

1 Introduction

1.1 The impact of recreational travel

With the introduction of the free Saturday in 1962, the two-day weekend in the Netherlands was a fact (Mommaas *et al.* 2000: 25). As only one of the indicators it shows that the amount of free time enjoyed by individuals had grown rapidly in the fifties and sixties. At the same time the car became a more common household attribute, being utilised by the family for recreational trips and for commuter trips (Van der Wal 2003). Along with the rapid economic growth, which led to more expenditure, and a rising population, a rapid mobility growth ensued in the Netherlands. The following numbers illustrate the enormous expansion of mobility. In the sixties there were roughly 600,000 cars compared with 6.5 million cars in 2002. During the same period the number of car kilometres travelled rose from 40 billion per year to 225 billion per year (Harms 2003: 3). This rapid mobility growth is not a specific Dutch problem. In the EU-15, the distance travelled has tripled in the last three decades and the private car ownership has more than doubled between 1975 and 2000 (DG TREN 2006).

Nowadays, mobility causes a mixture of positive and negative effects on society (DG TREN 2001: 11). To start with the positive effects: These include the increase of wealth and trade, the exchange of knowledge and experience and the personal freedom to travel (VROMraad 1999: 17). Martens (2000: 9) asserts that mobility of goods and individuals are indicators of economic growth. After all, the efficient organisation of the economy benefits from the options available to move goods and people through space. As long as accessibility is high, the economic benefits are also high. Another benefit caused by mobility is that it allows people to live independently from each other (Tacken 1997: 313). Furthermore, it allows people to participate in activities, and with faster transport modes (such as the car) more activities can be reached as time spent on travelling remains fairly constant (Schafer 1998). To summarise, the benefits for individuals are personal development, individualisation and personal autonomy (Martens 2000: 9).

Next to these positive effects, mobility also causes some negative effects. Decreasing accessibility, safety and increasing emissions are the most commonly mentioned adverse effects of mobility growth. The cause of decreasing accessibility is congestion (Mahmassani, 1997: 280). Congestion results from a higher demand than the available infrastructure can handle. It is thought that increased accessibility directly leads to larger markets and enables businesses and households to save time and costs (Rodrigue *et al.* 2006). The other way around: decreasing accessibility leads to fewer economic opportunities and decreases the competitiveness (e.g. higher costs on transport goods) (Kraan 1996: 1). The second negative impact of mobility growth is that it decreases the level of safety. Even though mobility has grown rapidly, the number of accidents per travelled kilometre has decreased enormously making the Netherlands one of the safest countries (only 881 fatal accidents in 2004). However, every accident results in economic and social losses and

is therefore still a major issue. Furthermore, the level of safety is lower in other EU countries, increasing the level of safety is one of the main aims within European transport policy (DG TREN 2001: 66). Finally, mobility growth results in rising emission levels that damage the (living) environment (Mahmassani 1997: 281; Schafer 1998: 455). Technological advances reduced emission levels of certain gases; however, CO₂ and NO_x emission have grown (VROMraad 1999: 9). Furthermore, a current issue is particle matter (PM₁₀) emissions, which cause (in)direct health problems (DETR 1997).

The main aim of transport policy is to modulate the impact of mobility growth to achieve socially desirable outcomes, which also include respecting the environment and improving safety (Metz 2005: 355). The trip motive is often the first step in determining which policy instruments are deployed. Commuter and business trips often receive specific attention because of their contribution to congestion and to economic growth. Other trip motives, such as recreational trips, have not received specific policy attention at the national or European level. However, recreational trips do account for 22% of all kilometres travelled. To compare, 23% of all kilometres travelled are commuter trips (Van Veggel & Peeters 2005: 625). Recreational trips are hard to clearly define; they are often treated as the ‘other’ category after commute and business trips. A clear definition is therefore required before data can be collected. Most broadly defined, leisure is all time not spend on obligatory activities (Boelhouwer 2002: 5). Statistics Netherlands¹ divides social-recreational trips into day trips and over-night trips. Their specific definition for recreational day trips is “*all outdoor activities for a recreational purpose lasting at least two hours without spending the night*” (CBS 2006). The Dutch National Bureau for Tourism (NBT) uses nearly the same definition, but set the time frame at four hours, thus excluding (regular) sport activities. Due to the regular nature of sports activities, we opt to use the NBT definition for recreational day activities. As Figure 1.1 shows, the average traveller makes 0.48 recreational trips per day, only surpassed by commuter (0.51) and shopping (0.66) trips.

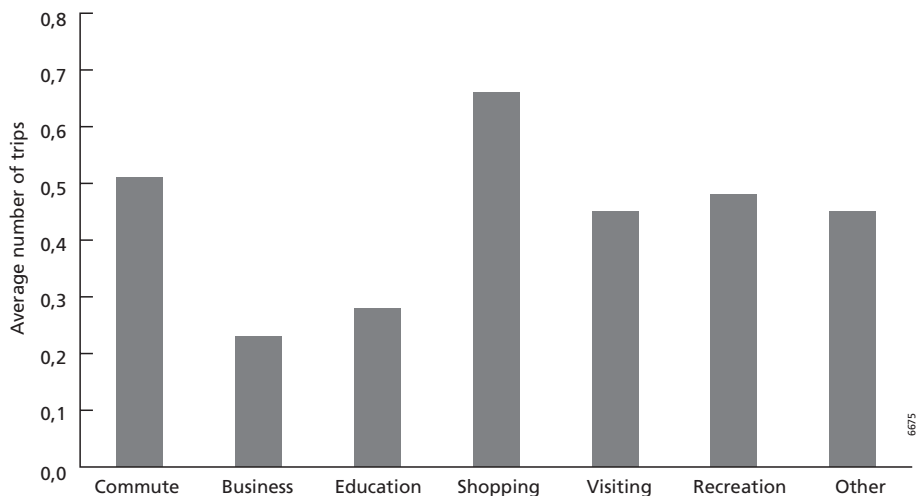


Figure 1.1 Average number of trips per trip motive (MON 2004)

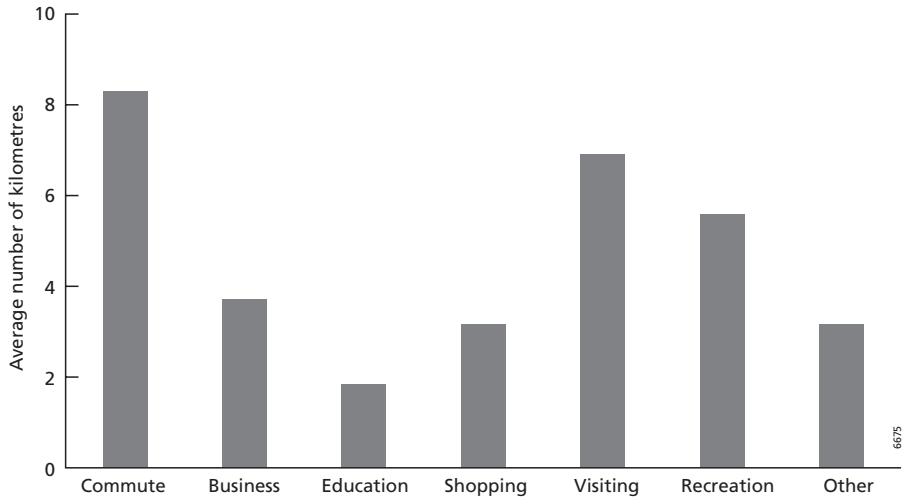


Figure 1.2 *Average number of kilometres travelled per trip motive (MON 2004)*

The trip lengths of recreational trips are another indication that recreational trips should receive specific transport policy attention. Again recreational trip lengths are, on average, the third longest (see Figure 1.2). Only commuter trips (8.3 km) and visiting trips (6.9 km) are longer. When the average number of trips is multiplied by the average trip lengths we see that recreational trips are the third largest motive contributing to overall mobility.

The contribution of the recreational trip motive to mobility means that this trip motive also contributes to the above-mentioned positive and negative impacts caused by mobility. Although recreational trips are not a major source of congestion on motorways (approximately 8% during evening rush hour), it is a major contributor to congestion on regional and local roads. This is particularly so when large visitor populations arrive and leave at the same time, as for example happens at theme parks or events (Van Veggel & Peeters 2005: 636). Not surprising, the first traffic jam that was recorded in the Netherlands was on a beautiful Pentecost day in 1959. A mitigating effect is that average car occupancy is 2.2 individuals for recreational trips compared with 1.1 for commuter trips. In addition, recreational trips contribute significantly to the emissions of CO₂, NO_x, PM₁₀ and noise. Finally, recreational trips are mostly made on regional and local roads. As most accidents occur in these types of roads, recreational trips diminish overall road safety (SVOW 2006²).

Trips with a recreational motive also contribute to economic growth, although this is usually not acknowledged in transport policy (see also chapter 2). Annually, the Dutch population spends approximately 1.5 billion euros on visiting theme parks, events and special attractions (CBS 2004: 109). Furthermore, there are roughly 45,000 companies in the recreation and tourism sector, offering a total of 227,000 fulltime jobs (Mommaas *et al.* 2000: 15). In contrast, the insurance and banking sector offers fewer jobs in the Netherlands. Next to the economic impact of recreational trips, they also contribute significantly to the personal development of individuals. Recreational

trips stimulate the personal development by participating in new or stimulating activities. For the contribution of recreational trips to the overall mobility and the consequences on congestion, safety, environment, economic growth and the personal development, we argue that more attention should be given to recreational trips in transport policy. Therefore, this study specifically focuses on this trip motive.

1.2 Affecting travel behaviour

Due to the variety of effects that mobility causes, it has received abundant attention from both scientists and policy makers. As previously stated, most effort concentrates on maximising the benefits (i.e. economic growth and personal development) while minimising the negative effects (i.e. congestion, safety and emissions). Modulating these effects requires a thorough understanding of individual travel behaviour as aggregating this behaviour results in overall mobility. The idea is that travel enables people to participate in certain activities. Understanding the mechanisms for activity engagement, i.e. what activities to pursue, when, where, for how long, with whom and in what sequence, leads to a better understanding of the demand for travel and subsequently of travel behaviour (Krygsman 2004: 19). Travel behaviour is thus a result from many separate decisions that the traveller makes. Hence, changing travel behaviour implies that the outcome of some of these decisions needs to be changed. Most policy effort has concentrated on congestion caused by car travellers; getting travellers to travel less or with other transport modes were policy objectives (see chapter 2 for more detail). In addition, travellers who do use the car are stimulated to use different routes or to change departure times as to disperse the travellers over place and time.

1.2.1 Using travel information to affect travel behaviour

There are many ways to affect the different decisions within travel behaviour. Road pricing, changing spatial planning and media campaigns promoting other transport modes are but a few examples. Travel information intends to help individuals make more informed travel decisions, and thereby moderate the effects of congestion (Schofer *et al.* 1993: 107). Information about travel opportunities, services, network structure and performance plays an important role in influencing travel decisions. In theory, accurate, timely and understandable information can contribute to choices that are somehow better for the individual traveller, for society or both. Travel information can also help a traveller to decide between different alternatives. Someone who wants to visit a recreational activity may not know which transport mode to use. Information on the available options may help that traveller to decide which transport mode best meets his wishes. Another reason to use travel information is to better plan a trip or to be aware of unwanted delays (such as non-recurrent congestion). Thus, travel information affects the knowledge a traveller has, which may result in different travel behaviour.

Travel information has been cited as a valuable instrument since the eighties (Arnott *et al.* 1989) and as a policy instrument since 1990 (V&W 1990). Many initiatives to provide travellers travel information were started; however, many failed because the travellers' needs were not met. Furthermore, not until recently has it been possible to deploy travel information that is accurate and timely. The advancements of information and communication technology (ICT) have made

new detection methods possible, allowing us to collect sufficient transport data that is necessary for accurate, timely and understandable travel information. Furthermore, the development of ICT has provided new communication methods, as the internet, mobile phones and navigation systems have become widely available. Currently there are some successful travel information services. For example the '511-project' in the United States. This is a national programme that offers areas a framework which they can use to provide local travel information by phone (511) and the internet. Depending on the area, the service provides information on car travel, public transport travel, ridesharing and even bicycle travel³. In Great Britain, the website www.transportdirect.info offers door-to-door information for both car travellers and public transport users. In the Netherlands, most travel information services aim at one mode of transport. The first (pilot) service that combines public transport information with car information is currently being tested in the Haaglanden region (Vonk & Van der Horst 2005). The possibilities of travel information to affect travel behaviour and the current developments that facilitate the deployment of travel information have both led to a substantial body of scientific research (Schofer *et al.* 1993; Khattak *et al.* 1999; Polak & Jones 1993; Hato *et al.* 1999; Kenyon & Lyons 2003; Pierce & Lappin 2004; AVV 2004, 2005).

However, two observations need to be made. First, most of these studies did not use an elaborate conceptual framework to determine the specific role of travel information. Nonetheless, such frameworks are necessary to understand why consumers make certain decisions and which information is crucial in this decision (Engel *et al.* 1995; Bettman 1979). This understanding, of how people acquire and use information, is relevant for marketing management, designing effective communication campaigns and effective service delivery (Gursoy & McCleary 2004a: 353). Adding an elaborate conceptual model could therefore increase the impact travel information may have on travel behaviour. The second observation is that none of these studies specifically focus on the recreational trip motive, although travel information potentially has a larger impact on recreational trips than on other trip motives.

1.2.2 Using travel information to affect recreational trips

Most empirical studies on use and impact of travel information focus on commuter trips (Katteler *et al.* 2002; Patten *et al.* 2003) or do not have a specific focus on a trip motive (Jou *et al.* 1997; Khattak *et al.* 1999). However, these studies showed that trip motive affects the information needs and the impact on travel behaviour. Hence, it is valuable to understand the role travel information has within recreational travel behaviour.

Another reason is that travel information has become more relevant for recreational trips. Not only has the number of recreational activities increased, but for many, the time pressure on these trips has also increased. Although the amounts of free time and the time spent on recreational activities have remained at the same level since the mid eighties (Harms 2003: 23), the travel time to activities or destinations has increased. Consequently, the actual time that can be spent at the destination has diminished. Consequently, the traveller is confronted with a paradox, with more recreational activities to pursue, but less time to spend at the chosen recreational destination. To deal with this paradox, the traveller tries, more than before, to optimise the choice of trip by selecting a trip that best fulfils the goal of the recreational activity. In other words, the traveller wants to make sure that the trip will yield a certain positive experience (Mommaas *et al.* 2000: 10).

Hence, these travellers are more prone to use travel information when deciding on a recreational trip. Finally, the nature of recreational trips makes the traveller more receptive to search for information and consequently change their travel behaviour. To explain the nature of recreational trips, the characteristics of this motive are compared with the commuter motive (Table 1.1).

As can be seen from the table below, the characteristics of commuter and recreational trips are different. The daily routine of the commuter means that he is familiar with route and the possible transport modes. Furthermore, his experience with the trip means that he can adjust departure time as to be on time. He does have more constraints, such as having to arrive on time. The daily routine often results in habitual travel behaviour. Consequently, travel information only has limited possibilities in changing travel behaviour or route. Only the decisions that are not yet habitual are likely to change, such as departure time. Because of the experience with the trip, the traveller knows exactly what information is required to make a travel decision. Based on these characteristics, we assume that commuters only conduct a short, but detailed, information search. This is confirmed by studies; most commuters listen to the radio and only when they hear of an unusual occurrence on their route will they search for specific information on the perceived alternatives (AVV 2004; Khattak *et al.* 1999). Thus, the commuter is mostly interested in en-route information to streamline the trip.

The constraints facing the traveller performing a recreational trip are considerably different. Recreational trips are often made to participate in different activities, which are located in a diffuse pattern. As these trips are usually made infrequently, the traveller is unfamiliar with the current trip and the previous experiences may not offer clues as to what to expect. Furthermore, recreational trips are often made with other people. Everyone in the travel party may have different goals that have to be met (see Mommaas 2000: 10) and agreeing on the activity and travel mode may require more deliberation. As the recreational traveller is unfamiliar with many aspects of the trip but wants a memorable trip, it is likely that an extensive information search is conducted to make an informed decision. Therefore, we expect that recreational travellers are

Table 1.1 *difference between commute and recreational travel*

Commuter trips	Recreational trips
Daily routine	Incidental
One destination; same route	Wide variety of different destinations
Concentration of locations	Diffuse pattern of locations
Individual	With travel party
Obligatory	Discretionary
(Scarce) time is important factor	(Arriving on) time is less important
Speed of travelling is important	Comfort and relaxation is important
Limited geographical scope	Wider geographical scope
Peak hours: workday rush hours	Some peaks in weekends/holidays
Clear expectations	Expectations are unclear
Little but detailed information search	Clear orientation, extensive information use

(Table adapted from Stemerding 1996: 29)

more interested in general information that helps them decide where to go, which route or mode to take. Hence, travel information is used to make the decisions that form travel behaviour.

1.2.3 Using travel information to affect mode and destination choice

Recreational travellers use travel information to be able to make a decision or to plan a trip. Therefore, pre-trip travel information that can be used for pre-trip decisions seems to be most relevant for these travellers. This raises the question as to what pre-trip decisions should be investigated in this study. Lappin & Bottom (2001: 16) argue that responses to travel information fall into two categories: context responses and trip-making responses. Responses to travel information involving the context include behaviour that affects the way that trips are scheduled or integrated into daily decisions; for example, adjustments of residential location or changes in habitual behaviour are trip-making context responses. Responses to the actual trip-making cover a wide range of trip-related decisions, such as destination choice, departure time, mode, route choice, driving behaviour and choice of parking location. Since recreational trips are infrequent, it is expected that travel information on recreational trips will not quickly impact the trip-making context. Consequently, the trip-making responses, such as mode, route, destination and departure time, are most relevant.

As not all these choices could be examined, the specific focus is on the mode and the destination choice of recreational trips. Affecting mode choice with travel information has received abundant attention for commuter trips (Adler & Blue 1998; Kenyon & Lyons 2003; Kingham *et al.* 2001). Although the changes in mode choice were less than expected, it was argued that this was caused by the insufficient technical advancements (Adler & Blue 1998) or by habitual mode behaviour (Kenyon & Lyons 2003). Based on the characteristics of recreational trips (see Table 1.1), we expect that habitual mode behaviour has less influence on recreational trips than on commuter trips. Therefore, it is interesting to investigate to what extent habitual mode behaviour extends to recreational mode choice. From a policy viewpoint, affecting mode choice may lead to less car travel and thus decreases the congestion. Most commuters have a fixed work destination, making the effect of travel information on destination choice less relevant. However, recreational travellers have many possible destinations that could be selected. Mommaas *et al.* (2000: 10) suggested that the number of recreational destinations has risen the last few years. It is therefore plausible that recreational travellers need travel information to decide on their destination, making this an relevant relationship to investigate.

1.3 Research aim and questions

Travel planning research and transport policy analysis are based on the ability to understand and thus predict how travellers respond to changes in their travel environment (Krygsman 2004: 23). The previous section discussed the role of travel information in affecting recreational travel behaviour. The potential for changing recreational travel behaviour is expected to be substantial, since travellers face uncertainty due to the lack of experience and unfamiliarity. In addition, recreational trips are a substantial part of mobility and changing some aspects of this travel behaviour could significantly contribute to decreasing the negative impacts of mobility. However,

few studies have specifically investigated the role of travel information within recreational trips. Therefore our research aim is:

To gain insight into the role of individual travel information in recreational trips, particularly related to mode and destination choice, and to investigate the implications for transport policy.

Four research questions are investigated in order to reach the aim of this study. In Figure 1.3 a schematic overview of the relation between the different research questions is presented. As this figure shows, there are four central concepts in this study: decision-making process, external factors, use and effect of travel information, and transport policy. The first three concepts are needed to understand displayed travel behaviour, while the latter is used to position the research findings within transport policy. The first research question deals specifically with decision-making processes:

- 1a. Which combination of current decision-making theories most adequately describes the decision-making process underlying recreational mode and destination choice?*
- 1b. Which aspects can be identified that describe the role of travel information in this process?*

Theoretically, travel information influences recreational travel behaviour by having an impact on the decision-making processes underlying the actual behaviour. Therefore, a model of the decision-making process that applies to both mode and destination choice has to be developed. A more detailed description of the role of travel information is needed in order to determine whether and how travel information affects travel behaviour. The role of travel information is defined broadly to encompass the search process, the use of the information and the possible effect on travel behaviour.

Decision-making processes are executed, and can therefore only be interpreted, in the light of the external factors operating on the decision maker. Therefore, the second research question is:

- 2. What are the key external factors that affect the decision-making process for mode and destination choice, and how do they affect the role of travel information?*

Travel choices are made within a defined space in which only a few travel options are available (Hägerstrand 1970). Many constraints and opportunities from outside the actual decision-making process, for example previously made decisions or experience, influence the available options. Therefore, external factors potentially affect the execution of all stages in the decision-making process. Understanding the effect of external factors on the role of travel information is essential from a policy perspective. In addition, these factors can be used to segment travellers into specific groups that have similar information needs. This enables service providers offering travel information to tailor the information to the specific needs of the traveller.

The third central concept in this study concerns the actual use and effect of travel information in mode and destination choice. Therefore the third research question is:

3. *What is the actual information search behaviour, which information is used in the mode and destination choice and what is the impact on travel behaviour?*

The actual role of travel information determines which information the travellers find important before choosing a mode or recreational destination. Within a decision-making process travellers compare one or more alternatives by comparing key attributes of each alternative. In other words, choosing between two recreational destinations may result in comparing the attributes such as entrance fee and attractions in the park. Based on the relative values of these attributes, the traveller decides. Travel information may provide the values of these attributes when they are unknown to the traveller. Therefore, mapping the actual information use is a proxy for determining which attributes are relevant in mode and destination choice for recreational trips.

Together, these three research questions answer what the role of travel information is in mode and destination choice for recreational trips on an individual level. Travel information can also be actively deployed as an instrument to change travel behaviour. This raises the question as to what the implications are of using travel information in affecting recreational travel behaviour on an aggregated level. The fourth central concept of this study therefore concerns transport policy. This research question is different to the previous questions as it does not lead to an in-depth analysis but rather discusses the implications of the results found in the previous questions.

4. *What are the implications of the role of travel information on the individual level for the actual deployment of travel information as a policy instrument?*

Understanding the impact of travel information on changes in individual behaviour travel behaviour will allow for a better utilisation of policy instruments. Consequently, the policy instruments are more effective in tailoring supply to demand and avoiding negative impacts such as congestion and emissions. Interpreting the results found in this study in light of transport policy and investigating the implications of these results require a clear understanding of (Dutch) transport policy and its policy instruments, such as travel information.

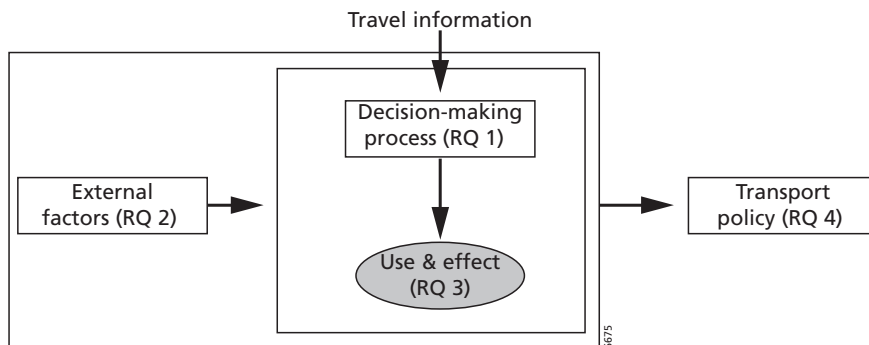


Figure 1.3 *Relation between research questions*

The relations between the research questions are depicted in the figure above. Next to these relations, it can also be used to discuss the nature of the research questions. The first research question has a theoretical nature; its answer supports the following research questions but it will not be answered empirically. As there is little known on the use and effect of travel information on recreational trips, research question three can only be answered empirically. However, to allow for implications for transport policy, it is necessary to answer research question 2 both theoretically and empirically. The last research question regards policy and will therefore be answered within the transport policy framework.

1.4 Outline of thesis

This study is divided into nine chapters (see Figure 1.3). Chapter 2 discusses (Dutch) transport policy and provides a framework in which the results of this study can be interpreted. Consequently, it provides the necessary basis for answering the fourth research question. In chapter 3, a theoretical model that describes the decision-making process for mode and destination choice is developed. Furthermore, this chapter discusses the aspects of the decision-making process that describe the role of travel information. Consequently, chapter 3 answers the first research question. Chapter 4 then discusses the external factors and their potential influence on the decision-making process. In doing so, it provides a theoretical answer to the second research question. Chapter 5 acts as a bridge between the theoretical and the empirical chapters. It discusses the methodological issues related to the data collection. Chapters 6 to 8 present the empirical results of this study. Chapter 6 examines the actual role of travel information in the decision-making process and thus answers the third research question empirically. In chapter 7, the relation between external factors and travel information is determined, whereby each external factor is discussed separately. As the external factors also affect each other, their combined impact on the decision-making process is also analysed. Chapter 8 contains logistical regressions that further explain the role of travel information within the process for mode and destination choice. In chapter 7 and 8, the empirical answer to research question 2 is provided and the empirical basis for answering research question 4 is laid. Chapter 3 to 8 thus provide a detailed discussion on the role of travel information on the individual level. Chapter 9 contains the conclusions and discussion points on each of the main concepts. Furthermore, this chapter answers the fourth research question by formulating implications for the use of travel information as a policy instrument for recreational trips.

Notes

- 1 In Dutch: CBS
- 2 Website (www.swov.nl) accessed on 20-03-2006
- 3 see www.511.org for information in the San Francisco Bay area.