

**Summary:**

# **Safe or scary? Risk perception on different means of transport**

## **Background**

A substantial amount of research on objective risk on various transport modes, as well as research on what precautionary measures that may reduce risks has been conducted throughout the years. Moreover, in the area of risk research there has been an increasing focus on *perceived* risk rather than objective risk. However, only to a limited degree has there been any systematic studies across transport modes on how people perceive risk. Further there is a need for research on how perception of risk may vary across different levels in the process of travelling, and what factors contribute to perception of risk.

The aim of the present study was to investigate if and how perception of risk on different travel modes influences choice of travel modes, as well as travellers' behaviour during the journey. In particular, we wanted to investigate potential differences between perception of risk for being involved in accidents (safety) and perception of risk for being exposed to unpleasant situations such as experiencing violence, being threatened etc. (security), and how this empirically relates to a number of different travel modes. Moreover, factors contributing to worrying about safety and security issues, risk perception on "the whole journey", and behavioural adaptations were investigated. A critical distinction relating to risk perception and behavioural adaptations were made between the strategic and the operational level, i.e., how you perceive risk and behavioural decisions made before you travel versus during the journey on a specific travel mode. In addition, risk perception was measured as both a cognitive component and an emotional component, reflecting the potential multidimensionality of the concept.

## **Methods**

The present report is based on results from two studies. In order to investigate risk perception at the strategic level, we conducted an internet based survey distributed to samples in Oslo and Kristiansand (study 1). Risk perception at the operational level was investigated through interviews with people travelling by bicycle or metro in Oslo (study 2).

The internet based survey was conducted in June 2007. Recorded time use for the responses averaged approximately 20 minutes. Of 2820 people invited to participate in this study, 853 accepted. Of these, 613 persons lived in Oslo, whereas 260 lived in Kristiansand. The questionnaire included measures on worry for being involved in an accident or unpleasant situations, choice of transport mode, frequency of use for various transport modes, behavioural adaptations, factors contributing to feelings of being unsafe/unsecure, and experience of being involved in accidents and unpleasant situations.

The main aim of study 2 was to investigate risk perception at the operational level. As bicycling and travelling by metro was perceived as unsafe with regard to accident risk and risk for unpleasant situations respectively, these two transport modes were chosen for further investigation in this study. Each interview took about 5 minutes, and included questions on frequency of travelling, factors influencing choice of transport mode, factors contributing to feelings of being unsafe, perceived risk measured as both a cognitive component and an emotional component, and behavioural adaptations. The interviews were conducted in August 2007. 222 persons were interviewed while travelling by metro, and 80 persons while cycling.

### **Worrying on public versus private transport modes**

As has previously been demonstrated, we found that respondents worried about security issues on public transport modes, while private transport modes were associated with worrying about safety issues. Pedestrians turned out to be the “exception” in this regard. “Walking” can be characterised as a private means of transport but participants reported higher perceived risk for security issues than safety issues when asked about the perception of risk related to walking. One interpretation of the results can be that people worry less about accidents on railway transport than in road traffic.

### **Experiencing unpleasant situations influences risk perception**

Respondents were asked about what factors contribute to feelings of being unsafe on the journey.

When travelling by car, motor cycle, bicycle, airplane, taxi and bus, factors associated with *accidents* were most often reported. However for bus and taxi, so called “security factors” (“meeting unpleasant people” and “unpleasant taxi driver”) were also of importance.

Worrying about *security issues* are more frequently reported when it comes to travelling by metro, train, and when walking. “Meeting unpleasant people”, “violence, robbery and harassment”, as well as “bad lighting conditions” are examples of relevant factors in this respect. Especially when travelling with metro people are concerned about these security issues.

Previous research has indicated that having experienced *accidents* results in people judging the risk of being in an accident as *lower*, whereas people having experienced *unpleasant situations* judge these to be *more risky*. In the current study, looking at feelings of worry concerning these same issues, this pattern of

results was to a certain degree replicated. Those having experienced accidents were not more worried about accidents than the others. Those who had experience unpleasant situations were, however, more worried about being exposed to such incidents than those who had not.

## **Stations and bus stops are more scary than trains and buses**

People were also asked to assess their feeling of safety while waiting for public transport on stations and bus stops. The results indicated that the degree of worry for unpleasant situations was far higher at a station (unspecified type) than onboard a metro.

## **Behavioural adaptations**

In addition to asking about factors contributing to perceived risk, participants were asked about behavioural adaptations related to the different transport modes. Behavioural adaptations in this context can be looked upon as safety precautions. 67 percent of respondents reported that they would “sometimes” or “often” choose another route as pedestrians as a consequence of feeling unsafe. Motorcyclists reported most frequently behavioural adaptations.

In general the study suggest that quite a few people do behavioural adaptations, and that quite a few choose not to travel as a safety precaution. Moreover, it seems like people are more afraid of being involved in an accident during day time, whereas unpleasant situations as being threatened, being exposed to violence etc. are associated with feelings of being unsafe at night time.

## **Risk perception and mode choice**

In order to investigate the contribution of risk perception for transport mode choice, a separate question about a given specified journey between two Norwegian towns (Oslo and Kristiansand) was asked. As it turned out, perceived safety was of little importance for the selection of transport mode on this journey. Rather, factors such as time, efficiency and comfort were rated as important.

Further, the correlations between people’s assessments of safety/security on different transport modes and their travel frequencies for the same modes of transport were virtually zero.

## **Personality is of little importance**

Selected questionnaire items concerning two personality traits (neuroticism and extroversion) borrowed from the NEO Pi-R battery and one from Levenson (locus of control) were utilised. None of these traits turned out to be significantly correlated with worry about safety or security.

## **Risk perception at strategic and operational levels**

The comparison of risk perception at strategic and operational level is somewhat problematic due to methodological differences. A main reason for this is that some of the questions that are meaningful in the strategic situation are without meaning in the operational situation, and vice versa. The results does however indicate that peoples express a higher degree of worry when at home (strategic situation) than when they are using a certain mode of transport (operational situation). In the study of risk perception at operational level, we distinguished between a cognitive component (risk assessment) and an affective component (feeling of worry). The results indicated that the affective component had the highest correlation with behavioural adaptations.

Future research should aim at conceptually and methodologically establishing better operationalisations of the affective and cognitive risk components. Further, specific traffic situations with large discrepancy between objective and perceived risk should be studied more closely. Especially risk perception for soft transport modes are of interest, as these might be involved in rather different processes of *risk compensations* than e.g. motorists.