Switzerland mode choice

Introduction

This case study deals with the estimation of a mode choice behavior model for inhabitants in Switzerland using revealed preference data. The survey was conducted between 2009 and 2010 for CarPostal, the public transport branch of the Swiss Postal Service. The main purpose of this survey is to collect data for analyzing the travel behavior of people in low-density areas, where CarPostal typically serves. A following study proposes new public transport alternatives according to the respondents' willingness to pay for these potential services in order to increase the market share of public transport.

Data collection

The survey covers French and German speaking areas of Switzerland. Questionnaires were sent to people living in rural area by mail. The respondents were asked to register all the trips performed during a specified day and provide socioeconomic characteristics of themselves together with their households. The collected information consists of origin, destination, cost, travel time, chosen mode and activity at the destination.

1124 completed surveys were collected from respondents. For each respondent, cyclic sequences of trips (starting and ending at the same location) are detected and their main transport mode is identified. The data is used to generate the estimation database, with 1906 observations relating sequences of trips, psychometric indicators and socioeconomic attributes. It should be noticed that each observation is a sequence of trips that starts and ends at home. A respondent may have several sequences of trips in a day.

Variables and descriptive statistics

The variables are described in the following table:

Table 1: Description of variables

Name	**Description**
ID	Identifier of the respondent who described the trips in the loop.
NbTransfertsTP1	The total number of transfers performed for all trips of the loop, using public transports.
DureeTP1	The duration of the loop performed in public transports.
WalkingTimeTP1	The total walking time in a loop performed in public transports.
WaitingTimeTP1	The total waiting time in a loop performed in public transports.
DureeAuto	The total duration of a loop made using the car.
MarginalCost	The total cost of a loop performed in public transports, accounting for half price passes, global passes, etc.
CoutAutoCHF	The total cost of a loop performed with the car.
TripPurpose	The main purpose of the loop:1 =Work-related trips; 2 =Work- and leisure-related trips; 3 =Leisure related trips.
CodageTypeCommune	The commune type, based on the Swiss Federal Statistical Office 1 =Centers; 2 =Suburban communes; 3 =High-income communes; 4 =Periurban communes; 5 =Touristic communes; 6 =Industrial and tertiary communes; 7 =Rural and commuting communes; 8 =Agricultural and mixed communes; 9 =Agricultural communes
CodageUrbainRural	Binary variable, where: 1 =Rural; 2 =Urban.
CodeLangue	Language of the commune where the survey was conducted: 1 =French; 2 =German.
CodeClassifLignes	Classication of the type of bus lines of the commune: 1 =Centre; 2 =Centripetal; 3 =Peripheral; 4 =Rabattement.

Table 2: Description of variables

Name	**Description**
frequency	Categorical variable for the frequency: 1 =Low frequency, < 12 pairs of trips per day; 2 =Low-middle frequency, 13 - 20 pairs of trips per day; 3 =Middle-high frequency, 21-30 pairs of trips per day; 4 =High frequency, > 30 pairs of trips per day.
NbTrajets	Number of trips in the loopl
Region OR CoderegionCAR	Region where the commune of the respondant is situated. These regions are dened by CarPostal as follows: 1 =Vaud; 2 =Valais; 3 =Delemont; 4 =Bern; 5 =Basel, Aargau, Olten; 6 =Zurich; 7 =Eastern Switzerland; 8 =Graubunden.
distance km	Total distance performed for the loop.
Choice	Choice variable: 0 = public transports (train, bus, tram, etc.); 1 = private modes (car, motorbike, etc.); 2 = soft modes (bike, walk, etc.).
InVehicleTime	Time spent in the transport modes only (discarding walking time and waiting time).
ReportedDuration	Time spent for the whole loop, as reported by the respondent.
age	Age of the respondent (in years).