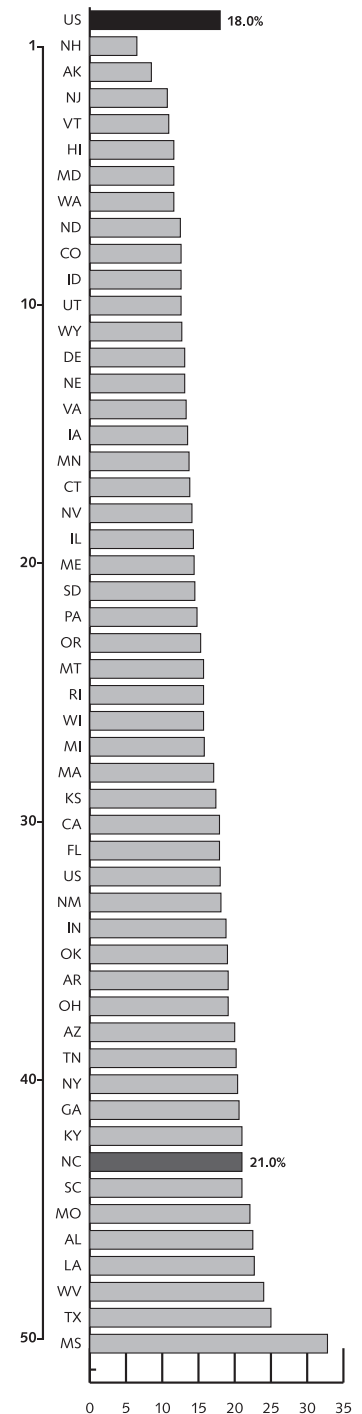


As noted in Chapters 3-6, certain health behaviors, such as smoking, drinking, poor nutrition, or lack of exercise, can have significant effects on a person's health. Similarly, a person's income, wealth, educational achievement, race and ethnicity, workplace, and community can also have profound health effects. The Task Force examined the affect of racial and ethnic disparities more fully in Chapter 10. A person's race and ethnicity, along with their income, educational achievement, and other social determinants are among the best predictors of health status. There is a strong correlation between health outcomes and income, wealth, income inequality, community environment and housing conditions, educational achievement, and race/ethnicity. People with higher incomes or personal wealth, more years of education, and who live in a healthy and safe environment have, on average, longer life expectancies and better overall health outcomes. Conversely, those with fewer years of education, lower incomes, less accumulated wealth, living in poorer neighborhoods, or substandard housing conditions have worse health outcomes. It is not only the abject lack of resources (income and assets) that contribute to health outcomes but also the income inequality in a community that predicts poorer health outcomes. Similarly, for most measures, racial and ethnic minorities have worse health outcomes than do whites.

Many of the social factors that affect health have both independent and interactive effects. For example, people with higher incomes have more opportunities to live in safe and healthy homes, good communities, and near high quality schools. They are also generally better able to purchase healthy foods and afford time for physical activity. Health insurance and health care also become more accessible with more monetary resources. All of these factors combine to shape a person's health. Conversely, people who are poor are more likely to live in substandard housing or in unsafe communities. Their communities may lack grocery stores that sell fresh fruits and vegetables or lack access to outdoor recreational facilities where they can exercise. Children who grow up in poverty generally fare worse in school and end up, on average, with fewer years of education than those in families with higher incomes. There is also a correlation between race/ethnicity and poverty, with racial and ethnic minorities more likely than whites to live in poverty. Further, there is a correlation between poverty, stress, and health behaviors. People who are poor are more likely to engage in risky health behaviors (e.g. drinking, smoking, eating unhealthy foods or being inactive) and experience greater levels of stress than more affluent individuals.

While many of these factors are interrelated, there is a growing body of literature that suggests some of these factors are also independent determinants of health. For example, in the United States health status for all racial and ethnic groups

Percent of Population Living in Low-Income Families 2007-2008^a



Source: The Kaiser Family Foundation.
<http://www.statehealthfacts.org>.
 Data Source: Urban Institute and Kaiser Commission on Medicaid and the Uninsured estimates based on the Census Bureau's March 2007 and 2008 Current Population Survey. Accessed August 21, 2009.

^a Low-income is defined as earning an income at or below 200% of the federal poverty guidelines, or \$44,100/year for a family of four in 2009.

People with higher incomes or personal wealth, more years of education, and who live in a healthy and safe environment have, on average, longer life expectancies and better overall health outcomes.

In the United States, some people live, on average, 20 years less than others, depending on their race and/or ethnicity, socioeconomic status, or where they live.

decreases with income level; individuals with incomes less than 100% of the federal poverty guidelines (FPG) have worse self-reported health in comparison to all other income levels.^{b,c,1} However, within each income level, African Americans have worse health than whites and Latinos, and Latinos generally have worse health than whites. Income and race/ethnicity interact to influence health status. Yet differences by income level and race/ethnicity remain even when taking the other into account. Other factors, including but not limited to, housing and education have similar independent and interactive affects on health. Research varies on which socioeconomic factor is the most important predictor of health. The Task Force did not attempt to try to answer which of these factors has the most important impact on health, recognizing that all of these factors should be addressed in order to improve the health of North Carolinians.

In the United States, some people live, on average, 20 years less than others, depending on their race and/or ethnicity, socioeconomic status, or where they live.² Some studies suggest that for every life saved through medical intervention, we could save five lives if African Americans experienced the same mortality rates as whites or eight lives if adults with inadequate education had the same mortality rates as those with some college education.³⁻⁵

Marked differences between racial and ethnic populations and between groups of differing socioeconomic status have been repeatedly observed across a wide range of health indicators.^{1,6} In addition, differing levels of access to schools and education, housing, safe living and work environments, health care, and opportunities for healthful living affect the health status of a person and a population.

North Carolina consistently ranks at the bottom of most state health comparisons. To improve population health, we need to improve the health of *all* of our residents, including racial and ethnic minorities, those living in poverty, or other marginalized or vulnerable populations. As the state moves forward to address the preventable risk factors discussed in this report, special attention should be focused on at-risk individuals and communities. Further it is important to also address socioeconomic risk factors directly, including strategies to reduce racial and ethnic disparities and poverty, and to increase decent affordable housing and improve educational outcomes for all North Carolinians. Identifying and creating policies and interventions aimed at reducing disparities—whether they are related to income, education, or race and ethnicity—will aid in improving the health of all North Carolinians.

This chapter describes the interplay between socioeconomic factors and health in three areas: 1) poverty, wealth, and income inequality; 2) community and housing conditions; and 3) educational achievement. The relationship between race/ethnicity and health was described in Chapter 10. This link between

b 100% of the federal poverty guidelines is \$22,050/year for a family of four in 2009.

c Based on percent of people in each income group reporting poor/fair health on the National Health Interview Survey, 2001-2006.

socioeconomic status and health status is one that is not always recognized or incorporated into public health prevention programs.

Income, Wealth, and Income Inequality

Income is positively related to health, with increasing income level corresponding to gains in health and health outcomes.⁷ This relationship between income and health is not linear. Differences in income generally make the greatest difference for health at the lower end of the income scale; increases in income for the highest income groups may not produce significant gains in health. While the relationship between income and health has been shown across a range of health indicators, the association is not well understood. Money, in itself, does not produce good health. Instead, income is generally considered a marker for a person's relative position in society, which is related to the social conditions and the social and economic opportunities to which a person is exposed.⁸ More affluent individuals have greater opportunities for healthful living through greater access to health-protecting resources such as the ability to live in safe and healthy communities with access to better equipped schools, places to exercise and play, and grocery stores. In addition, higher income individuals can more easily afford health insurance coverage. They may also have greater wealth (assets) including a home, savings, and low credit card debt, and, as a consequence, may have more disposable assets to use to meet basic necessities or pay for needed health services. Conversely, people who are poor have restricted opportunities for healthful living and may be exposed to health-damaging environments. They may live in poor housing in unsafe communities. Further, they may have less access to grocery stores or outdoor recreational facilities. In addition, poor individuals are much less likely to be insured.⁹ People in lower socioeconomic levels may also lack social relationships and supports; lack self-esteem, optimism, or sense of control; and/or experience chronic or acute stress.¹⁰ These psychosocial factors are predictive of morbidity and mortality. There may also be a degree of reverse causality in the association between income and health (e.g. poor health can lead to lower income when an individual is unable to work due to illness or health disability).⁸ The relationship between income and health is particularly salient in the current economic crisis. As the numbers of unemployed people grow and more people move into lower income levels, more and more people will be at risk for poor health. Therefore, in order to improve the health of its residents, North Carolina needs to help increase the economic security of the population, especially low-income people.

Income

Most studies examining the relationship between income and health have used annual family income for the measure of income, as this measure is routinely collected and easy to access. Income level is associated with almost every indicator of health, including infant and adult mortality, morbidity, disability, health behaviors, and access to health care. Individuals in poverty have the worst health, though even people in middle income levels have worse health than people in the highest income level. Low income is associated with many other factors contributing to poor health outcomes, including risky health behaviors, lower

The relationship between income and health is particularly salient in the current economic crisis. As the numbers of unemployed people grow and more people move into lower income levels, more and more people will be at risk for poor health.

Low income is associated with many other factors contributing to poor health outcomes, including risky health behaviors, lower levels of education, substandard housing, food insecurity, and lack of health insurance coverage.

levels of education, substandard housing, food insecurity, and lack of health insurance coverage. However, income is independently associated with health outcomes, even after controlling for most of these other factors.¹⁰

In 2007, 14.8% of North Carolinians lived in a family with a household income below the poverty level (\$20,650/year for a family of four in 2007), and a total of 35.1% lived in low-income households with incomes below 200% FPG (\$41,300 for a family of four in 2007).¹¹ (See Table 11.1.) In fact, in 2006-2007 North Carolina had the 11th highest percentage of its population living below 200% FPG in the nation (only 10 states had higher proportions of low-income people).¹² Although current income data are not available, it is probable that the percentage of people living in poverty has increased further with the downturn in the economy. North Carolinians are likely to have been hit harder than most other states by the downturn in the economy, as the increase in the state's unemployment rate between 2007 and January 2009 was the second largest increase in the nation (5 percentage points, from 4.7% to 9.7%).¹³

The use of the federal poverty guidelines (FPG)^d as a measure for economic security and hardship is widely regarded as outmoded and flawed, as it fails to capture the true extent of economic hardship. In fact, a study by the National Research Council's Panel on Poverty and Family Assistance in 1996 determined that FPG

Table 11.1
Percentage of Families at Different Percentages of the Federal Poverty Guidelines (NC, US)

	Low-Income				
	Poor (<100% FPG)	Near Poor (100%-199% FPG)	Total (<200% FPG)	Middle Income (200-399% FPG)	Higher Income 400%+ FPG
Total					
NC	14.8%	20.3%	35.1%	32.8%	32.2%
US	12.5%	18.1%	30.6%	31.1%	38.3%
Adults					
NC	12.5%	19.4%	31.9%	33.4%	34.6%
US	10.5%	17.0%	27.5%	31%	41.5%
Children <19					
NC	21.2%	22.8%	44%	30.8%	25.2%
US	18.0%	21.1%	39.1%	31.3%	29.6%

Source: North Carolina Institute of Medicine analysis of the US Census Bureau's Current Population Survey, 2007.

d The federal poverty guidelines were developed in the mid 1960's using Department of Agriculture budget data detailing how much a family in an emergency/temporary situation would need to keep from starving. Results were modified by family size, multiplied by three, and adjusted for inflation.(Quinterno J, Gray M, Shofield J; North Carolina Justice Center. Making ends meet on low wages: the 2008 North Carolina Living Income Standard. [http://www.ncjustice.org/sites/default/files/2008%20LIS%20report%20\(Final%20March%2025\).pdf](http://www.ncjustice.org/sites/default/files/2008%20LIS%20report%20(Final%20March%2025).pdf). Published March 2008. Accessed June 11, 2009).

no longer provided an accurate picture of differences in poverty or trends over time and may lead to underestimates of the number of individuals in economic hardship. For example, work by researchers at the North Carolina Budget and Tax Center conclude that the 1.4 million North Carolinians did not earn enough income to cover seven basic necessities in 2008; this was 10% higher than the estimate obtained using the FPG measure.¹⁴ Furthermore, even this measure understates family income needs; when savings and debt are included in the Living Income Standard (LIS), the monthly income needs of families increases by 15%-16%.^e No matter which particular definition is used to gauge the number of low-income people in North Carolina, it easily exceeds one million.

Effect of Income on the Health of Children

Living in poverty or having a lower income affects a person's health throughout their lifetime. However, the impact is especially important for infants and children, as the conditions that shape health in childhood influence opportunities for health throughout life.¹⁵ North Carolina has one of the highest infant mortality rates in the country, ranking 45th in the nation in 2005. Infant mortality rates are greater for babies born to low-income mothers compared to high-income mothers.¹⁶ Low-income mothers are also more likely to give birth to a low-birthweight baby (less than 2,500 grams), which can result in mental and physical impairments in the child.¹⁶ This effect remains after controlling for race/ethnicity.

Economic deprivation and hardship in childhood have been demonstrated to be significant factors for adult health, with economic hardship experienced in childhood resulting in significantly higher risk of poor health in adulthood.^{15,17} Children in poverty are more likely to experience nutritional deficiencies, and poor nutrition in childhood can have a lasting effect on health.⁷ Many conditions, such as obesity, cardiovascular disease, cancer, and mental health problems are linked to health in the early years of life.¹⁸ In addition, children living in families with low incomes are restricted in their opportunities for health through reduced access to good schools, healthy and safe living conditions, healthy food, exercise, and health insurance.¹⁵ These factors combine to produce accumulated risk for poor health in the future. A study in Pitt County, North Carolina compared working and middle class African American men to determine the effect of childhood socioeconomic status (including education, occupation, employment status, and home ownership) on risk factors for hypertension.¹⁹ The study found that low childhood socioeconomic status was associated with 60% greater odds of hypertension in adulthood.

Compared to other states, North Carolina has one of the largest gaps in children's self-reported health status between lower and higher-income children (ranking 32nd of the 50 states and the District of Columbia).²⁰ In North Carolina, children (under age 18) in poor families are four times more likely than children in higher-income families to report being in less than very good health, with 26.9% of

Economic hardship experienced in childhood results in significantly higher risk of poor health in adulthood.

North Carolina has one of the largest gaps in children's self-reported health status between lower and higher-income children.

^e Data on inclusion of savings and debt and the effect on LIS are based on three counties: Graham, Mecklenburg, and Washington.

Poor children are more likely to have a chronic illness and have higher rates of accidental injuries than higher income children.

children with family incomes below 100% FPG reporting being in less than very good health compared to 6.5% for children with family incomes greater than 400% FPG.²⁰ While children living in poverty have the worst health, children in near-poor and middle income families report worse health than children in higher income families (17% and 11%, respectively). In 2008 approximately 8% of parents with household incomes below \$25,000 reported that their child's health was poor/fair, compared to only 0.3% in households with income greater than \$75,000.²¹ Poor children are also more likely to have a chronic illness and have higher rates of accidental injuries than higher income children.^{22,23} One potential cause is that children in families with incomes less than 200% FPG are more likely to be uninsured. Low-income children made up 14% of the uninsured in North Carolina in 2008, even though these children are eligible for public coverage through Medicaid or NC Health Choice (North Carolina's Children's Health Insurance Program).⁹ In addition, children in families with incomes below \$25,000 are more likely than children in families with incomes greater than \$75,000 to lack a personal provider (21% and 10%, respectively), miss school due to illness or injury (5 days a year and 3 days year, respectively), and watch more television (2.1 hours a day and 1.5 hours a day, respectively).²¹

Effect of Income on the Health of Adults

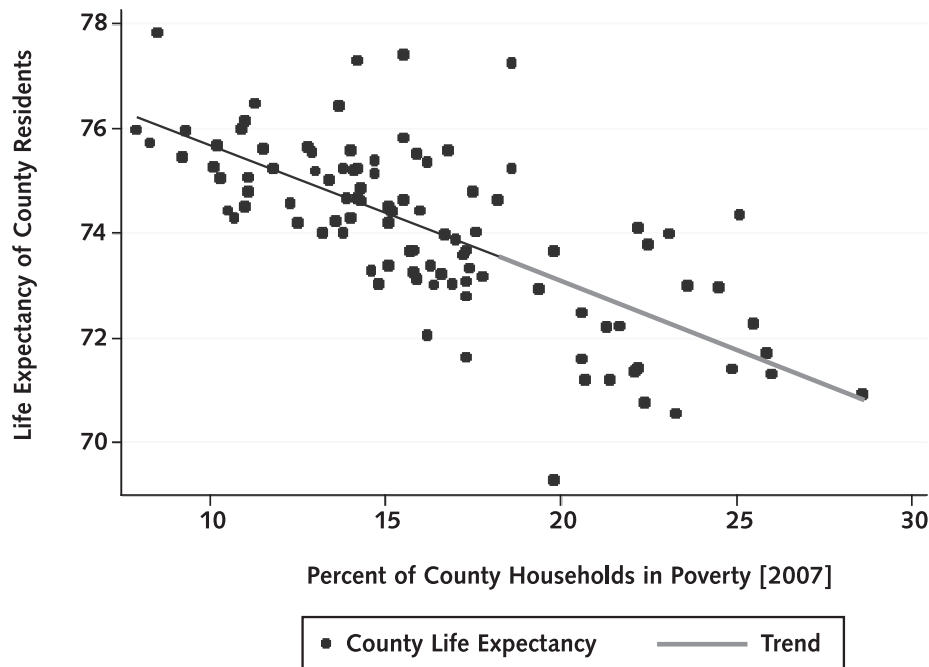
Individuals with higher incomes have a longer life expectancy than people with lower incomes. In the United States, men with incomes greater than 400% FPG are expected to live an average of eight years longer than men in poverty (78.5 years and 70.5 years, respectively), and women with incomes greater than 400% FPG are expected to live an average of 6.7 years longer than women in poverty (83.2 years and 76.5 years, respectively).⁷ As with children, North Carolina has a higher proportion of adults who are low-income than nationally. (See Table 11.1.)

In the United States, men with incomes greater than 400% FPG are expected to live an average of eight years longer than men in poverty.

Low family income is also associated with significantly higher all-cause mortality rates, even when controlling for age, sex, race, urbanicity, education, base-line health status, and health behaviors.¹⁰ Individuals with incomes less than \$10,000 per year have a 177% increased risk of premature death compared to people with incomes greater than \$30,000 per year. In addition, people with incomes between \$10,000 and \$29,000 have a 114% increased chance of dying prematurely compared to individuals in the highest income group.¹⁰ Figure 11.1 plots the life expectancy of residents in each North Carolina county against the percent of county residents living in poverty, along with a trend line. Not surprisingly, counties with the highest poverty rates have the shortest life expectancy. The effect size is meaningful—a four percentage point increase in a county's poverty rate is associated with one less year of life expectancy.

Poor adults are also more likely to report being in poor/fair health than high-income adults.⁷ In North Carolina in 2006-2007, individuals with household incomes in the lowest income group (<100% of FPG) were three times more likely to report being in fair or poor health than individuals with household incomes above 300% FPG (\$75,000+) (21.1% and 6.8%, respectively).²⁴ (See Figure 11.2.) Low-income adults are also more likely than high-income adults to have chronic illnesses such as diabetes, coronary heart disease, kidney disease, or a chronic

Figure 11.1
North Carolina Counties with the Highest Poverty Rates have the Shortest Life Expectancies



Source: North Carolina Institute of Medicine. Analysis of North Carolina Vital Statistics and US Census Bureau Small Area Income Poverty Estimates (SAIPE). Life expectancy computed from North Carolina Vital Statistics. Poverty estimates from SAIPE, 2007.

illness that limits activity. In 2008 North Carolinians in the lowest income level were approximately three times more likely to be diagnosed with diabetes than people in the highest income group (16.7% and 5.4%, respectively) and nearly three and a half times more likely to be diagnosed with coronary heart disease (8.1% and 2.3%, respectively).²⁵ Low income is also associated with higher prevalences of mental health and psychiatric conditions.²⁶

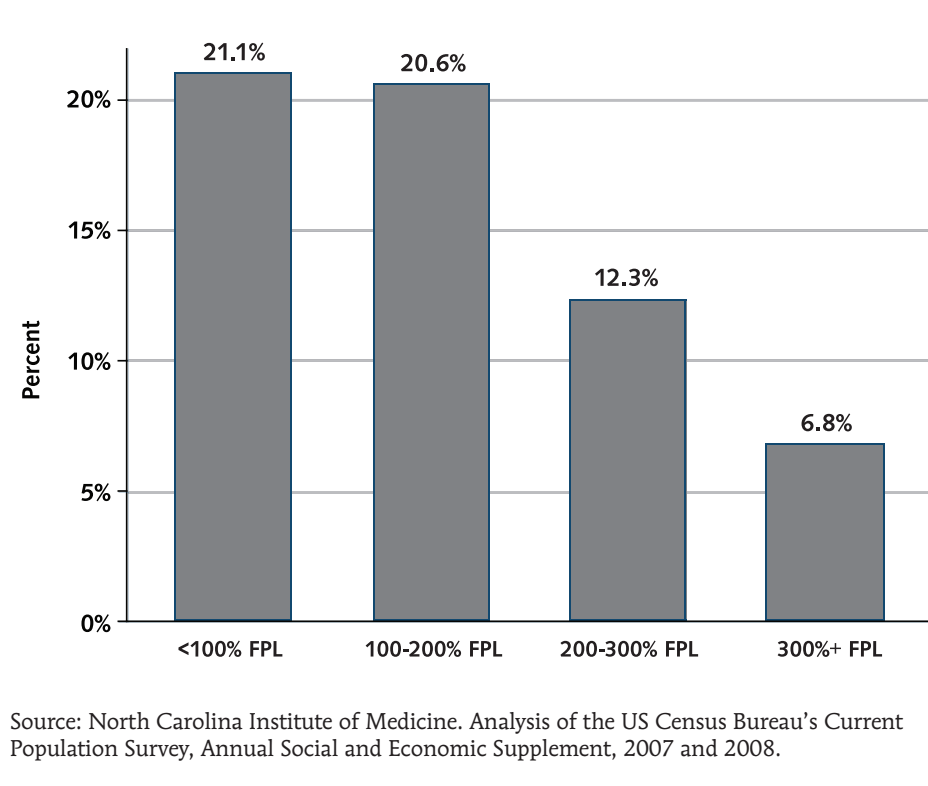
Poor individuals are also more likely to engage in certain risky health behaviors than more affluent individuals.¹⁰ In North Carolina, individuals in the lowest income group (<\$15,000) had significantly higher prevalences of tobacco use, physical inactivity, lack of social support, and disability than people in higher income groups.²⁵ As noted throughout the report, these risky health behaviors increase a person's chances of premature death or disability.

Low-income individuals are also more likely to face barriers to accessing health care and health care services. In 2008, 46% of the non-elderly uninsured were low-income adults (with incomes below 200% FPG).⁹ Poor individuals in the state are also significantly more likely to report delaying needed care due to costs; 34.7% of people with incomes below \$15,000 reported delaying care compared to 5.1% of people with incomes over \$75,000.²⁵

Low-income adults are also more likely than high-income adults to have chronic illnesses such as diabetes, coronary heart disease, kidney disease, or a chronic illness that limits activity.

Wealth (i.e. total financial resources accumulated over a lifetime) may have an even greater relationship with health than income.

Figure 11.2
Higher Income Individuals are Less likely to Report Fair/Poor Health, North Carolina 2008



Wealth

Wealth (i.e. total financial resources accumulated over a lifetime) may have an even greater relationship with health than income. Annual income is a rather unstable measure, as incomes vary from year to year. Some households experience sharp losses or increases in income with the loss or gain of a job. Wealth can buffer temporary financial changes. For example, sudden or temporary losses in income could be mitigated by using assets to cover income deficits. In addition, wealth can vary dramatically within income levels; whites in the bottom income group have nearly 400 times the net worth of African Americans in the same income group.²⁷ While there are conceptual and empirical grounds for measuring wealth in health studies, it has not been widely used as an economic indicator for economic status. Wealth is generally more difficult to measure, as it may require information on stocks, retirement accounts, pensions, real estate, automobiles, and taxes. The market values for these assets may be more time-consuming or difficult to determine, and accuracy in reported assets can be problematic.²⁸

While the number of studies using wealth as an indicator of economic position is small, studies that have examined the relationship between wealth and health have shown an association with mortality, self-reported health status, chronic conditions, mental health, and some risky health behaviors.²⁸ Greater wealth is generally associated with decreased mortality, even after controlling for education,

income, and occupation. When controlling for education and income, having greater levels of assets, absence of credit card debt, home ownership, and greater net worth are associated with better self-reported health. Conversely, people with less wealth are more likely to have a greater number of chronic conditions than people with more wealth.²⁸ Low wealth is also associated with increased depression, less leisure-time, physical activity, and increased use of alcohol and drugs. Wealth has an independent effect on health, after controlling for other socioeconomic measures such as income, education, or occupation.

In North Carolina in 2004, 11.3% of households had zero or negative net worth (i.e. household debt is equal to or greater than household financial assets). In addition, 17.5% of households in North Carolina were asset poor and did not have sufficient net worth to subsist at the poverty level for three months in the absence of income. North Carolina ranked 26th (out of the 50 states and the District of Columbia) in net worth of households, 36th in median credit card debt, and 30th in the rate of home ownership in 2004 (with one being the best performing state).²⁹ The accumulated wealth of North Carolinians, along with other people in the country, is likely to have suffered given the recent downturn in the economy. This, in turn, is likely to exacerbate existing health disparities in health outcomes.

Income inequality

Based on the positive relationship between income and health, one would expect that since the United States is the wealthiest country in the world, it would have the best health in the world. However, the United States ranks 25th among industrialized nations in infant mortality and 23rd in life expectancy.⁷ Researchers have suggested that instead of average income, it is the extent of income inequality in society that influences health. However, results on income inequality and health have been mixed, with some of the smaller studies unable to detect any differences based on the level of income inequality. However, the majority of studies that included larger sample sizes indicate a relationship between income inequality and different health indicators. In particular, state-level income inequality is associated with mortality, self-reported health, depression, hypertension, smoking, and lack of physical activity, with higher income inequality resulting in worse health.³⁰ These results suggest that the effect of income inequality on health may have an overarching effect beyond that of individual income. In other words, individual income affects individual health, but income inequality affects societal health so that individuals, regardless of individual income, living in a state or country with greater income inequality have worse health than states or countries with more equitable income distribution.³¹

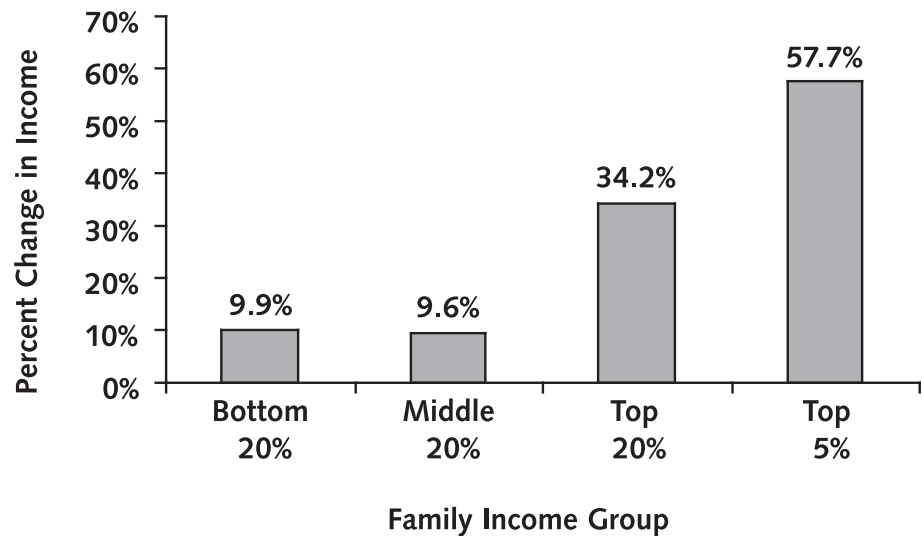
Income inequality has increased in North Carolina over the past two decades. In 2004-2006 the richest 20% of families in North Carolina had average incomes 7.2 times the size of the poorest 20%, up from 5.9 in 1987-1989. The growth in the income gap between North Carolina's richest and poorest families was the 21st largest in the nation. The growth in income inequality in the state is due to the fact that rich families have experienced much greater gains in income in the past

North Carolina ranked 26th (out of the 50 states and the District of Columbia) in net worth of households, 36th in median credit card debt, and 30th in the rate of home ownership in 2004 (with one being the best performing state).

20 years than low-income or middle-income families. (See Figure 11.3.) While the average income of the richest 5% of North Carolinians increased by 57.7% between 1987-1989 and 2004-2006, a gain of approximately \$4,249 a year, the income of the poorest 20% of families only increased by 9.9%, or approximately \$87 per year.^{31,32}

Figure 11.3

The Highest Income Families in North Carolina had the Greatest Gains in Income Over the Last 20 Years



Source: Center on Budget and Policy Priorities and Economic Policy Institute. Pulling apart: a state by state analysis of income trends. <http://www.cbpp.org/4-9-09sfp.htm>. Published April 2008. Accessed June 17, 2009.

In 2008 more than a million North Carolinians lived in a family that did not earn enough money to afford basic, necessary expenses, even though 61% of adults in these families worked. Economic insecurity forces families to choose between purchasing health care and other basic necessities.

Increasing Economic Security

As discussed above, in 2008 more than a million North Carolinians lived in a family that did not earn enough money to afford basic, necessary expenses, even though 61% of adults in these families worked.¹⁴ Economic insecurity forces families to choose between purchasing health care and other basic necessities. The constant prioritization and struggle to make ends meet can produce chronic stress. Research has shown that stressful experiences have a negative impact on health and can damage immune defenses and vital organs, especially with repeated stresses over time.³³ Stress can also lead to chronic illnesses, such as cardiovascular disease, and accelerated aging.

Economic insecurity may also lead to food insecurity, where individuals/families have limited access to nutritionally adequate and/or safe foods.³⁴ Adequate nutrition, both while in the womb and after birth, is critical for the healthy development of children. Increasing evidence indicates that the environment in the womb influences the development of type 2 diabetes, high blood pressure, and heart disease both in childhood and adulthood.¹⁸ Households in North Carolina

with lower incomes are significantly more likely to experience food insecurity. In 2008, 15.8% of parents with incomes below \$25,000 reported cutting their child's meal size due to a lack of money to purchase food, compared to less than 1% in households with incomes greater than \$75,000.²¹ Food insecurity can also cause adults to prioritize food over medications or medical care. In fact, food insecurity has been shown to be independently associated with postponing needed medical care and medications, as well as increased use of the emergency department. During 2007 the number of children with food insecurity increased by more than 60%, to 691,000.¹⁸ With the continued decline in the US economy, it is likely that many more children and families are currently experiencing food insecurity.

One way to increase economic security for low- and moderate-income families and thus allow for greater opportunity for healthful living is through increasing the state Earned Income Tax Credit (EITC), as the majority of poor and low-income families has at least one worker. The federal EITC is one of the most effective anti-poverty measures for low- and moderate-income working families in the United States and lifts approximately 4.5 million people, more than half of whom are children, out of poverty each year.^{35,36} The federal credit is a refundable earned income tax credit (i.e. after offsetting for taxes owed, the remaining credit is provided as a refund) for people earning less than approximately \$40,000 a year (depending on family size) and provides low-income and middle-income workers with additional funding to pay for the difference between what they earn and the income they need to meet their basic needs.^f Research has shown that families use the credit to buy basic necessities, pay down debt, and finance education and housing, all of which promote economic security.¹⁴ Using the EITC is also attractive politically as it rewards work, is administered as a universal benefit, and reaches 95% of eligible people. The importance of the EITC is even greater at the state level. State and local taxes are generally regressive, so that low-income taxpayers use more of their income to pay for taxes than high income taxpayers.³⁷ In 2002 the poorest fifth of North Carolinians paid 10.6% of their income on state and local taxes while the highest-income North Carolinians paid only 6.1%.³⁸ During the 2007 Session, the North Carolina General Assembly created a state EITC. Originally set at 3.5% of the federal EITC for tax year 2008, the credit was increased to 5% during the 2008 Session (for tax year 2009).^g Low-income and middle-income workers who qualify for the federal credit are eligible for the state EITC.^h The EITC became effective in 2009 and is expected to provide approximately

Food insecurity has been shown to be independently associated with postponing needed medical care and medications, as well as increased use of the emergency department.

One way to increase economic security for low- and moderate-income families and thus allow for greater opportunity for healthful living is through increasing the state Earned Income Tax Credit (EITC), as the majority of poor and low-income families has at least one worker.

^f The federal Earned Income Tax Credit (EITC) varies by family size and income level, providing greater refunds for lower incomes and larger families. The federal credit is also administered so that the credit phases out gradually as income increases over a certain point. In 2008, a single parent with two children received a credit of 40% for every dollar earned up to approximately \$12,000. Between \$12,000 and around \$16,000, no additional credit was received. The credit began to phase out after approximately \$16,000, falling to zero for earned incomes over \$38,646. (Institute on Taxation and Economic Policy. Policy brief #15: rewarding work through earned income tax credits. <http://www.itepnet.org/pb15eitc.pdf>. Published 2008. Accessed June 18, 2009.

^g NCGS 105-151.31(a). The 3.5% credit is effective for taxable year 2008. The 5% credit will be effective for taxable year 2009.

^h The state EITC estimator calculates how much a person/family can generally expect to receive from the EITC. The Estimator is available at <http://www.cbpp.org/eic2009/calculator/>.

An additional measure to increase economic security—by decreasing food insecurity—would be to increase the use of the Supplemental Nutrition Assistance Program (SNAP) by low-income individuals and families.

\$50 million annually to more than 825,000 low- and moderate-income working North Carolinians.³⁹ The combined federal and state EITCs could be worth close to \$5,000 for families with two or more children.³⁷ However, the current level of the state EITC may not be sufficient to fully lift working families out of poverty, especially during the current recession. A bill has been proposed in the North Carolina General Assembly to increase the state EITC to 6.5% of the federal EITC.ⁱ The increase will provide further support to low-income working families and families who have lost jobs or been forced to work in lower paying jobs due to the recession.^j The Task Force supports this increase of the state EITC.

An additional measure to increase economic security—by decreasing food insecurity—would be to increase the use of the Supplemental Nutrition Assistance Program (SNAP) by low-income individuals and families.^k SNAP helps families with monthly incomes less than or equal to 130% FPG purchase basic groceries.^l SNAP may only be used to purchase food products. While monthly assistance is modest (about half of participating households received less than \$200 a month in 2008), the benefit has helped increasing numbers of low-income North Carolinians weather the recession. In April 2009, approximately 1.2 million North Carolinians, or 13% of the population, lived in a family receiving SNAP, an increase of more than 21% since 2007.⁴⁰ In addition, SNAP payments are fully federally funded and generate an important economic stimulus in the state. Between December 2007 and March 2009, families in North Carolina received over \$1.6 billion in assistance.^m These funds were used to purchase food locally, generating an estimated \$2.8 billion in economic activity in the state.^{n,41} However, SNAP may not be reaching everyone in need. Expanding outreach to individuals and families could increase the number of households aware of SNAP and raise program participation. In addition, the more people receiving the benefit, the greater the purchasing power of low-income community residents and the greater the economic benefit to the state.

To increase the economic security and health of North Carolinians, the Task Force recommends:

i NCGA House Bill 1415 (2009).

j As long as a person earned income at some point in the year, they are still eligible for the EITC.

k SNAP benefits were formerly called Food Stamps.

l Gross income must not exceed 130% of the federal poverty guidelines. Net income may not exceed 100% of the federal poverty guidelines. Resources must not exceed \$2,000 per household (unless a household member is 60 years old or more, in which case resources can be up to \$3,000). Food Stamp recipients must meet Temporary Assistance for Needy Families (TANF) work requirements.

m Total amount in inflation-adjusted dollars.

n Research indicates that every \$1 in SNAP benefits generates \$1.73 of additional spending. (North Carolina Justice Center. BTC Brief. Reversing the decline: food stamps bolster local economies, help households weather economic storm. <http://www.ncjustice.org/sites/default/files/2009-BTC%20Brief%20FNS%20Impact.pdf>. Published May 2009. Accessed June 18, 2009.)

Recommendation 11.1: Promote Economic Security (PRIORITY RECOMMENDATION)

- a) The North Carolina General Assembly should increase the state Earned Income Tax Credit (EITC) to 6.5% of the federal EITC.
- b) The North Carolina Division of Social Services and local Departments of Social Services should conduct outreach to encourage uptake of the Supplemental Nutrition Assistance Program (SNAP) by low-income individuals and families.

Neighborhoods and Housing

The links between housing and health are complex, but it is now clear that substandard, unhealthy, overcrowded, and unaffordable home environments contribute to a large number of health problems.⁴²⁻⁴⁴ Many of these problems fall disproportionately on lower income individuals, who are more likely to live in older or substandard housing, in overcrowded conditions, and spend excessive amounts of their income on housing.⁴⁵

Neighborhood Characteristics

Most people understand the link between individual socioeconomic characteristics (i.e. income, wealth or education) and health. However, the communities in which a person lives can also have an effect on health.⁴⁶ Studies have shown that people who live in poorer neighborhoods have higher mortality rates, worse birth outcomes, more chronic illnesses, and poorer reported health status than people living in higher income neighborhoods. For example, a study in Wake County, North Carolina, found that living in poorer neighborhoods is associated with higher odds of having a pre-term birth, even when controlling for individual characteristics and risk factors.⁴⁷ Communities with higher concentrated poverty and lower social cohesion have also been associated with greater rates of depression and higher rates of teen pregnancy or conduct disorders among adolescents.^o Moreover, many of these adverse health impacts persist, even after adjusting for individual-level characteristics of the people living in the different neighborhoods.⁴⁸ As discussed more fully in other chapters, the neighborhoods in which we live can impact health in a number of different ways. Different neighborhoods offer different access to healthy food choices (discussed more fully in Chapter 4) or the availability of sidewalks, parks, and other open spaces (discussed in Chapter 4). In addition, the health of a community can be affected by the proximity of environmental hazards (discussed in Chapter 7).

Substandard, unhealthy, overcrowded, and unaffordable home environments contribute to a large number of health problems.

^o North Carolina has a smaller percentage of its population living in high poverty concentration communities in 1999, with 14.6% of the state population lived in high-poverty communities (defined as having 20% or more of the community in poverty) compared to 18.4% nationally. (Bishaw A. US Census Bureau. Areas with Concentrated Poverty: 1999. <http://www.census.gov/prod/2005pubs/censr-16.pdf> . Published July 2005. Accessed June 18, 2009)

Many falls, poisonings, and fire-or-burn related deaths and injuries occur in the home.

Overcrowding could also create serious health problems in the event of a particularly virulent influenza pandemic.

Housing

Housing that is damp, poorly ventilated, overly hot or cold, or overcrowded, as well as housing that lacks hot water, adequate food storage, or sufficient waste disposal has been linked to infection, disease, and other illness.⁴³ Inability to maintain a comfortable temperature in the home can be a risk factor for poor health, particularly for the young and old, and can also lead to increased mold growth.⁴⁹⁻⁵² Young children, many of whom spend more than 90% of their time in the home, may be at especially high risk for problems caused by unhealthy home environments.⁵³ Although unhealthy home environments tend to be more prevalent in older or substandard housing, environmental health hazards can be present in homes of any age.⁵⁴ The relationship between environmental hazards in the home and health is described more fully in Chapter 7.

Unfortunately, there is no estimate of the number of people in North Carolina living in substandard housing, broadly defined. The US Census Bureau only collects state level data on the number of people living without cooking or plumbing facilities. In 2007 there were very few occupied housing units in North Carolina that lacked plumbing (<12,000 units) or kitchen facilities (<16,000).^{55,56} However, the problem of substandard housing is much larger than just the lack of plumbing or kitchen facilities. The US Census Bureau’s American Housing Survey collects more detailed housing information but does not report state-specific data. Nationally, and in the south, low-income households are more likely to be older homes, those with holes or cracks in the floor or foundation, homes with rodents, and those without smoke detectors.⁵⁷ (See Table 11.2.)

Table 11.2
Low-Income Households are More Likely to Live in Housing with Potential Health Issues (Southern Region, US 2007)

Family Income	Rodents in last 3 months	Hole or crack in floor or foundation	No smoke Detector	Built before 1978 (prohibition of lead paint)
<100% FPG	10%	9%	16%	67%
100%-200% FPG	7%	7%	12%	63%
200%-300% FPG	6%	5%	9%	55%
>300% FPG	4%	3%	5%	47%

Source: North Carolina Institute of Medicine. Analysis of 2007 American Housing Survey, US Census Bureau. Houses in South region only.

Poor housing conditions can also lead to unintentional injuries. Many falls, poisonings, and fire-or-burn related deaths and injuries occur in the home. National estimates suggest that 50% of all deaths due to falls, 25% of all poisoning-related deaths, and 90% of all fire- or burn-related deaths occur in the home.⁵⁸ In addition to deaths, injuries in the home contributed to 16% of all non-fatal injuries that resulted in a visit to a physician’s office, 22% of the injuries that resulted in a visit to a hospital outpatient department, and 33% of the injuries

that resulted in a visit to the emergency department.⁵⁹ (Unintentional injuries are described in more detail in Chapter 8).

Many of the environmental hazards, injuries, and accidents that occur in the home can be prevented. The Centers for Disease Control and Prevention (CDC), the US Department of Housing and Urban Development (HUD), and the Environmental Protection Agency (EPA) have created the Healthy Homes Initiative to improve housing conditions and create healthier homes. This is described more fully in Chapter 7.

Overcrowding

Living in close proximity to others makes it easier to transmit certain infectious diseases, including tuberculosis and respiratory infections.^{43,60} Overcrowding could also create serious health problems in the event of a particularly virulent influenza pandemic.

Low-income people are more likely than others to live in overcrowded conditions. In 2007 more than 70,000 housing units in the United States were overcrowded (2% of all housing units).^p In North Carolina, rented units are almost four times more likely to be overcrowded than owned units (4.0% vs. 1.1%).⁶¹ More families are facing evictions or foreclosures due to the downturn in the economy. This, in turn, has led to increased doubling-up or sharing housing with other family or friends.⁶² Thus, the number of people living in overcrowded conditions is likely to have increased since the 2007 American Community Survey.

Housing Affordability

In addition to overcrowding, housing affordability is a particular problem in North Carolina. Families, especially low-income families, that spend a large amount of their income on housing (rent or mortgage), have less disposable income to spend on food, heating, medical needs, transportation, or other basic needs. Studies have shown that families that report having difficulty paying rent or utilities have greater reported barriers to accessing health care, higher use of the emergency department, and more hospitalizations.³⁴

In general, housing is considered to be unaffordable (high cost burden) if the individual or family has to spend more than 30% of their income on housing. Housing is considered to be extremely unaffordable if the person has to spend more than 50% of their income on housing. In North Carolina, approximately 1.1 million households spent more than 30% of their household income on housing costs in 2007.^{63,64} Of these, 18% (more than 624,000 households) spent between 30%-49% of their household income on housing, and 13% (more than 460,000 households) paid more than 50% of their income on housing. (See Figure 11.4.)

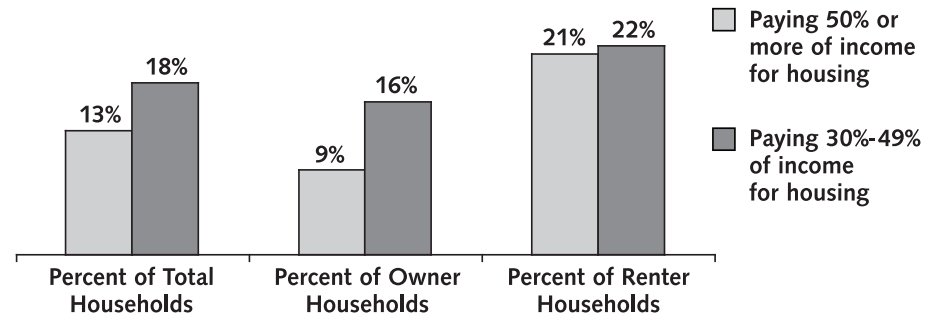
Low-income families are much more likely to rent than to live in owner occupied housing. For example, more than half of renters in North Carolina have incomes below \$35,000 (37% of the renters have incomes less than \$20,000 and 25% have

Studies have shown that families that report having difficulty paying rent or utilities have greater reported barriers to accessing health care, higher use of the emergency department, and more hospitalizations.

p Overcrowded housing is defined as having more than one person per room.

Housing affordability is a problem which predominantly affects lower income families.

Figure 11.4
Almost One-Third of North Carolina Households Live in Unaffordable Housing (2007)



Source: US Census Bureau. 2007 American Community Survey, Table B25070 and B25091.

incomes between \$20,000 and \$34,999). In contrast, only 29% of people living in owner occupied houses have incomes in the same range (14% of people living in owner occupied housing have incomes of less than \$20,000, and another 15% have incomes between \$20,000 and \$34,999).⁶⁶

Perhaps not surprisingly, low-income renters are more likely than people with higher incomes to live in “unaffordable” housing, spending more than 30% of their income on housing costs. For example, 73% of North Carolina renters with incomes below \$20,000 a year spend 30% or more on rent, in comparison to 51% of those with incomes between \$20,000 and \$34,999 a year, 13% of those with incomes between \$35,000 and \$49,999 a year, and only 2% of those with incomes above \$50,000 a year.⁶⁷ Thus, housing affordability is a problem which predominantly affects lower income families.

Because of the high cost of housing, people who have limited incomes have less choice about where to live. They may be forced to live in overcrowded or substandard housing or in unsafe neighborhoods. People who have problems paying their housing costs move more frequently; some experience periods of homelessness. Residential instability is linked to poorer health outcomes among adolescents, including higher levels of behavioral and emotional problems, increased rates of teen pregnancy, earlier initiation of drug use, and increased depression.⁶⁵ Some studies suggest a causal relationship between increased residential mobility and worse health outcomes. There are also numerous studies which show links between homelessness and health status. In North Carolina, there are an estimated 10,000-12,000 people who are homeless on any particular day.⁴ Individuals living on the street or in temporary shelters are more likely to report mental health problems, suicide, alcohol and drug dependency, respiratory infections, accidents, and violence than others with more stable housing. Some of

q Are M. Homeless Policy Specialist, North Carolina Department of Health and Human Services. Written (email) communication. June 18, 2009.

these conditions may have contributed to the person's homelessness, whereas other health problems may have been caused or exacerbated by the lack of housing.⁴⁵

In 1987, the North Carolina General Assembly established the Housing Trust Fund. Since 1987, the General Assembly has appropriated differing levels of annual funding to the North Carolina Housing Finance Agency to support the Housing Trust Fund. Funding levels have ranged from \$0 to almost \$19 million, largely in non-recurring funds.^r Funds from the Housing Trust Fund are used to leverage other private development funds and to lower the costs of building single, multi-unit, and apartment complexes so that they are affordable to low-income families, seniors, and people with disabilities. In addition, some of the funding is used to develop housing options for people with mental illness, developmental disabilities, or other disabilities, as well as homeless individuals and victims of domestic violence.⁶⁸ Historically, Housing Trust Funds have been used to develop more than 19,000 affordable homes and apartments. Eighty percent of the funds are used to support families with incomes below 50% of the local median household income (approximately \$22,400/year on a statewide basis in 2007), and almost half (48%) are used to help increase affordable housing options for families below 30% of the local median income (about \$13,400/year on a statewide basis).^s

North Carolina can do more to expand affordable housing options. The major constraint is the lack of funding through the Housing Trust Fund. Since its inception, funding for the Trust Fund has varied. Over the last five years, non-recurring funding has ranged between \$3 million and \$10 million.^t The North Carolina General Assembly began appropriating recurring funds in FY 2006, which have ranged between \$3 million and \$10 million. The North Carolina General Assembly should expand the amount of recurring funds appropriated to the Housing Trust Fund. One option would be to capture the interest from housing security deposits and dedicate the funds for the Housing Trust Fund.^u Regardless of the funding source, the Task Force supports increased funding to the Housing Trust Fund to expand the availability of affordable housing. In addition, the Task Force supports strategies to reduce utility expenses for low-income families, in order to ensure that these families can afford heating and cooling costs.^v Thus, the Task Force recommends:

r Estes C. Executive Director, North Carolina Housing Coalition. Written (email) communication. June 19, 2009.

s The median household income was \$44,772 in 2007. (North Carolina Quick Facts. US Census Bureau. American Community Survey 2007. <http://quickfacts.census.gov/qfd/states/37000.html>.)

t Estes C. Executive Director, North Carolina Housing Coalition. Written (email) communication. June 19, 2009.

u In 2007, the North Carolina Supreme Court mandated that the State Bar implement a mandatory program capturing interest on the general client trust accounts maintained by attorneys. This IOLTA (interest on lawyer's trust accounts) is used to support pro bono services for low-income populations. http://www.ncbar.gov/programs/iolta_banks.asp

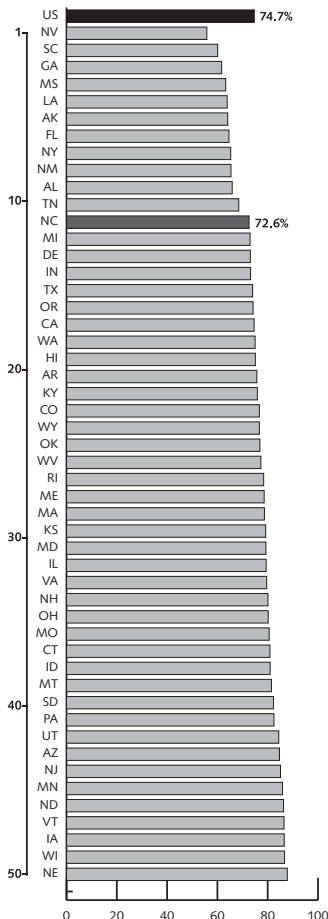
v For example, the Task Force on Prevention heard about the North Carolina Saves Energy bill (HB 1050) that was introduced in the 2009 General Assembly. The proposed legislation would set up an NC SAVES ENERGY fund to promote energy conservation and energy efficiencies, and would promote low-income weatherization programs. Priority in funding would be given, in part, to housing owned or occupied by low- and moderate-income residents.

Recommendation 11.2: Increase the Availability of Affordable Housing and Utilities

To help economically disadvantaged North Carolinians better afford housing and utilities, the North Carolina General Assembly should:

- a) Appropriate \$10 million in additional recurring funding beginning in SFY 2011 to the North Carolina Housing Finance Agency to increase funding to the North Carolina Housing Trust Fund.
- b) Enact legislation to help all North Carolinians and especially low-income North Carolinians lower their energy expenses.

Percent of Incoming Ninth Graders Who Graduate Within Four Years, 2004-2005



Source: United Health Foundation. America's Health Rankings: data tables. United Health Foundation website. <http://www.america'shealthrankings.org/2008/tables.html>. Published 2008. Accessed December 4, 2008.

Educational Achievement

Academic achievement and education seem to be strongly correlated with health across the lifespan. In general, those with less education have more chronic health problems and shorter life expectancies. In contrast, people with more years of education are likely to live longer, healthier lives. This education-health link is one that seems to result from the overall amount of time spent in school rather than from any particular content area studied or the quality of education. Further, these health disparities based on years of education are seen in every ethnic group.⁶⁹

Unfortunately, North Carolina does not fare well in educational achievement. According to the North Carolina Department of Public Instruction (DPI) data for 2007-2008, the four-year cohort graduation rate was 70.3%. This four-year cohort graduation rate shows how many students who began high school in the 2003-2004 academic year graduated four years later. The graduation rate increases slightly (71.8%) when examining the five-year graduation rate. While these statistics are disappointingly low, the numbers are even lower for minority and disadvantaged students.⁷⁰ Nationally, North Carolina ranks 39th in the percentage of incoming ninth graders who graduate within four years.⁷¹ The state has a long way to go to ensure that more of its students graduate from high school and, in turn, are healthier. Access to affordable, quality health care is important when considering ways to improve the health of North Carolinians, but health care alone is not enough to improve long-term health. We must also focus on schools and education policies to improve the health of our state.¹

The Impact of Education on Health

Adults who have not finished high school are more likely to be in poor or fair health than college graduates. The age-adjusted mortality rate of high school dropouts ages 25-64 is twice as large as the rate of those with some college education. They are also more likely to suffer from the most acute and chronic health conditions, including heart disease, hypertension, stroke, elevated

cholesterol, emphysema, diabetes, asthma attacks, and ulcers.^w College graduates live, on average, five years longer than those who do not complete high school. In addition, people with more education are less likely to report functional limitations and are also less likely to miss work due to disease.⁷¹

Educational achievement is not only correlated with the health of the individual, but also with that of his or her offspring. For example, maternal education is strongly linked to infant and child health. Babies born to women who dropped out of high school are nearly twice as likely to die before their first birthday as babies born to college graduates.² More educated mothers are less likely to have babies with low- or very low-birth weight, which is correlated with infant death within the first year of life. Children whose parents have not finished high school are more than six times as likely to be in poor or fair health as children whose parents are college graduates.⁷

It is difficult to determine whether the effect of education on health is causal. It is possible that there is an inverse relationship between the two—that is, that poor health affects educational achievement. Alternatively, it is also possible that poor educational achievement has mediating effects that are harmful to a person's health. For example, people with less education earn, on average, less than those with higher levels of schooling. Living in poverty has been shown to have adverse impacts on health. Additionally, there are data to show that people with less education are more likely to engage in risky behaviors which can lead to worse health outcomes. All of these factors—educational achievement, income, wealth, and health behaviors—are interrelated and, together, can have significant health impacts. However, existing evidence does suggest some degree of causality running from education to health.⁷²

The Impact of Education on Health Behaviors

Not only does education shape health outcomes, it also influences health behaviors. Data indicate that individuals with more education lead healthier lives and engage in fewer risky behaviors. Studies have examined health risks by years of added education. Table 11.3 summarizes the findings of one study. The table includes two columns—the implied change in percentage points due to four additional years of education and this effect relative to the mean. For example, those with four more years of education are eight percentage points less likely to smoke; evaluated at the average prevalence, this is a 35% reduction in the prevalence of smoking (from 23% prevalence to 15% prevalence).

Individuals with four more years of education are less likely to smoke, binge drink, or use illegal drugs than are those with less education. The better educated are also less likely to be overweight or obese. Additionally, they are significantly more likely to engage in protective health behaviors. People with more education are more likely to get preventive care such as flu shots, mammograms, pap smears,

Adults who have not finished high school are more likely to be in poor or fair health than college graduates. They are also more likely to suffer from the most acute and chronic health conditions, including heart disease, hypertension, stroke, elevated cholesterol, emphysema, diabetes, asthma attacks, and ulcers.

^w Cancer, chicken pox, and hay fever are exceptions, possibly due to increased rates of reporting, screening and diagnosis, or cancer survival. Physical and mental functioning are improved for those with more education, as they are less likely to self-report poor health, anxiety or depression.

and colonoscopies. Additionally, individuals with chronic conditions, such as hypertension or diabetes, are more apt to have their condition under control if they have more years of education. The probability of always using a seat belt, as well as having a house with a smoke detector, and one that has been tested for radon, is higher among those with more years of education. Moreover, these positive health impacts associated with increased years of education persist, even after controlling for income, family size, marital status, urbanicity, race, Hispanic origin, coverage by health insurance, occupation, and industry.⁶⁹

After controlling for exercise, smoking, drinking, seat belt usage, and use of preventive services, the effect of education on mortality is reduced by only 30%.

Table 11.3
 Measure of Effects (in percentage points and relative to the mean) of Four More Years of Schooling on Health Risk and Health Protective Behaviors

Health Behavior	Percentage point change	Percentage change relative to overall mean
<Smoking	-8	-35%
Consume Alcohol (number of days of 5 or more drinks)	-7	-64%
Overweight/Obese	-5	-22%
Use Illegal Drugs	-.6	-12%
Get flu shots	+7	23%
Get mammograms	+10	19%
Get pap smears	+10	17%
Get colonoscopies	+2.4	27%
Always use seat belt	+12	18%
Have house with smoke detector	+10.8	14%
Have house tested for radon	+2.6	65%

Source: Cutler D, Lleras-Muney A. National Bureau of Economic Research. Education and health: evaluating theories and evidence. <http://www.nber.org/papers/w12352>. Published 2006.

While it is very likely that that the positive health outcomes associated with education are at least partially due to differences in health behaviors, the behavioral differences do not explain all of the differences. After controlling for exercise, smoking, drinking, seat belt usage, and use of preventive services, the effect of education on mortality is reduced by only 30%. This relatively moderate reduction suggests that there are other reasons or behaviors that contribute to the lower mortality rate among those with more education.⁶⁹ These results support the concept that dropping out of high school is itself a risk behavior. Thus, policies that promote greater educational achievement (e.g. higher graduation rates or more years of education) are also health promoting policies. Education matters for health and may be an underutilized arena for health interventions.

Early Childhood Interventions

As noted previously, low-income families generally have worse health outcomes than families with higher incomes. Furthermore, on average, poor children often have parents with lower educational achievement than those children in higher income families. In North Carolina, 23% of low-income parents never completed high-school, compared to 2% of those earning more than 200% FPG. In households where parents earn more than 200% FPG, 16% have completed some high school and 82% some college. Of parents in households earning less than 200% FPG, 37% have completed some high school and 39% some college. In addition, many parents in low-income households are working more than one job to make ends meet.⁷³ As a result, children in lower income families often come to school less prepared and with fewer parental resources to help bridge the educational gap.

Children who live in poverty lag behind more affluent children in cognitive, language, and socioemotional skills as early as three years of age. The gaps are wide at kindergarten and for African American children increase with each year of schooling.⁷⁴ Gaps in behavioral and academic skills at the start of schooling have an impact on both short- and long-term achievement. Interventions and support, such as high quality child care and preschool programs can help low-income children start school on more equal footing. High-quality early education programs boost the achievement of African American and Latino children and narrow the school readiness and later achievement gaps.⁷⁵ Other research has demonstrated that the long-term effects (e.g. lower crime rates and higher graduation rates) produce a positive return on investment for high-quality early childhood programs.⁷⁶ A cost-benefit analysis of one North Carolina program has shown a tremendous rate of return on the investment. For every dollar that was invested in quality early child care, approximately four dollars were generated. This high rate of return can be attributed to increases in earning potential of over \$143,000 over the lifetime of the participants, savings to school districts over \$11,000 per child due to decreased need for services, and improved health benefits partially attributed to lower rates of smoking.⁷⁷

There is no one strategy that works for all children, as interventions should match a child's or family's needs.⁷⁸ Fortunately, there are different evidence-based programs which have been found to increase parental bonding, identify children with or at risk of developmental delays, and increase school readiness. Smart Start,^x North Carolina's early childhood initiative that helps ensure that young children enter school healthy and ready to learn, is investing in research-based programs that produce outcomes that young children need, including:

- Incredible Years: a program that improves parenting skills and decreases children's behavior problems.⁷⁹

Children who live in poverty lag behind more affluent children in cognitive, language, and socioemotional skills as early as three years of age. Gaps in behavioral and academic skills at the start of schooling have an impact on both short- and long-term achievement.

x More information about Smart Start and North Carolina Partnership for Children is available at: <http://www.smartstart-nc.org/>.

- Assuring Better Child Health and Development (ABCD): a program that incorporates developmental screening into primary health care practices to identify children with developmental problems as early as possible.⁸⁰
- High-quality early education programs: programs that increase children's learning skills and school readiness.⁸¹

North Carolina should invest more in high quality early childhood programs.^y High-quality early childhood health and education programs can improve parent-child bonding, identify children at risk of learning delays, contribute to greater academic success, increase earning potential, and lead to healthier life outcomes. Therefore, the Task Force recommends:

Recommendation 11.3: Expand Opportunities for High Quality Early Childhood Education and Health Programs

North Carolina Smart Start should further disseminate the Incredible Years program, the Assuring Better Child Health and Development program, and high-quality education programs to promote healthy social and emotional development among children in need in all North Carolina counties. The North Carolina General Assembly should appropriate \$1.2 million in recurring funds to the North Carolina Partnership for Children, Inc. to support this effort.

Youth development programs that promote school connectedness are very important for both academic success and long-term health.

Interventions during Adolescence

After the early years, an intensified focus on youth and adolescent development is essential for increasing school success for middle- and high-school students. Schools play a vital role in helping young people achieve the competence, confidence, character, and connectedness that they require to interact with appropriate social behaviors, to have a zest for life, and to succeed in school. Positive school climates that help build these life-enhancing skills will keep kids in school for longer periods of time. Connectedness to school, followed by family and community, has been found in some studies to be the most powerful protective factor for increasing the likelihood of positive outcomes for youth, including staying in school and its correlate, improved health. Therefore, youth development programs that promote school connectedness are very important for both academic success and long-term health.⁸²

Not surprisingly, children perform better on standardized tests and hence are more likely to graduate when they have fewer absences, fewer office referrals, and fewer short- and long-term suspensions. These students have more time in the classroom to learn. There is also an association between school crime and violence, suspensions and expulsions, and dropouts in North Carolina.⁸³ Therefore, evidence-based strategies that are effective at improving behavior and keeping

^y The 2009 Appropriations Act cut funding for both Smart Start and More at Four, and the 2009 Studies Act includes a provision to study, among other items, consolidating these programs.

children in school should be implemented to decrease suspensions and to increase achievement outcomes.

Fortunately, there are evidence-based programs in North Carolina that are effective at improving educational outcomes. Schools that are doing a better job at reducing suspensions, drop-out rates, and crimes have generally been more proactive in their approach. Schools that have implemented Positive Behavior Support, ninth grade academies, alternative programs and schools, and innovative high school models such as early college programs (such as Learn and Earn) are seeing positive early results.

It was beyond the scope of work for this Task Force to delve into details of these particular programs, but because education can have an impact on health throughout life and across generations, the Task Force recognized the importance of improving the high school graduation rate. Investments aimed at increasing educational attainment can decrease society's health-related costs, increase earnings, boost tax revenues for governments, decrease welfare expenditures, and decrease crime and incarceration rates.^z Thus, the Task Force recommended that North Carolina focus on increasing educational attainment within the K-12 years, with a particular focus on increasing the high school graduation rate. To do this, the Task Force recommended:

Because education can have an impact on health throughout life and across generations, the Task Force recognized the importance of improving the high school graduation rate.

Recommendation 11.4: Increase the High School Graduation Rate (PRIORITY RECOMMENDATION)

- a) The North Carolina State Board of Education (SBE) and the North Carolina Department of Public Instruction (DPI) should expand efforts to support and further the academic achievement of middle and high school students with the goal of increasing the high school graduation rate. The SBE should implement evidence-based or best and promising policies, practices, and programs that will strengthen interagency collaboration (community partnerships), improve student attendance rates/decrease truancy, foster a student-supportive school culture and climate that promotes school connectedness, explore and implement customized learning options for students, and more fully engage students in learning. Potential evidence-based or promising policies, practices, and programs might include, but are not limited to:
 - 1) Learn and Earn partnerships between community colleges and high schools.
 - 2) District and school improvement interventions to help low-wealth or underachieving districts meet state proficiency standards.

^z Section 7.13.(a) of SL2007-451 increased state appropriation for dropout prevention grants by \$13 million. Specific evaluation components include programs aimed at teen pregnancy prevention and pregnant and parenting teens. Furthermore, additional appropriations boosted recurring funding for Learn and Earn and North Carolina Virtual Public Schools by \$3.6 million and \$2 million, respectively.

- 3) Alternative learning programs, for students who have been suspended from school, that will support continuous student learning, behavior modifications, appropriate youth development, and increased school success.
 - 4) Expansion of the NC Positive Behavior Support Initiative to include all schools in order to reduce short- and long-term suspensions and expulsions.
 - 5) Establishment of a committee to study the potential impact of raising the compulsory school attendance age from 16 to 17 and 17 to 18 in successive years.
- b) The SBE should work with appropriate staff members in DPI, including curriculum and finance representatives, and staff from the North Carolina General Assembly Fiscal Research Division, to examine the experiences of other states and develop cost estimates for the implementation of the initiatives to increase the high school graduation rate. These cost estimates will be reported to the research division of the North Carolina General Assembly and the Education Oversight Committee by April 1, 2010 so that they can appropriate recurring funds.

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