



Overcoming Obstacles to Health in 2013 and Beyond



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The Robert Wood Johnson Foundation Commission to Build a Healthier America (RWJF Commission) is a national, independent, nonpartisan group of leaders created in 2008. In 2009, the RWJF Commission issued a set of influential recommendations for improving the health of all Americans. The Robert Wood Johnson Foundation is reconvening the Commission to identify actions that should be taken now to support health in communities and during early childhood.

For more information, please visit www.rwjf.org/goto/commission.

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EXECUTIVE SUMMARY

Despite leading the world on medical care spending, Americans have worse health and shorter lives than people in other affluent nations. Our international ranking has been slipping over time, and it is not only poor Americans who are affected. Middle-class and even wealthy Americans also are less healthy than their counterparts in other affluent countries.

These disturbing facts are presented in a January 2013 report from the National Research Council and the Institute of Medicine documenting our nation's health disadvantage relative to other affluent countries on most measures of health.

Equally concerning are the results of new analyses in this report, *Overcoming Obstacles to Health in 2013 and Beyond*, showing dramatic differences in health among Americans from different income, education, and racial or ethnic groups. These differences—between the United States and other countries, and within our own borders—adversely affect almost everyone, with serious human and economic costs. As a nation, we are failing to achieve our health potential.

This report reviews existing knowledge and interprets new analyses to address three questions:

- **What does the evidence tell us about America's unrealized health potential?**
- **Why are Americans not as healthy as they could be?**
- **What do we know about solutions that can help all Americans reach their full health potential?**

I. What does the evidence tell us about America's unrealized health potential?

- **Evidence from international comparisons:**
Despite spending more on medical care than any other nation, the United States ranks below other wealthy nations on most health indicators, including: life expectancy; rates of mortality at all ages up to age 75; rates of low birthweight and premature birth; and rates of occurrence and mortality due to diabetes, intentional and unintentional injuries, heart disease, and respiratory and infectious diseases (*Figures 1–3*). The United States ranks low even when comparing only relatively affluent people and whites with their counterparts internationally. In addition, the United States has one of the highest child poverty rates among industrialized countries—only Romania's rate is higher (*Figure 21*).
- **Evidence from comparisons within the United States:**
Health varies—often dramatically—according to where people live and their income, educational attainment, and racial or ethnic group.
 - **Health varies by where people live** (*Figures 4 and 5*). Striking geographic differences in health are seen, sometimes even for people living just a few miles apart.
 - **Health varies by income and education** (*Figures 6–12, 16, and 17*). Large differences by income and education levels are seen in life expectancy, infant mortality, overall child health, child obesity, overall adult health, and diabetes and heart disease among U.S. adults. For each of these health indicators, people in the poorest or least educated groups have the worst health, but middle-class people also are less healthy than those who are better off. For example, 25-year-old college graduates can expect to live eight to nine years longer than those who have not completed high school—and two to four years longer than those who have attended but not graduated from college.

- **Health varies by racial or ethnic group as well as by education and income** (*Figures 13–17*).

Dramatic differences in health are also seen across racial or ethnic groups in the United States. Both socioeconomic factors and the experiences of people in different racial or ethnic groups must be considered to understand health and health disparities. For example, life expectancy gaps are even greater when considering race along with education. In 2008, college-graduate whites could expect to live ten to fourteen years longer than blacks who had not finished high school.

II. Why are Americans not as healthy as they could be? What shapes health?

Despite many unanswered questions and ongoing debates, the past two decades have seen major advances in our understanding of how social factors—such as education, income, housing, and neighborhood features—can get into the body to affect health. While medical care and behaviors can greatly influence health, social factors play crucial roles as well. Furthermore, health-related behaviors are shaped by conditions in homes, schools, workplaces, and neighborhoods. Current knowledge from biology and social sciences sheds light on potential causes of the striking health differences between the United States and other countries and among Americans in different social groups.

How social factors can affect health:

- **Communities.** Health and health-related behaviors have been linked with a range of neighborhood features, including: the concentration of poverty; the density of convenience stores, liquor stores, and fast-food restaurants relative to grocery stores selling fresh foods; access to transportation; the condition of buildings; and the presence of sidewalks and places to play or exercise (*Figure 18*).

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to be healthy and to make healthy choices.
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decisions are too high for individuals to overcome,
even with great motivation.
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- **Income.** A family's income affects the health of both parents and children. More income increases access to nutritious food and other health-promoting goods and services, and can reduce stress by making it easier to cope with daily challenges. More income can buy the ability to live in a safe neighborhood with good public schools or to send children to private schools. This can affect a child's ultimate educational attainment, which in turn shapes job prospects and thus income levels in adulthood (*Figures 18, 19 and 22*).
- **Education.** Higher educational attainment can increase people's knowledge, problem-solving, and coping skills, enabling them to make healthier choices. Education may also have powerful health effects by determining job prospects and thus earning potential. And education may also influence health through psychosocial pathways, by shaping people's social networks and perceptions of their own social status, for example (*Figure 23*).
- **Stress.** Neuroscientists have identified physiologic mechanisms that can explain how chronic stress—such as stress associated with long-term economic hardship or family trauma—can get into the body to impair health. Chronic stress during childhood appears to have particularly profound and enduring adverse effects on health throughout life (*Figure 24*).
- **Racial or ethnic group.** Racial or ethnic differences in health can be explained in part by socioeconomic disadvantages that are the persistent legacy of discrimination. Chronic stress related to experiences of racial bias may also contribute to ill health—even without overt incidents of discrimination, and even among affluent and highly educated people of color (*Figures 20 and 25*).
- **Childhood experiences.** Scientific advances have revealed that childhood experiences are particularly critical in shaping people's lifelong chances for good health. A range of biologic mechanisms, including responses to stress, are likely involved. Recent evidence indicates that physical and social conditions can influence whether particular genes are expressed or suppressed, making it clear that our genes alone do not determine our destiny.

III. What do we know about solutions that can help all Americans reach their full health potential?

Medical care can be critically important for maintaining health and treating illness, and behaviors clearly play a key role in shaping health as well. But we now have overwhelming evidence that we must look beyond medical care and traditional approaches to improving behaviors in order to address our nation's unrealized health potential.

All Americans do not have the same opportunities to be healthy and to make healthy choices. Sometimes, barriers to health and to healthier decisions are too high for individuals to overcome, even with great motivation. These obstacles to health can only be addressed by broadening our focus to consider the social and economic factors that determine who becomes sick in the first place.

Health is powerfully shaped by living and working conditions, and people are not randomly sorted into healthy and unhealthy places and circumstances. Geography, climate, culture, and individual choices can shape living and working conditions, but these conditions are also strongly determined by people's economic and social opportunities and resources.

More education generally means better-paying jobs with healthier working conditions and benefits such as medical insurance and sick leave. Higher income makes it easier to cope with everyday challenges, reducing chronic stress. The legacy of racial segregation results in black and Hispanic children growing up in less healthy neighborhoods than those of their white counterparts. These relationships play out across lifetimes and generations.

Opportunities for health early in life can set children on the path to healthy lives. Health is transmitted across generations as families with greater social and economic advantages pass those advantages on to their children, through inherited wealth and educational opportunities that affect later earning potential. In contrast, children

from families disadvantaged by income, education, or racial or ethnic inequality are more likely to grow up in health-damaging conditions that lay the groundwork for poorer health throughout life. They are more likely to experience social disadvantage as adults and as parents providing for their own children.

Good health requires personal responsibility. But far too many Americans—particularly those who are poor and members of disadvantaged racial or ethnic groups—live and work where healthy choices are severely limited.

To improve health, we need to think more broadly about policies that will improve people's daily lives and the broader social and economic contexts that shape them. Strategies that fail to address underlying issues, such as poverty and racial inequality, may have limited and short-lived impact.

This is a timely moment to seek solutions.

Health policy debates have rarely focused on the powerful health effects of non-medical factors such as child care, education, housing, and urban planning, but this is a timely moment to move forward. There is widespread recognition by business, government, and the general public that medical costs must be brought under control. Concerns about global economic competitiveness add to pressures both to reduce medical costs and to have a healthier and thus more productive workforce. And awareness of the middle class's health disadvantage may add momentum for change.

We know enough to act.

Despite questions about the specific strategies that will be most effective and efficient in different contexts, we know enough now to identify promising approaches that should be tested. Our knowledge about what works can only advance if we implement—on an adequate scale—and rigorously evaluate promising models, of which there are many.

Overwhelming evidence tells us that we must broaden our focus beyond medical care and traditional approaches focused on health behaviors. The health

sector cannot improve our nation's health on its own. And experience tells us that, in general, interventions addressing a single factor at a time often fail. Every sector of society—public and private, and including child care, education, housing, transportation, and employment—must be involved in removing obstacles to health. This will require collaboration, and will be difficult to implement and evaluate, but these are challenges that must be tackled.

Effective solutions are likely to require substantial investment, but public and private decision-makers must weigh these expenses against the costs our society incurs every day due to lost opportunities for health. Every nation is unique, but useful lessons can be learned from other countries with better health outcomes and far lower spending on medical care.

The future of America's children is at risk, particularly for those who grow up in environments where good schools are scarce, crime rates are high, access to nutritious food is limited, and aspirations are low. These children are at risk for poor health throughout their lives. Their more limited social and economic opportunities and poorer prospects for health combine to sustain a tragic cycle of disadvantage across lifetimes and generations. In the end, those individuals and society as a whole pay the price.

Perhaps the most important reason to act now is the shared American ideal of fair opportunity for all to pursue life, liberty, and happiness—each of which requires good health. This is a crucial moment for us to take action as a society to strengthen every person's resources and opportunities for making healthy choices, and to remove the avoidable obstacles that divert too many Americans from the road leading to long, healthy, productive, and fulfilling lives.

Despite leading the world in medical care spending, Americans have worse health and shorter lives than people in other affluent nations. Our international ranking has been slipping over time, and it is not only poor Americans who are affected. Middle-class and even wealthy Americans live shorter and sicker lives than their counterparts in other well-off countries.

These disturbing facts are presented in a January 2013 National Research Council and Institute of Medicine report that documented our nation's health disadvantage relative to other affluent countries on most measures of health and at all ages up to 75 years. And, as shown in the following report, new evidence shows that health also varies within the United States, with dramatic differences seen for Americans across income, education, and racial or ethnic groups.

This unrealized health potential takes a terrible toll on our nation's economy in medical care costs and lost worker productivity. Although access to high-quality medical care is essential when we are sick, a growing body of scientific knowledge now tells us that whether we become sick in the first place is determined by how and where we live, learn, work, and play. These conditions, which influence health from birth to death, are powerfully influenced by our social and economic resources and opportunities.

While it is clear that individuals must take responsibility for their own health through the choices they make, not all Americans have the same opportunity to make healthy choices. If we are serious about building a healthier America, we as a *society* must take responsibility for creating more opportunities for all Americans to be healthy and to make healthy choices for themselves and their families. We are still learning about the most effective strategies for making this happen, but we know enough about promising approaches to take action now.

Building on earlier reports issued in 2008¹ and 2009,² this report first summarizes the evidence that we are not living up to our health potential as a nation and then discusses what current knowledge tells us about how we can overcome our nation's major obstacles to health. In particular, it underscores the importance of taking action to give all Americans a healthy start during early childhood, and to create healthy communities that protect and promote health.

This report focuses on three key questions:

What does the evidence tell us about America's unrealized health potential?

Why are Americans not as healthy as they could be?

What do we know about solutions that can help all Americans reach their full health potential?



What does the evidence
tell us about America's
unrealized health potential?

Americans have worse health than people in other wealthy nations, despite spending more on medical care.

For decades, international data have shown that the United States ranks poorly on life expectancy and infant mortality, despite leading the world in per-person spending on medical care. These findings are confirmed in a comprehensive report released in January 2013 by the National Research Council and the Institute of Medicine of the National Academy of Sciences. This report revealed that the United States ranks at or near the bottom among comparable countries on the vast majority of more than 150 standard health indicators.³ Perhaps most striking, worse health was observed among Americans in every age group under the age of 75 when compared with their international counterparts, and even when looking at relatively affluent white Americans.^{4,5}

These patterns of relatively poor health among Americans have not appeared suddenly, without warning; they have been building over decades. Although life expectancy and infant mortality rates have been gradually improving over time within the United States, other affluent countries have seen relatively

greater health gains. As a consequence, the U.S. ranking on life expectancy fell from 15th in 1980 to 27th in 2009 (*Figure 1*), while our ranking on infant mortality dropped from 18th in 1980 to 31st in 2009 (*Figure 2*).

These changes cannot be explained by demographic shifts within the U.S. population during this time, when the proportion of immigrants—who tend to experience relatively good health overall^{7–10}—has grown.¹¹

Our relative health disadvantage also cannot be explained by international differences in wealth. The United States is one of the world's three wealthiest nations,¹² with per capita income approximately 50 percent higher than that of New Zealand and 30 percent higher than that of France, for example; yet Americans on average die nearly three years earlier than our counterparts in those countries.¹²

The evidence also indicates that we are not getting good value for our health care dollar. In 2009, U.S. life expectancy was about five years shorter than what would be predicted based on national per-person health expenditures (*Figure 3*). As a nation, we spent nearly twice as much per person that year on health as did Australia, France, or Sweden, for example, while our average life expectancy at birth was two to three years shorter.¹²

The 2013 National Research Council and Institute of Medicine report found that the United States ranks below all or most other wealthy countries on a wide range of health indicators, including:

- **Life expectancy at birth.**
- **Mortality rates among people ages 50 years and younger**, including rates of infant, maternal, and child mortality.
- **Rates of low birthweight and premature birth**, which strongly predict infant survival, child health and development, and chronic disease risk and premature mortality in adulthood.
- **Prevalence and mortality rates** for heart disease, diabetes, respiratory disease, infectious diseases, and both intentional and unintentional injuries.
- **Disability rates**, or the proportion of people who are limited in their routine, daily activities.

The U.S. health disadvantage relative to other nations was seen at every age younger than 75 years and even when examining relatively affluent people and whites.^{3–6}

Losing Ground in Health: Life Expectancy

figure 1 In 1980, the U.S. ranked 15th among affluent countries in life expectancy (LE) at birth.
By 2009, we had slipped to 27th place.

1980	Rank	2009
LE = 76.7 Iceland	1	Japan LE = 83.0
Japan	2	Switzerland
Netherlands	3	Italy
Norway	4	Spain
Sweden	5	Australia
Switzerland	6	Iceland
Spain	7	Israel
Canada	8	Sweden
Greece	9	France*
Australia	10	Norway
Denmark	11	Canada**
France	12	New Zealand
Italy	13	Luxembourg
Israel	14	Netherlands
LE = 73.7 United States	15	Austria
Finland	16	Korea
Belgium	17	United Kingdom
New Zealand	18	Germany
United Kingdom	19	Greece
Germany	20	Belgium
Ireland	21	Finland
Luxembourg	22	Ireland
Austria	23	Portugal
Portugal	24	Denmark
Slovenia	25	Slovenia
Slovak Republic	26	Chile
Czech Republic	27	United States LE = 78.5
Poland	28	Czech Republic
Chile	29	Poland
Estonia	30	Mexico
Hungary	31	Estonia
Mexico	32	Slovak Republic
Korea	33	Hungary
Turkey	34	Turkey

Sources: 1980 data for Chile and Slovenia are from UNDESA. *2010 Revision of World Population Prospects*. United Nations Development Programme; 2011. <http://hdrstats.undp.org/en/indicators/69206.html>. Accessed May 21, 2013.
All other data are from OECD. OECD Stat, (database); 2012. http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT. Accessed May 21, 2013.

*Estimate

**Latest year available for Canada is 2008

Note: Small differences in rank order may not be meaningful because a number of countries are tied at the same value; tied countries are ranked alphabetically.

Losing Ground in Health: Infant Mortality

figure 2 We are losing ground among affluent countries with respect to important health indicators. Our ranking on infant mortality (IMR) slipped from 18th in 1980 to 31st in 2009.

1980	Rank	2009
IMR = 6.9 Sweden	1	Iceland IMR = 1.8
Japan	2	Japan
Finland	3	Slovenia
Iceland	4	Luxembourg
Norway	5	Sweden
Denmark	6	Finland
Netherlands	7	Czech Republic
Switzerland	8	Denmark
France	9	Greece
Canada	10	Norway
Australia	11	Ireland
Ireland	12	Korea
Luxembourg	13	Spain
Belgium	14	Belgium
United Kingdom	15	Germany
Spain	16	Estonia
Germany	17	Portugal
IMR = 12.6 United States	18	Austria
New Zealand	19	Israel
Austria	20	Netherlands
Italy	21	France*
Slovenia	22	Italy
Israel	23	Australia
Czech Republic	24	Switzerland
Korea**	25	United Kingdom
Estonia	26	Canada***
Greece	27	Hungary
Slovak Republic	28	New Zealand
Hungary	29	Poland
Portugal	30	Slovak Republic
Poland	31	United States IMR = 6.4
Chile	32	Chile
Mexico	33	Turkey
Turkey	34	Mexico

Source: OECD. OECD Stat, (database); 2012. http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT. Accessed May 21, 2013.

*Estimate

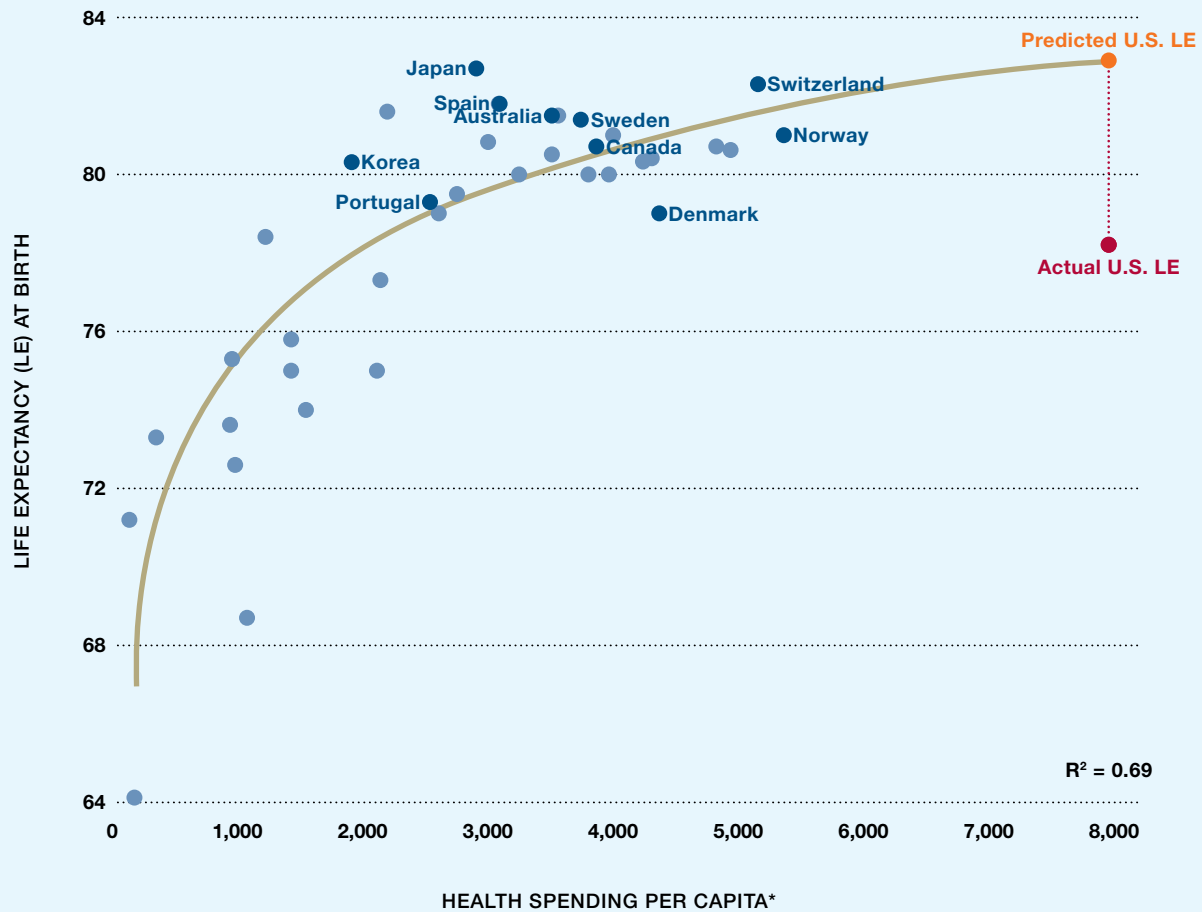
**Data for 1981

***Latest year available for Canada is 2008

Note: Small differences in rank order may not be meaningful because a number of countries are tied at the same value; tied countries are ranked alphabetically.

The U.S. Is Not Getting Good Value for Its Health Dollar

figure 3 The United States spends more money per person on health than any other country, but our lives are shorter—by nearly five years—than expected based on health expenditures.



Source: Data from OECD Health Data 2011; World Bank and national sources for non-OECD countries. Published in OECD. Life Expectancy at Birth. In: *Health at a Glance 2011: OECD Indicators*. Paris: OECD Publishing; 2011. http://dx.doi.org/10.1787/health_glance-2011-4-en. Accessed November, 11, 2012.
 *Figures reflect 2009 or most recently available data in U.S. dollars, purchasing power parity.

Striking differences in health are also seen within the United States—sometimes even for people living just a few miles apart.

Health varies by where we live.

Health can vary markedly based on where people live; it has been said that your ZIP code can tell more about your health than your genetic code.¹³ Comparing mortality across states, for example, the age-adjusted death rate from 2008 through 2010 among whites in Louisiana was 33 percent higher than that among whites in Minnesota. This discrepancy was even greater for blacks, whose death rate was 51 percent higher in Louisiana than in Minnesota.¹⁴

As seen in *Figures 4 and 5*, health can also vary dramatically across even smaller geographic areas.^{15–18} Among people living in the Washington, D.C., area, for example (*Figure 4*), living just a few subway stops apart can translate into a difference in life expectancy of several years.

Babies born to residents of the relatively affluent suburbs in Maryland's Montgomery County and Virginia's Arlington and Fairfax Counties can expect to live six to seven years longer than babies born to residents of Washington, D.C.—just a few subway stops away.

Even more dramatic differences are seen in New Orleans (*Figure 5*), where the average life expectancy at birth varies by as much as 25 years across nearby neighborhoods just a few miles apart.

These place-based health differences reflect the characteristics of communities where people live, learn, work, and play. They are also strongly linked with differences in social factors like income, education, and race or ethnicity.

Health also varies by income and education.

Although not everyone may think of either income or education as important influences on health, a large body of evidence strongly links both of these factors with a wide range of health measures.^{4, 14, 19–28}

Based on the most recent available national data, *Figures 6–12* illustrate striking differences by income or education in multiple health indicators. Although only income or education differences are shown for each indicator, the patterns by income and education are generally similar. The strong links seen here between health and both income and education have been confirmed by many studies, even after accounting for differences in other factors.

- **More education, longer life** (*Figure 6*). The number of years both men and women can expect to live after age 25 varies markedly with educational attainment. On average, 25-year-old college graduates can expect to live eight to nine years longer than their counterparts who have not completed high school and two to four years longer than those who have attended but not graduated from college.
- **More educated mothers, fewer infant deaths** (*Figure 7*). Babies whose mothers have not finished high school are twice as likely to die before reaching their first birthdays as babies born to college graduates.
- **Higher parental income, healthier children** (*Figure 8*). Parents' reports of their children's health are widely used as an indicator of overall child health.^{29–31} Children in poor families (for example, a family of four with a household income under \$22,350 in 2011) are more than four times as likely to be in less than "very good" health as children from families in the most affluent income group studied (with incomes at or greater than \$89,400 for a family of four, for example, corresponding to 400 percent of the Federal Poverty Level).
- **Higher parental income, fewer overweight or obese children** (*Figure 9*). Compared with children from families in the most affluent group, children in poor families are twice as likely—and children in middle-income families (with incomes two to four times the poverty level) nearly 1.4 times as likely—to be overweight or obese. Overweight or obese children are more likely to be overweight or obese adults, with higher risks of developing chronic diseases such as diabetes and heart disease and of dying prematurely.
- **More education, healthier adults** (*Figure 10*). Among adults, self-reported health is widely used to measure health status.^{32, 33} The proportion of adults reporting only poor or fair health decreases with increasing levels of educational attainment. Compared with college graduates, adults who have not graduated from high school are more than six times as likely—and those who have attended but not completed college more than twice as likely—to report being in poor or fair health.
- **More education, lower rates of diabetes** (*Figure 11*). Lower educational attainment is associated with higher rates of diabetes among adults, which in turn is a major cause of severe illness, disability, and premature death. Compared with college graduates, adults who have completed only some college are more than one-and-a-half times as likely—and those without high-school diplomas more than twice as likely—to have diabetes.



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While people in the lowest income and educational groups typically experience the poorest health, even middle-class Americans are less healthy than those with greater social advantages.
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- **More education, lower rates of heart disease** (*Figure 12*). A similar pattern is seen for coronary heart disease, the leading U.S. cause of death. The rate of coronary heart disease among adults who have not graduated from high school is two-and-a-half times that seen among college graduates. The rate among adults with only some college education is one-and-a-half times that of college graduates.

The striking stepwise pattern seen in *Figures 6-12*, showing higher levels of good health with increasing levels of income or education, is often referred to as the *socioeconomic gradient in health*. The health differences across education and income groups are not only seen when comparing the least and most socially advantaged groups. Even people in groups that are typically considered to be middle-class (those with some college education, and those with incomes from two to almost four times the federal poverty level) have significantly worse health outcomes than those with higher levels of income or education.

The socioeconomic gradients are not necessarily linear, however.³⁴ Increases in income typically are associated with bigger gains in health at the lower end of the income scale and may not be associated with similar health improvements among those with very high incomes.³⁴

Health varies by racial or ethnic group as well as by income and education.

Dramatic differences in health among racial or ethnic groups in the United States have also been repeatedly observed across a wide range of health indicators, from the beginning of life through old age.^{14, 35} The largest and most consistent health disparities typically are observed comparing whites with blacks and with American Indians (when data are available),^{14, 36, 37} although Hispanics and some Asian subgroups also fare poorly on important health indicators such as diabetes, certain cancers, and homicide.³⁸

For example:

- Blacks have the shortest average life expectancy at birth among the racial or ethnic groups for which these statistics are frequently reported (*Figure 13*), although some experts believe that Latino deaths are underreported.^{38, 39} Health information on American Indians or Alaska Natives is often unavailable, but the Indian Health Service estimates that life expectancy among American Indians or Alaska Natives in 2005–2007 was approximately four years shorter than the national average.⁴⁰

- Life expectancy gaps are even greater when considering race along with education; for example in 2008, whites with the highest levels of schooling (16 or more years) could expect to live much longer than blacks with the lowest levels of schooling (fewer than 12 years)—14.2 years longer for men and 10.3 years longer for women.²³
- Babies born to black mothers are more than twice as likely and those born to American Indian or Alaska Native mothers more than one-and-a-half times as likely to die before reaching their first birthdays, compared with babies born to white mothers (*Figure 14*).
- Blacks generally experience the worst health on most measures; an exception is self-reported health status, on which American Indians or Alaska Natives and Hispanics fare worse (*Figure 15*).

Figures 16 and 17 provide important additional information about differences in health across racial or ethnic groups. When differences by income (*Figure 16*) or education (*Figure 17*) in self-reported health status among adults are displayed separately for different racial or ethnic groups, we again see the clear stepwise socioeconomic gradients in health for every racial or ethnic group.

Socioeconomic gradients like these have been observed for multiple health indicators at different life stages among non-Hispanic blacks and whites^{41–45} and, less consistently, among Hispanics.^{25, 28} These patterns indicate the importance of considering the role of *both* socioeconomic factors and racial or ethnic groups in health disparities.

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Striking health disparities by education and income are seen in all racial or ethnic groups.



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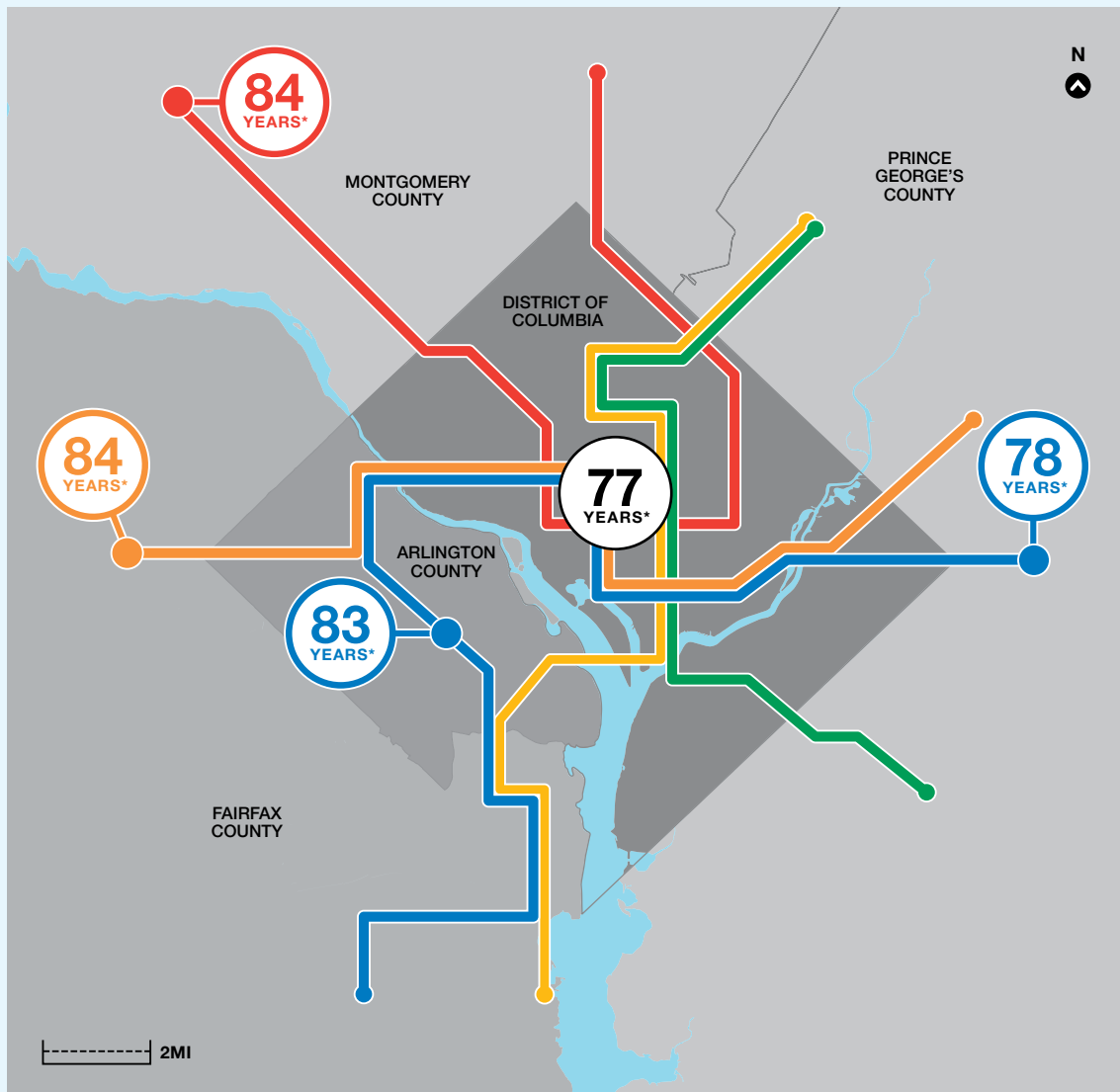
On average, 25-year-old college graduates can expect to live eight to nine years longer than their counterparts who have not completed high school and two to four years longer than those who have attended but not graduated from college.

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WASHINGTON, D.C.:

Short Distances to Large Disparities in Health

figure 4 Babies born to mothers in Maryland’s Montgomery County and Virginia’s Arlington and Fairfax Counties can expect to live six to seven years longer than babies born to mothers in Washington, D.C.—just a few subway stops away.

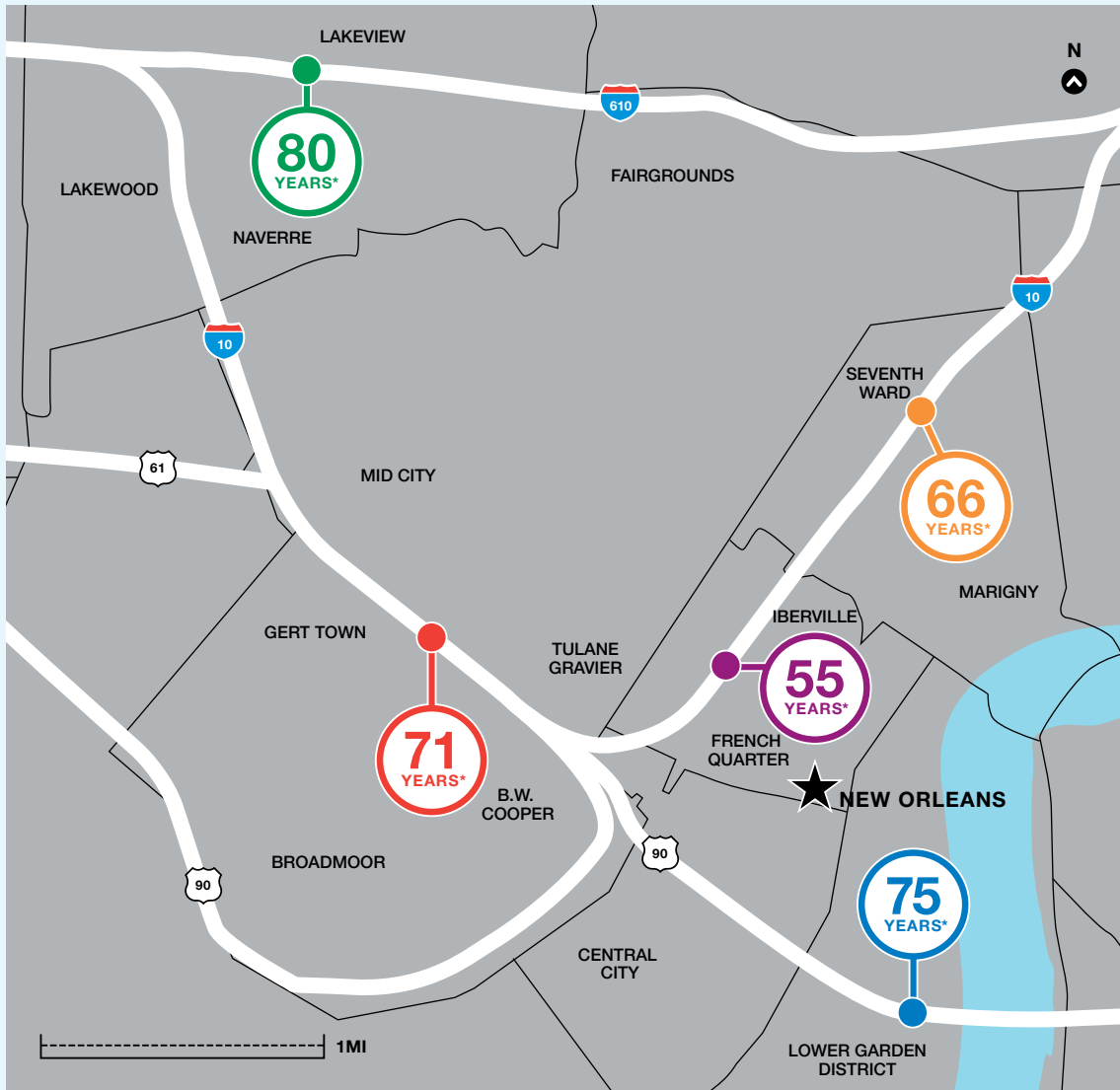


Source: Prepared by Woolf et al., Center on Human Needs, Virginia Commonwealth University using Centers for Disease Control and Prevention, National Center for Health Statistics, CDC WONDER Online Database, released January 2013. Data are compiled from Compressed Mortality File 1999-2010 Series 20 No. 2P, 2013. Accessed at <http://wonder.cdc.gov/cmfi-icd10.html>.

*Life expectancy at birth

NEW ORLEANS:
 Short Distances to Large Disparities in Health

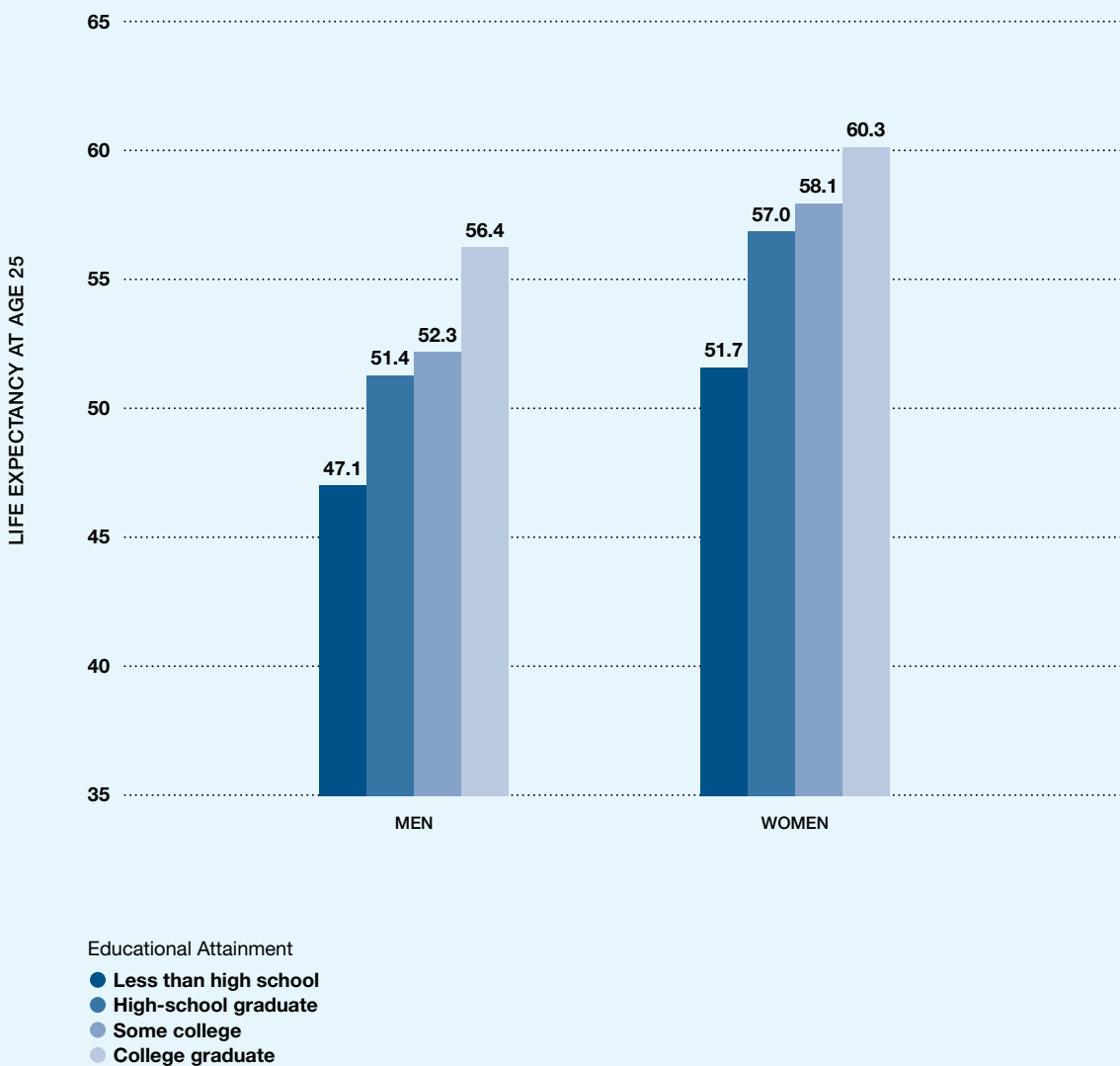
figure 5 The average life expectancy for babies born to mothers in New Orleans can vary by as much as 25 years across neighborhoods just a few miles apart.



Source: Prepared by Woolf et al., Center on Human Needs, Virginia Commonwealth University using Evans BF, Zimmerman E, Woolf SH, Haley AD. *Social Determinants of Health and Crime in Post-Katrina Orleans Parish: Technical Report*. Richmond, VA: Virginia Commonwealth University Center on Human Needs; 2012.
 *Life expectancy at birth

More Education, Longer Life

figure 6 For both men and women, more education often means longer life.* On average, 25-year-old college graduates can expect to live eight to nine years longer than their counterparts who have not completed high school and two to four years longer than those who have attended but not graduated from college.

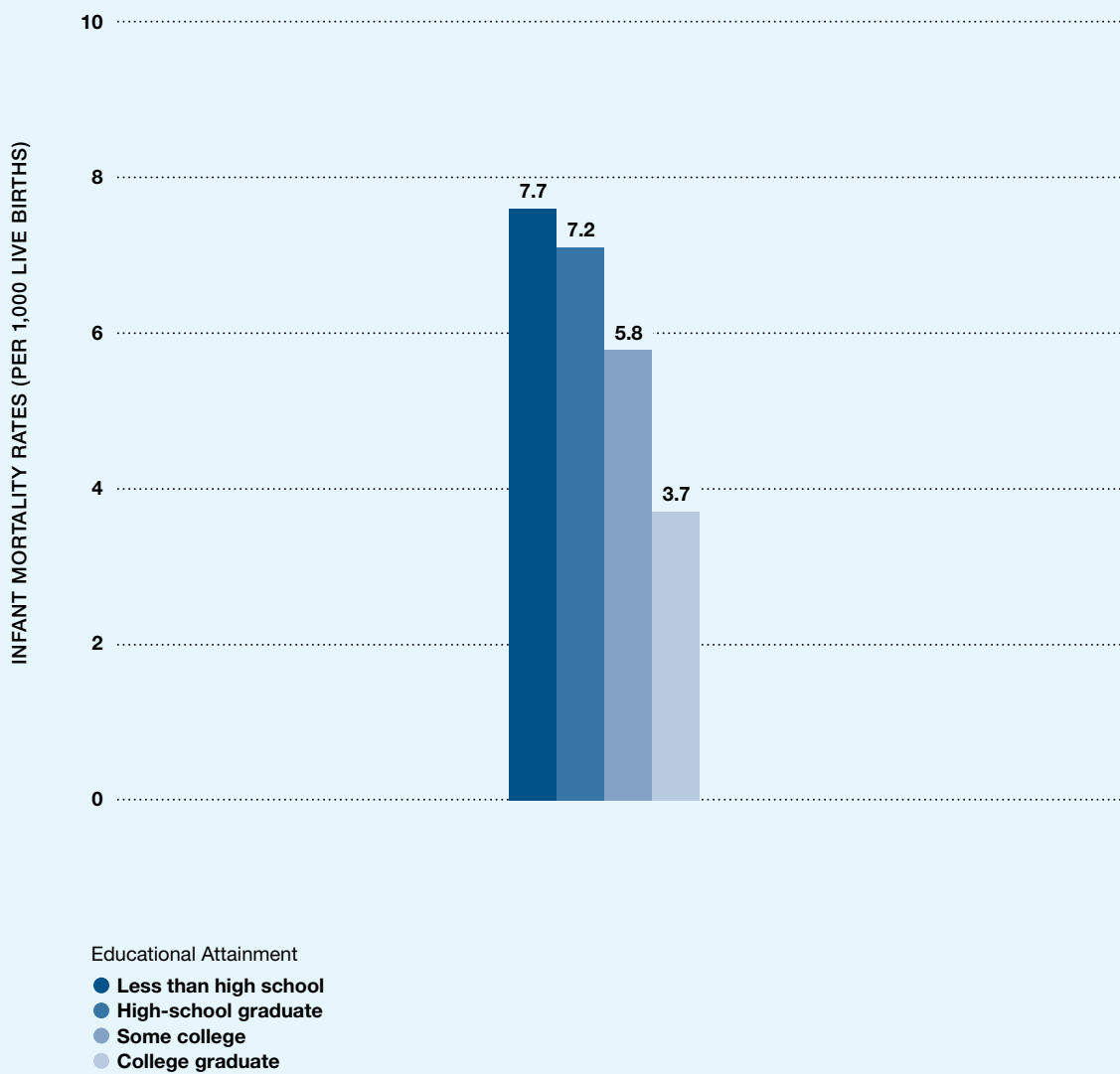


Source: CDC/NCHS, *National Health Interview Survey Linked Mortality File*, 2006. Published in National Center for Health Statistics. *Health, United States 2011: With Special Feature on Socioeconomic Status and Health*. Hyattsville, MD: 2012. <http://www.cdc.gov/nchs/data/hus/2011/fig32.pdf>. Accessed November 29, 2012.

*This chart describes the number of years that adults in different education groups can expect to live beyond age 25. For example, a 25-year-old man with a high school diploma can expect to live 51.4 additional years and reach an age of 76.4 years.

More Educated Mothers, Fewer Infant Deaths

figure 7 Babies born to mothers who have not finished high school are twice as likely to die before their first birthdays as babies born to college graduates.



Source: Mathews TJ, MacDorman MF. Infant Mortality Statistics From The 2009 Period Linked Birth/Infant Death Dataset. *National Vital Statistics Reports*; vol 60 no 5. Hyattsville, MD: National Center for Health Statistics; 2013. www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_08.pdf. Accessed February, 14, 2013.

Higher Parental Income, Healthier Children

figure 8 Compared with children in the highest-income families, children in poor families are more than four times as likely to be in less than “very good” health.

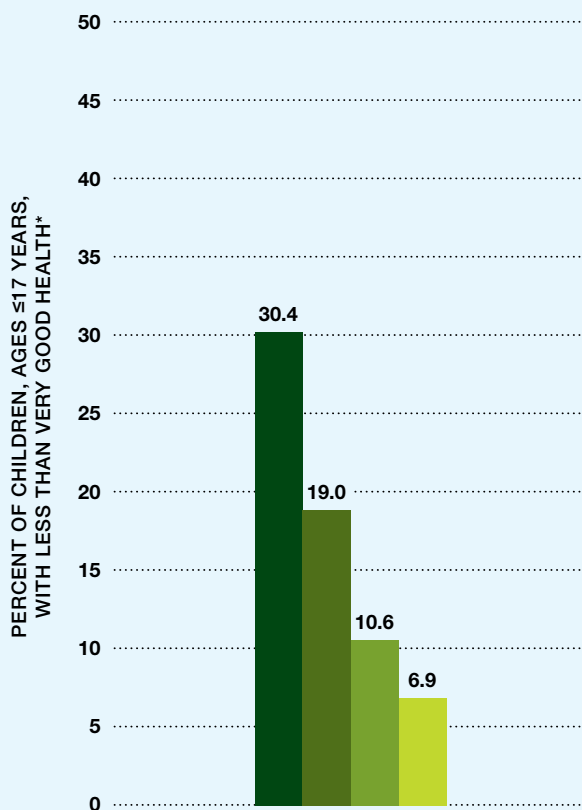
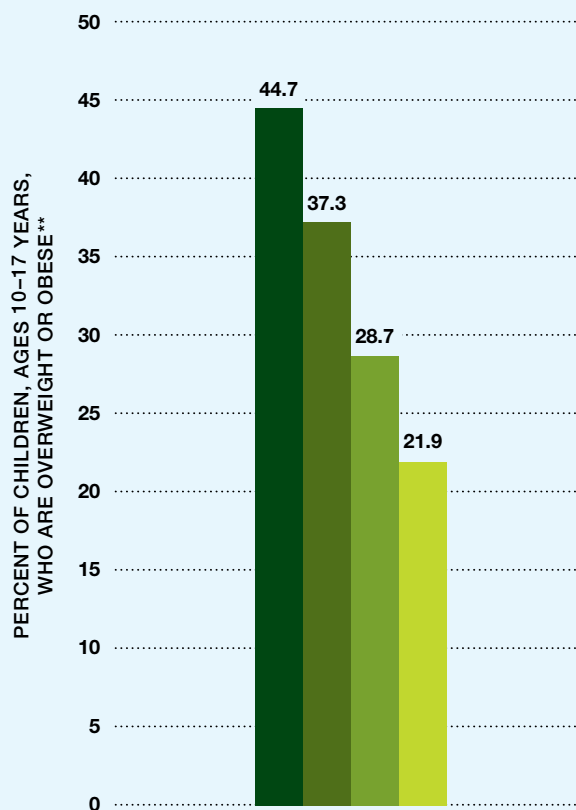


figure 9 Children in poor families are twice as likely to be overweight or obese as children in the highest-income families.



Family Income
(Percent of Federal Poverty Level)

- <100%
- 100-199%
- 200-399%
- ≥400%

Figure 8 Source: *National Survey of Children's Health. NSCH 2011/2012*. Data query from the Child and Adolescent Health Measurement Initiative, Data Resource Center for Child and Adolescent Health website, <http://www.childhealthdata.org/browse/survey/results?q=2456&r=1&g=458>. Accessed May 10, 2013.

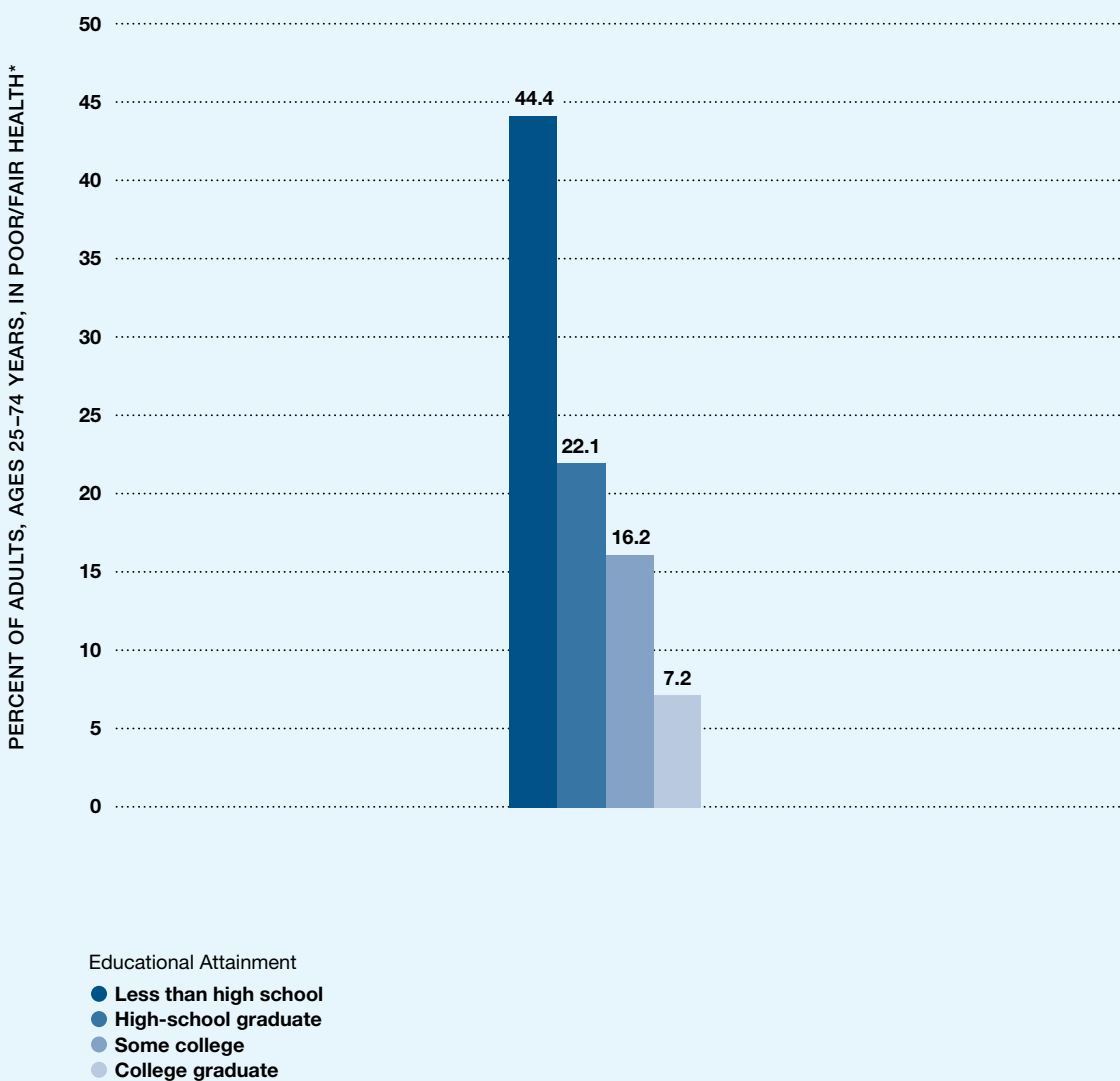
*Based on parental assessment and measured as poor, fair, good, very good, or excellent. Health reported as less than very good was considered to be less than optimal.

Figure 9 Source: *National Survey of Children's Health. NSCH 2011/2012*. Data query from the Child and Adolescent Health Measurement Initiative, Data Resource Center for Child and Adolescent Health website, www.childhealthdata.org/browse/survey/results?q=2415&r=1&g=458. Accessed May 10, 2013.

**Weight status of children ages 10-17 years only, based on Body Mass Index (BMI) for age. Overweight or obese is a BMI in the 85th percentile or above.

More Education, Healthier Adults

figure 10 Compared with college graduates, adults who have not finished high school are six times as likely—and those who have attended but not graduated from college more than twice as likely—to be in poor or fair health.



Source: Analyses by C. Cubbin, University of Texas at Austin. Data from Centers for Disease Control and Prevention. *Behavioral Risk Factor Surveillance System Survey Data*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2008–2010.

*Age Adjusted. Based on self-report and measured as poor, fair, good, very good, or excellent.

More Education, Less Chronic Disease

figure 11 Adults who have not finished high school are more than twice as likely as college graduates to have diabetes.

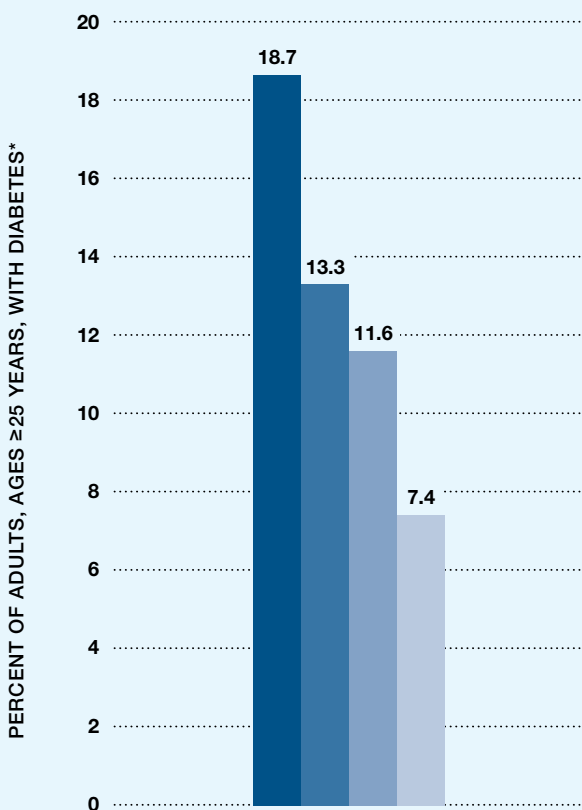
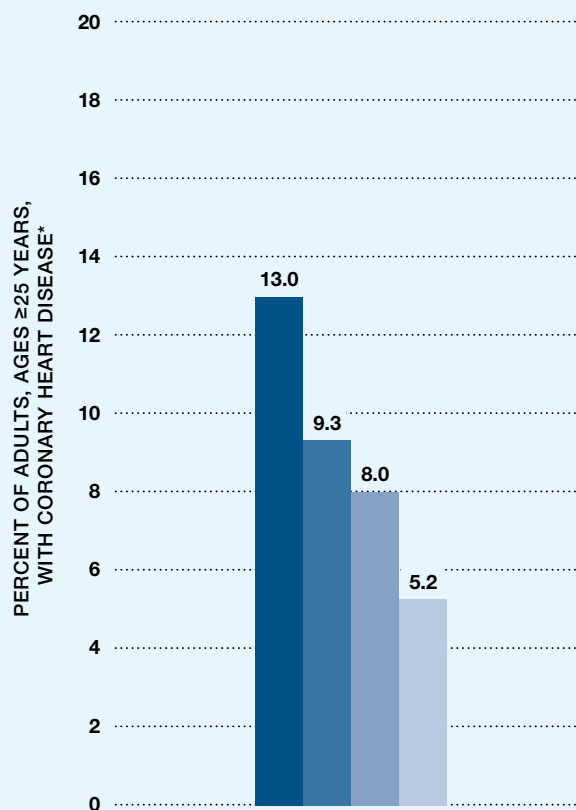


figure 12 The rate of coronary heart disease among adults who have not graduated from high school is two-and-a-half times that among college graduates.



Educational Attainment

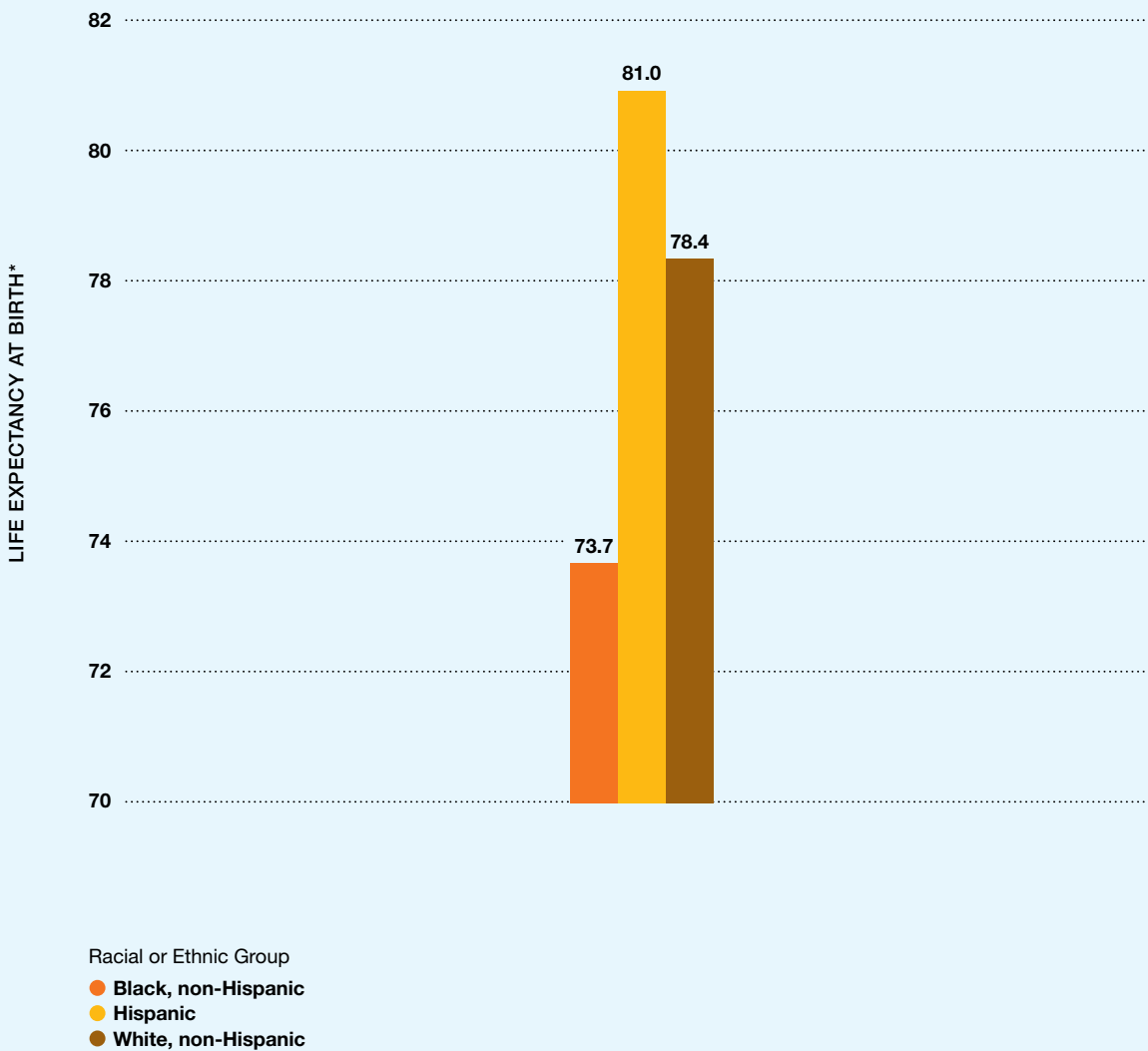
- Less than high school
- High-school graduate
- Some college
- College graduate

Source: Analyses by C. Cubbin, University of Texas at Austin. Data from Centers for Disease Control and Prevention. *Behavioral Risk Factor Surveillance System Survey Data*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2008–2010.

* Age-adjusted

Life Expectancy at Birth Varies Across Racial or Ethnic Groups

figure 13 Blacks have the shortest average life expectancy at birth among the racial or ethnic groups for which these statistics are frequently reported. On average, a black baby can expect to live seven years less than a Hispanic baby and nearly five years less than a white baby.

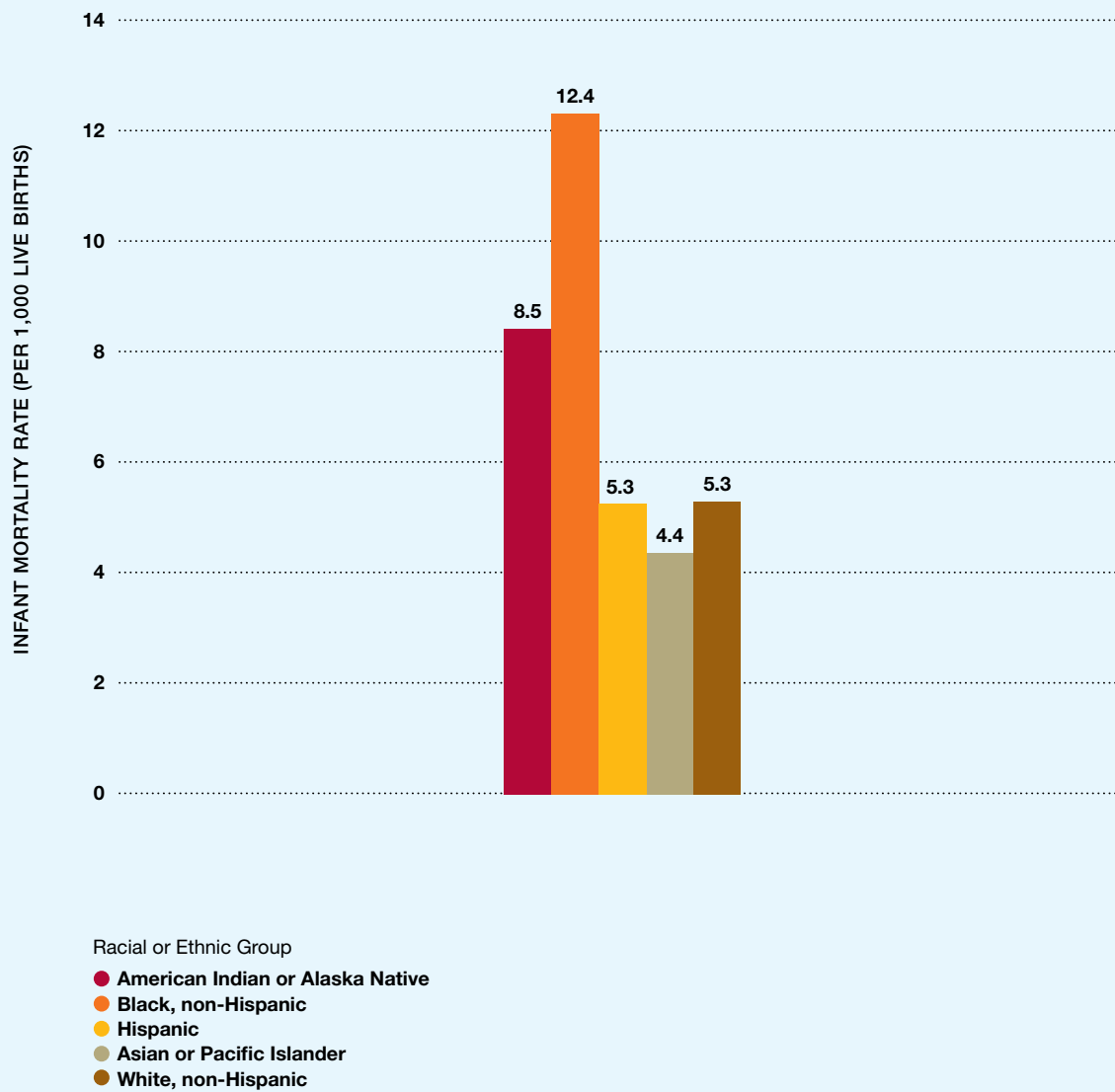


Source: Arias E. United States Life Tables, 2008. *National Vital Statistics Reports*; vol 61 no 3. Hyattsville, MD: Centers for Disease Control and Prevention, National Center for Health Statistics; 2012.

* Age-adjusted

Infant Mortality Rates Vary Across Racial or Ethnic Groups

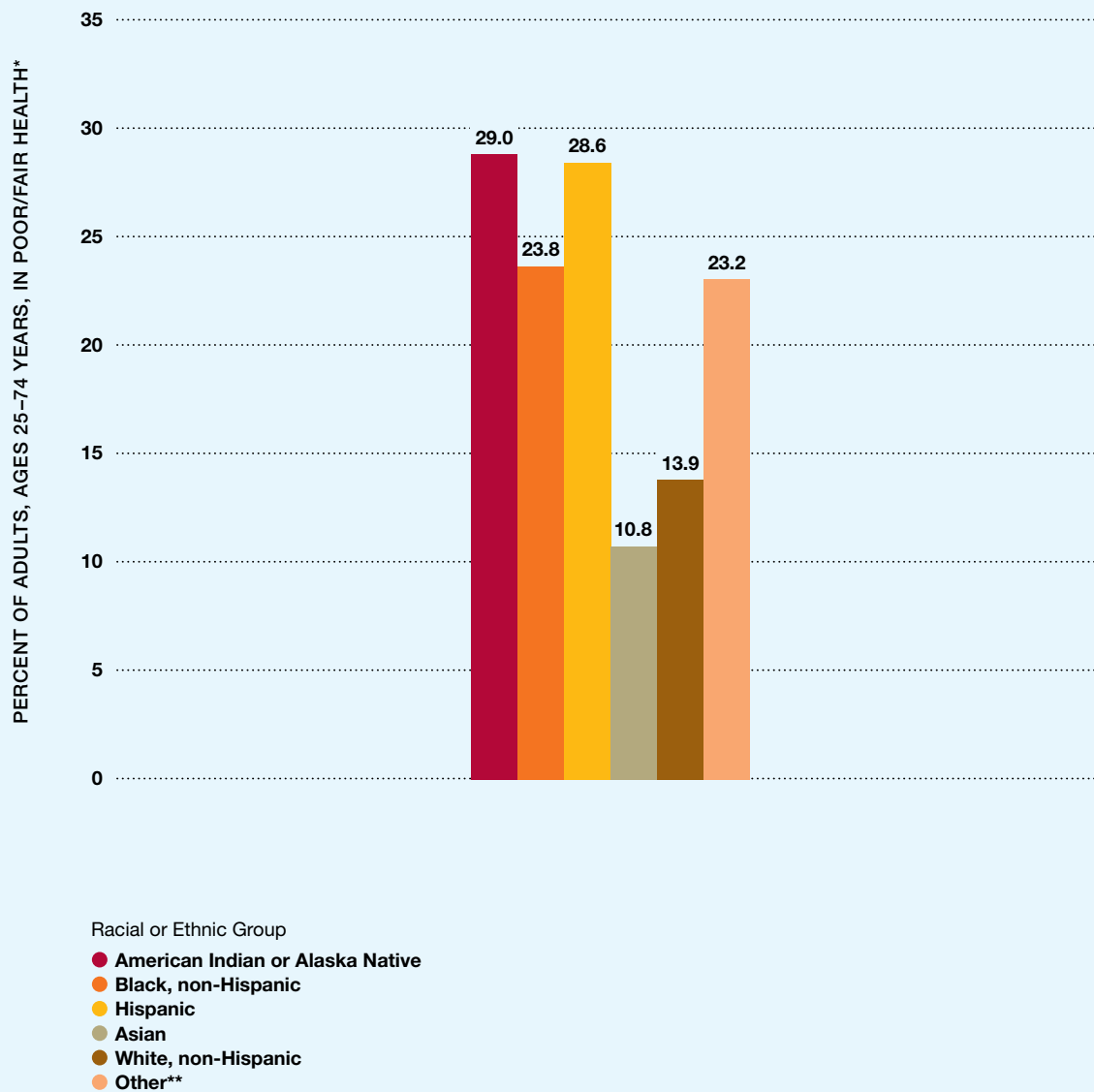
figure 14 Compared with babies born to white mothers, babies born to black mothers are more than twice as likely, and those born to American Indian or Alaska Native mothers more than one-and-a-half times as likely, to die before reaching their first birthdays.



Source: Mathews TJ, MacDorman MF. Infant Mortality Statistics From The 2009 Period Linked Birth/Infant Death Data Set. *National Vital Statistics Reports*; vol 60 no 5. Hyattsville, MD: National Center for Health Statistics; 2013.

Health Status Also Varies Across Racial or Ethnic Groups

figure 15 American Indians or Alaska Natives, Hispanics, and blacks all self-report significantly worse health than whites.



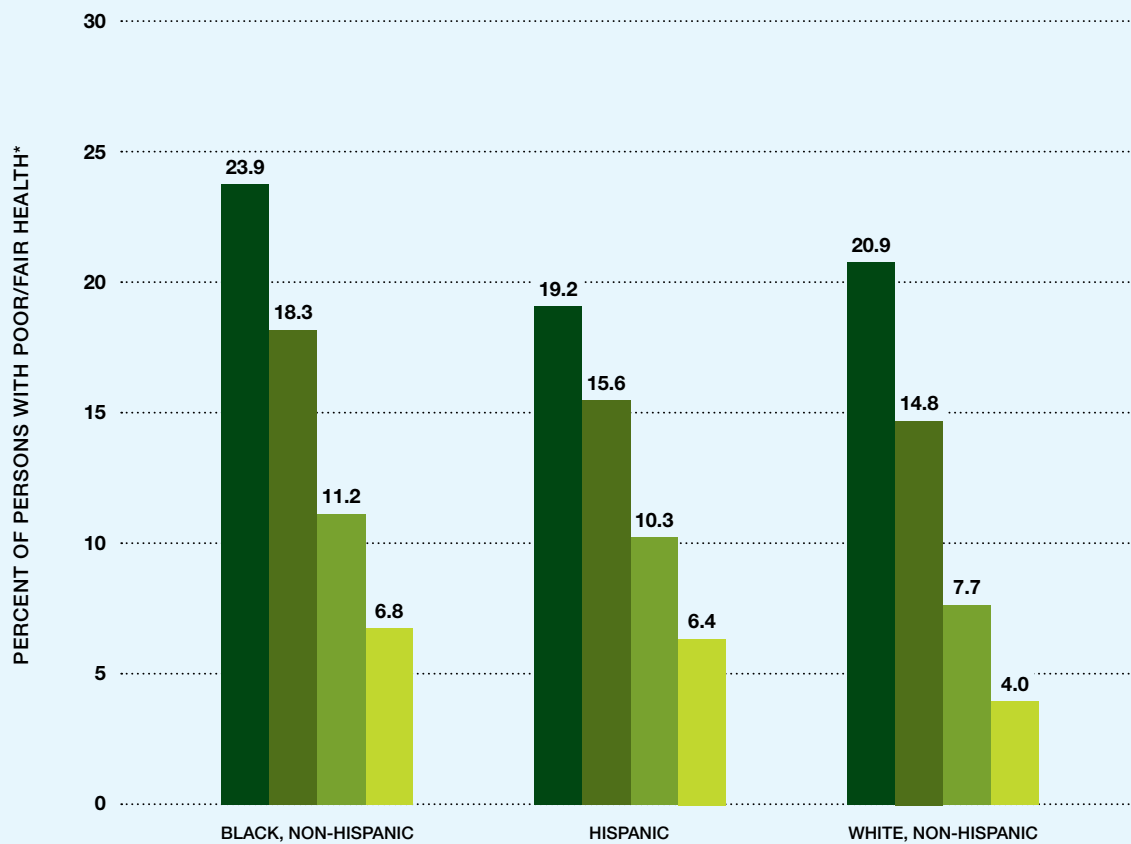
Source: Analyses by C. Cubbin, University of Texas at Austin. Data from Centers for Disease Control and Prevention. *Behavioral Risk Factor Surveillance System Survey Data*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2008–2010.

* Age-adjusted. Based on self-report and measured as poor, fair, good, very good, or excellent.

** Defined as any other or more than one racial or ethnic group, including any group with fewer than 3 percent of surveyed adults nationally in 2008–2010.

Income Is Linked With Health Across Racial or Ethnic Groups

figure 16 Differences in health status by income do not simply reflect differences by race or ethnicity; differences in health by income can be seen within each racial or ethnic group. Both income and racial or ethnic group matter for health.



Family Income
(Percent of Federal Poverty Level)

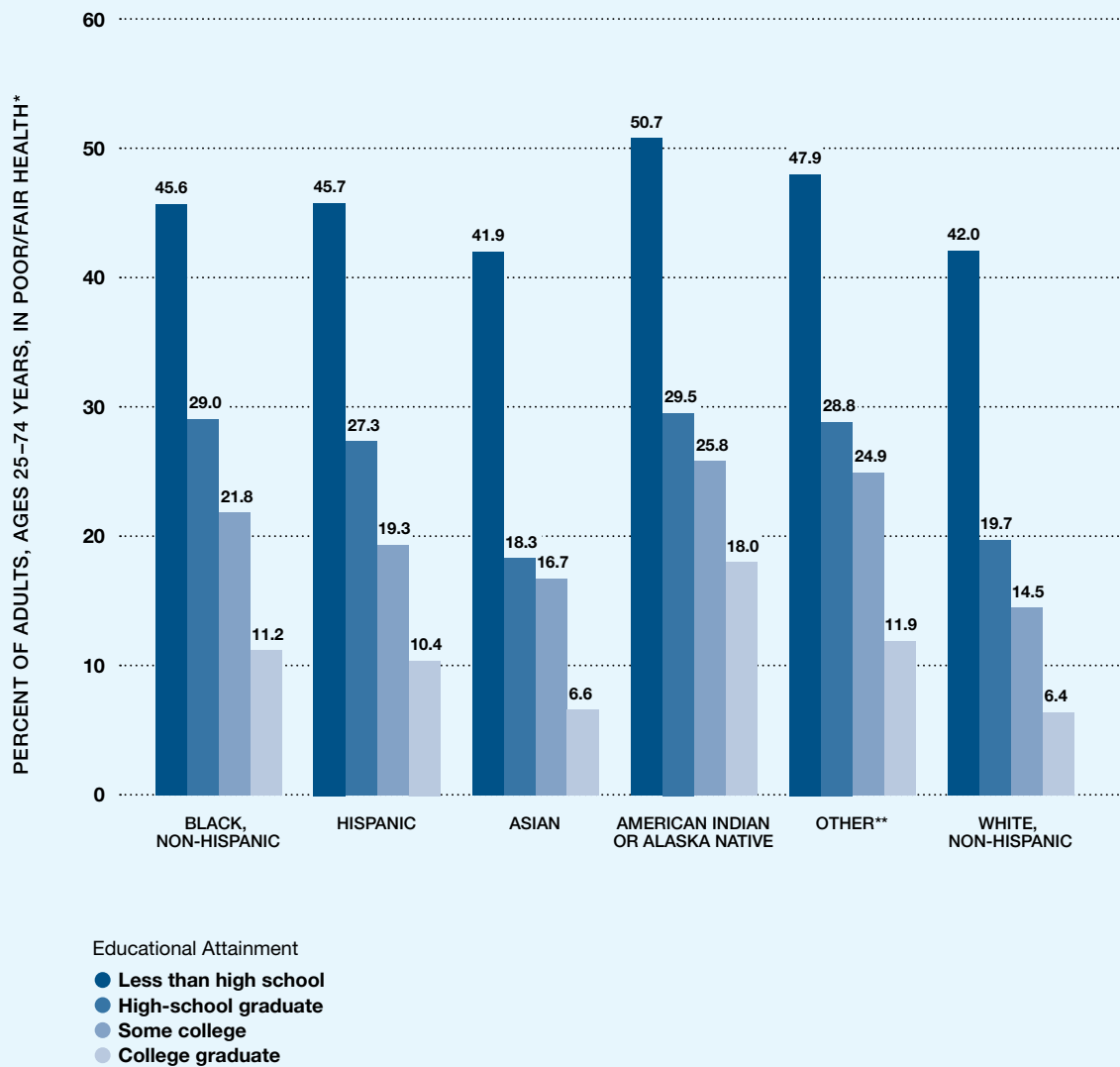
- <100%
- 100-199%
- 200-399%
- ≥400%

Source: CDC/NCHS. *National Health Interview Survey 2010, Family Core And Sample Adult Questionnaire*. Published in National Center for Health Statistics. *Health, United States 2011: With Special Feature on Socioeconomic Status and Health*. Hyattsville, MD: 2012. www.cdc.gov/nchs/data/hus/2011/056.pdf. Accessed November 29, 2012.

* Age-adjusted. Based on self-report and measured as poor, fair, good, very good, or excellent.

Education Is Linked With Health Across Racial or Ethnic Groups

figure 17 Differences in health status by education do not simply reflect differences by race or ethnicity; differences in health by education can be seen within each racial or ethnic group. Both education and racial or ethnic group matter for health.



Source: Analyses by C. Cubbin, University of Texas at Austin. Data from Centers for Disease Control and Prevention. *Behavioral Risk Factor Surveillance System Survey Data*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2008–2010.

*Age-adjusted. Based on self-report and measured as poor, fair, good, very good, or excellent.

**Defined as any other or more than one racial or ethnic group, including any group with fewer than 3 percent of surveyed adults nationally in 2008–2010.

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Reducing avoidable health differences will not only improve quality of life for tens of millions of Americans, but also may help bring escalating medical costs under control.

.....

Our nation's unrealized health potential has significant economic costs.

The human impacts of health are clear. Health is essential for living a long life with good quality and reaching one's fullest potential. The economic impacts of health have been less well recognized but are becoming increasingly apparent. A healthy workforce is more productive, which can increase economic growth rates over the long term and raise the nation's standard of living for almost everyone.

Furthermore, if current trends continue, total national health expenditures will increase from 17.4 percent of the Gross Domestic Product in 2009¹² to more than 19 percent by 2019.⁴⁶ Higher medical care costs are passed on by insurers to consumers in the form of higher premiums, deductibles, and co-payments.

The costs of medical care and insurance are now out of reach for many American households, even pushing some into bankruptcy. These costs are draining employers' resources, threatening the bottom line of many American businesses. Federal, state, and local health care spending is already straining government budgets, and our society's aging and the obesity epidemic will further increase costs of care.

Improving health may increase some medical care costs as more people live longer. However, if our goal is for Americans to live healthier as well as longer lives, the experiences of other affluent countries with better health outcomes and lower medical care expenditures suggest that this goal is both achievable and affordable. Reducing avoidable health differences—both between the United States and other wealthy countries, as well as within our own population—will not only improve quality of life for tens of millions of Americans, but may also help bring escalating medical care costs under control.



Why are Americans not as healthy as they could be?

The evidence presented above clearly demonstrates that, as a nation, we are not as healthy as we could be. Despite impressive overall health gains during recent decades, marked by increasing life expectancy and declining rates of some important chronic diseases, most health inequalities, both within the United States and relative to other affluent nations, do not appear to have narrowed. In fact, some studies have shown widening gaps in indicators, including childhood mortality and life expectancy.^{23, 47} For the first time, we are raising a generation of children who may live sicker, shorter lives than their parents.⁴⁸

To find promising approaches for achieving our nation’s health potential, we need to re-examine what we know about the factors that shape health and the steps we can take to improve health and reduce health disparities.

In this section we discuss pathways through which *social factors* like income, education, employment, child care, neighborhood conditions, and racial or ethnic inequality can shape health. These are factors apart from medical care that affect health in important ways and can be influenced by social policies.

Despite many unanswered questions and areas of continued debate among experts, the past two decades have seen major advances in our understanding of how these kinds of social factors “get into the body” to affect health. Here we focus on what current knowledge from biology and the social sciences tells us about the likely causes of the striking health differences across social groups.

.....
Social factors are factors apart from medical care—like income, education, employment, child care, neighborhood conditions, and racial or ethnic inequality—that shape health in important ways and can be influenced by social policies.
.....

What shapes health?

Many factors influence health. Age clearly matters; most people can expect to be less healthy at age 80 than they were at age 20. Sex matters, too—for example, men don’t experience medical complications related to childbirth and rarely have breast cancer. Genes also can matter; some diseases occur more often among people with ancestors from certain parts of the world. But individuals have no control over their age or over the sex and genetic make-up with which they were born, despite increasing recognition of how our physical and social environments shape the expression (or suppression) of our genes to affect health.

What about the role of medical care and health-related behaviors?

When considering important influences on health that can be modified, most people think first of *medical care*. In fact, many people use the terms *health* and *health care* almost interchangeably; to avoid that confusion, we generally use *medical care* when referring to clinical services.

Large and widespread socioeconomic and racial or ethnic disparities in medical care have been well documented^{49, 50} and are likely to contribute to the observed socioeconomic and racial or ethnic differences in health seen in the United States. While efforts to improve the quality of and access to medical care for all Americans are clearly important, current scientific knowledge tells us that achieving America’s unrealized health potential will require focusing on a broader set of factors.

Over the past few decades, research has repeatedly shown how our *behaviors* can either protect us from or increase our risks of ill health, and behaviors have been recognized as major causes of preventable death and ill health.⁵¹⁻⁵³ The general public has become increasingly aware of important ways in which our personal health-related behaviors—habits such as exercising regularly, eating a nutritious diet, getting enough sleep, not smoking, and limiting alcohol intake—can influence our health.

Despite this increased awareness and improvements over time, however, many Americans continue to practice behaviors that contribute significantly to poor health and early death.^{54, 55} In 2011, for example, fewer than half of U.S. adults had recommended levels of leisure-time physical activity and nearly one-fifth were smokers.⁵⁶

Until recently, most efforts to improve health-related behaviors have focused on health education—that is, ensuring that people are informed about the importance of making healthier decisions about their own behaviors. Although these approaches have resulted in many improvements in health overall, as reflected in average national statistics, little or no progress has been made in reducing large differences in health across social groups.⁵⁷ For some key health indicators, these differences have actually widened.^{14, 58-60}

New knowledge in recent years has greatly increased our understanding of how physical and social environments can shape behaviors. Our behaviors reflect choices we make as individuals, but the contexts in which we live, learn, work, and play influence both the choices available to us and our ability to choose paths that lead to health. Children—who cannot choose their environments—are particularly vulnerable to the health-damaging effects of adverse physical and social conditions.

How can the communities we live in shape our health?

As illustrated by the maps shown in *Figures 4 and 5*, health in the United States can vary markedly depending on where people live. While there is ongoing debate about whether the well-documented links between place and health primarily reflect characteristics of communities themselves or of the people who live in them,¹⁵ in fact these are hard to disentangle. Most public health experts would agree that both places and people matter for health.

Features of communities have been linked with a wide range of health conditions.^{15, 61} *Figure 18* displays several features of communities that could affect health. Physical and social conditions in communities may be overtly hazardous—for example, polluted or crime-infested. They also can severely limit the choices and resources available to residents. Studies have shown that neighborhood conditions can affect whether people eat healthy diets,^{17, 62-65} smoke,⁶⁶⁻⁶⁹ and adopt protective reproductive health practices.⁷⁰⁻⁷²

A person's ability—and motivation—to follow a healthy diet, exercise, and avoid smoking and excessive drinking may be constrained by living in a community without access to full-service grocery stores and safe areas for exercise; where intensive tobacco and alcohol advertising targets poorer and minority youth, and liquor stores and convenience stores are

plentiful; and where healthy role models are scarce. In contrast, positive aspects of communities—such as the availability of affordable nutritious food, sidewalks and playgrounds, and after-school physical activity programs for children and youth—may promote health by making it easier to adopt and maintain healthy behaviors.

Social and economic conditions in communities may also influence health by affecting access to employment opportunities and public resources including efficient transportation, medical care facilities, an effective police force, and good schools. Strong ties and trust among people within neighborhoods have also been associated with better health.¹⁵

Not all communities provide these opportunities and resources equally, however. As seen in *Figures 19 and 20*, access to health-promoting community conditions varies sharply with household income and across racial-ethnic groups. Housing discrimination has limited the ability of many blacks and Hispanics to live in health-promoting communities, for example; at the same income level, blacks and Hispanics are more likely than whites to live in neighborhoods with concentrated poverty.⁷³ The concentration of substandard housing in less-advantaged neighborhoods further compounds racial and ethnic as well as socioeconomic disparities in health.

Children may be particularly vulnerable to unhealthy conditions in their communities, with consequences for health both in childhood and later in life. Escaping health-damaging physical and social environments can be challenging because these communities typically lack employment opportunities and services—including good schools—that can lead to upward mobility. There may also be fewer positive role models for children and youth, and more peer pressure encouraging risky behaviors. Children in more supportive neighborhoods are more likely to receive adult guidance and less likely to engage in health-damaging behaviors like smoking.⁷⁴

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Community environments can severely
limit—or expand—opportunities to be
healthy. They can determine the choices
and resources available to their residents.
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Income Influences Community Options. How Can Communities Affect Health?

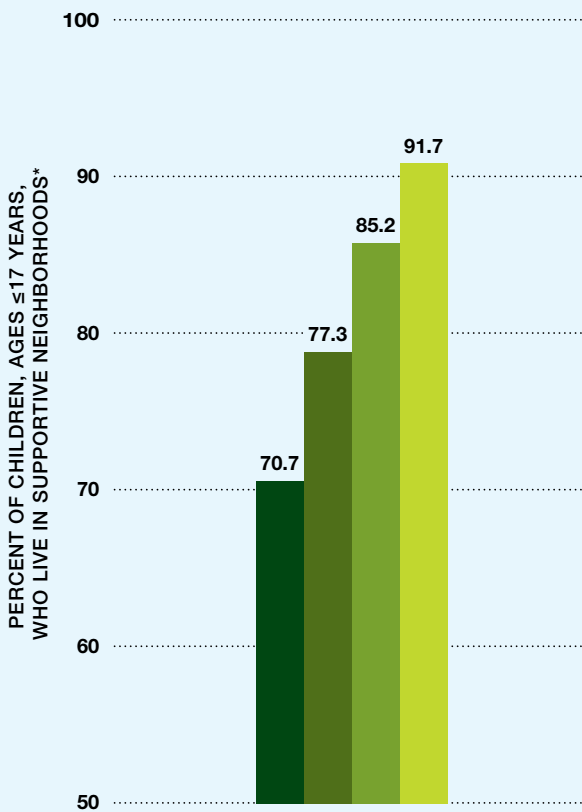
figure 18 A family's income determines whether it can afford to rent or buy a home in a community with health-promoting features. Many features of communities have been linked with health and health-related behaviors.



A Child's Chances of Living in a Supportive Neighborhood Vary by Income and Racial or Ethnic Group

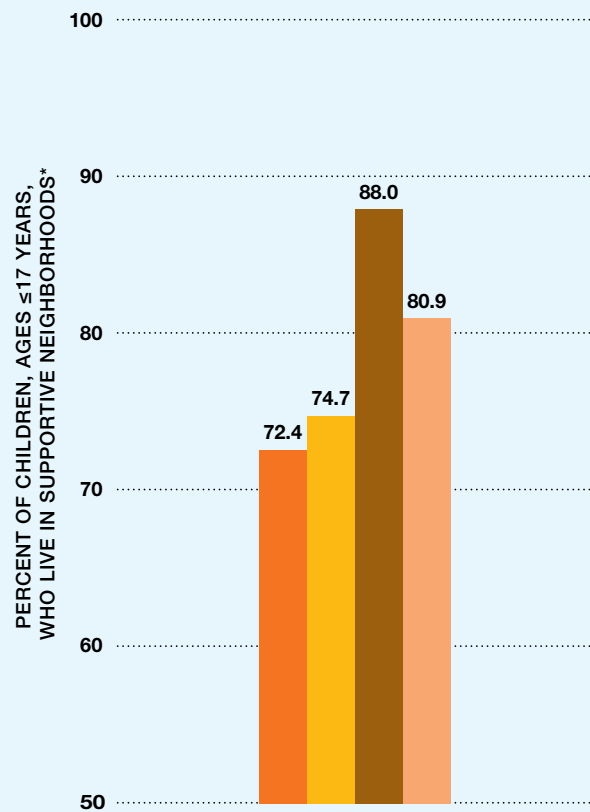
figure 19 Children from higher-income families are more likely to live in supportive neighborhoods.

figure 20 Children's chances of living in supportive neighborhoods vary by racial or ethnic group.



Family Income
(Percent of Federal Poverty Level)

- <100%
- 100-199%
- 200-399%
- ≥400%



Racial or Ethnic Group

- Black, non-Hispanic
- Hispanic
- White, non-Hispanic
- Other

Figure 19 Source: *National Survey of Children's Health. NSCH 2011/2012*. Data Query From the Child and Adolescent Health Measurement Initiative. Data Resource Center for Child and Adolescent Health, www.childhealthdata.org/browse/survey/results?q=2523&r=1&g=458. Accessed May 10, 2013.

Figure 20 Source: *National Survey of Children's Health. NSCH 2011/2012*. Data Query From the Child and Adolescent Health Measurement Initiative. Data Resource Center for Child and Adolescent Health, www.childhealthdata.org/browse/survey/results?q=2523&r=1&g=456. Accessed May 10, 2013.

*The NSCH defined a supportive neighborhood as one in which there are ties of trust and mutual support among residents.

How can income affect health?

A higher proportion of people—and particularly children (*Figure 21*)—in the United States lives in poverty compared with most other affluent countries; more than one in five American children is poor.⁷⁵ Links between poverty and ill health have been recognized for centuries.⁷⁶ But the patterns described earlier in this report—the gradients in health seen across income levels—suggest that the association between income and health goes beyond the health-damaging effects of living in poverty.

One obvious way in which both income and wealth—a person’s accumulated financial assets—can affect health is through access to necessary medical care, making it possible to buy medical insurance or pay out-of-pocket for care. Income also plays an important role in shaping a person’s access to other health-promoting conditions, allowing families to live in hazard-free housing and in safer communities with ample opportunities for physical activity. Income and wealth may also be related to health through pathways involving stress (discussed in more detail below), making it easier to meet life’s day-to-day challenges and to handle unexpected emergencies when they arise. Having more economic resources means more and better options, with less struggle.

The advantages or disadvantages associated with economic resources are likely to have long-lasting health effects, from childhood throughout life and in future generations as well. Current knowledge about physiology suggests that nutrition,⁷⁷⁻⁷⁹ physical activity,⁷⁹⁻⁸¹ and stress⁸²⁻⁸⁴ early in life can affect lifelong health, in some cases shaping health outcomes years and decades later.

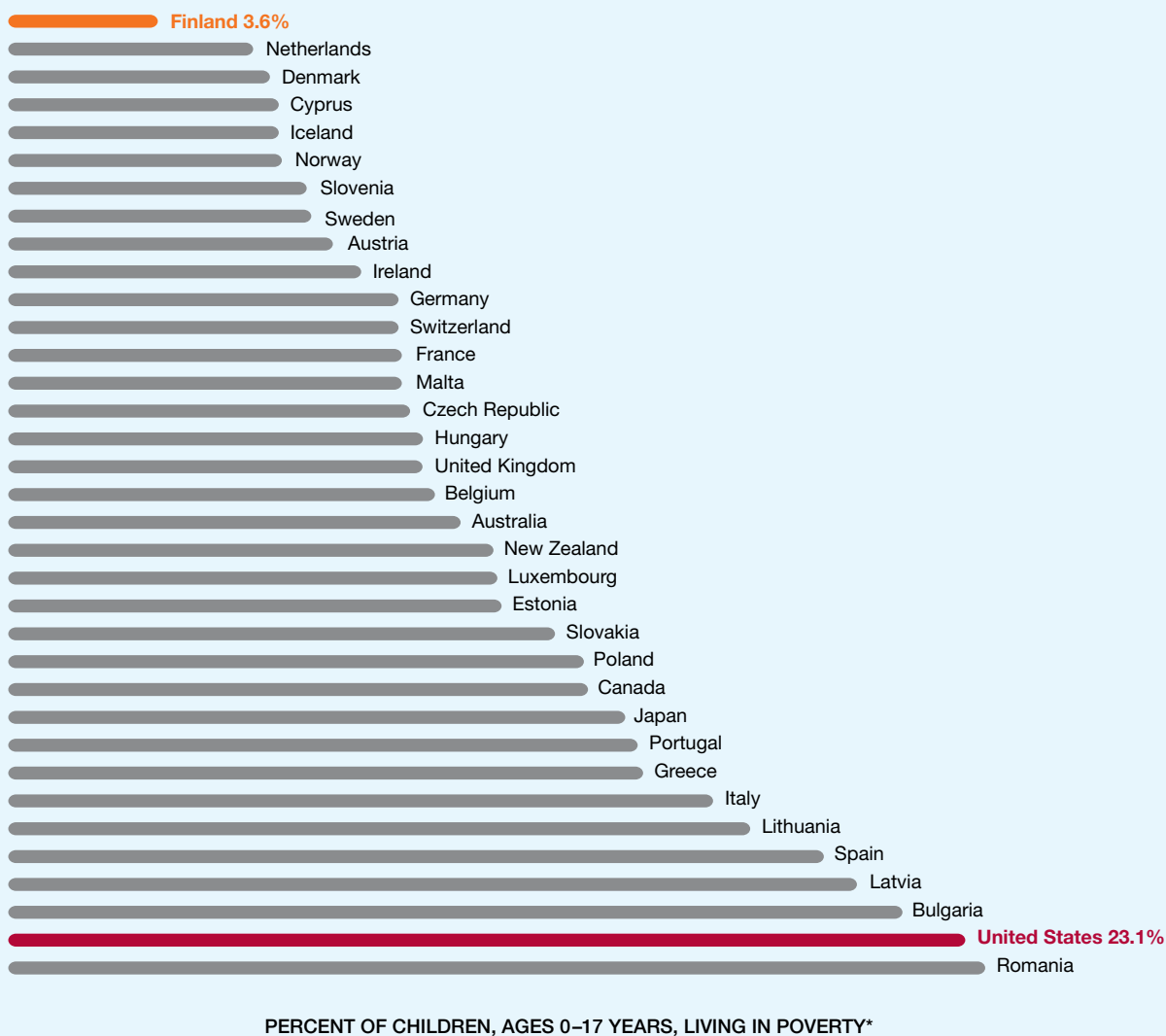
Family income and accumulated wealth may also shape children’s prospects for educational attainment by determining a family’s ability to rent or buy a home in a community with good public schools or to afford private schooling. As discussed further below, educational attainment is strongly associated with employment opportunities and income in adulthood, providing an additional pathway for perpetuating both economic and health advantage—or disadvantage—from generation to generation.

Do income and education affect health—or does health affect income and education?

Some researchers have questioned whether income and education actually influence health, or whether the associations might instead operate in the reverse direction—with people’s health either enabling or limiting their chances for educational attainment and/or earning a good living. While it is clear that health can indeed shape a person’s prospects for schooling⁸⁵ and employment, current evidence has led many experts to conclude that income and education affect health in major ways,⁸⁶⁻⁹⁴ in large part by determining people’s access to health-promoting resources and opportunities.

More Child Poverty in America

figure 21 The United States has higher rates of child poverty* than many other countries. In 2010, nearly one in four American children was poor—a proportion that was more than six times that seen in Finland.

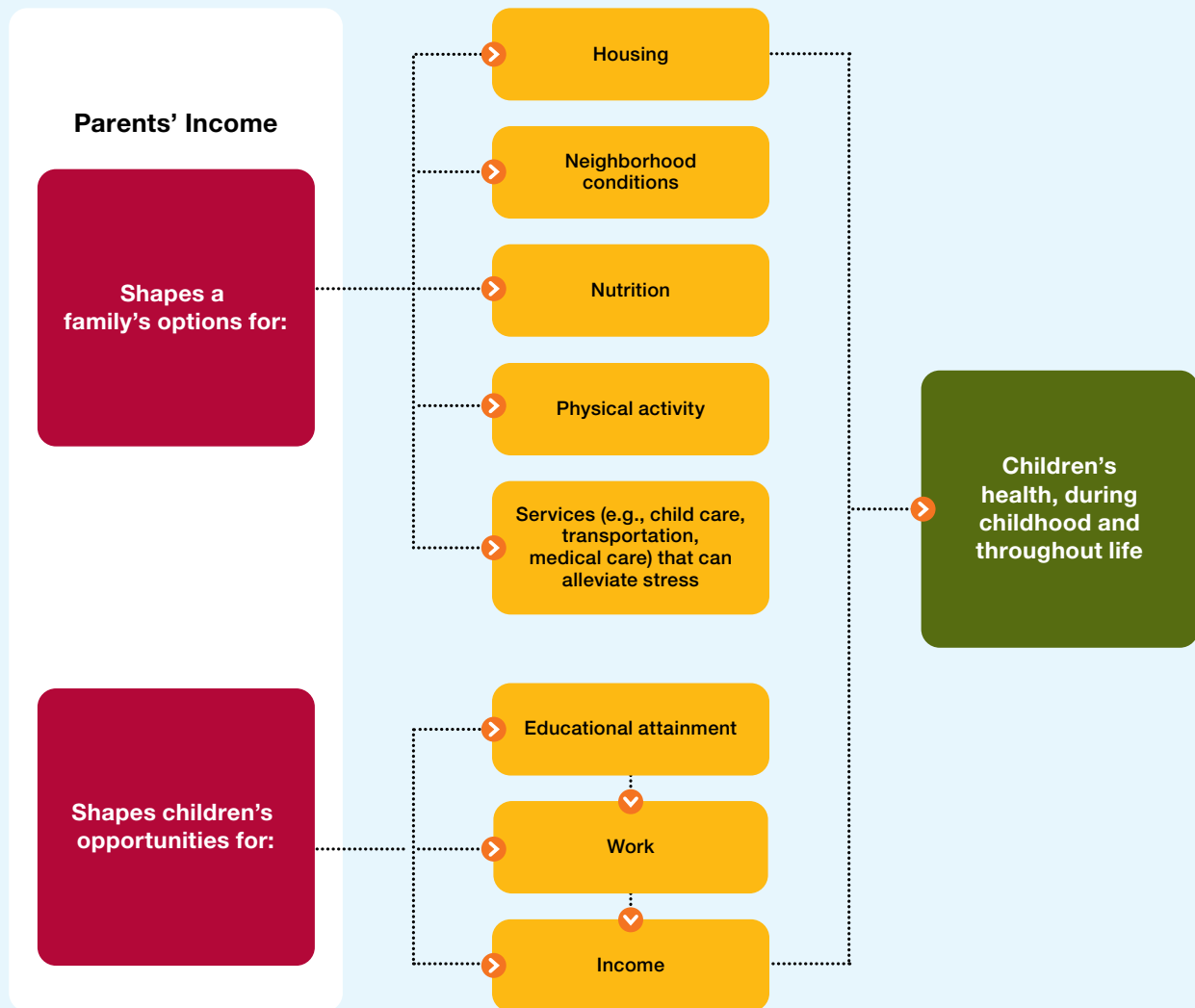


Sources: The data source for this figure was UNICEF, which provided data on 29 of the 34 Organisation for Economic Co-operation and Development (OECD) countries. Martorano B, Natali L, de Neubourg C, et al. (2013). *Child Wellbeing in Advanced Economies in the Late 2000s*, Working Paper 2013-01. UNICEF Office of Research, Florence, www.unicef-irc.org/publications/pdf/iwp_2013_1.pdf. Accessed May 21, 2013.

*Relative child poverty rates: the percent of children ages 0-17 living in households with incomes below 50% of the national median. Data are from 2010 or nearest year available.

Parents' Income Can Affect a Child's Chances for Health Throughout Life

figure 22 Parents' income can affect children's chances for health by shaping options for living conditions and educational chances, which in turn shape their income and living conditions as adults.



Prepared for the Robert Wood Johnson Foundation Commission to Build a Healthier America by the Center on Social Disparities in Health at the University of California, San Francisco.

How can education shape health?

Few people think of education as a crucial path to health, despite the large body of evidence that strongly—and, with rare exceptions, consistently—links education with health even when other factors like income are taken into account.⁹⁵⁻⁹⁸ A 2008 national study, for example, concluded that “... potentially avoidable factors associated with lower educational status account for almost half of all deaths among working-aged adults in the United States.”¹⁹

Figure 23 illustrates three major interrelated pathways through which education is linked with health. By “education” we mean educational attainment, or the years or highest level of formal schooling a person has, rather than instruction on specific health topics like diet or exercise. While the quality of education may also be important for health outcomes, this information is typically not available in routinely-collected data.

.....
A 2008 study concluded that “... potentially avoidable factors associated with lower educational status account for almost half of all deaths among working-aged adults in the United States.”
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Education can lead to better health by increasing health knowledge and healthy behaviors.

Education can increase knowledge, problem-solving, and coping skills, enabling people to make better-informed choices that could affect their own and their families’ health.⁹⁷⁻⁹⁹ Greater educational attainment has been associated with health-promoting behaviors, including consumption of fruits and vegetables and other aspects of healthy eating, engaging in regular physical activity, and refraining from smoking.¹⁰⁰⁻¹⁰⁴ In addition, people with more education tend to change their health-related behaviors more quickly in response to new evidence, health advice, and public health campaigns (like those addressing the risks of smoking, for example).^{59, 105}

Education shapes opportunities for better employment and higher income, which are linked with better health.

Work and income may be the most important pathways through which education affects health. Education provides the knowledge and skills necessary for employment, which can shape health in many ways. For most Americans, employment is the sole or main source of income, which as described above can influence health in multiple ways. More education generally means a greater likelihood of being employed at all and of having a job with higher wages, healthier working conditions, and better benefits.

Parents’ education can shape children’s prospects for health throughout their lives.

Parents’ education is strongly linked with children’s health and development,^{14, 126-130} which in turn influence prospects for health later in life. Parents with lower educational attainment typically face greater obstacles—including lack of knowledge, skills, time, money, and other resources—to providing healthy, stimulating, and nurturing homes and neighborhood environments for their children.^{131, 132}

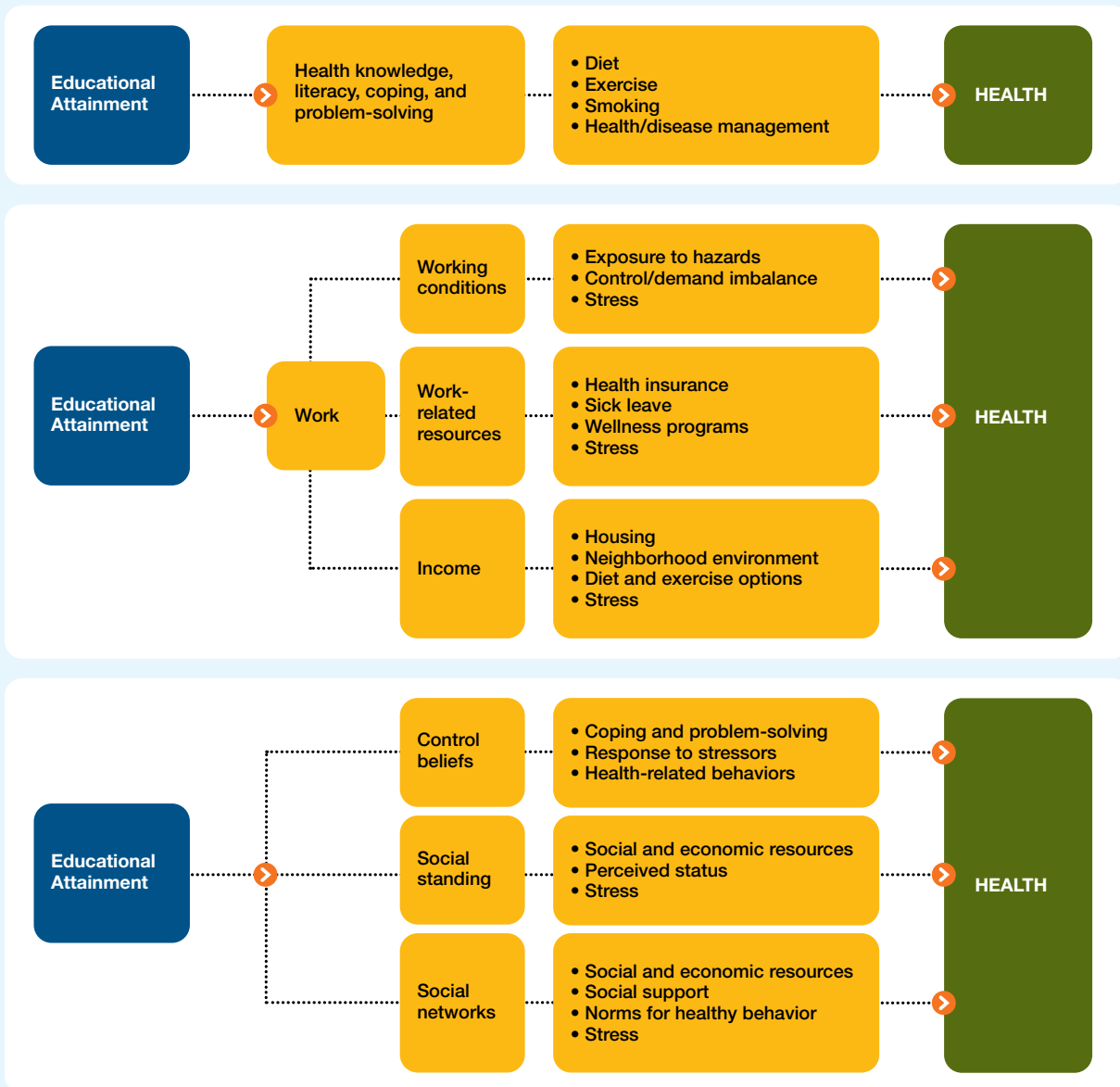
Parents’ education can also shape children’s prospects for healthy lives through links to their children’s educational attainment.^{97, 133, 134} Children with less-educated or lower-income parents face greater obstacles to success in school and are less likely to attain college degrees.^{133, 135-140} Parents’ education

can affect children’s education prospects both directly, through the kinds of support and resources provided at home,^{83, 97} and indirectly, through the quality of schools children are likely to attend.

The level of educational attainment children eventually achieve will affect their own health as adults, through the pathways described above, and can affect the health of their own children in turn—perpetuating an intergenerational cycle linking education and health.

How Can Education Affect Health?

figure 23 Education can influence health through many pathways, including through its role in shaping employment opportunities and income.



Prepared for the Robert Wood Johnson Foundation Commission to Build a Healthier America by the Center on Social Disparities in Health at the University of California, San Francisco.

Stress plays a key role in the health effects of many social factors.

Advances in knowledge, particularly during the past two decades, have shed new light on the likely biological explanations for the strong links between health and social factors like income, education, and racial or ethnic group. Important examples include physiological damage to multiple vital organ systems caused by chronic stress through neuroendocrine and immune or inflammatory mechanisms.

Stressful experiences—like those associated with having limited economic resources—can trigger the release of hormones and other substances that, particularly with repeated stresses over time, can damage immune defenses and vital organs. This physiological chain of events can result in more rapid onset and progression of chronic illnesses, including cardiovascular disease. The bodily wear and tear associated with chronic stress may accelerate aging.^{83, 141-148} *Figure 24* graphically illustrates one of the physiological pathways through which stress “gets into the body” through the brain.

.....
“Toxic stress” refers to stressful experiences that overwhelm a person’s ability to cope. It can result from sustained economic hardship or family adversity, and can cause observable biological changes in children. These changes, which may be difficult to reverse, can lead to ill health in adulthood.^{82, 83}
.....

There is widespread awareness that acutely traumatic events can adversely affect health. But increasing evidence shows that the accumulated strain from trying to cope with daily hassles may, over time, lead to far more physiological damage than a single stressful event, even if it is dramatic.¹⁴⁹ Daily hassles could include facing constant challenges posed by living in a neighborhood with high levels of noise and crime; working in an environment where one feels powerless, disrespected,

intimidated, or treated unfairly; or having inadequate financial resources for decent housing, food, child care, transportation, or medical care.

In contrast, the material and psychosocial resources and opportunities associated with greater income and education can make it easier to cope with and reduce the likelihood of stressful experiences.^{150, 151}

Stressful conditions in homes, neighborhoods, schools, and workplaces can also affect people’s health-related behaviors. For example, children who experience stressful circumstances, particularly on a daily basis, are more likely later in life to adopt—and less likely to discontinue—risky health behaviors like smoking and abuse of alcohol or drugs¹⁵²⁻¹⁵⁵ that may function as coping mechanisms.

Stress may also help explain racial or ethnic health disparities, in two main ways. First, many blacks and Hispanics experience more stress related to having fewer economic resources, given the legacy of once-legal racial discrimination. Personal experiences of racial discrimination could also be an important source of stress, even among people with higher incomes and more education. Such experiences may include potentially subtle but chronic experiences and a chronically heightened awareness that one may be judged or treated differently because of one’s race, even in the absence of overt incidents.^{156, 157}

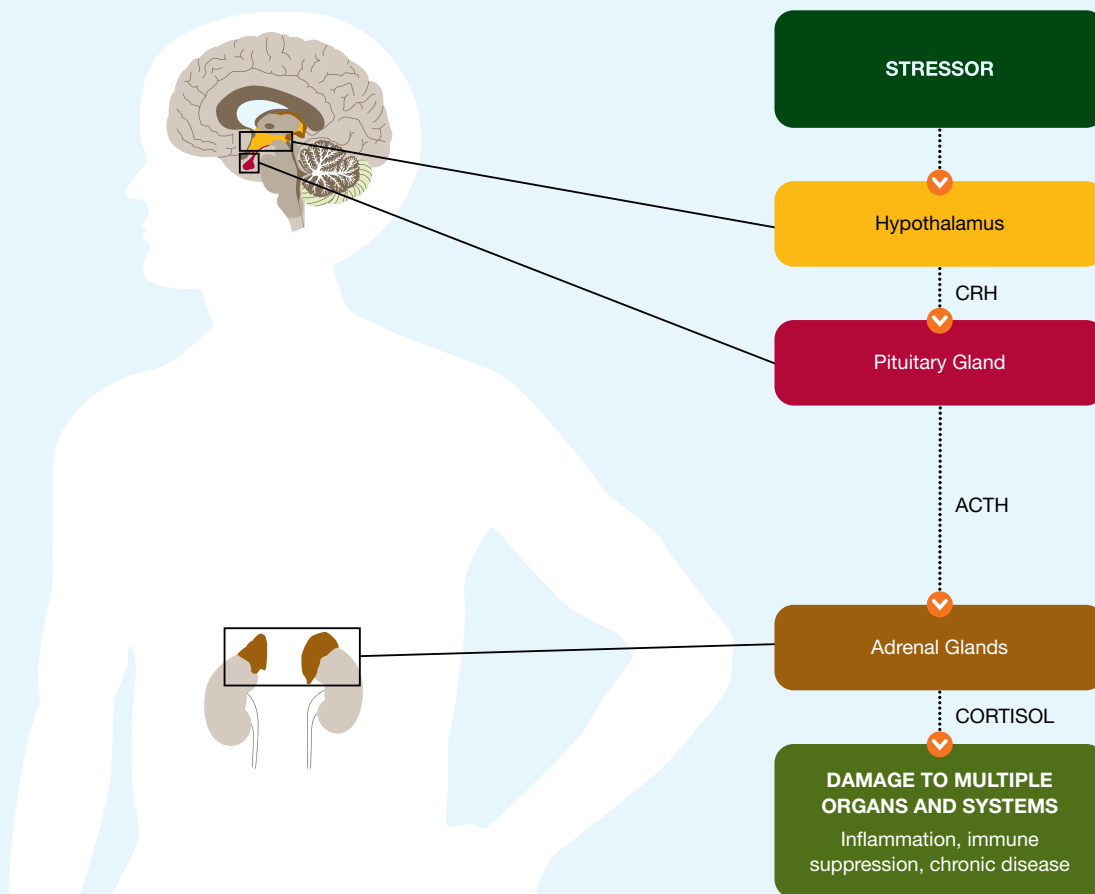
The effects of stressful experiences during childhood may be particularly powerful and enduring. The phrase “biological embedding” of early childhood experience refers to the physiological changes seen among children who face social adversity and the ways in which early experiences can determine whether “good” (healthy) or “bad” (health-harming) genes are expressed or suppressed, with potentially lifelong consequences.^{83, 84}

How Does Stress Get Under the Skin?

figure 24 The body's responses to stress involve complex interactions between two main physiologic systems: the neuroendocrine system, which includes the brain and hormonal systems directly activated by the brain, and the immune system.

Shown here is the *hypothalamic-pituitary-adrenal (HPA) axis*, one of the key neuroendocrine mechanisms involved in the body's stress responses. This process begins in the brain when a threat or challenge is detected. In response, the part of the brain called

the hypothalamus sends a signal (the hormone CRH) to another part of the brain, the anterior pituitary, which then sends a signal (the hormone ACTH) to the adrenal glands, which in turn produce cortisol. Prolonged exposure to cortisol can damage many organs and systems, contributing to chronic disease and premature aging. Chronically high cortisol levels can dysregulate crucial body systems, causing inflammation, damaging the body's ability to fight off infection, and compromising resilience to stress.^{143, 158}



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Health is transmitted across generations, as families
with greater social and economic advantages pass
those advantages on to their children.
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People with less formal education and training are more likely to be unemployed or to hold lower-paying jobs^{106, 107} with more occupational hazards, including environmental and chemical exposures, and poor working conditions that put them at higher risk of injury and fatality.¹⁰⁸⁻¹¹⁰ Certain kinds of psychosocial stress at work may also add to the health risks experienced by people with less education.¹¹¹⁻¹¹³ For example, less-educated workers may hold jobs that are demanding but offer few opportunities for autonomy; these types of jobs have been associated with adverse health outcomes, including heart disease.^{109, 114, 115} Less-educated workers also are less likely to have health-related benefits, including employer-sponsored medical insurance, paid and personal leave, workplace wellness programs, child- and elder-care resources, and retirement benefits.^{116, 117}

Education is also linked with social and psychological factors that affect health.

Evidence suggests that yet another general type of pathway may help explain the strong links between education and health. As shown in *Figure 23*, education reflects social and psychological factors, including sense of control, social standing, and social support.¹¹⁸⁻¹²⁰ These in turn can improve health in various ways, including by influencing health-related behaviors and buffering the adverse health effects of stress.

Higher levels of education have been observed to foster problem-solving skills and attitudes—such as purposefulness, self-directedness, perseverance, and confidence—that contribute to people’s sense of personal control and expectations that their own actions and behaviors shape what happens to them. Lower levels of education, on the other hand, may lead to experiences that produce fatalism, a sense of powerlessness, or the belief that one’s own efforts are less important than the influence of chance or others when it comes to health or life outcomes.^{121, 122} Higher educational attainment has also been associated with higher self-perceived social standing¹²³⁻¹²⁵ and higher levels of social support,¹¹⁸⁻¹²⁰ both of which have been linked with better health.^{120, 123-125}

What could explain the pervasive differences in health by racial or ethnic group?

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The legacy of once-legal racial discrimination and segregation is seen in persistent differences in income, wealth, education, and neighborhood disadvantage across racial or ethnic groups.

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Socioeconomic and racial or ethnic differences are tightly intertwined. As seen in *Figure 25*, higher proportions of blacks and Hispanics—and of black and Hispanic children, in particular—live in poor families. Other studies have shown that blacks¹⁵⁹ and Hispanics are also more likely than whites to live in neighborhoods with higher concentrations of poverty, even when family incomes are similar.^{73, 160}

These patterns reflect a long history of injustice in which race or ethnic origin was legally used to exclude individuals from employment, educational and business opportunities, and property ownership. Although it is no longer legal to discriminate on the basis of race or ethnicity, the far-reaching legacy of racial discrimination, including residential segregation, has left members of disadvantaged racial or ethnic groups both disproportionately poor and disproportionately concentrated in resource-poor neighborhoods and communities.¹⁶¹⁻¹⁶³

These differences in socioeconomic advantage contribute to racial and ethnic disparities in health by influencing access to health-promoting resources and exposures to health-damaging conditions along racial and ethnic lines. For example, black and Hispanic families are disproportionately likely to live in poor-quality housing^{169, 170} and near toxic waste dumps, freeways, and other sources of health-harming exposures.¹⁷¹⁻¹⁷³ They are more likely to live in neighborhoods with more crime, fewer options for purchasing affordable healthy food, fewer safe places to exercise, and more exposure to targeted and intensive advertising and marketing of tobacco and alcohol.^{159, 160, 174, 175} These combined social and health disadvantages are too often perpetuated through differences in the quality of school and educational environments experienced by children in different racial or ethnic groups.¹⁷⁶

Several studies have found that racial or ethnic differences in health are greatly or completely reduced after differences in income, education, or other measures of socioeconomic status or position are taken into account,^{73, 177, 178} but many differences (like those in self-reported adult health status, shown in *Figures 16 and 17*) persist.^{25, 161, 162, 179-181} These findings have led some to conclude that the unexplained racial or ethnic disparities reflect biological or entrenched “cultural” differences that are unlikely to be influenced by policies.

In fact, modifiable social factors that are less frequently measured—including wealth, neighborhood socioeconomic conditions, and childhood experiences—likely play a larger role in shaping health differences by race or ethnicity.⁷³ For example, at the same level of education, blacks and Hispanics have less income than whites and are more likely to have grown up in less advantaged circumstances. Similarly, blacks and Hispanics at the same level of income have far less accumulated wealth and are likely to live in more disadvantaged neighborhoods^{73, 161} than whites.

It would be a mistake, however, to think that racial disparities in health reflect *only* socioeconomic differences. Chronic stress related to experiences of racial or ethnic bias—including relatively subtle experiences that arise even in the absence of conscious or intentional prejudice—may contribute significantly to unexplained racial or ethnic disparities in health, regardless of income or education.^{161, 162}

For example, people in groups that have historically experienced discrimination may maintain a chronic level of vigilance in anticipation of potentially offensive incidents, which could be stressful even if no clear-cut incident occurs.¹⁵⁶ Although overt discrimination may happen less frequently in contemporary America, it can still occur—along with other more subtle but more frequent instances of unfair treatment.^{156, 161, 162} Members of a group that have been subjected to discrimination also may internalize negative judgments about themselves;^{156, 162, 182} this can further threaten self-esteem and self-confidence, which may adversely affect health in multiple ways.^{156, 162, 183}

Paradoxically, higher education or income may actually expose blacks or Hispanics to additional stress as they live and work in settings where they are in the minority.¹⁸⁴ Higher-income members of disadvantaged minority groups may also have heavy obligations to help out worse-off relatives, adding to their stress.¹⁸⁵⁻¹⁸⁷

Racial or ethnic differences in health primarily reflect social, not biological, differences.

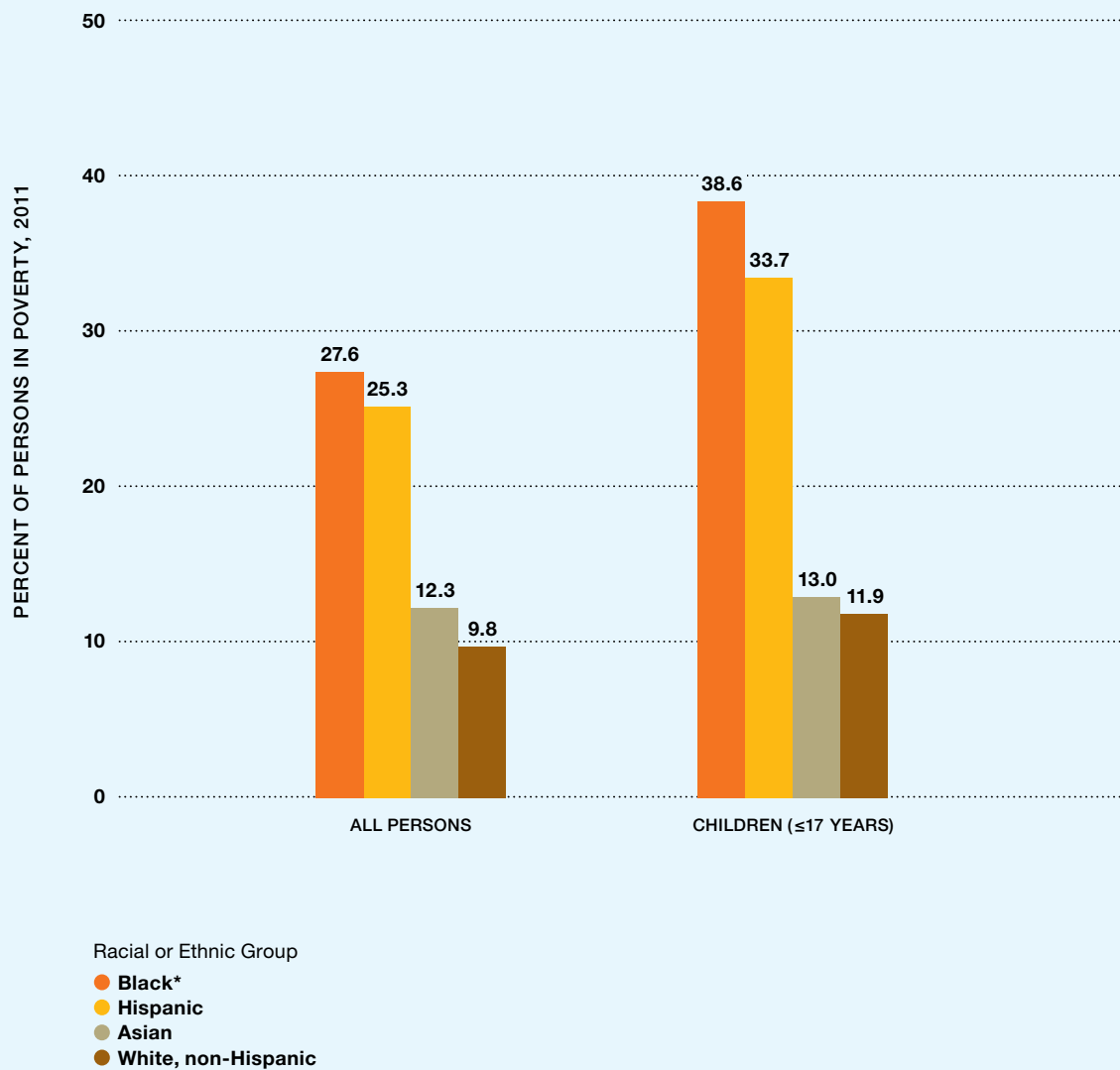
Public health statistics in the United States generally have been reported by racial or ethnic group but often not by income, education, or other socioeconomic characteristics.¹⁶⁴ Without adequate socioeconomic information, racial or ethnic differences in health often are assumed to reflect either underlying genetic differences or entrenched “cultural” differences—both of which have limited potential for intervention. In fact, differences in less frequently measured but more modifiable social factors—including income, education, wealth, and neighborhood socioeconomic conditions, both current and earlier in life—are likely to be more important in explaining racial or ethnic differences in health.⁷³

For example, researchers found that the age-specific risk of death for black men was no longer significantly higher than that for white men, after taking into account differences in education, income, and wealth.¹⁶⁵

While the role of genetic differences in health disparities continues to be debated, authoritative scientific sources have concluded that there is much more genetic variation *within* each racial group than between different groups, and that race is primarily a social rather than a biological construct.¹⁶⁶⁻¹⁶⁸

Persistent Racial or Ethnic Differences in Poverty, Especially Among Children

figure 25 Blacks and Hispanics experience the highest rates of poverty, especially among children. Among children, rates of poverty in these groups are approximately triple those seen for whites. More than one-third of black and Hispanic children grow up in poverty.



Source: DeNavas-Walt C, Proctor BD, Smith JC. Income, Poverty, And Health Insurance Coverage in the United States: 2011. *Current Population Reports*, pp. 60-243. Washington: U.S. Government Printing Office; 2012. Published in National Center for Health Statistics. *Health, United States 2011: With Special Feature on Socioeconomic Status and Health*. Hyattsville, MD: 2012. www.cdc.gov/nchs/data/hus/2011/002.pdf. Accessed May 22, 2013.

*Blacks could be of Hispanic or non-Hispanic origin

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Racial disparities in health likely reflect the effects of chronic stress related to experiences of discrimination—effects that can influence health even among people with higher incomes and more education.
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How do childhood experiences, especially very early ones, shape our chances of becoming healthy adults?

A healthy child is more likely to become a healthy adult. For example, a baby born too small (with low birthweight, less than 5½ pounds) or too early (prematurely, before 37 completed weeks of pregnancy) is less likely to have optimal cognitive, behavioral, and physical development as a child, and more likely to develop high blood pressure, heart disease, and diabetes as an adult.^{188, 189} Obese children are more likely to become obese adults,¹⁹⁰ increasing their risk of serious chronic diseases, including diabetes, heart disease, and stroke. Similarly, poor dental health in childhood can lead to painful, disabling, or disfiguring dental problems in adulthood.^{191, 192}

These links between childhood health and adult health have been known for some time. During the past 10 to 20 years, however, there has also been growing awareness of the powerful links between childhood *social advantage or disadvantage* and adult health. Socioeconomic factors—like family income, education, and neighborhood poverty—can affect health at every stage of life, but the lifelong health effects of socioeconomic adversity during early childhood may be most dramatic.

Children are particularly vulnerable during stages of rapid physiological, cognitive, and emotional development, with consequences that may play out across entire lifetimes. We know, for example, that economic hardship in childhood is strongly related to premature mortality and chronic disease in adulthood, including respiratory illness, diabetes, heart attack, hypertension, and stroke.¹⁹³ Children’s nutrition varies with parents’ income and education,^{133, 194, 195} and nutrition early in life can have lasting effects on health.^{77, 79, 196} Similarly, lead poisoning during childhood can lead to irreversible neurological damage, and unsafe levels of lead—commonly resulting from exposure to lead-based paint in substandard housing—are more frequently found among children from lower-income families.^{197, 198}

A family’s financial hardship can take a particularly large and enduring toll on young children.^{82, 83, 199} For example, studies have linked stress due to hardship early in life with impaired brain development and functioning^{200, 201} and other physiologic problems.⁸²⁻⁸⁴ These adverse physiologic effects can be significantly lessened by appropriate interventions.^{131, 200, 202-204}

How can children’s social advantages or disadvantages early in life shape their lifelong prospects for health? Parents with less education and/or income may face greater obstacles—such as lack of knowledge, skills, time,

money, or other resources—to creating healthy home environments and to modeling healthy behaviors for their children. Studies have shown that children in more favorable socioeconomic circumstances are more likely to receive positive stimulation from parents and caregivers,^{132, 133, 205-207} and positive stimulation in turn is associated with optimal cognitive, behavioral, and physical development. In contrast, biological changes due to adverse socioeconomic conditions in the earliest years of life can become literally embedded in children’s bodies, limiting their capacity to reach their full developmental potential.²⁰⁸

Scientists are increasingly aware of how physical and social conditions, particularly during early childhood, can actually determine whether a person’s favorable or unfavorable genes are expressed or suppressed. In other words, our genetic make-up is not necessarily our destiny. A person may only experience the adverse health consequences of an unfavorable genetic make-up if he or she is exposed to unfavorable conditions, such as sustained financial insecurity or family conflict. As Judith Stern of the University of California at Davis has said, “Genetics loads the gun. The environment pulls the trigger” (*written communication, April 2013*).

.....
Beyond “*nature versus nurture*”: Social factors shape physical and social conditions, which can in turn determine whether “good” or “bad” genes are expressed or suppressed to influence health.
.....

Researchers are also examining how socioeconomic advantage or disadvantage can influence the transmission of health across generations.²⁰⁹⁻²¹¹ It is already clear that the intergenerational transmission of health is shaped by both genetic and social factors.^{126, 188, 212, 213} Children in socioeconomically disadvantaged families are less likely as adults to have high educational attainment.^{135-137, 214} With consequently more limited prospects for good employment, they in turn will be less able to ensure that their own children grow up in health-promoting conditions that include good nutrition, adequate housing in safe neighborhoods, educational opportunities, and appropriate medical care.

Fortunately, effective interventions have been shown to markedly improve the developmental prospects of children growing up in adverse circumstances. The general features of promising approaches are discussed in the next section.



What do we know about solutions that can help all Americans reach their full health potential?

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Despite existing knowledge, debates about health policy in this country rarely have focused on the powerful health influences of non-medical factors such as child care, education, housing, and urban planning.

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Overwhelming evidence tells us that we must broaden our focus.

This report began by posing three questions: *What does the evidence tell us about America's unrealized health potential? Why are Americans not as healthy as they could be? And, what do we know about solutions?* We presented disturbing evidence of our nation's unrealized health potential, including stark comparisons with other affluent countries and dramatic health disparities within the United States by income, education, and racial or ethnic group. We then explored what current science tells us about likely reasons. This final section discusses the implications of existing knowledge for identifying solutions.

A framework for thinking about how health is shaped across lifetimes and generations.

We know that medical care is important, especially once we are sick, and that unhealthy behaviors take an enormous toll on people's health. At the same time, overwhelming evidence indicates that we as a nation must look beyond medical care and behaviors to improve health and reduce disparities.

Despite widespread awareness of the links between behaviors and health, too many Americans practice behaviors that contribute to poor health and early death.^{54, 55} Behaviors are important determinants of health—but what shapes behaviors? Behaviors clearly reflect choices we make as individuals, but new knowledge in recent years highlights the important ways in which our environments shape our opportunities (and motivation) to adopt health-promoting and avoid health-harming behaviors.

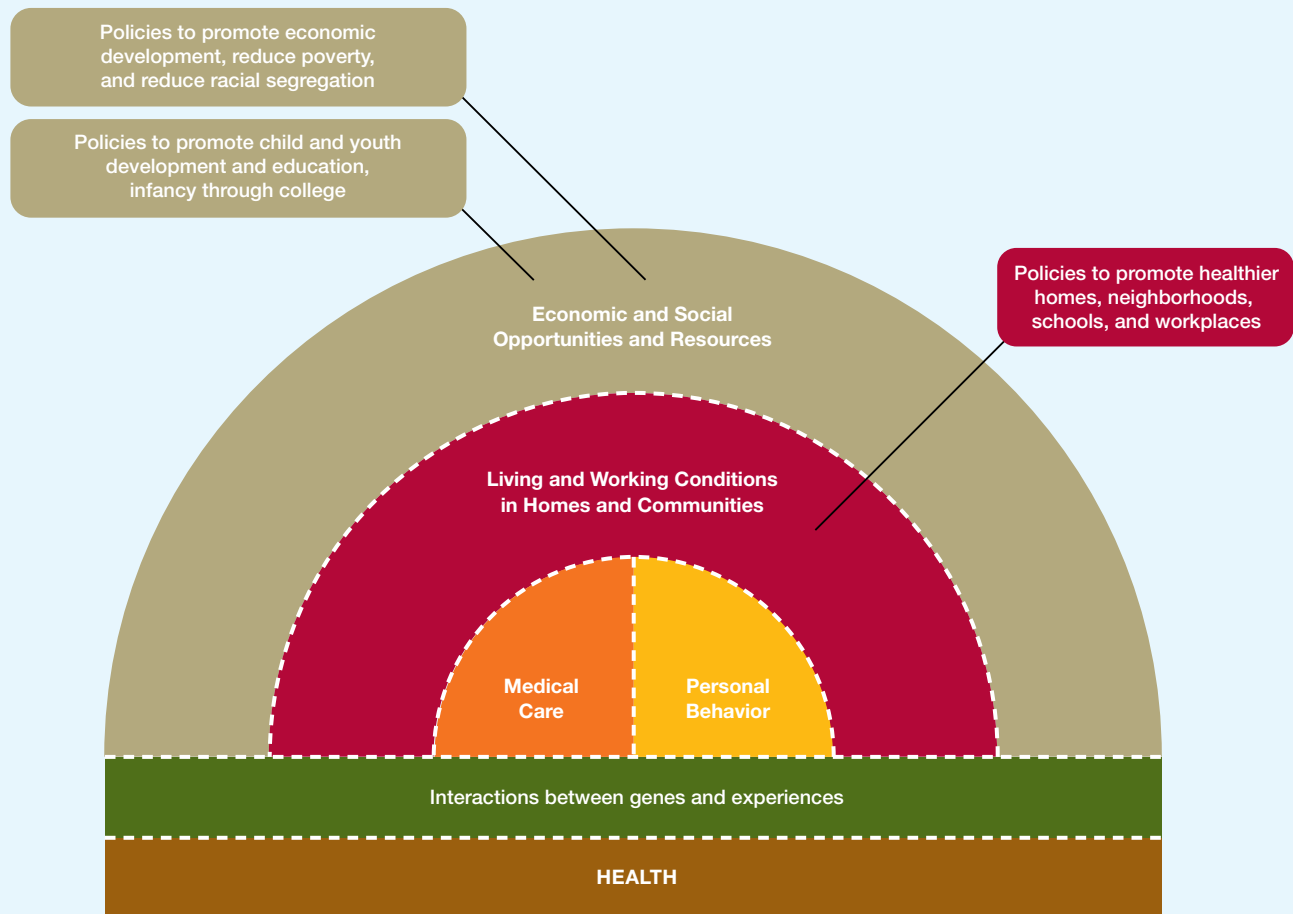
All Americans do not have the same opportunity to be healthy and to make healthy choices. Sometimes, barriers to health and to healthier decisions are too high for an individual to overcome, even with great motivation. These obstacles to health can only be addressed by broadening our focus to consider the social and economic factors that so powerfully influence behaviors and determine who becomes sick in the first place.

Based on knowledge summarized in earlier sections, *Figure 26* illustrates the relationships among the major factors that influence health and provides insight into key opportunities for taking action. While the relationships are far more complex, this framework emphasizes the need to broaden our search for solutions by thinking about the ways in which health is shaped by *living and working conditions*. It also points out that people are not randomly sorted into healthy and unhealthy places and circumstances. Living and working conditions are shaped by many factors, including geography, climate, culture, and individual choices. They also are strongly determined by *economic and social opportunities and resources*.

For example, more education generally means better-paying jobs with healthier working conditions and better benefits such as medical insurance and sick leave. Higher income can reduce chronic stress by making it easier to cope with everyday challenges. Differences in social and economic opportunities and resources also contribute to disparities in health among racial and ethnic groups. These relationships play out across lifetimes and generations.

Broadening the Focus to Find Solutions: Understanding How Social Factors Influence Health

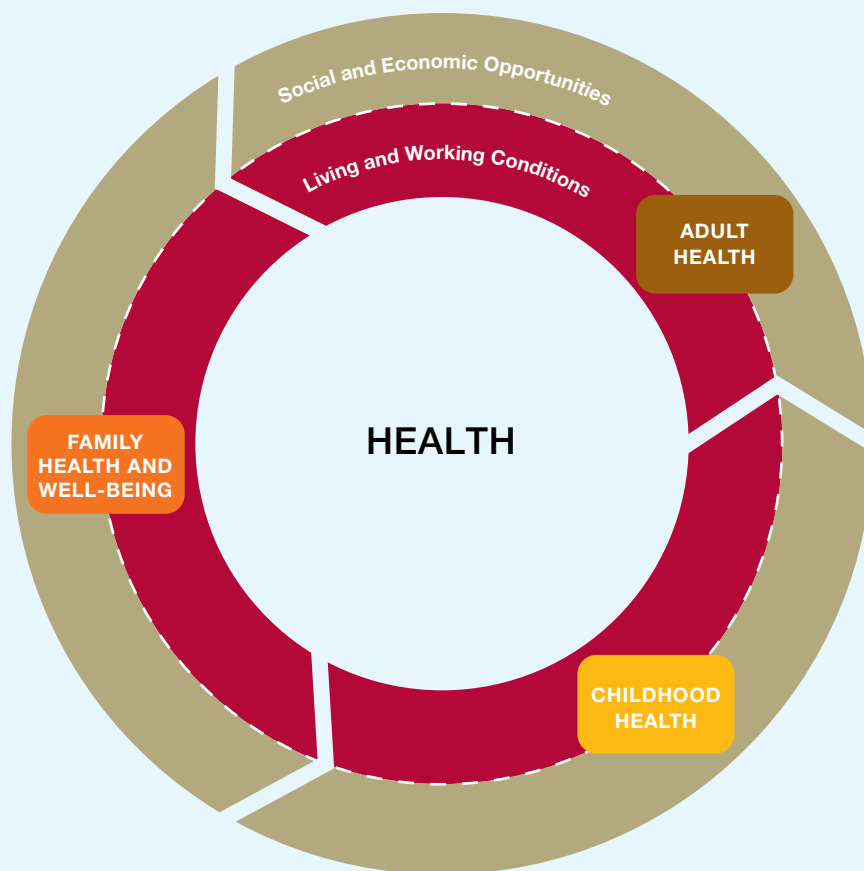
figure 26 Medical care and personal responsibility for behaviors are important. But finding promising strategies for achieving our nation's health potential will require broadening our focus to include the social and economic contexts in which Americans live.



Adapted from Braveman P and Egerter S. *Overcoming Obstacles to Health: Report From the Robert Wood Johnson Foundation to the Commission to Build a Healthier America*. Princeton, NJ: Robert Wood Johnson Foundation; 2008.

Social Factors Affect Health Across Lifetimes and Generations

figure 27 Social and economic disadvantage — and associated obstacles to health — can accumulate over time, creating increasingly limited prospects for achieving good health. Conversely, greater social and economic resources early in life can mean better chances for good health. These advantages, too, can build across lifetimes and generations.



Adapted from Braveman P and Egerter S. *Overcoming Obstacles to Health: Report From the Robert Wood Johnson Foundation to the Commission to Build a Healthier America*. Princeton, NJ: Robert Wood Johnson Foundation; 2008.

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Although individuals must take responsibility for their health, far too many Americans face daunting obstacles to health that only society can remove.

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Figure 27 illustrates how early opportunities for health can set a child on a path to a healthy life. Families with greater economic and social advantages can more easily provide health-promoting conditions for their children at home, at school, and in their communities. They can afford higher-quality child care and preschools and hazard-free housing in safe neighborhoods where their children can attend good schools—all contributing to a healthier life. Health is transmitted across generations as families with greater social and economic advantages pass those advantages on to their children, through inherited wealth and educational opportunities that affect later earning potential.

In contrast, children from disadvantaged families are more likely to grow up in health-damaging conditions that lay the groundwork for poorer health throughout life. They are more likely to experience social disadvantage as adults and as parents providing for their own children.

Clearly, good health requires personal responsibility. But far too many Americans, particularly those in poor and minority families, live and work in places and circumstances where their opportunities for making healthy choices are severely limited. Many have lost hope, and hopelessness in itself can present a major obstacle to health.²¹⁵⁻²¹⁸

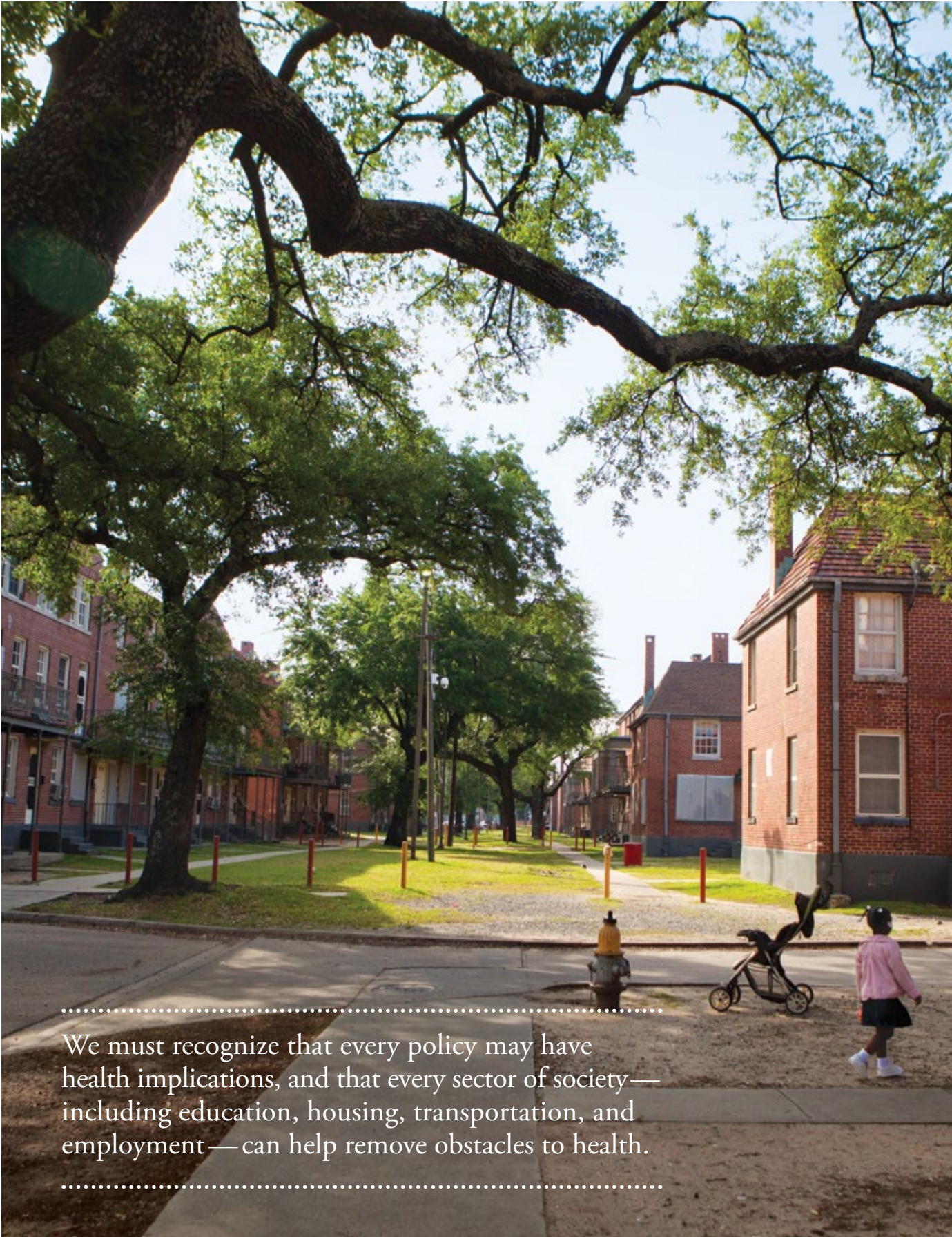
Evidence tells us that to improve health we need to think more broadly about policies that will improve people's daily lives and the broader social and economic contexts that shape them. Strategies that focus only on improving living conditions without addressing the underlying issues, such as poverty and racial inequality, may not be enough.

This is a timely moment to seek solutions.

Despite existing knowledge, debates about health policy in this country rarely have focused on the powerful health influences of non-medical factors such as child care, education, housing, and urban planning. Fulfilling our nation's unrealized health potential will not be simple, but this is a timely moment to move forward in new directions. There is widespread recognition by business, government, and the general public that medical care costs must be brought under control. Concerns about global economic competitiveness increase pressures both to reduce medical care costs and to build a healthier and thus more productive workforce.

The evidence that people in the most socially and economically disadvantaged groups generally experience the worst health may not be surprising to many. But we now have a critical mass of evidence revealing that middle-class Americans also are less healthy than wealthier and more educated Americans and compared with their counterparts in other affluent countries. The "Great Recession" and continued economic hard times have left many members of the middle class feeling more vulnerable than ever before—and thus potentially more supportive of policy changes needed to improve health and reduce disparities.

The World Health Organization's (WHO) Commission on the Social Determinants of Health affirmed the urgency of addressing "the conditions in which people are born, grow, live, work and age" and "the fundamental drivers of these conditions."^{22, 219} Now is the time to bring these issues to the attention of the public, policy-makers, and business leaders.



.....
We must recognize that every policy may have health implications, and that every sector of society—including education, housing, transportation, and employment—can help remove obstacles to health.
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We know enough to act.

Expanding our focus to include the broader social and economic context can lead to promising policy strategies for improving health. Current knowledge tells us that the most effective approaches for enabling all Americans to be healthy will require efforts that support childhood development and education from infancy through college, as well as efforts that foster economic development and reduce poverty.

While many questions remain about the specific strategies that will be most effective and efficient in different contexts, we know enough now to identify promising approaches. The WHO Commission, after an extensive research inventory and synthesis, has affirmed that sufficient knowledge exists to act now to reduce health inequalities within and across all nations.²² Implementing and rigorously evaluating strategies that address how and where people live, learn, work, and play is the only way to obtain more specific and definitive knowledge.²²⁰

Existing knowledge can guide action.

After reviewing a wide range of evidence, the Robert Wood Johnson Foundation Commission to Build a Healthier America (RWJF Commission) issued 10 recommendations in 2009² about promising directions for short- and intermediate-term action to improve health and reduce health disparities in the United States. The 2009 RWJF Commission found compelling research supporting interventions that provide positive stimulation for young children while also promoting effective parenting. The basis for early childhood development programs is so strong that national business groups and economists of the Federal Reserve Bank of Minneapolis, as well as Federal Reserve Chairman Ben Bernanke, have embraced these programs as a wise financial investment in the future U.S. workforce.^{221–227}

Several 2009 RWJF Commission recommendations also focused on giving all children a healthy start by decreasing barriers to healthy foods and physical activity in their neighborhoods and at school.

Many of the 2009 RWJF Commission recommendations called for collaborative efforts to create and sustain communities that protect and promote the health of American families, both by attracting additional resources and by building on and developing community strengths. Although most small-scale community-level interventions have not been rigorously evaluated, many appear to have improved diverse aspects of health in disadvantaged communities.

Arguments that these interventions improve health have become so compelling that the Board of Governors of the Reserve System and regional Federal Reserve Banks have collaborated with the Robert Wood Johnson Foundation since 2010 on a series of national and regional conferences to discuss how the finance and community development sectors could work together in expanding this work.

The 2009 RWJF Commission called for implementing and rigorously evaluating promising community-focused efforts;² evidence on costs and outcomes from such local efforts could guide the expansion of the most promising models. One recommendation called for assessing the health impact of policies in all sectors that influence health, looking beyond medical care. We must recognize that every policy may have health implications, and that every sector of society—both public and private, and including education, housing, transportation, and employment—should be involved in removing obstacles to health.

Experience tells us that interventions that address only one factor at a time often fail. Because the pathways leading to health are complex, effective solutions are likely to be complex as well. Such initiatives will require collaboration and will be difficult to implement and evaluate—but these are challenges we must tackle.

Effective solutions are likely to require substantial investment, but public and private decision-makers must weigh these expenses against the costs our society incurs every day due to lost opportunities for health. Every nation is unique, but useful lessons can be learned from other countries with better health outcomes and far lower spending on health.

Of greatest concern is the future of America's children, particularly those who grow up in resource-scarce environments where good schools are rare, crime rates are high, access to nutritious food is limited, and aspirations are low. These children are at risk for poor health, not only while they are young but throughout their lives. Their more limited social and economic opportunities and poorer prospects for health combine to sustain a cycle of disadvantage across lifetimes and generations.

Perhaps the most important reason to act now is the shared American ideal of fair opportunity for all to pursue life, liberty, and happiness—each of which requires good health. This a crucial moment for us to take action as a society to strengthen every person's abilities and resources for making healthy choices and to remove the avoidable obstacles that divert too many Americans from the road leading to long, healthy, productive, and fulfilling lives.



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