National Database on Childcare Prices

Technical Report

September 2024

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Background and Overview

The U.S. Department of Labor (DOL) Women's Bureau (WB) was created by law in 1920 to formulate standards and policies to promote the welfare of wage-earning women, improve their working conditions, increase their efficiency, and advance their opportunities for profitable employment. Women in the workforce are vital to the nation's economic security; thus, the Women's Bureau aims to empower all working women to achieve economic security.

Limited access to safe, reliable, and affordable child care is a barrier to employment for many Americans. Many working parents are caught between the need to work to provide for their families and the need for safe and reliable child care that supports their children's development. To support research on childcare affordability and availability at the local area level, the Women's Bureau commissioned the development of the National Database of Childcare Prices (NDCP), a collection of county-level childcare price estimates by age of child sourced from state market rate surveys.

This research provided policymakers with a tool to accurately measure potential economic impacts and identify strategies for enhancing employment options and economic security for women. By making the database publicly available, the WB provides states, localities, and other partners with a tool that combines county-level child care prices and economic indicators to evaluate characteristics of underserved areas, as well as illustrate how the price of childcare varies across the country and identify strategies for enhancing employment options and economic security for women.

Created in 2019, the original database contained information from 2008 – 2018 and did not capture the impact of COVID-19. In 2022, the Women's Bureau selected ICF to update and enhance the research by including Puerto Rico in the database, adding data from 2019-2022, and adding state-level price and affordability data.

Data Contained in the National Database of Childcare Prices

The National Database of Childcare Prices is a public-use data set that draws data from state childcare market rate surveys, as well as county- and state-level demographic and labor market data. Data collected for this project is aggregated and used for statistical purposes only. No identifying information was collected or disclosed.

Market Rate Surveys (MRS)

CHILDCARE TERMS USED IN THIS REPORT*

Childcare: Private, for-profit, and non-profit entities supplying non-parental care for children from birth through age 5.

Center-Based Care: Care provided for children in non-residential settings. Centers are usually larger and care for more children than home-based providers and are organized into classrooms of similarly-aged children.

Home-Based Care: Care provided for small groups of children, often of mixed ages, in a regulated home-based setting or residential unit. Also referred to as Non Center-Based care or Family Child Care.

Childcare Provider: The entity operating the childcare program.

Childcare Worker: An individual providing non-parental care within a program. Also referred to as early educators or early education teachers.

**Childcare terminology varies and is defined by each state, usually through laws and regulations.*

Since 1998, the Administration for Children and Families (ACF) at the U.S. Department of Health and Human Services has required states to conduct a study of childcare market prices to evaluate the adequacy of state reimbursement rates for the purpose of demonstrating equal access to childcare for low-income families. States use the results of market price surveys to inform rate-setting policy and to establish maximum reimbursement rates for children served through childcare assistance programs. The childcare price information made available through the NDCP came from the market rate survey reports that states produced, and in some cases, the data files used to prepare the reports.

The market price surveys typically collect data on regulated childcare centers, which are typically located in commercial buildings and serve multiple groups or classrooms of similarly aged children. They also collect data on regulated family childcare homes, which care for small groups of children in a residential building, such as a house, apartment, or condo unit. Some states conduct the surveys annually, but most states conduct the surveys based on ACF rules, which required surveys every two years until 2016, and since that point has required them every three years.

Information extracted from MRS reports includes:

- State
- Geographic reporting level (state, region, county, other clusters or zones as defined by the state)
- Age span used to define age groups in the state (infants, toddlers, preschool and school-age)
- Year of survey
- Median price of center-based full-time weekly care for infants
- Median price of center-based full-time weekly care for toddlers

- Median price of center-based full-time weekly care for preschool children
- Median price of center-based full-time weekly care for school-age children
- Median price of family full-time weekly care for infants
- Median price of family full-time weekly care for toddlers
- Median price of family full-time weekly care for preschool children
- Median price of family full-time weekly care for school-age children
- 75th percentile price of center-based full-time weekly care for infants
- 75th percentile price of center-based full-time weekly care for toddlers
- 75th percentile price of center-based full-time weekly care for preschool children
- 75th percentile price of center-based full-time weekly care for school-age children
- 75th percentile price of family full-time weekly care for infants
- 75th percentile price of family full-time weekly care for toddlers
- 75th percentile price of family full-time weekly care for preschool children
- 75th percentile price of family full-time weekly care for school-age children

American Community Survey (ACS) reports

Administered by the U.S. Census Bureau, the American Community Survey (ACS) is an ongoing survey that provides economic and demographic information on a yearly basis on topics such as employment, income, educational attainment, veteran status, home ownership, and family structure. State- and county-level data from the ACS were incorporated into the NDCP to facilitate analysis of the association of childcare prices with other factors. General demographic and labor market information extracted from ACS includes:

- Employment rates
- Unemployment rates
- Labor force participation rates
- Poverty rates
- Earnings and income
- Population and household counts
- Race and ethnicity distributions
- Employment distributions by major occupational group

Development of the County-Level Database

The county-level database consists of two primary components: Childcare Prices and Demographic and Labor Market Data. The following section provides an overview of how both sets of data were obtained, reviewed, and integrated into the database.

Childcare Prices

The Paperwork Reduction Act (PRA) of 1995[1] required that the Women's Bureau receive formal approval from the Office of Management and Budget (OMB) before requesting childcare data from the states. ICF worked with the Women's Bureau to develop a data collection process that would meet the requirements of the Paperwork Reduction Act, minimize the burden placed on states to provide data, and reduce, to the extent possible, the need for imputations.

Between December 2019 and February 2020, ICF conducted outreach to each U.S. state and the District of Columbia requesting all available MRS reports from 1998-2018 for the original database. In preparation for the next wave of data collection, ICF conducted a scan of state childcare agency websites to identify and download all publicly-available reports between October and December 2023, and following notification of OMB approval in March 2024, ICF conducted outreach to states and territories to obtain data that could not be found on publicly-available websites. Outreach communication included mail, emails, and direct phone calls.

A total of 35 states and DC provided MRS reports during the initial data collection period (2008-2018) and a total of 47 states and territories provided MRS reports during the subsequent data collection period (2019-2022). For states where publicly available data was not readily accessible or for which additional data was needed, ICF contacted the appropriate state office following the established protocol approved by the Office of Management and Budget.

The protocol, for both the original research and the subsequent update to the database included a formal Prenotification Letter to State Child Care Administrators and an official Notification Letter to State Child Care Administrators signed by the Women's Bureau Director and the U.S. Department of Health and Human Services' Administration for Children and Families, Office of Child Care[2] Director. For the original data collection effort, follow ups were required in 16 states; and for the subsequent data collection, data requests were sent to 11 states in March 2024.

An additional written notification was sent by ICF staff, followed by two phone calls with staff using a pre-approved script. ICF documented each state's reply and made note if the state no longer had access to data over certain years or in certain forms. Exhibit 1, State

[1] OFFICE OF MANAGEMENT AND BUDGET 5 CFR Part 1320, Controlling Paperwork Burdens on the Public; Regulatory Changes Reflecting Recodification of the Paperwork Reduction Act, retrieved from https://www.govinfo.gov/content/pkg/FR-1995-08-29/pdf/95-21235.pdf.

[2] The Office of Child Care is an office of the Administration for Children and Families that supports low-income working families through child care financial assistance and promotes children's learning by improving the quality of early care and education and afterschool programs.

Summary by Year of Missing MRS Data, provides a summary of data that is missing from the database.

Exhibit 1: State Summary by Year of Missing MRS Data

State /Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AK	X	X	X	X	X	X									
AR	X	X	X	X	X	X									X
CA														X	
CO	X	X	X	X	X	X			X	X	X	X	X	X	
CT															
DC	X	X	X			X	X	X	X	X	X	X	X	X	
GA	X	X	X	X	X	X	X								
HI	X	X	X												
ID	X	X	X	X											
IN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
IA	X	X	X	X	X	X	X	X							
ME	X	X	X	X											
MD	X	X	X	X	X										
MS	X	X													
MO	X	X	X	X	X	X	X							X	X
MT	X	X	X	X	X	X	X								
NE	X	X	X	X	X	X	X	X							
NV										X	X	X	X	X	

State /Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
NH	X	X	X	X	X	X	X	X	X						
NM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NY	X	X	X	X	X	X	X	X	X						
NC	X	X	X	X	X	X								X	
OH	X														
PA														X	X
PR	X	X	X	X	X	X	X	X	X	X	X	X	X		X
RI	X	X	X	X	X	X	X	X	X						
SC	X	X	X	X	X	X									
TX	X														
VT															X
VA	X													X	
WY	X	X	X	X	X	X									

Once obtained, the reports were cataloged and reviewed to identify any missing data or clarifications that might be needed. In several states, data gaps exist for entire counties, specific age groups, or provider types. Some states provided reasons for these gaps, such as low response rates, insufficient provider numbers, or the unavailability of certain types of care. However, other states did not explain the absence of data. ICF could only report data that was either directly obtained from the states or found in state MRS reports online, ensuring the data's integrity.

After obtaining the required data sources, ICF extracted relevant data elements from the MRS reports and data files. The Data Collection and Data Entry Protocol may be found in Appendix A. Based on nuances discovered in the data entry process, necessary imputations were identified and recorded in Appendix B.

In instances where a report included data from fewer than 10 providers, ICF either masked those data or clustered counties based on socioeconomic similarities so that potentially identifying information was not disclosed. In instances where a state indicated low response rates but only provided published data, ICF noted the state's published market survey rates.

To ensure accuracy of the data, ICF conducted a systematic quality control review of the data after entering it into the database. ICF randomly selected 20% of each state's entered data and compared each entered data element against the state's reports. Any data entry errors were corrected and compiled into a data entry error rate for each state. If any state had more than a five percent data entry error rate based on the checked cells, ICF instituted a 100% quality check of the state's data.

Demographic and Labor Market Data

Demographic and labor market information were extracted from the ACS for the years 2008 through 2022 and included in the final database. The elements were pulled from ACS 1-year, 3-year, and 5-year estimates. While ACS 1-year and 5-year estimates provided data from 2009 through 2022 that were representative of all U.S. counties, ACS 3-year estimates were used for 2008 (because 5-year estimates were not produced) and are only representative of counties with a population of 20,000 or more. A description of each of the data elements and the corresponding ACS table from which they were derived may be found in Appendix C.

Standardizations and Imputations

Due to differences in state methodologies and the availability of MRS data, imputing certain price values is necessary to develop a comprehensive database of county-level prices for each state. In the majority of states, at least one imputation was required for the childcare pricing variables, and more than one imputation was necessary to standardize the data and create a consolidated database. In addition to imputing price values, there also are various instances of missing ACS data for which imputations were required, as described later in this section.

ICF compiled detailed documentation on the imputations required for each state and included flags in the database to note for what states, counties, and years imputed values are used. The specific imputation methods used are detailed in the following sections, and a summary of all price imputations conducted by state for each year may be found in Appendix B and a summary of all imputations for demographic and labor market data from the ACS can be found in Appendix D.

Overview of Childcare Pricing Imputations

An Imputation Panel was convened in May 2020 to provide feedback and input on the imputations for the first wave of the NDCP data. The Imputation Panel consisted of state representatives from Arkansas, Minnesota, North Carolina, and Texas. Attendees also

included representatives from the Office of Child Care, Office of Planning Research & Evaluation (OPRE), National Center on Subsidy Innovation and Accountability, and the Women's Bureau. In addition, ICF sent the imputation methodologies to Child Care Aware of America for any additional feedback they could provide. Overall, with some adjustments the methodologies that were created and would be implemented by ICF were accepted by the panel based on the constraints of the data available. The panel-supported imputations were used in the development of the original database and the approved imputation strategy also was utilized as the basis for the 2024 update to ensure consistency. More information highlighted on new methodologies is covered later in this report under Alternative Price Methodology section.

ICF compiled detailed documentation on the imputations required for each state and included flags in the database to note for what states, counties, and years imputed values are used. In addition to the flags included within this database, Appendix A documents specific data entry decisions made for each state within the consolidated database.

ICF developed a hierarchy to conduct imputations in a standard order to ensure consistency of imputations:

1. Impute based on different age group.
2. Convert prices to a weekly price mode.
3. Impute county-level prices from statewide data (applicable if a state only provided state-level data, or the more granular data provided could not be associated to specific counties).
4. Impute either the 50th or 75th percentile (applicable if a state provided at least one of these percentiles).
5. Impute missing data in between usable MRS report years for states that provided county-level data in previous years but did not conduct an MRS during the update years.
6. Conduct "other" imputations, including imputing county-level prices using propensity score matching (PSM).

Appendix B provides an overview of which imputations were used and how often.

Assigning Prices to Standardized Age Groupings

While all states provided a breakdown of prices based on various ages of children, the definitions of these age groups varied. To ensure consistent age groups were used across states, ICF standardized childcare prices as follows:

- Birth to 5 Months
- 6 to 11 Months
- 12 to 17 Months
- 18 to 23 Months
- 24 to 29 Months
- 30 to 35 Months
- 36 to 41 Months
- 42 to 47 Months
- 48 to 53 Months
- 54 Months to School Age
- School Age

ICF examined each MRS report to determine the classifications for each age range, and then entered data according to these parameters. In several instances, a state's defined age groupings do not perfectly match with the age categories listed above. For these cases, ICF aligned the reported values with the best possible match and noted the discrepancy, which did not exceed more than three months' difference for any state. In instances where a state did not define infant, toddler, preschooler, or school-age child, ICF used the following standard definitions provided by Childcare.gov:

- Infant: 0-11 months (or 0-23 months if no "pretoddler" definition given)
- Pretoddler: 12-23 months (often combined with infant)
- Toddler: 24-35 months
- Pre-Kindergarten: 36-60 months (and not yet in school)
- School Age: 61 months +

When possible, ICF prioritized rates for the earliest age at which a child would attend school full-time, which was typically for kindergarten. For states without mandated full-day kindergarten, ICF chose School Age rates based upon the earliest age at which a child attends school full-time (as ICF inferred that part-time prices would be higher than the typical full-time School Age prices provided elsewhere). Some states provided school-age rates that ranged more widely, such as a few states that provided school-age rates for children between 6-12.

When using the price data contained in the database it is strongly recommended that researchers use the price estimates included in the more granular, six-month age groupings described above. However, the database also includes price estimates for broader age groupings, including infants, toddlers, preschool and school age. ICF assigned prices to these age groups using the price data from the six-month age groupings, and then assigned the prices to the broader age group based on the most common price found within that range:

- For infants, the price used was the most common price found for children birth through 23 months.
- For toddlers, the price used was the most common price found for children 24 months through 35 months.
- For preschool, the price used was the most common price found for children 36 months through 54 months.
- For school age, no additional price group was required.

When there was a tie for the most common price, the highest price was used. For each of the broader age groupings, the database includes an indicator that shows how the value was derived, as described in Appendix D. When reviewing price data for the broader age groups, it is important to consider the imputations that were used to produce the price estimates for the six-month age groupings.

Imputing Prices Based on Different Age Group

There were some instances where a given county had childcare pricing data available for some but not all the aforementioned age groups for a specific year. To achieve data completeness, an imputation was developed to estimate childcare pricing data that was missing for a specific age group when childcare pricing for other age groups was provided for the same county and year. To identify which states and for which years this imputation is require, please reference the imputation hierarchy in Appendix B.

Methodology

To impute these missing values for a given county and year, the existing age groups (those provided by usable MRS reports) for that county and year were used. For instance, if a county was missing the 50th percentile family child care price for infants but that same price for toddlers was available, the latter was used in the imputation methodology. Specifically, the adjustment factors to impute these missing values were based on the ratio of the average prices for these age groups for other counties within the same state. For example, if the toddler price was missing for a given county and year but the infant price was available (for the same provider type and percentile), the mean toddler and infant prices for that provider type and percentile were calculated for all other counties that had available data in that county's state for the year the toddler price was missing. Then, the missing toddler price would be imputed using the formula below where C is the county's data and S is the state's data:

$$ToddlerPrice_C = InfantPrice_C \times \frac{mean\ ToddlerPrice_S}{mean\ InfantPrice_S}$$

The state-level mean toddler price would be divided by that of the infant price and the result (i.e., the factor) would be multiplied by the provided infant price for a county to impute the missing toddler price for that same county. When it came to determining which age group to reference for the above formula to impute missing values, the closest age group to that which was missing was used. Specifically, to impute missing infant prices, the childcare prices for toddlers, or preschoolers, or school age children were referenced in that order based on data availability. For missing toddler or preschooler childcare prices, the age group (either the preceding or subsequent age group) that had the largest sample size was referenced in the imputation process. Lastly, for missing school age childcare prices, prices for preschoolers, or toddlers, or infants were referenced in that order based on data availability.

ICF compiled detailed documentation on the imputations required for each state in the database to denote where values were constructed using imputations. Specifically, if this different age group imputation was performed for a certain county (for a specific year, state, provider type, age group, and percentile), a "1" will show in the first digit of the five-digit imputation flag variable[3] (i.e., 1XXXX). Instances where the first digit of this variable is a "0" indicates this imputation was not carried out (i.e., 0XXXX).

Limitations

This imputation assumes that a missing childcare price for a specific age group is related to the childcare pricing of similar age groups for the same county and year. Also, it assumes—and incorporates into the imputation methodology—that a statewide relationship between the average childcare pricing of similar age groups exists. Given these assumptions, the imputed values may not be representative of actual pricing for that age group, provider type, county, and year. Results might over- or under-estimate the true values. Moreover, factors and criteria that go into pricing childcare for one age group (i.e., school age) may differ from those that go into pricing for another age group (i.e., toddler) at the county-level. For instance, pricing for childcare for a preschooler may cost more than that of a school age child given that this age group needs more constant and immediate care and supervision and is less independent. Moreover, this methodology does not necessarily consider county-level variance given its dependence on a state-level factor to impute missing prices for individual counties.

[3] Imputation variables in the database, denoted by "_flag" in the variable name, include each location type, price, and median and 75 percentiles for each age group.

Imputing Prices into Weekly Price Modes

States varied in the method they used to report childcare prices, with prices reported hourly, in half-days, daily, weekly, monthly, and annually . A few states also changed price modes across years or had different price modes for different percentiles. ICF standardized price estimates for all states and years at the weekly level so researchers can easily analyze childcare prices between counties, within and across states, and across years. To identify which states and for which years this imputation is required, please reference the imputation hierarchy in Appendix B.

Methodology

To conduct this imputation, ICF calculated weekly prices depending on the reported price mode that was extracted from states' MRS reports (e.g., hourly, half-day, daily). This process was repeated for each age group, median and 75th percentile, and provider type, using the formulas enumerated in Exhibit 2.

Exhibit 2: Price Conversion Formulas

Original Price Mode	Formula
Hourly	Weekly Price = Original Price x 40 (hours/week)
Half-Day	Weekly Price = Original Prices x 10 (half-days/week)
Daily	Weekly Price = Original Price x 5 (days/week)
Weekly	Weekly Price = Original Price
Monthly	Weekly Price = Original Price x 12/52 (12 months/52 weeks)
Yearly	Weekly Price = Original Price / 52 (weeks/year)

ICF compiled detailed documentation on the imputations required for each state in the database to denote where values were constructed using imputations. Specifically, if this weekly price conversion imputation was performed for a certain county (for a specific year, state, provider type, age group, and percentile), a "1" will show in the second digit of the five-digit imputation flag variable[4] (i.e., X1XXX). Instances where the second digit of this variable is a "0" indicates this imputation was not carried out (i.e., X0XXX). For example, imputations for infant prices in a Center-based Center would be denoted in the MCInfant_flag variable. Documentation of the relevant states and years this imputation was performed for are also indicated in Appendix B.

[4] Imputation variables in the database, denoted by "_flag" in the variable name, include each location type, price, and median and 75 percentiles for each age group.

Limitations

The adjustment factors were developed during the original database construction (2008-2018) and reviewed by the imputation panel in 2020. Additionally, after reviewing the formulas and imputation methods used for the database, Child Care Aware of America found consistency with the methods the organization uses when analyzing child care prices. ICF relied on market price survey best practices documented in research published by OPRE to guide the development of protocol for data collection and analysis. However, when using the data from the database, it is important to understand that childcare providers vary in the way that they set pricing. For example, childcare providers that charge hourly prices may charge more by the hour than they would for a week or month of care. These scenarios may lead this weekly pricing conversion imputation to over- or under-estimate the true price of providing care.

Imputing County-Level Childcare Prices From Statewide Data

In these instances, ICF developed predictive models of county-level prices using county-level variables that are highly correlated with childcare prices[1] In addition to using this imputation to estimate county-level childcare pricing data from data provided at the state-level, it also assigned counties that were missing rates across all age groups, provider types, and percentiles for a given year to a similar county in that same state and year that had provided MRS data. Then, it imputed those counties' missing pricing values based on predictive mean matching (PMM). PMM is a statistical imputation method for missing values that aims to reduce the bias introduced in a dataset through imputation by leveraging real values available in the dataset and those values' predictive means. To identify which states and for which years this imputation was applied, please reference the imputation hierarchy in Appendix B.

Model Development for Imputation

To estimate county-level childcare prices when the only information available is a state price, ICF developed statistical models based on county-level U.S. Census Bureau data from ACS. For consistency, the same modeling process was used for 2019-2022 as was used for the original database development (2008-2018). ICF used data for states that provided county-level 50th and 75th weekly childcare rates (i.e., not requiring any other types of imputation). For simplicity, ICF used a summary childcare price equal to the average of the preschool median prices for family childcare and center-based childcare providers. ICF also limited the development of these models to preschool prices because most providers offer care for this age group; however, ICF evaluated the results of these models for all the age groups, including infants, toddlers, preschool, and school-age.

To determine what U.S. Census Bureau variables to use in the statistical models that would help impute statewide data to the county level, ICF extracted the social, economic, and housing data tables for the 2019-2022 ACS 5-year estimates.[5] ICF then identified variables that were potentially related to childcare prices and selected three variables that were highly correlated to childcare prices at the county level. These three variables are listed in Exhibit 3. Note, some of the ACS variable names and tables have changed since the original database was created. Documentation of the models and procedure used for 2008-2018 data can be found in Appendix G.

Exhibit 3: American Community Survey Variables Selected Used for Imputation

Variable Name	ACS Table	Variable Description
DP02_0068PE	DP02	Educational Attainment - Percent of 25 and older population with a Bachelor's Degree or Higher (percent)
DP04_0134E	DP04	Median Gross Rent as percentage of Household Income (percent)
DP03_0087E	DP03	Mean family income (dollars)

ICF then took the ratio of each county-level variable relative to the state value and the ratio of the county childcare prices to the state average (weighted by total households per county). Next, ICF estimated regression models to predict the ratio of county childcare prices relative to the state for the 50th and 75th percentiles, separately. The results for these models are presented in Exhibit 4. The combined model for the 50th percentile has an R^2 value of 0.59 and the combined model for the 75th percentile has an R2 value of 0.57.

[5] The full data profile tables are available at https://data.census.gov/cedsci/.

Exhibit 4: Regression Model Results for 50th and 75th Percentiles

Variable	Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
50th Percentile					
Intercept	0.359	0.016	22.03	<.0001	0
DP04_0134E_ratio	0.377	0.029	12.84	<.0001	3.412
DP03_0087E_ratio	0.157	0.038	4.16	<.0001	4.773
DP02_0068PE_ratio	0.082	0.020	4.04	<.0001	3.329
75th Percentile					
Intercept	0.335	0.018	18.75	<.0001	0
DP04_0134E_ratio	0.399	0.033	12.04	<.0001	3.572
DP03_0087E_ratio	0.088	0.042	2.09	.0369	4.931
DP02_0068PE_ratio	0.146	0.023	6.45	<.0001	3.345

Based on these results, ICF used the following models to estimate childcare 50th and 75th percentile prices, respectively, at the county-level for instances where only statewide data was provided:

$$\widehat{County}_{50} = \text{State}_{50} \times (0.359 + (0.377 \times \text{DP04\_0134E\_ratio}) + (0.157 \text{x} \text{DP03\_0087E\_ratio}) + (0.082 \times \text{DP02\_0068PE\_ratio}))$$

$$\widehat{\text{County}}_{75} = \text{State}_{75} \times (0.335 + (0.399 \times \text{DP04\_0134E\_ratio}) + (0.088 \text{x} \text{DP03\_0087E\_ratio}) + (0.146 \times \text{DP02\_0068PE\_ratio}))$$

Methodology

To conduct this imputation, the appropriate regression model above is used to estimate county-level price estimates from the statewide price data. The former model is used when only 50th percentile statewide childcare pricing data are available, and the latter model is used when only 75th percentile statewide childcare pricing data are provided by MRS reports.

For each state that needed this imputation, the ACS variables listed above were gathered for each year using the ACS 5-yr summary files. The 5-yr summary files were used since they include all counties. (ACS 1-yr files only report for counties with at least 65,000 population.) Exhibit 5 provides an overview, by year, of the ACS summary files and the corresponding tables that were used.

Exhibit 5: ACS Summary File Summary

Year	ACS Summary Files	Tables
2019	2015-2019 5YR	DP02, DP03, DP04
2020	2016-2020 5YR	DP02, DP03, DP04
2021	2017-2021 5YR	DP02, DP03, DP04
2022	2018-2022 5YR	DP02, DP03, DP04

These data were used in the statistical models above to estimate the childcare pricing for the counties of a specific state. ICF compiled detailed documentation on the imputations required for each state in the database to denote where values were constructed using this imputation. This is indicated with a "1" in the third digit of the five-digit imputation flag variable[6] (i.e., XX1XX). Instances where the third digit of this variable is a "0" indicate this imputation was not carried out (i.e., XX0XX). For example, imputations made for median weekly price of Family Child Care for infants birth to 5 months would be denoted in the iMFCCBto5 variable. Appendix B also includes documentation of the relevant states and years where this imputation was used.

Limitations

The model has moderate predictive power for the states used to develop the model. However, this may not be the case for the other states that need this imputation; moreover, these estimates will most likely vary from actual childcare prices provided by these states' individual counties, as all county-level data points for these states were imputed. Lastly, only incorporating the preschool childcare pricing into these statistical models may limit their predictive capacity for childcare pricing for non-preschool age groups.

Imputing 50th and 75th Percentiles From Study Results

The database contains information on childcare prices at the 50th and 75th percentiles. However, 18 states were missing one of these percentiles as they were not provided by their MRS reports. The Women's Bureau's objective was to include data on both percentiles in the final database; thus, an imputation was developed to estimate missing percentiles when applicable. Appendix B indicates which states and years required this imputation.

[6] Imputation variables in the database, denoted by "_flag" in the variable name, include each location type, price, and median and 75 percentiles for each age group.

Model Development for Imputation

ICF used a statistical model to estimate the missing percentile based on the available percentile (i.e., determine the 50th percentile based on the MRS-provided 75th percentile; or determine the 75th percentile based on the MRS-provided 50th percentile). For consistency, the same model was used for 2019-2022 as was developed for the original database (2008-2018). ICF assumed childcare prices follow a lognormal distribution and have a standard deviation relative to the mean. Using childcare pricing data at the provider level that was available for Pennsylvania (PA), Maine (ME), and Minnesota (MN), ICF estimated the coefficient of variation (CV)—see formula below—by provider type (i.e., family childcare and center-based childcare) and urbanicity ranking for each of these three states:

$$CV = \left(\frac{Standard\ Deviation}{Mean}\right)$$

Urbanicity is a three-category ranking assigned at the county level. In general, this variable is based on the percent of a county's population that is considered urban according to the 2010 U.S. Census Bureau. The definitions are provided in Exhibit 6 and these definitions are consistent with those used by the National Survey of Early Childhood Education (NSECE). Specifically, NSECE uses these definitions in their data public use files.[7] and in a report supporting the conclusion that there are childcare pricing variations across these three urbanicity segmentations and by provider type (i.e., home-based and center-based care).[8]

Exhibit 6: Urbanicity Rankings

Name	Rank	Description
High-Density Urban	1	More than 84% of a county's population is urban
Moderate-Density Urban	2	Between 30% and 84% of a county's population is urban
Rural	3	Less than 30% of county's population is urban

To estimate the CV values for the statistical model, first counties in PA, ME, and MN were assigned an urbanicity ranking then, CV values were calculated by state, urbanicity ranking,

[7] 2019 National Survey of Early Care and Education (NSECE) User's Guide - Household, OPRE Report #2023-170, Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.

[8] National Survey of Early Care and Education Project Team (2015). Prices Charged in Early Care and Education: Initial Findings from the National Survey of Early Care and Education (NSECE). OPRE Report #2015-45, Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. Retrieved from: https://www.acf.hhs.gov/sites/default/files/opre/es_price_of_care_toopre_041715_2.pdf.

and provider type. Results were combined across states to estimate the average CV values (weighted by the number of total providers) by urbanicity ranking and provider type; these weighted averages are shown in Exhibit 7 and inform the coefficients used in the statistical model for this imputation.

Exhibit 7: CV Values by Urbanicity Ranking and Provider Type

Urbanicity Ranking	Rank	Center-Based Childcare	Family Childcare
High-Density Urban	1	0.24	0.20
Moderate-Density Urban	2	0.26	0.21
Rural	3	0.20	0.20

Testing the CV values revealed that the probability distributions were positively skewed. Thus, ICF used a lognormal distribution to calculate the missing quantiles (i.e., 50th or 75th percentile). Assuming a fixed CV (that is specific to a provider type and a county's urbanicity ranking) and a lognormal distribution, ICF developed the following statistical model that estimates an "unknown" percentile (PY) from a "known" percentile (PX), where Px and Py are the percentiles of the standard lognormal distribution (mean=0, standard deviation=1), X is the known childcare rate (either 50th or 75th percentile), and $\hat{Y}$ is the predicted childcare rate:

$$\hat{Y} = X \times \frac{\left(1 + \left(P_y \times CV\right)\right)}{\left(1 + \left(P_x \times CV\right)\right)}$$

Methodology

Each county in the state was assigned an urbanicity ranking based on the portion of their total population that was urban according to the 2010 U.S. Census Bureau data (consistent with the 2008-2018 data). For states that needed the 50th percentile imputed across counties, the childcare pricing data from the provided 75th percentile was used, and for states that needed the 75th percentile imputed across counties, the childcare pricing data from the provided 50th percentile was used. For example, for a county that had an urbanicity ranking of "1," the CV value used in the above model would be 0.24 for center-based childcare pricing and 0.20 for family childcare pricing. If for that same state there was a different county that needed this imputation and it had an urbanicity ranking of "3," the CV value used in the above model would be 0.20 for both provider types.

Notations for this imputation are flagged for each state and year within the database and are indicated with a "1" in the fourth digit of the five-digit imputation flag variable[9] (i.e., XXX1X). Instances where the fourth digit of this variable is a "0" indicate this imputation was not carried out (i.e., XXX0X). For example, imputations made for Median weekly price of Center-Based Care for Preschool would be denoted in the MCPreschool_flag variable. Appendix B also includes documentation of the relevant states and years where this imputation was used.

Limitations

First, this approach assumes the distribution of data is positively skewed across all states, which might not reflect the actual distributions of childcare pricing in each state. This may lead the imputations to over- or under-estimate the missing values. Second, while the model was developed based on provider level data from PA, ME, and MN, these states may not be representative of the actual rural and urban population distributions throughout the United States. Third, the "high-density rural" category will likely represent counties with varied rural populations. Specifically, this category accounts for both extremely remote counties (<1% urban), as well as more populous—yet still majority rural—counties (about 30% urban) across the nation. This variation may result in slightly skewed distributions. However, these definitions (and resulting nuances) are consistent with those utilized (and identified) by the NSECE.

Imputing Estimates for Years Between Study Cycles

The Child Care and Development Funds[10]' regulations previously required states to conduct MRS reports every two years. More recently, the study cycle has expanded to every three years. As such, most states do not provide an MRS report annually. While it is expected that every state would provide data for every study cycle (whether it was two or three years), and some states conducted reports more often than required, ICF did not receive data that were representative of this. This may be either because states did not complete MRS reports per each study cycle, or because these reports were not made available. While ICF took the initiative to gather as many reports as possible—through multiple forms of communication with state contacts as well as conducting internet searches to find published reports—the number of available MRS reports used in the database does not confer with the two- and three-year study cycles. Because ICF did not receive data that

[9] Imputation variables in the database, denoted by "_flag" in the variable name, include each location type, price, and median and 75th percentiles for each age group.

[10] The 2024 Child Care and Development Fund (CCDF) Final Rule updates regulations (45 CFR Part 98) to help working families afford child care and broadly support child care quality and accessibility in communities. https://www.ecfr.gov/current/title-45/subtitle-A/subchapter-A/part-98.

uniformly occurred every two or three years, the team could not infer that a year of missing data was due to an interim year in the study cycle versus a year where data were unavailable for another reason (for instance, the state may not have completed a study, the data were no longer available, or the data were not publicly available and ICF received no direct communication from the state). Due to this, any year that was missing an MRS report was defined as a "missing" year of data, and the same imputation methodology was applied uniformly to ensure a consistent practice was performed across all states.

Where applicable, ICF imputed childcare pricing data for states' missing years to increase data continuity. Imputing missing years in between study cycles will allow researchers and other database users to conduct longitudinal analyses of consecutive years. It will also allow users to identify and understand trends across multiple states for a sequential period of time.

Exhibit 8 summarizes for how many years, between 2008 and 2022, this fifth imputation was carried out per state to impute childcare pricing data for missing years. To identify for which years this imputation is required, please reference the imputation hierarchy in Appendix B.

Exhibit 8: States Where Estimates for Years Between Study Cycles Were Imputed

State	Number of Years Imputed	State	Number of Years Imputed
AL	11	MT	5
AK	7	NE	4
AZ	5	NV	7
AR	7	NH	4
CA	9	NJ	10
CO	1	NM	0
CT	10	NY	7
DE	10	NC	7
DC	1	ND	10
FL	13	OH	8
GA	6	OK	9
HI	5	OR	7
ID	9	PA	7
IL	9	PR	0
IN	0	RI	6
IA	5	SC	6
KS	9	SD	10
KY	9	TN	4

State	Number of Years Imputed	State	Number of Years Imputed
LA	10	TX	3
ME	7	UT	9
MD	7	VT	7
MA	10	VA	9
MI	9	WA	10
MN	11	WV	10
MS	9	WI	13
MO	5	WY	7

Methodology

For states with more than one year of data available, ICF calculated the linear trend between years of usable data. This method assumes that childcare prices would experience a constant rate of change between years of usable MRS data. ICF calculated the difference in prices between all years of available and usable MRS data and annualized the price change over the number of missing years between them. For example, MRS data were provided for 2020 and 2022 for Oregon To impute 2021 childcare pricing data using this method, the difference in prices between 2020 and 2022 was determined, and then an annualized rate of change was calculated. This estimated annual change was then added to the 2020 usable MRS data to impute 2021. This linear change in pricing method is applied to states that have a minimum of two years of viable MRS data, including the original 2008-2018 data (i.e., 47 states); states with one or no years of usable data were excluded from this imputation. The imputation was not applied in instances where there were six or more years between studies.

For this adjustment, the original data for 2008-2018 was combined with the 2019-2022 data. States varied in the frequency and pattern of data available between 2008 and 2022. For example, several states did not have available data for earlier years and some states did not have usable data for the latter years in this range. To address this challenge for states having a minimum of two years of usable data, ICF used the following approach:

- Impute only one year **before** the earliest year of usable MRS data (to get closer to the start of the desired time period, i.e., 2008)
- Impute only two years **after** the latest year of usable MRS data (to get closer to the end of the desired time period, i.e., 2022).

While some states have usable MRS data for 2008 as their earliest year (27% or 14 states), other states do not have available data until later years. If there were no 2008 MRS data

provided for a state, but a state provided data from pre-2008 years, these data were leveraged to impute 2008 values.[11] For example, in California, MRS data for the years 2007 and 2009 were used to calculate data for 2008 using the linear approach delineated above. The same process was repeated for the end range of data, ending in 2018 . While 49% (25 states) had usable MRS data for 2018, the remaining had earlier years (e.g., 2015, 2016) or post-2018 years as the last year of usable data. If 2018 was not the last year provided, the two years after the latest usable year of MRS data were imputed for all states that had a least two years of usable MRS data. If more recent data were missing, but a 2019 MRS report was available, ICF used 2019 data to impute for missing years. Exhibit 9 summarizes for which states 2007 data were leveraged to impute 2008 data and 2019 data were leveraged to impute 2018 data. ICF also used new data added from 2019 through 2022 to impute missing prices for 2017, 2018 and 2019, when data from prior years were available. Appendix I provides an overview of where additional information was added to the 2008-2018 data as a result of additional in-between study imputations.

Exhibit 9: Frequency of Pre-2008 and Post-2018 Data Used for Imputation

Year of Data Used	Applicable States
2007	California, Delaware, Florida, Louisiana, Michigan, and South Dakota
2019	Arkansas, Nebraska, New York, and South Dakota

Of note, in cases where the use of the above imputation resulted in the first (or last) year's imputed childcare price having a change from the subsequent (or previous) year's childcare price that was greater than 25% in either direction, a constraint was placed on the data. Specifically, the rate of the first (or last) year imputed due to this imputation was set equal to the rate of the subsequent (or previous) year. For example, if a childcare price for 2008 was imputed for a specific county based on usable 2009 data, but the change rate between the two prices was greater than 25%, the 2008 childcare price was set equal to that of 2009.

For the updated data (2019-2022), if a childcare price for 2022 was imputed for a specific county based on usable 2021 data, but the change rate between the two prices was greater than 25%, the 2022 childcare price was set equal to that of 2021. This occurred in CO, DC, IN and NM.

Notations for this imputation are flagged in the database, which denotes when this imputation was used. Within this database, when this imputation was performed for a

[11] Of note, Georgia had two years of usable MRS data (2003 and 2016); however, Georgia is excluded from this imputation because a 13-year gap is too large to rigorously impute childcare pricing data for interim years.

certain county and year, a "1" will show in the fifth digit of the five-digit imputation flag variable [12](i.e., XXXX1). Instances where the fifth digit of this variable is a "0" indicate this imputation was not carried out (i.e., XXXX0). For example, imputations made for 75th percentile weekly price of Center-Based Care for Preschool age would be denoted in the _75CPreschool_flag variable. Appendix B documents the states and years where this imputation was used.

Limitations

Overall, the wider the gap between years of available and usable MRS data, the less certain imputations are to be fully representative of actual childcare pricing. To mitigate the impact of this limitation, only years in between usable years of data as well as one year prior to the earliest usable year and two years after the last usable year for states with at least two years of usable MRS data are imputed. Given this conservative approach, not all states have MRS data for the entire 2008 to 2022 period, limiting the ability to compare data across all years, states, and counties. In addition, calculating the mean prices between years using the linear approach may not fully account for specific pricing fluctuations within a county or state during the years data are not provided. Moreover, it may also inaccurately smooth fluctuations out across years with missing data.

Imputations for States Using Alternative Price Methodology

In three states (California, North Carolina, and Virginia), the most recent MRS did not include county-level price estimates that could be included in the database, either because the state adopted a new methodology for the analysis or no longer made available the data needed for the database. In these instances, price estimates were extrapolated from the last reported estimates (2018 for California, Connecticut, Delaware, Maryland, New York, North Carolina, Oregon, Tennessee, Virginia, and Washington) using the changes in prices for similar counties that matched in a propensity score matching (PSM) model.

Methodology

PSM identifies observations in the control group most similar to the treatment group based on observed characteristics. Comparison states were selected based on whether the states were in the same census division, if they had similar cost of living indices, and whether they had similar state requirements for staffing ratios at childcare centers. In certain cases, comparison states with similar cost of living and state requirements for staffing ratios from outside of the census division were included to increase the number of

[12] Imputation variables in the database, denoted by "_flag" in the variable name, include each location type, price, and median and 75th percentiles for each age group.

potential counties. States that significantly differed in cost of living or regulatory requirements, had missing data, or had significant imputations for their 2022 childcare price data were excluded from the PSM. The variables in the PSM model were county-level cost of living, median household income, and earnings for childcare workers. Potential comparison counties for California were from its census division (Oregon and Washington), along with counties from New York and Connecticut, which have similar cost of living and requirements for staffing. Virginia's comparison counties were from its census division (Delaware and Maryland) along with Tennessee, which is from the same census region and has similar staffing ratios, and New York, which has similar staffing ratios to Virginia and similar cost of living. North Carolina's comparison counties were from Georgia and Tennessee, which are in the same census region and had similar staffing requirements to North Carolina. The comparison counties were identified with a PSM logistic model with nearest-neighbor matching.

After the comparison counties were identified, the rate of change between the comparison counties' last observed estimate and their 2022 estimates were calculated using the below formula:

$$PercentDifference = \frac{PRICE_{CONTROL2022} - PRICE_{CONTROL2018}}{PRICE_{CONTROL2018}}$$

The percent change was divided by six to attain the annual change for Georgia counties between 2016 and 2022 and then multiplied by four to estimate the total change from 2018 to 2022 for counties from North Carolina.

For each county in California, North Carolina, and Virginia, the 2018 price data was then multiplied by the percent difference from each matched county in and added to the 2018 price data from the respective county from California, North Carolina, and Virginia, as shown below:

$$PRICE_{CALIFORNIA2022} = PRICE_{CALIFORNIA2018} + (PRICE_{CALIFORNIA2018} * PercentDifference)$$

This method was applied to all price estimates with data available from both points in time for the comparison counties and with data available for the counties of interest in 2018.

Limitations

While PSM models efficiently match with similar counties based on observed characteristics, county-level variables and characteristics that are not observed or included in the model will not be factored into the matching process. Some characteristics

that may influence childcare pricing that were not included in this model are rurality, local demand for childcare, and quality of childcare. Given this, the matched counties may differ from each other in significant ways that may influence the change in childcare pricing over time.

Overview of Imputations of Demographic and Labor Market ACS Data

There are various instances of missing ACS data for which imputations were required (see Appendix D). Data from the Bureau of Labor Statistics (BLS) were also used to impute these missing values where applicable. Additionally, in 2020 ACS 1-year estimates were not produced, so 5-year estimates from 2020 were used instead. The types of imputations leveraged to estimate values in instances of missing data greatly varied depending on several factors:

- The specific data element that is missing (e.g., unemployment rates, median earnings, portion of population that identifies as one race.)
- The type of data element that is missing (e.g., percent- or number-based)
- The availability of a county's missing data element for prior and subsequent years
- The availability of other data elements for that same county in the year that the data element is missing
- The availability of the missing data element for other counties in the same state
- Whether counties split from or merged with another county in the year that the data element is missing
- Whether imputed variables ended up being realistic estimates (e.g., had to adjust instances where imputed values were over 100% for percent-based metrics)

For detailed explanations about the methodologies used for these imputations—regarding the data elements, counties, and years that were affected—please reference Appendix D. Within this database, when an imputation was performed for a certain county and year for an ACS variable, a "1" will show and in other instances—where imputations were not performed—a "0" will show. For example, imputations made for 75th percentile weekly price of Center-Based Care for Preschool age would be denoted in the _75CPreschool_flag variable. Appendix B documents the states and years where this imputation was used.

Imputations for ACS data included variables such as female labor force participation, specific unemployment rates, median household income and earnings for missing data, and employment by occupational groups. In addition, many unique imputations were made for specific counties where ACS data was missing. Appendix D provides detailed methodologies used for each imputation made for the ACS data. Also reference Appendix

D for more detailed information and descriptions regarding the imputation flags used for all ACS and demographic data in this database .

Additional Data Limitations and Considerations on Data Use

In addition to the limitations that apply to specific imputations, as described above, there are additional overarching limitations that researchers should keep in mind regarding the data contained in the database, including:

- States use **varying methods for conducting market price surveys that may impact the precision of the price estimates** the surveys produce. There are variations in the instruments and data collection methods used, sample design, analysis methods, and reporting format. Researchers should review both the survey documentation and the archive of state market price surveys to identify states for which there are significant methodological concerns that may warrant exclusion from their analyses or modifications to their analysis plans.
- States **defined child age groups in different ways** in the underlying market price studies. To mitigate this challenge, the database broke age groups into six-month ranges – e.g., birth through 5 months, 6 months through 11 months. Even at this level of granularity, there are multiple instances in which one or more age groups did not align with the age groupings in the database. In these instances, as described in the *Standardizations and Imputations* section above, ICF entered data using the age group that matched most closely and noted the discrepancy in the database documentation, as summarized in Appendix A. Researchers seeking to use the data for a national study or to study the prices for specific age groups, especially infants, toddlers, and school age, should keep this limitation in mind.

State Level: National Database of Childcare Prices

In 2024, a state-level component was added to the National Database for Childcare Prices. This information, combined with demographic and labor market information at this level allows researchers and policymakers a new lens through which they may compare and contrast childcare prices at the state level.

Overview of State-Level Database

Using data from the county-level childcare price database, ICF collaborated with DOL to develop a database of state-level childcare price metrics that provide policymakers, researchers, and other audiences with insights into how childcare price and affordability

vary within and across states. It should be noted that childcare markets are highly localized and the prices that providers charge may vary significantly within a state.[13] Therefore, there are significant limitations in developing state-level metrics that reflect these significant variations, especially any type of metric that could be used to rank or compare states to each other. State-level childcare price and affordability metrics are summarized below and detailed further in Appendix E:

- **State Median Price of Child Care** – This metric estimates the median price of childcare in each state for each type of care (childcare centers and family child homes) and each age group of children served (infant, toddler, preschool, and school-age) across all counties in the state for each year for which data are available. The metric provides a rough approximation of the overall price of childcare in a state but should be used with an understanding of the limitations further described below.
- **Child Care Price Rankings** – This metric estimates the percentage of the child population within each state living in areas at different childcare price quintiles for each type of care and each age group across all counties in the state for each year for which data are available. The metric provides a way of estimating the percentage of the child population in each state that is living in the highest priced counties and allows comparisons across states – e.g., which state has the highest percentage of children living in counties with the highest childcare prices, which state has the highest percentage of children living in counties with the lowest childcare prices. Appendix H, Table A, provides the quintile ranges used for this metric.
- **Child Care Affordability Rankings** - This metric estimates the percentage of the child population within each state living in areas at different childcare affordability quintiles for each type of care and each age group across all counties in the state for each year for which data are available. The metric is based on the percentage of income that a family would need to spend for full-time care for a specific type of care. The metric provides a way of estimating the percentage of the child population in each state that is living in counties where families must spend the highest portion of their income for child care and allows comparisons across states – e.g., which state has the highest percentage of children living in counties where families spend the highest percentage of income on child care, which state has the highest percentage of children living in counties where families spend the lowest percentage

[13] National Academies of Sciences, Engineering, and Medicine. (2018). Transforming the Financing of Early Care and Education. Washington, DC: The National Academies Press. doi: https://doi.org/10.17226/24984.

of income on child care. Appendix H, Exhibits A and B provide the quintile ranges used for this metric.

State Market Price Data Variables

To calculate the state-level price metrics, the National Database of Childcare Prices extracts the following county-level childcare price data variables, which are further described in Appendix E:

- State
- Year of survey
- Type of Care (childcare center or family childcare home)
- Median price of full-time weekly care for infants
- Median price of full-time weekly care for toddlers
- Median price of full-time weekly care for preschool children
- Median price of full-time weekly care for school-age children

State Demographic Data Variables

To calculate the state-level price metrics, the National Database of Childcare Prices extracts the following county-level demographic data variables, which are further described in Appendix E:

- State
- Year of survey
- Estimated child population for infants
- Estimated child population for toddlers
- Estimated child population for preschool-age children
- Estimated child population for school-age children
- Median household income

Standardizations and Imputations for State Market Price Variables

As described in more detail in the section on Data Limitations and Considerations on Data Use, states define childcare age groups in different ways in the underlying market price studies – e.g., the starting and ending age points for infants, toddlers, and preschoolers may vary by several months. To mitigate this challenge, the county-level database collected median price data by age in six-month ranges and then assigned the reported median prices to one of four higher-level age groups (infant, toddler, preschool, school-age), using

the criteria described in more detail above and in the county-level data dictionary found in Appendix C. Then, the state-level database used the four higher-level age groups to develop the state-level price metrics.

Imputing County-Level Child Population Estimates

The demographic data in the underlying county-level dataset relies upon ACS data, which does not include child population data broken out by the childcare age groups used for this database. Therefore, the state database includes imputed values for each age group based on the overall distribution of the child population at the national level and the proportion of the childcare age groups that make up the under 5 years, 5 to 9 years, and 10 to 14 years age groups for each county. For example, at the national level, the infant age group makes up 39.2% of under 5-year-olds, the toddler age group makes up 40.1% of under 5-year-olds, the preschool age group makes up 20.7% of under 5-year-olds, and the school-aged age group makes up 58.6% of the 5- to 14-year-olds.

State Level Demographic and Labor Market Data

Demographic and labor market information from the ACS, which is collected by the U.S. Census Bureau, for 2008 through 2022 were extracted and included in the final database. The data included employment rates, unemployment rates, labor force participation rates, poverty rates, earnings and income metrics, population and household counts, distributions of race and ethnicity, and employment distributions by major occupational group. These elements were pulled from ACS 1-year estimates. Due to instances of missing data for specific data elements for the years included, detailed imputations were carried out so no missing demographic or labor market data would be included in the final database. Individual states did not have missing data, but some imputations were necessary when an element was not measured for all years (e.g., labor force participation for women with children 6-17). The type of imputations leveraged to estimate values in instances of missing data greatly varied depending on the several factors:

- The specific data element that is missing (e.g., unemployment rates, median earnings, portion of population who identifies as one race.)
- The type of data element that is missing (e.g., percent- or number-based)
- The availability of a state's missing data element for prior and subsequent years

For detailed explanations about the methodologies used for these state-level imputations—regarding the data elements—please reference Appendix F. Notations for this imputation are flagged in the database, which denote when imputations were performed on certain ACS variables. Within this database, when an imputation was performed for a certain county and year for an ACS variable, a "1" will show and in other instances—where imputations were not performed—a "0" will show. Please reference Appendix D for more detailed information and descriptions regarding the imputation flags used for all data in this database.

Data Limitations and Considerations on Data Use

Limitation in Use of Price Data

The state-level database uses aggregated price variables contained in the county-level price database to develop price metrics for each state. In addition to the limitations already described above regarding the county-level database, it is also important to consider that the state-level price metrics have additional limitations when attempting to use these metrics to rank or compare states.

As described above, childcare markets are highly localized, and the state-level metrics, especially the median prices for childcare, should be used with significant caution since their metrics do not capture the significant variations that exist within states. For example, a state that has both a large rural population and a large urban population – e.g., Virginia, Pennsylvania, North Carolina, California – may have significant childcare price and affordability extremes that may not easily be reflected in the state median price of childcare.

The additional childcare price and affordability metrics contained in the state-level database may provide more useful metrics for informing state and national-level research and policymaking, as they are based on data that take county-level variations into consideration. However, they too may have limitations. In particular, the affordability metric measures child care prices as a percentage of median income in a county. This is not fully representative of the price burden of child care for all families in a county, as half of the households have a lower income and thus child care would constitute an even higher percentage of their income. Similarly, this measure is not representative of the price of child care for families with more than two children.

Limitations in the Use of County-Level Child Population Estimates

ACS data at the county level does not include population by the child care age groups used in the database, those populations are, thus, imputed. The imputations rely on the proportion of the child care age groups that make up larger age groups at the national level, where ACS provides a more granular population distribution by individual age. Those national-level ratios are applied to each county in the database. Therefore, the database includes imputed values for each age group based on the overall distribution of the child population at the national level. Actual population distribution, by child care age groups, may differ between counties and the nation as a whole.

Alternative Price Methodology

Some areas -- the District of Columbia, New Mexico and Virginia -- have shifted away from MRS reports, which are the primary data source for this database, and replaced them with alternative cost-based methodologies for setting child care reimbursement rates. While the database does include price estimates for the District of Columbia and Virginia, it does not include any price estimates for New Mexico, because price data were not available and no imputation methods were feasible.

Every three years, states are required to submit detailed plans to the U.S Department of Health and Human Services documenting how they will implement Child Care Development Block Grant (CCDBG) funds (81 FR 67512).[14] Payment policies must reflect equal access for children receiving childcare assistance, and states are encouraged to set their subsidy payment rates at the 75th percentile of the market rates. States have the option of conducting a "statistically valid market rate survey" or an "approved alternative methodology" to inform their subsidy rates. Alternative cost-based methodologies, also referred to as cost estimation models or cost modeling, estimate the average cost to operate a childcare business and provide quality care. Rather than reflecting the actual prices families are paying for childcare, cost methods use data modeling techniques to estimate the true cost of providing quality childcare. This information is then used for setting subsidy reimbursement rates.[15]

[14] Child Care and Development Fund Program (Final Rule). 81 FR 67512, Federal Register 81:190. https://www.govinfo.gov/content/pkg/FR-2016-09-30/pdf/2016-22986.pdf.

[15] Davis, L.A., Karoly, B.W., Caronongan, K.T., Banghart, P., Shaw, S., Partika, A. (2017). Market Rate Surveys and Alternative Methods of Data Collection and Analysis to Inform Subsidy Payment Rates, OPRE Report #2017-115, U.S. Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research, and Evaluation. https://www.acf.hhs.gov/opre/report/market-rate-surveys-and-alternative-methods-data-collection-and-analysis-inform-subsidy.

Cost models consider expenditures such as labor, benefits, rent/mortgage, supplies, or professional development, as well as revenue such as tuition, grants, and other public or private funding sources. Assumptions entered into the model can be adjusted, allowing researchers, policymakers, and other stakeholders to measure incremental changes on program budgets. States submitting a market rate survey also submit a "narrow cost analysis," a basic model used to compare state subsidy rates to the cost of providing childcare that meets those state standards.[16]

The Covid-19 pandemic brought with it unprecedented new costs for programs and exposed vulnerabilities in the childcare system. This led to an increased interest in cost models that are able to better predict the impacts of varying circumstances in the future. Due to differences in the methodologies and outputs of market rate surveys and these cost studies, the Women's Bureau is interested in understanding the implications of this shift for the NDCP and the future data available to its users. For example, cost studies may not produce market price estimates to include in the database or there may be significant limitations to their inclusion. Some states that use cost-based methodologies may still collect and publish childcare price data, but some may impute inflation-adjusted prices based on previous surveys. As more states adopt an alternative methodology, the lack of current childcare price data could limit the states that the NDCP can include in the future.[17]

A number of pre-existing market forces in the childcare industry have also contributed to the increased interest in alternative cost-based methodologies.[18,19] In the U.S., the bulk of the revenue received by childcare providers, regardless of program type, comes from parent tuition. It is widely accepted among researchers, policymakers, and parents themselves that childcare is generally unaffordable for families, particularly low-income families, while wages for childcare workers are too low. The prices programs can charge are limited by what families can pay, and what most parents can afford to pay is below the

[16] Bipartisan Policy Center. (2020). *The limitations of using market rates for setting child care subsidy rates.* https://bipartisanpolicy.org/wp-content/uploads/2020/06/Limitations_of_Market_Rate_Surveys_for_Child_Care_Brief_FINAL1.pdf .

[17] Paschall, K., & Maxwell, K. (2022). *Defining and measuring access to child care and early education with families in mind.* OPRE Report #2021- 232. Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. https://www.acf.hhs.gov/sites/default/files/documents/opre/opre_defining-measuring-access-highlight_feb2022.pdf.

[18] Aigner-Treworgy, S., Osborn, C., Smith, L. (2022). Charting the path forward for child care: Using cost modeling to design new solutions. Bipartisan Policy Center. https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/11/BPC_ECI_Cost-Model-Explainer_RV7.pdf.

[19] Davis, L.A., Karoly, B.W., Caronongan, K.T., Banghart, P., Shaw, S., Partika, A. (2017). Market Rate Surveys and Alternative Methods of Data Collection and Analysis to Inform Subsidy Payment Rates, OPRE Report #2017-115, U.S. Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research, and Evaluation. https://www.acf.hhs.gov/opre/report/market-rate-surveys-and-alternative-methods-data-collection-and-analysis-inform-subsidy.

costs required to provide quality care. Because infant and toddler care require lower staff-to-child ratios, it is more expensive to provide resulting in programs covering the costs of infant-toddler care with revenue from preschool programming. Many providers struggle to break even financially and are not able to make investments in higher quality care. Low wages, constrained by market dynamics, mean that providers also struggle to attract and retain high quality staff. These market distortions are key reasons some states are shifting to alternative cost-based methodologies.

For 2022-2024 submissions, the District of Columbia, New Mexico, and Virginia received waivers to conduct a cost estimation model instead of a market rate survey. The process of completing a cost model frequently involved broad-based stakeholder input, partnerships with public and private childcare agencies and researchers, and utilization of existing cost estimation tools such as the Provider Cost of Quality Calculator (PCQC).[20] The state of New Mexico has also completed a full cost model along with its market rate survey to inform state decision-making. More information about each of these states' childcare contexts, approaches, methodologies, and policy actions can be found in their publicly available reports.

To collect first-hand data on the nuances and implications of the shift toward alternative cost-based methodologies, the Women's Bureau hosted an Advisory Panel composed of professionals with expertise in studying childcare markets or direct experience with state-level cost studies. The goals of the Advisory Panel were to 1) elicit guidance on strategies to address these alternative methodologies, 2) assess their potential for integration into the current database, 3) gather feedback on what information might be important to share with different audiences, and 4) understand any considerations the panel may have for estimating child care prices in the future for states utilizing cost modeling. Another key goal was to determine how the NDCP could be as inclusive as possible regarding states utilizing alternative methodologies.

There were several key takeaways shared by the advisory panel:

- Some states using alternative methodologies also gather market rate information to have a full understanding of the childcare market, or to be prepared in case their state legislature is not supportive of fully moving to a cost-based approach. Currently, the market rate data collected by these states differs substantially in purpose, completeness, and availability, particularly when compared with the statistically valid and reliable market rate surveys included in the NDCP. At this time,

[20] Workman, S. & Capito, J. (2022). Using the Provider Cost of Quality Calculator to Estimate the Cost of Quality. National Center on Early Childhood Quality Assurance. https://childcareta.acf.hhs.gov/sites/default/files/new-occ/resource/files/using_the_pcqc_to_estimate_cost_of_quality_210927_final_updatedec2022_508.pdf.

only D.C. has published market rate information along with its cost study. Other states reported that they are moving in that direction due to the growing realization of the benefits of combining cost AND price data to inform decision-making.

- There was agreement among panel members that it is not sufficient to just replace collecting tuition data with a cost model. Understanding the relationship between childcare subsidy rates, the cost to deliver care, and what providers are charging families is important to understanding how the system is working together. There may be an assumption that cost modeling data is better and is going to drive cost sustainability for providers because providers are charging less than what it costs, but it is important to also account for the private pay market where parents are paying premiums for higher quality care. The realities of what parents are actually paying can then be compared with the cost model to determine the circumstances under which parents cannot bear the burden of the true costs of high-quality care.

- As more states are learning about the benefits of cost methods, the data are getting more reliable and consistent. However, because cost-models are tailored to each state's unique social and economic contexts, and vary considerably in the variables and models used, combining cost data from different states or comparing states to each other presents a number of challenges. One possible future area of study might involve compiling or comparing data from states' narrow cost analyses to begin to share similarities and differences in approaches and outcomes.

- Finally, the panel sees an opportunity to share with parents and the public the realities of the childcare markets as they are today, particularly why childcare is so expensive and difficult to access, the importance of certain quality drivers for optimal child development, and the true costs associated with providing quality care that meets children's developmental needs. For instance, it is not well known that preschool tuition often subsidizes the higher costs of infant care due to the larger gap between what it costs to provide infant care and what parents are able to pay. These market distortions impact the overall system. The panel also sees the opportunity to communicate the rationale and benefits of cost modeling to the public in an accessible way, and for state consumer websites to share price and cost data with the public in user-friendly formats, such as data dashboards.

Appendices

Appendix A: Data Collection and Data Entry Protocol

To ensure consistency, the following protocols were used by ICF staff responsible for locating, reviewing, and entering childcare price data into the database. In both the original database and the 2024 updated database, three individuals were primarily responsible for entering the data with the states generally assigned equally across the researchers.

Data Collection Protocol for NDCP

After opening a source study, follow the steps below to review and enter data from the study into the standardized data entry sheet for each of the 50 states, the District of Columbia, and Puerto Rico. Note: Puerto Rico was only included for the 2019-2022 update.

Collection

1. Use the link provided for the market rate survey (MRS) or child care cost study for the assigned state/territory.
2. Identify the publicly available MRS or cost studies for the years 2008-2022. Save the source study in PDF format in the appropriate internal ICF folder, based on the state and year of the study. If needed, rename the file with State_Year convention.
3. Identify any supplemental reports that were published as a companion, addendum, or along with the MRS that provide supplemental detail on the impacts of COVID-19 on the price or supply or access for child care. In many cases the supplemental data will be contained within the main MRS report. However, if contained in a separate document, save it to the appropriate location on Teams.
4. Update MRS tracker to show status of data collection.
5. Review the study and enter the year in which data collection began. If unknown, enter the year in which the study was published.

Initial Study Review

1. Review the study and enter:
    a. Lowest level of geographic reporting (county, region or zone, state) of market rate data.
    b. Provider Types (center, family child care)
    c. Age Definitions (infant, toddler; specific age ranges)
    d. Rate Types (weekly, monthly; median, 75th percentile)
2. If the state used a child care cost study, instead of a MRS, change the default "Study Type" to "Cost Study."
3. Enter any review notes about questions or concerns about the data.

Data Entry

1. Open the study and locate the county-level data.
    a. If no county-level data are provided, look for geographic groupings that assign prices estimates to counties based on regions, price clusters, or price zones.
    b. If there are no county-level price estimates or regional groupings provided in the report, then, look for statewide data.
2. Find the table(s) with weekly median and 75th percentile for the geographical level price estimates for childcare centers by age group. Some states may only provide the median OR the 75th percentile.
3. Enter the **weekly** median and the 75th percentile prices if provided for each age group listed in the data entry sheet in alignment with the age groupings in the study. Double-check all entries.
    a. If weekly prices are not available, enter **daily** prices.
    b. If weekly and daily prices are not available, enter **monthly** prices.
    c. If weekly, daily, and monthly prices are not available, enter **hourly** prices.
4. Find the table(s) with the most granular geographical estimates for family childcare providers by age group.
5. Enter the weekly median and 75th percentile prices for each age group listed in the data entry sheet in alignment with the age groupings in the study. Double-check all entries.
6. If weekly prices are not available, enter prices for one of the following price modes: daily prices, monthly prices, or hourly prices (in order of the preferred mode). Double-check all entries.

Additional Notes for Excel Data Entry

1. If any data including entire specific age groups, provider type data, or median or 75th percentile are missing data for any geographical level, enter NA.
2. Select the price mode (hourly, daily, weekly, monthly) that corresponds with the price data entered in County-level data entry Steps 3 through 8.
3. Review the study and enter the year in which data collection began. If unknown, enter the year in which the study was published.
4. Review the study and enter the lowest level of geographic reporting (county, region or zone, state) of market rate data.
5. Enter any review notes about questions or concerns about the data entered.

Supplemental COVID-19 Reports

1. If supplemental data or analysis exist, review to determine if the analysis examined impacts of COVID-19 on other topics not directly related to the price, supply, or access to child care. Select the option that applies (Yes, No). Then, add a brief

description of the topic – e.g., described challenges related to data collection, described supplemental funding providers received during pandemic, etc.

Dataset Fields

Prepopulated Information

- State
- County
- County FIPS Code
- Urbanicity

StudyYear: Enter year of pricing study

StudyType: MRS, Cost Study

COVID-19 Supplemental Data: Yes, No

PriceMode: Enter Hourly, Daily, Weekly, Monthly, or Yearly for study pricing

GeographicLevel: (County, Region or Cluster/Zone, State)

Median Price for Centers (MC) by age, in months

- MCBto5: Median price at a center for children birth to 5 months
- MC6to11: Median price at a center for children 6-11 months
- MC12to17: Median price at a center for children 12-17 months
- MC18to23: Median price at a center for children 18-23 months
- MC24to29: Median price at a center for children 24-29 months
- MC30to35: Median price at a center for children 30-35 months
- MC36to41: Median price at a center for children 36-41 months
- MC42to47: Median price at a center for children 42-47 months
- MC48to53: Median price at a center for children 48-53 months
- MC54toSA: Median price at a center for children 53 months to school-age
- MCSA: Median price at a center for school-age children

Median Price for Family Child Care (MFCC) by age, in months

- MFCCBto5: Median price at family child care for children birth to 5 months
- MFCC6to11: Median price at family child care for children 6-11 months
- MFCC12to17: Median price at family child care for children 12-17 months
- MFCC18to23: Median price at family child care for children 18-23 months
- MFCC24to29: Median price at family child care for children 24-29 months
- MFCC30to35: Median price at family child care for children 30-35 months
- MFCC36to41: Median price at family child care for children 36-41 months

- MFCC42to47: Median price at family child care for children 42-27 months
- MFCC48to53: Median price at family child care for children 48-53 months
- MFCC54toSA: Median price at family child care for children 54 months to school-age
- MFCCSA: Median price at family child care for school-age children

75th Percentile Price for Centers (75C) by age, in months

- 75CBto5: 75th percentile price at a center for children birth to 5 months
- 75C6to11: 75th percentile price at a center for children 6-11 months
- 75C12to17: 75th percentile price at a center for children 12-17 months
- 75C18to23: 75th percentile price at a center for children 18-23 months
- 75C24to29: 75th percentile price at a center for children 24-29 months
- 75C30to35: 75th percentile price at a center for children 30-35 months
- 75C36to41: 75th percentile price at a center for children 36-41 months
- 75C42to47: 75th percentile price at a center for children 42-47 months
- 75C48to53: 75th percentile price at a center for children 48-53 months
- 75C54toSA: 75th percentile price at a center for children 53 months to school-age
- 75CSA: 75th percentile price at a center for school-age children

75th Percentile Price for Family Child Care (75FCC) by age, in months

- 75FCCBto5: 75th percentile price at family child care for children birth to 5 months
- 75FCC6to11: 75th percentile price at family child care for children 6-11 months
- 75FCC12to17: 75th percentile price at family child care for children 12-17 months
- 75FCC18to23: 75th percentile price at family child care for children 18-23 months
- 75FCC24to29: 75th percentile price at family child care for children 24-29 months
- 75FCC30to35: 75th percentile price at family child care for children 30-35 months
- 75FCC36to41: 75th percentile price at family child care for children 36-41 months
- 75FCC42to47: 75th percentile price at family child care for children 42-27 months
- 75FCC48to53: 75th percentile price at family child care for children 48-53 months
- 75FCC54toSA: 75th percentile price at family child care for children 54 months to school-age
- 75FCCSA: 75th percentile price at family child care for school-age children

State	2008-2018 Data Nuances and Decisions	2019-2022 Data Nuances and Decisions
AK	In 2013, Wade Hampton Census Area changed to Kusilvak Census Area. Data provided by state were reported in regional cluster rates.	Alaska provides daily rates for Non-School Age but only monthly for before and after-school.
AL	Data provided by state were reported in regional cluster rates. For 2017, counties categorized under region 7 in this state's MRS report (e.g., Cherokee, Jackson, Marshall, DeKalb, and Etowah) had 50th percentile family childcare rates higher than the reported 75th percentile metrics. To rectify this, the provided 75th percentile metrics for these counties and year were removed and instead imputed using the 50th/75th percentile imputation described earlier.	There were no specific state nuances impacting the data entry.
AR	Data provided by state were reported in regional cluster rates.	There were no specific state nuances impacting the data entry.
AZ	Data provided by state were reported in regional cluster rates.	There were no specific state nuances impacting the data entry.
CA	Data provided by state were reported in regional cluster rates.	California only provides reimbursement ceilings. Since the database contains price data from previous years, data for 2019 through 2022 were imputed using propensity score matching.
CO	Rates provided from MRS reports are based off respondents' maximum prices charged for a regular day of childcare. Data provided by state were reported in clustered rates.	There were no specific state nuances impacting the data entry.
CT	Calculated years 2009 and 2011 using raw data. In 2011, for infants/toddlers in center-based care, the state provides two prices for each provider "full time weekly rate for 104 and for 102"--_and calculates the average of these prices in a separate column. The differences are typically minimal, most providers do not report a difference, some report only a few dollars difference. ICF used the average of the two prices to calculate the median and 75th.	There were no specific state nuances impacting the data entry.

State	2008-2018 Data Nuances and Decisions	2019-2022 Data Nuances and Decisions
	Data provided by state were reported in regional cluster rates.	
DC	There were no specific state nuances impacting the data entry.	There were no specific state nuances impacting the data entry.
DE	There were no specific state nuances impacting the data entry.	There were no specific state nuances impacting the data entry.
FL	For 2013 and 2015, ICF calculated the weighted averages for both gold seal and non-gold seal providers for each county. To do so, data for both types of providers (including rates and number of providers) were entered, and weighted average calculations were performed using the =SUMPRODUCT function in Excel. Counties with fewer than 10 providers in total were excluded. This was used to calculate an aggregate county-wide rate. Family childcare home rates were used to calculate family childcare rates. The state also reports a separate category defined as "Large Family Child Care Homes" without a more detailed description given. These large family childcare rates were excluded from the database.	The Florida 2021-2022 County Rate tables had data missing for Child Care Center and Family Child Center at 50th and 75th percentile for several counties.
GA	Data provided by state were reported in market rate zones, which were calculated based on correlations among county population and economic indicators, as well as median childcare market rates. To find out more about Georgia's market rate clustering, consult page 17 in their 2016-17 report.	There were no specific state nuances impacting the data entry.
HI	Center-based infant/toddler care rates were used for all center-based age groups from birth to 36 months. Registered family childcare home infant/toddler care rates were used for all family childcare age groups from birth to 36 months. Registered family childcare home rates were used for all family childcare age groups from 36 months and older. Licensed before school care/after school care rates were used for all center-based age groups from 60 months and older.	Hawaii's four counties with county seats (Hawaii County, Honolulu County, Kauai County, and Maui County) are represented in the database. Hawaii's fifth county, Kalawao County, is not represented in the database, because it was not represented in Hawaii's published MRS reports, potentially due to its extremely small population size.

State	2008-2018 Data Nuances and Decisions	2019-2022 Data Nuances and Decisions
	Honolulu County's data are taken from the "urban rates" table in Hawaii's MRS reports, as reports state, "[f]or this study, urban was defined as providers with a zip code prefix of 968xx; this zip code prefix is assigned to Honolulu metropolitan areas." Hawaii's four counties with county seats (Hawaii County, Honolulu County, Kauai County, and Maui County) are represented in the database. Hawaii's fifth county, Kalawao County, is not represented in the database, because it was not represented in Hawaii's published MRS reports, potentially due to its extremely small population size.	
IA	Iowa's rates are calculated based on a five-hour timeframe, which may be lower than the daily rates for other states. Because of this, ICF calculated Iowa's rates as half-day rates, and imputed to weekly prices based on this.	Iowa's rates are calculated based on a five-hour timeframe, which may be lower than the daily rates for other states. Because of this, ICF calculated Iowa's rates as half-day rates, and imputed to weekly prices based on this.
ID	Idaho's age groups provided were in the following brackets (0-12 months, 13-30 months, 31-60 months, 5-6 years, and 6-12 years), which were slightly inconsistent with the age groupings developed for the database. In all cases, rates were reported in the age grouping which most closely aligned with the final database. Data provided by state were reported in clustered rates.	There were no specific state nuances impacting the data entry.
IL	Per-slot rates were used in final database, which is defined as the rate for each child who is in a provider's care. This is different than reporting on provider rates (as done for other states in the database), where one provider will be represented by one rate. When reporting on per-slot rates, providers with more capacity will represent a larger share of the reported rates for Illinois than will providers with less capacity. Essentially, these rates will be more representative of providers who care for a larger number of children.	There were no specific state nuances impacting the data entry.

State	2008-2018 Data Nuances and Decisions	2019-2022 Data Nuances and Decisions
	The state calculates weekly rates based on a 35-hour week. Data provided by state were reported in clustered rates.	
IN	Indiana's data could not be used because the state only provides reimbursement rates. Reimbursement rate data cannot be used to calculate market rate data. Data provided by state were reported in clustered rates.	Indiana's data could not be used because the state only provides reimbursement rates. Reimbursement rate data cannot be used to calculate market rate data.
KS	Licensed childcare provider rates are used for family childcare rates across all years. Data for each year within the database is taken from the next year the MRS was published. For instance, data used to populate 2010 were taken from Kansas's 2011 MRS report, which calculated rates from July 2009-June 2010. MRS organizes counties into rate clusters.	Kansas 2020 MRS organizes counties into "Cost Areas." Hourly full-time rates for Family Child Care for two age groupings: 0-18 months and Over 18 mos. (19 months through School Age are all the same). Hourly Full-Time rates for centers are clearly defined Age groupings reported in MRS report are slightly different as compared to Database age groupings. ICF used the age groups which most closely aligned with what was reported by the state.
KY	Data provided by state were reported in regional cluster rates.	There were no specific state nuances impacting the data entry.
LA	Class A childcare rates are used for center-based care rates in database. This is because Class A providers are eligible to participate in Louisiana's Child Care Assistance Program (CCAP) whereas Class B providers are not. Only registered family childcare home rates are used for family childcare rates in database for the same reason, in that nonregistered providers were not eligible for CCAP. Data provided by state were reported in regional cluster rates.	There were no specific state nuances impacting the data entry.
MA	The state's age groupings in their MRS reports were slightly different than the age groupings defined for the database. In these instances, ICF used the age groups which most closely aligned	The state's age groupings in their MRS reports were slightly different than the age groupings defined for the database. In these instances, ICF used the age

State	2008-2018 Data Nuances and Decisions	2019-2022 Data Nuances and Decisions
	with what was reported by the state. For example: • Infant: State defines as 0-15 months; reported as 0-18 months in database • Toddler: state defines as 16-33 months; reported as 18-36 months in database • Preschool: state defines as 34 months-5 years; reported as 36-60 months in database Data provided by state were reported in regional cluster rates.	groups which most closely aligned with what was reported by the state. The MRS report organizes counties into rate clusters
MD	Data provided by state were reported in regional cluster rates.	There were no specific state nuances impacting the data entry.
ME	Counties with less than 10 provider responses were combined with neighboring counties for the percentile estimations. These include Franklin, Piscataquis, Somerset, Knox, Waldo, Hancock, Washington, Lincoln, and Sagadahoc. The state reports that respondents gave a range of definitions for what constitutes "full time"; 21-30 hours were the most frequent responses.	There were no specific state nuances impacting the data entry.
MI	State defines weekly rates as 45 hours a week and converts to hourly rates using this formula. For 2009, 2011, 2013, and 2015 statewide rates were used, in combination with socioeconomic variables, to impute rates for Michigan. The state reports that respondents could make their own determination of how many hours constituted full-time care.	Michigan reports prices for each county but not broken out by program type. The MRS report combines prices for center and family child care homes.
MN	State provided raw data for county rates and provided hard copy reports for data represented in county clustered rates. ICF used clustered rates to be consistent with public state reports. The state's definitions for infant, toddler and preschool are inconsistent with the database by two months each for center-based rates. Data provided by state were reported in clustered rates.	Minnesota has several counties that do not have child care center data for any of the four price clusters used in the MRS report. For those counties with no center-based providers, estimates were used.

State	2008-2018 Data Nuances and Decisions	2019-2022 Data Nuances and Decisions
MO	Missouri's market rate surveys had low response rates in some years, ranging from 3.6% - 45%. In these instances, ICF still included these rates in the database to be consistent with Missouri's published figures. Data provided by state were reported in regional clustered rates.	Missouri MRS report only has data for 75th percentile Child Care Centers and Family Home Centers
MS	The state reports that respondents make their own determination of how many hours constituted full-time care.	Mississippi organizes counties into Non-Metro and Metro areas, with price estimates for each area for child care centers. The price estimates for family child care were the same for all counties in the state.
MT	Montana only breaks down rates into two age categories which include infant (less than 2) and child (2 and older). Data provided by state were reported in regional cluster rates.	There were no specific state nuances impacting the data entry.
NC	For 2015, statewide response rates were used, in combination with socioeconomic variables, to impute county-level rates. While North Carolina did provide county-level rates for 2015, they were broken into various quality rankings and did not document how many providers were included in each. ICF was unable to calculate weighted averages to create one aggregate rate for each county.	North Carolina has started using an alternative price method, which made the current data incompatible with the database. Since the database did contain price data from previous years, data was imputed using Propensity Score matching to include North Carolina data for current years.
ND	There were no specific state nuances impacting the data entry.	There were no specific state nuances impacting the data entry.
NE	The state reports that respondents could make their own determination of how many hours constituted full-time care. Data provided by state were reported in clustered rates.	There were no specific state nuances impacting the data entry.
NH	New Hampshire's statewide data were used, in combination with socioeconomic variables, to impute county-level rates. While New Hampshire provided rates by regions, the reports do not	MRS Report did not contain data for 24 - 35 months. Data jumped from 24 months to 3 year old. The age group was included in the 2018 study. The missing age rate was imputed.

State	2008-2018 Data Nuances and Decisions	2019-2022 Data Nuances and Decisions
	articulate which counties fall into what regions, so ICF was unable to use these regional rates. The state reports that on average, providers defined full-time care as constituting 51.7 hours a week; no single definition was given or applied across provider rates.	
NJ	Statewide data provided for centers; county data provided for family childcare providers.	There were no specific state nuances impacting the data entry.
NM	New Mexico's data could not be used because the state disaggregates data into metro and urban providers, as well as splits it based on quality level. However, the number of providers within each of these classifications are not provided, meaning ICF could not produce county-level rates with this data.	New Mexico was not included in the database because it used an alternative cost-based methodology with no price data available.
NV	Data provided by state were reported in clustered rates.	Lyon County is included in 2 regions and the survey does not specify which market rate has been assigned to Lyon County providers. Based on the analysis, data from the non-rural cluster was utilized.
NY	While the state provided ICF with MRS reports, a closer look revealed that New York only reports reimbursement rates which were established based on the survey, and ICF did not have access to the survey data to compute market rates. Additionally, these reimbursement rates cover across multiple years (for instance, a MRS survey would report one reimbursement rate covering 2012-2014). This did not allow the team to calculate market rates from the provided data from 2008-2018. An exception to this is New York's most recent market rate study, published in 2019, which provides market rate percentiles. However, this is the only year of usable data received from the state and was out of the parameters between 2008-2018. To include at least 2018 data for this state, an exception was made to the team's aforementioned methodology (which stipulates that if only one year of usable data were received, no imputations forward or backward are to be	New York organizes counties into rate zones.

State	2008-2018 Data Nuances and Decisions	2019-2022 Data Nuances and Decisions
	conducted). A statistical model was developed that used counties' urbanicity, percent of population with a bachelor's degree or higher, and median gross rent—provided by 2019 ACS 1-year estimates—to impute 2018 values for all New York counties. Specifically, using the model, the mean childcare rate for 2018 counties was calculated. Then, the ratio of the 2018 predicted mean and the 2019 predicted mean for each county was used to adjust 2019 rates to impute 2018 county-level rates. For New York counties without 2019 MRS data, the mean predicted value for the state was used. Because this imputation is a variation of the fifth imputation, imputation flags for New York counties for 2018 denote that the fifth imputation was carried out.	
OH	Family childcare rates are broken into Type A and B, though data are not available to calculate weighted averages to aggregate rates. Type A providers can care for 7-12 children at a time; however, each staff member can care for no more than six children at one time. Type B providers can care for no more than 6 children at one time. Type B was the most populous classification and was therefore used to for the database. Data provided by state were reported in clustered rates, which were formed into three clusters of counties with similar market rate structures.	There were no specific state nuances impacting the data entry.
OK	ICF calculated a weighted average to create an aggregate rate for each county. ICF took a weighted average across all star levels, separate for each standard and enhanced county grouping and then took an aggregate weighted average to consolidate standard and enhanced counties into one rate. In Oklahoma, one star represents the lowest quality ranking and three stars represents the highest ranking; the higher the star status, the higher the reimbursement rate. The 2008 report states that there are the same number of providers within the standard and enhanced county groupings. Enhanced counties are those with rates which are higher than	Oklahoma's rate is statewide as opposed to county-level. The median is an average of the different quality "Star level" and the 75th percentile was not provided.

State	2008-2018 Data Nuances and Decisions	2019-2022 Data Nuances and Decisions
	standard counties and are determined by each market rate survey.	
OR	Data from 2014, 2016, and 2018 were provided at the zip code level and not by county. ICF created weighted county averages based on the total number of children aged 5 and under in the zip code.	Data from 2020 data was provided by zip code, not by county. ICF created weighted county averages based on the total number of children aged 5 and under in the zip code.
PA	Calculated using raw data. ICF created a grouping of counties based on socioeconomic closeness to group counties with few providers.	The 2020 reports provided statewide median rate but did not include anything by county or by 75th percentile. The 2022 report also did not include any usable data.
PR	Not included in 2018 database	The territory does not have counties, but has municipalities that are the equivalent of counties. The MRS organizes municipalities into rate regions.
RI	There were no specific state nuances impacting the data entry.	There were no specific state nuances impacting the data entry.
SC	Data provided by state were reported in regional cluster rates.	Data is reported by rural and urban zones, however the counties that fall under Rural or Urban were undefined. ICF used Census Bureau county designations to assign counties as urban and rural.
SD	Center-based rates include both center-based and larger group homes. In this instance, ICF was unable to separate center-based and group rates because raw data were not provided. Ogala Lakota County was called Shannon County before 2015. Data provided by state were reported in clustered rates based on population density, per the U.S. Census Bureau.	There were no specific state nuances impacting the data entry.
TN	To be consistent with other states' reporting, ICF used Tennessee's "school age in" rates, which is defined as the school age rates for children who are also attending school, rather than school-age "out" rates, which would be representative of childcare during holidays and summers.	

State	2008-2018 Data Nuances and Decisions	2019-2022 Data Nuances and Decisions
	Tennessee clusters counties into two rates – the "top tier" (comprised of top 20 highest per-capita personal income counties) and the "low tier" (remaining 70 counties). Database reflects county rates for each county within these tiers.	
TX	In 2015, the state switched over their reporting to report the previous year figures. Therefore, while the 2013 MRS report will report 2013 figures, data taken from the 2015 report (and onward) provides figures gathered in 2014.	For 2020, 2021, and 2022 data, FCC rate is reported in two groups: licensed and registered. ICF used licensed, since those centers tend to be in a more regulated and formal market.
UT	Age groups broken into 1 years, 2 years, 3 years, 4 years, 5 years, and 6-12 years. 5 years are not included in the database because students start school when they are 6 in Utah. Utah's 6-12-year-old rates are reported as "school age" rates within the database. In 2017, kindergarten is introduced as an included rate, and is used for reporting school age rates rather than rates for 6-12-year-olds. Data in Utah's reports are split into two groupings, based on urban and rural counties. Database reflects county rates for each county within these two classifications.	Data is reported by urban and rural zones, rather than by county. ICF used Census Bureau county designations to assign counties as urban and rural.
VA	From 2008-2013, Bedford City was an independent census area with unique childcare rates represented in the database. From 2013 onwards, Bedford City is integrated with Bedford County.	Virginia has started using an alternative price method, which made the current data incompatible with the database. Since the database did contain price data from previous years, data was imputed using a Propensity Score matching to include Virgina data for current years.
VT	For 2012 and 2014, Vermont reports data for social service regions, which are regional groups of towns. The social service regions may include parts of more than one county. In these cases, ICF assigned the regional rate to each town within the region and weighted county averages based on the total number of children ages 5 or under within each town of each county, using	There were no specific state nuances impacting the data entry.

State	2008-2018 Data Nuances and Decisions	2019-2022 Data Nuances and Decisions
	this to distribute regional rates which overlapped across multiple counties.	
WA	There were no specific state nuances impacting the data entry.	There were no specific state nuances impacting the data entry.
WI	School-age is defined as 6+ (due to later start times for state).	There were no specific state nuances impacting the data entry.
WV	There were no specific state nuances impacting the data entry.	There were no specific state nuances impacting the data entry.
WY	In 2017, Wyoming provides a statewide rate and a separate rate for Teton County, which represents the state's wealthiest county and one with the highest childcare prices when compared to the rest of the state. ICF imputed county-level rates based on socioeconomic indicators for all other counties in Wyoming.	There were no specific state nuances impacting the data entry.

Appendix B: List of Imputations Performed for Each State and Year

Key

1	Imputed based on different age group
2	Converted to weekly price mode
3	Imputed county-level prices from state-level data
4	Imputed 50th and/or 75th percentiles
5	Imputed estimates for years between study cycle
6	Imputed estimates from Propensity Score Match
NA	Years that are excluded from the database, based on the imputation methodology
NI	No imputations needed

State/ Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AL	4,5	4	4,5	4,5	4,5	4,5	4	4,5	4,5	4	4,5	5	5	NI	5
AK	NA	NA	NA	NA	NA	NA	2,3,5	1,2	2,3,5	2	2,3,5	2,5	2	2,5	NA
AZ	2	2,5	2	2,5	2	2,5	2	2,5	2,5	2,5	2	2,5	2,5	2,5	2
AR	NA	NA	NA	NA	NA	NA	2,5	2	2,5	2,5	2,5	2	2,5	NA	NA
CA	5	NI	5	5	NI	5	NI	5	NI	5	NI	5	NA	NA	5, 6
CO	NA	NA	NA	NA	NA	NA	NA	1,2	NA	NA	NA	NA	NA	NA	2,4
CT	5	NI	5	NI	5	5	5	NI	5	5	NI	5	5	5	NI
DE	2,4,5	2,4,5	2,4,5	2,4	2,4,5	2,4	2,4,5	2,4	2,4,5	2,4,5	2,4	2,4,5	2,4,5	2,4	2,4,5
DC	NA	NA	NA	NA	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	2
FL	1,3,4,5	1,3,4	1,3,4,5	1,3,4,5	1,3,4,5	1,3	1,3,5	1,3,5	1,3,5	1,3,5	NA	NA	2,5	2,4	2,4,5
GA	NA	NA	NA	NA	NA	NA	NA	NA	NI	NA	NA	5	5	NI	5
HI	NA	NA	NA	2,5	2	2,5	2	2	1,2	2	2	2	2,5	2,5	2
ID	NA	NA	NA	NA	2,5	2	2,5	2	2,5	2,5	1,2	2,5	2,5	2	2,5
IL	2	2,5	2	2,5	2	2,5	2	2,5	2	2,5	2	2,5	2,5	2,4	2,4,5
IN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,3,4	NA	2,3,4,5	2,3,4,5	2,3,4,5	2,3,4
KS	2	2,5	2	2,5	2	2	2,5	2,5	2,5	2	2,5	2,5	2	2,5	NA
KY	2,4,5	2,4	2,4,5	2,4	2,4,5	2,4	2,4,5	2,4	2,4,5	2	2,5	2,5	2,4	2,4,5	NA
LA	5	NI	NI	5	NI	5	NI	5	5	NA	NA	NA	2	2,5	NA
ME	NA	NA	NA	NA	1,5	1	1,5	NI	5	5	NI	5	5	NI	5
MD	NA	NA	NA	NA	NA	5	NI	5	5	2	2,5	2,5	2,5	4	4,5
MA	2	2,5	2,5	2	2,5	2,5	2,5	2	2,5	2,5	2	2,5	2,5	2,5	2
MI	5	2,3	2,3,5	2,3	2,3,5	2,3	2,3,5	2,3,4	2,3,4,5	2,3,4,5	2,3,4	2,3,4,5	2	2,5	NA
MN	1,3,4,5	1,3,4	3	3	3	3,5	3	3,5	3	3,5	3,5	5	5	NI	5
MS	NA	NA	3,4,5	3,4	3,4,5	2,3,4	2,3,4,5	2,3,4,5	2,3,4	2,3,4,5	2,3,4,5	2,3,5	2,3,5	NI	5
MO	NA	NA	NA	NA	NA	NA	NA	1,2,4,5	1,2,4	1,2,4,5	1,2,4	2,4,5	NA	NA	NA
MT	NA	NA	NA	NA	NA	NA	NA	NA	2,3,4	NA	NA	2,3,4,5	2,3,4	2,3,4,5	NA
NE	NA	NA	NA	NA	NA	NA	NA	NA	2,5	2	2,5	2	2,5	2	2,5
NV	2,3,5	2,3	2,3,5	2,3,5	2,3	2,3,5	1,2,3,4,5	1,2,3,4,5	1,2,3,4,5	NA	NA	NA	NA	NA	4
NH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3,5	3,5	3	3,5
NJ	3	3,5	3	3,5	3	3,5	3,5	3,5	1	1,5	1,5	5	5	3	3,5

NM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NY	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,4	NI	5	5	4
NC	NA	NA	NA	NA	NA	NA	2,3,4,5	2,3,4	2,3,4,5	2,3,4,5	1,2,3	2,5	NA	NA	5, 6
ND	2,3,5	2,3	2,3,5	2,3	2,3,5	2,3,5	2,3,5	2,3	2,3,5	2,3	2,3,5	2,3,5	2,3,5	2,3	2,3,5
OH	NA	1,5	1	1,5	NI	5	NI	5	NI	5	NI	5	5	5	NI
OK	2,3	2,3,5	2,3	2,3,5	2,3	2,3,5	2,3	2,3,5	2,3,5	2,3	2,3,5	2,3,5	2,3,5	2,3,4	2,3,4,5
OR	2	2,5	2	2,5	2	2,5	2	2,5	2	2,5	2	2,5	2	2,5	2
PA	2	1,2	1,2	1,2,5	1,2,3	1,2,3,5	1,3	1,3,5	1,3,5	1,3,5	1,2	2,5	NA	NA	NA
PR	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	NA
RI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3,5	3,5	3	3,5
SC	NA	NA	NA	NA	NA	NA	5	NI	5	NI	5	5	4	4,5	NA
SD	1,3,4,5	1,3,4,5	1,2,3,4,5	2,4	2,4,5	1,2,4	1,2,4,5	2,4	2,4,5	2,4	2,4,5	2,4,5	2,4,5	2,4,5	2
TN	4	4	4	4	4	4	4	NI	NI	NI	NI	5	5	NI	5
TX	NA	2,5	2	2,5	2	2	2	2	2	2	2	2,5	2	2	2
UT	2,3,5	2,3	2,3,5	2,3	2,3,5	2,3	2,3,5	2	2,5	2	2,5	2,5	2,5	2	2,5
VT	3	3,5	3	3,5	4	4,5	4	3	3,5	1	1,5	3	3,5	NA	NA
VA	NA	3,5	3	3,5	3	3,5	5	NI	5	5	NI	5	NA	NA	5, 6
WA	2,4	2,4,5	2,4	2,4,5	2,4	2,4,5	2,4	2,4,5	2,4,5	2,4,5	2	2,5	2,5	2	2,5
WV	2,3	2,3,5	2,3,5	2,3	2,3	2,3,5	2,3,5	2,3	2,3,5	2,3,5	2,3	2,3,5	2,3,4	2,3,4,5	NA
WI	1,3,5	1,3,5	1,3,5	1,3,5	1,3,5	1,3,5	1,3	1,3	1,3,5	1,3,5	1,3,5	5	5	5	NI
WY	NA	NA	NA	NA	NA	NA	2,3,4,5	2,3,4	2,3,4,5	2,3,4	2,3,4,5	2,3,4,5	2,3,4,5	2,3,4,5	2,4

Appendix C: County-Level Data Dictionary

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
STATE_NAME	State	Name of state for which the data are being entered.	Alpha-numeric	N/A
STATE_ABBREVIATION	State abbreviation	Two-letter state abbreviation	Alpha-numeric	N/A
COUNTY_NAME	County	Name of the county for which data are being entered.	Alpha-numeric	N/A
COUNTY_FIPS_CODE	County FIPS Code	Five-digit number that uniquely identifies the county in a state.	Numeric	N/A
STUDYYEAR	Study Year	Year in which data were collected for the market rate survey.	Numeric	N/A
MCBto5	Median Price of Center-Based Care –Birth through 5 Months	Median price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MC6to11	Median Price of Center-Based Care – 6 Months through 11 Months	Median price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MC12to17	Median Price of Center-Based Care – 12 Months through 17 Months	Median price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MC18to23	Median Price of Center-Based Care - 18 Months through 23 Months	Median price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MC24to29	Median Price of Center-Based Care – 24 Months through 29 Months	Median price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
MC30to35	Median Price of Center-Based Care – 30 Months through 35 Months	Median price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MC36to41	Median Price of Center-Based Care – 36 Months through 41 Months	Median price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MC42to47	Median Price of Center-Based Care – 42 Months through 47 Months	Median price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MC48to53	Median Price of Center-Based Care – 48 Months through 53 Months	Median price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MC54toSA	Median Price of Center-Based Care – 54 Months through School Age	Median price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MCSA	Median Price of Center-Based Care – School Age	Median price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MFCCBto5	Median Price of Family Child Care – Birth through 5 Months	Median price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
MFCC6to11	Median Price of Family Child Care – 6 Months through 11 Months	Median price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MFCC12to17	Median Price of Family Child Care – 12 Months through 17 Months	Median price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MFCC18to23	Median Price of Family Child Care - 18 Months through 23 Months	Median price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MFCC24to29	Median Price of Family Child Care – 24 Months through 29 Months	Median price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MFCC30to35	Median Price of Family Child Care – 30 Months through 35 Months	Median price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MFCC36to41	Median Price of Family Child Care – 36 Months through 41 Months	Median price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MFCC42to47	Median Price of Family Child Care – 42 Months through 47 Months	Median price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
MFCC48to53	Median Price of Family Child Care – 48 Months through 53 Months	Median price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MFCC54toSA	Median Price of Family Child Care – 54 Months through School Age	Median price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
MFCCSA	Median Price of Family Child Care – School Age	Median price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75CBto5	75th Percentile Price of Center-Based Care –Birth through 5 Months	75th percentile price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75C6to11	75th Percentile Price of Center-Based Care – 6 Months through 11 Months	75th percentile price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75C12to17	75th Percentile Price of Center-Based Care – 12 Months through 17 Months	75th percentile price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75C18to23	75th Percentile Price of Center-Based Care - 18 Months through 23 Months	75th percentile price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
_75C24to29	75th Percentile Price of Center-Based Care – 24 Months through 29 Months	75th percentile price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75C30to35	75th Percentile Price of Center-Based Care – 30 Months through 35 Months	75th percentile price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75C36to41	75th Percentile Price of Center-Based Care – 36 Months through 41 Months	75th percentile price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75C42to47	75th Percentile Price of Center-Based Care – 42 Months through 47 Months	75th percentile price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75C48to53	75th Percentile Price of Center-Based Care – 48 Months through 53 Months	75th percentile price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75C54toSA	75th Percentile Price of Center-Based Care – 54 Months through School Age	75th percentile price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75CSA	75th Percentile Price of Center-Based Care – School Age	75th percentile price charged for Center-Based Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
_75FCCBto5	75th Percentile Price of Family Child Care –Birth through 5 Months	75th percentile price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75FCC6to11	75th Percentile Price of Family Child Care – 6 Months through 11 Months	75th percentile price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75FCC12to17	75th Percentile Price of Family Child Care – 12 Months through 17 Months	75th percentile price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75FCC18to23	75th Percentile Price of Family Child Care - 18 Months through 23 Months	75th percentile price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75FCC24to29	75th Percentile Price of Family Child Care – 24 Months through 29 Months	75th percentile price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75FCC30to35	75th Percentile Price of Family Child Care – 30 Months through 35 Months	75th percentile price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75FCC36to41	75th Percentile Price of Family Child Care – 36 Months through 41 Months	75th percentile price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
_75FCC42to47	75th Percentile Price of Family Child Care – 42 Months through 47 Months	75th percentile price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75FCC48to53	75th Percentile Price of Family Child Care – 48 Months through 53 Months	75th percentile price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75FCC54toSA	75th Percentile Price of Family Child Care – 54 Months through School Age	75th percentile price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
_75FCCSA	75th Percentile Price of Family Child Care – School Age	75th percentile price charged for Family Child Care for this age group based on the results reported in the market rate survey report for the county or the rate zone/cluster to which the county is assigned.	Numeric	N/A
iMCBto5	Imputations made to Median Price of Center-Based Care – Birth through 5 Months	Summary of Imputations made to Median Price of Center-Based Care – Birth through 5 Months	Numeric	N/A
iMC6to11	Imputations made to Median Price of Center-Based Care – 6 Months through 11 Months	Summary of Imputations made to Median Price of Center-Based Care – 6 Months through 11 Months	Numeric	N/A
iMC12to17	Imputations made to Median Price of Center-Based Care – 12 Months through 17 Months	Summary of Imputations made to Median Price of Center-Based Care – 12 Months through 17 Months	Numeric	N/A
iMC18to23	Imputations made to Median Price of Center-Based Care - 18 Months through 23 Months	Summary of Imputations made to Median Price of Center-Based Care - 18 Months through 23 Months	Numeric	N/A
iMC24to29	Imputations made to Median Price of Center-Based Care – 24 Months through 29 Months	Summary of Imputations made to Median Price of Center-Based Care – 24 Months through 29 Months	Numeric	N/A
iMC30to35	Imputations made to Median Price of Center-Based Care – 30 Months through 35 Months	Summary of Imputations made to Median Price of Center-Based Care – 30 Months through 35 Months	Numeric	N/A
iMC36to41	Imputations made to Median Price of Center-Based Care – 36 Months through 41 Months	Summary of Imputations made to Median Price of Center-Based Care – 36 Months through 41 Months	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
iMC42to47	Imputations made to Median Price of Center-Based Care – 42 Months through 47 Months	Summary of Imputations made to Median Price of Center-Based Care – 42 Months through 47 Months	Numeric	N/A
iMC48to53	Imputations made to Median Price of Center-Based Care – 48 Months through 53 Months	Summary of Imputations made to Median Price of Center-Based Care – 48 Months through 53 Months	Numeric	N/A
iMC54toSA	Imputations made to Median Price of Center-Based Care – 54 Months through School Age	Summary of Imputations made to Median Price of Center-Based Care – 54 Months through School Age	Numeric	N/A
iMCSA	Imputations made to Median Price of Center-Based Care – School Age	Summary of Imputations made to Median Price of Center-Based Care – School Age	Numeric	N/A
iMFCCBto5	Imputations made to Median Price of Family Child Care – Birth through 5 Months	Summary of Imputations made to Median Price of Family Child Care – Birth through 5 Months	Numeric	N/A
iMFCC6to11	Imputations made to Median Price of Family Child Care – 6 Months through 11 Months	Summary of Imputations made to Median Price of Family Child Care – 6 Months through 11 Months	Numeric	N/A
iMFCC12to17	Imputations made to Median Price of Family Child Care – 12 Months through 17 Months	Summary of Imputations made to Median Price of Family Child Care – 12 Months through 17 Months	Numeric	N/A
iMFCC18to23	Imputations made to Median Price of Family Child Care - 18 Months through 23 Months	Summary of Imputations made to Median Price of Family Child Care - 18 Months through 23 Months	Numeric	N/A
iMFCC24to29	Imputations made to Median Price of Family Child Care – 24 Months through 29 Months	Summary of Imputations made to Median Price of Family Child Care – 24 Months through 29 Months	Numeric	N/A
iMFCC30to35	Imputations made to Median Price of Family Child Care – 30 Months through 35 Months	Summary of Imputations made to Median Price of Family Child Care – 30 Months through 35 Months	Numeric	N/A
iMFCC36to41	Imputations made to Median Price of Family Child Care – 36 Months through 41 Months	Summary of Imputations made to Median Price of Family Child Care – 36 Months through 41 Months	Numeric	N/A
iMFCC42to47	Imputations made to Median Price of Family Child Care – 42 Months through 47 Months	Summary of Imputations made to Median Price of Family Child Care – 42 Months through 47 Months	Numeric	N/A
iMFCC48to53	Imputations made to Median Price of Family Child Care – 48 Months through 53 Months	Summary of Imputations made to Median Price of Family Child Care – 48 Months through 53 Months	Numeric	N/A
iMFCC54toSA	Imputations made to Median Price of Family Child Care – 54 Months through School Age	Summary of Imputations made to Median Price of Family Child Care – 54 Months through School Age	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
iMFCCSA	Imputations made to Median Price of Family Child Care – School Age	Summary of Imputations made to Median Price of Family Child Care – School Age	Numeric	N/A
i_75CBto5	Imputations made to Median Price of Center-Based Care – Birth through 5 Months	Summary of Imputations made to Median Price of Center-Based Care – Birth through 5 Months	Numeric	N/A
i_75C6to11	Imputations made to 75 Percentile Price of Center-Based Care – 6 Months through 11 Months	Summary of Imputations made to 75 Percentile Price of Center-Based Care – 6 Months through 11 Months	Numeric	N/A
i_75C12to17	Imputations made to 75 Percentile Price of Center-Based Care – 12 Months through 17 Months	Summary of Imputations made to 75 Percentile Price of Center-Based Care – 12 Months through 17 Months	Numeric	N/A
i_75C18to23	Imputations made to 75 Percentile Price of Center-Based Care - 18 Months through 23 Months	Summary of Imputations made to 75 Percentile Price of Center-Based Care - 18 Months through 23 Months	Numeric	N/A
i_75C24to29	Imputations made to 75 Percentile Price of Center-Based Care – 24 Months through 29 Months	Summary of Imputations made to 75 Percentile Price of Center-Based Care – 24 Months through 29 Months	Numeric	N/A
i_75C30to35	Imputations made to 75 Percentile Price of Center-Based Care – 30 Months through 35 Months	Summary of Imputations made to 75 Percentile Price of Center-Based Care – 30 Months through 35 Months	Numeric	N/A
i_75C36to41	Imputations made to 75 Percentile Price of Center-Based Care – 36 Months through 41 Months	Summary of Imputations made to 75 Percentile Price of Center-Based Care – 36 Months through 41 Months	Numeric	N/A
i_75C42to47	Imputations made to 75 Percentile Price of Center-Based Care – 42 Months through 47 Months	Summary of Imputations made to 75 Percentile Price of Center-Based Care – 42 Months through 47 Months	Numeric	N/A
i_75C48to53	Imputations made to 75 Percentile Price of Center-Based Care – 48 Months through 53 Months	Summary of Imputations made to 75 Percentile Price of Center-Based Care – 48 Months through 53 Months	Numeric	N/A
i_75C54toSA	Imputations made to 75 Percentile Price of Center-Based Care – 54 Months through School Age	Summary of Imputations made to 75 Percentile Price of Center-Based Care – 54 Months through School Age	Numeric	N/A
i_75CSA	Imputations made to 75 Percentile Price of Center-Based Care – School Age	Summary of Imputations made to 75 Percentile Price of Center-Based Care – School Age	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
i_75FCCBto5	Imputations made to 75 Percentile Price of Family Child Care – Birth through 5 Months	Summary of Imputations made to 75 Percentile Price of Family Child Care – Birth through 5 Months	Numeric	N/A
i_75FCC6to11	Imputations made to 75 Percentile Price of Family Child Care – 6 Months through 11 Months	Summary of Imputations made to 75 Percentile Price of Family Child Care – 6 Months through 11 Months	Numeric	N/A
i_75FCC12to17	Imputations made to 75 Percentile Price of Family Child Care – 12 Months through 17 Months	Summary of Imputations made to 75 Percentile Price of Family Child Care – 12 Months through 17 Months	Numeric	N/A
i_75FCC18to23	Imputations made to 75 Percentile Price of Family Child Care - 18 Months through 23 Months	Summary of Imputations made to 75 Percentile Price of Family Child Care - 18 Months through 23 Months	Numeric	N/A
i_75FCC24to29	Imputations made to 75 Percentile Price of Family Child Care – 24 Months through 29 Months	Summary of Imputations made to 75 Percentile Price of Family Child Care – 24 Months through 29 Months	Numeric	N/A
i_75FCC30to35	Imputations made to 75 Percentile Price of Family Child Care – 30 Months through 35 Months	Summary of Imputations made to 75 Percentile Price of Family Child Care – 30 Months through 35 Months	Numeric	N/A
i_75FCC36to41	Imputations made to 75 Percentile Price of Family Child Care – 36 Months through 41 Months	Summary of Imputations made to 75 Percentile Price of Family Child Care – 36 Months through 41 Months	Numeric	N/A
i_75FCC42to47	Imputations made to 75 Percentile Price of Family Child Care – 42 Months through 47 Months	Summary of Imputations made to 75 Percentile Price of Family Child Care – 42 Months through 47 Months	Numeric	N/A
i_75FCC48to53	Imputations made to 75 Percentile Price of Family Child Care – 48 Months through 53 Months	Summary of Imputations made to 75 Percentile Price of Family Child Care – 48 Months through 53 Months	Numeric	N/A
i_75FCC54toSA	Imputations made to 75 Percentile Price of Family Child Care – 54 Months through School Age	Summary of Imputations made to 75 Percentile Price of Family Child Care – 54 Months through School Age	Numeric	N/A
i_75FCCSA	Imputations made to 75 Percentile Price of Family Child Care – School Age	Summary of Imputations made to 75 Percentile Price of Family Child Care – School Age	Numeric	N/A
MCInfant	Median Price of Center-Based Care – Infant	Aggregated weekly, full-time median price charged for Center-based Care for infants (i.e. aged 0 through 23 months)	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
MCInfant_flag	Imputations made for Center-Based Care for Infants: Birth through 23 months	Whether this aggregated group's childcare price (1) matched all the pricing values listed in its age range, (2) was the most common pricing value (i.e. mode) included in its age range, or (3) was the highest most frequent pricing value in its age range if there were multiple modes.	Numeric	N/A
MCToddler	Median Price of Center-Based Care – Toddler	Aggregated weekly, full-time median price charged for Center-based Care for toddlers (i.e. aged 24 through 35 months)	Numeric	N/A
MCToddler_flag	Imputations made for Median Price of Center-Based Care for Toddlers -24 months through 35 months	Whether this aggregated group's childcare price (1) matched all the pricing values listed in its age range, (2) was the most common pricing value (i.e. mode) included in its age range, or (3) was the highest most frequent pricing value in its age range if there were multiple modes.	Numeric	N/A
MCPreschool	Median Price of Center-Based Care – Preschool	Aggregated weekly, full-time median price charged for Center-based Care for preschoolers (i.e. aged 36 through 54 months)	Numeric	N/A
MCPreschool_flag	Imputations made for Median Price of Center-Based Care for Preschool -36 months through 54 months	Whether this aggregated group's childcare price (1) matched all the pricing values listed in its age range, (2) was the most common pricing value (i.e. mode) included in its age range, or (3) was the highest most frequent pricing value in its age range if there were multiple modes.	Numeric	N/A
_75CInfant	Aggregated 75th Percentile Price of Center-Based Care for Infants -0 months through 23 months	State level 75th percentile price charged for Center-Based Care for infants (i.e. aged 0 through 23 months)	Numeric	N/A
_75CInfant_flag	Imputations made for 75th percentile Price of Center-Based Care for Infants -0 months through 23 months	Description of all imputations that are made for 75th percentile Center-based care: 0 months through 23 months	Numeric	N/A
_75CToddler	Aggregated 75th Percentile Price of Center-Based Care for Toddlers -24 months through 35 months	State level 75th percentile price charged for Center-Based Care for Toddlers (i.e. aged 24 through 35 months)	Numeric	N/A
_75CToddler_flag	Imputations made for 75th percentile Price of Center-Based Care for Toddlers-24 months through 35 months	Description of all imputations that are made for 75th percentile Center-based care for Toddlers: 24 months through 35 months	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
_75CPreschool	Aggregated 75th percentile Price of Center-Based Care for Preschool-36 months through 54 months	State level 75th percentile price charged for Center-Based Care for Preschoolers (i.e. aged 36 through 54 months)	Numeric	N/A
_75CPreschool_flag	Imputations made for 75th percentile Price of Center-Based Care for Preschool-36 months through 54 months	Description of all imputations that are made for 75th percentile Center-based care for Preschool: 36 months through 54 months	Numeric	N/A
MFCCInfant	Median Price of Family Child Care – Infant	Aggregated weekly, full-time median price charged for family child care for infants (i.e. aged 0 through 23 months)	Numeric	N/A
MFCCInfant_flag	Imputations made for Family Child Care for Infants: Birth through 23 months	Whether this aggregated group's childcare price (1) matched all the pricing values listed in its age range, (2) was the most common pricing value (i.e. mode) included in its age range, or (3) was the highest most frequent pricing value in its age range if there were multiple modes.	Numeric	N/A
MFCCToddler	Median Price of Family Child Care – Toddler	Aggregated weekly, full-time median price charged for family child care for toddlers (i.e. aged 24 through 35 months)	Numeric	N/A
MFCCToddler_flag	Imputations made for Median Price of Family Child Care for Toddlers -24 months through 35 months	Whether this aggregated group's childcare price (1) matched all the pricing values listed in its age range, (2) was the most common pricing value (i.e. mode) included in its age range, or (3) was the highest most frequent pricing value in its age range if there were multiple modes.	Numeric	N/A
MFCCPreschool	Median Price of Family Child Care – Preschool	Aggregated weekly, full-time median price charged for family child care for preschoolers (i.e. aged 36 through 54 months)	Numeric	N/A
MFCCPreschool_flag	Imputations made for Median Price of Family Child Care for Preschool -36 months through 54 months	Whether this aggregated group's childcare price (1) matched all the pricing values listed in its age range, (2) was the most common pricing value (i.e. mode) included in its age range, or (3) was the highest most frequent pricing value in its age range if there were multiple modes.	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
_75FCCInfant	Aggregated 75th Percentile Price of Family Child Care for Infants - 0 months through 23 months	Aggregated 75th percentile price charged for Family Childcare for infants (i.e. aged 0 through 23 months)	Numeric	N/A
_75FCCInfant_flag	Imputations made for Aggregated 75th Percentile Price of Family Child Care for Infants - 0 months through 23 months	Description of all imputations that are made of 75th percentile price charged for Family Child Care for infants (i.e. aged 0 through 23 months)	Numeric	N/A
_75FCCToddler	Aggregated 75 Percentile Price of Family Child Care for Toddlers -24 months through 35 months	Aggregated 75th percentile price charged for Family Childcare for toddlers (i.e. aged 24 through 35 months)	Numeric	N/A
_75FCCToddler_flag	Imputations made for Aggregated 75 Percentile Price of Family Child Care for Toddlers -24 months through 35 months	Description of all imputations that are made for 75th percentile price charged for Family Child Care for Toddlers (i.e. aged 24 through 35 months)	Numeric	N/A
_75FCCPreschool	Aggregated 75 Percentile Price of Family Child Care for Preschool -36 months through 54 months	Aggregated 75th percentile price charged for Family Childcare for preschoolers (i.e. aged 36 through 54 months)	Numeric	N/A
_75FCCPreschool_flag	Imputations made for Aggregated 75th Percentile Price of Family Child Care for Preschool -36 months through 54 months	Description of all imputations that are made for 75th percentile price charged for Family Child Care for Preschool (i.e. aged 36 through 54 months)	Numeric	N/A
EMR_16	Employment Rate (16+)	Employment rate of the population aged 16 years old or older	Numeric	S2301
FEMR_16	Female Employment Rate (16+)	Employment rate of the female population aged 16 years old or older	Numeric	DP03
MEMR_16	Male Employment Rate (16+)	Employment rate of the male population aged 16 years old or older	Numeric	DP03
EMR_20to64	Employment Rate (20-64)	Employment rate of the population aged 20 to 64 years old	Numeric	S2301
FEMR_20to64	Female Employment Rate (20-64)	Employment rate of the female population aged 20 to 64 years old	Numeric	S2301
MEMR_20to64	Male Employment Rate (20-64)	Employment rate of the male population aged 20 to 64 years old	Numeric	S2301
UNR_16	Unemployment Rate (16+)	Unemployment rate of the population aged 16 years old or older	Numeric	S2301
FUNR_16	Female Unemployment Rate (16+)	Unemployment rate of the female population aged 16 years old or older	Numeric	DP03
MUNR_16	Male Unemployment Rate (16+)	Unemployment rate of the male population aged 16 years old or older	Numeric	DP03

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
UNR_20to64	Unemployment Rate (20-64)	Unemployment rate of the population aged 20 to 64 years old	Numeric	S2301
FUNR_20to64	Female Unemployment Rate (20-64)	Unemployment rate of the female population aged 20 to 64 years old	Numeric	S2301
MUNR_20to64	Male Unemployment Rate (20-64)	Unemployment rate of the male population aged 20 to 64 years old	Numeric	S2301
FLFPR_20to64	Female Labor Force Participation Rate (20-64)	Labor force participation rate of the female population aged 20 to 64 years old	Numeric	S2301
FLFPR_20to64_Under6	Female Labor Force Participation Rate (20-64) with Children Under 6 only	Labor force participation rate of the female population aged 20 to 64 years old who have children under 6 years old	Numeric	S2301
FLFPR_20to64_6to17	Female Labor Force Participation Rate (20-64) with Children 6-17 only	Labor force participation rate of the female population aged 20 to 64 years old who have children between 6 and 17 years old	Numeric	S2301
FLFPR_20to64_Under6_6to17	Female Labor Force Participation Rate (20-64) with Children Under 6 and 6-17	Labor force participation rate of the female population aged 20 to 64 years old who have children under 6 years old and between 6 and 17 years old	Numeric	S2301
MLFPR_20to64	Male Labor Force Participation Rate (20-64)	Labor force participation rate of the male population aged 20 to 64 years old	Numeric	S2301
PR_F	Poverty Rate (all families)	Poverty rate for families	Numeric	DP03
PR_P	Poverty Rate (all people)	Poverty rate for individuals	Numeric	DP03
MHI	Median Household Income	Median household income (i.e. 50th percentile)	Numeric	DP03
MFI	Median family income	Median family income (i.e. 50th percentile)	Numeric	DP03
ME	Median Earnings	Median earnings (i.e. 50th percentile)	Numeric	DP03
FME	Female Median Earnings	Median earnings for females (i.e. 50th percentile)	Numeric	S2001
MME	Male Median Earnings	Median earnings for males (i.e. 50th percentile)	Numeric	S2001
MHI_2022	Median Household Income - 2022 Adjusted	Median household income expressed in 2022 dollars	Numeric	N/A
MFI_2022	Median Family Income - 2022 Adjusted	Median family income expressed in 2022 dollars	Numeric	N/A
ME_2022	Median Earnings - 2022 Adjusted	Median earnings expressed in 2022 dollars	Numeric	N/A
FME_2022	Female Median Earnings - 2022 Adjusted	Median earnings for females expressed in 2022 dollars	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
MME_2022	Male Median Earnings - 2022 Adjusted	Median earnings for males expressed in 2022 dollars	Numeric	N/A
TOTALPOP	Total Population	Count of the total population	Numeric	DP05
ONERACE	One Race	Percent of population that identifies as being one race	Numeric	DP05
ONERACE_W	One Race: White Alone	Percent of population that identifies as being one race and being only White or Caucasian	Numeric	DP05
ONERACE_B	One Race: Black or African American Alone	Percent of population that identifies as being one race and being only Black or African American	Numeric	DP05
ONERACE_I	One Race: American Indian and Alaska Native Alone	Percent of population that identifies as being one race and being only American Indian or Alaska Native	Numeric	DP05
ONERACE_A	One Race: Asian Alone	Percent of population that identifies as being one race and being only Asian	Numeric	DP05
ONERACE_H	One Race: Native Hawaiian or Pacific Islander Alone	Percent of population that identifies as being one race and being only Native Hawaiian or Pacific Islander	Numeric	DP05
ONERACE_OTHER	One Race: Some Other Race Alone	Percent of population that identifies as being one race and being a different race not previously mentioned	Numeric	DP05
TWORACES	Two or More Races	Percent of population that identifies as being two or more races	Numeric	DP05
HISPANIC	Hispanic or Latino of Any Race	Percent of population that identifies as being Hispanic or Latino regardless of race	Numeric	DP05
HOUSEHOLDS	Number of Households	Number of Households	Numeric	DP02
H_UNDER6_BOTHWORK	Households with Children Under 6 with Two Working Parents	Number of households with children under 6 years old with two working parents	Numeric	B23008
H_UNDER6_FWORK	Households with Children Under 6 with Only Father Working	Number of households with children under 6 years old with only the father working	Numeric	B23008
H_UNDER6_MWORK	Households with Children Under 6 With Only Mother Working	Number of households with children under 6 years old with only the mother working	Numeric	B23008
H_UNDER6_SINGLEM	Households with Children Under 6 with Single Mother	Number of households with children under 6 years old with a single mother	Numeric	B23008
H_6to17_BOTHWORK	Households with Children 6-17 with Two Working Parents	Number of households with children between 6 and 17 years old with two working parents	Numeric	B23008

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
H_6to17_FWORK	Households with Children 6-17 with Only Father Working	Number of households with children between 6 and 17 years old with only the father working	Numeric	B23008
H_6to17_MWORK	Households with Children 6-17 with Only Mother Working	Number of households with children between 6 and 17 years old with only the mother working	Numeric	B23008
H_6to17_SINGLEM	Households with Children 6-17 with Single Mother	Number of households with children between 6 and 17 years old with a single mother	Numeric	B23008
EMP_M	Civilian Employed Pop. (16+) Management, business, science, and arts occupations	Percent of civilians employed in management, business, science, and arts occupations aged 16 years old or older	Numeric	S2401
MEMP_M	Male Civilian Employed Pop. (16+) Management, business, science, and arts occupations	Percent of male civilians employed in management, business, science, and arts occupations aged 16 years old or older	Numeric	S2401
FEMP_M	Female Civilian Employed Pop. (16+) Management, business, science, and arts occupations	Percent of female civilians employed in management, business, science, and arts occupations aged 16 years old or older	Numeric	S2401
EMP_SERVICE	Civilian Employed Pop. (16+) Service occupations	Percent of civilians employed in service occupations aged 16 years old and older	Numeric	S2401
MEMP_SERVICE	Male Civilian Employed Pop. (16+) Service occupations	Percent of male civilians employed in service occupations aged 16 years old and older	Numeric	S2401
FEMP_SERVICE	Female Civilian Employed Pop. (16+) Service occupations	Percent of female civilians employed in service occupations aged 16 years old and older	Numeric	S2401
EMP_SALES	Civilian Employed Pop. (16+) Sales and office occupation	Percent of civilians employed in sales and office occupations aged 16 years old and older	Numeric	S2401
MEMP_SALES	Male Civilian Employed Pop. (16+) Sales and office occupation	Percent of male civilians employed in sales and office occupations aged 16 years old and older	Numeric	S2401
FEMP_SALES	Female Civilian Employed Pop. (16+) Sales and office occupation	Percent of female civilians employed in sales and office occupations aged 16 years old and older	Numeric	S2401
EMP_N	Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations	Percent of civilians employed in natural resources, construction, and maintenance occupations aged 16 years old and older	Numeric	S2401
MEMP_N	Male Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations	Percent of male civilians employed in natural resources, construction, and maintenance occupations aged 16 years old and older	Numeric	S2401

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
FEMP_N	Female Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations	Percent of female civilians employed in natural resources, construction, and maintenance occupations aged 16 years old and older	Numeric	S2401
EMP_P	Civilian Employed Pop. (16+) Production, transportation, and material moving occupations	Percent of civilians employed in production, transportation, and material moving occupations aged 16 years old and older	Numeric	S2401
MEMP_P	Male Civilian Employed Pop. (16+) Production, transportation, and material moving occupations	Percent of male civilians employed in production, transportation, and material moving occupations aged 16 years old and older	Numeric	S2401
FEMP_P	Female Civilian Employed Pop. (16+) Production, transportation, and material moving occupations	Percent of female civilians employed in production, transportation, and material moving occupations aged 16 years old and older	Numeric	S2401
STATE_FIPS	State FIPS Code	Two-digit number that uniquely identifies a state.	Numeric	NA
EMR_16_STATE	State Level Employment Rate (16+)	Employment rate of the population aged 16 years old or older at the state level	Numeric	S2301
FEMR_16_STATE	State Level Female Employment Rate (16+)	Employment rate of the female population aged 16 years old or older at the state level	Numeric	DP03
MEMR_16_STATE	State Level Male Employment Rate (16+)	Employment rate of the male population aged 16 years old or older at the state level	Numeric	DP03
EMR_20to64_STATE	State Level Employment Rate (20-64)	Employment rate of the population aged 20 to 64 years old at the state level	Numeric	S2301
FEMR_20to64_STATE	State Level Female Employment Rate (20-64)	Employment rate of the female population aged 20 to 64 years old at the state level	Numeric	S2301
MEMR_20to64_STATE	State Level Male Employment Rate (20-64)	Employment rate of the male population aged 20 to 64 years old at the state level	Numeric	S2301
UNR_16_STATE	State Level Unemployment Rate (16+)	Unemployment rate of the population aged 16 years old or older at the state level	Numeric	S2301
FUNR_16_STATE	State Level Female Unemployment Rate (16+)	Unemployment rate of the female population aged 16 years old or older at the state level	Numeric	DP03
MUNR_16_STATE	State Level Male Unemployment Rate (16+)	Unemployment rate of the male population aged 16 years old or older at the state level	Numeric	DP03

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
UNR_20to64_STATE	State Level Unemployment Rate (20-64)	Unemployment rate of the population aged 20 to 64 years old at the state level	Numeric	S2301
FUNR_20to64_STATE	State Level Female Unemployment Rate (20-64)	Unemployment rate of the female population aged 20 to 64 years old at the state level	Numeric	S2301
MUNR_20to64_STATE	State Level Male Unemployment Rate (20-64)	Unemployment rate of the male population aged 20 to 64 years old at the state level	Numeric	S2301
FLFPR_20to64_STATE	State Level Female Labor Force Participation Rate (20-64)	Labor force participation rate of the female population aged 20 to 64 years old at the state level	Numeric	S2301
FLFPR_20to64_Under6_STATE	State Level Female Labor Force Participation Rate (20-64) with Children Under 6 only	Labor force participation rate of the female population aged 20 to 64 years old who have children under 6 years old at the state level	Numeric	S2301
FLFPR_20to64_6to17_STATE	State Level Female Labor Force Participation Rate (20-64) with Children 6-17 only	Labor force participation rate of the female population aged 20 to 64 years old who have children between 6 and 17 years old at the state level	Numeric	S2301
FLFPR_20to64_Under6_6to17_STATE	State Level Female Labor Force Participation Rate (20-64) with Children Under 6 and 6-17	Labor force participation rate of the female population aged 20 to 64 years old who have children under 6 years old and between 6 and 17 years old at the state level	Numeric	S2301
MLFPR_20to64_STATE	State Level Male Labor Force Participation Rate (20-64)	Labor force participation rate of the male population aged 20 to 64 years old at the state level	Numeric	S2301
PR_F_STATE	State Level Poverty Rate (all families)	Poverty rate for families at the state level	Numeric	DP03
PR_P_STATE	State Level Poverty Rate (all people)	Poverty rate for individuals at the state level	Numeric	DP03
MHI_STATE	State Level Median Household Income	State level median household income (i.e. 50th percentile)	Numeric	DP03
MFI_STATE	State Level Median family income	State level median family income (i.e. 50th percentile)	Numeric	DP03
MFI_2022_STATE	State Level Median Family Income - 2022 Adjusted	Family income expressed in 2022 dollars at the state level	Numeric	NA
ME_STATE	State Level Median Earnings	State level median earnings (i.e. 50th percentile)	Numeric	S2001
FME_STATE	State Level Female Median Earnings	State level female median earnings (i.e. 50th percentile)	Numeric	S2001
MME_STATE	State Level Male Median Earnings	State level male median earnings (i.e. 50th percentile)	Numeric	S2001

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
MHI_2022_STATE	State Level Median Household Income - 2022 Adjusted	Median household income expressed in 2022 dollars at the state level	Numeric	N/A
ME_2022_STATE	State Level Median Earnings - 2022 Adjusted	Median earnings expressed in 2022 dollars at the state level	Numeric	N/A
FME_2022_STATE	State Level Female Median Earnings - 2022 Adjusted	Median earnings for females expressed in 2022 dollars at the state level	Numeric	N/A
MME_2022_STATE	State Level Male Median Earnings - 2022 Adjusted	Median earnings for males expressed in 2022 dollars at the state level	Numeric	N/A
TOTALPOP_STATE	State Level Total Population	Count of the total population at the state level	Numeric	DP05
ONERACE_STATE	State Level One Race	Percent of population that identifies as being one race at the state level	Numeric	DP05
ONERACE_W_STATE	State Level One Race: White Alone	Percent of population that identifies as being one race and being only White or Caucasian at the state level	Numeric	DP05
ONERACE_B_STATE	State Level One Race: Black or African American Alone	Percent of population that identifies as being one race and being only Black or African American at the state level	Numeric	DP05
ONERACE_I_STATE	State Level One Race: American Indian and Alaska Native Alone	Percent of population that identifies as being one race and being only American Indian or Alaska Native at the state level	Numeric	DP05
ONERACE_A_STATE	State Level One Race: Asian Alone	Percent of population that identifies as being one race and being only Asian at the state level	Numeric	DP05
ONERACE_H_STATE	State Level One Race: Native Hawaiian or Pacific Islander Alone	Percent of population that identifies as being one race and being only Native Hawaiian or Pacific Islander at the state level	Numeric	DP05
ONERACE_OTHER_STATE	State Level One Race: Some Other Race Alone	Percent of population that identifies as being one race and being a different race not previously mentioned at the state level	Numeric	DP05
TWORACES_STATE	State Level Two or More Races	Percent of population that identifies as being two or more races at the state level	Numeric	DP05
HISPANIC_STATE	State Level Hispanic or Latino of Any Race	Percent of population that identifies as being Hispanic or Latino regardless of race at the state level	Numeric	DP05
HOUSEHOLDS_STATE	State Level Number of Households	Number of Households at the state level	Numeric	DP02

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
H_UNDER6_BOTHWORK_STATE	State Level Households with Children Under 6 with Two Working Parents	Number of households with children under 6 years old with two working parents at the state level	Numeric	B23008
H_UNDER6_FWORK_STATE	State Level Households with Children Under 6 with Only Father Working	Number of households with children under 6 years old with only the father working at the state level	Numeric	B23008
H_UNDER6_MWORK_STATE	State Level Households with Children Under 6 With Only Mother Working	Number of households with children under 6 years old with only the mother working at the state level	Numeric	B23008
H_UNDER6_SINGLEM_STATE	State Level Households with Children Under 6 with Single Mother	Number of households with children under 6 years old with a single mother at the state level	Numeric	B23008
H_6to17_BOTHWORK_STATE	State Level Households with Children 6-17 with Two Working Parents	Number of households with children between 6 and 17 years old with two working parents at the state level	Numeric	B23008
H_6to17_FWORK_STATE	State Level Households with Children 6-17 with Only Father Working	Number of households with children between 6 and 17 years old with only the father working at the state level	Numeric	B23008
H_6to17_MWORK_STATE	State Level Households with Children 6-17 with Only Mother Working	Number of households with children between 6 and 17 years old with only the mother working at the state level	Numeric	B23008
H_6to17_SINGLEM_STATE	State Level Households with Children 6-17 with Single Mother	Number of households with children between 6 and 17 years old with a single mother at the state level	Numeric	B23008
EMP_M_STATE	State Level Civilian Employed Pop. (16+) Management, business, science, and arts occupations	Percent of civilians employed in management, business, science, and arts occupations aged 16 years old or older at the state level	Numeric	S2401
MEMP_M_STATE	State Level Male Civilian Employed Pop. (16+) Management, business, science, and arts occupations	Percent of male civilians employed in management, business, science, and arts occupations aged 16 years old or older at the state level	Numeric	S2401
FEMP_M_STATE	State Level Female Civilian Employed Pop. (16+) Management, business, science, and arts occupations	Percent of female civilians employed in management, business, science, and arts occupations aged 16 years old or older at the state level	Numeric	S2401
EMP_SERVICE_STATE	State Level Civilian Employed Pop. (16+) Service occupations	Percent of civilians employed in service occupations aged 16 years old and older at the state level	Numeric	S2401
MEMP_SERVICE_STATE	State Level Male Civilian Employed Pop. (16+) Service occupations	Percent of male civilians employed in service occupations aged 16 years old and older at the state level	Numeric	S2401
FEMP_SERVICE_STATE	State Level Female Civilian Employed Pop. (16+) Service occupations	Percent of female civilians employed in service occupations aged 16 years old and older at the state level	Numeric	S2401

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
EMP_SALES_STATE	State Level Civilian Employed Pop. (16+) Sales and office occupation	Percent of civilians employed in sales and office occupations aged 16 years old and older at the state level	Numeric	S2401
MEMP_SALES_STATE	State Level Male Civilian Employed Pop. (16+) Sales and office occupation	Percent of male civilians employed in sales and office occupations aged 16 years old and older at the state level	Numeric	S2401
FEMP_SALES_STATE	State Level Female Civilian Employed Pop. (16+) Sales and office occupation	Percent of female civilians employed in sales and office occupations aged 16 years old and older at the state level	Numeric	S2401
EMP_N_STATE	State Level Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations	Percent of civilians employed in natural resources, construction, and maintenance occupations aged 16 years old and older at the state level	Numeric	S2401
MEMP_N_STATE	State Level Male Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations	Percent of male civilians employed in natural resources, construction, and maintenance occupations aged 16 years old and older at the state level	Numeric	S2401
FEMP_N_STATE	State Level Female Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations	Percent of female civilians employed in natural resources, construction, and maintenance occupations aged 16 years old and older at the state level	Numeric	S2401
EMP_P_STATE	State Level Civilian Employed Pop. (16+) Production, transportation, and material moving occupations	Percent of civilians employed in production, transportation, and material moving occupations aged 16 years old and older at the state level	Numeric	S2401
MEMP_P_STATE	State Level Male Civilian Employed Pop. (16+) Production, transportation, and material moving occupations	Percent of male civilians employed in production, transportation, and material moving occupations aged 16 years old and older at the state level	Numeric	S2401
FEMP_P_STATE	State Level Female Civilian Employed Pop. (16+) Production, transportation, and material moving occupations	Percent of female civilians employed in production, transportation, and material moving occupations aged 16 years old and older at the state level	Numeric	S2401
iEMR_16_STATE	Imputation for State Level Employment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
iFEMR_16_STATE	Imputation for State Level Female Employment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMEMR_16_STATE	Imputation for State Level Male Employment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iEMR_20to64_STATE	Imputation for State Level Employment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFEMR_20to64_STATE	Imputation for State Level Female Employment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMEMR_20to64_STATE	Imputation for State Level Male Employment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iUNR_16_STATE	Imputation for State Level Unemployment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFUNR_16_STATE	Imputation for State Level Female Unemployment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMUNR_16_STATE	Imputation for State Level Male Unemployment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iUNR_20to64_STATE	Imputation for State Level Unemployment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFUNR_20to64_STATE	Imputation for State Level Female Unemployment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMUNR_20to64_STATE	Imputation for State Level Male Unemployment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFLFPR_20to64_STATE	Imputation for State Level Female Labor Force Participation Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFLFPR_20to64_Under6_STATE	Imputation for State Level Female Labor Force Participation Rate (20-64) with Children Under 6 only	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFLFPR_20to64_6to17_STATE	Imputation for State Level Female Labor Force Participation Rate (20-64) with Children 6-17 only	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
iFLFPR_20to64_Under6_6to17_STATE	Imputation for State Level Female Labor Force Participation Rate (20-64) with Children Under 6 and 6-17	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMLFPR_20to64_STATE	Imputation for State Level Male Labor Force Participation Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iPR_F_STATE	Imputation for State Level Poverty Rate (all families)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iPR_P_STATE	Imputation for State Level Poverty Rate (all people)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMHI_STATE	Imputation for State Level Median Household Income	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMFI_STATE	Imputation for State Level Median family income	Whether this demographic or labor market variable was imputed (1) or not imputed (0).		N/A
iME_STATE	Imputation for State Level Male Median Earnings	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFME_STATE	Imputation for State Level Female Median Earnings	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMME_STATE	Imputation for State Level Male Median Earnings	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMHI_2022_STATE	Imputation for State Level Median Household Income - 2022 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMFI_2022_STATE	Imputation for State Level Median Family Income - 2022 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iME_2022_STATE	Imputation for State Level Median Earnings - 2022 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFME_2022_STATE	Imputation for State Level Female Median Earnings - 2022 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMME_2022_STATE	Imputation for State Level Male Median Earnings - 2022 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
iTOTALPOP_STATE	Imputation for State Level Total Population	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iONERACE_STATE	Imputation for State Level One Race	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iONERACE_W_STATE	Imputation for State Level One Race: White Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iONERACE_B_STATE	Imputation for State Level One Race: Black or African American Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iONERACE_I_STATE	Imputation for State Level One Race: American Indian and Alaska Native Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iONERACE_A_STATE	Imputation for State Level One Race: Asian Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iONERACE_H_STATE	Imputation for State Level One Race: Native Hawaiian or Pacific Islander Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iONERACE_OTHER_STATE	Imputation for State Level One Race: Some Other Race Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iTWORACES_STATE	Imputation for State Level Two or More Races	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iHISPANIC_STATE	Imputation for State Level Hispanic or Latino of Any Race	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iHOUSEHOLDS_STATE	Imputation for State Level Number of Households	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_UNDER6_BOTHWORK_STATE	Imputation for State Level Households with Children Under 6 with Two Working Parents	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_UNDER6_FWORK_STATE	Imputation for State Level Households with Children Under 6 with Only Father Working	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_UNDER6_MWORK_STATE	Imputation for State Level Households with Children Under 6 With Only Mother Working	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
iH_UNDER6_SINGLEM_STATE	Imputation for State Level Households with Children Under 6 with Single Mother	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_6to17_BOTHWORK_STATE	Imputation for State Level Households with Children 6-17 with Two Working Parents	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_6to17_FWORK_STATE	Imputation for State Level Households with Children 6-17 with Only Father Working	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_6to17_MWORK_STATE	Imputation for State Level Households with Children 6-17 with Only Mother Working	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_6to17_SINGLEM_STATE	Imputation for State Level Households with Children 6-17 with Single Mother	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
EMP_M_STATE	Imputation for State Level Civilian Employed Pop. (16+) Management, business, science, and arts occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMEMP_M_STATE	Imputation for State Level Male Civilian Employed Pop. (16+) Management, business, science, and arts occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFEMP_M_STATE	Imputation for State Level Female Civilian Employed Pop. (16+) Management, business, science, and arts occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iEMP_SERVICE_STATE	Imputation for State Level Civilian Employed Pop. (16+) Service occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMEMP_SERVICE_STATE	Imputation for State Level Male Civilian Employed Pop. (16+) Service occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFEMP_SERVICE_STATE	Imputation for State Level Female Civilian Employed Pop. (16+) Service occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iEMP_SALES_STATE	Imputation for State Level Civilian Employed Pop. (16+) Sales and office occupation	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
iMEMP_SALES_STATE	Imputation for State Level Male Civilian Employed Pop. (16+) Sales and office occupation	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFEMP_SALES_STATE	Imputation for State Level Female Civilian Employed Pop. (16+) Sales and office occupation	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iEMP_N_STATE	Imputation for State Level Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMEMP_N_STATE	Imputation for State Level Male Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFEMP_N_STATE	Imputation for State Level Female Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iEMP_P_STATE	Imputation for State Level Civilian Employed Pop. (16+) Production, transportation, and material moving occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMEMP_P_STATE	Imputation for State Level Male Civilian Employed Pop. (16+) Production, transportation, and material moving occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFEMP_P_STATE	Imputation for State Level Female Civilian Employed Pop. (16+) Production, transportation, and material moving occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iEMR_16	Imputation for Employment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFEMR_16	Imputation for Female Employment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
iMEMR_16	Imputation for Male Employment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iEMR_20to64	Imputation for Employment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFEMR_20to64	Imputation for Female Employment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMEMR_20to64	Imputation for Male Employment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iUNR_16	Imputation for Unemployment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFUNR_16	Imputation for Female Unemployment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMUNR_16	Imputation for Male Unemployment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iURN_20to64	Imputation for Unemployment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFUNR_20to64	Imputation for Female Unemployment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMUNR_20to64	Imputation for Male Unemployment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFLFPR_20to64	Imputation for Female Labor Force Participation Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFLFPR_20to64_UNDER6	Imputation for Female Labor Force Participation Rate (20-64) with Children Under 6 only	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFLFPR_20to64_6to17	Imputation for Female Labor Force Participation Rate (20-64) with Children 6-17 only	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFLFPR_20to64_UNDER6_6to17	Imputation for Female Labor Force Participation Rate (20-64) with Children Under 6 and 6-17	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
iMLFPR_20to64	Imputation for Male Labor Force Participation Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iPR_F	Imputation for Poverty Rate (all families)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iPR_P	Imputation for Poverty Rate (all people)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMHI	Imputation for Median Household Income	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMFI	Imputation for Median Family Income	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iME	Imputation for Median Earnings	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFME	Imputation for Female Median Earnings	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMME	Imputation for Male Median Earnings	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMHI_2022	Imputation for Median Household Income - 2022 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMFI_2022	Imputation for Median Family Income - 2022 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iME_2022	Imputation for Median Earnings - 2022 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFME_2022	Imputation for Female Median Earnings - 2022 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMME_2022	Imputation for Male Median Earnings - 2022 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iTOTALPOP	Imputation for Total Population	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iONERACE	Imputation for One Race	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
iONERACE_W	Imputation for One Race: White Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iONERACE_B	Imputation for One Race: Black or African American Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iONERACE_I	Imputation for One Race: American Indian and Alaska Native Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iONERACE_A	Imputation for One Race: Asian Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iONERACE_H	Imputation for One Race: Native Hawaiian or Pacific Islander Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iONERACE_OTHER	Imputation for One Race: Some Other Race Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iTWORACES	Imputation for Two or More Races	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iHISPANIC	Imputation for Hispanic or Latino of Any Race	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iHOUSEHOLDS	Imputation for Number of Households	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_UNDER6_BOTHWORK	Imputation for Households with Children Under 6 with Two Working Parents	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_UNDER6_FWORK	Imputation for Households with Children Under 6 with Only Father Working	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_UNDER6_MWORK	Imputation for Households with Children Under 6 With Only Mother Working	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_UNDER6_SINGLEM	Imputation for Households with Children Under 6 with Single Mother	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_6to17_BOTHWORK	Imputation for Households with Children 6-17 with Two Working Parents	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
iH_6to17_FWORK	Imputation for Households with Children 6-17 with Only Father Working	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_6to17_MWORK	Imputation for Households with Children 6-17 with Only Mother Working	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iH_6to17_SINGLEM	Imputation for Households with Children 6-17 with Single Mother	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iEMP_M	Imputation for Civilian Employed Pop. (16+) Management, business, science, and arts occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMEMP_M	Imputation for Male Civilian Employed Pop. (16+) Management, business, science, and arts occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFEMP_M	Imputation for Female Civilian Employed Pop. (16+) Management, business, science, and arts occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iEMP_SERVICE	Imputation for Civilian Employed Pop. (16+) Service occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMEMP_SERVICE	Imputation for Male Civilian Employed Pop. (16+) Service occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFEMP_SERVICE	Imputation for Female Civilian Employed Pop. (16+) Service occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iEMP_SALES	Imputation for Civilian Employed Pop. (16+) Sales and office occupation	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMEMP_SALES	Imputation for Male Civilian Employed Pop. (16+) Sales and office occupation	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFEMP_SALES	Imputation for Female Civilian Employed Pop. (16+) Sales and office occupation	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iEMP_N	Imputation for Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A

Variable Name	Variable Label	Variable Description	Variable Format	ACS Report Table ID
iMEMP_N	Imputation for Male Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFEMP_N	Imputation for Female Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iEMP_P	Imputation for Civilian Employed Pop. (16+) Production, transportation, and material moving occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iMEMP_P	Imputation for Male Civilian Employed Pop. (16+) Production, transportation, and material moving occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A
iFEMP_P	Imputation for Female Civilian Employed Pop. (16+) Production, transportation, and material moving occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	Numeric	N/A

Appendix D: Methods Used for Specific Demographic Variables - County

Variable(s)	Years Impacted	Methodology Description
Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only	2008	1. Navigated to the Bureau of Labor Statistics (BLS) website via the following link: https://www.bls.gov/lau/rdscnp16.htm. 2. Downloaded the ZIP *Employment status of the civilian noninstitutional population, annual averages* data file that gives the employment, unemployment, and civilian labor force participation rates for each U.S. state from 1976 to 2017. 3. For the years 2008 to 2017, calculated the YoY (year-over-year) percentage change from the latter to the former year for the *Civilian Labor Force Participation Rate* (CLFP) (e.g., calculated the percentage change between the 2009 and 2008 CLFP rates (%) to calculate the change experienced in that metric from 2009 to 2008). 4. For all counties that had missing 2008 data, used the respective YoY state-level percentage changes calculated from the BLS data to impute the three variables listed to the left of this section. 5. For example, to impute the ***Female Labor Force Participation Rate (20-64) with Children Under 6 only* (FLFPR6)** for Alabama (AL) counties that have this missing metric in 2008, the following formulas are used where the YoY state-level percentage change (%Δ) is calculated first which uses BLS-provided data: $$\%\Delta_{2009-2008} = \frac{(CLFP_{AL_{2008}} - CLFP_{AL_{2009}})}{CLFP_{AL_{2009}}}$$ $$\text{FLFPR6}_{\text{AL}_{2008}} = FLFPR6_{AL_{2009}} + (FLFPR6_{AL_{2009}} \times \%\Delta_{2009-2008})$$ 6. This methodology is replicated for each county where any of the three female labor force participation rates (with children age segmentations) are missing for 2008.
Female Labor Force Participation (LFP) Rate (20-64) with Children 6-17	2008-2014	1. Prior to 2015 the Census did not collect data on these variables. The above methodology was used for all counties prior to 2015. 2. Note that BLS did not have data for Puerto Rico., the Female Labor Force Participation rate (20-64) from the county was used instead of civilian labor force participation from the BLS data.

Variable(s)	Years Impacted	Methodology Description
only; Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6-17		
Unemployment Rate (16+)	2008	1. To impute this metric for counties where it was missing for 2008, first calculated the average ***Unemployment Rate (16+)*** metric per state based on Census-provided data from all available counties for each state for both 2009 and 2008. 2. Then calculated the percent difference between a state's 2009 avg. ***Unemployment Rate (16+)*** variable (UR_{2009}) and its 2008 avg. ***Unemployment Rate (16+)*** variable (UR_{2008}) in which the formula is: $$PercentDifference_{2009-2008} = \frac{UR_{2009} - UR_{2008}}{UR_{2009}}$$ Again, this calculation was carried out individually for each state. The resulting metric is based on the available Census-provided data for each state's counties for both years. 3. For a state's county where this data point was missing, subtracted the percent difference (%) between these years' for that state from 1 and then the difference is multiplied by the missing county's ***Unemployment Rate (16+)*** **(UR(16+))** for 2009 (i.e., the formula to impute the 2008 data point is shown below). $$UR(16+)_{2008} = UR(16+)_{2009} \times (1 - PercentDifference_{2009-2008})$$
Female Unemployment Rate (16+); Male Unemployment Rate (16+);	2008	Follows the same instructions as above except the variable ***Unemployment Rate (16+)*** is replaced by any of the percentage-based metrics listed to the left of this section for the imputation methodology.

Variable(s)	Years Impacted	Methodology Description
Unemployment Rate (20-64); Female Unemployment Rate (20-64); Male Unemployment Rate (20-64); Female Labor Force Participation (LFP) Rate (20-64); Male Labor Force Participation (LFP) Rate (20-64); Employment Rate (16+); Female Employment Rate (16+); Male Employment Rate (16+)		
Median Household Income	2008	1. Referencing the Census-provided 2009 and 2000 ***Median Household Income*** data variables, calculated the difference between them for each U.S. County that had this metric missing for 2008. 2. Assuming the ***Median Household Income*** experienced a constant annual rate of change (positive or negative) from 2000 to 2009 (a span of ten years), divided the difference of these two data variables by 9 to determine the change constant (or "C") per year for each county. "C" represents an equal increment of the difference between the 2009 and 2000 data variables (i.e. 1/9th).

Variable(s)	Years Impacted	Methodology Description
		3. The formula used to calculate "C" is below (using ***Median Household Income (MHI)*** as the example): $$C = \frac{(MHI_{2009} - MHI_{2000})}{9}$$ 4. To impute 2008 data that was missing for counties, "C" is then multiplied by 8 and then added to the respective 2000 ***Median Household Income (MHI)***. For example, for the year 2008, the formula for a county who was missing the ***Median Household Income (MHI)*** data variable for that year would be: $$MHI_{2008} = MHI_{2000} + (8C)$$ Notes: 1) From 2000 to 2009, the difference between these household incomes (i.e. number-based variables) for each county from year to year were minimal because they are population-based variables. Thus, it was assumed a constant rate of change was experienced (whether increasing or decreasing) for simplicity.
Medium Family Income; Median Earnings; Female Median Earnings; Male Median Earnings; Total Population; Number of Households; Households with Children Under 6 with Two Working Parents; Households	2008	Follows the same instructions as above except the variable ***Median Household Income*** is replaced by any of the number-based or percentage-based metrics listed in this section to the left for the imputation methodology.

Variable(s)	Years Impacted	Methodology Description
with Children Under 6 with Only Father Working; Households with Children Under 6 with Only Mother Working; Households with Children Under 6 with Single Mother; Households with Children 6-17 with Two Working Parents; Households with Children 6-17 with Only Father Working; Households with Children 6-17 with Only Mother Working; Households with Children 6-17 with Single Mother; Poverty Rate (for all families);		

Variable(s)	Years Impacted	Methodology Description
Poverty Rate (for all people); One Race; One Race: White Alone (percent of total); One Race: Black or African American Alone (percent of total); One Race: American Indian and Alaska Native Alone (percent of total); One Race: Asian Alone (percent of total); One Race: Native Hawaiian and Other Pacific Islander Alone (percent of total); One Race: Some Other Race Alone (percent of total); Two or More Races; Hispanic or Latino (any race)		

Variable(s)	Years Impacted	Methodology Description
Male Employment Rate (16+)	2008 – 2022	1. Figures for male employment were not provided by table DP03. However, the female and total statistics were reported. Since the total population is equal to the sum of male and female populations for each category, the total female population was subtracted from the total population to determine the total male population. Then, the total female employed was subtracted from the total employed figure to determine the number of male employment. Male employment was divided by total male population, as seen in the formula below: $$MER\_16_{2008} = \frac{\left(Total_{Employed_{2008}} - Total\_Female\_Employed_{2008}\right)}{Total\_Population - Total\_Female_{2008}}$$
Female Unemployment Rate (16+)	2010-2022	1. Figures for female unemployment rate were not provided by table DP03. However, the female civilian labor force population and female employed population statistics were reported. The unemployed population is the difference between the civilian labor force population and the employed population. The female employed population was subtracted from the female civilian labor force population to determine the number of female unemployed population and divided by the female civilian labor force, as seen in the formula below: $$FUNR_{16} = \frac{(Female\_CLF - Female\_Employed)}{Female\_CLF}$$
Male Unemployment Rate (16+)	2010-2022	1. Figures for male civilian labor force, employment, and unemployment were not provided by table DP03. However, the female and total statistics were reported. Since the total population is equal to the sum of male and female populations for each category, the female figures was subtracted from the total figures to determine the figures for males. After the male figures were determined, the male employed population was subtracted from the male civilian labor force to determine the male unemployed figure. This was divided by the male civilian labor force, as seen in the formula below: $$MUNR_{16} = \frac{((Total\_CLF - Female\_CLF) - (Total\_Employed - Female\_Employed))}{(Total\_CLF - Female\_CLF)}$$

Variable(s)	Years Impacted	Methodology Description
Employment Rate (20-64); Female Employment Rate (20-64); Male Employment Rate (20-64)	2008 – 2009	1. For all the variables and years listed to the left, gathered the total population by age and total employed count by age for each U.S. County as provided by ACS. 2. Determined the total civilian employed, female civilian employed, and male civilian employed counts for the age ranges. 3. Determined the total population, female population, and male population counts for the age ranges. 4. For each county, divided the total employed count (which includes males and females) by the total population count for the entire county. 5. A similar process was carried out to estimate percentage-based metrics for the different sexes.
Unemployment Rate (20-64); Female Unemployment Rate (20-64); Male Unemployment Rate (20-64); Women's Labor Force Participation Rate (20-64 years old); Women's Labor Force Participation Rate with own children under 6 years only (20-64 years old); Men's Labor Force Participation	2008 – 2009	Follows the same instructions as above except the variable ***Employment Rate (20-64)*** is replaced by any of the percentage-based metrics listed to the left of this section for the imputation methodology.

Variable(s)	Years Impacted	Methodology Description
Rate (20-64 years old)		
Median Earnings; Female Median Earnings; Male Median Earnings	2015; 2017	1. For each U.S. County where these data points to the left of this section were missing (Daggett County, Utah for 2015; Lexington city, Virginia for 2015; Motley County, Texas for 2017), calculated the midpoint between the years on either side of the missing value. For example, if a 2015 metric was missing, the 2016 and 2014 data point equivalents (assuming median earnings increased from 2014 to 2015 and then from 2015 to 2016) are used to impute the missing data points in 2015. 2. The formula used is below (using ***Median Earnings (ME)*** as the example): $$ME_{2015} = \frac{(ME_{2016} + ME_{2014})}{2}$$
Civilian Employed Pop. (16+) Management, business, science, and arts occupations; Male Civilian Employed Pop. (16+) Management, business, science, and arts occupations; Female Civilian Employed Pop. (16+) Management, business, science, and arts occupations; Civilian Employed Pop. (16+) Service occupations; Male Civilian	2008 – 2022	1. For all the variables and years listed to the left, gathered the total employed count by occupational group (and by sex within each occupational group) for each U.S. county as provided by ACS. 2. Determined the total civilian employed, female civilian employed, and male civilian employed counts across all five occupational groups per U.S. county. 3. For each county, divided the total employed count (which includes males and females) for each of the five occupational groups, by the total employed count for the entire county to determine the percent distribution of a county's employed population across these five occupational groups. 4. For instance, if the total employed count for the ***Management, business, science, and arts occupations*** for a given county was 5,000 and the total employed count for the whole county was 10,000, the resulting percent metric that would be estimated for this county and occupation group is 50.0%. In other words, 50.0% of the county's total employed population is working in these occupations. If the total employed count for the ***Service occupations*** was 2,000 for this same county, the resulting metric would be 20.0%. In other words, 20.0% of the county's total employed population is working in these occupations. 5. The resulting five percentage-based metrics (one for each occupational group) for a given county and year would sum to 100%. 6. A similar process was carried out to estimate percentage-based metrics for the different sexes within each occupational group. Specifically, the sex specific total employed counts for each of the five occupational groups were each divided by the total employed count for the entire county for that particular sex to determine the percent distribution of a county's employed

Variable(s)	Years Impacted	Methodology Description
Employed Pop. (16+) Service occupations; Female Civilian Employed Pop. (16+) Service occupations; Civilian Employed Pop. (16+) Sales and office occupation; Male Civilian Employed Pop. (16+) Sales and office occupation; Female Civilian Employed Pop. (16+) Sales and office occupation; Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations; Male Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations;		population across both the five occupational groups and for a specific sex. 7. For instance, if the female employed count for the ***Management, business, science, and arts occupations*** for a given county was 1,000 and the total female employed count for the whole county was 4,000, the resulting percent metric that would be estimated for this county and occupation group is 25.0%. In other words, 25.0% of the employed females in this county work in these occupations. If the total employed count for the male ***Management, business, science, and arts occupations*** was 4,000 for this same county and the total male employed count for the whole county was 6,000, the resulting metric would be 66.7%. In other words, 66.7% of the employed males in this county work in these occupations. 8. The resulting total employed, female employed, and male employed percentage-based metrics (for each occupational group) for a given county would each sum to 100%, separately. 9. Since this process had to be completed for all counties and all years, all these variables were imputed. Note: For 2008 – 2014, ACS provided the male and female percentages for these occupation groups versus the actual count of the employed population. Thus, to determine the respective count of males and females employed in the various occupation groups by county, used the total employed count for the occupation group for the county and the respective percentage to determine the total employed count for males and females. If theses female and male metrics are then added together, they equal the total employed population for that occupation group for that county.

Variable(s)	Years Impacted	Methodology Description
Female Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations; Civilian Employed Pop. (16+) Production, transportation, and material moving occupations; Male Civilian Employed Pop. (16+) Production, transportation, and material moving occupations; Female Civilian Employed Pop. (16+) Production, transportation, and material moving occupations		
Same variables as those listed above.	2008	1. Prior to carrying out the approach described above, the following methodology was employed for only 2008. 2. Navigated to the Bureau of Labor Statistics (BLS) website via the following link: https://www.bls.gov/oes/tables.htm and downloaded the individual *Occupational Employment Statistics* (OES Estimates) spreadsheets for May 2000 through May 2009 that gives the total employed population count by occupation title, OCC code, and state for each of those years. 3. Cross-walked the OCC codes of the BLS data to their respective occupation group used in ACS data by leveraging the *2010 Census Occupation Codes with Crosswalk* spreadsheet found on

Variable(s)	Years Impacted	Methodology Description
		the BLS website: https://www.census.gov/topics/employment/industry-occupation/guidance/code-lists.html. 4. Based on this matching, determined the total employed population per ACS occupational group per year per state from 2000 – 2009. 5. For those years, calculated the YoY (year-over-year) percentage change from the latter to the former year for the *Total Employed Population* (TEP) (i.e. calculated the percentage change between the 2007 and 2008 TEP metrics to determine the change experienced in that population-based metric from 2007 to 2008). 6. For all counties that had this missing data for 2008, used the respective YoY state-level percentage changes calculated from the BLS data to impute the variables listed to the left of this section. 7. For example, to impute the ***Civilian Employed Pop. (16+) Management, business, science, and arts occupations* (M)** metric for Alabama (AL) counties that have this missing metric in 2008, the following formulas are used where the YoY state-level percentage change (%Δ) is calculated first which uses BLS-provided data: $$\%\Delta_{2007-2008} = \frac{(M_{AL_{2008}} - M_{AL_{2007}})}{M_{AL_{2007}}}$$ $$M_{\mathrm{AL}_{2008}} = M_{AL_{2007}} \times (1 + \%\Delta_{2007-2008})$$ 8. This methodology is replicated to populate this type of missing data from 2001 to 2008 even though 2008 is the only year included in this database. This is because the 2008 imputed value is derived from the 2007 imputed value which is derived from the 2006 imputed value, etc. Overall, this process is carried out for each county where any of the population-based metrics to the left are missing.
Median Household Income – 2022 Adjusted; Median Family Income – 2022 Adjusted; Median Earnings	2008 – 2021	1. Navigated to the Bureau of Labor Statistics (BLS) website via the following link: https://data.bls.gov/cgi-bin/cpicalc.pl which goes to the Consumer Price Index (CPI) Inflation Calculator. 2. To determine each year's monetary-based variables in terms of 2022 dollars, this tool determines the inflation multiple needed to impute all monetary-based variables into 2022 dollar amounts so cross-year comparisons can be conducted. From this webpage, both month drop-down options were set to "June" (i.e., mid-year) and the bottom year drop-down option was set to 2022. The top year drop-down option was set to each year whose monetary-

Variable(s)	Years Impacted	Methodology Description
– 2022 Adjusted; Female Median Earnings – 2022 Adjusted; Male Median Earnings – 2022 Adjusted		based variables needed to be adjusted to 2022 amounts (i.e., 2000 – 2021). 3. For each year, an inflation multiple was calculated by determining what buying power $1 had in a prior year in terms of 2022 dollars. For example, in June 2018, $1 had the buying power of $1.18 in 2022. 1.18 is the inflation multiple in this scenario. 4. For each of the monetary-based variables listed to the left of this section, their values (whether provided by ACS directly or imputed based on methodologies enumerated above) were multiplied by the inflation multiple for that given year. 5. For example, given the ***Median Household Income (MHI)*** for a specific Alabama county in 2018, the following formula would be used to calculate the ***Median Household Income – 2022 Adjusted (MHI_2022)*** variable where 1.18 is the inflation multiple to be used for all counties that have monetary-based variables in 2022 that need to be imputed: $$MHI_2022_{AL2018} = MHI_{AL2018} \times (1.18)$$ 6. These steps are replicated for all U.S. counties for all four of the monetary-based variables listed to the left for 2008 – 2021 using the respective inflation multiple for the year being imputed.

Methods for Specific Counties.

Counties	Years Impacted	Methodology Description
Petersburg Borough, Alaska & Wrangell City and Borough, Alaska (Scenario: later in 2008, Wrangell-Petersburg Census Area in Alaska split into Petersburg Borough and Wrangell City and Borough. Thus, from 2009-2016, both counties have data while in 2008, only Wrangell-Petersburg Census Area in Alaska exists. Thus for 2008, data was imputed for Wrangell-Petersburg Census Area based on available data	2008	*Percentage-based Metrics*: 1. Referenced 2009 data for both Petersburg Borough, Alaska and Wrangell City and Borough, Alaska. 2. For each of the following metrics listed below, calculated a 2009 weighted average between these two counties using their respective 2009 ***Total Population*** data variable: Unemployment Rate (16+); Female Unemployment Rate (16+); Male Unemployment Rate (16+); Unemployment Rate (20-64); Female Unemployment Rate (20-64); Male Unemployment Rate (20-64); Female Labor Force Participation (LFP) Rate (20-64); Male Labor Force Participation (LFP) Rate (20-64); Poverty Rate (for all families); Poverty Rate (for all people); One Race; One Race: White Alone (percent of total); One Race: Black or African American Alone (percent of total); One Race:

Counties	Years Impacted	Methodology Description
from these two separate counties from 2009).		American Indian and Alaska Native Alone (percent of total); One Race: Asian Alone (percent of total); One Race: Native Hawaiian and Other Pacific Islander Alone (percent of total); One Race: Some Other Race Alone (percent of total); Two or More Races; Hispanic or Latino (any race). 3. For example, the 2008 Wrangell-Petersburg Census Area ***Unemployment Rate (16+)*** imputed data metric was calculated by first multiplying the 2009 ***Unemployment Rate (16+)*** data point for Petersburg Borough, Alaska (UR_P) by the population weight of this county for 2009. The population weight for Petersburg Borough, Alaska is determined by dividing the 2009 ***Total Population*** data point for Petersburg Borough (TP_P) by the summation of the 2009 ***Total Population*** data point for both Petersburg Borough (TP_P) and Wrangell City and Borough (TP_W). 4. Then, then the 2009 ***Unemployment Rate (16+)*** data point for Wrangell City and Borough (UR_W) is multiplied by the population weight of this county for 2009. The population weight for Wrangell City and Borough is determined by dividing the 2009 ***Total Population*** data point for Wrangell City and Borough (TP_W) by the summation of the 2009 ***Total Population*** data point for both Petersburg Borough (TP_P) and the Wrangell City and Borough (TP_W). 5. These two products (one a weighted average component for Petersburg Borough and the other a weighted average component for Wrangell City and Borough) are then added together. 6. The summation of these products represents the imputed ***Unemployment Rate (16+)*** for Wrangell-Petersburg Census Area, Alaska (UR_{WP}) for 2009. The formula used for steps 3-5 is shown below: $$UR_{WP_{2009}} = \left(UR_P \times \left(\frac{TP_P}{TP_P + TP_W}\right)\right) + \left(UR_W \times \left(\frac{TP_W}{TP_P + TP_W}\right)\right)$$

Counties	Years Impacted	Methodology Description
		7. This same procedure is followed to calculate the 2009 weighted average metric for all the percentage-based missing data for Wrangell-Petersburg Census Area listed in step 2. Then depending on the specific metric in step 2 to be imputed, either **Imputation Method 1** or **Imputation Method 2** is followed. **Imputation Method 1:** 1. After the weighted average of all the percentage-based metrics for 2009 is determined, followed the general imputation methodology for ***Median Household Income*** for 2008 enumerated earlier in this document to impute the following percentage-based variables for this county: Poverty Rate (for all families); Poverty Rate (for all people); One Race; One Race: White Alone (percent of total); One Race: Black or African American Alone (percent of total); One Race: American Indian and Alaska Native Alone (percent of total); One Race: Asian Alone (percent of total); One Race: Native Hawaiian and Other Pacific Islander Alone (percent of total); One Race: Some Other Race Alone (percent of total); Two or More Races; Hispanic or Latino (any race). 2. At a high-level, the difference between the weighted average percentage-based metric for 2009 (calculated in the general method above) and the respective Census-provided metric for 2000 for Wrangell City and Borough is taken and then divided by 9 to calculate the constant "C". 3. The formula used to calculate "C" is below (using ***Poverty Rate (all families) (PRF)*** as the example and where PRF_{2009} is the 2009 weighted average for Wrangell-Petersburg Census Area and PRF_{2000} is the Census-provided metric for 2000): $$C = \frac{(PRF_{2009} - PRF_{2000})}{9}$$

Counties	Years Impacted	Methodology Description
		4. Where these metrics are missing for 2008, "C" is then multiplied by the integer associated with the year desired to be imputed and then added to the respective 2000 metric for Wrangell-Petersburg Census Area. For example, for 2008, the formula for this county that was missing the ***Poverty Rate (all families)*** data variable would be: $$PRF_{2008} = PRF_{2000} + (8C)$$ Notes: 1) From 2000 to 2009, the difference between these percentage-based numbers for Wrangell-Petersburg Census Area from year to year were minimal because they are population-based percentage variables. Thus, it was assumed a constant rate of change was experienced (whether increasing or decreasing) for simplicity. **Imputation Method 2:** 1. After the weighted average of all the percentage-based metrics for 2009 is determined, followed the general imputation methodology for ***Unemployment Rate (16+)*** for 2008 enumerated earlier in this document to impute the following data points for this county: Unemployment Rate (16+); Female Unemployment Rate (16+); Male Unemployment Rate (16+); Unemployment Rate (20-64); Female Unemployment Rate (20-64); Male Unemployment Rate (20-64); Female Labor Force Participation (LFP) Rate (20-64); Male Labor Force Participation (LFP) Rate (20-64). 2. In this scenario, the base metric in the second equation (after the "Percent Difference" is calculated) to impute the 2008 data listed above would be the respective 2009 weighted average calculated earlier in this section. *Numeric-based Metrics:*

Counties	Years Impacted	Methodology Description
		1. Referenced the general 2008 imputation methodology for the variable ***Median Household Income (MHI)*** enumerated earlier in the document for the following metrics: Median Household Income; Median Family Income; Median Earnings; Female Median Earnings; Male Median Earnings; Total Population; Number of Households; Households with Children Under 6 with Two Working Parents; Households with Children Under 6 with Only Father Working; Households with Children Under 6 with Only Mother Working; Households with Children Under 6 with Single Mother; Households with Children 6-17 with Two Working Parents; Households with Children 6-17 with Only Father Working; Households with Children 6-17 with Only Mother Working; Households with Children 6-17 with Single Mother. 2. Follows the same procedure, **EXCEPT** there is a different calculation for the change constant "C" in step 2/3 of the referenced instructions due to the historical nature of Wrangell-Petersburg Census Area (WP), Alaska splitting into Petersburg Borough (P) and Wrangell City and Borough (W) in 2008. 3. Below is the formula to calculate "C" in this specific scenario using the ***Median Household Income (MHI)*** for 2009 where the weighted average (WA) is calculated first: $$WA = \left(\left(MHI_{P_{2009}} \times \left(\frac{TP_{P_{2009}}}{TP_{P\,2009} + TP_{W_{2009}}}\right)\right) + \left(MHI_{W\,2009} \times \left(\frac{TP_{W\,2009}}{TP_{P_{2009}} + TP_{W_{2009}}}\right)\right)\right)$$ $$C = \frac{WA - \left(MHI_{WP_{2000}}\right)}{9}$$ 4. Once this unique constant "C" is calculated, step 4 of the 2008 Median Household

Counties	Years Impacted	Methodology Description
		Income imputation methodology referenced earlier in this document is followed to determine the imputed ***Median Household Income (MHI)*** for this county. 5. This same procedure is followed to impute all the numeric-based missing data for Wrangell-Petersburg Census Area listed in step 1.
Skagway Municipality, Alaska & Hoonah-Angoon Census Area, Alaska	2008	<u>*Number-based Metrics:*</u> 1. To populate *Number-based Metrics* for Skagway Municipality, Alaska and Hoonah-Angoon Census Area, Alaska in 2008 using 2009 data, the following method was followed: a. Determined the U.S. average of Census-provided data for all available U.S. counties for 2009 and 2008 for each of the following *Number-based Metrics*: Median Household Income; Median Earnings; Female Median Earnings; Male Median Earnings; Total Population; Number of Households; Households with Children Under 6 with Two Working Parents; Households with Children Under 6 with Only Father Working; Households with Children Under 6 with Only Mother Working; Households with Children Under 6 with Single Mother; Households with Children 6-17 with Two Working Parents; Households with Children 6-17 with Only Father Working; Households with Children 6-17 with Only Mother Working; Households with Children 6-17 with Single Mother. b. Calculated the percent difference between the 2009 and 2008 U.S. averages for each of the *Number-based Metrics*. This metric represents the average change experienced from the 2009 to the 2008 metric. This formula uses ***Median Household Income (MHI)*** as an example:

Counties	Years Impacted	Methodology Description
		$PercentDifference = \frac{MHI_{US_{2009}} - MHI_{US_{2008}}}{MHI_{US_{2009}}}$ c. Used the following formula to calculate the imputed 2008 data (using ***Median Household Income (MHI)*** and 2009 Skagway Municipality (S) data to impute the 2008 ***Median Household Income (MHI)*** for Skagway Municipality as an example) for all *Number-based Metrics* for Skagway Municipality and Hoonah-Angoon Census Area): $MHI_{S_{2008}} = (1 - PercentDifference) \times MHI_{S_{2009}}$ d. This same equation was used to populate all missing 2008 *Number-based Metrics* for these two counties using the respective "Percent Difference" calculated in step 2 and the 2009 reference data point. e. To populate all the occupation group variables for Skagway Municipality, Alaska and Hoonah-Angoon Census Area, Alaska in 2008 using 2009 data, the following method was used: f. Followed steps 1 – 3 of the imputation methodology for the occupational group variables listed above (i.e. gathering and totaling BLS state-level total employed population data for Alaska for each occupation group for 2008 and 2009). g. Calculated the percentage change between the 2009 and 2008 Total Employed Population (TEP) metrics for Alaska to determine the change experienced in each of these occupation group metrics from 2009 to 2008. h. Used these state-level percentage changes calculated from the BLS data to impute the occupation group variables.

Counties	Years Impacted	Methodology Description
		i. For example, to impute the ***Civilian Employed Pop. (16+) Management, business, science, and arts occupations (M)*** metric for these Alaska (AK) counties that have this missing metric in 2008, the following formulas are used where the state-level percentage change (%Δ) is calculated first which uses BLS-provided data: $$\%\Delta_{2009-2008} = \frac{(M_{AK_{2008}} - M_{AK\,2009})}{M_{AK_{2009}}}$$ $$M_{\mathrm{AK}_{2008}} = M_{AK_{2009}} \times (1 + \%\Delta_{2009-2008})$$
Bedford City, Virginia (Scenario: Both Bedford City, Virginia and Bedford County, Virginia existed as separate counties prior to 2014. However, Bedford City, Virginia was absorbed into Bedford County, Virginia in 2013. Thus, from 2014 – 2016, Bedford City, Virginia does not exist as an individual county).	2008 – 2013	1. In referencing the methodology to calculate the *Female Labor Force Participation Rates* for the various children age segmentations earlier in this document, for the year 2013, the imputation equation for Bedford County, Virginia is the same one (including its inputs) used for Bedford City, Virginia for the following variables: ***Female Labor Force Participation (LFP) Rate (20-64) with Children 6-17 only*** and ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6-17.*** 2. For example, in 2013, the imputed ***Female Labor Force Participation (LFP) Rate (20-64) with Children 6-17 only*** in Bedford County, Virginia was 79.6% and this same metric (79.6%) is used to populate the ***Female Labor Force Participation (LFP) Rate (20-64) with Children 6-17 only*** data point for Bedford City, Virginia. 3. This is because Bedford City, VA did not exist after 2013 so it did not have a base metric to depend on for the imputation methodology and respective formula used for the other counties to calculate the ***Female Labor Force Participation Rates*** for the different children age segmentations. 4. Because of this, Bedford County, Virginia and Bedford City, Virginia have the same ***Female Labor Force Participation (LFP) Rate (20-64) with Children 6-17 only*** and

Counties	Years Impacted	Methodology Description
		Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6-17 metrics for 2008 – 2013.
Kalawao County, Hawaii	2008	1. Due to the imputation methodology for the labor force participation metrics (i.e. ***Female Labor Force Participation (LFP) Rate (20-64)*** and ***Male Labor Force Participation (LFP) Rate (20-64)***) enumerated earlier in this document, these imputed rates for 2008 for this county were > 100%. Therefore, for 2008, these data points were overridden by the value of "100%."
Culebra Municipio, Puerto Rico	2008 - 2014	1. In 2015 the *Female Labor Force Participation Rate (20-64)* ***with Children Under 6 and 6-17*** **was 0%. These imputed rates were overridden by the value of 0%.**
Petroleum County, Montana	2008 – 2015	2. In 2016, the ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6-17*** variable for this county was 0 and in 2015 it was "blank." 3. Because the imputation methodology (as described earlier in this document) for this metric relies on the subsequent year's data value to impute the value for the current year, the "blank" in 2015 was replaced with a "0" to eliminate errors in the formulaic imputations used for earlier years for this metric. 4. As a result, from 2008 – 2015, this metric for this county is imputed to be 0.
Daggett County, Utah	2016 – 2018	1. The formula to impute the ***Median Earnings*** for 2015 as described earlier in this document depends on the Census-provided 2016 ***Median Earnings*** value. However, in 2016, this value is "blank" for this county which creates an error for this value in earlier years due to the designated imputation methodology. 2. For this missing 2016 value, took the average ***Median Earnings*** for the other Utah counties (28 in total) for 2016 and used this average value to replace the "blank" for this value for this county for 2016. This metric was also missing for 2017 and 2018. The 2017 metric was imputed by calculating the product of the 2016 imputed value and the June 2016 to June 2017 inflation rate as

Counties	Years Impacted	Methodology Description
		provided by the Consumer Price Index (CPI) Inflation Calculator found at https://data.bls.gov/cgi-bin/cpicalc.pl. The 2018 metric was imputed by calculating the product between the 2017 imputed value and the June 2017 to June 2018 inflation rate as provided by the CPI Inflation Calculator.
Rio Arriba County, New Mexico	2018	1. The following metrics were not provided for this county for 2018: • Poverty Rate (all families) • Poverty Rate (all people) • Median Household Income • Median Family Income • Median Earnings • Female Median Earnings • Male Median Earnings • Households with Children Under 6 with Two Working Parents • Households with Children Under 6 with Only Father Working • Households with Children Under 6 With Only Mother Working • Households with Children Under 6 with Single Mother • Households with Children 6-17 with Two Working Parents • Households with Children 6-17 with Only Father Working • Households with Children 6-17 with Only Mother Working • Households with Children 6-17 with Single Mother • EM Rate (16+) • Female EM Rate (16+) • Male EM Rate (16+) • UNE Rate (16+) • Female UNE Rate (16+) • Male UNE Rate (16+) • UNE Rate (20-64) • Female UNE Rate (20-64) • Male UNE Rate (20-64) • Female LFP Rate (20-64) • Female LFP Rate (20-64) with Children Under 6 only

Counties	Years Impacted	Methodology Description
		• Female LFP Rate (20-64) with Children 6-17 only • Female LFP Rate (20-64) with Children Under 6 and 6-17 • Male LF Rate (20-64) • Civilian Employed Pop. (16+) Management, business, science, and arts occupations • Male Civilian Employed Pop. (16+) Management, business, science, and arts occupations • Female Civilian Employed Pop. (16+) Management, business, science, and arts occupations • Civilian Employed Pop. (16+) Service occupations • Male Civilian Employed Pop. (16+) Service occupations • Female Civilian Employed Pop. (16+) Service occupations • Civilian Employed Pop. (16+) Sales and office occupation • Male Civilian Employed Pop. (16+) Sales and office occupation • Female Civilian Employed Pop. (16+) Sales and office occupation • Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations • Male Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations • Female Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations • Civilian Employed Pop. (16+) Production, transportation, and material moving occupations • Male Civilian Employed Pop. (16+) Production, transportation, and material moving occupations • Female Civilian Employed Pop. (16+) Production, transportation, and material moving occupations

Counties	Years Impacted	Methodology Description
		These metrics were provided for this county for 2017; thus, the same percentage- and population-based 2017 values are used to populate the 2018 missing values. However, for monetary-based metrics (e.g., earnings), the 2017 values are multiplied by the June 2017 to June 2018 inflation rate as provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) to get 2018 values.
Clearfield County, Pennsylvania	2008 – 2010	1. Some of the Census-provided median earnings metrics (i.e. ***Median Earnings***, ***Female Median Earnings***, ***Male Median Earnings***) for this county for 2008 to 2010 were "blank." Referencing the 2011 and 2007 ***Median Earnings*** data variables for Clearfield County, Pennsylvania, calculated the difference between the 2011 and 2007 data variables respectively for each of the median earnings metrics. 2. Assuming all the ***Median Earnings*** metrics experienced a constant annual rate of change (positive or negative) from 2007 to 2011 (a span of five years), divided the difference of these two data variables by 4 to determine the "change constant" (or "C") per year. "C" represents an equal increment of the difference between the 2011 and 2007 data variables (i.e. 1/4th). 3. The formula used to calculate "C" for ***Median Earnings (ME)*** for this county for example is below: $$C = \frac{(ME_{2011} - ME_{2007})}{4}$$ 4. For each year of missing data for Clearfield County, "C" is then multiplied by the integer associated with the year desired to be imputed and then added to the respective 2007 median earnings metric for Clearfield County. For example, for the year 2009, the imputed value for the "blank" ***Median Earnings (ME)*** data variable would use the following formula:

Counties	Years Impacted	Methodology Description
		$ME_{2009} = ME_{2007} + (2C)$ Note: if 2008 data was desired to be imputed, the integer multiplied by "C" would be 1 to reflect the assumed incremental increase in the ***Median Earnings*** over the 5-year period (i.e. 2007 to 2011).
King County, Texas; Kenedy County, Texas; Jeff Davis County, Texas; Hinsdale County, Colorado; Borden County, Texas; Loving County, Texas; Esmeralda County, Nevada; Edwards County, Texas; Terrell County, Texas; San Juan County, Colorado; Edwards County, Texas; Loving County, Texas; Glasscock County, Texas; Loving County, Texas; Daggett County, Utah; Terrell County, Texas; Arthur County, Nebraska; Kinney County, Texas; Culebra Municipio, Puerto Rico; Kent County, Texas; Roberts County, Texas; Brooks County, Texas; De Baca County, New Mexico; Taliaferro County, Georgia; Dolores County, Colorado; Custer County, Colorado	2012; 2016 and 2010/2009; 2015 – 2017; 2016 – 2018, 2022; 2016 – 2018; 2011 – 2022; 2015 – 2022; 2017 – 2022; 2016 – 2017; 2016; 2016 and 2020-2021; 2016 – 2018; 2018; 2018; 2018; 2018; 2017; 2019-2022; 2008 – 2014; 2020-2021; 2021; 2022; 2019-2022; 2021-2022; 2020-2022	The following are scenarios in which data were not provided by the Census. Thus, imputed these missing data points by using the closest preceding data point from either the prior or subsequent year that was provided by the Census for the same metric. Below are the scenarios and the imputation methods used: The data point for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** was missing for 2012 for King County, Texas. This Census-provided data point in 2011 is 100%. Thus, the 2012 missing data variable is imputed to show a value of "100%." The following are specific to Kenedy County, Texas: The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** were missing for 2009, 2010, and 2016 for Kenedy County, Texas. This Census-provided data point in 2015 is 0% and is 60.0% in 2011. Thus, the 2016 missing data point is imputed with the 2015 value of "0%" and the 2010/2009 missing data points are imputed with the 2011 value of "60.0%" (because no preceding years have this data point provided by the Census, thus had to rely on the subsequent year). The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children 6-17 only*** were missing for 2020-2022 for Kenedy County, Texas. This Census-provided data point in 2019 is 100%. Thus, the

Counties	Years Impacted	Methodology Description
		missing data points are imputed with the 2019 value of "100%". The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6-17*** were missing for 2022 for Kenedy County, Texas. This Census-provided data point in 2021 is 100%. Thus, the 2022 missing data point is imputed with the 2021 value of "100%". The data point for the metric ***Female Median Earnings*** was missing for Kenedy County, Texas for 2016. This Census-provided metric in 2015 was $17,857. Thus, the 2016 missing data point is imputed by multiplying the $17,857 by the June 2015 to June 2016 inflation rate as provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl). The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** were missing for 2015 to 2017 for Jeff Davis County, Texas. This Census-provided data point in 2014 is 67.9%. Thus, the 2015-2017 missing data points are imputed to show a value of "67.9%." The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6-17*** were missing for 2022 for Jeff Davis County, Texas. This Census-provided data point in 2021 is 0%. Thus, the 2022 missing data points are imputed to show a value of "0.0%." The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6 - 17*** were missing for 2016 - 2018 for Hinsdale County, Colorado. This Census-provided data point in 2015 is 0.0%. Thus, the 2016 - 2018 missing data points are imputed to show a value of "0.0%."

Counties	Years Impacted	Methodology Description
		The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6 - 17*** were missing for 2016 - 2018 for Borden County, Texas. This Census-provided data point in 2015 is 100.0%. Thus, the 2016 - 2018 missing data points are imputed to show a value of "100.0%." The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** were missing for 2011-2018 for Loving County, Texas. The Census-provided data points for this metric from 2009-2010 are 100%. Thus, the 2011-2018 missing data points are imputed to show a value of "100%." The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** were missing for 2015-2022 for Esmeralda County, Nevada. This Census-provided data point in 2014 is 0.0%. Thus, the 2015-2022 missing data points are imputed to show a value of "0.0%." The data points for the metric ***Female LFP Rate (20-64) with Children Under 6 only*** were missing for 2017 - 2022 for Edwards County, Texas. This Census-provided metric in 2016 is 50.0%. Thus, the 2017 - 2022 missing data points are imputed to show a value of "50.0%." The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** were missing for 2016 and 2017 for Terrell County, Texas. This Census-provided metric in 2015 is 53.8% and in 2018 is 100.0%. Thus, the 2016 missing data point is imputed to show a value of "53.8%" and the 2017 missing data point is imputed to show a value of "100.0%". The following are specific to San Juan County, Colorado:

Counties	Years Impacted	Methodology Description
		The data point for the metric ***Female Median Earnings*** was missing for San Juan County, Colorado for 2016. This Census-provided metric in 2015 was $15,417. Thus, the 2016 missing data point is imputed by multiplying the $15,417 by the June 2015 to June 2016 inflation rate as provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl). The data points for ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** were missing for 2020-2021 for San Juan County, Colorado. This Census-provided data point in 2019 and 2022 is 100%. Thus, the 2020-2021 missing data points are imputed with the 2019 and 2022 value of "100%". The data point for the metric ***Female Median Earnings*** was missing for Edwards County, Texas for 2016. This Census-provided metric in 2015 was $13,452. Thus, the 2016 missing data point is imputed by multiplying the $13,452 by the June 2015 to June 2016 inflation rate as provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl). The data points for the metric ***Male Median Earnings*** were missing for Loving County, Texas for 2016 - 2018. This Census-provided metric in 2015 was $26,875. Thus, the 2016-2018 missing data points are imputed to show the product of $26,875 and the inflation rate specific for that year (i.e. June 2015 to June 2016 to impute the 2016 value for example) as provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl). The data point for the metric ***Female LFP Rate (20-64) with Children Under 6 and 6-17*** was missing for Glasscock County, Texas for 2018-2020. This

Counties	Years Impacted	Methodology Description
		Census-provided metric in 2017 and 2021 was 0.0%. Thus, the 2018-2020 missing data points are imputed to show a value of "0.0%." The data point for the metric ***Median Earnings*** was missing for Loving County, Texas for 2018-2019. This Census-provided metric in 2017 was $42,250. Thus, the 2018-2019 missing data point is imputed to be $42,250 multiplied by the June 2017 to June 2018 and June 2017 to June 2019 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl). The data point for ***Male Median Earnings*** was missing for Daggett County, Utah for 2018. This Census-provided metric in 2017 was $63,036. Thus, the 2018 missing data point is imputed to be $63,036 multiplied by the June 2017 to June 2018 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl). The data point for ***Male Median Earnings*** was missing for Terrell County, Texas for 2018. This Census-provided metric in 2017 was $44,063. Thus, the 2018 missing data point is imputed to be $44,063 multiplied by the June 2017 to June 2018 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl). The data point for ***Female LFP Rate (20-64) with Children Under 6 only*** was missing for Arthur County, Nebraska for 2017. This values for 2018 and 2016 are both 100.0%. Thus, the 2017 missing data point is imputed to show a value of "100.0%". The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children under 6 and 6-17*** was missing for Kinney County, Texas for 2019-2022. Thus, the Census-

Counties	Years Impacted	Methodology Description
		provided data point is imputed with the 2018 value of 100% The data point for ***Female LFP Rate (20-64) with Children 6 to 17 only*** was 100% in 2015 for Culebra Municipio, Puerto Rico and missing for prior years. The missing data points are imputed to show a value of "100.0%." The data point for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children under 6 only*** *was missing for* Culebra Municipio, Puerto Rico in 2022. This Census-provided data point in 2021 is 100%. Thus, the Census-provided data point is imputed with the 2021 value of 100%. The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** were missing for 2020-2021 for Kent County, Texas. This Census-provided data point in 2019 and 2022 is 100%. Thus, the 2020-2021 missing data points are imputed with the 2019 and 2022 value of "100%". The data point for the metric ***Female LFP Rate (20-64) with Children Under 6 and 6 to 17*** **is missing for 2021 for Roberts County, Texas.** This Census-provided data point in 2020 and 2022 is 100%. Thus, the 2021 missing data points are imputed with the 2020 and 2022 value of "100%". The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** were missing for 2022 for Brooks County, Texas. This Census-provided data point in 2021 is 0%. Thus, the 2022 missing data point is imputed with the 2021 value of "0%". The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** were missing for 2019-2022 for De Baca County, New Mexico. This Census-provided data point in 2018 is 0%. Thus, the 2019-2022 missing data

Counties	Years Impacted	Methodology Description
		points are imputed with the 2018 value of "0%". The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6-17*** were missing for 2021-2022 for Taliaferro County, Georgia. This Census-provided data point in 2020 is 100%. Thus, the 2021-2022 missing data points are imputed with the 2020 value of "100%". The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6-17*** were missing for 2020-2022 for Dolores County, Colorado. This Census-provided data point in 2019 is 100%. Thus, the 2020-2022 missing data points are imputed with the 2019 value of "100%". The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** were missing for 2020 for Custer County, Colorado. This Census-provided data point in 2019 is 100%. Thus, the 2020 missing data point is imputed with the 2019 value of "100%". The data points for the metric ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** were missing for 2022 for Sierra County, California. This Census-provided data point in 2021 is 100%. Thus, the 2022 missing data points are imputed with the 2021 value of "100%".
Denali Borough, Alaska; Kalawao County, Hawaii; Esmeralda County, Nevada; Eureka County, Nevada; Harding County, New Mexico; Mora County, New Mexico; Mellette County, South Dakota; Bailey County, Texas; Briscoe County, Texas; Culberson County, Texas;	2019-2022	1. The following are scenarios in which data were not provided by the Census. Thus, imputed these missing data points by using the closest preceding data point from either the prior or subsequent year that was provided by the Census for the same metric. 2. Below are the scenarios and the imputation methods used: • The data point for ***Male Median Earnings*** was missing for Denali Borough, Alaska for 2022. This Census-provided

Counties	Years Impacted	Methodology Description
Glasscock County, Texas; Jeff Davis County, Texas; Kenedy County, Texas; Kent County, Texas; Loving County, Texas; Daggett County, Utah;		metric in 2021 was $34,963. Thus, the 2022 missing data point is imputed to be $34,963 multiplied by the June 2021 to June 2022 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Median Family Income*** were missing for Kalawao County, Hawaii for 2021-2022. This Census-provided metric in 2020 was $76,274. Thus, the 2021-2022 missing data point is imputed to be $76,274 multiplied by the June 2020 to June 2022 and June 2021 to June 2022 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Female Median Earnings*** were missing for Kalawao County, Hawaii for 2022. This Census-provided metric in 2021 was $48,750. Thus, the 2022 missing data point is imputed to be $48,750 multiplied by the June 2021 to June 2022 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Female Median Earnings*** were missing for Esmeralda County, Nevada for 2022. This Census-provided metric in 2021 was $14,536. Thus, the 2022 missing data point is imputed to be $14,536 multiplied by the June 2021 to June 2022 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Female Median Earnings*** were missing for Eureka County, Nevada for 2021-2022. This Census-provided metric in 2020 was $19,677. Thus, the 2021-2022 missing data point is imputed to be $19,677

Counties	Years Impacted	Methodology Description
		multiplied by the June 2020 to June 2022 and June 2020 to June 2022 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Female Median Earnings*** were missing for Harding County, New Mexico for 2020. This Census-provided metric in 2019 was $16,250. Thus, the 2020 missing data point is imputed to be $16,250 multiplied by the June 2019 to June 2020 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Male Median Earnings*** were missing for Mora County, New Mexico for 2021. This Census-provided metric in 2020 was $21,333. Thus, the 2021 missing data point is imputed to be $21,333 multiplied by the June 2020 to June 2021 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Female Median Earnings*** were missing for Mellette County, South Dakota for 2021. This Census-provided metric in 2020 was $23,646. Thus, the 2021 missing data point is imputed to be $23,646 multiplied by the June 2020 to June 2021 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Median Earnings*** were missing for Bailey County, Texas for 2020. This Census-provided metric in 2019 was $28,522. Thus, the 2020 missing data point is imputed to be $28,522 multiplied by the June 2019 to June 2020 inflation rate provided by the provided by the Consumer Price Index

Counties	Years Impacted	Methodology Description
		(CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Male Median Earnings*** were missing for Bailey County, Texas for 2020. This Census-provided metric in 2019 was $32,019. Thus, the 2020 missing data point is imputed to be $32,019 multiplied by the June 2019 to June 2020 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Female Median Earnings*** were missing for Briscoe County, Texas for 2022. This Census-provided metric in 2022 was $19,828. Thus, the 2021 missing data point is imputed to be $19,828 multiplied by the June 2021 to June 2022 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Median Earnings*** were missing for Culberson County, Texas for 2022. This Census-provided metric in 2021 was $23,176. Thus, the 2021 missing data point is imputed to be $23,176 multiplied by the June 2021 to June 2022 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Female Median Earnings*** were missing for Glasscock County, Texas for 2021. This Census-provided metric in 2020 was $22,708. Thus, the 2021 missing data point is imputed to be $22,708 multiplied by the June 2020 to June 2021 and inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Male Median Earnings*** were missing for Glasscock County, Texas for 2020. This Census-

Counties	Years Impacted	Methodology Description
		provided metric in 2019 was $31,336. Thus, the 2020 missing data point is imputed to be $31,336 multiplied by the June 2019 to June 2020 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for *Median* ***Household Income, Median Earnings, Female Median Earnings, Male Median Earnings*** were missing for Jeff Davis County, Texas for 2020. This Census-provided metrics in 2019 were $53,088, $27,687, $32,083, and $19,798, respectively. These were multiplied by the June 2019 to June 2020 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Female Median Earnings*** were missing for Kenedy County, Texas for 2022. This Census-provided metric in 2021 was $24,286. Thus, the 2022 missing data point is imputed to be $24,286 multiplied by the June 2021 to June 2022 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Female Median Earnings*** were missing for Kent County, Texas for 2021-2022. This Census-provided metric in 2020 was $22,273. Thus, the 2021-2022 missing data point is imputed to be $22,273 multiplied by the June 2020 to June 2021 and June 2020 to June 2022 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Median Earnings*** were missing for Loving County, Texas for 2021. This Census-provided metric in

Counties	Years Impacted	Methodology Description
		2020 was $16,480. Thus, the 2021 missing data point is imputed to be $16,480 multiplied by the June 2020 to June 2021 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Family Median Income*** were missing for Loving County, Texas for 2020. This Census-provided metric in 2019 was $102,917. Thus, the 2020 missing data point is imputed to be $102,917 multiplied by the June 2019 to June 2020 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Female Median Earnings*** were missing for Loving County, Texas for 2019-2022. This Census-provided metric in 2018 was $61,250. Thus, the 2019-2022 missing data point is imputed to be $61,250 multiplied by the June 2018 to June 2019 through June 2022 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Household Median Income*** were missing for Loving County, Texas for 2021-2022. This Census-provided metric in 2020 was $44,076. Thus, the 2021-2022 missing data point is imputed to be $44,076 multiplied by the June 2020 to June 2021 through June 2022 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Male Median Earnings*** were missing for Loving County, Texas for 2021. This Census-provided metric in 2020 was $16,283. Thus, the 2021 missing data point is imputed to be $16,283 multiplied by the June 2020 to June 2021 inflation rate provided by the provided by the Consumer Price Index

Counties	Years Impacted	Methodology Description
		(CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Female Median Earnings*** were missing for Daggett County, Utah for 2020. This Census-provided metric in 2019 was $17,115. Thus, the 2020 missing data point is imputed to be $17,115 multiplied by the June 2019 to June 2020 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl) • The data points for ***Male Median Earnings*** were missing for Daggett County, Utah for 2022. This Census-provided metric in 2022 was $40,000. Thus, the 2021 missing data point is imputed to be $40,000 multiplied by the June 2021 to June 2022 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator (https://data.bls.gov/cgi-bin/cpicalc.pl)
Mineral County, Colorado; McMullen County, Texas; Loving County, Texas; Kalawao County, Hawaii; Issaquena County, Mississippi; Sierra County, California	2015 – 2022	3. The following are scenarios in which data points were not provided by the Census. Thus, these missing data points were imputed by taking the state-level average for that metric in the same year as the missing data point (e.g. missing ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** for a county in Alabama in 2016 will be imputed with the average ***Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only*** for all other Alabama counties with available data in 2016). 4. Below are the scenarios and the imputation method used: • ***Female LFP Rate (20-64) with Children Under 6 and 6-17*** for Mineral County, Colorado (imputed for 2015 - 2017). • ***Female LFP Rate (20-64) with Children Under 6 and 6-17*** for McMullen County, Texas (imputed for 2015 - 2019).

Counties	Years Impacted	Methodology Description
		• ***Female LFP Rate (20-64) with Children Under 6 and 6-17*** for Loving County, Texas (imputed for 2015 - 2022). • ***Female LFP Rate (20-64) with Children 6-17*** only for Loving County, Texas (imputed for 2019 - 2022). • ***Female LFP Rate (20-64) with Children Under 6*** only for Issaquena County, Mississippi (imputed for 2021 - 2022). • ***Female LFP Rate (20-64) with Children Under 6 and 6-17*** for Sierra County, California (imputed for 2021 - 2022). Note: the 2015 - 2018 imputed data points above for Loving and McMullen, Texas have the same values for the same year because they both use the Texas state-level average for the imputation (excluding both Loving County and McMullen County data). • **Female LFP Rate (20-64) with Children Under 6 only**, **Female LFP Rate (20-64) with Children 6-17 only, Female LFP Rate (20-64) with Children Under 6 and 6-17** for Kalawao County, Hawaii (imputed for 2015 - 2022).
Fairfield County, Connecticut; Hartford County, Connecticut; Litchfield County, Connecticut; Middlesex County, Connecticut; New Haven County, Connecticut; New London County, Connecticut; Tolland County, Connecticut; Windham, County. Connecticut	2022	1. Beginning in 2022, the Census started reporting Connecticut's ACS data by planning region rather than by county, so the following variables were missing for counties in Connecticut: Poverty Rate (all families) • Poverty Rate (all people) • Median Household Income • Median Earnings • Female Median Earnings • Male Median Earnings • Households with Children Under 6 with Two Working Parents

Counties	Years Impacted	Methodology Description
		• Households with Children Under 6 with Only Father Working • Households with Children Under 6 With Only Mother Working • Households with Children Under 6 with Single Mother • Households with Children 6-17 with Two Working Parents • Households with Children 6-17 with Only Father Working • Households with Children 6-17 with Only Mother Working • Households with Children 6-17 with Single Mother • EM Rate (16+) • Female EM Rate (16+) • Male EM Rate (16+) • UNE Rate (16+) • Female UNE Rate (16+) • Male UNE Rate (16+) • UNE Rate (20-64) • Female UNE Rate (20-64) • Male UNE Rate (20-64) • Female LFP Rate (20-64) • Female LFP Rate (20-64) with Children Under 6 only • Female LFP Rate (20-64) with Children 6-17 only • Female LFP Rate (20-64) with Children Under 6 and 6-17 • Male LF Rate (20-64) • Civilian Employed Pop. (16+) Management, business, science, and arts occupations • Male Civilian Employed Pop. (16+) Management, business, science, and arts occupations • Female Civilian Employed Pop. (16+) Management, business, science, and arts occupations • Civilian Employed Pop. (16+) Service occupations • Male Civilian Employed Pop. (16+) Service occupations

Counties	Years Impacted	Methodology Description
		• Female Civilian Employed Pop. (16+) Service occupations • Civilian Employed Pop. (16+) Sales and office occupation • Male Civilian Employed Pop. (16+) Sales and office occupation • Female Civilian Employed Pop. (16+) Sales and office occupation • Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations • Male Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations • Female Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations • Civilian Employed Pop. (16+) Production, transportation, and material moving occupations • Male Civilian Employed Pop. (16+) Production, transportation, and material moving occupations • Female Civilian Employed Pop. (16+) Production, transportation, and material moving occupations 2. The state-level ACS data was gathered for 2021 and 2022 for all variables. 3. Then calculated the statewide percent difference between Connecticut's 2021 Unemployment Rate (16+) variable (UR_{2021}) and its 2022 average Unemployment Rate (16+) (UR_{2022}) in which the formula is: $$PercentDifference_{2021-2022} = \frac{UR_{2021} - UR_{2022}}{UR_{2021}}$$ 4. Then subtracted the percent difference (%) between these years' for that state from 1 and then the difference is multiplied by the missing county's ***Unemployment Rate (16+)*** **(UR(16+))** for 2021 (i.e., the formula to impute the 2022 data point is shown below).

Counties	Years Impacted	Methodology Description
		$UR(16+)_{2022} = UR(16+)_{2021} \times (1 - PercentDifference_{2021-2022})$ 5. The remaining variables follow the same instructions as above.
Kusilvak Census Area, Alaska	2008 – 2013	Wade Hampton Census Area, Alaska had its name changed to Kusilvak Census Area in 2013. For simplicity, only the "Kusilvak Census Area" county name was used in this data set for simplicity.
Oglala Lakota County, South Dakota	2008 – 2014	Shannon County, South Dakota had its name changed to Oglala Lakota County in 2014. For simplicity, only the "Oglala Lakota" county name was used in this data set for simplicity.

Additional Edits.

Some very rural U.S. counties or those with very low populations saw labor force participation rates exceed 100% as a result of the imputation methodology chosen for certain variables. To rectify these imputed metrics, the labor force participation rate metrics for these counties were overridden manually to "100%." This only impacted the counties and for the years listed in the right column.

Variable	Counties & Years Impacted
Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only	Wibaux County, Montana (2008); Mineral County, Nevada (2008); Hinsdale County, Colorado (2008); San Juan County, Colorado (2008); Towner County, North Dakota (2008); Stanley County, South Dakota (2008), Bristol Bay Borough, Alaska (2008); Skagway-Hoonah-Angoon County, Alaska (2008); Prairie County, Montana (2008)
Female Labor Force Participation (LFP) Rate (20-64) with Children 6-17 only	San Juan County, Colorado (2008-2014); Gosper County, Nebraska (2012-2014, 2008-2009); Hooker County, Nebraska (2012-2014, 2008-2009); Sherman County, Kansas (2009-2014); Culebra, Puerto Rico (2011-2013); Harding County, New Mexico (2014, 2008-2012); Pierce County, North Dakota (2012-2014, 2008-2009); Wibaux County, Montana (2012-2013, 2008-2010); Cottle County, Texas (2011-2013); Bowman County, North Dakota (2012-2013, 2008-2009); Dimmit County, Texas (2011-2012); Boyd County, Nebraska (2008 and 2012); Storey County, Nevada (2008-2011); Kiowa County, Colorado (2008-2011); Grand County, Colorado (2008-2011); Lake of the Woods County, Minnesota (2008-2011); Keweenaw County, Michigan (2008-2010); Stanley County, South Dakota (2008-2010); Campbell County, South Dakota (2008-2010); Lane County, Kansas (2009-2010); Clay County, North Carolina (2008-2010); Johnson County, Wyoming (2009); Comanche County, Kansas (2009); Rock County, Nebraska (2009); Edmunds County, South Dakota (2008); Liberty County, Florida (2008); Sheridan County, Montana (2008); Douglas County, South Dakota (2008); Kingsbury County, South Dakota (2008); Toole County, Montana (2008); McCook County, South Dakota (2008); Hughes County, South Dakota (2008); Nance County, Nebraska (2008)
Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6-17	Armstrong County, Texas (2011-2014); Coke County, Texas (2011-2014); Kimble County, Texas (2011-2014); Foard County, Texas (2011-20141); Terrell County, Texas (2011-2014); Borden County, Texas (2011-2014); Childress County, Texas (2011-2014); Billings County, North Dakota (2012-2014, 2009); Adams County, North Dakota (2012-2014, 2009); Bath, Virginia (2009-2014); Northumberland County, Virginia (2008-20148); Highland County, Virginia (2008-2014); Ouray County, Colorado (2008-2014); Garfield County, Nebraska (2012-2014, 2008-2009); Loup County, Nebraska (2012-2014, 2008-2009); Surry County, Virginia (2008-2014); Niobrara County, Wyoming (2009, 2011, 20149); Quitman County, Georgia (2011-2014, 2008-2009); Storey County, Nevada (2008-2014); Alpine County, California (2008-2014); Comanche County, Kansas (2009-2014); Norton County, Kansas (2009-2014); Harding County, New

Variable	Counties & Years Impacted
	Mexico (2014, 2008-2012); De Baca County, New Mexico (2014, 2008-2012); Catron County, New Mexico (2014, 2008-2012); Sumter County, Alabama (2008-2014); Niobrara County, Wyoming (2012-2013); Fillmore County, Nebraska (2012-2013, 2008-2009); Putnam County, Georgia (2011-2013, 2008-2009); Tyrrell County, North Carolina (2009-2013); Fulton County, Kentucky (2009-2013); Iron County, Wisconsin (2008-2013); Gilliam County, Oregon (2008-2012); Stanley County, South Dakota (2008-2012); Jones County, South Dakota (2008-2012); Sully County, South Dakota (2008-2012); Hyde County, South Dakota (2008-2012); Rooks County, Kansas (2009); Emmet County, Iowa (2008-2009); Costilla County, Colorado (2008); Baker County Georgia (2008); Dodge County, Georgia (2008); Union County, Georgia (2008); Saline County, Nebraska (2008); Codington County, South Dakota (2008); New Kent County, Virginia (2008)
Male Labor Force Participation (LFP) Rate (20-64)	Blaine County, Nebraska (2008); McPherson County, Nebraska (2008); Wheeler County, Nebraska (2008); King County, Texas (2008)
Male Employment Rate (16+)	Loving County, Texas (2008)

Appendix E: State Level Data Dictionary

Variable	Variable Label	Variable Description	Variable Format
STATE_NAME	State Name	State name	Character
STUDYYEAR	Study Year	Year in which data were collected for the market rate survey.	Numeric
TYPE	Type of Child Care	Type of child care, including family for family child care and center for child care centers	Character
INFANT_POPULATION	State population of infants	Population of infants in the state	Numeric
TODDLER_POPULATION	State population of toddlers	Population of toddlers in the state	Numeric
PRESCHOOL_POPULATION	State population of preschool children	Population of preschool children in the state	Numeric
SCHOOL_AGE_POPULATION	State population of school-age children	Population of school-age children in the state	Numeric
PRICE_Q1_INFANT	Percentage of Infants in Price Quintile 1	Percentage of infant population in the state in price Quintile 1	Numeric
PRICE_Q2_INFANT	Percentage of Infants in Price Quintile 2	Percentage of infant population in the state in price Quintile 2	Numeric
PRICE_Q3_INFANT	Percentage of Infants in Price Quintile 3	Percentage of infant population in the state in price Quintile 3	Numeric
PRICE_Q4_INFANT	Percentage of Infants in Price Quintile 4	Percentage of infant population in the state in price Quintile 4	Numeric
PRICE_Q5_INFANT	Percentage of Infants in Price Quintile 5	Percentage of infant population in the state in price Quintile 5	Numeric
PRICE_Q1_TODDLER	Percentage of Toddlers in Price Quintile 1	Percentage of toddler population in the state in price Quintile 1	Numeric
PRICE_Q2_TODDLER	Percentage of Toddlers in Price Quintile 2	Percentage of toddler population in the state in price Quintile 2	Numeric
PRICE_Q3_TODDLER	Percentage of Toddlers in Price Quintile 3	Percentage of toddler population in the state in price Quintile 3	Numeric
PRICE_Q4_TODDLER	Percentage of Toddlers in Price Quintile 4	Percentage of toddler population in the state in price Quintile 4	Numeric
PRICE_Q5_TODDLER	Percentage of Toddlers in Price Quintile 5	Percentage of toddler population in the state in price Quintile 5	Numeric

Variable	Variable Label	Variable Description	Variable Format
PRICE_Q1_PRESCHOOL	Percentage of Preschool-Age Children in Price Quintile 1	Percentage of preschool population in the state in price Quintile 1	Numeric
PRICE_Q2_PRESCHOOL	Percentage of Preschool-Age Children in Price Quintile 2	Percentage of preschool population in the state in price Quintile 2	Numeric
PRICE_Q3_PRESCHOOL	Percentage of Preschool-Age Children in Price Quintile 3	Percentage of preschool population in the state in price Quintile 3	Numeric
PRICE_Q4_PRESCHOOL	Percentage of Preschool-Age Children in Price Quintile 4	Percentage of preschool population in the state in price Quintile 4	Numeric
PRICE_Q5_PRESCHOOL	Percentage of Preschool-Age Children in Price Quintile 5	Percentage of preschool population in the state in price Quintile 5	Numeric
PRICE_Q1_SCHOOLAGE	Percentage of School-Age Children in Price Quintile 1	Percentage of school-age population in the state in price Quintile 1	Numeric
PRICE_Q2_SCHOOLAGE	Percentage of School-Age Children in Price Quintile 2	Percentage of school-age population in the state in price Quintile 2	Numeric
PRICE_Q3_SCHOOLAGE	Percentage of School-Age Children in Price Quintile 3	Percentage of school-age population in the state in price Quintile 3	Numeric
PRICE_Q4_SCHOOLAGE	Percentage of School-Age Children in Price Quintile 4	Percentage of school-age population in the state in price Quintile 4	Numeric
PRICE_Q5_SCHOOLAGE	Percentage of School-Age Children in Price Quintile 5	Percentage of school-age population in the state in price Quintile 5	Numeric

Variable	Variable Label	Variable Description	Variable Format
AFFORDABILITY_Q1_INFANT	Percentage of Infants in Affordability Quintile 1	Percentage of infants in the state in affordability Quintile 1, where affordability is defined as the childcare price as a percent of median family income. Quintile 1 represents the most affordable meaning childcare price is the lowest percentage of median family income in the country compared to the other quintiles.	Numeric
AFFORDABILITY_Q2_INFANT	Percentage of Infants in Affordability Quintile 2	Percentage of infants in the state in affordability Quintile 2, where affordability is defined as the childcare price as a percent of median family income. Quintile 2 represents the second most affordable meaning childcare price is the second lowest percentage of median family income in the country compared to the other quintiles.	Numeric
AFFORDABILITY_Q3_INFANT	Percentage of Infants in Affordability Quintile 3	Percentage of infants in the state in affordability Quintile 3, where affordability is defined as the childcare price as a percent of median family income. Quintile 3 represents the third most affordable meaning childcare price is the third lowest percentage of median family income in the country compared to the other quintiles.	Numeric

Variable	Variable Label	Variable Description	Variable Format
AFFORDABILITY_Q4_INFANT	Percentage of Infants in Affordability Quintile 4	Percentage of infants in the state in affordability Quintile 4, where affordability is defined as the childcare price as a percent of median family income. Quintile 4 represents the fourth most affordable meaning childcare price is the fourth lowest percentage of median family income in the country compared to the other quintiles.	Numeric
AFFORDABILITY_Q5_INFANT	Percentage of Infants in Affordability Quintile 5	Percentage of infants in the state in affordability Quintile 5, where affordability is defined as the childcare price as a percent of median family income. Quintile 5 represents the least affordable meaning childcare price is the fifth lowest percentage of median family income in the country compared to the other quintiles.	Numeric
AFFORDABILITY_Q1_ TODDLER	Percentage of Toddlers in Affordability Quintile 1	Percentage of toddlers in the state in affordability Quintile 1, where affordability is defined as the childcare price as a percent of median family income. Quintile 1 represents the most affordable meaning childcare price is the lowest percentage of median family income in the country compared to the other quintiles.	Numeric

Variable	Variable Label	Variable Description	Variable Format
AFFORDABILITY_Q2_TODDLER	Percentage of Toddlers in Affordability Quintile 2	Percentage of toddlers in the state in affordability Quintile 2, where affordability is defined as the childcare price as a percent of median family income. Quintile 2 represents the second most affordable meaning childcare price is the second lowest percentage of median family income in the country compared to the other quintiles.	Numeric
AFFORDABILITY_Q3_TODDLER	Percentage of Toddlers in Affordability Quintile 3	Percentage of toddlers in the state in affordability Quintile 3, where affordability is defined as the childcare price as a percent of median family income. Quintile 3 represents the third most affordable meaning childcare price is the third lowest percentage of median family income in the country compared to the other quintiles.	Numeric
AFFORDABILITY_Q4_TODDLER	Percentage of Toddlers in Affordability Quintile 4	Percentage of toddlers in the state in affordability Quintile 4, where affordability is defined as the childcare price as a percent of median family income. Quintile 4 represents the fourth most affordable meaning childcare price is the fourth lowest percentage of median family income in the country compared to the other quintiles.	Numeric

Variable	Variable Label	Variable Description	Variable Format
AFFORDABILITY_Q5_TODDLER	Percentage of Toddlers in Affordability Quintile 5	Percentage of toddlers in the state in affordability Quintile 5, where affordability is defined as the childcare price as a percent of median family income. Quintile 5 represents the least affordable meaning childcare price is the fifth lowest percentage of median family income in the country compared to the other quintiles.	Numeric
AFFORDABILITY_Q1_ PRESCHOOL	Percentage of Preschool-Age Children in Affordability Quintile 1	Percentage of preschool-age children in the state in affordability Quintile 1, where affordability is defined as the childcare price as a percent of median family income. Quintile 1 represents the most affordable meaning childcare price is the lowest percentage of median family income in the country compared to the other quintiles.	Numeric
AFFORDABILITY_Q2_ PRESCHOOL	Percentage of Preschool-Age Children in Affordability Quintile 2	Percentage of preschool-age children in the state in affordability Quintile 2, where affordability is defined as the childcare price as a percent of median family income. Quintile 2 represents the second most affordable meaning childcare price is the second lowest percentage of median family income in the country compared to the other quintiles.	Numeric

Variable	Variable Label	Variable Description	Variable Format
AFFORDABILITY_Q3_ PRESCHOOL	Percentage of Preschool-Age Children in Affordability Quintile 3	Percentage of preschool-age children in the state in affordability Quintile 3, where affordability is defined as the childcare price as a percent of median family income. Quintile 3 represents the third most affordable meaning childcare price is the third lowest percentage of median family income in the country compared to the other quintiles.	Numeric
AFFORDABILITY_Q4_ PRESCHOOL	Percentage of Preschool-Age Children in Affordability Quintile 4	Percentage of preschool-age children in the state in affordability Quintile 4, where affordability is defined as the childcare price as a percent of median family income. Quintile 4 represents the fourth most affordable meaning childcare price is the fourth lowest percentage of median family income in the country compared to the other quintiles.	Numeric
AFFORDABILITY_Q5_ PRESCHOOL	Percentage of Preschool-Age Children in Affordability Quintile 5	Percentage of preschool-age children in the state in affordability Quintile 5, where affordability is defined as the childcare price as a percent of median family income. Quintile 5 represents the least affordable meaning childcare price is the fifth lowest percentage of median family income in the country compared to the other quintiles.	Numeric
AFFORDABILITY_Q1_ SCHOOLAGE	Percentage of School-Age Children in Affordability Quintile 1	Percentage of total school-age in the state in affordability Quintile 1	Numeric

Variable	Variable Label	Variable Description	Variable Format
AFFORDABILITY_Q2_SCHOOLAGE	Percentage of School-Age Children in Affordability Quintile 2	Percentage of total school-age in the state in affordability Quintile 2	Numeric
AFFORDABILITY_Q3_SCHOOLAGE	Percentage of School-Age Children in Affordability Quintile 3	Percentage of total school-age in the state in affordability Quintile 3	Numeric
AFFORDABILITY_Q4_SCHOOLAGE	Percentage of School-Age Children in Affordability Quintile 4	Percentage of total school-age in the state in affordability Quintile 4	Numeric
AFFORDABILITY_Q5_SCHOOLAGE	Percentage of School-Age Children in Affordability Quintile 5	Percentage of total school-age in the state in affordability Quintile 5	Numeric
MEDIAN_INFANT_PRICE	Median Price of Infant Care	Median price of infant care at the state level	Numeric
MEDIAN_TODDLER_PRICE	Median Price of Toddler Care	Median price of toddler care at the state level	Numeric
MEDIAN_PRESCHOOL_PRICE	Median Price of Preschool-Age Care	Median price of preschool-age care at the state level	Numeric
MEDIAN_SCHOOLAGE_PRICE	Median Price of School-Age Care	Median price of school-age care at the state level	Numeric
PCT_VALID_INFANT	Percentage with Infant Prices	Percentage of infants living in counties with infant price estimates	Numeric
PCT_VALID_TODDLER	Percentage with Toddler Prices	Percentage of toddlers living in counties with toddler price estimates	Numeric
PCT_VALID_PRESCHOOL	Percentage with Preschool-Age Prices	Percentage of preschool-age children living in counties with preschool price estimates	Numeric
PCT_VALID_SCHOOLAGE	Percentage with Infant Prices	Percentage of school-age children living in counties with school-age price estimates	Numeric

Appendix F: Methods Used for Specific Demographic Variables – State

Variable(s)	Years Impacted	Methodology Description
State Level Female Labor Force Participation (LFP) Rate (20-64) with Children 6-17 only; State Level Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6-17	2008 - 2014	1. Prior to 2015 the Census did not collect data on these variables. The above methodology was used for all states prior to 2015. 2. Navigated to the Bureau of Labor Statistics (BLS) website via the following link: https://www.bls.gov/lau/rdscnp16.htm. 3. Downloaded the ZIP *Employment status of the civilian noninstitutional population, annual averages* data file that gives the employment, unemployment, and civilian labor force participation rates for each U.S. state from 1976 to 2017. 4. For the years 2008 to 2017, calculated the YoY (year-over-year) percentage change from the latter to the former year for the *Civilian Labor Force Participation Rate* (CLFP) (e.g., calculated the percentage change between the 2009 and 2008 CLFP rates (%) to calculate the change experienced in that metric from 2009 to 2008). 5. For all states, used the respective YoY state-level percentage changes calculated from the BLS data to impute the two variables listed to the left of this section. 6. For example, to impute the ***State Level Female Labor Force Participation Rate (20-64) with Children Under 6 only*** **(FLFPR6)** for Alabama (AL) in 2008, the following formulas are used where the YoY state-level percentage change (%Δ) is calculated first which uses BLS-provided data: $$\%\Delta_{2009-2008} = \frac{(CLFP_{AL_{2008}} - CLFP_{AL_{2009}})}{CLFP_{AL_{2009}}}$$ $$\text{FLFPR6}_{\text{AL}_{2008}} = FLFPR6_{AL_{2009}} + (FLFPR6_{AL_{2009}} \times \%\Delta_{2009-2008})$$ This methodology is replicated for each state. Note that BLS did not have data for Puerto Rico, the Female Labor Force Participation rate (20-64) from the county was used instead of civilian labor force participation from the BLS data.
State Level Male Employment Rate (16+)	2008 – 2022	2. Figures for male employment were not provided by table DP03. However, the female and total statistics were reported. Since the total population is equal to the sum of male and female populations for each category, the total female population was subtracted from the total population to determine the total male population.

Variable(s)	Years Impacted	Methodology Description
		Then, the total female employed was subtracted from the total employed figure to determine the number of male employment. Male employment was divided by total male population, as seen in the formula below: $MER\_16_{2008} = \frac{(Total_{Employed_{2008}} - Total\_Female\_Employed_{2008})}{Total\_Population - Total\_Female_{2008}}$
State Level Female Unemployment Rate (16+)	2010-2022	1. Figures for female unemployment rate were not provided by table DP03. However, the female civilian labor force population and female employed population statistics were reported. The unemployed population is the difference between the civilian labor force population and the employed population. The female employed population was subtracted from the female civilian labor force population to determine the number of female unemployed population and divided by the female civilian labor force, as seen in the formula below: $FUNR_{16} = \frac{(Female\_CLF - Female\_Employed)}{Female\_CLF}$
State Level Male Unemployment Rate (16+)	2010-2022	1. Figures for male civilian labor force, employment, and unemployment were not provided by table DP03. However, the female and total statistics were reported. Since the total population is equal to the sum of male and female populations for each category, the female figures was subtracted from the total figures to determine the figures for males. After the male figures were determined, the male employed population was subtracted from the male civilian labor force to determine the male unemployed figure. This was divided by the male civilian labor force, as seen in the formula below: $MUNR_{16} = \frac{((Total\_CLF - Female\_CLF) - (Total\_Employed - Female\_Employed))}{(Total\_CLF - Female\_CLF)}$
State Level Employment Rate (20-64); State Level Female Employment Rate (20-64); State Level Male Employment Rate (20-64)	2008 – 2009	1. For all the variables and years listed to the left, gathered the total population by age and total employed count by age for each U.S. State as provided by ACS. 2. Determined the total civilian employed, female civilian employed, and male civilian employed counts for the age ranges. 3. Determined the total population, female population, and male population counts for the age ranges.

Variable(s)	Years Impacted	Methodology Description
		4. For each state, divided the total employed count (which includes males and females) by the total population count for the entire state. 5. A similar process was carried out to estimate percentage-based metrics for the different sexes.
State Level Unemployment Rate (20-64); State Level Female Unemployment Rate (20-64); State Level Male Unemployment Rate (20-64); State Level Women's Labor Force Participation Rate (20-64 years old); State Level Women's Labor Force Participation Rate with own children under 6 years only (20-64 years old); State Level Men's Labor Force Participation Rate (20-64 years old)	2008 – 2009	Follows the same instructions as above except the variable ***State Level Employment Rate (20-64)*** is replaced by any of the percentage-based metrics listed to the left of this section for the imputation methodology.
State Level Civilian Employed Pop. (16+) Management, business, science, and arts occupations; State Level Male Civilian Employed Pop. (16+) Management, business, science, and arts occupations; State Level Female Civilian Employed Pop. (16+) Management, business, science, and arts occupations; State Level Civilian Employed Pop. (16+) Service occupations; State Level	2008 – 2022	1. For all the variables and years listed to the left, gathered the total employed count by occupational group (and by sex within each occupational group) for each state as provided by ACS. 2. Determined the total civilian employed, female civilian employed, and male civilian employed counts across all five occupational groups per state. 3. For each state, divided the total employed count (which includes males and females) for each of the five occupational groups, by the total employed count for the entire state to determine the percent distribution of a state's employed population across these five occupational groups. 4. For instance, if the total employed count for the ***Management, business, science, and arts occupations*** for a given state was 5,000 and the total employed count for the whole state was 10,000, the resulting percent metric that would be estimated for this state and occupation group is 50.0%. In other words, 50.0% of the state's total employed population is working in these occupations. If the total employed count for the ***Service***

Variable(s)	Years Impacted	Methodology Description
Male Civilian Employed Pop. (16+) Service occupations; State Level Female Civilian Employed Pop. (16+) Service occupations; State Level Civilian Employed Pop. (16+) Sales and office occupation; State Level Male Civilian Employed Pop. (16+) Sales and office occupation; State Level Female Civilian Employed Pop. (16+) Sales and office occupation; State Level Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations; State Level Male Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations; State Level Female Civilian Employed Pop. (16+) Natural resources, construction, and maintenance occupations; State Level Civilian Employed Pop. (16+) Production, transportation, and material moving occupations; State Level Male Civilian Employed		***occupations*** was 2,000 for this same state, the resulting metric would be 20.0%. In other words, 20.0% of the state's total employed population is working in these occupations. 5. The resulting five percentage-based metrics (one for each occupational group) for a given state and year would sum to 100%. 6. A similar process was carried out to estimate percentage-based metrics for the different sexes within each occupational group. Specifically, the sex-specific total employed counts for each of the five occupational groups were each divided by the total employed count for the entire state for that particular sex to determine the percent distribution of a state's employed population across both the five occupational groups and for a specific sex. 7. For instance, if the female employed count for the ***Management, business, science, and arts occupations*** for a given state was 1,000 and the total female employed count for the whole state was 4,000, the resulting percent metric that would be estimated for this state and occupation group is 25.0%. In other words, 25.0% of the employed females in this state work in these occupations. If the total employed count for the male ***Management, business, science, and arts occupations*** was 4,000 for this same state and the total male employed count for the whole state was 6,000, the resulting metric would be 66.7%. In other words, 66.7% of the employed males in this state work in these occupations. 8. The resulting total employed, female employed, and male employed percentage-based metrics (for each occupational group) for a given state would each sum to 100%, separately. 9. Since this process had to be completed for all state and all years, all these variables were imputed. Note: For 2008 – 2014, ACS provided the male and female percentages for these occupation groups versus the actual count of the employed population. Thus, to determine the respective count of males and females employed in the various occupation groups by state, used the total employed count for the occupation group for the state and the respective percentage to determine the total employed count for males and females. If theses female and male metrics are then added together, they equal the total employed population for that occupation group for that state.

Variable(s)	Years Impacted	Methodology Description
Pop. (16+) Production, transportation, and material moving occupations; State Level Female Civilian Employed Pop. (16+) Production, transportation, and material moving occupations		
State Level Median Household Income – 2022 Adjusted; State Level Median Family Income – 2022 Adjusted; State Level Median Earnings – 2022 Adjusted; State Level Female Median Earnings – 2022 Adjusted; State Level Male Median Earnings – 2022 Adjusted	2008 – 2021	1. Navigated to the Bureau of Labor Statistics (BLS) website via the following link: https://data.bls.gov/cgi-bin/cpicalc.pl which goes to the Consumer Price Index (CPI) Inflation Calculator. 2. To determine each year's monetary-based variables in terms of 2022 dollars, this tool determines the inflation multiple needed to impute all monetary-based variables into 2022 dollar amounts so cross-year comparisons can be conducted. From this webpage, both month drop-down options were set to "June" (i.e., mid-year) and the bottom year drop-down option was set to 2022. The top year drop-down option was set to each year whose monetary-based variables needed to be adjusted to 2022 amounts (i.e., 2000 – 2021). 3. For each year, an inflation multiple was calculated by determining what buying power $1 had in a prior year in terms of 2022 dollars. For example, in June 2018, $1 had the buying power of $1.18 in 2022. 1.18 is the inflation multiple in this scenario. 4. For each of the monetary-based variables listed to the left of this section, their values (whether provided by ACS directly or imputed based on methodologies enumerated above) were multiplied by the inflation multiple for that given year. 5. For example, given the ***State Level Median Household Income (MHI_STATE)*** for Alabama in 2018, the following formula would be used to calculate the ***State Level Median Household Income – 2022 Adjusted (MHI_2022_STATE)*** variable where 1.18 is the inflation multiple to be used for all counties that have monetary-based variables in 2022 that need to be imputed: $$MHI_2022_{AL2018} = MHI_{AL2018} \times (1.18)$$

Variable(s)	Years Impacted	Methodology Description
		6. These steps are replicated for all states for all four of the monetary-based variables listed to the left for 2008 – 2021 using the respective inflation multiple for the year being imputed.

Appendix G: 2008-2018 Imputations for County-Level Childcare Prices from Statewide Data

To estimate county-level childcare prices between 2008 and 20218 when the only information available is a state price, ICF developed statistical models based on county-level U.S. Census Bureau data from ACS. ICF used data for counties in Maine (for the years 2013, 2015, and 2018) and in Virginia (for the years 2015 and 2018) to create the models. For simplicity, ICF used a summary childcare price equal to the average of the preschool median prices for family childcare and center-based childcare providers. ICF also limited the development of these models to preschool prices because most providers offer care for this age group. However, ICF evaluated the results of these models for all the age groups listed earlier in this document.

To determine what U.S. Census Bureau variables to use in the statistical models that would help impute statewide data to the county-level, ICF extracted the social, economic, and housing data tables for the 2013-2017 ACS 5-year estimates. ICF then identified variables that were potentially related to childcare prices and selected two variables that were highly-correlated to childcare prices at the county-level. These two variables are listed in Exhibit A

Exhibit A: American Community Survey Variables Selected for Imputation

Variable Name	ACS Table	Variable Description
DP02_0067PE	DP02	Educational Attainment - Percent with a Bachelor's Degree or Higher (percent)
DP04_0134E	DP04	Median Gross Rent of Occupied Units Paying Rent (dollars)

ICF then took the ratio of each county-level variable relative to the state value and the ratio of the county childcare prices to the state average (weighted by total households per county) for Virginia and Maine. Next, ICF estimated regression models (that combined the prices for Virginia and Maine) to predict the ratio of county childcare prices relative to the state for the 50th and 75th percentiles, separately. The results for these models are presented in Exhibit B. The combined model for the 50th percentile has an R^2 value of 0.84 and the combined model for the 75th percentile has an R^2 value of 0.85.

Exhibit B: Regression Model Results for 50th and 75th Percentiles

Variable	Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
50th Percentile					
Intercept	0.14	0.02	6.94	<0.001	0.00
DP04_0134E	0.62	0.04	15.42	<0.001	2.89
DP02_0067PE	0.22	0.03	7.41	<0.001	2.89
75th Percentile					
Intercept	0.11	0.02	5.74	<0.001	0.00
DP04_0134E	0.63	0.04	15.73	<0.001	2.89
DP02_0067PE	0.23	0.03	7.56	<0.001	2.89

Based on these results, ICF used the following models to estimate childcare 50th and 75th percentile prices, respectively, at the county-level for instances where only statewide data was provided:

$$County_{50} = State_{50} \times \left(0.14 + \left(0.62 \times DP04_{0134E_{ratio}}\right) + \left(0.22 \times DP02_{0067PE_{ratio}}\right)\right)$$
$$County_{75} = State_{75} \times \left(0.11 + \left(0.63 \times DP04_{0134E_{ratio}}\right) + \left(0.23 \times DP02_{0067PE_{ratio}}\right)\right)$$

Methodology

To carry out this imputation, the appropriate regression model above is used to estimate county-level estimates from the statewide data. The former model is used when only 50th percentile statewide childcare pricing data are available, and the latter model is used when only 75th percentile statewide childcare pricing data are provided by MRS reports.

For each state that needed this imputation, the DP02_0067PE and DP04_0134E variables were gathered from ACS 5-year estimates from 2010 to 2018. These variables were used in the statistical models above to estimate the childcare pricing for the counties of a specific state. Of note, ACS data were not available for 2008 and 2009; thus, 2010 ACS data points were used to impute statewide data for 2008 and 2009 county-level estimates. ICF compiled detailed documentation on the imputations required for each state in the database to denote where values were constructed using this imputation. This is indicated with a "1" in the third digit of the five-digit imputation flag variable (i.e., XX1XX). Instances where the third digit of this variable is a "0" indicates this imputation was not carried out (i.e., XX0XX).

Limitations

While the model has strong predictive power for both Virginia and Maine, this may not be the case for the 15 states that need this imputation; moreover, these estimates will most likely vary from actual childcare prices provided by these states' individual counties, as all county-level data points for these states were imputed. Lastly, only incorporating the preschool childcare pricing into these statistical models does limit their predictive capacity for childcare pricing for non-preschool age groups.

Appendix H: Price Quintile Ranges for State-Level Price Database

Exhibit A: Quintile Ranges for Price Rankings

Variable	Study Year	Quintile 1 (in $)	Quintile 2 (in $)	Quintile 3 (in $)	Quintile 4 (in $)	Quintile 5 (in $)
MCInfant	2008	58.16-92.63	92.64-108.14	108.15-132.69	133.12-165.00	165.34-412.43
MCInfant	2009	36.30-96.00	96.40-110.00	110.21-133.84	134.36-165.00	165.34-389.70
MCInfant	2010	49.55-96.90	97.20-112.00	112.06-134.86	135.00-160.00	160.13-379.87
MCInfant	2011	57.24-99.09	100.11-114.84	114.90-139.05	139.07-162.55	162.69-375.00
MCInfant	2012	67.98-103.10	103.23-118.58	118.61-142.40	142.47-169.09	169.39-388.75
MCInfant	2013	76.82-107.00	107.58-123.54	123.65-146.33	146.43-171.50	171.82-402.50
MCInfant	2014	72.84-106.36	106.55-127.13	127.15-147.55	147.88-175.60	175.68-416.25
MCInfant	2015	68.86-106.10	106.11-124.50	124.58-147.76	147.78-176.26	176.40-430.00
MCInfant	2016	64.87-108.47	108.83-128.33	128.44-150.00	150.14-175.94	176.25-438.67
MCInfant	2017	73.90-115.00	115.01-133.20	133.30-155.19	155.21-181.78	182.00-448.33
MCInfant	2018	27.73-118.33	118.45-135.92	136.07-161.98	162.19-185.54	185.75-470.00
MCInfant	2019	82.83-121.67	122.00-140.00	140.17-167.65	167.69-193.00	193.03-491.67
MCInfant	2020	93.75-125.00	125.11-145.75	145.94-172.55	172.57-202.93	203.00-513.33
MCInfant	2021	72.69-116.68	116.77-145.00	145.36-170.40	170.54-208.00	208.08-542.50
MCInfant	2022	90.46-124.40	125.22-154.14	154.15-187.25	187.50-225.00	225.15-606.61
MCToddler	2008	53.80-85.00	85.12-99.04	99.08-118.04	118.25-150.25	150.32-350.00
MCToddler	2009	33.00-85.93	86.00-99.93	99.96-118.51	118.68-145.00	145.50-351.00
MCToddler	2010	42.94-89.57	89.63-101.40	101.44-120.00	120.13-143.00	144.00-352.00
MCToddler	2011	51.52-90.35	90.42-104.20	104.29-125.67	125.81-147.50	147.76-353.00
MCToddler	2012	59.08-94.25	94.79-107.00	107.28-125.82	125.92-154.00	155.00-363.50
MCToddler	2013	64.95-98.02	98.18-111.75	111.92-130.00	130.24-154.20	154.65-374.00
MCToddler	2014	62.76-96.65	96.80-112.92	112.95-132.69	132.93-160.00	160.21-384.50
MCToddler	2015	60.57-99.05	99.08-112.00	112.03-133.99	134.00-160.50	160.64-395.00
MCToddler	2016	56.49-101.88	102.01-116.37	116.45-136.67	136.70-160.75	160.77-403.00
MCToddler	2017	66.71-107.71	107.82-120.04	120.12-142.38	142.40-164.67	164.78-411.00
MCToddler	2018	21.54-109.99	110.00-123.66	123.74-145.00	145.08-167.43	167.48-419.00
MCToddler	2019	83.35-110.04	110.17-130.59	130.61-147.71	147.74-173.94	174.17-444.25
MCToddler	2020	85.16-112.62	113.27-137.94	138.01-151.67	151.78-181.67	181.75-469.50
MCToddler	2021	72.69-110.00	110.28-133.00	133.20-160.00	160.05-189.69	189.75-494.75
MCToddler	2022	83.23-117.21	117.80-139.00	139.04-170.00	170.08-200.00	200.20-520.00
MCPreschool	2008	53.82-83.31	83.40-95.51	95.53-105.00	105.07-137.34	137.65-324.29
MCPreschool	2009	33.00-85.00	85.04-95.11	95.30-109.85	109.88-139.60	139.67-303.79
MCPreschool	2010	42.94-86.00	86.24-96.99	97.02-112.19	112.22-135.20	135.46-285.67
MCPreschool	2011	51.52-89.13	89.20-98.61	98.65-115.87	115.93-139.50	139.51-298.00
MCPreschool	2012	59.08-90.00	90.05-100.00	100.01-117.95	118.04-143.04	144.13-315.00
MCPreschool	2013	64.95-94.85	94.89-107.50	107.59-120.60	120.73-145.00	145.11-325.00
MCPreschool	2014	62.76-92.35	92.50-108.45	108.55-124.71	124.86-149.00	149.17-335.00
MCPreschool	2015	60.57-95.00	95.18-109.15	109.21-123.78	123.80-150.59	151.00-345.00
MCPreschool	2016	58.39-97.50	97.58-110.90	110.95-125.00	125.02-148.86	149.00-358.33
MCPreschool	2017	66.71-100.00	100.05-115.60	115.85-129.20	129.23-153.88	153.97-371.67
MCPreschool	2018	21.54-104.21	104.54-119.53	119.55-133.33	133.34-158.08	158.16-385.00
MCPreschool	2019	69.11-107.70	107.93-122.62	122.63-139.03	139.09-163.07	163.13-398.33
MCPreschool	2020	78.46-108.72	109.08-125.60	125.75-144.62	144.63-170.00	170.33-411.67
MCPreschool	2021	67.21-110.00	110.10-128.41	128.47-150.00	150.06-175.00	175.17-397.50

Variable	Study Year	Quintile 1 (in $)	Quintile 2 (in $)	Quintile 3 (in $)	Quintile 4 (in $)	Quintile 5 (in $)
MCPreschool	2022	83.23-113.80	113.83-134.40	134.72-160.56	161.21-185.14	185.18-496.30
MCSA	2008	38.00-66.18	66.26-77.23	77.30-93.11	93.37-112.50	113.22-210.00
MCSA	2009	30.51-66.10	66.18-79.90	79.95-93.50	93.63-112.47	112.50-251.00
MCSA	2010	37.45-64.00	64.15-81.36	81.38-94.04	94.43-115.63	115.83-242.00
MCSA	2011	20.19-66.60	67.13-83.78	83.86-97.28	97.50-118.89	118.94-264.50
MCSA	2012	23.08-69.20	69.47-86.17	86.23-100.00	100.11-123.42	123.49-287.00
MCSA	2013	25.96-73.20	73.26-90.48	90.67-102.80	102.88-126.50	126.67-303.00
MCSA	2014	28.85-77.00	77.03-93.60	93.67-105.00	105.11-130.00	130.26-319.00
MCSA	2015	23.08-80.80	80.93-94.79	94.91-105.00	105.08-131.15	131.31-335.00
MCSA	2016	40.94-84.60	84.65-95.46	95.56-105.97	105.99-127.15	127.50-326.67
MCSA	2017	34.62-80.46	80.55-95.94	95.98-111.25	111.36-133.13	133.18-375.40
MCSA	2018	18.98-84.23	84.25-100.00	100.02-114.11	114.27-138.85	138.86-375.40
MCSA	2019	25.38-85.63	85.82-103.41	103.47-118.88	118.92-139.96	140.00-375.40
MCSA	2020	25.38-84.80	84.86-106.20	106.21-123.19	123.30-145.67	145.90-396.67
MCSA	2021	23.65-83.60	84.18-109.53	109.57-123.44	123.59-153.83	154.00-329.08
MCSA	2022	23.65-85.00	85.19-112.00	112.09-130.25	130.26-161.72	161.79-504.30
MFCCInfant	2008	43.08-76.48	76.58-91.31	91.56-101.25	101.38-125.00	125.04-275.00
MFCCInfant	2009	43.08-79.71	79.78-93.07	93.41-105.05	105.13-127.40	127.46-279.17
MFCCInfant	2010	50.00-80.00	80.04-93.18	93.22-103.85	103.87-126.21	126.28-283.33
MFCCInfant	2011	49.97-82.52	82.64-95.28	95.35-106.35	106.36-128.08	128.38-287.50
MFCCInfant	2012	57.61-85.00	85.07-98.40	98.56-110.00	110.38-128.25	128.36-296.88
MFCCInfant	2013	61.00-86.04	86.17-102.50	102.56-116.33	116.67-134.50	134.88-306.25
MFCCInfant	2014	59.16-85.58	85.71-100.28	100.30-120.00	120.22-137.05	137.09-315.63
MFCCInfant	2015	53.36-86.11	86.17-99.77	99.85-118.75	118.76-140.00	140.06-325.00
MFCCInfant	2016	47.56-90.00	90.14-101.41	101.50-116.41	116.64-135.64	135.98-316.67
MFCCInfant	2017	47.58-93.60	93.79-106.98	107.01-124.38	124.43-145.00	145.38-351.29
MFCCInfant	2018	47.66-97.15	97.23-110.95	111.04-128.36	128.45-147.95	148.00-353.00
MFCCInfant	2019	72.94-100.85	100.93-118.85	118.86-135.05	135.08-156.67	156.69-354.72
MFCCInfant	2020	67.26-102.92	102.94-124.65	124.70-141.67	141.73-159.28	159.34-356.43
MFCCInfant	2021	51.92-100.00	100.03-125.00	125.10-142.62	142.71-164.29	164.50-358.14
MFCCInfant	2022	79.47-106.67	106.72-130.40	130.82-154.00	154.19-176.60	176.67-407.69
MFCCToddler	2008	43.08-75.00	75.17-83.40	83.42-95.00	95.37-115.38	115.41-270.00
MFCCToddler	2009	43.08-76.50	76.51-86.82	86.86-98.08	98.53-117.10	117.50-271.67
MFCCToddler	2010	50.00-75.89	76.00-86.10	86.12-100.00	100.20-120.00	121.90-273.33
MFCCToddler	2011	49.97-80.00	80.01-89.35	89.41-102.50	102.63-122.90	123.16-275.00
MFCCToddler	2012	47.30-80.00	80.14-92.69	92.75-105.00	105.04-122.25	122.50-283.75
MFCCToddler	2013	44.35-81.47	81.54-96.68	96.70-108.56	108.75-126.80	126.83-292.50
MFCCToddler	2014	45.39-84.00	84.09-95.63	95.67-108.16	108.26-130.00	130.03-301.25
MFCCToddler	2015	46.44-85.00	85.05-95.00	95.05-108.39	108.45-130.00	130.07-310.00
MFCCToddler	2016	47.49-87.50	87.55-95.00	95.12-107.90	108.00-127.50	127.80-300.00
MFCCToddler	2017	47.58-90.00	90.01-102.00	102.06-115.55	115.60-135.00	135.38-308.45
MFCCToddler	2018	46.97-91.01	91.16-105.30	105.37-125.00	125.28-138.49	138.68-313.16
MFCCToddler	2019	71.67-97.50	97.60-114.49	114.57-126.67	126.78-150.00	150.23-317.90
MFCCToddler	2020	66.67-97.50	97.54-119.85	119.92-133.20	133.33-150.00	150.01-330.70
MFCCToddler	2021	51.92-97.50	97.55-121.38	121.66-135.00	135.07-158.00	158.14-327.30
MFCCToddler	2022	75.00-103.72	103.82-125.00	125.48-140.88	140.92-167.33	167.61-393.25
MFCCPreschool	2008	43.08-74.97	75.00-81.40	81.51-94.74	94.79-114.18	114.62-270.00

Variable	Study Year	Quintile 1 (in $)	Quintile 2 (in $)	Quintile 3 (in $)	Quintile 4 (in $)	Quintile 5 (in $)
MFCCPreschool	2009	43.08-75.00	75.09-82.57	82.59-94.79	94.97-115.50	115.67-271.67
MFCCPreschool	2010	50.00-75.00	75.12-84.85	84.89-99.00	99.32-115.38	115.44-273.33
MFCCPreschool	2011	49.97-78.93	79.12-87.50	87.57-100.00	100.02-120.63	120.66-275.00
MFCCPreschool	2012	47.30-80.00	80.14-90.40	90.42-100.09	100.13-120.31	120.52-282.50
MFCCPreschool	2013	44.35-81.00	81.05-95.19	95.20-105.00	105.01-125.00	125.33-290.00
MFCCPreschool	2014	44.05-82.85	82.94-94.28	94.33-105.00	105.12-125.15	125.35-297.50
MFCCPreschool	2015	43.75-83.00	83.04-91.37	91.39-104.84	104.88-126.00	126.02-305.00
MFCCPreschool	2016	43.45-85.75	85.87-93.57	93.60-105.67	105.85-125.00	125.47-290.00
MFCCPreschool	2017	42.19-87.50	87.58-99.97	100.00-112.50	112.65-132.00	132.28-296.18
MFCCPreschool	2018	40.03-90.00	90.23-103.85	103.92-120.42	120.78-135.00	135.12-305.09
MFCCPreschool	2019	70.55-96.67	96.71-110.89	110.98-125.24	125.25-145.00	145.29-317.90
MFCCPreschool	2020	66.11-97.50	97.91-117.50	117.54-130.49	130.86-146.25	146.61-330.70
MFCCPreschool	2021	60.16-97.50	97.60-117.00	117.32-132.00	132.05-155.09	155.10-321.30
MFCCPreschool	2022	75.00-103.25	103.27-124.78	124.96-139.88	139.94-162.30	162.43-409.64
MFCCSA	2008	38.08-62.72	62.76-75.00	75.06-83.14	83.43-103.62	103.75-270.00
MFCCSA	2009	43.56-67.50	67.85-76.00	76.23-85.87	85.90-105.00	105.99-271.67
MFCCSA	2010	22.00-66.22	66.26-75.00	75.06-88.27	89.18-105.95	105.99-273.33
MFCCSA	2011	40.00-67.88	67.93-76.50	76.54-91.25	91.30-108.53	108.68-275.00
MFCCSA	2012	35.00-69.20	69.23-78.50	78.56-94.25	94.79-110.00	110.18-283.25
MFCCSA	2013	50.21-73.20	73.28-84.80	85.00-95.00	95.40-112.38	112.45-291.50
MFCCSA	2014	46.79-74.41	74.72-83.75	83.81-95.80	95.81-112.50	112.94-299.75
MFCCSA	2015	43.37-75.10	75.11-85.00	85.05-95.00	95.05-116.25	116.32-308.00
MFCCSA	2016	39.95-77.50	77.52-85.00	85.10-93.33	93.45-117.60	117.64-280.33
MFCCSA	2017	35.32-80.00	80.03-88.79	88.83-100.91	100.94-121.05	121.06-277.78
MFCCSA	2018	33.11-80.63	80.65-90.38	90.43-105.00	105.08-125.00	125.01-289.62
MFCCSA	2019	48.55-82.84	82.88-96.03	96.09-110.00	110.16-132.50	132.63-327.73
MFCCSA	2020	34.70-85.00	85.68-99.99	100.00-116.67	116.78-135.55	135.60-313.25
MFCCSA	2021	20.85-86.25	86.26-101.84	101.85-121.00	121.34-140.00	140.12-281.25
MFCCSA	2022	20.85-96.71	96.91-108.67	108.76-125.48	126.00-150.80	151.00-433.13

Exhibit B. Quintile Ranges for Affordability Rankings

Rate	Study Year	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
MCInfant	2008	.057–.101	.101–.116	.116–.129	.129–.149	.149–.320
MCInfant	2009	.033–.101	.101–.118	.118–.131	.131–.154	.154–.390
MCInfant	2010	.060–.100	.100–.117	.118–.131	.131–.150	.150–.292
MCInfant	2011	.058–.101	.101–.119	.119–.133	.133–.151	.151–.303
MCInfant	2012	.056–.103	.103–.121	.121–.135	.135–.153	.153–.329
MCInfant	2013	.061–.106	.106–.124	.124–.137	.137–.155	.155–.374
MCInfant	2014	.053–.105	.105–.123	.123–.138	.138–.159	.159–.445
MCInfant	2015	.054–.105	.105–.123	.123–.139	.139–.159	.159–.376
MCInfant	2016	.051–.104	.104–.121	.121–.137	.137–.155	.155–.317
MCInfant	2017	.062–.105	.105–.122	.122–.136	.136–.154	.154–.534
MCInfant	2018	.024–.104	.104–.121	.121–.135	.135–.152	.152–.470
MCInfant	2019	.063–.103	.103–.119	.119–.133	.133–.151	.151–.406
MCInfant	2020	.061–.103	.103–.118	.118–.134	.134–.154	.154–.363
MCInfant	2021	.053–.098	.098–.114	.114–.131	.131–.154	.154–.322
MCInfant	2022	.049–.092	.092–.108	.108–.126	.126–.148	.148–.299
MCToddler	2008	.056–.093	.093–.104	.104–.117	.117–.134	.134–.252
MCToddler	2009	.030–.091	.091–.106	.106–.119	.119–.136	.136–.359
MCToddler	2010	.052–.090	.090–.105	.105–.118	.118–.135	.135–.264
MCToddler	2011	.053–.091	.091–.106	.106–.120	.120–.137	.137–.259
MCToddler	2012	.052–.093	.093–.109	.109–.122	.122–.139	.139–.329
MCToddler	2013	.058–.095	.096–.111	.111–.124	.124–.141	.141–.320
MCToddler	2014	.053–.095	.096–.110	.110–.124	.125–.143	.143–.380
MCToddler	2015	.045–.096	.096–.110	.110–.125	.125–.143	.143–.325
MCToddler	2016	.051–.096	.096–.110	.110–.124	.124–.140	.140–.282
MCToddler	2017	.057–.097	.097–.111	.111–.123	.123–.140	.140–.435
MCToddler	2018	.019–.097	.097–.109	.109–.122	.122–.138	.138–.365
MCToddler	2019	.056–.095	.095–.108	.108–.121	.121–.136	.136–.297
MCToddler	2020	.057–.095	.095–.107	.107–.120	.120–.137	.137–.285
MCToddler	2021	.053–.091	.091–.105	.105–.120	.120–.140	.140–.282
MCToddler	2022	.050–.084	.084–.098	.098–.112	.112–.131	.131–.255
MCPreschool	2008	.050–.088	.088–.100	.100–.110	.110–.125	.125–.227
MCPreschool	2009	.030–.088	.088–.101	.101–.112	.112–.128	.128–.359
MCPreschool	2010	.052–.087	.087–.101	.101–.112	.112–.127	.127–.243
MCPreschool	2011	.050–.087	.087–.101	.101–.113	.113–.127	.127–.231
MCPreschool	2012	.048–.089	.089–.102	.102–.114	.114–.128	.128–.310
MCPreschool	2013	.055–.092	.092–.106	.106–.117	.117–.132	.132–.302
MCPreschool	2014	.053–.092	.092–.105	.105–.118	.118–.134	.134–.300
MCPreschool	2015	.045–.092	.092–.106	.106–.118	.118–.134	.134–.263
MCPreschool	2016	.051–.091	.091–.104	.104–.116	.116–.130	.130–.245
MCPreschool	2017	.057–.092	.092–.104	.104–.115	.115–.130	.130–.399
MCPreschool	2018	.019–.091	.091–.103	.103–.114	.114–.129	.129–.335
MCPreschool	2019	.054–.090	.090–.102	.102–.113	.113–.128	.128–.273
MCPreschool	2020	.054–.090	.090–.101	.101–.113	.113–.129	.129–.264
MCPreschool	2021	.053–.088	.088–.100	.100–.113	.113–.131	.131–.269
MCPreschool	2022	.049–.081	.081–.093	.093–.106	.106–.123	.123–.242

Rate	Study Year	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
MCSA	2008	.026–.063	.063–.079	.079–.094	.095–.111	.111–.196
MCSA	2009	.026–.066	.066–.080	.080–.097	.097–.113	.113–.259
MCSA	2010	.029–.064	.064–.079	.079–.096	.096–.112	.112–.199
MCSA	2011	.013–.063	.063–.080	.080–.096	.096–.114	.114–.204
MCSA	2012	.014–.065	.066–.082	.082–.097	.097–.114	.114–.303
MCSA	2013	.016–.069	.069–.086	.086–.101	.101–.117	.117–.239
MCSA	2014	.017–.072	.073–.088	.088–.103	.103–.119	.119–.250
MCSA	2015	.014–.075	.075–.090	.091–.104	.104–.119	.119–.226
MCSA	2016	.024–.074	.074–.088	.088–.100	.100–.115	.115–.211
MCSA	2017	.019–.074	.074–.086	.086–.099	.099–.114	.114–.325
MCSA	2018	.012–.073	.073–.085	.085–.097	.097–.112	.112–.273
MCSA	2019	.013–.071	.071–.083	.083–.095	.095–.112	.112–.226
MCSA	2020	.017–.069	.069–.083	.083–.095	.095–.113	.113–.235
MCSA	2021	.016–.065	.065–.081	.081–.095	.095–.113	.113–.217
MCSA	2022	.015–.058	.058–.076	.076–.090	.090–.107	.107–.228
MFCCInfant	2008	.043–.083	.083–.093	.093–.104	.104–.119	.119–.214
MFCCInfant	2009	.028–.084	.084–.096	.096–.107	.107–.123	.124–.257
MFCCInfant	2010	.044–.083	.083–.094	.095–.105	.105–.119	.119–.218
MFCCInfant	2011	.051–.083	.083–.094	.094–.104	.104–.119	.119–.229
MFCCInfant	2012	.049–.085	.085–.096	.096–.106	.106–.120	.120–.314
MFCCInfant	2013	.050–.088	.088–.098	.098–.109	.109–.123	.123–.306
MFCCInfant	2014	.052–.087	.087–.098	.098–.109	.109–.124	.124–.232
MFCCInfant	2015	.042–.086	.086–.098	.098–.108	.108–.124	.124–.221
MFCCInfant	2016	.048–.085	.085–.096	.096–.107	.107–.121	.121–.216
MFCCInfant	2017	.044–.085	.085–.096	.096–.106	.106–.121	.121–.249
MFCCInfant	2018	.046–.085	.085–.096	.096–.106	.106–.119	.119–.234
MFCCInfant	2019	.050–.085	.085–.097	.098–.109	.109–.121	.122–.224
MFCCInfant	2020	.051–.085	.085–.097	.097–.109	.109–.123	.123–.224
MFCCInfant	2021	.050–.081	.081–.094	.094–.107	.107–.123	.123–.313
MFCCInfant	2022	.048–.074	.074–.088	.088–.102	.102–.118	.118–.230
MFCCToddler	2008	.043–.078	.078–.087	.087–.097	.097–.111	.111–.215
MFCCToddler	2009	.025–.079	.079–.090	.090–.099	.099–.115	.115–.250
MFCCToddler	2010	.044–.079	.079–.089	.089–.099	.099–.112	.112–.199
MFCCToddler	2011	.048–.078	.078–.090	.090–.099	.099–.112	.112–.247
MFCCToddler	2012	.047–.078	.078–.091	.091–.100	.100–.114	.114–.296
MFCCToddler	2013	.050–.079	.079–.092	.093–.103	.103–.117	.117–.287
MFCCToddler	2014	.050–.081	.081–.092	.092–.102	.102–.117	.117–.201
MFCCToddler	2015	.041–.082	.082–.093	.093–.103	.103–.117	.117–.195
MFCCToddler	2016	.048–.079	.079–.091	.091–.101	.101–.115	.115–.199
MFCCToddler	2017	.044–.080	.080–.092	.092–.101	.101–.114	.114–.259
MFCCToddler	2018	.045–.080	.080–.092	.092–.101	.101–.113	.113–.225
MFCCToddler	2019	.044–.081	.081–.093	.093–.103	.103–.115	.115–.210
MFCCToddler	2020	.040–.080	.080–.092	.092–.103	.103–.117	.117–.213
MFCCToddler	2021	.045–.078	.078–.089	.089–.102	.102–.118	.118–.313
MFCCToddler	2022	.042–.071	.071–.083	.083–.095	.095–.111	.111–.212
MFCCPreschool	2008	.043–.076	.076–.085	.085–.095	.095–.108	.108–.204

Rate	Study Year	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
MFCCPreschool	2009	.025–.077	.077–.087	.087–.097	.097–.112	.112–.250
MFCCPreschool	2010	.044–.077	.077–.087	.087–.097	.097–.110	.110–.199
MFCCPreschool	2011	.046–.077	.077–.088	.088–.097	.097–.110	.110–.247
MFCCPreschool	2012	.045–.077	.077–.089	.089–.098	.098–.111	.111–.285
MFCCPreschool	2013	.048–.079	.079–.090	.091–.101	.101–.113	.114–.277
MFCCPreschool	2014	.048–.079	.079–.090	.090–.100	.100–.113	.113–.197
MFCCPreschool	2015	.041–.080	.080–.091	.091–.100	.100–.113	.113–.188
MFCCPreschool	2016	.043–.078	.078–.089	.089–.099	.099–.112	.112–.196
MFCCPreschool	2017	.038–.079	.079–.090	.090–.099	.099–.111	.111–.238
MFCCPreschool	2018	.038–.078	.078–.090	.090–.099	.099–.110	.110–.244
MFCCPreschool	2019	.044–.079	.079–.091	.091–.101	.101–.112	.112–.291
MFCCPreschool	2020	.040–.079	.079–.090	.090–.101	.101–.114	.114–.241
MFCCPreschool	2021	.045–.077	.077–.088	.088–.099	.100–.115	.115–.281
MFCCPreschool	2022	.042–.071	.071–.082	.082–.093	.093–.108	.108–.228
MFCCSA	2008	.028–.062	.062–.076	.076–.087	.087–.102	.102–.178
MFCCSA	2009	.025–.065	.065–.077	.077–.088	.088–.103	.103–.223
MFCCSA	2010	.021–.066	.066–.076	.076–.087	.087–.101	.101–.192
MFCCSA	2011	.031–.064	.064–.075	.075–.087	.087–.101	.101–.198
MFCCSA	2012	.030–.065	.065–.077	.077–.090	.090–.102	.102–.280
MFCCSA	2013	.030–.067	.067–.081	.081–.092	.092–.104	.104–.272
MFCCSA	2014	.030–.068	.068–.080	.080–.091	.091–.103	.103–.197
MFCCSA	2015	.029–.068	.068–.082	.082–.092	.092–.105	.105–.185
MFCCSA	2016	.035–.067	.067–.079	.079–.090	.090–.102	.102–.196
MFCCSA	2017	.032–.069	.069–.081	.081–.090	.090–.102	.102–.227
MFCCSA	2018	.028–.067	.067–.078	.078–.089	.089–.101	.101–.206
MFCCSA	2019	.030–.068	.068–.078	.078–.090	.090–.103	.103–.199
MFCCSA	2020	.024–.067	.067–.079	.079–.091	.091–.106	.106–.213
MFCCSA	2021	.012–.065	.065–.078	.078–.088	.088–.103	.103–.262
MFCCSA	2022	.011–.060	.060–.074	.074–.085	.085–.101	.101–.203

Appendix I: Summary of Additional 2008-2018 Data Added as a Result of Additional In-Between Study Imputations

State	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AL	0	0	0	0	0	0	0	0	0	0	67
AK	0	0	0	0	0	0	7	0	7	7	8
AR	0	0	0	0	0	0	68	0	68	68	68
CA	58	0	0	0	0	0	0	0	0	0	0
CO	0	0	0	0	0	0	62	0	0	0	0
DE	0	0	3	0	0	0	0	0	0	0	0
DC	0	0	0	1	0	0	0	0	0	0	0
FL	67	0	5	5	6	5	5	0	57	57	57
GA	0	0	0	0	0	0	0	158	0	158	158
HI	0	0	0	0	0	0	0	0	0	0	4
ID	0	0	0	0	0	0	0	0	0	0	0
IL	0	0	0	0	0	0	0	0	0	0	0
IA	0	0	0	0	0	0	0	0	99	0	99
KS	0	0	0	0	0	0	0	0	0	0	105
KY	0	0	0	0	0	0	0	0	0	0	120
LA	64	0	0	0	0	0	0	64	64	64	64
MD	0	0	0	0	0	0	0	0	0	0	24
MI	83	0	0	0	0	0	0	0	0	0	0
MN	0	0	0	0	0	1	1	1	1	3	2
MS	0	0	1	0	0	0	0	0	0	82	82
MO	0	0	0	0	0	0	0	0	0	0	0
MT	0	0	0	0	0	0	0	56	0	56	56
NE	0	0	0	0	0	0	0	0	93	0	93
NH	0	0	0	0	0	0	0	0	0	10	0
NJ	0	0	0	0	0	0	0	0	0	21	21
NY	0	0	0	0	0	0	0	0	0	62	0
NC	0	0	0	0	0	0	0	0	0	0	0
ND	0	0	0	0	0	0	0	0	0	0	53
OK	0	0	0	0	0	0	0	0	0	0	77
OR	0	0	0	0	0	0	0	0	0	0	0
PA	0	0	0	0	0	0	0	0	0	0	0
RI	0	0	0	0	0	0	0	0	0	5	0
SC	0	0	0	0	0	0	0	0	0	0	46
SD	31	0	1	0	0	0	0	0	0	0	66
UT	0	0	0	0	0	0	0	0	0	0	29
VT	0	0	0	0	0	0	0	0	0	0	14
VA	0	0	0	0	0	0	0	0	0	0	0
WV	0	0	0	0	0	0	0	0	0	0	0
WI	0	0	0	0	0	0	0	0	0	0	1
WY	0	0	0	0	0	0	0	0	0	0	22
Total	303	0	10	6	6	6	143	279	389	593	1336


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