U. S. Department of Labor, Women's Bureau National Database of Childcare Prices: Final Report

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ICF

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Background and Overview

Purpose of the National Database of Childcare Prices

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.

The Conference Board's Committee for Economic Development found a correlation between the use of childcare and increased employment. According to their report, **Child Care in State Economies: Update 2019**, "the inability to afford paid child care can keep a parent out of the labor force." [1]

Lack of local level price data has limited researchers' ability to study childcare price effects on employment. Existing research relies primarily on state-level price data which underestimates prices in urban areas, masks significant county-to-county differences and variations in prices between age groups and care settings. To better understand how childcare prices affect women's labor supply, the Women's Bureau contracted ICF to compile a database of county-level childcare prices (referred to throughout this document as childcare prices). The data were collected, as described further below, from state studies of childcare prices conducted between 2008 and 2018.

This research provides a powerful tool for parents, researchers, policymakers, and other stakeholders to make decisions based on local data. Current and prospective parents will be able to better plan and budget for childcare options that meet the needs of their family. Researchers will be able to utilize a database that combines local childcare costs and labor market information to make recommendations for improving the local economy. This research will allow policymakers to accurately measure potential economic impacts and identify strategies for enhancing employment options and economic security for women. By making the database publicly available, states, localities, and other stakeholders will have a tool at their disposal that can combine county-level childcare prices and economic indicators to evaluate characteristics of underserved areas.

Overview of State Child Care Market Price Surveys

Since 1998, the federal 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 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. While market price surveys may include multiple segments of the childcare market, at their core they are designed to collect and report prices on providers that are operating in the regulated market for childcare.

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[1] Child Care in State Economies: Update 2019, Committee for Economic Development of The Conference Board, Accessed on September 9, 2020.
https://www.ced.org/assets/reports/childcareimpact/181104%20CCSE%20Report%20Jan30.pdf

State childcare regulatory authorities, and in some cases local authorities, use different terms for the requirements that childcare providers must meet, such as childcare licensing, certification, or registration requirements. These requirements outline what providers must do to operate legally and what types of basic qualifications must be met.

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. While some surveys may collect data on other segments of the market, such as publicly subsidized preschool programs, Head Start or informal, unregulated family childcare, these data are not typically included in the analysis of childcare prices and were not included in the database. 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.

Data Sources Used

The Women's Bureau National Database of Childcare Prices contains a public-use data set that draws data from state childcare market price surveys, in addition to county-level demographic and labor market data from the American Community Survey (ACS) 5-year estimates. The childcare price information requested for this database came entirely from the market rate survey (MRS) final reports that states produced and/or the data files used to prepare the reports.

General Information That Was Extracted from MRS Reports:

- State
- Geographic reporting level (state, region, county, cluster)
- Age span used to define age groups in the state (infants, toddlers, preschool and school-age)
- Year of survey
- Mode of survey administration (mail, phone, internet)
- Survey response rates for center-based care
- Survey response rates for family/home-based childcare

Childcare Prices Information That Was Extracted from MRS Reports (if applicable):

- 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 childcare for infants
- Median price of family full-time weekly childcare for toddlers
- Median price of family full-time weekly childcare for preschool children
- Median price of family full-time weekly childcare 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 childcare for infants
- 75th percentile price of family full-time weekly childcare for toddlers

- 75th percentile price of family full-time weekly childcare for preschool children
- 75th percentile price of family full-time weekly childcare for school-age children

General Demographic and Labor Market Information That Was Extracted from ACS:

- 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

The following document describes the approach that ICF used to collect and enter the data from existing MRS studies, the data that were available and data limitations, data collected from the Census Bureau, and the data imputation methods for missing data.

Data Collection

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.

The Paperwork Reduction Act (PRA) of 1995[2] required that the Women's Bureau receive formal approval from the Office of Management and Budget (OMB) before requesting childcare data from the states. During the first half of 2019, while working with the Women's Bureau to prepare documentation for submission to the OMB as part of the PRA, ICF tested the proposed data collection protocol on 11 states representing different regions of the country, different data collection methods and different methods of analysis. The purpose of this step was to identify any potential issues with the data collection and data entry processes.

After receiving formal approval from OMB (OMB number: 1290-0025) and with support from the U.S. Department of Health and Human Services' Administration for Children and Families, ICF began the data collection process. The objective was to collect the following types of data for each county for each year in which MRS reports were available:

- Estimates of the 50th percentile and 75th percentile of childcare prices for each county, by the age of the child, and provider type (center-based care or family/home-based care)
- Descriptive data on the methodology used to conduct the study – i.e., data collection mode (mail, phone, web), price modes used (hourly, weekly, daily, monthly), geographic unit used for reporting price data (county, administrative region, cluster or state-level), and response rates

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. Outreach communication included mail, emails, and direct phone calls.

A total of 35 states provided MRS reports during the data collection period. ICF catalogued each MRS report received and sent follow-up requests when the MRS data did not include all the

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[2] Public Law 104-13, https://www.govinfo.gov/content/pkg/PLAW-104publ13/html/PLAW-104publ13.htm

required data. For instance, some states only provided studies that estimated childcare prices at the state but not county level, or a state may have sent only three out of the possible 20 years of data.

ICF followed up with these states to ask if the state had additional data at the county-level and to request any additional MRS reports that were missing for the years 1998 through 2018. 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. ICF also supplemented this outreach by searching for additional MRS reports on state childcare agency websites or other partner agency websites. This search resulted in approximately 46 additional MRS reports that were added to the database.

The data collection process produced at least one year of data for each state.[3] On average, ICF received 4.5 years of MRS data per state. ICF tracked the geographic unit of analysis used for each MRS report. Exhibit 1 indicates the most granular geographic unit of analysis for the MRS data received.[4]

Exhibit 1. Geographic Unit of Analysis

Geographic Unit	Percentage of
Statewide	23.5%
Region	15.7%
Cluster (population, socioeconomic status, etc.)	17.6%
County	25.5%
Mix of geographical units across MRS report years	17.7%

After outreach, ICF extracted relevant data elements from the MRS reports and data files, cleaned and standardized the data, and performed a quality control (QC) process on entered data to ensure accuracy. To view the data collection protocol process followed by ICF, consult Appendix A. Any data entry nuances that were discovered during the data entry process and the decisions that followed those discoveries are recorded in detail in Appendix B. Additionally, ICF compiled aggregate data, reporting each state's method of survey analysis, as well as survey response rates by provider type. Out of all usable MRS reports received, the median response rate for centers was 65% (with a range of 3.6% - 98%) and was 57% for family childcare (with a range of 3.6% - 99%). In several instances, a state reported market rates which were derived from fewer than 10 providers, as the case with some counties in Alaska, Hawaii, and Missouri. In instances where the raw data provided less than 10 providers for a rate, ICF either masked those data or clustered counties based on socioeconomic similarities (as was the case with Pennsylvania) so that potentially identifying information was not disclosed. In instances where a state indicated low response rates but only provided published data, ICF reported the state's published market survey rates. This was done to be consistent in reporting between ICF and the state. ICF believes if a state made this data publicly available, then any potentially identifying information would have been removed before publishing.

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[3] Indiana and New Mexico were ultimately excluded from the database because they did not report market rates in a usable format. To see discussions of why these states were excluded, please view Appendix A.

[4] The table indicates the most granular level of data received. Clustered data is reported as a grouping of counties based on similarities, such as density, urban/rural breakdowns, or socioeconomic status. Regional data indicates that counties were grouped by defined administrative regions, such as subsidy region or operating region.

After data entry, ICF randomly selected 10% of each state's entered data and an independent reviewer checked the entered data against the state's reports. Any data entry errors found were corrected and were compiled into an accuracy percentage for each state. At this initial stage of the QC process, the data entry error rate across all states and years was 2.87%. After this initial process, if any state had more than a five percent data entry error rate based on the checked cells, ICF conducted a 100% quality check of the state's data across all available years. Following these steps, the weighted average data entry error rate across all quality controlled data was 0.51%. In addition, after every imputation ICF plotted each state's data to check for potential additional errors in data entry and syntax.

Missing Data

For many states, missing data can be found for an entire county, a specific age group, or a specific provider type. Some states indicated why data was missing for reasons such as low response rate, too few providers, or a specific care was not offered. However, some states did not indicate why they may not have data for a specific county, age group, or provider. ICF was only able to report data that was obtained by the states themselves or by discovered state MRS reports online to keep the integrity of the data intact.

Standardizations and Imputations

Given the variations in state methodologies and availability of MRS data, to create a complete database of county-level prices, each state requires the imputing of some price values. Additionally, detailed imputations were carried out to populate data elements that were missing across counties and years from ACS. These imputation methods are described in greater detail in the subsequent sections.

Imputation Panel

At least one imputation for the vast majority of states was implemented to maximize the amount of data that would be accessible in the final database. To ensure the imputations would capture the satisfaction of the childcare community, an Imputation Panel was created for feedback and input on the imputations. 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), WRMA, 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.

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. For instance, one state may have classified infants as being between 0-11 months, whereas another state may have defined an infant as between 0-23 months. To ensure consistent age segmentations were used across states, ICF standardized childcare prices across the following age groups:

- 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

School Age rates are based on each state's compulsory age for attending school full-time. 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 for research purposes, to inform policymaking or to share broadly with the public, 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, including:

- 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.

In instances where the prices for the six-month age groupings were equal across the broader age group, that price was used. In instances where there were multiple prices across the six-month age groups, the most common price was used. 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. These imputations are detailed fully in Appendix B.

Overview of Childcare Pricing Imputations Conducted

The overwhelming majority of states required at least one imputation for the childcare pricing variables, and most required more than one imputation to standardize the data and create a consolidated database. 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.

Because most states require multiple data imputations, ICF developed a hierarchy to conduct imputations in a standard order, adhering to the rules developed for certain imputations below. Please consult Appendix B to see a full list of the hierarchy for each state and year. The following list provides the imputation hierarchy used:

1. Impute based on different age group
2. Convert prices to a weekly price mode
3. Impute county-level prices from statewide data (this is 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 (this is applicable if a state provided at least one of these percentiles)
5. Impute missing data in between usable MRS report years

The following sections provide more detail into each of the five imputations utilized for imputing the MRS data.

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 required, 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 childcare 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:

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

In other words, 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.

A real example of this is in 2016 for Passaic County, New Jersey where the median price for center-based childcare was provided for all age groups except the school age group. Thus, the childcare price of the closest age grouping to the missing value (e.g. preschooler) was used. This was then multiplied by the quotient of the mean school age childcare price for all other New Jersey counties and the mean preschooler price for all other New Jersey counties, per the formula above, to impute the missing school age center-based childcare price.

In all, this imputation is carried out across years and counties for 16 states such as Alaska, Florida, and Pennsylvania. 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 (i.e., 1XXXX). Instances where the first digit of this variable is a "0" indicates this imputation was not carried out (i.e., 0XXXX). Again, documentation of the relevant states and years this imputation was performed for are indicated in Appendix B.

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 versus 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.

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 (consult Appendix C to view initial price modes

provided by states). A few states also changed price modes across years or had different price modes for different percentiles. For instance, D.C. reported their 50th percentile rates in a daily price mode but reported their 75th percentile rates in weekly prices. 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, each year of a state's data were assigned a price mode (e.g., hourly, half-day, daily). ICF then calculated weekly prices depending on the reported price mode that was extracted from states' MRS reports. This process was repeated for each age group, 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)

This imputation was carried out for 30 states, with some states requiring it for one year of provided MRS data (e.g., Maryland) to a max of eight years of provided MRS data (e.g., Texas). Where there were nuances in the childcare pricing data—similar to the D.C. example—ad-hoc imputations were performed to ensure the weekly price mode was uniform across states and years. These ad-hoc imputations involved creating state-specific syntax that ensured the childcare pricing metrics provided by each state had the same original price mode reported across all provider types, age groups, counties, years, and percentiles for that state prior to undergoing the formal price conversion imputation described above. 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 (i.e., X1XXX). Instances where the second digit of this variable is a "0" indicates this imputation was not carried out (i.e., X0XXX). Documentation of the relevant states and years this imputation was performed for are also indicated in Appendix B.

Limitations

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. ICF also obtained feedback from an imputation panel of experts on childcare price studies. 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 childcare prices. 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. Also,

states may have used different approaches to how pricing data were reported and standardized by providers across their state. 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

Fifteen states provided MRS reports that only included data at the state level or state level data in addition to another type of data that was found to be unusable.[5] In these instances, ICF developed predictive models of county-level prices using county-level variables that are highly correlated with childcare prices.[6] To identify which states and for which years this imputation is required, 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. 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.[7] 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 3.

Exhibit 3. 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 4. The

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[5] For instance, one state provided statewide rates in addition to regional rates that could not be mapped to specific counties.

[6] In addition to this imputation being used 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. This imputation helped fill the gaps in missing county-level data for states such as Florida, Minnesota, Nevada, North Carolina, Pennsylvania, and South Dakota.

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

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 4. Regression Model Results for 50th and 75th Percentiles

50th Percentile

Variable	Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
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

Variable	Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
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). Appendix B also includes documentation of the relevant states and years where this imputation was used.[8]

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[8] Instances where this imputation was used to 1) assign counties with missing data across all age groups, provider types, and percentiles for a given year to similar, same-state counties with provided MRS data for that same year and 2) impute those counties' missing values based on using PMM are also denoted with a "1" in the third digit of the five-digit imputation flag variable.

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.

Imputing 50th and 75th Percentiles if Missing 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 collect and 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.

Model Development for Imputation

ICF used a statistical model to estimate the missing percentile from the available percentile (i.e., determined the 50th percentile based on the MRS provided 75th percentile or determined the 75th percentile based on the MRS-provided 50th percentile). ICF assumed childcare prices follow a standard probability distribution and have a standard deviation relative to the mean. Using raw childcare pricing data from 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 5 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[9] and in a recent 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).[10]

Exhibit 5. 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
High-Density Rural	3	Less than 30% of county's population is urban

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[9] NSECE Project Team (National Opinion Research Center). (2019, March 25). National Survey of Early Care and Education (NSECE), [United States], 2010-2012. Retrieved from https://www.childandfamilydataarchive.org/cfda/archives/cfda/studies/35519/versions/V12/summary.

[10] 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.

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, 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 6 and inform the coefficients used in the statistical model for this imputation.

Exhibit 6. 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
High-Density 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 (P_Y) from a "known" percentile (P_X), where P_x and P_y are the percentiles of the standard lognormal distribution (mean=0, standard deviation=1):

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

Methodology

The model above was used to estimate a missing percentile (i.e., either 50th or 75th) for a total of 18 states and 1 to 11 years per state. 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. 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.[11] 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 (i.e., XXX1X). Instances where the fourth digit of this variable is a "0" indicates this imputation was not carried out (i.e., XXX0X). Appendix B also includes documentation of the relevant states and years where this imputation was used.

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[11] Tennessee provided childcare pricing for both provider types for the 50th and 70th percentiles. An imputation was carried out to convert the 70th percentile to the 75th percentile using the statistical model above.

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 raw 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 Fund's 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 provide data for every study cycle (whether it was two or three years), 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 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 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 which 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.

For the 2008 to 2018 period, Tennessee provided the highest number of MRS reports (one for each of the 11 years) and Colorado, D.C., Georgia, Iowa, Montana, New Hampshire, and Rhode Island provided the lowest number of surveys that were able to be used (one). Moreover, two states—Indiana and New Mexico—did not provide any usable MRS data. These two states provided data that were only in hard copy, meaning the data were not manipulatable. Specifically, Indiana provided only reimbursement rates and not market rates, and New Mexico disaggregated their data into multiple geographic and quality ratings which could not be weighted up into aggregate rates. Because these two states could not provide access to raw data, ICF would not extract market rates at the 50th and 75th percentiles for these two states. To see more detail about each of these state nuances, consult Appendix A.

Exhibit 7 summarizes for how many years between 2008 and 2018 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 7. Applicable States for Which this Imputation was Performed, and Number of Years that Are Imputed

State	Number of Years Imputed
Alabama	8
Alaska	3
Arizona	6
Arkansas	4
California	6
Connecticut	7
Delaware	7
Florida	7
Hawaii	2
Idaho	4
Illinois	5
Kansas	6
Kentucky	6
Louisiana	5
Maine	4
Maryland	4
Massachusetts	7
Michigan	6
Minnesota	4
Mississippi	6
Missouri	2
Nebraska	2
Nevada	3
New Jersey	7
North Carolina	3
North Dakota	7
Ohio	5
Oklahoma	6
Oregon	5
Pennsylvania	4
South Carolina	3
South Dakota	6
Texas	2
Utah	6
Vermont	5
Virginia	6

State	Number of Years Imputed
Washington	6
West Virginia	6
Wisconsin	3
Wyoming	3

Methodology

To address this issue across states, ICF developed an approach for imputing data for missing years that is dependent on meeting certain conditions. Based on reviewing the availability of usable MRS data by state from 2008 to 2018, states were segmented into one of three data availability categories described in Exhibit 8.

Exhibit 8. Data Availability Categories

Prevalence of Usable Data	Definition	Number of States Included
High	States had usable MRS data for at least four years from 2008-2018 (i.e., had data for every other year or nearly every other year from 2008 to 2018)	29
Medium	States had usable MRS data for two or three years from 2008-2018	12
Low	States had usable MRS data for only one year from 2008-2018	7
NA	States with no years of data in usable format from 2008-2018	3
Total		**51**

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. To calculate the linear trend, first ICF analyzed pricing data from five states and confirmed that prices tended to increase over time and that, within each state, the size of the increase on an annual basis is relatively similar. Next, for each state, 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 2009 and 2012 for California. To impute 2010 and 2011 childcare pricing data using this method, the difference in prices between 2009 and 2012 was determined and then divided by the number of changes in years between 2009 and 2012 (i.e., 3) to create a unit difference. This unit difference is then added to the 2009 usable MRS data to impute 2010 and subtracted from the 2012 usable MRS data to impute 2011. This linear change in pricing method is applied to states that have a minimum of two years of viable MRS data (i.e., 41 states); states with one or no years of usable data were excluded from this imputation (i.e., 10 states).[12]

States varied in the frequency and pattern of data available between 2008 and 2018. 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:

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[12] An exception is made for New York even though it had no years of usable MRS data from 2008 to 2018. Please reference Appendix A for details.

- 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., 2018)

This conservative approach—imputing only one year prior to the first usable year of MRS data and two years after the last usable year—was applied for all states that had a least two years of usable MRS data (i.e., 41 states). 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[13] 2008 values.   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.

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

2007	California, Delaware, Florida, Louisiana, Michigan, and South Dakota
2019[14]	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.

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 certain county and year, a "1" will show in the fifth digit of the five-digit imputation flag variable (i.e., XXXX1). Instances where the fifth digit of this variable is a "0" indicates this imputation was not carried out (i.e., XXXX0). 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

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[13] 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.

[14] Please reference Appendix A to see why New York was included in this imputation even though it had no usable MRS data from 2008 to 2018 available.

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 2018 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.

Imputing Demographic and Labor Market ACS Data

Demographic and labor market information from ACS, which is collected by the U.S. Census Bureau, for 2008 through 2018 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 5-year and 3-year estimates. While ACS 5-year estimates provided data from 2009 through 2018 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.[15] Due to a lack of data availability for specific counties in 2008 who do not meet the above population criteria and other instances of missing data across counties and 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. Moreover, data from the Bureau of Labor Statistics (BLS) was also used to impute these missing values where applicable. The types 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 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 counties changed their name during the 2008 to 2018 period
- 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. 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.

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[15] U.S. Census Bureau. (2019, September 17). When to Use 1-year, 3-year, or 5-year Estimates. Retrieved from https://www.census.gov/programs-surveys/acs/guidance/estimates.html.

Data Limitations and Considerations on Data Use

When planning to use the data included in the database, there are important limitations that researchers should keep in mind regarding the data collected and the imputations performed upon the data. The limitations include:

- States **defined child age groups in different ways** in the underlying market price studies. To mitigate for 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.

- States used **different price modes** in the underlying market price studies. The database provides price estimates in the weekly price mode, which is the mode most frequently used in the underlying studies. However, not all states reported prices in the weekly price mode. In these instances, as illustrated in Appendix B, the database includes imputed weekly values for those states using the formula described in the **Standardizations and Imputations** section above. For example, in 2018, 14 states did not report weekly prices. Researchers seeking to use the data for national study or for the study of prices in the states with imputed values should keep this limitation in mind. Researchers could also exclude the imputed values from their analyses or could revise the imputations by reversing the imputations performed and using either the original values taken from the market price studies or using an alternative imputation.

- Some market price studies **do not provide any county-level price estimates**. As illustrated in Appendix B, there were 15 states in which county-level price estimates were not available. In these instances, the database includes imputed price estimates that were prepared using state-level price estimates and socio-economic data that are correlated with childcare prices, as described in the **Standardizations and Imputations** section above. Researchers seeking to use the data for national study or for the study of prices in the states with imputed values should keep this limitation in mind. Researchers could also exclude the imputed values from their analyses or replace them with alternative imputations.

- In limited instances, states **did not include either the 50th or 75th market price percentiles** in the underlying market price studies. As illustrated in Appendix B, for example, there were 4 states for which one of the percentile estimates was missing for 2018. In these instances, as described in the **Standardizations and Imputations** section above, the database includes imputed values based on the typical distribution of prices. Researchers seeking to use the data for national study or for the study of prices in the states for which this imputation was used should keep this limitation in mind. Researchers could also exclude the imputed values from their analyses or replace them with alternative imputations.

- The Child Care and Development Fund regulations that require states to conduct market price surveys do not require studies every year, and as a result, nearly all states have **multiple years in which no price data are available**. In these instances, as described in the **Standardizations and Imputations** section above, the database includes imputed values based on linear trends. Researchers seeking to use the data for national study or for the study of prices in the states for which this imputation was used should keep this limitation in mind. Researchers could also exclude the imputed values from their analyses or replace them with alternative imputations.

- 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 plan.

- The NDCP is designed for **county-level analytical uses and data are provided at the county level only**. Researchers seeking to use the data for a state or national study need to keep in mind that county-level weights are not provided. Out of 3,142 counties, 2,548 counties have populations smaller than 100,000 and 138 counties have populations of 500,000 or greater. However, nearly half of the U.S. population lives in the largest 138 counties. Larger counties have more expensive childcare prices. County weights to account for population size are not provided, thus smaller counties with lower prices outnumber larger counties with higher prices. Adjustment by county population size is recommended in any state- or national-level study.

Appendix A: Data Collection Protocol and Decisions Made During Data Entry Process, Including State Nuances

Data Collection Protocol

After opening a source study, ICF followed the steps below to review and enter data from the study into a standardized data entry sheet for each of the 50 states and the District of Columbia.

County-Level Data Entry

1. Open the study from State folder and determine if the study includes county-level data. 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. 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 price and the 75th percentile price 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.
4. 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.
5. Find the table(s) with the most granular geographical estimates for family childcare providers by age group.
6. 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.
7. 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 is missing data for any geographical level is missing, enter NA.
2. Select the price mode that corresponds with the price data entered in Steps 4 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 to determine the statewide survey response rate for center-based childcare. If unavailable, enter NA.
5. Review the study to determine the statewide survey response rate for family childcare. If unavailable, enter NA.
6. Review the study to determine the survey modes used to collect data and enter yes for all options used and NA for all options that were not listed as being used.
7. Enter any review notes about questions or concerns about the data entered.
8. Save the source study in PDF format in the appropriate internal ICF folder, based on the state and year of the study.

State	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.
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.
AR	Data provided by state were reported in regional cluster rates.
AZ	Data provided by state were reported in regional cluster rates.
CA	Data provided by state were reported in regional cluster rates.
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.
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 percentile. Data provided by state were reported in regional cluster rates.
DC	There were no specific state nuances impacting the data entry.
DE	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 this 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.
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.

State	Data Nuances and Decisions
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. 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.
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.
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. 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.
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. Data provided by state were reported in clustered rates.
KY	Data provided by state were reported in regional cluster rates.

State	Data Nuances and Decisions
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.
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 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.
MD	Data provided by state were reported in regional cluster rates.
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.
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.
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.
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.
MS	The state reports that respondents make their own determination of how many hours constituted full-time care.
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.

State	Data Nuances and Decisions
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.
ND	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.
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 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.
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.
NV	Data provided by state were reported in clustered rates.
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 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.

State	Data Nuances and Decisions
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. |
| 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 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.
PA	Calculated using raw data. ICF created a grouping of counties based on socioeconomic closeness to group counties with few providers.
RI	There were no specific state nuances impacting the data entry.
SC	Data provided by state were reported in regional cluster rates.
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.
Oglala 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. |
| 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.

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. |

State	Data Nuances and Decisions
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.
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.
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 this to distribute regional rates which overlapped across multiple counties.
WA	There were no specific state nuances impacting the data entry.
WI	School-age is defined as 6+ (due to later start times for state).
WV	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.

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
NI	No imputations completed
NA	Years that are excluded from the database, based on the imputation methodology ICF developed

State	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AK	NA	NA	NA	NA	NA	NA	5	1,2	5	2	5
AL	5	4	5	5	5	5	4	5	5	4	5
AR[16]	NA	NA	NA	NA	NA	NA	5	2	5	5	5
AZ	2	5	2	5	2	5	2	5	5	5	2
CA[17]	5	NI	5	5	NI	5	NI	5	NI	5	NI
CO	NA	NA	NA	NA	NA	NA	NA	1,2	NA	NA	NA
CT	5	NI	5	NI	5	5	5	NI	5	5	NI
DC	NA	NA	NA	NA	4	NA	NA	NA	NA	NA	NA
DE[18]	5	5	5	2,4	5	2,4	5	2,4	5	5	2,4
FL[19]	5	1,3,4	5	5	5	1,3	5	1,3	5	5	NA
GA	NA	NA	NA	NA	NA	NA	NA	NA	NI	NA	NA
HI	NA	NA	NA	5	2	5	2	2	1,2	2	2
IA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,3,4	NA
ID	NA	NA	NA	NA	5	2	5	2	5	5	1,2
IL	2	5	2	5	2	5	2	5	2	5	2
IN[20]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
KS	2	5	2	5	2	2	5	5	5	2	5
KY	5	2,4	5	2,4	5	2,4	5	2,4	5	2	5
LA[21]	5	NI	NI	5	NI	5	NI	5	5	NA	NA
MA	2	5	5	2	5	5	5	2	5	5	2
MD	NA	NA	NA	NA	NA	5	NI	5	5	2	5
ME	NA	NA	NA	NA	5	1	5	NI	5	5	NI
MI[22]	5	2,3	5	2,3	5	2,3	5	2,3,4	5	5	2,3,4
MN	5	1,3,4	3	3	3	5	3	5	3	5	3
MO	NA	NA	NA	NA	NA	NA	NA	5	1,2,4	5	1,2,4
MS	NA	NA	5	3,4	5	2,3,4	5	5	2,3,4	5	5
MT	NA	NA	NA	NA	NA	NA	NA	NA	2,3,4	NA	NA
NC	NA	NA	NA	NA	NA	NA	5	2,3,4	5	5	1,2,3
ND	5	2,3	5	2,3	5	5	5	2,3	5	2,3	5

[16] 2019 data were provided to impute 2018 data (required converting to weekly price mode).
[17] 2007 data were provided to impute 2008 data (required imputing 75th percentile).
[18] 2007 data were provided to impute 2008 data (required converting to weekly price mode).
[19] 2007 data were provided to impute 2008 data (required imputed 50th percentile).
[20] Indiana's data could not be used as the state only provided reimbursement rates and not market rate calculations.
[21] 2007 data were provided to impute 2008 data.
[22] 2007 data were provided to impute 2008 data.

State	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
NE[23]	NA	NA	NA	NA	NA	NA	NA	NA	5	2	5
NH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
NJ	3	5	3	5	3	5	5	5	1	5	5
NM[24]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NV	3	2,3	5	3	2,3	3	1,2,3,4	5	5	NA	NA
NY[25]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5
OH	NA	5	1	5	NI	5	NI	5	NI	5	NI
OK	2,3	5	2,3	5	2,3	5	2,3	5	5	2,3	5
OR	2	5	2	5	2	5	2	5	2	5	2
PA	2	1,2	1,2	5	1,2,3	5	1,3	5	1,3	5	1,2
RI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
SC	NA	NA	NA	NA	NA	NA	5	NI	5	NI	5
SD[26]	5	1,3,4	5	2,4	5	1,2,4	5	2,4	5	2,4	5
TN	4	4	4	4	4	4	4	NI	NI	NI	NI
TX	NA	5	2	5	2	2	2	2	2	2	2
UT	5	2,3	5	2,3	5	2,3	5	2	5	2	5
VA	NA	5	3	5	3	5	5	NI	5	5	NI
VT	3	5	3	5	4	5	4	3	5	1	5
WA	2,4	5	2,4	5	2,4	5	2,4	5	5	5	2
WI	5	1,3	1,3	1,3	1,3	5	1,3	1,3	5	1,3	1,3
WV	2,3	5	5	2,3	2,3	5	5	2,3	5	5	2,3
WY	NA	NA	NA	NA	NA	NA	5	2,3,4	5	2,3,4	5

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[23] 2019 data were provided to impute 2018 data (required converting to weekly price mode).

[24] New Mexico's data could not be used because the state did not provide data that could be weighted up to calculate one rate per county or geographical grouping. New Mexico provided rates broken down by urban/rural classification, as well as a quality rating of 1-5. While these rates were provided, the number of providers within each grouping was not documented, meaning that one unified figure could not be reported.

[25] While New York provided 2019 data, this was the only year in which usable MRS data were received. Because of this, New York was grouped into the category of "low" available data, which based on ICF's methodology, meant that no years were to be imputed forward or backward. However, an exception was made for New York and the explanation and process for imputing data for this state are described in Appendix A. Specifically, a variation of the fifth imputation was used to impute 2018 county-level childcare prices based on 2019 provided MRS data. Given that this imputation—not performed for any other state—was a variation of the fifth imputation, a 5 is shown for 2018 in Appendix B for this state. Additionally, for simplicity, imputation flags for New York counties for 2018 denote that the fifth imputation was carried out (i.e., XXXX1).

[26] 2007 and 2019 data were provided to impute 2008 and 2018 data, respectively (required converting to weekly price mode for both).

Appendix C: Initial Price Modes per States' MRS Reports

State	Price Mode provided By State in MRS Reports
AK	Monthly
AL	Weekly
AR	Daily
AZ	Daily
CA	Weekly
CO	Daily
CT	Weekly
DC	Daily (50th percentile) and Weekly (75th percentile)
DE	Daily
FL	Weekly
GA	Weekly
HI	Monthly
IA	Half-Day
ID	Monthly
IL	Daily
IN	Daily, Hourly, and Weekly
KS	Hourly
KY	Daily
LA	Weekly
MA	Daily
MD	Weekly and Monthly
ME	Weekly
MI	Weekly
MN	Weekly
MO	Daily
MS	Weekly and Monthly
MT	Daily
NC	Monthly
ND	Monthly
NE	Hourly
NH	Weekly
NJ	Weekly
NM	Monthly
NV	Weekly and Yearly
NY	Hourly, Daily, and Weekly
OH	Weekly
OK	Daily
OR	Monthly
PA	Daily and Weekly
RI	Weekly
SC	Weekly
SD	Weekly
TN	Weekly
TX	Daily
UT	Monthly

State	Price Mode provided By State in MRS Reports
VA	Weekly
VT	Weekly
WA	Monthly (50th percentile) and Daily (75th percentile)
WI	Weekly
WV	Daily
WY	Daily

Appendix D: Data Dictionary & Additional Imputation Methodology

Table D-1. Codebook for Women's Bureau National Database of Childcare Prices.

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
State_Name	Character	60	Character	State Name	Name of the U.S. state.	N/A
State_Abbreviation	Character	6	Character	State Abbreviation	Two-letter U.S. state abbreviation.	N/A
County_Name	Character	99	Character	County	Name of the U.S. county.	N/A
County_FIPS_Code	Numeric	5	Numeric	County FIPS Code	Five-digit number that uniquely identifies the county in a state. The first two digits of this number refer to the FIPS code of the state to which the county belongs (note: leading zeros are shown when applicable)	N/A
StudyYear	Number	8	Number	Year	Year the data collection began for the market rate survey and in which ACS data is representative of, or the study publication date.	N/A
UNR_16	Number	8	Percent	Unemployment Rate (16+)	Unemployment rate of the population aged 16 years old or older.	S2301
FUNR_16	Number	8	Percent	Female Unemployment Rate (16+)	Unemployment rate of the female population aged 16 years old or older.	B23001
MUNR_16	Number	8	Percent	Male Unemployment Rate (16+)	Unemployment rate of the male population aged 16 years old or older.	B23001
UNR_20to64	Number	8	Percent	Unemployment Rate (20-64)	Unemployment rate of the population aged 20 to 64 years old.	S2301
FUNR_20to64	Number	8	Percent	Female Unemployment Rate (20-64)	Unemployment rate of the female population aged 20 to 64 years old.	S2301

[1] For ACS variables included in this database, the ACS Table ID is provided so readers can reference original data tables located on the U.S. Census Bureau website (https://data.census.gov/cedsci/all). Also, please reference this link for more detailed definitions and descriptions of the ACS variables included in this database: https://www.census.gov/programs-surveys/acs/technical-documentation/code-lists.html.

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
MUNR_20to64	Number	8	Percent	Male Unemployment Rate (20-64)	Unemployment rate of the male population aged 20 to 64 years old.	S2301
FLFPR_20to64	Number	8	Percent	Female Labor Force Participation Rate (20-64)	Labor force participation rate of the female population aged 20 to 64 years old.	S2301
FLFPR_20to64_Under6	Number	8	Percent	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.	S2301
FLFPR_20to64_6to17	Number	8	Percent	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.	S2301
FLFPR_20to64_Under6_6to17	Number	8	Percent	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.	S2301
MLFPR_20to64	Number	8	Percent	Male Labor Force Participation Rate (20-64)	Labor force participation rate of the male population aged 20 to 64 years old.	S2301
PR_F	Number	8	Percent	Poverty Rate (All Families)	Poverty rate for families.	DP03
PR_P	Number	8	Percent	Poverty Rate (All People)	Poverty rate for individuals.	DP03
MHI	Number	8	Dollar	Median Household Income	Median household income.	DP03
ME	Number	8	Dollar	Median Earnings	Median earnings for the population aged 16 years old or older.	B20002
FME	Number	8	Dollar	Female Median Earnings	Median earnings for females for the population aged 16 years old or older.	B20002
MME	Number	8	Dollar	Male Median Earnings	Median earnings for males for the population aged 16 years old or older.	B20002
MHI_2018	Number	8	Dollar	Median Household Income - 2018 Adjusted	Median household income expressed in 2018 dollars.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
ME_2018	Number	8	Dollar	Median Earnings - 2018 Adjusted	Median earnings expressed in 2018 dollars for the population aged 16 years old or older.	N/A
FME_2018	Number	8	Dollar	Female Median Earnings - 2018 Adjusted	Median earnings for females expressed in 2018 dollars for the population aged 16 years old or older.	N/A
MME_2018	Number	8	Dollar	Male Median Earnings - 2018 Adjusted	Median earnings for males expressed in 2018 dollars for the population aged 16 years old or older.	N/A
TotalPop	Number	8	Number	Total Population	Count of the total population.	DP05
OneRace	Number	8	Percent	One Race	Percent of population that identifies as being one race.	DP05
OneRace_W	Number	8	Percent	One Race: White Alone	Percent of population that identifies as being one race and being only White or Caucasian.	DP05
OneRace_B	Number	8	Percent	One Race: Black or African American Alone	Percent of population that identifies as being one race and being only Black or African American.	DP05
OneRace_I	Number	8	Percent	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.	DP05
OneRace_A	Number	8	Percent	One Race: Asian Alone	Percent of population that identifies as being one race and being only Asian.	DP05
OneRace_H	Number	8	Percent	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.	DP05
OneRace_Other	Number	8	Percent	One Race: Some Other Race Alone	Percent of population that identifies as being one race and being a different race not previously mentioned.	DP05
TwoRaces	Number	8	Percent	Two or More Races	Percent of population that identifies as being two or more races.	DP05
Hispanic	Number	8	Percent	Hispanic or Latino of Any Race	Percent of population that identifies as being Hispanic or Latino regardless of race.	DP05

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
Households	Number	8	Number	Number of Households	Number of households.	S1101
H_Under6_BothWork	Number	8	Number	Households with Children Under 6 with Two Working Parents	Number of households with children under 6 years old with two parents that are both working.	B23008
H_Under6_FWork	Number	8	Number	Households with Children Under 6 with Only Father Working	Number of households with children under 6 years old with two parents with only the father working.	B23008
H_Under6_MWork	Number	8	Number	Households with Children Under 6 With Only Mother Working	Number of households with children under 6 years old with two parents with only the mother working.	B23008
H_Under6_SingleM	Number	8	Number	Households with Children Under 6 with Single Mother	Number of households with children under 6 years old with a single mother.	B23008
H_6to17_BothWork	Number	8	Number	Households with Children 6-17 with Two Working Parents	Number of households with children between 6 and 17 years old with two parents that are both working.	B23008
H_6to17_Fwork	Number	8	Number	Households with Children 6-17 with Only Father Working	Number of households with children between 6 and 17 years old with two parents with only the father working.	B23008
H_6to17_Mwork	Number	8	Number	Households with Children 6-17 with Only Mother Working	Number of households with children between 6 and 17 years old with two parents with only the mother working.	B23008
H_6to17_SingleM	Number	8	Number	Households with Children 6-17 with Single Mother	Number of households with children between 6 and 17 years old with a single mother.	B23008
EMP_M	Number	8	Percent	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 in the county.	S2401
MEMP_M	Number	8	Percent	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 in the county.	S2401

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
FEMP_M	Number	8	Percent	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 in the county.	S2401
EMP_Service	Number	8	Percent	Civilian Employed Pop. (16+) Service Occupations	Percent of civilians employed in service occupations aged 16 years old and older in the county.	S2401
MEMP_Service	Number	8	Percent	Male Civilian Employed Pop. (16+) Service Occupations	Percent of male civilians employed in service occupations aged 16 years old and older in the county.	S2401
FEMP_Service	Number	8	Percent	Female Civilian Employed Pop. (16+) Service Occupations	Percent of female civilians employed in service occupations aged 16 years old and older in the county.	S2401
EMP_Sales	Number	8	Percent	Civilian Employed Pop. (16+) Sales and Office Occupations	Percent of civilians employed in sales and office occupations aged 16 years old and older in the county.	S2401
MEMP_Sales	Number	8	Percent	Male Civilian Employed Pop. (16+) Sales and Office Occupations	Percent of male civilians employed in sales and office occupations aged 16 years old and older in the county.	S2401
FEMP_Sales	Number	8	Percent	Female Civilian Employed Pop. (16+) Sales and Office Occupations	Percent of female civilians employed in sales and office occupations aged 16 years old and older in the county.	S2401
EMP_N	Number	8	Percent	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 in the county.	S2401
MEMP_N	Number	8	Percent	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 in the county.	S2401

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
FEMP_N	Number	8	Percent	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 in the county.	S2401
EMP_P	Number	8	Percent	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 in the county.	S2401
MEMP_P	Number	8	Percent	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 in the county.	S2401
FEMP_P	Number	8	Percent	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 in the county.	S2401
MCBto5	Number	8	Dollar	Median Price of Center-Based Care – Birth to 5 Months	Weekly, full-time median price charged for Center-Based Care for those aged 0 to 5 months 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.	N/A
MC6to11	Number	8	Dollar	Median Price of Center-Based Care – 6 Months to 11 Months	Weekly, full-time median price charged for Center-Based Care for those aged 6 to 11 months 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.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
MC12to17	Number	8	Dollar	Median Price of Center-Based Care – 12 Months to 17 Months	Weekly, full-time median price charged for Center-Based Care for those aged 12 to 17 months 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.	N/A
MC18to23	Number	8	Dollar	Median Price of Center-Based Care - 18 Months to 23 Months	Weekly, full-time median price charged for Center-Based Care for those aged 18 to 23 months 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.	N/A
MC24to29	Number	8	Dollar	Median Price of Center-Based Care – 24 Months to 29 Months	Weekly, full-time median price charged for Center-Based Care for those aged 24 to 29 months 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.	N/A
MC30to35	Number	8	Dollar	Median Price of Center-Based Care – 30 Months to 35 Months	Weekly, full-time median price charged for Center-Based Care for those aged 30 to 35 months 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.	N/A
MC36to41	Number	8	Dollar	Median Price of Center-Based Care – 36 Months to 41 Months	Weekly, full-time median price charged for Center-Based Care for those aged 36 to 41 months 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.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
MC42to47	Number	8	Dollar	Median Price of Center-Based Care – 42 Months to 47 Months	Weekly, full-time median price charged for Center-Based Care for those aged 42 to 47 months 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.	N/A
MC48to53	Number	8	Dollar	Median Price of Center-Based Care – 48 Months to 53 Months	Weekly, full-time median price charged for Center-Based Care for those aged 48 to 53 months 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.	N/A
MC54toSA	Number	8	Dollar	Median Price of Center-Based Care – 54 Months to School Age	Weekly, full-time median price charged for Center-Based Care for those aged 54 months to school age 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.	N/A
MCSA	Number	8	Dollar	Median Price of Center-Based Care – School Age	Weekly, full-time median price charged for Center-Based Care for those who are school age 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.	N/A
MCInfant	Number	8	Dollar	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)	N/A
MCToddler	Number	8	Dollar	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)	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
MCPreschool	Number	8	Dollar	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)	N/A
MFCCBto5	Number	8	Dollar	Median Price of Family Childcare – Birth to 5 Months	Weekly, full-time median price charged for Family Childcare for those aged 0 to 5 months 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.	N/A
MFCC6to11	Number	8	Dollar	Median Price of Family Childcare – 6 Months to 11 Months	Weekly, full-time median price charged for Family Childcare for those aged 6 to 11 months 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.	N/A
MFCC12to17	Number	8	Dollar	Median Price of Family Childcare – 12 Months to 17 Months	Weekly, full-time median price charged for Family Childcare for those aged 12 to 17 months 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.	N/A
MFCC18to23	Number	8	Dollar	Median Price of Family Childcare – 18 Months to 23 Months	Weekly, full-time median price charged for Family Childcare for those aged 18 to 23 months 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.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
MFCC24to29	Number	8	Dollar	Median Price of Family Childcare – 24 Months to 29 Months	Weekly, full-time median price charged for Family Childcare for those aged 24 to 29 months 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.	N/A
MFCC30to35	Number	8	Dollar	Median Price of Family Childcare – 30 Months to 35 Months	Weekly, full-time median price charged for Family Childcare for those aged 30 to 35 months 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.	N/A
MFCC36to41	Number	8	Dollar	Median Price of Family Childcare – 36 Months to 41 Months	Weekly, full-time median price charged for Family Childcare for those aged 36 to 41 months 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.	N/A
MFCC42to47	Number	8	Dollar	Median Price of Family Childcare – 42 Months to 47 Months	Weekly, full-time median price charged for Family Childcare for those aged 42 to 47 months 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.	N/A
MFCC48to53	Number	8	Dollar	Median Price of Family Childcare – 48 Months to 53 Months	Weekly, full-time median price charged for Family Childcare for those aged 48 to 53 months 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.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
MFCC54toSA	Number	8	Dollar	Median Price of Family Childcare – 54 Months to School Age	Weekly, full-time median price charged for Family Childcare for those aged 54 months to school age 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.	N/A
MFCCSA	Number	8	Dollar	Median Price of Family Childcare – School Age	Weekly, full-time median price charged for Family Childcare for those who are school age 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.	N/A
MFCCInfant	Number	8	Dollar	Median Price of Family Childcare – Infant	Aggregated weekly, full-time median price charged for Family Childcare for infants (i.e. aged 0 through 23 months)	N/A
MFCCToddler	Number	8	Dollar	Median Price of Family Childcare – Toddler	Aggregated weekly, full-time median price charged for Family Childcare for toddlers (i.e. aged 24 through 35 months)	N/A
MFCCPreschool	Number	8	Dollar	Median Price of Family Childcare – Preschool	Aggregated weekly, full-time median price charged for Family Childcare for preschoolers (i.e. aged 36 through 54 months)	N/A
_75CBto5	Number	8	Dollar	75th Percentile Price of Center-Based Care –Birth to 5 Months	Weekly, full-time 75th percentile price charged for Center-Based Care for those aged 0 to 5 months 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.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
_75C6to11	Number	8	Dollar	75th Percentile Price of Center-Based Care – 6 Months to 11 Months	Weekly, full-time 75th percentile price charged for Center-Based Care for those aged 6 to 11 months 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.	N/A
_75C12to17	Number	8	Dollar	75th Percentile Price of Center-Based Care – 12 Months to 17 Months	Weekly, full-time 75th percentile price charged for Center-Based Care for those aged 12 to 17 months 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.	N/A
_75C18to23	Number	8	Dollar	75th Percentile Price of Center-Based Care - 18 Months to 23 Months	Weekly, full-time 75th percentile price charged for Center-Based Care for those aged 18 to 23 months 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.	N/A
_75C24to29	Number	8	Dollar	75th Percentile Price of Center-Based Care – 24 Months to 29 Months	Weekly, full-time 75th percentile price charged for Center-Based Care for those aged 24 to 29 months 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.	N/A
_75C30to35	Number	8	Dollar	75th Percentile Price of Center-Based Care – 30 Months to 35 Months	Weekly, full-time 75th percentile price charged for Center-Based Care for those aged 30 to 35 months 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.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
_75C36to41	Number	8	Dollar	75th Percentile Price of Center-Based Care – 36 Months to 41 Months	Weekly, full-time 75th percentile price charged for Center-Based Care for those aged 36 to 41 months 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.	N/A
_75C42to47	Number	8	Dollar	75th Percentile Price of Center-Based Care – 42 Months to 47 Months	Weekly, full-time 75th percentile price charged for Center-Based Care for those aged 42 to 47 months 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.	N/A
_75C48to53	Number	8	Dollar	75th Percentile Price of Center-Based Care – 48 Months to 53 Months	Weekly, full-time 75th percentile price charged for Center-Based Care for those aged 48 to 53 months 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.	N/A
_75C54toSA	Number	8	Dollar	75th Percentile Price of Center-Based Care – 54 Months to School Age	Weekly, full-time 75th percentile price charged for Center-Based Care for those aged 54 months to school age 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.	N/A
_75CSA	Number	8	Dollar	75th Percentile Price of Center-Based Care – School Age	Weekly, full-time 75th percentile price charged for Center-Based Care for those who are school age 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.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
_75CInfant	Number	8	Dollar	75th Percentile Price of Center-Based Care – Infant	Aggregated weekly, full-time 75th percentile price charged for Center-Based Care for infants (i.e. aged 0 through 23 months)	N/A
_75CToddler	Number	8	Dollar	75th Percentile Price of Center-Based Care – Toddler	Aggregated weekly, full-time 75th percentile price charged for Center-Based Care for toddlers (i.e. aged 24 through 35 months)	N/A
_75CPreschool	Number	8	Dollar	75th Percentile Price of Center-Based Care – Preschool	Aggregated weekly, full-time 75th percentile price charged for Center-Based Care for preschoolers (i.e. aged 36 through 54 months)	N/A
_75FCCBto5	Number	8	Dollar	75th Percentile Price of Family Childcare – Birth to 5 Months	Weekly, full-time 75th percentile price charged for Family Childcare for those aged 0 to 5 months 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.	N/A
_75FCC6to11	Number	8	Dollar	75th Percentile Price of Family Childcare – 6 Months to 11 Months	Weekly, full-time 75th percentile price charged for Family Childcare for those aged 6 to 11 months 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.	N/A
_75FCC12to17	Number	8	Dollar	75th Percentile Price of Family Childcare – 12 Months to 17 Months	Weekly, full-time 75th percentile price charged for Family Childcare for those aged 12 to 17 months 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.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
_75FCC18to23	Number	8	Dollar	75th Percentile Price of Family Childcare – 18 Months to 23 Months	Weekly, full-time 75th percentile price charged for Family Childcare for those aged 18 to 23 months 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.	N/A
_75FCC24to29	Number	8	Dollar	75th Percentile Price of Family Childcare – 24 Months to 29 Months	Weekly, full-time 75th percentile price charged for Family Childcare for those aged 24 to 29 months 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.	N/A
_75FCC30to35	Number	8	Dollar	75th Percentile Price of Family Childcare – 30 Months to 35 Months	Weekly, full-time 75th percentile price charged for Family Childcare for those aged 30 to 35 months 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.	N/A
_75FCC36to41	Number	8	Dollar	75th Percentile Price of Family Childcare – 36 Months to 41 Months	Weekly, full-time 75th percentile price charged for Family Childcare for those aged 36 to 41 months 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.	N/A
_75FCC42to47	Number	8	Dollar	75th Percentile Price of Family Childcare – 42 Months to 47 Months	Weekly, full-time 75th percentile price charged for Family Childcare for those aged 42 to 47 months 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.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
_75FCC48to53	Number	8	Dollar	75th Percentile Price of Family Childcare – 48 Months to 53 Months	Weekly, full-time 75th percentile price charged for Family Childcare for those aged 48 to 53 months 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.	N/A
_75FCC54toSA	Number	8	Dollar	75th Percentile Price of Family Childcare – 54 Months to School Age	Weekly, full-time 75th percentile price charged for Family Childcare for those aged 54 months to school age 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.	N/A
_75FCCSA	Number	8	Dollar	75th Percentile Price of Family Childcare – School Age	Weekly, full-time 75th percentile price charged for Family Childcare for those who are school age 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.	N/A
_75FCCInfant	Number	8	Dollar	75th Percentile Price of Family Childcare – School Infant	Aggregated weekly, full-time 75th percentile price charged for Family Childcare for infants (i.e. aged 0 through 23 months)	N/A
_75FCCToddler	Number	8	Dollar	75th Percentile Price of Family Childcare – School Toddler	Aggregated weekly, full-time 75th percentile price charged for Family Childcare for toddlers (i.e. aged 24 through 35 months)	N/A
_75FCCPreschool	Number	8	Dollar	75th Percentile Price of Family Childcare – School Preschool	Aggregated weekly, full-time 75th percentile price charged for Family Childcare for preschoolers (i.e. aged 36 through 54 months)	N/A
iUNR_16	Number	8	Binary	Imputation for Unemployment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
iFUNR_16	Number	8	Binary	Imputation for Female Unemployment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iMUNR_16	Number	8	Binary	Imputation for Male Unemployment Rate (16+)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iUNR_20to64	Number	8	Binary	Imputation for Unemployment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iFUNR_20to64	Number	8	Binary	Imputation for Female Unemployment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iMUNR_20to64	Number	8	Binary	Imputation for Male Unemployment Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iFLRPR_20to64	Number	8	Binary	Imputation for Female Labor Force Participation Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iFLFPR_20to64_Under6	Number	8	Binary	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).	N/A
iFLFPR_20to64_6to17	Number	8	Binary	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).	N/A
iFLFPR_20to64_Under6_6to17	Number	8	Binary	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).	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
iMLFPR_20to64	Number	8	Binary	Imputation for Male Labor Force Participation Rate (20-64)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iPR_F	Number	8	Binary	Imputation for Poverty Rate (All Families)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iPR_P	Number	8	Binary	Imputation for Poverty Rate (All People)	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iMHI	Number	8	Binary	Imputation for Median Household Income	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iME	Number	8	Binary	Imputation for Median Earnings	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iFME	Number	8	Binary	Imputation for Female Median Earnings	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iMME	Number	8	Binary	Imputation for Male Median Earnings	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iMHI_2018	Number	8	Binary	Imputation for Median Household Income - 2018 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iME_2018	Number	8	Binary	Imputation for Median Earnings - 2018 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iFME_2018	Number	8	Binary	Imputation for Female Median Earnings - 2018 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iMME_2018	Number	8	Binary	Imputation for Male Median Earnings - 2018 Adjusted	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	
iTotalPop	Number	8	Binary	Imputation for Total Population	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
iOneRace	Number	8	Binary	Imputation for One Race	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iOneRace_W	Number	8	Binary	Imputation for One Race: White Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iOneRace_B	Number	8	Binary	Imputation for One Race: Black or African American Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iOneRace_I	Number	8	Binary	Imputation for One Race: American Indian and Alaska Native Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iOneRace_A	Number	8	Binary	Imputation for One Race: Asian Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iOneRace_H	Number	8	Binary	Imputation for One Race: Native Hawaiian or Pacific Islander Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iOneRace_Other	Number	8	Binary	Imputation for One Race: Some Other Race Alone	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iTwoRaces	Number	8	Binary	Imputation for Two or More Races	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iHispanic	Number	8	Binary	Imputation for Hispanic or Latino of Any Race	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iHouseholds	Number	8	Binary	Imputation for Number of Households	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iH_Under6_BothWork	Number	8	Binary	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).	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
iH_Under6_FWork	Number	8	Binary	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).	N/A
iH_Under6_MWork	Number	8	Binary	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).	N/A
iH_Under6_SingleM	Number	8	Binary	Imputation for Households with Children Under 6 with Single Mother	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iH_6to17_BothWork	Number	8	Binary	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).	N/A
iH_6to17_Fwork	Number	8	Binary	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).	N/A
iH_6to17_Mwork	Number	8	Binary	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).	N/A
iH_6to17_SingleM	Number	8	Binary	Imputation for Households with Children 6-17 with Single Mother	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iEMP_M	Number	8	Binary	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).	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
iMEMP_M	Number	8	Binary	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).	N/A
iFEMP_M	Number	8	Binary	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).	N/A
iEMP_Service	Number	8	Binary	Imputation for Civilian Employed Pop. (16+) Service Occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iMEMP_Service	Number	8	Binary	Imputation for Male Civilian Employed Pop. (16+) Service Occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iFEMP_Service	Number	8	Binary	Imputation for Female Civilian Employed Pop. (16+) Service Occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iEMP_Sales	Number	8	Binary	Imputation for Civilian Employed Pop. (16+) Sales and Office Occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iMEMP_Sales	Number	8	Binary	Imputation for Male Civilian Employed Pop. (16+) Sales and Office Occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A
iFEMP_Sales	Number	8	Binary	Imputation for Female Civilian Employed Pop. (16+) Sales and Office Occupations	Whether this demographic or labor market variable was imputed (1) or not imputed (0).	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
iEMP_N	Number	8	Binary	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).	N/A
iMEMP_N	Number	8	Binary	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).	N/A
iFEMP_N	Number	8	Binary	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).	N/A
iEMP_P	Number	8	Binary	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).	N/A
iMEMP_P	Number	8	Binary	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).	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
iFEMP_P	Number	8	Binary	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).	N/A
iMCBto5	Character	5	Character	Imputation for Median Price of Center-Based Care – Birth to 5 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMC6to11	Character	5	Character	Imputation for Median Price of Center-Based Care – 6 Months to 11 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMC12to17	Character	5	Character	Imputation for Median Price of Center-Based Care – 12 Months to 17 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
iMC18to23	Character	5	Character	Imputation for Median Price of Center-Based Care - 18 Months to 23 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMC24to29	Character	5	Character	Imputation for Median Price of Center-Based Care – 24 Months to 29 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMC30to35	Character	5	Character	Imputation for Median Price of Center-Based Care – 30 Months to 35 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMC36to41	Character	5	Character	Imputation for Median Price of Center-Based Care – 36 Months to 41 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
iMC42to47	Character	5	Character	Imputation for Median Price of Center-Based Care – 42 Months to 47 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMC48to53	Character	5	Character	Imputation for Median Price of Center-Based Care – 48 Months to 53 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMC54toSA	Character	5	Character	Imputation for Median Price of Center-Based Care – 54 Months to School Age	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMCSA	Character	5	Character	Imputation for Median Price of Center-Based Care – School Age	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
iMFCCBto5	Character	5	Character	Imputation for Median Price of Family Childcare – Birth to 5 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMFCC6to11	Character	5	Character	Imputation for Median Price of Family Childcare – 6 Months to 11 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMFCC12to17	Character	5	Character	Imputation for Median Price of Family Childcare – 12 Months to 17 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMFCC18to23	Character	5	Character	Imputation for Median Price of Family Childcare – 18 Months to 23 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
iMFCC24to29	Character	5	Character	Imputation for Median Price of Family Childcare – 24 Months to 29 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMFCC30to35	Character	5	Character	Imputation for Median Price of Family Childcare – 30 Months to 35 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMFCC36to41	Character	5	Character	Imputation for Median Price of Family Childcare – 36 Months to 41 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMFCC42to47	Character	5	Character	Imputation for Median Price of Family Childcare – 42 Months to 47 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
iMFCC48to53	Character	5	Character	Imputation for Median Price of Family Childcare – 48 Months to 53 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMFCC54toSA	Character	5	Character	Imputation for Median Price of Family Childcare – 54 Months to School Age	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
iMFCCSA	Character	5	Character	Imputation for Median Price of Family Childcare – School Age	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75CBto5	Character	5	Character	Imputation for 75th Percentile Price of Center-Based Care – Birth to 5 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
i_75C6to11	Character	5	Character	Imputation for 75th Percentile Price of Center-Based Care – 6 Months to 11 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75C12to17	Character	5	Character	Imputation for 75th Percentile Price of Center-Based Care – 12 Months to 17 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75C18to23	Character	5	Character	Imputation for 75th Percentile Price of Center-Based Care - 18 Months to 23 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75C24to29	Character	5	Character	Imputation for 75th Percentile Price of Center-Based Care – 24 Months to 29 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
i_75C30to35	Character	5	Character	Imputation for 75th Percentile Price of Center-Based Care – 30 Months to 35 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75C36to41	Character	5	Character	Imputation for 75th Percentile Price of Center-Based Care – 36 Months to 41 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75C42to47	Character	5	Character	Imputation for 75th Percentile Price of Center-Based Care – 42 Months to 47 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75C48to53	Character	5	Character	Imputation for 75th Percentile Price of Center-Based Care – 48 Months to 53 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
i_75C54toSA	Character	5	Character	Imputation for 75th Percentile Price of Center-Based Care – 54 Months to School Age	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75CSA	Character	5	Character	Imputation for 75th Percentile Price of Center-Based Care – School Age	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75FCCBto5	Character	5	Character	Imputation for 75th Percentile Price of Family Childcare – Birth to 5 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75FCC6to11	Character	5	Character	Imputation for 75th Percentile Price of Family Childcare – 6 Months to 11 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
i_75FCC12to17	Character	5	Character	Imputation for 75th Percentile Price of Family Childcare – 12 Months to 17 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75FCC18to23	Character	5	Character	Imputation for 75th Percentile Price of Family Childcare – 18 Months to 23 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75FCC24to29	Character	5	Character	Imputation for 75th Percentile Price of Family Childcare – 24 Months to 29 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75FCC30to35	Character	5	Character	Imputation for 75th Percentile Price of Family Childcare – 30 Months to 35 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
i_75FCC36to41	Character	5	Character	Imputation for 75th Percentile Price of Family Childcare – 36 Months to 41 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75FCC42to47	Character	5	Character	Imputation for 75th Percentile Price of Family Childcare – 42 Months to 47 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75FCC48to53	Character	5	Character	Imputation for 75th Percentile Price of Family Childcare – 48 Months to 53 Months	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
i_75FCC54toSA	Character	5	Character	Imputation for 75th Percentile Price of Family Childcare – 54 Months to School Age	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
i_75FCCSA	Character	5	Character	Imputation for 75th Percentile Price of Family Childcare – School Age	Whether this childcare pricing variable was imputed (1) or not imputed (0) where the first, second, third, fourth, and fifth digits correspond to the different age group, weekly pricing conversion, statewide to county-level, 50th/75th percentile, and in between years imputations, respectively.	N/A
MCInfant_flag	Number	8	Number	Aggregation Flag for Median Price of Center-Based Care – Infant	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.	N/A
MCToddler_flag	Number	8	Number	Aggregation Flag for Median Price of Center-Based Care – Toddler	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.	N/A
MCPreschool_flag	Number	8	Number	Aggregation Flag for Median Price of Center-Based Care – Preschool	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.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
MFCCInfant_flag	Number	8	Number	Aggregation Flag for Median Price of Family Childcare - Infant	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.	N/A
MFCCToddler_flag	Number	8	Number	Aggregation Flag for Median Price of Family Childcare - Toddler	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.	N/A
MFCCPreschool_flag	Number	8	Number	Aggregation Flag for Median Price of Family Childcare - Preschool	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.	N/A
_75CInfant_flag	Number	8	Number	Aggregation Flag for 75th Percentile Price of Center-Based Care - Infant	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.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
_75CToddler_flag	Number	8	Number	Aggregation Flag for 75th Percentile Price of Center-Based Care - Toddler	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.	N/A
_75CPreschool_flag	Number	8	Number	Aggregation Flag for 75th Percentile Price of Center-Based Care - Preschool	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.	N/A
_75FCCInfant_flag	Number	8	Number	Aggregation Flag for 75th Percentile Price of Family Childcare - Infant	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.	N/A
_75FCCToddler_flag	Number	8	Number	Aggregation Flag for 75th Percentile Price of Family Childcare - Toddler	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.	N/A

Variable Name	Variable Type	Variable Length	Variable Format	Variable Label	Variable Description	Original ACS Table ID (if applicable)[1]
_75FCCPreschool_flag	Number	8	Number	Aggregation Flag for 75th Percentile Price of Family Childcare - Preschool	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.	N/A

Appendix D-2. Methods Used for Specific Demographic Variables.

Variables:

Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only; Female Labor Force Participation (LFP) Rate (20-64) with Children 6-17 only; Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6-17

Years:

2008

Methodology description:

1. Navigated to the Bureau of Labor Statistics (BLS) website.
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 in 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:

$$\%\Delta_{2009-2008} = \frac{\left(CLFP_{AL_{2008}} - CLFP_{AL_{2009}}\right)}{CLFP_{AL_{2009}}}$$

$$FLFPR6_{AL_{2008}} = FLFPR6_{AL_{2009}} + \left(FLFPR6_{AL_{2009}} \times \%\Delta_{2009-2008}\right)$$

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.

Variables:

Unemployment Rate (16+)

Years:

2008

Methodology description:

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).

$$UR(16+)_{2008} = UR(16+)_{2009} \times (1 - PercentDifference_{2009-2008})$$

Variables:

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)

Years:

2008

Methodology description:

Follows the same instructions as above except the variable Unemployment Rate (16+) is replaced by any of the percentage-based metrics listed in this section for the imputation methodology.

Variables:

Median Household Income

Years:

2008

Methodology description:

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).
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.

Variables:

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; 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)

Years:

2008

Methodology description:

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 for the imputation methodology.

Variables:

Median Earnings; Female Median Earnings; Male Median Earnings

Years:

2015; 2017

Methodology description:

1. For each U.S. county where these data points in 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):

$$ME_{2015} = \frac{(ME_{2016} + ME_{2014})}{2}$$

Variables:

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 occupations; Male Civilian Employed Pop. (16+) Sales and office occupations; Female

Civilian Employed Pop. (16+) Sales and office occupations; 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

Years:

2008-2018

Methodology description:

1. For all the variables and years listed, gathered the total employed count by occupational group (and by gender 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 genders within each occupational group. Specifically, the gender-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 gender to determine the percent distribution of a county's employed population across the five occupational groups and for a specific gender.
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.

Variables:

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 occupations; Male Civilian Employed Pop. (16+) Sales and office occupations; Female Civilian Employed Pop. (16+) Sales and office occupations; 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

Years:

2008-2018

Methodology description:

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 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. Crosswalked 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 the Census Bureau website.
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 in 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:

$$\%\Delta_{2007-2008} = \frac{(M_{AL_{2008}} - M_{AL_{2007}})}{M_{AL_{2007}}}$$

$$M_{AL_{2008}} = M_{AL_{2007}} \times (1 + \%\Delta_{2007-2008})$$

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 are missing.

Variables:

Median Household Income – 2018 Adjusted; Median Earnings – 2018 Adjusted; Female Median Earnings – 2018 Adjusted; Male Median Earnings – 2016 Adjusted

Years:

2008-2017

Methodology description:

1. Navigated to the Bureau of Labor Statistics (BLS) website which goes to the Consumer Price Index (CPI) Inflation Calculator.
2. To determine each year's monetary-based variables in terms of 2018 dollars, this tool determines the inflation multiple needed to impute all monetary-based variables into 2018 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 2018. The top year drop-down option was set to each year whose monetary-based variables needed to be adjusted to 2018 amounts (i.e., 2000 – 2017).
3. For each year, an inflation multiple was calculated by determining what buying power $1 had in a prior year in terms of 2018 dollars. For example, in June 2008, $1 had the buying power of $1.15 in 2018. 1.15 is the inflation multiple in this scenario.
4. For each of the monetary-based variables listed in 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 2008, the following formula would be used to calculate the Median Household Income – 2018 Adjusted (MHI-18) variable where 1.15 is the inflation multiple to be used for all counties that have monetary-based variables in 2008 that need to be imputed:

$$MHI{-}16_{AL_{2008}} = MHI_{AL_{2008}} \times (1.15)$$

These steps are replicated for all U.S. counties for all four of the monetary-based variables listed in this section for 2008 – 2017 using the respective inflation multiple for the year being imputed.

Appendix D-3. Methods for Specific Counties.

Counties:

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 from these two separate counties from 2009).

Years:

2008

Methodology description:

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: 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:

$$UR_{WP_{2009}} = \left(UR_P \times \left(\frac{TP_P}{TP_P + TP_W} \right) \right)$$
$$+ \left(UR_W \times \left(\frac{TP_W}{TP_P + TP_W} \right) \right)$$

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):

$$C = \frac{(PRF_{2009} - PRF_{2000})}{9}$$

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:

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 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 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.

Counties:

Skagway Municipality, Alaska & Hoonah-Angoon Census Area, Alaska

Years:

2008

Methodology description:

Number-based Metrics:

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:

$$PercentDifference = \frac{MHI_{US_{2009}} - MHI_{US_{2008}}}{MHI_{US_{2009}}}$$

   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.

    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:

$$\%\Delta_{2009-2008} = \frac{\left(M_{AK_{2008}} - M_{AK_{2009}}\right)}{M_{AK_{2009}}}$$

$$M_{AK_{2008}} = M_{AK_{2009}} \times (1 + \%\Delta_{2009-2008})$$

Counties:

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).

Years:

2008-2013

Methodology description:

  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 Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6-17 metrics for 2008 – 2013.

Counties:

Kalawao County, Hawaii

Years:

2008

Methodology description:

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%."

Counties:

Petroleum County, Montana

Years:

2008-2015

Methodology description:

1. 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."

2. 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.
   As a result, from 2008 – 2015, this metric for this county is imputed to be 0.

Counties:

Daggett County, Utah

Years:

2016-2018

Methodology description:

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 provided by the Consumer Price Index(CPI) Inflation Calculator. 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.

Counties:

Rio Arriba County, New Mexico

Years:

2018

Methodology description:

The following metrics were not provided by the Census Bureau for this county for 2018:
• 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
• 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
- 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
- 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

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 to get 2018 values.

Counties:

Clearfield County, Pennsylvania

Years:

2008-2010

Methodology description:

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 suppressed. 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:

$$C = \frac{(ME_{2011} - ME_{2007})}{4}$$

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:

$$ME_{2009} = ME_{2007} + (2C)$$

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).

Counties:

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

Years:

2012; 2016 and 2010/2009; 2015 – 2017; 2016 – 2018; 2016 – 2018; 2011 – 2018; 2015 – 2018; 2017 – 2018; 2016 – 2017; 2016; 2016; 2016 – 2018; 2018; 2018; 2018; 2018; 2017

Methodology description:

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 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 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.
   - 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 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%."
   - 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 2015-2018 for Esmeralda County, Nevada. This Census-provided data point in 2014 is 0.0%. Thus, the 2015-2018 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 and 2018 for Edwards County, Texas. This Census-provided metric in 2016 is 50.0%. Thus, the 2017 and 2018 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 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.
- 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.
- 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.
- 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. This Census-provided metric in 2017 was 0.0%. Thus, the 2018 missing data point is imputed to show a value of "0.0%."
- The data point for the metric Median Earnings was missing for Loving County, Texas for 2018. This Census-provided metric in 2017 was $42,250. Thus, the 2018 missing data point is imputed to be $42,250 multiplied by the June 2017 to June 2018 inflation rate provided by the provided by the Consumer Price Index (CPI) Inflation Calculator.
- 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.
- 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.

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%.

Counties:

Mineral County, Colorado; McMullen County, Texas; Loving County, Texas; Kalawao County, Hawaii

Years:

2015-2018

Methodology description:

1. 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 (i.e. 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).
2. 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 - 2018).
   - Female LFP Rate (20-64) with Children Under 6 and 6-17 for Loving County, Texas (imputed for 2015 - 2018).

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 - 2018).

Counties:

Kusilvak Census Area, Alaska

Years:

2008-2013

Methodology description:

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.

Counties:

Oglala Lakota County, South Dakota

Years:

2008-2014

Methodology description:

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.

Appendix D-4. 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:

Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 only

Counties and years impacted:

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)

Variable:

Female Labor Force Participation (LFP) Rate (20-64) with Children 6-17 only

Counties and years impacted:

San Juan County, Colorado (2014-2008); Gosper County, Nebraska (2014-2012, 2009-2008); Hooker County, Nebraska (2014-2012, 2009-2008); Sherman County, Kansas (2014-2009); Harding County, New Mexico (2014, 2012-2008); Pierce County, North Dakota (2014-2012, 2009-2008); Wibaux County, Montana (2013-2012, 2010-2008); Cottle County, Texas (2013-2011); Bowman County, North Dakota (2013-2012, 2009-2008); Dimmit County, Texas (2012-2011); Boyd County, Nebraska (2012 and 2008); Storey County, Nevada (2011-2008); Kiowa County, Colorado (2011-2008); Grand County, Colorado (2011-2008); Lake of the Woods County, Minnesota (2011-2008); Keweenaw County, Michigan (2010-2008); Stanley County, South Dakota (2010-2008); Campbell County, South Dakota (2010-2008); Lane County, Kansas (2010-2009); Clay County, North Carolina (2010-2008); 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)

Variable:

Female Labor Force Participation (LFP) Rate (20-64) with Children Under 6 and 6-17

Counties and years impacted:

Armstrong County, Texas (2014-2011); Coke County, Texas (2014-2011); Kimble County, Texas (2014-2011); Foard County, Texas (2014-2011); Terrell County, Texas (2014-2011); Borden County, Texas (2014-2011); Childress County, Texas (2014-2011); Billings County, North Dakota (2014-2012, 2009); Adams County, North Dakota (2014-2012, 2009); Bath, Virginia (2014-2009); Northumberland County, Virginia (2014-2008);

Highland County, Virginia (2014-2008); Ouray County, Colorado (2014-2008); Garfield County, Nebraska (2014-2012, 2009-2008); Loup County, Nebraska (2014-2012, 2009-2008); Surry County, Virginia (2014-2008); Niobrara County, Wyoming (2014, 2011, 2009); Quitman County, Georgia (2014-2011, 2009-2008); Storey County, Nevada (2014-2008); Alpine County, California (2014-2008); Comanche County, Kansas (2014-2009); Norton County, Kansas (2014-2009); Harding County, New Mexico (2014, 2012-2008); De Baca County, New Mexico (2014, 2012-2008); Catron County, New Mexico (2014, 2012-2008); Sumter County, Alabama (2014-2008); Park County, Wyoming (2013-2012); Fillmore County, Nebraska (2013-2012, 2009-2008); Putnam County, Georgia (2013-2011, 2009-2008); Tyrrell County, North Carolina (2013-2009); Fulton County, Kentucky (2013-2009); Iron County, Wisconsin (2013-2008); Gilliam County, Oregon (2012-2008); Stanley County, South Dakota (2012-2008); Jones County, South Dakota (2012-2008); Sully County, South Dakota (2012-2008); Hyde County, South Dakota (2012-2008); Rooks County, Kansas (2009); Emmet County, Iowa (2009-2008); 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)

Variable:

Male Labor Force Participation (LFP) Rate (20-64)

Counties and years impacted:

Aleutians West Census Area, Alaska (2008); Blaine County, Nebraska (2008); McPherson County, Nebraska (2008); Wheeler County, Nebraska (2008); King County, Texas (2008)

Appendix E: Making the Database Accessible

There are many types of disabilities, which include but are not limited to physical disabilities, intellectual or learning disabilities, psychiatric disabilities, neurological disabilities, and visual and/or hearing impairments. In the United States, 1 in 4 adults have a disability that impacts their lives.[28] Under Section 508 of the U.S. Rehabilitation Act of 1973, federal government agencies must provide reasonable accommodation for those individuals with disabilities in the form of accessibility to electronic and technical information and data that is comparable to the access provided to those without disabilities.

SAS is a software suite that can perform statistical analysis and data visualization. In order for users to open the .sas7bdat file version of this database, the user must have the SAS software installed on their computer. Depending on the type of SAS software the user has installed will determine how accessible the data is. SAS states on their website that "upon request by an eligible customer, SAS will provide information detailing the extent to which specific SAS products of interest to the customer support the applicable Section 508 accessibility criteria."[29]However, there is a lot of information available related to how to export reports, graphs, and other output produced in SAS into 508-compliant formats. For example, the data can be exported and published in HTML5, PDF, Excel, and other formats.

To support the researchers and end users who will leverage this database with making exported reports, graphs, and other output 508-compliant, ICF has included various educational materials created by SAS to assist them in the process. SAS has additional information regarding its accessibility including how to make the resulting exported files accessible. Please review the following for additional information.

- Creating Reports that Comply with Section 508 Using SAS® 9.4: Planning Is the Most Important Step (PDF)
- SAS/GRAPH 508 GRAPHS
- Accessibility at SAS
- SAS Code to Make Excel Files Section 508 Compliant (PDF)
- Tag, You're It! Creating Accessible (Tagged) PDF with SAS 9.4 Output Delivery System (PDF)
- Accessibility & Compliance for Government

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[28] "Disability Impacts All of Us." 2019. Accessed on September 10, 2020 at https://www.cdc.gov/ncbddd/disabilityandhealth/infographic-disability-impacts-all.html

[29] "Accessibility and Compliance for Government." 2020. Accessed on September 9, 2020 at https://www.sas.com/en_us/industry/government/accessibility/accessibility-compliance.html