

Measure title: **Integrated ticketing and tariffs in Krakow**

City: **Krakow**

Project: **Caravel**

*Measure
number:*

8.10

A Introduction

A1 Objectives

The measure objectives are:

- To increase patronage in PT by 10% (on Krzeszowice-Krakow corridor)
- To improve the quality of passenger movement in the wide-city area
- To test a solution of an integrated ticketing and tariff solution between local public transport and the National Railway line in Krzeszowice-Krakow corridor
- To decrease the amount of private cars getting into the city (people from outside Krakow going to/from- work)

A2 Description

Within this measure the City of Krakow will perform a test of an integrated ticketing and tariff solution between local PT and national railway. Due to limited budget possibilities this measure will be focused on 1 line (currently decided in Krzeszowice - Krakow corridor). With the integrated ticketing and tariff solution, an increase of public transport use by 10% in Krzeszowice - Krakow corridor is expected. Research and technological development activities like: design of the integrated tariff and ticketing system, including the selection of lines in Krzeszowice - Krakow corridor; assumptions for integrated tariff system; agreements with PKP (National Rail Company); development of technical specifications of design of the integrated tariff and ticketing system; start of design of the integrated tariff and ticketing system including study on the type of ticket (in aim of chip-ticket), study on the technological and organizational side of the measure; selection of lines in Krzeszowice-Krakow corridor.

B Measure implementation

B1 Innovative aspects

The innovative aspects of the measure are:

- **New conceptual approach** - The “Integrated ticketing and tariffs in Krakow” will be the first official system in Malopolska region where people can buy integrated tickets which allow them to use both local public transport and National Railway line in the Krzeszowice-Krakow corridor.
- **New organisational arrangements or relationships** – Agreements between City of Krakow and PKP (Rail Operator) concerning integrated ticketing and tariffs

used in local public transport and National Railway line in Krzeszowice-Krakow corridor.

- **New economic instrument** – Respond to passenger’s needs - one integrated ticket is connecting Krakow Public Transport and National Railway line in Krzeszowice-Krakow corridor. Buying an integrated ticket which cost was reduced by 10% passengers save time and money.
- **New technological tickets solution** – The integrated ticketing includes a study on new type of ticket (local public transport and National Railway)

B2 Situation before CIVITAS

Integrated tariffs and ticketing are only available within the city area, on buses and trams of the PT operator MPK. There is no integrated ticketing between railway and other transport modes. Suburban rail lines in the surrounding of Krakow are suffering a decreasing in the amount of passengers and are often being closed, due to missing profit. Although there are plans to "involve" rail network inside the city area into common local public transport. This project is called SKA - Szybka Kolej Aglomeracyjna (Fast Agglomeration Rail).

B3 Actual implementation of the measure



The measure was implemented in the following stages:

Stage 1: Feasibility study of integrated tariffs system (09.2006-12.2006) - Working document “Feasibility study of integrated tariffs system” was created. Document was based on the experience of Poland and France.

Stage 2: Implementation plan for integrated ticketing and tariffs in Krakow (09.2006-12.2006) - Working document “Implementation plan for integrated ticketing and tariffs in Krakow” was created.

Stage 3: Technical and organizational specification of integrate - ticket system tariff (09.2006-12.2006) - Working document “Technical and organizational specification of integrate -ticket system tariff” has been elaborated.

Stage 4: Identification of the situation “before” measure implementation (05.2007-06.2007) - The inquiry about traffic behaviour and preferences was conducted among Cracow University of Technology students and employees has taken place.

Stage 5: New tariff resolution in City Krakow (05.12.2007) - The new resolution introduces new kind of ticket – “stamp” which is an inherent element of the integrated ticket.

Stage 6: Intentional agreements between UMK-UMWM-PKP (13.12.2007) – first round of conversations between 3 concerned institutions on agreement to implement integrated ticketing and tariffs solution started.



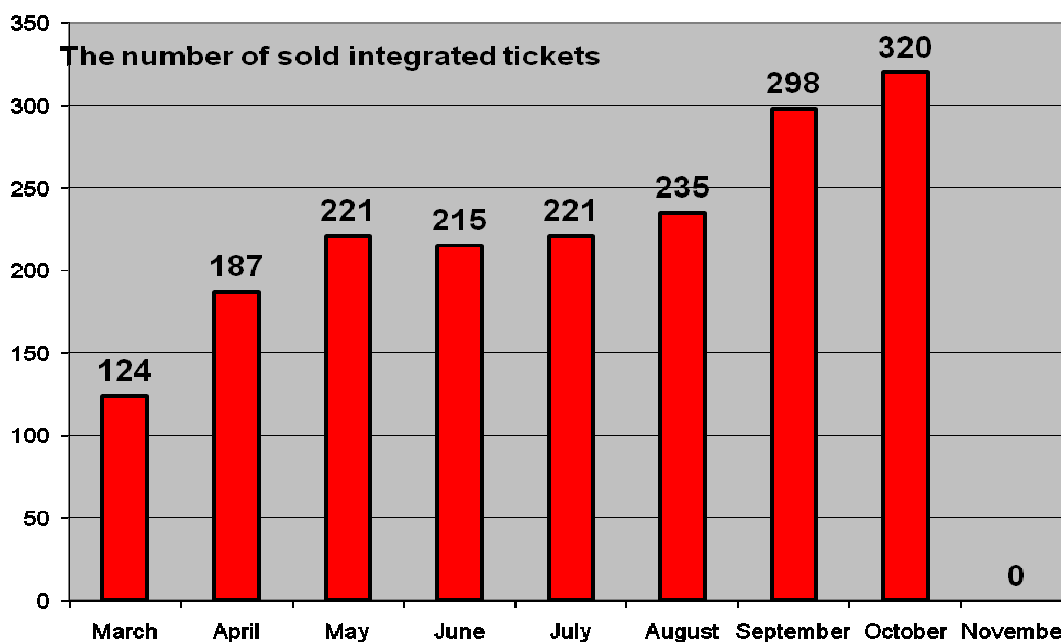


Stage 7: Final contract between UMK-PKP (22.02.2008) - an agreement which allows implementing integrated tariffs and ticketing has been signed.

Stage 8: Coordination measure implementation (03.2007 – 12.2008) – Coordinating of measure after implementation. Reporting of state of sale integrated ticks.

Stage 9: Questionnaire research and measurements before implementation (11.06.2008 – 12.07.2007) – Conducting of the questionnaire research and measurements before implementation.

Stage 10: Questionnaire research and measurements during implementation (03.2007-12.2008)- Ticket sale analysis and coordination of the project.



B3-1. As the survey shows the tendency is growing up. The sale increase by more than a 50% from March to September.

B4 Deviations from the original plan

Project should have started the first of January; due to a delay in the preparation of integrated tariffs system it began two months later (03.03.2007).

B5 Inter-relationships with other measures

The measure is related to other measures as follows:

Measure 8.3 – Clean high mobility corridor in Krakow – Integrated tickets available to use inside corridor. The main assumption of this project is to better making use of buses, trams and give priority for Public Transport. System which is responsive to what the public want and high quality service that work well are encourages passengers to buy integrated tickets.

Measure 11.3 – Sustainable mobility marketing in Krakow – Promotion of integrated tickets demonstration system among to citizens by seminars, web sites, press, to interest user in new possibilities. It is good solution to make more attractive new system and inform about it.

Measure 11.7 – Mobility Forum – Integrated tickets will be a subject of Forum meetings. Public Transport is inefficient if the service does not go where the passengers requires. That is why action should be undertaken by the public transport operator to increase the perceived efficiency of public transport in the minds of general population

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 (39)	Car traffic on road	%	UMK	Measurement	06.2007
Society	CI 15	PT accessibility	%	UMK	Survey	06.2007
Society	CI 14	Acceptance level	%	UMK	Survey	06.2007
Transport	Own (40)	Rail passenger number	% value	UMK/PKP	Measurement	06.2007
Transport	Own (41)	MPK passenger number	% value	MPK	Measurement	06.2007
Transport	Own (42)	Rail ticket structure	% value	UMK/PKP	Measurement, survey	06.2007

Detailed description of the indicator methodologies:

- **Car traffic on road** - *Percentage of decreasing in car traffic on road. Direct measurement of traffic level on corridor leading to Krakow. Measure was taking between 6.30 and 9.30 (working day) in for strategic points of the road nr 79 (Krzyszowice – Krakow corridor).*
- **PT accessibility** - *index of value “accessibility perception” of every surveyed person. Data comes from survey taking into consideration opinions of the users about accessibility of public transport. Questionnaire was conducted among commuters living in Krzyszowice and Zabierzów. Surveys contain questions about: aim of journey, frequency of journey, modes of transport which is used, sold tickets structure etc.*
- **Acceptance level** – *number of passengers using public transport who declared to buy integrated ticket. Data comes from survey taking into consideration opinions of the users about accessibility of public transport. Questionnaire was conducted among commuters living in Krzyszowice and Zabierzów. Survey contain question about accessibility of public transport, structure of sold PKP's tickets.*
- **Rail passenger number** - *Percentage of growth in rail passenger number. Direct measurement of the passenger volume in rail line connecting Krzyszowice and Krakow during one working day.*
- **MPK passenger number** - *Percentage of growth in passenger number of MPK buses. Data comes from measurement concerns percentage of growth in passenger number of MPK buses.*
- **Rail ticket structure** - *statistics concerning data about rail ticket structure used by passengers who travel by train in Krakow – Krzyszowice corridor. Questionnaire in public transport vehicles – estimation of the ticket structure among target group.*

C1.2 Establishing a baseline

In Krakow integrated tariffs and ticketing were only available within the city area on buses and trams of the PT operator MPK. There was no integrated ticketing between railway and other transport modes. Within this measure started from September 2006 City of Krakow has performed test of an integrated ticketing and tariff solution between local PT and national railway. With the integrated ticketing and tariff solution, an increase of public transport use by 10% on the corridor Krzyszowice-Krakow was expected.

Thanks to the integrated ticketing and tariff solution, one of goals-the growth of patronage in PT by 10% on the corridor Krzyszowice-Krakow- was achieved.

C1.3 Building the business-as-usual scenario

In business-as-usual scenario there isn't an integrated ticketing between railway and other transport modes. Integrated tariffs and ticketing are only available within the city area, on buses and trams of the PT. Unfortunately without this project the congestion in the city would have grown up. People in more situations, given a choice between private and public transport, choose the private car, because public transport is perceived by the average citizen as being very inferior to the car as a means of travel.

Furthermore, in the case of not implement this measure in Krzyszowice – Krakow corridor the demand for traveling by train could be decrease and demand for travelling by cars - increase. In order to encourage people out of cars and onto trains, buses and trams. Public Transport should be more competitive with the car.

C2 Measure results

The results are presented under sub headings corresponding to the areas used for indicators – economy, energy, environment, society and transport.

C2.1 Economy

Transport is an essential element of economy. It is ~~Often is~~ regarded as ~~a~~ catalyst of the ~~to~~ economic activity. If the integrated ticketing idea gets the expected acceptance among passengers it can help both sides (passengers and Transportation organizations, PMK and PKP) make more profit. On one side passengers can buy the ticket easier and faster and also 10% cheaper (both tickets) and on the other hand PKP and PMK can have more benefit due to economies of scope regarding more passengers who get motivated to use new system for their trips to Krakow and vice versa.

C2.2 Energy

If the idea could attract more passengers to use public transportation instead of private cars it can decrease the amount of overall energy usage in this corridor.

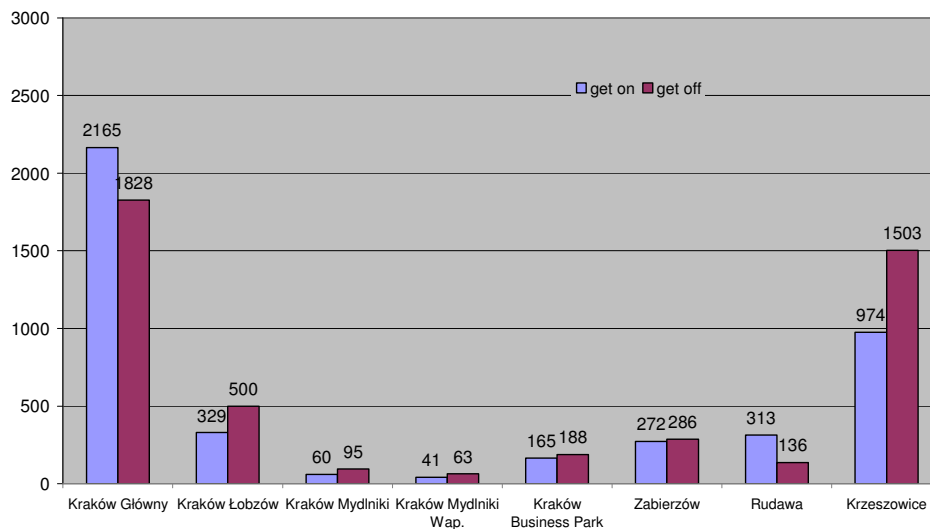
C2.3 Environment

The development of transport is closely associated with a wide range of environmental problems. The t~~r~~ansport sector affects the quality of life, health and well-being of people in town. Air pollution results from the emission of the detrimental substances. It can be improve if emissions are reduced by reduce fuel consumption and using the car less and the railway and public transport more. If the idea could attract more passengers to use public transportation instead of private cars it can help environment sustainability.

C2.4 Transport

Rail passenger number

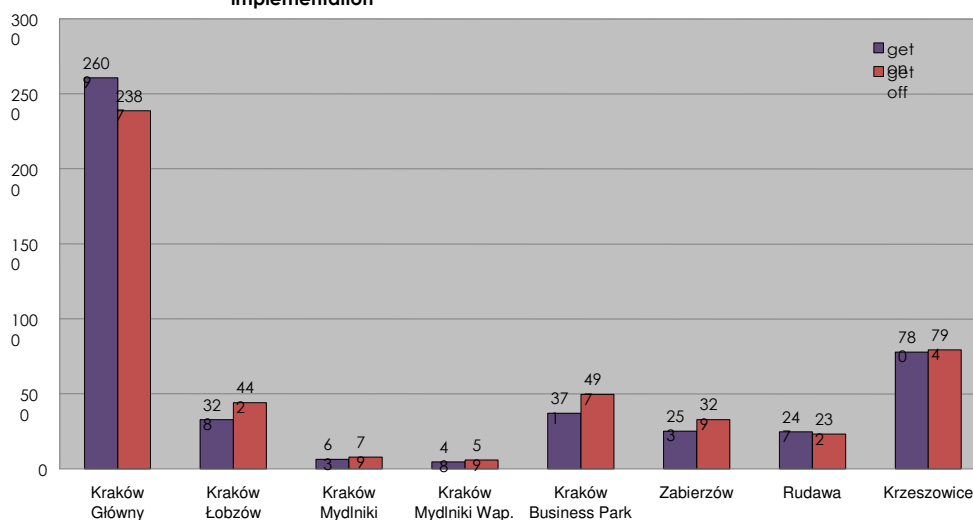
The number of passengers who get on and get off regional trains in following train stations in Krakow - Krzeszowice corridor before Caravel implementation



C2.4 – 1. The number of passengers who get on and get off regional trains in following train stations in Krzeszowice – Krakow corridor before Caravel implementation

Graph based on actualy data shows that the largest congestion is observed in the Krakow Glowny Station (Krakow Main Station). The main reason of traveling for passengers making use of that destination is to get from home to work, school or college situated in the city center. (C2.4 – 1.)

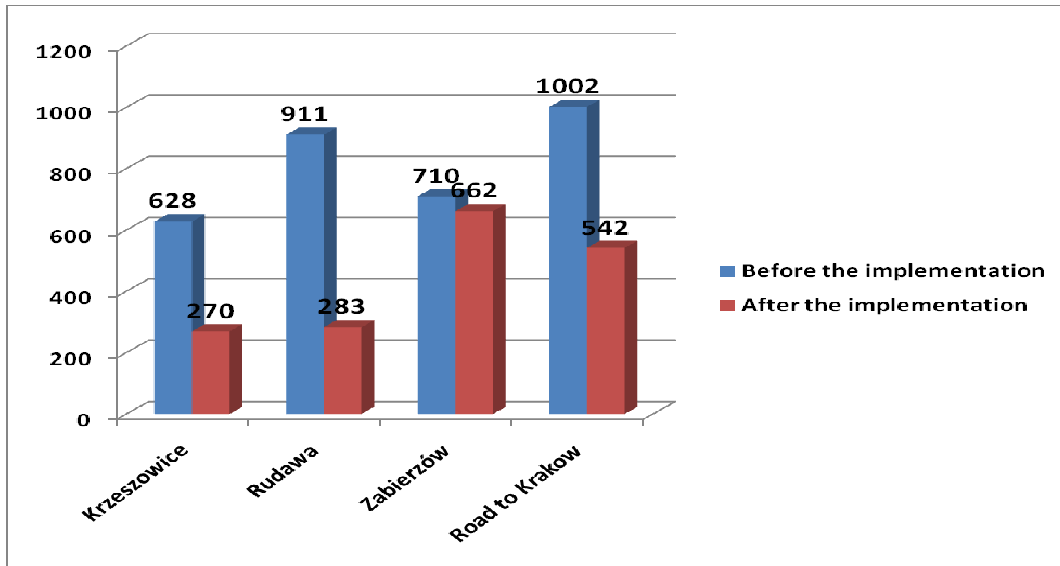
The number of passengers who get on and get off regional trains in following train stations in Krakow-Krzeszowice corridor after Caravel implementation



C2.4 – 2. The number of passengers who get on and get off regional trains in following train stations in Krzeszowice – Krakow corridor before Caravel implementation

The number of passengers who get on and get off regional trains in following train stations in Krakow-Krzeszowice corridor in both direction during one working day increase by 15% after the implementation of an integrated ticket. (C2.4 -2)

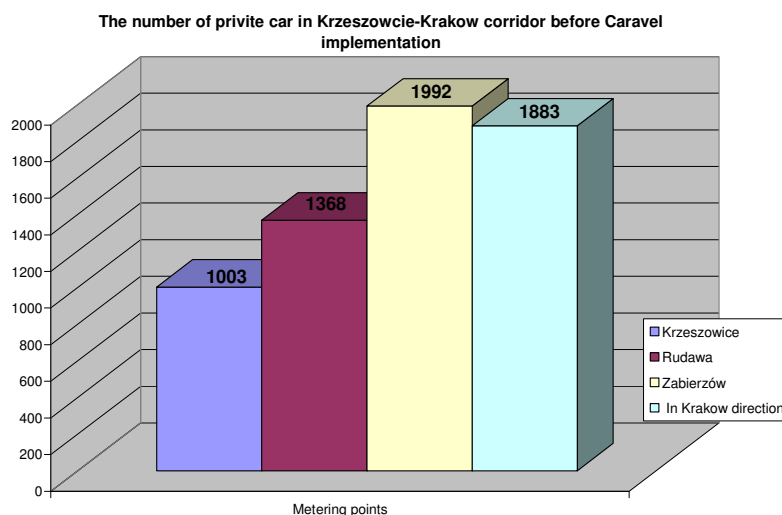
MPK passenger number



C2.4-3. The number of passengers in buses in Krzeszowice-Krakow corridor before and after Caravel implementation

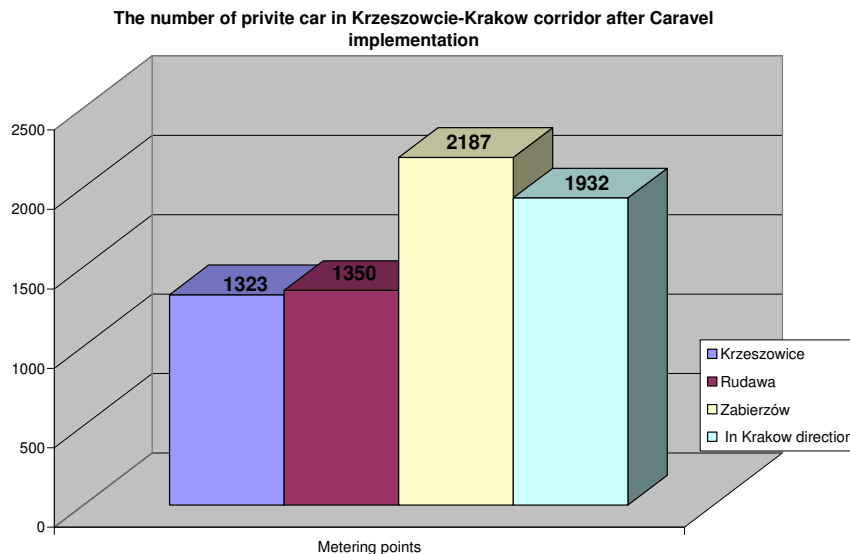
The number of passengers using Public Transport (buses- shuttle which are connecting Krzeszowice and Krakow) explicitly decreased. ItThere_is__obviously more convenient for passengers to buy integrated tickets and go to Krakow (or from Krakow to Krzeszowice) by train and use the same ticket in the city center, than travel by bus and buy another ticket for the tram in Krakow.

Car traffic on road



C2.4-4. The number of private car in Krzeszowice-Krakow corridor before Caravel implementation

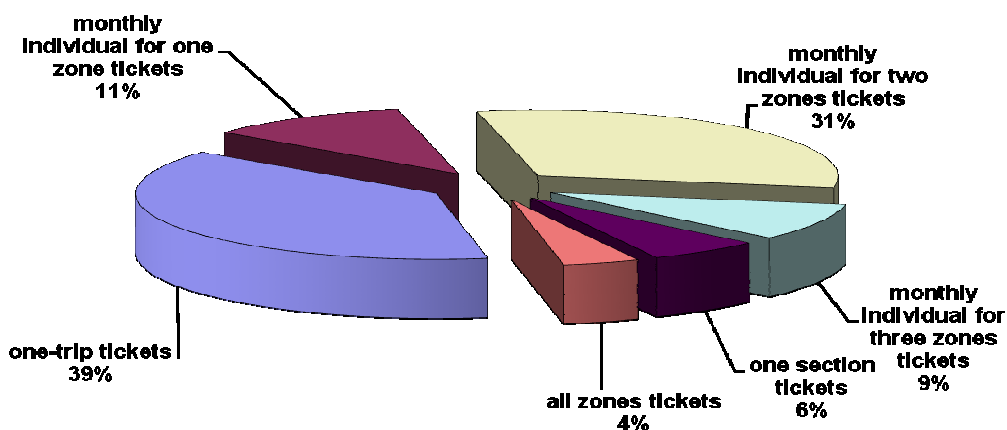
The graph shows that a great number of citizens in Krzeszowice-Krakow corridor use their private cars; generally the closer the city is the more cars there are. (C2.4-4)



C2.4-5. The number of private car in Krzeszowice-Krakow corridor before Caravel implementation

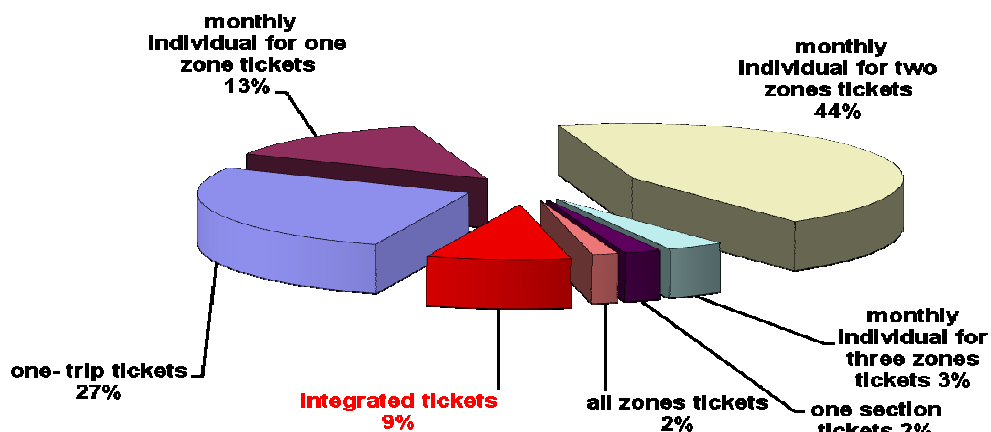
The number of cars in Krzeszowice-Krakow corridor (in the route 79) increased by 10%. It's an alarming indicator. The big change noticed at metering point- Zabierzów, where the number of cars increased by 13%. (C2.4-5.)

Rail ticket structure



C2.4-6. Rail ticket structure in Krzeszowice-Krakow corridor before Caravel implementation

The available information regarding the situation before Caravel implementation shows that 39% of people use one-trip ticket to travel to and within Krakow. The Majority buy different kind of period tickets. C2.4-6



C2.4-7. Rail ticket structure in Krzeszowice-Krakow corridor after Caravel implementation

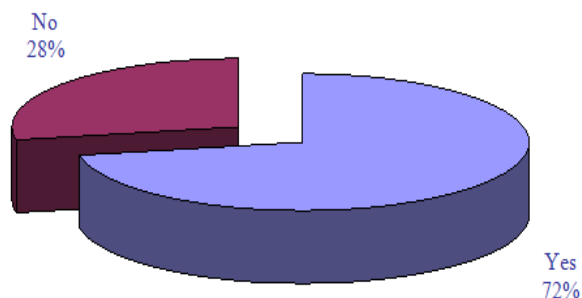
The action achieves the desired effect- 9% of all sold rail tickets were integrated tickets. It's interesting; that the most reduced was the number of one-trip tickets. This indicator shows what the demand for integrated tickets and tariffs is and obviously there is a need to continue selling that kind of tickets.

Comparative table with after and before situation

	Before Measure Implementation	After Measure Implementation
Rail passenger number	2371	3139
MPK passenger number	1002	662
Car traffic on road	1942	2187

C2.5 Society

Acceptance level

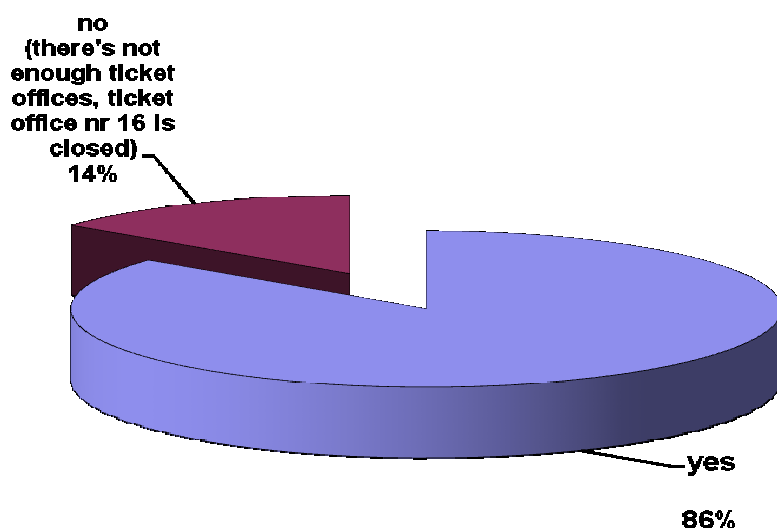


C2.5-1- Declaration of buying integrated ticket with 10% discount.

As survey shows that for great number of the passengers in this corridor buying two different tickets for train and bus or tram is not convenient. 72% of surveyed **were agreed** to buy integrated tickets with 10% discount. C2.5-1

PT accessibility

Is purchase of integrated ticket convenient for you?



C2.5-2- Opinion of accessibility integrated ticket.

A **g**reat number of passengers consider **s** that purchas**ing** of integrated tickets is convenient; the only problem was closed ticket office nr 16 in a day of questionnaire. (C2.5-2).

C3 Achievement of quantifiable targets complete

No.	Target	Rating
1	To increase in PT patronage by 10% (on Krzeszowice-Krakow corridor)	**
2	To improve the quality of passenger movement in the wide-city area	**
3	To test a solution of an integrated ticketing and tariff solution between local public transport and the National Railway line in Krzeszowice-Krakow corridor	**
4	To decrease amount of private cars getting into the city (people from outside the Krakow going to/from- work)	*
NA = Not Assessed * = Not achieved ** = Achieved in full *** = Exceeded		

C4 Up-scaling of results

Extending this measure for larger area can slow down the increasing amount of private cars users ~~in~~ getting into the city (people from outside the Krakow going to - and from - the work). Measurements show that number of private cars traveling every day in Krakow- Krzeszowice corridor is bigger by about 13%. The scale of this negative phenomenon ~~for shore~~ would be worse if there ~~were not on't be~~ any actions to prevent that. The Krakow area becomes more attractive and ~~easilyier~~ available for tourists who travel into the sub Krakow area. They ~~don't have to couldn't~~ worry about ticketing for each means of transport. There will be more bus and rail passengers. There will be less congestion on the road which led to Krakow and inside the city. People could travel quicker, better and cheaper. It is also good for the environment (less pollution). In the period of observation ~~a -and taking- measure like thes- an~~ integrated ticket ~~id gotwas- getting~~ more and more popular (9% of ticket in the structure of all rail tickets which were sold). ~~Passengers are interested of that kind of convenient and obviously scale of sold integrated ticket in whole city will by the same or even bigger.~~

C5 Appraisal of evaluation approach

All indicators have been chosen properly, which permitted to described the situation “before” and “after” implementation of measures. Indicators were selected in order to clearly and easily compare that situation. Initially 11 indicators were taken into account but finally only 6 were assessed . Others indicators were turned down because there were some problems with evaluation: Operating revenues and cost: those indicators were very difficult to determine the PT service relative costs: this indicator doesn't influence directly for “before” and “after” situation of implementation an integrated ticketing and tariff. Modal split: this indicator is very difficult to determinate and in details others indicators justify the elimination of this indicator. Number of MPK buses: At present on Krakow - Krzeszowice corridor is operated only one line which is served by MPK (bus operator) so determinate this indicator hasn't got justification. Additional was assessment different motivations to choose the desired mode of transportation and frequency of travels.

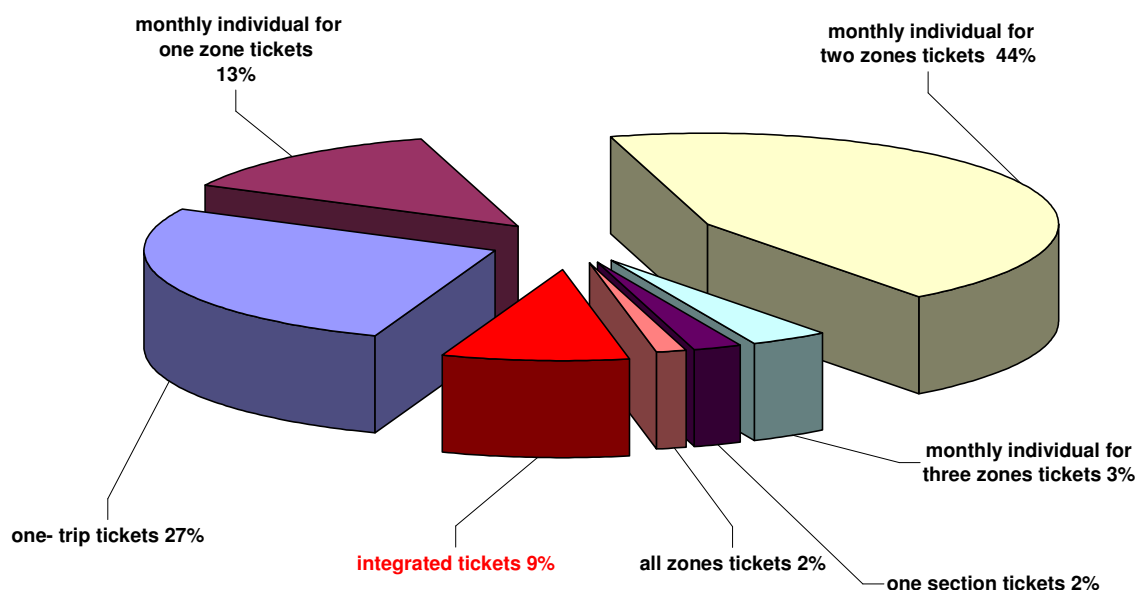
C6 Summary of evaluation results apply

The key results are as follows:

Key result 1 – Most of the trips (73%) happened because of job or education in Krakow which means daily or very frequent trips per week.

Key result 2 – Although 75% of the passengers have very frequent trips to Krakow and inside Krakow almost 58% of them use single trip tickets which shows for most of the passengers use there is not much tend to have periodical tickets.

Structure of sold Publik Transport tickets



C2.5-2- Structure of sold Public Transport tickets

Key result 3- In Public Transport in Krakow there is different kind of tickets for passengers. After the implementation of the measure the share of the an-integrated ticket in the general sold train tickets numbers is 9%. The sell-one-trip tickets sell decrease by 12%. The share of other tickets remained unchanged. without any changes.

D Lessons learned

D1 Barriers and drivers

D1.1 Barriers

- **Reorganisation of PKP** (national rail operator) - as a result lack of clear institutional structures and decision calls into being such structures
- **Uncertain of rail connection** – Uncertain of rail connection in Krzeszowice – Krakow corridor, some delays in timetable.
- **Problems with preparing an integrated tariffs system.**-The difficult negotiation between project partners. It was the main reason of delays. Finally the agreement was signed and each of participates was pleased.
- **Problems during conducted surveys in trains-** First of all passengers of some trains in Krzeszowice- Krakow corridor hadn't got any information about conducted surveys and didn't want to allowed to undertake the action. Situation was quickly explained.

D1.2 Drivers

- **Accessibility trains in line Krzeszowice-Krakow** - good developed connection between Krzeszowice and Krakow.
- **Common tariffs policy- lower price of an integrated ticket by 10%. Agreements between** Krakow Public Transport Organization and National Railway.
- **Alteration of standard in PT** – Alteration of standard in local public transport and the National Railway through better infrastructure and organization. It helped Caravel's co-operators to prepare some documents without wasting important time.
- **Very good cooperation between Caravel project partners** –intentions to change something, to act in the public interest, to improve situation of National Railway Network, to be more competitive to private cars.

D2 Participation of stakeholders

- **Manager of road and public transport** – take part in realization of this measure through direct participation as part of agreement which has allowed to implement integrated tariffs and ticketing.
- **Rail operator** – take part in realization of this measure through direct participation as part of agreement which has allowed to implement integrated tariffs and ticketing.
- **Passengers of public transport and citizens of Krzeszowice**
- **Miejskie Przedsiębiorstwo Komunikacyjne SA w Krakowie (MPK)** – PT operator in Krakow

- **Public Transport Authority** – municipal entity responsible for the organization of public transport in Krakow agglomeration, the party of contract for public service provision signed with MPK.

D3 Recommendations

- We recommend the way of preparing an integrated system as described above. It is **a** good idea cooperate with national railway operators and others local transport operators to make **the** new system, which is profitable for passengers and transport operators.
- Suitability of integrated tariffs and ticket system – In the city centre there is limited access for private cars, so it's easy to get around a city using public transport, which have priority, special buses line etc. It's better for passengers to purchase an integrated ticket instead of wasting time waiting in traffic jams in their own cars.

D4 Future activities relating to the measure

Through the implementation of the “Integrated ticketing and tariffs” Krakow builds the first condition, that could be great help for other integrated projects. It's a smart idea to connect rail and public transport by one ticket and make one integrated system. In the future city government is planning to undertake that kind of task, which could improve the connection between different Krakow areas. The decision about the next integrated system will depend on actually demand
