

Asthma in Missouri: Kansas City Area

(Jackson, Platte and Clay Counties)



University of Missouri
Asthma Ready® Communities

April 2020

Asthma
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Abstract

Asthma is a serious respiratory condition affecting one-half million people in Missouri including more than 120,000 children. According to the Behavioral Risk Factor Surveillance System (BRFSS), the prevalence of asthma among children and teens aged 0 to 17 years in Missouri was 8.7% in 2015, with the Kansas City Metropolitan Region prevalence (7.0%) similar to the state. However, many of the children within the Kansas City three counties (i.e., Jackson, Clay, and Platte) have persistent and/or uncontrolled asthma resulting in substantial morbidity and costs.

To inform and guide geographic distribution of interventions, analysis of Medicaid administrative claims data indicated areas in Missouri including the Kansas City Area where children are experiencing persistent asthma and population-based panel reports indicated a substantial proportion have uncontrolled asthma. Of the 77,309 total asthma emergency department (ED) visits that occurred among individuals living in the Kansas City three-counties (2004-2015), 42.7% (32,987) were among children 0 to 17 years of age. For the same 12-year period, there were a total of 17,783 asthma hospitalizations for people from the three counties with more than one-third (38.1% or 6,767 stays) among children. In 2015, inpatient hospital charges for asthma in the Kansas City Area totaled \$24.1 million and children aged 0 to 17 years accounted for about \$5.2 million or 21.6%. In Jackson County, Medicaid accounted for the largest pay source cited followed by commercial insurance for asthma hospital charges among children with approximately 66.7% of the hospital charges expected from Medicaid similar to the 66% for the state. Jackson County has been consistently higher in asthma ED visits and hospitalizations among children than the other two counties and Missouri, and these have significantly increased over time. For those aged 0 to 19, the asthma hospital admissions rates by month for the Kansas City Area indicated two peak periods: 1) April and 2) September-October. Also shown was a substantial low plateau in asthma hospital admissions in this area for children and teens for the months of June - July.

The Kansas City three-county area has 42 public school districts as well as charter and private schools, colleges, and universities. The Kansas City Area school districts combined have almost 170,000 total students representing approximately 19.2% of the enrollment in public schools in Missouri (2018-2019). The most populous school district in the three-county area is North Kansas City 74 in Clay County (20,807 students), followed by Lee's Summit R-VII (18,413 students) in Jackson County, and Kansas City 33 School District (15,356 students) also in Jackson County. The health care system in the Kansas City Area includes primary care providers, hospitals, clinics, community health centers, public health, mental health services, schools, Medicaid and care management services, and community partners. There are many community resources also available.

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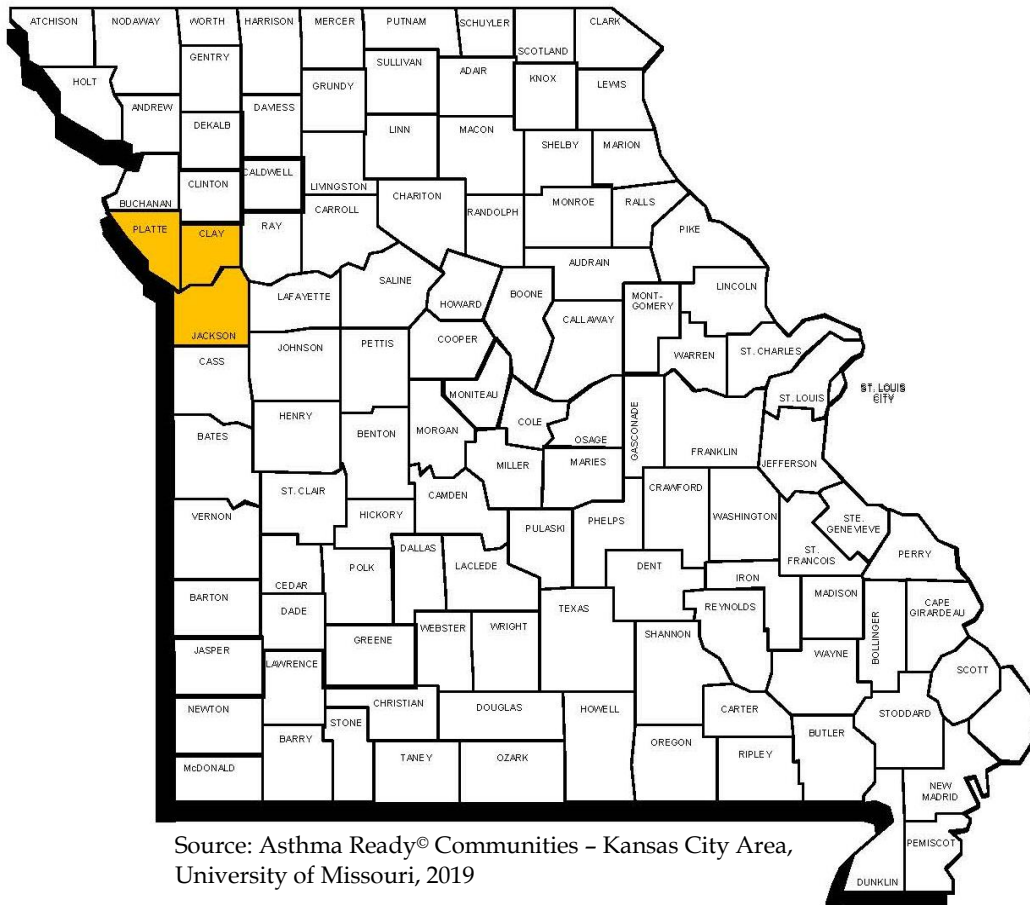
Cover photo: Kansas City, Asthma Ready Communities

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Kansas City Area

Asthma is a chronic respiratory condition that affects millions of adults and children in the United States,¹ In Missouri, more than one-half million people are living with asthma including an estimated 440,000 adults and 120,000 children (2017).² This report explores the burden of asthma and community care and support resources in three counties that comprise the Kansas City area of Missouri: Jackson, Platte, and Clay (Figure 1).

Figure 1. Kansas City Area counties, Missouri, 2019



- Jackson County** is located in the western portion of Missouri and is the second most populous county with St. Louis County being the most populous. Jackson County is part of the bi-state, 14 county Kansas City, MO-KS Metropolitan Combined Statistical Area (MSA). The original county seat is Independence and Kansas City is the second county seat and location of most county government. Approximately one-fourth of the population is 0 to 17 years of age (Table 1). Jackson County contains most of Kansas City, the largest city in Missouri, and is the most diverse of the three counties. It also has a high prevalence of no health insurance among those aged < 65 years, persons in poverty, and households without a computer compared to the other counties.
- Clay County** is part of Kansas City, MO-KS metropolitan area and the county seat is Liberty. It also contains a substantial part of Kansas City. Approximately one-fourth of its population is 0 to 17 years of age.
- Platte County** is also part of the Kansas City, MO-KS MSA and the county seat is Platte City. Similar to the other two counties, about one-fourth of its population is 0 to 17 years of age and it has the largest percentage of adults completing a bachelor's degree of the three counties.

Table 1. Characteristics and select indicators for the Kansas City Area counties and Missouri, 2019*

Characteristic	Jackson	Clay	Platte	Missouri
Total pop.	703,011	249,948	104,418	6,137,428
Age ^y / Sex	Percent	Percent	Percent	Percent
0 - 17	23.6	24.1	23.8	22.5
18 - 64	61.5	61.8	61.7	60.6
≥ 65	14.9	14.1	14.5	16.9
Female	51.6	50.9	50.7	50.9
Education				
≥ Bachelor's degree ^{a,b}	30.9	32.7	41.8	28.6
Race				
White	70.1	86.7	86.0	83.0
African American	23.8	7.0	7.4	11.8
American Indian / Alaska Native	0.6	0.6	0.6	0.6
Asian	1.9	2.5	2.9	2.1
Other race	3.6	3.2	3.1	2.5
Hispanic / Latino	9.1	7.0	6.2	4.3
Indicators				
No health insurance < age 65	12.6	8.6	6.6	11.2
Persons in poverty	13.0	7.0	5.8	13.2
Households without a computer ^b	12.7	6.8	5.3	12.7
* Kansas City Area counties: Jackson, Clay, and Platte. ^y Years ^a Persons age 25 years+ ^b 2014-2018 Source: U.S. Census Bureau.				

Asthma Prevalence

According to the Behavioral Risk Factor Surveillance System's (BRFSS) expanded Kansas City Metropolitan Region comprising nine counties, the prevalence of current asthma among adults (10.6%) and children is similar to the state prevalence in 2015 (Table 2).³

Table 2. Prevalence of current asthma among children aged 0-17 and adults aged ≥ 18 years, Kansas City Metropolitan Region and Missouri, 2015

	Adult %	Child %
	95% Confidence Interval	95% Confidence Interval
<i>Kansas City Metro Region</i>	9.7	7.0
	7.6 - 11.8	3.4 - 10.7
<i>Missouri</i>	9.6	8.7
	8.6 - 10.6	6.7 - 10.6

Source: Missouri Department of Health and Senior Services. Behavioral Risk Factor Surveillance System.

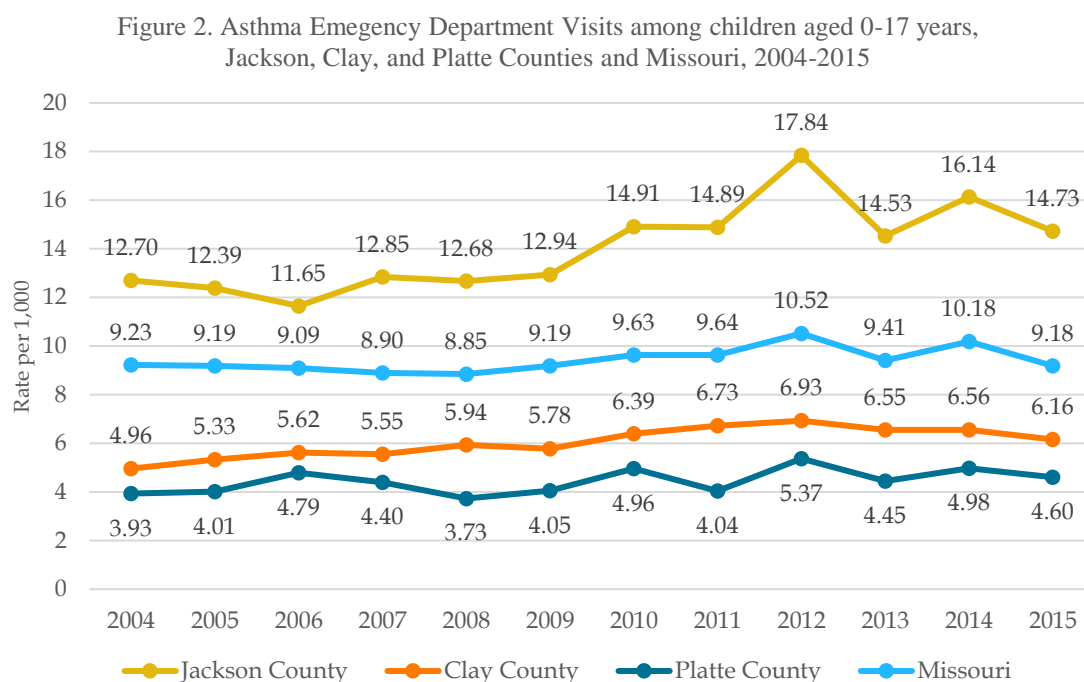
Asthma Control

Asthma currently affects an estimated 25 million people in the United States (7.7% adults and 7.5% of children) (2018). While asthma occurs among all population groups, it is particularly a health issue among children and teens and is more common among African-Americans and in households with lower incomes and education. While asthma cannot be cured, the goal is optimal control. Well controlled asthma results in increased productivity and low morbidity and overall health costs.

Approximately 55% of children with asthma in Missouri are uncontrolled.⁴ This leads to frequent symptoms and urgent asthma attacks resulting in impairment (e.g., interference with sleep and normal activity), absenteeism from school, and a disproportionate share of emergency department (ED) visits and hospitalizations. More than one-third of Missouri asthma ED visits (42.2%) and hospitalizations (31.5%) occurred among children 17 and younger in 2015.

Emergency Department Visits

Of the 77,309 total asthma emergency department (ED) visits that occurred among individuals living in the Kansas City three-county area (2004-2015), 42.7% (32,987) were among children 0 to 17 years of age. However, the asthma ED visit rates among children in Jackson County were consistently above that of the other two counties and Missouri (Figure 2). In addition, while the asthma ED visit rates among this age group have remained relatively stable in Missouri, there has been a significant increase in Jackson County comparing 2006 and 2012, (11.65, 95% CI 11.13 – 12.17 v 17.84, 95% CI 17.20 – 18.49 per 1,000 children).



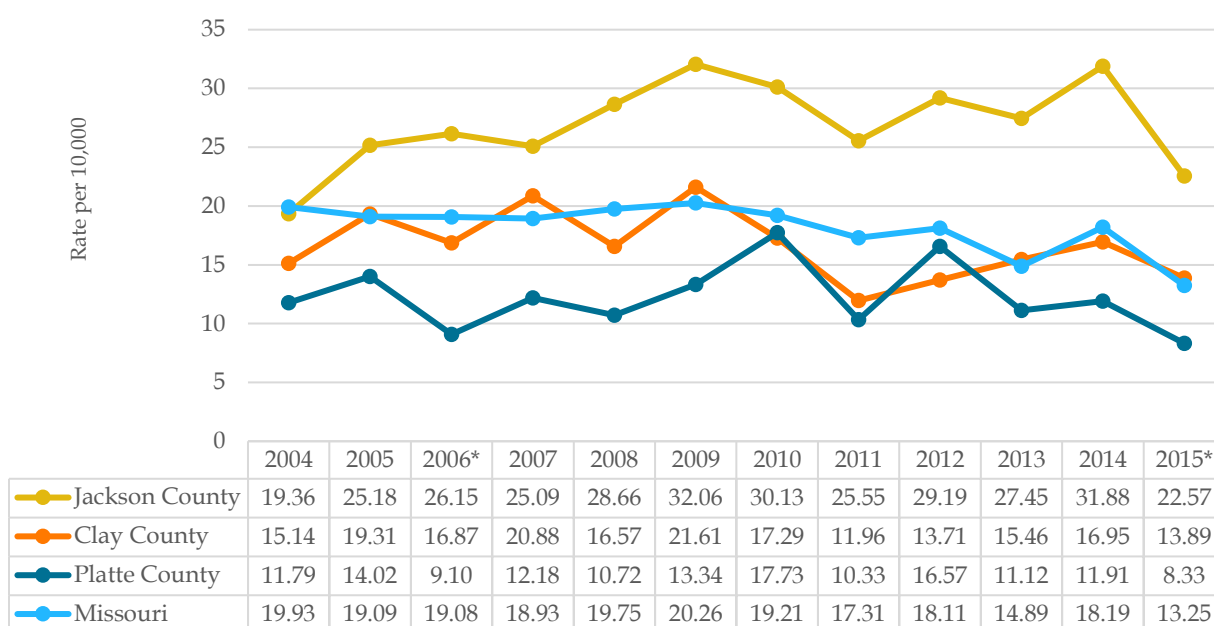
Kansas City Area Counties: Jackson, Clay, and Platte.

Source: Missouri Department of Health and Senior Services. Missouri Public Health Information Management System (MOPHIMS), Emergency Room Missouri Information for Community Assessment (MICA).

Hospitalizations

For the same 12-year period (2004-2015), there were a total of 17,783 asthma hospitalizations for people living in the Kansas City three-county area with 38.1% (6,767) among children 0 to 17 years of age. In Missouri, there was a statistically significant annual average decline of 2.5% in asthma hospitalizations among children 0 to 17 years of age 2004-2015 (Figure 3). Jackson County experienced an increase 2004 -2009 with the exception of 2007 and a second peak in 2014. Jackson County showed a significant increase in asthma hospitalizations among children comparing 2004 to 2014 (19.36, 95% CI 17.30 – 21.59 v 31.88, 95% CI 29.15 – 34.61).

Figure 3. Asthma hospitalization rates among children aged 0-17 years, Jackson, Clay, and Platte Counties and Missouri, 2004-2015



Kansas City Area Counties: Jackson, Clay, and Platte.

*Platte County: Less than 20 cases, rate unstable.

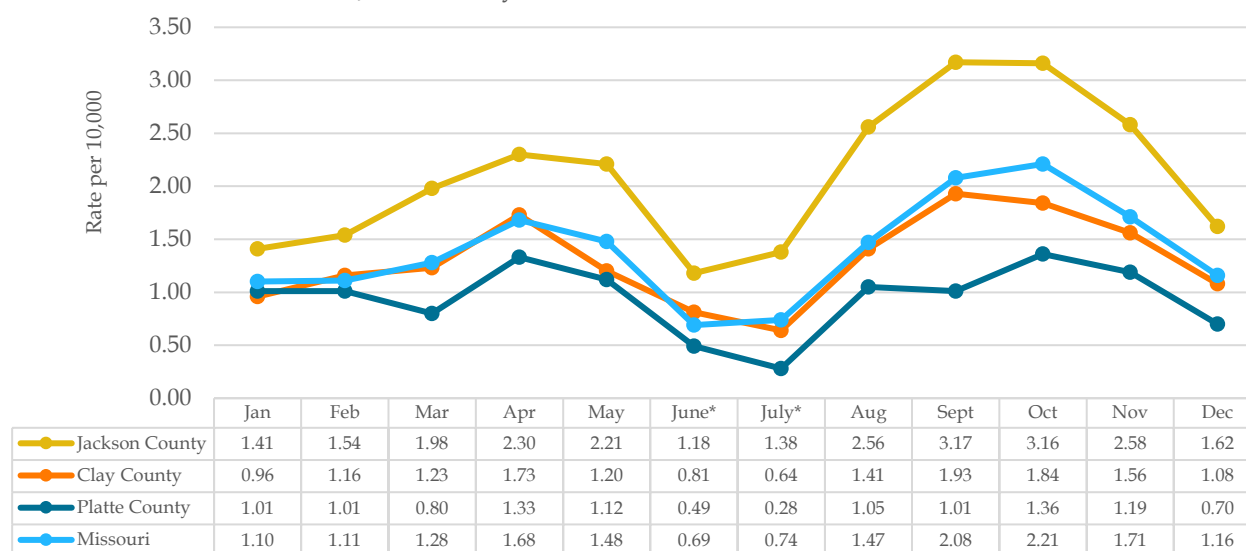
Source: Missouri Department of Health and Senior Services. Missouri Public Health Information Management System (MOPHIMS), Inpatient Hospitalizations Missouri Information for Community Assessment (MICA).



Asthma Seasonality

Asthma ED visits and hospitalizations have seasonal patterns. For children and teens aged 0 to 19, the asthma hospital admissions rates by month for the Kansas City three-county area and Missouri show a bimodal distribution indicating two peak periods (Figure 4). The peak months are April and September-October. Also shown are the substantial low rates in asthma hospital admissions for children and teens June-July in the Kansas City area counties and Missouri.

Figure 4. Asthma inpatient hospital admission rates for children aged 0 to 19 years by month, Jackson, Clay and Platte Counties and Missouri. 2004-2015



Kansas City Area Counties: Jackson, Clay, and Platte.

*Platte County: Less than 20 cases, rate unstable.

Source: Missouri Department of Health and Senior Services. Missouri Public Health Information Management System (MOPHIMS), Environmental Public Health Tracking

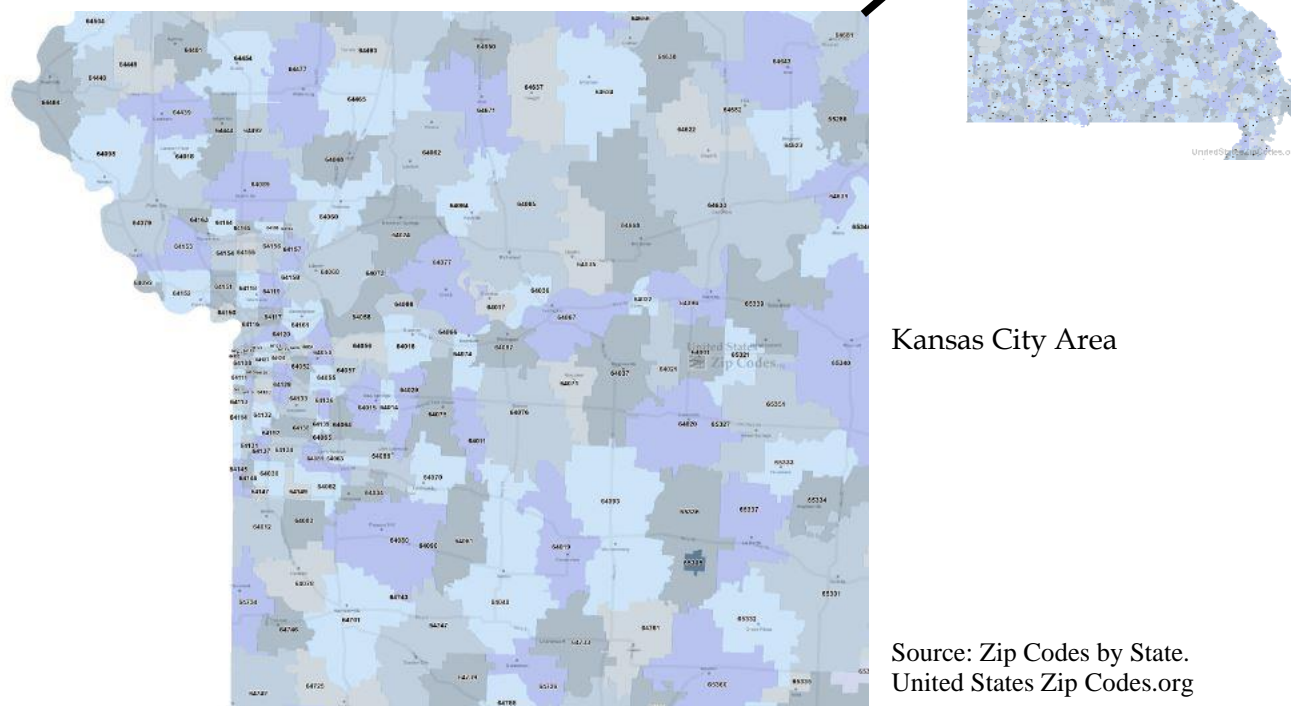
In 2015, inpatient hospital charges for asthma in Missouri totaled \$105 million with \$24.1 million for the Kansas City three-county area or almost 23% of the state's asthma charges. Among children and teens aged 0 to 17 with asthma as the primary diagnosis in Missouri, charges totaled \$20.8 million and children / teens from the Kansas City three-county area accounted for about 25.1% (\$5.2 million) of these charges. In Jackson County, Medicaid accounted for the largest pay source cited followed by commercial insurance for asthma hospital charges among children. In Jackson County for children, 66.7% of the charges were expected from Medicaid similar to the state (66%). As these data show, much of the asthma burden is on children and families enrolled in Medicaid.



Zip Codes

The Missouri Zip Codes Map (Figure 5), using the ZIP Code Tabulation Areas (ZCTAs) as specified by the United States Census Bureau, approximate the area covered by a ZIP code.⁵ The Kansas City three-county area has about 114 zip codes.⁶ Approximately 19 (16.7%) of the ZIP codes are PO Boxes with low or no residential populations.

Figure 5. Missouri Zip Codes, 2019



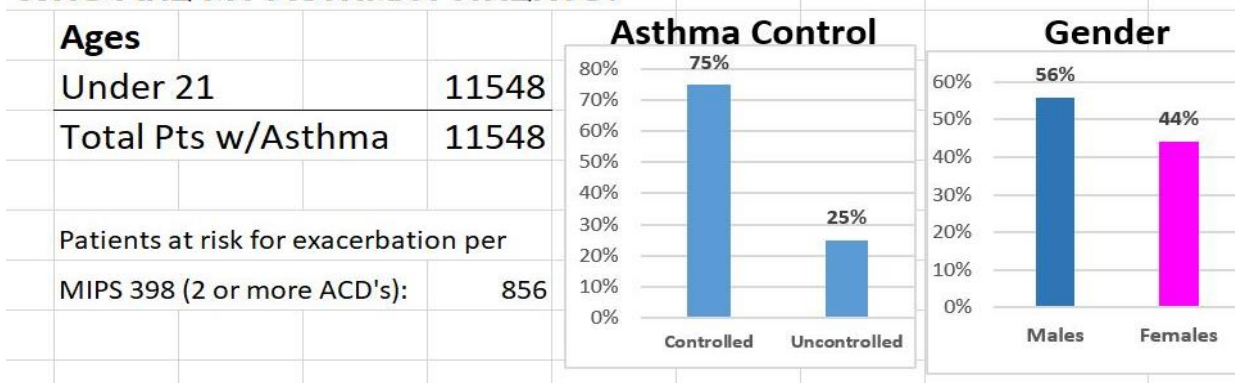
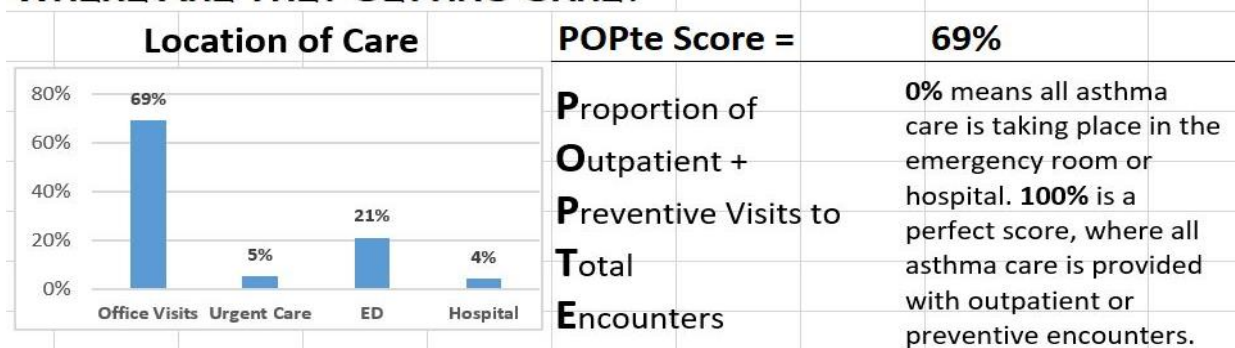
Interventions

To focus interventions in areas of greatest need, a population risk framework along with a health care delivery and communication system were developed. This system guides intervention deployment, provides healthcare referrals and access, and offers information for process and outcomes evaluation. Through an outcomes focused collaborative, Medicaid administrative claims data using risk indicator algorithms, are used to generate de-identified population-based panel risk reports and maps to identify and provide care to children with uncontrolled asthma in Missouri. Risk indicators such as frequent asthma acute care visits (i.e., emergency visits and hospitalizations) and medication overuse (i.e., short acting beta agonists or systemic oral steroids) or underuse (low control medication use) are used. This information is translated and provided to clinicians, school nurses, and care managers as an asthma population panel report for children enrolled in MO HealthNet to inform care management and practices. The asthma risk panel report for children, teens and young adults (< 21 years) in the Kansas City Area indicates that one-fourth (25.0%) had uncontrolled asthma and a large proportion sought care through ED visits (21%) (Figure 6). Progressively, with a POPte Score of 69% or almost 7 in 10 care encounters are occurring in outpatient and preventive visits.

Figure 6.

Asthma Dash Board: Kansas City Area

Data Range Between 8/1/18 and 7/31/2019

WHO ARE MY ASTHMA PATIENTS?**WHERE ARE THEY GETTING CARE?****WHAT MEDICATIONS ARE THEY TAKING?**

ICS	Percentage of all asthma patients who filled at least 1 ICS	52%
	Mean possession rate for patients who filled at least 1 ICS	25%
	Mean possession rate for patients w/uncontrolled asthma	23%
	Mean possession rate for all patients	13%
OCS	Total oral steroid bursts filled for all patients	7489
	Average OCS bursts per patient	0.65
	Number of patients with at least 2 OCS bursts	1848

WHAT OPPORTUNITIES FOR CARE AM I MISSING?

Missed office visits based on 2 visits/yr for all patients						11260	
Missed office visits based on 2/yr for controlled & 4/yr for uncontrolled						17012	
Based on control, number of patient needing return visits in:						30-60 days:	672
						60-90 days:	292
						90-120 days:	10400
Missed opportunity to bill 94664 inhaler training for each patient just once a year						8593	

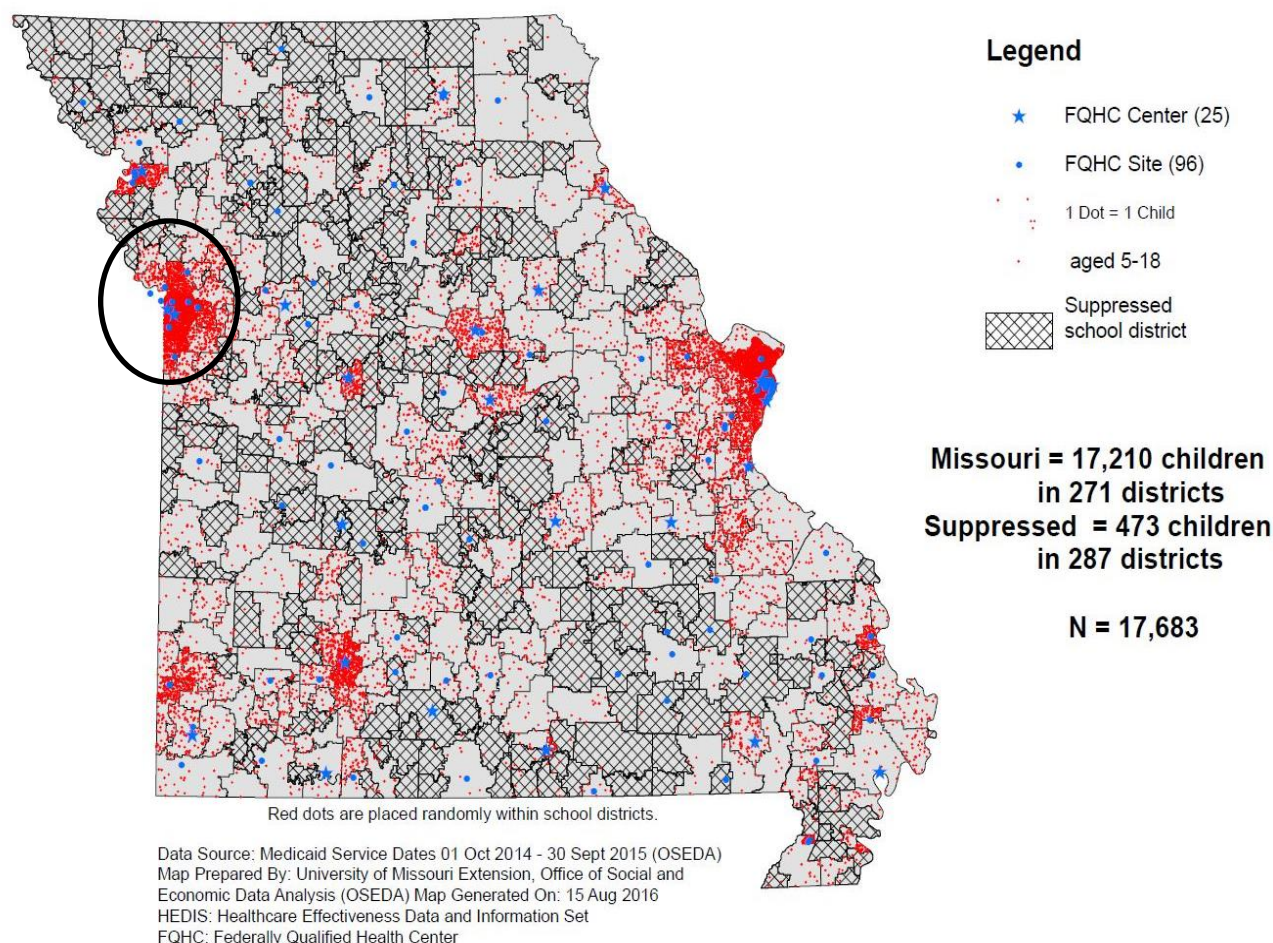
WHAT OTHER SERVICES CAN I OFFER?

Number of patients who are eligible for Health Home Enrollment	3287
Number of patients who are eligible for a Home Environmental Assessment	653

MIPS=Merit-Based Incentive Payment System, ACD=Acute Care Day, ICS=Inhaled Corticosteroid, OCS=Oral Corticosteroid

The map (Figure 7) shows several concentrated areas of children with persistent asthma enrolled in MO HealthNet (Medicaid) including in the Kansas City Area. Persistent asthma was defined by the Healthcare Effectiveness Data and Information Set (HEDIS) as having 1 asthma inpatient admission or emergency department visit or 4 asthma medication dispensing events, or 4 outpatient asthma visits and at least 2 asthma medication dispensing events.

Figure 7. Children with Medicaid with HEDIS persistent asthma by school district, Missouri, 2014-2015



Applying the data and implementing evidence-based practices and community-wide interventions in the Kansas City Area are showing results of improved self-care measures and overall symptom control among children and teens.⁷ Legacy interventions such as Teaming Up for Asthma Control evaluation, early childhood initiative,⁸ and asthma care professional development^{9,10} and current interventions (collaborative learning combined with health system, primary care, and community initiatives, particularly schools), are contributing to advances in asthma control. Collaborative learning participants include MD/DOs, RN/NPs, RTs, LPNs, MAs, CHWs, PhDs, students, and others. The Asthma Ready Communities (ARC) data contained 1,304 activity records based on zip codes for the Kansas City Area (Table 3). Other interventions and initiatives such as primary care health homes, home environmental assessments, and parent advisory groups also support and contribute to improving asthma outcomes and reducing costs

Table 3. Key interventions to reduce pediatric asthma risk and improve control, Kansas City Area*, Missouri, 2007-2020

Intervention	Percent of participation records
Extension for Community Healthcare Outcomes (ECHO)	35.4
<ul style="list-style-type: none"> Impact Asthma – <i>Essentials</i> Asthma Care Accelerator – <i>Quality Improvement / Maintenance of Certification (QI/MOC)</i> Asthma Care & Education – <i>Community / Faith-based</i> 	19.2 8.0 8.2
Teaming Up for Asthma Control	30.5
Asthma Ready Clinic Training I, II, and Follow-up	12.6
Becoming an Asthma Educator & Care Manager	7.6
Community Health Worker education and training	3.7
Childhood Asthma Linkages in Missouri 2	2.7
Asthma Empowerment	
Asthma Academy	
Asthma Day	4.7
ARC designation	
Programs – <i>Acting on Behalf of My Child</i> and Asthma Care Everyday	
Additional support – site visits, EPR3 guidelines, panel reports, and counseling for asthma risk reduction	1.5
Presentations	1.3

Source: University of Missouri, Asthma Ready Communities (ARC). Kansas City activity records = 1,304.

*Counties include Jackson, Clay, and Platte.

Community Agencies

There are many community resources available in the Kansas City Area. The following provide a sample of information available:

Jackson County Resource Guide

<http://bfmakc.org/downloads/ResourceGuideJacksonCounty.pdf>

United Way of Greater Kansas City

<https://www.unitedwaygkc.org/get-help>

North Kansas City Schools: Community Resource Guide

https://www.nkcschools.org/cms/lib/MO49000025/Centricity/Domain/151/NKC_Community_Resource_Guide_April%20_2019.pdf

The Whole Person: Kansas City Metro Area Resources

<https://thewholeperson.org/resources/kc-metro-resources-by-topic.html>

Children's Mercy Kansas City: Community Resources

<https://www.childrensmercy.org/your-visit/family-support/social-work/community-resources/>

Platte County Health Department

<https://www.plattecountyhealthdept.com/pview.aspx?id=25057&catid=522>

Platte County Missouri Assistance Programs

https://www.needhelppayingbills.com/html/platte_county_assistance_progr.html

United Services Community Action Agency

<https://www.caagkc.org/wp-content/uploads/2017/06/2012.pdf>

Community Resource Guide: Clay County, Missouri

<https://www.childrensmercy.org/contentassets/11ea3f3419c045bdb6b9b9f1d5544d6e/beacon-comm-resources-clay-county-mo-resource-guide.pdf>

Clay County Public Health Center

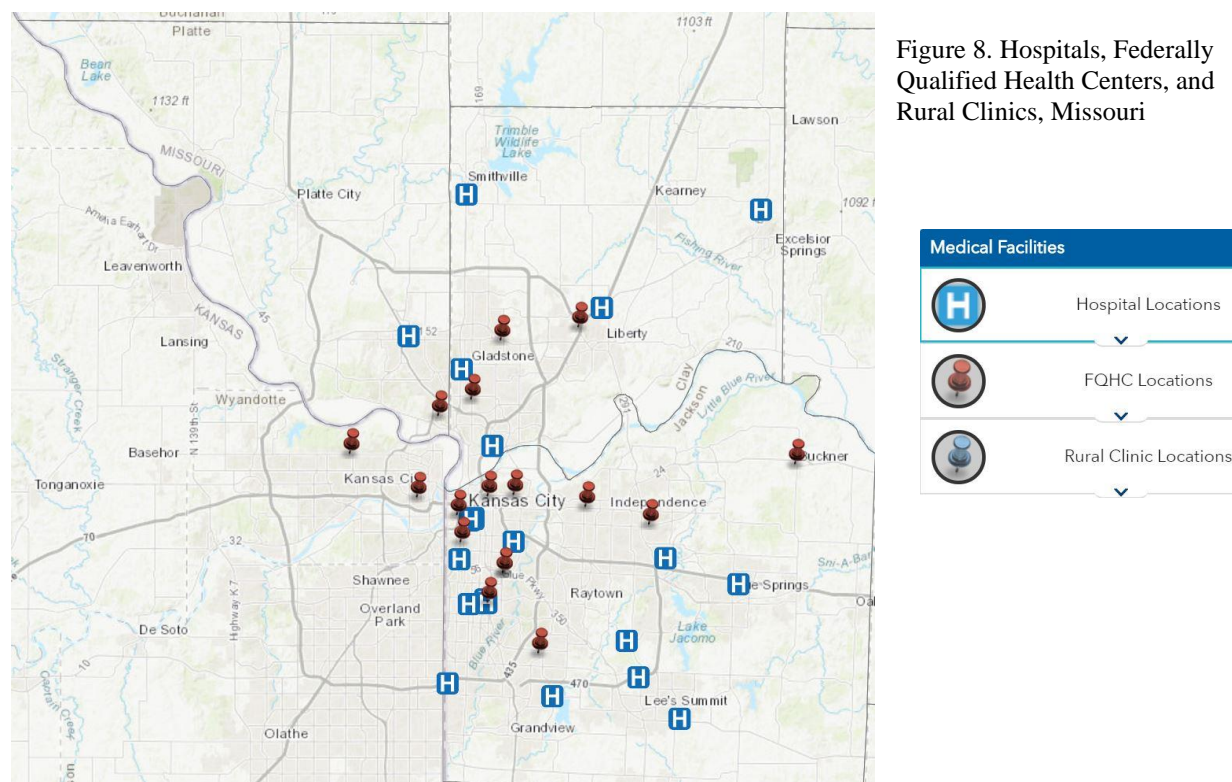
<https://www.clayhealth.com/255/Community-Resources>

Clay County Resources

<http://extension.missouri.edu/hes/wisewoman/ClayCountyWW.pdf>

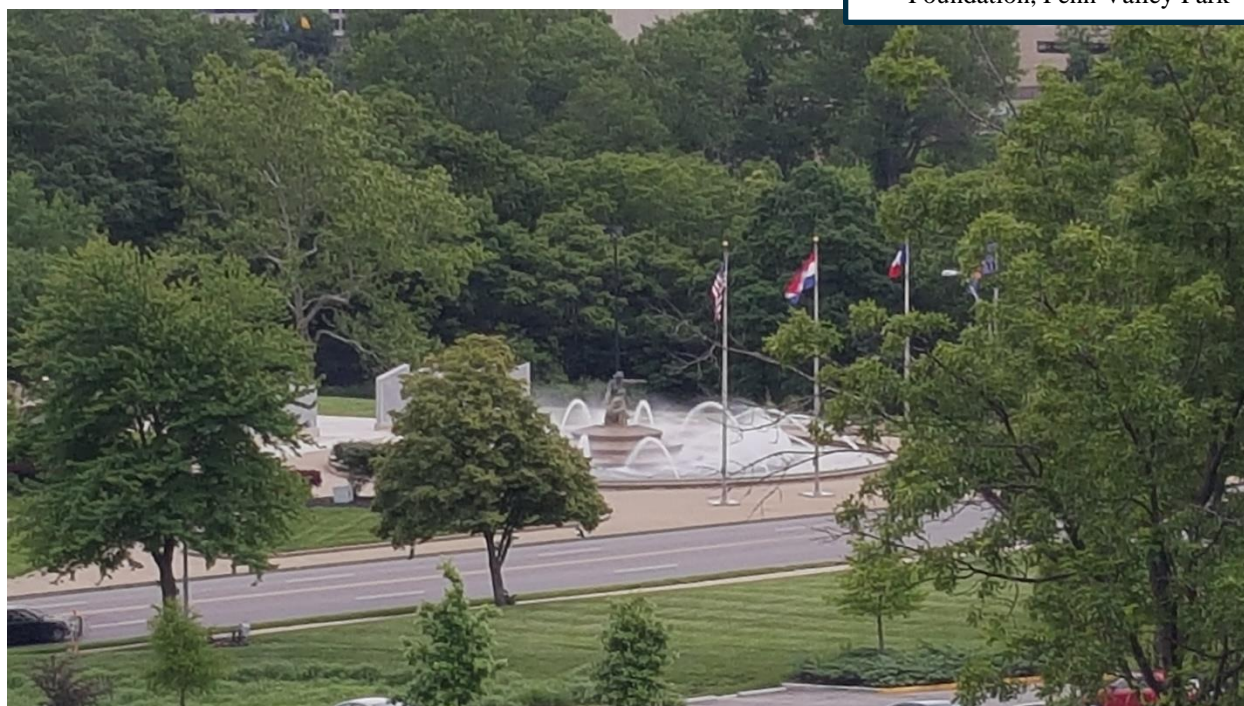
Health Systems

The health care system is comprised of primary care providers, hospitals, clinics, community health centers, public health, mental health services, school nurses, Medicaid and care management services, and community partners. The Kansas City Area has several health care systems that have participated in asthma activities such as Children's Mercy, St. Luke's, KC Care Clinic, federally qualified health centers (FQHCs), and rural health clinics. Locations for the hospitals, FQHCs and rural clinics are shown in Figure 8.



Source: Missouri Department of Health and Senior Services, Rural Health and Primary Care.

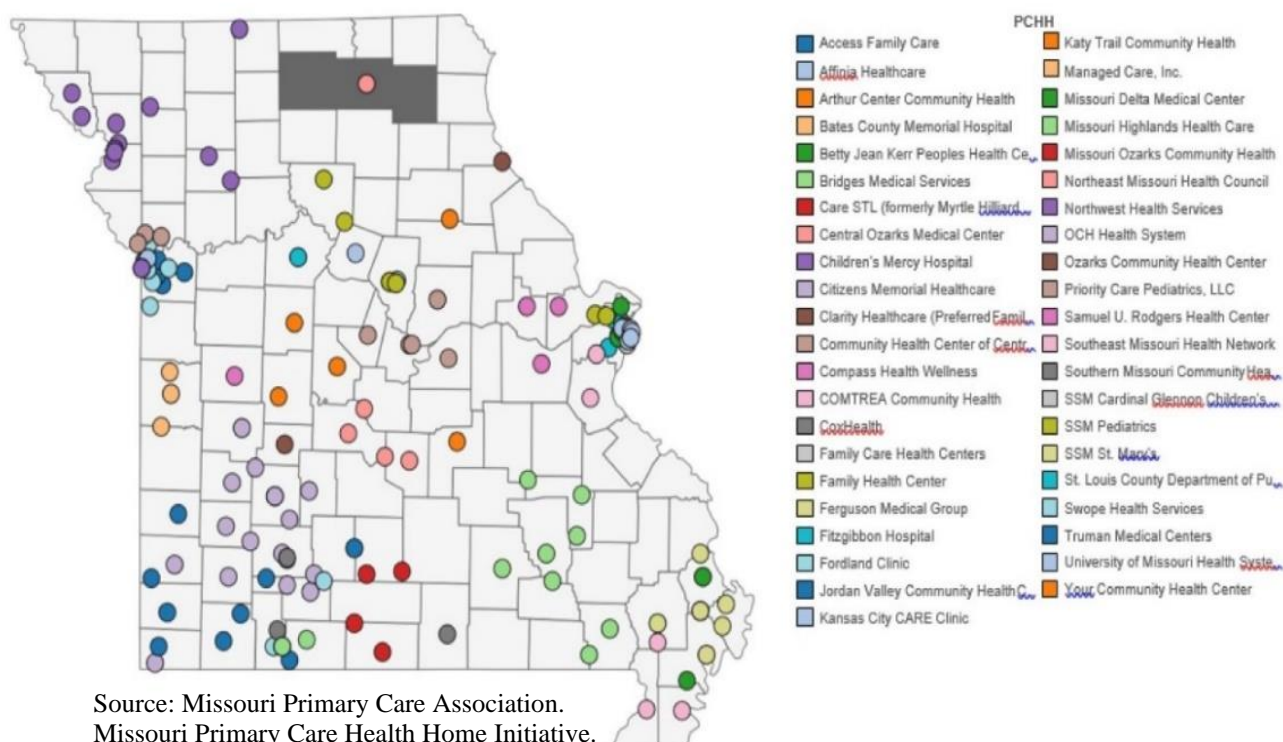
Kansas City Firefighters Memorial Foundation, Penn Valley Park



There are several MO HealthNet Division Primary Care Health Home providers in the Kansas City Area (Figure 9).¹¹ The county health departments in each of the three counties, are active public health agencies, promote prevention and environmental health, operate clinics, and offer many other health resources.

Figure 9.

MHD Primary Care Health Home Locations February 2019



Source: Missouri Primary Care Association.
Missouri Primary Care Health Home Initiative.

Figure 10. Kansas City Area school districts, by county, Missouri, 2019-2020

Schools

There are 42 school districts in the Kansas City three-county area (2018-2019).¹² Several of the school districts cross county boundaries (Figure 10).¹³ These school districts combined have almost 170,000 total students representing approximately 19.2% of the enrollment in public schools in Missouri.¹⁴ The most populous school district in the three county area is North Kansas City 74 in Clay County (20,807 students), followed by Lee's Summit R-VII (18,413 students in Jackson County, and Kansas City 33 School District (15,356 students) also in Jackson County (Table 3).

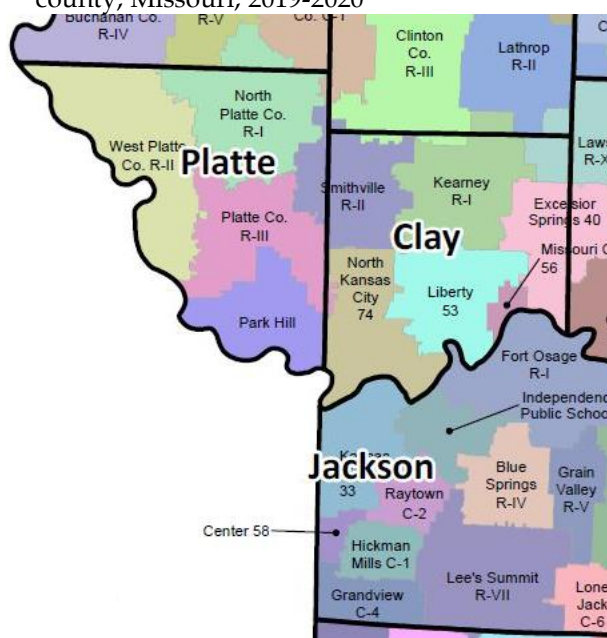


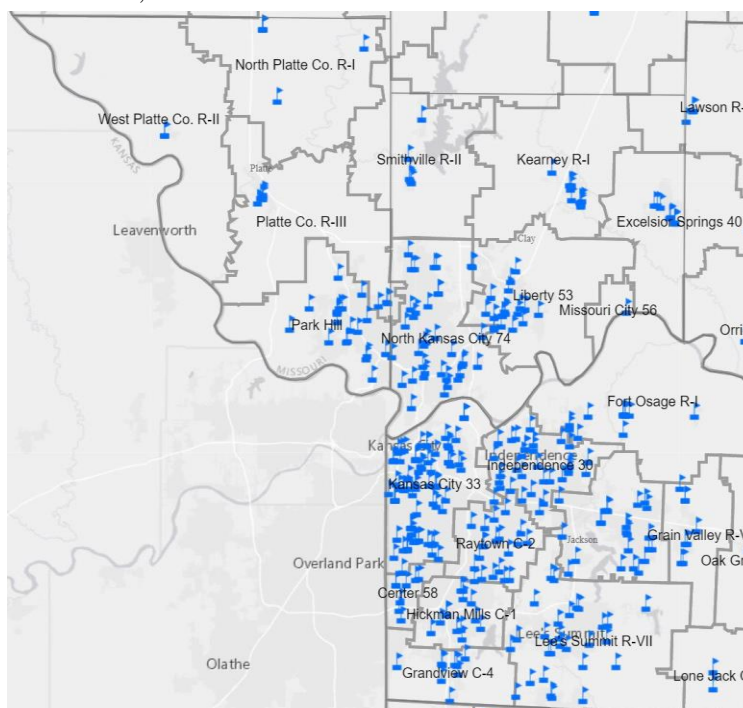
Table 4. Number and percent of total students in the Kansas City Area by number of students, Missouri, 2018-2019

Kansas City Area School Districts		Number	Percent of Total	
County	Three-County Area	169,647	100	
Clay	North Kansas City 74	20,807	12.3	
Jackson	Lee’s Summit R-VII	18,413	10.9	
Jackson	Kansas City 33	15,356	9.1	
Jackson	Independence 30	14,723	8.7	
Jackson	Blue Springs R-IV	14,605	8.6	
Clay	Liberty 53	12,754	7.5	
Platte	Park Hill	12,052	7.1	
Jackson	Raytown	8,852	5.2	
Jackson	Hickman Mills C-1	5,818	3.4	
Jackson	Fort Osage R-1	5,021	3.0	
Jackson	Grain Valley R-V	4,472	2.6	
Jackson	Grandview	4,288	2.5	
Platte	Platte Co R-III	4,246	2.5	
Clay	Kearney R-1	3,605	2.1	
Clay	Excelsior Springs 40	2,903	1.7	
Jackson	Center 58	2,651	1.6	
Clay	Smithville R-II	2,639	1.6	
Jackson	Oak Grove R-VI	2,003	1.2	
Jackson	Frontier Schools	1,626	1.0	
Jackson	Guadalupe Centers	1,293	7.4	
Jackson	University Academy	1,123		
Jackson	Ewing Marion Kauffman	1,078		
Jackson	Academia Lafayette	1,074		
Jackson	Hogan Preparatory Academy	983		
Jackson	Crossroads Charter Schools	779		
Platte	West Platte Co R-II	700		
Jackson	Brookside Charter School	697		
Jackson	Lone Jack C-6	684		
Jackson	Kipp Endeavor Academy	644		
Jackson	KC International Academy	621		
Platte	North Platte Co R-I	613		
Jackson	Allen Village	574		
Jackson	Lee A Tolbert Com Academy	492		
Jackson	Citizens of the World Charter	290		
Jackson	Scuola Vita Nuova	279		
Jackson	Genesis School Inc	268		
Jackson	Academy for Integrated Arts	230		
Jackson	Gordon Parks Elementary	150		
Jackson	Delasalle Charter School	113		
Jackson	Hope Leadership Academy	128		
Clay	Missouri City 56			
Jackson	Kansas City Girls Prep Academy			
Kansas City Area: Jackson, Clay, and Platte counties.				
Source: Missouri Department of Elementary and Secondary Education. School Directory.				

12 school districts have 80.9% of the total Kansas City Area student population

There are elementary, middle/Jr high schools, high schools as well as charter, academies, and others throughout the three-county area (Figure 11).⁸ According to the Missouri Assessment Program 2019 data, of the three most populous districts, Kansas City 33 had the highest student population receiving free and reduced lunches (100%), followed by North Kansas City (47.3%) and Lee's Summit (19.9%) compared to 50.0% in Missouri. The Kansas City Area also has several universities, colleges, and specialty schools.

Figure 11. Public schools in the Kansas City area by county, Missouri, 2019



Source: Missouri Department of Elementary and Secondary Education.

Churches

There is an abundance of churches in the Kansas City Area including Baptist, Methodist, Catholic, Pentecostal and Assembly of God, Christian, Church of Christ, and many others. The location of many of the churches may be found through online search portals such as *Church Finder* <https://www.churchfinder.com/>. Faith-based asthma control initiatives and partnerships have the potential for a broad health impact, ranging from the individual to the community or population health level and have shown promise in improving asthma control.

The combined impact of simultaneously supporting clinicians, school nurses, and care managers while implementing effective interventions and linking with community resources (i.e., schools, churches, pharmacies, etc.) in areas with known asthma burden will likely have substantial impact and significantly improve population-level asthma control.



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