GPS survey in the Greater Zurich Area: Route choice sets

Lara Montini
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<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PersonId</td>
<td>Personen identifier (GPS Zurich Studie)</td>
</tr>
<tr>
<td>StageId</td>
<td>Stage identifier (unique within a person)</td>
</tr>
<tr>
<td>nrAlternatives</td>
<td>Number of generated alternatives</td>
</tr>
<tr>
<td>choice</td>
<td>Number of the chosen alternative</td>
</tr>
<tr>
<td>Distance_N</td>
<td>Distance of alternative N [m]</td>
</tr>
<tr>
<td>FreeFlowTT_N</td>
<td>Free flow travel time of alt. N [s]</td>
</tr>
<tr>
<td>riseAverage_N</td>
<td>Average rise of alt. N [m/m]</td>
</tr>
<tr>
<td>riseMin_N</td>
<td>Minimum rise of alt. N [m/m]</td>
</tr>
<tr>
<td>riseMax_N</td>
<td>Maximum rise of alt. N [m/m]</td>
</tr>
<tr>
<td>fallAverage_N</td>
<td>Average fall of alt. N [m/m]</td>
</tr>
<tr>
<td>fallMin_N</td>
<td>Minimum fall of alt. N [m/m]</td>
</tr>
<tr>
<td>fallMax_N</td>
<td>Maximum fall of alt. N [m/m]</td>
</tr>
<tr>
<td>risingAltitudeDiff_N</td>
<td>Altitude overcome by going upwards [m] (alt. N)</td>
</tr>
<tr>
<td>fallingAltitudeDiff_N</td>
<td>Altitude overcome by going downwards [m] (alt. N)</td>
</tr>
<tr>
<td>steepRiseFrac_N</td>
<td>Fraction of distance of alt. N where gradient is higher than 0.05 [-]</td>
</tr>
<tr>
<td>mediumRiseFrac_N</td>
<td>Fraction of distance of alt. N where gradient is between 0.01 and 0.05 [-]</td>
</tr>
<tr>
<td>flatFrac_N</td>
<td>Fraction of distance of alt. N where the absolute of the gradient is &lt;= 0.01 [-]</td>
</tr>
<tr>
<td>steepFallFrac_N</td>
<td>Fraction of distance of alt. N where gradient is less than -0.05 [-]</td>
</tr>
<tr>
<td>mediumFallFrac_N</td>
<td>Fraction of distance of alt. N where gradient is between -0.05 and -0.01 [-]</td>
</tr>
<tr>
<td>RoadType1_N</td>
<td>Fraction of distance of alt. N on roads of osm type motorway [-]</td>
</tr>
<tr>
<td>RoadTypeTime1_N</td>
<td>Fraction of time of alt. N on roads of osm type motorway [-]</td>
</tr>
<tr>
<td>RoadType2_N</td>
<td>Fraction of distance of alt. N on roads of osm type trunk [-]</td>
</tr>
<tr>
<td>RoadTypeTime2_N</td>
<td>Fraction of time of alt. N on roads of osm type trunk [-]</td>
</tr>
<tr>
<td>RoadType3_N</td>
<td>Fraction of distance of alt. N on roads of osm type primary [-]</td>
</tr>
<tr>
<td>RoadTypeTime3_N</td>
<td>Fraction of time of alt. N on roads of osm type primary [-]</td>
</tr>
<tr>
<td>RoadType4_N</td>
<td>Fraction of distance of alt. N on roads of osm type secondary [-]</td>
</tr>
<tr>
<td>RoadTypeTime4_N</td>
<td>Fraction of time of alt. N on roads of osm type secondary [-]</td>
</tr>
<tr>
<td>RoadType5_N</td>
<td>Fraction of distance of alt. N on roads of osm type tertiary [-]</td>
</tr>
</tbody>
</table>
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4.77 XEndingPoint: X coordinate of the route end point

4.78 YEndingPoint: Y coordinate of the route end point

4.79 Distance: Distance of the route computed from the GPS track [m]

4.80 Duration: Duration of the route computed from the GPS track [s]

4.81 AverageSpeed: Average speed (GPS track) [m/s]

4.82 MedianSpeed: Median speed (GPS track) [m/s]

4.83 X95PercentileSpeed: 95th percentile speed (GPS track) [m/s]

4.84 MedianAcc: Median acceleration (GPS track) [m/s²]

4.85 X95PercentileAcc: 95th percentile acceleration (GPS track) [m/s²]

4.86 GapDistance: Distance of first coordinate of the route to the previous coordinate if stop point due to gap of 120 sec or more [m]

4.87 GapTimeDiff: Time difference between first coordinate of the route and previous coordinate if stop point due to gap of 120 sec or more [s]

4.88 GapSpeed: GapDistance/GapTimeDiff [m/s]

4.89 avAccelX: Average acceleration in X direction (of the device) captured by the accelerometer

4.90 avAccelY: Average acceleration in Y direction (of the device) captured by the accelerometer

4.91 avAccelZ: Average acceleration in Z direction (of the device) captured by the accelerometer

4.92 avAccelLength: Average acceleration norm captured by the accelerometer

4.93 stDevAccelX: Mean of standard deviation of AccelX within 10s moving window

4.94 stDevAccelY: Mean of standard deviation of AccelY within 10s moving window

4.95 stDevAccelZ: Mean of standard deviation of AccelZ within 10s moving window

4.96 stDevAccelLength: Mean of standard deviation of the norm within 10s moving window

4.97 personStageCnt: Unused (same as StageId)

4.98 originAct: Activity type at the start location

4.99 originLocId: Identifier of the start location

4.100 originX: X coordinate of the start location

4.101 originY: Y coordinate of the start location

4.102 destinationAct: Activity type at the end location

4.103 destinationLocId: Identifier of the end location

4.104 destinationX: X coordinate of the end location
4.105 destinationY: Y coordinate of the end location

4.106 durationSec: Duration of the stage [s]

4.107 stageType: Type of the stage

4.108 startTimeOfDay: Start time (seconds since 00:00)

4.109 endTimeOfDay: End time (seconds since 00:00)

4.110 weekday0so: Weekday

5 Route choice set (public transport): File description

6 Route choice set (public transport): Variables

6.1 personId: Person identifier

6.2 tripId: Public transport trip identifier

6.3 chosenRouteIdx: Number of the chosen route

6.4 nrOfRoutes: Number of generated routes

6.5 overallTT_N: Overall travel time of alternative N [s]

6.6 accessTT_N: Access travel time of alternative N [s]

6.7 egressTT_N: Egress travel time of alternative N [s]

6.8 inVehTT_N: In vehicle time of alternative N [s]

6.9 transferTime_N: Transfer time of alternative N [s]

6.10 nOfTransfers_N: Number of transfers of alternative N [s]

6.11 psTime_N: Path size calculated for a stage level based on time

6.12 psDist_N: Path size calculated for the stage level based on distance

6.13 nrBus_N: Number of bus stages

6.14 nrTram_N: Number of tram stages

6.15 nrRail_N: Number of rail stages

6.16 transformedBusFrac_N: Arcsin transformed fraction of bus stages (asin(sqrt(fraction))

6.17 transformedTramFrac_N: Arcsin transformed fraction of tram stages

6.18 transformedRailFrac_N: Arcsin transformed fraction of rail stages (asin(sqrt(fraction))

7 Route choice set common variables

7.1 ageCode: Age

7.2 genderCode: Gender

7.3 CarAvCoded: Car availability

7.4 cars: Number of cars in household

7.5 bikes: Number of bikes in household

7.6 incomeCoded: Income

7.7 educationCoded: Education level

7.8 employmentCoded: Employment status
7.9 GA: GA possession .................................................. 29
7.10 halfTax: Half fare card possession .......................... 29
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7.22 Var2_Factor: Factor emphasising spontaneity, liking for surprises (see GPS ZH field report STRC / Diss Montini) .................................................. 31
7.23 Var3_Factor: Factor covering the desire for making new experiences (see GPS ZH field report STRC / Diss Montini) .................................................. 31
GPS survey in the Greater Zurich Area: Route choice sets

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2016

Abstract

Route choice alternatives for all modes are generated for all participants of the GPS survey in the Greater Zurich Area conducted in 2011/12 at IVT.

Keywords
Route choice set, GPS survey Greater Zurich Area

Preferred citation style
Montini, L. (2016) GPS survey in the Greater Zurich Area: Route choice sets, Travel Survey Metadata Series, 63, Institute for Transport Planning and Systems (IVT), ETH Zurich, Zurich.
1 Document description

1.1 Title

GPS survey in the Greater Zurich Area: Route choice sets

1.2 Creator

Lara Montini (IVT, ETH Zurich)

1.3 Subject

Codebook, route choice sets, GPS Greater Zurich Area, list of variables

1.4 Description

This GPS survey in the greater Zurich area was conducted as part of the COST Action “TU0603 - Buses with a higher level of service”. This document contains the set of variables including a codebook for the route choice set generated for all modes of transport that were used for modeling using BIOGEME.

1.5 Publisher

Institute for Transport Planning and Systems (IVT), ETH Zurich

1.6 Contributor

1.7 Date

2016-06-27
1.8 Type

Text, survey data

1.9 Format

Text (.txt),

1.10 Identifier

INTERNAL USE ONLY

1.11 Source

http://www.ivt.ethz.ch/vpl

1.12 Language

English

1.13 Relation

http://www.ivt.ethz.ch/vpl

1.14 Coverage

Zurich, Switzerland, August 2011 - December 2012
1.15 Rights

Institute for Transport Planning and Systems (IVT), ETH Zurich

1.16 Version responsibility

Lara Montini (IVT, ETH Zurich)
2 Study description

2.1 Title

GPS Survey in the Greater Zurich Area

2.2 Creator

Institute for Transport Planning and Systems (IVT), ETH Zurich

2.3 Subject

GPS, Greater Zurich Area, travel behaviour diary, psychometric scales (risk, environment, variety), 1 week

2.4 Description

Travel behaviour is often modelled using socio-demographic as well as mobility specific attributes. But there are less easily surveyed latent variables that influence behaviour. In this study the risk propensity, the attitude towards the environment as well as the search for variety of participants are taken into account. The overall goal was to evaluate the influence of these attitudes on the route choice behaviour with a focus on public transport. GPS and accelerometer data was collected for up to one week per participant. Additionally, participants filled in an online socio-demographic questionnaire and psychometric scales.

2.5 Publisher

Institute for Transport Planning and Systems (IVT), ETH Zurich
2.6 Contributor

Institute for Transport Planning and Systems (IVT), ETH Zurich

2.7 Date

2012

2.8 Type

Text, processed survey data

2.9 Format

Text files for BIOGEME (.txt)

2.10 Identifier

INTERNAL USE ONLY

2.11 Source

http://www.ivt.ethz.ch/vpl

2.12 Language

English
2.13 Relation

http://www.ivt.ethz.ch/vpl/

2.14 Coverage

Zurich, Switzerland, August 2011 - December 2012

2.15 Rights

Institute for Transport Planning and Systems (IVT), ETH Zurich

2.16 Other identifications, funding and acknowledgements

Funded by the Swiss State Secretariat for Education and Research as part of the project “Route choice in urban public transport systems” within the COST Action “TU0603 - Buses with a higher level of service”

2.17 Unit of analysis

Trip or stage
3 Route Choice Set (car, bike, walk): File description

Title: MODE-CHOICESETSIZE_wide_inklInfoAndTransforms.txt

Contents: Choice sets for stages

Data collection: Person based GPS survey. Choice set generation using POSDAP (BFS-LE algorithm, similarity distribution based reduction)

Unit of analysis: Stage

File Structure: Hierarchical

File format: TXT input for BIOGEME (.txt)

4 Route Choice Set: Variables

4.1 PersonId: Personen identifier (GPS Zurich Studie)

Format = numeric.

4.2 StageId: Stage identifier (unique within a person)

Format = numeric.

4.3 nrAlternatives: Number of generated alternatives

Format = numeric.

4.4 choice: Number of the chosen alternative

Format = numeric.
4.5 Distance\_N: Distance of alternative N [m]

Format = numeric.

4.6 FreeFlowTT\_N: Free flow travel time of alt. N [s]

Format = numeric.

4.7 riseAverage\_N: Average rise of alt. N [m/m]

Format = numeric.

4.8 riseMin\_N: Minimum rise of alt. N [m/m]

Format = numeric.

4.9 riseMax\_N: Maximum rise of alt. N [m/m]

Format = numeric.

4.10 fallAverage\_N: Average fall of alt. N [m/m]

Format = numeric.

4.11 fallMin\_N: Minimum fall of alt. N[m/m]

Format = numeric.
4.12 \textit{fallMax\_N}: Maximum fall of alt. N [m/m]

Format = numeric.

4.13 \textit{risingAltitudeDiff\_N}: Altitude overcome by going upwards [m] (alt. N)

Format = numeric.

4.14 \textit{fallingAltitudeDiff\_N}: Altitude overcome by going downwards [m] (alt. N)

Format = numeric.

4.15 \textit{steepRiseFrac\_N}: Fraction of distance of alt. N where gradient is higher 0.05 [-]

Format = numeric.

4.16 \textit{mediumRiseFrac\_N}: Fraction of distance of alt. N where gradient is <= 0.05 and gradient > 0.01 [-]

Format = numeric.

4.17 \textit{flatFrac\_N}: Fraction of distance of alt. N where the absolute of the gradient <= 0.01 [-]

Format = numeric.
4.18 mediumFallFrac_N: Fraction of distance of alt. N where gradient < -0.01 and gradient >= -0.05 [-]

Format = numeric.

4.19 steepFallFrac_N: Fraction of distance of alt. N where gradient < -0.05 [-]

Format = numeric.

4.20 RoadType1_N: Fraction of distance of alt. N on roads of osm type motorway [-]

Format = numeric.

4.21 RoadTypeTime1_N: Fraction of time of alt. N on roads of osm type motorway [-]

Format = numeric.

4.22 RoadType2_N: Fraction of distance of alt. N on roads of osm type trunk [-]

Format = numeric.

4.23 RoadTypeTime2_N: Fraction of time of alt. N on roads of osm type trunk [-]

Format = numeric.
4.24 RoadType3_N: Fraction of distance of alt. N on roads of osm type primary [-]

Format = numeric.

4.25 RoadTypeTime3_N: Fraction of time of alt. N on roads of osm type primary [-]

Format = numeric.

4.26 RoadType4_N: Fraction of distance of alt. N on roads of osm type secondary [-]

Format = numeric.

4.27 RoadTypeTime4_N: Fraction of time of alt. N on roads of osm type secondary [-]

Format = numeric.

4.28 RoadType5_N: Fraction of distance of alt. N on roads of osm type tertiary [-]

Format = numeric.

4.29 RoadTypeTime5_N: Fraction of time of alt. N on roads of osm type tertiary [-]

Format = numeric.
4.30 **RoadType6_N**: Fraction of distance of alt. N on roads of osm type residential [-]

Format = numeric.

4.31 **RoadTypeTime6_N**: Fraction of time of alt. N on roads of osm type residential [-]

Format = numeric.

4.32 **RoadType7_N**: Fraction of distance of alt. N on roads of osm type track [-]

Format = numeric.

4.33 **RoadTypeTime7_N**: Fraction of time of alt. N on roads of osm type track [-]

Format = numeric.

4.34 **RoadType8_N**: Fraction of distance of alt. N on roads of other osm types [-]

Format = numeric.

4.35 **RoadTypeTime8_N**: Fraction of time of alt. N on roads of other osm types [-]

Format = numeric.
4.36 **RoadType9_N**: Unused - 0 everywhere

Format = numeric.

4.37 **RoadTypeTime9_N**: Unused - 0 everywhere

Format = numeric.

4.38 **RoadType10_N**: Fraction of distance of alt. N on extra urban primary roads [-] (speed limit > 16.7 m/s)

Format = numeric.

4.39 **RoadTypeTime10_N**: Fraction of time of alt. N on extra urban primary roads [-] (speed limit > 16.7 m/s)

Format = numeric.

4.40 **RoadType11_N**: Fraction of distance of alt. N on extra urban secondary roads [-] (speed limit > 16.7 m/s)

Format = numeric.

4.41 **RoadTypeTime11_N**: Fraction of time of alt. N on extra urban secondary roads [-] (speed limit > 16.7 m/s)

Format = numeric.
4.42 **RoadType12_N**: Fraction of distance of alt. N on extra urban tertiary roads [-] (speed limit > 16.7 m/s)

Format = numeric.

4.43 **RoadTypeTime12_N**: Fraction of time of alt. N on extra urban tertiary roads [-] (speed limit > 16.7 m/s)

Format = numeric.

4.44 **transTimeFrac_TrackOther_N**: Arcsin transformed fraction of time spent on track or other (road types 7 and 8) [arcsin(sqrt(frac))]

Format = numeric.

4.45 **transTimeFrac_Res_N**: Arcsin transformed fraction of time spent on residential roads (road type 6) [arcsin(sqrt(frac))]

Format = numeric.

4.46 **transTimeFrac_EU_N**: Arcsin transformed fraction of time spent on extra-urban roads (road types 10, 11 and 12) [arcsin(sqrt(frac))]

Format = numeric.

4.47 **transTimeFrac_MWandTrunk_N**: Arcsin transformed fraction of time spent on motorways and trunk roads (road types 1 and 2) [arcsin(sqrt(frac))]

Format = numeric.
4.48 safeBikeFrac_N: Fraction of distance of alt. N on osm path, track, cycleway, pedestrian, footway with bicycle=yes, cycleway = track [-]

Format = numeric.

4.49 bikeLaneFrac_N: Fraction of distance of alt. N on osm cycleway = [lane, opposite_lane or share_busway] [-]

Format = numeric.

4.50 walkOnlyFrac_N: Fraction of distance of alt. N on footway with bicycle = no [-]

Format = numeric.

4.51 walkAndBikeFrac_N: Fraction of distance of alt. N on roads where walking and cycling is allowed [-]

Format = numeric.

4.52 walkStepsFrac_N: Fraction of distance of alt. N on steps [-]

Format = numeric.

4.53 nrCrossings_N: Number of pedestrian crossings on alt. N [-]

Format = numeric.
4.54 nrTrafficLights\_N: Number of traffic lights along route N [-]

Format = numeric.

4.55 nrRightTurns\_N: Number of right turns along route N [-]

Format = numeric.

4.56 nrLeftTurns\_N: Number of left turns along route N [-]

Format = numeric.

4.57 nrUTurns\_N: Number of U turns along route N [-]

Format = numeric.

4.58 nrCrossroads\_N: Number of crossroads along route N [-]

Format = numeric.

4.59 nrRoundabouts\_N: Number of roundabouts along route N [-]

Format = numeric.

4.60 ps1Time\_N: Path size proposed by Ben-Akiva and Bierlaire 1999 (Diss Nadine Schüessler eq. 2.22) computed using link travel time

Format = numeric.
4.61 **ps1Dist_N**: Path size proposed by Ben-Akiva and Bierlaire 1999 (Diss Nadine Schüssler eq. 2.22) computed using link distance

Format = numeric.

4.62 **ps2Time_N**: Second path size proposed by Ben-Akiva and Bierlaire 1999 (Diss Nadine Schüssler eq. 2.23) computed using link travel time

Format = numeric.

4.63 **ps2Dist_N**: Second path size proposed by Ben-Akiva and Bierlaire 1999 (Diss Nadine Schüssler eq. 2.23) computed using link distance

Format = numeric.

4.64 **ps4Time_N**: PSC path size correction proposed by Bovy et al 2008 (Diss Nadine Schüssler eq. 2.25) computed using link travel time

Format = numeric.

4.65 **ps4Dist_N**: PSC path size correction proposed by Bovy et al 2008 (Diss Nadine Schüssler eq. 2.25) computed using link distance

Format = numeric.

4.66 **ps1TimeFullSet_N**: ps1Time computed for all generated alternatives (not the reduced choice set)

Format = numeric.
4.67 $ps1DistFullSet_N$: $ps1Dist$ computed for all generated alternatives (not the reduced choice set)

Format = numeric.

4.68 $ps2TimeFullSet_N$: $ps2Time$ computed for all generated alternatives (not the reduced choice set)

Format = numeric.

4.69 $ps2DistFullSet_N$: $ps2Dist$ computed for all generated alternatives (not the reduced choice set)

Format = numeric.

4.70 $ps4TimeFullSet_N$: $ps4Time$ computed for all generated alternatives (not the reduced choice set)

Format = numeric.

4.71 $ps4DistFullSet_N$: $ps4Dist$ computed for all generated alternatives (not the reduced choice set)

Format = numeric.

4.72 $\text{minDistance}$: Minimum distance of all routes in the choice set

Format = numeric.
4.73 \text{minDuration}: \text{Minimum duration of all routes in the choice set}

Format = numeric.

4.74 \text{NumberOfCoords}: \text{Number of GPS coordinates observed for this route}

Format = numeric.

4.75 \text{XStartingPoint}: \text{X coordinate of the route start point}

Format = numeric.

4.76 \text{YStartingPoint}: \text{Y coordinate of the route start point}

Format = numeric.

4.77 \text{XEndingPoint}: \text{X coordinate of the route end point}

Format = numeric.

4.78 \text{YEndingPoint}: \text{Y coordinate of the route end point}

Format = numeric.

4.79 \text{Distance}: \text{Distance of the route computed from the GPS track [m]}

Format = numeric.
4.80 **Duration**: Duration of the route computed from the GPS track [s]

Format = numeric.

4.81 **AverageSpeed**: Average speed (GPS track) [m/s]

Format = numeric.

4.82 **MedianSpeed**: Median speed (GPS track) [m/s]

Format = numeric.

4.83 **X95PercentileSpeed**: 95th percentile speed (GPS track) [m/s]

Format = numeric.

4.84 **MedianAcc**: Median acceleration (GPS track) [m/s²]

Format = numeric.

4.85 **X95PercentileAcc**: 95th percentile acceleration (GPS track) [m/s²]

Format = numeric.

4.86 **GapDistance**: Distance of first coordinate of the route to the previous coordinate if stop point due to gap of 120 sec or more [m]

Format = numeric.
4.87 GapTimeDiff: Time difference between first coordinate of the route and previous coordinate if stop point due to gap of 120 sec or more [s]

Format = numeric.

4.88 GapSpeed: GapDistance/GapTimeDiff [m/s]

Format = numeric.

4.89 avAccelX: Average acceleration in X direction (of the device) captured by the accelerometer

Format = numeric.

4.90 avAccelY: Average acceleration in Y direction (of the device) captured by the accelerometer

Format = numeric.

4.91 avAccelZ: Average acceleration in Z direction (of the device) captured by the accelerometer

Format = numeric.

4.92 avAccelLength: Average acceleration norm captured by the accelerometer

Format = numeric.
4.93 \text{stDevAccelX}: Mean of standard deviation of AccelX within 10s moving window

Format = numeric.

4.94 \text{stDevAccelY}: Mean of standard deviation of AccelY within 10s moving window

Format = numeric.

4.95 \text{stDevAccelZ}: Mean of standard deviation of AccelZ within 10s moving window

Format = numeric.

4.96 \text{stDevAccelLength}: Mean of standard deviation of the norm within 10s moving window

Format = numeric.

4.97 \text{personStageCnt}: Unused (same as StageId)

Format = numeric.

4.98 \text{originAct}: Activity type at the start location

Format = labelled, numeric. Labels: 1 = Home, 2 = Pick-up / drop-off s.o., 3 = Work, 4 = Education, 5 = Shopping (daily), 6 = Shopping (longterm), 7 = Services (Erledigungen / Dienstleistungen), 8 = Business, 9 = Leisure, 10 = Other, 11 = Mode transfer, 12 = Change of day, 13 = Not specified.
4.99 originLocId: Identifier of the start location

Format = numeric.

4.100 originX: X coordinate of the start location

Format = numeric.

4.101 originY: Y coordinate of the start location

Format = numeric.

4.102 destinationAct: Activity type at the end location

Format = labelled, numeric. Labels: 1 = Home, 2 = Pick-up / drop-off s.o., 3 = Work, 4 = Education, 5 = Shopping (daily), 6 = Shopping (longterm), 7 = Services (Erledigungen / Dienstleistungen), 8 = Business, 9 = Leisure, 10 = Other, 11 = Mode transfer, 12 = Change of day, 13 = Not specified.

4.103 destinationLocId: Identifier of the end location

Format = numeric.

4.104 destinationX: X coordinate of the end location

Format = numeric.

4.105 destinationY: Y coordinate of the end location

Format = numeric.
4.106 durationSec: Duration of the stage [s]

Format = numeric.

4.107 stageType: Type of the stage

Format = labelled, numeric. Labels: 0 = Standard stage (default), 1 = Access stage, 2 = Egress stage, 3 = Transfer stage, 4 = Roundtrip.

4.108 startTimeOfDay: Start time (seconds since 00:00)

Format = numeric.

4.109 endTimeOfDay: End time (seconds since 00:00)

Format = numeric.

4.110 weekday0so: Weekday

Format = labelled, numeric. Labels: 0 = Sunday, 1 = Monday, 2 = Tuesday, 3 = Wednesday, 4 = Thursday, 5 = Friday, 6 = Saturday.
5 Route choice set (public transport): File description

Title: MODE-CHOICESETGENERATIONALGORITHM_InklSozDemAndTrafo.txt

Contents: Choice sets for public transport trips

Data collection: Person based GPS survey. Choice set generation using POSDAP (basic pt choice set generation, VIA point choice set generation)

Unit of analysis: Trip

File Structure: Hierarchical

File format: TXT input for BIOGEME (.txt)

6 Route choice set (public transport): Variables

Variables that end with _N are saved in the files for each alternative. E.g. for choice sets of size 10, Distance_1, Distance_2 . . . Distance_10 exists

6.1 personId: Person identifier

Format = numeric.

6.2 tripId: Public transport trip identifier

Format = numeric.

6.3 chosenRouteIdx: Number of the chosen route

Format = numeric.
6.4 \textit{nrOfRoutes}: Number of generated routes

Format = numeric.

6.5 \textit{overallTT\_N}: Overall travel time of alternative N [s]

Format = numeric.

6.6 \textit{accessTT\_N}: Access travel time of alternative N [s]

Format = numeric.

6.7 \textit{egressTT\_N}: Egress travel time of alternative N [s]

Format = numeric.

6.8 \textit{inVehTT\_N}: In vehicle time of alternative N [s]

Format = numeric.

6.9 \textit{transferTime\_N}: Transfer time of alternative N [s]

Format = numeric.

6.10 \textit{nOfTransfers\_N}: Number of transfers of alternative N [s]

Format = numeric.
6.11 **psTime** $_N$: Path size calculated for a stage level based on time

Format = numeric.

6.12 **psDist** $_N$: Path size calculated for the stage level based on distance

Format = numeric.

6.13 **nrBus** $_N$: Number of bus stages

Format = numeric.

6.14 **nrTram** $_N$: Number of tram stages

Format = numeric.

6.15 **nrRail** $_N$: Number of rail stages

Format = numeric.

6.16 **transformedBusFrac** $_N$: Arcsin transformed fraction of bus stages (asin(sqrt(fraction))

Format = numeric.

6.17 **transformedTramFrac** $_N$: Arcsin transformed fraction of tram stages (asin(sqrt(fraction))

Format = numeric.
6.18 transformedRailFrac_N: Arcsin transformed fraction of rail stages (asin(sqrt(fraction))

Format = numeric.

7 Route choice set common variables

Person variables, as well as factors extracted from the psychometric scales questionnaire (PCA, varimax and rotation).

7.1 ageCode: Age

Format = labelled, numeric. Labels: 1 = <25, 2 = 25-34, 3 = 35-44, 4 = 45-54, 5 = 55-64, 6 = >=65.

7.2 genderCode: Gender

Format = labelled, numeric. Labels: 1 = Female, 2 = Male.

7.3 CarAvCoded: Car availability

Format = labelled, numeric. Labels: 1 = always, 2 = often, 3 = rarely, 4 = never.

7.4 cars: Number of cars in household

Format = numeric.

7.5 bikes: Number of bikes in household

Format = numeric.
7.6 incomeCoded: Income

Format = labelled, numeric. Labels: 1 = < 2000 CHF, 2 = 2000 - 4000 CHF, 3 = 4000 - 6000 CHF, 4 = 6000 - 8000 CHF, 5 = 8000 - 10000 CHF, 6 = 10000 - 12000 CHF, 7 = 12000 - 14000 CHF, 8 = 14000 - 16000 CHF, 9 = > 16000 CHF, 10 = keine Angabe.

7.7 educationCoded: Education level

Format = labelled, numeric. Labels: 1 = Primary school, 2 = Secondary school (noheeq) (Sekundar- oder Realschulabschluss), 3 = Secondary school (higher education) (Maturität / Abitur), 4 = Apprenticeship (Lehre), 5 = Professional diploma (eidg. Fachausweis / eidg. Diplom), 6 = University of applied sciences, 7 = University, 8 = Other.

7.8 employmentCoded: Employment status

Format = labelled, numeric. Labels: 1 = In training, 2 = Employed - full time (> 35h/week), 3 = Employed - part time, 4 = Unemployed, 5 = Housewife / househusband, 6 = Retired, 7 = Permanently unable to work.

7.9 GA: GA possession

Format = labelled, numeric. Labels: 0 = no, 1 = yes.

7.10 halbTax: Half fare card possession

Format = labelled, numeric. Labels: 0 = no, 1 = yes.

7.11 otherPTSub: Owns another public transport subscription

Format = labelled, numeric. Labels: 0 = no, 1 = yes.
7.12 **NoSub**: Own no public transport subscription

Format = labelled, numeric. Labels: 0 = no, 1 = yes.

7.13 **hhSize**: Household size

Format = numeric.

7.14 **Env1_Factor**: Factor covering agreement with measures to reduce car emissions (see GPS ZH field report STRC / Diss Montini)

Format = numeric.

7.15 **Env2_Factor**: Factor covering awareness of the negative consequences of pollution (see GPS ZH field report STRC / Diss Montini)

Format = numeric.

7.16 **Env3_Factor**: Factor covering overall concert about the environment (see GPS ZH field report STRC / Diss Montini)

Format = numeric.

7.17 **Env4_Factor**: Factor covering expectation that others such as the government step in and protect the environment (see GPS ZH field report STRC / Diss Montini)

Format = numeric.
7.18 **Risk1_Factor**: Factor mainly covering health related risks (see GPS ZH field report STRC / Diss Montini)

Format = numeric.

7.19 **Risk2_Factor**: Factor very mixed also including transport related risks (see GPS ZH field report STRC / Diss Montini)

Format = numeric.

7.20 **Risk3_Factor**: Factor covering social risks (see GPS ZH field report STRC / Diss Montini)

Format = numeric.

7.21 **Var1_Factor**: Factor covering the interest to vary the daily routine (see GPS ZH field report STRC / Diss Montini)

Format = numeric.

7.22 **Var2_Factor**: Factor emphasising spontaneity, liking for surprises (see GPS ZH field report STRC / Diss Montini)

Format = numeric.

7.23 **Var3_Factor**: Factor covering the desire for making new experiences (see GPS ZH field report STRC / Diss Montini)

Format = numeric.