Replication Data for: What are the likely air pollution impacts of carbon capture and storage?, Journal of the Association of Environmental and Resource Economists https://doi.org/10.7910/DVN/NRKU1F

Data Availability and Provenance Statements

Statement about Rights

- ☒ I certify that the author(s) of the manuscript have legitimate access to and permission to use the data used in this manuscript.
- ☒ I certify that the author(s) of the manuscript have documented permission to redistribute/publish the data contained within this replication package. Appropriate permission are documented in the LICENSE.txt file.

Summary of Availability

- ☒ All data **are** publicly available.

Dataset list

- Find detailed specifics about each dataset below under references
- The original version of AP3 referenced below included older mortality and population estimates, we we updated with data in /Model_Data/

Data	Source	Notes	Provided
`/Matlab_AP3/`	https://nickmuller.tepper.cmu.edu/APModel.aspx	Includes code, mortality data, source-receptor matrices, NEI data	Yes
`/InMap/`	https://inmap.run/	Includes code, CDC Mortality Data, source-receptor matrices, EPA NEI data	Yes
`/Model_Data/`	EPA NEI & CEMS & CDC Mortality Data	Updates to AP3	Yes
`/SCM/`	EIA-860, EPA NEI, EPA CEMS, SMOKE Data (Adams, 2020)	Data & Code to Create SCM dataset	Yes

Computational requirements

Software Requirements

INSTRUCTIONS - [X] The replication package contains one or more programs to install all dependencies and set up the necessary directory structure.
- Stata (code was last run with version 15) - the program "`setup.do`" will install all dependencies locally, and should be run once. - Python 3.6.4 - Matlab (code was run with Matlab Release 2021a) - R 3.4.3 - InMap - Go to https://github.com/spatialmodel/inmap/releases to obtain a copy - Results were generated using inmap-v1.10.0-beta.1-windows-amd64.exe

Portions of the code use Powershell scripting, which may require Windows 10 or higher.

Controlled Randomness

- ☒ No Pseudo random generator is used in the analysis described here. ### Memory, Runtime, Storage Requirements #### Summary Approximate time needed to reproduce the analyses on a standard (CURRENT YEAR) desktop machine:
- ☒ 1-3 days

Approximate storage space needed: - [X] 2 GB - 25 GB

Details

The code was last run on a **24-core Intel-based desktop with Windows 11 version 10.0.2262 with 200GB of free space**.

Description of programs/code

Instructions to Replicators

- Programs run on four platforms: — Data cleaning and preliminary analysis with Stata dofiles
- AP3 Air Transport Model runs executed in Matlab via shell scripts (sh files), note you may have to edit path in shell scripts depending upon your system configuration.
- InMap Air Transport Model runs executed in Go (software can be dowloaded from https://inmap.run)
- Maps and post run analysis in R
- Master do-file doAll.do will execute all programs include calls to R, Matlab shell scripts and InMap
- Depending on your configuration, you may find it easier to run subroutines directly from Matlab or RStudio

Details

List of tables and figures

The provided code reproduces:

- ☒ All numbers provided in text in the paper
- ☒ All tables and figures in the paper

Figure/Table #	Program	Line Number	Output file	Note
Figure 1, panel A	/R_Mapping/Indus_Facility_Locations.R	43	Industrial_Facilities_Jittered_Color_Switch.jpg	
Figure 1, panel B	/R_Mapping/EGU_Facility_Locations.R	40	EGU_Facilities_Jittered.jpg	
Figure 2, panels A,C,E	/dos/synthetic_control_unit_smoke.do	29, 144, 262	ei_co2.png, ei_so2.png, ei_so2.png	Produces donor figs for A Fig 3
Figure 2, panels B,D	/dos/synthetic_control_unit_smoke.do	86, 177	ei_NH3.png, ei_PM.png	Produces donor figs for A Fig 3
Figure 3, panel A	/R_Mapping/Indus/Map_County_Deaths_Indus.R	127	County-Level-Deaths_Indus.jpg	Requires prior AP3 run
Figure 3, panel B	/R_Mapping/EGU/Map_County_Deaths_EGU.R	126	County-Level-Deaths_EGU.jpg	Requires prior AP3 run
Figure 4, panel A	/R_Mapping/Indus/Map_County_Deaths_Shell.R	105	County-Level-Deaths_Single_Shell_5_States.jpg	Requires prior AP3 run
Figure 4, panels B-C	/dos/facility_damages.do	85, 106	shell_plot_death_pop.png, shell_plot_death_dist.png	Requires prior AP3 run
Figure 5	/dos/doKdensity.do	81, 147	industrial_distr.png, egu_distr.png	Requires prior AP3 run
Table 1	/dos/facility_sumsstat.do	83, 146	sumstats_1.tex	
Table 2	See “CCQ” Sheet of Emissions_Factors_wkst.xlsx for source			
Table 3	/dos/facility_damages_comparison.do	175,178,353, 182	damage_CO2_all.tex	Requires prior AP3 & InMap run
Table 4	several (see doAll.do) final table	NA	inmap_ej_tab.tex	Requires prior AP3 & InMap

Figure/Table #	Program	Line Number	Output file	Note
	produced by /dos/inMap_EJ_table.do			run

doAll.do also provides code to recover all Appendix Tables and Figures

References

Adams, Elizabeth, 2020, "2017 v1 NEI Emissions Modeling Platform (Premerged CMAQ-ready Emissions)", https://doi.org/10.15139/S3/TCR6BB, UNC Dataverse, V1 (SMOKE Dataset used for SCM) Accessed at https://gaftp.epa.gov/air/emismod/ [Last accessed March 2023]

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Clay, Karen, Akshaya Jha, Nicholas Muller, and Randall Walsh, "External Costs of Transporting Petroleum Products: Evidence from Shipments of Crude Oil from North Dakota by Pipelines and Rail," *The Energy Journal*, January 2019, 40 (1). AP3 model and datasets obtainable from https://nickmuller.tepper.cmu.edu/APModel.aspx [Last accessed March 2023]

EIA, EIA-860 Detailed Data, 2011-2020, Energy Information Agency, https://www.eia.gov/electricity/data/eia860/ [Last accessed March 2023]

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Acknowledgements

Thank you to Nicholas Muller for making AP3 code available and providing advice and updates.