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Changes in Transport Patterns in the Light of External Environmental Risks

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Abstract

Our research aimed to explore the extent to of the effects of recent global socio-political-economic events (e.g. the pandemic, the Ukrainian-Russian war, the energy crisis, and inflation) have influenced and changed people's transport habits, disaggregated by age groups. The survey was conducted in Hungary in May-June 2023 using an online questionnaire survey. We assume that based on social habits, people, regardless of age, prefer public transport over private cars. People like more walking or cycling to work or school when they can, and most of them do not use cars for small shopping trips either. In terms of car use, the use of electric or hybrid vehicles is less relevant in Hungary, while petrol or diesel cars predominate. We found out that people's transport habits have changed in recent years due to external negative impacts on society. During the pandemic, there was a shift away from public transport, but now that the pandemic is over, the energy crisis and inflation (e.g. significant fuel price increases) have led most people to prefer alternative means of transport and public transport options. Quantitative research results showed that the under-18s in Hungary mainly walk or travel by bus and bicycle, young people aged 18-25 go on foot, by car, bus, and train, the 26-55 age group by car, car and on foot, the 56-65 age group by car and on foot and the older generation (66+) on foot, by bicycle, bus, and car. A higher proportion of respondents between 36-45 years use diesel vehicles and a higher proportion of respondents aged 18-35 and 46-65 years use petrol vehicles. Inflation and changes in energy prices have increased the use of bicycles in all age groups. Bus and train use has increased in the age groups under 18, 18-25, 46-55, and over 66. The use of private cars fuelled by petrol or diesel increased only in the 26-35 age group. There is also an increasing tendency towards walking in all age categories.

Keywords

Transport habits, Pandemic, Inflation

Introduction

The COVID-19 epidemic has fundamentally changed the way the world functions socially, economically, and politically. The first wave of the pandemic hit Hungary in the spring of 2020, with the first closures taking place in March. Some employees were forced to work from home, businesses sought new ways to continue their activities, the education system was transformed into digital education, and the rules of social interaction changed essentially. Of course, the pandemic has also affected transport habits. Instead of using public transport, citizens preferably chose alternative means of transport, when the opportunity to go out started to rise again.

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Teleworking has become more widespread: in the United States, 15.0% of workers worked in home office before the COVID-19 pandemic, and their rate increased to 50.0% in 2020 as the virus spread (Deloitte Hungary, 2021), and the rate of those working from home at least one day a week rose to 58.0% by 2022 (Dua et al, 2022). In the European Union, the percentage of people working from home was around 5-6% in the 2010s, rising to 12.3% in 2020 and 13.5% in 2021 due to the epidemic (Eurostat, 2022). According to the Hungarian Central Statistical Office (KSH), only 3.7% of the employees in Hungary (144,000 people) were teleworking in 2018 (KSH, 2020). After the outbreak of the pandemic, in the spring of 2020, the share of the teleworking population was already 17.0% (around 760,000 people). Of course, the rising number of employees teleworking or working in home office also reduced the use of transport (KSH, 2021).

Changes in the use of different modes of transport varied during the epidemic. According to a representative survey conducted in Hungary (n=3025), the following modes of transport increased the most: walking (+23.8%), cycling (+18.5%), driving a car (+13.8%), and traveling by car (+12.2%). The modes of transport that decreased the most were: air travel (-7.6%), public transport (-6.8%), using taxis (-5.8%), and car-sharing (-4.7%) (Miskolczi et al., 2021). It is worth looking separately at the different transport habits of each generation, which will be highlighted in the primary research results included in this study. The Baby Boomer generation typically owns a car but travels less, and mainly for short distances, usually for shopping. Generation X typically uses their own cars on a daily basis, mainly for commuting to work. However, practicality is also an important consideration for them, and they are open to combined modes of transport. Generation Y also mainly uses private cars and combined ways of transport to commute to work and to transport their children, and in the long term, they typically choose private cars and public transport in cities (Kolnhofer et al., 2018). Generation Z is not the largest group in terms of population, but the survey and analysis of their transport habits are essential for future transport policy developments.

Methodology

Between May and June 2023, we conducted an online questionnaire survey in Hungary on sustainable household consumption and its changes in response to inflation and rising energy prices. In this publication, we examine the results related to transport habits. Data were processed using the statistical-mathematical program IBM SPSS Statistics Version 28.00. In addition to frequency and cross-tabulation analysis, the Chi-square test was used to examine different age groups.

Three hypotheses were formulated in relation to the general transport habits of people and the changes in transport behaviour due to price increases as a result of political and economic events affecting the country:
H1 People in Hungary prefer to use public transport regardless of age group based on social habits.
H2 In Hungary, the use of electric or hybrid vehicles is low.
H3 Due to inflation and the energy crisis, people prefer alternative means of transport and public transport.

Results and Discussion

The sample size of the questionnaire survey was 443 people. The proportion of men in the total sample size was 41.1% while the proportion of women was 58.9%. A total of 7 age groups were selected for the questionnaire survey. 14.0% of the respondents (62 persons) were less than 18 years old, 27.5% (122 persons) were between 18-25 years, 13.1% (58 persons) belonged to the age group of 26-35 years, 12.2% (54 persons) were 36-45 years old, 14.2% (63 persons) were between 46-55 years, 6.8% (30 persons) 56-65 years old and 12.2% (54 persons) 66 years old and above. According to educational level, 18.1% of the respondents have primary education, 56.4% have secondary education, and 24.6% have tertiary education. Most respondents work as employees (41.5%). Half of the respondents considered their income as average (50.6%), 24.2% below average, and 14.9% above average.

Almost half of the respondents (203 people) arrange their daily activities on foot. The most common means of transport are private cars (164 people), buses (105 people), bicycles (85 people) and trains (53 people). Scooters and electric scooters (18 and 14 persons), also motorbikes and taxis (11 and 10 persons) are less preferred.

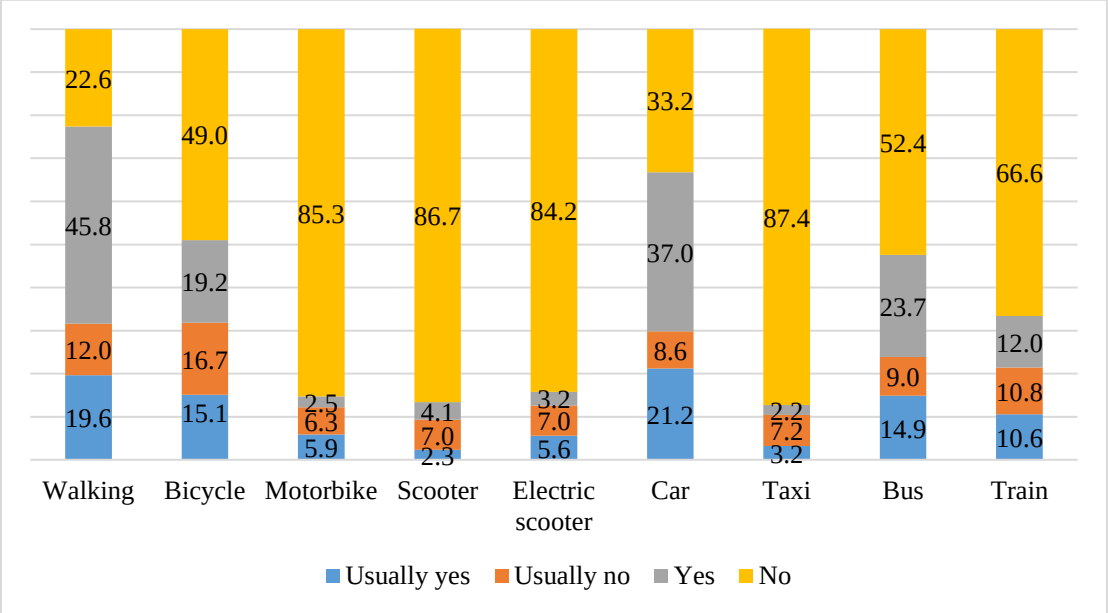

Figure 1 Use of transport in everyday activities (%)

Examining the responses by age groups, mainly going on foot is preferred by respondents aged under 18 (41, 66.1%), 18-25 (57, 46.7%), and 66+ (39, 72.2%). In addition to walking, respondents under 18 years are likely to use public bus transport (30, 48.4%) and cycling (20, 32.3%). 40.2% (49 respondents) of 18–25 year-olds travel by car and 31.1% (38 respondents) by bus. People aged 66 and over still choose to cycle (19 people, 35.2%) to arrange their everyday activities. Respondents aged under 18 years are the least likely to travel by motorbike, electric scooter, and taxi, the ones aged 18-25 years by motorbike and taxi, and respondents aged 66 and over by electric scooter. Respondents aged 66 and over do not use motorcycles and scooters at all according to the answers (Figure 1).

In each of the 4 age groups surveyed, respondents aged 26-65 years most often choose private cars as their preferred mode of transport, followed by walking and cycling. In the 56-65 age group, the same number of respondents use public transport (bus, train) as well as cycling, but reject scooters, electric scooters, and taxis. Those aged between 26 and 35 and also between

36 and 45 years use scooters and buses but do not use motorcycles. Public bus transport is also significant among 46-55 year-olds. They do not use motorbikes and scooters (Figure 2).

There is a significant relationship between the age of the respondents and the way of transportation: in the case of walking, cycling, traveling by car, bus (p=0.000), also by motorcycle, train (p=0.002), and electric scooter (p=0.019).

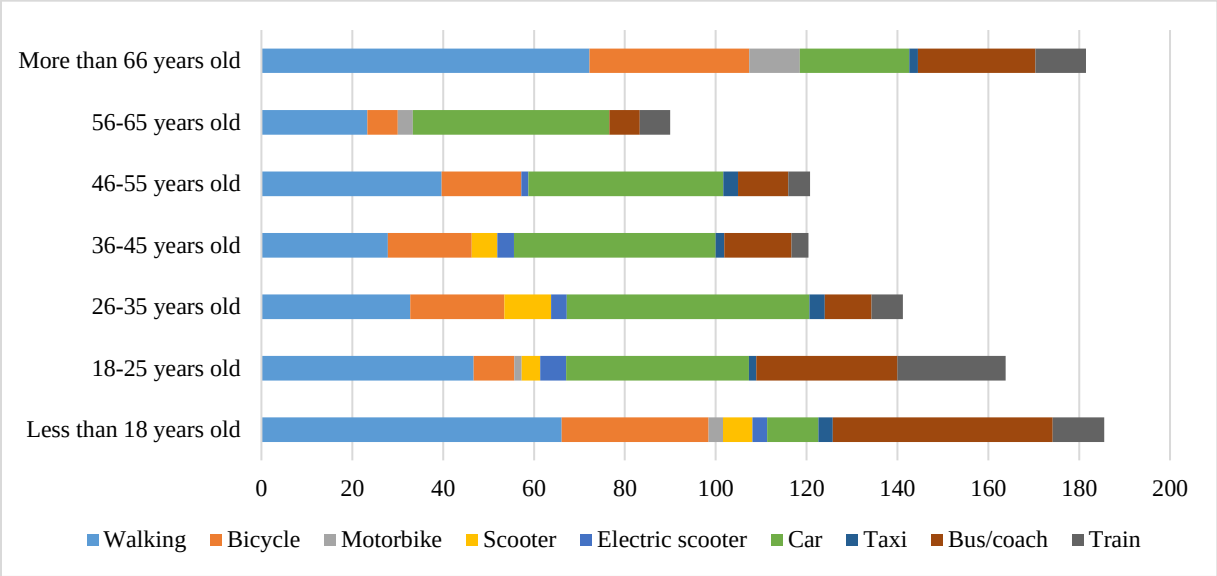

Figure 2 Transport use by age group (number of responses)

According to KSH data, 4,094,129 pieces of cars were officially in use in Hungary in 2022: 63.1% were petrol cars, 31.6% diesel, 3.82% hybrid, 0.73% electric, and 0.75% other. Out of the 443 respondents, 309 use private cars to arrange their daily tasks. The answers of the respondents also reflect the situation in Hungary, as most of them use petrol (167) and diesel (126) cars. The number of hybrid and electric car users is negligible in the sample.

There is also a significant relationship between the age of respondents and the type of fuel used in the car (Khi2=69.416, df=24, p=0.000). Among the 7 age categories we examined, the only age group where diesel cars predominate is the 36-45 age group. Respondents aged less than 18, 18-25, 26-35, 46-55, 56-65, and 66+ tend to drive petrol cars (Figure 3).

We also examined how the use of different means of transport has changed as a result of inflation and the energy crisis. 25.5% of respondents mentioned an increase in walking, 18.1% in cycling, 12.2% in traveling by bus, and 10.6% by train. The largest decrease by 16.5% was in the number of passenger car journeys among respondents. For the increase in the use of transport modes, we have taken the values that are above 10%, and based on this, we have established a ranking of the modes that are currently preferred by respondents. For respondents under 18 years cycling, walking, travelling by bus and train have shown the largest increases. Among 18-25 year-olds, walking, cycling, also bus and train transport were the most popular ways. The respondents aged 26-35 and 36-45 walk, cycle, and travel by car, the ones aged 46-55 walk, cycle, use train and bus, respondents aged 56-65 years cycle and walk, while the ones aged 66 years or above walk and to the same extent cycle and use bus more due to inflation and the energy crisis.

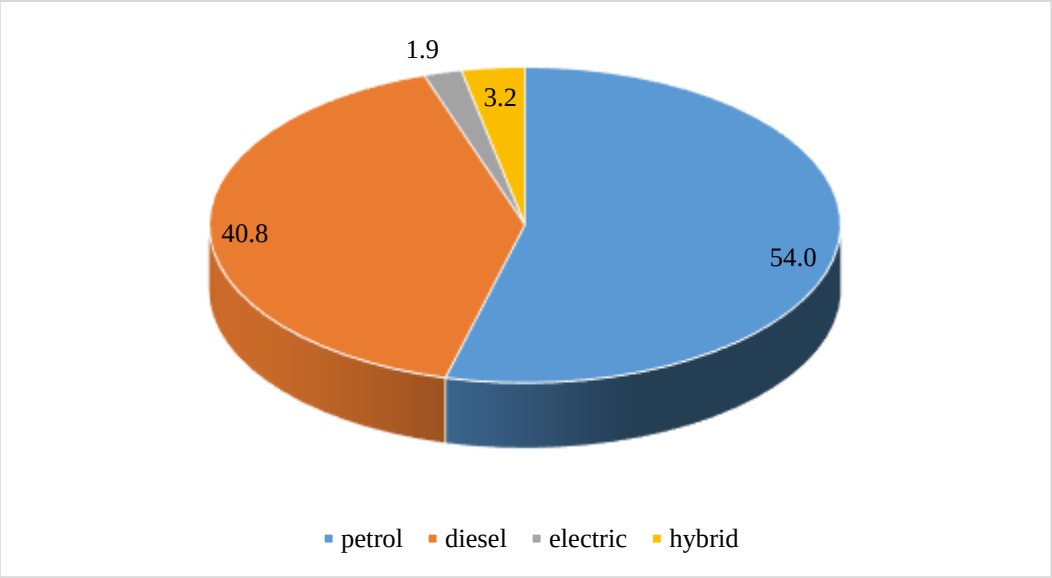

Figure 3 The usage of cars by fuel type (%)

We assume that based on these results, people are preferably choosing public transport and alternative means of transport (H3). We also come to the conclusion that based on Figure 1 people in Hungary do not unequivocally prefer to use public transport regardless of age groups based on social habits, so H1 was rejected. According to the preference of mainly petrol and diesel cars, the hypothesis that the use of electric or hybrid vehicles is low in Hungary can be accepted (H2).

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