

# README for “The Short-Term Labor Supply Response to the Expanded Child Tax Credit”

OpenICPSR ID: openicpsr-191881

## Overview

The code in this replication package constructs the analysis files from the several data sources and output for the paper using Stata. One master file runs all of the code to generate the output for the 3 figures in the AEA Papers and Proceedings publication, and the addition 2 figures and table in the NBER working paper. The replicator should expect the code to run for about 1 hour and 15 minutes on a personal computer.

## Data Availability and Provenance Statements

### 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.

### Summary of Availability

All data are publicly available.

### Details on each Data Source

**IPUMS CPS:** The paper uses Current Population Survey data from IPUMS-CPS ([Flood, Ruggles and Warren, 2015](#)). Specifically, we pull data for the Annual Social and Economic (ASEC) supplement, for year 2018 to 2022. IPUMS-CPS does not currently provide the ability to store or reference custom extracts, but allows for redistribution for the purpose of replication. The data citation in the main article has the full URL. The list of variables downloaded for the extract are listed and labeled in the `data/raw/IPUMS_asec.dta` file. The definition of all variables can be found at <https://cps.ipums.org/cps-action/variables/group>. A copy of this data files are provided as a part of this archive in the `data/raw` folder.

Datafiles: `IPUMS_asec.dta`

**NBER CPS Basic Monthly Data:** The paper uses Current Population Survey monthly survey data, curated by the National Bureau of Economic Research ([National Bureau of Economic Research, 2022](#)). The data can be downloaded at <https://www.nber.org/research/data/current-population-survey-cps-basic-monthly-data>. The data dictionary for these files can be found at <https://data.nber.org/cps-basic2/docs/>. A copy of these data files are provided as a part of this archive in the `data/raw` folder. The initial data set has data from January, 2018 to October, 2022.

Datafiles: `cps_raw.dta`

## Dataset list

Data file	Source	Notes	Provided
<code>data/raw/IPUMS_asec.dta</code>	IPUMS	Used to construct: <code>incdata.dta</code> , <code>cpsdata_19_22.dta</code>	Yes
<code>data/raw/incdata_original.dta</code>	IPUMS + authors' calculations	Used to construct: <code>incdata.dta</code> , <code>cpsdata_19_22.dta</code>	Yes
<code>data/raw/cps_raw.dta</code>	NBER	Used to construct: <code>cpsdata_19_22.dta</code>	Yes
<code>data/raw/cpsdata_original.dta</code>	NBER + authors' calculation	Used to construct <code>cpsdata_19_22.dta</code>	Yes

## Computational requirements

### Software Requirements

- Stata (code was last run with version 17)
  - `binscatter` (as of 05-22-2023)
  - `blindschemes` (as of 05-22-2023)
  - `texdoc` (as of 05-22-2023)

The versions of the Stata packages used to perform this analysis are included in the replication package. The program “`_run_all.do`” will temporarily instruct Stata to access the versions of the packages included with the replication package. Upon closing Stata, the default ado path will be restored.

For the user’s convenience, the replicated table results are output as  $\text{\LaTeX}$  files, which need to be compiled with a standard  $\text{\LaTeX}$  compiler. In addition, a  $\text{\LaTeX}$  file with all figures and the table is also produced.

### Controlled Randomness

In order to exactly reproduce our results, a random seed is set in lines 11 and 178 of `code/1_make_cps_monthly.do`. Our main results rely on a random sorting of observations in line 88 of `code/0_make_asec_inc.do`. However, we did not set a random seed prior to doing this and carrying out our analysis. We do, however, have the resulting data as originally sorted, which is saved as `data/raw/incdata_original.dta`. We use this data to sort our raw data in lines 101 to 113 of `code/0_make_asec_inc.do`. Likewise, our results rely on a non-unique, random sorting of data and encoding of a categorical variables (`psu` and `famnum`) in the data set `cpsdata.dta`. Again, we did not set a random seed prior to creating this data set. We do, however, have the resulting data as originally sorted, which is saved as `data/raw/cpsdata_original.dta`. We use this data to sort our data and recode the two categorical variables in lines 154 to 174 of `code/1_make_monthly_cps.do`. Note, this recoding of the categorical variables is only nominal, the groupings created by these categorical variables are left intact. However, the numerical coding affects the subsequent ordering of data and random specific pseudo-random draws used for imputation later in the code.

### Memory and Runtime Requirements

**Summary** Approximate time needed to reproduce the analyses on a standard (2023) personal computer is 1 hour and 11 minutes.

**Details** The code was last run on May 22nd, 2023, on a **8-core M2 laptop with MacOS version 12.6.1, with 24GB of RAM**. Computation took 1 hour and 11 minutes.

## Description of programs/code

- The entire analysis can be replicated by running one do file, `code/_run_all.do`. This runs all sub do files described below.
- The do files `code/0_make_asec_inc.do` and `code/1_make_monthly_cps.do` take as inputs the raw data sets and originally-sorted data sets referenced above. The are then transformed into “processed” data sets, which are saved in the `data/proc` folder. We have alternatively included pre-processed data in the `data/proc` folder. The processing of raw data can then be skipped by setting the macro “`process_data`” to 0 in the `code/_run_all.do` do file. Otherwise, the data setup do files are all called by `code/_run_all.do`.
- The next three do files, `code/2_analysis_elasticity.do`, `code/3_analysis_graphs.do`, and `code/2_analysis_table.do` in `code/` perform the analysis. The `code/2_analysis_elasticity.do` outputs two intermediate Stata data sets to the `results/estimates` folder: `dd_estimates.dta` and `dd_estimates_elasticity.dta`. These files store estimated parameters and statistics and are used to construct the main table of results. The do file `code/3_analysis_graphs.do` carries out further estimation and creates all of the figures for the analysis.
- A final do file, `code/5_all_figures_tables.do` is a convenience do file that compiles all figures and tables, in the order in which they appear in the papers, and returns a L<sup>A</sup>T<sub>E</sub>X file in the `results` folder.
- Ado files have been stored in `code/_ado` and `code/_run_all.do` sets the ADO directories appropriately. All packages are pre-loaded into this ado folder.
- Log files are stored in `code/_logs`. The `code/_run_all.do` creates one log file that captures all of the code.
- For a completely clean replication, the directories `data/proc`, `results`, `results/graphs`, `results/estimates`, and `results/tables` can be completely deleted before replication. They are created anew in the `code/_run_all.do` do file, if they do not already exist. Alternatively, to save the time needed to process raw data files, the pre-processed analysis data, that are included with this package, can be used, by setting “`process_data`” to 0 in the `code/_run_all.do` do file.

## Instructions to Replicators

- Edit `code/_run_all.do` to set two paths using global macros:
    - `CTC_Labor`: this points to where the `data/` folder will be stored.
    - `CTC_Labor_git`: this points to where the `code/` and `results` folders will be stored.
- It is not necessary to use separate locations, but this is allowed, in case the user needs to store the large data files in a separate place.
- Run `code/_run_all.do` to execute all steps in order.
  - **Optional:** Edit `code/_run_all.do` to set the local macro `process_data` to 0 to skip the processing of raw data and use the pre-processed data included with the replication package. This can only be skipped if the `data/proc` folder has not been deleted for a clean replication.

## List of tables and programs

The provided code reproduces all tables and figures in the paper, as well as confirms an original calculation done by the authors. All programs below are in the `code` folder, and are run by the `code/_run_all.do` do file.

Figure/Table	Program	Output File
Relationship between ARP Child Tax Credit Eligibility and Labor Force Participation	<code>code/3_analysis_graphs.do</code>	<code>figures/LFPR_H1_H2_2021.eps/png/pdf</code> , <code>figures/LFPR_H2_2021_H1_2022.eps</code> <code>/png/pdf</code>

Figure/Table	Program	Output File
Relationship between Placebo ARP Child Tax Credit Eligibility and Labor Force Participation: 2019 (NBER Working Paper Only)	<code>code/3_analysis_graphs.do</code>	<code>figures/LFPR_H1_H2_2019.eps/png/pdf</code> , <code>figures/LFPR_H2_2019_H1_2020.eps</code> <code>/png/pdf</code>
Effect of ARP Child Tax Credit Extension on Labor Force Participation and Total Hours Worked	<code>code/3_analysis_graphs.do</code>	<code>figures/LFPR_Hours_Heterogeneity</code> <code>.eps/png/pdf</code>
Effect of ARP Child Tax Credit Extension on Labor Force Participation	<code>code/2_analysis_elasticity</code> <code>.do</code> , <code>code/4_analysis_table.do</code>	<code>tables/tab_main.tex</code>

## References

- Flood, Sarah, Steven Ruggles, and J. Robert Warren.** 2015. “Integrated Public Use Microdata Series, Current Population Survey: Version 4.0. [Machine-readable database].” <http://doi.org/10.18128/D030.V4.0>.
- National Bureau of Economic Research.** 2022. “CPS Basic Monthly Data.” <https://www.nber.org/research/data/current-population-survey-cps-basic-monthly-data>.

## Acknowledgements

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