	151920	0,5	car	30	4	-	-	27	severe conflict
SJÖBO	A7		19990420	154447	not possible to examine due to camera angle							non severe conflict
zeebra crossing at	A8		19990420	161130	2, 8 - 2,9	pedestr.	30	-	5	4	21	colission course, non severe conflict
school	A9		19990421	153101	2,4	pedestr.	30	-	7	5	22	colission course, non severe conflict
			19990421	153101								

Before reconstruction Bike	Interaction no.	Expert quest. cut no.	Date	time	TO-value	Aversive action	Vehicle speed (km/h)	Vehicle distance (m)	vulnerable road user speed (km/h)	vulnerable road user distance (m)	Security level	Comments
HULTA	A10		19990504	83259								not collision cource
	A11	6	19990504	150732	4,0 - 5,0	car	15 - 20	23	-	-	17	
	A12		19990506	74913		bike						not collision cource
	A13		19990506	75037		no						not collision course, no aversive action
	A14		19990506	75200		bike						not collision cource

Appendix Q:2

HIGH SEVERITY SITUATIONS BEFORE RECONSTRUCTION

Before reconstruction Pedestrians	Interaction no.	Expert quest. cut no.	Vulnerable road user N; from the north S; from the south	Gender	Age	Total no. of persons in group	Gender of olde in group	Age of oldest in group	No. of cars passing when vulnerable road user is walking or standing						Encounter
									First lane		Second lane				
									before kerb	at kerb	before kerb	at kerb	before refuge	at refuge	
HULTA	A1		walking S	man	youth	1	man	youth	0	1	0	0	-	-	no car give way
	A2		walking S	woman	adult	1	woman	adult	1	2	0	2	-	-	no car give way
	A3	1	walking N	unknown	< 6.	4	woman	adult	0	0	0	5	-	-	no car give way
			walking N	man	9	4	woman	adult	0	0	0	5	-	-	no car give way
			walking pram N	woman	adult	4	woman	adult	0	0	0	5	-	-	no car give way
			walking N	woman	adult	4	woman	adult	0	0	0	5	-	-	no car give way
	A4		walking w wheelchai	woman	adult	3	woman	adult	1	2	0	0	-	-	any car give way
			wheelchair S	man	adult	3	woman	adult	1	2	0	0	-	-	any car give way
			walking S	woman	adult	3	woman	adult	1	2	0	0	-	-	any car give way
SJÖBO, zebra crossing	A5		walking S	man	elderly	1	man	elderly	0	1	1	0	-	-	no car give way
at high buliding	A6	4	walking N	woman	adult	1	woman	adult	2	2	0	0	-	-	any car give way
SJÖBO	A7		walking S	man	adult	1	man	adult	1	0	0	0	-	-	any car give way
zeebra crossing at	A8		walking S	man	adult	1	man	adult	0	0	0	0	-	-	any car give way
school	A9		walking S	woman	youth	2	woman	youth	0	0	0	1	-	-	no car give way
			walking S	woman	youth	2	woman	youth	0	0	0	1	-	-	no car give way

Before reconstruction Bike	Interaction no.	Expert quest. cut no.	Vulnerable road user N; from the north S; from the south	Gender	Age	Total no. of persons in group	Gender of olde in group	Age of oldest in group	No. of cars passing when vulnerable road user is walking or standing						Encounter
									First lane		Second lane				
									before kerb	at kerb	before kerb	at kerb	before refuge	at refuge	
HULTA	A10		bike S	man	adult	1	man	adult	0	1	0	0	-	-	no car give way
	A11	6	bike S	man	8	1	man	8	0	0	0	0	-	-	any car give way
	A12		bike S	woman	adult	1	woman	adult	0	1	0	0	-	-	no car give way
	A13		bike S	man	youth	1	man	youth	0	1	0	1	-	-	no car give way
	A14		bike S	woman	youth	1	woman	youth	1	2	0	2	-	-	no car give way

Appendix Q:3

HIGH SEVERITY SITUATIONS BEFORE RECONSTRUCTION

Before reconstruction Pedestrians	Interaction no.	Expert quest. cut no.	Vulnerable road user		Usage of surface	straigt or slant across	Tempo				Look around				
			stops at kerb	stops at refuge			Before crossing	Crossing 1.st lane	crossing 2.nd lane	After crossing	before kerb	at kerb	at 1.st lane	at refuge	at 2.nd lane
HULTA	A1		no		zebra cros.	slant across	normal	normal	normal	normal	right	both directions	left		no
	A2		yes		next to zebr.	slant across	normal	slowly	normal	normal	both directions	both directions	right		no
	A3	1	yes		zebra cros.	straigth	normal	running	running	normal	right	right	right		right
			yes		zebra cros.	straigth	normal	normal	normal	normal	no	both directions	both directions		both directions
			yes		zebra cros.	straigth	normal	normal	normal	normal	no	both directions	right		right
			yes		zebra cros.	straigth	normal	normal	normal	normal	no	both directions	right		right
	A4		no		zebra cros.	straigth	slowly	slowly	slowly	slowly	no	both directions	right		right
			no		zebra cros.	straigth	slowly	slowly	slowly	slowly	unknown	left	no		no
			no		zebra cros.	straigth	slowly	slowly	slowly	slowly	no	left	no		no
SJÖBO, zebra crossing	A5		no		zebra cros.	slant across	normal	normal	normal	normal	no	no	no		no
at high buliding	A6	4	yes		zebra cros.	straigth	slowly	normal	normal	normal	right	both directions	no		no
SJÖBO	A7		no		zebra cros.	straigth	slowly	slowly	slowly	slowly	left	both directions	both directions		both directions
zeebra crossing at	A8		no		closer to inters.	straigth	normal	fast	fast	normal	right	both directions	right		no
school	A9		no		zebra cros.	straigth	running	normal	normal	varying	right	both directions	right		no
			no		zebra cros.	straigth	running	normal	normal	varying	right	both directions	right		no

Before reconstruction Bike	Interaction no.	Expert quest. cut no.	Vulnerable road user		Usage of surface	straigt or slant across	Tempo				Look around				
			stops at kerb	stops at refuge			Before crossing	Crossing 1.st lane	crossing 2.nd lane	After crossing	before kerb	at kerb	at 1.st lane	at refuge	at 2.nd lane
HULTA	A10		yes		zebra cros.	straigth	normal	normal	normal	normal	both directions	both directions	no		no
	A11	6	no		zebra cros.	straigth	normal	fast	fast	normal	right	right	no		no
	A12		no		zebra cros.	straigth	normal	normal	normal	normal	no	both directions	no		no
	A13		yes		outside zebra cr.	straigth	normal	normal	normal	normal	right	both directions	no		no
	A14		yes		next to zebr.	slant across	normal	normal	normal	normal	both directions	both directions	no		no

Appendix Q:4

HIGH SEVERITY SITUATIONS BEFORE RECONSTRUCTION

Before reconstruction Pedestrians	Interaction no.	Expert quest. cut no.	Waiting time (s) at kerb	at refuge	Accepted time gap (s) between two cars	starts to walk and second car	cars in different directions	Time to passage	PET	Overtaking	Car driver give way	Car no. stops	Vulnerable road user at	Vehicle at	Traffic situation meeting first vehicle	Type of vehicle
HULTA	A1		0		L	L	L	7		no	no				leaving left	lorry
	A2		2		L	L	L	8		no	no				leaving left	car
	A3	1	20		L	L	L	4		no	no				leaving right	car
			20		L	L	L	6		no	no				leaving right	car
			20		L	L	L	6		no	no				leaving right	car
			20		L	L	L	6		no	no				leaving right	car
	A4		7		L	L	L	9		no	yes	3	kerb	1st lane	leaving left	car
			7		L	L	L	9		no	yes	3	kerb	1st lane	leaving left	car
			9		L	L	L	9	1	no	yes	3	kerb	1st lane	leaving left	car
SJÖBO, zebra crossing	A5		0		L	L	L	10		no	no				incoming right	car
at high buliding	A6	4	4					8		no	yes	5	1st lane	1st lane	incoming left	car
SJÖBO	A7		0		L	7		8		no	yes	1	2nd lane	2nd lane	incoming left	buss
zeebra crossing at	A8		0		L	5		5	1	no	no				leaving right	car
school	A9		0			L		6	L	no	no				leaving right	car
			0			L		6	L	no	no				leaving right	car

Before reconstruction Bike	Interaction no.	Expert quest. cut no.	waiting time (s) at kerb	at refuge	Accepted time gap (s) between two cars	starts to walk and second car	cars in different directions	Time to passage	PET	Overtaking	Car driver give way	Car no. stops	Vulnerable road user at	Vehicle at	Traffic situation meeting first vehicle	Type of vehicle
HULTA	A10		1		L	L		3			no				leaving left	truck
	A11	6	0					2		no	yes	1	1st lane	2nd lane	leaving right	car
	A12		0		L	L	L	4		no	no				incoming left	car
	A13		2		L	L	L	3		no	no				incoming right	car
	A14		10		L	L	L	5		no	no				leaving left	car

Appendix Q:5

HIGH SEVERITY SITUATIONS BEFORE RECONSTRUCTION

Before reconstruction Pedestrians	Interaction no.	Expert quest. cut no.	Vehicle from the left		Vehicle from the right		Comments
			present	give way	present	give way	
HULTA	A1		yes, close	no	no car	no car	
	A2		yes, not close	no	yes, close	no	
	A3	1	no car	no car	yes, close	no	
			no car	no car	yes, close	no	
			no car	no car	yes, close	no	
			no car	no car	yes, close	no	
	A4		yes, not close	2nd or later stops	yes, close	no	
			yes, not close	2nd or later stops	yes, close	no	mentally retarded?
			yes, not close	2nd or later stops	yes, close	no	mentally retarded?
SJÖBO, zebra crossing	A5		yes, not close	no	yes, close	no	
at high buliding	A6	4	yes, close	2nd or later slw do	no car	no car	
SJÖBO	A7		yes, not close	no	yes, close	1st stops	
zeebra crossing at	A8		no car	no car	yes, close	no	
school	A9		no car	no	yes, close	no	
			no car	no	yes, close	no	

Before reconstruction Bike	Interaction no.	Expert quest. cut no.	Vehicle from the left		Vehicle from the right		Comments
			present	give way	present	give way	
HULTA	A10		yes, close	no	no car	no car	
	A11	6	no car	no car	yes, close	1st slow down	
	A12		yes, close	no	no car	no car	
	A13		yes, close	no	yes, not close	no	
	A14		yes, close	no	yes, not close	no	

Appendix Q:6

HIGH SEVERITY SITUATIONS AFTER RECONSTRUCTION

After reconstruction Pedestrians	Interaction no.	Expert quest. cut no.	Date	Time	TO-value	Aversive action	Vehicle speed (km/h)	Vehicle distance (m)	vulnerable road user speed (km/h)	vulnerable road user distance (m)	Security level	Comments
HULTA	B1		20000321	133150								collision cource, non severe conflict, car brakes in to picture, not interestion for film
	B2		20000321	135705	2,3 - 3,1	car	30 - 40	26	-	-	23 - 24	collision cource, non severe conflict
	B3		20000321	140340	1,4	car	53	20	-	-	27	collision course, severe conflict, seems to be less severe
			20000321	140340								
	B4		20000321	140547	2,0 - 2,3 and 0,84	car and pedestr.	35 - 40	22	4,3	1	24 and 25	the cars aversive action gives security level 24, the pedestrians aversive action gives security level 25
			20000321	140547								
	B5		20000321	143058	1,28 and 0,83	car and pedestr.	14	5	4,5	1	25 and 25	the car's aversive action gives security level 25, the pedestrian's aversive action gives security level 25
	B6		20000321	145200								not collision cource
			20000321	145200								
	B7		20000321	153615	1,9 - 2,1	car	45 - 50	26	-	-	25	collision corce, conflict, not interseting for film
			20000321	153615								
TRANDERED	B8		20000322	132530	1,6	car	40	18	-	-	25	collisipon course, close to severe conflict, good example
UPPER	B9		20000322	133044								not collision course
	B10		20000322	154633	2,4	car	30	20	4	1,5	23	collision course, severe conflict, seems to be more severe
			20000322	154633								
	B11		20000322	160016								collision couce but non severe conflict, car braking in to picture, TA can not be measured
			20000322	160016								
	B12		20000322	161651	1,2	car	23	7	-	-	25	collision course, non severe conflict
			20000322	161651								
TRANDERED	B13		20000323	80208	1,5	pedestr.	16	-	5	2	24	collision course, non severe conflict, good example
LOWER			20000323	80208								
	B14	12	20000323	135106								not collision course, good example
			20000323	135106								
	B15	13	20000323	135825	1,2	car	26	9	-	-	25-26	collision course, close to severe conflict, good example
	B16	14	20000323	135825								not collision course
	B17		20000323	140025								not collision course

After reconstruction Bike	Interaction no.	Expert quest. cut no.	Date	Time	TO-value	Aversive action	Vehicle speed (km/h)	Vehicle distance (m)	vulnerable road user speed (km/h)	vulnerable road user distance (m)	Security level	Comments
HULTA	B18		20000320	141640	1,5	car	37	15	-	-	26	severe confilct from the car drivers point of view, difficult to see if the cyclist is breaking

Appendix Q:7

HIGH SEVERITY SITUATIONS AFTER RECONSTRUCTION

After reconstruction Pedestrians	Interaction no.	Expert quest. cut no.	Vulnerable road user N; from the north S; from the south	Gender	Age	Total no. of persons in group	Gender of olde in group	Age of oldest in group	No. of cars passing when vulnerable road user is walking or standing						Encounter
									First lane		Second lane				
									before kerb	at kerb	before kerb	at kerb	before refuge	at refuge	
HULTA	B1		walking S	man	adult	1	man	adult	0	0	0	0	0		no car give way
	B2		walking S	man	adult	1	man	adult	1	0	1	0	0	0	any car give way
	B3		walking N	man	youth	2	man	youth	0	0	0	0	0	0	any car give way
			walking N	man	youth	2	man	youth	0	0	0	0	0	0	any car give way
	B4		walking N	man	adult	2	man	adult	0	0	0	2	0	1	any car give way
			walking N	woman	adult	2	man	adult	0	0	0	2	0	1	any car give way
	B5		walking N	man	adult	1	man	adult	1	0	0	0	1	0	any car give way
	B6		walking S	man	youth	2	man	youth	0	1	0	1	0	0	no car give way
			walking S	man	youth	2	man	youth	0	1	0	1	0	0	no car give way
	B7		walking N	woman	youth	2	woman	youth	0	0	0	1	0	1	no car give way
			walking N	woman	youth	2	woman	youth	0	0	0	1	0	1	no car give way
TRANDERED	B8		walking S	unknown	7	1	unknown	7	0	0	-	-	1	0	any car give way
UPPER	B9		walking N	man	youth	1	man	youth	1	0	-	-	0	1	no car give way
	B10		walking S	man	youth	2	man	youth	0	0	-	-	1	0	any car give way
			walking S	man	youth	2	man	youth	0	0	-	-	1	0	any car give way
	B11		rollerblades S	man	9	2	man	9	1	0	-	-	0	1	any car give way
			rollerblades S	man	9	2	man	9	1	0	-	-	0	1	any car give way
	B12		walking w bike S	man	adult	2	man	adult	0	1	-	-	0	0	any car give way
			walking w bike S	unknown	< 6.	2	man	adult	0	1	-	-	0	0	any car give way
TRANDERED	B13		walking S	woman	10	2	woman	10	0	1	-	-	0	0	no car give way
LOWER			walking S	woman	9	2	woman	10	0	1	-	-	0	0	no car give way
	B14	12	walking S	man	10	1	man	10	0	0	-	-	0	0	any car give way
	B15	13	walking N	woman	9	1	woman	9	0	0	-	-	0	0	any car give way
	B16	14	walking N	woman	9	1	woman	9	0	2	-	-	0	0	no car give way
	B17		walking S	unknown	8	1	unknown	8	0	0	-	-	0	0	any car give way

After reconstruction Bike	Interaction no.	Expert quest. cut no.	Vulnerable road user N; from the north S; from the south	Gender	Age	Total no. of persons in group	Gender of olde in group	Age of oldest in group	No. of cars passing when vulnerable road user is walking or standing						Encounter
									First lane		Second lane				
									before kerb	at kerb	before kerb	at kerb	before refuge	at refuge	
HULTA	B18		bike S	woman	adult	1	woman	adult	0	0	0	0			any car give way

Appendix Q:8

HIGH SEVERITY SITUATIONS AFTER RECONSTRUCTION

After reconstruction Pedestrians	Interaction no.	Expert quest. cut no.	Vulnerable road user		Usage of surface	straigt or slant across	Tempo				Look around				
			stops at kerb	stops at refuge			Before crossing	Crossing 1.st lane	crossing 2.nd lane	After crossing	before kerb	at kerb	at 1.st lane	at refuge	at 2.nd lane
HULTA	B1		no	yes	zebra cros.	straigth	normal	normal	normal	normal	right	both directions	right	right	right
	B2		no	no	zebra cros.	straigth	normal	normal	normal	normal	right	both directions	both directions	right	right
	B3		no	no	zebra cros.	straigth	normal	normal	normal	normal	no	left	left	no	no
			no	no	zebra cros.	straigth	normal	normal	normal	normal	no	left	left	right	no
	B4		no	yes	zebra cros.	straigth	normal	normal	normal	normal	no	both directions	both directions	right	right
			no	yes	zebra cros.	straigth	normal	normal	normal	normal	no	both directions	both directions	right	right
	B5		no	no	zebra cros.	straigth	normal	fast	fast	normal	no	both directions	both directions	right	right
	B6		yes	no	zebra cros.	straigth	normal	normal	normal	normal	both directions	both directions	no	no	no
			yes	no	zebra cros.	straigth	normal	normal	normal	normal	both directions	both directions	no	no	no
	B7		no	no	zebra cros.	straigth	normal	normal	normal	normal	no	both directions	right	right	right
			no	no	zebra cros.	straigth	normal	normal	normal	normal	no	both directions	right	right	right
TRANDERED	B8		yes	yes	zebra cros.	straigth	normal	running	running	normal	unknown	unknown	unknown	unknown	unknown
UPPER	B9		no	no	zebra cros.	straigth	normal	normal	normal	normal	no	no	no	right	no
	B10		no	no	zebra cros.	straigth	normal	running	running	normal	right	no	no	no	no
			no	no	zebra cros.	straigth	normal	running	fast	normal	right	left	no	both direction	no
	B11		no	yes	zebra cros.	straigth	normal	fast	fast	fast	both directions	right	right	right	no
			no	yes	zebra cros.	straigth	normal	fast	fast	fast	both directions	right	right	right	no
	B12		yes	no	zebra cros.	straigth	normal	normal	normal	normal	unknown	both directions	both directions	both direction	both directions
			yes	no	zebra cros.	straigth	normal	normal	normal	normal	unknown	no	both directions	both direction	both directions
TRANDERED	B13		yes	no	zebra cros.	straigth	normal	fast	running	fast	left	left	no	no	right
LOWER			yes	no	zebra cros.	straigth	normal	normal	normal	normal	left	left	no	right	right
	B14	12	no	no	zebra cros.	slant across	running	running	running	running	unknown	no	no	no	no
	B15	13	no	no	closer to inters.	straigth	normal	running	running	running	unknown	unknown	right	right	no
	B16	14	yes	no	zebra cros.	straigth	normal	running	running	normal	unknown	no	no	right	no
	B17		no	yes	zebra cros.	straigth	fast	fast	fast	fast	no	no	no	right	no

After reconstruction Bike	Interaction no.	Expert quest. cut no.	Vulnerable road user		Usage of surface	straigt or slant across	Tempo				Look around				
			stops at kerb	stops at refuge			Before crossing	Crossing 1.st lane	crossing 2.nd lane	After crossing	before kerb	at kerb	at 1.st lane	at refuge	at 2.nd lane
HULTA	B18		no	no	zebra cros.	straigth	normal	normal	normal	normal	left	left	right	no	right

Appendix Q:9

HIGH SEVERITY SITUATIONS AFTER RECONSTRUCTION

After reconstruction Pedestrians	Interaction no.	Expert quest. cut no.	Waiting time (s) at kerb	Waiting time (s) at refuge	Accepted time gap (s) between two cars	Accepted time gap (s) starts to walk and second car	Accepted time gap (s) cars in different directions	Time to passage	PET	Overtaking	Car driver give way: Car driver give way	Car driver give way: Car no. stops	Car driver give way: Vulnerable road user at	Car driver give way: Vehicle at	Traffic situation: meeting first vehicle	Traffic situation: Type of vehicle
HULTA	B1		0	1	L	L		8		no	yes	1	refuge	2nd lane	incoming right	car
	B2		0	0						no	yes	2, 2	1st lane	1st lane, 2nd	leaving left	car
	B3		0	0				5		no	yes	1	kerb	1st lane	incoming left	car
			0	0				5		no	yes	1	kerb	1st lane	incoming left	car
	B4		0	2				7		no	yes	1	kerb	1st lane	incoming left	car
			0	2				8		no	yes	1	kerb	1st lane	incoming left	car
	B5		0	0				5		no	yes	2	1st lane	1st lane	incoming left	car
	B6		4	0	L	L	L	5		no	no				leaving left	car
			4	0	L	L	L	5		no	no				leaving left	car
	B7		0	0				9		no	yes	3	2nd lane	2nd lane	leaving right	car
			0	0				9		no	yes	4	2nd lane	2nd lane	leaving right	car
TRANDERED	B8		0	2				6		no	yes	2	refuge	2nd lane	incoming right	car
UPPER	B9				L	L	L	7		no	no				incoming left	car
	B10		0	0				5		no	yes	1	kerb	1st lane	incoming right	car
			0	0				5		no	yes	1	kerb	1st lane	incoming right	car
	B11		0	2				9		no	yes	2	refuge	2nd lane	leaving left	car
			0	2				9		no	yes	2	refuge	2nd lane	leaving left	car
	B12		4	0				10		no	yes	1	2nd lane	2nd lane	leaving left	car
			4	0				10		no	yes	2	2nd lane	2nd lane	leaving left	car
TRANDERED	B13		2	0	L	L	L	5		no	no				leaving left	car
LOWER			2	0	L	L	L	8		no	no				leaving left	car
	B14	12	0	0				2		no	yes	1	1st lane	1st lane	leaving left	car
	B15	13	0	0				3		no	yes	1	1st lane	1st lane	incoming left	car
	B16	14	4	0	L	L	L	3		no	no				incoming left	car
	B17		0	4				7		no	yes	1	refuge	2nd lane	leaving left	car

After reconstruction Bike	Interaction no.	Expert quest. cut no.	Waiting time (s) at kerb	Waiting time (s) at refuge	Accepted time gap (s) between two cars	Accepted time gap (s) starts to walk and second car	Accepted time gap (s) cars in different directions	Time to passage	PET	Overtaking	Car driver give way: Car driver give way	Car driver give way: Car no. stops	Car driver give way: Vulnerable road user at	Car driver give way: Vehicle at	Traffic situation: meeting first vehicle	Traffic situation: Type of vehicle
HULTA	B18	16	0					5		no	yes	1	refuge	2nd lane	leaving right	car

Appendix Q:10

HIGH SEVERITY SITUATIONS AFTER RECONSTRUCTION

After reconstruction Pedestrians	Interaction no.	Expert quest. cut no.	Vehicle from the left		Vehicle from the right		Comments
			present	give way	present	give way	
HULTA	B1		no car	no car	yes, close	1st stops	
	B2		yes, not close	2nd or later stops	yes, not close	2nd or later stops	
	B3		yes, close	1st slow down	no car	no car	
			yes, close	1st slow down	no car	no car	
	B4		yes, not close	1st stops	yes, close	no	
			yes, not close	1st stops	yes, close	no	
	B5		yes, close	1st slow down	yes, not close	no	
	B6		yes, close	no	yes, not close	no	
			yes, close	no	yes, not close	no	
	B7		no car	no car	yes, close	1st stops	
			no car	no car	yes, close	1st stops	
TRANDERED	B8		no car	no car	yes, close	2nd or later stops	
UPPER	B9		yes, not close	no	yes, close	no	
	B10		yes, close	1st stops	yes, not close	no	
			yes, close	1st stops	yes, not close	no	
	B11		yes, not close	no	yes, close	2nd or later stops	rollerbaldes
			yes, not close	no	yes, close	2nd or later stops	rollerbaldes
	B12		yes, not close	no	yes, close	no	
			yes, not close	no	yes, close	no	
TRANDERED	B13		yes, close	no	no car	no car	
LOWER			yes, close	no	no car	no car	
	B14	12	yes, close	no	no car	no car	
	B15	13	yes, close	1st stops	yes, close	1st stops	
	B16	14	yes, close	no	yes, not close	no	
	B17		yes, close	no	yes, not close	1st slow down	

After reconstruction Bike	Interaction no.	Expert quest. cut no.	Vehicle from the left		Vehicle from the right		Comments
			present	give way	present	give way	
HULTA	B18		no car	no car	yes, close	1st stops	

Appendix Q:11

HIGH SEVERITY SITUATIONS AFTER RECONSTRUCTION AND CODE CHANGE

After reconstruction and code change Pedestrians	Interaction no.	Expert quest. cut no.	Date	Time	TO-value	Aversive action	Vehicle speed (km/h)	Vehicle distance (m)	vulnerable road user speed (km/h)	vulnerable road user distance (m)	Security level	Comments
HULTA	C1		20000509	153400	1,5	car	15	6,5	-	-	24	non severe conflict, seems to be even less severe
	C2		20000510	143420	1,2	car	13	4,5	-	-	25	collision cource and conflict, not interesting in film
TRANDERED	C3		20000510	142019								not collision course
UPPER	C4		20000510	143014								not collision course
TRANDERED LOWER	C5		20000508	162802								not collision course

After reconstruction and code change Bike	Interaction no.	Expert quest. cut no.	Date	Time	TO-value	Aversive action	Vehicle speed (km/h)	Vehicle distance (m)	vulnerable road user speed (km/h)	vulnerable road user distance (m)	Security level	Comments
HULTA	C6		20000508	74525	1	bike	-	-	5,3	1,5	25	non severe conflict, seems to be less severe
	C7		20000509	84846								not collision course, good example
	C8		20000509	142921	1,8 to 2,3	car	15 to 20	10	-	-	23	collision course, non severe confict
			20000509	142921								
SJÖBO	C9		20000509	150457								not collision course when cyclist accelerate long before the intersection, interesting sekvenens

HIGH SEVERITY SITUATIONS AFTER RECONSTRUCTION AND CODE CHANGE

After reconstruction and code change Pedestrians	Interaction no.	Expert quest. cut no.	Vulnerable road user N; from the north S; from the south	Gender	Age	Total no. of persons in group	Gender of olde in group	Age of oldest in group	No. of cars passing when vulnerable road user is walking or standing						Encounter
									First lane		Second lane				
									before kerb	at kerb	before kerb	at kerb	before refuge	at refuge	
HULTA	C1		walking N	man	youth	1	man	youth	1	0	0	0	Före REF	REF	any car give way
	C2		walking N	man	adult	1	man	adult	0	0	0	0	1	0	any car give way
TRANDERED	C3		walking S	man	9	1	man	9	0	0	-	-	0	0	any car give way
UPPER	C4		walking S	man	10	1	man	10	0	0	-	-	0	0	any car give way
TRANDERED LOWER	C5		walking S	man	youth	1	man	youth	1	1	-	-	0	0	no car give way

After reconstruction and code change Bike	Interaction no.	Expert quest. cut no.	Vulnerable road user N; from the north S; from the south	Gender	Age	Total no. of persons in group	Gender of olde in group	Age of oldest in group	No. of cars passing when vulnerable road user is walking or standing						Encounter
									First lane		Second lane				
									before kerb	at kerb	before kerb	at kerb	before refuge	at refuge	
HULTA	C6		bike S	man	youth	2	man	youth	0	1	0	0	0	0	no car give way
	C7		bike S	woman	elderly	1	woman	elderly	0	0	0	1	-	-	any car give way
	C8		bike S	woman	7	2	woman	7	0	0	1	0	-	-	any car give way
			bike S	woman	7	2	woman	7	0	0	1	0	-	-	any car give way
SJÖBO	C9		bike S	man	10	1	man	10	0	0	0	0	-	-	any car give way

Appendix Q:13

HIGH SEVERITY SITUATIONS AFTER RECONSTRUCTION AND CODE CHANGE

After reconstruction and code change Pedestrians	Interaction no.	Expert quest. cut no.	Vulnerable road user		Usage of surface	straigt or slant across	Tempo				Look around				
			stops at kerb	stops at refuge			Before crossing	Crossing 1.st lane	crossing 2.nd lane	After crossing	before kerb	at kerb	at 1.st lane	at refuge	at 2.nd lane
HULTA	C1		yes	no	zebra cros.	straigth	normal	fast	fast	normal	no	both directions	right	right	right
	C2		no	no	zebra cros.	straigth	normal	normal	normal	normal	no	both directions	right	right	right
TRANDERED	C3		no	no	closer to inters.	slant across	running	running	running	running	unknown	unknown	unknown	unknown	unknown
UPPER	C4		no	no	zebra cros.	straigth	fast	running	running	running	right	left	no	no	no
TRANDERED LOWER	C5		no	no	next to zebr.	slant across	normal	normal	normal	normal	right	both directions	right	right	right

After reconstruction and code change Bike	Interaction no.	Expert quest. cut no.	Vulnerable road user		Usage of surface	straigt or slant across	Tempo				Look around				
			stops at kerb	stops at refuge			Before crossing	Crossing 1.st lane	crossing 2.nd lane	After crossing	before kerb	at kerb	at 1.st lane	at refuge	at 2.nd lane
HULTA	C6		yes	no	zebra cros.	straigth	normal	normal	normal	normal	both directions	left	right	no	no
	C7		yes	no	next to zebr.	straigth	slowly	slowly	slowly	slowly	both directions	both directions	no	no	no
	C8		yes	no	zebra cros.	straigth	normal	normal	normal	normal	both directions	both directions	left	no	no
			yes	no	zebra cros.	straigth	normal	normal	normal	normal	right	both directions	no	no	no
SJÖBO	C9		no		zebra cros.	straigth	fast	fast	fast	fast	no	no	no		no

HIGH SEVERITY SITUATIONS AFTER RECONSTRUCTION AND CODE CHANGE

After reconstruction and code change Pedestrians	Interaction no.	Expert quest. cut no.	Waiting time (s) at kerb	Waiting time (s) at refuge	Accepted time gap (s) between two cars	Accepted time gap (s) starts to walk and second car	Accepted time gap (s) cars in different directions	Time to passage	PET	Overtaking	Car driver give way Car driver give way	Car driver give way Car no. stops	Car driver give way Vulnerable road user at	Car driver give way Vehicle at	Traffic situation meeting first vehicle	Traffic situation Type of vehicle
HULTA	C1		0	0				4		no	yes	2, 1	kerb, 1st lane	2	incoming left	car
	C2		0	0				5		no	yes	2	refuge	2nd lane	leaving right	car
TRANDERED	C3		0	0				4		no	noyesA	1	2nd lane	2nd lane	incoming left	car
UPPER	C4		0	0				4		no	yes	1	kerb	1st lane	leaving left	car
TRANDERED LOWER	C5		0	0	L	L	L	11		no	no				leaving left	car

After reconstruction and code change Bike	Interaction no.	Expert quest. cut no.	Waiting time (s) at kerb	Waiting time (s) at refuge	Accepted time gap (s) between two cars	Accepted time gap (s) starts to walk and second car	Accepted time gap (s) cars in different directions	Time to passage	PET	Overtaking	Car driver give way Car driver give way	Car driver give way Car no. stops	Car driver give way Vulnerable road user at	Car driver give way Vehicle at	Traffic situation meeting first vehicle	Traffic situation Type of vehicle
HULTA	C6		2	0	L	L	L	4		no	no				leaving left	car
	C7		2	0				5		no	yes	1	1st lane	1st lane	incoming right	car
	C8		3	0				6		no	yes	1	kerb	1st lane	incoming right	car
			3	0				6		no	yes	1	kerb	1st lane	incoming right	car
SJÖBO	C9		0					2		no	yes				leaving right	car

Appendix Q:15

HIGH SEVERITY SITUATIONS AFTER RECONSTRUCTION AND CODE CHANGE

After reconstruction and code change Pedestrians	Interaction no.	Expert quest. cut no.	Vehicle from the left		Vehicle from the right		Comments
			present	give way	present	give way	
HULTA	C1		yes, not close	2nd or later stops	yes, close	1st stops	
	C2		no car	no car	yes, close	2nd or later stops	
TRANDERED	C3		yes, not close	no	yes, close	unknown	
UPPER	C4		yes, close	1st slow down	no car	no car	
TRANDERED LOWER	C5		no car	no car	yes, close	no	

After reconstruction and code change Bike	Interaction no.	Expert quest. cut no.	Vehicle from the left		Vehicle from the right		Comments
			present	give way	present	give way	
HULTA	C6		yes, close	no	no car	no car	
	C7		yes, close	1st stops	yes, not close	no	
	C8		yes, close	1st stops	yes, not close	no	
			yes, close	1st stops	yes, not close	no	
SJÖBO	C9		no car	no car	yes, close	1st stops	

ALL INTERSECTIONS TOGETHER

Appendix R:1

			Accepted time gap car- car (%)				Accepted time gap pedestrian-car (%)			
Period	age	Total no. pedestrians	5 s or less	6-10 s	> 10 s.	Min. accepted time gap (s)	5 s or less	6-10 s	> 10 s.	Min. accepted time gap (s)
1	<6.	19	*0*	*0*	*100*		*0*	*0*	*100*	
	6-7.	11	*0*	*9*	*91*		*0*	*9*	*91*	
	8-9.	26	*8*	*4*	*88*		*12*	*8*	*81*	
	10-12.	35	*0*	*29*	*71*		*6*	*43*	*51*	
	13-19.	60	*0*	*10*	*90*		*0*	*17*	*83*	
	20-64.	254	*1*	*6*	*93*		*1*	*19*	*80*	
	>64.	75	*0*	*11*	*89*		*0*	*9*	*91*	
	sum	480	*1*	*9*	*90*		*2*	*18*	*81*	
2	<6.	14	*0*	*7*	*93*		*0*	*7*	*93*	
	6-7.	5	*0*	*0*	*100*		*0*	*20*	*80*	
	8-9.	28	*0*	*7*	*93*		*0*	*7*	*93*	
	10-12.	29	*0*	*7*	*93*		*17*	*3*	*79*	
	13-19.	52	*0*	*6*	*94*		*0*	*29*	*71*	
	20-64.	109	*4*	*3*	*94*		*4*	*4*	*93*	
	>64.	23	*0*	*4*	*96*		*0*	*13*	*87*	
	sum	260	*2*	*5*	*94*		*3*	*10*	*86*	
3	<6.	25	*0*	*0*	*100*		*0*	*0*	*100*	
	6-7.	10	*0*	*0*	*100*		*0*	*0*	*100*	
	8-9.	39	*0*	*5*	*95*		*0*	*8*	*92*	
	10-12.	22	*0*	*5*	*95*		*0*	*5*	*95*	
	13-19.	46	*0*	*7*	*93*		*0*	*7*	*93*	
	20-64.	124	*0*	*3*	*97*		*0*	*3*	*97*	
	>64.	33	*0*	*0*	*100*		*0*	*3*	*97*	
	sum	299	*0*	*3*	*97*		*0*	*4*	*96*	

Appendix R:2

HULTA

			Accepted time gap car- car (%)				Accepted time gap pedestrian-car (%)			
Period	age	Total no. pedestrians	5 s or less	6-10 s	> 10 s.	Min. accepted time gap (s)	5 s or less	6-10 s	> 10 s.	Min. accepted time gap (s)
1	<6.	8	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	6-7.	5	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	8-9.	9	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	10-12.	4	*0*	*50*	*50*	6	*0*	*50*	*50*	6
	13-19.	32	*0*	*13*	*88*	6	*0*	*6*	*94*	6
	20-64.	83	*1*	*7*	*92*	4	*1*	*7*	*92*	4
	>64.	22	*0*	*14*	*86*	7	*0*	*5*	*95*	8
	sum	163	*1*	*9*	*90*		*1*	*7*	*93*	
2	<6.	7	*0*	*0*	*100*	>10.	*0*	*14*	*86*	10
	6-7.	2	*0*	*0*	*100*	>10.	*0*	*50*	*50*	10
	8-9.	6	*0*	*17*	*83*	7	*0*	*17*	*83*	7
	10-12.	3	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	13-19.	35	*0*	*9*	*91*	6	*0*	*43*	*57*	6
	20-64.	68	*3*	*1*	*96*	5	*3*	*4*	*93*	5
	>64.	14	*0*	*7*	*93*	10	*0*	*21*	*79*	6
	sum	135	*1*	*4*	*94*		*1*	*18*	*81*	
3	<6.	6	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	6-7.	2	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	8-9.	5	*0*	*0*	*100*	>10.	*0*	*20*	*80*	6
	10-12.									
	13-19.	23	*0*	*4*	*96*	6	*0*	*4*	*96*	6
	20-64.	35	*0*	*9*	*91*	6	*0*	*9*	*91*	6
	>64.	4	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	sum	75	*0*	*5*	*95*		*0*	*7*	*93*	

Appendix R:3

SJÖBO

			Accepted time gap car- car (%)				Accepted time gap pedestrian-car (%)			
Period	age	Total no. pedestrians	5 s or less	6-10 s	> 10 s.	Min. accepted time gap (s)	5 s or less	6-10 s	> 10 s.	Min. accepted time gap (s)
1	<6.	11	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	6-7.	6	*0*	*17*	*83*	8	*0*	*17*	*83*	6
	8-9.	17	*12*	*6*	*82*	5	*18*	*12*	*71*	3
	10-12.	31	*0*	*26*	*74*	9	*6*	*42*	*52*	>10.
	13-19.	28	*0*	*7*	*93*	7	*0*	*29*	*71*	6
	20-64.	171	*1*	*6*	*93*	4	*1*	*25*	*74*	5
	>64.	53	*0*	*9*	*91*	6	*0*	*11*	*89*	6
	sum	317	*1*	*9*	*90*		*2*	*23*	*75*	
2	<6.									
	6-7.									
	8-9.									
	10-12.									
	13-19.									
	20-64.									
	>64.									
	sum									
3	<6.	13	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	6-7.	5	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	8-9.	11	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	10-12.	9	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	13-19.	13	*0*	*15*	*85*	8	*0*	*15*	*85*	8
	20-64.	67	*0*	*1*	*99*	8	*0*	*1*	*99*	7
	>64.	24	*0*	*0*	*100*	>10.	*0*	*4*	*96*	7
	sum	142	*0*	*2*	*98*		*0*	*3*	*97*	

TRANDERD UPPER

			Accepted time gap car- car (%)				Accepted time gap pedestrian-car (%)			
Period	age	Total no. pedestrians	5 s or less	6-10 s	> 10 s.	Min. accepted time gap (s)	5 s or less	6-10 s	> 10 s.	Min. accepted time gap (s)
1	<6.									
	6-7.									
	8-9.									
	10-12.									
	13-19.									
	20-64.									
	>64.									
	sum									
2	<6.	7	*0*	*14*	*86*	8	*0*	*0*	*100*	>10.
	6-7.	1	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	8-9.	11	*0*	*9*	*91*	8	*0*	*9*	*91*	8
	10-12.	11	*0*	*18*	*82*	6	*45*	*9*	*45*	4
	13-19.	3	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	20-64.	17	*12*	*12*	*76*	3	*12*	*6*	*82*	3
	>64.	4	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	sum	54	*4*	*11*	*85*		*13*	*6*	*81*	
3	<6.	1	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	6-7.	2	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	8-9.	12	*0*	*17*	*83*	7	*0*	*17*	*83*	7
	10-12.	5	*0*	*20*	*80*	6	*0*	*20*	*80*	6
	13-19.	1	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	20-64.	5	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	>64.									
	sum	26	*0*	*12*	*88*		*0*	*12*	*88*	

TRANDERED LOWER Accepted time gap car- car (%) Accepted time gap pedestrian-car (%)

Period	age	Total no. pedestrians	5 s or less	6-10 s	> 10 s.	Min. accepted time gap (s)	5 s or less	6-10 s	> 10 s.	Min. accepted time gap (s)
1	<6.									
	6-7.									
	8-9.									
	10-12.									
	13-19.									
	20-64.									
	>64.									
	sum									
2	<6.	0	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	6-7.	2	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	8-9.	11	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	10-12.	15	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	13-19.	14	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	20-64.	24	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	>64.	5	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	sum	71	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
3	<6.	5	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	6-7.	1	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	8-9.	11	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	10-12.	8	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	13-19.	9	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	20-64.	17	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	>64.	5	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.
	sum	56	*0*	*0*	*100*	>10.	*0*	*0*	*100*	>10.

Pedestrian walking alone, meeting a car and any car driver give way

Appendix S:1

Period	age	ALL INTERSECTIONS		HULTA		SJÖBO		TRANDERED UPPER		TRANDERED LOWER	
		Total no. pedestrians	Alone, any car give way (%)	Total no. pedestrians	Alone, any car give way (%)	Total no. pedestrians	Alone, any car give way (%)	Total no. pedestrians	Alone, any car give way (%)	Total no. pedestrians	Alone, any car give way (%)
1	<6.	2	*0*	1	*0*	1	*0*				
	6-7.	5	*0*	4	*0*	1	*0*				
	8-9.	13	*15*	5	*0*	8	*25*				
	10-12.	10	*10*	4	*25*	6	*0*				
	13-19.	36	*11*	19	*11*	17	*12*				
	20-64.	212	*12*	52	*6*	160	*14*				
	>64.	52	*17*	14	*7*	38	*21*				
	sum	330	*13*	99	*7*	231	*15*				
2	<6.	0		0				0		0	
	6-7.	8	*63*	0				4	*75*	4	*50*
	8-9.	25	*52*	3	*67*			6	*67*	16	*44*
	10-12.	31	*71*	2	*50*			7	*29*	22	*86*
	13-19.	39	*56*	20	*65*			4	*75*	15	*40*
	20-64.	129	*42*	71	*38*			16	*50*	42	*45*
	>64.	19	*53*	7	*43*			3	*33*	9	*67*
	sum	251	*50*	103	*45*			40	*53*	108	*55*
3	<6.	5	*0*	0		2	*0*	0		3	*0*
	6-7.	8	*50*	4	*50*	1	*0*	1	*100*	2	*50*
	8-9.	44	*52*	8	*63*	7	*29*	22	*64*	7	*29*
	10-12.	29	*69*	0		4	*0*	12	*75*	13	*85*
	13-19.	53	*58*	23	*48*	7	*43*	7	*86*	16	*69*
	20-64.	201	*50*	62	*53*	78	*32*	15	*73*	46	*67*
	>64.	51	*45*	8	*50*	27	*30*	0		16	*69*
	sum	391	*51*	105	*52*	126	*30*	57	*72*	103	*65*

Pedestrian walking in group, meeting a car and any car driver give way

Appendix S:2

Period	age	ALL INTERSECTIONS		HULTA		SJÖBO		TRANDERED UPPER		TRANDERED LOWER	
		Total no. pedestrians	Group, any car give way (%)	Total no. pedestrians	Group, any car give way (%)	Total no. pedestrians	Group, any car give way (%)	Total no. pedestrians	Group, any car give way (%)	Total no. pedestrians	Group, any car give way (%)
1	<6.	21	*19*	9	*22*	12	*17*				
	6-7.	8	*25*	1	*0*	7	*29*				
	8-9.	22	*32*	4	*0*	18	*39*				
	10-12.	32	*19*	1	*0*	31	*19*				
	13-19.	35	*17*	18	*11*	17	*24*				
	20-64.	94	*26*	45	*20*	49	*31*				
	>64.	41	*22*	11	*18*	30	*23*				
	sum	253	*23*	89	*17*	164	*26*				
2	<6.	27	*48*	12	*42*			12	*42*	3	*100*
	6-7.	10	*80*	3	*33*			5	*100*	2	*100*
	8-9.	34	*53*	8	*38*			19	*53*	7	*71*
	10-12.	39	*49*	8	*75*			10	*40*	21	*43*
	13-19.	68	*49*	42	*33*			8	*75*	18	*72*
	20-64.	89	*62*	57	*58*			22	*59*	10	*90*
	>64.	19	*26*	15	*33*			2	*0*	2	*0*
	sum	286	*53*	145	*46*			78	*55*	63	*65*
3	<6.	43	*53*	13	*54*	19	*42*	7	*86*	4	*50*
	6-7.	15	*60*	2	*100*	4	*0*	8	*75*	1	*100*
	8-9.	69	*74*	7	*71*	10	*40*	30	*87*	22	*73*
	10-12.	45	*71*	0		9	*44*	18	*89*	18	*67*
	13-19.	71	*66*	42	*74*	16	*44*	3	*100*	10	*60*
	20-64.	89	*74*	24	*75*	32	*56*	17	*94*	16	*88*
	>64.	11	*55*	4	*100*	7	*29*	0		0	
	sum	343	*68*	92	*73*	97	*44*	83	*88*	71	*72*

Appendix T

Expert questionnaire:

How to describe road safety for vulnerable road users

Background

Our traffic environment is designed to fit grown-up people rather than children. According to the UN Convention about Children's Rights, what is best for the children should be the target for all governmental decisions affecting children. The Swedish National Road Administration has therefore initiated research as a base for developing guidelines "towards a safe environment for children". When designing roadways, it should be remembered that children of different ages have different needs and abilities. Children should be able to be a part of the traffic environment in a safe way. The traffic environment should be designed for children.

At Luleå Technical University a methodology is being developed based on before and after studies of children's behaviour and safety. Places that are to be rebuilt are filmed simultaneously from different angels to capture the different road-users' behaviour. After reconstruction the sites are again video filmed. The captured video material is coded in specific parameters. This questionnaire deals with these parameters.

Method

Video filming

The intersections are filmed with video cameras. Up to four cameras are used to capture all road users' behaviour. One or two cameras are used for filming close ups of the pedestrians crossing and the road at the zebra crossing. One or two cameras are used for overview pictures of the intersection.

Speed measurement with radar

The speeds of free cars are measured with radar at the intersection, just before the zebra crossing, the hypothetical point of collision.

Coding of parameters, behavioural studies

The traffic situations with the vulnerable road users stored on videotapes are manually analysed and coded. The coding is based on Øvstedals and Ryengs (1999) work where they studied the behaviour of children and car drivers at intersections. Some adjustments are made to better describe the traffic situation in question. Each passage of a vulnerable road user, irrespective of age, at the studied intersection is coded.

High Severity Situations[1]

The High Severity Situations are studied using the Swedish Traffic Conflict Technique (Almqvist & Ekman, 1999). TA-values, speeds and distances are estimated manually by trained observers by observing the filmed interactions on video. Very few conflicts are likely to occur at the studied traffic environments. Another detailed way to measure how the traffic situation has changed besides the conflict technique is to analyse the situations when a car from the left or right is close oncoming to a vulnerable road user. These situations of higher severity are most often less severe than a serious conflict but can still give important clues to describe the traffic situation, see e.g. Svensson (1998). The situations that are coded "a car closely oncoming to a vulnerable road user" are therefore specially analysed.

[1] In the version sent to experts the concept interactions of higher severity was used

It is these situations that are of interest in this questionnaire. Chosen for this questionnaire are some High Severity Situations that involve children. Also an interaction with high severity level with an adult is included.

Video cuts of five specific interactions are distributed along with the questionnaire. The questions below deal with these video cuts. Each interaction has a number in its upper left corner. For all the cuts except no. 4 an overview picture and a close up picture are shown. For cut no. 4 only an overview picture is shown.

To be able to see the video cuts you must have Windows Media Player version 7.0 on your computer. Windows Media Player is run and automatically installed under all Windows 98 and Windows 2000 installations. You might have an older version of Windows Media Player on your computer. It is easily upgraded by:

1. Choose Windows update at the Start menu at the lower left corner of your screen. The Windows web site then starts.

2. Chose Windows 2000 Service Pack and your Windows software as a whole is upgraded. You can also at the Windows web site chose to upgrade only the Windows Media Player software. That will take shorter time but you have to look it up at the Windows web site.

To see the video cuts in the Windows Media Player, chose Open under File and chose the video cut. Then you get start, stop and rewind buttons. If you want larger size of the picture chose Zoom under View. There you can choose 50%, 100% or 200% of the picture. You can also choose full screen under View but then the picture quality is not very good.

Questions:

1. It is of interest to determine how important each studied parameter is, how useful it is to describe the safety for children as vulnerable road users. In the table on next page give every parameter a value for each of the interactions in the video cut. The values for each parameter can obviously differ between the video cuts.

1 = very important, 2 = important, 3 = of some importance, 4 = not important, 5 = not relevant, 9 = can not assess

PARAMETER		Cut no.	1	4	6	12	13&14
	Basic parameters	Date	990504	990420	990504	000323	000323
		Time	14.39	15.19	15.07	13.51	13.58
Vulnerable road user	Description	Mode of transport					
		Gender					
		Age					
		Total no. of persons in group					
		Gender of oldest in group					
		Age of oldest in group					
	Crossing behaviour	Stops or does not stop at kerb					
		Stops or does not stop at refuge					
		Crossing, on zebra crossing or somewhere else					
		Straight or slant across the street					
		Time to cross over carriageway (s)					
	Tempo	Before kerb					
		Crossing 1st lane					
		Crossing 2nd lane					
		After					
	Look around	Before kerb					
		At kerb					
		At 1st lane					
		At refuge					
		At 2nd lane					
	Waiting time (s)	At kerb					
		At refuge					
	Accepted time gap (s)	Between two cars					
		Starts to walk and second car arrives					
		Between cars in different directions					
Car drivers	No of cars passing on first lane when	Vuln. road user before kerb					
		Vuln. road user at kerb					
	No of cars passing on second lane when	Vuln. road user before kerb					
		Vuln. road user at kerb					
		Vuln. road user before refuge					
		Vuln. road user at refuge					
	Car driver behaviour	Vulnerable road user at when car driver give way					
		Vehicle at when it gives way					
Interactions	Traffic situation First vehicle	Travelling direction of vehicle vuln. road user is meeting first					
		Type of vehicle					
		Zebra located at entrance or exit to intersection for car driver					
	Traffic situation Critical situation	Travelling direction of vehicle vuln. road user is meeting critical situation					
		Type of vehicle					
		Zebra located at entrance or exit to intersection for car driver					
	Vehicle from the left	Present					
		Give way					
		Car no. that give way					
	Vehicle from the right	Present					
		Give way					
		Car no. that give way					
		Visibility					
		Post encroachment time (s) *					
Conflicts	Conflict description	TA-value **					
		Who makes evasive action					
		Vehicle speed					
		Vehicle distance					
		Vulnerable road user speed					
		Vulnerable road user distance					
		Security level ***					
		Comments					

* Time measured from the moment the first road-user leaves the potential collision point to the moment the other road-user enters this conflict point.
** Time to accident value. Time to accident at the moment of evasive action when two road users are moving on a collision course.
*** Level in the security hierarchy.

2. Are any parameters missing to describe and study the road users behavior?

3. Rank the five most important parameters to describe the road users' behaviour from the traffic safety point of view. Include also missing parameters from your answer on question 2.

A.

B.

C.

D.

E.

4. For each cut describe what you think is the safety problem and also describe what you think would be a suitable measure in the traffic environment.

1.

4.

6.

12.

13 and 14.

Appendix U

Subject: Expert questionnaire 28-Mar-01

Dear colleague

We, that is PhD student Charlotta Johansson with supervisor AdjProf Lars Leden at the division of Traffic Engineering, Luleå university of Technology are working on methods how to describe and improve road safety for pedestrians and cyclists, especially children, elderly and disabled persons. We have identified you as an expert in this field, and we would like you to fill in enclosed forms and return within two weeks by e-mail to Charlotta Johansson, chjo@sb.luth.se. We have estimated that this will take you a total of no more than 40 minutes. We do not want you to look up information in books, or confer with colleagues. All we want you to do is to read the material sent to you and answer the questions. It is totally four questions and five video cuts to help us highlight safety problems for children and other road users. We hope this will be a good base for pinpointing problems and suggesting efficient countermeasures.

To this mail is the questionnaire attached. This mail is followed by five more mails containing video cuts. The questions in the questionnaire deal with these video cuts.

If you want clarification please contact
Charlotta Johansson on e-mail chjo@sb.luth.se or Lars Leden on e-mail Lars.Leden@vtt.fi .

Thank you for your time. We do appreciate your contribution!

Sincerely

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Experts ranking of studied parameters

Appendix V:1

1= important

Parameter			Cut no. 1		Cut no. 4	
			Mean	No. of answers	Mean	No. of answers
Vulnerable road user	Description	Mode of transport	1,8	6	1,7	9
		Gender	3,2	6	3,3	9
		Age	2,3	6	2,4	9
		Total no. of persons in group	2,5	6	3,4	9
		Gender of oldest in group	3,8	6	4,4	8
		Age of oldest in group	2,8	6	3,8	8
	Crossing behaviour	Stops or does not stop at kerb	2,0	6	1,7	9
		Stops or does not stop at refuge	3,5	6	3,4	7
		Crossing, on zebra crossing or somewhere else	2,0	6	1,9	9
		Straight or slant across the street	2,3	6	2,2	9
		Time to cross over carriageway (s)	2,5	6	2,2	9
	Tempo	Before kerb	2,5	6	2,4	9
		Crossing 1st lane	1,8	6	2,0	9
		Crossing 2nd lane	2,2	6	2,2	9
		After	4,0	6	3,9	9
	Look around	Before kerb	2,3	6	2,0	9
		At kerb	1,5	6	1,4	9
		At 1st lane	1,8	6	1,8	9
		At refuge	4,0	6	3,5	8
		At 2nd lane	2,5	6	2,0	9
	Waiting time (s)	At kerb	2,3	6	1,9	9
		At refuge	4,3	6	4,1	7
	Accepted time gap (s)	Between two cars	2,0	6	1,9	9
		Starts to walk and second car arrives	1,8	6	1,6	9
		Between cars in different directions	2,3	6	2,6	9
Car drivers	No of cars passing on first lane when	Vuln. road user before kerb	3,2	6	3,1	9
		Vuln. road user at kerb	2,3	6	2,1	9
	No of cars passing on second lane when	Vuln. road user before kerb	3,2	6	3,2	9
		Vuln. road user at kerb	2,2	6	2,4	9
		Vuln. road user before refuge	3,3	6	3,3	8
		Vuln. road user at refuge	3,5	6	3,4	8
	Car driver	Vulnerable road user at when car driver give way	2,8	6	2,5	8
Interactions	behaviour	Vehicle at when it gives way	3,0	5	2,6	7
	Traffic situation First vehicle	Travelling direction of vehicle vuln. road user is meeting first	2,3	6	2,7	9
		Type of vehicle	2,3	6	2,8	9
		Zebra located at entrance or exit to intersection for car driver	2,7	6	2,9	8
	Traffic situation Critical situation	Travelling direction of vehicle vuln. road user is meeting critical situation	2,3	6	2,6	9
		Type of vehicle	2,0	6	2,3	9
		Zebra located at entrance or exit to intersection for car driver	2,7	6	3,0	9
	Vehicle from the left	Present	2,2	6	1,9	7
		Give way	2,8	6	2,6	7
		Car no. that give way	3,0	6	2,1	7
	Vehicle from the right	Present	2,0	6	2,1	8
		Give way	2,8	6	2,9	8
		Car no. that give way	2,8	6	2,5	8
		Visibility	2,4	5	2,1	8
		Post encroachment time (s) *	2,3	6	1,5	8
Conflicts	Conflict description	TA-value **	1,7	6	2,0	9
		Who makes evasive action	1,5	6	1,6	9
		Vehicle speed	1,2	6	1,2	9
		Vehicle distance	1,3	6	1,2	9
		Vulnerable road user speed	1,7	6	1,7	9
		Vulnerable road user distance	1,3	6	1,3	9
		Security level ***	1,7	3	1,4	5
		Comments	1,0	1	1,7	3

Experts ranking of studied parameters

Appendix V:2

1= important

Parameter			6		12	
			Mean	No. of answers	Mean	No. of answers
Vulnerable road user	Description	Mode of transport	1,4	8	1,3	7
		Gender	3,1	8	3,1	7
		Age	2,1	8	2,3	7
		Total no. of persons in group	4,1	7	4,1	7
		Gender of oldest in group	4,4	7	4,4	7
		Age of oldest in group	3,9	7	3,9	7
	Crossing behaviour	Stops or does not stop at kerb	1,5	8	1,6	7
		Stops or does not stop at refuge	3,5	6	2,6	7
		Crossing, on zebra crossing or somewhere else	2,0	8	2,0	7
		Straight or slant across the street	1,9	8	1,9	7
		Time to cross over carriageway (s)	2,3	8	2,4	7
	Tempo	Before kerb	1,9	8	1,6	7
		Crossing 1st lane	1,6	8	1,7	7
		Crossing 2nd lane	1,8	8	2,0	7
		After	3,8	8	3,9	7
	Look around	Before kerb	1,8	8	1,7	7
		At kerb	1,3	8	1,4	7
		At 1st lane	1,6	8	2,0	7
		At refuge	3,7	7	2,6	7
		At 2nd lane	2,0	8	2,4	7
	Waiting time (s)	At kerb	3,1	8	2,9	7
		At refuge	4,3	6	3,0	7
	Accepted time gap (s)	Between two cars	2,7	7	2,7	7
		Starts to walk and second car arrives	2,4	7	3,0	7
		Between cars in different directions	3,4	7	3,4	7
Car drivers	No of cars passing on first lane when	Vuln. road user before kerb	3,4	8	3,7	7
		Vuln. road user at kerb	3,5	8	4,0	7
	No of cars passing on second lane when	Vuln. road user before kerb	3,5	8	3,7	7
		Vuln. road user at kerb	3,5	8	3,9	7
		Vuln. road user before refuge	4,0	7	3,7	7
		Vuln. road user at refuge	4,0	7	3,7	7
	Car driver	Vulnerable road user at when car driver give way	2,1	7	3,0	7
Interactions	behaviour	Vehicle at when it gives way	2,2	6	3,2	6
	Traffic situation First vehicle	Travelling direction of vehicle vuln. road user is meeting first	2,3	8	2,4	7
		Type of vehicle	2,6	8	2,3	7
		Zebra located at entrance or exit to intersection for car driver	3,3	8	3,4	7
	Traffic situation Critical situation	Travelling direction of vehicle vuln. road user is meeting critical situation	2,4	8	2,1	7
		Type of vehicle	2,3	8	2,1	7
		Zebra located at entrance or exit to intersection for car driver	3,0	8	3,7	7
	Vehicle from the left	Present	2,3	8	2,9	7
		Give way	2,4	8	2,9	7
		Car no. that give way	3,5	8	3,7	7
	Vehicle from the right	Present	2,6	8	2,6	7
		Give way	2,5	8	2,4	7
		Car no. that give way	3,5	8	3,7	7
		Visibility	1,4	7	1,2	6
		Post encroachment time (s) *	1,4	7	1,6	7
Conflicts	Conflict description	TA-value **	1,5	8	1,7	7
		Who makes evasive action	1,5	8	1,7	7
		Vehicle speed	1,1	8	1,1	7
		Vehicle distance	1,3	8	1,3	7
		Vulnerable road user speed	1,5	8	1,3	7
		Vulnerable road user distance	1,4	8	1,3	7
		Security level ***	1,4	5	1,5	4
		Comments	1,7	3	1,7	3

Experts ranking of studied parameters

Appendix V:3

1= important

Parameter			Cut no.13&14		TOTAL	
			Mean	No. of answers	Mean	No. of answers
Vulnerable road user	Description	Mode of transport	1,4	7	1,5	37
		Gender	3,1	7	3,2	37
		Age	2,3	7	2,3	37
		Total no. of persons in group	3,3	7	3,5	36
		Gender of oldest in group	3,9	7	4,2	35
		Age of oldest in group	3,3	7	3,5	35
	Crossing behaviour	Stops or does not stop at kerb	1,6	7	1,6	37
		Stops or does not stop at refuge	1,9	7	2,9	33
		Crossing, on zebra crossing or somewhere else	1,9	7	1,9	37
		Straight or slant across the street	2,0	7	2,1	37
		Time to cross over carriageway (s)	2,3	7	2,3	37
	Tempo	Before kerb	1,7	7	2,0	37
		Crossing 1st lane	1,4	7	1,7	37
		Crossing 2nd lane	1,6	7	1,9	37
		After	3,9	7	3,9	37
	Look around	Before kerb	1,7	7	1,9	37
		At kerb	1,3	7	1,4	37
		At 1st lane	1,7	7	1,8	37
		At refuge	1,7	7	3,1	35
		At 2nd lane	2,3	7	2,2	37
	Waiting time (s)	At kerb	2,9	7	2,6	37
		At refuge	3,0	7	3,7	33
	Accepted time gap (s)	Between two cars	2,0	7	2,3	36
		Starts to walk and second car arrives	2,0	6	2,1	35
		Between cars in different directions	2,7	7	2,9	36
Car drivers	No of cars passing on first lane when	Vuln. road user before kerb	3,3	6	3,3	36
		Vuln. road user at kerb	3,2	6	3,0	36
	No of cars passing on second lane when	Vuln. road user before kerb	3,5	6	3,4	36
		Vuln. road user at kerb	3,2	6	3,0	36
		Vuln. road user before refuge	3,0	6	3,5	34
		Vuln. road user at refuge	3,0	6	3,5	34
	Car driver	Vulnerable road user at when car driver give way	2,5	6	2,6	34
Interactions	behaviour	Vehicle at when it gives way	2,6	5	2,7	29
	Traffic situation First vehicle	Travelling direction of vehicle vuln. road user is meeting first	2,7	6	2,5	36
		Type of vehicle	2,3	6	2,5	36
		Zebra located at entrance or exit to intersection for car driver	3,2	6	3,1	35
	Traffic situation Critical situation	Travelling direction of vehicle vuln. road user is meeting critical situation	2,3	6	2,4	36
		Type of vehicle	2,2	6	2,2	36
		Zebra located at entrance or exit to intersection for car driver	3,5	6	3,2	36
	Vehicle from the left	Present	2,5	6	2,3	34
		Give way	2,3	6	2,6	34
		Car no. that give way	3,0	6	3,1	34
	Vehicle from the right	Present	2,7	6	2,4	35
		Give way	2,5	6	2,6	35
		Car no. that give way	3,0	6	3,1	35
		Visibility	1,8	5	1,8	31
		Post encroachment time (s) *	1,3	7	1,6	35
Conflicts	Conflict description	TA-value **	1,7	7	1,7	37
		Who makes evasive action	1,6	7	1,6	37
		Vehicle speed	1,1	7	1,2	37
		Vehicle distance	1,3	7	1,3	37
		Vulnerable road user speed	1,3	7	1,5	37
		Vulnerable road user distance	1,3	7	1,3	37
		Security level ***	1,5	4	1,5	21
		Comments	1,7	3	1,6	13

Appendix X:1

Video cut no. 1

Rank	Parameter	Score	No. of answers
1	Conflicts; Comments	1,0	1
2	Vehicle speed	1,2	6
3	Vehicle distance	1,3	6
4	Pedestrians and cyclists distance	1,3	6
5	Pedestrians and cyclists look around at kerb	1,5	6
6	Who makes aversive evasive action	1,5	6
7	TA-value	1,7	6
8	Pedestrians and cyclists speed	1,7	6
9	Security level	1,7	3
10	Pedestrians and cyclists mode of transport	1,8	6
11	Pedestrians and cyclists tempo crossing 1st lane	1,8	6
12	Pedestrians and cyclists look around at 1st lane	1,8	6
13	Time gap pedestrians and cyclists starts to walk and second car arrives	1,8	6
14	Pedestrians and cyclists stops or does not stop at kerb	2,0	6
15	Pedestrians and cyclists crossing on zebra crossing or somewhere else	2,0	6
16	Pedestrians and cyclists accepted time gap between two cars	2,0	6
17	Type of vehicle	2,0	6
18	If a car is coming from the right	2,0	6
19	Pedestrians and cyclists tempo crossing 2nd lane	2,2	6
20	No. of cars passing when pedestrians and cyclists at kerb	2,2	6

Appendix X:2

Video cut no. 4

Rank	Parameter	Score	No. of answers
1	Vehicle speed	1,2	9
2	Vehicle distance	1,2	9
3	Pedestrians and cyclists distance	1,3	9
4	Security level	1,4	5
5	Pedestrians and cyclists look around at kerb	1,4	9
6	Post encroachment time (s)	1,5	8
7	Time gap pedestrians and cyclists starts to walk and second car arrives	1,6	9
8	Who makes evasive action	1,6	9
9	Pedestrians and cyclists mode of transport	1,7	9
10	Pedestrians and cyclists stops or does not stop at kerb	1,7	9
11	Pedestrians and cyclists speed	1,7	9
12	Conflicts;Comments	1,7	3
13	Pedestrians and cyclists look around at 1st lane	1,8	9
14	If a car is coming from the left	1,9	7
15	Pedestrians and cyclists crossing on zebra crossing or somewhere else	1,9	9
16	Pedestrians and cyclists waiting time at kerb	1,9	9
17	Pedestrians and cyclists accepted time gap between two cars	1,9	9
18	Pedestrians and cyclists tempo crossing 1st lane	2,0	9
19	Pedestrians and cyclists look around before kerb	2,0	9
20	Pedestrians and cyclists look around at 2nd lane	2,0	9

Appendix X:3

Video cut no. 6

Rank	Parameter	Score	No. of answers
1	Vehicle speed	1,1	8
2	Pedestrians and cyclists look around at kerb	1,3	8
3	Vehicle distance	1,3	8
4	Pedestrians and cyclists mode of transport	1,4	8
5	Pedestrians and cyclists distance	1,4	8
6	Security level	1,4	5
7	Visibility	1,4	7
8	Post encroachment time (s)	1,4	7
9	Pedestrians and cyclists stops or does not stop at kerb	1,5	8
10	TA-value	1,5	8
11	Who makes evasive action	1,5	8
12	Pedestrians and cyclists speed	1,5	8
13	Pedestrians and cyclists tempo crossing 1st lane	1,6	8
14	Pedestrians and cyclists look around at 1st lane	1,6	8
15	Conflicts; Comments	1,7	3
16	Pedestrians and cyclists tempo crossing 2nd lane	1,8	8
17	Pedestrians and cyclists look around before kerb	1,8	8
18	Straight or slant across the street	1,9	8
19	Pedestrians and cyclists tempo before kerb	1,9	8
20	Pedestrians and cyclists crossing on zebra crossing or somewhere else	2,0	8

Video cut no. 12

Rank	Parameter	Score	No. of answers
1	Vehicle speed	1,1	7
2	Visibility	1,2	6
3	Pedestrians and cyclists mode of transport	1,3	7
4	Vehicle distance	1,3	7
5	Pedestrians and cyclists speed	1,3	7
6	Pedestrians and cyclists distance	1,3	7
7	Pedestrians and cyclists look around at kerb	1,4	7
8	Security level	1,5	4
9	Pedestrians and cyclists stops or does not stop at kerb	1,6	7
10	Pedestrians and cyclists tempo before kerb	1,6	7
11	Post encroachment time (s)	1,6	7
12	Conflicts; Comments	1,7	3
13	Pedestrians and cyclists tempo crossing 1st lane	1,7	7
14	Pedestrians and cyclists look around before kerb	1,7	7
15	TA-value	1,7	7
16	Who makes evasive action	1,7	7
17	Pedestrians and cyclists straight or slant across the street	1,9	7
18	Crossing, on zebra crossing or somewhere else	2,0	7
19	Pedestrians and cyclists tempo crossing 2nd lane	2,0	7
20	Pedestrians and cyclists look around at 1st lane	2,0	7

Video cut no. 13&14

Rank	Parameter	Score	No. of answers
1	Vehicle speed	1,1	7
2	Pedestrians and cyclists look around at kerb	1,3	7
3	Post encroachment time (s)	1,3	7
4	Vehicle distance	1,3	7
5	Pedestrians and cyclists speed	1,3	7
6	Pedestrians and cyclists distance	1,3	7
7	Pedestrians and cyclists mode of transport	1,4	7
8	Pedestrians and cyclists tempo crossing 1st lane	1,4	7
9	Security level	1,5	4
10	Pedestrians and cyclists stops or does not stop at kerb	1,6	7
11	Pedestrians and cyclists tempo crossing 2nd lane	1,6	7
12	Who makes evasive action	1,6	7
13	Conflicts; Comments	1,7	3
14	Pedestrians and cyclists tempo before kerb	1,7	7
15	Pedestrians and cyclists look around before kerb	1,7	7
16	Pedestrians and cyclists look around at 1st lane	1,7	7
17	Pedestrians and cyclists look around at refuge	1,7	7
18	TA-value	1,7	7
19	Visibility	1,8	5
20	Pedestrians and cyclists stops or does not stop at refuge	1,9	7

Questionnaire for Schools about the Intersection ..... in Borås.

Interview in .....school. Grade ....…..... Age ..... □ Boy □ Girl

in Borås……day, the …..of.....… 2001 at (time)……

Show the student where on the map the intersection is located, and show the photo of the layout before the reconstruction!

1. This intersection was reconstructed almost a year ago. Do you remember what it looked like before that, and can you describe in what way it was reconstructed? Please illustrate![i]

Show the student a photo of the intersection as it looks after the reconstruction

2 Do you remember the new traffic code as of 1 May 2000. That rule change was enacted approximately at the same time as the reconstruction was done. Please, describe the rule change.[ii]

3. How often have you crossed here as a pedestrian during the last months?
   □ almost daily □ at least 10 times □ a few times □ never before

   How often have you bicycled across the street here during the last months?
4. □ almost daily □ at least 10 times □ a few times □ never before

5. Since How long have you walked and/or bicycled across the street at this intersection?
   □ since at least two years □ since….....(month)…....(year) □ seldom □ never before

6. If you compare today's layout with the earlier one, do you believe that it for you when walking/bicycling across the street here has become (check *one*):
   □ 1. Risk cut in half or more
   □ 2. Somewhat safer than before
   □ 3. About as dangerous/safe as before
   □ 4. Somewhat more dangerous than before
   □ 5. At least doubling of risk
   □□ Don't know

   If there is a change in risk, is that caused by the reconstruction or by the new rules or by a combination of the two?
   □□ 1. Just the reconstruction
   □□ 2. Mostly on the reconstruction but not entirely
   □□ 3. Equal contribution of the two changes
   □□ 4. Mostly on the change in rules but not entirely
   □□ 5. Only on the change in rules

7. How do you experience walking or biking across the street here compared to before? (check *one* alternative):

   □ 1. Double difficulty, or worse
   □ 2. Somewhat more difficult than before
   □ 3. About the same as before
   □ 4. Somewhat of an improvement compare to before
   □ 5. At least double as easy as before
   □ Don't know

8. What were the problems you experienced before the reconstruction when walking/bicycling across the street here? Please illustrate!

9. What are the problems you experience now when you walk/bicycle across the street here? Please illustrate if you want to!

10. Is there anything more that should be done to improve the safety or reduce the delay at the intersection? Is there some other countermeasure that you think would be more effective in increasing the safety of pedestrians/bicyclists here? Please illustrate if you want to!

[i] The answer to Question 1 is coded as:
1 wrong description, 2 mostly correct, 3 correcttly described, 4 perfectly described

[ii] If you drive: Let the pedestrian cross ahead of you.
If you walk: Don't step out into the crosswalk until the vehicle is stopped.

Questionnaire for Schools about the Intersection Trandaredsg. – Söderkullag. in Borås.

Interview in .....school. Grade ....…..... Age ..... □ Boy □ Girl

in Borås……day, the …..of.....… 2001 at (time)……

Show the student where on the map the intersection is located, and show the photo of the layout before the reconstruction!

1 Do you remember the new traffic code as of 1 May 2000. That rule change was enacted approximately at the same time as the reconstruction was done. Please, describe the rule change.[i]

2 How often have you crossed here as a pedestrian during the last months?

□ almost daily □ at least 10 times □ a few times □ never before

How often have you bicycled across the street here during the last months?

3. □ almost daily □ at least 10 times □ a few times □ never before

4. Since How long have you walked and/or bicycled across the street at this intersection?

□ since at least two years □ since…….....(month)……..(year) □ seldom □ never before

5. If you compare today's layout with the earlier one, do you believe that it for you when walking/bicycling across the street here has become (check *one*):

□ 1. Risk cut in half or more
□ 2. Somewhat safer than before
□ 3. About as dangerous/safe as before
□ 4. Somewhat more dangerous than before
□ 5. At least doubling of risk
□□ Don't know

6. How do you experience walking or biking across the street here compared to before? (check *one* alternative):

□ 1. Double difficulty, or worse
□ 2. Somewhat more difficult than before
□ 3. About the same as before
□ 4. Somewhat of an improvement compare to before
□ 5. At least double as easy as before
□ Don't know

7. What were the problems you experienced before the reconstruction when walking/bicycling across the street here? Please illustrate!

8. What are the problems you experience now when you walk/bicycle across the street here? Please illustrate if you want to!

9. Is there anything more that should be done to improve the safety or reduce the delay at the intersection? Is there some other countermeasure that you think would be more effective in increasing the safety of pedestrians/bicyclists here? Please illustrate if you want to!

[i] If you drive: Let the pedestrian cross ahead of you.
If you walk: Don't step out into the crosswalk until the vehicle is stopped.

Questionnaire for Schools about the Intersection ..... in Trollhättan.

Interview in .....school. Grade ....…..... Age ..... □ Boy □ Girl

in Borås……day, the …..of.....… 2001 at (time)……

Show the student where on the map the intersection is located, and show the photo of the layout before the reconstruction!

1. This intersection was reconstructed almost a year ago. Do you remember what it looked like before that, and can you describe in what way it was reconstructed? Please illustrate![i]

Show the student a photo of the intersection as it looks after the reconstruction

2 Do you remember the new traffic code as of 1 May 2000. That rule change was enacted approximately at the same time as the reconstruction was done. Please, describe the rule change.[ii]

3. How often have you crossed here as a pedestrian during the last months?
□ almost daily □ at least 10 times □ a few times □ never before

How often have you bicycled across the street here during the last months?

4. □ almost daily □ at least 10 times □ a few times □ never before

5. Did you walk and bike across the street as often as before the change of code?
□ Considerably more seldom □ Somewhat more seldom □ As often □ Somewhat more often □ Clearly more often
What is the reason if there is a change? .....

6. Did you walk and bike across the street as often as before the reconstruction?
□ Considerably more seldom □ Somewhat more seldom □ As often □ Somewhat more often □ Clearly more often
What is the reason if there is a change? .....

7. Since How long have you walked and/or bicycled across the street at this intersection?
□ since at least two years □ since….....(month)…....(year) □ seldom □ never before

8 If you compare today's layout with the earlier one, do you believe that it for you when walking/bicycling across the street here has become (check *one*):
□ 1. Risk cut in half or more
□ 2. Somewhat safer than before
□ 3. About as dangerous/safe as before
□ 4. Somewhat more dangerous than before
□ 5. At least doubling of risk
□□ Don't know

If there is a change in risk, is that caused by the reconstruction or by the new rules or by a combination of the two?
□□ 1. Just the reconstruction
□□ 2. Mostly on the reconstruction but not entirely
□□ 3. Equal contribution of the two changes
□□ 4. Mostly on the change in rules but not entirely
□□ 5. Only on the change in rules

9 How do you experience walking or biking across the street here compared to before? (check *one* alternative):

□ 1. Double difficulty, or worse
□ 2. Somewhat more difficult than before
□ 3. About the same as before
□ 4. Somewhat of an improvement compare to before
□ 5. At least double as easy as before
□ Don't know

10. What were the problems you experienced before the reconstruction when walking/bicycling across the street here? Please illustrate!

11. What are the problems you experience now when you walk/bicycle across the street here? Please illustrate if you want to!

12. Is there anything more that should be done to improve the safety or reduce the delay at the intersection? Is there some other countermeasure that you think would be more effective in increasing the safety of pedestrians/bicyclists here? Please illustrate if you want to!

[i] The answer to Question 1 is coded as:
1 wrong description, 2 mostly correct, 3 correcttly described, 4 perfectly described

[ii] If you drive: Let the pedestrian cross ahead of you.
If you walk: Don't step out into the crosswalk until the vehicle is stopped.

Appendix Y:4

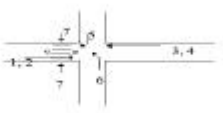
Proportion of school children assessing a certain safety effect of reconstruction and change of code (%).
In parenthesis number of school children.

Site	Risk cut in half or more	Somewhat safer than before	About as dangerous/safe as before	Somewhat more dangerous than before	At least doubling of risk	Total number
Hulta	80 (4)	20 (1)	0	0	0	(5)
Sjöbo	46 (6)	39 (5)	15 (2)	0	0	(13)
Trandared upper[1]	10 (1)	40 (4)	50 (5)	0	0	(10)
Trandared lower[2]	15 (3)	55 (11)	30 (6)	0	0	(20)
Total	29 (14)	44 (21)	27 (13)	0	0	(48)

[1] Trandaredsgatan – Trandareds ring
[2] Trandaredsgatan - Söderkullagatan

Appendix Z

Coding list

Reg. Number		Code
Gender		1 – woman 2 – man 9 – unknown
Age		Write ages for children between 6 and 12 years 1 – children (younger than 6 years) 2 – youth (13-19) 3 – adult (20-65) 4 – 65-75 5 – 75-85 13 – older than 85 99 – unknown
Means of transport		1 – walking 2 – by bike 3 – walking with bike 4 – walking with pram 5 – walking with wheelchair 6 – sitting in wheelchair 7 – sitting on bike behind 8 – other handicap aid 9 – other
	Numbers in the group	Numbers of persons in the group (one or more)
	Gender of oldest in group	Same code as gender
	Age of oldest in group	Same code as age
Crossing behaviour	Stops at kerb	1 – no 2 – yes 9 – unknown
	Stops at refuge	1 – no 2 – yes 9 – unknown
	Crossing behaviour	1 – on zebra crossing 2 – close to zebra crossing 3 – outside zebra crossing-closer to the intersection 4 – outside zebra crossing-away from the intersection 9 – unknown
	straight angle across	1 – straight 2 – angle or diagonal across 9 – unknown
Tempo	Before intersection	1 – slow 2 – normal 3 – walking fast 4 – running 5 – vary 9 – unknown
	First lane	As above
	Second lane	As above
	After intersection	As above
Look around	Before kerb	1 – no, no head movement 2 – both sides 3 – only left 4 – only right 9 – unknown
	At kerb	As above
	When passing first lane	As above
	At refuge	As above
	When passing second lane	As above
Traffic situation	First vehicle / interaction 	1 – To the intersect, left 2 – To the intersect, right 3 – From the intersect, left 4 – From the intersect, left right? 5 – Secondary street, right turn 6 – Secondary street, left turn 7 – Straight ahead 9 – unknown
	Type of vehicle	1 – car 2 – lorry 3 – small lorry 4 – buss 5 – bike 9 – unknown

	Overtaking at intersection at zebra crossing	1 – no 2 – yes 9 – unknown
	Overtaking of vehicle standing still	1 – no 2 – overtaking 3 – stops beside 9 – unknown
	Vehicle from the left	1 – no 2 – yes, but no conflict 3 – yes, but far away (as far as it is possible to cross before) 4 – yes, close 9 – unknown
	Vehicle from the left stops	0 – no car, no conflict 1 – no 2 – first car stops 3 – second car or later stops 4 – first car slow down 5 – second car or later slow down 9 – unknown
	Vehicle from the right	1 – no 2 – yes, but no conflict 3 – yes, but far away (as far as it is possible to cross before) 4 – yes, close 9 – unknown
	Vehicle from the right stops	0 – no car, no conflict 1 – no 2 – first car stops 3 – second car or later stops 4 – first car slows down 5 – second car or later slows down 9 – unknown
	Car drivers head movement	1 – no, no head movement 2 – both sides 3 – only right 4 – only left 9 – unknown
	Time gap accepted1 (1^{st} car-2^{nd} car)	In seconds
	Time gap accepted 2(starts to cross-car)	In seconds
	Waiting to cross, time	In seconds
	Time for crossing	In seconds
Comments	More than one is possible	1 – playing with ball 2 – talking 3 – playing and singing 4 – pushing 5 – playing 6 – jumping/walking backwards etc 7 – one leads other 8 – reach out hand 9 – rollerblades, skateboard etc
Free comments		Text