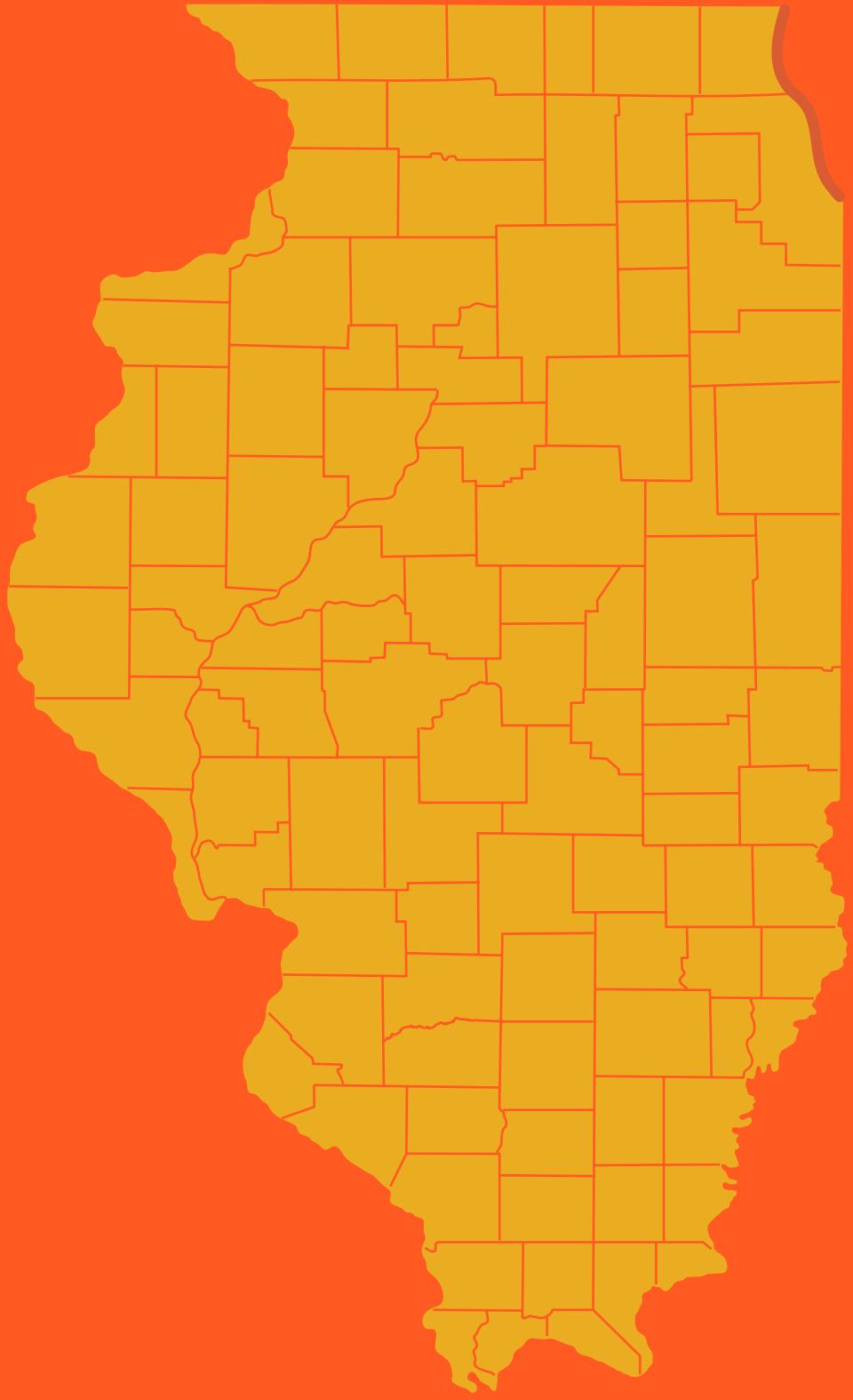

Transformation Data & Community Needs Report

WEST COOK COUNTY

October 2022

HTC
Healthcare Transformation Collaboratives

This report was prepared by the University of Illinois at Chicago (UIC) School of Public Health, Department of Psychology and Institute for Healthcare Delivery Design and Southern Illinois University (SIU) School of Medicine's Center for Rural Health and Social Service Development 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.

Our Team

Project Oversight

Dr. Ron Hershow, Director of the Division of Epidemiology and Biostatistics, UIC School of Public Health

Hugh Musick, Director, UIC Institute for Healthcare Delivery Design

Project Managers

Ann Kauth, Assistant Director, Institute for Healthcare Delivery Design

Justin Bartkus, Senior Strategist, Institute for Healthcare Delivery Design

Lead Medicaid Data Analysts

Dr. Vincent L. Freeman, Associate Professor, Epidemiology and Biostatistics, UIC School of Public Health

Dr. Michael Meinzer, Associate Clinical Professor, UIC Department of Psychology

Lead Biostatisticians

Dr. Sanjib Basu, Professor, Epidemiology and Biostatistics, UIC School of Public Health

Dr. Heng Wang, Clinical Assistant Professor of Epidemiology and Biostatistics, UIC School of Public Health

Medicaid Data Analysis Research Assistants

UIC School of Public Health Graduate Students:

Cecilia Chang, Shanta Ghosh, Xiaohan Mei, Concetta Smeriglio

UIC Department of Psychology Graduate Students:

Ari Kaiser, Elyse Shenberger

Community Engagement

Advisors

Dr. Jeni Hebert-Beirne, Associate Professor of Community Health Sciences and Associate Dean for Community Engagement, UIC School of Public Health

Dr. Naoko Muramatsu, Professor of Community Health Sciences and Fellow at the Institute for Health Research and Policy, UIC School of Public Health

Community Engagement Leads

Elise Levin, Research Specialist, Community Health Sciences, UIC School of Public Health

Dr. Kristine Zimmerman, Research Assistant Professor, Community Health Sciences, UIC School of Public Health and Division of Health Research and Evaluation, Department of Family and Community Medicine, UIC College of Medicine Rockford

Community Engagement Research Assistants

Aeysha Chaudhry, Graduate Research Assistant, Community Health Sciences, UIC School of Public Health

Laura Howenstine, Graduate Research Assistant, Community Health Sciences, UIC School of Public Health

Hend Jallala, Graduate Research Assistant, Southern Illinois University (SIU) School of Medicine, Center for Rural Health and Social Service Development

Aditi Jha, Associate Design Strategist, UIC Institute for Healthcare Delivery Design

Jonathan Lopez, Graduate Research Assistant, Community Health Sciences, UIC School of Public Health

Ashley Moss, Illinois Delta Network Project Director, SIU School of Medicine, Center for Rural Health and Social Service Development

Daisy Magana, Research Specialist, Collaboratory for Health Justice, UIC School of Public Health

Kaosisochukwu C. Onochie, Research Associate II, Division of Health Research and Evaluation, Department of Family and Community Medicine

Glenna Sullivan, Research Specialist, Collaboratory for Health Justice, UIC School of Public Health

Dimitri Willams, Associate Design Researcher, UIC Institute for Healthcare Delivery Design

Report Authors

Dr. Sanjib Basu, Professor, Epidemiology and Biostatistics, UIC School of Public Health

Dr. Jeni Hebert-Beirne, Associate Professor of Community Health Sciences and Associate Dean for Community Engagement, UIC School of Public Health

Aeysha Chaudhry, Graduate Research Assistant, Community Health Sciences, UIC School of Public Health

Dr. Vincent L. Freeman, Associate Professor, Epidemiology and Biostatistics

Yan Gao, Graduate Student, Division of Epidemiology and Biostatistics, UIC School of Public Health

Dr. Ron Hershow, Director of the Division of Epidemiology and Biostatistics, UIC School of Public Health

Laura Howenstine, Graduate Research Assistant, Community Health Sciences, UIC School of Public Health

Hend Jallala, Graduate Research Assistant, Southern Illinois University (SIU) School of Medicine, Center for Rural Health and Social Service Development

Aditi Jha, Associate Design Strategist, UIC Institute for Healthcare Delivery Design

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Dimitri Willams, Associate Design Researcher, UIC Institute for Healthcare Delivery Design

Dr. Kristine Zimmerman, Research Assistant Professor, Community Health Sciences, UIC School of Public Health and Division of Health Research and Evaluation, Department of Family and Community Medicine, UIC College of Medicine Rockford

Report Designed by

Kshitij Gotiwale, UIC School of Design

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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 healthcare system barriers (for example, lack of availability of healthcare in socially vulnerable communities, health insurance limitations, complexity of the healthcare system, language barriers, and costs) as well as "social-determinant-of-health" barriers (for example, lack of access to transportation; lack of access to affordable, healthy food; and unemployment). In other words, this is a problem that sits within both the healthcare system and 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.

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 West Cook.

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.

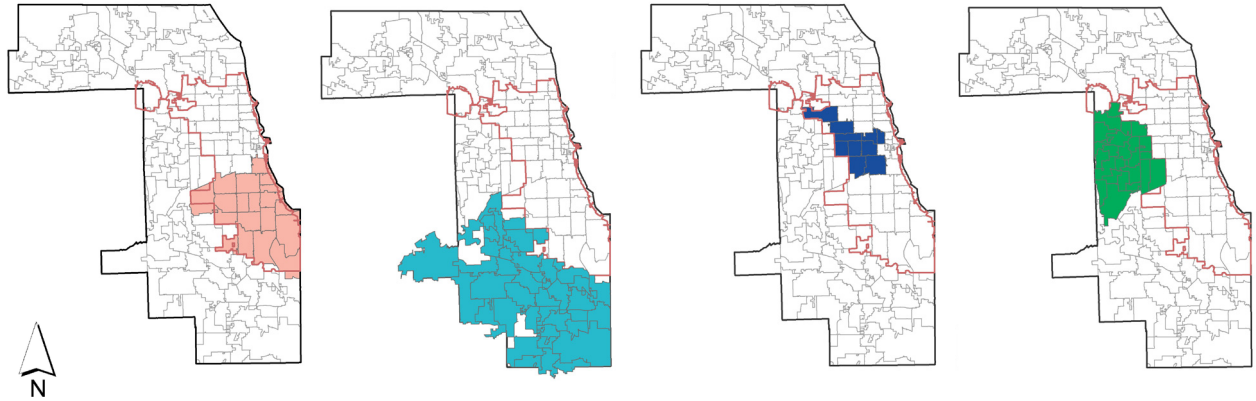
To identify Illinois areas with high social vulnerability and high susceptibility to health inequities, counties were analyzed individually and, where applicable, in combination, corresponding to Illinois metropolitan and micropolitan statistical areas designated by the U.S. Office of Management and 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 (South Chicago), the West Side of Chicago (West Chicago), South Cook County (South Cook), and West Cook County(West Cook)
- 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 4 socially vulnerable areas in Cook County (see Figure 1), with particular attention on findings for West Cook, and contains community-input findings from West Cook.

Figure 1: Study Areas with Zip Code Boundaries and Zip Code Table



South Chicago | South Cook | West Chicago | West Cook

Data Source: https://www.census.gov/cgi-bin/geo/shapefiles ; Coordinate System: NAD_1983_StatePlane_Illinois_East_FIPS_1201_Feet

South Chicago Zip Codes (19)				
60609	60619	60629	60636	60652
60615	60620	60631	60638	60653
60616	60621	60632	60643	60655
60617	60628	60633	60649	

South Cook Zip Codes (44)				
60406	60429	60456	60466	60478
60409	60430	60457	60467	60480
60411	60438	60458	60469	60482
60415	60439	60459	60471	60487
60419	60443	60461	60472	60501
60422	60445	60462	60473	60803
60425	60452	60463	60475	60805
60426	60453	60464	60476	60827
60428	60455	60465	60477	

West Chicago Zip Codes (10)				
60608	60622	60624	60639	60644
60612	60623	60634	60642	60651

West Cook Zip Codes (27)				
60104	60155	60171	60402	60707
60130	60160	60176	60513	60804
60131	60162	60301	60525	60546
60141	60163	60302	60526	
60153	60164	60304	60534	
60154	60165	60305	60558	

Figure 2: Demographic Traits of Study Areas[1]

South Chicago

1,025,989
Total Population

53.1% Female
46.8% Male

0–17	18–39	40–64	65+
23.6%	30.7%	31.0%	14.7%

Age

White	Black	Latino	Other
16.1%	55.4%	23.1%	5.4%

Race

75.2 Life expectancy
48,980 Median income
16.1% % of population no HS diploma
13.9% % of population unemployed
23.1% % of population living below the poverty rate

South Cook

879,883
Total Population

52.3% Female
47.7% Male

0–17	18–39	40–64	65+
23.3%	27.0%	33.4%	16.4%

Age

White	Black	Latino	Other
46.3%	34.4%	15.6%	3.7%

Race

77.5 Life expectancy
68,687 Median income
10.4% % of population no HS diploma
8.8% % of population unemployed
13.1% % of population living below the poverty rate

West Chicago

587,425
Total Population

50.4% Female
49.6% Male

0–17	18–39	40–64	65+
22.4%	39.1%	28.0%	10.5%

Age

White	Black	Latinx	Others
24.7%	36.4%	33.8%	5.1%

Race

75.7 Life expectancy
57,810 Median income
20.7% % of population no HS diploma
9.1% % of population unemployed
22.8% % of population living below the poverty rate

West Cook

537,824
Total Population

49.4% Female
50.6% Male

0–17	18–39	40–64	65+
22.4%	28.0%	32.6%	17.1%

Age

White	Black	Latinx	Others
45.0%	18.8%	31.9%	4.3%

Race

78.9 Life Expectancy
80,256 Median Income
13.9% % of population No HS Diploma
9.3% % of population unemployed
10.6% % of population living below the poverty rate

[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/

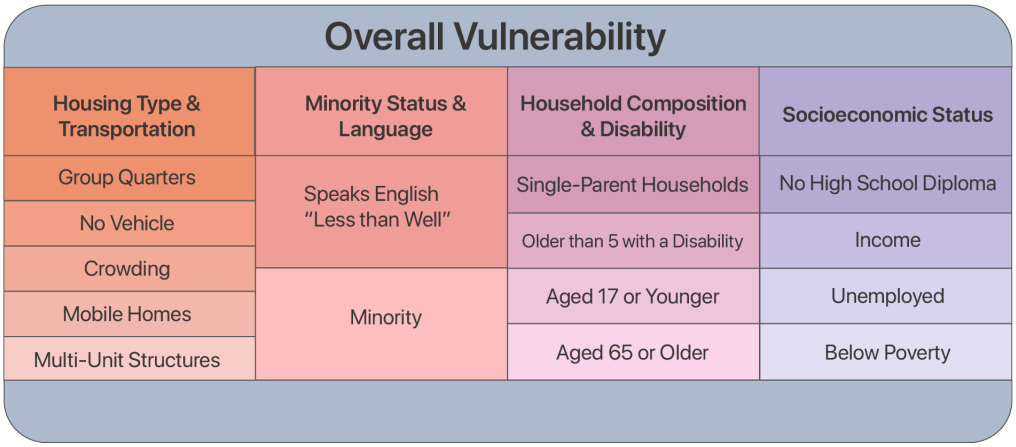
The process used to identify areas in Illinois with high social vulnerability is as follows:

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.

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, 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

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.

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.

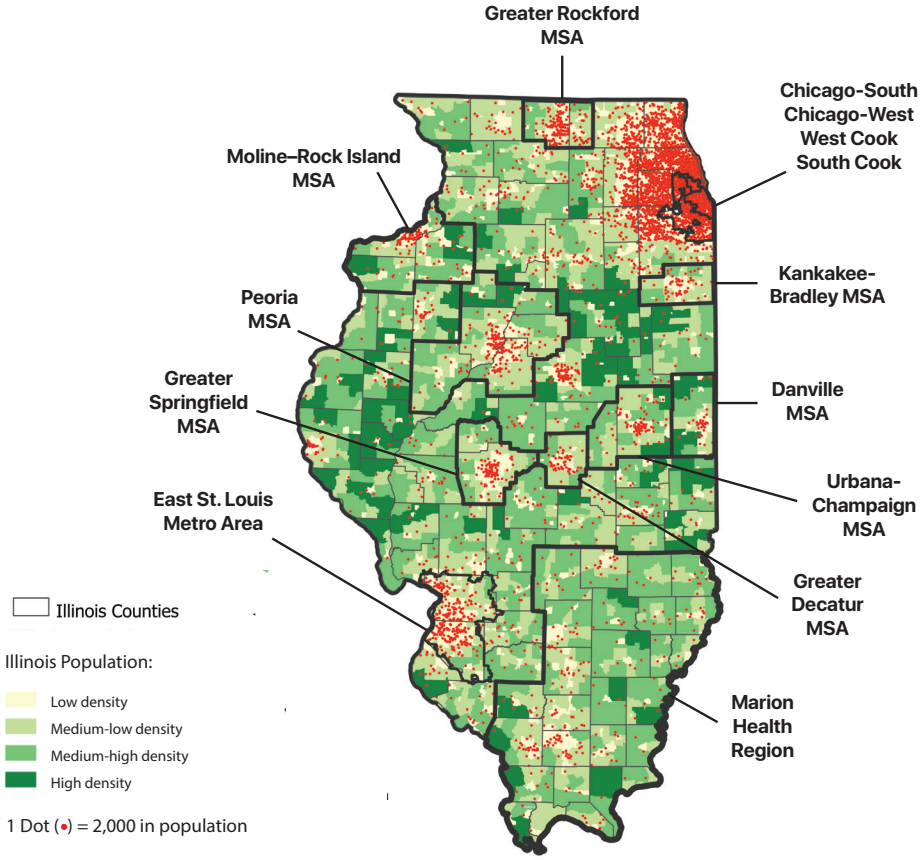
3. *Geographical areas ranked based on CDC-SVI percentile scores:* Geographical areas were ranked based on CDC-SVI percentile scores. Areas with scores >50 ("above average") [n = 35] were designated as potential priority locations (see Figure 4).

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 socially vulnerable areas in Cook County: South Chicago, South Cook, West Chicago, and West Cook.

(Separate reports have been complied for the following socially vulnerable areas in Illinois: Danville, East St. Louis, the Marion Health Region, Peoria, and Rockford.)

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 "noninstitutional" data set, and a "recipient file" 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 6 displays the most frequent blocks. Three of the most frequent hospitalization blocks in West Cook, 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 West Cook, 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 West Cook are mood [affective] disorders; other bacterial diseases (in particular, sepsis); mental and behavioral disorders due to psychoactive substance use ; and schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders.

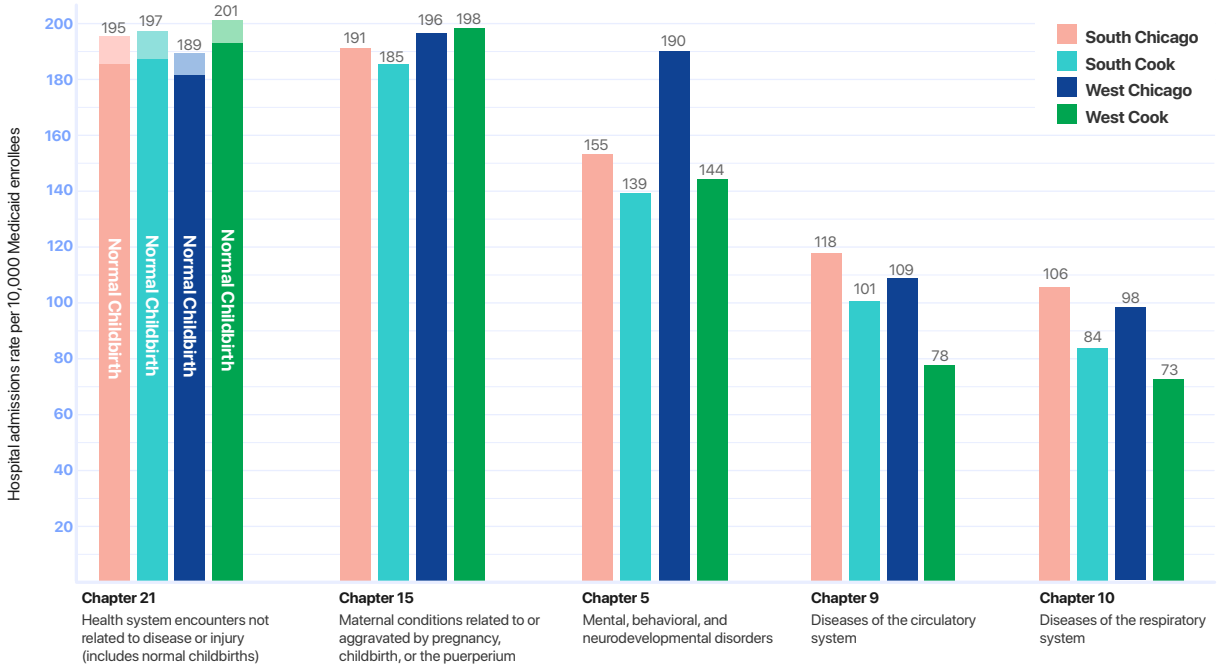
Pairing Frequency and Readmission Data

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

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

2019



2020

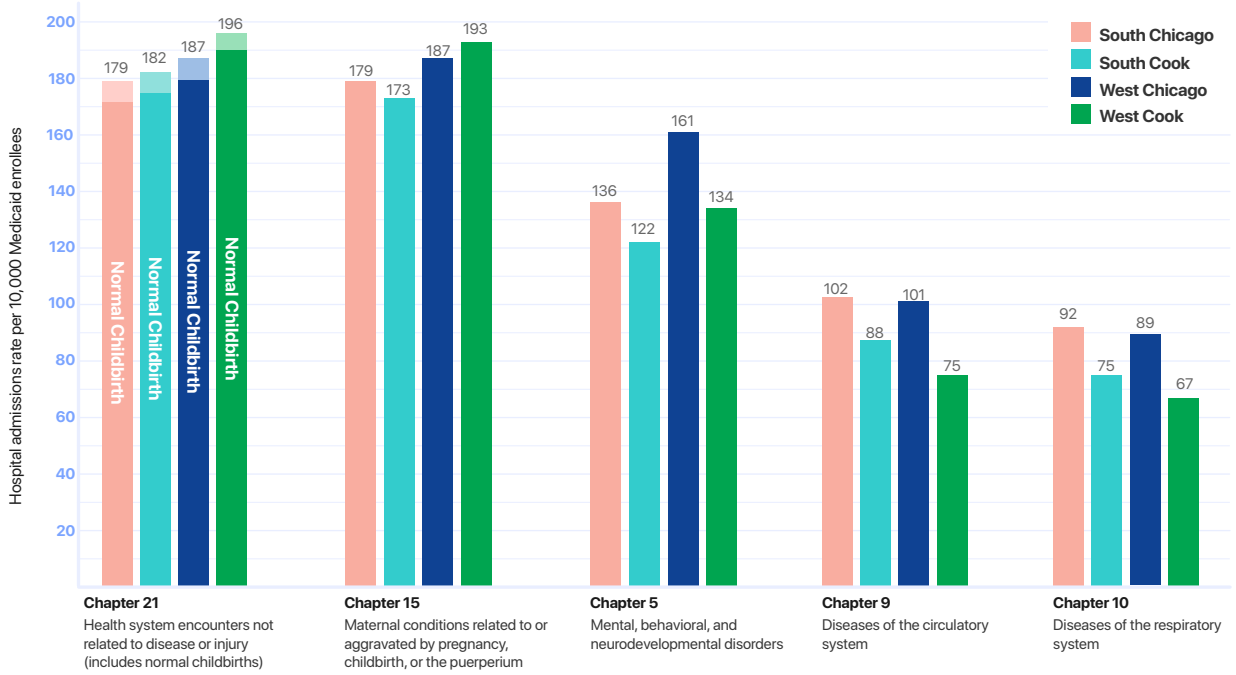
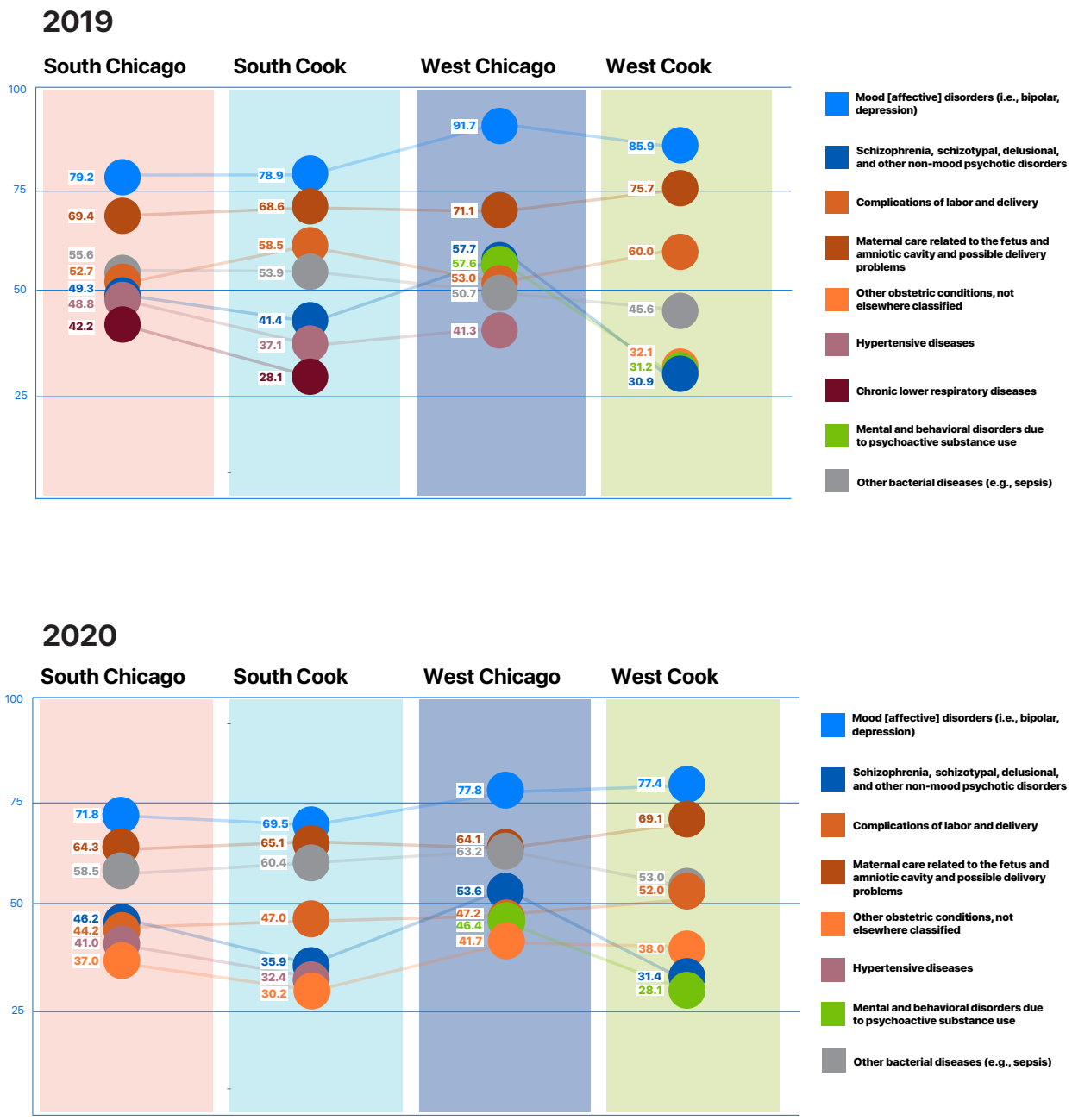


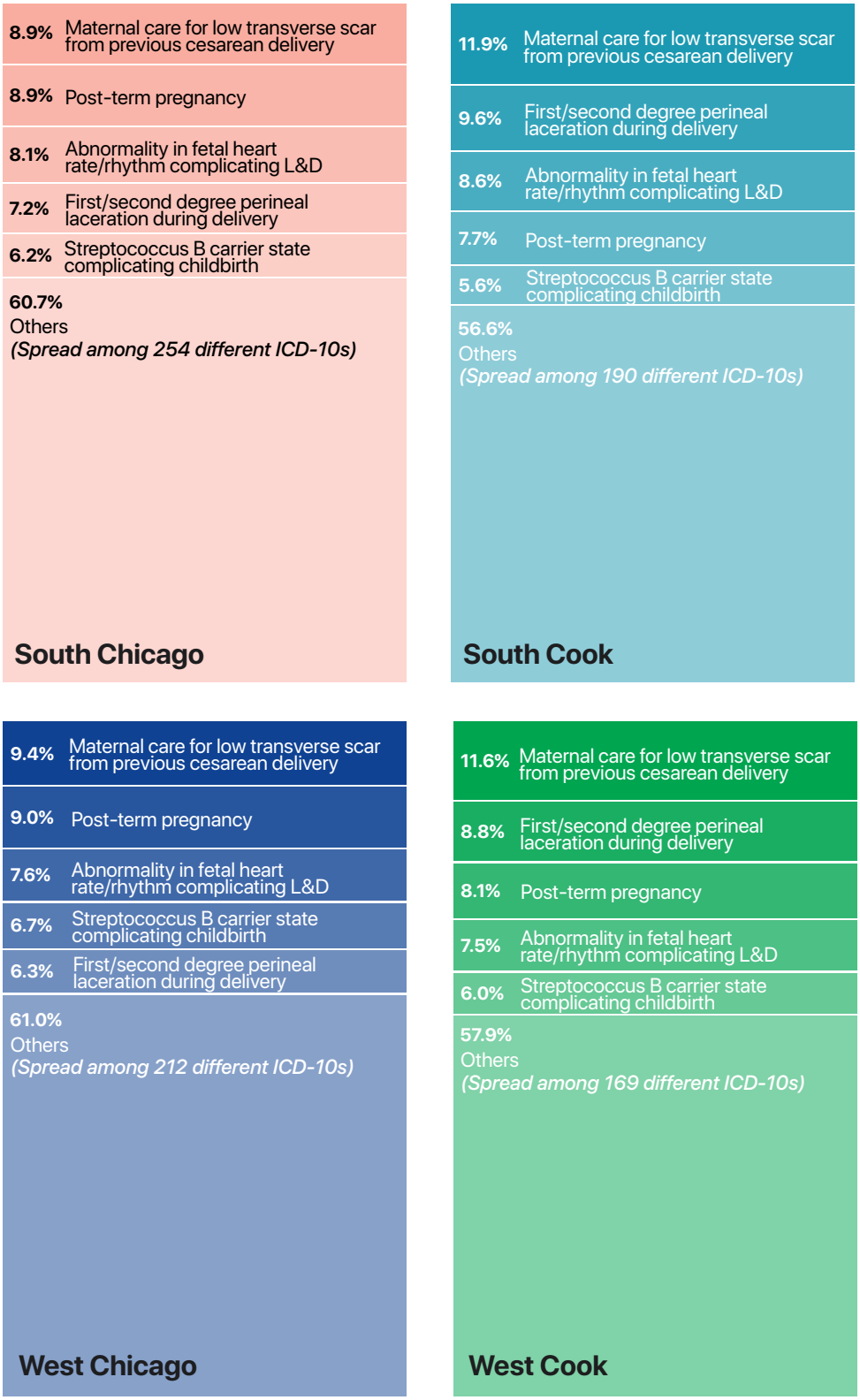
Figure 6: Top 7 Most Frequent Inpatient Hospitalization Blocks[1] by Study Area
(Frequency expressed as rate per 10,000 Medicaid enrollees)



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

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

2019



[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

South Chicago

- 8.8% Maternal care for low transverse scar from previous cesarean delivery
- 8.1% Post-term pregnancy
- 7.6% Abnormality in fetal heart rate/rhythm complicating L&D
- 6.6% Streptococcus B carrier state complicating childbirth
- 5.4% First/second degree perineal laceration during delivery
- 63.5% Others *(Spread among 250 different ICD-10s)*

South Cook

- 11.6% Maternal care for low transverse scar from previous cesarean delivery
- 7.5% First/second degree perineal laceration during delivery
- 7.4% Post-term pregnancy
- 7.2% Abnormality in fetal heart rate/rhythm complicating L&D
- 6.8% Streptococcus B carrier state complicating childbirth
- 59.5% Others *(Spread among 202 different ICD-10s)*

West Chicago

- 9.9% Maternal care for low transverse scar from previous cesarean delivery
- 7.9% Post-term pregnancy
- 7.1% Abnormality in fetal heart rate/rhythm complicating L&D
- 6.9% Streptococcus B carrier state complicating childbirth
- 6.5% First/second degree perineal laceration during delivery
- 61.7% Others *(Spread among 207 different ICD-10s)*

West Cook

- 11.1% Maternal care for low transverse scar from previous cesarean delivery
- 8.5% Post-term pregnancy
- 7.6% First/second degree perineal laceration during delivery
- 6.4% Streptococcus B carrier state complicating childbirth
- 5.5% Abnormality in fetal heart rate/rhythm complicating L&D
- 61.0% Others *(Spread among 169 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.

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 West Cook 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 outpatient utilization data shows that *outpatient care prior to or subsequent to hospital-level care for these disease groups and conditions is proportionally low*, indicating that many patients who were hospitalized for these diseases or disorders did not engage in outpatient care to manage their conditions (see Figures 10–12).

(Note: All outpatient encounters were used for this analysis, whether related to the hospitalization diagnosis or not. Thus, the results presented in Figures 10–12 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.)

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 West Cook 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,

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 ■ ASCSs

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

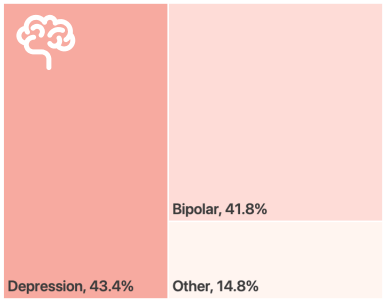
■ Mental Illnesses ■ Substance Use Disorders ■ ASCSs

South Chicago	South Cook	West Chicago	West Cook
1. Schizophrenia, schizotypal disorders	1. Schizophrenia, schizotypal disorders	1. Schizophrenia, schizotypal disorders	1. Mood affective disorders (bipolar, depression)
2. Mood affective disorders (bipolar, depression)	2. Mood affective disorders (bipolar, depression)	2. Mood affective disorders (bipolar, depression)	2. Schizophrenia, schizotypal disorders
3. Hemolytic anemias	3. Hemolytic anemias	3. Hemolytic anemias	3. Hemolytic anemias
4. Hypertensive diseases	4. Hypertensive diseases	4. Hypertensive diseases	4. Hypertensive diseases
5. Diabetes mellitus	5. Psychoactive substance use disorders (alcohol, opioids)	5. Diabetes mellitus	5. Psychoactive substance use disorders (alcohol, opioids)
6. Psychoactive substance use disorders (alcohol, opioids)	6. Other diseases of the respiratory system	6. Psychoactive substance use disorders (alcohol, opioids)	6. Diabetes mellitus
7. Other diseases of the respiratory system	7. Diabetes mellitus	7. Other diseases of the respiratory system	7. Other diseases of the respiratory system
8. Chronic lower respiratory diseases (asthma, COPD)	8. Chronic lower respiratory diseases (asthma, COPD)	8. Complications of surgical/ medical care	8. Cerebrovascular diseases
9. Cerebrovascular diseases	9. Cerebrovascular diseases	9. Cerebrovascular diseases	9. Complications of surgical/ medical care
10. Complications of surgical/ medical care	10. Diseases of liver	10. Diseases of liver	10. Diseases of liver
11. Diseases of liver	11. Complications of surgical/ medical care		
12. Disorders of gall-bladder, biliary tract, and pancreas			

[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.

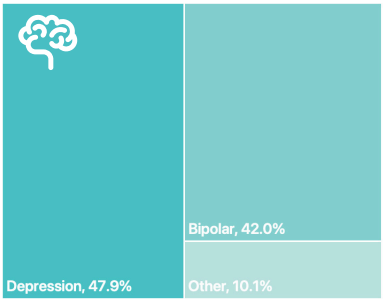
Figure 8: Proportion of Inpatient Hospitalizations for Depressive Disorders, Bipolar Disorders, and Other ICD-10s[1] within the Mood [Affective] Disorders Block across Study Areas

2019



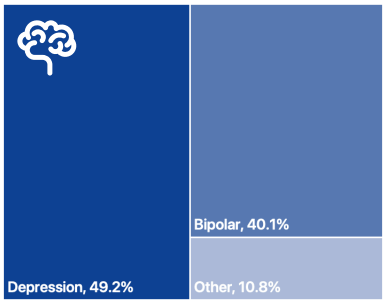
South Chicago

8.5% of inpatient hospitalizations are for mood [affective] disorders



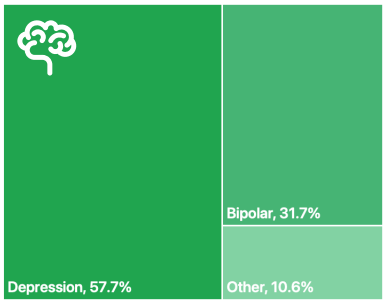
South Cook

9.3% of inpatient hospitalizations are for mood [affective] disorders



West Chicago

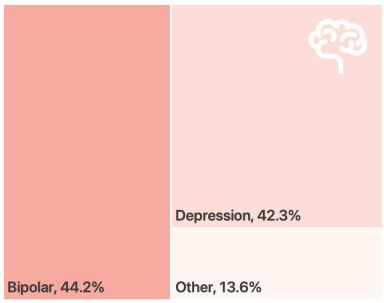
9.8% of inpatient hospitalizations are for mood [affective] disorders



West Cook

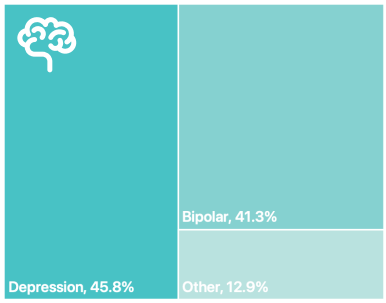
10.7% of inpatient hospitalizations are for mood [affective] disorders

2020



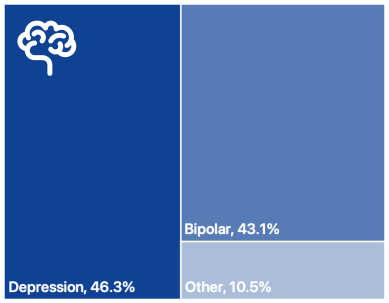
South Chicago

8.8% of inpatient hospitalizations are for mood [affective] disorders



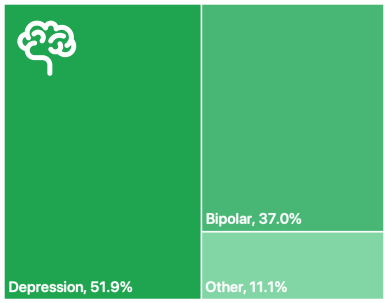
South Cook

9.6% of inpatient hospitalizations are for mood [affective] disorders



West Chicago

9.2% of inpatient hospitalizations are for mood [affective] disorders



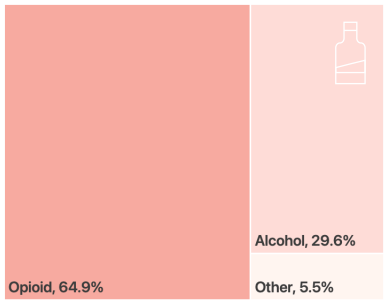
West Cook

11.0% of inpatient hospitalizations are for mood [affective] disorders

[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.

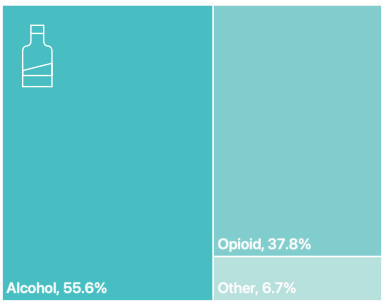
Figure 9: Proportion of Hospitalizations for Alcohol Use Disorders, Opioid Use Disorders, and Other ICD-10s within the Psychoactive Substance Use Disorders Block across Study Areas

2019



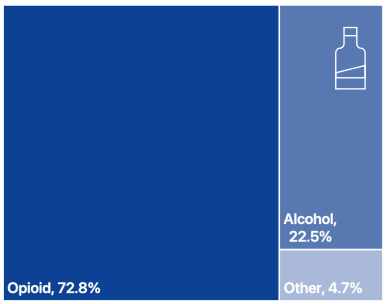
South Chicago

3.6% of inpatient hospitalizations are for psychoactive substance use disorders



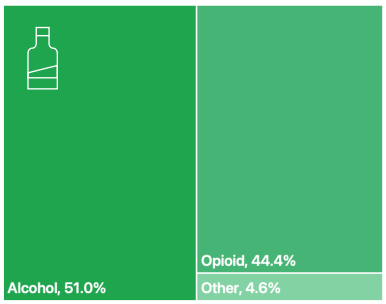
South Cook

2.9% of inpatient hospitalizations are for psychoactive substance use disorders



West Chicago

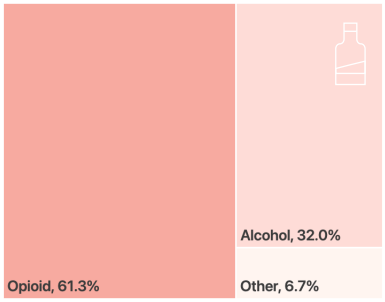
5.7% of inpatient hospitalizations are for psychoactive substance use disorders



West Cook

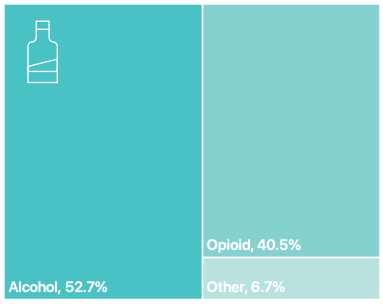
4.1% of inpatient hospitalizations are for psychoactive substance use disorders

2020



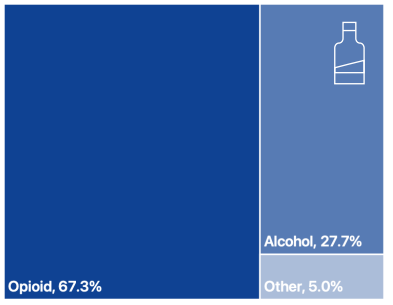
South Chicago

3.1% of inpatient hospitalizations are for psychoactive substance use disorders



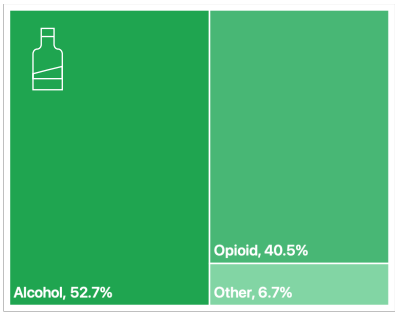
South Cook

2.9% of inpatient hospitalizations are for mood [affective] disorders



West Chicago

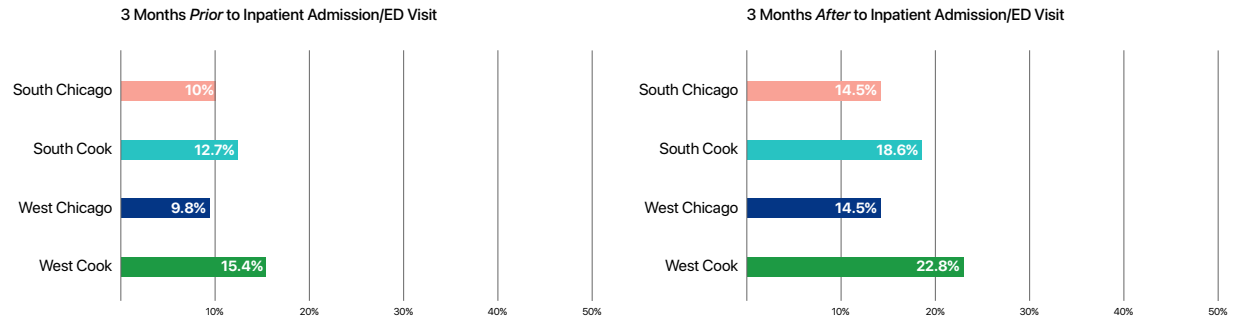
4.7% of inpatient hospitalizations are for psychoactive substance use disorders



West Cook

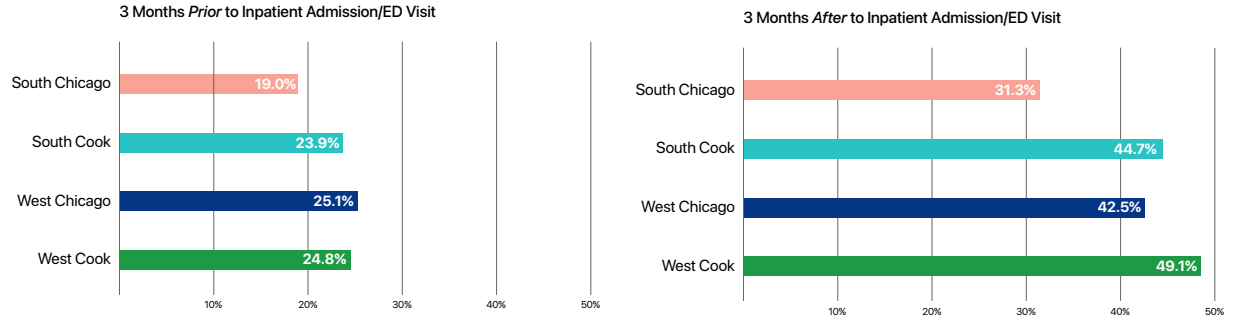
3.9% of inpatient hospitalizations are for psychoactive substance use disorders

Figure 10: Proportion of Prior and Subsequent Outpatient Care among Patients Who Received Hospital-Level Care for Mental Disorders, 2018



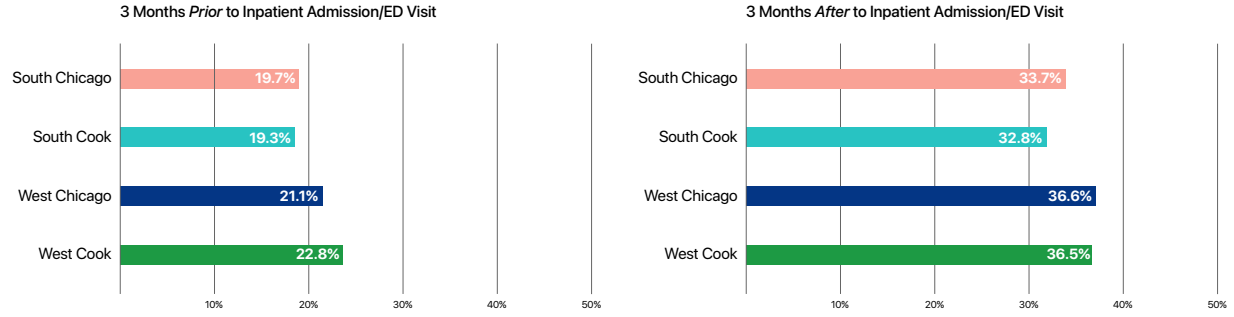
Included in this analysis are all of the ICD-10 principal diagnosis codes from Chapter 5 of the CMS Tabular List of Diseases and Injuries, excluding ICD-10s for substance use disorders.

Figure 11: Proportion of Prior and Subsequent Outpatient Care among Patients Who Received Hospital-Level Care for Psychoactive Substance Use Disorders, 2018



Included in this analysis are 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.

Figure 12: Proportion of Prior and Subsequent Outpatient Care among Patients Who Received Hospital-Level Care for ACSCs, 2018



Included in this analysis are all of the ICD-10 principal diagnosis codes categorized as Ambulatory Care Sensitive Conditions by the Agency for Healthcare Research and Quality.

Note: 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.

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 West Cook outpace national benchmarks, particularly in FY2020 (see Figure 13).

Results of multivariate logistic regressions show that, in West Cook, Black adults age 40 and over are associated with hospitalizations for ACSCs, in general. Adults age 40 and over are associated with acute ACSC hospitalizations and Black adults age 40 and over are associated with chronic ACSC hospitalizations. And, finally, Black men age 40 and over are associated with diabetes-related hospitalizations in West Cook.(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.

In West Cook, results of multivariate logistic regressions show that there's an association between teens age 12–19 and hospitalizations for depression, adults age 35–64 and hospitalizations for alcohol use disorder, and Blacks and hospitalizations for opioid use disorder. No associations are evident for bipolar disorder hospitalizations. (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. 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 13, 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 13: 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 West Cook (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**	4.30	3.59	5.15	<.0001
65-74	**18-39**	6.81	5.45	8.51	<.0001
75 or older	**18-39**	8.94	7.24	11.04	<.0001
RACE					
AmerIN/AN	**White**	0.64	0.22	1.87	0.41
Asian/PI	**White**	1.00	0.65	1.53	0.98
Black	**White**	1.35	1.17	1.57	<.0001
Other/UNK	**White**	1.06	0.89	1.27	0.52
SEX					
Male	**Female**	1.10	0.97	1.24	0.15

PQI 91_Acute Composite			Confidence Interval (95%)		
Group	**Compared To**	**Odds Ratio**	**Lower Limit**	**Upper Limit**	**P-Value**
AGE					
40-64	**18-39**	2.66	1.90	3.73	<.0001
65-74	**18-39**	6.06	4.12	8.92	<.0001
75 or older	**18-39**	11.19	7.96	15.72	<.0001
RACE					
AmerIN/AN	**White**	NR	NR	NR	NR
Asian/PI	**White**	0.91	0.44	1.89	0.79
Black	**White**	1.10	0.85	1.41	0.47
Other/UNK	**White**	1.02	0.74	1.40	0.92
SEX					
Female	**Male**	1.16	0.92	1.46	0.22

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

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**	4.79	3.88	5.91	<.0001
65-74	**18-39**	6.54	5.04	8.47	<.0001
75 or older	**18-39**	6.95	5.40	8.94	<.0001
RACE					
AmerIN/AN	**White**	0.89	0.30	2.65	0.83
Asian/PI	**White**	1.01	0.62	1.66	0.97
Black	**White**	1.32	1.12	1.56	0.0011
Other/UNK	**White**	1.05	0.86	1.29	0.62
SEX					
Male	**Female**	1.16	1.01	1.34	0.034

PQI 93_Diabetes Composite			Confidence Interval (95%)		
Group	**Compared To**	**Odds Ratio**	**Lower Limit**	**Upper Limit**	**P-Value**
AGE					
40-64	**18-39**	2.91	2.11	4.01	<.0001
65-74	**18-39**	3.24	2.10	4.98	<.0001
75 or older	**18-39**	2.81	1.82	4.36	<.0001
RACE					
AmerIN/AN	**White**	NR	NR	NR	NR
Asian/PI	**White**	0.93	0.38	2.30	0.88
Black	**White**	0.81	0.61	1.08	0.15
Other/UNK	**White**	1.19	0.86	1.65	0.29
SEX					
Male	**Female**	1.44	1.13	1.84	0.0036

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

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 West Cook (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_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	2.94	2.45	3.53	<0.001
15 to 19.9	25 to 34.9	3	2.56	3.52	<0.001
20 to 24.9	25 to 34.9	1.11	0.90	1.37	0.33
35 to 44.9	25 to 34.9	1.13	0.94	1.37	0.17
45 to 64.9	25 to 34.9	1.08	0.92	1.27	0.34
>65	25 to 34.9	0.24	0.17	0.33	<0.001
RACE					
AmericanIN/AN	White	1.7	0.92	3.15	0.09
Asian/PI	White	0.57	0.33	0.97	0.05*
Black	White	0.74	0.65	0.84	<0.001
Other/Unknown	White	0.96	0.85	1.07	0.43
SEX					
Female	Male	1.06	0.96	1.17	0.21

Table 5: Population Characteristics Associated with Bipolar Disorder Hospitalizations in West Cook (FY2019 and FY2020 Data Combined)

Bipolar_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.64	0.45	0.91	0.05
15 to 19.9	25 to 34.9	0.93	0.72	1.21	0.59
20 to 24.9	25 to 34.9	0.8	0.60	1.07	0.13
35 to 44.9	25 to 34.9	0.98	0.78	1.24	0.87
45 to 64.9	25 to 34.9	0.63	0.50	0.78	<0.001
>65	25 to 34.9	0.12	0.07	0.20	<0.001
RACE					
AmericanIN/AN	White	0.66	0.16	2.68	0.56
Asian/PI	White	0.57	0.25	1.28	0.17
Black	White	0.96	0.80	1.15	0.65
Other/Unknown	White	0.72	0.58	0.88	<0.01
SEX					
Female	Male	0.54	0.46	0.63	<0.001

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 West Cook (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_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.014	0.00	0.10	<0.001
15 to 19.9	25 to 34.9	0.27	0.18	0.40	<0.001
20 to 24.9	25 to 34.9	0.6	0.42	0.86	<0.01
35 to 44.9	25 to 34.9	1.34	1.05	1.70	0.05
45 to 64.9	25 to 34.9	1.1	0.89	1.37	0.36
>65	25 to 34.9	0.23	0.15	0.35	<0.001
RACE					
AmericanIN/AN	White	0.32	0.04	2.33	0.26
Asian/PI	White	0.42	0.17	1.02	0.05
Black	White	0.72	0.60	0.87	<0.001
Other/Unknown	White	0.83	0.66	1.03	0.88
SEX					
Female	Male	0.22	0.19	0.26	<0.001

Table 7: Population Characteristics Associated with Opioid Use Disorder Hospitalizations in West Cook (FY2019 and FY2020 Data Combined)

OUD_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.028	0.00	0.20	<0.001
15 to 19.9	25 to 34.9	0.032	0.01	0.13	<0.001
20 to 24.9	25 to 34.9	0.26	0.14	0.49	<0.001
35 to 44.9	25 to 34.9	1.02	0.74	1.39	0.92
45 to 64.9	25 to 34.9	1.35	1.05	1.74	0.05
>65	25 to 34.9	0.11	0.05	0.24	<0.001
RACE					
AmericanIN/AN	White	0	0.00	Inf	0.99
Asian/PI	White	0.17	0.02	1.20	0.05
Black	White	1.56	1.26	1.92	<0.001
Other/Unknown	White	0.59	0.41	0.84	<0.01
SEX					
Female	Male	0.23	0.18	0.28	<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

Uncle Ulee: - https://www.istockphoto.com/photo/sunset-in-cicero-gm490134610-75056233

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

The findings presented in this report up to this point 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.

Partner Community-Based Organizations

Erie Neighborhood House, Berwyn and Cicero
The mission of this 150-year-old nonprofit is to create a just and inclusive society by empowering Latinx immigrants alongside individuals and families of all backgrounds—through social services, education, and advocacy. With multiple locations in Chicago, Erie House opened a Berwyn satellite location in 2021 to provide bilingual support and connections to vital resources, especially for residents without internet connectivity.

Quinn Center of St. Eulalia, Maywood
The principal social outreach ministry of St. Eulalia Parish partners with the people of Proviso to address justice concerns and build an inclusive culture of justice, health, and peace through intentional action. Initiatives focus on community development, education, and improving the well-being of people of all ages.

Proviso Township Ministerial Alliance Network (PTMAN), Maywood
This faith-based social justice organization is an aggregation of churches that works with community partners to serve "the least" in Proviso Township (which encompasses 14 villages, including Maywood) and surrounding areas by bridging the communication gap between the community and elected officials to ensure that the community gets the resources it needs to prosper. Services include family support groups, a hunger ministry, and virtual social groups.

To understand and give voice to the lived experiences of socially and economically disadvantaged residents in West Cook County with health and healthcare, a research team from UIC partnered with local community-based organizations (CBOs) to conduct focus groups designed to collect community input.

To identify and recruit disadvantaged residents, the team used the CDC's social vulnerability index (based on 2018 census data) to identify areas of high vulnerability in West Cook and worked with partner organizations to engage disadvantaged populations in these areas. As a result, recruiting efforts focused predominantly on vulnerable populations in and around Bellwood, Berwyn, Cicero, and Maywood.
(See Appendix C for information about how these areas were chosen.)

The team formed a partnership with the following 3 CBOs to recruit for and conduct the community-input sessions:

- Erie Neighborhood House, Berwyn and Cicero, Illinois
- Quinn Center of St. Eulalia, Maywood, Illinois
- Proviso Township Ministerial Alliance Network (PTMAN), based in Maywood, Illinois

These partners used their local networks of clients and beneficiaries to recruit participants for the community-input sessions. Recruiting focused on socially vulnerable, marginalized, and special-interest populations (in particular, Latinx and Black residents, undocumented persons, women of reproductive age, and people who were publicly insured or uninsured). The community partners also provided session facilitators, who were trained by the research team. Consequently, the findings presented here reflect the experiences of the populations served by these

Participant Demographics:

Age:

18-25	4 Participants
26-35	4 Participants
36-45	21 Participants
46-55	8 Participants
56-65	9 Participants
66-75	7 Participants
76+	7 Participants
Age unspecified	3 Participants

Gender:

Female	55 Participants
Male	6 Participants

Race/Ethnicity:

Black	18 Participants
Hispanic	40 Participants
Multi-racial	1 Participant
White	2 Participants

Community:

Cicero	36 Participants
Maywood	14 Participants
Berwyn	4 Participants
Bellwood	1 Participant
Other	6 Participants

Insurance:

Private	16 Participants
Public	16 Participants
Uninsured	19 Participants
Unspecified	10 Participants

- -

Main Health Issues Affecting Community-Input Participants

In terms of the main health problems affecting them and their communities, the community-input participants cited the following conditions and diseases: **chronic illnesses** such as diabetes, hypertension, obesity, asthma, and dementia and **issues related to mental health** such as depression, postpartum depression, suicidality, anxiety, substance use disorder, domestic violence, and stress.

partner CBOs. (See the sidebar for more information about the participants in the community-input sessions.)

The sessions were informed by principles of community engagement, antiracism, and health equity. Conceptual frameworks from public health literature on healthcare access, health equity, and social and structural determinants of health were used to guide the conversations. (See Appendix C for more information on the approach taken to the community-input sessions.)

During the sessions, West Cook residents engaged in conversations about health and healthcare. Facilitators used conversational, open-ended queries to elicit thoughts, stories, and reflections from participants about:

- the health issues affecting them and others in their communities
- their experiences, and loved ones' experiences, with health and healthcare
- challenges to accessing healthcare and meeting health needs
- the impact of the COVID-19 pandemic on health and healthcare in their communities
- community needs for a healthier West Cook

Healthcare access is the ability to seek, approach, and fully utilize healthcare. This broad theme encompasses the availability, approachability, acceptability, and affordability of healthcare services. These elements of healthcare access are defined as follows (25):

> **Availability** refers to the existence and number of healthcare providers that serve an area broadly or for a particular health concern or need, the timeliness of getting those services, the distance of those healthcare services from community members' homes, and access to the transportation required to obtain care. **Approachability** refers to people's knowledge about—and ability to engage with—the

healthcare system, including health insurance. In other words, approachability consists of the identification of appropriate healthcare services, determination of how to receive them, and the knowledge and ability to arrange next steps.

Acceptability refers to the appropriateness of services that are provided for a particular need and the actual or perceived quality of the health services received.

Affordability refers to presumed and actual healthcare-related costs. These include both direct healthcare costs (for example, co-pays, medication costs, and medical bills) and indirect healthcare costs (for example, transportation costs, childcare costs, loss of wages, etc.)

Community members shared detailed accounts of the challenges they face in accessing care, as well as ***community resources needed*** to improve health and well-being in West Cook. (Note: As experts on their communities, CBOs' staff members also provided insights on healthcare access issues and needed resources in West Cook.)

Availability

The community-input participants identified physical distance, lack of capacity, insurance limitations, and telehealth barriers as issues affecting the availability of healthcare services to West Cook residents.

Physical Distance

How close to home healthcare services are can affect a patient's ability or willingness to access care. Participants reported having to travel outside their communities to other West Cook suburbs or Chicago to see specialists or go to an emergency room. For example, Paola and José couldn't find providers close to home, so both had to travel into Chicago for care:

Note:
All focus group participants adopted an pseudonym during the session and quotations are attributed to the pseudonym.

"We need more medical doctors' offices and clinics in Maywood."
Mary, 63, on lack of clinics in Maywood

"I had postpartum diabetes. . . . I was being treated at Alivio here [in Berwyn] but had to see a nutritionist. [To do so,] I had to go all the way to the Alivio clinic at Western and Cermak [in Chicago] because there were none here [at Alivio in Berwyn]. . . . And sometimes, when I needed to see a gynecologist, I had to go all the way back there [to Alivio in Chicago]. It's difficult because, of course, the expense of the gasoline but also having to [time the appointment to make it back] to pick up [my] children."
—Paola, a Hispanic, 40-year-old woman from Cicero with no insurance

"Last month . . . it was very slippery outside. [My wife] fell, and she broke her hand. She was in huge pain. We live in Cicero and we were looking for an emergency room nearby, but we couldn't find any. . . . In the end, we went all the way downtown [Chicago] to Rush Hospital because there was no emergency room [that we could find] in Cicero."
—José, a Hispanic, 57-year-old man from Cicero with private insurance

One participant has seen clinics shut down in her West Cook community, requiring her to go outside Maywood for care while wishing for more proximate care:

"We don't have clinics in Maywood like we used to have, [like] the Joplin Clinic and the other one at Madison and 5th. . . . So I don't see any doctors in Maywood. . . . I see a doctor in Elmhurst and one in Melrose Park. We need more medical doctors' offices and clinics in Maywood."
—Mary, a Black, 63-year-old woman from Maywood with public insurance

The issue of distance extends to pharmacies too:

> *"Sometimes people don't even have a ride to get their medication."*
> —Keeli, a Black 32-year-old woman from Berwyn with unspecified insurance

Given the lack of public transportation infrastructure in West Cook, travel to healthcare is especially difficult for those who don't own, or have access to, a vehicle. According to a Quinn Center staff member, public transportation in West Cook is "almost nonexistent." Public transportation determines where people can travel and how long they can stay; the lack of it restricts access to the resources residents need for their well-being, such as employment, grocery stores, and recreational areas, as well as healthcare services.

Lack of Capacity

Capacity issues at local healthcare facilities result in long wait times to get care:

> *"When I was at the clinic for pain [in my ovaries], I explained to the [receptionist] . . . I was feeling bad and asked for an earlier [surgical] appointment, because I couldn't stand the pain. I was squirming. And she told me, '[It's] 2 months and that's it."*
> —Doris, a Hispanic, 54-year-old woman from Cicero with no insurance

Community members said that wait times for mental health services were particularly long, especially for youths needing mental health services. For example, Jordan had to wait months when trying to get help for her foster daughter, who had expressed suicidal thoughts following the recent suicide of a family member:

> *"My 17-year-old stopped taking her medication a year ago. . . . I wanted to get her back on the medication that she had been taking to see if it would help. I waited a*

"My family doctor here in Cicero referred me to clinics . . . but . . . They all tell me that they are very saturated, that they are not accepting [new patients], and that the [wait time] is 4 to 6 months."

Sara, 41, on wait times for clinic visits

month to get an appointment to go see the [psychiatric care team], and they told me it would be another 2 to 3 months before she could see a psychiatrist [to get her back on her medication]. I said, 'You're telling me you can't get her in to see a psychiatrist for 2 or 3 months? That's totally ridiculous!'"
—Jordan, a Black, 68-year-old woman from Maywood with public insurance

Sara had a similar experience, with an even longer wait time:

"My family doctor here in Cicero referred me to clinics [to get mental health services for my son], but I haven't found a clinic here in Cicero that can help him. They all tell me that they are very saturated, that they are not accepting [new patients], and that the [wait time] is 4 to 6 months. And that's the problem right now that I have. . . . I'm a little desperate in that regard because I can't find anyone who can help me with my son's mental health."
—Sara, a Hispanic, 41-year-old woman from Cicero with no insurance

A Quinn staff member echoed the concerns about long wait times for mental health services and said, "It took us months to get one of our teens into therapy, and insurance will only cover 1 appointment per month."

Long emergency-room wait times are also an issue in West Cook communities:

"At the ER [emergency room], people wait 4 or 5 hours or more. The last time I went to the ER, people's beds were all in the hallway, all around in a circle. You're there for an emergency, and you wait 6 to 8 hours to see a doctor. That needs to be addressed—more doctors, more space, and more whatever [it is] they need!"
—Rosemary, a multi-racial, 75-year-old woman from Maywood with public insurance

"I went to the ER and left the house at 2:30 a.m. It was 11 a.m. by the time I got to see somebody "
Carolyn, 60, on emergency room wait times

"I went to the ER and left the house at 2:30 a.m. It was 11 a.m. by the time I got to see somebody in the waiting room. . . . I didn't even get admitted until after 6 p.m."
—Carolyn, a Black, 60-year-old woman from Berwyn with unspecified insurance

Insurance Limitations
Insurance also limits the healthcare services available to people, as Millie experienced:

"I currently have lower-back pains and problems with my right leg. The orthopedic specialist that I saw referred me to a surgeon, and the surgeon recommended an epidural. Well, because of an insurance issue, they couldn't do it because the surgeon wasn't in the network. So right now, I still haven't received the epidural, and I'm still having pain."
—Millie, a Black, 68-year-old woman from Maywood with no insurance

Telehealth Barriers
During the COVID-19 pandemic, providers began using telehealth, an option that community members shared mixed feelings about. For some, telehealth removed barriers to accessing healthcare. For example, Ella appreciated the convenience of telehealth because she did not have to address what to do with her children while seeing a provider:

"My youngest son hurt his finger. He smashed his finger, and it ended up damaging his nail. I had to use the telehealth to connect with the doctor because it was during COVID. It was different seeing my doctor on-screen instead of seeing him in person. I could upload pictures. . . . From there, the doctor gave me the precautions of what to look out for. I was able to get what I needed. . . . [And] it was convenient because I didn't have to leave the house with my kids. I didn't have to deal with the

hassle of getting them out of the house."
—Ella, a Hispanic, 30-year-old woman from Maywood with no insurance

For other community members, telehealth erected new barriers to care, such as the cost of technology and the skills needed to use it. For example, Sara, who considered herself technologically competent, struggled with her healthcare provider's telehealth system:

"I had to download an application to be able to have a video call. . . . I struggled a bit to download that application. It's not that I don't get electronic things, but it was complicated to understand. And for people who don't understand [technology], it would be hard. . . . Then, after all that, the doctor didn't even turn on the camera. A phone call would have been the same thing."
—Sara, a Hispanic, 41-year-old woman from Cicero with no insurance

An Erie House staff member summed up the healthcare-availability situation in West Cook as "the irony of hospital proximity," referring to how numerous hospitals and healthcare facilities are in the area but aren't necessarily accessible to the low-income population that lives nearby. The facilities' lack of specialists, the limited transportation options to get there, long wait times for an appointment, and insurance limitations, as well as patient difficulties with accessing telehealth platforms, contribute to the inaccessibility.

"I've tried to go to specialists only to have them say, 'We don't accept the plan that you have here."

Mariel, 40, on challenges to affording care

Approachability

The community members conversations revealed that many have found understanding and engaging with health insurance and healthcare systems difficult. Participants reported spending a significant amount of time and effort dealing with health insurance, finding appropriate healthcare resources, and interacting with healthcare systems.

Dealing with Health Insurance

Obtaining appropriate insurance coverage—and then finding providers that take that insurance—requires information not easily accessible to everyone. For example, a staff member at Erie House said that obtaining Medicaid is often complicated and frustrating for its constituents, and they often have difficulty reaching a person who can help them.

Even with insurance in hand, finding providers that will take that insurance can be challenging. Mariel described the burdensome nature of seeking an in-network specialist this way:

> *"In some places, they don't accept the medical card [Medicaid] because of the plan I have. I've tried to go to specialists only to have them say, 'We don't accept the plan that you have here.' Then I have to look for other specialists and . . . I make appointments in different places, get there, spend a lot of time waiting, and, in the end, the doctor doesn't take your plan. It's super uncomfortable."*
> —Mariel, a Hispanic, 40-year-old woman from Cicero with public insurance

Another participant echoed these sentiments:

> *"Looking for a therapist that takes my insurance [was difficult]. I mean, you have to do all this research and, finally, because of my ADHD, I asked my daughter to help me."*
> —José, a Hispanic, 57-year-old man from Cicero with private insurance

"Somebody close to me talked about taking their life. What are the resources you use in this situation? Do you [call] a hotline? Do you take that person to the hospital? I'm not sure about what resources are available . . . and I don't know how to find them."
Tyra, 38, on availability and accessibility of resources

Finding Appropriate Healthcare Resources
Another recurring issue raised by participants in West Cook was finding appropriate healthcare resources. This is fueled by a lack of awareness and information about the resources that exist. In particular, participants reported difficulties with identifying mental health resources in and near their communities. These information deficits are especially problematic during urgent health events, as Tyra experienced:

> *"I'm not sure about any mental health resources available. I had one incident where somebody close to me talked about taking their life. What are the resources you use in this situation? Do you [call] a hotline? Do you take that person to the hospital? I'm not sure about what resources are available . . . and I don't know how to find them."*
> —Tyra, a Black, 38-year-old woman from Palos Park with unspecified insurance

Interacting with Healthcare Systems
Community members found routine interactions with healthcare systems problematic. In fact, making appointments was a common pain point. For example, failed attempts to make an appointment led Victoria to forgo the care she needed:

> *"I didn't go to my 6-week postpartum checkup. I was trying to schedule it, and they wouldn't answer me. They were not accepting walk-ins, and, in the end, I never went to my checkup because I gave up. They didn't answer. I left messages, and they didn't return my calls."*
> —Victoria, a Hispanic, 21-year-old woman from Cicero with public insurance

Older participants found the phone-system technology for booking appointments difficult:

> *"I think that making an appointment is a problem. You call and then they [route your call] to a central office. They give you a long repertoire of numbers to punch, and sometimes they hang up after a long time of waiting or they connect you to the wrong person. This is a big problem, especially for older people. The technology is a challenge."*
> —Isabel, a Hispanic, 60-year-old woman from Cicero with public insurance

> "[You] want to make sure you're transfer [red] to the right person, to the right area, to the right team. But if you don't know how to do that, then you get very, very frustrated. . . . [You] end up being transferred 10 times and have to tell the same story over and over again before you get to where you [need to] go."
> —Lola, a Black 70-year-old woman from Maywood with public insurance

Language and Cultural Complications

For many members of the Latinx community, language, culture, and citizenship status further complicate their ability to interact with the healthcare system and get care. One staff member of Quinn Center emphasized that language can be an impediment to healthcare throughout the process for those in the Latinx community:

> *"An individual doctor might be bilingual, but [community members] may not be able to get through the entire process—researching providers, navigating insurance, scheduling appointments, etc.—in their native language."*

"I'm currently looking for a Latino therapist that speaks my language and that knows the culture in my community."
José, 57, on culturally competent care

The staffer also commented that navigating larger hospital systems (parking, finding the right building, finding the right suite, and so on) is more intimidating for people whose first language is not English.

Some Latinx community members want to see providers who understand their culture beyond the language:

> "Through my insurance, I got a therapist. She was great. But I was very uncomfortable talking to her. I couldn't get a male Latino therapist. That's what I wanted. So I let go of my therapist. . . . I'm currently looking for a Latino therapist that speaks my language and that knows the culture in my community."
> —José, a Hispanic, 57-year-old man from Cicero with private insurance

That said, the Latinx culture itself can be a barrier to approaching healthcare. This is especially true for mental healthcare, given the taboo nature of mental illness among many in the Latinx community:

> *"I have a 16-year-old daughter, and she has anxiety. . . . My husband doesn't believe in anxiety, and doesn't think she has anxiety, and says things that don't help resolve the situation or improve it because he doesn't listen to her or pay attention to her."*
> —Gaviota, a Hispanic, 51-year-old woman from Berwyn with no insurance

Citizenship status in the Latinx community can make approaching the healthcare system difficult for many. Undocumented members of the Latinx community hesitate or avoid seeking the care they need, even though everyone is eligible for emergency care under US federal law and many community health centers don't ask patients about their immigration status:

"Sometimes, because you are an immigrant, you don't go to a health center because you don't want to be asked for your documents and other things."
—Doris, a Hispanic, 54-year-old woman from Cicero with no insurance

Undocumented Latinx community members need to know the services available in their communities, which services take Medicaid or uninsured patients, and what, if any, documentation is required to receive those services. This information isn't always readily available.

Acceptability

One important condition for the provision of appropriate and high-quality care is trusted patient-provider relationships. During the community-input sessions, participants' descriptions of their experiences with healthcare providers varied. While many offered positive comments, others described experiences that had left them dissatisfied with the quality of their care and mistrustful of providers. They had encountered providers who were dismissive, uncompassionate, or discriminatory and providers whose care proved to be misguided.

Dismissive Care

Multiple participants said they felt that doctors were not paying attention to them or their symptoms, or that doctors did not take them seriously and generally were dismissive of them:

"I spoke to my daughter's doctor, [who]said that her belly [was hurting] a lot and that her bones were hurting in her back. . . . The doctor said, 'From what you're telling me, that's a stomach infection, it's not COVID.' I told her, 'But can you do me the favor of having her tested for COVID?' The doctor said, 'No, it's not necessary.' And I insisted again. . . . Eventually, [my daughter] did get tested, and it came back positive."

"The doctor that gave [my son] the vaccine didn't have any gloves on and he didn't wash his hands. . . . He took the needle out and the blood was dripping down my son's arm. He goes and gets a brown paper towel, grabs a piece of it, and just wipes the blood.
Ella, 30, on lack of adequate care and providers

—Sara, a Hispanic, 41-year-old woman from Cicero with no insurance

"[Several weeks after I had a baby,] I went to the emergency room because my stomach was hurting so much. It felt like I was still having contractions. . . . It took a long time for someone to see me, and they were treating me like they didn't believe me or that it was my fault. . . . I remember a nurse telling me, 'You should have taken care of this earlier.'"
—Victoria, a Hispanic, 21-year-old woman from Cicero with public insurance

"I've suffered from depression for many years, and [when] I went to my doctor, I would talk to her about my symptoms, but I was never treated—until after 10 years, when it turned severe and I stopped eating. That [got the doctor's attention] and she said, 'How is it possible that I didn't realize you had that problem?'"
—Margarita, a Hispanic, 57-year-old woman from Cicero with private insurance

Substandard or Uncompassionate Care
Multiple participants also believed that they had received substandard care or care that lacked compassion:

"The doctor that gave [my son] the vaccine didn't have any gloves on and he didn't wash his hands. . . . He just stuck the needle in and didn't have even anything prepared. . . . He took the needle out and the blood was dripping down my son's arm. He goes and gets a brown paper towel, grabs a piece of it, and just wipes the blood. I say, 'Do you have a Band-Aid?' And he says, 'Oh, you just put pressure on it with the napkin. It'll stop bleeding.' I'm like, what kind of care is this?"
—Ella, a Hispanic, 30-year-old woman from Maywood with no insurance

"[All that time,] I was taking pills that I didn't need to take."
Mary, 63, on being misdiagnosed by providers

"I don't necessarily want to say [there is] a lack of care, but [a] lack of compassion. In certain situations, [you're treated like] it's a business transaction when doctors [should be] caring about you as a human being. . . . I hear that a lot, where there's no compassion in the situation. It's just, 'Get in, get the insurance done, OK, you need this.' They're not actually showing that they care about you."
—JB, a Black 34-year-old man from Bellwood with unspecified insurance

Misguided Care
Several community members believed that either they or loved ones had been misdiagnosed or provided with unnecessary or misguided care:

"Recently, I had shingles. I didn't know what it was—it was horrible. I went to my clinic and they told me it was a sexually transmitted infection. Later, I had to go the hospital. There, they treated me, and as soon as they saw my blisters, they told me it was shingles. I said, 'How can that be possible?'. . . Now when I go to the clinic, I go in fear."
—Luz, a Hispanic, 44-year-old woman from Cicero with no insurance

"I was going to this other doctor, and he said, 'I see sugar in your blood, but it's always perfect. Your readings never go up or down.' But he still had me taking a pill. . . . When I started with this new doctor, he cut the pills down and then took me off them completely. Still, [my blood sugar levels] never went up or down. [All that time,] I was taking pills that I didn't need to take."
—Mary, a Black, 63-year-old woman from Maywood with public insurance

"When you arrive and you don't have insurance, the treatment is very different."
Cesi, 51, on discriminatory care with providers

"I had been taking this medicine 3 times a day before I switched to a new doctor. . . . When I brought all my medications to [the new doctor], he asked why was I taking this medicine 3 times a day. He told me that it should be taken only as needed."
—Sasha, a Hispanic, 65-year-old woman from Maywood with no insurance

Discriminatory Care

Some community members felt that the dismissive, substandard, uncompassionate or misguided care they received was due to discrimination based on their insurance status, socioeconomic status, race, or other such factors:

"When you arrive and you don't have insurance, the treatment is very different. They discriminate against you because you don't have insurance, and they don't listen to you. It's so sad. I know this because I have recently obtained insurance, and I see a difference [in the way I'm treated] from the time I arrive."
—Cesi, a Hispanic, 51-year-old woman from Cicero with unspecified insurance

"I think they want to clean that clinic of Hispanic people, to get us out of there. They treated us very differently, from the person who receives you for the appointment to the doctors. . . . I don't like that. [It's] not all of them, I am not going to generalize. . . . But some people discriminate against you, even if they are of the same race as you. They take care of you as if you were getting the [service] for free. But we pay."
—Luz, a Hispanic, 44-year-old woman from Cicero with no insurance

"Unfortunately, I have noticed that they give high priority to the African Americans and white people. And [we] Hispanics, they dismiss us a little. I have had several experiences where I arrive at the clinic, they see me there, and they make me wait even though I arrived on time."
—Mika, a Black, 51-year-old woman from Maywood with unspecified insurance

Telehealth's Role

Telehealth adds another dimension to participants' ideas about quality of care. Community members shared mixed feelings about the quality of the care they received via telehealth. Some were very satisfied with it, particularly for mental health services or appointments that did not require a physical visit. However, many participants felt that telehealth was an inadequate substitute for in-person care:

"When person-to-person contact is lost, it is not the same thing. Since the pandemic began, to avoid any contagion, my [elderly] mom's doctor appointments have been done by phone. Unfortunately, because of this, we didn't realize that a problem with her gallbladder had started. [Eventually] this turned into an emergency, when she had pain that she couldn't stand. When she had the surgery, the surgeon said that the problem had been there for a long time and she had slowly gotten used to the pain. . . . Because of the loss of physical contact between the doctors and my mom, we didn't notice it."
—Sara, a Hispanic, 41-year-old woman from Cicero with no insurance

Moreover, for at least one community member, telehealth exacerbated a patient-provider experience that already felt impersonal:

"It's bad enough [the doctors and staff] don't know who I am when they see me in

the office. But to do a Zoom or a phone call? I hate Zoom calls, and I hate talking to my doctor over the phone. . . . It doesn't feel like he knows who I am."
— Keeli, a Black 32-year-old woman from Berwyn with unspecified insurance

Care Coordination

Adjacent to patient-provider relationships is care coordination. For community members with complex conditions, care coordination is critical to high-quality care. However, a staff member at Quinn Center has noticed a lack of care coordination for the community members the organization serves:

"There seems to be a lack of centralized or coordinated care. Community members are bouncing around to different clinics and different specialists and are likely to be without a primary care physician that looks at the big picture and follows up appropriately."

Affordability

No discussion of healthcare access would be complete without affordability being addressed. Many participants described barriers to healthcare stemming from the costs of services and tendencies to delay or avoid getting care because of its cost.

The uninsured avoid getting healthcare and live in fear of healthcare emergencies because of the costs of care:

"We don't have [health] insurance. My husband and I are entrepreneurs, so it's kind of hard to figure out the whole health insurance situation. And for me, it's really stressful. I don't feel secure. . . . We're just hoping that day to day everything's OK . . . that nobody gets hurt because that's going

"We don't have [health] insurance. My husband and I are entrepreneurs, so it's kind of hard to figure out the whole health insurance situation. And for me, it's really stressful. I don't feel secure."
Ella, 30, on lack of health insurance

"I have to pay over $150 for each medication"
Ella, 30, on lack of health insurance

to be an emergency fee. . . . Obviously, number1, I want my family to be safe and healthy. That's primary. But, you know, right up there with that is our finances."
—Ella, a Hispanic, 30-year-old woman from Maywood with no insurance

The fear of incurring costs deters some people, even if they have insurance, from getting care:

"My dad qualified for the medical card [Medicare] because of how old he is . . . but he won't go to the doctor even if he's sick, and it's because of the expense of going to the doctor. In December, he got COVID and it got complicated. He had very bad pneumonia and, even then, he wouldn't go to the doctor."
—Guadalupe, a Hispanic, 40-year-old woman from Cicero with private insurance

Medications, particularly insulin, can also be unaffordable,

"I'm on disability [supplementary security income], and some of medications I take have a zero co-pay. But for insulin, I have to pay over $150 for each medication, and I have 2. So that can be pretty costly for me, and I've been seeking out help with this, but [apparently] I'm not eligible to have that extra help."
—Millie, a Black, 68-year-old woman from Maywood with no insurance

Indirect costs like transportation, childcare, and loss of wages also deter people from getting care:

"I know people who haven't been treated for anything . . . because of the children, the house, [or their] job."
—Doris, a Hispanic, 54-year-old woman from Cicero with no insurance

"One procedure costs us $500—that's with insurance—and he needed 4. So we had to pay $500, $500, $500, $500. Then, you've got to get hotels [on top of that]. "

Sharon, 72, on costs of healthcare service

For serious illnesses, patients and loved ones incur major healthcare costs as well as high indirect costs related to their care:

> *"My son is 50, and he got diagnosed with pancreatic cancer. . . . He went to Loyola, and they recommended a surgery and gave him a 50/50 chance of surviving. . . . But I wasn't having that. My daughter and I went online, talked to different people, talked to different places. I was on YouTube a lot. . . . We went to Mayo Clinic in Minnesota, but [now] he's in Phoenix because that's where the biggest cancer center is. . . . It costs a lot. . . . One procedure costs us $500—that's with insurance—and he needed 4. So we had to pay $500, $500, $500, $500. Then, you've got to get hotels [on top of that]. I mean, it's a lot of money, but we want to try and save his life."*
> —Sharon, a Black, 72-year-old woman from Maywood with public insurance

Community Resource Needs

Beyond the need to improve healthcare accessibility and quality, participants identified community needs that speak to challenges related to the social determinants of health that affect well-being in socially vulnerable communities. Participants identified 4 areas of need in West Cook: health education, access to healthy food, community-based programming, and support for caregivers.

Health Education

Participants felt that not enough emphasis is put on health education and that there is a general lack of knowledge about how to stay healthy. They indicated a need in their communities for more education about health, including information about healthy eating and nutrition:

> *"The importance of health is not stressed enough. When we're younger, we feel good,*

"I just think that we need to be more aware of health issues, food, and our bodies."
Macy, 40, on health education

we move well, and we don't think about the things that can come that are preventable by being proactive instead of reactive. So the importance of health should be something that's really discussed in schools and throughout the community."
— Victoria, a Hispanic, 21-year-old woman from Cicero with public insurance

"In my community, I see that there is no education about nutrition. I see in my community what my folks are eating. . . . Their eating habits are not very healthy. They . . . need education about nutrition."
—José, a Hispanic, 57-year-old man from Cicero with private insurance

"I just think that we need to be more aware of health issues, food, and our bodies."
— Macy, a Black, 40-year-old woman from Westchester (unspecified insurance)

Access to Healthy Food

Having access to affordable, fresh, healthy foods intersects closely with staying healthy. The community- participants wanted increased access to healthy foods in their communities.

Food pantries play a critical role in food security, but participants noted that supplies at local food pantries can be paltry and often unhealthy, as Ella hast experienced:

"When you have a family of more than 2 people, besides yourself, you get a certain amount every time you go to a food pantry. . . but [the food pantries are mostly] monthly so you've got to wait until the next time to feed your whole family—and, it's like, how do you survive? You can survive, but it's like you're putting junk into your body, carbs and things that are not healthy. What about [providing] fruits and vegetables?"
—Ella, a Hispanic, 30-year-old woman from Maywood with no insurance

"I would really like to see programs that would offer help for older people, like yoga or other activities like that."
Victoria, 21, on lack of health activities for the community

"[I'd like to have] places to go to exercise, do cooking classes, . . . to play cards, to talk to other people—something that doesn't cost an arm and a leg."
Alice, 72, on lack of physical activities for the community

Ella also noted another prevalent issue in her West Cook community: the lack of full-service grocery stores:

> *"[We don't have] supermarkets, good supermarkets, especially in Maywood. We have to go to other neighborhoods to get good-quality food.""*
> —Ella, a Hispanic, 30-year-old woman from Maywood with no insurance

Community-Based Programming

Participants cited the importance of community-based programs for physical health, mental health, and social stability. The COVID-19 pandemic further decreased already-insufficient community programming in socially vulnerable areas of West Cook. Participants wanted more options for and access to programs in their communities for people of all ages:

> *"When I was coming up, we had things to do. We had the [park district] field house. . . . We had basketball teams and other sports going on. These kids have nothing to do now."*
> —Macy, a Black, 40-year-old woman from Westchester (unspecified insurance)

> *"I would like to see more activities being offered. There are activities for kids to run around, but it's not really offered to young adults or to adults. And I would really like to see programs that would offer help for older people, like yoga or other activities like that."*
> — Victoria, a Hispanic, 21-year-old woman from Cicero with public insurance

> *"[I'd like to have] places to go to exercise, do cooking classes, . . . to play cards, to talk to other people—something that doesn't cost an arm and a leg. . . . People don't want to be alone all the time, but we don't get that many chances [to socialize], especially*

"We're treated as if the man is worth a lot but the woman is not worth much. I would like it if there were more programs that teach respect, that teach men that they should respect [women], and that enduring abuse is not good."

Paola, 57, on discrimination within community

since COVID. Some things have stopped, like neighborhood restaurants have closed. Sometimes I'd meet people just for a cup of coffee and we'd sit for 2 hours talking. . . . We need something to be able to get together more and in different kinds of ways."
—Alice, a Black, 72-year-old woman from Maywood with public insurance

One specific community need participants mentioned is programming to reduce domestic violence, as Paola explained:

"Hispanic women, we're taught not to take care of ourselves. There's a lot of abuse of women in Cicero, it seems. Personally, several women have approached me and have shared that they suffer from abuse. . . . This is deeply rooted. We're treated as if the man is worth a lot but the woman is not worth much. I would like it if there were more programs that teach respect, that teach men that they should respect [women], and that enduring abuse is not good."
—Paola, a Hispanic, 57-year-old man from Cicero with private insurance

Of course, for such programs to work, community members must be aware of them. Yet participants cited a frequent lack of knowledge about community-based resources—an indication of parallel needs for more programming and awareness-raising campaigns:

"We definitely need . . . more awareness throughout the community about different things going on. I feel like we do have a lot of resources, . . . but I just don't think that we are making enough people aware or [helping people] find the right ways to connect with [them], so they can be aware of what's going on, so they can benefit from

"We definitely need . . . more awareness throughout the community about different things going on. I feel like we do have a lot of resources, . . . but I just don't think that we are making enough people aware."

Keeli, 32, on community awareness

"The priority is the person who's sick and depends on you. It affects you a lot when you have this kind of responsibility. You lose yourself keeping up with everything. You stop taking care of yourself."

Sara, 41, on support for caregivers

a lot of the resources that we have within the community."
— Keeli, a Black 32-year-old woman from Berwyn (unspecified insurance)

Support for Caregivers

Many participants were or knew caregivers to sick or elderly loved ones. Caregiving puts financial, social, physical, and emotional stress on the family, particularly the primary caregiver, who often is a woman):

"With my mom's illness, I stopped working before so I could care for her . . . and it was a drastic change. I used to be involved a lot in the community. I would go out and do things that I liked, like go get a coffee, [but now] I can't do anything. . . . I go out 1 day to do the washing and to shop for food for the house. . . . The priority is the person who's sick and depends on you. It affects you a lot when you have this kind of responsibility. You lose yourself keeping up with everything. You stop taking care of yourself. . . . You get stressed, you feel that anxiety and that depression. Then you have to put that aside. . . . We need to learn how to take more care of ourselves. But it's also important that even if we want to do it, [we know] how to do it, how to get help when you're like, 'I need to get out for 3 hours.'"
— Sara, a Hispanic, 41-year-old woman from Cicero with no insurance

"I have a neighbor who takes care of her mother-in-law who is very old and sick, and I've seen how [caring for her] has affected her. She [the neighbor] can't go out. She's always taking care of her. Her husband is a truck driver, and she is the only one who's there, because the lady needs injections in the morning and in the afternoon.

It's good what she's doing, but at the same time it's sad. . . . It's really affected her."
—Erika, a Hispanic, 50-year-old woman from Cicero with no insurance

The difficulties of caregiving that these participants have experienced or witnessed suggest a need for more accessible, affordable, community-based support, such as home-care support and adult day care.

Conclusion

West Cook residents shared detailed accounts of the challenges they face when trying to access care—challenges related to the availability, approachability, acceptability, and affordability of healthcare services in their area—and the resources they feel they and their communities need for greater well-being.

Availability

Although West Cook is the home to many hospitals and other healthcare facilities, the participants raised numerous issues that contribute to healthcare inaccessibility. The community members have found themselves needing to travel outside their communities to see specialists or visit an ER, with the absence of a robust public transportation system in West Cook compounding the issue.

The participants told of long wait times that stem from a lack of capacity, especially for mental healthcare services. They also discussed the constraints of health insurance, specifically providers that do not take certain health insurance plans or are not in particular insurance networks. The telehealth practices adopted during the pandemic were also barriers for some of the participants. To reduce availability barriers in West Cook, care needs to be closer to community residents in socially vulnerable areas, closer in terms of both time, physical distance and, for telehealth, technology access and know-

how. Any efforts to increase acceptance of a wider variety of insurance plans should continue and be augmented.

Approachability
West Cook participants had difficulties understanding and engaging with health insurance and healthcare systems and, as a result, spent significant time and effort researching, seeking out, and arranging for care. Issues relating to language, culture, and citizenship status further complicate the ability of members of the Latinx community to approach the healthcare system and get care. These difficulties indicate a deep need for simplifying the wider healthcare system or, in lieu of that, providing support for navigating the current system, especially for populations in socially vulnerable areas.

Acceptability
A key condition for the provision of high-quality care is the presence of a trusting patient-provider relationship. While some West Community participants had positive experiences with providers, participants more frequently reported negative experiences (such as dismissiveness, a lack of compassion, and misguided or discriminatory care)—suggesting a critical need to focus efforts on more patient-centered and culturally-competent care.

Affordability
West Cook participants experienced healthcare access challenges due to actual or assumed direct healthcare costs (co-pays, medication costs, etc.), as well as indirect costs (transportation to providers, childcare, etc.), which are especially challenging for critically ill patients and their family. Efforts to reduce affordability barriers should not only focus on reducing the actual costs of healthcare but reducing or eliminating indirect costs, costs which are particularly hard for socially vulnerable

populations to bear. Reduction of costs should include transportation costs, child care or elder care costs (when caregivers need to access health), lost wages, and required wellness activities (diet and physical activity modifications that are a part of treatment). Finally, to help overcome the affordability barrier, there should also be more transparent information about costs, as well as options for financial help with costs, to reduce people avoiding care based on cost presumptions.

Community Resource Needs

In addition to improved healthcare accessibility and quality, West Cook's participants want to see resources invested in 4 areas to promote good health in their communities: health education; access to healthy food; community-based programming for physical, mental, and social well-being; and support for caregivers.

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 physical and behavioral healthcare and, in parallel, invest in community resources and 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 West Cook to reach out beyond the walls of their hospitals and into communities. It will also require community residents and organizations in West Cook 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.

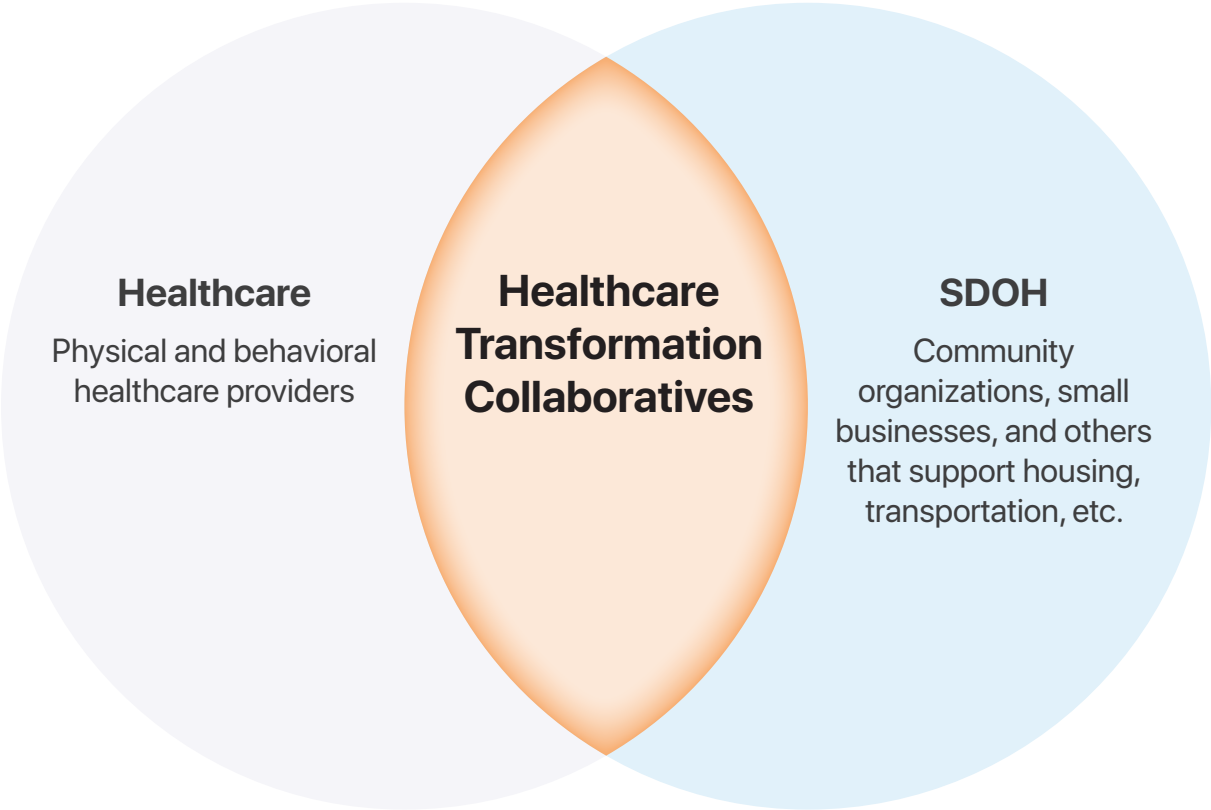
To this end, the combined analysis suggests that transformation efforts need to concentrate on *clinic-community linkages* that provide primary and secondary care and community-based wraparound services to help people manage chronic illnesses, mental illnesses, and substance use disorders. Clinic-community 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.

More specifically, clinic-community 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*.
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 14). 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 14


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. .

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 udating 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 date
- discharge date
- 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 15 to 21 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: While primary association studies were based on descriptive subgroup or stratified analysis, the data analytics team also performed a limited set of advanced inferential statistical analysis using bivariable and multivariable regression analyses. Most important, regression analyses were used to understand Medicaid patients' demographic characteristics most associated with diseases of interest: bipolar and depressive disorders, alcohol and opioid use disorders, and ACSC PQIs.

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 all demographic covariates available in the data, these being age, race, sex, and study area.

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

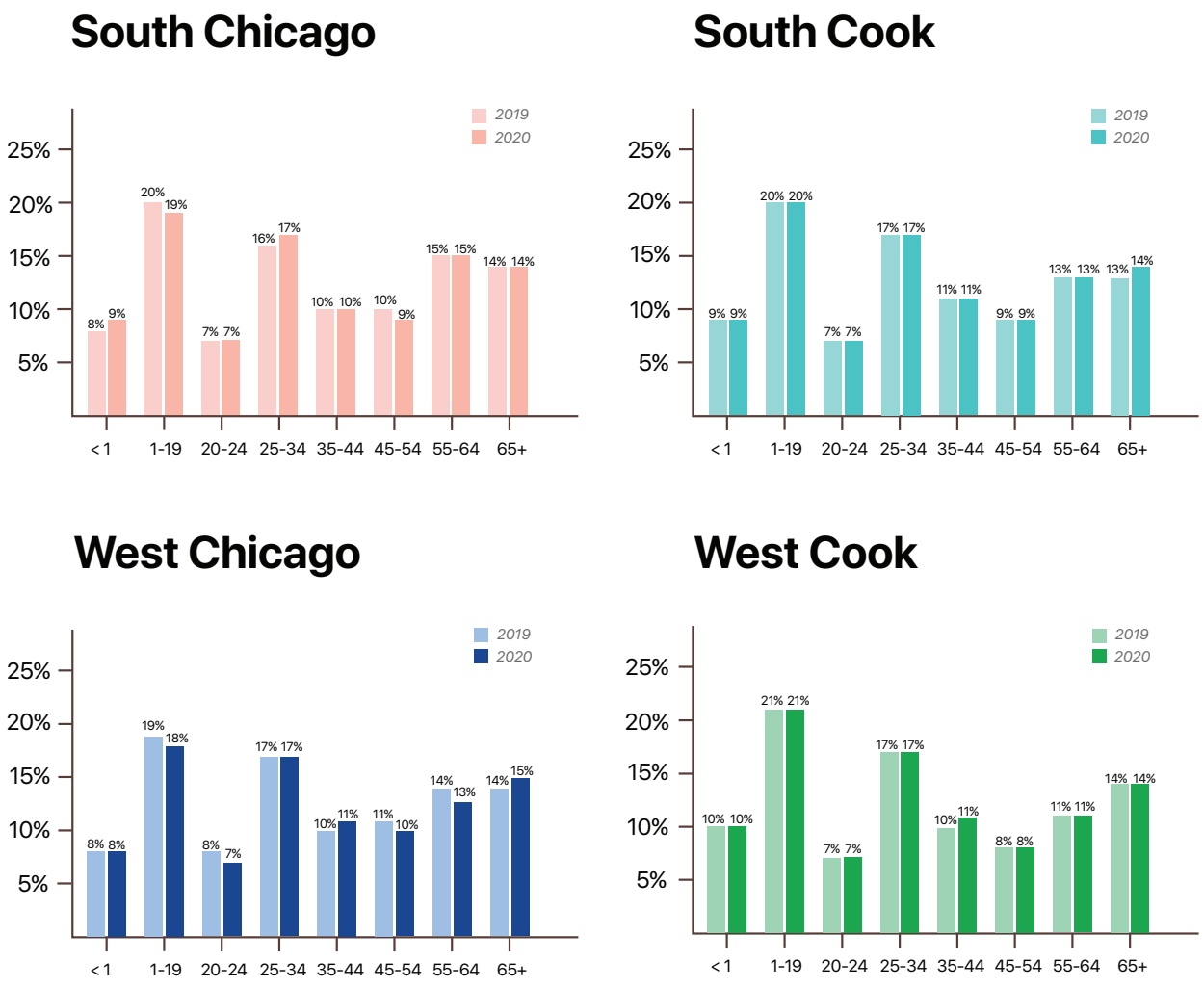


Figure 16: Inpatient Hospitalizations—Distribution of Sex of Patients by Study Area

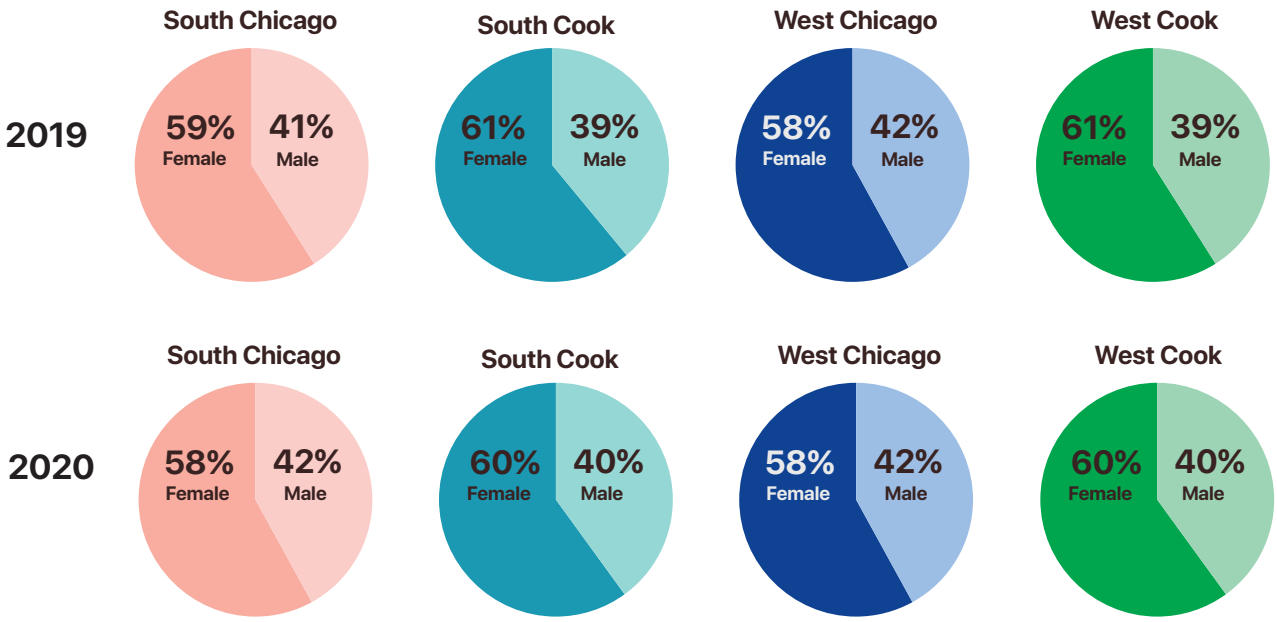


Figure 17: Inpatient Hospitalizations—Distribution of Races of Patients by Study Area

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

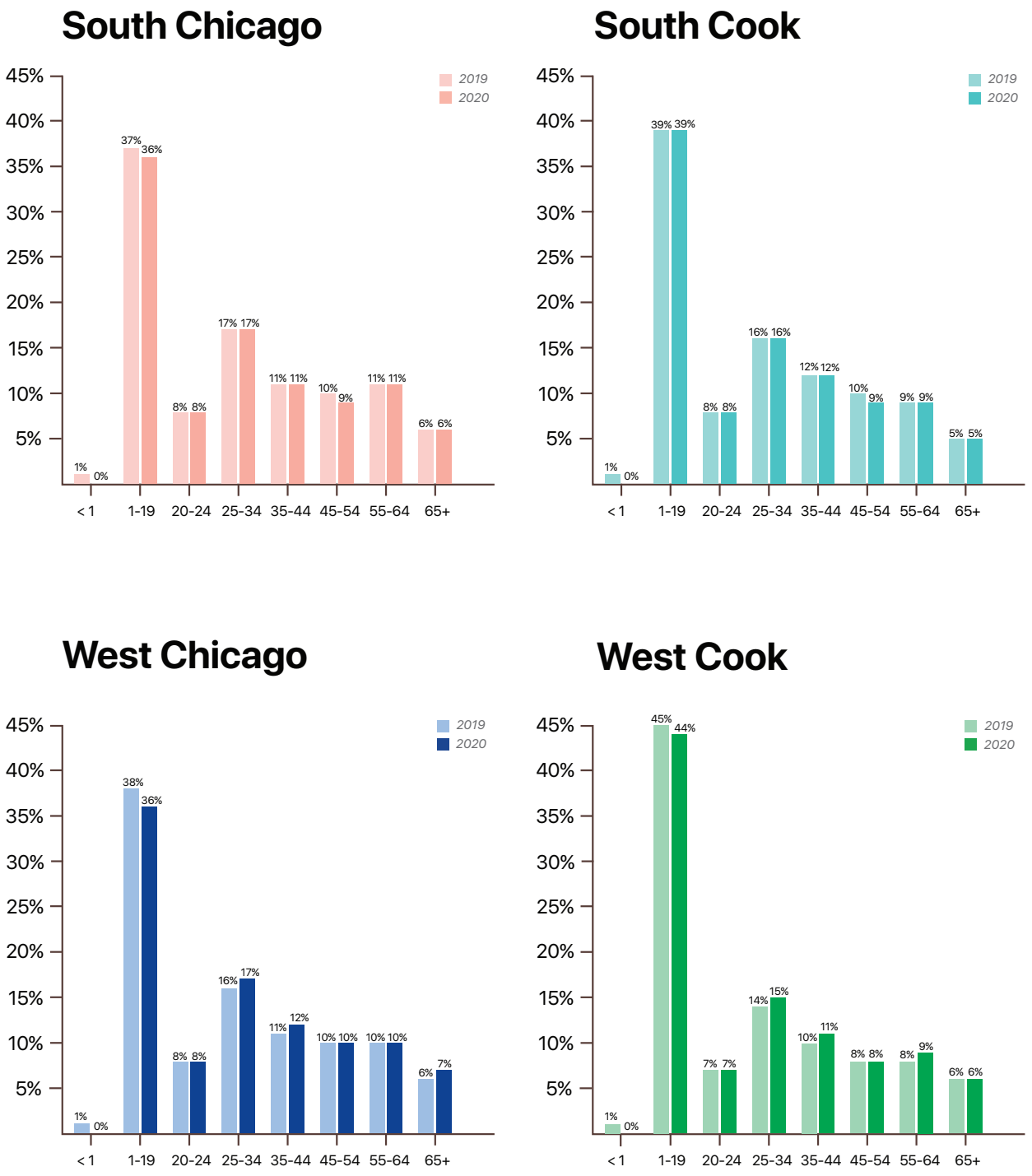


Figure 19: Emergency Department Visits—Distribution of Sex of Patients by Study Area

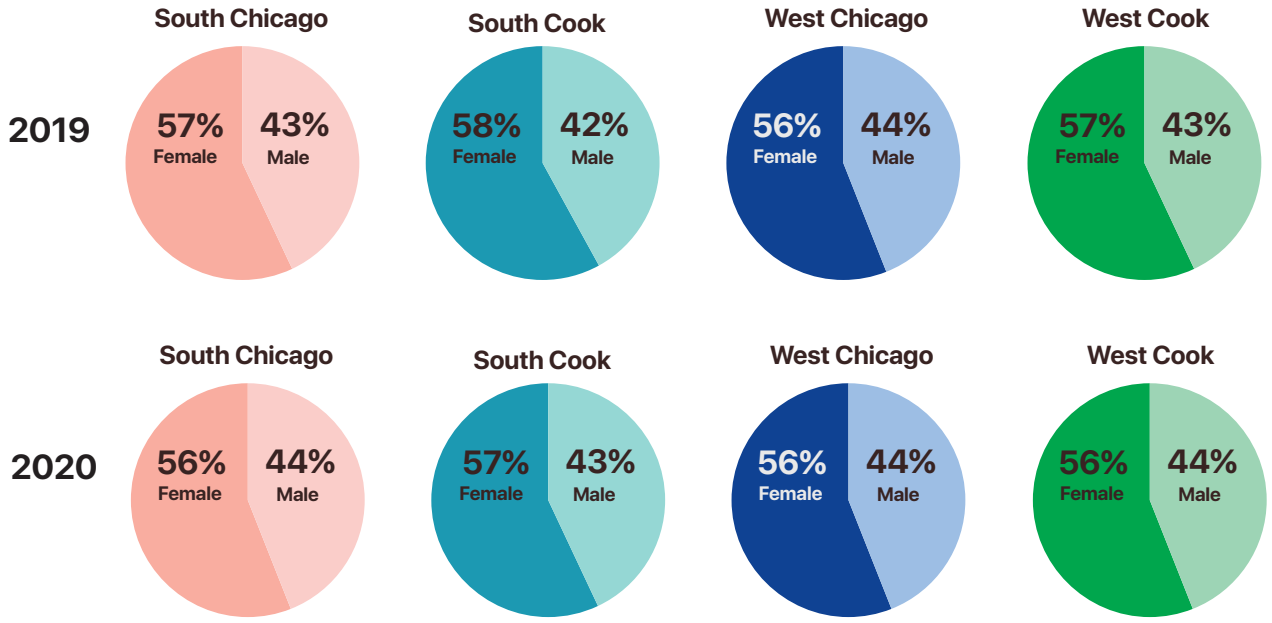


Figure 20: Emergency Department Visits—Distribution of Races of Patients by Study Area

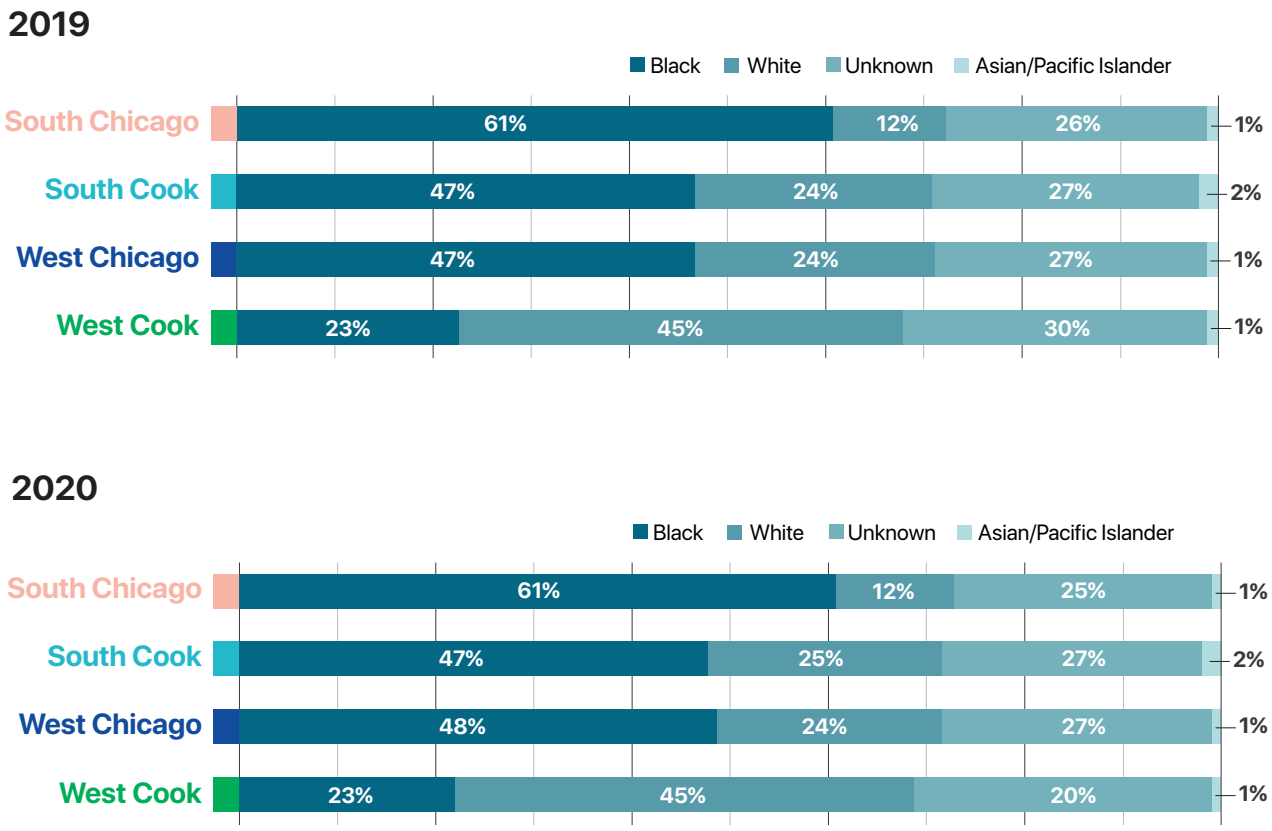
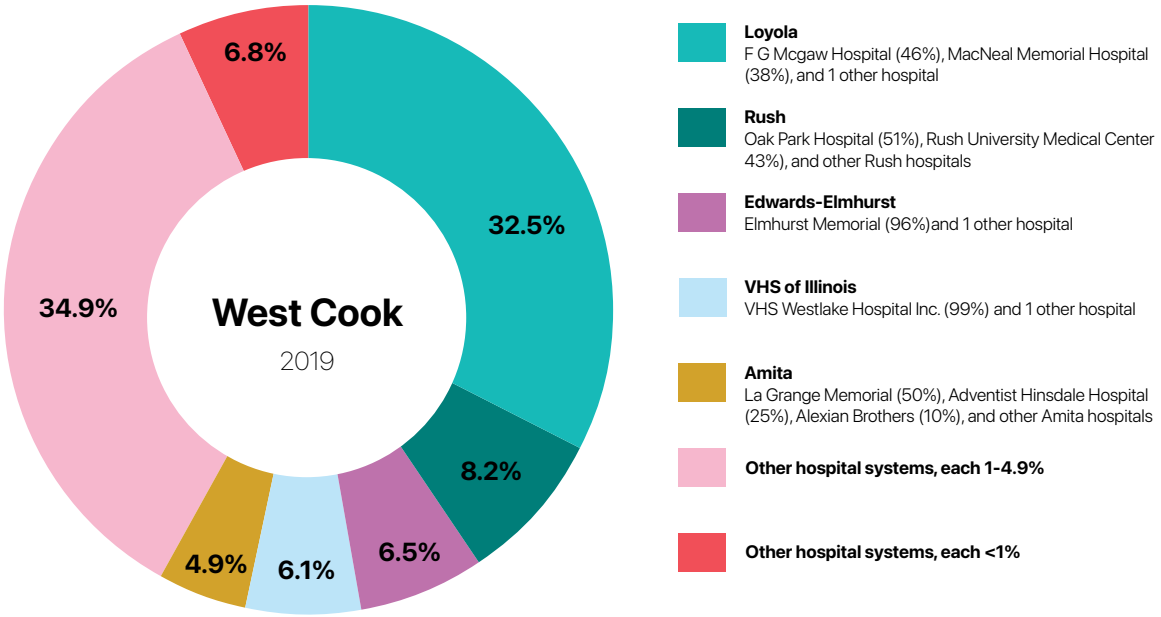
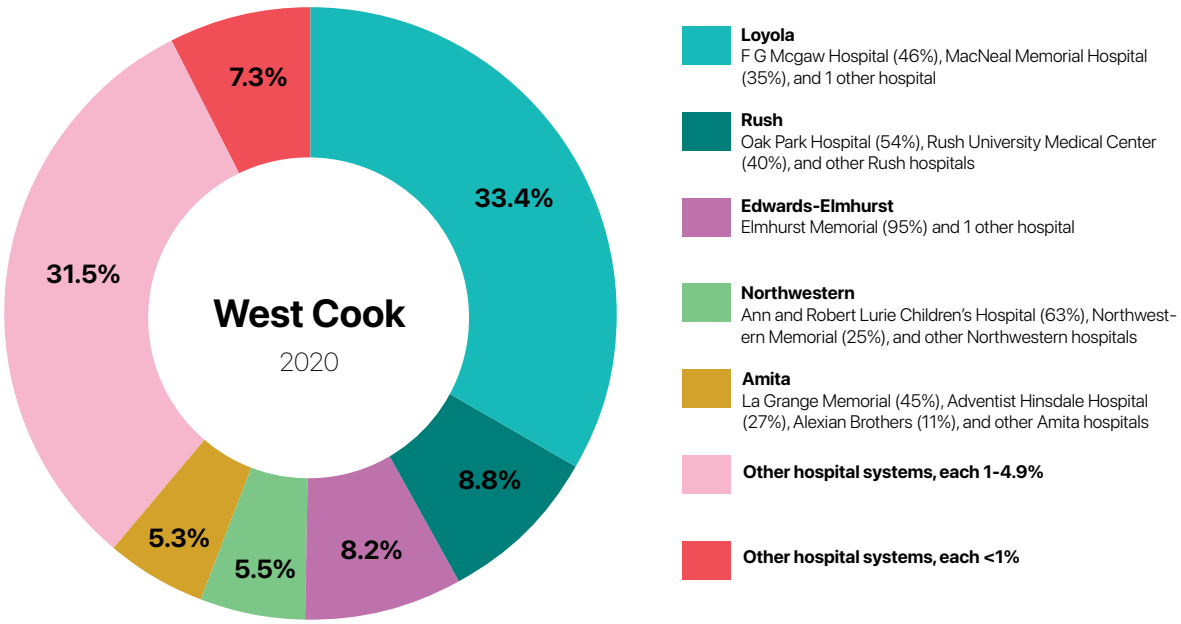


Figure 21: Estimated Share of West Cook Medicaid Enrollees Admitted to the Hospital
(Share of hospitals receiving Medicaid enrollees who live in the West Cook study area as patients for FY2019 and FY2020)





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 8–11 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 Bipolar Disorders

While no particular characteristic is statistically associated with bipolar disorders, low odds ratios of adults over 65 years in age in most areas indicate that being this age is likely a protective factor in terms of bipolar disorders.

Table 8: Population Characteristics Associated with Bipolar Disorder Patients (FY2019 and FY2020 Data Combined)

Bipolar_So. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.62	0.477	0.805	<0.001
15 to 19.9	25 to 34.9	1	0.838	1.180	0.96
20 to 24.9	25 to 34.9	0.82	0.686	0.970	0.05
35 to 44.9	25 to 34.9	0.92	0.793	1.057	0.22
45 to 64.9	25 to 34.9	0.84	0.749	0.951	0.01
>65	25 to 34.9	0.21	0.163	0.279	<0.001
RACE					
AmericanIN/AN	White	1.02	0.451	2.300	0.96
Asian/PI	White	0.28	0.147	0.522	<0.001
Black	White	0.98	0.862	1.113	0.75
Other/Unknown	White	0.59	0.490	0.701	<0.001
SEX					
Female	Male	0.53	0.482	0.577	<0.001

Bipolar_South Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.77	0.58	1.02	0.63
15 to 19.9	25 to 34.9	1.17	0.96	1.41	0.11
20 to 24.9	25 to 34.9	1.07	0.88	1.31	0.5
35 to 44.9	25 to 34.9	0.79	0.66	0.95	0.05
45 to 64.9	25 to 34.9	0.57	0.48	0.67	<0.001
>65	25 to 34.9	0.13	0.09	0.21	<0.001
RACE					
AmericanIN/AN	White	0.18	0.03	1.32	0.09
Asian/PI	White	0.38	0.21	0.69	<0.01
Black	White	0.72	0.63	0.82	<0.001
Other/Unknown	White	0.52	0.44	0.63	<0.001
SEX					
Female	Male	0.51	0.45	0.57	<0.001

Table 8 Continued

Bipolar_W. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.27	0.18	0.40	<0.001
15 to 19.9	25 to 34.9	0.59	0.47	0.75	<0.001
20 to 24.9	25 to 34.9	0.76	0.61	0.94	<0.05
35 to 44.9	25 to 34.9	0.93	0.78	1.10	0.38
45 to 64.9	25 to 34.9	0.92	0.80	1.07	0.27
>65	25 to 34.9	0.19	0.13	0.26	<0.001
RACE					
AmericanIN/AN	White	0.45	0.11	1.82	0.26
Asian/PI	White	0.51	0.29	0.91	<0.05
Black	White	0.82	0.72	0.93	<0.01
Other/Unknown	White	0.71	0.59		<0.001
SEX					
Female	Male	0.52	0.06	0.58	<0.001

Bipolar_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.64	0.45	0.91	0.05
15 to 19.9	25 to 34.9	0.93	0.72	1.21	0.59
20 to 24.9	25 to 34.9	0.8	0.60	1.07	0.13
35 to 44.9	25 to 34.9	0.98	0.78	1.24	0.87
45 to 64.9	25 to 34.9	0.63	0.50	0.78	<0.001
>65	25 to 34.9	0.12	0.07	0.20	<0.001
RACE					
AmericanIN/AN	White	0.66	0.16	2.68	0.56
Asian/PI	White	0.57	0.25	1.28	0.17
Black	White	0.96	0.80	1.15	0.65
Other/Unknown	White	0.72	0.58	0.88	<0.01
SEX					
Female	Male	0.54	0.46	0.63	<0.001

Summary of Population Characteristics Most Associated with Patients with Depressive Disorders

- Teenagers, age 12–19 in all areas
- Young adults, age 20–24 in South Cook
- Adults, age 35–65 in South and West Chicago

Table 9: Population Characteristics Associated with Depressive Disorder Patients (FY2019 and FY2020 Data Combined)

DEPRESSION_So. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	2.93	2.546	3.372	<0.001
15 to 19.9	25 to 34.9	2.67	2.370	3.010	<0.001
20 to 24.9	25 to 34.9	-1.1	0.956	1.270	0.17
35 to 44.9	25 to 34.9	1.24	1.090	1.400	<0.001
45 to 64.9	25 to 34.9	1.25	1.127	1.390	<0.001
>65	25 to 34.9	0.54	0.453	0.641	<0.001
RACE					
AmericanIN/AN	White	1.13	0.643	1.970	0.67
Asian/PI	White	0.35	0.240	0.515	<0.001
Black	White	0.72	0.659	0.789	<0.001
Other/Unknown	White	0.71	0.633	0.787	<0.001
SEX					
Female	Male	1.06	0.989	1.130	0.09

DEPRESSION_South Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	2.28	1.89	2.75	<0.001
15 to 19.9	25 to 34.9	2.57	2.21	3.00	<0.001
20 to 24.9	25 to 34.9	1.4	1.17	1.67	<0.001
35 to 44.9	25 to 34.9	1.1	0.93	1.29	0.26
45 to 64.9	25 to 34.9	0.94	0.82	1.09	0.43
>65	25 to 34.9	0.27	0.20	0.37	<0.001
RACE					
AmericanIN/AN	White	0.66	0.29	1.49	0.31
Asian/PI	White	0.38	0.24	0.61	<0.001
Black	White	0.58	0.52	0.64	<0.001
Other/Unknown	White	0.63	0.55	0.71	<0.001
SEX					
Female	Male	0.86	0.78	0.94	<0.001

Table 9 Continued

DEPRESSION_W. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	2.08	1.77	2.46	<0.001
15 to 19.9	25 to 34.9	2.2	1.92	2.53	<0.001
20 to 24.9	25 to 34.9	1	0.85	1.19	0.95
35 to 44.9	25 to 34.9	1.28	1.11	1.48	<0.001
45 to 64.9	25 to 34.9	1.54	1.36	1.73	<0.001
>65	25 to 34.9	0.61	0.51	0.73	<0.001
RACE					
AmericanIN/AN	White	0.6	0.26	1.34	0.21
Asian/PI	White	0.62	0.44	0.87	<0.01
Black	White	0.61	0.56	0.67	<0.001
Other/Unknown	White	0.82	0.74	0.91	<0.001
SEX					
Female	Male	0.95	0.88	1.03	0.91

DEPRESSION_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	2.94	2.45	3.53	<0.001
15 to 19.9	25 to 34.9	3	2.56	3.52	<0.001
20 to 24.9	25 to 34.9	1.11	0.90	1.37	0.33
35 to 44.9	25 to 34.9	1.13	0.94	1.37	0.17
45 to 64.9	25 to 34.9	1.08	0.92	1.27	0.34
>65	25 to 34.9	0.24	0.17	0.33	<0.001
RACE					
AmericanIN/AN	White	1.7	0.92	3.15	0.09
Asian/PI	White	0.57	0.33	0.97	0.05*
Black	White	0.74	0.65	0.84	<0.001
Other/Unknown	White	0.96	0.85	1.07	0.43
SEX					
Female	Male	1.06	0.96	1.17	0.21

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

- Adults age 35–65 in South and West Chicago
- Older adults over age 65 in South Chicago
- Black people in South Chicago and West Cook

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

OUD_So. Chicago			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	0.9
15 to 19.9	25 to 34.9	0.02	0.00	0.14	<0.001
20 to 24.9	25 to 34.9	0.18	0.09	0.35	<0.001
35 to 44.9	25 to 34.9	2.05	1.62	2.60	<0.001
45 to 64.9	25 to 34.9	6.44	5.32	7.80	<0.001
>65	25 to 34.9	1.69	1.31	2.20	<0.001
RACE					
AmericanIN/AN	White	1.5	0.61	3.69	0.38
Asian/PI	White	0.12	0.05	0.33	<0.001
Black	White	1.33	1.14	1.56	<0.001
Other/Unknown	White	0.68	0.53	0.88	0.01
SEX					
Female	Male	0.34	0.31	0.38	<0.001

OUD_South Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.029	0.00	0.21	<0.001
15 to 19.9	25 to 34.9	0.015	0.00	0.11	<0.001
20 to 24.9	25 to 34.9	0.44	0.28	0.70	<0.001
35 to 44.9	25 to 34.9	1.21	0.92	1.57	0.16
45 to 64.9	25 to 34.9	1.08	0.86	1.37	0.49
>65	25 to 34.9	0.11	0.05	0.24	<0.001
RACE					
AmericanIN/AN	White	0.41	0.06	2.91	0.36
Asian/PI	White	0.22	0.07	0.69	<0.001
Black	White	0.54	0.45	0.66	<0.01
Other/Unknown	White	0.36	0.25	0.51	<0.001
SEX					
Female	Male	0.21	0.17	0.25	<0.001

Table 10 Continued

OUD_W. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0	0.01	0.09	<0.001
15 to 19.9	25 to 34.9	0.048	0.14	0.30	<0.001
20 to 24.9	25 to 34.9	0.2	0.34	0.61	<0.001
35 to 44.9	25 to 34.9	2.49	1.37	1.93	<0.001
45 to 64.9	25 to 34.9	6.24	1.13	1.53	<0.001
>65	25 to 34.9	1.03	0.33	0.55	<0.001
RACE					
AmericanIN/AN	White	0.6	0.23	2.27	0.57
Asian/PI	White	0.17	0.11	0.53	<0.001
Black	White	1.81	0.73	0.95	<0.01
Other/Unknown	White	0.84	0.59	0.87	<0.001
SEX					
Female	Male	0.33	0.21	0.26	0.94

OUD_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.028	0.00	0.20	<0.001
15 to 19.9	25 to 34.9	0.032	0.01	0.13	<0.001
20 to 24.9	25 to 34.9	0.26	0.14	0.49	<0.001
35 to 44.9	25 to 34.9	1.02	0.74	1.39	0.92
45 to 64.9	25 to 34.9	1.35	1.05	1.74	0.05
>65	25 to 34.9	0.11	0.05	0.24	<0.001
RACE					
AmericanIN/AN	White	0	0.00	Inf	0.99
Asian/PI	White	0.17	0.02	1.20	0.05
Black	White	1.56	1.26	1.92	<0.001
Other/Unknown	White	0.59	0.41	0.84	<0.01
SEX					
Female	Male	0.23	0.18	0.28	<0.001

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

- Adults age 35–65 in South Chicago, West Chicago, and South Cook
- Adults age 35–44 in West Cook

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

AUD_So. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.087	0.046	0.164	<0.001
15 to 19.9	25 to 34.9	0.25	0.186	0.340	<0.001
20 to 24.9	25 to 34.9	0.48	0.378	0.612	<0.001
35 to 44.9	25 to 34.9	1.46	1.267	1.687	<0.001
45 to 64.9	25 to 34.9	1.53	1.357	1.728	<0.001
>65	25 to 34.9	0.51	0.409	0.624	<0.001
RACE					
AmericanIN/AN	White	0.78	0.318	1.898	0.57
Asian/PI	White	0.21	0.111	0.392	<0.001
Black	White	0.86	0.760	0.976	0.05
Other/Unknown	White	0.72	0.599	0.864	<0.001
SEX					
Female	Male	0.29	0.263	0.318	<0.001

AUD_South Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.028	0.01	0.11	<0.001
15 to 19.9	25 to 34.9	0.17	0.11	0.27	<0.001
20 to 24.9	25 to 34.9	0.42	0.30	0.58	<0.001
35 to 44.9	25 to 34.9	1.34	1.12	1.61	<0.01
45 to 64.9	25 to 34.9	1.25	1.06	1.46	<0.01
>65	25 to 34.9	0.036	0.26	0.50	<0.001
RACE					
AmericanIN/AN	White	0.79	0.29	2.15	0.63
Asian/PI	White	0.17	0.07	0.41	<0.001
Black	White	0.6	0.53	0.69	<0.001
Other/Unknown	White	0.45	0.36	0.57	<0.001
SEX					
Female	Male	0.29	0.26	0.33	<0.001

Table 11 Continued

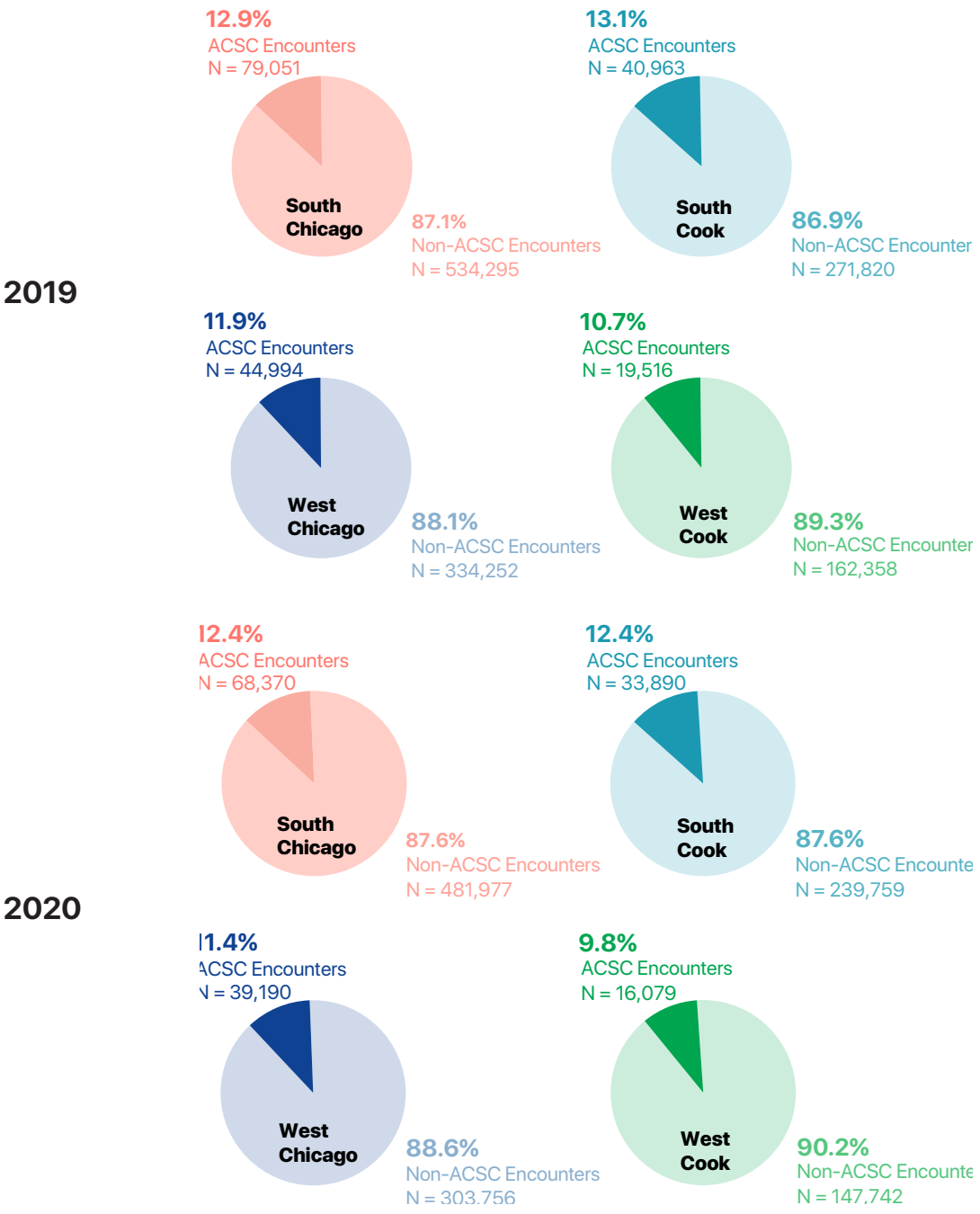
AUD_W. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.023	0.00	INF	0.95
15 to 19.9	25 to 34.9	0.21	0.02	0.15	<0.001
20 to 24.9	25 to 34.9	0.45	0.11	0.36	<0.001
35 to 44.9	25 to 34.9	1.63	2.01	3.07	<0.001
45 to 64.9	25 to 34.9	1.31	5.21	7.47	<0.001
>65	25 to 34.9	0.43	0.78	1.36	0.84
RACE					
AmericanIN/AN	White	0.72	0.15	2.45	0.47
Asian/PI	White	0.24	0.06	0.45	<0.001
Black	White	0.83	1.59	2.05	<0.001
Other/Unknown	White	0.72	0.69	1.03	0.1
SEX					
Female	Male	0.23	0.30	0.37	<0.001

AUD_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
12 to 14.9	25 to 34.9	0.014	0.00	0.10	<0.001
15 to 19.9	25 to 34.9	0.27	0.18	0.40	<0.001
20 to 24.9	25 to 34.9	0.6	0.42	0.86	<0.01
35 to 44.9	25 to 34.9	1.34	1.05	1.70	0.05
45 to 64.9	25 to 34.9	1.1	0.89	1.37	0.36
>65	25 to 34.9	0.23	0.15	0.35	<0.001
RACE					
AmericanIN/AN	White	0.32	0.04	2.33	0.26
Asian/PI	White	0.42	0.17	1.02	0.05
Black	White	0.72	0.60	0.87	<0.001
Other/Unknown	White	0.83	0.66	1.03	0.88
SEX					
Female	Male	0.22	0.19	0.26	<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 (26) 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 22).

Figure 22: 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 23).

Figure 23: 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 (27). 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) (28). 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 composed 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 12 to 15.

(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:

- Black adults, age 40 and over in all areas

Table 12: Population Characteristics Associated with PQI 90, Overall ACSC Composite (FY2019 and FY2020 Data Combined)

PQI 90_So. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.67	3.40	3.95	<.0001
65-74	18-39	4.06	3.68	4.48	<.0001
75 or older	18-39	4.83	4.36	5.35	<.0001
RACE					
AmerIN/AN	White	0.87	0.43	1.75	0.69
Asian/PI	White	0.63	0.48	0.82	0.0007
Black	White	1.53	1.39	1.70	<.0001
Other/UNK	White	1.26	1.11	1.43	0.0003
SEX					
Male	Female	1.03	0.98	1.09	0.28

PQI 90_South Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.18	2.86	3.54	<.0001
65-74	18-39	4.68	4.07	5.37	<.0001
75 or older	18-39	4.96	4.31	5.71	<.0001
RACE					
AmerIN/AN	White	1.46	0.65	3.31	0.36
Asian/PI	White	0.94	0.67	1.31	0.70
Black	White	1.48	1.35	1.64	<.0001
Other/UNK	White	1.33	1.16	1.53	<.0001
SEX					
Male	Female	1.06	0.98	1.15	0.15

Table 12 Continued

PQI 90_W. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.25	2.94	3.59	<.0001
65-74	18-39	5.03	4.42	5.72	<.0001
75 or older	18-39	5.01	4.36	5.75	<.0001
RACE					
AmerIN/AN	White	1.19	0.50	2.86	0.70
Asian/PI	White	1.26	0.95	1.69	0.11
Black	White	1.41	1.27	1.56	<.0001
Other/UNK	White	1.22	1.08	1.39	0.0021
SEX					
Male	Female	0.99	0.92	1.07	0.80

PQI 90_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	4.30	3.59	5.15	<.0001
65-74	18-39	6.81	5.45	8.51	<.0001
75 or older	18-39	8.94	7.24	11.04	<.0001
RACE					
AmerIN/AN	White	0.64	0.22	1.87	0.41
Asian/PI	White	1.00	0.65	1.53	0.98
Black	White	1.35	1.17	1.57	<.0001
Other/UNK	White	1.06	0.89	1.27	0.52
SEX					
Male	Female	1.10	0.97	1.24	0.15

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

- Adults, age 40 and over in all areas
- Females in all areas except West Cook
- Asians and Pacific Islanders in West Chicago

Table 13: Population Characteristics Associated with PQI 91, ACSC Acute Composite (FY2019 and FY2020 Data Combined)

PQI 91_So. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	2.55	2.13	3.04	<.0001
65-74	18-39	3.76	3.01	4.69	<.0001
75 or older	18-39	6.88	5.60	8.45	<.0001
RACE					
AmerIN/AN	White	0.54	0.07	3.92	0.54
Asian/PI	White	0.79	0.51	1.23	0.29
Black	White	1.01	0.83	1.22	0.95
Other/UNK	White	1.03	0.79	1.33	0.83
SEX					
Female	Male	1.14	1.01	1.29	0.04

PQI 91_South Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	2.62	2.06	3.33	<.0001
65-74	18-39	4.84	3.63	6.44	<.0001
75 or older	18-39	7.66	5.89	9.98	<.0001
RACE					
AmerIN/AN	White	0.86	0.12	6.33	0.88
Asian/PI	White	1.30	0.77	2.19	0.33
Black	White	0.84	0.70	1.01	0.06
Other/UNK	White	0.80	0.59	1.08	0.15
SEX					
Female	Male	1.62	1.35	1.94	<.0001

Table 13 Continued

PQI 91_W. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	2.75	2.19	3.44	<.0001
65-74	18-39	4.82	3.67	6.33	<.0001
75 or older	18-39	5.99	4.56	7.87	<.0001
RACE					
AmerIN/AN	White	0.86	0.12	6.33	0.88
Asian/PI	White	1.84	1.16	2.94	0.01
Black	White	1.02	0.84	1.24	0.87
Other/UNK	White	0.93	0.71	1.22	0.61
SEX					
Female	Male	1.30	1.10	1.52	0.00

PQI 91_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	2.66	1.90	3.73	<.0001
65-74	18-39	6.06	4.12	8.92	<.0001
75 or older	18-39	11.19	7.96	15.72	<.0001
RACE					
AmerIN/AN	White	NR	NR	NR	NR
Asian/PI	White	0.91	0.44	1.89	0.79
Black	White	1.10	0.85	1.41	0.47
Other/UNK	White	1.02	0.74	1.40	0.92
SEX					
Female	Male	1.16	0.92	1.46	0.22

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

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

- Black adults, age 40 and over in all areas
- Males in South Cook

Table 14: Population Characteristics Associated with PQI 92, ACSC Chronic Composite (FY2019 and FY2020 Data Combined)

PQI 92_So. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.78	3.48	4.10	<.0001
65-74	18-39	3.95	3.55	4.39	<.0001
75 or older	18-39	4.03	3.60	4.52	<.0001
RACE					
AmerIN/AN	White	0.98	0.46	2.06	0.95
Asian/PI	White	0.55	0.39	0.77	0.0005
Black	White	1.64	1.47	1.84	<.0001
Other/UNK	White	1.32	1.15	1.51	0.0001
SEX					
Male	Female	1.06	1.00	1.12	0.058

PQI 92_South Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.22	2.87	3.62	<.0001
65-74	18-39	4.42	3.80	5.14	<.0001
75 or older	18-39	3.98	3.39	4.66	<.0001
RACE					
AmerIN/AN	White	1.62	0.68	3.88	0.28
Asian/PI	White	0.78	0.52	1.19	0.25
Black	White	1.67	1.50	1.86	<.0001
Other/UNK	White	1.51	1.30	1.76	<.0001
SEX					
Male	Female	1.19	1.09	1.30	<.0001

Table 14 Continued

PQI 92_W. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	3.25	2.91	3.63	<.0001
65-74	18-39	4.74	4.11	5.46	<.0001
75 or older	18-39	4.37	3.75	5.11	<.0001
RACE					
AmerIN/AN	White	1.33	0.52	3.41	0.56
Asian/PI	White	1.04	0.74	1.46	0.81
Black	White	1.52	1.36	1.70	<.0001
Other/UNK	White	1.30	1.13	1.50	0.0002
SEX					
Male	Female	1.05	0.97	1.14	0.20

PQI 92_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	4.79	3.88	5.91	<.0001
65-74	18-39	6.54	5.04	8.47	<.0001
75 or older	18-39	6.95	5.40	8.94	<.0001
RACE					
AmerIN/AN	White	0.89	0.30	2.65	0.83
Asian/PI	White	1.01	0.62	1.66	0.97
Black	White	1.32	1.12	1.56	0.0011
Other/UNK	White	1.05	0.86	1.29	0.62
SEX					
Male	Female	1.16	1.01	1.34	0.034

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

- Black men age 40–64 in South Chicago and South Cook
- Men age 40–74 in West Chicago
- Men age 40 and over in West Cook

Table 15: Population Characteristics Associated with PQI 93, Diabetes Hospitalization Composite (FY2019 and FY2020 Data Combined)

PQI 93_So. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	1.38	1.22	1.57	<.0001
65-74	18-39	0.97	0.78	1.19	0.74
75 or older	18-39	1.19	0.96	1.47	0.12
RACE					
AmerIN/AN	White	1.17	0.36	3.74	0.80
Asian/PI	White	0.38	0.19	0.75	0.0057
Black	White	1.26	1.05	1.51	0.013
Other/UNK	White	1.31	1.05	1.64	0.016
SEX					
Male	Female	1.33	1.19	1.48	<.0001

PQI 93_South Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	1.40	1.19	1.65	<.0001
65-74	18-39	1.30	0.99	1.70	0.058
75 or older	18-39	0.75	0.53	1.08	0.12
RACE					
AmerIN/AN	White	NR	NR	NR	NR
Asian/PI	White	0.47	0.19	1.15	0.0995
Black	White	1.40	1.19	1.65	<.0001
Other/UNK	White	1.40	1.09	1.78	0.0078
SEX					
Male	Female	1.82	1.57	2.11	<.0001

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

Table 15 Continued

PQI 93_W. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	1.21	1.02	1.44	0.026
65-74	18-39	1.64	1.28	2.09	<.0001
75 or older	18-39	0.88	0.62	1.23	0.44
RACE					
AmerIN/AN	White	0.77	0.11	5.67	0.80
Asian/PI	White	1.03	0.55	1.93	0.93
Black	White	1.09	0.90	1.32	0.39
Other/UNK	White	1.41	1.11	1.78	0.0044
SEX					
Male	Female	1.34	1.15	1.56	0.0002

PQI 93_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
40-64	18-39	2.91	2.11	4.01	<.0001
65-74	18-39	3.24	2.10	4.98	<.0001
75 or older	18-39	2.81	1.82	4.36	<.0001
RACE					
AmerIN/AN	White	NR	NR	NR	NR
Asian/PI	White	0.93	0.38	2.30	0.88
Black	White	0.81	0.61	1.08	0.15
Other/UNK	White	1.19	0.86	1.65	0.29
SEX					
Male	Female	1.44	1.13	1.84	0.0036

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

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 (29). Table 16 lists the conditions included in each of these categories. Population characteristics associated with PQI composite measures were computed and appear in Tables 17–19.

(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 16: 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

- Females age 0–19 in all areas
- Females age 20–24 in South Cook as well

Table 17: Population Characteristics Associated with Acute ACSC ED Visits (FY2019 and FY2020 Data Combined)

ACUTE_So. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	4.19	3.97	4.43	<.0001
1 to 2.9	25 to 34.9	4.63	4.41	4.87	<.0001
3 to 5.9	25 to 34.9	4.04	3.83	4.25	<.0001
6 to 11.9	25 to 34.9	3.05	2.90	3.20	<.0001
12 to 14.9	25 to 34.9	1.78	1.65	1.90	<.0001
15 to 19.9	25 to 34.9	1.31	1.24	1.39	<.0001
20 to 24.9	25 to 34.9	1.02	0.97	1.08	0.38
35 to 44.9	25 to 34.9	0.88	0.83	0.92	<.0001
45 to 64.9	25 to 34.9	0.61	0.58	0.64	<.0001
65 or older	25 to 34.9	0.51	0.46	0.55	<.0001
RACE					
AmerIN/AN	White	0.97	0.75	1.26	0.82
Asian/PI	White	1.14	0.99	1.30	0.066
Black	White	0.97	0.93	1.01	0.13
Other/UNK	White	0.96	0.93	1.01	0.086
SEX					
Female	Male	1.11	1.09	1.14	<.0001

Table 17 Continued

ACUTE_South Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	4.57	4.27	4.90	<.0001
1 to 2.9	25 to 34.9	5.12	4.81	5.44	<.0001
3 to 5.9	25 to 34.9	4.44	4.17	4.73	<.0001
6 to 11.9	25 to 34.9	2.93	2.75	3.12	<.0001
12 to 14.9	25 to 34.9	1.66	1.52	1.81	<.0001
15 to 19.9	25 to 34.9	1.36	1.27	1.45	<.0001
20 to 24.9	25 to 34.9	1.10	1.03	1.17	0.0065
35 to 44.9	25 to 34.9	0.93	0.87	0.99	0.017
45 to 64.9	25 to 34.9	0.63	0.60	0.67	<.0001
65 or older	25 to 34.9	0.49	0.43	0.55	<.0001
RACE					
AmerIN/AN	White	1.07	0.81	1.41	0.64
Asian/PI	White	0.94	0.82	1.08	0.40
Black	White	0.95	0.91	0.99	0.018
Other/UNK	White	0.99	0.94	1.03	0.61
SEX					
Female	Male	1.17	1.13	1.20	<.0001

ACUTE_W. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	4.15	3.87	4.45	<.0001
1 to 2.9	25 to 34.9	4.81	4.53	5.12	<.0001
3 to 5.9	25 to 34.9	4.34	4.07	4.62	<.0001
6 to 11.9	25 to 34.9	3.00	2.82	3.19	<.0001
12 to 14.9	25 to 34.9	1.79	1.64	1.95	<.0001
15 to 19.9	25 to 34.9	1.28	1.20	1.38	<.0001
20 to 24.9	25 to 34.9	1.07	1.00	1.15	0.38
35 to 44.9	25 to 34.9	0.88	0.83	0.94	<.0001
45 to 64.9	25 to 34.9	0.64	0.60	0.67	<.0001
65 or older	25 to 34.9	0.60	0.54	0.66	<.0001
RACE					
AmerIN/AN	White	0.85	0.62	1.16	0.82
Asian/PI	White	1.06	0.89	1.26	0.066
Black	White	0.93	0.89	0.97	0.13
Other/UNK	White	0.98	0.94	1.02	0.086
SEX					
Female	Male	1.16	1.12	1.19	<.0001

Table 17 Continued

ACUTE_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	3.92	3.55	4.33	<.0001
1 to 2.9	25 to 34.9	4.50	4.12	4.91	<.0001
3 to 5.9	25 to 34.9	3.79	3.46	4.15	<.0001
6 to 11.9	25 to 34.9	3.07	2.81	3.34	<.0001
12 to 14.9	25 to 34.9	1.64	1.46	1.85	<.0001
15 to 19.9	25 to 34.9	1.22	1.10	1.35	0.0001
20 to 24.9	25 to 34.9	1.00	0.90	1.12	0.94
35 to 44.9	25 to 34.9	0.85	0.77	0.94	0.0022
45 to 64.9	25 to 34.9	0.64	0.59	0.71	<.0001
65 or older	25 to 34.9	0.54	0.46	0.63	<.0001
RACE					
AmerIN/AN	White	0.95	0.64	1.42	0.81
Asian/PI	White	0.97	0.76	1.22	0.77
Black	White	0.98	0.91	1.04	0.44
Other/UNK	White	1.02	0.97	1.08	0.47
SEX					
Female	Male	1.12	1.07	1.17	<.0001

Summary of Population Characteristics Most Associated with Chronic ACSC ED Visits

- Adults age 35 and older in all areas, children in South and West Chicago age 3–14, and children age 6–11 in South and West Cook
- Blacks in all areas plus American Indian/American Natives in South Chicago
- Males in all areas

Table 18: Population Characteristics Associated with Chronic ACSC ED Visits (FY2019 and FY2020 Data Combined)

CHRONIC_So. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	0.17	0.14	0.21	<.0001
1 to 2.9	25 to 34.9	0.69	0.62	0.76	<.0001
3 to 5.9	25 to 34.9	1.44	1.33	1.57	<.0001
6 to 11.9	25 to 34.9	1.71	1.59	1.85	<.0001
12 to 14.9	25 to 34.9	1.28	1.16	1.42	<.0001
15 to 19.9	25 to 34.9	0.89	0.82	0.97	0.0068
20 to 24.9	25 to 34.9	0.81	0.75	0.88	<.0001
35 to 44.9	25 to 34.9	1.46	1.38	1.55	<.0001
45 to 64.9	25 to 34.9	2.53	2.42	2.66	<.0001
65 or older	25 to 34.9	2.31	2.16	2.47	<.0001
RACE					
AmerIN/AN	White	1.41	1.03	1.94	0.031
Asian/PI	White	0.67	0.53	0.84	0.0004
Black	White	1.41	1.32	1.50	<.0001
Other/UNK	White	1.17	1.09	1.25	<.0001
SEX					
Male	Female	1.22	1.19	1.26	<.0001

Table 18 Continued

CHRONIC_South Cook Group	Compared To	Odds Ratio	Confidence Interval (95%) Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	0.13	0.09	0.17	<.0001
1 to 2.9	25 to 34.9	0.48	0.41	0.56	<.0001
3 to 5.9	25 to 34.9	1.09	0.97	1.23	0.16
6 to 11.9	25 to 34.9	1.31	1.17	1.45	<.0001
12 to 14.9	25 to 34.9	1.03	0.89	1.20	0.65
15 to 19.9	25 to 34.9	0.77	0.69	0.87	<.0001
20 to 24.9	25 to 34.9	0.80	0.72	0.90	<.0001
35 to 44.9	25 to 34.9	1.44	1.32	1.56	<.0001
45 to 64.9	25 to 34.9	2.15	2.00	2.30	<.0001
65 or older	25 to 34.9	2.38	2.15	2.64	<.0001
RACE					
AmerIN/AN	White	1.48	0.98	2.24	0.061
Asian/PI	White	0.85	0.66	1.08	0.19
Black	White	1.53	1.43	1.64	<.0001
Other/UNK	White	1.34	1.24	1.45	<.0001
SEX					
Male	Female	1.41	1.35	1.48	<.0001

Table 20 Continued

CHRONIC_W. Chicago Group	Compared To	Odds Ratio	Confidence Interval (95%) Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	25 to 34.9	0.24	0.19	0.31	<.0001
1 to 2.9	25 to 34.9	0.75	0.66	0.86	<.0001
3 to 5.9	25 to 34.9	1.45	1.30	1.62	<.0001
6 to 11.9	25 to 34.9	1.76	1.60	1.94	<.0001
12 to 14.9	25 to 34.9	1.35	1.18	1.55	<.0001
15 to 19.9	25 to 34.9	0.81	0.72	0.91	0.0006
20 to 24.9	25 to 34.9	0.93	0.84	1.03	0.15
35 to 44.9	25 to 34.9	1.65	1.53	1.78	<.0001
45 to 64.9	25 to 34.9	2.89	2.71	3.08	<.0001
65 or older	25 to 34.9	2.68	2.46	2.93	<.0001
RACE					
AmerIN/AN	White	1.28	0.86	1.92	0.23
Asian/PI	White	1.16	0.93	1.45	0.18
Black	White	1.48	1.39	1.57	<.0001
Other/UNK	White	1.22	1.14	1.30	<.0001
SEX					
Male	Female	1.27	1.22	1.32	<.0001

Table 18 Continued

CHRONIC_West Cook Group	Compared To	Odds Ratio	Confidence Interval (95%) Lower Limit	Upper Limit	P-Value
AGE					
< 1 y	**25 to 34.9**	0.23	0.15	0.33	<.0001
1 to 2.9	**25 to 34.9**	0.63	0.51	0.78	<.0001
3 to 5.9	**25 to 34.9**	0.97	0.80	1.17	0.75
6 to 11.9	**25 to 34.9**	1.27	1.08	1.48	0.0034
12 to 14.9	**25 to 34.9**	0.81	0.64	1.03	0.080
15 to 19.9	**25 to 34.9**	0.86	0.72	1.03	0.10
20 to 24.9	**25 to 34.9**	0.99	0.84	1.18	0.93
35 to 44.9	**25 to 34.9**	1.42	1.24	1.63	<.0001
45 to 64.9	**25 to 34.9**	2.32	2.07	2.60	<.0001
65 or older	**25 to 34.9**	2.47	2.12	2.88	<.0001
RACE					
AmerIN/AN	**White**	1.00	0.54	1.85	1.00
Asian/PI	**White**	1.15	0.83	1.60	0.40
Black	**White**	1.44	1.32	1.58	<.0001
Other/UNK	**White**	1.06	0.96	1.17	0.24
SEX					
Male	**Female**	1.27	1.19	1.37	<.0001

Summary of Population Characteristics Most Associated with Avoidable ACSC ED Visits

- Adults age 21–44 in all areas plus adults 65 or over in South Chicago
- Blacks in all areas plus American Indian/American Natives in South Chicago
- Males in all areas

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

AVOIDABLE_So. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
21 to 34	< 21	2.14	1.94	2.35	<.0001
35 to 44	< 22	1.83	1.63	2.05	<.0001
45 to 64	< 23	1.11	1.00	1.24	0.056
65 or older	< 24	0.62	0.49	0.78	<.0001
RACE					
AmerIN/AN	White	1.04	0.49	2.21	0.92
Asian/PI	White	0.89	0.55	1.44	0.64
Black	White	1.39	1.24	1.57	<.0001
Other/UNK	White	1.19	1.03	1.37	0.02
SEX					
Male	Female	1.25	1.17	1.34	<.0001

AVOIDABLE_South Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
21 to 34	< 21	2.70	2.39	3.05	<.0001
35 to 44	< 22	2.19	1.91	2.52	<.0001
45 to 64	< 23	1.43	1.24	1.64	<.0001
65 or older	< 24	0.37	0.24	0.58	<.0001
RACE					
AmerIN/AN	White	2.38	1.39	4.08	0.0017
Asian/PI	White	0.84	0.55	1.28	0.41
Black	White	1.19	1.07	1.32	0.001
Other/UNK	White	1.05	0.91	1.22	0.48
SEX					
Male	Female	1.14	1.04	1.24	0.0038

Table 19 Continued

AVOIDABLE_W. Chicago			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
21 to 34	< 21	2.11	1.86	2.40	<.0001
35 to 44	< 22	1.60	1.37	1.86	<.0001
45 to 64	< 23	0.96	0.82	1.11	0.55
65 or older	< 24	0.49	0.35	0.69	<.0001
RACE					
AmerIN/AN	White	0.23	0.03	1.63	0.14
Asian/PI	White	0.30	0.11	0.80	0.016
Black	White	1.13	1.00	1.27	0.042
Other/UNK	White	0.97	0.84	1.13	0.71
SEX					
Male	Female	1.29	1.18	1.42	<.0001

AVOIDABLE_West Cook			Confidence Interval (95%)		
Group	Compared To	Odds Ratio	Lower Limit	Upper Limit	P-Value
AGE					
21 to 34	< 21	2.28	1.87	2.78	<.0001
35 to 44	< 22	2.48	1.98	3.10	<.0001
45 to 64	< 23	1.08	0.85	1.38	0.52
65 or older	< 24	0.45	0.25	0.81	0.0076
RACE					
AmerIN/AN	White	1.09	0.35	3.42	0.88
Asian/PI	White	1.61	0.85	3.04	0.14
Black	White	1.43	1.20	1.69	<.0001
Other/UNK	White	1.05	0.85	1.29	0.64
SEX					
Male	Female	1.21	1.04	1.41	0.012

Appendix C:
Approach to Community Input

Members of University of Illinois Chicago's (UIC) Institute for Healthcare Delivery Design (IHDD) and School of Public Health (SPH), in collaboration with Southern Illinois University School of Medicine Center for Rural Health and University of Illinois College of Medicine Rockford Division of Health Research and Evaluation (all entities together the "CI team"), conducted community-input sessions from February through July 2022 in five regions in Illinois: Danville, the Marion Health Region (MHR), Peoria, the Rockford metropolitan region, and West Cook County. The project teams at the academic institutions reached out to community-based organizations (CBOs) that serve vulnerable populationsin each region. Twelve CBOs conducted a total of 24 input sessions and 39 individual interviews. In the end, 230 individuals' voices are represented in the regional reports.

Community-Input (CI) Goals

1. Support the overall Transform initiative through narratives of community members' health and healthcare experiences to inform Illinois Department of Healthcare and Family Services (HFS).
2. Elevate the use of narratives to inform what questions are asked, how findings are interpreted, and what emerging questions need to be investigated in the future.
3. Demonstrate and enhance methods to solicit community input.
4. Uncover emerging issues for potential directions of the Transform project in the future.
5. Empower community-based organizations with community-input solicitation tools and findings to continuously improve the health of socially vulnerable populations in Illinois.

Targeted Regions and Communities

In 2020, the UIC and SIU teams conducted community input in four socially vulnerable areas in Illinois: the South Side of Chicago, the West Side of Chicago, South Cook County, and the East St. Louis Metropolitan Area. HFS published these reports on the HFS website in February of 2021. In 2022, the CI team conducted community input in five additional socially vulnerable areas: Danville, the MHR, Peoria, and Rockford, and West Cook County.

Within the five areas under study, the CI team identified the geographic areas or communities with the most vulnerable populations with respect to accessing healthcare and to health outcomes. They completed the identification of these specific geographic areas in consultation with UIC faculty members: Dr. Vincent Freeman (Associate Professor of Epidemiology and Biostatistics, UIC SPH) and Dr. Matt Sweeney (Senior Research Specialist, UIC Institute for Policy and Civic Engagement). Drs. Freeman and Sweeney used

the CDC Social Vulnerability Index to determine priority zip code areas and/or "meaningful communities" (e.g., Cicero in the West Cook region) for the CI team to focus on.

Once priority zip codes were identified, the CI team identified groups of community members in each geographic community who demonstrated characteristics that were priorities of the HFS Transformation program (racial/ethnic groups, women of reproductive age, people with multiple chronic diseases, older adults, people with disabilities, family caregivers, etc.). The team used these population groups to inform the identification of and outreach to potential community partners.

Identifying Community Partners

The CI team identified CBOs that provide services to vulnerable community members with the previously described characteristics. To do this, they used multiple sources of information—including existing health assessments, databases, and resource lists, as well as preexisting connections, referrals from other community-organizations, and internet searches. They excluded healthcare organizations, to ensure the participants would include individuals who face challenges accessing healthcare.

The CI team from each region contacted potential partner CBOs and scheduled meetings with organizations to describe the project, including roles and expectations for the CBOs and the CI team. The interested CBOs then entered a formal partnership with the university. For each interested CBO, the CI team developed a scope of work outlining roles for each party along with a contract between UIC and each partner organization. Because most of the CBOs recruited participants, collected data, provided incentives to participants, and engaged in other activities, the contracts stipulated that UIC would compensate the organizations for their time and the cost of the participant incentives.

Community Partner Training

The CI team provided a series of training sessions to the staffs of the partner CBOs to prepare them for the community-input sessions. This unique feature of UIC's community-input process was intended to enhance both the capacity of the CBOs (see the "Goals" section, above) and their input-session-facilitation skills. The training included participant-recruitment and focus-group facilitation practices. The CBO staff were able to practice their skills during the training sessions, which were held either in person or online. To allow CBO staffers to revisit training topics and to share information with staff members unable to attend the live training, the training sessions were recorded.

The Social or Structural Drivers of Health Framework

The CI team developed a conceptual framework which integrated the key concepts of the social drivers of health, access to healthcare, and healthcare quality. These provided a

common framework for developing discussion guides, the codebook, and data analysis and interpretation in all 5 regions. The framework also allowed flexibility for each region to adapt its community-input strategy to regional variations and to discover and highlight findings that were unique to the region.

Community-Input Focus Groups Led by the CBOs

After training was completed, the partner CBOs scheduled community-input sessions, recruited participants, and conducted the focus-group sessions. All participants received a gift-card incentive to thank them for participating in a community-input session.

Participant Recruitment. To leverage the community partners' networks of readily available existing relationships, a convenience sampling (a type of non-probability sampling) was taken, using flyers and other promotional materials created by the CI team to recruit session participants. The convenience-sampling approach had the advantage of using the CBOs' existing relationships with community members to recruit community-input participants and to establish some trust with them. A key limitation of convenience sampling is the possibility that people who are not part of the CBO's network could be underrepresented in the sample. This situation limits the ability to make generalizations about residents of the community as a whole. However, in 3 of the 5 regions (Peoria, Rockford, West Cook), partnering with multiple CBOs helped to mitigate this limitation.

Implementation of Community-Input Sessions. Community-partner staffers conducted most of the community-input sessions, using the discussion guide developed by the CI team. The CI team provided technical and note-taking support. However, some CBOs indicated they had insufficient capacity to conduct sessions. In those cases, the UIC team conducted the community-input sessions. The sessions were conducted either in-person or via Zoom, depending on CBO and community preferences as well as COVID-19 restrictions at the time of the sessions. In addition to having a note taker present, all the community-input sessions were audio recorded.

Regional Adaptations of the Protocol and Procedures. The CBOs were allowed to adapt the standard protocol developed by UIC to fit their own communities (e.g., to adjust the community-member recruitment strategy, vary the number of participants in an input session, and have either virtual or in-person sessions).

Languages. To maximize the inclusion of multiple perspectives, focus groups were conducted in 3 languages other than English – as needed (or requested) by the local organizations. The CI team translated the focus-group guide in advance. In all, 2 CBOs conducted 10 sessions in languages other than English:

- **Erie House,** in West Cook County, conducted 7 sessions in Spanish.
- **Winnebago Emerging Small Business Services**, in Rockford, conducted 1 session in Spanish, 1 session in Dari (with Afghani immigrants), and 1 session in Swahili (with Congolese immigrants).

Sessions were facilitated by persons fluent in the relevant language. One session in Rockford was co-facilitated by an English-speaking staff person and a person from the community who was fluent in the non-English language. For the Spanish-language and Swahili-language sessions, focus-group recordings were transcribed in their original language and then translated into English for coding and analysis. For the Dari-language session, translation back to English was conducted in real time and notes were captured in English.

Individual Interviews. In Rockford, individual interviews were conducted with 39 community members. Interviews were done for a range of reasons, including limited access to technology for some priority populations, which would have restrict their ability to participate in a Zoom session; an uptick in COVID-19 infections, which restricted in-person gatherings; and the desire to elicit community input from community members who, for health or logistics reasons, were unable to participate in a 90-minute focus group.

Data Management and Analytic Strategy

The community-input sessions' recordings were automatically transcribed using voice-recognition software and corrected by a member of the CI team. The CI team created a codebook using the Social and Structural Drivers of Health Framework that was used to create the focus-group discussion guide. Like the discussion guide, the codebook covered key concepts of the social drivers of health, access to healthcare, and healthcare quality. A subset of CI team members tested and modified the codebook. Once the codebook was finalized, a member of the CI team held 2 training sessions to describe the coding process. Using the codebook, CI team members coded transcripts, created memos, and reviewed notes to analyze the participants' experiences related to health and healthcare in their communities. Through this analytic process, each regional team identified key themes and summarized its findings in the areas of healthcare access, healthcare quality, and other thematic areas related to social determinants of health or community recommendations to address them. All these findings were then compiled into a separate, final community-input report for each region.

In addition, representative participant quotations and stories were pulled and curated to ground the research findings and bring out the human perspective. Through member-checking, the community partners were asked to offer feedback on the data analysis and thematic findings in draft summary reports. Upon publication of this report, community partners will disseminate the project objectives and findings to resident participants and their broader networks of stakeholders.

Endnotes

1. Office of Management and Budget (OMB). "Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas," Bulletin No. 18-03, April 10, 2018. https://www.bls.gov/bls/omb-bulletin-18-03-revised-delineations-of-metropolitan-statistical-areas.pdf (accessed October 5, 2020)

2. Williams, David R., and Chiquita Collins. "Racial residential segregation: a fundamental cause of racial disparities in health." Public Health Reports (2016).

3. Ruel, Erin, and Stephanie A. Robert. "A model of racial residential history and its association with self-rated health and mortality among black and white adults in the United States." *Sociological Spectrum* 29.4 (2009): 443–466.

4. Srinivasan, Shobha, et al. "Creating healthy communities, healthy homes, healthy people: Initiating a research agenda on the built environment and public health." American journal of public health 93.9 (2003): 1446–1450.

5. Rothstein, Richard. *The Color of Law: A Forgotten History of How Our Government Segregated America*. Liveright Publishing, 2017.

6. Pais, Jeremy, et al. "Metropolitan heterogeneity and minority neighborhood attainment: Spatial assimilation or place stratification? " *Social Problems* 59.2 (2012): 258–281.

7. The State of Rural Health in Illinois: Great challenges and a path forward. https://www.siumed.edu/sites/default/files/u9451/rhs_stateofillinois_final.pdf (accessed April 11, 2020).

8. Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry/Geospatial Research, Analysis, and Services Program. CDC Social Vulnerability Index Fact Sheet. https://www.atsdr.cdc.gov/placeandhealth/svi/fact_sheet/fact_sheet.html.

9. Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry/ Geospatial Research, Analysis, and Services Program. CDC Social Vulnerability Index 2018 Database, Illinois. https://www.atsdr.cdc.gov/placeandhealth/svi/data_documentation_download.html (accessed October 5, 2020).

10. Wolkin, Amy, et al. "Reducing public health risk during disasters: identifying social vulnerabilities." *Journal of Homeland Security and Emergency Management* 12.4 (2015): 809–822.

11. IDPH Health Regions and Local Health Departments. https://dph.illinois.gov/contact-us/regional-health-departments.html (accessed October 2, 2020).

12. Business Interruption Grants Program. https://www2.illinois.gov/dceo/SmallBizAssistance/Pages/C19DisadvantagedBusGrants.aspx, and https://www2.illinois.gov/dceo/SmallBizAssistance/Documents/

BIGDIAZipCodeList_062520.pdf (accessed October 2, 2020).

13. McCall, Nancy, et al. "Rates of hospitalization for ambulatory care sensitive conditions in the Medicare+ Choice population." *Health Care Financing Review* 22.3 (2001): 127.

14. Centers for Medicare & Medicaid Services (CMS). Health Insurance Exchange: 2020 Quality Rating System Measure Technical Specifications, September 2019. https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityInitiativesGenInfo/ACA-MQI/Downloads/2020-QRS-Measure-Tech-Specs.pdf (accessed January 2, 2021).

15. The National Committee for Quality Assurance (NCQA). HEDIS Measures and Technical Resources: Follow-Up After Hospitalization for Mental Illness. https://www.ncqa.org/hedis/measures/follow-up-after-hospitalization-for-mental-illness/ (accessed on January 2, 2021).

16. Agency for Healthcare Research and Quality. 2014 AHRQ Quality Indicators. https://www.qualityindicators.ahrq.gov/ (accessed September 14, 2020).

17. Bindman, Andrew B., et al. "Preventable hospitalizations and access to health care." *JAMA* 274.4 (1995): 305-311.

18. Oster, Ady, and Andrew B. Bindman. "Emergency department visits for ambulatory care sensitive conditions: Insights into preventable hospitalizations." *Medical Care* (2003): 198–207.

19. Weinick, Robin M., et al. "Ambulatory care sensitive emergency department visits: A national perspective." *Academic Emergency Medicine* 10.5 (2003): 525.

20. Baker, David W., et al. "Regular source of ambulatory care and medical care utilization by patients presenting to a public hospital emergency department." *JAMA* 271.24 (1994): 1909–1912.

21. Johnson, Pamela Jo, et al. "Disparities in potentially avoidable emergency department (ED) care: ED visits for ambulatory care sensitive conditions." *Medical Care* (2012): 1020–1028.

22. Bergamo, Cara, et al. "Association of mental health disorders and Medicaid with ED admissions for ambulatory care–sensitive condition conditions." *The American Journal of Emergency Medicine* 34.5 (2016): 820–824.

23. John Billings, Professor, Director, Health Policy and Management Program, Robert F. Wagner School of Public Service, New York University. Ambulatory Sensitive Conditions Listing and ICD-CM Coding Source. http://wagner.nyu.edu/files/faculty/NYU_ED_Algorithm_-_ICD-10_Codes_-_6.23.15.xlsx (accessed on April 11, 2020).

24. Agency for Healthcare Research and Quality. 2014 AHRQ Quality Indicators. https://www.qualityindicators.ahrq.gov/ (accessed September 14, 2020).

25. Levesque, Jean-Frederic, et al. "Patient-centered access to health care: Conceptualising access at the interface of health systems and populations." International Journal for Equity in Health (2013). https://equityhealthj.biomedcentral.com/articles/10.1186/1475-9276-12-18

26. ---. "Rates of hospitalization for ambulatory care sensitive conditions in the Medicare+ Choice population." *Health Care Financing Review* 22.3 (2001): 127.

27. John Billings, Professor, Director, Health

Policy and Management Program, Robert F. Wagner School of Public Service, New York University. Ambulatory Sensitive Conditions Listing and ICD-CM Coding Source. http://wagner.nyu.edu/files/faculty/NYU_ED_Algorithm_-_ICD-10_Codes_-_6.23.15.xlsx (accessed on April 11, 2020).

28. Agency for Healthcare Research and Quality. 2014 AHRQ Quality Indicators. https://www.qualityindicators.ahrq.gov/ (accessed September 14, 2020).

29. John Billings, Professor, Director, Health Policy and Management Program, Robert F. Wagner School of Public Service, New York University. Ambulatory Sensitive Conditions Listing and ICD-CM Coding Source. http://wagner.nyu.edu/files/faculty/NYU_ED_Algorithm_-_ICD-10_Codes_-_6.23.15.xlsx (accessed on April 11, 2020).