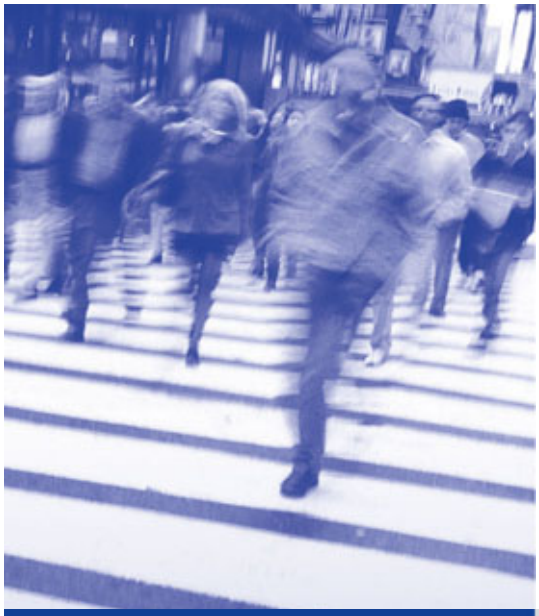


CiViTAS
Cleaner and better transport in cities

ELAN
BRNO • GENT • LJUBLJANA • PORTO • ZAGREB

Implementation status report on “clever commuting” campaign

ELAN Deliverable No. 4.4 – D1

Project acronym: ELAN
Project full title: Mobilising citizens for vital cities

Grant Agreement No.: ELAN TREN/FP7TR/218954/”ELAN”

Workpackage: WP 4
Measure: 4.4-ZAG Mobility management for large institutions

Author(s): Ivan Grgurević
Co-author(s): Tonči Carić, Ružica Škurla Babić

THE CIVITAS INITIATIVE
IS CO-FINANCED BY THE
EUROPEAN UNION

Status: Final

25 September 2010

ELAN deliverable no.	4.4 – D1
Date / Version	25 September 2010, Final version
Dissemination level	CO
Work Package	WP4 Influencing travel behaviour
Author(s)	Ivan Grgurević
Co-author(s)	Tonči Carić, Ružica Škurla Babić
File Name	4.4 – D1 – Implementation status report on clever commuting campaign.pdf

Keywords

General

x	CIVITAS
x	ELAN Project

Work package links

	WP1 Alternative fuels & clean vehicles		WP7 Energy-efficient freight logistics
	WP2 Collective transport & intermodal integration		WP8 Transport telematics
	WP3 Demand management		WP9 Project coordination
x	WP4 Influencing travel behaviour		WP10 Project management
	WP5 Safety, security & health		WP11 Research and Technological Development
	WP6 Innovative mobility services		WP12 Impact and process evaluation
			WP13 Dissemination, citizens' engagement, training and knowledge transfer

Document history

Date	Person	Action	Status [1]	Circulation [2]
20/08/2010	Ivan Grgurević	Preparation of the document (1st draft)	Draft	ML
12/09/2010	Tonči Carić, Ružica Škurla Babić	Comments on draft	Draft	ML, SC
25/09/2010	Ivan Grgurević	Final version/ review	Final	ML, SC

[1] *Status:* Draft, Final, Approved, Submitted

[2] *Circulation*: PC = Project Coordinator; PM = Project Manager; SC = Site Coordinators; EM = Evaluation Manager; DM = Dissemination Manager; SEM = Site Evaluation Managers; SDM = Site Dissemination Managers; SCo = Scientific Coordinator, P = partners, ML = Measure Leaders

CONTENT

1. SUMMARY (ABSTRACT) 4
2. INTRODUCTION 6
3. OVERVIEW 6
4. DATA COLLECTION AND IMPLEMENTATION STATUS 7
   4.1. INTRODUCTION ..... FEHLER! TEXTMARKE NICHT DEFINIERT.
   4.2. MODAL SPLIT 15
   4.3. VEHICLE OCCUPANCY 21
   4.4. COMMON JOURNEYS 21
5. CONCLUSION 24
6. ATTACHMENTS 25
   6.1. INVITATION AND PROGRAM LEAFLET 25
   6.2. LIST OF PARTICIPANTS AT THE PRESENTATION OF THE MEASURE 4.4 29
   6.3. LIST OF POLLED COMPANIES/INSTITUTIONS 30
   6.4. WEB PAGE DISPLAY FOR RESERVATION OF A CAR SEAT 32
   6.5. MARKETING CAMPAIGN EVENTS ..... FEHLER! TEXTMARKE NICHT DEFINIERT.
   6.6. POWER POINT PRESENTATION 38

1. SUMMARY (ABSTRACT)

The City of Zagreb with its about 800,000 inhabitants records a rapid growth in motorization levels. Modal split is constantly changing in favor of personal car and thus the city center is faced with traffic network congestion, which produces negative effects such as longer journey time, increased pollution and noise, increased number of traffic accidents and illegal parking.

The main objective of Measure 4.4 “Mobility management for large institutions” is the promotion of more sustainable commuting, which includes car pooling, public transport, cycling and walking. The measure is oriented towards employees and other users within large organizations (i.e. hospitals, factories, universities, schools, municipal and other administrations etc.). At least eight dedicated travel plans will be set up for different organizations, including the following targets:

- Increase no. of passengers/cars by organizing common journeys;
- Increase cycling by offering “test bicycles” to employees;
- Promote use of public transport and other sustainable modes by a dedicated campaign;
- Reduce congestion;
- Reduce level of air pollution and noise.

Using personal cars for common journeys by several people represents an innovative way of transportation compared to the usual use of personal vehicles. Use of a single vehicle by several passengers in mutual accordance can be regarded as turning individual means of transportation into some mode of collective transportation. Establishing contact between possible users via a website shows acceptance of technological achievement in everyday life.

Mobility is one of the main strategic issues in Zagreb and all plans and strategies strongly aim at better public transport and alternative means of transport such as public transport, cycling and walking, instead of using the private car.

The Measure Leader of measure 4.4-ZAG – “Mobility management for large institutions” is ZFOT (Faculty of Transport and Traffic Sciences, University of Zagreb). Other partners are the City of Zagreb and ODRAZ-Sustainable Community Development.

This document presents and describes the data collected at the demonstration corridor of the CIVITAS-ELAN project in a part of the City of Zagreb. Data collection refers to the following key data (key units): modal split, vehicle occupancy, common journeys/ carpooling, etc.

The data is used to examine the state and possibility of introduction of strategies and mobility management measures in larger companies or institutions in the encompassed zone. Apart from companies/institutions at the demonstration corridor, data collection was also made at the Faculty of Transport and Traffic Sciences in Zagreb (ZFOT), which served as a pilot project and test phase before the intended data collection. In order to assess project results and determine possible improvements, the same data type will be collected again at the end of the project period.

High motorization level and increase in the standard of inhabitants has significantly affected modal split in the City of Zagreb. Through data collection, the existing state of traffic mobility of employees and students at the demonstration corridor of the CIVITAS ELAN project was determined. A certain number of polled companies/ institutions reacted positively and provided the data on transportation and transportation habits of the employees. However, a number of companies did not recognize the need for such an act. Through a more extensive project promotion and adequate employee motivation, the number of common journeys could be positively affected. That is why it is important to point out the numerous advantages of common journeys and secure a reliable system of ride pairing and reservations.

Through the analysis of collected data, needs are determined and sustainable management basis of traffic mobility for the City of Zagreb secured. The stated facts are going to be key in making transport plans for four companies/ institutions at the corridor.

Along with the mentioned questionnaire, three more researches were made:

- ¨MOBILITY MANAGEMENT FOR UNIVERSITY CAMPUS BORONGAJ (CASE STUDY: ZAGREB)¨, with 587 participants, out of which 184 were employees at teaching and/or research positions and 389 participants were students;

- ¨INFLUENCE OF TELEWORKING ON TRANSPORT DEMAND (CASE STUDY: CITY OF ZAGREB)¨, with 402 participants, and
- ¨RESEARCH ON TELEWORKING AND E-LEARNING SYSTEMS IN HIGHER EDUCATION INSTITUTION¨, with 139 participants (students of the Faculty of Transport and Traffic Sciences at the University of Zagreb, Transport and Traffic Studies, Department of Information and Communication Traffic).

Documents and discussion of the mentioned research are not shown in the this document due to their volume.

The list of companies/ institutions included in the questionnaire is listed in the Appendix of the document.

2. INTRODUCTION

The City of Zagreb, being the capital with 804,200 inhabitants (in 2008) and with about 500,000 registered vehicles (in 2005), has recorded a significant increase in motorization levels in the past ten years. Analysis of the data generating personal vehicle travels shows that after 1996, the trend of increase in motorization levels is constantly growing, more so than registered in the rest of Croatia. The data of 356,7 vehicles on 1000 inhabitants for the City of Zagreb in 2003, shows that Zagreb has almost reached other European cities in motorization levels. High motorization levels and increase in the standard of inhabitants have significantly affected the modal split in the City of Zagreb. It is evident that in the modal split of motorized journeys in 2003, there was a substitution in the share of public transport journeys and personal vehicle journeys in comparison to 1990. While in 1990, the share in public transport journeys was 55%, personal vehicles 44% and others 1%, in 2003 modal split consisted of 40% public transport journeys, increase in the use of personal vehicles amounted to 59% and others remained at 1%. The analysis of the stated data (estimation by the Statistical Yearbook of the City of Zagreb) correlates with the state and quantity of traffic in the central part of the City of Zagreb. The number of personal vehicles arriving to the city center has grown enormously, which caused the concentration of traffic volume exceeding the capacity of the existing transport network and which causes frequent congestion with all the negative effects. It causes daily peak hour load for personal vehicle journeys, traffic congestion and loss of time through extended time of travel to destination. It also generates negative effects on the environment (noise, air pollution and other).

3. OVERVIEW

This document presents and describes the data collected at the demonstration corridor of the CIVITAS-ELAN project in a part of the City of Zagreb. The data is used to overview the state and the possibility of introduction of strategies and mobility management measures in larger companies or institutions in the encompassed zone. Apart from companies/institutions at the demonstration corridor, data collection was executed at the Faculty of Transport and Traffic Engineering in Zagreb (ZFOT), which served as a pilot project and test phase before the intended data collection. In order to assess project results and determine possible improvements, the same data type will be collected again at the end of the project period.

Measure 4.4 has several objectives whose realization depends on the openness of the companies/institutions to polling and acceptance of innovative (alternative) traffic solutions. A successful marketing campaign is expected:

- To increase the average number of passengers in cars by 20 %;
- To increase bicycle journeys by employee motivation (test bicycles);
- To increase the number of persons using alternative ways of travel by 10 %.

As results of the measure, the following material indicators are expected:

- Transport plans for 4 larger companies/institutions at the corridor;
- Creation of web pages;
- Carpooling scheme;
- Test bicycles scheme;
- Marketing campaigns which include various media like web pages, promotion materials, events, etc.

The Description of Work of the CIVITAS-ELAN project for measure 4.4-ZAG defines objectives, innovative approaches, the situation before CIVITAS/present situation (including work funded through other projects), and describes the work to be performed within CIVITAS:

- Research and development;
- Implementation and demonstration;
- Data collection;
- In-depth data analysis and studies;
- Measure-related dissemination;
- Dissemination and training.

In order to achieve the stated objectives, it is primarily necessary to execute complete data collection which has never been conducted for the City of Zagreb in this volume. Data collection is organized depending on the collection plan and realization possibilities. Several methods were used for data collection, e.g. web questionnaire in companies/ institutions for modal split.

4. DATA COLLECTION AND IMPLEMENTATION STATUS

4.1. Introduction

Before data collection, the analysis of the solution was made, i.e. strategies of Traffic Mobility Management in the world, in order to determine the possibility of achieving planned objectives. Mobility Management (*Transportation Demand Management* - TDM) consists of different program or project changes in the journey mode in order to increase efficiency in the transport system. The above mentioned includes strategies for travel options improvement, launching initiatives for more efficient use for every (single) journey, and increased availability and use of the existing traffic infrastructure.

In Table 1 Mobility Management strategies are shown. These strategies cause various types of journey changes, including mode changes (personal vehicle, walking, cycling, public transport etc.), destination, time (peak-off peak) and frequency (route consolidation, switching to teleworking in regard to physical journey).

There are many reasons for mobility management. It is a cheap way to solve problems such as traffic congestion, pollution by traffic fumes emission or inadequate mobility for people who do not use personal vehicles. It also represents savings for public transport programers as well as the City of Zagreb's traffic services and the Government.

Mobility management can sustain strategic objective planning such as renewed urban development, environmental protection and economic development. It includes teleworking and improvements in non-motorized transport, which is especially appreciated by users. Those changes can improve fitness levels and generally strengthen the public health system. Many mobility management strategies are market reforms, which correct the existing market distortions and thus increase economic efficiency.

Cities are often faced with the issue of choice of a specific Mobility Management strategy. In order to choose optimally, it is necessary to execute a complete research of demands with previous diagnosing of various traffic parameters such as traffic flow, mean speed, travel time and others.

The first step after launching Mobility Management project is influencing the awareness of people and offering clear alternatives and benefits for an individual, otherwise there will be no significant detachment from the existing state. Mobility Management examples are shown in Figure 1.

Considering the large number of Mobility Management strategies, it is necessary to perceive the difference between the strategies and the encompassing area, which refer to the possibility of Mobility Management for different areas: local (urban and rural), regional, state and interstate.

Table 1. Mobility Management strategies

Traffic options improvement	Initiatives (incentives)	Management	Program implementation
Transit improvement Walking and cycling improvement Rideshare programs High occupancy vehicle priorities (HOV[3]) Flexible working hours Carsharing, Carpooling[4] Teleworking Taxi service improvements Guaranteed ride home	Congestion pricing Distance-based fees Commuter financial incentives Parking prices Parking regulations Fuel tax increases Transit encouragement	Smart growth Transit oriented development Location-efficient development Parking manage-ment Carfree planning Traffic calming	Commute trip reduction Programs School and campus transport management Freight transport Management Tourist transport Management Mobility management marketing programs Transport planning reforms

Various Mobility Management strategies are shown in the table. Many of them include a certain number of sub-categories.

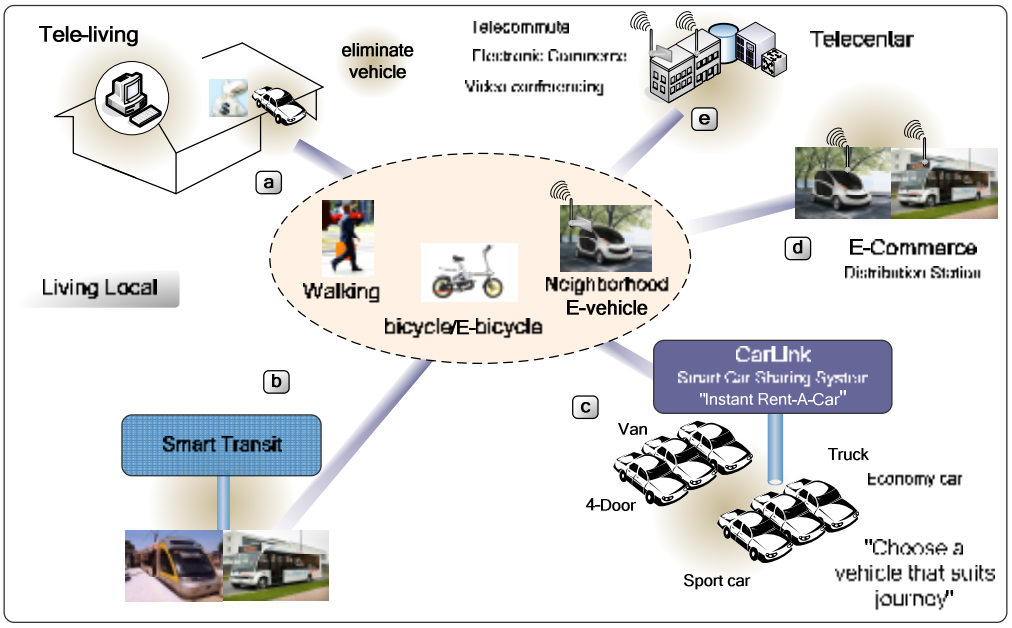


Figure 1. Examples of Mobility Management of participants in urban area traffic

The data referring to common use of a personal car or carpooling can be collected in different ways, depending on the encompassed area and targeted interest group. General carpooling objective is decrease in the number of individual motorized passengers using a personal car and organizing carpools to work and back (but not necessarily).

[3] High Occupancy Vehicle

[4] Carpooling arrangements and schemes include various levels of formality and regulations. Formally, *car pool* projects have been structured since mid-1970ies.

The service is realized after the user (a participant in traffic) who is starting a journey, provides travel pairing service with information on origin, destination and time of departure. The service then checks their database for users traveling to the same destination at the same time and their data are sent to user/car owner. Naturally, those users whose starting points are on close locations are paired.

The use of personal cars for common journeys for several persons at a time represents an innovative way of transport in regard to the usual use of personal vehicles. The use of one vehicle for the needs of several passengers in accordance with each other can be considered as individual transport means which enables collective transport.

Making contact between users, i.e. interested passengers, can be done through the Internet web sites, which are currently the most accepted form of information exchange and the most used technological achievement in everyday life, especially business one. Users who do not know how to use the Internet options should also be taken into consideration and purposefully educated.

Apart from requirements such as: starting point, destination and time of departure, special requirements can also be defined, such as those for persons with special needs: persons with disabilities, children, senior citizens etc. There is a possibility of integration of that service with the services provided by taxi operators or some other commercial transport organizations. Through the integration of electronic payment services, a problem of vehicle depreciation, reservation, toll payment, etc. can be resolved more efficiently. In Table 2, a list of indicators for Mobility Management and data collection methods is given.

Table 2. List of indicators for Mobility Management

Data collection					
Measure	**Indicator**	**Frequency**	**Method**	**Measurement unit**	**Sample**
Mobility Management	Modal split[5]-PAX[6]	Before/after	Questionnaire	% by mode	No. of employers
	Modal split-vehicles	Before/after	Questionnaire	% by mode	No. of employers
	Modal split-vehicles among students	Before/after	Questionnaire	% by mode	No. of students
	Mean vehicle occupancy	Before/after	Questionnaire	No. of persons per vehicle	Project corridor (encompassed area)
	Number of *carpooling* journeys in institutions	Before/after	Questionnaire	No.	8 institutions

According to the indicators, i.e. development activities from Table 2, conclusions were made for Mobility Management for larger companies/institutions and listed in Table 3.

[5] Definition: Mean Modal Split (vehicle km/passenger km) is defined as percentage vehicle km or passenger transport km by transport mode in one full year. Unit: vehicle percentage or passenger km. Transport modes: walking, bicycle, bus, tram, metro, train, car (driver or passenger), motor.

[6] Age groups of users in a certain institution (company).

Table 3. Conclusion list by indicators

Measure	Development activities/indicators	Conclusions
Mobility Management according to the groups of participants in traffic	Modal split-PAX within institutions	Changed modal split among institutions
	Modal split-vehicles within institutions	Increase of mean vehicle occupancy through introduction of transport plans
	Modal split-vehicles among students	Increase of mean vehicle occupancy through introduction of transport plans
	Mean vehicle occupancy	Increase in number of carpooling journeys through introduction of transport plans
	Number of carpooling journeys in institutions	Targeted groups: employees on corridor (encompassed zone)

List of transport modes and journey purposes are shown in Table 4.

Table 4. List of transport modes and journey purposes

Transport mode	Journey purpose
Walking (more than 100 meters)	School/university
Cycling	Work
Motorcycle	Errands (e.g. hospital, bank)
Personal car – driver	Shopping
– passenger	Leisure
Urban public transport – bus	Home
– tram	Other
– train	

There are many methods of data collection and the development of data collection process enables data fusion, i.e. combination of data collected from different sources, e.g. by means of active test vehicles, passive ITS[7] test vehicles, methods in the function of carpooling vehicles registration plate recognition, etc.

Through the collection of data, it is possible to find out what the existing plans of traffic management in companies and especially institutions with a large number of employees are. Data collection does not exclude collection of data necessary for calculating modal split. Modal split depends on targeted interest user group (companies, scientific and educational institutions, etc.) but can be available to other groups as well. Several methods have been elaborated for the objective of data collection to calculate modal split. There is also a difference among the possible areas for data collection: starting point and destination (in schools, at universities, in companies, in city districts, etc.) but also on individual public transport stations and in public transport vehicles or defined corridor points. Data collection methods by polling transport users are shown in Figure 2.

[7] ITS - Intelligent Transport Systems

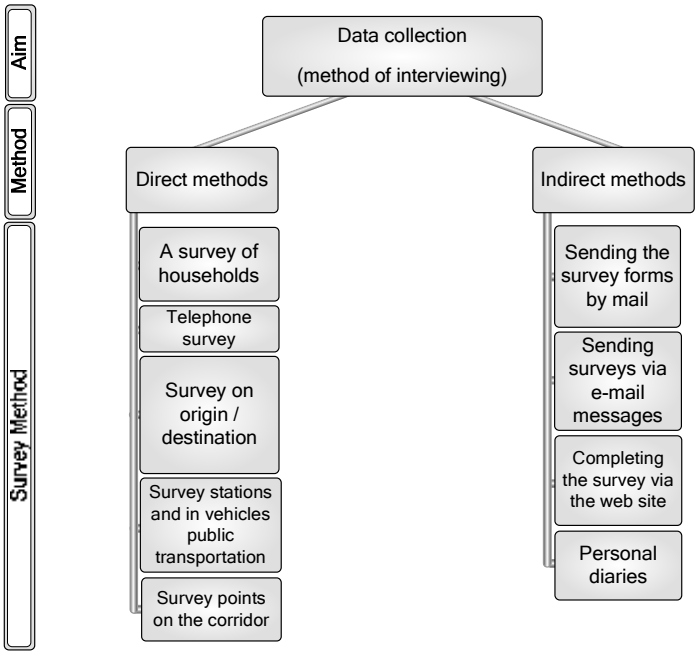


Figure 2. Methods of data collection by polling transport users

The most accurate data is received by polling people at home (anonymous questionnaire) or workplace but it is necessary to have particular resources and a representative sample.

During polling, attention must be paid to sample structure, i.e. epistemological mistakes (participant's age and gender, education level, driving experience, address, city district, etc.) in order to get realistic data for a specific area. In Table 5, elements of data collection with appropriate description are shown.

By polling users at home or in the company (interview) with the use of elements of a standardized, individual and group interview, best quality results are received because it is possible to explain to the participant the defined criteria and how to fill in the questionnaire, and thus collect quality data.

Table 5. Elements of data collection

Table name	**Description**
Place – city district	List of places in Zagreb and the surroundings
Profession	Professions list. For now categories are: unemployed, worker, student, retiree.
Education level	List of education levels. For now the categories are: unskilled worker, primary education, secondary education, tertiary education.
Origin and destination	Origin and destination of user travel.
Journey purpose	List of journey purpose. For now the categories are: school/faculty, work, errands (hospital, bank), shopping, leisure, home.
Streets	List of streets the user uses.
Crossing	List of crossings the user passes.
Transport mode	User's transport mode. For now the categories are: walking, bicycle, motorcycle, car (driver), car (passenger), bus, tram, train.
User data	General user data.

Journey data	Data on user's journey from origin to destination.
Journey routes	Data on user's journey routes from origin to destination.

Method of personal journey logs also provides quality data. The additional advantage is that logs are entered continuously in a certain time period (a week or month). The disadvantage of the method is that it requires an education of a larger number of people and a longer time to process the data, which makes the method more expensive.

Data base structure for collection of data on the web is shown in Figure 3.

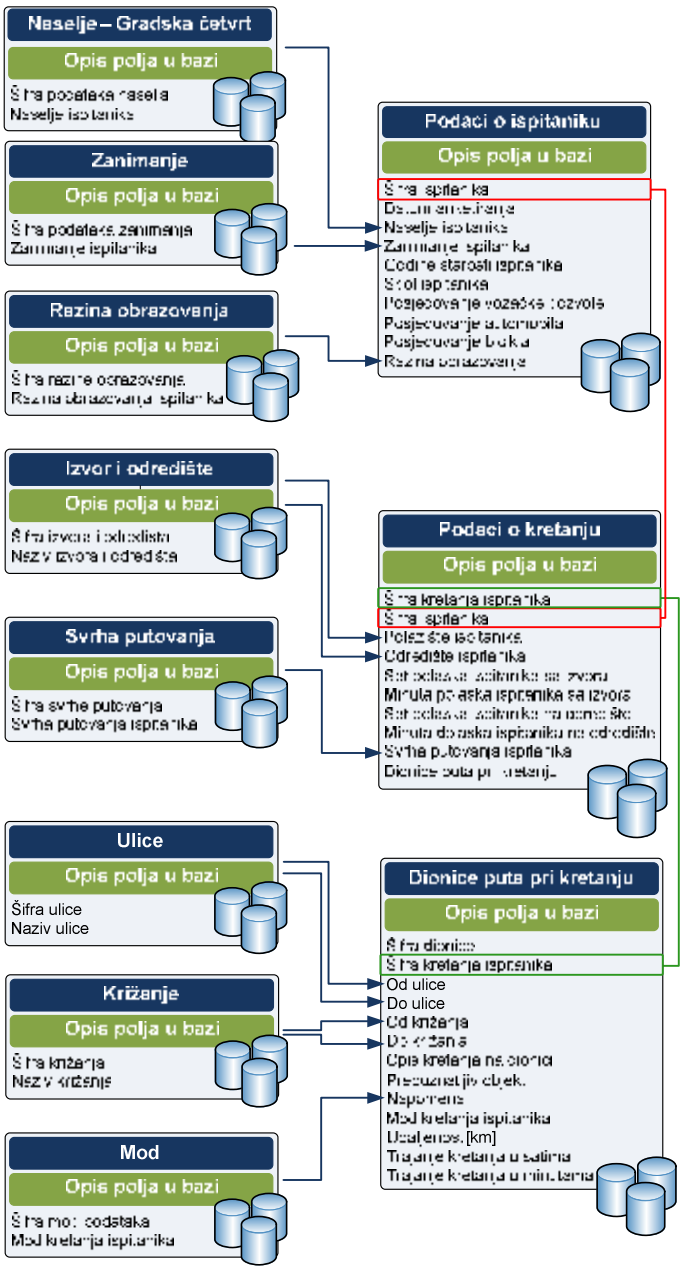


Figure 3. Data base structure for collection of data on the web
(in the original language, Croatian)

The fastest and cheapest method is filling in the questionnaires on web pages (Figure 4). The advantage is sample size. However, there are many disadvantages too, such as:

- Non-representative sample for questionnaire (senior citizens rarely surf the web);
- Filling in the questionnaire cannot be geographically limited to a certain area (anybody can access web pages, no matter where they are);
- Impossibility of detailed explanation of the defined criteria and manner of filling in the questionnaire;
- Uncertain accuracy of the results.

One possible solution, i.e. a possible way of data collection for determining modal split (e.g. counting method, measuring with the dedicated video camera, measuring by means of GPS technology, etc.), is the collection of the existing data and execution of several stated methods. Thus results of individual methods are combined and disadvantages are more easily eliminated.

Any method of filling in a questionnaire collects the following data: number of participants in traffic, data on participants (age, address, city district, education level, etc.), number of individual journeys in a day, journey time data, average number of journeys by one participant, average distance in one journey, average duration of one journey, average distance by one transport mode, average use duration of one mode, etc.

According to the above mentioned questionnaire with the general modal split in a certain area, modal split in dependence on journey purpose, participant's age and gender, participant's education level, various sources and destinations, time of day, day of the week, weather conditions, etc. can be calculated. Database with the collected data is shown in Figure 5.

By means of a unique data base, other questions can also be answered, such as:

- Which sources and destinations are most represented in relation to city districts;
- Number of parking spaces of a company/institution;
- Which walking distance is used by participants (walking is considered if the distance is longer than 100 meters);
- Is journey purpose is differentiated by age, etc.

The infrastructural level includes the design of web pages for different purposes, ranging from promotional tasks and data collection to the realisation of reserving the places in the vehicle and planning of trips as part of smart distribution of travelling and the development of dynamic carpooling schemes. Further work on the measure is expected to result in the making of optimal transport plans for the employees of the companies / institutions on the demonstration corridor such as universities, hospitals, city administration or larger companies.

The design of web pages has been conceived in three parts:

- Official web page of the project – for the city of Zagreb as a partner;
- Web questionnaire in order to collect data (http://civitas.fpz.hr/Prijava.asp);
- Web page for reservation of places in vehicles and trip planning ("smart distribution of travelling"), www.fpz-carpooling.com.

All the three mentioned web pages have been realised for different purposes, and the web page for the reservations of places in vehicles and ride planning ("smart distribution of travelling ") expects a new revised version.

The designed web pages in the context of the marketing campaign feature the following functions:

- Informing the citizens;
- Informing the interested targeted stakeholders (employees of large companies);
- Informing the participants in the project and measure;
- Data collection, and
- Realisation of the reserved places in a vehicle and ride planning as part of the smart distribution of travelling.

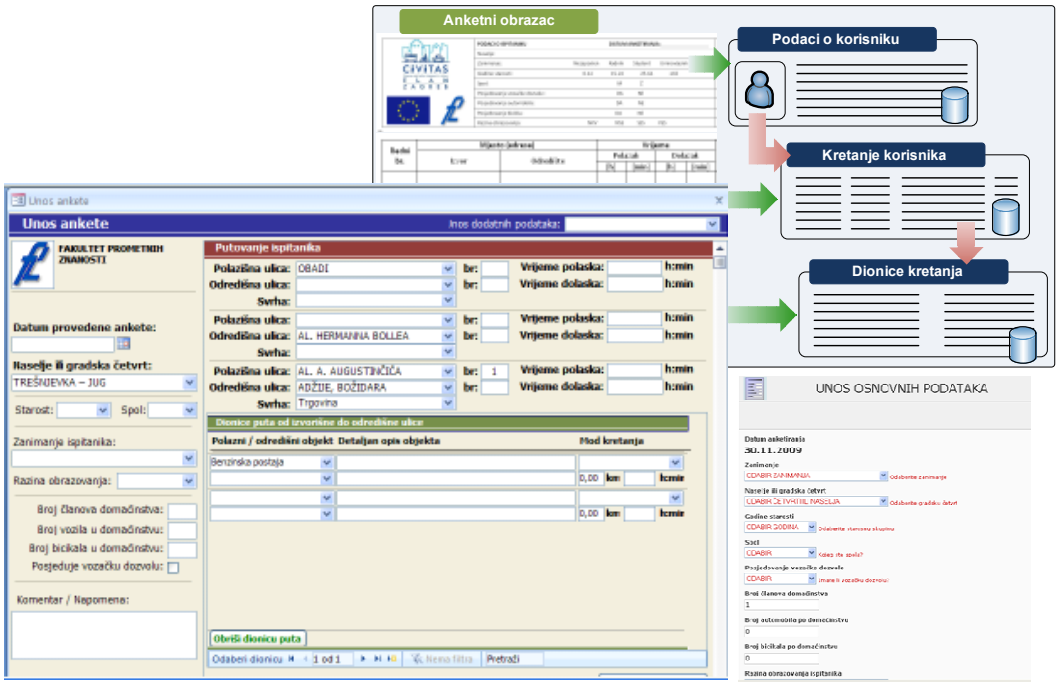


Figure 4. Questionnaire example on web page (originally)

An adequate video on filling in the questionnaire was also made (3-minute long demo movie).

Data collection includes the following key data (basic units):

- Modal split;
- Vehicle occupancy;
- Carpooling.

The list of companies/institutions encompassed in the questionnaire is given in the Appendix of Working Document.

Zaposlen	Trešnjevka - Sjever	ozaljska 9	zuk boron	8:40:00	9:20:00	OZALJSKA	SAVSKI GAJ	Autobus
Zaposlen	Trešnjevka - Sjever	ozaljska 9	zuk boron	8:40:00	9:20:00	SAVSKI GAJ	SAVUDRIJSKA	Automobil - putnik
Zaposlen	Trešnjevka - Sjever	savudrijsk	ozaljska 9	17:00:00	17:40:00	SAVUDRIJSKA	OZALJSKA	Automobil - putnik
Zaposlen	Gornja Dubrava	sa posla	do doma	15:30:00	16:20:00	BORONGAJSKA CESTA		Autobus
Zaposlen	Novi Zagreb - Zapad	doma	na posao	8:20:00	9:15:00			Autobus
Zaposlen	Gornja Dubrava	Kvaterniki	Poljanice	15:50:00	16:20:00	KVATERNIKOV TRG		Tramvaj
Zaposlen	Gornja Dubrava	Kvaterniki	Poljanice	15:50:00	16:20:00			Tramvaj
Zaposlen	Gornja Dubrava	Borongajs	Kvaterniki	15:30:00	15:50:00			Autobus
Zaposlen	Gornja Dubrava	Borongajs	Kvaterniki	15:30:00	15:50:00	KVATERNIKOV TRG	POLJANICE	Tramvaj
Zaposlen	Donji Grad	Kuca	Posao	8:30:00	8:35:00	BANJAVČIĆEVA	VUKELIĆEVA	Automobil - vozač
Zaposlen	Trešnjevka - Sjever	Dinarska 2	Borongajs	8:30:00	8:45:00			Automobil - vozač
Zaposlen	Trešnjevka - Sjever	doma	na posao	8:30:00	8:45:00	DINARSKA ULICA	BORONGAJSKA CESTA	Automobil - vozač
Zaposlen	Trešnjevka - Sjever	posao	posao	11:30:00	11:45:00	BORONGAJSKA CESTA	VUKELIĆEVA	Automobil - vozač
Zaposlen	Trešnjevka - Sjever	posao	posao	14:00:00	14:15:00	VUKELIĆEVA	BORONGAJSKA CESTA	Automobil - vozač
Zaposlen	Trešnjevka - Sjever	posao	slobodno	17:30:00	18:00:00	BORONGAJSKA CESTA	PETROVARADINSKA	Automobil - vozač
Zaposlen	Trešnjevka - Sjever	slobodno	doma	19:30:00	19:40:00	PETROVARADINSKA	DINARSKA ULICA	Automobil - vozač
Zaposlen	Trešnjevka - Sjever	doma	posao	9:00:00	9:50:00		KENNEDYEV TRG	Tramvaj
Zaposlen	Trešnjevka - Sjever	doma	posao	9:00:00	9:50:00	LJUBLJANICA	KENNEDYEV TRG	Tramvaj
Zaposlen	Trešnjevka - Sjever	posao	doma	15:00:00	15:30:00	KENNEDYEV TRG	KRANJČEVIĆEVA	Automobil - putnik
Zaposlen	Trešnjevka - Sjever	posao	doma	15:00:00	15:30:00	KRANJČEVIĆEVA	LJUBLJANICA	Automobil - putnik
Zaposlen	Trešnjevka - Sjever	posao	doma	15:00:00	15:30:00	LJUBLJANICA		Pješačenje (>100m)
Zaposlen	Trnje	doma	na posao	6:55:00	7:15:00			Automobil - vozač
Zaposlen	Trnje	posao	doma	15:15:00	15:50:00			Automobil - vozač

Figure 5. Database of collected data (display)

4.2. Modal split

Modal split data were collected in companies/institutions at the demonstration corridor and the surroundings. The demonstration corridor is shown in Figure 6. Along with the data collected from the employees on the demonstration corridor, data from students were also collected (Figure 11). There is a significant number of students on the corridor (three dorms, faculties, University of Zagreb Rectorate, etc.).

In order to collect data on modal split of employees, research in the form of a questionnaire was conducted. There were 639 participants (610 correctly filled and 29 incorrectly, which ruled them out from processing). All collected data is anonymous. The questionnaire was carried out as web questionnaire in the week from April 19-23, 2010. Thus, the questionnaire fulfils its methodological basis.

The questionnaire was made from two main units/questions with 16 subquestions altogether. Participants gave their answers in the form of choice and filling in the blanks.

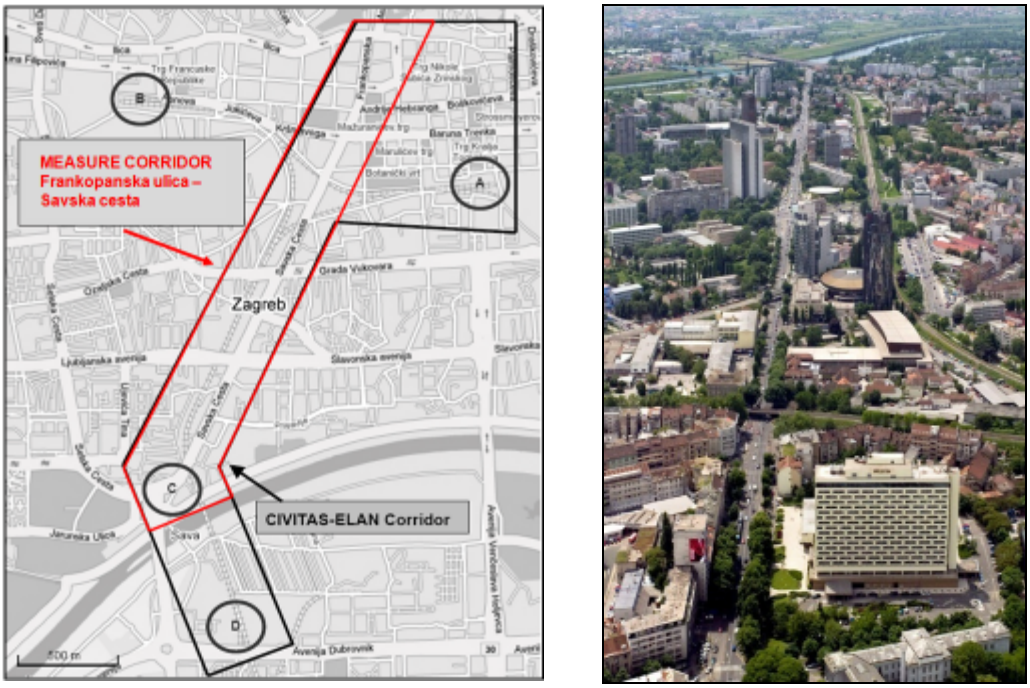


Figure 6. Demonstration corridor

The first basic unit included general questions on questionnaire participant such as profession, place or city district, age, gender, driving licence, number of members at home, number of cars per home, number of bicycles per home, education level. It also included the following questions:

- If the right circumstances existed, would you use a bicycle to go to work, school, university?
- Is parking space provided by company or university?
- Is your workplace/university dislocated on workdays? (Does your job require going to more than one location during workday?);
- Is there in your company organized carpooling to and from work for employees? (e.g. bus transport, van transport, personal agreement among colleagues, official vehicle with a driver, etc.)

There are three types of journeys: Home-Based Work (HBW), Home-Based Other (HBO) and Non-Home Based (NHB). For example, schools and universities belong to HBW, commercial (shopping) and leisure journeys belong to HBO and business journeys belong to NHB. Setting up a mobility plan usually demands status-quo analysis or base line study, which gives insight to journey purpose from/to as well as traffic conditions in the environment, etc.

In Figure 7, total questionnaire results by journey type in the City of Zagreb are shown for the mentioned research. Participants by gender were represented by 50,903% men and 49,096% women (Figure 8). Journey type in the City of Zagreb is linked to business journeys by 71,39% and school and faculty journeys by 20,18%.

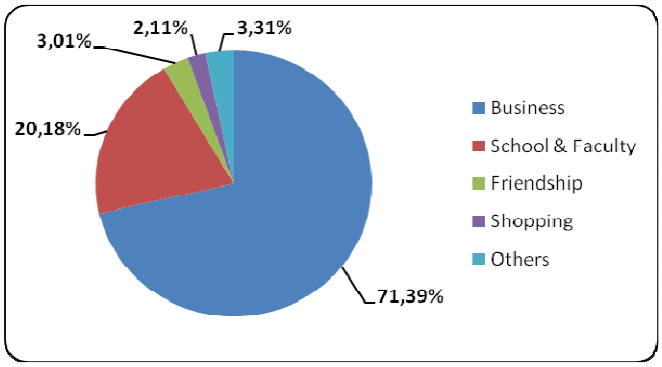


Figure 7. Journey types in the City of Zagreb (companies/institutions on demonstration corridor)

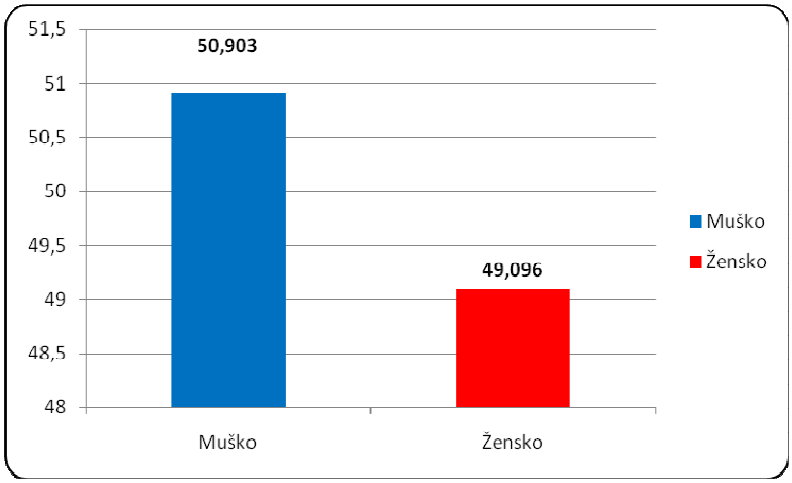


Figure 8. Gender distribution of polled employees

Modal split in the City of Zagreb for 1999 stated in percentages is shown in Figure 9. The greatest mean value is taken by public transport by 37% and personal vehicles by 36,60% (Complete version is shown in Figure 7. The data are from MVA[8]: Traffic Study of the City of Zagreb, Report on General Traffic Plan, 1999).

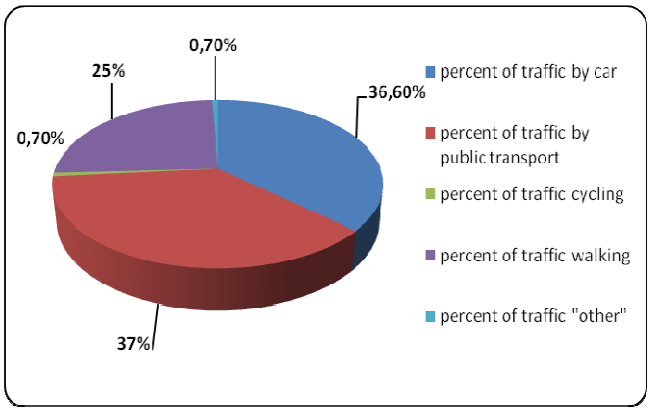


Figure 9. Modal split data from 1999
[MVA: Traffic study of the City of Zagreb, Report on General Traffic Plan, 1999]

Mobility research of participants in the City of Zagreb traffic provides complete data for employees of large companies/institutions and transport mode in the City of Zagreb with additional division of public transport to bus and tram transport and suburban and urban railway. According to the received data, bus transport takes up 50% of total transport, personal vehicle transport 34,4% and walking 12,35% (>100 meters). Detailed overview is given in Figure 10.

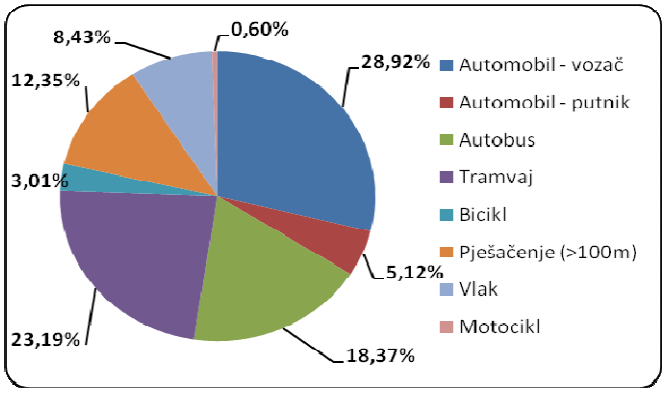


Figure 10. Transport means in the City of Zagreb for companies/ institutions at the demonstration corridor

[8] Mean Value Analysis

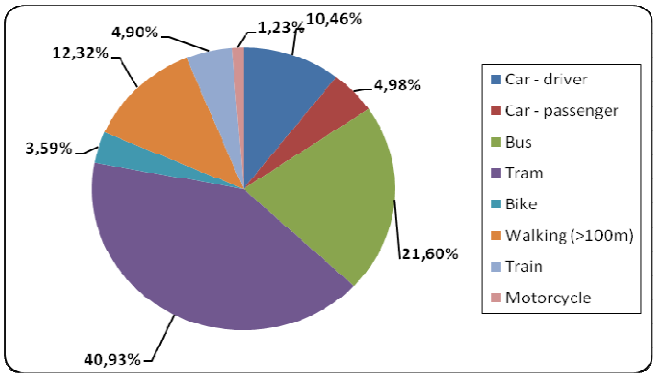


Figure 11. Modal split in the City of Zagreb for students at the demonstration corridor

As a pilot project, a research was conducted at the Faculty of Transport and Traffic Sciences (ZFOT), in which data for modal split, vehicle occupancy and carpooling were collected (to work, from work, among facility locations, etc.).

The Faculty of Transport and Traffic Sciences is interesting to analyse due to dislocation of its facilities (Vukelićeva 4, Borongaj University Campus, Kušlanova 2, Croatian Aviation Training Center in Lučko, near Zagreb), i.e. objects and need for daily student migration. Figure 12 shows journey purpose of participants at the Faculty of Transport and Traffic Sciences.

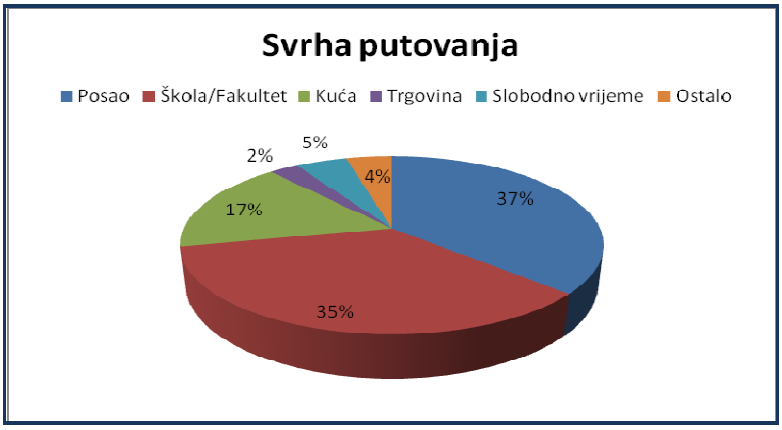


Figure 12. Journey purpose of participants of the Faculty of Transport and Traffic Sciences

Journey purpose of participants from Residential and Municipal Services Department (Gradsko stambeno komunalno gospodarstvo - GSKG) is shown in Figure 13.

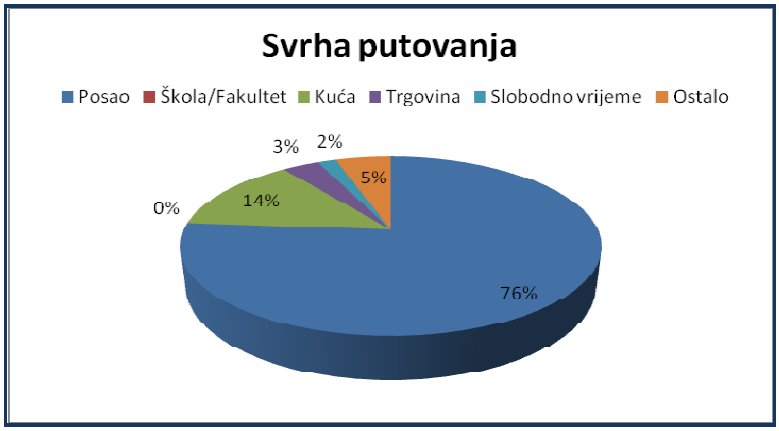


Figure 13. Journey purpose of participants from Residential and Municipal Services Department (Gradsko stambeno komunalno gospodarstvo)

Modal split for the Faculty of Transport and Traffic Sciences and Residential and Municipal Services Department (Gradsko stambeno komunalno gospodarstvo) is shown in Figures 14 and 15.

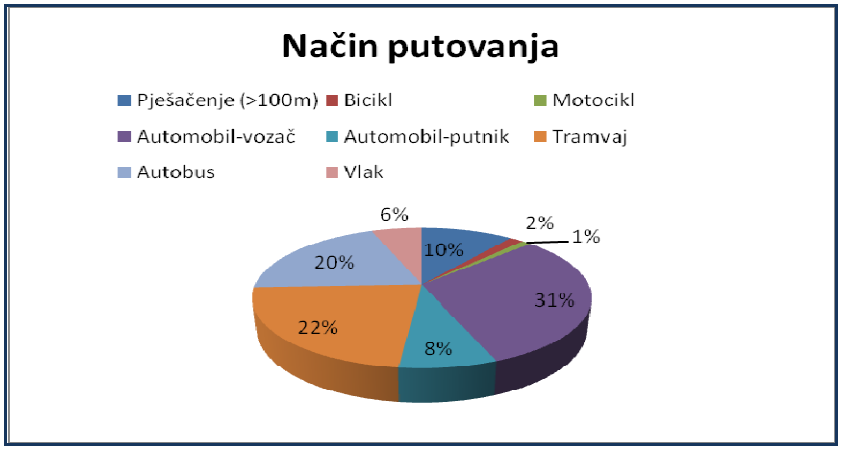


Figure 14. Modal split for the Faculty of Transport and Traffic Sciences

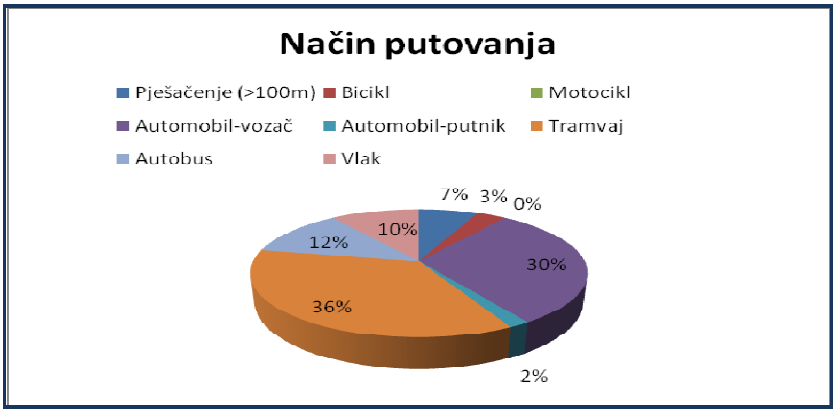


Figure 15. Modal split for Residential and Municipal Services Department (Gradsko stambeno komunalno gospodarstvo)

Along with the above mentioned questionnaire, three more research projects were made:

- ¨MOBILITY MANAGEMENT FOR UNIVERSITY CAMPUS BORONGAJ (CASE STUDY: ZAGREB)¨, with 587 participants, out of which 184 were employees at teaching and/or research positions and 389 participants were students;
- ¨INFLUENCE OF TELEWORKING ON TRANSPORT DEMAND (CASE STUDY: CITY OF ZAGREB)¨, with 402 participants, and
- ¨RESEARCH ON TELEWORKING AND E-LEARNING SYSTEMS IN HIGHER EDUCATION INSTITUTION ¨, with 139 participants (students of the Faculty of Transport and Traffic Sciences at the University of Zagreb, Transport and Traffic Studies, Department of Information and Communication Traffic).

Documents and discussion of the mentioned research have not been shown in the stated D1 Deliverable due to its volume.

4.3. Vehicle occupancy

Vehicle occupancy represents a key factor in traffic characteristics, which reflects the total mobility of persons, i.e. the average number of persons traveling by car. Traffic experts would have significant benefits from systemic data collection on Average Vehicle Occupancy (AVO) because the data on vehicle occupancy can be used for different purposes. There are several basic methods for data collections: Roadside Windshield, Carousel Observation, Photographic and Video Surveillance, Accident Data Extraction and Mail Out Survey.

For clearer picture on modal split and analysis, data collection on personal vehicle occupancy was made. Personal vehicle occupancy in the City of Zagreb according to the data from 1999 amounts to 1,44 [MVA: Traffic Study of the City of Zagreb, Report on General Traffic Plan, 1999] and according to the data from 2009 1,37 [CIVITAS ELAN, ZFOT, Measure 3.2.].

The above mentioned data demonstrate the increase in personal vehicle occupancy, according to which measures for increase in vehicle occupancy are needed, such as introducing carpooling, carsharing and similar systems. Infrastructural adjustment is thus necessary as prioritizing and favorizing in certain traffic situations. For example, giving priority at a road (dedicated lane), priority for parking, reduced congestion charging in the city center, etc.

AVO research done by Roadside Windshield method as the most spread method for data collection on vehicle occupancy in Measure 3.2. In Measure 4.4, data was collected by means of a questionnaire. Questionnaire results showed a small deflection from values obtained by measurement in 2009 and vehicle occupancy of 1,40 persons per vehicle for employees of polled companies.

Roadside Windshield method includes setting up one or more material counters alongside a road, which count vehicles and passengers. For Measure 3.2 counting was done by help of an electronic computer. AVO is calculated as average number of persons in vehicle divided with total number of observed vehicles (*Pi* / *Vi*).

4.4. Common journeys

Carpooling as a strategy of mobility management represents a system of multiuser utilization of personal vehicles, i.e. the system of common journeys by personal vehicles. Advantages of joining together for people traveling to similar locations are obvious and include environmental protection, increase in traffic flow and savings in transport costs.

The use of personal vehicles for common journeys of several people at a time represents an innovative way of transportation in compared to the usual use of personal vehicles. Use of a single vehicle by several passengers in mutual accordance can be regarded as turning individual means of transportation into some mode of collective transportation. There are numerous positive examples of organized carpooling systems in companies, institutions, university campuses and academic communities in the world.

Carpooling/carsharing is still not used much in the City of Zagreb nor in Croatia. It is realized randomly at the level of personal acquaintances and usually without sharing fuel costs. This is confirmed by the fact that 8,73% of polled participants do their journeys by personal vehicle as passengers.

In the function of implementation of a carpooling/carsharing system, a web page was made for seat reservation in a car, which is shown in Figure 16. In order for the information to be accessible to employees (teaching and/or research positions), students and all interested parties, it is necessary to predict interfaces at busy points. The financial part (sharing all transport costs and depreciation) which is connected to using carpooling/ carsharing system, can be regulated by authorization and system of prepayments, for students by student cards or e-index and for employees through the salary system. Along with requirements such as origin, destination, time of departure, other specific requirements can be defined, e.g. in regard to persons with special needs: people with disabilities, children, senior citizens, etc.

The analysis of starting locations of employees is shown in Figure 17. Through the research of starting locations of employees by multiple criteria, it's possible to determine starting points of future carpoolers such as city district, time of arrival to workplace, time of departure from workplace, vehicle fleet, etc.

By means of questionnaires, mean distance, i.e. mileage during journeys of employees, students and professors and lecturers at the relation house – workplace was determined. It amounts to 9,26 km. Mean travel time at the same relation was 00:46:21 (hours), i.e. 46 minutes and 21 seconds. Mean distance and mean journey time depends on the choice of transport mode and its condition, itinerary, current traffic flow and driver's personality, weather conditions, road condition, etc.

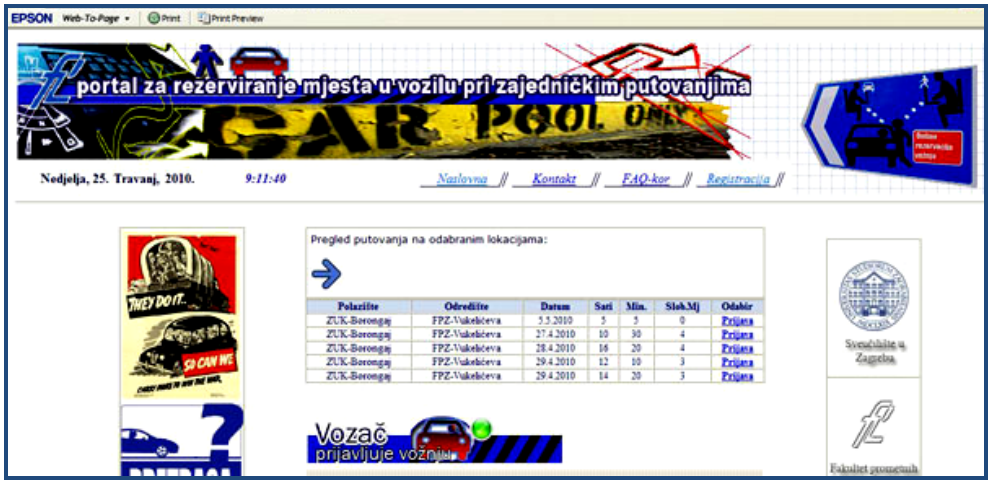


Figure 16. Web page for reservation of a vehicle seat (version 1.3)

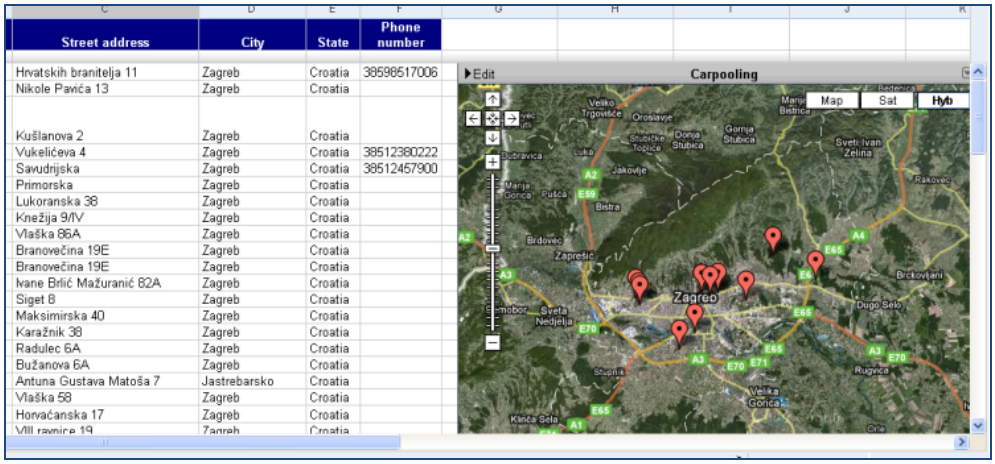


Figure 17. Analysis of collected data in the function of organization of common journeys

During the polling, data on parking capacity of companies/institutions was collected, which for the most part do not satisfy current employee needs. The introduction of dedicated parking spaces for carpools is suggested as well as user motivation system. The dedicated parking places should be marked accordingly (Figure 18), which would by its form motivate the employees to use the carpooling option.

The benefits of carpooling for individuals are as follows:

- Decrease in journey costs and need for owning a personal vehicle;
- Decrease in parking costs;
- Company during driving, i.e. journey, etc.

The benefits of carpooling for companies/institutions are:

- Decrease in need for parking places;
- Enables company among employees;
- Decrease in stress levels of employees about driving to work;
- Improvement of company/institution image, etc.

Figure 18. Marking of carpooling parking

5. CONCLUSION

High motorization level and increase in standard of the inhabitants has significantly affected modal split in the City of Zagreb. Through data collection, the existing state of traffic mobility of employees and students at the demonstration corridor of CIVITAS ELAN project was determined. A certain number of polled companies/institutions reacted positively and provided the data on transport and transport habits of the employees. However, a number of companies did not recognize the need for such an act. Through a more extensive project promotion and adequate employee motivation, the number of common journeys could be positively affected. That is why it is important to point out the numerous advantages of carpools and secure a reliable reservation system.

Through the analysis of all gathered information, needs are determined and sustainable management basis of traffic mobility for the City of Zagreb secured. The stated facts are going to be key in making transport plans for four companies/institutions at the corridor.

Expected involvement of citizens on measure 4.4 are:

- Informing citizens on measure and its activities;
- Discussion on optimal solutions by introduction of mobility plans (transport plans) for large companies/institutions, examples from Europe and the world;
- Encouragement to citizens to use public transport and alternative means of transport.

Expected activities on measure 4.4:

- Promotional materials and marketing campaign in the function of raising awareness of employees;
- Research on behavior change in choosing transport mode (material and web questionnaire);
- Presentation of results on the measure at Info point, i.e. CIVITAS ELAN tram.

6. ATTACHMENTS

6.1. Invitation and program leaflet

SVEUČILIŠTE U ZAGREBU
FAKULTET PROMETNIH ZNANOSTI
Vukelićeva 4
10000 Zagreb
www.fpz.hr

Europski tjedan mobilnosti
16. – 22. rujna 2009.

CiViTAS
Cleaner and better transport in cities
E L A N
Z A G R E B

Fakultet prometnih znanosti Vas poziva da u sklopu projekta **CiViTAS ELAN** provedete Europski tjedan mobilnosti zajedno s nama. Ukoliko želite saznati nešto više o inovativnim tehnologijama i pristupima rješavanju prometnih problema u gradu Zagrebu svakako nam se pridružite od 16. – 22. rujna 2009. godine u prostorima Tehničkog muzeja i Tribini grada Zagreba.

Na što Vas to pozivamo?

MJESTO: Tehnički muzej Zagreb, Savska cesta 18

VRIJEME: 18. rujna 2009. godine u 11:00 sati

Obilježavanje Europskog tjedna mobilnosti održava se uz potporu Tehničkog muzeja, Zagreb, Savska cesta 18.

TEHNIČKI MUZEJ

TEMA IZLAGANJA:

UPRAVLJANJE MOBILNOŠĆU ZA VEĆE TVRTKE/INSTITUCIJE

«Više putnika u manje automobila»

KRATAK OPIS IZLAGANJA:

- upoznavanje sudionika s konceptom zajedničkih odlazaka na posao i s posla (*car pooling*);
- prezentiranje višestrukih prednosti korištenja sustava u većim tvrtkama (smanjenje potrebnog broja parkirnih mjesta, i dr.) kao i za širu zajednicu (smanjenje prometnog zagušenja/povećanje mobilnosti i prevencija drastičnih ekoloških mjera);
- prikaz mogućih sustava za operacionalizaciju *car pooling* inicijative.

IZLAGAČ:

Mr. sc. Ružica Škurla Babić; Prof. dr. sc. Tonči Carić; Ivan Grgurević, dipl. ing.
Fakultet prometnih znanosti, Sveučilište u Zagrebu

Molimo da u svojoj tvrtki nađete osobu iz odgovarajućeg odjela (transportni odjel, vozni park, kadrovski odjel ili dr.) koja bi našla vremena nazočiti pozivnom izlaganju!

Zahvaljujemo na Vašem odazivu!

Projekt CiViTAS ELAN sufinancira Europska unija

PARTNERI U PROJEKTU:

odraz

HŽ INFRASTRUKTURA

ZET

Figure 19. Invitation for European Mobility Week, 18th September 2009 (*excerpt*)

Projekt CIVITAS ELAN

CiViTAS ZAGREB

PROGRAM DOGAĐANJA

EUROPSKI TJEDAN MOBILNOSTI 2009.

CiViTAS ELAN

DATUM	VRIJEME	AKTIVNOST	PARTNER ORGANIZATOR	MJESTO DOGAĐANJA
Četvrtak 17. 09. 2009.	11:00 – 11:30	**OTVARANJE CIVITAS ELAN FORUMA** ▪ **Press konferencija** s gradonačelnikom Grada Zagreba i partnerima ▪ **Kratka prezentacija projekta CIVITAS ELAN**	Grad Zagreb	CIVITAS ELAN FORUM TEHNIČKI MUZEJ Savska 18
	11:30 -12:00	**Prezentacija** **OSVRT NA PROMETNI SUSTAV HRVATSKE, GRADA I REGIJE** - *Milena Kuhta, Grad Zagreb*	Grad Zagreb	TEHNIČKI MUZEJ Savska 18
	12:00 -13:00 13:00 - 13:30	**Prezentacije** **NOVA ELEKTRONSKA NAPLATA PRIJEVOZA** - *Predstavnik ZET-a* **UVOĐENJE BIODIZELA U 'ČISTOĆU'** - *Bojan Ribić, Čistoća*	Zagrebački holding d.o.o. Podružnice ZET i Čistoća	TEHNIČKI MUZEJ Savska 18
Petak 18.09. 2009.	11:00 13:00	**Prezentacija** **USPOSTAVA PRVENSTVA JAVNOG GRADSKOG PRIJEVOZA** - *prof. dr. sc. Mario Anžek* - *prof. dr. sc. Hrvoje Gold* **UPRAVLJANJE MOBILNOŠĆU ZA VELIKE TVRTKE/INSTITUCIJE** - *mr. sc. Ružica Škurla* - *prof. dr. sc. Tonči Carić* - *Ivan Grgurević, dipl. ing.* **DOSTAVA ROBA U SREDIŠTU GRADA ZAGREBA** - *dr.sc. Kristijan Rogić* - *mr.sc. Veselko Protega* - *dr.sc. Tonči Carić*	Fakultet prometnih znanosti	TEHNIČKI MUZEJ ZAGREB Savska 18

Figure 20. Invitation for European Mobility Week, 18th September 2009 (*excerpt*)

Građanke i građani Zagreba važni su sudionici u zagrebačkom dijelu europskog projekta CIVITAS ELAN

CiViTAS ZAGREB

Projekt sufinancira EU

SRIJEDOM U TRAMVAJU

Niz prezentacija, tribina, izložbi, razgovora, prikupljanja pitanja, prijedloga i komentara te drugih javnih događanja o prometu u gradu nastavlja se

u srijedu 17. veljače 2010. u 16 sati

„Više putnika u manje automobila“

16:00 - 16:20 Prezentacija
- Ivan Grgurević, dipl.ing., Sveučilište u Zagrebu, Fakultet prometnih znanosti

16:20 - 17:00 Razgovor sa sudionicima - pitanja, prijedlozi, komentari
- Moderatorica: Višnja Bedenko, Grad Zagreb, Gradski ured za strategijsko planiranje i razvoj Grada

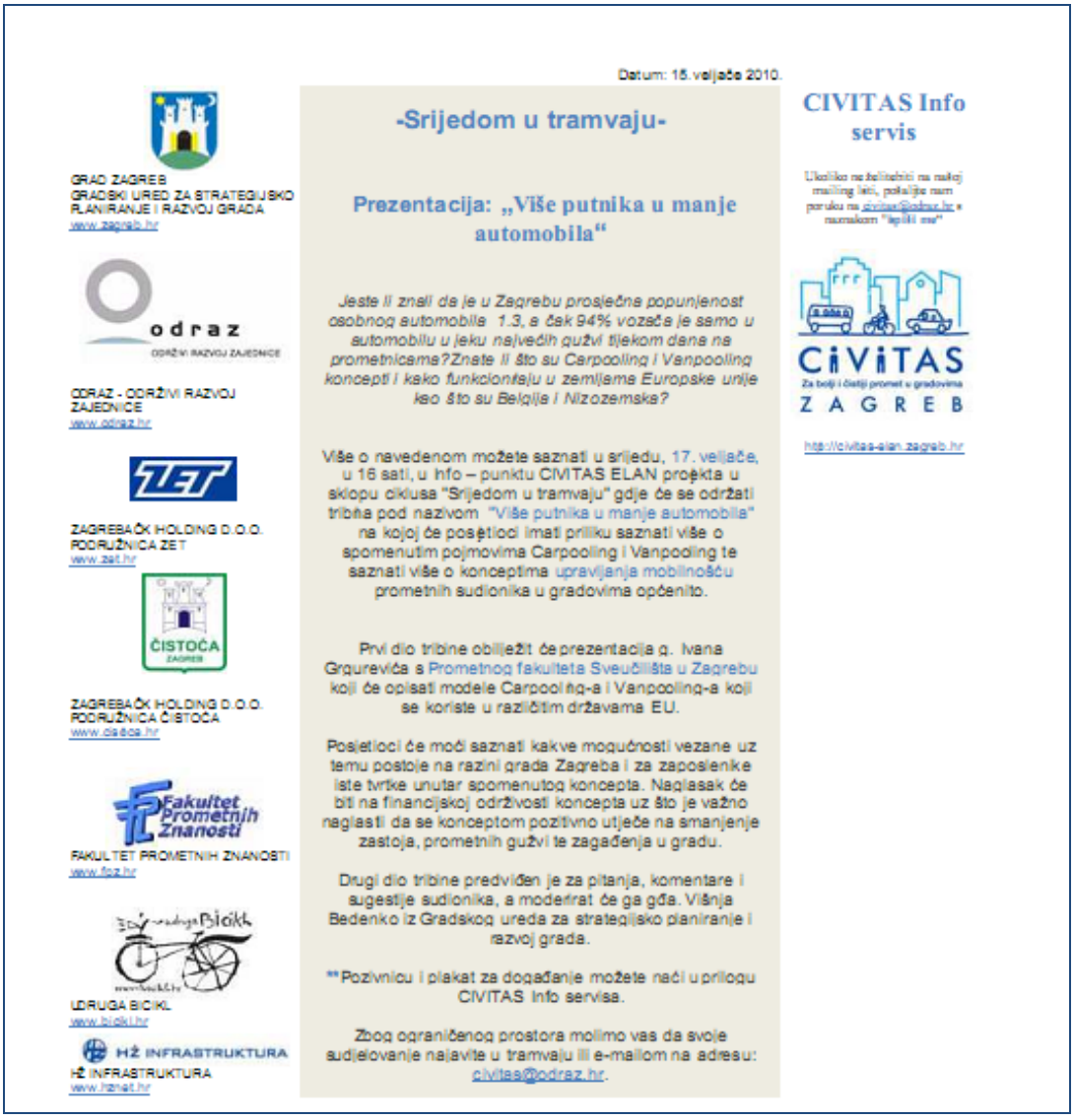
Zbog ograničenog prostora molimo vas da svoje sudjelovanje najavite u tramvaju ili e-mailom na adresu: civitas@odraz.hr

CIVITAS ELAN INFO-PUNKT - tramvaj pred Tehničkim muzejom u Zagrebu, Savska cesta18
ponedjeljak - petak 13:00 - 17:00 sati
subota 9:00 - 13:00 sati

više informacija o projektu CIVITAS ELAN na: http://civitas-elan.zagreb.hr

Projekt CIVITAS ELAN koordinira

Figure 21. CIVITAS ELAN Info service, 17th February 2010. (*excerpt*)



Datum: 15.veljače 2010.

GRAD ZAGREB
GRADSKI URED ZA STRATEGIJSKO PLANIRANJE I RAZVOJ GRADA
www.zagreb.hr

ODRAZ - ODRŽIVI RAZVOJ ZAJEDNICE
www.odraz.hr

ZAGREBAČKI HOLDING D.O.O.
PODRUŽNICA ZET
www.zet.hr

ZAGREBAČKI HOLDING D.O.O.
PODRUŽNICA ČISTOĆA
www.cistoca.hr

FAKULTET PROMETNIH ZNANOSTI
www.fpz.hr

UDRUGA BICIKL
www.bicikl.hr

HŽ INFRASTRUKTURA
www.hznet.hr

-Srijedom u tramvaju-

Prezentacija: „Više putnika u manje automobila“

Jeste li znali da je u Zagrebu prosječna popunjenost osobnog automobila 1.3, a čak 94% vozača je samo u automobilu u jeku najvećih gužvi tijekom dana na prometnicama? Znate li što su Carpooling i Vanpooling koncepti i kako funkcioniraju u zemljama Europske unije kao što su Belgija i Nizozemska?

Više o navedenom možete saznati u srijedu, 17. veljače, u 16 sati, u Info – punktu CIVITAS ELAN projekta u sklopu ciklusa "Srijedom u tramvaju" gdje će se održati tribina pod nazivom "Više putnika u manje automobila" na kojoj će posjetioci imati priliku saznati više o spomenutim pojmovima Carpooling i Vanpooling te saznati više o konceptima upravljanja mobilnošću prometnih sudionika u gradovima općenito.

Prvi dio tribine obilježit će prezentacija g. Ivana Grgurevića s Prometnog fakulteta Sveučilišta u Zagrebu koji će opisati modele Carpooling-a i Vanpooling-a koji se koriste u različitim državama EU.

Posjetioci će moći saznati kakve mogućnosti vezane uz temu postoje na razini grada Zagreba i za zaposlenike iste tvrtke unutar spomenutog koncepta. Naglasak će biti na financijskoj održivosti koncepta uz što je važno naglasiti da se konceptom pozitivno utječe na smanjenje zastoja, prometnih gužvi te zagađenja u gradu.

Drugi dio tribine predviđen je za pitanja, komentare i sugestije sudionika, a moderirat će ga gđa. Višnja Bedenko iz Gradskog ureda za strateglijsko planiranje i razvoj grada.

** Pozivnicu i plakat za događanje možete naći u prilogu CIVITAS Info servisa.

Zbog ograničenog prostora molimo vas da svoje sudjelovanje najavite u tramvaju ili e-mailom na adresu: civitas@odraz.hr.

CIVITAS Info servis

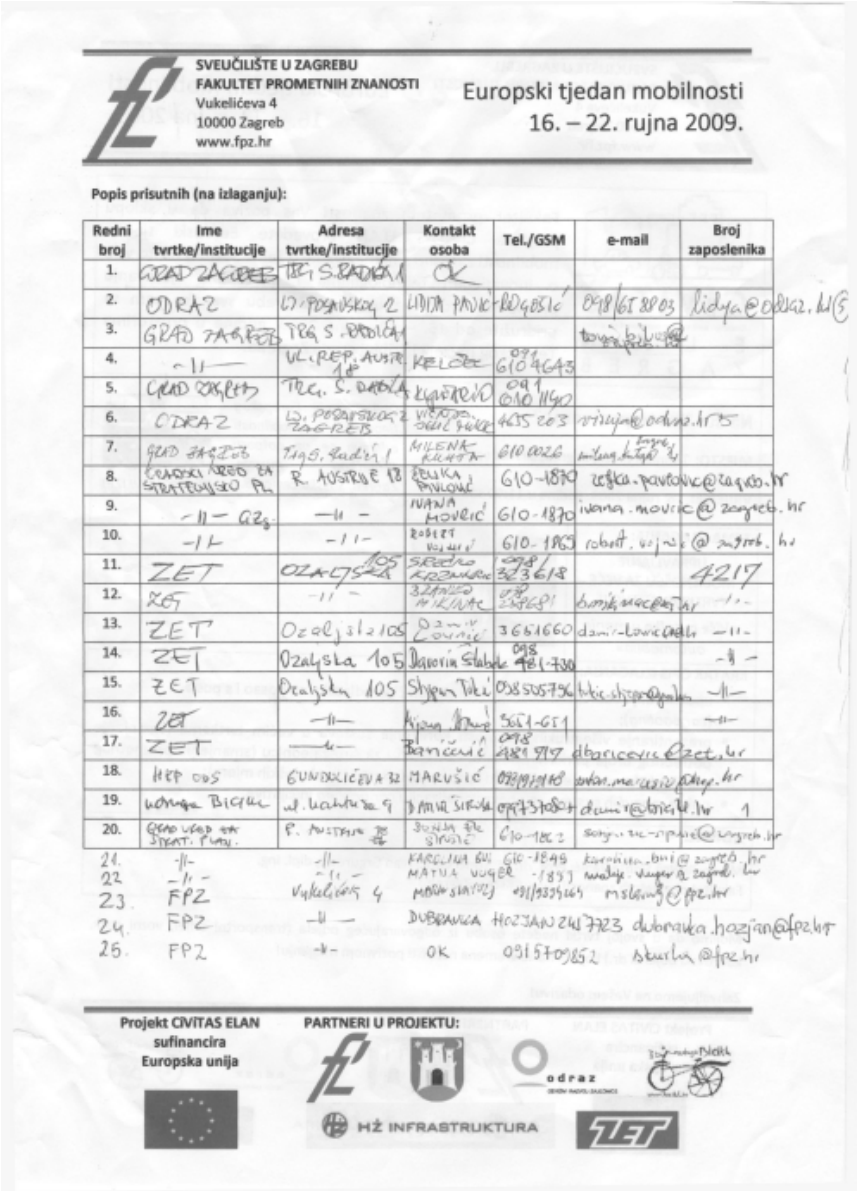
Ukoliko ne želite biti na našoj mailing listi, pošaljite nam poruku na civitas@odraz.hr s naznakom "Ispiši me"

CIVITAS
Za bolji i čistiji promet u gradovima
ZAGREB

http://civitas-elan.zagreb.hr

Figure 22. CIVITAS ELAN Info service, 17 February 2010. (*excerpt*)

6.2. List of participants at the presentation of the measure 4.4



SVEUČILIŠTE U ZAGREBU
FAKULTET PROMETNIH ZNANOSTI
Vukelićeva 4
10000 Zagreb
www.fpz.hr

Europski tjedan mobilnosti
16. – 22. rujna 2009.

Popis prisutnih (na izlaganju):

Redni broj	Ime tvrtke/institucije	Adresa tvrtke/institucije	Kontakt osoba	Tel./GSM	e-mail	Broj zaposlenika
1.	GRAD ZAGREB	TRG S. RADIĆA 1	OK			
2.	ODRAZ	LJ. POSAVSKOG 2	LIDIJA PAVIĆ-ROGOŠIĆ	098/658803	lidya@odraz.hr	5
3.	GRAD ZAGREB	TRG S. RADIĆA 1			[illegible]	
4.	-//-	UL. REP. AUSTR. 18	KELČEC	091 6104643		
5.	GRAD ZAGREB	TRG. S. RADIĆA	KYNĚRIĆ	091 6101140		
6.	ODRAZ	LJ. POSAVSKOG 2 ZAGREB	VIŠNJA SKUL [illegible]	4655203	visnja@odraz.hr	5
7.	GRAD ZAGREB	TRG S. RADIĆA 1	MILENA KLAJA	6100026	milena.klajo@zagreb.hr	
8.	GRADSKI URED ZA STRATEGIJSKO PL.	R. AUSTRIJE 18	ŽELJKA PAVLOVIĆ	610-1870	zelka.pavlovic@zagreb.hr	
9.	-//- GZg.	-//-	IVANA MOVRIĆ	610-1870	ivana.movric@zagreb.hr	
10.	-//-	-//-	ROBERT VOJNIĆ	610-1869	robert.vojnic@zagreb.hr	
11.	ZET	OZALJSKA 105	SREĆKO KRZNARIĆ	098/323618		4217
12.	ZET	-//-	BRANKO MIKINAC	098 238681	bmikinac@zet.hr	-//-
13.	ZET	Ozaljska 105	Damir Lovrić	3651660	damir-lovric@zet.hr	-//-
14.	ZET	Ozaljska 105	Davorin Stabek	098 481-730		-//-
15.	ZET	Ozaljska 105	Stjepan Tokić	098505796	tokic.stjepan@zet.hr	-//-
16.	ZET	-//-	Kijana [illegible]	3651-651		-//-
17.	ZET	-//-	Baričević	098 481 917	dbaricevic@zet.hr	
18.	HRP ODS	GUNDULIĆEVA 32	MARUŠIĆ	098/919118	[illegible]	
19.	[illegible]	ul. [illegible] 9	DAMIR ŠIRUŠA	099737080+	damir@[illegible].hr	1
20.	GRAD URED ZA STRAT. PLAN.	R. AUSTRIJE 18	SONJA ŠIRUŠIĆ	610-1862	sonja.sirusic@zagreb.hr	
21.	-//-	-//-	KARLINA BUI	610-1849	karolina.bui@zagreb.hr	
22	-//-	-//-	MATIJA VUGER	-1859	matija.vuger@zagreb.hr	
23.	FPZ	Vukelićeva 4	MARIN SLATOZJ	091/9339265	mslatoz@fpz.hr	
24.	FPZ	-//-	DUBRAVKA HOZJAN	2457723	dubravka.hozjan@fpz.hr	
25.	FPZ	-//-	OK	0915709852	skurka@fpz.hr	

Projekt CIVITAS ELAN sufinancira Europska unija

PARTNERI U PROJEKTU:

HŽ INFRASTRUKTURA

Figure 23. List of participants at the presentation of the measure 4.4
(European Mobility Week, 18 September 2009)

6.3. List of polled companies/institutions

Table 6. includes a list of polled companies/institutions involved in research in the first project year of CIVITAS ELAN.

Table 6. List of polled companies/institutions involved in research in the first project year of CIVITAS ELAN.

Company/institution name	Company/institution address
Iskon internet d.d.	**Savska cesta 41, 10000 Zagreb**
Državni zavod za zaštitu prirode	**Savska cesta 41/XXIII, 10000 Zagreb**
Prehrambeno-biotehnološki fakultet	**Pierottijeva 6, 10000 Zagreb**
HŽ infrastruktura d.o.o.	**Mihanovićeva 12, 10000 Zagreb**
HŽ putnički prijevoz	**Mihanovićeva 12, 10000 Zagreb**
HŽ Cargo d.o.o.	**Mihanovićeva 12, 10000 Zagreb**
Ministarstvo unutarnjih poslova	**Ulica grada Vukovara 33, 10000 Zagreb**
Gradsko stambeno komunalno gospodarstvo	**Savska cesta 1, 10000 Zagreb**
Fakultet prometnih znanosti	**Vukelićeva 4, 10000 Zagreb**
Visoka policijska škola	**Avenija Gojka Šuška 1, 10040 Zagreb**

Table 7. includes other companies/institutions whose collected questionnaire sample was not satisfactory.

Table 7. List of companies/institutions whose collected questionnaire sample was not satisfactory.

Company/institution name	Company/institution address
Tehnički muzej	**Savska cesta 18, 10000 Zagreb**
Energetski institut Hrvoje Požar	**Savska cesta 163, pp 141, 10001 Zagreb**
Stomatološka poliklinika Zagreb	**Perkovčeva 3, 10000 Zagreb**
Hrvatska gospodarska komora	**Rooseveltov trg 2, 10000 Zagreb**
Hrvatske šume d.d.	**Ljudevita Farkaša Vukotinovića 2, 10000 Zagreb**
Geofizika d.d.	**Savska cesta 64, 10000 Zagreb**
Hrvatski geodetski institut	**Savska c. 41/XVI, 10000 Zagreb**
HEP ODS d.o.o. - DP Elektra Zagreb	**Gundulićeva 32, 10000 Zagreb**
Tisak d.d.	**Slavonska avenija 2, 10000 Zagreb**
Muzej Mimara	**Rooseveltov trg 5, 10000 Zagreb**
PROPLIN d.o.o.	**Savska cesta 41 II, 10000 Zagreb**
HŽ VUČA VLAKOVA d.o.o.	**Mihanovićeva 12 , 10000 Zagreb**
VIADUKT d.d.	**Kranjčevićeva 2 , 10000 Zagreb**

6.4. Web page display for reservation of a car seat

Figure 24. Web page for car seat reservation (Home page: index.asp)

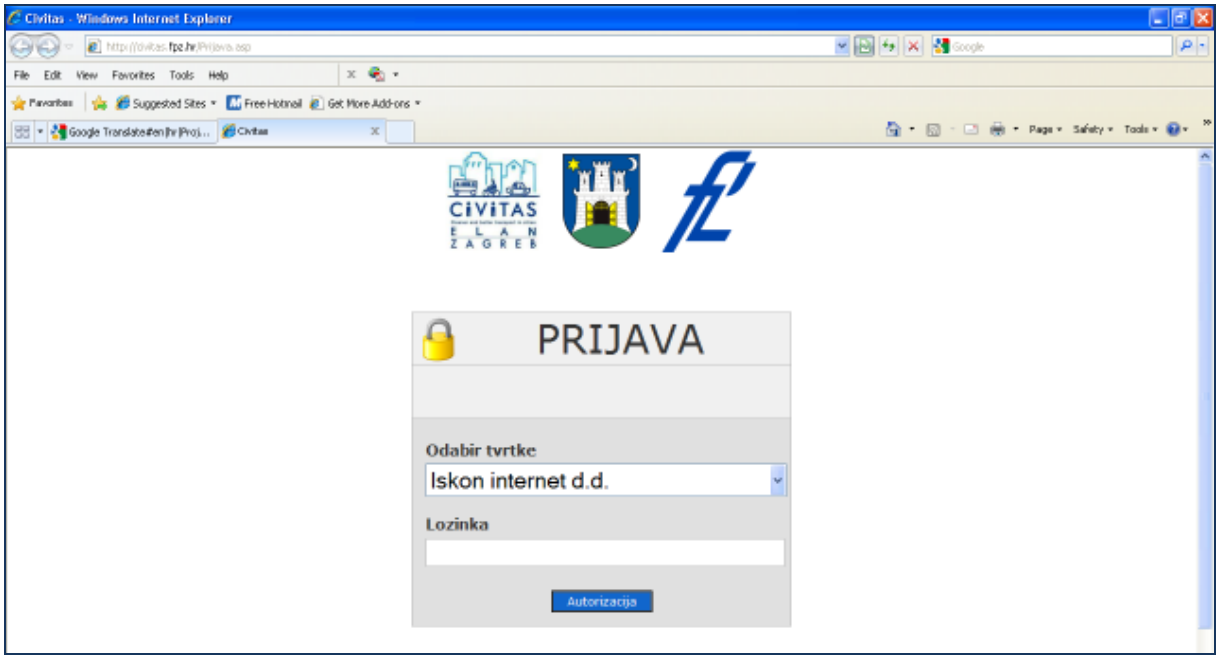


Figure 25. Home page of web questionnaire for Measure 4.4 (http://civitas.fpz.hr/Prijava.asp)

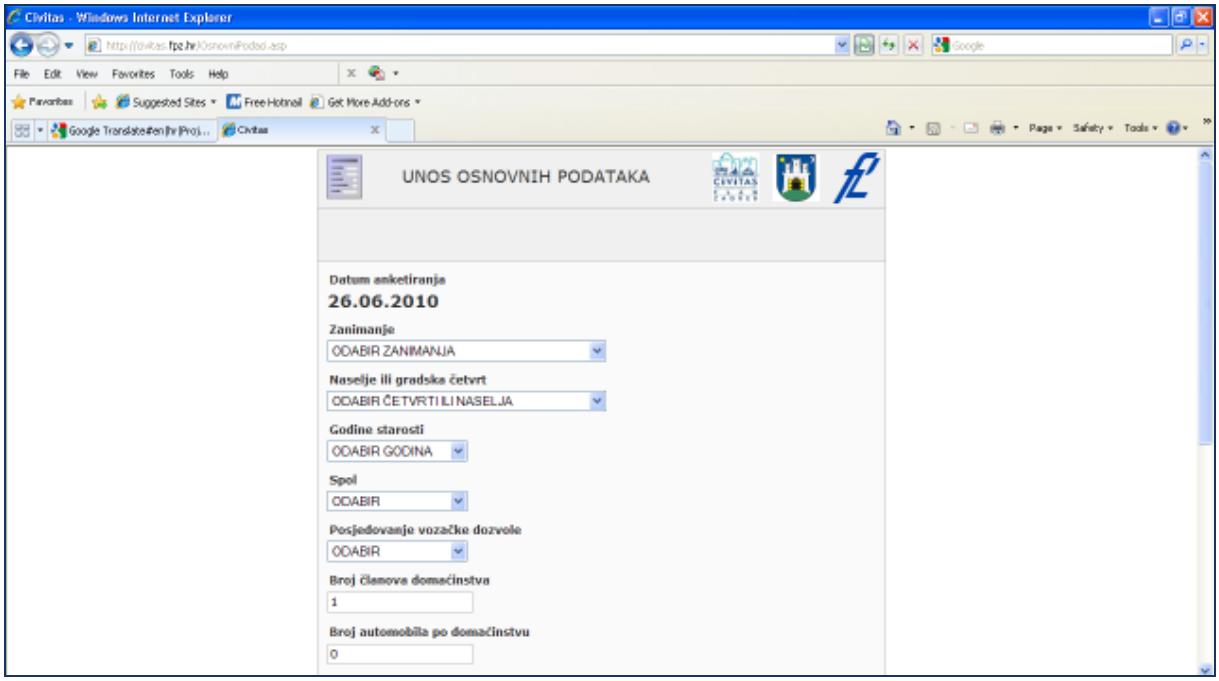


Figure 26. Filling in participant's basic data in web form
(web questionnaire, http://civitas.fpz.hr/Prijava.asp)

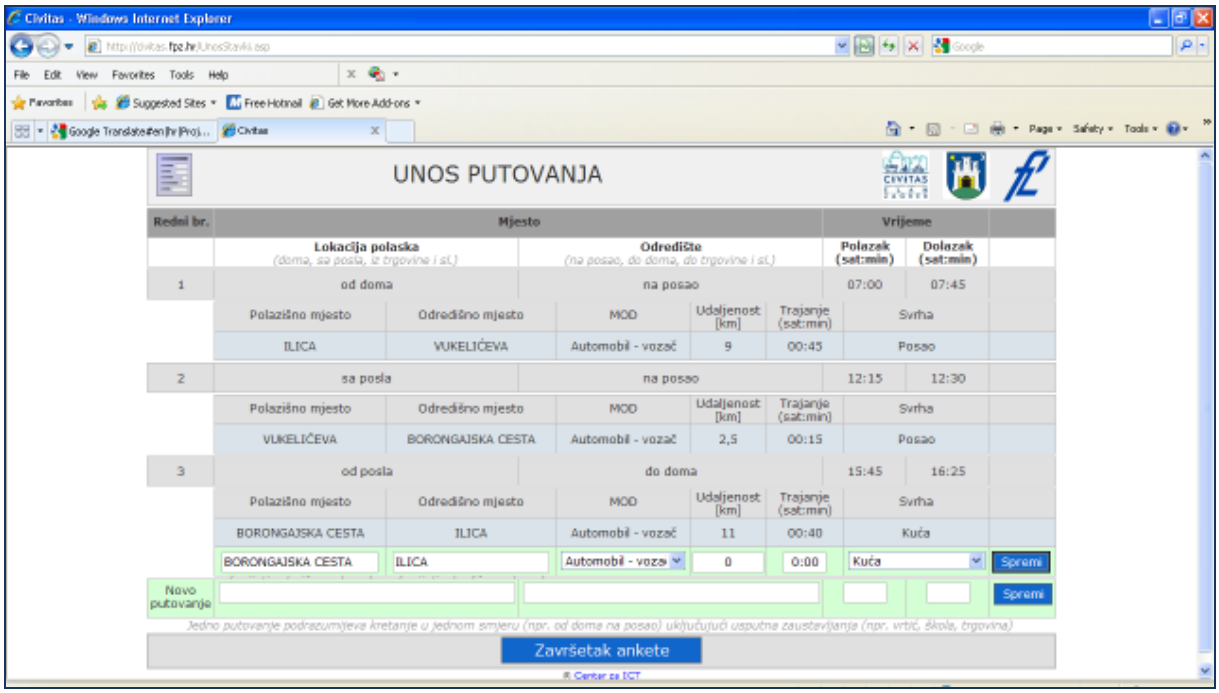


Figure 27. Display of filling in participant's single journeys in web form (web questionnaire, http://civitas.fpz.hr/Prijava.asp)

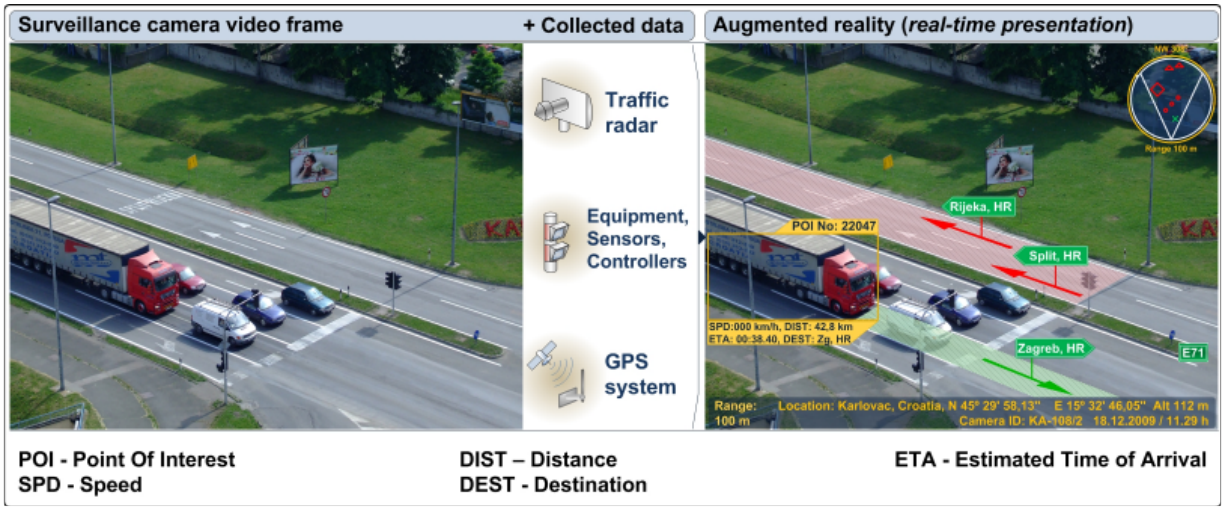


Figure 28. Mobile application with use of Augmented Reality technology

6.5. Marketing campaign events

Marketing campaign was started in the first project year by holding public forums. Within the marketing campaign, the following forums and lectures shown in Table 8. were held for the Measure 4.4.

Table 8. Marketing campaign events

Presentation name	Event	Place	Time	Targeted group
Mobility Management for large companies/institutions	European Mobility Week 2009, Day of Healthy Living (September 16–22, 2009)	Museum of Technology, Zagreb, Tratinska 18	September 18, 2009 (Friday), from 11:00 – 13:00	Citizens, targeted companies
"More passengers in less cars“	Workshop “Tram on Wednesdays”	Museum of Technology, Zagreb, Tratinska 18 (CIVITAS ELAN tram)	February 17, 2010 at 16:00	Citizens
Carpooling, CIVITAS lecture on "More passengers in fewer cars“ “	Workshop report “Tram on Wednesdays”	*Večernji list* newspaper article	February 18, 2010	Newspaper readers (Circulation: 220,000 copies + web issue: http://www.vecernji.hr/)
Informing companies/institutions on polling	Polling	Telephone talks and meetings with employers	April 19-23, 2010	Chosen large companies/institutions on corridor (23 companies/institutions)
"Civitas Project – Specific Traffic Qualities of Ljubljana and Zagreb"	Lecture during field education for students of the Faculty of Education, University of Maribor (Pedagoška fakulteta, Univerza v Mariboru, Oddelek za geografijo, Prometna geografija)	Faculty of Transport and Traffic Sciences, University of Zagreb, Zagreb, Borongajska cesta 83A	May 10, 2010	45 students
Possibilities of carpooling in cities	European Mobility Week 2010, "Travel smarter, live better"	Artisan Guild of the City of Karlovac, J. Haulika 6, Karlovac	September 21, 2010 at 11:00	about 30 participants
"More passengers in fewer cars“	European Mobility Week 2009, (September 16–22, 2009)	Museum of Technology, Zagreb, Tratinska 18	September 22, 2010, from 11:00 – 13:00	citizens, targeted companies, 30 participants

Figure 29. Photos for European Mobility Week, 18 September 2009 (excerpt)

Figure 30. Public workshop “More passengers in fewer cars", 17 February 2010

Table 9. Announcement of presentations and other events

Presentation/workshop name	Event	Place	Time	Targeted group
„Learning history“ workshop	„Learning history“ on Measure 4.4	Faculty of Transport and Traffic Sciences, University of Zagreb, Zagreb, Borongajska cesta 83A	October 12, 2010 at 10:30	Participants in the measure
Training workshop on Mobility Management for larger companies/institutions	Training workshops	Faculty of Transport and Traffic Sciences, University of Zagreb, Zagreb, Borongajska cesta 83A	October 2010	Chosen large companies/institutions on corridor (9 companies/institutions according to questionnaire and sample)

6.6. Power point presentation

Ciljevi

- očekuje se najmanje osam prilagođenih transportnih planova koji će biti postavljeni za izabrane tvrtke/institucije, uključujući i sljedeće ciljeve:
  - smanjenje pojedinačnih motoriziranih putnika koji koriste osobni automobil, organiziranjem zajedničkih prijevoza do posla;
  - smanjenje opterećenosti parkirnih mjesta;
  - povećanje dolazaka na posao pomoću bicikla, motivirajući zaposlenike nudeći im "test bicikle" odnosno besplatne sponzorske bicikle;
  - promicanje korištenja javnog gradskog prijevoza i ostalih održivih načina putovanja uz povećani angažman u obliku pripremljene promotivne kampanje;
  - smanjenje prometnog zagušenja;
  - smanjenje razine onečišćenja zraka i buke.

Koristi od *carpooling*-a za pojedince

- smanjenje putnih troškova i potreba posjedovanja osobnog automobila;
- društvo tijekom vožnje odnosno putovanja i dr.

Koristi od *carpooling*-a za zajednicu

- smanjenje prometnog zagušenja;
- smanjenje razine onečišćenja zraka i buke;
- smanjenje opterećenosti parkirnih mjesta;
- predstavlja alternativno i ekonomično prijevozno sredstvo i dr.

Koristi od *carpooling*-a za tvrtke/institucije

- smanjenje potrebe za parkirnim mjestima;
- omogućava druženje među djelatnicima;
- smanjuje stres djelatnika zbog vožnje na posao;
- poboljšava imidž tvrtke/institucije i dr.

Opis planiranog posla u sklopu projekta

- istraživanje i razvoj (research & development);
  - anketom će se analizirati putovanja osoblja/posjetitelja većih organizacija i entiteta duž zacrtanog (ELAN) koridora
  - marketinška kampanja i "pametna raspodjela putovanja" će biti dizajnirana pomoću web stranica
- implementacija i demonstracije (implementation & demonstration)
  - u gradu Zagrebu će se primjenjivati "pametna dnevna migracija (*commuting*)" pomoću različitih transportnih planova za različite subjekte i organizacije duž koridora (planirano je minimalno 8 transportnih planova)

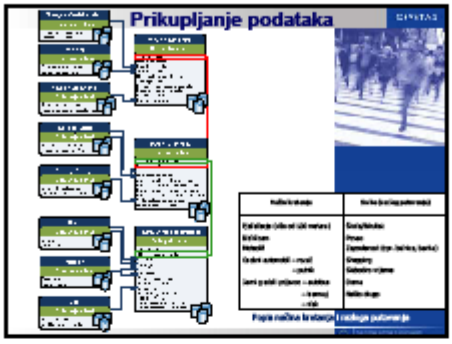
Opis planiranog posla u sklopu projekta (nastavak)

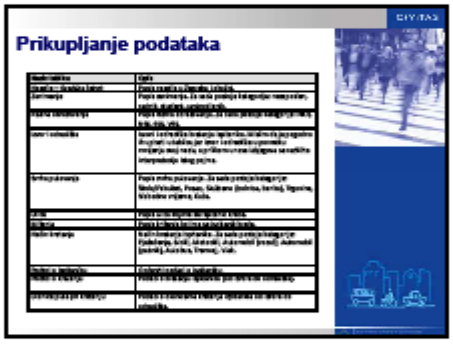
- prikupljanje podataka (data collection)
  - prikupljanjem podataka, između ostalog, će se kalibrirati postojeći planovi upravljanja prometom u velikim institucijama
- detaljna analiza podataka i izučavanje dobivenog
  - kako bi se dobili detaljni podaci, provest će se složena anketa o promjeni ponašanja kretanja i mobilnosti sudionika te broj udruženih putovanja (*carpooling*) nakon primjene odabranih mjera
- desiminacija vezana za mjeru
  - u svrhu podizanja svijesti i prihvaćanja (novih) mjera biti će pripremljen primjereni promotivni materijal
- desiminacija i trening/obuka

Prikupljanje podataka

- popis indikatora za upravljanje mobilnošću

Prikupljanje podataka
tri načina prikupljanja podataka:
pomoću web aplikacije (web anketa),
fizička anketa uz prisustvo anketara i
osobna anketa (usmjerena na pojedinačni angažman djelatnika/studenata u prikupljanju podataka).

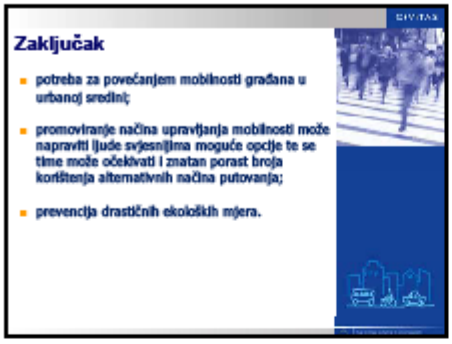

Prikupljanje podataka


Prikupljanje podataka

Prikupljanje podataka
uz pomoć jedinstvene baze podataka može se odgovoriti i na druga pitanja, na primjer:
koji su izvori i odredišta najzastupljeniji;
kolika udaljenosti ispitanici prevaljuju pješice;
razlikuje li se svrha putovanja prema godinama starosti i dr.

Primjeri carpooling-a u svijetu
opći javni servisi (međudržavni)
javni servisi na razini grada, županije, regije ili države

Primjeri carpooling-a u svijetu
usluga carpooling-a unutar određene tvrtke (Microsoft, Coca Cola, Hawlett Packard i dr.);
usluga carpooling-a za potrebe studenata.
Definiranje prostornih lokacija odnosno točaka okupljanja carpooling partnera na zemljovidu (prema gradskim četvrtima)
Poštivanje dogovorenih pravila (pouzdan vremenski plan, podjela troškova, točnost, sigurnost i dr.)


Zaključak
potreba za povećanjem mobilnosti građana u urbanoj sredini;
promoviranje načina upravljanja mobilnosti može napraviti ljude svjesnijima moguće opcije te se time može očekivati i znatan porast broja korištenja alternativnih načina putovanja;
prevencija drastičnih ekoloških mjera.

Hvala na pažnji!

Fakultet prometnih znanosti
Sveučilišta u Zagrebu
Vukelićeva 4, 10000 Zagreb
Mjera 4.4 Upravljanje mobilnošću za veće tvrtke/institucije
Suradnici na projektu
FP7 projekta CIVITAS ELAN