What explains differences in social distancing in the UK?

The UK in a Changing Europe

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Executive Summary

- **Google's data shows that the British public took the lockdown very seriously and, in many cases, were acting ahead of the official government ruling.**

- **However, some places have locked down more than others. These differences can be explained by income, geography and (more surprisingly) politics.**

- **There is a difference between Remain and Leave-voting places in the level of social distancing taking place, even when controlling for income, demographics and population density.**

- **Places that are more 'Remainy' than you'd expect given their income, location and demographics are also more likely to have seen reduced workplace activity.**

- **This difference in the politics of places, with higher Leave vote correlating with lower levels of distancing, exists across and within all regions of Great Britain.**

The coronavirus has led to the greatest change in everyday life for Britons – and citizens around the world – since the Second World War. Governments have almost universally employed lockdowns, preventing citizens from leaving their homes except for specifically approved reasons.

But no lockdown is 100% enforced. It is both impossible and undesirable to have the police monitor every movement or every citizen. And in most countries the rules around social distancing have some wriggle room. In England, for example, the government advice is to exercise only once daily but this does not have an explicit basis in law. In any case, some people are essential workers and must continue their daily travel and interaction through the lockdown.

In other words, we should expect some variation across people – and maybe places – in how much social distancing is going on. But other than anecdotal snapshots of people in London parks – and the ensuing moral outrage in the media – how can we tell how much social distancing is going on?

One possibility is to ask people in surveys. A number of polling companies have done so and found relatively little difference in people's claims about their social distancing behaviour in terms of personal hygiene, avoiding crowded places, etc. There are some emerging differences in whether people have been able to work from home.

YouGov found that 45% of people in social grades ABC1 have avoided going to work to protect themselves from coronavirus, compare to only 29% of social grades C2DE. Even still, self-reported behaviour is prone to so-called 'social desirability' bias – people tell survey companies what they think they want to hear.

To get around this problem we could look at people's actual social distancing behaviour, as opposed to their claims about it. To do so at an individual level would require Big Brother style monitoring that few of us would be comfortable with (at least yet!).

However, we can look at aggregated data on the amount of 'activity' going on in different types of places. Google's Community Mobility Reports provides just this kind of data. It is constructed from people's 'Location History' in their Google Accounts – so this will be sent to Google from people's smartphones as they move around. Google keeps this data anonymous but can aggregate it at the regional level, showing how much activity is going on in various types of locations.

Google uses six location types: groceries, parks, residential, retail and recreation, transit stations, and workplaces. The data quality varies across categories, and is especially weak for parks and residential. But it provides, for each category, a helpful account of how much activity has changed since 29 February.

In the UK, we are fortunate that Google provides this data at a quite disaggregated level – with 150 different geographical units covered. The good news is that these cover the whole of the UK. The bad news is that sometimes they are local authorities, such as Reading or Thurrock, and other times they are counties, such as Oxfordshire. Even worse, there is just one observation for London. So we need to be a bit careful about this data since it is not always comparing apples with apples.

We can match this data, more or less well, to other data collected at the local authority level. The good people in the ONS Data Science Campus have scraped the Google data and added population demographics. To this I have further added economic data drawn from the ONS – gross domestic product per person and its growth over the past year – and political data, specifically the voting record of the local authority in the Brexit Referendum of 2016. Together with the data on the population's demographics this gives us the ability to see how demographic, economic, and political factors might be shaping people's activity during the lockdown.

So, what do we find? First off, the most important – and impressive – thing to note is just how much social distancing has been going on. In the first two weeks of March, even as the virus had clearly ravaged Northern Italy – workplace activity in the UK was indistinguishable from normal. But around 15 March we see a sharp drop of around 25% compared to normal activity. And following the lockdown this reduced to 50% and then by Easter weekend almost 75% in some places. The British public clearly took the lockdown very seriously and indeed in many cases were acting ahead of the official government ruling.

We see a similar pattern for activity at transit stations and retail and recreation. At the same time, activity in residential areas – i.e. at home – increased. This is great news for the government's lockdown strategy. People are largely following the advice and we have not had the same agitation we see in a number of US states.

The second thing to note is that different places have seen quite starkly different changes in activity. Not everywhere has shut down equally. Some localities, such as North East Lincolnshire have reduced workplace activity by just over half. Others, such as Edinburgh, by 80%. Now these are percentage changes so it's possible this is produced by having different baselines. But as we shall see, there does seem to be something systematic to this.

All three types of regional factors – demographic, economic, and political – appear to matter in explaining differences across places. Surprisingly, the latter is the strongest predictor, even taking into account the other forces and regional differences.

Let's begin with three figures showing the change in workplace activity on Thursday 9 April, just before the Easter weekend. This first figure shows the population density of the region plotted against workplace activity versus its pre-COVID level. The lower the dot, the greatest reduction in activity within the local authority area; the further right the dot, the more densely populated it is. There is a slight negative relationship: Greater London, Edinburgh, and Reading are dense and have greatly reduced workplace activity; Dumfries and Galloway, Powys and Herefordshire are sparsely populated and have less reduction. But it's all pretty messy. Demographics aren't destiny.

The relationship between population density and reduced workplace activity is relatively weak

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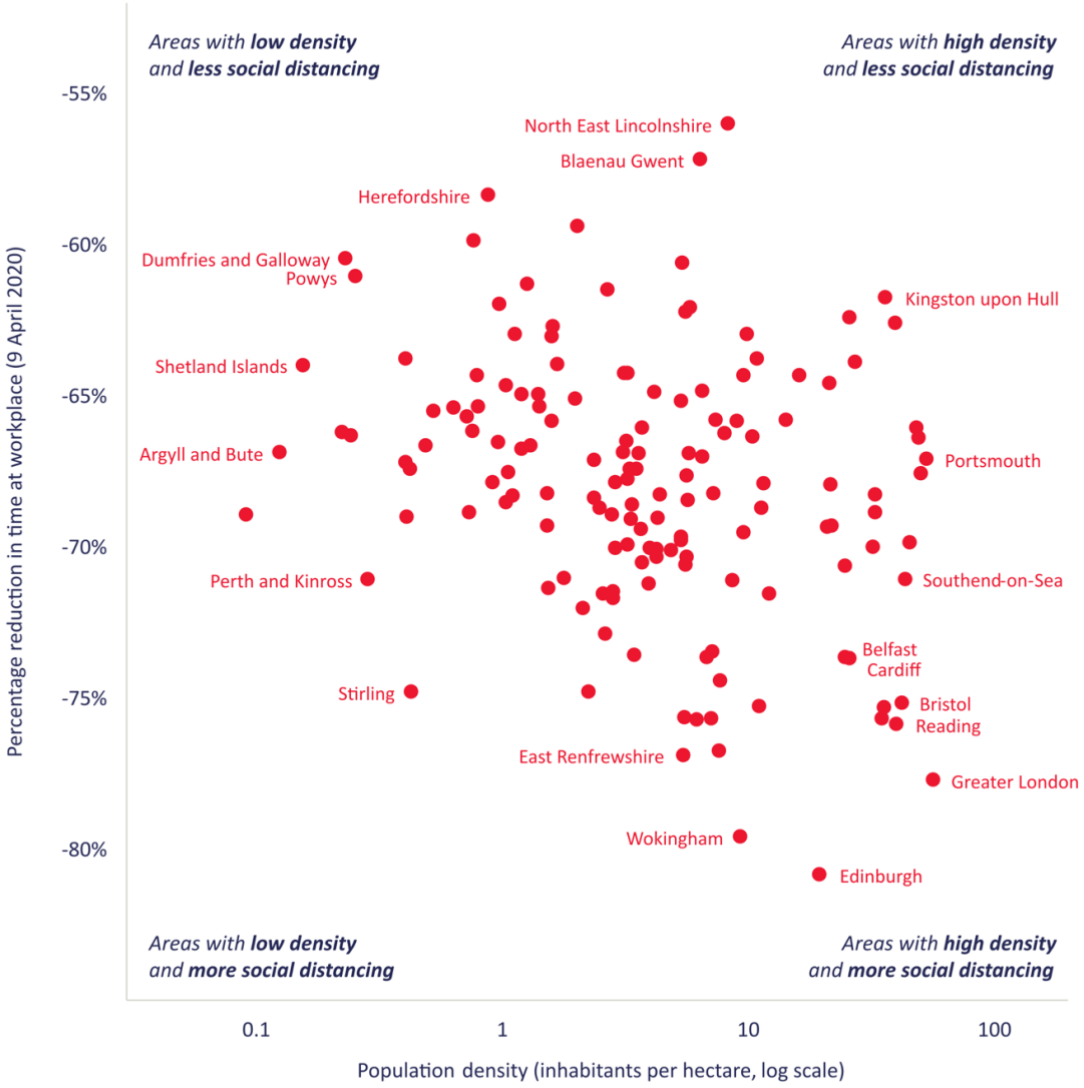
Reduction in workplace activity vs. population density, by local authority or county.



Source: Google Community Mobility Reports and ONS. Analysis by Ben Ansell for UK in a Changing Europe.

So it's not just cities versus the rest. What about income? After all, wealthier professionals find it easier to stay at home to work than people in manual professions, or indeed many less well-off key workers, from nurses to grocery workers. We now plot GDP per capita (i.e. personal income) by area. The lower the dot, the greatest reduction in activity within the local authority area; the further right the dot, the richer it is.

Richer areas are spending much less time at work, while there is substantial variation among poorer areas

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Reduction in workplace activity vs. GDP per capita, by local authority or county.

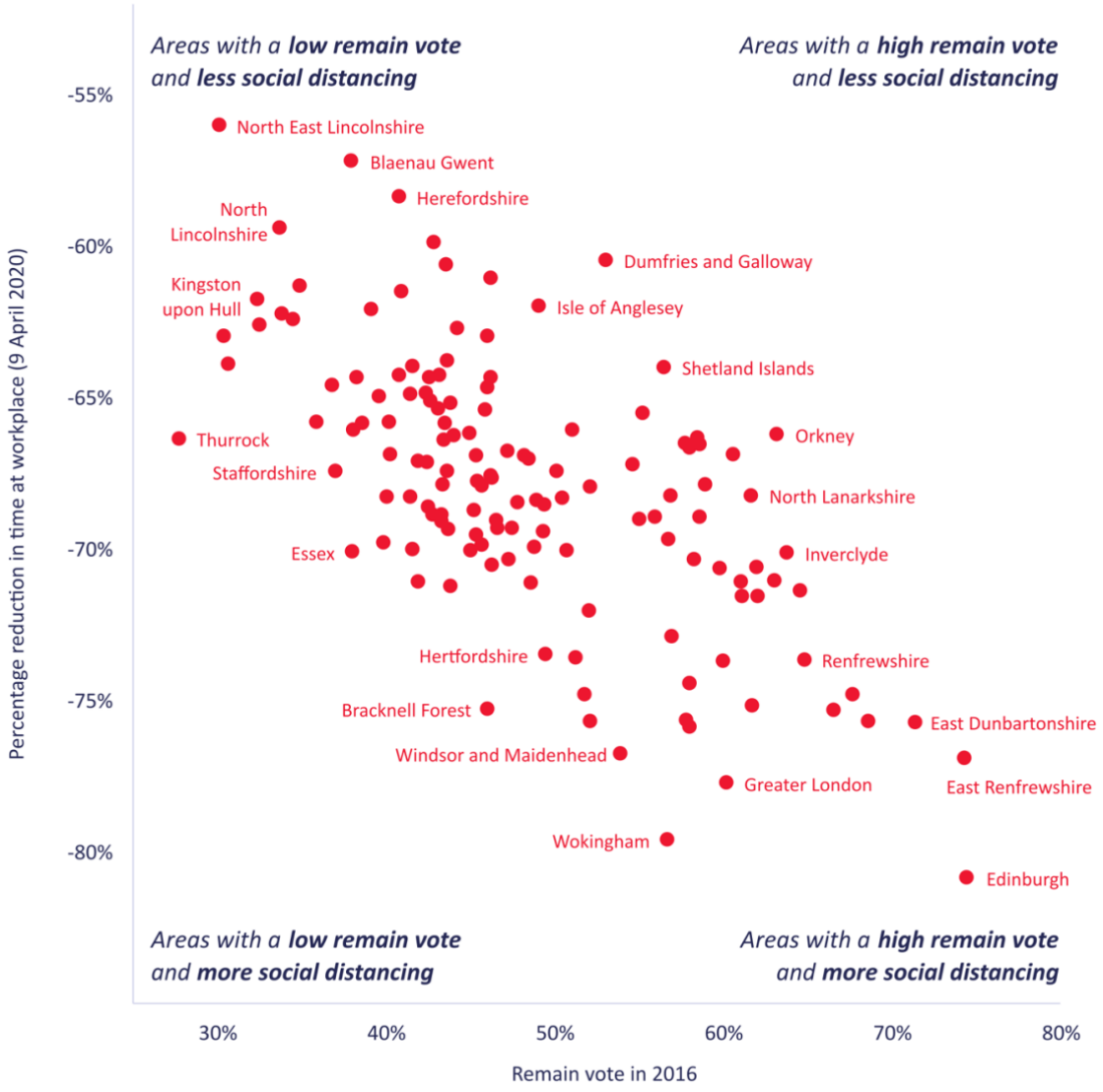
Source: Google Community Mobility Reports and ONS. Analysis by Ben Ansell for UK in a Changing Europe.

Again we see a negative relationship. The richest parts of the country have all had a reduction in workplace activity of more than two-thirds. But there is substantial variation among poorer and more middle-income areas (i.e. the left half of the graph). So economics matters, but again can't tell the whole story.

What about politics? I now match each area to its voting pattern in the Brexit referendum, using the proportion voting Remain.

The reduction in workplace activity has been greater in areas that voted strongly for remain in 2016

Reduction in workplace activity vs. remain vote share in 2016, by local authority or county.



Source: Google Community Mobility Reports and ONS. Analysis by Ben Ansell for UK in a Changing Europe.

Here we see a very tight negative relationship between the Remain vote and workplace activity. It is partly driven by Scottish regions that were very anti-Brexit and where workplace reduction has been especially strong. We also see wealthy pro-Remain areas in the South East with a similar pattern. And at the top-left we see areas in the East Midlands, Yorkshire, and Wales – the bedrock of Leave support – have less (though of course still substantial) workplace activity reduction.

However, it is also true that, again looking at 9 April, we see the same negative relationship between Remain vote and workplace activity in every UK region.

The correlation between remain vote share and levels of social distancing can be seen across GB regions

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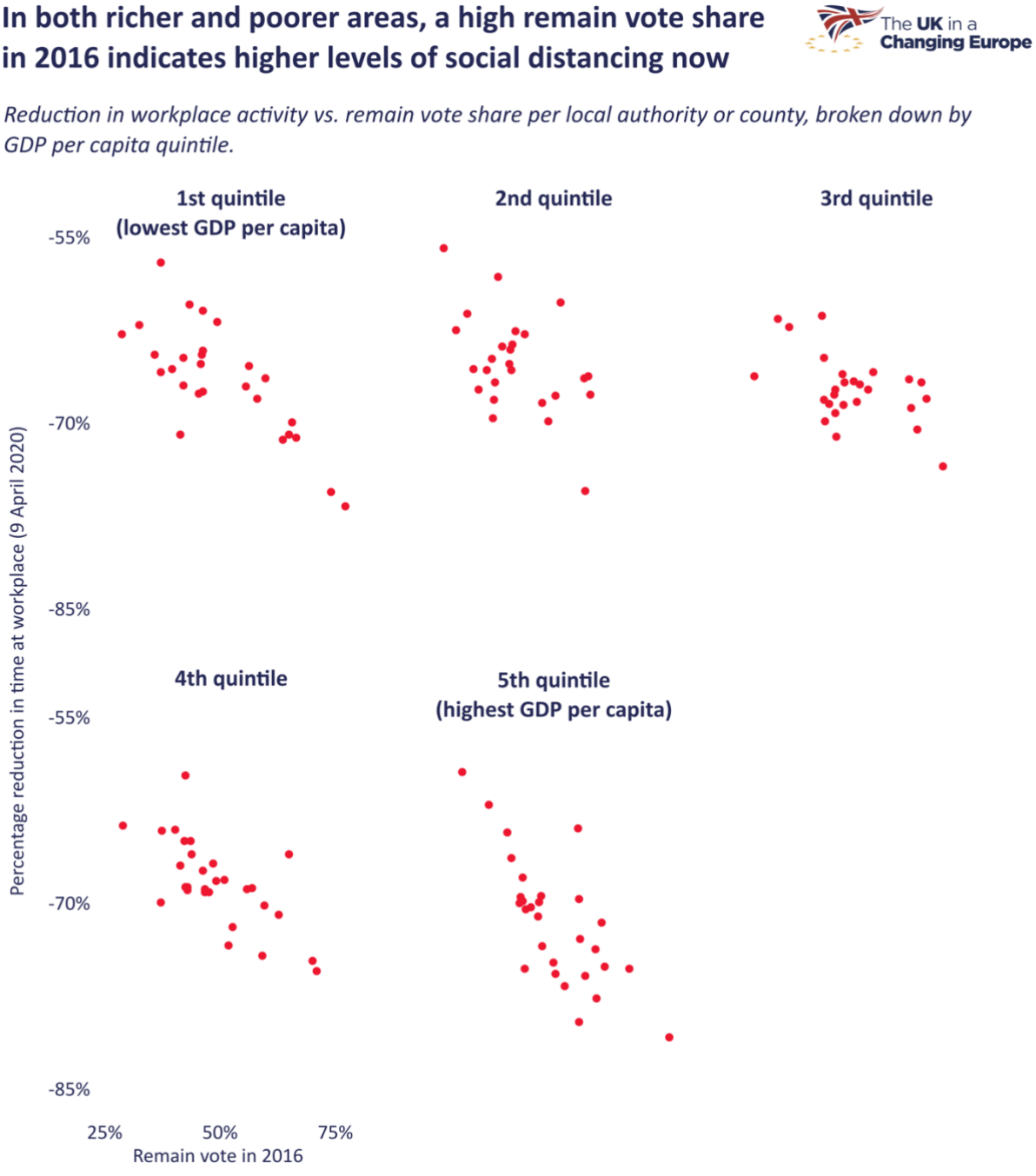
Reduction in workplace activity vs. remain vote share per local authority/county, broken down by region.

Source: Google Community Mobility Reports and ONS. Analysis by Ben Ansell for UK in a Changing Europe.

Furthermore, if we split the UK into five income 'quintiles' we see a negative pattern in each of them. This figure shows that, in both the poorest and richest places, the more Remain-voting areas have distanced more.

In both richer and poorer areas, a high remain vote share in 2016 indicates higher levels of social distancing now



Source: Google Community Mobility Reports and ONS. Analysis by Ben Ansell for UK in a Changing Europe.

When I showed this research on Twitter a week ago I met with an understandable pushback that this political relationship was because Leave voters find it harder to work from home or are key workers. That is indeed the most likely reason for this relationship, though it is no easy task to get comparable occupational data at this level across the UK to fully adjudicate that. However, this occupation link ought to be being picked up by the income data we do have – and have seen also seems to matter.

So this raises the obvious question. Is the Brexit relationship simply about economics? Or is there something additional going on?

The simplest way to get at this is to run linear regression models. What these do is predict the relationship between one variable (say Brexit support) and another (say workplace activity) while 'controlling' for (or netting out) the effects of other variables (say income or population structure). So that's what we will do.

Now it's worth noting that this is just about correlations across variables, not causation. I can't and won't prove any causation here – in any case, there is no 'shock' to political behaviour that would allow us to do so. Think of this as a good way of predicting the behaviour in each area, not as a full explanation.

I ran a linear regression model that includes measures for income, income growth, population density, proportion of people aged over 70, proportion under 30, and an indicator for each UK region. What, if anything, is left of the relationship between Brexit and workplace activity after that? As it turns out, quite a lot.

This next graph shows this relationship once all those other factors have been netted out. I show the line of best fit and 95% confidence intervals around that line. Whichever way you cut it, this is a pretty strong result. Places that are more 'Remainy' than you'd expect given their income, location, demographics, etc, are also more likely to have reduced workplace activity.

The relationship between remain support and social distancing is not explained by income or demographics

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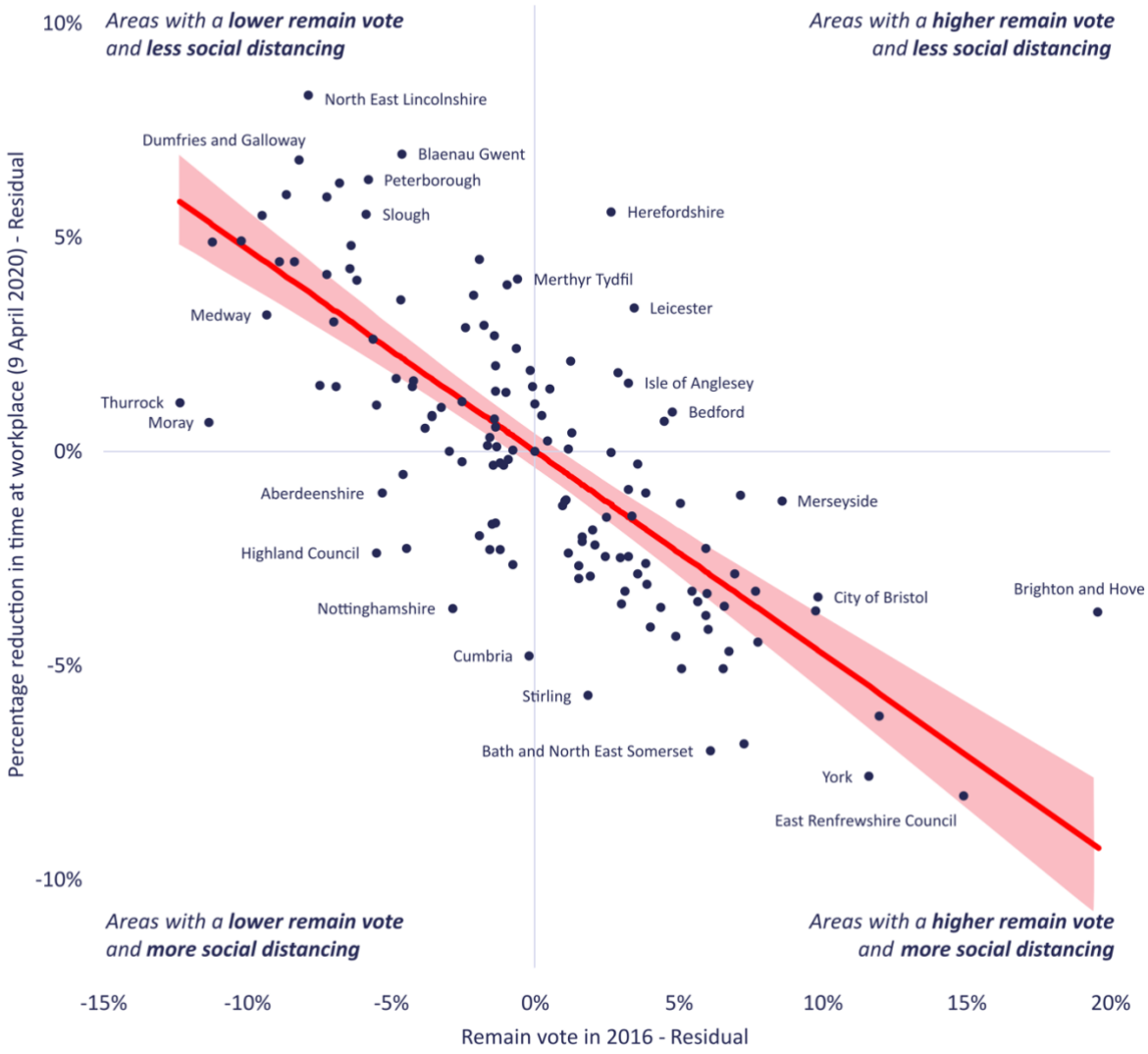
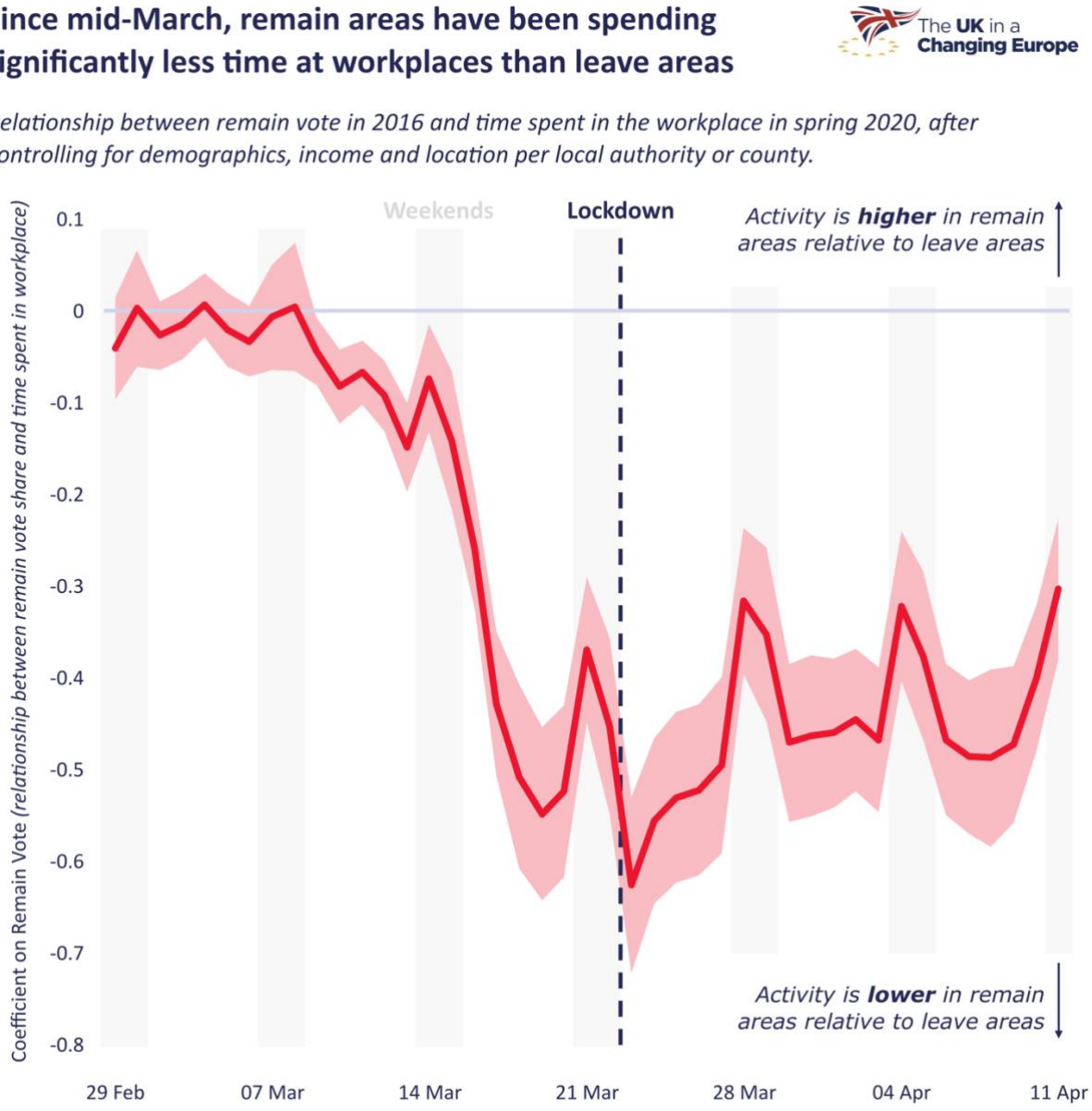
Linear regression showing the relationship between remain vote share and the reduction in time spent at workplace, controlling for demographics, income and location per local authority or county.



Source: Google Community Mobility Reports and ONS. Analysis by Ben Ansell for UK in a Changing Europe.

Maybe this is all about 9 April? Maybe that's a weird day. What does the pattern look like over time? We can do the same analysis for each day since February 29th and see whether it is consistent. Here I use code developed by Robert Hickman to plot each coefficient – that's the estimated slope of the line of best fit as we saw above – for every day. It's easy to see that there was no difference in behaviour between Leave and Remain areas at all in the first week of March. But after 15 March a massive gap opens up and remains roughly consistent since then. We can also see the date of the lockdown, the blue dashed line, doesn't particularly matter.

Since mid-March, remain areas have been spending significantly less time at workplaces than leave areas



Source: Google Community Mobility Reports and ONS. Analysis by Ben Ansell for UK in a Changing Europe.

What about other forms of activity? Is this about Remain areas being more likely to social distance, or just working from home more easily? The answer is maybe a bit of both.

We can do this same time series analysis and separate each of the six measures of activity provided by Google. If we do that we see that for transit and retail/recreation there is a difference, where Remain areas have less activity after around 15 March 15th. We also see more residential activity, which you would expect if more people were at home. But for groceries and parks, no such relationship exists.

So, it's not the case – as those photos of London parks indicate – that people in Remain areas are staying in much more than everyone. But they are at work less and perhaps avoiding city centres and transit stations more.

Remain areas are spending disproportionately less time in retail and transit spaces, but the same is not true for parks

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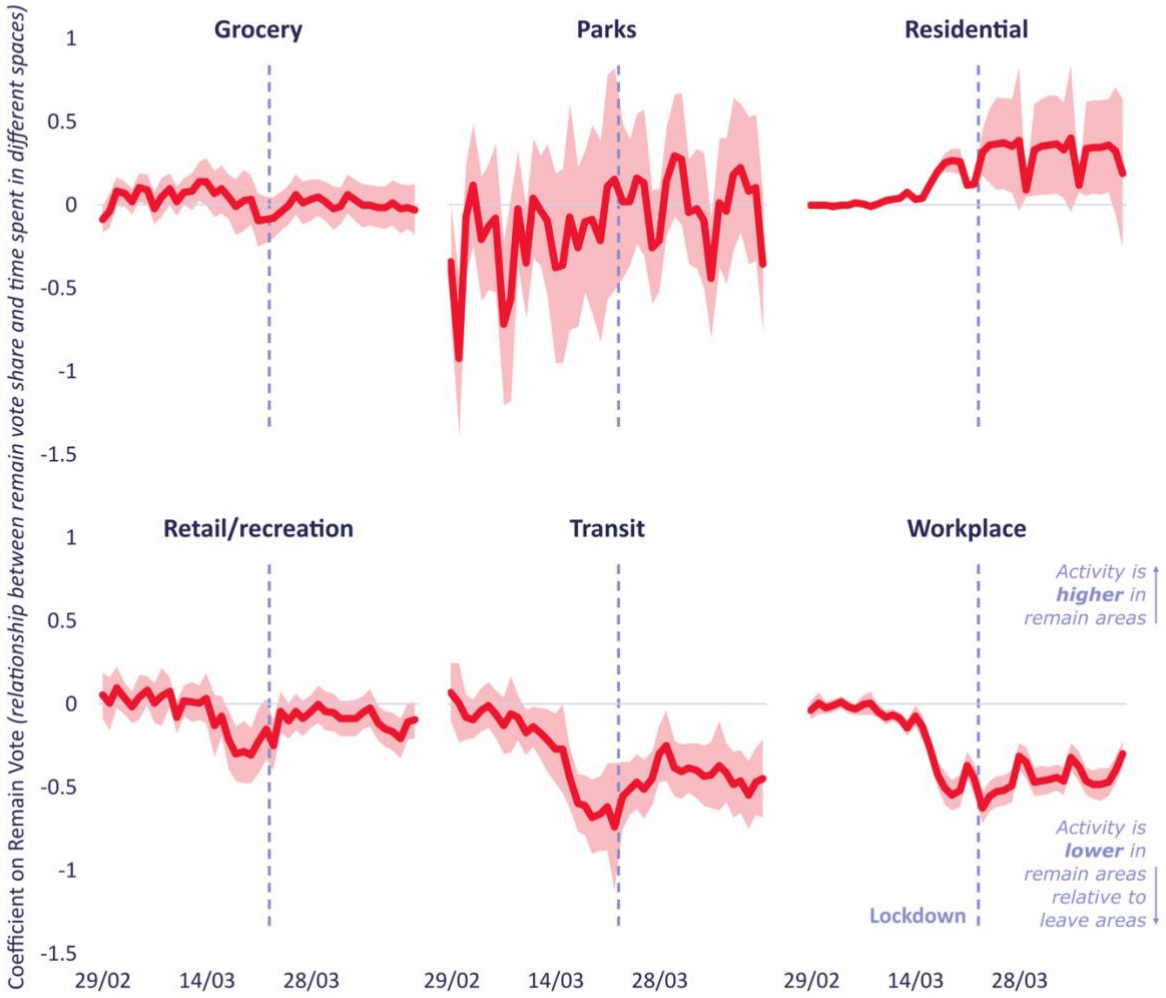
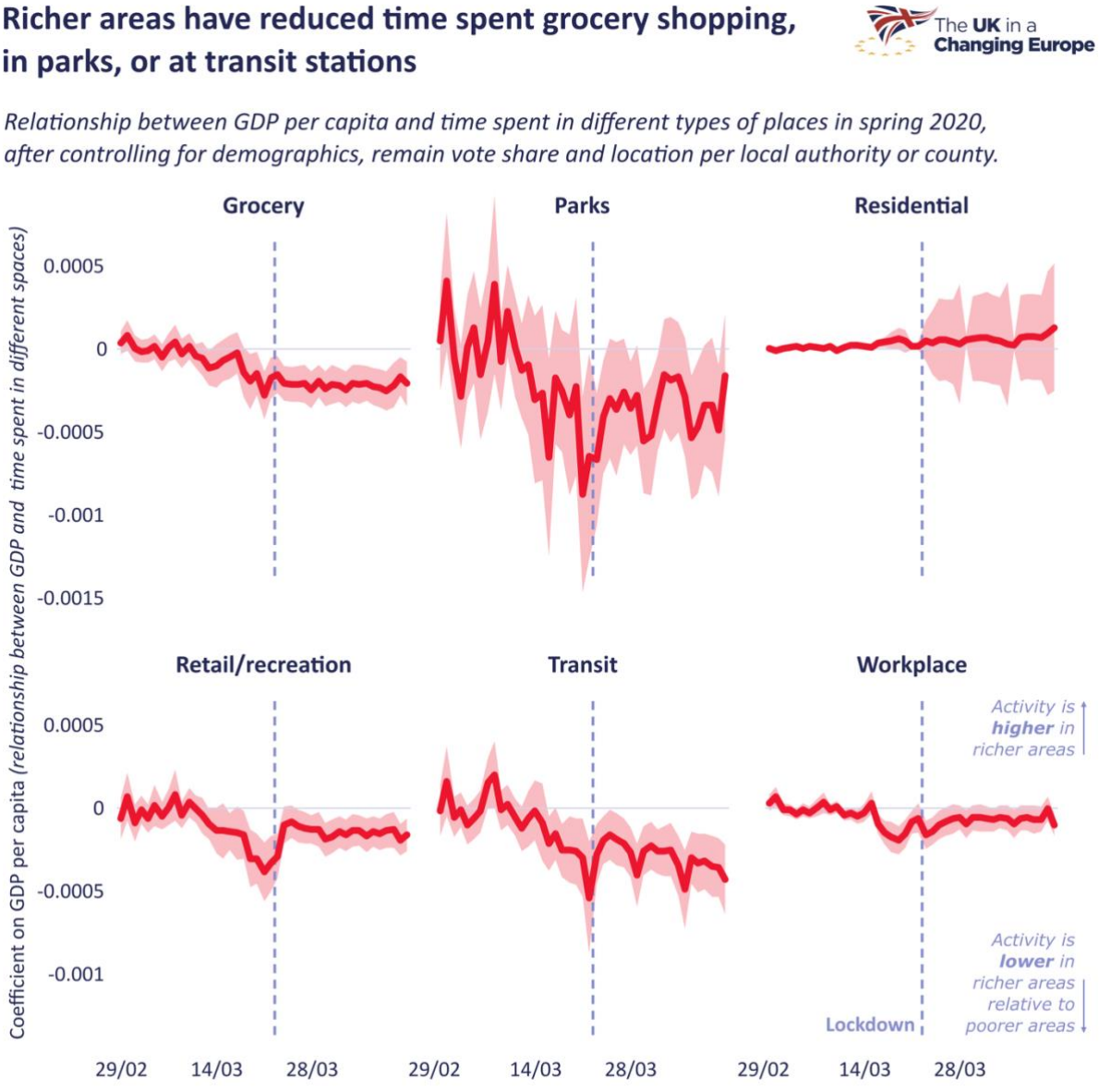
Relationship between remain vote in 2016 and time spent in different types of places in spring 2020, after controlling for demographics, income and location per local authority or county.



Source: Google Community Mobility Reports and ONS. Analysis by Ben Ansell for UK in a Changing Europe.

Finally, it's worth showing the same set of analyses for income. Here we see that richer areas have reduced shopping, going to the park, and going to transit stations more than have poorer areas.

Richer areas have reduced time spent grocery shopping, in parks, or at transit stations



Source: Google Community Mobility Reports and ONS. Analysis by Ben Ansell for UK in a Changing Europe.

As with the earlier graphs, this is netting out all other effects (including the Brexit vote), so this is the 'pure' income relationship. So both Brexit vote and income tested independently show significant differences in activity.

OK those graphs got quite complex. What did we learn? As before, it's really important to note that everywhere has social distanced dramatically. There are no bad actors here. But there are differences in the degree of social distancing, at least relative to the baseline. That could be because of different levels of starting activity. But it could also be related to demographic, economic, and political factors. The Brexit divide that has shaped much of British life over the past half-decade is indeed showing up here.

What are the implications? If Remain areas are able to social distance more – likely due to being able to work from home more easily, but potentially also related to different underlying attitudes – this could widen Britain's social divisions. It is not hard to imagine resentment building over the fact that in some places everyone seems to be working from home, whereas in others people have to head into work, putting themselves at risk. Or viewed the other way, there could be resentment that some people feel they are abiding by the lockdown, whereas others are following it more loosely.

There is no right or wrong here. Most people are doing their very best. But we have already seen from media coverage that mixed compliance with the lockdown leads to moral outrage. And the economic shocks from Covid-19 are likely to regionally very unequal, just as were the effects of the credit crisis. Anything that further widens Britain's already sharp divides should give us cause for concern.