

**Research Misconduct Complaint Against California State University, Fullerton
Professors Jane V. Hall and Victor Brajer**

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This document represents my research misconduct complaint against two Professors in the California State University, Fullerton (CSUF) Department of Economics: Jane V. Hall, Ph.D. (<http://business.fullerton.edu/Economics/faculty-profile.aspx?ID=HallJane>) and Victor Brajer, Ph.D. (<http://business.fullerton.edu/Economics/faculty-profile.aspx?ID=BrajVicto>). I am filing this complaint in accord with the CSUF University Policy Statement UPS 630.000 “POLICY FOR INVESTIGATING INSTANCES OF POSSIBLE RESEARCH MISCONDUCT” (<http://www.fullerton.edu/senate/documents/PDF/600/UPS630-000.pdf>). Both the text and the included web links need to be read in detail in order to fully assess the content of this document.

I allege that since 2007 Drs. Hall and Brajer have repeatedly engaged in the form of research misconduct that is defined in Section II.A.2. of UPS 630.000: falsification in reviewing research and in reporting research results, specifically, omitting data or results such that the research is not accurately represented in the research record. This complaint is based on four publications co-authored by Drs. Hall and Brajer since 2007 that have falsified the relationship between fine particulate air pollution (PM_{2.5}) and total mortality (“premature death”) in California. These publications have been used to influence multi-billion dollar California air pollution regulatory policy, particularly regarding the California Air Resources Board (CARB) diesel vehicle regulations and the South Coast Air Quality Management District (AQMD) Air Quality Management Plan (AQMP) (<https://aqmd.gov/aqmp/AQMPintro.htm>). Both CARB and AQMD implement costly and complex regulations that are largely driven by the National Ambient Air Quality Standards (NAAQS) that are set by the U.S. Environmental Protection Agency (EPA).

The four CSUF-based publications that contain alleged evidence of falsification of research results are listed below, along with web links to the full publications:

Hall 2007. Jane V. Hall, Victor Brajer, and Frederick W. Lurmann.
“Measuring the gains from improved air quality in the San Joaquin Valley.” *Journal of Environmental Management* Volume 88, Issue 4, Pages 1003-1015 September 1, 2008.
doi:10.1016/j.jenvman.2007.05.002 Online June 21, 2007
(<http://www.sciencedirect.com/science/article/pii/S0301479707001843>) or
(http://www.researchgate.net/publication/6247744_Measuring_the_gains_from_improved_air_quality_in_the_San_Joaquin_Valley)

Hall 2008. Jane V. Hall, Victor Brajer, and Frederick W. Lurmann. “The Benefits of Meeting Federal Clean Air Standards in the South Coast and San Joaquin Valley Air Basins.” California State University, Fullerton, November 13, 2008, 108 pages
(<http://calstate.fullerton.edu/news/2008/091-air-pollution-study.html>) and
(http://business.fullerton.edu/centers/iees/reports/Benefits_of_Meeting_Clean_Air_Standards_11-13-08.pdf) or (<http://www.aqmd.gov/news1/2008/JaneHallStudy2008.pdf>)

Hall 2010. Jane V. Hall, Victor Brajer, and Frederick W. Lurmann. “Air pollution, health and economic benefits: Lessons from 20 years of analysis.” *Ecological Economics* Volume 69, Issue 12, pages 2590-2597 October 15, 2010
(<http://www.sciencedirect.com/science/article/pii/S0921800910003277>) or
(<http://EconPapers.repec.org/RePEc:eee:ecolec:v:69:y:2010:i:12:p:2590-2597>)

Brajer 2011. Victor Brajer, Jane V. Hall, and Frederick W. Lurmann. “Valuing health effects: the case of ozone and fine particles in Southern California.” *Contemporary Economic Policy* Volume 29, Issue 4, pages 524-535 October 1, 2011
(<http://onlinelibrary.wiley.com/doi/10.1111/j.1465-7287.2010.00240.x/full>) or
(<http://onlinelibrary.wiley.com/doi/10.1111/j.1465-7287.2010.00240.x/pdf>)
(http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1931333) or
(<http://dx.doi.org/10.1111/j.1465-7287.2010.00240.x>)

Drs. Hall and Brajer have consistently and seriously falsified the relationship between PM2.5 and total mortality in California in their publications. The falsification occurs in section “2.2.3. Mortality” on page 1008 of Hall 2007, section “III.1.4 PM2.5 Mortality” on pages 63-65 of Hall 2008, section “4. Health Concentration–Response Functions” on pages 2592-2594 of Hall 2010, and section “PM2.5 Mortality” on pages 528-529 of Brajer 2011. A complete summary of California-specific evidence on PM2.5 and total mortality is contained in my September 28, 2012 paper "Particulate Matter is Not Killing Californians" (Enstrom 2012). This paper is scheduled to be published in December 2012 in the American Statistical Association 2012 Joint Statistical Meeting Proceedings (<http://www.scientificintegrityinstitute.org/ASAS092812.pdf>). The Hall and Brajer publications do not cite the null results from the following studies that are contained in my Table 1: Figures 5 and 21 of Krewski 2000, McDonnell 2000, Enstrom 2005, Enstrom 2006, Zeger 2008, Jerrett 2010, Krewski 2010, Jerrett 2011, Lipsett 2011, and Ostro 2011. These null results are based on the epidemiologic studies of 26 highly qualified doctoral level scientists, including myself (<http://www.scientificintegrityinstitute.org/AMQP092012.pdf>).

In addition, I contend that this falsification has been deliberate because Drs. Hall and Brajer must have followed the intense two decade long PM2.5 epidemiology controversy. This controversy has been repeatedly described, such as, in the August/September 1997 *Reason* article "Polluted Science" by Michael Fumento (<http://reason.com/archives/1997/08/01/polluted-science>) and in my April 24, 2012 talk, “Pseudoscientific Aspects of Fine Particulate Matter Epidemiology, 1993-2012,” at the International Dose-Response 2012 Conference (http://www.dose-response.org/conference/2012/pdf/Enstrom_Dose_Response_Fine_Part particulate.pdf).

For instance, Dr. Hall acknowledged knowing about the Enstrom 2005 and Zeger 2008 studies in a January 21, 2009 email message to me and in a January 20, 2009 email message to blogger Thomas Frantz, aka “airqualityguy” (<http://www.scientificintegrityinstitute.org/Hall012109.pdf>). Dr. Hall’s January 20, 2009 email message was posted by Frantz as a blog comment, now removed, in response to the January 18, 2009 Bakersfield Californian Column and Blog by Lois Henry “Hype clouds our real air pollution picture” (<http://www.bakersfieldcalifornian.com/columnists/lois-henry/x361189600/Lois-Henry-Hype-clouds-our-real-air-pollution-picture>).

The wide-spread knowledge of the null PM2.5 mortality risks in California is illustrated by the February 17, 2009 letter, entitled "Temporary Suspension of CARB On-Road and Off-Road Diesel Truck Regulations," to the California Air Resources Board that was co-signed by CSUF economics graduate and State Senator Lou Correa: “There is substantial epidemiologic evidence from six independent sources that there is no current relationship between fine particulate air pollution (PM2.5) and premature deaths in California.” (http://www.arb.ca.gov/lists/siprev09/1-carb_devore_villines_correa_letter_regarding_diesel_regs_021709.pdf).

On November 28, 2009 Dr. Hall acknowledged a second email message that I sent to her regarding additional evidence and commentary indicating that PM2.5 is not related to total mortality in California (<http://www.scientificintegrityinstitute.org/Hall112809.pdf>). In addition, many qualified California scientists, including myself, were invited to participate in a February 26, 2010 CARB Symposium "Estimating Premature Deaths from Long-term Exposure to PM2.5" (http://www.arb.ca.gov/research/health/pm-mort/pm-mort-ws_02-26-10.htm). Drs. Hall and Brajer must certainly have been aware of this major and highly influential symposium, which critiqued the very epidemiologic evidence that they have used in their four publications.

In spite of the overwhelmingly null PM2.5 mortality findings within California that have been published since 2000 and in spite of the February 26, 2010 CARB Symposium on PM2.5 deaths, Drs. Hall and Brajer published 2010 and 2011 journal papers that focused on non-California-specific evidence and concluded that there was a positive relationship between PM2.5 and total mortality in California. In particular, they focused on Pope 2002, Jerrett 2005, Laden 2006, and Krewski 2009, with mention of earlier results by these authors (Dockery 1993, Pope 1995, and Krewski 2000). They came to the exact same conclusion in both their 2010 and 2011 papers: “Given the differing strengths of the primary underlying health studies and the conclusions from the expert elicitation, we use a weighted average of Jerrett et al. (RR = 1.17), Laden et al. (RR = 1.16), and Pope et al. (RR= 1.06). This results in an RR [relative risk] factor of 1.10 . . .”

Drs. Hall and Brajer knew that they were not using California-specific evidence because footnote 5 on page 528 of Brajer 2011 states “Although these studies are conducted both at the national level and for various cities in the United States (and not all in southern California), we follow the standard assumption that ozone and particulates cause basically the same health outcomes in southern California that they cause elsewhere in the United States At present, there is no consistent pattern of evidence to suggest otherwise.”

However, their statements “the standard assumption that ozone and particulates cause basically the same health outcomes in southern California that they cause elsewhere in the United States” and “At present, there is no consistent pattern of evidence to suggest otherwise” are both UTTERLY FALSE. As of September 20, 2011, the date that Brajer 2011 was last modified, there was an UNEQUIVOCALLY “consistent pattern of evidence to suggest otherwise.” Indeed, an OVERWHELMING amount of null California-specific evidence was published before September 20, 2011 and all of it is cited in Table 1 of Enstrom 2012. If they had cited this evidence and had done a properly weighted assessment, Drs. Hall and Brajer would have had to conclude that the California-specific RR was 1.00, meaning no “premature deaths” in California.

In turn, the lack of “premature deaths” means that the following statements on page 530 of Brajer 2011 are incorrect and need to be changed: “Not surprisingly, given the large value that individuals, and society more broadly, place on avoiding premature deaths, the overall economic benefits of attaining the NAAQS are dominated by mortality. Across the SoCAB [South Coast Air Basin], it is estimated that 3,000 people would avoid premature death each year, accounting only for the effect of PM_{2.5} and only for the population aged 30 and older. With a value for each statistical life of \$6.63 million, this effect by itself offers an attainment benefit of nearly \$20 billion each year.”

My allegations of falsification have both scientific and societal significance because Drs. Hall and Brajer wrote their four papers with full knowledge of the socioeconomic hardship caused by CARB and AQMD regulations that have been and will continue to be implemented to reduce particulate matter levels in California. For instance, the authors themselves state in Hall 2010: “The impetus for the study [Hall 1989] was the need for quantitative benefits estimates to inform the policy debate. The regional regulatory agency [AQMD] was under increasing pressure to back away from aggressive and costly control measures needed to attain the NAAQS, on the grounds that the costs would wreak economic havoc. The benefit assessment [Hall 1989] essentially provided a counter weight to claims of catastrophic control costs, since the potential economic benefits of regulation had never been adequately quantified . . .”

The Hall 1989 study is featured at the beginning of the AQMD “Smog and Health” webpage: “A 1989 study funded by AQMD and conducted by Dr. Jane Hall of Cal State Fullerton found that meeting federal clean air standards for ozone and fine particulates in the South Coast region would provide \$9.4 billion in health-related benefits each year. The study found that 98% of the four-county basin's population of 13 million is exposed to unhealthful air, with children especially vulnerable. In addition, 1,600 people die prematurely as a result of exposure to air pollution, according to the study.”(http://www.aqmd.gov/smog/historical/smog_and_health.htm). This June 1989 study was entitled “Economic Assessment of the Health Benefits from Improvements in Air Quality in the South Coast Air Basin, Final Report,” was authored by Jane V. Hall, Arthur M. Winer, and Minn P. Poe, and was cited in Hall 2010 and is in the EPA library (<http://yosemite.epa.gov/ee/epalib/eelib.nsf/8b0118ba1065662a85256a290076d16a/7b77ee057394e2d485256d0800524ebd!OpenDocument>).

Dr. Hall has been doing economic assessments for AQMD since 1989 and she currently serves as a member of the AQMD Scientific, Technical & Modeling Peer Review Advisory Group for the 2012 AQMP (http://aqmd.gov/gb_comit/stmpradvgrp/2012stmpradvgrpmembership.html) . The Draft 2012 AQMP Socioeconomic Report released on September 28, 2012 (<http://aqmd.gov/aqmp/2012aqmp/DraftSocioeconomicReport.pdf>) contains her September 17, 2012 review as a “peer-review economist” on pages F-28 to F-30. Her review cites Hall 2008 and Brajer 2011, but it makes no reference to the overwhelmingly null California-specific evidence regarding PM2.5 mortality cited in Enstrom 2012.

Furthermore, Dr. Hall’s September 17, 2012 review does not address the serious socioeconomic concerns expressed in the 91 comment letters that have been submitted regarding the AQMP as of October 31, 2012 (<http://aqmd.gov/aqmp/2012aqmp/commentletters/commentlist.html>). Most of these letters were available for her to read before she wrote her review. A sample of the serious socioeconomic concerns are described in the 5-page August 31, 2012 and the 6-page October 22, 2012 comment letters from the 27-member Southern California Business Coalition (http://www.bizfed.org/sites/default/files/so_cal_business_coalition_comment_ltr_8-31-12.pdf). These two letters begin by stating “The final 2012 Air Quality Management Plan, and the rule making that will eventually stem from it, will directly affect many of these businesses’ interests.” The members of the Southern California Business Coalition represent hundreds of thousands of individual businesses and millions of individual employees in Southern California.

A simple comparison of the text and references in their four publications with the Table 1 and references in my 2012 paper reveals that Drs. Hall and Brajer have not cited or reviewed the vast amount of California-specific evidence on PM2.5 deaths that has been published since 2000. Based on my own interpretation of UPS 630.000, they have falsified the relationship between PM2.5 and total mortality in California in their publications. Thus, I request a formal CSUF assessment of my allegations of falsification.

Thank you very much for your prompt and full consideration of my research misconduct complaint.