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## Reviewing efficiency and effectiveness of interurban public transport services: a practical experience

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### Abstract

This paper describes the methodology and the analysis tool developed for a study, carried out in 2012, aimed at the reorganisation of the interurban public transport services of the Piedmont region of Italy. Reorganization was necessary as a result of the reduction in funds allocated to public transport. We needed to work on a large dataset spanning different types of data, such as service provision, ridership, economic data, and geographical information. The size of the task warranted the effort to merge all those data into a single database and develop an analysis tool on purpose. Therefore we custom built a web-based visual analysis tool, using free web applications, including geo-referenced dynamic maps and allowing users to visualise and interact readily with the information in the database. This web GIS application was used to characterise public transport lines on the basis of combinations of indicators of interest (such as ridership, number of services and km produced by time unit), or on the basis of their characteristics (such as route overlaps, reference public administration, type of services, e.g. daily, for schoolchildren, market day only). Tables, charts and maps obtained from the web GIS were employed to compare the information we had with a set of criteria and identify instances of inefficiency or ineffectiveness of interurban public transport services.

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## 1. Introduction

Due to the current economic downturn, public administrations are facing the tough task of providing adequate services with decreasing funds. Public transport is one of the most affected services. Under the pressures of urgency, lack of funds and limited knowledge of services' effectiveness, administrators may choose the easier and faster solution: undifferentiated service cuts. Smarter choices could be made using good data sources and analysis tools. The pressure to collect and use such sources and tools may also be taken as an occasion to develop or fine tune data collection methods and data exploration procedures.

This paper describes the method developed for a study on interurban public transport services of the Piedmont region of Italy. The study, carried out in 2012, assessed the efficiency and the effectiveness of public transport and characterised which services could be reorganised in order to increase the system's sustainability while preserving as much as possible the level of service provided. The content of this paper is based on the final report of the study by SiTI (2012), which the authors contributed to.

The focus of the paper is on the method used, the selection of performance indicators, and the analyses carried out. The next section begins by elaborating on the motivation and the context in which the study was carried out, as well as the limitations of the remit. Other work carried out on the same case application is reviewed in section 3, while section 4 offers a brief survey of the literature that this work builds upon. Section 5 describes some of the characteristics of interurban public transport provision in the case examined that are useful to follow the ensuing discussion on the method and its application (section 6). The final section draws some conclusions and outlines some further information on the study including the work described in the paper.

## 2. Motivation

Planning and contracting interurban public transport in Italy is the responsibility of the Regions and of the Provinces. Regions, each including several Provinces, are directly responsible for rail transport and for bus services of regional interest, which are typically those connecting the main urban centres of one region with those of another one. Provinces are responsible for interurban bus services within their area. Regions have also the remit of coordinating services' planning by Provinces. All services are subject to public service obligations and are subsidized. The distribution of responsibilities just outlined results from the provision of legislative decree no. 422/1997 -which transferred public transport responsibilities from the State to the Regions- as well as from the regional legislation and administrative acts that each Region issued to adapt the new setup to its own situation.

In particular, the Piedmont Region transposed national legislation on public transport into its regional law no. 1 of year 2000 and identified 9 contracting bodies responsible for planning interurban bus services within their area: 8 Provinces and the Metropolitan Transport Agency of Turin, Piedmont's capital city (AMM - Agenzia per la Mobilità Metropolitana). The remit of this Agency includes planning and contracting urban and interurban bus transport in the greater Turin area (over 1.5 million people living in the 32 city councils making it up, about 900,000 in Turin alone) and the Metropolitan Railway Services (Servizio Ferroviario Metropolitano), 5 lines whose services started in 2012.

Within this framework, our research institute developed for the regional administration a method and a tool to analyse interurban bus services with the aim to support their reorganisation. Such reorganisation is meant in steps, and has to comply with both a long term vision for the public transport system and a decreasing availability of funds for subsidies. Reorganisation of railway services had been formulated separately by the regional administration. Therefore railway services were taken as given in this work and considered as the system around which bus services should be organised. Interurban bus services were analysed as a single integrated system, independently of the contracting body responsible for them.

This has been the first time that such a big and complex system has been screened in such a detail to investigate efficiency and effectiveness of existing services, reviewing the possible reasons for the issues detected by using summary indicators (no ad hoc survey was carried out for this work).

The findings of this analysis, together with guidelines for the reorganisation of the services resulting from a benchmarking exercise, were passed on to all the contracting bodies in order to foster a common reorganisation process according to the same standards across the whole Region.

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