**Data and Code for**

**Ambient Air Pollution and the Transmission of Infectious Diseases: A New Econometric Framework**

Guojun He, Yuhang Pan, and Takanao Tanaka[[1]](#footnote-1)

**Setup:**

* *Programming language*: The codes are written in STATA and the authors used STATA 16-18 for all the analyses. You will need STATA license to replicate all the files.
* *Repository*: First, set your repository in the

- “$dir/code/config.do"

* *Master code:* Run the following code. The code will automatically execute all the processes needed for replication

- “$dir/code/master.do"

**Data and variable:**

1. For Air Pollution and COVID-19 in China:

The "$dir/data/master\_china.dta" is used. Variables are listed in Table 1

1. Air Pollution and Influenza hospital visits in Japan:

The "$dir/data/master\_japan.dta" is used. Variables are listed in Table 2.

**Codes:**

1. Figures and Tables:

These codes produce main figures and tables

* Figures

- "$dir/code/main/fig2.do"

- "$dir/code/main/fig3.do"

- "$dir/code/main/fig4.do"

- "$dir/code/main/fig5.do"

- "$dir/code/main/fig6.do"

- "$dir/code/main/fig7.do"

1. Appendix:

These codes produce Appendix figures and tables

* Appendix Figures

- "$dir/code/main/figA1.do"

- "$dir/code/main/figA2.do"

- "$dir/code/main/figA3.do"

- "$dir/code/main/figA4.do"

- "$dir/code/main/figA5.do"

- "$dir/code/main/figA6.do"

* Appendix Tables

- "$dir/code/main/TableA2.do"

- "$dir/code/main/TableA4.do"

- "$dir/code/main/TableA5.do"

- "$dir/code/main/TableA6.do"

**Replication Folders:**

The replication files include 6 folders. "code," "data," "temp," "figure," "appendix\_figure," and "appendix\_table." The "code" folder includes all the codes necessary for replications. The "data" folder includes all the cleaned data for analysis. The figures and tables in the paper can be produced in the "figure," "appendix\_figure," and "appendix\_table" when we run the codes to replicate them. The "temp" folder includes intermediate data sets that are necessary to replicate the outputs.

**Data Source:**

See "Appendix A: Data Appendix". All the data used in this paper are publicly available.

**Data and Code Availability:**

All the data and code used in this paper are available on the **public respiratory (Yuhang will add a link).**

**Table 1: Main Variables, China**

|  |  |  |
| --- | --- | --- |
| Variable Name | Variable Description | Main Output |
| *ID* |  |  |
| prov\_code | Province ID | - |
| city\_code2010 | City ID | - |
| date | Calendar date | - |
| daynum | Calendar date ID | - |
| year | Year | - |
| month | Month | - |
| day | Day | - |
| *COVID-19* |  |  |
| case | Confirmed cases | Fig2a |
| c\_cure | Recovered cases | Fig2a, FigA6 |
| death | Deceased cases | Fig2a |
| cur | Active cases | Fig2a |
| gcur | Growth rate of active cases | Figs2-5, FigsA1-5, TableA2 |
| gcase | Growth rate of confirmed cases | Figs2-5, FigsA1-5, TableA2 |
| new\_death | New deceased cases | Fig5 |
| new\_cure | New recovered cases | Fig5 |
| *Air Quality* |  |  |
| aqi | Air Quality Index | Figs2-5, FigsA1-6, TableA2-3 |
| pm | PM2.5 (µg/m3) | FigA5 |
| pm10 | PM10 (µg/m3) | FigA5 |
| so2 | SO2 (µg/m3) | FigA5 |
| no2 | NO2 (µg/m3) | FigA5 |
| co | CO (mg/m3) | FigA5 |
| o3 | O3 (µg/m3) | FigA5 |
| *Weather* |  |  |
| temp | Temperature (℃) | Figs3-5, FigsA1-6, TableA2 |
| prec | Precipitation (mm) | Figs3-5, FigsA1-6, TableA2 |
| snow | Snow (depth, mm) | Figs3-5, FigsA1-6, TableA2 |
| it | Thermal Inversion (℃) | Figs3-5, FigsA1-6, TableA2 |

**Table 2: Main Variables, Japan**

|  |  |  |
| --- | --- | --- |
| Variable Name | Variable Description | Main Output |
| *ID* |  |  |
| pref\_id | Prefecture ID | - |
| time | Year-week ID | - |
| year | Year | - |
| month | Month | - |
| week | Week | - |
| day | Day | - |
| *Influenza* |  |  |
| flu | Influenza admissions | Fig6, TableA4 |
| gflu | Growth rate of Influenza admissions | Figs6-7, TablesA4-6 |
| *Air Quality* |  |  |
| spm | SPM(µg/m3) | Figs6-7, TablesA4-6 |
| pm | PM2.5 (µg/m3) | TableA4 |
| so2 | SO2 (ppb) | TableA4 |
| no2 | NO2 (ppb) | TableA4 |
| co | CO (0.1ppm) | TableA4 |
| ox | OX(ppb) | TableA4 |
| *Weather* |  |  |
| temp | Temperature (℃) | Fig7, TablesA4-6 |
| prec | Precipitation (mm) | Fig7, TablesA4-6 |
| snow | Snow (depth, mm) | Fig7, TablesA4-6 |
| it | Thermal Inversion (℃) | Fig7, TablesA4-6 |

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