

# Quarantine and Its Scar on Labor

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- Quarantine for individuals who had close contact with infected people
  - A widely used policy to combat Covid-19
  - e.g. Shortening of quarantine period from 10 days to 7 days in 9/7/2022 in Japan
- There are a few analyses of its benefit in terms of suppressing the spread of Covid-19 (e.g. Chiba (2022))
- No analysis on the *cost* of the quarantine

# What we do

We use a large-scale survey conducted in Japan to investigate the following questions

1. How did quarantine affect hours and earnings during the quarantine period?
2. Does quarantine leave scars on hours and earnings even after the quarantine period?
  - If yes, how long and how much?
3. What are the factors associated with the likelihood and duration of the scar?

# What we find

1. How does quarantine affect hours and earnings during quarantine?
  - 22.6% workers experienced a reduction in earnings, 35.6% for hours
2. Does quarantine leave scars?
  - YES. 12.0% of workers experienced a reduction in earnings during a month after quarantine, 15.3% for hours
    - does not seem to be due to symptom of Covid-19: both tested negative and positive had similar reduction
  - How long? How much?
    - Average duration of reduction: 3.5 months for earnings, 2.7 months for hours
    - Average earning loss: 37.5%
    - 8.5% of workers left job during/after quarantine

3. What are the factors associated with the likelihood and duration of scars?
  - Availability of remote work.
    - e.g. Regular employees with remote-work available have 0.84 months shorter period of reduced earnings and 0.77 months shorter period of reduced hours than non-employees
  - Duration of the quarantine period
    - Quarantined by more than a week leads to 0.16 months longer period of decrease in earnings and hours

# Related Literature

1. Scar of recession/unemployment on wage (Kahn, 2010; Davis and von Wachter, 2011; Acabbi et al., 2022) and employment (Yagan, 2019; Heathcote et al., 2020) Kahn (2010): Graduating at a bad time makes wage persistently low.
2. Covid's impact on wage of female (Drozd et al., 2022)
  - No analysis on the impact of quarantine on labor outcomes

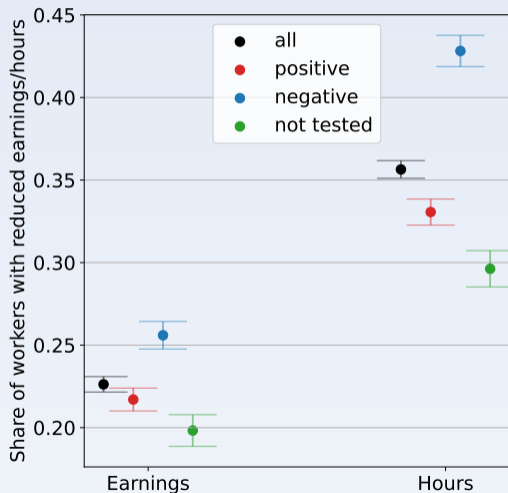
# Survey Description

- Surveyed at 2/14/2023 through 2/21/2023
- Samples: Individuals residing in Tokyo, working in March 2020, any close contact with to Covid-19 infected person
- Valid responses: 7998
- Demographics: 50.6% male, average age = 42.8

1. Hours and earnings during the quarantine period
2. Scars after the quarantine period
3. Factors associated with the magnitude and duration of scars.

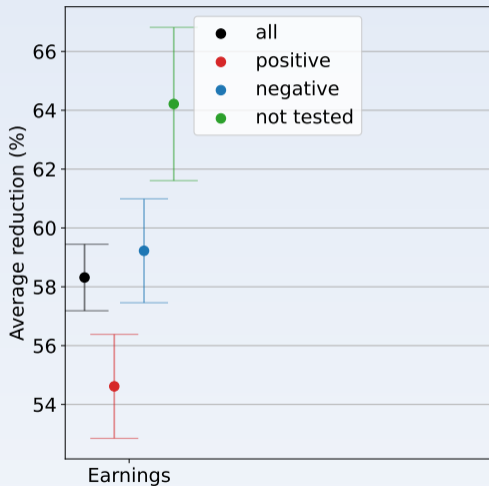


# Reduction in Earnings for about 1/4 Workers, Hours for 1/3



- Share of workers with reduced earnings/hours during quarantine
  - band represents one standard error of each mean
- Overall, 22.6% of workers experienced a reduction in earnings after quarantine, 35.6% for hours

# 55.4% of Reduction in Earnings



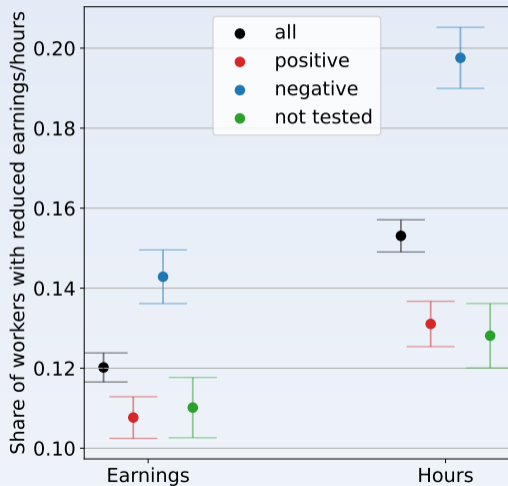
- Average size of a reduction in earnings after quarantine
  - band represents one standard error of mean
- Average monthly earnings loss is 55.4% after quarantine

# Summary of This Section

- During quarantine, reduction in
  - earnings for  $\approx \frac{1}{4}$ % of workers
  - hours for  $\approx \frac{1}{3}$ % of workers
- More than half reduction in earnings on average

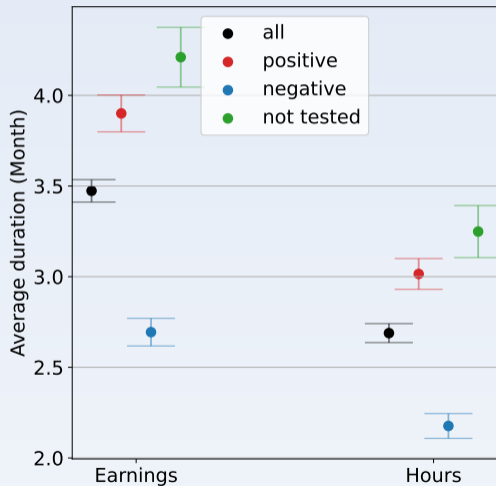
1. Hours and earnings during the quarantine period
2. **Scars after the quarantine period**
3. Factors associated with the magnitude and duration of scars.

# More than 10% of Workers with Reduced Earnings/Hours



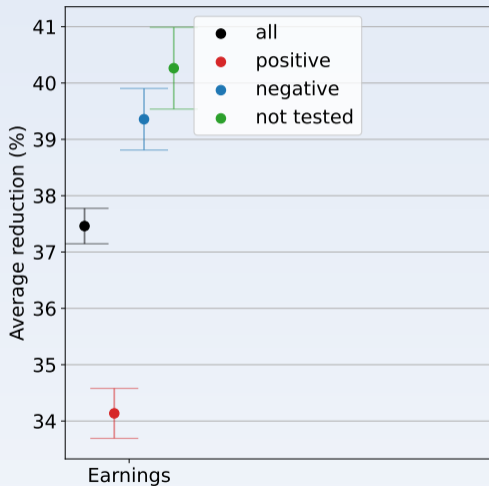
- Share of workers with reduced earnings/hours after quarantine
  - band represents one standard error of each mean
- Overall, 12.0% of workers experienced a decrease in earnings after quarantine, 15.3% for hours

# Reduction Lasted around 3 Months



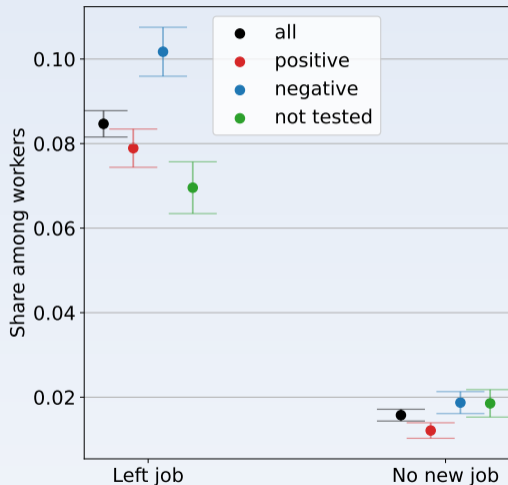
- Average duration of the reduction in earnings/hours after quarantine
  - band represents one standard error of each mean
- On average, the reduction lasted 3.5 months for earnings 2.7 months for hours.

# Nearly 40% Reduction in Earnings



- Average size of a reduction in earnings after quarantine
  - band represents one standard error of mean
- Average monthly earnings loss is 37.5% after quarantine

# Nearly 10% Job Separation After Quarantine

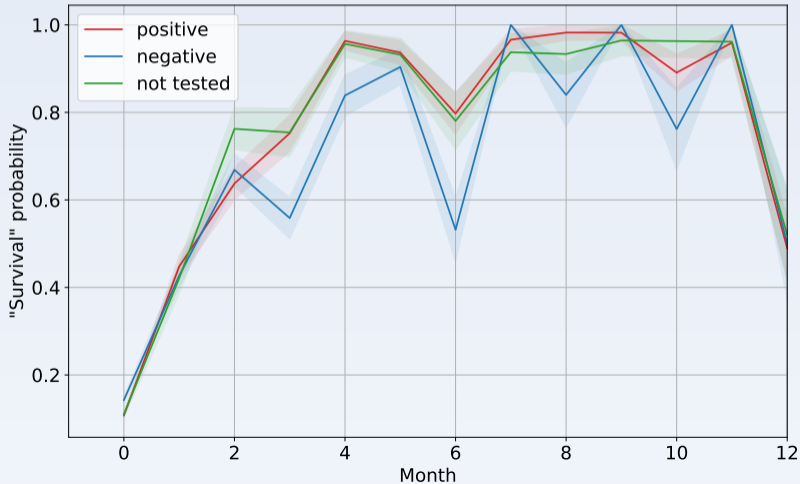


- Left: Share of workers that quit/lost job after quarantine
- Right: Share of workers that quit/lost job after quarantine and have not found a new job
  - band represents one standard error of each share
- Job separation for 8.5% of workers
- 1.6% of workers did not find a new job
  - i.e. 18.6% of job separations were not temporary



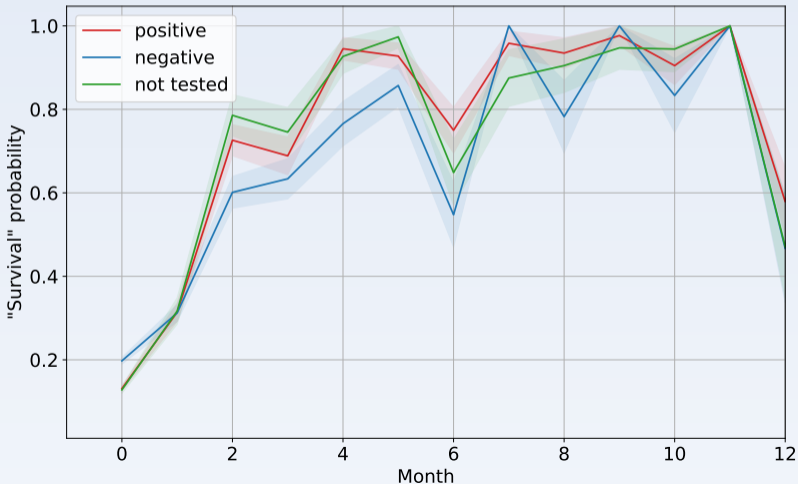
# Hazard Function of Earning

- "Survival" = stop the decrease at each month conditional on the decrease has lasted to that month with one standard error



# Hazard Function of Hours

- "Survival" = stop the decrease at each month conditional on the decrease has lasted to that month with one standard error



# Summary of This Section

- More than 10% of workers experienced reduction in earnings/hours after quarantine
- Does not seem to be due to the symptom of Covid
  - Workers tested negative had higher likelihood of earnings/hours reduction and larger size of the reduction in earnings.
  - Their reduction lasted shorter than others, but still longer than 2 months

1. Hours and earnings during the quarantine period
2. Scars after the quarantine period
3. **Factors associated with likelihood and duration of scars**

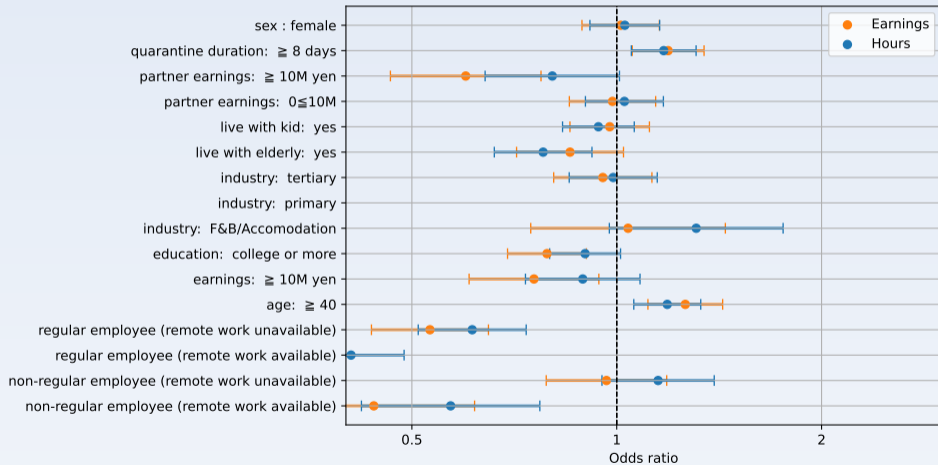
# Likelihood of the Scar

- What affects the likelihood of the scar?
- Use logit model
- Dependent variable: dummy variable that takes one if earnings/hours fell after quarantine and zero otherwise

# What's in Covatiates

- Quarantine duration: 0 to 7 days, 8 days or more
- Age group: 20-39, 40+
- Earning: 0-10M, 10M+
- Education: below college, college or more
- Job industry: primary (agri., fishery ..., mining), secondary (construction, manufac.), F&B and accomodation, tertiary (everything else)
- Live with kids
- Live with elderly
- Partner's earning: no partner, 0-10M, 10M+
- Employment: Remote-work possible/impossible regular/non-regular employee, non-employee
- Sex: Male, female

# Likelihood of the scar: OR for All Workers

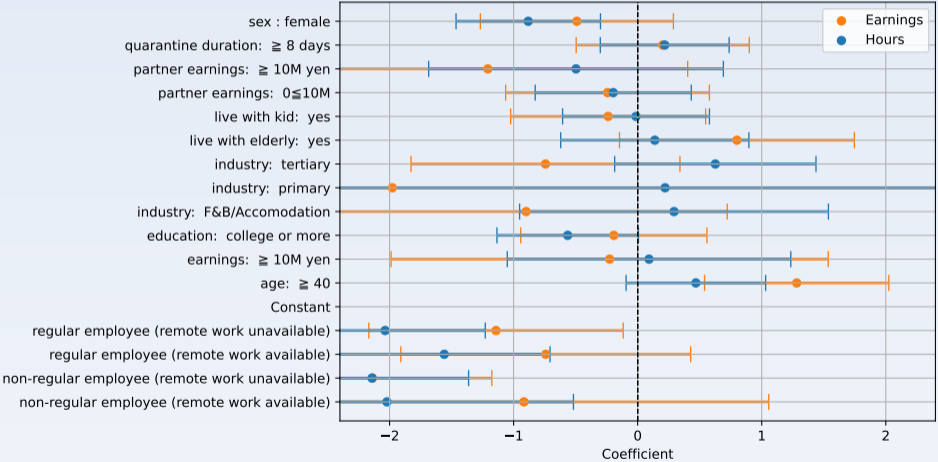


# Duration of the scar

- What affects the duration of the scar?
- Use OLS
- Dependent variable: duration (months) of reductions in earnings/hours
  - Samples



# Duration of the scar



## Summary of This Section

- Longer quarantine increases the likelihood of the scar on earnings/hours, but not make the scar last longer
- Remote work possibility and regular employment make the scar less likely
- Employees experience shorter reduction in hours.

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