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Racial And Ethnic Inequities In Children's Neighborhoods: Evidence From The New Child Opportunity Index 2.0

ABSTRACT Neighborhoods influence children's health, so it is important to have measures of children's neighborhood environments. Using the Child Opportunity Index 2.0, a composite metric of the neighborhood conditions that children experience today across the US, we present new evidence of vast geographic and racial/ethnic inequities in neighborhood conditions in the 100 largest metropolitan areas in the US. Child Opportunity Scores range from 20 in Fresno, California, to 83 in Madison, Wisconsin. However, more than 90 percent of the variation in neighborhood opportunity happens within metropolitan areas. In 35 percent of these areas the Child Opportunity Gap (the difference between Child Opportunity Scores in very low- and very high-opportunity neighborhoods) is higher than across the entire national neighborhood distribution. Nationally, the Child Opportunity Score for White children (73) is much higher than for Black (24) and Hispanic (33) children. To improve children's health and well-being, the health sector must move beyond a focus on treating disease or modifying individual behavior to a broader focus on neighborhood conditions. This will require the health sector to both implement place-based interventions and collaborate with other sectors such as housing to execute mobility-based interventions.

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A long tradition of social science research has examined how neighborhoods influence socioeconomic and health outcomes during the life course.[1] In the past decade increasingly strong evidence indicates that there has been a causal relationship between children's neighborhood environment and educational attainment, employment, income, and health outcomes.[2,3] In addition, a large body of research has documented high levels of racial residential segregation in US metropolitan areas and high levels of geographic concentration of both poverty and affluence.[4–7] Starting in the 1990s, groundbreaking work by George Galster and colleagues has connected these two research traditions, arguing that an unequal "geography of opportunity" in metropolitan areas—that is, differential access to neighborhood-based opportunity—leads to inequities in outcomes by race and ethnicity.[8,9]

Building on the geography of opportunity scholarship,[10–13] in 2014 we published the Child Opportunity Index to provide the child health field with a measure of children's neighborhood opportunity, which we defined as the context of neighborhood-based conditions and resources (for example, early childhood education, schools, availability of healthy food) that influence children's healthy development and long-term outcomes such as health and socioeconomic mobility.[14] Our goal was to facilitate analysis of the

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relationship between neighborhood opportunity and child outcomes; equity analysis of children's access to neighborhood opportunity, particularly by race and ethnicity; and identification of neighborhoods of low and high opportunity for targeted interventions.

The index was designed as a tool for both research and applied uses in health and other sectors. Since its publication, researchers have found associations between higher child neighborhood opportunity and better child health (reduced cortisol, asthma-related hospitalizations, and pediatric acute care visits).[15–19] Practitioners have used the index to characterize inequities in neighborhood environment in their communities and to develop interventions for specific neighborhoods.[20–22]

After several years of research and application, we have updated the Child Opportunity Index and improved its methodology, taking advantage of newly released, high-quality data sets on neighborhood features and outcomes of children growing up in different neighborhoods.

Definitions

The Child Opportunity Index builds on a positive definition of children's health: the ability of children to achieve healthy development in all areas (physical, cognitive, emotional, and social) and to reach their full potential.[23]

Neighborhood environment is an important influence on children's health because essential proximal inputs for healthy child development (for example, schools and the built environment) are neighborhood based.[1,10,18,24,25] In addition to a large body of cross-sectional evidence, rigorous research has shown a causal link between neighborhood environment and outcomes. Evidence from a randomized social experiment showed a causal link between growing up in low-poverty neighborhoods and long-term outcomes such as higher college attendance, higher earnings, and lower rates of single parenthood.[3] An analysis of data on seven million families further established a causal link between the neighborhoods where children grow up and their earnings, college attendance, and family formation as adults.[2] A review of the empirical evidence on neighborhood effects is beyond the scope of this article, but several recent systematic reviews have explored the influence of neighborhoods on child health and development.[1,26–28]

Although neighborhoods influence children's outcomes, evidence on how specific neighborhood traits influence specific outcomes is still emerging. Many studies focused on the neighborhood poverty rate. However, scholars of neighborhood effects agree that neighborhoods are multidimensional and influence outcomes through a variety of mechanisms; for example, exposure to air pollution may affect childhood asthma, whereas neighborhood walkability may affect physical activity.[1,24,25,29]

Unique Features Of The Child Opportunity Index 2.0

The Child Opportunity Index is not the only index of neighborhood environment, but it has unique features that make it useful for studying children's neighborhoods. First, the Child Opportunity Index was developed with a conceptual model of child development. Therefore, it includes child-relevant indicators such as the presence of early childhood education centers, availability of healthy food, and walkability. For a complete list of indicators and definitions, see online appendix B.[30]

Second, the Child Opportunity Index was built to capture neighborhood resources that facilitate healthy child development, not as an index of concentrated disadvantage or vulnerability.

Third, the Child Opportunity Index 2.0 summarizes children's neighborhood conditions around 2015 to capture recent conditions that children experience in their neighborhoods. Other neighborhood measures provide historical prospective information on the extent of socioeconomic mobility that children who grew up in those neighborhoods a few decades ago experienced later as adults.[31]

Finally, the Child Opportunity Index 2.0 includes both 2010 and 2015 data, which are comparable over time, allowing longitudinal analysis.

Differences Between The Child Opportunity Index 1.0 And 2.0

The Child Opportunity Index 2.0 differs from the 2014 version in important ways. The index is now available for virtually all US neighborhoods (that is, census tracts) for both 2010 and 2015, rather than for just the 100 largest metropolitan areas at a single time point. The Child Opportunity Index 2.0 is based on twenty-nine neighborhood indicators, rather than the nineteen indicators used for the Child Opportunity Index 1.0, which capture important mechanisms through which neighborhoods influence children. We improved the quality of measurement for several of the indicators. Furthermore, instead of equally weighting all indicators in the index, the Child Opportunity Index 2.0 makes use of the correlations between its component indicators and health and socioeconomic mobility outcomes

at the neighborhood level to give more weight to indicators more strongly associated with the outcomes of interest. Appendix A provides a more detailed discussion of the differences between Child Opportunity Index 1.0 and Child Opportunity Index 2.0.[30]

Some of the work presented here has been described previously.[32] The current article includes additional analysis, including the distribution of children in poor families across levels of neighborhood opportunity, the correlation between the Child Opportunity Gap and racial/ethnic gaps in child opportunity, and the association between childhood disability and levels of neighborhood opportunity (the latter is in appendix K).[30]

Study Data And Methods

INDEX DOMAINS AND INDICATORS To select indicators, we adapted Galster's classification of mechanisms through which neighborhoods influence children: social-interactive, environmental, geographic, and institutional.[25] However, because our goal is for the index to be applied by diverse stakeholders, not only academic researchers, we grouped the indicators into three domains that correspond to policy and programmatic sectors: education, health and environment, and social and economic opportunity.

We conducted a multidisciplinary literature review of empirical studies documenting the association between the domains of the index and child outcomes. However, data availability was an important constraint. Certain metrics examined in the literature are not available nationally for all census tracts or for our two index time points (2010 and 2015).

Conceptually, the Child Opportunity Index does not assume that there is an underlying construct named "neighborhood opportunity" but instead posits a set of distinct factors that influence multiple outcomes through distinct mechanisms. We tested this assumption by examining the indicators in the Child Opportunity Index using factor analysis. Although we found a socioeconomic conditions factor (neighborhood poverty, public assistance rate, homeownership rate, high-skill employment, median household income, single-headed households, and adult educational attainment), our analysis did not support the existence of an opportunity latent structure (see appendix A).[30]

INDEX CONSTRUCTION We calculated the Child Opportunity Index 2.0 for 72,000 (nearly all) neighborhoods (that is, census tracts as defined by the Census Bureau) in the US. The present analysis includes all 47,000 neighborhoods in the 100 largest (based on population size) met-

ropolitan areas, which are home to two-thirds of the US child population. Census tracts contain approximately 4,000 people and 1,600 housing units. A metropolitan area contains a core urban population of at least 50,000 people and includes the counties containing the core urban area and adjacent counties that have a high degree of socioeconomic integration with the urban core.[33]

Because the Child Opportunity Index indicators are measured on different scales (counts, percentages, currency), the raw values of each indicator are standardized, using z-scores to combine them into the index. Indicators are weighted to reflect the strength of association between selected adult health outcomes (prevalence of poor self-rated mental/physical health) and economic outcomes (mean household income rank and probability of living in a low-poverty census tract at age thirty-five for children with parents at the fiftieth percentile of the parent income distribution) aggregated at the neighborhood level.[34] Appendix A contains details on the Child Opportunity Index construction and the measures described below.[30]

CHILD OPPORTUNITY SCORES To construct Child Opportunity Scores, all neighborhoods are ranked nationally according to their Child Opportunity Index z-scores from lowest to highest and then divided into 100 rank-ordered groups. Each group contains 1 percent of the US child population and is assigned a Child Opportunity Score from 1 (lowest opportunity) to 100 (highest opportunity).

For some analysis, neighborhood-level Child Opportunity Scores are aggregated up to the metropolitan area level and can be interpreted as the neighborhood opportunity score experienced by the typical (that is, median) child in a given metropolitan area, or the overall opportunity score in the metropolitan area. We calculated aggregate opportunity scores for individual metropolitan areas by taking the weighted median value of scores across all census tracts in the metropolitan area of interest, using the number of children in each tract as weights. This method is akin to exposure indices, which are extensively used in the literature on segregation and neighborhood inequality.[35–37]

To break down variation in neighborhood Child Opportunity Scores into between- and within-metropolitan-area variations, we used analysis of variance based on regressing Child Opportunity Scores for all 72,000 tracts on a set of dummy variables for each of the 100 metropolitan areas. The percentage variance explained by this regression measures the amount of variation in the opportunity scores between metropolitan areas, and 100 minus the R^2 yields the

amount of variation within metropolitan areas. A more detailed explanation of the analysis is in appendix A.1.[30]

CHILD OPPORTUNITY LEVELS Child Opportunity Index z-scores are expressed as Child Opportunity Levels, constructed by dividing all neighborhoods in a metropolitan area into five ordered groups, each containing 20 percent of the child population in that area. We labeled these five groups as very low-opportunity, low-opportunity, moderate-opportunity, high-opportunity, and very high-opportunity neighborhoods.

CHILD OPPORTUNITY GAP To understand variation in opportunity within metro areas, we examined the Child Opportunity Gap: the difference between the conditions in a metropolitan area's very high-opportunity neighborhoods and the conditions in its very low-opportunity neighborhoods (measured by the average Child Opportunity Score for neighborhoods in each of these two levels). Because the gap is measured using nationally normed opportunity scores, we can compare the size of the gap between metropolitan areas.

CHILD OPPORTUNITY HOARDING AND SHARING Metropolitan areas differ in terms of the extent to which communities or neighborhoods hoard or share resources with other communities or neighborhoods in the same area.[38] We characterized metropolitan areas with wide Child Opportunity Gaps as areas of child opportunity hoarding. We defined wide gaps as those as wide as or wider than the gap between very high- and very low-opportunity neighborhoods across the entire national neighborhood distribution (80 points). We characterized metropolitan areas with narrower gaps (fewer than 80 points) as areas of opportunity sharing.

RACIAL/ETHNIC SCORES We constructed opportunity scores for the following racial/ethnic groups: non-Hispanic White, Black, or Asian and Pacific Islander and Hispanic (which may be of any race).[39] The score for a given racial/ethnic group may be interpreted as the score of the neighborhood experienced by the typical (median) child of that group in a given metropolitan area.

POPULATION DISTRIBUTION ACROSS LEVELS OF NEIGHBORHOOD OPPORTUNITY By construction, each of the five opportunity levels includes 20 percent of the child population. Absent racial/ethnic inequities in neighborhood opportunity, all children, regardless of race/ethnicity, would be distributed evenly across opportunity levels (about 20 percent in each level). We calculated the percentage of children living in each of the five opportunity levels by race/ethnicity and poverty. Poor children are defined as those living in families with incomes less than 100 percent of the federal poverty level.[39]

LIMITATIONS Despite its improvements over the first Child Opportunity Index, the new index has limitations. The Child Opportunity Index 2.0 lacks indicators on certain neighborhood features that previous research has identified as relevant for children but for which we were unable to gather comparable data for the entire country. These include measures of neighborhood-level prevalence of violence, crime, aggressive policing, social capital, collective efficacy, and density of primary health care.

Furthermore, the weights used to combine indicators into domains and aggregate scores are constant across all census tracts and over time. We could allow variation by metropolitan areas, but this would impede one of our main goals: producing a metric to compare neighborhoods across the US.

Study Results

Metropolitan area–level Child Opportunity Scores vary considerably across the country, ranging from 20 in Fresno, California, to 83 in Madison, Wisconsin. Regionally, the average score for metros is lowest in the South, with a Child Opportunity Score of 50, compared with 53 in the West, 64 in the Midwest, and 65 in the Northeast. See appendices F–K for data on all measures used in the analysis for each of the 100 metropolitan areas.[30]
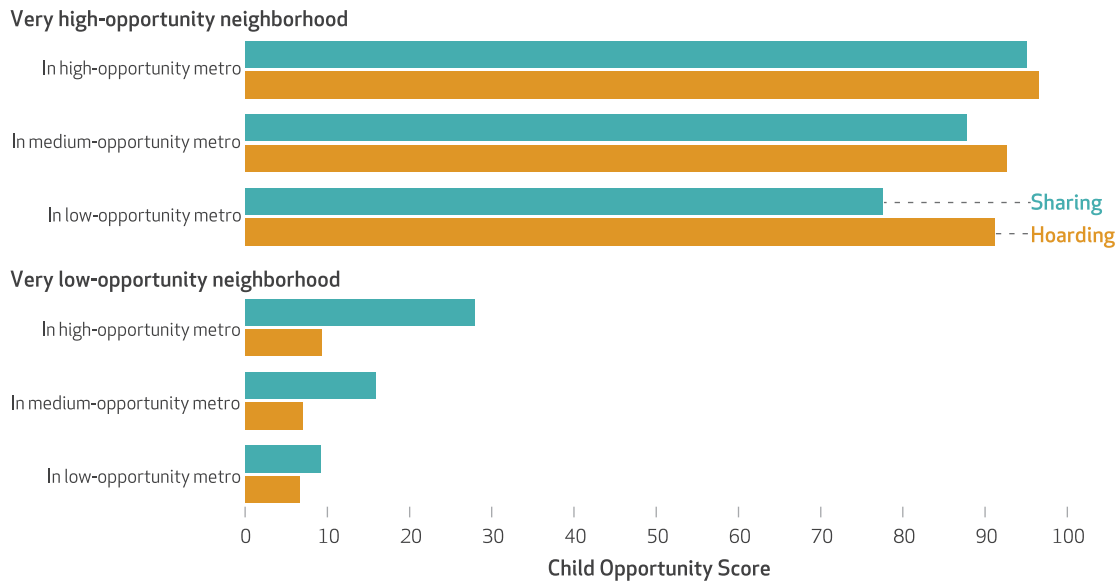
Despite these differences, inequities in child opportunity are larger within metropolitan areas than across the country. According to the analysis of variance, 91 percent of the variation in child opportunity happens within metropolitan areas, whereas only 9 percent happens between them.

Exhibit 1 stratifies metropolitan areas into three groups (low, medium, and high overall opportunity) based on their Child Opportunity Scores, and then further stratifies each group according to the size of their Child Opportunity Gap (difference in scores between very low-opportunity and very high-opportunity neighborhoods), categorized as hoarding (gaps of 80 or above) or sharing (gaps of less than 80).

Hoarding metropolitan areas have the worst conditions (lowest scores) for children living in the lowest-opportunity neighborhoods (exhibit 1). In hoarding areas, very low-opportunity neighborhoods have similar, very low scores regardless of the overall (median) opportunity in the metropolitan area. In contrast, in sharing areas, the scores for very low-opportunity neighborhoods are higher and are positively associated with the overall level of opportunity in the

EXHIBIT 1

Average scores of very low- and very high-opportunity neighborhoods, by overall metropolitan area opportunity level and hoarding or sharing status for the metropolitan area

Very high-opportunity neighborhood

Very low-opportunity neighborhood
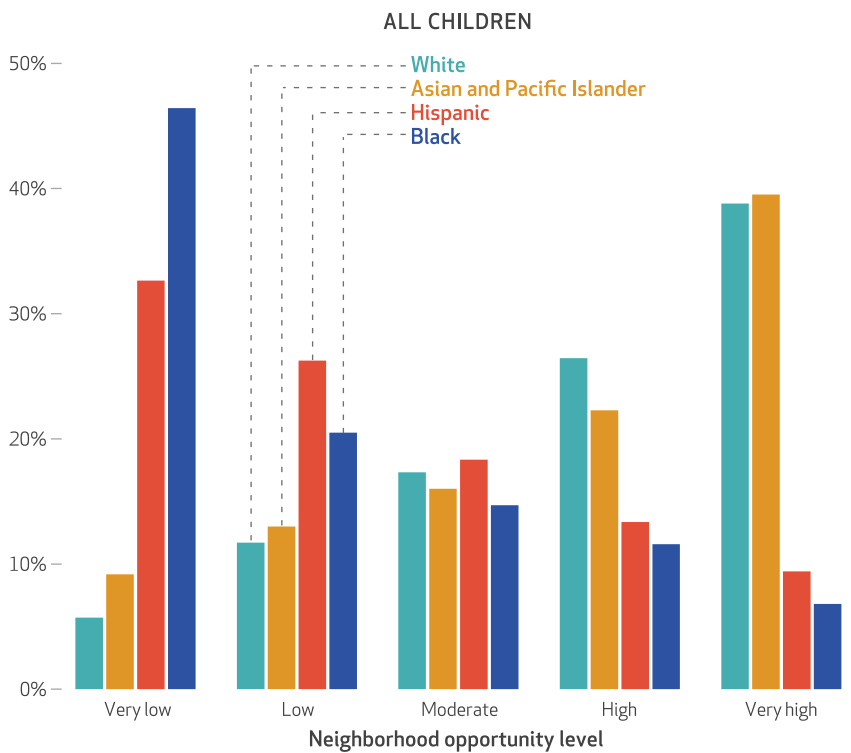
EXHIBIT 2

area.

We examined racial/ethnic opportunity gaps, defined as the difference in the score of the typical White child's neighborhood and the score of the typical minority child's neighborhood. For the 100 largest metropolitan areas combined, the Child Opportunity Score for White children is 73 compared with 72 for Asian and Pacific Islander children, 33 for Hispanic children, and 24 for Black children.

Opportunity hoarding is positively associated with large gaps between White and Black or Hispanic children. The correlations between the Child Opportunity Gap and the Black-White and Hispanic-White gap are 0.81 and 0.72, respectively (data not shown). In a given metropolitan area, the wider the gap in scores between very low- and very high-opportunity neighborhoods, the larger the gap in the scores between the neighborhoods of White children and the neighborhoods of Black or Hispanic children. Although there are racial/ethnic gaps in all metropolitan areas, in hoarding areas Black and Hispanic children live in neighborhoods with much lower opportunity scores than White children do.

As shown in exhibit 2, non-Hispanic White (39 percent) and Asian and Pacific Islander (40 percent) children are concentrated in very high-opportunity neighborhoods, whereas Hispanic (33 percent) and Black (46 percent) chil-

Percent of all children across levels of neighborhood opportunity, by race/ethnicity (100 largest metropolitan areas combined)

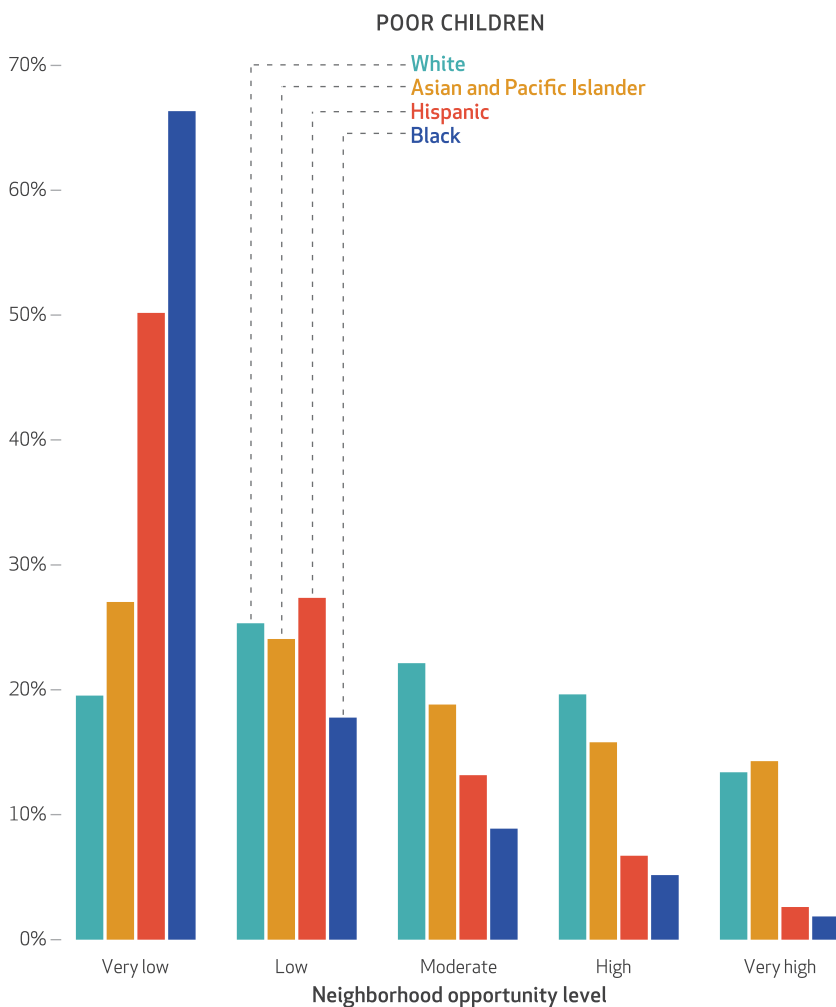dren are disproportionately concentrated in very low-opportunity neighborhoods.

Family poverty can play a role in access to opportunity as a result of higher housing costs in high-opportunity neighborhoods. Therefore, we further stratified the distribution of children across opportunity levels by poverty status. We found vast racial/ethnic inequities in neighborhood opportunity among children in poverty. As shown in exhibit 3, 66 percent of poor Black children and 50 percent of poor Hispanic children live in very low-opportunity neighborhoods compared with 20 percent of poor White children.

EXHIBIT 3

Percent of poor children across levels of neighborhood opportunity, by race/ethnicity (100 largest metropolitan areas combined)

SOURCE Child Opportunity Index 2.0, diversitydatakids.org (see note 32 in text). Population and poverty data from the Census Bureau, American Community Survey 5-Year Summary Files for 2013–17. **NOTES** Authors' calculations. See online appendix A: Technical Appendix (see note 30 in text).

Discussion

Our findings are consistent with prior research that suggests that residential segregation and neighborhood inequality by race/ethnicity largely play out at the metropolitan area level.[40,41] We show that according to the Child Opportunity Index 2.0, a measure of inputs for healthy child development, inequities in child neighborhood opportunity mainly (91 percent) happen within metropolitan areas rather than across the country (data not shown).

Demographers, sociologists, and housing scholars have examined the problems of concentrated disadvantage, concentrated affluence, and opportunity hoarding.[5,6,38] This is an important conceptual and policy issue. Both research and policy often focus on concentrated disadvantage and place-based interventions without acknowledging that concentrated disadvantage exists in the context of an unequal distribution of neighborhood resources in which the other end of the distribution is concentrated affluence. We add to this evidence by showing that metropolitan areas vary in the magnitude of their Child Opportunity Gap. In more than one-third of metropolitan areas, the gap between their very high- and very low-opportunity neighborhoods is larger than the gap across the entire national neighborhood distribution. We also document that larger Child Opportunity Gaps are associated with larger racial/ethnic inequities in neighborhood opportunity.

Policy Implications

Metropolitan areas are relatively small geographic areas where geographic redistribution of economic, educational, and health resources should be technically feasible. However, historically, US metropolitan areas have evolved toward high jurisdictional fragmentation—that is, they are divided into cities, towns, and municipalities. This fragmentation goes hand in hand with the ability of jurisdictions to enact barriers that exacerbate residential segregation, limit access to neighborhood opportunity, and impede policy and programmatic solutions at the metropolitan-area level.[38,40,42] For example, high fragmentation is associated with zoning laws that preclude more multifamily and affordable housing in some jurisdictions, which disproportionately excludes Black and Hispanic children.[43,44] Therefore, although neighborhood inequities are within metropolitan areas, policy solutions at higher levels of government are needed to mitigate the consequences of fragmentation. State zoning reform laws can limit the ability of lower jurisdictions to enact exclusionary zoning, and federal and state laws can reward the

development of affordable housing in higher-opportunity areas.[45]

Although small relative to the overall public expenditures in their sector, there are emerging practices that acknowledge the importance of neighborhood context and seek to improve access to neighborhoods with conditions and resources favorable for healthy development. Relatedly, the use of indices to assess neighborhood conditions and guide interventions is gaining acceptance in some policy sectors such as fair housing and housing assistance for low-income families. For example, housing mobility programs use the metrics of neighborhood opportunity to provide low-income families that receive housing assistance with information about housing availability in neighborhoods with higher-performing schools, lower poverty rates, lower crime, and other features important for families with children.[46] A recent housing mobility policy demonstration allocates $50 million for public housing agencies to develop programs to help low-income families access low-poverty, high-opportunity neighborhoods.[47] However, this represents only a small fraction of the total annual federal expenditures on tenant-based rental housing assistance programs ($22.6 billion).[48]

Some trends in the health sector may present openings for addressing neighborhood opportunity. Along with increasing attention to social determinants of health and social interventions, some health care systems are using neighborhood-level data to identify patients for targeted social risk screening and referrals to social services and to identify vulnerable communities.[49,50] A few organizations offer promising practices by identifying and treating highly disadvantaged neighborhoods as "patients" to address social determinants.[51]

Community needs assessments and implementation of strategies to improve community conditions are encouraged or required in various policy sectors (for example, health, early childhood), but the use of neighborhood data or an equity-focused analysis is not required. Before the Affordable Care Act (ACA), hospitals spent less than 6 percent of their community benefits on community health improvements.[52] Hospitals are gradually moving toward more rigorous community needs assessments and implementation of community-level strategies, as mandated by the ACA.[53] It remains to be seen whether this will lead to larger investments in community health. A promising trend, however, is an increasing recognition that "place matters" not only as a marker of health risk but also as a focus for health interventions. For example, a forthcoming report from the surgeon general will highlight the connection between community health and economic prosperity and suggest that community-level interventions are needed to improve population health.[54]

Conclusion

Neighborhood environment matters for child health and well-being. Therefore, to improve children's health, the health sector should move beyond a focus on treating disease or modifying individual behavior to a broader focus on improving children's neighborhood conditions. This will require the health sector to both implement place-based interventions and collaborate with other sectors such as housing to implement mobility-based interventions.

The health and economic crisis associated with coronavirus disease 2019 (COVID-19) has heightened awareness of racial/ethnic inequities and their connection to residential segregation.[55,56] Although neighborhood measurement and interventions are still emerging practices in the health sector, the present crisis should strengthen our focus on reducing neighborhood inequities. Neighborhood indices such as the Child Opportunity Index can provide the health sector with a surveillance system of children's neighborhood environments and help guide interventions. ∎

NOTES

1 Ellen IG, Glied S. Housing, neighborhoods, and children's health. Future Child. 2015;25(1):135–53.

2 Chetty R, Hendren N. The impacts of neighborhoods on intergenerational mobility I: childhood exposure effects. Q J Econ. 2018;133(3):1107–62.

3 Chetty R, Hendren N, Katz LF. The effects of exposure to better neighborhoods on children: new evidence from the Moving to Opportunity Experiment. Am Econ Rev. 2016;106(4):855–902.

4 Coulton CJ, Chow J, Wang EC, Su M. Geographic concentration of affluence and poverty in 100 metropolitan areas, 1990. Urban Aff Rev. 1996;32(2):186–216.

5 Goetz EG, Damiano A, Williams RA. Racially concentrated areas of affluence: a preliminary investigation. Cityscape (Wash, DC). 2019;21(1):99–123.

6 Massey DS. The age of extremes: concentrated affluence and poverty in the twenty-first century. Demography. 1996;33(4):395–412, discussion 413–6.

7 Herbert C, Spader J, Molinsky J, Rieger S, editors. A shared future: fostering communities of inclusion in an era of inequality. Cambridge (MA): Harvard University, Joint Center for Housing Studies; 2018.

8 Knaap E. The cartography of opportunity: spatial data science for equitable urban policy. Hous Policy Debate. 2017;27(6):913–40.

9 Galster G, Sharkey P. Spatial foundations of inequality: a conceptual model and empirical overview. RSF. 2017;3(2):1–33.

10 Galster GC, Killen SP. The geography of metropolitan opportunity: a reconnaissance and conceptual framework. Hous Policy Debate. 1995;6(1):7–43.

11 McArdle N, Acevedo-Garcia D. Consequences of segregation for children's opportunity and wellbeing. In: Herbert C, Spader J, Molinsky J, Rieger S, editors. A shared future: fostering communities of inclusion in an era of inequality. Cambridge (MA): Harvard University, Joint Center for Housing Studies; 2018. p. 80–95.

12 Osypuk TL, Acevedo-Garcia D. Beyond individual neighborhoods: a geography of opportunity perspective for understanding racial/ethnic health disparities. Health Place. 2010;16(6):1113–23.

13 Acevedo-Garcia D, Rosenfeld LE, McArdle N, Osypuk TL. The geography of opportunity: a framework for child development. In: Edley C Jr, Ruiz de Velasco J, editors. Changing places: how communities will improve the health of boys of color. Berkeley (CA): University of California Press; 2010. p. 358–406.

14 Acevedo-Garcia D, McArdle N, Hardy EF, Crisan UI, Romano B, Norris D, et al. The Child Opportunity Index: improving collaboration between community development and public health. Health Aff (Millwood). 2014;33(11):1948–57.

15 Kersten EE, Adler NE, Gottlieb L, Jutte DP, Robinson S, Roundfield K, et al. Neighborhood child opportunity and individual-level pediatric acute care use and diagnoses. Pediatrics. 2018;141(5):e20172309.

16 Roubinov DS, Hagan MJ, Boyce WT, Adler NE, Bush NR. Family socioeconomic status, cortisol, and physical health in early childhood: the role of advantageous neighborhood characteristics. Psychosom Med. 2018;80(5):492–501.

17 Beck AF, Huang B, Wheeler K, Lawson NR, Kahn RS, Riley CL. The Child Opportunity Index and disparities in pediatric asthma hospitalizations across one Ohio metropolitan area, 2011–2013. J Pediatr. 2017;190:200–206.e1.

18 Shonkoff JP, Phillips DA, editors. From neurons to neighborhoods: the science of early childhood development. Washington (DC): National Academies Press; 2000.

19 Rush University Medical Center. Community health needs assessment report [Internet]. Chicago (IL): Rush University Medical Center; 2016 Jun 8 [cited 2020 Aug 19]. Available from: https://www.rush.edu/sites/default/files/rush-chna-august-2016.PDF

20 Ann & Robert H. Lurie Children's Hospital of Chicago. 2019 community health needs assessment for Chicago youth, adolescents, and families [Internet]. Chicago (IL): Lurie Children's Hospital; 2019 [cited 2020 Aug 19]. Available from: https://www.luriechildrens.org/globalassets/documents/luriechildrens.org/community/community-health-needs-assessment/chna-2019.pdf

21 Chicago Department of Public Health. Healthy Chicago 2.0: partnering to improve health equity 2016–2020 [Internet]. Chicago (IL): The Department; 2016 Mar [cited 2020 Aug 19]. Available from: https://www.chicago.gov/content/dam/city/depts/cdph/CDPH/HC2.0Plan_3252016.pdf

22 Derian A. People and place matter: using integrated data systems to understand chronic absenteeism [Internet]. Washington (DC): National Neighborhood Indicators Partnership; 2016 Mar [cited 2020 Aug 19]. Available from: https://www.neighborhoodindicators.org/sites/default/files/publications/IDS%20and%20Chronic%20Absenteeism%20Brief%20Final%204.18.16%20optimized%202.pdf

23 Institute of Medicine, National Research Council. Children's health, the nation's wealth: assessing and improving child health [Internet]. Washington (DC): National Academies Press; 2004 [cited 2020 Sep 4]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK92206/

24 Santiago AM, Galster GC, Lucero JL, Ishler KJ, Lee EL, Kypriotakis G, et al. Opportunity neighborhoods for Latino and African-American children: final report [Internet]. Washington (DC): Department of Housing and Urban Development, Office of Police Development and Research; 2014 [cited 2020 Sep 4].

25 Galster GC. The mechanism(s) of neighbourhood effects: theory, evidence, and policy implications. In: van Ham M, Manley D, Bailey N, Simpson L, Maclennan D, editors. Neighbourhood effects research: new perspectives. Dordrecht: Springer; 2012. p. 23–56.

26 Minh A, Muhajarine N, Janus M, Brownell M, Guhn M. A review of neighborhood effects and early child development: how, where, and for whom, do neighborhoods matter? Health Place. 2017;46:155–74.

27 Hicks AL, Handcock MS, Sastry N, Pebley AR. Sequential neighborhood effects: the effect of long-term exposure to concentrated disadvantage on children's reading and math test scores. Demography. 2018;55(1):1–31.

28 Arcaya MC, Tucker-Seeley RD, Kim R, Schnake-Mahl A, So M, Subramanian SV. Research on neighborhood effects on health in the United States: a systematic review of study characteristics. Soc Sci Med. 2016;168:16–29.

29 Ellen IG, Turner MA. Do neighborhoods matter and why? In: Goering J, Feins JD, editors. Choosing a better life? Evaluating the Moving to Opportunity social experiment. Washington (DC): Urban Institute Press; 2003. p. 313–38.

30 To access the appendix, click on the Details tab of the article online.

31 Chetty R, Friedman JN, Hendren N, Jones MR, Porter SR. The Opportunity Atlas: mapping the childhood roots of social mobility [Internet]. Washington (DC): Census Bureau, Center for Economic Studies; 2018 [cited 2020 Aug 19]. (Working Papers 18-42). Available from: https://www2.census.gov/ces/wp/2018/CES-WP-18-42R.pdf

32 Acevedo-Garcia D, Noelke C, McArdle N. The geography of child opportunity: why neighborhoods matter for equity—first findings from the Child Opportunity Index 2.0 [Internet]. Waltham (MA): Brandeis University, Heller School for Social Policy and Management;

2020 Jan [cited 2020 Aug 26]. Available from: http://www.diversitydatakids.org/sites/default/files/file/ddk_the-geography-of-child-opportunity_2020v2_0.pdf

33 Census Bureau. Glossary [Internet]. Washington (DC): Census Bureau; [cited 2020 Aug 19]. Available from: https://www.census.gov/glossary/

34 Noelke C, McArdle N, Baek M, Huntington N, Huber R, Hardy EF, et al. Child Opportunity Index 2.0: technical document [Internet]. Waltham (MA): Brandeis University, Heller School for Social Policy and Management; 2020 Jan 15 [cited 2020 Aug 19]. Available from: http://new.diversitydatakids.org/research-library/research-brief/how-we-built-it

35 Galster GC, Mikelsons M. The geography of metropolitan opportunity: a case study of neighborhood conditions confronting youth in Washington, DC. Hous Policy Debate. 1995;6(1):73–102.

36 Massey DS, Denton NA. The dimensions of residential segregation. Soc Forces. 1988;67(2):281–315.

37 Massey D, White M, Phua V. The dimensions of segregation revisited. Sociol Methods Res. 1996;25(2):172–206.

38 Freemark Y, Steil J, Thelen K. Varieties of urbanism: a comparative view of inequality and the dual dimensions of metropolitan fragmentation. Polit Soc. 2020;48(2):235–74.

39 Census Bureau. American Community Survey and Puerto Rico Community Survey: 2017 subject definitions [Internet]. Washington (DC): Census Bureau; 2017 [cited 2020 Aug 19]. Available from: https://www2.census.gov/programs-surveys/acs/tech_docs/subject_definitions/2017_ACSSubjectDefinitions.pdf?

40 National Research Council. Governance and opportunity in metropolitan America [Internet]. Washington (DC): National Academies Press; 1999 [cited 2020 Sep 4]. Available from: https://www.nap.edu/read/6038/chapter/1

41 Ellen IG, Steil J, editors. The dream revisited: contemporary debates about housing, segregation, and opportunity. New York (NY): Columbia University Press; 2020.

42 Hart KD, Kunitz SJ, Sell RR, Mukamel DB. Metropolitan governance, residential segregation, and mortality among African Americans. Am J Public Health. 1998;88(3):434–8.

43 Rothwell JT, Massey DS. Density zoning and class segregation in U.S. metropolitan areas. Soc Sci Q. 2010;91(5):1123–43.

44 Pendall R. Local land use regulation and the chain of exclusion. J Am Plann Assoc. 2000;66(2):125–42.

45 Infranca J. The new state zoning: land use preemption amid a housing crisis. Boston Coll Law Rev. 2019;60(3):823–87.

46 Nguyen QC, Acevedo-Garcia D, Schmidt NM, Osypuk TL. The effects of a housing mobility experiment on participants' residential environments. Hous Policy Debate. 2017;27(3):419–48.

47 Department of Housing and Urban Development. Section 8 housing choice vouchers: implementation of the Housing Choice Voucher mobility demonstration. Fed Regist. 2020;85(136):42890–914.

48 Kimura D. Fiscal 2019 HUD budget approved. Affordable Housing Finance [serial on the Internet]. 2019 Feb 20 [cited 2020 Aug 19]. Available from: https://www.housingfinance.com/news/fiscal-2019-hud-budget-approved_o

49 Fichtenberg C, Delva J, Minyard K, Gottlieb LM. Health and Human Services integration: generating sustained health and equity improvements. Health Aff (Millwood). 2020;39(4):567–73.

50 National Academies of Sciences, Engineering, and Medicine. Integrating social care into the delivery of health care: moving upstream to improve the nation's health [Internet]. Washington (DC): National Academies Press; 2019 [cited 2020 Sep 4]. Available from: https://www.nap.edu/read/25467/chapter/1

51 Kelleher K, Reece J, Sandel M. The Healthy Neighborhood, Healthy Families Initiative. Pediatrics. 2018;142(3):e20180261.

52 Leider JP, Tung GJ, Lindrooth RC, Johnson EK, Hardy R, Castrucci BC. Establishing a baseline: community benefit spending by not-for-profit hospitals prior to implementation of the Affordable Care Act. J Public Health Manag Pract. 2017;23(6):e1–9.

53 Santos T. Non-profit hospital targeted health priorities and collaboration with local health departments in the first round post-ACA: a national descriptive study. Front Public Health. 2020;8:124.

54 Bauer UE. Community health and economic prosperity: an initiative of the Office of the Surgeon General. Public Health Rep. 2019;134(5):472–6.

55 Arasteh K. Prevalence of comorbidities and risks associated with COVID-19 among Black and Hispanic populations in New York City: an examination of the 2018 New York City Community Health Survey. J Racial Ethn Health Disparities. 2020 Aug 13. [Epub ahead of print].

56 Kim SJ, Bostwick W. Social vulnerability and racial inequality in COVID-19 deaths in Chicago. Health Educ Behav. 2020;47(4):509–13.