

Road traffic threatens child. Road traffic threatens child development. We need a fundamental change of perspective

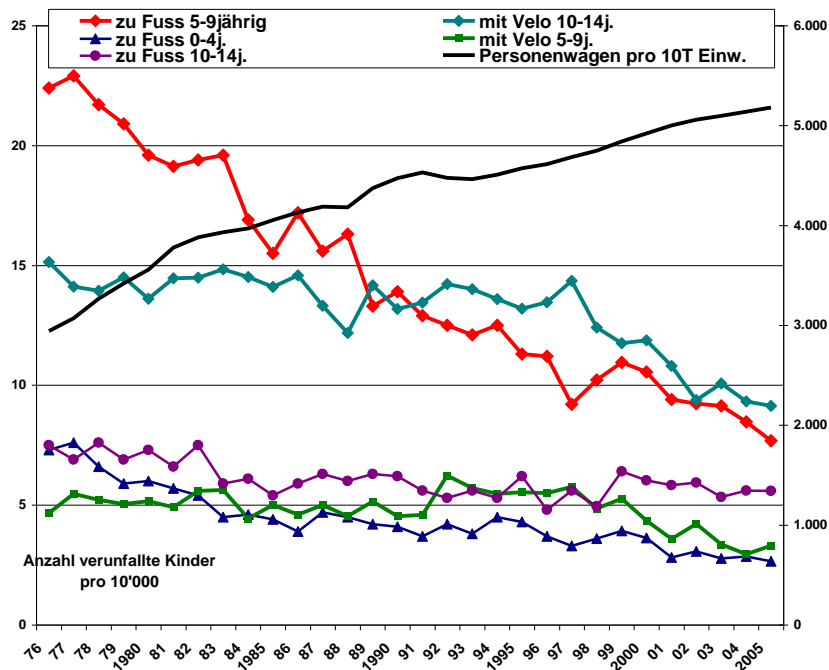
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The relationship of children to road traffic is almost exclusively considered in terms of safety. Each decrease in the number of traffic accidents involving children is hailed as a success by public authorities and transport associations and attributed to the safety measures taken. This is irrespective of whether the children can independently move around in the public domain or are accompanied all the time.

We show below that a change of perspective is vital if we want to carry out a credible road safety policy. Motorized traffic not only threatens the lives of children but also their healthy development. Healthy development also includes basic skills that allow children to move around on the road safely. The acquisition of these skills, however, is now being prevented by road traffic. The development of these skills first occurs in residential areas, if they are accessible to younger children on their own, and later on the way to kindergarten and to school. These areas must be designed in a way that is not only safe, but that also provides enough freedom of movement without requiring supervision.

To provide more security on the road by taking children off the streets, as has been done up to now, proves to be a dangerous impasse. Lack of exercise and increasing obesity in children, as well as deficits in social development, which can be attributed to road traffic speak, for themselves. A genuine road safety policy can only be based on measures in which both the safety of children and their freedom of movement are increased, as well as their opportunities for development are improved.

1 The history of displacement



The immediate residential environment and the neighborhood streets were and still are the most important areas for movement and play for many children. The ban of games on the streets can indeed be traced back to the middle Ages, but they remained largely ineffective. Not until a

massive increase in motor traffic in the last century and the associated sharp rise in accidents involving children in the 70's did parents begin to "take their children off the streets." (Hüttenmoser 1991) Since 1976, the number of accidents involving children on the road sank continuously in Switzerland and Austria. From a historical perspective, the decline of these accidents must be described for the most part as a process of displacement and cannot be called a result of the various traffic safety measures taken in this period. This is difficult to prove statistically. The Swiss census, which measures the mobility patterns of the population every five years, only measures target-oriented routes and ignores the behavior of children who are younger than six years old. Mayer Hillman, John Adams and John Whitelegg, however, show a massive decline of independent road space use by 7-11 year old children for the period from 1971 to 1990. Further evidence is given by the accident statistics themselves. A closer analysis of the accident rates among 0-14 year old children shows that the significant decline in accidents in the period 1976-2005 took place exclusively by 5-9 year old children provided they were traveling on foot. But there are no measures whose effect would be limited to this group of children. Additional evidence is provided by an analysis of bicycle-riding 10-14 year olds. In their case, the number of accidents remain about the same until 1998, at which point it sinks very clearly. For bike riders, the data of the census show that the number of kilometers driven in this period greatly decreased. (Sauter Daniel 2008). One must conclude from this that here too, processes of displacement are taking place: bicycling on roads with increasing traffic is becoming more dangerous. Many no longer dare to use a bicycle in traffic.

2 The Consequences of Displacement

The main thing is that no children have accidents on the road. The most effective measures in that case are to lock them up or to constantly monitor them. That's how one could describe the unstated positions of traffic safety specialists. This viewpoint remained unchallenged for a long time: safety first, at any price!

A 1982 analysis carried out of hitherto usual traffic education came to the conclusion that motorized traffic not only endangers the lives of children, but also impedes children in their development by taking away the space necessary for healthy freedom of movement. Measures focusing exclusively on safety propose that children should only go to kindergarten or school alone because they would be less distracted by road traffic. This is certainly a valid observation that leads, however, to the conclusion that road traffic can lead to antisocial behavior and misguided child development. (Hüttenmoser 1982):

3 The Street Divides



An analysis of 859 children's drawings of 3-6 year olds on the theme of traffic clearly demonstrated that "the street divides." 23 percent of the drawings using different materials and methods illustrate that children have problems when they want to cross the street to meet important needs (i.e. to visit friends, to go to a playground, to make contact with trusted adults, to observe animals and plants, etc.). (Hüttenmoser 1990)

Within a large-scale study in the city of Zurich of families with five year old children which had not moved from their living surroundings within the last four two years, and which had children who no longer visited kindergarten four half days a week (telephone survey: N = 1726, response 73.5%; written survey: N = 926, response 70.7%, intensive study of 20 families), we formed two contrasting groups. The children of so-called A-families (N = 483) could leave their homes unaccompanied to play outside. The children of B-families (N = 83) had to be constantly supervised by adults when they went outside. (Hüttenmoser and Degen-Zimmermann 1995, Hüttenmoser 1995) On a smaller scale, a control survey was conducted in seven villages in a rural area (N = 146; return 75 percent). (Hüttenmoser 1996) Again, a distinction was made between A and B families. The main findings of the various studies are summarized below:

- In the city, 24% of 1720 parents said their child could not play outdoors unsupervised. In the country it is 32 percent. 76 percent of parents in the city designate motorized street traffic as the main reason why their child is not allowed to play outside unaccompanied. In the country, 87 percent of parents name traffic as the main reason. The reason the situation tends to be worse in the countryside is the environment. The city has more playgrounds, which are separated from the street, drivers are more considerate of the children, according to the parents, and the neighborhood often has either less traffic or no traffic at all. One can also assume that in the country, where there is relatively little traffic on the wide neighborhood streets, cars are faster. According to accident statistics, serious accidents also occur more frequently in the country.
- The length of time children stay out in the open is substantially higher for children who can move around unsupervised in residential areas than for children who do not have this possibility. 54.3 percent of 5-year-old children in the city stay more than two hours outside on a beautiful day, in the country, 63 percent, if they have free access to it. If this is not the case, 12 percent of city children and 48 percent of country children go outside for so long. These figures refer to accompanied and unaccompanied periods. It seems that parents in the country try more to compensate for the lack of opportunity to play freely outside in their neighborhood.
- A study in a suburban district of Zurich, which has good living conditions and an environment where all children can play outside unaccompanied, shows that the duration of time spent outside under good conditions is far longer than expected. The use of the area does not only start with the five-year-olds. In the area studied, 30 percent of three-to nine-year-olds spent three hours outside in good weather, a further 28 per cent four hours and just over 15 percent more than four hours. The proportion of three to four year old children is high: 20 percent of them spend 1-2 hours outside, 25% 2-3 hours, 20 percent 3-4 hours and even still 15 percent 4 and more hours outdoors. (Hüttenmoser and Sauter 2002) These figures demonstrate the extensive play and exercise time children spend outside. They also illustrate that even frequent participation in organized activities – going to the playground with their mothers, ballet, swimming, horseback riding, soccer training - can never outweigh the daily exercise related to independent activity in residential areas. In addition, such programs always involve adult supervised activities. A crucial prerequisite, however, for basic experience and development to remain effective, is independence.
- Whoever cannot play outside unsupervised has significantly fewer friends in the neighborhood. The number of children playing together in a good residential area in the city compared to a bad residential area sinks from an average of 8.8 to 2.4 children, and in the country from 5.6 to 3.7, respectively. In the country, kids groups are smaller due to more sparse housing areas. If we also assume that kids in the neighborhood are often not around, the risk is high that very often there is no one to play with if one has only two or three playmates.
- If residential areas are good for children, they will also be better for the parents. In the city, parents of five-year-old children get together to chat

in good residential areas on average with 19.2 people, in poor residential areas with still 9.7 people. In the country, the number of neighbors to interact with drops from an average of 15.7 to 8.5, in good and bad residential areas respectively.

- Neighborhood assistance also benefits greatly from a good residential neighborhood. Spontaneous childcare services are thus much better in good neighborhoods. 94 percent of parents of 5-year-old children have at least one child care option in the neighborhood of a good residential area in the city. In a bad neighborhood, not quite 70 percent have such an option. In the country the availability of child care decreases depending on the area, from 80 to 65 percent.
- a good residential area has a long-term impact on the behavior of young families in traffic. Whoever lives in a good residential area stays home more on the weekends. The average number of kilometers driven in the city and in the countryside on weekends decreases from 140 to 70 kilometers.
- In a very intensive study with numerous tests and in-depth interviews of 20 families, the direct consequences of a bad residential area on child development could be proven. The main conclusion is as follows: whoever grows up in a residential area in which traffic does not permit children to play together independently, already shows significant deficits in both motor and social development by the age of five, compared to children who grow up in a good residential area. (Hüttenmoser et al. 1992)

4 Integration is on the way!

In a recent study, the limitation of the study population on families with younger children was abandoned. (Daniel Sauter and Marco Hüttenmoser 2006, 2008) Following the classic study by Donald Appleyard (1981), the integration potential in the public space of urban residential areas was explored for all age and population groups in various aspects (i.e. street perceptions, quiet, beauty, safety, development opportunities, fear of physical attack, emergency assistance, neighborhood contacts, effects of dividing streets; frequency of leisure stops; participation in the design, satisfaction with living area, feeling of being socially integrated, length of residence). The starting point consisted of three different types of roads: main roads (speed limit 50km/h), district roads (30 km/h) and strolling zones (20km/h, right of way for pedestrians). The summarized results can be described as follows:

The more quiet the traffic and the more attractive the street, that is, the less there is of motor vehicle traffic, the lower its speed and the lower the parking density, the greater is the general potential for integration. Strolling zones have much more potential for social integration than the 30 km/h zone and, in turn, more than roads with a 50 km/h speed limit. This is reflected, for example, in relation to neighborhood contacts. Residents of low traffic streets have significantly more frequent and intensive relationships with their neighbors, and especially to those on the other side of the street, as residents of other streets. The effect of the street as a divider is especially lower in such cases for children. Despite frequent and intensive interactions the residents of such strolling zones do not feel socially controlled. Socio-demographic characteristics affect the potential for social integration to a much lesser extent than the type of road. Age, gender, nationality and social status play only a significant independent influence on the integration potential in certain cases. Family households differ from those in other population groups mainly by the number of neighborhood contacts and the use of public space.

4.1 Implications for the design of road space

The realization that the road not only affects the lives but also child development in significant ways has far-reaching consequences for the design of exterior spaces.

The study results first show that the nearby residential environment, including the nearby neighborhood streets, is of the utmost importance for the development of younger children. In good residential areas with little or no traffic, important motor and social skills, as well as the independence of children is promoted. These are also the crucial prerequisites for the safe and responsible behavior of children and young people on the street. The streets in the immediate residential area must therefore be designed accordingly. 20km/h speed limits and the right of way for children at play in residential zones, and no or only a few parking spaces are the minimal requirements. Better, but much more expensive, are designated "residential streets" (with speed limits at walking speed and no parking areas.) Appropriately designed road posts must guarantee the protection from speeding vehicles. Street areas must be spacious enough to allow children's games.

Children also get around independently from an early age. In Switzerland, 80 per cent of children go to school unaccompanied. The majority of children also go by themselves to kindergarten starting at the ages between 4 and 5. This may be different in other countries but it is something to aim for everywhere. In addition, there are the frequent trips made on foot in free time, in which significantly more accidents occur than on the way to school. This means that when designing road space, 30 km/h zones should apply to residential areas nationwide, interspersed with as many strolling zones and "residential streets" as possible. 30 km/h speed limits are safe for children when they are focused on the road. When children are playing, 30 km/h is not enough.

Children need and more or less want to be able to cross congested main streets. Child safety and freedom of movement have best been guaranteed up until now by well-designed traffic lights or zebra crossings. In new traffic concepts, these proven systems are to be abandoned. In shared-space designs, whether they maintain 50km/h speed limits (including a reallocation of road space, the abolition of street curb parking spaces and no right of way for pedestrians), 30 km/h on main roads (including redesigning streets with middle lanes, with no crosswalks and with no right of way for pedestrians), or strolling zones with social interaction functions (with 20 km/h speed limits, pedestrian right of way), "cooperation with one another" is the euphemistic aim. An essential feature of the behavior of pedestrians, cyclists and car drivers in such designed areas, is that one interacts with each other, making eye contact and signaling that one wants to cross the street or gives the pedestrian the right of way. In various shared space streets a marked reduction of accidents has been registered for some, which has been called a success. (Bechtler et al. 2010) This all sounds very nice but it needs to be declared as inappropriate when it comes to children.

Concerning the reduction of accidents, this aspect is irrelevant as long as is not proven that children were not displaced by the newly designed areas, nor did they seek alternative routes or had to be accompanied by an adult. Such evidence has not yet been provided. If one takes the effects of motor traffic on children seriously, every new traffic concept should be appraised for its displacement effects before being adopted for the general public.

Highly problematic for children from the very beginning is the basic principle of "cooperating with one another". In Switzerland, people debated for years whether children should signal drivers and make eye contact with them before entering pedestrian crosswalks. We came to the conclusion that this is not possible for children. Children know that there is a driver in the car, but they hardly see them. The speed of the approaching vehicle, even when going slowly, prevents this, as do the now dark tinted windows on all vehicles. The interior of the vehicle is considered a private area where people telephone, eat pizza and talk with passengers. The problem of making contact is also evident in many children's drawings, in which the car windows are either colored over or colored pitch-black.



(Figures 2 and 3) A ban on tinted windows - a dark stripe at the top would satisfy safety requirements - would be a step towards improving communication in road spaces. But for children, this would not solve the problem alone. The issue of the visually impaired was highly debated in regards to the shared-space concept and measures are still being sought. As for the children, the case hasn't been dealt with in-depth. To date, no child-friendly design has been found that could replace the traffic light system or a well-designed pedestrian crossing. The new concepts amount to a two-layer transportation policy: people who know how to conform and behave themselves are tolerated, but those who do not, especially younger children, should stay at home or should be led by their mother's hand (Hüttenmoser 2009).

A child-friendly design of exterior spaces often fails because of the costs. This is what happened with the residentially zoned streets, many of which were done away with. The conclusion that motorized traffic also creates costs in serious deficiencies in child development, such as lack of exercise and obesity, is strongly disputed. The numerous programs and measures currently undertaken by public agencies to fight the lack of exercise and obesity in children demonstrate this. None of these programs take into account the lack of free space or promote effective measures of traffic calming. The symptoms are treated rather ineffectively in day care centers and schools. Transport policy measures are politically inopportune.

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Box:

How traffic effects perception.

A scarcely investigated aspect is how traffic impairs perception and knowledge of one's own environment. In order for children to adapt to their environment, they must have the opportunity to explore it independently. This starts in the residential area and is continued on the way to kindergarten and to the school.

In a research project on the integration potential, we let 173 children draw their living environment shortly before starting school. At the same time they were asked if they played outside unsupervised and how many playmates they had in the neighborhood. Children who could play unsupervised have on average 12 other kids to play with, while those who cannot play outside alone, have only two. The first group included an average of 16 objects in the drawings of their environment (children, playground equipment, plants and animals) while the latter group only included two of those. The drawings reflect two completely different worlds. (Hüttenmoser 2006)



Figure 4: Roman cannot play outside unsupervised and has no friends in the neighborhood.



Figure 5: Beatrice can go outside by herself. She depicts an environment rich in details and has around 20 children to play with.