

# Cars and Urban Travel

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**Abstract** The present article is an attempt to describe the role of cars in the urban transport of inhabitants living in select European cities. It uses information obtained from research into modal split that has been conducted throughout the last 10 years. This allowed for trends of change to be revealed with reference to the cities in which research was conducted on a number of occasions throughout the aforementioned period.

The role of cars in the undertaking of urban travel with regard to the Polish cities was determined on the basis of findings of complex traffic research as well as preferences and travel behaviour research. The research was conducted in select Polish cities. The factors determining the decision to undertake urban travel by car were also established.

**Keywords** Car • Urban transport • Travel behaviour

## Introduction

The role of cars in urban travel is systematically on the increase. At the same time, the attitude of society towards cars is changing, as it ceases to be a symbol of affluence and elevated social status and instead becomes a common consumer commodity, virtually indispensable in everyday life. It seems impossible to reverse the trend of increasing motorisation and wide use of private cars in urban travel which has led to congestions (traffic) in a growing number of cities. The fact that a car permits its passengers to travel door-to-door means that it provides freedom of travel within cities only until infrastructural factors, such as the quality and parameters of the roads and parking spaces, cause congestion and result in a decrease in the attractiveness of cars as a mode of transportation.

Research into the ways in which trips are fulfilled serves as a means for establishing the actual significance of cars. Such research is conducted by employing

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various methods and techniques, thus findings have to be compared carefully. They allow, nevertheless, the trend of change to be verified and serve as a basis to determine the key moment at which to undertake actions aimed at decreasing the negative consequences arising from the overwhelming share of cars in urban travel.

### Cars and Urban Travel in European Cities

The findings regarding the ways in which urban trips are undertaken are stored on the European Platform on Mobility Management. The platform offers access to research findings from the past 10 years (2004–2014) which were gathered in 430 cities (in some of them, research was conducted a number of times). In 60 % of the cities (260 cities out of 430) for which data was gathered, over 50 % of urban trips were undertaken by car. Lone drivers made up nearly 100 % of those travelling during such trips.

Research findings in large cities (above 500 k inhabitants) of the most current period, namely, the years 2010–2014, served as a basis for the illustration of the role cars play within cities (Fig. 1). This allowed the relevance and clarity of the data presented to be preserved.

The graph presents the cities in decreasing order according to the share of cars in urban trips in the modal split structure. The largest share belongs to car trips in the cities of the United Kingdom and Ireland, such as Manchester, Leeds, Sheffield and Dublin. Wrocław, Poznań and Cracow were among the European cities in which cars are used extensively in urban travel.

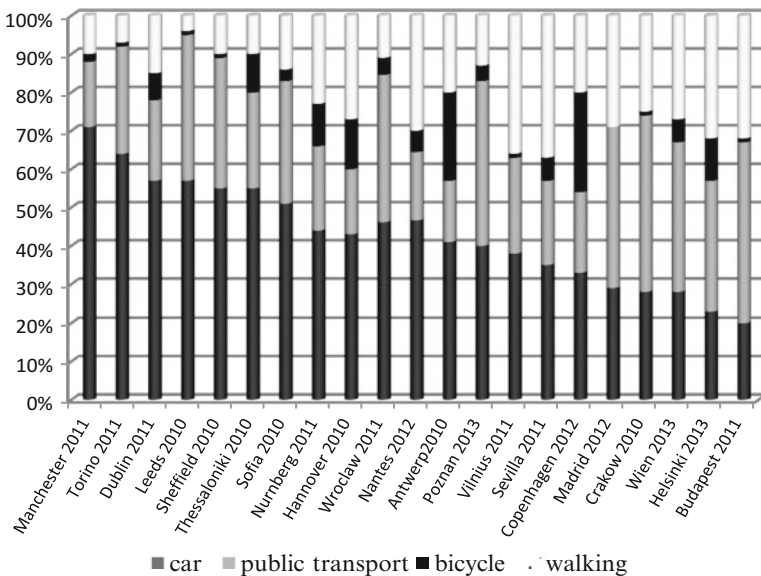


Fig. 1 Modal split of urban trips in select European cities (number of inhabitants above 500 k) in the years 2010–2014 in the light of the research [3]

### Cars and Urban Travel in Chosen Polish Cities in the Light of Complex Traffic Research

The way in which inhabitants undertake urban travel in different cities suggests strong dependence on local conditions. It was established on the basis of complex traffic research (CTR), which was fulfilled between the years 2004 and 2014 in select Polish cities (Warsaw 2005, Tychy 2008, Wrocław, Rzeszów and Gdańsk 2009, Szczecin 2010, Wrocław 2010/2011, Cracow 2013), that the inhabitants of Warsaw and its vicinity fulfilled 30 % of their trips undertaken in the year 2005 by car (Fig. 2) and 35 % by inhabitants of Gdansk in 2009, and the inhabitants of Wrocław in the period 2010/2011 chose this mode of transportation for 43 % of their trips (Fig. 3).

It is interesting to note that in Cracow in 2013, it was established that inhabitants chose to travel by car during only 34 % of their trips [1, pp. 32–33]. Among the drivers who took part in research, as much as 61 % of them were travelling alone with no passengers in the car. In 28 % of cases, there was a single passenger

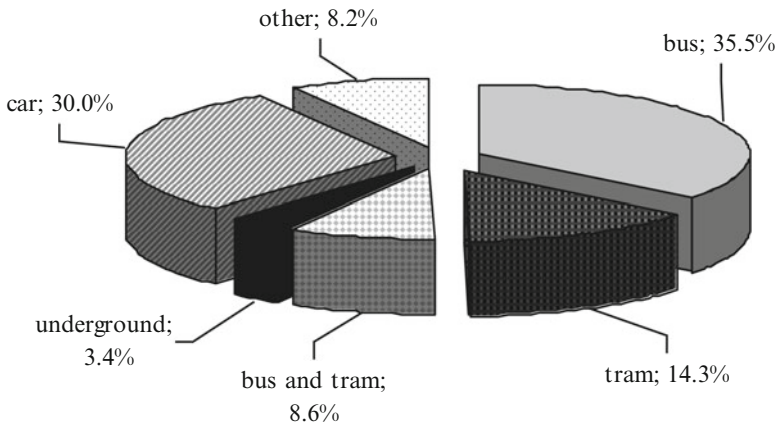


Fig. 2 The mode of undertaking urban travel by Warsaw inhabitants in 2005 [4]

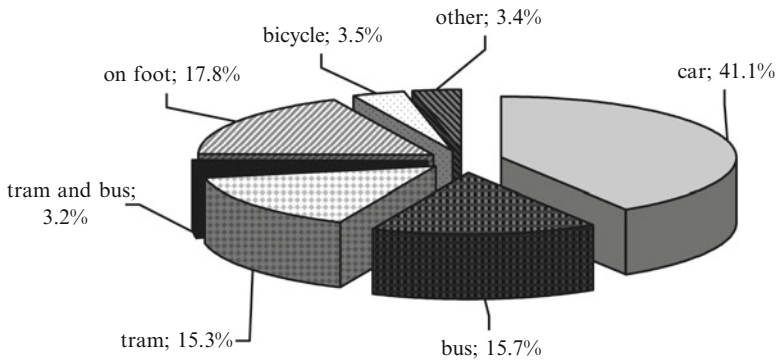


Fig. 3 The mode of undertaking urban travel by Wrocław inhabitants in the period 2010/2011 [5, 6]

travelling and in 7.5 % two passengers. In the very centre of Cracow, where traffic is restricted and parking charges are introduced, cars are chosen by even fewer inhabitants and their share in the modal split amounts to as little as 27 % [2, pp. 30–34]. This serves to confirm the significance of local conditions in the decision to undertake urban travel by car.

## Cars and Urban Travel in Gdynia in the Light of Research into Transport Preferences and Behaviour

In a few Polish cities, research into the transport behaviour of their inhabitants is conducted systematically with the use of the same methodology. In Gdynia such research was conducted as part of research into transport preferences and behaviour of the inhabitants in the years 2004, 2006, 2008, 2010 and 2013. On each occasion a sample of 1 % of inhabitants was surveyed. Random sampling was carried out maintaining its correct structure with regard to age, gender and district. Household research was conducted through use of a questionnaire.

Households in Gdynia with a car constitute a growing group. Throughout the research period, the share of households without a car dropped from 47 to 26 %, whilst the share of households with a car grew from 53 to 74 %. It is noteworthy that the largest growth was noted in households with only one car (Table 1).

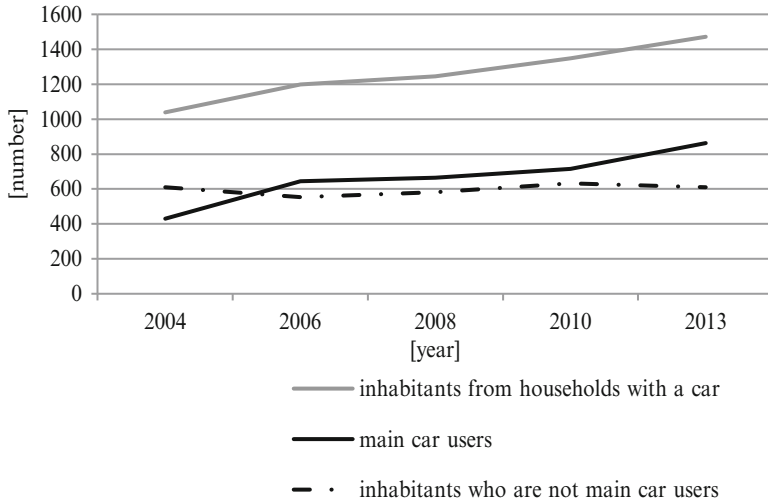
The growth of the share of households with cars reflected the growth of main car users (Fig. 4). The share of inhabitants who are not main car users in their households remained at approximately 30 %.

In keeping with the increased access of the inhabitants of Gdynia to cars, their transport behaviour is changing. The car is used increasingly often in urban travel. The research conducted in Gdynia determined this fact by firstly asking respondents to declare their habitual mode of travel to later verify the answer by enquiring about the actual way they travelled on the day prior to the survey.

Among all surveyed inhabitants of Gdynia, the group that declares that it travels around the city by car is increasing (always, nearly always and nearly as much as by public transportation). The share of those who always travel by car has seen the most growth. Throughout the entire research period, their share increased by 2.5 times (Table 2).

**Table 1** The structure of Gdynia inhabitants according to their motorisation status in the light of market research in the years 2004–2014 [%] [7–11]

Motorisation status	Year				
	2004	2006	2008	2010	2013
Inhabitants from households with no cars	47.37	36.71	35.91	31.75	26.35
Inhabitants from households with one car	45.44	51.19	52.26	54.38	57.05
Inhabitants from households with two cars	6.43	10.35	10.49	12.10	15.00
Inhabitants from households with three or more cars	0.76	1.75	1.34	1.77	1.60



**Fig. 4** Motorisation status of the respondents of market research conducted in Gdynia in the years 2004–2013 [number of people] [7–11]

**Table 2** The declared way of urban travel by inhabitants of Gdynia in the years 2004–2013 in the light of market research [% of inhabitants] [7–11]

The mode of urban travel	Year				
	2004	2006	2008	2010	2013
Always by car	10.19	17.6	18.93	20.96	25.00
Usually by car	12.07	16.0	16.31	14.53	16.35
Equally by car and public transport	13.74	11.0	11.06	12.40	11.85
Always by public transport	34.23	28.7	27.62	31.34	28.35
Usually by public transport	27.59	26.5	25.67	20.25	18.15
Other	2.18	0.2	0.41	0.52	0.30

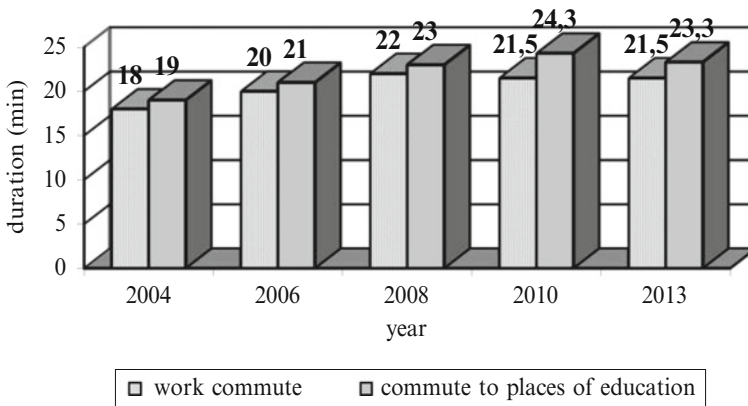
The determination of the way in which the respondents travelled on the day prior to the survey was conducted using the method of “a day in picture”. The findings also confirm that the way in which inhabitants of Gdynia travel within the city is undergoing change. The growing tendency to choose to undertake urban travel by car can be observed at every step. Within the analysed period, the share of this mode of transportation in actual trips grew by approximately 15 % (Table 3).

The average time of work commute by car was always a little shorter than that of a commute to an educational establishment, namely, by 1–3 min (Fig. 5). The fact that inhabitants believed a door-to-door commute to be nearly two times shorter than the equivalent journey by public transportation is significant.

**Table 3** The actual mode of urban travel of Gdynia inhabitants in the years 2004–2013 on the basis of trips fulfilled by the respondents on the day prior to the research (according to the chosen modes of transportation)<sup>a</sup> [%of trips] [7–11]

Way of travel	Year				
	2004	2006	2008	2010	2013
Car	38.64	47.25	46.95	48.65	53.10
Bus	36.93	31.76	29.94	28.81	25.04
Trolleybus	17.20	14.82	14.72	14.97	14.00
Fast Urban Railway or train	5.78	5.40	7.20	6.32	6.40
Bicycle	0.57	0.27	0.41	0.35	0.80
Other	0.88	0.50	0.78	0.90	0.66

<sup>a</sup>In the case of an indirect trip, it was classified according to the mode of transportation used during the first leg of this trip

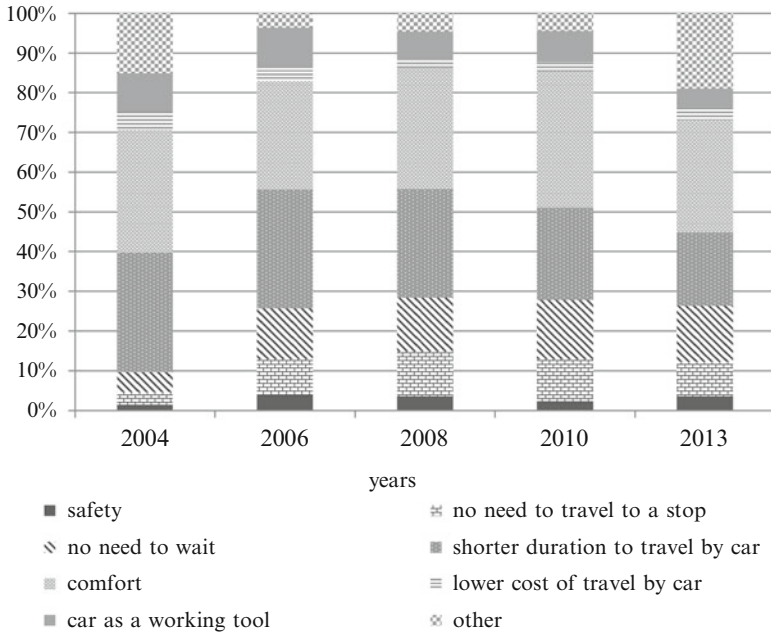


**Fig. 5** The average time of car commute to workplace and educational establishments in Gdynia in the years 2004–2013 [min] (7–11)

### Determinants of the Choice to Undertake Urban Travel by Car in Gdynia in the Light of Research into Preferences and Travel Behaviour

The factors determining the choice to undertake urban travel by car were always or usually always established during transport behaviour research among the inhabitants of Gdynia. The inhabitants were asked about the reasons why they chose to undertake urban travel by car.

In all years analysed, two decisive factors determining the choice of a car were dominant: shorter trip duration and higher comfort. Generally speaking, regardless of the chosen order of a factor, they constituted as much as 57 % of all answers given by respondents (Fig. 6). It is necessary to point out that the share of inhabitants who highlighted the shorter duration of travel as the reason for choosing to



**Fig. 6** Structure of the factors determining the choice to undertake urban travel by car in the light of research conducted in Gdynia in the years 2004–2013 [% answers] (7–11)

undertake urban travel by car can be seen to have decreased systematically, starting at 30 % in 2004 and finishing at 17 % in 2013. However, the number of respondents highlighting comfort as the main reason for travelling by car has grown proportionally. The importance of the third factor, namely, the lack of waiting time, also increased from 5 % in 2004 to 15 % in 2010 (13 % in 2013).

It is also worth noting that the respondents expressed no strong feelings about the low cost of car travel and travel by public transportation. The highest number of inhabitants that highlighted this determinant was noted in 2004 and amounted to 5 %. The lowest was in 2008 amounting to 2 %.

The ability to travel directly to one’s destination without multiple connections as well as the fact that many respondents carry items such as shopping (9 % and 8 %, respectively), among other factors, can be seen to have grown in significance. This led to the necessity to distinguish such determinants in research conducted in 2013 (Fig. 6).

The order of importance of the reasons for choosing to undertake urban travel by car has undergone changes during the course of research. The following may be counted among the main reasons for choosing to undertake urban travel by car, based on the findings of research from all previously named years, regardless of the order in which they were selected:

- Comfort
- Shorter duration of travel by car
- No need to wait
- Direct travel (no need for multiple connections)

- Carrying items (shopping)
- No need to reach a public transportation stop
- Car as a working tool
- Safety—exposure to violence, i.e. from other passengers
- Lower cost to travel by car
- Other (personal reasons named by the respondents)

## Summary

The establishment of the role of cars in urban travel is carried out as part of complex traffic research and research into transport preferences and behaviour of urban inhabitants. As such research is highly complicated, difficult to carry out and costly, it is only undertaken in select cities. By taking advantage of the fact that the findings are stored on the European Platform on Mobility Management, it is possible to compare the role of cars among various European cities. On the basis of this research, it can be claimed that despite the large dependency of the mode of urban travel on local conditions, the growing tendency to undertake urban travel by car is visible in European cities, including Polish cities.

Over 50 % of urban trips in European cities in the past 10 years were undertaken by car. Lone drivers made up nearly 100 % of those travelling during such trips. The largest share of cars was seen in the cities of The United Kingdom and Ireland.

In the Polish city of Gdynia, where research into transport behaviour and preferences was conducted five times in the period between 2004 and 2013, it was established that  $\frac{3}{4}$  of households are currently households with at least one car. Both the declared and actual mode of undertaking urban travel is by car despite the fact that due to increasing congestion, the duration of travel increased by approximately 15 %. Comfort and the shorter duration of travel constitute the main factors determining the choice to undertake urban travel by car. There is no evidence to suggest that in the nearest future, the role of cars in urban travel shall diminish; they have, in fact, become a commonly used mode of transportation for such travel.

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