This directory contains data and code that produces the cleaned datasets and replicates the output reported in the full set of tables and figures in the following paper:

Title: "The Heterogeneous Effects of Large and Small Minimum Wage Changes: Evidence Using a Partially Pre-Committed Analysis Plan"

Authors: Jeffrey Clemens and Michael R. Strain

Directory Structure:

- The data are stored in .dta format in the folder: Data
- All code is provided in the folder: Programs
- All graphs are placed into the folder: Graphs
- All raw tables are placed the folder: Tables
- Generated bootstrap estimates used in the summary tables are placed in the folder: Estimates

Data Availability Statement:

This project uses Current Population Survey (CPS) and American Community Survey (ACS) data from IPUMS, House Price Index data from the Federal Housing Finance Agency (FHFA) and Personal Income per Capita data from the Bureau of Economic Analysis (BEA).

All data are publicly available.

Description of files in the Data folder:

- CPS-2019.dta: IPUMS CPS microdata downloaded on February 2, 2020 from here: https://cps.ipums.org/cps/

- CPS-2019-no-restrictions.dta: IPUMS CPS microdata downloaded on April 15, 2023 from here: https://cps.ipums.org/cps/

--- Used to construct the Kaitz Index figures Figure 2 Panel B and Figure A2 Panel B.

--- Contains the same variables as - CPS-2019.dta but includes all ages 16 and over.

- ACS-2019.dta: IPUMS USA microdata downloaded on November 12, 2020 from here: https://cps.ipums.org/usa/

- acs-and-cps-variables-samples.xlsx: This file contains a list of the variables and samples in the raw data file CPS-2019.dta, CPS-2019-no-restrictions.dta and ACS-2019.dta.

You can download extracts from IPUMS using the following steps:

1) To download extracts from ipums you first need to create and account with IPUMS. If you have already done this, you can log in to your account and skip to step 2.

2) From the main page at https://cps.ipums.org/cps/, click on "GET DATA".

3) Select the variables from the "IPUMS CPS-2019" tab of the acs-and-cps-variables-samples.xlsx spreadsheet.

4) Click on "CHANGE SAMPLES", click the "Basic Monthly" tab and then select the samples from the samples list in the "IPUMS CPS-2019"" tab of the ipums-variables-and-samples spreadsheet.

5) After selecting all variables and samples, click on "VIEW CART".

6) Click "CREATE DATA EXTRACT".

7) In "DATA FORMAT make sure .dta (Stata) is selected and click "SUBMIT EXTRACT".

8) After the extract is downloaded, unzip the .dta file and rename it "CPS-2019.dta".

- HPI_2019.dta - Quarterly All Transactions State House Price Index Data from FHFA. Originally downloaded April 5, 2020.

- HPI_acs_2019.dta - Quarterly All Transactions State House Price Index Data from FHFA averaged by year to create a state-year dataset to use with the ACS extract. Originally downloaded April 5, 2020.

- PersonalIncome_2019.dta - Quarterly State Personal Income per Capita from BEA. Originally downloaded April 5, 2020

- PersonalIncome_acs_2019.dta - Quarterly State Personal Income per Capita from BEA averaged by year to create a state-year dataset to use with the ACS extract. Originally downloaded April 5, 2020.

- min_wage_variables_for_ACS_and_CPS_analysis.dta - Groups states into large increasers small increasers and indexers.

- HousingIndexChanges.dta - Includes 3-year lags of annual HPI data used for event studies with rich controls.

- PersonalIncomeChanges.dta - Includes 3-year lags of annual PersonalIncome data used for event studies with rich controls.

- minimum-wage-yearly.dta - Includes January minimum wage data for years prior to 2011.

- state_fips_master.dta - crosswalk with state names, two-letter abbreviations, and FIPS codes.

*** Software Requirements:

Stata 16.1

External Packages:

- reghdfe version 6.12.2, 02Nov2021
- ftools version 2.49.0, 06may2022
- did_imputation version 2.0, 23apr2023
- grc1leg2 version 2.2.1, 15nov2022
- estout version 3.17, 02jun2014
- egenmore last revised 24jan2019
- erepost version 1.0.2, 15jun2015

*** Description of programs in the code folder

*** To run any file, change global path to point to directory where files are stored on your computer at the top of a particular file.

global path "I:/DataSets5/Duncan/Dropbox/Recent Minimum Wage Changes/2020.12 NBER Update/JOLE Precommittment Replication"

It is recommended to run the files in the order specified below (also specified in the master.do file in this folder).

*** Generate Main Tables and Figures

* Figure 1 Panels A and B

do "$codedir/Figure_1.do"

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* Figure 2 Panel A
do "$codedir/Figure_2_Panel_A.do"

* Figure 2 Panel B
do "$codedir/Figure_2_Panel_B.do"

* Figure 3
do "$codedir/Figure_3.do"

* Figure 4 and Figure B7
do "$codedir/Figure_4_Panel_A.do"

do "$codedir/Figure_4_Panel_B.do"

do "$codedir/Figure_4_Panel_C.do"

do "$codedir/Figure_4_Panel_D.do"

do "$codedir/Figure_4_Panel_E.do"

do "$codedir/Figure_4_Panel_F.do"


* Summary Stats Tables 1 and 2, A1, and A5
do "$codedir/SummaryStatsStandard_ACS_CEPCategories.do"

* Summary Stats Tables A2 and A3, A4, and A6
```

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do "$codedir/SummaryStatsStandard_CPS_CEPCategories.do"

* Summary Stats Table A7
do "$codedir/SummaryStatsStandard_ACS_NewNewCategories.do"

* Summary Stats Tables A8
do "$codedir/SummaryStatsStandard_CPS_NewNewCategories.do"

* Figure A1
do "$codedir/Figure_A1.do"

* Figure A2 Panel A
do "$codedir/Figure_A2_Panel_A.do"

* Figure A2 Panel B
do "$codedir/Figure_A2_Panel_B.do"

* Generate Dataset for use with Event Studies
do "$codedir/GenerateEventStudyDataset.do"

*** Appendix B

* Data for Figure B1
do "$codedir/analysis_ACS_EventStudyDesigns2013.do"

* Data for Figure B2
do "$codedir/analysis_ACS_EventStudyDesignsEventTimeNoCategories.do"
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* Data for Figure B3
do "$codedir/analysis_ACS_EventStudyDesignsEventTimePolicyCategories"

* Figure B1
do "$codedir/Figure_B1.do"

* Figure B2
do "$codedir/Figure_B2.do"

* Figure B3
do "$codedir/Figure_8.do"

* Figure B4
do "$codedir/Figure_B4.do"

* Figure B5
do "$codedir/Figure_B5.do"


* Figure B6
do "$codedir/Figure_B6_Panel_A.do"

do "$codedir/Figure_B6_Panel_B.do"

do "$codedir/Figure_B6_Panel_C.do"

do "$codedir/Figure_B6_Panel_D.do"
```

```
do "$codedir/Figure_B6_Panel_E.do"

do "$codedir/Figure_B6_Panel_F.do"

* Figure B8
do "$codedir/Figure_B8.do"

* Figure B9
do "$codedir/Figure_B9.do"

* Figure B10
do "$codedir/Figure_B10_Panel_A.do"

do "$codedir/Figure_B10_Panel_B.do"

do "$codedir/Figure_B10_Panel_C.do"

* Figure B11
do "$codedir/Figure_B11_Panel_A.do"

do "$codedir/Figure_B11_Panel_B.do"

do "$codedir/Figure_B11_Panel_C.do"
```

The following files generate the estimated averages and bootstrap estimates used to construct the 95 percent confidence intervals for each estimated average employment effect, wage effect, or elasticity reported in tables 3, 4, 5, A9, A10, A11, A12, and A13.

We structure each file as follows:

1) We a define a program "bs_strat" which runs the individual regressions needed to construct each average, calculates the average effects across the individual regression specifications and returns the estimated average effects

2) We take the ACS and CPS datasets, merge in the relevant covariates and apply the necessary sample restrictions to generate the estimates reported in each table row

3) We then wrap the "bs_strat" program in a bootstrap command to generate the estimates that comprise the bootstrap confidence intervals

The bootstrap randomly samples each of the 51 states in the dataset with replacement using the same proportion of "no change" "indexer" "small increaser", "large increaser" states as in the actual ACS and CPS data, runs the "bs_strat" program on the sample and returns estimated averages from the regression, and saves the estimated averages to a .dta file in the folder: Estimates\Bootstrap.

Files in the folder: "seed-123456" use the seed 123456 to generate 100 bootstrap samples. Files in the folder "seed-789012" use the seed 789012 to generate an additional bootstrap samples. These samples are later appended together to create a set of 200 samples that are used to generate 95 percent confidence intervals for the average employment and wage effects

Within each older, each file with "coef" in the name contains the averages generated from regressions using the actual ACS and CPS data.

Each file with "boot" in the name contains 100 estimates for each average generated from randomly sampling the 51 states with replacement and running the regressions on each random sample. These estimates are later used to create the 95 percent confidence intervals for the average effects generated from regressions on the actual ACS and CPS data.

All files used to generate summary estimates with bootstrapped confidence intervals are located in the "bootstrap" subfolder of the "Programs" folder.

They are organized as follows:

There are 12 files for each table (6 files to generate estimates for the low-skilled sample and 6 files for the young sample).

Each of the files generates the averages and bootstrap confidence reported in one of the rows in each table. The files are named according to the estimates they generate, which are categorized by:

-- Whether they generate results for the low-skilled sample "lowskill" or young sample "young"

-- Whether they use the Original "cep" or New policy groupings "new".

-- Whether they include states that switch policy categories between the original and new policy groupings "switchers" or drop states that switch policy categories.

-- The post period used: 2015-2019 "2015-2019", 2015 only "2015-2015", or 2019 only "2019-2019".

These categories are described in more detail in the paper. This same structure is used for all of the tables that report summary estimates with bootstrapped confidence intervals.

*** Underlying Estimates for Table 3 and A12

* seed 123456

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-lowskill-switchers-2015-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-lowskill-switchers-2015-2015.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-lowskill-switchers-2019-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-lowskill-noswitchers-2015-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-lowskill-noswitchers-2019-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-new-lowskill-switchers-2019-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-young-switchers-2015-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-young-switchers-2015-2015.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-young-switchers-2019-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-young-noswitchers-2015-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-young-noswitchers-2019-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-new-young-switchers-2019-2019.do"

* seed 789012

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-lowskill-switchers-2015-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-lowskill-switchers-2015-2015.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-lowskill-switchers-2019-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-lowskill-noswitchers-2015-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-lowskill-noswitchers-2019-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-new-lowskill-switchers-2019-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-young-switchers-2015-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-young-switchers-2015-2015.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-young-switchers-2019-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-young-noswitchers-2015-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-young-noswitchers-2019-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-new-young-switchers-2019-2019.do"

*** Underlying Estimates for Table 4 and A13

* seed 123456

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-lowskill-switchers-2015-2019-cs-2017.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-lowskill-switchers-2015-2015-cs-2017.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-lowskill-switchers-2019-2019-cs-2017.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-young-switchers-2015-2019-cs-2017.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-young-switchers-2015-2015-cs-2017.do"

do "$codedir/bootstrap/seed-123456/bootstrap-emp-cep-young-switchers-2019-2019-cs-2017.do"

* seed 789012

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-lowskill-switchers-2015-2019-cs-2017.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-lowskill-switchers-2015-2015-cs-2017.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-lowskill-switchers-2019-2019-cs-2017.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-young-switchers-2015-2019-cs-2017.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-young-switchers-2015-2015-cs-2017.do"

do "$codedir/bootstrap/seed-789012/bootstrap-emp-cep-young-switchers-2019-2019-cs-2017.do"

*** Underlying Estimates for Table A9

* seed 123456

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-lowskill-switchers-2015-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-lowskill-switchers-2015-2015.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-lowskill-switchers-2019-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-lowskill-noswitchers-2015-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-lowskill-noswitchers-2019-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-new-lowskill-switchers-2019-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-young-switchers-2015-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-young-switchers-2015-2015.do"
do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-young-switchers-2019-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-young-noswitchers-2015-2019.do"
do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-young-noswitchers-2019-2019.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-new-young-switchers-2019-2019.do"

* seed 789012
do "$codedir/bootstrap/seed-789012/bootstrap-ow-mw-cep-lowskill-switchers-2015-2019.do"
do "$codedir/bootstrap/seed-789012/bootstrap-ow-mw-cep-lowskill-switchers-2015-2015.do"
do "$codedir/bootstrap/seed-789012/bootstrap-ow-mw-cep-lowskill-switchers-2019-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-ow-mw-cep-lowskill-noswitchers-2015-2019.do"
do "$codedir/bootstrap/seed-789012/bootstrap-ow-mw-cep-lowskill-noswitchers-2019-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-ow-mw-new-lowskill-switchers-2019-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-ow-mw-cep-young-switchers-2015-2019.do"
do "$codedir/bootstrap/seed-789012/bootstrap-ow-mw-cep-young-switchers-2015-2015.do"
do "$codedir/bootstrap/seed-789012/bootstrap-ow-mw-cep-young-switchers-2019-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-ow-mw-cep-young-noswitchers-2015-2019.do"
do "$codedir/bootstrap/seed-789012/bootstrap-ow-mw-cep-young-noswitchers-2019-2019.do"

do "$codedir/bootstrap/seed-789012/bootstrap-ow-mw-new-young-switchers-2019-2019.do"

*** Underlying Estimates for Table A10

* seed 123456

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-lowskill-switchers-2015-2019-cs-2017.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-lowskill-switchers-2015-2015-cs-2017.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-lowskill-switchers-2019-2019-cs-2017.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-young-switchers-2015-2019-cs-2017.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-young-switchers-2015-2015-cs-2017.do"

do "$codedir/bootstrap/seed-123456/bootstrap-ow-mw-cep-young-switchers-2019-2019-cs-2017.do"

* seed 789012

do "$codedir/seed-789012/bootstrap-ow-mw-cep-lowskill-switchers-2015-2019-cs-2017.do"

do "$codedir/seed-789012/bootstrap-ow-mw-cep-lowskill-switchers-2015-2015-cs-2017.do"

do "$codedir/seed-789012/bootstrap-ow-mw-cep-lowskill-switchers-2019-2019-cs-2017.do"

do "$codedir/seed-789012/bootstrap-ow-mw-cep-young-switchers-2015-2019-cs-2017.do"

do "$codedir/seed-789012/bootstrap-ow-mw-cep-young-switchers-2015-2015-cs-2017.do"

do "$codedir/seed-789012/bootstrap-ow-mw-cep-young-switchers-2019-2019-cs-2017.do"

*** Table Output for Tables 3, 4, 5, A9, A10, A11, A12, and A13

do "$codedir/bootstrap/test-generate-elasticities-and-ci-200-reps.do"

This .do file takes the summary averages and bootstrap estimates generated in the above files and generates the summary averages and 95 percent confidence intervals for each average, resulting in the output reported in tables 3, 4 and, 5 of the main text as well as tables A9, A10, A11, A12, and A13 of the appendix.

These files are located in the folder: Estimates/Bootstrap/Tables

The summary averages are placed in files with “coef” in the name.

The 95 confidence intervals generated from the bootstrap estimates are placed in the files with “ci” in the name.

*** Underlying Estimates for Tables A14, A15 and A16 from regressions with no time-varying covariates

*** Underlying estimates for Table A14

do "$codedir/no-tvc/bootstrap-emp-cep-lowskill-switchers-2015-2019-no-tvc.do"

do "$codedir/no-tvc/bootstrap-emp-cep-lowskill-switchers-2015-2015-no-tvc.do"

do "$codedir/no-tvc/bootstrap-emp-cep-lowskill-switchers-2019-2019-no-tvc.do"

do "$codedir/no-tvc/bootstrap-emp-cep-lowskill-noswitchers-2015-2019-no-tvc.do"

do "$codedir/no-tvc/bootstrap-emp-cep-lowskill-noswitchers-2019-2019-no-tvc.do"

do "$codedir/no-tvc/bootstrap-emp-new-lowskill-switchers-2019-2019-no-tvc.do"

do "$codedir/no-tvc/bootstrap-emp-cep-young-switchers-2015-2019-no-tvc.do"

do "$codedir/no-tvc/bootstrap-emp-cep-young-switchers-2015-2015-no-tvc.do"

do "$codedir/no-tvc/bootstrap-emp-cep-young-switchers-2019-2019-no-tvc.do"

```
do "$codedir/no-tvc/bootstrap-emp-cep-young-noswitchers-2015-2019-no-tvc.do"
do "$codedir/no-tvc/bootstrap-emp-cep-young-noswitchers-2019-2019-no-tvc.do"

do "$codedir/no-tvc/bootstrap-emp-new-young-switchers-2019-2019-no-tvc.do"


*** Underlying estimates for Table A15
do "$codedir/no-tvc/bootstrap-ow-mw-cep-lowskill-switchers-2015-2019-no-tvc.do"
do "$codedir/no-tvc/bootstrap-ow-mw-cep-lowskill-switchers-2015-2015-no-tvc.do"
do "$codedir/no-tvc/bootstrap-ow-mw-cep-lowskill-switchers-2019-2019-no-tvc.do"

do "$codedir/no-tvc/bootstrap-ow-mw-cep-lowskill-noswitchers-2015-2019-no-tvc.do"
do "$codedir/no-tvc/bootstrap-ow-mw-cep-lowskill-noswitchers-2019-2019-no-tvc.do"

do "$codedir/no-tvc/bootstrap-ow-mw-new-lowskill-switchers-2019-2019-no-tvc.do"


do "$codedir/no-tvc/bootstrap-ow-mw-cep-young-switchers-2015-2019-no-tvc.do"
do "$codedir/no-tvc/bootstrap-ow-mw-cep-young-switchers-2015-2015-no-tvc.do"
do "$codedir/no-tvc/bootstrap-ow-mw-cep-young-switchers-2019-2019-no-tvc.do"

do "$codedir/no-tvc/bootstrap-ow-mw-cep-young-noswitchers-2015-2019-no-tvc.do"
do "$codedir/no-tvc/bootstrap-ow-mw-cep-young-noswitchers-2019-2019-no-tvc.do"

do "$codedir/no-tvc/bootstrap-ow-mw-new-young-switchers-2019-2019-no-tvc.do"
```

* Table Output for Tables A14 A15 and A16

This do file takes the summary averages and bootstrap estimates generated in the above files and generates the summary averages and 95 percent confidence intervals for each average, resulting in the output reported in Tables A14, A15, and A16.

These files are located in the folder: Estimates/Bootstrap.no-tvc/Tables

The summary averages are placed in files with “coef” in the name.

The 95 confidence intervals generated from the bootstrap estimates are placed in files with “ci” in the name.

do "$codedir/bootstrap/no-tvc/test-generate-elasticities-and-ci-no-tvc.do"

Memory and Runtime Requirements:

- The analysis was last run on a server with 120 gigabytes of RAM.

- The runtime for the summary statistics tables was about 30 minutes.

- The runtime for the BJS event study figures was roughly 2 days for each of the 6 panel figures.

--- To speed up the execution, if you are just interested in obtaining the point estimates, you can add the option "nose" to the did_imputation commands and the code will execute much faster.

--- The runtime for the bootstrapped summary estimates is very long. Each bootstrap replication takes roughly 20 minutes for analyses where the post period is 2015 or 2019 only and 40 minutes for analyses where the post period is 2015-2019.

--- To speed up this execution you can request fewer bootstrap replications, although the confidence intervals returned may be slightly different if you do this.

--- If you are only interested in the estimated averages you can enter a smaller in the number of bootstrap replications "reps(100)" to get the post estimates without spending time on bootstraps.