Attachment #1

The relationship between EPA air lead levels and population density

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Ethyl corporation used population density (linearly interpolated from 1970 and 1980 estimates) to represent air lead levels in their regression model. The question of whether air lead levels measured by EPA and population density are related can be analyzed from EPA air lead data and Bureau of Census population data for cities across the U.S.

Bureau of Census population data was collected in 1980. EPA also has air lead measurements summarized as quarterly averages during 1980 for many U.S. cities (National Aerometric Data Bank, EPA). Some cities have multiple sites of air lead measurement while others have only one. The 1981 Statistical Abstract (Bureau of Census) gives population data on 63 cities for which EPA also has air lead measurements for at least two quarters of 1980. The 1980 population density versus the 1980 quarterly average EPA air lead level for each city is plotted in Figure 1. Regression of air lead on population density (Table 1) shows that population density can account for less than 5 percent of the variation in the air lead levels. Thus, population density is an inadequate variable to represent EPA air lead levels.

AIR LEAD LEVELS VS. POPULATION DENSITY

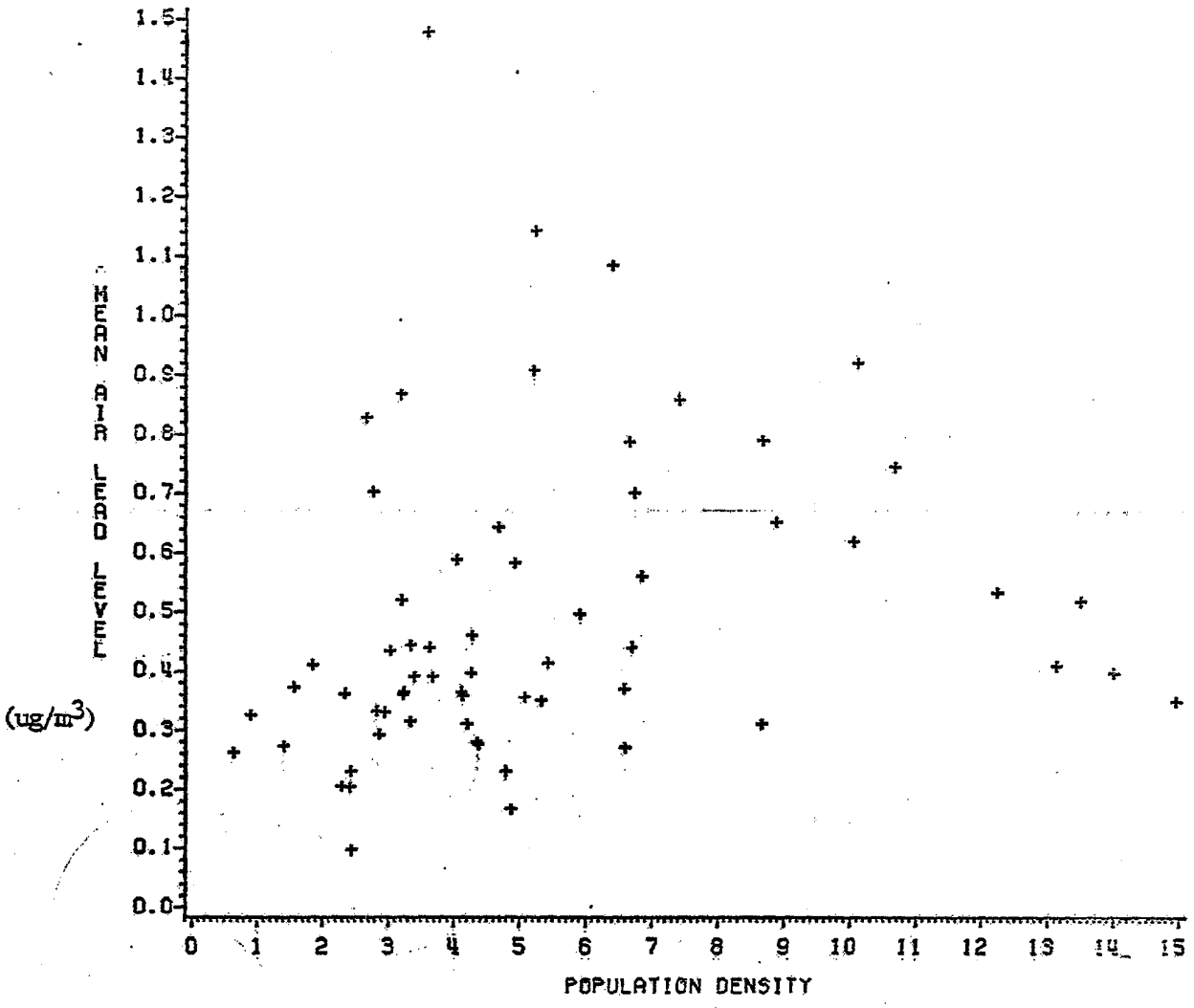

FIGURE 1

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Table 1

Regression of the 1980 quarterly average EPA air lead levels vs. 1980 population density for 63 U.S. cities

DEP VARIABLE: MEAN MEAN AIR LEAD LEVEL

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	1	0.190054	0.190054	2.917	0.0927
ERROR	61	3.973732	0.065143		
C TOTAL	62	4.163785			
ROOT MSE		0.255232	R-SQUARE	0.0456	
DEP MEAN		0.489400	ADJ R-SQ	0.0300	
C.V.		52.15197			

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR H0: PARAMETER=0	PROB > |T|
INTERCEP	1	0.401095	0.060883	6.588	0.0001
DENSITY	1	0.016694	0.009773755	1.708	0.0927