

Elena Aleksandrovna Erosheva

Current Position Assistant Professor WOT of Statistics and Social Work, and a core member of the Center for Statistics and the Social Sciences, University of Washington.

Contact Information

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| <i>Work</i> | Department of Statistics Box 354320 C 14C Padelford Hall Seattle, WA 98195 <i>Tel:</i> (206) 685-0166 <i>Fax:</i> (206) 221-6873 <i>E-mail:</i> elena@stat.washington.edu | <i>Home</i> | 1700 N Northlake Way # A108 Seattle, WA 98103 <i>Tel:</i> (206) 545-4028 |
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Education CARNEGIE MELLON UNIVERSITY Pittsburgh, PA
Ph.D., Statistics, August 2002
Dissertation title: "Grade of Membership and Latent Structure Models With Application to Disability Survey Data"

UTAH STATE UNIVERSITY Logan, UT
M.S., Statistics, June 1998

NOVOSIBIRSK STATE UNIVERSITY Novosibirsk, Russia
B.S., Mathematics and Applied Mathematics,
Honor Diploma, June 1995

Research and Professional Experience

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|---|---------------------|
| <i>Director of Consulting</i> | 09/2007-present |
| CENTER FOR STATISTICS AND THE SOCIAL SCIENCES, UNIVERSITY OF WASHINGTON | Seattle, WA |
| <i>Assistant Professor WOT</i> | 07/2005-present |
| UNIVERSITY OF WASHINGTON | Seattle, WA |
| <i>Research Assistant Professor</i> | 09/2002-06/2005 |
| UNIVERSITY OF WASHINGTON | Seattle, WA |
| <i>Research Assistant</i> | 09/2000-08/2002 |
| CARNEGIE MELLON UNIVERSITY | Pittsburgh, PA |
| <i>Statistician</i> | 05/2000-08/2000 |
| UNIVERSITY OF PITTSBURGH SCHOOL OF PHARMACY | Pittsburgh, PA |
| <i>Summer Intern</i> | 05/1999-08/1999 |
| VACCINE BIOMETRICS DEPARTMENT MERCK RESEARCH LABORATORIES | West Point, PA |
| <i>Research Assistant</i> | 1997-1998 |
| DEPARTMENT OF MATHEMATICS AND STATISTICS, UTAH STATE UNIVERSITY | Logan, UT |
| <i>Research Assistant</i> | 1994-1996 |
| THE SOBOLEV INSTITUTE OF MATHEMATICS | Novosibirsk, Russia |

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|---|--|------------------|
| Teaching Experience | <i>Professor</i> | 2002-2008 |
| | University of Washington | Seattle, WA |
| | SocW/CS&SS 589 <i>Multivariate Data Analysis for the Social Sciences</i> | |
| | STAT/CS&SS 560 <i>Hierarchical Modeling for the Social Sciences</i> | |
| | STAT/CS&SS 504 <i>Applied Regression</i> | |
| | <i>Teaching Assistant</i> | 06/2002, 06/2002 |
| | Inter-University Consortium for Political and Social Research | Ann Arbor, MI |
| | <i>Mixed Models for Categorical Data</i> | |
| | <i>Longitudinal, Multistrata, and Multilevel Models for Categorical Data</i> | |
| | <i>Graduate Teaching Assistant</i> | 1998-2001 |
| | Department of Statistics, Carnegie Mellon University | Pittsburgh, PA |
| | <i>Graduate Teaching Assistant</i> | 1996-1998 |
| | Department of Mathematics and Statistics, Utah State University | Logan, UT |
| UW Committees and Other Duties | | 2007-2008 |
| | Social Work Statistics Track Committee (chair) | |
| | Social Work Ph.D. Steering Committee (member) | |
| | CSSS Graduate Committee (member) | |
| | | 2006-2007 |
| | Statistics Department Pedagogy Committee (chair) | |
| | Social Work Statistics Track Committee (chair) | |
| | Statistics Department Ph.D. Applied Exam Committee (member) | |
| | Social Work Ph.D. Steering Committee (member) | |
| | CSSS Graduate Committee (member) | |
| | 2005-2006 | |
| Statistics Department Pedagogy Committee (member) | | |
| Statistics Department M.S. Applied Exam Committee (member) | | |
| Social Work Ph.D. Steering Committee (member) | | |
| CSSS Graduate Committee (member) | | |
| | 2004-2005 | |
| Statistics Department Pedagogy Committee (chair) | | |
| CSSS Graduate Committee (chair) | | |
| Editor of CSSS Working Paper Series | | |
| School of Social Work Luncheon Series Planning Committee (member) | | |
| Statistics Department Applied Ph.D. Exam Committee (member) | | |
| | 2003-2004 | |
| Statistics Department Pedagogy Committee (member) | | |
| CSSS Graduate Committee (chair) | | |
| Editor of CSSS Working Paper Series | | |
| CSSS Graduate Committee (member) | | |
| School of Social Work Luncheon Series Planning Committee (member) | | |
| Statistics Department M.S. Applied Exam Committee (member) | | |
| | 2002-2003 | |
| Department of Statistics Events and Seminars Committee (member) | | |
| Editor of CSSS Working Paper Series | | |

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|---|---|-------------------|
| Professional Service | Associate Editor <i>The Annals of Applied Statistics</i> | 2006-present |
| | Guest Associate Editor <i>Psychometrika</i> | 2006-2007 |
| | Conference Organizing Committee <i>Case Studies in Bayesian Statistics VIII, IX</i> | 2004-present |
| | Core faculty member <i>Conference on Application of Psychometric Methods to Measurement Issues in Cognitive Aging Research</i> | 2007-present |
| | Reviewer for: <i>Annals of Applied Statistics, British Journal of Mathematical and Statistical Psychology, the Center for Statistics and the Social Sciences Seed Grant Program, Columbia University Press, Demography, Encyclopedia of Social Measurement, National Science Foundation, Oxford University Press, Proceedings of the National Academy of Sciences, Psychometrika</i> and Springer Publishing Services. | |
| Supervision of Students | <ul style="list-style-type: none"> • Committee chair for David Dailey (Statistics, MS 06/2005) • Committee chair for Toby White (Statistics, PhD expected 09/2008) | |
| | Ph.D. dissertation Committee member for Ryan Admiraal (Statistics), Seunghye Hong (Social Work), Elizabeth Sanders (Education), Douglas Downey (Computer Science and Engineering). M.S. thesis committee member for Conglei Zhang, (Business School). Mentor, <i>Faculty and Graduate Student Mentoring Program</i> , University of Washington. External evaluator for two M.S. dissertations, Department of Statistics, Athens University of Economics and Business. | |
| Research Projects, Grants, Contracts | Co-investigator | 09/01/07-08/31/09 |
| | Award No. 1 R01 AG029672-01A1 <i>Improving Cognitive Outcome Precision and Responsiveness with Modern Psychometrics</i> (NIH, PI-Paul K. Crane, Department of Medicine, UW, \$2,716,365 total costs). | |
| | Principal Investigator | 09/01/07-08/31/09 |
| | Award No. 1 R03 AG030605-01 <i>Operational Definition of Chronic Disability in the National Long-Term Care Survey</i> , (NIH, \$121,280 total costs). | |
| | Co-investigator | 9/1/05-8/31/08 |
| | Award No. R 01 DA18148-01A1 <i>Life Course Trajectories of Substance Use and Crime</i> (NIH, PI-Ross L. Matsueda, Department of Sociology, UW, \$993,535 total costs). | |
| Co-investigator | 12/06-09/08 | |
| <i>Learning Initiatives Award to the Department of Statistics</i> , College of Arts & Sciences, University of Washington (PI-June Morita, Department of Statistics, UW, \$35,000 + \$25,893 total costs). | | |
| Co-investigator | 1/1/05-12/30/06 | |
| Award No. 1R01HD049142-01 <i>Education and Health Among Racial Groups</i> (NICHD, PI-David Takeuchi, School of Social Work, UW, \$368,455 total costs). | | |
| Principal Investigator | 09/30/03-08/31/06 | |
| Subaward No. 1090087-145355 to the University of Washington (\$192,000 total costs); grant 1 R01 AG023141-01 <i>Modeling Longitudinal Disability Survey Data</i> (NIH, PI-Stephen E. Fienberg, Department of Statistics, Carnegie Mellon University). | | |

Principal Investigator 09/15/04–08/31/05
Subaward No. 148549 to the University of Washington;
grant 1 R43 AG025710-01 A *Stata Module for Grade of Membership (GoM) Analysis*
(NIH, PI-Roberto G. Guiterrez, Stata Corporation, \$8,784 total costs).

Principal Investigator 11/1/03–5/31/04
Subaward No. 149928-0505 to the University of Washington (\$8,784 total costs); grant
U01 MH060220 *Epidemiology: National Comorbidity Survey Replication* (NIH, PI-
Ronald C. Kessler, Department of Health Care Policy, Harvard Medical School).

Principal Investigator 09/29/03–05/31/04
Seed Grant *Statistics and Social Work Collaborative Research Initiative* (CSSS, UW,
\$37,424 total costs).

**Peer-reviewed
Article
Publications**

1. E. A. Erosheva, S.E. Fienberg, and C. Joutard. “Describing disability through individual-level mixture models for multivariate binary data” *The Annals of Applied Statistics* (2007), Vol. 1, No. 2, 502-537.
2. E. A. Erosheva, E. C. Walton, and D. T. Takeuchi. “Self-rated health among foreign- and US-Born Asian Americans: A test of comparability.” *Medical Care* (2007), 45(1): 80-87.
3. E. A. Erosheva. “Will the market bear your asking price?” *Chance* (2005), 18(3), 23-28 (with discussion).
4. E. A. Erosheva “Comparing latent structures of the Grade of Membership, Rasch, and latent class models,” (2005) *Psychometrika*, 70(4), 619-628.
5. E. A. Erosheva and S. E. Fienberg. Book chapter “Bayesian mixed membership models for soft clustering and classification.” In Weihs, C. and Gaul, W. (Eds.), *Classification - The Ubiquitous Challenge*, (2005) Springer, Heidelberg, 11-26.
6. E. A. Erosheva. Book chapter “Partial membership models with application to disability survey data.” In H. Bozdogan, ed., *Statistical Data Mining and Knowledge Discovery*, (2004) Chapman & Hall/CRC, 117-134.
7. A. Dobra, E. A. Erosheva, and S. E. Fienberg. Book chapter “Disclosure limitation methods based on bounds for large contingency tables with application to disability data.” In H. Bozdogan, ed., *Statistical Data Mining and Knowledge Discovery*, (2004) Chapman & Hall/CRC, 93-116.
8. E. A. Erosheva, S. E. Fienberg, and J. Lafferty. “Mixed-membership models of scientific publications.” *Proceedings of the National Academy of Sciences* (2004), 101 (Suppl.1), 5220-5227.
9. E. A. Erosheva. Book chapter “Bayesian estimation of the Grade of Membership model,” *Bayesian Statistics 7 (J. Bernardo et al., Eds.)*. Oxford University Press, (2003), 501-510.
10. E. A. Erosheva, S. E. Fienberg, and B. J. Junker. “Alternative statistical models and representations for large sparse multi-dimensional contingency tables,” *Annales de la Faculte des Sciences de l’Universite de Toulouse Mathematiques*, (2002), 11.
11. E. A. Erosheva, J. B. Greenhouse, and P. D. Kroboth. “Characterizing the diurnal rhythm of DHEA,” *The American Statistician*, (2002) 56, No. 4, 273-283.

**Abstract
Publications in
Peer-reviewed
Journals**

1. P. K. Crane, L. E. Gibbons, S. Haneuse, G. van Belle, E. Erosheva, E. B. Larson and D. M. Mungas. "Accounting for measurement precision in a simulated longitudinal study of cognitive functioning dramatically improved the accuracy of estimates of the rate of change," *Alzheimer's and Dementia* (2006), 2, No. 3, Supplement 1, S302-S303.
2. E. A. Erosheva, F. S. Salek, R. A. Stone, M. M. Folan, J. Greenhouse, and P. D. Kroboth. "Characterizing the diurnal rhythm of DHEA and effects of an oral dose of Alprazolam" *Biological Psychiatry* (2000), 47, No. 8, Supplement 1, p. S145.

**Non
Peer-reviewed
Articles and
Conference
Proceedings**

1. E. A. Erosheva and C. Joutard. "The extended Grade of Membership mixture model." In C. H. Skiadas (Ed.), *Proceedings of the 12th International Conference on Applied Stochastic Models and Data Analysis* (2007), Chania, Greece (available at http://www.asmda.com//CDasmda2007a/conf_papers.html).
2. J. Connor, E. A. Erosheva, S. E. Fienberg, and T. White. "Toward a restructuring of the National Long Term Care Survey." Technical report commissioned by the National Academy of Sciences for discussion at the *Second Expert Meeting on the Future of the National Long Term Care Survey*, February 16, 2006, Washington DC (available at <http://www.nia.nih.gov/ResearchInformation/ExtramuralPrograms/BehavioralAndSocialResearch/ConferencesAndWorkshops.htm>).
3. E. A. Erosheva and S. E. Fienberg. Contribution to the discussion of S. P. Brooks, P. Giudici and G. O. Roberts, "Efficient construction of reversible jump Markov chain Monte Carlo proposal distributions", (2003) *Journal of the Royal Statistical Society, Series B*, **65**, 3-55.

**Papers and
Under Review**

1. D. Kreager, R. Matsueda, and E. A. Erosheva. "Motherhood and criminal desistance in disadvantaged neighborhoods," submitted 02/15/08 to *American Sociological Review*.

Patents

1. P. A. Maltseff, S. Winter, P. Nikitin, V. Kodukula, and E. Erosheva. "Stochastic communication protocol method and system for radio frequency identification (RFID) tags based on coalition formation, such as for tag-to-tag communication." International publication number: WO 2007/035863 A2. International publication date: March 29, 2007.

**Presentations
and Conference
Talks**

- P. K. Crane, J. C. Gruhl, L. E. Gibbons, E. Erosheva, S. McCurry, K. Rhoads, V. Nguyen, K. Arani, K. Masaki, and L. White. "Self-reported use of written Japanese in midlife was not protective for late-life cognitive decline: the Honolulu-Asia Aging Study." Submitted to *International Alzheimer's meeting*, Chicago, July 2008.
- E. A. Erosheva, D. Telesca, R. Matsueda, and D. Kreager. "Hierarchical Bayesian modeling of marijuana use trajectories in young adults and adolescents" (poster) *Case Studies in Bayesian Statistics Workshop 9*, Pittsburgh, PA, October 19, 2007.
- T. White and E. A. Erosheva. "Latent class transition models for the elderly U.S. chronically disabled population" (poster) *University of Washington Geriatric Research Forum*, Seattle, WA, September 20, 2007.

- E. A. Erosheva and C. Joutard. “The extended Grade of Membership mixture model” *The 12th International Conference on Applied Stochastic Models and Data Analysis*, Chania, Greece, May 28-June 1, 2007.
- E. A. Erosheva, E. C. Walton, and D. T. Takeuchi. “Testing for group biases in a multiple category scale: A case-study on self-rated health among foreign- and native-born individuals,” *Joint Statistical Meetings*, Seattle, WA, August 6-10, 2006.
- D. Dailey and E. A. Erosheva. “Sensitivity of latent trait analysis to highly skewed ability distributions,” *Joint Statistical Meetings*, Seattle, WA, August 6-10, 2006.
- E. A. Erosheva. “Missing data: What can we do about it?” *Psychometrics Workshop*, Friday Harbor, San Juan Island, WA, August 27-31, 2006.
- E. A. Erosheva, E. C. Walton, and D. T. Takeuchi. “Using propensity score matching to investigate differential item functioning” *International Meeting of the Psychometric Society*, Montreal, June 14-17, 2006.
- C. Joutard, E. A. Erosheva, and S. E. Fienberg “Grade of membership analysis of a subset of functional disability data” *Eight Valencia International Meeting on Bayesian Statistics*, Alicante, Spain, June, 2006.
- E. A. Erosheva, E. C. Walton, and D. T. Takeuchi “Self-rated health among foreign- and US-born individuals: A test of comparability.” *International Conference on Health Policy Research*, October 28 - November 1, 2005; *CSSS Seminar*, University of Washington, Seattle, February 8, 2006.
- E. A. Erosheva. “Dimensions of functional disability in the elderly: Analyzing basic and instrumental activities of daily living.” *Society of Social Work and Research Annual Conference*, Miami, Florida, January 15, 2005.
- E. A. Erosheva. “Bayesian estimation of a latent trait model with bounded continuous latent variables.” *International Meeting of the Psychometric Society*, Pacific Grove, CA, June 14, 2004.
- E. A. Erosheva. “Functional disability dimensions: Overview”, *First Pacific Northwest Health and Medical Psychometrics Meeting*, University of British Columbia, Vancouver, Canada, May 1, 2004.
- E. A. Erosheva, S. E. Fienberg, and J. Lafferty. “Major, minor, and internal categories of PNAS research reports”, *CSSS Seminar*, University of Washington, Seattle, October 15, 2003; *Working Group on Model-Based Clustering and Bayesian Model Selection*, University of Washington, Seattle, October 31, 2003.
- E. A. Erosheva, S. E. Fienberg, and J. Lafferty. “Exploring internal structure of PNAS publications: A hierarchical model for text and references” (poster), *Case Studies in Bayesian Statistics 7*, Carnegie Mellon University, Pittsburgh, PA, September 12, 2003.
- E. A. Erosheva. “Analyzing hormone concentrations with linear mixed-effects models”, *Social Development Research Group*, School of Social Work, University of Washington, Seattle, WA, March 20, 2003.
- E. A. Erosheva. “Partial membership models”, *Working Group on Model-Based Clustering and Bayesian Model Selection*, University of Washington, Seattle, WA, January 24, 2003.
- E. A. Erosheva. “Latent class and Grade of Membership models”, *Working group on Model-Based Clustering and Bayesian Model Selection*, University of Washington, Seattle, WA, July 26, 2002.

- E. A. Erosheva. “Bayesian estimation of the Grade of Membership model” (contributed paper), *Seventh Valencia International Meeting on Bayesian Statistics*, Tenerife, Spain, June, 2002.
- E. A. Erosheva. “Using statistical models to understand functional disability among the elderly”, *Department of Health Care Policy, Harvard Medical School*, Boston, MA, February 2002; *School of Social Work, University of Washington*, Seattle, WA, February 2002.
- E. A. Erosheva. “The GoM model: latent class representation and implications for Bayesian estimation”, Department of Statistics, University of Washington, Seattle, WA, February 2002; Faculteit Psychologie, Katholieke Universiteit Leuven, Belgium, December 2001.
- E. A. Erosheva. “Heterogeneity representations of log-linear, latent class, Rasch, and Grade of Membership models” (contributed paper), *International Meetings of Psychometrics Society*, Osaka, Japan, July 2001.
- E. A. Erosheva, F. S. Salek, R. A. Stone, M. M. Folan, J. Greenhouse, and P. D. Kroboth. “Characterizing the diurnal rhythm of DHEA and effects of an oral dose of Alprazolam” *Society of Biological Psychiatry*, Chicago, IL, May 2000.
- E. A. Erosheva, P. D. Kroboth, and J. Greenhouse. “Characterizing the diurnal rhythm of Dehydroepiandrosterone and effects of an oral dose of Alprazolam” (poster) *Eastern North American Region of International Biometrics Society*, Chicago, IL, March 2000.

Invited Talks

- E. A. Erosheva, D. Telesca, R. Matsueda, and D. Kreager. “Unimodal Hierarchical Curve Registration: Analyzing Longitudinal Crime Patterns” *International Meeting of the Psychometric Society*, Durham, NH, June 30, 2008.
- E. A. Erosheva. “Extended Grade of Membership mixture model” *Department of Mathematics & Statistics, Portland State University*, March 14, 2008.
- E. A. Erosheva. “Combining analysis of square tables and propensity score matching: Do two groups of assessors differ in their usage of the categories?” *Case Studies in Bayesian Statistics Workshop 9, Special Session in Honor of Stephen E. Fienberg’s 65-th Birthday*, Pittsburgh, PA, October 19, 2007.
- E. A. Erosheva “An Extension of hierarchical Bayesian mixed-membership models” *Department of Statistics, Athens University of Economics and Business*, Athens, Greece, June 1, 2007.
- E. A. Erosheva “A Bayesian analysis of multivariate binary response data using basic and compartmental Grade of Membership models”, *Department of Statistics and Actuarial Science, University of Waterloo*, November 16, 2006.
- E. A. Erosheva and S. E. Fienberg. “Bayesian mixed-membership models”, Plenary Lecture at the *Annual Conference of the German Classification Society*, University of Dortmund, March 10, 2004.
- E. A. Erosheva. “Grade of Membership and latent structure models with applications to disability survey data”, *Joint Statistical Meetings, Savage Award (Application Methodology) Section*, San Francisco, CA, August 5, 2003.
- E. A. Erosheva, S. E. Fienberg, and J. Lafferty. “Mixed membership models of scientific publications” *Arthur M. Sackler Colloquium on Mapping Knowledge Domains*, Beckman Center for National Academy of Sciences, Irvine, CA, May 10, 2003.

- E. A. Erosheva. “Mixed membership models”, *Warren Neel Conference on the New Frontiers of Statistical Data Mining, Knowledge Discovery, and E-Business*, Knoxville, Tennessee, June, 2002.

**Professional
Membership**

Institute of Mathematical Statistics, Psychometric Society, American Statistical Association, Society of Social Work and Research.

**Awards and
Honors**

- Travel Award, American Statistical Association, Section on Bayesian Statistical Science. Joint Statistical Meetings, 2003.
- Conference Travel Grant, Seventh Valencia International Meeting on Bayesian Statistics, 2002.
- Honor Society Phi Kappa Phi, 2001.
- Graduate Presentation Award, 2001, Carnegie Mellon University.
- Graduate Academic Achievement Award, 1998, Utah State University.
- National Dean’s List, 1997.