Demographic and Geographic Data for Population Health Research

Sarah Ehresman
Research Coordinator
Kentucky State Data Center
Agenda

• Census Geography
• Data Sources
• Accessing Data
Geography

- ZIP Code Tabulation Areas
- School Districts
- Congressional Districts
- Voting Districts
- Traffic Analysis Zones
- County Subdivisions
- Subminor Civil Divisions
- Census Tracts
- Block Groups
- Census Blocks

- States

- AIANHH Areas
  (American Indian, Alaska Native, Native Hawaiian Areas)
- Urban Areas
- Core Based Statistical Areas
- Urban Growth Areas
- State Legislative Districts
- Public Use Microdata Areas
- Places
Census Tracts

• Statistical unit with around 1,200 to 8,000 people, optimum size of 4,000
• Generally follow identifiable features
• Boundaries often change every 10 years
• Often used to represent neighborhoods
• Named with a numeric ID, up to 6 digits
There are currently 191 Census tracts in Jefferson County.
ZIP Codes

- ZIP codes define delivery routes, not polygons
- Census Bureau created ZIP Code Tabulation Areas (ZCTAs) in 2000 due to user demand
  - Do not easily conform to other statistical/administrative units
  - May be discontinuous
  - More heterogeneous than Census tracts
  - PO Boxes and rural routes may be poorly identified
Zip Code Tabulation Areas (ZCTA) within Jefferson County
Places

• A place is a concentration of population
• Must have a name, be locally recognized, and not be part of any other place
• Incorporated place
• Census Designated Place (CDP)
Jefferson County includes 83 semi-independent municipalities.
Data Sources

• U.S. Census Bureau
  – Decennial Census
  – American Community Survey
  – Population Estimates

• National Center for Health Statistics
  – Population Estimates
  – Vital Statistics
Decennial Census

• Mandated by Article 1, Section 2 of the U.S. Constitution
• Counts the population every 10 years
• Used for apportionment and redistricting
Census 2000

- During the 2000 Census and previous census years two forms were used:
  1. Short form
     - Basic demographics – age, sex, race, household size
  2. Long form
     - Characteristics of population – income, education, marital status, language spoken, lots more
- All persons receive the short form
- Sample of population receive long form
Census 2010

• Only used the short form
  – Basic demographics: age, sex, race, household size, housing units-owned, rented, vacant
• Focus on counting the population
• Characteristics of the population no longer collected with the decennial Census
American Community Survey

- Began collecting data in all areas in 2005
- Published first estimates for all areas in 2010
- Updates every year
- Available for small geographic areas and areas with small population
- Smaller sample size than Census Long Form
Census 2010 and ACS

• 2010 Census **counts** the population
• ACS produces **estimates** on characteristics of population and housing
• The purpose of the ACS is not to count the population but to provide data showing how people live and the needs of the community
Characteristics of the Population

• Social
  – Ancestry
  – Citizenship Status
  – Disability
  – Educational Attainment
  – Fertility
  – Grandparents
  – Language
  – Marital status and history
  – Migration
  – School enrollment
  – Veteran Status

• Economic
  – Employment and work status
  – Health insurance
  – Income and earnings
  – Industry and occupation
  – Commuting
  – Poverty
  – SNAP

• Demographic
  – Age and sex
  – Race and Hispanic origin
Characteristics of Housing

• Financial
  – Housing costs
    • Utilities
    • Insurance
    • Condo fee
    • Taxes
    • Mortgage
    • Rent
  – Tenure
  – Property value

• Physical
  – Heating fuel
  – Kitchen facilities
  – Plumbing facilities
  – Telephone available
  – Rooms and bedrooms
  – Units in structure
  – Vehicles available
  – Year moved in
  – Year structure built
A Dynamic Survey

• 2008
  – Marital history
  – Health insurance coverage
  – VA service-connected disability status and rating
  – Disability

• 2009
  – Bachelor’s degree field of study

• 2013
  – Computer ownership (including smart phones)
  – Internet access
A Continuous Survey

• ACS collects survey data throughout the year
• Estimates produced are period estimates
• Reflects a period of time, not a point in time
• Different from the decennial Census which asks respondents to answer questions as of April 1
Period Estimates

• 1-year estimates
  – Produced for areas with at least 65,000 people

• 3-year estimates
  – Produced for areas with at least 20,000 people
  – Discontinued

• 5-year estimates
  – Produced for all areas
Which Period Estimates?

- Availability
- Comparisons
- Currency vs. Precision
Limitations

- American Community SURVEY
- Margins of error reported for 90% confidence levels
- Test for reliability
  - Standard error = Margin of Error / 1.645
  - Coefficient of Variation =
    \( \frac{\text{Standard Error}}{\text{Estimate}} \times 100 \)
- Census says use caution when CV > 15%
Census Population Estimates

• Demographic data published between decennial Census years
• Annual updates and revisions
  – Most current vintage will include data for previous years
• Derived from mathematical models
  – Components of population change
Census Population Estimates

• Age, Sex, Race, Ethnicity
  – 5-year age groups at county level
  – 6 racial categories, including multiple races

• Nation, state, counties, incorporated places

• Often used as the denominator in rate calculations
NCHS Population Estimates

- Modification of the Census Population Estimates
- Age, Sex, Race, Ethnicity
- Bridged-Race Estimates
  - 4 categories for race
- Single year of age at county level
NCHS Population Estimates

• Primary reason for NCHS to develop distinct population estimates are for the bridged-race categories
• Network of vital statistics (at the state level) use the racial categories consistent with NCHS population estimates
• Important for race-specific rates
NCHS Population Estimates

• Also useful for special age groups that do not conform to the 5-year age groups
  – Children under 18 years
  – Infants under 1 year

• Internally consistent with Census Population Estimates
NCHS Vital Statistics

• Mortality data for state and counties
• Natality data for state and counties with at least 100,000 population
• Any data with less than 10 cases is suppressed
• Any rates produced from less than 20 cases is flagged as unreliable
American Fact Finder

http://factfinder.census.gov

- Decennial Census
- American Community Survey
- Census Population Estimates
CDC WONDER

http://wonder.cdc.gov
### CDC WONDER

#### 1. Organize table layout:

#### 2. Select location:

#### 3. Select years and demographics:

#### 4. Select cause of death:

#### 5. Select rate options:

##### Calculate Rates Per

- 1,000
- 10,000
- 100,000
- 1,000,000

##### Age-Adjusted Rate Options:

- No age-adjusted rates
- Use standard populations for age-adjusted rates
- Use non-standard populations for age-adjusted rates

#### 6. Other options:

- **Export Results**: (Check box to download results to a file)
- **Show Totals**: ✔
- **Show Zero Values**: □
- **Show Suppressed Values**: □
- **Precision**: 1 ▼ decimal places
- **Data Access Timeout**: 5 ▼ minutes

---

**Browse** the list by opening and closing items.

**Use** Ctrl+Click to multiple select, Shift+Click for a range.
<table>
<thead>
<tr>
<th>Five-Year Age Groups</th>
<th>Deaths</th>
<th>Population</th>
<th>Crude Rate Per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 year</td>
<td>88</td>
<td>10,198</td>
<td>866.8</td>
</tr>
<tr>
<td>1-4 years</td>
<td>17</td>
<td>39,032</td>
<td>Unreliable</td>
</tr>
<tr>
<td>5-9 years</td>
<td>Suppressed</td>
<td>47,006</td>
<td>Suppressed</td>
</tr>
<tr>
<td>10-14 years</td>
<td>Suppressed</td>
<td>47,648</td>
<td>Suppressed</td>
</tr>
<tr>
<td>15-19 years</td>
<td>35</td>
<td>45,837</td>
<td>76.4</td>
</tr>
<tr>
<td>20-24 years</td>
<td>61</td>
<td>49,900</td>
<td>122.2</td>
</tr>
<tr>
<td>25-29 years</td>
<td>64</td>
<td>53,960</td>
<td>118.6</td>
</tr>
<tr>
<td>30-34 years</td>
<td>80</td>
<td>52,047</td>
<td>153.7</td>
</tr>
<tr>
<td>35-39 years</td>
<td>94</td>
<td>46,881</td>
<td>200.5</td>
</tr>
<tr>
<td>40-44 years</td>
<td>146</td>
<td>48,354</td>
<td>201.9</td>
</tr>
<tr>
<td>45-49 years</td>
<td>208</td>
<td>52,692</td>
<td>394.7</td>
</tr>
<tr>
<td>50-54 years</td>
<td>381</td>
<td>56,492</td>
<td>674.4</td>
</tr>
<tr>
<td>55-59 years</td>
<td>479</td>
<td>51,307</td>
<td>933.6</td>
</tr>
<tr>
<td>60-64 years</td>
<td>505</td>
<td>44,660</td>
<td>1,130.8</td>
</tr>
<tr>
<td>65-69 years</td>
<td>495</td>
<td>29,442</td>
<td>1,681.3</td>
</tr>
<tr>
<td>70-74 years</td>
<td>594</td>
<td>22,758</td>
<td>2,610.1</td>
</tr>
<tr>
<td>75-79 years</td>
<td>750</td>
<td>18,500</td>
<td>4,054.1</td>
</tr>
<tr>
<td>80-84 years</td>
<td>1,081</td>
<td>15,443</td>
<td>6,999.9</td>
</tr>
<tr>
<td>85-89 years</td>
<td>1,095</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>90-94 years</td>
<td>725</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>95-99 years</td>
<td>236</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>100+ years</td>
<td>67</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Not Stated</td>
<td>Suppressed</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7,196</td>
<td>746,906</td>
<td>963.4</td>
</tr>
</tbody>
</table>
Additional Data Sources

• **Kids Count Data Center**
  – Data related to children’s well-being
  – Socioeconomics, education, health, safety

• **Kentucky Health Facts**
  – Social and behavioral indicators, health outcomes, access to care, maternal and child health

• **County Health Rankings**
  – Health outcomes, health behaviors, clinical care, socioeconomics, physical environment
Demographic and Geographic Data for Population Health Research

Sarah Ehresman
Kentucky State Data Center

http://ksdc.louisville.edu
sarah.ehresman@louisville.edu
502.852.7990