

Poverty and Health: Focus on North Carolina

Christopher Mansfield, Lloyd F. Novick

The association between poverty and poor health is substantial and the effects are experienced over a lifetime; they are borne most heavily by children. Mitigation requires a public health approach, intervening upstream to increase economic opportunity and invest in early childhood development, healthy communities, education, nutrition, and preventive health services.

The relationship between poverty and health has long been documented in the literature of medicine. In 1848, Rudolph Virchow, the father of pathology, compared mortality rates of the aristocracy in Berlin with those of the poor. Speaking of the poor, he said,

They are supposed to pray daily "and give us this day our daily bread and a long life on earth," but they are not to know that long life is a monopoly of princes and counts and of the fanatics of tranquility [1].

The relationship between poverty and health in the United States was highlighted in the 1960s as part of the War on Poverty and has been studied for the past 50 years [2, 3, 4].

Americans living in poverty have poorer health outcomes than do other Americans. Despite high levels of spending on health care, the United States is at the bottom of the list of developed nations with respect to key health measures such as life expectancy and infant mortality [5]. What accounts for the paradox of a high monetary investment in health care not being matched by high marks for health status? To a large extent, this state of affairs is attributable to the adverse effects on health of poverty and the inequitable distribution of wealth.

The phenomenon of poverty being associated with poor health outcomes is particularly evident in North Carolina, as we will document by analyzing vital statistics, census data, and what residents have reported in surveys about their health. The national recession of 2008-2009 brought increased joblessness and income inequality to North Carolina, which had the fourth highest unemployment rate in the nation in May of 2012 [6]. The economic situation in the state continues to be unsatisfactory and has accentuated wealth inequality, leading to adverse health effects.

A 2002 report from the Institute of Medicine of the

National Academies concluded that Americans today "are healthier, live longer, and enjoy lives that are less likely to be marked by injuries, ill health or premature death" [7]. However, these gains have not been shared fairly by all members of society. Elevated death rates for the poor are evident for almost all of the major causes of death and for each major category of health problem, including infectious, nutritional, cardiovascular, and metabolic diseases, as well as cancers and injuries [8]. National Health Interview Survey (NHIS) data show that the prevalence of nearly every measured acute or chronic condition is higher in low-income children than in other children [9]. Larson and Halfon analyzed data from the 2003 National Survey of Children's Health, controlling for race/ethnicity, age and sex of child, family structure, and health insurance coverage, and found that children in the lowest-income families were at least twice as likely as those in the highest-income families to have diabetes, headaches, ear infections, learning disabilities, behavior or conduct problems, and speech problems [10].

Superior health among the affluent is evident within various population groups at birth and continues throughout adulthood. For adults in the United States who are 45-64 years of age, there is a sharp gradient, with those at higher income levels being less likely to have 2 or more chronic conditions [11].

What explains the relationship between poverty and ill health? The poor get sick and the sick get poor. The mechanisms by which poverty affects health include a lack of sufficient resources with which to obtain food and shelter; financial, geographic, and cultural barriers to access to care; unhealthy behaviors such as unhealthy food choices, physical inactivity, smoking, and alcohol or drug abuse; social ordering and psychological characteristics, including stress, depression, and hostility; lack of education; unhealthy social and physical environments; and high costs of care that can impoverish any but the ultra-wealthy. Explanatory factors include unhealthy eating habits (because of the expense or

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The Job Boost II Subsidized Employment Program

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Over the last three years, Mecklenburg County created various subsidized employment programs to assist Work First participants with obtaining jobs. Work First is part of the Temporary Assistance to Needy Families (TANF) program. A subsidized employment program offers its participants an opportunity to discover or enhance occupational skill sets and to establish a viable work history. It also prepares them to secure unsubsidized employment with the goal of attaining sustainable self-sufficiency. Participating employers receive payroll assistance in return for developing and mentoring an underemployed workforce.

As a result of the success of Mecklenburg County's initial subsidized employment initiatives—the Opportunity Project (2009) and Job Boost I (2010)—the North Carolina Department of Health and Human Services expanded the program to Job Boost II. Like its predecessors, Job Boost II offered valuable employment experience in real work environments to Work First participants whose income was less than 200% of the federal poverty guidelines and who were considered work-ready. These subsidized employment programs operated in other counties as part of their TANF programs in addition to Mecklenburg county.

The objectives of the program were 2-fold. Job Boost II gave eligible individuals a chance to acquire or enhance viable skill sets and to establish a credible work history over a 20-week period. The program also assisted clients in moving toward self-sufficiency. The long-term goal was for citizens receiving state-supported financial assistance to become self-sufficient. The average wage of a Job Boost II participant was \$8.18 per hour. The Job Boost II Program was implemented from July 2011 through May 2012. The

program ended as funding was not allocated in the recent state budget.

Originally, the entire program budget was \$1.32 million, and the goal was to find placements for 200 individuals. However, 200 placements were made within the first 3 months, so Mecklenburg County was awarded an additional \$660,000 to fund another 100 placements. Ultimately 453 placements were made, and 93 participants were permanently hired when their placement ended. After covering administrative costs, Job Boost II used all of its resources to fund 75% percent of the wages of program participants; participating employers were responsible for paying the remaining 25% of each participant's salary. Administrative costs included the salaries of the Job Boost Team, which consisted of a program manager, a social worker, an administrative assistant, and a part-time research/data analyst.

Job Boost II was housed in the Community Resources Division of Mecklenburg County's Division of Social Services (DSS). The program's success relied heavily on the collaborative efforts between the Job Boost II staff, DSS Work First teams, community partners, and 2 staffing agencies (referred to as "job developers"). Program participants were given practical occupational experience and a chance to boost their overall quality of life. Community partners helped participants acquire the skills needed for job readiness and job preparedness. Job developers located employers willing to invest in the development of a less skilled workforce. The DSS Job Boost II and Work First teams assisted clients with support services and interventions.

Participating in Job Boost allowed clients to see

unavailability of wholesome food) and the absence of safe public recreation, which encourages a sedentary life style. In their study of neighborhood of residence and coronary heart disease, Diez Roux and colleagues list the following as characteristics of poor neighborhoods: danger, high crime rates, substandard housing, few or no decent medical services nearby, low-quality schools, little recreation, and almost no stores selling wholesome food [12]. Income, education, and environment do influence health disparities. The life expectancy of residents of Montgomery County, Maryland, a wealthy suburb of Washington, DC, is 9 years greater than that of residents of Washington, DC [13].

Children are more likely than other age groups to be members of families with incomes at or below the federal poverty guidelines [14]. The Adverse Childhood Experiences (ACE) study demonstrated a relationship between severe adverse experiences in childhood and the risk behaviors and diseases that are the leading causes of death in adult life, including ischemic heart disease, chronic lung disease, cancer, depression, alcoholism, and smoking [15]. Food insecurity is another factor that has an adverse effect on the health of young children [16].

Importantly, Marmot and Bell emphasize that although much of the discussion about health disparities in the United States centers on racial/ethnic differences, those health disparities are actually more the result of disparities in socioeconomic level and fairness in distribution of societal resources [13]. Both Marmot and Bell [13] and Wilkinson and Pickett [17] have postulated that the prevalence of poor health is related to inequality in wealth rather than to absolute levels of wealth. They contend that the problem is not caused by lack of income but where one's income stands in relation to that of others. Despite the high per capita income of the United States, it does not have fewer health problems than do many less well-off countries. Poorer people in developed countries have death rates 2 to 4 times greater than those of affluent people in the same country [18].

Median household income, median net worth, metrics of income inequality, and the poverty rate are all useful measures. The poverty rate is widely used. Poverty is a relative term, generally meaning an insufficiency of means for subsistence. The federal poverty guidelines for 2012 is \$11,170 per year for an individual and \$23,050 for a family of four [19].

themselves as having the ability to be self-sufficient and independent. After obtaining her goal of permanent employment, a client said that being in the subsidized employment program had enabled her to stop being dependent on government assistance and to take care of her children and pay her bills.

One unique component of the Mecklenburg County Job Boost II Program was built-in case management for its participants: The program employed a full-time Job Boost social worker whose primary objective was to help clients. In collaboration with Work First and employment social workers, the Job Boost social worker helped clients overcome such barriers to success as problems with transportation or child care or a domestic situation; supported clients and employers through site visits and on-site interviews regarding client performance, attendance, and attitude; and provided positive reinforcement throughout the client's Job Boost II work experience. For many clients, the case management component was crucial to their success.

A client who is now taking classes that will count toward an Associate Degree in Human Services stated that being placed in subsidized employment through Job Boost had helped her realize what she wanted to pursue as a career, adding,

I am now more comfortable in talking with others and sharing information about my life experiences. I am also in a position to take care of my own financial responsibilities.

Community partners, job developers, and the Job Boost II team had access to Sepweb, a database designed specifically to store and process the demographic, personnel, eligibility, and program history of individuals who quali-

fied for subsidized employment. Sepweb matched potential clients with employment openings, which according to one job developer made the job placement process "more targeted and effective." Data from Sepweb was used to produce weekly reports for the respective DSS teams and monthly reports for the North Carolina Division of Social Services.

Job Boost II received 2 awards from the National Association of Counties—an Achievement Award and Best of Achievement Category for 2011-2012. **NCMJ**

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Editor's Note: When we first invited Ms. Cohen to submit this sidebar, the Job Boost II program was in operation. As noted, funding no longer exists for the program and it has since ceased. However, we decided to publish this sidebar as an example of a subsidized employment program because of the potential such programs have to help low-income people gain employment.

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In 2010, 17.5% of the population of North Carolina had an income below the federal poverty guidelines [20], compared with 15.3% of the US population [21]. The poverty rates for both the state and nation had increased over the preceding decade, up from 13.2% and 11.3%, respectively, in 2000 [22]. There is great disparity across the state. Current comparable estimates of poverty rates by county in North Carolina range from 8.5% to 30.2% [23]. Wealth, a corollary to poverty, is not accurately or regularly measured at the state or county level. However, at the national level, median net worth dropped by more than 39% between 2007 and 2010, from \$126,400 to \$77,300 [24].

Median household income is known to be an important health risk factor, irrespective of race or ethnicity [25]. The median household income in North Carolina was \$43,326 in 2010 [26]; that figure is 13% lower than national median household income of \$50,046 and is 6.9% lower than the \$46,549 that it was in North Carolina in 2008, a peak before the recession [27]. The relationship of household income to health has been found to be substantial using both subjective and objective health outcome measures. Data from the 2010 Behavioral Risk Factor Surveillance System (BRFSS) show that 46.3% of North Carolinians in households earning

less than \$15,000 a year reported themselves to be in fair to poor health, compared with 10% of those earning \$50,000-\$74,999 per year and 5% of those earning \$75,000 or more per year. The gradient is linear (see Figure 1).

Median household income and the poverty rate are the 2 most useful measures to weigh against health outcomes such as mortality rates. The premature mortality rate—the number of years of life lost before age 75 per 10,000 population—is a particularly good summary measure. North Carolina ranks 36th among the states in premature mortality [28].

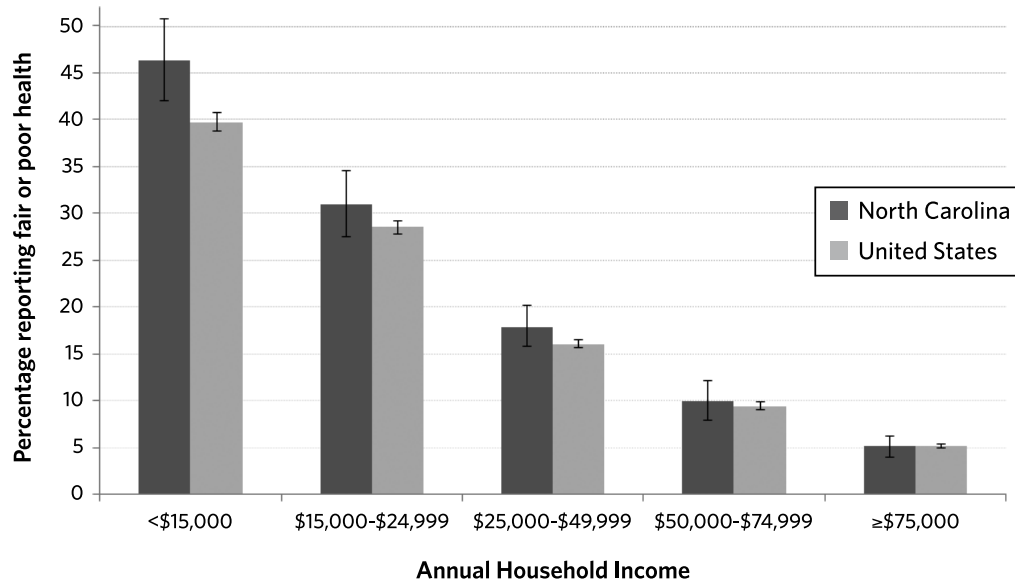
The associations between various types of mortality and economic risk factors observed across the 100 North Carolina counties are presented in Table 1. Using Pearson product moment correlation, all of the types of mortality shown in the table were found to correlate with the poverty rate and with median household income. The strongest correlations were between premature mortality rate (using 2009 data) and poverty rate (a positive correlation, $r = .599$, significant at the 0.01 level, 2-tailed) and between premature mortality and median household income (a negative correlation, $r = -.646$, significant at the 0.01 level, 2-tailed).

As Figure 2 shows, as the poverty rate (the percentage of the population with a household income below the federal

poverty threshold) for counties in North Carolina increases, so does the premature mortality rate; and as the median household income for a county goes up, the premature mortality rate goes down. The relationships between poverty and premature mortality in the North Carolina counties are

evident in the scatter plot and the maps of the 2 variables in Figure 2. Higher poverty rates and higher premature mortality rates are indicated by progressively darker shading of counties on the maps. The data points in the scatter plot indicate the values for each county for each of the measures.

FIGURE 1.
Percentage of Adults Reporting Themselves To Be in Fair or Poor Health in 2010, by Household Income



Note: Error bars indicate 95% confidence intervals.

Source of data: 2010 Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention.

TABLE 1.
Correlations among Poverty, Median Household Income, Health Insurance Coverage, and Mortality Rates in North Carolina

Factor	Median household income ^a	% of population 18 to 65 yrs old without health insurance ^b	Premature mortality ^b	All-cause mortality ^c	Heart disease mortality ^c	Cancer mortality ^c	Stroke mortality ^c	Diabetes mortality ^c	Infant mortality ^d
% of population with income below federal poverty threshold	-.816**	.497**	.599**	.572**	.596**	.274**	.462**	.477**	.373**
Median household income		-.590**	-.646**	-.487**	-.478*	-.167	-.405**	-.314**	-.308**
% of population 18 to 65 yrs old without health insurance			.302**	.227*	.276**	.018	.130	.250*	-.054

Note. Data are *r* correlation coefficients obtained using Pearson product moment correlation.

^aMedian household income data are from years 2006-2010.

^bHealth insurance coverage data and premature mortality data are from year 2009.

^cMortality data for heart disease, cancer, stroke, and diabetes are from years 2003-2007.

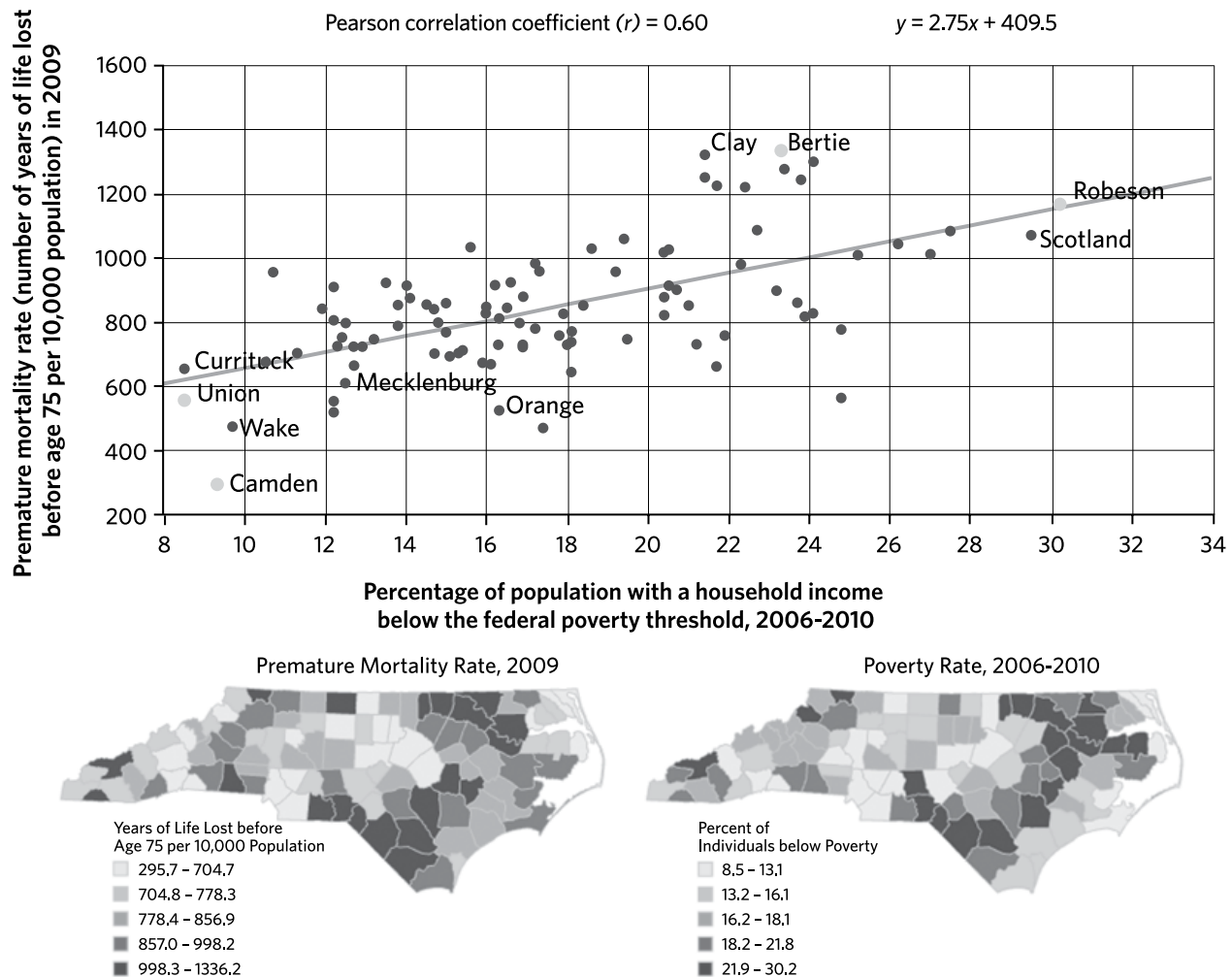
^dInfant mortality data are from years 2005-2009.

*Significant at 0.01 level (two-tailed).

**Significant at 0.05 level (two-tailed).

Source: Correlations were calculated using SPSS 19 with data from North Carolina Health Data Explorer, which was created at the Center for Health Systems Research and Development at East Carolina University in Greenville, North Carolina. <http://www.ecu.edu/cs-dhs/chsrd/InstantAtlas/NC-Health-Data-Explorer.cfm>.

FIGURE 2.
Relationship of Premature Mortality to Poverty in North Carolina Counties



Note. Data were produced using North Carolina Health Data Explorer, which was created at the Center for Health Systems Research and Development at East Carolina University in Greenville, North Carolina. Values for all counties can be found at <http://www.ecu.edu/cs-dhs/chsrd/InstantAtlas/NC-Health-Data-Explorer.cfm>.

A strong positive linear relationship is evident. The counties with the highest poverty rates, Scotland and Robeson, also had premature mortality rates that were high, and the counties with the lowest poverty rates, Union, Wake, Camden, and Currituck, had low premature mortality rates. The very highest premature mortality rates were found in Bertie and Clay counties. (Data for all counties can be found using the North Carolina Health Data Explorer at <http://www.ecu.edu/cs-dhs/chsrd/InstantAtlas/NC-Health-Data-Explorer.cfm>).

Returning to the data in Table 1, the associations of the poverty rate with other types of mortality rates are also strong. The correlation coefficients are $r = .572$ for all-cause mortality, $r = .596$ for heart disease mortality, $r = .274$ for cancer mortality, $r = .462$ for stroke mortality, $r = .477$ for diabetes mortality, and $r = .373$ for infant mortality; all of these correlations are significant at the 0.01 level (2-tailed). The associations of mortality with median family income are

similarly strong, except in the case of cancer mortality.

Health insurance coverage is another economic factor related to health outcomes; and whether one has health insurance or not is, of course, related to poverty and income. The correlation between lack of health insurance and mortality is most substantial with regard to premature mortality ($r = .302$) and heart disease mortality ($r = .276$), both of which correlations are significant at the 0.01 level (2-tailed), as well as diabetes mortality ($r = .250$) and all-cause mortality ($r = .277$), both of which correlations are significant at the 0.05 level (2-tailed).

With incomes declining, a serious concern for the future is that improvement in health outcomes as envisioned in the state's Healthy People 2020/Healthy Carolinians plans may not occur. The effects of poverty will be experienced over a lifetime by more than 1.5 million North Carolinians, and children will carry the effects of their parents' misfor-

Bundling Economic Supports to Help Low-Income Students Obtain Postsecondary Credentials and Find a Career

Colin Austin, Ulysses Bell

Higher education is increasingly seen as a critical gateway out of poverty. At the same time, fewer than half of all students who enter community colleges achieve a degree or credential. Low-income and minority students, in particular, face multiple financial hurdles [1]. Many simply cannot afford to stay in school, because doing so would conflict with keeping a job, paying the bills, or responding to a crisis.

Bridging the education and employment gap is a major focus for MDC, a nonprofit organization based in Durham, North Carolina, which develops programs to expand opportunity, reduce poverty, and address structural inequity. MDC's research and practice provide support for the claim that material well-being is a decisive factor in health outcomes for individuals and communities (C.A., unpublished data). The social determinants of health are strongly connected to economic security, and over the past 10 years that idea has served as a framework when MDC has considered issues of family economic success, career pathways, and disconnected youth.

MDC currently promotes an approach called Center for Working Families (CWF), which brings together—or bundles—access to a range of essential economic supports that help families build self-sufficiency, stabilize their finances, and move ahead. With support from the Annie E. Casey Foundation, whose funding pioneered CWF in communities around the nation, MDC introduced and supported the CWF approach in community colleges [2].

One early adopter of the CWF approach has been Guilford Technical Community College (GTCC), where the student population served by the program is extremely low-income, with the vast majority eligible for assistance of some sort, such as the Supplemental Nutritional Assistance Program (SNAP, formerly known as food stamps). The CWF reaches these students in a variety of ways. One is through employment training. In addition to providing instruction in basic skills, GTCC works with students to move them toward a career readiness certificate, a basic credential that can give individuals a leg up when they enter the workforce. The school also offers one-on-one financial training. Achievement “coaches” at the CWF work closely with students, helping them plan their household budgets and understand how to cope with the immense financial pressures they face, including paying for such nonschool expenses as transportation and child care. In addition, CWF staff members help students access public benefits that they might not have known how to obtain, such as food and nutrition programs, financial aid, and earned income tax credits. The CWF also provides financial assistance to students who need transportation in order to attend class on campus.

The CWF occupies a physical space on the High Point campus, providing a central place for students to drop by and talk with their financial coaches as they head to their classes. And the intense coaching model allows students the opportunity to develop individualized plans aimed at

tune long into the future. Mitigating the effects of poverty on health requires a public health perspective and consideration of equity in the distribution of resources. Priority should be given to legislation and administrative policies that have the most positive upstream effect on the cascade of negative effects of poverty on development of children. The North Carolina Institute of Medicine (NCIOM) has identified the relationship between economic insecurity and food insecurity as a serious problem and has recommended increased outreach by the state and localities to encourage low-income individuals and families to enroll in the Supplemental Nutrition Assistance Program (formerly known as the food stamp program) [29].

Future approaches to this issue in North Carolina can be informed and energized by ongoing efforts elsewhere in the United States and in England. The important recommendations of the Robert Wood Johnson Foundation Commission to Build a Healthier America are well summarized in the following statement [30]:

Although medical care is important, our reviews of research and the hearings we've held have led us to conclude that building a healthier America will hinge largely on what we

do beyond the health care system. It means changing policies that influence economic opportunity, early childhood development, schools, housing, the workplace, community design and nutrition, so that all Americans can live, work, play and learn in environments that protect and actively promote health.

These recommendations and those of the NCIOM should be considered along with those of a recent commission in England chaired by Sir Michael Marmot, which was charged with recommending the most effective evidence-based strategies for reducing health inequalities. The following policy objectives emerged [31]:

- Give every child the best start in life.
- Enable all children, young people and adults to maximise their capabilities and have control over their lives.
- Create fair employment and good work for all.
- Ensure healthy standard of living for all.
- Create and develop healthy and sustainable places and communities.
- Strengthen the role and impact of ill-health prevention.

There are differences and commonalities between the approach of the Robert Wood Johnson Foundation commis-

meeting their own specific financial challenges and helping them reach their personal educational goals.

The CWF's impact is significant. In 2010, the first full year of the program's operation at GTCC, 260 students received services. All 260 received financial education and employment training services, and 60% of them received assistance in obtaining public benefits that supplemented their income. Student retention results are just as impressive. Eighty percent of students receiving CWF services enrolled at GTCC the following semester, a much higher retention rate than in most community college environments. Greater retention rates mean that more students are achieving their academic goals, and more students maintaining enrollment translates to more funding for the school. In essence, CWF has been shown to pay for its own operation.

Building on the CWF experience, in 2012 MDC launched the North Carolina JobsNOW Employment and Training demonstration project, which connects students with an online expert service called The Benefit Bank®, which helps families apply for tax credits, public benefits, and student financial aid.

The JobsNow Employment and Training project deploys Success Coaches to help low-income and first-generation students navigate through community colleges. The coaches provide students with career and employment advice, connections to community resources, financial education, financial counseling, and strategies for saving and for building assets. MDC is also planning to take steps to help students who are eligible for SNAP to access federal employment and training funds to pay for half of their out-of-pocket education expenses. Currently, 16 community colleges in North Carolina participate in the project,

56 community college staff members have been trained as Success Coaches, and approximately 80 community college staff members have been trained as Benefit Bank counselors. NCMJ

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sion and that of the Marmot Review. The latter's focus on creating a "Fair Society" more directly addresses the social gradient in health. Both approaches outline bold steps in the right direction and complement current planning by the NCIOM Task Force on Implementing Evidence-Based Strategies in Public Health. NCMJ

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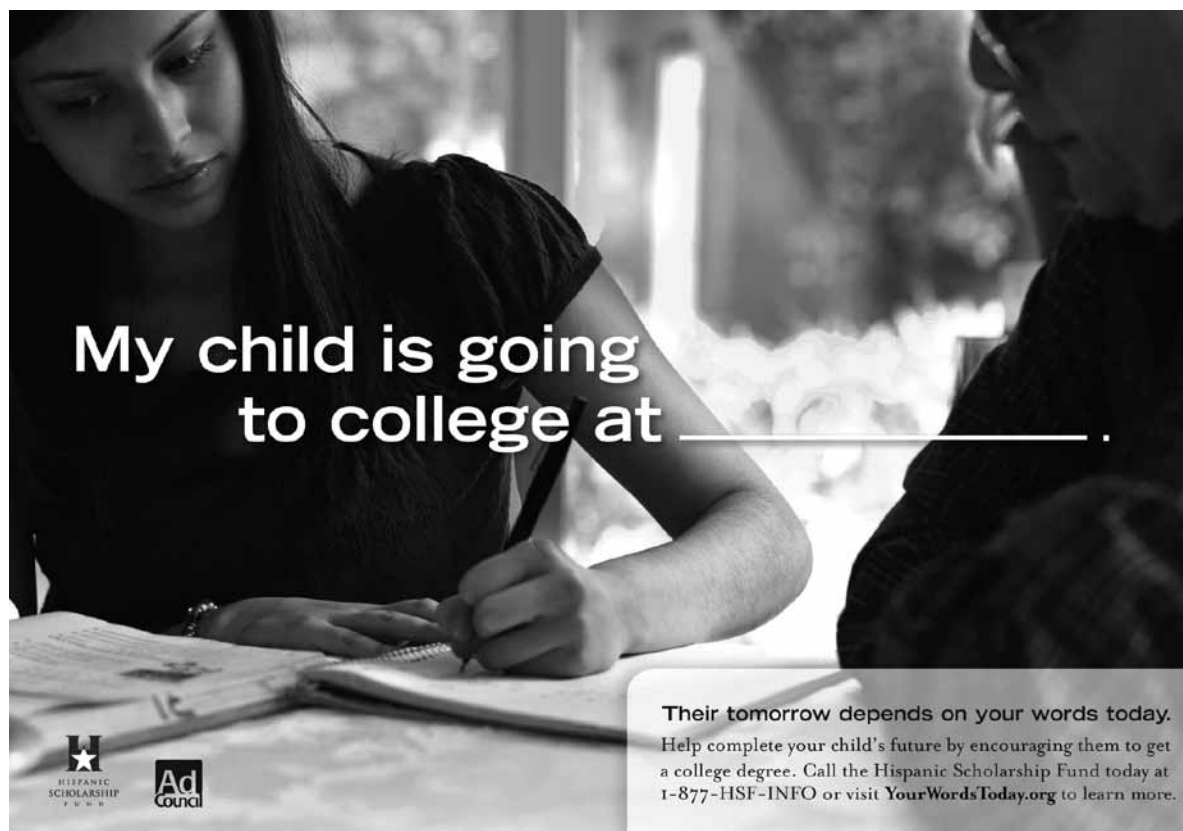
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