

Curriculum Vitae - Esben Budtz-Jørgensen

Day of birth June 17, 1968

Nationality Danish

Short presentation

Dr. Budtz-Jørgensen is the head of the Section of Biostatistics at the University of Copenhagen. He has a considerable experience in statistical analysis of complex multivariate data. One of his main research topics has been how to use latent variable models in environmental epidemiology, and he has done research on methods for identification of safe exposure levels, consequences of exposure measurement error, methods for confounder selection and modeling of genetic and neuroimaging data.

Education

1997 MSc (Mathematical statistics).

University of Copenhagen.

2002 Ph.D (Biostatistics).

University of Copenhagen.

Title of Ph.D-project: Statistical Methods for the Evaluation of Health Effects of Prenatal Mercury Exposure.

Current employment and most recent employments

1/2 2017 - Department Chair.
Department of Biostatistics, University of Copenhagen

1/6 2013 - Qualified for position as Professor in Biostatistics

1/2 2006 - Associate professor.
Department of Biostatistics, University of Copenhagen

1/8 2004 - 1/2 2006 Assistant professor.
Department of Biostatistics, University of Copenhagen
Financed with 50% by Department of Environmental Medicine,
University of Southern Denmark

1/1 2004 - 1/7 2004 Visiting scientist
Department of Biostatistics, Harvard University, Boston.

1/8 2002 - 1/8 2004 Assistant professor.
Department of Environmental Medicine,
University of Southern Denmark
Department of Biostatistics, University of Copenhagen

Awards, societies, etc.

Best paper award: Annals of Epidemiology 2007. Editorial board for Environmental Health. Regular reviewer for several journals in biostatistics. Participation in several international research projects. Member of ISI- Committee on Risk Analysis (2008-2011). Elected as a member of the International Statistical Institute, 2012. An evaluation committee of the University of Copenhagen found him to be qualified for a position as Professor in Biostatistics, 2013.

Membership of major university committees, research councils, etc.

Member of the Research Committee of the Faculty of Health Sciences, University of Copenhagen (2011-2015). Member, European Food Safety Authority, Expert Panel on the Benchmark Approach (2006-2009). Member of the leader team of the Section of Biostatistics, Copenhagen University (2012-). Member Center Steering Group, Neuropharm, University of Copenhagen (2015-2020). Current member of coordination group in DOC*X project.

International expert panels

1. Mercury Expert Panel Meeting. Agency for Toxic Substances and Disease Registry, Atlanta, USA, July 1998.
2. The White House Office of Science and Technology Policy: Workshop on Scientific Issues Relevant to Assessment of Health Effects from Exposure to Methylmercury. National Institute of Environmental Health Science, Raleigh, North Carolina, USA, November 1998.
3. Member, European Food Safety Authority, Expert Panel on the Benchmark Approach (2006-2009).

Referee for Scientific Journals

Risk Analysis, Biometrics, Biostatistics, Statistics in Medicine, Scandinavian Journal of Statistics, Environmetrics, Journal of computational and graphical statistics, Life time data analysis. Environmental Health Perspectives. GUT-An international Journal of Gastroenterology and Hepatology. American Journal of Epidemiology. Journal of Exposure Analysis and Environmental Epidemiology.

Member of assessment committees

Position as Associate Professor in applied statistics at Aalborg University. Position as Postdoc in Epidemiology at University of Southern Denmark. Position as Assistant Professor in Biostatistics, University of Copenhagen. Head of Ph.D.-assessment committee for Mette Gerster (Department of Biostatistics, 2009), Lise Geisler Andersen (Institute of Preventive Medicine, 2013), and Marie Holm Eliassen (Research Centre for Prevention and Health, Glostrup, 2018)

Organizing committees

Member of the organizing committee for Annual Conference of the International Society for Clinical Biostatistics, Copenhagen, 2008.

Funding

- Lundbeck foundation (0062449) *New perspectives on pharmacological treatment of mental disorders*. Period: 2021-2026. Applied for: 16,255,000 kr. Application is now in interview phase. PI: Merete Osler. EBJ role: co-investigator.
- NIEHS (R01ES030394) 2020-2024 *Vulnerability During Infancy to Immunotoxic Contaminant Exposures*. Period: 2020-2024. PI: Philippe Grandjean. EBJ Role: co-investigator.
- Lundbeck foundation (R279-2018-1145) *BrainDrugs - Neuropharmacological treatment: Precision medicine in epilepsy and depression*. Period: 2020-2024. Amount: 49,637,551 kr. EBJ: leader of WP1. PI: Gitte Moos Knudsen. EBJ Role: co-investigator.
- University of Copenhagen 2016 fund. Period: 2014-2018. *Dynamical Systems: Mathematical Modeling and Statistical Methods for the Social, Health, and Natural Sciences*. PI: Susanne Ditlevsen. EBJ role: co-investigator
- The Danish Working Environment Fund (Projektnr.: 43-2014-03) *DOC*X Danish Occupational Cohort*. Period: 2015-2018. Amount: 7,140,000 kr. EBJ role: co-investigator.
- Health Effects Institute Walter A. Rosenblith New Investigator Award (CR-83590201), *Impact of Exposure to Air Pollution on Asthma: a Multi-Exposure Assessment*. Period: 2018-2021. Amount: \$ 450,000. PI: Marie Pedersen. EBJ Role: co-investigator.
- Danish Cancer Society. *Measurement error in AirGIS* Amount: 125,000 kr. EBJ Role: PI.
- NIEHS (P42ES027706) *Sources, Transport, Exposure and Effects of PFASs (STEEP SRP Center)*. Period: 2017-2022. PIs: Rainer Lohmann, Philippe Grandjean. EBJ Role: co-investigator.
- NSF (OCE-1321612) *Immunotoxicity in Human with Exposure to Ocean Pollutants*. Period: 2013-2020. PI: Philippe Grandjean. EBJ Role: co-investigator.
- NIEHS (R01ES021993) *Immunotoxicity in Humans with Lifetime Exposure to Ocean Pollutants*. Period: 2012-2019. PI: Philippe Grandjean. EBJ Role: co-investigator.
- NIEHS (1R01ES012199) *Epidemiology of Immunotoxicant Exposure in Children*. Period: 2011-2017. PI: Philippe Grandjean. EBJ Role: co-investigator.
- Savværksejer Jeppe Juhl og hustru Ovita Juhls Mindelegat. *A joint model for multiple brain imaging markers to evaluate for the association between the serotonergic system and genetic factors*. Period: 2013-2014, Amount: 200.000 kr. EBJ Role: PI.

- NIEHS (5U01ES009797-05) *Mercury-Associated Neurobehavioral Deficit in Children*. Period: 2007-2012. PI: Philippe Grandjean. EBJ Role: co-investigator.
- NIEHS (R01ES014460) *Three-generation Human Study of Reproductive Effects of Marine Contaminants*. Period: 2006-2013. PI: Philippe Grandjean. EBJ Role: co-investigator.

As the leader of the Section of Biostatistics, I am responsible for many projects in our consultancy service. This includes 400,000 kr/year from Rigshospitalet and 380,000 kr/year from North Zealand Hospital.

In my successful collaboration with Philippe Grandjean, we have received funding from a long list of applications especially to the NIEHS. Some of these funds have been used for my overseas travels and to pay for salary to younger researchers helping me [e.g., Elisabeth Wreford Andersen (1.5 years), Ulla Mogensen (1.5 years), Anne Marie Andersen (0.8 years)].

In addition, I was the main supervisor of Brice Ozenne when he got a lucrative Postdoc grant from Marie Curie and a similar grant from the Lundbeck foundation.

Short bibliographic overview

Peer-reviewed publications: 120, First authorship: 23, Last authorship: 14, Citations: 9060, H-index: 46 (assessed 17/9 2020).

Selected publications

1. Budtz-Jørgensen, E., Keiding, N., Grandjean, P., White, R.F., Weihe, P. *Benchmark dose calculations of methylmercury-associated neurobehavioural deficits*. Toxicology Letters, 112, 193-199, 2000.
2. Larsen, K., Petersen, J.H., Budtz-Jørgensen, E., Endahl, L. *Interpreting parameters in the logistic regression model with random effects*. Biometrics, 56, 909-914, 2000.
3. Budtz-Jørgensen, E., Keiding, N., Grandjean, P. *Benchmark dose calculation from epidemiological data*. Biometrics, 57, 698-706, 2001.
4. Budtz-Jørgensen, E., Keiding, N., Grandjean, P., Weihe, P., White, R.F. *Consequences of exposure measurement error for confounder identification in environmental epidemiology*. Statistics in Medicine, 22, 3089-3100, 2003.
5. Budtz-Jørgensen, E., Keiding, N., Grandjean, P., Weihe, P. *Estimation of health effects of prenatal mercury exposure using structural equation models*. Environmental Health, 1 : 2, 2002.
6. Budtz-Jørgensen, E., Keiding, N., Grandjean, P., Weihe, P., White, R.F. *Statistical methods for the evaluation of health effects of prenatal mercury exposure*. Environmetrics 13, 105-120, 2003.

7. Keiding, N., Budtz-Jørgensen, E. *The precautionary principle and statistical approaches to uncertainty*. European Journal of Oncology Library, 2, 185-191, 2003.
8. Budtz-Jørgensen, E., Keiding, N., Grandjean, P. *Effects of exposure imprecision on estimation of the benchmark dose*. Risk Analysis 24, 1689-1696, 2004.
9. Budtz-Jørgensen, E., Grandjean, P., Jørgensen, P.J., Weihe, P., Keiding, N. *Association between mercury concentrations in blood and hair in methylmercury-exposed subjects at different ages*. Environmental Research 95, 385-393, 2004.
10. Budtz-Jørgensen, E. *Environmental risk assessment with structural equation models*. In *Human Developmental Neurotoxicology* pp 379-392, edited by DC. Bellinger, Taylor & Francis Group, New York, 2006.
11. Sanchez, B.N., Budtz-Jørgensen, E., Ryan, L., Hu, H. *Structural equation models. A review with applications to environmental epidemiology*. Journal of the American Statistical Association 100, 1443-1455, 2006.
12. Budtz-Jørgensen, E., Debes, F., Weihe, P., Grandjean, P., Weihe, P. *Adverse mercury effects in 7-old children expressed as loss in 'IQ'*. Report to the U.S. Environmental Protection Agency, 2005.
13. Debes, F., Budtz-Jørgensen, E., Weihe, P., White, R.F., Grandjean, P. *Impact of methylmercury exposure on neurobehavioral function at age 14 years*. Neurotoxicology and Teratology 28, 363-375, 2006.
14. Budtz-Jørgensen, E. *Environmental risk assessment with structural equation models*. In *Human Developmental Neurotoxicology* pp 379-392, edited by DC. Bellinger, Taylor & Francis Group, New York, 2006.
15. Budtz-Jørgensen, E., Keiding, N., Grandjean, P., Weihe, P. *Confounder Selection in Environmental Epidemiology: Assessment of Health Effects of Prenatal Mercury Exposure*. Annals of Epidemiology 17, 27-35, 2007.
16. Budtz-Jørgensen, E., Grandjean, P., Weihe, P. *Separation of risks and benefits of seafood intake*. Environmental Health Perspectives 115, 323-327, 2007
17. Budtz-Jørgensen, E. *Estimation of the benchmark dose by structural equation models*. Biostatistics 8, 675-688, 2007.
18. Grandjean, P., Budtz-Jørgensen, E. *Total Imprecision of Exposure Biomarkers: Implications for Calculating Exposure Limits*. American Journal of Industrial Medicine, 50, 712-719, 2007.
19. Budtz-Jørgensen, E., Keiding, N., Grandjean. *Approaches to handling uncertainty when setting environmental exposure standards*. In *Uncertainties in Environmental Modelling and Consequences for Policy Making* pp 267-280, edited by P. Baveye, J. Mysiak, M. Laba, Springer, 2009.

20. Gamborg, M. and Andersen, P.K. and Baker, J.L. and Budtz-Jørgensen, E. and Jørgensen, T. and Jensen, G. and Sørensen, T.I.A. *Life course path analysis of birth weight, childhood growth, and adult systolic blood pressure*. American Journal of Epidemiology, 169, 1167-1178, 2009.
21. Sanchez, B.N., Budtz-Jørgensen, E., Ryan, L. *An estimating equations approach to fitting latent exposure models with longitudinal health outcomes*. The Annals of Applied Statistics 3(2), 2009.
22. Budtz-Jørgensen, E., Weihe, P., Debes, F., Grandjean, P. *Structural equation models for meta-analysis in environmental risk assessment*. Environmetrics 21, 510-527, 2010.
23. Guidance of the Scientific Committee on the request from EFSA on the use of the benchmark dose approach in risk assessment (member of the working group). The EFSA Journal 1150, 1-72, 2009.
24. Budtz-Jørgensen E, Grandjean P. *An ignored risk factor in toxicology: The total imprecision of exposure assessment*. Pure and applied chemistry 82, 383-391, 2010.
25. Petersen, J.H. and Holst, K.K. and Budtz-Jørgensen, E. *Correcting a Statistical Artifact in the Estimation of the Hubble Constant Based on Type Ia Supernovae Results in a Change in Estimate of 1.2%*. The Astrophysical Journal, 723,966, 2010.
26. Petersen, J., Bandeen-Roche, K., Budtz-Jørgensen, E., Larsen, K. *Predicting Latent Class Scores for Subsequent Analysis*, Psychometrika 77, 244-262.
27. Grandjean P, Andersen EW, Budtz-Jørgensen E, Nielsen F, Mølbak K, Weihe P, Heilmann C. *Serum Vaccine Antibody Concentrations in Children Exposed to Perfluorinated Compounds*. JAMA, 307: 391-397, 2012.
28. Holst KK, Budtz-Jørgensen E. *Linear latent variable models: the lava-package*. Computational Statistics, 2012.
29. Budtz-Jørgensen E, Bellinger D, Lanphear B, Grandjean P. *An international pooled analysis for obtaining a Benchmark dose for environmental lead exposure in children*, Risk Analysis 33, 450-461, 2013.
30. Grandjean P, Pichery C, Bellanger M, Budtz-Jørgensen, E. *Calculation of Mercury's Effects on Neurodevelopment*, Environmental health perspectives, 120, a452a, 2012.
31. Grandjean P, Budtz-Jørgensen E. *Immunotoxicity of perfluorinated alkylates: Calculation of benchmark doses based on serum concentrations in children*, Environmental health, 12:35, 2013
32. Grandjean, Philippe and Weihe, Pal and Debes, Frodi and Choi, Anna L and Budtz-Jørgensen, Esben. *Neurotoxicity from prenatal and postnatal exposure to methylmercury*. Neurotoxicology and teratology, 43, 39-44, 2014

33. Mogensen, Ulla B; Grandjean, Philippe; Nielsen, Flemming; Weihe, Pal; Budtz-Jørgensen, Esben. *Breastfeeding as an Exposure Pathway for Perfluorinated Alkylates*, Environmental Science & Technology (Washington), Vol. 49, 10466-10473, 2015.
34. Mogensen, Ulla B; Grandjean, Philippe; Heilmann, Carsten; Nielsen, Flemming; Weihe, Pal; Budtz-Jørgensen, Esben *Structural equation modeling of immunotoxicity associated with exposure to perfluorinated alkylates*. Environmental Health: A Global Access Science Source, Vol. 14, 1-10, 2015.
35. Holst, K. K., Budtz-Jørgensen, E., Knudsen, G.M. *A latent variable model with mixed binary and continuous response variables*. arXiv preprint arXiv:1507.01182, 2015.
36. Grandjean, P., Heilmann, C., Weihe, P., Nielsen, F., Mogensen, U. B., Timmermann, A., Budtz-Jørgensen, E. *Estimated exposures to perfluorinated compounds in infancy predict attenuated vaccine antibody concentrations at age 5-years*. Journal of immunotoxicology, 14(1), 188-195, 2017.
37. Budtz-Jørgensen, E. *Statistical comments to the paper "Confounding and causation in the epidemiology of lead" by Wilson and Wilson*. Response to Public Consultation of European Chemicals Agency (ECHA) on neurotoxicity from lead in gunshot, lead in ammunition (bullets) and lead in fishing sinkers (2017).
38. Budtz-Jørgensen, E., & Grandjean, P. *Application of benchmark analysis for mixed contaminant exposures: Mutual adjustment of perfluoroalkylate substances associated with immunotoxicity*. Plos One, 13(10), e0205388, 2018.
39. Rod, N. H., Bengtsson, J., Budtz-Jørgensen, E., Clipet-Jensen, C., Taylor-Robinson, D., Andersen, A. M. N., ... & Rieckmann, A. (2020). *Trajectories of childhood adversity and mortality in early adulthood: a population-based cohort study*. The Lancet, 396(10249), 489-497.
40. Ekstrøm C, Budtz-Jørgensen E, Jensen AK. *Hvorfor er det svært at forudsige epidemier, lige efter de er gået i udbrud?* vindenskab.dk (2020)
41. Holst, K. K., & Budtz-Jørgensen, E. *A two-stage estimation procedure for non-linear structural equation models*. Biostatistics to appear
42. Ozenne B, Fisher PM, Budtz-Jørgensen E. *Small sample corrections for Wald tests in Latent Variable Models*. Journal of the Royal Statistical Society (to appear).

Recently submitted manuscripts

1. Ozenne B, Budtz-Jørgensen E, Ebert E. *Controlling the familywise error rate when performing multiple comparisons in a Linear Latent Variable Model*. Psychometrika (second revision).
2. Ozenne B, Budtz-Jørgensen E, Péron J. *The asymptotic distribution of the net benefit estimator in presence of right-censoring*. Submitted to Biostatistics.