

## TRANSPORT FINDINGS

# Changes in Travel Behaviour During the Pandemic: Exploring Why Public Transport is Not Back to Pre-Pandemic Levels

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## Findings

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This study explores why shares using public transport in autumn 2021 remained well below 2019 pre-pandemic levels, even after most COVID-19 restrictions had been lifted. Based on an interview survey of 1145 workers in the Oslo region in Norway, the study offers evidence in support of four potential explanations: increased levels of remote working; fear of infection on public transport; changes in transport mode preferences; and ticket solutions that are poorly suited to new hybrid work patterns. In addition, the study suggests public transport is taking a double hit by increased remote working. Not only do fewer people travel to work by public transport, but those who can work remotely previously used public transport more before the pandemic compared to those who cannot work remotely.

### 1. Questions

Confinement regulations and fear of infection led to a shift from public to private transport modes (car use, cycling, and walking) during the COVID-19 pandemic (in Norway: Nordbakke and Fleten Nielsen 2021, in Australia: Currie, Jain, and Aston 2021, in the Netherlands: Shamshiripour et al. 2020). In addition, the number of commute trips decreased due to increased remote working.

On the 25<sup>th</sup> of September 2021, the Norwegian government officially reopened society. Data from traffic counts in the Oslo region – i.e. Oslo and its surroundings municipalities – showed that car traffic had returned to pre-pandemic levels in October 2021. By November 2021 it was even 5.2 percent higher than in November 2019 (Fjellinjen 2021). At the same time, data from the public transport administrator, Ruter AS, showed that use of public transport remained 20 percent below pre-pandemic levels as of October 2021 ([Figure 1](#)).<sup>1</sup>

A recent study by Currie, Jain, and Aston (2021) based on surveys from Melbourne found that working from home could not explain the entire shift from public to private transport modes after the reopening of the society.

The main research question in this study is: *Why had public transport not returned to pre-pandemic levels as of autumn 2021?* In this study, four hypotheses have been explored:

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<sup>1</sup> There was a new wave of infection with COVID-19 in the Oslo region with Omicron during December 2021.

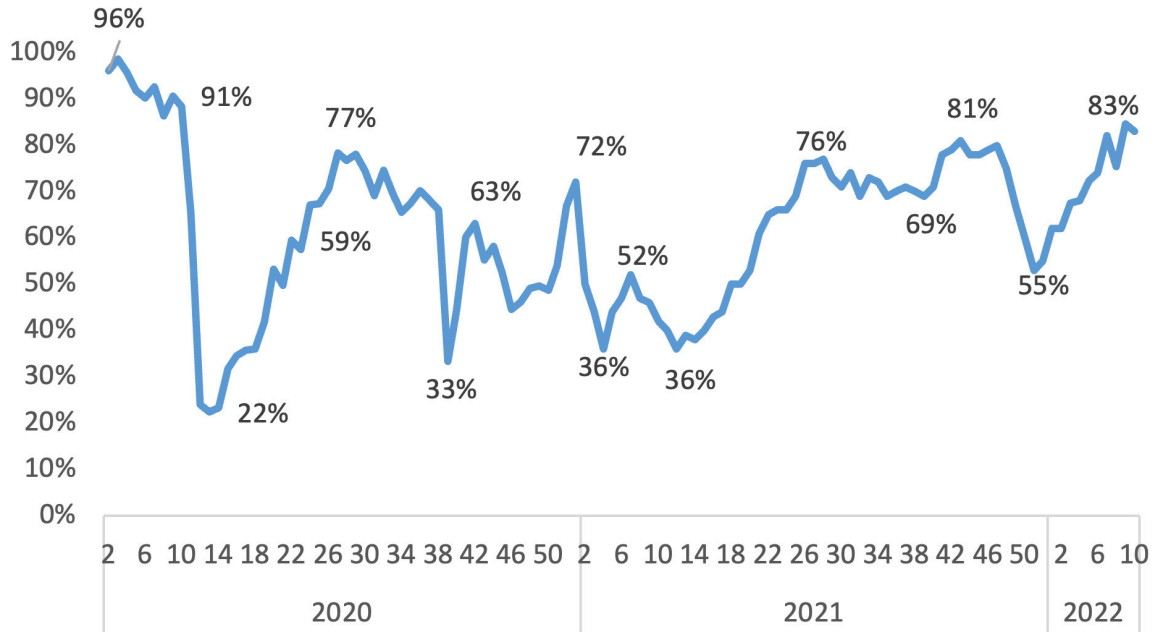


Figure 1. Amount of boardings on public transport measured as the share of a normal week in 2019 (i.e. average weekly ridership across all of 2019).

The normal week in 2019 is adjusted to season. Share of a normal week in percent of each week ridership in 2020, 2021 and the first weeks of 2022. Source: Ruter AS

- Sustained higher levels of remote working can explain part of the reduction in use of public transport, but not all: we expect that remote working is a possibility also for those who usually drive to work.
- Fear of infection still impacted people’s willingness to use public transport even after the reopening of society.
- Changes in preferences towards private transport modes.
- The current ticket system in the Oslo region is not flexible enough for those working remotely only some days of the week: Only period tickets (week, month, year) and single tickets are available.

## 2. Methods

An interview survey was sent out to 4462 workers aged 20–66 in the period from the 25<sup>th</sup> of November to the 5<sup>th</sup> of December 2021 in the Oslo region. The survey was limited to workers, as the primary focus was to study home office usage and changes in commuting patterns. Workers are defined as those who have income-based work as their primary source of subsistence. The sample was randomly drawn from a web panel owned by the interview company Kantar AS. The panel comprises a representative sample of the Norwegian population. In total, 1145 individuals (26 percent) completed the survey. The sample was weighted by age, gender and education.

As the survey only provides information about commute trips, the data cannot be used directly to explain the entire 20 percent decrease in public transport as of autumn 2021, as shown in [Figure 1](#). Neither do we have data on the share of public transport trips that are to and from work. However, as commute trips accounts for one fifth of all trips in Norway (Grue, Landa-Mata, and Flotve 2021), it is reasonable to believe that data on commute trips can give some insights as to why public transport had not returned to pre-pandemic levels as of autumn 2021.

### 3. Findings

Prior studies from Norway during the pandemic (with higher levels of restrictions) show that the share working from home on a particular day was higher in the Oslo region than for Norway as a whole (56 percent versus 41 percent for a particular day in April 2020; see Nordbakke and Fleten Nielsen 2021). In the present study, conducted after the reopening of society, 19 percent of workers in the Oslo region responded that they worked from home on Thursday the 18<sup>th</sup> of November. We do not have data for the Oslo region on home office usage before the pandemic for a particular day nor on a daily basis. Data from Eurostat suggests that 5 percent of the workforce in Norway usually worked from home daily in 2019 (Eurostat 2020). If we assume that 5 percent or more were working remotely on a given day in the pre-pandemic situation in the Oslo region, the elevated levels of remote work would suggest a drop in commute trips by 14 percentage points or less on the 18<sup>th</sup> of November. Even if all public transport trips were made for the purpose of work (to and from), this decrease in commute trips could not explain the entire 20 percent decrease in public transport as of autumn 2021 compared to pre-pandemic levels. Moreover, not all trips previously made to work that now are replaced by remote work were made using public transport. Forty-four percent of the respondents reported that they usually travelled by public transport to work in the weeks prior to the pandemic, see [table 1](#). The same table shows that the transport profile of those who can carry out part or all paid work from home is different from those who cannot.<sup>2</sup> Those who can work from home used to travel more with public transport to work than those who cannot work from home (46 versus 37 percent, the difference is significant,  $p < 0,001$ ). This signifies that home office usage has served public transport a “double whammy”: Increased home office usage not only reduces the number of trips made by public transport, but those who can work remotely used to travel more with public transport before the pandemic compared to those who cannot work remotely.

Further analysis finds that a larger share of public transport users can work from home than can car users (drivers and passengers) (70 versus 55 percent); see [Table 2](#). This result may be different from some other countries where

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<sup>2</sup> This distinction is based on the question: “In your job, is it possible to carry out part or the whole work from home?”.

Table 1. “Think about your commute in the weeks prior to Covid-19 pandemic and regulations were set in (that is, before the 12th of March 2020). Please indicate how you usually travelled to work (the mode of transport you used for most part of distance)».

	Have the possibility to work from home	Do not have the possibility to work from home	All
Walking all the way	11	10	11
Scooter/E-scooter	0	1	0
Bike cycle	8	4	7
E-bike	2	1	1
Tram	2	2	2
Bus	14	16	15
Subway	16	12	15
Train	14	7	12
Car as a driver	28	41	32
Car as a passenger	1	2	1
Did not use a regular mode of transport	1	1	1
Do not remember	0	0	0
None of these	2	3	2
Total	100	100	100
N=	743	395	1145

Workers in the Oslo region. Percent.

Table 2. Share who can do part or all pain work from home by commute mode used in the weeks prior to the 12th of March 2020.

Commute mode	Can work remotely	N
Bicycle	79	75
E-bicycle	79	19
Train	79	132
Subway	71	166
Walking all the way	67	121
Tram	65	23
Bus	62	167
Car as a driver	56	370
Car as a passenger	48	15
Scooter/E-scooter	44	9
All	67	1098
Public transport in total	70	488
Car users in total	55	385

Percent. N=1098. “Do not remember transport mode” or “None of these transport modes” left out from analysis.

transit users (especially bus users) tend to have attained a lower level of education and tend to work in lower-wage jobs (see e.g. Giuliano 2005). A recent study on commute mode shifts during COVID-19 at University of Wisconsin-Milwaukee (UWM) campus finds that bus users prior to the pandemic were less likely to shift to remote work during the pandemic than were those who used to be car drivers before the pandemic (Schneider and Schinkowsky 2021).

Table 3. Reasons for shifting transport modes on commute trips from before the pandemic to after the pandemic.

	Shifted from public transport
I am worried about infection if I use public transport	37
I started to commute by car during the pandemic and I prefer this mode of transportation now	23
I started to walk or cycle to work during the pandemic and I prefer this mode of transportation now	21
It has become less affordable to commute by public transport now as I work more from home	18
There are no ticket solutions for public transport that fits my need	17
I have moved	14
I have had a change of jobs	9
It has become better to drive to work as there are less queues	8
Other reasons, please note	7
My work has moved to a different location	7
Don't know	0
N=	191

Several responses possible. Only those who shifted from public transport to other modes of transport. Percent.

In addition to a drop in the number of trips by public transport due to remote work, the gap in public transport usage from before to after the pandemic might also relate to changes in travel habits. Twenty-three percent (N=269) of the workers report that they travelled with a different transport mode in the autumn of 2021 than before the pandemic. Seventy-one percent of these had changed from public transport to other modes of transport (car, bike, walking). Those who reported having changed transport mode, were asked about the reasons for their change. [Table 3](#) shows how those who had shifted from public transport to other modes answered.

Infection concerns are a major reason for the shift. In addition, it seems that there has been a change in transport preferences: 23 and 21 percent, respectively, report that they shifted to another transport mode (from public transport) during the pandemic and that they now prefer this. Moreover, the reported reasons for change also relate to costs of using public transport in a new hybrid workday: 18 percent report that “It has become less affordable to commute by public transport now as I work more from home” and 17 percent report that “There are no ticket solutions for public transport that fit my need”. In the Oslo region, there are two kinds of ticket solutions: a period card (week, month and year) or single tickets. When commuting less due to more remote work, a period card can be perceived as too expensive, while buying single tickets might be too expensive when still commuting to work on a regular basis (but not every day). Reasons related to changes in circumstances (change of jobs, change of housing location etc.) are rated as less important, and there is no reason to believe that there has been a considerable change in these contextual circumstances compared to the pre-pandemic situation.

To conclude, this study offers evidence in support of four potential explanations for the 20 percent decrease in use of public transport as of autumn 2021 in the Oslo region compared to the pre-pandemic situation: increased

levels of remote working, fear of infection on public transport, changes in transport mode preferences and ticket solutions that are poorly suited to new hybrid work patterns. In addition, this study suggests that public transport takes a double hit from increased remote working, since those who can work remotely used to travel more with public transport before the pandemic than those who cannot work remotely. It can be expected that the fear of infection will be reduced after some time, and that more people will go back to public transport. Still, it is likely that the degree of use of public transport will not get back to pre-pandemic levels, as one can expect an increase in remote working compared to the pre-pandemic situation. We might also see that changes in transport mode preferences during the pandemic are difficult to revert especially when the ticket solutions in the Oslo region are not suited to more remote working.

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