GIS for policy, program planning, and evaluation: Lessons learned

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Background: Teen Births in California

- **Teen births** - significant personal and social costs
- **Teen Birth Rates (2004)**
  - 4-15 per 1,000 - Most modern, industrialized countries
  - 37.1 per 1,000 California

Background (cont.)

- California Department of Public Health needs information to target resources for teen pregnancy prevention program
  - One criterion: serve areas of need
    - Map teen birth rate “hot spots” compared to state

1999-2000 Teen Birth Rate Data Analysis Methods

- **Source for Numerator (teen births)**
  - California birth file 1999 and 2000:
    - Live births to females age 15-19
    - 92% geocoded (n = 103,249)
- **Source for Denominator**
  - 2000 US Census: # females age 15-19 by census tract

Methods (cont.)

- **Average annual teen birth rate (see formula below):**

$$\frac{\text{\# live births to teen females in 1999, 2000}}{\text{female teen population in 2000} \times 2} \times 1{,}000$$

- **Geographic unit – census tract**

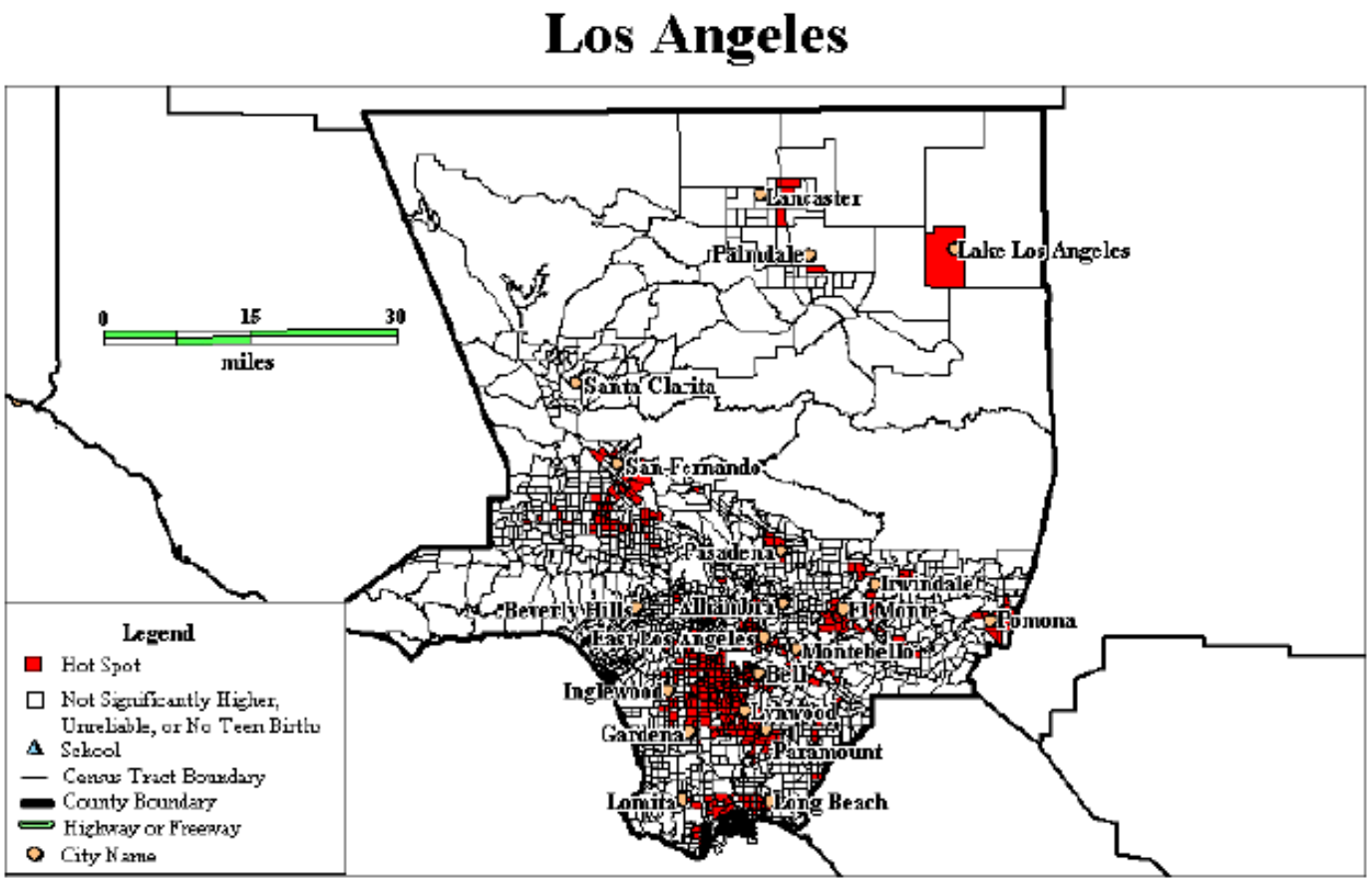
Methods (cont.)

- Only black & white
  - Census tracts with teen birth rates statistically significantly higher than the state average (hot spots)

versus

  - Everything else

Teen Birth Rate Hot Spots by Census Tract, Los Angeles County, 1999-2000



California's Most Recent GIS Analysis

- **Primary Purpose**
  - Show areas with high teen birth rates
- **Secondary Purpose**
  - Teen Birth Rates by
    - Neighborhood
    - Race and ethnicity
    - Time

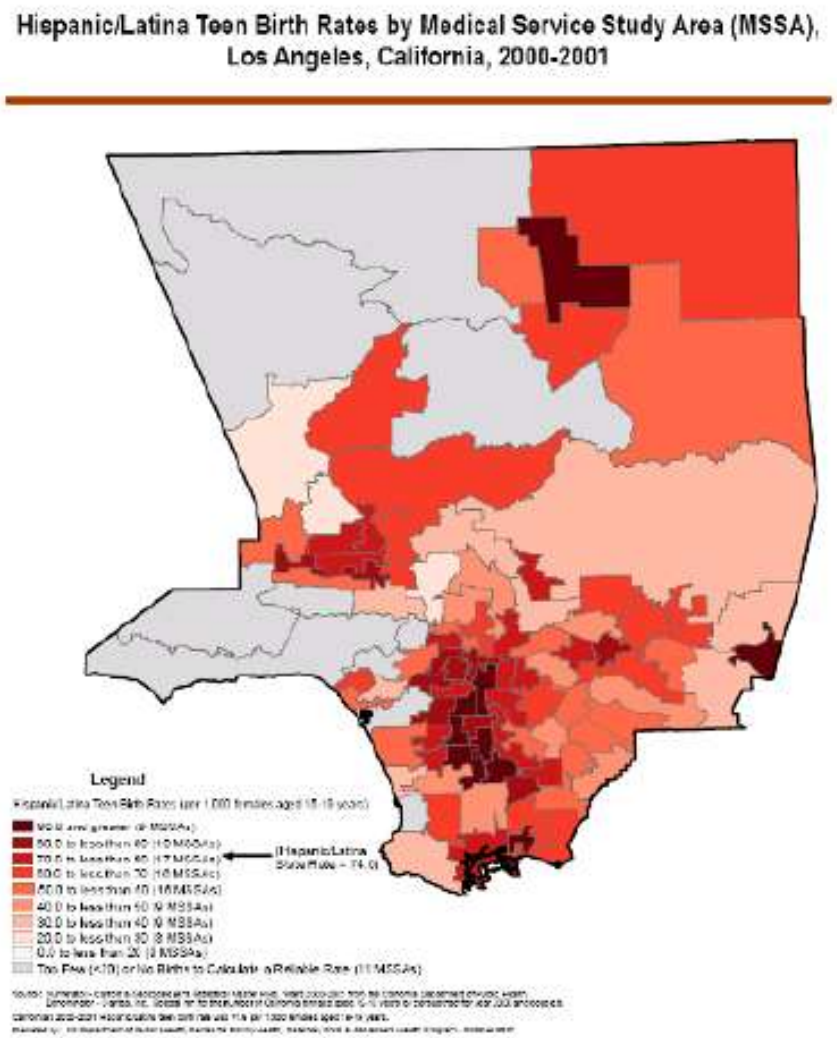
Change in Methods

- **Medical Service Study Area** (MSSA) (n = 541)
  - Versus census tracts (n = 7,049)
- **Teen birth rate <u>ranges</u>**
  - For 20+ teen births
  - Increment: 10 live births per 1,000 female teens
- **Reference**
  - Single teen birth rate versus changing average
  - No statistical testing -> show more areas

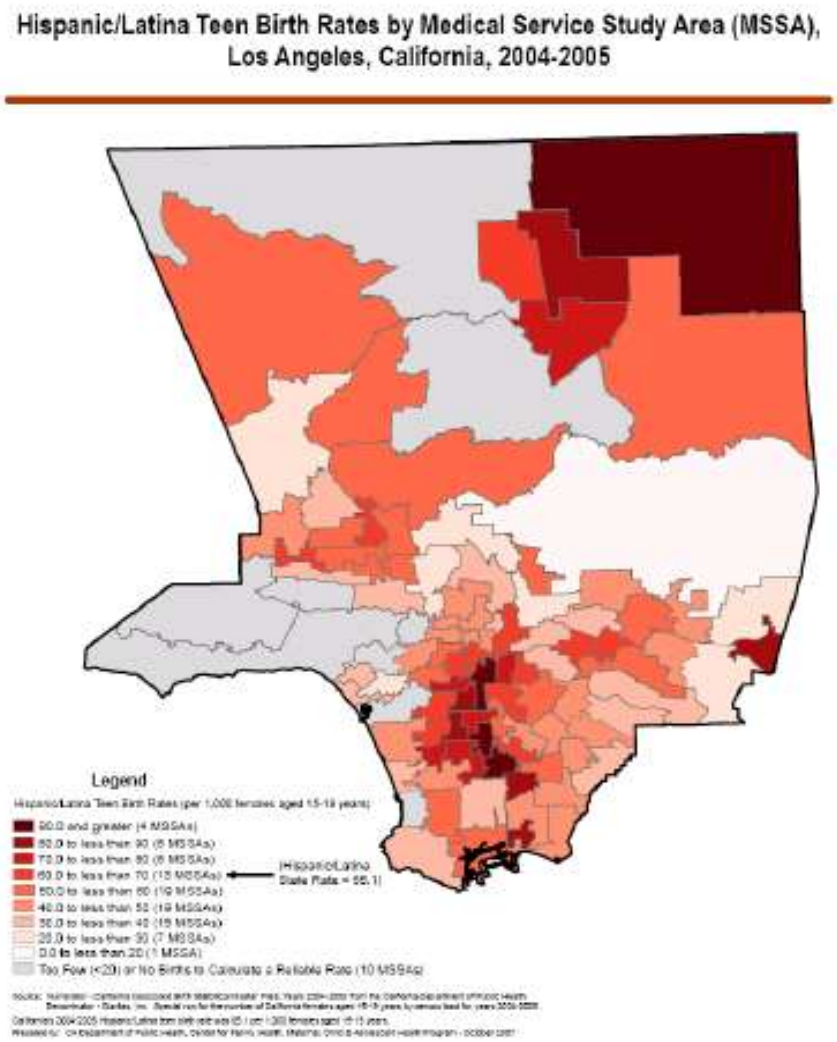
Change in Methods (cont.)

- **Race and ethnic groups**
  - All
  - Hispanic
  - African American
  - Asian
- **Two time periods**
  - 2000-2001 compared to 2004-2005

Hispanic/Latina Teen Birth Rates by MSSA, Los Angeles County, 2000-2001 & 2004-2005



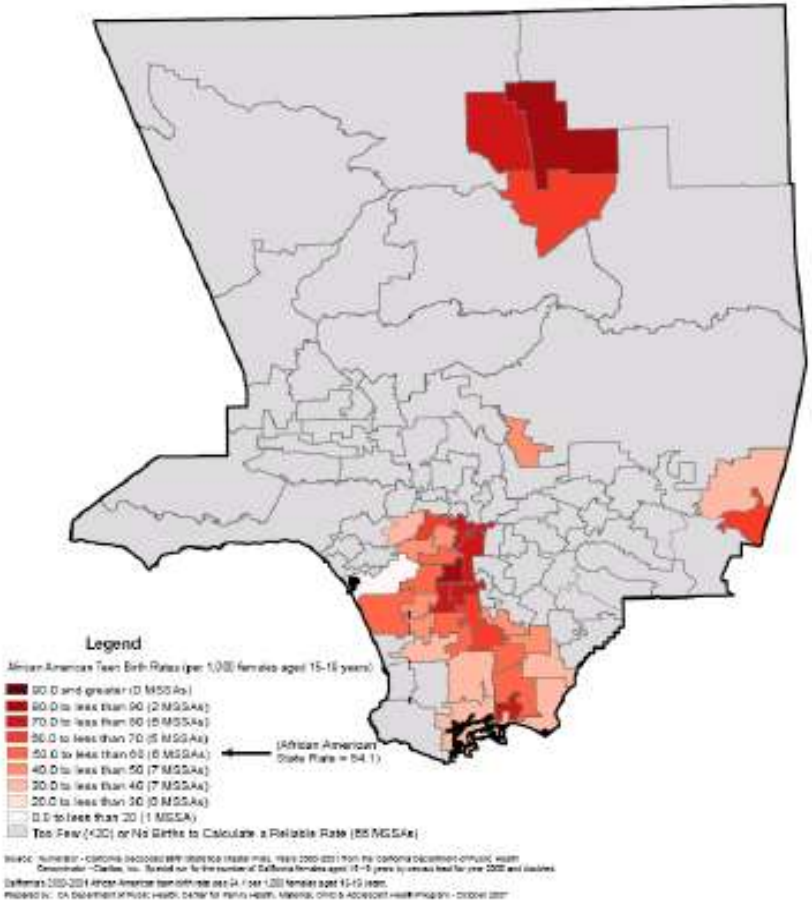
2000-2001



2004-2005

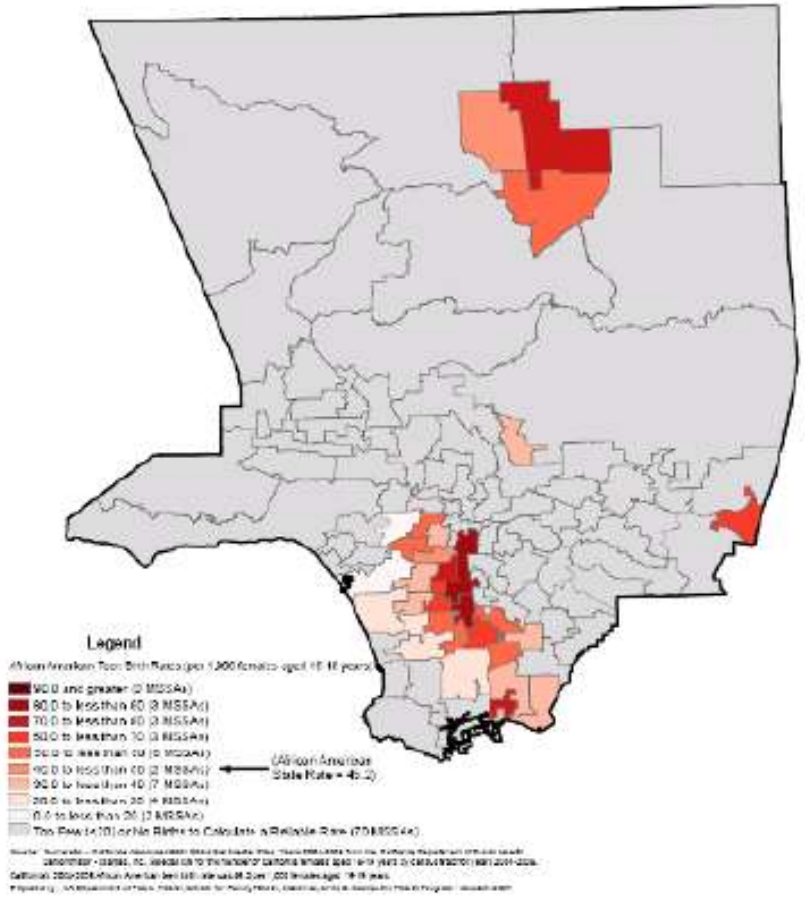
African American Teen Birth Rates by MSSA, Los Angeles County, 2000-2001 & 2004-2005

African American Teen Birth Rates by Medical Service Study Area (MSSA), Los Angeles, California, 2000-2001



2000-2001

African American Teen Birth Rates by Medical Service Study Area (MSSA), Los Angeles, California, 2004-2005



2004-2005

Potential Uses in Policy, Program Planning and Evaluation

- Scope of problem
- Target programs
- Target sex ed evaluation
- Evaluate programs

Lessons Learned

- Aggregate or statistically smooth data
  - Show everything
- Use meaningful, unchanging baseline
- Use meaningful categories
- Add tabular data and maps as needed

Lessons Learned (cont.)

- Keep checking with your audience
  - Purpose
  - Interpretation
  - Utility
- Answers prompt questions
  - Encourage queries

Lessons Learned (cont.)

- Plan but expect changes, Murphy's Law, and evolution
- GIS can bring insight
- GIS can mislead
- GIS is art **plus** science

Contact Information

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