Residential and Workplace

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Introduction & data

Since the large impacts of the pandemic on OmniCorp, particularly in the retail and hospitality sectors, we are interested in the effects of lockdown and other government interventions and how/why these might be different in different countries.

In the following, we will use the dataset "tidycovid19.csv", downloaded from the tidycovid19 R package on 24th September 2020. Descriptions of the different variables found in the data relating to the current epidemic and further details of the package can be found at this website (Gassen 2020).

We look at how the frequency of people visiting residential places and workplaces has changed during the pandemic for countries in Europe and America. In particular, we study the `gcmr_residential gcmr_workplaces` variables from a community mobility report (Google, 2020). The variables are expressed as a percentage*100 change relative to the baseline period Jan 3 - Feb 6, 2020. However, we take the data from Feb 7, as we want to look at the average percentage change in the frequency of people's visits to these places, and don't want to include the baseline in this mean. We find the mean of these variables and name them `mean_gcmr_residential` and `mean_gcmr_workplaces` respectively.

Activity in residential places and workplaces in Europe and America

We plot the average percentage change in the frequency of visits to residential places against workplaces for countries in Europe and America from this year (Feb 7 onwards). We look particularly at the trends for Europe, North America and South America.
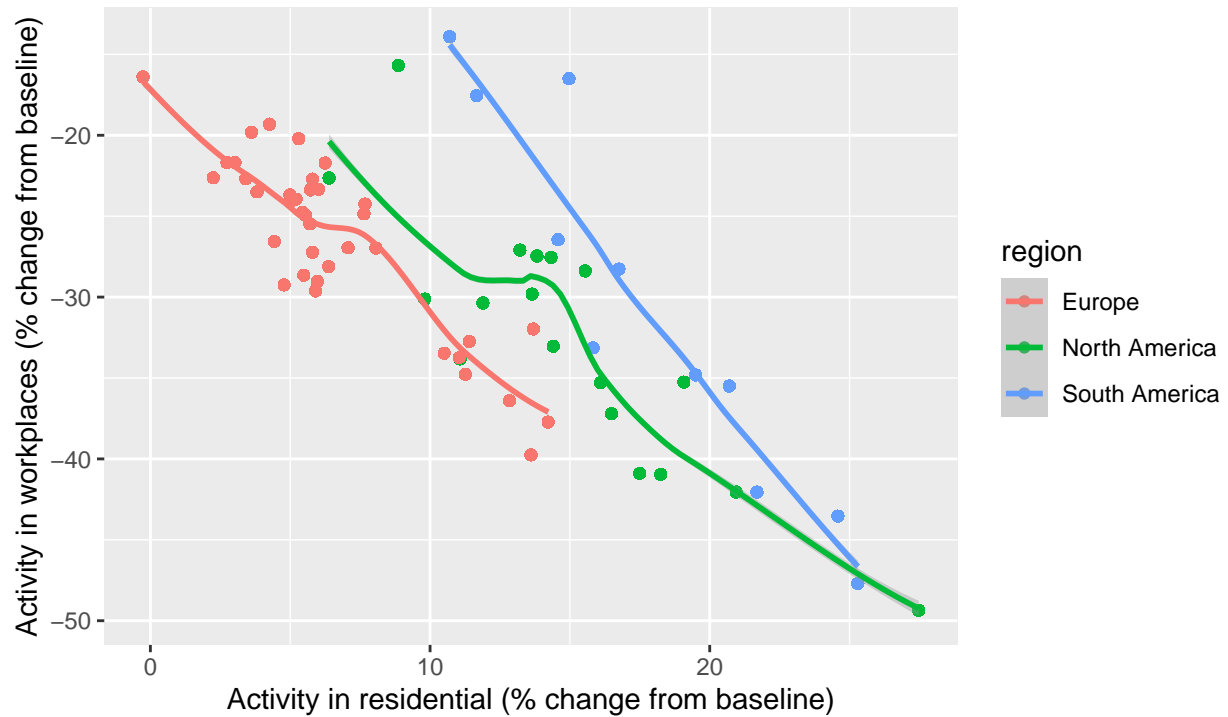
Time in workplaces decreases as time in residential places increases in Europe and America

Drawn from Google Community Mobility Reports
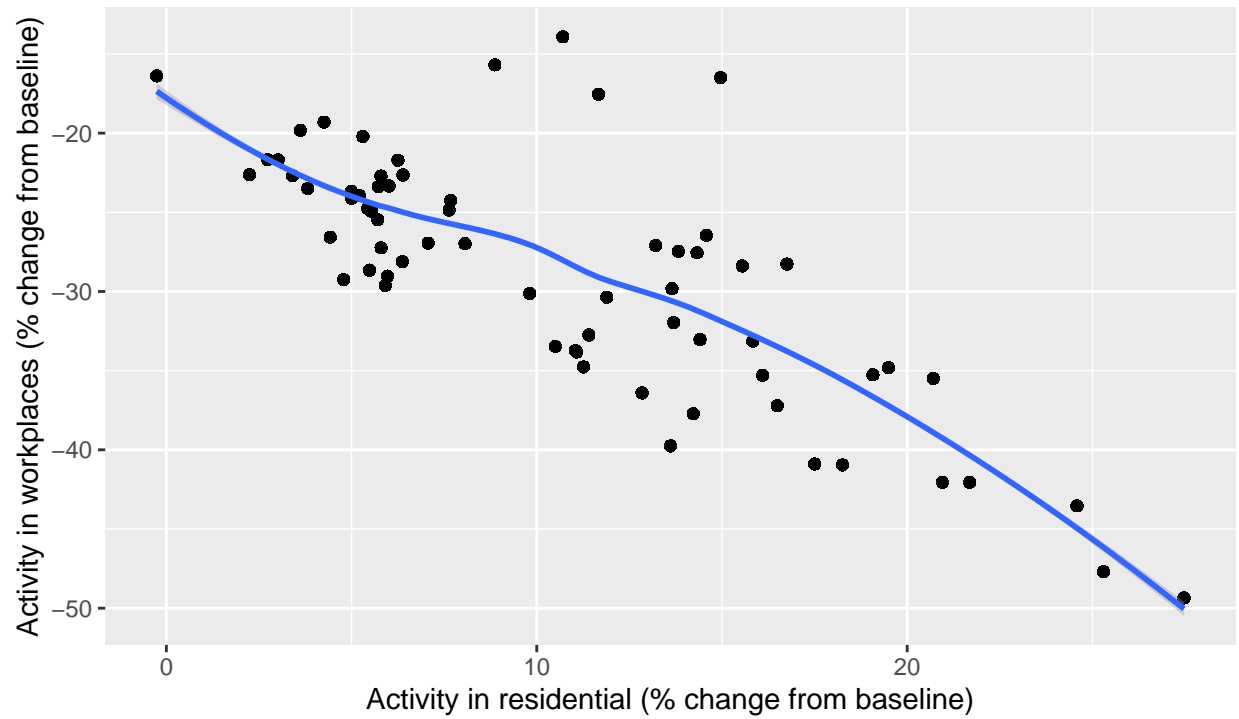
Time in workplaces decreases as time in residential places increases across Europe, North America and South America

Drawn from Google Community Mobility Reports

We fit a linear model between `mean_gcmr_workplaces` and `mean_gcmr_residential` of all countries in Europe and America and find the intercept value to be -18.468 and the slope to be -0.972. We plot this linear relationship on a graph against the individual trends of each region.

Time in workplaces decreases as time in residential places increases across Europe, North America and South America

Drawn from Google Community Mobility Reports
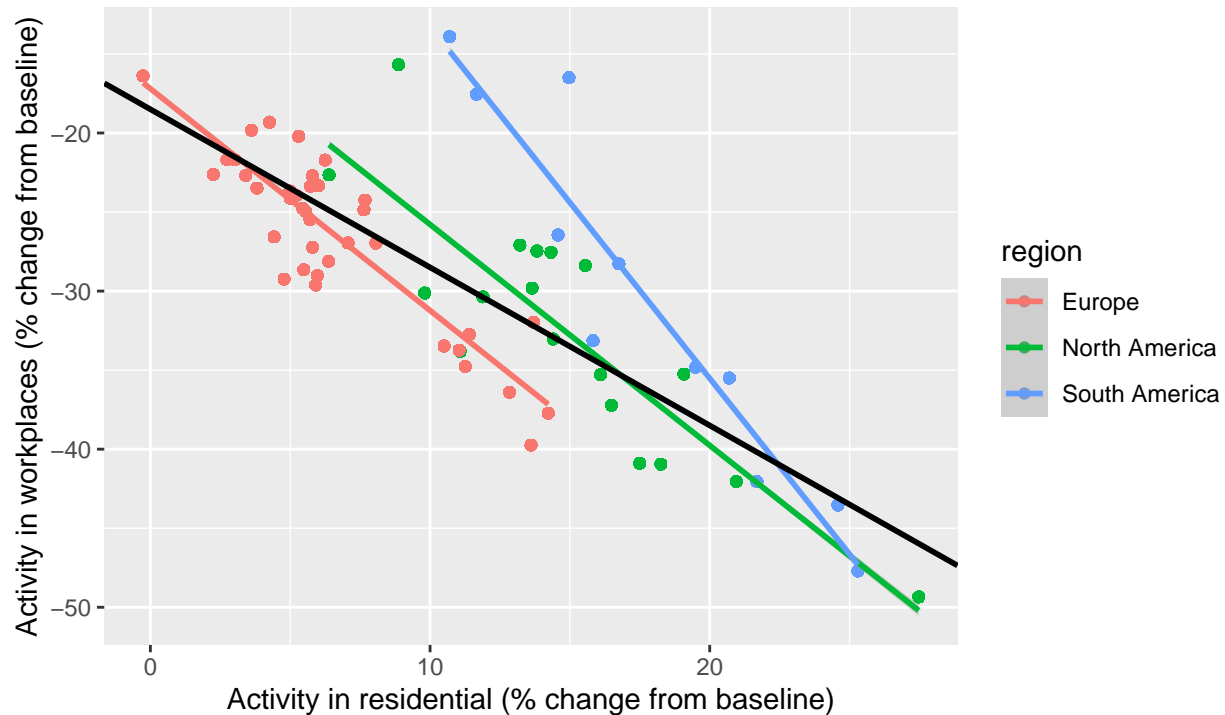
We see from this plot that the general trend is as the time spent in workplaces decreases, the time spent in residential places increases. This relationship is reflected when looking at each region in isolation, and the linear relationship is arguably stronger. We see that the strongest linear relationship is in South America.

We also note that there was a greater average activity in residential places in South America than in Europe. However, this could be explained by the time period. We are looking at data from Feb 7 - Sept 20, and in this time period South America is predominantly in Autumn and Winter, in which people potentially stay at home more than in Spring and Summer, so there is potential for misleading data here.

We look closer at the relationship of activity in residential places against activity in workplaces for Europe, North America and South America individually, to identify any outliers in the trend and identify why these might occur.

((We look closer at the activity in homes for these regions from 1st March - 11th Apr (note: these dates are subject to change from the data we gain from lockdowns). This is because we see a significant increase in activity in residential homes in this time period, as well as a significant decrease in activity in workplaces.))

References

Gassen, 2020, *Download, Tidy and Visualize Covid-19 Related Data.* [online] Available at: https://joachim-gassen.github.io/tidycovid19/

Google, 2020. *COVID-19 Community Mobility Report.* [online] Available at: https://www.google.com/covid19/mobility/