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Changes in the Behavior of Individual Car Users in Poland as a Result of the COVID-19 Pandemic

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Abstract:

Purpose: *The aim of the article is to determine changes in the behaviour and preferences of individual automotive consumers as a result of the Covid-19 pandemic. The specific objectives are characterise the group of individual car users, showing preferences in the use of cars by individual users before and after the COVID-19 pandemic, presening plans and intentions regarding car purchases, determine the nature and durability of changes in the behaviour of individual car users.*
Design/Methodology/Approach: *Car users with a driving licence were purposively selected for the study. The data source was 450 online surveys conducted in June 2023. Surveys were shared through social media and car user groups.*
Findings: *As a result of the COVID- pandemic, car users have stopped using their cars for commuting to work and school. Weekly driving time behind the wheel also decreased. The pandemic did not result in a change in the main areas of car travel or in the main reasons for purchasing a car. Changes in the behaviour and preferences of individual car users during the COVID-19 pandemic were short-lived.*
Practical implications: *The results will fill a gap regarding changes in car user behaviour and preferences during the crisis.*
Originality/Value: *New information on the impact of the Covid-19 pandemic on the behaviour of car users has been emerged.*

Keywords: *Carsharing, remote work, purchasing a car, impact of the crisis on behaviour, disruptions in the COVID-19 pandemic.*

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1. Introduction

Owning a car comes with costs and benefits. It is common for car owners to underestimate the total costs of using a car. Indeed, it is one of the most expensive household consumer goods (Gössling *et al.*, 2022). The problem is the attachment to this mode of transport. The benefits, on the other hand, are also underestimated adequately, as I domineer the intangible ones, such as the ability to travel anywhere, anytime (Moody *et al.*, 2021).

The benefits of owning a car include the ability to choose one's job, place of education and family time. Car ownership is also associated with social status (Curl *et al.*, 2018).

The COVID-19 pandemic may have caused changes in attitudes towards private car use. In general, there were different phases during the pandemic, related to the restrictions put in place. There were phases of complete closure and then the car was not used. During the restrictions, some users switched from public transport to their own cars, minimising the risk of infection (Zhang and Zhang, 2021; Grima *et al.*, 2020).

In most cities, urban congestion levels returned to normal, in many cases even surpassing those of 2019, suggesting that the impact of the pandemic on private car use was not sustainable (Dueñas *et al.*, 2021). Such studies were, of course, conducted during the pandemic in different areas of the world.

However, researchers mainly focused on aspects related to urban mobility and the use of public transport (Kadlubel *et al.*, 2022). There is little detailed research on the behaviour of car users before and after the pandemic. It is important to determine what changes in user behaviour and preferences occurred, what aspects were affected, and were the changes sustainable? The research carried out fills a research

gap regarding changes in the behaviour and preferences of car users during the crisis caused by the COVID-19 pandemic.

The article's main objective is to changes in the behaviour and preferences of individual automotive consumers as a result of the Covid-19 pandemic. The specific objectives are:

- characterise the group of individual car users,
- showing preferences in the use of cars by individual users before and after the COVID-19 pandemic,
- presening plans and intentions regarding car purchases,
- determine the nature and durability of changes in the behaviour of individual car users.

The article seeks the answers to one research hypothesis:

Hypothesis 1: Changes in the behaviour and preferences of individual car users during the Covid-19 pandemic were short-lived.

The organisation of the work is as follows: Section 1 provides an introduction to the topic. Aspects related to car users' preferences and the changes in these preferences as a result of the COVID-19 pandemic are presented. The rationale and objectives of the paper are also included in this section. Section 2 presents the materials and methods. Section 3 presents the results of the study. In Section 4, reference is made to other research findings on the relationships studied. The main conclusions of the research are included in Section 5.

2. Materials and Methods

Car users with a driving licence were purposively selected for the survey. The data source was 450 online surveys conducted in June 2023. The surveys were shared via social networks and car user groups. The interview questions were prepared in advance. Most of the questions contained closed answers. For a few questions, an open response option was also available. Respondents took part in the survey voluntarily.

Data was collected in Excel format and then coded and processed. The survey results are aggregated so as not to reveal data on individual respondents. Based on the survey results obtained, the shares of individual responses can be determined.

The research was divided into stages. Stage one presented basic information about the respondents regarding gender, age, place of residence, number of people in the household, education, occupational status, vehicle ownership. Stage two showed car users' presentiments before and after the COVID-19 pandemic. Stage three deals

with respondents' car purchase plans and intentions. Finally, the persistence time of changes in the behaviour of individual car users after the pandemic was presented.

A limitation of the survey conducted is that it was limited to only 450 respondents. It was not possible to survey the entire population of individual car users in Poland. The research is also not representative. This article presents only a section of the survey, but a fairly significant one.

Another limitation of the study is the rather general nature of the results, as the survey does not address more detailed patterns and actions taken. It is also planned to conduct in-depth interviews with a smaller number of respondents.

2. Research Results

The group of respondents surveyed had certain characteristics. Among the respondents, 51.7% were women and 48.3% were men. The distribution was therefore similar to that found in Polish society, where 52% were women. The respondents were in different age groups.

Most were aged 18-25 years (43.1%), followed by 26-35 years (29.3%) and 36-45 years (22.4%). The least represented group was aged 46-55 (5.2%). Only people with a driving licence and therefore of legal age took part in the survey, so minors were not represented.

There was also no representation of those aged over 56. It can therefore be concluded that active car users were surveyed. Half of the respondents were in a household of one or two people. 65.5% of the respondents had a university education, so they were informed transport users.

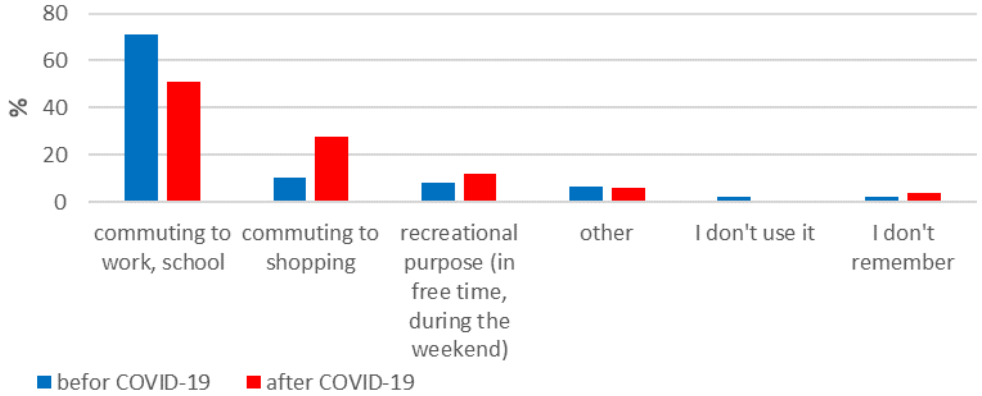
31% of respondents lived in a large city with more than 500,000 inhabitants, and 25.9% of respondents lived in rural areas. The remainder lived in smaller towns. 57% of respondents were working full or part-time and 28% indicated their status as pupils or students.

All had a driving licence, with 67% having a category that allowed them to drive cars. The remainder had various combinations. 88% of respondents had their own car.

First, respondents' preferences for car use were examined before and after the COVID-19 pandemic (Figure 1). Before the pandemic, car use for commuting to work and school was more common.

The use of work and distance learning during the pandemic reduced such travel. More frequent use of the car was mainly for shopping and recreational purposes.

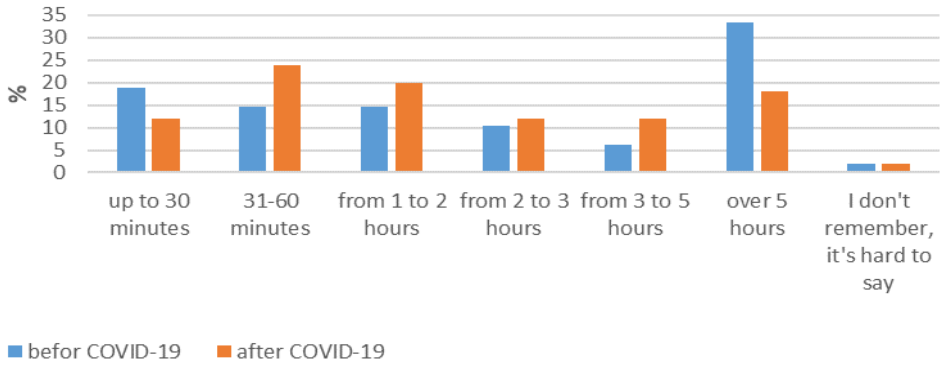
Figure 1. *The most common purpose of using their car by respondents before and after the COVID-19 pandemic (%).*



Source: *Own study.*

The average weekly driving time changed as a result of the pandemic (see Fig. 2). Before the pandemic, most respondents drove for more than 5 hours per week (33%). After the pandemic, the most frequent respondents spent between 31 and 60 minutes per week behind the wheel of a car (24%) and between 1 and 2 hours (20%). Thus, there has been a change in this area due mainly to changes in travel patterns to work and school.

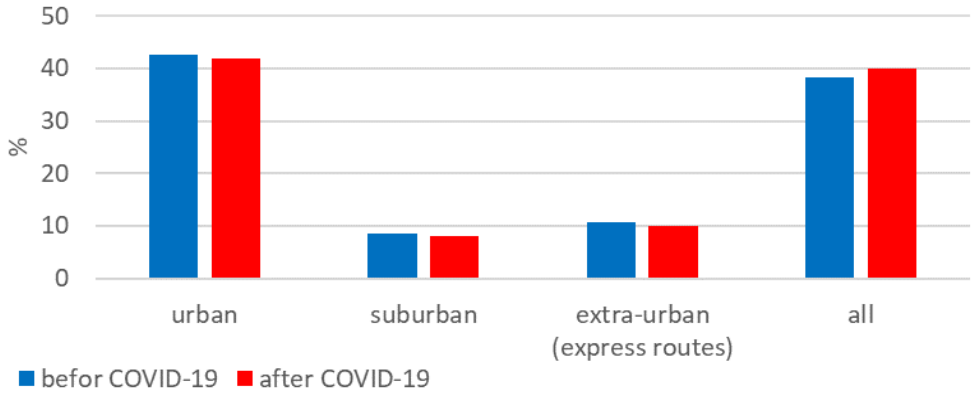
Figure 2. *Time spent by respondents in the car as an active driver before and after the COVID-19 pandemic (weekly average).*



Source: *Own study.*

There was no change in the areas in which respondents travelled most frequently (Figure 3). Both before and after the COVID-19 pandemic, about 42% of respondents travelled most frequently in the urban area and 39% in all areas (including suburban and expressways). The area of travel is determined by the place of residence, as well as the place of work and school, so there was no change in this area.

Figure 3. *The most common area of car travel by respondents before and after the COVID-19 pandemic (%).*

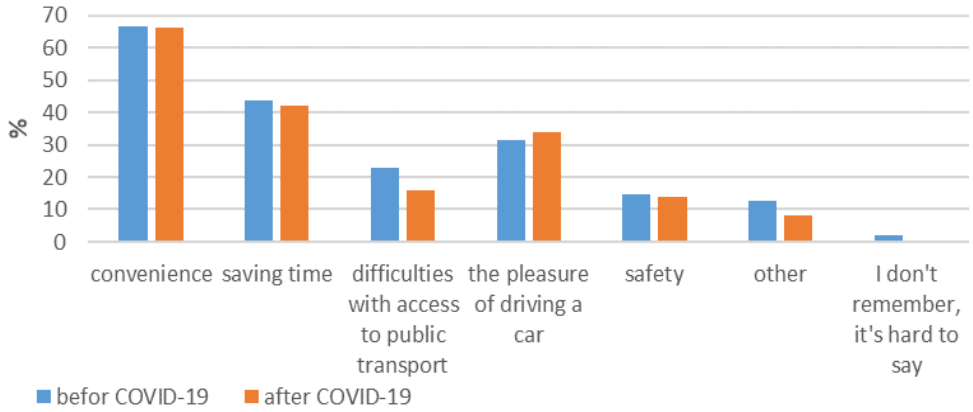


Source: *Own study.*

The next group of questions concerns the planned purchase of a car. Respondents then indicated the most important reasons for purchasing cars (Figure 4). There were no big differences in the pre- and post-pandemic period. Approximately 66% indicated convenience, as there is no need to carry shopping, one can drive directly to the destination.

Time saving was cited by 43% of respondents and driving pleasure by 33%. After the pandemic, there was a slightly lower percentage indicating difficulties in accessing public transport. The continued development of this mode of transport may encourage people to leave the car at home.

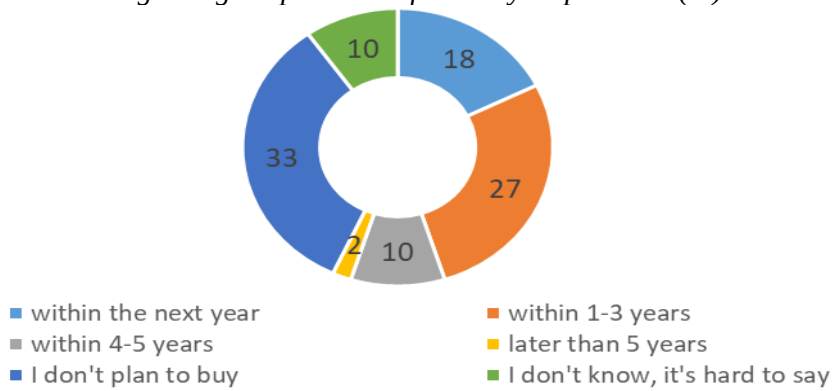
Figure 4. *The most important reasons for purchasing a car by respondents before and after the COVID-19 pandemic (multiple selection).*



Source: *Own study.*

Respondents were asked about their planned car purchase in the post-pandemic period (Figure 5). 33% do not plan to buy a car and 10% were undecided. The remainder cited different time periods in which they plan to purchase. Some 27% want to make the purchase within 1-3 years, 18% within 1 year and 10% within 4-5 years. Overall, the majority of respondents planned to purchase a car within the next 5 years.

Figure 5. *Plans regarding the purchase of a car by respondents (%).*

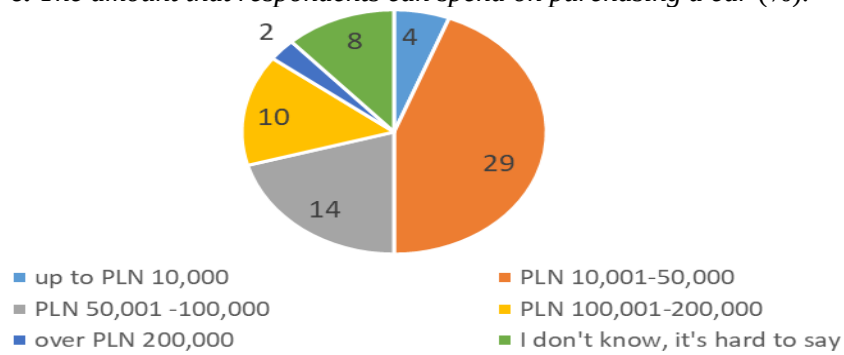


Source: *Own study.*

Respondents then declared the amount of money they could spend on buying a car (Figure 6). The questions concerned respondents who declared their intention to purchase a car. Amounts are given in PLN, with the exchange rate of EUR 1 at the end of 2023 being PLN 4.45. Around 29% of respondents declared an expenditure of PLN 10,001-50,000 for a car.

Between PLN 50,000 and 100,000 was declared by 14% of respondents and between PLN 100,000 and 200,000 by 10% of respondents. It should be taken into account that most of the respondents worked and lived in large cities, so they were earning and could transfer the money they saved to buy a car.

Figure 6. *The amount that respondents can spend on purchasing a car* (%).

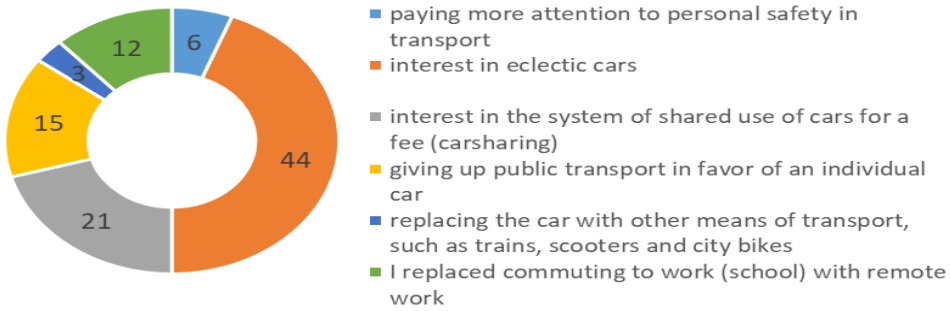


Source: *Own study.*

Further aspects related to the changes as a result of the COVID-19 pandemic that respondents observed in their approach to transport and movement (Figure 7). As many as 44% were interested in electric cars. Clearly, this type of vehicle is being promoted, but more free time during the lockdowns may have contributed to a greater interest in these issues. The same may be true of carsharing, which was indicated by 21% of respondents.

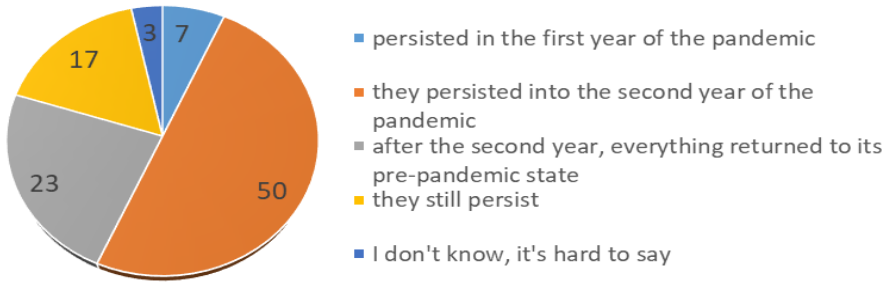
The effect of the pandemic was also a shift away from public transport to the individual car. 15% of respondents indicated such an effect. On the other hand, 10% of respondents indicated that I replaced travelling to work (school) with remote working.

Figure 7. *Changes in respondents' approach to transport and movement as a result of the COVID-19 pandemic.*



Source: *Own study.*

Figure 8. *Persistence of changes in respondents' movements as a result of the COVID-19 pandemic.*



Source: *Own study.*

The final question concerned the persistence of the mentioned changes on the cusp of the COVID-19 pandemic. According to 50% of respondents, the changed preferences of car users persisted until the 2nd year of the pandemic (Figure 8). 23% of respondents believed that after the second year everything returned to its pre-pandemic state.

In contrast, 17% believed that the changed preferences persisted continuously, i.e., there was a permanent change in the behavioural patterns of individual car users.

3. Discussion

Vega-Gonzalo *et al.* (2023), in their study of mobility in European cities, showed that the pandemic caused an increase in car use among socio-economic groups that were previously poorly dependent on the car. A reduction in car use was observed among remote workers with higher incomes. In contrast, those with low incomes maintained similar levels of car mobility.

In our study, we obtained similar results, but we did not examine the income situation of the respondents. Schaefer *et al.* (2021) showed that during the pandemic, residents in the city centre of Hanover were more likely to increase their car use than those living in less densely populated areas. Currie *et al.* (2021), based on the views of Melbourne residents at the start of the pandemic, suggested that car use would increase compared to pre-pandemic times.

Angell and Potoglou (2022) reached similar results based on the views of residents in the Cardiff region of the UK. Hartal *et al.* (2023) pointed out important elements that characterise urban areas, namely a higher proportion of young people and people with higher education, which also affects mobility. In our study, the majority of respondents lived in large cities.

Ecke *et al.* (2021) showed from Germany that during the COVID-19 pandemic, car use was reduced and overall mileage decreased. Furthermore, they indicated that the type of car use (business/private) and household characteristics were associated with the magnitude of changes in car use. In our study, we obtained similar results in terms of reduced car use. In a subsequent study, Ecke *et al.* (2022) showed on differences occurring in car preferences due to differences in income and education.

They also found that, in general, the changes caused by the pandemic were short-lived and everything returned to its previous state. In our study, we have similar conclusions. The nature of the changes was short-lived. However, changes in attitudes towards future individual mobility were apparent. Interest in electromobility has increased.

Rokicki *et al.* (2021) study noted both an increase in sales and share of electric cars. Societies also used the difficult time of the pandemic to raise their awareness of mobility. This was also happening with the involvement of the automotive industry, which has invested heavily in the switch to electric car production and is promoting this (Rokicki *et al.*, 2024). It seems that the preferences and behaviour of car users will change, but this will be a long-term process.

4. Conclusions

On the basis of the research carried out, it was possible to identify the types of changes in the preferences of individual car users.The research presented allows several conclusions to be drawn:

1. As a result of the pandemic, car users abandoned the use of cars for commuting to work and school. The reason for this was the introduction of remote working and learning. As a result, the weekly driving time behind the wheel also decreased. The car started to be used more often for other activities such as the shop, weekend trips.
2. The pandemic has not caused a change in the main areas of car travel, nor in the main reasons for buying a car.
3. The car is still an important mode of transport. The majority of respondents plan to buy one in the next 5 years, willing to spend quite large amounts. Expenditure on a car is still regarded as significant in the budget, incurred once every few years.
4. Changes in the behaviour and preferences of individual car users during the COVID-19 pandemic were short-lived, with the vast majority of car users indicating a return to their previous preferences already during and immediately after the pandemic. The research hypothesis positively verified.

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