

Measure title: **Monitoring Centre for Road Safety and Accident Prevention in Krakow**

City: **Krakow**

Project: **Caravel**

Measure number: **11.16**

A Introduction

A1 Objectives

The measure objectives are: please align bullet points

- To establish an Integrated Monitoring Centre for Road Safety and Accident Prevention
- To have an central resource and information management centre
- To improve methodology and technological aspects of accident data collection
- To improve road safety
- To decrease the amount of road accidents
- To improve way of defining potential “dangerous places” (black dots in the downtown)

A2 Description

The objective of this measure is to set up a monitoring Centre for Road Safety and Accident Prevention. The functioning of the Centre will be strongly connected to innovative methods of data collection, i.e. by using mobile equipment when registering road accidents. The development of methods for data collection will enable a deeper and better analysis for the definition of potential “dangerous places”.

New sources of data will be integrated in the system and new stakeholders will be involved in the data collecting process. Insurance companies are a very important source of data given the fact that the information collected by the Police refers only to very serious accidents, while that provided by insurance companies refers to a wider range of accidents. The real road safety conditions in Krakow can be obtained by analysing the whole situation, including different data from several sources.

By combining enhanced accident data with using vector maps and GPS system, much deeper and fruitful spatial analysing will be possible. That kind of post-processed information will improve road safety in Krakow.

B Measure implementation

B1 Innovative aspects

The innovative aspects of the measure are:

- **Use of new technology/ITS** – Using mobile terminals (PDA), based on vector maps in collecting field data as well as its spatial analysis is an innovative approach in Road Safety activities in Krakow
- **New organisational arrangements or relationships** – a new system of data collection and analysis in Krakow will be enhanced and new stakeholders (especially those, who deal with “incidents data”, like insurance companies) will be involved. The cooperation between stakeholders will be formalised by signing special agreements.

B2 Situation before CIVITAS

There was a system collecting road incidents and accidents data, which helped to define potential risks, but cooperation among stakeholders was not formalized. Analyzing of the data didn't include a spatial approach, because positioning of the accidents was not precise. Data were obtained from Police, public transport company and a few insurance companies. Advantage of the system was that data have been analyzed for more than 30 years using the same methodology.

B3 Actual implementation of the measure

The measure was implemented in the following stages:

Stage 1: Design of the overall architecture of the Monitoring Centre for Road Safety and Accident Prevention in Krakow (01.01.2006 -01.04.2007) – *Working document A 11.16.1 „ Monitoring Centre for Road Safety and Accident Prevention in Krakow” was created. Deeper cooperation among stakeholders working with accident data was the basic assumption of the document. From technical point of view, mobile terminals for Police Department was the most important part of the measure. Several meetings among stakeholders took place and a working plan was established.*

Stage 2: Identification of the situation “before” measure implementation (01.04.2007 - 31.12.2007) – *Data related to the past was collected and indicators for the measure within the project (before situation) were chosen. Indicators were based on the discussions with the team, which has been analysing accident data in Krakow for last 30 years.*

Stage 3: Software development and stakeholders cooperation agreement preparation (01.10.2007 – 30.04.2008) – *During this period the formalization of cooperation among stakeholders is being prepared, as well as software for mobile terminals (PDA) and new architecture of database.*

Stage 4 Operational run of the system (01.04.2008 – 30.06.2008) – *According to complicated content of Police accident data paper forms, the several changes in the software had to be done. On the basis of cooperation, the idea of the data collected by electronic device had to be changed within the test of the system.*

B4 Deviations from the original plan

The deviations from the original plan comprised:

- **Delay of software development and cooperation agreement** – The 2 months delay was a result of a change of position within Police mostly involved in the project preparation and the reorganization of the municipality structure, which affected the negotiations and discussions about the responsibility of ordering the software.

B5 Inter-relationships with other measures

The measure is related to other measures as follows:

- **Measure 8.11 Security action plan for public transport in Krakow** – The connection is focused on the issue of “Public transport role in accident prevention”. All the accidents, happening near the bus and tram stops will be analysed according to conclusions of the Measure 8.11.

C Evaluation – methodology and results

C1 Measurement methodology

C1.1 Impacts and Indicators

Table of Indicators

Evaluation Category	N°	Indicator	Units	Source of data	Methodology for indicator construction (survey, modelling, etc)	Baseline date
Transport	Own	Level of new road safety data usefulness on activities taken within the improvement of road safety	%	UMK	Survey	07.2007
	Own	Number of accidents	%	UMK	Survey	07.2007
	Own	Level of acceptance and use of new technologies	%	UMK	Survey	11.2007
	Own	Transport Safety	%	UMK	Survey	11.2007

Detailed description of the indicator methodologies:

- **Level of new road safety data usefulness on activities taken within the improvement of road safety** - Surveys in institutions which are involved in road safety. A survey will be conducted among persons involved in road safety data base.
- **Number of accidents** - Data is collected through a comparison of annual reports about road safety in Krakow.
- **Level of acceptance and use of new technologies** - Main sources of data will be obtained from inquiries conducted among employees working with transport safety data base. Sample size is equal to number of persons involved with analysis of the database.
- **Transport Safety** [d1]- Transport safety is defined as the number of recorded transport injury accidents and the resulting number of fatalities and casualties caused by any means of transport. A recorded injury accident is any transport incident causing death or injury

which is recorded by the police. Data will be obtained from Monitoring Centre, developed in Project.

C1.2 Establishing a baseline

The accidents data have been collected in Krakow for last 30 years. Although the data were obtained from Police Department by people analysing the data for Road Management Department, the deeper cooperation didn't exist. There was no interest in common actions and initiatives developing both obtaining and analysing accident data among interested key actors before Civitas measure. It was one of the main problems, to show the stakeholders, that joint action can result in success of different parties. Till the measure was discussed in public, every actor was concentrated on its own problems, not thinking about wider cooperation.

C1.3 Building the business-as-usual scenario

The cooperation between the Road Management Department (ZIKIT) and Police in terms of collecting and analysing the data would be continued, but based on copying of the paper forms. Nevertheless using of mobile terminals would be possible only if the National Police Headquarter would be implementing such a measure as a nationwide. The bottom up initiative in Police is not used very often, so the Krakow experience is not easy to be implemented in other Polish towns.

Cooperation among other stakeholders sending accident data to the Road Management Department would be based on the paper forms as well. The findings of every year report about road safety situation in Krakow would not be deeply analysed by other key actors.

C2 Measure results

The measure results will be presented in situation "before" and "after" measure implementation. All measure results will be presented under sub headings corresponding to the areas used for indicators – economy, energy, environment, society and transport.

C2.1 Economy

From economical point of view the measurement can help to reduce the number of accidents in Krakow which can lead to decrease of amount of accidents charges.

Exact economical results of the measure are difficult to assess, according to very complex character of the issue.

C2.2 Energy

The matter of energy is not related to this measurement.

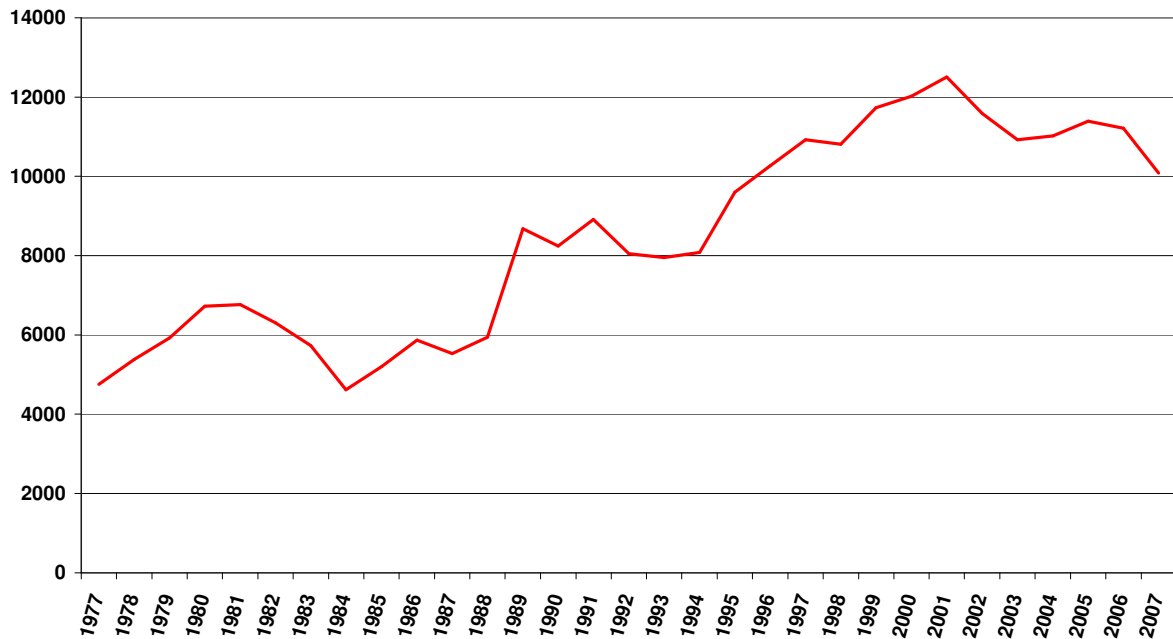
C2.3 Environment

The matter of environment is not related to this measurement.

C2.4 Transport

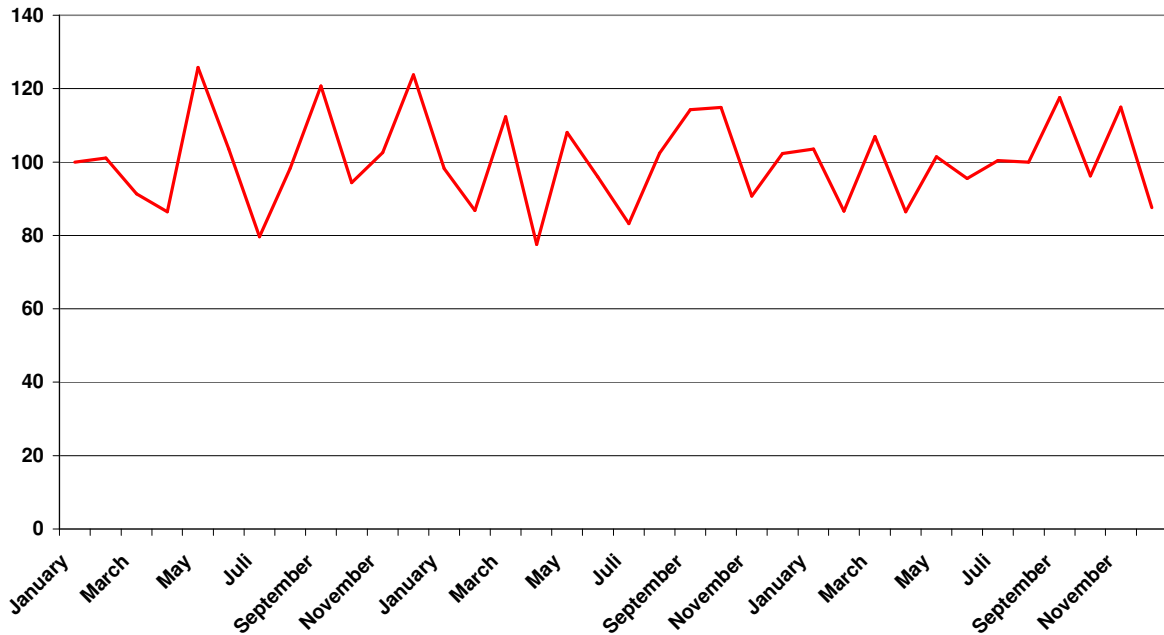
Based on the statistics Number of accidents and incidents, strongly correlated with traffic intensity and has an increase tendency in the whole analyzed period (1977-2006). The highest number of accidents occurred in 2001 (12508). The lowest number of accidents occurred in 1984. (C2.4-1)

Accidents and incidents 1977-2007



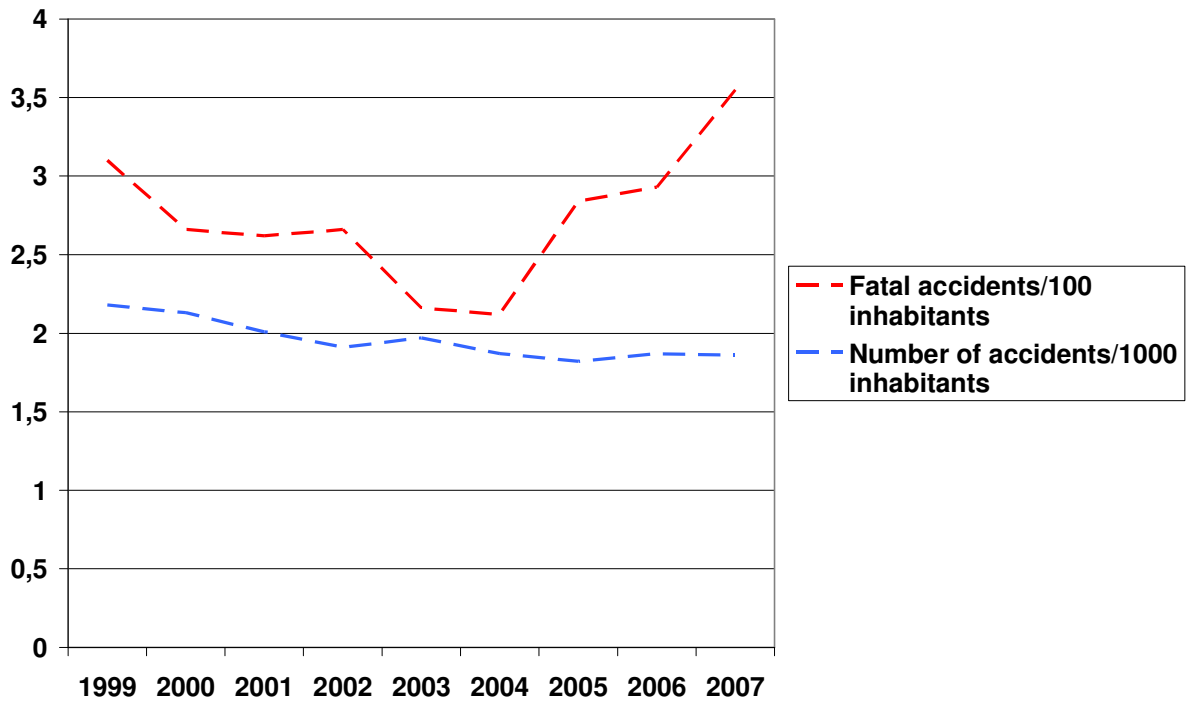
C2.4-1- Number of Accidents and incidents.

Changes of the number of accidents month to month in the period 2005-2007



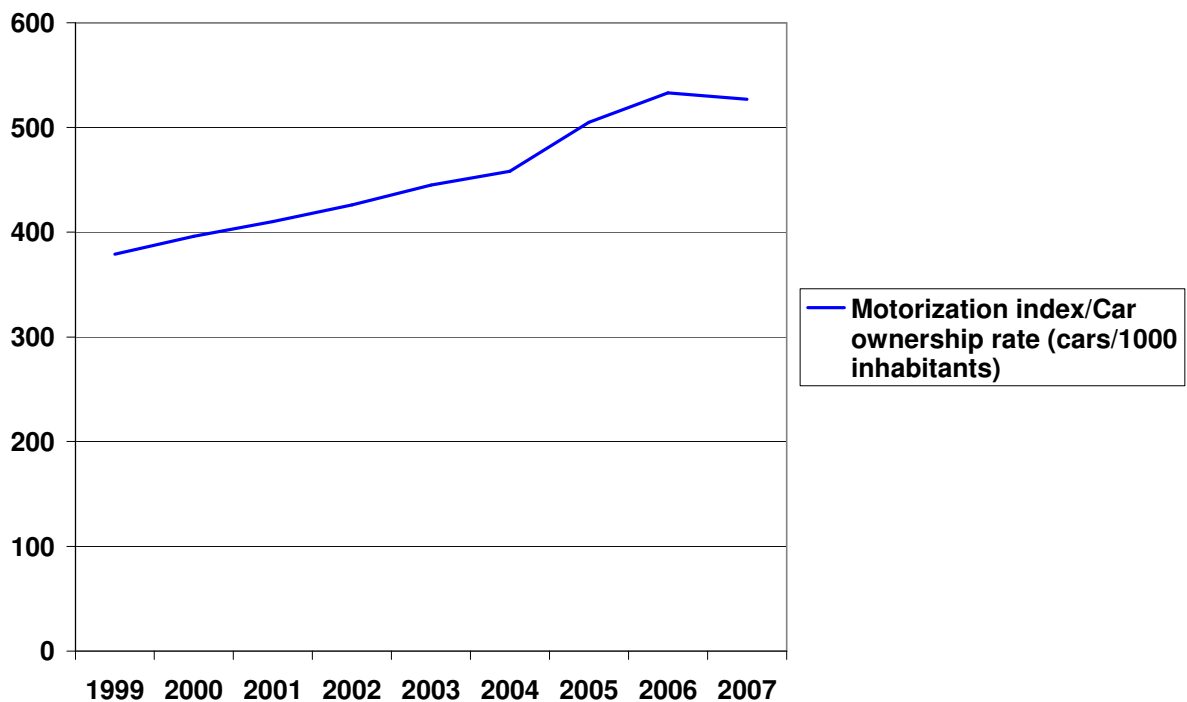
C2.4-2- Changes of the number of accidents month to month.

Also by gaining the expected results of reducing the number of accidents, this measurement can help in decreasing the traffic jam in some dangerous places.

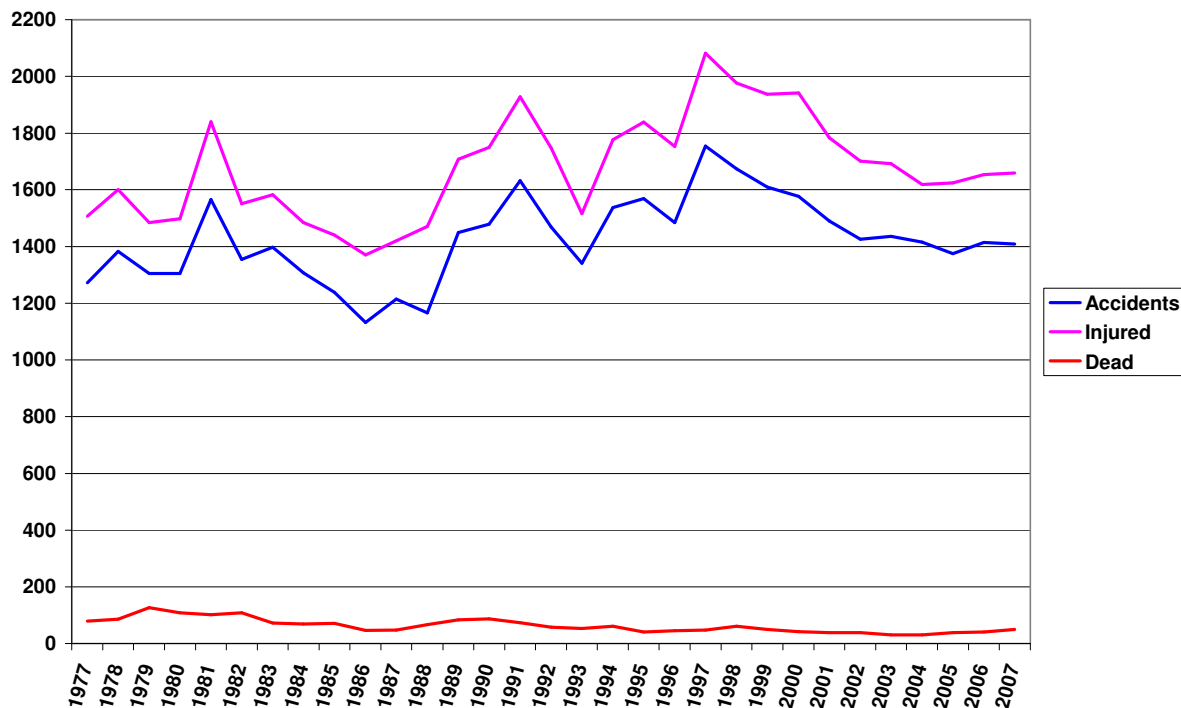


C2.4-3- Fatal accidents index and number of accidents index.

Two important indexes presenting the situation in Krakow in last years show that although number of accidents on 1000 inhabitants is decreasing year to year, fatal accidents are still an increasing problem of the city. As the following chart shows, it is strongly correlated with the increase of the number of cars. As we can see car ownership rate in Krakow is above 500 cars per 1000 inhabitants since 2005.



C2.4-4- Motorization index in Krakow.



C2.4-5- Number of accidents (without incidents) and number of dead and injured in those accidents in Krakow in the period 1977-2007.

C2.5 Society

The most important goal of this measure is reducing the number of accidents which can lead to decreasing the number of injuries and deaths according to car accidents. It is obvious that the expected goal of this measure can help society to have a safer environment and transportation. Another important aspect is the improve of the quality of life as well as standard of living of Krakow society. Both goals can be achieved, when we reduce the number of accidents as well as its impact.

C3 Achievement of quantifiable targets

No.	Target	Rating
1	To decrease amount of road accidents	
2	Developing a new road safety monitoring system	
3	-	
4	-	
NA = Not Assessed * = Not achieved **= Achieved in full ***= Exceeded		

C4 Up-scaling of results

Up-scaling should concern extension of the system to minimum region area (Malopolska), and in maximum to the national level. There are several ideas in Poland to create the system of accident data collection which use ITS (Police Department and Insurance companies were trying to implement similar projects). Until now none of success finished projects are known, except WZDR system implemented in few large cities, but probably not as innovative as CARAVEL measure. Monitoring System created in Krakow up-scaled to national or at least regional level might bring comprehensive

and homogeneous tool to collect traffic accident data, as well as improve prevention actions. All traffic Police should be equipped in PDA's to collect data on accident localization and Regional Road's Administration together with National Road Administration should create same databases as this implemented under the CARAVEL measure in Krakow Road Administration, that calibration of data will be able.

The system of collecting the accident data for Poland should be compatible with the system for whole European Union. Nevertheless till now, the common European solution doesn't exist in that area. It is somehow connected with different methodology as well as different scope of collected data. Harmonization of that would be the first step to create common accident database policy. Considering diversity of national law and regulations (e.g. alcohol limit for drivers) it is not just about the same data being collected Europe-wide. Some initiatives in terms of standardization among EU countries in that area can be found, what may trigger next steps to create the same rules of data collecting and analysis.

Up-scaling of the results may be also achieved, when other polish Police Departments, outside of Krakow will see any positive aspects in new ways of data collecting and analysis, implemented within Civitas. There were some signals from Malopolska Voivodship Road Management Office that they are interested in the results of our measure in terms of new ways of data collecting. The main problem is that without external founding (e.g. EU funds and projects) Police is not able to cover the expenses. Another problem is that Police Headquarter is not interested now in developing its data collection system on national level so only the local initiatives might be implemented.

Extend the cooperation between the stakeholders in terms of developing the exchange of the accident data and involving new actors (e.g. private transport companies) in creating common local accident databases and analysis units is very important. Lots of incidents are not registered by the Police, because they are not called when the damages are not big and no one hurts, so the data sources like private companies may play very important role in trying to define the dangerous places, especially in regional scale.

C5 Appraisal of evaluation approach

Indicator "Number of accidents" might be difficult to calculate. Causes of traffic accidents are so complicated, that even if measure objectives will be reached, and number of accidents will decrease as a result of better prevention after proper identification, some other conditions can increase this figure.

C6 Summary of evaluation results

The key results are as follows:

- **Key result 1** – Correlation of number of accidents and number of injured clearly has decreasing tendency since 1977 which can be result of new safety equipments of the cars and more awareness from the drivers. It should be noticed that the different causes of any kind of decreasing in tendency of accidents after implementation cannot be separated from each other and decreasing in amount of accidents or injuries can be because of many cause.
- **Key result 2** – Indicators number 2 and 4 (Number of accidents and Transport Safety) are conceptually very similar; we can see this similarity in their description and available data as well. It seems that we can merge together the results.

D Lessons learned

D1 Barriers and drivers

D1.1 Barriers complete please

- **Delay in realization in the area-scoped traffics control system and traffic management system (SSR)**

The system is still being realized and it is difficult to influence on that barrier.

- **Difficulties in contacts with other stakeholders** - contacts are based on very formal procedures, especially with Police as an example of highly structured organisation. Nevertheless several meetings were organised as well as cooperation between software producer and Police improved. The problem which is the most difficult to overcome is the often changing project contact person from the Police side. It triggers draw outs of the several implementation steps.
- **Enlargement of the Shengen Agreement** – Police is obliged to implement all the regulations connected to Shengen Agreement, what makes another actions (i.e. improving road safety collecting methodology much less important). Combining of the procedures and software adjustment so that one system could operate both on Shengen data and accident data was proposed, but from Police regulations and procedures point of view it is not possible.

D1.2 Drivers

- **Contacts with people creating the first system of collecting and analysing road safety data in Krakow in the preparation phase** – experience of people working on analysis of road accident data for a long years was very helpful
- **Decrease tendency in number of most serious road accidents in Krakow in last 10 years** – in general, the number of most serious accidents is decreasing, what is connected with risk awareness and different road safety promoting campaigns

D2 Participation of stakeholders

- **Police Department** – Police Department is not satisfied with all the solutions, planned in the measure. As the most problematic issue they find the fact, that the new system of collecting the road accident data is not the part of the national system, what makes it not possible to connect with all others procedures, ruling in Police. Next problematic issue is the fact, that because of local implementation area (City of Krakow), it is very difficult for the Police Department to obtain an extra financial support for the measure. It makes a really serious danger, that some parts of the measure will not be continued after end of the Civitas project financial support. National system is focused on collecting statistical data, but it not covers the aspects of e.g. accidents within public transport, what makes “Krakow system” more adjusted to the deeper analysis. It may be seen by Police as valuable.

D3 Recommendations

- **Common EU methodology** – There is nothing like common EU methodology of obtaining and analyzing accident data. The ways of obtaining the information may differ, nevertheless the range should be the same in different countries.
- **Involvement of Road Management Department to the Civitas project as a partner** – In many measures RMD of Krakow plays important, as not the most important role. Nevertheless it was not a project partner and some of the actions didn't have it's support. It was

very difficult to convince them to implement some changes. If RDM wa a project partner, the discussions would be much easier and time saved could be invested in other activities.

D4 Future activities relating to the measure

The list of stakeholders involved in the data collection and analysis should be enlarging as an on-going activity. Another issue is constant evaluation, so the way of works on the data could be improved more often. Very important thing is also dissemination of the results, so that possible actors, which are now not interested in cooperation (e.g. private bus companies) could see the advantages.