Graphic Detail

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Visualizing Same-Sex Couple Household Data With Linked Micromaps

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In this article, I demonstrate how using linked micromaps (Carr and Pickle, 2010) can improve mapping of same-sex couple (SSC) household data. Micromaps display multiple maps on the same exhibit and highlight different geographic units in each map. Linked micromaps display columns of data next to micromaps.

I improve on typical census data mapping (for example, Lofquist, 2011) in several ways, most importantly by providing context for interpretation.[1] Typical choropleth maps provide no context to help the reader understand why, for example, Washington, D.C. (hereafter, D.C.), has such a high percentage of same-sex couples compared with the SSC percentage of the 50 states. Linked micromaps allow for state total estimates to be reported along with estimates by metropolitan status. When areas within states with the same metropolitan status are compared, D.C. is no longer such a significant outlier. I also improve on typical census mapping by presenting SSC estimates in descending order, which puts similar states into smaller perceptual subgroups for easier comprehension. I also report confidence limits, which help the reader gauge the relative precision of the mean estimates.

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[1] For Census Bureau data on SSC households, see http://www.census.gov/hhes/samesex/.

To compute custom estimates by state and metropolitan status, I used American Community Survey (ACS) Public Use Microdata Sample (PUMS) data. To increase precision, I analyzed 5 years of PUMS data (2006 through 2010), which I downloaded from the University of Minnesota's IPUMS-USA database (Ruggles et al., 2010).

Of U.S. couple households, from 2006 through 2010, an estimated 1 percent (652,791) were SSC households; the 95-percent confidence interval is 1.0 to 1.1 percent. The SSC percentage is much higher in metropolitan areas than in nonmetropolitan areas. Of nonmetropolitan couple households, only 0.7 percent were estimated to be SSC households. Of metropolitan couples, an estimated 1.2 percent were SSC households. An estimated 2.0 percent of couple households in central cities of metropolitan areas were SSC households compared with 0.9 percent of couple households in metropolitan areas outside of central cities.

The possible preferences of same-sex couples for cultural and other amenities available in more metropolitan areas might play a significant role in these differences. Another possible factor is that there might be more tolerance and less discrimination in metropolitan areas.

Exhibit 1 reports estimates of same-sex couples as a percentage of all couple households by state and for metropolitan and nonmetropolitan areas within states, and it includes 95-percent confidence intervals. Estimates are reported in descending order of state total estimates. The total SSC percentage varies from 0.5 percent in Mississippi to 5.7 percent in D.C., the median is 0.9 percent in North Carolina, and the mean is 1.1 percent. Four of the five highest percentage observations (D.C., Maine, Massachusetts, and Vermont) are in the eastern United States; the exception is Oregon. The five lowest percentage states are in the Midwest (North Dakota, Nebraska, and South Dakota) and South (Mississippi and West Virginia) census regions.

Nonmetropolitan estimates vary from 0.4 percent in Mississippi to 2.3 percent in Delaware, with a median of 0.6 percent in Michigan and a mean of 0.8 percent. Metropolitan estimates vary from 0.5 percent in North Dakota to 5.7 percent in D.C., with a median of 1.0 percent in Missouri and a mean of 1.2 percent. Note that some states' estimates are missing from one column. For instance, New Jersey has no nonmetropolitan areas, whereas Wyoming has no metropolitan areas.

Although exhibit 1 is more informative than typical maps, D.C. remains an outlier. In exhibit 2, I replace the column of metropolitan estimates in exhibit 1 with estimates for metropolitan areas outside central cities and for central cities of metropolitan areas.[2]

Compared with exhibit 1, exhibit 2 better explains why D.C. is an outlier from the 50 states. D.C. is the only observation for which the total population resides in a central city of a metropolitan area. When compared with central-city areas within states, D.C. is not such a significant outlier. In fact, Oregon central cities have a higher estimated SSC percentage—6.2 percent. Although Georgia ranks 17th overall, its central-city estimate of 5.2 percent ranks 3rd. The median for central-city areas within states is 1.6 percent in Texas, and the mean is 2.0 percent.

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[2] The ACS PUMS does not disclose central-city status for all households in metropolitan areas or for any metropolitan areas in Delaware, Montana, and North Dakota.

Exhibit 1

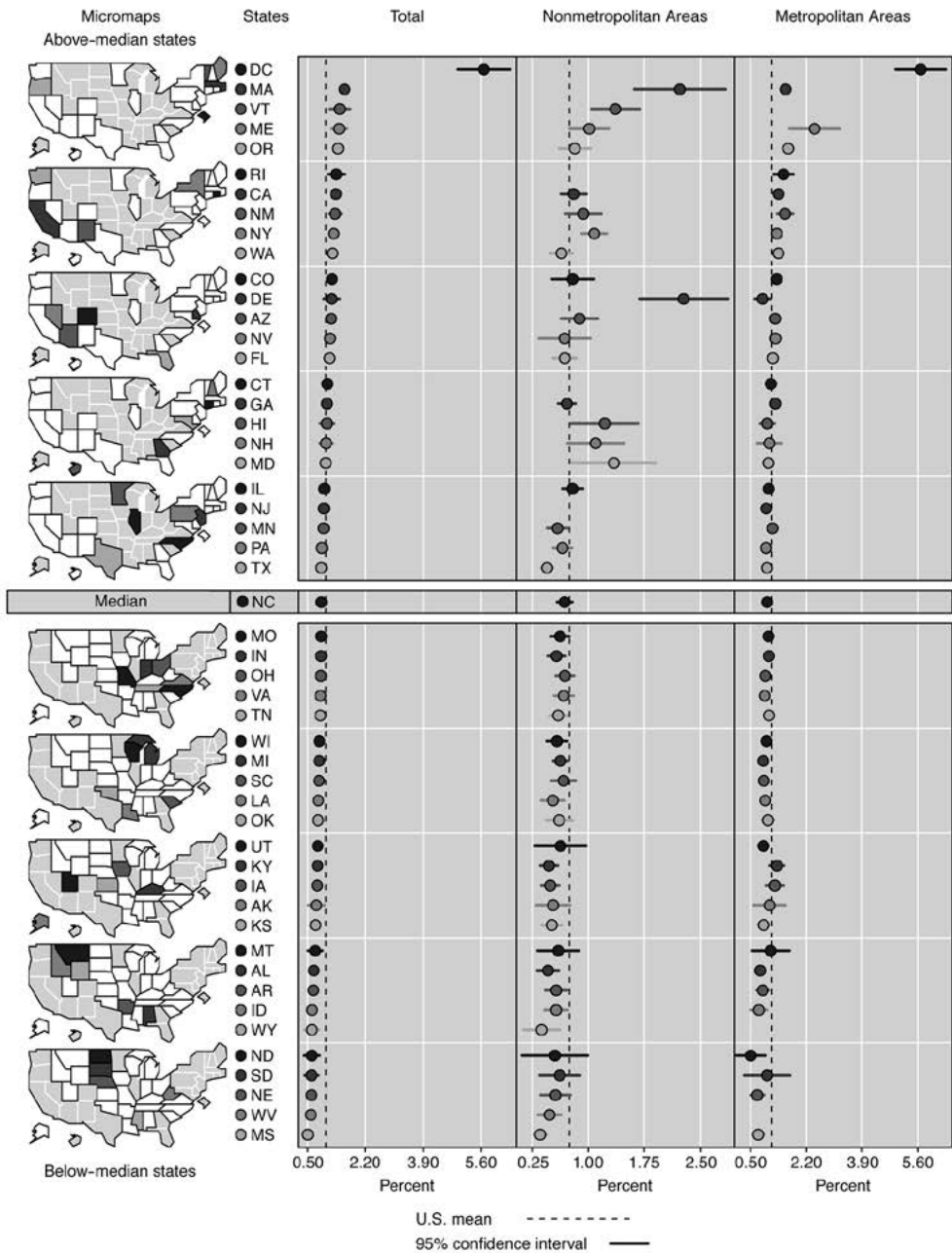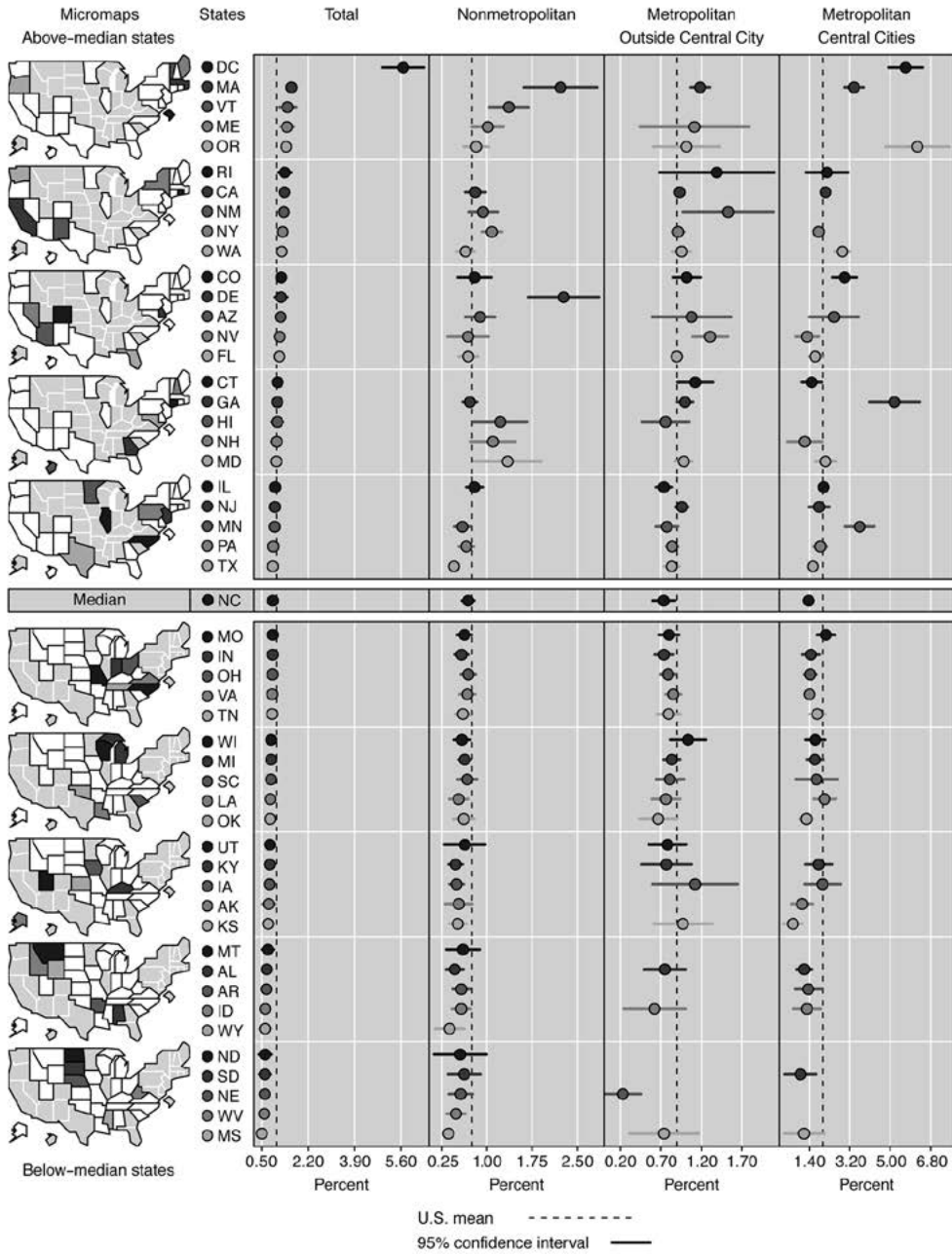Same-Sex Couple Households As a Percentage of Couple Households
(by metropolitan status)

Exhibit 2

Same-Sex Couple Households As a Percentage of Couple Households
(by metropolitan and central-city status)

Linked micromaps are powerful data-visualization tools, allowing for multiple columns of data to be reported next to maps. Geographic areas can be sorted and arranged in subgroups to facilitate visual comprehension.

Linked micromaps make clear that part of the state variation in the SSC percentage is because of differences in the proportion of the state population living in metropolitan areas, particularly in central cities. Compared with estimates for central cities within other states, the SSC percentage in Washington, D.C., is not so large.

Acknowledgments

Author

Brent D. Mast is a social science analyst in the Office of Policy Development and Research at the U.S. Department of Housing and Urban Development.

References

Carr, Daniel B., and Linda Williams Pickle. 2010. *Visualizing Data Patterns With Micromaps*. New York: Chapman and Hall/CRC.

Lofquist, Daphne. 2011. "Same-Sex Couple Households: American Community Survey Briefs." U.S. Census Bureau Report ACBSR/10-03. Available at http://www.census.gov/prod/2011pubs/acsbr10-03.pdf.

Ruggles, Steven, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. 2010. "Integrated Public Use Microdata Series: Version 5.0." Machine-readable database. Minneapolis: University of Minnesota. Available at http://usa.ipums.org/usa/.

Additional Reading

O'Connell, Martin, and Daphne Lofquist. 2009. "Changes to the American Community Survey Between 2007 and 2008 and Their Potential Effect on the Estimates of Same-Sex Couple Households." Washington, DC: U.S. Census Bureau. Available at http://www.census.gov/hhes/samesex/files/changes-to-acs-2007-to-2008.pdf.