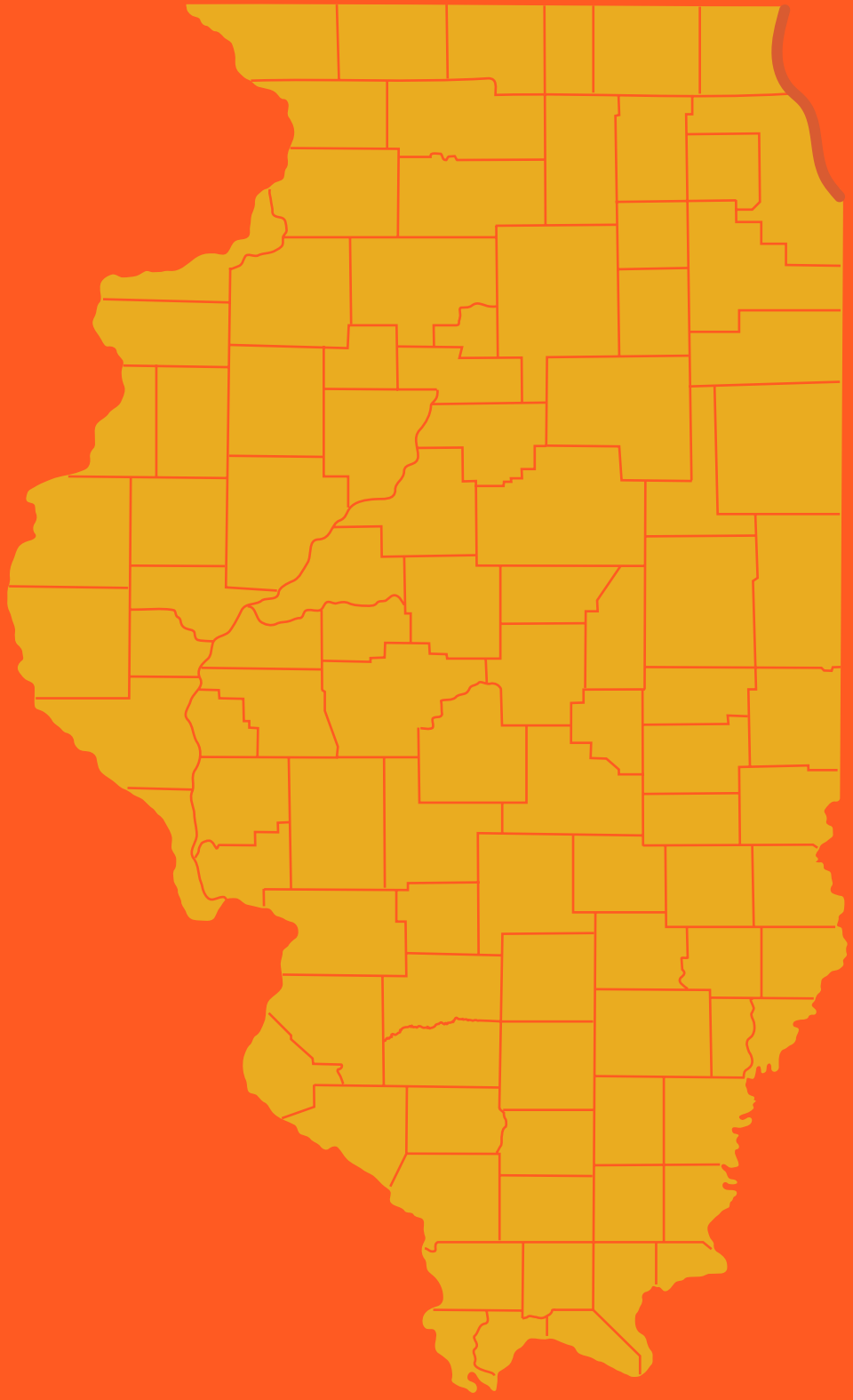

Transformation Data & Community Needs Report

HTC
Healthcare Transformation Collaboratives

EAST ST. LOUIS METRO AREA

October 2022

This report was prepared by the University of Illinois at Chicago (UIC) School of Public Health and Institute for Healthcare Delivery Design for the Illinois Department of Healthcare and Family Services. This report details the findings and methods for a study UIC conducted to understand health outcomes and community needs in socially vulnerable areas in the State of Illinois.

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Contents

Executive Summary

Healthcare policies enacted during the past decade incentivize healthcare systems receiving public funding to be more accountable for health outcomes in the communities that they serve. These policies are reflected in many forms, including triennial community needs assessments, value-based care models, accountable care organizations, and integrated health home models of care, among others. In spite of these efforts to change the status quo, poor health outcomes and health inequities persist, especially in communities with underlying social vulnerabilities. This reality suggests the need for a new approach.

In recognition of this need, the Illinois Department of Healthcare and Family Services (HFS) in 2019 initiated a healthcare transformation program with the goal of providing healthcare systems and other health-related organizations with financial assistance to transform services and care models to better meet communities' unmet needs. HFS engaged the Institute for Healthcare Delivery Design and the School of Public Health at the University of Illinois at Chicago (UIC) to develop an approach to measure health needs in Illinois communities with high rates of social vulnerability and to use that data to direct transformation funding to reduce existing health disparities and improve the health of Illinoisans. The approach developed by the UIC team combines analysis of Medicaid hospital utilization data for specific areas of the state with input from community members who were primarily, but not exclusively, publicly insured, gathered during in-depth conversations conducted by community-based organization partners to give a fuller picture of communities' wants and needs.

Community input combined with data analysis converged around a set of disease groups and conditions driving hospitalizations, each of them frequent, resource intensive, and contributing to poor health outcomes—and for which hospital-level care can be avoided with outpatient care, coordination of treatment, and community-based supports. These key disease groups and conditions are:

- mental illness, in particular bipolar and depressive disorders
- substance use disorders, especially alcohol and opioid use disorders
- a subset of "ambulatory care sensitive conditions" or ACSCs: hypertensive diseases, diabetes, chronic obstructive pulmonary disease (COPD)/asthma, and heart disease

By definition, ACSCs are health conditions for which either good outpatient care can potentially prevent the need for hospitalization or early intervention can prevent complications and progression to more severe disease. The same can be said for substance use disorders and bipolar and depressive disorders.

Access to quality primary and specialty care is critical to decreasing hospital-level care for ACSCs, mental illnesses and substance use disorders. However, as this report highlights, there's a lack of access to this care for vulnerable populations. Often, this lack of access is driven by social, economic, and other "social-determinant-of-health" barriers

that people face in achieving health (for example, lack of access to transportation; lack of access to affordable, healthy food; unemployment; community violence). In other words, this is a problem that sits within both the healthcare system and within the social fabric of communities.

Creating a middle ground in which hospitals and communities work together to achieve better health outcomes can become the basis for transformation that enables and sustains healthier lives. More specifically, this report's findings suggest that transformation efforts concentrate on building and strengthening linkages between clinical care and community-based needs and services. In other words, transformation should focus on "clinic-community linkages" that provide primary and secondary care plus community-based wraparound services to help people manage chronic illnesses, mental illnesses, and substance use disorders and reduce social-determinant-of-health barriers to care and treatment. **Improving health outcomes for these diseases and conditions can be achieved only if social determinants of health are addressed as part of healthcare delivery.**

Clinic-community linkages leverage the treatment expertise of healthcare systems, the on-the-ground knowledge of community-based organizations, and the trust that residents have in those organizations to support a more active approach to chronic disease management. In addition, clinic-community linkages can be a way to restore trust in the healthcare system in socially vulnerable communities and hold the promise of increasing engagement in healthcare over time. If healthcare systems and communities can adopt these new ways of engaging with one another, the current healthcare delivery paradigm will shift from siloed and transactional to relationship-based and collaborative.

The data in this report is intended as a resource for hospitals, legislators, community-based organizations, and other key stakeholders to help them focus, prioritize, and plan efforts to address and more effectively manage the most frequent and resource-intensive diseases and conditions in a culturally competent manner and to produce better, more sustainable health outcomes that are equitable and just.

The UIC research team completed a series of analyses to establish the recommendations in this report as follows:

1: Identified areas in Illinois with the greatest concentration of social vulnerability to health inequities and poor health outcomes

2: Examined the most frequent and resource-intensive diseases driving Medicaid enrollee hospitalizations in 5 of these socially vulnerable areas and discovered a set of disease groups and conditions for which access to quality outpatient care can prevent the need for hospitalization

3: Engaged community members from socially vulnerable areas in conversations and identified barriers to outpatient care, disease prevention, and treatment adherence

4: Synthesized findings from the data analyses and the community conversations to define transformation opportunities for stimulating outpatient care access and reducing the social barriers to care and treatment

Detailed findings from each of these analyses follow, with particular attention on findings for East St. Louis.

Detailed Findings

1: Identified areas in Illinois with the greatest concentration of social vulnerability to health inequities and poor health outcomes

The Center for Disease Control's Social Vulnerability Index combines a number of factors such as poverty, lack of access to transportation, and crowded housing into an overall measure of vulnerability by census tract. Areas with higher levels of social vulnerability are more susceptible to health problems. This measure was a key index used in this study to determine the areas of Illinois with the highest levels of social vulnerability, areas susceptible to health inequities.

To identify Illinois areas with high social vulnerability and high susceptibility to health inequities, counties were analyzed individually and, where applicable, in combination, corresponding to Illinois metropolitan and micropolitan statistical areas designated by the U.S. Office of Management and Budget (OMB) (1). Population density, U.S. census-derived indicators of social vulnerability and socioeconomic distress, demographic factors, and history guided the selection of the study areas analyzed for this report. Racially and ethnically diverse population centers are often characterized by marked social and economic contrasts causally associated with health inequities by race and place (2–4). "Place stratification"—in which institutional factors (for example, structural racism) prevent minorities, especially black and brown Americans, from using their socioeconomic means to access communities with greater resources and opportunities—has been implicated in these inequities (5, 6). Significant health gaps also exist between rural and urban residents in Illinois. These include higher rates of smoking and obesity-related health problems, overdose deaths, and being uninsured (7). Decreased spatial accessibility to healthcare providers and services in rural areas only exacerbates vulnerability to the health inequities as a consequence of geography.

Research for this project focused on 9 of the most socially vulnerable areas in Illinois:

- 4 areas within Cook County—the South Side of Chicago, the West Side of Chicago, South Cook County, and West Cook County
- 5 areas outside of Cook County—the Danville Metropolitan Statistical Area (Danville), the East St. Louis Metropolitan Statistical Area (East St. Louis), the Marion Health Region, the Peoria Metropolitan Statistical Area (Peoria), and the Rockford Metropolitan Statistical Area (Rockford)

This report contains data findings from the 5 socially vulnerable areas outside of Cook County (see Figure 1), with particular attention on findings for East St. Louis, and contains community-input findings from East St. Louis.

Figure 1: Study Area Maps with Zip Code Boundaries

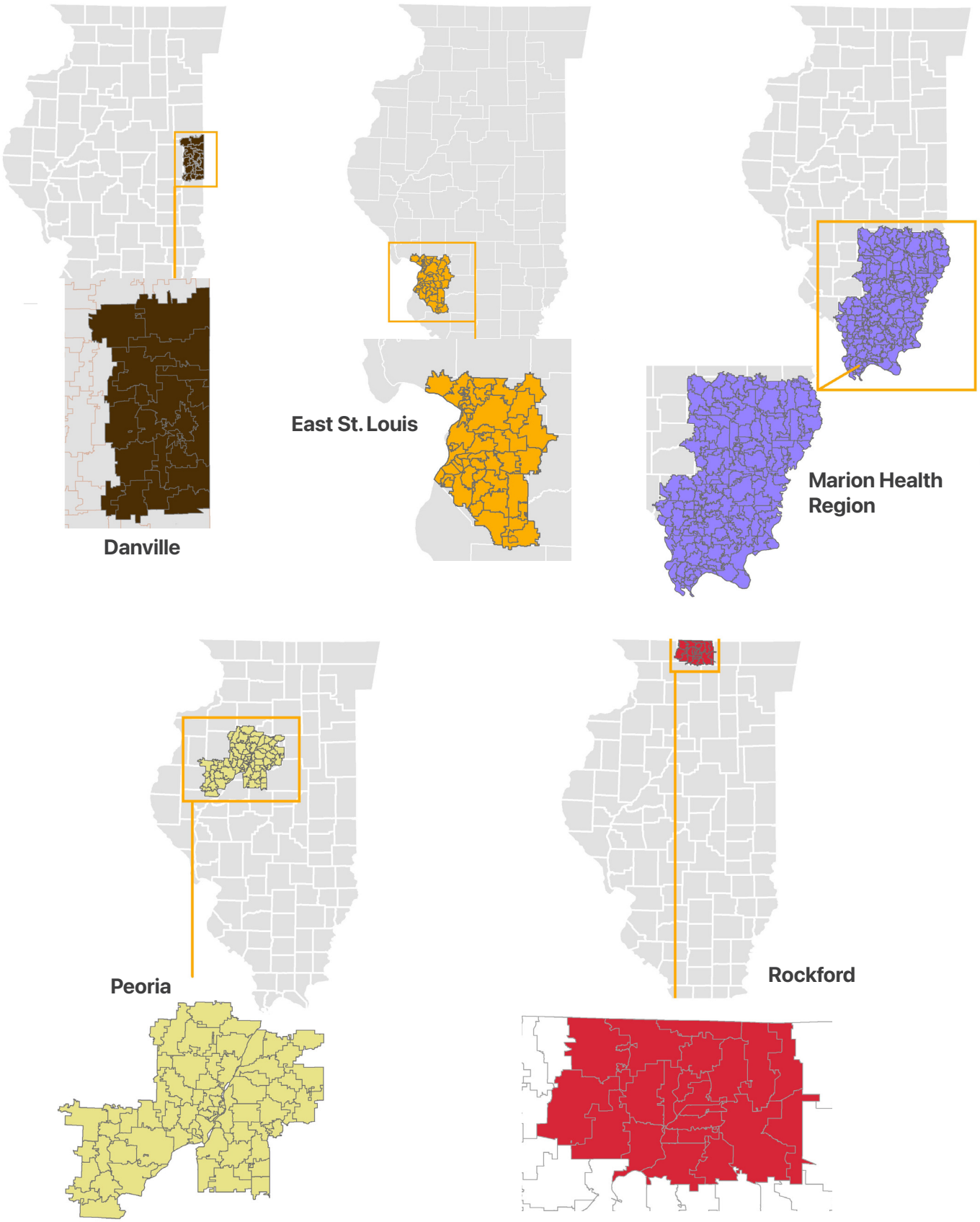


Figure 1 Continued

Danville Zip Codes (24)						
60932	60963	61812	61831	61834	61846	61857
60942	61810	61814	61832	61841	61848	61858
60960	61811	61817	61833	61844	61850	61865
61870	61876	61883				

East St. Louis Zip Codes (55)						
62001	62034	62061	62095	62281	62207	62232
62002	62035	62062	62097	62294	62208	62239
62010	62040	62067	62201	62059	62220	62240
62018	62046	62074	62234	62203	62221	62243
62021	62048	62084	62249	62204	62223	62255
62024	62058	62087	62254	62205	62225	62257
62025	62060	62090	62269	62206	62226	62258
62260	62264	62282	62285	62289	62293	

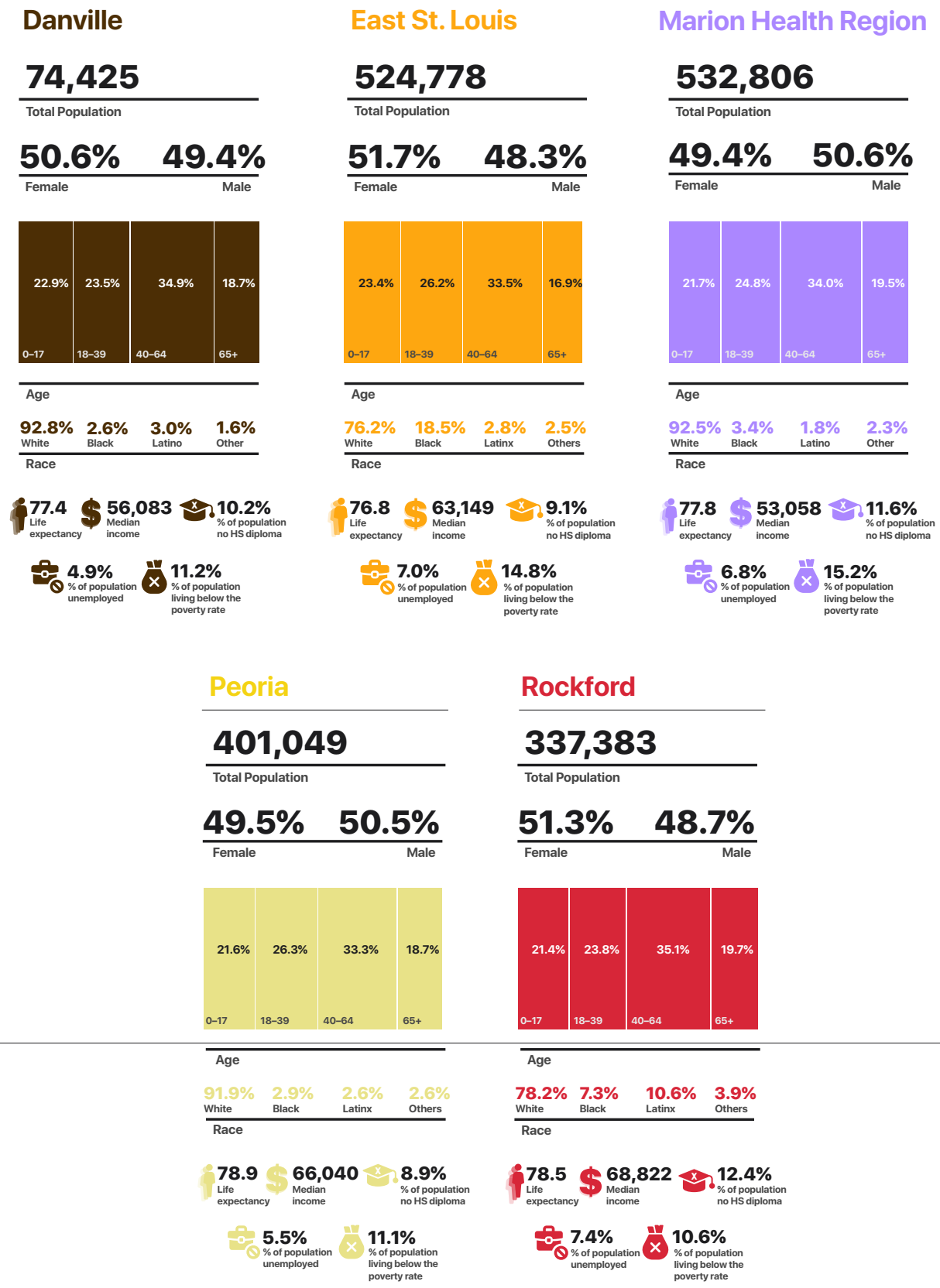
Marion Health Region Zip Codes (199)						
62914	62949	62839	62838	62919	62997	62952
62957	62951	62858	62880	62931	62928	62961
62962	62959	62879	62885	62947	62938	62998
62969	62974	62899	62812	62982	62941	62410
62988	62801	62413	62819	62432	62956	62818
62990	62807	62427	62822	62436	62963	62863
62901	62849	62433	62825	62445	62964	62446
62903	62853	62449	62836	62448	62970	62809
62907	62854	62451	62856	62475	62976	62823
62916	62870	62454	62860	62479	62992	62833
62924	62875	62478	62865	62480	62996	62837
62927	62881	62476	62874	62481	62419	62842
62932	62882	62806	62884	62912	62421	62843
62940	62892	62815	62890	62923	62425	62850
62942	62893	62401	62891	62939	62450	62851
62950	62810	62411	62896	62943	62452	62878
62958	62814	62424	62897	62967	62868	62886
62966	62816	62426	62983	62972	62917	62895
62975	62830	62443	62999	62985	62930	62820
62994	62846	62461	62867	62995	62935	62821
62841	62864	62467	62871	62417	62946	62827
62902	62872	62473	62934	62439	62965	62835
62915	62883	62011	62954	62460	62977	62844
62918	62889	62080	62979	62466	62987	62861
62921	62894	62414	62984	62238	62905	62862
62922	62898	62418	62817	62274	62906	62869
62933	62434	62458	62828	62832	62920	62887
62948	62824	62471	62859	62888	62926	62908
62910	62953	62960				

Figure 1 Continued

Peoria Zip Codes (85)						
61415	61520	61540	61536	61607	61535	61755
61427	61531	61541	61539	61614	61550	61759
61431	61542	61565	61547	61615	61554	61516
61432	61543	61451	61552	61616	61564	61530
61433	61544	61517	61559	61625	61568	61545
61441	61553	61523	61562	61421	61571	61548
61459	61563	61524	61569	61426	61610	61561
61477	61369	61525	61602	61449	61611	61570
61482	61375	61526	61603	61479	61721	61729
61484	61377	61528	61604	61483	61733	61738
61501	61424	61529	61605	61491	61734	61742
61519	61537	61533	61606	61534	61747	61760
61771						

Rockford Zip Codes (25)						
61008	61038	61024	61073	61080	61102	61107
61011	61065	61063	61077	61088	61103	61108
61012	61016	61072	61079	61101	61104	61109
61111	61112	61114	61115			

Figure 2: Demographic Traits of Study Areas[1]



[1]Total population figures listed here are estimates.

Data Source: U.S. Census Bureau American Community Survey Subject Tables 5-Year estimates, 2019. Tables S0101, B0101B, B0101C, B0101D, B0101E, B0101H, and B0101I, https://www.census.gov/acs/www/data/data-tables-and-tools/subject-tables/

The process used to identify areas in Illinois with high social vulnerability is as follows:

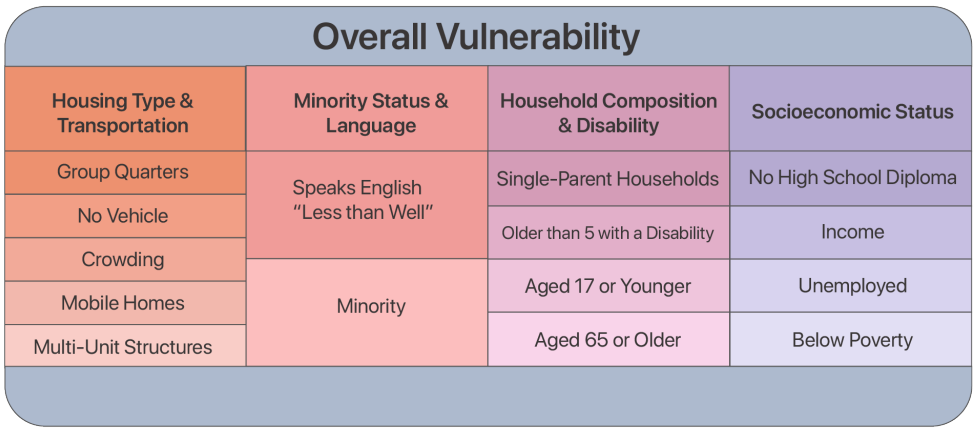
1. *Geographical areas defined:* 3 types of geographical areas were defined for the analysis: metropolitan statistical areas (MSA[1]), micropolitan statistical areas (µSA[2]), and counties that were neither. In Illinois, MSAs are usually composed of multiple counties, whereas µSAs are typically a single county. Included as an area is the Marion Health Region, which consists of MSAs, µSAs and freestanding counties. See Table 1.

2. *Social vulnerability measured:* Social Vulnerability Index (SVI) percentile rankings for all Illinois counties were obtained from the U.S. Centers for Disease Control and Prevention (CDC) (8, 9). Social vulnerability refers to the potential negative effects on communities caused by external stresses on human health, such as natural or human-caused disasters and disease outbreaks (10). The CDC's Social Vulnerability Index (CDC-SVI) uses 15 U.S. census-derived social factor variables, including poverty, lack of vehicle access, and crowded housing, and groups them into 4 related themes: socioeconomic status, household composition, race/ethnicity/language, and housing/transportation (see Figure 3). Since the county-level CDC-SVI percentiles are standardized to the state, "scores" for individual counties ranged from 0 to 100. For MSAs and µSAs composed of more than one county, the CDC-SVI percentile score for the entire geography was calculated based on the population-weighted average of the state-standardized CDC-SVI percentile ranks for the component counties.

3. *Geographical areas ranked based on CDC-SVI percentile scores:* Geographical areas were ranked based on CDC-SVI percentile scores. Areas with scores >50 ("above average") [n = 35] were designated as potential priority locations for additional analyses (see Figure 4).

Note: The Marion Health Region, one of the 7 Illinois Department of Public Health (IDPH) Regions, is located in the south/southeast section of the state (11). The Marion Health Region includes all 3 types of geographies (MSAs, µSAs, and freestanding counties), and, in contrast to the other 6 health regions,

Figure 3: Social Vulnerability Index Themes and Variables. 5-Year Estimaes from the American Community Survey (ACS), 2014–2018



[1]An MSA is a geographical region with a relatively high population density at its core and close economic ties throughout the area. It is composed of one or more counties (or equivalents) anchored by an urban center of at least 10,000 people plus adjacent counties that are socioeconomically tied to the urban center by commuting and employment.

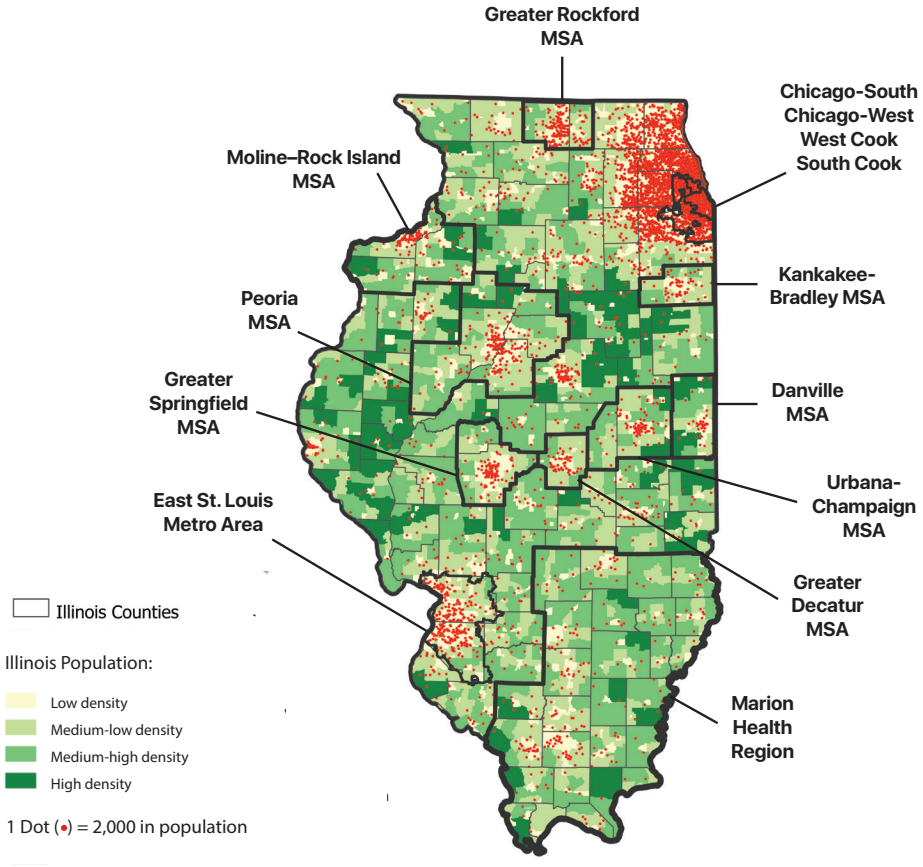
[2]A uSA generally has fewer than 50,000 people.

the SVI percentile scores of nearly all of its counties were above average. This is a particularly rural area of the state and, when analyzed individually at the MSA, µSA, or county level, doesn't reflect the widespread social vulnerabilities in this area. However, when analyzed collectively, in this case using IDPH's definition of this region, it can more effectively be recognized for the level of social vulnerability that exists here.

3. *Geographical areas ranked based on CDC-SVI percentile scores:* Geographical areas were ranked based on CDC-SVI percentile scores. Areas with scores >50 ("above average") [n = 35] were designated as potential priority locations (see Figure 4).
4. *Most socially vulnerable areas identified using zip code–level data:* Last, CDC-SVI percentile scores at the zip code level—where available—were used to help identify areas within counties and counties within statistical areas that were driving above average scores in geographical areas (see the last column in Table 1). Zip codes in each geographical area that were designated by the state as being disproportionately impacted by the economic effects of COVID-19 ("disproportionately impacted areas" or [DIAs]) (12) were also identified (see bolded zip codes in the last column of Table 1).

The findings in this report are organized around the following socially vulnerable areas: Danville, East St. Louis, the Marion Health Region, Peoria, and Rockford. (Separate reports have been complied for the socially vulnerable areas in Cook County.)

Figure 4: Illinois Areas[1] with Above Average (>50th Percentile) Social Vulnerability Index Scores



[1] This map does not include 6 micropolitan Illinois areas that have above average Social Vulnerability Scores. These areas are contained in Table 1.

Table 1: Statewide Scan of Areas in Illinois with Above Average (>50th Percentile) Social Vulnerability Scores

1. Whole or Partial Metropolitan Statistical Areas (MSA) [8]

Areas with CDC Social Vulnerability Index Percentile Score > 50[1]	*Pop. Count*[2]	*CDC-SVI%-tile Score*[3]	*Percentile Score-Driving County, City, or Other Geography [SVI score]*	*Pop. Count*[2]	*Sample of Zip Codes w/ SVI Score > 754*[4] *("most vulnerable")*
Danville [Vermillion CTY]	75,758	98.0			**61832**
Bradley-Kankakee [Kankakee CTY]	109,862	91.1			60901, 60950, 60958
Rockford	336,116	88.1	Winnebago Cty [93.1]	282,572	61101, 61102, 61103
Chicago–South	1,026,829	87.6			**60621, 60636, 60637**
Chicago–West	590,175	83.5			**60623, 60624, 60644**
Decatur [Macon CTY]	104,009	78.2	Decatur, IL [77.5]	85,381	**62522, 62523, 62526**
Moline-Rock Island [Rock Island CTY]	206,229	69.0	Rock Island, IL [86.0]	141,879	**61201, 61443**
Springfield [Sangamon CTY]	197,661	60.4			62701, 62702, 62703
East St. Louis Metro[5]	522,652	58.8	East St. Louis [93.6]	55,995	**62201, 62203, 62204**
West Cook	529,407	58.0			**60104, 60153, 60804**
South Cook	895,830	56.6			**60472, 60501, 60827**
Champaign-Urbana [Champaign CTY]	209,448	53.5			**61801, 61820**
Peoria	400,561	50.1	Fulton, Cty [82.2], Peoria, Cty [77.2]	55,995	62201, 62203, 62204
Total	5,256,685				

2. Micropolitan Statistical Areas (μSA) [6]

Macomb, IL [McDonough CTY]	29,682	72.2			–
Freeport, IL [Stephenson CTY]	44,498	68.3			**61032**
Pontiac, IL [Livingston CTY]	35,648	62.4			–
Jacksonville, IL	38,609	61.2	Morgan Cty [67.3]	33,658	–
Galesburg, IL [Knox CTY]	51,453	60.2	Galesburg, IL [74.7]	33,964	**61401**
Charleston–Mattoon, IL	61,387	59.7	Coles Cty [66.3]	50,621	–
Total	261,277				

Table 1 Continued

3. Marion Health Region

Areas with CDC Social Vulnerability Index Percentile Score > 50[1]	*Pop. Count*[2]	*CDC-SVI%-tile Score*[3]	*Percentile Score-Driving County, City, or Other Geography [SVI score]*	*Pop. Count*[2]	*Sample of Zip Codes w/ SVI Score > 75*[4] *("most vulnerable")*
Statistical areas [5]					
Mount Vernon, IL µSA [Jefferson CTY]	37,684	97.0			**62846, 62864, 62872**
Centralia, IL µSA [Marion CTY]	37,205	95.1			**62801, 62882**
Cape Girardeau, MO-IL MSA [Alexander CTY]	5,761	94.9			62914
Paducah, KY-IL µSA [Massac CTY][6]	13,772	94.1			–
Carbondale-Marion MSA	136,764	72.9	Jackson [87.1]	58,551	**62901, 62902, 62903**
Other Marion Health Region Counties [15]					
Saline	23,491	99.0			62930, 62946
Lawrence	15,678	96.0			62460, 62466
Union	16,653	92.1			**62906**
Pulaski	5,335	85.2			–
Perry	20,916	84.2			–
Clay	13,184	83.2			62879
Franklin	38,469	86.1			–
Fayette	21,336	79.2			–
White	13,537	74.3			–
Gallatin	4,828	72.3			62934, 62954, 62984
Hardin	3,821	71.3			62919, 62931, 62947
Richland	15,513	65.4			–
Wayne	16,215	64.4			62885, 62886
Pope	4,177	56.4			–
Crawford	18,667	51.5			–
Total	463,006				

[1]CDC-SVI: https://www.atsdr.cdc.gov/placeandhealth/svi/index.html

[2]American Community Survey 2014–2018 5-Year Estimates: https://data.census.gov/cedsci/all?d=ACS%205-Year%20Estimates%20Detailed%20Tables

[3]From CDC based on 2018 estimates: https://www.atsdr.cdc.gov/placeandhealth/svi/data_documentation_download.html

[4]Zip-code level SVI scores were sourced from Covid-19 Healthcare Coalition/Mitre: https://c19hcc.org/resource/vulnerable-population

[5]St. Clair and Madison Counties

[6]Highest zip code = 62960, Metropolis (pop. ~ 11,250)

Last, a bolded zip code means that is also designated as being a disproportionately impacted area (DIA) due to COVID-19 by the Illinois Department of Commerce and Economic Opportunity: https://www2.illinois.gov/dceo/SmallBizAssistance/Pages/C19DisadvantagedBusGrants-test.aspx

2: Examined the most frequent and resource-intensive diseases driving Medicaid enrollee hospitalizations in the study areas and discovered a set of disease groups and conditions for which access to quality outpatient care can prevent the need for hospitalization

Once the areas of Illinois with the highest SVI scores were determined, the next step was to develop a true understanding of health outcomes for the most vulnerable population in each area. To measure health outcomes across study areas, FY2019 and FY2020 Medicaid patient-level utilization data was analyzed. (Note: the FY2020 data contains data from March to June 2020, the initial 3 months of the COVID-19 pandemic.) Three data sets were analyzed: an "institutional" data set, a "recipient file" data set, and, for East St. Louis only, an FY2018 "noninstitutional" data set.

The institutional data set contained Medicaid recipients' healthcare encounters (inpatient admissions, outpatient visits, and ED visits) at hospital/medical center systems. Key fields in this data set included the following:

- hospital system provider name (system in which the healthcare encounter occurred)
- zip code of hospital system provider (where the encounter occurred)
- recipient ID
- recipient zip code (indicating home address of recipient)
- service type (inpatient, outpatient, or renal)
- ER indication (indicates if the encounter is an emergency room visit)
- admission and discharge dates
- ICD-10 code and description (principal diagnosis for the encounter)
- Diagnosis related group (DRG) code

The noninstitutional data contained Medicaid recipients' outpatient visits to independent healthcare providers. Key fields in this data set included the following:

- provider type and description
- category of service and description
- provider zip code
- recipient ID
- recipient zip code (indicating home address of recipient)
- behavioral health indication (indicates if encounter is for behavioral health)
- service date
- ICD-10 code and description (principal diagnosis for the encounter)

(Note: FY2019 and FY2020 noninstitutional data was not available for analysis due to technical issues related to data size. See the "Limitations and Opportunities for Future Research" section of this report for more details as well as information about additional data-analysis constraints.)

The recipient file data set contained demographic data for Medicaid recipients in each study area, specifically sex, date of birth, and race data by unique recipient ID. (Note: Age at time of encounter was derived from recipient date of birth.)

The insitutional and recipient data sets represent hospitalization and ED visit encounters for FY2019 and FY2020 for all Medicaid recipients living within the zip codes of areas defined in this study (specifically, all recipients with home zip

codes within the study areas). In other words, the data track hospital and ED utilization by Medicaid recipients living in the study areas, regardless of where that care took place.

Key to analyzing the data was categorizing International Classification of Diseases, Clinical Modification (ICD-10-CM) codes, the principal diagnosis for a healthcare encounter. To bucket these diagnosis codes into analytic categories, the data analysis team used the Centers for Medicare & Medicaid Services' (CMS) 2020 ICD-10-CM Tabular List of Diseases and Injuries (https://www.cms.gov/Medicare/Coding/ICD10/Downloads/2020-Coding-Guidelines.pdf). This structured list of diagnosis codes is divided into 21 chapters based on body system or condition. Each chapter contains disease or injury blocks and the ICD-10 codes that make up those blocks (so the hierarchy is ICD-10 code > block > chapter). The chapters of the CMS ICD-10-CM Tabular List of Diseases and Injuries are as follows:

Chapter Number and Title	*ICD-10 Code Range*
1 Certain infectious and parasitic diseases	A00–B99
2 Neoplasms	C00–D49
3 Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	D50–D89
4 Endocrine, nutritional, and metabolic diseases	E00–E89
5 Mental, behavioral, and neurodevelopmental disorders	F01–F99
6 Diseases of the nervous system	G00–G99
7 Diseases of the eye and adnexa	H00–H59
8 Diseases of the ear and mastoid process	H60–H95
9 Diseases of the circulatory system	I00–I99
10 Diseases of the respiratory system	J00–J99
11 Diseases of the digestive system	K00–K95
12 Diseases of the skin and subcutaneous tissue	L00–L99
13 Diseases of the musculoskeletal system and connective tissue	M00–M99
14 Diseases of the genitourinary system	N00–N99
15 Pregnancy, childbirth, and the puerperium	O00–O9A
16 Certain conditions originating in the perinatal period	P00–P96
17 Congenital malformations, deformations, and chromosomal abnormalities	Q00–Q99
18 Symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified	R00–R99
19 Injury, poisoning, and other consequences of external causes	S00–T88
20 External causes of morbidity	V00–Y99
21 Factors influencing health status and contact with health services (includes the diagnoses codes for live-born infants)	Z00–Z99

Initial Analyses

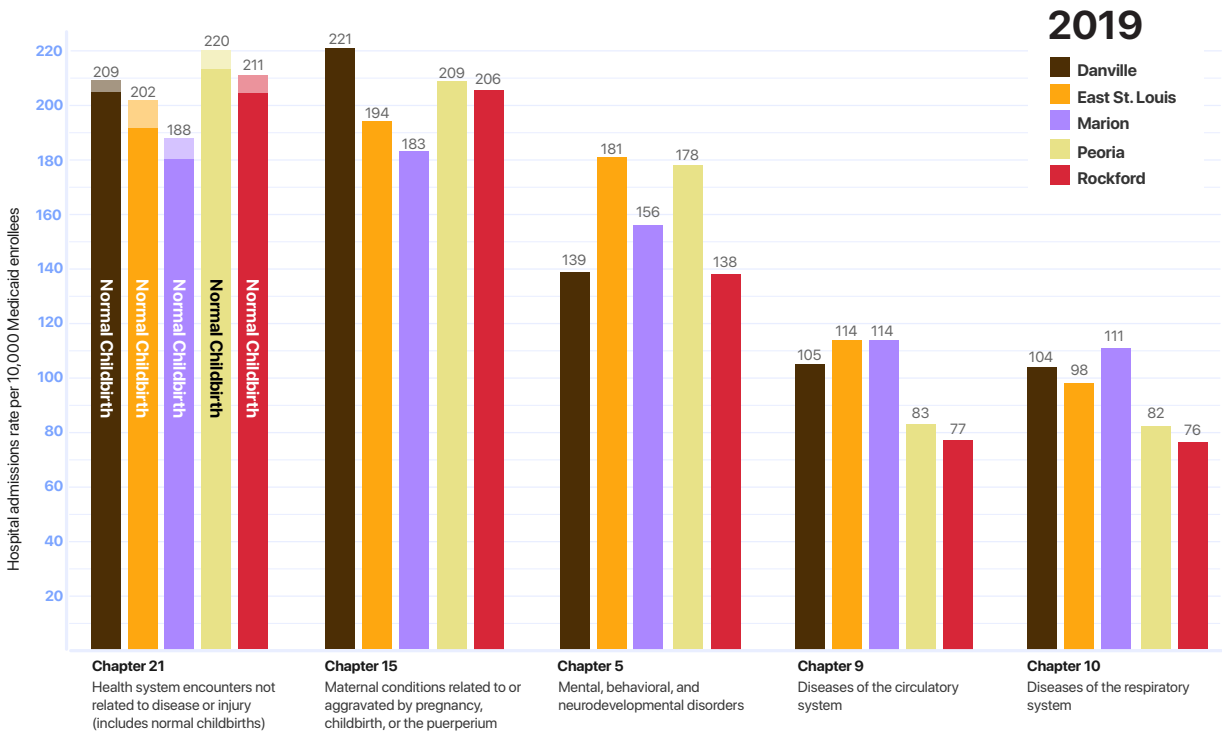
After getting to know the data sets via review of fields and variables, running histograms of variables, and doing basic data cleaning and new data creation (for example, patient age at time of the patient encounter), the data analytics team produced an initial set of descriptive statistics.

For the institutional data set, these initial analyses included looking at the distribution of healthcare encounters by demographic data (inpatient hospitalizations and ED visits by race, age, and sex by study area) and market share of hospitals receiving Medicaid patients by study area (see Appendix A for graphs of this data).

Initial analyses also included looking at the distribution of health outcomes, specifically the frequency distribution of chapters and blocks for inpatient hospitalizations. These analyses provided a basic picture of utilization and health outcomes.

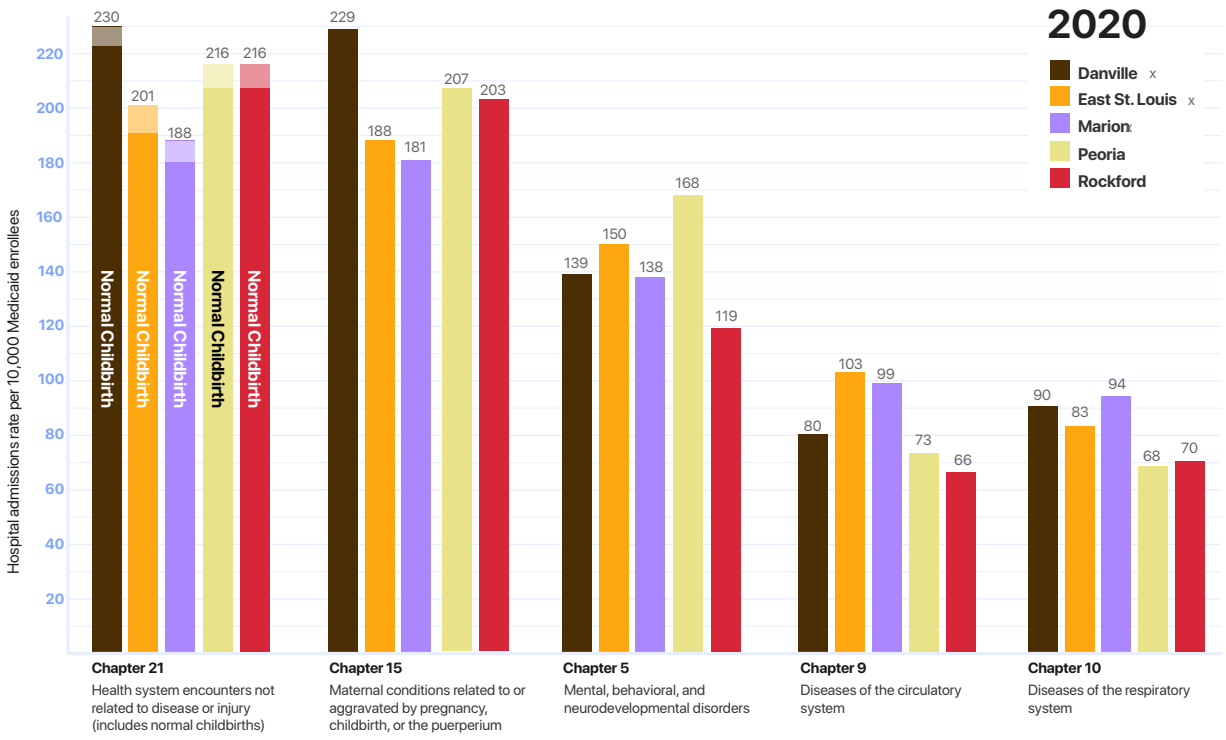
Across FY2019 and FY2020, healthcare encounters related to childbirth (Chapters 21 and 15) were the most frequent driver of hospital utilization. The vast majority of these childbirth encounters were normal or relatively uncomplicated. Following childbirth, the next most frequent hospital-level encounters included mental disorders, circulatory diseases, and respiratory diseases (Chapters 5, 9 and 10). See Figure 5.

Figure 5: Top 5 Most Frequent Inpatient Hospitalization Chapters by Study Area
(Frequency expressed as rate per 10,000 Medicaid enrollees)



Note: The 5 chapters of the CMS ICD-10-CM Tabular List of Diseases and Injuries shown here (21, 15, 5, 9, 10) represent the most frequent inpatient hospitalization chapters in all areas except Peoria. In Peoria, the 5most frequent chapters were 21, 15, 5, 1, and 9, respectively. Chapter 1 (diseases generally recognized as communicable or transmissible) ranked fourth in terms of inpatient hospitalizations in the Peoria study area, at a rate of 104.1 per 10,000 Medicaid enrollees.

Figure 5 Continued

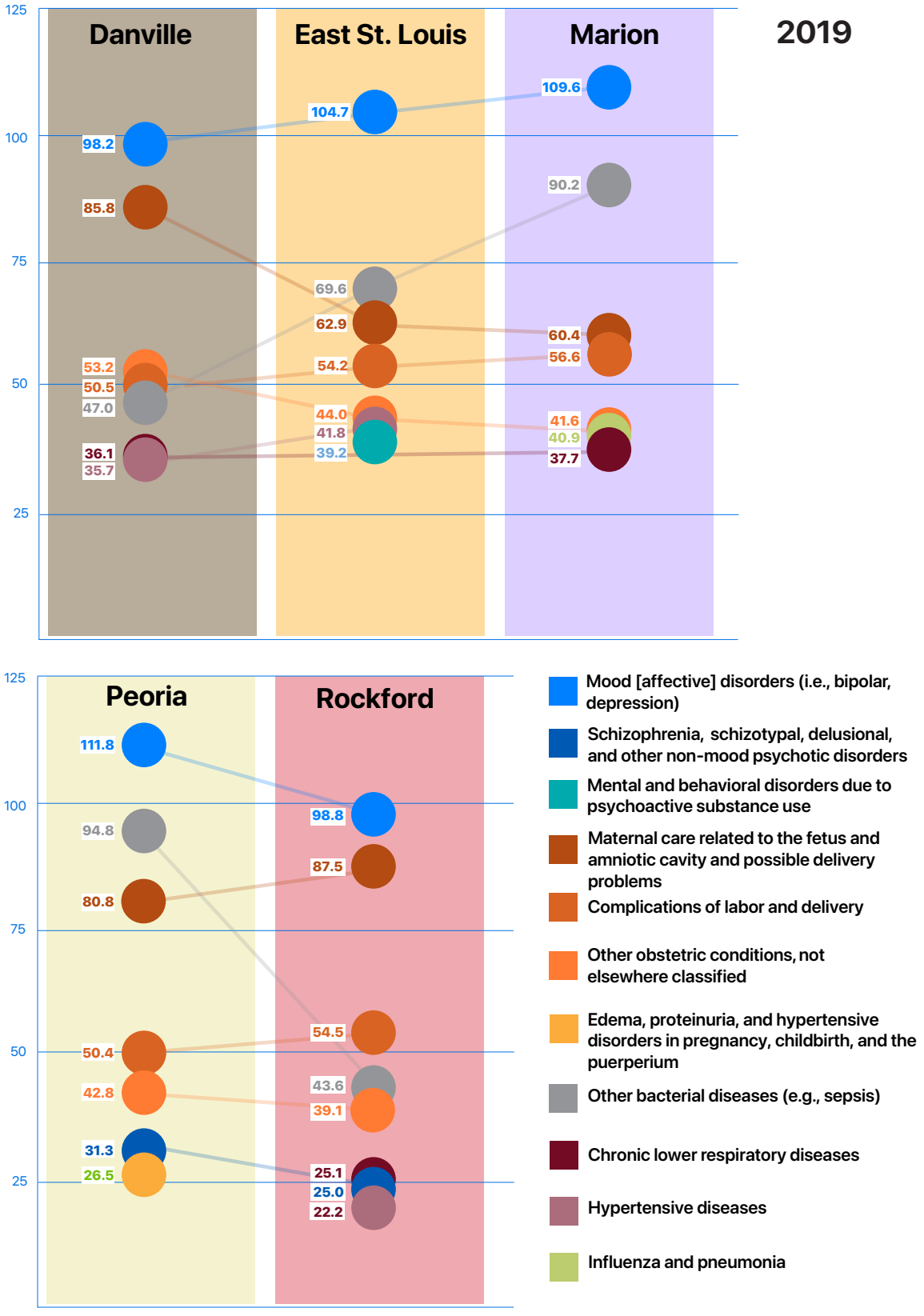


Note: The 5 chapters of the CMS ICD-10-CM Tabular List of Diseases and Injuries shown here (21, 15, 5, 9, 10) represent the most frequent inpatient hospitalization chapters in all areas except Peoria. In Peoria, the 5 most frequent chapters were 21, 15, 5, 1, and 19, respectively. Chapter 1 (diseases generally recognized as communicable or transmissible) ranked fourth in terms of inpatient hospitalizations in the Peoria study area, at a rate of 91.8 per 10,000 Medicaid enrollees. Chapter 19 (injury, poisoning, and certain other consequences of external causes) ranked fifth in Peoria at a rate of 74.1 per 10,000 Medicaid enrollees.

Figure 6 displays the most frequent blocks. Three of the most frequent hospitalization blocks in East St. Louis for both FY2019 and FY2020 are related to pregnancy or childbirth: maternal care related to the fetus and amniotic cavity and possible delivery problems; complications of labor and delivery; and other obstetric conditions, not elsewhere classified. All of these blocks point to complications related to pregnancy, childbirth, or postpartum. However, frequency distributions of the ICD-10 codes that make up these disease blocks show that most complications are mild and not preventable and are often, in fact, common issues related to childbirth. For example, in East St. Louis, one of the top complications is first and second degree perineal lacerations during delivery, a common, treatable occurrence during childbirth (see Figure 7).

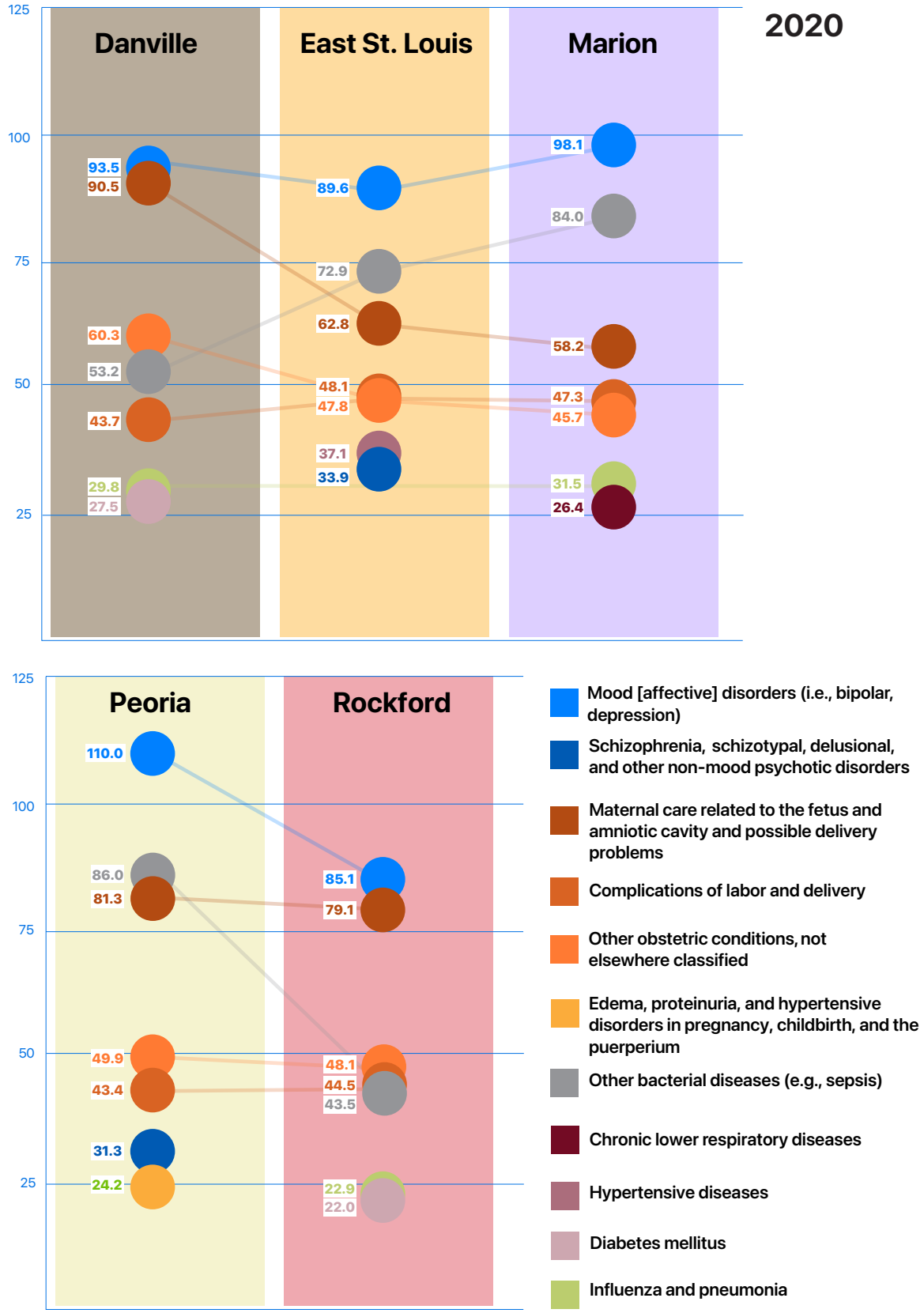
Otherwise, the top most frequent hospitalization blocks for East St. Louis are mood [affective] disorders; other bacterial diseases (in particular, sepsis); hypertensive diseases; mental and behavioral disorders due to psychoactive substance use (in FY2019); and schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders (in FY2020).

Figure 6: Top 7 Most Frequent Inpatient Hospitalization Blocks[1] by Study Area
(Frequency expressed as rate per 10,000 Medicaid enrollees)



[1]These figures do not include Chapter 21 blocks, which include blocks for normal childbirth.

Figure 6 Continued



[1]These figures do not include Chapter 21 blocks, which include blocks for normal childbirth.

Figure 7: Distribution of ICD-10s of Top Childbirth Complications Blocks[1] by Study Area

2019

Danville

- **8.3%** Maternal care for low transverse scar from previous cesarean delivery
- **6.9%** Post-term pregnancy
- **6.1%** Streptococcus B carrier state complicating childbirth
- **6.1%** First/second degree perineal laceration during delivery
- **4.6%** Abnormality in fetal heart rate/rhythm complicating L&D
- **68.1%** Others *(Spread among 89 different ICD-10s)*

East St. Louis

- **13.3%** Maternal care for low transverse scar from previous cesarean delivery
- **8.0%** First/second degree perineal laceration during delivery
- **6.7%** Streptococcus B carrier state complicating childbirth
- **4.6%** Abnormality in fetal heart rate/rhythm complicating L&D
- **4.2%** Maternal care for known/suspected poor fetal growth
- **63.1%** *Others (Spread among 185 different ICD-10s)*

Marion Health Region

- **12.6%** Maternal care for low transverse scar from previous cesarean delivery
- **10.8%** First/second degree perineal laceration during delivery
- **9.0%** Streptococcus B carrier state complicating childbirth
- **5.9%** Post-term pregnancy
- **4.5%** Maternal care for known/suspected poor fetal growth
- **57.2%** Others *(Spread among 175 different ICD-10s)*

Peoria

- **11.8%** Maternal care for low transverse scar from previous cesarean delivery
- **7.9%** Streptococcus B carrier state complicating childbirth
- **7.0%** Post-term pregnancy
- **6.7%** First/second degree perineal laceration during delivery
- **4.5%** Abnormality in fetal heart rate/rhythm complicating L&D
- **62.2%** Others *(Spread among 155 different ICD-10s)*

Rockford

- **11.6%** Maternal care for low transverse scar from previous cesarean delivery
- **9.8%** Post-term pregnancy
- **9.6%** Streptococcus B carrier state complicating childbirth
- **8.0%** Abnormality in fetal heart rate/rhythm complicating L&D
- **5.5%** First/second degree perineal laceration during delivery
- **55.4%** Others *(Spread among 141 different ICD-10s)*

[1]The charts here contain ICD-10s from the top pregrancy, labor and delivery, and post-partum complication blocks across all 5 areas: complications of labor and delivery; maternal care related to the fetus and amniotic cavity; and other obstetric conditions, not elseshere classified.
Note: L&D = labor and delivery.

Figure 7 Continued

2020

Danville

- **8.9%** Maternal care for low transverse scar from previous cesarean delivery
- **7.0%** Streptococcus B carrier state complicating childbirth
- **5.8%** Obesity complicating childbirth
- **5.3%** Maternal care for known/suspected poor fetal growth
- **5.1%** Anemia complicating childbirth
- **67.9%** Others *(Spread among 93 different ICD-10s)*

East St. Louis

- **14.3%** Maternal care for low transverse scar from previous cesarean delivery
- **9.5%** Streptococcus B carrier state complicating childbirth
- **7.4%** First/second degree perineal laceration during delivery
- **4.0%** L&D complication by cord around neck w/o compression, or unspecified cord complication
- **4.0%** Post-term pregnancy
- **60.8%** Others *(Spread among 192 different ICD-10s)*

Marion Health Region

- **13.0%** Maternal care for low transverse scar from previous cesarean delivery
- **9.5%** First/second degree perineal laceration during delivery
- **9.5%** Streptococcus B carrier state complicating childbirth
- **5.4%** Post-term pregnancy
- **4.5%** L&D complication by cord around neck w/o compression, or unspecified cord complication
- **58.1%** Others *(Spread among 176 different ICD-10s)*

Peoria

- **11.5%** Maternal care for low transverse scar from previous cesarean delivery
- **8.7%** Streptococcus B carrier state complicating childbirth
- **8.6%** Post-term pregnancy
- **5.7%** First/second degree perineal laceration during delivery
- **3.7%** Maternal care for known/suspected poor fetal growth
- **61.8%** Others *(Spread among 152 different ICD10s)*

Rockford

- **11.5%** Streptococcus B carrier state complicating childbirth
- **10.9%** Maternal care for low transverse scar from previous cesarean delivery
- **7.7%** Post-term pregnancy
- **5.0%** First/second degree perineal laceration during delivery
- **4.9%** Maternal care for known/suspected poor fetal growth
- **59.9%** Others *(Spread among 166 different ICD-10s)*

[1]The charts here contain ICD-10s from the top pregrancy, labor and delivery, and post-partum complication blocks across all 5 areas: complications of labor and delivery; maternal care related to the fetus and amniotic cavity; and other obstetric conditions, not elseshere classified.
Note: L&D = labor and delivery.

Pairing Frequency and Readmission Data

To provide a more detailed understanding of health outcomes, hospitalization frequency data was paired with readmission rates, with readmission rates being a measure of "resource intensiveness."

Readmission was defined for each patient per disease block based on the total number of inpatient admissions. To calculate readmissions for a disease block, the data analytics team subtracted one from each patient's total number of admissions within that disease block during the year. So, if a patient in a particular disease block had only one admission, the number of readmissions was 0. An average readmission rate was calculated for each disease block and represents the average number of readmissions among all patients per disease block per year.

Readmission rates were cross-tabulated with frequency rates by disease block in each study area. Isolating the top sixth ("sextile") disease blocks for both measures produces a view of the most frequent and resource-intensive disease blocks in each area (see Tables 2a and 2b).

Most Frequent and Resource-Intensive Diseases and Conditions

In Tables 2a and 2b, a clear pattern emerges. The 3 groups comprising the most frequent and resource-intensive hospitalizations, in East St. Louis and in other areas, are mental illnesses, substance use disorders, and a third group organized around a set of chronic illnesses identified as "ambulatory care sensitive conditions" (ACSCs).

By definition, ACSCs are health conditions for which good outpatient care can potentially prevent the need for hospitalization or early intervention can prevent complications and progression to more severe disease (13).

The same can be said for mood [affective] disorders (made up mostly of bipolar and depressive disorders; see Figure 8) and mental and behavioral disorders due to psychoactive substance use (primarily alcohol and opioid use disorders; see Figure 9).

Given this, these frequent, resource-intensive and outpatient-treatable disease groups and conditions became the focus of the research:

- mood [affective] disorders (in particular, bipolar and depressive disorders)
- mental and behavioral disorders due to psychoactive substance use disorders (in particular, alcohol and opioid use disorders)
- ACSCs (in particular, hypertension, asthma/COPD, diabetes, and heart diseases such as congestive heart failure)

Outpatient Care Rates Prior and Subsequent to Hospital-Level Care

A previous analysis of FY2018 data for the East St. Louis area shows that *outpatient care prior to or subsequent to hospital-level care for these disease groups and conditions is relatively low*, indicating that many patients who were hospitalized for these diseases or disorders did not engage in outpatient care to manage their conditions (see Figure 10). For example, outpatient care within 3 months after hospital-level care for a mental disorder, falls well below the national Medicaid benchmark of 56% of discharges receiving follow-up care within 30 days after a hospitalization for mental illness (14, 15).

Table 2a: FY2019 Disease Blocks in the Top Sextile[1] for Both Frequency Rate and Average Hospital Readmission Score[2] (Ranked by Product of Frequency Rate and Readmission Score)

■ Mental illnesses ■ Substance use disorders ■ ACSCs

Danville	East St. Louis	Marion	Peoria	Rockford
1. Mood affective disorders (bipolar, depression)	1. Mood affective disorders (bipolar, depression)	1. Mood affective disorders (bipolar, depression)	1. Mood affective disorders (bipolar, depression)	1. Mood affective disorders (bipolar, depression)
2. Hypertensive diseases	2. Schizophrenia, schizotypal disorders	2. Schizophrenia, schizotypal disorders	2. Schizophrenia, schizotypal disorders	2. Schizophrenia, schizotypal disorders
3. Diabetes mellitus	3. Hemolytic anemias	3. Diabetes mellitus	3. Psychoactive substance use disorders (alcohol, opioids)	3. Diabetes mellitus
4. Other bacterial diseases	4. Hypertensive diseases	4. Hypertensive diseases	4. Diabetes mellitus	4. Chronic lower respiratory diseases (asthma, COPD)
5. Schizophrenia, schizotypal disorders	5. Diabetes mellitus	5. Chronic lower respiratory diseases (asthma, COPD)	5. Complications of surgical/medical care	5. Diseases of liver
6. Other diseases of the respiratory system	6. Psychoactive substance use disorders (alcohol, opioids)	6. Complications of surgical/medical care	6. Hypertensive diseases	6. Psychoactive substance use disorders (alcohol, opioids)
7. Cerebrovascular diseases	7. Chronic lower respiratory diseases (asthma, COPD)	7. Disorders of gall-bladder, biliary tract, and pancreas	7. Disorders of gall-bladder, biliary tract, and pancreas	7. Hypertensive diseases
8. Chronic lower respiratory diseases (asthma, COPD)	8. Other diseases of the respiratory system	8. Other diseases of the respiratory system	8. Chronic lower respiratory diseases (asthma, COPD)	8. Other diseases of the respiratory system
9. Psychoactive substance use disorders (alcohol, opioids)	9. Cerebrovascular diseases	9. Psychoactive substance use disorders (alcohol, opioids)	9. Cerebrovascular diseases	9. Disorders of gall-bladder, biliary tract, and pancreas
10. Metabolic disorders	10. Complications of surgical/medical care	10. Diseases of liver	10. Episodic and paroxysmal disorders	10. Complications of surgical/medical care
11. Other forms of heart disease	11. Disorders of gall-bladder, biliary tract, and pancreas	11. Noninfective enteritis and colitis		11. Cerebrovascular diseases
12. Diseases of esophagus, stomach, and duodenum	12. Noninfective enteritis and colitis			
	13. Behavioral and emotional disorders			

[1] Sextile refers to the top sixth of the disease blocks found in the 2020 ICD-10-CM Tabular List of Diseases and Injuries for both frequency and early readmission, representing ~16.67% of all the disease blocks.
[2] This analysis excludes Chapter 21 of the ICD-10-CM Tabular List of Diseases and Injuries which contains encounters with the healthcare system not related to injury or disease, including encounters for normal newborns.

Table 2b: FY2020 Disease Blocks in the Top Sextile[1] for Both Frequency Rate and Average Hospital Readmission Score[2] (Ranked by Product of Frequency Rate and Readmission Score)

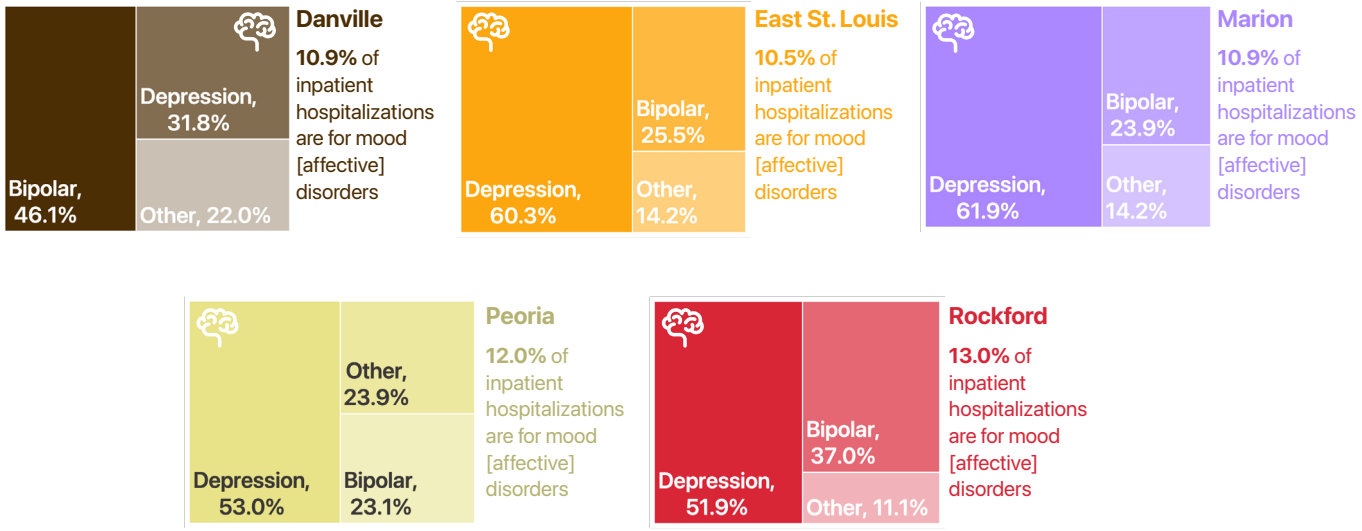
Mental illnesses **Substance use disorders** **ACSCs**

Danville	East St. Louis	Marion	Peoria	Rockford
1. Mood affective disorders (bipolar, depression)	1. Mood affective disorders (bipolar, depression)	1. Mood affective disorders (bipolar, depression)	1. Schizophrenia, schizotypal disorders	1. Mood affective disorders (bipolar, depression)
2. Hypertensive diseases	2. Schizophrenia, schizotypal disorders	2. Schizophrenia, schizotypal disorders	2. Mood affective disorders (bipolar, depression)	2. Schizophrenia, schizotypal disorders
3. Diabetes mellitus	3. Hemolytic anemias	3. Hypertensive diseases	3. Hemolytic anemias	3. Hemolytic anemias
4. Schizophrenia, schizotypal disorders	4. Hypertensive diseases	4. Hemolytic anemias	4. Hypertensive diseases	4. Hypertensive diseases
5. Complications of surgical/medical care	5. Other bacterial diseases	5. Diabetes mellitus	5. Other bacterial diseases	5. Diabetes mellitus
6. Hemolytic anemias	6. Diabetes mellitus	6. Psychoactive substance use disorders (alcohol, opioids)	6. Psychoactive substance use disorders (alcohol, opioids)	6. Psychoactive substance use disorders (alcohol, opioids)
7. Psychoactive substance use disorders (alcohol, opioids)	7. Psychoactive substance use disorders (alcohol, opioids)	7. Cerebrovascular diseases	7. Diabetes mellitus	7. Cerebrovascular diseases
8. Cerebrovascular diseases	8. Cerebrovascular diseases	8. Chronic lower respiratory diseases (asthma, COPD)	8. Complications of surgical/medical care	8. Other diseases of the respiratory system
9. Episodic and paroxysmal disorders	9. Disorders of gall bladder, biliary tract, and pancreas	9. Complications of surgical/medical care	9. Other diseases of the respiratory system	9. Disorders of gall-bladder, biliary tract, and pancreas
10. Metabolic disorders	10. Complications of surgical/medical care	10. Other forms of heart disease	10. Chronic lower respiratory diseases (asthma, COPD)	10. Chronic lower respiratory diseases (asthma, COPD)
		11. Disorders of gall-bladder, biliary tract, and pancreas	11. Episodic and paroxysmal disorders	11. Metabolic disorders
			12. Cerebrovascular diseases	
			13. Other forms of heart disease	
			14. Disorders of gall-bladder, biliary tract, and pancreas	
			15. Other diseases of the urinary system	

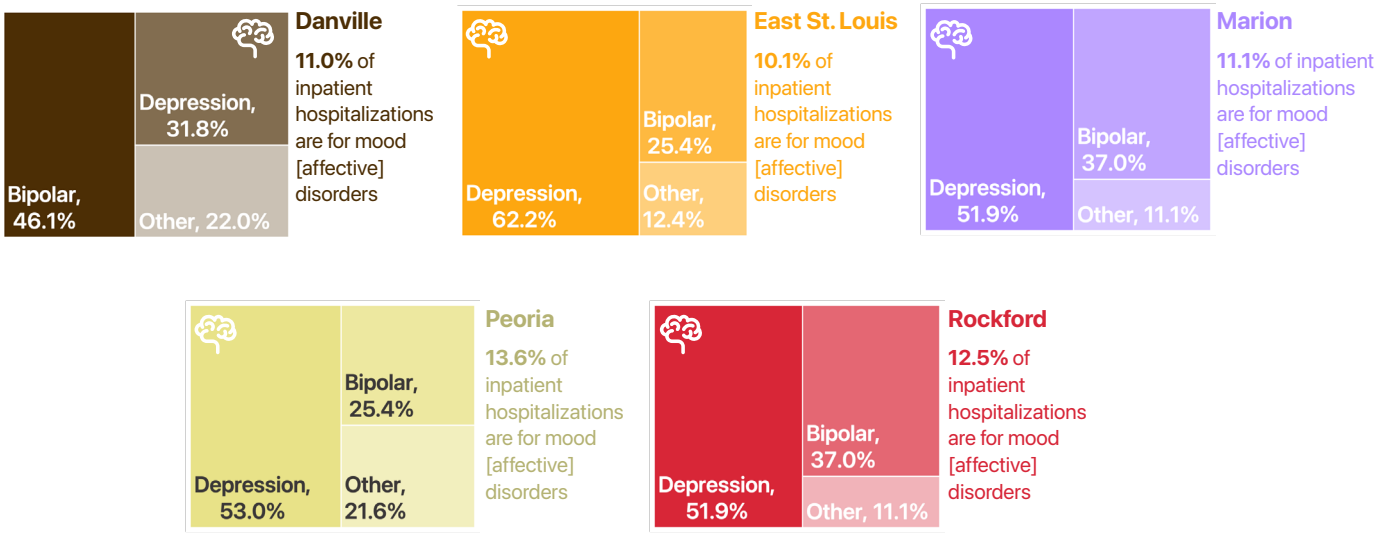
[1] Sextile refers to the top sixth of the disease blocks found in the 2020 ICD-10-CM Tabular List of Diseases and Injuries for both frequency and early readmission, representing ~16.67% of all the disease blocks.
[2] This analysis excludes Chapter 21 of the ICD-10-CM Tabular List of Diseases and Injuries which contains encounters with the healthcare system not related to injury or disease, including encounters for normal newborns.

Figure 8: Proportion of Inpatient Hospitalizations for Depressive Disorders, Bipolar Disorders, and Other ICD-10s[1] within the Mood [Affective] Disorders Block across Study Areas

2019



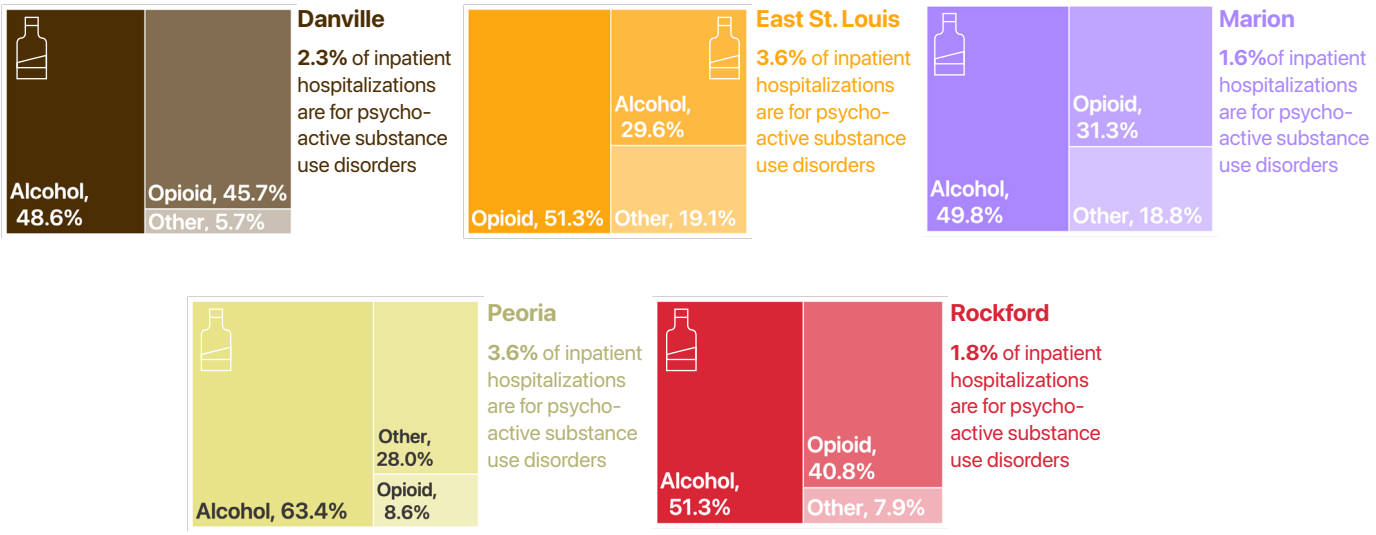
2020



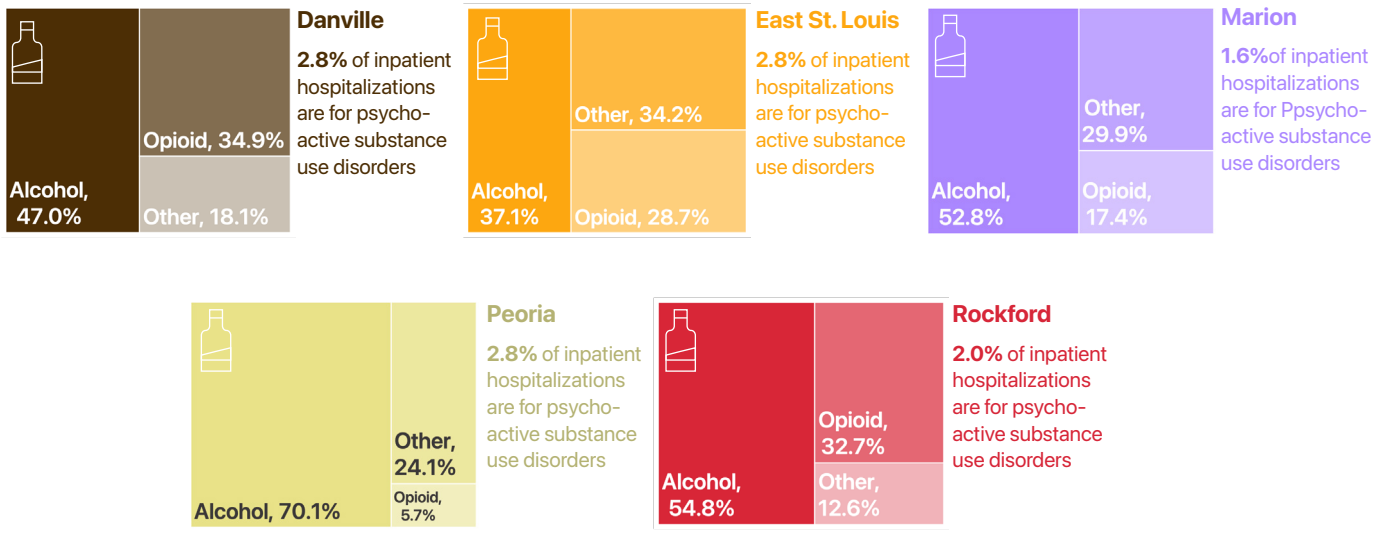
[1] Depression in this figure includes all "depressive disorder" ICD-10 codes in the mood [affective] disorders block. Bipolar includes all ICD-10 codes labeled "bipolar." The "other" category includes ICD-10 codes for conditions such as cyclothymic disorder, dysthymic disorder, manic episodes with and without psychotic symptoms, persistent mood [affective] disorders, and unspecified mood [affective] disorders.

Figure 9: Proportion of Hospitalizations for Alcohol Use Disorders, Opioid Use Disorders, and Other ICD-10s within the Psychoactive Substance Use Disorders Block across Study Areas

2019



2020

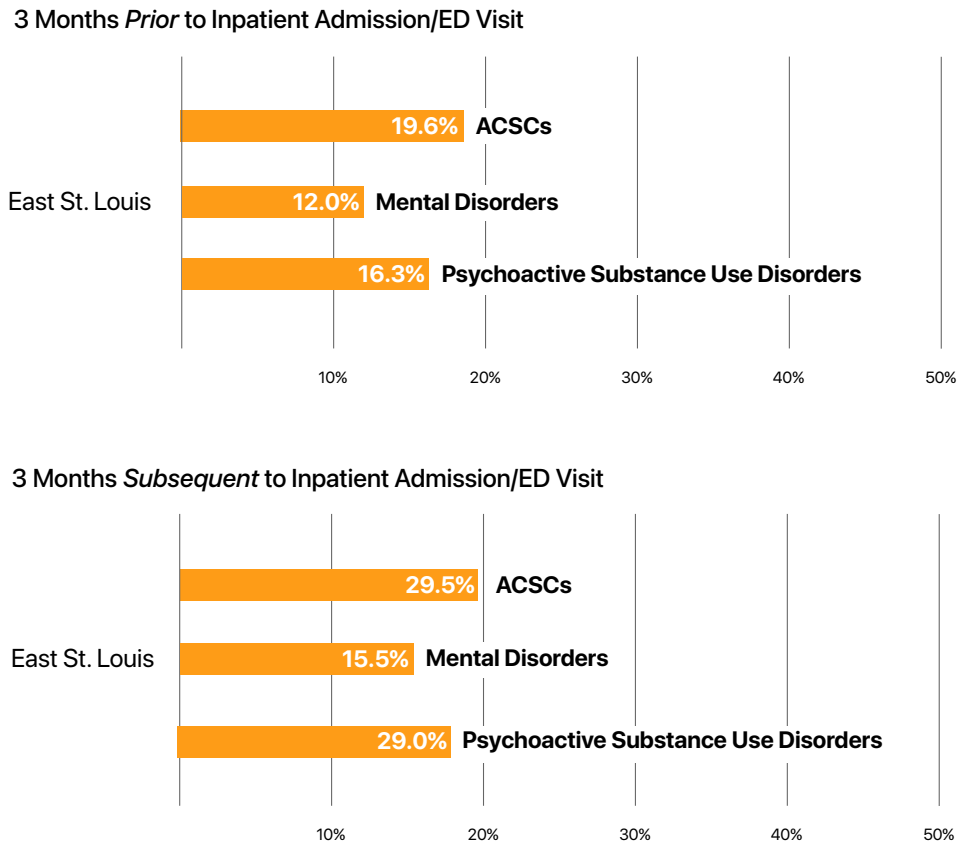


Note: "Other" psychoactive substance use disorders includes ICD-10 codes for cannabis, cocaine, hallucinogens, sedatives, and other psychoactive substances or stimulants.

FY2018 analyses completed for these disease groups and conditions in socially vulnerable areas in Cook County produced similar results.

(Note: All outpatient encounters were used for this analysis, whether related to the hospitalization diagnosis or not. Thus, the results presented in Figure 10 can be considered a conservatively generous estimate of outpatient care for those with selected and preventable inpatient admissions or ED visits. Additionally, the outpatient care analysis presented here is for FY2018. Technical issues related to data file size prevented access to, and analysis of, FY2019 and FY2020 outpatient data.)

Figure 10: East St. Louis 2018 / Proportion of Prior and Subsequent Outpatient Care among Patients Who Received Hospital-Level Care for ACSCs, Mental Disorders, and Psychoactive Substance Use Disorders



ACSCs consist of all of the ICD-10 principal diagnosis codes categorized as Ambulatory Care Sensitive Conditions by the Agency for Healthcare Research and Quality.

Mental Disorders consist of all of the ICD-10 principal diagnosis codes from Chapter 5 of the CMS Tabular List of Diseases and Injuries, excluding ICD-10s for substance use disorders.

Psychoactive Substance Use Disorders consist of all of the ICD-10 principal diagnosis codes from Chapter 5 of the CMS Tabular List of Diseases and Injuries for the "Mental and behavioral disorders due to psychoactive substance use" disease block.

To look for outpatient care evidence prior to hospital-level care, patients who had an initial hospitalization or ED visit for mental disorders, substance use disorders or ACSCs in the last 3 quarters of FY2018 (10/01/2017 to 06/30/2018) were identified. The proportion of these patients who had outpatient care encounters within 3 months *prior* to their hospital admission date or ED visit was then tabulated.

The low rates of outpatient care observed prior to and following hospitalizations and ED visits motivate an interest in improved care for these disease groups and conditions, but it is possible to more directly link hospital use to the lack of preventive care in East St. Louis and the other study areas. ACSCs are a group of conditions identified by the Agency for Healthcare Research and Quality (AHRQ) as indicators of the accessibility, quality, and efficiency of the healthcare ecosystem in an area (16). Hospitalization rates for ACSCs are, in fact, an *established* metric for evaluating population access to care. Prior research has established that communities with poor access to outpatient care have higher rates of hospitalization for chronic illnesses and that improving this access is an effective way to reduce hospitalization rates for ACSCs (17). Furthermore, ACSCs and mental disorders are linked: Patients with coexisting mental disorders are 2 to 5 times more likely to be admitted to EDs for ACSCs (18–22).

AHRQ developed Preventative Quality Indicators (PQIs), measures based on ACSC hospital inpatient discharge data and designed to identify outpatient care quality and access issues, including appropriate follow-up care after hospital discharge. These widely used benchmarks for healthcare accessibility and quality are based on a subset of the ACSC codes for hospital admissions in the John Billings algorithm (23). Specifically, PQIs use data from hospital discharges to identify admissions that might have been avoided through access to high-quality outpatient care. In other words, while PQIs are based on hospital inpatient data, they provide insight into the quality of the healthcare ecosystem *outside* hospitals and in the community by measuring preventable complications that occur in a given population (in a community or region) (24).

The PQIs consist of the following 11 disease-specific ACSCs, which are measured as rates of admission to the hospital:

- diabetes mellitus, short-term complications admission rate
- diabetes mellitus, long-term complications admission rate
- uncontrolled diabetes mellitus admission rate
- chronic obstructive pulmonary disease or asthma, older adults (40+) admission rate
- hypertension admission rate
- congestive heart failure admission rate
- dehydration admission rate
- bacterial pneumonia admission rate
- urinary tract infection admission rate
- asthma, younger adults (18–39) admission rate
- rate of lower extremity amputation among patients with diabetes

Each of the above disease admission rates is its own PQI. AHRQ compiles these measures into *composite* PQIs as follows:

- PQI 90 Composite combines hospital admission rates for both acute and chronic PQIs
- PQI 91 Acute Composite is a composite indicator of acute, episodic admission rates and consists of the following admission rates:
    - bacterial pneumonia
    - urinary tract Infection
- PQI 92 Chronic Composite is a composite indicator of chronic disease admission rates and consists of the following admission rates:
    - diabetes Mellitus, short-term complications
    - diabetes mellitus, long-term complications
    - COPD or asthma, older adults

(40+)
    - hypertension
    - congestive heart failure
    - dehydration
    - uncontrolled diabetes mellitus
    - asthma, younger adults (18–39)
    - rate of lower extremity amputation among patients with diabetes
- PQI 93 Diabetes Composite is a composite indicator of diabetes admission rates and consists of the following admission rates:
    - diabetes mellitus, short-term complications
    - diabetes mellitus, long-term complications
    - uncontrolled diabetes mellitus

AHRQ publishes national benchmarks for PQIs. Age-adjusted admission rates for composite PQIs in East St. Louis outpace national benchmarks (see Figure 11).

Results of multivariate logistic regressions show that, in East St. Louis, Black adults age 40 and over are associated with hospitalizations for ACSCs, in general. Female adults age 40 and over are associated with acute ACSC hospitalizations in East St. Louis. And, finally, Black and Native American adults age 40 and over are associated with chronic ACSC hospitalizations in East St. Louis. (See Table 3.)

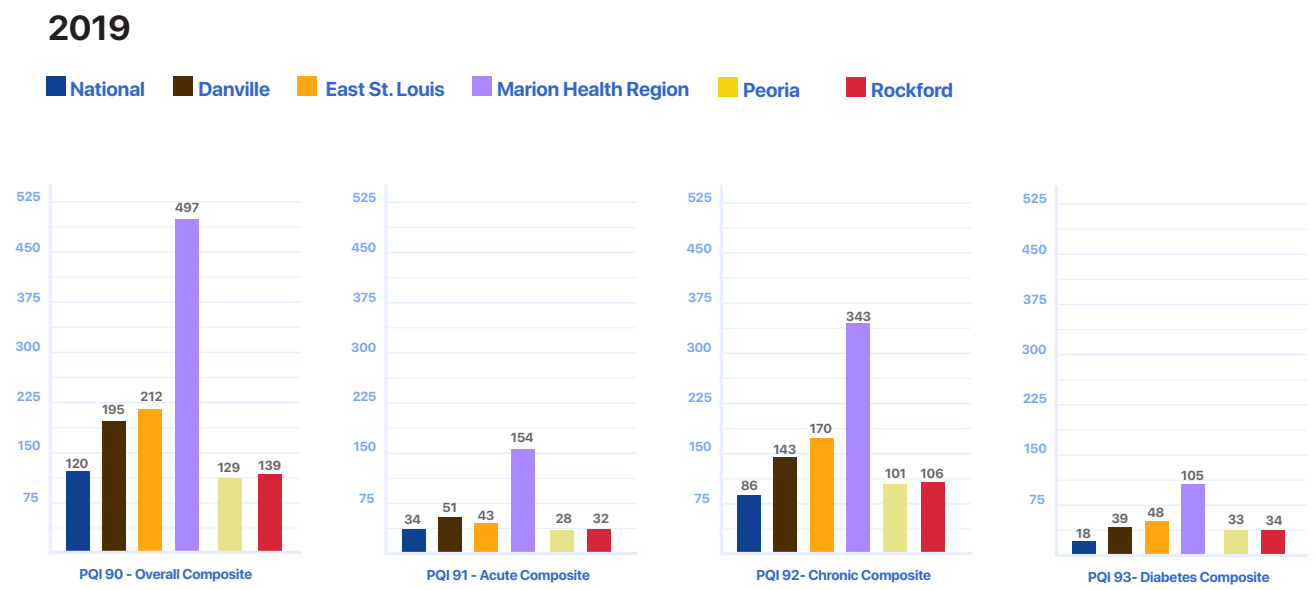
While not formally part of the definition of ACSCs or the related PQIs, bipolar disorder, depressive disorders, and alcohol and opiod use disorders are all outpatient-treatable. These disorders account for the majority of disorders within the mood [affective] disorders block and the psychoactive substance abuse disorder block.

Results of multivariate logistic regressions show an association between teens age 12–19 and hospitalizations for depression and adults age 35–64 and hospitalizations for alcohol use disorder in East St. Louis. For the other disorders (bipolar and opioid use disorders), no associations are evident. (See Tables 4–7.)

The data paint a clear picture: Medicaid enrollees have poor access to outpatient care and higher levels of prevention-sensitive hospitalizations in all study areas. This is particularly true for the Medicaid population in East St. Louis, given the area's high rates of hospitalizations for ACSCs. Improving accessibility to quality primary and specialty care (including behavioral healthcare and detection of ACSCs and mental health comorbidities) will be critical to decreasing hospital admissions for ACSCs as well as hospitalizations for mood affective and substance use disorders.

(Note: Rates of hospitalization for ACSCs are being analyzed to provide an indication of healthcare delivery gaps in a population defined by a geography—in this case, the selected study areas. In Figure 11, these rates are compared against *national* PQIs rates which are made up of discharge data from the general population. These benchmarks are being used to gauge, directionally, the state of the healthcare ecosystem in each study area. Data upgrades are needed to create additional benchmarks, such as national PQI rates by insurance status [for example, Medicaid vs. private] or Illinois PQI rates, statewide and by insurance status. See the "Data Limitations and Opportunities for Future Research" section for more information.)

Figure 11: Composite Preventative Quality Indicators (PQIs 90, 91, 92, and 93) Hospital Admission Rates per 10,000 Medicaid Recipients, Age-Adjusted, by Study Area with National Benchmarks for the General Population as Reference



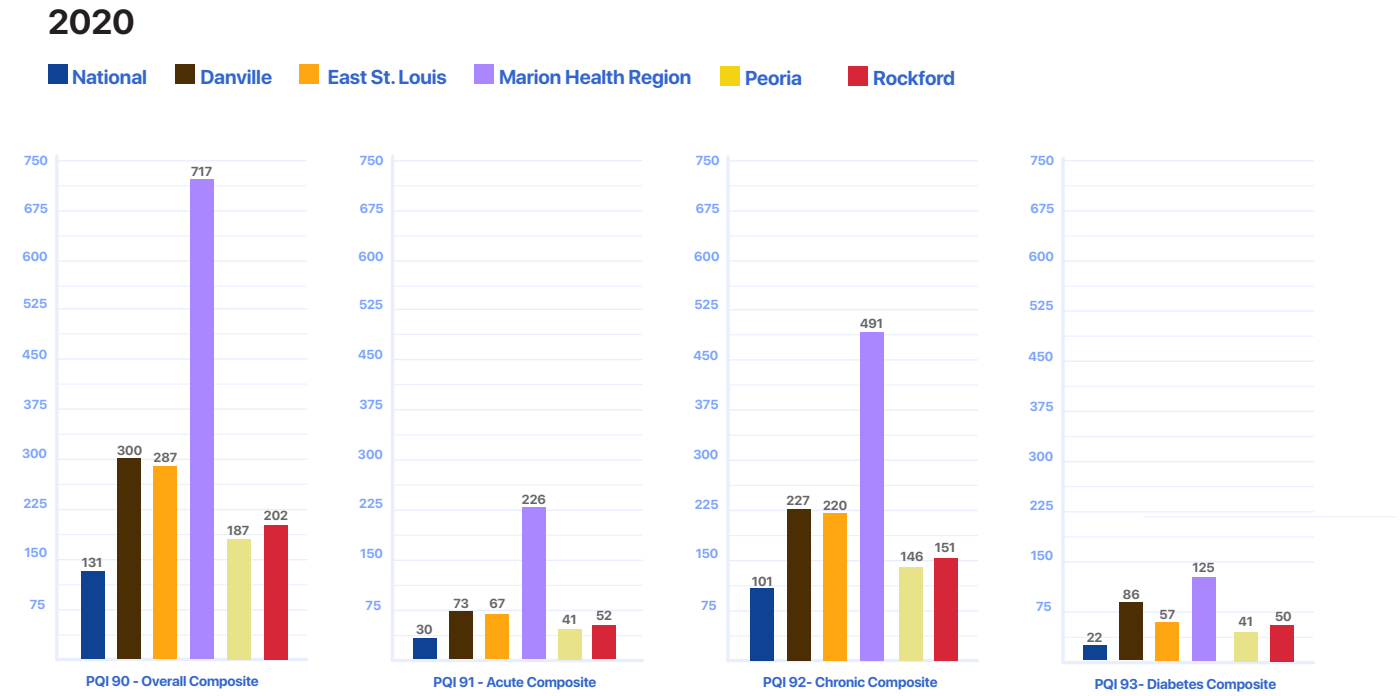


Table 3: Population Characteristics Associated with Composite PQIs in East St. Louis (FY2019 and FY2020 Data Combined)

Note: Variables highlighted in red are statistically associated with the PQI, meaning the odds ratio and the confidence level lower limit are ≥ 1 and the p-value is <0.05.

PQI 90_Overall Composite			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.81	3.32	4.36	<.0001
65-74	18-39	5.52	4.65	6.56	<.0001
75 or older	18-39	4.61	3.80	5.59	<.0001
RACE					
AmerIN/AN	White	1.76	0.96	3.26	0.069
Asian/PI	White	0.71	0.33	1.52	0.37
Black	White	1.41	1.25	1.59	<.0001
Other/UNK	White	1.31	1.00	1.72	0.050
SEX					
Male	Female	1.00	0.90	1.11	0.98

PQI 91_Acute Composite			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	4.64	3.36	6.40	<.0001
65-74	18-39	6.52	4.46	9.53	<.0001
75 or older	18-39	10.85	7.49	15.73	<.0001
RACE					
AmerIN/AN	White	0.47	0.06	3.46	0.46
Asian/PI	White	0.70	0.17	2.93	0.62
Black	White	0.96	0.77	1.20	0.72
Other/UNK	White	0.91	0.50	1.65	0.75
SEX					
Female	Male	1.31	1.06	1.62	0.01

Table 3 Continued

PQI 92_Chronic Composite			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.43	2.96	3.97	<.0001
65-74	18-39	4.88	4.06	5.88	<.0001
75 or older	18-39	3.22	2.59	4.01	<.0001
RACE					
AmerIN/AN	White	2.19	1.17	4.10	0.014
Asian/PI	White	0.73	0.31	1.74	0.48
Black	White	1.56	1.37	1.77	<.0001
Other/UNK	White	1.43	1.07	1.91	0.017
SEX					
Male	Female	1.07	0.96	1.20	0.23

PQI 93_Diabetes Composite			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	1.14	0.92	1.41	0.23
65-74	18-39	1.02	0.72	1.44	0.91
75 or older	18-39	0.63	0.39	1.02	0.060
RACE					
AmerIN/AN	White	0.42	0.06	3.05	0.39
Asian/PI	White	1.30	0.40	4.23	0.66
Black	White	1.16	0.94	1.44	0.17
Other/UNK	White	1.22	0.75	1.97	0.42
SEX					
Male	Female	1.21	0.99	1.47	0.064

In the tables above, AmerIN/AN = American Indian/American Native, Asian/PI = Asian/Pacific Islander, Other/UNK = Other/Unknown

Table 4: Population Characteristics Associated with Depression-Related Hospitalizations in East St. Louis (FY2019 and FY2020 Data Combined)

Note: Variables highlighted in red are statistically associated with the PQI, meaning the odds ratio and the confidence level lower limit are ≥ 1 and the p-value is <0.05.

DEPRESSION_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	1.92	1.55	2.37	<0.001
15 to 19.9	25 to 34.9	2.06	1.73	2.46	<0.001
20 to 24.9	25 to 34.9	1.11	0.90	1.37	0.31
35 to 44.9	25 to 34.9	0.91	0.76	1.08	0.27
45 to 64.9	25 to 34.9	1.03	0.89	1.20	0.68
>65	25 to 34.9	0.52	0.39	0.68	<0.001
RACE					
AmericanIN/AN	White	1.65	0.92	2.97	0.09
Asian/PI	White	0.33	0.12	0.88	<0.05
Black	White	0.46	0.41	0.52	<0.001
Other/Unknown	White	0.63	0.53	0.75	<0.001
SEX					
Female	Male	0.82	0.74	0.91	<0.001

Table 5: Population Characteristics Associated with Bipolar Disorder Hospitalizations in East St. Louis (FY2019 and FY2020 Data Combined)

Bipolar_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.54	0.33	0.88	<0.05
15 to 19.9	25 to 34.9	1.14	0.84	1.54	0.39
20 to 24.9	25 to 34.9	0.84	0.61	1.16	0.29
35 to 44.9	25 to 34.9	1.01	0.79	1.29	0.95
45 to 64.9	25 to 34.9	0.66	0.52	0.83	<0.001
>65	25 to 34.9	0.25	0.15	0.42	<0.001
RACE					
AmericanIN/AN	White	1.03	0.33	3.25	0.09
Asian/PI	White	1.35	0.60	3.04	0.47
Black	White	0.37	0.30	0.45	<0.001
Other/Unknown	White	0.51	0.36	0.71	<0.001
SEX					
Female	Male	0.86	0.72	1.02	0.08

In the tables above, AmericanIN/AN = American Indian/American Native, Asian/PI = Asian/Pacific Islander, Other/UNK = Other/Unknown

Table 6: Population Characteristics Associated with Alcohol Use Disorder Hospitalizations in East St. Louis (FY2019 and FY2020 Data Combined)

Note: Variables highlighted in red are statistically associated with the PQI, meaning the odds ratio and the confidence level lower limit are ≥ 1 and the p-value is <0.05.

AUD_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.035	0.00	0.25	<0.001
15 to 19.9	25 to 34.9	0.23	0.12	0.43	<0.001
20 to 24.9	25 to 34.9	0.45	0.07	0.73	<0.01
35 to 44.9	25 to 34.9	1.49	1.15	1.92	<0.01
45 to 64.9	25 to 34.9	1.37	1.09	1.73	<0.01
>65	25 to 34.9	0.4	0.24	0.67	<0.05
RACE					
AmericanIN/AN	White	1.82	0.67	4.97	0.24
Asian/PI	White	0	0.00	INF	0.98
Black	White	0.83	0.69	0.99	<0.01
Other/Unknown	White	0.46	0.27	0.77	<0.001
SEX					
Female	Male	0.31	0.26	0.37	<0.001

Table 7: Population Characteristics Associated with Opioid Use Disorder Hospitalizations in East St. Louis (FY2019 and FY2020 Data Combined)

OUD_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0	0.00	INF	0.97
15 to 19.9	25 to 34.9	0.03	0.01	0.12	<0.001
20 to 24.9	25 to 34.9	0.39	0.25	0.61	<0.001
35 to 44.9	25 to 34.9	0.98	0.78	1.25	0.88
45 to 64.9	25 to 34.9	0.28	0.21	0.37	<0.001
>65	25 to 34.9	0.015	0.00	0.11	<0.001
RACE					
AmericanIN/AN	White	0.84	0.21	3.43	0.81
Asian/PI	White	0.61	0.15	2.47	0.48
Black	White	0.21	0.15	0.28	<0.001
Other/Unknown	White	0.29	0.15	0.55	<0.001
SEX					
Female	Male	0.39	0.32	0.48	<0.001

In the tables above, AmericanIN/AN = American Indian/American Native, Asian/PI = Asian/Pacific Islander, Other/UNK = Other/Unknown, AUD = Alcohol Use Disorder, and OUD = Opioid Use Disorder

3: Engaged community members from socially vulnerable areas in conversations and identified barriers to outpatient care, disease prevention, and treatment adherence

The findings above demonstrate a lack of access to outpatient care for the most frequent and resource-intensive conditions. Recognizing that healthcare data can reveal what is happening, but not explain why, a parallel qualitative study was conducted to understand people's lived experience of the healthcare system.

In the fall of 2020, 16 community-input sessions were held with 69 residents of the East St. Louis Metro Area (see Figure 12). Community residents were recruited from the most distressed zip codes in the East St. Louis Metro Area as follows:

- 62002 (Alton/East Alton, IL)
- 62025 (Edwardsville, IL)
- 62040 (Granite City, IL)
- 62059 (Brooklyn, IL)
- 62060 (Madison, IL)
- 62090 (Venice, IL)
- 62095 (Wood River, IL)
- 62201 (East St. Louis, IL)
- 62203 (Centreville, IL)
- 62204 (Washington Park, IL)
- 62205 (Centreville, IL)
- 62206 (Cahokia, IL)
- 62207 (Centreville, IL)
- 62234 (Collinsville, IL)

(See Appendix C for information on how zip codes were selected.)

During input sessions, residents engaged in structured conversations to understand challenges that they face across a simple "healthcare journey" consisting of: staying healthy; recognizing a healthcare need and deciding to get care; arranging and getting to care; receiving care; and managing a condition over time (for those with ongoing health issues). Community residents spoke of multiple barriers (or social determinants) that they face across the healthcare journey. *These community-identified barriers vividly demonstrate the "why" behind low rates of outpatient-care engagement and high rates of hospitalization for key diseases identified in the quantitative data.* (See table 8.)

Social-determinant-of-health barriers voiced by community members include::

- Knowledge and information barriers
- Economic barriers
- Healthcare service barriers
- Sociocultural barriers
- Environmental barriers
- COVID-19-related barriers

A summary of findings for each type of social-determinant barrier follows. Before moving on to these findings, it's important to note the cumulative impact that these barriers have on residents in communities with high social vulnerability. When people decide to seek care, they make an implicit cost-benefit analysis, trading off time, money and trouble against the value they expect to gain from care. The barriers voiced by community residents tip the balance toward the costs of seeking care and away from the value of getting healthcare. In other words, resident stories about healthcare barriers demonstrate that the cost-benefit calculus applied in deciding whether to seek care would produce a substantially different result if these residents resided in areas with lower social vulnerability.

Figure 12: Tally of Communit- Input Participants for the East St. Louis Metro Area

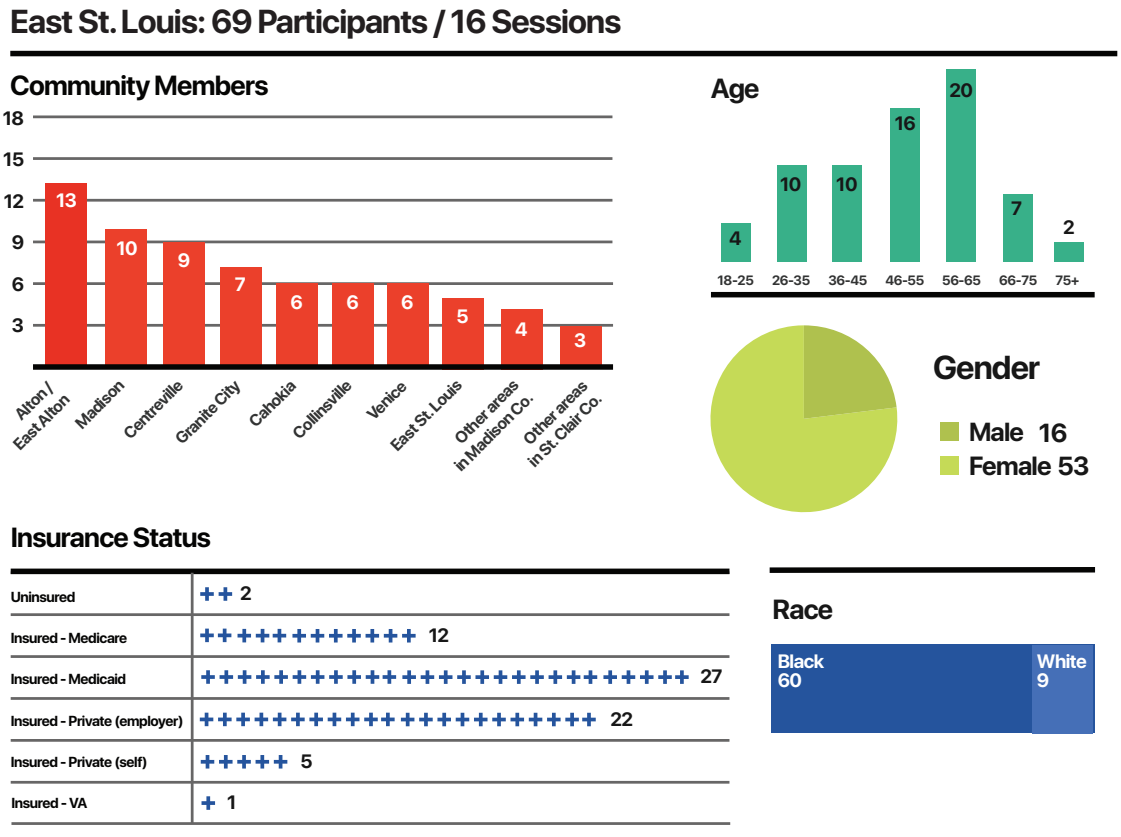


Table 8: Community-Defined Barriers to Staying Healthy and Accessing Care

BARRIERS BY SOCIAL DETERMINANTS OF HEALTH	Staying healthy	Recognizing a health need and deciding to get care
Knowledge & Information (i.e., health literacy barriers – the lack of awareness, information and skills needed to care for one's health and navigate health services)	• Lack of factual and trustworthy health information	• Lack of knowledge of signs and symptoms of prevalent health conditions • Lack of knowledge of what is covered or not covered in insurance plan • Fear about getting healthcare as a result of the lack of knowledge or information (i.e., fear due to unknown costs involved, fear of bad diagnoses, etc.)
Economic (i.e., inability to access activities, programs, and services due to the associated costs)	• Lack of time for self-care (i.e., exercise, preparing healthy food, preventative care, etc.) • Inability to afford healthy food • Unemployment or economic instability • Housing instability	• Inability to afford health insurance • Inability to afford out-of-pocket care costs (e.g., co-pays) • Inability to afford time off work to seek care
Healthcare Service (i.e., barriers that impede equitable access to, and engagement with, healthcare services)	• Lack of preventive screening or programming in the community	• Previous negative healthcare experience • Fear of going to healthcare facilities due to COVID-19
Socio-Cultural (i.e., individual or collective attitudes and beliefs that impact one's ability to maintain health and engage in healthcare)	• Culturally ingrained food and cooking habits	• Hesitancy to seek care (due to historic healthcare system mistrust, cultural issues, immigration status, fear of doctors, stigma, or previous bad experience) • Concealing health issues from family and friends
Environmental (i.e., resource, service, context and infrastructure obstacles in the community that limit one's ability to maintain health and engage in healthcare)	• Lack of resources (i.e., food, recreation, transportation, walking infrastructure, etc.) • Poor air quality due to local polluters • Presence of unhealthy foods • Prevalence of drugs and alcohol in communities • Exposure to ongoing crime, street violence, domestic abuse, neglect and/or discrimination	

Note: Community residents spoke of structural inequities such as resource access (including healthcare access), the quality of local resources, generational disinvestment, unethical scientific experimentation, racism, and discrimination based on socioeconomic status as significant contributors to health in their communities. Community residents described these inequities as a cause of chronic stress, cycles of violence, mistrust of the healthcare establishment, health disparities, and the lack of economic and educational opportunities.

Arranging and getting to care	Getting care (point of service)	Managing the condition in daily life
• Lack of awareness of healthcare services within community • Lack of awareness of where to seek care that fits one's needs	• Difficulty understanding technical medical terms and physician instructions	• Difficulty applying physician instructions to personal circumstances • Lack of knowledge of local resources to help manage condition
• Lack of insurance or under-insured • Inability to afford transportation	• Inability to afford out-of-pocket care costs (for example, co-pays)	• Inability to afford treatment (e.g., medication, equipment, supplies, etc.)
• Poor quality of local healthcare facilities (self-reported) • Long wait times for appointments • Scarcity of local healthcare facilities (lack of, or limited options due what health insurance is accepted) • COVID-19 closures or reduced appointments	• Long wait times at the point of care • Service quality disparities • "Transactional" experiences with providers (e.g., short facetime, bias towards medication, etc.) • Lack of trained, culturally competent providers • Discrimination due to race, socio-economic status or insurance status (i.e., having Medicaid for insurance) • Care that doesn't fit cultural context (e.g., language and behavioral norms)	• Lack of consistent healthcare support to help manage condition over time
		• Social isolation (lacking a support system) • Strain on social support system (i.e., emotional, physical, economic)
• Insufficient transportation options		• Lack of resources (i.e., food, recreation, transportation, walking infrastructure, etc.) • Poor air quality due to local polluters • Presence of unhealthy foods • Prevalence of drugs and alcohol in communities • Exposure to ongoing crime, street violence, domestic abuse, neglect and/or discrimination

Knowledge and Information Barriers

Knowledge and information barriers, also known as health literacy barriers, include the lack of awareness, information, and skills needed to care for one's health and navigate health services. Residents described a range of knowledge and information barriers to achieving and maintaining health. They spoke of:

- lacking knowledge, tools, and time needed to lead a healthy lifestyle
- lacking trusted sources of health information
- not knowing signs and symptoms of medical conditions
- confusion about health insurance coverage for needed services
- not knowing where to find services to meet a health need
- challenges integrating provider recommendations into lifestyle

The lack of trusted and accurate health knowledge and information often results in fear and delay of care. Residents talked about this absence of trust as a reason to avoid care and expressed related fears: the fear of bad diagnoses, fear about the costs of care and treatment, and fear associated with contracting COVID-19 at the offices of healthcare providers.

Community members' suggestions for how to address health information and health service navigation barriers, included pairing preventive health information with community-based programs to teach the skills needed to shift behavior, health fairs, healthy cooking classes, farmers markets, and exercise programs offered through local schools, community centers, and the park district. In addition, residents recommended that messaging about available health resources be culturally tailored to communities and appropriate channels identified to ensure reach and penetration.

On lack of knowledge about healthy eating

"We need to educate people how to eat. If you go to someone and ask them how to eat, it's a really mysterious question for them. I would actually like the answer on how to do it! I've gone on the internet and searched because I'm struggling to lose weight. But there's still a lot that I don't know."

Centreville resident
(East St. Louis Metro Area)
Male, 26–35 years old

On not knowing the signs and symptoms of a health condition

"I know of people that just dropped dead from heart attacks—middle-aged and older—because they did not know about their condition."

Centreville resident
(East St. Louis), Male
56–65 years old

Economic Barriers

Economic barriers are defined as the inability to access activities, programs, and services—both prevention and intervention—due to the associated costs. Residents spoke of economic barriers impacting residents' ability to stay healthy and afford needed care and treatment. Residents from all study areas identified key economic barriers to health, including:

- unemployment and underemployment
- lack of insurance or inadequate insurance
- cost of co-pays
- cost of medication
- cost of healthy food
- cost of transportation
- cost of fitness membership and other wellness programs

Of particular concern to East St. Louis Metro Area residents was the cost of healthy food, transportation costs to healthcare services and full-service grocery stores, the cost of co-pays, health insurance, and medication. Another "affordability" barrier to healthcare was not being able to afford to take the time off of work to get care.

On inability to afford out-of-pocket care costs

"Paying for healthcare? Minimum wage is the issue. If you don't have the money for [health] insurance, how are you going to get care? I make $400 per week, which is pretty decent. My rent is $475, car insurance is $200, my car note is $187, and on top of that I have electric, phone, sewer, and water bills, and college tuition. So already, that's over what I make."

Cahokia resident
(East St. Louis Metro Area)
Male, 26–35 years old

"Although I have private insurance, it does not cover a lot. My medications are very expensive. A lot of times, my family has to help me get my medicine each month, even though I work. I have a decent job and make decent money. Still, it costs me a lot for medication each month."

Madison resident
(East St. Louis Metro Area)
Female, 56–65 years old

On cost of healthy food

"We can't afford to eat the way we are supposed to eat. I make $1,300 a month and once you pay all the bills, there's not that much left. Then, you have to pay for transportation to get you to the [grocery] store. It's super difficult to eat a proper diet . . . especially if you have a family [to feed]".

Cahokia resident
East St. Louis Metro Area),
emale, 46–55 years old

"When I was first diagnosed with diabetes, I took a nutrition class. Then, when I got to the store, I was trying to buy [the food that was recommended] and found out that the sugar-free stuff was higher [in price] than the regular stuff. It was way higher. So I couldn't afford it."

Alton resident
(East St. Louis Metro Area)
Female, 46–55 years old

Healthcare Service Barriers

Healthcare service barriers impede equitable access to, and engagement with, healthcare services. Access barriers include lack of preventive services for staying healthy; lack of local outpatient facilities for arranging, accessing, and getting care; and lack of healthcare service support to manage a condition over time. Residents also spoke of experiencing "transactional" care—care not attuned to cultural context or not meeting their individual, personal needs.

In terms of access barriers, residents of all study areas spoke of a scarcity of community-based healthcare facilities and services, due to an actual lack of local facilities or lack of local facilities that take residents' type of health insurance. Several residents described shifting from employer-provided insurance to public insurance due to job layoffs, some associated with COVID-19, and as a result, not being able to see a provider who they had seen in the past. Such changes forced some to seek care outside of the community and others to delay care.

On scarcity of local healthcare facilities

"If we had more clinics in low-income communities, you wouldn't have to call a ride to pick you up 2 hours before your appointment, and then sit there waiting for 2 hours to see a doctor. I think this should be addressed because we have a lot of health issues. . . . If we had clinics in our neighborhoods, then I think we'd become a healthier America."

Cahokia resident
(East St. Louis Metro Area)
Male, 56–65 years old

On scarcity of local drug treatment options due to insurance

"With certain insurance, facilities do not take you . . . so you have to call all over Illinois or go up to Chicago and that's crazy. When somebody is ready to get help, then it's a stand still—you have to wait 30 days and you have to keep calling back until you get them in. That's a downfall right there—people are going to go back to using when they don't get that help right away."

Alton resident
(East St. Louis Metro Area)
Female, 56–65 years old

Photo by Brown Planet Productions for the UIC Transformation Project

Photo by Brown Planet Productions for the UIC Transformation Project

In terms of "transactional" care experiences, community residents—in particular, those with chronic conditions, including mental illness and substance use disorders—expressed a disconnect between the care they expected to receive and the actual care delivered by a provider. Community residents expected to have time with providers to ask questions, talk about options for care, and get help that fit within their circumstances (for example, medications covered by insurance and treatment suggestions that fit their financial and homelife realities). Instead, many residents experienced very different encounters with the healthcare system. Dissatisfaction with provider interactions included: little time spent with providers to ask questions and understand the information being conveyed, being provided with a prescription but not addressing options or available resources to help manage a condition, and feeling like being treated as a number and not a person. In other words, many community residents expected relationship-based care with healthcare providers but instead experienced care that was impersonal and transactional. A number of residents noted that repeated negative encounters with the healthcare system influenced their decisions to not engage with it at all.

On bias toward medication

"Not being heard by my doctor was a problem for me. He was quick to give out medication and stuff but not try anything else before medication—like a change in diet or routine. . . . I found another doctor because you want to go to someone who treats you with respect, someone who treats you like a human being and not a science experiment."

Centreville resident
(East St. Louis Metro Area)
Female, 18–25 years old

On lack of trust and dialog with doctors

"There is a lack of trust with doctors [because] . . . a lot of times, they don't want to take time with you. . . . When you get a good doctor, one that really cares, they will take the time to sit there, talk to you and explain everything to you. That's when everything comes together as one."

East Alton resident
(East St. Louis Metro Area)
Female, 56–65 years old

Table 9 outlines the dimensions of a relationship-based care experience from the perspective of community residents in contrast to the transactional encounters they experience.

Table 9: The Desired Shift from Transactional Care to Relationship-Based Care from a Resident Lens

	Transactional care (status quo)	Relationship-based care (desired)
Logistics / administrative	I often need to wait months before I am able to get in for an appointment.	I expect to be able to schedule an appointment when I have a health care need.
Waiting room experience	Due to providers running behind schedule, I often need to wait to be seen.	I expect my time to be valued and for the office to run on time.
Patient-provider relationship	When my appointment lasts 15 minutes, and then I am pushed out the door, I feel like a number.	I expect my doctor to seek to understand and invest in my whole [bio-psycho-social] person.
Decision making	My doctor tells me what to do based on what he/she thinks is best for me.	I expect to take an active role in making decisions about my body and health.
Care plan	When the doctor rushes to a prescription, it feels like a band-aid solution. My insurance doesn't cover the prescription given. The doctor recommends that I cook healthy meals each night. I am managing multiple jobs and young children. I need fast, convenient options. The doctor recommends I go outside for walks but it isn't safe in my neighborhood and a fitness membership is expensive.	I expect my doctor to seek to understand the root cause of my symptoms. I expect care recommendations that fit my insurance and life circumstances.

Sociocultural Barriers

Sociocultural barriers are individual or collective attitudes and beliefs that impact a person's ability to stay healthy and engage in healthcare. Sociocultural barriers impact staying healthy, recognizing a health need and deciding to get care, and managing a health condition in daily life. Key sociocultural barriers include ingrained eating and cooking habits, hesitancy to seek care due to sociocultural beliefs, and issues related to social support systems.

Ingrained, unhealthy eating and cooking habits impeded residents' ability to stay healthy and to care for chronic diet-related diseases, but residents find these habits hard to change because food is a critical piece of social connectivity and comfort.

On ingrained eating habits

"The things we eat contribute to high blood pressure. We always want to add salt to the food we make . . . and we make a lot of fatty foods. Rather than frying, we should bake but we just don't do that. We eat what we like and then deal with the consequences later."

Alton resident
(East St. Louis Metro Area),
Female, 46–55 years old

"Before [I got sick], I was a mover. I played sports and I was in all types of activities [so I ate what I wanted]. I wasn't eating vegetables, I was a meat man. I'd grab a few burgers or a box of chicken. Just meat and bread."

Washington Park resident
(East St. Louis Metro Area),
Male, 26–35 years old

Photo by Brown Planet Productions for the UIC Transformation Project

Hesitancy to seek healthcare was a top issue in the East St. Louis Metro Area and that hesitancy took many forms. Black residents in East St. Louis harbor a mistrust of the medical system. That mistrust stems both from historic, unethical practices, such as the U.S. Public Health Service Syphilis Study at Tuskegee, as well as discriminatory treatment in healthcare today. Participants also expressed learning from their family of origin that "you don't go to the doctor until it's an emergency" or "you treat issues at home." Another group with longstanding hesitancy to seek out medical care is men. This hesitancy seems to stem from an unwillingness to appear weak or vulnerable as well as lack of time due to working, especially in early adult life, when a habit of not seeing a doctor forms. Fear of "bad news" keeps people from seeing a doctor too, and for mental illness and substance abuse, social stigma is a barrier.

On mistrust of the healthcare system

"A lot of minorities have a certain disdain when it come to the healthcare system because of the history of injustice, with certain medical experiments being tried on African Americans. So, we have reasons as to why we don't trust doctors . . . because of the Tuskegee study and all that."

Alton resident
(East St. Louis Metro Area)
Female, 18–25 years old

On men not seeking care

"In my family, men just don't want to go to the doctor. My stepdad hadcancer on his arm and he just let it go and go and go until it was just terrible."

Collinsville resident
(East St. Louis Metro Area)
Female, 56–65 years old

Photo by Antreina Stone on Unsplash

Photo by Brown Planet Productions for the UIC Transformation Project

Issues related to social support systems was also top-of-mind for many residents in the East St. Louis Metro Area. Residents spoke of the emotional, physical, and economic strain that chronic illnesses put can put on individuals as well as on their family and friends. Caregiving becomes an additional job that can be part driver, counselor, advocate, care coordinator, cook, translator, and nurse. These additional responsibilities can become a source of stress that in turn can affect the caregiver's health. Chronically ill residents without strong support systems spoke of social isolation as well as delayed care due to lack of logistic and emotional support. COVID-19 has exacerbated both the strain on support systems and social isolation.

On the stress of caretaking

"I took care of my mother for years. She just recently passed. As a caretaker, it effects you emotionally and physically because, in the end, my mother was bedridden. She had to be changed. She had to be fed. And I still worked a full-time job. It takes a lot out of you. Sometimes I didn't know if I could do it."

East Alton resident
(East St. Louis Metro Area)
Female, 56–65 years old

Environmental Barriers

Environmental barriers are resource, service, context, and infrastructure obstacles in the community that limit one's ability to maintain health. Environmental barriers mentioned by residents across all community-input sessions include: living in a resource desert (food, recreation, green space, transportation, healthcare facilities, etc.), the presence of unhealthy food options in communities, prevalence of drugs and alcohol in the community, poor air quality and exposure to ongoing crime, street violence, domestic abuse, neglect, and discrimination.

For community residents, key resources lacking in distressed parts of the East St. Louis Metro Area include a lack of local full-service grocery stores, a lack of transportation, and lack of healthcare resources in the community. Finally, residents reported a lack of recreational options in the area, such as gyms and sidewalks.

On lack of grocery stores in the community

"I live in Washington Park and it's a food desert. You have corner stores and basically, that's all. . . . You have to go out of the community to get [to grocery stores to get] quality fruits and vegetables."

Washington Park resident
(East St. Louis Metro Area)
Female, 56–65 years old

On lack of access to transportation

"If you don't have your own transportation and you're trying to get on the bus [with groceries], there is only so much you can carry. Or, if you have someone take you, you have to pay them and sometimes, they don't want to wait for you so you feel rushed and you don't have time to get what you need."

Centreville resident
(East St. Louis Metro Area)
Female, 46–55 years old

On lack of sidewalk infrastructure

"I live on a front street and I'd like to be able to walk. But we need sidewalks to do that and we need to get rid of all the stray dogs around here. . . . Right now, we have to walk in the dirt or on the road and take the chance of getting hit by a car."

Centreville resident
(East St. Louis Metro Area)
Female, 46–55 years old

COVID-19 Exacerbated Barriers to Health and Healthcare

The COVID-19 pandemic has heightened barriers to staying healthy and accessing care and contributed to increased violence, addiction, mental health issues, and difficulty managing chronic conditions.

Community residents saw impacts of COVID-19 in:

- unemployment and the sudden loss of insurance
- isolation exacerbating mental health issues
- suspension of in-person 12-step programs
- postponement of needed care for fear of going into healthcare facilities
- friction with telehealth, due to lack of equipment, internet access, technical knowledge, or dissatisfaction with past telehealth appointments
- Stress and depression as a result of losing friends and family members to the virus

In addition, several residents described the closure of local pharmacies in the aftermath of George Floyd's death and the subsequent social unrest which prevented them from obtaining medications to manage chronic conditions.

(See Appendix C for additional information about the community input gathered in East St. Louis including information on the community organizations that conducted the input sessions, the approach to recruiting community residents, the discussion guide and the format of the community-input sessions.)

Photo by Pedro Ceu on Unsplash

Photo by National Cancer Institute on Unsplash

4: Synthesized findings from the data analyses and the community conversations to define transformation opportunities for stimulating outpatient care access and reducing the social barriers to care and treatment

What emerges from the combination of the analysis of hospital utilization data and the inventory of concerns expressed by residents in community conversations is strong indication of a need to improve accessibility to quality primary, specialty, and behavioral healthcare and, in parallel, to address the social-determinant-of-health barriers that make it difficult to prevent disease, access care, and adhere to treatment. Doing so will require healthcare systems in East St. Louis to reach out beyond the walls of their hospitals and into communities. It will also require community residents and organizations in East St. Louis to become more engaged in health and healthcare. In other words, the effort will entail finding a middle ground where healthcare systems and communities work together to prevent disease and promote outpatient care engagement.

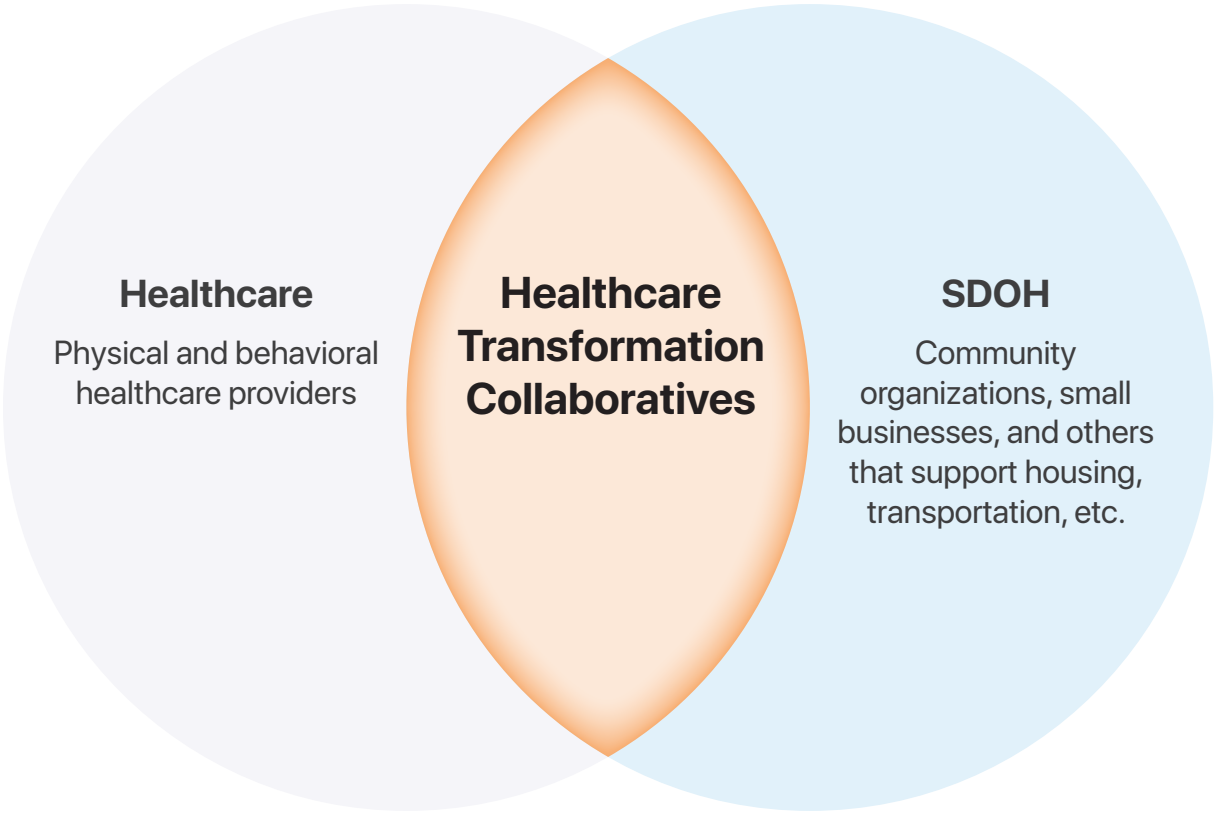
To this end, the combined analysis suggests that transformation efforts need to concentrate on *clinic-community linkages* that provide primary and secondary care and community-based wraparound services to help people manage chronic illnesses, mental illnesses, and substance use disorders. Clinic-community linkages leverage the treatment expertise of healthcare systems, the on-the-ground knowledge of community-based organizations, and the trust that residents have in those organizations to support an active approach to chronic disease management, restore trust in the healthcare system in socially vulnerable communities, and increase engagement in healthcare.

Based on the accumulated evidence gathered through this analysis, the report suggests that transformation initiatives should be guided by the following objectives:

1. *Incentivize clinic-community linkages* in order to address physical health, behavioral health, and social needs in a coordinated, accessible fashion within communities.
2. *Promote collaborative care models* for chronic illnesses, including mental illnesses and substance use disorders (for example, health homes and coordinated care models).
3. *Build capacity* for clinic-community linkages and collaborative, relationship-based care models.
4. *Promote care engagement* via awareness of services and navigation support.
5. *Continuously groom clinic-community linkage services* to reduce and eliminate barriers to care.

HFS' Healthcare Transformation Collaboratives project is designed to incentivize these clinic-community linkages (see Figure 13). Over time, investments in these linkages will address the need for access to services where people live, work, and play and, ultimately, will help drive greater health in communities.

Figure 13


Healthcare
Physical and behavioral healthcare providers
Healthcare Transformation Collaboratives
SDOH
Community organizations, small businesses, and others that support housing, transportation, etc.

Limitations and Opportunities for Future Research

The analyses in this report demonstrate an imperative need to expand access to outpatient care and, in parallel, reduce the barriers to that care (that is, address the social determinants that make it difficult to access that care), in particular for bipolar disorders, depressive disorders, substance use disorders, and key ACSCs (hypertension, diabetes, asthma/COPD, and heart disease). However, some limitations related to the data and community input affected the execution of this research, and these limitations are described in this section.

Data Limitations

Limited Variables Available in Noninstitutional Data

The data obtained under the data-use agreement (see Appendix A) includes:

- institutional data that consists of inpatient admissions, outpatient visits, and ED visits in hospital/medical center systems
- noninstitutional data that consists of outpatient visits to independent healthcare providers
- a recipient data file that contains date of birth, sex, race, and zip code information for Medicaid enrollees in each study area

The lack of specificity in the noninstitutional data impaired what analysis could achieve. For example, providers are classified broadly as "physicians" or "nurse practitioners" with no further specialty-based classifications available in the data. Also, some provider addresses are billing addresses, which may differ from service-providing addresses. Although some addresses were confirmed as service-providing ones, others could not be verified. In upcoming years, HFS is scheduled to move to an improved and expanded database that will contain deeper data on provider types, locations, and diagnoses. Improved data will allow more detailed analyses of outpatient utilization trends and the relationship between hospital-level care and outpatient utilization.

In addition, technical issues related to file size and other delays prevented analysis of FY2019 and FY2020 noninstitutional data for compiling updated figures for outpatient care before and after hospitalization for mental disorders, substance use disorders, and ACSCs.

Limited Patient-Level Demographic Data

The Medicaid institutional data set contains patient-level healthcare encounter data. For each encounter, the data contain the following key fields: the patient's unique recipientID code, the patient's admission and discharge dates, diagnosis (ICD-10 code), and whether the encounter was for an ED visit, an inpatient hospital admission, renal

visit, or an outpatient service encounter. In a related recipient table, joined by the "recipientID" code, the data contained the following fields for each patient: date of birth, sex, race, and zip code. The data on race is limited because the collection of race data is not required. As a result, race is listed as "unknown" in approximately 20% of the records. In addition, segmentation and analysis by ethnicity was not possible since information on ethnicity is not in the data. Detailed patient-level data would allow analyses to better determine those patient populations most closely associated with negative outcomes and help inform targeted interventions.

Need for Patient-Level Social-Determinant-of-Health Data

The absence of patient-level information on social, cultural, and economic characteristics, health-related behaviors, and other social-determinant-of-health characteristics is another constraint. Its absence limits understanding how specific aspects of the patient's lived experience drive the observed health outcomes. Associating patient-level utilization and other health outcome data with patient-level social-determinant-of-health factors would provide insight into what specific factors drive negative (and positive) health outcomes and where to focus interventions. It is recommended that the State of Illinois invest in mechanisms that allow the association of patient-level Medicaid utilization data with patient-level social-determinant-of-health data.

Need for Hyper-Local Neighborhood Social-Determinant-of-Health Data

Local neighborhood data on social determinants of health would help contextualize patient-level healthcare utilization and health outcomes and provide insight into structural barriers to good health and health-related quality of life. Having such hyper-local data would strengthen the State's ability to identify social-determinant-of-health drivers of disparities in healthcare utilization and inequities in health outcomes across populations. It is recommended that the State invest in mechanisms that allow the association of hyper-local social-determinant-of-health data with patient-level utilization and health outcome data.

Need for Patient-Level Comorbidity Data

Information on the presence of other health conditions at the time of a clinical encounter would help take case mix into account when comparing patients and patient populations with respect to healthcare utilization and health outcomes. Limitations in data access to secondary diagnoses prevented analyses related to comorbidities.

Lack of Maternal-Child Health Outcomes Assessment

This report does not assess maternal-child health outcomes, which are known to be disparate in Illinois and a priority for HFS. Using HFS-provided data, a preliminary analysis of key adverse pregnancy outcomes (such as stillbirth and premature birth) was conducted. However, analyses were thwarted by important data limitations:

- There's no infant-to-mother record linkage in the data. The lack of linkage from infant-to-mother records presented the additional challenge of determining an appropriate denominator for birth outcomes (for example, the total number of births).
- Prenatal care visits were not identifiable in the provided outpatient data. This meant that even if rates of adverse maternal-

child health outcomes could have been estimated, it would still not have been possible to trace associations of these outcomes back to inadequate prenatal care.

The effects of these data limitations were such that attempts to assess rates of premature birth and stillbirths across these study areas yielded implausibly low numbers of adverse events and rates that were orders of magnitude lower than published national rates. The data team was unable to ascertain whether these estimates had been distorted by missing data, coding errors, or other data problems in the count of adverse outcomes or total births. In the end, these data concerns led to the decision to not include analyses of maternal-child health in this report. With enhanced data sets and a methodology for connecting mother with babies in the data, a future assessment of poor outcomes in pregnancy, and with newborns, could be done.

Unavailability of Hospitalization Data by Insurance Status for PQI Comparison Rates

We analyzed Medicaid utilization data for ACSCs as an indicator of healthcare delivery gaps in selected study areas. For ACSC PQIs, we compared study area PQI rates for Medicaid enrollee hospitalizations with national PQI rates for the general population. This analysis was informative and indicative of healthcare delivery gaps in the study areas. However, additional benchmarks are needed for comparison—specifically, national PQI rates for Medicaid recipients, Illinois PQI rates, and Illinois Medicaid PQI rates.

Community-Input Limitations

COVID-19

Community-input sessions were planned to be in-person, starting in late spring of 2020. The arrival of COVID-19 that spring delayed these sessions and required they be conducted remotely. To reduce barriers to participating remotely, sessions were held via telephone using a WebEx conference-call number. It is not known what impact the telephone format had on the feedback. However, the anonymity afforded by telephone conference calls may have enabled participants to express themselves more freely than in in-person sessions.

Moderation Challenges

Guided by an equity-driven approach, community-based organizations were hired to recruit and moderate the community-input sessions. Community organizations provided staff to serve as moderators. The UIC research team briefed moderators on the topics to be covered during the sessions. Moderators came to the work with different skill levels and experience. The UIC team provided additional moderation training, as needed, to help community organization staff host conversations. Virtual, voice-only moderation prevents moderators from being able to pick up on visual cues and read body language and can make it challenging to orchestrate conversational flow. To support moderators with these challenges, a UIC researcher offered real-time prompts via WebEx chat during the sessions to help guide the conversation.

Convenience Sampling Used to Recruit Community Members for Input Sessions

To leverage community partners' networks of readily available existing relationships, a

convenience sampling approach was taken to recruit participants for sessions. This approach had the advantage of engaging the community organizations' existing relationships with community members to recruit participants and establish a level of trust with them. A key limitation of convenience sampling is the possibility of underrepresentation of people who are not part of the community partner's network. This situation presents limitations on making generalizations about community residents as a whole.

Limited Minutes on Public Phones

Several seniors who receive their phone plans through public aid were unable to participate due to the limited allocation of minutes on their phone plans.

Opportunities for Future Research

Despite the data and community-input limitations explained here, there are meaningful and conclusive analyses in this report that highlight very important issues. Furthermore, the analyses contained in this report can serve as benchmarks for measuring outcomes of transformation interventions. These benchmarks can also be used to assess the impact wrought by COVID-19, hospital closures, and other changes in healthcare delivery systems.

Appendices

Appendix A:
Approach to Analyzing Medicaid Utilization Data

About Medicaid Utilization Data

The team tasked with updating data analyses from the report published in February 2021 focused on FY2019-2020 Medicaid patient-level utilization data. Patient-level utilization data was obtained from the Illinois Department of Healthcare and Family Service (HFS) under a data-use agreement (DUA) executed jointly by HFS and University of Illinois Chicago (UIC) legal counsels. Data was stored in a secure server. To further protect the data, access to that server was limited to a small number of selected members of the research team, each of whom completed required security training. Information flow in and out of the server was further severely restricted by IT technology.

Under the DUA, the team received 3 data sets: institutional data, noninstitutional data, and a "recipient file."

Institutional Utilization Data (FY2019 and FY2020)
This data set contained Medicaid recipients' healthcare encounters (inpatient admissions, outpatient visits, and emergency department [ED] visits) at hospital/medical center systems. Key fields in this data set included the following:

- hospital system provider name (system in which the healthcare encounter occurred)
- zip code of hospital system provider (where the healthcare encounter occurred)
- recipient ID (unique Medicaid recipient code)
- recipient zip code (indicating home address of recipient)
- service type (inpatient, outpatient, or renal)
- ER indication (indicates if the encounter is a visit to the emergency room of the institution; variables for this are "ER visit" and "other")
- admission and discharge dates
- ICD-10 code and description (principal diagnosis for the encounter)
- diagnosis related group (DRG) code

Noninstitutional Utilization Data
(FY2018 only; data for FY2019 and FY2020 not available due to file size)
The noninstitutional data contained Medicaid recipients' outpatient visits to independent healthcare providers. Key fields in this data set included the following:

- provider type and description
- category of service and description
- provider zip code
- recipient ID (unique Medicaid recipient code)
- recipient zip code (indicating home address of recipient)

- behavioral health indication (indicates if the encounter is for behavioral healthcare)
- service date
- ICD-10 code and description (principal diagnosis for the encounter)

Recipient File Data
This data set contained sex, date of birth, and race data for unique recipient IDs. A couple of notes about recipient data:

- Race data does not include ethnicity, so mentions of "white" as race include Latinx.
- Age at time of encounter was derived from recipient date of birth.

The FY2019 and FY2020 institutional data file and recipient file represent all inpatient hospitalization encounters in these fiscal years for all Medicaid recipients living in the zip codes of the areas defined in this study (specifically, all recipients with home zip codes within the study areas)—in other words, the data track inpatient hospital utilization by Medicaid recipients living in the study areas, regardless of where that care took place.

Approach to Medicaid Utilization Data Analysis

Non-Prescriptive Approach to Data Analysis

At no point during this research did HFS direct an analytic framework that the UIC team should follow, or identify questions or hypotheses the research team must pursue. The research team worked in complete independence and reported results and findings to HFS as they became available.

Data-First, Data-Driven Analysis Approach

Most analyses are hypotheses driven, in the sense that they begin with specific questions and hypotheses and then analyses are framed broadly to address those questions. In contrast, this project was predominantly data driven. The team approached the data analytics in this project with no previously formed hypothesis. Using this "data-first" (rather than question-first) approach, the team let the data analytics bring up the questions and topics of interest. The team then used further data analytics to gain insight into these questions and topics. It bears noting that the statistical results reported here are mostly descriptive rather than inferential.

Analytics Approach: Descriptive Statistics, Bivariate Associations, and Logistic Regressions

Descriptive statistics is the primary analytics approach used for this study. Aggregated summaries provided in this report are expressed as percentages, rates, averages, medians, and such. For example, since the data may include multiple encounters for one Medicaid recipient (for example, multiple visits to a healthcare provider, ED visits, and/or inpatient hospital stays) for one health condition, a numerator for the rate could be the number of encounters (which counts multiple encounters of a single patient) or the number of unique recipients. Similarly, the denominator to calculate the rate could be the overall population in the region or the number of Medicaid enrollees in the region. Each such calculation in the analyses was done after careful consideration of all these aspects by subject-area scholars.

Descriptive statistics: After getting to know the data sets by reviewing the fields and variables, running histograms of variables, and doing basic data cleaning and new data creation (for example, patient age at time of the patient encounter), the data analytics team produced an initial set of descriptive statistics. For the institutional data set, initial analyses included looking at the distribution of demographic data and the distribution of healthcare encounters by hospitals. Figures 14 to 20 exhibit the charts for the following analyses:

- for inpatient hospitalizations, distribution of ages, sex, and races of patients by study area (excluding Chapter 21 data)
- for ED visits, distribution of ages, sex, and races of patients by study area (excluding Chapter 21 data)
- market share of hospitals receiving Medicaid patients by study area

Other descriptive statistics, such as frequency distributions of disease chapters and blocks, are found in the "Detailed Findings" section of this report.

Bivariate associations: The data analytics team also investigated bivariate associations, such as associations between health conditions (that is, principal diagnosis codes represented by chapter, block, or ICD-10 code) and localities (zip codes and study areas). More specifically, the team compared rates, percentages, averages, and medians across zip codes, age groups, race and study areas. Included in the "Detailed Findings" section of this report are the key bivariate associations that drove insights about the utilization data: inpatient admission diagnosis blocks by resource intensiveness defined by hospital readmission.

Logistic regressions: The data analytics team also performed a limited set of advanced inferential statistical analysis using bivariable and multivariable regression analyses. Regression analyses were used to understand Medicaid patients' demographic characteristics most associated with diseases of interest: bipolar and depressive disorders, and alcohol and opioid use disorders, and ACSCs. This task required first singling out those patients with a principal diagnosis of the key disease groups and conditions (1 vs. 0) in the utilization data for any type of encounter (inpatient hospitalization, ED visit, or outpatient visit). For example, if a patient had at least one depressive disorder diagnosis, the outcome variable for the depressive disorder was flagged as 1. If the patient had 2 or more depressive disorder diagnoses, the outcome of the depressive disorder was still flagged as 1. The same process was followed for the other key diseases. Patients with multiple diagnoses were included in more than one logistic regression. For example, if a patient had both a bipolar and a depressive disorder diagnosis, that patient was included in logistic regressions for both conditions. The covariate for the logistic regression included the demographic covariates available in the data, these being age, race, and sex.

See Appendix B, “Additional Analyses for Selected Disease Groups and Conditions," for tables containing the results of the logistic regressions for bipolar and depressive disorders, and alcohol and opioid use disorders, and ACSCs.

Figure 14: Inpatient Hospitalizations—Distribution of Ages of Patients by Study Area

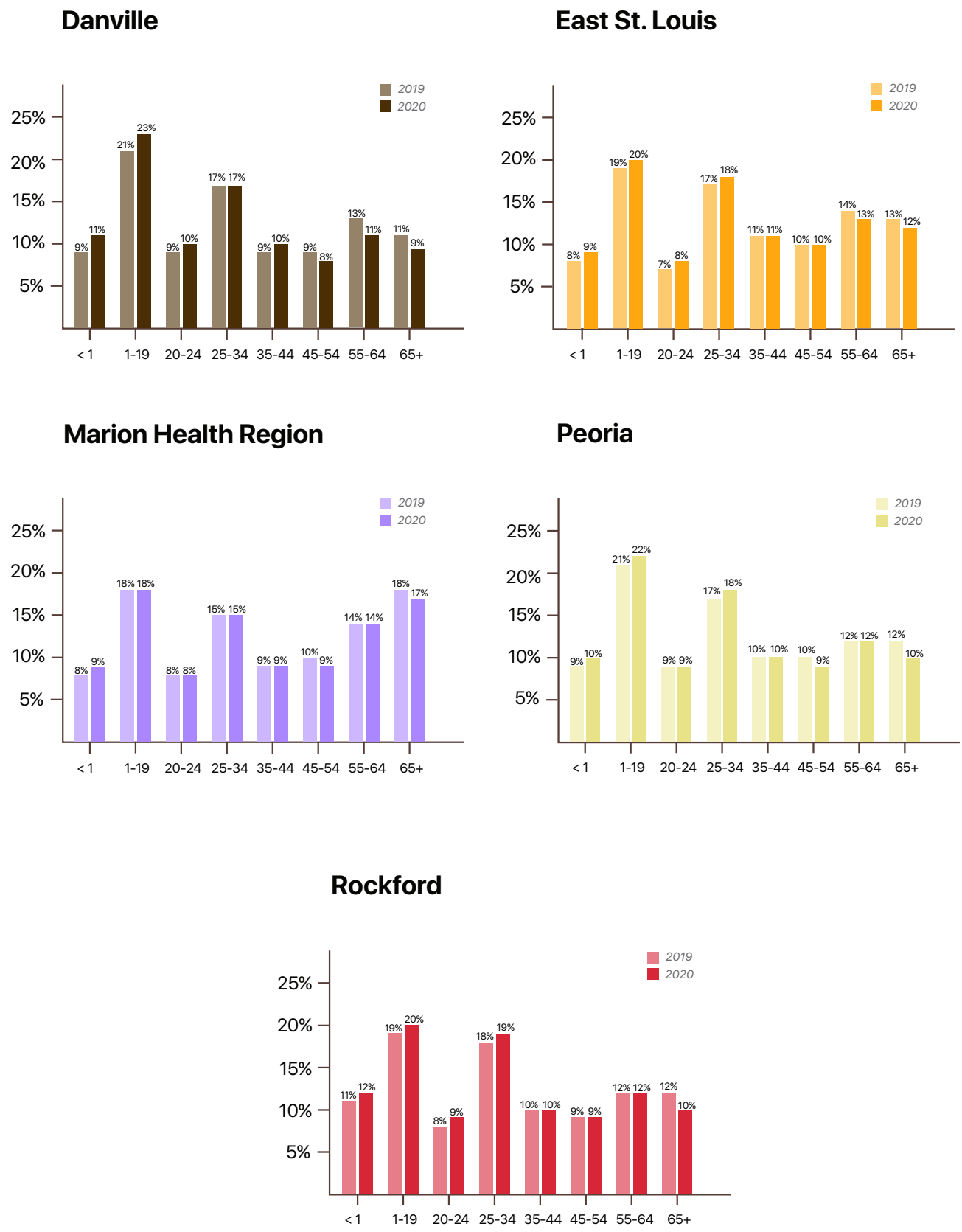
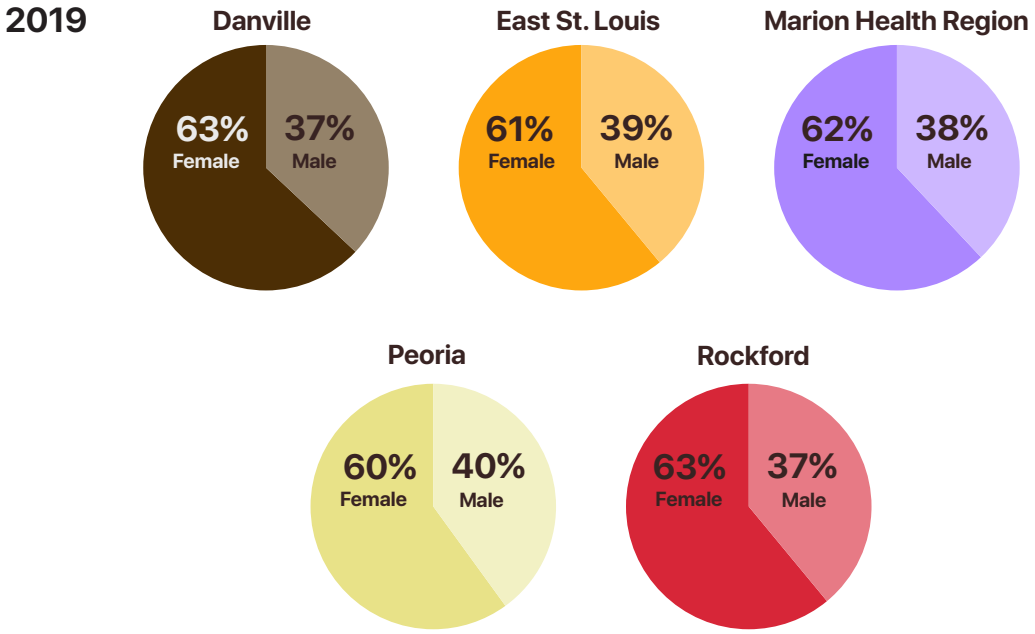


Figure 15: Inpatient Hospitalizations—Distribution of Sex of Patients by Study Area



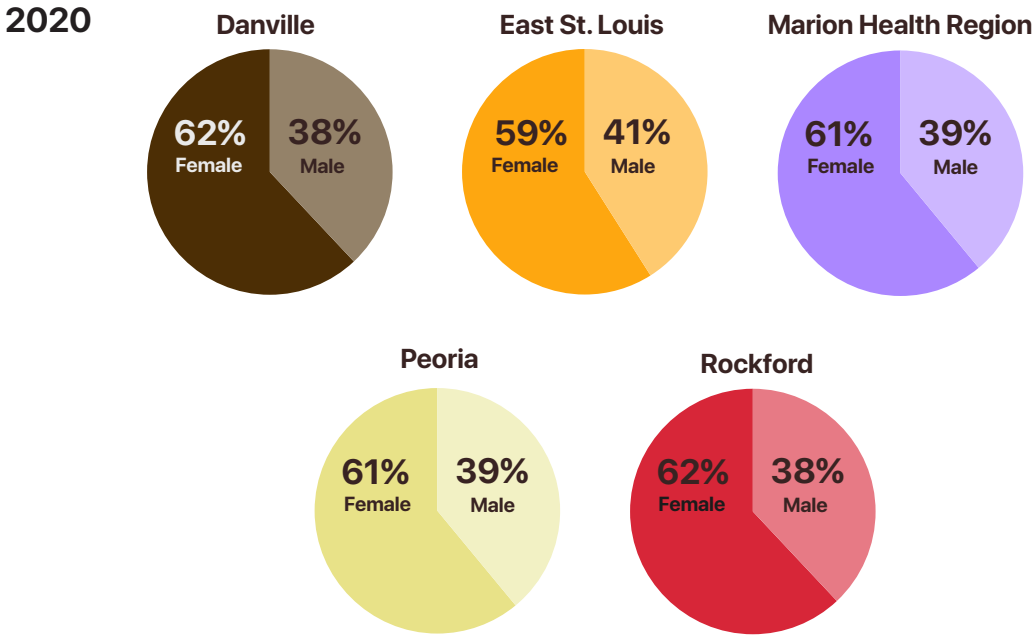
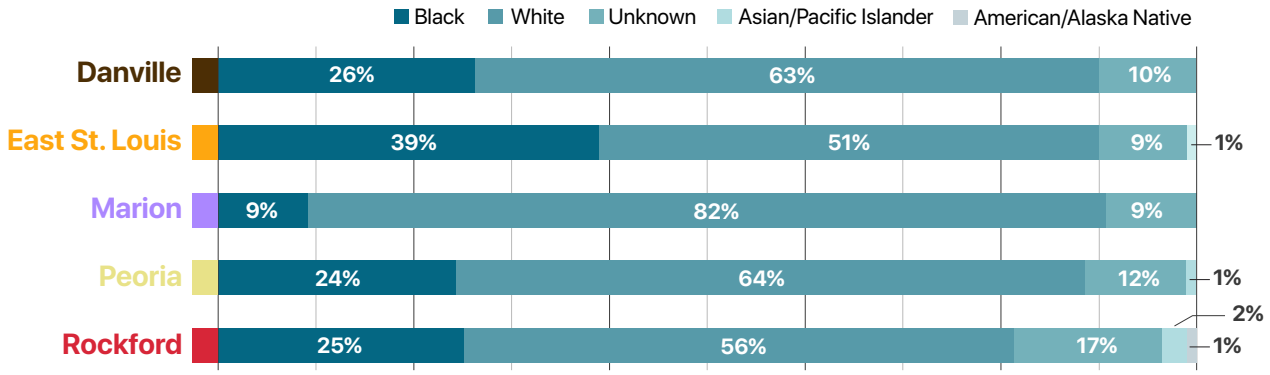


Figure 16: Inpatient Hospitalizations—Distribution of Races of Patients by Study Area

2019



2020

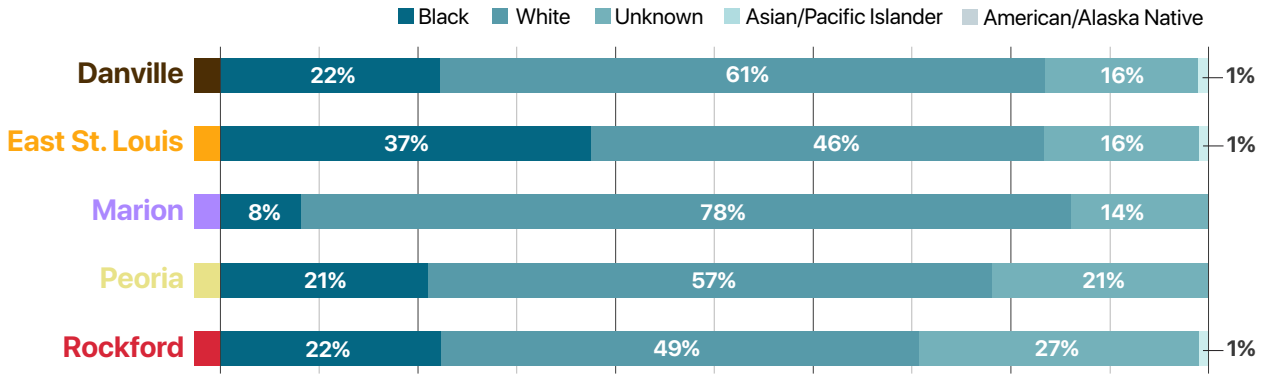


Figure 17: Emergency Department Visits—Distribution of Ages of Patients by Study Area

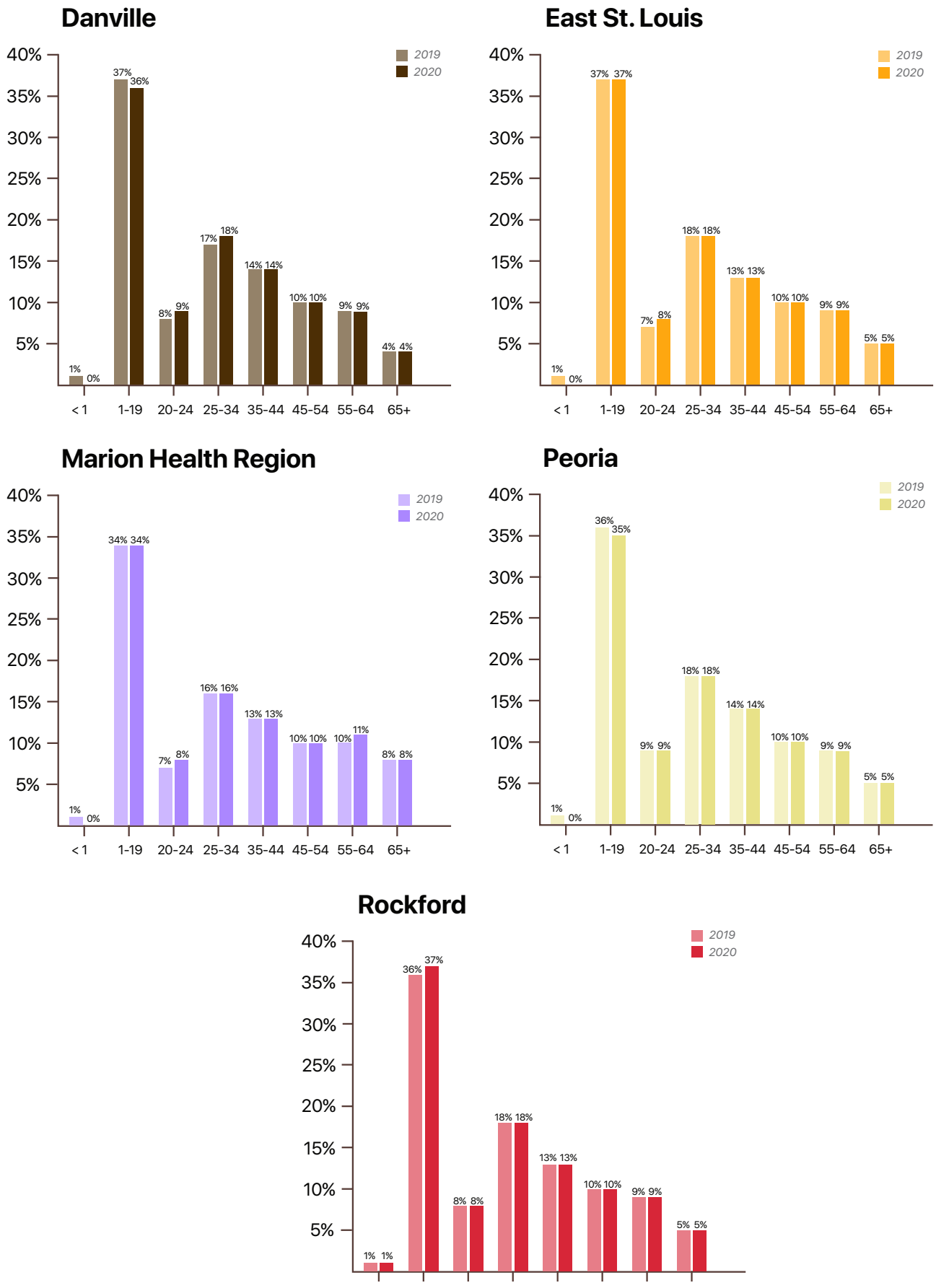


Figure 18: Emergency Department Visits—Distribution of Sex of Patients by Study Area

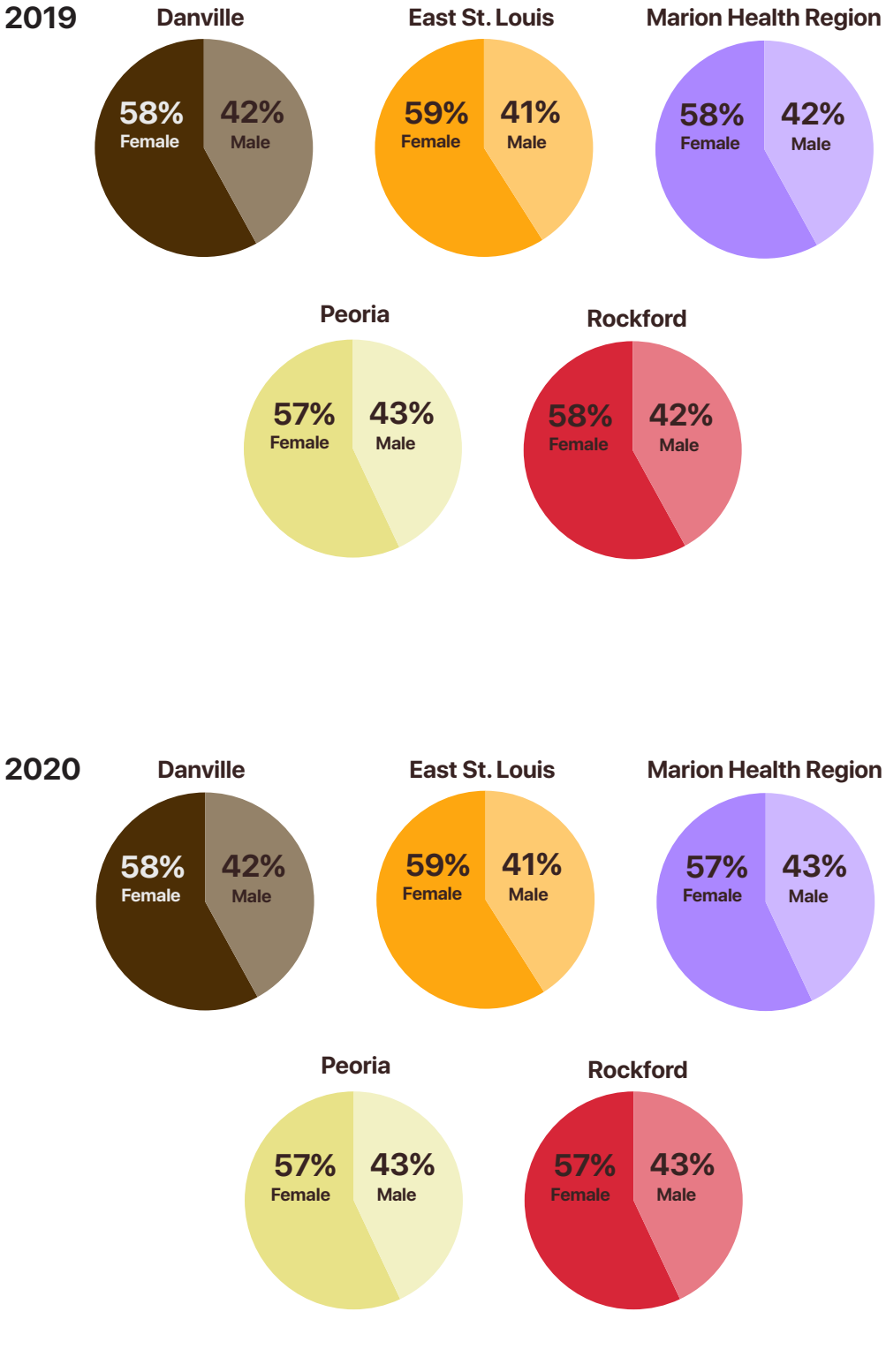
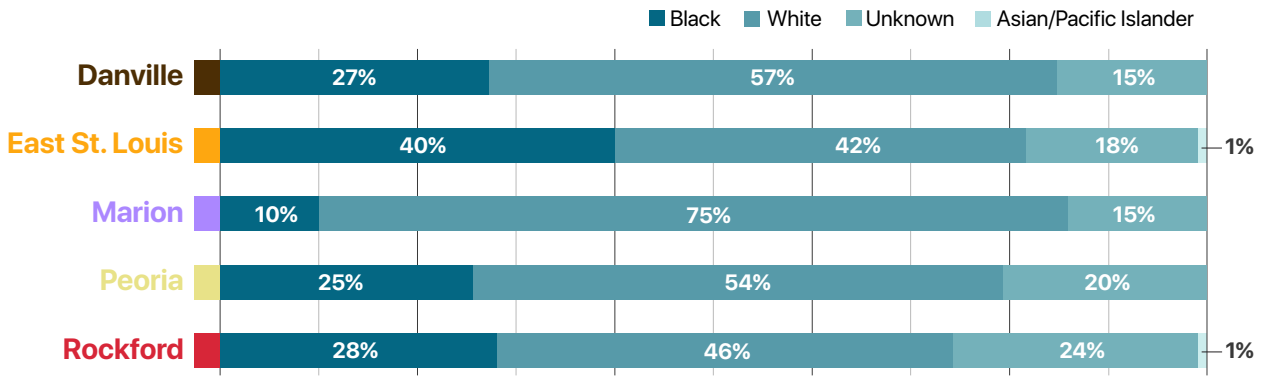


Figure 19: Emergency Department Visits—Distribution of Races of Patients by Study Area

2019



2020

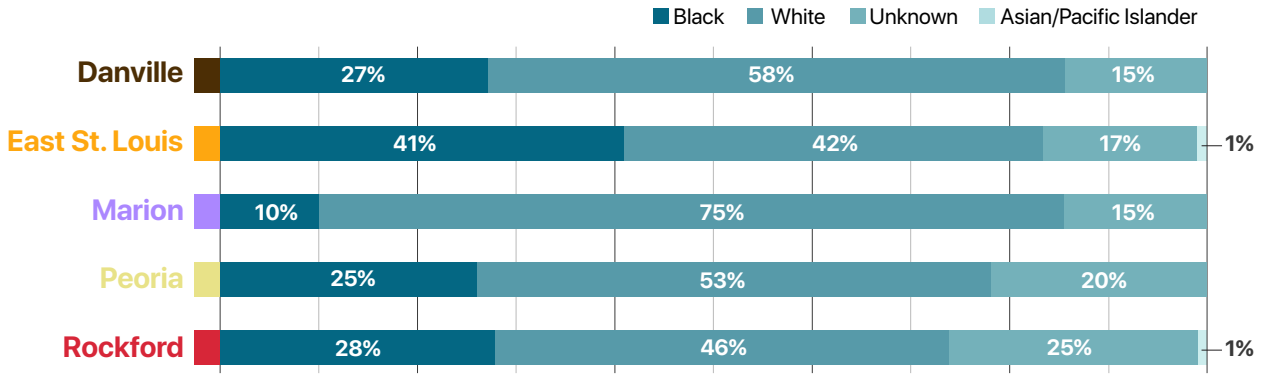
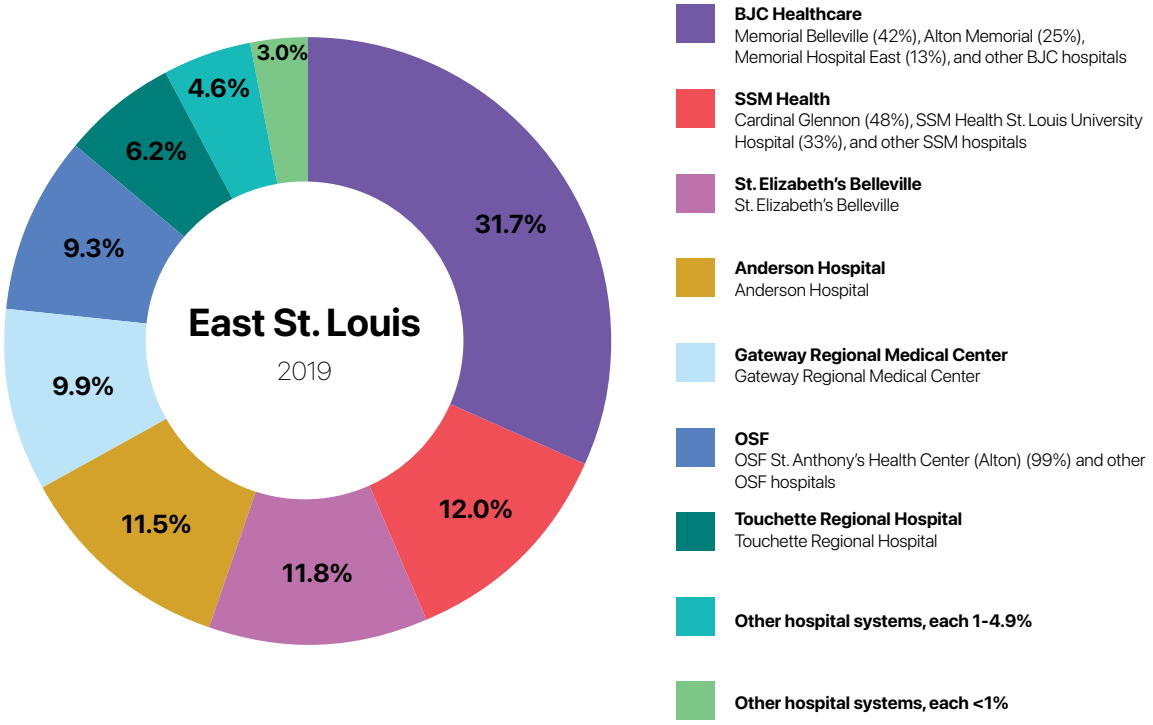
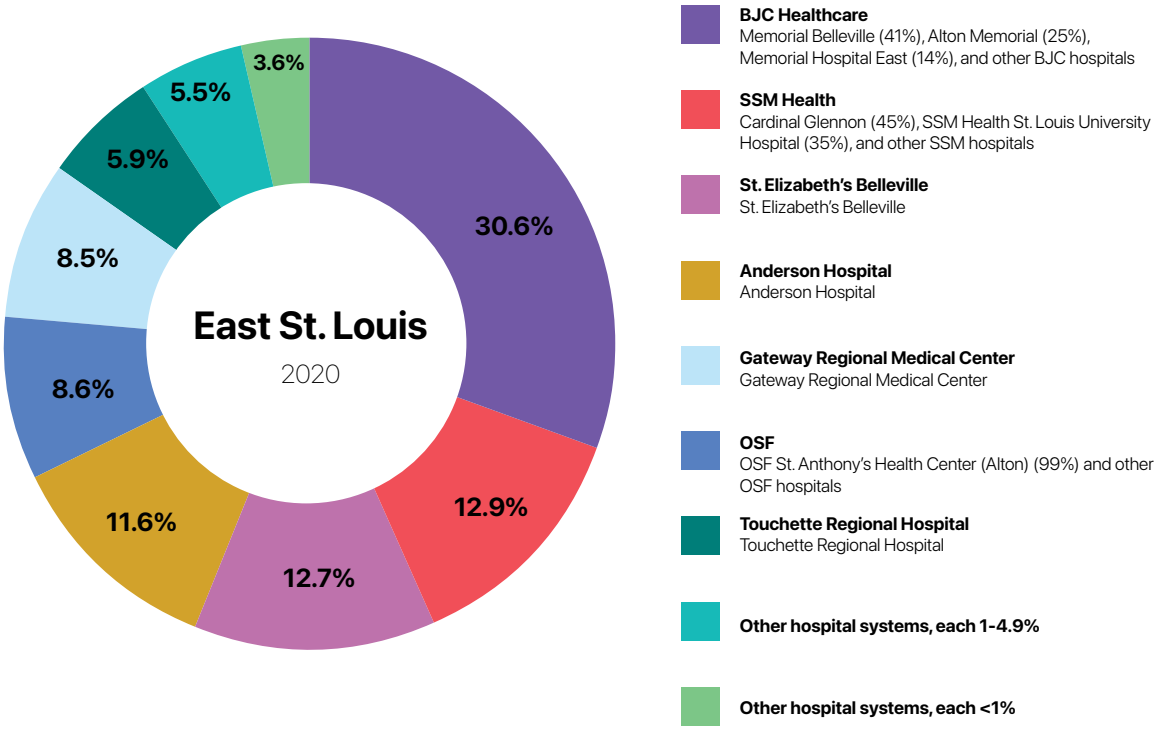


Figure 20: Estimated Share of East St. Louis Medicaid Enrollees Admitted to the Hospital
(Share of hospitals receiving Medicaid enrollees who live in the East St. Louis study area as patients for FY2019 and FY2020)





Appendix B:
Additional Analyses for Select Disease Groups and Conditions

Bipolar, Depressive, Opioid Use and Alcohol Use Disorders

After identifying the key disease groups and conditions (mental illnesses, psychoactive substance use disorders, and ACSCs), the data analytics team conducted additional analyses to develop a fuller understanding of these conditions.

For mental illness analyses, the research team focused on bipolar and depressive disorders for 2 reasons. First, these disorders represented the bulk of the mood [affective] disorders block, which was the most frequent and resource intensive of the disease blocks in the hospital utilization data. Second, these disorders are responsive to outpatient care treatment that can keep people out of the hospital.

For psychoactive substance use disorder analyses, the research team focused on opioid use disorder (OUD) and alcohol use disorders (AUD), since they represented the majority of the disorders in the psychoactive substance use disorders block and are outpatient-treatable.

Multivariate logistic regressions were performed to determine the population characteristics most associated with patients with bipolar, depressive, opioid use and alcohol use disorders. Tables 10–13 contain the results of the logistic regressions for these disorders. Variables highlighted in red represent a population characteristic statistically associated with the diagnosis (meaning the odds ratio and confidence level lower limit are ≥1 and the p-value is <0.05).

(Note: In the logistic regression tables that follow, AmericanIN/AN = American Indian/American Native, Asian/PI = Asian/Pacific Islander, Other/UNK = Other/Unknown, AUD = Alcohol Use Disorder, and OUD = Opioid Use Disorder.)

Summary of Population Characteristics Most Associated with Patients with Depressive Disorders

- Teenagers, age 12–19 in all areas
- Young adults, age 20–24 in Danville and Peoria

Table 10: Population Characteristics Associated with Depressive Disorder Patients (FY2019 and FY2020 Data Combined)

DEPRESSION_Danville			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	2.37	1.43	3.93	<0.001
15 to 19.9	25 to 34.9	2.54	1.70	3.80	<0.001
20 to 24.9	25 to 34.9	1.62	1.05	2.50	<0.05
35 to 44.9	25 to 34.9	0.83	0.53	1.30	0.41
45 to 64.9	25 to 34.9	0.6	0.39	0.92	<0.05
>65	25 to 34.9	0.17	0.05	0.56	
RACE					
AmericanIN/AN	White	0.88	0.12	6.49	0.89
Asian/PI	White	0.81	0.11	5.95	0.83
Black	White	0.51	0.36	0.73	<0.001
Other/Unknown	White	0.6	0.39	0.93	<0.05
SEX					
Female	Male	0.78	0.60	1.01	0.06

DEPRESSION_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	1.92	1.55	2.37	<0.001
15 to 19.9	25 to 34.9	2.06	1.73	2.46	<0.001
20 to 24.9	25 to 34.9	1.11	0.90	1.37	0.31
35 to 44.9	25 to 34.9	0.91	0.76	1.08	0.27
45 to 64.9	25 to 34.9	1.03	0.89	1.20	0.68
>65	25 to 34.9	0.52	0.39	0.68	<0.001
RACE					
AmericanIN/AN	White	1.65	0.92	2.97	0.09
Asian/PI	White	0.33	0.12	0.88	<0.05
Black	White	0.46	0.41	0.52	<0.001
Other/Unknown	White	0.63	0.53	0.75	<0.001
SEX					
Female	Male	0.82	0.74	0.91	<0.001

Table 10 Continued

DEPRESSION_Marion HR			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	1.37	1.12	1.67	<0.01
15 to 19.9	25 to 34.9	1.89	1.63	2.20	<0.001
20 to 24.9	25 to 34.9	1.13	0.97	1.35	0.11
35 to 44.9	25 to 34.9	0.93	0.80	1.07	0.3
45 to 64.9	25 to 34.9	0.61	0.53	0.70	<0.001
>65	25 to 34.9	0.47	0.38	0.57	<0.001
RACE					
AmericanIN/AN	White	1.6	0.87	2.95	0.13
Asian/PI	White	0.62	0.23	1.67	0.34
Black	White	0.67	0.56	0.80	<0.001
Other/Unknown	White	0.88	0.75	1.03	0.1
SEX					
Female	Male	0.97	0.88	1.06	0.48

DEPRESSION_Peoria			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	2.37	1.89	2.98	<0.001
15 to 19.9	25 to 34.9	2.71	2.27	3.24	<0.001
20 to 24.9	25 to 34.9	1.4	1.15	1.71	<0.001
35 to 44.9	25 to 34.9	0.92	0.77	1.11	0.39
45 to 64.9	25 to 34.9	0.81	0.68	0.95	<0.05
>65	25 to 34.9	0.35	0.25	0.49	<0.001
RACE					
AmericanIN/AN	White	0.69	0.25	1.87	0.46
Asian/PI	White	0.49	0.18	1.33	0.16
Black	White	0.51	0.44	0.59	<0.001
Other/Unknown	White	0.6	0.51	0.72	<0.001
SEX					
Female	Male	1.1	0.99	1.23	0.08

DEPRESSION_Rockford			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	3.13	2.39	4.10	<0.001
15 to 19.9	25 to 34.9	3.44	2.76	4.28	<0.001
20 to 24.9	25 to 34.9	1.17	0.89	1.54	0.25
35 to 44.9	25 to 34.9	1.14	0.90	1.43	0.26
45 to 64.9	25 to 34.9	1	0.81	1.23	0.96
>65	25 to 34.9	0.38	0.25	0.57	<0.001
RACE					
AmericanIN/AN	White	1.41	0.69	2.90	0.34
Asian/PI	White	0.37	0.16	0.83	0.05
Black	White	0.62	0.53	0.74	<0.001
Other/Unknown	White	0.7	0.59	0.84	<0.001
SEX					
Female	Male	0.87	0.76	0.99	0.05

Summary of Population Characteristics Most Associated with Patients with Bipolar Disorders

- Native Americans in Danville and the Marion Health Region

Table 11: Population Characteristics Associated with Bipolar Disorder Patients (FY2019 and FY2020 Data Combined)

Bipolar_Danville			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.26	0.08	0.87	<0.05
15 to 19.9	25 to 34.9	0.78	0.43	1.40	0.4
20 to 24.9	25 to 34.9	0.9	0.52	1.55	0.7
35 to 44.9	25 to 34.9	1.1	0.71	1.71	0.65
45 to 64.9	25 to 34.9	0.49	0.30	0.79	<0.01
>65	25 to 34.9	0	0.00	INF	0.98
RACE					
AmericanIN/AN	White	4.48	1.35	14.92	<0.05
Asian/PI	White	0	0.00	INF	0.96
Black	White	0.67	0.44	1.00	0.52
Other/Unknown	White	0.76	0.38	1.52	0.43
SEX					
Female	Male	0.71	0.51	0.99	<0.05

Bipolar_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.54	0.33	0.88	<0.05
15 to 19.9	25 to 34.9	1.14	0.84	1.54	0.39
20 to 24.9	25 to 34.9	0.84	0.61	1.16	0.29
35 to 44.9	25 to 34.9	1.01	0.79	1.29	0.95
45 to 64.9	25 to 34.9	0.66	0.52	0.83	<0.001
>65	25 to 34.9	0.25	0.15	0.42	<0.001
RACE					
AmericanIN/AN	White	1.03	0.33	3.25	0.09
Asian/PI	White	1.35	0.60	3.04	0.47
Black	White	0.37	0.30	0.45	<0.001
Other/Unknown	White	0.51	0.36	0.71	<0.001
SEX					
Female	Male	0.86	0.72	1.02	0.08

Table 11 Continued

Bipolar_Marion HR			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.61	0.38	0.05	<0.05
15 to 19.9	25 to 34.9	1.13	0.85	1.49	0.41
20 to 24.9	25 to 34.9	0.89	0.67	1.20	0.45
35 to 44.9	25 to 34.9	1.05	0.84	1.33	0.65
45 to 64.9	25 to 34.9	0.66	0.53	0.82	<0.001
>65	25 to 34.9	0.3	0.21	0.44	<0.001
RACE					
AmericanIN/AN	White	2.93	1.38	6.28	<0.01
Asian/PI	White	0.95	0.24	3.86	0.94
Black	White	0.59	0.43	0.82	<0.01
Other/Unknown	White	0.56	0.40		<0.01
SEX					
Female	Male	0.91	0.77	1.06	0.21

Bipolar_Peoria			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.66	0.39	1.11	0.11
15 to 19.9	25 to 34.9	1.2	0.86	1.68	0.27
20 to 24.9	25 to 34.9	1.28	0.95	1.73	0.10
35 to 44.9	25 to 34.9	0.91	0.69	1.20	0.50
45 to 64.9	25 to 34.9	0.67	0.52	0.88	<0.01
>65	25 to 34.9	0.19	0.10	0.37	<0.001
RACE					
AmericanIN/AN	White	1.02	0.25	4.14	0.98
Asian/PI	White	0.38	0.05	2.71	0.33
Black	White	0.54	0.42	0.69	<0.001
Other/Unknown	White	0.58	0.41	0.82	<0.01
SEX					
Female	Male	0.87	0.72	1.05	0.14

Bipolar_Rockford			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.73	0.43	1.25	0.25
15 to 19.9	25 to 34.9	1.08	0.75	1.54	0.67
20 to 24.9	25 to 34.9	0.98	0.69	1.40	0.91
35 to 44.9	25 to 34.9	1.09	0.82	1.45	0.53
45 to 64.9	25 to 34.9	0.82	0.63	1.07	0.14
>65	25 to 34.9	0.15	0.07	0.33	<0.001
RACE					
AmericanIN/AN	White	1.81	0.73	4.44	0.19
Asian/PI	White	0.26	0.06	1.05	0.06
Black	White	0.61	0.48	0.78	<0.001
Other/Unknown	White	0.64	0.47	0.88	<0.01
SEX					
Female	Male	0.64	0.53	0.78	<0.001

Summary of Population Characteristics Most Associated with Patients with Opioid Use Disorder

While no particular characteristic is statistically associated with OUD, low odds ratios of women compared to men indicate that being female is likely a protective factor in terms of OUD.

Table 12: Population Characteristics Associated with Opioid Use Disorder Patients (FY2019 and FY2020 Data Combined)

OUD_Danville			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0	0.00	INF	0.99
15 to 19.9	25 to 34.9	0.11	0.01	0.82	<0.05
20 to 24.9	25 to 34.9	0.28	0.08	0.95	<0.05
35 to 44.9	25 to 34.9	0.92	0.49	1.75	0.8
45 to 64.9	25 to 34.9	0.34	0.16	0.70	<0.01
>65	25 to 34.9	0	0.00	INF	0.99
RACE					
AmericanIN/AN	White	3.48	0.46	26.43	0.22
Asian/PI	White	0	0.00	INF	0.99
Black	White	0.61	0.31	1.20	0.15
Other/Unknown	White	0	0.00	INF	0.98
SEX					
Female	Male	0.44	0.26	0.76	<0.01

OUD_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0	0.00	INF	0.97
15 to 19.9	25 to 34.9	0.03	0.01	0.12	<0.001
20 to 24.9	25 to 34.9	0.39	0.25	0.61	<0.001
35 to 44.9	25 to 34.9	0.98	0.78	1.25	0.88
45 to 64.9	25 to 34.9	0.28	0.21	0.37	<0.001
>65	25 to 34.9	0.015	0.00	0.11	<0.001
RACE					
AmericanIN/AN	White	0.84	0.21	3.43	0.81
Asian/PI	White	0.61	0.15	2.47	0.48
Black	White	0.21	0.15	0.28	<0.001
Other/Unknown	White	0.29	0.15	0.55	<0.001
SEX					
Female	Male	0.39	0.32	0.48	<0.001

Table 12 Continued

OUD_Marion HR			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0	0.00	INF	0.98
15 to 19.9	25 to 34.9	0.036	0.00	0.26	<0.001
20 to 24.9	25 to 34.9	0.38	0.20	0.75	<0.01
35 to 44.9	25 to 34.9	1.07	0.73	1.55	0.73
45 to 64.9	25 to 34.9	0.43	0.29	0.65	<0.001
>65	25 to 34.9	0.025	0.00	0.18	<0.001
RACE					
AmericanIN/AN	White	1.47	0.20	10.57	0.7
Asian/PI	White	0	0.00	INF	0.99
Black	White	0.92	0.55	1.54	0.74
Other/Unknown	White	0.72	0.31	1.64	0.43
SEX					
Female	Male	0.55	0.40	0.75	<0.001

OUD_Peoria			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0	0.00	INF	0.98
15 to 19.9	25 to 34.9	0	0.00	INF	0.98
20 to 24.9	25 to 34.9	0.22	0.07	0.72	<0.05
35 to 44.9	25 to 34.9	1.13	0.68	1.90	0.63
45 to 64.9	25 to 34.9	0.63	0.37	1.07	0.85
>65	25 to 34.9	0.081	0.01	0.60	<0.05
RACE					
AmericanIN/AN	White	0	0.00	INF	0.99
Asian/PI	White	0	0.00	INF	0.99
Black	White	0.46	0.25	0.83	<0.05
Other/Unknown	White	0.73	0.26	2.02	<0.01
SEX					
Female	Male	0.7	0.46	1.07	0.09

OUD_Rockford			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0	0.00	INF	0.98
15 to 19.9	25 to 34.9	0.037	0.01	0.27	<0.01
20 to 24.9	25 to 34.9	0.25	0.11	0.58	<0.01
35 to 44.9	25 to 34.9	0.95	0.64	1.41	0.78
45 to 64.9	25 to 34.9	0.34	0.22	0.53	<0.001
>65	25 to 34.9	0.26	0.12	0.58	<0.001
RACE					
AmericanIN/AN	White	2.02	0.49	8.31	0.33
Asian/PI	White	0	0.00	INF	0.99
Black	White	0.41	0.26	0.63	<0.001
Other/Unknown	White	0.55	0.29	1.07	0.07
SEX					
Female	Male	0.39	0.28	0.55	<0.001

Summary of Population Characteristics Most Associated with Patients with Alcohol Use Disorder

- Adults age 35–64 in East St. Louis and Rockford
- Native Americans in the Marion Health Region

Table 13: Population Characteristics Associated with Alcohol Use Disorder Patients (FY2019 and FY2020 Data Combined)

AUD_Danville			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0	0.00	INF	0.98
15 to 19.9	25 to 34.9	0.077	0.01	0.58	<0.05
20 to 24.9	25 to 34.9	0.57	0.23	1.41	0.22
35 to 44.9	25 to 34.9	1.1	0.59	1.99	0.78
45 to 64.9	25 to 34.9	1.44	0.86	2.41	0.16
>65	25 to 34.9	0.13	0.02	1.00	0.05
RACE					
AmericanIN/AN	White	0	0.00	INF	0.99
Asian/PI	White	2.06	0.27	15.40	0.48
Black	White	0.98	0.62	1.55	0.93
Other/Unknown	White	0.98	0.39	2.48	0.96
SEX					
Female	Male	0.3	0.20	0.46	<0.001

AUD_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.035	0.00	0.25	<0.001
15 to 19.9	25 to 34.9	0.23	0.12	0.43	<0.001
20 to 24.9	25 to 34.9	0.45	0.07	0.73	<0.01
35 to 44.9	25 to 34.9	1.49	1.15	1.92	<0.01
45 to 64.9	25 to 34.9	1.37	1.09	1.73	<0.01
>65	25 to 34.9	0.4	0.24	0.67	<0.05
RACE					
AmericanIN/AN	White	1.82	0.67	4.97	0.24
Asian/PI	White	0	0.00	INF	0.98
Black	White	0.83	0.69	0.99	<0.01
Other/Unknown	White	0.46	0.27	0.77	<0.001
SEX					
Female	Male	0.31	0.26	0.37	<0.001

Table 13 Continued

AUD_Marion HR			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0	0.00	INF	0.93
15 to 19.9	25 to 34.9	0.28	0.17	0.48	<0.001
20 to 24.9	25 to 34.9	0.56	0.37	0.85	<0.01
35 to 44.9	25 to 34.9	1.29	1.00	1.67	0.05
45 to 64.9	25 to 34.9	1.05	0.83	1.33	0.67
>65	25 to 34.9	0.23	0.14	0.39	0.99
RACE					
AmericanIN/AN	White	3.48	1.62	7.49	<0.01
Asian/PI	White	0	0.00	INF	0.98
Black	White	0.93	0.68	1.26	0.64
Other/Unknown	White	0.99	0.67	1.47	0.97
SEX					
Female	Male	0.39	0.32	0.47	<0.001

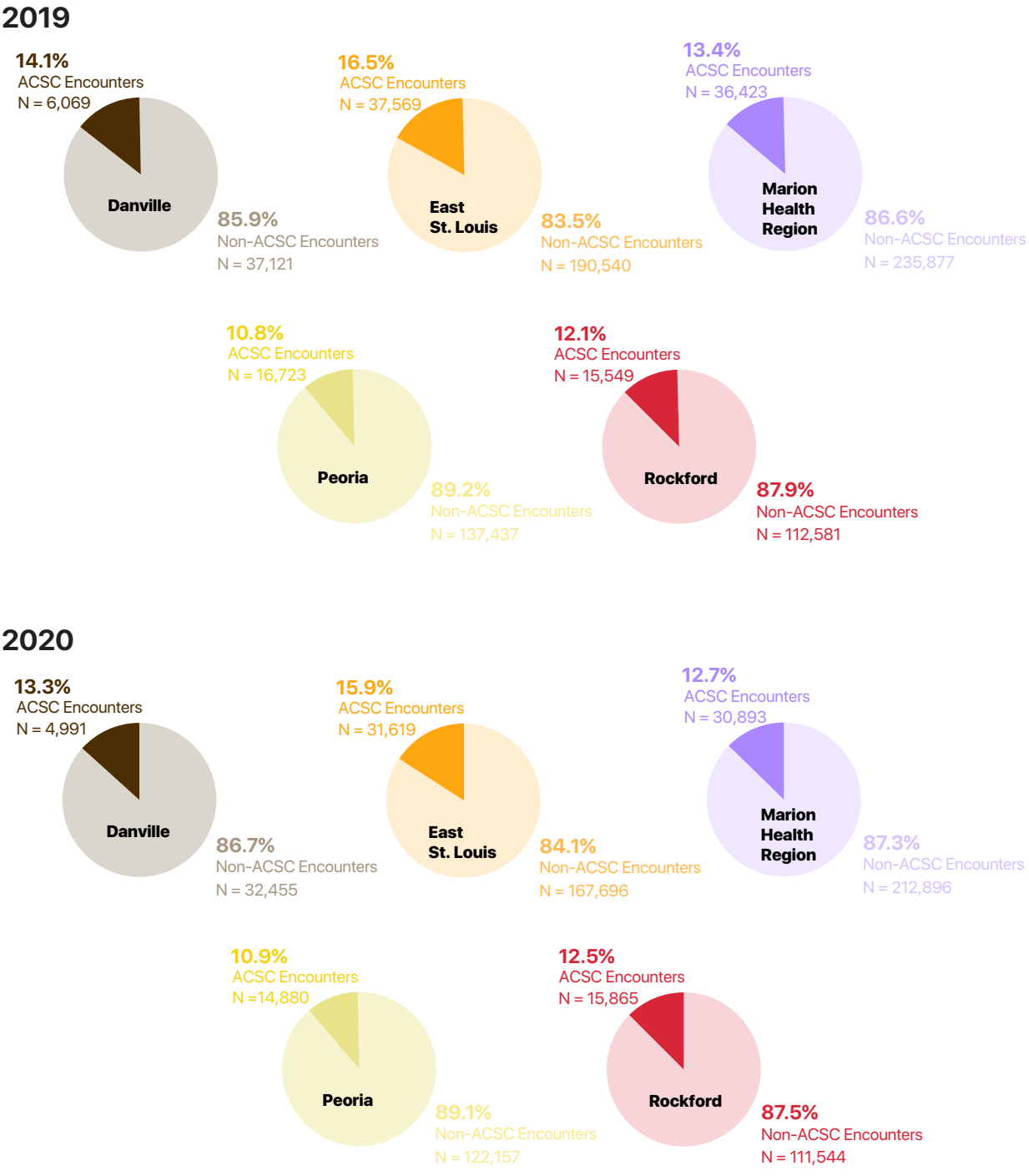
AUD_Peoria			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.036	0.01	0.26	<0.01
15 to 19.9	25 to 34.9	0.19	0.09	0.38	<0.001
20 to 24.9	25 to 34.9	0.76	0.51	1.12	0.16
35 to 44.9	25 to 34.9	1.33	1.02	1.75	0.16
45 to 64.9	25 to 34.9	1.23	0.96	1.57	<0.05
>65	25 to 34.9	0.29	0.16	0.53	<0.001
RACE					
AmericanIN/AN	White	0.54	0.00	3.86	0.53
Asian/PI	White	0.45	0.06	3.25	0.43
Black	White	0.89	0.71	1.10	0.27
Other/Unknown	White	0.61	0.39	0.96	<0.05
SEX					
Female	Male	0.33	0.07	0.40	<0.001

AUD_Rockford			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0	0.00	INF	0.98
15 to 19.9	25 to 34.9	0.17	0.06	0.47	<0.001
20 to 24.9	25 to 34.9	0.52	0.28	0.98	0.05*
35 to 44.9	25 to 34.9	1.75	1.24	2.46	<0.01
45 to 64.9	25 to 34.9	1.62	1.18	2.21	<0.01
>65	25 to 34.9	0.29	0.14	0.62	<0.01
RACE					
AmericanIN/AN	White	0	0.00	INF	0.99
Asian/PI	White	0.49	0.16	1.54	0.22
Black	White	0.55	0.42	0.73	<0.001
Other/Unknown	White	0.37	0.21	0.64	<0.001
SEX					
Female	Male	0.31	0.24	0.39	<0.001

Ambulatory Care Sensitive Conditions

ACSCs, which are health conditions for which good outpatient care can potentially prevent the need for hospitalization or early intervention can prevent complications or more severe disease (25) and they are some of the most frequent and resource-intensive conditions in the FY2019 and FY2020 Medicaid institutional data. In fact, ACSCs account for approximately 10–17% of all care encounters in the institutional data across the study areas (see Figure 21).

Figure 21: Distribution of Care Encounters for ACSCs and Non-ACSCs by Study Area



A majority of ACSC care encounters take place in the ED or the hospital as opposed to outpatient settings, adding evidence to the lack of outpatient resources in each of the areas under study (see Figure 22).

Figure 22: Distribution of Point of Care Encounters for ACSCs by Study Area

AHRQ developed Preventative Quality Indicators (PQIs), measures based on ACSC hospital inpatient discharge data and designed to identify outpatient care quality and access issues, including appropriate follow-up care after hospital discharge. These benchmarks for healthcare accessibility and quality are based on a subset of the ACSC codes for hospital admissions in the John Billings algorithm (26). Specifically, PQIs use data from hospital discharges to identify admissions that might have been avoided through access to high-quality outpatient care. In other words, while PQIs are based on hospital inpatient data, they provide insight into the quality of the healthcare ecosystem outside hospitals and in the community by measuring preventable complications that occur in a given population (in a community or region) (27). Four composite PQIs and several disease-specific PQIs make up the composite measures.

Composite PQIs:

- PQI 90 Composite combines hospitalizations diagnoses for all PQIs below
- PQI 91 Acute is a composite indicator of acute, episodic hospitalization diagnoses and is composed of the following disease-specific acute PQIs:
  - -PQI 11 Bacterial Pneumonia Admission Rate
  - -PQI 12 Urinary Tract Infection Admission Rate
- PQI 92 Chronic is a composite indicator of chronic disease hospitalizations and is comprised of the following disease-specific chronic PQIs:
  - -PQI 01 Diabetes Mellitus, Short-Term Complications Admission Rate
  - -PQI 03 Diabetes Mellitus, Long-Term Complications Admission Rate
  - -PQI 05 COPD or Asthma, Older Adults (40+) Admission Rate
  - -PQI 07 Hypertension Admission Rate
  - -PQI 08 Congestive Heart Failure Admission Rate
  - -PQI 10 Dehydration Admission Rate
  - -PQI 14 Uncontrolled Diabetes Mellitus Admission Rate
  - -PQI 15 Asthma, Younger Adults (18–39) Admission Rate
  - -PQI 16 Rate of Lower Extremity Amputation among Patients with Diabetes
- PQI 93 Diabetes Mellitus Hospitalization Composite is a combined measure of diabetes-related PQIs:
  - -PQI 01 Diabetes Mellitus, Short-Term Complications Admission Rate
  - -PQI 03 Diabetes Mellitus, Long-Term Complications Admission Rate
  - -PQI 14 Uncontrolled Diabetes Mellitus Admission Rate

Population characteristics associated with PQI composite measures were computed and appear in Tables 14 to 17.

(Note: In the logistic regression tables that follow, AmerIN/AN = American Indian/American Native, Asian/PI = Asian/Pacific Islander, and Other/UNK = Other/Unknown.)

Summary of Population Characteristics Most Associated with PQI 90, a composite of all PQI measures:

- Adults, age 40 and over
- Black people in all areas except the Marion Health Region

Table 14: Population Characteristics Associated with PQI 90, Overall ACSC Composite (FY2019 and FY2020 Data Combined)

PQI 90_Danville			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.41	3.07	3.78	<.0001
65-74	18-39	5.37	4.70	6.13	<.0001
75 or older	18-39	5.99	5.23	6.85	<.0001
RACE					
AmerIN/AN	White	1.65	0.74	3.69	0.22
Asian/PI	White	0.93	0.66	1.29	0.66
Black	White	1.57	1.44	1.71	<.0001
Other/UNK	White	1.38	1.21	1.59	<.0001
SEX					
Male	Female	1.00	0.92	1.08	0.99

PQI 90_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.81	3.32	4.36	<.0001
65-74	18-39	5.52	4.65	6.56	<.0001
75 or older	18-39	4.61	3.80	5.59	<.0001
RACE					
AmerIN/AN	White	1.76	0.96	3.26	0.069
Asian/PI	White	0.71	0.33	1.52	0.37
Black	White	1.41	1.25	1.59	<.0001
Other/UNK	White	1.31	1.00	1.72	0.050
SEX					
Male	Female	1.00	0.90	1.11	0.98

Table 14 Continued

PQI 90_Marion HR			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.47	3.05	3.95	<.0001
65-74	18-39	5.80	5.00	6.73	<.0001
75 or older	18-39	6.42	5.51	7.49	<.0001
RACE					
AmerIN/AN	White	2.14	1.14	4.01	0.018
Asian/PI	White	0.79	0.33	1.88	0.59
Black	White	1.15	0.99	1.34	0.070
Other/UNK	White	0.85	0.63	1.14	0.27
SEX					
Male	Female	1.04	0.95	1.14	0.36

PQI 90_Peoria			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	4.32	3.56	5.24	<.0001
65-74	18-39	6.20	4.86	7.91	<.0001
75 or older	18-39	8.99	6.98	11.58	<.0001
RACE					
AmerIN/AN	White	NR	NR	NR	NR
Asian/PI	White	0.75	0.27	2.13	0.59
Black	White	1.41	1.20	1.64	<.0001
Other/UNK	White	1.05	0.75	1.48	0.79
SEX					
Male	Female	0.86	0.74	0.99	0.036

NR = Not reported due to small sample size/unstable estimate

PQI 90_Rockford			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.34	2.79	4.01	<.0001
65-74	18-39	5.48	4.31	6.95	<.0001
75 or older	18-39	6.63	5.18	8.49	<.0001
RACE					
AmerIN/AN	White	0.98	0.48	2.01	0.95
Asian/PI	White	0.68	0.37	1.25	0.21
Black	White	1.48	1.27	1.74	<.0001
Other/UNK	White	1.03	0.80	1.32	0.84
SEX					
Male	Female	0.96	0.83	1.10	0.56

Summary of Population Characteristics Most Associated with PQI 91, a composite of acute PQI measures:

- Adults, age 40 and over
- Females in East St. Louis, the Marion Health Region and Peoria

Table 15: Population Characteristics Associated with PQI 91, ACSC Acute Composite (FY2019 and FY2020 Data Combined)

PQI 91_Danville			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	8.32	4.07	16.98	<.0001
65-74	18-39	9.01	3.79	21.43	<.0001
75 or older	18-39	19.40	8.68	43.37	<.0001
RACE					
AmerIN/AN	White	NR	NR	NR	NR
Asian/PI	White	NR	NR	NR	NR
Black	White	0.85	0.51	1.41	0.52
Other/UNK	White	0.86	0.31	2.42	0.78
SEX					
Female	Male	1.40	0.91	2.14	0.12

NR = Not reported due to small sample size/unstable estimate

PQI 91_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	4.64	3.36	6.40	<.0001
65-74	18-39	6.52	4.46	9.53	<.0001
75 or older	18-39	10.85	7.49	15.73	<.0001
RACE					
AmerIN/AN	White	0.47	0.06	3.46	0.46
Asian/PI	White	0.70	0.17	2.93	0.62
Black	White	0.96	0.77	1.20	0.72
Other/UNK	White	0.91	0.50	1.65	0.75
SEX					
Female	Male	1.31	1.06	1.62	0.01

Table 15 Continued

PQI 91_Marion HR			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.42	2.68	4.36	<.0001
65-74	18-39	6.59	5.07	8.58	<.0001
75 or older	18-39	9.78	7.57	12.64	<.0001
RACE					
AmerIN/AN	White	NR	NR	NR	NR
Asian/PI	White	0.73	0.17	3.05	0.66
Black	White	0.59	0.42	0.82	0.0017
Other/UNK	White	0.69	0.39	1.21	0.19
SEX					
Female	Male	1.25	1.07	1.46	0.0049

NR = Not reported due to small sample size/unstable estimate

PQI 91_Peoria			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.68	2.42	5.60	<.0001
65-74	18-39	6.73	4.11	11.00	<.0001
75 or older	18-39	12.57	7.88	20.06	<.0001
RACE					
AmerIN/AN	White	NR	NR	NR	NR
Asian/PI	White	0.65	0.09	4.83	0.68
Black	White	0.80	0.56	1.15	0.23
Other/UNK	White	0.83	0.40	1.71	0.61
SEX					
Female	Male	1.53	1.13	2.08	0.0055

NR = Not reported due to small sample size/unstable estimate

PQI 91_Rockford			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	2.75	1.91	3.95	<.0001
65-74	18-39	5.72	3.70	8.84	<.0001
75 or older	18-39	8.88	5.89	13.40	<.0001
RACE					
AmerIN/AN	White	0.48	0.07	3.50	0.47
Asian/PI	White	0.56	0.17	1.79	0.32
Black	White	0.90	0.65	1.23	0.49
Other/UNK	White	1.07	0.69	1.66	0.75
SEX					
Female	Male	1.13	0.86	1.47	0.38

Summary of Population Characteristics Most Associated with PQI 92, a composite of chronic PQI measures:

- Adults, age 40 and over
- Black people in all areas
- Males in the Marion Health Region

Table 16: Population Characteristics Associated with PQI 92, ACSC Chronic Composite (FY2019 and FY2020 Data Combined)

PQI 92_Danville			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	4.47	3.19	6.27	<.0001
65-74	18-39	5.52	3.48	8.74	<.0001
75 or older	18-39	5.69	3.46	9.36	<.0001
RACE					
AmerIN/AN	White	NR	NR	NR	NR
Asian/PI	White	NR	NR	NR	NR
Black	White	1.80	1.37	2.37	<.0001
Other/UNK	White	0.80	0.39	1.62	0.53
SEX					
Male	Female	0.86	0.66	1.12	0.27

NR = Not reported due to small sample size/unstable estimate

PQI 92_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.43	2.96	3.97	<.0001
65-74	18-39	4.88	4.06	5.88	<.0001
75 or older	18-39	3.22	2.59	4.01	<.0001
RACE					
AmerIN/AN	White	2.19	1.17	4.10	0.014
Asian/PI	White	0.73	0.31	1.74	0.48
Black	White	1.56	1.37	1.77	<.0001
Other/UNK	White	1.43	1.07	1.91	0.017
SEX					
Male	Female	1.07	0.96	1.20	0.23

Table 16 Continued

PQI 92_Marion HR			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.05	2.62	3.55	<.0001
65-74	18-39	4.18	3.50	5.00	<.0001
75 or older	18-39	3.57	2.94	4.32	<.0001
RACE					
AmerIN/AN	White	3.03	1.58	5.79	0.0009
Asian/PI	White	0.80	0.28	2.29	0.68
Black	White	1.41	1.18	1.69	0.0002
Other/UNK	White	0.93	0.66	1.30	0.67
SEX					
Male	Female	1.20	1.08	1.34	0.0007

PQI 92_Peoria			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	4.31	3.48	5.34	<.0001
65-74	18-39	5.62	4.27	7.38	<.0001
75 or older	18-39	6.84	5.10	9.16	<.0001
RACE					
AmerIN/AN	White	NR	NR	NR	NR
Asian/PI	White	0.80	0.25	2.61	0.71
Black	White	1.59	1.34	1.89	<.0001
Other/UNK	White	1.12	0.77	1.64	0.55
SEX					
Male	Female	0.94	0.80	1.10	0.41

NR = Not reported due to small sample size/unstable estimate

PQI 92_Rockford			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.40	2.78	4.17	<.0001
65-74	18-39	4.94	3.78	6.47	<.0001
75 or older	18-39	5.11	3.83	6.81	<.0001
RACE					
AmerIN/AN	White	1.21	0.57	2.58	0.62
Asian/PI	White	0.77	0.39	1.51	0.45
Black	White	1.69	1.42	2.01	<.0001
Other/UNK	White	1.00	0.75	1.34	1.00
SEX					
Male	Female	0.98	0.84	1.15	0.83

Summary of Population Characteristics Most Associated with PQI 93, a composite of diabetes measures:

- Males in the Marion Health Region
- Middle-age (40–64) adults and adults 75 and older in Peoria
- Black, male adults age 65–74 in Rockford

Table 17: Population Characteristics Associated with PQI 93, Diabetes Hospitalization Composite (FY2019 and FY2020 Data Combined)

PQI 93_Danville			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	1.51	0.91	2.52	0.11
65-74	18-39	0.59	0.18	1.97	0.39
75 or older	18-39	0.80	0.24	2.67	0.71
RACE					
AmerIN/AN	White	NR	NR	NR	NR
Asian/PI	White	NR	NR	NR	NR
Black	White	0.90	0.52	1.55	0.71
Other/UNK	White	0.87	0.27	2.84	0.82
SEX					
Male	Female	1.49	0.92	2.41	0.11

NR = Not reported due to small sample size/unstable estimate

PQI 93_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	1.14	0.92	1.41	0.23
65-74	18-39	1.02	0.72	1.44	0.91
75 or older	18-39	0.63	0.39	1.02	0.060
RACE					
AmerIN/AN	White	0.42	0.06	3.05	0.39
Asian/PI	White	1.30	0.40	4.23	0.66
Black	White	1.16	0.94	1.44	0.17
Other/UNK	White	1.22	0.75	1.97	0.42
SEX					
Male	Female	1.21	0.99	1.47	0.064

Table 17 Continued

PQI 93_Marion HR			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	1.03	0.84	1.26	0.79
65-74	18-39	0.69	0.50	0.96	0.03
75 or older	18-39	0.31	0.19	0.52	<.0001
RACE					
AmerIN/AN	White	0.88	0.21	3.64	0.85
Asian/PI	White	1.53	0.36	6.39	0.56
Black	White	1.28	0.95	1.72	0.11
Other/UNK	White	0.88	0.52	1.50	0.64
SEX					
Male	Female	1.86	1.54	2.25	<.0001

PQI 93_Peoria			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	1.94	1.43	2.63	<.0001
65-74	18-39	1.60	0.98	2.63	0.063
75 or older	18-39	1.76	1.01	3.05	0.046
RACE					
AmerIN/AN	White	NR	NR	NR	NR
Asian/PI	White	NR	NR	NR	NR
Black	White	1.20	0.89	1.62	0.23
Other/UNK	White	1.40	0.80	2.44	0.24
SEX					
Male	Female	1.02	0.78	1.34	0.87

NR = Not reported due to small sample size/unstable estimate

PQI 93_Rockford			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	1.29	0.95	1.74	0.099
65-74	18-39	1.69	1.08	2.64	0.021
75 or older	18-39	0.82	0.43	1.57	0.54
RACE					
AmerIN/AN	White	0.43	0.06	3.13	0.40
Asian/PI	White	0.92	0.28	2.97	0.88
Black	White	1.67	1.25	2.23	0.0005
Other/UNK	White	0.98	0.59	1.63	0.95
SEX					
Male	Female	1.74	1.33	2.28	<.0001

A majority of hospital-level care for ACSCs take places in the ED. PQIs are measures for ACSC hospitalizations. For ED visits, ACSCs can be categorized as acute, chronic, or avoidable (28). Table 18 lists the conditions included in each of these categories. Population characteristics associated with PQI composite measures were computed and appear in Tables 19–21.

(Note: In the logistic regression tables that follow, AmerIN/AN = American Indian/American Native, Asian/PI = Asian/Pacific Islander, and Other/UNK = Other/Unknown.)

Table 18: Diseases Comprising Acute, Chronic, and Avoidable ACSCs

ACUTE	CHRONIC	AVOIDABLE
Bacterial Pneumonia	Angina	Congenital syphilis
Bronchitis	Asthma	Failure-to-thrive
Cellulitis	Chronic obstructive pulmonary disease (COPD)	Dental conditions
Seizure (non-epileptic)	Congestive heart failure (CHF)	Vaccine preventable
Dehydration	Diabetes	Nutritional deficiencies
Gastroenteritis, noninfective	Grand mal status and other, epileptic convulsions	
Hypoglycemia	Hypertension	
Kidney/urinary infection	Tuberculosis (non-pulmonary)	
Pelvic inflammatory disease	Tuberculosis (pulmonary)	
Severe ear, nose, and throat infections		
Skin grafts with cellulitis		

Summary of Population Characteristics Most Associated with Acute ACSC ED Visits

- In general, children younger than 12 and teenagers age 12–19
- Young adults age 20–24 in the Marion Health Region and Rockford
- Females in East St. Louis, the Marion Health Region, Peoria, and Rockford

Table 19: Population Characteristics Associated with Acute ACSC ED Visits (FY2019 and FY2020 Data Combined)

ACUTE_Danville			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	3.73	3.12	4.46	<.0001
1 to 2.9	25 to 34.9	4.01	3.42	4.71	<.0001
3 to 5.9	25 to 34.9	3.76	3.17	4.47	<.0001
6 to 11.9	25 to 34.9	2.88	2.45	3.38	<.0001
12 to 14.9	25 to 34.9	1.36	1.06	1.74	0.017
15 to 19.9	25 to 34.9	1.10	0.91	1.32	0.32
20 to 24.9	25 to 34.9	0.90	0.75	1.07	0.22
35 to 44.9	25 to 34.9	0.92	0.79	1.07	0.28
45 to 64.9	25 to 34.9	0.77	0.67	0.89	0.0004
65 or older	25 to 34.9	0.62	0.45	0.85	0.0033
RACE					
AmerIN/AN	White	0.53	0.19	1.47	0.22
Asian/PI	White	0.43	0.15	1.19	0.10
Black	White	0.93	0.84	1.03	0.15
Other/UNK	White	0.96	0.86	1.09	0.55
SEX					
Female	Male	1.09	1.00	1.19	0.041

Table 19 Continued

ACUTE_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	3.40	3.16	3.66	<.0001
1 to 2.9	25 to 34.9	3.50	3.29	3.74	<.0001
3 to 5.9	25 to 34.9	3.26	3.05	3.48	<.0001
6 to 11.9	25 to 34.9	2.23	2.09	2.37	<.0001
12 to 14.9	25 to 34.9	1.47	1.35	1.60	<.0001
15 to 19.9	25 to 34.9	1.30	1.21	1.39	<.0001
20 to 24.9	25 to 34.9	1.03	0.97	1.11	0.34
35 to 44.9	25 to 34.9	0.86	0.81	0.91	<.0001
45 to 64.9	25 to 34.9	0.65	0.62	0.69	<.0001
65 or older	25 to 34.9	0.50	0.45	0.56	<.0001
RACE					
AmerIN/AN	White	1.11	0.86	1.42	0.43
Asian/PI	White	1.05	0.84	1.31	0.68
Black	White	0.94	0.91	0.98	0.0042
Other/UNK	White	1.00	0.95	1.04	0.88
SEX					
Female	Male	1.12	1.08	1.15	<.0001

ACUTE_Marion HR			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	3.45	3.17	3.75	<.0001
1 to 2.9	25 to 34.9	3.85	3.58	4.14	<.0001
3 to 5.9	25 to 34.9	3.29	3.05	3.54	<.0001
6 to 11.9	25 to 34.9	2.11	1.96	2.27	<.0001
12 to 14.9	25 to 34.9	1.06	0.95	1.19	0.28
15 to 19.9	25 to 34.9	1.12	1.04	1.21	0.0046
20 to 24.9	25 to 34.9	1.12	1.04	1.21	0.0029
35 to 44.9	25 to 34.9	0.85	0.79	0.91	<.0001
45 to 64.9	25 to 34.9	0.71	0.67	0.75	<.0001
65 or older	25 to 34.9	0.76	0.70	0.83	<.0001
RACE					
AmerIN/AN	White	0.84	0.61	1.16	0.29
Asian/PI	White	0.69	0.44	1.07	0.095
Black	White	0.96	0.90	1.02	0.20
Other/UNK	White	1.04	0.99	1.10	0.13
SEX					
Female	Male	1.02	0.99	1.06	0.23

Table 19 Continued

ACUTE_Peoria			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	3.41	3.05	3.80	<.0001
1 to 2.9	25 to 34.9	3.94	3.56	4.37	<.0001
3 to 5.9	25 to 34.9	3.12	2.80	3.48	<.0001
6 to 11.9	25 to 34.9	1.83	1.64	2.04	<.0001
12 to 14.9	25 to 34.9	1.21	1.04	1.40	0.013
15 to 19.9	25 to 34.9	1.10	0.99	1.22	0.079
20 to 24.9	25 to 34.9	1.08	0.98	1.19	0.11
35 to 44.9	25 to 34.9	0.88	0.80	0.96	0.0053
45 to 64.9	25 to 34.9	0.67	0.61	0.73	<.0001
65 or older	25 to 34.9	0.65	0.55	0.77	<.0001
RACE					
AmerIN/AN	White	0.82	0.51	1.32	0.42
Asian/PI	White	0.92	0.58	1.46	0.73
Black	White	0.99	0.92	1.05	0.69
Other/UNK	White	1.01	0.95	1.09	0.69
SEX					
Female	Male	1.13	1.07	1.18	<.0001

ACUTE_Rockford			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	3.25	2.90	3.64	<.0001
1 to 2.9	25 to 34.9	4.18	3.77	4.63	<.0001
3 to 5.9	25 to 34.9	3.53	3.16	3.94	<.0001
6 to 11.9	25 to 34.9	2.44	2.19	2.71	<.0001
12 to 14.9	25 to 34.9	1.54	1.33	1.79	<.0001
15 to 19.9	25 to 34.9	1.15	1.02	1.29	0.021
20 to 24.9	25 to 34.9	1.12	1.00	1.25	0.042
35 to 44.9	25 to 34.9	0.89	0.81	0.98	0.019
45 to 64.9	25 to 34.9	0.72	0.66	0.79	<.0001
65 or older	25 to 34.9	0.61	0.51	0.72	<.0001
RACE					
AmerIN/AN	White	0.74	0.50	1.10	0.14
Asian/PI	White	1.25	0.98	1.59	0.073
Black	White	1.02	0.96	1.09	0.44
Other/UNK	White	1.01	0.95	1.09	0.69
SEX					
Female	Male	1.06	1.01	1.12	0.020

Summary of Population Characteristics Most Associated with Chronic ACSC ED Visits

- Adults age 35 and older in all areas, children and teens in Danvile (age 3–14), children age 3–11 in East St. Louis, and children age 6–11 in Rockford
- Blacks in all areas
- Males in East St. Louis, the Marion Health Region, Peoria, and Rockford

Table 20: Population Characteristics Associated with Chronic ACSC ED Visits (FY2019 and FY2020 Data Combined)

CHRONIC_Danville			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	0.18	0.07	0.44	0.0002
1 to 2.9	25 to 34.9	1.14	0.80	1.60	0.47
3 to 5.9	25 to 34.9	1.66	1.19	2.30	0.0026
6 to 11.9	25 to 34.9	2.01	1.51	2.66	<.0001
12 to 14.9	25 to 34.9	1.55	1.04	2.31	0.033
15 to 19.9	25 to 34.9	0.89	0.64	1.24	0.48
20 to 24.9	25 to 34.9	0.87	0.64	1.18	0.38
35 to 44.9	25 to 34.9	1.82	1.46	2.27	<.0001
45 to 64.9	25 to 34.9	3.89	3.21	4.71	<.0001
65 or older	25 to 34.9	4.14	3.12	5.49	<.0001
RACE					
AmerIN/AN	White	0.60	0.14	2.48	0.48
Asian/PI	White	0.46	0.11	1.90	0.28
Black	White	1.31	1.15	1.50	<.0001
Other/UNK	White	0.97	0.77	1.21	0.77
SEX					
Male	Female	1.10	0.98	1.23	0.12

Table 20 Continued

CHRONIC_E. St. Louis Group	Compared To	Odds Ratio	Confidence Interval (95%) Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	0.15	0.10	0.21	<.0001
1 to 2.9	25 to 34.9	0.74	0.63	0.87	0.0003
3 to 5.9	25 to 34.9	1.30	1.13	1.50	0.0003
6 to 11.9	25 to 34.9	1.49	1.31	1.69	<.0001
12 to 14.9	25 to 34.9	1.00	0.83	1.20	0.96
15 to 19.9	25 to 34.9	0.99	0.86	1.14	0.87
20 to 24.9	25 to 34.9	1.03	0.90	1.17	0.70
35 to 44.9	25 to 34.9	1.89	1.72	2.08	<.0001
45 to 64.9	25 to 34.9	3.24	2.99	3.53	<.0001
65 or older	25 to 34.9	4.00	3.57	4.47	<.0001
RACE					
AmerIN/AN	White	1.03	0.68	1.55	0.90
Asian/PI	White	1.21	0.85	1.72	0.30
Black	White	1.38	1.30	1.47	<.0001
Other/UNK	White	1.09	0.99	1.20	0.085
SEX					
Male	Female	1.27	1.20	1.33	<.0001

CHRONIC_Marion HR Group	Compared To	Odds Ratio	Confidence Interval (95%) Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	0.18	0.12	0.28	<.0001
1 to 2.9	25 to 34.9	0.51	0.40	0.64	<.0001
3 to 5.9	25 to 34.9	0.74	0.60	0.90	0.0033
6 to 11.9	25 to 34.9	0.87	0.74	1.03	0.11
12 to 14.9	25 to 34.9	0.81	0.65	1.01	0.064
15 to 19.9	25 to 34.9	0.63	0.53	0.75	<.0001
20 to 24.9	25 to 34.9	1.26	1.10	1.43	0.0007
35 to 44.9	25 to 34.9	1.46	1.31	1.63	<.0001
45 to 64.9	25 to 34.9	3.15	2.88	3.45	<.0001
65 or older	25 to 34.9	4.64	4.20	5.14	<.0001
RACE					
AmerIN/AN	White	1.51	1.06	2.15	0.024
Asian/PI	White	0.78	0.42	1.43	0.42
Black	White	1.32	1.21	1.45	<.0001
Other/UNK	White	0.88	0.77	0.99	0.037
SEX					
Male	Female	1.20	1.14	1.27	<.0001

Table 20 Continued

CHRONIC_Peoria Group	Compared To	Odds Ratio	Confidence Interval (95%) Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	0.11	0.07	0.18	<.0001
1 to 2.9	25 to 34.9	0.38	0.28	0.51	<.0001
3 to 5.9	25 to 34.9	0.86	0.68	1.10	0.23
6 to 11.9	25 to 34.9	1.07	0.87	1.32	0.50
12 to 14.9	25 to 34.9	0.69	0.52	0.92	0.012
15 to 19.9	25 to 34.9	0.88	0.73	1.07	0.19
20 to 24.9	25 to 34.9	0.79	0.66	0.94	0.0088
35 to 44.9	25 to 34.9	1.51	1.32	1.72	<.0001
45 to 64.9	25 to 34.9	2.62	2.34	2.93	<.0001
65 or older	25 to 34.9	3.02	2.57	3.55	<.0001
RACE					
AmerIN/AN	White	0.84	0.41	1.73	0.64
Asian/PI	White	0.71	0.33	1.54	0.39
Black	White	1.35	1.23	1.49	<.0001
Other/UNK	White	0.98	0.86	1.13	0.78
SEX					
Male	Female	1.24	1.15	1.34	<.0001

CHRONIC_Rockford Group	Compared To	Odds Ratio	Confidence Interval (95%) Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	0.15	0.09	0.24	<.0001
1 to 2.9	25 to 34.9	0.65	0.51	0.83	0.0007
3 to 5.9	25 to 34.9	1.19	0.96	1.49	0.11
6 to 11.9	25 to 34.9	1.25	1.02	1.52	0.031
12 to 14.9	25 to 34.9	0.92	0.69	1.22	0.55
15 to 19.9	25 to 34.9	0.78	0.63	0.96	0.019
20 to 24.9	25 to 34.9	0.96	0.80	1.15	0.63
35 to 44.9	25 to 34.9	1.68	1.47	1.92	<.0001
45 to 64.9	25 to 34.9	2.80	2.50	3.15	<.0001
65 or older	25 to 34.9	3.35	2.83	3.96	<.0001
RACE					
AmerIN/AN	White	2.14	1.49	3.07	<.0001
Asian/PI	White	1.02	0.69	1.50	0.92
Black	White	1.47	1.35	1.60	<.0001
Other/UNK	White	1.28	1.14	1.45	<.0001
SEX					
Male	Female	1.13	1.05	1.22	0.0009

Summary of Population Characteristics Most Associated with Avoidable ACSC ED Visits

- Adults age 21–64
- Blacks in Peoria and Rockford
- Males in East St. Louis, the Marion Health Region, Peoria, and Rockford

Table 21: Population Characteristics Associated with Avoidable ACSC ED Visits (FY2019 and FY2020 Data Combined)

AVOIDABLE_Danville			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
21 to 34	< 21	5.58	4.34	7.17	<.0001
35 to 44	< 22	4.27	3.26	5.61	<.0001
45 to 64	< 23	1.87	1.39	2.51	<.0001
65 or older	< 24	0.35	0.11	1.12	0.077
RACE					
AmerIN/AN	White	3.17	1.50	6.71	0.0025
Asian/PI	White	0.34	0.05	2.42	0.28
Black	White	1.01	0.86	1.19	0.923
Other/UNK	White	0.88	0.62	1.24	0.451
SEX					
Male	Female	1.08	0.93	1.26	0.327

AVOIDABLE_E. St. Louis			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
21 to 34	< 21	4.18	3.78	4.63	<.0001
35 to 44	< 22	3.44	3.07	3.86	<.0001
45 to 64	< 23	1.47	1.30	1.67	<.0001
65 or older	< 24	0.51	0.36	0.72	0.0001
RACE					
AmerIN/AN	White	0.94	0.56	1.58	0.81
Asian/PI	White	0.28	0.10	0.75	0.011
Black	White	1.03	0.97	1.11	0.35
Other/UNK	White	0.95	0.83	1.09	0.47
SEX					
Male	Female	1.12	1.04	1.19	0.0017

Table 21 Continued

AVOIDABLE_Marion HR			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
21 to 34	< 21	5.81	5.20	6.49	<.0001
35 to 44	< 22	4.28	3.79	4.83	<.0001
45 to 64	< 23	1.72	1.51	1.96	<.0001
65 or older	< 24	0.20	0.13	0.31	<.0001
RACE					
AmerIN/AN	White	0.98	0.61	1.58	0.95
Asian/PI	White	1.15	0.56	2.33	0.71
Black	White	0.99	0.89	1.09	0.79
Other/UNK	White	0.89	0.77	1.03	0.11
SEX					
Male	Female	1.17	1.09	1.25	<.0001

AVOIDABLE_Peoria			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
21 to 34	< 21	4.78	4.03	5.66	<.0001
35 to 44	< 22	3.53	2.92	4.27	<.0001
45 to 64	< 23	1.69	1.38	2.07	<.0001
65 or older	< 24	0.17	0.06	0.46	0.0004
RACE					
AmerIN/AN	White	0.17	0.02	1.19	0.074
Asian/PI	White	0.23	0.03	1.65	0.14
Black	White	1.13	1.01	1.26	0.032
Other/UNK	White	1.20	0.99	1.45	0.064
SEX					
Male	Female	1.38	1.25	1.53	<.0001

AVOIDABLE_Rockford			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
21 to 34	< 21	4.23	3.49	5.13	<.0001
35 to 44	< 22	4.40	3.59	5.40	<.0001
45 to 64	< 23	1.36	1.08	1.71	0.0095
65 or older	< 24	0.48	0.25	0.91	0.026
RACE					
AmerIN/AN	White	0.93	0.44	1.97	0.85
Asian/PI	White	1.10	0.60	2.02	0.75
Black	White	1.19	1.06	1.35	0.0043
Other/UNK	White	0.94	0.77	1.16	0.57
SEX					
Male	Female	1.13	1.01	1.27	0.034

Appendix C:
Approach to Community Input

University of Illinois at Chicago's (UIC) Institute for Healthcare Delivery Design (IHDD) partnered with Southern Illinois University (SIU) School of Medicine's Center for Rural Health and Social Service Development to conduct community input in the East St. Louis Metro Area. SIU engaged community partners in the area to recruit and facilitate 16 remote community conversations via conference call with a total of 69 residents between September and November 2020. UIC and SIU researchers offered community partners support through the creation of a facilitation guide, facilitation training, notetaking, and data analysis. Each community partner recruited a convenience sample of residents through their preferred recruitment channel. The sample included a mix of age, gender, race/ethnicity, and health insurance status. Values of equity, relationship-based trust, and collaboration guided the work with community partners.

The goals of the community-input sessions were to:

1. Understand the health conditions and diseases important to community members.
2. Determine factors that make it hard to prevent, get care for and manage these diseases
3. Determine what existing or new resources are needed to help community manage these diseases

Selecting Zip Codes for Community Input in Each Community Area

Participant recruiting focused on specific zip codes within the East St. Louis Metro Area. The specific approach used to identify zip codes was the following:

1. *Determine the social determinants of health profiles of zip codes.* Each zip code in the East St. Louis Metro Area was characterized with respect to 23 social determinants of health (SDOH) variables and life expectancy estimates using data derived from the 2014-2018 American Community Survey (ACS), 2010 U.S. Decennial Census, Institute for Child, Youth and Family Policy, and the CDC's Behavioral Risk Factor Surveillance Survey (BRFSS) and Small-Area Life Expectancy Estimates Project (29–33). The SDOH variables included the prevalence of behavioral risk factors health conditions such as obesity, current smoking, diabetes, and chronic obstructive pulmonary disease, as well as 3 multidimensional composite socioeconomic (SES) indicators: Concentrated Disadvantage (CD), Economic Hardship Index (EHI), and Child Opportunity Index (COI) 2.0 (34–36). All data and measures were obtained at the census tract level and aggregated up to the zip code level using standard areal interpolation techniques followed by manual adjudication of the results (37).
2. *Identify SDOH characteristics more negatively correlated with life expectancy (LE).*

SDOH-LE correlations were ranked from most negative to most positive, and SDOH characteristics with correlation coefficients of r > 0.65 were identified.

3 *Identify most "distressed" zip codes in the community area.* Zip codes were ranked with respect to LE and each of the SDOHs most negatively correlated with LE. Those in the worst quartile for LE and for each of the SDOH were identified. This resulted in a list of most "distressed" zip codes. This list was used in step 4 as a sampling frame from which to select zip codes with the highest inpatient admission rates among Medicaid enrollees.

4 *Identify zip codes with highest inpatient admission per capita Medicaid enrollees.* Hospital-based utilization data for persons enrolled in Medicaid during FY2018 were obtained from HFS. Inpatient admission rates were calculated for each of the most distressed zip codes per 100 Medicare enrollees in each zip code during FY2018 (38).

5 *Finalize list of target zip codes:* Zip codes that were the most distressed and had the most Medicaid enrollee inpatient admissions per capita were targeted for community input. The resulting list is as follows:

- 62002 (Alton/East Alton, IL)
- 62025 (Edwardsville, IL)
- 62040 (Granite City, IL)
- 62059 (Brooklyn, IL)
- 62060 (Madison, IL)
- 62090 (Venice, IL)
- 62095 (Wood River, IL)
- 62201 (East St. Louis, IL)
- 62203 (Centreville, IL)
- 62204 (Washington Park, IL)
- 62205 (Centreville, IL)
- 62206 (Cahokia, IL)
- 62207 (Centreville, IL)
- 62234 (Collinsville, IL)

Community Partner Selection

Two community partners were selected to conduct community-input sessions in the East St. Louis Metro Area: the University of Illinois Extension Service and the Madison County Housing Authority. See Table 22 for more information about these community partners.

Criteria used to identify and select community partners included health mission alignment, community embeddedness in target zip code areas, and current capacity to recruit and facilitate community conversations. Community partners were identified through existing academic-community partnerships at SIU. Final community partner selection was done in collaboration with HFS. Several of the community-based organizations that were contacted declined participation due to bandwidth constraints and the urgency to address basic client needs in response to COVID-19.

After aligning on the intended scope of work and entering into a contract agreement, UIC and SIU researchers onboarded community partner moderator(s) to a facilitation guide focused on understanding, from a resident perspective, the most pervasive health conditions and key barriers to staying healthy and accessing care and treatment. Feedback from community

partners was integrated to tailor sessions for cultural appropriateness and vocabulary. All sessions were conducted in English.

Sample Size, Recruitment Approaches and Incentives

For each community area, community partners recruited a convenience sample of 50–75 residents across age, gender, race/ethnicity, and insurance status. UIC supplied a flier to market the sessions and each partner employed their own recruitment tactics based on existing relationships, communication channels, and engagement methods.

In East St. Louis, the Madison County Housing Authority recruited residents from its public and mixed-income housing developments, and the University of Illinois Extension Service leveraged its contacts among residents, obtained through its community education and outreach efforts. Both East St. Louis area partners contacted residents via phone and email.

Participants were compensated for their time in the form of a $50 gift card or check.

Table 22: East St. Louis Community Partner Organizations

Community Partner	Mission	Leadership	Recruitment & Facilitation
University of Illinois (U of I) Extension Service	The mission of the Illinois Extension is to provide practical translations of cutting-edge research to help people, businesses, and communities find answers to some of the most pressing issues of our modern world.	Amy Cope, Director, U of I Extension Service County Director	Joey Fonseca Katrina Galati
Madison County Housing Authority (MCHA)	The mission of the MCHA is to provide a variety of safe, affordable housing options to very low and low-income residents across Madison County, as well as elderly and disabled members of the community.	Andy Hightower, Executive Director, MCHA	Marie Nelson Rosie Brown

Discussion Guide

In order to understand the social, economic, and physical factors influencing health and healthcare access, the discussion guide was informed by 2 prominent preventive medicine and public health frameworks: the Levels of Prevention framework (39) and the Healthy People 2020 Social Determinants of Health (SDOH) framework (40).

The Levels of Prevention framework includes 3 categories across the prevention spectrum: primary prevention aimed at preventing the onset of specific diseases by limiting exposure to key risk factors, secondary prevention aimed at preventing progress of specific diseases through early detection and treatment, and tertiary prevention aimed at preventing negative quality of life and longevity impact for patients with specific diseases. Adaptations to the initial framework have been made since its development which include the addition of a fourth category called primordial prevention, aimed at preventing broad health determinants at the population level. For the purpose of the discussion guide, the researchers translated the levels of prevention into everyday language (for example, primordial level as "staying healthy," primary level as "preventing X condition," secondary level as "accessing care and treatment for a condition," and tertiary level as "managing a condition when really sick"). Questions were developed across each of the 4 prevention levels.

The Healthy People 2020 SDOH framework includes 5 categories

- neighborhood and built environment
- health and healthcare
- social and community context
- education
- economic stability

The framework is built on a growing body of evidence that suggests the home environment, schools, workplace, and neighborhoods play an important role in preventing disease and improving health outcomes. For the purpose of the discussion guide, researchers developed probes as follow-up questions for each of the social determinants of health (for example, for neighborhood and built environment a variation of the following question was asked: "Is there anything related to our built environment that makes it hard? By built environment, I mean things like our streets, sidewalks, parks, open space, etc.").

Here is the discussion guide used for the community-input sessions:

Discussion Guide

0) [Introduction]

Hello, my name is [name of moderator] and I'm from [community partner]. Before we begin, I would like to take this opportunity to let you know how much we appreciate you committing to this HEALTH discussion. [Community Partner] has partnered with the University of Illinois Chicago to conduct discussions about health in [community area] communities.

The information we gather will be used to help healthcare providers and other organizations get funding to develop new programs to help address top health issues. Your participation in this discussion will be kept confidential. We will share anonymous quotes in reports that we provide to HFS with the purpose of reporting community priorities. Our discussion is scheduled to last 1 hour and 30 minutes. You must participate for the entire time of the discussion in order to be compensated. You will receive $50 in the form of a gift card [or check]. Our discussion will be recorded and others from my team may have questions for you at the end of the discussion. Can I have your permission to record our discussion today? [Get verbal permission; start recording]

Just to confirm: I asked for, and everyone on the call gave, permission to record this discussion. Is that correct? [Go around and have each person state their name and restate their permission to record.]

One request as we get started here: Before answering a question or adding a comment to the discussion, state your first name so that we know who's talking.

Here's an overview of how we'll spend the next 90 minutes:First, we will do some brief introductions. Then, we will then identify 1 or 2 of the most important health conditions in our community.
For each health condition (we will likely get through 1–2), we will go through a set of questions and ask for you all to share your perspective on:

a) Challenges related to prevention
b) Challenges related to care and treatment
c) Challenges related to supporting someone who is really sick
d) Finally, we'll talk about resources that exist or are needed in our communities to help with this health condition

1) [Resident Introductions]

- What is one word a family member or close friend would use to describe you?
- What do you do?
- What the word "health" means to you?

2) [Health Issues in Our Community]

Several months ago, the UIC School of Public Health analyzed data about why people end up in the hospital in East St. Louis. The top 2 drivers are:

- mental illness, especially bipolar disorder, depression and schizophrenia
- hypertension (aka high blood pressure)

[Folow up questions]

- Are there other important diseases or health conditions that you see in this community that aren't on this list?
- Have you or someone you know been personally affected by any of the issues that have been mentioned?
- Of all of the issues mentioned so far, which condition do you believe is the #1 most important health issue facing our communities? [Get consensus on 1–3 of the most important health issues for community participants)

[NUMBER 1 HEALTH ISSUE IN DETAIL]

Let's talk about [#1 most important condition] in more detail, specifically, about challenges related to

prevention, care and treatment, and supporting someone when they are really sick. We will also discuss resources that exist in our communities for this health issue.

[For each question below, probe on relevant social determinants of health]

a) What makes it hard to PREVENT this health issue
b) For those with this health issue, what makes it hard to get CARE AND TREATMENT that they need?
c) Think about what happens when someone is really sick with this issue. What makes it hard for someone in our community who is really sick with this issue get the support they need?
d) Finally, we'd like to discuss and learn about the existing resources or assets in our communities that support people who are living with this condition. What's happening, or what exists, in our communities right now that's working to help people to prevent or manage this health issue?

[#2 & #3 HEALTH ISSUE IN DETAIL—Go through questions A–D above as time allows]

[SOCIAL DETERMINANTS PROBES]
(moderators select 2–3 relevant probes)

i) Is there anything related to **healthcare resources** like doctors, hospitals, clinics, treatment centers or pharmacies that makes it hard?
   (a) Any issues making an appointment?
   (b) Any issues at the point of service?
   (C) Any issues with the treatment plan / caring for the condition over time?
ii) Is there anything related to **food or food access** that makes it hard?
iii) Is there anything related to our **built environment** that makes it hard? By built environment I mean, things like our streets, sidewalks, parks, open space, etc.
iv) Is there anything about our air or water quality—or other **environmental issues**—that makes it hard?
v) Is there anything about **transportation** in our community that makes it hard? By transportation, I mean everything from public transit to taxi services to access to highways.
vi) Is there anything about **housing** in our community that makes it hard?
vii) Is there anything about **education** in our community that makes it hard?
viii) Is there anything **economically** that makes it hard?
ix) Is there anything related to **child care or caring for adult dependents or elderly care** that makes it hard?
x) Is there anything about our community's **social fabric** that makes it hard? And by social fabric, I mean our trust of and reliance on one another and our trust of, and ability to work with, governmental organizations.

Format of Input Sessions

Ninety-minute small group conversations with 1 to 6 residents were held via WebEx phone call. The calls were recorded. Participants verbally consented to recording for data processing purposes and reaffirmed voluntary consent to participate once the recording started. After sharing background information about the study and facilitating resident introductions, the moderators followed the discussing guide above. Throughout the discussion, participants were encouraged to reflect on and share stories about their own lived experiences and those of loved ones. UIC and SIU researchers supported moderators with real-time follow-up questions prompted via text message or WebEx chat.

Sessions Analysis and Reporting

UIC researchers reviewed audio recordings and detailed notes to summarize barriers, challenges, and issues that surfaced during the community-input sessions.

Researchers applied affinity clustering to participants' remarks to identify common themes, surface domains of consensus and divergence, and summarized these barriers using a care journey framework (See Table 8 in the Detailed Findings section of the report). Additionally, representative resident quotes and stories were pulled and curated to bring out the human perspective. Community partners were asked to offer feedback on the data represented and storytelling contained in draft summary reports. Upon publication of this report, community partners will disseminate the project objectives and findings to resident participants and share among their broader stakeholder networks.

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