Tennessee State Data Center

Your Local Population and Census Partner

Tim Kuhn, Director
Agenda

• Intro the TNSDC
• 2020 Census Results and Trends
• Population Projections
• 2020 SDC Products
• 2020 Census Products
• PUMA Geography Update
• Q & A
To know us is to love us...

INTRO TO THE STATE DATA CENTER
TNSDC Mission

• “Make Tennessee Data Users Stronger”

We are experts in accessing, understanding and disseminating data about Tennessee. We make it understandable and useful to citizens, businesses and agencies across the state. We work continuously to find innovative ways to add value to Tennessee’s state and local government agencies.
TNSDC Partnership

- **State of Tennessee**
  - Funding
  - Key customer/client
- **University of Tenn. – Boyd Center, Haslam Business College**
  - Brand/platform
  - Center of expertise
  - Overhead and services
- **Census Bureau**
  - Training and resources
  - Access to the national SDC network
- **Data Center Affiliates**
Four primary relationships

PERENNIAL STATE-CENSUS RELATIONSHIPS
1. State Data Center

• Origins and evolving roll
• Active in 50 states and 6 territories
• Mission
  • Efficient access to Census Bureau data and data products
  • Training and technical assistance
  • Feedback on usability, data needs and operational issues
• Other work as assigned...
2. FSCPE/FSCPP

- Active in 50 states and Puerto Rico
- Typical designation
  - State demographer
  - Universities
2. FSCPE/FSCCPP Roles

- Pop estimates support
  - Vital stats
  - Group quarters
  - Housing unit review
  - Estimate review

- 2020 Census Roles
  - Define College off-campus areas (E-NRFU)
  - Census Master Address File Review (Count Review Operation)

- Support other state-census relationships
3. Governor's liaison

- Active during decennial census
- Currently vacant
4. Geography Update Partnerships

- Redistricting liaison
  - Comptroller, Office of Local Government
- Boundary Annexation Survey (BAS)
  - Unofficial state partnership
- School District Boundaries
- Participant Statistical Area Program (PSAP)
- Local Update of Census Address (LUCA)
Engaging with TNSDC

- Subscribe
  - @TNSDC
  - Bimonthly newsletter
- Webinar Series
- Questions: Call or email
What’s been released and what we have learned about Tennessee.

RECAPPING THE 2020 DECENNIAL CENSUS DATA RELEASE
Who is counted and what is collected?

- Every person living in U.S and military/federal employees living overseas
- Place of residence of April 1, 2020
- Data collected
  - Age
  - Sex
  - Race/Hispanic ethnicity
  - Relationships
  - Occupied and vacant housing units
  - Population in group quarters
2020 Census
Percent Change in Resident Population (2010-2020)

US: 7.4% Increase Since 2010

State Percent Change
- <0% or Less Decrease (3)
- 0% to <5% (19)
- 5% to <10% (13)
- 10% or More Increase (13)

Map: Tennessee State Data Center, University of Tennessee, Knoxville • Source: Resident Population of the 50 States (Table 2), US Census Bureau, 2010 and 2020 • Note: Resident population excludes counts of overseas U.S. military and federal civilian employees (and their dependents living with them).
Tennessee’s growth was slower last decade but outpaced the US

- 6.91 million residents in 2020
- 564,735 increase (8.9%)
- Slowest percentage gain since 1980 to 1990

Source: Appointment Counts, US Census Bureau, 2020
Note: Excludes Federal employees and families living overseas
Rural population losses are accelerating

- 65 of 95 counties grew last decade
- Rural counties with population loss
  - 8 counties 2010
  - 29 counties in 2020
- 2 point decrease in share of population living in rural counties since 2000
Most Counties Saw Reduced Under-18 Population

- 65 of 95 counties have fewer children than 10 years ago
- Adult population declined in only 18 counties
Growing Racial and Ethnic Diversity

- Most groups race and ethnic groups grew
- 82% of population increases since 2010 were not “white” alone

*Race question and coding changes partially responsible
Population increases in 2000’s were more concentrated in the middle-part of the decade

**Annual Growth Rate**
- 2000 - 2010: 1.06%
- 2011 - 2020: 0.93%

Through the 2000’s annual growth rates regularly exceed 1% in non-recessionary years.

From 2011 to 2020 annual increases were generally lower and more consistent.

*Source: Vintage 2010 and 2020 Evaluation Estimates, State and County Components of Population Change by U.S. Census Bureau.*
An aging population pushed deaths higher while births have remained nearly flat

Population gains from natural change (births – deaths) are steadily withering.

Fertility rates are at historic lows and continue to fall.

Increasing deaths from an aging population will continue to climb.


Economic cycles have influenced migration patterns in the last two decades

Domestic net migration totals in the 2000’s and 2010’s are comparable

Recessionary periods in the 2000’s bookended the highest increases in 2006

2011 to 2020 saw steadily increasing migration

Migration trends during the pandemic are unclear but dramatic departures from recent trends are not yet evident

Current trends suggest domestic net migration will drive further state population increases

Domestic migration accounted for 51.8% of population increases in 2000’s, but grew to 63.4% in the 2010’s

<table>
<thead>
<tr>
<th>Change Component</th>
<th>2001-2010</th>
<th>2011-2020</th>
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<tbody>
<tr>
<td>Natural Change</td>
<td>35.2%</td>
<td>23.1%</td>
</tr>
<tr>
<td>International Migration</td>
<td>13.0%</td>
<td>13.5%</td>
</tr>
<tr>
<td>Domestic Migration</td>
<td>51.8%</td>
<td>63.4%</td>
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</tbody>
</table>

Components of Population Change

Where is population headed

BOYD CENTER POPULATION PROJECTIONS
Boyd Center Projection Overview

- Updated Biennially
- County-level
- Sub-county methodology

Source: Appointment Counts, US Census Bureau, Boyd Center Population Projections
Cohort Component Projection Methodology

Inputs
• Decennial census & population estimates
• Vital statistics
• Life tables
• Birth rates

Projected variables
• 95 counties
• Race, age and sex
• 5-year age bands
Accessing the Projections

- Excel Workbook
- Raw data
- Summary-levels
- GIS formats
- Interactive dashboard

https://tnsdc.utk.edu/estimates-and-projections/boyd-center-population-projections/
Projection Updates

• **Current** (October, 2019)
  • 2000 Base Year, 2018 Estimates
  • 2019 Launch Year

• **Update** (Expected Q1 2022)
  • 2000 Base Year, 2020 Eval. Estimates
  • 2020 Census incorporated
  • 2021 Launch Year

• Webinar early next year
Too soon to tell...

• 2021 Projection Trends
  • COVID-19 impacts
    • +12,000 Deaths (Natural decrease)
    • Accelerating migration patterns?
  • Further fertility-rate declines
• Employment Forecast?
Ready-to-use GIS for Tennessee

2020 CENSUS DATA PRODUCTS
2020 Census Data Releases

- **Apportionment Counts** *(April 26, 2021)*
  - Nation and states
  - Population

- **P.L. 94-171 Redistricting Data** *(August 12, 2021)*
  - All census geographies
  - Housing, population and characteristics

- **Upcoming Releases**
  - Demographic Profiles (Age, sex, household relationship) *(TBD)*
  - Demographic and Housing Characteristics (formerly SF1) *(TBD)*
  - Urban Areas (Final criteria, geography) *(Early 2022)*
Retrieving 2020 Census Data

• **New Census Data Users**
  - Review [Census Academy](#) videos

• **Experienced Users**
  - Tabular data from [data.census.gov](http://data.census.gov)
  - GIS DIY - Assemble “Legacy” Format Data
    - [TIGER/Line 2020 Shapefiles](#)
    - [Redistricting Data Summary Files](#) (Text)
    - [Microsoft Access Table Shells](#)
  - Download from Tennessee data from [TNSDC](#)
  - [NHGIS](#) (National coverage)
TNSDC “QuickStats” 2020 Census Data

• 33 most requested fields from Redistricting release

• Available Formats
  • Tables: CSV, Excel
  • GIS: Shapefile, File Geodatabase, ArcGIS Online Hosted Feature Layers
Decennial Census Content on TNSDC Site

- “QuickStat” data downloads
- Ready-to-use maps (PDF, PNG)
- Data for 2000 and 2010

https://tnsdc.utk.edu/data-and-tools/2020-census/
How you think about decennial census data should change

2020 CENSUS DISCLOSURE AVOIDANCE: CONSIDERATIONS FOR DATA USERS
2020 Census Disclosure Avoidance Strategies

Differential Privacy (DP)
- Adds “noise” to published statistics

Publish fewer statistics
- Eliminate tables in upcoming 2020 data products
- Data at fewer geographic levels
2020 Census Data Product Planning

• Overview of 2020 Census Product changes
  • Demographic Profiles available at place-level or higher only (currently tract)
  • Reduces geographic levels of about 30 tables
  • Eliminates nearly 50 other tables
• Detailed in Crosswalk Spreadsheet
• Other proposals...
# 2020 Census Data Product Planning Crosswalk

<table>
<thead>
<tr>
<th>Proposed 2020 Census Demographic Profile (DP) Crosswalk</th>
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<tr>
<td><strong>2020 DP Table Number</strong></td>
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Impact of Differential Privacy

- **Invariant**
  - Population in each state
  - Number of housing units
  - Number and types of groups quarter facilities

- **Subject to Noise Infusion**
  - Occupied/vacant households
  - Population counts and all characteristic

- **Population decoupled from household and housing unit**
Implausible Block Scenario 1

- One occupied housing unit but dozens of people
- 1,433 blocks (0.8%)
Implausible Block Scenario 2

- Everyone in area under age 18
- 3,050 blocks (1.7%)
Implausible Block Scenario 3

- Zero occupied housing units but more than zero household population
- 9,869 blocks (5.5%)
Implausible Block Scenario 4

• More occupied housing units than people
• 1,409 blocks (0.8%)
Aggregate blocks

- Aggregate blocks to areas with >500 people
- Use block groups instead
- Census Bureau research

  95% of block groups were within 5% of published statistics using 2010 PPMF and published SF1data
Avoid rate calculations at tract and smaller

Data should not be divided across tables in low population areas

2010 PPMF v 2010 SF1 for MCD’s <5000 people

Persons Per Household

<table>
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<tr>
<th>Min</th>
<th>-0.03</th>
<th>-0.02</th>
<th>-0.01</th>
<th>0</th>
<th>0.01</th>
<th>0.02</th>
<th>0.03</th>
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</table>

Mean Absolute Difference 0.003 PPH

HU Occupancy Rates

<table>
<thead>
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<th>Min</th>
<th>-5%</th>
<th>-4%</th>
<th>-3%</th>
<th>-2%</th>
<th>-1%</th>
<th>0%</th>
<th>1%</th>
<th>2%</th>
<th>3%</th>
<th>4%</th>
<th>5%</th>
</tr>
</thead>
</table>

Mean Absolute Difference 0.67%

Source: UMass Donahue Institute, Economic and Public Policy Research & Population Estimates Program
Disclosure Avoidance Resources

- Census Bureau Website
  - Email Newsletter
  - DA Handbook (released 11/3)
- 2020 Decennial Census Product Crosswalk

PUMA – not just the world’s third largest sportswear producer

PUBLIC USE MICRODATA AREA UPDATE
Public Use Microdata Areas

• PUMA’s
  • State-based, non-overlapping, statistical areas
  • No fewer than 100,000 people each
  • Follow county and census tract boundaries
  • Used with Public Use Microdata Samples (PUMS) products from ACS.

• Redrawn after decennial census by SDC’s
Census Microdata

- Anonymized single-person and single-household responses
  - Decennial Census
  - American Community Survey (ACS)
- Custom tabulations not available in pre-compiled tables
- Accessed with statistical packages or MDAT
2020 Tennessee PUMA Criteria

- **Required PUMA Criteria (U.S. Census Bureau)**
  - Must not cross state boundaries
  - Must exceed 100,000 people and maintain this population throughout the decade
  - Must be constructed of counties and/or census tracts
  - Portions of counties included in PUMA's which cross a county line must be in excess of 10,000 people

- **Other Guidance (U.S. Census Bureau)**
  - Should not contain more than 200,000
  - Should be contiguous
  - Should be comprised of areas entirely within or outside of CBSA's
  - Should maintain relationships with geographies including places, 2010 urban/rural delineations
  - Recognize Place of Work and Migration PUMAs

- **Tennessee Specified Criteria**
  - Support longitudinal PUMA analysis by preserving existing boundaries when feasible
  - Whole counties with population in excess of 100,000 people should be preserved as individual PUMAs
  - Where feasible, create PUMA's nesting within Workforce Development Areas/Development Districts boundaries
  - Consider the boundaries of Metropolitan Planning Organization Boundaries and Metropolitan Planning Areas in PUMA delineation
2020 PUMA Update Scenarios

- Alternative 0: No changes
- Alternative 1: Minimal revisions
- Alternative 2: Conformance with PUMA Criteria
2020 PUMA Update Timeline

- Final PUMA Criteria  (September, 2021)
- PUMA Drafting/Input  (November 2021 – January 31, 2022)
- Webinar  (Mid-December, 2021)
American Community Survey

- One-Year (65,000+)
  - 2020 Cancelled
  - Experimental, state-level replacement
- Five-year
  - 2016-2020 delayed until March
  - Cancellation of release is a possibility