**Methodology for Constructing Estimates of Total Population
for Counties and Subcounty Areas in Florida**

Richard Doty, Suzanne Roulston-Doty, and Stefan Rayer
Bureau of Economic and Business Research
University of Florida
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The Bureau of Economic and Business Research (BEBR) makes population estimates for every county and subcounty area in Florida, with subcounty areas defined as incorporated cities, towns, and villages, and the unincorporated balance of each county. County estimates are calculated as the sum of the subcounty estimates for each county, and the state estimate is calculated as the sum of the county estimates. The estimates refer solely to permanent residents of Florida; they do not include seasonal or other types of temporary residents.

The estimates are produced using the housing unit method, in which changes in population are based on changes in occupied housing units (or households). This is the most commonly used method for making local population estimates in the United States because it can utilize a wide variety of data sources, can be applied at any level of geography, and can produce estimates that are at least as accurate as those produced by any other method.

The foundation of the housing unit method is the fact that almost everyone lives in some type of housing structure, whether a traditional single-family unit, an apartment, a mobile home, a college dormitory, or a state prison. The population of any geographic area can be calculated as the number of occupied housing units (households) times the average number of persons per household (PPH), plus the number of persons living in group quarters such as college dormitories, military barracks, nursing homes, and prisons:

$$P_t = (H_t \times PPH_t) + GQ_t$$

where P_t is the population at time t, H_t is the number of occupied housing units at time t, PPH_t is the average number of persons per household at time t, and GQ_t is the group quarters population at time t. Estimates of the number of people without permanent living quarters (e.g., the homeless population) are included in estimates of the group quarters population.

This is an identity, not an estimate. If these three components were known exactly, the total population would also be known. The problem, of course, is that these components are almost never known exactly. Rather, they must be estimated from various data sources, using one or more of several possible techniques. In this report, we describe the data and techniques that we used this year to develop population estimates for Florida's counties and subcounty areas for April 1, 2022.

Households

Census definitions require a person to be counted as an inhabitant of his/her usual place of residence, which is generally construed to mean the place where she/he lives and sleeps most of the time. This place is not necessarily the same as one's legal or voting residence. A household is the person or group of people occupying a housing unit; by definition, the number of occupied housing units is the same as the number of households. Households refer solely to permanent residents, and a housing unit is classified as vacant even when it is continuously occupied, if all the occupants are temporary residents staying only for a few days, weeks, or months.

BEBR uses three different data sources to estimate the number of households in Florida. Our primary data source is active residential electric customers. We collect these data from each of the state's 53 electric utility companies. Households can be estimated by constructing a ratio of households to active residential electric customers using data from the most recent census year (e.g., 2020) and multiplying that ratio times the number of active residential customers in some later year (e.g., 2022). This procedure assumes that no changes have occurred in electric company bookkeeping practices, in the vacancy rate of active residential electric customers, or in the proportion of those customers who are permanent residents. Although changes do occur, they are generally fairly small. In some places we adjust the household/electric customer ratio to account for changes in the vacancy rate or the proportion of housing units occupied by permanent residents.

We sometimes filter electric customer data to exclude minimum use customers. Minimum use customers are those using less than 200 kilowatt (kWh) hours per month. We believe these customers represent seasonal or other part-time residents or vacant units, and excluding them may give a more accurate measure of permanent residents. Because we estimate the change in population since the 2020 Census, excluding minimum use customers can capture changes in unit occupancy over that period. These data are not available for all areas of the state, but in places in which the data are available and appear to be reliable, we often use them in conjunction with other data sources.

Our second data source is residential building permits, as collected and distributed by the U.S. Department of Commerce. The housing inventory in 2022 for a city or county that issues building permits can be estimated by adding permits issued since 2020 to the units counted in the 2020 census and subtracting units lost to destruction, demolition, or conversion to other uses. The time lag between the issuance of a permit and the completion of a unit is assumed to be three months for single-family units and fifteen months for multifamily units. Building permits are not issued for mobile homes, but proxies can be derived from records of shipments to mobile home dealers in Florida. Creating a housing inventory for an entire county requires complete permit data for every permitting agency within the county. Although such data are not always available, coverage is sufficient in most Florida cities and counties to provide useful information.

There are no readily available data sources providing comprehensive up-to-date information on occupancy rates that are as reliable as those produced by the latest decennial census. Accurate

information can be obtained through special censuses or large sample surveys, but in most instances these methods are too expensive to be feasible. A common solution is to use the occupancy rates reported in the most recent decennial census. We base our occupancy estimates on these values, but we may make adjustments to account for factors reflecting changes in occupancy rates over time. For the 2022 estimates, we used occupancy rates from Census 2020. In some cases, slight changes in occupancy since 2020 were captured in places where we use electrical customer data and can exclude minimum use customers.

The product of the inventory figure and the occupancy rate provides an estimate of the number of households. There are several potential problems with this estimate. Time lags between the issuance of permits and the completion of units may vary from place to place and from year to year. The proportion of permits resulting in completed units is usually unknown. Data on demolitions and conversions are incomplete and data on mobile homes must be estimated indirectly. Reliable estimates of changes in occupancy rates are generally unavailable. Certificate-of-occupancy data, where available, can eliminate problems related to completion rates and time lags, but not those related to occupancy rates, demolitions, and conversions. Although these problems limit the usefulness of the data in some places, building permit data often provide reasonably accurate estimates of households.

Our third data source for estimates is the number of homestead exemptions by county reported by the Florida Department of Revenue. Households can be estimated by constructing a ratio of households to exemptions using data from the most recent census year (e.g., 2020) and multiplying that ratio times the number of exemptions in some later year (e.g., 2022). An important advantage of these data is that they cover only housing units occupied by permanent residents, thereby excluding the impact of seasonal and other non-permanent residents. The primary disadvantage is that the data do not include households occupied by renters or other non-homeowners, but those households often change at a similar rate to the households with homestead exemptions. Homestead exemption data is also available from each county's property appraiser at the property parcel level, which can be summarized by subcounty areas. We occasionally use these data to inform our decision making in places where our other primary data sources show significantly different results.

Electric customer, building permit, and homestead exemption data all provide useful information regarding changes in households. Previous research on BEBR population estimates has shown that household estimates based on electric customer data are—on average—more accurate than those based on building permit and other data. However, we use our professional judgment to decide which data source(s) to use in each specific county and subcounty area. In many instances, we use averages of estimates from more than one data source. We also sometimes use GIS-based property parcel data (along with year-built information and detailed land use codes from the Florida Department of Revenue) to evaluate which data source is best for a particular place.

Persons per Household

The second component of the housing unit method is the average number of persons per household (PPH). Florida's PPH dropped steadily from 3.22 in 1950 to 2.46 in 1990 but then leveled off, remaining constant between 1990 and 2000. It rose to 2.48 in 2010 and slightly dropped to 2.47 in 2020. There is a substantial amount of variation among local areas in Florida, with values in 2020 ranging from 1.9 to 3.0 for counties and from less than 1.4 to more than 3.8 for subcounty areas. PPH values have risen over time in some cities and counties and declined in others. We note that the U.S. Census Bureau has not provided PPH for Census 2020 to date and may not provide it at all due to data privacy concerns. We were able to calculate 2020 PPH values from other Census 2020 data by dividing the population not in group quarters by the number of occupied housing units. If PPH is finally released by the Census Bureau, it may have very small differences with our calculated values due to the intentional error introduced by the Census Bureau's application of Differential Privacy, though mathematically they should be identical.

For each county and subcounty area, we base our PPH estimates on the local PPH value in the most recent census (e.g., 2020). In some instances, we estimate changes in PPH since that census based on local changes in the mix of single-family, multifamily, and mobile home units (our other source of information – trends in data from the American Community Survey – was not available in time to use for the 2022 estimates). Again, we use our professional judgment to decide which data sources and techniques to use in each county and subcounty area.

Group Quarters Population

The household population is calculated as the product of households and PPH. To obtain an estimate of the total population, we must add an estimate of the group quarters population. In most places, we estimate the group quarters population by assuming that it accounts for the same proportion of total population in 2022 as it did in 2020. For example, if the group quarters population accounted for 2% of the total population in 2020, we assume that it accounted for 2% in 2022. In places where there are large group quarters facilities, we collect data directly from the administrators of those facilities and add those estimates to the other group quarters population. Inmates in state and federal institutions are accounted for separately in all local areas; these data are available from the Federal Bureau of Prisons, the Florida Department of Corrections, the Florida Department of Veteran Affairs, the Florida Agency for Persons with Disabilities, the Florida Department of Health, the Florida Department of Juvenile Justice, and the Florida Department of Children and Families. The total population estimate is made by adding the estimate of the group quarters population to the estimate of the household population.

Conclusion

The population estimates produced by BEBR are calculated by multiplying the number of households by the average number of persons per household and adding the number of persons living in group quarters. This methodology is conceptually simple but effective. It utilizes data that are available for all local areas, its components respond rapidly to population movements, and it can

be applied systematically and uniformly everywhere in the state. A comparison of population estimates with census results for 1980, 1990, 2000, 2010, and 2020 showed the BEBR estimates to be quite accurate, especially when compared to other sets of estimates. We believe the housing unit method is the most effective method for making city and county population estimates in Florida and that it produces reliable estimates that provide a solid foundation for budgeting, planning, and analysis.

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