Community Factors Associated with Average Child Welfare Entry Rates in Illinois

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Introduction

Community conditions play an important role in understanding the likelihood of positive and negative outcomes for children and families. For example, the concentration of poverty and criminal activity in communities can be associated with disparities in exposure to child maltreatment. In Illinois, community contexts vary widely – within the City of Chicago, between Illinois counties, and within sub-regions, such as southern Illinois. Due to geographic disparities, family resources, experiences, and activities are constrained differently depending on where families live. Rates of entry into the child welfare system are influenced by community risk factors and may also be influenced by community protective factors.

The prevalence of reporting of maltreatment also varies by community context. Community factors play a role in the decision-making process in child protective services (Baumann, Dalgleish, Fluke, & Kern, 2011).[2] The ability to access social services or early intervention programming can differ based on spatial proximity or access to transportation, both in rural and urban settings (Belanger & Stone, 2008).[3] Increased access to services in communities may be considered helpful in reducing child maltreatment or child welfare entry rates, however, increased access of community services by families also increases "surveillance bias." Surveillance bias occurs when families with higher rates of engagement in community services have a higher likelihood of being reported to the child welfare system (Chaffin & Bard, 2006).[4]

The use of an ecological approach, recommended by the National Research Council (1993),[5] helps us think about substitute care entry as a product of the individual, family, and community-level factors. Analyses that account for geographic differences and relationships can also help understand how discrimination and structural inequalities impact outcomes for families. Using geospatial data on local labor markets, Beggs and colleagues (1997)[6] showed how discriminatory bias against African-Americans across communities contributes to occupational and wage inequalities. While understanding the role of community characteristics in explaining differences in an outcome such as child welfare entry is valuable, equally important is understanding the role of one community's characteristics in relation to surrounding communities.

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[2] Baumann, D.J., Fluke, J.D., Dalgleish, L., Kern, K. (2014). "The decision-making ecology." In: Shlonsky, A., Benbenishty, R., Eds., *From Evidence to Outcomes in Child Welfare: An International Reader*, (pp. 24–40). New York, NY: Oxford University Press.
[3] Belanger, K., & Stone, W. (2008). The social service divide: Service availability and accessibility in rural versus urban counties and impact on child welfare outcomes. *Child Welfare, 87*(4), 101-124.
[4] Chaffin, M. & Bard, D. (2006). Impact of intervention surveillance bias on analyses of child welfare report outcomes. *Child Maltreatment, 11*(4), 301-312.
[5] National Research Council. (1993). *Understanding child abuse and neglect*. National Academies Press.
[6] Beggs, J. J., Villemez, W. J., & Arnold, R. (1997). Black population concentration and black-white inequality: Expanding the consideration of place and space effects. *Social Forces, 76*(1), 65-91.

Executive Summary

- This data analysis project focused on understanding the extent to which local, community-level factors explain differences in substitute care entry rates for Illinois' 102 counties and 3,101 residential census tracts. The underlying assumption of this analysis is that the relationship between entry into the child welfare system varies by spatial unit (region, county, or community). We examine the role of community factors averaged over a five-year period (2016-2020) on average rates of substitute care entry over the same five-year period. Community data derives from the 2016-2020 American Community Survey (ACS) and other state and federal data sources.

- Even though this analysis provides valuable insights, statistical modeling often raises more questions than answers. Statistical modeling with available data has limitations. Our goal is to help interested stakeholders raise questions, develop actionable strategies, and guide the next data analyses.

- We used a statistical technique called linear regression to measure the relationship between community-level factors and entry rates. From this process, we learned which community factors (i.e., variables) have a relatively stronger relationship to entry. A series of spatial visualizations demonstrate how substitute care entry is concentrated in specific counties and neighborhoods across the State of Illinois.

- We conducted regression analyses separately with census tracts in: Cook County (n=1,315), other Illinois metropolitan areas (n=1,354), non-metro areas (n=432), and the state of Illinois (n=3,101) show similarities and differences in significant predictors of child welfare entry averaged over five years (2016-2020, and measured as a normalized rate relative to population of % of 1,000 youth).[7] For example:

  Similarities in predictors of increased child welfare entry rates:
  - An increased proportion of the adult population **without a high school diploma** is associated with higher substitute care entry rates in all Illinois geographic areas, especially in non-Cook metro areas and non-metro areas.
  - The **proportion of vacant housing** in all geographic areas is also associated with increased child welfare entry rates.

  Differences in predictors of increased child welfare entry rates:
  - **Higher unemployment rates** are a substantive factor associated with increased child welfare entry rates for Cook County and other Illinois metropolitan areas, but not for rural and smaller micropolitan areas.

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[7] A metropolitan statistical area consists of one or more counties that contain a city of 50,000 or more inhabitants. Due to its unique characteristics, we analyzed Cook County as a separate spatial unit. Non-Cook metropolitan statistical areas are labeled based on their most prominent cities. They include counties in/around Bloomington, Cape Giradeau MO-IL, Carbondale-Marion, Champaign-Urbana, Chicago-Naperville-Elgin (excluding Chicago), Danville, Davenport-Moline-Rock Island IA-IL, Decatur, Kankakee, Peoria, Rockford, Springfield, and St. Louis MO-IL. While the metropolitan areas may span from Illinois to a neighboring state (e.g., Iowa, Missouri), this data analysis only included census tracts and counties in Illinois.

A non-metro spatial unit is any county that does not require either a) contain a city of 50,000 or more inhabitants or b) have significant commuting flow into a nearby county with a city of 50,000 or more inhabitants. These include the following counties: Adams, Brown, Bureau, Carroll, Cass, Christian, Clark, Clay, Clinton, Coles, Crawford, Cumberland, DeWitt, Douglas, Edgar, Edwards, Effingham, Fayette, Ford, Gallatin, Greene, Hancock, Hardin, Henderson, Iroquois, Jasper, Jefferson, Jo Daviess, Knox, La Salle, Lawrence, Lee, Livingston, Logan, Marion, Mason, Massac, McDonough, Montgomery, Morgan, Moultrie, Ogle, Pike, Pope, Pulaski, Putnam, Richland, Saline, Schuyler, Scott, Shelby, Stephenson, Union, Warren, Washington, Wayne, White, Whiteside.

- For non-Cook metro and non-metro areas, **higher poverty rates** are associated with increased child welfare entry rates.
- The percent of **households without ownership of at least one vehicle** was not an associated factor with child welfare entry rates in Cook County. However, it was a significant predictor of increased high substitute care entry rates in both non-Cook metropolitan and non-metro areas.
- **Higher crime rates** are strong predictors of increased substitute care entry in non-Cook metro areas and rural areas of Illinois. However, controlling for other variables in the regression model, the crime rate was not associated with substitute care entry in Cook County.
- In Cook County, a **higher proportion of the African-American population** is associated with increased substitute care entry rates. However, an increased proportion of African-American youth in rural census tracts is associated with lower rates of substitute care entry; and not a statistically significant predictor for non-Cook metro census tracts.
- The **ratio of children to adults** has a strong association with higher substitute care entries in both non-Cook metro areas and non-metro areas in Illinois, but not in Cook County.
- The **rate of single-parent households** was one of the top two predictors of average child welfare entry rates in rural areas in the state.

Differences in predictors of decreased child welfare entry rates:

- A higher **proportion of the Latino population in non-Cook metro and non-metro areas** in Illinois is associated with lower rates of child welfare entry, but not in Cook County.
- A higher **proportion of the elderly population** is associated with lower child welfare entry in non-Cook metro areas, but not in Cook County or non-metro areas.

Strongest predictors across Illinois census tracts:

- Top factors associated with substitute care entry rates are generally poverty-related: higher percentage of the population without a high school education (+0.23), crime index (+0.19), higher proportion of vacant housing (+0.16), increased unemployment rates (+0.10), higher proportion of children living below federal poverty level (+0.10), higher number of households without a vehicle (+0.08).
- Additionally, household characteristics also matter for our understanding of increased substitute care entry – higher child-to-adult ratios (+0.10) and higher proportion of single-parent households (+0.05).
- In relation to Cook County, all other regions have higher substitute care entry rates in relation to the overall youth population.
- A higher proportion of Latino, African-American, and elderly population is associated with lower child welfare entry rates, when looking at the state as a whole (-0.22, -0.08, and –0.05, respectively).

- Using county-level data (n=102), we found that, compared to all other regions, the **DCFS 5A (Marion) subregion experienced the highest increase of substitute care entries** as a proportion of total youth. Since the weight of the entries relative to the estimated youth population is disproportionately skewed in 5A, the statistical modeling results were primarily driven by community-level risk factors in 5A.
  - Many of the variables (births to unmarried mothers, poverty rate, unemployment rate, low levels of college education, and 3rd-grade reading/math scores; adults reporting physical and mental distress) progressed in a detrimental direction for the Marion region. Descriptive visualizations also show that 5A has disproportionately experienced an increase of youth entering care.

- When the individual child and family data are added to a full range of community-level ecological predictors, the nature of the associations between the community ecological variables and the outcome of

child welfare entry is likely to change. Prior studies have found that when the child and family data are added to the community-level predictors, the effect of the community variables is reduced.

- Statistical models using county-level predictors with county-level child welfare entry rates did not perform well. Available community predictors at county- and census-tract levels did not work well to explain variance in the rate of change in child welfare entry rates from 2016-2017 to 2019-2020, accounting for the overall rate.

Implications and Considerations for DCFS

- Continue to prioritize the development of partnerships, cross-agency collaboration, community-level development, and collaborative engagement in high-risk counties and regions (e.g., DCFS Subregion 5A). These continued efforts would marshal resources and solutions to address the consequences of increased poverty and unemployment.
- Continue to advocate for the welfare of all youth in the State of Illinois, calling attention to the root causes of higher unemployment in urban areas and increased poverty in non-metro areas. Both are symptoms of economic change, and a reduction in unemployment and poverty have a strong likelihood of reducing child welfare entry rates.
- Building upon work by Chapin Hall Center for Children (Weiner & Heaton, 2020)[8], explore use of Chapin Hall's "Latent Event Simulator," which uses multiple sources of data to help DCFS forecast changing rates of abuse and neglect based on community-level stressors, including poverty and economic insecurity indicators.
    - Since the proportion of vacant housing has a strong relationship with increased child welfare entry across metro and rural areas, it is critical to learn more about the root causes of vacant housing and activities in the community with higher levels of vacant housing. A higher level of vacant housing is correlated with higher rates of poverty and crime in the community and likely correlated with higher out-migration rates from communities.
    - Efforts to increase the proportion of the population earning at least a high school diploma are essential to reducing substitute care entry rates. Higher educational attainment is associated with reduced poverty, and would have a beneficial impact for substitute care entry rates.
    - In Illinois' non-Cook metro and non-metro areas, families without a vehicle are at increased risk of child welfare entry, when controlling for poverty, unemployment, and other factors. This is a significant risk factor for additional program and policy development.
    - It will be important to keep an eye on areas with higher child-to-adult ratios to develop prevention supports, associated with increased child welfare entry rates in non-Cook metropolitan areas and rural areas.
    - Strengthening the delivery of prevention services and developing more robust kinship networks are essential to help reduce the disproportionate rate of child welfare entry among African-American families in Cook County.
    - Addressing the prevention needs of white, low-income families across Illinois is necessary to reduce overall rates of entry into DCFS care.

[8] Weiner, D. & Heaton, L. (2020). *COVID-19 and child welfare: Using data to understand trends in maltreatment and response*. Chicago, IL: Chapin Hall Center for Children. https://www.chapinhall.org/news/data-reveals-trends-in-child-maltreatment-new-tool-can-enable-effective-response/

Methodology and Data Sources

For this briefing, we used the following analytical methods: 1) descriptive statistics and visualization to highlight county-level differences across DCFS regions, 2) simple linear regression[9] to describe relationship between measures and substitute care entry, 3) ordinary least squares (OLS) diagnostics with county-level data, and 4) multivariate OLS regression with census-tract level data. Using the county-level predictors with county-level entry rates, the OLS regression revealed a modifiable areal unit problem (MAUP), or potential distortion of rate calculations at the county-level (see Openshaw, 1984; Arbia, 1988).[10] Using data at the census tract level, we used analytical functions in SAS® to determine the optimal linear (best-fitting) regression model (Beal, 2005).[11]

To visualize this information, we used the Jenks Natural Breaks Classification (1967) method to group similar values together (e.g., for a community characteristic such as unemployment rate) and illustrates differences between geographic areas in a choropleth map.[12] All figures and rates have been normalized with count of youth from U.S. Census Bureau, Population Estimates Program (PEP). All figures were created with TIGER/Line Shapefiles, a series of geographic extent and boundaries of both legal and statistical entities maintained by the U.S. Census Bureau. DCFS-pertinent information (i.e., sub-regions) were generated by the research team from publicly-available information.

County-level[13] counts of substitute care entry (2016-2020 CY) were constructed using initial legal county information from CYCIS by the Office of Strategy and Performance Execution. Additional data sources included the U.S. Census Bureau, American Community Survey, CDC Behavioral Risk Factor Surveillance System (BRFSS), Illinois Department of Public Health, Illinois State Police, and Stanford Education Data Archive.

Census Tract-level[14] counts of substitute care entry (2016-2020 CY) were generated from individual addresses in CR-03 CYCIS screen provided by the Office of Strategy and Performance Execution. The county-level information derived for this report was created using address at substitute-care entry, rather than the traditional legal county reported in CYSIS. This address information was fed into a localized geocoder with a Master Address File (MAF) to develop Census Tract-level counts.

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[9] Simple linear regression is an analysis that illustrates the relationship between one predictor and the outcome variable, e.g., unemployment rate with child welfare entry rate.

[10] See Openshaw, S. (1984). Ecological fallacies and the analysis of areal census data. *Environment and Planning A*, *16*(1), 17-31.; Arbia, G. (1988). *Spatial data configuration in statistical analysis of regional economic and related problems* (Vol. 14). Springer Science & Business Media.

[11] Beal, D. J. (2005) *SAS® code to select the best multiple linear regression model for multivariate data using information criteria*. Oak Ridge, TN: Science Applications International Corporation. http://www.biostat.umn.edu/~wguan/class/PUBH7402/notes/lecture8_SAS.pdf

[12] A choropleth map is a thematic map used to represent statistical data through various shading patterns or symbols on predetermined geographic areas. This thematic map may include up to 7 groupings, where each theme (color) represents a grouping of values that have minimal variance but maximum variance from other themes (colors). This grouping is determined through an iterative process.

[13] Counties are the primary legal divisions in the State of Illinois. They are a functioning governmental unit with powers and functions. There are 102 counties in the State of Illinois.

[14] Census Tracts are small, relatively permanent statistical subdivisions of a county that are updated by local participants prior to each Decennial Census as part of the U.S. Census Bureau's Participant Statistical Areas Program. Census Tracts have a population between 1,200 and 8,000 people with an optimum size of 4,000 people. Boundaries generally follow visible and identifiable features. There are 3,115 Census Tracts in the State of Illinois with residents.

Figure 1. Substitute Care Entry per 1,000 youth, by year, by subregion, 2016-2020.

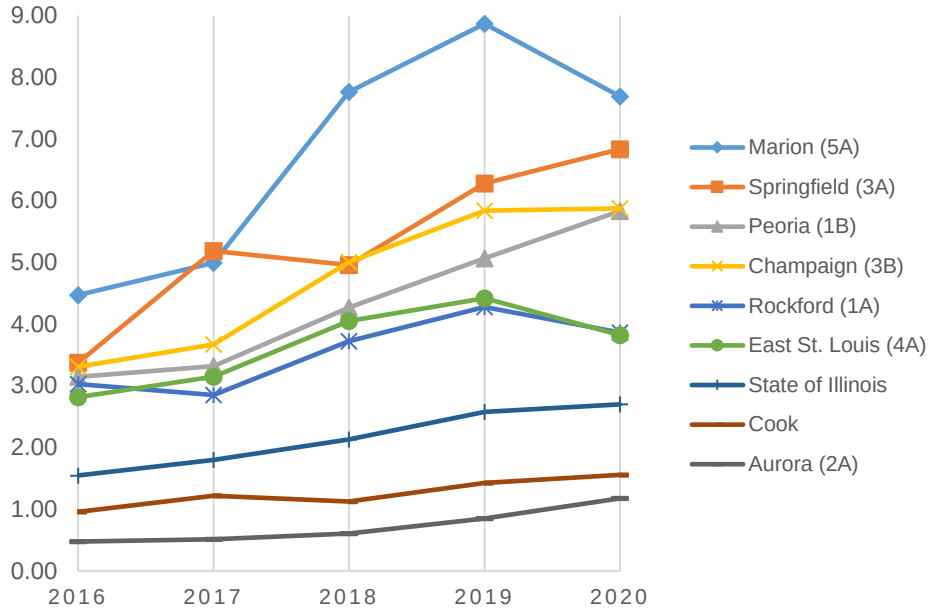


Figure 2. Simple bivariate regression for county-level predictors with relationship to substitute care entry, 2016-2020. (+ / - relationship), $p < .05$[15]

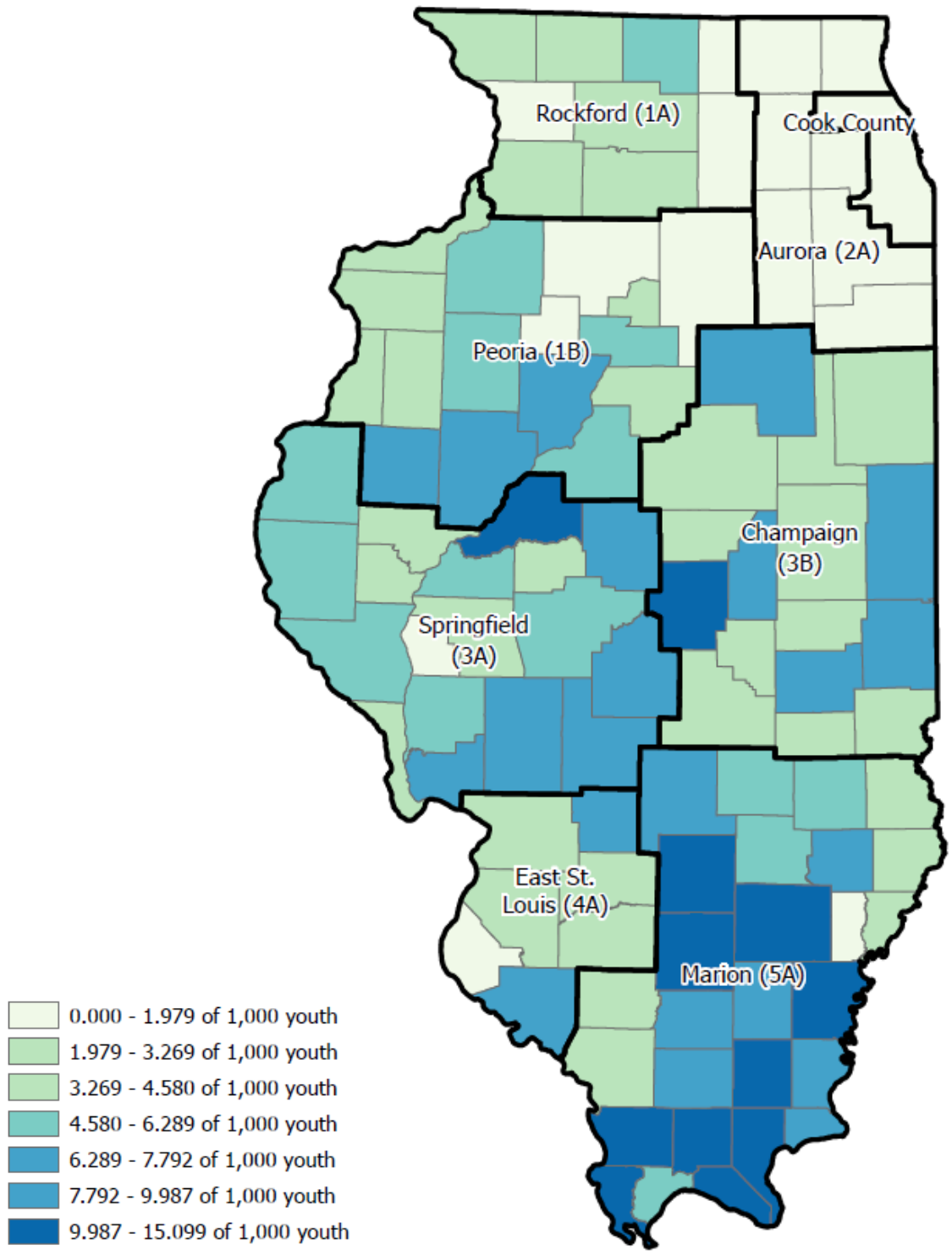
Metropolitan Area	-
Births/unmarried mothers	+
Births/teenage mothers	+
Births/mothers in poverty	+
Children in poverty	+
Unemployment rate	+
% w/ college diploma	-
3rd grade reading/math	-
% adults reporting physical distress[16]	+
% adults reporting mental distress[17]	+
Community crime index[18]	+

[15] P-values indicate whether a result is "statistically significant" or likely due to chance. Statistical significance is most commonly evaluated from a p-value of less than .05, which means there is less than 5% probability that the result is due to chance.
[16] Percentage of adults reporting 14 or more days of poor physical health per month (age-adjusted).
[17] Percentage of adults reporting 14 or more days of poor mental health per month (age-adjusted).
[18] Weighting of aggravated battery and assault, arson, burglary, murder, robbery, sexual assault, theft, and vehicle theft statistics.

Table 1. Descriptive statistics for community predictors, at DCFS sub-region level.

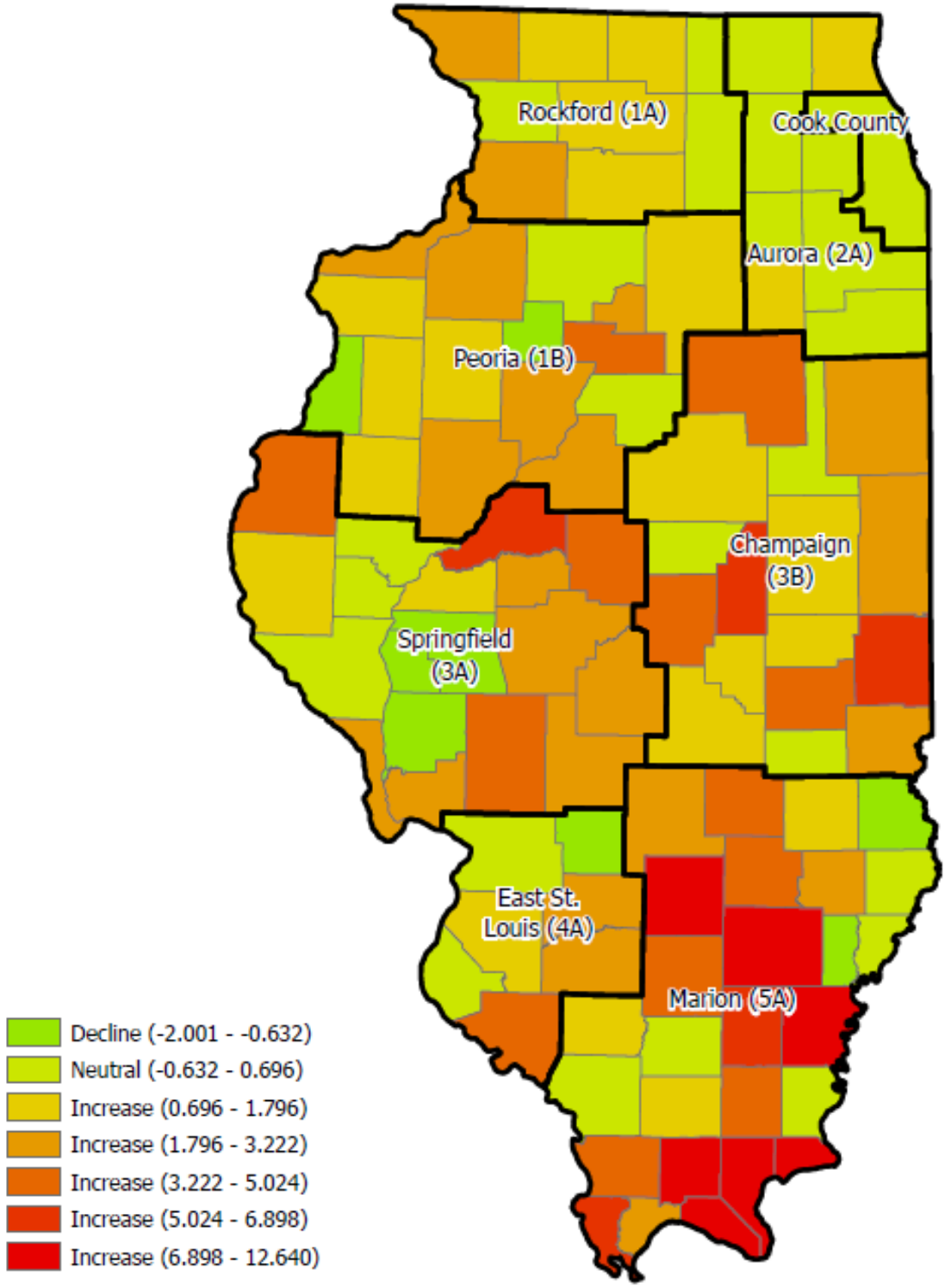
	Aurora (2A)	Champaign (3B)	Cook County (0A)	East St. Louis (4A)	Marion (5A)	Peoria (1B)	Rockford (1A)	Springfield (3A)
% of counties that are metropolitan	1.00	0.63	1.00	0.57	0.15	0.63	0.56	0.44
Births/unmarried mothers (IDPH, 2019)	32.81	42.51	40.78	36.43	44.25	42.56	44.94	42.16
Births/teenage mothers (IDPH, 2019)	3.63	5.62	3.90	3.90	6.80	5.42	4.61	4.71
Births/mothers in poverty (IDPH, 2019)	16.68	24.84	21.40	17.07	29.65	23.94	25.92	26.37
% children in poverty (ACS, 2015-2020)	10.05	16.97	18.80	14.34	23.69	17.11	16.29	17.61
Unemployment rate (ACS, 2015-2020)	5.10	5.08	5.38	4.51	6.31	5.72	5.40	5.20
% w/ college diploma (ACS, 2015-2020)	21.68	14.51	23.01	15.36	10.96	14.61	14.22	12.72
3rd grade reading/math (SEDA, 2018)	3.20/ 3.05	3.02/ 2.83	Not reported/ 2.85	3.17/ 3.06	2.92/ 2.79	3.02/ 2.84	2.99/ 2.89	3.00/ 2.86
% adults reporting physical distress (CDC BRFSS, 2018)	9.54	10.82	10.21	10.22	11.39	10.49	10.63	10.61
% adults reporting mental distress (CDC BRFSS, 2018)	10.74	12.11	10.96	11.43	12.54	11.72	11.72	11.86
Community crime index (ISP, 2015-2018)	274.41	505.86	836.16	354.05	509.39	413.93	443.02	427.42
Total Intakes into DCFS (2020)	964	1,006	1,732	555	870	1,097	571	809
Youth population (2019)	820,599	171,287	1,113,238	145,303	113,144	188,113	147,810	118,381

Figure 3. Substitute care entry in 2019/2020, expressed at county-level, per 1,000 youth.



Data sources:
DCFS CYCIS, Substitute care entry rates averaged across CY2019 and CY2020.
U.S. Census Bureau, Population Estimate Program (2019, 2020)

Figure 4. Change in substitute care entry rate from 2016/2017 to 2019/2020, expressed at county-level, per 1,000 youth.



Data sources:
DCFS CYCIS, Substitute care entry rate is averaged for CY2016 and CY2017, and then averaged across CY2019 and CY2020.
U.S. Census Bureau, Population Estimate Program (2016, 2017, 2019, 2020)

Table 2. Counties with highest changes in counts of youth (normalized) entering substitute care between 2016/2017 and 2019-2020.

The following counties are identified as having the ten highest changes in counts of youth (normalized) enter substitute care, between 2016/2017 and 2019/2020. These county-level counts are based on the CR-03 addresses, rather than the traditional legal county identified in CYCIS.

Spatial unit	DCFS Subregion	Change in rate between 16/17 and 19/20	19/20 rate of entry
Massac County	Marion (5A)	+12.640	14.981 of 1,000 youth each year
Johnson County	Marion (5A)	+10.379	12.809 of 1,000 youth each year
Pope County	Marion (5A)	+9.584	13.578 of 1,000 youth each year
Wayne County	Marion (5A)	+8.863	12.758 of 1,000 youth each year
Marion County	Marion (5A)	+8.242	12.910 of 1,000 youth each year
Hardin County	Marion (5A)	+8.136	8.136 of 1,000 youth each year
White County	Marion (5A)	+8.016	11.690 of 1,000 youth each year
Hamilton County	Marion (5A)	+6.898	8.278 of 1,000 youth each year
Mason County	Springfield (3A)	+6.567	13.312 of 1,000 youth each year
Alexander County	Marion (5A)	+6.520	15.099 of 1,000 youth each year

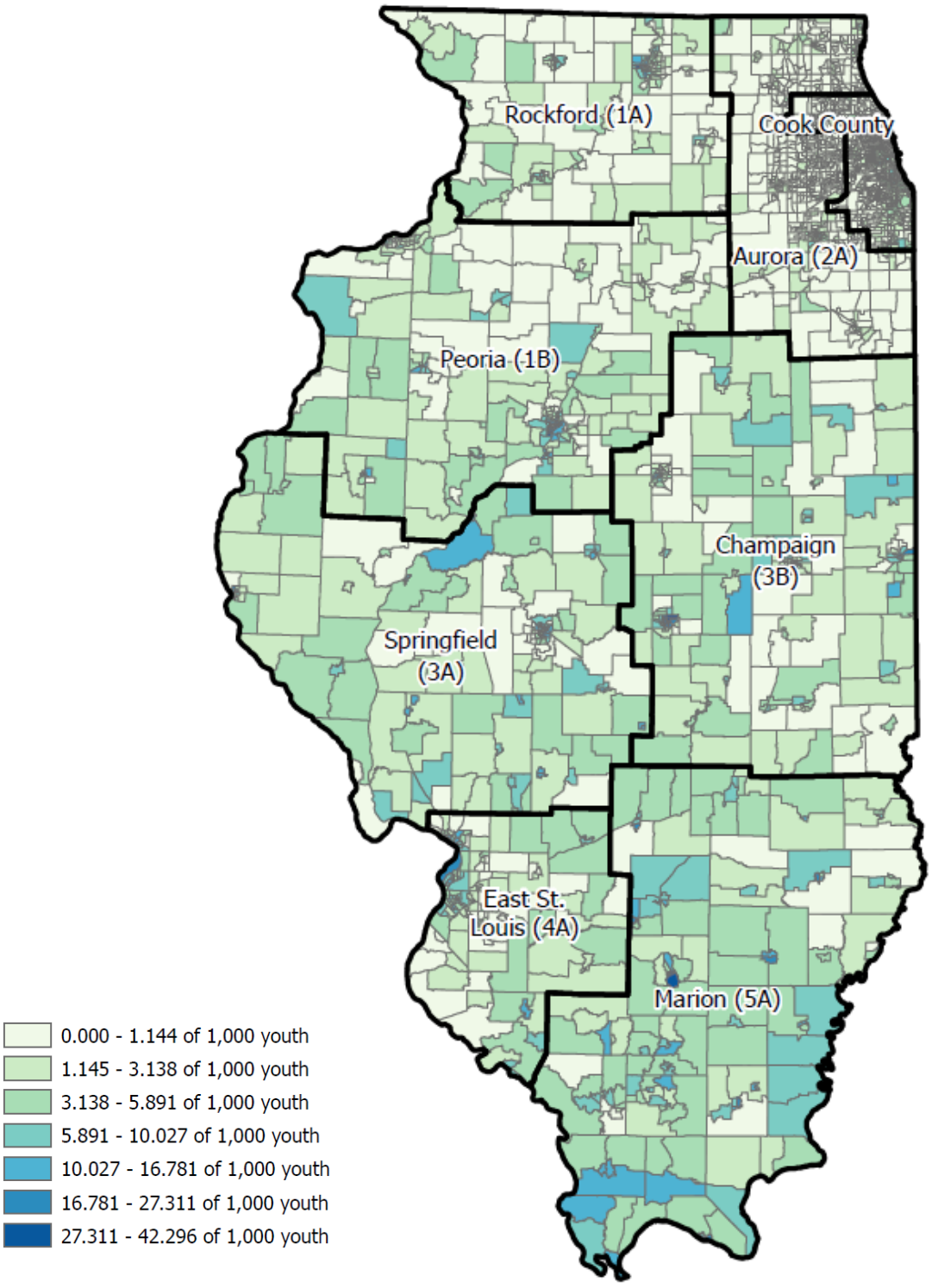
Data sources:
DCFS CYCIS, Substitute care entry rate is averaged for CY2016 and CY2017, and then averaged across CY2019 and CY2020

Because of statistical bias in aggregating spatial phenomena (substitute care entry) to the county-level, we chose to use Census Tracts to represent neighborhoods when establishing initial relationships between community-level conditions and substitute care entry. Census Tracts have a population between 1,200 and 8,000 people. There are 3,101 residential Census Tracts in the State of Illinois with residents. In the following figure, Metropolitan Areas are visualized in gray and non-metro communities are visualized in white. Census Tracts within these counties will be subset accordingly: Cook County, Metropolitan Areas (excluding Cook County), and non-metropolitan communities (the remainder of the state).

These groupings were created to account for variation in the relationship between indicators of community wellbeing and substitute care entry for Cook County, non-Cook metro areas, and non-metro/rural areas. Rural communities in Illinois are quite different from metropolitan areas of the state, and the city of Chicago is rather different from other metropolitan areas of Illinois. As a result, community conditions most associated with average child welfare entry rates in Cook County can be expected to be different from community conditions most associated with substitute care entry in non-Cook metro areas and non-metropolitan areas in Illinois.

Figure 5. Metropolitan and Non-Metropolitan Counties, State of Illinois

Figure 6. Substitute care entry between 2016 and 2020, calculated as a yearly average rate, expressed at the Census Tract-level, per 1,000 youth.



Data sources:
DCFS CYCIS, Substitute care entries for CY2016, CY2017, CY2018, CY2019, and CY2020
U.S. Census Bureau, Population Estimate Program (2016, 2017, 2018, 2019, 2020)

Figure 7. Substitute care entry between 2016 and 2020, calculated as a yearly average rate, selected areas, expressed at the Census Tract-level, per 1,000 youth.

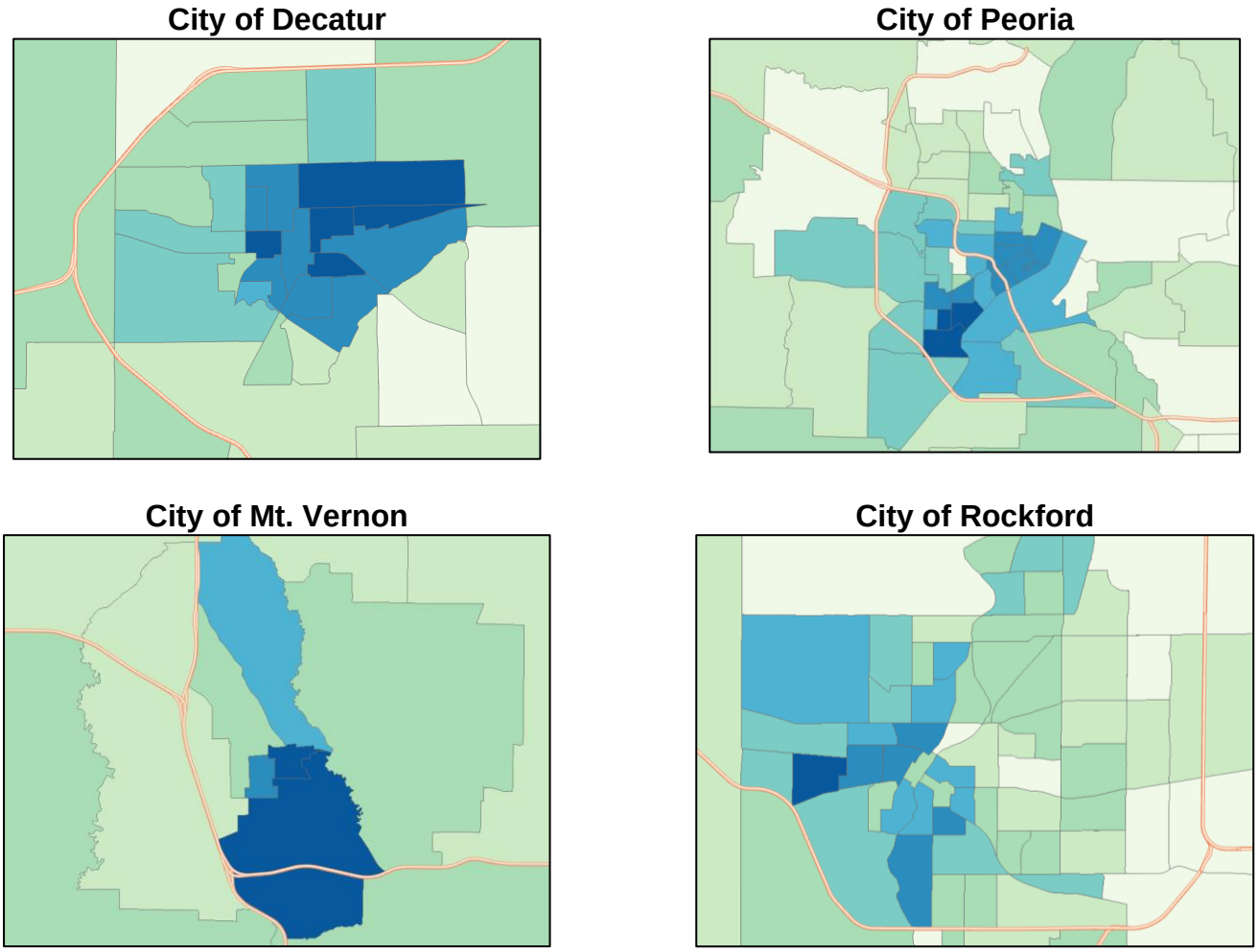


Table 3a. Counties with highest counts of youth (normalized) entering care across 2016-2020.
The following Counties are identified as having the twenty highest counts of youth (normalized) enter substitute care, on an average year, between 2016 and 2020. While the largest community in each county is provided for identification purposes, the entry rate is generated from the entire county and not that community alone. This table is based on legal county, rather than the CR-03 Address used for the Census Tracts. To consider scale, the average number of youth entering substitute care each year is also included.

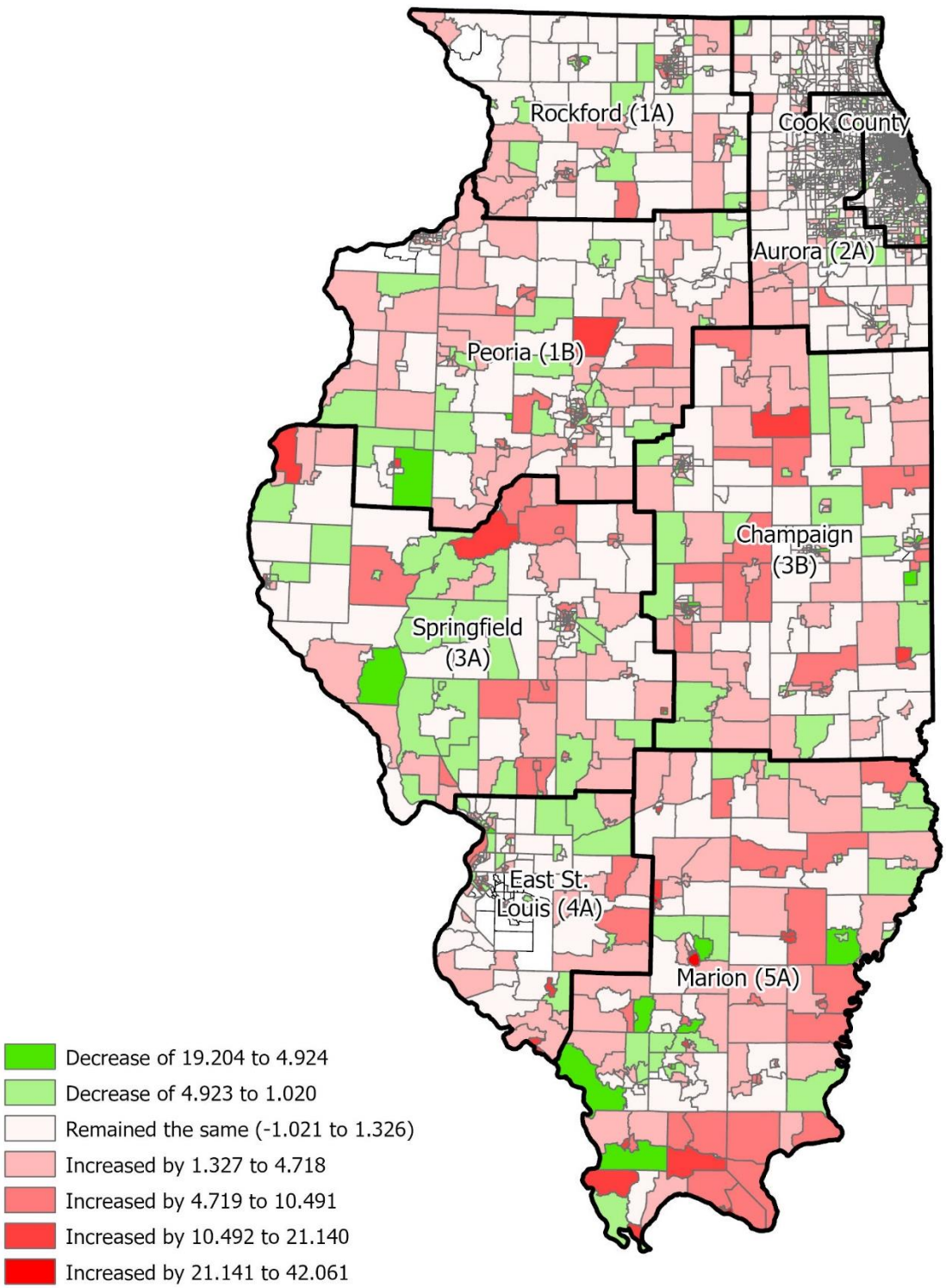
Spatial unit	DCFS sub-region, community	Rate of entry	Mean N
Pope County	Southern 5A, Golconda	11.84 of 1,000 youth	6
Union County	Southern 5A, Anna	11.57 of 1,000 youth	41
Macon County	Central 3B, Decatur	11.08 of 1,000 youth	258
Saline County	Southern 5A, Harrisburg	10.24 of 1,000 youth	52
Alexander County	Southern 5A, Cairo	9.61 of 1,000 youth	13

Jefferson County	Southern 5A, Mt. Vernon	9.58 of 1,000 youth	81
Marion County	Southern 5A, Salem	9.37 of 1,000 youth	81
Wayne County	Southern 5A, Fairfield	8.91 of 1,000 youth	33
Christian County	Central 3A, Taylorville	8.85 of 1,000 youth	59
Massac County	Southern 5A, Metropolis	8.46 of 1,000 youth	26
Bond County	Southern 4A, Greenville	8.34 of 1,000 youth	27
Logan County	Central 3A, Lincoln	8.24 of 1,000 youth	46
Gallatin County	Southern 5A, Shawneetown	8.09of 1,000 youth	8
Peoria County	Central 1B, Peoria	7.83 of 1,000 youth	336
Richland County	Southern 5A, Olney	7.81 of 1,000 youth	28
Mason County	Central 3A, Havana	7.68 of 1,000 youth	22
Johnson County	Southern 5A, Vienna	7.44 of 1,000 youth	17
White County	Southern 5A, Carmi	7.16 of 1,000 youth	22
Franklin County	Southern 5A, Benton	6.98 of 1,000 youth	60
Montgomery County	Central 3A, Hillsboro	6.78 of 1,000 youth	39

Table 3b. Census tracts with highest counts of youth (normalized) entering care across 2016-2020.
The following Census Tracts are identified as having the ten highest counts of youth (normalized) enter substitute care, on an average year, between 2016 and 2020.

Spatial unit	Identifiable feature	Rate of entry
Census Tract 10, Macon County	City of Decatur, Grant Park and West Lake	42.296 of 1,000 youth each year
Census Tract 1, Peoria County	City of Peoria, South Peoria (South end)	39.151 of 1,000 youth each year
Census Tract 5, Peoria County	City of Peoria, South Peoria (North end)	38.756 of 1,000 youth each year
Census Tract 511, Jefferson County	City of Mt. Vernon, Southern and eastern areas	37.809 of 1,000 youth each year
Census Tract 510, Jefferson County	City of Mt. Vernon, Central area	37.345 of 1,000 youth each year
Census Tract 24, Winnebago County	City of Rockford, Westmoreland	36.513 of 1,000 youth each year
Census Tract 9, Macon County	City of Decatur, Phoenix Park	36.402 of 1,000 youth each year
Census Tract 21, Macon County	City of Decatur, Concord and Fans Field	35.094 of 1,000 youth each year
Census Tract 3, Peoria County	City of Peoria, South Peoria (Central East)	32.747 of 1,000 youth each year
Census Tract 2, Peoria County	City of Peoria, South Peoria (Central West)	30.914 of 1,000 youth each year

Figure 8. Change in substitute care entry between 2016/2017 and 2019/2020, expressed at the Census Tract-level, per 1,000 youth.



DCFS CYCIS, Substitute care entries for CY2016, CY2017, CY2019, and CY2020
U.S. Census Bureau, Population Estimate Program (2016, 2017, 2019, 2020)

Table 4a. Census tracts with highest counts in counts of youth (normalized) change entering substitute care between 2016/2017 and 2019-2020.

The following Census Tracts are identified as having the ten highest counts of youth (normalized) enter substitute care, on an average year, between 2016 and 2020.

Spatial unit	Identifiable feature	Change in rate of entry
Census Tract 5027, St. Clair County	Former City of Centreville (South of Alorton)	Increase of 42.061 (of 1,000)
Census Tract 510, Jefferson County	City of Mt. Vernon, Central area	Increase of 33.945 (of 1,000)
Census Tract 511, Jefferson County	City of Mt. Vernon, Southern and eastern areas	Increase of 32.520 (of 1,000)
Census Tract 17, Sangamon County	City of Springfield, E. Cook St. and S. 11th St.	Increase of 29.897 (of 1,000)
Census Tract 21, Winnebago County	City of Rockford, River Forest	Increase of 27.376 (of 1,000)
Census Tract 13, Peoria County	City of Peoria, North Valley (South end)	Increase of 26.701 (of 1,000)
Census Tract 9704, Massac County	City of Metropolis, Massac City	Increase of 26.575 (of 1,000)
Census Tract 12, Peoria County	City of Peoria, Downtown Peoria	Increase of 25.826 (of 1,000)
Census Tract 20, Macon County	City of Decatur, French Quarters / Monroe Park	Increase of 25.504 (of 1,000)
Census Tract 10, Macon County	City of Decatur, Grant Park and West Lake	Increase of 25.108 (of 1,000)
Census Tract 5025, St. Clair County	City of Alorton	Increase of 24.704 (of 1,000)
Census Tract 9527, Marion County	City of Centralia, North of W. McCord St.	Increase of 24.148 (of 1,000)
Census Tract 9, Sangamon County	City of Springfield, E. Madison St. and N. 9th St	Increase of 21.140 (of 1,000)

Table 4b. Counties with highest counts in counts of youth (normalized), averaged 2016 to 2020 (calendar years).

The following 20 counties are identified as having the highest counts of youth (normalized) enter substitute care, on an average year, between 2016 and 2020.

Spatial unit	Identifiable feature	Rate of Entry	Average Count
Union County	Southern 5A, Anna	11 of 1,000 youth each year	41
McDonough County	Central 1B, Macomb	11 of 1,000 youth each year	34
St. Clair County	Southern 4A, East St. Louis	10 of 1,000 youth each year	201
Jefferson County	Southern 5A, Mt. Vernon	10 of 1,000 youth each year	81
Macon County	Central 3B, Decatur	9 of 1,000 youth each year	258
Alexander County	Southern 5A, Cairo	9 of 1,000 youth each year	13
Wayne County	Southern 5A, Fairfield	9 of 1,000 youth each year	33
Christian County	Central 3A, Taylorville	9 of 1,000 youth each year	59
Bond County	Southern 4A, Greenville	8 of 1,000 youth each year	27
Logan County	Central 3A, Lincoln	8 of 1,000 youth each year	46
Marion County	Southern 5A, Salem	8 of 1,000 youth each year	81
Gallatin County	Southern 5A, Shawneetown	8 of 1,000 youth each year	8
Peoria County	Central 1B, Peoria	8 of 1,000 youth each year	336
Madison County	Southern 4A, Collinsville	8 of 1,000 youth each year	228
Richland County	Southern 5A, Olney	8 of 1,000 youth each year	28
Johnson County	Southern 5A, Vienna	8 of 1,000 youth each year	17
White County	Southern 5A, Carmi	7 of 1,000 youth each year	22
Franklin County	Southern 5A, Benton	7 of 1,000 youth each year	60
Montgomery County	Central 3A, Hillsboro	7 of 1,000 youth each year	39
Fayette County	Southern 5A, Vandalia	6 of 1,000 youth each year	30

Table 5a. Ordinary Least Squares Regression Results for Best-Fitting Models of Community-Level Conditions[19] Associated with Average Census-Tract Substitute Care Entry Rates, 2016-2020, *Standardized Coefficients.*

	Cook County	Non-Cook County Metropolitan	Non-Metropolitan (rural)	State of Illinois (All)
Intercept				
Demographic composition				
% Black	0.20***	-0.05	-0.11*	-0.08*
% Hispanic	-0.08*	-0.36***	-0.11**	-0.22***
% Elderly		-0.06**		--0.05***
Socioeconomic conditions				
% w/o HS education	0.15***	0.36***	0.18***	0.23***
% unemployed	0.18***	0.16***		0.10***
% under poverty level		0.07***	0.15**	0.10***
Income inequality index[20]		0.00		
% No health insurance			0.06	0.01
Social/resource conditions				
% w/o vehicle		0.19***	0.23***	0.08***
% vacant housing	0.29***	0.11***	0.16***	0.16***
Crime index		0.13***	0.16***	0.19***
Drug overdose rate			0.04	0.04
Social capital index		-0.03		
Household and children/family characteristics				
Child/Adult ratio	0.03	0.19***	0.11**	0.10***
% Single-parent HHs	0.06	-0.00	0.21***	0.05*
Teen birth rate		-0.02	0.03	0.03
% Low birth weight		0.01		0.02
DCFS Region				
2A - Aurora		Reference	-0.06	0.24***
3B - Champaign		0.12***	-0.14***	0.24***
4A - East St. Louis		-0.00	-0.01	0.15***
1B - Peoria		0.11***	-0.17***	0.24***
1A - Rockford		0.02	-0.12*	0.14***
3A - Springfield		0.05	0.01	0.23***
5A – Marion			Reference	0.27***
0A - Cook				Reference
Adjusted R^2	0.4795	0.5532	0.4847	0.4785
N=	1,315	1,354	432	3,101
Child Welfare Entry Rate Mean, Range	1.244 (0 - 16.85)	2.76 (0 – 42.96)	4.61 (0 – 36.66)	2.38 (0 – 42.96)

Data Sources: DCFS CYCIS, American Community Survey (2015-2019), various state agency/federal sources
P-values:[21] *p < .05, ** p < .01, *** p < .001

[19] Data for each community-level condition may be reported at the census-tract level or the county-level, depending upon data availability. Data for each community-level condition may be reported for an individual year, or a five-year average, depending on the data source. American Community Survey data is reported as five-year estimates, from which averages of 2016-2020 years are used. See Methods Appendix for information on each independent variable.

[20] Income inequality is measured by what is called a "Gini coefficient," which indicates distribution of income across the population in a geographic unit (e.g., census tract). The coefficient ranges from 0 (or 0%) to 1 (or 100%), with 0 representing perfect equality and 1 representing perfect inequality. Values over 1 are theoretically possible, due to negative income or wealth (but rarer than values between 0 and 1).

[21] P-values indicate whether a result is "statistically significant" or likely due to chance. Statistical significance is most commonly evaluated from a p-value of less than .05, which means there is less than 5% probability that the result is due to chance. R^2 is a statistical measure that illustrates the proportion of the variation in the outcome (e.g. rate of substitute care entry) by the predictors in the regression model..

Intercept: The intercept in a regression can be interpreted as the expected mean value of the outcome variable when all of the independent predictors are set to zero, which only helps situate the regression line on the X-Y axis and does not have a meaningful interpretation on its own.

R^2: Interpreted as the proportion of variance in the outcome explained by predictors in the regression model. To the extent that average child welfare entry rates vary across census tracts, these models explain about 48-55% of the variance in average child welfare entry rates (Cook County model=48% variance explained; non-Cook metro model=55% variance explained; non-metro model=49% variance explained; state of Illinois variance explained=48%).
VIF: The Variance Inflation Factor for all measures were under 10, which is a primary threshold to indicate multicollinearity.

Table 5b. Ordinary Least Squares Regression Results for Best-Fitting Models of Community-Level Conditions[22] Associated with Average Census-Tract Substitute Care Entry Rates, 2016-2020. *Unstandardized Coefficients.*

	Cook County	Non-Cook County Metropolitan	Non-Metropolitan (rural)	State of Illinois (All)
Intercept	-0.84***	-4.22***	-7.41***	-4.59**
Demographic composition				
% Black	1.10***	-1.49	-7.20*	-1.14*
% Hispanic	-0.58*	-10.76***	-8.15**	-4.14***
% Elderly		-4.31**		-2.80***
Socioeconomic conditions				
% w/o HS education	2.82***	18.90***	16.02***	9.74***
% unemployed	5.03***	14.80***		6.38***
% under poverty level		2.67***	8.55**	3.27***
Income inequality index[23]		0.31		
% No health insurance			22.1	1.57
Social/resource conditions				
% w/o vehicle		11.11***	18.09***	2.38***
% vacant housing	7.70***	7.38***	9.97***	8.30***
Crime index		0.01***	0.01***	0.00***
Drug overdose rate			1.09	0.95
Social capital index		-0.25		
Household and children/family characteristics				
Child/Adult ratio	0.49	9.97***	7.47**	4.05***
% Single-parent HHs	1.58	-0.24	28.17***	3.26*
Teen birth rate		-0.05	0.08	0.07
% Low birth weight		0.03		0.05
DCFS Region				
2A - Aurora		Reference	-2.20	2.36***
3B - Champaign		1.84***	-2.07***	3.85***
4A - East St. Louis		-0.037	-0.19	2.78***
1B - Peoria		1.64***	-2.08***	3.62***
1A - Rockford		0.32	-1.73*	2.49***
3A - Springfield		1.06	0.15	4.11***
5A – Marion			Reference	4.99***
0A - Cook				Reference
Adjusted R^2	0.4795	0.5532	0.4847	0.4785
N=	1,315	1,354	432	3,101
Child Welfare Entry Rate Mean, Range	1.244 (0 - 16.85)	2.76 (0 – 42.96)	4.61 (0 – 36.66)	2.38 (0 – 42.96)

Data Sources: DCFS CYCIS, American Community Survey (2015-2019), various state agency/federal sources
P-values:[24] *p < .05, ** p < .01, *** p < .001

[22] Data for each community-level condition may be reported at the census-tract level or the county-level, depending upon data availability. Data for each community-level condition may be reported for an individual year, or a five-year average, depending on the data source. American Community Survey data is reported as five-year estimates, from which averages of 2016-2020 years are used. See Methods Appendix for information on each independent variable.

[23] Income inequality is measured by what is called a Gini coefficient," which indicates distribution of income across the population in a geographic unit (e.g., census tract). The coefficient ranges from 0 (or 0%) to 1 (or 100%), with 0 representing perfect equality and 1 representing perfect inequality. Values over 1 are theoretically possible, due to negative income or wealth (but rarer than values between 0 and 1).

[24] P-values indicate whether a result is "statistically significant" or likely due to chance. Statistical significance is most commonly evaluated from a p-value of less than .05, which means there is less than 5% probability that the result is due to chance. R^2 is a

Intercept: The intercept in a regression can be interpreted as the expected mean value of the outcome variable when all of the independent predictors are set to zero, which only helps situate the regression line on the X-Y axis and does not have a meaningful interpretation on its own.
R^2: Interpreted as the proportion of variance in the outcome explained by predictors in the regression model. To the extent that average child welfare entry rates vary across census tracts, these models explain about 48-55% of the variance in average child welfare entry rates (Cook County model=48% variance explained; non-Cook metro model=55% variance explained; non-metro model=49% variance explained; state of Illinois variance explained=48%).
VIF: The Variance Inflation Factor for all measures were under 10, which is a primary threshold to indicate multicollinearity.

Table 5c. Descriptive statistics for community predictors in the best-fitting regression models, Census Tracts Mean (SD)

	Cook County	Non-Cook County Metropolitan	Non-Metropolitan (rural)	State of Illinois (All)
Demographic composition				
% Black	28.82 (36.34)	10.56 (16.60)	3.74 (7.78)	17.30 (28.07)
% Hispanic	23.87 (26.22)	12.58 (16.14)	4.40 (6.71)	16.18 (21.45)
% Elderly	14.17 (14.17)	15.44 (6.34)	20.01 (4.74)	15.56 (6.57)
Socioeconomic conditions				
% w/o HS education	13.72 (10.75)	9.85 (9.18)	10.77 (5.59)	11.61 (9.65)
% unemployed	8.47 (7.38)	5.86 (5.08)	5.60 (3.29)	6.93 (6.13)
% under poverty level	16.25 (12.50)	12.53 (12.68)	14.68 (8.45)	14.41 (12.21)
Income inequality index	50.81 (0)[25]	44.83 (2.97)	43.38 (2.46)	47.15 (3.84)
% No health insurance	8.58 (0)	6.16 (1.09)	8.22 (1.41)	7.48 (1.47)
Social/resource conditions				
% w/o vehicle	18.93 (15.49)	6.65 (8.11)	6.97 (6.00)	11.88 (13.09)
% vacant housing	10.76 (7.69)	8.76 (7.21)	13.74 (8.14)	10.32 (7.74)
Crime index	836.17 (0)	523.62 (381.21)	439.58 (240.95)	644.41 (315.17)
Drug overdose rate	0.62 (0)	0.43 (0.18)	0.35 (0.17)	0.50 (0.17)
Social capital index	-0.53 (0)	-0.41 (0.54)	0.31 (0.49)	-0.36 (0.49)
Children/family structure				
Child/Adult ratio	0.30 (11.75)	0.31 (0.09)	0.30 (0.07)	0.31 (0.10)
% Single-parent HHs	8.00 (0.07)	6.73 (5.74)	5.98 (3.60)	7.16 (6.21)
Teen birth rate	3.90 (0)	4.33 (1.91)	5.75 (2.00)	4.35 (1.59)
% Low birth weight	8.96 (0)	8.23 (1.59)	7.84 (2.33)	8.48 (1.43)
N=	1,315	1,354	432	3,101

statistical measure that illustrates the proportion of the variation in the outcome (e.g. rate of substitute care entry) by the predictors in the regression model..

[25] Variables measured at the county-level have a standard deviation of zero in the regression analysis for Cook County. Variables measured at the census-tract level in Cook County represent an average across multiple census tracts, with standard deviations (variance) greater than zero. Since Cook County is a singular county and the variable is measured at the county-level, the standard deviation is zero for several variables.

Discussion

We developed separate best-fitting regression models for census-tracts in Cook County, census tracts in non-Cook metro areas, and census tracts for non-metropolitan areas. Information on community characteristics is grouped into four categories: 1) demographic composition, 2) socioeconomic conditions (education, poverty indicators), 3) social (drug overdose, crime, social capital/associations) and resource conditions (housing/vehicle access), and 4) household and child/family characteristics. Since community characteristics vary between non-Cook metro areas across the state, and between rural areas across Illinois, our regression models take into account the location of the census tract by DCFS region (1A, 1B, 2A, 3A, 3B, 4A, 5A). The regression results analyze the role of county or census-tract averages of community-level predictors over five-year period (2016-2020) in relation to average five-year child welfare entry rate in Illinois' census-tracts.

Among 30+ predictors of average rates, the best-fitting regression model varied for average substitute care entry rates (census-tract level) in Cook County, non-Cook metro areas, and non-metropolitan areas. Best-fit regression models were derived from the Beal (2005) statistical procedure in SAS to find lowest Alkaike Information Criteria (AIC)/Highest R-Squared (which are indicators of best-fitting regression models). Statistical information on the correlations between variables were checked for the best-fitting regression models, and the Variance Inflation Factors (VIFs) for predictors in these models were in acceptable ranges. Best-fitting models select predictors that uniquely explain variance in the outcome, while controlling for other characteristics in the model.

We provide results of the best-fitting regressions with both standardized coefficients and unstandardized coefficients. Using the **standardized regression coefficients** allows us to interpret the strength of the association between and among community characteristics, in relation to substitute care entry, because predictors are in converted to the same metric, of standard deviations from the mean. With the **unstandardized regression coefficients**, we can interpret the results of each community characteristic to average substitute care entry separately, in the original metric. For example, a one percentage point average increase in the population without a high school education would be associated with an average of 10 percentage point increase in the average rate of entry into substitute care, for that census tract. Since we are primarily interested in the relationship between and among community-level characteristics in relation to substitute care entry, we will **focus on interpreting the standardized regression results**.

Cook County results. In Cook County, the proportion of vacant housing (+0.29) and the proportion of the population identifying as African-American (+0.20) were the top two factors most associated with higher child welfare entry rates. For Cook County census tracts, a higher proportion of the population without a high school diploma (+0.15) and higher unemployment rates (+0.18) were also associated with higher substitute care entry rates. A higher proportion of Latinos in a census tract was associated with lower child welfare entry rate (-0.08) in Cook County census tracts. The influence of the percentage of the population without a high school diploma was measured at the county-level, and it is important to note that census-tracts may vary in the proportion of the population without a high school diploma, so this factor is not as precise as other census-tract level predictors in the model (e.g., % of vacant housing, % unemployment).

Non-Cook County Metropolitan results. In non-Cook metro areas, the top factor associated with higher child welfare entry rates was a higher proportion of the population without a high school diploma (+0.36). Additional factors associated with higher substitute care entry were: 1) a higher proportion of the population without a vehicle (+0.19), 2) higher child-to-adult ratio (+0.19), and 3) higher unemployment rate (+0.16). Other factors with strong association to increased child welfare entry rates in non-Cook metro areas were: 1) higher crime index (+0.13) and 2) higher proportion of vacant housing (+0.11). For non-Cook metro census tracts, the proportion of the population under the federal poverty level (+0.07) was also associated with higher child

welfare entry rates, however not to the same degree as the influence of higher unemployment (+0.16). We found that having a higher proportion of Latinos in non-Cook metro census tracts (-0.36) and a higher proportion of elderly population (-0.06) was associated with lower child welfare entry rates in non-Cook metro areas of Illinois. Compared to the Aurora metro area, census tracts in Champaign metro (+0.12) and Peoria (+0.11) metro areas had higher child welfare entry rates. However, census tracts in East St. Louis metro, Rockford metro, and Springfield metro did not show different child welfare entry rates than Aurora metro, when controlling for community characteristics. The Aurora 2A region was selected as the reference group because is a primarily urban region with a lower substitute care entry rate per 1,000 population.

Non-Metro area results. In non-metro census tracts, the top two factors associated with increased child welfare entry rates were the proportion of the population without a high school diploma (+0.23) and the proportion of the households without a vehicle (+0.23). Additional factors strongly associated with substitute care entry in rural areas were: 1) single-parent households (+0.21), 2) crime index (+0.16), 3) the proportion of vacant housing (+0.16), and 4) the proportion of the population living under the federal poverty level (+0.15). Additionally, higher child-to-adult ratios were also associated with increased substitute care entry in rural areas (+0.11). The best-fitting model for non-metro census tracts in Illinois included: rate of drug overdose, proportion of the population without health insurance, and the teen birth rate. However, when controlling for all the community characteristics in the best-fitting model, these three factors were not statistically significant. In non-metro areas, a higher proportion of African-American and Latino population was associated with lower average substitute care entry rates (-0.11 for both groups). Compared to the non-metro 5A region of Illinois, rural areas of DCFS 1B (Peoria), DCFS 3B (Champaign), and DCFS 2A (Rockford) had lower child welfare entry rates (-0.17, -0.14, and –0.12, respectively). However, non-metro census tracts in DCFS 2A (Aurora), DCFS 3A (Springfield), and DCFS 4A (East St. Louis) were not associated with the child welfare entry rates when compared to DCFS 5A (Marion), when controlling for community characteristics. The Marion 5A region was selected as the reference group because it is a primarily rural region.

State of Illinois results. Similar results are found when including all residential census tracts statewide in the analysis. Top factors associated with substitute care entry rates are generally poverty-related: higher percentage of the population without a high school education (+0.23), crime index (+0.19), higher proportion of vacant housing (+0.16), increased unemployment rates (+0.10), higher proportion of children living below federal poverty level (+0.10), higher number of households without a vehicle (+0.08). Additionally, household characteristics also matter for our understanding of increased substitute care entry – higher child-to-adult ratios (+0.10) and higher proportion of single-parent households (+0.05). In relation to Cook County, all other regions have higher substitute care entry rates in relation to the overall youth population. A higher proportion of Latino, African-American, and elderly population is associated with lower child welfare entry rates, when looking at the state as a whole (-0.22, -0.08, and –0.05, respectively).

Comparisons between Cook County, non-Cook metropolitan areas, and non-metro areas.

- The influence of community demographic composition: African-American neighborhoods in Cook County are more likely to experience substitute care entry, however, this relationship does not hold true for non-Cook metro areas and non-metropolitan areas of Illinois. In Cook County (as of 8/31/2021), 71% of youth in care identify as African-American, while only 25.5% of youth in Cook County are African-American. Statewide, 14% of the youth population is African-American, while 42% of youth in care identify as African-American. Rural communities in Illinois do not have as many African-American and Latino youth. A higher proportion of African-American and Latino populations in non-metro areas is associated with lower child welfare entry rates. Also, a higher proportion of Latino population (but not a higher proportion of African-Americans) in non-Cook metro areas is associated with lower child welfare entry rates. Through

a systematic review of the literature, Millett (2016)[26] found that amidst risks posed by poverty and lower educational attainment, Latino families have healthier outcomes (including lower rates of child maltreatment) than native-born population experiencing similar socio-economic conditions due to protective factors associated with stronger family and social ties. This phenomenon is referred to as a "Latino paradox" and reflective of a broader "healthy immigrant paradox", illustrating similar findings for foreign-born families generally.

- The influence of community socioeconomic conditions: Increased rates of unemployment are associated with higher rates of child welfare entry in both Cook County and non-Cook metropolitan areas, but this effect does not hold for rural communities. Rather, a higher poverty rate (in the census tract) is a stronger predictor of substitute care entry in non-metro areas. Additionally, the proportion of the population in the county without a high school education is strongly associated with increased child welfare entry rates in both metropolitan and rural areas. Individuals without a high school education would be less likely to earn higher-paying jobs, so this also a poverty-correlated factor. Higher crime rates are associated with increased child welfare rates in non-Cook metro and rural areas, also.

- The influence of social and resource conditions: In all three geographic types (Cook County, non-Cook metro, and non-metro areas), a higher concentration of vacant households is associated with higher child welfare entry rates. Lack of vehicle ownership is not associated with increased child welfare entry rates in Cook County, but an increased proportion of households without a vehicle in non-Cook metro and non-metro areas is associated with higher rates of substitute care entry.

- The influence of household and child/family characteristics: We found that the ratio of children to adults in non-Cook metro areas and rural areas was strongly associated with higher average child welfare entry rates. We also found that *in rural areas only,* a higher proportion of single-parent households had a strong relationship (+0.21) with average substitute care entry rates. However, neither of these factors (child-to-adult ratio; proportion of single-parent households) are predictors of child welfare entry in Cook County.

- Variance in child welfare entry by DCFS region, when controlling for community characteristics[27]: For non-Cook metro census tracts in Illinois, location in the Champaign and Peoria metro areas is associated with higher substitute care entry rates compared to being in the Aurora metro area. For rural census tracts, location in non-metro Champaign region, Peoria region, and Rockford regions is associated with lower child welfare entry rates compared to being in the Marion (5A) region of Illinois.

Conclusion and Implications

From this project, we have new understanding of which community conditions have relatively stronger relationships to average rates of entry in DCFS care from 2016-2020, and we learned which regions have experienced disproportionately higher rates of entry relative to the youth population. However, regression models did not perform well to understand community factors associated with change in substitute care entry rate during this five-year period. Future analyses may explore the degree to which community conditions over a longer period, such as 10 or 15 years, help understand changes in substitute care entry rates.

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[26] Millett, L. S. (2016). The healthy immigrant paradox and child maltreatment: A systematic review. *Journal of Immigrant Minority Health, 18*, 1199-1215.

[27] We can't compare across columns because different variables are used in the regression, and we set the reference group for subregion (2A) Aurora for the non-Cook metro area regression, and the reference group as (5A) Marion for the rural areas regression. The Aurora region is primarily metro, and the Marion subregion is primarily rural.

Given the strong influence of poverty-related factors associated with average child welfare entry rates, cross-agency efforts to address the root causes and consequences of poverty are paramount to reducing rates of entry into DCFS care. Chapin Hall has developed a Latent Event Simulator, which would use available data of community poverty and economic insecurity factors to forecast rates of child maltreatment. This seems like a promising tool to help DCFS better marshal resources to help high-risk communities.

It will be important to invest in cross-agency partnerships, as well as utilize agency resources, such as the DCFS Norman funds and Wraparound support programs, to help alleviate the conditions of poverty associated with increased child maltreatment and substitute care entry rates. Efforts to help low-income families access resources to attend community college would make an important difference to support new opportunities for higher employment income. African-American children in Cook County have disproportionately high rates of entry into DCFS care relative to the population of African-American children. Reinforcing DCFS investment in prevention services and development of kinship networks in African-American families to care for abused and neglected children, as well as efforts to mitigate systemic racial bias is critically important. Addressing the prevention needs of white, low-income families across the state of Illinois is necessary to reduce overall rates of entry into DCFS care.

Supplemental Resources

The following peer-reviewed journal articles use a similar methodological approach to understand child maltreatment allegations, foster care reentries, or the reporting/investigation of child maltreatment.

Barboza, G. E., Schiamberg, L. B., & Pachl, L. (2021). A spatiotemporal analysis of the impact of COVID-19 on child abuse and neglect in the city of Los Angeles, California. *Child Abuse & Neglect*, *116*, 104740.

Barboza-Salerno, G. E. (2020). Variability and stability in child maltreatment risk across time and space and its association with neighborhood social & housing vulnerability in New Mexico: a Bayesian space-time model. *Child abuse & neglect*, *104*, 104472.

Belanger, K., & Stone, W. (2008). The social service divide: Service availability and accessibility in rural versus urban counties and impact on child welfare outcomes. *Child welfare*, *87*(4), 101.

Coulton, C. J., Richter, F. G. C., Korbin, J., Crampton, D., & Spilsbury, J. C. (2018). Understanding trends in neighborhood child maltreatment rates: A three-wave panel study 1990–2010. *Child abuse & neglect*, *84*, 170-181.

Freisthler, B., Bruce, E., & Needell, B. (2007). Understanding the geospatial relationship of neighborhood characteristics and rates of maltreatment for Black, Hispanic, and White children. *Social work*, *52*(1), 7-16.

Frioux, S., Wood, J. N., Fakeye, O., Luan, X., Localio, R., & Rubin, D. M. (2014). Longitudinal association of county-level economic indicators and child maltreatment incidents. *Maternal and child health journal*, *18*(9), 2202-2208.

Klein, S., & Merritt, D. H. (2014). Neighborhood racial & ethnic diversity as a predictor of child welfare system involvement. *Children and Youth Services Review*, *41*, 95-105.

Maguire-Jack, K. (2014). Multilevel investigation into the community context of child maltreatment. *Journal of Aggression, Maltreatment & Trauma*, *23*(3), 229-248.

Maguire-Jack, K., Lanier, P., Johnson-Motoyama, M., Welch, H., & Dineen, M. (2015). Geographic variation in racial disparities in child maltreatment: The influence of county poverty and population density. *Child Abuse & Neglect*, *47*, 1-13.

Molnar, B. E., Goerge, R. M., Gilsanz, P., Hill, A., Subramanian, S. V., Holton, J. K., ... & Beardslee, W. R. (2016). Neighborhood-level social processes and substantiated cases of child maltreatment. *Child abuse & neglect*, *51*, 41-53.

Appendix 1. Mean of Community Predictors for Census-Tract Analysis

Available Predictors	Spatial Unit Source	State of Illinois Mean (SD) of CT mean
Demographics about Population/Children		
1. % of the population who identify by race/ethnicity	Census Tract ACS (2015-2019)	Black – 17.30% (28.07) Hispanic – 16.18% (21.45)
2. % of children in single-parent households	Census Tract ACS (2015-2019)	7.16% (6.2)
3. Child-to-adult ratio	Census Tract ACS (2015-2019)	0.3052 (0.1020)
4. % of population 25 or older without at least high school diploma	Census Tract ACS (2015-2019)	11.61% (9.65)
5. Average 3rd grade reading scores; average 3rd grade math scores	County Stanford Data Archive (2018)	3.06 (0.215) 2.891 (0.204)
6. % of population over age 65	Census Tract ACS (2015-2019)	15.56 (6.57)
Economic characteristics		
7. % of children below federal poverty level	Census Tract ACS (2015-2019)	14.41% (12.21)
8. Unemployment rate	County ACS (2015-2019)	6.93% (6.13)
9. Income inequality index	County ACS (2015-2019)	0.4714 (0.0383)
10. % of population without health insurance	County Small Area Health Insurance Estimates (SAHIE) Program (2019)	7.48% (1.47)
11. Level of food insecurity index	County Mind the Meal Gap (2018)	0.1087 (0.0258)
12. % of households without vehicle	Census Tract ACS (2015-2019)	11.88% (13.09)
Household characteristics		
13. % of households that are owner-occupied	Census Tract ACS (2015-2019)	64.44% (22.33)
14. % of households in crowded housing	Census Tract ACS (2015-2019)	2.60% (3.57)
15. % vacant housing units	Census Tract ACS (2015-2019)	10.32% (7.74)
16. Residential segregation index	County/Census Tract/Block Group ACS (2015-2019)	44.086 (9.434)
17. % of households with severe housing problems	County Comprehensive Housing Affordability Strategy (CHAS) (2013-2017)	17.34% (4.67)
18. % of households with severe housing cost burden	County ACS (2015-2019)	14.83% (3.90)
19. Criminal activity index[28]	County Illinois State Police (2015-2018)	644.410 (315.170)

[28] Weighting of aggravated battery and assault, arson, burglary, murder, robbery, sexual assault, theft, and vehicle theft statistics.

20. Rate of drug overdose deaths (per 100,000)	County National Center for Health Statistics, Mortality Files (2013-2019)	49.9 (17.5)
Population health characteristics		
21. % of adults reporting frequent physical distress (for 14 or more days, age-adjusted)	County CDC Behavioral Risk Factor Surveillance System (2018)	10.29 (0.79)
22. % of adults reporting frequent mental distress (for 14 or more days, age-adjusted)	County CDC Behavioral Risk Factor Surveillance System (2018)	11.26 (0.74)
23. Teen birth rate (per 1,000)	County Illinois Department of Public Health (2019)	43.5 (15.9)
24. Rate of low birthweight births (per 1,000); low birthweight measured as <2,500 grams.	County Illinois Department of Public Health (2019)	84.8 (14.3)
25. Rate of births received prenatal care (per 1,000)	County Illinois Department of Public Health (2019)	764.5 (61.9)
Services and social capital		
26. % of children participating in home visiting (HFI)	County Illinois Department of Human Services, FY 2020	0.09% (0.23)
27. % of children participating in home visiting (PAT)	County Illinois Department of Human Services, FY 2020	0.15% (0.23)
28. % of children participating in home visiting (MIECHV)	County U.S. Health Resources and Services Administration, July 1, 2018 to June 30, 2019	0.06% (0.16)
29. % of children receiving SNAP	County ACS (2015-2019)	21.05% (5.96)
30. Number of associations (religious, civic, social, business, political, professional, labor)	County U.S. Census Bureau, County Business Patterns (2019)	-0.36 (0.49)

Appendix 2. Average of county-level entry, per 1,000 youth, for 2019/2020 (averaged) from lowest to highest.

Stark County, Illinois	0
DuPage County, Illinois	0.322377
Kendall County, Illinois	0.756617
McHenry County, Illinois	1.09075
Will County, Illinois	1.10702
Kane County, Illinois	1.147422
Monroe County, Illinois	1.177702
Edwards County, Illinois	1.334223
Scott County, Illinois	1.368613
Lake County, Illinois	1.41653
Boone County, Illinois	1.442948
Kankakee County, Illinois	1.450468
Cook County, Illinois	1.456196
Carroll County, Illinois	1.782531
Bureau County, Illinois	1.83176
DeKalb County, Illinois	1.90916
LaSalle County, Illinois	1.939864
Grundy County, Illinois	1.97966
Ogle County, Illinois	2.205882
Douglas County, Illinois	2.340729
Ford County, Illinois	2.485913
Cumberland County, Illinois	2.619911
Woodford County, Illinois	2.659574
Schuyler County, Illinois	2.684049
Putnam County, Illinois	2.690583
Jo Daviess County, Illinois	2.787203
De Witt County, Illinois	2.904444
Crawford County, Illinois	2.9232
Lee County, Illinois	2.935995
Henderson County, Illinois	3.17965
Morgan County, Illinois	3.236745
Moultrie County, Illinois	3.264418
Mercer County, Illinois	3.269917
Brown County, Illinois	3.502627
Clinton County, Illinois	3.512293
Clark County, Illinois	3.588187
McLean County, Illinois	3.708067
Iroquois County, Illinois	3.787879
St. Clair County, Illinois	3.824447
Champaign County, Illinois	3.827207
Rock Island County, Illinois	3.843281
Jackson County, Illinois	3.945144
Warren County, Illinois	3.99361
Stephenson County, Illinois	4.056274
Menard County, Illinois	4.083148
Madison County, Illinois	4.127612
Lawrence County, Illinois	4.14651
Whiteside County, Illinois	4.20808
Wabash County, Illinois	4.286828
Shelby County, Illinois	4.423824
Washington County, Illinois	4.443713
Calhoun County, Illinois	4.459861
Perry County, Illinois	4.580342
Cass County, Illinois	4.929346
Pike County, Illinois	4.939317
Henry County, Illinois	5.037669
Knox County, Illinois	5.154639
Pulaski County, Illinois	5.389718
Clay County, Illinois	5.469009
Marshall County, Illinois	5.636743
Winnebago County, Illinois	5.73856
Adams County, Illinois	5.797199
Hancock County, Illinois	5.804749
Tazewell County, Illinois	5.810891
Sangamon County, Illinois	5.91803
Greene County, Illinois	6.046171
Effingham County, Illinois	6.23919
Jasper County, Illinois	6.289308
Fulton County, Illinois	6.607297
Bond County, Illinois	6.643467
Livingston County, Illinois	6.763721
Williamson County, Illinois	6.845116
Coles County, Illinois	6.915181
Piatt County, Illinois	7.034632
Jersey County, Illinois	7.131885
Vermilion County, Illinois	7.213364
Franklin County, Illinois	7.252263
McDonough County, Illinois	7.275512
Fayette County, Illinois	7.296812
Randolph County, Illinois	7.401448
Macoupin County, Illinois	7.693897
Edgar County, Illinois	7.792576
Hardin County, Illinois	8.136095

Hamilton County, Illinois	8.278146
Montgomery County, Illinois	8.65651
Richland County, Illinois	8.825152
Christian County, Illinois	9.042395
Peoria County, Illinois	9.129585
Gallatin County, Illinois	9.633911
Logan County, Illinois	9.987516
Saline County, Illinois	11.16243
Union County, Illinois	11.28448
Jefferson County, Illinois	11.37171
White County, Illinois	11.69005
Wayne County, Illinois	12.75853
Johnson County, Illinois	12.80919
Marion County, Illinois	12.91066
Macon County, Illinois	12.96769
Mason County, Illinois	13.31203
Pope County, Illinois	13.57827
Massac County, Illinois	14.98127
Alexander County, Illinois	15.09952