

## Children's risks on their way to school: the example of Tallinn

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### Abstract

Rapid motorization development contributes to serious consequences in traffic situations in many countries. This can be seen in the statistics of traffic accidents involving children aged 0–15 as well as in the growing share of car use in children's school transportation.

In Estonia, the traffic fatality risk (risk of death due to a traffic accident) is 2–7 times higher than in other European countries with high motorization. In last years the number of children traffic fatalities has not increased. However, the number of traffic accidents involving children has increased while the number of injured children in traffic accidents has a similar trend.

About 50% of traffic accidents involving children in Estonia take place in the two biggest cities –Tallinn and Tartu.

Estonian Road Administration in cooperation with the University of Tartu conducted a project “My Way to School” in the schools of Tallinn

The main object of this project was to determine children's own risk assessment among the fourth year pupils of Tallinn. The project also teaches children to get familiar to the surroundings of their home and school, as well as to highlight dangerous places in terms of traffic risks.

The survey was prepared in the form of questionnaires including maps specially prepared for the fourth year pupils.

The questionnaires and maps (scale 1:7500) of the surrounding area were compiled for schools. The pupils were asked to describe their everyday movements (mode and route) from home to school and to point out the intersections, pedestrian crossings, bus stops and other locations which appear to them to be dangerous.



The results of the project “My Way to School” showed that the main risks for children are pedestrian crossings and intersections.

*Keywords: road safety, risk assessment, accident analysis, travel behaviour, transportation planning.*

## 1 Introduction

Children are still in their development and so it is necessary for them to move a lot. Walking in this context is a very important transport mode for children. It can be easily integrated in their everyday activities like walking to kindergarten, school, sports institutes, to friends, to the bakery, etc. Children, however, have special needs in road traffic. They cannot be considered as small adults. They are, for example, not familiar with traffic rules and are not able to cope with complex traffic situations. They are smaller than adults and perceive traffic from a different angle [1].

By walking, children are able to get acquainted with their nearest vicinity, to experience objects, events and human relations. A varied environment which offers contact-possibilities in different age-groups supports the development of children. A part of these abilities, particularly social experiences, can only be acquired when children can move freely in public space [2].

A lot of children exercise too little and it is also known that parents drive their children to school because they are afraid that their children will be involved in an accident. But by doing this, they cause additional risks for those “remaining” children who still walk to school [3].

The number of children who are taken to school by car has increased considerably. Many parents have decided that it is best to take their child to school by car, because this enables them to transport their child in safety almost to the school gate. However, increased motor traffic in the immediate vicinity of the school poses an increased danger to those children who travel to school on foot or by bicycle. The existing traffic schemes around schools have not been designed to accommodate such specific motor traffic; there are often no places for cars to stop, or bicycle facilities or pavements. Children who go to school by public transport, bicycle or on foot usually face more dangers on their way to school than those children who are taken to school in their parents’ car. They have to cross roads, walk on streets which are poorly designed or maintained or cycle on busy roads.

Road traffic accidents involving children happen more frequently in areas where children are physically active, i.e. primarily around schools and the places where they live. Children’s everyday journeys are mostly related to school attendance. It is clear that the neighbourhoods of schools are areas where road traffic accidents involving children are likely to happen, since much of the pedestrian traffic involving children is concentrated around schools. Road traffic accidents are often related to a deficient or outright dangerous traffic solution for roads, their intersections, and pedestrian crossings.

It is not really important whether a child gets involved in a road traffic accident while travelling from home to school or vice versa, or while simply



walking in the neighbourhood of the school after the end of the school day. The risk of road traffic accidents in the neighbourhood of schools and other children's institutions is higher, since children are less protected road users with less traffic experience and often with little sense of caution.

The aim of the present study is to analyse the road traffic accidents involving children that have happened in the Nõmme district of the city of Tallinn and the traffic dangers faced by the school pupils of Nõmme on the basis of the results of the project "My Way to School".

## 2 Road traffic accidents involving children in Estonia

Traffic accident mapping shows that the majority of children involved traffic accidents take place near home and school. The everyday movements of children often involve school-related movements but also a big part of out-of-school activities also takes place near the schools. It is obvious that the space around schools could be described as a higher risk zone in terms of children traffic accidents.

The number of road traffic accidents involving children and the number of children injured in such accidents have remained stable throughout the years, although in recent years, a small decline can be detected (Table 1).

Table 1: Road traffic accidents involving children in Estonia in 2000–2009 [4].

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Accidents involving children</b>	270	335	350	335	317	345	354	336	236	202
<b>Children killed</b>	10	17	11	8	9	13	8	8	3	6
<b>Children injured</b>	270	370	383	360	341	378	404	382	269	211

In 2007–2009, 1061 road traffic accidents in total were recorded in Tallinn, in which 42 people were killed and 1210 were injured. Accidents involving children numbered 180 (Figure 1).

The largest share of accidents involved pedestrians and cyclists.

The number of accidents caused by children's own errors has decreased year by year, but their share is still large enough to indicate that children themselves are often responsible for accidents. Four out of every ten children were involved in the accident due to their own negligence or breach of traffic rules.

A number of child-pedestrians created the dangerous situation themselves and consequently also caused the subsequent road traffic accident. The most common causes of accidents were crossing a street in front of an already dangerously close approaching vehicle and crossing against a red light.

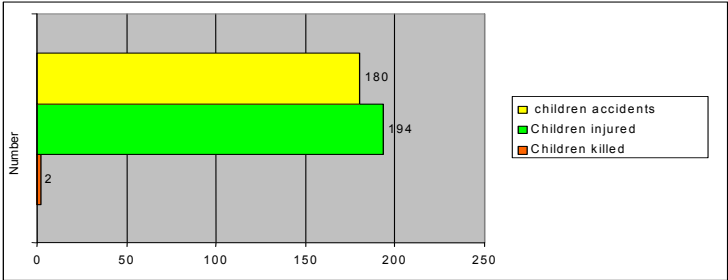


Figure 1: Road traffic accidents involving children in Tallinn in 2007–2009 [4].

2.1 Study area

The City of Tallinn is divided into city districts. Tallinn consists of 8 different districts. District Nõmme located in southern part of Tallinn [5]. The survey was carried out in the Nõmme district of the city of Tallinn



Figure 2: The Nõmme district of the city of Tallinn [5].

There are seven general education schools in the district of Nõmme - four of those are basic schools and three are upper secondary schools (Figure 3)

In the academic year 2009, 2,902 pupils studied at the general education schools in Nõmme [5]

The analysis of road traffic accidents shows that the accidents involving children in Nõmme were more numerous at the beginning of the academic year (September/October) and at the end of the academic year (May–June). In six calendar months, no road traffic accidents happened with children in Nõmme (Figure 4).



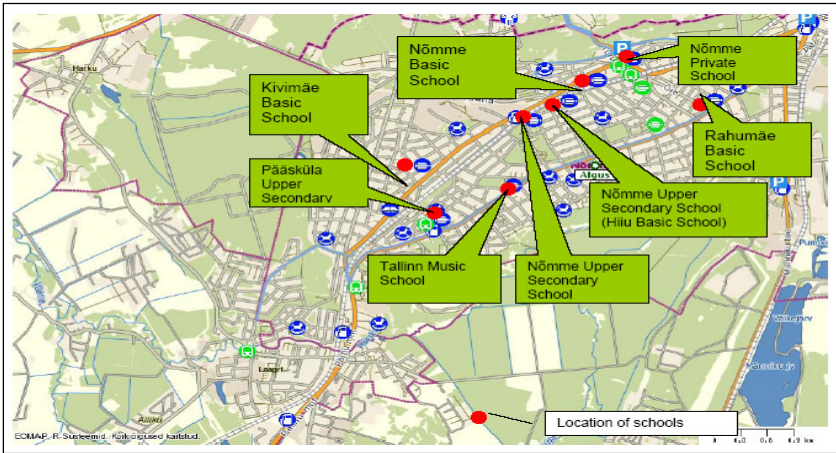


Figure 3: Location of schools in the district of Nõmme [5].

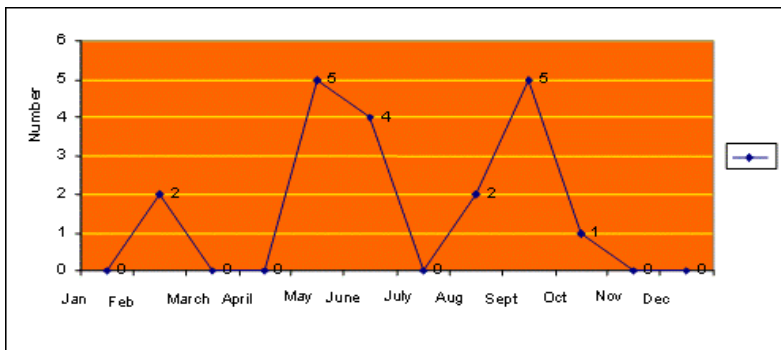


Figure 4: Road traffic accidents involving children in the district of Nõmme in 2007–2009 [4].

### 3 Data and methods

Commissioned by the Estonian Road Administration, the project “My Way to School” was carried out in Tallinn in 2009. Four schools in Nõmme also participated in the project (Table 2).

The survey was prepared in the form of a school assignment for the fourth grade. 85 questionnaires and maps of school surroundings were distributed in the schools of Nõmme as part of the project “My Way to School”. Completed questionnaires were: 45 children from secondary schools participated and 40 primary school.

Table 2: Schools in Nõmme participating in the project “My Way to School” in 2009.

SCHOOL	NUMBER OF participating? PUPILS
Pääsküla Upper Secondary School of Tallinn	24
Nõmme Upper Secondary School of Tallinn	21
Nõmme Basic School of Tallinn	23
Kivimäe Basic School of Tallinn	17
TOTAL	85

The pupils were given a questionnaire and a 1:750 scale map of the school and the surrounding streets (Figure 4) and they were asked to describe in short their route to school and to mark such intersections, pedestrian crossings and streets which they regarded as dangerous. The children also pasted symbols (home, school, intersection, traffic lights, zebra crossing, warning sign etc.) describing their route home on the map (Figure 5).

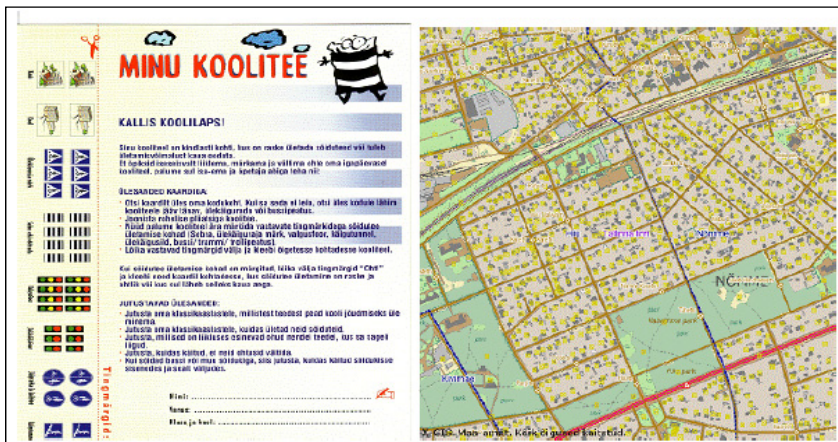


Figure 5: The questionnaire “My Way to School” project [4].

## 4 Results

Most of the 4th grade pupils who participated in the “My Way to School 2009 project” attend schools within their home neighbourhood and live in relative proximity to their school. 39 pupils (46%) go to school either on foot or by bicycle. 29 pupils (34%) use public transport. The number of pupils taken to school by car is 17 (20%) (Figure 6).



The pupils in the Nõmme district regarded unregulated zebra crossings as the main source of danger on their way to school but they also mentioned the lack of cycle paths and lanes and the inconsideration of car drivers.

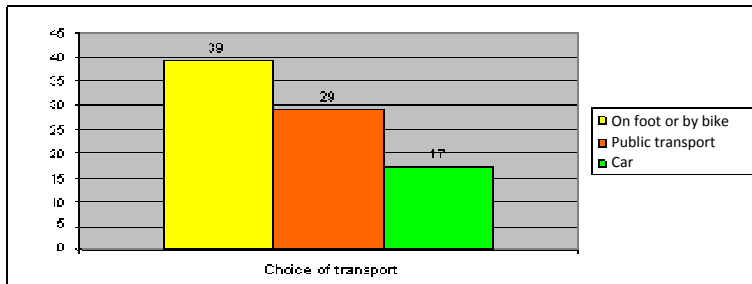


Figure 6: Choice of transport for travelling between home and school in the Nõmme district (Project “My Way to School”).

There were also several children who found that their routes to school were completely risk-free since their routes were very short and free from significant traffic; the lack of any risk was attributed to the fact that they are brought to school by car.

Intersections without traffic lights and long pedestrian crossings over several lanes were regarded as the main hazards (Figure 7).

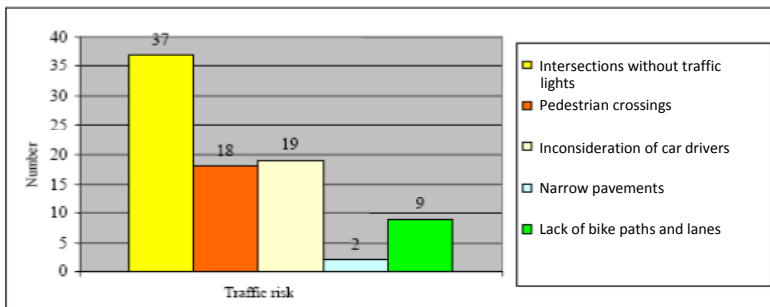


Figure 7: Traffic risks faced by the pupils on their routes to school in the Nõmme district (Project “My Way to School”).

If we look at the different school there are some differences, the pupils of the Nõmme Basic School saw traffic risk in the numerous narrow streets without pavements, which are common in Nõmme, and also regarded their school yard as a dangerous place, since too many cars park there in the mornings, creating dangerous situations for children. The pupils of the Pääsküla Upper Secondary School were found to have the safest routes between home and school, and the most dangerous routes were travelled by the pupils of the Nõmme Basic School and Nõmme Upper Secondary School.

The children expressed the opinion that their routes to school could be safer if car drivers were more polite and careful and more considerate towards pedestrians.

Speeding vehicles and reckless drivers, who even ignore red stop lights, were regarded as a hazard.

According to the responses given in the questionnaires, in the district of Nõmme, intersections were regarded as the most dangerous places for children travelling between home and school (Table 3).

Table 3: Dangerous traffic locations for children in the district of Nõmme (Project “My Way to School”).

Traffic risks for children on school routes”	CHILDREN'S ASSESSMENT
Intersection of Pärnu Rd. and Õitse St.	Heavy traffic, approaching vehicles are not easily visible
Intersection of Lauliku St. and Õitse St.	Heavy traffic, narrow streets
Intersection of Pärnu Rd. and Laane St.	Pedestrian crossing without traffic lights, vehicle drivers often fail to give way
Intersection of Vabaduse Bvd. and Jannseni St.	Heavy traffic, vehicles making a turn into Jannseni Street pose a significant danger. Fail to give way to pedestrians.
Intersection of Hiiu St. and Raudtee St.	Heavy traffic, high fences, which are very close to the road, blocking the view on to the road. Children cannot see approaching vehicles. Intersection without traffic lights, poorly visible pedestrian crossing..
Intersection of Nürme St. and Raudtee St.	Heavy traffic, narrow streets, no pavements.
Pedestrian crossing over Pärnu Road in front of the Hiiu Pub	The cars parking in front of the pub block the view; pedestrians cannot see approaching vehicles. In order to cross the road, one must first step onto the road to make sure it is safe. Three lanes must be crossed. If the vehicle in the first lane stops, the car in the second lane may fail to do so. Drivers are reckless and inconsiderate towards pedestrians.
Railway crossing of Pääsküla	The railway area is very wide. Four pairs of rails must be crossed.

## 5 Conclusion

The aim of the present study was to provide an overview of the negative impacts of increased car use, to establish the main hazards faced by school children on their way to school on the basis of the information obtained from the project “My way to School 2009”, and to analyse the road traffic accidents in Nõmme that have involved children.

The results of the project “My Way to School” showed that the participating children regard the unregulated zebra crossing at the intersection of Hiiu and Raudtee Streets (Figure 7), as one of the most dangerous places in the Nõmme district. The intersection is situated in a heavy traffic area, is unregulated, and the pedestrian crossing is poorly visible. The children argued that the high fences near the intersection block their view of the road; they also mentioned the lack of bike paths and lanes. The location of a bus stop at the pedestrian crossing is also dangerous.



In 2007–2009, 22 road traffic accidents occurred in Nõmme with children below 18 involved. One child was killed in these accidents.

The road traffic accidents were caused by errors by the children themselves, deficient traffic solutions for roads, their intersections, and pedestrian crossings, as well as by the inconsiderate behaviour of drivers with regard to pedestrians.

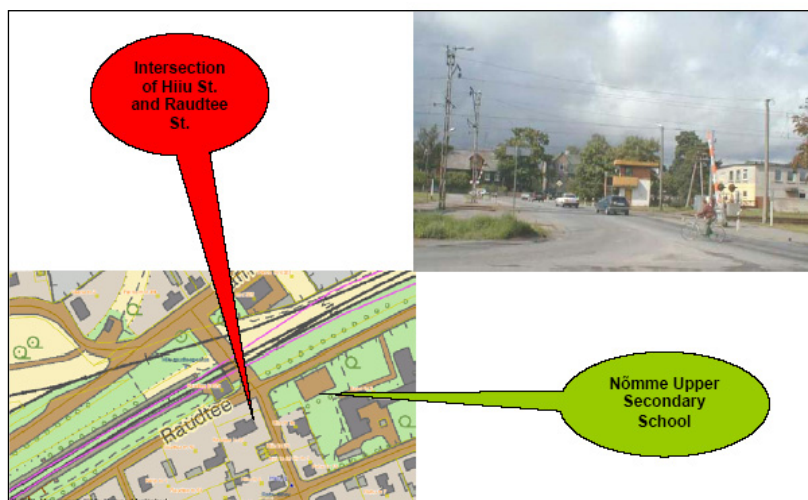


Figure 8: Intersection of Hiiu St. and Raudtee St.

Children in Nõmme have various transport options for travelling between home and school. They may travel on foot, by bike, use public transport or may be taken to school by car. The choice of transport depends on a number of circumstances, but primarily on the distance between home and school. The majority of children in Nõmme travel either on foot or by bike.

However, many parents have decided that it is safest to use their car to take their children to school, in order to shield them from the dangers of exposure to traffic. However, increased motor traffic in the immediate vicinity of schools poses an increased danger to those children who travel to school on foot or by bike. Children must exercise great caution while moving between cars on their way to school.

The results of the project “My Way to School” showed that the children of Nõmme regard unregulated pedestrian crossings and the inconsideration of drivers as the greatest hazards they have to face while travelling between home and school.

The zebra crossing at the intersection of Hiiu St. and Raudtee St., which is unregulated, is poorly visible and is located in a heavy traffic area, is pointed out as the most problematic and dangerous traffic location for children.

## References

- [1] PROMISING *Measures for pedestrian safety and mobility problems. Final report of Workpackage 1 of the European research project PROMISING (Promotion of Measures for Vulnerable Road Users), Deliverable D1*, National Technical University of Athens NTUA, Athens. 2001.
- [2] Rauh, W.; Kose, U.; Lechner, R. & Riegler A., *Straßen für Kinder*, VCÖ Verkehrsclub, Wien Österreich: pp. 175-187,1995.
- [3] Steiner, R., Cirdar, L. & Betancourt, M., *Safe Ways to School – The role in multimodal planning*, pp. 79-95, 2006.
- [4] *Statistics of Fatal and Injurious Road Traffic Accidents in Estonia*. Estonian Road Administration, 2010.
- [5] Tallinna Nõmme linnaosavalitsus <http://www.tallinn.ee/nomme/>

