Who Lives Where: A Comprehensive Population Taxonomy of Cities, Suburbs, Exurbs, and Rural Areas in the United States

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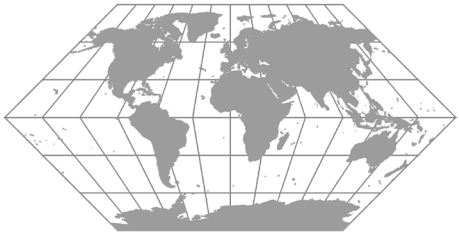

The Geographical Bulletin 57: 25-40

ABSTRACT

This paper answers the question: how many Americans live in cities, suburbs, exurbs, and rural areas in the United States? Previous works have examined only one or some of these settlement types instead of accounting for the entire country's population, or have employed highly technical classifications uncommon in common parlance. This paper develops a comprehensive classification scheme using vernacular settlement types, then organizes U.S. Census data into the taxonomy presented here. This research contributes to the existing literature by (1) reporting the number and percentages living in all four major settlement types rather than covering only one or two of these categories; (2) delineating the population into four categories in order to adequately detail the full variety of major settlement types rather than classifying the population into a simple urban/nonurban scheme; and (3) using settlement type names that are common parlance rather than jargon.

Key Words: urban, suburban, exurban, population, United States

INTRODUCTION

This paper calculates and reports the percentage and number of Americans living in cities, suburbs, exurbs, and rural areas. This paper is the first to develop a taxonomy of settlement types that includes all U.S. residents and uses vernacular names for settlement types. This research contributes to the existing literature in three ways, first by building on prior works that have reported on the number or percentage of Americans living in only exurbia or suburbia without addressing cities and rural areas. While previous works have chosen to focus on one or two settlement categories, this paper develops a comprehensive classification scheme of major settlement types. Second, this paper builds on prior work that addressed the

entire American population, but delineated the population into too few settlement categories to provide detailed insight, such as urban/nonurban. The four aforementioned categories are used to illustrate the full range of major settlement types currently in existence in the United States. Third, this paper formulates categories using vernacular terms for the different settlement types in order to better reflect common parlance.

It is important to know the number and percentage of Americans living in cities, suburbs, exurbs, versus rural areas for many reasons. First, such knowledge can help government leaders and community planners make more informed appropriation decisions. Cities, suburbs, exurbs, and rural places uniquely face different planning challenges (Gordon and Janzen, 2013), from brownfield redevelopment to inner-suburb decline to high congestion to loss of prime agricultural land. For example, a highly exurban and rural population may likely request substantial road spending (Baum-Snow 2007), while a more city-based population may have more interest in mass transit (Schimek 1996). Politicians should be keenly interested in the numbers and percentages of people living in cities, suburbs, exurbs, and rural areas because these constituents tend to vote differently on various issues (Teixeira 2008).

Second, the numbers and percentages affect the consumer economy of a country, as people living in different settlement types make different purchases and in different amounts. A country with a large percentage of its population living in cities would likely have a lower demand for automobiles, furniture, and large appliances compared to a country with a large percentage of its population living in suburbs and exurbs (Florida & Feldman 1988). Such differences in consumer spending, in large part guided by settlement type, have key implications for a country's economy.

Third, these numbers and percentages can indicate relative access to jobs and services in a country. Cities generally contain higher-order jobs and services such as research hospitals, corporate headquarters, and commercial airports while rural areas are more likely to contain lower-order jobs and services found at community health clinics, grocery stores, and community banks (Cromartie & Nulph 2012b). An area with a mainly rural population would likely have a large percentage of its population located farther from higher-order jobs and services compared to a more city-based populace.

Fourth, these numbers and percentages can greatly affect the environmental impact of a country's population. A population that is largely city-dwelling would consume less transportation energy (P. W. Newman & Kenworthy 1989) and building climate control energy (Perkins, et al. 2009) per capita than one that is largely rural; however, the city-based society would create heat islands (Oke 1973) in a way that the rural population would not. A largely rural society may produce more pollution in the form of agricultural chemical runoff (Tim & Jolly 1994), while a suburban society would build many impervious surfaces and face the associated water issue challenges (Ball, et al. 1998). Differences in settlement types can indicate differences in the type and severity of environmental impacts of an area.

Fifth, knowing the numbers and percentages of people living in different settlement types can be useful because different types of settlements are associated with varied adverse medical conditions. This is important knowledge because a large segment of household and government spending goes to health care. Rural people have higher rates of smoking, dental problems, and obesity (National Center for Health Statistics 2012) and suburbanites have higher rates of frequent mental distress (Rohrer, et al. 2005). Precisely knowing the different settlement types represented in a society can help to inform decisions on prioritizing different public health interventions in different areas.

LITERATURE REVIEW

The existing literature has tended to focus on counting the population of, and defining the characteristics of, only one or a few of these settlement types, typically defining settlement types "in his or her own way in relation to the empirical question being investigated" (R. Shearmur personal communication, October 15, 2013). For example, Sutton et al. (2006) focused on urban, exurban, and rural settlement types, classifying some suburban places as urban and others as exurban. Their results were based on their analysis of nighttime satellite imagery and their definitions of the level of nighttime light as indicator of settlement type, i.e. they classified well-lit areas as urban, low-lit areas as exurban, and dark areas as rural. Based on their scheme, they reported that 55% of the U.S. population lived in urban areas, 37% lived in exurban areas, and 8% in rural areas.

Hobbs and Stoops (2002) examined central cities and suburban areas without specifically considering exurban areas. They found 50% of the U.S. population to be living in suburban areas, defined as the places inside a metropolitan statistical area (MSA) but outside the central city and 30.3% to be living in the central cities themselves. The remainder of the population they classified as neither urban nor suburban. A paper by Bieri et al. (2012) similarly found 50% of the U.S. population to be suburban, but did not specify the definition used to delineate suburban areas.

A recent paper by Frey (2012) concentrated on the suburbs, reporting that 45% of the population lived in such places. In that paper, suburban areas were defined as the places in MSAs outside of the central cities in MSAs containing more than 500,000 people. No definition of city, exurban, and rural areas was provided nor were populations in those places detailed. Instead, Frey's work here was solely focused on suburbs.

Berube et al. (2006) focused primarily on exurbs and suburbs without directly addressing city and rural population percentages. That paper found 53% of the U.S. population to be living in suburban areas and 3.8% to be living in exurban areas. Exurban areas were defined as census tracts that met four qualifications: (1) at least 20% of workers commuted to urbanized areas (UA) within an MSA containing at least 500,000 residents, (2) housing density was in the bottom 1/3 of census tracts (less than 2.6 acres per unit), (3) population grew faster than the average for the local MSA between 1990 and 2000, and (4) the tract population grew at least 10% in the 1990s. In their paper, Berube et al. (2006) also reviewed exurban definitions recently devised by other researchers, including definitions based on commuter-sheds, distance from MSAs, growth rates, distance from central cities, housing densities, and population densities.

Forsyth (2012) also presented a literature review in which the author focused on suburban definitions used by other researchers, without addressing existing definitions for city, exurban, or rural populations. Forsyth's paper found that researchers have formulated and used various suburban area definitions based on close proximity to core cities, low population densities, dominance of detached houses, location within commuter sheds, segregation of land uses, post-World War II construction, presence of middle class households, and/or separate incorporation from the core city.

Nelson (1992) defined urban areas as the central counties of MSAs, suburban areas as non-central counties that have been in MSAs since 1960, and exurban as counties that are non-urban MSA counties and non-suburban, but are within 50 miles of the central city boundary (for MSAs between 500,000 and 2 million in population) or within 70 miles of the central city boundary (for MSAs with more than 2 million persons). This paper did not specifically address the remainder of the population living outside of their urban/suburban/exurban scheme.

Straightforward definitions of exurban settlement types appear in other papers, again without definitions of other settlement types

or reporting of population figures. Johnson (2011) defines exurban areas as locations inside of MSAs but outside of the municipal boundaries of the MSAs constituting cities, towns, villages, and boroughs. Clark et al. (2009) define exurban areas as locations that have a population density of 100 to 1,000 persons per square kilometer and are located inside an MSA but are not located within a UA. Theobald (2001) defines exurban areas to be places where settlement density is at least one house per forty acres but no more than one house per ten acres.

In contrast to the works reviewed above, which have focused on counting and/or defining a single settlement type or a partial set of classifications, other works detailed below have classified the whole of the American population, but they have tended to delineate the entire population into either very few categories that are not detailed enough to describe the full variety of major American settlement types or have used a multitude of categories, detailed in the below section. The more comprehensive schemes also have assigned highly technical names to categories; such as "micropolitan" and "non-metropolitan" as well as using numeric codes to describe the "rural-urban continuum" and "urban influence." Such descriptors are rarely used in common parlance to describe the different U.S. settlement types.

The U.S. Census delineates the entire United States into urban areas and non-urban areas. The urban areas are further divided into two categories: urbanized areas (UA) and urban clusters (UC). The U.S. Census definition scheme does not define suburban or exurban areas, bluntly classifying all non-urban areas as rural (Groves 2011).

For Census 2010, an area classified as urban begins with contiguous census tracts of less than three square miles each and population densities of at least 1,000 persons per square mile. Additional contiguous tracts are added if any tracts are less than three square miles and have at least 500 persons per square mile each. An adjacent census block may be included if it is contiguous, has at least 500 persons per square mile, "at least one-third of the census block consists of territory with a level of imperviousness of at least twenty percent," (Groves 2011) and is compact (as measured by a shape index formula), or if the imperviousness threshold is met and the census block is at least 40% contiguous with a qualifying census block. Special consideration is given to water features, nonresidential enclaves, nonresidential lands at the urban edge, airports, industrial land uses, commercial land uses, and locations separated by green spaces so that such uses do not artificially raise or lower the local population densities or counts when defining urbanized areas (Groves 2011). Taken together, groups of qualifying census tracts and census blocks make up a UA if the total population is at least 50,000 persons (U.S. Census 2013a). Urban clusters are defined in the same manner as UAs, the only difference being that UCs have 2,500 to 49,999 persons (U.S. Census 2013a).

The U.S. Census urbanized area definition is lacking because it does not define suburban or exurban populations. In addition, the U.S. Census definition is problematic because it counts as "urban" the populations located in UCs. This is of concern because of the low 2,500 population threshold for UCs. That permissive a definition encompasses settlements of wildly different characteristics. Perhaps this low threshold was appropriate in centuries past, when transportation was non-motorized and a trip to the nearby small "urban" market was a momentous undertaking. From Census 1910 to Census 1940, the Census Bureau defined "urban" as "any incorporated place that contained at least 2,500 people within its boundaries" (with additional criteria for certain New England towns and other selected unincorporated areas) (U.S. Census 2015). Census 1950 made a change to classify "densely settled communities outside the boundaries of large incorporated municipalities" as urban (U.S. Census 2015).

In addition to the U.S. Census, the United States Office of Management and Budget

(OMB) maintains a settlement type classification system. The OMB categorizes every U.S. county or county equivalent as being in a MSA, micropolitan statistical area (μSA), or neither. The purpose of the OMB scheme is to delineate a territory with a large population concentration and adjacent populations that are economically and socially connected (Sunstein 2010) as measured by commuting flows (Groves 2011). In New England, cities and towns are used rather than counties because of city and town importance in comparison to limited county government functions (Zients 2013).

The current MSA/μSA/neither classification system was enacted before Census 2010 (Orszag 2009). The delineation of an MSA or μSA starts with one or more central counties that have at least half of their population in Census-defined urban areas of at least 10,000 persons or that have at least 5,000 persons living within the county or counties in a single urban area of at least 10,000 persons (Spotila 2000). An outlying county is then added to the MSA or μSA if at least 25% of the outlying county's workers work in the central county/counties or vice-versa (Sunstein 2010). A county may only be in one MSA or μSA, which is the MSA or μSA with the strongest commuting tie, and all MSA and μSA counties must be contiguous (Sunstein 2010). The location is deemed an MSA if the core urban area is 50,000 persons or more, and a μSA if the urban core is 10,000 to 49,999 persons (U.S. Census 2013b). In each MSA and μSA, the most populous incorporated place is deemed the principal city and is listed first in the name of the MSA/μSA (Sunstein 2010).

For example, the Knoxville (TN) MSA[1] contains Knox County because at least half of Knox County's population lives in Census-defined urban areas of at least 10,000 persons. Knox County actually also has at least 5,000 persons living within a single urban areas of at least 10,000 persons. The outlying counties of Union, Blount, Loudon, and Anderson are included in the Knoxville MSA because each of these counties sends at least 25% of their respective workers to Knox County to work. All of the outlying counties have their strongest commuting ties with Knox County and all are contiguous. The core urban area is 50,000 persons or more, so this constitutes a MSA.

There are several weaknesses with the MSA/μSA/neither scheme used by the OMB. Using counties or county-equivalents is problematic because of the great variation in size, population, and density among differing counties and the variation in population density within a particular county (Isserman 2007; Morrill et al. 1999). Some counties in the United States are very large in area, and the county-based OMB definition may overcount the metropolitan population, including a metro county's urban and rural population (Isserman 2005; Theobald 2001; Zients 2013). Not only is there wide variation, the variation tends to be regional, with smaller counties in the east and larger ones in the Western states. For example, all of the people in San Bernardino County, California (which is larger than 9 U.S. states) are classified as metropolitan, even the people living in the sparsely populated, remote Mojave Desert. The definitions published by the OMB acknowledge this issue and state that MSA/μSA/neither definitions do not equate to urban/rural classifications (Orszag 2009; Sunstein 2010). Another issue with the MSA/μSA/neither classification scheme is that no effort is made to define suburban and exurban areas. The dichotomy bluntly classifies all locations as MSA, μSA, or neither. The OMB acknowledges that the MSA/non-MSA classification scheme should not be used as a general geographic framework, but rather for statistical purposes (Zients 2013).

The United States Department of Agriculture's Economic Research Service (ERS) has acknowledged that the MSA/μSA/neither classification scheme needs further refinement (Cromartie & Parker 2013) and therefore has developed rural-urban continuum codes, urban influence codes, ERS typology codes, rural-urban commuting areas, and frontier and remote area codes to categorize

the different American settlement types at a finer level of detail.

The rural-urban continuum codes classify counties into one of nine codes by MSA population size, urban area population, and location in relation to an MSA (Parker 2013a). The codes range from #1, representing counties in MSAs of 1,000,000 residents or more, to code 9, counties that have no urban areas or an urban population of less than 2,500 and are not adjacent to an MSA (Parker 2013a).

ERS urban influence codes are based on MSA/non-MSA status, MSA population, population of largest city or town, and proximity to MSAs or μSAs (Parker 2013b). This classification system has 12 categories, starting with category 1, counties in MSAs of 1,000,000 residents or more ("large MSAs") and progressing to category 12, noncore counties not adjacent to MSAs or μSAs that do not contain a town of at least 2,500 residents (Parker 2013b).

ERS typology codes classify counties based on economic and social characteristics. ERS typology codes classify counties as farming-dependent, mining-dependent, manufacturing-dependent, federal/state government-dependent, services-dependent, and non-specialized (Parker 2012), based on the amount of "average annual labor and proprietors' earnings derived from" or percent of employed residents working in those economic categories (Parker 2015). It could be argued that the farming and mining-dependent counties are more rural, while the manufacturing-dependent, services-dependent, and non-specialized counties have more urban or suburban economies.

ERS rural-urban commuting areas classify each U.S. Census tract using MSA/μSA/neither status; population densities; presence of urban areas, size and direction of largest commuting flow; and size and direction of second-largest commuting flow. Each census tract is assigned one of 33 codes ranging from 1.0, metropolitan area core: primary flow within a UA, to 10.6, secondary flow 10% to 30% to a small UC (Cromartie & Nulph 2012a).

ERS "frontier and remote" codes (frontier and remote being a single classification) classify zip code areas as frontier and remote based on automobile travel time to U.S. Census-defined urban areas of varying population sizes (Cromartie & Nulph 2012c). Four levels of frontier and remote areas are defined, with level 1 being the least frontier and remote, ZIP code areas with majority populations living 60 minutes or more from urban areas of 50,000 or more people, and level 4 being the most frontier and remote. Level 4 places are ZIP code areas with majority populations' living 60 minutes or more from urban areas of 50,000 or more people, and 45 minutes or more from urban areas of 25,000-49,999 people, and 30 minutes or more from urban areas of 10,000-24,999 people, and 15 minutes or more from urban areas of 2,500-9,999 people (Cromartie & Nulph 2012a).

The ERS classification systems are useful in that they provide more categories than the simple UA/UC/neither scheme or the MSA/μSA/neither scheme. However, the ERS classification systems, except the rural-urban commuting areas and frontier and remote codes, still use the county or county equivalent as the basic building block, so these schemes suffer from the same misclassification problems of sundry population groups living in large, populous, and diverse counties detailed above in the discussion of the OMB system. In addition, while the ERS classification systems have many detailed categories, they do not reflect vernacular definitions of common American settlement types. It is unlikely many residents, business owners, or politicians know which rural-urban continuum code in which their residence, business, or district is located. Would more Americans be able to quickly characterize their location as city, suburb, exurb, or rural area?

When a researcher needs to report the number or percentage of Americans living in a particular settlement type, there is currently no single taxonomy available that provides a straightforward answer to the question, "How many Americans live in cities, versus

suburbs, exurbs, or rural areas?" This paper seeks to provide a concise answer to that question.

METHODS

In order to count the percentages of Americans living in cities, suburbs, exurbs, and rural areas, this paper builds on the definitions detailed in the literature review, attempting to devise a classification scheme that covers the entire U.S. population while heeding Nelson's (1992) suggestion to create a system based on existing research that will allow researchers to tabulate available census data and compare to existing definitions rather than completely redefining concepts.

As such, the taxonomy devised in this research utilizes aspects of the OMB MSA definition and the U.S. Census UA definition. A strong point of the MSA definition is that it accounts for population size and commuting connectivity, taking into account the concept that cities and their suburbs and exurbs are economically connected. The main weakness of the MSA definition is that the county or county-equivalent geographic base utilizes a scale that is not detailed enough. Fortunately, fine detail is a strength of the UA definition, as the geography for the UA scheme is census tract-based.

By combining aspects of both systems, cities, suburbs, exurbs, and rural areas can be defined for the purposes of this research. "Cities" are defined here as the most populous city in each MSA. "Suburbs" are the UAs that contain each MSA's most populous city, but with that most populous city's population excluded. "Exurbs" are the areas in an MSA outside of the UA containing the MSA's most populous city. "Rural areas" are outside of MSAs (Fig. 1).

The most recent nationally consistent census block-level population data available at

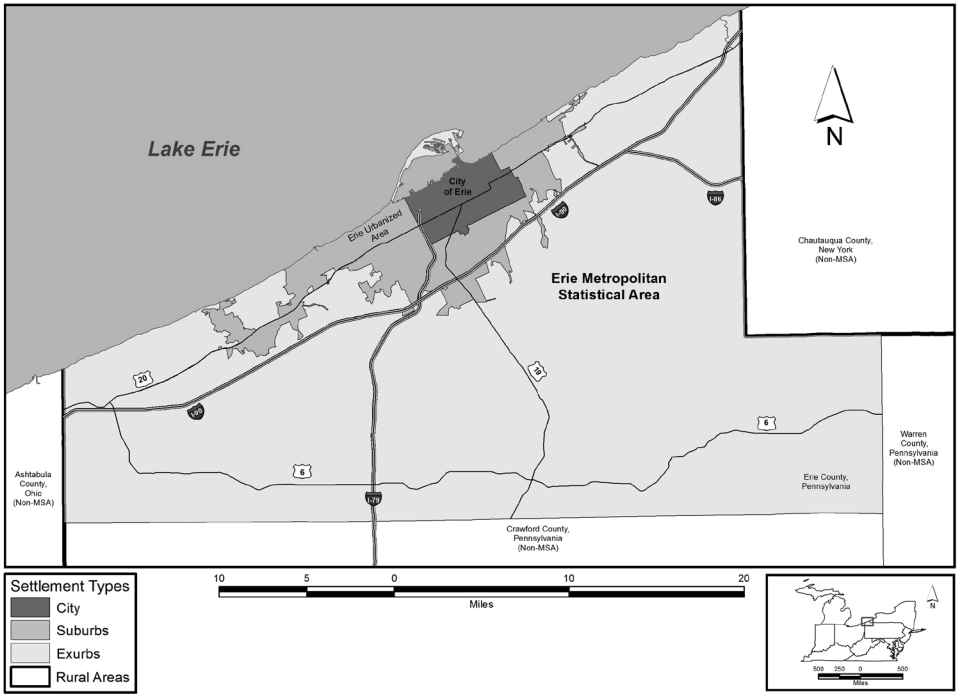

Figure 1: Example map of settlement types definition.

the time of writing was for Census 2010. To assemble the 2010 data, we first obtained the names of all 366 MSAs and their 1,100 constituent counties and/or county equivalents (Orszag 2009) from the U.S. Census website (U.S. Census 2009). Second, we obtained the Census 2010 populations of each MSA (U.S. Census 2010c). Third, we acquired the names and populations of each Census 2010 UA (U.S. Census 2010b). Fourth, the researchers compiled the Census 2010 populations of all individual cities, towns, boroughs, and census designated places (U.S. Census 2010d). Fifth, we obtained the total population of the United States for Census 2010 (U.S. Census 2010e). Sixth, we removed the data for populations outside of the 50 United States (Puerto Rico and other U.S. possessions) because this paper focuses on only the 50 United States and the District of Columbia.

The dataset was then organized in a manner that allowed the researchers to sum the population of persons living in each MSA's most populous city in order to obtain the total number of Americans living in the cities category nationwide. We arrived at the number of Americans living in suburbs by subtracting the total number of those in the cities category from the total number of persons living in MSA UAs that contained each MSA's most populous city. The population of the exurbs was counted by subtracting the total number of persons living in UAs containing each MSA's most populous city from the total number of persons living in MSAs. The rural area residents were counted by subtracting the sum of all persons living in MSAs from the total U.S. population (Table 1). Finally, we divided each group's population by the total U.S. population to calculate each group's percentage of the total U.S. population.

We then repeated the above steps using data from Census 2000 and Census 1990 in order to compare percentages and totals from the past several decennial censuses. We downloaded Census 2000 data on MSA components (U.S. Census 2002) and populations (U.S. Census 2001); UA names and populations (U.S. Census 2000a); cities, towns, boroughs, and census-designated places populations (U.S. Census 2000b); and the total U.S. population (U.S. Census 2012). Finally, we obtained Census 1990 data on MSA components (U.S. Census 1990c) and populations (U.S. Census 2001); urban areas and populations (U.S. Census 1990b); cities, towns, boroughs, and census designated places populations (U.S. Census 1990b), and the total U.S. population (U.S. Census 1990a).

Two specific geographic exceptions were made to the cities/suburbs/exurbs/rural areas classification rules explained above. In Census 2000 and Census 1990, Baltimore was the most populous city in the Washington-Baltimore Consolidated MSA (U.S. Census, 1990b 2000b), even though the principal city identified by the U.S. Census was Washington, DC, rather than Baltimore (U.S. Census 1990c, 2002). Similarly, in Census 2000 and Census 1990, San Jose, CA, was the most populous city in the San Francisco-Oakland-San Jose Consolidated MSA (U.S. Census 1990b, 2000b), even though the principal city identified by the U.S. Census was San Francisco, rather than San Jose (U.S. Census 1990c, 2002). Therefore, in the censuses for

Table 1: Settlement types definitions.

Settlement Type	Definition
Cities	Most populous city in each MSA
Suburbs	Each MSA UA containing that MSA's most populous city − Cities
Exurbs	Total MSAs population − Cities − Suburbs
Rural areas	U.S. population − MSAs

2000 and 1990, Baltimore and San Jose were counted in the cities category along with Washington, DC and San Francisco. This exception did not have to be made in the Census 2010 data because for that census, Baltimore had been designated the principal city of the new Baltimore-Towson, MD MSA, independent of Washington, DC, and San Jose was designated as the principal city of the new San Jose-Sunnyvale-Santa Clara, CA MSA, independent of San Francisco (U.S. Census 2009).

The methodology employed here is not without limitations. Restricting cities to mean the most populous municipality in each MSA may include places that are low density neighborhoods, but within the most populous municipality's corporate boundaries, resulting in a city over count. On the other hand, excluding from the city category the less populous municipalities that are densely populated, instead would classify their populations as suburban. Additionally, regional variation in annexation laws may make it more difficult for cities to annex surrounding areas in the Northeast, driving up their suburban counts while more permissive annexation laws in the Southeast may drive up their city population counts. Caution is advised in using this research to drill down to the regional or state, rather than the national level.

RESULTS

In 2010, the percentage of Americans living in cities was 27.4% (84,627,236 persons). The percentage of Americans living in suburbs was 38.5% (119,043,190 persons) and the percentage of Americans in exurbs was 17.8% (54,647,337 persons). The percentage living in rural areas was 16.3% (50,427,775 persons) (Table 2).

In 2000, the percentage of Americans living in cities was 23.1% (64,879,118 persons) and the percentage living in suburbs was 35.8% (100,669,181 persons). The percentage of Americans living in exurbs was 21.5% (60,433,380 persons) and the percentage living in rural areas was 19.7% (55,440,227 persons). From 2000 to 2010, the percentage of city dwellers and suburbanites grew while the percentage of exurbanites and rural residents shrank (Fig. 2).

In 1990, the percentage of Americans living in cities was 23.8% (59,122,451 persons) and the percentage living in suburbs was 39.7% (98,627,605 persons). The percentage living in exurbs was 16.1% (40,132,368 persons) and the percentage in rural areas was 20.4% (50,827,449 persons). Between 1990 and 2000, the percentages of Americans living in cities and in rural areas were relatively unchanged while suburbs dropped and exurbs increased.

Across the entire time period examined, from 1990 to 2010, several general trends can be identified. Generally, the American population became more city-dwelling by a few percentage points, an increase of 25,504,785 persons. Between 1990 and 2000, the American population became less suburban, but by 2010, the percentage living in suburbs had nearly rebounded to the

Table 2: The percentage and number of Americans living in cities, suburbs, exurbs, and rural areas: 2010, 2000, and 1990.

	2010		2000		1990	
	Percentage of U.S.	Population	Percentage of U.S.	Population	Percentage of U.S.	Population
Cities	27.4%	84,627,236	23.1%	64,879,118	23.8%	59,122,451
Suburbs	38.5%	119,043,190	35.8%	100,669,181	39.7%	98,627,605
Exurbs	17.8%	54,647,337	21.5%	60,433,380	16.1%	40,132,368
Rural areas	16.3%	50,427,775	19.7%	55,440,227	20.4%	50,827,449

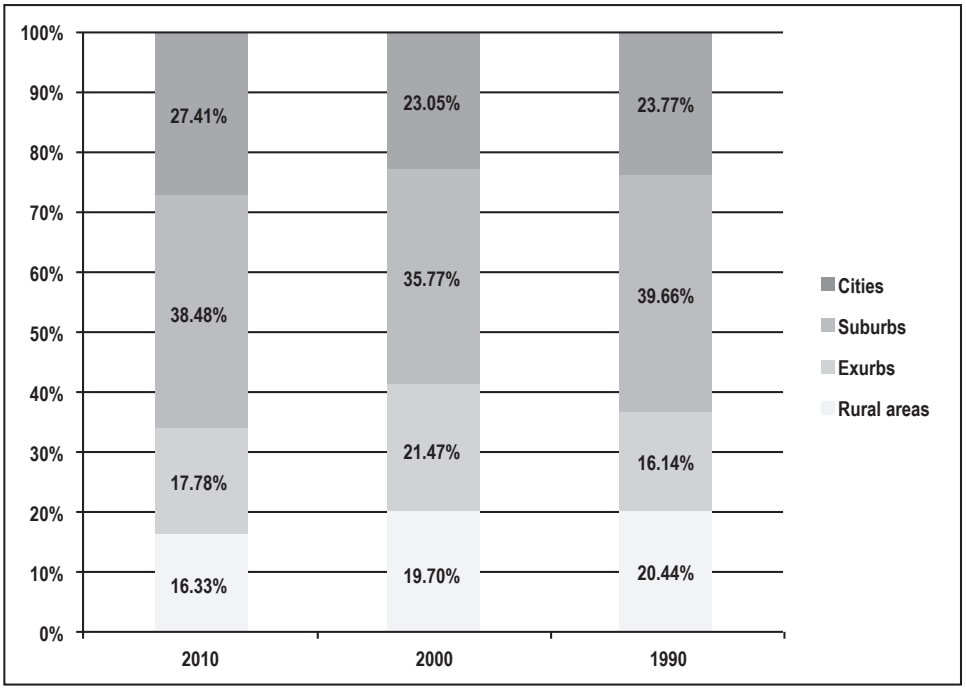

Figure 2: The percentage of Americans living in cities, suburbs, exurbs, and rural areas: 2010, 2000, and 1990.

1990 level. From 1990 to 2000, the exurban percentage grew, but had shrunk by 2010 to nearly the 1990 level. The rural areas percentage dropped slightly between 1990 and 2000, then dropped further between 2000 and 2010.

These results give a more detailed picture of the percentages of Americans living in the major settlement types than classification schemes reviewed above. By comparison, Census 2010 reported that 80.7% of the population lived in Census-defined urban areas while 19.3% lived in non-urban areas (U.S. Census, 2010a), with no inclusion in their classification scheme of the suburban or exurban populations. For Census 2000, the urban areas accounted for 79.0% of the population and non-urban areas 21.0% (U.S. Census, 2010a), with no inclusion in their classification scheme of the suburban or exurban populations. Census 1990 reported 75.2% in urban areas and 24.8% in non-urban areas (U.S. Census, 1995), again with no inclusion in their classification scheme of the suburban or exurban populations. Because the U.S. Census does not delineate suburban or exurban areas, the results presented above provide additional useful detail on the number and percentage of Americans living in suburbs and exurbs, as well as cities and rural areas in order to help better inform decisions on government appropriations, infrastructure and social service planning, business type location, environmental planning, and public health provision.

DISCUSSION

It is possible that demographic and economic forces have driven the changes in the percentages of Americans living in cities, suburbs, exurbs, and rural areas from 1990 to 2010. The percentage living in cities had increased while the exurban percentage had

decreased. Demographically speaking, this may be due to the aging of the population and the desire for smaller housing and residences that do not include a large, maintenance-intensive yard characteristic of the exurbs (Myers & Pitkin 2009; Myers & Ryu 2008; Nelson 2009a; Pitkin & Myers 2008). Perhaps empty nester baby boomers want to live near dining, museums, and concerts, no longer wanting a large house and yard for raising children (Sohmer & Lang 2003) in the exurbs. Looking at younger generations, the sharp drop in fertility since the 1970s perhaps has driven the desire for smaller dwellings among young and middle-aged adults (Nathan, et al. 2005; Nelson 2009b; Pendall et al. 2012). These young adults may want to prioritize living close to work, coffee shops, and bars, not the children's school at the MSA's edge since they've delayed childbearing (Sohmer & Lang 2003).

In terms of economic changes, the creative economy has grown in absolute and relative terms in the past few decades and these jobs, which tend to cluster in city centers (Davidson & Lees 2005; Filion et al. 2004; Hoernig et al. 2004; Florida 2002; Madden et al. 2001), may have pulled residents into cities. Young adults may be moving to cities because they want to live close to large city employment clusters at all costs because of the difficult labor market associated with the Great Recession (Frey 2012; Howley 2009). These young adults may also anticipate switching jobs often due to their entry-level status and the predicted continued labor market fluidity (Pendall et al. 2012). Young adults may be eschewing homeownership, in part, because of the 2008 housing market collapse and because they don't have the money for large down payments required by tightened mortgage requirements (Bracha & Jamison 2012; K. Newman 2012). Fewer young adults are getting driver's licenses compared to past decades (Sivak & Schoettle 2011), perhaps opting to live in rapid-transit and bike-friendly cities rather than exurbs. Road congestion and the cost of automobile ownership may be making city residences, with their high accessibility to services, facilities, amenities, and workplaces, more attractive than exurbs (Howley 2009; Newman & Kenworthy 2015).

The drop in the percentage of Americans living in rural areas may be due to a continuation of general urbanization trends experienced by more developed countries. As industrial economies, and now post-industrial service economies, replaced agricultural economies, high-paying jobs clustered in metropolitan areas, attracting workers (Zeigler et al. 2012). At the same time, farm mechanization meant that fewer laborers were needed in the rural areas, further providing an impetus to move away from the rural areas to a different settlement type (Zeigler et al. 2012). Clearly, more research is needed on the causes of the changes in each settlement type's percentages.

CONCLUSION

This research makes three contributions to the literature. First, it reports the number and percentage of Americans living in all major settlement types that comprise the entirety of the country's population, rather than singularly concentrating only on the city, suburb, exurb, or rural area population. Prior works have reported on the numbers or percentages of Americans living in one or two settlement types, but this paper is the first to categorize the entire country into cities, suburbs, exurbs, or rural areas.

Second, this paper is the first to use a complete set of settlement categories to capture enough explanatory variety while avoiding an overwhelming amount of detailed classes. Prior publications have used binary categories, such as urban/non-urban or metropolitan/nonmetropolitan, that did not provide much nuance. Other research has used dozens of categories to provide an inordinate amount of detail. This paper attempts to strike a balance between being too crude and being too intricate.

Third, this research has used settlement type conceptions and terminologies that are

as close as possible to those used by ordinary people. Many Americans can conceptualize what it means to live in a city versus a suburb, exurb, or a rural area, and this paper attempts to stay true to those vernacular definitions.

Future research should update the percentages presented here once consistent, countrywide data is available for the current year. By doing so, interests in economic, environmental, demographic, governmental, public health, and other fields can be better informed when planning for the future.

NOTES

1. For official U.S. Census/OMB map see http://www2.census.gov/geo/maps/metroarea/stcbsa_pg/Feb2013/cbsa2013_TN.pdf, U.S. Census 2013c.

ACKNOWLEDGEMENTS

The authors wish to thank Auburn University at Montgomery College of Arts and Sciences Faculty Scholarship Fund and Auburn University at Montgomery Research Council for research grant funding.

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