Supplementary Information For

Half of US Population Exposed to Adverse Lead Levels in Early Childhood

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Supplementary text

The Dataset1 file is the result of our demographic analysis. It started with the proportion of young children with various blood lead levels from 1940-2015 and performed a demographic analysis to give estimates for the entire population from 2015-2100. It provides the estimated proportion of the population exposed to various blood-lead levels by cohort and year. This data can be used by other researchers as cohort specific estimates of lead exposure in early life. Dataset2 provides the R code used to create Dataset1 as well as Figure 2 in the manuscript.

Table S1. NHANES ample Sizes (1976-2016)

NHANES YEARS	Sample Size (N = 11,616)
1976	453
1977	425
1978	368
1979	409
1980	46
1988-1991	1,794
1992-1994	1,944
1999-2000	604
2001-2002	747
2003-2004	749
2005-2006	801
2007-2008	675
2009-2010	701
2011-2012	586
2013-2014	664
2015-2016	650

Table S2. Blood Lead Levels as a Function of Leaded-Gasoline Consumption

Blood Lead Level Categories (µg/dL)	Equation	R^2
0-4.9	$BLL_{year} = -7.94 \times 10^{-6}(lead_{year}) + 1.77 \times 10^{-11}(lead_{year})^2 + .87$	0.93
5-9.9	$BLL_{year} = 4.15 \times 10^{-6}(lead_{year}) + 1.46 \times 10^{-11}(lead_{year})^2 - 1.66 \times 10^{-16}(lead_{year})^3 + .13$	0.73
10-14.9	$BLL_{year} = -1.78 \times 10^{-6}(lead_{year}) + 4.46 \times 10^{-11}(lead_{year})^2 - 1.43 \times 10^{-16}(lead_{year})^3 + .07$	0.90
15-19.9	$BLL_{year} = 6.00 \times 10^{-6}(lead_{year}) - 5.13 \times 10^{-12}(lead_{year})^2 + 5.27 \times 10^{-17}(lead_{year})^3 + .02$	0.97
20-24.9	$BLL_{year} = 6.94 \times 10^{-7}(lead_{year}) - 1.08 \times 10^{-11}(lead_{year})^2 + 5.33 \times 10^{-17}(lead_{year})^3 + .00$	0.85
25-29.9	$BLL_{year} = -3.47 \times 10^{-9}(lead_{year}) + 1.43 \times 10^{-12}(lead_{year})^2 + 1.28 \times 10^{-17}(lead_{year})^3 + .00$	0.75
30+	$BLL_{year} = 6.15 \times 10^{-8}(lead_{year}) - 1.99 \times 10^{-12}(lead_{year})^2 + 1.33 \times 10^{-17}(lead_{year})^3 + .00$	0.79

Table S3. Numbers used to Calculate IQ Loss From Gould [1,a]

BLL (µg/dL)	IQ point point loss per 1 µg/dL
2-10	0.513
10-20	0.19
>20	0.11

[a] Data from Lanphear et al.[2] assume uniform decreases within BLL groups.
For example, among those exposed to 10-15 µg/dL of blood lead we calculated IQ lost as 7.5 X (.513)+5 X(.19)= 4.8

Figure S1. Blood Lead Levels in Early Life after Treating 1976-1980 as the same Time Period

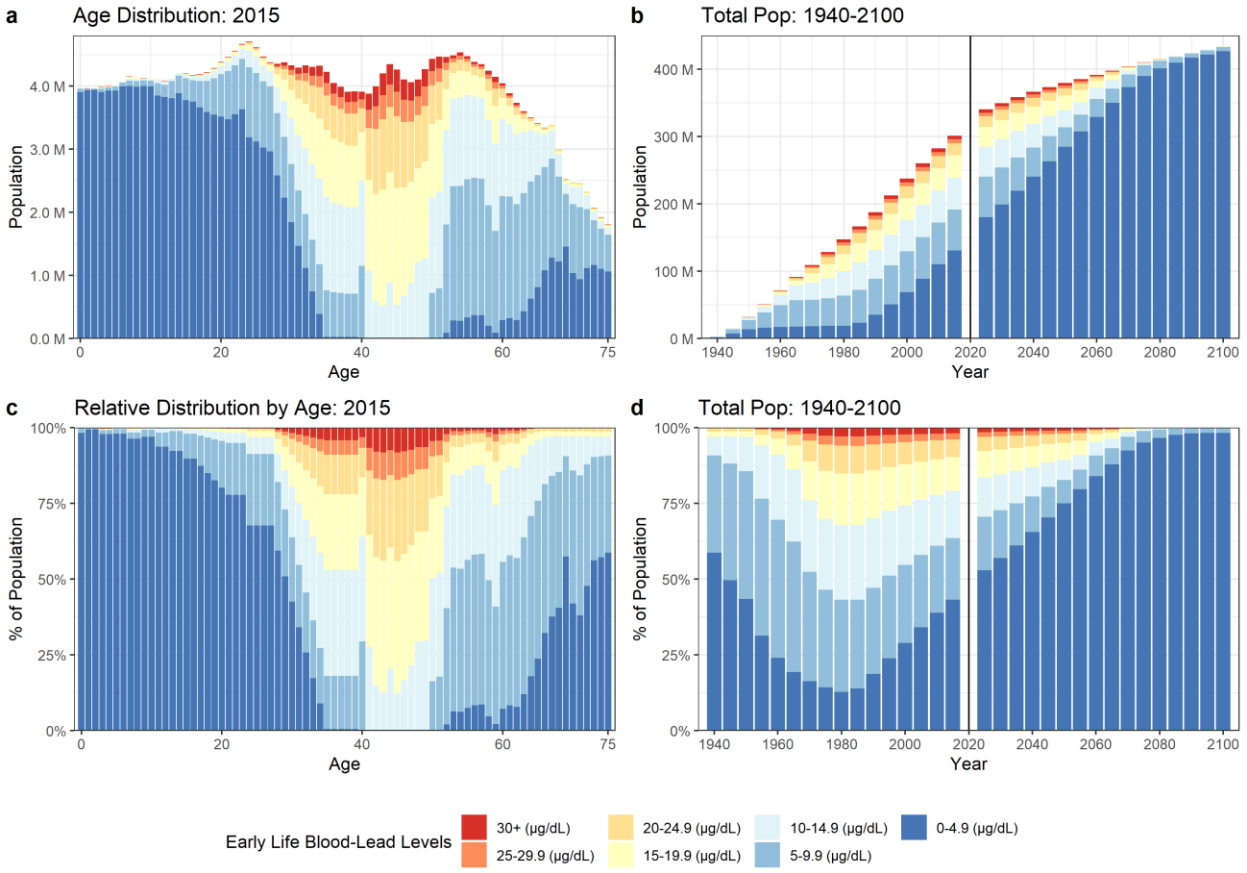
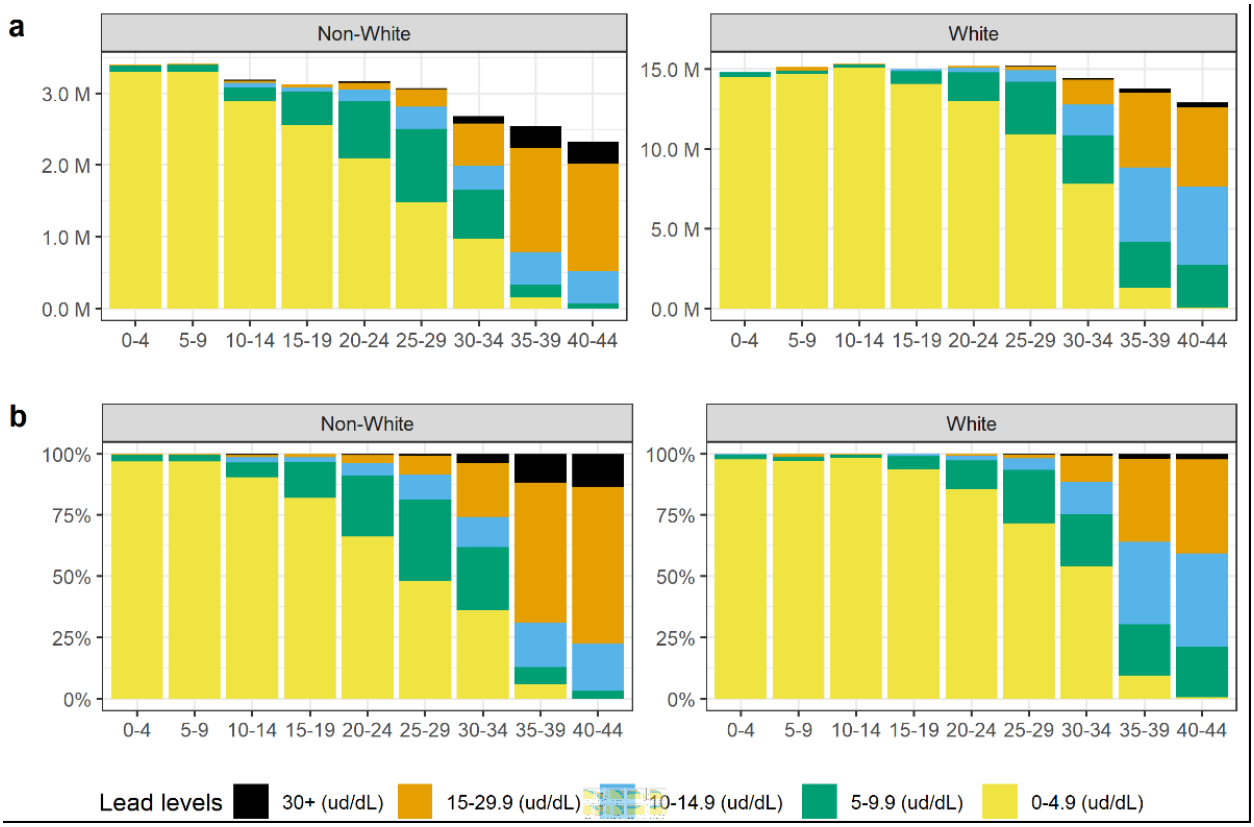


Figure S2. Blood Lead Levels at Ages 1-5 by Race and Age in 2015 for those Under 45 Years Old.



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1. Gould E. Childhood lead poisoning: conservative estimates of the social and economic benefits of lead hazard control. *Environmental health perspectives* 2009: 117(7): 1162-1167. https://doi.org/10.1289/ehp.0800408

2. Lanphear BP, Hornung R, Khoury J, Yolton K, Baghurst P, Bellinge, DC, Roberts R. Low-level environmental lead exposure and children's intellectual function: an international pooled analysis. *Environmental health perspectives* 2005:113(7): 894-899. doi.org/10.1289/ehp.7688