BESTUFS WP 3.1

Report on urban freight data collection in Italy

Prof. Antonio Musso
University of Rome “La Sapienza”
Rome (Italy)

Final version

August 2006
Report on urban freight data collection in Italy

Contents

Introduction 3

Main Organizations collecting urban freight data in Italy 3

Reviews of freight data collection in Italy 4

Freight transport data and indicators used in Italy – national level 4
ISTAT Data 5
APAT Data 7
NTA Data 8

Freight transport data and indicators used in Italy – local level: three case studies 8
The Rome case study 9
The Milan case study 10
The Emilia Romagna case study 13
Other experiences 13

Gaps in freight data collection in Italy 13

Conclusions 14

References 14

Appendix 1: Summary of freight data sources in Italy 16

Appendix 2: Summary of most recurring indicators and terms 19
Report on urban freight data collection in Italy

Introduction

Urban freight data collection in Italy is a relatively recent process. In past times, data on mobility phenomena were collected only at national level and for general, statistical purposes, only. In the '90s, the enforcement of a new generation of regulatory and planning tools at local levels prompted local administrators to start investigating traffic phenomena; the rising concern on environmental issues contributed to speed such process.

The main problem administrators, technicians and planners had to face was the unsuitability of the available statistical data on mobility for local purposes. Lack of information, too general way of processing and publishing data, the expensiveness of surveys to update them were other difficulties. In spite of these difficulties, big and medium-size municipalities started surveying and analysing mobility data, but focusing on general traffic problems with emphasis on private cars. Unfortunately, “shedding lights “on private cars meant “casting shadows” on urban freight data; indeed commercial vehicles were usually tackled as a part of the overall amount of traffic, paying no attention to the mobility patterns typical of this mode.

Even though commercial vehicles started to be recognized among the main causes of pollution in urban environments, no regular surveys were undertaken. Thus, only very few municipalities run one-off surveys and studies on freight distribution phenomena, but currently there are no consolidated data on historical trends.

To the modesty of examples at urban level corresponded no upgrading of the collection of data for national statistical aims. It is worth noticing that such gap is also caused by the lack of regulatory tools to compel national/local administrators to collect data on urban freight traffic.

Main Organizations collecting urban freight data in Italy

There are no organizations strictly responsible for collecting data on urban freight, neither at national nor at local levels. However, the National Institute of Statistics (ISTAT - Istituto Nazionale Statistica) and the Ministry of Infrastructure and Transportation are the two main national bodies that deal with the collection of urban freight data.

In general collected data merge to create statistics in which urban freight data are a part of wide-ranging information on mobility, traffic, infrastructure, accidents, goods, etc.

ISTAT collects data on road transport of goods at national level, on a three-monthly basis. The Ministry of Infrastructure and Transportation collects data to be issued in the National Transportation Account – NTA (Conto Nazionale Trasporti). NTA provides annual statistics on the economic and infrastructural issues concerning all modes of transportation. Data come from very different sources as ISTAT, EUROSTAT, Bank of Italy, national companies managing air/railways and highways, etc. All data are referred to national (and in some cases to regional) levels.
The so-called Observatory on goods (Osservatorio delle Merci) created by ACI (Automobile Club of Italy) and Confcommercio (National Retailers Association), collected basic indicators of urban freight mobility for 29 cities. Last update concerned year 1998.

Data to interrelate freight traffic and environmental issues are collected by the Agency for the Preservation of Land and Environment (APAT – Agenzia per la Protezione dell’Ambiente e del Territorio). Also in this case, data are on a national basis, with few exceptions concerning some urban areas, as results of spot analyses.

Other bodies of national relevance collecting freight data are the national operators companies and the insurances companies. In general, data are not to be published and even classified. Customs, civil aviation authorities, the national railways company collect data as well, for their own purposes. However, such data cannot be considered strictly surveys on the urban distribution of goods.

At local level, main organizations collecting freight data are the big – medium size municipalities. Data are generally collected to support political decision processes and planning activities. Most of surveys take place in occasion of one-off studies on these purposes, so there are no consolidated statistics. In few cases, relevant database/studies concern specific cities where the implementation of urban logistics projects required a preliminary freight traffic data analysis.

A call for tender for a statistics study on urban freight has been launched last year by the Italian Ministry of Infrastructure and Transport, but no information are available on the status of this activity.

The participation of some municipalities to EC funded projects led some local administrations to start collecting data to support the demonstration activities/measures.

**Reviews of freight data collection in Italy**

Data on transport of freight at national level are periodically summarised but at local level no institutional body reviews data gathered in all cities. For what concerns the first case, national and regional data are periodically described in the annual NTA report, published by the Ministry of Infrastructure and Transport, tackling all interurban modes of transportation.

ISTAT publishes annual reports on transport of freight on road at national level, the so called Transportation Yearbooks. NTA and ISTAT publications are the only official documents, reporting at national level data on freight transportation.

APAT publishes an annual report (“Mobility in Italy: transportation and environmental indicators”) in which, at national level, the contribution of freight traffic to the emissions package, the freight demand according to scope and mode, external costs are described.

Local experiences are dealt only within few, dedicated publications in which data are reported, as well. For instance, Milan and Rome examples are described in publications and were occasionally presented at meetings, conferences, etc.

**Freight transport data and indicators used in Italy – national level**

As mentioned above, both ISTAT and NTA reports supply researches, administrators and citizens with a large palette of data concerning freight distribution. The two sets of data are different because the two documents are differently targeted. ISTAT data are aimed at providing information
merely under the statistical point of view, NTA processes information and data and provides a dedicated section of the report in which only the most relevant issues are described.

On their turn, APAT data, being focused on environmental issues only, partly merge in the ISTAT package and partly become a self-standing set of information collected in response to TERM - Transport and Environment Reporting Mechanism reference system. This system, promoted by the European Agency for Environment and by EUROSTAT, defined a list of 15 macro indicators aimed at describing negative impacts on the land and on the environment due to transportation activities. To stress the differences and similarities among these three sets of data, short descriptions of each of them are provided, as follows:

**ISTAT Data**

Data on freight are divided into different domains, i.e. according to the main fields of surveys at national levels; these can be divided into:

- **Freight transportation operators companies:**
  National data on number of companies and related operators/employees are provided, according to legal status and/or region. Most striking aspect from these data is that 62.6% of the business is based on one-man companies. External services companies including both freight transportation and handling are provided, as well, always according to legal status and/or region. A four-years comparison (1996 – 2000) is also available.
  Data on the costs of the transportation companies are listed, according to general activities, invoiced goods and investments in million Euros, but besides some general data it is difficult to disaggregate goods transportation as an own entity. The same is valid for statistical data on classes of transportation companies according to number of operators/employees, labour costs, wages and work hours.
  A special section is dedicated to the comparison among EU Countries for what concerns road transportation of freight.

- **Infrastructures:**
  This section is very concise and numbers of freight villages, intermodal and freight terminals, according to macro geographical areas, are reported.

- **Transportation modes:**
  This is a vast data collection on vehicles fleets circulating in Italy, according to national data provided by Automobil Club of Italy – ACI and the Vehicles Public Register – PRA. Numbers of heavy and light vehicles are listed, as parts of the circulating fleet, according age (heavy vehicles only), region, registered legal status. Data on rolling stock is classified according to owners-companies (national and private bodies), but a dedicated table on the amount of freight wagons (divided into flat, covered and high sides open wagons) is available. Merchant marine data are presented according to similar criteria.

The aim of these sets of data is not to focus on freight transportation issues but to provide a general profile of data on mobility; to a more detailed outline of freight distribution is dedicated a proper section in which all data of this domain are reported.

- **Freight Transportation:**
  A short profile on the evolution of the freight transportation demand, at national level,
introduces the data and comments on freight distribution according to different modes: via rail, road, seaway, inland waterways, air and piping. A special section is dedicated to intermodal data.

Data reporting the freight distribution according to different modes are at national level; no geographical references are provided, being freight traffic data listed according to classes of travel distances (5 ranks ranging from less than 100 km up to more than 1000 km) or macro-categories of goods. Same criteria are valid for freight transported via road; in this case, an extra option of data listed per macro-categories of goods and per traveled distances (less than 50 km – considered as local transportation and more than 50 km – considered as medium-long distance) is provided.

Few sets of data concern freight traffic flows from the 6 main relevant regions, in terms of transported goods, which are: Lombardy, Veneto, Emilia-Romagna and Piedmont (Northern areas); Tuscany and Lazio (Central areas). They attract about 60% of the whole national transportation of goods, in Italy.

As already stressed when dealing with data on Freight transportation operators companies, the matter that 62,6% of the business is based on one-man companies prompts data processors to provided statistics in which data on traffic flows are divided into two classes: freight directly transported by companies and freight transported by deliveries operators; according to this main criterium, extra statistics provide data on freight flows at interregional (in general) and international (from/to Italy) levels.

Sea and inland waterways transportation data are at national level, as well, and other specific criteria they are dealt with concern macro-categories of goods, loading/unloading ports, short shipping sea and international activities, in term of numbers of loading/unloading operations; data on airways are provided accordingly.

The intermodal data section provides few data on combined (road/rail) and maritime transportations; for the former, the amount of transported goods and traveled distances are reported during the 1996 – 2002 period, for the latter data on the amount of containers loaded/unloaded in the different ports (in TEU) are listed.

For each set of data reporting the freight distribution according to different modes it is also provided a comparison among Italy and other EU states.

* Environmental issues:
This special section is dedicated to environmental aspects; impacts of freight distribution on the emission packages are esteemed according to the Corinair 94 Methodology. Data are listed providing emission sources (cars, light vehicles, heavy vehicles and buses, mopeds, motorcycles) and the related contribution to specific emissions (Sox, NOx, Non-meth. VOC, CH4, CO, CO2, N2O, NH3) at national level. Even though these data are published by ISTAT, the same set of information is issued also by APAT – the national Agency for the Preservation of Land and Environment, which is the main national data collector and processor for environmental matters. The involvement of both ISTAT and APAT is due to meet the requirements to fulfill environmental indicators coming from the TERM.

However, data on hazardous goods represent the core of this section. Hazardous goods are classified both according to the Adr – Agreement concerning the International Carriage of Dangerous Goods by Road, and to the so-called Nst/R code, issued by EUROSTAT. Crossing the two classifications it is possible to reduce the number of hazardous goods to only four items: crude oil, oil products, chemical products (tar and carbochemical products excluded), tar and carbochemical products.

Being such classification very restrictive, ISTAT provides both series of data. Hence,
different sets of data are listed: transported hazardous goods according to Nst/R (years 1999 – 2002) and according to Adr (year 2002) per types of products and by all modes; hazardous goods according to Adr (year 2002) per types of products transported via road; transported hazardous goods according to Nst/R and according to Adr (years 1999 – 2002) per types of products, via road. The incidence of the transportation of the hazardous goods on the transportation of all freights at national level is reported, as well. Eventually, the paragraph on freight flows reports data concerning the overall flows of hazardous goods per origin and destination (all Italian regions and abroad) in the period 2000 – 2002. The indicators “environmental risk” provide data concerning the overall amounts of transported hazardous goods referred both to regions areas and road regional network lengths.

APAT Data
APAT collects and/or processes data coming from national surveys and databases concerning mainly environmental issues; in particular, data concerning the link between transportation and environment are collected in the frame of the TERM system, as stressed above. The TERM system is based on seven groups of indicators; these are:

- Transportation Environmental Consequences
- Transportation Demand
- Accessibility and Planning
- Supply of infrastructures and transportation services
- Costs and fares of transportation
- Use technology and efficiency
- Management

APAT is able to provide only a part of indicators for each group and for the groups Accessibility and Planning, Costs and fares of transportation and Management no indicators have been supplied, yet.

Freights distribution is partly dealt in the following groups of indicators:

* Transportation Environmental Consequence:
  Indicator TERM 01 provides data on the freight vehicles’ energy consumption, at national level during the 1985 – 2004 period. Data comes from the Ministry of Infrastructure and from the Ministry of Industry databases. Indicator TERM 02 concerns greenhouse gas emissions due to transportation activities; data are provided for type of traffic (passengers and freight) for the 1985 – 2004 period; data sources are the same of indicator TERM 01. Indicator TERM 03 describes the main pollutant emissions, as already reported in the *Environmental issues paragraph, when dealing with the ISTAT data.

* Transportation Demand:
  Indicator TERM 13 provides data on the freight transportation demand per mode, at national level during the 1985 – 2004 period. Data comes from the Ministry of Infrastructure databases. A focus on the “intensity” of the road freight transportation demand referred to GDP and to national population is provided, as well. Such values are processed from the Ministry of Infrastructure, the Ministry of Industry, ISTAT and Italian Automobil Club databases.

* Costs and fares of transportation:
  Indicator TERM 25 is aimed at describing transportation external costs. In view of the fact
that data from the Ministry of Infrastructure provides values which were not updated since 2000, the indicator actually provides an assessment of such costs for the year 2000 according to mode; each mode is referred both to passengers and freight transportations. External costs are divided per cause (greenhouse gases, smog, noise, accidents, congestion). All data are at national level.

* Use technology and efficiency:

Even though this is multiscope group of indicators, only few data can be considered really relevant for the freight transportation issues. Indeed, most of indicators are aimed at generally assessing size and composition of the vehicles fleet, heavy and light vehicles included, so to provide information as average age, motorization rates, etc., at national level. Indicator TERM 33 describes the amount of vehicles meeting the emissions standards, according to the EU directions; in this way it is possible to have data on how many private vehicles divided per type of fuel along with two wheels, heavy and light vehicles and buses meet respectively EURO 0, EURO 1, EURO 2 and EURO 3 standards in 2003.

NTA Data

National Transportation Account report is divided in three parts: a first part describing the general economic state of the art of the nation and the main involved bodies, a second one where accounts related to national and local administrations operating transportation services along with similar accounts related to private operators are listed; and eventually a third part dedicated to accounts concerning infrastructures, traffic and mobility. Most relevant information concerning freight transportation issues are in parts 2 and 3, but they are at national level. In part 2, a special section on freight transport costs reports yearly costs for purchase and renewal of the fleet; overall amounts of costs per types of vehicles; and overall costs divided per items (costs of fuel, tires, maintenance, insurance, etc.). Part three contains two sets of relevant data; the first one concerns the freight transportation traffic and the second one is strictly focused on integrated logistics and intermodality. Freight transportation traffic section reports data on the amount of tons of freight transported by companies according to legal status (i.e. single-operated business and companies), and the relationship of transported freight (in percentage) and the distance ranges. Overall transported goods (in tons) related to origin/destination regions are reported as well. The section on intermodality and logistics provides national data, with special attention to freight transportation by waterways and via rail-road. Data, however, are few and not linkable to any urban operations. Sources of data are ISTAT and the Ministry of Infrastructure databases. NTA last edition concerning 2003 was published in 2005 and no updated versions are currently available.

Freight transport data and indicators used in Italy – local level: three case studies

From the description of the national data, as above reported, it is very difficult to extrapolate useful information apt to describe local situations. Some possible reasons for such difficulties are reported in the paragraph “Gaps in freight data collection in Italy”, further described.
However, generally speaking, data at local level are neither public nor to be published, as explained in the previous section “Main Organizations collecting urban freight data in Italy”. However, in spite of this trend, some local studies have been published and they can be really representative of how and why data on freight transportation are collected and processed at urban level. These studies, because of the accuracy and the thoroughness of the surveys they are based upon, can be really considered pilot experiences in this field; they concern Rome and Milan situations and the Emilia – Romagna region example.

The reason to investigate these three situations comes from the local administrators’ common call to revise local transportation policies, exploring all the possible avenues, in terms of interventions and measures, to achieve more sustainable mobility patterns. The goods distribution reorganization becomes, hence, a top priority since diesel-fuelled commercial vehicles are among the main causes of urban pollution.

The Rome case study
In 1999 Rome Municipality asked STA – Società Trasporti Automobilistici (the body in charge to manage mobility matters) to run a study on the state of the art of the goods distribution in the city historical centre. Concerns on the air quality and on the cultural heritage preservation were the main causes which prompted such study.

The aim of the study was twofold: on the one hand, to have a better knowledge of the “distribution of goods” phenomena, on the other to collect useful information to develop directions to solve the most recurring problems.

The study was developed according to a vast survey, to which corresponded two focus studies, respectively, on freight distribution demand and supply. The analysis of critical issues and the creation of strategies to implement completed the study.

The core of the study was represented by the results coming from the survey which included data on:

Counts

- **Vehicles counts** – operated along 33 road sections (28 within the city centre, 5 at cordons). Operators at each section counted passing vehicles per each direction, according to five types (light vehicles < 1.5 t; commercial vehicles between 1.5 – 3.5 t, heavy vehicles, lorries, private cars).
- **Spatial distribution of traffic due to commercial vehicles** – where for each accessing point along the cordons the amount of entering commercial vehicles were counted.
- **Time distribution of traffic due to commercial vehicles** – where the amount of commercial vehicles according different hours of the day (8.00 – 18.00) is observed.

Interviews

779 drivers were interviewed at the 33 road sections; such sample was considered satisfactory also in light of previous experiences run in other Italian cities. Interviewees were asked to answer about: the vehicles (make of the car, type of fuel, full load weight, etc.); origin and destinations (from where and where to goods are travelling, types and amount of goods, how long loading/unloading operations last, frequency of operations, etc.); use of loading/unloading areas (whether they are used or not, if not, why); possible suggestions to improve the current operative processes.

Most important results came from inquiries on origin and destinations; indeed, answers allowed to define most recurring destinations, but also to list them according to type of carries goods, to know average times of deliveries per type of carries goods.
About 250 retailers were interviewed by a questionnaire, as well; besides information on retail activities and sites, shopkeepers were asked to provide information on the delivery process, mainly whether they operated deliveries by their own or by external operators, or both (specifying the number of involved vehicles, frequency of deliveries, weight of parcels, type of vehicles, usual time schedules for deliveries, average time for delivering, etc.). As for the drivers, also retailers were asked to suggest solutions to the most recurring problems.

**Focus Groups**

Focus groups sessions were dedicated to operators of some companies (2 – 4 participants per each session); the selected companies were very different (food, fuel, construction materials, furnitures, handcraft, logistics, chemical products, etc.) so to have a palette of participants really representative of the urban situation. Questions were very similar to those asked to drivers and retailers, in order to have homogeneity of results.

The quantitative results coming form the surveys supported the assessment of goods transportation demand and the infrastructure supply. For the former, starting from a zoning based on 480 traffic areas, an O/D matrix was developed to determine the number of trips/day originated from each zone towards the others, paying special attention to trips to/from the city centre. For the latter, a simple list of loading/unloading areas was provided.

The philosophy of the study was to have a snapshot of the situation in the Roman area, to support decision-makers about future mobility policies and regulations to implement; this explains the reasons why the study ends with the analysis of the most critical problems and with some recommendations to solve them.


**The Milan case study**

In 2000 a study started in Milan, virtually with the same aims of the Rome analysis, to define the distribution of freight in the metropolitan area. Such a very large area of investigation (the municipality of Milan, plus 38 municipalities around the city) required a very skilled methodological approach to manage the whole study program; this explains why the study was run in two steps: a first one for the surveys (on its turn divided into two sets of surveys, respectively in 2000 and in 2002) and a second one for the creation of a dedicated model.

The study program can be synthesized according to the following activities:

*Support analyses – socio-economic and land use data were collected to feed a GIS database to support the next traffic and the survey analyses*

- **Preparation of surveys** – the localization of surveys spots, surveys operators training, co-ordination and agreement with the involved bodies, preparation of questionnaires, etc. were the main activities of this task.
- **Surveys** – Each set of survey was based on: surveys of commercial vehicles, on-the-spot interviews to drivers, interviews to companies operators.
- **Statistical process of collected data** – Data collected on the surveys were used to draw an O/D matrix, aimed at defining mainly the spatial distribution of commercial trips entering the metropolitan area.
- *Creation of a model* – A model to simulate commercial traffic along the main roads of the area was built.

- *Results analyses and recommendations* – Conclusions drawn both from the surveys and from the simulation activities were addressed to decision-makers and stakeholders for further mobility governance activities.

As for Rome, the core, in terms of spent resources, of the whole program was represented both by the survey activities and the building of the model. The surveys were the most time-consuming activities, as the amount of available data demonstrates. These can be divided into:

- **Facts and figures on the metropolitan area**: data and information on the socio-economic situation of the area in hand were collected to have a census analysis of inhabitants, employees, companies, material resources involved in the activities (vehicles fleets, warehouses, depots, outdoor areas, amount of goods transported per year, etc.). The census was completed by geographical data and facts on the infrastructural supply.

- **Data collection from surveys**: a multitask process led to collect data on the basis of four sets of surveys: a pilot survey; a systematic survey of commercial vehicles flows; the so-called O/D survey and eventually a survey on the operators.

The pilot survey was based on phone interviews to a restricted sample of commercial operators: the aim was to have information on typical habits of operators, as: peak hours, recurring timetables or schedules for picking/delivery activities, usual routes, etc.

**The 2000 survey**

The systematic survey of commercial vehicles flows was performed during some working days in June and July, and partly repeated in September 2000. Data on vehicles composition (divided into: two-wheels, cars, buses, light commercial vehicles - < 3.5t, heavy commercial vehicles - > 3.5t and long vehicles) per direction, per hour along a large number of sections were achieved.

The O/D survey was based on a on-the-spot questionnaire delivered to operators; interviewees, at kerbsides, were asked to provide information on:

- **Type of vehicle and carried load**
- **Features of the current transportation activity**: picking/delivery, load percentage, frequency of the activity and type of transported goods
- **Information on the trip origin**: from where and from what kind of premise the vehicle came, departure time and esteemed time of arrival back to the origin
- **Information on the trip destination**: where to and to what kind of premise the vehicle was going, esteemed arrival time
- **Information on the next five trip destinations**: same as above, when applicable.

Data on the most recurring origins and destinations, and hence on usual routes were achieved.

The survey on the operators was aimed at collecting information on the logistic chains, with special regards to the processes linked to the supply chains, thanks to vis-à-vis interviews. Questionnaires were delivered to retailers, transportation and logistic operators; information to achieve were aimed at providing data on two different fields: organization of the picking/delivery activities and suggestions to improve the freight transportation process, in general. Besides general information on the size and the asset of the companies, a data collection on the amount of picked/delivered goods, number and frequency of operations per day, schedules, orders processing chains, etc., was achieved. The part of the questionnaire concerning the operators proposals was aimed at assessing awareness and acceptance of policies and strategies in the field of goods transportation,
with special regards to pricing, regulatory aspects (time slots, restrictions to some categories of vehicles, etc.), increase of the infrastructural supply and market strategies (the latter paying attention to the relevance of agreements among the involved bodies). Operators assessments was based on a score on the feasibility of each aspects and on the related esteemed costs.

*The 2002 survey*

A similar survey process was repeated in 2002 on a smaller urban area; the aim was to have more detailed information on specific supply chains, even to a neighbourhood scale. Special emphasis was on the delivery activities, as final end of the whole logistic process. It is very difficult to synthesize all the results; surveys on traffic flows and O/D analyses have been repeated with similar procedures of the 2000 surveys, but, as mentioned above, on a restricted central area. The quality of information on traffic counts, type and frequency of activities, kind of transported goods, recurring O/D, etc. was hence as high as was in the 2000 surveys, but the quality on information on the built environment supply and on the retail-end processes was increased. On-the-spot interviews allowed to collect data on retail premises and availability of warehouses or storage areas, according to type of goods and surface in sqm.

For what concerns the retail-end process, achieved data according to type of shop/retail activity were mainly on: the frequency and the number of provisions from transportation operators, origin of goods (from producers, distributors, self-provision), kind of agreement between retailer and provider, time gap between orders and deliveries (in hours and days), recurring timetables for deliveries, possibilities to modify such schedules (with answers: yes, yes but it causes some problems, no); kind of vehicles used for deliveries, load percentage, etc.

The same set of data was achieved also for single supply chains.

*The model*

All data and the used maps merged into a GIS tools. Most relevant problems concerned the geocodification of records, so to have correct geocodes of roads, premises, shops, and the standardization and simplification of data as well.

Most relevant data were published in: *Da Rios, G. and Gattuso, D., La Mobilità delle merci nell’area Milanese (Goods movements in the Milan area), Milan 2003*

*The Emilia Romagna case study*

The Emilia Romagna situation can be considered a relevant example of data collection at local level because of some regional features. The region is mainly flat and with an excellent infrastructural supply. Emilia Romagna indeed is densely inhabited even in rural areas (so to be considered a kind of “urban region”), land use is very mixed, and under the economic point of view there are no differences among tertiary, industrial and agricultural activities; this makes of Emilia Romagna one of the wealthiest region of Italy. To such an advanced economic status corresponds a long-time concern for environmental problems, shared both by local administrators and citizens, which is mainly performed by the implementation of sustainability-based strategies and policies along with eco-friendly local measures. The need to preserve the cultural heritage and to support the always-booming tourist activities play a relevant role, as well.

The environmental problems, hence, prompted regional administrators to monitor commercial traffic also in light of the fact that about 45% of goods produced in the region are for inner (regional) markets and that only 11% of the surveyed commercial flows are due to regional through-traffic.
Regular surveys take place at regional level and published data concern:
- Relevance (in %) of transported goods per destination (regional data)
- Average transportation distance (per kind of transportation, i.e. directly transported by producers or transported by logistic operators)
- Transported tons of goods (per kind of transportation)
- Number of vehicles per transportation company
- Relevance (in %) of industrial activities per provinces
- Infrastructural supply

Most of these data are collected to support planning activities and are especially targeted to support directions issued in the Regional Plan of Logistics; moreover, a synthesis of most relevant facts and figures are regularly published by Emilia Romagna Region (the latest available issue is: Regione Emilia Romagna, Linee guida per una strategia regionale della logistica urbana – Quaderno n.2 (Guidelines for urban logistics regional strategies – issue nr.2), Bologna 2004

Other experiences
As side experience, it is also worth reporting the study run by PricewaterhouseCoopers – PwC on the data analysis for transport flow optimisation in some Italian cities, as requested by a major express courier. Data collection was an one-off study and lasted one month. PwC analysed the express courier data system, since the consultancy was on how to optimise the distribution of parcels in a given area.

Data fed an Excel model, for reducing number of collection/distribution trips (basically by aggregating flows to/from adjacent areas).

The data collection method was based on two steps:
- Extraction of number of shipment to/from each area (defined by the postal code) from the data system
- Direct verification of the vehicle routes

The sample of the study concerned all shipments carried by the courier in the given area, with a good level of reliability of the process, thanks to bar codes on shipments which allowed tracking and tracing operations.

Gaps in freight data collection in Italy

Lacks in the current systems to collect data in Italy are due to a lack of coordination between national and local authorities.

National bodies collect data in a very wide-ranging way, mainly just to “feed” national statistics. Hence, being the target very broad, results are very general, too. For instance, ISTAT collects data on road transport of goods at national level, on a three-monthly basis. Limits of these surveys rely on two factors:
1. The bottom – up collecting process does not start from the local level; interviewees have to specify provinces of departure and of arrival but not the municipal areas; such information are processed on a regional basis.
2. Light goods vehicles (less than 3,5t) are not taken into account because, according to the European regulations on road freight transport statistical surveys, interviews to drivers of such vehicles are not compulsory; it is worth noticing, however, that currently there are
about 2,000,000 commercial vehicles circulating in Italy, but out of them there are just 300,000 vehicles with a load over 3.5t.

On their turn, local authorities consider surveys on freight distribution not a regular task; data collection on this purpose is either limited to support political/regulatory decisions (just as an added value to a general knowledge of local mobility phenomena) or to provide new entries to traffic models, without any real “interpretation” of the freight distribution process. Accordingly, the case studies of Milan and Rome can be considered as exceptions, because of the in-depth run analyses, but for what strictly concerns the interpretation of the phenomenon there is still work to do.

Two lacking aspects in the data collection support this statement; the first concerns the difficulties to have data on the infrastructural supply dedicated to goods deliveries. Usually, no indicators linking numbers of operators to retail activities, to land use or even to loading/unloading areas (just to mention two very simple ones) are available.

But traffic data are split not only from information on road supply, but also from another relevant component: the participation of end-users. This second problem can be well represented by the Rome case.

Everyday, freight entering the city amounts to about 90,000 tons/day; the historical centre represents 1.1% of the urban area but it attracts 33% of the total amount of delivered goods. About 25,000 freight vehicles enter the Freight Limited Traffic Zone (FLTZ, an area larger than LTZ) per day. The most striking aspect of this process is the lack of an appropriate number of parking lots, but the Municipality’s first answer just to plan more loading/unloading areas, was soon evident was not the most appropriate solution for the city centre, where narrow streets, operators’ non respect of the rules and citizens’ basic parking requirements make the situation worse, day by day. No real comparison between operators’ requirements and space supply have ever been run, nor residents’ parking requirements have also been taken into account in light of the fact that creation of new bays for deliveries often results in fewer parking lots for residents. Another point to consider is the local operators’ general wariness; they are not ready for negotiations, so it is very difficult to have proper knowledge of their requirements.

Hence another gap in the collection of data is the total absence of quantitative/qualitative information of transportation operators.

Conclusions

The situation on studies and analyses of freight transport in urban areas, in Italy, is still not well developed.

Only few studies at local level have been run in the last years and there is no co-ordination among the different administrations or groups involved in these studies. This is probably due to the lack of an institutional body in charge of studying, co-ordinating studies on these phenomena and summarizing data collected at local level.

Moreover, data collected from different public or private administrations, such as ISTAT or Ministry of Infrastructure and Transport, that could be used in studies and analyses of local phenomena, are not always useful to this aim because of the very big scale used (e.g. O/D matrix at province level and not at local level) or because considering some aspects of phenomena (e.g. in ISTAT study on transport of freight no vehicles with a load under 3.5t are surveyed), only.

Data availability at local level is often linked to the enforcement of regulatory tools, as in case of PGTU (General Plan of Transport), and information are limited to basic data, mainly traffic counts.
However, thanks to pilot studies and recent implementations, the knowledge on such phenomena is improved in last years and will improve in the next ones.

References
Regione Emilia Romagna, *Linee guida per una strategia regionale di logistica urbana - Quaderno n.2*, Bologna 2004
## Appendix 1: Summary of freight data sources in Italy

<table>
<thead>
<tr>
<th>Type of data collection exercise/survey</th>
<th>Name of data collection/ survey</th>
<th>Name of organisation collecting data</th>
<th>Reason for data collection</th>
<th>Is data used for modelling?</th>
<th>Frequency of data collection</th>
<th>Last time data was collected</th>
<th>Type of data collected</th>
<th>Method of data collection</th>
<th>Sample size</th>
<th>Units of measurement used</th>
<th>Geographical area over which data collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodity flow survey</td>
<td>N.A.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site/Land Use Establishment surveys</td>
<td>N.A.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NTA</td>
<td>Ministry of Infrastructure and Transportation</td>
<td>Report on national surveys/data</td>
<td>no</td>
<td>All the time – published annually</td>
<td>2003</td>
<td>Number of vehicles</td>
<td>Questionnaire - census</td>
<td>All vehicles</td>
<td>Vehicles per category</td>
<td>Vehicle kilometres</td>
<td>All Italy</td>
</tr>
<tr>
<td>NTA</td>
<td>Ministry of Infrastructure and Transportation</td>
<td>Report on national surveys/data</td>
<td>no</td>
<td>All the time – published annually</td>
<td>2003</td>
<td>Own/operated transport</td>
<td>Questionnaire - census</td>
<td>All vehicles</td>
<td>Tonnes and kilometres</td>
<td>All Italy</td>
<td></td>
</tr>
<tr>
<td>Annual report on transportation statistic</td>
<td>ISTAT</td>
<td>Report on national surveys/data</td>
<td>no</td>
<td>All the time – published annually</td>
<td>2005</td>
<td>Number of companies</td>
<td>Questionnaire - census</td>
<td>All vehicles</td>
<td>Several</td>
<td>All Italy</td>
<td></td>
</tr>
<tr>
<td>Annual report on transportation statistic</td>
<td>ISTAT</td>
<td>Report on national surveys/data</td>
<td>no</td>
<td>All the time – published annually</td>
<td>2005</td>
<td>Type of transported goods</td>
<td>Questionnaire - census</td>
<td>All vehicles</td>
<td>Tonnes and kilometres</td>
<td>All Italy</td>
<td></td>
</tr>
<tr>
<td>Shipper surveys</td>
<td>N.A.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receiver surveys</td>
<td>N.A.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good vehicle fleet licensing data</td>
<td>Pubblico Registro Automobilistico (Vehicle ownership registry)</td>
<td>PRA</td>
<td>Vehicle ownership registry</td>
<td>no</td>
<td>Real time (registration of changes in vehicle ownership are compulsory)</td>
<td>2005</td>
<td>Vehicle characteristics and ownership</td>
<td>Declaration by owners</td>
<td>All vehicles</td>
<td>-</td>
<td>All Italy</td>
</tr>
<tr>
<td>Type of data collection exercise/survey</td>
<td>Name of data collection/survey</td>
<td>Name of organisation collecting data</td>
<td>Reason for data collection</td>
<td>Is data used for modelling?</td>
<td>Frequency of data collection</td>
<td>Last time data was collected</td>
<td>Type of data collected</td>
<td>Method of data collection</td>
<td>Sample size</td>
<td>Units of measurement used</td>
<td>Geographical area over which data collected</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>---------------------------------</td>
<td>--------------------------------------</td>
<td>---------------------------</td>
<td>---------------------------</td>
<td>----------------------------</td>
<td>----------------------------</td>
<td>-------------------------</td>
<td>--------------------------</td>
<td>------------</td>
<td>--------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Traffic counts</td>
<td>Rome case study</td>
<td>STA</td>
<td>Freight Traffic monitoring</td>
<td>yes</td>
<td>One - off</td>
<td>1999</td>
<td>Vehicles count</td>
<td>Count of vehicles Questionnaire Focus group</td>
<td>195,000</td>
<td>Vehicles/day according to 5 vehicles types</td>
<td>Rome centre zone on 33 road sections</td>
</tr>
<tr>
<td></td>
<td>Milan case study</td>
<td>University of Milan</td>
<td>Freight Traffic monitoring</td>
<td>yes</td>
<td>One - off</td>
<td>2000/2002</td>
<td>Count of vehicles Questionnaire Focus group</td>
<td>541,000</td>
<td>Vehicles/day</td>
<td>Milan municipality and surrounding areas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emilia-Romagna regional surveys</td>
<td>Emilia-Romagna Region</td>
<td>Freight Traffic monitoring</td>
<td>N.A.</td>
<td>One - off</td>
<td>2005</td>
<td>N.A.</td>
<td>N.A.</td>
<td>Several</td>
<td>Emilia-Romagna Region</td>
<td></td>
</tr>
<tr>
<td>Distribution industry surveys</td>
<td>N.A.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle operating cost surveys</td>
<td>NTA</td>
<td>Ministry of Infrastructure and transportation</td>
<td>Report on national surveys/data</td>
<td>no</td>
<td>All the time – published annually</td>
<td>2003</td>
<td>Cost per vehicles category</td>
<td>Questionnaire - census</td>
<td>Several</td>
<td>Euro</td>
<td>All Italy</td>
</tr>
<tr>
<td>Loading/unloading/parking Infrastructure data for goods vehicles</td>
<td>N.A.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data on road accidents involving goods vehicles</td>
<td>Annual report on transportation statistic</td>
<td>ISTAT</td>
<td>Report on national surveys/data</td>
<td>no</td>
<td>All the time – published annually</td>
<td>2005</td>
<td>Number of accidents Questionnaire - census</td>
<td>All vehicles</td>
<td>Several</td>
<td>All Italy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Insurance companies database</td>
<td>Insurance companies associations</td>
<td>Statistics</td>
<td>no</td>
<td>published annually</td>
<td>N.A.</td>
<td>Number of accidents Questionnaire - census</td>
<td>All vehicles</td>
<td>Several</td>
<td>All Italy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Many cities gather statistics on urban accidents</td>
<td>Cities authorities – Statistical dept.</td>
<td>Statistics, policy making</td>
<td>no</td>
<td>Depending on the cities</td>
<td>Depending on the cities</td>
<td>Depending on the cities</td>
<td>Depending on the cities</td>
<td>Depending on the cities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data on lorry/lorry load thefts</td>
<td>Insurance companies database</td>
<td>Insurance companies associations</td>
<td>Statistics</td>
<td>no</td>
<td>Regularly, not for publishing</td>
<td>N.A.</td>
<td>Number of lorries Questionnaire - census</td>
<td>All vehicles</td>
<td>N.A.</td>
<td>All Italy</td>
<td></td>
</tr>
</tbody>
</table>
### Summary of freight data sources in Italy (cont.)

<table>
<thead>
<tr>
<th>Type of data collection exercise/survey</th>
<th>Name of data collection/survey</th>
<th>Name of organisation collecting data</th>
<th>Reason for data collection</th>
<th>Is data used for modelling?</th>
<th>Frequency of data collection</th>
<th>Last time data was collected</th>
<th>Type of data collected</th>
<th>Method of data collection</th>
<th>Sample size</th>
<th>Units of measurement used</th>
<th>Geographical area over which data collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment surveys in freight transport and logistics industry</td>
<td>Annual report on transportation statistic</td>
<td>ISTAT</td>
<td>Report on national surveys/data</td>
<td>no</td>
<td>All the time – published annually</td>
<td>2005</td>
<td>Number of employees</td>
<td>Questionnaire - census</td>
<td>All vehicles</td>
<td>Several</td>
<td>All Italy</td>
</tr>
<tr>
<td>Land use databases for town/city needed for freight modeling</td>
<td>Milan case study</td>
<td>University of Milan</td>
<td>Freight Traffic monitoring</td>
<td>yes</td>
<td>once</td>
<td>2000</td>
<td>Social-economic data and land use</td>
<td></td>
<td></td>
<td>Milan municipality and hinterland</td>
<td></td>
</tr>
<tr>
<td>Port freight traffic data inside the urban area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rail freight traffic data inside the urban area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inland waterway freight traffic data inside the urban area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airport freight traffic data inside the urban area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freight informatics data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other sources of urban freight data Environment</td>
<td>Annual report on environmental indicators</td>
<td>APAT</td>
<td>Report on national surveys/data</td>
<td>no</td>
<td>published annually</td>
<td>2005</td>
<td>Environmental data</td>
<td>Elaboration of traffic data</td>
<td>N.A.</td>
<td>Several</td>
<td>All Italy</td>
</tr>
<tr>
<td>Vehicle safety and maintenance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Appendix 2: Summary of most recurring indicators and terms

#### Summary of indicators used to measure the performance of urban freight transport

<table>
<thead>
<tr>
<th>Title and description of the urban freight indicator</th>
<th>Units in which the indicator is measured</th>
<th>Project/organisation using this indicator and reference if known</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of shipments per day (and by area)</td>
<td>N. of shipments</td>
<td>Transport operators</td>
</tr>
<tr>
<td>Number of commercial vehicles attracted/produced per day or per zone</td>
<td>N. vehicles/zone*day</td>
<td></td>
</tr>
<tr>
<td>Needed of loading/unloading place per zone or per street or Number of loading/unloading place currently existing in a zone or in a street</td>
<td>N. of place/zone, N. of place/street</td>
<td></td>
</tr>
<tr>
<td>Number of shipments produced by a type of commercial activities in a day</td>
<td>N of shipment per one commercial activity /day</td>
<td></td>
</tr>
<tr>
<td>Occupancy coefficient</td>
<td>Goods Load transported /Load capacity=[%]</td>
<td></td>
</tr>
<tr>
<td>Number of freight distribution vehicles circulating in the city per day</td>
<td>N. of vehicles, N. of vehicles*km</td>
<td>City authorities, transport planners</td>
</tr>
<tr>
<td>Number of freight distribution vehicles circulating entering the city center per day</td>
<td>N. of vehicles, N. of vehicles*km</td>
<td>City authorities, transport planners</td>
</tr>
<tr>
<td>Number of shipments per day (and by area)</td>
<td>N. of shipments</td>
<td>Transport operators</td>
</tr>
</tbody>
</table>

#### Terms used and their definitions in urban freight data collection

<table>
<thead>
<tr>
<th>Term used (English)</th>
<th>Term used (Italian)</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop</td>
<td>Sosta</td>
<td>Each stop made by a freight distribution vehicle to delivery or collect a shipment</td>
</tr>
<tr>
<td>Route</td>
<td>Giro</td>
<td>The route of a freight collection / distribution of a vehicle, often the same every day</td>
</tr>
<tr>
<td>direct delivery</td>
<td>Consegna diretta</td>
<td>When the delivery route has a single destination (used in urban area)</td>
</tr>
<tr>
<td>Operative vehicles</td>
<td>Veicolo operativo</td>
<td>Category of commercial vehicles used in upkeeping activities or in building activities (In urban areas these categories represent about 20% or more of total commercial vehicles)</td>
</tr>
<tr>
<td>Trip</td>
<td>Viaggio</td>
<td>Movement from origin to destination</td>
</tr>
<tr>
<td>Stop</td>
<td>Tappa</td>
<td>Stops for partial load/unload of goods between origin and destination.</td>
</tr>
<tr>
<td>Heavy goods vehicles</td>
<td>Veicoli pesanti</td>
<td>Freight vehicle with maximum weight &gt; 3,5 t</td>
</tr>
<tr>
<td>Light goods vehicles</td>
<td>Veicoli leggeri / furgoni</td>
<td>Freight vehicle with maximum weight &lt; 3,5 t</td>
</tr>
</tbody>
</table>