County-Level Diabetes and Hypertension Hospitalizations in Georgia: An Analysis of Burdens and Trends

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Shivani A. Patel

Irene Baumler

KM Venkat Narayan

Emory University

Executive Summary

Objective: We sought to describe the burden of diabetes and hypertension hospitalizations in adults by county in Georgia and analyze temporal trends therein.

Methods: Diabetes and hypertension hospitalization discharge data were obtained from the Georgia Department of Public Health OASIS system for 2000 to 2015. We describe the county-level burdens of diabetes and hypertension related hospitalizations across the state and examine temporal trends in hospitalizations from 2000 to 2015 using hierarchical linear models. Counties were classified based on trajectories of hospitalizations over time. We also investigated cross-sectional demographic, social, economic, and health-related correlates of hospitalizations in 2015 at the county-level.

Results: The proportions of both hospitalizations due to diabetes and hypertension by county have increased in the state of Georgia between 2000 and 2015. Diabetes hospitalizations comprised a greater proportion of total hospitalizations than those due to hypertension in 2000 (2.00% versus 0.75%). Diabetes hospitalizations at the county-level have also increased at a faster rate (0.01% per year versus 0.003%). Counties with persistently suboptimal trajectories of diabetes and hypertension hospitalizations (high proportion of total hospitalizations due to diabetes or hypertension in 2000 with largest increasing trends over time) were scattered throughout the central and southern part of the state. Vanguard counties – those with low hospitalizations in 2000 and declining trends over time – were largely concentrated in the northern part of the state. County-level age, proportion Black/African American, income inequality, poverty, unemployment, household problems, obesity, and current smoking were each positively associated with diabetes and hypertension hospitalizations in 2015, respectively. County median income and health food environment were inversely associated with both types of hospitalizations. Additionally, for diabetes only, county-level physical inactivity and the proportion of Medicare patients who have their HbA1c measured is inversely related to hospitalization.

Conclusions: Hospitalizations due to diabetes and hypertension are increasing in Georgia. More closely examining the heterogeneity of county hospitalization trajectories over time, to understand why some counties are able to improve over time while others are not, may provide lessons for policy makers. In general, hospitalizations increase with higher levels of socioeconomic disadvantage in the county. Identifying and addressing the needs of the populations in these disadvantaged counties may be critical to reversing the increase in hospitalizations due diabetes and hypertension in the state.

Contents

Background

Diabetes and CVD hospitalizations cost the state of Georgia billions of dollars annually. Between 2000 and 2013, there were over 1.8 million cardiovascular disease (CVD) hospitalizations in Georgia in addition to 223,924 hospitalizations that were specifically due to diabetes. These hospitalizations particularly impact race/ethnic minority and socioeconomically disadvantaged populations. Diabetes hospitalizations were more frequent among non-Hispanic blacks (12.5% vs. 9.7% for non-Hispanic whites); adults without a high school degree or equivalent (14.3% vs. 7.5% for college graduates); and adults making $15,000 or less per year (13.1% vs. 7.8% for those making $75,000 or more per year). Although CVD hospitalization declined from 2000 to 2013 for both men and women, socioeconomically disadvantaged subpopulations continued to experience higher rates; hospitalization was higher in those earning less than $25,000 per year (11.8% vs. 5.1% for those making $50,000 or more per year); and those with less than a high school education (12.9% vs. 4.6% for college graduates).

Addressing the burden of cardiometabolic disease hospitalization requires intervening upon the risk factors underlying cardiometabolic disease. Diabetes and hypertension are two preventable and treatable conditions that are critical targets to reduce the burden of poor cardiometabolic disease outcomes. Diabetes and hypertension share common risk factors (obesity, poor diet, physical inactivity, tobacco use). The health behaviors of tobacco use, poor diet and physical inactivity are estimated to be responsible for approximately 70% of the potential years of life lost in the state. At the state-level, approximately 29.6% of Georgia adults are obese and physical activity remains low, with only 20.9% of Georgia adults meeting recommendations for both the aerobic and muscle-strengthening activities, and 27.2% of Georgia adults reporting no leisure time physical activity. The proportion of adults who engaged in adequate physical activity decreases, while the proportion of obese increases, with higher age in Georgia. Women, Hispanics, low income (<$25,000 annually) individuals, and adults with less than high school education were significantly less likely to engage in adequate physical activity.

Simultaneously, national data show large and persistent disparities at the county-level with respect to diabetes and cardiovascular mortality.[1–4] This geographic disparity is acutely apparent in the Southeastern US, which holds the unfortunate distinction of being called both the “diabetes belt” and “stroke belt” of the US. In Georgia, 11.6% of adults have diagnosed diabetes, a prevalence relatively 20% higher than the national average,[5] and there was a 10-fold difference in diabetes prevalence between Catoosa County, a non-rural county, and Candler County, a rural county (29.2 versus 290.5 per 100,000).[6]

Objectives

The overarching goal of this project was to identify diabetes and hypertension burdens and examine trends therein. We conducted analyses to first, describe county-level longitudinal trends in diabetes- and hypertension-related hospitalization in the state of Georgia from 2000-2015; and second, better understand the cross-sectional correlates of the distribution of diabetes and hypertension hospitalizations in 2015.

Approach

Data sources

We used hospitalization discharge data from the Georgia Department of Public Health accessed through the Online Analytical Statistical Information System (OASIS).[7] OASIS provides standardized health data from the Georgia Department of Public Health on a variety of indicators across the state. OASIS was designed, built and maintained by the Office of Health Indicators for Planning (OHIP). Data were obtained for each Georgia county from 2000 to 2015 for the total adult population (ages 20 years and older). Hospitalizations related to diabetes (or hypertension) as a proportion of the total hospitalizations reported for a county were analyzed.

Data describing the demographic composition of counties in 2015 was obtained from the American Community Survey 5-year estimates.[8] Data describing the social and healthcare contexts of counties in 2015 was obtained from the Robert Wood Johnson County Health Rankings & Roadmaps project.[9]

Measures and Definitions

Diabetes hospitalizations were defined using the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) codes E08-E11 and E13. Hypertension hospitalizations were defined using ICD-10 codes I10 and I12.

As possible explanatory factors for county-level diabetes and hypertension hospitalizations, we considered the variables described in Table 1.

Table 1. Definitions of county characteristics

Variables	Definition
Demographic characteristics	
Total Population	The number of residents of the county.
% Women	Proportion of the county population that is female.
Median age	Median age of the county population.
% 65 y or older	Proportion of the county population that is 65 years of age or older.
% Hispanic	Proportion of the county population that is Hispanic.
% Asian	Proportion of the county population that is Asian.
% Black/African American	Proportion of the county population that is Black.
% Foreign born	Proportion of the county population that is foreign born.
Social and economic features	
Median income 2015	Median income of county residents in 2015.
Income inequality	The ratio of the 80^{th} and 20^{th} percentile levels of household income within the county, from the American Community Survey.
% In poverty	The proportion of the population below the federal poverty line.
% Unemployed	The proportion of the civilian labor force ages 16 and older who are unemployed within the county, from the County Health Rankings which uses the annual average.
% Graduates high school in 4 years	The proportion of county residents who graduate high school in four years, data was accessed from the U.S. Department of Education by the County Health Rankings.
Health care and healthy environment	
Primary care physicians	The ratio of the population to total primary care physicians within the county where primary care physicians include non-federal, practicing physicians (M.D.'s and D.O.'s) under age 75 specializing in general practice medicine, family medicine, internal medicine, and pediatrics.
% Uninsured	The proportion of county residents who do not have health insurance

% HbA1c test	The proportion of diabetic fee-for-service Medicare patients ages 65-75 whose blood sugar control was monitored in the past year using a test of their glycated hemoglobin (HbA1c) levels.
Exercise opportunities	The proportion of individuals in the county who live close to a location of physical activity such as parks (local, state, and national parks) or recreational facilities (businesses identified by Standard Industry Classification (SIC) codes and include gyms, community centers, YMCAs, dance studios and pools). Living within a half mile of a park, one mile of a recreational facility for an urban census block, or three miles of a recreational facility for a rural census block is considered having adequate access for physical activity opportunities.
Food environment index	Ranges from 0 (worst) to 10 (best) and equally weights two indicators: 1. Limited access to healthy foods. Proportion of the population that is low income (annual family income of $\leq$ 200% of the federal poverty threshold for the family size) and does not live close to a grocery store (less than 10 miles in rural areas and less than 1 mile in urban areas). 2. Food insecurity. Proportion of the population who did not have access to a reliable source of food during the past year as determined by a two-stage fixed effects model using data from the Community Population Survey, Bureau of Labor Statistics, and American Community Survey.
% Severe housing problems	Measured using Comprehensive Housing Affordability Strategy data where severe housing problems include overcrowding (>1.5 person per room), too expensive (housing costs over 50% of household monthly income), incomplete plumbing facilities, or incomplete kitchen facilities.
Residential segregation score	As determined by the index of dissimilarity which measures the evenness with which two groups are distributed across the component geographic areas that make up a larger area. In this case, American Community Survey (2011-2015) data for black and white residents of census tracts making up counties were analyzed. The resulting index score is the proportion of either black or white residents in a census tract that would have to move for the tract's distribution to match that of the county.
Health risk factors	
% Obese adults	Proportion of the county population 18 years or older that is obese (CDC, DDT).
% Physically inactive adults	Proportion of the county population 18 years or older that is physically inactive (CDC, DDT).
% Adults who smoke	Proportion of the county population 18 years or older who smoke (CDC, DDT).

Notes: Data from the Robert Wood Johnson County Health Rankings & Roadmaps project [9] unless otherwise specified

Analytic Approach

Analyses of diabetes and hypertension were conducted separately. County-level data from each of the data sources were merged and analyzed. As relevant, estimates were aggregated up to larger geographical units (e.g., entire state of Georgia or public health districts). All data analyses were conducted using SAS statistical software (SAS Institute, Cary, NC).

Objective 1 analytic approach

We first conducted a descriptive analysis of hospitalizations over the calendar period 2000 to 2015. At the state-level, we report the average of county-level rates of hospitalization by year. At the county-level, we classified each of the counties into one of six trajectories of hospitalizations

over time following Table 2. Trajectories were based on the random intercept and slope of each county estimated from a hierarchical linear regression model with hospitalizations as the outcome and time as the independent variable.

Table 2. Classification of county-level trajectories

		Direction of difference between change in rate in specific county relative to average Georgia change in rate between 2000-2015 (slope sign)	
		Lower (-)	*Higher (+)*
Tertile of difference between rate in specific county relative to average Georgia rate in 2000 (intercept tertile)	*Lowest tertile*	Vanguard	Vulnerable
	Middle tertile	Improving	Vulnerable
	Highest tertile	Resilient	Suboptimal and declining

Finally, we constructed county-level heat maps of hospitalizations that show the county-level rate and relative ranking compared with other counties (in quintiles) by calendar year.

Objective 2 analytic approach

We described the distribution of all outcomes and independent variables. We examined bivariate associations between each independent variable and the outcomes using linear regression. Variables were standardized to facilitate comparisons across coefficients. Outcomes were assessed for normality and no substantial departures were detected (skewness and kurtosis ranged from -1 to 1 for each variable). Linearity of the association between the independent variables and hospitalization rates was visually assessed. Because many variables were highly correlated (see Supplemental Table 3), we did not estimate a fully adjusted model.

Findings

Diabetes Hospitalization Trends

Figure 1. Shows a trend that the percent of hospitalizations attributable to diabetes are increasing in Georgia. Although levels of diabetes hospitalizations are somewhat low (under 3% in all years), the trajectory of the graph shows a disconcerting upward trend starting around 2007.

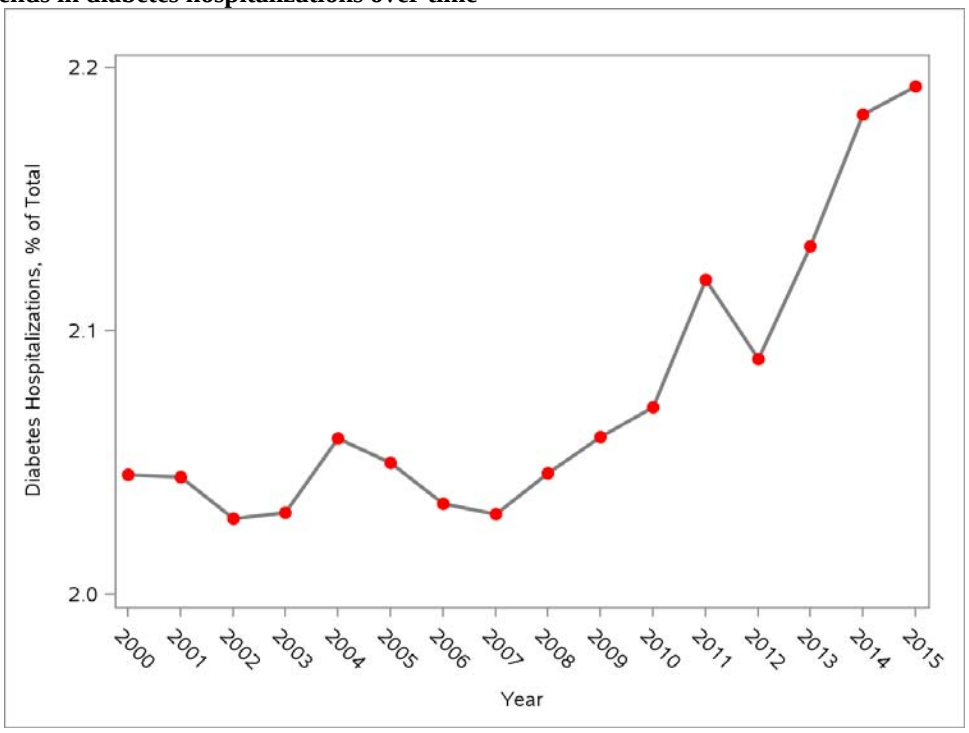
The highest total numbers of hospitalizations due to diabetes in Georgia among individuals 20 and older are observed in the counties around Atlanta, which is logical given the higher population density (data not shown). This pattern continues from 2000 to 2015, the years for which data were collected. This pattern is consistent for the three age groups, 20 to 44 years, 45 to 64 years, and 65 and older (data not shown). There is a pattern of a higher number of diabetes-related hospitalizations in the counties in the northwest corner of the state for the youngest age group. The next age group has a slighter lower density of diabetes hospitalizations in these counties, and that of the oldest age group is slightly lower than the middle age group.

However, a different pattern emerges when we consider the percent of all hospitalizations that were due to diabetes. Supplemental Table 1 shows the county-level percentage of all hospitalizations that were due to diabetes. From 2000 through around 2006, the counties around Atlanta, particularly the northern ones, had a lower percent of total hospitalizations due to

diabetes. Interestingly, this cluster of lower rates moves north, east, and is less pronounced between 2007 and 2015. The counties with the higher percent of hospitalizations due to diabetes tend to be in the southern and central parts of the state and the northwestern corner. However, the high percent clusters change over the years.

In 2000, the counties with a higher percent are those in the center of the state. From 2001 to 2003, these counties are the southwestern and central-eastern parts of the state and northwest corner. 2004 saw fewer counties with high percentages of diabetes hospitalizations and these are scattered through the center of the state but by 2005, the numbers of counties with a high percent has grown and tend to be in the southeastern part of the state, a new pattern. By 2009, the counties in the southeastern region have lowered back to a moderate percent of diabetes hospitalizations and this pattern continues through 2015. The counties with a high percentage are scattered through the center of the state from about 2010 forward.

Figure 1. Trends in diabetes hospitalizations over time



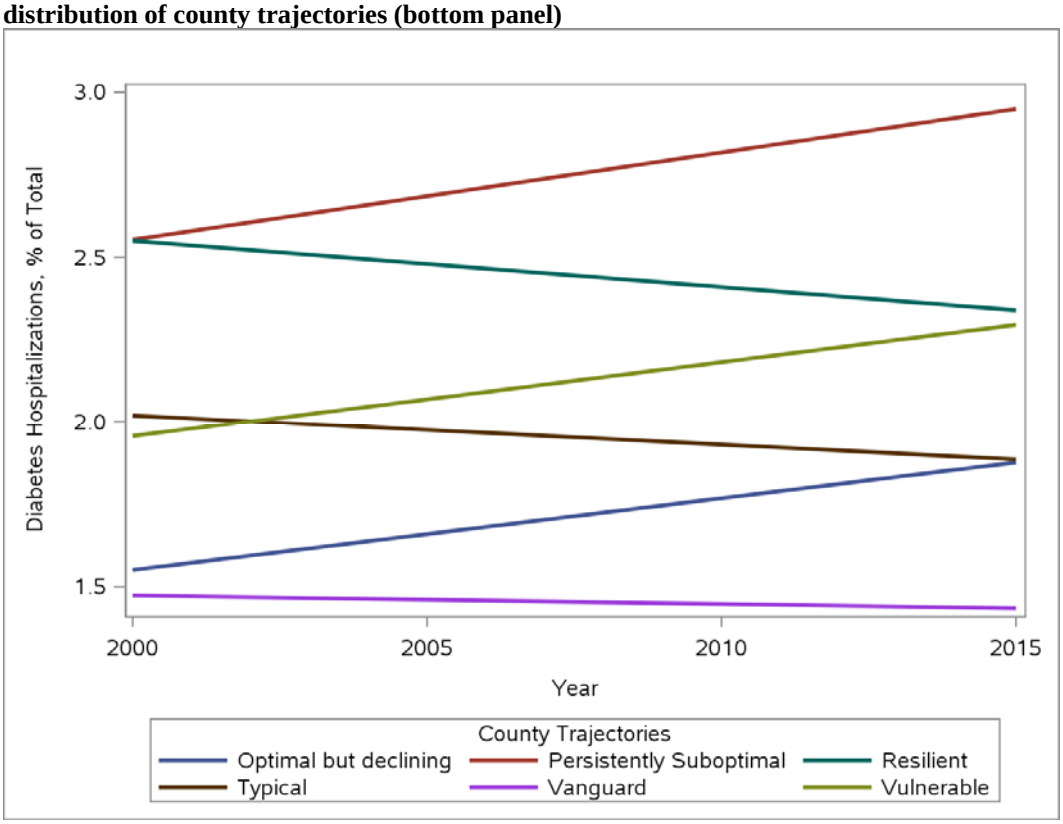
County trajectories in diabetes hospitalizations: levels in 2000 and subsequent change

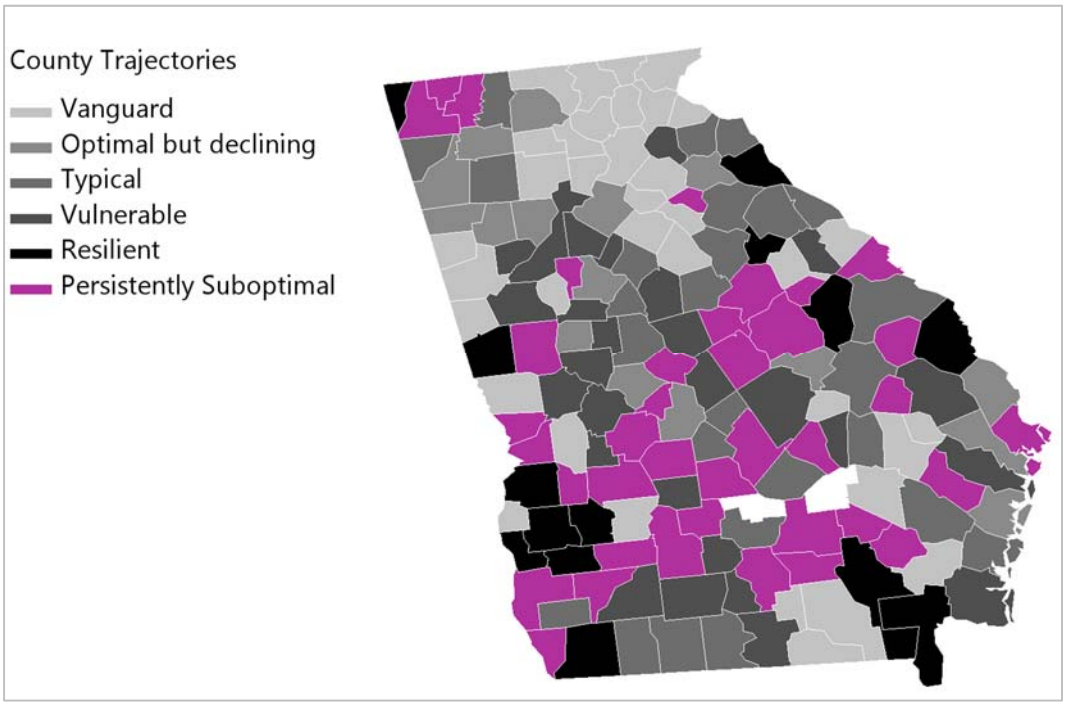
Individual counties were grouped into trajectories based on their performance relative to the state's average. Based on the hierarchical linear model, the Georgia-wide average county diabetes hospitalization percentage (of total hospitalizations) in 2000 was 2.0%; the Georgia-wide average *increase* in diabetes hospitalizations per year was 0.01% between 2000 and 2015. The model allowed for each county to have its own individual starting status (diabetes hospitalizations in 2000) and its own rate of change (slope of best fit between 2000 and 2015). This was used to classify county trajectories. Vanguard counties, by definition, had trajectories with comparatively low percentages of hospitalizations due to diabetes in 2000 and declining levels of diabetes hospitalizations between 2000 and 2015. Optimal but declining counties are those with relatively low percentages of hospitalizations due to diabetes in 2000 but whose percentages increased between 2000 and 2015. Counties with typical trajectories had percentages

of hospitalizations due to diabetes around the middle of the group in 2000 and this percent dropped between 2000 and 2015. Vulnerable trajectories are counties with middling percentages in 2000 but increases between 2000 and 2015. Resilient trajectories are those with initially high percentages of hospitalizations due to diabetes that dropped between 2000 and 2015. Persistently suboptimal trajectories are those with initially high percentages of hospitalizations due to diabetes and whose percent increased between 2000 and 2015.

The distribution of county trajectories displayed some geographical patterning (see map of trajectories in Figure 2). *Vanguard counties* (Fannin, Union, Towns, Rabun, Pickens, Dawson, Lumpkin, White, Habersham, Stephens, Cherokee, Forsyth, Hall, Jackson, Barrow, Oconee, Walton, Morgan, Haralson, Carroll, Heard, Fayette, Harris, Marion, Quitman, Lee, Echols, Clinch, Lanier, Brantley, Appling, Tattnall, Evans, Treutlen, Warren, and Columbia) are clustered in the northeastern part of the state with smaller clusters at some of the boarders of the state. *Optimal but declining* (Gilmer, Gordon, Floyd, Polk, Paulding, Cobb, Gwinnett, Madison, Henry, Pike, Crawford, Houston, Johnson, Effingham, Bryan, and Mcintosh), *typical* (Murray, Chattooga, Bartow, Franklin, Hart, Lincoln, Wilkes, Oglethorpe, Greene, Putnam, Newton, Butts, Monroe, Bleckley, Pulaski, Telfair, Irwin, Brooks, Thomas, Grady, Miller, Glynn, Wayne, Toombs, Emanuel, and Burke), and *vulnerable* (Banks, Douglas, Coweta, Fulton, DeKalb, Rockdale, McDuffie, Spalding, Lamar, Upson, Talbot, Taylor, Schley, Crips, Tift, Mitchell, Colquitt, Cook, Lowndes, Camden, Liberty, Bulloch, Montgomery, Laurens, Twiggs, Jones, and Jasper) counties boarder the vanguard counties and are clustered in the center of the state. There are a small number of *resilient counties* (Dade, Elbert, Tallaferro, Jefferson, Screven, Ware, Charlton, Decatur, Clay, Calhoun, Randolph, Terrell, Stewart, and Troup) and these are scattered along the borders of the state with small clusters along the southwestern border and southern border. *Persistently suboptimal counties* (Walker, Catoosa, Whitfield, Clayton, Clarke, Meriwether, Muscogee, Chattahoochee, Webster, Sumter, Dooly, Macon, Peach, Bibb, Baldwin, Wilkinson, Hancock, Washington, Glascock, Richmond, Wilcox, Dodge, Wheeler, Candler, Jenkins, Chatham, Long, Pierce, Bacon, Coffee, Atkinson, Berrien, Turner, Worth, Dougherty, Baker, Early, and Seminole) are scattered throughout the state and are mostly found in the central part and the northwestern part of the state. Interestingly, there are vanguard, resilient, and persistent counties next to each other in certain locations.

Figure 2. County trajectories in diabetes hospitalizations (top panel) and geographical distribution of county trajectories (bottom panel)





Correlates of counties with high proportions of diabetes hospitalizations

Table 3. Shows the distribution of county-level characteristics in or near 2015 and their associations with diabetes hospitalizations in 2015 in Georgia.

The average median age of residents across the counties in Georgia was 38.9 years in 2015 with minimum and maximum median ages of 23.3 and 53.3 years, respectively. For each standard higher in the median age of county residents, the proportion of hospitalizations due to diabetes is 0.13 percentage points lower (95% CI: -0.24, -0.03).

The percent of the population at the county level that was black or African American varied widely from 0.4% to 73.3%. The average was 29.1%. For each standard higher in the percent of the population that is black/African American, the proportion of hospitalizations due to diabetes is 0.29 percentage points higher (95% CI: 0.19, 0.39).

The median annual income across the counties in Georgia was $42,510 in 2015 with a minimum of $25,941 and a maximum of $97,886. For each standard higher in median income within a county, the proportion of hospitalizations due to diabetes is 0.24 percentage points lower (95% CI: -0.34, -0.14).

The average income inequality ratio across the counties was 5.0 with a minimum and maximum of 2.7 and 8.0, respectively. The proportion of hospitalizations due to diabetes is 0.16 percentage points higher for each standard higher in the income inequality ratio (95% CI: 0.05, 0.27).

The percent of the population in poverty within Georgia counties ranged from 6.3% to 42.0% and averaged at 21.9%. The proportion of hospitalizations due to diabetes increased by 0.27 percentage points for each standard higher in the percentage of the county's population in poverty (95% CI: 0.17, 0.37).

The percent of the population that is unemployed within Georgia counties ranged from 4.3% to 11.3% and averaged at 6.7%. The proportion of hospitalizations due to diabetes increased by 0.22 percentage points for each standard higher in the percentage of the county's population that was unemployed (95% CI: 0.10, 0.33).

The percent of the population within Georgia counties that graduated high school within four years ranged from 61.0% to 93.9% and averaged at 80.3%. The proportion of hospitalizations due to diabetes is 0.14 percentage points lower for each standard higher in the percentage of the population that graduated high school in four years (95% CI: -0.25, -0.03).

The average food index score (higher score=healthier food environment) for Georgia counties was 6.5 and ranged from 1.2 to 9.2. For each standard higher in the food index score, the proportion of hospitalizations due to diabetes is -0.33 percentage points lower (95% CI: -0.43, -0.22).

The average diabetes screening rate for Georgia counties was 84.6 and ranged from 66.7 to 92.2. For each standard higher in diabetes screening rate, the proportion of hospitalizations due to diabetes is -0.13 percentage points lower (95% CI: -0.24, -0.01).

The percent of the population at the county level experiencing housing problems varied from 6.4% and 25.9%. The average was 16.8%. For each standard higher in the percent of the population that experienced housing problems, the proportion of hospitalizations due to diabetes is 0.22 percentage points higher (95% CI: 0.11, 0.33).

The percent of the population at the county level that was obese varied from 22.9% and 38.0%. The average was 31.4%. For each standard higher in the percent of the population that is obese, the proportion of hospitalizations due to diabetes is 0.16 percentage points higher (95% CI: 0.06, 0.26).

The percent of the population within Georgia counties that were physically inactive ranged from 17.7% to 33.8% and averaged at 27.1%. The proportion of hospitalizations due to diabetes is 0.19 percentage points higher for each standard higher in the percentage of the population that is physically inactive (95% CI: 0.09, 0.29).

The percent of the population at the county level that smoked varied from 12.2% to 26.8% and averaged at 18.4%. For each standard higher in the percent of the population that smoked, the proportion of hospitalizations due to diabetes is 0.31 percentage points higher (95% CI: 0.20, 0.41).

There was no association between the size of the county population; the proportion of the population that is comprised of women, adults ages 65 years and older, Hispanics, Asians, or foreign born adults; the primary care physician to population ratio; availability of exercise opportunities; or residential segregation with diabetes hospitalizations.

Table 3. County-level characteristics and their associations with diabetes hospitalizations

Variable	Mean	CV (SD/mean)	Min	Max	Bivariate associations	P-value
Diabetes hospitalizations	2.2	33.1	0.0	4.6		
Total population (1000s)	62.9	213.5	1.7	983.9	-0.001 (-0.11, 0.10)	0.96
% Women	50.4	6.2	32.1	58.0	-0.02 (-0.15, 0.10)	0.72
Median age	38.9	11.6	23.3	53.3	-0.13 (-0.24, -0.03)	0.02
% 65+ y	15.1	26.3	3.3	31.8	-0.08 (-0.19, 0.03)	0.16
% Black/African American	29.1	60.1	0.4	73.3	0.29 (0.19, 0.39)	<.01
% Hispanic	6.1	87.9	0.0	33.1	-0.03 (-0.15, 0.08)	0.60
% Asian	1.1	132.7	0.0	11.0	-0.06 (-0.17, 0.04)	0.24
% Foreign born	4.6	93.1	0.2	25.8	-0.06 (-0.17, 0.04)	0.24
Median income	42510	27.6	25941	97886	-0.24 (-0.34, -0.14)	<.01
Income inequality	5.0	17.2	2.7	8.0	0.16 (0.05, 0.27)	<.01
% In poverty	21.9	32.8	6.3	42.0	0.27 (0.17, 0.37)	<.01
% Unemployed	6.7	19.4	4.3	11.3	0.22 (0.10, 0.33)	<.01
% Graduate HS in 4y	80.3	7.4	61.0	93.9	-0.14 (-0.25, -0.03)	0.01
Food Index	6.5	20.8	1.2	9.2	-0.33 (-0.43, -0.22)	<.01
Primary care physician ratio	3315	94.7	800.5	24939	0.03 (-0.08, 0.14)	0.58
Diabetes screening	84.6	4.8	66.7	92.2	-0.13 (-0.24, -0.01)	0.04
% Uninsured	18.9	15.5	11.7	30.5	0.10 (-0.01, 0.22)	0.07
Exercise opportunities	55.6	44.8	0.2	100.0	-0.07 (-0.19, 0.04)	0.21
% Housing problems	16.8	20.6	6.4	25.9	0.22 (0.11, 0.33)	<.01
Segregation score	26.9	47.7	1.8	63.9	-0.01 (-0.12, 0.10)	0.90
% Obese	31.4	9.1	22.9	38.0	0.16 (0.06, 0.26)	<.01
% Physically inactive	27.1	11.7	17.7	33.8	0.19 (0.09, 0.29)	<.01
% Smoking	18.4	12.8	12.2	26.8	0.31 (0.20, 0.41)	<.01

Correspondence between diabetes prevention programs and diabetes hospitalizations

The majority of counties with diabetes prevention programs were those classified as having vulnerable trajectories, in that they had overall low average diabetes hospitalizations in 2000 but

demonstrate an increasing trend relative to the state average. Such vulnerable counties include Douglas, Coweta, Fulton, DeKalb, and Lowndes. This may reflect of selective placement of programs in high-risk counties and/or migration of high risk populations to areas with better facilities. It is also possible that without these programs, the trajectories of increasing percentages of hospitalizations due to diabetes would be more extreme. However, the county-level data may be inadequate to capture program-level success of diabetes prevention in these programs. These results should be interpreted with caution. Additional longitudinal data regarding average participation over time would be needed from the programs to better understand the cost-benefit ratio of the programs themselves.

Only three, Catoosa, Muscogee, and Chatham, of the 38 persistently suboptimal counties have diabetes prevention programs, revealing a need for more programs in these counties.

The majority of the counties in Georgia with one or more diabetes prevention programs are in the Atlanta area. There are no diabetes prevention programs in the central part of the state, even though these counties mostly have typical, vulnerable, and persistently suboptimal county trajectories. This presents an opportunity of where diabetes prevention programs could be initiated.

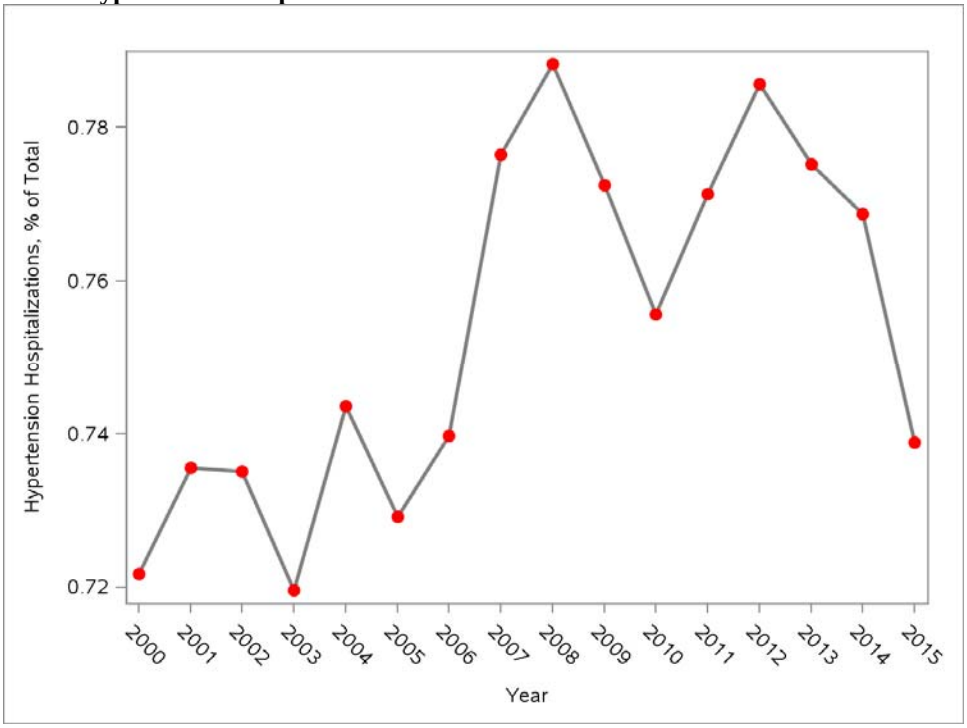
Table 4. National Diabetes Prevention Programs in Georgia

County	City	Program(s)
Carroll	Carrollton	Tanner Medical Center/Carrollton
	Villa Rica	Tanner Medical Center/Villa Rica
Catoosa	Ringgold	North Georgia Community YMCA
Chatham	Savannah	St. Joseph's/Candler Diabetes Management
Cobb	Marietta	Cheerful Habits LLC
	Powder Springs	Lakeview Seventh Day Adventist Church
	Marietta	McCleskey-East Cobb YMCA
	Marietta	Northeast Cobb YMCA
	Kennesaw	Northwest YMCA
Coweta	Newnan	Summit Family YMCA
DeKalb	Atlanta	Cowart-Ashford Dunwoody YMCA
	Decatur	Decatur Family YMCA
	Atlanta	East Lake Branch YMCA
	Decatur	Midha Medical Clinic
	Stone Mountain	Wade Walker Park YMCA
Douglas	Douglasville	New South Development Corporation
Floyd	Rome	Diabetes Education Department-Floyd Diabetes Prevention Program
	Rome	Floyd Medical Center
Fulton	Atlanta	Andrew and Walter Young Family YMCA
	Atlanta	Buckhead Functional Medicine
	Atlanta	Carl E. Sanders Family YMCA at Buckhead
	Atlanta	Collier Heights Recreation Center
	Roswell	Integrative CAP Health Practices LLC
	Atlanta	Providence Missionary Baptist Church
	Atlanta	The Villages at Carver Family YMCA
	Atlanta	Thrive Now Nutrition
Gwinnett	Lawrenceville	J. M. Tull-Gwinnett Family YMCA
	Norcross	Robert D. Fowler Family YMCA
Hall	Gainesville	JA Walters YMCA - Northeast Georgia Medical Center
Lowndes	Valdosta	Barnes Healthcare Services
Muscogee	Columbus	Midtown Medical Center Conference Center
Thomas	Thomasville	Thrive Physical Therapy and Fitness

Hypertension hospitalization trends

Figure 3 shows the percent of hospitalizations due to hypertension over the 2000 to 2015 timespan. Compared with diabetes, a relatively smaller proportion of hospitalizations are due to hypertension. The proportion of hospitalizations due to hypertension increased between 2000 and 2008 from about 0.72% to 0.77%. The proportion decreases between 2008 and 2010 to about 0.755% before rising to 0.785% at 2012. It falls to about 0.74% by 2015. It appears that the percent of hospitalizations due to hypertension are on a downward trend at the state-level, however, the direction of change since 2008 was not stable over time.

Figure 3. Trends in hypertension hospitalizations over time

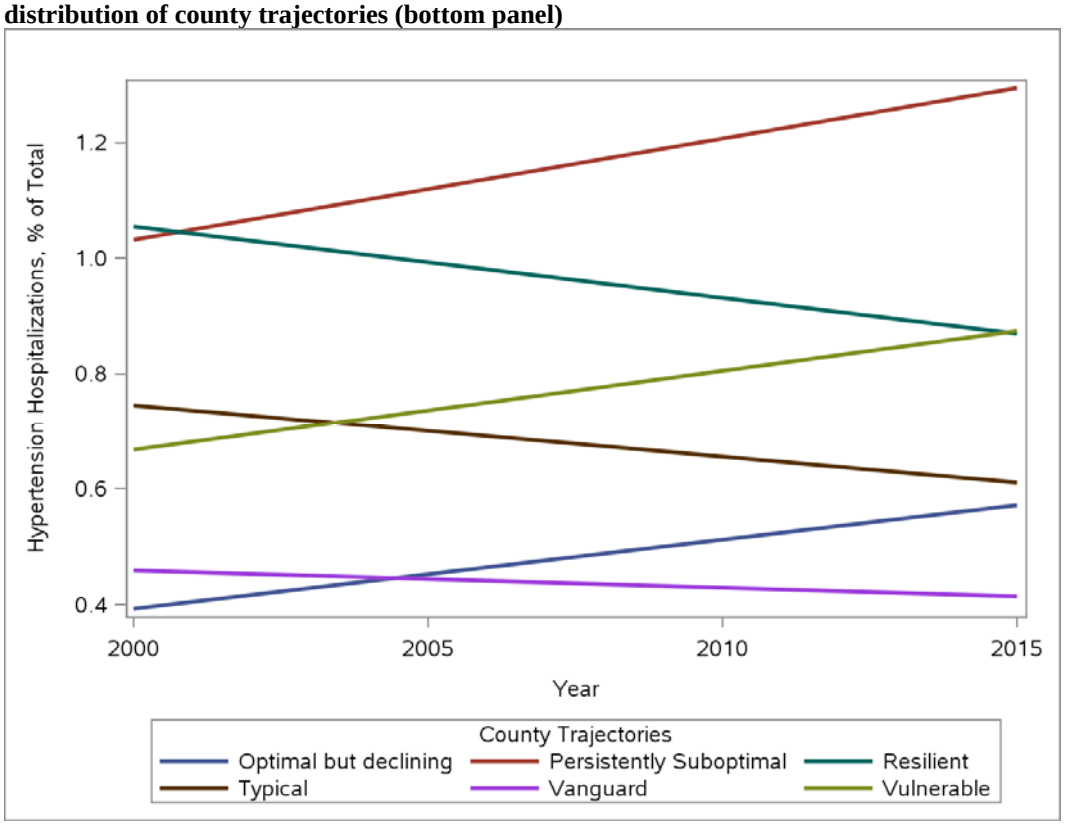


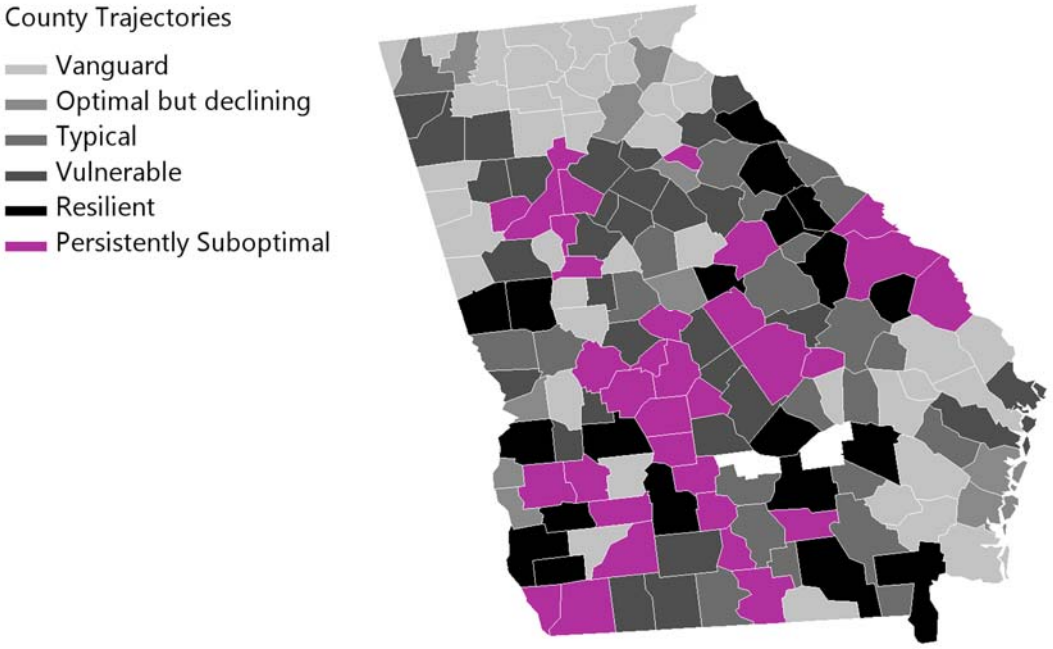
County trajectories in hypertension hospitalizations: levels in 2000 and subsequent change

Based on the hierarchical linear model, the Georgia-wide average county proportion of hospitalizations due to hypertension (percentage of total hospitalizations) in 2000 was 0.75% ($p<.001$); the Georgia-wide average *increase* in hypertension hospitalizations per year was 0.003% between 2000 and 2015 ($p=.0042$). The trajectories of hospitalizations due to hypertension for the counties of Georgia between 2000 and 2015 are classified the same way as for hospitalizations due to diabetes (Figure 4). The geographical patterns of county trajectories for hypertension are similar to those for diabetes but not quite the same. Like the diabetes map, *vanguard* counties (Dade, Catoosa, Murray, Gordon, Fannin, Gilmer, Pickens, Cherokee, Forsyth, Dawson, Lumpkin, Union, Towns, Rabun, White, Stephens, Banks, Franklin, Jackson, Polk, Haralson, Carroll, Heard, Fayette, Pike, Upson, Butts, Putnam, Marion, Lee, Baker, Echols, Montgomery, Tattnall, Evans, Bulloch, Bryan, Effingham, Wayne, Pierce, Brantley, and

Camden) are clustered in the northwestern part of the state but this cluster does not extend as far downward as it does for diabetes hospitalizations. *Optimal but declining* (Whitfield, Habersham, Hall, Oconee, Jones, Chattahoochee, Quitman, Clay, Glynn, and Mcintosh), *typical* (Walker, Lincoln, Columbia, Oglethorpe, Taliaferro, Glascock, Washington, Jasper, Monroe, Harris, Talbot, Emanuel, Candler, Toombs, Long, Wheeler, Bacon, Ware, Irwin, Berrien, Lanier, and Brooks), *vulnerable* (Chattooga, Floyd, Bartow, Paulding, Cobb, Hart, Madison, Gwinnett, Barrow, Walton, Henry, Rockdale, Newton, Morgan, Greene, Coweta, Lamar, Crawford, Muscogee, Webster, Schley, Twiggs, Bleckley, Dodge, Wilcox, Johnson, Chatham, Liberty, Grady, Thomas, and Colquitt), and *persistently suboptimal* (Douglas, Fulton, DeKalb, Clayton, Spalding, Clarke, Hancock, Richmond, Burke, Screven, Wilkinson, Laurens, Treutlen, Bibb, Peach, Houston, Pulaski, Taylor, Macon, Dooly, Crisp, Turner, Tift, Cook, Lowndes, Atkinson, Seminole, Decatur, Mitchell, Dougherty, Randolph, and Terrell) counties are similarly scattered through the middle of the state. Finally, *resilient counties* (Elbert, Wilkes, McDuffie, Warren, Jefferson, Jenkins, Baldwin, Troup, Meriwether, Stewart, Sumter, Miller, Early, Calhoun, Worth, Telfair, Coffee, Appling, Clinch, and Charlton) are similarly found along the borders of the state but also include some counties further inward. Interestingly, unlike the diabetes map, the southeastern corner of the state has a cluster of vanguard counties.

Figure 4. County trajectories in hypertension hospitalizations (top panel) and geographical distribution of county trajectories (bottom panel)





Correlates of counties with high proportions of hypertension hospitalizations

Table 5 shows the distribution of county-level characteristics in or near 2015 and their associations with hypertension hospitalizations in 2015 in Georgia. Characteristics of counties are identical to what was shown in the table for diabetes (Table 3), but repeated here for ease of review.

As for diabetes hospitalizations, positive associations were found between hypertension hospitalizations and the percent of the population that was black or African American, income inequality, the percent of the population in poverty, the percent unemployed, the percent experiencing housing problems, the percent that was obese, and the percent that were smokers. Because only the independent variables were standardized, but hospitalizations were analyzed as observed, the magnitude of coefficients between the diabetes and hypertension models cannot be directly compared.

For each standard higher in the percent of the population that was black or African American, the percentage of hospitalizations due to hypertension is 0.25 percentage points higher (95% CI: 0.20, 0.30).

The coefficient was similar for hospitalizations due to hypertension and income inequality at 0.12 (95% CI: 0.06, 0.18).

The coefficient was also similar for hospitalizations due to hypertension and the percent of the population that was obese at 0.11 (95% CI: 0.05, 0.16) and hospitalizations due to diabetes and obesity at 0.16.

For each standard higher in the percent of the population that was in poverty, the percentage of hospitalizations due to hypertension is 0.15 percentage points higher (95% CI: 0.10, 0.21).

The coefficient is also positive and statistically significant for the percent of the population that was unemployed at 0.13 (95% CI: 0.07, 0.20) and hospitalizations due to hypertension.

The coefficient is also positive for the percent of the population experiencing housing problems at 0.13 (95% CI: 0.07, 0.19).

There was a positive association between the percent of the population that smoked and hypertension hospitalizations (0.16 [95% CI: 0.10, 0.22]).

As for diabetes hospitalizations, negative associations were found between hypertension hospitalizations and the median age of county residents, the percent of the population aged 65 years and older, the median income of county residents, and the county's food index score.

For each standard higher in the median age of county residents, the percentage of hospitalizations due to hypertension is 0.08 percentage points lower (95% CI: -0.14, -0.02).

Whereas there was no statistically significant relationship between the population ages 65 and older and diabetes hospitalizations, there were -0.07 (95% CI: -0.13, -0.01) fewer hypertension hospitalizations for each standard deviation higher in the population ages 65 and older.

The median income of county residents was inversely related to hypertension hospitalizations (-0.10 [95% CI: -0.15, -0.04]).

The coefficient for the food index score was -0.22 (95% CI: -0.27, -0.16).

There were some population characteristic variables that were associated with the percentage of hospitalizations due to diabetes but not the percent of hospitalizations due to hypertension. The percentage of hospitalizations due to diabetes was negatively associated with the percent of county residents who graduated high school in four years (-0.14) and the diabetes screening rate (-0.13) and positively associated with the percent of residents who were inactive (0.19). The associations between the percentage of hospitalizations due to diabetes and these same variables were not statistically significant.

Table 5. County-level characteristics and their associations with hypertension hospitalizations

Variable	Mean	CV	Min	Max	Bivariate associations	P-value
Hypertension hospitalizations	0.7	51.9	0.0	1.7		
Total population (1000s)	62.9	213.5	1.7	983.9	0.05 (-0.00, 0.11)	0.07
% Women	50.4	6.2	32.1	58.0	0.06 (-0.01, 0.13)	0.09
Median age	38.9	11.6	23.3	53.3	-0.08 (-0.14, -0.02)	<.01
% 65+ y	15.1	26.3	3.3	31.8	-0.07 (-0.13, -0.01)	0.02
% Black/African American	29.1	60.1	0.4	73.3	0.25 (0.20, 0.30)	<.01
% Hispanic	6.1	87.9	0.0	33.1	-0.04 (-0.10, 0.03)	0.24
% Asian	1.1	132.7	0.0	11.0	0.02 (-0.03, 0.08)	0.43
% Foreign born	4.6	93.1	0.2	25.8	-0.01 (-0.07, 0.05)	0.67
Median income	42510	27.6	25941	97886	-0.10 (-0.15, -0.04)	<.01
Income inequality	5.0	17.2	2.7	8.0	0.12 (0.06, 0.18)	<.01
% In poverty	21.9	32.8	6.3	42.0	0.15 (0.10, 0.21)	<.01
% Unemployed	6.7	19.4	4.3	11.3	0.13 (0.07, 0.20)	<.01
% Graduate HS in 4y	80.3	7.4	61.0	93.9	-0.04 (-0.10, 0.02)	0.17
Food Index	6.5	20.8	1.2	9.2	-0.22 (-0.27, -0.16)	<.01
Primary care physician ratio	3315	94.7	800.5	24939	0.01 (-0.05, 0.07)	0.83
Diabetes screening	84.6	4.8	66.7	92.2	-0.06 (-0.13, 0.01)	0.08
% Uninsured	18.9	15.5	11.7	30.5	0.00 (-0.06, 0.07)	0.90
Exercise opportunities	55.6	44.8	0.2	100.0	-0.03 (-0.10, 0.03)	0.31
% Housing problems	16.8	20.6	6.4	25.9	0.13 (0.07, 0.19)	<.01
Segregation score	26.9	47.7	1.8	63.9	0.04 (-0.03, 0.10)	0.25
% Obese	31.4	9.1	22.9	38.0	0.11 (0.05, 0.16)	<.01
% Physically inactive	27.1	11.7	17.7	33.8	0.04 (-0.01, 0.10)	0.14
% Smoking	18.4	12.8	12.2	26.8	0.16 (0.10, 0.22)	<.01

Summary and conclusions

The proportions of both hospitalizations due to diabetes and hypertension by county have increased in the state of Georgia between 2000 and 2015. Diabetes hospitalizations comprised a greater proportion of total hospitalizations than those due to hypertension in 2000 (2.00% versus 0.75%). Diabetes hospitalizations have also increased at a faster rate (0.01% per year versus 0.003%). Counties with persistently suboptimal trajectories of diabetes and hypertension hospitalizations (high proportion of total hospitalizations due to diabetes or hypertension in 2000 with largest increasing trends over time) were scattered throughout the central and southern part of the state. Vanguard counties – those with low hospitalizations in 2000 and declining trends over time – were largely concentrated in the northern part of the state. County-level age, proportion Black/African American, income inequality, poverty, unemployment, household problems, obesity, and current smoking were each positively associated with diabetes and hypertension hospitalizations in 2015, respectively. County median income and health food environment were inversely associated with both types of hospitalizations. Additionally, for

diabetes only, county-level physical inactivity and the proportion of Medicare patients who have their HbA1c measured were inversely related to hospitalization.

More closely examining the heterogeneity of county hospitalization trajectories over time, to understand why some counties are able to improve over time while others are not, may provide lessons for policy makers. In general, hospitalizations increase with higher levels of socioeconomic disadvantage in the county. Identifying and addressing the needs of the populations in these disadvantaged counties may be critical to reversing the increase in hospitalizations due to diabetes and hypertension in the state.

The majority of the state is underserved in terms of diabetes prevention programs and most counties of the state have no recorded diabetes prevention program. Of counties with national diabetes prevention programs, the majority were those classified as vulnerable per our schema; these counties may both recognize the need for diabetes prevention programs and also possess resources to implement them.

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Supplemental Material

Supplemental Table 1. Diabetes hospitalizations by county by year

Shading Legend

Lowest Quintile	Q1	Q2	Q3	Highest Quintile

*Counties are sorted by rates in 2015

County	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Jenkins	2.3	3.7	2.7	3.3	3.4	2.8	2.6	1.3	2.4	1.4	2.1	3.0	1.7	4.7	4.9	4.6
Long	1.6	3.0	2.0	1.1	1.3	2.0	3.2	1.6	3.4	2.6	2.1	2.9	3.5	4.1	3.9	4.5
Early	1.6	2.9	2.0	2.8	1.9	1.6	2.1	2.1	1.9	1.6	3.0	3.3	2.9	3.2	2.2	4.3
Glascock	1.7	.	3.1	3.7	1.8	3.0	1.6	1.5	1.9	1.3	2.6	4.3	1.9	2.0	1.7	4.3
Seminole	1.3	1.6	1.3	1.8	1.3	1.8	2.3	2.0	2.0	2.1	2.5	2.5	3.5	2.6	3.9	4.0
Baker	.	.	3.3	1.7	.	2.0	.	2.1	2.6	2.6	.	1.7	1.9	2.0	4.4	3.9
Macon	2.8	2.2	1.8	2.3	2.9	2.6	2.1	2.4	2.3	2.0	2.7	2.8	2.6	3.0	3.3	3.6
Dougherty	2.1	2.3	2.3	2.2	2.4	2.6	3.0	2.8	2.5	3.4	2.5	2.9	2.7	2.8	3.3	3.4
Wheeler	1.3	1.3	1.8	2.9	2.4	2.4	2.6	1.9	1.7	2.5	2.0	3.2	2.1	1.5	2.8	3.4
Atkinson	2.7	3.0	2.3	2.5	2.8	2.5	2.7	3.5	2.7	1.3	3.2	3.1	1.8	2.2	4.4	3.2
Peach	2.0	2.2	2.1	1.8	1.4	1.0	1.3	2.1	1.9	1.9	2.1	2.1	1.9	3.5	2.2	3.2
Pierce	1.4	1.6	1.3	1.7	2.4	2.3	2.0	2.0	2.8	2.7	2.5	2.1	2.6	3.4	4.6	3.2
Walker	1.5	2.0	2.3	2.8	3.0	2.5	2.3	2.2	2.6	2.7	3.1	4.1	3.5	2.9	3.8	3.2
Bacon	2.8	2.6	1.5	1.5	2.2	2.9	2.4	2.2	2.3	2.0	2.4	3.4	2.4	2.7	2.0	3.1
Candler	2.0	0.5	2.0	2.0	2.0	1.7	2.6	2.2	2.3	2.1	1.8	2.2	2.0	1.4	2.4	3.1
Dooly	2.4	2.5	2.8	3.4	4.1	3.0	2.4	2.1	2.1	3.0	3.1	3.2	2.7	2.7	2.8	3.1
Baldwin	1.7	2.2	2.5	2.1	2.5	2.6	2.5	2.0	2.0	1.8	1.9	1.9	2.0	2.4	2.7	3.0
Berrien	1.9	1.1	1.8	2.0	1.6	1.9	1.3	2.1	1.6	1.8	1.8	1.9	1.7	2.0	3.3	3.0
Terrell	3.1	2.7	1.7	1.9	1.9	2.3	3.3	3.5	1.7	1.9	2.4	2.4	2.1	2.8	1.3	3.0
Washington	1.9	1.5	2.1	1.8	1.4	1.6	1.6	1.2	1.7	2.4	2.2	2.6	2.1	1.8	1.9	3.0
Wilkinson	2.7	1.8	1.8	1.5	1.4	1.5	1.7	1.1	1.4	1.7	2.4	2.6	2.7	2.2	2.4	3.0
Worth	2.1	1.5	1.2	1.9	1.8	1.8	2.3	1.6	1.8	1.7	1.7	1.4	1.5	1.4	1.7	3.0
Bibb	1.7	2.0	2.2	2.5	2.8	2.4	2.4	2.5	2.2	2.2	2.4	2.6	2.7	2.5	2.9	2.9
Catoosa	1.7	2.5	2.3	2.1	2.0	2.5	2.1	2.0	1.8	2.5	2.7	2.6	3.2	3.4	3.5	2.9
Clayton	1.8	1.5	1.7	2.0	2.0	1.8	2.1	2.0	2.0	2.2	2.4	2.5	2.6	2.9	2.8	2.9
Decatur	3.0	2.4	2.4	2.8	2.6	2.1	2.5	3.2	2.5	2.7	2.6	2.4	2.8	2.6	2.5	2.9
Turner	2.2	1.9	1.9	1.9	1.3	0.6	1.2	1.9	1.6	1.8	2.6	1.4	2.9	1.5	1.9	2.9
Wilcox	2.3	2.1	2.0	1.8	1.9	1.5	1.6	1.3	2.2	2.6	2.7	1.9	2.1	1.4	2.3	2.9
Coffee	2.6	1.6	2.2	2.8	2.5	2.6	2.1	2.4	2.5	2.3	2.1	2.9	2.4	2.5	2.2	2.8
Jasper	1.5	1.6	1.1	1.5	1.8	1.0	2.1	1.7	1.7	1.0	2.0	1.1	1.3	2.0	1.2	2.8
Meriwether	2.9	2.5	2.9	2.4	2.8	1.9	2.8	2.0	2.4	1.7	2.0	2.5	2.8	2.6	3.4	2.8
Montgomery	0.9	1.1	1.3	1.6	2.1	1.6	1.6	1.5	1.9	2.3	2.8	1.4	1.7	3.0	2.4	2.8
Whitfield	1.8	1.9	1.6	1.6	1.7	1.8	2.2	2.1	1.9	1.8	1.6	2.2	2.1	2.0	2.4	2.8
Chatham	2.0	2.0	2.2	2.2	2.2	2.3	2.2	2.4	2.4	2.5	2.8	2.8	3.0	3.0	2.6	2.7
Troup	2.4	2.3	2.3	2.3	2.7	2.4	2.5	2.3	2.4	2.1	2.0	2.2	2.1	2.4	3.0	2.7
Clay	5.7	.	.	0.0	3.7	0.0	.	3.4	3.2	.	.	2.8	.	.	.	2.6
Elbert	2.5	2.2	1.8	1.9	1.4	2.0	2.1	2.5	1.9	1.5	1.5	1.9	1.6	1.4	2.5	2.6
Ware	2.2	1.8	1.9	2.3	1.9	2.4	2.4	2.2	3.1	1.6	1.9	2.0	2.1	2.1	2.1	2.6
Chattahoochee	.	1.4	2.7	1.5	3.4	2.0	.	1.9	1.6	1.6	1.7	.	3.1	2.0	3.3	2.5
DeKalb	1.7	1.7	1.8	1.8	1.8	1.9	1.8	2.0	1.8	2.0	2.3	2.4	2.5	2.5	2.6	2.5
Hancock	2.9	3.0	2.1	2.6	3.3	2.8	4.2	2.3	2.6	3.5	3.9	3.6	3.9	2.9	3.3	2.5
Muscogee	2.1	2.3	2.0	2.2	1.9	2.0	1.7	1.7	2.0	2.1	2.0	2.2	2.3	2.2	2.3	2.5
Richmond	1.8	2.1	2.2	2.1	2.0	2.2	2.2	2.2	2.5	2.1	2.5	2.5	2.5	2.5	2.3	2.5
Screven	3.4	3.1	2.1	2.6	1.9	2.6	1.7	2.3	2.8	2.4	2.0	2.3	2.5	2.0	2.6	2.5
Sumter	2.1	1.9	2.2	2.4	2.2	2.3	2.4	1.8	2.3	2.7	1.9	1.6	2.0	2.6	2.5	2.5
Twiggs	1.6	1.8	2.0	2.0	2.0	1.9	2.7	1.8	2.8	2.4	2.3	1.9	2.7	3.8	3.2	2.5
Wayne	2.3	2.5	2.1	1.1	1.6	1.9	2.0	1.8	2.0	1.4	1.7	1.6	2.0	2.2	2.1	2.5

County	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Banks	1.6	1.7	2.6	2.0	1.5	2.2	1.6	1.4	1.8	1.7	2.3	2.3	1.9	2.4	2.9	2.4
Cook	2.3	1.7	2.6	1.9	1.8	1.7	1.8	2.2	1.8	2.1	2.7	2.9	3.3	1.7	2.2	2.4
Crisp	2.3	1.6	1.9	2.2	1.9	3.5	1.7	1.6	1.7	3.0	2.2	2.6	2.8	2.3	2.6	2.4
Dodge	2.4	1.8	1.8	2.3	2.2	2.3	2.2	2.4	2.8	3.7	3.0	2.6	2.6	2.4	2.5	2.4
Schley	.	2.1	1.4	1.3	2.5	.	2.9	1.1	1.9	3.1	3.4	1.5	2.9	.	1.7	2.4
Spalding	1.8	1.7	1.5	1.5	1.5	1.4	1.5	1.5	1.3	1.5	1.4	1.9	1.6	2.0	2.3	2.4
Wilkes	1.9	2.5	1.8	1.3	1.7	1.4	2.2	1.5	1.3	2.2	1.5	1.5	1.9	1.1	2.1	2.4
Bulloch	1.5	2.0	1.9	1.3	1.9	1.6	1.6	1.9	1.9	2.1	2.2	2.6	2.2	1.9	2.5	2.3
Charlton	3.3	2.4	2.3	2.8	1.1	3.1	3.4	2.5	1.6	0.9	1.5	1.1	2.1	1.3	2.1	2.3
Clarke	2.4	2.3	2.0	2.0	2.5	2.2	2.2	2.3	2.2	2.4	2.5	2.8	2.9	3.1	2.6	2.3
Douglas	1.4	1.6	1.5	1.7	1.7	1.7	1.3	1.6	1.5	2.3	2.2	1.9	2.1	2.3	2.2	2.3
Franklin	2.4	1.6	1.4	1.7	1.5	1.7	1.7	1.5	2.1	2.0	1.3	1.3	1.7	2.3	1.6	2.3
Fulton	2.1	2.0	2.1	1.9	1.9	1.8	1.9	2.0	2.0	2.1	2.0	2.3	2.1	2.3	2.2	2.3
Jones	1.1	2.2	1.7	1.6	1.3	1.1	1.4	1.4	1.4	1.6	1.2	1.5	2.0	2.2	2.1	2.3
Lowndes	1.8	1.5	1.5	2.0	2.0	2.5	1.9	2.1	1.8	2.1	1.9	1.8	1.8	2.2	2.7	2.3
Rockdale	1.5	1.4	1.8	1.9	2.0	1.2	1.5	1.4	1.5	1.5	1.9	2.2	2.5	2.3	2.4	2.3
Colquitt	1.4	1.7	1.6	1.5	1.2	1.6	1.4	1.5	1.6	1.8	1.6	1.4	1.9	1.8	1.6	2.2
Coweta	1.5	1.4	1.6	1.7	1.5	1.7	1.4	1.4	1.6	1.4	1.9	2.1	1.8	1.8	2.2	2.2
Gordon	1.4	1.0	1.1	1.2	1.4	1.3	1.2	1.3	1.9	1.2	1.7	1.8	1.5	2.0	2.2	2.2
Hart	1.6	1.9	2.0	2.7	1.7	1.7	1.5	0.8	1.6	1.6	1.6	1.4	1.0	1.8	1.8	2.2
Henry	1.2	1.3	1.3	1.4	1.7	1.5	1.6	1.4	1.6	1.7	1.7	1.4	1.7	1.8	1.9	2.2
Jeff	1.2	1.4	1.7	1.2	1.9	2.0	1.5	1.7	3.1	1.7	1.5	1.8	2.8	1.8	2.1	2.2
Liberty	1.8	1.7	2.0	2.1	2.2	2.6	2.3	2.1	2.4	2.0	2.3	2.0	1.8	2.5	2.4	2.2
Mitchell	1.7	1.6	2.6	1.7	2.0	1.3	1.7	2.5	1.4	2.3	1.9	2.3	2.1	2.5	2.0	2.2
Upson	2.3	1.9	2.1	2.0	1.8	2.0	1.7	2.0	2.4	2.2	2.4	2.7	2.5	2.7	2.0	2.2
Butts	2.0	1.5	1.8	1.7	2.2	1.7	1.7	1.5	1.4	1.4	1.8	1.4	1.4	1.7	2.3	2.1
Camden	1.7	2.0	1.5	1.8	1.7	2.5	2.5	2.0	2.1	2.2	2.2	1.9	2.7	2.3	1.8	2.1
Glynn	1.6	1.5	2.0	1.8	1.5	2.0	2.0	2.3	1.9	1.8	2.1	2.0	1.7	1.6	2.1	2.1
Houston	1.4	1.5	1.6	1.3	1.4	1.1	1.3	1.5	1.7	1.5	1.7	1.7	1.7	2.1	2.2	2.1
Miller	2.3	2.5	2.0	2.4	1.7	1.3	0.7	1.3	1.5	2.3	2.2	3.0	1.9	2.3	1.4	2.1
Monroe	1.5	1.7	1.6	2.4	2.5	2.0	1.7	2.0	1.4	1.9	1.5	2.0	2.2	2.0	2.0	2.1
Oglethorpe	1.8	1.7	1.8	1.5	2.1	2.4	1.5	1.7	2.2	2.1	1.8	1.4	1.3	1.6	2.1	2.1
Pulaski	2.0	1.8	3.0	2.5	2.4	2.2	1.9	2.1	1.9	2.3	2.8	1.9	1.5	1.8	1.7	2.1
Randolph	2.4	2.4	2.0	3.2	2.3	2.8	3.2	2.1	3.0	2.3	3.5	2.3	2.9	1.8	1.6	2.1
Thomas	1.6	2.5	2.1	2.2	1.5	2.3	2.2	1.7	2.2	2.0	2.0	2.1	2.1	2.6	2.2	2.1
Tift	1.9	2.1	2.1	2.0	2.1	2.4	1.7	2.4	2.2	2.5	2.4	2.1	2.2	2.4	2.4	2.1
Bartow	1.3	2.0	1.8	1.7	1.5	1.8	1.5	1.3	1.6	1.5	1.9	1.7	1.8	2.0	2.0	2.0
Brooks	1.9	1.8	2.9	2.8	2.5	2.4	2.0	2.3	1.7	1.2	1.7	2.1	1.5	2.2	2.6	2.0
Chattooga	1.8	1.8	2.7	2.8	2.1	2.7	2.9	2.6	2.0	2.0	2.4	1.7	2.3	1.8	1.9	2.0
Cobb	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.6	1.5	1.6	1.6	1.9	2.0
Floyd	1.6	1.6	1.8	1.4	1.4	1.3	1.4	1.4	1.4	1.8	1.9	1.6	1.8	2.1	1.8	2.0
Lamar	1.7	1.5	1.2	1.9	1.9	1.5	1.8	2.0	2.1	2.0	1.5	2.2	2.1	2.3	2.3	2.0
Newton	1.4	1.5	1.4	1.9	2.0	1.5	2.0	1.7	1.9	1.6	1.9	1.6	2.0	1.8	1.6	2.0
Pike	0.8	0.9	1.4	1.3	1.6	1.3	1.0	1.5	1.5	1.7	1.7	1.4	1.4	1.7	1.5	2.0
Taylor	1.0	1.1	2.1	2.1	2.4	1.3	1.9	2.4	2.8	3.1	2.3	2.1	1.8	2.1	2.3	2.0
Telfair	2.5	1.9	1.2	1.9	1.7	2.0	2.0	2.7	2.6	1.8	1.8	2.3	1.4	2.1	1.9	2.0
Toombs	2.4	2.2	1.9	1.3	1.4	1.4	1.7	1.3	1.6	1.7	1.4	1.9	2.0	1.8	2.1	2.0
Ben	1.6	1.8	2.4	2.0	2.4	1.5	2.3	1.9	2.0	2.0	2.1	2.1	2.3	2.0	2.5	1.9
Emanuel	1.9	2.2	1.9	1.9	2.2	1.9	2.2	2.1	1.6	1.5	1.9	1.7	1.8	1.1	1.7	1.9
Fannin	2.0	1.5	1.3	1.7	1.2	1.4	1.3	1.1	1.1	0.8	1.2	1.2	1.1	1.3	1.2	1.9
Gilmer	1.2	1.4	1.1	1.3	1.1	0.8	0.9	1.1	1.6	1.1	0.9	1.4	1.7	1.4	1.6	1.9
Jefferson	2.2	3.4	3.0	2.2	2.7	2.9	3.0	3.4	3.1	2.9	3.1	2.9	1.7	2.9	3.2	1.9
Lee	0.8	1.8	1.5	1.4	1.7	1.4	1.0	1.3	0.8	0.8	1.4	1.2	1.2	1.2	1.5	1.9
Lumpkin	1.7	1.2	1.1	1.4	1.7	1.1	1.2	1.0	1.4	1.2	1.1	1.6	1.2	1.5	1.7	1.9

County	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Murray	2.2	2.6	1.5	1.5	1.9	1.2	1.8	1.4	1.7	1.7	1.9	1.5	1.9	2.1	2.3	1.9
Paulding	1.1	1.3	1.2	1.4	1.5	1.3	1.3	1.2	1.4	1.5	1.4	1.4	1.5	1.7	1.8	1.9
Polk	1.8	1.1	1.1	1.4	1.4	1.5	1.3	1.6	1.7	1.5	1.6	1.8	1.4	1.9	1.9	1.9
Talbot	.	1.4	1.6	1.9	2.3	2.6	1.4	1.7	1.7	1.7	2.8	1.9	2.9	2.7	3.5	1.9
Walton	1.9	1.7	1.5	1.4	1.7	1.6	1.5	1.6	1.5	1.7	2.0	1.9	1.7	1.8	1.6	1.9
Barrow	1.6	1.4	1.7	1.9	2.1	1.4	1.5	1.8	1.4	1.6	2.0	1.6	1.8	1.7	1.7	1.8
Gwinnett	0.9	1.0	1.0	0.9	1.1	1.0	1.0	1.1	1.2	1.2	1.3	1.4	1.6	1.4	1.6	1.8
Johnson	1.3	2.0	1.5	1.1	1.4	1.4	1.4	0.6	2.0	1.7	1.3	2.5	2.1	2.0	1.5	1.8
Laurens	1.8	2.1	1.7	2.0	1.9	2.1	1.8	2.1	2.0	2.5	2.2	3.0	2.7	2.2	2.4	1.8
McDuffie	1.3	1.5	1.9	1.6	2.5	1.8	2.2	2.2	2.6	2.6	1.9	2.4	2.4	3.0	2.5	1.8
Putnam	1.8	1.7	1.2	1.5	2.2	2.3	2.5	2.2	2.0	2.1	2.4	2.1	1.7	1.8	1.4	1.8
Tattnall	1.6	1.4	1.5	1.8	2.0	2.1	2.1	2.1	1.9	2.0	1.5	1.4	2.0	1.4	2.6	1.8
Bleckley	2.2	2.7	2.8	2.9	2.5	2.2	2.2	1.6	1.6	1.9	1.9	1.9	1.3	0.6	1.1	1.7
Burke	2.1	2.6	2.8	2.4	2.1	2.2	2.6	2.8	1.9	2.1	3.0	2.5	2.3	2.9	2.4	1.7
Calhoun	2.4	3.6	2.5	1.7	2.4	2.8	3.6	3.0	2.6	4.5	2.4	4.1	1.7	2.0	2.5	1.7
Effingham	2.1	1.8	1.5	1.2	1.4	1.3	1.8	1.6	1.3	2.0	2.1	2.1	1.9	2.0	2.3	1.7
Harris	1.1	1.6	1.4	1.8	1.6	1.0	1.0	1.3	0.7	1.3	1.6	1.5	1.2	2.4	1.3	1.7
Jackson	1.8	1.7	2.0	1.8	1.7	1.8	1.6	1.3	1.4	1.7	1.7	1.5	1.8	1.5	1.5	1.7
Brantley	1.9	1.1	2.1	0.9	1.6	2.5	1.5	1.9	1.7	1.7	1.2	1.7	1.8	1.4	1.4	1.6
Grady	1.6	2.8	3.3	2.3	2.1	2.1	2.0	1.8	1.5	1.8	1.8	2.7	1.5	1.2	2.3	1.6
Hall	1.2	1.5	1.4	1.1	1.1	1.2	1.2	1.3	1.3	1.6	1.5	1.6	1.6	1.5	1.3	1.6
Irwin	2.1	2.4	4.3	1.8	1.8	1.6	1.4	2.4	2.3	1.3	1.8	1.6	2.3	2.3	2.5	1.6
Lanier	2.4	1.7	1.2	1.8	1.4	1.9	2.1	1.7	1.4	2.2	2.1	2.1	1.8	2.1	1.7	1.6
McIntosh	.	1.4	1.4	1.9	1.8	2.0	2.0	1.7	2.1	1.7	2.0	2.6	2.0	1.9	2.4	1.6
Marion	1.5	1.3	1.5	1.5	1.8	1.9	1.3	2.5	2.2	2.0	1.1	2.3	1.7	2.0	1.7	1.6
Stewart	3.2	3.0	3.4	3.3	3.4	4.0	3.5	4.7	6.1	5.2	3.0	3.2	2.1	1.5	2.9	1.6
Treutlen	1.1	1.9	1.7	0.9	2.5	2.5	1.4	2.3	2.4	1.6	1.9	3.1	1.2	1.7	.	1.6
Bryan	1.7	1.3	1.2	1.3	1.7	1.3	1.2	1.1	1.7	1.8	2.2	1.5	1.6	2.0	2.0	1.5
Carroll	1.7	2.2	1.9	1.9	1.9	1.7	1.6	1.6	1.3	1.5	1.7	1.5	1.5	1.5	1.6	1.5
Clinch	1.6	1.5	2.3	1.0	1.9	2.6	1.7	2.6	1.8	2.3	1.3	2.2	2.6	1.9	1.8	1.5
Crawford	1.4	1.1	1.5	1.5	1.7	1.2	1.5	2.0	1.7	2.6	2.1	1.7	1.3	2.7	2.8	1.5
Lincoln	2.4	3.8	2.3	2.4	2.3	1.7	0.9	1.8	1.5	1.8	1.8	1.3	1.5	1.6	1.7	1.5
Madison	1.6	1.9	1.6	2.3	1.5	2.1	1.2	1.5	2.5	2.3	2.1	2.5	2.4	2.6	2.2	1.5
Pickens	1.4	1.5	1.0	1.5	1.2	0.9	1.1	0.8	0.9	1.0	1.3	1.5	1.6	1.4	2.0	1.5
Stephens	1.6	1.7	1.8	2.1	2.2	2.0	1.7	1.6	1.3	2.0	1.5	1.5	1.1	1.1	1.0	1.5
Cherokee	0.9	1.0	1.1	0.9	1.0	0.8	1.0	0.9	1.0	1.2	1.1	1.1	1.2	1.2	1.5	1.4
Evans	2.0	2.6	2.3	1.6	1.9	1.7	1.6	1.4	1.7	2.2	1.4	2.1	3.2	3.1	2.7	1.4
Habersham	1.4	0.8	1.4	1.0	1.5	1.4	1.4	1.4	1.1	1.4	1.3	1.6	1.0	1.4	1.2	1.4
Oconee	1.5	1.3	1.5	1.0	1.2	1.0	1.8	1.4	1.1	0.9	1.1	1.2	1.3	0.6	0.8	1.4
Columbia	1.4	1.4	1.3	1.5	1.5	1.1	1.4	1.3	1.3	1.2	1.4	1.2	1.4	1.4	1.5	1.3
White	1.4	1.4	0.6	0.9	0.9	0.7	1.2	1.0	1.8	1.0	1.0	1.2	1.4	1.9	1.4	1.3
Dawson	0.9	1.1	0.9	1.9	1.0	1.0	1.2	2.3	1.7	1.1	0.9	0.7	0.8	0.6	1.1	1.2
Fayette	1.1	1.1	1.2	0.9	1.1	0.9	1.1	0.8	1.2	1.0	1.0	1.1	1.2	1.2	1.3	1.2
Greene	3.7	4.4	2.9	2.9	3.0	3.6	2.6	2.3	2.1	2.2	1.9	2.0	1.9	1.4	1.9	1.2
Haralson	1.6	1.7	1.5	1.7	1.5	1.4	1.7	1.4	1.4	1.6	1.4	1.9	2.1	2.1	1.7	1.2
Heard	1.1	1.7	1.5	1.7	2.1	2.1	2.6	1.6	1.9	2.2	1.5	1.6	1.5	1.5	1.5	1.2
Morgan	1.5	1.6	2.1	1.8	2.0	1.6	2.5	1.9	1.8	1.0	1.3	1.8	2.1	2.7	2.0	1.2
Rabun	2.1	1.9	1.7	1.4	1.4	1.5	1.3	1.7	1.2	1.2	1.0	1.1	1.1	1.8	0.4	1.2
Towns	1.2	1.1	0.7	1.1	1.5	1.3	1.0	0.6	0.9	1.0	0.6	1.2	0.5	1.3	0.9	1.2
Union	1.8	2.0	1.6	1.5	1.2	1.0	1.3	1.3	1.2	1.0	1.1	0.7	0.7	1.2	1.4	1.2
Warren	2.3	2.4	1.5	2.6	2.1	2.5	3.1	2.0	1.2	1.5	1.0	1.8	1.1	2.4	1.4	1.2
Appling	1.1	1.8	1.8	2.4	2.7	2.3	2.2	1.2	1.2	1.8	1.7	1.6	2.1	2.2	1.5	1.1
Forsyth	0.8	0.9	0.7	0.9	1.0	0.7	0.9	0.9	0.9	1.0	1.0	0.9	1.1	1.1	0.8	1.0
Echols	.	.	.	.	1.8	.	1.6	3.5	.	.	.	.	.	.	2.4	0.0

County	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Dade	4.4	4.3	1.6	1.6	2.0	5.0	1.8	1.8	1.5	.	.	2.8	.	3.4	.	.
Quitman	.	.	0.0	.	.	4.7	0.0	0.0	.	.	0.0	.	0.0	0.0	0.0	.
Taliaferro	2.6	.	3.0	2.6	2.6	2.4	2.3	.	2.5	2.4	2.8	1.8	.	.	.	.
Webster	4.8	2.6	4.0	3.6	.	.	.	5.7	.	.	.	.	.	.	.	.

Supplemental Table 2. Classification of counties by diabetes hospitalization trajectory

			Diabetes Hospitalizations (% of all hospitalizations)		
Classification	Public Health District	County	Rate in 2000	Rate in 2015	Annual change 2000-2015
Vanguard	1-1 Northwest (Rome)	Haralson	1.2	1.2	0.01
	1-2 North Georgia (Dalton)	Cherokee	1.0	1.4	0.02
		Fannin	1.4	1.9	0.01
		Pickens	1.1	1.5	0.02
	10-0 Northeast (Athens)	Barrow	1.5	1.8	0.02
		Jackson	1.5	1.7	0.01
		Morgan	1.3	1.2	0.01
		Oconee	1.1	1.4	0.01
		Walton	1.5	1.9	0.02
	2-0 North (Gainesville)	Dawson	1.0	1.2	0.01
		Forsyth	0.8	1.0	0.01
		Habersham	1.1	1.4	0.01
		Hall	1.2	1.6	0.02
		Lumpkin	1.4	1.9	0.02
		Rabun	1.2	1.2	-0.00
		Stephens	1.4	1.5	0.00
		Towns	0.9	1.2	0.01
		Union	1.1	1.2	0.00
		White	1.0	1.3	0.02
	4-0 La Grange	Carroll	1.4	1.5	0.01
		Fayette	0.9	1.2	0.01
		Heard	1.3	1.2	0.01
	5-1 South Central (Dublin)	Treutlen	1.5	1.6	0.02
	6-0 East Central (Augusta)	Columbia	1.1	1.3	0.01
		Warren	1.5	1.2	-0.00
	7-0 West Central (Columbus)	Harris	1.3	1.7	0.02
		Marion	1.4	1.6	0.02
		Quitman	0.7	.	-0.01
	8-1 South (Valdosta)	Echols	0.3	0.0	0.01
		Lanier	1.5	1.6	0.02
	8-2 Southwest (Albany)	Lee	1.4	1.9	0.01
	9-2 Southeast (Waycross)	Appling	1.3	1.1	0.01
		Brantley	1.4	1.6	0.01
		Clinch	1.5	1.5	0.02
		Evans	1.5	1.4	0.02
		Tattnall	1.6	1.8	0.02
Optimal but declining	1-1 Northwest (Rome)	Floyd	1.5	2.0	0.02
		Gordon	1.5	2.2	0.03
		Paulding	1.4	1.9	0.02
		Polk	1.4	1.9	0.02
	1-2 North Georgia (Dalton)	Gilmer	1.3	1.9	0.02
	10-0 Northeast (Athens)	Madison	1.5	1.5	0.02
	3-1 Cobb-Douglas	Cobb	1.4	2.0	0.02
	3-4 East Metro (Lawrenceville)	Gwinnett	1.2	1.8	0.02
	4-0 La Grange	Henry	1.6	2.2	0.02
		Pike	1.4	2.0	0.02
	5-1 South Central (Dublin)	Johnson	1.4	1.8	0.02
	5-2 North Central (Macon)	Crawford	1.3	1.5	0.03
		Houston	1.5	2.1	0.03
	9-1 Coastal (Savannah)	Bryan	1.3	1.5	0.02

Classification	Public Health District	County	Diabetes Hospitalizations (% of all hospitalizations) Rate in 2000	Rate in 2015	Annual change 2000-2015
		Effingham	1.4	1.7	0.02
		McIntosh	1.5	1.6	0.02
Typical	1-1 Northwest (Rome)	Bartow	1.6	2.0	0.02
		Chattooga	1.9	2.0	0.01
	1-2 North Georgia (Dalton)	Murray	1.6	1.9	0.02
	10-0 Northeast (Athens)	Greene	1.9	1.2	-0.02
		Oglethorpe	1.7	2.1	0.01
	2-0 North (Gainesville)	Franklin	1.8	2.3	0.02
		Hart	1.7	2.2	0.01
	3-4 East Metro (Lawrenceville)	Newton	1.6	2.0	0.02
	4-0 La Grange	Butts	1.7	2.1	0.02
	5-1 South Central (Dublin)	Bleckley	1.8	1.7	-0.01
		Pulaski	1.9	2.1	0.01
		Telfair	1.8	2.0	0.02
	5-2 North Central (Macon)	Monroe	1.7	2.1	0.02
		Putnam	1.6	1.8	0.02
	6-0 East Central (Augusta)	Burke	1.8	1.7	0.01
		Emanuel	1.7	1.9	0.01
		Lincoln	1.6	1.5	-0.01
		Wilkes	1.8	2.4	0.02
	8-1 South (Valdosta)	Brooks	1.9	2.0	0.01
		Irwin	1.7	1.6	0.01
	8-2 Southwest (Albany)	Grady	1.7	1.6	0.00
		Miller	1.8	2.1	0.02
		Thomas	1.8	2.1	0.02
	9-1 Coastal (Savannah)	Glynn	1.7	2.1	0.02
	9-2 Southeast (Waycross)	Toombs	1.6	2.0	0.02
		Wayne	1.9	2.5	0.02
Vulnerable	2-0 North (Gainesville)	Banks	1.9	2.4	0.03
	3-1 Cobb-Douglas	Douglas	1.7	2.3	0.03
	3-2 Fulton	Fulton	1.9	2.3	0.02
	3-4 East Metro (Lawrenceville)	Rockdale	1.7	2.3	0.03
	3-5 DeKalb	DeKalb	1.9	2.5	0.03
	4-0 La Grange	Coweta	1.6	2.2	0.02
		Lamar	1.6	2.0	0.02
		Spalding	1.7	2.4	0.02
		Upson	1.9	2.2	0.02
	5-1 South Central (Dublin)	Laurens	1.7	1.8	0.02
		Montgomery	1.9	2.8	0.04
	5-2 North Central (Macon)	Jasper	1.9	2.8	0.02
		Jones	1.7	2.3	0.02
		Twiggs	2.0	2.5	0.04
	6-0 East Central (Augusta)	McDuffie	1.6	1.8	0.03
	7-0 West Central (Columbus)	Crisp	2.0	2.4	0.02
		Schley	2.0	2.4	0.02
		Talbot	1.6	1.9	0.03
		Taylor	1.7	2.0	0.03
	8-1 South (Valdosta)	Cook	2.0	2.4	0.02
		Lowndes	1.8	2.3	0.02
		Tift	1.9	2.1	0.02
	8-2 Southwest (Albany)	Colquitt	1.6	2.2	0.02

Classification	Public Health District	County	Diabetes Hospitalizations (% of all hospitalizations) Rate in 2000	Rate in 2015	Annual change 2000-2015
		Mitchell	1.8	2.2	0.02
	9-1 Coastal (Savannah)	Camden	1.8	2.1	0.02
		Liberty	1.9	2.2	0.02
	9-2 Southeast (Waycross)	Bulloch	1.8	2.3	0.03
Resilient	1-1 Northwest (Rome)	Dade	2.5	.	0.01
	10-0 Northeast (Athens)	Elbert	2.0	2.6	0.02
	4-0 La Grange	Troup	2.3	2.7	0.02
	6-0 East Central (Augusta)	Jefferson	2.1	1.9	0.01
		Screven	2.2	2.5	0.01
		Taliaferro	2.2	.	0.01
	7-0 West Central (Columbus)	Clay	2.4	2.6	0.01
		Randolph	2.1	2.1	0.01
		Stewart	2.4	1.6	-0.00
	8-2 Southwest (Albany)	Calhoun	2.0	1.7	0.01
		Decatur	2.5	2.9	0.02
		Terrell	2.4	3.0	0.02
	9-2 Southeast (Waycross)	Charlton	2.1	2.3	-0.00
		Ware	2.1	2.6	0.02
Persistently Suboptimal	1-1 Northwest (Rome)	Catoosa	2.3	2.9	0.04
		Walker	2.5	3.2	0.04
	1-2 North Georgia (Dalton)	Whitfield	2.0	2.8	0.03
	10-0 Northeast (Athens)	Clarke	2.0	2.3	0.03
	3-3 Clayton (Morrow)	Clayton	2.1	2.9	0.04
	4-0 La Grange	Meriwether	2.4	2.8	0.02
	5-1 South Central (Dublin)	Dodge	2.1	2.4	0.03
		Wheeler	2.4	3.4	0.03
		Wilcox	2.2	2.9	0.02
	5-2 North Central (Macon)	Baldwin	2.3	3.0	0.02
		Bibb	2.3	2.9	0.03
		Hancock	2.4	2.5	0.03
		Peach	2.2	3.2	0.03
		Washington	2.1	3.0	0.03
		Wilkinson	2.1	3.0	0.03
	6-0 East Central (Augusta)	Glascock	3.1	4.3	0.02
		Jenkins	3.3	4.6	0.04
		Richmond	2.1	2.5	0.02
	7-0 West Central (Columbus)	Chattahoochee	2.0	2.5	0.02
		Dooly	2.7	3.1	0.02
		Macon	2.7	3.6	0.03
		Muscogee	2.0	2.5	0.02
		Sumter	2.1	2.5	0.02
		Webster	3.6	.	0.03
	8-1 South (Valdosta)	Berrien	2.1	3.0	0.03
		Turner	2.0	2.9	0.03
	8-2 Southwest (Albany)	Baker	3.0	3.9	0.02
		Dougherty	2.6	3.4	0.03
		Early	2.9	4.3	0.04
		Seminole	2.5	4.0	0.06
		Worth	2.1	3.0	0.02
	9-1 Coastal (Savannah)	Chatham	2.2	2.7	0.03
		Long	3.0	4.5	0.06

Classification	Public Health District	County	Diabetes Hospitalizations (% of all hospitalizations) Rate in 2000	Rate in 2015	Annual change 2000-2015
	9-2 Southeast (Waycross)	Atkinson	2.6	3.2	0.03
		Bacon	2.4	3.1	0.03
		Candler	2.2	3.1	0.03
		Coffee	2.3	2.8	0.02
		Pierce	2.3	3.2	0.05

Supplemental Table 3. Correlations of Georgia county characteristics with diabetes hospitalizations in 2015

		v1	v2	v3	v4	v5	v6	v7	v8	v9	v10	v11	v12	v13	v14	v15	v16	v17	v18	v19	v20	v21	v22	v23	v24
v1	Diabetes hospitalizations	1.00																							
v2	Total population (1000s)	0.00	1.00																						
v3	% Women	-0.03	0.14	1.00																					
v4	Median age	-0.20	-0.29	0.13	1.00																				
v5	% 65+ y	-0.12	-0.40	0.18	0.88	1.00																			
v6	% Black/African American	0.43	0.12	-0.02	-0.20	-0.16	1.00																		
v7	% Hispanic	-0.04	0.30	-0.20	-0.37	-0.36	-0.15	1.00																	
v8	% Asian	-0.10	0.77	0.02	-0.37	-0.49	0.03	0.34	1.00																
v9	% Foreign born	-0.10	0.60	-0.17	-0.31	-0.39	-0.01	0.84	0.67	1.00															
v10	Median income	-0.38	0.42	0.15	-0.08	-0.34	-0.39	0.11	0.57	0.32	1.00														
v11	Income inequality	0.24	-0.08	0.15	-0.04	0.19	0.46	-0.21	-0.20	-0.21	-0.57	1.00													
v12	% In poverty	0.41	-0.28	-0.26	-0.10	0.12	0.58	-0.01	-0.33	-0.11	-0.85	0.67	1.00												
v13	% Unemployed	0.30	-0.26	-0.18	0.04	0.18	0.57	-0.16	-0.33	-0.24	-0.66	0.43	0.64	1.00											
v14	% Graduate HS in 4y	-0.22	0.40	0.23	-0.15	-0.24	-0.18	-0.17	0.48	0.05	0.70	-0.32	-0.66	-0.41	1.00										
v15	Food Index	-0.47	0.01	0.09	0.33	0.16	-0.81	0.05	0.09	0.07	0.59	-0.51	-0.72	-0.68	0.29	1.00									
v16	Primary care physician ratio	0.05	-0.19	-0.28	0.16	0.03	-0.01	-0.13	-0.20	-0.18	-0.17	-0.11	0.12	0.12	-0.28	-0.02	1.00								
v17	Diabetes screening	-0.18	0.10	0.01	0.00	-0.03	-0.34	0.05	0.15	0.11	0.31	-0.27	-0.32	-0.34	0.23	0.32	-0.02	1.00							
v18	% Uninsured	0.15	-0.13	0.01	0.19	0.36	-0.04	0.35	-0.28	0.13	-0.61	0.27	0.44	0.23	-0.61	-0.14	0.14	-0.10	1.00						
v19	Exercise opportunities	-0.11	0.38	0.42	-0.16	-0.13	-0.26	0.20	0.38	0.28	0.43	-0.17	-0.47	-0.38	0.55	0.22	-0.40	0.26	-0.13	1.00					
v20	% Housing problems	0.32	0.22	0.19	-0.18	0.00	0.44	0.11	0.09	0.15	-0.29	0.39	0.35	0.23	-0.15	-0.49	-0.12	-0.05	0.29	0.14	1.00				
v21	Segregation score	-0.01	0.35	0.24	-0.04	0.04	0.10	0.03	0.20	0.14	0.08	0.10	-0.09	-0.02	0.20	-0.09	-0.27	0.01	0.03	0.35	0.27	1.00			
v22	% Obese	0.26	-0.30	-0.01	-0.18	-0.12	0.42	0.00	-0.20	-0.11	-0.38	0.17	0.39	0.39	-0.40	-0.45	0.14	-0.14	0.18	-0.24	0.10	-0.12	1.00		
v23	% Physically inactive	0.30	-0.57	-0.09	0.18	0.30	0.17	-0.16	-0.59	-0.39	-0.68	0.24	0.52	0.45	-0.63	-0.27	0.20	-0.19	0.42	-0.43	-0.02	-0.10	0.46	1.00	
v24	% Smoking	0.44	-0.27	-0.24	-0.26	-0.06	0.58	0.06	-0.35	-0.11	-0.80	0.59	0.88	0.64	-0.68	-0.73	0.15	-0.32	0.44	-0.47	0.35	-0.17	0.52	0.54	1.00

Supplemental Table 4. Heat map of county-level hypertension hospitalizations

Legend

Lowest Quintile	Q1	Q2	Q3	Highest Quintile
1	2	3	4	5

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Terrell	0.65	0.62	0.84	0.82	1.53	0.95	1.25	0.81	1.00	1.68	0.83	1.38	0.74	0.96	0.96	1.73
Taylor	0.15	0.64	1.03	0.46	0.87	0.73	0.38	0.82	1.16	1.06	0.57	0.83	0.60	1.17	2.09	1.65
Wilkinson	0.45	0.43	0.54	0.50	0.62	0.26	0.41	0.88	1.21	0.94	0.31	1.34	1.11	1.31	2.06	1.58
Crisp	0.71	1.21	0.98	0.82	1.78	1.19	1.51	1.25	2.03	1.68	0.99	0.75	1.37	1.41	1.19	1.57
Dooly	0.70	0.76	0.60	0.67	0.63	1.07	0.85	0.64	1.50	1.11	1.37	1.40	1.08	1.00	0.64	1.53
Peach	0.94	0.84	0.99	1.08	0.66	0.55	1.06	1.21	1.12	0.65	0.88	0.85	0.82	1.27	1.94	1.48
Hancock	2.07	1.47	0.68	0.56	0.84	1.17	1.06	0.90	1.55	1.97	1.10	1.66	1.52	0.84	1.53	1.45
Laurens	0.92	0.88	1.06	0.90	0.77	0.74	0.78	0.69	1.02	1.30	0.99	1.24	1.61	1.95	1.81	1.43
Treutlen	0.90	0.59	1.01	1.46	0.78	0.00	0.94	1.41	1.37	1.31	1.11	1.53	1.47	2.48	1.57	1.41
Dougherty	0.63	0.45	1.00	0.88	1.22	1.56	1.09	1.26	1.32	1.52	1.45	1.44	1.35	1.33	1.29	1.41
Lowndes	0.94	1.02	1.12	1.08	1.22	0.91	0.92	1.23	1.23	1.49	1.51	1.21	1.16	1.24	1.33	1.40
Bibb	0.83	0.81	0.79	0.76	0.81	0.93	0.84	0.81	0.98	1.17	1.03	1.14	1.11	1.24	1.61	1.40
Pulaski	0.63	0.48	0.86	0.54	0.55	0.46	0.54	0.97	0.57	0.81	1.34	1.62	1.65	2.16	1.43	1.37
Tift	1.38	1.04	1.02	0.89	1.39	1.31	1.47	1.59	1.32	1.57	1.23	1.19	1.30	1.76	1.18	1.36
Clayton	0.70	0.60	0.79	0.91	0.86	0.87	1.11	1.23	1.13	0.94	1.19	1.04	1.16	1.24	1.27	1.33
Houston	0.63	0.64	0.84	0.62	0.59	0.78	0.91	0.83	0.78	0.60	0.80	0.99	0.98	1.49	2.00	1.32
Macon	1.63	0.76	1.36	1.02	0.88	1.08	1.38	1.34	1.48	1.64	0.73	0.76	1.16	1.25	1.43	1.31
Sumter	0.79	1.24	1.43	1.27	1.54	1.37	1.08	1.57	1.55	1.06	1.08	0.89	0.91	0.91	0.51	1.29
Richmond	1.13	1.16	0.83	0.84	0.97	1.06	1.15	1.14	1.07	1.21	1.19	1.20	0.97	1.05	1.03	1.26
DeKalb	0.91	0.86	0.92	0.91	0.90	0.99	1.14	1.15	1.09	1.29	1.33	1.25	1.34	1.32	1.34	1.24
Screven	0.76	0.62	0.53	0.79	0.64	0.63	0.46	0.49	0.53	0.89	0.70	0.60	1.05	0.62	0.57	1.24
Charlton	1.56	1.79	1.31	0.67	1.28	0.39	0.46	1.45	0.89	0.94	0.30	0.70	0.78	1.44	0.87	1.23
Turner	0.87	0.86	1.05	1.26	1.13	0.96	0.65	1.03	1.26	1.96	1.59	0.97	1.23	1.53	1.82	1.22
Burke	0.70	0.76	0.63	0.46	0.57	0.59	0.73	0.55	0.46	0.91	1.57	0.85	1.24	0.83	0.87	1.20
Clarke	0.50	0.45	0.57	0.67	0.60	0.53	0.54	0.66	0.88	1.14	1.16	1.49	1.23	0.86	0.89	1.18
Randolph	1.27	0.73	1.64	0.94	1.17	2.55	0.81	0.91	1.45	1.60	0.66	0.87	0.98	1.71	1.35	1.16
Warren	1.42	2.00	1.72	1.36	2.21	0.95	2.08	1.15	1.46	1.18	1.49	0.81	0.49	0.17	0.69	1.15
Miller	0.82	0.85	0.26	0.60	0.54	0.94	0.69	0.58	0.40	0.59	0.55	0.86	0.67	0.35	0.14	1.13
Fulton	0.84	1.01	1.00	1.03	0.88	0.84	0.94	0.97	1.08	1.13	1.12	1.10	1.18	1.06	1.15	1.12
Seminole	0.90	0.85	0.85	0.99	0.31	1.04	0.95	1.10	0.77	0.55	1.39	0.82	0.93	1.83	0.59	1.07
Spalding	0.87	0.82	0.76	0.68	0.56	0.56	0.71	0.94	0.95	0.75	0.63	0.79	0.80	0.95	0.87	1.07
Crawford	0.79	0.73	0.57	0.62	0.74	0.39	0.70	0.62	0.50	1.01	0.27	0.53	0.47	1.10	0.72	1.05
Douglas	0.54	0.55	0.56	0.60	0.73	0.88	0.94	0.76	0.85	0.85	1.00	1.05	1.07	1.00	1.16	1.05
Cook	1.35	1.27	1.00	0.93	1.01	0.93	1.08	1.60	1.69	0.98	1.11	0.87	0.59	1.63	1.43	1.04
Morgan	0.59	0.60	0.41	0.55	0.66	0.57	0.59	0.53	0.47	0.71	0.67	0.65	0.99	0.62	0.96	1.04
Bartow	0.50	0.53	0.45	0.50	0.67	0.65	0.41	0.55	0.74	0.60	0.66	0.77	0.94	0.85	1.06	1.04
Wilcox	0.70	0.17	0.78	0.18	0.65	0.63	0.77	1.09	0.70	1.00	0.58	0.83	1.02	0.93	1.00	1.04
McDuffie	1.08	0.92	1.33	0.84	1.50	1.11	1.38	1.41	1.35	0.85	1.16	0.91	0.77	0.96	0.93	1.03
Worth	0.58	0.69	0.99	0.77	0.94	0.60	1.09	0.72	1.00	1.02	0.84	0.77	0.82	0.64	0.55	1.00
Mitchell	0.54	1.03	0.44	0.83	0.71	0.65	0.70	0.89	1.31	0.96	1.22	0.78	1.43	1.02	1.13	0.99
Rockdale	0.47	0.40	0.43	0.68	0.43	0.60	0.65	0.83	0.74	1.02	0.76	1.22	1.10	1.31	1.17	0.98
Jenkins	1.69	1.66	0.96	1.89	1.43	1.09	0.79	1.10	1.50	0.55	0.95	1.09	1.11	1.19	1.24	0.97
Twiggs	0.27	0.97	1.16	0.78	0.76	0.84	0.61	0.56	1.21	0.70	1.29	0.97	1.38	1.97	1.47	0.95
Toombs	0.95	1.01	0.63	0.62	0.68	0.51	1.00	0.60	0.61	0.72	0.50	0.95	0.75	0.80	0.21	0.94
Calhoun	1.64	1.44	1.27	1.84	0.94	1.01	1.22	1.42	2.01	1.99	1.01	1.13	0.57	1.00	0.57	0.93
Elbert	0.93	1.12	1.06	1.17	1.14	0.99	0.85	0.75	0.78	0.74	1.03	0.74	0.81	0.53	0.91	0.93
Baldwin	0.96	0.71	0.84	0.76	1.01	0.91	0.72	0.87	1.01	0.91	0.93	0.77	0.68	0.91	0.60	0.92
Schley	0.40	0.63	0.69	0.00	0.85	0.22	1.03	1.95	0.72	1.84	0.62	0.91	2.09	0.94	0.29	0.91

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Decatur	0.83	0.94	0.66	0.88	0.88	0.83	1.03	0.82	0.66	0.49	1.37	1.03	0.89	0.93	1.47	0.91
Early	0.88	1.54	1.15	0.50	0.64	1.27	1.12	1.38	0.91	0.66	0.25	0.72	0.60	0.96	0.65	0.90
Troup	0.85	1.01	1.05	1.26	1.22	1.24	1.06	0.70	0.87	1.05	1.23	0.71	0.89	0.75	0.95	0.90
Madison	0.18	0.18	0.38	0.60	0.65	0.28	0.52	0.45	0.68	0.94	0.76	0.59	1.00	0.40	0.59	0.89
Bleckley	0.61	0.64	0.39	0.49	0.87	1.02	1.20	0.62	1.32	0.71	0.78	0.93	1.03	0.44	1.08	0.89
Newton	0.46	0.39	0.62	0.81	0.95	0.77	0.89	0.75	0.70	0.83	0.67	0.97	0.97	1.10	1.37	0.88
Thomas	1.02	0.54	0.58	0.62	0.48	0.73	0.94	0.85	0.81	0.54	0.57	0.74	0.92	0.96	0.87	0.88
Greene	0.77	0.90	0.69	0.80	0.78	0.82	0.97	0.77	0.30	0.57	1.12	0.63	1.10	1.16	0.78	0.86
Gwinnett	0.36	0.37	0.41	0.50	0.45	0.50	0.51	0.57	0.54	0.58	0.67	0.70	0.75	0.80	0.74	0.86
Monroe	0.61	0.73	0.56	0.51	0.76	0.89	0.67	0.68	0.53	0.79	0.34	0.65	0.43	0.51	0.57	0.86
Cobb	0.42	0.54	0.67	0.54	0.61	0.56	0.63	0.75	0.73	0.69	0.88	0.84	0.88	0.82	0.89	0.84
Colquitt	0.42	0.94	0.71	0.63	0.49	0.65	0.60	1.19	1.11	0.88	0.73	0.74	0.93	1.01	0.97	0.81
Ben	1.11	1.33	1.10	0.99	0.93	0.52	0.89	0.80	1.37	1.34	1.00	0.72	0.49	0.72	0.60	0.81
Coffee	1.06	0.96	0.90	1.21	1.20	1.14	1.10	1.31	1.53	0.69	1.10	0.86	1.19	1.31	0.87	0.80
Henry	0.34	0.29	0.40	0.41	0.49	0.69	0.59	0.70	0.61	0.81	0.81	0.89	0.94	0.85	0.62	0.79
Hart	0.64	0.49	0.54	0.56	0.77	0.47	0.50	0.54	0.88	0.56	1.01	0.54	0.98	0.78	0.95	0.79
Telfair	1.13	1.13	0.72	0.87	0.61	0.69	0.85	1.47	1.36	0.71	1.06	0.99	1.07	0.79	0.35	0.79
Barrow	0.31	0.55	0.56	0.37	0.69	0.49	0.72	0.68	0.91	0.63	0.58	0.65	0.75	0.64	0.63	0.78
Muscogee	0.61	0.77	0.52	0.66	0.85	0.81	0.73	0.90	0.88	0.87	0.77	1.01	0.87	0.85	0.71	0.78
Atkinson	1.27	1.30	0.71	0.51	0.93	0.91	1.19	0.39	1.37	1.20	1.33	0.63	1.53	1.76	1.30	0.77
Jefferson	1.24	1.35	1.02	1.31	0.94	0.79	0.66	1.27	1.62	1.19	1.55	1.02	0.95	0.97	0.96	0.76
Johnson	0.70	0.69	0.11	0.85	0.77	0.55	0.60	0.93	0.78	1.01	0.92	1.27	0.72	0.80	0.84	0.76
Grady	0.64	0.65	0.55	0.42	0.28	0.60	0.62	0.82	0.30	0.54	0.55	0.59	0.64	0.71	0.98	0.74
Liberty	0.59	0.37	0.35	0.56	0.53	0.63	0.39	0.71	0.60	0.43	0.62	0.72	0.70	0.84	0.60	0.73
Appling	0.57	1.09	1.23	0.87	0.90	0.92	1.24	1.15	1.24	0.91	1.16	0.80	1.16	0.64	1.11	0.72
Chatham	0.50	0.55	0.40	0.51	0.49	0.39	0.56	0.58	0.74	0.71	0.66	0.76	0.69	0.65	0.66	0.71
Wilkes	1.45	0.60	1.21	0.95	1.49	1.10	1.53	1.47	1.40	1.07	0.84	1.81	1.61	0.99	1.25	0.71
Paulding	0.44	0.43	0.54	0.58	0.42	0.52	0.68	0.55	0.62	0.49	0.58	0.74	0.77	0.84	0.91	0.71
Long	1.12	0.18	0.67	0.16	0.78	0.54	0.55	0.48	0.28	0.13	0.49	0.58	0.19	0.56	0.39	0.70
Clinch	0.93	2.13	1.10	1.09	0.69	1.09	0.63	0.65	0.78	0.65	1.03	0.92	0.73	0.42	0.86	0.70
Walker	0.51	0.44	0.59	0.39	0.58	0.70	0.63	0.22	0.48	0.35	0.15	0.19	0.30	0.37	0.48	0.69
Jasper	1.48	1.23	0.99	0.84	0.32	0.57	0.50	1.01	1.19	0.31	0.42	0.32	0.44	0.78	0.77	0.69
Heard	0.48	0.50	0.32	0.34	0.53	0.34	0.59	0.43	0.32	0.50	0.24	0.71	0.93	0.43	0.10	0.68
Coweta	0.42	0.44	0.59	0.49	0.40	0.55	0.48	0.55	0.49	0.88	0.79	0.64	0.66	0.74	0.73	0.66
Bacon	0.73	0.92	0.74	0.74	1.16	0.94	0.86	0.71	0.70	0.67	1.07	1.04	0.96	0.25	0.45	0.66
Lamar	0.43	0.48	0.59	0.45	0.45	0.69	0.65	0.84	0.73	0.71	0.69	0.67	0.43	0.83	0.91	0.66
Oglethorpe	0.74	0.39	0.67	0.63	0.67	0.29	0.44	0.58	0.93	0.65	0.49	0.07	0.49	1.04	0.78	0.66
Walton	0.33	0.29	0.48	0.56	0.48	0.61	0.64	0.74	0.55	0.76	0.58	1.02	0.72	0.87	0.69	0.66
Jones	0.28	0.50	0.35	0.31	0.57	0.77	0.59	0.65	0.86	0.69	0.62	0.60	0.61	0.61	0.65	0.65
Meriwether	0.98	1.06	1.24	1.25	1.62	1.49	0.95	1.10	1.07	1.16	1.14	0.95	0.96	0.87	0.66	0.64
Dodge	0.46	0.77	0.87	0.84	0.78	0.86	0.64	0.57	0.74	0.86	0.73	0.80	0.97	0.98	1.35	0.64
Columbia	0.47	0.53	0.44	0.53	0.61	0.55	0.54	0.58	0.53	0.67	0.83	0.67	0.50	0.58	0.55	0.64
Chattooga	0.60	0.59	0.58	0.48	0.60	0.49	0.50	0.52	0.68	0.26	0.75	0.62	1.30	1.52	1.10	0.63
Floyd	0.54	0.61	0.53	0.71	0.51	0.64	0.80	0.64	1.55	0.83	0.70	1.01	0.72	0.88	0.89	0.61
Harris	0.46	0.59	0.71	0.36	0.77	0.43	0.57	0.89	1.02	0.65	0.56	0.53	0.52	0.66	0.46	0.61
Habersham	0.35	0.37	0.39	0.36	0.43	0.24	0.31	0.42	0.37	0.41	0.63	0.58	0.40	0.37	0.55	0.60
Talbot	0.87	1.01	1.85	1.10	0.93	0.79	1.15	0.43	1.73	0.96	0.49	0.74	0.91	0.29	0.44	0.60
Hall	0.33	0.32	0.29	0.36	0.35	0.41	0.42	0.47	0.45	0.42	0.52	0.50	0.48	0.61	0.63	0.60
Brooks	0.81	1.07	0.77	1.35	0.75	0.96	0.89	1.20	0.92	1.00	1.17	0.79	0.88	0.66	0.59	0.58
Upson	0.74	0.51	0.77	0.44	0.53	0.41	0.51	0.47	0.54	0.77	0.55	0.57	0.49	0.31	1.00	0.58
Berrien	0.70	0.83	0.91	0.69	0.76	0.39	0.73	0.83	0.87	1.00	0.81	0.90	0.85	0.74	1.09	0.58
Franklin	0.42	0.41	0.50	0.78	0.66	0.48	0.56	0.32	0.54	0.53	0.59	0.35	0.33	0.53	0.45	0.58
Webster	2.07	0.00	0.45	0.91	0.53	1.64	0.61	1.43	0.00	1.96	2.79	3.47	4.11	0.00	0.58	0.57
Jackson	0.43	0.54	0.66	0.91	0.37	0.40	0.58	0.61	0.51	0.65	0.55	0.39	0.51	0.47	0.42	0.57

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Ware	0.51	0.93	0.90	0.97	0.87	0.69	0.78	0.87	1.06	0.84	0.80	1.06	0.95	0.60	0.86	0.56
Camden	0.28	0.72	0.39	0.47	0.79	1.07	0.39	0.75	0.71	0.65	0.72	0.44	0.77	0.59	0.59	0.56
Candler	0.67	0.50	1.62	0.83	1.11	0.63	0.97	0.55	0.67	0.73	0.42	0.48	0.68	0.37	1.02	0.55
Lumpkin	0.38	0.78	0.56	0.48	0.63	0.35	0.35	0.69	0.27	0.34	0.52	0.47	0.33	0.33	0.11	0.55
Emanuel	0.84	0.91	1.25	0.96	1.03	0.95	1.27	0.70	0.69	0.77	0.86	0.59	0.73	0.51	0.65	0.53
Brantley	0.62	0.16	0.76	0.35	1.11	0.80	0.56	0.73	0.44	0.74	0.37	0.40	0.46	0.50	0.18	0.53
Clay	0.00	1.18	0.00	0.00	0.00	1.27	0.00	0.68	2.14	1.10	0.00	0.56	0.56	1.10	0.00	0.53
Lee	0.49	0.28	0.64	0.58	0.78	0.69	1.02	0.42	0.98	0.77	0.55	0.58	0.40	0.94	0.68	0.52
Whitfield	0.40	0.32	0.23	0.25	0.38	0.22	0.36	0.20	0.34	0.61	0.48	0.54	0.45	0.54	0.43	0.52
Wheeler	1.37	1.22	0.85	0.89	0.61	0.38	0.69	1.92	0.69	0.70	0.61	2.43	1.43	0.91	0.53	0.51
Washington	0.78	0.57	1.19	1.13	1.05	0.90	0.96	1.21	1.18	0.58	0.77	0.29	0.97	0.57	0.63	0.50
Gordon	0.46	0.29	0.44	0.56	0.21	0.52	0.45	0.49	0.40	0.49	0.49	0.55	0.47	0.61	0.49	0.50
White	0.34	0.47	0.37	0.18	0.37	0.21	0.46	0.54	0.35	0.35	0.51	0.28	0.33	0.53	0.31	0.49
Glynn	0.48	0.44	0.34	0.33	0.64	0.41	0.54	0.63	0.46	0.64	0.70	0.74	0.74	0.55	0.62	0.48
McIntosh	0.39	0.21	0.65	0.29	0.58	0.63	0.40	1.08	0.70	0.89	1.27	0.79	0.88	0.09	0.98	0.48
Lincoln	1.10	1.87	1.08	0.92	0.98	0.54	0.44	1.65	0.44	0.90	0.82	1.11	1.28	0.87	1.18	0.47
Butts	0.46	0.41	0.68	0.71	0.78	0.62	0.49	0.94	0.57	0.64	0.67	0.52	0.67	0.65	0.94	0.47
Stephens	0.42	0.56	0.59	0.48	0.50	0.35	0.51	0.27	0.46	0.66	0.24	0.56	0.31	0.20	0.51	0.47
Polk	0.61	0.52	0.39	0.50	0.69	0.60	0.40	0.47	0.45	0.35	0.41	0.57	0.86	0.72	0.64	0.46
Pike	0.75	0.56	0.40	0.26	0.32	0.63	0.47	0.68	0.39	0.48	0.33	0.48	0.35	0.44	0.32	0.45
Banks	0.63	0.45	0.32	0.44	0.40	0.34	0.40	0.40	0.45	0.25	0.48	0.57	0.69	0.60	0.35	0.45
Bulloch	0.39	0.70	0.62	0.59	0.89	0.61	0.63	0.76	0.71	0.52	0.67	0.76	0.57	0.51	0.71	0.44
Tattnall	0.68	0.39	0.53	0.54	0.91	0.65	0.30	0.64	0.83	0.51	0.42	0.21	0.61	0.23	0.45	0.43
Carroll	0.42	0.34	0.54	0.57	0.37	0.32	0.51	0.31	0.47	0.55	0.33	0.43	0.41	0.44	0.50	0.43
Wayne	0.59	0.53	0.55	0.65	0.67	0.57	0.63	0.82	0.45	0.29	0.46	0.43	0.44	0.55	0.45	0.41
Putnam	1.05	0.70	0.46	0.80	0.24	0.40	0.60	0.31	0.33	0.51	0.39	0.48	0.60	0.66	0.60	0.41
Gilmer	0.55	0.83	0.55	0.66	0.69	0.44	0.44	0.50	0.24	0.37	0.45	0.29	0.40	0.42	0.48	0.41
Cherokee	0.24	0.41	0.41	0.36	0.43	0.37	0.50	0.47	0.37	0.46	0.51	0.53	0.52	0.41	0.44	0.39
Echols	0.46	0.35	0.32	1.40	0.51	1.12	0.96	1.44	1.11	0.55	0.64	0.81	0.82	0.59	0.68	0.37
Haralson	0.18	0.32	0.55	0.44	0.34	0.23	0.28	0.31	0.42	0.68	0.22	0.24	0.38	0.36	0.18	0.37
Oconee	0.30	0.18	0.31	0.36	0.18	0.57	0.22	0.33	0.60	0.41	0.58	0.49	0.72	0.52	0.84	0.35
Pickens	0.22	0.19	0.45	0.51	0.25	0.59	0.49	0.44	0.35	0.37	0.49	0.46	0.19	0.48	0.52	0.35
Evans	0.89	0.23	0.88	0.62	0.31	0.81	1.09	0.49	0.73	0.80	0.92	0.60	1.07	0.39	0.53	0.34
Lanier	0.73	1.22	1.07	1.00	1.50	1.05	0.88	0.76	1.20	0.68	0.68	1.30	1.55	0.56	0.66	0.34
Jeff	0.79	0.93	0.69	0.88	0.97	0.78	0.93	0.77	0.86	0.69	0.65	0.75	0.52	0.39	0.36	0.33
Pierce	0.43	0.62	0.72	0.62	0.59	0.71	0.55	0.52	0.69	0.57	0.49	0.58	0.73	0.44	0.51	0.32
Fayette	0.32	0.34	0.42	0.46	0.45	0.45	0.53	0.43	0.42	0.49	0.38	0.32	0.42	0.32	0.37	0.32
Irwin	1.01	2.30	1.36	1.54	1.11	1.19	1.00	0.97	1.17	1.48	1.13	0.80	1.48	0.54	0.95	0.32
Chattahoochee	0.47	0.87	0.54	0.49	1.15	0.00	0.24	0.00	1.01	0.80	0.25	0.22	0.67	1.99	1.09	0.32
Forsyth	0.47	0.45	0.34	0.43	0.47	0.38	0.41	0.41	0.37	0.41	0.30	0.35	0.44	0.46	0.40	0.31
Glascock	1.17	1.21	1.66	0.44	0.23	0.25	0.26	1.47	0.85	0.89	0.52	0.00	0.27	1.16	0.00	0.31
Effingham	0.20	0.35	0.39	0.32	0.39	0.40	0.32	0.21	0.21	0.23	0.33	0.50	0.32	0.64	0.34	0.31
Dawson	0.71	0.07	0.35	0.35	0.81	0.33	0.43	0.50	0.57	0.20	0.59	0.68	0.68	0.59	0.27	0.30
Bryan	0.17	0.59	0.48	0.20	0.36	0.50	0.27	0.40	0.39	0.54	0.31	0.31	0.66	0.34	0.29	0.28
Stewart	1.88	1.70	2.17	1.80	0.89	1.65	1.59	1.56	1.78	1.95	0.74	1.99	1.06	0.44	1.02	0.26
Murray	0.39	0.33	0.36	0.18	0.15	0.42	0.27	0.31	0.48	0.89	0.36	0.13	0.41	0.30	0.25	0.23
Union	0.81	0.85	0.41	0.51	0.57	0.35	0.68	0.68	0.53	0.23	0.31	0.23	0.16	0.31	0.11	0.20
Fannin	0.51	0.54	0.25	0.42	0.62	0.52	0.90	0.92	0.69	0.57	0.58	0.97	0.61	0.46	0.21	0.20
Marion	0.75	0.67	1.03	0.70	0.88	0.86	1.15	1.10	1.22	0.40	0.70	0.66	1.35	0.61	0.61	0.18
Montgomery	0.52	1.24	0.99	1.14	1.03	0.65	1.09	0.87	0.63	1.07	0.59	0.77	1.48	0.85	0.26	0.14
Rabun	0.34	0.68	0.56	0.44	0.43	0.47	0.61	0.74	0.59	0.11	0.23	0.59	0.17	0.46	0.25	0.12
Catoosa	0.15	0.39	0.75	0.51	0.69	0.28	0.38	0.52	0.39	0.33	0.33	0.58	0.25	0.25	0.47	0.12
Towns	0.30	0.46	0.87	0.63	0.43	0.41	0.26	0.46	0.09	0.37	0.47	0.36	0.09	0.21	0.11	0.09
Baker	0.00	0.60	0.89	1.00	0.99	2.73	1.15	0.42	0.36	0.75	3.25	1.01	0.77	0.00	1.04	0.00

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Dade	0.00	0.22	0.00	0.45	1.09	0.24	0.30	0.51	0.58	0.38	0.46	0.00	0.00	0.00	0.00	0.00
Quitman	0.00	0.74	0.00	0.00	0.00	0.93	0.00	0.90	0.00	0.00	0.00	0.00	0.00	1.19	3.30	0.00
Taliaferro	2.09	0.96	0.84	0.86	1.47	0.79	2.27	2.41	1.64	1.22	0.94	3.52	0.83	2.21	0.44	0.00

Supplemental Table 5. Hypertension hospitalization rate trajectories

Classification	Public Health District	County	Hypertension Hospitalizations (% of all hospitalizations) Rate in 2000	Rate in 2015	Annual change 2000-2015
Vanguard	1-1 Northwest (Rome)	Catoosa	0.31	0.12	-0.00
		Dade	0.21	0.00	-0.01
		Gordon	0.47	0.50	0.00
		Haralson	0.38	0.37	-0.00
		Polk	0.49	0.46	0.00
	1-2 North Georgia (Dalton)	Cherokee	0.40	0.39	0.00
		Fannin	0.41	0.20	-0.00
		Gilmer	0.49	0.41	-0.00
		Murray	0.31	0.23	-0.00
		Pickens	0.37	0.35	0.00
	10-0 Northeast (Athens)	Jackson	0.56	0.57	-0.00
	2-0 North (Gainesville)	Banks	0.45	0.45	0.00
		Dawson	0.39	0.30	0.00
		Forsyth	0.38	0.31	-0.00
		Franklin	0.55	0.58	-0.00
		Lumpkin	0.53	0.55	-0.00
		Rabun	0.34	0.12	-0.01
		Stephens	0.48	0.47	-0.00
		Towns	0.31	0.09	-0.01
		Union	0.42	0.20	-0.01
		White	0.43	0.49	0.00
	4-0 La Grange	Butts	0.54	0.47	0.00
		Carroll	0.44	0.43	-0.00
		Fayette	0.39	0.32	-0.00
		Heard	0.56	0.68	0.00
		Pike	0.48	0.45	-0.00
		Upson	0.57	0.58	0.00
	5-1 South Central (Dublin)	Montgomery	0.55	0.14	-0.01
	5-2 North Central (Macon)	Putnam	0.51	0.41	-0.00
	7-0 West Central (Columbus)	Marion	0.53	0.18	-0.00
	8-1 South (Valdosta)	Echols	0.57	0.37	0.00
	8-2 Southwest (Albany)	Baker	0.49	0.00	-0.00
		Lee	0.57	0.52	0.00
	9-1 Coastal (Savannah)	Bryan	0.35	0.28	-0.00
		Camden	0.57	0.56	0.00
		Effingham	0.33	0.31	0.00
	9-2 Southeast (Waycross)	Brantley	0.57	0.53	-0.00
		Bulloch	0.54	0.44	-0.00
		Evans	0.52	0.34	-0.00
		Pierce	0.47	0.32	-0.00
		Tattnall	0.52	0.43	-0.00
		Wayne	0.51	0.41	-0.00
Optimal but declining	1-2 North Georgia (Dalton)	Whitfield	0.43	0.52	0.00
	10-0 Northeast (Athens)	Oconee	0.35	0.35	0.01
	2-0 North (Gainesville)	Habersham	0.49	0.60	0.00
		Hall	0.48	0.60	0.01
	5-2 North Central (Macon)	Jones	0.57	0.65	0.01

Classification	Public Health District	County	Hypertension Hospitalizations (% of all hospitalizations) Rate in 2000	Rate in 2015	Annual change 2000-2015
	7-0 West Central (Columbus)	Chattahoochee	0.44	0.32	0.01
		Clay	0.51	0.53	0.00
		Quitman	0.13	0.00	0.01
	9-1 Coastal (Savannah)	Glynn	0.49	0.48	0.00
		McIntosh	0.51	0.48	0.01
Typical	1-1 Northwest (Rome)	Walker	0.59	0.69	-0.00
	10-0 Northeast (Athens)	Oglethorpe	0.61	0.66	0.00
	5-1 South Central (Dublin)	Wheeler	0.74	0.51	0.00
	5-2 North Central (Macon)	Jasper	0.78	0.69	-0.01
		Monroe	0.74	0.86	0.00
		Washington	0.71	0.50	-0.01
	6-0 East Central (Augusta)	Columbia	0.58	0.64	0.00
		Emanuel	0.74	0.53	-0.01
		Glascock	0.60	0.31	-0.01
		Lincoln	0.76	0.47	-0.00
		Taliaferro	0.73	0.00	-0.00
	7-0 West Central (Columbus)	Harris	0.60	0.61	0.00
		Talbot	0.83	0.60	-0.01
	8-1 South (Valdosta)	Berrien	0.66	0.58	0.00
		Brooks	0.77	0.58	-0.00
		Irwin	0.83	0.32	-0.01
		Lanier	0.69	0.34	-0.01
	9-1 Coastal (Savannah)	Long	0.61	0.70	-0.00
	9-2 Southeast (Waycross)	Bacon	0.74	0.66	-0.00
		Candler	0.69	0.55	-0.00
		Toombs	0.83	0.94	-0.00
		Ware	0.69	0.56	0.00
Vulnerable	1-1 Northwest (Rome)	Bartow	0.76	1.04	0.01
		Chattooga	0.58	0.63	0.01
		Floyd	0.63	0.61	0.01
		Paulding	0.60	0.71	0.01
	10-0 Northeast (Athens)	Barrow	0.66	0.78	0.01
		Greene	0.80	0.86	0.00
		Madison	0.65	0.89	0.01
		Morgan	0.77	1.04	0.01
		Walton	0.58	0.66	0.01
	2-0 North (Gainesville)	Hart	0.68	0.79	0.01
	3-1 Cobb-Douglas	Cobb	0.70	0.84	0.01
	3-4 East Metro (Lawrenceville)	Gwinnett	0.65	0.86	0.01
		Newton	0.75	0.88	0.01
		Rockdale	0.75	0.98	0.02
	4-0 La Grange	Coweta	0.58	0.66	0.01
		Henry	0.63	0.79	0.01
		Lamar	0.60	0.66	0.01
	5-1 South Central (Dublin)	Bleckley	0.79	0.89	0.01
		Dodge	0.67	0.64	0.01
		Johnson	0.70	0.76	0.01
		Wilcox	0.79	1.04	0.01
	5-2 North Central (Macon)	Crawford	0.82	1.05	0.00

Classification	Public Health District	County	Hypertension Hospitalizations (% of all hospitalizations) Rate in 2000	Rate in 2015	Annual change 2000-2015
		Twiggs	0.83	0.95	0.02
	7-0 West Central (Columbus)	Muscogee	0.74	0.78	0.01
		Schley	0.78	0.91	0.01
		Webster	0.80	0.57	0.02
	8-2 Southwest (Albany)	Colquitt	0.74	0.81	0.01
		Grady	0.63	0.74	0.01
		Thomas	0.77	0.88	0.01
	9-1 Coastal (Savannah)	Chatham	0.61	0.71	0.01
		Liberty	0.61	0.73	0.01
Resilient	10-0 Northeast (Athens)	Elbert	0.93	0.93	-0.00
	4-0 La Grange	Meriwether	0.90	0.64	-0.01
		Troup	0.94	0.90	-0.00
	5-1 South Central (Dublin)	Telfair	0.85	0.79	-0.00
	5-2 North Central (Macon)	Baldwin	0.86	0.92	0.00
	6-0 East Central (Augusta)	Jefferson	0.93	0.76	-0.00
		Jenkins	1.11	0.97	-0.00
		McDuffie	1.06	1.03	-0.00
		Warren	1.32	1.15	-0.02
		Wilkes	0.93	0.71	0.00
	7-0 West Central (Columbus)	Stewart	0.97	0.26	-0.02
		Sumter	1.22	1.29	-0.00
	8-2 Southwest (Albany)	Calhoun	1.14	0.93	-0.01
		Early	0.92	0.90	-0.00
		Miller	0.86	1.13	0.00
		Worth	0.88	1.00	0.00
	9-2 Southeast (Waycross)	Appling	0.83	0.72	0.00
		Charlton	1.13	1.23	-0.00
		Clinch	0.87	0.70	-0.01
		Coffee	0.92	0.80	0.00
Persistently Suboptimal	10-0 Northeast (Athens)	Clarke	0.87	1.18	0.02
	3-1 Cobb-Douglas	Douglas	0.84	1.05	0.01
	3-2 Fulton	Fulton	1.00	1.12	0.01
	3-3 Clayton (Morrow)	Clayton	1.04	1.33	0.01
	3-5 DeKalb	DeKalb	1.06	1.24	0.01
	4-0 La Grange	Spalding	0.87	1.07	0.01
	5-1 South Central (Dublin)	Laurens	1.10	1.43	0.02
		Pulaski	0.96	1.37	0.03
		Treutlen	1.11	1.41	0.02
	5-2 North Central (Macon)	Bibb	1.06	1.40	0.02
		Hancock	1.26	1.45	0.01
		Houston	0.96	1.32	0.02
		Peach	1.12	1.48	0.01
		Wilkinson	1.00	1.58	0.03
	6-0 East Central (Augusta)	Burke	0.89	1.20	0.01
		Richmond	1.10	1.26	0.01
		Screven	0.90	1.24	0.01
	7-0 West Central (Columbus)	Crisp	1.31	1.57	0.01
		Dooly	1.11	1.53	0.01
		Macon	1.19	1.31	0.01

Classification	Public Health District	County	Hypertension Hospitalizations (% of all hospitalizations) Rate in 2000	Rate in 2015	Annual change 2000-2015
		Randolph	1.15	1.16	0.00
		Taylor	1.08	1.65	0.02
	8-1 South (Valdosta)	Cook	1.05	1.04	0.00
		Lowndes	1.19	1.40	0.01
		Tift	1.24	1.36	0.01
		Turner	1.08	1.22	0.01
	8-2 Southwest (Albany)	Decatur	0.84	0.91	0.01
		Dougherty	1.15	1.41	0.02
		Mitchell	0.85	0.99	0.01
		Seminole	0.93	1.07	0.01
		Terrell	1.26	1.73	0.01
	9-2 Southeast (Waycross)	Atkinson	0.85	0.77	0.01

Supplemental Table 6. Correlations of Georgia county characteristics with hypertension hospitalizations in 2015

	Variable	v1	v2	v3	v4	v5	v6	v7	v8	v9	v10	v11	v12	v13	v14	v15	v16	v17	v18	v19	v20	v21	v22	v23	v24
v1	Hypertension hospitalizations	1.00																							
v2	Total population (1000s)	0.16	1.00																						
v3	% Women	0.15	0.14	1.00																					
v4	Median age	-0.23	-0.29	0.13	1.00																				
v5	% 65+ y	-0.19	-0.40	0.18	0.88	1.00																			
v6	% Black/African American	0.67	0.13	-0.02	-0.20	-0.16	1.00																		
v7	% Hispanic	-0.10	0.30	-0.20	-0.37	-0.36	-0.14	1.00																	
v8	% Asian	0.07	0.77	0.02	-0.37	-0.49	0.04	0.34	1.00																
v9	% Foreign born	-0.04	0.60	-0.17	-0.31	-0.39	-0.01	0.84	0.67	1.00															
v10	Median income	-0.27	0.42	0.15	-0.08	-0.34	-0.38	0.11	0.57	0.32	1.00														
v11	Income inequality	0.32	-0.08	0.15	-0.04	0.18	0.46	-0.21	-0.20	-0.21	-0.56	1.00													
v12	% In poverty	0.41	-0.28	-0.26	-0.10	0.12	0.58	-0.01	-0.33	-0.11	-0.85	0.67	1.00												
v13	% Unemployed	0.34	-0.25	-0.18	0.03	0.18	0.58	-0.15	-0.33	-0.24	-0.66	0.43	0.65	1.00											
v14	% Graduate HS in 4y	-0.12	0.40	0.23	-0.15	-0.24	-0.18	-0.17	0.48	0.05	0.70	-0.32	-0.66	-0.41	1.00										
v15	Food Index	-0.55	0.01	0.09	0.34	0.17	-0.81	0.04	0.09	0.06	0.59	-0.52	-0.72	-0.69	0.28	1.00									
v16	Primary care physician ratio	0.02	-0.19	-0.28	0.16	0.03	-0.02	-0.13	-0.20	-0.18	-0.17	-0.11	0.12	0.12	-0.28	-0.01	1.00								
v17	Diabetes screening	-0.15	0.10	0.01	0.01	-0.03	-0.34	0.05	0.15	0.10	0.31	-0.27	-0.32	-0.34	0.23	0.32	-0.02	1.00							
v18	% Uninsured	0.01	-0.13	0.01	0.19	0.36	-0.03	0.35	-0.28	0.13	-0.61	0.27	0.44	0.23	-0.61	-0.15	0.14	-0.11	1.00						
v19	Exercise opportunities	-0.09	0.38	0.42	-0.16	-0.13	-0.26	0.20	0.38	0.28	0.43	-0.18	-0.47	-0.38	0.55	0.22	-0.40	0.26	-0.13	1.00					
v20	% Housing problems	0.35	0.22	0.19	-0.18	-0.01	0.45	0.12	0.09	0.16	-0.29	0.40	0.36	0.24	-0.15	-0.50	-0.13	-0.05	0.30	0.13	1.00				
v21	Segregation score	0.10	0.35	0.25	-0.04	0.04	0.09	0.03	0.20	0.14	0.08	0.09	-0.09	-0.03	0.20	-0.09	-0.26	0.01	0.03	0.35	0.27	1.00			
v22	% Obese	0.31	-0.30	-0.01	-0.18	-0.12	0.42	0.00	-0.20	-0.11	-0.37	0.16	0.39	0.38	-0.40	-0.45	0.15	-0.13	0.18	-0.24	0.09	-0.11	1.00		
v23	% Physically inactive	0.12	-0.57	-0.08	0.18	0.30	0.17	-0.16	-0.59	-0.39	-0.68	0.24	0.52	0.45	-0.63	-0.27	0.20	-0.19	0.42	-0.43	-0.02	-0.10	0.46	1.00	
v24	% Smoking	0.42	-0.27	-0.25	-0.26	-0.06	0.58	0.07	-0.34	-0.10	-0.80	0.59	0.88	0.64	-0.68	-0.73	0.15	-0.32	0.44	-0.47	0.36	-0.17	0.51	0.54	1.00