Real-time economics and COVID-19:
What are we learning?

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This presentation

- Will look at some uses of real-time data
  - Will offer a "tasting menu" from a rich array of emerging research
- I will set the context and frame the issues
  - Then discuss some concrete evidence
- But we are still far from having a fully-joined up approach
  - And UK data sources are lagging behind other places
  - So many UK-based researchers are working on data from other countries

Economic Basics

- Economic interactions create benefits
    - Income
        - From labour and capital earnings
    - Consumption
    - Public goods
        - Including from "social life"
- But they create *negative externalities*
    - Congestion
    - Pollution
    - *And they spread disease.*

Economic Basics

- There are established approaches to monitoring the economy
  - Consumption/expenditure data
  - Production data

- Information available with a lag
  - But highly informative for policy
  - And tells us something about distributional impacts

- Debates about links between health and the economy
  - But general not thought of in terms of a trade-off

Economic Basics

- Classic economic model of economic behaviour
  - People pursue "utility" as economic actors
  - Are motivated by economic returns
- Government regulation needed
  - to limit negative externalities
  - to encourage pro-social actions
  - to redistribute in order to limit inequalities
- Also interest in non-economic motives
  - Norms
  - Values
  - Trust

So what is new in the pandemic?

- A trade-off between health and the economy?
- Do we have the right data tools for exploring economic impacts
  - Need for information to be timely
  - Also needs to give insights on how social interactions are changing
- New kinds of policy interventions with economic impacts to study
  - For example
    - Lockdowns
    - Furlough programs
    - Social distancing
    - Messaging
    - NPIs
- And how does limiting the spread of covid impact on the "normal" functioning of the economy

How to think about the trade-offs?

- From epi macro literature (Source: Ben Moll)
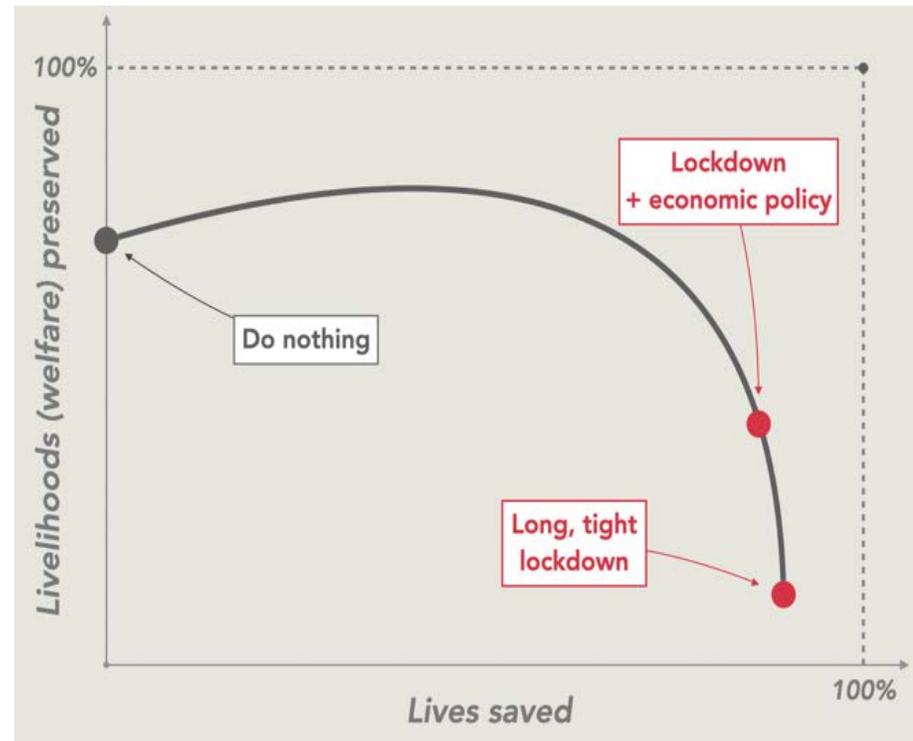
Can gains and losses be quantified?

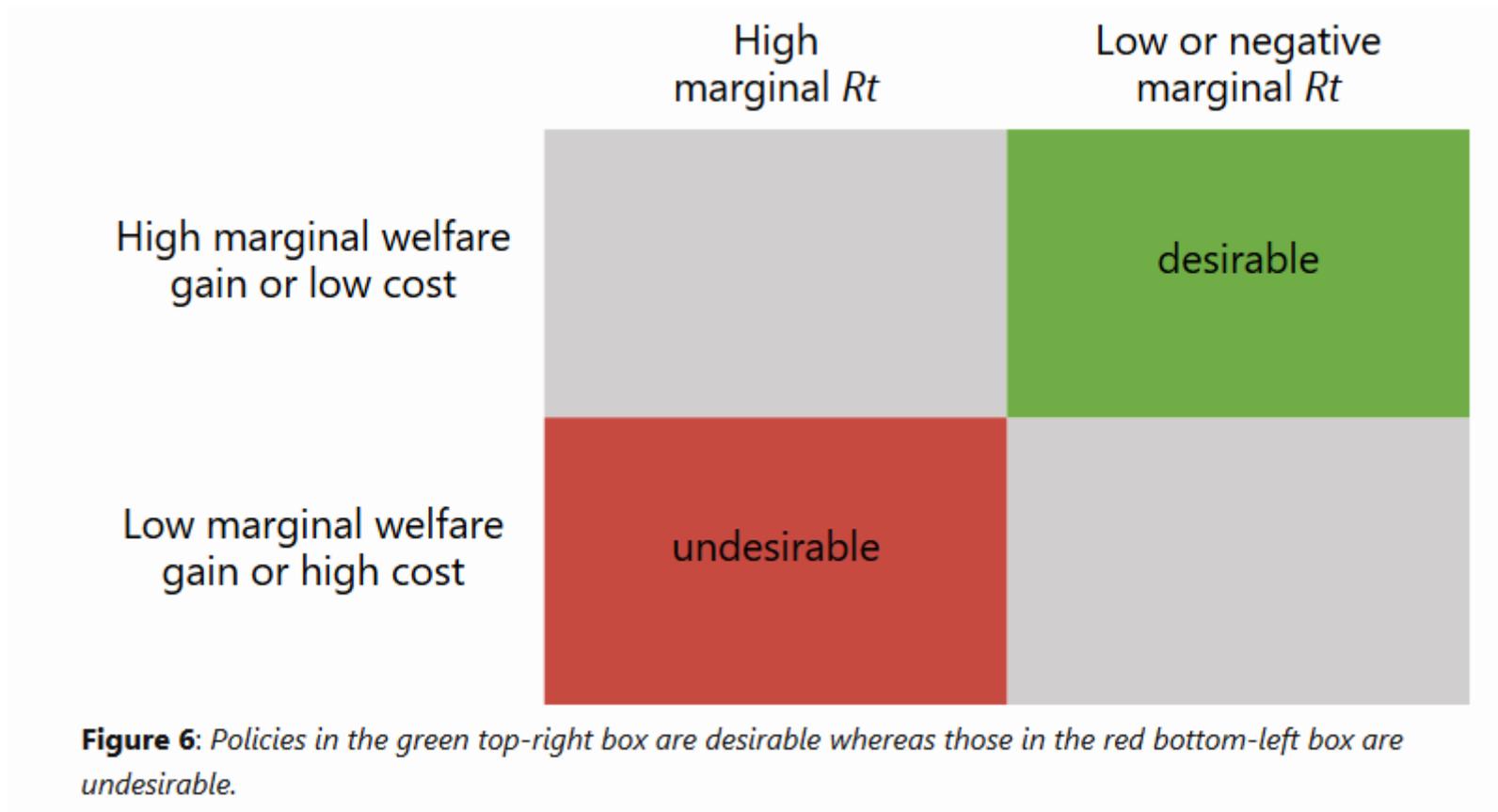- Based on QALY=£30,000 (Source: Miles, Stedman and Heald, 2020)

Table 2. Benefits (+), costs (−) and net benefits[a] of March-June UK lockdown; converted to an index of £bn, 5 QALY are assumed lost for each COVID-19 death

	9% GDP loss	15% GDP loss	20% GDP loss	25% GDP loss
Lives not lost				
440,000	£66b, −£200b, −£134b	£66b, −£330b, −£264b	£66b, −£440b, −£374b	£66b, −£550b, −£484b
200,000	£30b, −£200b, −£170b	£30b, −£330b, −£300b	£30b, −£440b, −£410b	£30b, −£550b, −£520b
100,000	£15b, −£200b, −£185b	£15b, −£330b, −£315b	£15b, −£440b, −£425b	£15b, −£550b, −£535b
50,000	£8b, −£200b, −£192b	£8b, −£330b, −£322b	£8b, −£440b, −£432b	£8b, −£550b, −£542b
20,000	£3b, −£200b, −£197b	£3b, −£330b, −£327b	£3b, −£440b, −437b	£3b, −£550b, −£547b

Notes: Each life saved is estimated to result in 5 more quality adjusted years of life. The NICE resource threshold of £30,000 is applied to each of these quality adjusted years. The money value of GDP losses is taken as a proportion of 2019 GDP of £2.2 trillion. All resulting figures are in £ billions.
(a) Net benefits are shown in red.

A framework for policy?

Figure 6: Policies in the green top-right box are desirable whereas those in the red bottom-left box are undesirable.

- Source: https://rs-delve.github.io/reports/2020/08/14/economic-aspects-of-the-covid19-crisis-in-the-uk.

Sources of new real-time data

- Financial transactions data
  - Payments data
  - Credit cards
- Mobility data
  - From mobile devices
- Changes are happening at high frequency
  - Daily data
- Can be used to look at heterogeneity
  - By geography
  - Over time
  - By income group

Sources of new real-time data

- UK has generally lagged behind in making such data widely available
- Best data available in
  - Denmark[1]
  - France[2]
  - Portugal[3]
  - Spain
  - Sweden[4]

1: Andersen et. al. (2020) https://bit.ly/2Fn8uAb
2: Bounie et. al. (2020) https://papers.ssrn.com/abstract=3588373
3: Carvalho et. al. (2020) https://ideas.repec.org/p/eca/wpaper/2013-307531.html
4: Andersen et. al. (2020) http://arxiv.org/abs/2005.04630

Some examples of lessons emerging

- Relationship between health and the economy is complex but in interesting ways:
  - Household heterogeneity
  - Cross country comparisons
  - Timing
  - Responsiveness

Household heterogeneity
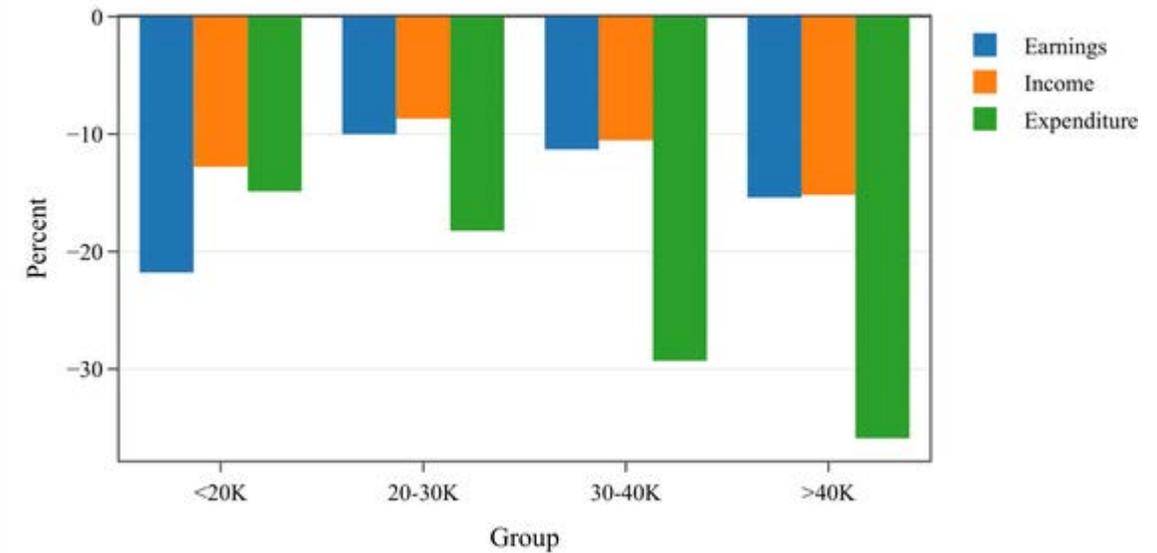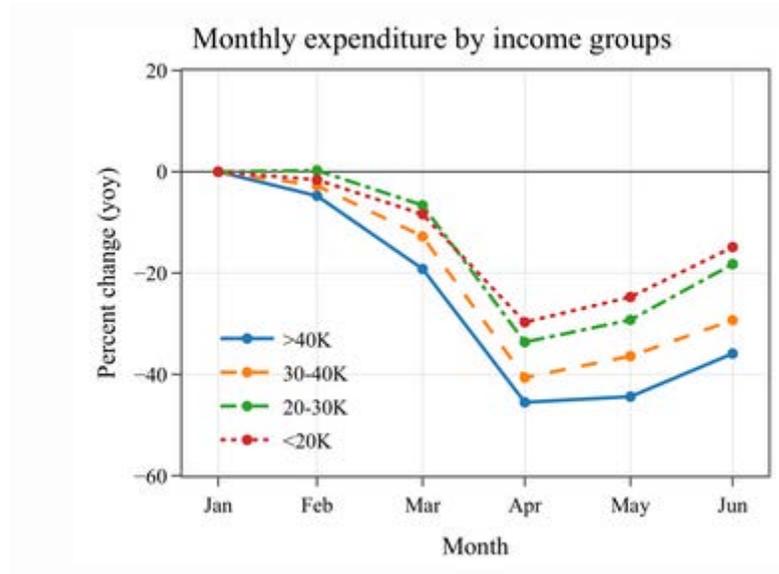
- Source: Hacioglu, Kaenzig, and Surico (2020) data on approximately 15,000 users of a financial app (Money DashBoard)
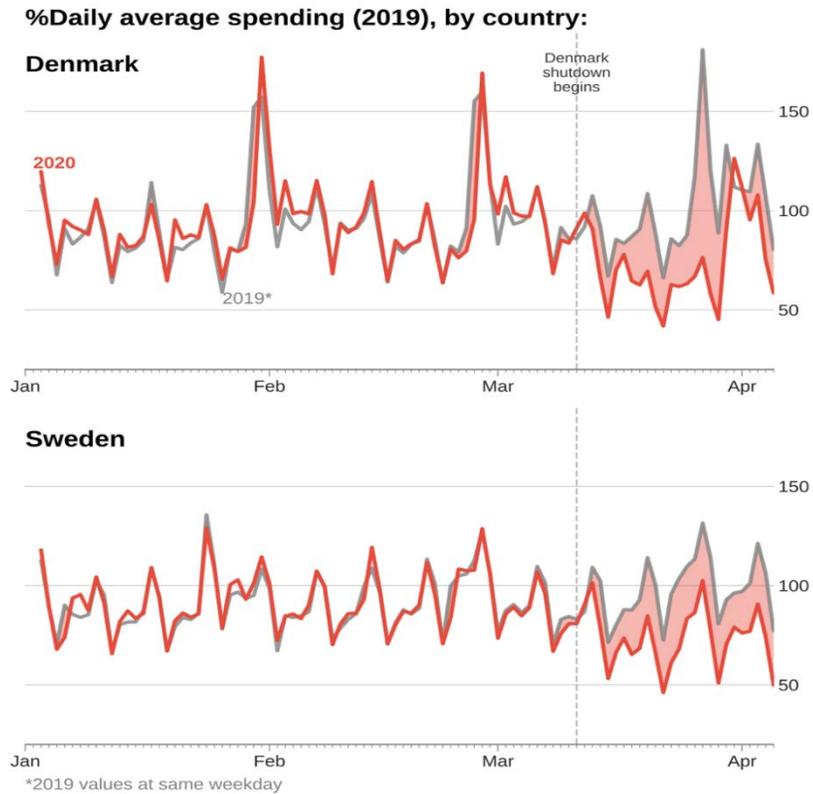
Cross-country differences

Daily Year-on-Year Expenditure Growth (MA)

Legend: Spain, Turkey, Mexico, Colombia, Peru, Argentina, SouthUS
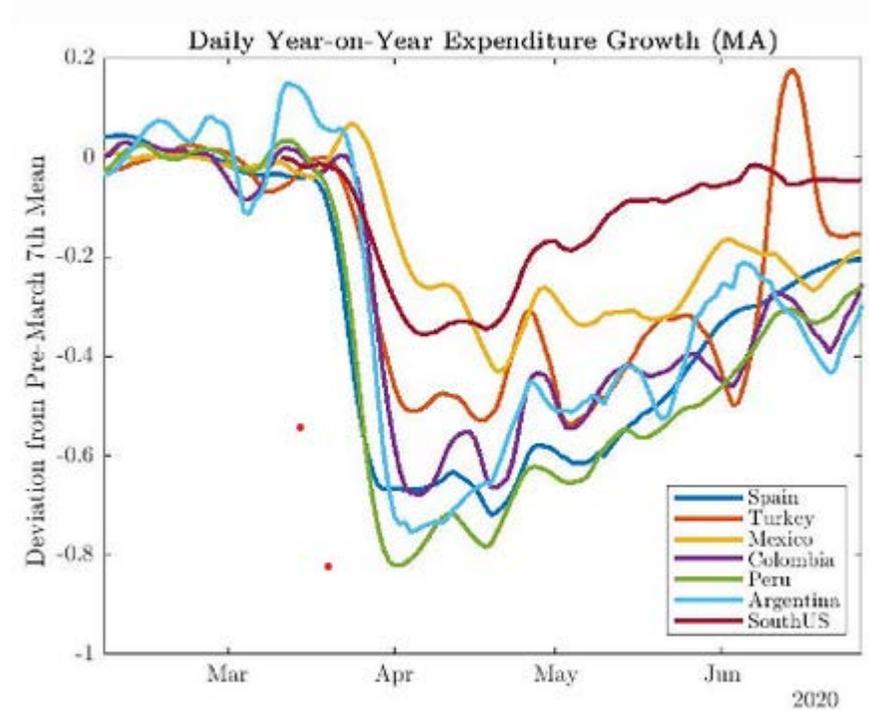
- Source: Banco Bilbao Vizcaya Argentaria (BBVA) card data from Carvalho et al. (2020)

Denmark versus Sweden
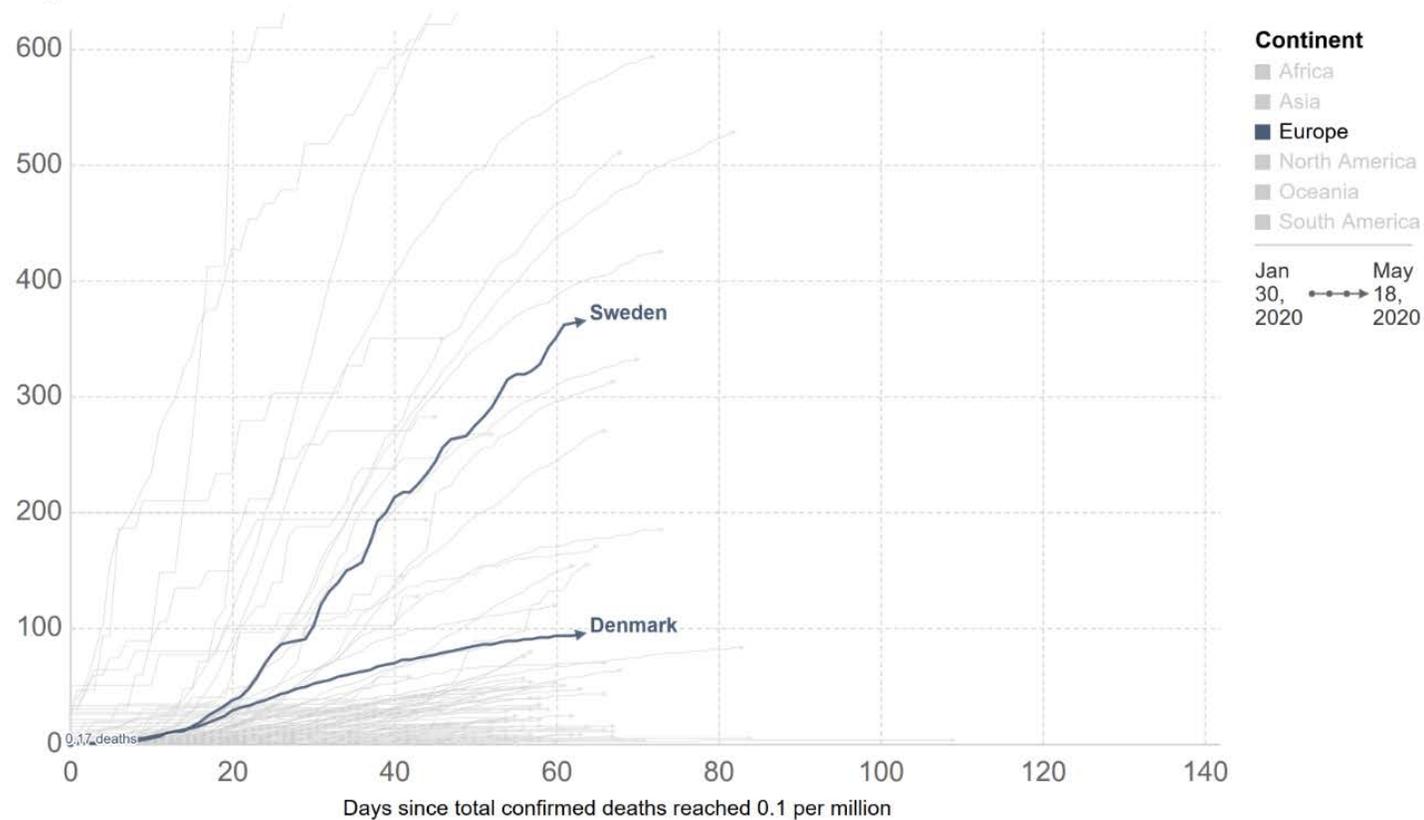
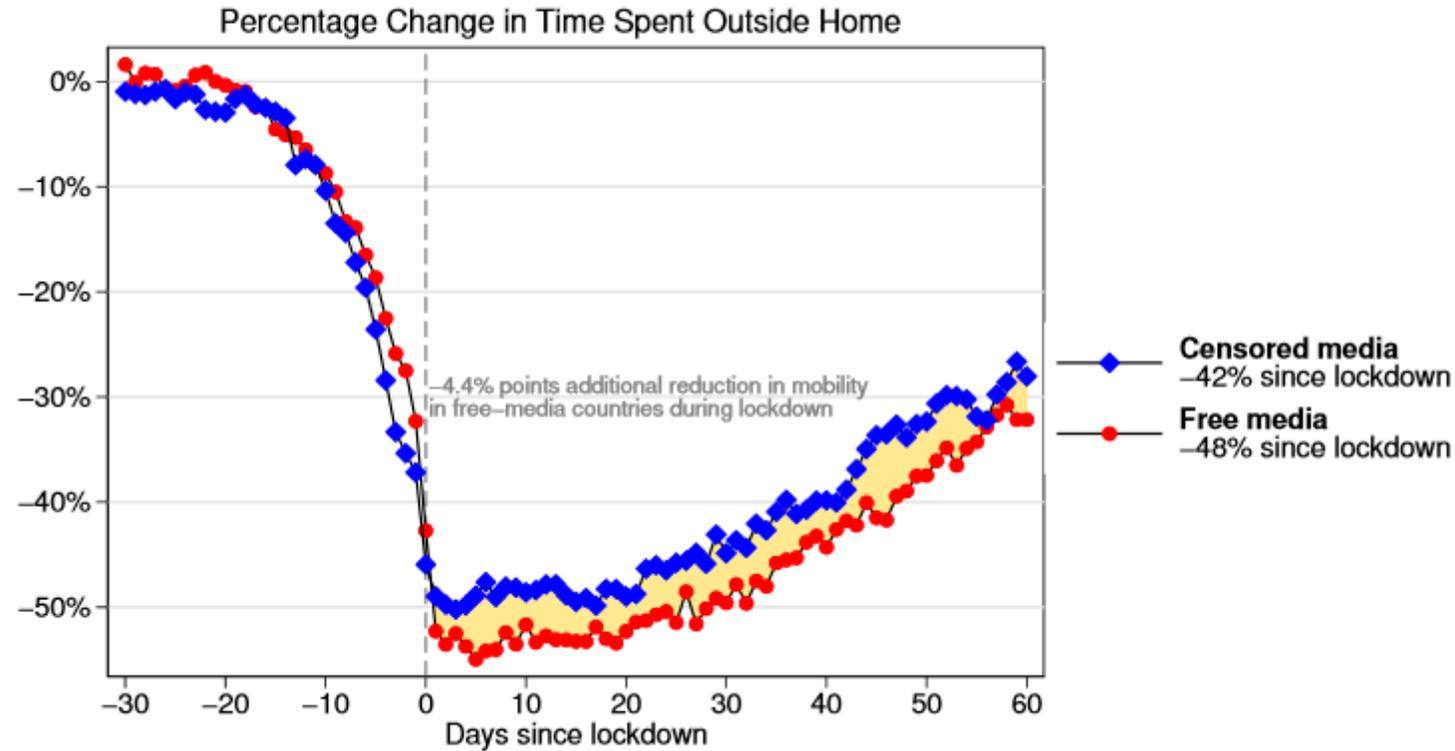- Source:Andersen, Hansen, Johannesen and Sheridan (2020).

%Daily average spending (2019), by country:

Denmark versus Sweden

Cumulative confirmed COVID-19 deaths per million people

Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.
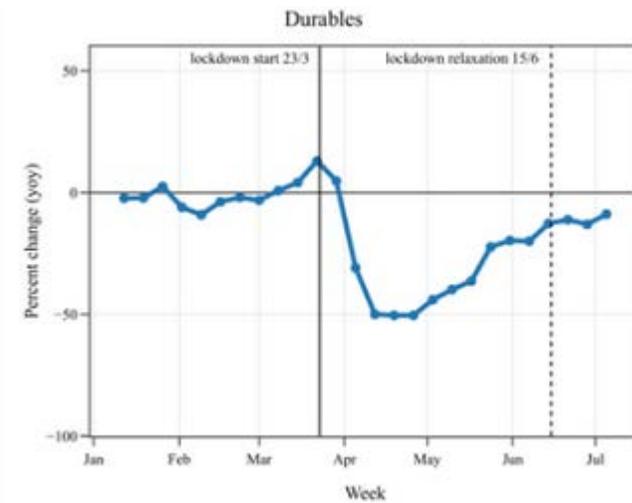
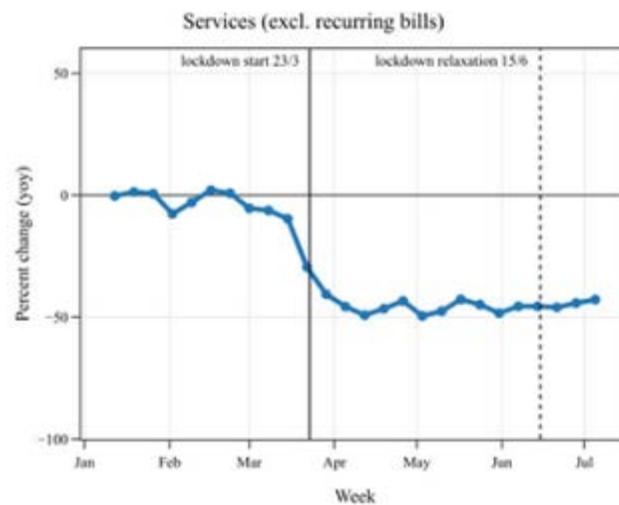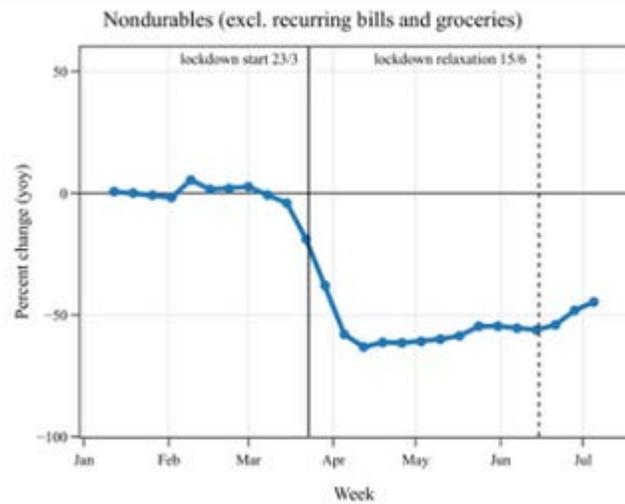Source: European CDC – Situation Update Worldwide – Last updated 23 July, 12:06 (London time), Our World In Data   CC BY

Media Freedom and Mobility

Percentage Change in Time Spent Outside Home

Censored media −42% since lockdown

Free media −48% since lockdown

−4.4% points additional reduction in mobility in free−media countries during lockdown

- Source: Besley and Dray (2020a) based on based on Google mobility data since January

Timing

- Source: Hacioglu, Kaenzig, and Surico (2020) data on approximately 15,000 users of a financial app (Money DashBoard)

Mobility and Responsiveness

- How does behaviour respond to
  - Government policy
  - News about death and infection
- Can look at differences across space and over time
  - Using social distancing measured using smartphone ping data on device from Couture et al. (2020)
    - Exposure = average number of device encountered via overlapping visits to commercial venues on each day.
    - Social Distancing = % change in exposure compared to January 21-February 28
- Will look at some evidence from the US
  - Can look to see whether counties with different characteristics differ
  - Also evidence of changing patterns over time
  - The following are from Besley and Dray (2020b)
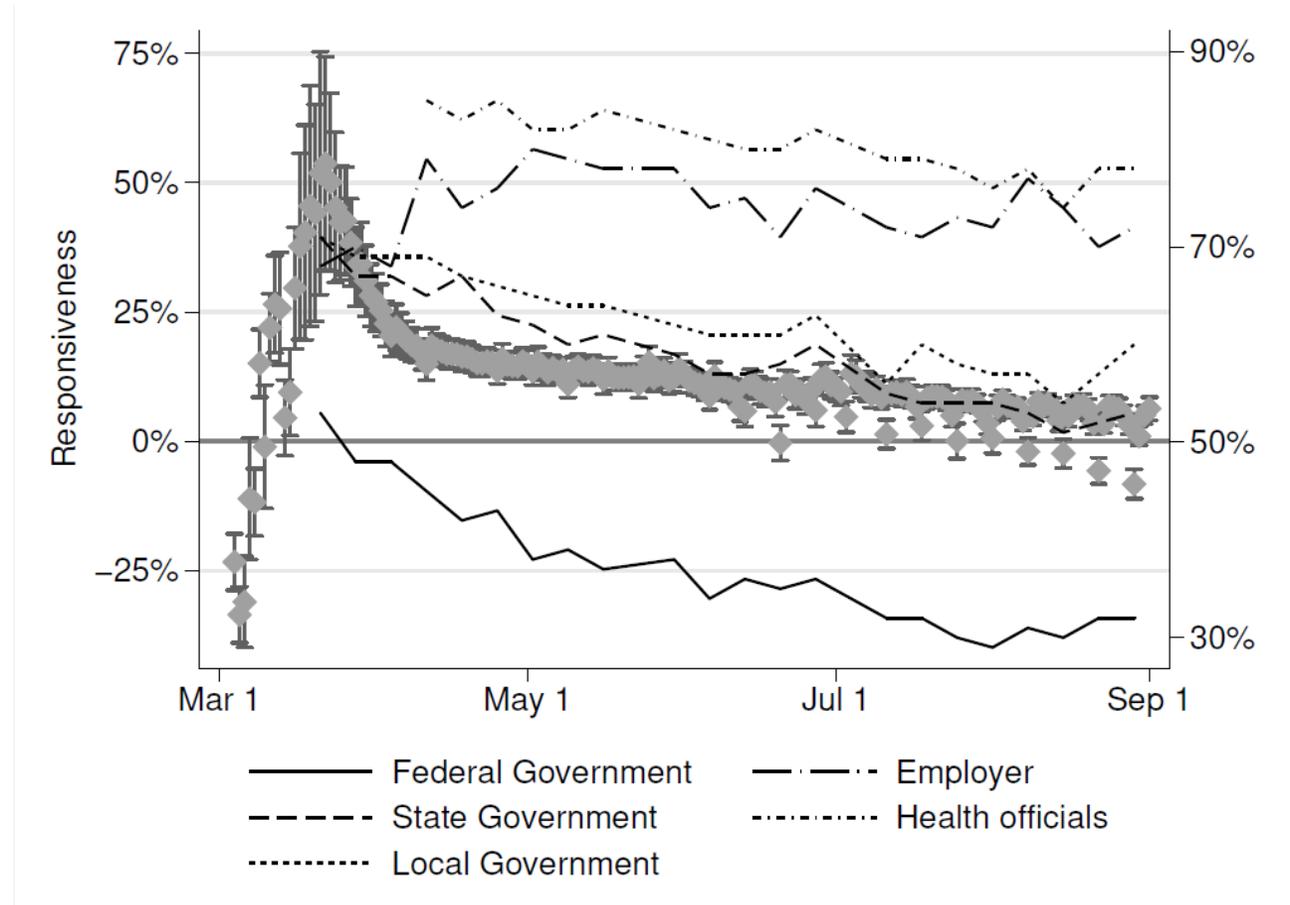
Changes over time in social distancing
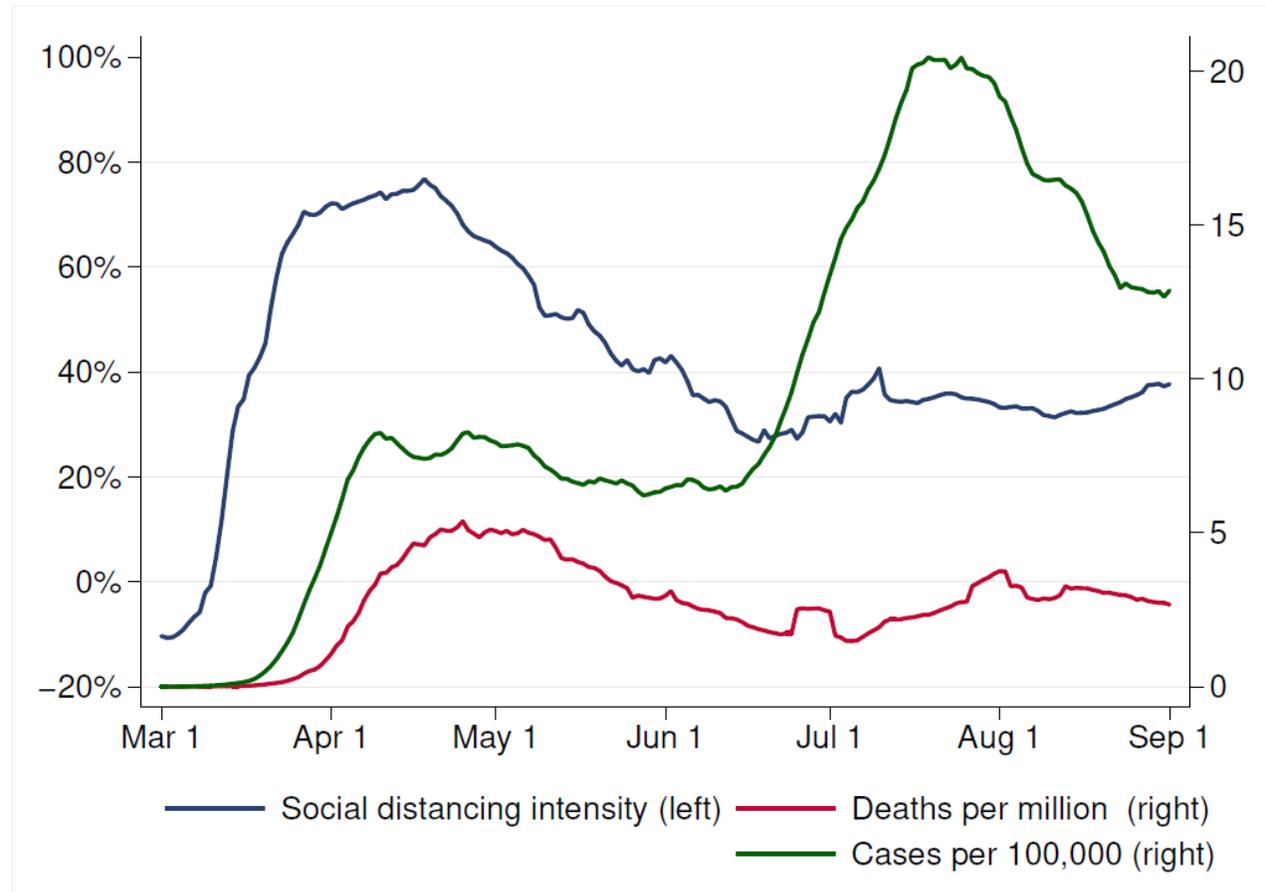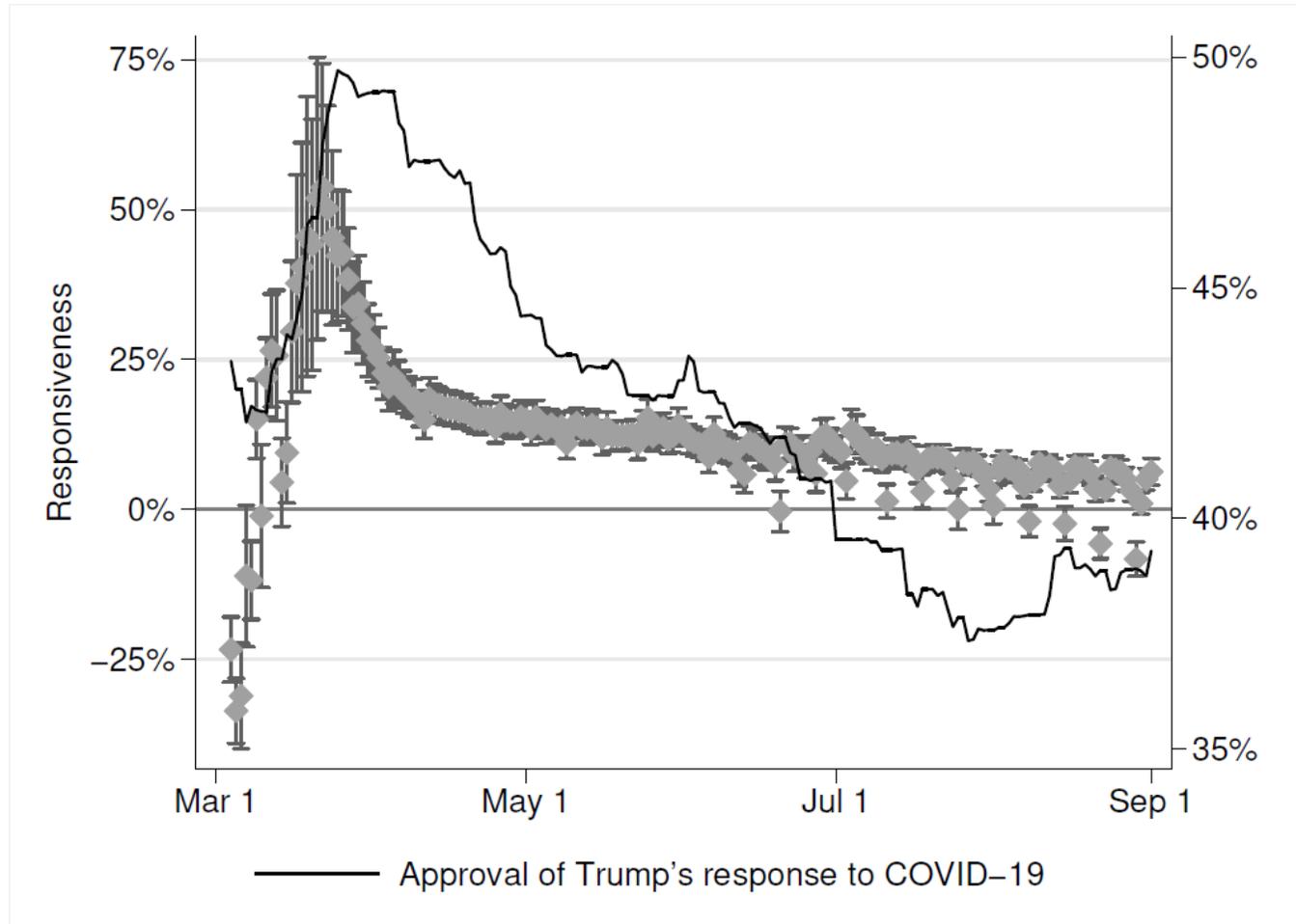
Responsiveness to death over time

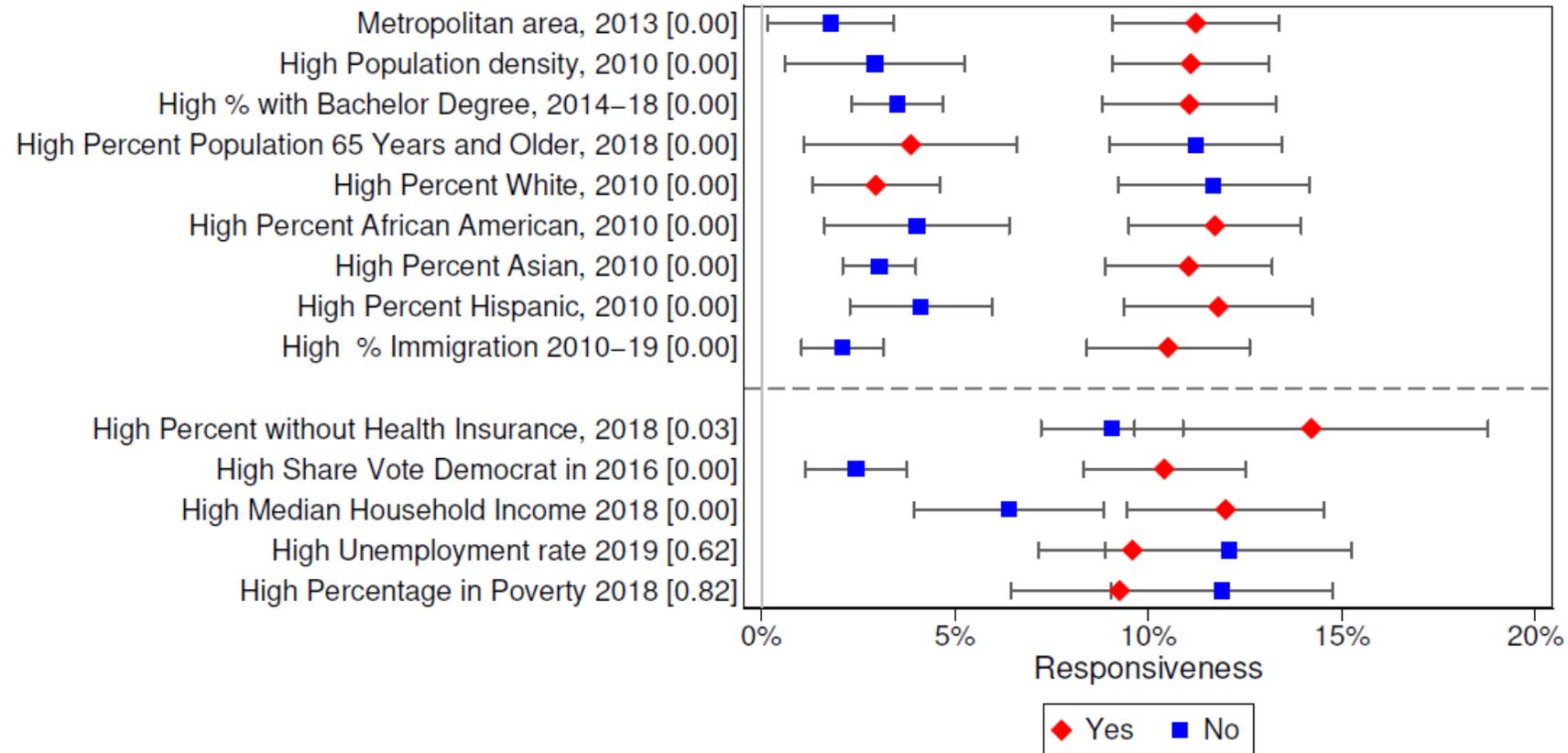- Relationship between death rate and social distancing
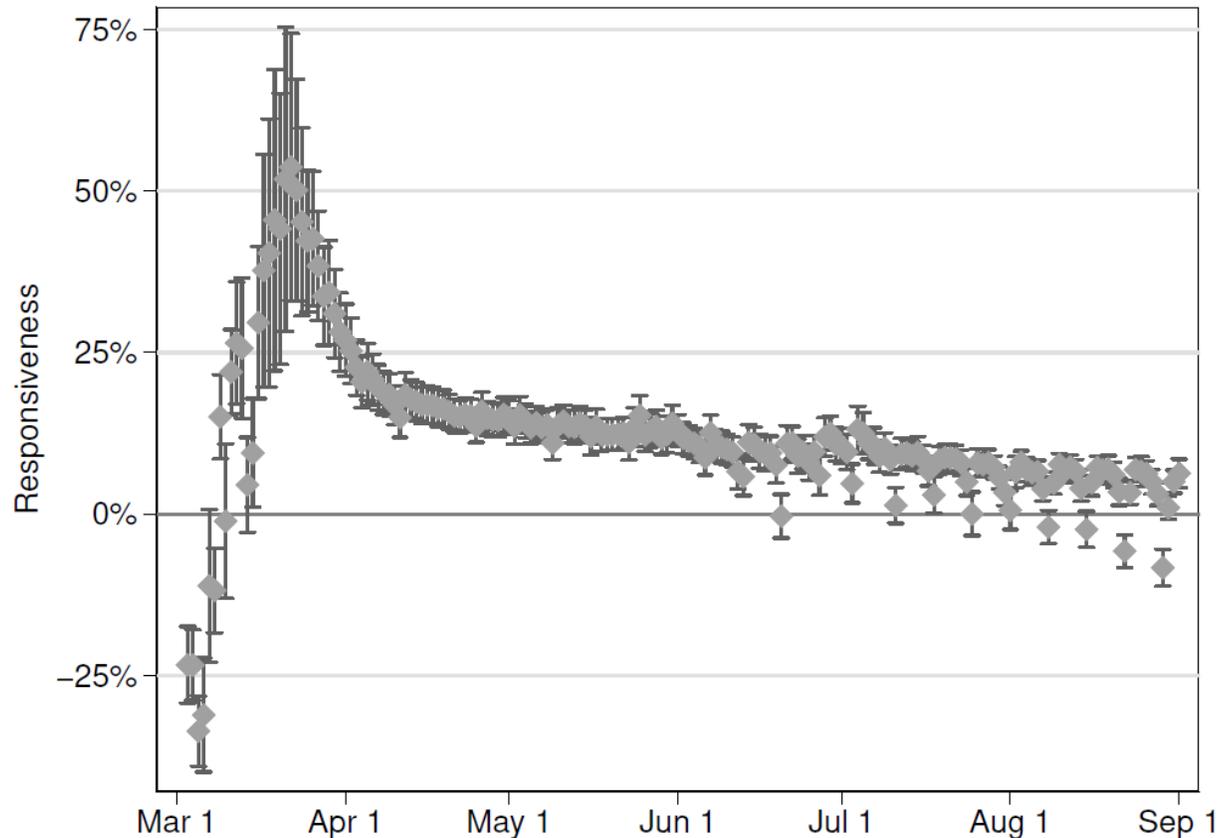
Responsiveness and Trust

Responsiveness and Trump's approval rating

Approval of Trump's response to COVID-19

Heterogeneity across counties

Concluding Comments

- Boost to research that exploits high-frequency changes
  - Where available, we are getting insights into patterns in the data
  - But mapping this to models of behaviour still in its infancy
- Important as we monitor the economy and disease progression
  - Can give real time feedback on the impact of policy on the economy
- BUT
  - The UK is behind other countries in having available high quality data for academic research purposes