

The Use of Bureau of Economic Analysis (BEA) Areas and Regions for Representing Geographic Variation

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Introduction: Regional Analysis with Smaller Geographies

Geography provides a perspective that is applicable to most, if not all, social science research questions. Geography provides a framework that is integral towards capturing and understanding human activity in these disciplines.¹ Equally as important is the accurate display and visualization of the data to represent behavioral processes at work. Disciplines such as economics, political science, public health, demographics and public policy have all looked to geography as a way of better understanding human activity. Many past and current research attempts to bring a contextual understanding of why crime occurs where it does, but consideration is usually given to individual and demographic factors as explanations. Today, there is an increasing realization that contextual factors play a role in creating a more comprehensive picture of crime. This includes the Obama Administration as evident in the 2009 memo highlighting that from 2011 forward emphasis will be on place-based programs and policies². Less and less policy-makers are asking for national level statistics and wanting regional and local level variation. To conduct an analysis that captures factors related to region and place requires data sets that allow for contextual factors to be merged with the long standing individual factors. This presents a more comprehensive analysis of people within places.

A Geographic Framework for the Offender Drug Arrestee Monitoring (ODAM) Program

Without proper geographic representation of data much of the information intended for the audience can be lost. The United States Department of Commerce, through the Bureau of Economic Analysis (BEA), has established a micro and macro regional division of the United States that can be useful for the Offender Drug Abuse

¹ Wilson, R. E. (2009). Geography and Crime Project: Understanding Place and Its Influence on Crime. *Briefing Paper*. August.

² Developing Effective Place-Based Policies for the FY 2011 Budget:
www.whitehouse.gov/omb/assets/memoranda_fy2009/m09-28.pdf

Monitoring (ODAM) project. The BEA break-down of economic areas and the states that capture those areas is relevant to this project because the areas are based on homogeneity with regard to a variety of economic and social factors³. Based on the principle law in geography that places that are closer in space share similar characteristics this makes them more natural. Drug markets can operate at three geographic scales, which are generally the neighborhood, metropolitan area and regional. Because the sale of illicit products share the same principles as legal products it is reasonable to assume that these markets operate within the same confines as regular economic activity areas in and between metropolitan areas in any region of the U.S. This is simply based on principles of urban geography in that any human activity follows the spatial structure of an area and the flow of resources. These spatial structures that are common and universal allow generalization, which includes an agglomeration of economies.

Furthermore, using the BEA Regions could allow for two particular opportunities to enhance the project. First is the incorporation of economic data that is often critical to understanding social structure in metropolitan areas. Second would be to conduct analysis at larger geographic scales (smaller units of analysis) that still incorporates demographic data with corresponding economic data. The BEA Regions by state are Far West, Great Lakes, Mideast, New England, Rocky Mountain, Southeast, and Southwest; see a list of which states are included into each region please refer to list at the end of this paper. Under each of these regions are sub-regions that capture economic activity that is important for modeling the appropriate scale of effect across a metropolitan area and all the units (counties, tracts, etc...) of analysis underneath. Those sub-regions are depicted in the Johnson and Kort (2004) paper that lists the method and the resulting geographic boundaries⁴. This nesting allows for both spatial and hierarchical data analysis methods to be employed.

An important aspect for this project is that using the sub-regional boundaries a more intuitive regional strata can be formed that is more intuitive with regards to actual social and economic activity within and between metropolitan areas. Rather than be restricted to State boundaries or ad-hoc selection of counties to form major regions of the U.S., the aggregate selection of sub-regions can form regions that are likely to more realistically capture the activity being measured.

Background History of BEA Regions⁵

³ Johnson, K. P., and Kort, J. R. (2004). 2004 Redefinition of the BEA Economic Areas. November.

⁴ Ibid.

⁵ Kort, J. R. (2008). A History of the Development of BEA Regions, delivered at the 47th Annual meetings of Southern Regional Science Association. March.

To understand why the BEA Regions are useful it is important to know some of the history behind their development and standardization. In the 1940's the BEA originally adopted the widely known and used Census Regions. The Census continues to use these 9 regions. From 1943 to 1955, the BEA reorganized the grouping of the multi-state regions based on a grouping established by Howard D. Odum in 1936, in *Southern Regions of the United States*. Odum's regional classification of homogeneity was based on approximately 700 economic and social factors.

In the early 1950's a Commerce Working Group was formed to help standardize the breakdown and classification of multi-state regions. The Commerce Working Group consisted of the Census, BEA (at the time OBE), and the Office of Distribution in the Commerce Department. The goal of the group was to determine and quantitatively review the factors used to group states. As established by the working group, the guiding principle for the grouping of states into regions was homogeneity with regard to economic and social factors. Population size in the states and regions was also factored into the analysis. It is important to note that the primary intention was to use a classification system that was to remain as objective as possible. A report was subsequently produced, and the BEA adopted the eight region break-out that was suggested by the Commerce Working Group. Today, the BEA continues to use the same regional classification of states that was established in the 1950's (with the addition of Alaska and Hawaii).

A Note on Census Regions

Even though the BEA Regions have not been updated since the 1950's, the Census Regions largely remain the same as when they were established in the 1880's. The reasoning for their break-down was to reflect the particularities of location, climate, topography, economic systems, ethnicity of settlers, and systems of local government. Since the 1880 census some name changes have occurred, but otherwise the overall geographic breakdown has remained the same.⁶ The Census Regions consist of 9 divisions (Pacific, Mountain, West North Central, East North Central, West South Central, East South Central, South Atlantic, Middle Atlantic, and New England) which were previously known as regions. Today, those 9 divisions are now components of 4 regions (West, Midwest, Northeast, and South). It has been anecdotally suggested that the reason the Census Regions have remained the same to ensure no break in a time series. Given the United States has gone through a tremendous amount of restructuring in social

⁶ U.S. Census Bureau. (1994). Statistical Groups of States and Counties. *The Geographic Areas Reference Manual*. November.

and economic factors it does not seem appropriate to use the Census Regions for capturing regional variation.

BEA Regions and Economic Areas

As stated above, the BEA regions were mainly based on homogeneity of states with regard to economic and social factors. It is because of the strict and objective nature of the groupings that make the BEA Regions a good site selection and analytical framework for this project. Additionally, another reason for using BEA Regions is that they are closely linked to a smaller unit of measure, BEA Economic Areas. BEA Economic Areas consist of homogenous sub-regional markets that surround metropolitan statistical areas. As with the BEA Regions, the Economic Areas are established by comparing factors such as labor, products, information, and other economics. The BEA Economic Areas also factor in local labor commuting patterns which help define the labor markets. These can be used either in conjunction with social and demographic factors at the same scale or used to account for economic processes that occur within larger geographic ranges than other social process occurring within the metropolitan area and neighborhoods. This recognizes that there are greater forces at work that have varying effects at larger scales... meaning smaller units of analysis. Finally, the definition of BEA economic areas was recently updated in 2004. To reflect current economic activity the update adjusted the areas based on economic and population changes that have occurred across the United States (2004 BEA Economic Areas redefinition paper note in footnote 2).

It is useful to study local areas because the change that occurs in these areas is an outcome and reflection of regional, national, and world conditions as well as individual local characteristics.⁷ Should there be interest in a local level analysis through the use of smaller units of analysis, such as metropolitan areas or even down to neighborhoods, then using BEA Economic Areas would be a reasonable suggestion. Using the BEA Regions in the current analysis will allow for easier use of BEA Economic Areas since they are closely related. The two geographic units are similar in the way they are formed which would allow for a multi-scale geographic analysis. By eventually incorporating mixed models of different geographic scales, such as regional and local level, the analysis will only be strengthened due to accounting for processes that occur on different scales.

Versatility of BEA Economic Areas

⁷ Brown, L. A. (1999). Presidential Address: Change, Continuity, and the Pursuit of Geographic Understanding. *Annals of the Association of American Geographers*, 89(1), 1-25.

In regards to thematic mapping and sampling, another argument for the use of BEA Economic Areas is their versatility. Regional geographic divisions of the United States can be created with the BEA Economic Areas and be defined by the user. This customizable division allows for the creation of regional sampling areas that are not defined by state boundary lines. As previously mentioned, BEA Economic Areas are built up from metropolitan statistical areas and as a result often cross state lines. The adjustable nature of these units of analysis directly relates to their size and shape. The geographic units are small enough that regional divisions and breakdowns can be defined by the user with more detail and accuracy. Even though the resulting regional divisions may cross state boundaries, the areas are likely to be of greater utility since the regions will be more similar in make-up. Simply using regional divisions that follow state boundary lines does not this same versatility and accuracy.

Conclusion: A Site Selection Framework

This framework that accommodates site selection of metropolitan areas facilitates two significant site selection criteria. First, it provides the opportunity to select sites based on a number of criteria both geographic and substantive, such as the local need for data, a particular drug problem, dearth of federal assistance, issue-focused, or an approach based on an open call where sites are chosen based only on their desire to comport with program requirements. Second, it works to ensure there are not too many sites in the same region of the U.S. Doing so prevents overrepresentation in one geographical area that would diminish variation of regional factors that may play a role in particular drug markets. This framework, then, makes it possible to more subjectively select sites with numerous criteria and yet facilitate variation in factors that change across the U.S. Finally, the use of this framework will facilitate multi-level modeling to account for factors that at their appropriate geographic scale and their affect on units of analysis below them.

BEA Regions

- New England Region
 - o Connecticut
 - o Maine
 - o Massachusetts
 - o New Hampshire
 - o Rhode Island
 - o Vermont
- Mideast Region
 - o Delaware
 - o District of Columbia
 - o Maryland
 - o New Jersey
 - o New York
 - o Pennsylvania
- Great Lakes Region
 - o Illinois
 - o Indiana
 - o Michigan
 - o Ohio
 - o Wisconsin
- Plains Region
 - o Iowa
 - o Kansas
 - o Minnesota
 - o Missouri
 - o Nebraska
 - o North Dakota
 - o South Dakota
- Southeast Region
 - o Alabama
 - o Arkansas
 - o Florida
 - o Georgia
 - o Kentucky
 - o Louisiana
 - o Mississippi
 - o North Carolina
 - o South Carolina
 - o Tennessee
 - o West Virginia
- Southwest Region
 - o Arizona
 - o New Mexico
 - o Oklahoma
 - o Texas
- Rocky Mountain Region
 - o Colorado
 - o Idaho
 - o Montana
 - o Utah
 - o Wyoming
- Far West Region
 - o Alaska
 - o California
 - o Hawaii
 - o Nevada
 - o Oregon
 - o Washington