

Mobility under the COVID-19 Pandemic: Asymmetric Effects across Gender and Age

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21st Jacques Polak Annual Research Conference

November 6, 2020

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Motivation

- **Effect of lockdowns on women:**

- ▶ Women tend to work in the most affected sectors i.e. hospitality and personal care
- ▶ School closures disproportionately affect working mothers
- ▶ Home production cannot be outsourced

→ Targeted policy support?

- **Effect of lockdowns on younger cohorts:**

- ▶ Younger workers rely on labor income to support consumption and have less stable job contracts that are more likely to be terminated
- ▶ Health risks posed by COVID-19 are much more severe for people aged 65+

→ Targeted containment measures?

- **Does COVID-19 fear vary by age?**

- ▶ Understanding individual risk perceptions

→ Improve compliance with measures

Research question

- This paper
 - ▶ **Are lockdowns' effects heterogeneous across gender and age?**
 - ▶ **Does voluntary social distancing vary by age?**
- Related literature
 - ▶ **Distributional effects of lockdowns** (Beland et al. 2020; Chetty et al. 2020):
 - ① We focus on **women** (Alon et al. 2020; Adams et al. 2020) and the **young** (Belot et al., 2020; Glover et al., 2020)
 - ▶ **Lockdowns vs voluntary social distancing** (Born et al. 2020; Goolsbee and Syverson 2020)
 - ① We ask if the fear factor is **age-specific** (Bordalo et al. 2020; Belot et al. 2020)

Methodology

Challenges to identify the effects of lockdowns and fear factors:

- 1 Lockdowns are endogenous policy choices
 - 2 They are introduced when health risks become acute → People voluntary reduce interactions
 - 3 Different lockdown measures adopted at the same time (stay-at-home vs school closure)
- **Effect of lockdowns on women and younger cohorts**
 - ▶ **Unique Vodafone mobility data** by gender and age at the province level
 - ▶ **RD design** to exploit high-frequency of the data and timing of local school closures in Italy
 - ▶ **Local projections** to study dynamic effects and exploit provincial disaggregation for alternative identification
 - **Does COVID-19 fear vary by age?**
 - ▶ **COVID-19 cases** to proxy for voluntary social distancing, controlling for lockdown stringency

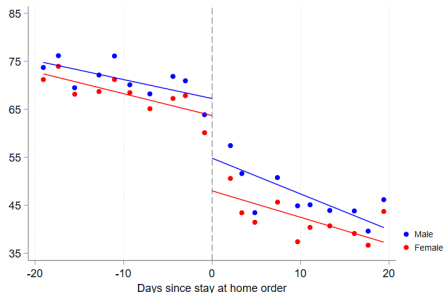
Unique mobility data by gender and age

- Vodafone creates anonymized **mobility indexes** by **gender** and **age** using information on post-paid contracts
- Data are at the **province** (NUTS3) level for **Italy, Portugal, and Spain**
- The age groups include: people aged between **18 and 24**, between **25 and 44**, between **45 and 64**, and **65+**
- Mobility indicator = percentage of people in a given province and demographic group leaving home in a day
- The home location of each customer is identified by monitoring cell connections during the night
- **Correlation with Google** mobility at the country-level > 0.84

Stay-at-home orders effects on mobility by gender

Identification idea:

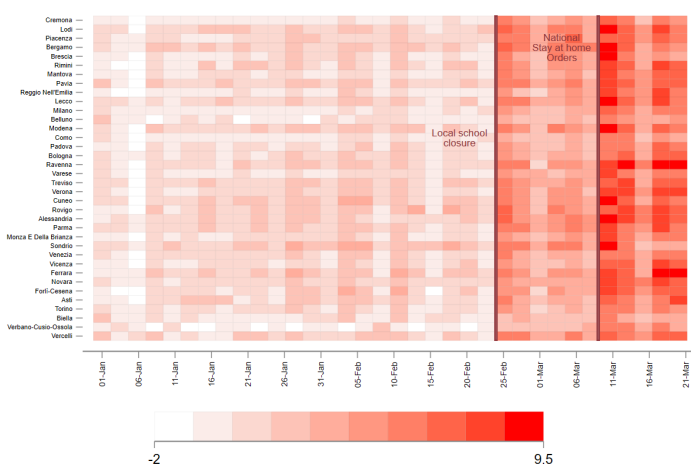
- Within the time interval unobserved confounding factors are likely to be similar
- Province and day-of-the-week FE
- Focus on age 25-44



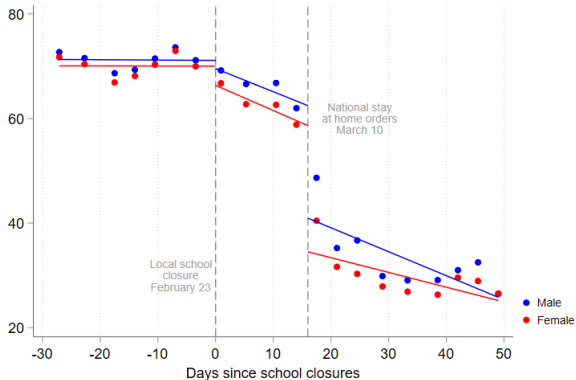
	18-24	25-44	45-64	65+
Stay-at-home	-19.60*** (0.59)	-12.95*** (0.46)	-12.52*** (0.41)	-11.76*** (0.46)
Women \times stay-at-home	-2.31*** (0.50)	-3.24*** (0.35)	-1.74*** (0.34)	1.55*** (0.57)
Observations	13,909	14,102	14,151	13,102
R-squared	0.87	0.86	0.87	0.82

Impact of local school closure on the gender mobility gap

- **Disentangle school closures vs stay-at-home orders:**
In five Northern Italian regions schools closed few weeks before national stay-at-home orders



Impact of local school closures on the gender mobility gap



Local projections

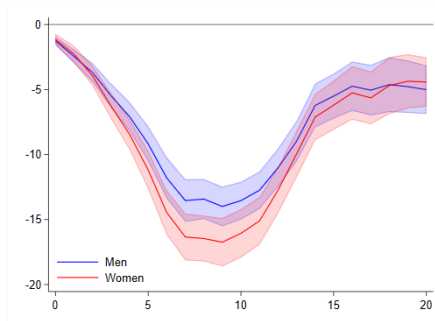
$$\begin{aligned} \text{mob}_{i,g,a,t+h} = & \alpha_i^h + \kappa_g^h + \tau_t^h + \sum_{p=1}^P \rho_p^h \text{mob}_{i,g,a,t-p} + \sum_{p=0}^P \delta_p^h \text{lock}_{j,t-p} + \sum_{p=0}^P \beta_p^h \ln \Delta \text{cases}_{i,t-p} \\ & + \text{women}_{i,a} \times \left(\sum_{p=0}^P \gamma_p^h \text{lock}_{j,t-p} + \sum_{p=0}^P \psi_p^h \ln \Delta \text{cases}_{i,t-p} \right) + \varepsilon_{i,g,a,t+h} \end{aligned}$$

Identification idea:

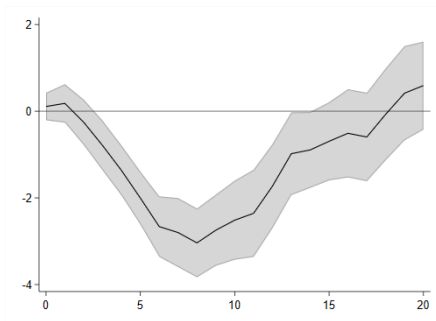
- Since governments often introduced **lockdowns on a national scale** in reaction to **localized outbreaks**, we exclude provinces with early and major COVID-19 outbreaks
- Controls:
 - ▶ Lagged stringency: intrinsic persistency
 - ▶ Lagged mobility: pre-existing trends
 - ▶ New infections: fear effect
 - ▶ Country and time FE: e.g. civic capital and global announcements

Local projections results

Impact of a Full Lockdown on Mobility, by Gender (Age group 25–44, percent)



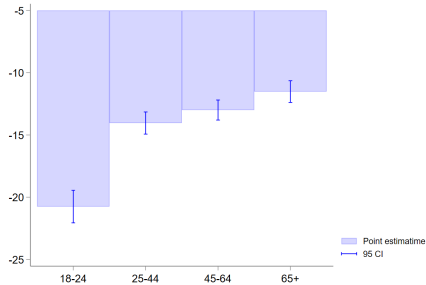
(a) Men vs Women



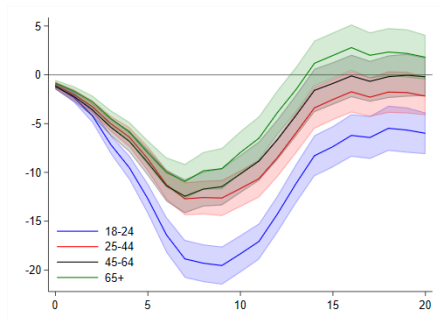
(b) Women-men differential

Heterogeneous effects on mobility across age groups

Impact of Lockdown Measures on Mobility, by Age (Percent)



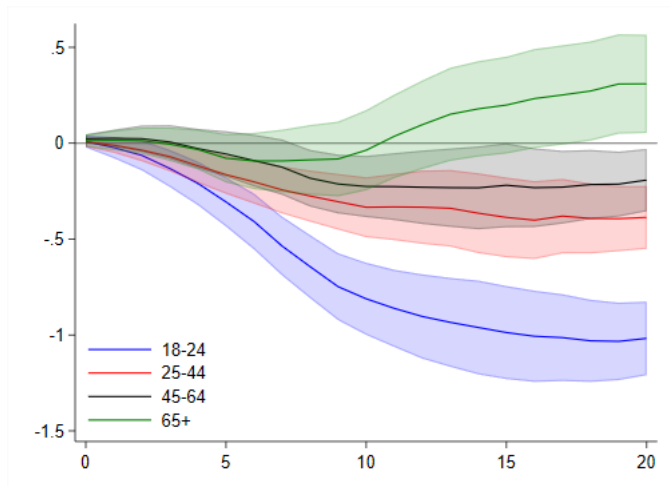
(a) Impact of stay-at-home orders



(b) Impact of a full lockdown

Does the fear factor vary by age?

Impact of a Doubling of COVID-19 Cases on Mobility, by Age (Percent)



Robustness exercises

- **RD design:**

- ▶ Alternative time window
- ▶ Controlling for COVID-19 cases
- ▶ Alternative samples

- **Local projections:**

- ▶ Including all provinces
- ▶ Controlling for day-of-the-week fixed effects
- ▶ Alternative samples

Conclusions

- **Are lockdowns' effects heterogeneous across gender and age? YES**
 - ▶ Women are disproportionately affected
 - ▶ Young cohorts are disproportionately affected
- **Does voluntary social distancing vary by age? YES**
 - ▶ Younger people responds more strongly also to rising infections
 - ▶ Consistent with survey evidence, this could be because younger people are more concerned about the virus

Policy implications

- **Are lockdowns' effects heterogeneous across gender and age? YES**
 - ▶ Possible widening of gender inequality
 - ★ Targeted policy intervention is required to support women during the pandemic, e.g. **parental leave to both men and women**
 - ▶ Possible widening of inter-generational inequality and scarring effects
 - ★ Need for a **social pact across generations** to at least partially compensate younger workers for the economic losses due to lockdowns
- **Does voluntary social distancing vary by age? YES**
 - ▶ Consider heterogeneous behaviour
 - ★ Devise targeted containment policies and **improve compliance**