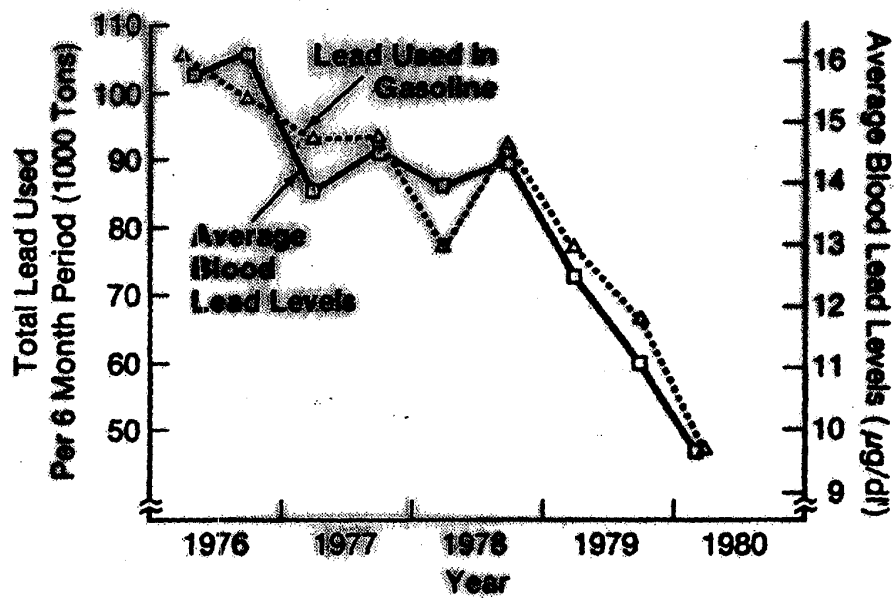


Conclusions

- **National gasoline lead use is not a valid index of exposure at NHANES III sites**
- **Over 50% of the apparent blood lead decrease is attributable to demographics**
- **5 to 10% of the apparent blood lead decrease is attributable to gasoline lead exposure**
- **The blood lead decrease of 0.3 to 0.6 $\mu\text{g}/\text{dl}$ attributable to gasoline lead is consistent with the observed air lead decrease**
- **A significant blood lead time trend remains after accounting for demographics and gasoline lead exposure**

TEH 0532601

Gasoline Lead and NHANES II Blood Lead Levels (Feb. 1976 — Feb. 1980)



TEH 0532602

DUP050033870

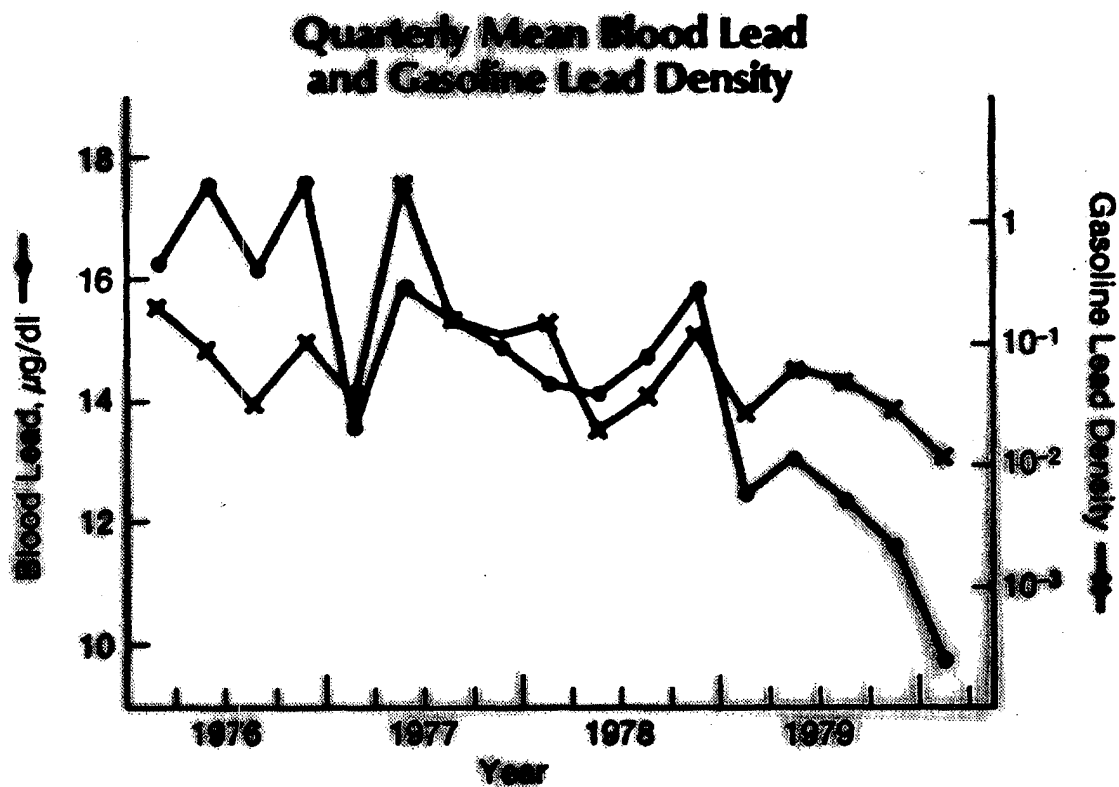
Typical Model Results*

Effects Removed	Blood Lead, $\mu\text{g/dl}$		
	Remaining Four Year Decrease	Attributable to Gasoline Lead	R^2_A
None	5.80		
DEM	1.62		0.53
DEM, GPb	1.27	0.35	0.59
DEM, GPb, GPb ₃₀	1.21	0.41	0.59
DEM, GPb, GPb ₃₀ , GPb ₄₅	1.19	0.43	0.58
DEM, log GPb	1.48	0.14	0.57
DEM, log GPb, log GPb ₃₀	1.10	0.52	0.60
DEM, log GPb, log GPb ₃₀ , log GPb ₄₅	1.09	0.53	0.59
GPb	5.17		0.20
log GPb	4.93		0.21

*Dependent variable BPb, residuals weighted by 1/SZ, no BPb weights.

TEH 0532603

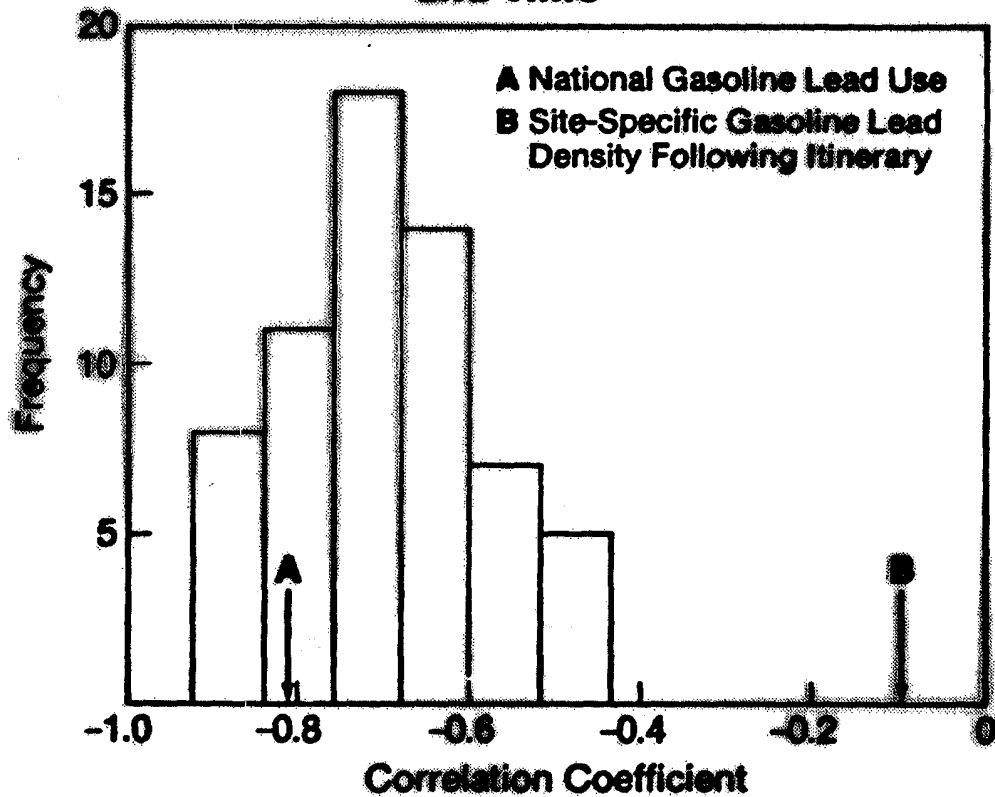
DUP050033871



TEH 0532604

DUP050033872

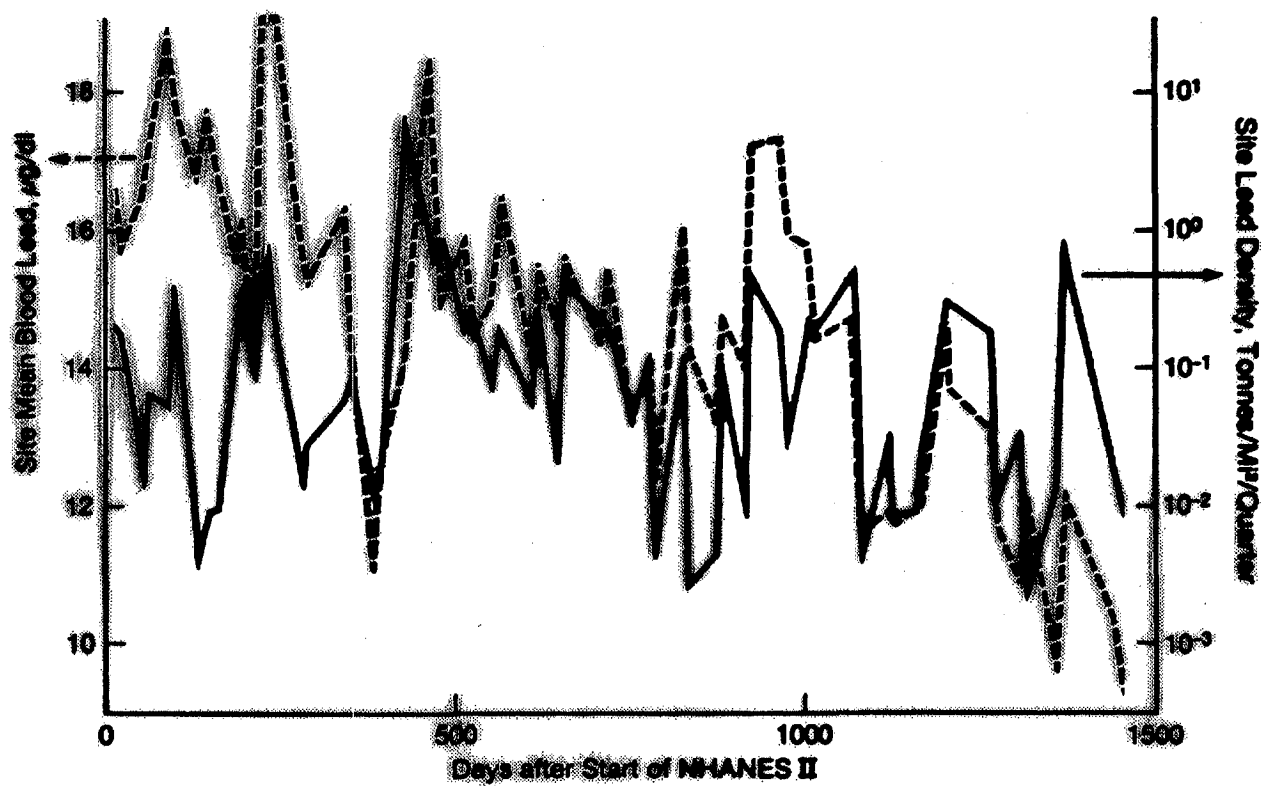
Correlation of Gasoline Lead Density and Time



TEH 0532605

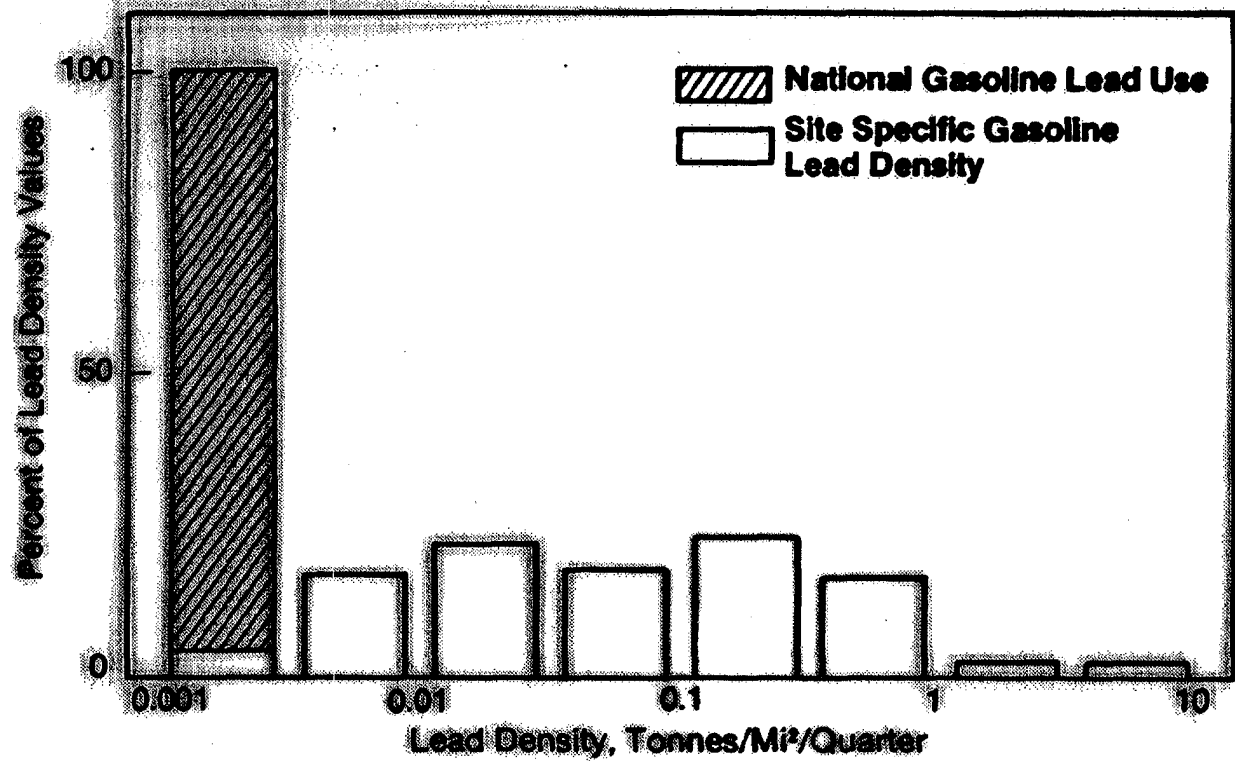
DUP050033873

Blood Lead and Gasoline Lead at NHANES II Sites



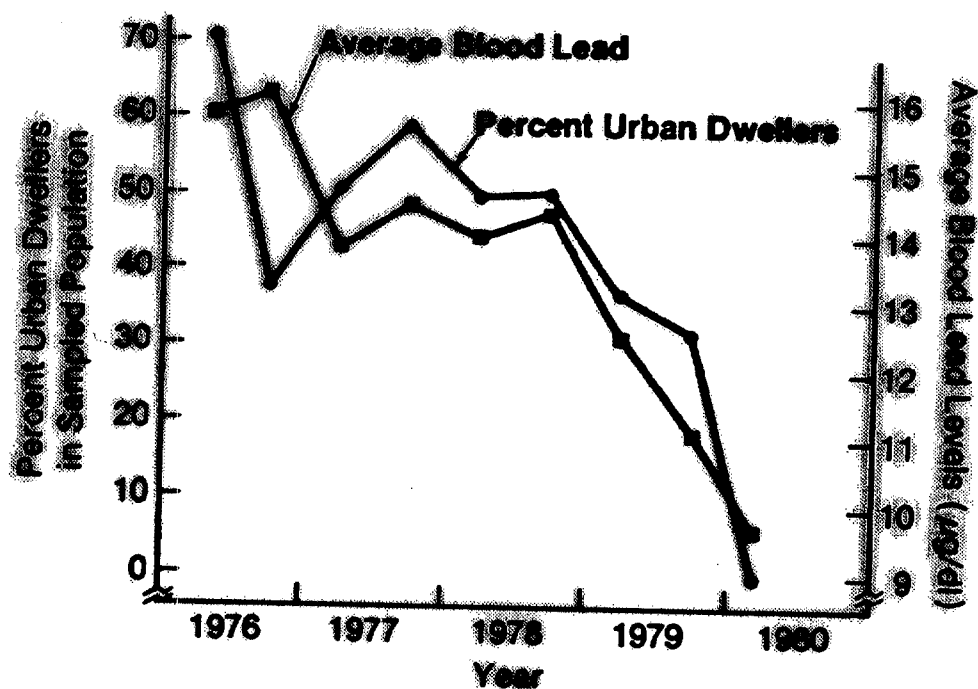
TEH 0532606

Distribution of Gasoline Lead Density for NHANES II Sites



TEH 0532607

**Urban Dwellers Sampled and
NHANES III Blood Lead Levels
(Feb. 1976 — Feb. 1980)**



TEH 0532608

NHANES II

- **Assessment of National Health Status**
- **February 1976 to February 1980**
- **64 Sampling Sites**
- **6 Months to 74 Years of Age**
- **27,801 Persons Selected — 20,322 Examined**
- **9,936 Venous Blood Lead Levels Determined**
- **Not Designed for Chronological Trend Analysis**
- **Apparent 37 Percent Reduction in Blood Lead**

TEH 0532609

DUP050033877

Steps in Blood Lead Trend Analysis

**Within-Site
Analysis**

**Adjust for Differing Characteristics
of Individual Subjects**

**Between-Site
Analysis**

**Further Adjust for Differing Site
Characteristics — With and Without
Gasoline Lead**

**Residual Time
Analysis**

Quantify Unexplained Time Trend

**Gasoline Lead
Contribution
Analysis**

**Compare Unexplained Time Trend
With and Without Gasoline Lead
Exposure**

TEH 0532610

Analyses for Residual Time Trend

<u>Factor</u>	<u>Options</u>
BPb and ln BPb	2
P, R, I and 26 combinations of current and lagged site specific gasoline lead density and their logarithms	27
With and without BPb weighting factors	2
Residuals weighted according to $1/S^2$ and N	2

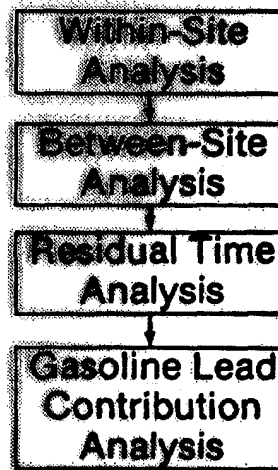
Number of models = $2 \times 27 \times 2 \times 2 = 216$

Consistent results regardless of BPb weights, residual weighting, and BPb or ln BPb

TEH 0532611

DUP050033879

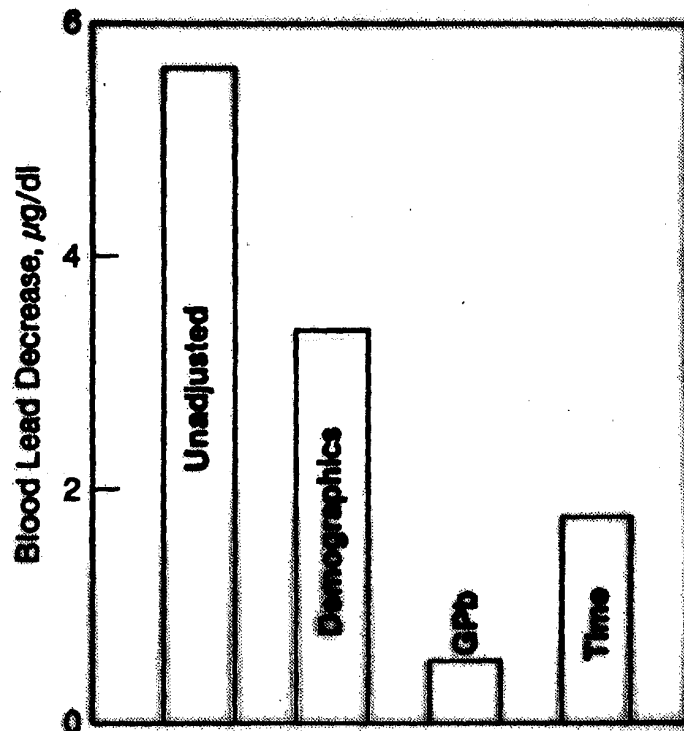
Steps in Blood Lead Trend Analysis



TEH 0532612

DUP050033880

**Contributions to
Blood Lead Decrease
1976-80**



TEH 0532613

DUP050033881

Significance of National Gasoline Lead and Site Specific Lead Density

Gasoline Lead Exposure Variable	Significance Level*	
	Lead Exposure Variable	Time
National	0.8850	≤ 0.0001
Site Density	0.0022	≤ 0.0001
Log (Site Density)	0.0019	≤ 0.0001

* All models included the full set of 20 demographic terms.

TEH 0532614

DUP050033882

Identifiable Factors Potentially Influencing Blood Lead Trend

Exposure

- Air Lead from Gasoline
- Food and Beverages
- Water
- Paint
- Dust

Study Design

- Caravan Itinerary
- Personal Variables
- Residence Characteristics

Study Execution

- Laboratory Analysis
- Sample Handling

TEH 0532615

DUP050033883