Methodology statement: 2023/2028 Esri Dependency Ratios

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Introduction

The concept of dependency is critical to understanding a population as the age structure and labor force conditions shift within it. High levels of dependency can indicate an imbalance and potentially a need for resources to accommodate the large proportion of dependents. To get a full picture of dependency, Esri produces two sets of ratios: Age Dependency Ratios and Economic Dependency Ratios.

Age Dependency Ratios

The Age Dependency Ratio (ADR) is a measure of the nonworking-age population relative to the population of working age that serves as a useful indicator of an area's age structure. This measure is used to express the relationship between three age groups in a population: under 18, 18 to 64, and 65 and older. Dependent populations are defined as children under 18 years of age and seniors aged 65 and older. For this measure, the population aged 18 to 64 is considered the working-age population.

Three separate Age Dependency Ratios are calculated: The Child Dependency Ratio (CDR) is the population under 18 years of age divided by the working-age population aged 18 to 64. The Senior Dependency Ratio (SDR) is the population aged 65 and older divided by the working-age population aged 18 to 64. The ADR is the sum of the population under 18 years of age and 65 and older divided by the working-age population aged 18 to 64. All ratios are then multiplied by 100.
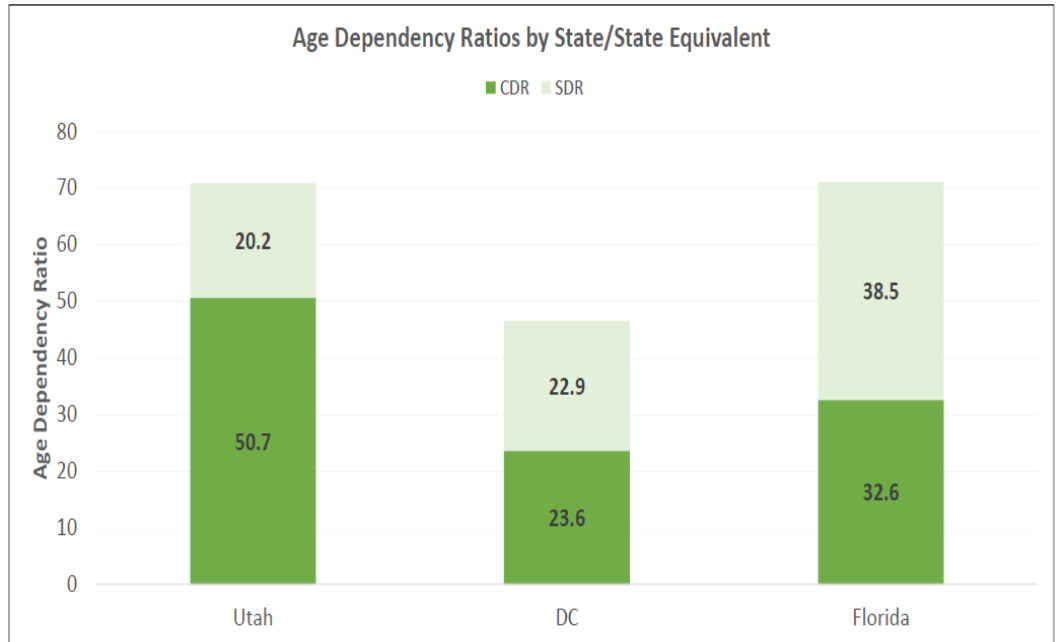
Higher ratios indicate a greater level of dependency on the working-age population. The U.S. ADR is 65.1 for 2023, or 65.1 dependents for every 100 individuals aged 18 to 64. Correspondingly, the U.S. CDR and SDR are 35.7 and 29.4, respectively. This reveals that children represent a larger share of the dependent population than seniors at the national level.

Note that these traditionally defined measures are approximations based solely on age and not adjusted for labor force participation by age. The ratios assume the entire working-age population aged 18 to 64 participate in the civilian labor force. Moreover, a portion of the dependent child and senior populations are participating in the labor force while the ratio assumes they are not.

Age Dependency Ratios are a quick and valuable tool for understanding the age distribution and resulting dependencies within an area. These measures are also powerful comparative tools. Looking at Chart 1 below, you can learn that Utah and Florida both have high Age Dependency Ratios, with values of 70.9 and 71.1, respectively. However, the age group contributions to the total ADR are different. Utah has a young population, with 50.7 of the 70.9 dependents (72 percent) coming from the child population. On the other hand, Florida has an older population with a more even split between child and senior dependents. By contrast, the District of Columbia (DC) has a low Age Dependency Ratio. DC has only 46.5 dependents per

100 persons of the working-age population, and 51 percent of those dependents are children under 18 years of age.
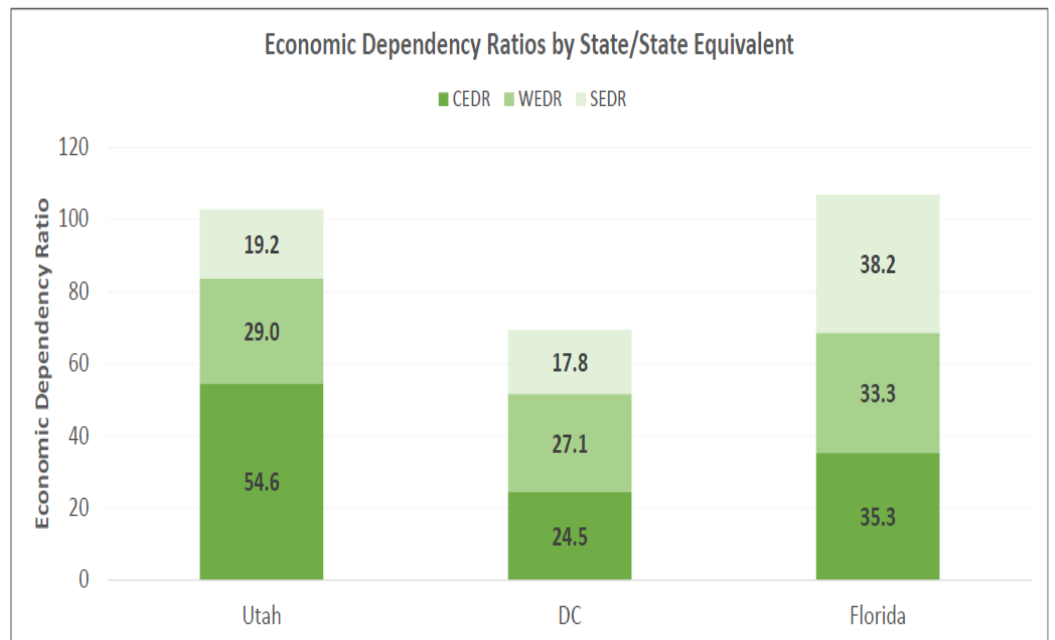
Chart 1

Age Dependency Ratios by State/State Equivalent

CDR   SDR

State	CDR	SDR
Utah	50.7	20.2
DC	23.6	22.9
Florida	32.6	38.5

Economic Dependency Ratios

The Economic Dependency Ratio (EDR) is similar to the ADR, but it accounts for labor force participation by age. The EDR measures the relationship of nonworkers to the employed population. Nonworkers include children, the unemployed population, and those not in the labor force (that is, individuals who are neither working nor actively searching for work). Children are defined as the population under 16 years of age.

Four separate ratios are available: The Child Economic Dependency Ratio (CEDR) is the population under 16 divided by the total employed population. The Working-Age Economic Dependency Ratio (WEDR) is the population not employed aged 16 to 64 divided by the total employed population. The Senior Economic Dependency Ratio (SEDR) is the population not employed aged 65 and older divided by the total employed population. All ratios are multiplied by 100. Total EDR is the sum of CEDR, WEDR, and SEDR. These measures exclude prisoners and the armed forces population.

In 2023, the U.S. EDR is 105, or 105 dependents for every 100 workers. Correspondingly, the U.S. CEDR is 39.8, or around 40 children dependents for every 100 workers. The WEDR is 35.7, or around 36 working-age dependents aged 16 to 64 to every 100 workers. The SEDR is 29.5, or around 30 senior dependents to every 100 workers. Although, as these values indicate, children make up the largest share of dependents; this can vary significantly depending on the area of the nation under examination. As Chart 2 shows, Utah's large child population makes the CEDR the largest component of the total EDR with a value of 54.6. Conversely, Florida has a large senior population that results in a high SEDR value of 38.2. DC has a relatively low EDR of 69.4, and the largest contributor to this is the nonworkers in the working-age population, resulting in a WEDR of 27.1 (39 percent).

Chart 2

Summary of ratio differences

Comparing the charts above reveals important details regarding how the dependency ratios can diverge. Key differences between the measures include the following:

- The EDR incorporates employment and unemployment information. This can result in the EDR calculation containing portions of the working-age and senior populations in both the numerator and denominator of the calculation depending on the age-specific labor force makeup of the study area.
- The EDR is a civilian-only measure that does not include populations such as armed forces and prisoners.
- Three groups (child, working-age, senior) sum to the total EDR as opposed to only two groups (child, senior) summing to the total ADR. This is necessary to account for dependents (unemployed, not in the labor force) in the population aged 16 to 64.
- The cutoff between the child and working-age groups is 16 years of age for the EDR versus 18 for the ADR. Age 18 is used for the ADR because it corresponds with the standard definition of children. Age 16 is used for the EDR, as it is the basic minimum age for employment.
- Unlike the ADR, which is also calculated for 2028, the EDR is available only for 2023.

Esri's data development team

Led by chief demographer Kyle R. Cassal, Esri's data development team has more than 40 years of experience in market intelligence. The team's economists, statisticians, demographers, geographers, and analysts produce independent small-area demographic and socioeconomic estimates and forecasts for the United States. The team develops exclusive demographic models and methodologies to create market-proven datasets, many of which are now industry benchmarks, such as Tapestry™ Segmentation, Consumer Spending, Market Potential, and annual Updated Demographics. Esri® demographics power ArcGIS® through dynamic web maps, data enrichment, reports, and infographics.

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