



BESTUFS WP 3.1

Report on urban freight data collection in Switzerland

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1. Overview of freight data collection in Switzerland

Organisations collecting freight data in Switzerland include:

- Federal Office for Statistics (Bundesamt für Statistik BFS)
- Federal Office for Spatial Planning (Bundesamt für Raumentwicklung ARE)
- Municipal Authorities for regional and urban data collection

Most of the relevant data is collected as part of national surveys. One-off urban freight data collection exercises have taken place in Basel, Berne, Lausanne and Zurich. These urban data collection exercises include surveys and traffic counts.

In the last five years, data from traffic counts have improved in Switzerland. However, routing data from goods vehicles operators has worsened over this time period.

The EU-funded COST 321 project (1994-1997) reviewed freight data that is collected in Switzerland at a national level, while an SVI research project in 2005 has reviewed freight data at a regional level.

Table 1 at the back of this report summarises sources of continuous freight data in Switzerland.

2. Issues related to urban freight data

It is very difficult to extract urban freight transport data from national surveys. The national surveys contain a high proportion of international transport flows (border-crossing transport). It is difficult to estimate from the data which transport flows are related to urban areas, and specifically which urban areas. The lowest level that has been listed in the GTS is the Cantonal level. The survey samples are not always representative in data collection exercises.

3. Most important freight data collection exercises in the country

National level freight data collection in Switzerland:

- GTS 93 (Gütertransportstatistik 1993) = Road Freight Transport Statistics, responsible: Federal Office for Statistics on Basis of the survey on road freight transport in Switzerland (GTE Gütertransporterhebung 1993)
- GTS 98 (Gütertransportstatistik 1998) = Road Freight Transport Statistics, responsible: Federal Office for Statistics on Basis of the survey on road freight transport in Switzerland (GTE Gütertransporterhebung 1998) + Inquiry of border crossing road freight transport (GQGV Grenzübergangender Strassengüterverkehr).
- GTS 03 (Gütertransportstatistik 2003) = Road Freight Transport Statistics, responsible: Federal Office for Statistics on Basis of the survey on road freight transport in Switzerland (GTE Gütertransporterhebung 2003) + Inquiry of border crossing road freight transport (GQGV Grenzübergangender Strassengüterverkehr).
- AQGV (Alpenquerender Güterverkehr) = Alpine Crossing Road freight Transport, responsible: Federal Office for Spatial Development (every five years)

The following urban level freight data collection exercises have taken place in Switzerland:

- Gütertransporterhebung Innenstadt Bern (1997) = Freight Transport Inquiry Inner city Area Berne. Special inquiry on behalf of the Federal Office for Education and Research and the Municipal Police of Berne

- Basel City Logistics (Special survey for the planning of a city logistics project in the inner city area of Basel).
- Gütertransporterhebung Stadt Zürich (Road Freight Transport Inquiry City of Zurich) (2003): on behalf of the City of Zurich. The data include: type of vehicles, number of vehicles, share of freight transport in total transport. The data collection has been carried out manually and automatically. The manual data collection has been carried out at six days in September 2003.

4. Detailed information about the most important surveys

4.1 GTS

Name of organisation collecting data

Federal Office for Statistics

Reason for data collection

The reasons for carrying out the GTS are:

- To get fundamental knowledge for development of political frameworks (government, parliament, administration): The increasing importance of freight transports makes it necessary to get a general view on roads goods transports on national and regional level (goods and vehicle flows and structure of these flows).
- To get fundamental knowledge for reaction on new circumstances of European politics: relationship with EU, realisation of NEAT (Alpen-transversale), heavy vehicles fee (Lenkungsabgaben) and realisation of the Alpine initiative (Alpeninitiative)
- To get fundamental information and main data for calibration of the models being used for traffic statistics in Switzerland.

Frequency of data collection

Every 5 years

Last time data was collected

2003.

Type of data collected

The GTS collects information including:

- Average transport distances
- Number of heavy goods vehicles
- Transport in relation to weight
- Capacity usage rates
- Vehicles kilometres
- Mileage
- Transport in relation to kind of goods

Method of data collection

The GTE inquiry is carried out by a questionnaire sent to vehicle owners. Additionally the border-crossing road freight transport has been statistically prepared by the Swiss Custom. The GTE has been carried out in 40 accidental days within one year. The final calculation of the data has been made by projection.

Geographical area over which data collected

Operators in the whole of Switzerland.

4.2 AOGV

Name of organisation collecting data

Federal Office for Spatial Planning (ARE)

Reason for data collection:

Overview and knowledge about alpine crossing goods transport (road and rail and combined transport). The data collection has also been carried out also in Austria and France. The data of each participating country will be exchanged. The data basis can deliver support within the planning of political measures.

Permanent collection since 1980 every 5 years. Results will be prepared for the Swiss Goods Transport Statistics (GTS).

Frequency of data collection

Every 5 years

Last time data was collected

2004

Type of data collected

- driving way: used custom location (entering Switzerland), used alpine pass
- origin-destination: country, zone/region
- origin-destination-source: for CH, LIE on municipality-level; for FR, DE, IT, AT on NUTS 5-level, for other EU-countries NUTS-1-level)
- type of goods: transported goods according to 10-NSTR-goods group, loading weight
- vehicle: vehicle type, enrolment, vehicle weight, axle configuration

Method of data collection (AOGV 2004 carried out by Rapp)

- Survey of road hauliers at 4 alpine crossing passes: San Bernadino, Gotthard, Grosser St. Bernhard, Simplon. In total 21208 interviews.
- Manual counts
- Automatically counts with SWISS 10: SWISS 10 is a classification system for road transport counts and allows a differentiation in heavy goods vehicles (without trailer, with trailer and semi-trailer)
- Finally data preparation and projection

Sample size

- 8500 surveys (each survey = one alpine crossing trip, one truck)
- two data files have been produced: goods and vehicles

Geographical area over which data collected

The data is collected for 4 alpine passes in Switzerland.

4.3 GOGV

Name of organisation collecting data

Federal Office for Statistics (BfS).

Reason for data collection

Overview and knowledge about border crossing goods transport (road). The data basis can deliver support within the planning of political measures. Permanent collection since 1993 every 5 years. Results will be prepared for the Swiss Goods Transport Statistics (GTS).

Frequency of data collection

Every 5 years.

Last time data was collected

2003

Type of data collected

- driving way: used custom location (entering Switzerland)
- origin-destination: loading point, point for unloading
- type of goods: transported goods according to 10-NSTR-goods group, loading weight, type of freight
- vehicle: vehicle type, enrolment, vehicle weight, axle configuration
- used custom point (direction, type, date)

Method of data collection

- Survey of road hauliers (interviews) at 70 Swiss custom points: random sample of total 30000 interviews with drivers of foreign heavy trucks.
- Manual evaluation of custom declarations

Sample size

- 30000 surveys (each survey = one border crossing trip, one truck)

Geographical area over which data collected

The whole of Switzerland.

4.4 OMGV = Qualitätsmerkmale im Güterverkehr (Quality Characteristics of Goods Transports)

Name of organisation collecting data

Federal Office for Roads (Astra).

Reason for data collection

Overview and knowledge about decision processes of shippers, modal shift behaviour and importance of quality factors in goods transports. The results are benefit values and money values for time savings, more punctuality and reliability.

The results can be used in a later state for Cost-Benefit-Analysis of new traffic planning measures.

Frequency of data collection

It was a one-off project.

Last time data was collected

2004

Type of data collected

Includes:

- driving way for 2 typical transport tasks of one shipper
- origin-destination: loading point, point for unloading
- type of goods: transported goods according to 10-NSTR-goods group, loading weight, type of freight
- vehicle: vehicle type, enrolment, vehicle weight, axle configuration
- price per transport

Method of data collection

Survey of 40 shippers (interviews) in Switzerland. The survey has been made by a stated preference survey on basis of SAWTOOTH-software.

Sample size

40 surveys (each survey = one shipper), the stated preference example has been made for 2 typical transports of each shipper

Geographical area over which data collected

Switzerland (German and Italian speaking part of Switzerland)

4.5 Güterverkehrserhebung Innenstadt Bern – Road Goods Transport Inquiry in the Inner City of Berne

Introduction

This was a one-off data collection. It was conducted by the Federal Office for Education and Research (BBW), EU Commission DG TREN (the project was carried out within the COST 321-programme).

As part of the COST 321-action “Environment-friendly Urban Goods Transport” different environment-friendly road goods transport measures were evaluated. Data had to be collected for this assessment. This specific survey in Berne was carried out in order to obtain data for the planning of new concepts or measures (such as a city-logistics scheme).

The data is freely available to people and organisations that wish to use it.

Uses of the data

The data collected was used for evaluation of impacts of different potential freight measures. The data was not used for modelling purposes.

Methodology and sampling

The data was collected by a survey of vehicle owners and dispatchers of road haulage companies, and by monitoring goods vehicles entering the inner urban area. All types of goods vehicles were captured in the survey work. The traffic monitoring took place in one week in March (excluding Sunday).

In total the traffic monitoring inquiry included 2385 vehicles within the one week period.

The random sample of the survey of vehicle owners and companies encompassed 834 vehicles. There was a return of 781 questionnaires.

Contents of the data collection included:

- Vehicle types (heavy good vehicle, light vehicles, delivery vehicles) per vehicle owner group (distributor, road haulier, producer, shop owner, services)
- Number of stops
- Delivery volume in tonnes per vehicle owner group
- Average delivery volume per vehicle type and vehicle owner group
- Delivery volume according to goods group
- Delivery volume according to branches (construction, restaurant, offices, grocery etc.)

Goods delivered data was collected in kilograms (kg) all other data was collected in total numbers.

Reliability of the data collected

The reliability of the data collected was viewed to be good.

Difficulties experienced in collecting the data

Because of difficulties in the survey of vehicle drivers in the inner city area (time and positioning in inner city area) it was decided to carry out an inquiry also by monitoring goods transport activities and by a survey of vehicle owners (companies and private persons).

The questionnaire was sent to the owners after identification of the vehicle registration plate with support of the municipal police and federal authorities, but data protection was guaranteed.

Advantages and disadvantages of the data collection methods used

The data allowed a comparison between the goods transport structure in the inner area of Berne, the agglomeration and between parts of the city.

The inquiry provided information about the delivery situation depending on the day and time. The information about tour characteristics was helpful in thinking about future traffic concepts and city access measures.

4.6 Güterverkehrserhebung Stadt Zürich – Road Goods Transport Inquiry City of Zurich

This was a one-off data collection. It was carried out by the Transport Planning division of the City of Zurich Department of Civil Engineering.

In recent years the land usage in Zurich's inner urban areas has become increasingly intensive. This development has also had an impact on transport volumes and traffic within the city of Zurich. Measures (like the introduction of the Heavy Goods Vehicle Fee since beginning of 2001, called LSVA) and planning activities have been introduced to reduce negative impacts. Therefore it was felt necessary that the current road goods transport in the city should be captured and monitored by a traffic count of the road goods transport in Zurich. The traffic count was carried out in 2003.

Uses of the data

The data have been used for evaluation of impacts of different measures and to capture and analyse today's traffic situation in road goods transport.

The data has not been used for modelling purposes.

Methodology and sampling

The data was collected by a traffic count within the city of Zurich. The area under investigation encompassed 9 manually operated traffic counters and 1 automatically operated traffic counter. The count was conducted on various street categories. Different categories have been taken into account:

- Delivery areas and streets in the city centre
- Sub-centres and delivery areas
- Main routes and junctions in the city
- Main routes that connect the conurbation with the city (inner city area)
- Main routes that connect the conurbation with the city (outskirts)

In the outskirts the data collection has been carried out by automatically operated meters. In the city area manual counts have been carried out. The manual counts were made on 6 days in September 2003 between 06.00 and 09.00, because the main traffic takes place within this time period (rush-hour). At some inner city area points there have been made counts also at other times to capture the transport characteristics also out of the rush-hour time. The automatic counts are based on 3-monthly cycles within a one- or two-years period. At end of the years the values are projected into average yearly or monthly values. A classification is made according to the length of vehicles.

The results from the automatic counts at main roads in the outer skirts have counted approximately 29,000 vehicles in one working day.

Contents of the data collection included:

- Vehicle types (heavy good vehicle, light vehicles, delivery vehicles)
- Traffic volume within the time interval (6.00 – 9.00) at counting positions
- Also direction of traffic flows has been captured
- Share of road freight traffic in all traffic
- Average delivery volume per vehicle type and vehicle owner group
- Delivery volume according to goods group
- Delivery volume according to branches (construction, restaurant, offices, grocery etc.)

The data is freely available to people and organisations that wish to use it

Reliability of the data collected

The reliability of the data collected is good.

5. Gaps in urban freight data collection

- The focus is on passenger transport and individual traffic not freight transport
- The interest in urban freight transport does exist (especially in Zurich), but to a much lesser extent than for passenger transport
- There is still a lack of continuous monitoring of freight transport in agglomerations
- Freight transport in urban areas is an important problem but compared to individual traffic not seen as so important
- There is no clear methodology for the collection of urban freight data. “Ad hoc” surveys are mainly carried out for the reasons of given planning intentions or political measures.
- In national surveys the situation looks different: a lot of effort is spent to collect data about road freight transport. A clear methodology is described in guidelines and directives. The collection takes place in a fixed time interval.
- There is little data about delivery patterns including frequencies, stops, locations etc.

6. Future plans for urban freight data collection

A National Research Programme (NRP 54) is planned that aims to look at transport flows and city logistics in urban areas. The project will focus on the interrelation between the settlement structure, the infrastructure for freight handling, distribution and the freight transport flows' structure in conurbations and between conurbations. The main objectives of the project are therefore:

- to analyse freight logistics activities and freight flow patterns in Swiss conurbations and their development within the last 20 years
- to analyse the interrelation between freight transport and socio-economic structure of conurbations (including spatial development and development of the infrastructure and its use during the last decades) and derivation of driving factors
- to analyse the characteristics and functions of logistics and transport infrastructure (private and public) and the today's and future infrastructure needs
- to set up a regional freight transport model and a set of indicators for sustainable freight logistics and transport.

7. Indicators by Swiss government and researchers to measure the performance of freight transport

Table 2 provides details of indicators used by government and researchers to measure the performance of freight transport.

Table 2: Indicators used by government and researchers to measure the performance of freight transport

Title and description of the urban freight indicator	Units in which the indicator is measured
Vehicles per minute, hour, day for a road section	Total number of vehicles
Direction of vehicles	
Type of vehicles: HGV, LGV, Delivery vehicles	Total number of vehicles
Number of stops in delivery and pick up	Total number of vehicles
Origin and Destination / Point of loading/unloading	Regions: municipality, NUTS region, Country level
Loading weight	In tonnes
Total weight	In tonnes
Capacity usage	In % of total allowed loading volume
Average delivery volume per vehicle type	In tonnes
Delivery volume according to goods group	In tonnes
Delivery volume according to branches	In tonnes
Type of goods transported	Classification according to NSTR-10, EUROSTAT
Number of trips and way in area of investigation	Total number
Classification according to EURO-Norm	EURO-Norm 1 – 5
Parking situation	Descriptive
Loading/Unloading situation	Descriptive
Time of parking	In minutes/hours
Time for loading/unloading	In minutes

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Table 1: Sources of continuous urban freight data collected in Switzerland

Type of data collection exercise/survey	Name of data collection/survey	Name of organisation collecting data	Reason for data collection	Is data used for modelling ?	Frequency of data collection	Last time data was collected	Type of data collected	Method of data collection	Sample size	Geographical area over which data collected
Commodity flow survey	Güterstatistik	Schweizerische Zolldirektion		No						
Site/Land Use/Establishment surveys	Nutzflächen- und Geschossdatei	are Bundesamt für Raumentwicklung		No						
Transport operator surveys (including driver diary surveys)	GTE	Bundesamt für Statistik	Knowledge of roads goods transports on national and regional level (goods and vehicle flows and structure of these flows)	Yes	Every five years	2003	Goods vehicle trips, ave. distance, weight, capacity, vehicle km, goods carried	Survey of vehicle owners		National
	GQGV	Bundesamt für Statistik	Knowledge about border crossing goods transport (road).	N/K	Every five years	2003	Origin-destination, type of goods, weight, vehicle type, custom point and pass used	Survey at 70 custom points	30,000 respondents	National
	AQGV	Bundesamt für Statistik	Knowledge about alpine crossing goods transport (road and rail and combined transport). Data collection also in Austria and France.	N/K	Every five years	2004	Origin-destination, type of goods, weight, vehicle type, custom point and pass used	Survey at 4 Alpine passes and traffic counts	8,500 respondents	4 Alpine passes
Shipper surveys	QMGV	Federal Office for Roads (Astra)	Decision processes of shippers, modal shift behaviour and importance of quality factors in goods transports.	Yes	One-off	2004	Origin-destination, type of goods, weight, vehicle type, transport price	Stated preference interviews	40 interviews	National
	div.	ASTAG, SGL								

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Type of data collection exercise/survey	Name of data collection/survey	Name of organisation collecting data	Reason for data collection	Is data used for modelling ?	Frequency of data collection	Last time data was collected	Type of data collected	Method of data collection	Sample size	Geographic area over which data collected
Receiver surveys	QMGV			Yes	One-off	2004				
Good vehicle fleet licensing data	Motorfahrzeug Statistik	Bundesamt für Statistik								
Traffic counts	Several in different cities									
Distribution industry surveys	Betriebszählung	Bundesamt für Statistik		Yes						
Vehicle operating cost surveys	Carried out by association	ASTAG		No						
Loading/unloading/parking infrastructure data for goods vehicles										
Data on road accidents involving goods vehicles	Unfallstatistik	Bundesstelle für Unfallverhütung BfU		No						
Data on lorry/lorry load thefts	Data not published	Insurance companies		No						

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Type of data collection exercise/survey	Name of data collection/ survey	Name of organisation collecting data	Reason for data collection	Is data used for modelling?	Frequency of data collection	Last time data was collected	Type of data collected	Method of data collection	Sample size	Geographic area over which data collected
Employment surveys in freight transport and logistics industry	Schweizerischer Arbeitskräfte Survey	Bundesamt für Statistik								
Land use databases for town/city needed for freight modelling	EAG data	Amt für Stadtebau, Hochbaudepartement Zürich		No						
Port freight traffic data in the urban area	Basel Gütertransportstatistik	Hafen Basel								
Rail freight traffic data in the urban area	Wagenladungsverkehr	SBB Cargo								
Inland waterway freight traffic data in the urban area										
data in the urban area										
(from cameras, sensors & other automatic data capture devices)	Schweizerische Strassenverkehrs-zählung	ASTRA Bundesamt für Strassen								