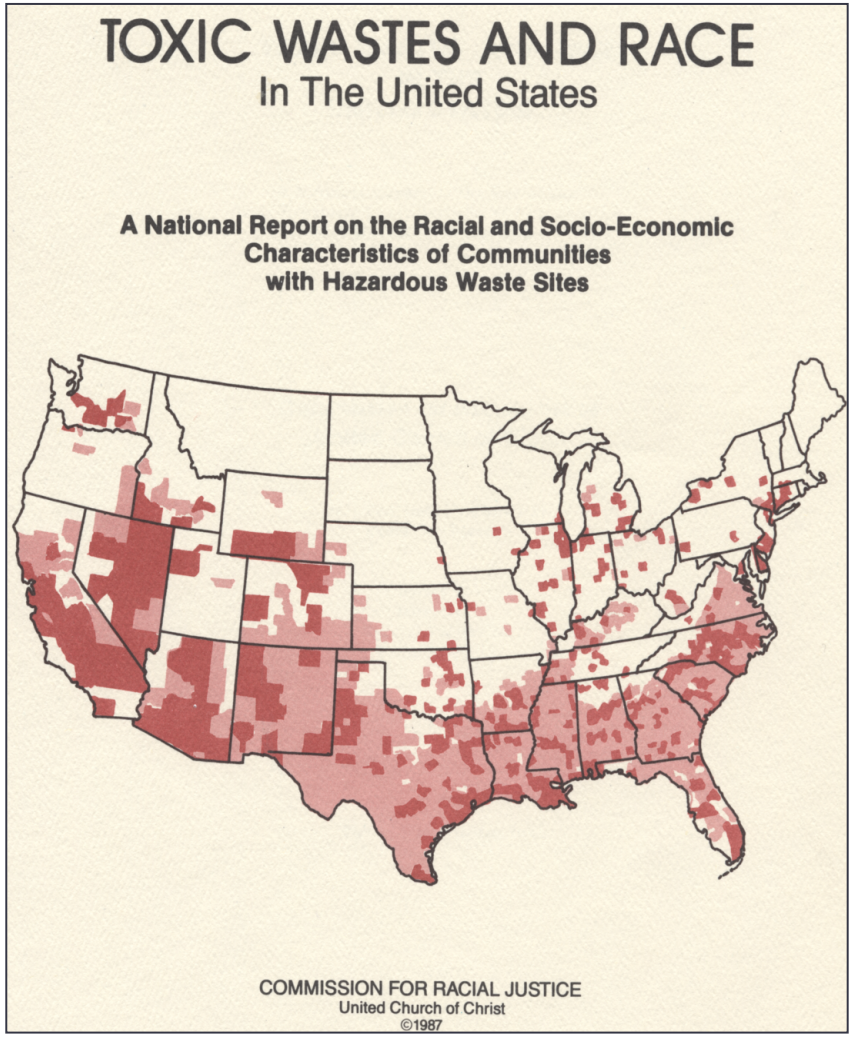
Which Came First, People or Pollution?

Paul Mohai, Ph.D.

School for Environment & Sustainability

University of Michigan, Ann Arbor



National Press Club
Washington, D.C.
March 1987

Environmental Justice "Debates"

1) **Evidence and Methodology**:
   Do environmental disparities exist? How important are they? Perhaps we didn't measure them right?

2) **Race vs. Class**:
   If disparities do exist, are they a natural outcome of the marketplace, not racism? And can the marketplace be a solution?

3) **Which came first, the people or the pollution?**:
   Who's responsible? How do we solve the problem?

4) **Proof of harm**:
   If environmental disparities exist, can you prove the extra pollution causes harm?

5) **Policy**:
   How do we solve the problem?

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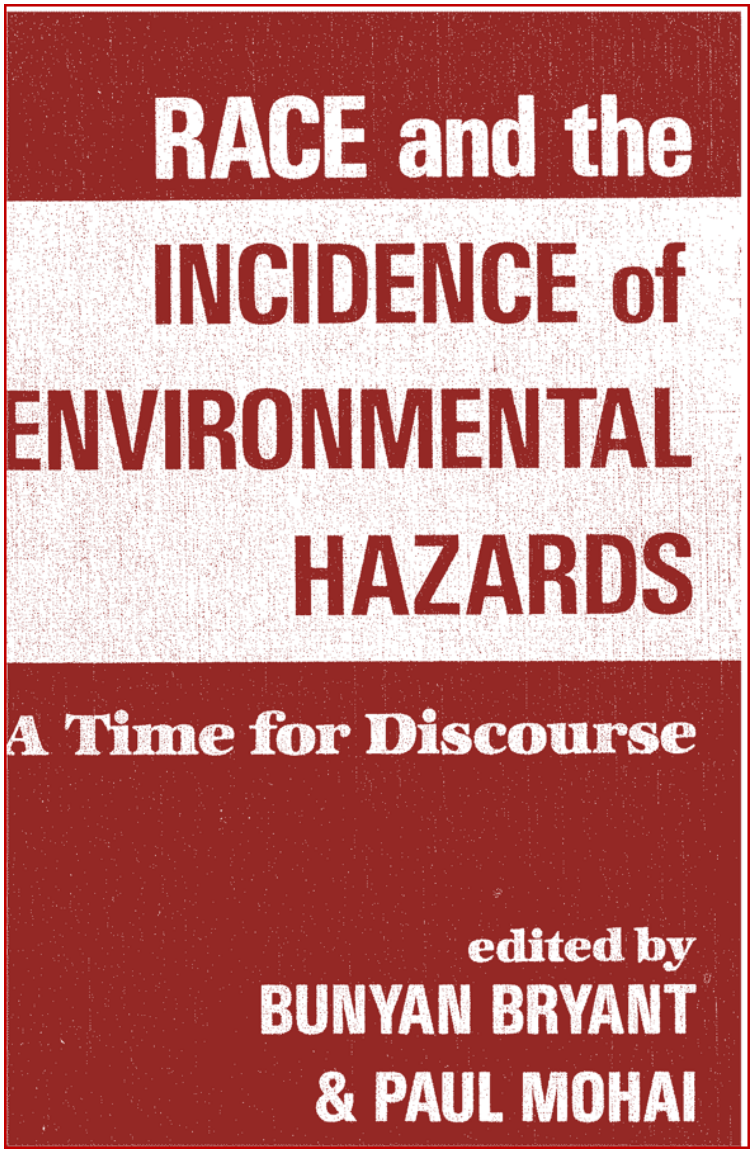
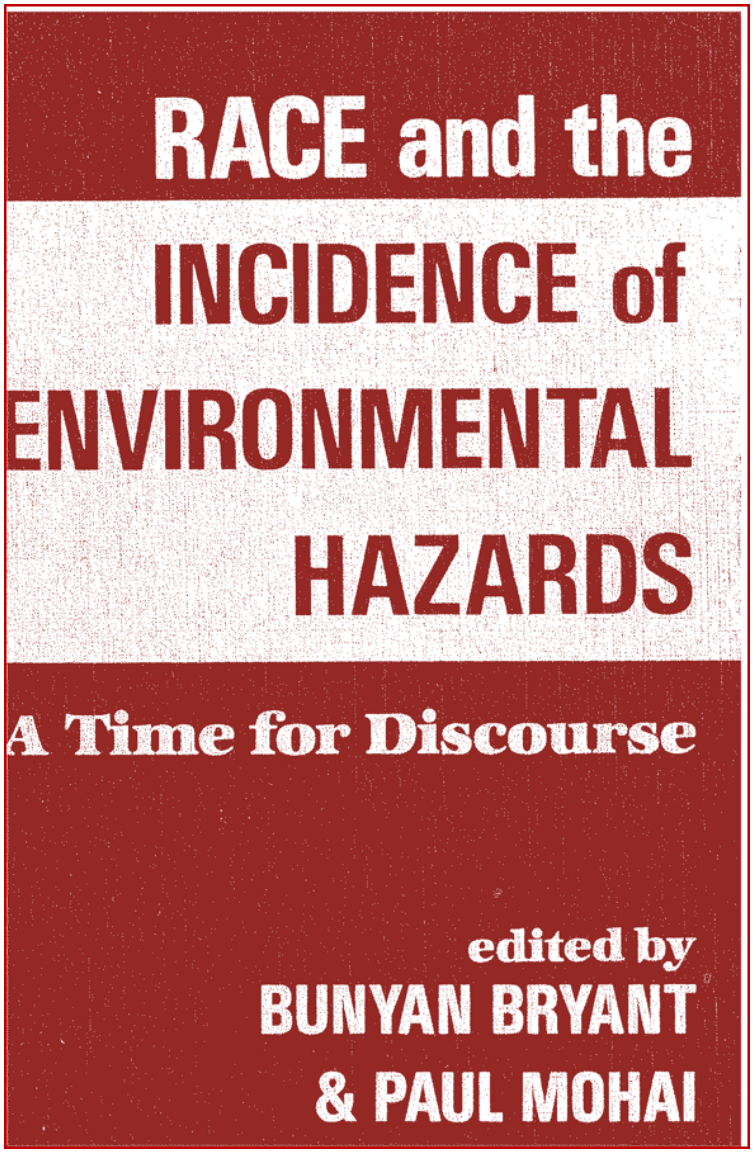
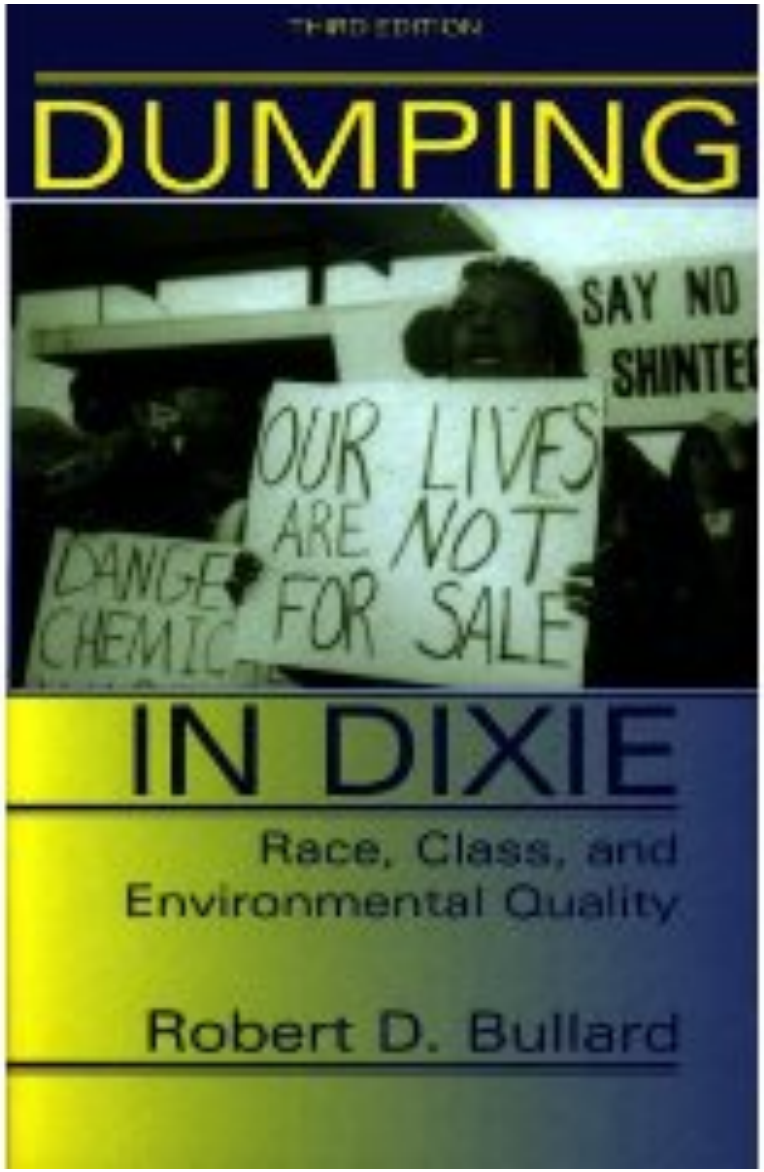


Michigan Conference on Race and the Incidence of Environmental Hazards
January 1990



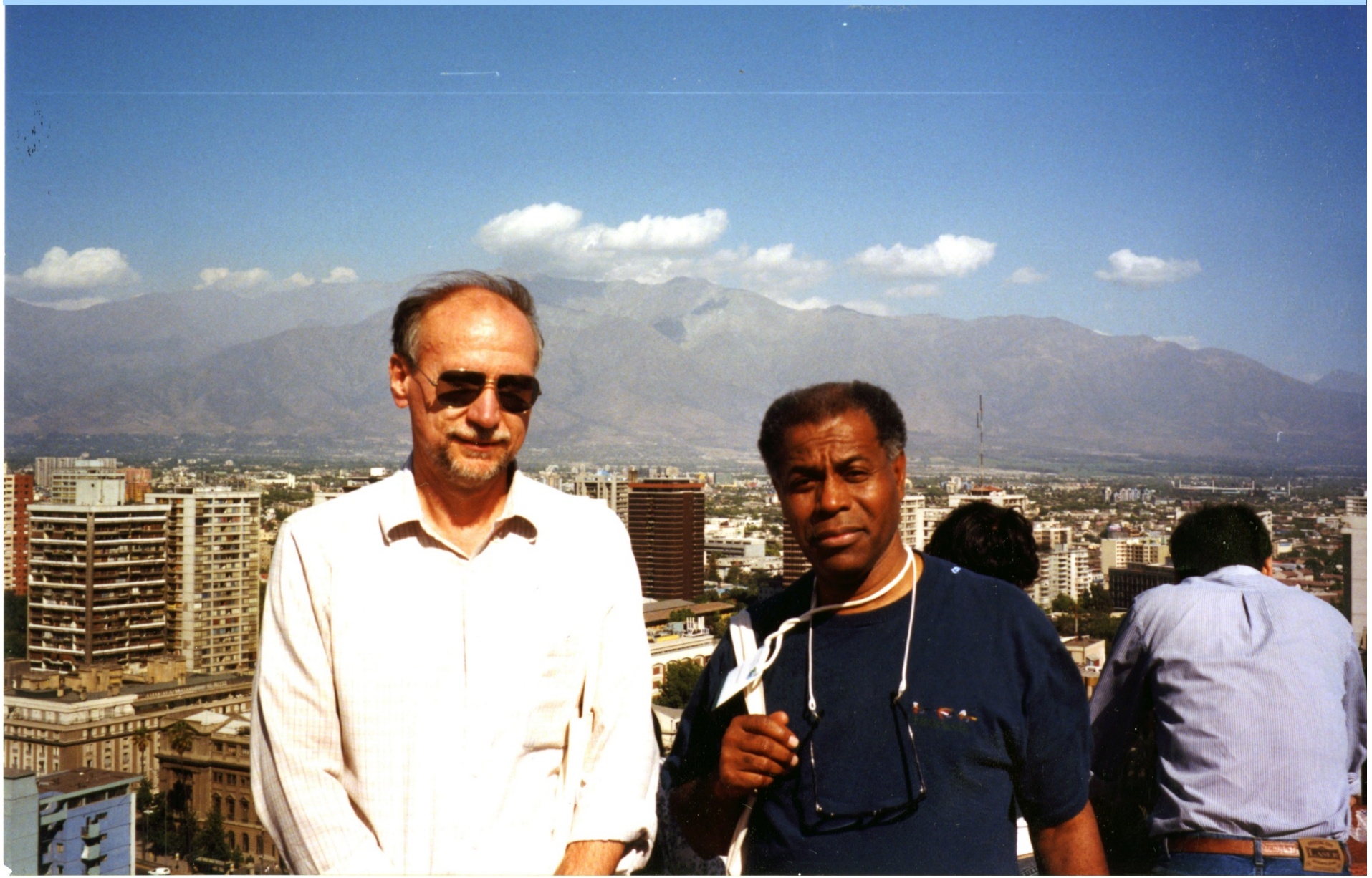
Environmental Racism: Reviewing the Evidence
Paul Mohai and Bunyan Bryant

Study	Hazard
CEQ (1971)	Air pollution
Freeman (1972)	Air pollution
Zupan (1973)	Air pollution
Harrison (1975)	Air pollution
Kruvant (1975)	Air pollution
Burch (1976)	Air pollution
Berry et al. (1977)	Air pollution
	Solid waste
	Noise



3495 Citations
(Google Scholar)

Paul Mohai and Bunyan Bryant at International Society of Ecological Economists Conference – Santiago, Chile – November 1998



Demography, Vol. 31, No. 2, May 1

Environmental Equ
The Demographics

Douglas L. Anderton
Andy B. Anderson
John Michael Oakes
Michael R. Fraser

Virginia Environmental Law Journal

Vol. 14, No. 4, Summer 1995

SYMPOSIUM: ENVIRONMENTAL JUSTICE: THE NEW WAVE

THE DEMOGRAPHICS OF EXAMINING THE IMPACT METHODOLOGIES IN ENV RESEARCH

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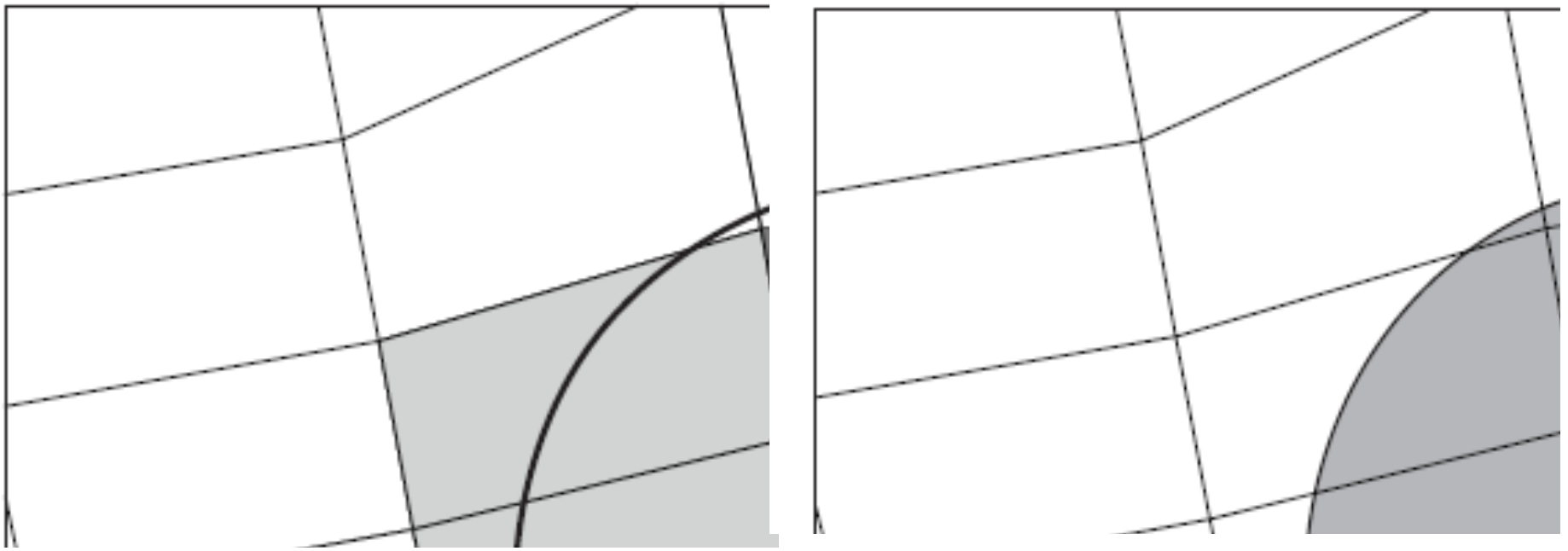
Demography, Volume 43

REASSESSING RACIAL A DISPARITIES IN ENVIRON RESEARCH*

PAUL MOHAI AND ROBIN SAHA

Figure 1. Comparing Neighborhoods Arou

a. 50%-area containment b. Area apportionment a



2006

Sponsored by the
Critical Issues in America Grant through
the College of Letters and Science,
University of California, Santa Barbara

The Wrong Complexion for Protection? Race and Environmental Justice

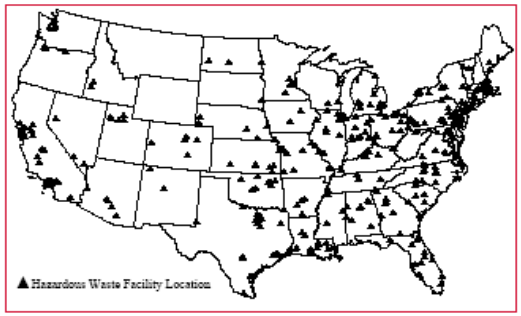
In honor of Earth Day weekend, the Environmental Studies Program, the Multi-Cultural Center and the Departments of Black Studies, Geography and Sociology will present a colloquium on **Monday, April 24**, 3:00–5:00 p.m. at the MultiCultural Center Auditorium, featuring **Robert Bullard** and **Paul Mohai**.

Robert D. Bullard, the Ware Distinguished Professor of Sociology and Director of the Environmental Justice Resource Center at Clark Atlanta University, has sometimes been described as the nation's leading authority on race and the environment. He is the author of a dozen books, including the award-winning *Dumping in Dixie: Race, Class and Environmental Quality* (Westview Press, 2000), which has become a standard text in the environmental justice field. He will be speaking on "The Quest for Environmental Justice: Human Rights and the Politics of Pollution."

Paul Mohai is Professor of Natural Resources and Environment and founder of the Environmental Justice Program at the University of Michigan, Ann Arbor. He helped to create the field of Environmental Justice, and his recent research on racial and income disparities in the distribution of hazardous wastes sites in the U.S., funded by the National Science Foundation (NSF), is seen by many as the most sophisticated scientific research ever done on the topic. He will be speaking on "Which Came First, People or Pollution? How Race and Socioeconomic Status Affect Environmental Justice."

Toxic Wastes and Race at Twenty 1987—2007

A Report Prepared for the United Church of Christ Justice & Witness Ministries



Justice & Witness Ministries:
Rev. M. Linda Jaramillo
Executive Minister

Dr. Carlos J. Correa Bernier
Minister for Environmental Justice

Principal Authors:
Robert D. Bullard, Ph.D.
Paul Mohai, Ph.D.
Robin Saha, Ph.D.
Beverly Wright, Ph.D.

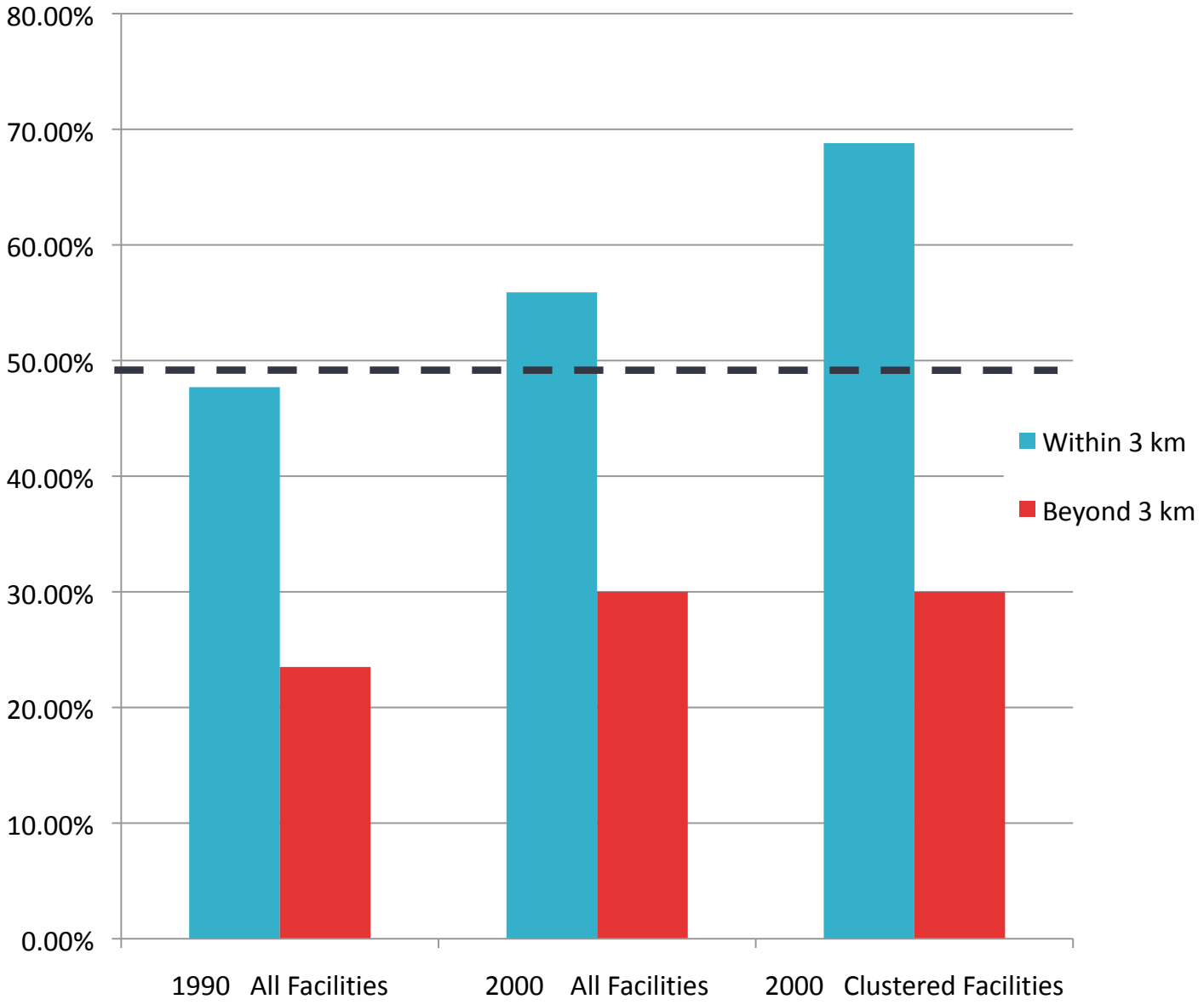
United Church of Christ

UNITED CHURCH OF CHRIST
God is Still Speaking

National Press Club Washington, D.C. March 22, 2007

Comparing Results of Past Studies Using Unit-Hazard Coincedence Method with Results Using Distance-Based Methods

Assessing Racial Disparities in the Distribution of Hazardous Waste Facilities in 1990 and 2000 Using Distance-Based Methods



Senate Subcommittee on Superfund and Environmental Health
"Oversight of the EPA's Environmental Justice Programs"
July 25, 2007

Environmental Justice Debates

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Are present-day disparities the result of:

- A pattern of disproportionately placing hazardous waste facilities and other LULUs in people of color and poor communities?

- Demographic changes after siting?

Environ. Res. Lett.

Environmental

Which came first, people or poll

and post-siting demographic ch

Implications

- Theoretical:
  - What explains present-day racial and socioeconomic disparities in the distribution of hazardous waste facilities and other LULUs?
- Policy:
  - How much effort should be given to managing the siting process vs. other actions to avoid disparities, e.g, fully informing buyers about risks and eliminating discrimination in the housing market?
- Political:
  - Who is responsible for the disparities and what role should they play in reducing them?

Explanations: Disparate Siting

Industry seeks to minimize costs of doing business and looks to see where land values are low and where sources of raw materials and industrial labor pools are available. These are where people of color and the poor live.

Industry anticipates local opposition and seeks the “path of least resistance”. These are not where affluent whites live.

Institutionalized discrimination, e.g., past discriminatory zoning may lead to disparate siting of facilities, even if industry is not intending to discriminate.

Explanations: Post-Siting Demographic Change

Negative effects of LULUs cause affluent whites to move out. People of color and the poor are left behind.

Additional people of color and the poor move in because housing becomes more affordable.

Methodology

- Hazardous waste TSDFs are sorted based on how close in time they were sited to each of the following census years: 1970, 1980, and 1990.
- 3 km circular neighborhoods are constructed around facility locations using areal apportionment.
- Demographic disparities are examined within and beyond 3 km of facility locations at the time the facilities were sited.
- Demographic changes are tracked before and after facility siting up to the 2000 census.

Figure 1 - White and Minority Percentages within and beyond 3.0 km of 81 TSDFs Sited from 1966 to 1975

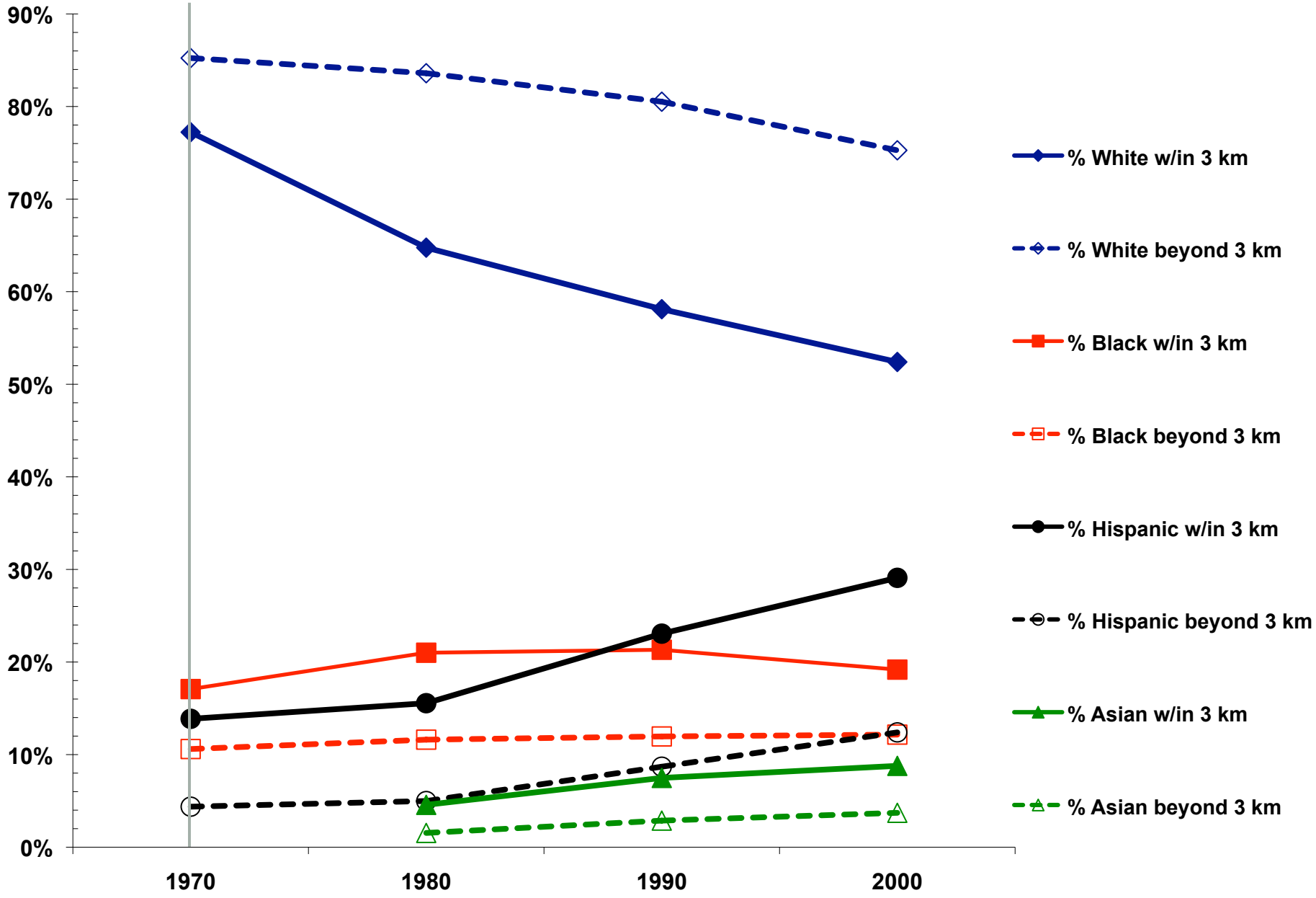

Figure 2 - White and Minority Percentages within and beyond 3.0 km of 156 TSDFs Sited from 1976 to 1985

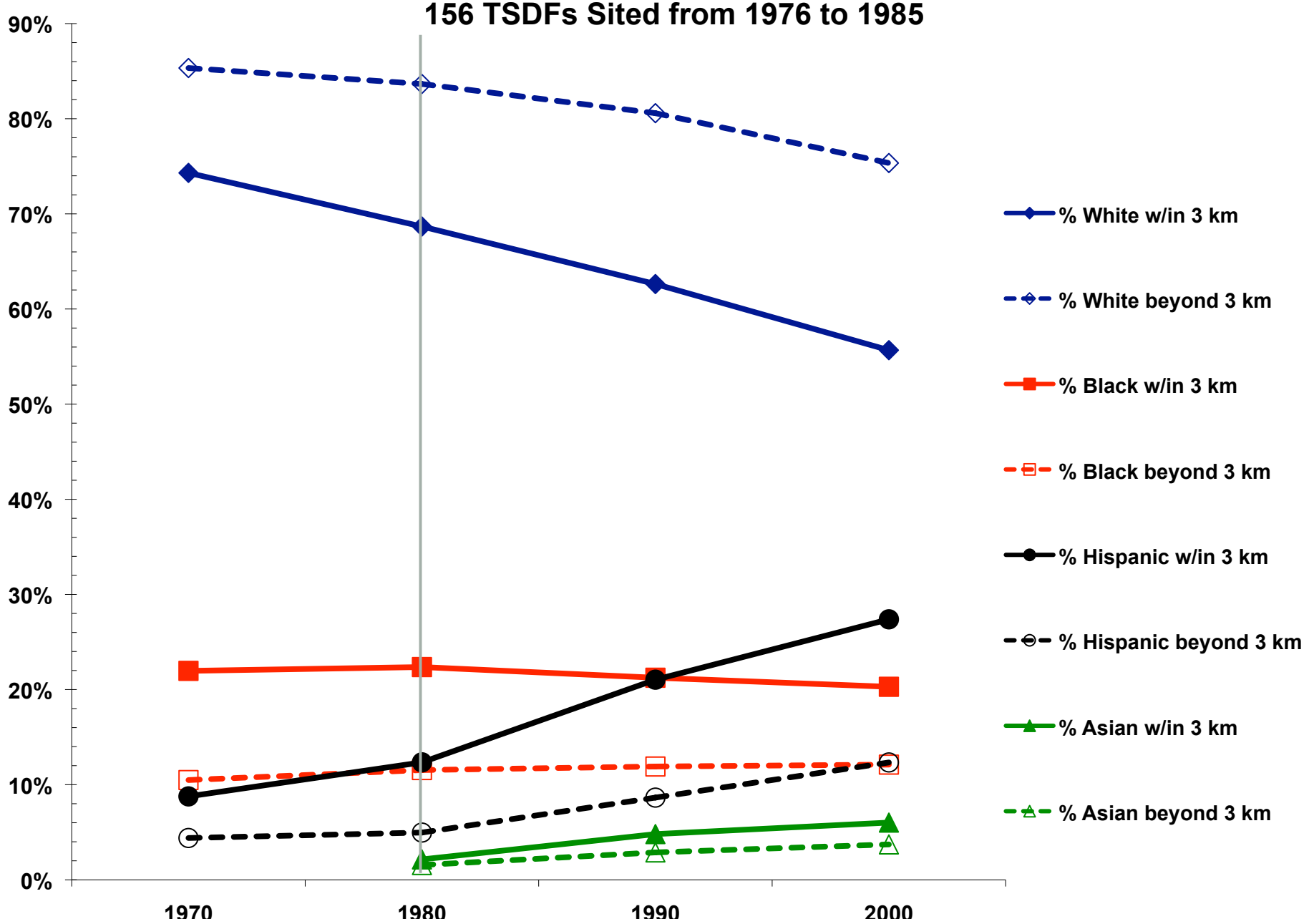

Figure 3 - White and Minority Percentages within and beyond 3.0 km of 84 TSDFs Sited from 1986 to 1995

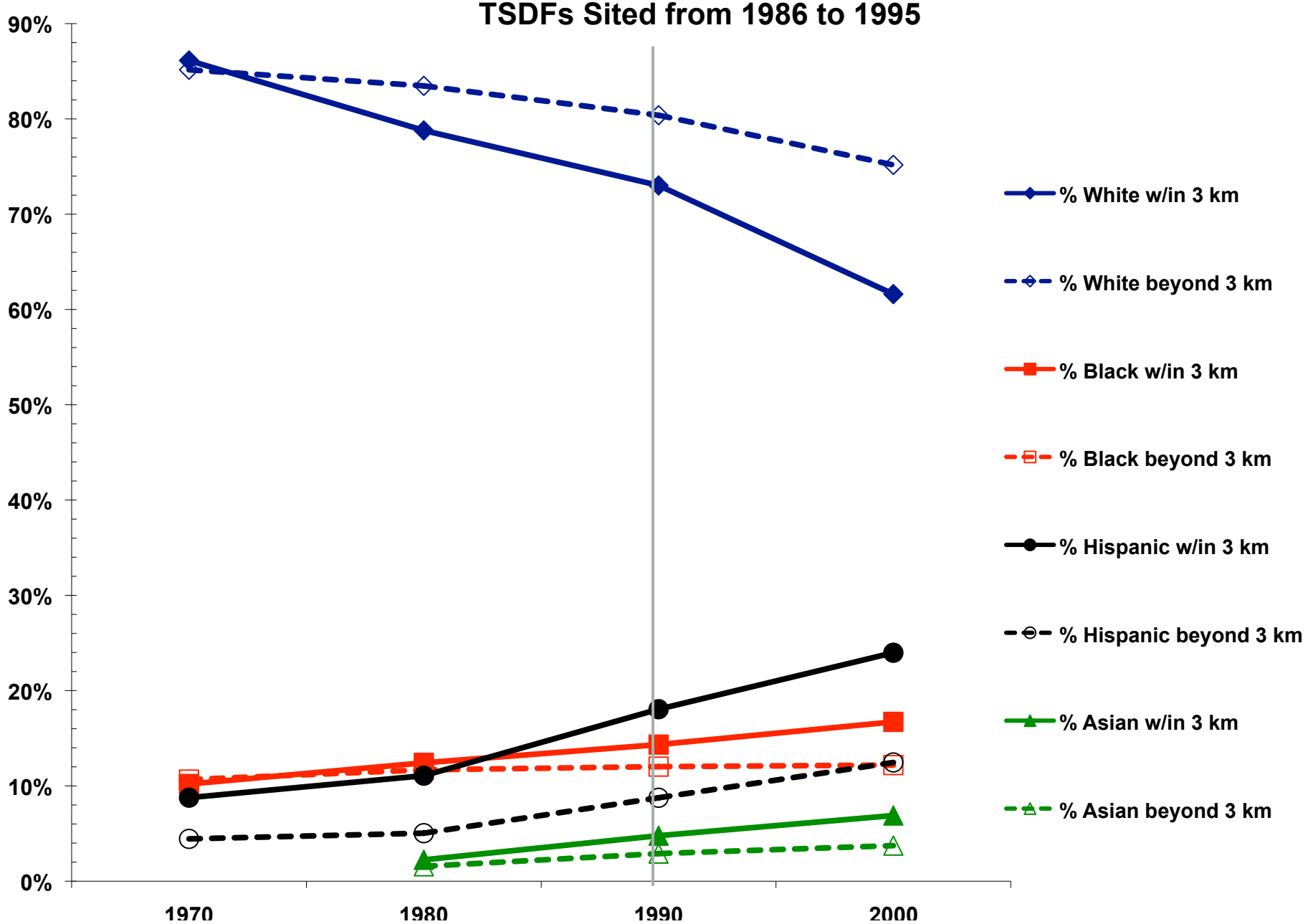

Figure 4 - White and Minority Population Totals within 3.0 km of 81 TSDFs Sited from 1966 to 1975

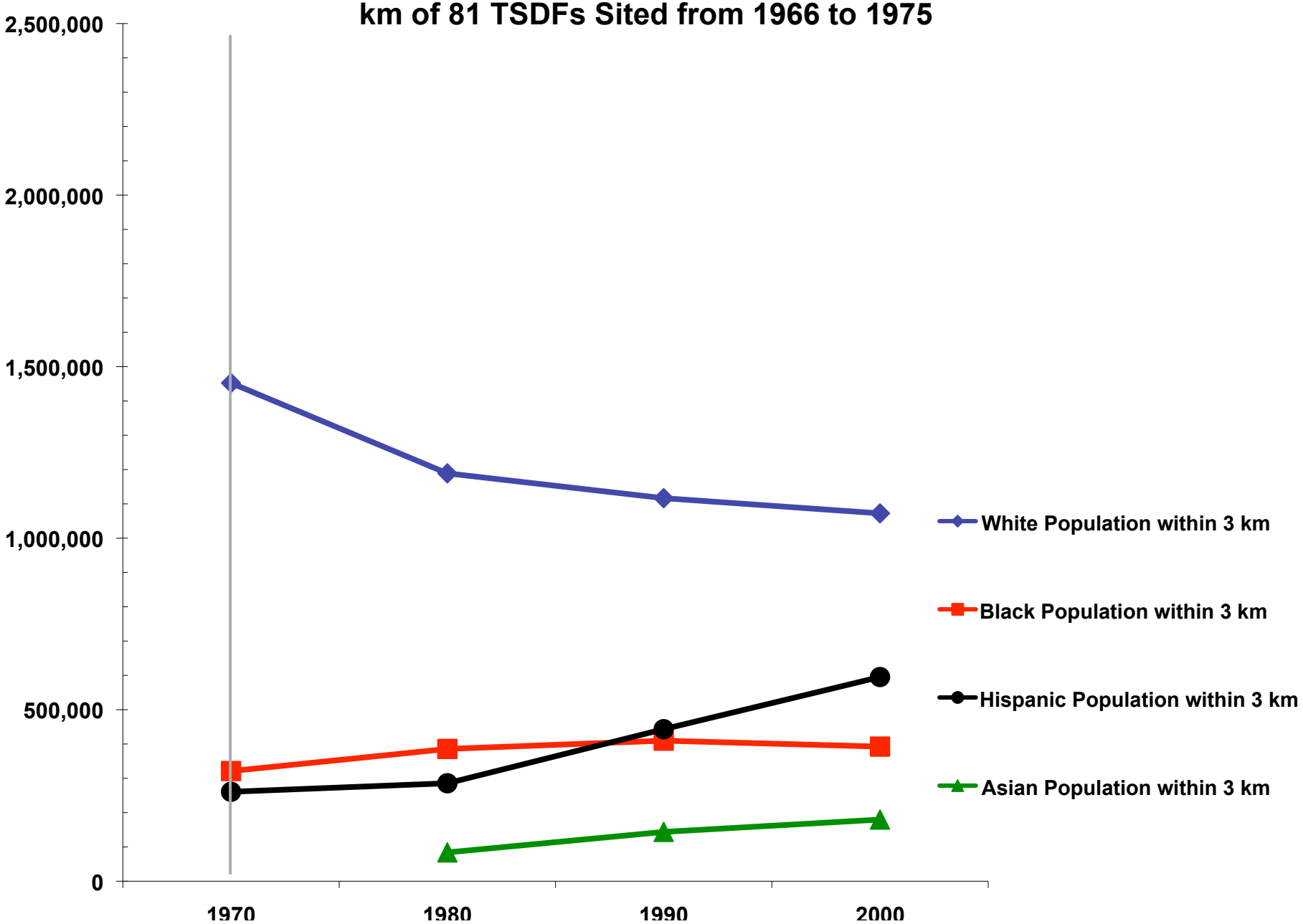

Figure 5 - White and Minority Population Totals within 3.0 km of 156 TSDFs Sited from 1976 to 1985

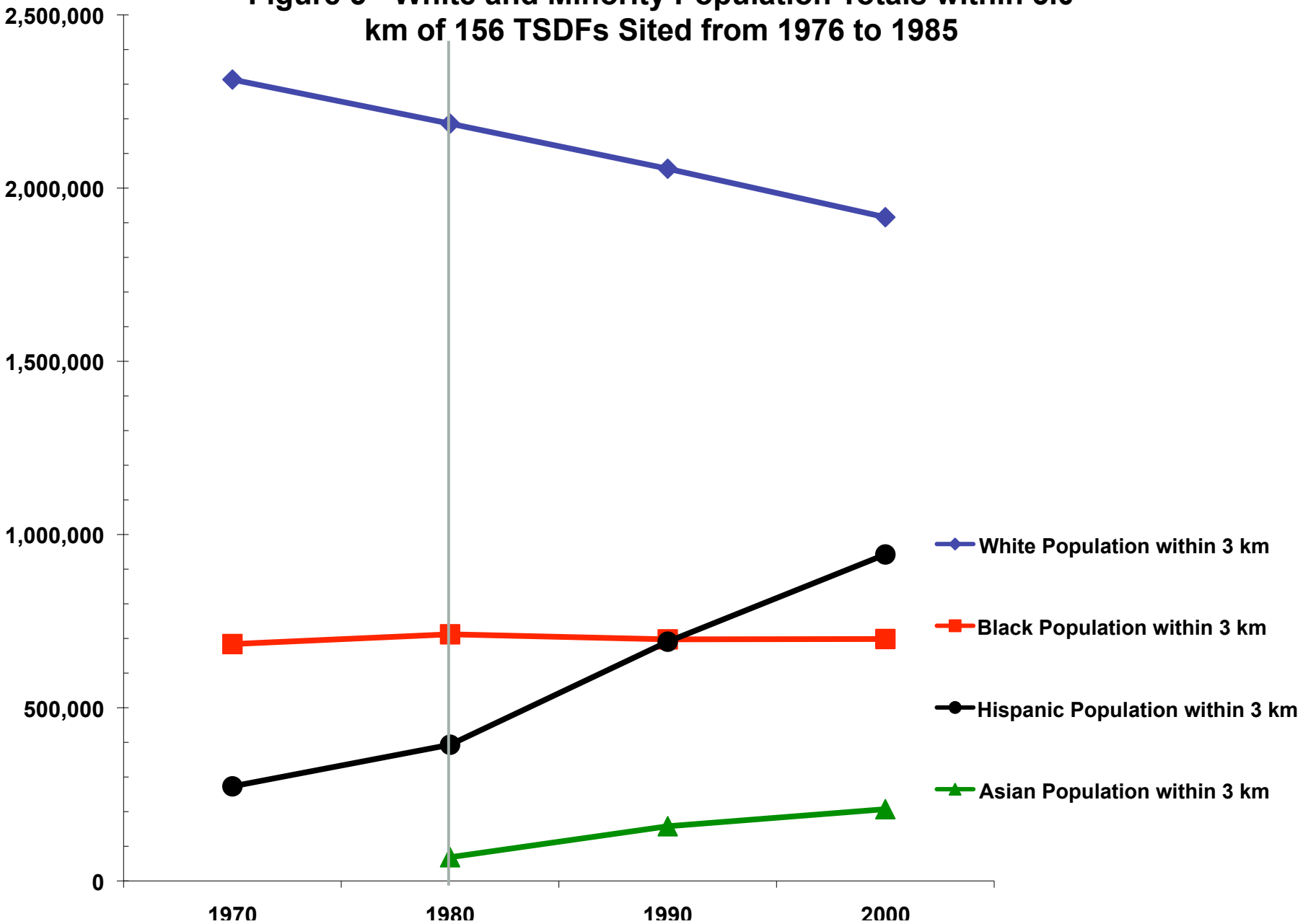

Figure 6 - White and Minority Population Totals within 3.0 km of 84 TSDFs Sited from 1986 and 1995

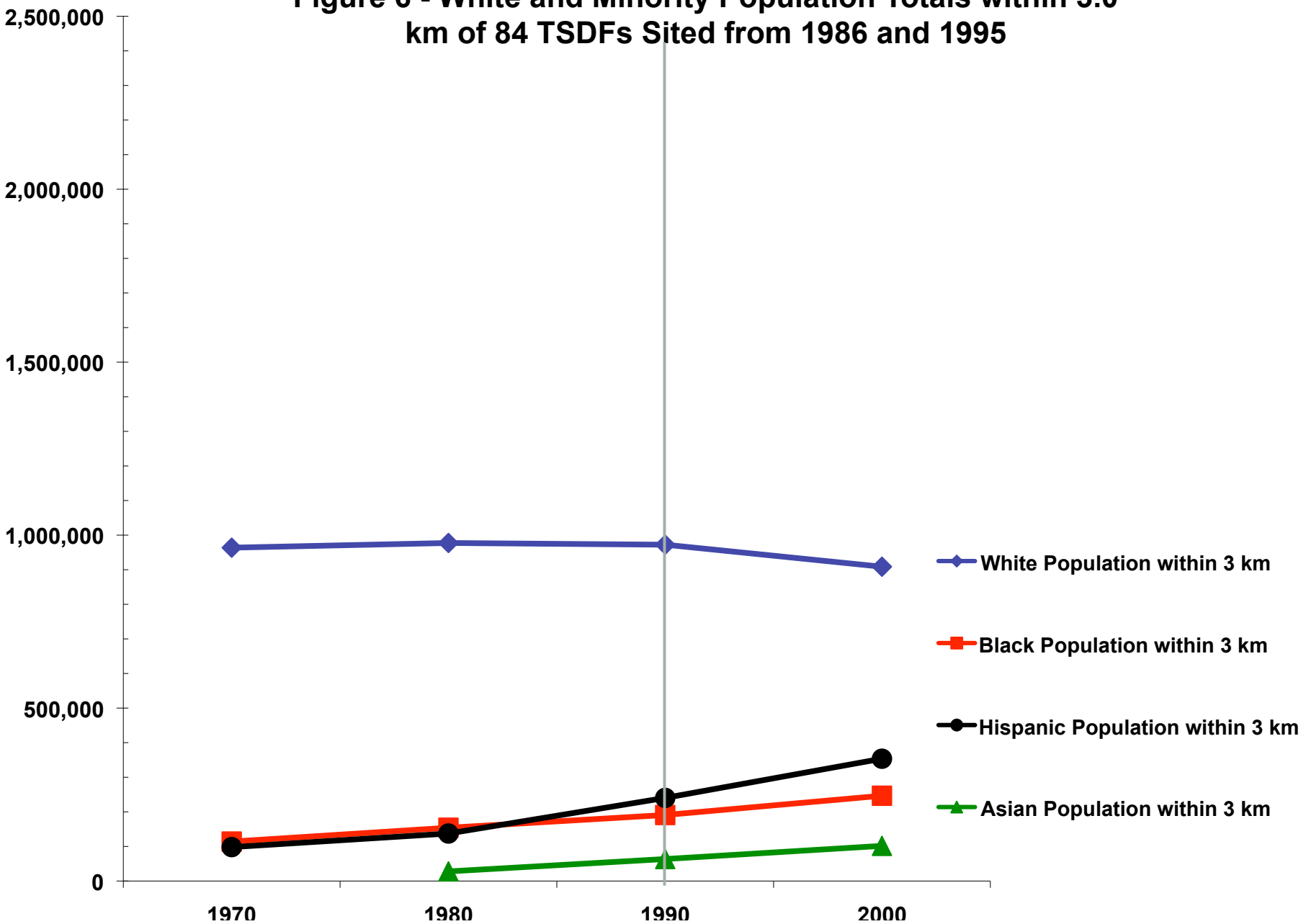

Table 1 – Logistic regression results applying 50% areal containment method to tracts within 3 km of TSDF

Variables	TSDFs Sited 1966-1970 1970 Census				TSDFs Sited 1971-1975 1970 Census			
	Model 1		Model 2		Model 1		Model 2	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
% black	.659	.007	-.958	.048	1.113	.000	.754	.001
% Hispanic	3.677	.000	1.487	.001	1.317	.001	.298	.514
%Asian and Pac. Isl.								
Mean property value ($1,000s)			.017	.361			.000	.997
% with college degree			-8.680	.037			-5.979	.034
% in exec., mana. & prof. occup.			-7.087	.063			-2.521	.349
% in prec. prod., trans., & lab. occ.			-.130	.913			2.668	.002
Constant	-5.532	.000	-4.410	.000	-5.358	.000	-5.261	.000
-2 Log Likelihood	2496.03		1239.28		2525.19		2181.87	
Model X^2	182.99	.000	88.82	.000	32.42	.000	146.82	.000
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	Model 1		Model 2		Model 1		Model 2	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
% black	.997	.000	0.725	0.000	2.244	.000	1.894	0.000
% Hispanic	2.055	.000	1.649	0.000	2.666	.000	2.160	0.000
%Asian and Pac. Isl.	2.116	.000	3.064	0.000	-2.051	.236	2.060	0.107
Mean property value ($1,000s)			-0.003	0.255			-0.021	0.000
% with college degree			-1.667	0.165			2.376	0.077
% in exec., mana. & prof. occup.			1.903	0.152			-0.823	0.585
% in prec. prod., trans., & lab. occ.			2.407	0.000			2.987	0.000
Constant	-5.044	.000	-5.795	0.000	-5.564	.000	-5.809	0.000
-2 Log Likelihood	4798.77		4508.96		3963.80		3587.26	
Model X^2	93.76	000	133.36	0.000	272.32	.000	376.60	0.000
Variables	TSDFs Sited 1986-1990 1990 Census				TSDFs Sited 1991-1995 1990 Census			
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	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
% black	.636	.007	0.292	0.250	.292	.559	-0.261	0.621
% Hispanic	1.749	.000	1.667	0.000	-3.991	.044	-3.295	0.072
%Asian and Pac. Isl.	2.468	.000	3.554	0.000	2.383	.035	3.721	0.002
Mean property value ($1,000s)			-0.004	0.001			-0.009	0.011
% with college degree			0.366	0.698			1.014	0.507
% in exec., mana. & prof. occup.			-2.924	0.018			-4.278	0.041
% in prec. prod., trans., & lab. occ.			-1.661	0.044			-4.074	0.016
Constant	-5.815	.000	-4.327	0.000	-6.884	.000	-4.211	0.000
-2 Log Likelihood	3268.64		3165.68		883.98		862.07	
Model X^2	57.05	.000	98.39	0.000	9.16	.027	29.50	0.000

Logistic Regression Results

- Applying 50% areal containment method to tracts within 3km of TSDF

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Summary

Present-day demographic disparities in the distribution of hazardous waste TSDFs appear to be largely the result of disparate siting

- Facilities tend to be sited where racial and ethnic minorities and the poor are concentrated **at the time of siting.**
- In addition, facilities tend to be sited where the numbers of racial and ethic minorities and the poor are increasing and whites are leaving. Although demographic disparities increase after siting, the changes appear to occur **before siting**.
- The above patterns tend to support "**path of least resistance**" arguments rather than arguments that facilities trigger white "move-out" and minority "move-in".

Paths of Least Resistance

- Why people of color and poor communities?
  - Constrained resources, lack of representation where and when siting decisions get made, lack of political clout
- Why communities that are undergoing change (i.e., whites moving out, people of color moving in)?
  - Disrupted social bonds/networks, weakened organizations, loss of community leaders, i.e., reduced “social capital”

Thank You!