Pandemics Through the Lens of Occupations

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This file provides the instructions to run the programs in the correct order to replicate the Figures in the paper.

1. Run "main.m" in MATLAB to generate Figures 4, 5, 6, 7, 13, 14, 15, 17 and 18 (Panel b).
2. Run "Occupation Specific Risk\main_occ_risk.m" in MATLAB to generate Figure 10.
3. Run "Heathcare Congestion\main_congestion.m" in MATLAB to generate Figure 16.
4. Run "Figure_1_2_3_9.do" in STATA to generate Figure 1,2,3 and 9.
5. Run "Figure_8.do" in STATA to generate Figure 8.
6. Run "Figure_11.do" in STATA to generate Figure 11.
7. Run "Figure_12.do" in STATA to generate Figure 12.

Note 1: Please adjust directories in each of the above MATLAB/STATA programs for the code to run correctly.

Note 2: The provided code will replicate all figures apart from Figure 18 Panel (a) which was taken from the paper by Chetty et al. (2020).

Note 3: Ado files needed for the STATA code are provided in the "Ado" folder.

Data Availability Statement

Statement about Rights

We certify that the authors of the manuscript have legitimate access to and permission to use the data used in this manuscript.

Details on each Data Source

- Annual data on median wages, salaried and commissions for one-, two- and three-digit NOC occupations is available from the 2016 Census Catalogue no. 98-400-X2016304 (Statistics Canada 2016). We filtered the two-digit NOC occupation data and divided median annual wages by 52 to get a weekly measure of wages. Click here to access the data and select "Total-Work activity during the reference year". The data was constructed by Statistics Canada by taking a 25% sample of the Census and people 15 years and over working were considered.
- Data on number of workers, risk index and work from home shares for each two-digit occupation were provided by Baylis et al. (2020a,b).
- Employment data for February, March, April and June 2020 are available from the Table 14-10-0296-01 provided by Statistics Canada (2021). Click here to access the data and select "British Columbia" for Geography and "February 2020" to "June 2020" as the relevant reference periods.
- Death data for Canada and British Columbia are available from the Canadian Covid-19

epidemiological data which is available at https://health-infobase.canada.ca/covid-19/epidemiological-summary-covid-19-cases.html.

- Death data for United States are available from The New York Times (2021). The url is https://github.com/nytimes/covid-19-data.
- Data on sectoral elasticities is 1 and weights are 0.1 over 10 sectors in "gdp_sectors_parameters.csv". Data on elasticity of an occupation across sectors is 1 and weight is 1 in "sectors_occ_elasticities.csv" and "sectors_occ_elasticities.csv" respectively. This ensures that output is a linear sum of wages across all occupations and sectors.

Dataset List

Data file	Source	Notes	Provided
Raw data/2-digit occupation aggregation.xlsx	Data on number of workers, risk index and work from home shares for 3-digit industry x 4-digit occupation were provided by Baylis et al. (2020b).	We aggregate them to two-digit occupation in the same Excel file, sheet "occ_2_aggregation".	
Raw data/ Occupation data on wages.xlsx	Data on median wages from Statistics Canada (2016), Census Catalogue no. 98-400-X2016304.	Combined data on no. of workers, risk index and share working from home from "2-digit occupation aggregation.xlsx".	Yes
Raw data/ Occupation Employment.xlsx	Statistics Canada (2021), Table 14-10-0296-01	Combined data on proportion working from home from "Occupation data on wages.xlsx"	Yes
Raw data/ Deaths data.xlsx	Data from US are from The New York Times (2021) and the Canadian Covid-19 epidemiological data.	Canadian Covid-19 epidemiological data is available at https://health-infobase.canada.ca/covid-19/epidemiological-summary-covid-19-cases.html	Yes
gdp_sectors_parameters.csv	Constructed by authors		Yes
sectors_occ_elasticities.csv	Constructed by authors		Yes
sectors_occ_elasticities.csv	Constructed by authors		Yes

Computational Requirements

Software Requirements

- STATA (code was last run on version 14)
    - Labutil (Ado file provided, code by Cox (2000))
    - Splitvallabels (Ado file provided, code by Winter and Jann (2004))
- MATLAB (code was last run with MATLAB Release 2020a, previously also ran on MATLAB Release 2018b)

Memory and Runtime Requirements

The code was last run on a 4-core Intel-based laptop with i7 processor, 16 GB RAM and Windows 10.

The entire code took less than 10 minutes to execute.

Description of programs/code

Below, we provide a brief description of all the files in the replication package.

File Name	Sub-Directory	Type
Data files		
gdp_sectors_parameters.csv	Also present in "Occupation Specific Risk" and "Healthcare Congestion"	CSV file
sectors_occ_elasticities.csv	Also present in "Occupation Specific Risk" and "Healthcare Congestion"	CSV file
sectors_occ_weights.csv	Also present in "Occupation Specific Risk" and "Healthcare Congestion"	CSV file
wage_schedule.xlsx	Also present in "Occupation Specific Risk" and "Healthcare Congestion"	Excel worksheet
Deaths data.xlsx	Raw data	Excel worksheet
Occupation data on wages.xlsx	Raw data	Excel worksheet
Occupation Employment.xlsx	Raw data	Excel worksheet
STATA programs		
Figure_1_2_3_9.do		STATA Do-file
Figure_8.do		STATA Do-file
Figure_11.do		STATA Do-file
Figure_12.do		STATA Do-file
Labutil.ado	Ado	STATA Ado-file

Splivallabels.ado	Ado	STATA Ado-file
MATLAB programs (by order of appearance in the code)		
main.m		MATLAB m-file
steady_state_cutoff.m		MATLAB m-file
go_calibrate_pis.m		MATLAB m-file
calibration_pi.m		MATLAB m-file
policy_susceptible.m		MATLAB m-file
sir_dynamics.m		MATLAB m-file
policy_susceptible_linear.m		MATLAB m-file
sir_dynamics_linear.m		MATLAB m-file
policy_susceptible_rebate.m		MATLAB m-file
sir_dynamics_rebate.m		MATLAB m-file
policy_susceptible_vaccine.m		MATLAB m-file
sir_dynamics_vaccine.m		MATLAB m-file
main_occ_risk.m	Occupation Specific Risk	MATLAB m-file
steady_state_cutoff.m	Occupation Specific Risk	MATLAB m-file
go_calibrate_pis.m	Occupation Specific Risk	MATLAB m-file
calibration_pi.m	Occupation Specific Risk	MATLAB m-file
policy_susceptible.m	Occupation Specific Risk	MATLAB m-file
sir_dynamics.m	Occupation Specific Risk	MATLAB m-file
main_congestion.m	Healthcare Congestion	MATLAB m-file
steady_state_cutoff.m	Healthcare Congestion	MATLAB m-file
go_calibrate_pis.m	Healthcare Congestion	MATLAB m-file
calibration_pi.m	Healthcare Congestion	MATLAB m-file
policy_susceptible.m	Healthcare Congestion	MATLAB m-file
sir_dynamics.m	Healthcare Congestion	MATLAB m-file

References

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The New York Times (2021) "Coronavirus (Covid-19) Data in the United States", Retrieved March 1 2021, from https://github.com/nytimes/covid-19-data

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