



# A geographical perspective on driving attitudes and behaviour among young adults in urban and rural Norway

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## ABSTRACT

Studies have shown that the driver's risk behaviour is a significant contributor to the difference in road traffic accident risk between urban and rural areas. The aim of the study is to achieve a better understanding of the relatively high risk for rural youths compared to urban youths. A cross-sectional survey with 484 drivers aged 19–24 years is used to compare self-reported risk behaviour in urban, peri-urban and rural areas. A stratified random sample was made to ensure respondents from different area types. The results show an urban–rural gradient in risk-taking behaviour. Attitudes towards road safety partly explain individual variation in risk behaviour; however, they fail to erase the urban–rural gradient. The findings suggest a complex interaction of the system risk (the road environment) and elements of risk-culture beyond road safety attitudes.

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## 1. Introduction

### 1.1. Background

Transport accidents, and road traffic accidents in particular, are considered a serious health concern worldwide (WHO, 2004). Young adults are overrepresented among fatalities and can therefore be seen as a particularly vulnerable group (UNECE, 2005). In Norway, road traffic accidents are the most frequent cause of death for people aged 15–24 years (Statistics Norway, 2006) and the majority of the fatalities are drivers and car passengers. Numerous severe disabilities and lifelong injuries make road traffic an even more serious threat to young adults.

There has been a strong focus on risk reducing strategies growing out of the Vision Zero strategy implemented in 2002 in Norwegian road traffic safety policy. The Vision is one of a desired future, and holds that no fatalities or serious injuries should be tolerated in road traffic. The Norwegian Parliament has based The National Transport Plan for 2002–11 on this principle. In the process of reaching this goal in road traffic, a broad set of measures are being put into action focusing especially on improved road design, regulations for safer vehicles and attitude campaigns directed towards children and young adults (Norwegian Ministry of Transport, 2006).

### 1.2. An urban–rural gradient in risk and risk behaviour

The likelihood of fatal accidents varies substantially among areas and can be described roughly as a gradient from mainly urban to

mainly rural areas. Generally, the patterns in urban areas are characterised by relatively few fatal accidents and relatively high numbers of accidents with less severe human injuries or with material damage only to vehicles. The traffic volume and driving patterns in urban areas create more potential conflict situations between vehicles, and between vehicles and pedestrians, and the speed limits are usually lower. In rural areas there are generally fewer but more serious accidents. Rural areas also experience relatively fewer killed or injured pedestrians. This pattern is explored in several studies and from different approaches (Borgialli et al., 2000; Brown et al., 2000; Clark and Cushing, 2004; Donaldson et al., 2006; Kmet and Macarthur, 2006; Muelleman and Mueller, 1996; Stevenson and Palamara, 2001; Thoez et al., 1991). Higher mortality in rural crashes can be related to higher speed limits or delayed time for medical response (Clark and Cushing, 1999; Jones and Benthams, 1995; Muelleman et al., 2007). Research has also shown that risk-taking behaviour such as alcohol use and the lower rate of seat belt use in rural areas contributes to the pattern (Borgialli et al., 2000; Clark, 2003).

### 1.3. Study objectives

The aim of this study is to investigate the differences in traffic-related risk-taking behaviour among youths living in urban and rural areas. To what extent can geographical differences in attitudes towards road safety explain the gradient in risk-taking behaviour?

### 1.4. Youths and accidents

There are many possible reasons for the high numbers of accidents involving youths. Three central factors often mentioned are

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experience, excitement and exposure. Young drivers may lack experience to be able to understand and avoid risky situations. The highest risk of accident injury for novice drivers is in the first months after receiving their driving licence. Thereafter, the risk decreases over the subsequent months and years (Sagberg and Bjørnskau, 2003). Further, the car is often equated with freedom, speed and excitement, especially for young males. Humans tend to have a need to test their own and others' limits during adolescence. To take chances can be viewed in many ways as an essential element of the process of growing up. A moderate amount of risk can actually belong in a healthy, normal development (Garvey, 2001). Exposure is related to the position the car holds in many areas. For some rural youths the car can play a central role for much more than transportation. The stereotype picture of such youths is that they typically get their own car at an early age, they use the vehicle extensively and also often repair their own cars (Lægran, 2003). The phenomenon is mostly restricted to rural areas or small towns. In many areas the car represents a place to be for youths, especially in rural areas (Lægran, 2002). The car offers status, especially for young males from rural areas, often with vocational training and with plans for a future outside the urban areas. They may see the car as important for their professional careers (Andréasson, 2000).

## 2. A geographical perspective on road traffic accident risk

### 2.1. Risk and uncertainty

Risk is related to uncertainty and uncertainty is a natural fact of living in a complex environment. The concept of risk is 'associated with the evaluation of uncertain events. Risk can be evaluated on a multidimensional continuum from tolerable to intolerable, from acceptable to unacceptable, and from significant to not significant' (Golledge and Stimson, 1997, p. 207).

For most accidents it is difficult to identify a single cause. Usually an accident is a result of a series of unfortunate events which, taken alone, are not necessarily sufficient to have caused the accident. Hence, possible causes are termed risk factors. The presence of a risk factor potentially increases the probability for an accident to occur. A range of risk factors has been identified in road traffic, such as the mode of travel (e.g. buses are safer than bicycles), the road system (some roads can be safer), the physical environment (slippery roads or poor visibility), travel speed (the risk for serious injuries in an accident is higher at high speed), and travellers' personal characteristics (e.g. sex, age or risk behaviour). Examples of studies quantifying such risk factors using logistic regression models have been published by Al-Ghamdi (2002), Flahaut (2004), and Valent et al. (2002). For a comprehensive overview of different risk factors, see Elvik and Vaa (2004). Certain geographical areas exhibit a higher combination of risk factors and these differ at various geographical scales.

### 2.2. System risk and risk-taking culture

Risk factors such as the road systems, the vehicles and the weather conditions together form what in this context can be termed the system risk. This is the underlying risk in a traffic system or in an area, and it is an 'objective' risk, in principle independent from the individual, and which everyone entering the traffic system has to deal with. The system risk will vary from place to place, from vehicle to vehicle, and from situation to situation. Risk factors related to people's norms, values, perceptions, or attitudes vary on an individual level and sometimes also on a group level. Such risk factors can be termed the risk-taking culture. In turn, the risk-taking culture may influence behaviour (see Fig. 1).

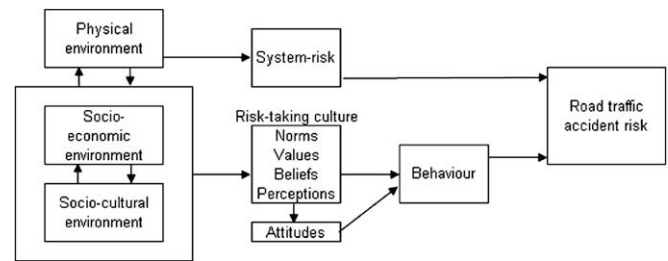


Fig. 1. Tentative model: road traffic accident risk in a geographical perspective.

Misbehaviour in traffic can be changed through changes in the road user's driving behaviour either directly or indirectly through changing the risk-taking culture. Actions that expose one to higher risk or new risks can be called risk-taking behaviour. Individual variation in risk tolerance partly may be due to sensation-seeking, a term introduced by Zuckerman (1979, 1991). Norms, values, perceptions, and risk tolerance affect what can be viewed as potential gains and losses from risk-taking behaviour in traffic. Examples of gains are saving of time and status in peer groups.

Perception can be regarded as a function of needs and values and will therefore vary on an individual level. Perception can be defined as interaction or transaction between the individual and the environment (Golledge and Stimson, 1997). According to Fishbein and Ajzen (1975), attitude is a learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object, person or spatial environment. Individual differences in human behaviour can therefore be assigned to structural causes or to cultural values and the nature of social interaction. These values and interactions may influence perceptual thresholds that can be consistent across individuals in the same area or in the same group (Golledge and Stimson, 1997). Adams (1995) term 'The Risk Thermostat' may be seen as an example of such perceptual thresholds. He discusses this term in the light of the theory of risk homeostasis (Wilde, 1988), and argues that the accident rate of a society mirrors its member's disposition to expose themselves to risks. Further, he argues that cultural filters may make The Risk Thermostat resistant, though not totally insensitive to change.

The risk-taking culture is created and maintained by social interaction and may interplay with the system risk. This means that road traffic risk related to risk-taking culture can be reduced through changes in perceptions, attitudes and behaviour, as well as through targeted changes in the system risk aimed to, for example, limit or restrain risk behaviour.

### 2.3. Accidents related to cultural elements, attitudes and risk behaviour

Studies indicate that there are relations between cultural elements and accidents, e.g. between lifestyle and accidents (Bina et al. 2006; Gregersen and Berg 1994), between socioeconomic aspects and motor vehicle crashes among young drivers (Hasselberg et al., 2005; Laflamme et al. 2005), and between socio-cultural characteristics and road safety in European countries (Melinder, 2007).

The Theory of Reasoned Action (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975) suggests that behaviour can be predicted on the basis of a person's attitude towards the particular behaviour as well as the person's intention, believed consequences of the behaviour and social norms. It is argued that if there is inconsistency between attitudes and behaviour it is primarily a problem of measurement. The theory and its extension, The Theory of Planned Behaviour (Ajzen, 1988, 1991), have been applied in research on driving behaviour (Åberg, 1993; Iversen, 2004; Iversen and

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