

Fall 2012

sampler

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from the CHAIR



Another successful year has gone by and it is time to once again report to you on the many exciting developments over the past year.

A big change in the department: after 30 years of wonderful service Dick Dykstra retired this Spring. We also added Ting Zhang as a new Assistant Professor from the University of Chicago.

This year we graduated three Ph.D. students: Jae Youn Ahn, Fei Su, and Xiongwen Tang. Jae Youn has taken a teaching position with Ewha Womans University in Seoul, South Korea. Fei is working in research with ISO Innovative Analytics in San Francisco, California. Xiongwen has taken a research position with Forest Labs in Jersey City, New Jersey. We also awarded 11 MS degrees and 9 BS degrees in statistics last year.

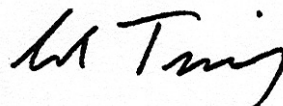
Our actuarial science program awarded 16 MS degrees and 14 BS degrees. Our students' pass rates on the SOA exams continue to be exceptional. In addition, 13 alumni became Fellows of the Society of Actuaries (FSA); 10 became Associates of the Society of Actuaries (ASA); 3 alumni became Fellows of the Casualty Actuarial Society (FCAS); 1 additional Associate of the Casualty Actuarial Society (ACAS); and 1 alumnus became a Chartered Enterprise Risk Analysts (CERA).

We are very grateful for the generous donations from alumni, friends, and companies who allow us to attract and support the best students. During the 2011-2012 academic year we spent more than \$49,500 on our students, the vast majority in the form of scholarships, actuarial exam fee reimbursements, and prizes. This is a big investment, but having the best students makes it worthwhile. Thank you for helping to make our programs successful!

We are unable to include our Fiscal Year 2012 donor honor roll in this issue of the *Sampler* due to the UI Foundation restructuring of the alumni/donor database. We are very sorry that we could not publish this important information as we do deeply appreciate your valuable contributions and we plan to recognize these contributions in a future issue of the *Sampler*.

I hope you will enjoy reading the news about our department, students, faculty, and alumni on the following pages. We would be happy to include any news you would like to share with former classmates in next year's newsletter. Please use the enclosed sheet to send your information, or send us an email.

Best wishes,



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Faculty and Staff News

Richard Dykstra was recognized on May 4, 2012 for his thirty years of service to the University of Iowa and he began retirement in earnest after finishing teaching this spring. Thank you Professor Dykstra for your wonderful years of teaching for our department!



Joyee Ghosh gave an invited talk at the Department of Biostatistics, University of Iowa in February 2012. The title of the talk was “Secure computation protocols for Bayesian model averaging”. Joyee also gave invited talks at the Department of Statistics, University of Missouri-Columbia and at the IBM T.J. Watson Research Center in Yorktown Heights, New York in March and April, 2012. She gave a talk in an invited session “Advances in variable selection methods for high-dimensional data” at the WNAR-Graybill Conference in Fort Collins, Colorado in June 2012. She also presented a special topic session talk titled “Data Augmentation and Sandwich Algorithms for Bayesian Model Averaging” at the ISBA 2012 World Meeting in Kyoto, Japan, in June 2012. Joyee is the Poster Chair for invited, topic-contributed and contributed posters for the Joint Statistical Meetings to be held in Montreal, Canada, in August, 2013.



Russ Lenth is serving on ASA’s Leadership Support Council as a liaison for the ASA committees that are concerned with external issues – ethics, human rights, climate-change policy, etc., and is an Associate Editor for *The American Statistician*. His sample-size website is still going strong, and crossed the 1,000,000-hit milestone this fall. He will retire at the end of this academic year. He joined the faculty as a new PhD in 1975. Russ says: “this department has been a great place to work, and there was never a reason to go elsewhere.” He intends to remain busy with professional activities, but retirement will expand opportunities to travel and to pursue his other passion, playing the French horn.



Erning Li was invited to give a colloquium talk “Alternative REML estimation of covariance matrices in linear mixed Models” at the School of Mathematical and Statistical Sciences, Arizona State University, Tempe, Arizona, in April 2012.



Javier Suarez-Espinosa has joined our department as a visiting Assistant Professor this year. Javier received his Ph. D. in Applied Statistics from the University of California, Riverside. Welcome Javier!

Osnat Stramer was invited to give a talk “Bayesian inference for irreducible diffusion processes”, at the 2012 Seminar on Bayesian Inference in Econometrics and Statistics (SBIES), on April 27 and 28, 2012, UC Santa Cruz. Also, she presented “Linking the discrete and continuous time approaches regarding inference for diffusion processes”, at the Midwest Statistics Research Colloquium, March 16-17, 2012, in Madison, Wisconsin.

Additionally she gave a talk “Bayesian inference for a generalized class of Heston models”, at the Monte Carlo and Quasi Monte Carlo conference (MCQMC 2012), in Sydney, Australia on February 13-17, 2012. And finally she presented, “Bayesian inference for threshold diffusion processes using the pseudo-marginal approach”, at the 4th International Conference of the ERCIM WG (European Consortium for Informatics and Mathematics Working Group) on Computing & Statistics (ERCIM-11), in London in December 2011.

Jerome Pansera was invited to the workshop “The Mathematics of the New Financial Systems” from the Institute for Mathematics and its Applications, at the University of Minnesota. In July 2012, he attended the 16th International Congress on Insurance: Mathematics & Economics, in Hong Kong, where he gave a talk on “Consistent Estimation of Finite-Dimensional Markov Interest-Rate Models”.

Elias Shiu, in December 2011, was invited by the University of Hong Kong to give the Patrick Poon Lecture; the lecture title was “Valuing Equity-Linked Death Benefits: Option Pricing without Tears.” In June 2012 he presented a talk “Interest-Rate Risk Management” at the International Conference on Actuarial Science and Risk Management, hosted by Xiamen University, China. Then he went to Hong Kong to attend the 16th International Congress on Insurance: Mathematics and Economics; he was Chairman of the Scientific Committee. In July 2012 he gave a talk titled “Discounted Density: From Penalty at Ruin to Equity-Linked Death Benefit” at the 4th International Gerber-Shiu Workshop, organized by the University of Melbourne.



Aixin Tan and **Ruitao Liu** welcomed a new daughter, named Aiolia. She was born on April 19th and was 5 lbs and 1 oz. Congratulations Aixin and Ruitao!



Qihe Tang was promoted in rank to Professor from Associate Professor.

Qihe attended the Workshop on Mathematical Finance and Related Issues, at the Kyoto Research Park, Kyoto, Japan, on September 2-5, 2012 and the International Conference on Quantitative Finance and Risk Management, Jilin University, Changchun, China, on July 2-4, 2012. Qihe gave a talk: Loss given default in the presence of multivariate regular variation (based on a joint work with Zhongyi Yuan).

He also presented a talk at the Department of Mathematics, Florida State University, April 20, 2012, and Department of Statistics and Actuarial Science, University of Waterloo, March 22, 2012 and his talk was: Default risk of a time-homogeneous diffusion model (based on a joint work with Bin Li and Xiaowen Zhou). In January 2012 he gave a talk at the Mathematical Finance/Financial Engineering Seminar, School of Mathematics, Georgia Institute of Technology,

Selected Papers

- Huang, J.** and Zhang, C.-H. (2012). Estimation and selection via absolute penalized convex minimization and its multistage adaptive applications. *Journal of Machine Learning Research*, 13, 1839-1864.
- Yan, J. and **Huang, J.** (2012). Model selection for Cox models with time-varying coefficients. *Biometrics*, 68, 419-428.
- Jiang, D., **Huang, J.** and Zhang, Y. (2012). The cross-validated AUC for MCP-logistic regression with high-dimensional data. Accepted for publication by *Statistical Methods in Medical Research*. Published online before print November 28, 2011, doi: 10.1177/0962280211428385.
- Shen, S., Park, **J.**, **Huang, J.**, Dittmar, K., Lu, Z., Zhou, Q., Carstens, R., Xing, Y. (2011). MATS: A Bayesian framework for flexible detection of differential alternative splicing from RNA-seq data. *Nuclear Acid Research*, Apr 40(8):e61.
- Ghosh, J** and Clyde, M. A. (2011), "Rao-Blackwellization for Bayesian variable selection and model averaging in linear and binary regression: A novel data augmentation approach", *Journal of the American Statistical Association*, 106 (495): 1041-1052. doi:10.1198/jasa.2011.tm10518
- Lee, S.H., Lim, J., **Li, E.**, Vannucci, M. and Petkova, E. (2012). Order test for high-dimensional two sample means. *Journal of Statistical Planning and Inference*, 142, 2719-2725.
- Li, E.**, Lim, J., Kim, K., and Lee, S.-J. (2012). Distribution-free tests of mean vectors and covariance matrices for multivariate paired data. *Metrika*, 75, 833-854.
- Pansera, J.** (2012). Discrete-time local risk minimization of payment processes and applications to equity-linked life-insurance contracts. *Insurance: Mathematics and Economics* 50, 1-11.
- Feng, D. and **Tierney, L.** (2011). A Package for MRI Tissue Classification, *Journal of Statistical Software*, Vol. 44, Issue 7, Oct 2011.
- Zimmerman, D.L.** and Fang, X. (2012). Estimating spatial variation in risk from locations coarsened by incomplete geocoding. *Statistical Methodology*, 0, 239-250.
- Kim, C. and **Zimmerman, D.L.** (2012). Unconstrained models for the covariance structure of multivariate longitudinal data. *Journal of Multivariate Analysis*, 107, 104-118.
- Zimmerman, D.L.**, Sun, P., and Fang, X. (2012). Likelihood-based estimation of spatial intensity and variation in disease risk from locations subject to geocoding errors. *Statistics and Its Interface*, 5, 207-219.

titled: Modeling insurance in the presence of dependent extreme risks (based on a joint work with Raluca Vernic and Zhongyi Yuan).

In addition, Qihe gave three contributed talks at the following conferences. The 47th Actuarial Research Conference (ARC), University of Manitoba, Winnipeg, Manitoba, Canada, August 1-4, 2012. His talk was titled: Loss given default in the presence of multivariate regular variation - Part 1: Introduction (based on a joint work with Zhongyi Yuan). Additionally, the 16th International Congress on Insurance: Mathematics and Economics, University of Hong Kong, Hong Kong, June 28-30, 2012. Talk: Versatility of randomly weighted sums in insurance, finance and risk management. The 7th Samos Conference in Actuarial Science and Finance, University of the Aegean, Samos, Greece, May 28 - June 3, 2012. His last talk was: Default risk of a time-homogeneous diffusion model (based on a joint work with Bin Li and Xiaowen Zhou).

N.D. Shyamalkumar was promoted in rank to Associate Professor with tenure from Assistant Professor.

Dale Zimmerman presented "Antependence models for categorical longitudinal data," ENAR Spring Meeting, Washington DC, "Antependence models for categorical longitudinal data," at Penn State University and "Model-based design of a sampling network for multivariate geostatistics," at Purdue University. He also co-authored (with Robert V. Hogg) a book chapter "On the history of the Department of Statistics and Actuarial Science at the University of Iowa" which will appear in the forthcoming book, *Strength in Numbers: The Rising of Academic Statistics Departments in the U.S.*, A. Agresti and X.L. Meng (eds.), Springer, to be published in October 2012.



Ting Zhang has joined our department at an Assistant Professor of Statistics. Ting completed his PhD in Statistics from the University of Chicago and is currently teaching STAT:4510 Regression, Time Series and Forecasting for us this fall. Ting is interested in nonparametric and semiparametric methods, high dimensional variable selection, locally stationary processes, and Bayesian learning and robust control problems. He also enjoys cooking, reading and basketball. Welcome, Ting!



Selected Grants

Jian Huang was awarded a new NSF grant in 2012:

PI on NSF grant (DMS-1208225) "Constrained Group Selection and Structure Estimation in Semiparametric Models." 07/01/2012-06/30/2015.

Jian Huang has also been continuing working on the following grants:

PI on the NSF grant (DMS-0805670) "Efficient Bi-Level Variable Selection in High-Dimensional Models." 08/01/2008-07/31/2011.

PI on the NIH grant (R01CA120988) "Regularized Classification & Survival Analysis for Expression Profiling of Cancer." 01/01/2008-12/31/2012.

PI on UI subcontract from Yale University (NCI/NIH R01 CA 142774) "Novel Methods for Integrative Analysis of Cancer Genomic Data." 09/01/2010-06/30/2014.

Luke Tierney was awarded a grant for "Computing Environments for Statistics" by the National Science Foundation for the period July 2012-July 2015.

student NEWS

Student Awards and Scholarships

Our annual student awards were presented on Thursday, April 26, 2012. The Allen T. Craig Award for outstanding teaching assistant was presented to **Kyung Yong Kim**.

For outstanding performance in the Actuarial Science program, **Seung Han Lee** won the Lloyd A. Knowler Award for Outstanding Achievement by a student in Actuarial Science

We also presented several Robert H. Taylor Awards for academic achievement in Actuarial Science. This year's recipients:

Robert H. Taylor Award in Actuarial Analysis
Jae Youn Ahn.

Taylor-Craig Award for outstanding performance in 22S:174

Guolin Chen (undergraduate student)
Kun Liu (graduate student)

Taylor-Cosby Award for outstanding performance in 22S:182

Yegang Wu (undergraduate student)
Jinbo Qiu (graduate student)

Taylor-Knowler Award for outstanding performance in 22S:182

Wenju Xu (undergraduate student)
Zhenhao Zhou (graduate student)

Scholarships totaling \$14,500 were awarded to several students in the 2011-12 academic year. Included among these were several named scholarships:

Transamerica Scholarship
2012-13 **Gregory E. Monson**

Knowler Scholarship
2011-12 **Stephanie Kommes**
2012-13 **Yegang Wu**

Principal Financial Group Foundation Scholarship
2011-12 **Kyle Sewright**
2012 Fall Semester- **Andrew Rietgraf**
2012 Spring Semester- **Caitlin Carney**

Towers Watson Scholarship
2011-12 **Christopher Hunter**
2012-13 **Katherine Adams**

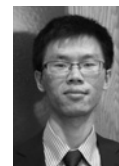
Harold W. Schloss Memorial Scholarship
2011-12 **J. Daniel Benzshawel**
2012-13 **Tom R. Duffy**

Northwestern Mutual
2012-13 **Jacob Brady and Brooke Stadel**

DW Simpson Scholarship
2011-12 **Christopher Nienart**
2012-13 **Christopher Hunter**

Mary Feng, Travis Wayne Reichter, Nathan Hopper, Nicole McArdle and **Dalton Streff** were selected and awarded \$8,000 scholarships from Charles E. and Eleanore G. Wilson Scholarship Fund for 2012-13. Charles Wilson (BA, 1941) attended The University of Iowa during the Depression only because of a scholarship. He was an actuary for 45 years. He established this fund because he wanted to give future students the same opportunity he had and to help the actuarial profession.

Zhongyi Yuan presented a paper titled "Loss given default in the presence of multivariate regular variation" at the 16th International Congress on Insurance: Mathematics and Economics, University of Hong Kong, and at the 47th Actuarial Research Conference, University of Manitoba. He is a recipient of the Society of Actuaries' James C. Hickman Scholar Doctoral Stipend. Incidentally, Jim Hickman (1927 - 2006) received his Ph.D. from the University of Iowa in 1961. He was a professor at the University of Iowa and the University of Wisconsin, Madison. He became dean of Wisconsin's business college. He was also a vice-president of the Society of Actuaries.



Ziqian Zhou went to International Conference on Bartonell and JSM in August 2012.

Yisi Wang, Zhe Liu, Yihong Zhang and **Michael Seedorff**, undergraduate Statistics students, were presented with \$400 academic scholarships for fall 2012 semester for their excellent performance in the classroom.

In addition to scholarships, the department refunded a total of \$13,960 to students passing CAS/SOA exams in 2011-12.



Find us on Facebook!

Remember you can now find us on Facebook! Friend us at: University of Iowa Department of Statistics and Actuarial Science



Find us on Twitter!

@UIOWAStatActSci is the official Twitter account for the Department of Statistics and Actuarial Science at The University of Iowa.

Student News

Many of our students receive outside awards and personal recognition for their academic achievements. We are very proud of our amazing students!

Kaleigh Meyer and Andrew Rietgraf, were elected Co-Presidents of the Actuarial Science Club for 2012-13. The other officers include: Vice President – **Yisi Wang**, Treasurer – **Chris Hunter**, Secretary – **Thomas Brandhorst** Reporter – **Blake Dean**, Webmaster – **Sai Liu**, and Librarian – **Mary Feng**.

The Phi Beta Kappa Society and the Alpha of Iowa Chapter has invited **Guolin Chen** to accept

membership in Phi Beta Kappa in February 2013.

Congratulation to our new Statistics graduate student **Jessica Orth** for being a winner of the Gertrude M. Cox Scholarship! The American Statistical Association (ASA), the nation's pre-eminent professional statistical society, announced the winners of the 23rd annual Gertrude M. Cox Scholarships and they were presented at the Joint Statistical Meetings (JSM) program at the San Diego Convention Center in August.

Congratulation to the following undergraduate students who

have been admitted into Actuarial Science in 2012!

Spring Actuarial Science undergraduate admission:

Noor Hanisah Abdul Razak
Katie Adams
Hana Farina Binti Awaluddin
Thomas James Brandhorst
Yu Cao
Caitlin Carney
James Conway
Yanhao Hu
Wanling Li
Gregory Monson
Khanh-Tung Nguyen-Ba
Anna Pritchard
Yibing Qi
Hanishah Razali

Qianya Sun
Mengying Wang
Yiting Wang
Yuting Xu
Norsyahizan Zulkiffili

Fall Actuarial Science undergraduate admission:

Jacob Brady
Jingyi Chen
Hao Cui
Justin Ewald
Kaleigh Meyer
Yan Dong Ni
Xiangyu Wang
Jiang Xinyang
Rongshuo Xu
Zainal Fikri Zainal Abidin
Fei Zheng

Our Actuarial Science Club Co-Presidents for 2012-13 are Kaleigh Meyer and Andrew Rietgraf.

We asked them both some random questions to get their responses on life beyond running a very active Actuarial Science Club!



Kaleigh Meyer

- Hometown and state: Sumner, IA
- Anticipated graduation semester is December 2012
- Major(s): Actuarial Science

What campus organizations and activities are you involved in?

Alpha Phi Women's Fraternity, Gamma Iota Sigma, Intramural Volleyball, Girls on the Run Volunteer Coach

Why did you choose your major? What do you love about it?

My strong desire to work in a business and mathematically focused career drew me to the major. I love my major because the education I am receiving at the University of Iowa will directly cross over to my career.

What have some of your favorite classes been outside of your major?

Age of Dinosaurs - It was really interesting and fun to learn!

What advice would you give to a new statistics or actuarial science student?

Use office hours as a resource for help outside of class.

What are your post-graduation plans?

I was offered a position with Transamerica in Cedar Rapids, Iowa and will begin in January!



Andrew Martin Rietgraf

- Hometown and state: Huxley, IA
- Anticipated graduation semester is May 2014
- Majors: Actuarial Science, Economics, Mathematics

What campus organizations and activities are you involved in? 24:7: Actuarial Science Club

Why did you choose your major? What do you love about it?

I was interested in math but wanted to do something in the business world as well. I love the combination of the two (business and math) in actuarial science as well as the challenge that it offers.

What have some of your favorite classes been outside of your major? Why?

Ballroom Dance 1-2 cause they were a lot of fun. 22S:195 Probability and Stochastic Processes 1, it was a very challenging course but contained a lot of material that was very easy to see applied in the real world.

What advice would you give to a new statistics or actuarial science student?

Don't expect to be able to do well in classes without studying outside of them. Work hard and enjoy the challenge and you'll do well.

What are your post-graduation plans?

I may pursue a graduate degree in Economics or Business but currently I am planning on entering the workforce for a while

Ph.D. Graduates

Jaе Youn Ahn received his Ph.D. in May 2012. His thesis was titled: "Non-parametric Inference of Risk Measures" and his advisor was N.D. Shyamalkumar. Jaе Youn has taken an Assistant Professor position at Ewha Womans University, in Seoul, South Korea.

Fei Su received her Ph.D. in December 2011. Her thesis was titled: "Statistical Analysis of Nonlinear Diffusion Processes" and her advisor was Elias Shiu. Fei has taken a research position with ISO Innovative Analytics in San Francisco, CA.

Xiongwen Tang received his Ph.D. in May 2012. His thesis was titled: "Two-Level Lognormal Frailty Model and Competing Risks Model with Missing Cause of Failure" and his advisor was Mike Jones. Xiongwen has taken a Senior Statistician position with Forest Labs in New Jersey, NJ.

Congratulations to Iowa alumni who became associates or fellows in the Society of Actuaries!

SOCIETY OF ACTUARIES Fellows (FSA)

December 2011

Siyang Chen (MS 2006)
Stephanie Lauren Fahy (BS 2007)
R. Travis James (BS Mathematics 2005)
Kyle Patrick Hays (MS 2006)
Xiongbin Liu (MS 2006) (PhD Mech Eng 2006)
Mark Edwards Woods (BS 2007)

March 2012

Xiaowei Han (MS 2007)
Phillip Jon Loftus (BS 1999)
Kyle Daniel Mulholland (BS 2008)

June 2012

Mark E. Carolan (JD 2010)
Jingyan Wang (MS 2006)

August 2012

Bradley Charles Becker (BS 2009)
Alex Gregory Shaller (MS 2007)

CASUALTY ACTUARIAL SOCIETY Fellows (FCAS)

Julieta Zambrano (BS 2005)
Wade Daniluk (MS 2008)
Lisa Marie Holloway (MS 2007)

CASUALTY ACTUARIAL SOCIETY Associates (ACAS)

Colleen Patricia Arbogast
(née McGlaughlin) (BS 2009)

SOCIETY OF ACTUARIES Associates (ASA)

Society of Actuaries
Associates (ASA)

November 2011

Samuel Young Annan (MS 2011)
Amy Strang (BS 2009)

December 2011

Taehan Bae (MS 2004)
Seth Donald Truka (BS 2009)

March 2012

Wee Keat Tan (BS 2005)

April 2012

Devin R. Westcott (BS 2009)

May 2012

Nan Liu (MS 2010)

June 2012

Rachelle Ann Altenhofen (BS 2008)

July 2012

Yi Wang (MS 2009)

August 2012

Kyle B. Sherlock (BS 2007)

SOCIETY OF ACTUARIES Chartered Enterprise Risk Analysts (CERA)

January 2012

Meng-Ling Tsai (MS 2008)



We want to hear from YOU!

The Sampler newsletter is sent to alumni and friends of the Department of Statistics and Actuarial Science at The University of Iowa. As always, we like to hear from our alumni. We look forward to printing your news items in future newsletters. Please drop us a line and let us know about recent promotions, job changes, awards, professional designations, name changes, etc.

Questions, comments, address changes and alumni news can be sent to:

Newsletter Updates
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Please Print:

Name _____ (maiden name when appropriate) _____

Year Graduated from Iowa _____ Degree _____ Major _____

Professional Designations ASA ACAS FSA FCAS MAAA

Other Professional Designations: _____

Address
and Employer
Update

Address _____

City _____

State _____ ZIP _____ - _____

Home Phone _____

E-mail _____

Employer/company name _____

Employer address _____

What is happening in your life and career?

May we share this in our department newsletter? Yes No



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Newsletter Updates

Department of Statistics and Actuarial Science
The University of Iowa
241 Schaeffer Hall
Iowa City, IA 52242-1409



Invited SPEAKERS

Fall 2011

Dale Zimmerman

Robert V. Hogg Professor of Statistics,
Department of Statistics and Actuarial
Science, University of Iowa
“The Joys of Geocoding (from a Spatial
Statistician’s Perspective)”

Hani Doss

Professor, Department of Statistics,
University of Florida
“Hyperparameter and Model Selection
for Nonparametric Bayes Problems via
Radon-Nikodym Derivatives”

Elias Shiu

Professor Department of Statistics and
Actuarial Science, University of Iowa
“Option Pricing Without Tears”

Robert Gramacy

Assistant Professor of Econometrics
and Statistics, The University of
Chicago Booth School of Business
Colloquium is jointly sponsored
with the University of Iowa Tippie
College of Business Department of
Management Sciences.
“Dynamic Trees for Response Surface
Learning and Optimization”

Russell Lenth

Professor, Department of Statistics and
Actuarial Science, University of Iowa
“Easy User Interfaces Via rJava”

Xiaoli Gao

Assistant Professor, Department of
Mathematics and Statistics, Oakland
University
“Estimation and Selection Properties
of the LAD Fused Lasso Signal
Approximator”

Marc Linderman

Associate Professor, Department of
Geography, University of Iowa
“Improving Estimates of Regional
Biogeochemical Interannual
Variability”

Luke Tierney

Professor, Department of Statistics and
Actuarial Science, University of Iowa
“Some Developments for the R Engine”

Jeffrey Dawson

Professor, Department of Biostatistics,
University of Iowa
“Analysis of Quantitative Driving Data
in Healthy and Impaired Populations”

Spring 2012

William Kleiber, Ph.D.

Post Graduate Scientist with The
National Center for Atmospheric Re-
search (NCAR)
“Computer Model Calibration with
High and Low Fidelity Model Output
for Spatio-Temporal Data”

Daniela Yang

The Wharton School, University of
Pennsylvania
“Singular Value Decomposition for
High-Dimensional Data”

Vadim Zipunnikov

Johns Hopkins Bloomberg School of
Public Health
“Longitudinal High-Dimensional Data
Analysis”

Kehui Chen

University of California, Davis
“Conditional Distribution Modeling
and Stringing For Functional Data”

Ting Zhang

University of California at Davis
“Nonparametric Methods on Nonsta-
tionary Time Series “

Stephen D. Simon

P. Mean Consulting and Department of
Biomedical and Health Informatics,
University of Missouri-Kansas City
“Slipped deadlines and sample size
shortfalls in clinical trials: a proposed
remedy using a Bayesian model with an
informative prior distribution.”

Guang Cheng

Assistant Professor, Department of
Statistics, Purdue University
“Joint Asymptotics and Inferences for
Semi-Nonparametric Models”

Maria Iannario

Assistant Professor, University of
Naples, Federico Italy
“A class of models for ordinal variables:
logical foundations and statistical infer-
ence”

Rob Tibshirani

Professor of Health Research and
Policy, and Statistics, Stanford
University
41th Annual Craig Lecture #1: “Finding
consistent patterns: A nonparametric
approach for identifying differential
expression in RNA-Seq data.” Lecture
#2: “The lasso: some novel algorithms
and applications”

other NEWS

Reprinted from: Iowa Now, University Communications and Marketing:
<http://now.uiowa.edu/2012/03/actuaries-actually>

Actuaries, actually - in demand profession mathematically unearths fascinating facts about life and death

Check out a list of careers that are expected to be in demand in coming years and actuary will almost always be near the top.

And then the first question so many people ask when they think of actuary comes up: what *does* an actuary do? Beyond something that involves math and insurance, explanations always seem rather mysterious and bizarre, something that only other practitioners of actuarial science can really understand.

But Elias Shiu, professor of statistics and actuarial science and senior actuary faculty in the University of Iowa College of Liberal Arts and Sciences, says it's not that difficult.

"Actuaries use past experiences to construct tables that determine the likelihood of something bad happening," he says. "Insurance companies and governments can use them to determine premiums, reserves and cash values."

That is, at its heart, actuary is figuring out when people might die so that life insurance companies can figure out what policyholders' premiums should be. Shiu says life insurers want an estimate of when policyholders might die so that the premiums provide enough cash to pay out claims. If too many policyholders die at once, claims might sap all of the company's cash and hurt the bottom line, or, in the worst-case scenario, drive the company out of business.

To do that, they build intensely comprehensive mathematical models that predict when people will die based on health and lifestyle factors. Or, as one actuary put it in the profession's publication, *Actuary*, they build "excruciatingly complex models of small bits of the world."

In the process, they come up with fascinating nuggets like this (also from *Actuary*): people whose favorite activity is gardening have a 4.55 percent prevalence of cardiovascular disease, while those whose favorite activity is jogging have only a .6 percent prevalence of cardiovascular disease, which means gardeners are more than seven times more likely to have cardiovascular disease than runners. Even more interesting is that people whose favorite activity is walking for health have a cardiovascular presence of 4.03 percent, which makes them still six times more likely to have cardiovascular disease than joggers

While these numbers might be abstractly interesting to most people, they can be worth millions of dollars to insurance companies. These figures help them figure out what premiums to charge policyholders, ensuring they have enough cash to pay out anticipated claims while staying profitable. If they have more policyholders who jog than garden, they need less cash on hand because fewer of

them are likely to die of cardiovascular disease and anticipated claims will be lower. More gardeners means more cash on hand.

Other forms of insurance also use actuaries in their lines to determine, for instance, the likelihood of a house burning down or of a driver getting into a car accident, to set home insurance or auto insurance premiums. Pension management firms and retirement funds use actuaries, and companies also incorporate actuarial science into their risk management. The Social Security Administration uses actuaries to set monthly paybacks to retired persons.*

What does actuary mean, anyway? The term actuary is derived from the Latin term "actuarius," which means copyist or account keeper, and is itself derived from the term "actus," meaning public business. In the 16th century it came to be used as a term for a registrar or clerk, and was first applied in the insurance profession in 1849. Thanks to the *Online Etymology Dictionary*.

And for their work, actuaries are rewarded handsomely. An actuary who has only the bare minimum qualifications will be paid an annual salary of \$46,000 the moment her diploma is in hand. Shiu says some top students can expect a starting salary closer to \$80,000, depending on how many certification tests they pass and where they work.

Despite that demand and high salary, students do not flock to the field. The UI, for instance, has only 50 actuarial science majors this year, and 165 interests, or pre-actuary majors. While demand is high, Shiu says that's not because U.S. companies employ tons of them. They don't. There are no armies of actuaries. Even companies that employ actuaries don't employ as many of them as they do sales reps or marketing people or financial managers. The demand, he says, stems from a limited supply of qualified people to fill what positions there are.

This doesn't apply to China, where insurance companies are booming because so much wealth has been created in the past 30 years that people need to insure—which Shiu says wasn't the case when the country's population was mostly peasant farmers. That global need for actuaries is reflected in the fact that 32 of the UI's 50 current actuarial majors are international students. In fact, four of the largest insurance companies in Beijing employ UI alumni as chief actuaries.



Shiu says actuary programs have to market themselves and recruit for students because not many kids grow up dreaming of becoming an actuary, or have even ever heard of an actuary. He says the kind of student who goes into the field likes math, wants to go into business, and has a sense of humor.

Ming Tran and Kyle Sewright are seniors from Des Moines majoring in actuarial science. Both are mathematically inclined and picked actuarial science because of its intensive focus on numbers.

“It’s math, statistics, and business all wrapped into one,” says Tran.

Sewright admitted he really wasn’t sure what actuaries were even after he was majoring in it, and his parents worked for insurance companies. “I didn’t have a clear understanding of actuarial science for the first year and a half.”

But, unlike other math-heavy majors like accounting or economics or mathematics, they like actuarial science because it allows for more creativity and is rooted in reality.

“It’s a practical application of math in the real world,” says Sewright. “There’s a thousand different ways you can approach a question, and you don’t have to worry about finding a definitive answer down to the dollar.”

“Math at a higher level is all about proofs, it’s very abstract and I can’t see it,” says Tran. “In actuarial science, you’re looking at car accidents or other things that I understand.”

Both will graduate in May, and despite a stubbornly high unemployment rate, neither of them had problems finding work. Both had three job offers—Sewright picked The Principal in Des Moines; Tran took Milliman Consulting, in its Milwaukee office.

“It’s going to be an exciting adventure,” says Tran.

Vanessa Miller with the Cedar Rapids Gazette visited Jerome Pansera’s class and wrote: Other students are keenly aware of which majors are in demand and pick accordingly. Some students are lucky enough to have their interests align with employable careers, like Alan Driggs, 23, a first-year UI graduate student studying actuarial science. Actuarial science is one of a handful of majors with 0 percent unemployment, according to the Wall Street Journal. (Liz Martin/ The Gazette) “Actuarial science related a lot to what I was interested in,” Driggs said. “Being employable is a plus, but it’s not necessarily the reason I chose to do it.” Still, said program coordinator Margie Ebert, interest in the major has boomed since the economy began its slump. “We have seen the numbers really jumping off the page,” Ebert said, “and a lot of our students who are seniors and who are set to graduate in May already have jobs lined up.” In addition to the UI’s actuarial science majors, 187 students are listed as pre-actuarial science. Five years ago, Ebert said, that number was 57. Instructor Jerome Pansera said classes have swelled so much that the department has added sections and courses.



In Memoriam

Class of 1937

Mr. Jack H. Jefferson (MS in Mathematical Science with an interest in Actuarial Science) died March 2012.

Class of 1940

Ms. Cathryn Holland Pike (MS in Mathematical Science with an interest in Actuarial Science) died October 2011.

Class of 1941

Mr. Joseph M. Andelman (MS in Mathematical Science with an interest in Actuarial Science) died February 2012.

Class of 1942

Dr. Louis Garfin (MS in Mathematical Science with an interest in Actuarial Science in 1939 and PhD in 1942) died May 2012.

Class of 1946

Mrs. Martha Marberry Huff (BA in Mathematical Science with an interest in Actuarial Science) died May 2012.

Class of 1947

Mr. Gene L. Payne (BA in Mathematical Science with an interest in Actuarial Science) died September 2012.

Class of 1953

Mr. Frank S. Copeland (BA in Mathematical Science with an interest in Actuarial Science) died October 2011.

Class of 1956

Mr. Gerald R. Marquardt (MS in Mathematical Science with an interest in Actuarial Science) died May 2012.

Class of 1958

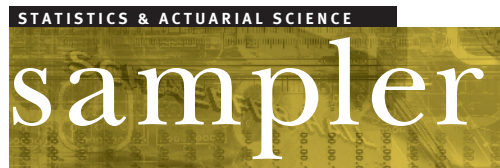
Dr. John W. Warner (MS in Mathematical Science with an interest in Actuarial Science) died February 2012.

Class of 1961

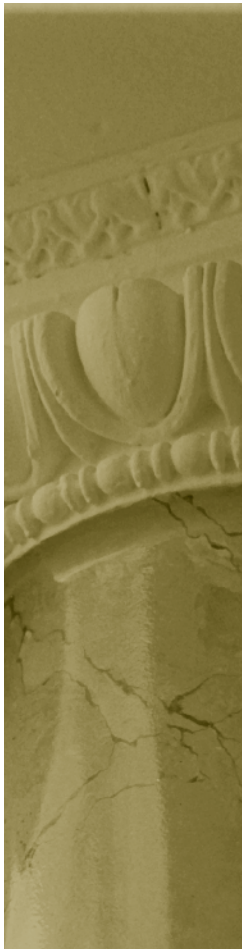
Mr. Conrad H. Bracklein (MS in Mathematical Science with an interest in Actuarial Science) died July 2012.

Class of 1974

Dr. Arthur M. Jones (PhD in Mathematical Statistics) died November 2011.



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<http://www.givetoiowa.org/statistics>

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- You can become a member of the College of Liberal Arts and Sciences Dean's Club with gift support of \$1,000 or more during the fiscal year July 1-June 20 to the Department of Statistics and Actuarial Science Development fund or any other are of the College. Gift support totaling \$2,500 or more will qualify you for membership in the **Patrons Circle of Dean's Club**, designated to recognize the College's most generous benefactors.