

Mobility patterns and mode choice preferences during the Covid 19 situation

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Introduction

Attitudes and preferences in the context of mode choice are, besides other factors, influenced by situational factors, such as personal safety, comfort or availability of traffic modes.

Restrictions during the Covid 19 situation created a natural experimental situation when situational factors were drastically changed from day to day.

This enabled us to research how concrete **situational factors** influence mode choice and what role do habits play in this process.

Aim

The study aims to understand how the Covid 19 situation influenced the **preferences** of the different traffic modes during the **early stages** of Covid 19 episode and to explore whether these changes **will have longer lasting effects.**

Research questions

Did the Covid 19 situation influence mode choice? If so, how?

Will mode choice change during Covid 19 last even when the epidemiological situation will get better?

Will people fear to use public transport and prefer other modes of transport?

What will be the effects on the individual car use? Will it replace public transport trips?

How will the Covid 19 situation affect active traffic modes - walking and cycling?

Method (I)

The sample consisted of 636 cases, compiled from various countries through a survey distributed on the Internet utilizing social media and applying the “Snow Ball” method. The sampling, therefore, was random but not probabilistic.

The data was collected in **two phases**; the first in the spring of 2020 and the second in the fall of the same year. During the **first phase**, data was compiled of the periods before and during the health crisis provoked by the pandemic; the second phase consisted of data collected after 5 months of living with the pandemic situation from the same people.

To match both phase responses in each respondent a private personal code was used. The principles of the Helsinki declaration for research with human subjects have been followed (World Medical Association, 2013).

Method (II)

Through survey methodology, in different languages, data were collected on the frequency of use of 4 modes of transport: **private car, local public transport, bicycle and walking**. The survey was distributed and answered **online** in the different countries in which the study was carried out:

Austria (AT), Czech Rep. (CZ), Spain (ES), Finland (FI), Croatia (HR), Italy (IT), Lithuania (LT), Portugal (PT), Russian Fed. (RU), Sweden (SE) and United Kingdom (UK).

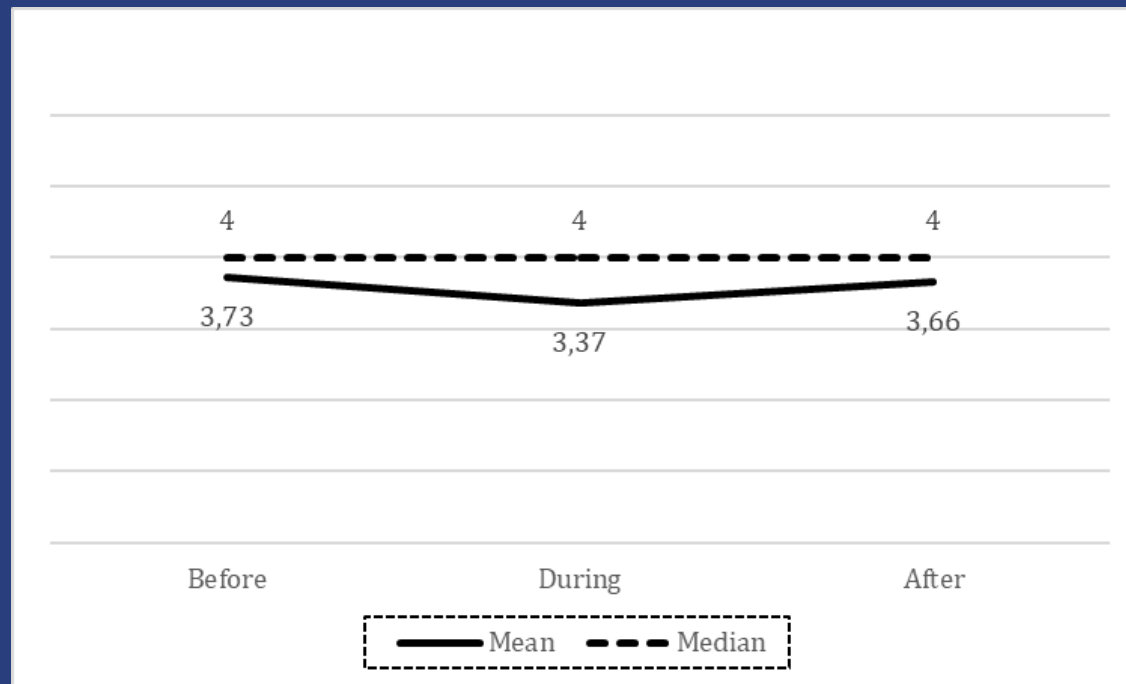
The answers were collected using a Likert-type 5-point answer scale.

Randomized Block Design (RBD) was used, graphs and non-parametric tests were applied (Friedman test, Wilcoxon Test) to compare the responses between the 3 epochs.

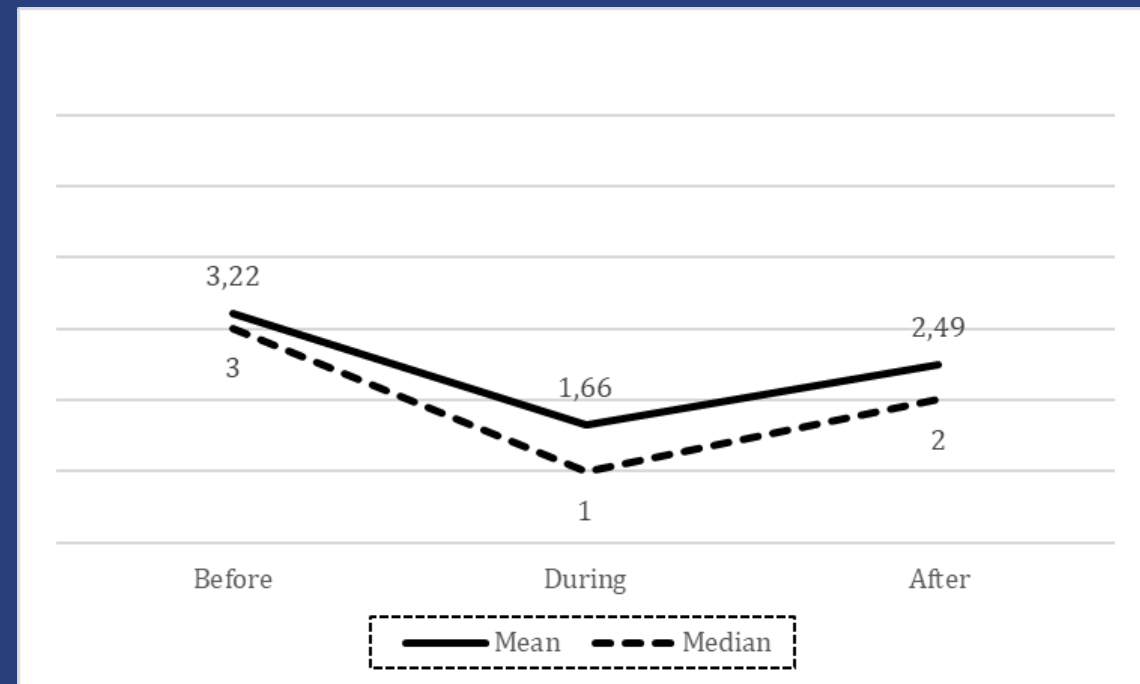
Results (I)

1. Private Car and Urban Public Transport

Car



Public transport



Results (II)

1. Private Car and Urban Public Transport

A reduction in usage is observed of both modes of transportation in the most critical period of the pandemic, **however, it is Public Transport which has been affected the most by the changes.**

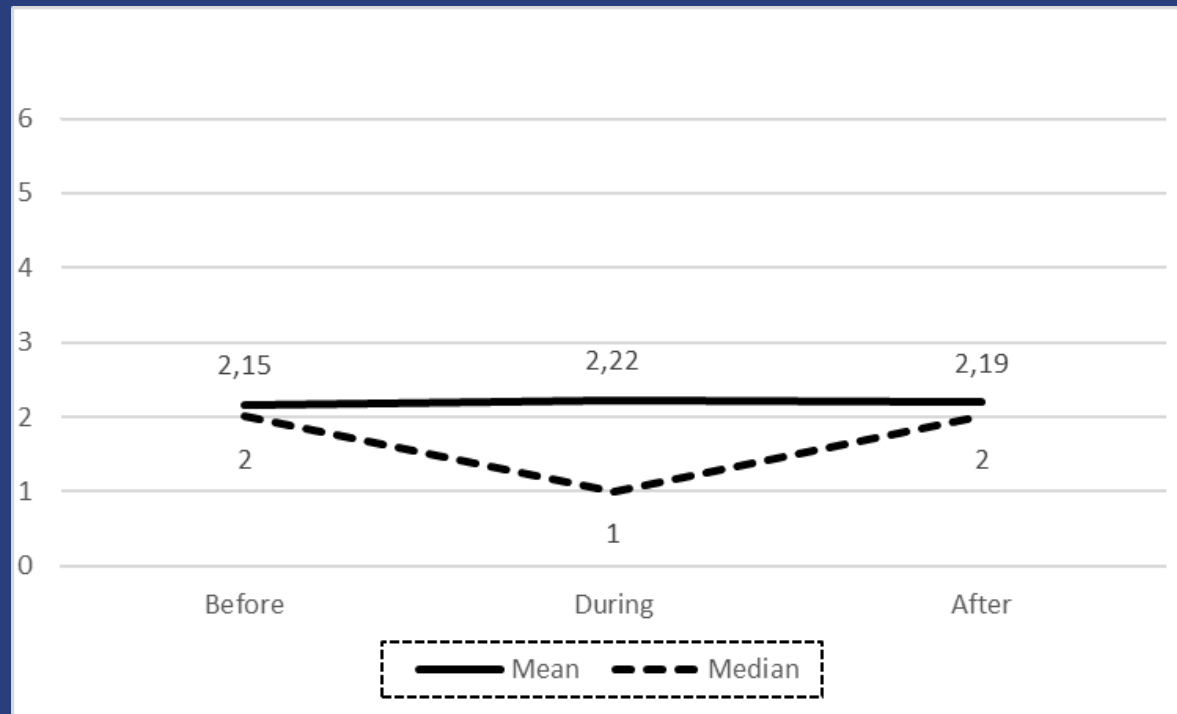
The greatest reduction being produced between the before and during periods, while after 5 months an increase is observed in the frequency of use, **although not to the levels seen before the pandemic.**

The time period has had a statistically significant effect on the use of both modes of transport and changes between periods (before, during, after) were statistically significant (2-tailed $p < .0001$).

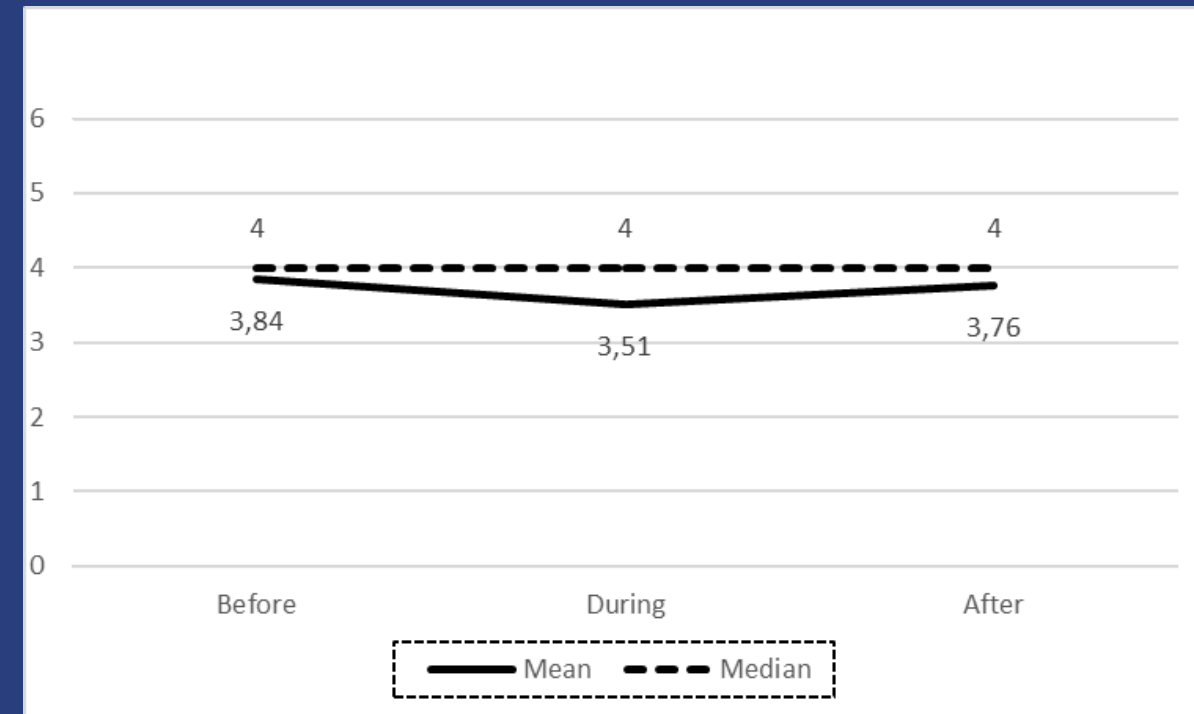
Results (III)

2. Cycling and Walking

Cycling



Walking



Results (IV)

2. Cycling and Walking

The situation of the pandemic has had less influence on these modes of transport (cycling and walking) than on the other two previously analysed (Private car and urban public transport).

We can observe slight increase of bicycle use during the health crisis situation.

The time period has had not a statistically significant effect on the use of both modes of transport and changes between periods (before, during, after) were not statistically significant (2-tailed $p = ,508$).

Discussion & Conclusions (I)

Did the Covid 19 situation influence mode choice? If so, how?

Respondents stated that they **reduced** mobility by car, local public transport and walking, but not bicycling during the lock-down, compared to the time before the pandemic started. It is necessary to note, that mobility (number of trips) decreased also in total.

Will mode choice change during Covid 19 last even when the epidemiological situation will get better?

When the easing came they assessed their own use of the **car and walking as almost back to normal**. They also reported an increase of the use of public transport, **but not reaching the level of before the pandemic by far**.

Discussion & Conclusions (II)

Will people fear to use public transport and prefer other modes of transport?

Our results indicate that this is the case. However, open-ended questions and answers are needed in order to understand whether motives like fear or other reasons lie behind the reduced use of public transport.

What will be the effects on individual car use? Will it replace public transport trips?

From our results we cannot decide whether there was a replacement of public transport use by car use. What we can say is that the respondents considered their car use during the easing phase as similar to before the pandemic started, which was not the case concerning their use of local public transport.

Discussion & Conclusions (III)

How will the Covid 19 situation affect active traffic modes (walking and cycling)?

Cycling was affected least by the pandemic. Respondents even reported an increase during the lock-down, though not significant, while the level during the easing was the same as the one before the lock down.

Walking as a transport mode was considered to be less prevalent during the lock-down. One could hypothesise that the reduced number of walks to the stops and stations of public transport contributed to this and that respondents did not fully consider leisure walks as “transport”, while such leisure walks could well have increased in numbers.

Thank you for your attention.

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