

Environmental Justice and Toxic Releases: Establishing Evidence of Discriminatory Effect Based on Race and Not Income

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I. INTRODUCTION

Commencing with the influential study by the Commission for Racial Justice for the United Church of Christ (CRJ Report),¹ considerable evidence that people of color face disproportionate exposure to environmental risks has been reported.² Some of the evidence suggests environmental racism³ or is

¹ COMMISSION FOR RACIAL JUSTICE, UNITED CHURCH OF CHRIST, TOXIC WASTES AND RACE IN THE UNITED STATES: A NATIONAL REPORT ON THE RACIAL AND SOCIO-ECONOMIC CHARACTERISTICS OF COMMUNITIES WITH HAZARDOUS WASTE SITES (1987) [hereinafter CRJ REPORT]. Actually, a report by the General Accounting Office predates the CRJ Report, but it did not generate as much attention as the more outspoken CRJ Report. U.S. GENERAL ACCOUNTING OFFICE, SITING OF HAZARDOUS WASTE LANDFILLS AND THEIR CORRELATION WITH RACIAL AND ECONOMIC STATUS OF SURROUNDING COMMUNITIES (1983) [hereinafter GAO REPORT]. The data and findings of the CRJ Report have been reviewed by other authors, with one of the best reviews being by Dr. Lee, Director of Research for the Commission for Racial Justice for the United Church of Christ. Charles Lee, in *Toxic Waste and Race in the United States*, in RACE AND INCIDENCE OF ENVIRONMENTAL HAZARDS: A TIME FOR DISCOURSE 10, 12-13 (Bunyan Bryant & Paul Mohai, eds., 1992) [hereinafter INCIDENCE].

² The CRJ study served as a foundation for later governmental reports by the Environmental Protection Agency. OFFICE OF POLICY, PLANNING, & EVALUATION, U.S. ENV. PROTECTION AGENCY, EPA230-R-92-008, ENVIRONMENTAL EQUITY: REDUCING RISK FOR ALL COMMUNITIES (June 1992) [hereinafter EPA ENVIRONMENTAL EQUITY]; OFFICE OF ADMINISTRATION AND RESOURCES MANAGEMENT, U.S. ENV. PROTECTION AGENCY, EPA200-R-93-001, ENVIRONMENTAL JUSTICE INITIATIVES 1993 (February 1994).

Three significant books by academicians complement these institutional works. A collection of papers from a conference on Race and the Incidence of Environmental Hazards held at the University of Michigan, edited by Bryant and Mohai, constitute a notable commentary on evidence of environmental injustice. INCIDENCE, *supra* note 1. Bullard's *Dumping in Dixie*, first published in 1990, forcefully advances evidence of environmental discrimination in the environmental context. ROBERT D. BULLARD, DUMPING IN DIXIE: RACE, CLASS AND ENVIRONMENTAL QUALITY (2d ed. 1994). His surveys of siting conflicts showed feelings of unfair treatment that reinforced racial and class distinctions. *Id.* at 82. Bullard's second book, an anthology, explores disproportionate exposure of communities of color to environmental risks. CONFRONTING ENVIRONMENTAL RACISM: VOICES FROM THE GRASSROOTS (Robert D. Bullard ed., 1993) [hereinafter CONFRONTING]. For an excellent survey of the environmental justice literature, *see generally* Vicki Been, *Environmental Justice and Equity Issues*, in PATRICK J. ROHAN, ZONING AND LAND USE CONTROLS, Ch. 25D.02 (1995).

³ Environmental racism may be defined in different ways. Some define it broadly to denote the disproportionate burdens and risks of environmental policies placed on people of color. Mariá Ramirez Fisher, *On the Road from Environmental Racism to Environmental Justice*, 4 VILL. ENVTL. L.J. 449, 449-50 (1994). More narrow definitions are incorporated into the legal institutions proscribing racial discrimination where intent or a discriminatory effect standard is required. *See infra* notes 59-106 and accompanying text. Such definitions ignore unconscious racism. Bradford C. Mank, *Environmental Justice and Discriminatory Siting: Risk-Based Representation and Equitable Compensation*, 56 OHIO ST. L.J. 329, 383

interpreted as supporting a finding of environmental racism.⁴ For a racist environmental policy, a predictable distributional impact of the policy contributing to the structure of racial subordination and domination is generally present.⁵ Other evidence is less definitive and suggests discrimination based on race and income.⁶ In fact, recent research cautions against inferring too

(1995).

⁴ For example, in looking at the siting of hazardous waste facilities, evidence suggested they were often located in communities consisting predominantly of Black residents without determining whether the siting predated the minority population. EPA ENVIRONMENTAL EQUITY, *supra* note 2, at 14. Chase reports evidence of environmental racism, but notes that other factors such as poverty, lower property values, and the need for jobs may contribute to the disproportionate exposure to environmental hazards by people of color. Anthony R. Chase, *Assessing and Addressing Problems Posed by Environmental Racism*, 45 RUTGERS L. REV. 335, 340-46 (1993).

A finding of environmental racism may be based on a definition of aversive racism: racism without intent or racial animus. Gerald Torres, *Introduction: Understanding Environmental Racism*, 63 U. COLO. L. REV. 839, 840 (1992). See also Edward Patrick Boyle, Note, *It's Not Easy Bein' Green: The Psychology of Racism, Environmental Discrimination, and the Argument for Modernizing Equal Protection Analysis*, 46 VAND. L. REV. 937, 939-47 (1993). Fisher adopts this definition: "[e]nvironmental racism occurs when people of color disproportionately bear the burdens and risks of environmental protection policies while the associated benefits are dispersed throughout society." Fisher, *supra* note 3, at 449.

⁵ Torres, *supra* note 4, at 840. Torres' definition of environmental racism is adopted for this article; environmental regulations with a potential racial impact and the willful ignorance of that impact are racist. *Id.* See also Sheila Foster, *Race(ial) Matters: The Quest for Environmental Justice*, 20 ECOLOGY L.Q. 721 (1993); Peter L. Reich, *Greening the Ghetto: A Theory of Environmental Race Discrimination*, 41 KAN. L. REV. 271 (1992).

⁶ The fact that discrimination against people of color is based on both race and income has been recognized by numerous authors. Been notes this fact and therefore addresses the issue of environmental justice rather than environmental racism. Vicki Been, *What's Fairness Got to Do With It? Environmental Justice and the Siting of Locally Undesirable Land Uses*, 78 CORNELL L. REV. 1001, 1002-3 (1993). Been carefully analyzes some of the evidence of disproportionate siting of undesirable land uses to disclose that the evidence does not necessarily show racial discrimination. *Id.* at 1014-15.

Another author that carefully distinguishes environmental equity based on income from environmental racism is Lazarus. Richard J. Lazarus, *Pursuing 'Environmental Justice': The Distributional Effects of Environmental Protection*, 87 NW. U. L. REV. 787, 796 (1993). The identification of income levels as a basis for distributional inequities leads Lazarus to advocate greater consideration of the distribution of environmental benefits and burdens in environmental decisionmaking. *Id.* at 856-57. Some authors go beyond race to focus on income. Cole advances environmental poverty law as a topic for environmental and social justice in the United States. Luke W. Cole, *Empowerment as the Key to Environmental Protection: The Need for Environmental Poverty Law*, 19 ECOLOGY L.Q. 619 (1992). As a new approach to environmental problems, Cole's environmental poverty law seeks to address the problems of communities bearing the brunt of environmental dangers. *Id.* at 683.

much from studies that are not rigorous enough to separate racial discrimination from other factors that may account for disproportionate exposures to risks.⁷ The evidence and commentaries raise a question why should discrimination based on other factors, particularly income, receive different treatment?⁸

Distributional inequities in an environmental context due to race and income are part of evolving environmental justice issues⁹ that both civil rights groups and environmental organizations are seeking to address.¹⁰ The

⁷ Douglas L. Anderton et al., *Environmental Equity: The Demographics of Dumping*, 31 DEMOGRAPHY 229 (1994). Confusion between racism and income abounds in a considerable amount of the research. Some of the early research focuses on race and basically ignores any effects that might be attributable to income. E.g., INCIDENCE, *supra* note 1. Other authors seem to disregard the possibility that discrimination based on income can differ from discrimination based on race. For example, one author finds a prevalence of toxic waste dumps in areas where racial minorities and the poor live, yet proceeds to use the term "environmental racism" to describe the siting of toxic waste dumps in poorer communities. Naikang Tsao, Comment, *Ameliorating Environmental Racism: A Citizens' Guide to Combating the Discriminatory Siting of Toxic Waste Dumps*, 67 N.Y.U. L. REV. 366, 366-67 (1994). Other authors imply that various studies showing hazardous waste facilities located near people with low incomes constitutes evidence of environmental racism. Kelly M. Colquette & Elizabeth A. Henry Robertson, *Environmental Racism: The Causes, Consequences, and Commendations*, 5 TUL. ENVTL. L.J. 153, 206-7 (1991).

⁸ As noted by Professor Been, "the distributional implication of the way in which our society seeks to manage environmental threats" is an issue that needs to be addressed. Vicki Been, *Analyzing Evidence of Environmental Injustice*, 11 J. LAND USE & ENVTL. L. 1, 1 (1995).

⁹ Although the complexity of the issues and changing human perspectives means that environmental justice is an amorphous concept, for this article the definition will follow Been and connote inequities based on race and income. Vicki Been, *Locally Undesirable Land Uses in Minority Neighborhoods: Disproportionate Siting or Market Dynamics*, 103 YALE L.J. 1383, 1384 (1994).

¹⁰ The key distinction posited for distinguishing the environmental justice movement from the environmental movement is that "[a]ctivists of color were more experientially [sic] equipped to perceive the injustice in the distribution of environmental hazards." Dorecta E. Taylor, *Environmentalism and the Politics of Inclusion*, in CONFRONTING, *supra* note 2, at 54. See also Gerald Torres, *Environmental Burdens and Democratic Justice*, 21 FORDHAM URB. L.J. 431, 436 (1994). By moving beyond race to include poverty, a broader class of discrimination is addressed and more people have an interest in remedying the discrimination. Thus, much of the research advocating new institutions acknowledges race and income and addresses equity issues rather than simply racism. Environmental civil rights through new legislation is needed to assure a clean, safe environment. Linda D. Blank, *Seeking Solutions to Environmental Inequity: The Environmental Justice Act*, 24 ENVTL. L. 1109 (1994). Environmental civil rights would include the distributional implications of policymakers' decisions. Lazarus, *supra* note 6, at 856. Lazarus would require the distribution of environmental benefits and burdens be an explicit element of the environmental policy debate. *Id.*

environmental justice movement aspires to secure the same environmental protection for people of color and the poor as enjoyed by the rest of society.¹¹ Its advocacy of environmental quality for disadvantaged persons challenges some of the basic tenets governing environmental and land use law.¹²

Existing laws and other legal institutions generally have not provided people of color a means to avoid disproportionate exposure to environmental risks or other environmental inequities.¹³ Environmental justice civil rights cases alleging violations of the Equal Protection Clause have not provided any plaintiff a remedy for environmental racism.¹⁴ While agency regulations in

¹¹ Brian D. Israel, Comment, *An Environmental Justice Critique of Risk Assessment*, 3 N.Y. U. ENVT. L.J. 469, 470 (1995) (noting the disproportionate distribution of environmentally hazardous facilities).

¹² For example, Cole relates the issue that states have set up siting processes for waste facilities to stifle local opposition. Luke W. Cole, *Remedies for Environmental Racism: A View from the Field*, 90 MICH. L. REV. 1991, 1994 (1992). See also Rachel E. Godsil, Note, *Remedying Environmental Racism*, 90 MICH. L. REV. 394, 403-08 (1991) (enumerating how existing siting processes that neglect minority interests can be challenged by alternative proposals that would incorporate minorities and the poor into the siting process).

¹³ Several distinguished works summarize the inability of existing institutions to provide remedies for people of color and the poor and will not be repeated. See Been, *supra* note 6, at 1004 (noting the lack of success under the Equal Protection Clause); Luke W. Cole, *Environmental Justice Litigation: Another Stone in David's Sling*, 21 FORDHAM URB. L.J. 523, 534 (1994) (advancing Title VIII of the Civil Rights Act as a means to provide environmental justice); James H. Colopy, *The Road Less Traveled: Pursuing Environmental Justice Through Title VI of the Civil Rights Act of 1964*, 13 STAN. ENVT. L.J. 125, 188-89 (1994) (noting that legislators and administrators "can easily conceal discriminatory motivation behind a facade of neutral justifications"); Lazarus, *supra* note 6, at 856 (concluding that environmental policy makers traditionally ignore the distribution of environmental benefits and burdens); Torres, *supra* note 10, at 437-45 (review of discrimination cases concerned with challenges based on the Equal Protection Clause). The court holdings of three siting cases show the lack of a viable cause of action. See *infra* notes 69-83 and accompanying text.

¹⁴ Cole has noted that the regulations implementing Title VI of the Civil Rights Act of 1964 may offer promising remedies for some inequities. Cole, *supra* note 13, at 538-41. The lack of success under existing institutions has prompted proponents of environmental justice to advocate legislative changes to address siting inequities, including the proposed Environmental Justice Act of 1992, designed to provide greater assistance to minorities and the disadvantaged. H.R. 2105, 103d Cong., 1st Sess. (1993). See Blank, *supra* note 10 (discussing the Environmental Justice Act as a means to curtail disproportionate environmental degradation).

Another suggestion to protect the public against environmental harms is to require individual notice of proposed hazardous facilities under the public notice requirements of certain federal laws. Omar Saleem, *Overcoming Environmental Discrimination: The Need for a Disparate Impact Test and Improved Notice Requirements in Facility Siting Decisions*, 19 COLUM. J. ENVT. L. 211, 212 (1994). Godsil suggests amending Title VI of the Civil Rights Act of 1964 by incorporating a disparate impact model. Godsil, *supra* note 12, at

support of the antidiscrimination provisions of Title VI of the Civil Rights Act of 1964¹⁵ offer promise as a vehicle to address some discrimination, it has been suggested that greater efforts are needed to amass meaningful evidence to justify relief.¹⁶ Another auspicious possibility is greater reliance on private compensation and the enforcement remedies of existing environmental legislation.¹⁷

A review of cases and the literature concerning alleged siting and exposure discrimination leads to the conclusion that there is considerable confusion about the environmental problems faced by people of color and whether the cited evidence can be utilized to obtain relief within existing antidiscrimination institutions. This article addresses these issues, assessing the major reported environmental inequities with an emphasis on disproportionate exposure and siting. Employing this foundation, Part III examines the three institutional responses that have been used to address environmental discrimination against people of color: constitutional provisions, federal civil rights laws, and federal regulations. The discussion shows that, in the absence of new legislation or regulations, the implementing regulations of Title VI offer the only real assistance for non-intentional siting discrimination against people of color.

421-425. Godsil also suggests a "super review approach" by states in the selection of sites for hazardous waste facilities. *Id.* at 425-426.

¹⁵ 42 U.S.C. § 2000d (1988). For a discussion of Title VI, *see Colopy, supra* note 13; Michael Fisher, *Environmental Racism Claims Brought Under Title VI of the Civil Rights Act*, 25 ENVT'L L. 285 (1995).

¹⁶ Cole, *supra* note 12, at 1993. Torres reports how courts in the four reported cases involving alleged discriminatory sitings of solid waste landfills by municipal agencies failed to find sufficient evidence of racially discriminatory intent. Torres, *supra* note 10, at 439-44. Another suggestion for communities facing environmental justice issues is to more fully present a rigorous historical analysis so that past injustices are not used to perpetuate social and environmental equity. Charles P. Lord & William A. Shutkin, *Environmental Justice and the Use of History*, 22 B.C. ENVT'L AFF. L. REV. 1, 25-26 (1994). Mank proposes a risk-based approach to empower local residents that would be effected by a siting decision. Mank, *supra* note 3, at 383. For a discussion of proposed legislation to address discriminatory siting, *see id.* at 351-57.

¹⁷ Mank suggests three type of compensation payments. Mank, *supra* note 3, at 357-68. (1) Remedial compensation could help make a community whole and provide funds for suffered damages. (2) Preventive compensation could be used to pay for measures used to ameliorate adverse effects. (3) Rewards or incentives could provide payments to the host community. *Id.* at 359-60. *See also Vicki Been, Compensated Siting Proposals: Is It Time to Pay Attention?*, 21 FORDHAM URB. L.J. 787, 800-08 (1994).

Alternatively, the use of existing enforcement provisions may offer assistance. Eileen Guana, *Federal Environmental Citizen Provisions: Obstacles and Incentives on the Road to Environmental Justice*, 22 ECOLOGY L.Q. 1, 4 (1995). The possibility that private enforcement remedies contribute to unequal environmental protection has been noted. *Id.*

Part IV addresses shortcomings of some of the published studies. First, the question of whether host communities had a disproportionate number of people of color at the time the locally undesirable land use (LULU) was sited is raised to show that some siting research actually reports disproportionate exposure to environmental risks and not the community make-up at the time of the siting.¹⁸ Related to this problem, the dynamics of the marketplace, such as higher income households leaving neighborhoods after LULUs are sited, may impact the composition of neighborhoods and the location of LULUs.¹⁹ Part IV also notes that some of the evidence of discriminatory practices against people of color is not supported by a statistical analysis capable of establishing conclusive proof of racial discrimination.²⁰ Furthermore, other locational factors, including jobs, affordable housing, inexpensive transportation and the availability of a public service, influence siting decisions.

To respond to the evidentiary issues involving discrimination based on factors other than race, such as income, analyses of toxic exposure are developed in Part V. Using Toxics Release Inventory (TRI) data from the Environmental Protection Agency,²¹ three separate models analyze the influence of race, income, political organization and industrial-location factors on neighborhood exposure to toxic releases from manufacturing facilities in two states.²² While a tobit-regression model involving three discriminatory factors supports the position that the differential pollutant exposure is due to differences in both race and income,²³ a more complex industrial-location tobit-regression model considering nondiscriminatory factors suggests that race is not significant.²⁴

Part VI addresses the issue of the siting of manufacturing facilities emitting toxic releases using tobit analyses to determine whether people of

¹⁸ See *infra* notes 135-151 and accompanying text.

¹⁹ See *infra* notes 152-176 and accompanying text.

²⁰ See *infra* notes 177-191 and accompanying text.

²¹ OFFICE OF POLLUTION PREVENTION AND TOXICS, U.S. ENV. PROTECTION AGENCY, EPA 749-C-94-001, 1987-1992 TOXIC RELEASE INVENTORY (1994) [hereinafter INVENTORY]. In 1994, the EPA promulgated rules to add 286 toxic chemicals that would need to be reported under Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and Section 6607 of the Pollution Prevention Act of 1990. 59 Fed. Reg. 61,432 (1994).

²² These models examined emissions from existing facilities without reference to when the facilities were sited and, therefore, are referred to as analyses of exposure.

²³ This analysis considered race, income and political organization. See *infra* notes 212-220 and accompanying text.

²⁴ This analysis considered six industrial location factors. See *infra* notes 221-224 and accompanying text.

color have been targeted to host undesirable land uses.²⁵ The empirical analyses focus upon the toxic releases from new establishments that have been located close to the time of the 1990 Census. A tobit-regression analysis of discriminatory factors shows race as being significant in one of the two states, meaning the evidence is inconclusive as to whether a plaintiff may be able show a significantly adverse discriminatory impact on communities of color. However, the data and analyses disclose a problem of horizontal equity. The findings recommend new strategies to insure that new facilities emitting toxics are sited without prejudice in order to provide for the equitable treatment of all individuals.

II. ENVIRONMENTAL INEQUITIES

The environmental justice literature describes a plethora of environmental inequities. While an analysis of the various inequities is beyond the scope of this article, the identification of the major inequities is needed to address the issue of discrimination and may serve as a starting point for inviting further research to describe additional inequities. Disproportionate exposure to environmental risks and the siting of LULUs proximate to people of color and the poor are the two most common inequities addressed in the literature.

A. *Disproportionate Exposure*

With respect to disproportionate exposure of people of color and the poor to various environmental hazards, a summary of the CRJ Report showed that African Americans were over-represented in populations of areas with uncontrolled toxic waste sites.²⁶ The EPA's 1992 Report on Environmental Equity differentiated five groupings of disproportionate exposure to environmental risks.²⁷ The EPA concluded that "[r]acial minority and low-

²⁵ These models examined emissions only from facilities sited at approximately the same time as the demographic information of the neighborhoods was obtained and, therefore, are referred to as siting analyses. The siting analyses consider exposure by persons who are proximate to the new polluting facilities.

²⁶ The findings have been reviewed by other authors and will not be repeated. *See, e.g.*, Lazarus, *supra* note 6, at 801-802 (summarizing important environmental justice studies); Lee, *supra* note 1, at 15-17 (recapitulating highlights of the CRJ Report); Saleem, *supra* note 14, at 214-15 (reviewing significant environmental justice studies). The CRJ Report noted that in addition to a disproportionate number of hazardous waste facilities, minority communities are also experiencing high levels of poverty, unemployment, poor housing, and education achievement. Lee, *supra* note 1, at 16.

²⁷ EPA ENVIRONMENTAL EQUITY, *supra* note 2, at 12-16 (describing disproportionate exposure experienced by racial minorities). The groupings include exposures and susceptibilities, air pollution, residence near waste sites, dietary exposure through fish

income populations experience higher than average exposures to selected air pollutants, hazardous waste facilities, contaminated fish and agricultural pesticides in the workplace.²⁸ Other evidence regarding workplace hazards,²⁹ nutritional disadvantages,³⁰ lead poisoning,³¹ air pollution,³² and the location of LULUs³³ suggests that people of color often experience disproportionate exposure to environmental risks.

While possible institutional remedies for environmental racism generally do not provide redress for disproportionate exposure,³⁴ the evidence and concern about this inequity beseech further consideration of environmental justice in the decisionmaking process. Policymakers need to take into account distributional impacts and burdens of environmental regulations to assure a

consumption, and pesticide exposures to farmworkers. *Id.* The EPA Report cautions, however, that the "differences in exposures are complex and deeply rooted in many aspects of society, such as historical residence, politics, commerce, geography, state and local land use decisions and other socioeconomic factors that affect where people live and work. *Id.* at 12.

²⁸ *Id.* at 3. Immediately following this finding, the EPA notes that "[e]xposure does not always result in an immediate or acute health effect." *Id.*

²⁹ Pesticide exposure is the most common. Fisher, *supra* note 15, at 297-98. People of color in general may be concentrated in low-paying, high-risk jobs so that they experience disproportionate exposure to environmental risks. *Id.* See also Marion Moses, *Farmworkers and Pesticides*, in *CONFRONTING*, *supra* note 2, at 161 (discussing racism and agriculture); Ivette Perfecto, *Pesticide Exposure of Farm Workers and the International Connection*, in *INCIDENCE*, *supra* note 1, at 177 (discussing pesticide exposure of farm workers and international aspects of the pesticide problem).

³⁰ Fish consumption patterns suggest some people of color may suffer environmental risks due to their higher rate of ingesting contaminated fish. Patrick C. West et al., *Minority Anglers and Toxic Fish Consumption: Evidence from a Statewide Survey of Michigan*, in *INCIDENCE*, *supra* note 1, at 100.

³¹ A 1988 study suggests that children of urban African-Americans may have higher lead levels in their blood. Fisher, *supra* note 15, at 299. See also Donald E. Lively, *The Diminishing Relevance of Rights: Racial Disparities in the Distribution of Lead Exposure Risks*, 21 B.C. ENVTL. AFF. L. REV. 309, 312 (1994) (reporting statistics that suggest nearly 12 percent of a given category of children under the age of seven in six Midwestern states have elevated blood-lead levels); Janet Phoenix, *Getting the Lead Out of the Community*, in *CONFRONTING*, *supra* note 2, at 77 (advocating self-help and grassroots efforts).

³² BULLARD, *supra* note 2, at 7 (reporting air pollution in urban areas as five times greater than suburban areas).

³³ Fisher, *supra* note 15, at 299-300 (addressing hazards and risks posed by facilities); BULLARD, *supra* note 2, at xv (listing LULUs as consisting of facilities such as garbage dumps, hazardous-waste landfills, incinerators, smelter operations, paper mills and chemical plants).

³⁴ This is due to the absence of discriminatory intent or discriminatory effect. See *infra* notes 135-151 and accompanying text.

basic level of public health protection for all communities.³⁵ Processes through which discriminatory policies are made need to be restructured to include persons who are currently excluded from governmental decisionmaking processes so that costs and risks can be measured and apportioned to minimize damages.³⁶

B. Discriminatory Siting

The selection of sites for LULUs in communities of color also is a major issue addressed in the environmental justice literature, and discriminatory siting is an issue that may be challenged under existing institutions.³⁷ Caution is needed, however, to ascertain that evidence presented as supporting racial discrimination in a siting decision is not actually evidence of disproportionate exposure. Does the evidence differentiate the community demographics at the time the LULU was sited or simply current demographics unrelated to the siting of the LULU? Community demographics at the time of siting may support a finding of discrimination against people of color.³⁸ At the same time, other reasons may account for the siting of LULUs in communities of color. One proffered argument is that the siting of a LULU may have historically resulted from employment and income security concerns being given priority over environmental quality.³⁹

Current demographics showing disproportionate numbers of people of color near a LULU may result from said people moving there after the LULU was sited due to cheap housing, land or other factors not related to intentional discrimination.⁴⁰ Interpretations of the information and findings of the CRJ Report⁴¹ may be used to show confusion, even among knowledgeable people, in distinguishing between these two distinct concepts. The 1987 CRJ Report found that race was the best predictor among a variety of factors of the location

³⁵ As noted by Torres, the goal should be "environmental protection in the most equitable and efficient manner possible." Torres, *supra* note 10, at 459. Blank argues for a clean and safe environment for everyone through new federal legislation. Blank, *supra* note 10, at 1136.

³⁶ Torres, *supra* note 4, at 842.

³⁷ See notes 56-128 and accompanying text.

³⁸ See notes 139-131 and accompanying text.

³⁹ Business decisions prioritizing economic issues at the expense of human health concerns may be less of a determining force as awareness about the trade-offs increases. Stan L. Albrecht, *Equity and Justice in Environmental Decision Making: A Proposed Research Agenda*, 8 SOC'Y. & NAT. RESOURCES 67, 70 (1995). See also Been, *supra* note 9, at 1387.

⁴⁰ See *infra* notes 152-180 and accompanying text.

⁴¹ CRJ REPORT, *supra* note 1.

of hazardous waste facilities in the United States⁴² and the location of these facilities addressed the issue of disproportionate exposure. The evidence reported did not explicitly relate to intentional siting discrimination. However, authors have suggested that the information and conclusions of the CRJ Report constitute evidence of the siting of LULUs proximate to people of color.⁴³

Studies of the lack of enforcement of environmental laws tend to show people of color receiving less than equal treatment.⁴⁴ Perhaps the most influential study of this issue involved an analysis of the time it took to place abandoned hazardous waste sites on the national priority action list.⁴⁵ Communities of color may experience slower cleanup of contamination,⁴⁶ lower fines,⁴⁷ even though they experience more frequent violations of pollution laws.⁴⁸ Moreover, research suggests that people of color may not have significant input into decisions regarding the siting and distribution of

⁴² Lee in *INCIDENCE*, *supra* note 1, at 14.

⁴³ For example, Bullard addresses waste facility siting disparities and includes the CRJ Report as an example. BULLARD, *supra* note 2, at 33-35. Bullard relates that the CRJ Report "found a strong association between race and the location of hazardous-waste facilities" and that "the siting process has resulted in" disproportionate exposure of minority neighborhoods. *Id.* at 35.

⁴⁴ See, e.g., Cole, *supra* note 6, at 647 (reporting less diligent enforcement of environmental regulations in Black and lower-income neighborhoods); Saleem, *supra* note 14, at 218-21 (discussing the findings of Lavelle and Coyle); Lazarus, *supra* note 6, at 818 (noting inequities in the distribution of enforcement activities); Fisher, *supra* note 3, at 460 (reporting that regulatory agencies enforce environmental laws in communities of color less often than in white communities).

⁴⁵ Lavelle and Coyle reported that under Superfund, "abandoned hazardous waste sites in minority areas take 20 percent longer to be placed on the national priority action list than those in white areas" and penalties for violation of pollution laws "in white communities were 46 percent higher than in minority communities." Marianne Lavelle & Marcia Coyle, *The Federal Government, In Its Cleanup of Hazardous Sites and Its Pursuit of Polluters, Favors White Communities Over Minority Communities Under Environmental Laws Meant to Provide Equal Protection for All Citizens, A National Law Journal Investigation Has Found*, NAT'L L.J., Sept. 21, 1992, at S1.

⁴⁶ Lavelle and Coyle found that action on cleanup at Superfund sites in the autonomous regions that administer EPA programs "begins from 12 percent to 42 percent later at minority sites than at white sites." Lavelle & Coyle, *supra* note 45, at S2. See also John R. Kye, *Environmental Justice: The Need for Equal Enforcement and Sound Science*, 11 J. CONTEMP. HEALTH L. & POL'Y 253, 263 (1994) (noting the study by Lavelle and Coyle).

⁴⁷ For example, one study found a 500 percent disparity in fines between areas with the greatest white population and the greatest minority population. Lavelle & Coyle, *supra* note 45, at S2.

⁴⁸ Lazarus, *supra* note 6, at 818-19 (reporting greater air pollution and lead poisoning in urban areas where minority populations are disproportionately high).

LULUs,⁴⁹ decisionmaking about contamination,⁵⁰ or the promulgation of laws and regulations.⁵¹ For local siting decisions, various zoning processes and tools may augment the vulnerability of minority communities to LULUs.⁵² With respect to aspects of the environmental movement, the lack of participation of people of color in environmental interest groups may mean that environmental justice issues have not received much attention.⁵³ The lack of education and political clout may lead to the siting of LULUs in communities of color⁵⁴ or contribute to a "social acceptance" of LULU facilities.⁵⁵

⁴⁹ Fisher, *supra* note 15, at 292 (arguing that the conscious deprivation of benefits through majoritarian power is illegitimate).

⁵⁰ This is particularly conspicuous at the national level. Lazarus, *supra* note 6, at 819-21 (noting the under-representation of people of color in Congress). People of color may fail to exercise the right to vote, and generally are under-represented in political office. Fisher, *supra* note 3, at 461. More affluent communities often have greater resources and contacts so that a LULU is not placed in their back yard. Harvey L. White, *Hazardous Waste Incineration and Minority Communities*, in *INCIDENCE*, *supra* note 1, at 135.

⁵¹ Lazarus notes the lack of minorities in Congress and federal agencies, inferring that people of color may not have had much input on environmental issues. Lazarus, *supra* note 6, at 820-22. He also cites an example whereby commercial interests seek the help of minorities to oppose environmental protection. *Id.* at 809.

⁵² Reich, *supra* note 5, at 277 (suggesting lack of technical or financial resources and language problems means people of color lack meaningful access to decisionmaking activities); Jon C. Dubin, *From Junkyards to Gentrification: Explicating a Right to Protective Zoning in Low-Income Communities of Color*, 77 MINN. L. REV. 739 (1993) (exploring the government's failure to provide zoning benefits to low-income communities of color).

⁵³ Lazarus, *supra* note 6, at 820 (noting the lack of interest of minorities in environmental issues and the lack of participation of minorities in environmental organizations). *See also* Kyte, *supra* note 46, at 258-59 (suggesting that more pressing concerns such as housing, health care and education were responsible for the lack of interest in environmental issues).

⁵⁴ Freeman and Godsil suggest that people of color may not be able to effectively oppose an unwanted land use. James S. Freeman & Rachel D. Godsil, *The Question of Risk: Incorporating Community Perceptions into Environmental Risk Assessments*, 21 FORDHAM URB. L.J. 547, 553 (1994). Reich notes that language problems and the lack of resources may block access to planning decisions. Reich, *supra* note 5, at 277. One author even chastises lawyers and law schools for being slow at acknowledging social issues, including environmental justice. Colin Crawford, *Strategies for Environmental Justice: Rethinking CERCLA Medical Monitoring Lawsuits*, 74 B.U. L. REV. 267, 272-73 (1994).

⁵⁵ White, *supra* note 50, at 134. The suggestion that a tradition of having LULUs in their communities means people of color may be more likely to accept existing conditions. *Id.* at 135.

III. RELIEF THROUGH INSTITUTIONAL RESPONSES

Three major legal institutions exist to provide relief to persons subjected to racism by governmental entities and recipients of federal largesse: the Equal Protection Clause,⁵⁶ Title VI of the Civil Rights Act of 1964,⁵⁷ and various implementing regulations of Title VI by federal agencies.⁵⁸ Although these institutions do not afford relief for environmental discrimination based on income or by private individuals, they may be instrumental in lending assistance to the development of techniques and mechanisms to avoid inequities.

A. Equal Protection Clause

The Equal Protection Clause of the Fourteenth Amendment provides that no state shall deny any person "the equal protection of the laws." Numerous courts have considered allegations of racial discrimination in violation of the Equal Protection Clause and have imposed a requirement of discriminatory intent or purposeful conduct employing race to dominate or oppress another to establish a violation.⁵⁹ The Equal Protection Clause, therefore, has been interpreted as not covering unconscious racism.⁶⁰ Yet, as held by the Supreme Court, "laws neutral on their face but 'unexplainable on grounds other than race'" may violate the Fourteenth Amendment.⁶¹

⁵⁶ This refers to the Equal Protection Clauses of both the Fifth and Fourteenth Amendments to the U.S. Constitution.

⁵⁷ 42 U.S.C. § 2000d (1994).

⁵⁸ See 7 C.F.R. § 15.3(b)(2) (1995); 10 C.F.R. § 1040.13(c-d) (1995); 15 C.F.R. § 8.4(b)(2)-(3) (1995); 22 C.F.R. § 141.3(b)(2) (1995); 24 C.F.R. § 1.4(b)(2-3) (1995); 28 C.F.R. § 42.104 (b)(2)-(3) (1995); 29 C.F.R. § 31.3(b)(2)-(3) (1995); 34 C.F.R. § 100.3(b)(2)-(3) (1995); 38 C.F.R. § 18.3(b)(2)-(3) (1995); 40 C.F.R. § 7.35 (1995); 43 C.F.R. § 17.3(b) (1995); 45 C.F.R. § 80.3(b)(2)-(3) (1995); 49 C.F.R. § 21.5(b)(2)-(3) (1995).

⁵⁹ *Arlington Heights v. Metropolitan Hous. Dev. Corp.*, 429 U.S. 252, 264-65 (1977); *Washington v. Davis*, 426 U.S. 229, 244-48 (1976); *Orange Lake Assocs., Inc. v. Kirkpatrick*, 21 F.3d 1214, 1226 (2d Cir. 1994); *Elston v. Talladega County Bd. of Educ.*, 997 F.2d 1394, 1406 (11th Cir. 1993).

⁶⁰ Mank, *supra* note 3, at 383 (advancing the notion that people of color would achieve greater benefits from remedies providing compensation for sitings rather than attempting to challenge them under existing institutions).

⁶¹ *Miller v. Johnson*, ___ U.S. ___, 115 S. Ct. 2475, 2483 (1995) (quoting *Arlington Heights*, 429 U.S. at 266). In *Miller*, the legislative formation of Georgia's Eleventh Congressional District was challenged under the Fourteenth Amendment as a racial gerrymander. The district court's "finding that race was the predominant factor motivating the drawing of the Eleventh District" was upheld by the Supreme Court. *Id.* Although it was argued that the State of Georgia had a compelling interest in complying with the Voting

Courts have found that intentional discrimination may be shown in different ways. If race is the predominant factor motivating a challenged action, such as redistricting, then the action violates the Equal Protection Clause unless it satisfies strict scrutiny.⁶² Intentional discrimination exists when the motivating factor for a challenged action is an “invidious discriminatory purpose” shown by direct and circumstantial evidence.⁶³ An intent to discriminate “established by evidence of such factors as substantial disparate impact, a history of discriminatory official actions, procedural and substantive departures from the norms generally followed by the decision-maker, and discriminatory statements in the legislative or administrative history of the decision” is sufficient to merit relief.⁶⁴ On the other hand, disproportionate impact due to race may not be sufficient by itself to support a finding of a violation.⁶⁵

Moreover, plaintiffs are not required to prove that a challenged action rests solely on racially discriminatory purposes.⁶⁶ But if a court is presented proof that a discriminatory purpose has been a motivating factor in the decision, judicial deference to a legislative or administrative decision may not be justified.⁶⁷ Whenever there exists an invidious discriminatory purpose based on race as a motivating factor for a legislative or administrative action, the action may be challenged under the Equal Protection Clause.⁶⁸

In three major environmental cases involving allegations of discriminatory sitings of solid waste landfills in violation of the Equal Protection Clause,⁶⁹ each court scrutinized the evidence but was unable to find discriminatory intent

Rights Act, 42 U.S.C. §§ 1971—1974e (1994 & Supp. 1996), the Court found none in the districting action. *Id.* at 2490.

⁶² *Id.* at 2490. The state needs a compelling state interest to justify such discriminatory action. *Id.*

⁶³ *Arlington Heights*, 429 U.S. at 266.

⁶⁴ *Elston*, 997 F.2d at 1406, *citing Arlington Heights*, 429 U.S. at 265-69.

⁶⁵ *Washington v. Davis*, 426 U.S. 229, 242 (1976) (“Disproportionate impact is not irrelevant, but it is not the sole touchstone of an invidious racial discrimination.”).

⁶⁶ *Arlington Heights*, 429 U.S. at 265.

⁶⁷ In *Miller*, the state argued that compliance with the Voting Rights Act justified the congressional districting plan. *Miller*, 115 S. Ct. at 2485. The Supreme Court disagreed, finding that “compliance with the federal antidiscrimination laws cannot justify race-based districting where the challenged district was not reasonably necessary under a constitutional reading and application of those laws.” *Id.* at 2491.

⁶⁸ *Arlington Heights*, 429 U.S. at 265-66.

⁶⁹ *East-Bibb Twiggs Neighborhood Ass'n v. Macon-Bibb Co. Planning and Zoning Comm'n*, 896 F.2d 1264 (11th Cir. 1989); *Bean v. Southwestern Waste Management Corp.*, 482 F. Supp. 673 (S.D. Tex. 1979), *aff'd* 782 F.2d 1038 (5th Cir. 1986); *R.I.S.E., Inc. v. Kay*, 768 F. Supp. 1144 (E.D. Va. 1991), *aff'd*, 977 F.2d 573 (4th Cir. 1992).

to support relief.⁷⁰ In *East-Bibb Twiggs Neighborhood Ass'n v. Macon-Bibb County Planning and Zoning Commission*,⁷¹ a landfill siting case from Georgia, the circuit court reviewed the evidence and found that the governmental agency had not acted with discriminatory intent to discriminate against black persons in approving a landfill application.⁷² Instead, the circuit court agreed with the district court's finding that the government agency "carefully and thoughtfully addressed a serious problem and that it made a decision based upon the merits and not upon any improper racial animus."⁷³ The court also found insufficient evidence that the government agency engaged "in a historical pattern of discriminatory conduct."⁷⁴ Absent evidence of a discriminatory intent, there was no violation of the Equal Protection Clause.

The second landfill siting case, *Bean v. Southwestern Waste Management Corp.*,⁷⁵ involved a request for a preliminary injunction.⁷⁶ While a Texas district court found the permitting agency's decision "unfortunate and insensitive," the plaintiffs were unable to meet the standards for injunctive relief.⁷⁷ According to the district court it was unlikely that the plaintiffs could show purposeful discrimination and so would be unable to establish a substantial likelihood of success on the merits of the underlying claim.⁷⁸ Mere

⁷⁰ For a discussion of these cases, see Chase, *supra* note 4, at 353-58; Kyte, *supra* note 46, at 264-65; Lazarus, *supra* note 6, at 831-33; Reich, *supra* note 5, at 292-95; Torres, *supra* note 10, at 439-42.

⁷¹ 896 F.2d 1264, 1266 (11th Cir. 1989).

⁷² *Id.* at 1266 (citing *Arlington Heights*, 429 U.S. at 265, as authority regarding proof of a disproportionate impact).

⁷³ *Id.* The district court found that the record of the transcript of the hearings before the county zoning commission "portrayed the Commissioners as concerned citizens and effective public servants." *East-Bibb Twiggs Neighborhood Ass'n v. Macon-Bibb County Planning and Zoning Comm'n*, 706 F. Supp. 880, 887 (M.D. Ga.), *aff'd*, 896 F.2d 1264 (11th Cir. 1989).

⁷⁴ *East-Bibb Twiggs*, 896 F.2d at 1267. Nor was there sufficient evidence of discriminatory intent. *Id.*

⁷⁵ *Bean v. Southwestern Waste Management Corp.*, 482 F. Supp. 673 (S.D. Tex. 1979), *aff'd* 782 F.2d 1038 (5th Cir. 1986).

⁷⁶ In *Bean*, plaintiffs sought to enjoin a solid waste site due to its proximity to a predominately Black high school. *Id.* at 675, 679-80. The cause of action was grounded upon violation of 42 U.S.C. § 1983 (1994). *Id.* at 675.

⁷⁷ The district court judge noted that the evidence seemed to show that the decision of the agency to grant a permit for the solid waste site was "unfortunate and insensitive", but that such a heartless decision did not establish a substantial likelihood of purposeful racial discrimination in violation of 42 U.S.C. § 1983. *Id.* at 680.

⁷⁸ *Id.* at 681. The plaintiffs needed to show that there was an intent to discriminate based on race. *Id.* at 677. They attempted to show the decision as part of a pattern or practice of discrimination in the siting of solid waste sites, but their data were insufficient to establish such proof. *Id.* They also attempted to show that approval of the permit constituted discrimination due to the historical placement of solid waste sites in the City of

disproportionate impact of people of color through the siting of LULUs in neighborhoods of color does not necessarily mean there is an actionable constitutional violation.⁷⁹

A third siting case, *R.I.S.E., Inc. v. Kay*,⁸⁰ involved the rezoning of a site for a landfill in Virginia. The court found that a county's placement of landfills had a disproportionate impact on Black residents.⁸¹ Thus, the question was whether the evidence met the discriminatory purpose equation. As set forth in *Arlington Heights*, challenges based on the Equal Protection Clause must have evidence of a discriminatory purpose to be successful.⁸² The *R.I.S.E.* court found insufficient evidence of a discriminatory purpose to support plaintiffs' claim.⁸³

An additional zoning case, although not dealing with the siting of a solid waste facility, shows the futility of advancing Equal Protection challenges to governmental decisions that cannot demonstrate discriminatory intent. In *Orange Lake Associates, Inc. v. Kirkpatrick*,⁸⁴ a developer alleged that a zoning amendment had a disparate impact on minorities.⁸⁵ Because the rezoning operated to reduce affordable housing, the developers' alleged it imposed a barrier to minorities and constituted racial discrimination subject to a strict scrutiny test under the Equal Protection Clause.⁸⁶ The Second Circuit analyzed the evidence presented to determine if it would support discriminatory intent or purpose.⁸⁷ Finding no discriminatory impact from the zoning amendment,

Houston. *Id.* at 678.

⁷⁹ *Arlington Heights v. Metropolitan Hous. Dev. Corp.*, 429 U.S. 252, 265 (1977). ("Disproportional impact is not irrelevant, but it is not the sole touchstone of an invidious racial discrimination.").

⁸⁰ 768 F. Supp. 1144 (1991), *aff'd*, 977 F.2d 573 (4th Cir. 1992).

⁸¹ *Id.* at 1149.

⁸² *Arlington Heights*, 429 U.S. at 252.

⁸³ *R.I.S.E.*, 768 F. Supp. at 1149-50. In its reasoning the *R.I.S.E.* court found that although there was a racially disproportionate impact, there was no "evidence that satisfies the remainder of the discriminatory purpose equation set forth in *Arlington Heights*." *Id.* at 1149. This conclusion was based on the absence of evidence that a discriminatory purpose had been a motivating factor in the rezoning. Rather, the district court concluded that the legislative unit had balanced economic, environmental and cultural needs to reach its siting decision. *Id.* at 1150.

⁸⁴ 21 F.3d 1214 (2d Cir. 1994).

⁸⁵ *Id.* at 1221. The zoning amendment reduced the number of dwellings permitted per acre from twelve to two. *Id.* at 1217.

⁸⁶ *Id.* at 1225-26.

⁸⁷ *Id.* The developer failed to present evidence to back up claims of the need for affordable housing or that the zoning master plan exacerbated the growing shortage of affordable housing. *Id.* at 1226. Nor was there explicit evidence of racial animus by the persons approving the rezoning amendment. *Id.* at 1227.

the court concluded that the amendment was not subject to strict scrutiny and did not violate the Equal Protection Clause.⁸⁸

B. Title VI

The second institution offering relief to persons subjected to racism is Title VI of the Civil Rights Act of 1964.⁸⁹ Title VI provides that “[n]o person in the United States shall, on the grounds of race, color, or national origin, ... be subjected to discrimination under any program or activity receiving Federal financial assistance.”⁹⁰ Under this statutory command, governmental entities may be challenged for discriminatory siting of waste facilities and racial discrimination involving other actions affecting environmental issues. Actions need to be filed in a timely fashion.⁹¹

Given federal largesse, Title VI applies to a considerable number of governmental units.⁹² It also applies to others that are intermediary channeling organizations or recipients of federal funds. States,⁹³ municipal entities,⁹⁴ school districts,⁹⁵ universities⁹⁶ and others including private actors⁹⁷ may be enjoined from unlawful discrimination under this directive if they receive federal funds. The issue is whether the recipient of the federal assistance is “in a position to accept or reject those obligations as part of the decision whether

⁸⁸ *Id.* at 1226-27.

⁸⁹ 42 U.S.C. §§ 2000d—2000d-7 (1994). For a relevant discussion of Title VI, *see* Colopy, *supra* note 13, at 152-88; Fisher, *supra* note 15, at 311-34.

⁹⁰ 42 U.S.C. § 2000d.

⁹¹ *Goshen Rd. Envtl. Action Team v. United States Dep't of Agric.*, 891 F. Supp. 1126, 1132 (E.D. N.C. 1995) (suggesting that a three-year statute of limitations applies to Title VI claims).

⁹² Given the extensive array of federal programs providing funds for environmental, agricultural, communications and defense activities, the Title VI command has a significant impact.

⁹³ *See, e.g., Coalition of Concerned Citizens Against I-670 v. Damian*, 608 F. Supp. 110, 112 (E.D. Ohio 1984) (listing the State of Ohio as a defendant); *Association of Mexican-Am. Educators v. California*, 836 F. Supp. 1534, 1541 (N.D. Cal. 1993) (indicating that a state may be sued under Title VI).

⁹⁴ *See, e.g., Guardians Ass'n v. Civil Serv. Comm'n of New York*, 463 U.S. 582 (1983); *Association Against Discrimination in Employment v. City of Bridgeport*, 710 F.2d 69 (2d Cir. 1983).

⁹⁵ *See, e.g., Lau v. Nichols*, 414 U.S. 563, (1974) (involving suit against officials responsible for operation of a San Francisco school district seeking relief against unequal educational opportunities); *Graham v. Tenn. Secondary Sch. Athletic Ass'n*, No. 1:95-cv-044, 1995 U.S. Dist. LEXIS 3211, at 36 (D. Tenn. Feb. 20, 1995).

⁹⁶ *See, e.g., Scelsa v. City Univ. of New York*, 806 F. Supp. 1126 (S.D. N.Y. 1992), aff'd, 76 F.3d 37 (2d Cir. 1996).

⁹⁷ *Association of Mexican-Am. Educators*, 836 F. Supp. at 1540 (stating that Title VI may apply to private entities).

or not to 'receive' federal funds."⁹⁸ If the recipient has the ability to accept or reject federal funds, they are intended recipients and are subject to the dictates of Title VI.⁹⁹ The governmental entity responsible for the Title VI violation incurs liability.¹⁰⁰

Clearly, intentional discrimination against people of color violates Title VI.¹⁰¹ The issue of whether disparate impact discrimination is sufficient to support a violation is less clear. While *Lau v. Nichols*¹⁰² barred discrimination in the availability or use of academic facilities even in the absence of a purposeful design,¹⁰³ suggesting that disparate impact discrimination was sufficient, later Supreme Court cases have retreated from *Lau*.¹⁰⁴ Proof of intentional discrimination is required to establish a Title VI violation.¹⁰⁵ More recent lower court decisions note that programs having a disparate impact on

⁹⁸ United States Dep't of Transp. v. Paralyzed Veterans of Am., 477 U.S. 597, 606 (1986).

⁹⁹ *Id.* at 606. The question involves intended recipients of the federal funds, not the intended beneficiaries. *Id.* Beneficiaries that do not receive federal aid, directly or indirectly, are not subject to Title VI dictates. *Id.*

¹⁰⁰ The argument of whether there must be a program or activity by an entity before Title VI applies has also been advanced. *Association of Mexican-Am. Educators*, 836 F. Supp. at 1539-43. A district court found that a state could incur liability if it was responsible for a Title VI violation despite the absence of the state being a program or activity. *Id.* at 1543.

¹⁰¹ *Elston v. Talladega County Bd. of Educ.*, 997 F.2d 1394, 1406 (11th Cir. 1993) (grouping Title VI with the Fourteenth Amendment in prescribing intentional discrimination); *Graham*, 1995 U.S. Dist. LEXIS 3211, at 36 (rejecting the argument that disparate impact is sufficient for a Title VI violation and requiring intentional discrimination).

¹⁰² 414 U.S. 563 (1974). *Lau* considered the possible violation of the Department of Health, Education and Welfare's nondiscrimination regulations based upon Title VI of the Civil Rights Act. *Id.* at 566. Specifically, the *Lau* court's decision was based on a violation of a section of the Civil Rights Act, 42 U.S.C. § 2000d (1994), which bans discrimination based "on the ground of race, color, or national origin" in "any program or activity receiving Federal financial assistance." *Id.*

¹⁰³ *Id.* at 567-68.

¹⁰⁴ See *Alexander v. Choate*, 469 U.S. 287, 293-94 (1985); *Guardians Ass'n v. Civil Serv. Comm'n of New York*, 463 U.S. 582, 607 (1983) ("discriminatory intent is not an essential element of a Title VI violation"); *Regents of the Univ. of Cal. v. Bakke*, 438 U.S. 265, 287 (1978) ("Title VI must be held to proscribe only those racial classifications that would violate the Equal Protection Clause or the Fifth Amendment.").

¹⁰⁵ *Choate*, 469 U.S. at 293 (noting a two prong test; intentional discrimination required under Title VI whereas an unjustifiable disparate impact is required under Title VI regulations); *Goshen Rd. Env'tl. Action v. United States Dep't of Agric.*, 891 F. Supp. 1126, 1133 (E.D. N.C. 1995).

racial minorities do not offend Title VI in the absence of an additional regulation.¹⁰⁶

C. Title VI Regulations

A third institution available to combat environmental racism is the agency rules implementing Title VI.¹⁰⁷ For example, an Environmental Protection Agency regulation prohibits actions that would have the effect of subjecting minorities to discrimination without adequate justification.¹⁰⁸ Title VI regulations embody a disparate impact standard to remedy discrimination in cases in which the discrimination would not be actionable under Title VI;¹⁰⁹

¹⁰⁶ See, e.g., *Elston v. Talladega County Bd. of Educ.*, 997 F.2d 1394, 1405 n.11 (11th Cir. 1993) (stating Title VI provides no more protection than the Equal Protection Clause); *Goshen Rd.*, 891 F. Supp. at 1133 (requiring intentional discrimination for a claim under Title VI); *United States v. City of Yonkers*, 888 F. Supp. 591, 597 (S.D. N.Y. 1995) (opining that a Title VI claim demands the same burden of proof as an equal protection claim).

Other federal decisions seem to be less demanding and may allow plaintiffs to maintain a Title VI allegation with a showing of disparate impact discrimination. In *Scelsa*, the district court opined that discriminatory impact without discriminatory intent will suffice for a Title VI private right of action if there is "some definite, measurable disparate impact." *Scelsa v. City Univ. of New York*, 806 F.Supp. 1126, 1140 (S.D. N.Y. 1992), aff'd, 76 F.3d 37 (2d Cir. 1996) (citing *NAACP v. Medical Ctr. Inc.*, 657 F.2d 1322, 1332 (3d Cir. 1981)). Justice Marshall, dissenting in *Guardians Ass'n*, would bar practices that have a discriminatory impact without a sufficient nondiscriminatory justification. *Guardians Ass'n v. Civil Serv. Comm'n of New York*, 463 U.S. 582, 623-24 (1983) (Marshall, J., dissenting). The judge in *Association of Mexican-Am. Educators* agreed with Justice Marshall's dissent in *Guardians Ass'n* and found "that discriminatory animus is not an essential element of a violation of Title VI." 836 F. Supp. at 1546.

¹⁰⁷ See *supra* note 58 for list of such regulations. See also *Colopy*, *supra* note 13, at 171-88 (discussing federal regulations implementing Title VI); *Fisher*, *supra* note 15, at 311-33 (evaluating federal regulations implementing Title VI).

¹⁰⁸ The EPA regulation provides:

A recipient shall not use criteria or methods of administering its program which have the effect of subjecting individuals to discrimination because of their race, color, national origin, or sex, or have the effect of defeating or substantially impairing accomplishment of the objectives of the program with respect to individuals of a particular race, color, national origin, or sex.

40 C.F.R. § 7.35(b) (1995).

¹⁰⁹ *Choate*, 469 U.S. at 287 (noting that Congress rejected an amendment that would have limited Title VI regulations to intentional discrimination). The recent *Yonkers* case illustrates this possibility. In *Yonkers*, the court found no liability under Title VI and found that the plaintiffs had not alleged a violation of any Title VI regulation. *Yonkers*, 588 F. Supp. at 600. The court then distinguished between "interpretative" and "legislative" regulations and concluded that Title VI regulations were legislative in nature. *Id.* at 597-98. As such, they are independent of Title VI and plaintiffs would need to allege a violation of a specific regulation. *Id.* at 598.

thereby, liability may be found without evidence of a subjective intent to discriminate.¹¹⁰ Through the codification of a discriminatory effect standard, a Title VI regulation makes disparate impact discrimination based on race illegal.¹¹¹

To establish a violation of Title VI regulation, the findings by courts in Title VII cases may be illustrative. Generally, the analysis of discrimination under Titles VI,¹¹² VII¹¹³ and VIII¹¹⁴ of the Civil Rights Act are similar so that the lessons about one title may be carried over to another title.¹¹⁵ Proof of two prerequisites must be met. First, the challenged action must have a significantly adverse discriminatory impact on a minority group.¹¹⁶ Thereby, a policy that is neutral on its face but in fact discriminates against minorities may be found to be violative of Title VI.¹¹⁷ Second, the action cannot be

¹¹⁰ *Wards Cove Packing Co. v. Atonio*, 490 U.S. 642, 109 S. Ct. 2115 (1989) (considering a Title VII claim). For a discussion of the factors that may be used to find a discriminatory impact in the absence of a discriminatory intent, *see Mountain Side Mobile Estates Partnership v. Secretary of Hous. and Urban Dev.*, 56 F.3d 1243 (10th Cir. 1995) (Title VIII case). In *Mountain Side*, a Title VIII case, the court adopted an analysis consisting of three factors: (1) the strength of the plaintiff's showing, (2) the interest of the defendant in taking the action, and (3) the nature of the relief sought. *Id.* at 1252-53.

¹¹¹ Cole, *supra* note 13, at 531. *See also, Guardians*, 463 U.S. at 582 (stating discriminatory effect would satisfy pleading requirements to state a claim for violating regulations implementing Title VI); *Elston v. Talladega County Bd. of Educ.*, 997 F.2d 1394, 1406 (11th Cir. 1993) (finding Department of Education regulations incorporate a disparate impact standard mandating duty of nondiscrimination as to groups protected by statute). *See also, Goshen Rd. Envtl. Action v. United States Dep't of Agric.*, 891 F. Supp. 1126, 1133 (E.D. N.C. 1995) (stating that a discriminatory effect would satisfy the pleading requirement to seek relief under Title VI regulation).

¹¹² 42 U.S.C. §§ 2000d—2000d-7 (1994).

¹¹³ 42 U.S.C. §§ 2000e—2000e-17 (1994).

¹¹⁴ 42 U.S.C. § 2000f (1994).

¹¹⁵ Courts may use Title VII disparate impact cases to formulate standards for Title VI claims. *See e.g., New York Urban League v. New York*, 71 F.3d 1031, 1036 (2d Cir. 1995); *Elston*, 997 F.2d at 1407 n.14; *Georgia State Conference of NAACP v. Georgia*, 775 F.2d 1403, 1417 (11th Cir. 1985); *Groves v. Alabama State Bd. of Educ.*, 776 F. Supp. 1518, 1523 (N.D. Ala. 1991). Similarly, Title VIII cases may use Title VII cases for guidance. *Mountain Side*, 56 F.3d at 1251 n.7.

¹¹⁶ *Groves*, 776 F. Supp. at 1523.

¹¹⁷ *EEOC v. Steamship Clerks Union Local 1066*, 48 F.3d 594, 606-07 (1st Cir. 1995) (Title VII case).

justified by some other basis.¹¹⁸ Statistical proof is often used to show that the disparity was not a chance occurrence.¹¹⁹

The decision of a circuit court in *Elston v. Talladega County Board of Education*¹²⁰ is illustrative of the mechanics of Title VI regulations involving disparate impact discrimination. First, an allegation of violation of a specific regulation is required, as well as a causal connection to a decision or action.¹²¹ The plaintiff needs to demonstrate by a preponderance of the evidence that an action has a disproportionate adverse effect on a group protected by the Title VI regulation.¹²² To avoid liability, the defendant needs to rebut the plaintiff's evidence through proof of a substantial legitimate justification for the challenged practice.¹²³ However, a plaintiff may prevail even when the defendant presents proof of a substantial justification. If it is found that the defendant's proffered justification is a pretext for discrimination, or if there exists an effective alternative practice embodying less discrimination

¹¹⁸ *Groves*, 776 F. Supp. at 1523. However, note that discrimination may be possible due to an affirmative action plan. *United Steelworkers of America v. Weber*, 443 U.S. 193, 208-09 (1979).

¹¹⁹ *Waisome v. Port Auth. of N.Y and N.J.*, 948 F.2d 1370, 1379 (1991), *aff'd*, and reversed on other grounds, 999 F.2d 711 (2d Cir. 1993) (finding in a Title VII case that if there is a low probability that a given distribution could have occurred randomly, there is evidence that the disparity is not a chance occurrence). *Wards Cove Packing Co. v. Atonio*, 490 U.S. 642, 650-51 (1989) (finding in a Title VII case that comparison of racial composition of work force as probative of a *prima facie* case).

¹²⁰ 997 F.2d 1394 (11th Cir. 1993).

¹²¹ In *Elston*, the defendants' failed to object to the Title VI disparate impact analysis so the court assumed the defendants' actions fell within the scope of the Department of Education's Title VI regulations. 997 F.2d at 1406-07. The court then proceeded to apply the disparate impact analysis to the case. *Id.* In analyzing the existence of disparate impact, the court was unable to find a sufficient relationship between the disparate impact and the challenged policy of not sending students to a particular school. Due to the absence of a causal relationship, the plaintiffs were unsuccessful with their challenge. *Id.* at 1416, 1422.

¹²² *Elston*, 997 F.2d at 1407. With this showing, the burden shifts to the defendant. *Id.* See also *Board of Ed. of N.Y. v. Harris*, 444 U.S. 130, 151, (1979) (finding in a Title VII case that after a statistical case has been established, the other party has the burden to refute it).

¹²³ *Elston*, 997 F.2d at 1407. In *Elston*, a siting decision that was necessary to meet an educational goal was found to be sufficient to meet the requirement of a substantial legitimate justification. *Id.* The justification was based on the nonavailability of land for expansion at the location desired by plaintiffs. *Id.* A Tennessee district court imposed the same requirement. *Graham*, 1995 U.S. Dist. LEXIS 3211, at 37. See also *EEOC v. Steamship Clerks Union Local 1066*, 48 F.3d 594, 601-02 (1st Cir. 1995) (showing the shift of the burden of proof in a Title VII case).

proportionately, there may be liability.¹²⁴ Thus, racist activities and programs may violate the Title VI federal regulations even though they fail to violate Title VI itself or the Equal Protection Clause.

A question still remains on how to respond to discrimination when evidence shows aversive racism correlated with low income.¹²⁵ In the absence of a command against discrimination based on income in the Equal Protection Clause, Title VI and Title VI regulations, evidence based on both race and income may not suffice to establish a discrimination claim. If the low income is accompanied by lower land prices or another economic justification for selection of the site in a community of color as opposed to another community, the economic justification may offer a substantial legitimate justification for the challenged practice.¹²⁶ Furthermore, the economic justification may mean that there is not a causal connection between the challenged practice and the disparate impact.¹²⁷ In the absence of documentation showing that income is not a significant contributory factor, evidence consisting of racial and income factors may not show a discriminatory effect or unjustifiable disparate impact based on race necessary to avail a petitioner of the remedies available under these federal laws.¹²⁸

IV. SUFFICIENCY OF THE EVIDENCE

Reported evidence of environmental inequities is weighty enough to pursue societal efforts for remedial policies.¹²⁹ At the same time, however, some of the evidence of environmental racial discrimination may not be persuasive due to the presence of other possible justifications accounting for

¹²⁴ *Elston*, 997 F.2d at 1407. In *Steamship Clerks Union*, a family tradition justification was advanced as a basis for the discrimination against minorities in a labor union. 48 F.3d at 607. The court found that such an argument did not present "even the glimmerings of a business defense" and declined to find error in the lower court's findings. *Id.* at 607.

¹²⁵ Studies have suggested that income is more important than race in explaining disproportionate exposure. *See, e.g.* Been, *supra* note 9, at 21.

¹²⁶ *Elston* suggests that the nonavailability of land for a facility may serve as a legitimate justification. 997 F.2d at 1413. In *Mountain Side*, the defendant presented sewer system limitations and concern over the quality of mobile home park life as legitimate reasons for its action. *Mountain Side Mobile Estates Partnership v. Secretary of Hous. and Urban Dev.*, 56 F.3d 1243, 1253 (10th Cir. 1995). These reasons were sufficient to overcome the plaintiffs' *prima facie* case. *Id.* *See infra* notes 152-180 and accompanying text for a discussion of market dynamics and amenities.

¹²⁷ *See supra* note 122.

¹²⁸ Been, *supra* note 9, at 1392-96.

¹²⁹ Mank, *supra* note 3, at 344.

the alleged discriminatory action or activity.¹³⁰ Four problems deserve attention. First, evidence advanced in support of siting discrimination may actually be disproportionate exposure data.¹³¹ Second, market dynamics and locational factors, including the economics of urban amenities, suggest that income may be related to LULUs and environmental pollution exposure. Persons with higher incomes may be expected to buy a cleaner environment,¹³² and firms siting LULUs may seek low-priced land. Third, proof of a disparate impact on people of color often depends on a statistical analysis which may not be adequate to establish discrimination based directly on race. Some of the cited examples of disproportionate environmental risk exposure used correlation analyses that lack statistical proof to support a finding of disparate impact.¹³³ Fourth, some of the studies report limited observations that are statistically meaningless.¹³⁴

An analysis of these problems does not address the issue of whether there exists discrimination with respect to a particular situation. Rather, the germane questions are the twin issues of what discrimination qualifies plaintiffs to some type of relief and what do aggrieved plaintiffs need to show in order to qualify for relief under existing antidiscrimination laws. An evaluation of the evidence presented in previously-cited studies presents useful information to develop strategies for meeting the rigorous burdens of proof required to qualify for relief from disproportionate exposure to environmental risks.

A. Demographic Evidence

In evaluating evidence involving the siting of LULUs, inquiry must be made about the racial composition of the neighborhood at the time the decision to site the LULU was made. Evidence of racial composition gathered after the

¹³⁰ See *id.* at 390-91. For example, it has been calculated that the statistical findings enumerated in the CRJ Report had a ninety percent confidence level, *id.* at 391, a level that is unacceptable for most burdens of proof.

¹³¹ The institutional remedies require, at a minimum, a disparate impact discrimination. Exposure may adversely affect people of color yet, if there is no governmental action causing the effect, there is no cause of action.

¹³² Research has shown that amenities, including a good environment, are commodities that people may acquire when their incomes rise. R.N.S. Harris et al., *The Residence Site Choice, in THE ECONOMICS OF URBAN AMENITIES* 55, 65 (Douglas B. Diamond, Jr. & George S. Tolley eds., 1982) [hereinafter URBAN AMENITIES]; Peter A. Groothuis & Gail Miller, *Locating Hazardous Waste Facilities: The Influence of NIMBY Beliefs*, 53 AMER. J. ECON. & SOCIOLOGY 335, 343 (1994).

¹³³ As circumstantial evidence, statistical evidence will be scrutinized to determine its value in establishing a point. EEOC v. Olson's Dairy Queens, Inc., 803 F. Supp. 1215, 1221 (S.D. Tex. 1991), *rev'd on other grounds*, 989 F.2d 165 (5th Cir. 1993).

¹³⁴ The studies do not establish that the disparity is not a chance occurrence. See generally, MORRIS H. DEGROOT ET AL., *STATISTICS AND THE LAW* 6 (1986).

LULU is sited means the evidence concerns current demographics and whether disproportionate exposure exists rather than discriminatory siting.¹³⁵ Such demographic evidence cannot show intentional siting discrimination¹³⁶ and fails to establish a specific action that could have had a disparate impact on a minority group.¹³⁷ Thus, demographic data not directly related to the time at which the challenged action occurred are insufficient to establish relief under the above-noted legal remedies.¹³⁸

Alternatively, evidence of a discriminatory siting decision supported by data of the current racial composition may support a finding of intentional discrimination or an unjustifiable disparate impact.¹³⁹ Drawing from judicial proclamations in disparate impact cases under Title VII, statistical comparisons to establish discrimination need to compare the racial composition of the at-issue group and the composition of the appropriate population in the relevant area.¹⁴⁰ For a siting discrimination case, evidence of racial composition of the at-issue group involves the population living near the site at the time of the location decision.¹⁴¹ Evidence of the racial composition of the population near

¹³⁵ As noted by a district court looking into an allegation of a Title VII violation, racial imbalance by itself does not make out a case of disparate impact. *Fisher v. Vassar College*, 852 F. Supp. 1193, 1226 (S.D. NY 1994), *aff'd and rev'd on other grounds*, 70 F.3d 1420 (2d Cir. 1995). Evidence from a later date generally means there is no causal relationship between the challenged action and the adverse discriminatory impact. The evidence would fail to show proof of discrimination at the time the action was made.

¹³⁶ Governmental action will not be unconstitutional simply due to a racially disproportionate impact. Instead, there must be proof of a discriminatory intent or purpose. *Arlington Heights v. Metropolitan Hous. Dev. Corp.*, 429 U.S. 252, 265 (1977).

¹³⁷ For a *prima facie* case of disparate impact on people of color, specific elements of an action must have a significantly disparate discriminatory impact. *Wards Cove Packing Co. v. Atonio*, 490 U.S. 642, 658 (requiring in Title VII claim, *prima facie* case of disparate impact with respect to petitioners' employment practices). Data that includes choices made after the enumerated action thereby fail to show that the action was responsible for the discriminatory impact. Moreover, racial imbalance by itself does not always establish a case. *Id.* at 653.

¹³⁸ Of course, the authors may not have intended to report data that would meet the qualifications established by these institutions. Rather than looking at why a site was selected, the authors may attempt to explain whether people of color bear disproportionate exposure. *See, e.g.,* *Been, supra* note 9, at 7.

¹³⁹ At this time, no reported case has recounted such a burden of proof as being met by a plaintiff. *See Torres, supra* note 10, at 439-40.

¹⁴⁰ *Wards Cove*, 490 U.S. at 650. Comparison between the racial composition of the qualified persons in the relevant labor market and the persons holding the at-issue jobs generally forms the basis for the initial statistical inquiry in a disparate impact case. *Id.*

¹⁴¹ Whereas, in employment discrimination cases, the at-issue group is generally persons holding the job wanted by the plaintiff, for siting cases, the at-issue group is the people in the neighborhood at the time of the decision to site the LULU.

the site at a later time fails to address the at-issue group so is not relevant proof of racial discrimination in deciding where to site a LULU.

Failure to provide evidence of current demographics is identified as a shortcoming for a number of the key environmental justice studies that allege discrimination against people of color.¹⁴² Professor Been showed that the CRJ Report¹⁴³ and some of Bullard's survey results¹⁴⁴ constituted evidence of current demographics rather than evidence addressing the demographics at the time of the siting decision to place a LULU in a community of color.¹⁴⁵ The report on environmental justice by the U.S. Government Accounting Office¹⁴⁶ simply concerned racial demographics of communities with existing hazardous waste sites,¹⁴⁷ and the EPA's findings regarding sitings were drawn from demographics.¹⁴⁸ Finally, the summary of fifteen studies by Bryant and Mohai failed to note that some of them simply had examined current demographics.¹⁴⁹

Even a recent study that identified some of the shortcomings of earlier research failed to distinguish current demographic evidence from demographics at the time of the siting decision.¹⁵⁰ This suggests that none of these studies provide evidence of a discriminatory governmental decision that would constitute proof of intentional discrimination or an unjustifiable disparate impact sufficient to garner relief under current antidiscrimination institutions. As advocated by Professor Been, research of characteristics of host neighborhoods at the time they were selected for a LULU, together with

¹⁴² E.g., Been, *supra* note 9, at 1398-1406; James T. Hamilton, *Testing for Environmental Racism: Prejudice, Profits, Political Power?*, 14 J. POL'Y ANALYSIS & MGMT. 107, 113-14 (1995).

¹⁴³ See CRJ REPORT, *supra* note 1.

¹⁴⁴ Robert D. Bullard, *Solid Waste Sites and the Black Houston Community*, 53 SOCIOLOGICAL INQUIRY 273 (1983).

¹⁴⁵ Been, *supra* note 9, at 1392-1422. In the absence of knowing which came first, the people of color or the LULU, the studies simply explore demographics rather than establish evidence of a discriminatory impact. *Id.* at 1395-96.

¹⁴⁶ See GAO REPORT, *supra* note 1. For example, the GAO looked at "the percentage of minorities and low-income people living within 1 mile of nonhazardous municipal landfills . . ." and found a higher percentage of minorities than near these facilities. *Id.* at 20.

¹⁴⁷ Lee, *supra* note 1, at 12-13.

¹⁴⁸ EPA ENVIRONMENTAL EQUITY, *supra* note 2, at 14.

¹⁴⁹ This included the GAO Report and the Bullard study. Paul Mohai & Bunyan Bryant, *Environmental Racism: Reviewing the Evidence*, in INCIDENCE, *supra* note 1, at 163-76.

¹⁵⁰ Anderton et al., *supra* note 7, at 233-42. Although the study by these authors included dates that facilities opened for business, the dates were not used in the analyses for discrimination against communities of color. *Id.*

a tracing of demographic changes occurring afterwards, are needed before solutions for environmental inequities may be devised.¹⁵¹

B. Market Dynamics and Amenities

Research suggests that market dynamics and the economics of amenities impact a neighborhood's composition and, thereby, may play a significant role in the disproportionate exposure experienced by people of color.¹⁵² The housing market process is dynamic; approximately seventeen percent of U.S. households move to a new home each year.¹⁵³ Neighborhood adjustments are made whenever a household makes an ordinary relocation or when a neighborhood is subjected to a change in environmental amenities.¹⁵⁴ Alternatively, new industrial land uses may search to locate near existing factories and transportation facilities.¹⁵⁵ As a result, the price of high quality locations increases and poor households are left with affordable housing located in relatively polluted areas.¹⁵⁶ The dynamics of housing markets tend to cause people of color to move to or remain in neighborhoods near LULUs.¹⁵⁷ The economics of amenities may justify some siting decisions and the disproportionate exposure of minorities to environmental risks.¹⁵⁸ Location-specific goods, such as the absence of noise, pleasant landscape, good air quality, and absence of LULUs, are amenities that can be bought in the real

¹⁵¹ Been, *supra* note 9, at 1406.

¹⁵² *Id.* at 1387. Been also found, however, that the GAO study (*see GAO REPORT, supra* note 1) suggested that the burdens in the distribution of the hazardous waste landfills were not due to market dynamics. *Id.* at 1405. *See also* Douglas B. Diamond, Jr. & George S. Tolley, *The Economic Roles of Urban Amenities*, in *URBAN AMENITIES, supra* note 132, at 6-7 (suggesting that there is a market for land uses that is location specific). Vaughan and Huckins concluded that noise from expressways creates a disamenity for nearby residents. Roger J. Vaughan & Larry E. Huckins, *The Costs of Urban Expressway Noise*, in *URBAN AMENITIES, supra* note 132, at 125.

¹⁵³ KRISTIN A. HANSEN, *GEOGRAPHICAL MOBILITY: MARCH 1992 TO MARCH 1993*, at VII-IX (Bureau of the Census, U.S. Dep't of Commerce, Current Population Reports Series P20, No. 481, 1994).

¹⁵⁴ For example, further research on the evidence amassed by Bullard regarding the location of LULUs in Houston suggests that market dynamics played a significant role in their distribution in urban areas. Been, *supra* note 9, at 1387.

¹⁵⁵ Anderton et al., *supra* note 7, at 245.

¹⁵⁶ Been, *supra* note 6, at 1017 (addressing dynamics in which the poor might choose to live proximate to a LULU).

¹⁵⁷ *Id.* at 1017; Been, *supra* note 9, at 1390-92.

¹⁵⁸ A practice resulting in a discriminatory racial impact may be permitted if substantiated by a substantial legitimate justification. *Elston v. Talladega County Bd of Educ.*, 997 F.2d 1394, 1407; *Georgia State Conference of NAACP v. Georgia*, 775 F.2d 1403, 1417 (11th Cir. 1985).

estate marketplace.¹⁵⁹ Economics suggests that higher income households will locate in areas with higher quality environmental amenities.¹⁶⁰ Within a region, households will select housing locations according to their preferences for local public goods and services, including environmental amenities, subject to their budget constraint.¹⁶¹ To the extent that environmental quality is purchased in the housing market, higher income households tend to sort themselves out into neighborhoods with higher environmental quality.¹⁶² To the extent that minority groups may be poor, it may be inferred that such persons will be exposed to higher ambient pollution levels.¹⁶³ As a general rule, land is less expensive in an undesirable neighborhood so that available sites in these areas would be selected for the siting of new polluting facilities over similar sites in more well-to-do neighborhoods.¹⁶⁴

Market dynamics also involves private preferences that may be grounded on racism. Racial discrimination accompanying private real estate transactions, both sales and rentals, may relegate people of color to less desirable neighborhoods.¹⁶⁵ Housing in neighborhoods of color may sell at a discount due to a smaller pool of potential buyers because racist buyers will shun such areas regardless of economics.¹⁶⁶ The lower prices accompanying housing sales may be expected to encourage additional segregation.¹⁶⁷

¹⁵⁹ Diamond & Tolley, *supra* note 152, at 5-10; Vaughan & Huckins, *supra* note 152, at 125-26.

¹⁶⁰ Groothuis & Miller, *supra* note 132, at 343; Diamond & Tolley, *supra* note 152, at 12-13. For air pollution in inter-city and intra-city locations, Asch and Seneca found that income and income-related variables were important in determining exposure to air pollution. Peter Asch & Joseph J. Seneca, *Some Evidence on the Distribution of Air Quality*, 54 LAND ECON. 278 (1978). *See also* Harris, *supra* note 132, at 65.

¹⁶¹ Diamond & Tolley, *supra* note 152, at 12-13.

¹⁶² Groothuis & Miller, *supra* note 132, at 343. *See generally* WILLIAM J. BAUMOL & WALLACE E. OATES, *THE THEORY OF ENVIRONMENTAL POLICY* (1975); A. Myrick Freeman, III, *Distribution of Environmental Quality*, in *ENVIRONMENTAL QUALITY ANALYSIS* (Allen V. Kneese & Blair T. Bower, eds., 1972).

¹⁶³ Cole notes that the siting of LULUs in neighborhoods of color evinces the success of environmental law. Cole, *supra* note 12, at 1995.

¹⁶⁴ Been, *supra* note 6, at 1017.

¹⁶⁵ Been, *supra* note 9, at 1389. Smith found that a major effect of prejudice against Blacks is that they pay less for housing. Barton A. Smith, *Racial Composition as a Neighborhood Amenity*, in *URBAN AMENITIES*, *supra* note 132, at 177-78. Prejudice leads persons with money to buy the type of neighborhood they want. *Id.* at 188. Racial prejudice and lower priced housing in areas with people of color often leads to a high degree of racial segregation. *Id.* at 178.

¹⁶⁶ Smith, *supra* note 165, at 167, 178-79 (concluding that prejudice against minority neighbors affects housing values).

¹⁶⁷ Prejudice models show lower prices, although models of exclusion suggest that housing in ghettos of color may be unusually high due to a restricted supply of housing. Smith, *supra* note 165, at 179.

Politics is another factor in locational decisions and housing markets.¹⁶⁸ As a political decision, the siting of a LULU in a community of color is not surprising given the historical exclusion of minorities from the political process.¹⁶⁹ Circumstances such as low property values,¹⁷⁰ lack of education, inability to meaningfully organize, and lack of funds for hiring legal and technical assistance¹⁷¹ induce the siting of LULUs in communities of color.¹⁷² Moreover, the supposition that poor communities need the tax revenues of LULU facilities has been advanced.¹⁷³ The NIMBY (not in my-back-yard) syndrome suggests that facilities will tend to locate in communities that are politically inactive and have the least likelihood of protesting the siting of a polluting facility.¹⁷⁴

Given these additional factors of market dynamics and the economics of amenities, much of the evidence of discriminatory siting or discriminatory environmental practices may not establish sufficient proof for a finding of a violation of a Title VI regulation. Or, market dynamics or the economics of amenities may offer a substantial legitimate justification to rebut a plaintiff's proof that an action has a disproportionate adverse effect on a minority group.¹⁷⁵ If a defendant can show that economics, poverty, low land prices, market-based locational factors or business factors were significant in the location of a LULU, it may refute the statistical or other evidence of racial discrimination.¹⁷⁶

¹⁶⁸ Cole, *supra* note 12, at 1995.

¹⁶⁹ Bailey et al. present an account of a struggle of people of color for political representation in an Alabama County. Conner Bailey et al., *Environmental Politics in Alabama's Blackbelt*, in CONFRONTING, *supra* note 2, at 107, 110-16. See also Cole, *supra* note 6, at 649. As political decisions without intentional discrimination, siting decisions generally are legal under environmental and civil rights laws. Cole, *supra* note 12, at 1995.

¹⁷⁰ The low property values may be due to racism. Chase, *supra* note 4, at 345.

¹⁷¹ Communities of color often lack the financial resources of well-to-do residents to resist the siting of LULUs. Chase, *supra* note 4, at 345.

¹⁷² See, e.g., White, *supra* note 50, at 134-35. The proposition that people of color may be more likely to accept LULUs has also been maintained. *Id.*

¹⁷³ For example, it was reported that the school system and county government in Sumter County, Alabama, depend on a hazardous waste landfill, and that many people of color seemed reluctant to support actions that might shut down the landfill. Bailey et al., *supra* note 169, at 116. Another author concluded that evidence whereby communities of color sought or approved LULUs due to the economic benefits was mixed. Dubin, *supra* note 52, at 766 (citing Bullard's research). Mank, *supra* note 3, at 332-33.

¹⁷⁴ Dubin, *supra* note 52, at 766-67.

¹⁷⁵ See, Georgia State Conference of NAACP v. Georgia, 775 F.2d 1403, 1417-18 (noting the alleged justification of "educational necessity" which the court found similar to the "business necessity" exception in Title VII cases).

¹⁷⁶ See, Watson v. Fort Worth Bank & Trust, 487 U.S. 977, 996-7 (1988). Once establishing a justification, a defendant may need to show that an alternative practice without a similarly undesirable racial effect was not available. *Id.*; Wards Cove Packing

C. Correlation Analysis

Correlation analysis has been used in some of the studies claiming that disproportionate exposure due to race is more significant than low income. For example, Mohai and Bryant examined fifteen studies, some of which simply compared correlation coefficients for an area's mean household income and racial characteristics with pollutant levels, to show that race was the best predictor of where greater environmental risks exist.¹⁷⁷ In a study analyzing the expansions of toxic waste disposal facilities, it was found that race was not a significant explanatory variable when measures of income and political organization were also included.¹⁷⁸ An earlier correlation analysis determined that relatively poorer, less educated or non-white households dominate areas with higher pollution.¹⁷⁹ In yet another analysis, evidence of discrimination in siting waste-to-energy facilities looked at race and income to disclose problems with various statistical methods used to evaluate evidence of discrimination.¹⁸⁰

From these studies, it was concluded that race has an impact on the distribution of environmental hazards independent of income.¹⁸¹ Such a conclusion may not be accurate because correlation analysis by itself is not capable of controlling for the effect that income plays in determining race-

Co. v. Antonio, 490 U.S. 642, 658 (1989).

¹⁷⁷ Mohai & Bryant, *supra* note 149, at 166.

¹⁷⁸ Hamilton, *supra* note 142. An earlier study found a negative correlation coefficient between pollution levels and income; *but see*, David Harrison, Jr. & Daniel Rubinfeld, *The Distribution of Benefits from Improvements in Urban Air Quality*, 5 J. ENVTL. ECON. & MGMT. 313 (1978), finding that poorer classes experience greater physical benefits of improved air urban air quality after automobile controls were enacted, but that the monetary benefits are more equally distributed regardless of income.

¹⁷⁹ Asch & Seneca, *supra* note 160, at 287. More recent research focuses upon individuals' total exposure to air pollutants including conditions not only at the place of residence but also at the place of work, schooling and recreation. The study showed through simple correlation coefficients that there existed a positive association between total exposure and proportions of low income, Black and Hispanic populations in California's South Coast Air Basin. Victor Brajer & Jane V. Hall, *Recent Evidence on the Distribution of Air Pollution Effects*, 10 CONTEMP. POL'Y ISSUES, Apr. 1992, at 63.

¹⁸⁰ Greenberg, *Proving Environmental Inequity in Siting Locally Unwanted Land Uses*, 4 RISK—ISSUES IN HEALTH AND SAFETY 235, 238 (Winter 1993) (suggesting that to avoid unsubstantiated accusations, analyses of discrimination should be conducted with at least two different types of statistics).

¹⁸¹ Mohai & Bryant, *supra* note 149, at 169. Yet three of the studies had found income more important than race and two of the studies lacked information for a comparison of race and income. *Id.* at 168-69.

Two of the studies may be criticized for other grounds. The GAO study involved a small number of sites. GAO REPORT, *supra* note 1. The GAO and Bullard studies involved current demographics of evidence of current exposure. *See supra* notes 142-149 and accompanying text. Moreover, neither study discusses statistical tests of significance.

based exposure levels.¹⁸² Race may simply be correlated with true causal factors like income, political organization or location factors rather than constitute the explanation for the differentiation. If evidence is to show that race matters more than income, a more exacting empirical method is needed, such as multiple regression.¹⁸³ Thus, while the findings by Mohai and Bryant may show racial discrimination, because it is so closely linked to income it may not be sufficient to establish credible evidence of an unjustifiable disparate impact required to garner relief under Title VI.¹⁸⁴ If relief for discriminatory exposure to environmental risks is based on a remedy requiring racial discrimination, then discrimination based on race and income together may not be sufficient to justify relief.

D. Small Sample Size

A fourth limitation of some of the studies claiming disproportionate exposure of people of color to environmental risks is the small sample size. Due to small samples, plaintiffs may be unable to establish, or have difficulty in establishing, sufficient statistical proof of discrimination.¹⁸⁵ Evidence from limited samples may not establish that race rather than chance led to the placement of a LULU in a community of color. For example, the GAO's 1983 Report looked at four offsite hazardous waste landfills and found three located in communities of color.¹⁸⁶ The report does not adequately address, however, whether the location of these four landfills was statistically significant or whether the location was due in part to other factors such as poverty. Similarly in *Bean*, the allegation of race discrimination was based on a small sample.¹⁸⁷ The allegation involved discrimination in locating two solid waste facilities.

¹⁸² The net effect that race has on exposure must be computed while holding constant the effect of income.

¹⁸³ The Supreme Court has recognized multiple regression analysis to establish proof of violations under Title VII. *McCleskey v. Kemp*, 481 U.S. 279, 294 (1987).

¹⁸⁴ A circuit court noted that data showing a 95.58% cumulative passage rate did not establish sufficient evidence of discrimination without a showing of what this meant in terms of standard deviations. *Frazier v. Garrison*, 980 F.2d 1514, 1524 n.29 (5th Cir. 1993) (Title VII case). Thus, the *Frazier* court held that in the absence of "the existence of statistical disparity, [the plaintiffs] failed to make a *prima facie* case of disparate impact under Title VII." *Id.* at 1525.

¹⁸⁵ This is due to the fact that smaller sample sizes may be accompanied by larger disparity rates without statistical significance. DEGROOT ET AL., *supra* note 134, at 17.

¹⁸⁶ GAO REPORT, *supra* note 1, at 3. The GAO also found poverty near the sites. *Id.*

¹⁸⁷ *Bean v. Southwestern Waste Management Corp.*, 482 F. Supp. 673, 678 (S.D. Tex. 1979), *aff'd*, 782 F.2d 1038 (5th Cir. 1986) (alleging that the siting of two solid waste sites of the City of Houston had a discriminatory purpose).

As might be expected, the court had little difficulty in finding such an allegation to be without statistical significance.¹⁸⁸

Although statistical evidence based on relatively small numbers of occurrences may not present reliable proof of disparate impact,¹⁸⁹ alleged discrimination involving small numbers may support a finding of adverse impact due to other evidence.¹⁹⁰ Plaintiffs may be able to show other aspects of discrimination or discriminatory activities that, together with the small sample, establish a finding of adverse impact.¹⁹¹

V. ANALYSES OF EXPOSURE

This section presents three empirical analyses of the exposure of people to toxic releases in two states as they relate to a neighborhood's race and poverty characteristics. Data from the 1990 Population Census for census block groups of the states of Georgia and Ohio were employed to test whether neighborhoods of color or poor residents may be exposed to higher environmental hazards.¹⁹² The measure of exposure to environmental risk was generated from the EPA's Toxics Release Inventory (TRI) data set for the years

¹⁸⁸ The court noted that the absence of a statistically significant number presented a problem of proving discrimination. *Id.* Upon further analysis, the court concluded that one of the landfills was located in a tract with only 18.4% minority population so that no inference of discrimination could be made from the data. *Id.*

¹⁸⁹ *Waisome v. Port. Auth of N.Y. and N.J.*, 948 F.2d 1370, 1379 (1991), *aff'd and rev'd on other grounds*, 999 F.2d 711 (2d Cir. 1993).

¹⁹⁰ In *Waisome*, the small sample size of promotions available for developing statistical evidence to establish employment discrimination led a lower court to grant summary judgment for the defendant. *Id.* at 1376. However, the promotion procedure also involved a written test with a sufficiently large sample size. *Id.* The circuit court found that the statistical significant disparity between races on the written test supported the plaintiffs' allegations of disparate impact in the ultimate promotion decisions. *Id.* Thus, the court reversed the lower court's summary judgment and remanded the issue. *Id.*

¹⁹¹ In *Sims v. Montgomery County Comm'n*, 873 F. Supp. 585, 602 (1994), modified on other grounds, 887 F. Supp. 1479 (M.D. Ala.), modified, 890 F. Supp. 1520 (M.D. Ala. 1995), the court found that a small sample would support a finding of adverse impact due to a pattern of discrimination over time.

¹⁹² BUREAU OF THE CENSUS, U.S. DEP'T OF COMMERCE, CENSUS OF POPULATION AND HOUSING, 1990: SUMMARY TAPE FILE 3A, CD-ROM discs CD90-3A-14 (Georgia), CD90-3A-44, -45, and -46 (Ohio) (1992). A neighborhood is defined as a census block group. Census block groups are sufficiently small units of observation that come close to approximating the neighborhood effects that the environmental justice literature argues is most crucial. BUREAU OF THE CENSUS, U.S. DEP'T OF COMMERCE, CENSUS OF POPULATION AND HOUSING, 1990: SUMMARY TAPE FILE 3 TECHNICAL DOCUMENTATION, at A-4 (1991).

1987-1992.¹⁹³ The TRI data, mandated by Section 313 of the Emergency Planning and Community Right-to-Know Act of the Superfund Amendments and Reauthorization Act of 1986,¹⁹⁴ summarize annual reports filed by manufacturing firms. All five TRI categories of releases were used: smokestack atmospheric releases, other atmospheric releases, water releases, underground injection and landfill disposal.¹⁹⁵ The annual average poundage of released toxics was calculated for each reporting establishment.¹⁹⁶

The location of each census block group was identified on the CD-ROM by the latitude and longitude of its centroid.¹⁹⁷ Similarly, the TRI data reports the latitude and longitude of each reporting establishment.¹⁹⁸ To determine toxic exposure, an assumption was adopted from other studies that the impact of toxic materials is limited to within one mile of a TRI site.¹⁹⁹ For each TRI site, a union was calculated with the appropriate census block group or groups.²⁰⁰ The proportion of the union's area in a given block group was assigned a corresponding percentage of the poundage of toxic materials from

¹⁹³ INVENTORY, *supra* note 21. For Georgia, 14,732 releases reported by 826 establishments were analyzed, while in Ohio there were 37,234 releases by 1,935 establishments. This data is not totally representative of toxic releases as it only covers the manufacturing sector, Standard Industrial Classification codes 20-39. 60 Fed. Reg. 59,658, 59,664 (Nov. 28, 1995). In 1995, the EPA announced it was considering adding additional industries to the list of facilities that must report toxic releases. 60 Fed. Reg. at 59,664. Industries under consideration include "electric utilities, waste management facilities, mining, oil and gas production, materials recovery and recycling, and some warehousing activities." *Id.*

¹⁹⁴ Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499, 100 Stat. 1613 (1986) (codified at 42 U.S.C. § 11023 (1994)).

¹⁹⁵ The analysis aggregates all types of toxic substances and assumes they are all harmful. It thereby fails to account for different levels of toxicity.

¹⁹⁶ Off-site transfers were not included.

¹⁹⁷ The area reported for each block group was converted to square miles. With these data, each block group's north, south, east and west boundaries were defined with a simple computer routine.

¹⁹⁸ INVENTORY, *supra* note 21.

¹⁹⁹ U.S. GENERAL ACCOUNTING OFFICE, HAZARDOUS AND NONHAZARDOUS WASTE: DEMOGRAPHICS OF PEOPLE LIVING NEAR WASTE FACILITIES 20-21 (1995) (measuring percentages of minorities within one mile of landfills); Theodore S. Glickman, *Measuring Environmental Equity with Geographical Information Systems*, 116 RESOURCES 2-3 (Summer 1994) (using circles of one-half mile, one mile and two miles).

²⁰⁰ The union would be the overlap of the one-mile radius of the TRI site and the corresponding census block groups. For the 6,446 block groups in Georgia, 3,941 were farther than one mile from any TRI site so were assumed not to be exposed to toxic releases. These may be called zero-toxic block groups. Of the 15,697 Ohio block groups, 7,863 were exposed to toxic releases, and 7,834 zero-toxic block groups.

the TRI site.²⁰¹ The weights of all toxic releases from each TRI site were assigned to block groups and summed to yield the annual average poundage of toxic material that potentially could pollute a Census block group.

Three different empirical analyses were performed to show how different assumptions and parameters may impact evidence of discriminatory siting. The first analysis was a standard t-test analysis that showed a correlation between race and exposure.²⁰² A more sophisticated tobit-regression analysis was used to discern the effects of race, poverty and political organization for the second model.²⁰³ A third industrial-location tobit-regression model was used to consider other siting considerations.²⁰⁴ This final model showed that, although race was not found to be significant, three other factors including poverty were related to the siting of manufacturing facilities emitting toxic releases.

A. T-Test Analysis

Previous studies have established evidence from the results of t-tests for the difference between means of environmental justice variables.²⁰⁵ For this approach, the means of the racial variable between block groups that had zero and nonzero annual average pounds of toxic releases were compared.²⁰⁶ For Georgia, the average zero-toxic block group had 24.61 percent²⁰⁷ people of color population, while the nonzero blocks averaged 35.31 percent.²⁰⁸ In Ohio, people of color comprised 5.23 percent of the population in the block groups with zero toxics,²⁰⁹ while the nonzero block groups had 16.48 percent.²¹⁰ The differences of the two means for each state were significant at the one percent level.²¹¹ Thus, this comparison of means suggests that people of color as opposed to white people are more likely to be exposed to toxic releases.

²⁰¹ Thus, for each TRI site, the poundage would be assigned proportionately to the census block groups within a one-mile radius.

²⁰² See *infra* notes 205-211 and accompanying text.

²⁰³ See *infra* notes 212-220 and accompanying text.

²⁰⁴ See *infra* notes 221-224 and accompanying text.

²⁰⁵ E.g., Greenberg, *supra* note 180, at 239-240.

²⁰⁶ See *supra* note 200.

²⁰⁷ This was for 3,941 block groups. For all of the Georgia block groups, the average percentage of people of color in the population was 28.77 percent.

²⁰⁸ This was for 2,505 block groups. The average exposure for the Georgia block groups was 23,759 pounds per year.

²⁰⁹ This was for 7,834 block groups. For all of the Ohio block groups, the average percentage of people of color in the population was 28.77 percent.

²¹⁰ This was for 7,863 block groups. The average exposure for the Ohio block groups was 20,976 pounds per year.

²¹¹ The difference between the Georgia means had an associated t statistic of 12.80 while the Ohio t statistic was 30.25.

B. Tobit-Regression Analysis

A second analysis, a multiple regression model, was developed to determine whether there exist other causes of discriminatory exposure in Georgia and Ohio. More specifically, the model involved a tobit regression of the racial variable on the toxic release variable.²¹² Three factors were considered, the percentage of people of color in the population, poverty and political organization. The percentage of the population living in poverty was the selected measure for poverty,²¹³ and the analysis showed an average population in poverty of 16.93 percent in Georgia and 13.41 percent in Ohio.²¹⁴ For political activity, the percentage of the eligible population voting in the 1992 election served as the proxy.²¹⁵

The tobit-regression analysis yielded positive coefficients for the racial variable in both states that were highly significant. Such results suggests that the distribution of toxic substance releases entails differential exposure by race, holding poverty's effect constant.²¹⁶ The analysis also showed poverty as being

²¹² For such an analysis, the dependent variable is censored at zero. Ordinary least squares regression would yield biased and inefficient estimators because the method cannot account for nonzero means of the disturbance term that the censoring causes. Therefore, a tobit regression is the appropriate model to examine evidence of discrimination. WILLIAM H. GREENE, ECONOMETRIC ANALYSIS 697 (2d ed. 1993).

²¹³ There are other income measures, such as per capita income, but the percentage of population in poverty is preferred because it has been used by other studies of environmental justice, and it is in the same percentage terms as the racial variable. Furthermore, the mean income tells us less about the low end of the distribution, where people are marginalized from economic and political processes, than does the percentage that are measurably in that category as measured by poverty definitions.

²¹⁴ The correlation between people of color and poverty was 0.587 for Georgia and 0.434 for Ohio.

²¹⁵ The use of voting information as a proxy for political organization follows research by Hamilton. Hamilton, *supra* note 142, at 121. Voting data are not always reported at the block group level so data for the block group's county were used. County data for these variables were obtained from census records. BUREAU OF THE CENSUS, U.S. DEPT' OF COMMERCE, COUNTY AND CITY DATA BOOK (1994). The data showed that 56.83 percent of the population eighteen years of age and over participated in the 1992 elections, in Georgia, while the Ohio data showed a corresponding 62.35 voter turnout. The correlation between people of color and election participation was -0.049 for Georgia and 0.020 for Ohio. Thus, in neither Georgia nor Ohio is there a likely problem with damaging collinearity in a regression containing racial and income characteristics.

²¹⁶ The signs on the coefficients of the race variable were positive and the one-tailed tests for the variables are rejected at the 0.01 significance level. A comparison of the two states show that neighborhoods of color in Ohio are subjected to marginally more risks than in Georgia.

significant,²¹⁷ but provided inconclusive evidence on the effect of political activism.²¹⁸ For both states, poverty rates seem to have a larger impact than racial composition, although both are shown independently to be statistically significant causes of differential exposure to toxic releases.²¹⁹ For example, the Georgia analysis suggests that a one percent increase in a block group's people of color will increase toxic substance releases by an average of 278 pounds, while a one percent increase in a block group's population in poverty will increase toxic substance releases by an average of 910 pounds.²²⁰

C. Industrial-Location Tobit-Regression Analysis

New establishments choose manufacturing locations based on site characteristics that affect their profitability.²²¹ Through a broader model consisting of the discriminatory variables included in the previous regression model²²² and six non-discriminatory factors that might have influenced the location decisions of firms, the Georgia and Ohio data again were analyzed.²²³

²¹⁷ The signs on the coefficients of the poverty variables were positive and the one-tailed tests for the variables are rejected at the 0.01 significance level.

²¹⁸ For Georgia, the coefficient for the political activism variable was insignificant. For Ohio, this coefficient was significant at the 0.01 level. However, both coefficients had the opposite sign from that expected. Thus, if election participation is a good proxy for political organization, then the evidence is clear that firms do not systematically expose less politically active citizens to greater exposure to toxic releases. Ohio's statistically significant result would indicate that the opposite occurs.

²¹⁹ This result is based on a comparison of the percentage terms of the coefficients.

²²⁰ This assumes all other factors remain constant. For Ohio, the figures would be an increase of 561 pounds for a one percent increase in a block group's people of color and 1,447 pounds for a one percent increase in a block group's population in poverty. Thus, race and income are shown to be statistically significant causes of differential exposure.

²²¹ Because the same data is being used to explain location decisions that were made twenty or more years ago as well as recent locations, the model's performance may be reduced. However, any error is probably minimal because current site characteristics reflect current profitability and, therefore, firms' decisions to continue operations at a site.

²²² The discriminatory factors are the percentage of people of color, poverty and political organization.

²²³ The six variables were suggested by the industrial location literature. See Robert Walker & Frank Calzonetti, *Searching for New Manufacturing Plant Locations: A Study of Location Decisions in Central Appalachia*, 24 REGIONAL STUDIES 15 (1990); JAMES O. WHEELER & PETER O. MULLER, *ECONOMIC GEOGRAPHY* 192 (2d ed. 1986).

The six non-discriminatory factors were (1) average house value, (2) population density, (3) percent of adults with four years of high school, (4) presence of an interstate highway in the county, (5) the county's average weekly manufacturing wage, and (6) the size of the county's manufacturing workforce. The first three variables were available at the block group level. Data for the last three variables were available only at the county level; therefore, each census block in the county is assigned the value for the entire county.

The results of this industrial-location model established race as a less significant factor for toxic exposure of people of color than the previous models. The model suggests that race *per se* may not explain the positive association between people of color and exposure. Rather, the poverty variable, the presence of interstate highways and the high school education variable were found to be significant in both states.²²⁴ Thus, these three variables seem to be the most significant factors in attracting industrial facilities that emit toxic releases.

VI. TOBIT ANALYSIS OF RECENTLY-LOCATED TRI SITES

Exposure data do not address whether people of color are deliberately targeted to host undesirable land uses through a governmental action. The possibility exists that the demographics of neighborhoods near LULUs change as wealthier, whiter citizens move away and people of color and poorer people remain or are attracted by the lower rents and less expensive properties. Although two previous studies have specifically looked at the targeting issue,²²⁵ other studies have omitted consideration of the role that various factors may play in determining the neighborhood racial and income characteristics near risky facilities.

This section reports regression models that were applied to data from Georgia and Ohio to discern whether neighborhoods of color and poor communities have been targeted to host toxic-emitting facilities that have

These non-discriminatory variables were selected as proxies for information that may contribute to the location decision by a facility emitting toxic releases. (1) The average value of houses is a proxy for cost of living. (2) Higher population density is expected to be associated with lower toxic emissions, since polluting firms should prefer a location where their activity is noticeable to fewer people. (3) The percent of adults with high school degrees is a proxy for the productivity of the available work force. (4) It is postulated that the presence of an interstate highway positively affects industrial location and, therefore, increases toxic exposure. (5) In a similar manner, the size of the workforce employed in manufacturing should positively affect industrial location and increase toxic exposure. (6) Manufacturing employment is also a proxy variable for the presence of agglomeration economies. The average manufacturing wage is assumed to negatively impact a firm's desire to do business, with productivity held constant.

²²⁴ For Ohio, both the manufacturing wage and average house value variables are significant. Moreover, the wage variable has the opposite of the expected sign, which is probably due to the education variable's less-than-perfect performance as a proxy of labor productivity.

²²⁵ Been, *supra* note 9; Hamilton, *supra* note 142. At the same time, one study specifically noted it did not attempt to model the siting process. Been, *supra* note 9, at 7.

located between 1987 and 1992.²²⁶ By matching the siting of 71 recently-located TRI facilities in Georgia²²⁷ and 60 facilities in Ohio,²²⁸ the analyses are able to describe how location decisions were related to a neighborhood's characteristics, including race and poverty.²²⁹

Adopting the same tobit-regression model as previously reported, the effects of race, poverty and political organization were analyzed for recently-located TRI facilities. The results for Georgia indicate that neither race nor poverty had any significant effects on exposure from recently-located facilities.²³⁰ For Ohio, poverty had no significant effect but higher percentages of people of color were related to higher releases from recently-located facilities.²³¹

The recently-located TRI sites were also examined using the industrial-location tobit-regression model to discern the effects of industrial location variables.²³² Neither race nor income was statistically significant for either

²²⁶ The analysis of recently-located TRI sites was made possible by matching the TRI firm's name and location with listings of new manufacturing plants that were compiled by the Georgia Department of Industry, Trade and Tourism, and by Ohio statistics reported in *Site Selection* magazine, *Recent Locations*, SITE SELECTION, vol. 33-37 (1st Quarter 1988-1992).

²²⁷ These 71 sites are within one mile of 254 block groups, so that four percent of the 6,446 block groups are not censored at zero. A similar percentage was found for Ohio.

²²⁸ The summary statistics for variables in the location model are identical to those reported in the previous section, except that the average of the dependent variable (for non-censored observations) in Georgia was 4,835 pounds of toxic material released annually and in Ohio it was 10,931 pounds.

²²⁹ The necessary condition for finding evidence of discrimination, a positive association between racial composition and exposure, was first examined via correlations. For Georgia, the correlation was -0.02 which was not statistically significant. The examination comparing the average racial composition of the block groups that had zero and nonzero toxic releases resulted in toxic releases in block groups averaged 30.41% versus 28.71 percent people of color. The t statistic of 0.808 indicates that the difference between these means was insignificant. In Ohio, the groups with zero toxic releases averaged 10.62 percent people of color while the groups with toxic releases had 17.82 percent. The t value of 5.50 indicates that these means are statistically different at the one percent level.

²³⁰ The political organization variable for Georgia is significant at the 0.05 level and had a positive coefficient. This indicates that better political organization tends to be associated with more locations of toxic-emitting facilities.

²³¹ This was significant at the 0.01 level. The political organization variable for Ohio was significant at the 0.01 level and was a positive coefficient. Again, this indicates that better political organization tends to be associated with more locations of toxic-emitting facilities.

²³² See *supra* notes 221-224 and accompanying text.

state.²³³ House value was significant for Ohio and the presence of an interstate highway and population density were significant in both states.²³⁴

The analyses of recently-located TRI sites thereby show that, when considering only the three discriminatory factors, race was a statistically significant cause of differential exposure in Ohio but not in Georgia. Thus, the tobit-regression model should be found to present evidence of disparate effect from the siting of manufacturing facilities emitting toxic releases in Ohio.²³⁵ If a specific governmental regulation can be identified as being related to the siting of the manufacturing facilities emitting toxic releases in Ohio, there may be a cause of action under the enumerated Title VI regulation.²³⁶ When industrial location factors were added to the model, there was no statistically significant evidence that communities of color were targeted for TRI sites. Moreover, when comparing the tobit-regression analyses of all TRI sites to the recently-located sites,²³⁷ the results suggest that the relationship between TRI facilities and race may be due to housing market dynamics.

VII. CONCLUSION

In recent years environmental justice issues have gained increasing visibility in both environmental and civil rights circles. This is due to increased concern about the relationship between environmental hazards and health, especially among people of color and low income populations. Past studies on the relationship between race, poverty and environmental conditions suggest varying conclusions concerning the disproportionate location of hazardous facilities and polluting industries in neighborhoods of color. Although some observers have charged that neighborhoods of color have been targeted to host hazardous facilities,²³⁸ other industrial location factors and post-location housing dynamics exist as competing explanations. Knowledge

²³³ The political organization variable retains its significance and its positive sign. *See supra* note 218.

²³⁴ Average house value is one of the six locational factors considered in the industrial-location model. *See supra* note 223.

²³⁵ There exists a significantly adverse discriminatory impact on communities of color.

²³⁶ Of course, the defendant may be able to present some substantial legitimate justification for the challenged practice. It is possible that industrial location factors like those considered in our industrial-location tobit-regression model, provide such a justification. *See supra* notes 118-124 and accompanying text.

²³⁷ This involved the comparison of the results of the tobit-regression model (incorporating the three discriminatory factors) and the tobit-regression industrial-location model (incorporating the three discriminatory factors and the six locational factors) of Part IV with the results of the corresponding models of Part V.

²³⁸ *See, e.g.*, CRJ REPORT, *supra* note 1; INCIDENCE, *supra* note 1; CONFRONTING, *supra* note 2.

of the causal mechanism of disproportionate exposure is vital to formulating effective policy responses.

The research methods applied in the analyses of the Georgia and Ohio data demonstrate the importance of the choice of statistical techniques, and provides evidence for these two states that neighborhoods of color and poor people experience disproportionate exposure to toxic releases. In the tobit-regression model where only three discriminatory variables were examined, race had an important effect separate from income in determining exposure to toxic releases.²³⁹ When six locational variables were added in an expanded tobit-regression industrial-location model, race was not found to be a significant locational factor.²⁴⁰

The more specific analysis of toxic releases from facilities that located between 1987 and 1992 suggests that race may be important in some states in determining whether neighborhoods of color and poor communities are selected for facilities with releases reported on the TRI list.²⁴¹ Whether an individualized situation would enable plaintiffs to show that a given siting decision was based on race remains to be determined.²⁴² The finding of race as a statistically significant cause of discrimination was based on an analysis excluding other plausible locational factors.²⁴³ If a siting decision having a significantly adverse discriminatory impact on people of color can be justified by some other basis, including locational factors, there would not be a violation of a Title VI regulation.²⁴⁴

The findings that neighborhoods of color are associated with greater environmental risks indicate a lack of horizontal equity: the equal treatment of people with similar income. Some of the evidence provided here supports the finding that this inequity exists even after accounting for poverty. American society generally has not accepted horizontal inequity because it is

²³⁹ The overall conclusion from the analyses described on Georgia and Ohio data is that poverty appears to be a robust explanation for patterns of exposure to toxic releases. *See supra* notes 212-220 and accompanying text.

²⁴⁰ *See supra* notes 221-224 and accompanying text.

²⁴¹ The data from Ohio showed race as significant in the regression model that looked at the discriminatory variables of race, poverty and political organization. *See supra* notes 226-237 and accompanying text.

²⁴² Moreover, since the measure of political participation (the voting variable) was associated with higher environmental risks, there seems to be a perception that industrial locations generating toxic releases are positive outcomes due to the jobs and taxes they produce.

²⁴³ As the industrial-location tobit-regression model shows race as not being a significant factor related to siting decisions, some explanation for not using this model may be needed.

²⁴⁴ Of course the defendant would need to establish the justification. *See supra* note 123 and accompanying text.

contrary to the high value that Western political philosophy has placed upon the equality of individuals.

The question of whether American society wishes to address inequities in environmental protection is an important one that underlies the current environmental justice debate. The evidence of this paper suggests that much of the disproportionate exposure of people of color to toxic releases is caused by the increased risks that come with industrial development, which undeniably has a positive side. To the extent that this is generally true, it suggests that more exacting environmental regulation and greater enforcement of regulations will be a more effective means of addressing the problem than specific regulation of industrial location decisions. Workable remedies and implementation strategies, however, remain elusive. Discrimination against people of color continues to present policy makers with formidable challenges, and the achievement of equity in exposure to toxic environmental risks remains an elusive aspiration for a society that endeavors to provide equitable treatment to all individuals.