Exploring **Primary Care Services and Resources** in Greater Cincinnati

A Chart Book of the Issues

A Project of

The Health Foundation of Greater Cincinnati

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Introduction

The health of a population in a region varies by geography. This *Chart Book of the Issues*, produced by The Health Foundation of Greater Cincinnati, defines the health of the Foundation's service area. This is also the first step in an initiative to achieve 100% timely and effective access to primary care in the 20-county region that spans southeastern Indiana, northern Kentucky, and southwestern Ohio. These counties are remarkably diverse—from the urban cities of Cincinnati and Covington to suburban counties like Butler, Campbell, and Dearborn to the lightly populated Adams, Bracken, and Switzerland Counties.

The availability of health resources—physicians, hospitals, and community health centers—affect health outcomes, as do characteristics of the population—insurance coverage, income, and age. This *Chart Book* and the accompanying overview give a comprehensive picture of these various factors and the resources available for solutions. Using these data, the leaders and managers of resources in the region have the opportunity to decide how these resources will be deployed toward the goal of 100% access.

This *Chart Book* contains data derived from a variety of sources, including the Area Resource File (ARF) produced by National Center for Health Workforce Analysis (NCHWA), Bureau of Health Professions (BHPr) within the Health Resources and Services Administration (HRSA). The ARF contains data on over 6,000 variables on physicians, hospitals, and population data by county. Another resource, the Center for Evaluative Clinical Sciences at Dartmouth University, provides similar data by ZIP codes and Primary Care Service Areas (PCSAs). PCSAs are sub-county regions, formed by combining ZIP code areas to define primary care "market areas," or regions that follow actual referral patterns of Medicare, Medicaid and privately insured consumers.

Other sources of data include documents produced by state governments of Indiana, Kentucky, and Ohio as well as the Kaiser Family Foundation and the U.S. Census Bureau. Tristate hospitalization data were provided by the Greater Cincinnati Health Council. More detailed information on community health centers and some primary care physician practices in the region come from a specially prepared survey and uniform data systems (UDS) maintained by the U.S. Bureau of Primary Health Care.

Primarily, the displays in this *Chart Book* are organized around the geography of healthcare needs and resources across the region. Healthcare needs derive from risk factors associated with poverty, lack of insurance coverage, culture, and geographic isolation. Health resources are distributed according to a complex mix of economic incentives as well as a desire to make access uniform. Tracking the various geographic layers can be daunting since there are so many dimensions involved. An attempt to bring the various issues together on one page is found in the scorecard (see Table 1 on page 39). While those closest to specific neighborhoods or regions might know their issues best, the region as a whole can choose to be neighbors, listen to local stories, and then respond. Perhaps a twist on the political metaphor is "listen locally, and act regionally."

Profile of the 20-County Region

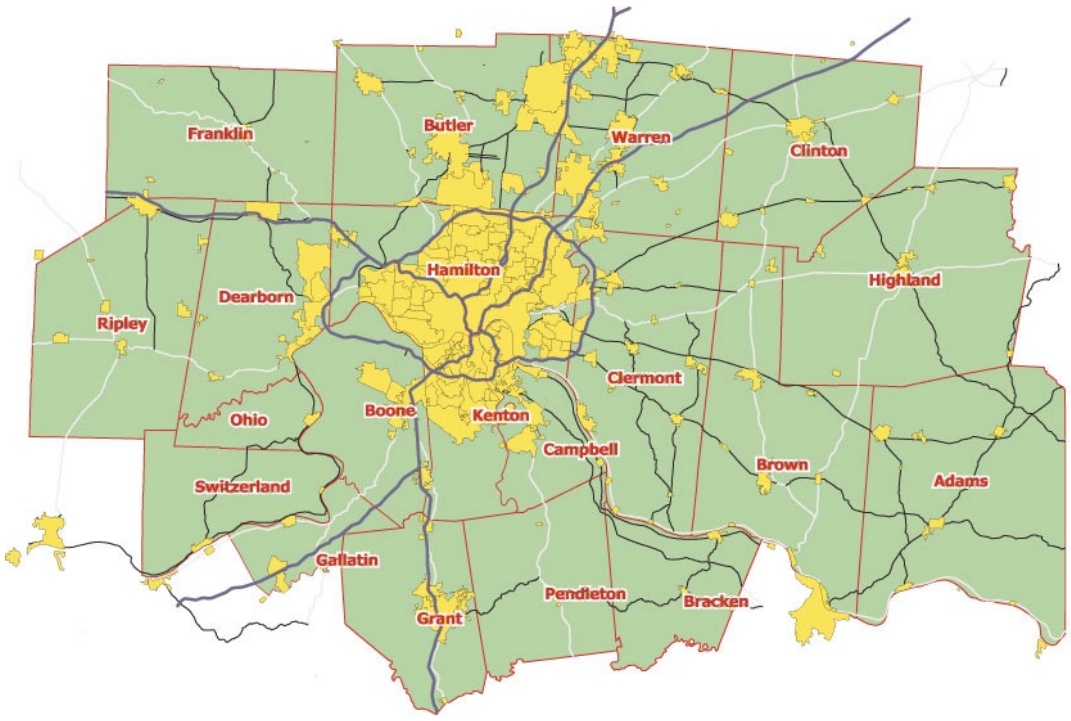
Map 1 shows the 20-county region that surrounds the Cincinnati/Covington Metropolitan Statistical Area (MSA). The region is a mix of urban, suburban, and rural areas.

For orientation, the map shows small and large communities and connecting roads and highways.

The distances across the region are:

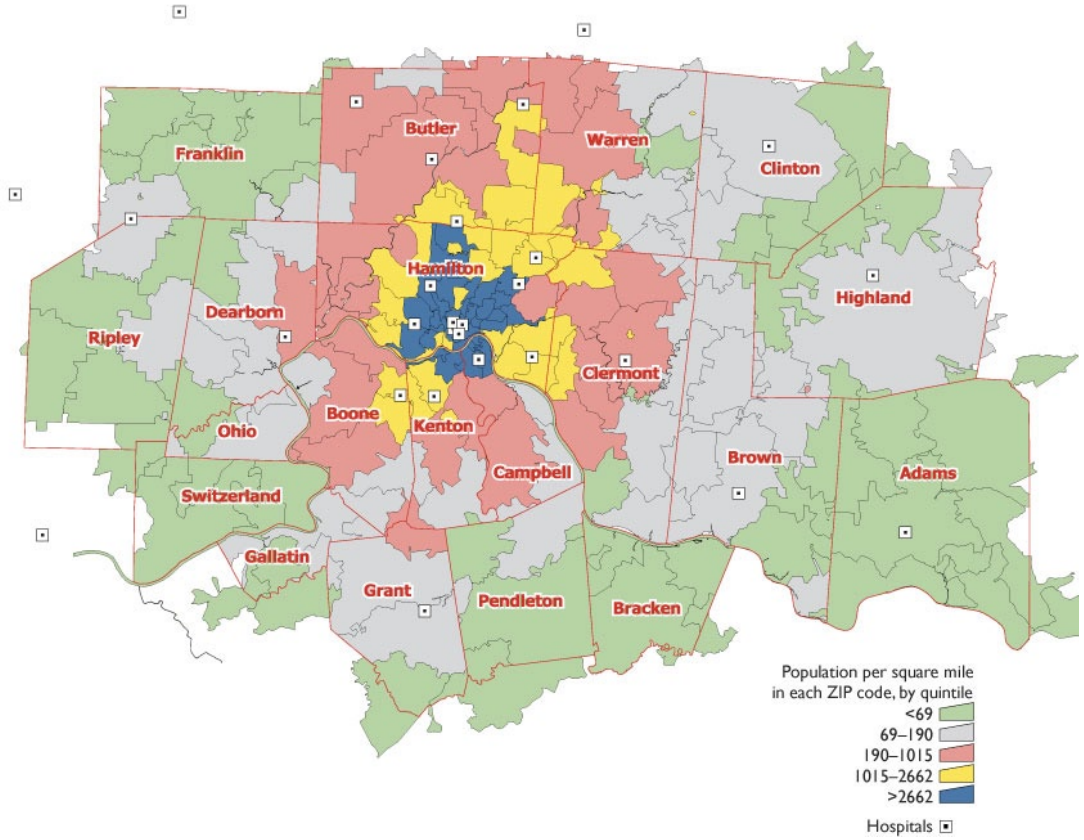
- 128 miles from the northwest corner of Franklin County to the southeast corner of Adams County.
- 62 miles from where Cincinnati and Covington join on the Ohio River to the east boundary and 48 miles to the west boundary.
- 35-40 miles from where Cincinnati and Covington join to the north and south boundaries.

Map 1: 20-county region of Greater Cincinnati



Hospital location, relative to where people live, is an important predictor of current and future health status. Many developing technologies require highly organized, multidisciplinary teams and substantial capital outlay almost always provided by hospitals.

Map 2: Population density and hospital locations



The relationship between hospital locations and technology is a fluid relationship that has changed markedly over the past several decades. Immediately after World War II, hospitals were mostly custodians of patients as they recuperated. As diagnostic and curative technology became centralized in hospitals, hospitals became a "doctor's workshop."

Recently some technologies (e.g., imaging, dialysis, surgery centers) have become more dispersed, giving physicians a chance to have them in their own offices or facilities. Still, physicians who use these technologies tend to cluster close to hospitals, likely keeping hospitals at the center of advanced health care for some time (Goldsmith, 2004).

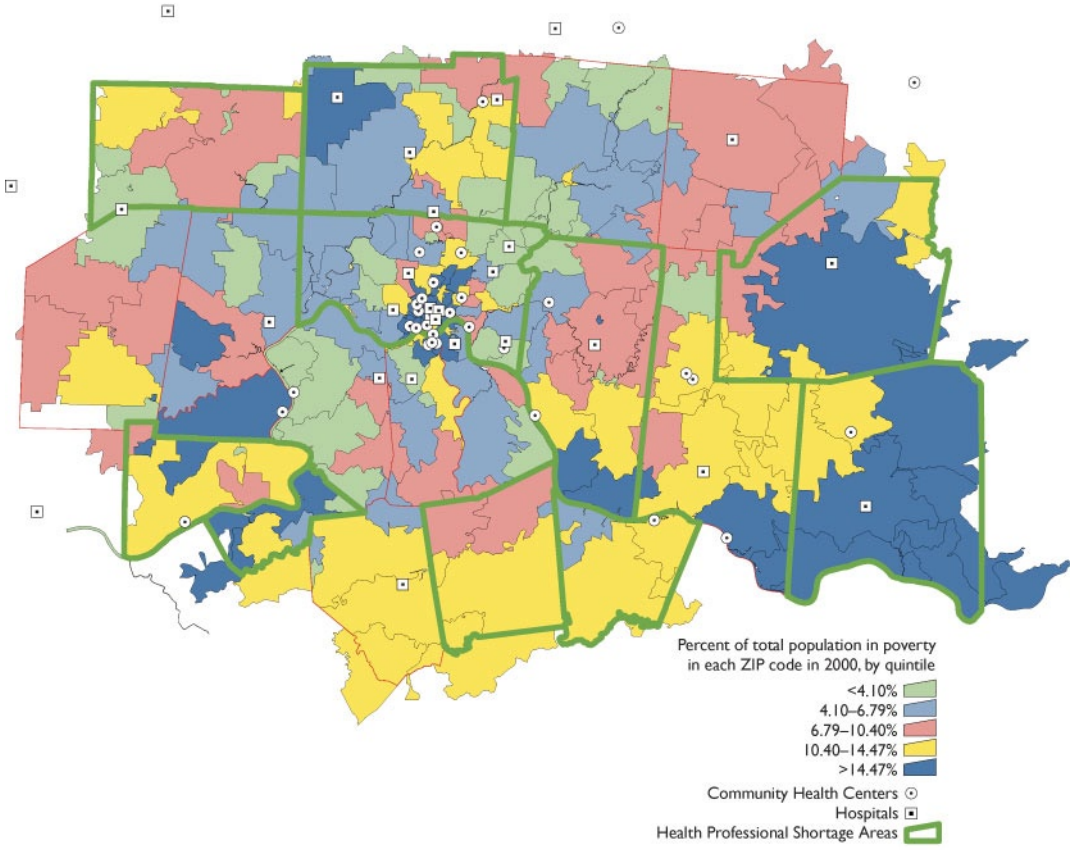
Poverty in the Region

Map 3 shows the distribution of people with incomes under the Federal Poverty Level (FPL) from the 2000 Census. In the blue areas, poverty exceeds 14% of the population. In 2000, the federal poverty level was about $14,000 for a family of three.

The counties bounded by green borders are designated as HPSAs. In these areas, the population to provider ratio is more than 3,500:1 (or about 29 physicians per 100,000 people) and 30% or more of the population have incomes below 200% of poverty.

The map also shows the locations of the over 40 community health centers in the region. The bulk of them are located in areas of high poverty in the central city areas. The suburban and rural health center locations are not generally located in the areas of highest poverty.

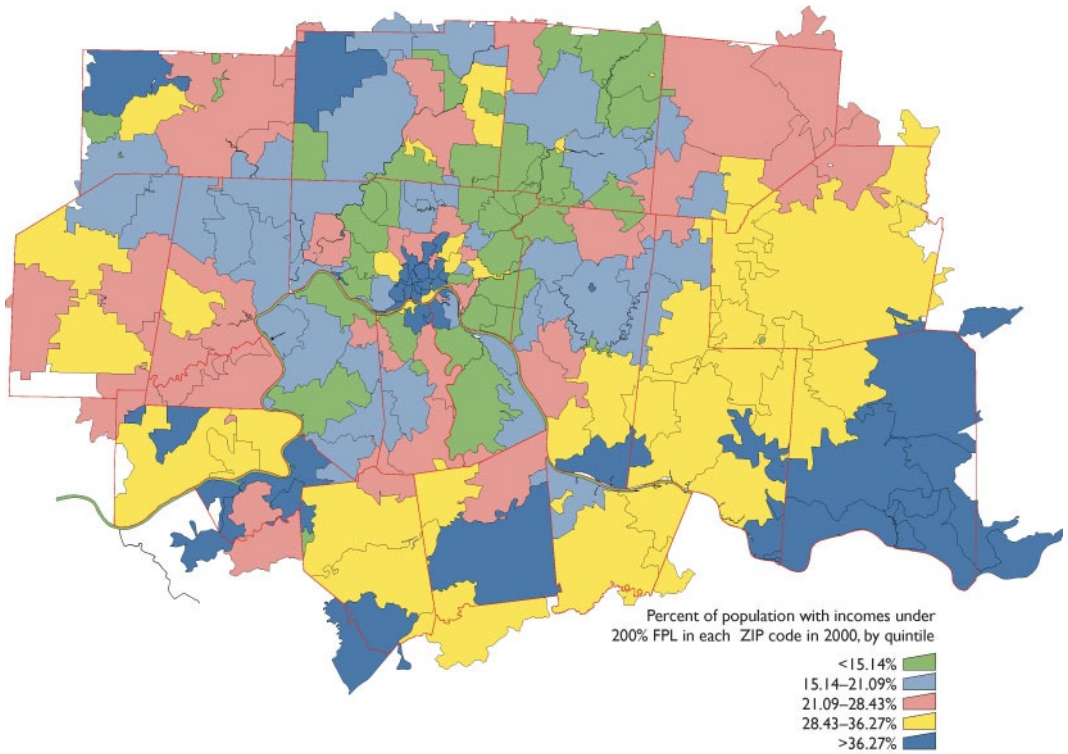
Map 3: Percent of population in poverty by ZIP code, 2000



Because many people earning incomes slightly higher than the FPL still face financial hardships, many program eligibility guidelines have a limit of 200% FPL.

Map 4 shows the percentage of the population with incomes under 200% FPL. Maps 3 and 4 show considerable overlap. In Map 4, a third of the people living in the dark blue areas and over a quarter of the people living in the yellow areas are at risk for lack of health coverage as well as other basic needs.

Map 4: Percent of people at 200% FPL by ZIP code, 2000



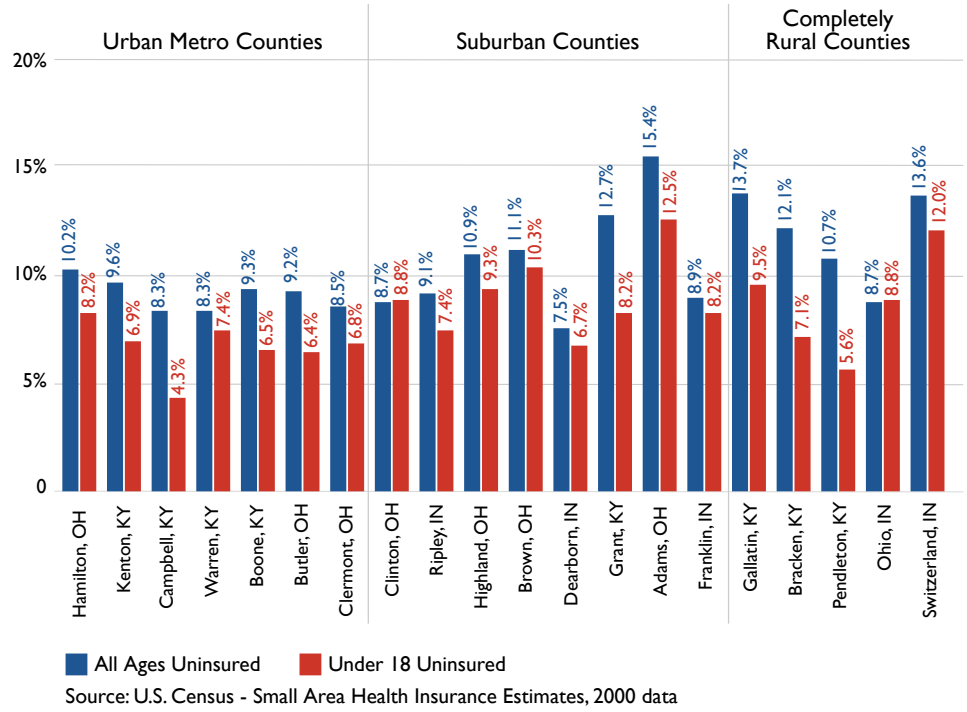
Health Insurance Coverage in the Region

The number of people with health insurance is decreasing overall. The percentage without insurance nationally is nearly 16%.

As research for this *Chart Book* drew to a close, all three states had completed or were in the midst of studies of their uninsured populations. Since these individual state reports use different geographic areas and different definitions, we used U.S. Census data here to provide consistent definitions of geography and uninsurance.

Generally, more rural counties have higher proportions of uninsured people (see Figure 1). These counties typically have few higher-income employers, which are the most likely source of insurance coverage.

Figure 1: Percentage of uninsured by age and county, 2000



Source: U.S. Census - Small Area Health Insurance Estimates, 2000 data

Health Status Indicators—Low Birthweight Deliveries and Infant Mortality

Figures 2–4 show the percentage of births of low birthweight per county as three-year rolling averages. Averages are used because natality data at the county level can be based on low numbers; thus, rates for a single year can be misleading. Low birthweight is defined as a baby whose weight is less than 2,500 grams (5 lbs., 8 oz.) at birth. Rates in Indiana rose from 1996-2000 and 1997-2001 due mainly to a "spike" in Dearborn, Ohio, and Ripley Counties in 2001. In Kentucky, Bracken and Pendleton Counties have the highest rates, and overall rates for the seven Kentucky counties rose due to increases in Bracken, Gallatin, and Grant counties. In Ohio, Hamilton County has the highest rates and shows an increase in low birthweight births while most other Ohio counties show a decrease.

Figure 2: Percentage of low birthweight births in Indiana, 1996–2001

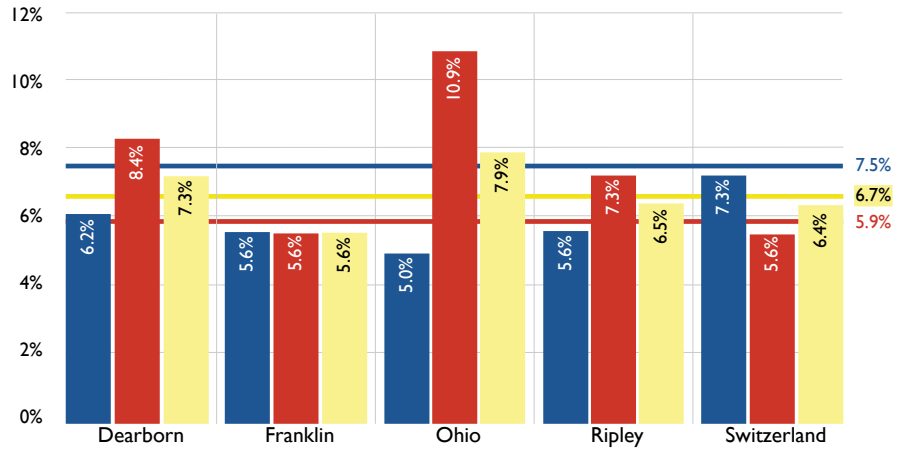


Figure 3: Percentage of low birthweight births in Kentucky, 1996–2001

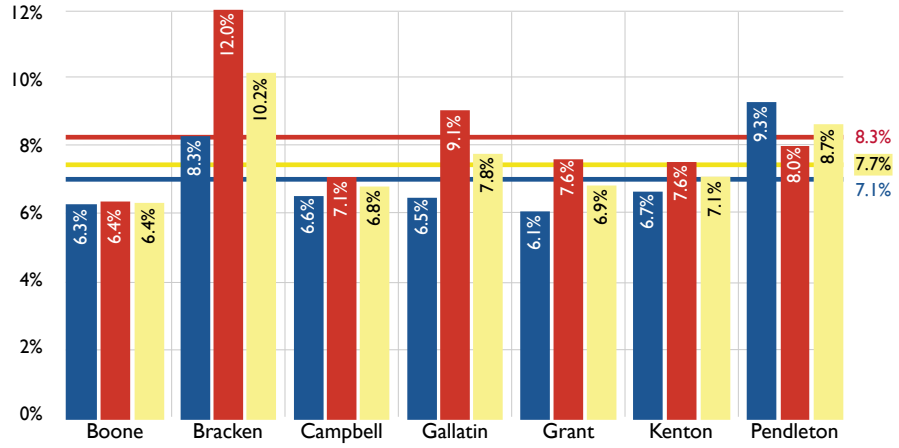
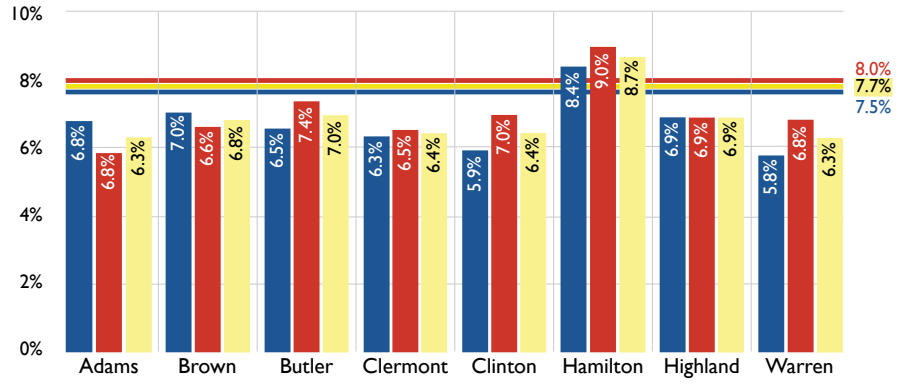


Figure 4: Percentage of low birthweight births in Ohio, 1996–2001



96-00: 3-Yr Total Low Birth Weight
Sub-Region Average

97-01: 3-Yr Total Low Birth Weight
Sub-Region Average

County Average
Sub-Region Average

Figures 5–7 show the region's 5-year infant mortality rates, defined as the number of deaths within the first 12 months of life per 1,000 live births. Many counties with elevated low birthweight percentages also have elevated infant mortality rates. Leading causes of infant death in the U.S. include birth defects, prematurity/low birthweight, sudden infant death syndrome (SIDS), maternal complications of pregnancy, and respiratory distress syndrome.

Figure 5: Infant mortality rates per 1,000 live births in Indiana, 1996–2001

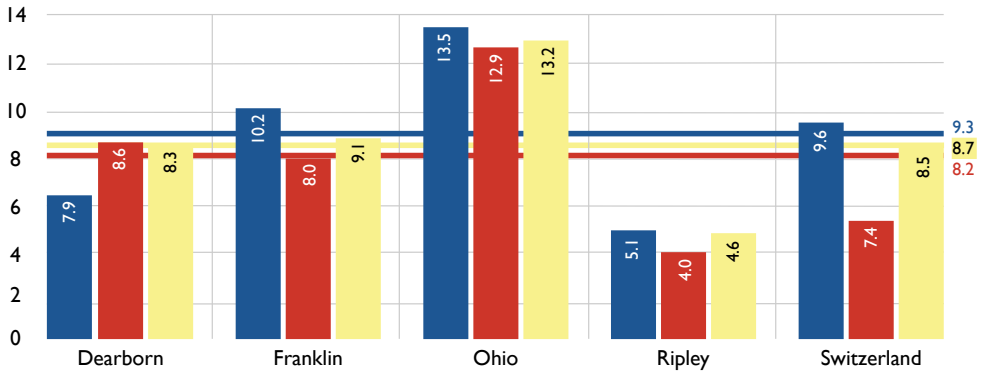


Figure 6: Infant mortality rates per 1,000 live births in Kentucky, 1996–2001

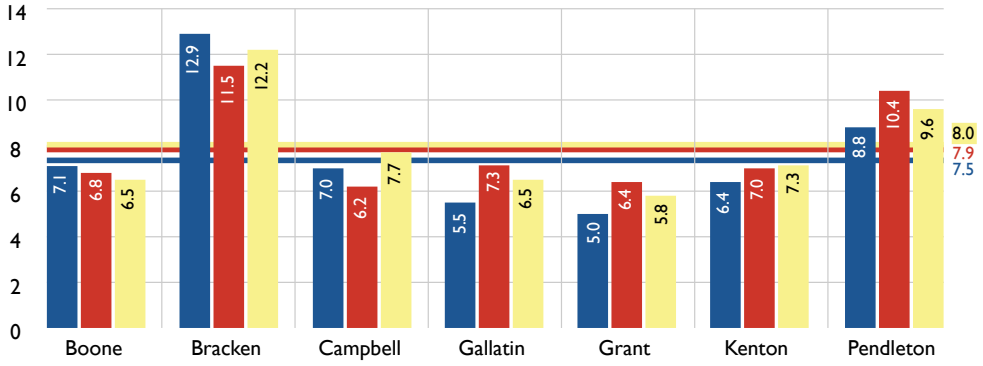


Figure 7: Infant mortality rates per 1,000 live births in Ohio, 1996–2001

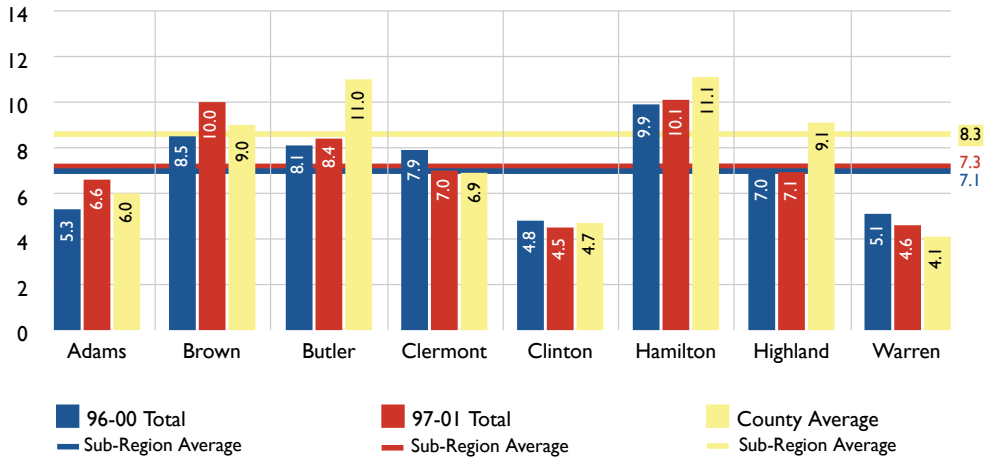
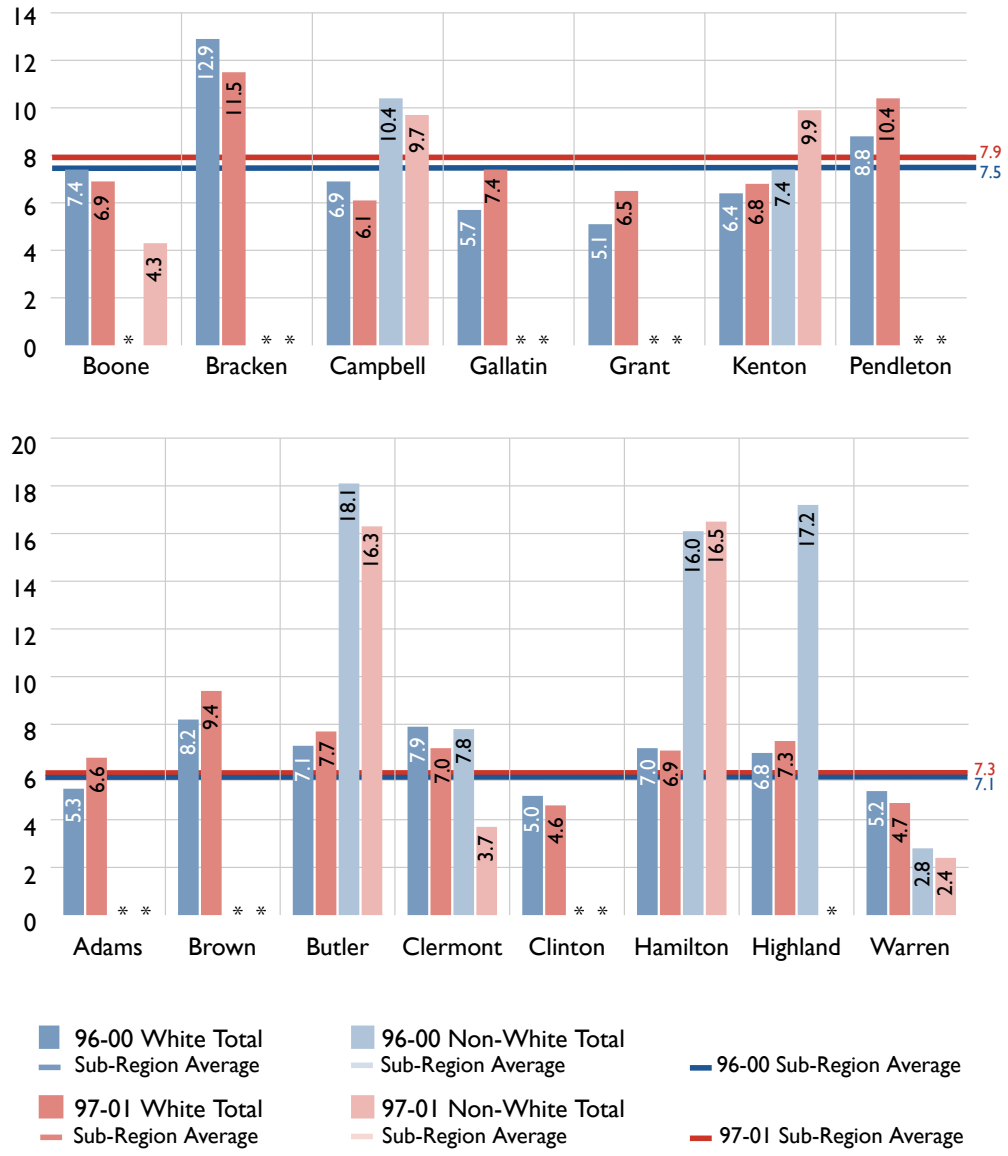


Figure 8: White and non-white infant mortality rates per 1,000 live births in Kentucky, 1996–2001

Figure 9: White and non-white infant mortality rates per 1,000 live births in Ohio, 1996–2001

Figures 8–9 show the infant mortality rates for white and non-white births in Kentucky and Ohio. The Indiana counties had too few non-white births in 1996–2001 to report meaningful mortality rates.



[1] The rates for Highland County are presented here as recorded in the Area Resource File. The reason for the sudden drop between 96–00 (17.2 deaths per 1,000 live births) and 97–01 (too few non-white births) in non-white infant mortality in Highland County is unknown at this time.

**Data for non-white births were suppressed due to small numbers of or no non-white births.*

Figure 10 shows the payers for patients at community health centers in the 20-county region. There are significant differences in the payer type of patients served in facilities.

The Indiana centers, for example, serve a much higher proportion of self-pay patients, whereas centers in other states have a higher proportion of Medicaid patients. This difference in insurance types profoundly affects overall budgets. Centers with less federal support or fewer insured patients need more non-patient revenue to make ends meet, since collections from self-pay patients equal only about 31% of charges (see Table 12 on page 12).

Figure 10: Payers for patients at community health centers

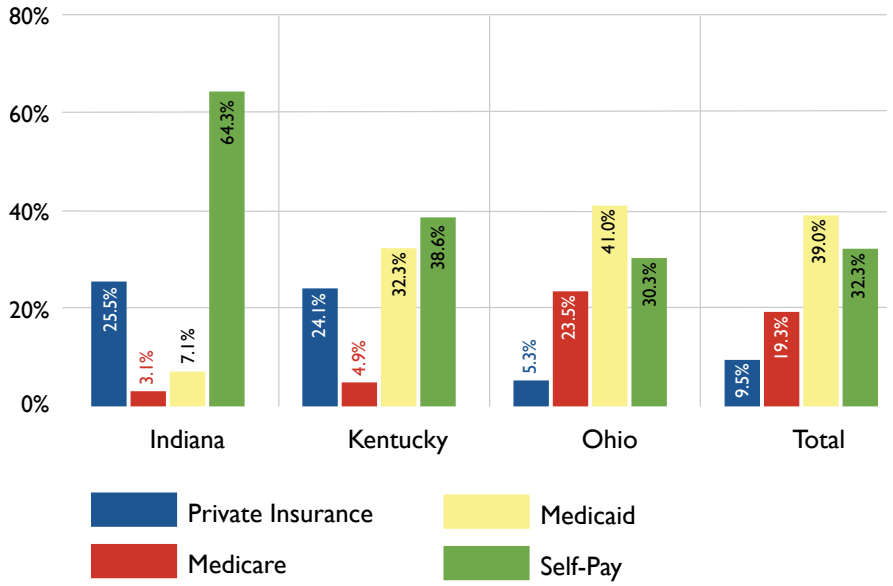


Figure 11 displays payment source information for centers with 330 grant support from the Bureau of Primary Health Care. Indiana has no health centers with this support in the Health Foundation's service area. There is a different payer mix for these health centers. Just over 43% of patients seen in these centers have no insurance coverage. This is a higher proportion than the uninsured population in the community because health centers with 330 grant support are commissioned to serve low-income populations who generally lack insurance.

Figure 11: Payers for patients at community health centers receiving 330 grant support

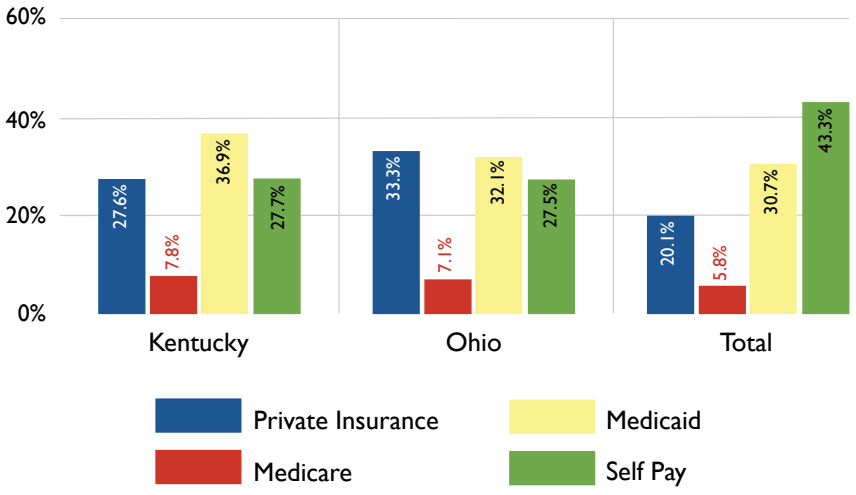
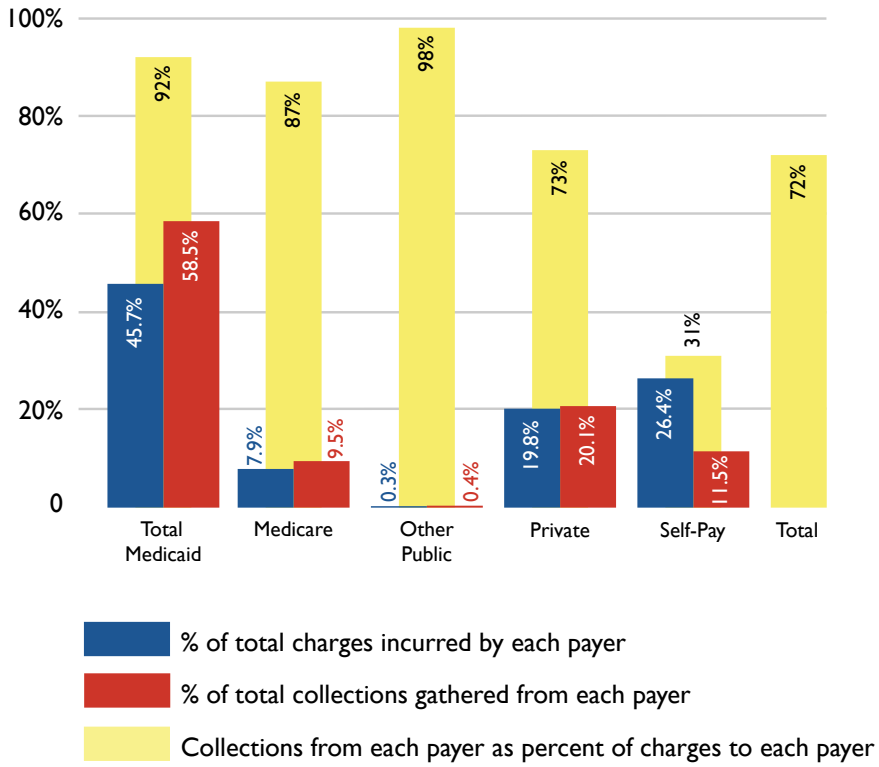


Figure 12: Charges and collections by payer of community health centers receiving 330 grant support

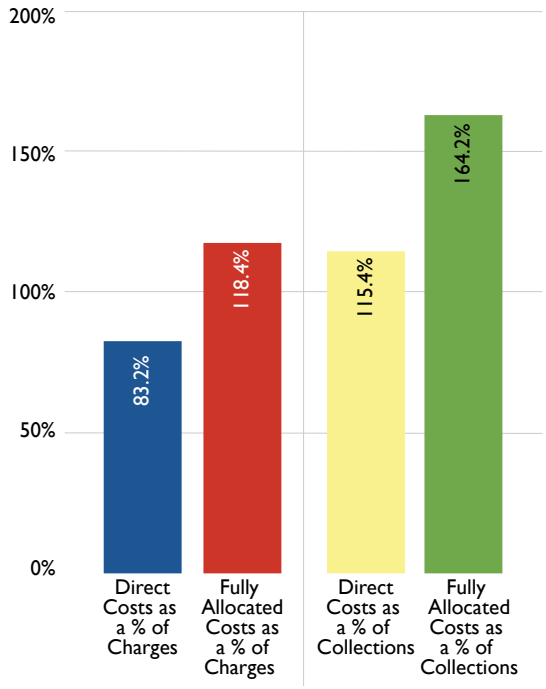
Figure 12 shows charges incurred by patients with different forms of insurance coverage who visit health centers with 330 grant funding and the revenue that these centers collected from payment sources. Charges are what is billed to the payer for services rendered. Collections are what the payer pays. The health centers generally receive a proportionate amount of collections from each payer except self-pay patients.



On average, the health centers with 330 grant funding in the Foundation's service area collect about 72% of the charges incurred. However, they collect only 31% of charges incurred by self-pay patients. This might lead one to initially conclude that the insured are subsidizing care for the uninsured. This would be true if private and public insurance payments to these centers covered the full costs of services provided. In the Greater Cincinnati area, private practice and community providers agree that insurance payments—both public and private—for patient care are far lower than the costs of providing that care.

Figure 13: Direct and fully allocated costs as percentage of charges and collections

Figure 13 shows all costs and collections of the 330 grant funded health centers. Direct costs are those incurred by direct patient activity, while allocated costs include both direct costs and administrative or overhead costs. In general, direct costs are less than what is charged, and fully allocated costs are more than what is charged. However, both costs are higher than what is collected from payers.

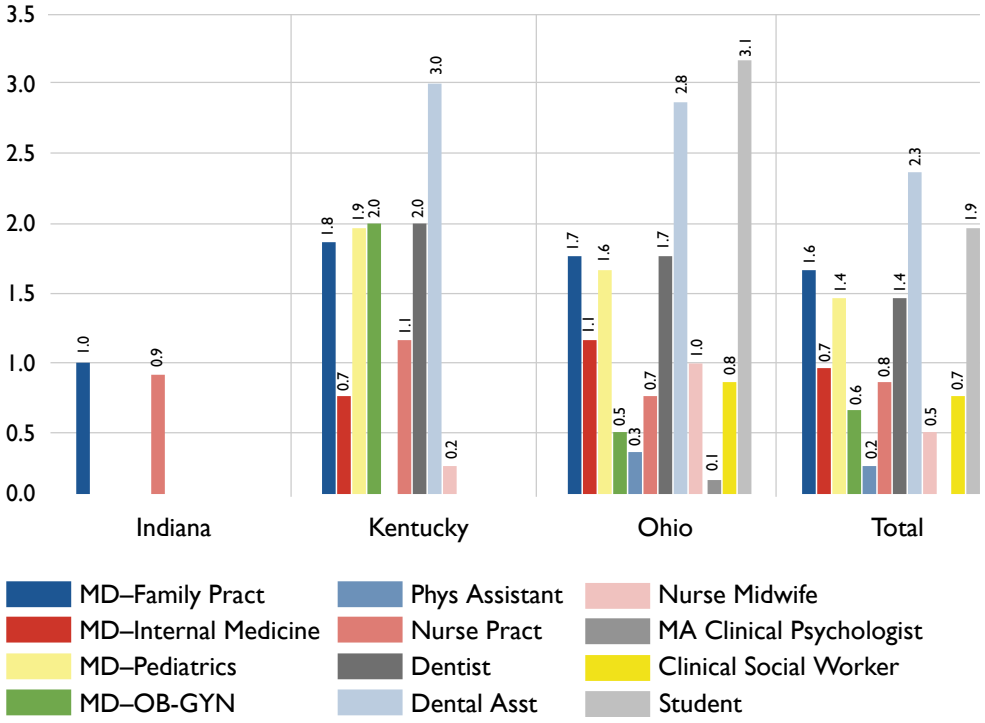


To make up the difference, health centers turn to non-patient revenue, such as grants. For the health centers in the Foundation's service area, these other sources equal about 68% of patient revenues and make up 33.2% of total revenue. Added together, patient and non-patient revenues are higher than direct and allocated costs. On average, the health centers in the Foundation's service area have a net revenue of about 21%. This is an aggregate number, however. Net revenues of individual centers will vary.

Staffing and Services

Staff resources are clearly more abundant in Ohio compared to Kentucky and Indiana. The health centers in Ohio are typically located in more highly populated areas.

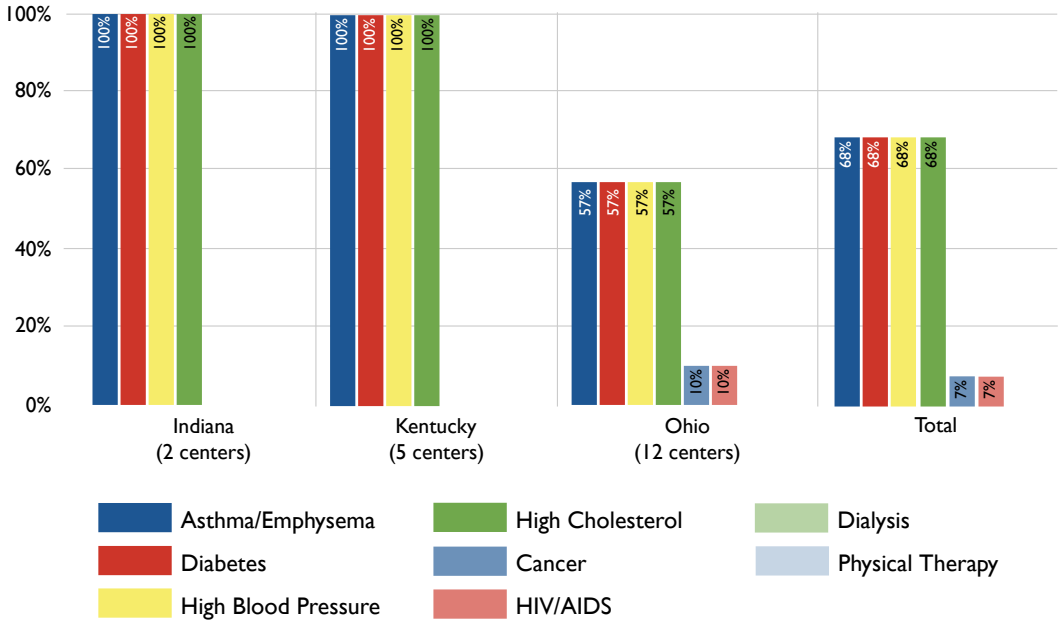
Figure 14: Staff resources of community health centers by state



Since Kentucky and Ohio have more health centers in urban locations, which typically have a more diverse population, these centers have more diverse staff. Nevertheless, staff at all facilities are primarily Caucasian.

When looking at services provided at the health centers, centers in Indiana and Kentucky have more consistency. The parent organizations in these two states typically run multiple sites, whereas centers in Ohio are run by different parent organizations. The services provided in most facilities are preventive services that help to reduce the rate of ambulatory sensitive conditions (ASC) that, when untreated, can lead to inappropriate hospital or emergency room use.

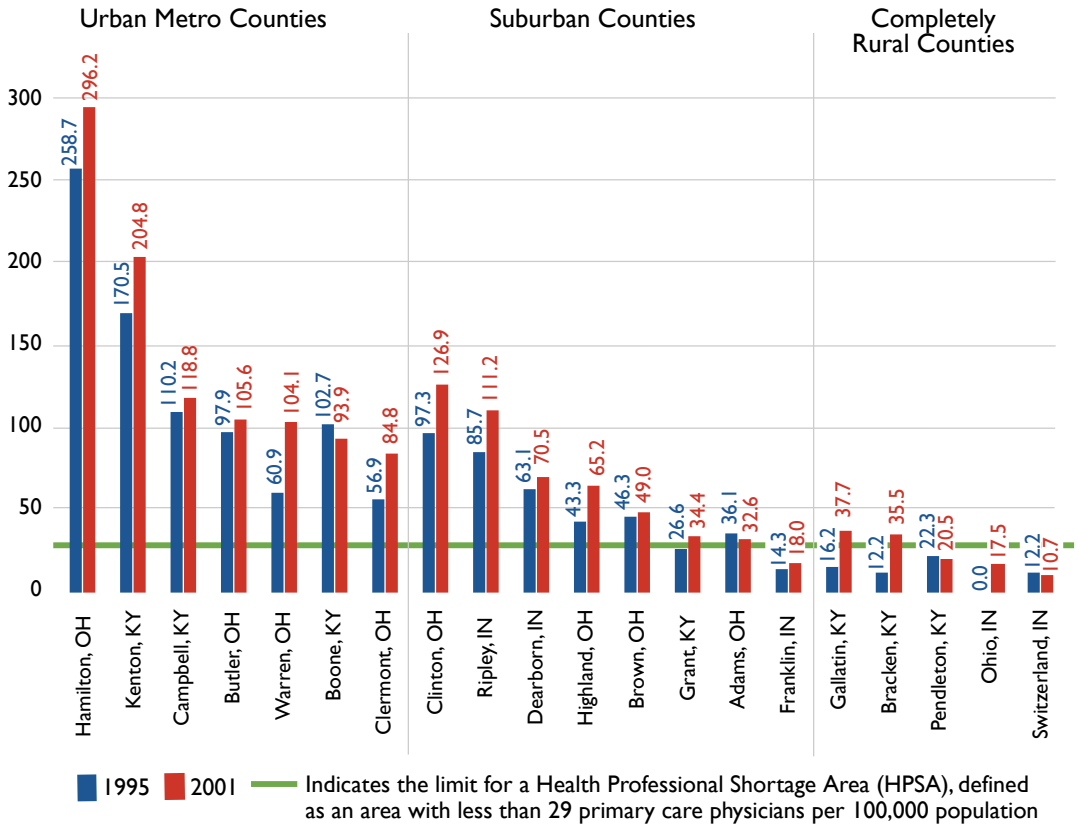
Figure 15: Percent of community health centers providing specific treatment services by state



Primary Care Physician Distribution

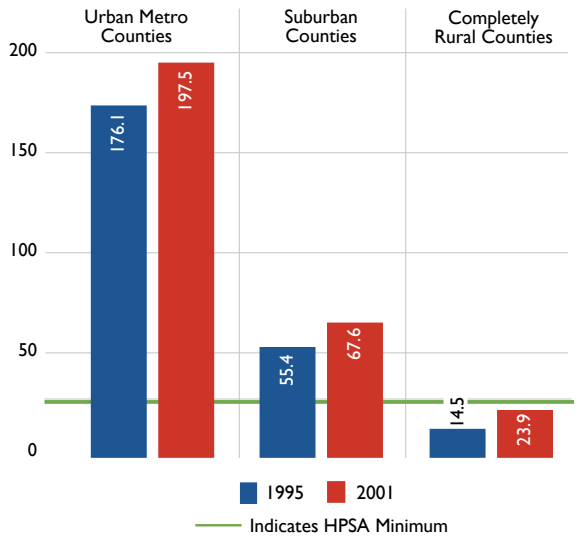
Physician distribution, specifically primary care physician distribution, is closely related to mortality rates. More primary care physicians (including general practitioners, internal medicine, family practice, pediatrics, and obstetricians/gynecologists [Ob/Gyn]) per capita means lower overall mortality rates *even when accounting for socioeconomic and demographic variables* (Starfield, 2005). This means that for the safety net, the number of primary care physicians in each county is of critical importance.

Figure 16: Physician distribution by county, 1995 and 2001



Between 1995 and 2001, more physicians moved to rural areas. Still, the number of primary care physicians in rural areas per 100,000 people is less than the designated Health Professional Shortage Area (HPSA) minimum.

Figure 17: Physicians per 100,000 people by geographic region, 1995–2001

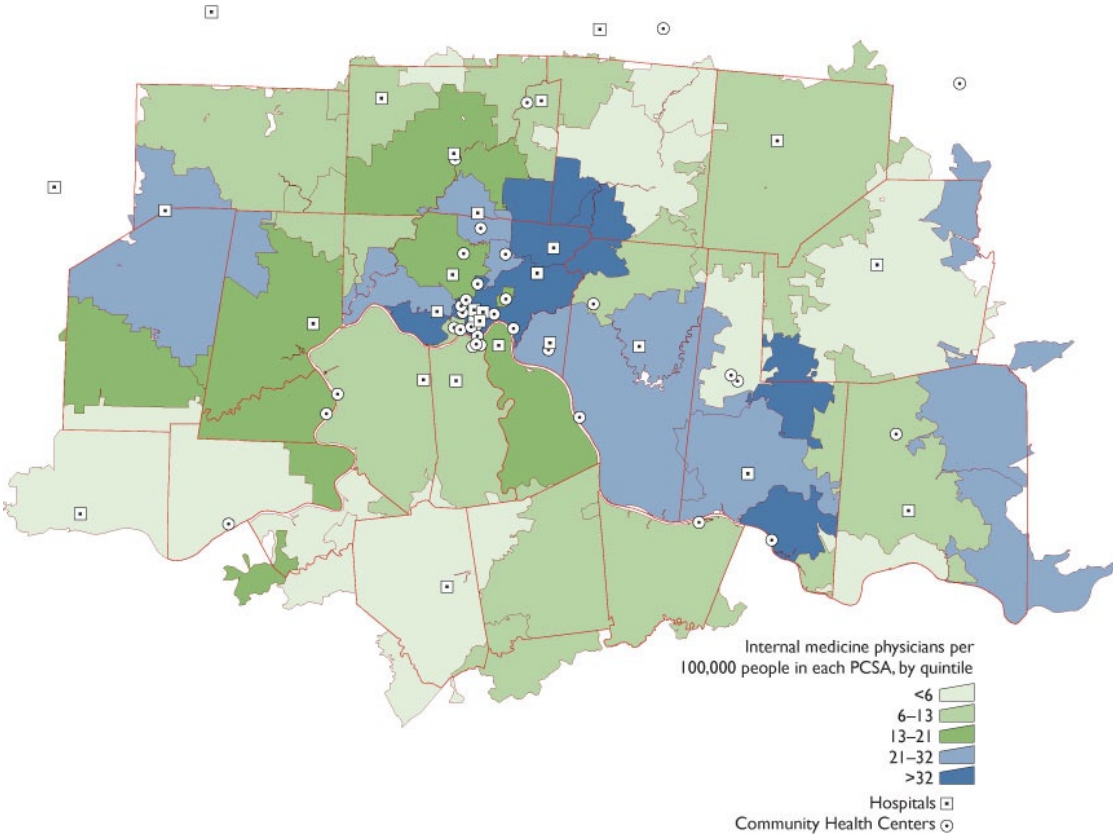


Maps of Physician Distribution

The discussion thus far has emphasized the urban, or at least hospital-centric, characteristics of physician office locations. The regions surrounding hospitals tend to have the highest physician density (see Map 5). However, some hospitals do not attract many physicians; see, for example, Grant County in Kentucky and Highland County in Ohio. Despite the presence of a hospital, there are less than 2 internal medicine physicians per 100,000 people.

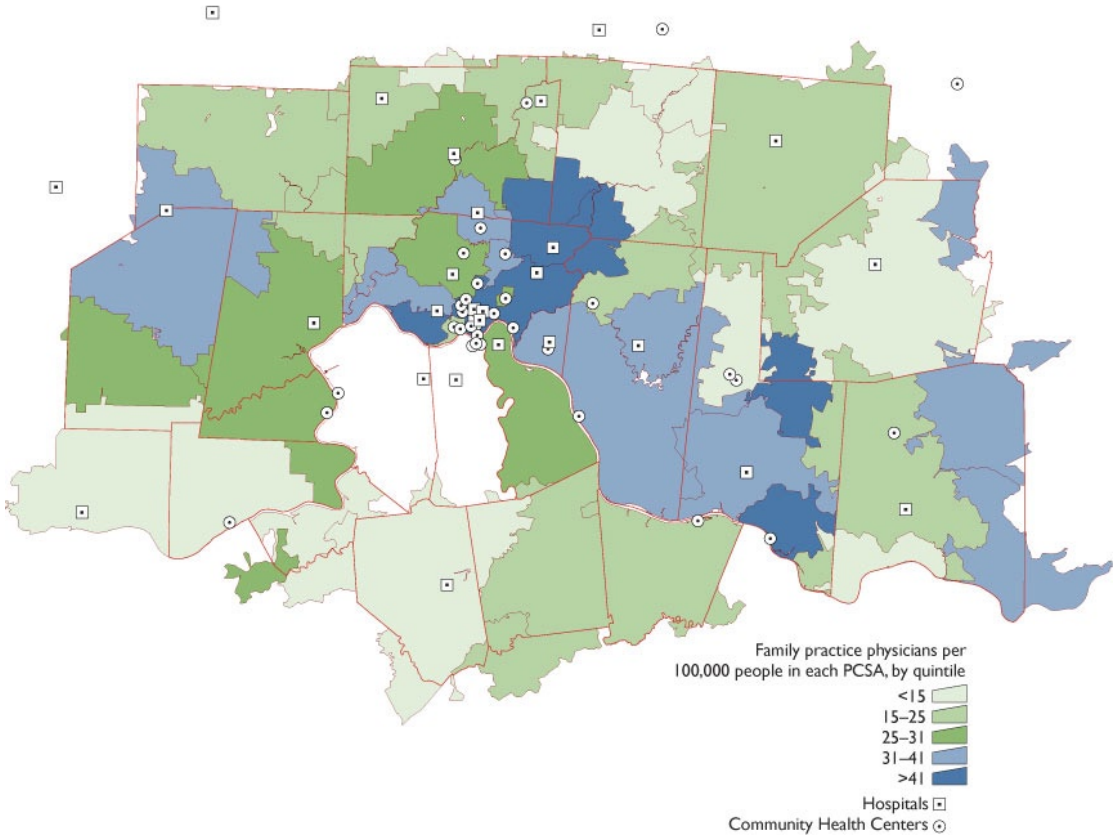
Highest densities of internal medicine physicians occur in Ohio in central Hamilton County and spill upward into southwest Butler and southeast Warren counties. As a frame of reference, the standard used to designate a HPSA shortage area is 29 total primary care physicians—internal medicine physicians, pediatricians, Ob/Gyns, and family practice physicians—per 100,000 people.

Map 5: Distribution of internal medicine physicians by PCSA



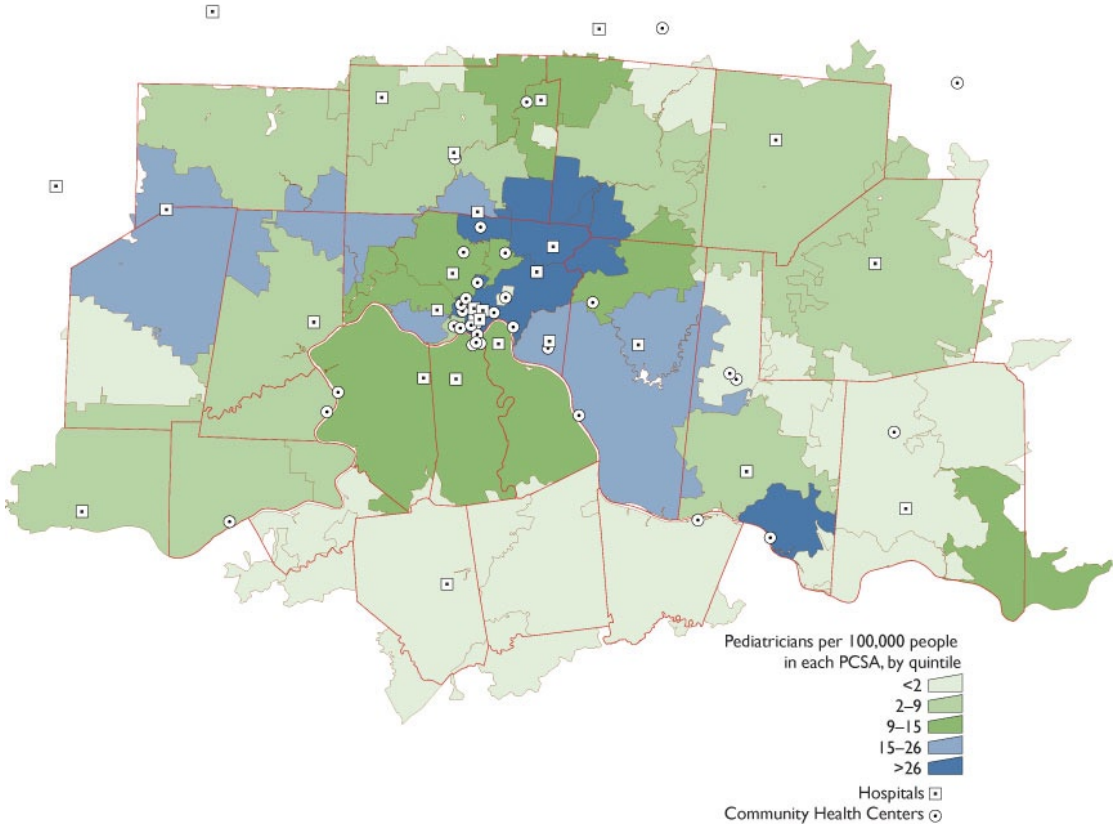
Family practice physicians tend to congregate near hospitals in urban areas (see Map 6); however, there is not an urban concentration in central Hamilton County. There are relatively large patches of family practice physicians ranging from Bracken up through Brown and into Highland Counties. High concentrations of family physicians are also located in northern Warren County in some proximity to a hospital. Again these densities of physicians match those of other studies where (a) family practice physicians are more evenly distributed and (b) they have higher densities in rural areas. These other studies indicate that the average density for family practice is 26 per 100,000 people.

Map 6: Distribution of family practice physicians by PCSA



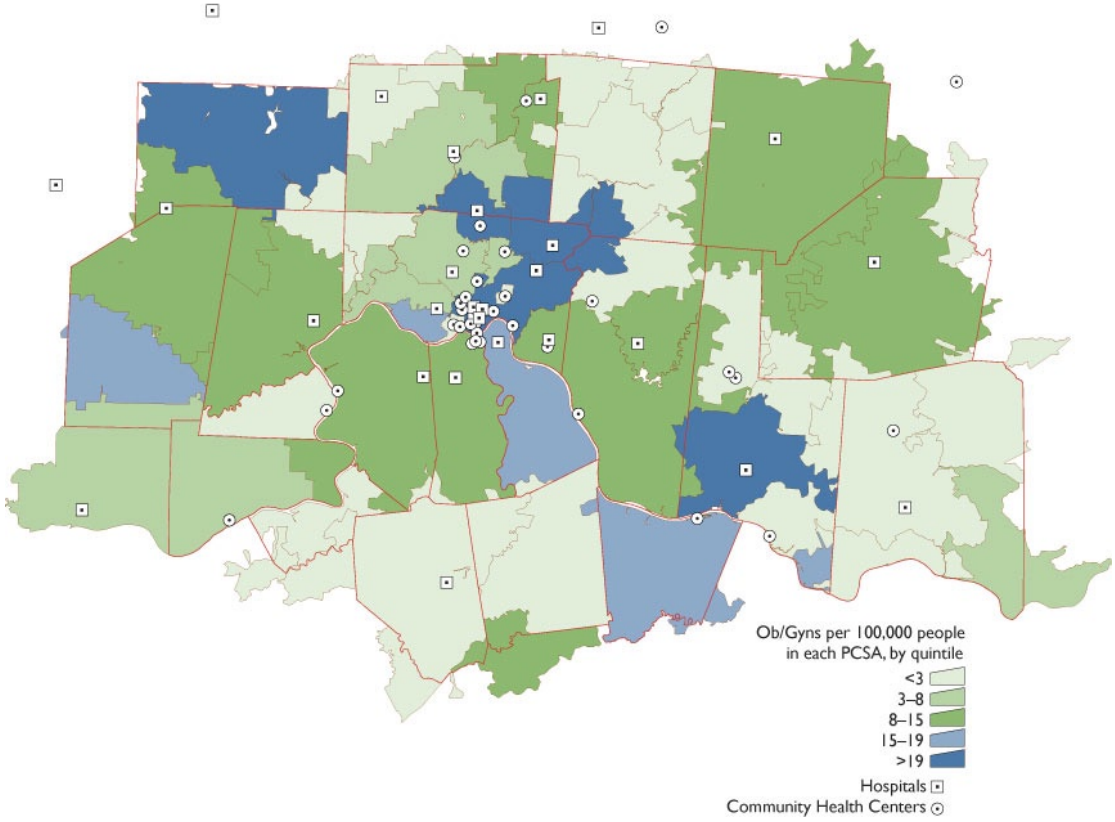
Pediatricians are mostly concentrated in central Hamilton, the southeast corner of Butler, and the southwest corner of Warren in proximity to Cincinnati Children's Hospital Medical Center as well as other downtown hospitals (see Map 7). There are also several pediatricians in the area surrounding New Richmond in Clermont County, Ohio. Aside from there, pediatricians are sparse along the southern tier of the region (Adams, Bracken, Grant, and Pendleton Counties). This distribution is consistent with other studies where pediatric distribution is about 5 per 100,000 in rural areas and about 14 per 100,000 in urban settings (Gramm, Castillo, and Pittman, 2003). Pediatricians are also likely to settle in communities of 10,000 or more in order to have access to other physicians who can help provide evening and weekend coverage.

Map 7: Distribution of pediatricians by PCSA



Ob/Gyns are the most sparsely distributed in the 20-county region (see Map 8). These physicians are concentrated in central Hamilton County and parts of Brown and Franklin Counties. In southwestern Kentucky and in a strip running from Adams through Northern Brown and into Warren Counties, there are fewer than 3 Ob/Gyns per 100,000 people. One reason for the low number of Ob/Gyns could be that malpractice insurance for these physicians is particularly high. Also, rural areas typically lack technological resources that might attract Ob/Gyns.

Map 8: Distribution of Ob/Gyns by PCSA

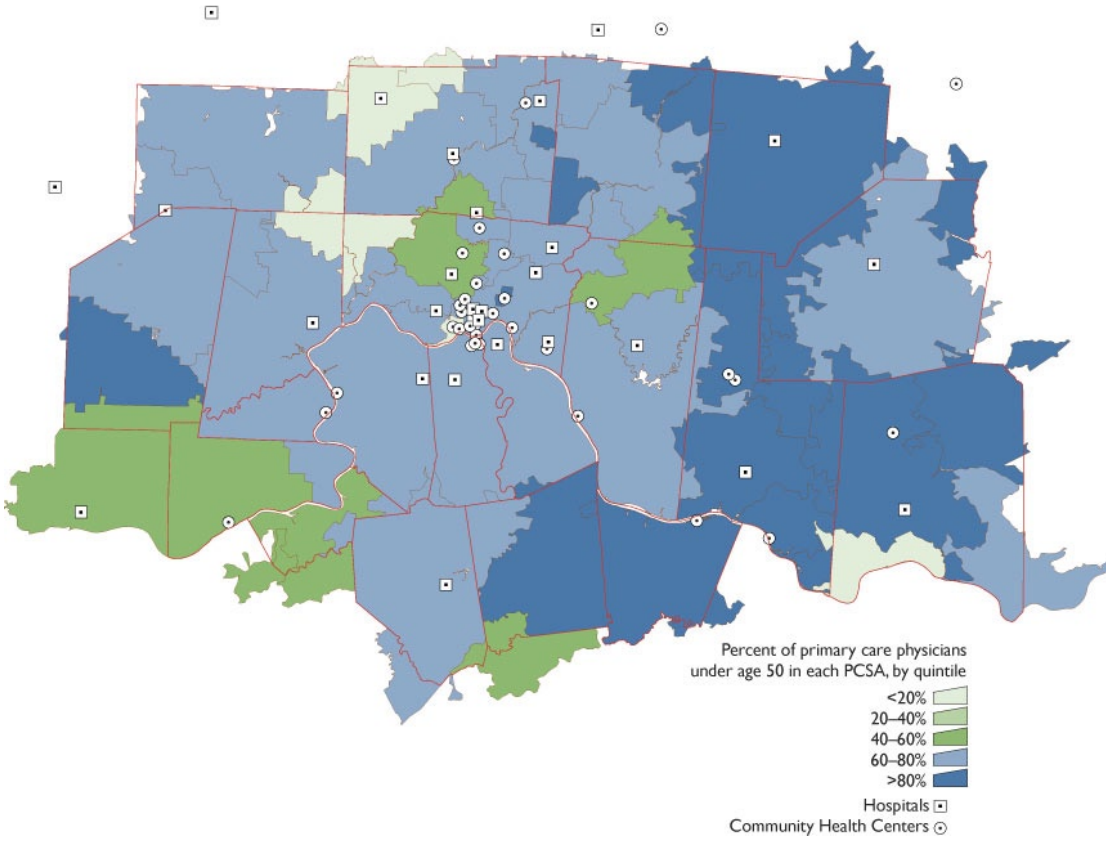


Age Distribution of Physicians

Although rural areas typically have fewer physicians, these areas have higher concentrations of younger physicians. Programs like the National Health Service Corps draw younger physicians to rural areas because these programs pay off educational loans while physicians practice in non-metropolitan areas. However, retention is beginning to be seen as a bigger challenge than recruitment (Gramm, Castillo, and Pittman, 2003).

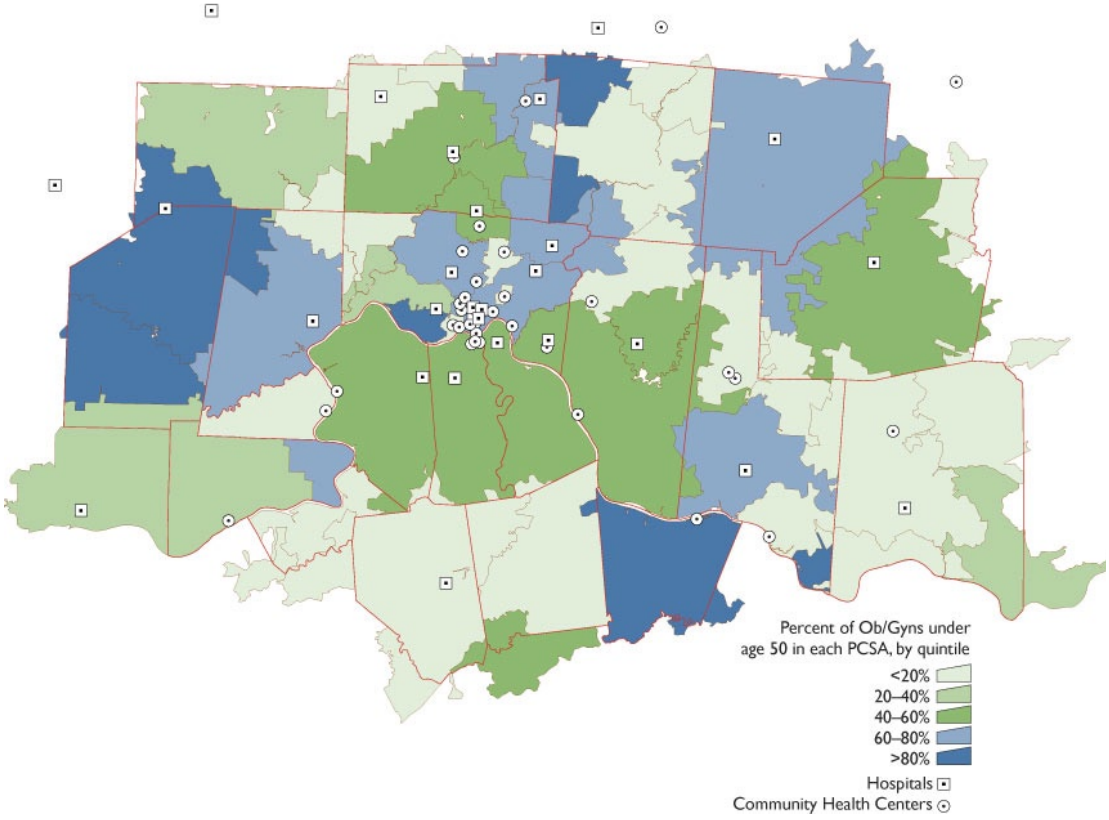
Map 9 supports evidence that physicians often migrate to more urban settings later in their career. A good supply of younger physicians "in the pipeline" could sustain current levels of physicians in rural areas. If practice conditions become more unfavorable in rural areas, the average exit age may decrease, leading to increasing physician shortages in rural areas.

Map 9: Distribution of primary care physicians under age 50 by PCSA



Map 10: Distribution of Ob/Gyns under age 50 by PCSA

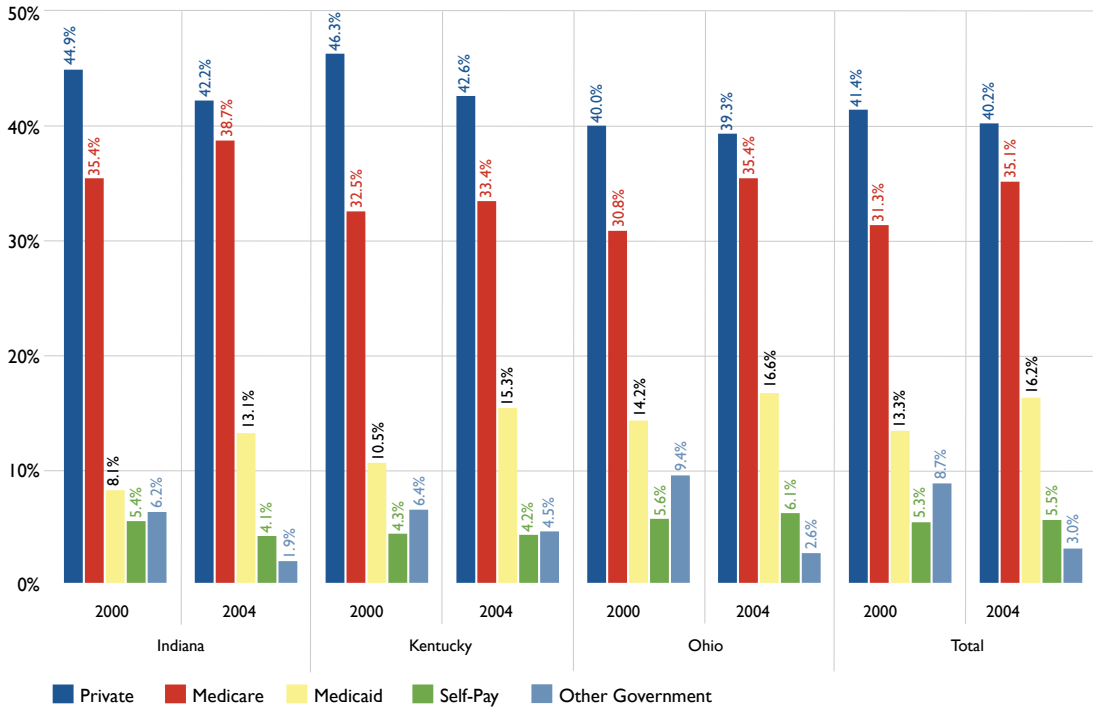
Younger Ob/Gyn physicians are also concentrated mainly in rural areas (see Map 10). However, there are still relatively fewer Ob/Gyns in these rural areas. And, as with primary care physicians, unfavorable practice conditions in rural areas may cause younger physicians to leave for suburban and urban areas.



Inpatient Pay Groups

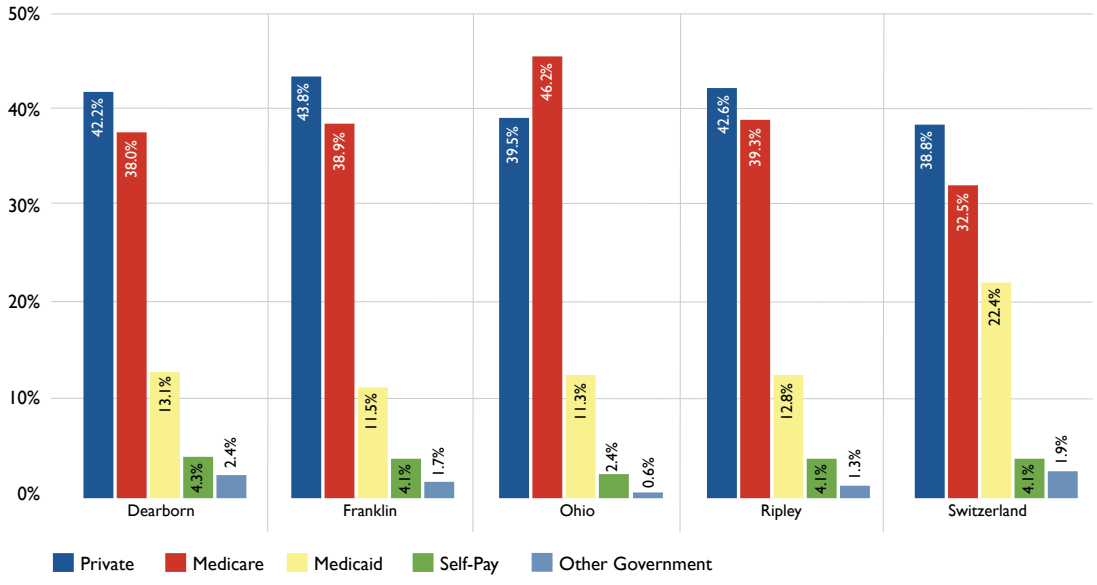
The major changes between 2000 and 2004 in payers for inpatient hospital care were a decrease in hospital admissions by people with private coverage and an increase in admissions by people with Medicaid coverage for all states.

Figure 18: Inpatient hospital stays by payer and state, 2000 and 2004



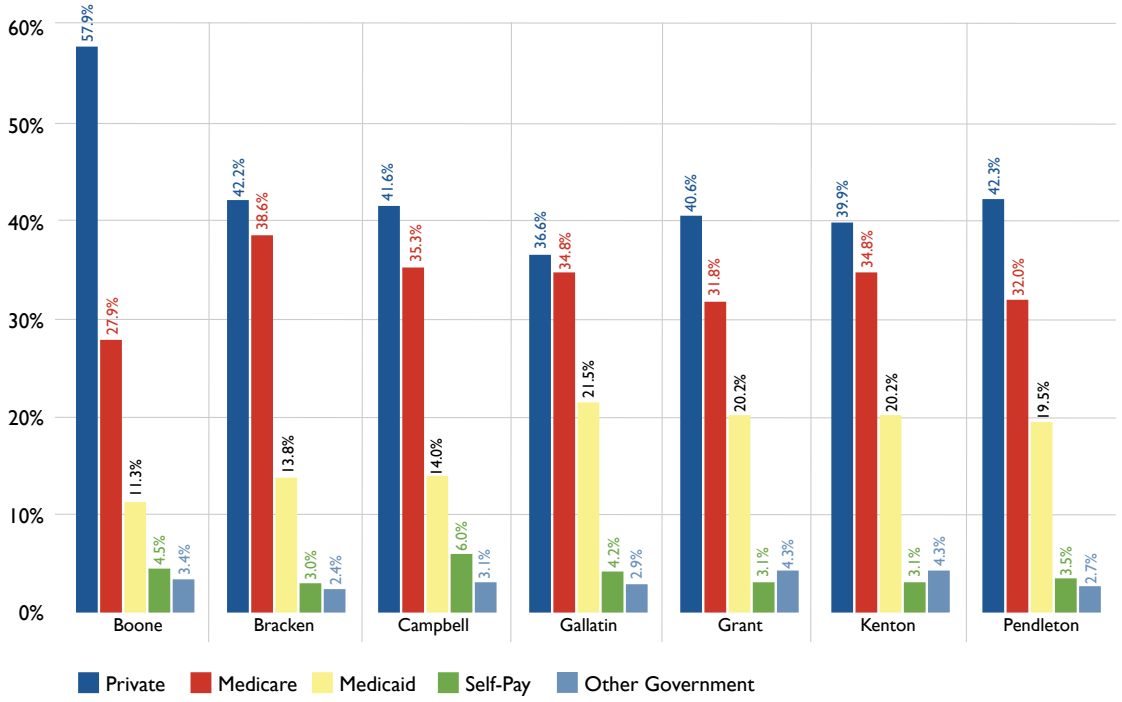
In Indiana in 2004, Ohio County had the most residents on Medicare admitted to the hospital, while Switzerland County had the most residents on Medicaid admitted. Franklin County had the most residents with private coverage admitted to the hospital.

Figure 19: Inpatient hospital stays by payer and county (Indiana), 2004



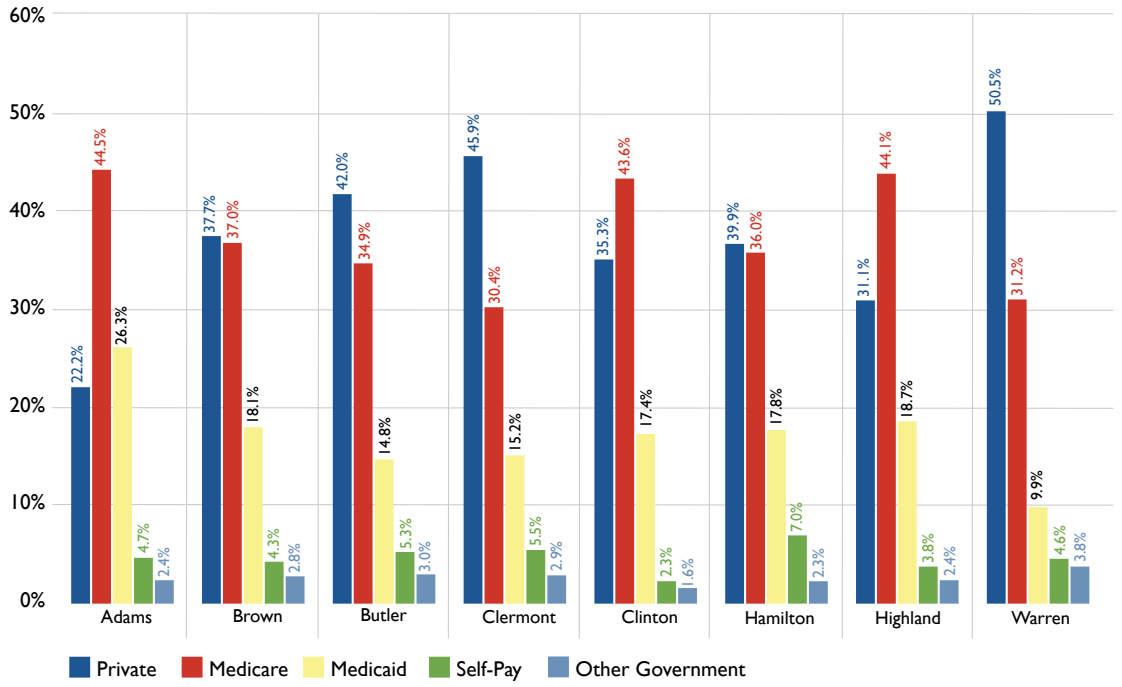
In Kentucky in 2004, Bracken County had the most residents on Medicare admitted to the hospital and Gallatin County had the most residents on Medicaid admitted. Campbell County had the highest rates of self-pay admissions.

Figure 20: Inpatient hospital stays by payer and county (Kentucky), 2004



In Ohio in 2004, Adams, Clinton, and Highland County had more residents on Medicare admitted to hospitals than any other pay group. Adams County also had the highest rate for Medicaid admissions. Hamilton County had the highest rate of self-pay admissions.

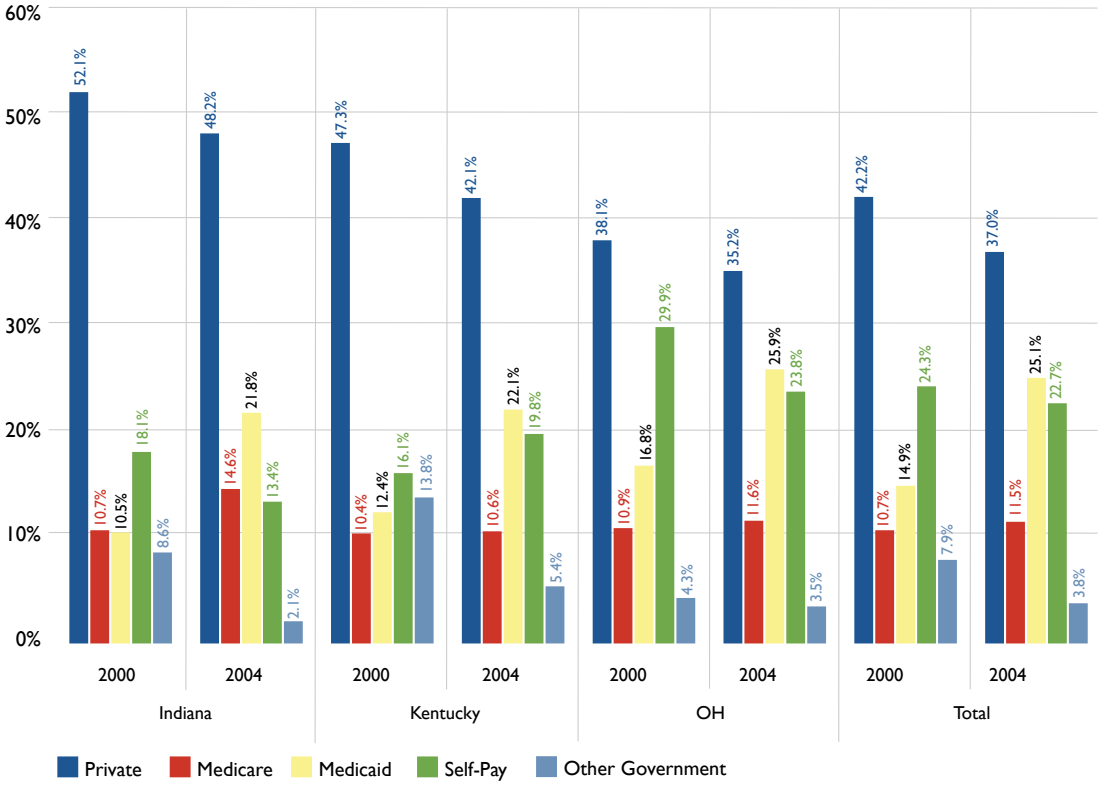
Figure 21: Inpatient hospital stays by payer and county (Ohio), 2004



Emergency Visit Pay Groups

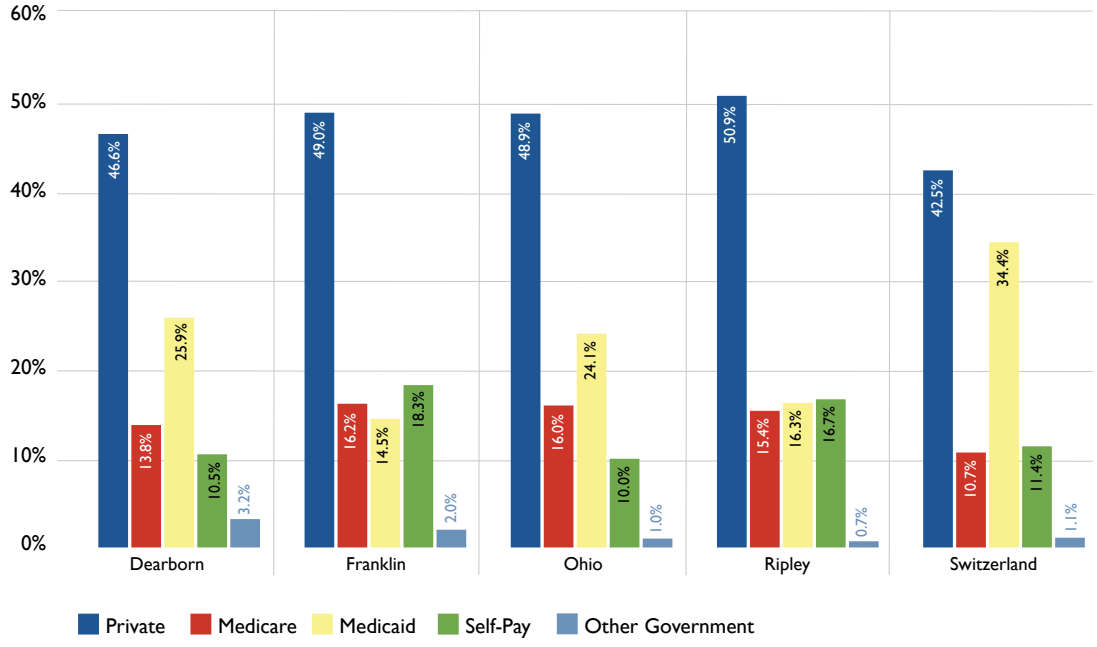
As with inpatient hospital admissions, the major changes from 2000 to 2004 in emergency room (ER) visit payers was a decrease in commercially covered visits and an increase in Medicaid-covered visits. There was also a large reduction in visits by self-paying patients in Ohio between 2000 and 2004.

Figure 22: ER visits by payer and state, 2000 and 2004



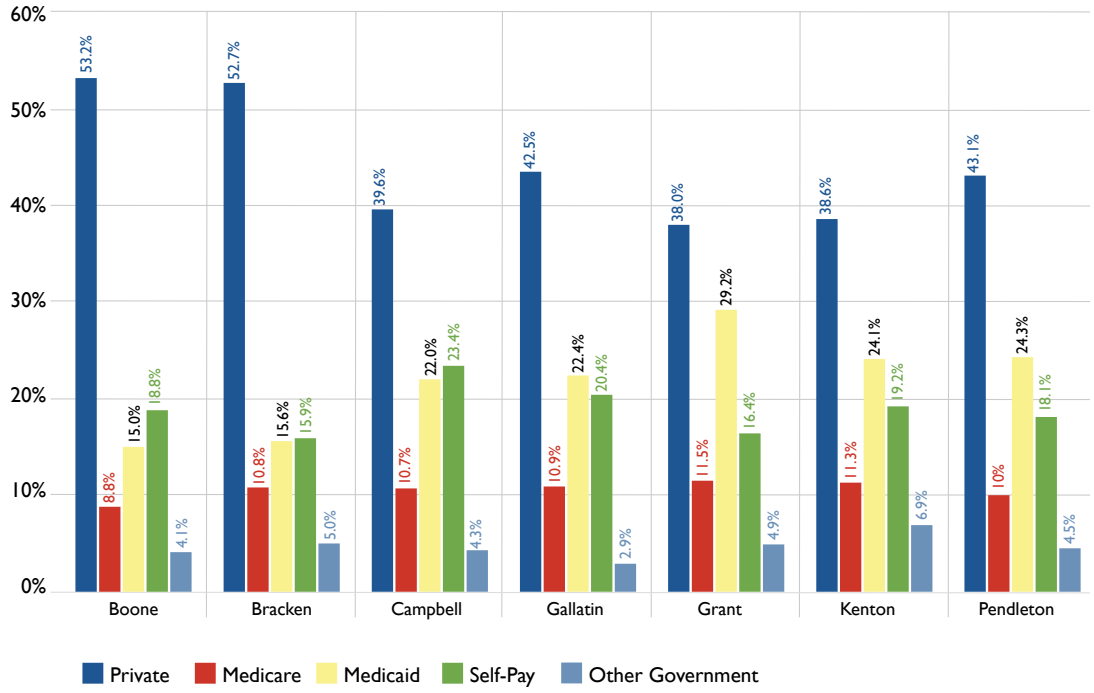
In Indiana in 2004, Switzerland County had the most ER visits by people with Medicaid coverage but the fewest ER visits by people on Medicare.

Figure 23: ER visits by payer and county (Indiana), 2004



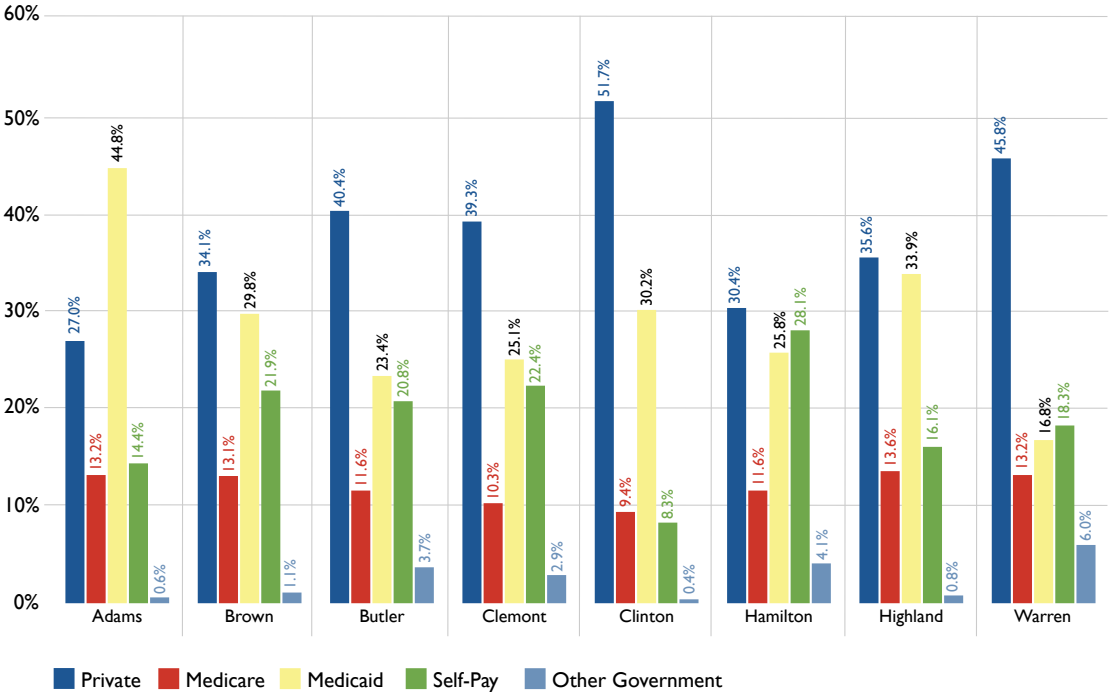
In Kentucky in 2004, Grant County had the most ER visits by people with Medicaid coverage, followed by Kenton and Pendleton Counties. There were higher rates of visits by self-paying patients from Gallatin, Kenton, and Pendleton Counties.

Figure 24: ER visits by payer and county (Kentucky), 2004



In Ohio in 2004, Adams, Brown, Clinton, and Highland Counties had the highest rates of ER visits by people with Medicaid coverage. The highest self-pay rates were in Brown, Clermont, and Hamilton Counties.

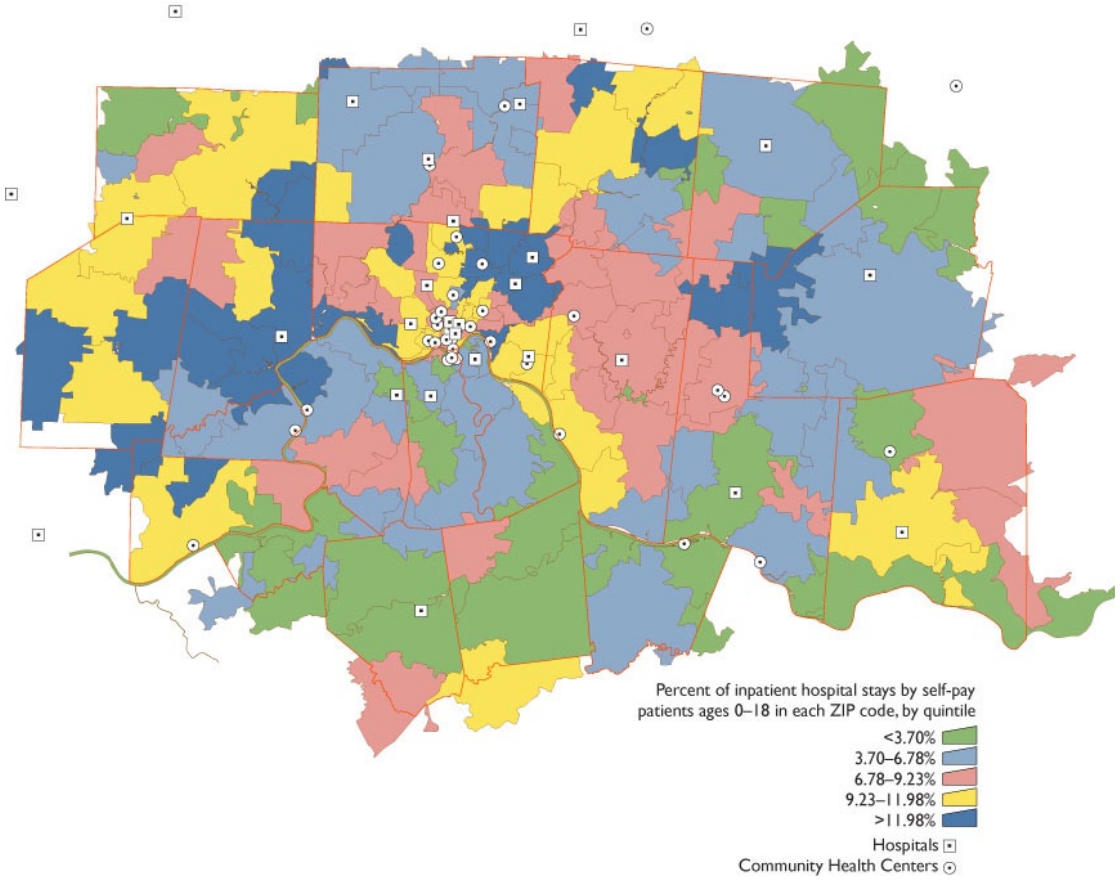
Figure 25: ER visits by payer and county (Ohio), 2004



Hospital Usage by Self-Paying Patients

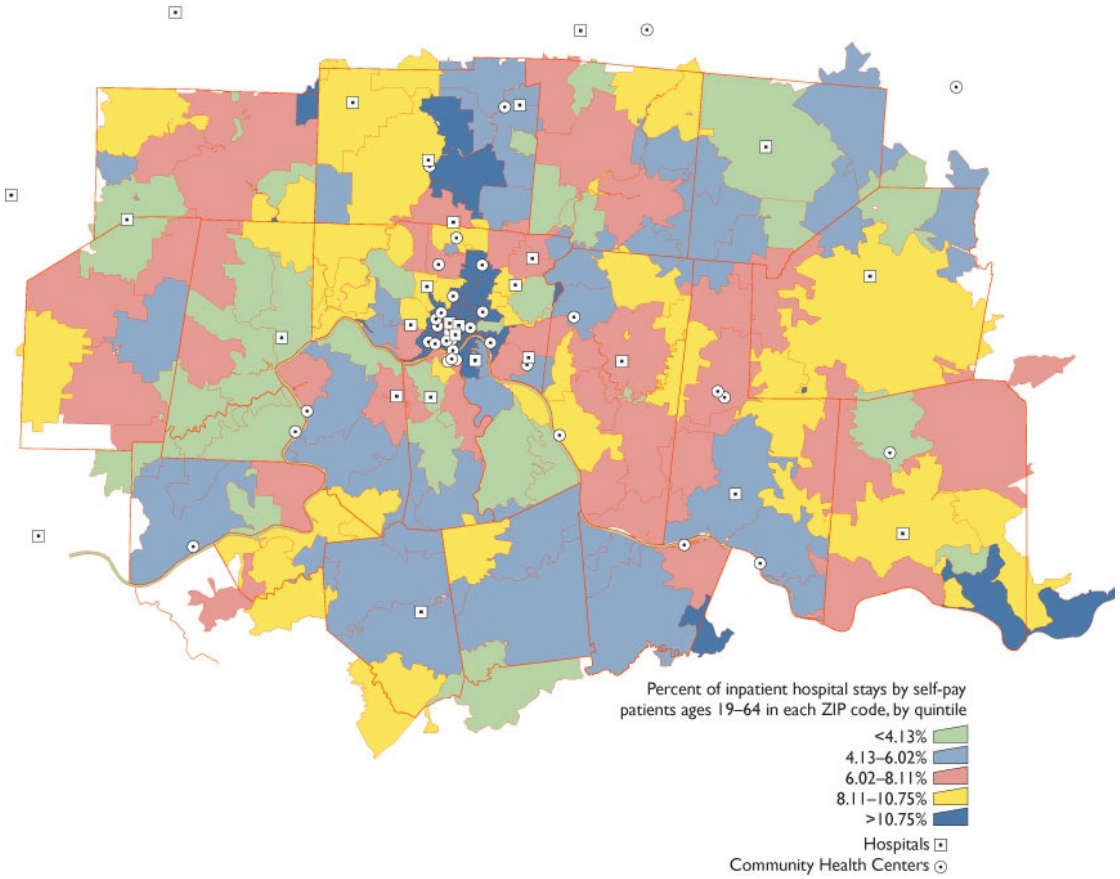
The maps on the following pages show where self-pay patients who use the hospitals live. Map 11 shows the percentage of self-pay hospital admissions for children by ZIP code. The highest rates of self-pay admissions (blue and yellow areas) are in central Hamilton County in Ohio and large patches of Dearborn, Ripley, and Switzerland Counties in Indiana.

Map 11: Percent of inpatient hospital stays by self-paying patients ages 0–18 by ZIP code



Map 12: Percent of inpatient hospital stays by self-paying patients ages 19–64 by ZIP code

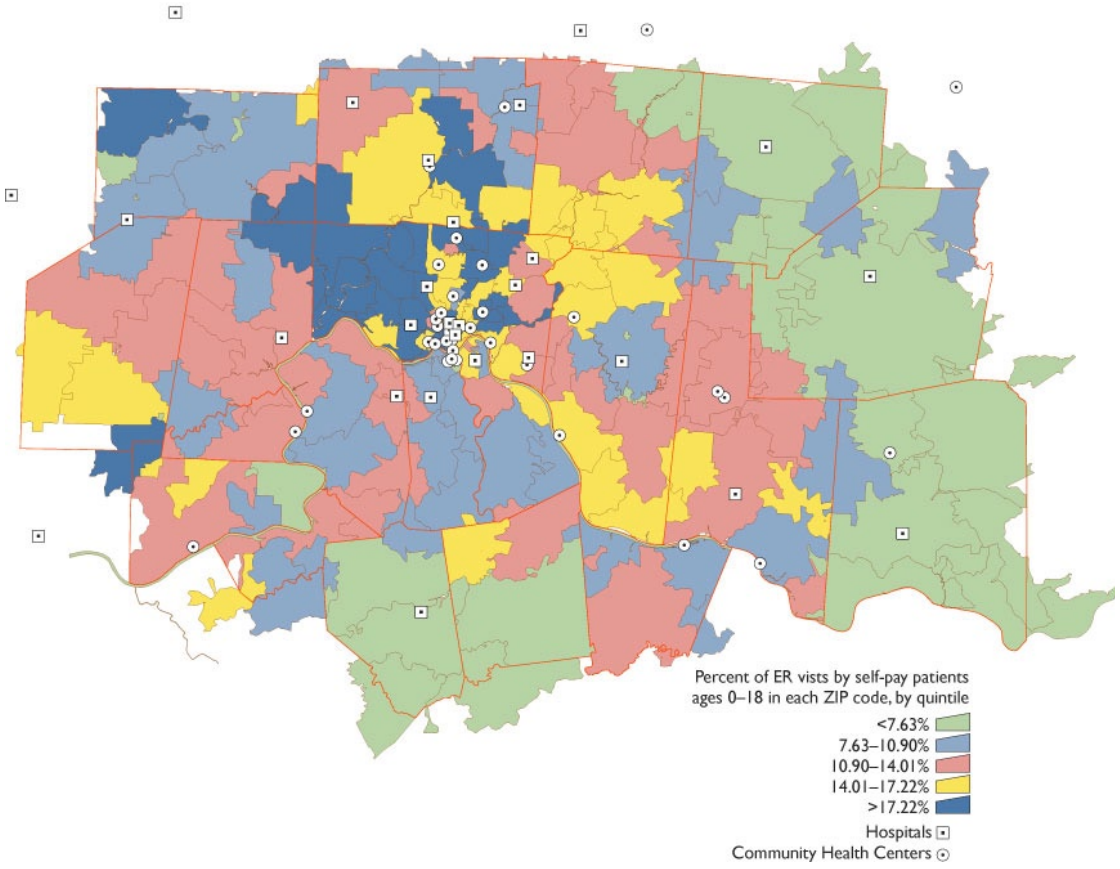
Map 12 shows the pattern of self-pay admissions for adults by ZIP code. The highest rates run up through the central part of Butler and Hamilton Counties in Ohio. These areas do not coincide with higher rates of poverty, however. It is likely that these areas are home to lower income workers whose insurance benefits are thin or non-existent.



Maps 13 and 14 show ER visits for self-paying patients. These visits may be a combination of visits for emergencies and visits to seek non-emergency care because the patient has no other source of care.

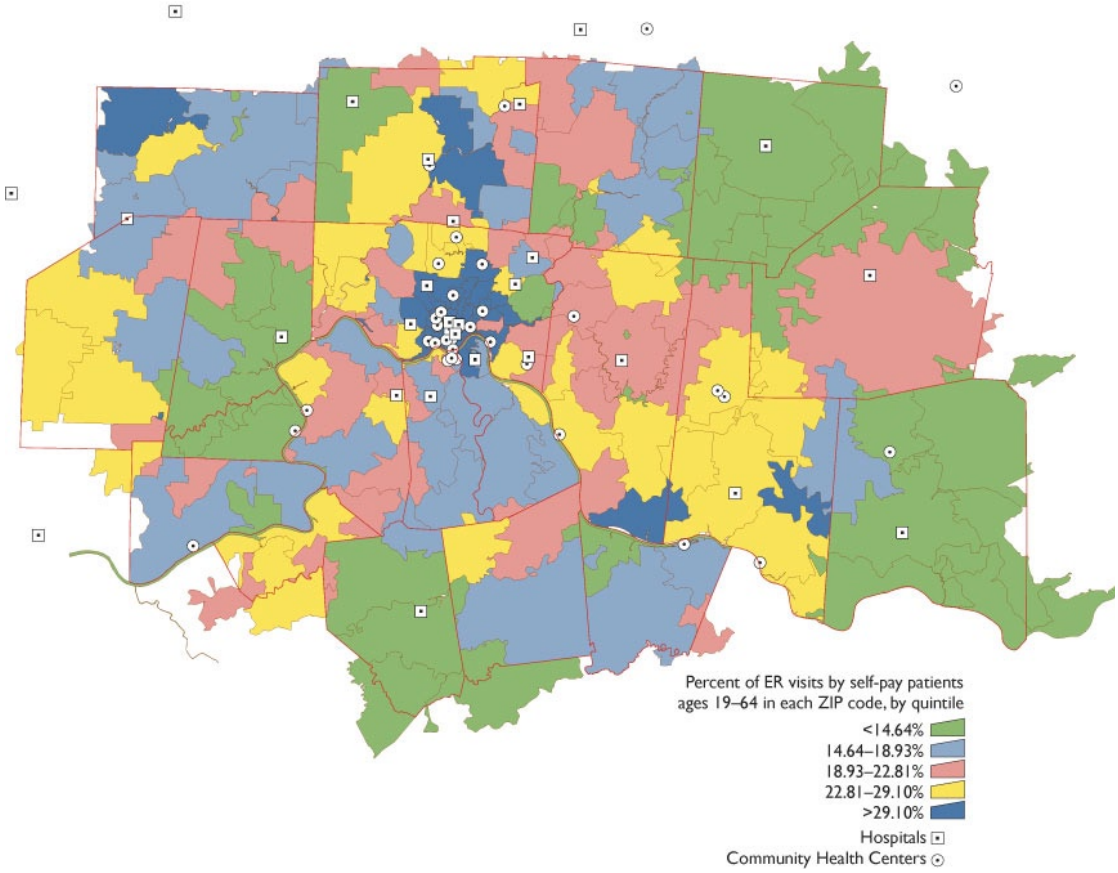
Map 13 shows ER visits for self-paying patients aged 0-18. The highest rates of visits are from children in western Hamilton County in Ohio and at the Indiana/Ohio border where Butler, Dearborn, Franklin, and Hamilton Counties intersect.

Map 13: Percent of ER visits by self-paying patients ages 0–18 by ZIP code



Map 14 shows ER visits of self-paying patients aged 19-64. There is much overlap with Map 13, except for a patch in central Highland County in Ohio where about 20% of ER visits are by self-paying adults. In this same area, less than 8% of ER visits are by self-paying children.

Map 14: Percent of ER visits by self-paying patients ages 19–64 by ZIP code



Preventable Hospital Use

This section examines hospital admissions and emergency room (ER) visits that could have been prevented had the patient received timely care from a primary care physician (family practice, internal medicine, pediatrician, or Ob/Gyn). Preventable admissions and ER visits refer to diagnostic categories (determined at discharge) that are responsive to timely and effective primary care. These diagnoses are also called ambulatory sensitive conditions (ASC). Inpatient admissions are classified as preventable based on the condition the person is being treated for. Examples include asthma, diabetic ketoacidosis, and congestive heart failure.

ER vists are classified as preventable based on discharge diagnoses.When a person comes in to the ER, his or her condition may be an emergency or a non-emergency. If an emergency, he or she may need ER care or simply primary care. And, if he or she needs ER care, the condition may or may not have been preventable or avoidable. The flow chart in Figure 26 shows the types of visits that are categorized as preventable.

Figure 26: Categories of preventable ER visits

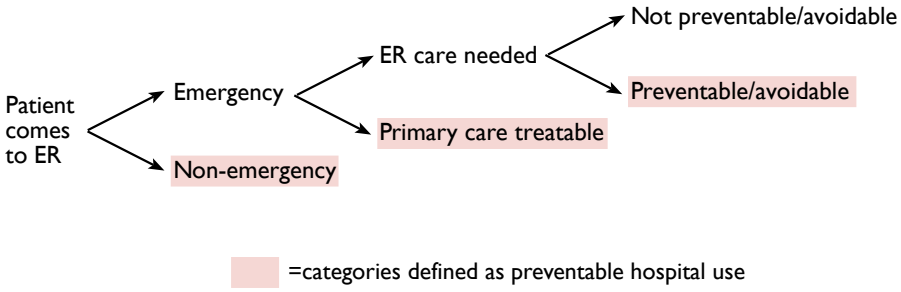


Figure 27 shows standardized rates for inpatient ASC discharges compared to the regional norm. Standardization here means that ASC rates are computed as though there was *no difference* in age or insurance status. The rate of ASC hospital admissions (inpatient ASC) for patients from Adams County ZIP codes was 1.8 times the regional average, while ASC hospital admissions for patients from Bracken County ZIP codes were 0.8 times the regional average.

It is interesting to note that most of the counties with rates higher than the regional average (or counties to the left of the figure) are rural counties, while those with lower rates (counties to the right of the figure) are urban counties, with some exceptions.

Figure 27: Rates of preventable inpatient hospital stays by county, standardized for age and payer

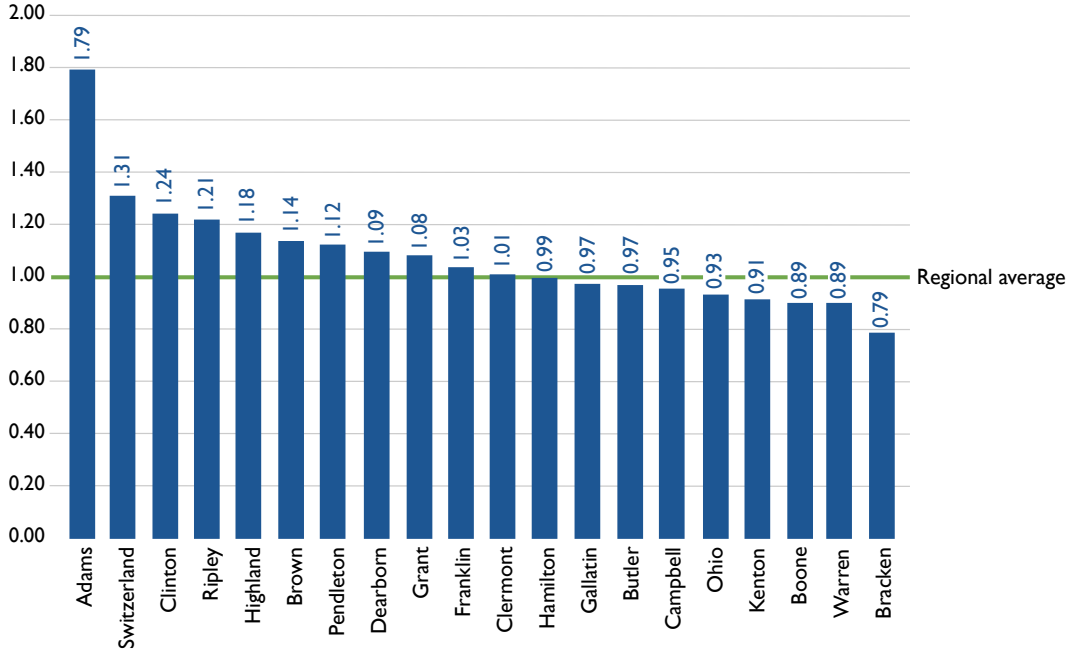


Figure 28: Rates of preventable ER visits by county, standardized for age and payer

Figure 28 shows the standardized rates across counties for emergency room ASC (ER ASC). Following the lead of other researchers, the three "preventable" categories (non-emergency, emergency and primary care treatable, and emergency but preventable/avoidable) were added together (Weinick, Billings, and Thorpe, 2003). Clinton, Highland, and Grant Counties all have higher rates of both inpatient and ER ASC visits than the regional average.

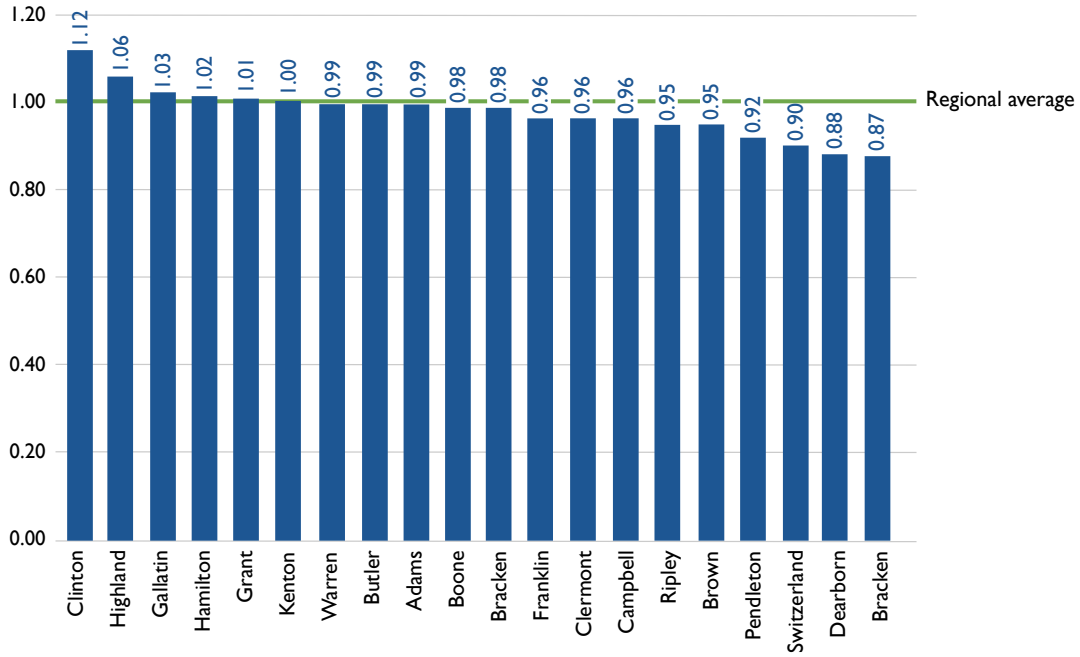


Figure 29: Percent of preventable visits by each pay source

Figure 29 shows the percent of preventable hospital visits by people from each pay source. For example, only about 20% of ER ASC visits were by self-pay patients. *(Note: the "visits" in Figure 29 represent discharges from the ER or from the hospital. If a person comes into the ER and is subsequently admitted to the hospital, upon discharge, that person is only counted as an inpatient discharge.)*

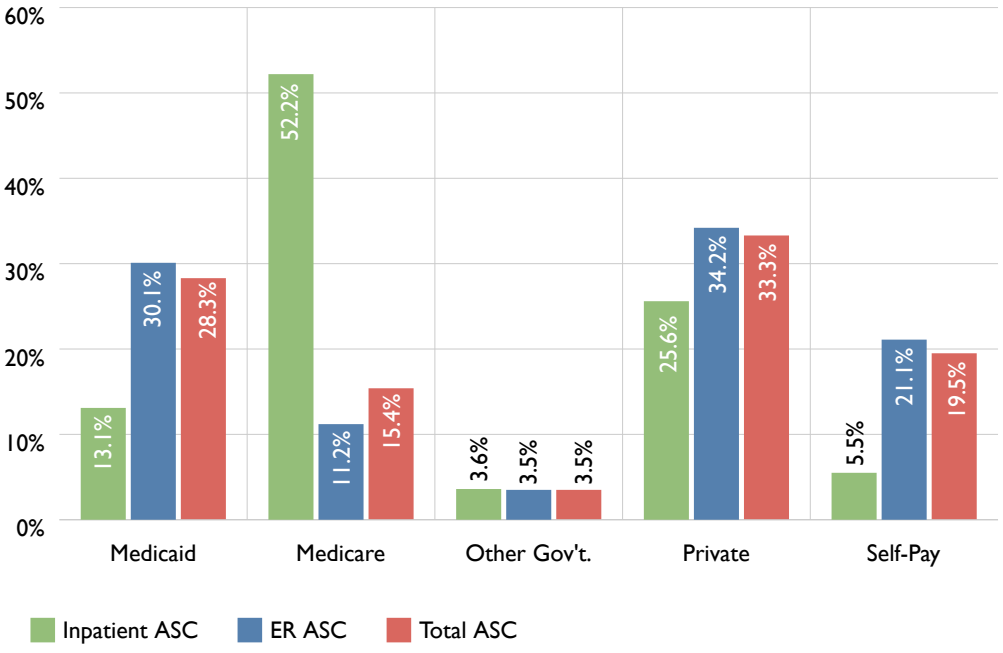


Figure 30: Preventable inpatient hospital admissions by age and payer

Figure 30 shows inpatient ASC rates by age and insurance pay source. For example, almost 20% of Medicare recipients ages 19-64 have a preventable inpatient admission to the hospital.

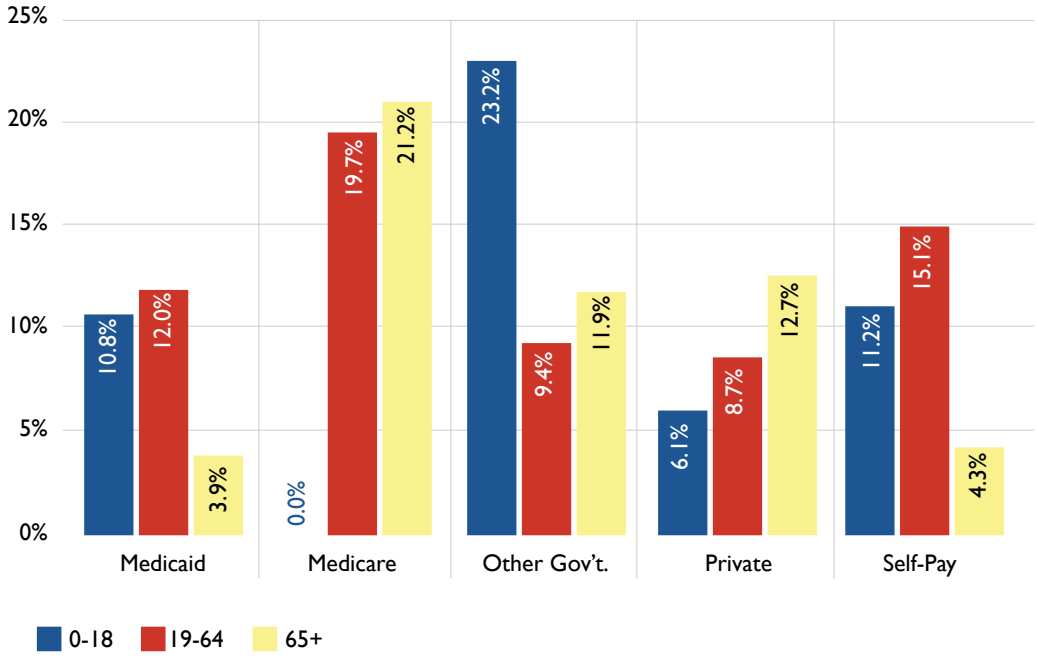


Figure 31: Preventable ER visits by age and payer

Figure 31 shows rates of preventable ER use. Over half of Medicaid recipients of all ages have a preventable ER visit. Of particular interest is the fact that the self-pay group has some of the lowest usage rates for people over age 18. Many people complain that ERs are overburdened with the uninsured. These data, however, suggest otherwise. Considering that Medicaid patients have the highest rates of preventable ER use, perhaps the uninsured and Medicaid patients—both of whom are low-income—are being inadvertently lumped together.

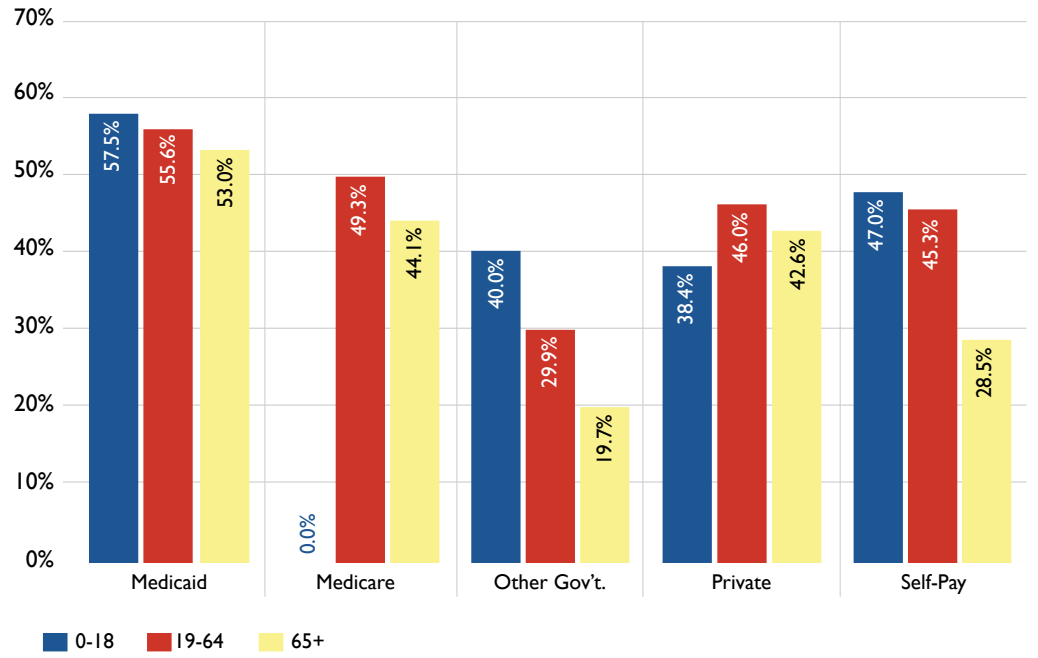


Figure 32: Percentage of change in preventable inpatient hospital stays by county, 2000–2004

Figure 32 compares changes in county inpatient ASC rates between 2000 and 2004. Switzerland County shows a 56% increase in inpatient ASC rates between 2000 and 2004, but most counties have changes of less than ±20%. The average change for the region is -2%.

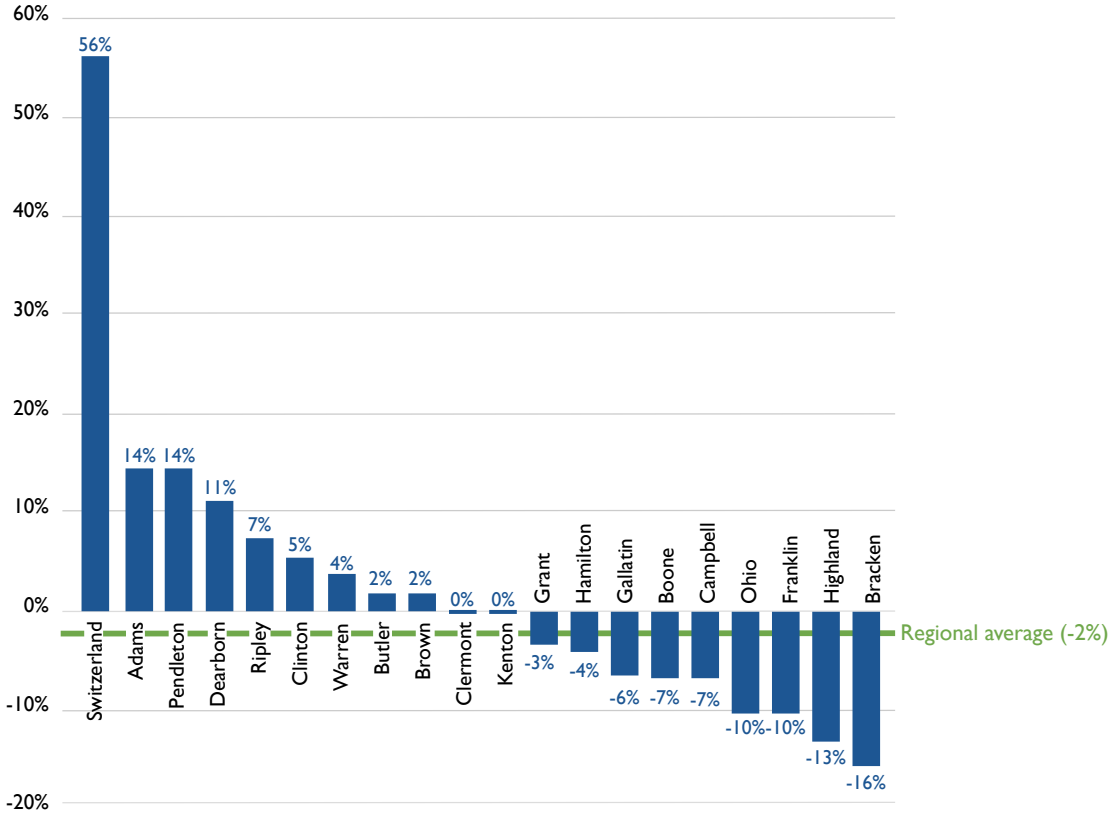
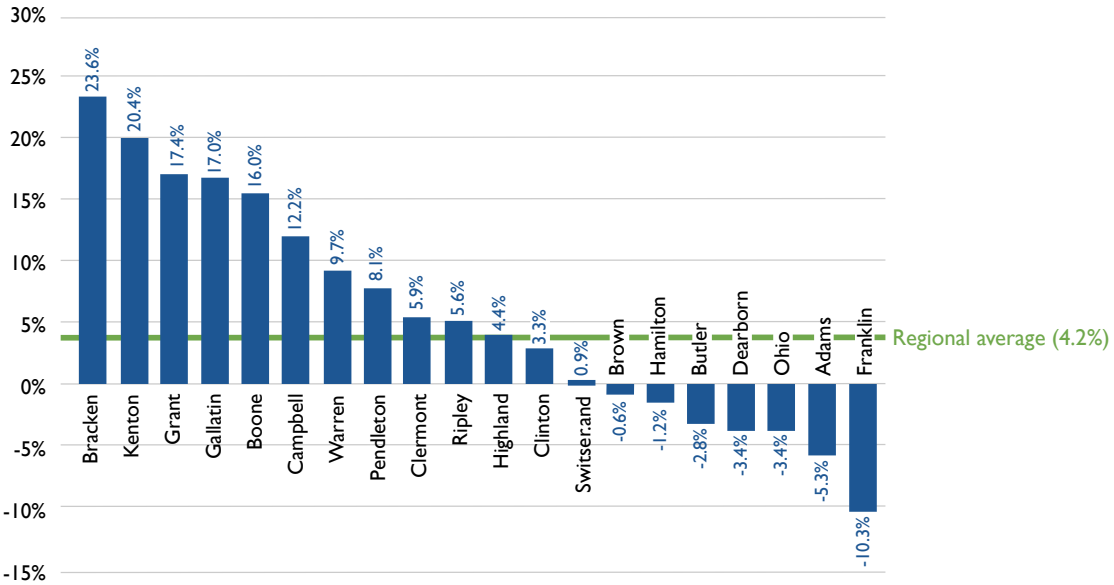


Figure 33: Percentage of change in preventable ER visits by county, 2000–2004

Figure 33 shows the percent change in county ER ASC rates. The average change is about 4%. Just under half the counties had an increase of 8% or more. The amount of change does not seem to follow a rural-urban or wealthy-poor dimension. It is also unclear whether these changes are due to shifts in insurance coverage or to some other factor.

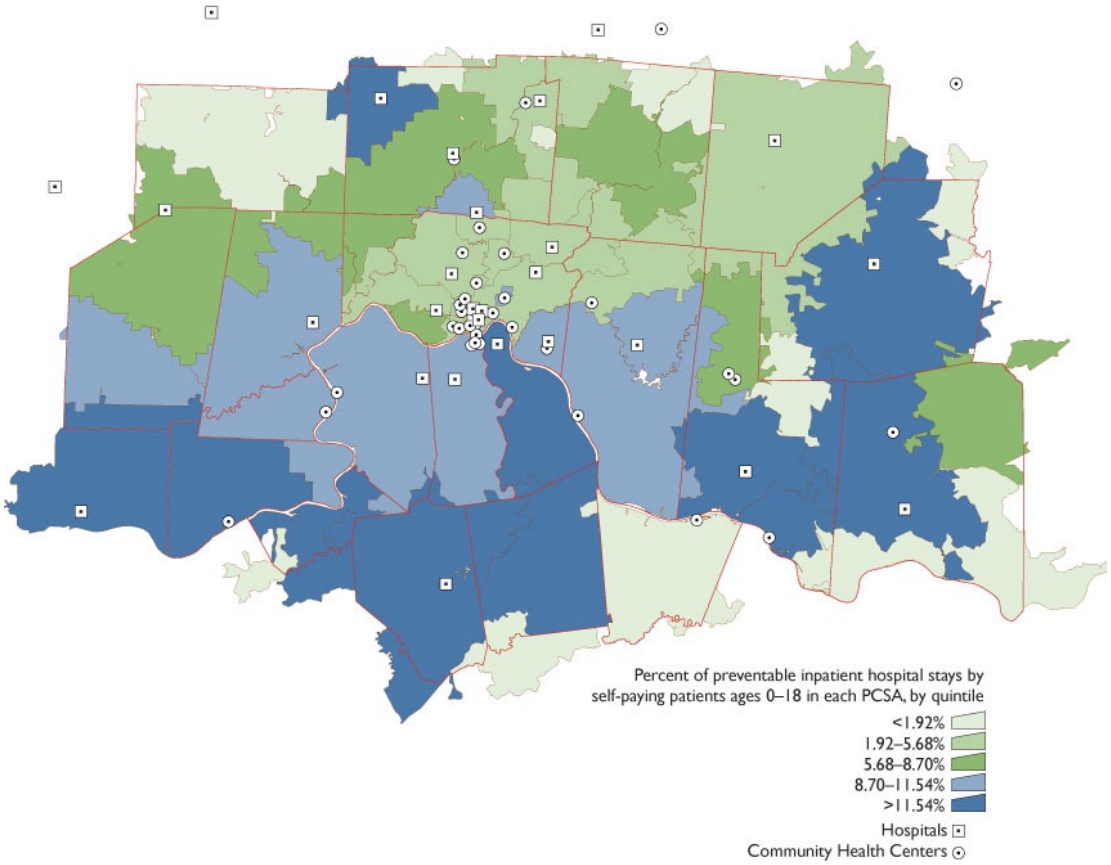


Preventable Hospital Use by Self-Paying Patients

Self-paying patients are less likely to have a medical home and to receive timely primary care. Their health conditions tend to escalate until they seek hospital care. And although self-paying patients are not the highest users of hospitals, the care self-paying patients receive is subsidized heavily by the system. Hospitals generally collect less revenue from self-paying patients than from patients with insurance. Therefore, we focus in this section on preventable hospital use by self-paying patients to begin to understand where these patients live. The next step is to determine the types of conditions for which self-paying patients are using the hospitals and options for providing accessible, timely services in a non-hospital setting.

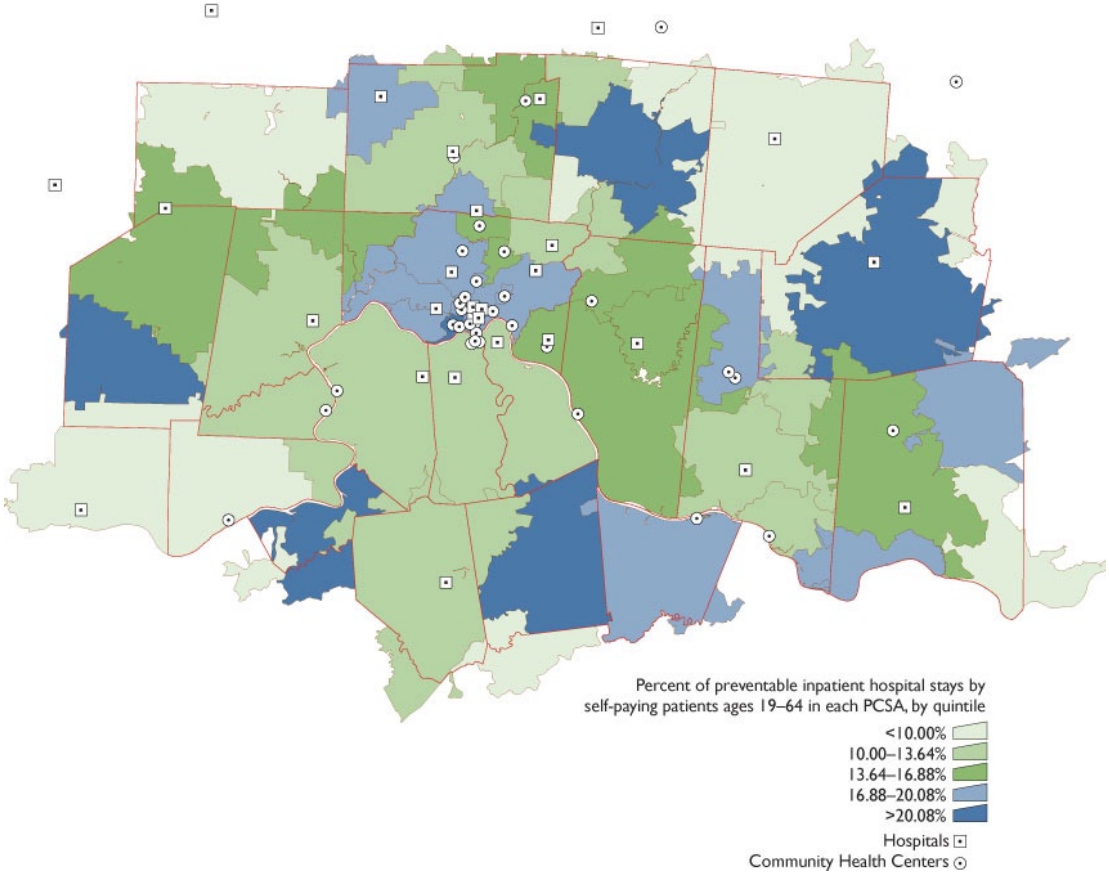
High inpatient ASC rates for self-paying children occur in Grant, Pendleton, and Switzerland Counties, large sections of Adams, Brown, and Highland Counties, and in northwest Butler County (see Map 15). All of these regions are anchored by a hospital facility but—except for Adams County—do not have a nearby community health center. Many of these regions have high rates of poverty (see Map 1).

Map 15: Preventable inpatient hospital stays for self-paying patients ages 0–18 by PCSA



The geographic spread of inpatient ASC admissions for self-paying adults is more concentrated than for children, but the median rate for adults is higher overall: 13-15% for adults compared to 5-8% for children. Most of the regions, though, overlap with those where children have high hospital admission inpatient ASC rates.

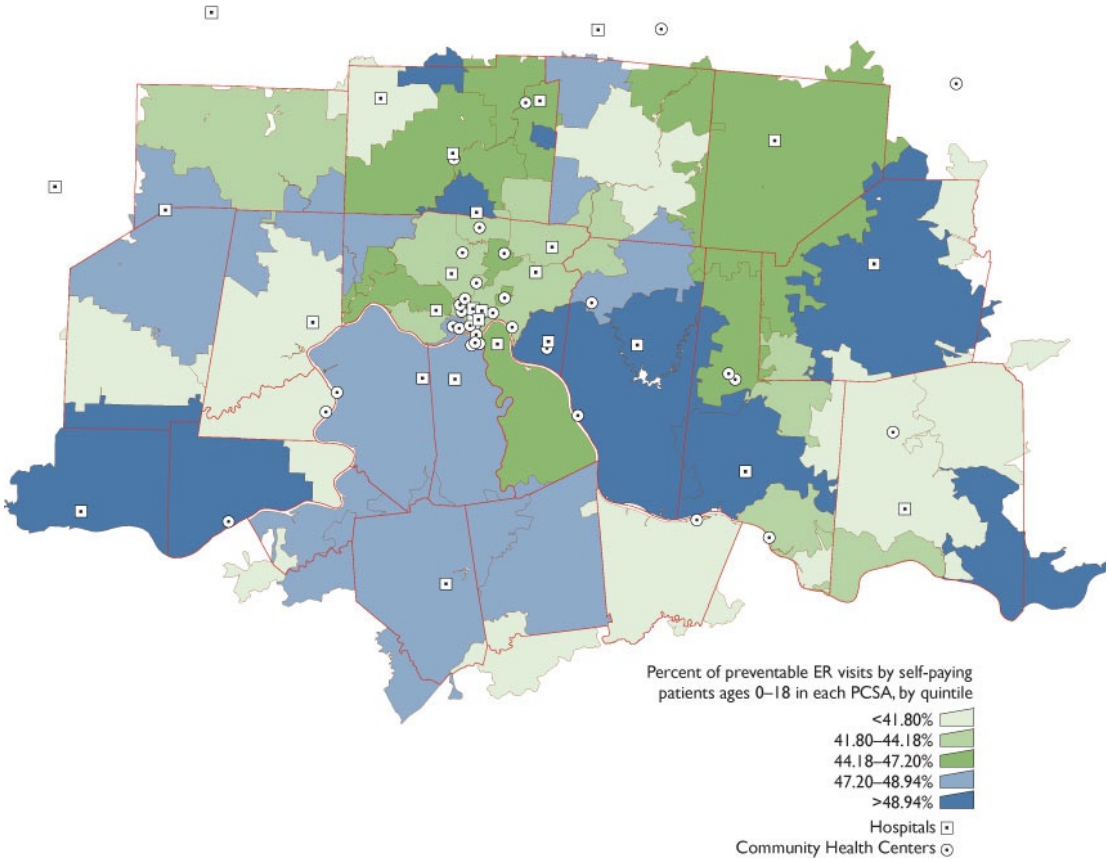
Map 16: Preventable inpatient hospital stays for self-paying patients ages 19–64 by PCSA



Socioeconomic status seems to be a factor in higher inpatient ASC rates. First, higher inpatient ASC rates may be due to poorer health status of lower income people. Second, higher ASC may be due to poorer care – diminished access to specialty care, longer waits for or between appointments, etc. Third, higher inpatient ASC rates may be due to less effective use of the non-hospital health system. Each of these factors call for a different response.

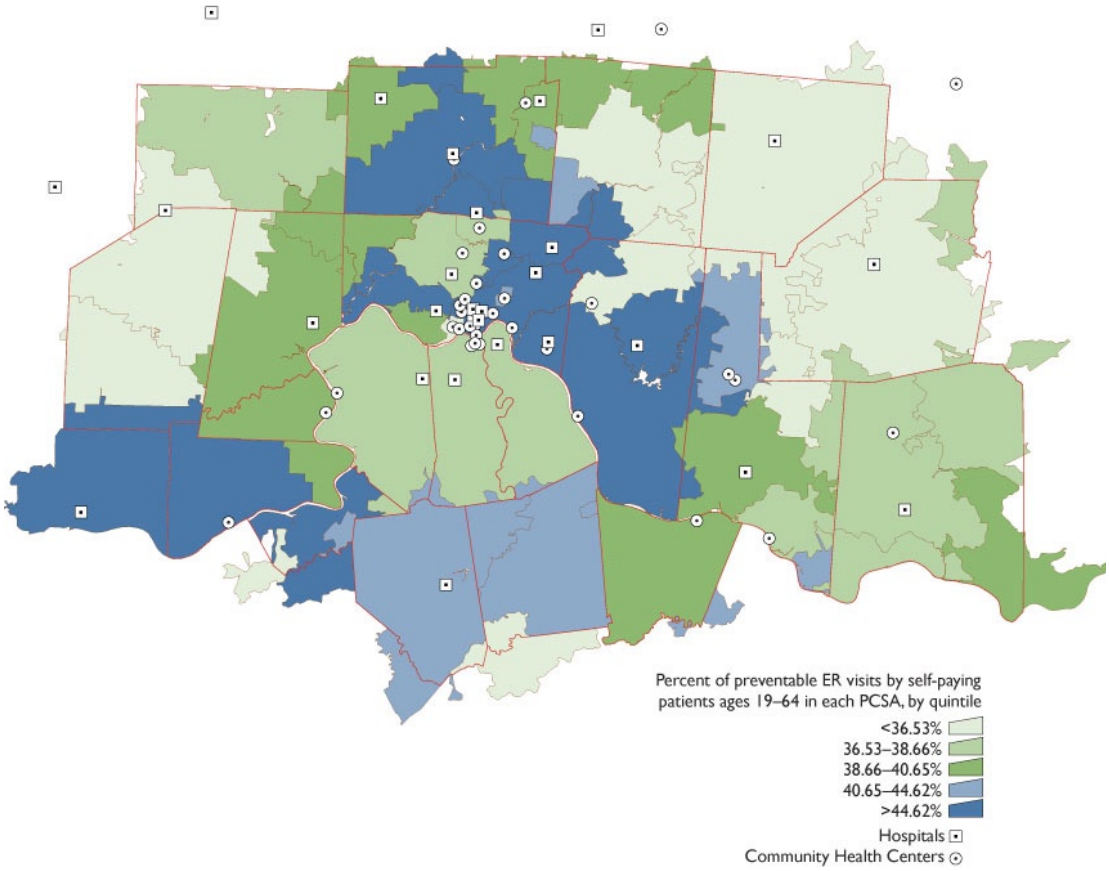
Preventable ER visits include three of the four potential classifications for an ER visit: non-emergency, emergency but primary care treatable, and emergency with ER care needed but preventable/avoidable. The median rate for self-paying children for ER ASC visits is 44-47%, as shown in Map 17. Nearly half of total visits to the ER by children who self-pay could have been prevented by timely and effective primary care.

Map 17: Preventable ER visits for self-paying patients ages 0–18 by PCSA



Map 18 shows preventable ER visits for self-paying adults. The median rate here is 38-40%, somewhat lower than for children. Most areas of high incidence contain hospitals.

Map 18: Preventable ER visits for self-paying patients ages 19–64 by PCSA



A Preliminary Scorecard of Risk Factors

Table 1: Scorecard of risk factors for selected communities in the 20-county region

The scorecard below contains summary data from the maps presented in this chart book. Cells in red indicate issues of high concern, i.e, high rates of hospital use by self-paying patients, high rates of ASC use by Medicaid and self-paying patients, or fewer doctors per 100,000 people. Cells in pink indicate issues of potential concern, i.e., medium to high rates of hospital use by self-paying patients, medium to high rates of ASC use by self-paying and Medicaid patients, and lower rates of doctors per 100,000 people.

General findings from the scorecard are summarized on the next page.

Community	Age group	Number of doctors per 100,000 people[1]				Uninsurance		Preventable hospital use				
		Internal Medicine	Family Practice	Pediatrics	Ob/Gyn	Self-Pay Inpatient	Self-Pay ER Visits	Self-Pay Inpatient ASC	Medicaid Inpatient ASC	Self-Pay ER ASC	Medicaid ER ASC	# High ASC Values
Rural												
Adams Co.	0–18	<6	15–25	<2	<3	M,H[2]	L	H	H	L	H	3
	19–64					M,H	L	M	H	L	L	1
Bracken Co.	0–18	6–13	>41	<2	15–19	L	L,M	L	L	L	H	1
	19–64					M	L,M	H	H	H	L	2
Ohio Co.	0–18	6–13	<15	2–9	8–15	L	M	H	H	L	L	2
	19–64					L	L	L	H	L	L	1
Pendleton Co.	0–18	6–13	15–25	<2	<3	L	L,M	H	M	H	L	2
	19–64					M	L,M	H	L	M	M	1
Switzerland Co.	0–18	<6	31–41	2–9	3–8	H	M,H	H	H	H	L	3
	19–64					L	L,M	L	L	H	L	1
Suburban												
Central Warren Co.	0–18	<6	25–31	2–9	<3	H	M	M	H	L	H	2
	19–64					M	M	H	L	L	H	2
Hillsboro (Highland Co.)	0–18	<6	>41	2–9	8–15	L	L	H	M	H	H	3
	19–64					H	M	H	L	L	H	2
New Richmond (Clermont Co.)	0–18	21–32	25–31	15–26	8–15	H	H	H	M	H	L	2
	19–64					H	H	M	M	H	H	2
Urban												
NW Boone Co.	0–18	6–13	31–41	9–15	8–15	L	L	H	H	H	L	3
	19–64					L,M	L	L	L	L	H	1
SW Butler Co.	0–18	21–32	15–25	2–9	3–8	L,H	H	M	M	M	M	0
	19–64					L,H	L,H	L	M	H	M	1
W. Hamilton Co.	0–18	21–32	15–25	9–15	3–8	M,H	H	L,M	H	L,M	M,H	1.5
	19–64					H	M,H	H	M,H	M,H	H	3
# of high values						8.5	5.5	12	9.5	9.5	9.5	1.8 (avg)

[1] Red cells indicate values in the lowest 2 quintiles (fewer doctors), pink cells indicate values in the middle quintile, and white cells indicate values from the highest 2 quintiles (more doctors) from Maps 5–8

[2] From Maps 15–18 or Figures 8–9 (for the green columns) and Maps 11–14 (for the yellow columns):

- *L = values in the lowest 2 quintiles*
- *H = values in the highest 2 quintiles*
- *L,M = subregions within the community had both low and middle values*
- *L,H = subregions within the community had both low and high values*
- *M,H = subregions within the community had both middle and high values*

Scorecard Findings

The scorecard summarizes a rich body of evidence documenting physician distribution and hospital usage. While care should be taken in over-diagnosing communities based on the scorecard, its "quick-glance" value helps focus on areas within the region needing attention. Also, the maps on which the scorecard are based do not show absolute values of people but rather percentages. Each ZIP code or PCSA contains a different number of people, and a high percentage of people in a rural area may represent relatively few people, while a low percentage in an urban area may represent relatively more people.

One lesson from the scorecard is that communities with low rates of physicians per 100,000 people and higher rates of uninsured people using the hospitals tend to be communities with high rates of preventable hospital use.

Another lesson from the scorecard is that physician distribution and lack of insurance are strong risk factors for preventable hospital use, with the latter being the most influential. Examples of this are the statistics for Switzerland County in Indiana and the areas around Hillsboro (Highland County, Ohio) and New Richmond (Clermont County, Ohio).

Interestingly, in some communities, there can be high ASC rates for adults and lower rates for children, and vice versa. This may have more to do with the organization and focus of services within the community rather then physician distribution or insurance status, but further research will have to bear this out. Examples include Switzerland County in Indiana (higher ASC rates for children) and Western Hamilton (in Ohio) and Bracken (in Kentucky) Counties (higher ASC rates for adults).

Lessons from this Chart Book

Presented here are some lessons learned from the data compiled in this *Chart Book*. For a discussion of the learnings and possible solutions, please see the companion piece, *Exploring Primary Care Services and Resources in Greater Cincinnati: An Overview of the Issues.*

Lessons in Geography

The area's health resources are distributed unevenly. While that is no surprise, an even basic understanding of the economic factors contributing to this may help ignite a set of initiatives that individually address uneven resource distribution. Some medical practices depend on proximity to technology, thereby leaving more rural locations with a dearth of supply in physicians and providers. Where some physicians, such as family practice, distribute themselves more evenly in the region, increasing financial pressures encourage migration to urban areas when physicians reach mid-career.

Lessons in Poverty

In the gravest areas within the 20 county region, poverty exceeds 14% of the population. These areas include:

- Central Cincinnati/Covington (Kentucky/Ohio)
- Northeast Butler County (Ohio),
- Southeast and Eastern Appalachian Region (Ohio)
- Southern Clermont County (Ohio),
- Southwestern Gallatin County (Kentucky), and
- Western Dearborn County (Indiana).

In these same areas between a quarter and a third of the population are at risk for lack of health coverage. The suburban and rural locations of community health centers, however, are not located in these areas.

Lessons in Health Status

The prevalence of low birthweight babies and infant mortality rates were selected as two indicators to track the effectiveness of the system's primary care.

In Indiana, higher percentages of low birthweight births were identified in Ohio and Dearborn Counties. There, rates have risen from 1996-2000 and 1997-2001 due mainly to a "spike" for Dearborn, Ohio and Ripley counties in 2001.

In Kentucky, Bracken and Pendleton counties have the highest infant mortality rates, and overall rates of low birthweight babies are higher in Bracken, Gallatin and Grant counties due to increases between 1997-2001.

In Ohio, Hamilton County has the highest rates and shows an increase in low birthweight births in the later period. Decreases, however, were common in other Ohio counties.

It is common in these counties to have elevated low birthweights persist at the same time as elevated infant mortality rates. Elevated rates in an area for both can be due to a number

of factors, including population specific factors such as lack of insurance coverage and socioeconomic status of the mother during pregnancy, and healthcare-specific factors such as poor/non-existent pre-natal care and the process of care delivery. Data show higher rates of both among African American populations.

Lessons in Preventable Hospital Utilization

Use of primary care, perhaps even access to care, is a problem not only for the uninsured but for everyone. Almost half of all ER visits were preventable through earlier primary care intervention, but the uninsured account for only about one-fifth of preventable ER encounters. Perhaps the message is as much about access outside normal business hours, visibility (hospitals vs. rural health centers), provider behavior, or trust compared to the source of payment.

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