

ALBUQUERQUE-BERNALILLO COUNTY
AIR QUALITY CONTROL BOARD

IN THE MATTER OF THE PETITION TO AMEND TITLE 20, CHAPTER 11 OF THE NEW MEXICO ADMINISTRATIVE CODE TO REQUIRE REVIEW AND CONSIDERATION OF CUMULATIVE AIR IMPACTS.

AQCB Petition No.

Southwest Organizing Project,

Petitioner.

The Southwest Organizing Project (“SWOP”), by and through its attorneys, the New Mexico Environmental Law Center, respectfully petitions the Albuquerque-Bernalillo County Air Quality Control Board (“Board”) to hear and adopt the following proposed regulatory amendments to Title 20, Chapter 11 of the New Mexico Administrative Code, pursuant to its authority under the New Mexico Air Quality Control Act, NMSA 1978, §§ 74-2-1 *et. seq.* (the “Act”), its implementing regulations, and NMAC 20.11.82.1 *et. seq.* That proposed regulatory change is attached as Exhibit A. SWOP submits this Petition and proposed rule change because environmental and public health impacts from air pollution in Albuquerque and Bernalillo County are heavily concentrated in low-income and minority neighborhoods causing increased risk of disease and lower life expectancy in those neighborhoods. In order to begin to address the profound inequalities in exposure to pollutants, the proposed rule would require that the Albuquerque Air Quality Division (“Department”) consider the cumulative impacts of any new operation permitted under the Act and allow the Department to propose appropriate mitigation of those impacts. In support of its petition, SWOP STATES:

LEGAL AUTHORITY

1. The Board is authorized to adopt the proposed changes to the Board’s regulations pursuant to NMSA 1978, § 74-2-5(B)(1) and 20.11.82.1 *et. seq.* NMAC.

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2. Section 74-2-5(B)(1) specifically allows the Board to “adopt, promulgate … and amend” regulations, consistent with the Act.

3. Further, the Act provides that Board regulations “shall prevent or abate air pollution.” NMSA 1978, § 74-2-5(B)(1).

4. The Act defines “air pollution” as emitting air contaminants into the outdoor atmosphere “in quantities and of a duration that may with reasonable probability injure human health or animal or plant life or as may unreasonably interfere with the public welfare … or the reasonable use of property.” Id. at § 74-2-2(B).

5. The Act places some restrictions on the Board’s regulatory authority. Specifically, the Act restricts the Board from promulgating certain regulations that are more stringent than those of the Act or the federal Clean Air Act. Id. at § 74-2-5(C).

6. However, those restrictions are limited. The Board is only prohibited from promulgating regulations that are more stringent than the Air Quality Control Act or the Clean Air Act with respect to: protecting visibility in class I areas by preventing significant deterioration of air quality and achieving national ambient air quality standards in nonattainment areas (§ 74-2-5(C)(1)(a)); prescribing performance and emission standards for hazardous air pollutants (§ 74-2-5(C)(2)(a)); and regulating air emissions from solid waste incinerators (§ 74-2-5(C)(3)).

7. Except for these limited circumstances, any regulation the Board promulgates need only be consistent with the Act. § 74-2-5(B)(1). See, Wylie Bros. Contracting Co. v. Albuquerque-Bernalillo County Air Quality Control Board, 80 N.M. 633, 644, 459 P.2d 159, 171 (Ct. App. 1969) (Local board regulations need not be identical to state regulations adopted by state board, only consistent with statutory language).

8. The proposed regulations are consistent with the Act because they are intended to allow the Department and Board to evaluate the cumulative impacts of air emissions from any proposed source on the environment and human health, which would assist the Department and Board in preventing and abating air pollution.

9. Moreover, the proposed regulation is specifically authorized by the Act. To achieve the goal of preventing and abating air pollution, the Act gives the Board the authority to require “any person” emitting “any air contaminant” to install, use and maintain emission monitoring devices, sample emissions, and “provide … reasonable information relating to the emission of air contaminants.” NMSA 1978, § 74-2-5(C)(6).

10. The proposed regulation would require that any potential emitter of air contaminants monitor and report the current air quality within five miles of where the emitter seeks to locate its operation and report the anticipated environmental and public health impacts its operation is likely to have when combined with existing and reasonably foreseeable emissions.

11. In promulgating its regulations, the Act requires the Board to give weight it deems appropriate to all facts and circumstances including the “character and degree of injury to or interference with health, welfare, visibility and property.” Id. at § 74-2-5(E).

12. As discussed below, the impacts of air pollution on low-income and minority neighborhoods in Bernalillo County are significant. The proposed regulation would provide information necessary for the Department and Board to make decisions that protect citizens’ health, neighborhoods and property.

13. Finally, nothing in the proposed regulation is inconsistent with the substantive provisions of the Act. Nowhere does the Act expressly or impliedly prohibit the Board from promulgating a rule that requires sampling, monitoring, and reporting cumulative air impacts.

14. Indeed, the proposed rule furthers the purposes of the Clean Air Act, which is the federal law that serves as the authority for the New Mexico Air Quality Control Act. Congress declared that the Clean Air Act was intended “to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population.” 42 U.S.C. § 7401(b)(1).

CUMULATIVE IMPACTS ANALYSIS IS NECESSARY

15. Research into the impacts of air pollution on human health firmly establishes that air pollution causes a range of health problems, including cancer. *See, e.g., Straif, K., et. al., eds., Air Pollution and Cancer,* International Agency for Research on Cancer, Scientific Publication No. 161 (2013), available at:

<http://www.iarc.fr/en/publications/books/sp161/index.php>; Morello-Frosch, R. and Jesdale, B., *Separate and Unequal: Residential Segregation and Estimated Cancer Risks Associated with Ambient Air Toxics in U.S. Metropolitan Areas*, 114 *Environmental Health Perspectives* 386 (2006).

16. Research also establishes that low-income and minority communities are particularly vulnerable to the effects of air pollution. Morello-Frosch, *et. al.*, *Environmental Justice and Regional Inequality in Southern California: Implications for Future Research*, 110 *Environmental Health Perspectives* 149 (2002).

17. Low-income communities and communities of color are particularly vulnerable to adverse health impacts of air pollution because polluting industries disproportionately locate in those communities. Id. at 151-152.

18. As a result, public health professionals have recommended analyzing the cumulative health effects of multiple air contaminants from multiple sources. Id. at 149.

19. Like similar communities elsewhere in the United States, poor and minority neighborhoods in Albuquerque and Bernalillo County are disproportionately impacted by air pollution and suffer disproportional health problems because of those impacts.

20. A 2012 study on public health, pollution exposure, poverty and race demonstrates that low-income and minority communities in Bernalillo County have a greater risk than more affluent and non-minority communities to being exposed to environmental pollutants. Joint Center for Political and Economic Studies, Place Matters for Health in Bernalillo County: Ensuring Opportunities for Good Health for All (Sept. 2012) at 17-18 (“Good Health for All Study”). A copy of that study is attached as Exhibit B.

21. The Good Health for All Study examined the racial and economic data for census tracts in Bernalillo County and compared those data to data about life expectancy and sources of environmental pollution in the census tracts studied. Id. at 2.

22. The Good Health for All Study found that neighborhoods with higher populations of Hispanics and recent immigrants with high levels of poverty were more likely to contain dense concentrations of polluting facilities. Id. at 16; Map 11.

23. These neighborhoods were located primarily in Downtown, the Southeast Heights, the South Valley and the North Valley. Id.

24. Further, people in these “high risk neighborhoods” had an elevated risk for adverse health impacts and a shorter life expectancy. Id. at 17-19; 18, Figs. 6, 7.

25. Conversely, neighborhoods with higher proportions of non-minority and wealthy residents had a lower concentration of toxic facilities and a longer life expectancy, and were considered “low risk neighborhoods”. Id.

26. Indeed, the difference in life expectancy between high risk neighborhoods and low risk neighborhoods is dramatic. The residents of high risk neighborhoods can expect to live an average of 5.2 fewer years than residents living in low risk neighborhoods. Id. at 1,13, Fig. 5.

27. The Good Health for All Study recommends several kinds of impact analyses as ways to address increased pollution risks in low-income and minority communities. Id. at 19-20.

28. Both the recommended impact assessments include evaluating the cumulative and combined impacts of multiple pollution sources. Id.

29. The Good Health for All Study recommendations echo those of the 2007 Environmental Justice Task Force (“Task Force”) that the Board created to review and evaluate the Board’s air quality permitting policies and practices.

30. The Task Force found that the Board’s policies, procedures and regulations do not adequately address environmental and public health issues in communities disproportionately burdened by air pollution. Environmental Justice Task Force, Final Report Submitted to Albuquerque-Bernalillo County Air Quality Control Board at 5 (2008).

31. The Task Force recommended that the Board adopt cumulative environmental impact assessment provisions. Id.

32. The Task Force included a model environmental impact regulation as an attachment to its Report. Id., Attachment 1.

33. That model environmental impact regulation would have required assessing the cumulative air impacts of air pollution sources. *Id.*

34. Finally, other jurisdictions have acknowledged the health and environmental problems associated with the disparate impacts of pollution on the poor and minorities, and have enacted rules to address those disparities.

35. In 2008, Minnesota's legislature amended the Minnesota Environmental Policy Act to allow the Minnesota Pollution Control Agency ("MPCA") to evaluate and address the cumulative air impacts in a specific area of Minneapolis. Ellickson, Kristie, *et. al.*, Cumulative Risk Assessment and Environmental Equity in Air Permitting: Interpretation, Methods, Community Participation and Implementation of a Unique Statute, 8 *Int. J. Environ. Res. Public Health* 4140 (2011).

36. The amendment was enacted specifically to address the disproportionate impacts of air pollution in a low-income and minority area of Minneapolis that contained dense concentrations of polluting industry. *Id.* at 4142.

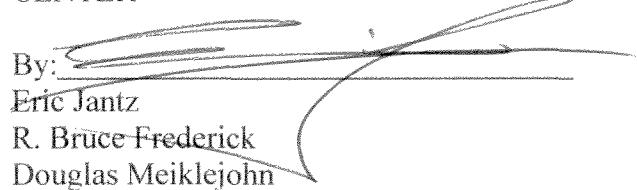
37. The statute requires not only that the MPCA consider the cumulative risks associated with sources of air pollution, but also environmental equity, i.e., the fairness of placing a polluting source in neighborhoods already burdened by air pollution.

38. Petitioners anticipate a hearing on this Petition will take approximately eight (8) hours.

39. For all the above reasons, SWOP requests that the Board hear and adopt the proposed cumulative impact regulation.

Respectfully submitted this 27th day of January, 2014.

NEW MEXICO ENVIRONMENTAL LAW
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1 TITLE 20 ENVIRONMENTAL PROTECTION

2
3 CHAPTER 11 ALBUQUERQUE/BERNALILLO COUNTY AIR QUALITY CONTROL
4 BOARD

5
6 PART 72 CUMULATIVE EFFECTS

7
8 20.11.72.1 ISSUING AGENCY: Albuquerque/Bernalillo County Air Quality Control Board,
9 P.O. Box 1293 Albuquerque, New Mexico 87102.

10
11 20.11.72.2 SCOPE: This Part applies to all persons who intend to construct or modify a
12 source or apply for an operating permit, except as otherwise provided by this Part or the New
13 Mexico Air Quality Control Act and the Joint Air Quality Control Board Ordinances.

14
15 20.11.72.3 STATUTORY AUTHORITY: This Part is adopted pursuant to the authority
16 provided in the New Mexico Air Quality Control Act, NMSA 1978, §§ 74-2-4, 74-2-5(C); the
17 Joint Air Quality Control Board Ordinance, Bernalillo County Ordinance 94-5, Sections 4 and 5;
18 and the Joint Air Quality Control Board Ordinance, Revised Ordinances of Albuquerque, 1994 §
19 9-5-1-4.

20
21 20.11.72.4 DURATION: Permanent.

22
23 20.11.72.5 EFFECTIVE DATE: The effective date of this Part shall be January 1, 2015.

24
25 20.11.72.6 OBJECTIVE: This Part ensures that any proposal to construct, modify or operate
26 a source disclose, analyze and evaluate the cumulative effects of air pollution to ensure that air
27 pollution does not disproportionately affect the environment or public health in any
28 neighborhood, census tract, or region of Albuquerque or Bernalillo County.

29
30 20.11.72.7 DEFINITIONS: In addition to the definitions in this Section, the definitions in
31 20.11.1 NMAC shall apply unless there is a conflict between definitions, in which case the
32 definition in this Part shall govern.

33
34 A. "California Cancer or Reproductive Toxicity Chemicals List" means the
35 State of California List of Chemicals Known to the State to Cause Cancer or Reproductive
36 Toxicity.

37 B. "Criteria Air Pollutants" means the air pollutants for which there are
38 national ambient standards provided for in 40 C.F.R. Part 50.

39
40 C. "Cumulative Effects" or "Cumulative Impacts" means the public health
41 and environmental effects in a geographic area or population group from all air contamination
42 sources, including contaminants from all emissions and discharges, whether single or multi-
43 media, routinely, accidentally or otherwise released, and including emissions from past, present
44 and all reasonably foreseeable emissions or discharges.

1 D. “Disproportionate Impact” means environmental or public health impacts
2 on low-income or minority communities from air contaminants that are unreasonably or unfairly
3 high when compared to more affluent or non-minority communities.

4
5 E. “Hazardous Air Pollutants” means those air pollutants designated pursuant
6 to 40 C.F.R. Part 63.

7
8 F. “Low-income Communities” or “Low-income Neighborhoods” means a
9 census tract, as defined in the United States Census Bureau’s Geographic Areas Reference
10 Manual, where 51% or greater of the population in that census tract has an income at or below
11 150% of the Federal poverty level.

12
13 G. “Minority Community” or “Minority Neighborhood” means a census tract,
14 as defined in the United States Census Bureau’s Geographic Areas Reference Manual, where
15 51% or greater of the population of that census tract is Hispanic/Latino, Asian, Pacific Islander,
16 African-American, Native American, Native Alaskan or any combination thereof.

17
18 20.11.72.8 CUMULATIVE IMPACTS ANALYSIS: Evaluation of the cumulative
19 effects of air pollution is intended to enable the Board and the Department to develop a full
20 understanding of the current and future effects of their actions on the ecosystems and human
21 communities in Bernalillo County and the City of Albuquerque and evaluate and recognize the
22 differences, needs, requirements and conditions within the County and parts thereof.

23
24 A. For every application for a permit under the Air Quality Control Act,
25 NMSA 1978, 74-2-1 *et. seq.*, the Board or Department shall prepare or cause to be prepared a
26 cumulative impact analysis.

27
28 B. A cumulative impact analysis shall contain the following:

29
30 (1) Twelve (12) consecutive months of air quality monitoring data for
31 existing Criteria Air Pollutants, Hazardous Air Pollutants, and air pollution emissions for
32 chemicals on the California Cancer or Reproductive Toxicity Chemicals List, within a five (5)
33 mile radius of the proposed project using methods consistent with 40 C.F.R. parts 51, 60, 61, 63
34 and 75 and approved by the Department;

35
36 (2) An estimate, based on anticipated operations and emissions control
37 technology, of the proposed project’s emissions added to the past, present and reasonably
38 foreseeable future effects of all other actions within a five mile radius of the proposed project;

39
40 (3) Disclosure and analysis of the public health impacts, including the
41 impacts on vulnerable subpopulations including, but not limited to, children, pregnant women,
42 and the elderly, of the proposed project’s emissions added to the past, present and reasonably
43 foreseeable emissions within a five mile radius of the project;

44
45 (4) Any cumulative effects analysis must disclose all gaps in data and
46 uncertainties. Disclosure must include not only identification of the data gaps and uncertainties,

1 but also an evaluation of how those data gaps and uncertainties affect the cumulative impacts
2 analysis and any conclusions drawn;

3
4 (5) Disclosure of whether the cumulative impacts will have a
5 disproportionate impact on a low-income community or minority community;

6
7 (6) Alternatives to the proposed action, including denying a permit for
8 the proposed action, and an evaluation of the cumulative effects of each such alternative;

9
10 (7) Disclosure and evaluation of all feasible measures to mitigate the
11 cumulative effects of the proposed project.

12
13 C. If the Board or Department does not prepare the cumulative impacts
14 analysis, that cumulative impacts analysis shall be prepared by an independent third party
15 contractor, selected from a list of contractors pre-approved by the Board, and the applicant shall
16 bear the cost of preparing the cumulative impacts analysis.

17
18 20.11.72.9 NOTICE--OPPORTUNITY TO COMMENT--AVAILABILITY TO
19 LEGISLATURE AND GENERAL PUBLIC.--

20
21 A. Whenever the Department or Board determines that a cumulative impact
22 statement should be prepared for a project, notice of the impact statement shall be:

23
24 (1) provided by certified mail to the owners of record, as shown by the
25 most recent property tax schedule, of all properties within one hundred feet of the property on
26 which the project or proposed project is located or proposed to be located;

27
28 (2) published once in a newspaper of general circulation in each county
29 in which the property on which the project is proposed to be constructed, operated or closed is
30 located. This notice shall appear in either the classified or legal advertisements section of the
31 newspaper and at one other place in the newspaper calculated to give the general public the most
32 effective notice and, when appropriate, shall be printed in English, Spanish and any other
33 language spoken by a significant portion of the community affected by the proposed project; and

34
35 (3) posted in at least four publicly accessible and conspicuous places,
36 including the project entrance on the property on which the project is or is proposed to be
37 located.

38 B. Any member of the general public may request a copy of an impact
39 statement by requesting a copy from the Department. Upon receiving a request for a copy of an
40 impact statement, the Department shall either provide the requestor with a copy of the impact
41 statement within fifteen days of receiving the request or direct the requestor to a publicly
42 available copy.

43
44 C. The requirements of this Section represent minimum notice requirements.
45 The Board may, by regulation, impose additional notice procedures consistent with existing law.

1 20.11.72.11 EXEMPTIONS.--Exempted from the provisions of the Cumulative
2 Impacts Ordinance are:

- 3 A. Enforcement activities;
- 4 B. Emergency activities to protect public health, safety or the environment;
- 5 C. Purely ministerial actions;
- 6 D. Actions subject to the National Environmental Policy Act of 1969 and its
7 implementing regulations, except that the Board shall review the Federal agency's or agencies'
8 final action under the National Environmental Policy Act and may require additional information
9 and evaluation on a project or proposed project before approving any permits, licenses, or
10 authorizations required under this Part.

11 20.11.72.12 ENFORCEMENT--COMMENCEMENT OF ACTIONS OR
12 PROCEEDINGS.--

13 A. Any person having an interest that is or may be adversely affected by a
14 project or proposed project may commence a civil action on that person's own behalf to compel
15 compliance with this Part.

16 B. No person shall commence an action pursuant to this section prior to sixty
17 (60) days after giving written notice to the Department and permit applicant; provided, however,
18 when the violation or order complained of constitutes an immediate threat to the health or safety
19 of the plaintiff or would immediately and irreparably impair a legal interest of the plaintiff, an
20 action pursuant to this section may be brought immediately after notification of the proper
21 parties.

22 C. Except as otherwise provided herein, suits against the Department or
23 proposed project's applicant shall be brought in the district court of Bernalillo County.

24 D. The court, in issuing a final order in an action brought pursuant to this
25 section, may award costs of litigation, including attorney and expert witness fees, to a party
26 whenever the court determines such award is appropriate.

27 20.11.72.13. ADMINISTRATIVE APPEALS ---JUDICIAL REVIEW.--

28 A. Any person who is adversely affected by a project or proposed project
29 subject to this Part or who participated in a permitting action before the Department and who is
30 adversely affected by such action may appeal to the Board for further relief pursuant to
31 20.11.81.1 *et. seq.*

32 B. Any person who is adversely affected by a final decision of the Board or
33 who participated in an appeal to the Board of a Department decision and who is adversely

1 affected by such an action may appeal the Board's final decision to the court of appeals pursuant
2 to NMSA 1978, § 74-2-9.
3

4 20.11.72.14. SEVERABILITY.--If any part or application of this Part is held invalid,
5 the remainder or its application to other situations or persons shall not be affected.
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10



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SEPTEMBER 2012

PLACE MATTERS FOR HEALTH IN BERNALILLO COUNTY:

Ensuring Opportunities for Good Health for All

A Report on Health Inequities in Bernalillo County, New Mexico

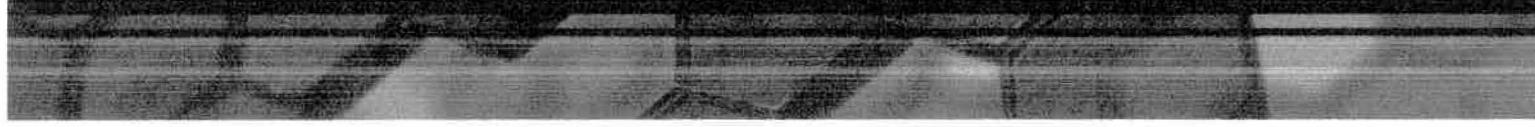


Exhibit B

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**ANALYSIS OF OPPORTUNITIES FOR HEALTH
IN BERNALILLO COUNTY:**

Ensuring Opportunities for Good Health for All

A joint multi-disciplinary investigation by the Joint Center for Political and Economic Studies, New Mexico

Prepared by the
Joint Center for Political and Economic Studies

In Conjunction With
the Center on Human Needs, Virginia Commonwealth University
and The Virginia Network for Geospatial Health Research

JOINT CENTER FOR POLITICAL AND ECONOMIC STUDIES
SEPTEMBER 2012

The contents of this report reflect the views of the authors and do not necessarily reflect the views of the Joint Center for Political and Economic Studies or its Board of Governors, the Center on Human Needs at the Virginia Commonwealth University, and the Virginia Network for Geospatial Health Research.

Opinions expressed in Joint Center publications are those of the authors and do not necessarily reflect the views of the staff, officers or governors of the Joint Center for Political and Economic Studies or the organizations that support the Joint Center and its research.

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Joint Center

Place matters for health in important ways, according to a growing body of research. Differences in neighborhood conditions powerfully predict who is healthy, who is sick, and who lives longer. And because of patterns of residential segregation, these differences are the fundamental causes of health inequities among different racial, ethnic, and socioeconomic groups.

The Joint Center for Political and Economic Studies is pleased to add to the existing knowledge base with this report, “*Place Matters* for Health in Bernalillo County: Ensuring Opportunities for Good Health for All, A Report on Health Inequities in Bernalillo County, New Mexico.” The report, supported by a grant from the National Institute on Minority Health and Health Disparities (NIMHD) of the National Institutes of Health, provides a comprehensive analysis of the range of social, economic, and environmental conditions in Bernalillo County and documents their relationship to the health status of the county’s residents.

The study finds that social, economic, and environmental conditions in low-income and non-white neighborhoods make it more difficult for people in these neighborhoods to live healthy lives.

The overall pattern in this report – and those of others that the Joint Center has conducted with other PLACE MATTERS communities – suggests that we need to tackle the structures and systems that create and perpetuate inequality to fully close racial and ethnic health gaps. Accordingly, because the Joint Center seeks not only to document these inequities, we are committed to helping remedy them.

Through our PLACE MATTERS initiative, which is generously supported by the W.K. Kellogg Foundation, we are working with leaders in 24 communities around the country to identify and address social, economic, and environmental conditions that shape health. We look forward to continuing to work with leaders in Bernalillo County and other communities to ensure that every child, regardless of their race, ethnicity, or place of residence, can enjoy the opportunity to live a healthy, safe, and productive life.

*Ralph B. Everett
President and CEO
Joint Center for Political and Economic Studies*

THE VISION AND THE PLAN

Place matters for health in important ways. Differences in neighborhood conditions powerfully predict who is healthy, who is sick, and who lives longer. And because of patterns of residential segregation, these differences in neighborhood conditions are the fundamental causes of health inequities found among different racial, ethnic, and socioeconomic groups.

This study examined the relationships between place, ethnicity, and health in Bernalillo County, N.M., and found that:

- Life expectancy in the county varies by more than 22 years across census tracts.
- The percentage of low-birth-weight infants varies by a factor of 12 across census tracts.
- Community-level health risks, which are measured by factors such as educational attainment, violent crime rates, foreclosure rates, unemployment rates, and the percentage of overcrowded households, vary widely across census tracts.
- A clear relationship exists between community risk index scores and health outcomes; when a neighborhood's community risk index is low, life expectancy is high.
- Nonwhite and low-income census tracts, such as those in the downtown area, face a higher concentration of environmental health hazards such as air pollution and toxic industrial wastes than do whiter and higher-income census tracts;
- Life expectancy is an average of 5.2 years shorter in census tracts with the greatest concentration of environmental hazards.

Although researchers cannot say with certainty that these neighborhood conditions *cause* poor health, the overall pattern suggests that the clustering of social, economic, and environmental health risks in low-income and nonwhite neighborhoods makes it more difficult for people in these communities to live healthy lives.

These patterns need not and should not continue as they are. Policy makers should consider steps to reduce the concentration of health risks in vulnerable communities and support health-enhancing resources. For example, the use of Health Impact Assessments as well as the environmental assessments required under the Consolidated Environmental Review Act can help to ensure that low-income and Hispanic communities are not disproportionately hurt by environmental degradation and policies or practices that cluster health risks.

There is a strong moral imperative to enact policies designed to improve health for all. But there is also a powerful economic incentive. A study released by the Joint Center for Political and Economic Studies in 2009 found that the direct medical costs associated with health inequities among African Americans, Hispanics, and Asian Americans approached \$230 billion between 2003 and 2006. When the indirect costs of health inequities, such as lowered productivity and lost tax revenue resulting from illness and premature death, are added to the equation, the total cost of health inequities between 2003 and 2006 exceeded \$1.24 trillion.¹ For both moral and economic reasons, now is the time for action to address neighborhood conditions that shape health outcomes.

INTRODUCTION

Place matters for health, and it may be even more important than access to health care or health-related behaviors. This is the startling conclusion of a large and growing body of public health research, including this report. This research demonstrates that neighborhood conditions have powerful direct and indirect influences on health, often operating in ways over which individuals have little control. The research further indicates that unhealthy neighborhood conditions tend to cluster adjacent to one another, and most often in minority and low-income neighborhoods. According to many leading scholars, place is a root cause of health inequities between racial, ethnic, and socioeconomic groups.

In Bernalillo County, N.M., people living in neighborhoods characterized by poor housing, inadequate schools, polluted environments, insufficient transportation, and lack of safety typically have significantly poorer health than people living in neighborhoods that don't suffer from these conditions. They also have higher rates of poverty and lower life expectancy.

Data on a national scale indicate that neighborhoods shape the health of individuals in many ways:

- Neighborhood conditions such as the level of crime and violence not only increase the risk of injury and death, but they also increase the stress levels of those who are not directly victimized, which in turn can lead to premature aging and other stress-related illnesses.
- Neighborhoods can also directly influence health through environmental degradation and exposure to air, water, and soil hazards—hazards such as lead paint in homes, which can lead to permanent cognitive and behavioral impairment in young children, or molds, rodents, and insects, which are associated with asthma and other health problems. Children are also at greater risk for asthma if they live in communities with high levels of air pollution.
- Neighborhood characteristics shape health indirectly. For example, research has shown that when fresh produce and healthy foods are readily available, people are more likely to report eating a healthy diet. On the other hand, when low-cost but nutritionally poor fast food is one of the few options close at hand, neighborhoods experience higher rates of obesity and related illnesses.
- The likelihood that neighborhood residents will be able to exercise or enjoy an active lifestyle is powerfully shaped by community characteristics. In neighborhoods that aren't safe or where residents are fearful and distrustful, people find it harder to bike, jog, or play outdoor sports.

Other factors that we don't typically think of as affecting people's health, such as the quality of schools, also play a role. The best predictor of a person's health is his or her educational level. In other words, the better educated people are, the more likely they are to be healthy. But too many children in the United States live in poor neighborhoods and are stuck in schools that have high dropout rates, outdated textbooks, crumbling facilities, inadequately trained teachers, and a woeful lack of resources. As a result, these children are more likely to receive an inadequate education, are less prepared for many of life's challenges, and are at greater risk of poor health.

The quality of transportation also affects a community's health. Good public transportation can minimize environmental health threats while at the same time encouraging economic growth by linking people with jobs, goods, and services.

Taken together, these neighborhood factors—housing, schools, transportation, environmental quality, public safety—often are referred to as social determinants of health.

Despite these problems, the communities most disadvantaged from a health standpoint are also the same communities where the greatest gains can be made to improve the community's health. In doing so, we can also improve the health of surrounding communities. This report finds that by working together to reduce the concentration of health risks and increasing health-enhancing resources, we can give all residents of Bernalillo County a better chance to live healthy lives.

Part I of this report provides background information about Bernalillo County, including population data, health outcomes, socioeconomic conditions, community characteristics, and a community risk index. Part II examines the geographic relationship between the community risk index and life expectancy. Part III examines the environmental hazards in the county and the geographic relationship between environmental hazards, health outcomes, and life expectancy. Part IV presents conclusions about the role of community risk factors and environmental hazards in understanding disparities in health outcomes in Bernalillo County. For a full explanation of data sources and analytic methods, please access the Virginia Commonwealth University Center on Human Needs website, at <http://www.humanneeds.vcu.edu/>.

Table 1. Demographic Characteristics of Bernalillo County, State of New Mexico, and United States

	Bernalillo	New Mexico	United States
Population (2009)^(a)	642,527	2,009,671	307,006,556
Population Density (2000)^(b)	477.4	15.0	79.6
Race/Ethnicity (2009)^(a)			
Hispanic	46.7%	45.6%	15.8%
White	42.0%	41.0%	64.9%
Black	2.7%	1.9%	12.1%
Other	4.3%	2.9%	6.6%
American Indian and Alaska Native Alone	4.2%	8.6%	0.6%
Foreign Born	10.4%	9.8%	12.5%

(a) Source: U.S. Census Bureau, 2009 American Community Survey

(b) Source: 2009 Geolytics Projection

I. Bernalillo County: Where People Live

Bernalillo County Population

Bernalillo County, located in central New Mexico, had a population of 642,527 in 2009,² almost one third of the state's population. It is the most densely populated county in New Mexico, with 477 people per square mile. The city of Albuquerque, with a population of 529,219, accounts for more than 80% of the county's population. The city has an average density of 1,237 people per square mile, with a high of over 12,000.

As detailed in Table 1, Hispanics are the largest ethnic group in the county and make up a significantly larger percentage of the population than the national average (46.7% compared to 15.8% nationally). The majority of the Hispanic population in Bernalillo County is U.S.-born. According to the U.S. Census Bureau, the foreign-born population in the county is similar to that of the nation (10.4% compared to 12.5% nationally).

As in many areas of the United States, where residential patterns reflect historical racial and ethnic segregation and restrictions in the housing market,^{3,4,5} there are notable differences in the ethnic and racial composition of neighborhoods across Bernalillo County. Map 1 shows the racial and ethnic composition of the census tracts in central Bernalillo County. Census tracts with the highest concentrations of Hispanic residents are in South Valley and Southwest Mesa; there, the majority of census tracts are 75% to over 90% Hispanic. Downtown also has a high percentage of Hispanic residents. A number of census tracts in the Far Northeast Heights/Foothills

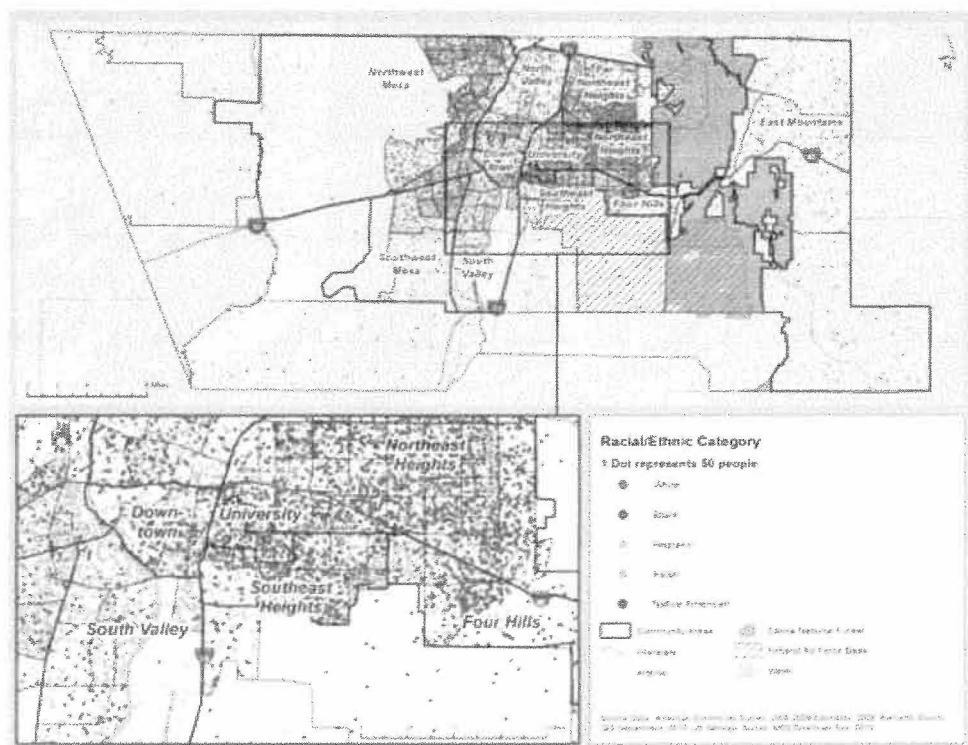
areas are over 75% white. One way to assess the racial/ethnic mix of an area is to use the Diversity Index, a measure of the likelihood that two people randomly chosen from an area will be of a different race or ethnicity. The higher the value, the less segregated the area. While the index for Bernalillo as a whole is 61.7%, the value ranges from 13.7% (low diversity) to 80.6% (high diversity). Based on the Diversity Index, the Northwest Mesa, North Valley, Southeast Heights, Northeast Heights, and University are the most diverse areas.

Map 2 highlights census tracts within Bernalillo County in which the percentage of foreign-born residents has been higher than the county average over several decades. As indicated by dark brown shading on Map 2, foreign-born residents have been more concentrated in Southeast Heights and Downtown since the 1970s.

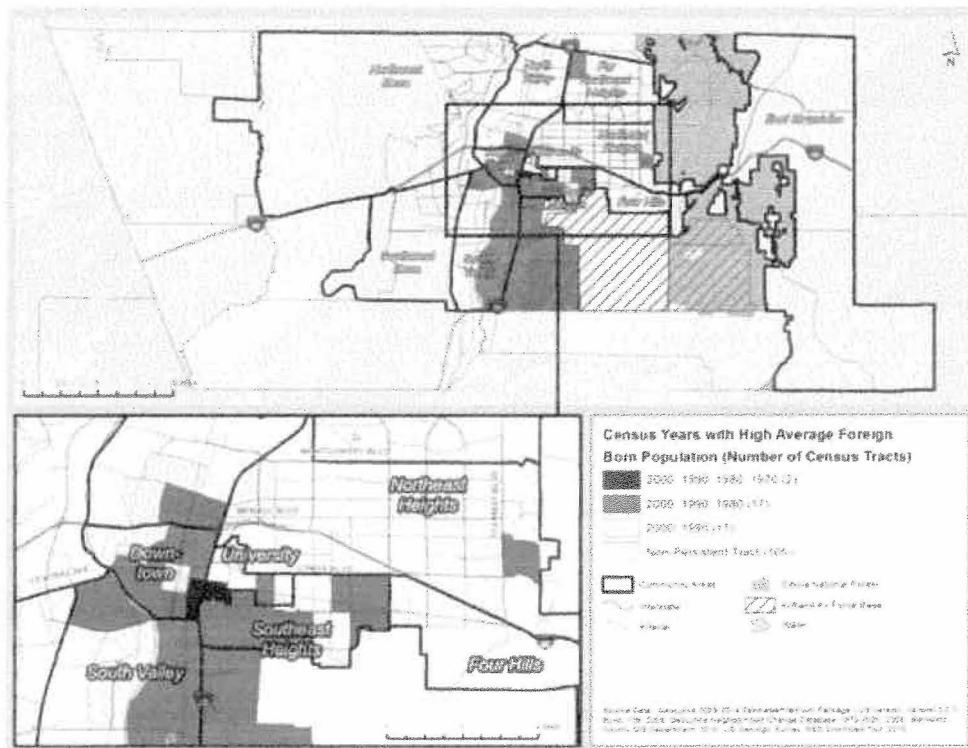
Socioeconomic Conditions

Like other communities, socioeconomic conditions in Bernalillo County have an important and often unrecognized influence on health status. Education, for example, is a pathway to higher income and net worth, which in turn have strong influences on health status and access to health care. National statistics indicate that adults (age 25 and older) who lack a high school education or equivalent are three times more likely to die before age 65 than those with a college education.⁶ They are also more likely to engage in unhealthy behaviors such as cigarette smoking.⁷

Map 1: Racial/Ethnic Distribution by Census Tract, Bernalillo County, N.M. (2003-2009)



Map 2: Persistent Foreign Born by Census Tract, Bernalillo County, N.M. (1970-2009)



Note: The category of "persistent foreign born" includes census tracts that, for two or more decennial census periods, had a percentage of foreign-born population equal to or greater than the overall Bernalillo County average (5%) for the time period from 1970 to 2000.



	Bernalillo	New Mexico	United States
Educational Attainment			
Less than High School (K-12)	13.5%	17.2%	14.7%
High School Only	24.3%	26.4%	28.5%
Some College	30.7%	31.1%	28.9%
Bachelor's Degree or Higher	31.5%	25.3%	27.9%
Poverty Rate			
Below 0.50 of Poverty Rate	7.3%	7.5%	6.3%
0.50-0.99 of Poverty Rate	8.6%	10.5%	8.1%
1.00-1.99 of Poverty Rate	19.5%	22.3%	18.4%
2.00 and Above of Poverty Rate	64.6%	59.7%	67.3%

Source: U.S. Census Bureau, 2009 American Community Survey

Educational attainment in Bernalillo County, where 86.5% of adults age 25 and over have completed high school, compares favorably with that of New Mexico (82.8%) and the U.S. (85.3%) (Table 2). However, educational attainment varies greatly by race and ethnicity (Figure 1). According to 2009 data from the American Community Survey, over 25% of the county's Hispanic adults have not completed high school, and almost 60% have no education beyond high school. Of the foreign-born residents, 32.3% do not have a high school degree and 54.5% do not have an education beyond high school. While educational outcomes are slightly better for Native American residents, nearly 40% have no education past high school.

The percentage of adults in Bernalillo County who have graduated from high school varies even more by neighborhood. Census tracts in which 40% or more of the adult population have not completed high school are in Downtown, South Valley, Southeast Heights, North Valley, and Native American lands in the northwest and south (Map 3).

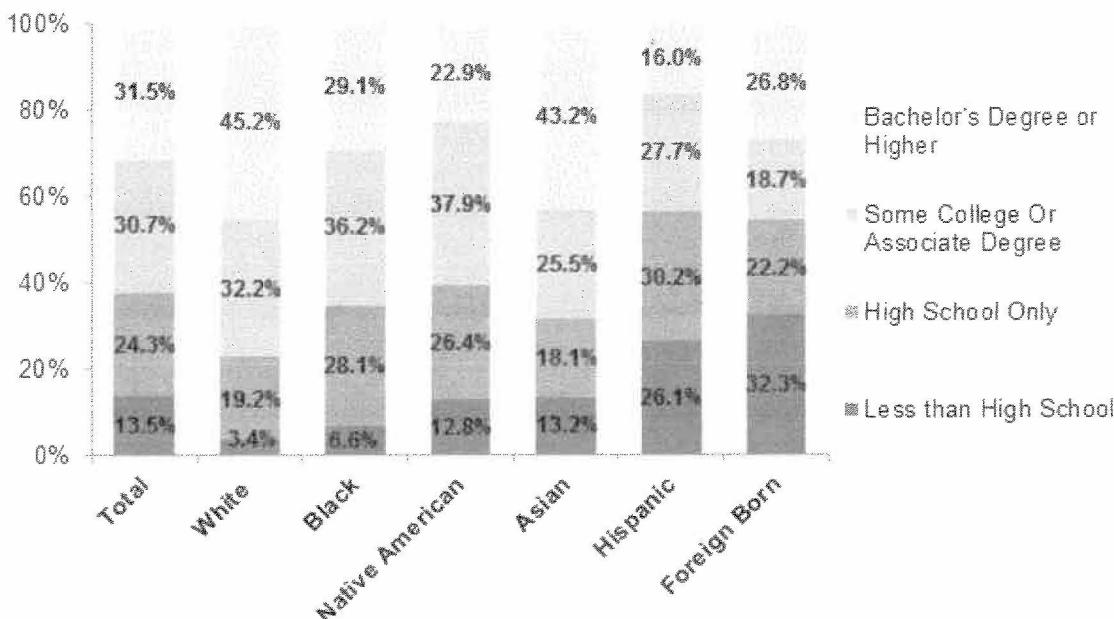
Poverty also has a strong influence on health: nationally, families living below the federal poverty level are 3.6 times more likely to report fair or poor health than those with incomes at least twice the poverty level.⁸ Experiencing poverty during childhood influences a child's cognitive, emotional, behavioral, and physical development. For example, poor children have a higher rate of lead poisoning than non-poor children, have a higher prevalence of developmental delay, and are more likely to be reported as having long-term emotional or behavioral problems. Childhood poverty also decreases a child's likelihood of high school graduation.^{9,10} Poverty rates are highest in Native American lands bordering the western and southern portions of

Bernalillo County (Map 4). In 2009 in these areas, as well as in a few census tracts in the Southeast Heights and South Valley, over 55% of the population had incomes below 150% of the poverty level.

Persistent poverty, defined as having at least 20% of the population with incomes under 100% of the federal poverty level for at least two consecutive census periods, is shown in Map 5. Areas of persistent poverty since the 1970s are shown in dark brown. These include six census tracts in South Valley, Southeast Heights, Downtown, and North Valley. Areas of persistent poverty since the 1980s are shown in lighter brown. These include eight census tracts in Downtown, North Valley, South Valley, and Southeast Heights.

Poverty rates in Bernalillo County are somewhat higher than national rates. In 2009, about 16% of households in Bernalillo County had incomes below 100% of the federal poverty level (\$22,000 or less for a family of four), compared to 14% nationwide. Like educational attainment, poverty rates vary with race and ethnicity. According to American Community Survey data for 2009, white residents are least likely to live in poverty (10.1%) compared to black, Native American, Hispanic, and foreign-born residents (23.3%, 20.3%, 21.2%, and 20.2% respectively; see Figure 2).

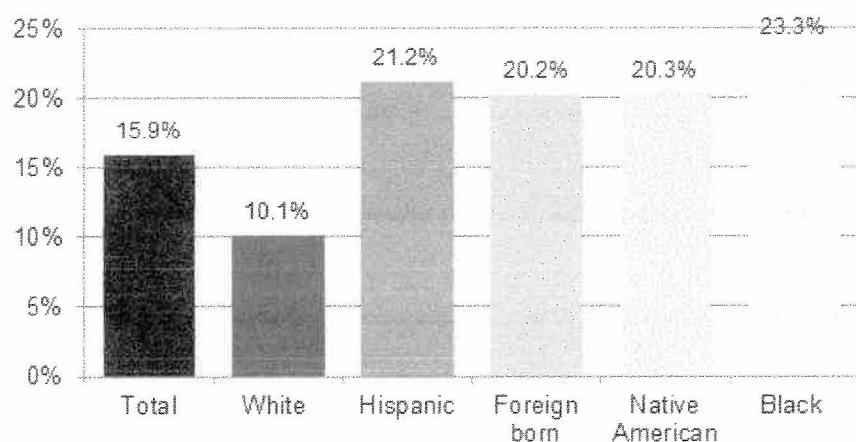
Figure 1: Educational Attainment in Bernalillo County, N.M.



Source: U.S. Census Bureau 2009 American Community Survey

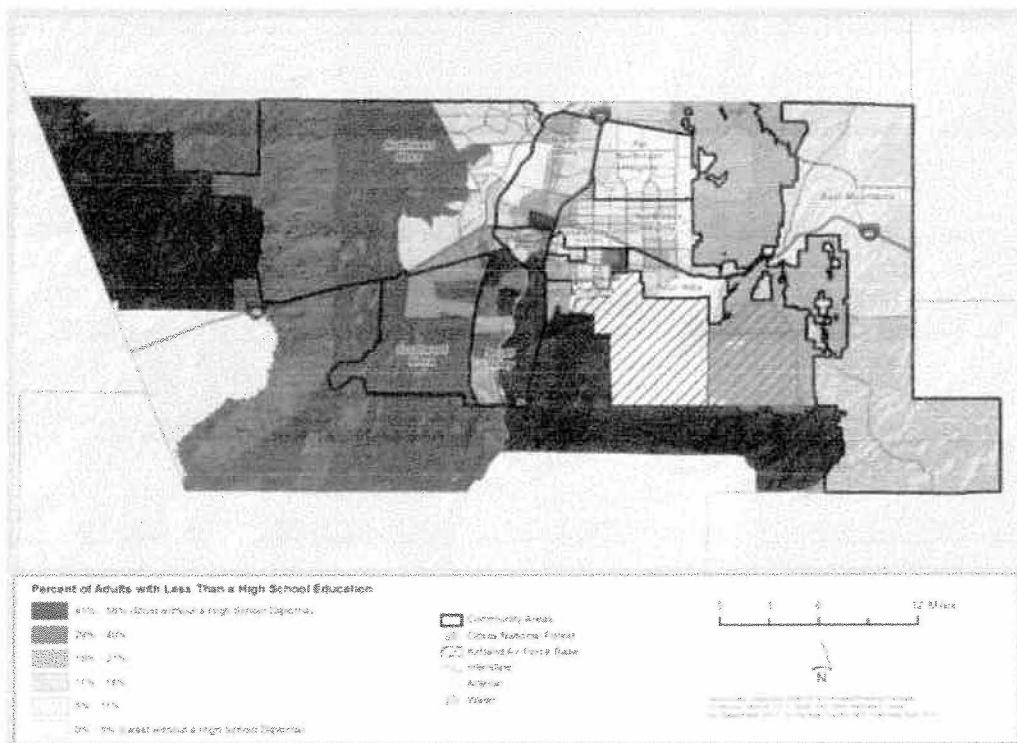
Notes: White includes Non-Hispanic population only; all other racial categories include Hispanic and Non-Hispanic population.

Figure 2: Individuals in Poverty in Bernalillo County, N.M., by Race, Ethnicity, and Nativity



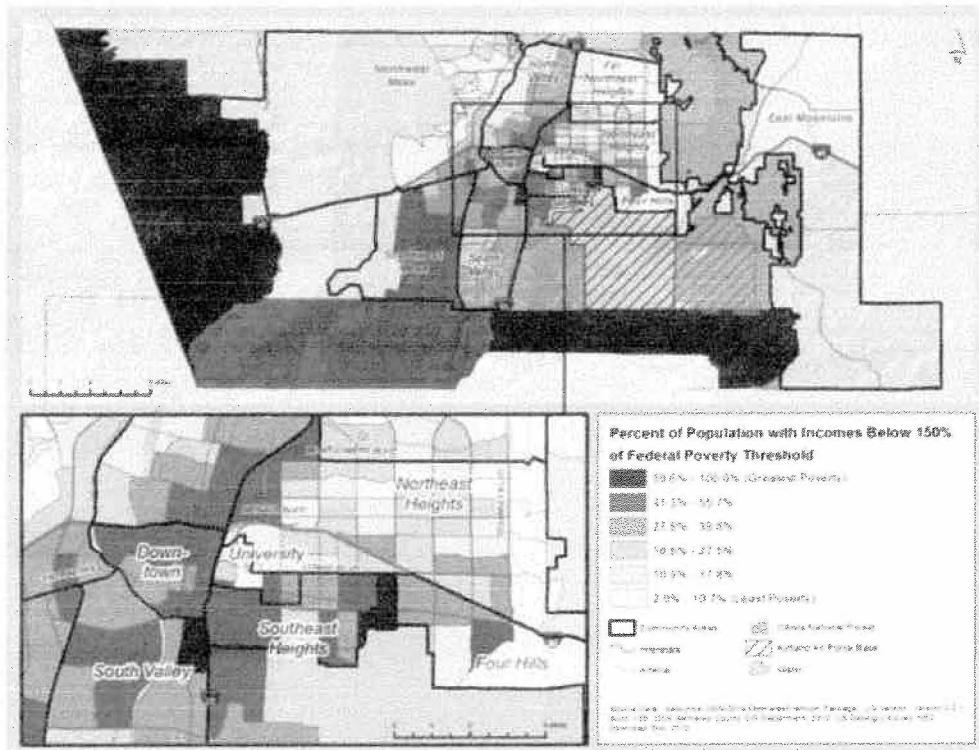
Source: U.S. Census Bureau, 2009 American Community Survey

Map 3: Adults With Less Than High School Education by Census Tract, Bernalillo County, N.M. (2009)

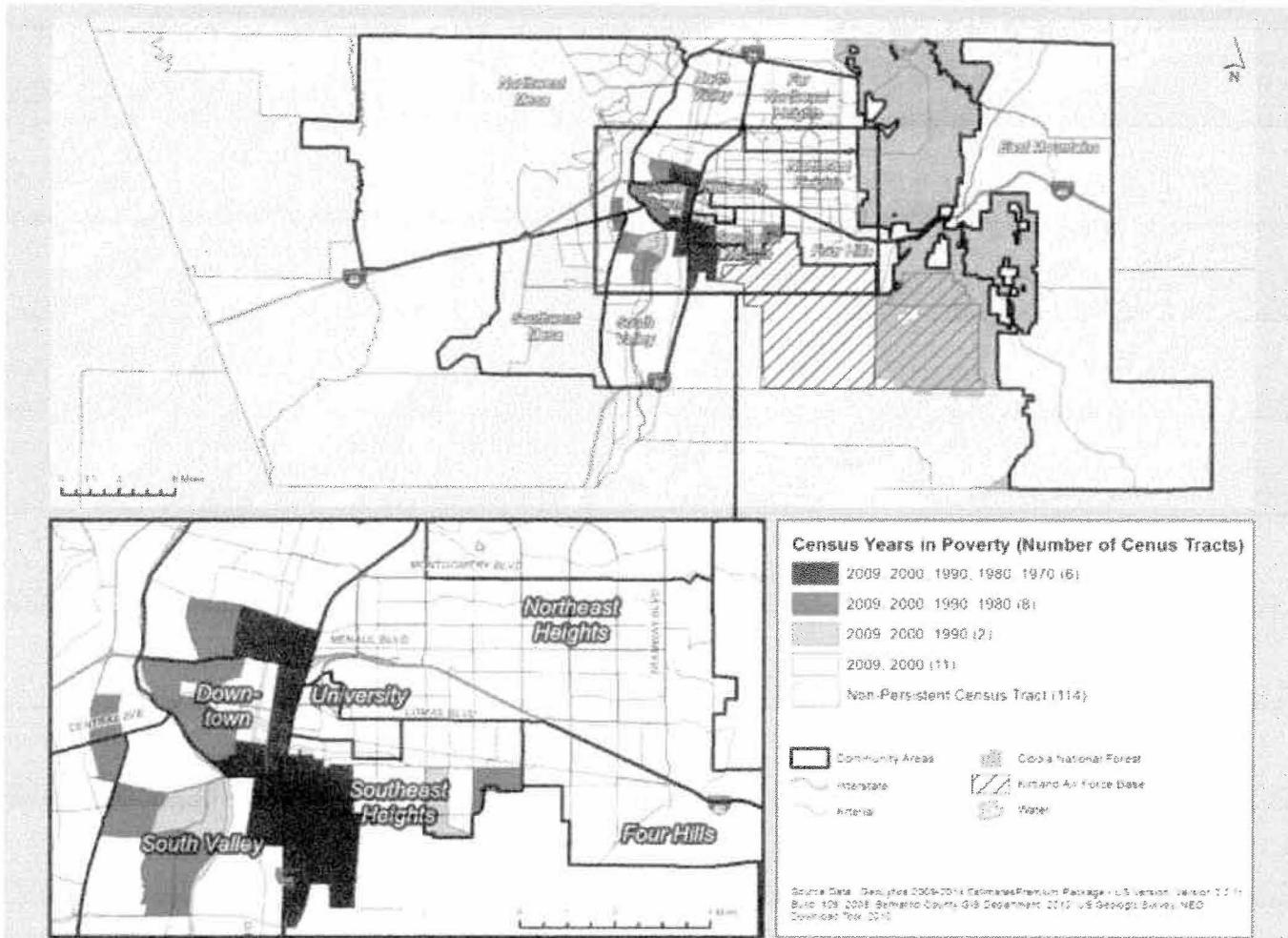


Note: Adults age 25 or older without a high school diploma or equivalent.

Map 4: Poverty by Census Tract, Bernalillo County, N.M. (2009)



Map 5: Persistent Poverty by Census Tract, Bernalillo County, N.M. (1970-2009)



Note: The category of "persistent poverty" includes census tracts with a poverty rate of at least 20% for at least two consecutive census periods, looking retrospectively from 2009. This concept is based on the U.S. Department of Agriculture's research on persistent poverty counties.

II. The Health and Life Expectancy of the People of Bernalillo County

Housing Conditions

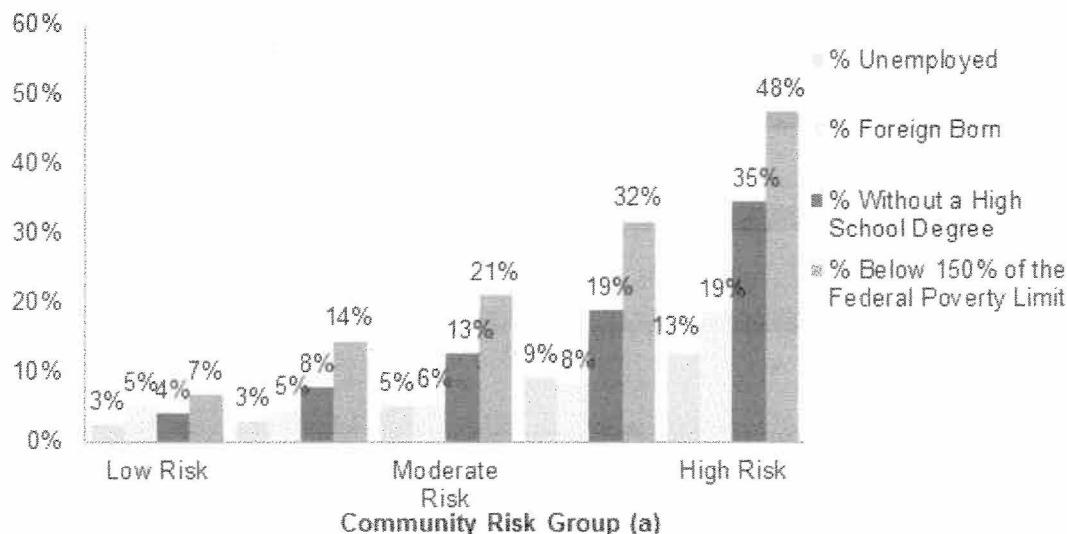
Neighborhood housing conditions have a significant impact on the community environment. Foreclosure rates in 2010 were lower in Albuquerque (one in 475 housing units) than in the nation (one in 381 units), but higher than the New Mexico rates (one in 753 units). Foreclosure rates during 2006-2008 were highest in the Downtown area, Northeast Heights, and Southwest Mesa.

The percent of vacant housing units for Bernalillo County is lower than both the state and national average, but varies greatly

within the county. Census tracts with the highest rates of vacant housing, above 15%, include the Southeast Heights and the Downtown and University areas.

According to American Community Survey data for 2009, overcrowding in Albuquerque, generally defined by the survey as more than one person per room, is lower than the rate in New Mexico (2.4% and 3.6% respectively), and lower than the national rate (3.0%). Overcrowding varies by neighborhood in Bernalillo County, from census tracts with no significant overcrowding to census tracts with a rate of over 15%. Census tracts that have higher-than-average overcrowding rates include Northeast Heights, South Valley, and the Downtown and University areas.

Figure 3: Community Risk Index Groups, Bernalillo County, N.M.



Community Risk Index quintiles: Source: Geolytic 2009 Projections, Albuquerque Public Schools; Research, Development and Accountability Department 2004-2006, RealtyTrac via the Federal Reserve, U.S. Census Bureau, Census 2000, Institute for Social Research 2004-2006

Community Risk Index

To sum up socioeconomic and neighborhood risks, we developed an index for comparing Bernalillo County neighborhoods. We statistically combined a set of measures into a single “community risk” index (CRI) for each census tract (see the Center on Human Needs website at <http://www.humanneeds.vcu.edu/> for details). The CRI was calculated based on variables of interest to the Bernalillo County Place Matters Team and has a basis in social determinants of health literature. These variables include: average educational attainment, average standardized test scores, the violent crime rate, the foreclosure rate, the unemployment rate, vacant houses, households with no automobile, and overcrowded households. The higher the CRI score, the higher the risk associated with socioeconomic and community conditions. Use of this index enables us to examine the relationship between multiple community socioeconomic risks and health outcomes simultaneously.

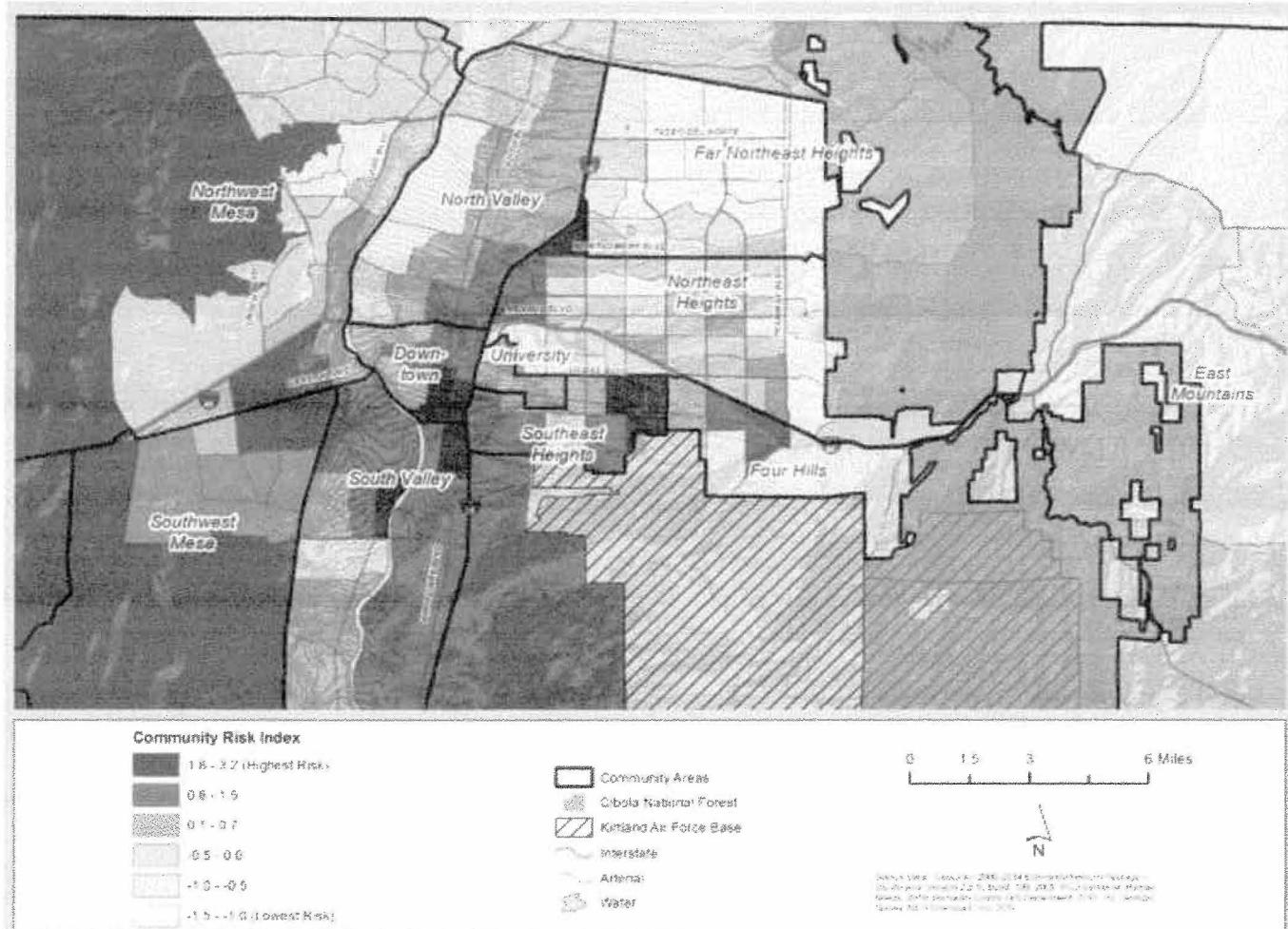
Figure 3 illustrates the relationship between the CRI and selected socioeconomic conditions. Census-tract-level scores on the CRI were divided into quintiles (five equal-size groups), which are displayed from lowest to highest. In the quintile with the lowest CRI values (lowest risk), the unemployment rate is 3%, 7% have an income below 150% of the federal poverty level, and 4% of adults lack a high school diploma. In the quintile with the highest CRI values (highest risk) 13% are unemployed, 48% have an income below 150% of the federal poverty level, and 35% of adults lack a high school diploma.

Map 6 examines geographic variation in the CRI, with high-risk areas shaded in dark brown, including Southeast Heights, Downtown, South Valley, and Northeast Heights. These are neighborhoods in which residents may be most vulnerable to poor health outcomes that are influenced by unfavorable socioeconomic conditions and community characteristics, such as high rates of poverty, crime, unemployment, low educational attainment, and poor housing conditions.

Health Status of Community Residents

Overall indicators of the health status of Bernalillo County are mixed. According to the County Health Rankings released in 2010 by the Robert Wood Johnson Foundation, Bernalillo County ranked the seventh highest in health status among the 33 counties in New Mexico; however, it should be noted that New Mexico ranked very low in morbidity, 10th lowest in the U.S.¹¹ Based on health outcome data from the New Mexico Department of Health for years 2001–2005, the average life expectancy in Bernalillo County (80.3 years) is slightly higher than for the state of New Mexico (77.3) or the United States (77.9). Similarly, the death rate in Bernalillo (783.6/100,000 population) is somewhat higher than the rate in the state of New Mexico (761.2) and lower than in the United States (803.6). On the other hand, rates of infant mortality and low birth weight in Bernalillo County are similar to those for New Mexico and the United States (Table 3).

Map 6: Community Risk Index by Census Tract, Bernalillo County, N.M. (2004-2009)



Note: The CRI is a composite index that is based on the following indicators: percentage of population with less than a high school education, average standardized test scores, the violent crime rate, the foreclosure rate, the unemployment rate, percentage of houses that were vacant, and percentage of households with no automobile or with overcrowding. Higher scores represent the highest levels of risk.

Given the significant differences by neighborhood in community risk factors that may affect health in Bernalillo County, it follows that health outcomes, including life expectancy, mortality, and rate of low-birth-weight births, vary sharply by neighborhood as well.

Life expectancy—how long a person born today can expect to live—varies by several decades across Bernalillo County neighborhoods. Based on vital statistics data from the New Mexico Department of Health for years 2001 to 2005, the average life expectancy for the county as a whole is 80.3 years. However, in some census tracts in the Downtown area and the Southeast Heights, a person born today can expect to live to only about 70 years or less. In other places in Bernalillo County, a person born today might expect to live into his/her nineties.

Map 7 illustrates this variation, with census tracts with the lowest life expectancies denoted in dark brown and census tracts with the highest life expectancies denoted in light yellow.

Low birth weight (defined as a weight of less than 5.5 pounds at birth) also varies sharply by neighborhood. Based on data from the New Mexico Department of Health for years 2001 to 2005, the average percent of low-birth-weight births for Bernalillo County is 8.5%. Geographic patterns for low birth weight are shown in Map 8. Darker brown areas on the map represent areas of high rates of low birth weight. Census tracts with the highest low-birth-weight rates are located in the Northeast Heights and University areas.

Map 7: Life Expectancy by Census Tract, Bernalillo County, N.M. (2001-2005)

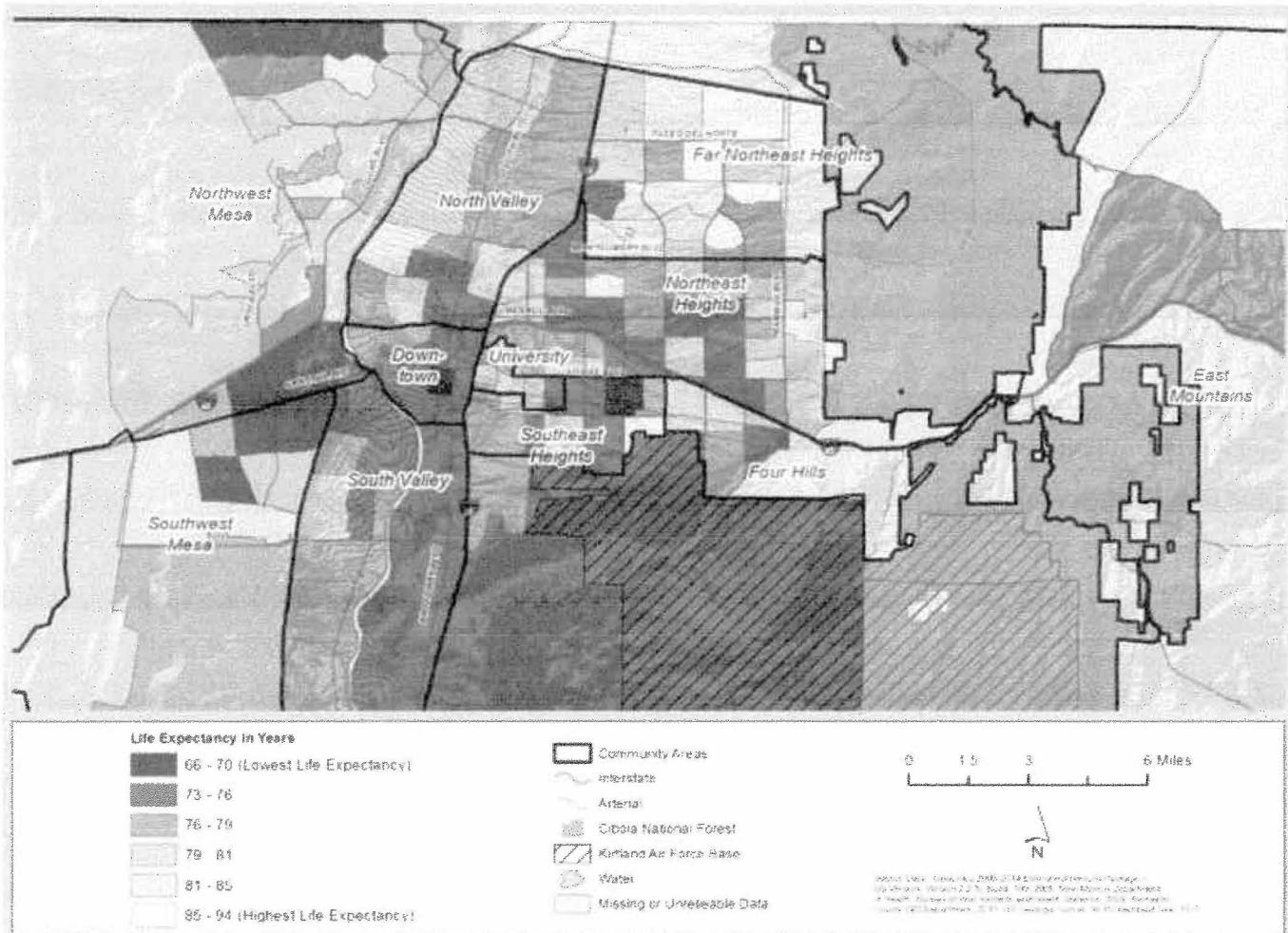


Table 3. Health Outcomes in Bernalillo County, State of New Mexico, and United States

	Bernalillo	New Mexico	United States
Deaths			
Life Expectancy in Years	80.3 _(a)	77.3 _(b)	77.9 _(b)
Death Rate/100,000 Population	783.6 _(a)	761.2 _(b)	803.6 _(b)
Births			
Low Birth Weight	8.4% _(a)	8.5% _(b)	8.2% _(b)
Infant Mortality/1,000 Births	6.3 _(a)	6.1 _(b)	6.8 _(b)

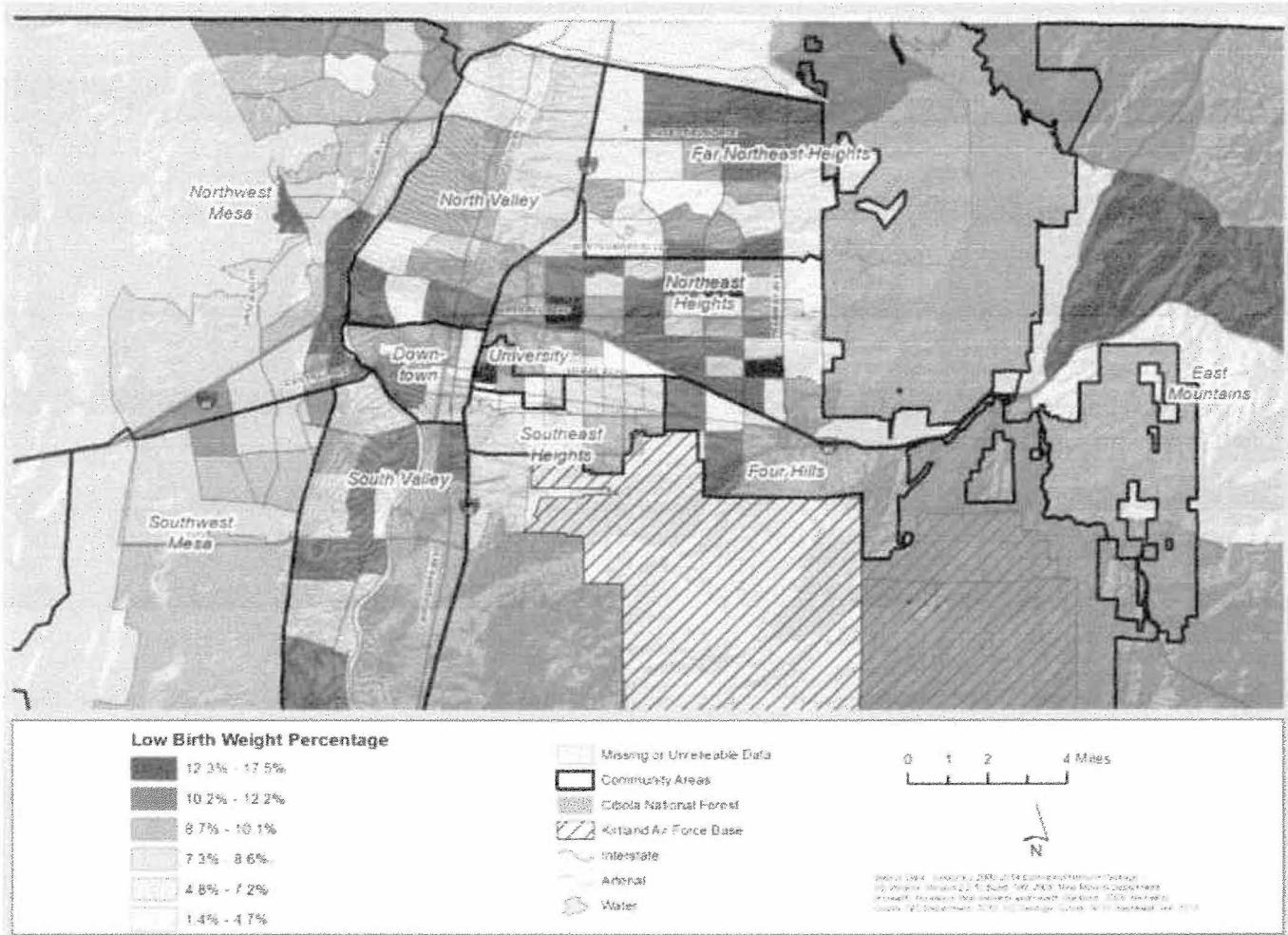
(a) New Mexico Department of Health, Bureau of Vital Records and Health Statistics, 2001-2005.

(b) Centers for Disease Control and Prevention, National Center for Health Statistics, 2005.

(c) National Vital Statistics Report, Vol 58, No. 17, April 30, 2010.

Available at http://www.cdc.gov/nchs/data/nvsr58/nvsr58_17.pdf.

Map 8: Low Birth Weight by Census Tract, Bernalillo County, N.M. (2001-2005)



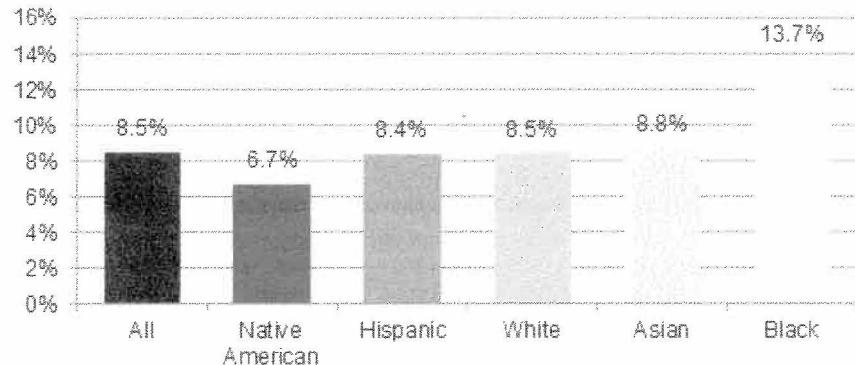
Note: Low birth weight is defined as a weight of less than 2500 grams, or about 5.5 pounds at birth. Rates in the Cibola National Forest may be unreliable due to small population size.

Figure 4 shows that the average low-birth-weight rate is nearly identical for Hispanics and whites, the two largest racial/ethnic groups in Bernalillo County. Thus, variability in low-birth-weight rates in Bernalillo County is likely to have less to do with racial/ethnic composition of neighborhoods and more to do with other community and individual risks. However, it should be noted that the percentage of low-birth-weight African American babies in the county is significantly higher than that for other population groups. This may be due to the relatively small African American population in the county, or it may be related to the stress of racism, an outcome that has been suggested by other research in other locations.

Community Risk and Health Outcomes

Although low-birth-weight rates often vary with socioeconomic characteristics, in Bernalillo County there does not appear to be any significant relationship between low-birth-weight rates and community or household-level characteristics measured at the census tract level. We may have insufficient data to uncover this relationship in Bernalillo County. However, census tracts in Bernalillo County with the highest level of community risk have lower average life expectancy (Figure 5). A variety of factors may affect life expectancy, including social, environmental and behavioral factors—some of which are themselves associated with the indicators measured by the community risk index. To some degree, the observed association between our index and life expectancy may represent the

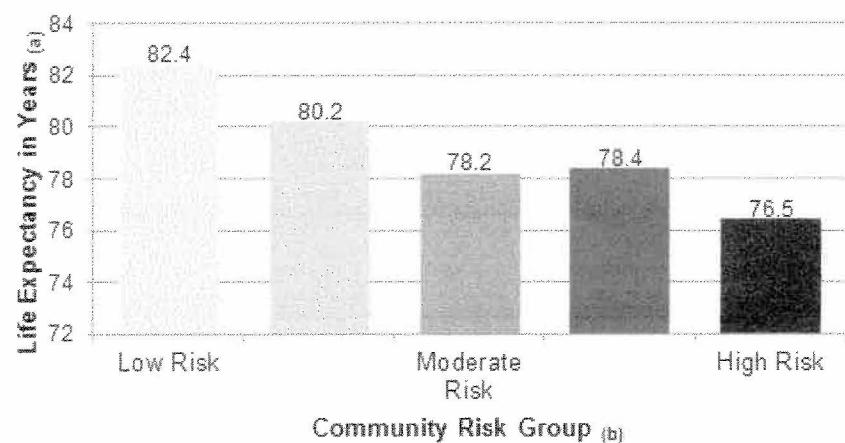
Figure 4: Percent Low-Birth-Weight Births by Race/Ethnicity in Bernalillo County, N.M.



Source: Bernalillo County Department of Health, Seer Stat 2001-2005.

Note: Racial groups include Non-Hispanic population only. Hispanic can include any racial group.

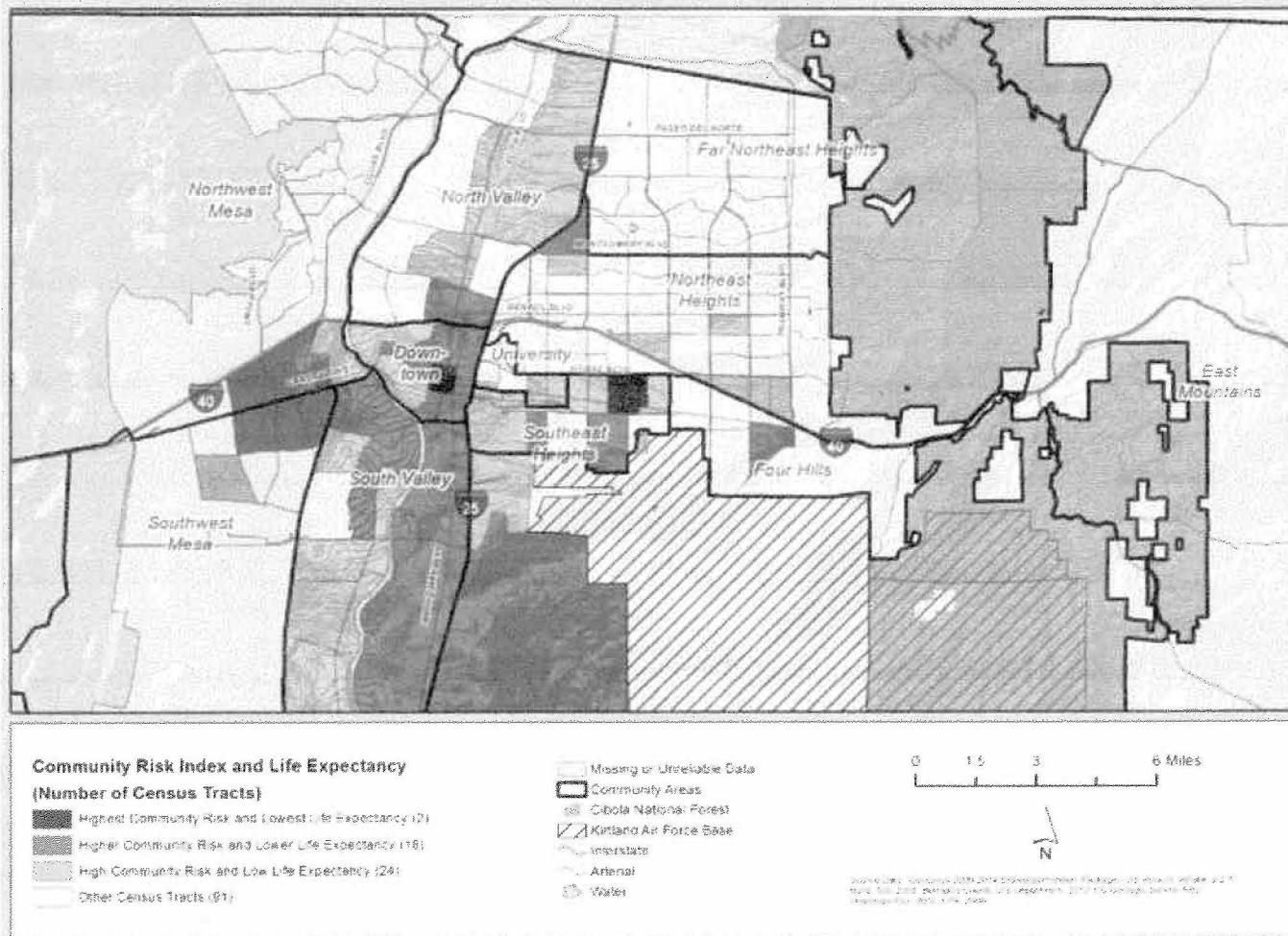
Figure 5: Life Expectancy in Bernalillo County, N.M., by Community Risk Groups



(a) Life expectancy quintiles Source: Department of Health, Seer Stat, 2001-2005

(b) Community Risk Index quintiles; Source: Geolytic 2009 Projections, Albuquerque Public Schools; Research, Development and Accountability Department 2004-2006, RealtyTrac via the Federal Reserve, U.S. Census Bureau, Census 2000, Institute for Social Research 2004-2006

Map 9: Regions of Elevated Community Risk Index and Low Life Expectancy by Census Tract, Bernalillo County, N.M. (1970-2009)



Note: Values for CRI: highest = 1.79 - 3.21; higher = 0.71 - 1.47; high = 0.01 - 0.61.
Values for life expectancy (LE): lowest = 66 - 70; lower = 71 - 76; low = 77 - 79.

influence of these confounding variables and not a causal role of the measured indicators themselves.

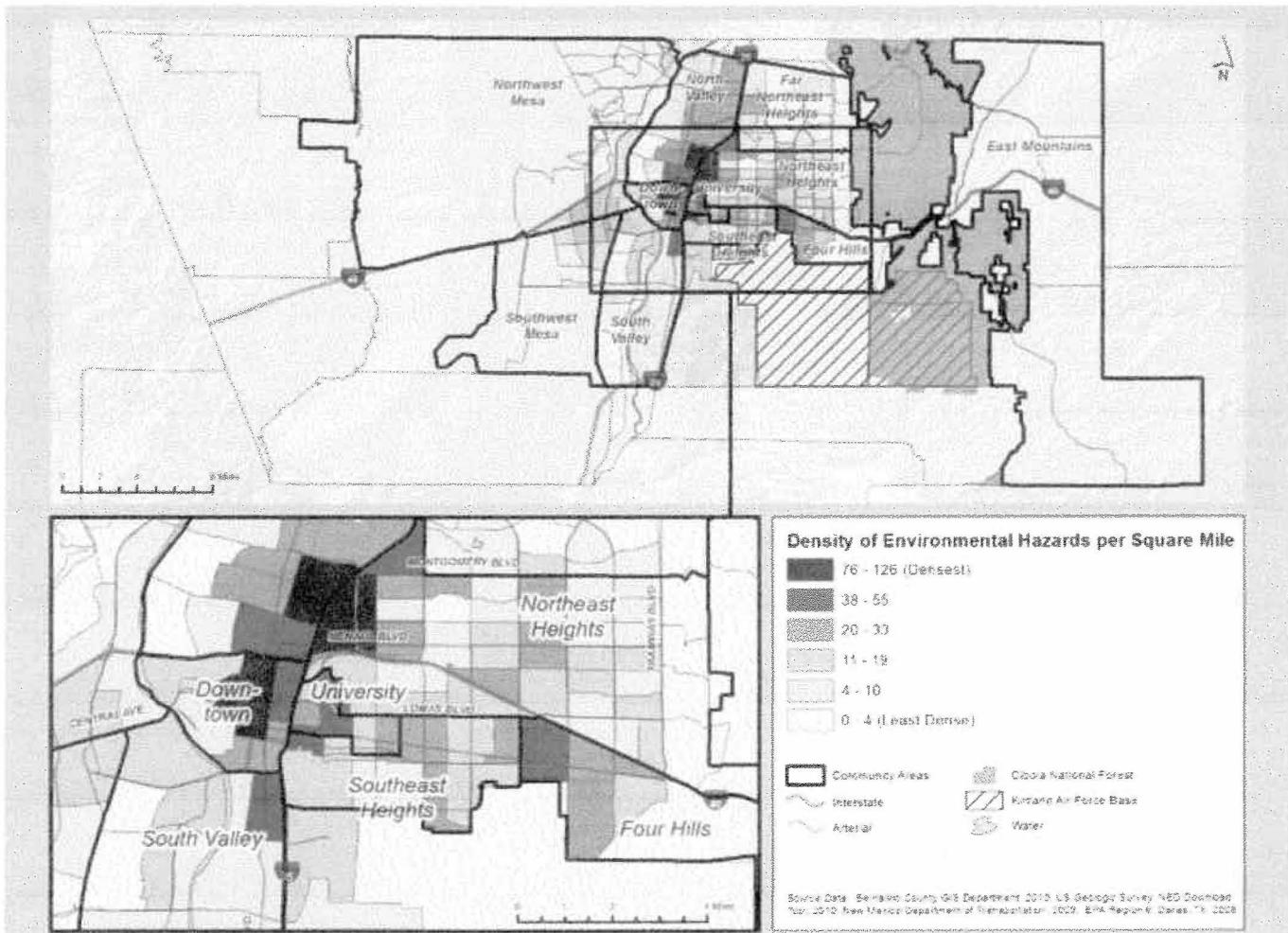
Map 9 shows the geographic relationship between socioeconomic and community risk factors (as measured by the CRI) and life expectancy in Bernalillo. Neighborhoods where the CRI is high and there are poor health outcomes are shown in darker colors. The map, which focuses on the urban areas of Bernalillo County, illustrates that census tracts in Southeast Heights, Downtown, Four Hills, South Valley, and portions of Northwest Mesa, Southwest Mesa, and Northeast Heights have a co-occurrence of high community risk index and low life expectancy.

III. Environmental Hazards and Life Expectancy in Bernalillo County

Environmental Hazards

As noted above, factors that determine one's health are not restricted to the characteristics of individuals and families. Other factors, often referred to as social determinants of health, such as communities where people are exposed to environmental hazards, contribute to greater health risks. Environmental hazards may induce disease and injuries by exposing the population to contaminated air, water, and food or to hazards associated with workplace conditions, transportation, pests, noise, toxic spills, and climate change.

Map 10: Environmental Risk by Census Tract, Bernalillo County, N.M. (2002)



Note: The density of environmental hazards was generated from an aggregation of the following types of hazards per square mile:

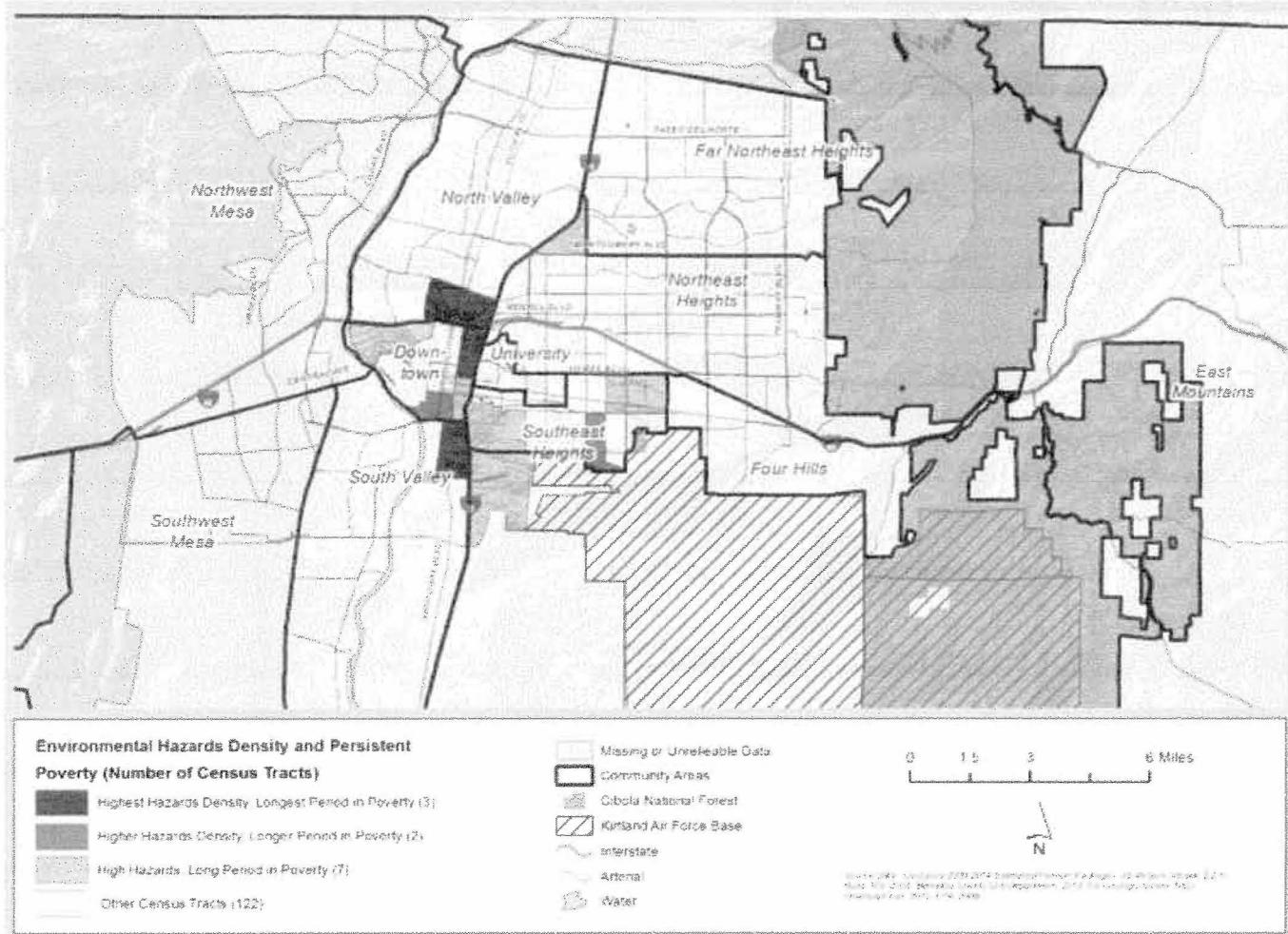
- Tier II reporting facilities
- Discharge permit points
- Dumping locations
- Hazmat locations
- Hospitals
- Railroad depots
- NMED discharge permit locations
- NPDES permit locations
- NMED petroleum storage tank bureau leak sites
- Stationary air [pollution] sources
- Superfund sites
- Industrial/manufacturing land use

While a broad array of environmental risks are considered to have health effects, the 2003 Albuquerque/Bernalillo County Comprehensive Plan identified primary sources of air pollutants as vehicular emissions, residential wood burning, dust from unpaved roads and construction sites, and, to a lesser degree, industrial operations. Primary sources of water pollutants include septic tanks, agricultural activities, gas stations, landfills, illegal dumping, and hazardous materials. In addition, there are three Superfund sites in Bernalillo County.¹² (According to the Environmental Protection Agency, "a Superfund site is an uncontrolled or abandoned place where hazardous waste is located, possibly affecting local ecosystems or people."^{13,12})

Environmental Hazards in Bernalillo County

- Traffic corridors
- Railroads
- Industrial zones
- Brownfield sites
- Superfund sites
- Resource Conservation and Recovery Act (RCRA) sites
- Hazardous air pollutants

Map 11: Regions of Elevated Environmental Risk and Persistent Poverty by Census Tract, Bernalillo County, N.M. (1970-2009)



Note: Values for hazards density: highest = 38.95 - 54.65; higher = 26.00 - 33.01; high = 13.89 - 20.17.
Values for period in poverty: longest = 5 decades; longer = 3 - 4 decades; long = 2 decades.

Exposure to environmental hazards is rarely uniform across geographic areas. Studies document proximity to hazardous sites and heightened exposure to pollution in neighborhoods with larger populations of people of color and the poor.^{14,15,16,17} Studies in various locations also document that more environmental hazards occur in communities with large minority populations.¹⁸ Some longitudinal studies suggest that toxic facilities are deliberately sited in minority communities,¹⁹ possibly because such neighborhoods are socially isolated and hold limited political power to resist undesirable land use decisions by governments and corporations.²⁰

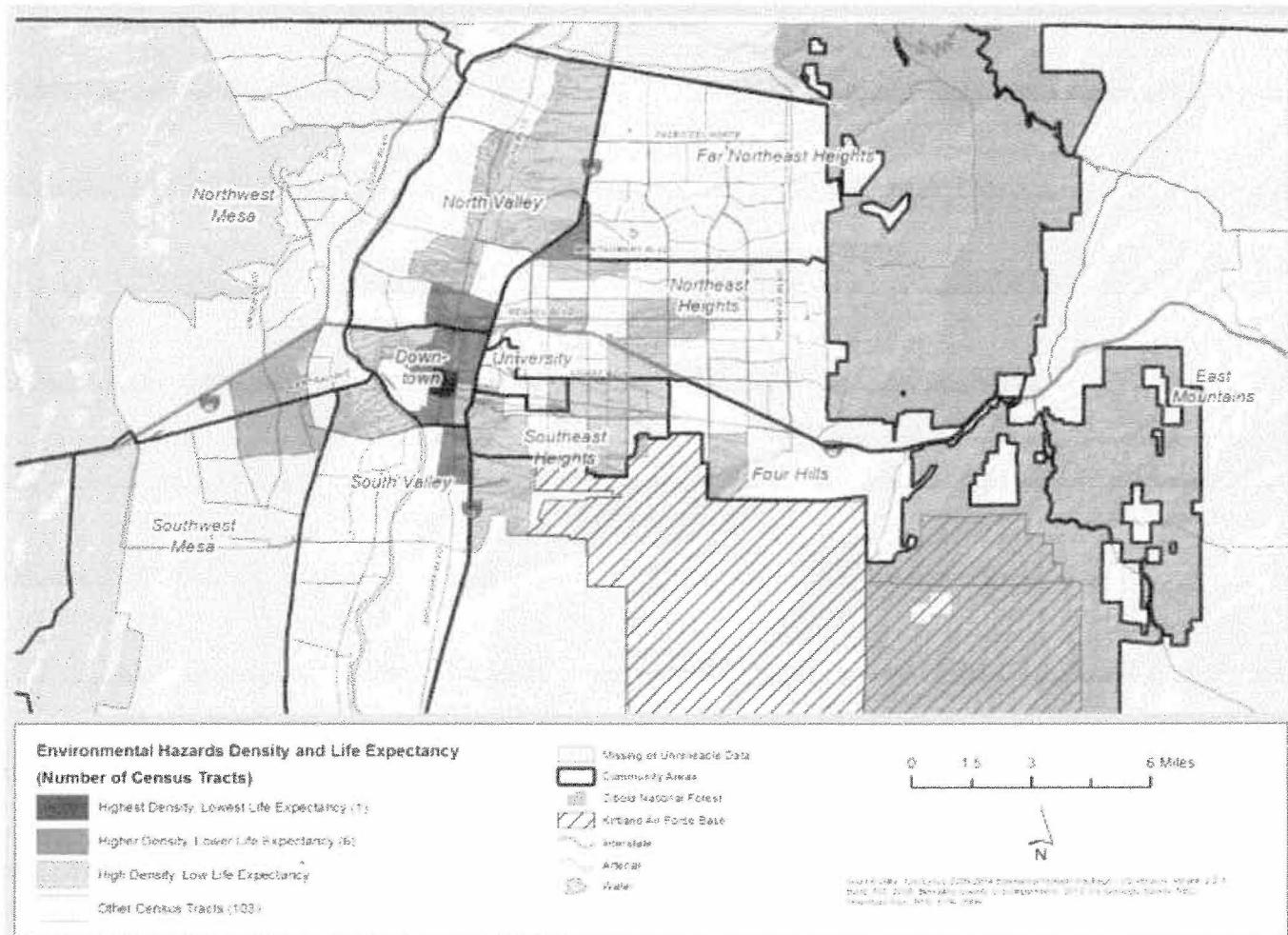
As Map 10 shows, environmental hazards are most prevalent in downtown Albuquerque, near North Valley, and Northeast Heights close to Interstate 25. This measure does not reflect the

number of pollutant sources but rather the number of pollutant sources divided by the square miles. While one census tract in Four Hills has elevated risk as measured by this index, the high risk score is primarily a result of land that is zoned for industrial or commercial use. Land use in this zoning classification does not necessarily result in exposure to environmental hazards.

Community Characteristics and Environmental Exposure

In Bernalillo County, particular community characteristics are common in areas having a greater number of toxic facilities. Areas with high levels of potential pollution are significantly more likely to contain low-income, Hispanic, and recent immigrant populations (Figure 6). In the quintile with the highest levels of environmental risk, 32% of households have

Map 12: Regions of Elevated Environmental Risk and Low Life Expectancy by Census Tract, Bernalillo County, N.M. (1970-2009)



Note: Values for hazards density: highest = 54.65 - 126.15; higher = 27.43 - 54.64; high = 13.52 - 27.42.
Values for life expectancy: lowest = 66 - 70; lower = 71 - 76; low = 77 - 79.

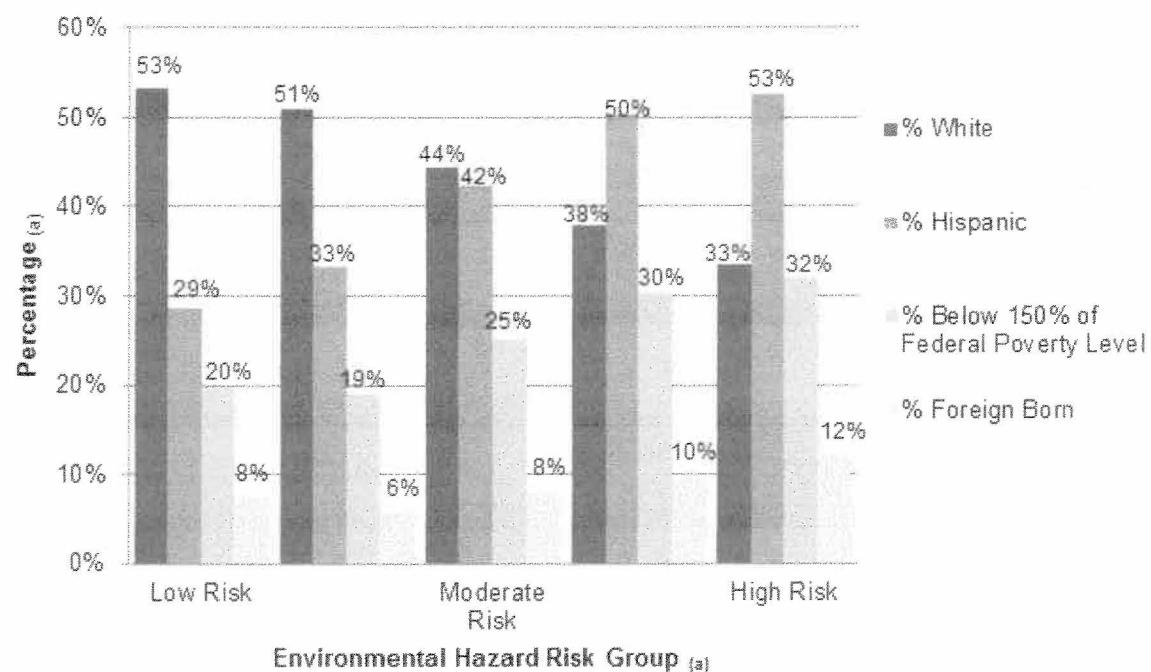
incomes below 150% of the federal poverty level—or \$33,525 for a family of four as of 2011—and 53% of these households are Hispanic. In addition, areas with the highest exposure to environmental hazards like landfills have on average 50% more foreign-born residents than the areas with the lowest exposure. Communities with the lowest levels of exposure to potentially toxic facilities tend to report higher incomes (20% below 150% of the federal poverty level) and to have a majority white population (53%).

Map 11 illustrates census tracts with a co-occurrence of persistent poverty and exposure to environmental hazards. Census tracts in the Downtown, South Valley, Southeast Heights, and North Valley have experienced high rates of poverty over several decades and have a high density of

environmental hazards. There are, however, census tracts in the South Valley that have experienced persistent poverty but relatively few environmental hazards. The environmental hazards density (hazards per square mile) is meant to represent a general measure of pollution and hazards to the environment. The measure is based on the available hazardous and pollutant data from Bernalillo County at point level. Because the data set includes several types of hazards and pollutants, and excludes others, over differing time periods, the ground perception of hazard density may differ from the measure derived here.

In sum, our findings indicate that exposure to environmental hazards—traffic corridors, railroads, industrial zones, brownfield sites, Superfund sites, Resource Conservation and Recovery Act sites, and hazardous air

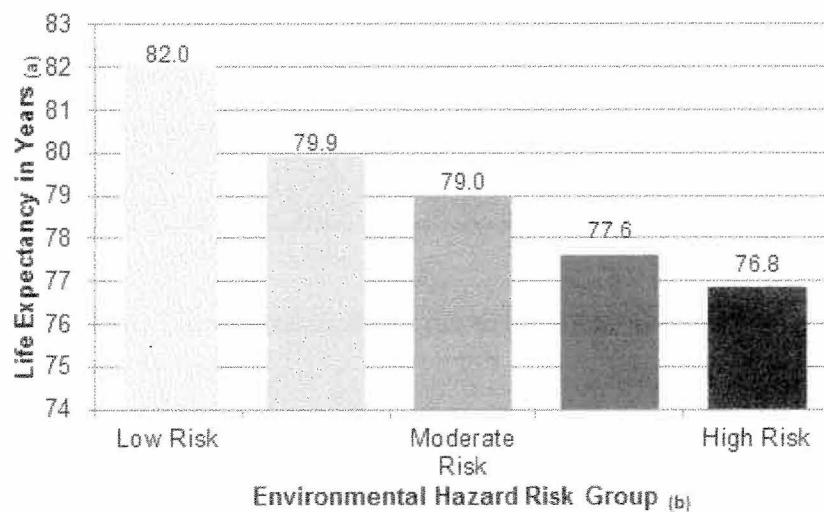
Figure 6: Environmental Exposure by Race/Ethnicity and Poverty in Bernalillo County, N.M.



(a) Geolytic 2009 Projections

(b) Environmental hazard risk quintiles; Calculated by Virginia Network for Geospatial Health Research.

Figure 7: Life Expectancy in Bernalillo County, N.M., by Environmental Risk Groups



(a) Life expectancy quintiles Source: Department of Health, Seer Stat, 2001-2005

(b) Environmental hazard risk quintiles; Source: Bernalillo GIS Department

pollutants—is more likely to occur in communities where a higher percentage of the population is poor and/or Hispanic, and less likely in communities that have lower concentrations of poverty and a larger white population. Furthermore, in the Downtown area, South Valley, North Valley, and Northeast Heights, which had high environmental hazard exposure, life expectancy was low (see Map 12).

Figure 7 illustrates the relationship between the density of environmental hazards and life expectancy for census tracts in Bernalillo County. Census tracts were divided into quintiles according to the number of environmental hazards they contain. Life expectancy in the tracts in the highest quintile (with the most environmental hazards) was an average of 5.2 years shorter than for census tracts with the fewest environmental hazards (lowest quintile).

IV. Conclusion and Recommendations

Where people live within Bernalillo County powerfully predicts whether they are healthy, whether they are sick, and how long they live. Communities facing the greatest array of health risks have a larger percentage of low-income, immigrant, and Hispanic families than communities facing the least health risks. Specifically, the data show:

- Life expectancy in the county varies by more than 22 years across census tracts.
- The percentage of low-birth-weight infants varies by a factor of 12 across census tracts.
- Community-level health risks, which are measured by factors such as educational attainment, violent crime rates, foreclosure rates, unemployment rates, and the percentage of overcrowded households, vary widely across census tracts.
- A clear relationship exists between community risk index scores and health outcomes; when a neighborhood's community risk index is low, life expectancy is high.
- Nonwhite and low-income census tracts, such as those in the downtown area, face a higher concentration of environmental health hazards such as air pollution and toxic industrial wastes than do whiter and higher-income census tracts;
- Life expectancy is an average of 5.2 years shorter in census tracts with the greatest concentration of environmental hazards.

Although researchers cannot say with certainty that these neighborhood conditions *cause* poor health, the overall pattern suggests that the clustering of social, economic, and

environmental health risks in low-income and nonwhite neighborhoods makes it more difficult for people in these communities to live healthy lives.

These patterns need not—and should not—continue as they are. Policy makers should consider steps to reduce the concentration of health risks in vulnerable communities and support health-enhancing resources. For example, the use of Health Impact Assessments as well as the environmental assessments required under the Consolidated Environmental Review Act can help to ensure that low-income and Hispanic communities are not disproportionately hurt by environmental degradation and policies or practices that cluster health risks.

Consolidated Environmental Review Act (CERA) Assessments

Currently, New Mexico regulations set limits for individual pollutants in air, water, and soil. However, regulations do not account for exposure to multiple pollutants from a single facility or multiple facilities and do not require an assessment of a project's overall impact on the environment or the public's health. This approach therefore underestimates a project's total impact on the community's health and the environment. To address this, CERA requires a 1-2 page environmental assessment for all projects that require permits under the federal Clean Air Act, Clean Water Act, or Hazardous Waste Act in order to identify, early on, impacts to the environment or the community's health. Environmental assessments include descriptions of: (1) the affected environment, (2) possible alternatives to the proposed actions, and (3) mitigating measures to reduce the project's impact to the environment and the community's health.

CERA requires the use of evidence-based science for the permit decision-making process that considers pollution sources, population exposures, environmental effects, and public health effects. It is expected to result in a consistent and predictable permitting process because projects will be vetted by the lead agency during the early project planning stages, potentially saving resources that would otherwise be needed later for environmental cleanup and health care costs.

Health Impact Assessments (HIAs)

HIA allow researchers and policy makers to systematically judge the potential, sometimes unintended, effects of a proposed policy, plan, program, or project on the health of a population and the distribution of those effects within the population.

HIA attempt to ensure that all government programs and initiatives in and outside of the health care delivery sector—such as transportation, housing, land use policies, and environmental protection—are assessed to determine their potential impact on the health status of affected communities.²¹ HIA are used extensively as a policy and planning tool in

Europe and other countries, and they are used increasingly in the United States. Bernalillo County is currently conducting HIAs for proposed land use changes in the Mountain View, San Jose, and Southeast Heights neighborhoods. King County in Washington State is developing a process to utilize an impact assessment tool that focuses on health equity and social justice in the adoption and implementation of county policies and decisions.

Other policies can also be effective in helping to reduce the concentration of health risks in vulnerable communities; CERA and HIAs are but two examples. The point is that community-based health promotion and disease prevention strategies are the most cost-effective ways to improve health, because they address the underlying causes of illness.

There is a strong moral imperative to enact policies designed to improve health for all. But there is a powerful economic reason as well. A study released by the Joint Center for Political and Economic Studies in 2009 found that the direct medical costs associated with health inequities among African Americans, Hispanics, and Asian Americans approached \$230 billion between 2003 and 2006. When the indirect costs of health inequities—such as lowered productivity and lost tax revenue resulting from illness and premature death—are added to the equation, the total cost of health inequities between 2003 and 2006 exceeded \$1.24 trillion. For both moral and economic reasons, now is the time for action to address neighborhood conditions that shape health outcomes.

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ABOUT THE JOINT CENTER, ITS HEALTH POLICY INSTITUTE AND THE *PLACE MATTERS* PROJECT

The Joint Center for Political and Economic Studies is a national, nonprofit research and public policy institution that is sometimes referred to as “America’s black think tank.” Founded in 1970 by black intellectuals and professionals to provide training and technical assistance to newly elected black public officials, it has evolved into an invaluable source of information and policy analysis for policy makers and policy influentials on issues of particular concern to African Americans and other communities of color. It currently focuses its work on critical public policy issues such as political participation, economic advancement, health policy, and climate change.

The Joint Center’s Health Policy Institute (HPI) is a pioneering program of the Joint Center that seeks to ignite a health equity movement that gives people of color the right to equal opportunity for healthy lives. Its research, publications, activities, and projects are designed to accelerate progress through collective strategies that will produce real and lasting change in health outcomes. PLACE MATTERS is a major HPI initiative that is designed to build the capacity of community leaders to address the social, economic, and environmental conditions in their communities that shape health and health outcomes. The program assists participating local PLACE MATTERS teams in developing and implementing community-based strategies to address social factors that determine health.



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