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Continuing our investigation on the community development and public health intersect, senior business economist Susan Longworth's article, "Exploring the correlations between health and community socioeconomic status in Chicago," provides a look at how indicators of health parallel economic conditions, and at how one Chicago neighborhood, to some degree, provides an exception to this general relationship. Jason Keller, economic development director (for Illinois) in the Federal Reserve Bank of Chicago's Community Development and Policy Studies division, and David Knight, an Ann Arbor based consultant and authority on Great Lakes navigation, provide an overview of a recent conference on Great Lakes ports, their economic and ecologic ramifications for our district, and the changing dynamics of connections between ports and their surrounding communities.

The Federal Reserve Bank of Chicago

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Exploring the correlations between health and community socioeconomic status in Chicago

by Susan Longworth

Much research demonstrates that where you live – and the socioeconomic conditions present in that place – determine individual-level health outcomes.¹ The premise that individual stressors tend to aggregate themselves into communities with poor socioeconomic status (SES) leads to the conclusion that “where you live determines how long you live.” As former Federal Reserve Chairman Bernanke stated, “Factors such as educational attainment, income, access to healthy food, and the safety of a neighborhood tend to correlate with individual health outcomes in that neighborhood.”² These factors are referred to as the social determinants of health.³

Using community level data available through the City of Chicago Data Portal,⁴ as well as aggregated census tract level economic data compiled by the Federal Reserve Bank of Chicago,⁵ this article explores community-level SES conditions and corresponding health outcomes in Chicago’s 77 communities to derive a localized perspective on a commonly accepted hypothesis that the socioeconomic conditions of places contribute to the health outcomes of residents.

Our analysis includes health outcomes that are influenced – at least in part – by one’s environment,

including rate of infant mortality, low birth weight, prenatal care, preterm birth, lead screening, lead poisoning, teen birth, firearm-related casualties, cancers, diabetes, stroke, and tuberculosis (TB).

The socioeconomic variables included in the analysis relate to housing, income and education, workforce, racial and ethnic composition, and ‘climate.’ They are organized as follows:

Housing

- Percent of the population living in crowded housing
- Percent of vacant units
- Percent of owner-occupied housing

Income and education

- Percent of the over-25 population with/without a high school diploma
- Percent of the over-25 population with some college or a bachelor’s degree
- Percent of families in poverty
- Per capita income

Employment

- Labor force participation
- Unemployment rates
- Self-employment in non-incorporated business rates

Racial and ethnic composition

- Percent of the population that is black
- Percent of the population that is Hispanic
- Percent of the population that is foreign born

Climate

- Crime rates
- 311 service call intensity rates
- Home mortgage and small business lending volumes
- Presence of financial institutions
- Business counts

The first level of analysis correlates the socioeconomic data with health outcomes (e.g., how strongly, positively, or negatively do unemployment levels correlate with the incidence of diabetes?). Without proving causality, the strengths and directions of the correlations indicate patterns of association between SES and health outcomes.

Turning from the correlations, we sort both the community-level SES and health outcomes into quartiles. Within this ranking, we explore the extent to which health outcomes improve or deteriorate with various isolated socioeconomic factors related to income, employment, race and ethnicity, housing, and climate (as organized above).

Next, we index Chicago's communities by SES quartile outcomes with the corresponding health quartile outcome to provide a simple illustration of whether community level health outcomes improve as SES improves, and vice versa.

Returning to the hypothesis that community SES determines individual health outcomes, finally, we look for communities that disrupt this hypothesis by outperforming their SES quartile by at least one

health quartile. These results are supplemented by field interviews with community development and health practitioners in two neighboring, contiguous communities – one that disrupts the hypothesis and one that does not.

Finally, we arrive at findings, from which we can draw some policy implications.

Health and socioeconomic status correlations

Tables 1-5 (pages 3-4) provide detail on the correlations between select socioeconomic indicators and a set of health outcomes. Cells highlighted in gray represent areas in which there were correlations of significance, either positively or negatively.⁶

Table 1 reflects the correlations between housing factors and health outcomes. An increase in crowded housing⁷ is positively correlated with increases in the teen birth rate, childhood blood lead level screening and TB. More striking however, is the impact of increased vacant units on the health outcomes within a given community. An increase in vacant units is correlated with negative health outcomes in all of the indicators featured. Finally, an increase in the percentage of owner-occupied units is correlated with several positive health outcomes, such as a decrease in low birth weight babies, an increase in prenatal care, a reduction in the teen birth rate, a reduction in both the lead screening and lead poisoning rate, a reduction in the incidence of diabetes, as well as in the incidence of TB.

Table 2 explores correlations between indicators relating to education and income and health outcomes. Three indicators relate to educational attainment: the first shows the correlation between the percentage of the population without a high school diploma and health outcomes; the second shows the correlation between having a high school diploma and health outcomes; and the third reflects the correlation between the percentage of the population with some college or a college degree and health outcomes. The levels of educational attainment yield different correlation results. Not having a high school diploma is positively correlated with teen birth rate, childhood lead screening and poisoning, diabetes incidence, stroke, and TB.

Table 1. Correlations between housing factors and health outcomes⁸

Socioeconomic characteristic: housing	Low birth weight	Prenatal care beginning in first trimester	Preterm births	Teen birth rate	Infant mortality rate	Childhood blood lead level screening	Childhood lead poisoning	Cancer (all sites)	Diabetes-related	Stroke (Cerebrovascular Disease)	Tuberculosis	Firearm-related
Percent crowded housing	-0.061	0.064	-0.130	0.468	0.006	0.706	0.172	-0.122	0.148	0.101	0.394	0.031
Percent vacant units	0.598	-0.521	0.508	0.612	0.598	0.501	0.530	0.454	0.377	0.532	0.322	0.641
Percent owner-occupied units	-0.307	0.427	-0.161	-0.369	-0.198	-0.398	-0.319	-0.010	-0.251	-0.099	-0.529	-0.213

Table 2. Correlations between education and income and health outcomes

Socioeconomic characteristic: income and education	Low birth weight	Prenatal care beginning in first trimester	Preterm births	Teen birth rate	Infant mortality rate	Childhood blood lead level screening	Childhood lead poisoning	Cancer (all sites)	Diabetes-related	Stroke (Cerebrovascular Disease)	Tuberculosis	Firearm-related
Without HS diploma	0.046	0.085	-0.001	0.588	0.128	0.792	0.272	0.005	0.285	0.258	0.370	0.184
With high school diploma	0.363	0.000	0.394	0.608	0.449	0.490	0.394	0.517	0.481	0.576	0.090	0.509
With at least some college or degree	-0.197	-0.057	-0.179	-0.670	-0.291	-0.752	-0.362	-0.240	-0.410	-0.436	-0.288	-0.356
Below poverty level	0.673	-0.464	0.571	0.753	0.625	0.747	0.585	0.508	0.619	0.584	0.489	0.670
Per capita income	-0.363	0.019	-0.344	-0.643	-0.444	-0.657	-0.467	-0.440	-0.588	-0.559	-0.345	-0.497

Table 3. Correlations between workforce factors and health outcomes

Socioeconomic characteristic: labor	Low birth weight	Prenatal care beginning in first trimester	Preterm births	Teen birth rate	Infant mortality rate	Childhood blood lead level screening	Childhood lead poisoning	Cancer (all sites)	Diabetes-related	Stroke (Cerebrovascular Disease)	Tuberculosis	Firearm-related
Percent unemployed	0.739	-0.467	0.701	0.774	0.797	0.577	0.726	0.764	0.642	0.766	0.215	0.834
Percent in labor force	-0.623	0.284	-0.592	-0.636	-0.713	-0.563	-0.541	-0.664	-0.512	-0.687	-0.104	-0.748
Percent self-employed in own non-incorporated business	-0.218	-0.097	-0.220	-0.414	-0.285	-0.420	-0.131	-0.275	-0.314	-0.385	0.065	-0.346

Table 4. Correlations between racial and ethnic composition and health outcomes

Socioeconomic characteristic: race and ethnicity	Low birth weight	Prenatal care beginning in first trimester	Preterm births	Teen birth rate	Infant mortality rate	Childhood blood lead level screening	Childhood lead poisoning	Cancer (all sites)	Diabetes-related	Stroke (Cerebrovascular Disease)	Tuberculosis	Firearm-related
Percent black population	0.872	-0.533	0.839	0.620	0.869	0.387	0.647	0.850	0.655	0.751	0.104	0.901
Percent Hispanic population	-0.455	0.328	-0.457	0.176	-0.327	0.441	-0.149	-0.452	-0.082	-0.204	0.162	-0.313
Percent foreign-born population	-0.641	0.364	-0.698	-0.250	-0.570	0.137	-0.382	-0.643	-0.424	-0.467	0.285	-0.628

Table 5. Correlations between “community climate” factors and health outcomes

Socioeconomic characteristic: climate	Low birth weight	Prenatal care beginning in first trimester	Preterm births	Teen birth rate	Infant mortality rate	Childhood blood lead level screening	Childhood lead poisoning	Cancer (all sites)	Diabetes-related	Stroke (Cerebrovascular Disease)	Tuberculosis	Firearm-related
Crime rate (crimes per 100,000 between May 12 & May 13)	0.792	-0.591	0.729	0.676	0.770	0.429	0.609	0.705	0.596	0.690	0.190	0.829
Median call Intensity: 311 street lights - one out (2012)	-0.137	0.240	-0.169	-0.077	-0.104	0.033	-0.006	-0.049	-0.080	-0.058	0.120	-0.153
Deposits (thousands of nominal dollars): total, per capita	-0.144	0.036	-0.159	-0.208	-0.070	-0.093	-0.110	-0.165	-0.230	-0.055	-0.023	-0.101
Number of full-service branches: total, per capita	-0.318	0.070	-0.329	-0.446	-0.273	-0.288	-0.331	-0.354	-0.470	-0.300	-0.105	-0.344
HMDA home purchase originations (count): total, per capita	-0.399	0.101	-0.380	-0.621	-0.502	-0.645	-0.488	-0.472	-0.524	-0.504	-0.298	-0.543
HMDA refinance originations (count): total, per capita	-0.424	0.188	-0.356	-0.696	-0.543	-0.755	-0.502	-0.466	-0.544	-0.537	-0.355	-0.567
Number of SB loan originations: annual rev <= 1M, per capita	-0.349	0.065	-0.338	-0.510	-0.329	-0.433	-0.359	-0.409	-0.482	-0.384	-0.164	-0.401
DNB counts (edited): total, per capita	-0.194	-0.010	-0.206	-0.310	-0.133	-0.191	-0.226	-0.239	-0.352	-0.193	-0.041	-0.206

Having a high school diploma results in correlations of the same significance, and adds low birth weight, pre-term births, infant mortality, cancer, and firearm related casualties. Of note is that having some post-secondary education (some college, but not necessarily a degree) results in correlations of significance for many of the same health outcomes, but in the opposite direction, suggesting that a positive ‘tipping point’ occurs across almost all health outcomes as educational attainment advances beyond high school.

Indicators relating to income are highly correlated with health outcomes. The percentage of families with incomes below the poverty level strongly correlates with negative health outcomes. Inversely, higher per capita income correlates strongly with positive health outcomes, with the exception of the presence of prenatal care, which is not significantly correlated.

Correlations between socioeconomic factors relating to labor and the workforce are also significant (table 3). Not surprisingly, unemployment is correlated with negative health outcomes across all of the indicators reviewed, with the exception of TB. Inversely, labor force participation (regardless of employment status) is correlated with positive health outcomes, again, with the exception of TB, which is not significantly correlated. We also reviewed correlations between the percentage of the population that is self-employed in a non-incorporated business⁹ and found self-employment to be significantly correlated with approximately half of the health variables. However, several factors had no significant correlations, including low birth weight babies, prenatal care, preterm births, childhood lead poisoning and TB.

Correlations between racial and ethnic composition and health outcomes vary widely (table 4). The percentage of black population in a geography

correlates positively (and significantly) with negative health outcomes, except TB. Inversely, the percentage of Hispanic population strongly correlates with positive health outcomes, with the exception of teen birth rate, childhood lead poisoning, diabetes, stroke and TB, which show no significance. The percentage of the foreign born population is also strongly correlated with positive health outcomes, the only exception being childhood blood lead level screening.

The final set of correlations we explored looked at those that impacted the ‘climate’ of a community in a more general sense (table 5). These included crime, which is a commonly accepted contributor to negative health outcomes. However, because of particular interests of the Federal Reserve, we also wanted to explore other economic factors, such as the presence of financial institutions, deposits, small business and home mortgage lending levels, as well as business counts, as measured by Dun & Bradstreet. While not proving causality, these factors contribute to a community’s vitality and indicate a degree of “connection” to the broader economy.

To further explore this notion of ‘connectivity’ contributing to health outcomes (or conversely, isolation compounding poor health outcomes), we retrieved 311 service call data from the city of Chicago. These calls typically involve requesting non-emergency city services at a particular location. In this case, we analyzed 311 calls requesting service regarding a ‘street light out.’ Our hypothesis in retrieving this data was that people who feel empowered to effect change in their communities are more likely to use the 311 service to report incidents. People who feel disengaged from their community, conversely, would be less likely to use the service. Controlling for population and duplicate calls, we arrived at a measure of 311 “call intensity.”¹⁰

As one might expect, incidence of crime is strongly and positively correlated with all of the health outcomes (with the exception of TB) – with the obvious corollary between crime and firearm-related casualties. The 311 service calls were inconclusive, with the exception of a positive and significant correlation with prenatal care. However, measures of economic activity were significantly and positively correlated with health outcomes, with a notable

exception. While per capita income is positively correlated with health outcomes (see table 1), deposits were not significantly correlated (positively or negatively) with health outcomes. However, lending activity (both small business and HMDA¹¹ purchase and refinance) in terms of numbers of loans (correlations regarding the total value of loans were the same) were correlated with most positive health outcomes, as was the presence of bank branches. More in-depth analysis would need to control for income and other factors that might drive lending activity, for example.

Quartile rankings – overall

Next, we created a type of index wherein we sorted community level outcomes (both health and SES) into quartiles. In our index, ranking within the fourth quartile indicated the community was doing ‘well’ or had a positive outcome. Correspondingly, moving through the spectrum to the first quartile represented a deterioration/increase in vulnerability in terms of both health and SES outcomes.

We first used this quartile index to sort health outcomes by SES variable to see, for example, how overall health outcomes improved as labor force participation increased or as home vacancies decreased. Again, without seeking to determine causality, it was interesting to observe how health outcomes improved or declined as certain SES factors changed. As in the previous section, we grouped the variables according to general areas of community development intervention.

Chart 1. Percent of population with some college or college degree/health outcomes¹²

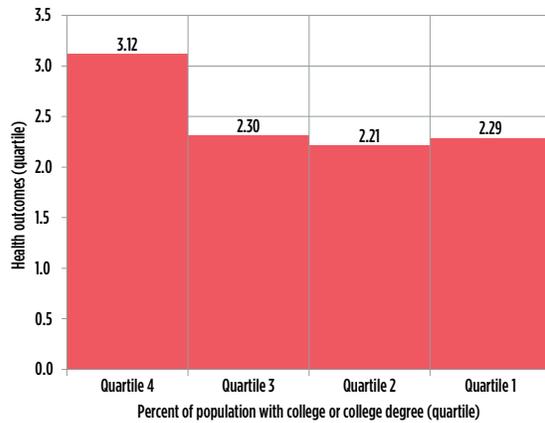


Chart 2. Percent of families below poverty level/health outcomes

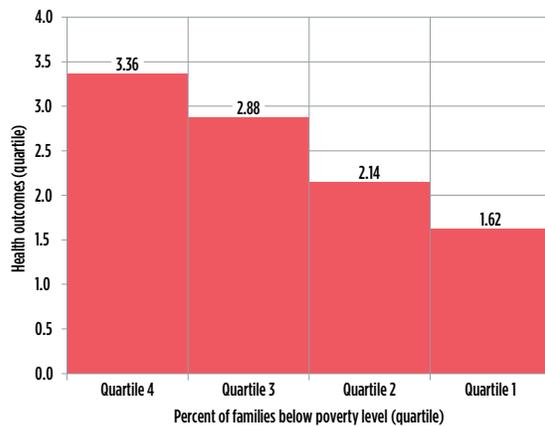
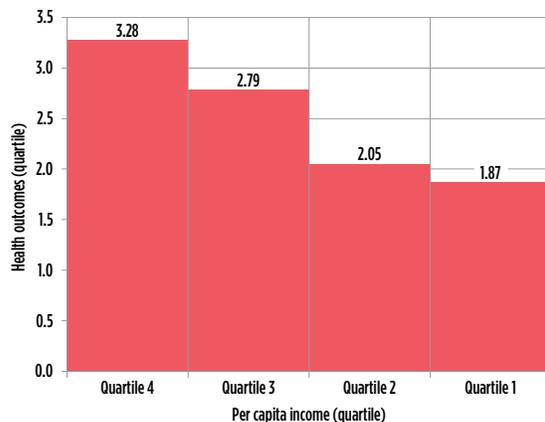


Chart 3. Per capita/health outcomes



Income and education (charts 1-3)

By holding factors related to income and education constant, we see the following health outcomes emerge. For education (chart 1), improvements in health occur most dramatically at the highest levels of concentration (this is true for no high school diploma and only high school diploma as well). Those communities with the highest levels of educational attainment – in the fourth quartile – see dramatic health improvements that are muted in the lower quartiles. In contrast changes in income – either through reductions in poverty or increases in per capita income – return steady improvements in health outcomes with the most marked improvements occurring between second and third quartile communities. However, overall, community health outcomes are consistent with the hypothesis that improvements in SES will return improvements in health outcomes.

Racial/ethnic composition (charts 4-6)

The racial and/or ethnic composition of a community appears to have a dramatic impact on a community’s health outcomes. (For the purposes of this analysis, communities that were mostly minority or that had high levels of foreign born population followed the assumption that these concentrations represented an area of vulnerability.) For example, communities that are predominantly black (e.g., are in the first quartile) demonstrate poor health outcomes. As the concentration decreases and the community becomes more diverse, health outcomes improve in a manner that is consistent with our hypothesis.

Charts 5 and 6 (page 7) depict the concentration of Hispanic or foreign born residents (acknowledging the overlap between these communities, in Chicago which is historically a ‘gateway’ city, foreign born concentrations represent many regions of origin). Here, the hypothesis is disrupted, although not in the way one might expect. Positive health outcomes are highest in the communities with the highest concentrations of Hispanic and foreign born populations. As those concentrations diminish, so do health outcomes.

In spite of these divergent outcomes, they may be indicative of the impact of isolation vs. connection

Chart 4. Percent of population that is black/health outcomes

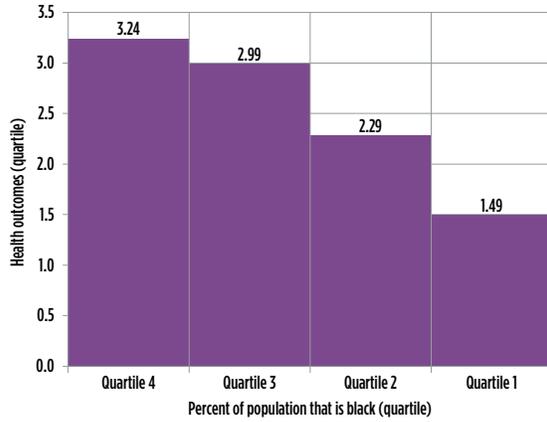


Chart 7. Percent of the population that is employed/health outcomes

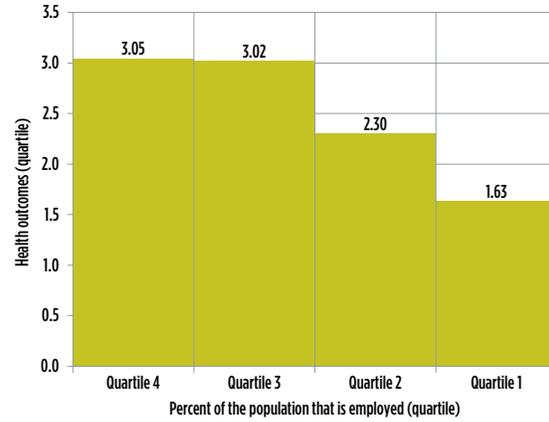


Chart 5. Percent of the population that is Hispanic/health outcomes

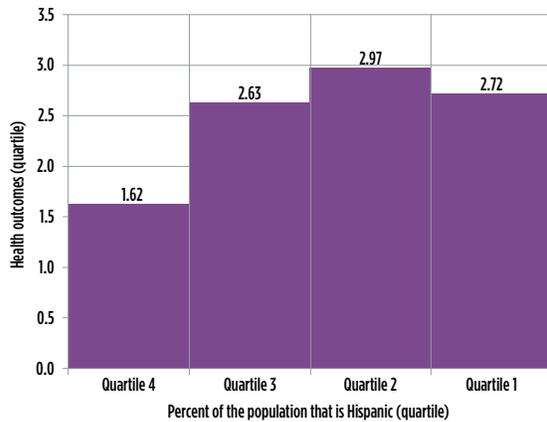


Chart 8. Percent of population that is self-employed/health outcomes

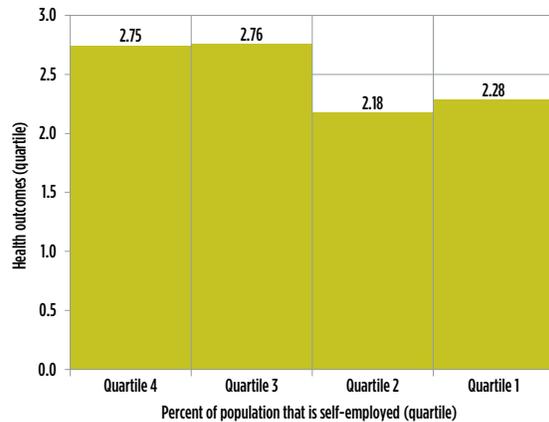
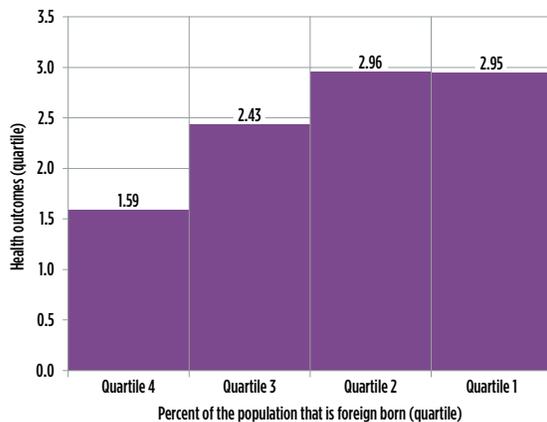


Chart 6. Percent of the population that is foreign born/health outcomes



on health outcomes, which will be discussed in more detail in the concluding sections of this article.

Workforce (charts 7-8)

Chart 7 reflects that being employed has a significant impact on health outcomes, especially, as the percent of a population that is employed progresses from the first quartile through the second and third. Interestingly, labor force participation (which includes individuals employed and those seeking employment/available for work) shows very similar outcomes.

We also briefly explored the health dynamics surrounding self-employment without conclusive

Chart 9. Percent of housing that is crowded/health outcomes

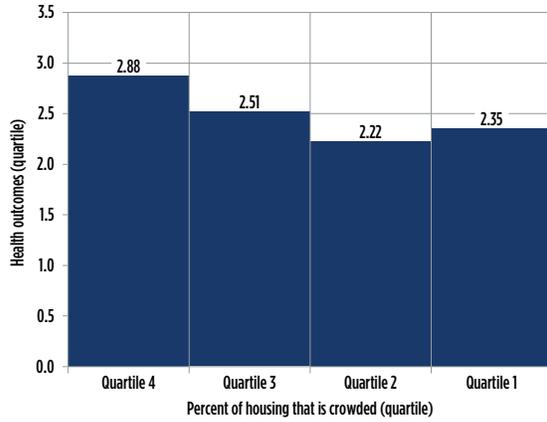


Chart 10. Percent of housing that is vacant/health outcomes

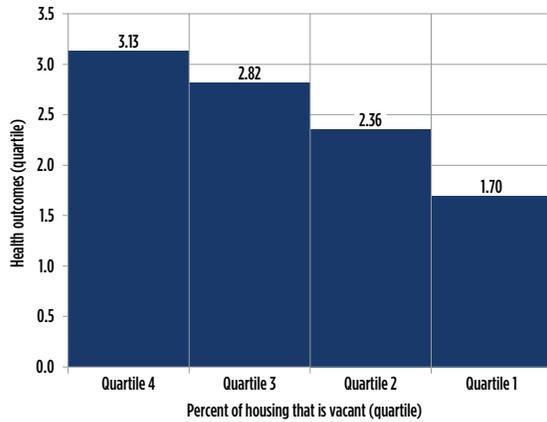
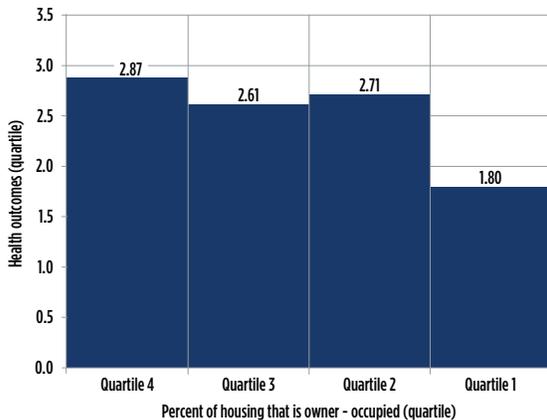


Chart 11. Percent of housing that is owner-occupied/health outcomes



results. At the lower end of the spectrum (here, we assumed that higher levels of self-employment were ‘better’ for a community and, therefore, a community in the fourth quartile has among the highest levels of self-employment, although across the city, the range was relatively narrow), communities with low levels of self-employment outperformed expectations. However, the levels of self-employment ranged from 8.5 percent of the population at the high end to 1.5 percent at the low end leaving doubt about the potential for self-employment to impact overall health outcomes.

Housing (charts 9-11)

We also explored the impact of housing conditions on health outcomes across a community. In communities with high percentages of crowded housing (thus, in the first quartile), the health outcomes were more positive than would be expected. Overall, health outcomes remained relatively flat across the quartiles, indicating that crowded housing may impart some positive effects associated with having multiple generations, or multiple wage earners living under one roof. As crowded housing becomes less of an economic reality, health improvements tend to diminish.

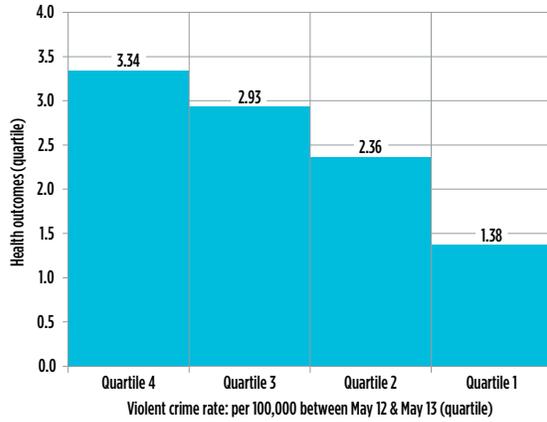
However, reductions in vacant housing have dramatic and progressive impact on health outcomes, as indicated by chart 10. Further, increases in owner-occupied housing (chart 11) appear to have a dramatic effect on community-level health outcomes, especially at the lower end of the spectrum.

Climate (charts 12-18)

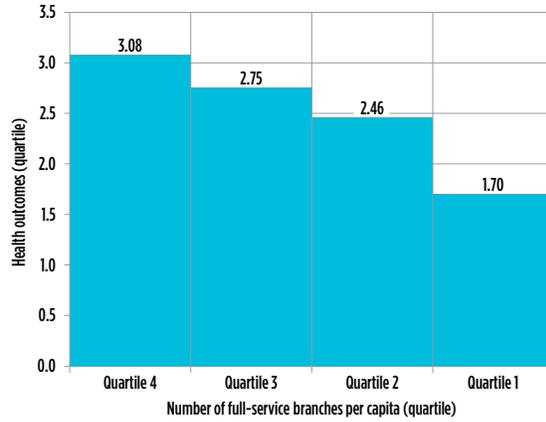
Charts 12-18 (pages 9-10) observe the changes in health outcomes as various SES factors related to the general ‘climate’ of a community change, including crime, 311 call intensity, and factors relating to the financial/credit activity within a given community.

The negative impact of crime on health outcomes is well-documented. In chart 12, we look solely at the violent crime rate. Improvements in health are most dramatic at the lower end of the spectrum (in communities where the violent crime rate is highest). Results for property crime and overall crime were similar, although somewhat less dramatic.

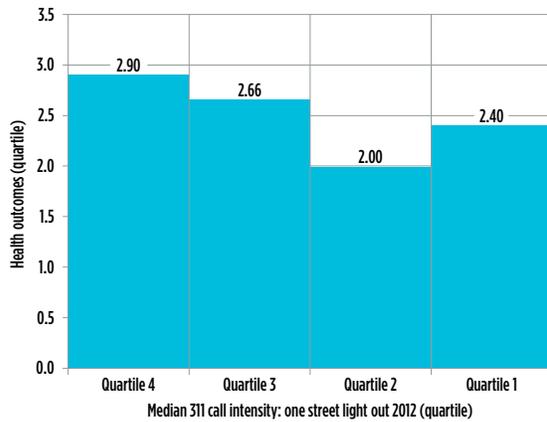
**Chart 12. Violent crime rate/
health outcomes**



**Chart 15. Number of bank branches/
health outcomes**



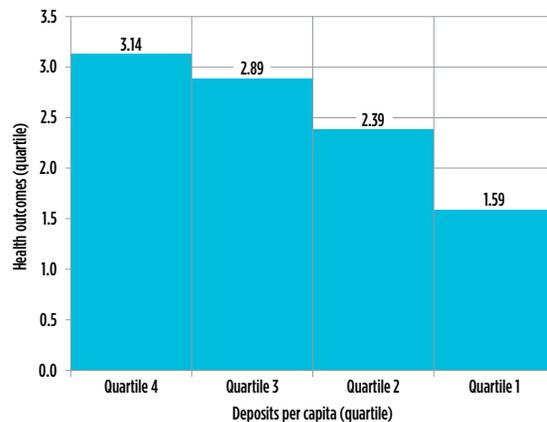
**Chart 13. Median call intensity/
health outcomes**



In chart 13, as was seen with the correlations the relationship between 311 call intensity and health outcomes is less conclusive, although in general the trend is that as call intensity increases, health outcomes improve.

Charts 14-18 observe the relationship between levels of financial, credit, and small business activity in a community and health outcomes. There is likely some corollary between income levels (see charts 2 and 3), but nevertheless a connection between a community's wealth and capital and the health outcomes of residents can be drawn.

**Chart 14. Deposits per capita/
health outcomes**



Quartile rankings – by community

Next, still adhering to our quartile rankings, we indexed socioeconomic data and community health data by individual Chicago community in an effort to identify those communities that were deviating from the hypothesis that a community's SES is a predictor/influencer of individual health outcomes (chart 19, page 11).

The shaded areas on chart 19 reflect the 'expected' ranges, that is, following the hypothesis, one would 'expect' a community with a SES quartile ranking between 1 and 2 to also return a health quartile ranking between 1 and 2. As can be seen in chart 19, most communities performed within their 'expected' ranges, adhering to the conclusion that as community SES deteriorates, so do health outcomes of residents.

Chart 16. Number of HMDA originations/health outcomes

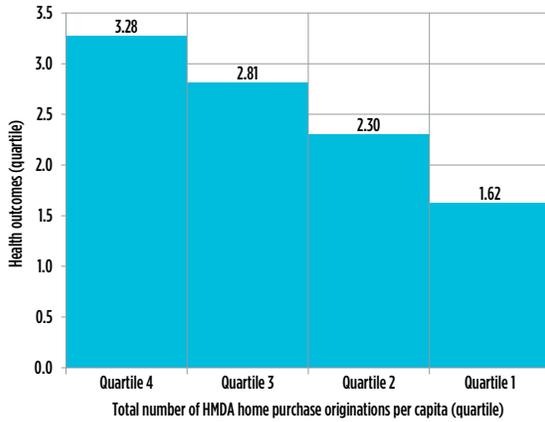


Chart 17. Number of small business loans/health outcomes

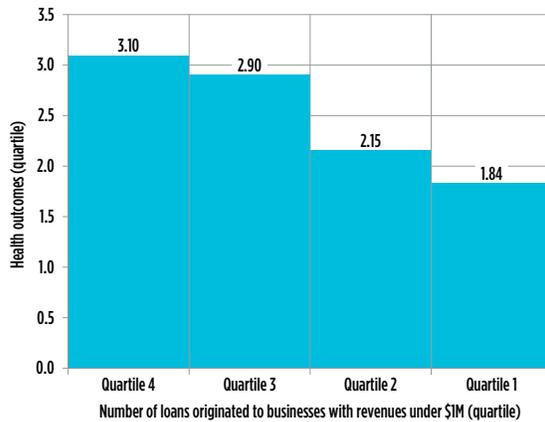


Chart 18. Business counts/health outcomes

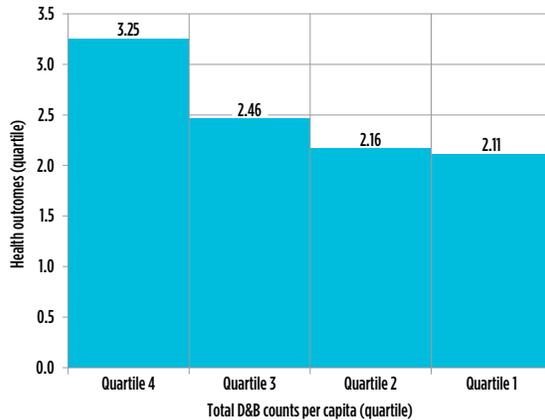


Table 6. North Lawndale/South Lawndale comparisons

Community area name	Health quartile average	Socioeconomic quartile average	Difference
North Lawndale	1.2	1.3	-0.1
South Lawndale	2.8	1.5	1.4

However, we then looked for communities that were high risk/vulnerable socioeconomically (i.e., with a quartile ranking averaging between 1 and 2), but that were performing better than expected from a health standpoint (meaning that their health quartile was at least one entire quartile above their socioeconomic quartile). For example, for a community that had a socioeconomic community quartile average of 2, we were looking for communities with a community health quartile average of 3 or better (recalling that 4 is ‘best’ and 1 is ‘worst’). Within our index, the community of South Lawndale was the only community that met this criteria. In contrast, its neighboring community, North Lawndale (see map 1, page 15), similarly socioeconomically stressed, has underperforming health outcomes.

Table 6 summarizes the differences and similarities between the socioeconomic and health conditions in both communities. Although virtually the same in terms of socioeconomic quartile average, the two communities diverge significantly in their health quartile average, with South Lawndale’s health ‘outperforming’ its SES average by 1.3. A further analysis of the differences between socioeconomic and health indicators for the two communities is in charts 20 and 21 (page 12).

Chart 20 reflects the socioeconomic indicator quartiles for the two communities (recalling that 4 is ‘good’ and 1 is ‘bad’). The two communities display opposite outcomes in some cases. For example, the composition of their populations differs greatly, with South Lawndale (in red) being predominantly Hispanic and having among the highest levels of foreign born population in the city. On the other hand North Lawndale (in green) is majority black, with low levels of foreign born and Hispanic populations. The communities show divergence with

Chart 19. Quartile index

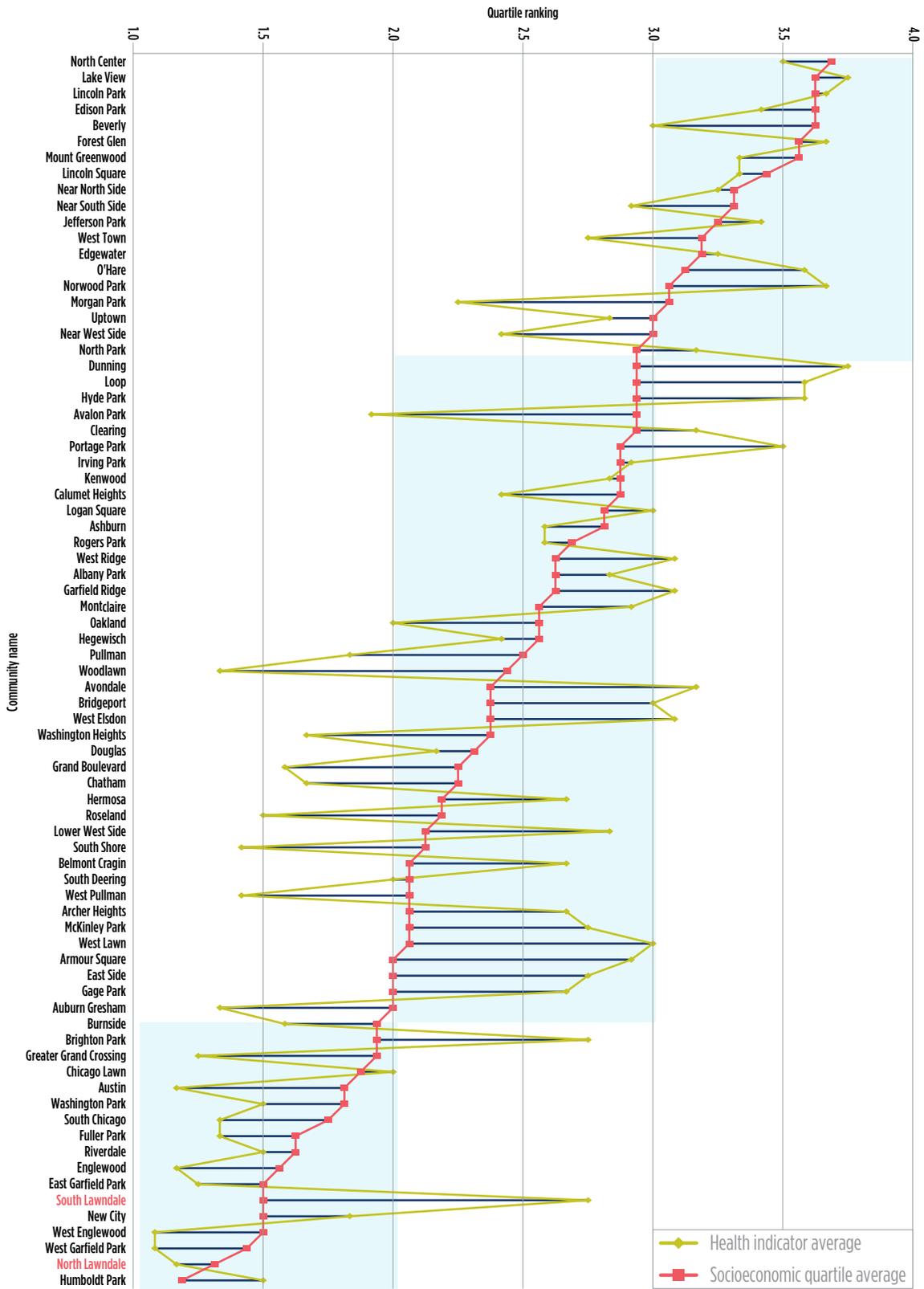


Chart 20. Socioeconomic indicator quartiles: North and South Lawndale

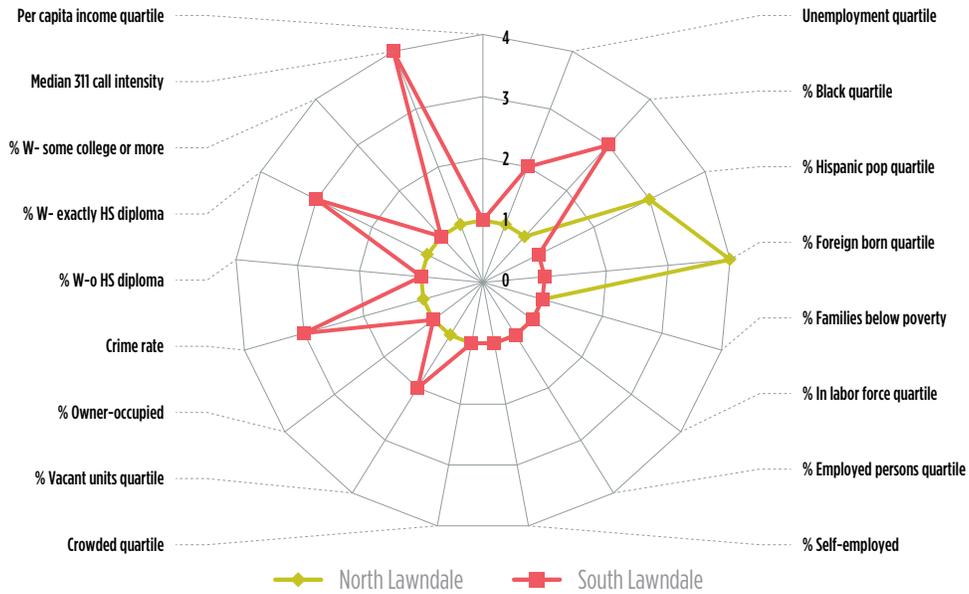
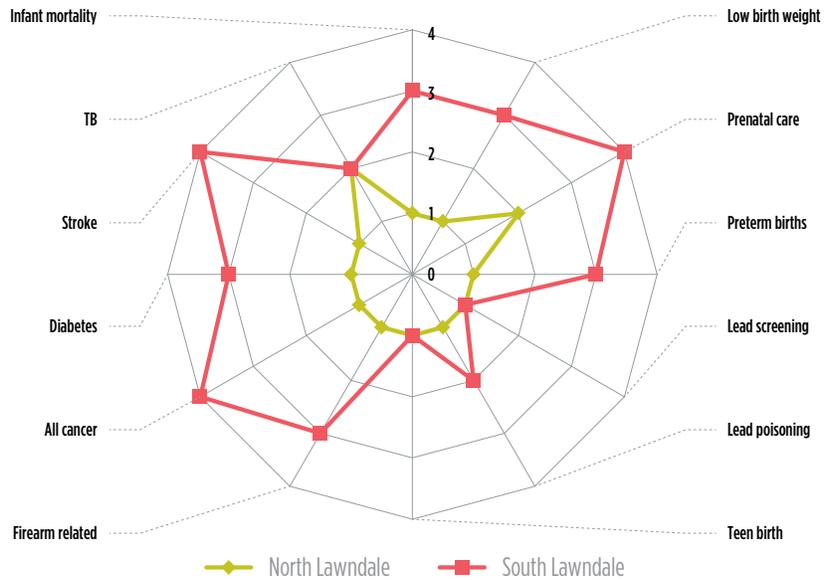


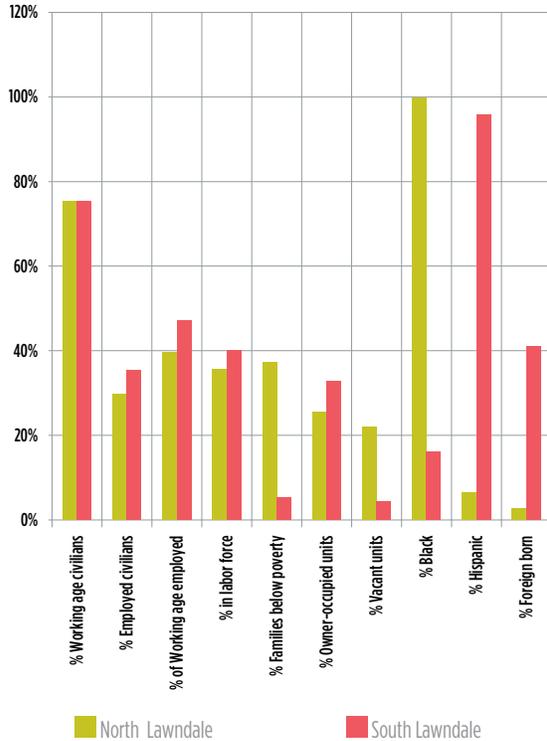
Chart 21. Health indicator quartiles: North and South Lawndale



respect to their crime rates, with North Lawndale being one of the most violent communities in the city. Further, with respect to their 311 call intensity, South Lawndale residents make high use of this non-emergency city service number.

However, in many ways the communities are similar with levels of educational attainment, per capita income, labor force participation, self-employment, owner-occupied units that are all among the lowest in the city. In terms of unemployment and home

Chart 22. North/South Lawndale community characteristics



vacancies, South Lawndale outperforms North Lawndale by one quartile, but remains stressed.

In summary, these communities are poor, lagging in educational attainment, with unstable housing and limited employment prospects. Both communities are mostly minority, but with very different racial and ethnic compositions. Further, North Lawndale is plagued by crime and apparent isolation, as indicated by the low level of 311 call intensity.

Chart 21 depicts the health quartile profile for the two communities. South Lawndale outperforms its neighbor on almost all indicators with the exception of TB, lead screening and the teen birth rate. For these three indicators, outcome and incidence data are among the worst in the city. However, South Lawndale scores strongly for pre and neonatal indicators, such as infant mortality, low birth weight, prenatal care, and preterm births. South Lawndale also ranks highly for diseases and afflictions that may become prevalent later in life, such as cancer,

diabetes, and stroke. In contrast, health outcomes in North Lawndale are consistently among the worst in the city.

So, while these two communities evidence similar socioeconomic stressors in most cases, their health outcomes diverge significantly. The remainder of this article is devoted to exploring this phenomenon.

The communities of North and South Lawndale are contiguous on the west side of Chicago (see map 1). Combined, they have a population of just over 101,000, with two-thirds of that residing in South Lawndale. Despite sharing a border, the two communities are distinctly different and face different challenges. The two communities have roughly the same percentage of working age civilians, but South Lawndale has higher levels of employment, working age employed, and labor force participation. North Lawndale has higher levels of families in poverty, lower levels of owner-occupied units, and significantly higher vacancies. Racial and ethnic compositions vary greatly as well: North Lawndale is 100 percent black, while South Lawndale is predominantly Hispanic, with 40 percent of its population foreign born (chart 22).

The crime rates in the two communities are also vastly different. North Lawndale residents experience more than 300 crimes per 1,000 people, while the crime rate in South Lawndale is 82 per 1,000 people (chart 23). The homicide rate in North Lawndale is .35 per 1,000 people compared to .10 per 1,000 people in South Lawndale (chart 24).

Although city of Chicago maps refer to the communities of North and South Lawndale, South Lawndale residents refer to “Little Village” as their home, reflecting the community’s heritage as a ‘gateway’ community.

Community leaders acknowledge the health disparities between the two communities, however, caution against ascribing too much to the data. The executive director of the Lawndale Christian Health Center, a federally qualified health center serving both communities, estimates a significant portion of the users of his facility is undocumented and therefore often do not seek treatments beyond primary care. Under-reporting of disease, high levels of obesity, sub-standard, over-crowded housing, and low levels

Chart 23. North/South Lawndale: Crime (all) per 1,000 people

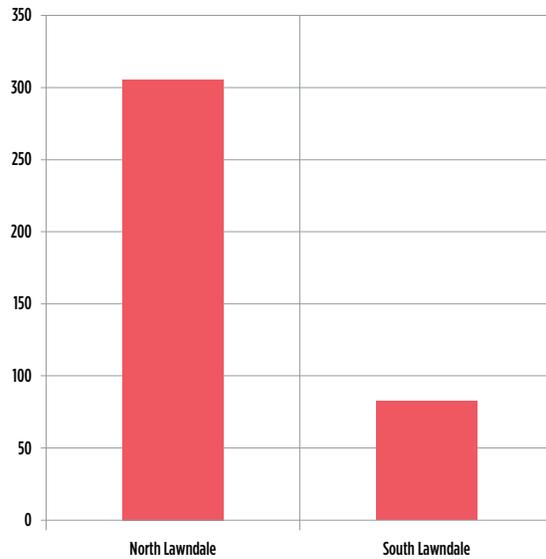
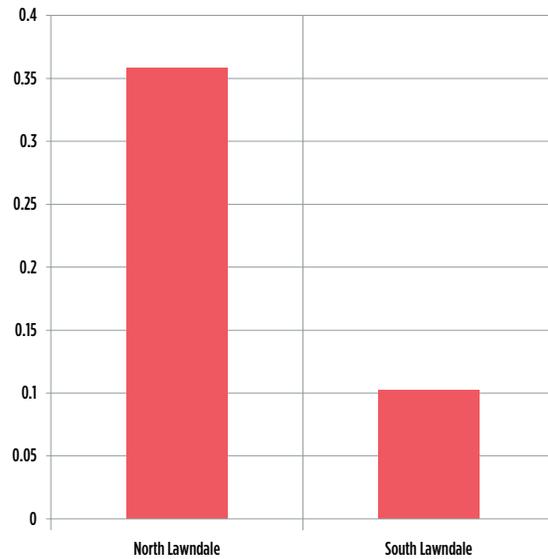


Chart 24. North/South Lawndale: Crime (homicide) per 1,000 people



of educational attainment dominate the health challenges of South Lawndale’s residents, according to community leaders. At the same time, community leaders acknowledge a strong social fabric amongst the community’s Hispanic residents, resulting in close-knit families that support each other through times of financial, as well as medical hardship. For example, multiple wage earners may contribute to a household’s global earnings, providing a degree of resilience.

Community leaders also highlight the complexity of the stories behind the numbers. A baby that dies of neglect, as told by one community leader, will be counted among the infant mortality statistics. However, the root causes of that infant’s death are more societal than medical and were likely in motion before birth. Although the medical profession may be called upon in these situations, any ‘cure’ lies in addressing the ‘upstream’ causes of poverty or abuse, areas where community development interventions can have an impact.

North Lawndale has suffered from decades of disinvestment and social disintegration. When asked what one thing would make a difference to North Lawndale residents, one community leader responded, “Hope.”

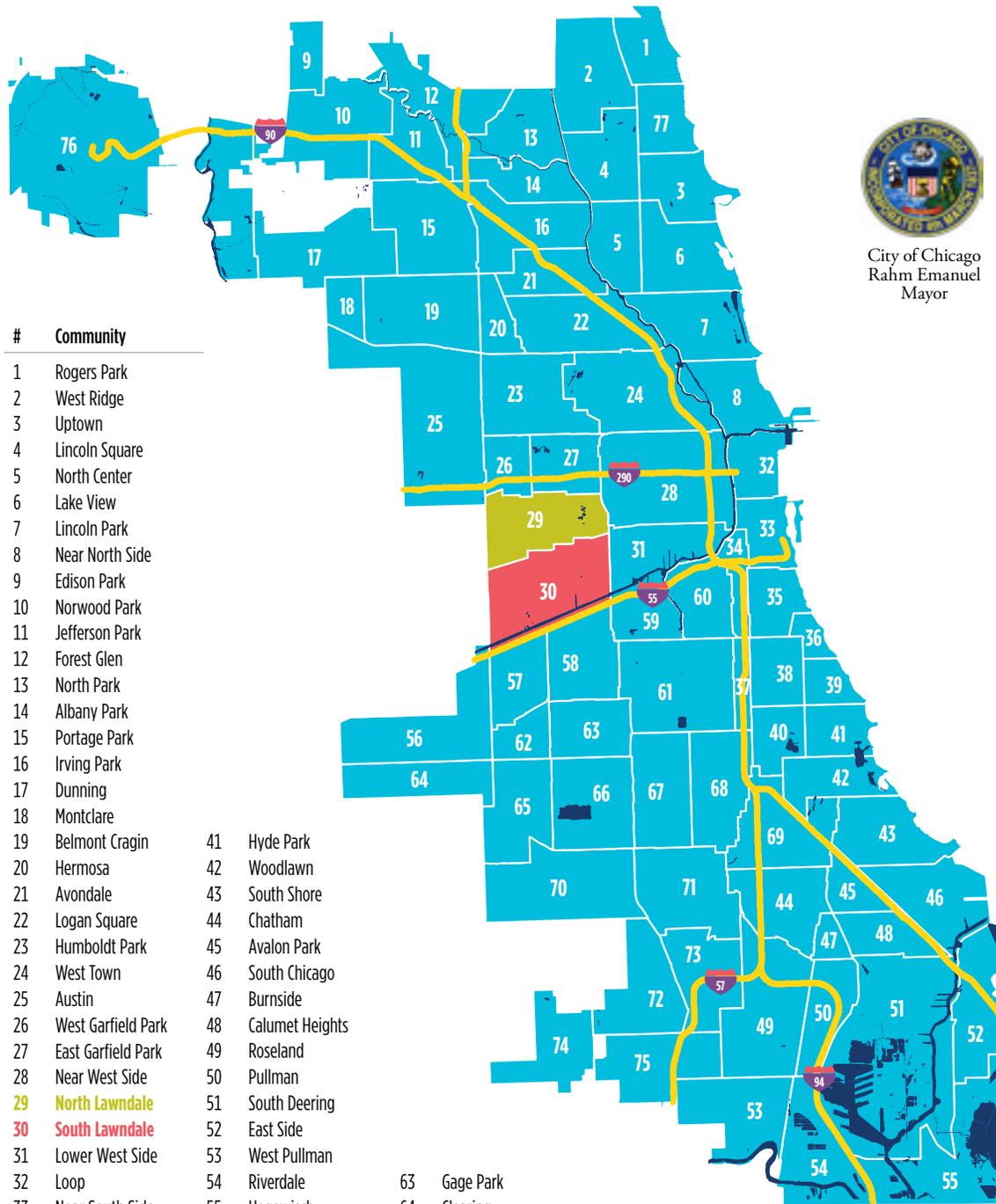
Summary of findings

While this analysis did not and was not designed to determine causality, strong correlations exist between the socioeconomic characteristics of a place and health outcomes of residents in Chicago’s communities.

Positive correlations between ethnicity and foreign born status and health are particularly strong. Further, employment and labor force participation are correlated with positive health outcomes, as is the percent of occupied units and home ownership. Beyond this there exist positive correlations between health outcomes and economic activity, as measured by home mortgage and small business lending, as well as the presence of financial institutions and self-employed residents. Race, poverty, vacancies, and unemployment are all strongly and positively correlated with negative health outcomes.

The quartile analyses concur with the correlation results and reflect that health outcomes do improve with higher SES. However, health improvements are not always consistent. For example, health outcomes appear to improve steadily with decreases in poverty. Similarly, the racial and ethnic composition of a community appears to play a strong role in the health outcomes experienced by the residents of

Map 1. City of Chicago communities



City of Chicago
Rahm Emanuel
Mayor

#	Community
1	Rogers Park
2	West Ridge
3	Uptown
4	Lincoln Square
5	North Center
6	Lake View
7	Lincoln Park
8	Near North Side
9	Edison Park
10	Norwood Park
11	Jefferson Park
12	Forest Glen
13	North Park
14	Albany Park
15	Portage Park
16	Irving Park
17	Dunning
18	Montclare
19	Belmont Cragin
20	Hermosa
21	Avondale
22	Logan Square
23	Humboldt Park
24	West Town
25	Austin
26	West Garfield Park
27	East Garfield Park
28	Near West Side
29	North Lawndale
30	South Lawndale
31	Lower West Side
32	Loop
33	Near South Side
34	Armour Square
35	Douglas
36	Oakland
37	Fuller Park
38	Grand Boulevard
39	Kenwood
40	Washington Park
41	Hyde Park
42	Woodlawn
43	South Shore
44	Chatham
45	Avalon Park
46	South Chicago
47	Burnside
48	Calumet Heights
49	Roseland
50	Pullman
51	South Deering
52	East Side
53	West Pullman
54	Riverdale
55	Hegewisch
56	Garfield Ridge
57	Archer Heights
58	Brighton Park
59	Mckinley Park
60	Bridgeport
61	New City
62	West Elsdon
63	Gage Park
64	Clearing
65	West Lawn
66	Chicago Lawn
67	West Englewood
68	Englewood
69	Greater Grand Crossing
70	Ashburn
71	Auburn Gresham
72	Beverly
73	Washington Heights
74	Mount Greenwood
75	Morgan Park
76	Ohare
77	Edgewater

Source: City of Chicago.

that community, which either steadily improve or deteriorate depending on demographic compositions.

Results from the analysis of other SES variables (e.g., owner-occupied units, vacancies, employment, and crime) seem to indicate that community development interventions (e.g., quality day care, charter schools, workforce training) in the lowest SES communities have significant potential to impact health outcomes.

Community interviews tend to support these findings. However, community leaders remind us of the challenges of fully documenting the health outcomes within the Hispanic community, as well as the complexity of the conditions behind the numbers.

Implications

The results of our analysis indicate that the socioeconomic conditions of a place – good or bad – correlate with health outcomes and conditions of residents. Low SES in low- and moderate-income communities in particular correlates positively with negative health outcomes. However, we show that low socioeconomic standing is not always correlated with poor health outcomes, as demonstrated by the case of South Lawndale, and that some other factors also appear to influence health. Nevertheless, being aware of the correlations that exist between socioeconomic interventions and health outcomes presents opportunities for community development and public health practitioners.

For example, with deep experience in workforce development, community development practitioners play an important role in connecting individuals to the labor market an important corollary with positive health outcomes. The community development field is also well versed in stabilizing housing markets, as well as in providing early childhood development opportunities. However, addressing the health issues associated with racial concentration would appear to require further exploration and engagement.

The thought that ‘economic infrastructure’ and community development interventions – such as those that connect people to jobs, those that create community networks and systems, and those that empower people within their communities – may have measurable health outcomes is gaining

currency in both the community development and public health spheres. For example, positive correlations between levels of HMDA lending and bank branch presence and health outcomes provide further indication of the importance of key community resources, including access to credit and financial institutions.

Increasing numbers of successful collaborations across the health and community development field abound, most frequently in the realm of access to healthy food, green space, and early childhood development, although new initiatives make the link between stable housing and health as well.

With a better understanding of the (potential for) complementarity between economic/community development and public health goals, the fields have the opportunity to align interventions involving built infrastructure and service delivery. However, linking these interventions is challenging. True coordination requires defining common goals, objectives, and measurement tools; coalescing funding streams and reporting processes; as well as coordinating timelines and expectations regarding change and impact.

Notes

1. For example, see Robert Wood Johnson Foundation Social Determinants of Health: <http://www.rwjf.org/en/research-publications/find-rwjf-research/2011/09/how-does-where-we-live--work--learn-and-play-affect-our-health-.html>. And, Winkleby, M.A., and Cubbin, C. Influence of individual and neighbourhood socioeconomic status on mortality among black, Mexican-American, and white women and men in the United States. *J Epidemiol Community Health* 2003 (57:444-452). And, Waitzman, N.J., and Smith, K.R. Phantom of the area: poverty-area residence and mortality in the United States. *American Journal of Public Health*, Vol. 88, No. 6, June 1998.
2. Bernanke, Ben. Creating Resilient Communities. Remarks at Federal Reserve System Research Conference. April 12, 2013.
3. For more information regarding the social determinants of health, visit <http://www.rwjf.org/en/topics/search-topics/S/social-determinants-of-health.html>.
4. For an explanation of the data, visit <https://data.cityofchicago.org/api/assets/2107948f-357d-4ed7-acc2-2e9266bbffa2>. For the actual data, visit <https://data.cityofchicago.org/Health-Human-Services/Public-Health-Statistics-Selected-public-health-in-ignk-2tcu>.
5. Socioeconomic data sources include: 2000 and 2010 Decennial Census; 2006-2010 ACS; Chicago Police Department; Dun & Bradstreet; FDIC Summary of Deposits; Federal Financial Institutions Examination Council (FFIEC), "Home Mortgage Disclosure Act (HMDA): Loan Application Register (LAR)," Federal Financial Examination Council (FFIEC), "Community Reinvestment Act (CRA): Disclosure Data," and Federal Reserve Bank of Chicago calculations.
6. Correlations help identify the strength and direction (positive or negative) of association between two variables. For example, a result of -1 indicates perfect negative association; a result of +1 indicates perfect positive association, while a result close to 0.0 indicates little or no relationship. In the tables in this article, cells highlighted in green are significant at the 5 percent level, meaning the likelihood that the [observed] association has occurred by chance is less than 0.05.
7. "Although the Census Bureau has no official definition of crowded units, many users consider units with more than one occupant per room to be crowded." *American Community Survey Definitions* (p 25).
8. All correlations are Federal Reserve Bank of Chicago calculations.
9. Self-employed in own not incorporated business workers includes people who worked for profit or fees in their own unincorporated business, professional practice, or trade or who operated a farm. Source: U.S. Census Bureau.
10. A "call intensity" metric was constructed using the set of "311 service requests - street lights - one out" that were resolved in 2012. To generate the figure, the start and end date of unique outages was identified. Then the number of calls associated with each outage was divided by the number of days the outage was outstanding. Finally, each Chicago Community Area (CCA) was assigned an overall intensity rating by taking the median intensity of all outages in that CCA. By quantifying intensity rather than frequency, the hope was to control for two sources of variation that didn't interest us: 1) the incidence of outages, and 2) variations in the time it takes the city to resolve outages. We also chose this measurement because we imagined the incidence of outages to be fairly random, and they relate more to public spaces than private spaces when compared to a lot of the other service types, and, finally, the sample size was very large (over 30,000 calls) of this type of request. The choice is not perfect though. There is the possibility that one person drives the intensity by calling multiple times, and/or there may be differences in the visual prominence of outages. Furthermore, the big technical problem with this approach is that it requires the identification of unique outages. While there's a field (service request number) that uniquely identifies calls, there's nothing built-in to uniquely identify outages. To infer unique outages, we

(naively) assigned calls resolved during the same day in the same zip code to the same outage. The obvious flaw with this method is that, when the city sends out electricians to fix outages, they might be providing instructions to address more than one outage in the same area.

11. This refers to loans required to be reported (as to race and location of borrower, and certain loan terms) by insured financial institutions under the Home Mortgage Disclosure Act.

12. Quartile analyses derive from Federal Reserve Bank of Chicago calculations.

Biography

Susan Longworth is a senior business economist in the Community Development and Policy Studies division at the Federal Reserve Bank of Chicago.

Strategies for maximizing the potential of Great Lakes ports for regional growth

by David L. Knight and Jason Keller
data contribution by William Strauss

Introduction

Great Lakes maritime ports are catalysts for local and regional economic growth and “laboratories” for research and innovation to sustain the ecological health of the lakes. Typically located at the mouths of tributaries, their locations have historically been strategically important as key links in transportation networks. In recent years, the growing awareness of the importance and fragility of river-mouth ecosystems has required more careful and intentional planning around port development and related policy to minimize environmental impact.

The Seventh Federal Reserve District (Chicago) includes the majority of the geographic areas of the Great Lakes’ coastal states of Illinois, Indiana, Michigan, and Wisconsin. With approximately 10,900 miles of Great Lakes shore line, including two dozen deep draft commercial ports in the district, the Chicago Fed has an interest in both the physical health of the Great Lakes and the economic well-being of their port communities. The Bank recently partnered with the state of Illinois, the Great Lakes Commission, the National Oceanic and Atmospheric Administration, and the Council of Great Lakes Governors to host a two-day conference

in Chicago to explore new approaches to promoting economic development and maximizing local maritime assets while protecting and enhancing the Great Lakes water resource.

The “Great Lakes Ports and Regional Growth: Integrating Environmental Health and Economic Prosperity” conference involved more than 120 participants, including representatives from port authorities and non-governmental organizations, economic development practitioners, and experts in economics, regional finance, logistics, and environmental protection.

According to the U.S. Department of Transportation Maritime Administration (MARAD), waterborne transport is regarded as the most efficient, safest, and environmentally friendly form of moving goods. For example, a freighter can move one ton of cargo 576 miles on one gallon of fuel – the equivalent of 413 miles by train and 155 miles by truck.¹ A modal shift to water from the highly congested highway and rail corridors of Chicago, Toledo, and Toronto (as well as other major regional hubs) would increase their freight handling capacity and support economic growth, while offering potential fiscal and environmental benefits.

The conference speakers focused largely on strengths and opportunities of Great Lakes ports, while illustrating the need for additional research and policy discussion on the potential impact of maritime commerce on regional economic development. The goal was to encourage dialogue among public officials, private investors, and economic and community development practitioners, and to urge them to think cooperatively about transportation plans, land use strategies, and revitalization programs in communities surrounding local ports.

Conference highlights

It is difficult to overstate the importance of the roles that Great Lakes ports and waterborne commerce play in the Midwest economy, and in the historic development of the region's most dynamic urban markets. Chicago, Milwaukee, Detroit, Gary/Burns Harbor, Saginaw/Bay City, and Green Bay all grew more rapidly owing to the impact of deep-water harbors. More recently, these six major ports collectively averaged over 70 million tons of annual waterborne cargo throughput in the 2006-2010 period,² almost half of the 145 million total tons moved through and between federally authorized ports in the Great Lakes waterway system in that period.

The six major ports, 28 smaller Great Lakes commercial ports, and 39 federally authorized recreational harbors located within the Seventh Federal Reserve District, contribute much to the regional economy.

Great Lakes ports and coastal communities also play a prominent role in shaping the Great Lakes' regional identity as North America's "Fourth Coast." Strong, vibrant, working ports and waterfronts in these communities help reinforce a regional "brand" connoting economic growth and quality of life.

Commerce and cargo remain the fundamental metrics for how Great Lakes ports drive regional economic growth. By enabling efficient, bulk transport of commodities including iron ore, coal, limestone, cement, grain, fertilizer, and liquid bulk products, the Great Lakes/St. Lawrence Seaway (Seaway) system continues to support hundreds of thousands of jobs in some of the region's core sectors,

including integrated steelmaking, automotive and heavy machinery manufacturing, power generation, construction, and agriculture. According to a 2011 analysis, in 2010 the Seaway system generated 227,000 jobs (U.S. and Canadian), \$33.6 billion in business revenue, \$4.6 billion in taxes, and \$14.1 billion in personal earnings.³

Maximizing the value of the Great Lakes' working ports to the Midwest regional economy presents the challenge of adapting a marine transportation infrastructure rooted in the region's historically strong heavy manufacturing and agricultural sectors to new opportunities emerging from expanding intermodal transportation hubs and transitional economic trends such as alternative energy development.

Asserting the ports' added value within those important trends and opportunities is the challenge, according to William Friedman, conference panelist and president and CEO of the Cleveland Cuyahoga County Port Authority. "My job is to match up the competencies and capabilities of a port authority with the opportunities of the market on behalf of the regional economy," Friedman said. "The point is not to enrich our ports, but to drive down transportation costs for companies within the hinterland of our port, to make the supply chains run better with alternative routings, and to ultimately help them prosper and grow and go after new business. States in other port ranges on the coasts are much more aggressive in using their ports to attract new business, and we in the Great Lakes should follow the example."

The conference explored perspectives from other port ranges (i.e., a group of ports serving the same broad region), including case studies from Europe on how port cities with similarities to Midwest port cities leverage their maritime assets for economic growth and development. A number of relevant studies were cited, including work by the Paris-based Organisation for Economic Co-operation and Development (OECD) under its Port Cities Program. Olaf Merk, manager of the OECD's Port Cities Program, told conference attendees that for ports to maximize their impact on their host cities, three requirements must be fulfilled: 1) they must be competitive; 2) their benefits should be accrued locally, not to distant markets served; and 3)

negative impacts must be mitigated, or even made into opportunities.

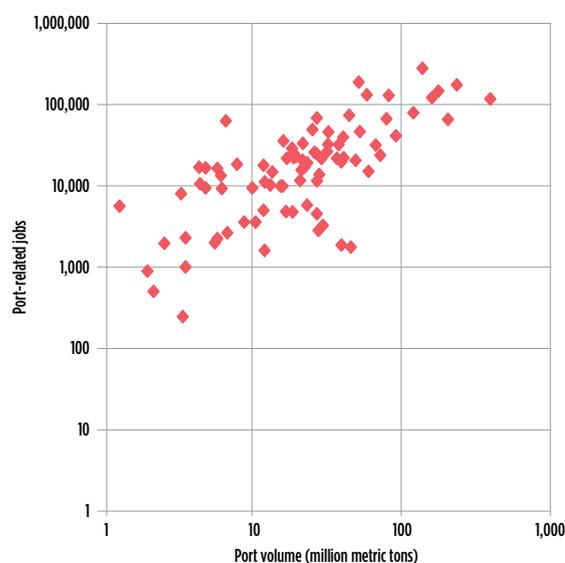
Logistics consultant, Adam Wasserman of Global Logistics Development Partners, echoed the importance of the direct connection of a port to its local community, saying, “Harnessing the value of a port is the objective. Los Angeles treasures its port, but all the value moves right through, in the form of cheap Asian goods to the Midwest. Sometimes we think of logistics as an end product, but to me it is more of a verb moving toward economic growth.”

OECD’s Olaf Merk noted that the value added by ports can indeed be substantial and is sometimes enough to drive an entire regional economy, such as in Rotterdam where the port generates some \$13 billion in economic benefit annually. “In impact studies,” said Merk, “we found that the average economic impact of every ton of cargo throughput generated \$100, and every cruise passenger generated \$200.” In addition, there was indirect impact of up to a 2.5 multiplier. According to a 2010-2013 synthesis report focusing on 11 major international ports, the OECD determined that one million tons of throughput equaled some 300 jobs in the short term, plus indirect jobs⁴ (chart 1).

Merk added that ports also promote the clustering of industries tied to waterborne commerce. These industry clusters have collateral benefits, including shared research and development investment and increased trade among local firms. Peter Creticos, president of the Chicago-based Institute for Work and the Economy who was involved with OECD’s Chicago-focused research, noted, however, that while inter-lake commerce in the Great Lakes is well-defined by longstanding origin-destination routes linking specific bulk commodity sources with specific industrial facilities, there is little overall coordination of the system as a whole. “The OECD’s conclusion,” Creticos said, “is that there is a great wealth of transportation, but little coordination.”

Great Lakes maritime commerce still follows trade patterns largely established during the region’s early industrialization over a century ago. Routes were based on the need to move iron ore, limestone, and coal from mines and railheads to steel mills, factories, and electrical plants, and grain and other agricultural products from elevators to population

Chart 1. Port related jobs compared to port volume



Source: OECD

centers and export routes. The opening of the St. Lawrence Seaway in 1959 gave these movements a more global reach, but the commodities moved today are essentially what they were 55 years ago: iron ore, steel, and grain. More than one conference speaker pointed to the challenges Great Lakes ports face as the cities and regional economic sectors that shaped these trade patterns change. Since this time, ports have seen increased demand to moving finished goods in addition to raw materials, but pressures to improve air quality and the emergence of cheap, newly plentiful natural gas will continue to foster industry change, thus forcing ports and port infrastructure to follow suit.

The notion of change was echoed by William Testa, the vice president and director of Regional Research for the Federal Reserve Bank of Chicago. His remarks centered on the contrast between the Great Lakes region’s history as a strong goods producing economy to one today, based on services. While technological developments have improved certain economic efficiencies (namely that we employ fewer people to produce the same output), Testa commented that the region is “urban and educated,” but that many cities have to restructure themselves if they want to succeed in the new service-based economy. He went

on to say that “we have a real challenge...we have to keep the old, and morph into something new.”

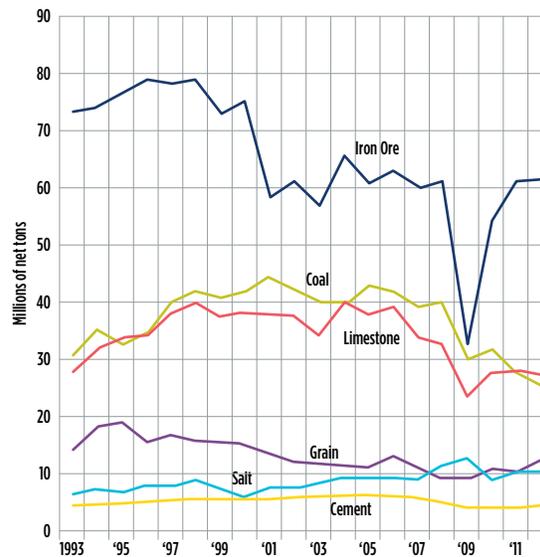
The change from coal to other commodities was also highlighted by Eric Gabler, who said, “Coal used to be the U.S. fleet’s most stable commodity, but no longer.” Gabler, an economist with the U.S. Maritime Administration who recently contributed to a report⁵ on the status of the U.S.-flag bulk carrier fleet in the Great Lakes, said coal cargo on U.S. cargo ships fell from almost 25 million tons in 2008 to 17.6 million tons in 2012. The chief cause, he noted, was a decline in exports of U.S. coal to Canadian electric utilities as they started a movement to phase out coal as a power source. The broader shift to lower cost of natural gas supply has also been a factor. As seen in chart 2, coal has not been the only commodity experiencing recent declines.

Notably, the decline in iron ore tonnage between 1993 and 2012 likely reflects the manufacturing shock that sent steel output plunging during the recent economic recession as motor vehicle production was cut in half. This change has implications for the ports and industries operating the 42 major coal receiving docks on the Great Lakes. “The market for lakes-borne coal bound for U.S. plants is more stable than that serving Canadian ports,” Gabler said, “but prospects for closure of more U.S. coal burning facilities does not bode well for future domestic coal shipments.”

The key question for ports in this transitional phase is whether infrastructure designed for a relatively low value bulk commodity can be repurposed, perhaps for cargo movement with higher value added and more jobs involved? “Over time,” said the Port of Cleveland’s Friedman, “you see dock facilities that become obsolete for one reason or another. If they are private, it is up to the owner. Often communities get involved in how to adapt large facilities and reuse them. There is plenty of marine terminal capacity on the Great Lakes and that is good. We can handle more cargo without huge new investment.”

Friedman said Cleveland is doing more than talking about ports’ potential for attracting new cargo. In an entrepreneurial venture unprecedented among Great Lakes’ public port authorities, the port is chartering two ocean-going vessels to launch a scheduled liner service to Europe in the spring of 2014, the first such

Chart 2. Great Lakes dry-bulk commerce



Source: Lake Carriers Association.⁶

service available in the Great Lakes since the 1970s. “We are taking matters into our own hands,” said Friedman. “We are confident the market is there to allow us to move up to the higher value cargoes. Hopefully this will lead the way to more regular movement of such cargoes; they are our cargoes, now moving by truck or rail to East or Gulf Coast ports. We should be moving that through our own ports.”

Betty Sutton, administrator of the U.S. Department of Transportation’s St. Lawrence Seaway Development Corp., sees significant opportunity in the new energy landscape. “The Great Lakes [are] at the epicenter of a radically changing energy landscape, and the Seaway is going to play a key role in the transportation decisions surrounding these changes. While iron ore, coal, and steel are still mainstays, high value cargo is growing to serve the energy and mining industry. Wind energy represents one cargo opportunity emerging on the Lakes; many of the system’s ports handle components for the wind industry...and the quest for energy self-sufficiency holds the promise for increasing employment and restoring manufacturing competitiveness.”

Development of wind energy, both offshore and on land, holds some promise for Great Lakes ports. Panelist Dave Karpinski, vice president of

Operations for the Lake Erie Energy Development Corporation, reported on his firm's plans for the first offshore wind farm installation in the Great Lakes. Six wind turbines located in Lake Erie about seven miles off Cleveland are planned as a pilot project.

"Within the Great Lakes, we have about 18 percent of the total U.S. offshore wind capacity potential," Karpinski said, adding that the above-mentioned pressures to lessen the region's heavy dependence on coal create additional incentive to identify alternative energy sources. Karpinski noted how ports' roles in wind energy development will potentially include provision of staging and lay-down areas during the construction phase, and as bases for ongoing turbine and transmission line maintenance, as well as transshipment handlers of the oversize turbine units and tower components. He described how some Great Lakes ports have already established import and export movements of turbine components for land-based wind farms.

In any business development scenario, ports must rely on carriers; and the good news for Great Lakes/Seaway ports is that recent investments by the specialized fleets that operate in the system reflect an optimistic outlook. Montreal-based Fednav is the Seaway system's largest single international operator, with currently some 75 owned or chartered vessels specialized for the inbound steel-outbound grain Seaway trades. Panelist Marc Gagnon, Fednav's Government Affairs director, noted that his firm's confidence in the system's future is clearly evident in its current new-vessel building program scheduled to deliver 12 new Great Lakes-classed vessels in 2015 and 2016, plus ten additional oceangoing and arctic-specialized ships. Canada Steamship Lines is also in the midst of a fleet renewal program involving four new vessels that will operate in the Great Lakes domestic trades.

Said Fednav's Gagnon, "At this time we have 23 ships on order...so obviously we believe it is the right time to invest." He added, however, that ongoing system success depends equally on the ongoing public sector commitment, saying, "Investment is very important; this is a time to invest and Fednav's investment is about \$1 billion in new ships, so we are doing our part. But the infrastructure is the key to the future. If we let the infrastructure go – the locks, dredging,

docks, bridges – we will not be able to come into the Lakes."

Logistic specialist, Adam Wasserman, echoed that warning, saying, "Governments have not invested in infrastructure for a long time. I don't think we are catching up; we seem to pride ourselves on spending less money. So we have to think more creatively about our resources."

Federal Reserve Bank of Chicago Senior Economist William Strauss, a long-time observer of Great Lakes maritime commerce, said, "Great Lakes shipping is an industry that has been around for a long time, and the infrastructure on which it depends has to be long-lived, requiring long-term investments." As an example, Strauss noted that the last 1,000-foot U.S.-flag ship for the Great Lakes was built 30 years ago, and is still fully operational. "Yet the industry continues to innovate," he said. "We have heard today about advances being made in liquefied natural gas (LNG) as a cleaner fuel source, and at least one of the major U.S. flag fleets in the Lakes, Interlake Steamship, announced earlier this year its plans to convert its vessels to LNG."

Long-term success for the Great Lakes/Seaway maritime system, and its constituent ports, according to Wasserman, will require governments and communities to be enthusiastic about the economic development role of their ports. "While government does not often understand logistics," Wasserman said, "through ports it actually owns logistics businesses."

Wasserman noted that, "Ports have a challenge all over the world in terms of relating to their communities. To many of the citizenry that we serve, Great Lakes ports seem to tell the story of where we have been, not where we want to go, or more accurately, where citizens think we ought to go. The Great Lakes serve a contingent of industries – can that be broadened to a wider spectrum of what community leaders think is the future of our society?"

Conclusion

The conference was organized to explore how cities with coordinated visions for their ports can be more economically competitive. Conference panelists used statistical and anecdotal evidence to describe leading practices in port development and administration. After two days of dialogue, they did not, however, come to a consensus on what the future holds for ports or their surrounding communities. While speakers generally agreed on the need for innovation and additional collaboration with the municipalities that they serve, they advocated for a more coordinated regional approach to economic development in and around port cities, especially around those ports that have experienced significant decreases in shipped tonnage or disinvestment.

Some experts perceive port revitalization as part of smart, long-term master planning, while others view modernization efforts as expensive with no guarantee for future success – especially in recent times of economic uncertainty. Great Lakes ports and their surrounding cities remain crucial to economic development, serving as hubs for intermodal transportation, as sites for environmental research, and as sources for well paying, skilled jobs.

Notes

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Biographies

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