History of the Swiss travel surveys

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Abstract

In this paper, the differences between the last six Swiss travel surveys are described. Based on this description, an attempt is undertaken to compare the key figures. This comparison also reveals the problems connected with various methodological changes in the survey design.

Keywords

Swiss travel surveys – History – Questionnaires for travel behaviour – 3rd Swiss Transport Research Conference – STRC 2003 – Monte Verità

1. Introduction

The first Swiss travel survey was implemented in 1974. Since then, such surveys have been conducted every five years – the last one in 2000. One remarkable characteristic of the Swiss survey history is that the methodology was adopted every second survey according to the state of the art and the respective political requirements. Time budget surveys as well as travel diaries based on stages respectively written forms as well as telephone interviews were used during this process of development. Table 1 gives on overview over the last six surveys. For 2005, it is discussed to change the method once again. The cross-sectional survey with a five-year-rhythm will perhaps be substituted by an annual survey.

Table 1 Travel surveys 1974 – 2000

Year	Sample	Reporting period	Method	Remarks
1974	2'114 households, all persons older than 6	1 effective day, autumn	Combination of written und personal interview	Time-budget survey covering all activities
1979	2'000 households, all persons older than 10	2 effective days, autumn		
1984	3'513 households, all persons older than 14	1 effective day, spring	Written interview	Trip concept (similar to KONTIV-design)
1989	20'472 households, persons older than 10			
1994	16'570 households, 18'020 persons, persons older than 6	1 effective day, whole year	Computer added telephone interview (CATI)	Stage concept
2000	28'054 households, 29'492 persons, persons older than 6			

Source: Bundesamt für Raumentwicklung und Bundesamt für Statistik (2001) *Mobilität in der Schweiz, Ergebnisse des Mikrozensus 2000 zum Verkehrsverhalten*, Bern und Neuenburg.

The surveys cover a range of information:

- Information about the household (size, composition, mobility tools)
- Information about cars and motorcycles
- Information about the household-members
- Information about the target persons and their one-day-mobility
- Information about the attitude towards transport policy

- Information about journeys with at least one overnight stay (only in 2000)

One consequence of these different variables is, that for each survey datasets at different levels exist (person-file, household-file, trip-file, …).

This paper gives a review of the different survey-periods and their designs. The remainder of the paper is organised as follows. At first, the transport policy background is described as a determinant for the surveys. Then each survey period is introduced. The targets of the different surveys, the survey methods and instruments as well as the respective publications are outlined. After that, the temporal development of the key figures is presented. In the conclusion the different survey-periods are compared and assessed and an outlook onto the next survey is given.

2. Transport policy background

The fifties and sixties of the last century can be called the 'era of the automobile' (Bundesamt für Raumentwicklung, 2000). The automobile was part of the economic miracle and had become an important status symbol for many people. The transport policy was characterised by a mode specific and non-integrated approach and by a demand orientated infrastructure planning. This policy resulted in more roads and growing traffic volumes. At the beginning of the seventies the problems of this policy – such as congestion and negative environmental effects – became more and more visible.

Taking these problems into consideration, the Bundesrat decided to set up a commission (Stab für Gesamtverkehrsfragen), which should investigate the transport related problems and develop the basics for a co-ordinated transport policy. In 1972, the commission started its work for a transport master plan. Very soon it became clear that very little information about the personal mobility was available. As this information was crucial to develop the master plan, various mobility studies were initiated – among other things a survey on individual travel behaviour ('Mikrozensus Verkehr'). The commission completed the master plan in1978. The demonstration of the usefulness of a travel survey was one important side-effect of this master plan.

The development of this master plan was the first step in the direction of a co-ordinated transport policy. The necessity to put this master plan into action was clear – especially in view of a growing opposition against the motorised traffic (for example 'Stop dem Beton', 'Kleeblatt-Initiativen'). In order to implement the new integrated policy approach, the 'Dienst für Gesamtverkehrsfragen' was founded which should prepare the referendum. Although the master plan was not accepted by the population in 1988, it has considerably influenced the Swiss transport policy till today.

In the seventies and eighties, the Swiss transport policy was concentrated on the national level. The liberalization policy of the EU and the growing transport volumes required an extension of the Swiss perspective. As a consequence, new surveys were established to measure the induced traffic through Switzerland ('alpen- und grenzquerender Personen- beziehungsweise Güterverkehr'). Furthermore it was started to predict the transport development and to compare the travel behaviour of the Swiss people with other populations. These tasks presupposed a method change of the Swiss travel survey: The trip concept was introduced in

the eighties. New transport related requirements necessitated the next adaptation in the nineties (stage concept).

3. Time-budget surveys in the seventies

The first Swiss travel survey took place in 1974. The following targets were connected with this survey (Stab für Gesamtverkehrsfragen, 1975):

- Establishing a connection between travel behaviour and daily routine
- Investigation of the impact of socio-demographic characteristics
- Assessment of the influence of the spatial structure
- Collection of information about attitudes towards transport policy
- Bridging the knowledge-gap concerning the different trip purposes
- Control of the results of existing data (commuter-statistics of the national census)

According to these targets, the main interests of this first survey were the personal mobility situation and the needs of the travellers. These interests resulted in the decision for a time-budget approach. This strategic decision was also influenced by the fact, that time budget surveys were very popular at this time (for example Szalai, 1972; Blass, 1980) and that travel surveys based on individual trips were a relatively unknown survey type. The first travel survey was conducted in the U.S.A. in 1969. The first European surveys took place in the early seventies, for example Germany 1973 and Great Britain 1972 (Simma, Dubouloz and Axhausen, 2001).

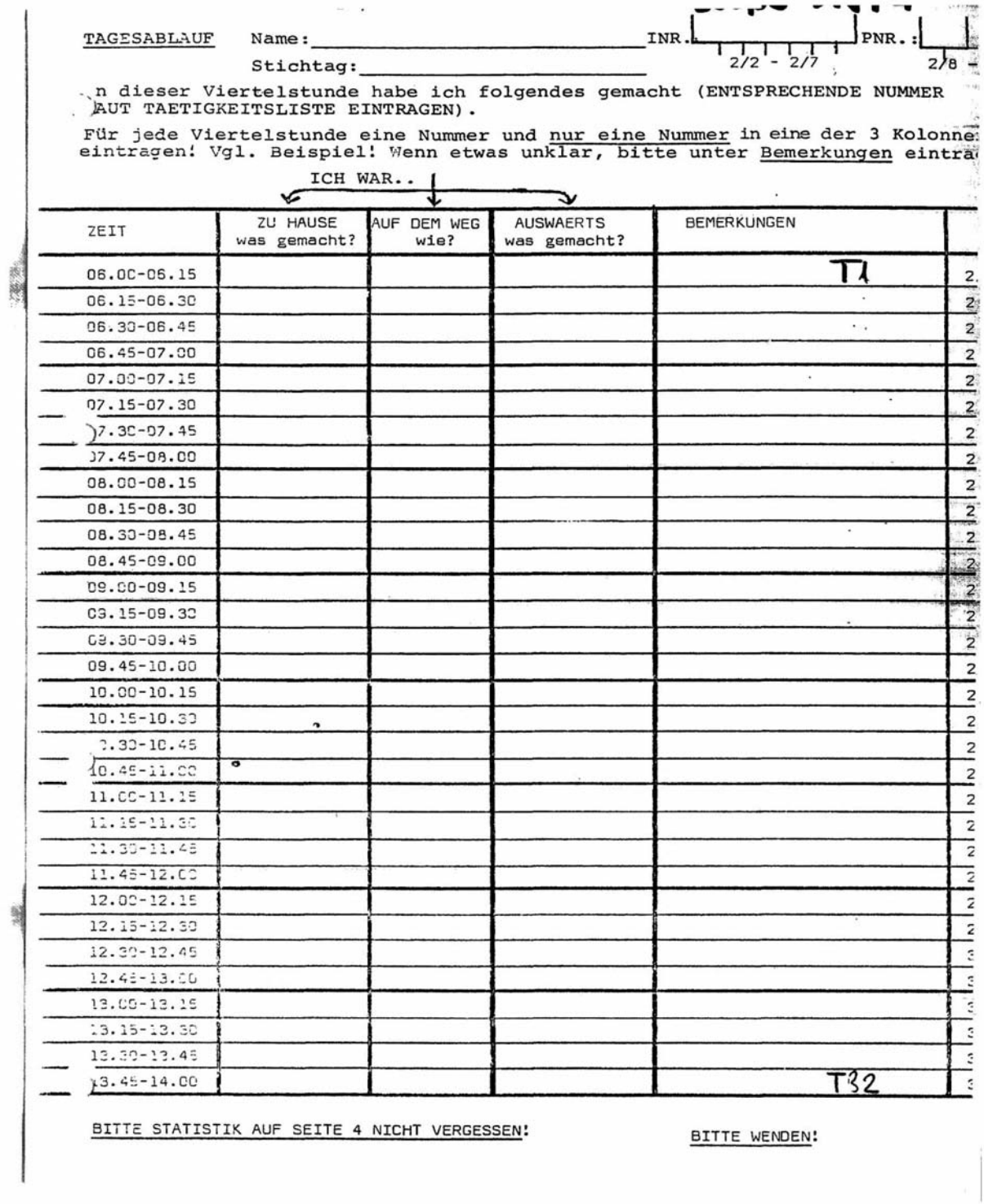
The survey instruments of 1974 and 1979 contained one questionnaire for the socio-demography, one for the use of time on the respective day, which is shown in Figure 1 respectively 2, and one to describe a specific trip. In both surveys the day was divided in 15-minutes intervals. For each interval the respondents were asked to report an activity or trip according to a detailed coding system. In 1979 more than ten categories for indoor activities, 20 categories for trips and ten categories for outdoor activities were available to select from.

The households were contacted by an interviewer who recorded the socio-demography and explained the timetable of the survey. The questionnaires were collected by the same person after a week. Finally, a randomly selected member of the household was chosen to discuss one of his/her specific trips.

There exist differences between these first two travel surveys. On the one hand, the survey instruments were a little bit different. For example, the timetable of the 1979-instrument contained pictograms and had a horizontal alignment. On the other hand, the selection of the respective days was different. Whereas in 1974 only the behaviour on weekdays and Saturdays was recorded, in 1979 the behaviour during the whole week with a main focus on weekend-travel was surveyed. Each person had to describe one weekday and one weekend-day. One reason for this change was that the growing importance of leisure travel had been recognized.

The results of the surveys were published by the 'Stab für Gesamtverkehrsfragen' (1975, 1983). The publication concerning the 1974 survey only included the direct survey results. The description of the results strictly followed the structure of the survey. In 1979 the publication was thematically organised and extended by a chapter about the general situation in Switzerland.

Figure 1 Survey instrument in 1974



TAGESABLAUF Name: _____ INR. [ ] PNR.: [ ]
2/2 - 2/7 2/8

Stichtag: _____

...n dieser Viertelstunde habe ich folgendes gemacht (ENTSPRECHENDE NUMMER AUS TAETIGKEITSLISTE EINTRAGEN).

Für jede Viertelstunde eine Nummer und nur eine Nummer in eine der 3 Kolonnen eintragen! Vgl. Beispiel! Wenn etwas unklar, bitte unter Bemerkungen eintra...

ICH WAR..

ZEIT	ZU HAUSE was gemacht?	AUF DEM WEG wie?	AUSWAERTS was gemacht?	BEMERKUNGEN	
06.00-06.15				T1	2
06.15-06.30					2
06.30-06.45					2
06.45-07.00					2
07.00-07.15					2
07.15-07.30					2
07.30-07.45					2
07.45-08.00					2
08.00-08.15					2
08.15-08.30					2
08.30-08.45					2
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10.45-11.00					2
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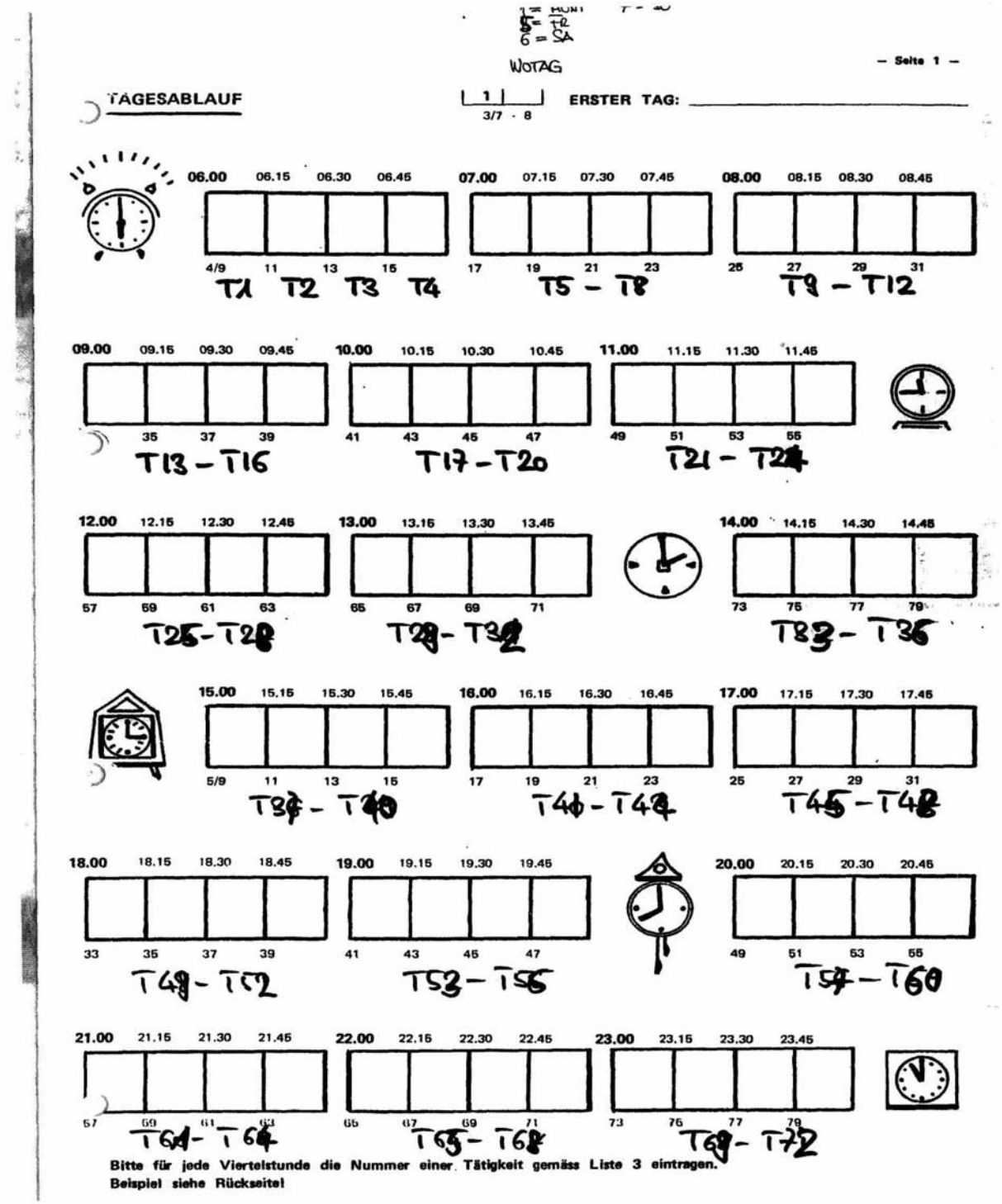
13.00-13.15					2
13.15-13.30					2
13.30-13.45					2
13.45-14.00				T32	2

BITTE STATISTIK AUF SEITE 4 NICHT VERGESSEN!

BITTE WENDEN!

Figure 2 Survey instrument in 1979



4. Trip based surveys in the eighties

The findings of the first travel surveys provided important insights into the behaviour of the Swiss people and were therefore important for the Swiss transport policy. But the structure of these surveys made predictions and comparisons with other countries nearly impossible. As predictions and comparisons played a more and more important role for the Swiss transport planers and politicians, it was decided to change the method for the following survey. In the context of this change other national surveys were investigated in detail. The German example ('KONTIV') was seen as most promising and was therefore used as a model for the survey in 1984 (see Figure 3).

In 1989 the trip concept was maintained, but the design of the questionnaire was completely changed. The aim was to make it more user-friendly and more understandable. For example, an explanation about what is meant by a trip was added. In principle, the changes in the design were positive – with one exception: The new trip diary provided space only for reporting five trips (see Figure 4). Five trips, though, are often not enough to describe the daily mobility of persons comprehensively. In 1984 seven trips per questionnaire were allowed. In both surveys, it was offered to order as many diaries as needed, but not many respondents took this opportunity.

Another change in the eighties concerned the selection of the field period. In 1984 80% of the respondents were asked during May, in 1989 nearly 50% of the respondents during April. As in April many schools are closed for two weeks because of holidays, the number of work and school trips were smaller in 1989 than in 1984.

The results of both surveys were published by the 'Stab' respectively 'Dienst für Gesamtverkehrsfragen' (1986, 1991). The descriptions of the results in 1984 and 1989 are very similar and were focused on the same issues. Connections to general topics, such as in 1979, were not made. In the publication of 1984 former travel surveys are mentioned in the introduction, but time series are completely missing. The print run of these publications was 1'000 (1984) respectively 700 (1989).

Figure 3 Survey instrument in 1984

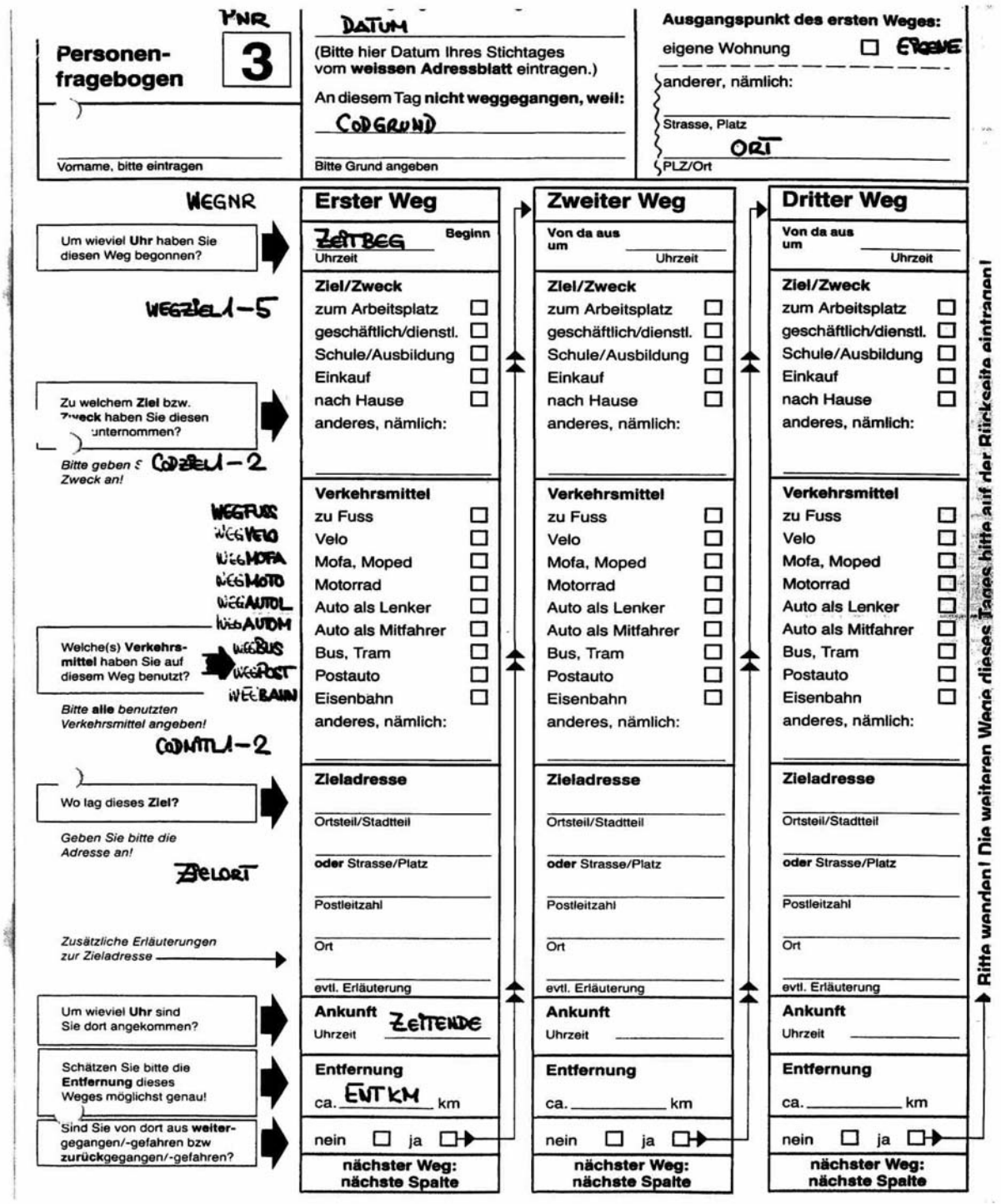
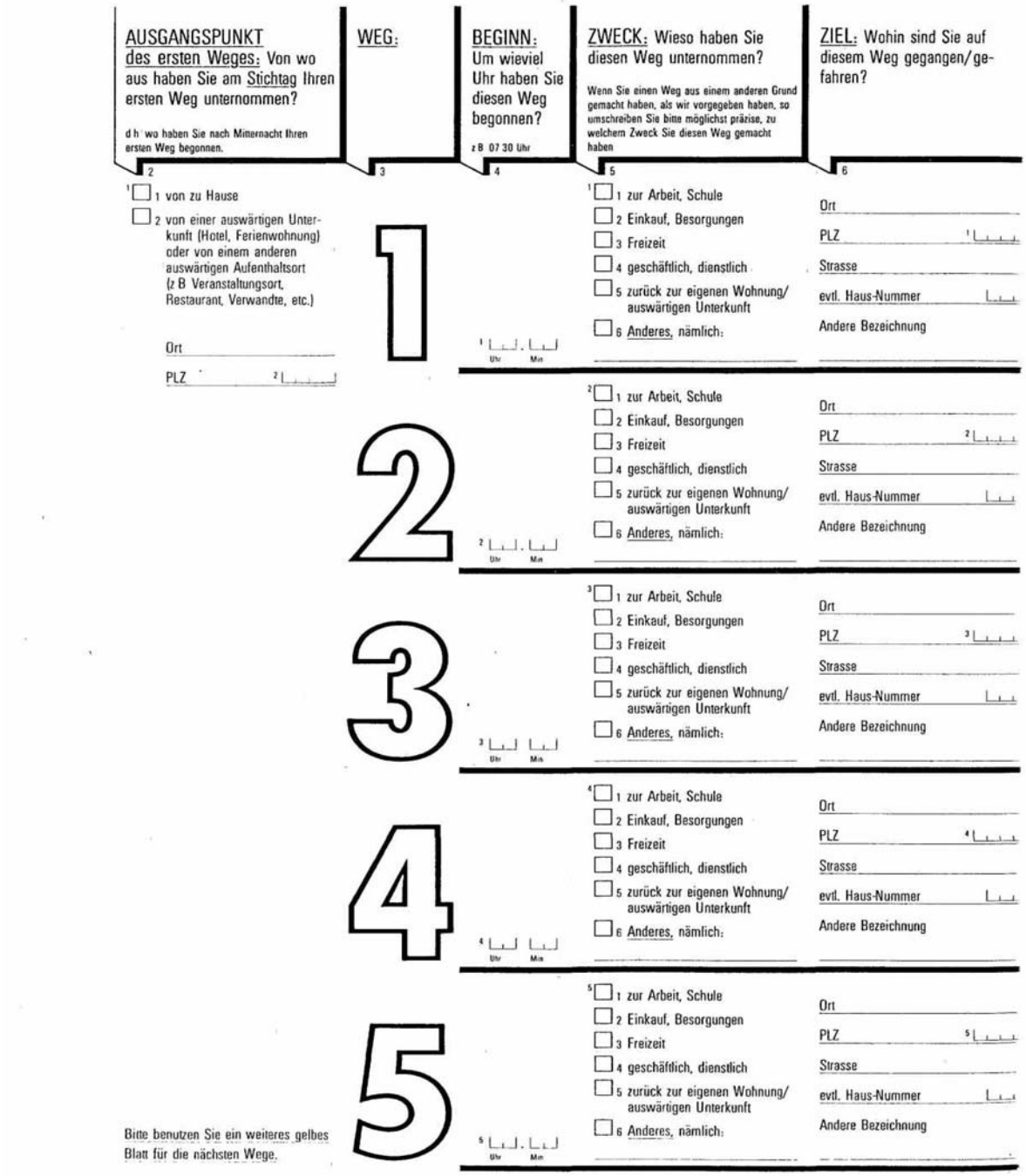


Figure 4 Survey instrument in 1989



AUSGANGSPUNKT des ersten Weges: Von wo aus haben Sie am Stichtag Ihren ersten Weg unternommen? d h wo haben Sie nach Mitternacht Ihren ersten Weg begonnen. (2)	WEG: (3)	BEGINN: Um wieviel Uhr haben Sie diesen Weg begonnen? z B 07 30 Uhr (4)	ZWECK: Wieso haben Sie diesen Weg unternommen? Wenn Sie einen Weg aus einem anderen Grund gemacht haben, als wir vorgegeben haben, so umschreiben Sie bitte möglichst präzise, zu welchem Zweck Sie diesen Weg gemacht haben (5)	ZIEL: Wohin sind Sie auf diesem Weg gegangen/gefahren? (6)
[1] ☐ 1 von zu Hause ☐ 2 von einer auswärtigen Unterkunft (Hotel, Ferienwohnung) oder von einem anderen auswärtigen Aufenthaltsort (z B Veranstaltungsort, Restaurant, Verwandte, etc.) Ort PLZ [2]	1	[1] Uhr . Min	[1] ☐ 1 zur Arbeit, Schule ☐ 2 Einkauf, Besorgungen ☐ 3 Freizeit ☐ 4 geschäftlich, dienstlich ☐ 5 zurück zur eigenen Wohnung/ auswärtigen Unterkunft ☐ 6 Anderes, nämlich:	Ort PLZ [1] Strasse evtl. Haus-Nummer Andere Bezeichnung
	2	[2] Uhr . Min	[2] ☐ 1 zur Arbeit, Schule ☐ 2 Einkauf, Besorgungen ☐ 3 Freizeit ☐ 4 geschäftlich, dienstlich ☐ 5 zurück zur eigenen Wohnung/ auswärtigen Unterkunft ☐ 6 Anderes, nämlich:	Ort PLZ [2] Strasse evtl. Haus-Nummer Andere Bezeichnung
	3	[3] Uhr Min	[3] ☐ 1 zur Arbeit, Schule ☐ 2 Einkauf, Besorgungen ☐ 3 Freizeit ☐ 4 geschäftlich, dienstlich ☐ 5 zurück zur eigenen Wohnung/ auswärtigen Unterkunft ☐ 6 Anderes, nämlich:	Ort PLZ [3] Strasse evtl. Haus-Nummer Andere Bezeichnung
	4	[4] Uhr Min	[4] ☐ 1 zur Arbeit, Schule ☐ 2 Einkauf, Besorgungen ☐ 3 Freizeit ☐ 4 geschäftlich, dienstlich ☐ 5 zurück zur eigenen Wohnung/ auswärtigen Unterkunft ☐ 6 Anderes, nämlich:	Ort PLZ [4] Strasse evtl. Haus-Nummer Andere Bezeichnung
Bitte benutzen Sie ein weiteres gelbes Blatt für die nächsten Wege.	5	[5] Uhr . Min	[5] ☐ 1 zur Arbeit, Schule ☐ 2 Einkauf, Besorgungen ☐ 3 Freizeit ☐ 4 geschäftlich, dienstlich ☐ 5 zurück zur eigenen Wohnung/ auswärtigen Unterkunft ☐ 6 Anderes, nämlich:	Ort PLZ [5] Strasse evtl. Haus-Nummer Andere Bezeichnung

5. Stage based surveys in 1994 and 2000

The main difference between the trip and the stage concept is the degree of information about mode choice. In the trip concept, the distance, the destination and the origin, the duration, the departure and arrival time as well as the used modes respectively the main mode between two activities at different locations are covered. In the stage concept, additionally all used modes and all switches between the modes (with the same information as for a trip) as well as the waiting periods are monitored. Therefore, a survey based on the stage concept provides information about the modal split with exact details about the kilometres and durations. This information is requested by many transport planers.

A study which was conducted before the stage concept was initialised demonstrated that this concept change also implied a change of the adopted interview-method (Dienst für gesamtverkehrsfragen, 1993). Computer added telephone interviews (CATI) were proposed by the researchers of the study and finally implemented. Switzerland was one of the first countries which managed the step from a written interview to a telephone interview. Many countries have followed the Swiss example in the last years, for example Germany. In addition to the possibility to initialise the stage concept, there were other advantages connected with the telephone interview technique:

- verification of answers
- better exhaustion of the sample
- more knowledge about the effective respondent and the effective day
- possibility to answer questions of the respondents
- higher answer rate

Not only the interview-method was changed between 1989 and 1994, but also the duration of the field period. Perhaps based on the experiences of 1989 (high number of holiday days), travel behaviour was surveyed over a whole year. The change of the interview technique made another adoption necessary. No longer all persons in a household older than a certain age were interviewed. Only one or at most two persons per household were asked to participate in the survey. Consequently, the possibility to explore the interrelationships between household-members was reduced – a possibility which has not been used before anyway.

As telephone interviews were used for the surveys 1994 and 2000, no questionnaire can be shown (only interview guides exist). Therefore comparisons between the survey designs are less obvious. Nevertheless, the surveys were compared. The main changes concern the following points.

- **Purposes**: In 1994, the trip purposes were coded very roughly (work – business – school – shopping – leisure – other). This rough definition was extended in 2000. On the one hand the purposes 'service' and 'escort' were added. 5% of all trips were conducted for these two purposes, whereby the distinction between service and escort was not clear for many respondents and was therefore not kept for the analyses. On the other hand the exact leisure activities were registered. How useful this adoption was, is shown in Table 2. Each activity is connected with different trip figures.

Table 2 Figures of the most important leisure activities per (leisure) trip in 2000

Activity	Activities / leisure trips [%]	Duration [min]	Slow modes / leisure trips [%]	Trips < 2km / leisure trips [%]
Gastronomy	22	23	43	64
Non-sportive outdoor - activity	20	60	85	45
Visits (friends, acquaintance)	18	23	30	48
Cultural events, leisure facilities	11	28	34	57
Sports	10	41	41	41
Unpaid work	9	21	34	56
All mentioned activities	90	36	47	51

- **Habitual behaviour**: Questions concerning the habitual behaviour were only asked in 1994.
- **Journeys**: In 2000, a supplementary module was added, because journeys with at least one overnight stay are not correctly covered by effective days. Taking the importance of tourism into consideration, the usefulness of such a module is undisputed. Unfortunately, this module was not adequately tested in the pre-test and therefore not applied well in the main survey. Only information about the last journey was surveyed and not – as in most long distance respectively journey surveys – the journeys in a given period before the interview.
- **Flights**: This module was also new in 2000. It was initiated by the 'Bundesamt für Zivilluftfahrt', which wanted to compare the travel survey results with its own figures. The results of this comparison are not yet published.
- **Income**: In 2000, the question about income has been posed for the first time since 1979. This question was not treated in former surveys, because a high refusal rate and deterrence rate were expected. In 2000, the refusal rate was really relatively high (15%

no answer, 10% don't know), but the high explanatory power of this variable emphasizes its importance in the Swiss travel survey (see Table 3).

Table 3 Key mobility figures per person and day dependent on household income in 2000

HH-income [SFr]	Duration [min]	Distance [km]	Trips [n]	Leisure-trips [n]	Leisure-trips / trips [%]
< 2'000	68	19	2.56	1.25	49
2'000-6'000	94	42	3.38	1.35	40
6'001-10'000	106	54	3.90	1.52	39
10'001-14'000	109	62	4.04	1.55	38
> 14'000	119	72	4.14	1.63	39
Total	98	48	3.59	1.42	40

The differences between the two survey designs must be considered, if developments in traffic are assessed. Not only are the developments within the nineties of interest, but also the developments between 1974 and 2000 or at least between 1984 and 2000. In principle, the change form the trip concept to the stage concept does not necessarily exclude temporal comparisons, as each chain of stages can be transformed into trips. Important preconditions for this transformation are similar or even better identical categories and a clear key for defining the main mode of the whole trip. Both preconditions are not fully fulfilled.

As in former years, the results of the surveys were published by the 'Dienst für Gesamtverkehrsfragen' respectively the 'Bundesamt für Raumentwicklung' as well as by the 'Bundesamt für Statistik' (1996, 2001). The publication of 1994 was edited in the layout of the 'Bundesamt für Statistik' (1'000 exemplars), the publication of 2000 in the layout of the 'Bundesamt für Raumentwicklung' (7'000 exemplars). The high print run in 2000 and the big feedback in the media are the result of committed public relations.

The contents of the two publications reflect the environments of the respective surveys. In 1994, the method of the survey is explained in detail, mainly because great changes took place during this survey. In addition to the key figures, the publication of the 2000 survey contains the results of the supplementary modules and a historical perspective. This perspective covers the surveys 1984, 1989, 1994 and 2000. It is the first attempt to make a comparison of the Swiss travel surveys.

6. Participation of the cantons

Since 1989, the cantons have been given the opportunity to participate in the Swiss travel survey. For the participation the cantons had to pay a contribution per interview. In return for this more people were interviewed in the respective canton. In 2000, the cantons even had the chance to introduce extra questions. For example, for the canton Zurich questions concerning the 'Zürcher Verkehrsverbund' were added. In each survey year, the number of cantons and the participating cantons varied. In 1989, four cantons, participated, in 1994 only three cantons were involved and in 2000 there were even ten cantons.

The participation of the cantons was found to be useful for the responsible federal offices for three main reasons:

- A larger sample becomes possible.
- The data set is used and analysed by more people, which have different focuses.
- The cantonal publications are very popular and therefore increase the publicity of the Swiss travel survey (for example: 'Das Verkehrsverhalten in der Region Bern', 2002; 'La mobilité des Vaudois', 2002).

Therefore it is one aim of the responsible offices to motivate as many cantons as possible to join the next survey.

7. Historical development of the key figures

In the last chapters the different survey periods and their respective designs were described in detail. On the one hand, the methods changed completely each second survey, on the other hand, also various changes within a methodical period were made. Based on these descriptions and the knowledge about the differences between the surveys, an attempt can be made to compare the key figures. It should be said here that changes of the key figures could be caused by real changes of travel behaviour or/and by methodological changes or/and by changes of the population's composition.

The effects of the different survey instruments in 1984 and 1989 were the only methodological effects which were so far investigated in detail (Dienst für Gesamtverkehrsfragen, 1992). The trip diary was shorter in 1984 than in 1989 (space for 5 trips instead of 7 trips). Two hypotheses, how the respondents reacted, were proposed:

- Hypothesis 1: Trips with an ordinal number of six and higher are left out.
- Hypothesis 2: Small, seemingly unimportant trips are left out.

The second hypothesis is more plausible than the first one, because the number of trips was lower in 1989 and the average distance higher. The experts of the respective study assumed that the number of trips was underestimated with a spread of 0.15 – 0.30 trips per mobile person.

7.1 Personal characteristics

As changes in the key figures can be caused by changes of the population's composition, this topic must be analysed as well as the other key figures. Table 4 gives an overview of the main personal characteristics over the years. The results are related to people older than 19. Younger people were not included, because the age limit varied each survey. The selection of the adults had the positive side effect, that differences, which could be the result of different surveys units (household versus person), were smoothed out.

For most variables, a trend can be observed. There is only exception – namely gender. It was not expected that this variable would vary.

- **Marriage**: The share of married people decreased between 1974 and 2000 by nearly 20%. In this time the number of single and divorced people increased.
- **Age**: The share of young people slightly decreased, the share of elderly people slightly increased.
- **Employment**: In the seventies and eighties, the share of employed people was relatively stable, but in the nineties, it increased by nearly 10%.
- **Household-size**: Two related developments can be noticed. First, the share of one-person-households increased, second, the average number of members per household decreased.

Aware of the fact that our society has been subjected to a variety of changes, for example the emancipation of women, the ageing of the population, the individualism and the pluralism of life-styles, these observed developments seem very plausible. As the development from one predominant household-type (nuclear family) to a pluralized society is not yet finished, more changes are expected (Simma, 2000). It is assumed that these changes have had effects on the general travel behaviour.

Table 4 Historical development of the personal characteristics in the Swiss travel surveys (TS) – people older than 19 years

Characteristics	**TS 74**	**TS 79**	**TS 84**	**TS 89**	**TS 94**	**TS 00**
Male [%]	49	48	47	49	48	48
Married [%]	79	76	66	64	60	60
Employed [%]	51	49	57	54	62	64
Between 20-24 [%]	12	10	10	10	8	8
Older than 64 [%]	16	19	21	19	19	20
Household-size [average]	3.1	3.0	2.8	2.9	2.7	2.7
1-person households [%]	8	9	17	16	20	19
High HH-income [%]	14	17				21

Empty fields are caused by missing variables in the respective travel surveys.

7.2 Mobility tools

Travel is usually realized to satisfy personal needs, whereby mobility tools are often a precondition for trip making. The possibility to use a specific mode is understood by a mobility tool. The main mobility tools concern three modes:

- **Bicycle** – ownership and availability of a bicycle
- **Public transport** – ownership of different ticket types (monthly, annual, yearly)
- **Car** – ownership of a driving license as well as ownership or availability of a car

With regard to public transport, it is important to mention that different ticket types are connected with different degrees of commitment. A 'Generalabonnement' can be regarded as an equivalent to a car, whereas a reduction-ticket ('Halbtax') is often only an agreeable and cheap supplementation (Simma and Axhausen, 2001).

In the last thirty years, the importance of the car increased strongly. In 1974 only 50% of the adults owned a driving-license, in 2000 already 80%. For car-availability, the respective figures are 34% (1974) and 63% (2000). Parallel to this development the ownership of bicycles and their availability doubled. It can be generally found, that people have improved their mobility tools by a large degree. It is difficult to assess the ownership of tickets, because this variable has only been surveyed since 1994 and because the price-system has dramatically changed (introduction of reduction-tickets and GA, establishment of public transport compounds).

Table 5 Historical development of the mobility tools in the Swiss travel surveys (TS) – people older than 19 years

Characteristics	TS 74	TS 79	TS 84	TS 89	TS C 94	TS 00
Driving licence-owner [%]	49	58	64	68	76	80
Season ticket-owner [%]			24	19	19 (GA: 4)	18 (GA: 6)
Reduction-ticket-owner [%]				35	38	35
Bike available [%]		33			63	65
HH without bikes [%]	48	38	43	38	28	25
Number of bikes [average]	1.04	1.36	1.26	1.53	1.81	2.00
Car available [%]	34	44		46	57	63
HH without cars [%]	32	26	26	20	20	17
Number of cars [average]	0.83	0.94	1.02	1.16	1.14	1.28

Empty fields are caused by missing variables in the respective travel surveys.

7.3 Personal mobility

It was already described, how the population's composition and the mobility tools had changed in the last three decades. Here the question arises, how these general trends affected travel behaviour. At the personal level, various mobility figures were computed (see Table 6), whereby the figures are based on all respondents. When assessing the results, it must be considered that the effective days are unequally distributed. In 1974 no Sundays were included; in 1979 the Sundays were overrepresented. In the other surveys an equal distribution of mobile days over the week could be achieved.

In contrast to the personal characteristics, it is difficult to detect tendencies for the figures of the personal mobility. Most increases respectively decreases between two surveys are compensated in one of the following surveys. The effects of the different methods are probably one reason for this unclear situation. For example, it can be assumed, that the relatively high share of immobile people in the eighties is a result of the written interview. Easy to detect are also the effects of the short trip diary in 1989 or the estimated trip durations in the seventies (conversion from time-slots to trips).

It is interesting to see, that the impacts of changes within the society and of the enlarged mobility tools on the general travel behaviour seem to be relatively small. Here the idea of constants in travel behaviour occurs. These possible constants especially the constant time budget have been investigated in detail by Simma (2003). In this study the variations within the Swiss population become visible. But these variations were levelled out on average in the past years.

Table 6 Historical development of the personal mobility in the Swiss travel surveys (TS)

Characteristics	**TS 74**	**TS 79**	**TS 84**	**TS 89**	**TS 94**	**TS 00**
Immobile adults [%]	9	15	17	18	12	10
Trips per adults [n]	3.6	3.2	3.4	2.8	3.2	3.6
Trips per mobile person [n]	3.7	3.5	4.0	3.6	3.7	4.0
Duration per mobile person [km]	79	108	82	101	97	100
Distance per mobile person [min]	20	22	40	36	39	41

7.4 Trip characteristics

Now, the perspective is altered – from the personal level to the trip level. This allows a consideration of various trip characteristics, for example the average length and duration of trips as well as the modal split (see Table 7). As in the first four surveys the trip concept was applied, the stages in the last surveys were converted into trips. There exist different possibilities for this conversion. For a comparison with the other surveys, a conversion after a hierarchy of the different modes seemed most appropriate.

The key trip figures show a similarly unclear picture like the figures of the personal mobility shown above. It is therefore rather difficult to detect trends. Only some tendencies can be mentioned:

- Trips seem to become longer – with respect to length and duration.
- Public transport and slow modes lose 'market shares' compared to private motorised modes.

Table 7 Historical development of the trip characteristics in the Swiss travel surveys (TS)

Characteristics	**TS 74**	**TS 79**	**TS 84**	**TS 89**	**TS 94**	**TS 00**
Distance per trip [km]	5.0	5.8	9.3	10.7	10.2	13.2
Duration per trip [min]	22	30	21	27	26	27
Share of slow modes [%]	47	41	40	31	38	35
Car-share [%]	33	42	48	53	49	53
Public transport -share [%]	12	13	11	13	11	10

8. Conclusion

The Swiss travel surveys not only give interesting insights into the development of travel behaviour, but also into the various methodological aspects of travel surveys and their practicability. Unfortunately, this last feature aggravates the illustration of the historical development. Especially, the key figures concerning the personal mobility and the trips are biased significantly. In contrast to these biases, the variables describing the person and the household reflect the general trends within the society.

Concerning the different survey methods, it can be stated that they reflect the state of the art and the respective political and transport related requirements. Therefore it is difficult to compare and assess the quality and the usefulness of these surveys. Although each survey has its justification, the problem to illustrate the historical development of the key figures is a considerable disadvantage of the Swiss travel survey history. For future surveys, this aspect should be taken into account more.

Although the various method changes aggravate the possibility of reasonable comparisons, another method change is planned for the forthcoming travel survey. This method change concerns the five-year-rhythm. Various reasons speak for the establishment of an annual survey:

- A steady distribution of the financial and personal resources
- Possibility of additional modules
- Higher attractiveness for the cantons
- Possibility to integrate other surveys (for example DATELINE)
- Advantages for modelling
- Possibility to react faster to new methods (for example GPS)
- Faster availability of data and results

Other features of the last survey, like the stage concept or CATI, are uncontested. It is hoped that provisional decisions concerning the new survey can be presented at STRC.

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