E. Andrés Houseman, Sc.D.   Curriculum Vitae

Assistant Professor of Community Health (Research)
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Education:

2003	Biostatistics	Sc.D.	Harvard School of Public Health
1990	Applied Mathematics	A.B.	University of California at Berkeley

Academic Appointments:

2008-present	Assistant Professor of Community Health (Research) Center for Environmental Health and Technology, The Warren Alpert Medical School of Brown University
2006-present	Research Scientist, Department of Biostatistics, Harvard School of Public Health
2006-2008	Assistant Professor, Department of Work Environment, University of Massachusetts, Lowell
2003-2006	Research Scientist, Department of Biostatistics, Harvard School of Public Health
1999-2003	Doctoral Candidate, Department of Biostatistics, Harvard School of Public Health

Honors and Distinctions:

2000-2003	Howard Hughes Medical Institute Predoctoral Fellowship

Other Experience:

2005-2006 Consultant, Battelle, Columbus, OH
1998-1999 Senior Professional Services Engineer, Actuate Software Corporation, San Mateo, CA
1994-1997 Senior Systems Analyst and Applications Developer, Horsely Bridge Partners, San Francisco, CA
1990-1994 Associate Scientist, Eisenberg, Olivieri, and Associates, Oakland, CA

Major Research Interests:

Translational research; high-dimensional latent variable models and their application to molecular epidemiology, bioinformatics, and environmental exposure assessment.

Teaching Experience:

2009-2011	Brown University	Analysis of Lifetime Data
2008	Brandeis University	Biostatistics
2006-2008	University of Massachusetts Lowell	Applied Regression
		Introduction to Mathematical Statistics
2004-2009	Harvard School of Public Health	Introduction to Biostatistics (Summer Program in Quantitative Sciences)
2005-2006	Harvard School of Public Health	Applied Survival Analysis and Discrete Data Analysis

Professional Societies:

2004-present International Biometric Society

Recent and Upcoming Presentations:

1.   June, 2011: DNA Methylation Arrays as a Surrogate Measure of Cell Mixtures (invited lecture at ICSA Applied Statistics Symposium), New York, NY.
2.   November, 2010: Statistical Issues in Epigenetic Epidemiology: Analysis of Genome-Scale DNA Methylation Data (invited lecture at University of Massachusetts Amherst), Amherst, MA.
3.   April, 2009: Recursively Partitioned Mixture Models with Applications to Genomic Data (invited lecture at Brigham Young University), Provo, UT.
4.   March, 2009: Clustering Methylation Array Data: A Model-Based Recursive-Partitioning Algorithm (invited lecture at ENAR conference, International Biometric Society), San Antonio, TX.

Other Activities:

1. NHLBI working group on epigenetics (September, 2008). Bethesda, MD.
2. Reviewer for NIH RC1 (Challenge Grants in Health and Science Research, June, 2009)
3. Reviewer and study section participant for NIH Cancer Biomarkers Study Section (February 2010, June 2010, February 2011). Alexandria, VA.

4. Reviewer and study section participant for NIH Cancer Biomarkers Study Section special emphasis panel in chemoprevention (September 2010). Teleconference.
5. Associate Editor, *Biometrics*, July 2010-2013.

Publications:

1. Cash HL, Tao L, Yuan JM, Marsit CJ, **Houseman EA**, Xiang YB, Gao YT, Nelson HH, Kelsey KT. LINE-1 hypomethylation is associated with bladder cancer risk among non-smoking Chinese. *Int J Cancer*, 2011.
2. Christensen BC, Smith AA, Zheng S, Koestler DC, **Houseman EA**, Marsit CJ, Wiemels JL, Nelson HH, Karagas MR, Wrensch MR, Kelsey KT, Wiencke JK. DNA Methylation, Isocitrate Dehydrogenase Mutation, and Survival in Glioma. *J Natl Cancer Inst* 103:143-53, 2011.
3. Clougherty JE, **Houseman EA**, Levy JI. Source apportionment of indoor residential fine particulate matter using land use regression and constrained factor analysis. *Indoor Air* 21:53-66, 2011.
4. Demehri S, Kalra MK, Rybicki FJ, Steigner ML, Lang MJ, **Houseman EA**, Curhan GC, Silverman SG. Quantification of urinary stone volume: attenuation threshold-based CT method--a technical note. *Radiology* 258:915-22, 2011.
5. Fabian P, Brain J, **Houseman EA**, Gern J, Milton DK. Origin of Exhaled Breath Particles from Healthy and Human Rhinovirus-Infected Subjects. *J Aerosol Med Pulm Drug Deliv*, 2011.
6. Marsit CJ, Koestler DC, Christensen BC, Karagas MR, **Houseman EA**, Kelsey KT. DNA methylation array analysis identifies profiles of blood-derived DNA methylation associated with bladder cancer. *J Clin Oncol* 29:1133-9, 2011.
7. Zheng S, **Houseman EA**, Morrison Z, Wrensch MR, Patoka JS, Ramos C, Haas-Kogan DA, McBride S, Marsit CJ, Christensen BC, Nelson HH, Stokoe D, Wiemels JL, Chang SM, Prados MD, Tihan T, Vandenberg SR, Kelsey KT, Berger MS, Wiencke JK. DNA hypermethylation profiles associated with glioma subtypes and EZH2 and IGFBP2 mRNA expression. *Neuro Oncol* 13:280-9, 2011. PMCID: PMC3064601.
8. Campion SN, **Houseman EA**, Sandrof MA, Hensley JB, Sui Y, Gaido KW, Wu Z, Boekelheide K. Suppression of radiation-induced testicular germ cell apoptosis by 2,5-hexanedione pretreatment: gene array analysis reveals adaptive changes in cell cycle and cell death pathways. *Toxicol Sci* 117:457-65, 2010.
9. Christensen BC, **Houseman EA**, Poage GM, Godleski JG, Bueno R, Sugarbaker DJ, Wiencke JK, Nelson HH, Marsit CJ, Kelsey KT. Integrated profiling reveals a global correlation between epigenetic and genetic alterations in mesothelioma. *Cancer Res* 70:5686-94, 2010.
10. Christensen BC, Kelsey KT, Zheng S, **Houseman EA**, Marsit CJ, Wrensch MR, Wiemels JL, Nelson HH, Karagas MR, Kushi LH, Kwan ML, Wiencke JK. Breast cancer DNA methylation profiles are associated with tumor size and alcohol and folate intake. *PLoS Genetics* 6:e1001043, 2010.
11. Gee GV, Koestler DC, Christensen BC, Sugarbaker DJ, Ugolini D, Ivaldi GP, Resnick MB, **Houseman EA**, Kelsey KT, Marsit CJ. Downregulated MicroRNAs in the differential diagnosis of malignant pleural mesothelioma. *Int J Cancer* 127:2859-69, 2010.
12. Koestler DC, Marsit CJ, Christensen BC, Karagas MR, Bueno R, Sugarbaker DJ, Kelsey KT, **Houseman EA**. Semi-supervised recursively partitioned mixture models for identifying cancer subtypes. *Bioinformatics* 26:2578-85, 2010.
13. Levy JI, Clougherty JE, Baxter LK, **Houseman EA**, Paciorek CJ, Committee HEIHR. Evaluating heterogeneity in indoor and outdoor air pollution using land-use regression and constrained factor analysis. *Res Rep Health Eff Inst*:5-80; discussion 1-91, 2010.
14. Marsit CJ, **Houseman EA**, Christensen BC, Gagne L, Wrensch MR, Nelson HH, Wiemels J, Zheng S, Wiencke JK, Andrew AS, Schned AR, Karagas MR, Kelsey KT. Identification of methylated genes associated with aggressive bladder cancer. *PLoS One* 5:e12334, 2010. PMCID: PMC2925945.

15. Poage GM, Christensen BC, **Houseman EA**, McClean MD, Wiencke JK, Posner MR, Clark JR, Nelson HH, Marsit CJ, Kelsey KT. Genetic and epigenetic somatic alterations in head and neck squamous cell carcinomas are globally coordinated but not locally targeted. *PLoS One* 5:e9651, 2010. PMCID: PMC2836370.
16. Wilhelm-Benartzi CS, Koestler D, **Houseman EA**, Christensen BC, Wiencke JK, Schned AR, Karagas MR, Kelsey KT, Marsit CJ. DNA methylation profiles delineate etiologic heterogeneity and clinically important subgroups of bladder cancer. *Carcinogenesis* 3:1972-6, 2010.
17. Chen AA, Marsit CJ, Christensen BC, **Houseman EA**, McClean MD, Smith JF, Bryan JT, Posner MR, Nelson HH, Kelsey KT. Genetic variation in the vitamin C transporter, SLC23A2, modifies the risk of HPV16-associated head and neck cancer. *Carcinogenesis* 30:977-81, 2009.
18. Christensen BC, **Houseman EA**, Godleski JJ, Marsit CJ, Longacker JL, Roelofs CR, Karagas MR, Wrensch MR, Yeh RF, Nelson HH, Wiemels JL, Zheng S, Wiencke JK, Bueno R, Sugarbaker DJ, Kelsey KT. Epigenetic profiles distinguish pleural mesothelioma from normal pleura and predict lung asbestos burden and clinical outcome. *Cancer Res* 69:227-34, 2009.
19. Christensen BC, **Houseman EA**, Yeh RF, Godleski JG, Bueno R, Sugarbaker DJ, Karagas MR, Wrensch MR, Wiemels JL, Zheng S, Marsit CJ, Nelson HH, Wiencke JK, Kelsey KT. Aging and environmental exposures alter tissue-specific DNA methylation dependent upon CpG island context. *PLoS Genetics* 5:e1000602, 2009.
20. Christensen BC, Marsit CJ, **Houseman EA**, Godleski JG, Longacker JL, Zheng S, Yeh RF, Wrensch MR, Wiemels JL, Karagas MR, Bueno R, Sugarbaker DJ, Nelson HH, Wiencke JK, Kelsey KT. Differentiation of lung adenocarcinoma, pleural mesothelioma, and nonmalignant pulmonary tissues using DNA methylation profiles. *Cancer Res* 69:6315-21, 2009. PMCID: PMC2755616.
21. Clougherty JE, **Houseman EA**, Levy JI. Examining intra-urban variation in fine particle mass constituents using GIS and Constrained Factor Analysis. *Atmos Environ*, 2009.
22. Desantis SM, **Houseman EA**, Coull BA, Louis DN, Mohapatra G, Betensky RA. A latent class model with Hidden Markov dependence for array CGH data. *Biometrics* 65:1296-305, 2009.
23. Dodson RE, **Houseman EA**, Morin B, Levy JI. An analysis of continuous black carbon concentrations in proximity to an airport and major roadways. *Atmos Environ* 24:3764-73, 2009.
24. Dodson RE, Levy JI, **Houseman EA**, Spengler JD, Bennett DH. Evaluating methods for predicting indoor residential volatile organic compound concentration distributions. *J Expo Sci Environ Epidemiol*, 2009.
25. Fabian P, McDevitt JJ, **Houseman EA**, Milton DK. Airborne influenza virus detection with four aerosol samplers using molecular and infectivity assays: considerations for a new infectious virus aerosol sampler. *Indoor Air* 19:433-41, 2009.
26. Fabian P, McDevitt JJ, Lee WM, **Houseman EA**, Milton DK. An optimized method to detect influenza virus and human rhinovirus from exhaled breath and the airborne environment. *J Environ Monit* 11:314-7, 2009.
27. **Houseman EA**, Christensen BC, Karagas MR, Wrensch M, Nelson HH, Wiemels J, Zheng S, Wiencke JK, Kelsey KT, Marsit CJ. Copy number variation has little impact on bead-array-based measures of DNA methylation. *Bioinformatics* 25:1999-2005, 2009.
28. Marsit CJ, Christensen BC, **Houseman EA**, Karagas MR, Wrensch MR, Yeh RF, Nelson HH, Wiemels JL, Zheng S, Posner MR, McClean MD, Wiencke JK, Kelsey KT. Epigenetic profiling reveals etiologically distinct patterns of DNA methylation in head and neck squamous cell carcinoma. *Carcinogenesis* 30:416-22, 2009. PMCID: PMC2650795.
29. Sanchez BN, **Houseman EA**, Ryan LM. Residual-based diagnostics for structural equation models. *Biometrics* 65:104-15, 2009.
30. Christensen BC, Godleski JJ, Marsit CJ, **Houseman EA**, Lopez-Fagundo CY, Longacker JL, Bueno R, Sugarbaker DJ, Nelson HH, Kelsey KT. Asbestos exposure predicts cell cycle control gene promoter methylation in pleural mesothelioma. *Carcinogenesis* 29:1555-9, 2008. PMCID: PMC2516493.

31. Desantis SM, **Houseman EA**, Coull BA, Stemmer-Rachamimov A, Betensky RA. A penalized latent class model for ordinal data. *Biostatistics* 9:249-62, 2008.
32. Furniss CS, Marsit CJ, **Houseman EA**, Eddy K, Kelsey KT. Line region hypomethylation is associated with lifestyle and differs by human papillomavirus status in head and neck squamous cell carcinomas. *Cancer Epidemiol Biomarkers Prev* 17:966-71, 2008. PMCID: PMC2633874.
33. **Houseman EA**, Christensen BC, Yeh RF, Marsit CJ, Karagas MR, Wrensch M, Nelson HH, Wiemels J, Zheng S, Wiencke JK, Kelsey KT. Model-based clustering of DNA methylation array data: a recursive-partitioning algorithm for high-dimensional data arising as a mixture of beta distributions. *BMC Bioinformatics* 9:365, 2008. PMCID: PMC2553421.
34. Knight MM, **Houseman EA**. A collaborative model for the treatment of depression in homebound elders. *Issues Ment Health Nurs* 29:974-91, 2008.
35. Loh MM, **Houseman EA**, Levy JI, Spengler JD, Bennett DH. Contribution to volatile organic compound exposures from time spent in stores and restaurants and bars. *J Expo Sci Environ Epidemiol*, 2008.
36. Marsit CJ, **Houseman EA**, Nelson HH, Kelsey KT. Genetic and epigenetic tumor suppressor gene silencing are distinct molecular phenotypes driven by growth promoting mutations in non-small cell lung cancer. *J Can Epidemiol* 2008:215809, 2008.
37. Breton CV, Zhou W, Kile ML, **Houseman EA**, Quamruzzaman Q, Rahman M, Mahiuddin G, Christiani DC. Susceptibility to arsenic-induced skin lesions from polymorphisms in base excision repair genes. *Carcinogenesis* 28:1520-5, 2007.
38. Dodson RE, **Houseman EA**, Levy JI, Spengler JD, Shine JP, Bennett DH. Measured and modeled personal exposures to and risks from volatile organic compounds. *Environ Sci Technol* 41:8498-505, 2007.
39. **Houseman EA**, Marsit C, Karagas M, Ryan LM. Penalized item response theory models: application to epigenetic alterations in bladder cancer. *Biometrics* 63:1269-77, 2007.
40. Hsiung DT, Marsit CJ, **Houseman EA**, Eddy K, Furniss CS, McClean MD, Kelsey KT. Global DNA methylation level in whole blood as a biomarker in head and neck squamous cell carcinoma. *Cancer Epidemiol Biomarkers Prev* 16:108-14, 2007.
41. Kile ML, **Houseman EA**, Breton CV, Quamruzzaman Q, Rahman M, Mahiuddin G, Christiani DC. Association between total ingested arsenic and toenail arsenic concentrations. *J Environ Sci Health A Tox Hazard Subst Environ Eng* 42:1827-34, 2007.
42. Kile ML, **Houseman EA**, Breton CV, Smith T, Quamruzzaman Q, Rahman M, Mahiuddin G, Christiani DC. Dietary arsenic exposure in bangladesh. *Environ Health Perspect* 115:889-93, 2007. PMCID: PMC1892146.
43. Loh MM, Levy JI, Spengler JD, **Houseman EA**, Bennett DH. Ranking cancer risks of organic hazardous air pollutants in the United States. *Environ Health Perspect* 115:1160-8, 2007. PMCID: PMC1940102.
44. Marsit CJ, **Houseman EA**, Schned AR, Karagas MR, Kelsey KT. Promoter hypermethylation is associated with current smoking, age, gender and survival in bladder cancer. *Carcinogenesis* 28:1745-51, 2007.
45. McCarty KM, Ryan L, **Houseman EA**, Williams PL, Miller DP, Quamruzzaman Q, Rahman M, Mahiuddin G, Smith T, Gonzalez E, Su L, Christiani DC. A case-control study of GST polymorphisms and arsenic related skin lesions. *Environ Health* 6:5, 2007. PMCID: PMC1805433.
46. McDevitt JJ, Lai KM, Rudnick SN, **Houseman EA**, First MW, Milton DK. Characterization of UVC light sensitivity of vaccinia virus. *Appl Environ Microbiol* 73:5760-6, 2007. PMCID: PMC2074914.
47. Morara M, Ryan L, **Houseman A**, Strauss W. Optimal design for epidemiological studies subject to designed missingness. *Lifetime Data Anal* 13:583-605, 2007.
48. Schmidt MW, **Houseman A**, Ivanov AR, Wolf DA. Comparative proteomic and transcriptomic profiling of the fission yeast Schizosaccharomyces pombe. *Mol Syst Biol* 3:79, 2007. PMCID: PMC1828747.

49. Breton CV, **Houseman EA**, Kile ML, Quamruzzaman Q, Rahman M, Mahiuddin G, Christiani DC. Gender-specific protective effect of hemoglobin on arsenic-induced skin lesions. *Cancer Epidemiol Biomarkers Prev* 15:902-7, 2006.

50. Coull BA, **Houseman EA**, Betensky RA. A computationally tractable multivariate random effects model for clustered binary data. *Biometrika* 93:587-99, 2006.

51. **Houseman EA**, Coull BA, Betensky RA. Feature-specific penalized latent class analysis for genomic data. *Biometrics* 62:1062-70, 2006.

52. **Houseman EA**, Coull BA, Ryan LM. A functional-based distribution diagnostic for a linear model with correlated outcomes. *Biometrika* 93:911-26, 2006.

53. **Houseman EA**, Coull BA, Shine JP. A nonstationary negative binomial time series with time-dependent covariates: Enterococcus counts in Boston Harbor. *J Amer Stat Assoc* 101:1365-76, 2006.

54. **Houseman EA**, Milton DK. Partial questionnaire designs, questionnaire nonresponse, and attributable fraction: Applications to adult onset asthma. *Stat Med* 25:1499-519, 2006.

55. Loh MM, **Houseman EA**, Gray GM, Levy JI, Spengler JD, Bennett DH. Measured concentrations of VOCs in several non-residential microenvironments in the United States. *Environ Sci Technol* 40:6903-11, 2006.

56. Marsit CJ, **Houseman EA**, Christensen BC, Eddy K, Bueno R, Sugarbaker DJ, Nelson HH, Karagas MR, Kelsey KT. Examination of a CpG island methylator phenotype and implications of methylation profiles in solid tumors. *Cancer Res* 66:10621-9, 2006.

57. McCarty KM, **Houseman EA**, Quamruzzaman Q, Rahman M, Mahiuddin G, Smith T, Ryan L, Christiani DC. The impact of diet and betel nut use on skin lesions associated with drinking-water arsenic in Pabna, Bangladesh. *Environ Health Perspect* 114:334-40, 2006. PMCID: PMC1392225.

58. Sama SR, Milton DK, Hunt PR, **Houseman EA**, Henneberger PK, Rosiello RA. Case-by-case assessment of adult-onset asthma attributable to occupational exposures among members of a health maintenance organization. *J Occup Environ Med* 48:400-7, 2006.

59. Chen YC, Su HJ, Guo YL, **Houseman EA**, Christiani DC. Interaction between environmental tobacco smoke and arsenic methylation ability on the risk of bladder cancer. *Cancer Causes Control* 16:75-81, 2005.

60. **Houseman EA**. A robust regression model for a first-order autoregressive time series with unequal spacing: application to water monitoring. *J Royal Stat Soc - Series C* 54:769-80, 2005.

61. Kile ML, **Houseman EA**, Rodrigues E, Smith TJ, Quamruzzaman Q, Rahman M, Mahiuddin G, Su L, Christiani DC. Toenail arsenic concentrations, GSTT1 gene polymorphisms, and arsenic exposure from drinking water. *Cancer Epidemiol Biomarkers Prev* 14:2419-26, 2005.

62. **Houseman EA**, Ryan LM, Coull BA. Cholesky residuals for assessing normal errors in linear model with correlated outcomes. *J Amer Stat Assoc* 99:383-94, 2004.

63. **Houseman EA**, Ryan L, Levy JI, Spengler JD. Autocorrelation in real-time continuous monitoring of microenvironments *J Appl Stat* 29:855-72, 2002.

64. Levy JI, **Houseman EA**, Spengler JD, Loh P, Ryan L. Fine particulate matter and polycyclic aromatic hydrocarbon concentration patterns in Roxbury, Massachusetts: a community-based GIS analysis. *Environ Health Perspect* 109:341-7, 2001. PMCID: PMC1240273.

65. Levy JI, **Houseman EA**, Ryan L, Richardson D, Spengler JD. Particle concentrations in urban microenvironments. *Environ Health Perspect* 108:1051-7, 2000. PMCID: PMC1240162.

Patents:

1. US Patent: Christensen BC, **Houseman EA**, Yeh RF, Godleski JG, Bueno R, Sugarbaker DJ, Karagas MR, Wrensch MR, Wiemels JL, Zheng S, Marsit CJ, Nelson HH, Wiencke JK, Kelsey KT. *Diagnosing, prognosing, and early detection of cancers by DNA methylation profiling*. USPTO #: 61/222,558.

Active Research Support:

R01 CA075971-10 Betensky   09/01/07-08/31/11   0.6 calendar months
NIH/NCI $148,241
Statistical Methods for Analysis of Failure Time Data
The major goal of this project is the development of methods for analysis of interval and right censored data that addresses medical questions frequently posed by clinicians.

Coop. Agreement No. 7-C-NE-HU (Levy)   07/01/10-06/30/11   0.36 calendar Months
Federal Aviation Administration $88,685
Health Impacts of Aviation-Related Air Pollutants (Partners Project II)
The primary goal of this project is to develop models evaluating linkages between aviation activity and air pollution patterns in neighborhoods surrounding small and large airports, focusing on mobile monitoring data collected near T.F. Green Airport and fixed-site monitoring data collected near Los Angeles International Airport. The project additionally involves development and application of methods to model health risks from future aviation emissions given changes over time in emissions, background concentrations, and population patterns, with an emphasis on extracting individual airport impacts from national-scale atmospheric model outputs.

2P30ES000002-46 (Dockery)   04/01/97-03/31/14   0.24 calendar months
NIH/NIEHS $98,000
HSPH-NIEHS Center for Environmental Health – Kresge Center
Provides statistical and data management support for the design and analysis of research projects conducted by investigators in the Kresge Center. Research focused on interdisciplinary investigations of environmental health problems using epidemiological methods.

P01 CA134294-01 (Lin)   09/10/08-08/31/13   0.6 calendar months
NCI $473,469
Statistical Informatics for Cancer Research
This program project will tackle a series of problems motivated by the analysis of high dimensional data arising in population-based studies of cancer.

R01 CA126939 (Kelsey)   05/17/08-03/31/13   1.35 calendar months
NIH/NCI $312,146
The Epidemiology of Molecular Alterations in Mesothelioma
This project will study the molecular character of their tumors, proposing that the character of the lesions in the tumor is associated with the nature of their asbestos exposure and well as with their response to treatment.

R01 CA121147 (Kelsey)   05/01/07-02/28/12   1.97 calendar months
NIH/NIEHS $303,243
The Molecular Epidemiology of Bladder Cancer

The project investigates carcinogen-induced inactivation of tumor suppressor genes. It will specifically clarify the relationship of carcinogen exposure with epigenetic silencing of genes in the causal pathway for this disease.

R01 CA100679 (Kelsey)   04/01/09-03/31/13   1.1 calendar months
NIH/NCI $250,000
Patterns of Somatic Gene Alteration in Oral Cancer
This grant proposes to determine mutation spectra and epigenetic inactivation of genes important in causing oral cancer.

RCAG036666 (Loucks)   09/30/09 – 08/31/11   0.43 calendar months
NIH/NIA $628,782
The New England Family Study: Fifty Year Post-Perinatal Follow-Up for Life Course Effects on Aging
This project will assess aging processes in 500 of the Collaborative Perinatal Project (CPP) participants born in 1959-1966 to explore how conditions during pregnancy and early life may impact epigenetic alterations and aging processes that could subsequently manifest in midlife as atherosclerosis, type 2 diabetes, adiposity and cognitive decline.

Coop. Agreement (Houseman)   10/01/10 – 08/31/11   3.13 calendar months
NIOSH/CDC $84,416
Open-source architecture for Bayesian decision models in occupation hygiene and exposure assessment
The Department of Health and Human Services (HHS), Centers for Disease Control and Prevention (CDC),
National Institute for Occupational Safety and Health (NIOSH), Division of Applied Research (DART) requires scientific, statistical, and technical assistance and expertise in development of an open-source architecture for Bayesian decision models for use in occupational hygiene and exposure assessment. These will be implemented in an R package, providing basic support for Markov-Chain Monte Carlo sampling, abstract model classes, data management strategies for commonly used constants or data sources, and generalized interfaces for graphics.