AMHERST H. WILDER FOUNDATION

Blue Cross and Blue Shield of Minnesota Foundation

The unequal distribution of health in the Twin Cities

A study commissioned by the Blue Cross and Blue Shield of Minnesota Foundation / October 2010

Making a healthy difference in people's lives

As the philanthropic arm of Blue Cross and Blue Shield of Minnesota, the Foundation has a unique opportunity to focus "upstream" on social determinants. Extending the Blue Cross mission of ***"Making a healthy difference in people's lives,"*** we are looking for ideas that are beyond the traditional reach of the health care system — revolutionary concepts that can help create healthier communities tomorrow.

The Distribution of Health in the Twin Cities study was commissioned by the Foundation to ask a very important question: "Is there a connection between socioeconomic status and health in the Twin Cities?" — something that has been demonstrated through a growing body of national and international research.

The results of the study suggest that our area is certainly not immune. Here, as elsewhere, health is connected to median area income, education, race and neighborhood conditions.

With that information in hand, we can renew our efforts toward helping ensure that everyone in the Twin Cities has equal opportunity to receive a good education, live in a healthy home and have a good job. We can also work to reduce the segregation of groups in lower-income neighborhoods.

The value of a sound study is that it grounds future decisions in a common reality, creates unity and guides smart progress. We've learned the truth about health inequities in our area, and our determination for change is renewed. Our hope is that policy makers, community residents, business leaders, educators and all of us who volunteer and vote will speak loudly and help plot a future of growth that includes every Minnesotan.

— Marsha Shotley, President, Blue Cross and Blue Shield of Minnesota Foundation

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Summary

Eating right can improve your health. But so can your neighborhood. Having good health insurance can help you live longer. But so can being born into an Asian family. Exercising can increase your vitality. But so can education. And all of this is true right here in the Twin Cities.

While debates over health insurance, fad diets, and the merits of various exercise regimes continue to capture the popular imagination, national research suggests that a person's health is strongly influenced – as much as 50 percent or more – by social determinants, including income, education, and neighborhood conditions.

This report, commissioned by the Blue Cross and Blue Shield of Minnesota Foundation, looks at whether the connection between socioeconomic status and health is as obvious in the Twin Cities as has been demonstrated elsewhere in the nation. In particular, we tested whether "health inequities," or unjust and avoidable differences in health outcomes, exist in our backyard. The results suggest that here as elsewhere health is strongly connected to race, income, and the specific parts of the metro area in which people live.

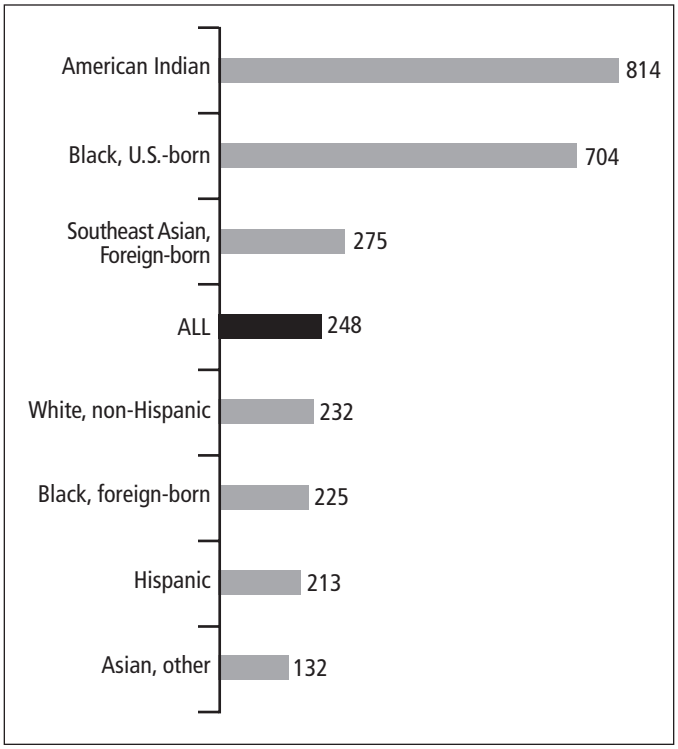
Race, ethnicity, and health

Discussions of 'inequities' often bring to mind racial inequality, and the status of non-Hispanic whites in comparison to people of color. In general, we see the same pattern with health that we do with other measures of well-being, including educational attainment, poverty and income, employment, and homeownership rates: As a group, people of color fare worse than do whites in our region on a variety of health measures, including birth weights, obesity, diabetes, and mortality.

When looking more closely at health, however, racial and ethnic disparities take a somewhat surprising turn:

- Asian and Latino populations, as well as African immigrants, often have better health outcomes than non-Hispanic whites, American Indians and U.S.-born blacks in our region.
- For example, our analysis shows life expectancies for racial groups in the Twin Cities ranging from highs of 83 years for Asians and 81 years for whites, to lows of 74 years for African Americans and only 61 years for American Indians.
- More specifically, compared to the region's largest racial group, non-Hispanic whites, age-adjusted mortality rates are 3.5 times higher for American Indians, 3.0 times higher for U.S.-born blacks, and 1.2 times higher for Southeast Asian immigrants. On the other hand, death rates are slightly lower for foreign-born blacks as well as Hispanics, and rates for Asians other than the Southeast Asian immigrant group are significantly lower (43%) than those of non-Hispanic whites.

Mortality rates* by race and ethnicity, Twin Cities 7-county region



*Age-standardized deaths per 100,000, among the population age 25-64 during the years 2005 to 2007.
Source: Minnesota Department of Health (mortality rates calculated by Wilder Research).

Thus, groups with large numbers of immigrants have better health outcomes than would be expected from socioeconomic characteristics alone. For example, Latinos in the Twin Cities have much higher poverty rates than whites (20% compared with 5%), and much lower high school graduation rates (31% on-time rate, compared with 80%), but have somewhat lower mortality rates, even after adjusting for age differences between the two groups.

This surprising "immigrant advantage" is well-known by public health researchers, who generally think that new arrivals benefit from a better diet, less sedentary lifestyle, and other health-protective cultural beliefs and ties. Our analysis suggests this to be just as plausible in the Twin Cities as elsewhere in the United States.

Unfortunately, our analysis also highlights that the relatively dire social and economic conditions faced by African Americans born in the U.S. and American Indians in our region are reflected in significantly shorter life expectancies for these groups.

Socioeconomic status and health

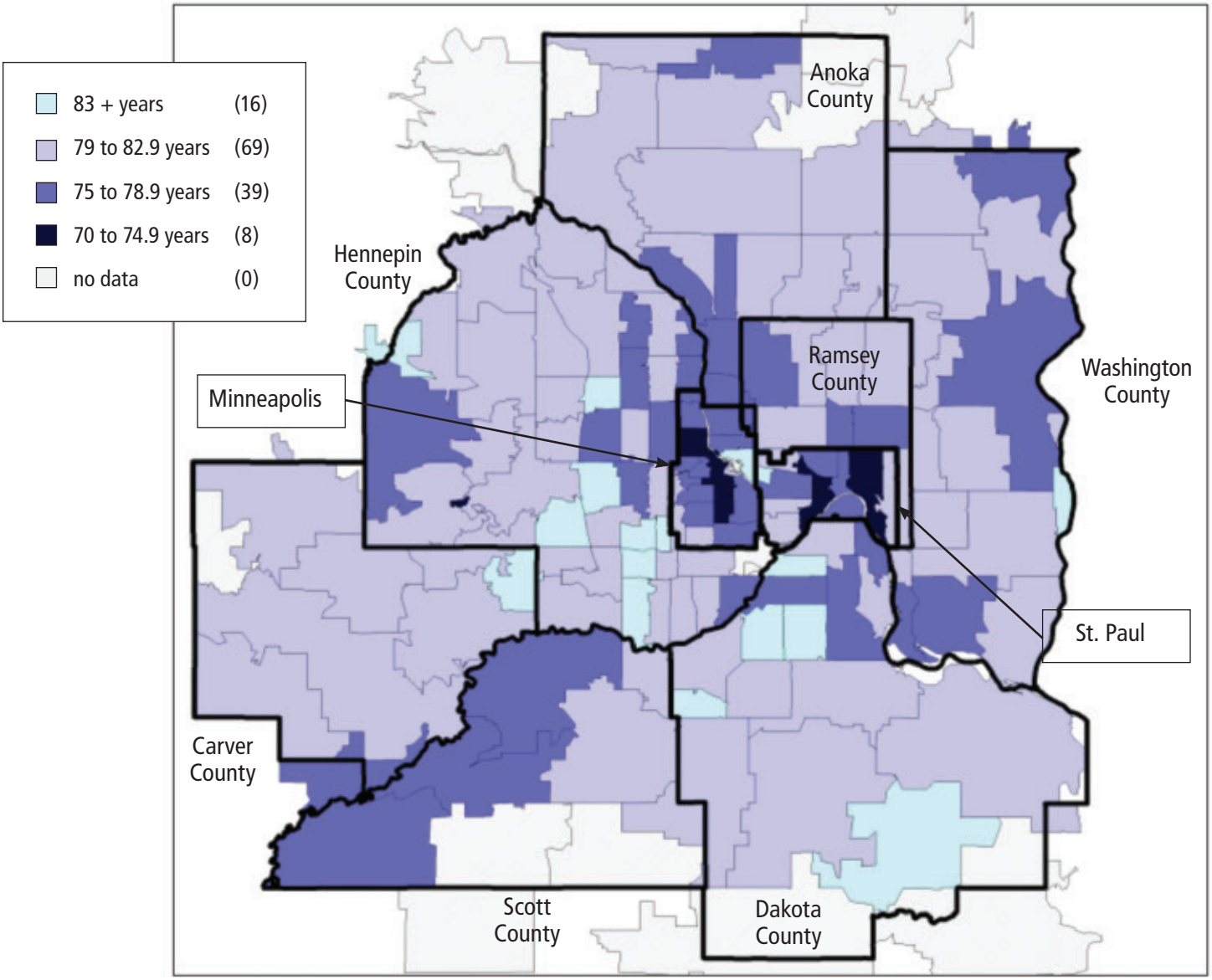
In the 1970s and 1980s studies of British civil servants established that higher job status is associated with better health – all along the continuum, not just for those in the lowest positions. Since that time numerous studies from around the globe have demonstrated a "social gradient" of increased socioeconomic status coinciding with improved health outcomes. Some studies have extended this concept to show health is also connected to the social gradient of where people live, including the relative prosperity of their neighborhoods.

This might be true elsewhere, but how about the Twin Cities? Our analysis suggests that the gradient exists here as well. Health is strongly related to the socioeconomic characteristics of the area in which people live, especially the median income of those living near to us.

Our analysis uses mortality data, which includes ZIP code of last residence. To those familiar with the Twin Cities, simply mapping these data shows some interesting patterns.

- First, there is a swath of areas with long life expectancies, 83 years or longer, in the second-ring suburbs, mainly west of Minneapolis into northern Dakota county, including at least parts of wealthier communities such as Minnetonka, Chanhassen, Edina, Bloomington, and Eagan, as well as small pockets in both Minneapolis and St. Paul.
- The next longest life expectancies, all close to the region-wide expectancy of 80 years, are mostly found in the region's other suburban cities, including Hastings, Woodbury, White Bear Lake, Andover, Plymouth, and nearly all of Carver County. The Southwest border of Minneapolis, as well as some of St. Paul's more affluent neighborhoods is also among this group.
- Below that comes a group of areas with somewhat shorter life expectancies, around 77 years, that might be characterized as "working class" areas, including at least parts of several close-in suburbs like Fridley, North St. Paul, and Inver Grove Heights, as well as outer-ring areas, like Belle Plaine, Maple Plain, Bethel, and Stillwater. Several neighborhoods in both Minneapolis (e.g., Camden, Northeast, Longfellow, Nokomis) and St. Paul (e.g., North End, West Side, Merriam Park) also fall in this category.
- Finally, the areas with the shortest life expectancies, between 70 and 75 years, are all in the poorest areas of the region's two central cities, including the Near North, Phillips and Powderhorn neighborhoods in Minneapolis, and St. Paul's Frogtown, West Seventh, Payne-Phalen, and Dayton's Bluff neighborhoods.

Life expectancy by ZIP code

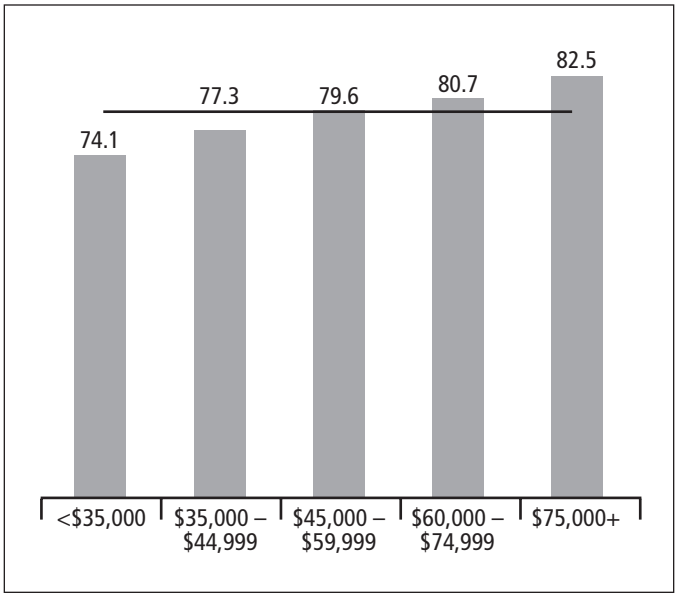


Source: Wilder Research analysis of Minnesota Department of Health mortality data (2005-2007) and U.S. Census Bureau data.

For a more rigorous analysis, we combined the ZIP code-level mortality data together with ZIP code-level census data, including median income, poverty rate, and proportion of adults with at least a bachelor's degree. When we group together ZIP codes with similar socioeconomic characteristics, we found that:

- Residents of the highest income/lowest poverty areas in the Twin Cities have an average life expectancy of 82 years, while residents of the lowest income/highest poverty areas have an average life expectancy of 74 years; a full eight-year difference.
- The relationship between an area's income and mortality is so striking that, on average, every $10,000 increase in an area's median income appears to buy its residents another year of life.
- The relationship between life expectancy and an area's educational attainment is not as strong as either income or poverty. Still, mortality rates among those age 25-64 in areas with few college-educated adults (less than 12% with a bachelor's degree) are about twice as high as those living in areas with many college-educated adults (40% or more with a bachelor's degree).

Life expectancy by median household income group of ZIP codes



Note: Black line represents average life expectancy at birth during the period 1998-2002 in the Twin Cities.
Source: Wilder Research analysis of Minnesota Department of Health (mortality data 1998-2002), U.S. Census Bureau (population, median household income, and poverty rate by ZIP code).

The interaction of socioeconomic status and race on health

The first part of the analysis showed that an individual's race and ethnicity is linked to health in the Twin Cities. The second part showed that the area in which people live, particularly the area's median income, is also closely linked to our health. As a final step in the analysis we looked at how the health of various racial groups in the Twin Cities might be impacted by the areas in which they live. We found that:

- When we look at the major racial groups separately, the social gradient still exists. Whites living in lower income areas have substantially higher death rates than do whites living in higher income areas. These differences are even more dramatic for African Americans and American Indians. Asians and Latinos also fare better in higher income areas, although the differences are less dramatic than the other groups.
- Racial and ethnic disparities in mortality rates are largest in the lowest income areas. Mortality rates are extremely high for American Indians living in low income areas and are very high for African Americans and whites living in low income areas. Racial disparities still exist, but are much smaller in the higher income areas of the Twin Cities.

Equalizing the opportunity for health

This report shows that health is distributed unequally in the Twin Cities along lines of race and ethnicity as well as according to the area of the region in which people live. These findings suggest some general guidelines for targeting efforts to increase health in our region.

First, the Twin Cities might make big gains in life expectancy by targeting certain areas for neighborhood improvement efforts, possibly including everything from creating more jobs and increasing public safety to improving access to healthy food and recreation.

This report's analysis also suggests that American Indian and African American households (particularly U.S.-born blacks) who live in low income neighborhoods are in the most acute need of attention. Our analysis suggests that the health of these groups might be improved by increasing

their educational attainment and, ultimately, household income, and by reducing the extent to which these groups are segregated into lower-income neighborhoods.

Finally, this report's analysis around race and ethnicity also suggests that many of us could benefit from emulating the diet and lifestyle brought by many of our region's immigrant groups.

These guidelines are fairly broad in nature. However, the general finding that social determinants do result in health inequities in the Twin Cities suggests that national and international recommendations to address social determinants are relevant for our local context as well. Several high-profile efforts provide worthwhile guidance, including the World Health Organization's *Closing the Gap in a Generation* agenda, the Institute of Medicine's list of "local solutions to reduce inequities in health and safety," the recommendations of the Robert Wood Johnson Foundation's Commission to Build a Healthier America, and the national *Healthy People 2010* (and soon-to-be-issued *Healthy People 2020*) objectives, overseen by the U.S. Department of Health and Human Services.

Ours is not the first report to recognize the importance of addressing health inequities in our region or state. Much work is already being done. For example, the Minnesota Health Improvement Partnership issued its *A Call to Action* in 2001, and since then the Minnesota Department of Health has been working on its Eliminating Health Disparities Initiative. More recently, counties funded through Minnesota's State Health Improvement Plan have started to work on health using a framework that encompasses social determinants, and Health Impact Assessments are beginning to be discussed as a possible filter for a broad range of policies.

In addition, public, private, and philanthropic efforts to address social determinants of health – whether explicitly identified as "health" initiatives or not – are too numerous to list here. Despite all of this progress, however, inequities persist in our region. Additionally, the economic downturn has stalled some efforts and likely worsened some inequities. Finally, while existing efforts do point to some traction on the issue of health inequities, we still have a long way to go before social determinants are as connected to health in the public imagination as are either insurance or personal behavior.

In sum, in the long term:

- Those concerned with health in the Twin Cities should strive to build consensus around the need to address social determinants of health, build on existing successes, and continue to innovate new policies and programmatic responses.

And in the short term:

- Those advocating for poverty reduction, closing educational gaps, reducing segregation, and creating high-paying jobs in the Twin Cities can broaden their case to include the health benefits and the very tangible economics of improved health.
- More of those among the medical community should lend their voices to those efforts in order to help improve the health and longevity of their patients.
- We should learn from the health-promoting cultural practices of new arrivals, and reinforce the protective aspects of all cultures in our region.

Addressing inequities is an issue of justice for our region. It is also an important ingredient to cost containment and long-term regional prosperity.

Introduction

"Where systematic differences in health are judged to be avoidable by reasonable action they are, quite simply, unfair. It is this that we label health inequity." [i]

Health inequities are a global issue, recognized as a fundamental social justice concern by the United Nations' World Health Organization.[ii] Health inequities are a national issue, identified by the Institute of Medicine and the Robert Wood Johnson Foundation, among others, as a central challenge to improving the nation's health.[iii] Health inequities are also a prevalent local issue, being addressed from Boston, Massachusetts to California's Bay Area.[iv]

The Twin Cities region is not immune.

Minnesota's largest metropolitan area is widely recognized as a national leader in quality of life, ranking among the very best on everything from household income and homeownership to educational attainment and health care access.[v] Unfortunately, the region ranks lower on issues of equity, including racial disparities in poverty rates, homeownership rates, residential segregation, school performance, and mortality rates.[vi] The striking "coincidence" of these inequities begs the question of how they might be connected, and what that might mean for the overall health and prosperity of our region.

Medical practitioners and health policymakers have long been aware of the health disparities that exist in our state.[vii] For example, in 2001 the Minnesota Department of Health's Eliminating Health Disparities Initiative was created through legislation (1Sp2001 c 9 art 1 s 48), and it has been an active priority of the Department ever since. It is not until more recently, however, that the notion that the drivers of these differences in health outcomes, should be traced "upstream" and addressed at an earlier stage, prior to encounters with the traditional health care system.

To reinforce the traction that has been gained in this area, the Blue Cross and Blue Shield of Minnesota Foundation retained Wilder Research to examine health inequities in the Twin Cities 7-county region (Anoka, Dakota, Carver, Hennepin, Ramsey, Scott, and Washington). The Foundation recognized that through its Twin Cities Compass project Wilder Research had already begun to analyze many of the social determinants that had proven important in similar work on health inequities elsewhere in the country. Compass also seemed a good fit due to its track record of successfully assembling advisors from all sides of an issue, as well as the possibility of becoming a vehicle from which to monitor future progress made on the issues likely to be raised in this project.

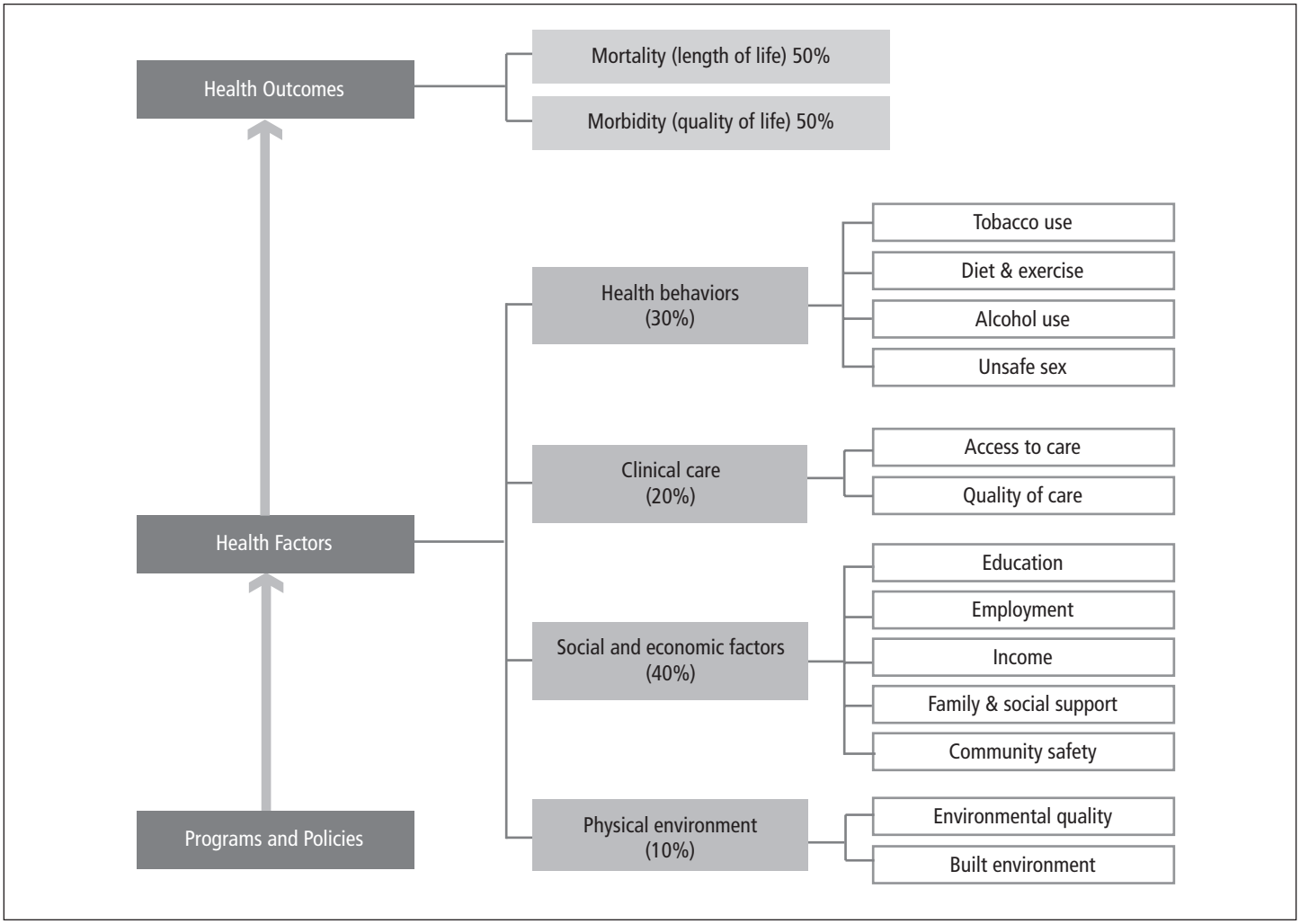
Social determinants of health: Why move upstream?

Public discourse related to health typically focuses on either health care or personal behaviors. Both are crucial components of the larger debate, but neither of these is the focus of the current report. Why? Because only a portion of health outcomes are attributable to health care and health behaviors.

According to a model created by the University of Wisconsin's Population Health Institute, only 20 percent of overall health is attributable to health care, and only 30 percent of health outcomes can be explained by individual behaviors (Figure 1). According to this model, fully half of health cannot be traced to the causes that we often use to explain differences in health. Half of all health is driven by factors like education, income, pollution, and the built environment, which together are called the social determinants of health.

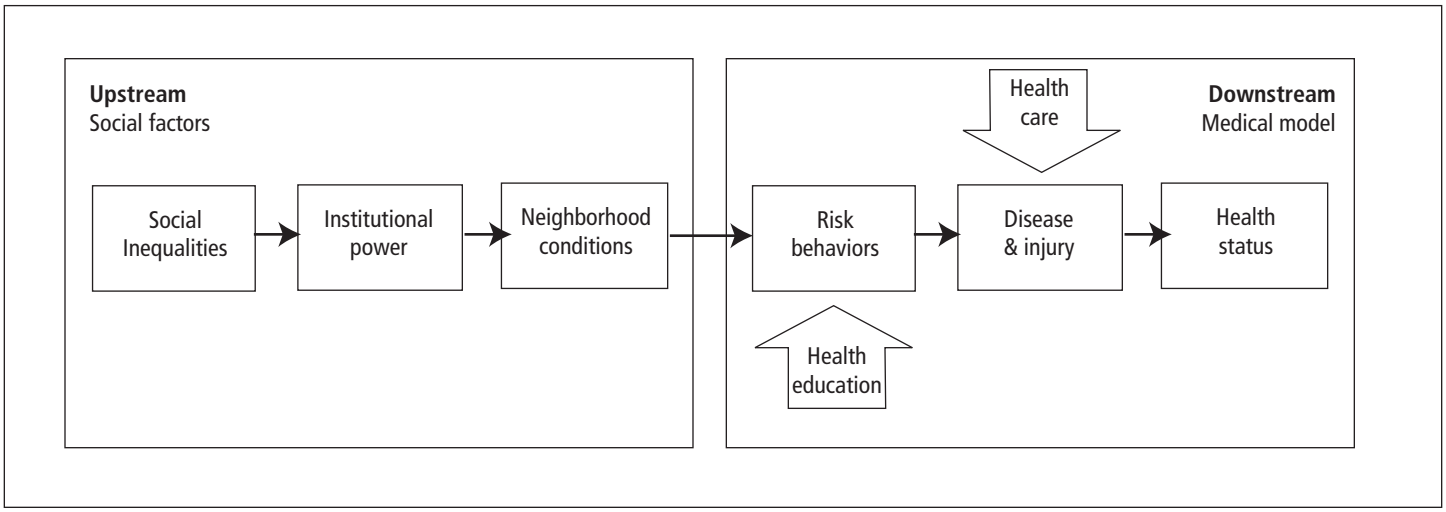
A complementary model developed by the Bay Area Regional Health Inequities Initiative (BARHII) places "disease and injury" as well as "risk behaviors" in a box labeled "medical model," and notes that these are impacted by upstream social factors including neighborhood conditions, institutional power, and social inequalities (Figure 2).

1. University of Wisconsin Population Health Institute's Schematic on Health Determinants



Source: University of Wisconsin Population Health Institute (www.countyhealthrankings.org/).

2. A framework for health equity



Source: Adapted from: Dr. Tony Iton, "The Context of Health: What is the Role of Leadership?" presented at the Blue Cross and Blue Shield of Minnesota Foundation 2nd Annual Upstream Health Leadership Award ceremony, November 2007.

Dr. Tony Iton, Senior Vice President of Healthy Communities at the California Endowment, argues that if we seek to address disparities in health status through improvements in health care and coverage alone we are, in effect, pulling a lever that is at best impacting only 30 percent of the problem. To address the remaining 70 percent, he argues, we need to go upstream and work on the social factors impacting health.

Finally, addressing upstream determinants of health may be an important part of cost containment for the nation's health care system. Health care costs have been taking up a larger and larger share of the nation's economy for years, with continued increases projected in to the foreseeable future. One way to help contain these costs is to foster social conditions that are associated with better health outcomes. For example, according to a recent report by the Joint Center for Political and Economic Studies, closing health disparities observable between America's racial and ethnic groups could result in an approximate savings of $57 billion per year in direct medical costs, and another $252 million in indirect costs caused by missing work due to illness and premature death.[viii]

Mortality rates as a proxy for health

Health disparities can be measured by looking at any one of a wide variety of diseases, health conditions, or even responses to survey questions related to perceptions of personal health. This report does not attempt to catalog all of these disparities. While touching on several health conditions, this report relies on life expectancy, and its converse, mortality and death rates, as the main "dependent variable" to examine whether and how the social determinants of health currently play out in the Twin Cities. While age at death falls short of capturing the full spectrum of what it means to be healthy, mortality measures are useful in looking at differences in health across subgroups in the community.

Mortality data offer several benefits. Thanks to the Minnesota Department of Health, mortality data are readily available. The data series, based on death certificates, includes useful demographic information including the decedent's age, race, area of last residence, and place of birth, as well as the underlying cause of death. As a health outcome that affects all of us, death rates are particularly compelling.

Where possible, we use life expectancy – the age at which a child born today can expect to live, assuming continuation of current age-specific death rates – since it is fairly easy to conceptualize. In many cases, however, we have relied on mortality rates, shown as deaths per 100,000 people. This is because mortality rates can be calculated among smaller population groupings than can valid life expectancies.

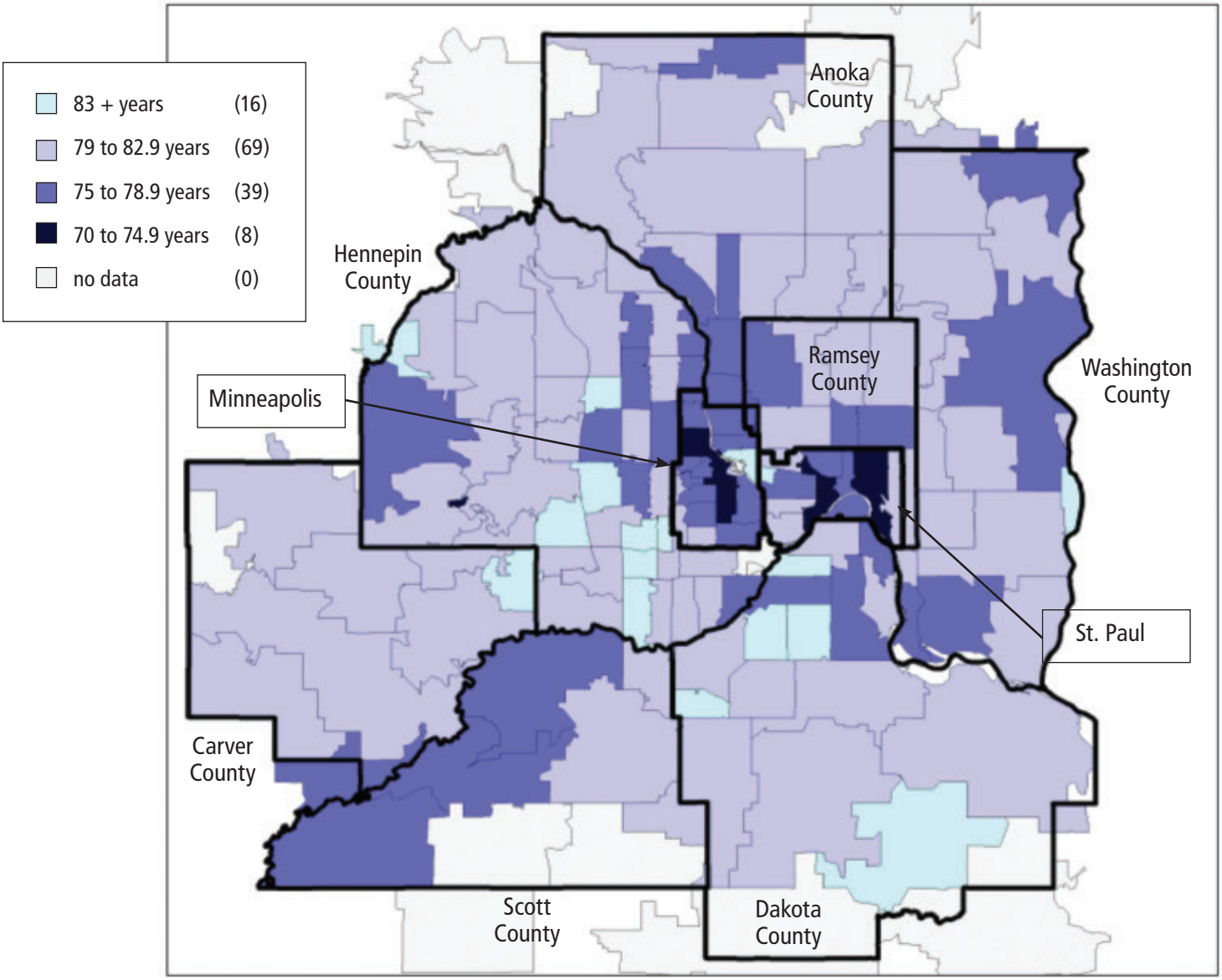
We have age-standardized the mortality rates so that valid comparisons can be drawn between groups that have different age distributions. Without age standardizing the relatively older white population, for example, would look like it had a much higher mortality rate than the region's relatively younger Latino population.

Additionally, in most cases we have restricted the analysis to those ages 25 to 64. This is because some of the immigrant groups do not include many children and newborns, since new immigrants tend to come to the U.S. as single, young adults. With the analysis limited to adults, we can make better comparisons across groups. In the analysis that relies on ZIP codes, this also helps to protect us from mistaken conclusions that might be drawn from high death rates in areas that include large nursing home facilities, which may not be located in the same ZIP code as the decedents' last home.

Outline of the current report

The body of this report contains three chapters. The first examines the relationship between race, ethnicity, and health in the Twin Cities. The second examines the links between health and socioeconomic status, including income, education, and place of residence. The final chapter briefly addresses the response to health inequities, including a look at recommendations from local, state, national, and even international efforts to address these issues, as well as a brief look at some of the efforts currently underway to address health inequities in the Twin Cities.

3. Life expectancy by ZIP code

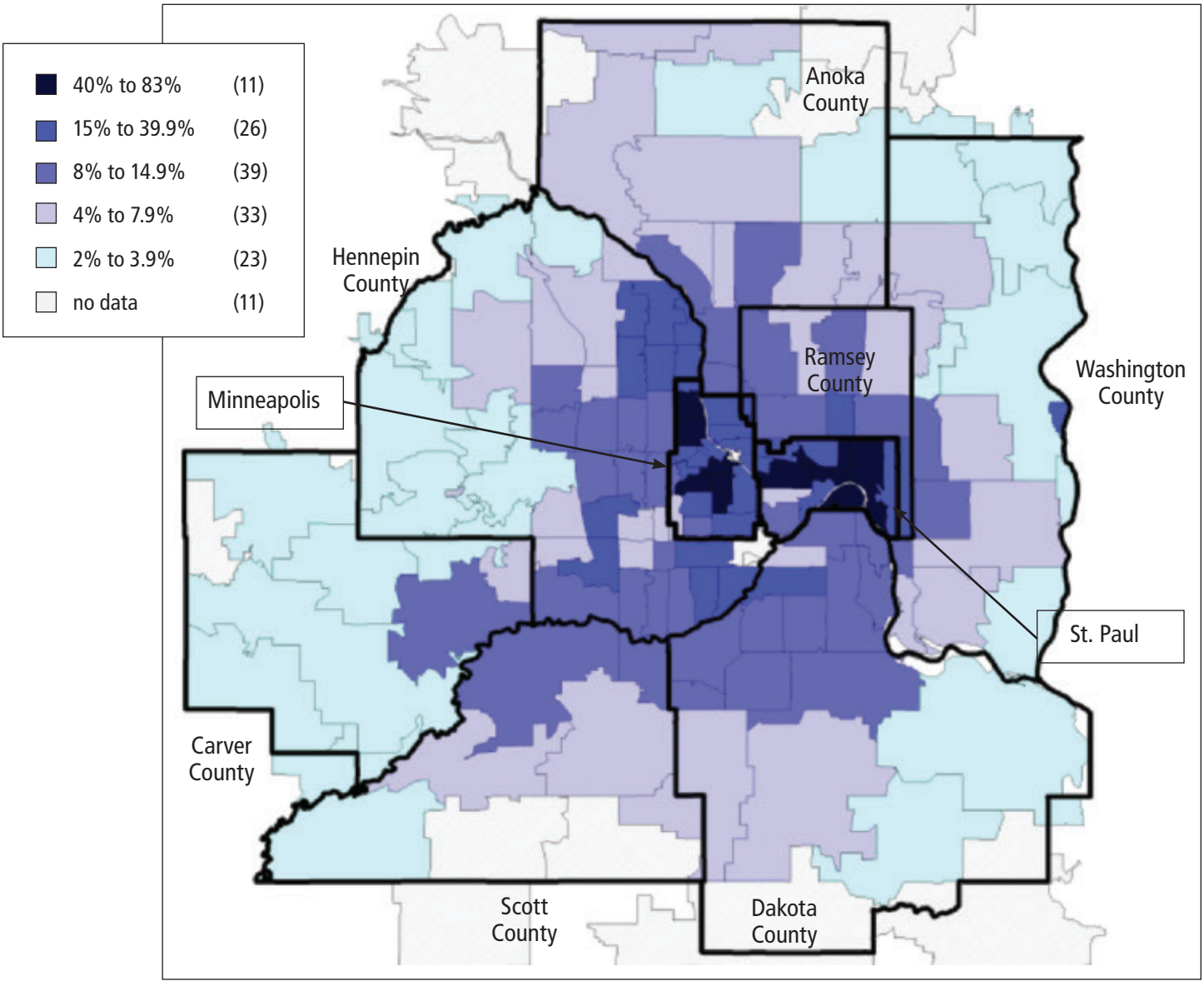


Source: Wilder Research analysis of Minnesota Department of Health mortality data (2005-2007) and U.S. Census Bureau data.

Race, ethnicity, and health

The Twin Cities region is rapidly becoming more diverse. As recently as 1990, less than 10 percent of our region was made up of persons of color, including African Americans, American Indians, Asian Americans, and Latinos. By 2000, people of color made up 17 percent of our population, and today more than 1 in every 5 residents of our region is a person of color. As shown in Figure 4, people of color are fairly concentrated in certain parts of Minneapolis and St. Paul, but people of color make up significant proportions of many suburbs, especially the "inner ring" suburbs that border the two central cities.

4. Population of color by ZIP code, 2000



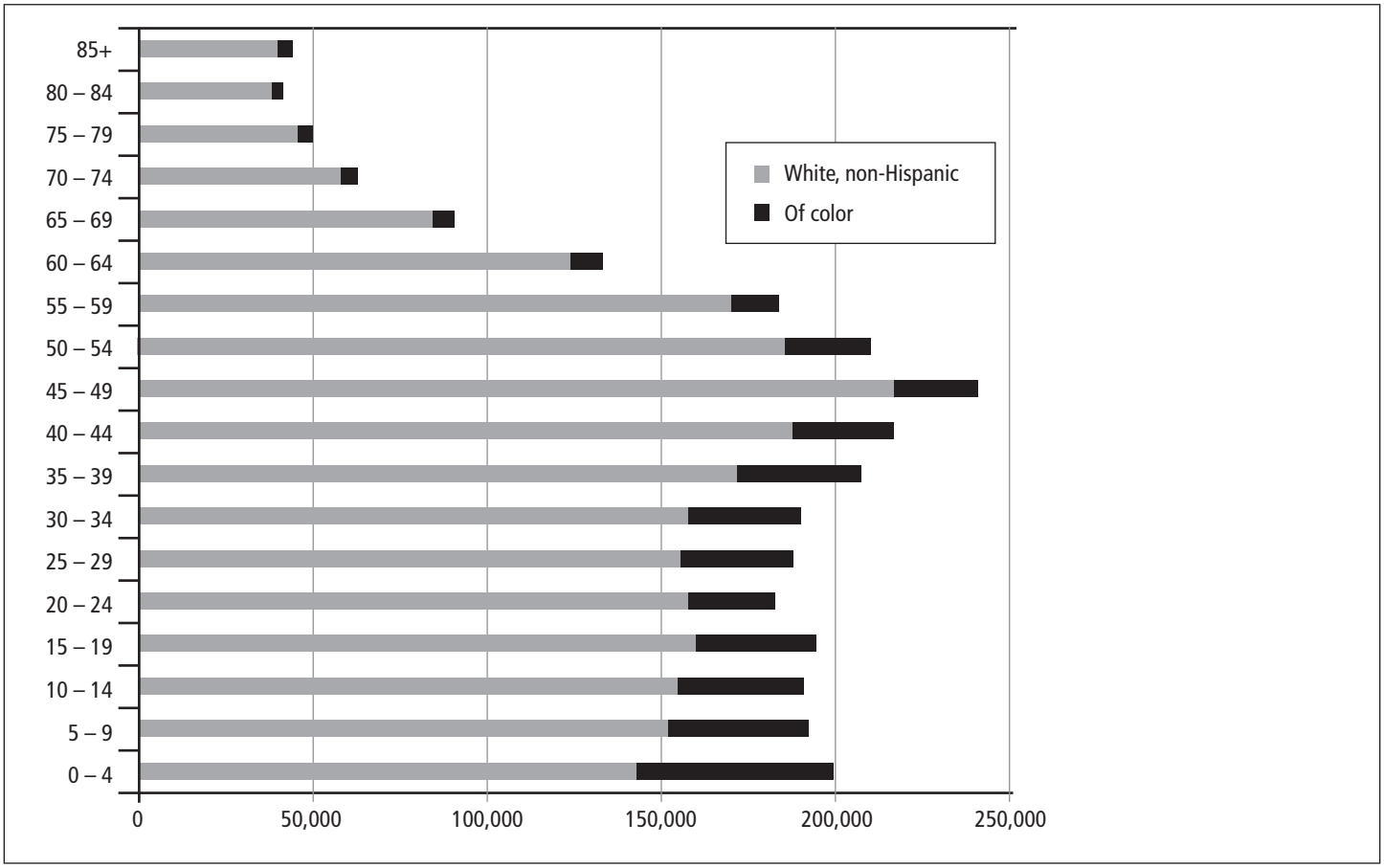
Source: Wilder Research analysis of U.S. Census Bureau data.
Note: "Of Color" includes African American, American Indian, Asian, and Hispanic populations.

The Twin Cities region is home to a relatively large immigrant and refugee population, including large contingents from East Africa and Southeast Asia. The region is also characterized by a relatively large American Indian population, including residents of the Little Earth of United Tribes community in south Minneapolis and members of the Shakopee Mdewakanton Sioux Community in Scott County.

The diversity of our region will continue to increase. The vast majority of our region's population growth in recent years has come from populations of color. According to Census Bureau estimates, 85 percent of all population growth – nearly 160,000 people – in the 7-county metro area so far this decade are persons of color. Additionally, persons of color are much younger as a group than are whites. For example, over one-third of those under age five in our region are children of color (Figure 5).

These demographic characteristics carry big implications for the overall health and prosperity of our region. As the population ages, more and more of our region's resources will be tied up with declining health and health care, making it more important than ever to find ways to minimize and prevent these costs. Additionally, as the baby-boom generation continues to exit the workforce we will need all segments of the remaining workforce to be as healthy as possible to maintain a highly productive local economy, in order for our region to retain its relatively high standard of living.

5. Twin Cities population by age and race, 2008



Source: Wilder Research analysis of U.S. Census Bureau, Intercensal estimates.
Note: "Of Color" includes African American, American Indian, Asian, and Hispanic populations.

Racial disparities in health in the Twin Cities

The relationship between race, ethnicity, and health is well documented. For example, in the Twin Cities we know that low birth weight rates are much higher for populations of color. We also know that adult obesity and diabetes rates are higher for populations of color than they are for whites in Hennepin County. To a somewhat lesser extent, the same is true for this report's central proxy for health status, life expectancy.

6. Selected health outcomes by race

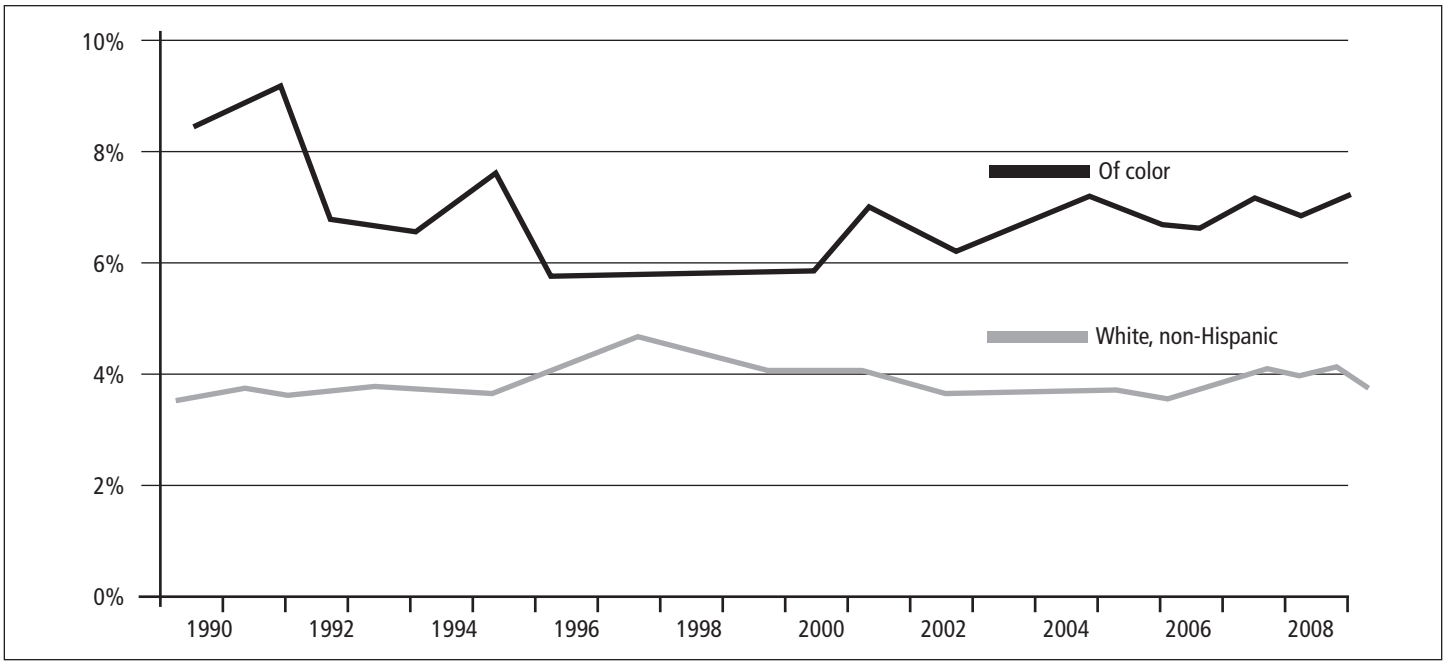
	White	Of Color
Low birth weight rate (2008)	3.7%	7.1%
Adult obesity rate (2006)	18.5%	22.2%
Adult diabetes rate (2006)	5.2%	10.2%
Life expectancy (2005-2007)	81.0 years	79.9 years

Note: In this table 'Of Color' includes African American, American Indian, Asian, as well as Latinos who do not identify as white ("Hispanic" ethnicity is typically treated as an ethnic category which is separate and distinct from race).
Sources: Minnesota Department of Health for low birth weight (includes only live births of single babies in the 7-county region, reported by race of mother); Hennepin County SHAPE for obesity and diabetes rates (includes only Hennepin County residents; diabetes rates include both type 1 and type 2). Life expectancy derived by Wilder Research from 2005-2007 data provided by Minnesota Department of Health and the U.S. Census Bureau.

Race-based disparities in health outcomes are not immutable. Here in the Twin Cities, for example, the gap between the low birth weight rate of white mothers and mothers of color shrunk from 5.0 percentage points in 1990 to 2.8 percentage points in 2007. While some of that gap was closed by increased low birth weights for white mothers, more of it was due to improvement among mothers of color (see Figure 7).

Although not limited to the Twin Cities, a similar pattern is observable across several health measures represented in Minnesota Department of Health's on-going *Populations of Color: Health Status Report* series.[ix] The 2009 report, for example shows that the infant mortality rates for both African Americans and American Indians have nearly halved in recent years, from over 16 deaths per 1,000 live births during the period 1989-1993 to less than 10 deaths per 1,000 during the period 2003-2007. Similarly, African Americans in Minnesota saw a dramatic decrease in a measure of mortality (years of potential life lost) between the same two periods.

7. Low birth weight rates by race of the mother, 1990 - 2008



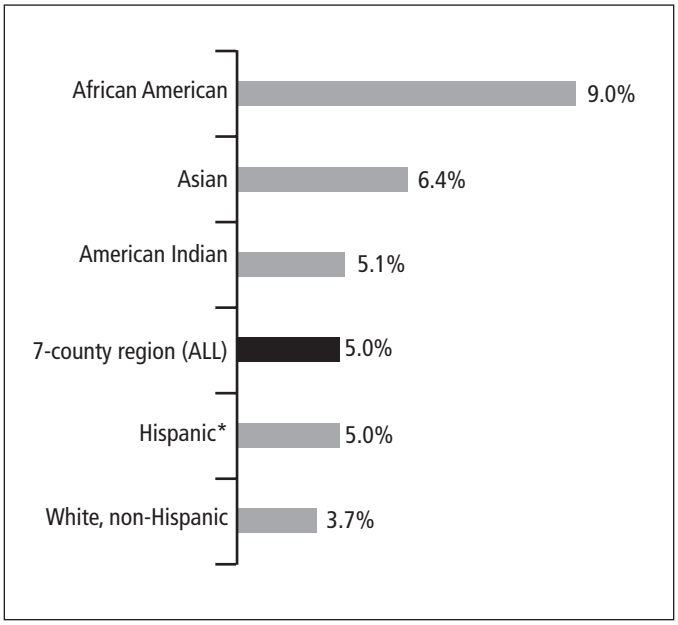
Source: Wilder Research analysis of data provided by Minnesota Department of Health.
Note: Babies with a birth weight under 2500 grams (5 lbs 8 oz) are considered to be low birth weight. This graph includes only single live births in the Twin Cities 7-county region. "Of Color" includes African American, American Indian, Asian, and Hispanic populations.

Why are there racial disparities? And are they "inequities"?

If a health "disparity" is defined as a measurable difference in health outcomes, why do these differences exist? And are the reasons for the differences unnecessary, avoidable and unfair, thus becoming "inequities"?[x]

Some health disparities that follow racial lines may appear to be genetic. For example, mothers identifying as African American in the Twin Cities are more likely to give birth to low weight babies than are white mothers (9.3% compared to 4.2% in 2007), which might lead one to suspect that African Americans are more likely to give birth to smaller babies by heredity. However, research published over a decade ago in the highly acclaimed New England Journal of Medicine found that babies born to African immigrants in the U.S. were closer in weight to white babies than were babies of black mothers who were themselves born in the U.S. Thus, the researchers concluded that the observable difference in average birth weights had much less to do with genetics than other factors.[xi]

8. Low birth weight rates by race of the mother, 2008

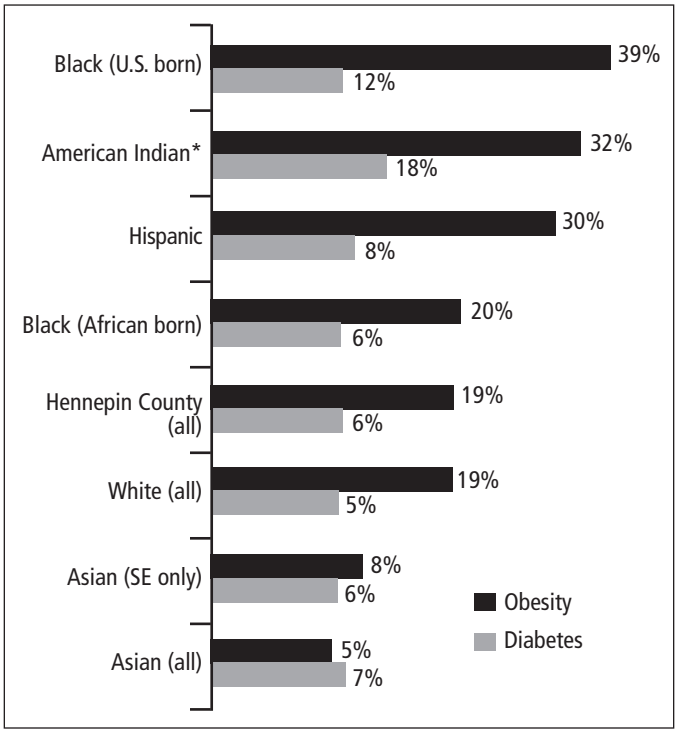


Source: Wilder Research analysis of data provided by Minnesota Department of Health.
Note: Babies with a birth weight under 2500 grams (5 lbs 8 oz) are considered to be low birth weight. Graph includes only single live births in the Twin Cities 7-county region. (*) Hispanic mothers of any race.

Upon surveying the social status of various groups in our region, it is not difficult to imagine that "upstream" social determinants could easily outweigh hereditary causes of most health disparities. For example, here in the Twin Cities, persons of color are much more likely to live in poverty, much less likely to own their homes, and much less likely to graduate from high school on time (see Figure 9, below). As we discuss in the following chapter, these sorts of characteristics are associated with poorer health.

Thus, we argue that it is not race itself that causes the disparity, but rather the social and economic disadvantages heavily concentrated within populations of color that cause poorer health outcomes within these groups. Although there is a longer-term trajectory toward greater racial equality both in our region and elsewhere in the U.S., it is not difficult to argue that whites tend to be born into positions of greater advantage than are persons of color. This places most racial health disparities firmly in the category of "inequities": they are not explained away by factors outside of our collective control.

9. Adult obesity and diabetes rates by race and ethnicity, Hennepin County



Source: Compiled by Wilder Research from Hennepin County SHAPE Survey, 2006.
Note: Obese = Body Mass Index of 30 or greater. Diabetes rates include both Type 1 and 2 diabetes, but exclude women with gestational diabetes. (*) Rate for American Indians is from 2002 (not available in 2006). Differences between groups should be treated with caution since margins of error are very large for American Indian, Hispanic, African-born black, and Asian groups.

Differences in health by specific racial and ethnic group

In addition to the health disparities between populations of color and whites, it is also important to note that there is wide variation in health outcomes between specific populations of color. For example, Hispanic mothers have much lower rates of low birth weights than do African American mothers, and Asians have much lower rates of diabetes than do American Indians. In addition, health outcomes vary substantially by ethnicity within what we think of as racial groups. Most notably, there are often large differences between populations of color born in the United States and those who are more recent immigrants.

Even though immigrants generally have lower incomes, lower levels of educational attainment, and barriers to health care access, they often have better health outcomes than do second and later generation Americans. Among public health professionals this is known as the "immigrant paradox," and is typically explained in terms of culture: it takes immigrants some time to lose the beliefs and supportive relationships that can promote good health and adopt the high-calorie diet and sedentary lifestyle prevalent in contemporary America.

The immigrant health paradox is observable even here in the "healthy" Twin Cities. In Hennepin County, for example, both the obesity and diabetes rates are lower for African-born blacks than for U.S.-born blacks.

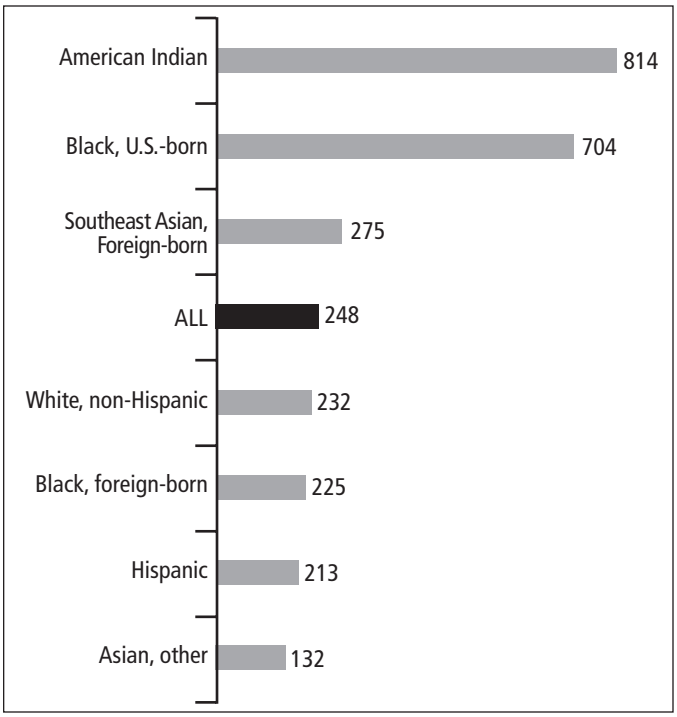
The immigrant advantage likely also helps explain why Latinos and Asians fare better in terms of obesity and diabetes than do American Indians or U.S.-born blacks; nearly two-thirds of all Asians in the Twin Cities are foreign born and the same is true for over 40 percent of all Latinos (compared with 31% of African Americans, 2% of non-Hispanic whites, and about 10% of the region as a whole). [xii]

As noted earlier, life expectancy varies considerably by race in the Twin Cities. Setting aside immigration status, whites born in the Twin Cities can expect to live to age 81, just slightly higher than the overall life expectancy for all Twin Citians, 80.6 years, and 1.1 years longer than persons of color living in the region. The difference varies significantly by specific groups, from a high of 83 years for Asians, to lows of 74.4 years for African Americans and 61.5 for American Indians in the Twin Cities.

Mortality rates, a correlate of life expectancy that can be calculated for smaller groups, also vary dramatically. Currently, the overall mortality rate is about 250 deaths per every 100,000 people age 25-64 in the Twin Cities. That is very similar to the rate experienced by the region's largest racial group, non-Hispanic whites (232). Overall persons of color experience a much higher mortality rate, with 366 deaths per 1,000. This means that adults of color die at a 60 percent higher rate than do adult whites in the Twin Cities.

As shown in Figure 10, most of the gap between death rates for whites and persons of color is driven by the extremely high rates observable among U.S.-born African Americans and American Indians in our region. Both of these groups die at more than 3 times the rate of whites. African-born blacks, Latinos, and Asians, all have mortality rates below those of whites. Indeed, in aggregate the mortality rate for all U.S.-born residents of the Twin Cities is actually higher than it is for the region's foreign born residents as a group (250 per 100,000 for those age 25-64, compared with 212). The exception is the relatively poorer group of Southeast Asian immigrants, whose mortality rates are 20 percent higher than that of non-Hispanic whites.

10. Mortality rates* by race and ethnicity, Twin Cities 7-county region



* Age-standardized deaths per 100,000, among the population age 25-64 during the years 2005 to 2007.
Source: Minnesota Department of Health (mortality rates calculated by Wilder Research).

To conclude this brief discussion of health according to race and ethnicity, it is important to recognize that as much as we all share a common geography, common weather, and certain public amenities, the Twin Cities are experienced very differently by different groups. As we discuss in the following chapter, these differences can and do exert a powerful influence on different health outcomes in our region.

11. Select demographic, economic, and educational characteristics by racial and ethnic group

	All	White, non-Hispanic	Of Color (all)	Specific populations of color			
				African American	American Indian	Asian	Hispanic/ Latino*
Population	2,810,414	2,234,013	576,401	210,945	24,944	158,511	147,417
Median age	36	40	26	27	25	30	26
Median household income	$64,057	$68,741	$41,754	$29,533	$42,772	$64,362	$41,962
Percent in poverty	9%	5%	23%	32%	31%	15%	20%
Percent foreign-born	10%	2%	40%	31%	2%	64%	43%
Home ownership rate	74%	79%	45%	30%	45%	63%	47%
Adults with BA or more education	38%	40%	27%	20%	20%	42%	16%
High school graduation rate	68%	80%	47%	39%	29%	63%	31%
3rd grade reading: proficient	77%	87%	59%	54%	50%	67%	59%

* Of any race.
Sources: Population = U.S. Census Bureau, 2008 Intercensal estimates; Median age = U.S. Census Bureau, 2008 American Community Survey (ACS) ; Median income = ACS (from 2006-08 3-year estimates, reported in 2007 dollars); Poverty rate = 2007 ACS (African American, Asian, and Hispanic rates are from the 13-county region and American Indian are from state of Minnesota); Percent foreign born = 2007 ACS (7-county except for American Indian, which is from the 13-county region); Home ownership = 2008 ACS; Adults with BA or more education = ACS (2008; shown for adults age 25 or older); High school graduation rate = Minnesota Department of Education (4-year on-time graduation rate for 2007-08 school year); 3rd grade reading proficiency = Minnesota Department of Education (results of MCA-II for the 2008-09 school year).

Socioeconomic status and health

"Disparities" and "inequities" are often framed in terms of race and ethnicity. Equally, if not more important, however, are differences based on socioeconomic status. In fact, the Whitehall studies, upon which the field of social epidemiology is basically founded, were centered on social class rather than race or ethnicity.[xiii] Before these studies it was known that lower income workers often had poor health, but these studies revealed a "social gradient" of improved health coinciding with every step up along the continuum of income and job status among British civil servants – even though all were guaranteed access to health care. In other words, social determinants do not just impact the poor, they also have an impact on the middle class.

As we will demonstrate below, a social gradient is observable here in the Twin Cities as well. Unlike the Whitehall studies, however, we are unable to get directly at the effect of income, education, or other social characteristics on health on an individual-by-individual basis since these characteristics are not collected in death certificates (or any other broadly representative health data in the Twin Cities). Instead we rely on aggregate population characteristics from the ZIP code where people last lived. Currently, the most recent ZIP code level data on income and educational attainment are from the 2000 Census. While the Twin Cities region has undergone significant change since that time, this analysis provides an initial look at how socioeconomic status influences health in our region.

Overlaying demographic data aggregated at the ZIP code level with individual-level mortality data has some advantages over purely individual-level data. First, it pushes us to map the data, which enables us to see patterns that may not be otherwise identifiable. Second, it gives us a sense of how special effects, including racial and economic segregation, might be impacting health in our region.[xiv]

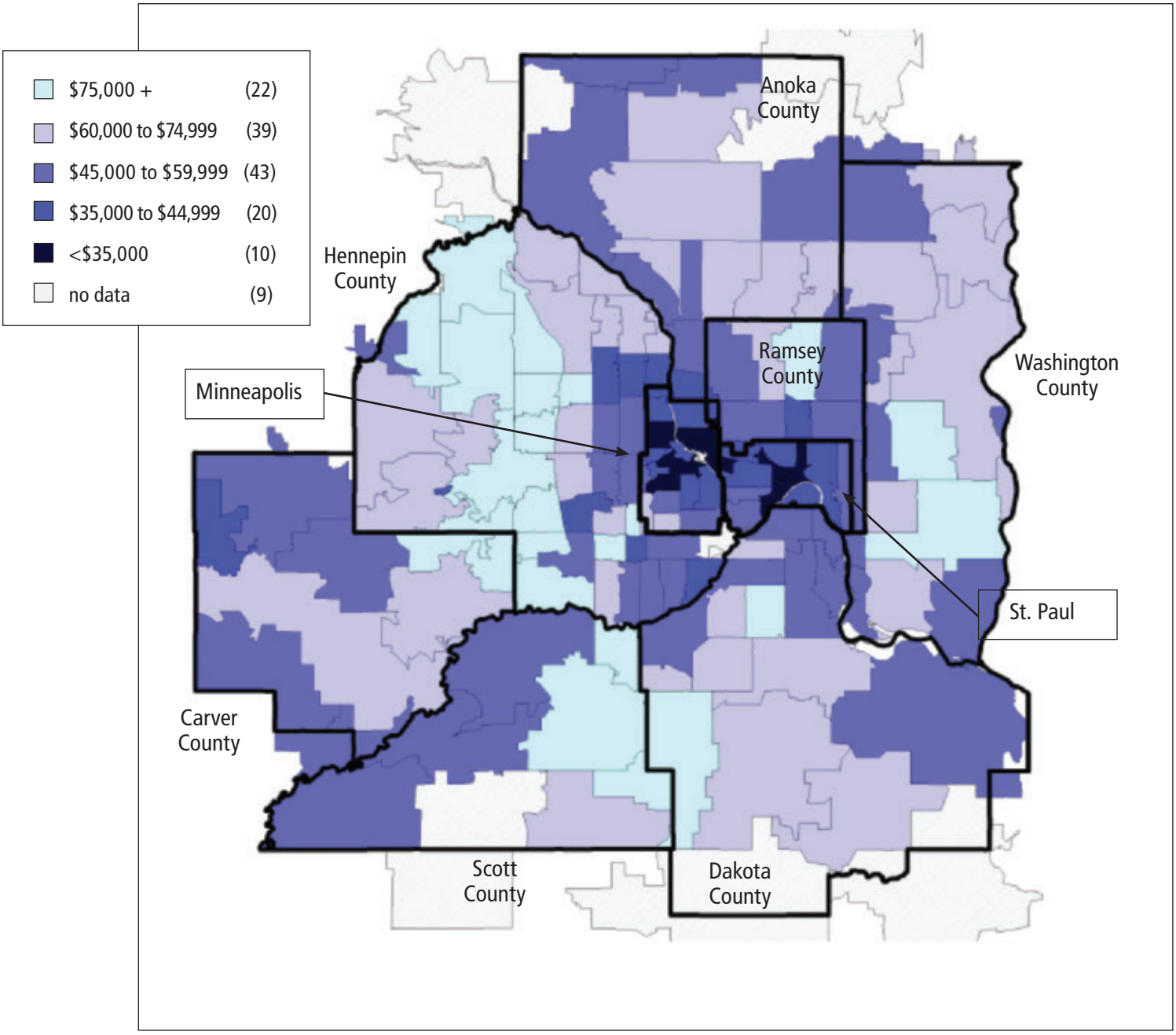
Some researchers have been able to combine aggregate level data with individual data to explore the relationship between social and personal or behavioral determinants of health in a manner that is more sophisticated than possible in this project. For example, researchers from the University of Texas at Austin linked detailed survey data with census tract level information and found that both personal characteristics – including age, employment, income, and education – and neighborhood socioeconomic status are influential on physical functioning.[xv]

Similarly, recent research by the state of Washington's Department of Health found that ZIP-code level characteristics related to income (asset ownership and receipt of public assistance) and education (proportion with bachelor's degree) help predict obesity, even after controlling for individual-level characteristics like age and race.[xvi] Finally, the *American Journal of Public Health* recently published an analysis of national survey data showing that demographic characteristics, including low income, education, and race, are significantly related to estimated longevity, even while accounting for influential behavioral risk factors, such as smoking and binge drinking.[xvii]

Income and health

The Twin Cities 7-county region is segregated along economic lines, just as it is along lines of race. The lowest income areas are concentrated in certain parts of Minneapolis and St. Paul, although some of the first ring suburbs as well as some of the far outer-ring areas also have lower incomes. Mapping poverty rates (not shown) yields a virtually identical pattern as shown below.

12. Median household income by ZIP code, 2000



Source: Wilder Research analysis of U.S. Census data.

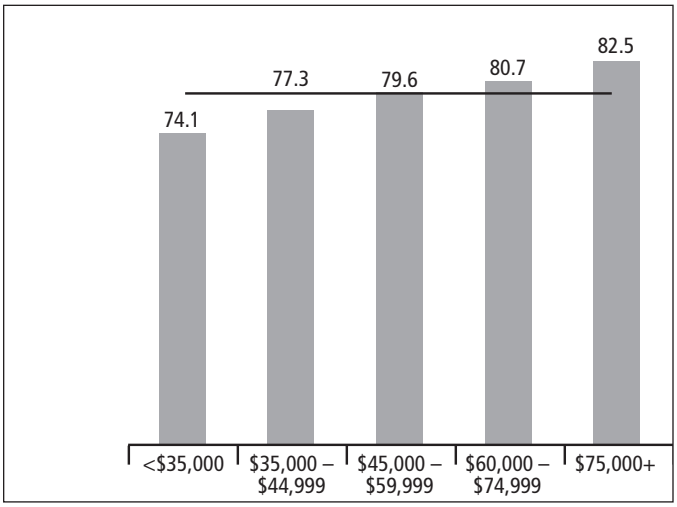
To see how income impacts health in the Twin Cities, we calculated life expectancies and mortality rates for each ZIP code, based on death certificates collected from 1998 to 2002. We then grouped the ZIP codes according to: 1) median income, and 2) poverty rates to look at variations in life expectancy and death rates. For example, in 2000 there were 43 ZIP codes within the Twin Cities that had median household incomes somewhere between $45,000 and $59,999. About 35 percent of the region's population lived in those middle income ZIP codes. People living in those ZIP codes have a life expectancy of nearly 80 years. In addition, during the time period 1998 to 2002 the rate of death among those age 25 to 64 living in the middle income areas was 225 for every 100,000 (Figure 13).

Whether looking at median income or poverty, there is a very observable "gradient" in the Twin Cities. Children born into the highest income/lowest poverty areas currently have a life expectancy of 82 years, while those born into the lowest income/highest poverty have a life expectancy of 74 (Figures 13 and 14). Even those in the three middle categories have significantly shorter life expectancies than those in the highest income category. In fact, the relationship is so striking that it looks like every additional $10,000 increase in median income "buys" another year of life in our region.

Mortality rates also show a social gradient, with those age 25 to 64 who reside in middle income areas dying at less than half the rate of their counterparts in the lowest income areas – but about a 60 percent higher rate than their counterparts in higher income neighborhoods. Again, the very same pattern exists between ZIP code-level poverty rates and mortality in the Twin Cities.

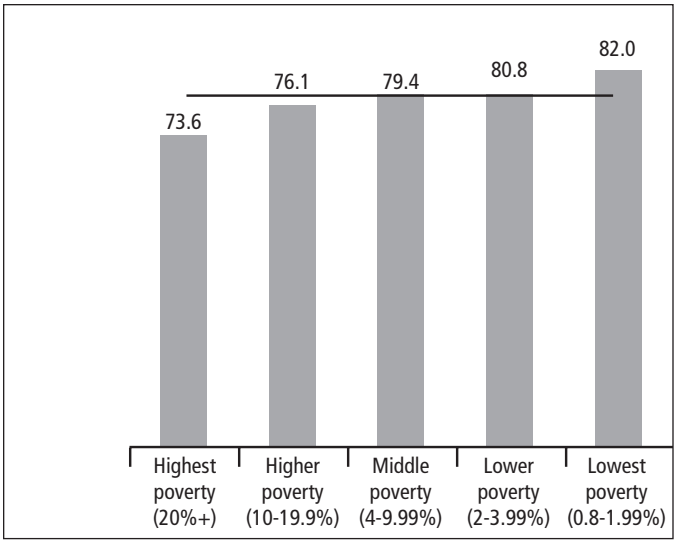
This analysis, which does not take into account either individual-level family heredity or personal behaviors, suggests that income is the single most important social determinant of health in the Twin Cities. Statistically, the connection between poverty rate and life expectancy is not quite as strong as the median household income, likely because ZIP codes high in poverty are concentrated to a few areas, and most ZIP codes in the Twin Cities have relatively low poverty rates. Both measures of income, however, show a strong relationship with mortality.

13. Life expectancy by median household income group of ZIP codes



% of population	7.1%	18.5%	35.2%	25.8%	13.4%
Age-standardarized deaths per 100,000 for those aged 25 – 64	484	325	225	181	143

14. Life expectancy by poverty rate group of ZIP codes



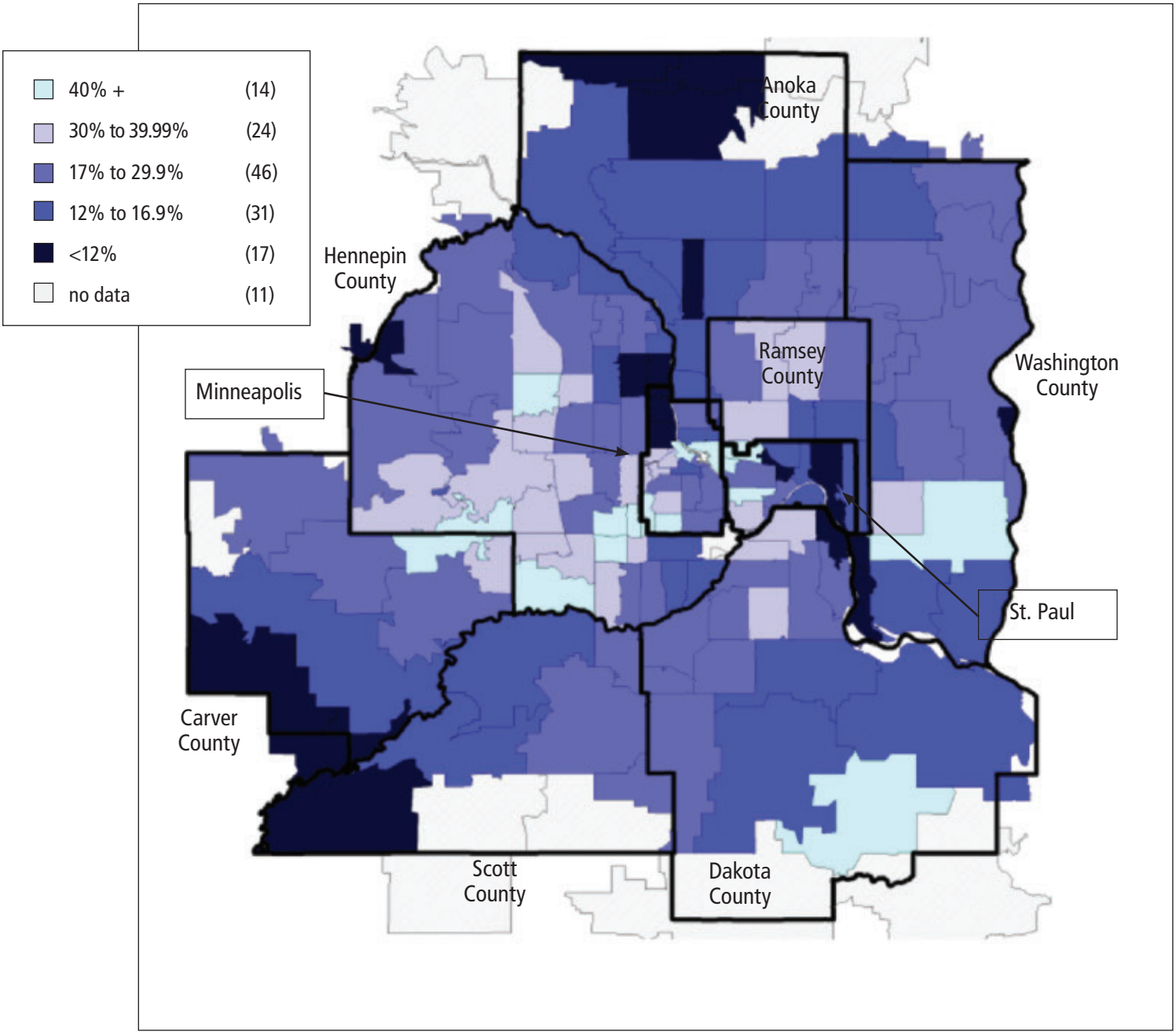
% of population	5.3%	14.2%	38.5%	30.6%	11.4%
Age-standardarized deaths per 100,000 for those aged 25 – 64	507	325	236	181	145

Note: Black line represents average life expectancy at birth during the period 1998-2002 in the Twin Cities (79.4 years).
Source: Wilder Research analysis of Minnesota Department of Health (mortality data 1998-2002), U.S. Census Bureau (population, median household income, and poverty rate by ZIP code).

Education and health

Like most health data, death records do not include the educational level of the decedent. Therefore, to look at the relationship between education and health in the Twin Cities, we used an aggregate-level measure: percent of the adult population with at least a bachelor's degree within each ZIP code. Mapping this shows a different pattern than the earlier race and income maps. In addition to certain ZIP codes in the central cities and inner-ring suburbs, several areas in the outer-rings, including northern Anoka County and western Scott and Carver counties, include relatively few adults who have completed a college education.

15. Adults age 25 or older with a bachelor's degree or higher education, 2000

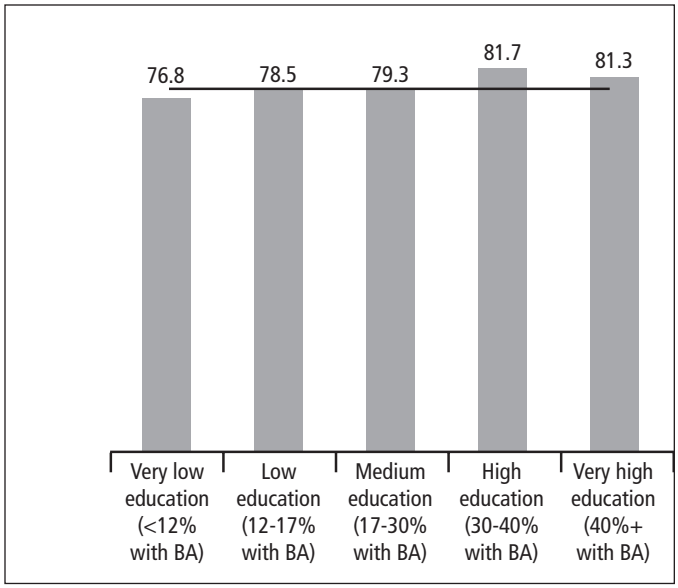


Source: Wilder Research analysis of U.S. Census data.

The gradient observable between life expectancy and ZIP code level educational group is not as steep as either income or poverty. Still, life expectancy is nearly 5 years less in the very low education grouping than the two highest groupings. Also, mortality rates among those age 25 to 64 in the areas with lowest educational attainment (less than 12% with a bachelor's degree) are about twice as high as it is for their counterparts living in areas with many college-educated adults (40% or more with a bachelor's degree). This suggests that in terms of health, education pays.

Much of this effect likely has to do with the personal health benefits that accrue to people with higher education (e.g., knowledge about healthy choices, access to safer jobs, higher income, healthy foods and recreation), but there also may be health benefits from simply living around other people who are more highly educated.

16. Life expectancy by educational group of ZIP codes



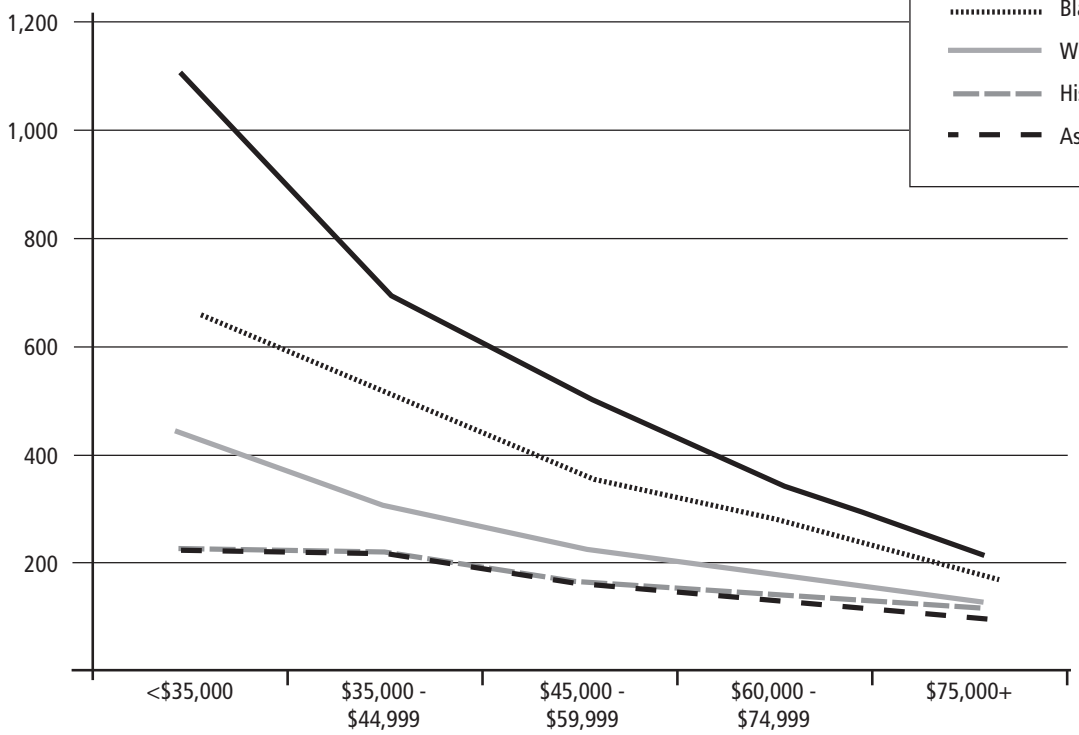
% of population	10.1%	27.1%	36.2%	18.7%	7.9%
Age-standardarized deaths per 100,000 for those aged 25 – 64	332	255	232	176	164

Note: Black line represents average life expectancy at birth during the period 1998-2002 in the Twin Cities (79.4 years).
Source: Wilder Research analysis of Minnesota Department of Health (mortality data 1998-2002), U.S. Census Bureau (population and educational attainment of adults age 25 or older by ZIP code).

The interaction of socioeconomic status and race on health

We have demonstrated that race, income, and education all impact health status in the Twin Cities. This may be enough to motivate action. Still, which of these is most powerful in advancing health? The question is not purely academic. Identifying which social determinants have the biggest influence may help identify where limited resources might be put to best use.

17. Mortality rates* by race within median household income group of ZIP codes



Percent of the population	6.8%	16.5%	35.1%	26.9%	14.7%
American Indian	22.5%	33.4%	26.1%	12.8%	5.2%
Black/ African American	28.4%	36.2%	20.7%	11.3%	3.4%
White (non-Hispanic)	4.8%	14.4%	36.6%	28.5%	15.8%
Hispanic/Latino (any race)	20.2%	33.7%	28.4%	12.5%	5.2%
Asian	15.6%	29.2%	25.7%	19.4%	10.1%

* Deaths per 100,000 for those age 25 to 64.
Source: Minnesota Department of Health (mortality data 1998-2002), U.S. Census Bureau (2000 population and median household income by ZIP code).

As noted earlier, mortality rates differ greatly by race in the Twin Cities. Age-standardized death rates per 100,000 for those age 25 to 64 range from lows of 183 for Asians, 197 for Hispanics, and 220 non-Hispanic whites, to highs of 484 for African Americans and 666 for American Indians. Adding to this analysis, by controlling for the income group of the area in which people live reveals a couple of interesting dynamics (Figure 17). First, among all racial groups, mortality rates decline as the income of the area in which people live increases. African Americans residing in higher income areas have better outcomes than those in lower income areas, and the same is true for all major racial groups in the Twin Cities.

Second, and perhaps most notable, is that the racial disparities in death rates are largest in the lowest income groups and smallest in the higher groups. Although some disparities persist, African Americans and American Indians living in high income areas have mortality rates much more like those of their white, Hispanic, and Asian counter-parts than is the case in lower-income areas. Unfortunately, over half of American Indians and African Americans live in lower income areas.

This analysis, coupled with the earlier findings, suggests that the Twin Cities might make big gains in life expectancy by targeting certain areas for neighborhood improvement efforts, possibly including everything from creating more jobs and increasing public safety to improving access to healthy food and recreation. This report's analysis also suggests that American Indian and African American households (particularly U.S.-born blacks) who live in low income neighborhoods are in the most acute need of attention. Our analysis also suggests that the health of these groups might be improved by increasing their educational attainment and, ultimately, household income, and by reducing the extent to which these groups are segregated into lower-income neighborhoods.

Another conclusion that comes directly from this report's analysis around race and ethnicity is that many Twin Citians could benefit from learning more about and emulating the diet and lifestyle brought by many of our region's immigrant groups. Our analysis was not able to capture all of the potential social determinants of health in our region, however, so the next chapter presents a more complete discussion of what others have demonstrated to be effective and recommended to address health inequities.

Equalizing the opportunity for health

As we have seen, the social determinants of health are as influential in the Twin Cities as in other areas. The disparities that exist are startling, and social equity as well as our region's future prosperity demand that we address them. Although our region has some unique characteristics, including relatively large immigrant and refugee populations from East Africa and Southeast Asia, and a sizable urban American Indian population, recommendations from national and even international efforts to address health inequities appear to be as applicable here as anywhere.

Unlike some other communities, the Twin Cities region has actually made some significant progress on many recommendations, and we may be in a position to capitalize on this momentum to become a national leader in addressing health disparities. Unfortunately, like other regions, the Great Recession is hampering many efforts to improve health outcomes, even while making the need for these efforts more apparent.

Prescriptions for change

Developing recommendations to address social determinants of health is challenging, since the issues involved are as complex as racism, segregation, and poverty. Even where efforts to address these issues succeed, it would be difficult to definitively attribute positive health outcomes to them, since the results are largely preventive in nature.

Panels of experts have weighed in on the issue, however, and some consensus is forming on measures that should be taken to address health inequities. For example in its 2001 report *A Call to Action: Advancing health for all through social and economic change*, the Minnesota Health Improvement Partnership issued the following recommendations:

- Identify and advocate for healthy public policy through the implementation of health impact assessments and research briefs.
- Build and fully use a representative and culturally competent workforce by educating, hiring, and retaining a diverse workforce.
- Increase civic engagement and social capital by providing culturally sensitive and linguistically appropriate health education materials, and building mutually beneficial relationships between community based organizations and larger systems and institutions.
- Re-orient funding provided by the Minnesota Department of Health, by involving diverse communities in the grant application and grant review processes.
- Strengthen assessment, evaluation, and research by building on efforts already underway (e.g., *Populations of Color Health Status Report*), expanding traditional indicators of health to reflect social and economic determinants, and more consistently collecting socioeconomic and race data in health-related data systems. [xviii]

Some of these recommendations have lived on. The Department of Health's Eliminating Health Disparities Initiative has funded at least some upstream work and has established a steering committee that involves many representatives of several communities of color. Additionally, the new Statewide Health Improvement Plan, currently in a $47 million two year pilot, is adding civic engagement into the mix of health initiatives through funding community-based efforts focused on prevention of obesity and tobacco use.[xix] Finally, the requirement of health impact assessments is a key component of the Healthy Communities Act, which was introduced in the 2009 legislative session but so far has failed to gain much bi-partisan support.[xx]

Internationally, the World Health Organization's Commission on Social Determinants of Health issued a call for closing the health gap in a generation, through its "overarching recommendations":

1. Improve daily living conditions

2. Tackle the inequitable distribution of power, money, and resources

3. Measure and understand the problem and assess the impact of action[xxi]

These broad recommendations are put in somewhat more grounded form in a report commissioned by the national Institute of Medicine entitled *A Time of Opportunity: Local Solutions to Reduce Inequities in Health and Safety*, issued at a meeting on social determinants of health in Minneapolis last year.[xxii] While still broad, the report outlines a 32-point framework that could help inform plans to address these issues in the Twin Cities (see Figure 18).

Developing broad consensus around a set of goals like these, actively resourcing the efforts, and regularly monitoring progress could go a long way toward reducing inequities in our region. Other goals and recommendations, including those outlined by Robert Wood Johnson Foundation's Commission to Build a Healthier America, should be part of the discussion.[xxiii] Additionally, the Minnesota Department of Health's Office of Public Health reports that they have already engaged a broad group of partners in discussion about the role of social connectedness in health, as part of its efforts surrounding the forthcoming release of the U.S. Department of Health and Human Service's *Healthy People 2020*.[xxiv]

18. Institute of Medicine's recommendations to reduce health inequities

Community Recommendations

C1. Build the capacity of community members and organizations.
C2. Instill health and safety considerations into land use and planning decisions.
C3. Improve safety and accessibility of public transportation, walking, and bicycling.
C4. Enhance opportunities for physical activity.
C5. Enhance availability of healthy products and reduce exposure to unhealthy products in underserved communities.
C6. Support healthy food systems and the health and well-being of farmers and farm workers.
C7. Increase housing quality, affordability, stability, and proximity to resources.
C8. Improve air, water, and soil quality.
C9. Prevent violence using a public health framework.
C10. Provide arts and culture opportunities in the community.

Health Care Services Recommendations

HC1. Provide high-quality, affordable health coverage for all.
HC2. Institute culturally and linguistically appropriate screening, counseling, and health care treatment.
HC3. Monitor health care models/procedures that are effective in reducing inequities in health and data documenting racial and ethnic differences in care outcomes.
HC4. Take advantage of emerging technology to support patient care.
HC5. Provide health care resources in the heart of the community.
HC6. Promote a Medical Home model.
HC7. Strengthen the diversity of the health care workforce to ensure that it is reflective and inclusive of the communities it is serving.
HC8. Ensure participation by patients and the community in health care related decision.
HC9. Enhance quality of care by improving availability and affordability of critical prevention services.
HC10. Provide outspoken support for environmental policy change and resources for prevention.

Systems Recommendations

S1. Enhance leadership and strategy development to reduce inequities in health and safety outcomes.
S2. Enhance information about the problem and solutions at the state and local levels.
S3. Establish sustainable funding mechanisms to support community health and prevention.
S4. Build the capacity of state and local health agencies to understand and lead population-based health equity work.
S5. Collaborate with multiple fields to ensure that health, safety, and health equity are considered in every relevant decision, action, and policy.
S6. Expand community mapping and indicators.
S7. Provide technical assistance and tools to support community-level efforts to address determinants of health and reduce inequities.

Overarching Recommendations

O1. Develop a national strategy to promote health equity across racial, ethnic, and socioeconomic lines, with specific attention to preventing injury and illness in the first place.
O2. Provide federal resources to support state and local community-based prevention strategies.
O3. Tackle the inequitable distribution of power, money, and resources—the structural drivers of the conditions of daily life that contribute to inequitable health and safety outcomes—and especially address race, racism, and discrimination in institutions and policies; racial and socioeconomic segregation; and socioeconomic conditions.
O4. Improve access to quality education and improve educational outcomes.
O5. Invest in early childhood.

Source: Prevention Institute (2009), A Time of Opportunity: Local Solutions to Reduce Inequities in Health and Safety. Commissioned by the Institute of Medicine Roundtable on Health Disparities.

The Twin Cities region is relatively well-positioned on several of these recommendations. In terms of the community recommendations, for example, our region ranks highly on bicycle commuting despite our cold climate, there are several active farmers markets and community gardens that help provide underserved communities direct access to fresh produce, and we have a thriving arts community providing ample cultural opportunities. In the area of health care services, the region has among the best rates of health care coverage in the nation, and provides health care services "in the heart of the community" through clinics like the North-Point Health and Wellness Center, West Side Community Health Services, and other projects that link care and community using community health workers.

In terms of systems recommendations, the state Health Department's well-established emphasis on health disparities as well as the Blue Cross and Blue Shield of Minnesota Foundation's consistent funding of efforts targeting under-served populations have provided both funding and leadership in the areas of eliminating inequities.[xxv] And in regard to the over-arching recommendations, the Twin Cities have been a national leader in educational innovation ranging from the charter school movement to comprehensive initiatives like Achievement Plus and the emerging Northside Achievement Zone initiative.

Obviously we have not closed all of our health gaps or made all the progress that is desirable. In fact, racial disparities in education have stubbornly persisted in our region. The Great Recession has brought on rampant home foreclosures, high unemployment rates, and increased poverty. It has also severely impacted the ability of the state and local governments, as well as the philanthropic sector, to provide a safety net, much less fund new large-scale programs aimed at social reform. However, much of the above-mentioned "infrastructure" that has been established in our state and region still exists, and it could position the Twin Cities as a national model for addressing upstream health concerns.

Culture as a protective factor

One area that is perhaps under-emphasized by national reports on health inequities is a subject that was stressed by the advisory group brought together for this report. That group observed that often times studies showing disparities along lines of race and ethnicity can inadvertently reinforce those disparities by pointing out things that are going wrong among groups that are already underprivileged. An unfortunate side-effect of raising awareness of the existence of disparities can be the misperception that the cultural practices of racial and ethnic minorities are somehow inferior.

Of course, health outcomes provide a ready counter-factual to this perception. The now well-known immigrant paradox shows that health of recent immigrants is often better than the health of others, including whites. This is often attributed to the adherence of recent immigrants to their more traditional dietary patterns, as well as their beliefs and within-group support networks. In subsequent generations, however, these advantages diminish, as second and third generations adopt what has become the dominant, mainstream American diet, and as traditional cultural beliefs and social ties fade.

Further, reinforcement of ethnic identity and culture can promote health and well-being. While this may seem intuitive, it is also backed by some solid local evidence, including:

- Participants in Ginew/Golden Eagles, a year-round program for school-aged American Indians in Minneapolis, show higher signs of cultural connectedness, perceive more positive expectations from their peers, and indicate better emotional well-being than a comparison group of similar children.[xxvi]
- Participants in Hmong Youth Pride, a program for 9-14 year-old Hmong youth in the Twin Cities, show stronger academic improvement as well as increased cultural pride than did a comparison group of similar children.[xxvii]

The Cultural Wellness Center is among the leaders in the Twin Cities area in promoting culture as a resource and a protective factor both in terms of health and in terms of community development and actualization. In attempting to address health inequities in the Twin Cities, our region would do well to draw on the cultural traditions of our increasingly diverse population.

In conclusion

There is no one silver bullet to addressing health inequities in the Twin Cities. To make progress in this broad area requires the sustained attention of committed people and institutions. In the short-term, some fairly obvious take-aways from this analysis of social determinants in our region include:

- Those advocating for the elimination of poverty, closing of racial and economic gaps in educational opportunities and achievement, reduction of racial and economic segregation, as well as for economic development and creation of high-paying jobs in our region can safely broaden their case to include health benefits and the very tangible economics of improved health.
- More of those working in health care, including the medical community, can and should add their voices to those advocating for such reforms as another way of helping their "patients" in the community at large achieve better longer, healthier lives.
- More should be done to learn from the health-promoting cultural practices brought by our region's immigrant groups.

Additionally, an effort should be made to continue to map and track health outcomes as we have done in this report. The 2010 Census and accompanying American Community Survey will provide the information necessary to replicate the analysis contained in this report. The analysis also could be expanded to include additional factors affecting health such as exposure to pollution, incidence of crime, and access to healthy foods.

Most importantly, continuing to build consensus around the need to improve the social determinants of health in our region – finding ways to scale up existing efforts as well as develop new policies, strategies, and projects – could dramatically impact the opportunity for more residents to enjoy long and fulfilling lives. Eliminating health inequities could also be an important part of cost containment for health care in our region. Finally, addressing these challenges also could provide our region a much needed competitive advantage as we advance out of the Great Recession and into a new era characterized by the skill drain of retiring Baby Boomers, coupled with an increasingly diverse workforce.

Appendix

Glossary

Health disparity: A gap in the health status of different groups of people, in which one group is healthier than others.

Health impact assessment: A rigorous prospective evaluation of potential health effects of a given policy, program, or project.

Health inequities: Unjust and avoidable health disparities.

Life expectancy: Technically, life expectancy at birth shows the average number of years a baby born in a given year can expect to live if that baby were subject to the same mortality conditions across the life course that prevailed at the time of birth.

Mortality rate: The number of deaths per the number in the referenced population. Mortality rates are typically reported in deaths per 100,000.

Social determinants of health: Group characteristics, including race, income, and education, that have an influence on health.

Social gradient: Differences in income and/or occupational status on a continuum from low to high.

Detailed methods

1998-2002 Life expectancy and mortality rates

The death data used to estimate life expectancy and mortality were provided by the Minnesota Department of Health. Five years of data were pooled, providing us with enough data on deaths in the region so that we could make reliable inferences.

ZIP-code level population estimates were taken from the 2000 census. We looked at 1998-2002 because the 2000 census provides the most recent contextual data available at the ZIP code level, such as median household income, percentage of the population in poverty, and percentage of the adult population who have attained a bachelor's degree or more education.

Life expectancy at birth shows the average number of years a baby born in a given year can expect to live if that baby were subject to the same mortality conditions across the life course that prevailed at the time of birth.

The mortality rates given in this report are age-standardized rates. Standardizing on age is an important part of analyzing mortality data, since the age distribution of a population has such a strong effect on the rate of deaths in that population.

To produce the age-standardized mortality rate, the population is divided into age groups (0-1, 1-4, 5-9, 10-14, 15-19, etc.). The number of deaths in each age group is then divided by the population in that age group. These probabilities of death at each age are then weighted to match the age distribution of the standard population, in this case the population in the 7-county region in the year 2000. The weighted age-specific rates are then summed over all age groups and multiplied by 100,000 to produce a number that estimates the number of deaths per 100,000 residents. This number, the age-standardized mortality rate, is then comparable across geographic areas with different age distributions.

In some cases, it is useful to compare mortality data for adults only. In these cases we calculated age-standardized mortality rates for the population age 25 to 64. We used the same method described above, but included only the population age 25 to 64. The 2000 population in the 7-county region, age 25 to 64, was used as the standard population in these cases. We did this to moderate the effect of nursing homes in certain ZIP codes, and to be able to make better comparisons between native-born and foreign-born populations.

1998-2002 Geographic coverage

ZIP codes that fell completely within the boundaries of the Twin Cities 7-county region were used for the analysis of 1998-2002 data. The 7-county region includes Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington counties.

ZIP codes that crossed the boundary of the 7-county region were excluded from the analysis. In addition, a small number of ZIP codes with very small populations were combined with other adjacent ZIP codes that had similar aggregate socioeconomic characteristics. When an adjacent ZIP code with a similar composition was not available, the ZIP code with the small population was excluded from the analysis.

2005-2007 Life expectancy and mortality rates

The death data used to estimate life expectancy and mortality were provided by the Minnesota Department of Health. Three years of data were pooled to produce reliable estimates, and to be comparable with the population data that were available for the 2005-2007 period.

Population estimates of the 7-county region were taken from the Integrated Public Use Microdata Series, 2005-2007 American Community Survey.

Steven Ruggles, Matthew Sobek, Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. Integrated Public Use Microdata Series: Version 4.0 [Machine-readable database]. Minneapolis, MN: Minnesota Population Center [producer and distributor], 2005-2007. http://usa.ipums.org/usa/

Age-standardized mortality rates were calculated by using the same method described above for the 1998-2002 period.

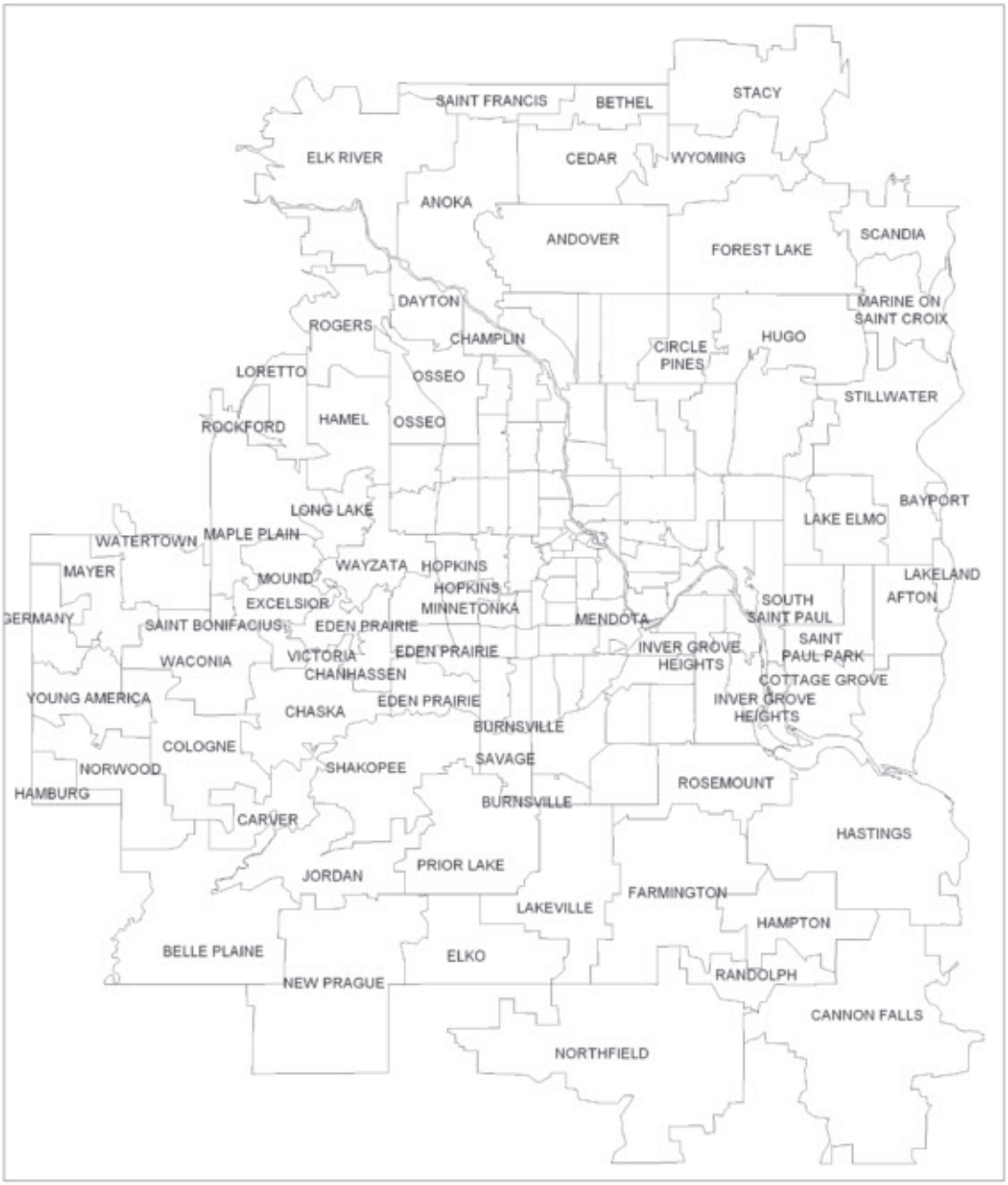
2005-2007 Geographic coverage

The analysis for 2005-2007 used data from the entire Twin Cities 7-county region. This broader sample could be used in the later period since we were not constrained by the same needs for comparability that we were with the earlier years of data that took advantage of ZIP-code level, census data.

Map of ZIP codes and cities

The map below shows some of the cities and towns associated with the ZIP codes used in maps throughout this report.

Map of cities and towns associated with select ZIP codes, 2000
7-county region by Zip code, 2000



Detailed table: Mortality rates, income, poverty, and educational attainment by ZIP code

ZIP code	Associated city	County	Percent in poverty (2000)	Median income (2000)	Percent of color (2000)	Percent of adults (25+) with at least a BA	Total population: Total	Number of deaths 1998-2002	Age-standardized death rate (25-64)
55001	AFTON	Washington	0.8%	$89,318	3.7%	31%	2,664	55	178
55003	BAYPORT	Washington	3.7%	$53,026	28.0%	9%	3,162	121	218
55005	BETHEL	Anoka	4.2%	$56,844	4.2%	6%	4,093	55	247
55011	CEDAR	Anoka	2.7%	$62,275	2.6%	7%	8,696	123	218
55014	CIRCLE PINES	Ramsey	3.4%	$64,848	6.6%	16%	26,384	363	188
55016	COTTAGE GROVE	Washington	2.2%	$65,314	7.8%	13%	30,141	438	199
55020	ELKO	Scott	1.1%	$66,250	1.8%	10%	2,326	24	126
55024	FARMINGTON	Dakota	3.0%	$63,533	5.9%	13%	21,125	343	196
55025	FOREST LAKE	Washington	4.1%	$58,938	3.2%	13%	19,659	626	182
55031	HAMPTON	Dakota	3.5%	$61,696	1.9%	11%	1,797	28	153
55033	HASTINGS	Washington	4.3%	$57,667	3.3%	12%	25,799	856	219
55038	HUGO	Washington	2.0%	$68,100	4.1%	17%	10,687	142	159
55042	LAKE ELMO	Washington	6.7%	$78,653	4.9%	20%	7,583	126	139
55043	LAKELAND	Washington	3.5%	$71,352	3.5%	18%	4,028	71	119
55044	LAKEVILLE	Scott	1.7%	$77,818	5.9%	21%	35,085	349	149
55047	MARINE ON SAINT CROIX	Washington	1.1%	$74,338	3.0%	24%	2,624	60	249
55055	NEWPORT	Washington	3.9%	$45,461	10.0%	9%	3,795	120	318
55065	RANDOLPH	Dakota	4.5%	$55,547	2.1%	12%	980	17	310
55068	ROSEMOUNT	Dakota	3.1%	$65,040	8.1%	15%	20,734	285	214
55070	SAINT FRANCIS	Anoka	4.4%	$53,297	4.4%	7%	5,575	79	271
55071	SAINT PAUL PARK	Washington	6.2%	$50,508	7.8%	7%	5,185	158	327
55073	SCANDIA	Washington	2.9%	$68,073	2.8%	16%	2,790	67	167
55075	SOUTH SAINT PAUL	Dakota	5.9%	$45,474	10.1%	9%	20,108	906	276
55076	INVER GROVE HEIGHTS	Dakota	4.8%	$56,703	9.8%	16%	18,589	428	268
55077	INVER GROVE HEIGHTS	Dakota	3.7%	$58,802	10.8%	18%	10,590	325	212
55079	STACY	Anoka	3.1%	$56,957	3.2%	7%	7,064	32	NA
55082	STILLWATER	Washington	3.1%	$67,776	3.9%	24%	30,311	1108	212
55092	WYOMING	Anoka	4.1%	$57,377	2.7%	11%	9,239	74	NA
55101	SAINT PAUL	Ramsey	24.5%	$31,155	55.6%	13%	21,969	669	407
55102	SAINT PAUL	Ramsey	13.2%	$34,756	23.0%	22%	17,727	988	456
55103	SAINT PAUL	Ramsey	26.0%	$29,558	65.4%	10%	14,728	569	523
55104	SAINT PAUL	Ramsey	17.0%	$38,237	40.3%	24%	46,133	1562	348
55105	SAINT PAUL	Ramsey	5.4%	$53,879	7.6%	43%	27,818	730	172
55106	SAINT PAUL	Ramsey	17.3%	$36,560	45.4%	9%	54,296	2145	394

Detailed table: Mortality rates, income, poverty, and educational attainment by ZIP code (continued)

ZIP code	Associated city	County	Percent in poverty (2000)	Median income (2000)	Percent of color (2000)	Percent of adults (25+) with at least a BA	Total population: Total	Number of deaths 1998-2002	Age-standardized death rate (25-64)
55107	SAINT PAUL	Ramsey	16.0%	$39,552	51.4%	13%	16,032	757	394
55108	SAINT PAUL	Ramsey	13.4%	$43,277	21.1%	43%	15,914	1052	164
55109	SAINT PAUL	Ramsey	4.8%	$50,614	10.2%	13%	30,514	1459	290
55110	SAINT PAUL	Washington	4.0%	$59,373	5.1%	20%	39,703	1309	215
55112	SAINT PAUL	Ramsey	5.0%	$54,365	10.8%	23%	45,035	1855	211
55113	SAINT PAUL	Ramsey	4.1%	$50,616	11.8%	28%	38,278	1971	189
55114	SAINT PAUL	Ramsey	18.5%	$26,895	25.9%	32%	1,309	46	606
55115	SAINT PAUL	Washington	2.5%	$72,877	3.6%	26%	9,018	214	132
55116	SAINT PAUL	Ramsey	7.8%	$46,863	14.7%	32%	23,552	1197	203
55117	SAINT PAUL	Ramsey	15.0%	$40,132	32.6%	15%	39,578	1443	325
55118	SAINT PAUL	Dakota	4.7%	$50,325	13.4%	20%	27,270	1471	241
55119	SAINT PAUL	Ramsey	8.9%	$45,666	23.2%	14%	37,778	1128	236
55120	SAINT PAUL	Dakota	2.2%	$73,901	6.7%	33%	4,722	95	152
55121	SAINT PAUL	Dakota	4.9%	$54,358	17.1%	24%	7,714	168	274
55122	SAINT PAUL	Dakota	3.0%	$60,298	14.1%	24%	28,019	366	194
55123	SAINT PAUL	Dakota	2.5%	$82,004	10.8%	31%	27,448	219	145
55124	SAINT PAUL	Dakota	2.1%	$70,253	9.3%	23%	46,454	947	172
55125	SAINT PAUL	Washington	1.4%	$73,754	11.5%	29%	40,093	841	163
55126	SAINT PAUL	Ramsey	2.1%	$68,941	7.5%	30%	25,377	590	184
55127	SAINT PAUL	Ramsey	1.7%	$75,091	8.0%	32%	16,979	342	152
55128	SAINT PAUL	Washington	4.0%	$55,632	9.4%	14%	27,309	600	173
55129	SAINT PAUL	Washington	3.3%	$93,218	9.4%	32%	6,285	72	115
55150	MENDOTA	Dakota	5.4%	$45,833	7.2%	11%	152	10	474
55303	ANOKA	Anoka	3.9%	$57,792	5.5%	12%	42,088	1014	217
55304	ANDOVER	Anoka	2.1%	$73,932	4.2%	14%	39,049	454	171
55305	HOPKINS	Hennepin	3.3%	$61,633	8.0%	31%	19,299	671	175
55306	BURNSVILLE	Dakota	5.0%	$60,315	13.0%	22%	15,033	171	169
55311	OSSEO	Hennepin	1.7%	$85,782	5.9%	28%	19,827	184	137
55315	CARVER	Carver	1.3%	$67,778	2.5%	13%	2,444	43	205
55316	CHAMPLIN	Hennepin	2.5%	$66,026	5.6%	14%	22,422	263	198
55317	CHANHASSEN	Carver	1.8%	$84,385	7.2%	30%	17,114	152	105
55318	CHASKA	Carver	4.5%	$61,214	8.8%	18%	19,232	389	177
55322	COLOGNE	Carver	2.2%	$60,123	2.3%	8%	2,754	64	121
55327	DAYTON	Hennepin	1.8%	$73,507	3.2%	12%	3,502	49	169
55331	EXCELSIOR	Hennepin	2.4%	$82,471	3.5%	32%	17,584	368	120
55337	BURNSVILLE	Dakota	5.0%	$58,286	14.1%	20%	45,174	908	185
55339	HAMBURG	Carver	4.5%	$49,531	2.9%	9%	960	19	165
55340	HAMEL	Hennepin	1.3%	$80,493	4.0%	20%	5,836	70	175
55343	HOPKINS	Hennepin	7.7%	$44,253	16.0%	23%	24,475	1207	253
55344	EDEN PRAIRIE	Hennepin	7.5%	$59,885	18.1%	31%	13,022	280	150

Detailed table: Mortality rates, income, poverty, and educational attainment by ZIP code (continued)

ZIP code	Associated city	County	Percent in poverty (2000)	Median income (2000)	Percent of color (2000)	Percent of adults (25+) with at least a BA	Total population: Total	Number of deaths 1998-2002	Age-standardized death rate (25-64)
55345	MINNETONKA	Hennepin	1.8%	$78,530	5.1%	32%	22,227	559	137
55346	EDEN PRAIRIE	Hennepin	2.9%	$83,443	7.7%	33%	17,920	208	118
55347	EDEN PRAIRIE	Hennepin	1.8%	$95,372	8.1%	36%	23,980	229	126
55352	JORDAN	Scott	3.2%	$54,500	6.2%	12%	6,270	215	358
55356	LONG LAKE	Hennepin	2.9%	$73,878	3.2%	26%	4,738	132	138
55357	LORETTO	Hennepin	2.0%	$81,282	2.1%	16%	3,497	59	133
55359	MAPLE PLAIN	Hennepin	2.0%	$69,453	2.7%	18%	5,612	223	184
55360	MAYER	Carver	3.0%	$53,333	1.6%	8%	1,527	31	289
55364	MOUND	Hennepin	2.7%	$66,740	3.7%	19%	14,983	313	181
55367	NEW GERMANY	Carver	9.1%	$43,393	1.7%	6%	950	27	228
55368	NORWOOD	Carver	6.6%	$49,559	3.0%	5%	2,248	77	292
55369	OSSEO	Hennepin	1.4%	$68,057	6.0%	18%	33,294	661	191
55372	PRIOR LAKE	Scott	3.1%	$77,097	4.3%	18%	22,828	362	207
55373	ROCKFORD	Hennepin	5.9%	$52,300	3.6%	9%	4,363	27	69
55374	ROGERS	Hennepin	0.8%	$78,564	2.7%	16%	9,317	130	197
55375	SAINT BONIFACIUS	Hennepin	3.2%	$64,766	4.2%	15%	1,907	31	184
55378	SAVAGE	Scott	2.3%	$76,010	10.6%	21%	21,882	192	202
55379	SHAKOPEE	Scott	4.2%	$58,298	11.5%	14%	23,250	582	209
55384	SPRING PARK	Hennepin	10.3%	$36,607	4.9%	14%	1,473	348	263
55386	VICTORIA	Carver	2.2%	$81,476	4.2%	21%	3,448	47	239
55387	WACONIA	Carver	3.6%	$59,423	3.1%	16%	8,595	352	128
55388	WATERTOWN	Carver	5.5%	$50,987	2.6%	11%	4,482	183	192
55391	WAYZATA	Hennepin	1.9%	$87,648	3.6%	33%	16,135	548	111
55397	YOUNG AMERICA	Carver	3.5%	$58,257	3.8%	8%	2,565	40	137
55401	MINNEAPOLIS	Hennepin	14.5%	$40,716	21.5%	33%	3,649	172	482
55402	MINNEAPOLIS	Hennepin	23.8%	$30,921	43.2%	24%	176	23	NA
55403	MINNEAPOLIS	Hennepin	15.7%	$30,702	21.8%	33%	14,873	609	468
55404	MINNEAPOLIS	Hennepin	33.9%	$20,923	61.6%	11%	27,282	1549	649
55405	MINNEAPOLIS	Hennepin	16.8%	$40,368	33.8%	32%	15,909	389	370
55406	MINNEAPOLIS	Hennepin	8.6%	$40,867	24.2%	23%	33,033	1279	310
55407	MINNEAPOLIS	Hennepin	18.4%	$37,462	55.1%	17%	37,879	1372	413
55408	MINNEAPOLIS	Hennepin	17.4%	$34,216	41.9%	25%	30,564	862	429
55409	MINNEAPOLIS	Hennepin	6.0%	$55,424	27.6%	33%	21,100	1095	292
55410	MINNEAPOLIS	Hennepin	3.3%	$64,084	7.1%	39%	18,435	545	142
55411	MINNEAPOLIS	Hennepin	33.1%	$28,434	82.5%	8%	31,689	1066	596
55412	MINNEAPOLIS	Hennepin	16.4%	$38,818	52.0%	11%	25,010	759	374
55413	MINNEAPOLIS	Hennepin	20.4%	$33,774	25.8%	15%	12,082	617	425

Detailed table: Mortality rates, income, poverty, and educational attainment by ZIP code (continued)

ZIP code	Associated city	County	Percent in poverty (2000)	Median income (2000)	Percent of color (2000)	Percent of adults (25+) with at least a BA	Total population: Total	Number of deaths 1998-2002	Age-standardized death rate (25-64)
55414	MINNEAPOLIS	Hennepin	32.0%	$28,426	23.1%	39%	24,126	448	382
55415	MINNEAPOLIS	Hennepin	11.2%	$30,156	53.6%	16%	1,713	36	397
55416	MINNEAPOLIS	Hennepin	3.6%	$55,252	8.8%	36%	27,276	1170	141
55417	MINNEAPOLIS	Hennepin	4.5%	$52,127	16.2%	24%	25,117	1181	238
55418	MINNEAPOLIS	Hennepin	10.1%	$41,344	18.8%	17%	30,795	1568	369
55419	MINNEAPOLIS	Hennepin	4.1%	$63,513	14.6%	38%	17,197	835	186
55420	MINNEAPOLIS	Hennepin	6.5%	$47,295	16.9%	11%	21,315	982	255
55421	MINNEAPOLIS	Anoka	7.2%	$39,526	14.4%	12%	25,622	1402	314
55422	MINNEAPOLIS	Hennepin	4.0%	$51,885	11.5%	20%	27,810	1619	310
55423	MINNEAPOLIS	Hennepin	6.3%	$45,598	21.2%	15%	34,594	1607	251
55424	MINNEAPOLIS	Hennepin	1.9%	$93,481	4.2%	47%	9,821	267	136
55425	MINNEAPOLIS	Hennepin	5.9%	$44,538	26.0%	14%	9,027	487	199
55426	MINNEAPOLIS	Hennepin	6.5%	$47,145	14.9%	21%	25,458	1523	258
55427	MINNEAPOLIS	Hennepin	4.0%	$55,685	11.6%	21%	23,441	937	217
55428	MINNEAPOLIS	Hennepin	6.8%	$43,970	20.9%	12%	29,933	2082	280
55429	MINNEAPOLIS	Hennepin	7.4%	$43,511	31.4%	9%	25,930	903	251
55430	MINNEAPOLIS	Hennepin	11.5%	$39,620	35.8%	9%	21,102	873	326
55431	MINNEAPOLIS	Hennepin	3.2%	$57,197	9.4%	20%	18,542	689	187
55432	MINNEAPOLIS	Anoka	6.7%	$48,370	12.0%	13%	30,576	1096	287
55433	MINNEAPOLIS	Anoka	6.1%	$52,128	8.4%	12%	34,714	961	284
55434	MINNEAPOLIS	Anoka	2.9%	$54,887	7.1%	10%	27,553	596	249
55435	MINNEAPOLIS	Hennepin	6.1%	$42,478	10.3%	30%	11,268	1079	235
55436	MINNEAPOLIS	Hennepin	2.3%	$72,361	5.0%	38%	12,607	521	172
55437	MINNEAPOLIS	Hennepin	3.2%	$58,483	10.0%	25%	18,828	899	151
55438	MINNEAPOLIS	Hennepin	1.5%	$70,011	9.1%	31%	17,425	499	120
55439	MINNEAPOLIS	Hennepin	3.1%	$87,302	6.0%	44%	8,884	263	102
55441	MINNEAPOLIS	Hennepin	4.5%	$63,068	10.8%	26%	17,398	429	218
55442	MINNEAPOLIS	Hennepin	1.3%	$84,451	8.0%	31%	13,196	202	117
55443	MINNEAPOLIS	Hennepin	4.4%	$62,347	29.5%	17%	25,379	381	209
55444	MINNEAPOLIS	Hennepin	2.3%	$65,043	23.6%	14%	15,702	231	178
55445	MINNEAPOLIS	Hennepin	3.0%	$63,662	22.9%	16%	8,853	140	248
55446	MINNEAPOLIS	Hennepin	1.0%	$91,431	9.3%	37%	12,464	171	128
55447	MINNEAPOLIS	Hennepin	2.8%	$75,029	9.7%	30%	23,435	404	161
55448	MINNEAPOLIS	Anoka	3.3%	$60,226	6.5%	13%	26,551	516	204
55449	MINNEAPOLIS	Anoka	3.6%	$67,617	9.0%	14%	11,678	130	208
55454	MINNEAPOLIS	Hennepin	41.6%	$14,360	64.8%	16%	6,772	108	311
55455	MINNEAPOLIS	Hennepin	68.0%	$66,250	11.4%	72%	2,036	9	NA
56011	BELLE PLAINE	Carver	4.5%	$54,468	2.8%	10%	6,028	286	270

Leading causes of death in the Twin Cities 7-County region, 2005-2007

A1. Leading causes of death in the Twin Cities 7-County region, by racial and ethnic group 2005-2007

	Hispanic (any race)	American Indian	Black (U.S.-born)	Black (Foreign-born)	Southeast Asian	Asian (Other)	White (non-Hispanic)	ALL
Total number of deaths	594	361	2,172	250	646	372	45,411	49,894
Cancer	21.4%	16.9%	22.4%	32.0%	25.2%	21.0%	25.6%	25.3%
Heart Disease	10.4%	14.4%	15.6%	7.2%	10.7%	12.6%	17.5%	17.1%
Stroke (Cerebrovascular)	6.4%	5.3%	4.3%	6.4%	10.7%	7.0%	5.8%	5.8%
Unintentional Injury	14.0%	11.6%	7.9%	11.6%	5.1%	8.3%	5.0%	5.4%
COPD	1.9%	2.5%	2.8%	1.6%	3.4%	1.6%	4.9%	4.7%
Diabetes	3.9%	5.3%	4.7%	4.4%	4.2%	1.9%	2.9%	3.0%
Alzheimer's	0.3%	0.3%	1.1%	0.0%	1.2%	1.9%	3.2%	3.0%
Nephritis	2.4%	2.5%	2.7%	2.0%	4.8%	1.6%	2.0%	2.0%
Suicide	3.2%	3.0%	1.4%	1.6%	2.0%	3.5%	1.6%	1.6%
Pneumonia-Influenza	1.2%	1.1%	0.7%	0.8%	0.6%	1.1%	1.7%	1.6%
Cirrhosis	1.5%	5.8%	1.1%	0.0%	1.5%	0.3%	0.9%	1.0%
Septicemia	0.8%	2.5%	1.2%	2.4%	1.4%	2.2%	0.8%	0.9%
Perinatal Conditions	5.9%	1.4%	4.7%	0.0%	0.0%	7.3%	0.3%	0.6%
Congenital Anomalies	3.4%	0.6%	2.2%	0.4%	0.2%	4.0%	0.5%	0.6%
Homicide	2.2%	2.5%	6.0%	4.0%	1.1%	3.2%	0.2%	0.5%
AIDS/HIV	1.2%	1.4%	1.5%	3.6%	0.2%	0.0%	0.1%	0.2%
Atherosclerosis	0.0%	0.6%	0.1%	0.0%	0.0%	0.0%	0.2%	0.2%
SIDS	0.8%	0.8%	0.7%	0.0%	0.0%	0.3%	0.1%	0.1%
Other (residual)	19.2%	21.6%	19.1%	22.0%	27.7%	22.3%	26.7%	26.2%

Note: Percentages are not age-standardized.

A2. Leading causes of death in the Twin Cities 7-County region, by median household income group of ZIP codes, 1998-2002

	<$35,000	$35,000-$44,999	$45,000-$59,999	$60,000-$74,999	$75,000+	ALL
Total number of deaths	7,590	20,906	33,958	13,805	5,578	81,837
Cancer	19.5%	22.1%	24.7%	28.2%	31.7%	24.6%
Heart Disease	18.3%	20.8%	21.0%	19.7%	18.4%	20.3%
Stroke (Cerebrovascular)	6.7%	7.3%	7.5%	6.7%	6.1%	7.2%
Unintentional Injury	5.3%	5.2%	5.3%	4.9%	4.8%	5.2%
COPD	5.2%	4.5%	4.0%	5.1%	5.4%	4.5%
Diabetes	3.2%	3.4%	3.3%	3.3%	2.6%	3.3%
Alzheimer's	2.8%	2.9%	2.6%	2.3%	1.8%	2.6%
Nephritis	2.4%	2.4%	2.7%	2.3%	2.0%	2.5%
Suicide	2.0%	1.8%	1.7%	1.6%	1.2%	1.7%
Pneumonia-Influenza	1.8%	1.0%	1.2%	1.7%	1.8%	1.4%
Cirrhosis	1.5%	1.1%	0.9%	1.0%	1.0%	1.0%
Septicemia	0.9%	0.7%	0.6%	0.6%	0.6%	0.7%
Perinatal Conditions	0.6%	0.6%	0.5%	0.8%	1.2%	0.6%
Congenital Anomalies	0.8%	0.5%	0.4%	0.7%	0.8%	0.5%
Homicide	1.6%	0.7%	0.3%	0.3%	0.2%	0.5%
AIDS/HIV	0.3%	0.3%	0.5%	0.4%	0.3%	0.4%
Atherosclerosis	1.2%	0.3%	0.2%	0.1%	0.1%	0.3%
SIDS	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Other (residual)	25.7%	24.4%	22.6%	20.2%	20.0%	22.8%

Note: Percentages are not age-standardized.

Endnotes

[i] Commission on Social Determinants of Health. *CSDH Final Report: Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health.* Geneva, Switzerland: World Health Organization; 2008.

[ii] Commission on Social Determinants of Health. CSDH Final Report: *Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health.* Geneva, Switzerland: World Health Organization; 2008.

[iii] Institute of Medicine, *Challenges and successes in reducing health disparities: Workshop summary.* Washington, D.C.: The National Academies Press, 2008 (**www.nap.edu/catalog.php?record_id=12154**). Robert Wood Johnson Foundation, Overcoming Obstacles to Health. Princeton, New Jersey: Robert Wood Johnson Foundation; February 2008.

[iv] New England Health Care Institute, *The Boston Paradox: Lots of health care, not enough health.* Boston, MA: The Boston Foundation; June 2007. Bay Area Regional Health Inequities Initiative, Health Inequities in the Bay Area. Oakland, CA: Bay Area Regional Health Inequities Initiative; nd. (**www.barhii.org/press/download/barhii_report08.pdf**).

[v] According to our analysis for Twin Cities Compass, among the nation's 25 largest metropolitan areas Minneapolis-St. Paul has the 2nd lowest poverty rate (based on U.S. Census Bureau's 2007 American Community Survey), 4th highest median household income (2007 ACS), the highest proportion of adults age 16-64 employed in the workforce (2008 ACS), the 4th highest percentage of adults with a Bachelors degree or higher (2006 ACS), the highest homeownership rate (2008 ACS), the 8th highest rating on air quality (U.S. EPA, 2007), the lowest rate of adult diabetes (Centers for Disease Control and Prevention's 2008 Behavioral Risk Factor Surveillance System), the 9th lowest adult obesity rate (2008 BRFSS); and the highest rate of volunteerism (2006-2008 March supplement to the U.S. Census Bureau's Current Population Survey). In addition, the region ranked 2nd of 50 major metropolitan areas on the 2009 American Fitness Index, published by the American College of Sports Medicine (**www.americanfitnessindex.org/**).

[vi] According to our analysis for Twin Cities Compass, among the nation's 25 largest metropolitan areas Minneapolis-St. Paul has the 6th highest poverty rate among persons of color (2007 ACS), the 4th largest gap between homeownership rates between white-headed households and households headed by a person of color (2008 ACS). According to an analysis of 2000 Census data by the Social Science Data Analysis Network (**www.censusscope.org**), among the 25 largest metropolitan areas the Twin Cities are ranks 7th in terms of black-white segregation and 13th in terms of Asian-white segregation, where 1st is least segregated (black and Asian are the region's second- and third-largest racial groups, respectively. The dissimilarity index, upon which such rankings are based, is not reliable among small groups). Additionally, while these analyses are not available for metropolitan areas, according to the National Assessment of Educational Performance, Minnesota ranks 2nd among all states on 8th grade reading scores, but 15th for African American students, and 37th in terms of the gap between white and black students, when ranked from least to largest. Finally, according to an analysis of Center for Disease Control and Prevention data by the Kaiser Family Foundation, at the state level Minnesota has the 3rd lowest age-adjusted mortality rate for whites, but only the 17th lowest for African Americans (**www.statehealthfacts.org**)

[vii] For example, in 2001 the Minnesota Department of Health's Eliminating Health Disparities Initiative was created through legislation (1Sp2001 c 9 art 1 s 48), and it has been an active priority of the Department ever since.

[viii] The figures cited are average annual savings estimated for 2003 to 2006, published in 2008 dollars. See Thomas LaVeist, Darrell Gaskin, and Patrick Richard, September 2009, "The Economic Burden of Health Inequities in the United States," Washington, D.C.: Joint Center for Political and Economic Studies.

[ix] See **www.health.state.mn.us/divs/chs/POC/**

[x] Olivia Carter-Pokras and Claudia Baquet (September-October 2002), "What is a "health disparity"?" *Public Health Reports* 117:426-34.

[xi] Richard J. David and James W. Collins Jr. (October 23, 1997), "Differing birth weight among infants of U.S.-born blacks, African-born blacks, and U.S.-born whites," The New England Journal of Medicine 337.17: 1209-15.

[xii] Compiled by Wilder Research from: Integrated Public Use Microdata Series from the U.S. Census Bureau, 2007 American Community Survey.

[xiii] For example, see Michael G. Marmot, G. Davey Smith, S.A. Stansfeld, C. Patel, F. North, J. Head, et al. "Health inequalities among British Civil Servants: the Whitehall II study." Lancet 1991; 337:1387-1393.

[xiv] Amy J. Schulz, David R. Williams, Barbara A. Israel, Lora Bex Lempert (2002), "Racial and Spatial Relations as Fundamental Determinants of Health in Detroit," *The Milbank Quarterly*, 80.4: 677-707.

[xv] They were also able to statistically estimate that, of the neighborhood-level effects, about 60 percent of the impact is due to the personal characteristics of people who live in the neighborhood, but that 40 percent of the effect was due to the context of the neighborhood itself: "...neighborhood socioeconomic status significantly influences the physical functioning of the individuals who live there over and above their own socioeconomic status" (p.174). Catherine E. Ross and John Mirowsky (June 2008), "Neighborhood Socioeconomic Status and Health: Context or Composition?" *City & Community* 7.2:163-179.

[xvi] Dennis McDermot (October1, 2009), "Evaluating data to inform policy," presented at the Community Indicators Consortium annual meeting in Bellevue, Washington.

[xvii] Peter Muennig, Kevin Fiscella, Daniel Tancredi, and Peter Franks (January, 2010), "The relative health burden of selected social and behavioral risk factors in the United States: Implications for policy," *American Journal of Public Health* (published online ahead of print, December 17, 2009). Their analysis suggests that income (less than 200% of the poverty line) is the single most influential factor, lowering "quality adjusted life years to age 85" by 8.2 years, followed by smoking (6.6 years), high school degree (5.1 years), race of non-Hispanic black compared to non-Hispanic white (4.7 years), Obesity (4.2 years), and binge drinking (1.2 years).

[xviii] Minnesota Health Improvement Partnership, Social Conditions and Health Action Team (April 2001), *A call to action: Advancing health for all through social and economic change;* St. Paul: Minnesota Department of Health.

[xix] Minnesota Department of Health (January 2010), *Creating a better state of health: The statewide health improvement plan,* available at **www.health.state.mn.us/healthreform/ship/index.html**

[xx] The Healthy Communities Act is backed by the advocacy group ISAIAH, the SEIEU, and the Minnesota Public Health Association: **www.mpha.net/tabs/SpotLight/SpotlightDetails.aspx?DocId=89**

[xxi] Commission on Social Determinants of Health (2008), *Closing the gap in a generation: health equity through action on the social determinants of health.* Geneva, Switzerland: World Health Organization.

[xxii] Larry Cohen, Anthony Iton, Rachel Davis, and Sharon Rodriguez, *A time of opportunity: Local solutions to reduce inequities in health and safety.* Commissioned by the Institute of Medicine for the Roundtable on Health Disparities public meeting on state and local health initiatives to reduce health disparities, Minneapolis, MN, May 11, 2009 (**www.iom.edu/Object.File/Master/67/181/A%20Time%20of%20Opportunity-Local%20Solutions%20to%20Reduce%20Inequities%20in%20Health%20and%20Safety.pdf**)

[xxiii] Commission to Build a Healthier America (April 2009), *Beyond health care: new directions to a healthier America,* Princeton, NJ: Robert Wood Johnson Foundation (available at **www.commissiononhealth.org**).

[xxiv] Personal communication with Dorothy Bliss, Minnesota Department of Health, Office of Public Health Practice, February 18, 2010. Information on Healthy People 2020 is available at **www.healthypeople.gov**.

[xxiv] For Minnesota Department of Health's efforts, see: **www.health.state.mn.us/ommh/grants/ehdi/index.html**. For Blue Cross and Blue Shield of Minnesota Foundation's efforts, see **www.bcbsmnfoundation.org/**.

[xxvi] Richard Chase and Douglas Clement (January 2000), *Ginew/Golden Eagle program evaluation,* St. Paul: Wilder Research (available at: **www.wilder.org/download.0.html?report=1255&summary=1**).

[xxvii] Richard Chase (April 2002), *Cultural ties as a protective factor against risky behavior,* presented to the International Conference on Adolescence in London (available at **www.wilder.org/download.0.html?report=963**).

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