

“Critique of CARB Diesel Science, 1998-2010”

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February 26, 2010

1. Epidemiologic Qualifications of Enstrom & CARB

 **The Leland Stanford Junior University**
to all to whom these Letters shall come Greeting

The Trustees of the University on the recommendation of the University Faculty and by virtue of the Authority in Them vested have conferred on

James Eugene Enstrom

who has satisfactorily pursued the Studies and passed the Examinations required therefor the Degree of

Doctor of Philosophy

with all the Rights Privileges and Honors thereunto appertaining Given at Stanford University in the State of California on the First Day of October in the Year of Our Lord One Thousand Nine Hundred and Seventy of the Republic the One Hundred and Ninety-fifth and of the University the Eightieth



W. E. Meyer

Physica

R. W. Lyman
President of the University

W. P. Full
President of the Board of Trustees

Melvin Schwartz 1932-2006



Enstrom's Epidemiologic Training

1970 Stanford Physics Ph.D. Dissertation

“SLAC-125” (<http://www.slac.stanford.edu/cgi-wrap/getdoc/slac-r-125.pdf>)

1973 PostDoc in Epidemiology (Roger Detels)

(<http://www.scientificintegrityinstitute.org/Detels082773.pdf>)

1976 UCLA Cancer Epidemiology Certificate

(<http://www.scientificintegrityinstitute.org/UCLAPC021276.pdf>)

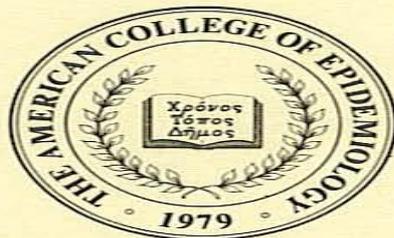
1976 UCLA M.P.H. in Epidemiology

(<http://www.scientificintegrityinstitute.org/UCLAMPH061876.pdf>)

2008 Paper with Epi Mentor (Lester Breslow)

(<http://www.scientificintegrityinstitute.org/PM2008.pdf>)

THE
AMERICAN COLLEGE OF EPIDEMIOLOGY
FELLOWSHIP CERTIFICATE



*The Board of Directors
certifies that*

James Eugene Enstrom, Ph. D., M.P.H.

has been duly elected

a Fellow of

The American College of Epidemiology

in recognition of professional standing

in the field of epidemiology

August 1, 1981

Date

Abraham Libofsky

*President of the College and
Chairman of the Board*

American College of Epidemiology

James E. Enstrom, Fellow 1981-Present

No Tran Report Authors, Advisors, Peer Reviewer were

Members or Fellows as of 2008: One was a member as of 2009

No CARB staff were Members or Fellows as of 1998 or 2009

Society for Epidemiologic Research

James E. Enstrom, Member 1974-Present

No Tran Report Authors, Advisors, Peer Reviewer were

Members as of 2008: One was a member as of 2009

No CARB staff were Members as of 1998 or 2009

American Statistical Association

No Tran Report Authors, Advisors, Peer Reviewer were

Members or Fellows as of 2009

One CARB staff member was Member as of 2009

Physics

Rigorous experimental science with independently verifiable results, worthy of annual Nobel Prize

Chronic Disease Epidemiology

Observational public health science often involving weak and inconsistent relationships that rarely withstand independent verification

Air Pollution Epidemiology

Chronic disease epidemiology that is limited by the ecological fallacy, geographic variation, and lack of access to underlying data

2. Ethical Conduct & Scientific Integrity Regarding CARB Diesel & PM2.5 Science

University of California Standards of Ethical Conduct

“Members of the University community are expected to become familiar with the laws and regulations bearing on their areas of responsibility”

“Members of the University community engaged in research are not to . . . knowingly omit data or results to misrepresent results in the research record [falsification]”

“All those engaged in research are expected to pursue the advancement of knowledge while meeting the highest standards of honesty, accuracy and objectivity”

February 5, 2010 SCIENCE Editorial

“Ensuring Integrity in Science”

Ralph J. Cicerone

President, US National Academy of Sciences

“public opinion has moved toward the view that scientists often try to suppress alternative hypotheses and ideas and that scientists will withhold data and try to manipulate some aspects of peer review to prevent dissent”

“It is essential that the scientific community work urgently to make standards for analyzing, reporting, providing access to, and stewardship of research data operational”

APPENDIX D: HEI POLICY ON THE PROVISION OF ACCESS TO DATA UNDERLYING HEI-FUNDED STUDIES

“Access to data underlying studies of the health effects of air pollution is an important element of ensuring credibility, especially when the studies are used in controversial public policy debates”

“It is the policy of the Health Effects Institute to provide access expeditiously to data for studies that it has funded and to provide that data in a manner that facilitates review and validation of the work”

3. CARB Scientific Review Panel & 1998 Identification of Diesel as TAC

**AB 1807 (Tanner, Davis, Hayden, . . .) 1983
→ California Health and Safety Code 39670**

39670(a): A nine-member *Scientific Review Panel on Toxic Air Contaminants* shall . . . advise the state board . . . health effects toxicity of substances

39670(b): The members . . . shall be highly qualified and . . . appointed . . . for a term of three years

39670 (b)(4): Members . . . shall be appointed from a pool of nominees submitted . . . by the President . . . University of California. The pool shall include, at a minimum, three nominees for each discipline

Key Current CARB SRP Members

Toxicologist: Chair John R. Froines, UCLA
Appointed 1984; Reappointed 1988, 1991,
1994, 1997, 2000, 2003, 2006

Biostatistician: Stanton A. Glantz, UCSF
Appointed 1986; Reappointed 1987, 1990,
1993, 1996, 1999, 2002, 2005, 2008

Epidemiologist: Gary D. Friedman, Stanford
Appointed 1988; Reappointed 1991;
No appointment since 1994

AIR RESOURCES BOARD

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January 17, 1991

Dr. Gary D. Friedman
Assistant Director for Epidemiology
and Biostatistics
Division of Research
Kaiser Permanente Medical Care
Program
3451 Piedmont Avenue
Oakland, CA 94611

Dear Dr. Friedman:

It is my pleasure to notify you that I have chosen to reappoint you to the Scientific Review Panel on Toxic Air Contaminants, filling the position of Epidemiologist. I appreciate the fine work you have performed to this date.

Your appointment is effective immediately and will continue until January 1, 1994. Bill Lockett, Chief, Office of External Affairs, will be available to answer any questions you may have about your reappointment.

Congratulations, and I look forward to your continuing contributions.

Sincerely,

A handwritten signature in cursive script, reading "Jananne Sharpless".

Jananne Sharpless
Chairwoman

April 22, 1998 Scientific Review Panel Meeting

Summary of Identification of Diesel Exhaust as Toxic Air Contaminant (TAC)

Portion of Transcript by Key SRP Members

Toxicologist Froines (38.0%)

Biostatistician Glantz (18.9%)

Epidemiologist Friedman (3.2%)

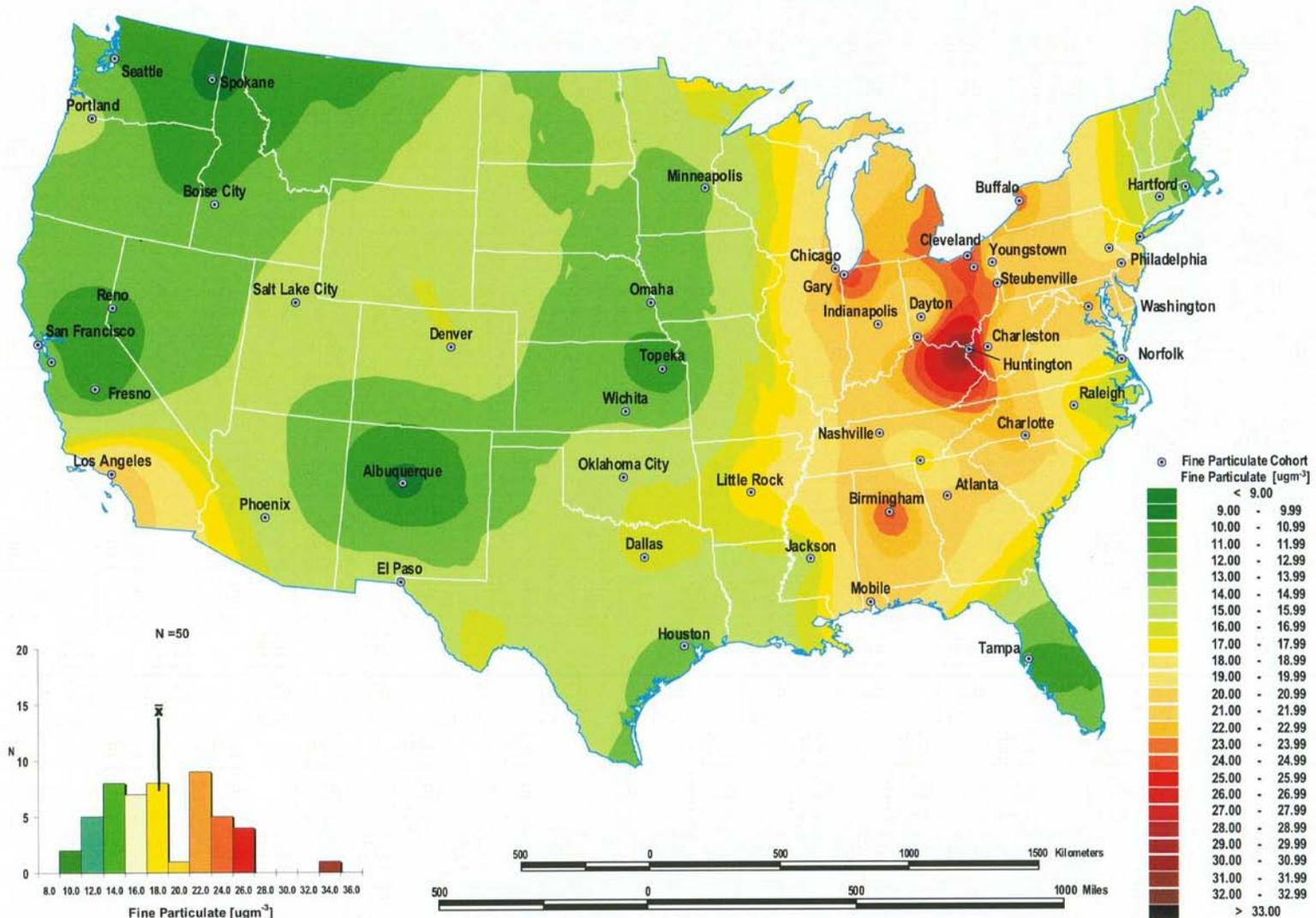
Epidemiologist never discussed major limitations of occupational studies of workers exposed to diesel: assessment of diesel exposure and smoking status, relevance to general California population, and criteria for a causal relationship

4. Evidence of No Current Relationship PM2.5 & Premature Deaths in CA

2000 Krewski Jerrett HEI Report Figure 18

1982-1986 PM2.5 Concentration Distribution

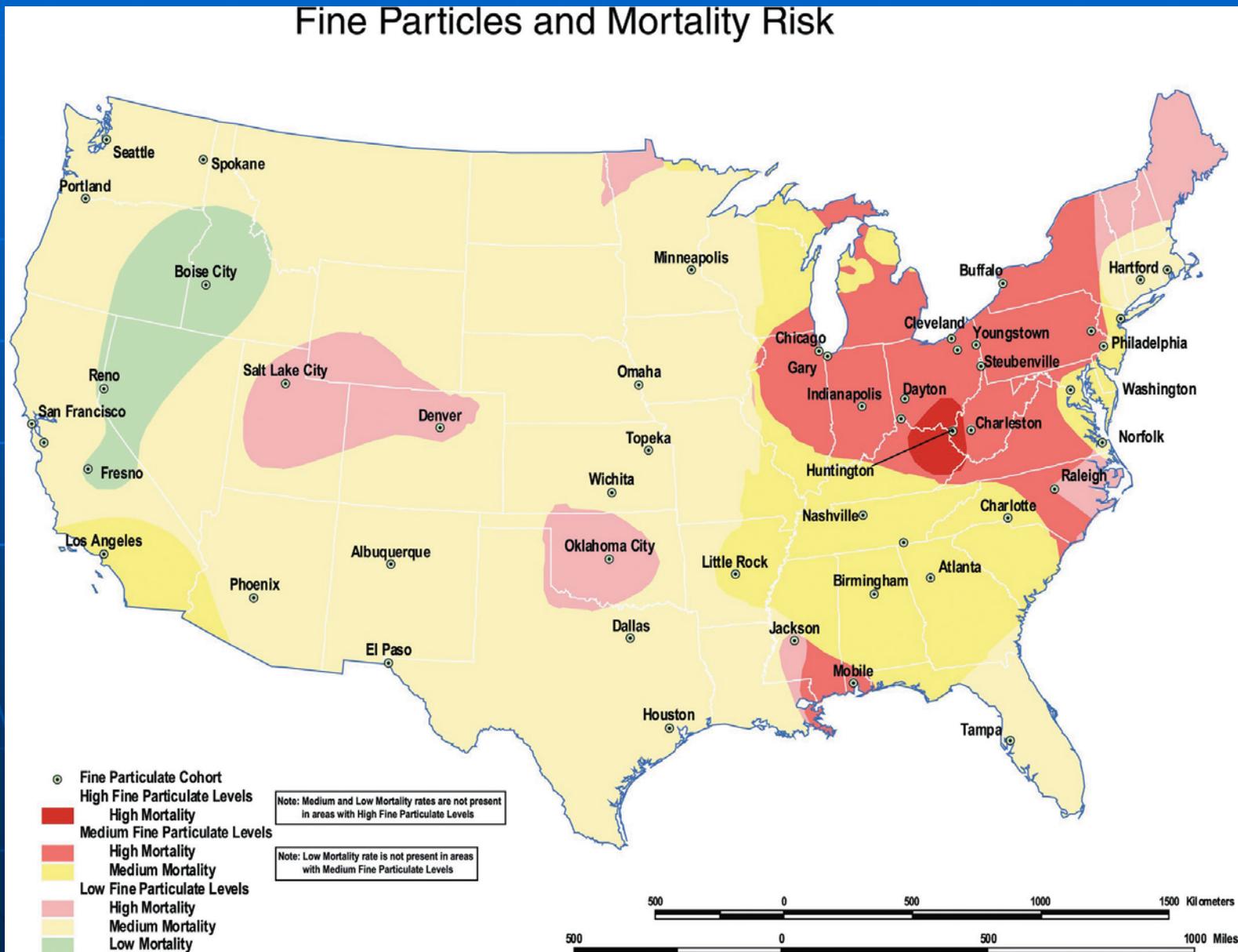
Modeled Fine Particles Surface



2000 Krewski Jerrett HEI Report Figure 21

1982-1989 CPS II PM2.5 Mortality Risk <1.0 in CA

Fine Particles and Mortality Risk



2001 EPA CASAC Slide 46 (1982-1989 CPS II)

July 11, 2008 CARB Comment by Jon Heuss

Regional Adjustment Models for NMMAPS Regions

Region*	PM _{2.5} Excess Risk Estimates		PM _{2.5} and SO ₂ Excess Risk Estimates			
	Risk	Conf. Limits	PM _{2.5} Risk	Conf. Limits	SO ₂ Risk	Conf. Limits
Northeast	14	(-7, 40)	3	(-15, 24)	19	(-2, 45)
Industrial Midwest	29	(10, 56)	9	(-12, 35)	19	(4, 38)
Southeast	25	(1, 54)	9	(-8, 29)	10	(-28, 48)
West*	-9	(-29, 17)	-9	(-28, 16)	31	(1, 69)

**December 15, 2005 *Inhalation Toxicology*
Paper by James E Enstrom**

49,975 elderly Californians in 11 counties followed during 1973-2002 in California Cancer Prevention Study (CA CPS I)

“For the initial period, 1973–1982, a small positive risk was found: RR was 1.04 (1.01–1.07) for a 10- $\mu\text{g}/\text{m}^3$ increase in PM_{2.5}.

For the subsequent period, 1983–2002, this risk was no longer present: RR was 1.00 (0.98–1.02).

For the entire follow-up period, RR was 1.01 (0.99–1.03).”

December 1, 2008 (on line August 12, 2008)

Environmental Health Perspectives

Paper by Zeger, Dominici, McDermott, Samet

**13.2 million Medicare enrollees residing in 4,568
U.S. zip codes followed 2000-2005 (MCAPS)**

**“Chronic exposure to PM_{2.5} was associated with
mortality in the eastern and central regions,
but not in the western United States.”**

**“This lack of association is largely because
the Los Angeles basin counties (California) have
higher PM levels than other West Coast urban
centers, but not higher adjusted mortality rates.²³”**

June 3, 2009 HEI Report 140: Extended Follow-up and Spatial Analysis of Fine Particulate Air Pollution and Mortality (1982-2000 CPS II)

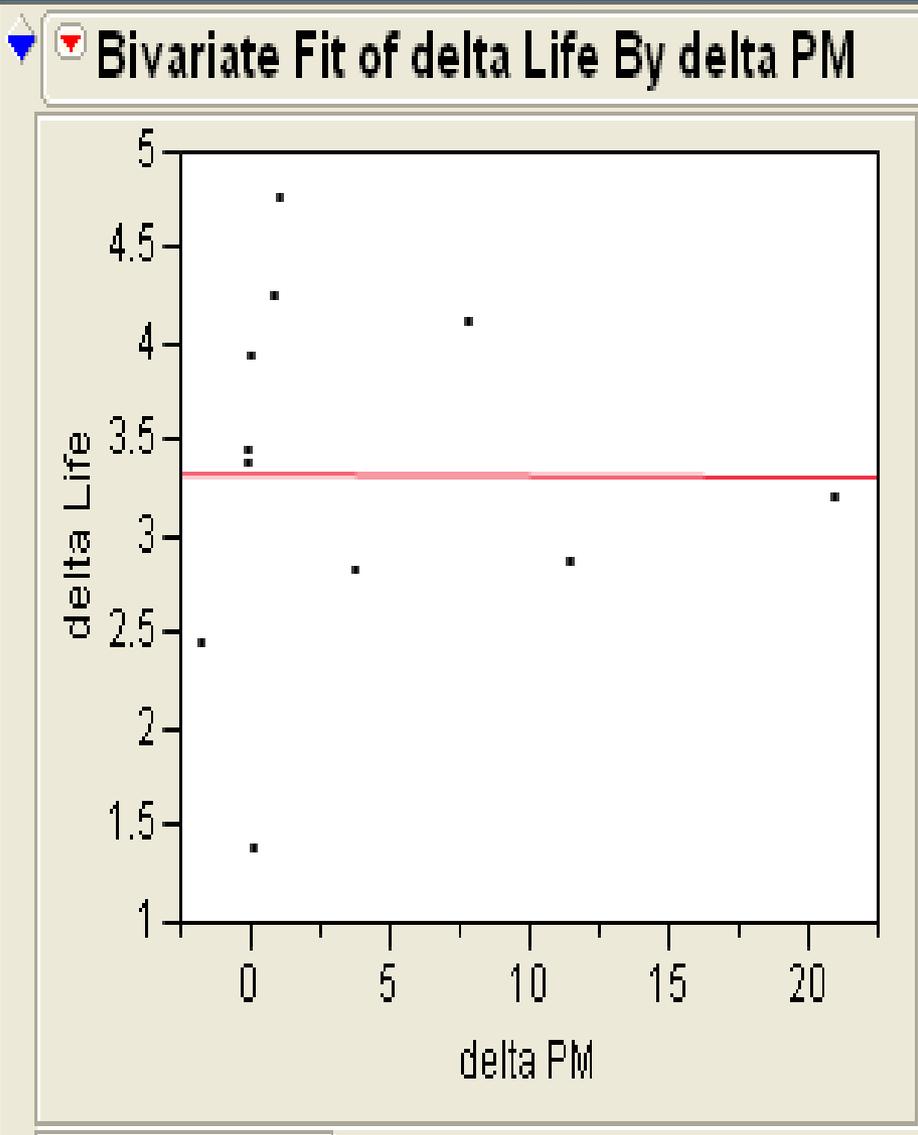
Table 33 (same as May 21, 2008 PPT)

Daniel Krewski, Michael Jerrett, Richard T Burnett, C Arden Pope III, George Thurston, Michael J Thun, others

<u>Author-year Reference</u>	<u>Follow-up</u>	<u>RR (95% CI)</u>
Pope 1995 equivalent	1982-1989	1.048 (1.022 - 1.076)
Pope 2002 equivalent	1982-1998	1.031 (1.015 - 1.047)
Krewski 2009	1982-2000	1.028 (1.014 - 1.043)
Pope 1995 equivalent	1982-1989	1.048 (1.022 - 1.076)
Pope 2002 latest years	1990-1998	1.021 (1.002 - 1.041)
Krewski 2009 latest years	1999-2000	1.014 (0.980 - 1.049)

Rejected Enstrom letter re 2009 Pope NEJM paper: PM2.5 and life expectancy changes not related in CA

	County	delta PM	delta Life
1	Santa Barbar	-0.1	3.45
2	Contra Cost	-0.1	3.38
3	Alameda	0	3.94
4	Butte	0.1	1.37
5	San Francisc	1	4.76
6	Santa Clara	0.8	4.25
7	Fresno	-1.8	2.45
8	San Diego	3.7	2.83
9	Los Angeles	7.8	4.11
10	Kern	11.5	2.87
11	Riverside	20.9	3.2



5. Falsification & Conflicts of Interests Associated with CARB Tran Report

June 3, 2009 HEI Report 140: Extended Follow-up and Spatial Analysis of Fine Particulate Air Pollution and Mortality (1982-2000 CPS II) (May 21, 2008 PPT→available for Tran Report)

Authors Jerrett, Pope, and Burnett participated in
July 11, 2008 CARB teleconference with Enstrom

Falsification (failure to respond to Enstrom requests
and other misrepresentations of research record):

Enstrom 2005 paper not cited

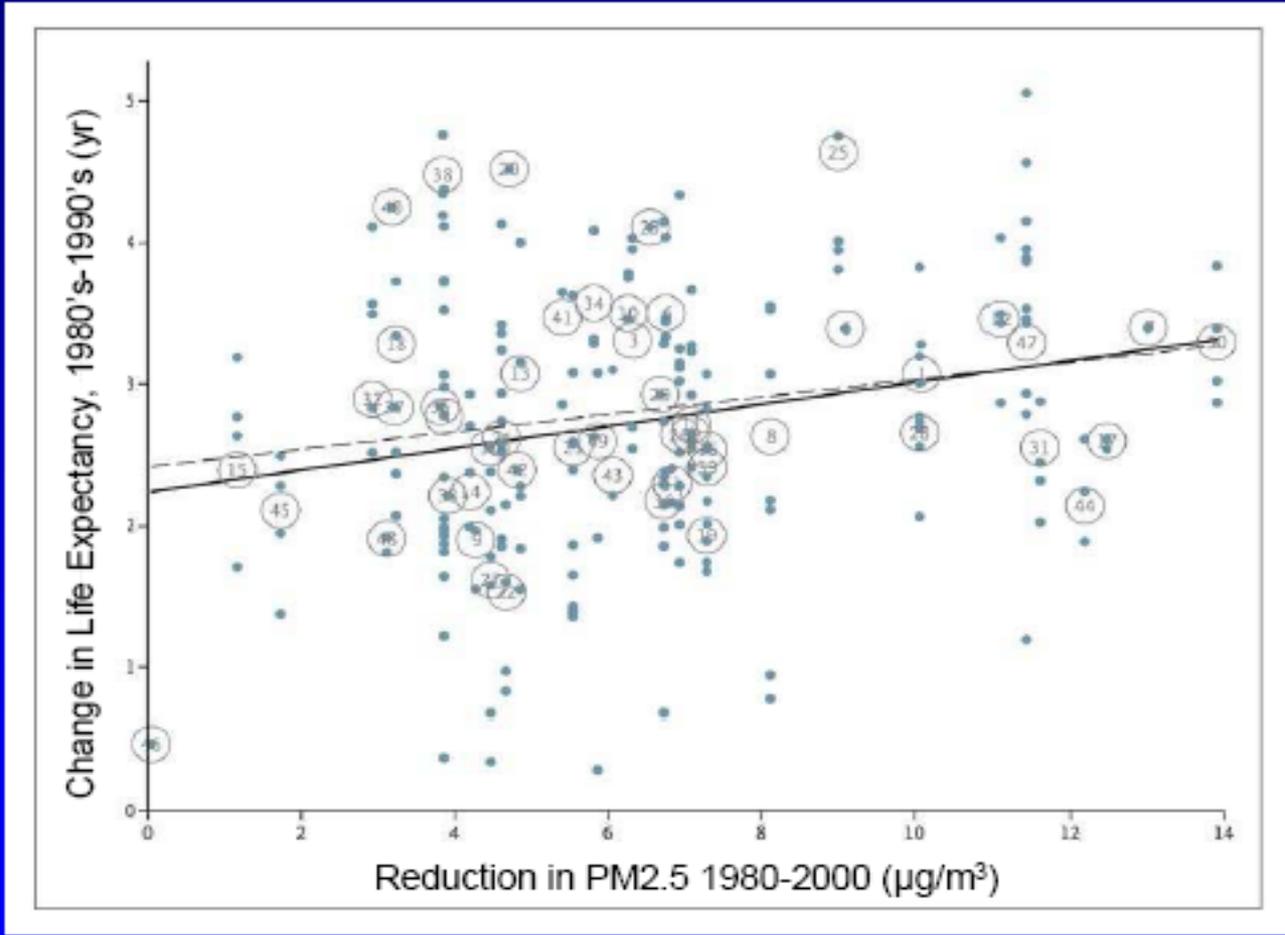
Zeger Samet et al. 2008 paper not cited

PM2.5 Risk Map for US (like Figure 21) omitted

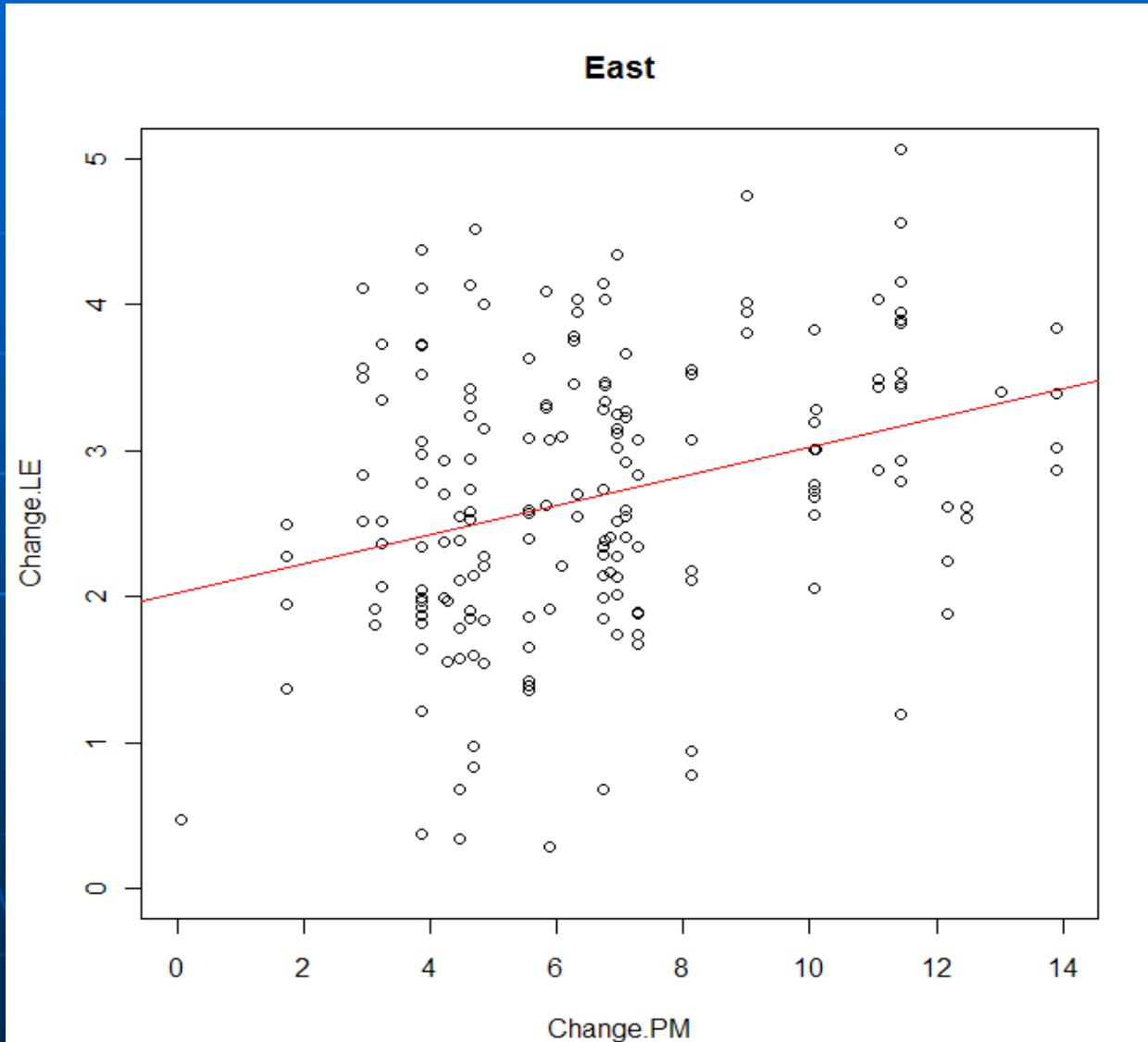
CA-specific PM2.5 risks not addressed in text

2009 Pope NEJM 11-page paper (peer reviewed by Balmes) did not address Enstrom concerns about geographic variation

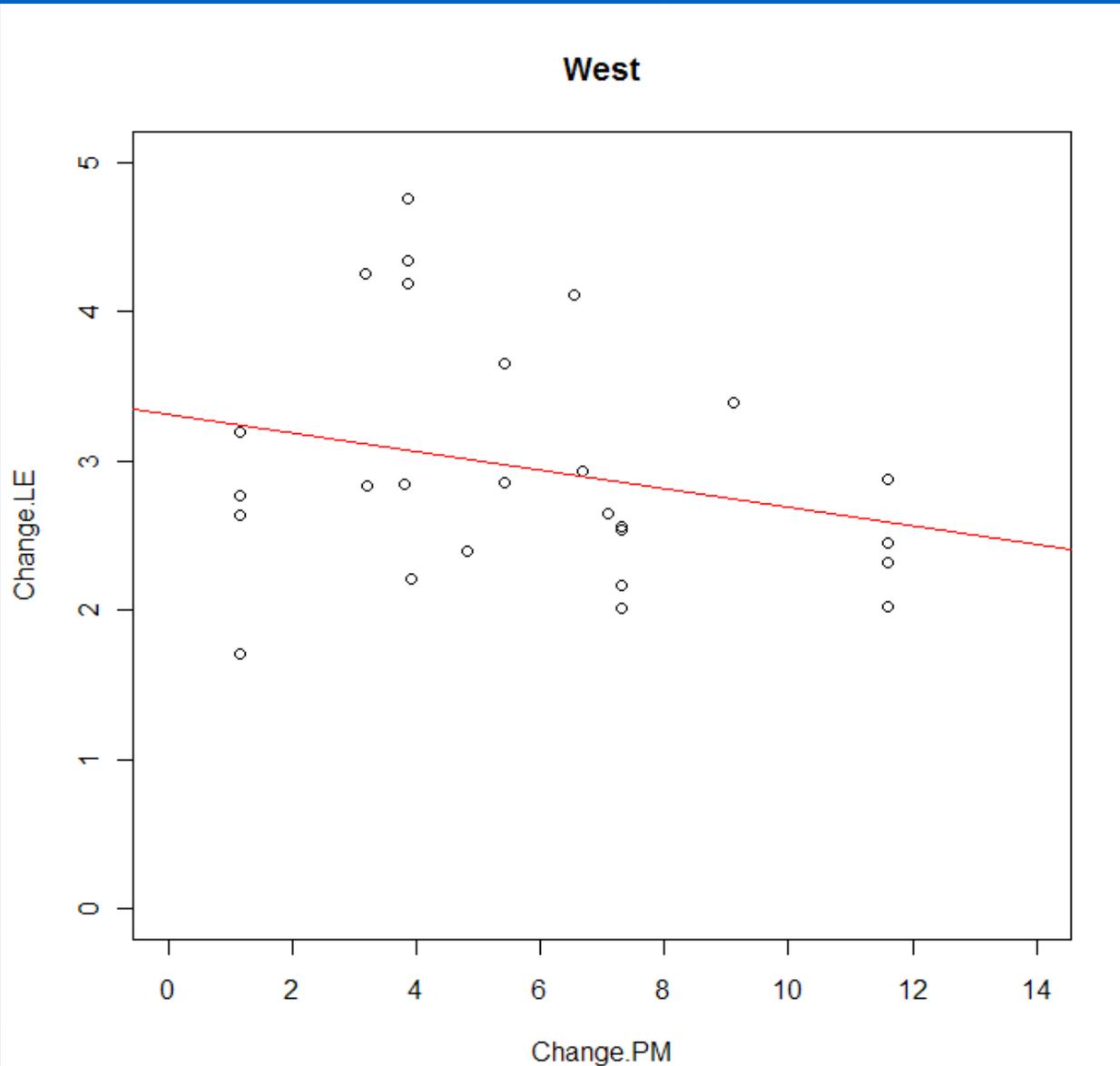
Changes in Life Expectancy and PM2.5 1980-2000



February 20, 2010 AAAS Presentation by Stan Young: Reanalysis of Pope NEJM Table 4 for cities east of Denver



February 20, 2010 AAAS Presentation by Stan Young: Reanalysis of Pope NEJM Table 4 for cities west of Denver



Tran Report Table 2a: Key studies discussed by experts (including CARB Advisor Pope)

12 points Six Cities (Dockery Pope et al. 1993, Krewski Jerrett et al. 2000, Laden et al. 2006)

12 points ACS (Pope et al., 1995, 2002, 2004; Krewski Jerrett et al. 2000)

10 points ACS Reanalysis (Jerrett et al. 2003; Jerrett Pope et al. 2005a)

4 points CA CPS I (Enstrom 2005)

Omitted MCAPS (Zeger Samet et al. 2008)

Tran Report Table 2b: Key studies used by experts for concentration-response (C-R)

9 points ACS (Pope et al. 2002)

8 points ACS Reanalysis (Jerrett Pope et al. 2005)

6 points Six Cities (Dockery Pope et al. 1993)

Omitted CA CPS I (Enstrom 2005)

Omitted MCAPS (Zeger Samet et al. 2008)

November 29, 2009 San Diego Union-Tribune Letter

Air board: shameful or 'most competent'?

CARB members John R. Balmes and Daniel Sperling

[Response to November 22, 2009 Editorial "The air board's shame / Staff never revealed internal scandal before crucial vote" following November 19, 2009 statement by CARB member John G. Telles regarding Hien T. Tran and 2008 Tran Report]

"there was no abuse, manipulation or dishonesty of any type"

"No one has questioned the accuracy or integrity of the report"

"there is no evidence to question the regulation, the supporting studies or board ARB management"



COEH Faculty

John R. Balmes, Director---CARB Member

Paul D. Blanc---SRP Member

Mark D. Eisner---Tran Report Peer Reviewer

S. Katharine Hammond---SRP Member

Irva Hertz-Picciotto---RSC Member

Alan E. Hubbard---Tran Report Peer Reviewer



Environmental Health Sciences Faculty

S. Katharine Hammond, Chair—SRP Member

Alan E. Hubbard—Tran Report Peer Reviewer

Michael L. Jerrett—Author of Studies in Tran Report

John R. Balmes—CARB Member

6. California is Very Healthy State

2005 Age-Adjusted Total Death Rate (x 10**5) and Life Expectancy at Birth (years) (CDC)

<u>State</u>	<u>Death Rate</u>	<u>Life Expectancy</u>
Hawaii	630	81.7
Minnesota	693	80.5
North Dakota	715	79.8
California	719	79.7
Connecticut	728	80.1
Massachusetts	735	79.8
United States	801	78.0

7. Recommended Actions Based on Above Findings

Objectively reassess current relationship between PM2.5 and premature death in CA with independent reviewers not connected to CARB

Reassess relationship of PM2.5 to diesel PM in CA and need for CARB diesel regulations

CARB & HEI need to fund all legitimate researchers, including critics, in order to show commitment to objective air pollution epidemiology

Conduct independent investigation of reasons why all CARB members were not informed of Tran Ph.D. fraud, as has been repeatedly requested