

# Math Mess

Department of Mathematics  
St. Olaf College  
Northfield, MN 55057

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## **This Week's Mathematics Colloquia (2!)**

Title: Introduction to Poisson Regression (Tues) / If Fisher Had a Workstation (Thurs)

Speaker: Brooke Fridley / Michael Ernst

Time: Tuesday, November 19<sup>th</sup>, 1:30 pm / Thursday, November 21<sup>st</sup>, 2:30 pm

Place: SC 182

### Tuesday's Colloquium

Armed with a few motivating examples, Brooke Fridley will introduce us to Poisson regression. Along the way a quick introduction to generalized linear models will be provided. Brooke will examine two examples of Poisson regression; one involving elephants and the other concerning the transfers of carbon. Interpretation of parameters and how to code the analysis in SAS and Splus will also be discussed.

Brooke Fridley grew up on the outskirts of Kansas City in a town called Blue Springs, Missouri. She attended Northeast Missouri State University (now Truman State) in Kirksville, Missouri, receiving a BS in Mathematics with a Statistics minor. Brooke obtained her Masters degree in Statistics at Iowa State University, and while doing so, she started working on her dissertation in the area of spatial dependence and censored data. Brooke is currently a statistical consultant for the College of Family and Consumer Science at Iowa State.

### Thursday's Colloquium

For paired data in which the ordering within the pairs is arbitrary it is unclear how to make a representative scatterplot of the data. If the X-Y labels are meaningless, then how should we order the pairs? We propose that the set of all permutations within pairs of interchangeable measurements forms a legitimate basis for selecting a representative scatterplot.

Professor Michael Ernst, a graduate of St. Cloud State University and Southern Methodist University, teaches statistics in the Department of Mathematical Sciences at Indiana University-Purdue University Indianapolis (IUPUI). Prior to coming to IUPUI, Dr. Ernst worked in the Division of Biostatistics at the University of Florida. His interests range from nonparametric methods, applied statistics, and statistics education to classical music, basketball, and The Simpsons.

## Grad School Open House

St. Olaf students are cordially invited to the first annual Fall Open House for the University of Minnesota's Graduate Program in Mathematics. The event will take place Saturday, November 23, from 10:00 am to about 5:00 pm, in Vincent Hall. You will hear informational presentations about the graduate program, as well as overviews of current research. A pizza lunch will be held in the math common room. For more details check out [http://www.math.umn.edu/grad/open\\_house/](http://www.math.umn.edu/grad/open_house/). If you need online maps for building location, parking, or connections from major highways, go to <http://onestop.umn.edu/Maps/>. Please RSVP and direct your questions to [garrett@math.umn.edu](mailto:garrett@math.umn.edu).

## Mathematics Gone Wild

Iowa State University is offering a Graduate Research Assistantship in Statistics. The research will focus on the development of sampling protocols for surveillance of Chronic Wasting Disease in deer. Along with assessing the statistical performance of sampling designs, you'll have a chance to explore spatial epidemiology and landscape ecology of disease. The project is funded by the USGS National Wildlife Health Center (NWHC) and provides the opportunity to work with wildlife biologists. The position carries an annual stipend of \$18,500 plus scholarship support for either one-half or full tuition. Applications are being accepted immediately. Please send a letter of interest, resume, transcripts, and GRE scores to Dr. William Clark or Dr. David Otis, Iowa State University, 124 Science II, Ames, IA 50011. Email [wrcClark@iastate.edu](mailto:wrcClark@iastate.edu) for more information.

## Last Week's Problem

Find the shortest possible sequence which contains somewhere in it all possible sequences of four 0s and 1s. (For example, if four were replaced by two, 11001 would suffice, as it contains 00,01,10,11.)

The shortest possible sequence has 19 digits, since at best every digit from the 4th on completes a string of four. Kyle Manley '06, Robert Orme '05, and Adam McDougall '05 found sequences with 19

digits. One possibility is 1111000010100110111. Kyle writes: "To get this answer I wrote out all 16 combinations writing out the 11110000 first since the 1111 and 0000 are the hardest to fit in. Crossing off one of the combinations as I wrote each digit, it came out nice and easy on the first try!" Which leads to a question Robert posed - is it possible to get stuck using this method?

## Problem of the Week

After a problem on the NCS contest concerning fractions with minimal denominators on a given interval, we pose the following question: first, show that the fraction with minimal denominator in the interval  $\left(\frac{3}{5}, \frac{5}{8}\right)$  is  $\frac{8}{13}$ . In general, given two

"adjacent" fractions  $\frac{a}{b}$  and  $\frac{c}{d}$  (adjacent means  $|ad - bc| = 1$ ), how do you find the fraction with minimal denominator between  $\frac{a}{b}$  and  $\frac{c}{d}$ ?

\*\* Please submit all solutions to David Molnar ([molnar@stolaf.edu](mailto:molnar@stolaf.edu)) by noon on Sunday.

If you would like to receive a copy of the Math Mess in your P.O. Box weekly, please e-mail Donna Brakke at [brakke@stolaf.edu](mailto:brakke@stolaf.edu).

Editor-in-Chief: Bruce Hanson

Associate Editor: Jeremy Strief

MM Czar: Donna Brakke

Problem Guy: David Molnar

[mathmess@stolaf.edu](mailto:mathmess@stolaf.edu)