Colorado-Wyoming Chapter

You are invited to attend the fall meeting of the CO/WY chapter of the ASA.
It will be held November 5 from 1-4pm at UC Denver Anschutz Medical Campus, room P28-2307 in the Education 2 North Building.
We have several interesting topics being presented, and refreshments will be provided.

We hope to see you there!
Matt Ostberg President CO/WY Chapter ASA

. Click here for a map.

ASA CO/WY Chapter
2010 Fall Meeting Agenda

1:00 - 1:05 Introduction
1:05 - 1:15 Nels Grevstad – Statistical Literacy Bill

Speakers:
1:15 - 1:55 Ashok Krishnamurthy
1:55 - 2:35 Steven Anderson
2:35 – 2:40 Break
2:40 - 3:20 Julie Roy
3:20 - 4:00 Ed Hess

Abstracts
Speaker: Ashok Krishnamurthy
Affiliation: University of Colorado at Denver

Title: Bayesian Tracking of Emerging Epidemics Using Ensemble Optimal Statistical Interpolation (EnOSI)

Abstract: We explore the use of the ensemble optimal statistical interpolation (EnOSI) data assimilation method for the statistical tracking of emerging epidemics and to study the spatial dynamics of a disease. The epidemic models that we used for this study are spatial variants of the common susceptible-infectious-removed (S-I-R) compartmental model of epidemiology. The spatial S-I-R epidemic model is illustrated by application to simulated spatial dynamic epidemic data from the historic "Black Death" plague of 14th century Europe. Bayesian statistical tracking of emerging epidemic diseases using the EnOSI as it unfolds is illustrated for a simulated epidemic wave originating in Santa Fe, New Mexico.
We found that EnOSI can efficiently adjust its estimated spatial distribution of the number of infected, if and when the epidemic jumps from city to city, and with data that are sparse and error-ridden. The tracking accuracy in our simulations provides evidence of the good performance of the EnOSI approach.

Speaker: Steve Anderson
Affiliation: Anderson Research, LLC

Title: Fixed effect ridge regression model for determining the mixture of subscription and acquisition cost

Abstract: The following paper presents a statistical method for analyzing the driver based expense model for Qwest Communications. It utilizes a fixed effect regression model with interaction to measure the mixture of subscription and acquisition cost by cost pool. The ratio of fixed to variable cost within each cost pool will also be determined for

a proof of concept since these components arise naturally from the data. An examination of the theory will be presented prior to the discussion of the simulation results.

Speaker: Julie Roy
Affiliation: Metro State College of Denver
Title: Singularities in Deterministic Global Optimization

Abstract: For both linear and nonlinear global optimization problems, it often occurs that there are feasible lines, planes, hyperplanes, or hypersurfaces that have optimal (or approximately optimal) objective function values. For these problems, common deterministic global optimization software may only find one optimizer without even indicating that other solution points exist, and software with automatically verified complete search algorithms may not complete within a reasonable amount of time. Since there has not been much research done concerning deterministic algorithms for verified solutions to general singular global optimization problems, the purpose of this work is to propose a method for computing rigorous enclosures of sets that contain approximately feasible, approximately optimal solution points for these problems. These approximate singular solution sets are defined in terms of boxes constructed in different coordinate systems about approximately optimal points. A method for constructing approximate solution boxes is presented for problems with linear solution sets, and then the method is extended for problems with nonlinear solution sets. Additionally, some illustrative examples are provided. Future work to incorporate these methods into a branch and bound process for global optimization is discussed, and preliminary results are given.

Speaker: Ed Hess
Affiliation: University of Colorado Denver

Title: Longitudinal Parametric Regression
Abstract: Non-parametric regression techniques such as LOESS and GAM provide flexible alternatives to the more rigid linear regression framework commonly used for many analyses, and are beneficial in exploratory situations where the functional relationship is unknown or poorly motivated. However, neither of these methods is suited for analysis of clustered data, and no well developed analog (such as a mixed effect model) exists. Recent efforts to create a non-parametric regression technique suitable for clustered data include both NPME (non-parametric mixed effect) models and GAMM (generalized additive mixed model). Based on the theoretical work of Wu and Zhang, an NPME model was implemented (using SAS software) for the analysis of repeated measures lung function data collected from asthmatic children who attend the Kunsberg School at National Jewish Health. Optimal bandwidths for model fitting were obtained using SCV and PCV cross validation statistics, and were used to produce both mean and subject curves. Comparison of the results from the NPME model with a standard mixed model analysis of the same data showed general agreement in both the behavior of the mean function and the confidence intervals calculated. However, the NPME model provided the added benefit of not requiring a functional form specification as required by a traditional mixed model analysis, giving an indication of where non-linearity occurs in the mean and subject functions, thus allowing for a less constrained, more investigatory analysis of the data.

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