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Conversation with Michael R. Ratcliffe[1]

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The value of census and sample survey data relates directly to its quality, and also to the classification of the data into geographic areas that are useful and meaningful for the many and varied users of those data.

Michael Ratcliffe, Assistant Division Chief for Geographic Standards, Criteria, Research, and Quality in the Geography Division, U.S. Census Bureau, manages many of the tasks associated with defining and delineating the Census Bureau's geographic areas. In this Conversation, which took place on March 24, 2017, Michael describes his responsibilities and the variety of experiences associated with this critical work, which benefits many statisticians in the United States, whether in government, academia, or the private sector. Reference information on the geographic terms and concepts used by the U.S. Census Bureau is avaiable at https://www.census.gov/geo/reference/.

Away from the office, Mike enjoys an eclectic range of literary pursuits. A published poet, his work appears in a variety of print and on-line journals, including *Fourth and Sycamore*, *Free State Review*, and *You Are Here: The Journal of Creative Geography*. His chapbook, *Shards of Blue*, published by Finishing Line Press in 2015, chronicles the lives of his great-great grandparents in the mid-nineteenth century.

Interviewer: I'd like to start by talking about your background and education. What led you to major in geography and pursue a career in this field?

I started out as a political science major as an undergraduate. I had interests in government and the way the government works, government administration, and political philosophy. I thought about becoming a lawyer. I switched to geography as an undergraduate because it encompassed more of my interests in looking at all aspects of culture, geography, and the history and politics of an area. Geography was all-encompassing, and it seemed like a better home for my approach to looking at things holistically. So I switched to geography as an undergrad and got a degree in geography from the University of Maryland. I also received a Master's degree from Oxford University. In terms of academic background, I am primarily a cul-

[1]The views and opinions expressed in the conversation are those of the interviewee and do not necessarily reflect the policy or position of the U.S. Census Bureau, the *Statistical Journal of the International Association for Official Statistics* nor IOS Press.

tural and historical geographer. The topic of my Master's thesis at Oxford was the growth and distribution of the Latter-Day Saint Church in Wales from 1840 to 1860. That topic led me to study the role of religion, working class movements, and how people cope with social and economic change.

I always knew I wanted to work in the federal government. My father, uncle, and grandfather were federal employees, so that was the career track I always thought I would follow. It just was a question of what federal agency. I landed at the Census Bureau after sending out resumes to every federal agency that looked interesting and hired geographers. The Census Bureau had a job when I needed a job, and it's been a great career.

Interviewer: Geography as a discipline has more variety than most people probably realize. Wouldn't you agree?

Yes, I would agree. The variety appeals to me. Also, relating geography to population and economic data makes the field interesting, challenging, and rewarding. The geographic work we do at the Census Bureau is constantly changing. There is lots of continuity, but lots of variety and diversity since we are managing geography for the entire country. Relating geography to population characteristics and to economic data is exciting work.

Interviewer: Your core responsibilities at the Census Bureau relate to geographic areas. Can you give us an overview of these areas?

There are about 40 types of geographic areas for which the Census Bureau publishes data. We can divide these areas into two major categories: political, or administrative geography (also called legal areas), and statistical areas.

The legal and administrative geographic areas are entities like states, counties, cities, townships, school districts, and congressional districts. These are areas that have legal boundaries defined through statute or charter, or by treaties in the case of American Indian Reservations.

Think of the legal and administrative areas as existing outside the Census Bureau. Some are familiar entities that we encounter in everyday life – states, counties, cities, townships, school districts – so, we have a responsibility to publish data for them. Others, like voting districts and legislative districts, are critical for redistricting and reapportionment of Congress and state legislatures. The other category of areas is statistical geographies. These are geographic areas that relate to communities, geographic areas, or concepts that people recognize, but that are not defined legally. You can't go to the courthouse and find a legally binding document providing the definition of a census tract or an unincorporated place. But these are areas that have meaning on a daily basis. For example, in Maryland, where we are right now, there are lots of unincorporated areas that mean something to the residents, but that don't have legally defined boundaries. So you can't go to a charter and see one of these areas defined as an area measured from point a to point b. Let's take North Laurel, MD, a census designated place (CDP) where I live, as an example. If you ask someone standing at one of the main intersections of North Laurel, MD, people will probably say they are in North Laurel, and they may give you some sense of the boundary of that area if you ask them. But there is not necessarily a consensus on the boundary among North Laurel's residents. There is no legal document that states you are in North Laurel. Awareness of North Laurel and other CDPs in Maryland is critical for understanding the state's population's distribution and characteristics. The Census Bureau has a responsibility to publish data for them, and, additionally, to publish data for the statistical areas, such as census tracts, that comprise them. Census tracts are a little more esoteric, but collectively, they can be understood as representing areas that correspond to neighborhoods. It is unlikely that many know the collection of census tracts that comprise their neighborhood, let alone the census tract where they live. But census tracts are useful for research and, like CDPs, represent areas that provide some context for analysis.

Interviewer: I think a description of a statistical area defined by the Census Bureau would be interesting to our audience. Could you tell us about how the Census Bureau defines urban, for example?

The Census Bureau started defining urban places in the late 1800s. The population size of 2,500 was adopted as the official minimum size of urban places in 1910. At that time, there were meaningful differences between urban and rural areas. But since then, the char-

acteristics of urban and rural areas have changed as the distinctions between urban and rural areas have blurred, both in terms of the characteristics of the populations who live in these areas, and the types of communities that house them. I would say, looking at that era, there was a more distinct difference between urban areas and rural areas them than there is now.

This change, and subsequent changes to urban and rural populations between 1910 and 1950 demonstrated the need for flexibility in defining urban and rural as concepts at the Census Bureau. Degree of isolation, access to resources, and access to urban centers are still important for differentiating urban and rural populations, but it's important to reexamine these concepts as settlement patterns and the needs of data users change.

One major change in urban and rural definitions was implemented for the 1950 Census following a Conference on the Urban Fringe that was sponsored by the Census Bureau. The rise of suburbia and changing annexation patterns, especially in the years following World War II, led to the creation of a new geographic entity – the urbanized area – to recognize as urban densely settled areas just outside urban place boundaries, together with the urban places, that had minimum populations of 50,000. For the 2000 Census, the Census Bureau modified its urban and rural definitions again by recognizing as urban islands of settlement with populations of 2,500–50,000. Urban clusters, as these urban islands were called, represented small urban areas with densities similar to those found in small towns. We are not considering further changes to the urban/rural definition for the next census in 2020, but I think at some point in the next decade we should consider whether changes to urban and rural classification are warranted. Stakeholders in federal agencies are interested in urban and rural concepts, and we will work closely with those agencies, especially the Economic Research Service of the Department of Agriculture, to consider improvements to our urban and rural definitions moving forward. A review of the rural definition may be the next priority. Continuing improvements in GIS technology and the ability to map densities at the block level will play a role in making it possible to conduct research that would be needed to justify any changes to rural or urban definitions.

Interviewer: Let's return to political boundaries. They change, and sometimes, every year. How does the Census Bureau keep track of all the changes?

The Census Bureau conducts the annual Boundary and Annexation Survey (BAS) to survey every state, county, municipalities, and federally recognized American Indian Reservations to collect changes in boundaries or in status (for example, to document the change in an entity from town to city, or to recognize the incorporation of an entity that was previously a Census Designated Place).

We mail out materials in December of each year for the next year's survey, and ask for the boundary changes as of January 1 of the next year. If municipalities respond by March 1, we guarantee those changes will be reflected in data products from programs such as the population estimates program or the American Community Survey (ACS). If municipalities fail to respond by March 1 of the year following the mailout of BAS materials, the changes may not be reflected in data until the following year.

A few states manage the boundary change reporting process for all their municipalities. But most municipalities participate in the BAS based on their own.

Interviewer: Do participants in the BAS generally return their boundary change information on time?

Yes, they do. It's in their interest to have accurate data. If a city has annexed a large housing development, for example, they may want to get credit for that annexed area if they are using the population and housing increase resulting from this development as a basis for applying for funding.

Interviewer: I would imagine that kind of change would be important to local businesses, or to attract new businesses to an area.

Yes, states and municipalities generally cooperate because they know that it is in their interests to do so, and we have a high rate of participation in the BAS. If a municipality does not have a GIS available to participate in the BAS, we send out paper maps for them to annotate.

Interviewer: In the last several decades, there has been a marked increase in the use of data for small geographic areas. What is the impact of this demand on the work performed by the Geography Division?

I've been at the Census Bureau almost 27 years, since 1990. Over that time, I have seen a substantial growth in the use of small-area geographic data. A large part of that has to do with improvements in technology – GIS, database technologies, spreadsheets, and software to manage large volumes of data. For a long time, census tracts have been the choice for researchers exploring, for example, population distribution patterns in a given metropolitan area (defined by the Office of Management and Budget for use by Federal statistical agencies in collecting, tabulating, and publishing Federal statistics). The large number of census tracts – about 74,000 for the U.S. and Puerto Rico– made analysis of national patterns very labor intensive. But with the use of GIS and large spreadsheets, research at the national level became easier and less time-consuming. We can now easily deal with research involving 74,000 census tracts nationwide. Even research on block groups, which number about 200,000 nationwide, became easier with the use of GIS and spreadsheets. Manipulation of data is easier, and management of data is easier. One can gain better insight and a deeper understanding of population distributions or differences at the neighborhood scale. The Census Bureau benefits from that research and the interest it generates in how census tracts and other areas are defined. We try to respond to that interest by ensuring that we disseminate information about our geographic programs, operations, and schedules as widely as possible so that public comments can be fully considered as we consider the definitions of geographic areas for future censuses.

Interviewer: Is there an established formal process for seeking input from external stakeholders for geographic areas?

Yes – there is a well-defined process for seeking input regarding geographic areas.

We'll often start by first having conversations with data users, a particular community, or a professional organization, such as the American Association of Geographers. If these groups are receptive, we will work with them and other external groups to hone our ideas and develop a formal proposal. We will vet the proposal through Census Bureau's Statistical Areas Committee (SAC). If the suggestion for a change to the criteria comes from the outside, we will develop a formal proposal to represent the suggestion, and present that proposal to the SAC.

SAC members represent all Census Bureau divisions having an interest in the use and tabulation of data for geographic areas. No decisions are made without consulting that body.

Once the SAC approves the proposal, and the Director of the Census Bureau concurs, we publish the proposal in the *Federal Register*, a daily publication of the US federal government that issues proposed and final administrative regulations of federal agencies. After a comment period generally ranging from sixty to ninety days, comments are reviewed and changes may be made to the proposal before it becomes final. The final criteria are then published in the *Federal Register*, and plans are then made to implement the proposed changes for the next census.

Interviewer: Looking beyond the next census, and taking a long-range view, what's ahead for geography at the Census Bureau? What you would hope to witness and what change or development would you envision as possible?

Several items come to mind. We've seen increased interest in combining demographic and economic data to present more comprehensive information for places and other geographic areas – the Census Business Builder Tool, combining ACS and Economic Census data, is a good example (see https://www.census.gov/data/data-tools/cbb.html). The challenge, however, is that the Census Bureau has two slightly different definitions of place – one used with decennial census, American Community Survey, and population estimates data, and the other used by the Economic Census. The key difference is the treatment of towns and townships in the nine Northeastern states as well as Michigan, Minnesota, and Wisconsin. They are county subdivisions in the standard geographic hierarchy used with demographic data, but are treated as places by the Economic Census, which is generally consistent with the way in which towns and townships are viewed in the twelve states in which they are primary units of local government. We've begun discussing the need to adopt a standardized definition of "place" across all Census Bureau products, specifically changing the

place concept to include towns and townships in those twelve states. But, as we dug into this, other definitional issues arose. We currently do not allow places to overlap. If we were to define towns and townships as places, we would have to decide how to manage the boroughs, villages, and CDPs that currently exist within towns and townships. More discussion and outreach is needed on this topic.

We've also seen increased interest for population data by grid cell. Several organizations in the US and other countries are producing gridded population datasets, and population analysts are increasingly turning to gridded data to overcome differences in administrative and statistical geographies from one nation to another. Grid cells are probably the easiest way to achieve standardized geographic units for population distribution analysis, but there are challenges since they do not relate specifically to familiar geographic areas.

Last, and taking a longer view, I think we need to find ways to move from our current urban-rural dichotomy to an urban-rural continuum in which we recognize multiple categories of urban and rural settlement. At a minimum, I think we need to recognize different levels of rurality rather than treating rural as a single, residual category.

Interviewer: Thank you very much for your time. Census geography is not familiar to most of our readers, and you have helped raise awareness of its importance and relevance for users of official statistics.