WORKING FROM HOME AFTER COVID-19: EVIDENCE FROM JOB POSTINGS IN 20 COUNTRIES

LINK TO PAPER; LINK TO DATASET

Pawel Adrjan (Indeed Hiring Lab and Regent's Park College, Oxford)
Gabriele Ciminelli (OECD)
Alexandre Judes (Indeed Hiring Lab)
Michael Koelle (OECD)
Cyrille Schwellnus (OECD)
Tara Sinclair (United States Department of the Treasury)

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Twitter Employees Can Work From Home 'Forever' Or 'Wherever You Feel Most Productive And Creative'

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Is working from home a **temporary response** to the pandemic or is it a **structural change** in the labour market?

What do we do?

- Provide novel data on share of remote work
  - From hundreds of millions of job ads on **Indeed**
  - **20 countries** and **55 job categories** over **2019m1-2022m9**

- Estimate the causal effect of the pandemic
  - Adoption across job categories w/ different telework potential in response to pandemic shocks (**diff-in-diff**)
  - Distinguish between pandemic **easing** and **tightening**

Related remote work literature

- Surveys
  - Feasibility (Dingel & Neiman, 2020); Adams-Prassl et al, 2022)
  - Realisations (Bartik et al, 2020; Adams-Prassl et al, 2020)
  - Intentions (Barrero et al., 2020; Criscuolo et al., 2021)

- Online job ads
  - Single countries (Hu et al, 2020, China; Bamieh and Ziegler, 2022, Austria)

DATA

Construction of the remote work dataset

- Data from 20 country-specific **Indeed job sites**
  - Europe, North America, Japan, Australia, New Zealand

- Identify remote work using general and country-specific **keywords** in job title, description or location:
  - “working from home”, “télétravail”, “remoto”, “home office”, “smart working”…

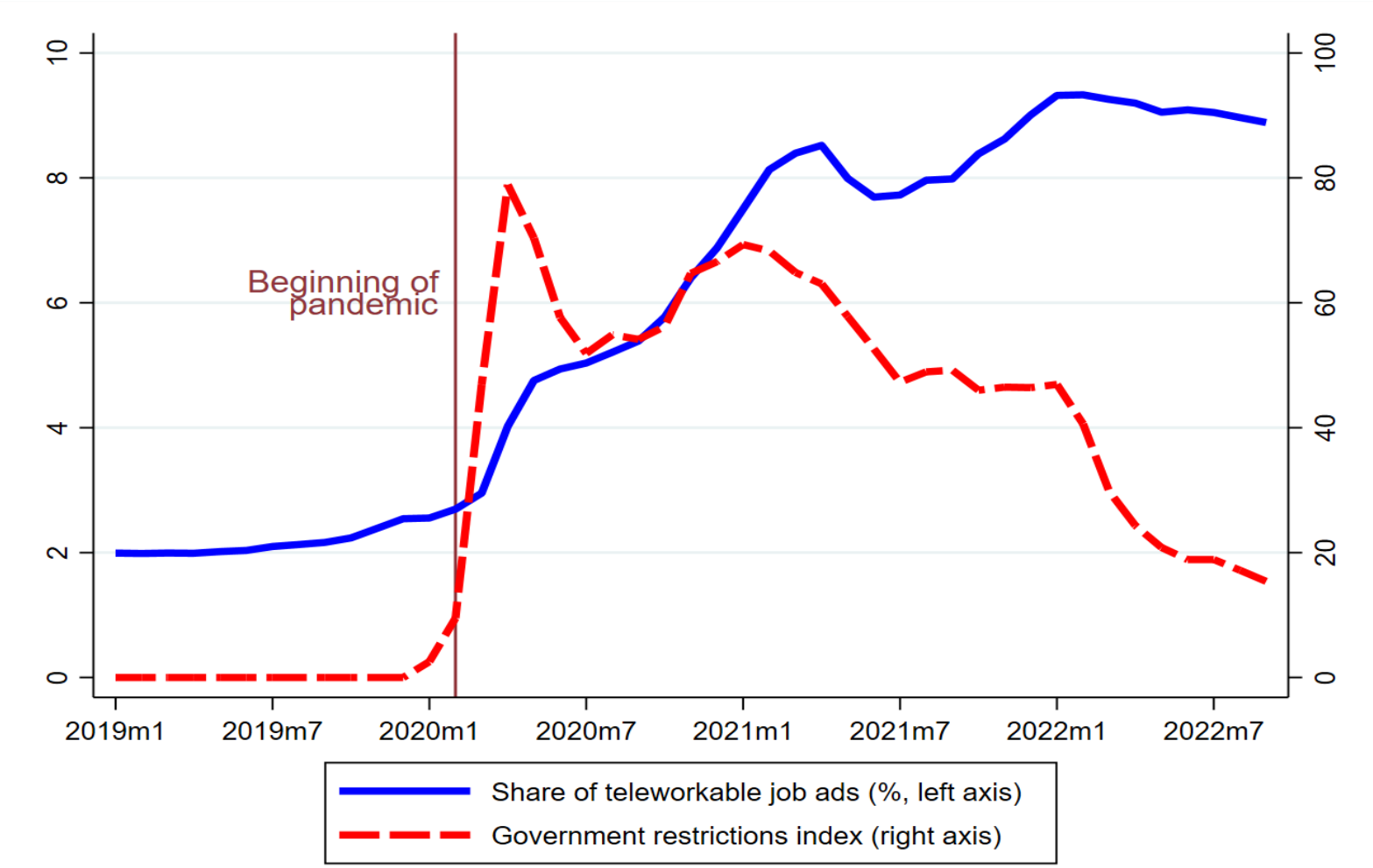
- Main variable: **Share of job postings that advertise remote work**

3 STYLIZED FACTS

1/ High persistence of advertised remote work

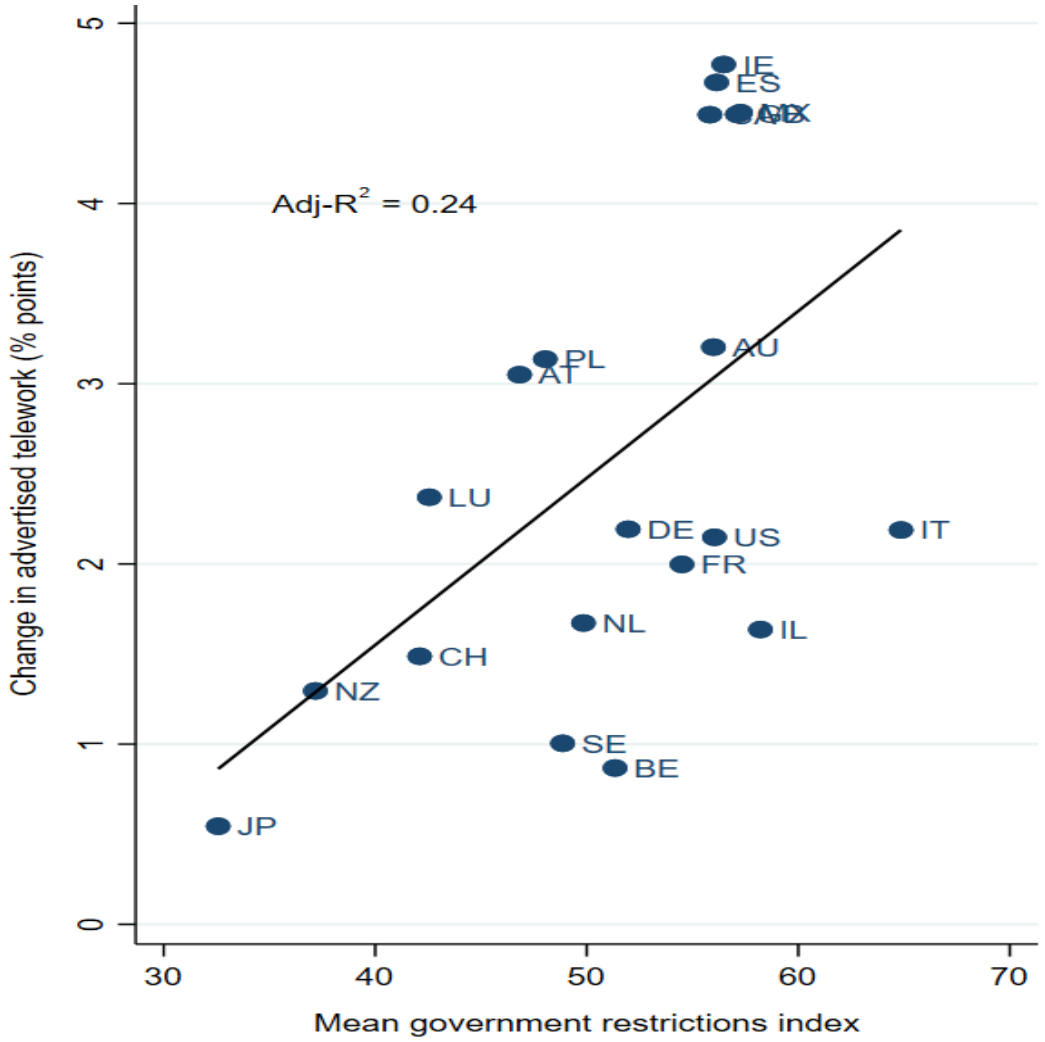
Advertised telework tripled to to circa 9% of all job ads across countries.

Advertised telework **did not systematically go down** when the pandemic eased.



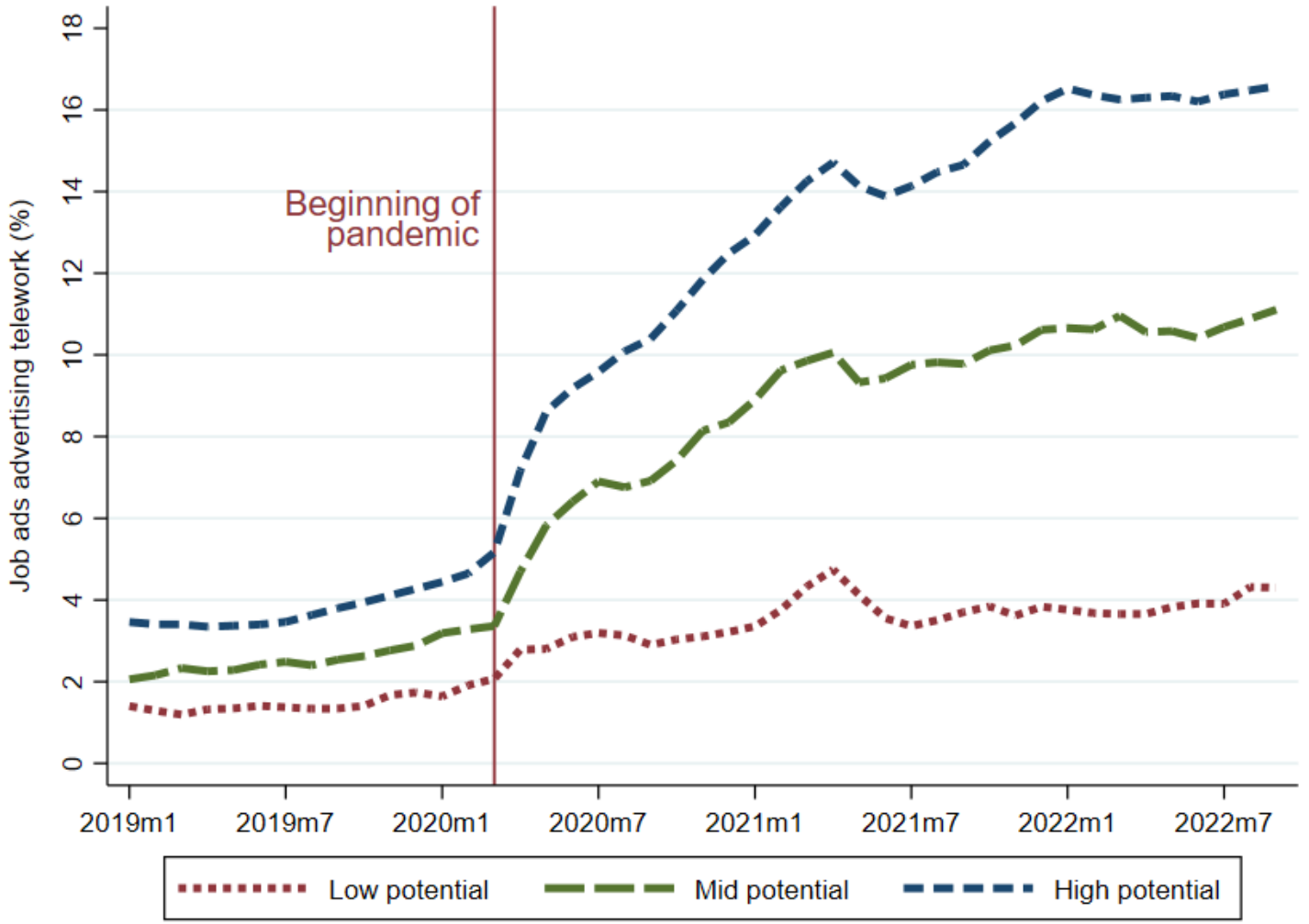
2/ Adoption correlates with pandemic severity across countries

Increase in share of advertised remote work systematically larger in countries where **pandemic mobility restrictions** were more pronounced



3/ Telework correlates with feasibility across occupations

Increase in share of advertised remote work systematically larger in countries where **pre-pandemic feasibility** was high



EMPIRICAL STRATEGY

Empirical strategy

Increases/decreases in pandemic severity

$$y_{i,j,t+k} - y_{i,j,t-1} = \beta^{p,k} p_j * x^{p}_{i,t} + \beta^{n,k} p_j * x^{n}_{i,t} + \mu_{i,j} + \tau_{i,t} + lagged\ \&\ interim\ shocks + \varepsilon_{i,j,t}$$

WFH potential (predetermined)

$y_{i,j,t+k}$ => share of job postings advertising WFH in country *i*, occupation category *j*, time *t+k*

$x^{p}_{i,t}$ ($x^{n}_{i,t}$) => increases (decreases) in pandemic severity (country-level, time varying)

p_j => WFH potential (occupation-level, predetermined)

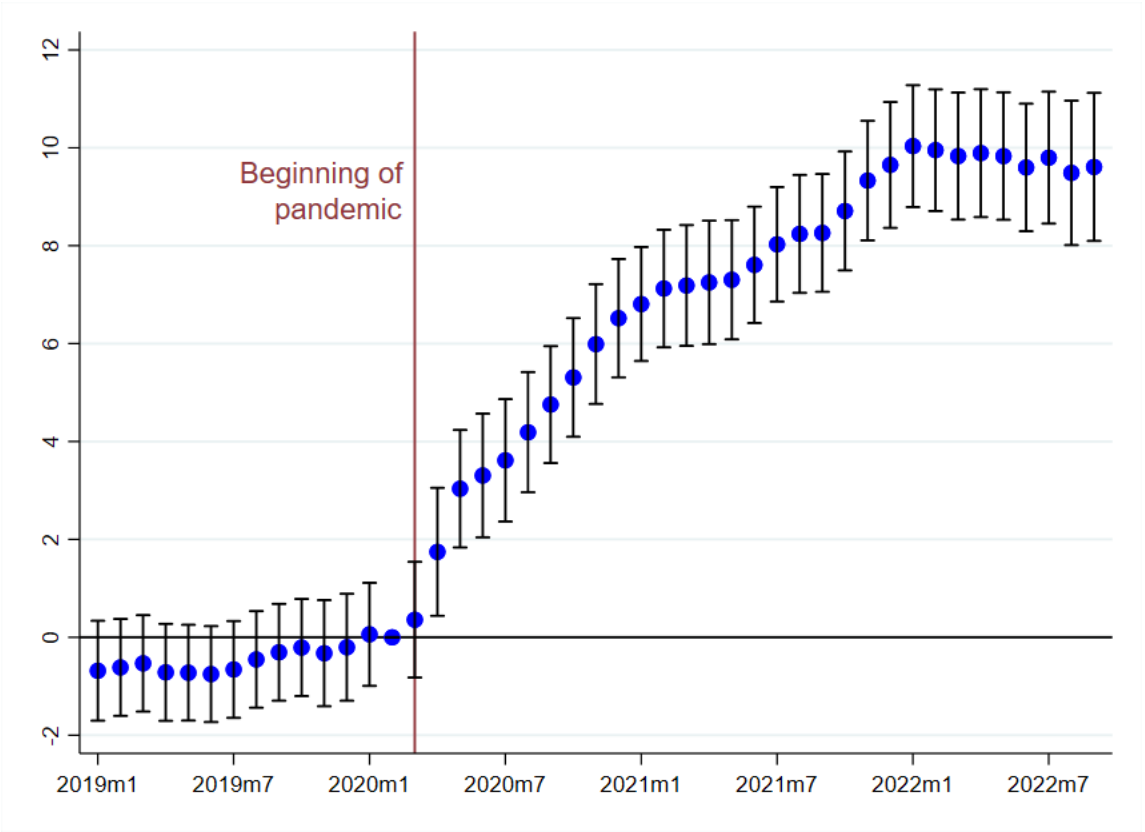
$\mu_{i,j}$ => country-occupation effects

$\tau_{i,t}$ => country-time effects

Obtain 6-period impulse response functions by plotting estimated $\widehat{\beta^{p,k}}$ and $\widehat{\beta^{n,k}}$ coefficients and their s.e.

Identification assumption: stable pre-pandemic trends

Difference in advertised WFH between occupation categories with a high and low WFH potential

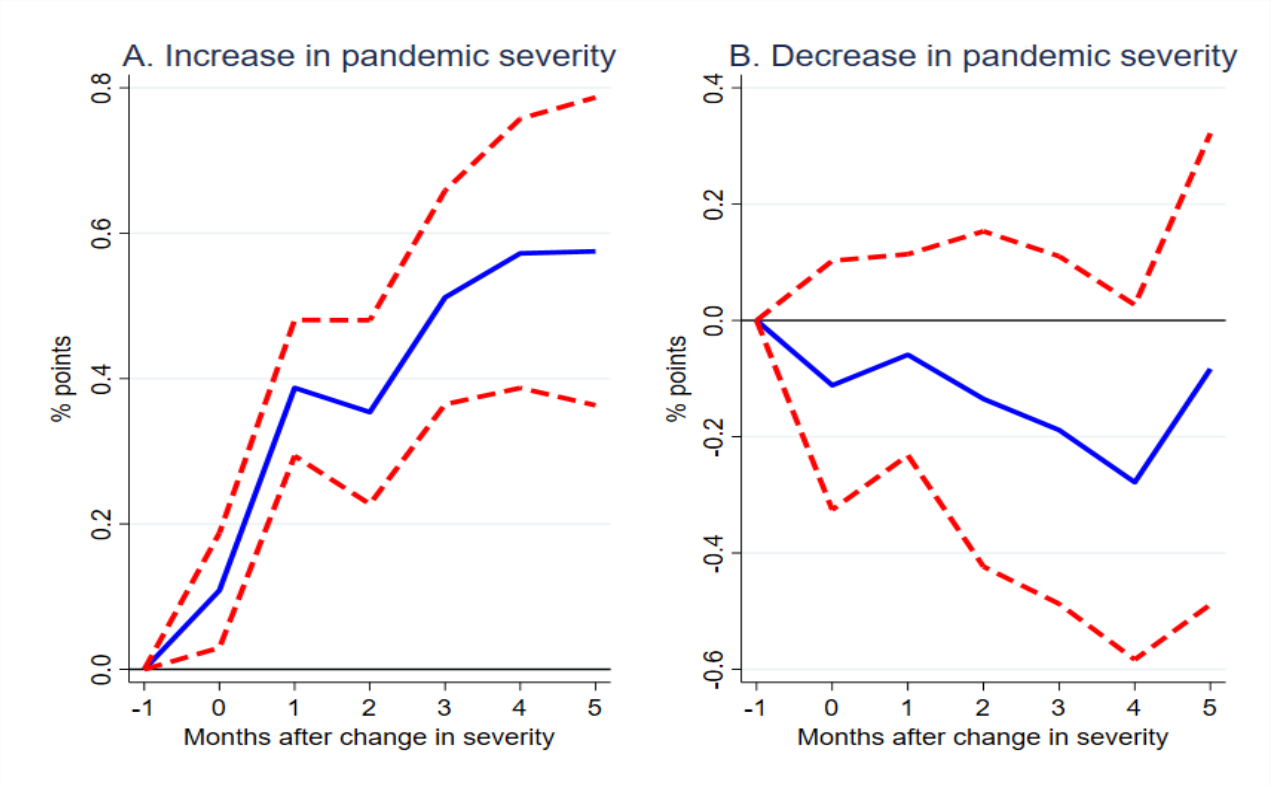


Notes: The figure plots estimated developments in the difference in share of job postings advertising WFH between occupations with a high and a low WFH potential, defined as those in the upper and lower terciles of the variable measuring WFH potential. Estimates are obtained from the following regression: $y_{i,j,t} = \alpha + \gamma^t \tau_t + \delta^t \tau_t * d_j + \mu_i + \mu_j + \varepsilon_{i,j,t}$, where $y_{i,j,t}$ denotes the share of advertised WFH in country I, occupation j at time t, τ_t are time effects, μ_i and μ_j are country and occupation fixed effects and d_j is a dummy variable that takes value 1 for occupations with a high WFH potential and 0 for those with low. Shown are the δ^t coefficients.

RESULTS

Strong response to increase in severity, no response to decrease

Differential effect of a change in pandemic severity on advertised WFH between occupations with high and low WFH potential



Note: The figure reports impulse response functions showing the cumulative differential effects of a one standard deviation change in pandemic severity on the share of job postings advertising telework in the average occupation with a high telework potential relative to the average occupation with low telework potential (respectively defined as occupations in the upper and lower terciles of the telework potential distribution), over a 6-month window. Panels A and B respectively report effects of an increase and decrease in pandemic severity. Pandemic severity is measured using the Oxford COVID-19 government restrictions index. Y-axes report the magnitude of the estimated effects, while x-axes report the horizon of the response. Blue solid lines denote point estimates, while red dashed lines are 90% confidence bands.

Alternative specifications

- Alternative measures to proxy pandemic severity
- Changes in lag structure
- Treatment of health occupations
- Two-way clustering instead of DK standard errors
- Alternative measures to proxy pandemic severity
- Placebo test
- Separate analysis before and after vaccination campaign

CONCLUSION

Conclusion

- Persistent tripling of online job ads advertising WFH since pandemic
  - WFH surged after increase in pandemic severity, no response after decrease
- Pandemic triggered path dependency:
  - Forced experimentation; irreversible investments; network externalities
- WFH is here to stay
  - Implications for firms, workers and cities; potential to decrease frictional unemployment

THANK YOU!

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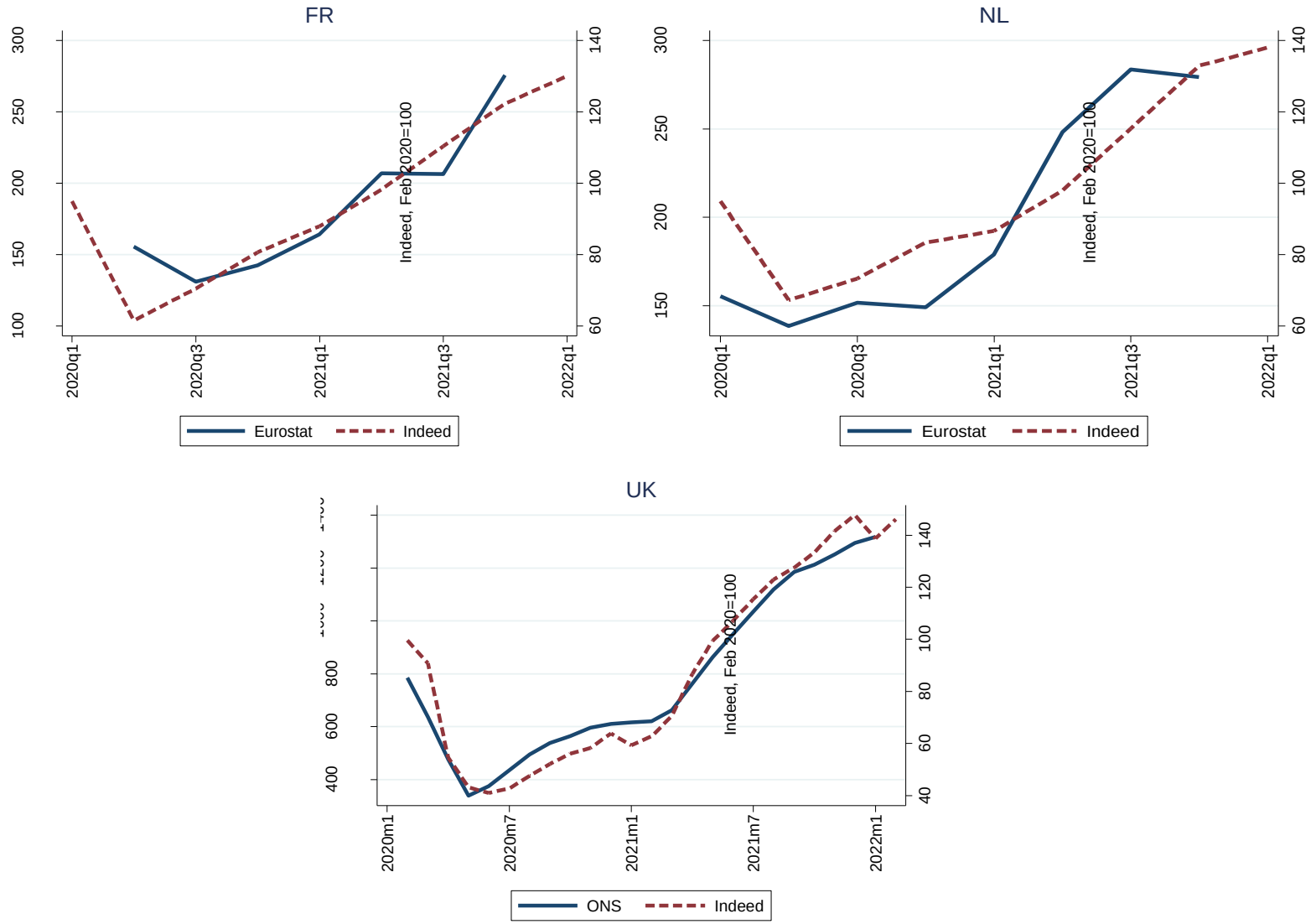
Annex

Indeed postings vs. official vacancies



Other data

Oxford COVID-19 Government Response Tracker:

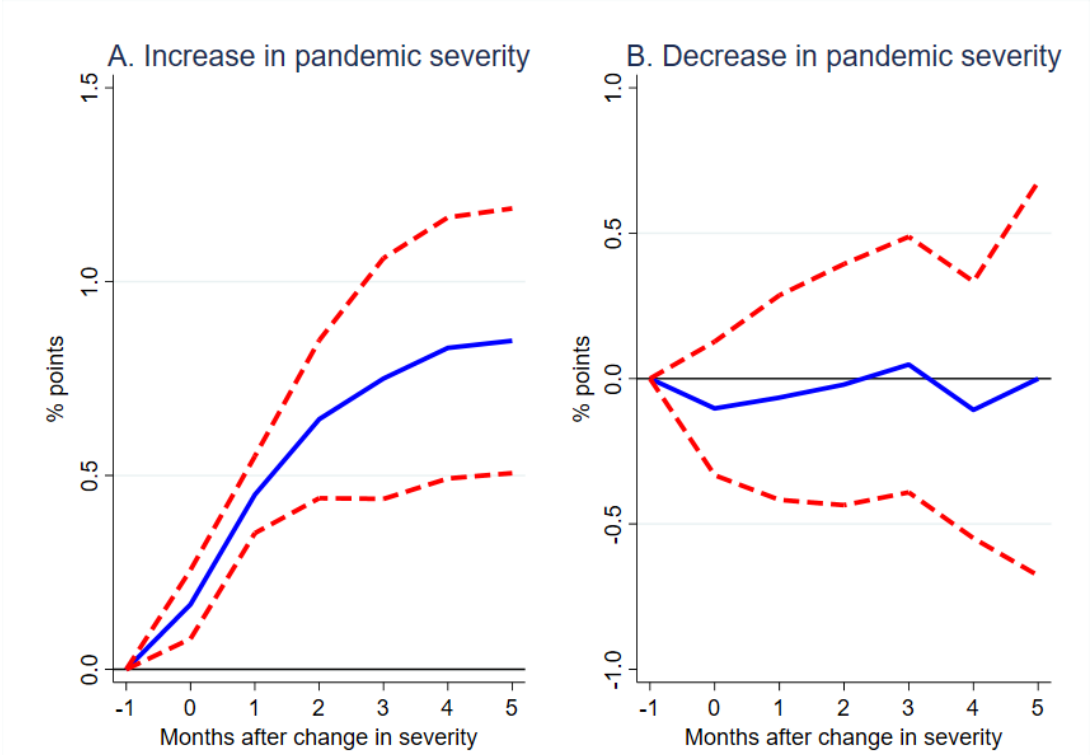
- Government restrictions stringency index
- Government response index (includes health mandates)
- COVID-19 mortality

Google COVID-19 Community Mobility Reports:

- Visits to (i) consumer venues (ii) workplaces (iii) transport hubs
- Average mobility index

Main result using Google mobility

Differential effect of a change in pandemic severity on advertised WFH between occupations with high and low WFH potential



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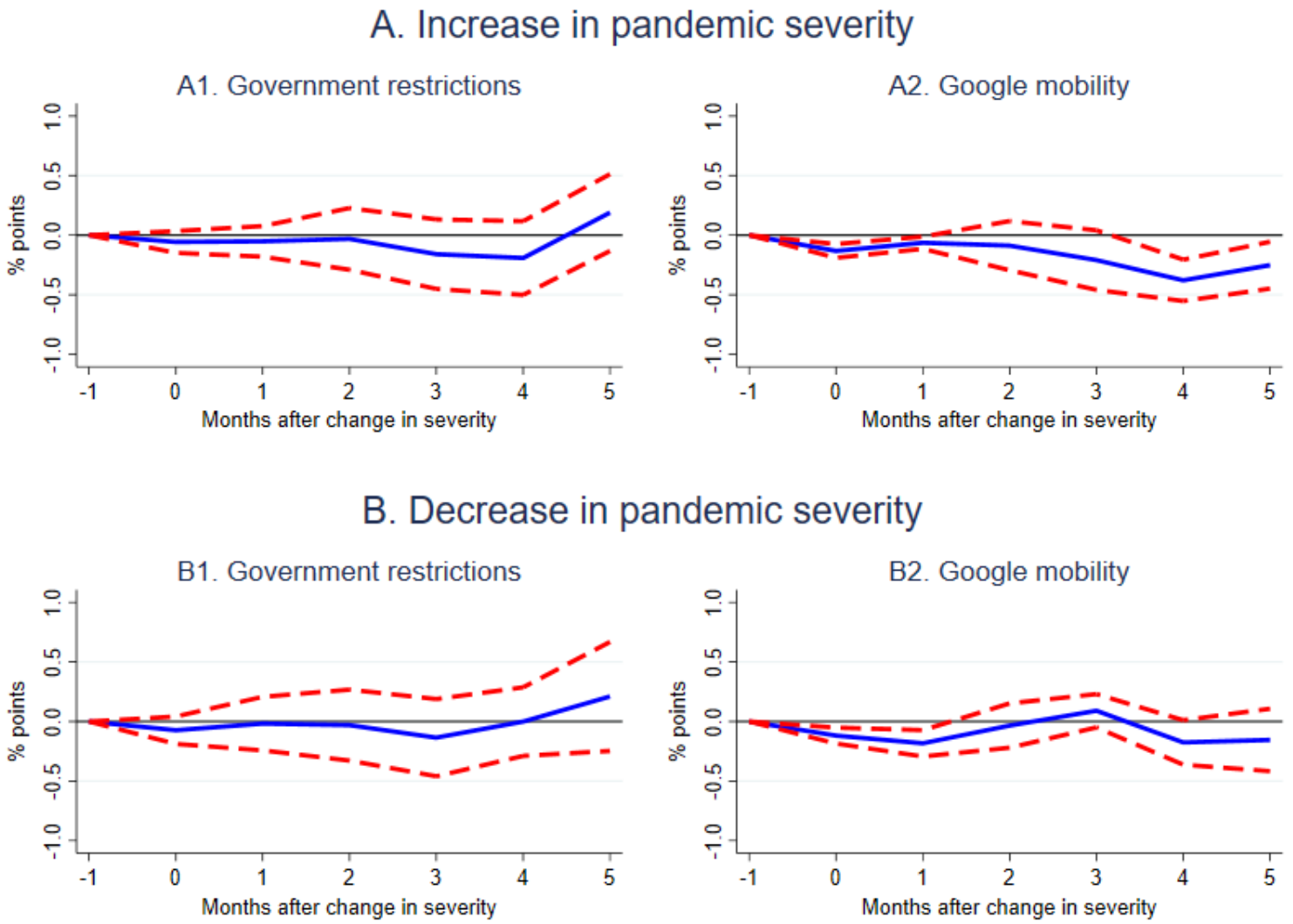
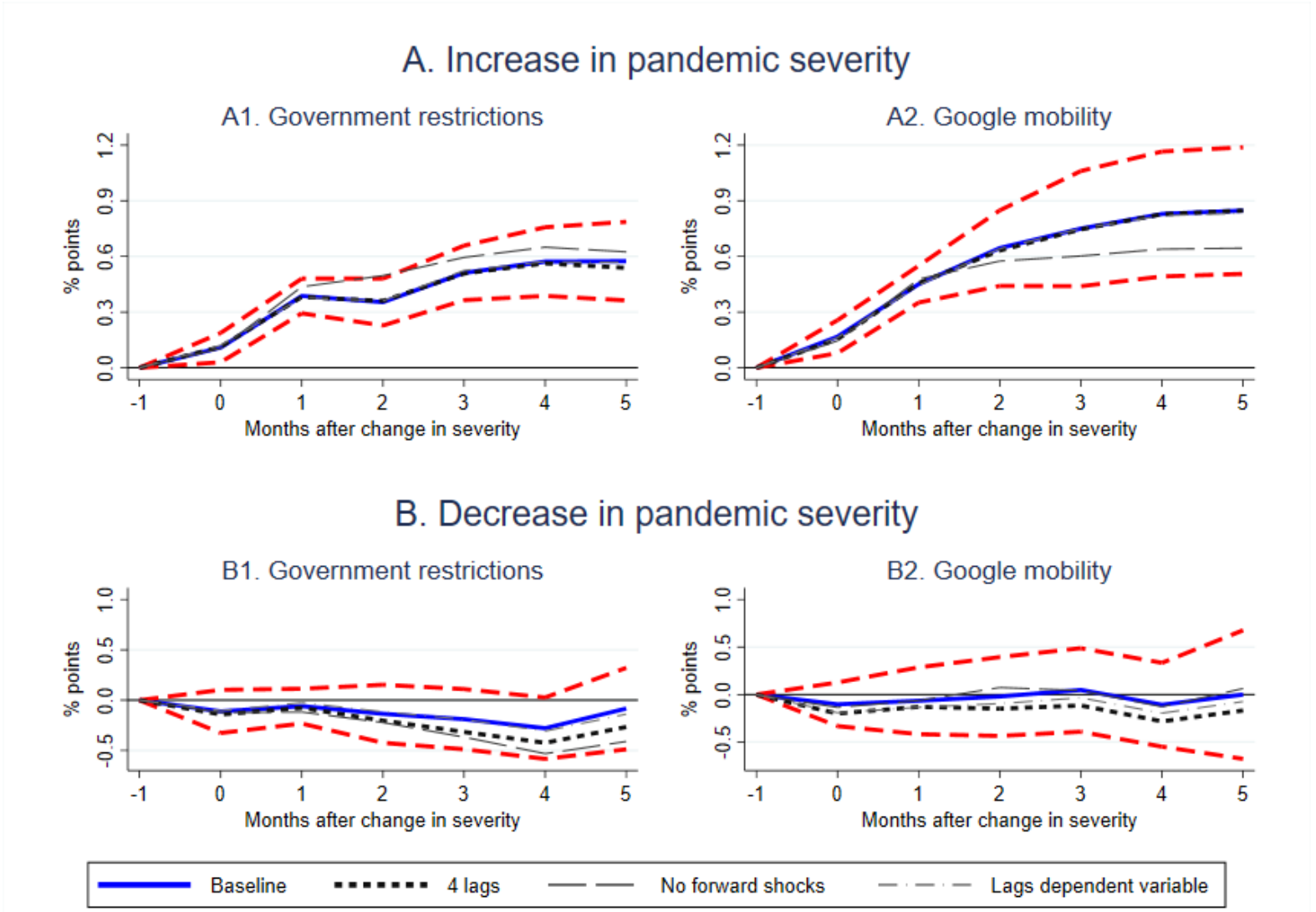
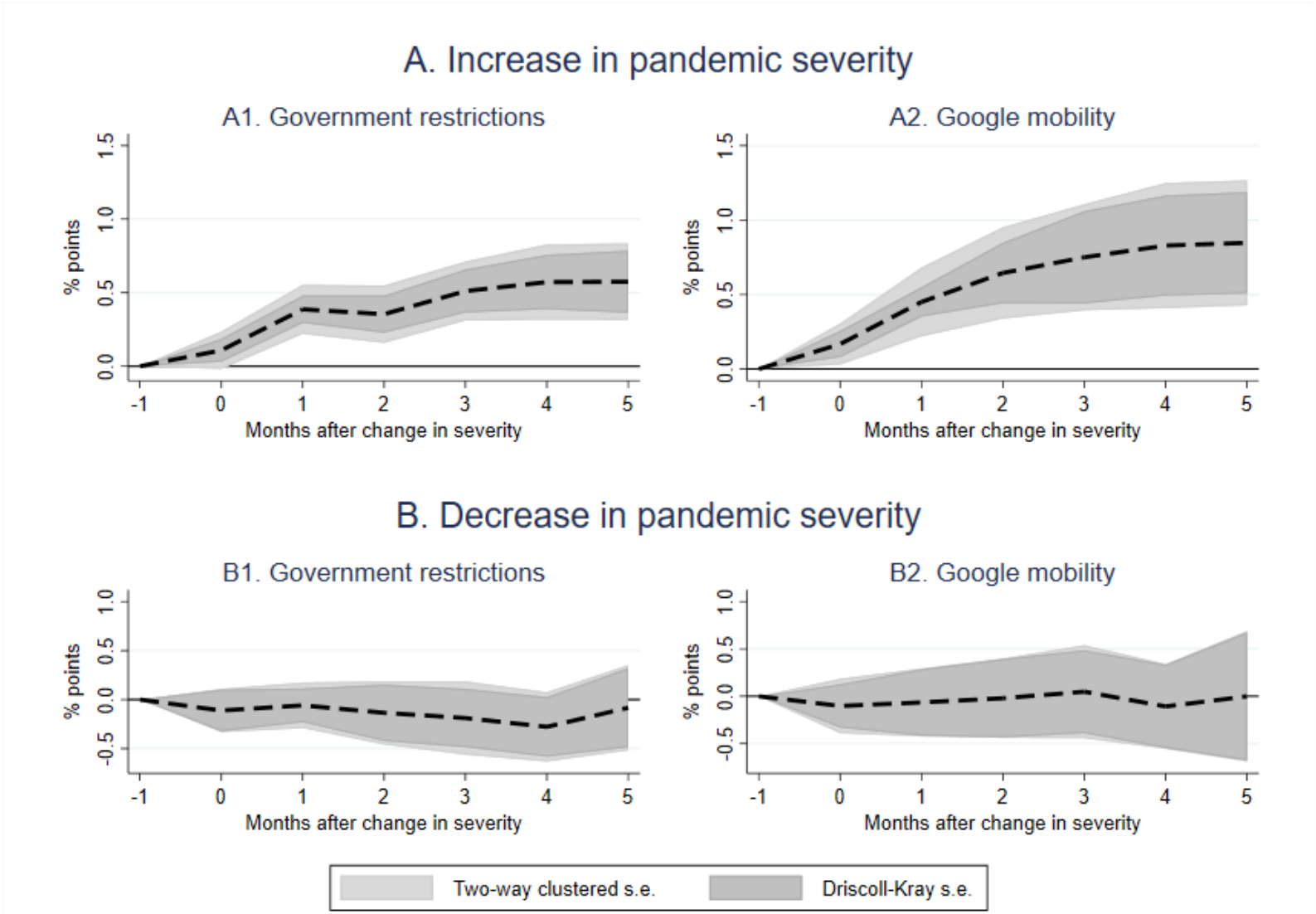
Placebo test: moving the pandemic to 2019



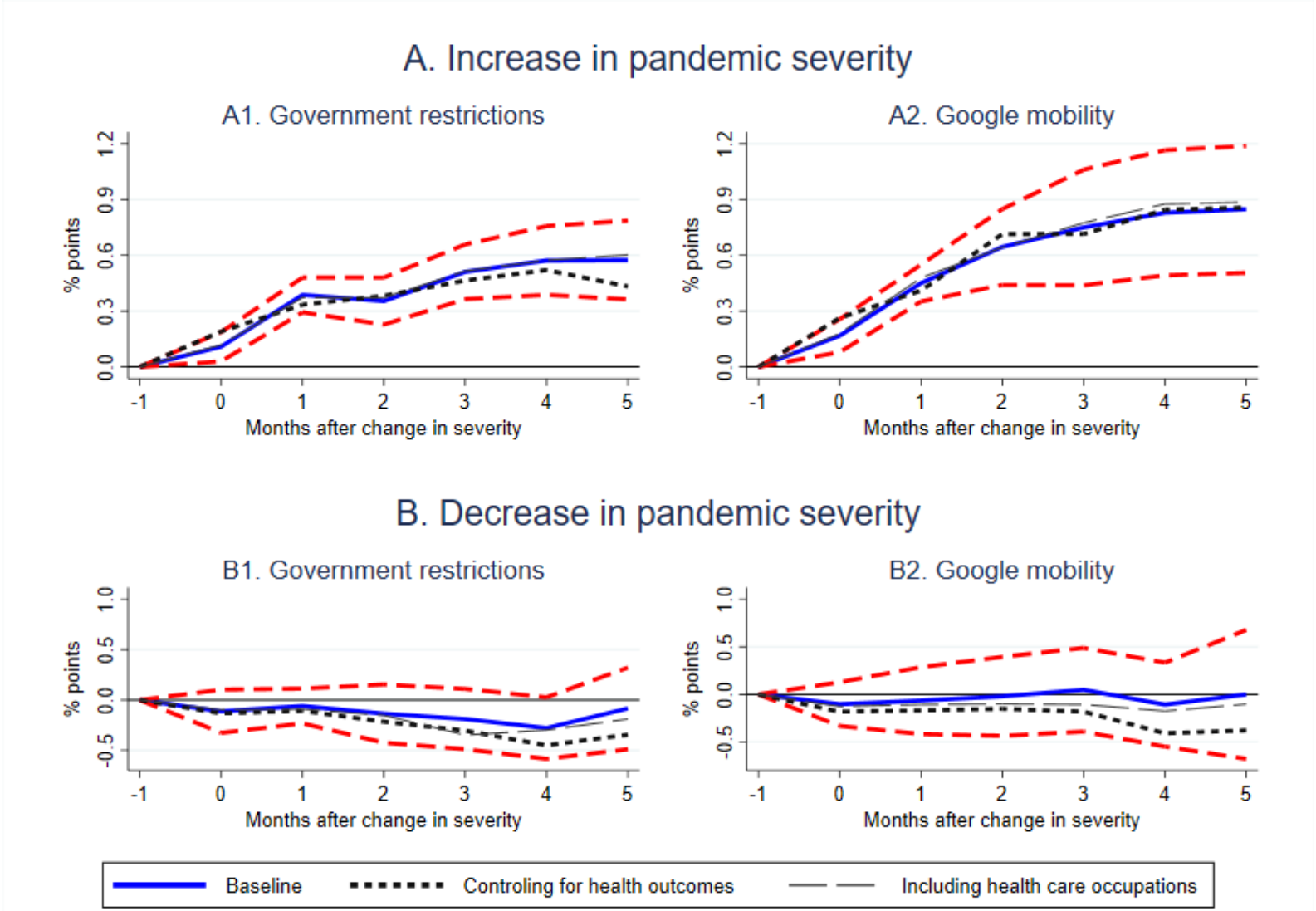
Robustness: lag structure



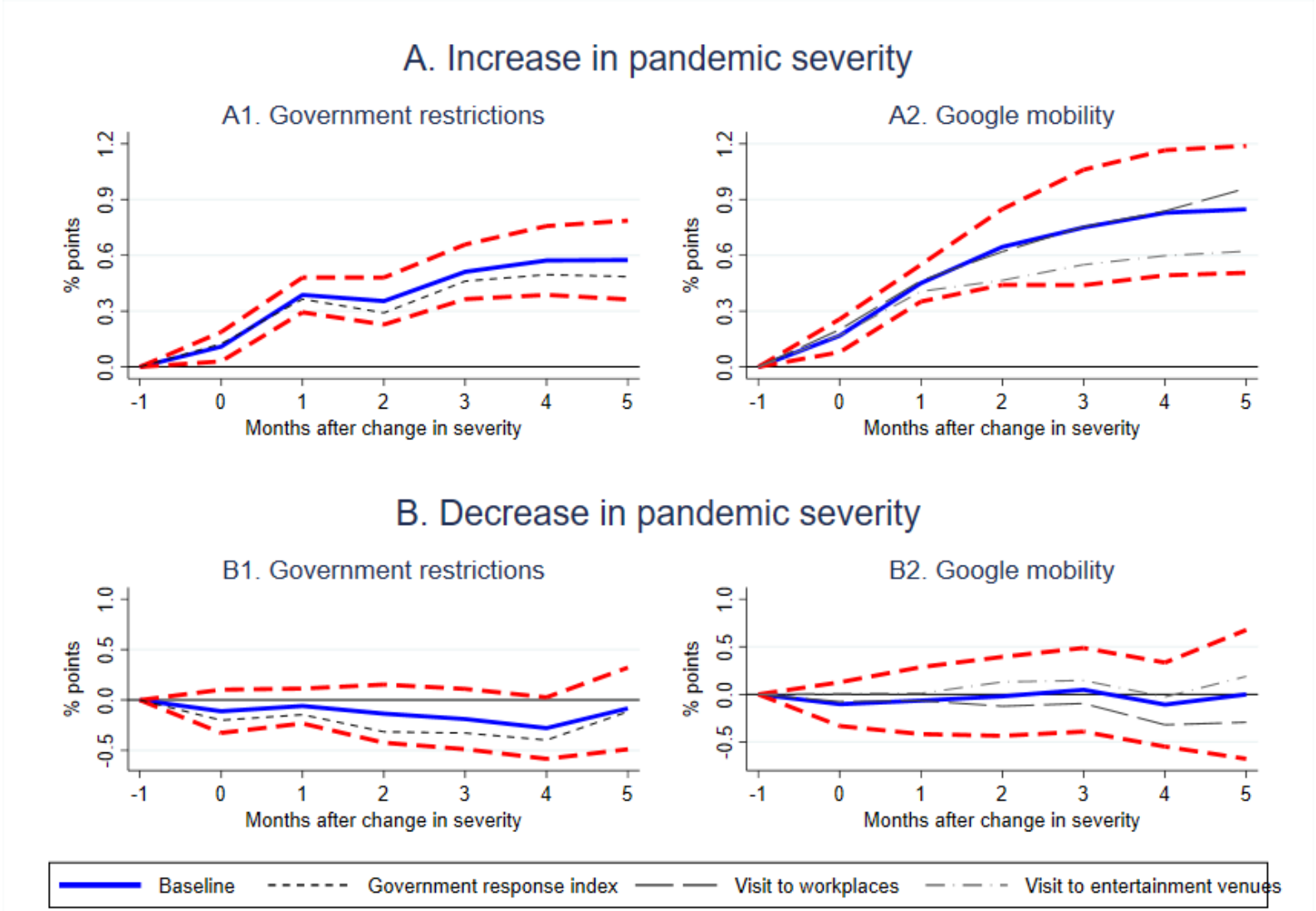
Robustness: standard errors



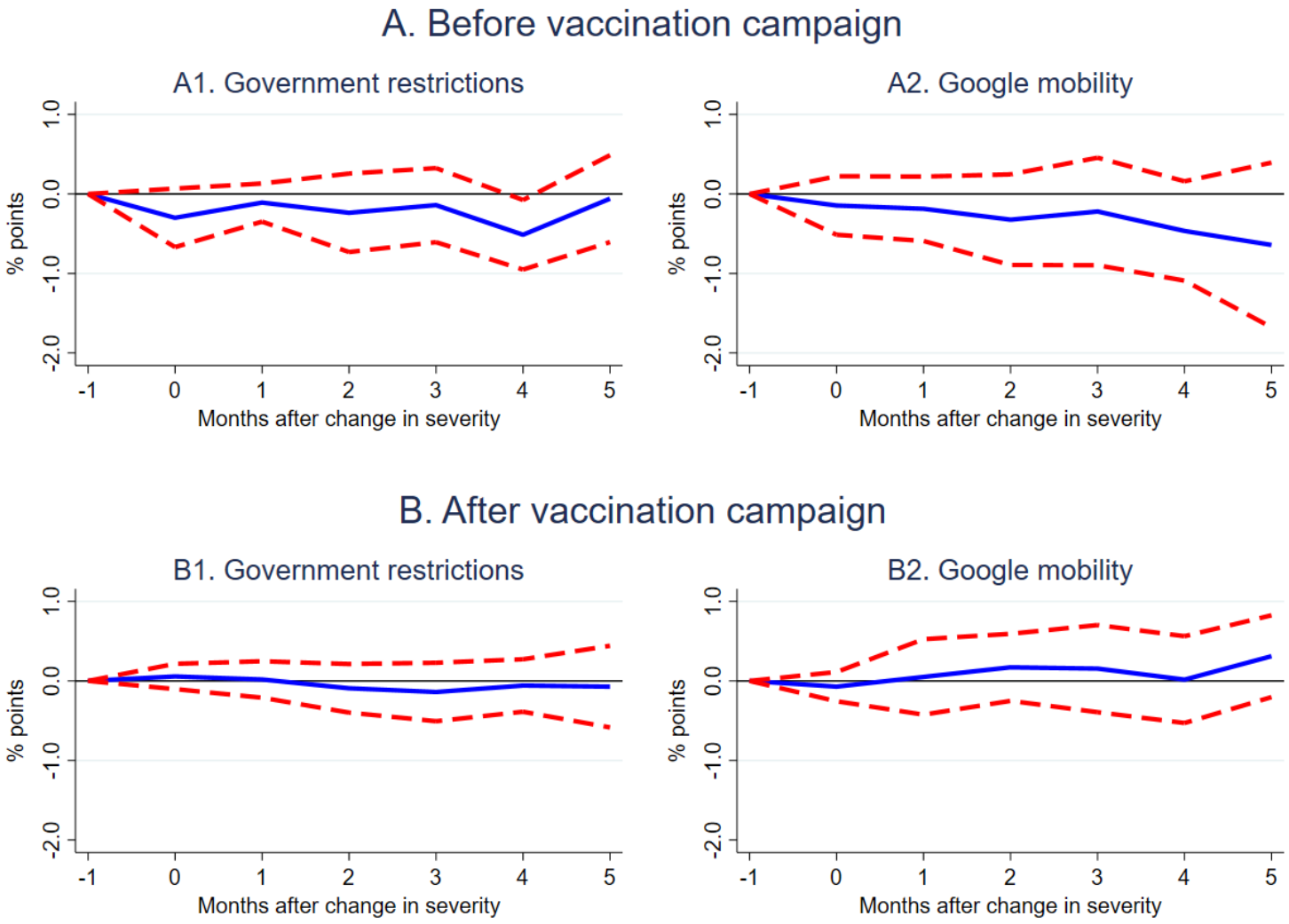
Robustness: healthcare variables



Robustness: alternative mobility indices



Robustness: vaccination campaign



Back-of-the-envelope: Implied direct effects on the increase of telework across countries (1)

- To get an idea of how differently the pandemic impacted telework across countries, we perform a simple back-of-the-envelope calculation, using (i) our occupation-level impulse-response coefficients, (ii) the country-level overall increase in pandemic severity, as well as (iii) country shares of jobs that can be done from home, estimated by Dingel & Neiman (2020):

$$\Delta telework = \hat{\beta}^{p,k} * \left(\sum_{t=1}^{T} x_t^p \right) * p$$

Back-of-the-envelope: Implied direct effects on the increase of telework across countries (2)

Table 1. Predicted increase in the share of job postings advertising telework due to the pandemic

	relative to the U.S.	in absolute value (% points)
Mexico	0.7	2.9
U.S.	//	4.1
Spain	1.1	4.7
Germany	1.2	5.1
Sweden	1.2	5.1
Italy	1.3	5.2
Poland	1.3	5.4
U.K.	1.4	5.8
Switzerland	1.5	6.2
Austria	1.6	6.4
Ireland	1.6	6.5
Belgium	1.6	6.6
Netherlands	1.6	6.6
France	1.6	6.6
Luxembourg	2.3	9.5
Average	**1.4**	**5.8**

Note: The table reports the predicted increase in country shares of job postings advertising telework over the March 2020 to September 2022 that was directly due to the pandemic. Values are obtained from the back-of-the-envelope calculation illustrated in Annex B. Values for Australia, Canada, Israel, Japan and New Zealand are not available due to lack of data on country shares of jobs that can be done from home (Dingel & Neiman, 2020).