SwissMetro

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Travel Survey Metadata Series **42**

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Travel Survey Metadata Series

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Abstract

The SwissMetro is a proposed major innovation to the Swiss transport system : an underground mag-lev system to connect the major urban centres in Switzerland. As part of the various assessment studies carried out so far, Abay (1999) conducted a substantial RP/SP survey of longdistance road and rail travellers using a two-stage survey method. First, the respondents were interviewed or observed about a current trip. Based on this trip SP exercises were generated, which the respondent answered in turn.

This dataset consists of survey data collected on the trains between St. Gallen and Geneva, Switzerland, during March 1998. The respondents provided information in order to analyze the impact of the modal innovation in transportation, represented by the Swissmetro, a revolutionary mag-lev underground system, against the usual transport modes represented by car and train.

The Swissmetro is a true innovation. It is therefore not appropriate to base forecasts of its impact on observations of existing revealed preferences (RP) data. It is necessary to obtain data from surveys of hypothetical markets/situations, which include the innovation, to assess the impact. Survey data were collected on rail-based travels, interviewing 470 respondents. Due to data problems, only 441 are used here. Nine stated choice situations were generated for each of 441 respondents, offering three alternatives: rail, Swissmetro and car (only for car owners).

A similar method for relevant car trips with a household or telephone survey was deemed impractical. The sample was therefore constructed using license plate observations on the motorways in the corridor by means of video recorders. A total of 10529 relevant license plates were recorded during September 1997. The central Swiss car license agency had agreed to send up to 10000 owners of these cars a survey-pack. Until April 1998, 9658 letters were mailed, of which 1758 were returned. A total of 1070 persons filled in the survey completely and were willing to participate in the second SP survey, which was generated using the same approach used for the rail interviews. 750 usable SP surveys were returned, from the license-plate based survey.

Keywords

Swissmetro, Switzerland

Preferred citation style

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1.0 Document Description

Citation

Title:	SwissMetro
Identification Number:	Swissmetro
Authoring Entity:	Prof. Dr. Kay W. Axhausen (IVT, ETH Zürich)
Date of Production:	2013-02-22
Software used in Production:	Nesstar Publisher

2.0 Study Description

Citation

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Study Scope

Abstract: The SwissMetro is a proposed major innovation to the Swiss transport system : an underground mag-lev system to connect the major urban centres in Switzerland. As part of the various assessment studies carried out so far, Abay (1999) conducted a substantial RP/SP survey of longdistance road and rail travellers using a two-stage survey method. First, the respondents were interviewed or observed about a current trip. Based on this trip SP exercises were generated, which the respondent answered in turn. This dataset consists of survey data collected on the trains between St. Gallen and Geneva, Switzerland, during March 1998. The respondents provided information in order to analyze the impact of the modal innovation in transportation, represented by the Swissmetro, a revolutionary mag-lev underground system, against the usual transport modes represented by car and train. The Swissmetro is a true innovation. It is therefore not appropriate to base forecasts of its impact on observations of existing revealed preferences (RP) data. It is necessary to obtain data from surveys of hypothetical markets/situations, which include the innovation, to assess the impact. Survey data were collected on rail-based travels, interviewing 470 respondents. Due to data problems, only 441 are used here. Nine stated choice situations were generated for each of 441 respondents, offering three alternatives: rail, Swissmetro and car (only for car owners). A similar method for relevant car trips with a household or telephone survey was deemed impractical. The sample was therefore constructed using license plate observations on the motorways in the corridor by means of video recorders. A total of 10529 relevant license plates were recorded during September 1997. The central Swiss car license agency had agreed to send up to 10000 owners of these cars a survey-pack. Until April 1998, 9658 letters were mailed, of which 1758 were returned. A total of 1070 persons filled in the survey completely and were willing to participate in the second SP survey, which was generated using the same approach used for the rail interviews. 750 usable SP surveys were returned, from the license-plate based survey.

Country: Switzerland

3.0 File Description

File: Swissmetro.NSDstat

- Number of cases: 10728
- No. of variables per record: 28
- Type of File: NSDstat 200501

4.0 Variable Description

Variable Groups

- RP/SP Swissmetro

RP/SP Swissmetro

Variables within *RP/SP Swissmetro*

- Different groups in the population
- Survey performed in train (0) or car (1)
- It is fixed to 1 (stated preference survey)
- Respondent identifier
- Travel purpose. 1: Commuter, 2: Shopping, 3: Business, 4: Leisure, 5: Return from work, 6: Return from shopping, 7: Return from business, 8: Return from leisure, 9: other
- First class traveler (0 = no, 1 = yes)
- Travel ticket. 0: None, 1: Two way with half price card, 2: One way with half price card, 3: Two way normal price, 4: One way normal price, 5: Half day, 6: Annual season ticket, 7: Annual season ticket Junior or Senior, 8: Free travel after 7pm card, 9: Group ticket, 10: Other
- Who pays (0: unknown, 1: self, 2: employer, 3: half-half)
- 0: none, 1: one piece, 3: several pieces
- It captures the age class of individuals. The age-class coding scheme is of the type: 1: age<=24, 2: 24<age<=39, 3: 39<age<=54, 4: 54<age<=65, 5: 65 <age, 6: not known
- Traveler's Gender 0: female, 1: male
- Traveler's income per year [thousand CHF]. 0 or 1: under 50, 2: between 50 and 100, 3: over 100, 4: unknown
- Variable capturing the effect of the Swiss annual season ticket for the rail system and most local public transport. It is 1 if the individual owns a GA, zero otherwise.
- Travel origin (a number corresponding to a Canton, 1:ZH, 2:BE, 3:LU, 4:UR, 5:SZ, 6:OW, 7:NW, 8:GL, 9:ZG, 10:FR, 11:SO, 12:BS, 13:BL, 14:SH, 15:AR, 16:AI, 17:SG, 18:GR, 19:AG, 20:TH, 21:TI, 22:VD, 23:VS, 24:NE, 25:GE, 26:JU)
- Travel destination (a number corresponding to a Canton, 1:ZH, 2:BE, 3:LU, 4:UR, 5:SZ, 6:OW, 7:NW, 8:GL, 9:ZG, 10:FR, 11:SO, 12:BS, 13:BL, 14:SH, 15:AR, 16:AI, 17:SG, 18:GR, 19:AG, 20:TH, 21:TI, 22:VD, 23:VS, 24:NE, 25:GE, 26:JU)
- Train availability dummy
- Car availability dummy
- SM availability dummy
- Train travel time [minutes]. Travel times are door-to-door making assumptions about car-based distances (1.25*crow- flight distance)
- Train cost [CHF]. If the traveler has a GA, this cost equals the cost of the annual ticket.
- Train headway [minutes]. Example: If there are two trains per hour, the value of TRAIN HE is 30.

- SM travel time [minutes] considering the future Swissmetro speed of 500 km/h
- SM cost [CHF] calculated at the current relevant rail fare, without considering GA, multiplied by a fixed factor (1.2) to re flect the higher speed.
- SM headway [minutes]. Example: If there are two Swissmetros per hour, the value of SM HE is 30.
- Seats configuration in the Swissmetro (dummy). Airline seats (1) or not (0).
- Car travel time [minutes]
- Car cost [CHF] considering a fixed average cost per kilometer (1.20 CHF/km)
- Choice indicator. 0: unknown, 1: Train, 2: SM, 3: Car

Variables

Variable: **Different groups in the population**

Value	Label	Frequency
2 .		3969
3 .		6759

Range of Valid Data Values: 2 to 3

Summary Statistics:

Variable Format: numeric

Variable: **Survey performed in train (0) or car (1)**

Value	Label	Frequency
0 .		3969
1 .		6759

Range of Valid Data Values: 0 to 1

Summary Statistics:

Variable Format: numeric

Variable: **It is fixed to 1 (stated preference survey)**

Value	Label	Frequency
1 .		10728

Range of Valid Data Values: 1 to 1

Summary Statistics:

Variable Format: numeric

Variable: **Respondent identifier**

Range of Valid Data Values: 1 to 1192

Summary Statistics:

Minimum : 1

Maximum : 1192

Mean : 596.5

Standard deviation : 344.117

Variable Format: numeric

Variable: **Travel purpose. 1: Commuter, 2: Shopping, 3: Business, 4: Leisure, 5: Return from work, 6: Return from shopping, 7: Return from business, 8: Return from leisure, 9: other**

Value	Label	Frequency
1 .		1575
2 .		1278
3 .		5193
4 .		2304
5 .		144
6 .		63
7 .		144
8 .		9
9 .		18

Range of Valid Data Values: 1 to 9

Summary Statistics:

Variable Format: numeric

Variable: **First class traveler (0 = no, 1 = yes)**

Value	Label	Frequency
0 .		5679
1 .		5049

Range of Valid Data Values: 0 to 1

Summary Statistics:

Variable Format: numeric

Variable: **Travel ticket. 0: None, 1: Two way with half price card, 2: One way with half price card, 3: Two way normal price, 4: One way normal price, 5: Half day, 6: Annual season ticket, 7: Annual season ticket Junior or Senior, 8: Free travel after 7pm card, 9: Group ticket, 10: Other**

Value	Label	Frequency
1 .		4680
2 .		207
3 .		3402
4 .		99
5 .		234
6 .		1350
7 .		315
8 .		297
10 .		144

Range of Valid Data Values: 1 to 10

Summary Statistics:

Variable Format: numeric

Variable: **Who pays (0: unknown, 1: self, 2: employer, 3: half-half)**

Value	Label	Frequency
0 .		324
1 .		5814
2 .		3564
3 .		1026

Range of Valid Data Values: 0 to 3

Summary Statistics:

Variable Format: numeric

Variable: **0: none, 1: one piece, 3: several pieces**

Value	Label	Frequency
0 .		3969
1 .		6498
3 .		261

Range of Valid Data Values: 0 to 3

Summary Statistics:

Variable Format: numeric

Variable: **It captures the age class of individuals. The age-class coding scheme is of the type: 1: age<=24, 2: 24<age<=39, 3: 39<age<=54, 4: 54<age<=65, 5: 65 <age, 6: not known**

Value	Label	Frequency
1 .		711
2 .		3339
3 .		3834
4 .		2025
5 .		810
6 .		9

Range of Valid Data Values: 1 to 6

Summary Statistics:

Variable Format: numeric

Variable: **Traveler's Gender 0: female, 1: male**

Value	Label	Frequency
0 .		2682
1 .		8046

Range of Valid Data Values: 0 to 1

Summary Statistics:

Variable Format: numeric

Variable: **Traveler's income per year [thousand CHF]. 0 or 1: under 50, 2: between 50 and 100, 3: over 100, 4: unknown**

Value	Label	Frequency
0 .		306
1 .		1719
2 .		3744
3 .		4041
4 .		918

Range of Valid Data Values: 0 to 4

Summary Statistics:

Variable Format: numeric

Variable: **Variable capturing the effect of the Swiss annual season ticket for the rail system and most local public transport. It is 1 if the individual owns a GA, zero otherwise.**

Value	Label	Frequency
0 .		9207
1 .		1521

Range of Valid Data Values: 0 to 1

Summary Statistics:

Variable Format: numeric

Variable: **Travel origin (a number corresponding to a Canton, 1:ZH, 2:BE, 3:LU, 4:UR, 5:SZ, 6:OW, 7:NW, 8:GL, 9:ZG, 10:FR, 11:SO, 12:BS, 13:BL, 14:SH, 15:AR, 16:AI, 17:SG, 18:GR, 19:AG, 20:TH, 21:TI, 22:VD, 23:VS, 24:NE, 25:GE, 26:JU)**

Range of Valid Data Values: 1 to 25

Summary Statistics:

Minimum : 1

Maximum : 25

Mean : 13.324

Standard deviation : 10.141

Variable Format: numeric

Variable: **Travel destination (a number corresponding to a Canton, 1:ZH, 2:BE, 3:LU, 4:UR, 5:SZ, 6:OW, 7:NW, 8:GL, 9:ZG, 10:FR, 11:SO, 12:BS, 13:BL, 14:SH, 15:AR, 16:AI, 17:SG, 18:GR, 19:AG, 20:TH, 21:TI, 22:VD, 23:VS, 24:NE, 25:GE, 26:JU)**

Range of Valid Data Values: 1 to 26

Summary Statistics:

Minimum : 1

Maximum : 26

Mean : 10.796

Standard deviation : 9.747

Variable Format: numeric

Variable: **Train availability dummy**

Value	Label	Frequency
1 .		10728

Range of Valid Data Values: 1 to 1

Summary Statistics:

Variable Format: numeric

Variable: **Car availability dummy**

Value	Label	Frequency
0 .		1683
1 .		9045

Range of Valid Data Values: 0 to 1

Summary Statistics:

Variable Format: numeric

Variable: **SM availability dummy**

Value	Label	Frequency
1 .		10728

Range of Valid Data Values: 1 to 1

Summary Statistics:

Variable Format: numeric

Variable: **Train travel time [minutes]. Travel times are door-to-door making assumptions about car-based distances (1.25*crow- flight distance)**

Range of Valid Data Values: 31 to 1049

Summary Statistics:

Minimum : 31

Maximum : 1049

Mean : 166.626

Standard deviation : 77.353

Variable Format: numeric

Variable: **Train cost [CHF]. If the traveler has a GA, this cost equals the cost of the annual ticket.**

Range of Valid Data Values: 4 to 5040

Summary Statistics:

Minimum : 4

Maximum : 5040

Mean : 514.335

Standard deviation : 1088.932

Variable Format: numeric

Variable: **Train headway [minutes]. Example: If there are two trains per hour, the value of TRAIN HE is 30.**

Range of Valid Data Values: 30 to 120

Summary Statistics:

Minimum : 30

Maximum : 120

Mean : 70.101

Standard deviation : 37.432

Variable Format: numeric

Variable: **SM travel time [minutes] considering the future Swissmetro speed of 500 km/h**

Range of Valid Data Values: 8 to 796

Summary Statistics:

Minimum : 8

Maximum : 796

Mean : 87.466

Standard deviation : 53.55

Variable Format: numeric

Variable: **SM cost [CHF] calculated at the current relevant rail fare, without considering GA, multiplied by a fixed factor (1.2) to re flect the higher speed.**

Range of Valid Data Values: 6 to 6720

Summary Statistics:

Minimum : 6

Maximum : 6720

Mean : 670.341

Standard deviation : 1441.595

Variable Format: numeric

Variable: **SM headway [minutes]. Example: If there are two Swissmetros per hour, the value of SM HE is 30.**

Value	Label	Frequency
10 .		3562
20 .		3582
30 .		3584

Range of Valid Data Values: 10 to 30

Summary Statistics:

Variable Format: numeric

Variable: **Seats configuration in the Swissmetro (dummy). Airline seats (1) or not (0).**

Value	Label	Frequency
0 .		9456
1 .		1272

Range of Valid Data Values: 0 to 1

Summary Statistics:

Variable Format: numeric

Variable: **Car travel time [minutes]**

Range of Valid Data Values: 0 to 1560

Summary Statistics:

Minimum : 0

Maximum : 1560

Mean : 123.795

Standard deviation : 88.711

Variable Format: numeric

Variable: **Car cost [CHF] considering a fixed average cost per kilometer (1.20 CHF/km)**

Range of Valid Data Values: 0 to 520

Summary Statistics:

Minimum : 0

Maximum : 520

Mean : 78.742

Standard deviation : 55.264

Variable Format: numeric

Variable: **Choice indicator. 0: unknown, 1: Train, 2: SM, 3: Car**

Value	Label	Frequency
0 .		9
1 .		1423
2 .		6216
3 .		3080

Range of Valid Data Values: 0 to 3

Summary Statistics:

Variable Format: numeric