

# Movers from the city in the first year of Covid

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## *Abstract*

Cities across the world have been severely affected by the Covid-19 pandemic, and out-migration from many cities was particularly high in 2020. Some movers went abroad; others moved to other parts of the same country.

Using Oslo, Norway, as a case, this study examines the characteristics of those who moved away from the city in 2020, such as occupation, age and whether they were born there. Based on these findings, I discuss the likelihood of the leavers returning when the pandemic is over.

The results show that those moving away from Oslo in 2020 were somewhat older compared to those who moved away between 2016 and 2019. To a greater extent than in the preceding years, movers in 2020 had jobs where teleworking could be possible and were not born in Oslo. This may indicate that a substantial share of those who moved away from Oslo in 2020 will not move back to the city after the pandemic if teleworking is still possible. For those who emigrated to another country, no teleworking effect was found.

# 1. Introduction

Many people moved out of cities in 2020, which, in most countries, was the first year of the Covid-19 pandemic. Out-migration to other parts of the country was at a record high in, for instance, Stockholm (Statistics Sweden, 2021), Helsinki (Statistics Finland, 2021) and Copenhagen (Statistics Denmark, 2021). Figures from the first six months of the Covid pandemic in the US show clearly elevated net out-migration from New York, Chicago, San Francisco, Washington DC, Houston and Philadelphia (Bowman, 2021). Moreover, Britain witnessed a “covid exodus” from the cities (Marsh, 2021). Exceptionally high out-migration during the pandemic is also reported in other cities, such as Tokyo (Gomi and Fukushima, 2021; Fielding and Ishikawa, 2021), Melbourne (Pollard, 2021), Paris (Cuthbertson, 2021), New Delhi (Sen and Pandya, 2021), Istanbul (Daily Sabah, 2021) and Dublin (Weckler, 2020).

The motivations for leaving a city during a pandemic like Covid-19 are probably diverse. Some may want to get away from higher infection rates, strict lockdowns and the absence of cultural activities and social life – normally attractive qualities of a city. Some cannot afford the combination of job loss and high housing costs in the city. Others may have spent these extraordinary times reevaluating their lives and found that they want to live closer to nature and/or family. Moreover, options for teleworking increased considerably during the Covid-19 pandemic, which made physical distance from the workplace less significant and which may have also induced the need for more space at home to facilitate working from there.

High out-migration may have consequences for both the cities movers leave behind, which may experience a lack of workers and a decreased demand for services and housing, and for the places that receive the former city dwellers. However, such consequences strongly depend on the characteristics of the movers themselves and whether their moves were permanent relocations or more temporary exiles that will be reversed as soon as the pandemic is over, and it also depends on where the movers moved to. That is the topic of this study, which uses data from Oslo to examine the characteristics those who moved from the city in 2020 and where they moved to.

Oslo is the capital of Norway and by far the country’s largest city. Oslo experienced record high out-migration in 2020. Figure 1 (left panel) shows that the increase was particularly strong for internal migration to other parts of Norway (orange line).<sup>1</sup> Migration from Oslo to other countries also

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<sup>1</sup> Similar analyses were conducted for Norway’s 2nd, 3rd and 4th largest cities (Bergen, Trondheim and Stavanger). Bergen and Trondheim also had record high numbers of movers to other parts of Norway in 2020; however, the increase from previous years was not as large as for Oslo.

increased in 2020 (blue line); however, the long-term trend in emigration from Oslo is somewhat declining.

Part of the increased out-migration in 2020 is a result of Oslo's growing population, with more people at risk of leaving. However, even the crude rates of out-migration (out-movers divided by the total population of Oslo) increased in 2020, as shown in the right panel of Figure 1.

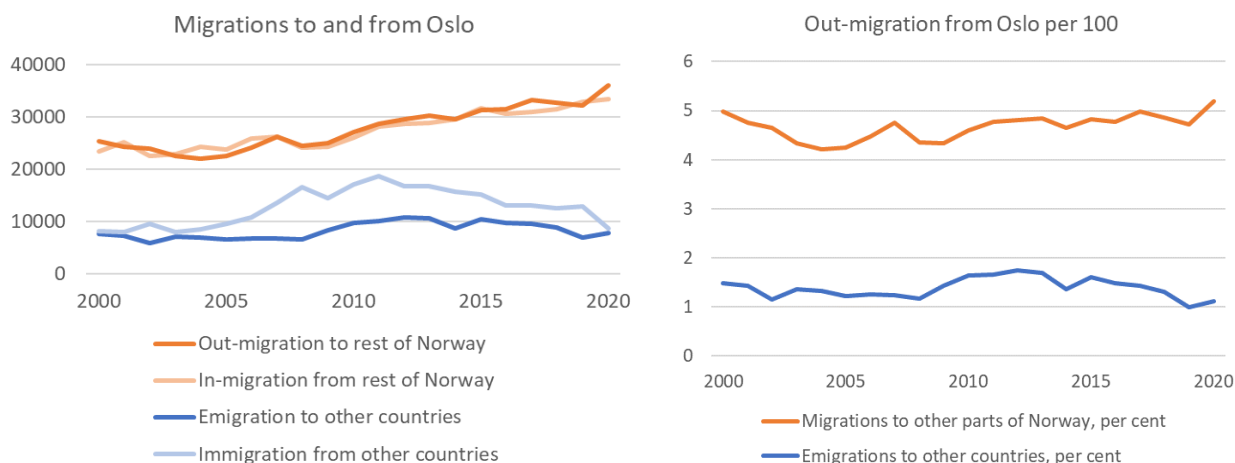


Figure 1. Migration to and from Oslo (left panel) and out-migration per 100 Oslo inhabitants (right panel) to other countries and to other parts of Norway. Source: Statistics Norway

This study's main research question is: *what characterises those who moved out of Oslo in 2020 compared with those who left before?* The question will be answered using rich Norwegian register data on characteristics such as a person's age, occupation, whether or not he or she was born in Oslo, their type of household and where they moved to. Based on these descriptions and the possible mechanisms at work, I also discuss how likely it is that the movers will come back when the pandemic is over.

## 2. Possible mechanisms at work

The literature on human mobility and migration offers a wide range of explanations for why people move. For this study, I will mainly focus on possible reasons for leaving a city during a pandemic. Furthermore, I will discuss which of the movers' characteristics may be associated with different reasons for leaving the city during the Covid-19 pandemic and consider how this can be linked to varying likelihoods of movers returning when the pandemic is over.

Although social science has not agreed on one grand migration theory, economic considerations (in particular, differences in real incomes and need for labour) have long been considered a main reason for migration (Lee, 1966; Massey et al., 1993; Ravenstein, 1885). Economic considerations may

also include the difference in living costs. In addition to economic and work-related reasons, many have to migrate as a consequence of wars and catastrophes. Scholars have also pointed towards the importance of other factors, such as personal networks and cultural/linguistic proximity (Massey et al., 1993). Furthermore, migration is closely linked to age, with the highest migration propensities among young adults (Clark, 1986; Rogers and Castro, 1981).

*Internal migration* within a country is also found to be highly affected by economic factors such as income differences, cost of living (including housing) and the labour market, but this literature also highlights the role of a place's attractiveness or the quality of life there (Brasington, 2021; Cebula, 2005; Etzo, 2008). Studies on motivations for moving (and staying) in Norway have identified four main reasons that determine why people move (or stay): work, family, housing and a place's attractiveness (Sørliet et al., 2012). For many movers (and stayers) the motivations are numerous and sometimes hard to distinguish.

In addition, *migrations out from and into a city* can have reasons connected to the city's specific characteristics and attractiveness. Although cities usually offer urban qualities such as increased opportunities for social contact, a wide range of services, more vibrant nightlife, and entertainment and cultural life, characteristics like pollution and overcrowding have historically been important reasons for moving out of city centres, and suburbanisation has also drawn movers out from the inner parts of cities (Mieszkowski and Mills, 1993; Rieniets, 2009; Wiechmann and Bontje, 2015). Studies from Norway show that housing is a more important reason for moving among those who moved into and within the the surrounding areas of large cities than it is for other movers (Sørliet et al., 2012) Contrary to predominant theories in rural population research, people who moved into more rural areas of Norway are not primarily motivated by anti-urban preferences for rural living but rather by family relations and economic concerns (Grimsrud, 2011). Moves into and out of cities such as Oslo can also be seen as part of individual moving careers, where young people move to cities for work or higher education. After some years, many of them move out of the most central areas, often to nearby regions where house prices may be lower and where conditions are better suited to family life (Clark, 1986; Havnen, 2006; Juvkam and Sørliet, 2000; Knox and Pinch, 2010).

To sum up, there may be many reasons for moving out from (and back into) a city. The reasons often overlap and interlink, and if one reason – for instance, work – becomes less important, the decision maybe become weighted in favour of other reasons – for instance, a place's attractiveness. To organise the discussion in this paper, the reasons are categorised into (1) work-related and economic factors, such as differences in unemployment, income and housing costs between the city and other places; (2) factors connected to family life, including life-course moving patterns and a wish to live closer to family; and (3) the attractiveness of the city and of potential destination places.

### *Reasons for moving from and to a city during the Covid-19 pandemic*

Some of the possible reasons for leaving (or staying in) a city changed as a result of the Covid-19 pandemic, which hit Oslo particularly hard compared to other municipalities in Norway. From 12 March 2020, Norway implemented the strongest restrictions since the Second World War to stop the pandemic from spreading. Infection rates were higher in Oslo than in most other parts of the country, and the municipality of Oslo implemented many measures that were stricter than the national restrictions (Cenar, 2021; Statsforvalteren i Oslo og Viken, 2020). These included long periods where (non-essential) shops, theatres, concert venues, pubs and restaurants remained closed.

*Work-related and economic factors* were affected in several ways. Firstly, the strict measures meant that many people working in shops, bars, restaurants and other sectors affected by the lockdown were either temporarily laid off or lost their jobs entirely (Cenar, 2021). Hence, they did not need to live in Oslo because of work, and high housing expenses may have been more difficult to cover. This may particularly have been the case for young people in Oslo whose parents (or “safety net”) lived somewhere else. Secondly, teleworking became far more practical and widespread. Many people in Oslo have office jobs, which allow for more teleworking, so living somewhere else became easier for this group than it was before 2020. Working from home may also create the need for a larger dwelling (for instance, with a separate room for teleworking), and housing prices in Oslo are considerably higher than most other places in Norway – and they increased substantially through 2020, which is probably closely linked to low interest rates – so places to live that were larger and more affordable were easier to obtain outside of the city.

*Factors connected to family* were affected more indirectly. Some people who were not originally from Oslo may have wanted to live closer to “home” and family during an uncertain time. Moving “home” is not uncommon in Norway: previous research has shown that around 1 in 6 people aged 40 has moved back to the municipality they grew up in after having lived somewhere else (Sørli, 2012). Another possible family mechanism may be linked to the spouse – if he or she lost their job or were given the opportunity of teleworking. And some families may have used the pandemic to reconsider their way of living, which, for some, led to a decision about moving away from Oslo.

Finally, the *attractiveness of the city* was severely affected by the pandemic and the lockdowns. High infection rates and population density meant that the risk of contracting the virus was considerable. Furthermore, all of the counter-pandemic measures implemented in Oslo affected a wide range of the urban qualities that a city usually offers, such as all possibilities for social contact,

culture and nightlife. On the other hand, the attractiveness of other places did not change as much as a result of the pandemic, and qualities connected to nature and outdoor life were almost unaffected.

Hence, as indicated above, the Covid-19 pandemic affected the reasons to leave the city in several ways, and people with different characteristics were affected differently. We may assume that economic and work-related reasons most strongly affected those with jobs in sales and certain services, as well as people with jobs that allowed for teleworking. Family-related reasons may have affected people who were not originally from Oslo to a greater extent, and we may assume that the attractiveness of the city was particularly reduced for groups who are main users of Oslo's nightlife, cultural activities and opportunities for broad social contact, such as young adults.

### *Differing likelihood of return*

To what extent moves away from Oslo in 2020 can be considered to be “temporary exiles”, or whether they will be more permanent, depends on the reasons for moving and the characteristics of the movers.

Those who left the city because they (temporarily or permanently) lost their jobs during the lockdowns can, to a large degree, be expected to return when Oslo's sales and service sectors open up again. However, the groups who left because of the new possibilities for teleworking may not return to the same extent – at least if teleworking is still possible after the pandemic. Hence, measuring out-migration by occupation may give an indication as to whether the out-movers will return or not.

Furthermore, if those who moved from Oslo in 2020 originally came from another place, the likelihood that they will return to Oslo can be expected to be lower than if they were born in the city – because people moving away from their place of origin (and families) may eventually want to return “home”. Hence, there may be reason to believe that out-movers who are originally from Oslo are more inclined to return. For emigration from Oslo, we may assume that people born in other countries are less likely to return, and we may also assume that Norwegian-born people with immigrant parents also have closer links to other countries and/or move with their parents, which makes their return less likely than for people without an immigrant background.

Moving may be a more measured decision for households with children as it may be demanding for the children themselves to adjust to a new place (Tønnessen et al., 2016). Hence, information on whether people who moved from Oslo in 2020 were born in there, and whether their household included children, may indicate to what extent they are likely to return when the pandemic is over. Furthermore, people who move at an older age can be expected to settle down more permanently than those who move in their early 20s. And since the attractiveness of the city (before

the pandemic) may have been particularly high among young people who are intensive users of the services most affected by lockdown, we would expect many of the young out-movers to come back whenever these services open again.

Although it is too early to draw any conclusions as to how many of the out-movers from Oslo in 2020 will return after the pandemic, the mechanism outlined above suggests that we can expect higher return migration to the city after the pandemic if the out-migrants in 2020 were young people, workers in the sales and service industries, and people who were born in Oslo. On the other hand, if the out-migrants were older and born outside Oslo (or in another country), with teleworking-friendly jobs and with children in the household, we can expect a smaller share of them to return.

### 3. Data and methods

This study uses rich Norwegian register data which covers every person in Norway's population register, linked with information from several other registers. The movers are identified as those people who lived in Oslo on 1 January 2020 and were still alive but living in another municipality, or had emigrated, by 1 January the following year. Information about characteristics such as age, sex, place of birth, occupation, immigrant background and number of people in the family is linked for both these movers and for those who remained in Oslo. Data on age show age as of 1 January, place of birth shows the mother's resident municipality at the point of giving birth, occupation shows the registered occupation in November of the previous year, immigrants are defined as people born abroad with two foreign-born parents and four foreign-born grandparents and people in the family shows the number of people recorded with the same family ID-number as of 1 January. The data are accessed through [microdata.no](https://microdata.no), which provides researchers and students at approved research institutions access to register data from Statistics Norway.

Although Norwegian register data is rich, it does not have information about people's inner-motivation for moving (or staying). Furthermore, the data accessed through [microdata.no](https://microdata.no) do not provide information about who lost their job or was temporarily laid off during the 2020 lockdowns: yearly data on employment (in November) will not reveal whether there were spells of employment or unemployment in between, nor does it provide information about each individual's possibilities for teleworking. This study has examined changes in municipality of residence in the population register. However this register is not informed about all moves – particularly the case for students. Moreover, data on whether a person is a student or not was not found in [microdata.no](https://microdata.no), nor was country of destination for those who emigrated to another country, and there is no information about each individual's possibilities for teleworking. However, information about occupation will give an

indication as to whether people worked in sectors that were severely affected by lockdowns or in sectors where teleworking became easier in 2020.

This paper's main analyses are descriptive, showing differences between movers from Oslo in 2020 and previous years, with a focus on the characteristics most closely linked with different likelihoods of return. Somewhat different characteristics are shown for people who moved to other parts of Norway and people who moved abroad since these movements may have different determinants. As supplementary analyses (shown in Appendix), multinomial logistic regressions explore how the movers (to other parts of Norway and abroad) differ from those who stayed in Oslo and whether these differences changed in 2020.

## 4. Results

Figure 2 shows the age distribution of the out-movers in 2020 (thick lines) compared with those who moved from Oslo during the preceding four years (thin lines – the darkest lines show the most recent years).

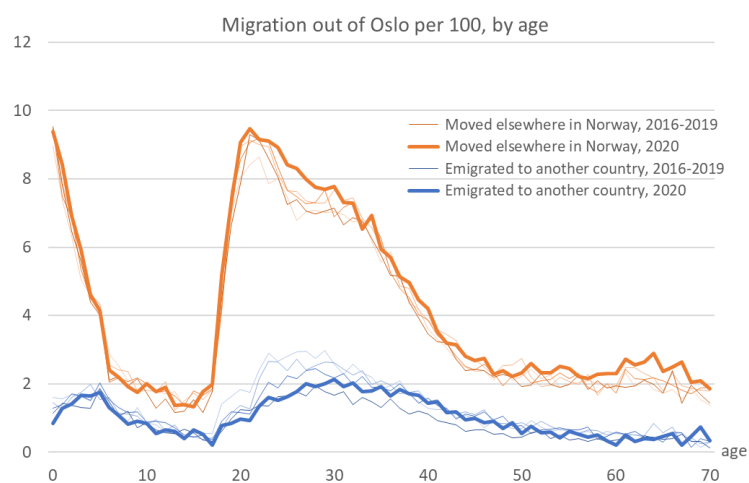


Figure 2. Migration from Oslo to other parts of Norway (orange lines) and to other countries (blue lines) per 100, in 2020 (thick lines) and the preceding four years (thin lines). Source: Statistics Norway / microdata.no

For moves to other parts of Norway (orange line), the increase from the preceding years was particularly high among people aged 25 to 30 years and also among people aged 60 to 70 years, which is around retirement age. The decrease in emigration from Oslo from 2016 (also shown in Figure 1) has mainly taken place among people in their 20s. In 2020, the rate of emigration among those above the age of 35 was as high as in the years before 2019.

Figure 3 shows the main occupation of movers from Oslo (aged 15 to 74 years). Out-migration from Oslo to elsewhere in Norway increased substantially in 2020 among the occupational group



“professionals”. This group includes all academic professions requiring four years or more of higher education, such as science and engineering professionals, health professionals, teaching professionals, business and administration professionals, information and communications technology professionals, and legal, social and cultural professionals. Also, 2020 saw increased out-migration from Oslo among managers, technicians and associate professionals, clerical support workers, and service and sales workers. Percentage-wise, the increase was highest for professionals and for clerical support workers, including general and keyboard clerks, customer service clerks, and numerical and material recording clerks. Almost no change is seen in the out-migration from Oslo among craft and related trade workers and elementary occupations (such as cleaners). Figure A1 in the appendix shows a more detailed disaggregation of occupations among the movers from Oslo to other parts of Norway, where, in particular, the “professionals” group is broken down in more detail, showing that occupations within health and education also saw some increased out-migration in 2020.

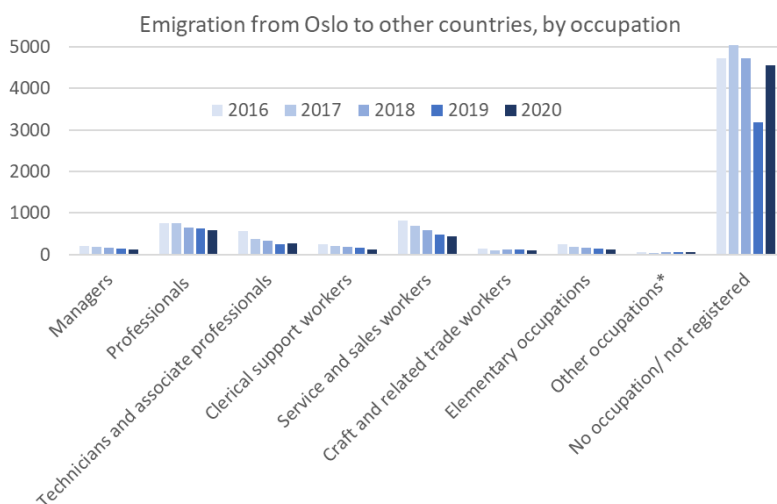
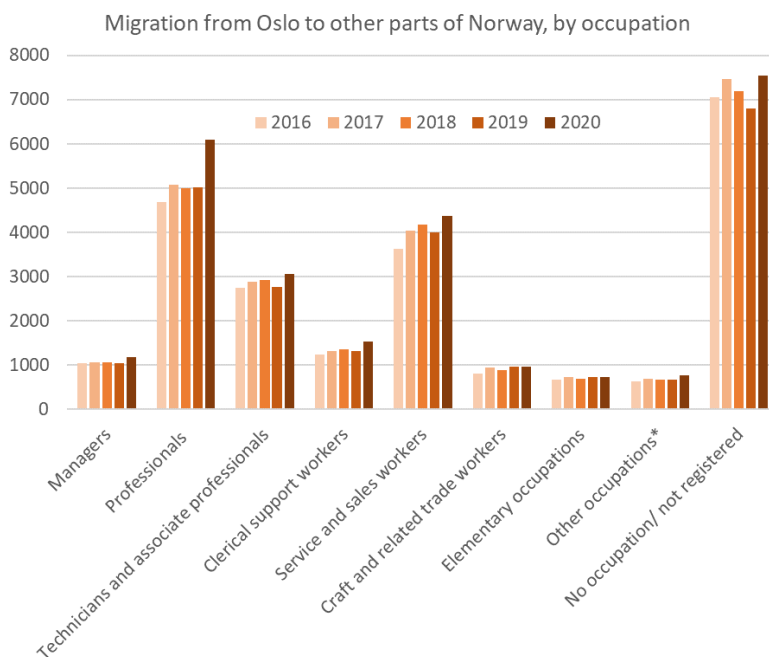
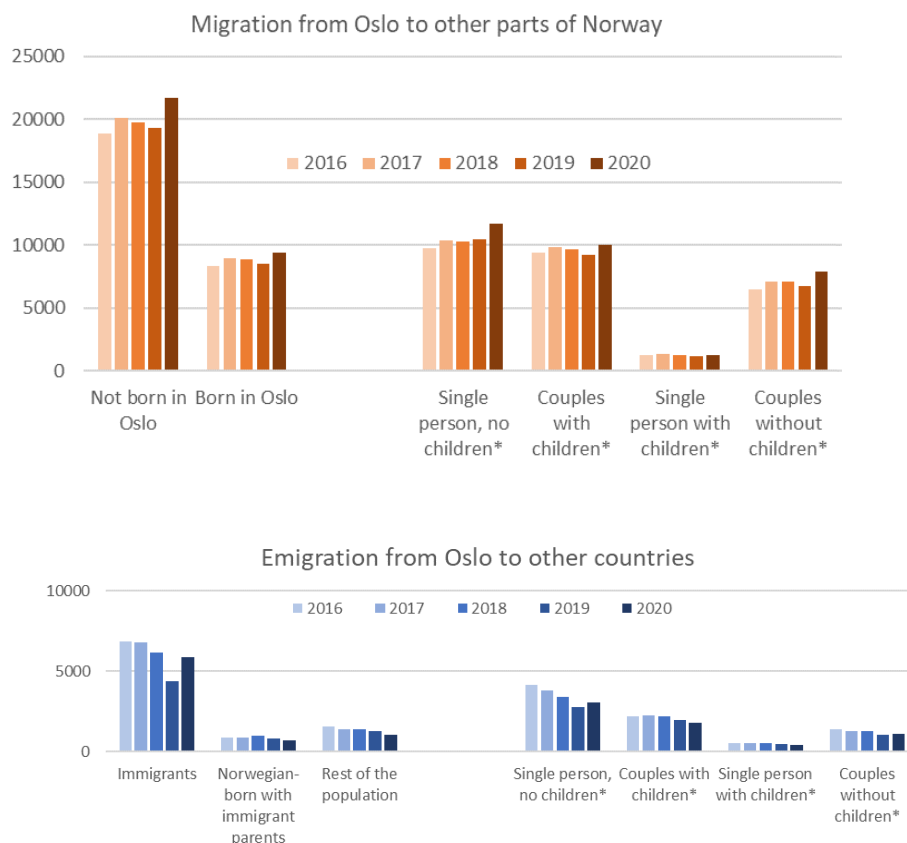


Figure 3. Migration from Oslo to other parts of Norway (upper panel) and to other countries (lower panel) by occupation, age 15–74, 2016–2020. Source: Statistics Norway / microdata.no

\* Includes military occupations, plant and machine operators and assemblers and skilled agricultural, forestry and fishery workers.

For emigration to other countries (lower panel), the picture is different. People without registered occupation showed the largest increase in emigration, and it is hard to see any “teleworking effect” for clerical workers, managers or professionals. Furthermore, no increase is seen among service and sales workers: occupations that were serverly affected by the lockdowns.<sup>2</sup>

Figure 4 shows some other characteristics of the movers out of Oslo. The majority of those who moved from Oslo to other parts of Norway were not originally born in Oslo (upper panel, left side), and the increase in 2020 was particularly strong among those not born in Oslo. For emigration to other countries, an increase is seen from 2019 to 2020 for immigrants but not for others. Most of the out-movers – internal or international – did not have children (aged 0 to 17 years) in the family, and the increase in 2020 was larger for those without children.



<sup>2</sup> The fact that so many of the emigrants were not registered with an occupation (in November the year before) may have a rather technical explanation: if people move from Norway without noticing the population register, the population register may declare them as out-migrated after some years (Vassenden, 2015). In this intermediate period, they will likely not be listed with an occupation in Statistics Norway’s system. This also implies that some of those who moved abroad from Oslo in 2020 may not yet have been registered as emigrated in the Norwegian population register, making our results about emigration less certain than those for moves to other parts of Norway.

Figure 4. Migration from Oslo to other parts of Norway (upper panel) and to other countries (lower panel) by place of birth/immigrant background and characteristics of the family, 2016–2020. Source: Statistics Norway / microdata.no

\*Children age 0–17 years.

To complement the results shown in figures 2 to 4, a multinomial logistic regression was conducted to simultaneously consider all the characteristics shown in these figures and to control for other characteristics which may affect out-migration from Oslo (but where the association to the likelihood of return is less clear). The results are shown in Appendix Table A1. They broadly confirm the main conclusions from the descriptions above: clerical support workers, as well as service and sales workers, stood out by displaying a higher out-migration from Oslo compared to other groups in 2020, with a larger difference than in the preceding years. Whereas professionals have usually had relatively low out-migration, the difference between this occupational group and the others was considerably smaller in 2020. Being born outside Oslo increased the likelihood of moving away to a larger extent in 2020 than in the years before. In 2020, people with children in the family were not any longer significantly more likely to move to other parts of Norway compared with those without children. For emigration, the largest increase was observed among people with no registered occupation. Although the propensity for moving abroad was higher for immigrants (like in the years before 2020), the emigration-likelihood of Norwegian-born people with immigrant parents differed less from the rest of the population in 2020 than in the years before.

#### *Where did they go?*

An additional analysis has examined the *destinations* of those people who moved from Oslo to other parts of Norway.<sup>3</sup> As shown in Figure 5, the large majority of them settled in Viken – the large neighbouring county that surrounds Oslo – just as in the years before 2020. However, all of the other counties (except for Innlandet) had more people moving in from Oslo in 2020 than the average for the preceding years. Percentage-wise, the increase was highest for Trøndelag and Vestfold & Telemark, whereas the increase in absolute numbers was far highest for Viken.

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<sup>3</sup> For those who emigrated, analyses of the emigrants' country of birth show that emigration from Oslo decreased most for those born in other Nordic countries, while more people born outside Europe emigrated in 2020 than the average for 2016-2019.

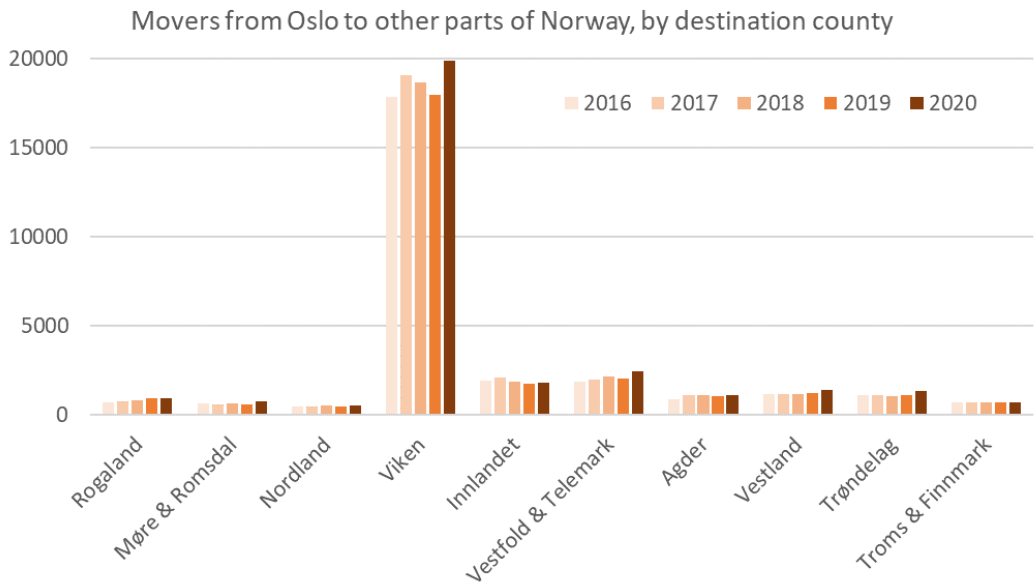


Figure 5. Movers from Oslo to other parts of Norway by county of residence 1 January the year after, 2016 to 2020. Source: Statistics Norway / microdata.no

In Figure 6, the out-movers' destinations are shown at the municipality level. Municipalities with one asterisk are part of the Oslo housing and labour market region and those with two are (partially) covered by the Oslo urban settlement. Like 2019, all the top five destination municipalities in 2020 are part of the Greater Oslo area. This indicates that a substantial part of the out-migration from Oslo can still be categorised as a form of suburbanisation. Hence, although the Covid-19 pandemic seems to have affected *who* moves out of Oslo, it does not really seem to have affected *where* people move when leaving Oslo.

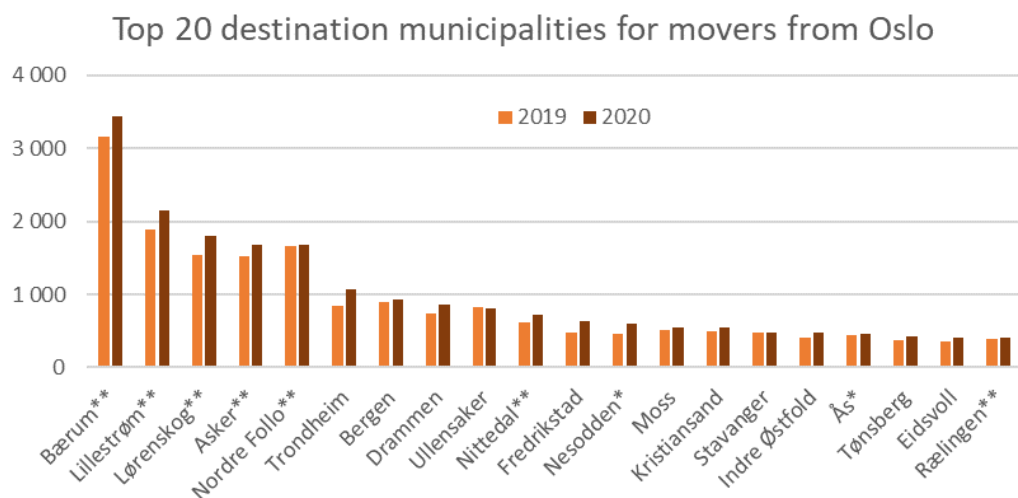


Figure 6. Movers from Oslo to other parts of Norway by municipality of residence 1 January the year after, 2019 and 2020. Source: Statistics Norway / microdata.no

\* The municipality is part of Oslo housing and labor market region, \*\*and the urban settlement of Oslo covers (part of) the municipality.

## 5. Discussion

Although most of Oslo's inhabitants did *not* move from the city in 2020, and although many peoples' preferences for housing and neighbourhood did not change due to the pandemic (Macic and Midtgaard, 2021), Oslo still experienced record-high levels of out-migration in 2020 – just like many other cities worldwide. How much of this out-migration was caused by the covid-19 pandemic, directly or indirectly, is probably impossible to quantify since reasons for moving are often numerous and interlinked and because the pandemic affected the society in so many direct and indirect ways. The main aim of this paper has been to describe the characteristics of those people who moved from Oslo in 2020. This description may reveal more about what type of people the city “lost” and, hence, what type of people other parts of Norway, or other countries, “gained”. It may also lay the foundations for some suggestions about whether they will return when the pandemic is over.

In short, the results show that, compared to the previous years, people who moved from Oslo in the first year of the Covid-19 pandemic more often had occupations where teleworking was possible or were service and sales workers. They were also somewhat older, and more of them were born outside Oslo. Currently available data cannot give any clear answers to whether or not they will return, but these characteristics do make it possible to hypothesise about the likelihood of them moving back to Oslo in the following ways:

Firstly, *work-related and economic factors* point in somewhat different directions. Figure 3 shows a substantially higher out-migration from Oslo to other parts of Norway in 2020 for two different groups. The first group are sales and service workers, who may have lost their jobs during the lockdown, and many of whom may be expected to come back when the city opens up again. The out-migration in this group did not, however, substantially increase, which may be because many people in these occupations assumed that the lockdown would be relatively brief. The second – and larger – group consists of people in occupations where teleworking became more prevalent during the pandemic. Estimates of the share of jobs that can be performed remotely in different occupational groups in Norway (Holgersen et al., 2020) suggest that clerical support workers, managers and professionals have particularly high shares of teleworking-friendly jobs, and these occupational groups also had clearly elevated out-migration from Oslo to other parts of Norway in 2020. No similar increase is seen for craft and trade workers, and elementary workers (including cleaners): occupations

where it is hard to work from home. This suggests that a relatively large share of those who moved from Oslo in 2020 did so because teleworking became easier, which makes it less likely that they will move back as Oslo opens up again, as long as working from home remains an option. Even if employers in Oslo in the future will expect their employees to come to the office now and then, commuting a few days a week would still be possible for most of those who moved to Viken.

Somewhat surprisingly, teachers and nurses also had increased out-migration from Oslo, even though these groups neither lost their jobs nor could easily work from home. A possible explanation could be that the job market for teachers and nurses covers all parts of the country, so they may more easily leave Oslo if, for instance, they have a partner who can now work from home. Teachers and nurses were also affected by the increase in housing prices in Oslo during 2020 – from the first quarter of 2020 to the first quarter of 2021, the price for existing dwellings in Oslo and Bærum increased by 13 percent (Statistics Norway, 2021). The likelihood of return for all occupational groups certainly also depends on Oslo's future housing prices, which are in turn linked to the number of completed dwellings in Oslo and the surrounding municipalities.

Secondly, *factors connected to family life*, including life-course moving patterns and the wish to live closer to family, suggest that older people (who may be later in their moving career) are less likely to return once the pandemic is over. In particular, the increased number of people in their 60s who moved out of Oslo to other parts of Norway in 2020 cannot be expected to return to a large degree. Moreover, people's desire to live closer to family may indicate that the increased number of out-movers who were not born in Oslo, as well as the immigrants who left Oslo and Norway, are not inclined to return to the same extent as those born in Oslo. On the other hand, the 2020 increase in out-migration was highest among people without children in the family, which may indicate that they may be more mobile, making future returns to Oslo somewhat more feasible.

Thirdly, *the attractiveness of the city* changed dramatically during the pandemic and the lockdown and is expected to change once again when the pandemic is over. We can assume that the opening up of, for instance, Oslo's nightlife, cultural activities and opportunities for broad social contact will have the largest effect on young adults and that this will contribute to increased return migration for this group. However, as shown in Figure 2, out-migration from Oslo did not increase a great deal in 2020 for people below the age of 25.

To summarise (although more data is needed to firmly conclude), based on the characteristics of the movers and on the possible mechanisms at work, we can expect that a relatively large share of the people who moved from Oslo in 2020 will probably not return when Oslo opens up again, provided that working from home remains an option in the labour market.

These results may affect the city and the society in several ways. First of all, the out-movers who do not return contribute to a lower population growth in Oslo and to a changing population composition of the city. This may affect the need for services and housing as well as the municipality's tax revenue.

Furthermore, the increased out-migration from Oslo affects the destination areas of the movers. Many municipalities in Norway have declining populations, and the increased emigration from Oslo may have given hope that the teleworkers can revive remote municipalities aiming to increase their populations. However, as figures 5 and 6 show, most of those who moved from Oslo did not move far, just like in the years before 2020. This may also indicate that a large proportion of the teleworking movers intend to visit Oslo relatively frequently in the future.

This paper has only examined those who left Oslo up until 2020, and it is too early to determine whether out-migration from Oslo will remain as high as in 2020 (or higher) in the years to come. This will of course depend a lot on how the pandemic evolves. Some factors suggest that 2020 may be the start of a new trend: if teleworking remains a more permanent way of working in Norway, and not just a temporary way to cope with pandemics and lockdowns, more people in office jobs – who may have stayed in Oslo 2020 in order to wait and see – may seize the opportunity to move out of the city, particularly if they find other places more attractive and if the housing prices in Oslo remain high. More permanent use of home offices may also create the need for extra space at home, and larger homes are less expensive outside of Oslo. Furthermore, migration flows are often self-perpetuating because each act of migration itself creates the social structure needed to sustain it (Massey et al., 1993). If friends and other networks have already moved from the city to somewhere else, it may be easier to follow them.

However, other factors suggest that the movement out of Oslo in 2020 might be a peak and not the start of a new trend. Firstly, we may assume that the most out-migration-prone people have already left, so those who are still living in Oslo are more inclined to remain. Secondly, if the out-movers sell (or rent out) their dwellings in Oslo, the housing market may be affected, making housing in Oslo more accessible to others.

Data from the two first quarters of 2021 show that out-migration from Oslo has remained high, suggesting that the teleworking and network effects may be strong. However, longer time series are needed in order to draw firm conclusions about whether the relatively high out-migration will continue after the pandemic, and they will also reveal whether the out-movers find new destination areas or continue to move mainly to Oslo's nearest neighbourhood.

The possible returnees among those who moved from Oslo in 2020 will show up in data on migrations *into* Oslo in the years to come: a flow equally as important as the out-migration for the planning of Oslo's housing market, transport infrastructure, etc. So far, in-migration from other parts of Norway to Oslo scarcely seems to have been changed by the Covid-19 pandemic. In-migration may increase if many of the 2020 out-movers return or if housing in Oslo becomes more affordable (which high out-migration could contribute to). We may also see a new group of in-movers: if teleworking becomes easier, it may be possible to have a job somewhere else while living in Oslo, which may be an option for some people who find life in Oslo particularly appealing. Hence, 2020 and the new opportunities for teleworking may be the start of a trend where work becomes less important in choosing where to live, and the attractiveness of cities and other places becomes more weighted. This may, in turn, imply that people who do not find cities so attractive move out of Oslo and are partly replaced by people who prefer life in cities and who can telework for a job which is somewhere else. Although this latter flow will probably be smaller since the share of occupations adaptable to remote working is lower outside the large cities (OECD, 2020), with more out-migration of people who find the city less attractive and more in-migration of people who prefer to live in the city, Oslo may end up with a more satisfied population than before – even if the city itself does not change much compared to the years preceding the pandemic.

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## Appendix

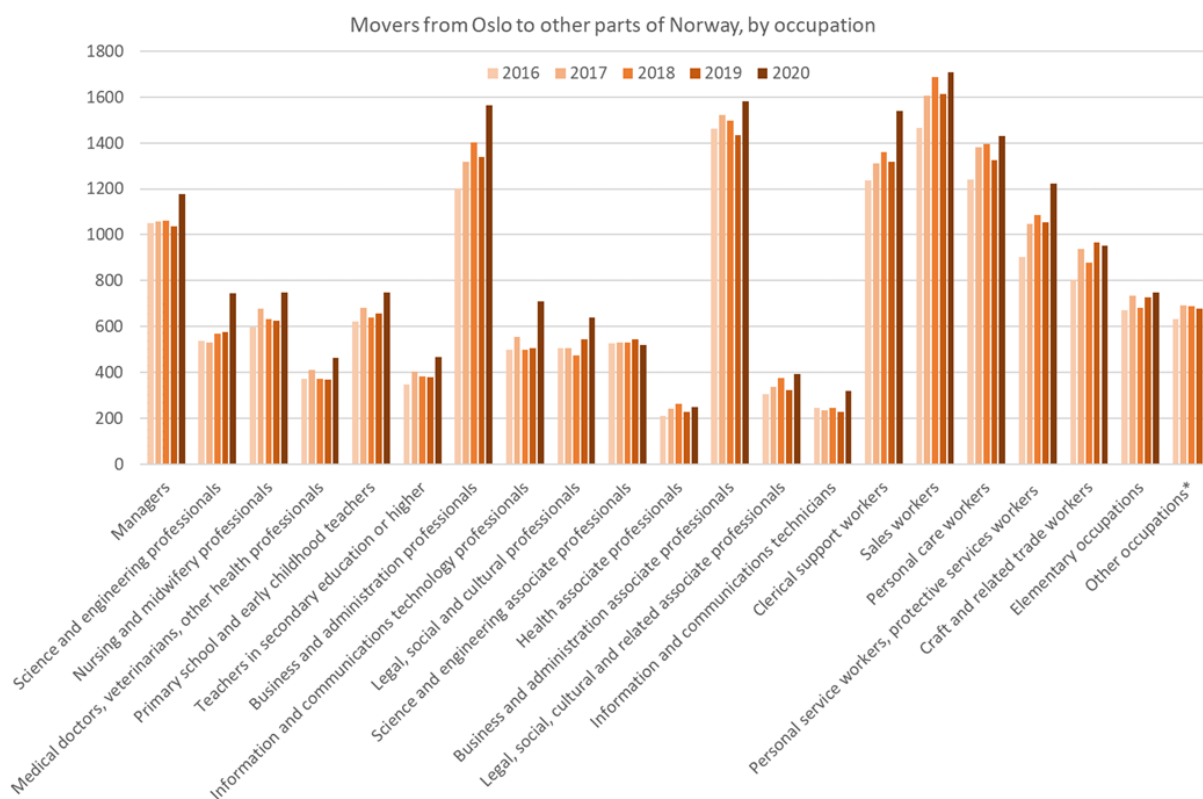


Figure A1. Migration from Oslo to other parts of Norway by more disaggregated occupations, 2016 to 2020

\* Includes military occupations, plant and machine operators and assemblers and skilled agricultural, forestry and fishery workers.

Table A1. Moving from Oslo to other parts of Norway (upper part) or abroad (lower part) – results from binomial logistic regressions

	2016	2017	2018	2019	2020
Male (ref = female)	<b>0.039</b>	0.018	<b>0.034</b>	0.015	0.029
Children (0-17 years) in family (ref = no children 0-17 years in family)	<b>0.073</b>	<b>0.055</b>	<b>0.086</b>	<b>0.078</b>	0.034
Born in Oslo (ref = not born in Oslo)	<b>-0.514</b>	<b>-0.504</b>	<b>-0.500</b>	<b>-0.503</b>	<b>-0.519</b>
Age group (ref = 0-5 years)					
6-17 years	<b>-1.234</b>	<b>-1.327</b>	<b>-1.323</b>	<b>-1.460</b>	<b>-1.414</b>
18-24 years	-0.001	-0.014	0.008	-0.060	-0.032
25-34 years	<b>-0.135</b>	<b>-0.150</b>	<b>-0.132</b>	<b>-0.205</b>	<b>-0.173</b>
35-44 years	<b>-0.631</b>	<b>-0.637</b>	<b>-0.652</b>	<b>-0.697</b>	<b>-0.662</b>
45 years or older	<b>-1.403</b>	<b>-1.410</b>	<b>-1.404</b>	<b>-1.479</b>	<b>-1.416</b>
Home ownership (ref = homeowner)					
Unit/share holder	<b>0.283</b>	<b>0.277</b>	<b>0.303</b>	<b>0.170</b>	<b>0.189</b>
Renter	<b>0.608</b>	<b>0.574</b>	<b>0.590</b>	<b>0.573</b>	<b>0.483</b>
Personal income (ref = less than NOK 200,000 annually)					
NOK 200,000-500,000	-0.032	-0.035	-0.009	-0.013	0.011
NOK 500,000-1,000,000	-0.061	<b>-0.073</b>	-0.015	-0.024	-0.022
More than NOK 1,000,000	<b>-0.243</b>	<b>-0.219</b>	<b>-0.203</b>	<b>-0.206</b>	<b>-0.115</b>
Immigrant background (ref = no immigrant background)					
Immigrant	<b>-0.517</b>	<b>-0.524</b>	<b>-0.536</b>	<b>-0.541</b>	<b>-0.515</b>
Norwegian-born with immigrant parents	<b>-0.459</b>	<b>-0.434</b>	<b>-0.448</b>	<b>-0.449</b>	<b>-0.393</b>
Occupation (ref = managers)					
Professionals	<b>-0.098</b>	-0.046	<b>-0.096</b>	-0.079	-0.023
Technicians and associate professionals	0.062	<b>0.109</b>	0.096	0.068	0.080
Clerical support workers	-0.003	0.032	0.077	0.057	<b>0.151</b>
Service and sales workers	-0.015	0.060	0.113	<b>0.106</b>	<b>0.126</b>

	Craft and related trade workers	<b>0.238</b>	<b>0.360</b>	<b>0.305</b>	<b>0.430</b>	<b>0.334</b>
	Elementary occupations	0.039	0.071	0.024	0.115	0.081
	Other occupations	<b>0.333</b>	<b>0.336</b>	<b>0.328</b>	<b>0.344</b>	<b>0.442</b>
	No occupation / not registered	-0.093	-0.050	-0.044	-0.050	-0.002
	Constant	<b>-2.449</b>	<b>-2.395</b>	<b>-2.482</b>	<b>-2.403</b>	<b>-2.352</b>
Emigration to another country	Male (ref = female)	0.003	0.023	0.031	-0.043	0.050
	Children (0-17 years) in family (ref = no children 0-17 years in family)	<b>-0.718</b>	<b>-0.637</b>	<b>-0.610</b>	<b>-0.475</b>	<b>-0.599</b>
	Born in Oslo (ref = not born in Oslo)	<b>-0.224</b>	<b>-0.185</b>	<b>-0.124</b>	<b>-0.187</b>	<b>-0.186</b>
	Age group (ref = 0-5 years)					
	6-17 years	<b>-0.998</b>	<b>-1.022</b>	<b>-0.941</b>	<b>-0.896</b>	<b>-1.126</b>
	18-24 years	<b>-0.556</b>	<b>-0.643</b>	<b>-0.646</b>	<b>-0.466</b>	<b>-0.679</b>
	25-34 years	<b>-0.396</b>	<b>-0.263</b>	-0.049	-0.058	-0.088
	35-44 years	<b>-0.826</b>	<b>-0.608</b>	<b>-0.404</b>	<b>-0.474</b>	<b>-0.395</b>
	45 years or older	<b>-1.867</b>	<b>-1.545</b>	<b>-1.380</b>	<b>-1.462</b>	<b>-1.502</b>
	Home ownership (ref = homeowner)					
	Unit/share holder	<b>-0.219</b>	<b>-0.113</b>	-0.077	<b>-0.175</b>	<b>-0.128</b>
	Renter	<b>0.553</b>	<b>0.612</b>	<b>0.611</b>	<b>0.471</b>	<b>0.569</b>
	Personal income (ref = less than NOK 200,000 annually)					
	NOK 200,000-500,000	<b>-0.716</b>	<b>-0.910</b>	<b>-0.994</b>	<b>-0.710</b>	<b>-1.085</b>
	NOK 500,000-1,000,000	<b>-0.553</b>	<b>-0.719</b>	<b>-0.982</b>	<b>-0.685</b>	<b>-1.020</b>
	More than NOK 1,000,000	0.082	0.096	-0.188	-0.084	<b>-0.406</b>
	Immigrant background (ref = no immigrant background)					
	Immigrant	<b>2.193</b>	<b>2.182</b>	<b>2.152</b>	<b>1.963</b>	<b>2.171</b>
	Norwegian-born with immigrant parents	<b>1.125</b>	<b>1.108</b>	<b>1.233</b>	<b>1.173</b>	<b>1.035</b>
	Occupation (ref = managers)					
	Professionals	-0.147	-0.005	-0.025	-0.107	0.060
	Technicians and associate professionals	0.112	-0.118	-0.073	<b>-0.283</b>	-0.049
	Clerical support workers	-0.174	-0.247	-0.161	-0.262	-0.248
	Service and sales workers	<b>-0.335</b>	<b>-0.365</b>	<b>-0.437</b>	<b>-0.508</b>	<b>-0.374</b>
	Craft and related trade workers	<b>-0.677</b>	<b>-0.758</b>	<b>-0.596</b>	<b>-0.408</b>	<b>-0.548</b>
	Elementary occupations	<b>-0.504</b>	<b>-0.779</b>	<b>-0.800</b>	<b>-0.593</b>	<b>-0.583</b>
	Other occupations	0.164	-0.004	-0.106	-0.016	0.049
No occupation / not registered	0.158	<b>0.240</b>	<b>0.273</b>	<b>0.290</b>	<b>0.478</b>	
Constant	<b>-4.201</b>	<b>-4.440</b>	<b>-4.643</b>	<b>-4.686</b>	<b>-4.870</b>	
Number of observations	631790	639404	644890	652978	661854	
Pseudo R2	0.090	0.088	0.088	0.080	0.084	

Estimates in **bold** are significant at the 0.01 level. Please note that the regression for each year is conducted separately, hence the results (and significance level) relate to differences within the population each year.