THE University of Vermont MEDICAL CENTER

By Electronic Mail & U.S. Mail

June 11, 2024

Ms. Donna Jerry
Senior Health Policy Analyst
Green Mountain Care Board
144 State Street
Montpelier, VT 05602
Donna.Jerry@vermont.gov

Re: Docket No. GMCB-004-23con, Development of Outpatient Surgery Center on Tilley Drive, Project Cost: $129,640,703. CONFIDENTIAL

Dear Ms. Jerry:

The University of Vermont Medical Center Inc. ("UVM Medical Center") hereby responds to the Green Mountain Care Board's ("the Board") post-hearing requests for additional information dated May 23, 2024 in the above-referenced docket.

1. **In a table format, broken out separately for both the Main Campus and the Fanny Allen Campus, provide actual volumes for each year, FY 2019 through FY 2023, FY 2024 actual volumes to date (specify dates), and FY 2024 volumes annualized for both inpatient and outpatient. For this request, use the same assumptions and methodology used for previous volume submissions. Provide a list of those procedures/ surgeries that were excluded in previous volume submissions and confirm that the same procedures/ surgeries were excluded from this volume data request.**

   Response:

Below please find the table showing actual volumes for FY19-FY23, with annualized volumes for FY24 based on actual volumes for 10/1/2023 – 4/30/2024. Note that we elected to show CY20 volumes excluding Oct-Dec 2019 given the transition to the Epic Optime OR module on November 9, 2019.

UVMMC Surgical Volumes: 25 ORs - All surgical volumes except ECTs

	FY 2019			2020**			FY 2021			FY 2022			FY 2023			FY 2024 (through 4/30/24)			FY 2024 Annualized		
	IP	OP	Total	IP	OP	Total	IP	OP	Total	IP	OP	Total	IP	OP	Total	IP	OP	Total	IP	OP	Total
Fanny Allen		4,298	4,298		2,524	2,524		527	527		2,087	2,087		3,796	3,796		2,452	2,452	-	4,203	4,203
Main Campus	5,948	8,754	14,702	4,879	7,965	12,844	4,856	11,174	16,030	5,034	9,740	14,774	5,210	10,102	15,312	3,108	5,834	8,942	5,328	10,001	15,329
Total	**5,948**	**13,052**	**19,000**	**4,879**	**10,489**	**15,368**	**4,856**	**11,701**	**16,557**	**5,034**	**11,827**	**16,861**	**5,210**	**13,898**	**19,108**	**3,108**	**8,286**	**11,394**	**5,328**	**14,205**	**19,533**

* ECT volumes excluded

** Given transition to Epic OpTime on 11/9/19, showing CY 2020 for best 12-mo period

The data above correspond to the actual volumes for Years 2019-2023 as provided in previous inputs to the Mathematica model with procedures and surgeries occurring in the 25 OR set (18 Main Campus ORs, MPUs 1-2, and 5 Fanny Allen ORs), including the same specialties, and the same procedures and surgeries. See, Q.006, Q.2 (November 16, 2023); Q.009, Q.3 (February 27, 2024); Q.009, Q.3 (rev.) (March 12, 2024).

Discrepancies between these numbers and those provided in response to Q.009, Q.3 are due to the difference between reporting on a calendar year and fiscal year basis, and timing impacts given the closure of the Fanny Allen ORs for air quality issues in Nov-Dec of both 2020 and 2021 (Oct-Dec 2020 is Q1 of FY21 and Q4 of CY20).

2. **In your response to Q006 (November 16, 2023), question 4, you stated that UVMMC had recently implemented a consistent methodology and centralized reporting for surgical waitlists across service lines at UVMMC. In a table format, by month, provide the waitlist data collected to date.**

   Response:

UVM Medical Center's wait time report is an operational dashboard, which is run and consulted as needed to support operational meetings on Mondays and Fridays of each week. During these meetings, we review the wait time data to identify services we need to prioritize for flex OR time, which helps us move patients into earlier time slots when possible. Because this is an operational dashboard, run on demand to support real-time decision-making, we do not write these statistics to a log that we can retrospectively review over time. However, below is a table of three reports run in support of this CON application – two referenced in response to the Board's Requests for Additional Information Q.006, Q.4, and one run in preparation for the public hearing held on May 20, 2024.

	Sep 8 2023	Nov 3 2023	May 16 2024
Patients Waiting 90+ Days	180	341	304
Patients Waiting 60-90 Days	441	375	220
Patients Waiting 60+ Days (sum)	621	716	524

3. **Provide data that supports UVMMC's assertion that costs to commercial payers are higher for surgeries performed out-of-state, especially given the data provided in the**

RAND 5.0 report, which shows that UVMMC is in the highest relative price decile of all hospitals included in the study.

Response:

We know from our regular discussions with commercial payers that (a) they generally pay higher rates to out-of-state providers for care that Vermonters choose to receive in Boston, Albany, and similar locations; and (b) those rate differences remain very difficult to quantify, both for payers and (especially) for providers. Despite recent price transparency regulations, the publicly available pricing data remains incomplete, inconsistent, and difficult to access and analyze without the use of a specialized vendor. We have very recently obtained access to a transparency tool provided by such a vendor, Clarify Health Solutions ("Clarify"). The data in this tool does not break down member cost share and it is only complete to the extent the payers and hospitals report, which unfortunately is still lagging.

Although we are still learning to use the Clarify tool, in response to the Board's question we tested it and found that the available data supports what commercial payers have long told us: they usually pay more for like services when received out of state, rather than at UVMMC. For instance, analyzing total knee replacement procedures in the Massachusetts/Albany/North Country New York marketplace, we found payers reimburse other facilities a higher amount. In Boston, Blue Cross Blue Shield Association members ("the Blues") reimburse Boston Medical Center 118% of the amount they reimburse UVMMC. For this procedure, only one hospital in Boston appeared to be paid less than UVMMC -- Beth Israel Medical Center by -20%. Looking to the Albany region, the total knee replacement in Albany costs the Blues 46% more compared to UVMMC. The same general trend appeared when looking at United Health Care, Aetna and Cigna.

Moreover, the Board's own budget tool, which includes only Dartmouth Health as an out-of-state comparator hospital, tells the same story in aggregate:

	UVMMC	DH
Commercial Payment per Inpatient Encounter	$25,757	$31,339
Medicare Payment per Inpatient Encounter	$17,216	$26,001
Medicaid Payment per Inpatient Encounter	$13,943	$18,497

Of course, both the Clarify data and Board data is limited in that it does not take account of any increased out-of-pocket costs to patients when they seek care out of state (and therefore sometimes out-of-network). But our review of the limited available data confirms our assessment that care costs commercial insurers more when it is delivered out of state, rather than at UVM Medical Center.

The Rand 5.0 report cited in the question is not part of the evidentiary record in this CON proceeding, and therefore cannot form the basis for any conclusions or inferences by the Board

in this matter. For that reason, we will not address the study, or any of its shortcomings, in full here. Nonetheless, it is important to note the following regarding the Rand 5.0 report:

- First, for inpatient services, some of which are included in the incremental project pro-forma, UVMMC is at its respective median price.

IP Standard Prices - UVMHN vs. National Data

	UVMHN	Average	1st Quartile	Median	3rd Quartile
Integrated AMCs	$ 31,753	$ 37,752	$ 25,819	$ 31,646	$ 43,348

- Second, the Medicare payment that the Rand study uses as the base for its price comparisons is not the same across the country. For the time period used in the study, UVMMC was not receiving any enhanced Medicare funding (standard PPS hospital), whereas other hospitals, like Dartmouth Health, do. That difference has the effect of making the UVM Medical Center appear more expensive relative to Medicare than a hospital (such as Dartmouth Health) that is receiving higher Medicare payments (which the Board's budget tool shows to be the case).

- Third, the outpatient service mix provided by hospitals in Vermont is different than in other States, including more high reimbursed services because there are fewer non-hospital-based providers of those services here.

4. **Quantify the magnitude of productivity increases expected to result from the project and explain in detail how these increases were determined. Also provide the current benchmarked percentile work RVUs for clinical FTEs for each specialty moving to the OSC and what the expected benchmarked percentile work RVUs will be for the same clinical FTEs once the OSC opens.**

Response:

Across all outpatient surgical specialties, we projected a 9% increase in wRVUs produced from 2019 to 2024. To develop the physician productivity projections, we used the CON Application Scenario 3 volume projections to identify the percent increase in outpatient surgeries by specialty. We then applied this same percent increase to the 2019 surgical wRVUs by specialty. This provided us with the incremental projected wRVUs by specialty over the forecast period.

The services currently projected to operate at the OSC are collectively 14% behind median productivity per Sullivan Cotter benchmarks. There are several reasons for this gap between actual and median productivity: (1) OR physical capacity limitations; (2) 24x7 operation of highly specialized clinical services requires UVM Medical Center to maintain a team of providers sufficient to cover call while surgical volume in these services may be low; (3) other specialty-specific factors. This gap suggests that several of these services have the capacity to

expand into the first phase of the OSC (8 ORs) without significantly increasing their clinical capacity via recruitment.

Per previous submissions to the Board, we anticipate we will be able to fill the capacity of the OSC in phase 1 (8 ORs) without significant surgeon recruitment and may need to recruit incremental surgeons if and when we expand into the 10 - 12 OR footprint at the OSC in the future, at which point we project that surgeons taking advantage of the needed incremental capacity at the OSC will be operating close to median benchmark.

We could provide current benchmarked percentile wRVUs by specialty, but we would need to provide this level of detail confidentially, because it would allow physicians UVM Medical Center seeks to recruit, and competitors for physician services, to closely estimate individual surgeons' compensation, which is proprietary and confidential information. Prospective hires could use this information to UVM Medical Center's disadvantage in employment contract negotiations, and competitors could use it to UVM Medical Center's disadvantage to recruit UVM Medical Center surgeons.

5. **Provide the data showing UVMMC's current and projected cost per case and cost per OR as compared against specific benchmarks (state source(s), such as Intellimarker).**

   Response:

UVM Medical Center Periop leadership works continuously to contain costs while maintaining quality with a focus on three main cost drivers: staffing ratios, the cost of surgical implants and other supplies, and OR efficiency.[1] The hospital does not, however, track either "cost per case" or "cost per OR" on any of its operational dashboards, and Periop leadership is not aware of any applicable benchmarking at this level. Since many different types of surgeries and procedures are performed at the hospital, and the types of surgeries and procedures performed in each OR vary substantially, these high-level metrics are not meaningful for OR performance management purposes.

Although UVM Medical Center does not use or monitor this metric, we were able to derive estimates of average cost per case across all UVM Medical Center's ORs and procedure rooms on the Main Campus and the Fanny Allen campus, and average cost per OSC case based on cost estimates UVM Medical Center's business planning team developed in building the full OSC pro forma that appears in the OSC Business Plan which is an Exhibit to the CON Application. Please note that the average cost per OSC case depends on assumptions regarding the types and mix of cases when the OSC is operating at full capacity (8 ORs).

A comparison of these high-level average cost/ case estimates indicates that the average cost for an OSC case will be approximately 12% lower than UVM Medical Center's FY23 average cost/case:

FY23 Average Cost/Case: $5,140
OSC Average Cost/Case (in FY22$): $4,529

[1] See our previous responses to the Board's requests for information regarding OR turnaround time and utilization.

These calculations include direct and indirect facility-related costs and exclude physician compensation costs and provider tax. For purposes to an apples-to-apples comparison, OSC interest costs are not included.

6. **Explain in detail whether and how UVMMC's population projections and staffing projections took into account Vermont's acute housing challenges. How accurate have population forecasts such as those produced by Public Opinion Strategies and Claritas been over time?**

   Response:

   a. **Explain in detail whether and how UVMMC's population projections took into account Vermont's acute housing challenges.**

Please see the attached Claritas document, which describes Claritas' methodology for projecting populations, including its use of small area data sources such as USPS, new construction data, and the internal Claritas Master Address File (MAF). Claritas Demographic Update 2024 Methodology (September 2023) at 5-7.

As Claritas' 2024 population forecast uses the 2020 Census data, please see also this article addressing Housing Characteristics in the 2020 Census: https://www.census.gov/library/publications/2023/decennial/c2020br-09.html

We have shared all the information available to UVM Medical Center regarding Public Opinion Strategies' approach in response to the Board's previous requests for additional information.

   b. **Explain in detail whether and how UVMMC's staffing projections took into account Vermont's acute housing challenges.**

OSC staffing projections were developed based upon the project's operating model, which is informed by considerations as outlined in the CON Application. The impact of our region's housing shortage is reflected in our estimate of traveler positions, and our intent to start the recruitment process for the additional positions eighteen months before the OSC opens. In addition, as described in the CON Application, UVM Medical Center has recently partnered with a housing developer to expand employee housing in South Burlington. The second of two apartment buildings is now leasing to UVM Medical Center staff.

   c. **How accurate have population forecasts such as those produced by Public Opinion Strategies and Claritas been over time?**

Claritas speaks to the results of an evaluation of its 2020 forecasts in comparison to the 2020 Census in this blog post: (Evaluating Our Estimates and Projections | Claritas LLC Blog).

Please see UVM Medical Center's response to the Board's Q.009, Q.2, comparing Claritas 2021 and 2024 forecasts, and POS projections to the Vermont Department of Health's ("VT DOH") population estimates for 2020-2022, updated in Nov. 2023, which is the most current available data. Claritas' 2021 forecast for Chittenden County's 65+ population is nearly identical to the

Nov. 2023 VT DOH 65+ estimate, underestimating the population by just .7%. Claritas' 2021 forecast for the Under 65 population was 4.3% less than the VT DOH's Nov. 2023 estimate for this cohort.

POS does not publish population forecasts on a regular basis, but rather generates them for its clients upon request. Information concerning POS's accuracy over time is therefore not available.

7. **In a table format, provide a breakdown by payer type (Medicare, Medicaid, and Commercial) of the relative contributions to the proposed OSC's operating margin and total revenue for each year FY 2025 through FY 2029.**

Response:

The UVM Medical Center's cost accounting system generates payment and cost estimates at the encounter level. This means that when we pull data out of the system for a specific procedure code, it searches for encounters where that procedure code was billed and pulls in the payments by payer and costs for all the services that were provided in that encounter. For example, for an inpatient encounter, it pulls in the room charges, labs, x-rays, physical therapy, drugs, etc. The reason for this is inpatient services are reimbursed by the payers at the encounter level. We do not receive individual payments for the procedure, the room charge, labs, etc. It is the same for outpatient encounters. For professional encounters (physician services), reimbursement is made at the individual code level.

As a result, if we were to pull data out of our cost accounting system for the procedure codes that will be performed at the OSC, it would pull in all of the additional services associated with an encounter, because of the manner in which OSC encounter history is recorded in our cost accounting system. That means we cannot provide a margin contribution breakdown by payer for the specific procedures that will be performed at the OSC; we can only do it in total. This system allows us to focus on affordability at the system level and on the largest categories that drive costs, namely labor and supplies. But the system does not allow us to provide the sort of analysis the Board seeks at a "business unit" level.

We nonetheless spent considerable time and effort over the past two weeks, trying to determine the best way to provide an approximate answer to the Board's question. That work led us to conclude that the cost coverage by payer at the OSC will likely be close to the cost coverage by payer that we reliably measure across the UVM Medical Center. Those cost coverage percentages are as follows, taken from the UVM Medical Center's FY23 actual financial results: Medicaid covers an average of 58% of the cost of care provided; Medicare covers an average of 67% of the cost of care provided; commercial insurers cover an average of 185% of the cost of care; and all other payers cover an average of 79% of the cost of care provided.

Please see UVM Medical Center's response to the Board's Request for Additional Information Q.009, Q.10 for incremental OSC revenue by payer FY25-FY29. Note, however, that this information derives from the case volume projections UVM Medical Center generated at the Board's request in response to the Board's Request for Additional Information Q.009, Q.3.

8. **Assuming that Medicaid rate increases continue at historic levels, provide an estimate of the projected Medicaid losses on cases to be performed at the proposed OSC for FY 2025 through FY 2029 and the Commercial rate increases that UVMMC would request in each fiscal year to cover the shortfall.**

   Response:

Please see the response to the above Q.7. As we have previously stated, UVM Medical Center does not anticipate that the proposed project will result in or contribute to an increase in its annual requests for commercial rates.

9. **In a table format, for each specialty, provide the current average reimbursement per case and its associated Intellimarker percentile benchmark as well as the planned average reimbursement per case for the OSC and its associated Intellimarker percentile benchmark. Also please provide the weighted (by dollars) average reimbursement across specialties and its associated Intellimarker percentile benchmark, both currently and after adjustment when the OSC is fully operational.**

   Response:

Intellimarker is a subscription service to which UVM Medical Center does not subscribe. UVM Medical Center had limited access to Intellimarker data through its consultant Stroudwater in the summer of 2022; we can answer this question only with reference to that information.

Stroudwater compared UVM Medical Center's FY19 average facility reimbursement/ case for specialties that will move cases to the OSC (in FY22 dollars) to an adjusted Intellimarker 90th percentile and Intellimarker median. Stroudwater used the 90th percentile (rather than some other percentile) as the most relevant benchmark within the Intellimarker data, because the Intellimarker data reflects many stand-alone and limited-specialty ambulatory surgery centers that are not good comparators for the proposed OSC, which will be a multi-specialty surgery center at an academic medical center. In short, in the absence of benchmarks for "like" facilities, Stroudwater attempted to make the best use that it could of a benchmark that is of limited applicability to this project.

The below table shows (in FY22 dollars) a) UVM Medical Center's FY19 average facility reimbursement per case for specialties that will move to the OSC; b) projected average facility reimbursement per case for OSC cases; c) Stroudwater's adjusted Intellimarker 90th percentile; c) Stroudwater's adjusted Intellimarker median; and d) weighted average facility reimbursement per case.

[redacted]

10. **Provide any documents relating to marketing or "awareness" campaigns or plans associated with the OSC.**
    Response:

Although we will of course take reasonable steps to make our patients and the public aware of the OSC when it opens for patient care, we do not plan to market the OSC for the purpose of attracting new patients from outside UVM Medical Center's service area. Because the OSC, if approved, will not open for patient care for at least another 18 months, we do not have any documents relating to the anticipated efforts to make the public aware of the completed facility.

Thank you for your attention to UVM Medical Center's application.

Sincerely,

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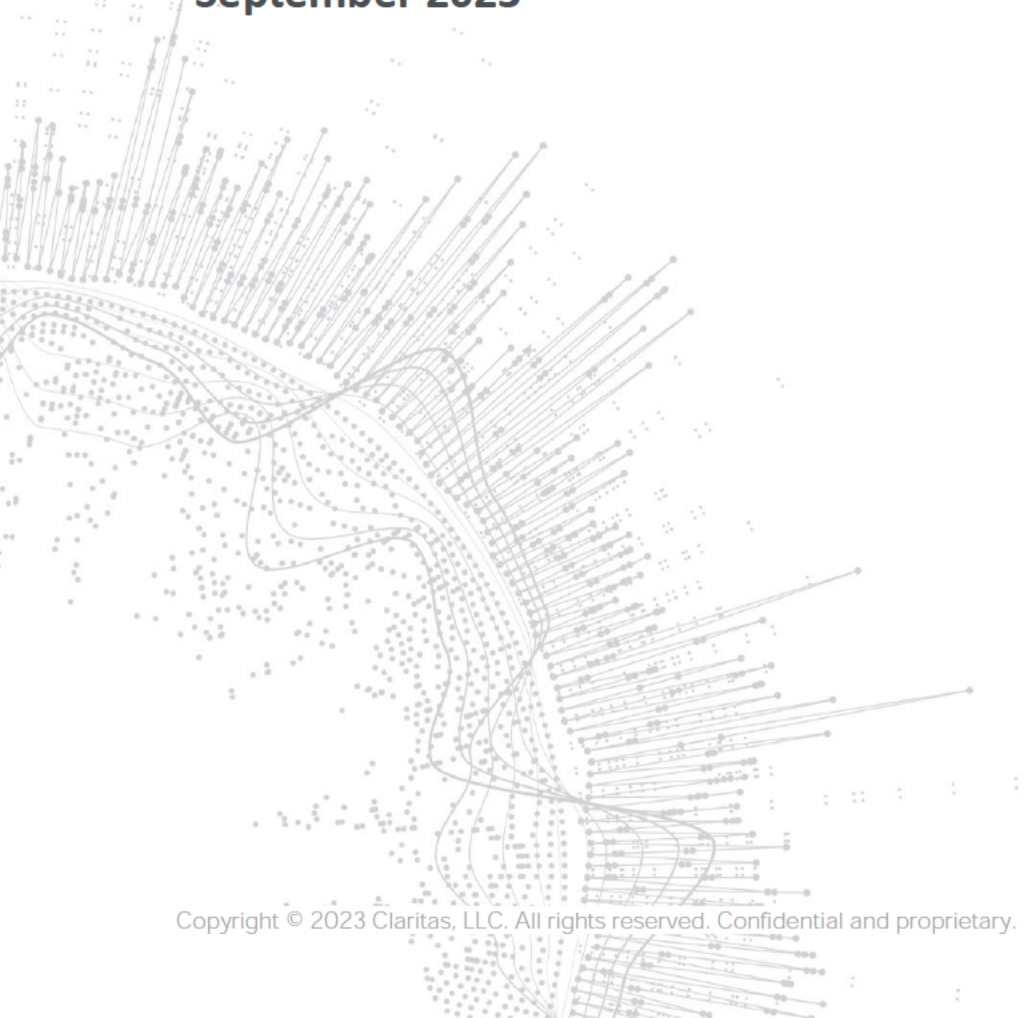
claritas

CLARITAS DEMOGRAPHIC UPDATE 2024 METHODOLOGY

September 2023



identify
deliver
optimize

Claritas Demographic Update 2024 Methodology

CONTENTS

INTRODUCTION

This methodology document covers the 2024 Claritas Demographic Update. Claritas has a proven track record as an industry leader producing quality data and maintains this position by continually innovating and improving upon the methodology used for the annual demographic update. Claritas utilizes existing and new external data resources that can lead to increased value and is continually looking to the future and to changes that may impact the demographic estimation process.

This document will outline the process for the development of the 2024 update. It includes household and population data covering more than 4,000 demographic variables from Census 2010, Census 2020, and current year estimates and five-year projections based on the American Community Survey (ACS) and other sources.

EXPERIENCED LEADERSHIP

The Claritas Demographics team is headed by Rachel Cortes. Rachel's experience with the Claritas Update builds on her previous work with the Census Bureau, the Population Reference Bureau, and the San Diego Association of Governments. Working with Rachel is Ken Hodges, with over 40 years of experience in applied demography and the Claritas Demographic Update. Both Rachel and Ken are prominent in the field, with professional involvements including the following:

Rachel Cortes

- Member, Census Quality Reinforcement task force--Blended Base and Data Quality Subcommittees
- Member, Population Association of America
- Former Board Member, Census Transportation Planning Products Oversight Board

Ken Hodges

- Board Member, Council of Professional Associations on Federal Statistics
- Member, Population Association of America Committee on Population Statistics
- Member, Census Data Products Redesign Group

EVALUATION AND SUPPORT MATERIALS

The Claritas Demographic Update is supported by extensive research and evaluation, with results often documented in professional papers. In addition to this methodology document, papers describing the following topics are available:

- Evaluation of 2020 Estimates Against 2020 Census Results
- What Do Margins of Error Tell Us About Small Area ACS Data?

- Improving the Accuracy of Block Group Data from the American Community Survey
- ACS Multi-Year Estimates as Proxies for Point in Time Data
- Evaluation of Claritas Master Address File Counts Against 2010 Census Results

DEMOGRAPHIC UPDATE

The update is a shorthand term for the massive set of demographic estimates and projections produced for the Claritas Pop-Facts® products. Select data is also incorporated into American Marketscape DataStream™ (AMDS). *Estimates* consist of data prepared for the current year and *projections* (sometimes called forecasts) prepared for dates five years in the future.

The data are brought up to date for many geographic levels including nation, state, county, census tract, and block group. Data are also available for commonly used areas such as metropolitan areas, cities/towns, ZIP Codes, Congressional Districts, and media areas such as Nielsen Designated Market Area (DMA) regions. Because it is produced for small areas, the update can be easily aggregated to custom geographic areas specified by the user.

The update begins with the estimation and projection of base counts, including total population, household population, group quarters population, households, family households, and housing units. Characteristics related to these base counts are then estimated. Population characteristics include age, sex, race, and Hispanic ethnicity. Households are estimated by age of householder and income. Owner occupied housing units are estimated by value, and renter occupied units are estimated by contract rent.

CHANGES TO METHODOLOGY AND DATA SOURCES

Claritas is always exploring and testing ways to innovate and improve estimation techniques, to adapt to a changing demographic landscape, and to take advantage of new resources. In recent updates, the following changes were implemented:

- The Claritas Demographic Update continues to utilize new American Community Survey (ACS) data as they become available from the U.S. Census Bureau. The 2024 update makes use of data from the 2021 release of ACS data. Specifically, the update incorporates one-year ACS data for 2021 and five-year data for 2017-2021.
- For the 2024 vintage, we are also happy to announce the use of additional 2020 Census data from the newly released Demographic and Housing Characteristic (DHC) file, which replaces the 2010 Census Summary File 1 (SF1). These data include additional population characteristics like age and sex for total population and by race and ethnicity groups, as well as household characteristics such as tenure, household size, composition, and age, race, and Hispanic ethnicity of the householder. New 2020 DHC data are published in our

2020 data section, and users should also expect to see greater differences in estimates and projections for related items due to the use of this data.

- This year's update also uses vintage 2022 Census Bureau County Population estimates which reflect July 1, 2022.
- The method for population 5+ by language spoken at home has been enhanced to ensure that estimates for Asian languages are controlled to estimates for the populations who speak those languages, based on their reported detailed Asian race, such as Korean or Vietnamese.
- Some non-Census geographies have undergone updates. This includes ZIP Codes, Nielsen Designated Market Areas (DMA), Congressional Districts, and Wire Centers. For more information about geographic changes, please refer to the *Claritas Cartographic Boundaries and Map Enhancement Layers 2024 Release Notes* for standard geographies and *Claritas Telecommunications Boundaries 2024 Release Notes* for telecommunication industry geographies. Either of these documents can be provided by your Claritas representative upon request.

TOP-DOWN VS. BOTTOM-UP METHODOLOGIES

Over the years, some descriptions of small-area estimation methods have emphasized a distinction between top-down and bottom-up methodologies. The distinction is overdone, as estimates produced with pure top-down or bottom-up methods are rare. A pure top-down method might produce estimates at the county level, and then distribute to tracts and block groups without making use of any post-census tract and block group data. This approach has obvious and severe limitations for small areas. On the other hand, a pure bottom-up method would use post-census block group data to produce estimates at that level, and then sum to all larger areas, without reference to independent estimates for larger areas such as cities, counties, and states. This approach has severe limitations for larger areas.

Claritas estimates combine the strengths of top-down and bottom-up methods. Data for tracts and block groups drive the estimates at those levels, while data for counties and states drive the estimates at those levels. The small area estimates are then adjusted to conform with the independent estimates for larger areas. This approach is designed to achieve maximum accuracy at all levels. Thus, it cannot be described as either top-down or bottom-up.

In a bottom-up approach, Claritas identifies growth trends using small area data sources such as USPS, new construction data, and the internal Claritas Master Address File (MAF). The MAF contains over 129 million occupied housing unit records and is informed by various household level sources such as Epsilon™, Valassis™, and Data Axle, Inc.

Once the trends have been identified and estimates have been generated at the block group level, a top-down approach is taken in applying controls that will prevent the generation of unrealistic estimates at larger geographic levels such as county or state. Claritas utilizes county level data

provided annually by the Census Bureau and other federal agencies as control totals for the small area estimates.

TRENDING

To take full advantage of methodological refinements and new data resources, each set of updates begins not with the previous year's estimates, but with data from the most recent decennial census or American Community Survey (ACS). For this reason, the difference between estimates for consecutive years is not an estimate of change from one year to the next. Change is estimated with reference to the previous Census Bureau numbers – either from the decennial census or the ACS. It is not recommended to trend current year estimates from one year to the next. Changes in data values could be caused by differing methodologies, revisions to data sources, new data sources, and/or true change in data values.

DATA NOT AVAILABLE FOR CENSUS YEARS

Beginning in 2010, the Census Bureau stopped sending out what was known as the long form questionnaire with the decennial census. This means that they no longer collect data on specific categories including household income, home value, education, and occupation with the census every ten years. As a result, these categories are not published in our 2010 or 2020 data sections. These data are now collected by the American Community Survey (ACS), however small area data from the ACS is only available from estimates that are aggregated over five-year periods, so there is no true equivalent to a single Census year. The ACS can still be used for comparison purposes, but in most cases, it does not offer the same level of detail available in Claritas estimates for many categories, especially those that include household income. This additional detail is estimated for the current year using supplemental sources and methods described in this document.

However, because the ACS and other sources most times represent different time periods, including different time periods for different geographies, it is difficult to accurately measure back to a specific point in time that would be consistent with when the last decennial census was taken. Therefore, while it is not recommended to trend current year estimates from year to year based on the information in the "Trending" section above, it is understandable that users may wish to refer to previous updates for categories where Census year data are not available. In such cases, it is recommended users compare the percent distributions for the categories, rather than the estimates themselves. It is also important to be mindful of any related changes in the "Changes to Methodology and Data Sources" section of this document, as well as any differences in the geographic area being evaluated. This advice is also recommended when comparing to the ACS. Users may also wish to review the *Claritas Demographic Update 2024 Largest Differences* document for additional details about some of the larger differences in county population and median household income since the last update. This document can be provided by your Claritas account representative upon request.

ESTIMATION DATE

The target date for estimates and projections is January 1 of the relevant year.

VARIABLE CATEGORIES

The Claritas Demographic Update includes the categories and data items listed in the sections below.

Population & Race

- Base Count Population, Households, Housing Units, Families, Group Quarters
- Workday Population
- Population by Age, Sex, Race, Ethnicity
- Population by Ancestry/Origin
- Population by Language Spoken
- Population by Marital Status
- Means and Medians

Housing & Household Composition

- Households by Age, Race, Ethnicity, and Tenure
- Owner Occupied Housing Units by Value
- Renter Occupied Housing Units by Rent
- Households by Size (number of persons)
- Households by Type and Presence of Children
- Housing Units by Year Built
- Housing Units by Number of Units
- Households by Year Householder Moved In
- Households by Vehicles Available
- Housing Units by Vacancy Status
- Means and Medians

Affluence & Education

- Households by Income, Age, Race and Ethnicity of Householder

- Effective Buying Income (EBI)
- Families by Poverty Status
- Population Educational Attainment by Sex and Ethnicity
- Population by Level of School Enrollment
- Means and Medians

Employment & Occupation

- Population by Employment Status and Sex
- Population by Transportation to Work
- Population by Travel Time to Work
- Population by Class of Worker
- Population by Industry and Occupation
- Means and Medians

GEOGRAPHY

The Claritas Demographic Update is prepared for a wide range of geographic areas, summarized below. For information about updates to geographies, please refer to the documentation for our 2024 Standard Boundaries or Telecommunications Boundaries.

STANDARD MACRO GEOGRAPHIES	STANDARD MICRO GEOGRAPHIES	INDUSTRY GEOGRAPHIES
Country* [1] State* [51] County* [3K+] Nielsen Designated Market Area (DMA) [200+] Combined Statistical Area (CSA) [100+] Core-Based Statistical Area – Metropolitan/Micropolitan (CBSA) [900+] Congressional District (CNG) [400+] Three-Digit ZIP (TDZ) [800+]	Place* [31K+] Tract* [84K+] Block Group* [239K+] Block* [7M+] (small subset of demographics available) ZIP Code [32K+] Minor Civil Divisions (MCD)* [35K+] (Also includes Census Civil Divisions [CCD] in states that do not have MCDs)	Wire Centers [18K+] Major & Basic Trading Area Wireless (MTA & BTA) [500 +] Metro/Rural Service Area for Wireless (RSA) [700+]

* Decennial Census geographies

DATA OVERVIEW

Summary

This section provides a general overview of how various categories of data are created. Additional details are available in the dedicated sections for each category that appear later in this document.

Base Counts

Base counts are the basic totals for population, households, family households, group quarters population, and housing units. At the national, state and county geography levels, base count updates are based on estimates from the Census Bureau. At the block group level, base count information is based on sources including trends in United States Postal Service (USPS) deliverable address counts, Claritas Master Address File counts, and Valassis new housing unit counts.

Population Characteristics

Population is estimated for the following demographic characteristics:

- Age
- Sex
- Race
- Hispanic ethnicity
- Age by Sex by Race by Hispanic ethnicity

Population by Age/Sex

The age/sex distribution is estimated using a modified cohort survival method, which ages population based on age/sex specific survival probabilities and estimates births over the estimation period. Survival probabilities are not applied to group quarters and other populations to ensure that these populations do not age in place. The method is applied first for counties, estimating forward from the 2020 Census counts of population by age/sex at that level. Following the completion of the county age/sex estimates, block group age/sex estimates were produced and controlled to the county estimates.

Population by Race/Ethnicity

Race by Hispanic ethnicity is estimated for 14 categories reflecting single classification race including a "multi-race" category that is comprised of respondents who identify with two or more races. National estimates start with 2020 Census results for race and Hispanic ethnicity with adjustments based on the Census Bureau's Post Enumeration Survey.

Estimates are produced next for counties, building from the 2020 Census data for population by race and ethnicity at that level. Block group estimates of race/ethnicity are then produced based

on 2010-2020 Census trends, identified through the Claritas conversion of 2010 Census race/ethnicity counts to the block groups defined for the 2020 Census.

Workday Population

Workday population computations for an area start with the daytime population formula from the Census Bureau, which takes the residential population count for an area, adds the number of workers commuting into the area, and finally subtracts the number of residents in the area that commute to another area daily for work. This workday population estimate is then adjusted to account for institutional group quarters population that typically does not participate in the local economy by shopping at nearby businesses or eating at local restaurants.

Household Characteristics

Households are estimated for the following characteristics:

- Household income
- Household size
- Age of householder
- Race and Hispanic ethnicity
- Year householder moved into unit
- Household income by age of householder

Household Income

Income estimates and projections reflect the Census/American Community Survey (ACS) money income definition and are produced for current dollar values. Rates of change in median income are estimated first, and then ACS income distributions are advanced to reflect the estimated rate of change. Median income targets at the national level are based on income estimates from the ACS and the Census Bureau's Current Population Survey (CPS). Income estimates at the county level reflect income change indicated by the Bureau of Economic Analysis (BEA) income estimates, Internal Revenue Service (IRS) income statistics supplied by Powerlytics and summarized to county level by Claritas, and ACS income estimates.

Income change at the block group level is estimated based on recent changes in median income in the ACS, and with reference to income change at the county level.

Distributions of ACS income are advanced to the estimated and projected target dates through a process that estimates the movement of households from one income category to the next based on the specific area's estimated rate of income growth. The national medians serve only as targets, not control totals, while the block group estimates are controlled to the county level.

Household Size

The distribution of households by size starts with 2020 Census distributions and advances them to current year based on estimated change in persons per household (average household size).

Income by Age of Householder

Income by age of householder estimates are produced after those for population by age and households by income are produced. The household by income estimates serve as totals for the income dimension, but persons by age estimates are converted to householders by age using headship rates reflecting Census 2020 householder by age data. The households by income and householders by age estimates serve as income and age row and column totals for the estimated income by age table. Cell values (specific income by age categories) are estimated through a process called Iterative Proportional Fitting (IPF) applied to recent ACS income by age data to the estimated income and age totals. This process yields income by age values that not only sum to the income and age estimates, but also preserve the statistical relationship between income and age for each area as measured by the ACS.

Housing Unit Characteristics

Housing units are estimated for the following characteristics:

- Total number of owner-occupied and renter-occupied units
- Renter-occupied units by rent
- Value of owner-occupied units
- Year structure built

Housing Value

Housing value is estimated for all owner-occupied housing units. As with income, the method begins with the estimation of a rate of change, which is then used to advance recent ACS distributions to current year and projection year.

At the national level, target rates of change in value are based on change in value estimated by the ACS, as well as change in the House Price Index from the Federal Housing Finance Agency (FHFA), the American Housing Survey (AHS), and existing home sales and median sales price data from the National Association of Realtors (NAR).

At the metropolitan area level, the FHFA data are also combined with change in median sales price data from the NAR to estimate change. An additional data source contributing to estimated change at the county level is that containing the most recent estimates of median home value from the ACS. Block group rates of change are estimated based on recent trends in ACS median value estimates, with reference to rates of change at the county level.

As with income, estimated rates of change are used to advance recent ACS distributions to current year and the five-year projection date. The national medians serve only as targets (not control totals) for the county estimates, while the block group estimates are controlled to the county level.

Rent

Contract rent is estimated for renter-occupied housing units. As with value, the method begins with the estimation of a rate of change, which is then used to advance recent ACS distributions to current year and projection year.

At the national level, target rates of change in rent are based on change in value estimated by the ACS and the AHS. At the county level, rates of change are based on ACS trends combined with those from the Department of Housing and Urban Development's Fair Market Rent data series.

As with value, estimated rates of change are used to advance recent ACS distributions to current year and the five-year projection date. The national rates serve only as targets (not control totals) for the county estimates, while the block group estimates are controlled to the county level.

American Community Survey Based Data

Additional data categories build from five-year ACS data and are controlled to one-year ACS data for larger counties, as available.

Decennial Census Data Differences

There are some instances where users may notice differences between the Claritas published decennial census data and values as published by the U.S. Census Bureau.

For example, users may see differences in the Claritas published Census 2010 and Census 2020 data collections due to varied geographic definitions. For example, because the update is now prepared for 2020 Census geographies, the 2010 Census base counts will not always match those published on 2010 Census data products. Additionally, because all geographic levels are rolled up from the block group level, geographies like place, which are defined by groups of blocks, may see slight differences from even the published 2020 Census data due to percent allocation and rounding of the block group data.

Differences in Median Values

Because it is not feasible for Claritas to calculate true median values, the Claritas Demographic Update makes use of calculations to estimate median values based on data summarized for categories or ranges of variables, such as income. Category detail can differ by product, so users may notice differing median values between Claritas Demographic products.

BASE COUNTS

For this document, base counts include basic totals such as population, households (occupied housing units), family households (households with two or more persons related by birth, marriage, or adoption), group quarters population (persons in dormitories, military quarters, prisons, nursing homes, and other non-household living arrangements), and housing units (a house, apartment, or group of rooms intended to serve as separate living quarters).

Total U.S. Population

Total U.S. population is estimated using Census Bureau estimates of total United States resident population (all persons residing in the United States, regardless of citizenship) and 2020 Census resident population counts. The 2024 estimate was a short projection beyond the Census Bureau's most recent post 2020 estimate (for July 2022) and 2020 Census resident population (for April 2020). Total group quarters population is also estimated based on the Census Bureau's estimate for July 2022 and the 2020 Census count for group quarters population for April 2020.

Total estimated households are derived by subtracting the estimated group quarters population from the estimated total population to derive the total number of persons in households. This figure is then divided by the estimated average household size, or persons per household (PPH). Estimated average household size is based on change in PPH indicated by the Census Bureau's Current Population Survey (CPS) and the American Community Survey (ACS).

Five-year projections of the national base counts are produced by applying recent rates of change to the current year estimates described above. The Census Bureau produces national level projections of total population, but because they are produced infrequently, they serve only as a guideline for the population projections, not as control totals.

State

State population estimates are projections from the Census Bureau's most recent population estimates at the state level and 2020 Census resident population counts. (Census Bureau 2022 estimates were used for the 2024 update.) Household totals are estimated indirectly from the completed population estimates. Specifically, the Census Bureau's estimates of group quarters population are projected to 2024. This number is then subtracted from the estimated total population to determine estimated household population. The result is divided by estimated average household size (based on intercensal trends) to determine estimated households.

County

County population estimates are based on the most recent Census Bureau county population estimates, in combination with county population estimates produced by selected states. The Census Bureau estimates (in this case for July 2022) lag 18 months behind the Claritas estimation date, so a series of long and short-term projections is produced for the target date (in this case, January 1, 2024). The mean of these projections serves as the county population estimate. Where

state produced estimates are available and contributed to increased detail in the past, these estimates also are projected to current year and averaged with the county estimates. The resulting estimates are then adjusted to conform with the state population estimates described above.

Group quarters population is estimated similarly based on the Census Bureau county estimates of population in group quarters (in this Update, Census Bureau estimates for July 2022). Estimated group quarters population is subtracted from estimated total population to produce estimates of persons in households. Then estimates of total households are derived by dividing estimated persons in households by estimated persons per household (PPH). The 2024 estimates of PPH are a conservative projection of intercensal trends.

Projections of county base counts to 2029 were based on moderated rates of change from 2020 Census to the 2024 estimates. Persons in households and persons in group quarters were projected first and summed to complete the projection of total population. The household projections were derived by dividing projected household population by projections of PPH.

Block Group

The estimation of block group base counts starts with households, followed by the estimation of persons in households and persons in group quarters (which sum to total population). Housing units and family households are then derived from the estimates of total households.

The major data resources tracking change in households since the 2020 Census are the following:

- Counts of active residential addresses from the U.S. Postal Service (USPS)
- Counts from the Claritas Master Address File (MAF)
- Valassis counts of new housing units

Household estimates are the average of several alternatives. The first alternative, based on the 2010-2020 trend in total households, serves as a backup for areas where post-2020 data sources do not pass reliability checks. The other alternatives were based on change in USPS address counts, change in Claritas MAF counts and the Claritas MAF count totals. Evaluations of the 2010 estimates confirmed the ability of Claritas MAF counts to improve estimates in rapid change areas, so the MAF-based estimates were given additional weight in such areas – and served as the household estimate in selected areas, such as those where Valassis indicated rapid and recent growth. The preliminary household estimates were controlled to the county household estimates described above.

Next, household population was estimated as a weighted average of the 2010-2020 decennial census trend and the 2020-2024 estimated rate of change in households. Group quarters population was similarly estimated for 2024 as the average of estimates based on 2010-2020 change and the rate of change in households. The household population and group quarters population estimates were controlled to the county level and summed to provide the final estimates of total population for 2024. In this method, persons per household (PPH) is a byproduct

of the estimates of households and household population, so the values are checked relative to 2020 Census values.

Estimates of housing units and family households were produced by applying 2020 Census housing/household and family/household ratios to the 2024 estimates of total households. Adjustments were not made to the county housing and family household estimates, but the uncontrolled estimates were checked for consistency with independent estimates.

Estimates of housing units were produced by estimating the number of housing units gained or lost given the block group's estimated increase or decrease in total households. Total family households were estimated by applying the 2020 Census family/household ratios to the 2024 estimates of total households. The block group estimates of housing units and family households were summed to higher geographic levels without control totals. However, because they were derived from household estimates that were subject to top-down controls, the housing and family estimates benefit indirectly from the control total process.

Five-year projections of block group base counts are produced as nonlinear projections from the 2020 decennial census counts through the current year estimates. Rapid rates of growth and decline are moderated into the future to reflect the assumption that extreme rates of net migration are unlikely to be sustained over long periods of time. Household population and group quarters population are projected first and adjusted to the county control total projections. Projected household population and group quarters population are then summed to establish the projection of total population. PPH is projected to the five-year projection date based on a conservative projection of the 2020 to current year estimated change in PPH. Household projections are then derived as the projection of household population divided by PPH. Housing units were projected based on estimates of units gained or lost through household growth/decline, and family households were projected by applying 2020 Census family/household ratios to the five-year projections of total households.

ZIP Code Estimates and Projections

Estimates and projections for ZIP Codes are aggregations of estimates already prepared for block groups. As such, there is not a distinct ZIP Code methodology. However, it is important to understand the process used to build ZIP Code estimates as well as the complications involved in analyzing ZIP Code data.

ZIP Code demographic data is widely used, but involves complications not encountered with other geographic areas. ZIP Codes are defined by the USPS for the delivery of mail, not for the presentation of data. They lack definitive boundaries and change frequently at the determination of postal officials. In addition, ZIP Codes do not conform to the boundaries of other geographies such as counties, cities, census tracts, or census blocks.

Further complicating the specification of ZIP Code demographics is the imperfect relationship between where people live and where they get their mail. Some people live in rural areas where there is no mail delivery and pick up their mail at a specified location such as a post office in a nearby town. The boundaries of such general delivery and P.O. Box ZIP Codes (there are about

9,000 of them) are not formally defined. Also, some urban residents elect to pick up some or all of their mail at a P.O. Box—perhaps near their place of work. They reside in one ZIP Code but receive mail in another. Such ZIP Codes often consist exclusively of P.O. boxes at a post office in a nonresidential area. They often have no definable boundaries, as the people receiving mail there may reside in neighborhoods scattered across a wide area.

Census Bureau Data for ZIP Codes

Contrary to common belief, ZIP Codes have not been a standard geography for the reporting of Census Bureau data. The Census Bureau did release 1980 and 1990 decennial census ZIP Code products, but these products were nonstandard and not widely used. Beginning with the 2000 Census, the Census Bureau has provided data for what it calls ZIP Code tabulation areas (ZCTAs). ZCTAs approximate ZIP Code areas based on the allocation of whole census blocks. The Census Bureau points out that ZCTAs are not ZIP Codes, and users need to understand that ZCTA data does not constitute official ZIP Code estimates. Furthermore, because the Census Bureau updates ZCTA definitions only infrequently, these definitions often are out of date.

ZIP Code Data from the Claritas Demographic Update

Claritas ZIP Code estimates and projections are aggregations of Claritas estimates for block groups. The process used is similar to that for retrieving data for circles and polygons. Census Bureau data, including estimates and projections, already exist for block groups, and are aggregated to the current roster of ZIP Codes reflecting current definitions. Data for all years (including Census 2010 and Census 2020) are aggregated the same way to maintain a consistent reference to current ZIP Code definitions.

All Claritas products provide spatial definition ZIP Code data. Spatial definition ZIP Codes are based on a block group to ZIP Code correspondence, which is updated each year. This correspondence is based on the location of block centroids (latitude/longitude points) within current ZIP Code boundaries estimated by TomTom®. If a block's centroid falls within a ZIP Code boundary, it is allocated to that ZIP Code. These block to ZIP Code allocations determine the block groups that are included in a given ZIP Code. For block groups allocated to more than one ZIP Code, percent inclusion factors determine the percent of the block group allocated to each ZIP Code. Inclusion factors are updated annually based on the most recent distribution of addresses on the Claritas Master Address File. For all spatial ZIP Codes, the resulting block group to ZIP Code relationship establishes a geographic definition that is used to aggregate block group data to current ZIP Codes.

Claritas products do not provide demographic data for rural P.O. Box or general delivery ZIP Codes that do not have a boundary. These ZIP Codes serve residents in rural areas where there is no mail delivery; residents pick up their mail at a central location such as a post office. Although included in the AZP (all ZIP Codes) roster, these ZIP Codes have no clearly defined spatial dimension, and therefore, have no demographic data associated with them. Instead, the data for these ZIP Codes is included in the spatially defined ZIP Code (or multiple ZIP Codes) covering the area near the post office. These are known as parent ZIP Codes.

It is not unusual to find spatial definition ZIP Code data that appear to be discrepant with deliverable address counts. For example, spatial definition data might indicate no data for a rural P.O. Box ZIP Code for which the post office reports 600 residential deliveries. Furthermore, spatial definition estimates for parent ZIP Codes are often higher than delivery counts since they also include the populations served by P.O. Box ZIP Codes.

Enhanced Aggregation of Estimates to ZIP Codes

ZIP Code correspondence files, which define how block group data are aggregated to ZIP Codes, are highly accurate following a census, but they often need updating in areas where post-decennial census population change has been substantial. When this happens, ZIP Code population growth can be underestimated even when the relevant block group estimates reflect the growth. For example, growth that should have been allocated to ZIP Code A might be allocated to adjacent ZIP Code B, thus underestimating growth in ZIP Code A. To guard against such estimation errors, Claritas updates block group-to-ZIP Code correspondence files to reflect estimated redistribution of population at the census block level. This enhanced aggregation provides more up-to-date factors by which to identify the percent of block group growth in ZIP Code A versus ZIP Code B.

Note: This enhancement did not involve a change to the estimation method, but rather to the process used to aggregate block group estimates to ZIP Codes. For a more detailed discussion of how ZIP Code estimates are built, please see the previous section “ZIP Code Estimates and Projections.”

POPULATION CHARACTERISTICS

Population by Age/Sex

Population by age/sex composition is estimated and projected using cohort survival methods. Cohort survival is a major factor in changing age structures, and is driven by the reality that, for example, persons age 35 in 2020 who survive another five years, will be age 40 in 2025. Accordingly, a population with a large proportion of 35-year-olds in 2020 can expect to have large proportions of 40-year-olds in 2025. It is this process that has swelled the U.S. age structure at progressively older age categories as the baby boom generation (or birth cohort) has aged.

The Claritas cohort survival method is executed first at the county level, and then for block groups, with the block group estimates controlled to the county level results. The 2024 county age/sex estimates start with the Census Bureau’s county age/sex estimates for July 2021 which were the most recent available at the time. Block group age/sex estimates start with age/sex distributions from the 2020 census.

At all levels, the method starts with five-year age/sex categories—separating persons in households from those in group quarters. Where Census Bureau estimates data do not provide full

age/sex detail for household versus group quarters populations, Claritas estimates the detail required to execute the cohort survival method.

The cohort survival process is set into motion with the application of age/sex specific five-year survival rates to the Census Bureau estimates age/sex data described above. Each round of cohort survival ages the population of each block group ahead five years. For example, the process projects the number of 30 to 34-year-olds in a block group who will survive to become 35-39 years old five years later (and so on for all five-year age categories). The initial survival data from 2020 Census yields projections of age/sex composition for April 2025, which is ahead of the January 2024 estimation date. Those results are then interpolated to the January 1, 2024 estimation date.

Accounting for Births

As part of each round of cohort survival, the population less than age five is survived to age 5-9, so an estimate of births is required to fill the vacated 0-4 category. Births are estimated using the child/woman ratio—defined as the population age 0-4 divided by females age 15-44 (childbearing age).

The child/woman ratio is an indirect measure of births specific to each area, but more important, it is sensitive to projected changes in the number of women of childbearing age—itself a byproduct of the cohort survival process. An increase in the number of childbearing age women will result in an increased number of births even if fertility rates (or child/woman ratios) remain constant. The child/woman ratios applied in the Claritas age/sex estimates and projections are derived from 2020 Census but modified slightly in some updates to increase consistency with national level Census Bureau projections of the population age 0-4.

Exceptions to Cohort Survival

The cohort survival process is at work in all areas, but in some areas, its effects on age composition are overridden by migration. In the absence of authoritative age specific migration data for small areas, the Claritas method defaults to the assumption that the age/sex composition gained or lost through migration is similar to the area's "survived" population.

However, because of migration, the cohort survival process is often not applicable to populations living in group quarters facilities such as dormitories, military quarters, prisons, and nursing homes. These facilities have high turnover rates, resulting in age/sex compositions that tend to be stable as a reflection of the nature of the facility. For this reason, cohort survivals are applied only to the population living in households. Group quarters populations are estimated separately, and their age/sex compositions held constant with those measured in the census.

Claritas also identifies segments of the household population (such as concentrations of college students in off-campus housing) for which cohort survival is not applicable. Concentrations of these "hidden group quarters" populations are identified through their distinctive imprint on small area age compositions and are similarly exempted from the cohort survival process.

Five-Year Projections

Five-year projections of age/sex composition are produced with the same method used for the current year estimates. In the current update, the estimates of population by age/sex were the starting point for five-year survivals. As with the current year estimates, age/sex projections are produced first for counties, then for block groups, with the block group projections controlled to the county results.

Population by Race and Ethnicity

There are no universally accepted definitions of race and Hispanic ethnicity. The Census Bureau currently defines "Hispanic or Latino" as an ethnicity, not a race. Race and ethnicity are separate questions, so in Census Bureau tabulations, persons of Hispanic or Latino ethnicity can be of any race. Hispanics and Latinos are included in each race category, and the race categories alone sum to total population.

The decennial census form allows persons to mark "one or more" boxes when responding to the race question. For example, one person might mark only the box for "Black or African American," while another might mark that box and the box for "Asian." In reporting data on race, one option is to indicate the number of persons identifying with each race category and no others (race alone), while another option is to report the number of persons identifying with that race either by itself or along with other categories (race alone or in combination). Census Bureau data and Claritas estimates are reported for the "race alone" and "race alone or in combination" options.

For more information about Ethnic Classifications, see the "Additional Terminology" section.

Estimates and Projections of Race and Ethnicity

Race by Hispanic ethnicity is estimated for 14 categories reflecting single classification race including a "multi-race" category that is comprised of respondents who identify with two or more races. An important change to the coding of the 2020 Census data includes allowing respondents to write in as many races as they want to in the race and ethnicity questions. In the past only the first 30 characters were coded for the race groups write-ins, but starting with 2020 Census, 200 characters were coded. In addition, starting with 2020 Census, Hispanic responses to the race categories are coded as "some other race." The result is a large increase in the "some other race" group compared to the 2010 Census. This increase is likely due to these changes in coding, but also to changing ways individuals identify with their race and ethnicity.

Beginning with the 2020 update, a national total for Hispanic ethnicity was established as the first step in the process of assigning race and ethnicity to the population. National estimates start with 2020 Census results for race and ethnicity and add additional population to the Hispanic or Latino categories based on the reported statistically significant undercount of the Hispanic or Latino population that was found in the 2020 Census data based on the Census Bureau's Post Enumeration Survey. Increasing the total Hispanic or Latino population necessitates a reduction of other race/ethnicity groups to be consistent with the decennial census count of the total population which was found to have only a small but statistically significant undercount at the national level.

The reduction in other race/ethnic groups results in the largest decrease to White, Non-Hispanic category because this group is the largest race/ethnic group in the US. White, Non-Hispanics were also found to have a statistically significant overcount so the reduction in this group is appropriate. During this process, caution was taken to ensure the Black/African American, Non-Hispanic population was not reduced, because, like total Hispanics or Latinos, this population also had a statistically significant undercount. Because the adjustment to the Hispanic population was applied to all Hispanic groups regardless of race, the overall Black/African American population does show an overall increase compared to the 2020 Census count.

Estimates are produced next for counties, building from the 2020 Census data for population by race and ethnicity at that level. Block group estimates of race/ethnicity then are produced based on 2010-2020 Census trends, identified through the Claritas conversion of 2010 Census race/ethnicity counts to the block groups defined for the 2020 Census.

Then, starting with "race alone" tabulations, estimates and projections of population by race and ethnicity are produced at the county level, and then for block groups, with the block group estimates and projections controlled to the county level totals. The method focuses on percent distribution of race and ethnicity, which are applied to previously established estimates and projections of total population.

County-level estimates of race and ethnicity are based on the national totals established above and the 2020 Census counts of population by race and ethnicity at that level.

Race/ethnicity estimates for block groups are based on 2010-2020 decennial census trends in the percent of population in each race/ethnicity category. The method focuses on the percent of population in each category, and controls to both total population for the block group and population by race and ethnicity at the county level.

Five Year Projections

Five-year projections of race/ethnicity are produced with methods similar to those used for the current year estimates—projecting the current year estimates (of percent race/ethnicity) to the five-year projection date. Again, projections are made for percent race/ethnicity distributions, and applied to previously completed projections of population. Counties are projected first, followed by block groups, with adjustments maintaining consistency between geographic levels.

All Inclusive Race

Estimates and projections for all-inclusive race/ethnicity (race alone or in combination) are produced as derivatives of the single classification (race alone) estimates and projections. For each race/ethnicity category, the Census 2020 ratio of all-inclusive race/single classification race was applied to the estimate or projection of single classification race—with adjustments made in some areas to provide consistency with the number of persons estimated (or projected) to be of two or more races. Because the all-inclusive estimates and projections are derived from data already adjusted to county controls, the all-inclusive estimates and projections are produced only at the block group level and summed to higher levels.

Population by Age/Sex by Race/Ethnicity

Estimates and projections also are provided for the crosstabulation of population by age/sex by race/ethnicity. These estimates start with the completed estimates of population by age/sex and population by race/ethnicity at the block group level. Census-based seed values are adjusted to the age/sex and race/ethnicity estimates to produce estimates of the full cross-tabulation. Because the 2020 Census did not provide age/sex by race/ethnicity detail at the block group level, age/sex by race/ethnicity distributions for census tracts are used as "seed values" for component block groups. This application of Iterative Proportional Fitting (IPF) produces block group estimates consistent with estimated age/sex and race/ethnicity, as well as the statistical relationship between these characteristics observed for the census tract in Census 2020. The IPF was executed with age/sex data in the standard five-year age breaks and splits to single years of age are made as a final step.

Workday Population

Workday population computations for an area start with the daytime population formula from the Census Bureau, which takes the residential population count for an area, adds the number of workers commuting into the area, and finally subtracts the number of workers living in the area that commute to another area. This was done using population base counts, counts of businesses and employees from Data Axel, occupation and employment status population estimates, and commuter flow data from the U.S. Census Bureau. This workday population estimate was then adjusted to account for institutional group quarters population (i.e., person living in nursing homes or correctional facilities) that typically does not participate in the local economy by shopping at nearby businesses or eating at local restaurants.

HOUSEHOLD CHARACTERISTICS

Households by Income

All Claritas income estimates are expressed in current year dollars using the money income definition reported in the American Community Survey (ACS). The estimates and projections reflect household income, which includes the income earned by all persons living in a housing unit (i.e., all household members). In contrast to the ACS, which reports income earned in the 12 months prior to ACS response, Claritas income estimates are for the calendar year relevant to each set of estimates and projections. For example, the 2024 estimates reflect 2024 income for 2024 households.

The method starts by establishing ACS "launch distributions" – the distributions from which the income estimates are built. When income was reported by the census, the launch distributions all reflected the census year, but ACS data are not that simple. Depending on its population size, an area might have only five-year ACS data, or it might have new five-year data and one-year data. Always working with the most recent "vintage" of ACS data, the Claritas method combines the

multiple years of ACS data where relevant and establishes an effective launch date for the ACS data. For block groups where the ACS sample was especially small, the data also are enhanced with data from neighboring block groups in a process described in the "American Community Survey Enhanced Data" section.

Once the ACS launch distributions are established, rates of change in median household income are estimated for each area. Based on these rates of change, the ACS income launch distributions are advanced to current (or projection) year.

Rates of change are produced first at the county level, and then for block groups. Aggregate, average, and median income numbers were derived from the resulting income distributions.

Claritas standard household income ranges extend beyond the "$200,000 or more" category reported by the ACS, to the following income ranges:

- $200,000 to $249,999
- $250,000 to $499,999
- $500,000 or more

The extended income categories were estimated from the ACS launch distributions, which are the starting point for the estimates and projections of income distribution. Pareto methods, which involve an assumption of exponential decay, were applied to the ACS launch distributions to estimate the number of households in each of the extended income categories. For more information about Pareto methods, see the "Additional Terminology" section.

Income Estimation Method

Income change at the national level was estimated based on national estimates of income change from the Current Population Survey (CPS) and the ACS. The CPS provides two measures: change in median household income reflected in the Annual Social and Economic Supplement, and a timelier measure of change in median family income released each month. The final estimates reflect an average of estimates based on these sources, projected to current year to reflect recent income change.

County income rates of change are based on recent rates of change in ACS income estimates, as well as rates of change in income data from the Bureau of Economic Analysis (BEA) and Internal Revenue Service (IRS) data provided by Powerlytics and summarized by Claritas. The final estimated rates of change reflect the average of rates based on IRS, BEA, and ACS data. These rates are modified, as needed, to produce estimated county income distributions that conform with the target median income estimate at the national level.

Income change at the block group level is estimated based on recent change in ACS median income estimates, enhanced to compensate for small samples and projected to reflect the time from launch date to estimation date. The ACS and based rates are averaged with relevant county rates to establish estimated rates of change in median income for block groups.

At both the county and block group levels, the estimated rates of income change are used to advance, or shift, the ACS launch distributions of households by income forward to current year. This procedure involves the estimation of the number of households advancing from one income category to another—based on the area's estimated rate of income change.

The county level distributions are estimated first, followed by the block group distributions, and the block group distributions are adjusted to conform with the final county distributions.

Five-Year Projections

Five-year projections of income are produced with a similar process. Rates of growth or decline based on change from ACS launch medians to current year estimated median income are used to advance the current year income distributions to the five-year projection date. As with the current year estimates, the five-year projections are produced first at the county level, and then for block groups, with the block group distributions adjusted to conform with the county level results.

Household Effective Buying Income

Effective Buying Income (EBI) reflects income after taxes. Because EBI is not provided by the American Community Survey (ACS), the estimates are computed as derivatives of household income, based on the correspondence between before tax and after-tax income identified for each state from the Census Bureau's Current Population Survey (CPS). For each state, three-year combinations of CPS data identify the mean before tax income of households within the income in ranges estimated for the Claritas Demographic Update. The CPS also identifies mean income for these same households after deductions for federal income taxes, state taxes, FICA, and federal retirement payroll deductions. Where relevant, earned income credits were added to refine the measure of after-tax income.

The CPS data provides before tax to after tax income rates of change specific to households with before tax income in selected income ranges—and specific to each state. These rates of change are applied to the current year estimated and five-year projected distributions of households by before tax income (the standard Claritas income estimates and projections) to estimate the movement of households to lower income ranges after deductions for taxes. The resulting distribution of households by after tax income provides the basis for computing mean, median and aggregate EBI.

Beginning with the 2022 update, property tax information is no longer available from the CPS, so it is no longer factored into EBI. Also with that update, the definition of after-tax income was refined to deduct Federal Income Tax Liability and State Income Tax Liability, after all credits are taken. Prior to this change, the method had used the "before all credits" versions of Federal and State Income Tax Liability. "After all credits" is the preferred definition to use as those tax credits can add to a household's disposable income.

Income by Age of Householder

The cross-tabulation of household income by age of householder is valuable because income and life cycle stage, when combined, are so strongly associated with consumer needs and behavior. The Claritas income by age updates are produced after the estimates of population by age and households by income have been completed. The data constitutes a 128-cell table defined by 16 categories of household income and 8 categories of householder age. The row and column totals from these tables (the income and age totals) are commonly referred to as the marginal totals.

The estimates of households by income serve as the income marginals, but population by age estimates must be converted to householder by age for use as the age marginals. For each area estimated, 2020 Census data is used to determine age specific headship rates, or the percent of persons in specific age categories who are householders. These headship rates are then applied to estimated population by age to produce estimated householders by age. A final adjustment to total households provides consistency with that critical base count.

With the income and age (row and column) marginal totals estimated, the final step is to estimate the full cross-tabulation of income by age of householder. In other words, values must be determined for each of the 128 income by age categories, or cells. Block group level income by age cell values from the most recent American Community Survey (ACS) provide the initial input (or seed values). Because the ACS provides only four categories of householders by age, Current Population Survey (CPS) separation factors are applied to expand to the eight age-of-householder categories in the estimated table. The ACS distributions also are enhanced in block groups with small numbers of ACS responses.

Within each age category, ACS income distributions are advanced to reflect the block group's (previously) estimated rate of income growth. This adjustment expresses ACS income by age distribution in current dollar values. The resulting table is then adjusted to conform with both the income and age of householder totals estimated for current year. These adjustments are accomplished through Iterative Proportional Fitting, which adjusts the ACS table to conform simultaneously with the household income and householder by age estimates, while preserving the block group specific statistical relationship between income and age reflected in ACS income by age data.

Five-year projections are produced using similar methods. Projected households by income serve as the income marginal totals, and 2020 Census headship rates again are used to convert projected population by age to projected householders by age. The income by age table is then advanced to projection year dollar values, and iteratively adjusted to the projected income and age marginal totals.

Income by Race and Ethnicity of Householder

Estimates and projections of household income by the race and ethnicity of the householder are produced by applying the estimated/projected rates of change in income for each area to the income distribution for each race/ethnicity group in the area. The rates of change are used to project each distribution forward to the current (or projected) year, and the resulting distributions

are adjusted to conform with the householder by race/ethnicity estimates and projections described below.

Householders by Race and Ethnicity

Estimates and projections of householders by (single assignment) race and ethnicity are based on the estimates and projections of population by race/ethnicity. For each block group, the 2020 Census ratio of householders by race/ethnicity to population by race/ethnicity is identified and applied to the current year estimate of population by race/ethnicity. This ratio indicates the percent of persons in each race/ethnicity category who were householders in 2020 Census. The final ratio is modified somewhat through the adjustment of householders by race to total households for each area, and it is the final current year ratio that is applied to the five-year projections.

Households by Size

Working at the block group level, estimates of households by size (number of persons) are produced for the following categories:

- 1 person
- 2 persons
- 3 persons
- 4 persons
- 5 persons
- 6 persons
- 7 or more persons

The distribution of households by size from the 2020 Census serves as the base from which the current year estimates are derived. The distribution is advanced to current year based on estimated change in persons per household (average household size).

Projections of households by size are based on the 2020 Census and current year estimated distribution of households by size. The current year distribution is shifted to reflect the growth or decline in average household size during the projection interval.

Households by Year Moved into Unit

Survival probabilities for "Year Moved In" are computed from 2016 and 2019 one-year American Community Survey (ACS) data (in this case reflecting the loss of residents of specific lengths of residence). These national level probabilities are applied to the most recent ACS distribution of households by "Year Moved In" to establish estimated and projected distributions. Households in excess of those surviving (staying in place) to longer lengths of residence are estimated to have moved in during the most recent time period launch date. Thus, areas with rapid household growth

will show the greatest concentrations of new movers. The method is executed at the block group level and summed to larger areas.

HOUSING UNIT CHARACTERISTICS

Housing Value

Housing value (often referred to as home value) is estimated and projected for all owner-occupied housing units and is based on the American Community Survey (ACS) measure, which reflects respondents' estimates of how much their dwellings would sell for, or the asking price of units currently for sale. Median value is estimated and projected, as is the distribution of units among the 26 categories of value reported by the ACS.

The total number of owner-occupied housing units is estimated by applying 2020 Census ownership percentages to the completed estimate of total occupied housing units for all block groups. The results are adjusted to county level census-based estimates of owner and renter-occupied housing.

Housing value estimates are produced first at county level (with adjustments to the national estimate of median value), and next at block group level, with the block group results adjusted to conform with the county level estimates.

The basic rate of change in value is estimated first and is used to advance the ACS launch distribution of units by value to reflect this rate of change. At the national level, the rate of change in home value is estimated based on change in the House Price Index data from the Federal Housing Finance Agency (FHFA), existing home sales and median sales price data from the National Association of Realtors (NAR), as well as home value estimates from the ACS.

County rates of change in home value are derived from two sources at the metropolitan area level. The first is data indicating the change in median sales price from the NAR. Changes in sales price reflect only units sold during the time in question but are strongly associated with overall change in home value. The second source is change in the FHFA House Price Index. The ACS contributes trends in median home value directly at the county level.

Housing value change at the block group level is estimated based on recent change in ACS median value estimates, enhanced to compensate for small samples, and projected to reflect the time from launch date to estimation date. Then the ACS-based rates are averaged with relevant county rates to establish estimated rates of change in median value for block groups.

Five-Year Projections

Five-year projections of value are based on rates of change derived from change in median value from ACS launch data to the current year estimate. For each area, the estimated rate of change is used to advance the current year estimated distribution to the five-year projection date. Projections are produced first at county level (with rates adjusted to improve consistency with the national

median value projection), then at block group level, with the block group results adjusted to conform with the county level estimates.

Contract Rent

Contract rent is estimated and projected for all renter-occupied housing units and is based on the American Community Survey (ACS) measure, which reflects the monthly rent agreed to or contracted for. Median rent is estimated and projected, as is the distribution of units among the 25 categories of rent reported by the ACS. Units that are renter-occupied without payment of rent are classified as "No cash rent", and these units are not considered when calculating the median.

The total number of renter-occupied housing units is estimated by applying ACS ownership percentages to the completed estimate of total occupied housing units for all block groups. The results are adjusted to county level ACS-based estimates of owner and renter-occupied housing.

Rent estimates are produced first at county level (with adjustments for consistency with the national estimate of median rent), and next at block group level, with the block group results adjusted to conform with the county level estimates.

The basic rate of change in rent is estimated first and is used to advance the ACS launch distribution of units by rent to reflect this rate of change. At the national level, the rate of change in rent is estimated based on trends in ACS estimates. County rates of change in rent are derived from trends in ACS rent data, and trends in the Department of Housing and Urban Development's Fair Market Rent data.

Rates of change at the block group level are estimated based on recent change in ACS median rent estimates, enhanced to compensate for small samples and projected to reflect the time from launch date to estimation date. The block group rates also are averaged with relevant county rates to enhance consistency with market trends.

Five-Year Projections

Five-year projections of contract rent are based on rates of change derived from change in rent from ACS launch data to the current year estimate.

For each area, the estimated rate of change is used to advance the current year estimated distribution to the five-year projection date. Projections are produced first at county level (with rates adjusted to improve consistency with the national median rent projection), then at block group level, with the block group results adjusted to conform with the county level estimates.

Housing Units by Year Built

Estimates and projections of housing units by year-built start with the most recent American Community Survey (ACS) launch distributions. These distributions are advanced to current year (and five-year) targets based on housing loss patterns exhibited between ACS 2010 and ACS 2013 data. For example, the number of units built between 1960 and 1969 surviving in 2013 is lower than the number of such units surviving in 2010 and suggests a survival probability for units of that age.

The method establishes a set of such probabilities at the national level and applies them to ACS launch housing data to generate the current year estimates and five-year projections. In most areas, surviving units are fewer than total units (estimated separately), and the excess units are assigned to the most recent year-built period. Thus, areas with rapid housing growth will show the greatest concentrations of new housing. The method is executed at the block group level, with results summed to higher geographic levels.

DHC ENHANCED DATA

DHC refers to the Demographic and Housing Characteristics file from the 2020 Census. The DHC file is an excellent source of data for small area estimates because it represents a full count as opposed to a sample survey. In some cases, the DHC data also has greater geographic granularity than the ACS. For the following items, DHC data is projected forward based on updated housing unit and occupied housing unit (household) current year estimates and five-year projections.

- Occupied Housing Units by Tenure
- Vacant housing units by vacancy status

AMERICAN COMMUNITY SURVEY ENHANCED DATA

For characteristics no longer available as part of the decennial census, or where data had other limitations, estimates and projections are based on ACS data at the block group level. These items formerly reflected static block group level decennial census data ratio-adjusted to current year base counts, but now they benefit from annual ACS estimates with controls at county level – thus giving them an important element of update.

For block groups where the ACS sample is small (and ACS data is at risk of substantial error), Claritas produces enhanced distributions. The enhanced distribution blends the ACS distribution for the block group in question with the distribution of neighboring block groups – thus drawing from a larger number of ACS responses.

Note that this approach to enhancing ACS block group data is also applied to ACS data contributing to estimates including household income, housing value, and rent.

The list of ratio-adjusted ACS data items is as follows. Note that a few, such as Hispanic population age 5+ by ability to speak English, have ACS data only at tract level, and thus are not eligible for the block group based ACS enhancements.

- Asian population by detailed single race
- Hispanic population by specific origin
- Population by ancestry
- Households by type and presence of own children under 18

- Population 5+ by language spoken at home
- Population by age, language, and ability to speak English
- Hispanic population age 5+ by ability to speak English
- Population 15+ by sex and marital status
- Working population 16+ by means of transportation to work
- Working population 16+ by travel time to work
- Population 25+ by educational attainment
- Hispanic or Latino population 25+ by educational attainment
- Population 3+ by type of school and enrollment level
- Population 16+ by sex and employment status
- Employed civilian population 16+ by industry
- Employed civilian population 16+ by occupation
- Employed civilian population 16+ by class of worker
- Families by poverty status, family type, and presence of related children under age 18
- Housing units by units in structure
- Households by tenure, ethnicity and race
- Owner-occupied housing units by mortgage status
- Occupied housing units by tenure and vehicles available

With the implementation of the ACS-Enhanced data development method, there may be situations where data values from independently built ACS-Enhanced tables are not consistent with each other. Because these tables are built independently of each other, the inconsistencies inherent in the independent ACS tables are occasionally propagated within our demographic updates. For example, for persons 16+ by sex and employment status, the ACS only has data available at the tract level. However, other categories for employed civilian population 16+ have data available at the block group level, which is preferred for its more granular detail. Therefore, data from these categories is inconsistent with similar data from persons 16+ by sex and employment status.

However, beginning with the 2024 update, the method for population 5+ by language spoken at home has been enhanced to ensure that estimates for Asian languages are controlled to estimates for the populations who speak those languages based on their reported detailed Asian race. For example, the Korean speaking population from this category will not exceed the Korean population from the Asian population by detailed single race category.

ADDITIONAL TERMINOLOGY

2020 Claritas Adjusted Base Counts

Claritas adjusted 2020 Census data for population, households, vacant housing units, and group quarters population in about 600 block groups. This was an attempt to account for what we would consider logical inconsistencies and improbable values introduced by the differential privacy method the Census Bureau applied to 2020 Census data for disclosure avoidance. A logical inconsistency could be something like an area with households and no population, and an improbable value would be something like an area with an extremely large average household size. These adjustments also roll up to all other levels of geography. Differential privacy was not applied to total housing units, so those numbers were not adjusted. However, occupied housing units (households) and vacant housing units may be impacted. Other 2020 Census data were not adjusted to these bases because the overall impact is relatively small. However, these adjusted counts are provided for reference since they did inform our current year estimates.

The method for adjusting the data was based on research done to compare the original 2010 Census data, which did not use differential privacy for disclosure avoidance, to a set of demonstration data, which applied that new method to the 2010 Census data. This allowed the analysis of the impact of differential privacy and what changes could be instituted to realign the protected data with the original decennial census counts. Then, in the 2020 Census data, we looked for similar values as those that were improbable or logically inconsistent in the 2010 demonstration files and made similar adjustments.

Adjustment Techniques and Expanded Definitions

The adjustment process is essential to the production of estimates that use input data at various geographic levels and are consistent across all levels of geography. The Claritas updates are geographically consistent, meaning that for each data item, block group data always sums to tract totals, which always sums in turn to county, state, and national totals. Adjustment techniques also assure that characteristic distributions sum to base count totals (e.g., households by income always sums to total households). The simultaneous adjustment of characteristics to higher level control totals and to total persons or households within each smaller area is achieved with Iterative Proportional Fitting (IPF). The basic techniques are described below.

Ratio Adjustment

Ratio adjustment is used to bring small area data into conformity with large area totals. For example, if preliminary block group population estimates sum to a tract total of 552, but the independent tract estimate is 561, the preliminary block group estimates are adjusted upward by 1.63% (561/552) to achieve the target tract total. Similar adjustments are made to bring preliminary distributions (such as age and race) into conformity with population totals for each geographic unit.

Iterative Proportional Fitting

Iterative Proportional Fitting (IPF) methods are an elaborate form of ratio adjustment and are used when estimates must conform simultaneously to two sets of marginal control totals—often referred to as the dimensions of a two-dimensional table. Income by age of householder is a good example. The estimates must sum to both households by income and householders by age.

IPF methods begin with a table with target row and column totals, referred to as the row and column marginal totals. For example, one might have 16 categories of households by income as the row totals and 8 categories of householders by age as the column totals established for a 128 cell (16 by 8) table. The objective is to produce estimates for the table's 128 cells that sum to both the row and column marginals.

The execution of IPF methods requires initial or seed cell values. In the case of income by age of householder, seed values are obtained from the American Community Survey. This matrix of cell values reflects an intricate set of probabilities defining the relationship between income and age—as measured for the specific geography. However, these figures sum to neither estimated households by income nor estimated householders by age.

IPF achieves this conformity through a series of ratio adjustments to the row and column marginal totals. Each round (or iteration) of row and column adjustments brings the seed values closer to conformity with the marginal totals. The number of iterations required varies by area, but the values eventually converge on a result that sums, within rounding error, to the marginal totals. The resulting estimates not only sum to the desired marginal totals but preserve the statistical relationship between the two variables (income and age) measured for the area.

Ethnic Classifications

The race definitions used by 2020 Census and Claritas estimates include the following basic categories:

- White
- Black or African American
- American Indian and Alaska Native
- Asian
- Native Hawaiian and Other Pacific Islander
- Some other race

However, because the current race standards permit respondents to mark *one or more* race categories, there are actually 63 categories—the six basic races plus 57 possible combinations of two or more races. When cross tabulated by ethnicity (Hispanic or Latino and non-Hispanic or Latino), there are 126 race by ethnicity categories.

Short of presenting data for all 63 race categories, there are two basic tabulation options—single classification and all inclusive.

Single Classification

The single classification option includes the following categories:

- White alone
- Black or African American alone
- American Indian and Alaska Native alone
- Asian alone
- Native Hawaiian and Other Pacific Islander alone
- Some other race alone
- Two or more races

This option identifies the number of persons marking each race category by itself, and then provides a seventh category identifying the number marking two or more races. The tabulation is similar to those used prior to 2000 Census, and sums to total population. However, it provides no information about the race of persons in the "two or more" category, so it is not possible to determine the total number of persons identifying with a given race.

All-inclusive Classification

The total number of persons marking a given race category is revealed by the following all-inclusive categories:

- White alone or in combination
- Black or African American alone or in combination
- American Indian and Alaska Native alone or in combination
- Asian alone or in combination
- Native Hawaiian and Other Pacific Islander alone or in combination
- Some other race alone or in combination

This option identifies the total number of persons marking each race category—either by itself or as part of a combination of two or more races. However, because persons marking two or more races are counted two or more times, the table sums to totals larger than total population.

Extended Income and Pareto Interpolation

Income tabulations from the American Community Survey (ACS) top out at the "$200,000 or more" category. However, higher income breaks are important in affluent areas, so Claritas has extended ACS income distributions to include categories of "$200,000 to $249,999", "$250,000 to $499,999" and "$500,000 and over."

Vilfredo Pareto (1848 - 1923) is credited for creating a method used to approximate the upper end of an income distribution. Pareto's distribution is an exponential decay curve. The Pareto distribution is typically used to extend income ranges for very large areas, such as whole countries, where income distributions are smooth. The application of Pareto methods for small areas, where distributions can be irregular, requires some care.

The Pareto extensions are applied to the ACS income data. Estimated and projected income for the extended categories was produced with standard methods applied to the extended ACS data.

Inflation and Income

A common question is how the effect of inflation is accounted for in the Claritas income estimates. Inflation, as commonly measured by the Consumer Price Index, reflects changing prices, and a corresponding change in the value of a dollar. For example, items that would have cost $100 in 1983, would have cost about $147 by 1993—a 47% inflation in prices. Thus, $100 was not the same in 1993 as it was in 1983.

Inflation is not a measure of income change, but the two are related. Some income sources (such as Social Security and some union contracts) are indexed by inflation, and workers typically require and demand more pay to cover the increased costs of living. Although income tends to follow inflation, it does not move at the same rate. There are periods when income growth outpaces inflation, and periods when it lags behind. These income changes relative to inflation are referred to as real income growth.

The Claritas income estimates and projections are expressed in current dollar values, which reflect how many dollars are being received in the relevant year. As such, they reflect both real income growth (or decline) and the change due to the effect of inflation. Rather than estimating the effects separately, Claritas measures the combined or net effect through input sources (such as the Bureau of Economic Analysis income estimates, IRS income data, and ACS income estimates), all of which reflect income change in current dollars. The inflation effect in these data sources is implicitly incorporated into the Claritas estimates. Note that accounting for inflation in this manner is different from controlling for inflation, which requires removing the effect of inflation, to produce estimates in constant dollar values.

KNOWN DISCREPANCY IN AGE AND SEX DATA

For standard five-year age breaks (0 to 4, 5 to 9, and so on), the estimates of population by age/sex are consistent with the estimates of population by age/sex summed across race/ethnicity categories. However, users might find differences for single years of age or age ranges other than the standard five–year categories. For example, the estimate of males ages 60 to 62 might be different from the estimate of males ages 60 to 62 summed across all race/ethnicity categories.

The differences trace to the fact that the estimates of population by age/sex and population by age/sex/race/ethnicity are produced for the standard five-year categories, and then split to single years of age, which are then summed to create more detailed breaks. The split of age/sex to single

year categories is enhanced by applying separate split factors for persons in households and those living in group quarters of various types. For example, the percent of persons ages 20 to 24 who are ages 20 can be different in areas with large college dormitory populations compared to those with persons living in households. The enhancement is applied to the estimates of total population by age/sex, where the method separates by household versus group quarters population. However, the enhancement is not feasible for the estimates of population by age/sex/race/ethnicity, which are not produced separately for persons in households and group quarters, so single year data from this tabulation can differ.

TECHNICAL SUPPORT

If you need further assistance, not provided in this document or the release notes, please contact the Claritas Solution Center between 9:00 a.m. and 8:00 p.m. (Monday through Friday, EST) at 800.866.6511.