Meddelelser, v/Eva B. Vedel Jensen
Matematisk Institut
Aarhus Universitet

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Næste nummer af "MEDDELELSER" udkommer i begyndelsen af oktober.
Bidrag til dette nummer skal være redaktøren i hænde senest **fredag den 23. september 1994.**
Bidrag bedes sendt til:

Meddelelser, v/ Eva B. Vedel Jensen
Afdeling for Teoretisk Statistik
Matematisk Institut
Ny Munkegade
8000 Århus C
eller med e-mail til: eva@mi.aau.dk

Samme adresse bedes benyttet ved **indmeldelse** i DSTS og ved **adresseændring**.

MEDDELELSER

Dansk Selskab for Teoretisk Statistik

19. aargang nr. 7 september 1994

AFTENMØDE I SELSKABET

Onsdag (obs!!) **den 14. september 1994 kl. 19.30**

i Auditorium 10, H.C. Ørsted Instituttet

Jacques A. Hagenaars (Faculty of Social Sciences, University of Tilburg)

Loglinear analysis of categorical longitudinal data by means of latent variable models

Resumé

Loglinear models have become the major tool for analyzing categorical data (measured at nominal or interval level). Applications to the analysis of longitudinal categorical data are rather straightforward. Measurement errors play a significant (systematically) distorting role when analyzing change over time. Latent variable models, more specifically latent class models and loglinear models with latent variables, can be used to unravel processes of true change and manifest change caused by measurement error. This is the more important because the effects of measurement error are not random, but make for very systematically looking patterns of change. The analysis of the 'nonequivalent control groups design' may serve as an example.

Efter foredraget vil der være uformelt samvær på Institut for Matematisk Statistik.

Todagesmøde i DSTS

Næste todagesmøde afholdes i november ved Afdeling for Teoretisk Statistik, Matematisk Institut, Aarhus Universitet. Datoerne bliver formentlig 22. og 23. november. Nærmere besked følger i næste nummer af MEDDELELSER.

21st European Meeting of Statisticians

21–25 August 1995

University of Aarhus, Denmark

Bulletin 1

The 21st European Meeting of Statisticians will take place under the auspices of the European Regional Committee of the Bernouilli Society for Mathematical Statistics and Probability.

Scientific Programme Committee	**Local Organising Committee**
P. Embrechts (Chairman, Switzerland)	M. Sørensen (Chairman)
P.K. Andersen (Denmark)	A.H. Andersen
P.J. Green (U.K.)	E.B. Vedel Jensen
P. Groeneboom (The Netherlands)	J.L. Jensen
A.N. Shiryaev (Russia)	J. Møller
E. de Turckheim (France)	O. Wethelund

SCIENTIFIC PROGRAMME

The programme follows the tradition of European Meetings. It consists of special invited lectures, invited paper sessions and contributed paper sessions.

Opening Lecture:	Lucien Birgé (Paris)
Forum Lectures:	Hans Föllmer (Bonn)
Closing Lecture:	Richard Smith (Cambridge)

Invited Paper Sessions and Organisers:

Stochastic Geometry	Jesper Møller (Aarhus)
Limit Theorems for Dependent Variables	P. Doukhan (Paris)
Statistics in Genetics	Odile Pons (Jouy-en-Josas)
Stable Processes: Theory and Applications	Alexander Weron (Wroclaw)
Interval Censoring	Piet Groeneboom (Delft)
Convergence of Statistical Experiments and Decision Functions	Albert N. Shiryaev (Moscow)
Inverse Problems	Michael Nussbaum (Berlin)
Markov Chain Monte Carlo	Julian Besag (Seattle)
Probabilistic Models in Biology	Mathisca de Gunst (Amsterdam)
Brownian Motion	Marc Yor (Paris)
Continuous Percolation	Ronald Meester (Utrecht)
When does the Bootstrap Work?	Enno Mammen (Berlin)
Model Uncertainty	David Draper (Bath)
Probability and Statistics in Hydrology	Edward C. Waymire (Corvallis)
Non-Linear Time Series Models	Rainer Dahlhaus (Heidelberg)

Other Special Invited Lectures:

Art B. Owen (Stanford)
David J. Spiegelhalter (Cambridge)
Herman Thorisson (Reykjavik)
Jørgen Hoffmann-Jørgensen (Aarhus)

FURTHER INFORMATION

Contributed papers need not be related to the topics of Invited Paper Sessions. They may either be read or presented as posters. Detailed instructions on the submission of contributed papers will be given in Bulletin 2. The deadline for abstracts will be 1 May 1995.

Social Programme: Reception at the City Hall on Monday evening. Conference dinner on Thursday evening. Excursions on Wednesday afternoon.

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E-mail: ems95@mi.aau.dk

Statens Seruminstitut

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Center for Epidemiologisk Grundforskning, Statens Seruminstitut, inviterer til

internationalt seminar ved

Sander Greenland:

A Critical Look at Meta-analytic Methods

Foredraget vil foregå på engelsk, og der er fri adgang.

Tid: Torsdag den 1. september 1994 kl. 10.00.
Sted: Foredragssalen, bygning 43, Statens Seruminstitut,
Artillerivej 5, 2300 København S.

Nyt om navne

Birgitte Nørgård Larsen er pr. 1. august 1994 ansat som biostatistiker i Biostatistisk Afdeling, H. Lundbeck A/S.

SEMINAR I ANVENDT STATISTIK.

BEMÆRK UGEDAG, TID OG STED.

Seminaret afholdes kl. 14.00 i Dam Auditoriet, Panum Instituttet, Blegdamsvej 3.
(Indgangen Nørre Alle 20 ved Københavns Tandlægeskole kan også benyttes).

Onsdag d. 7. september 1994.

M.L. Moeschberger, Department of Preventive Medicine, The Ohio State University.
(Joint work with J.P. Klein and Y.F. Kuo.)

Summary of conclusions and discussion of statistical methods employed in the Framingham heart study.

Resumé:

Over 40 recent papers published on the Framingham Heart Study with respect to the identification of risk factors for coronary heart disease are surveyed. The conclusions of these papers are summarized, the statistical methods employed are described, recent observations on survival studies with implications for Framingham are noted, and suggestions for future analyses are presented.

Peter Dalgaard

SEMINAR I ANVENDT STATISTIK.

Seminaret afholdes kl. 15.15 i lokale 21.1.25a, Panum Instituttet, Blegdamsvej 3.
(Indgangen Nørre Alle 20 ved Københavns Tandlægeskole kan også benyttes).

Der serveres te i Biostatistisk Afdeling på gangarealet 33.4.11 kl. 14.45.

Mandag d. 12. september 1994.

M.L. Moeschberger, Department of Preventive Medicine, The Ohio State University. (Joint work with J.P. Klein.)

Titel:

Statistical methods for dependent competing risks.

Resumé:

Many biological and medical studies have as a response of interest the time to occurrence of some event, X, such as the occurrence of cessation of smoking, conception, a particular symptom or disease, remission, relapse, death due to some specific disease, or simply death. Often it is impossible to measure X due to the occurrence of some other competing event, usually termed a competing risk. This competing event may be the withdrawal of the subject from the study (for whatever reason), death from some cause other than the one of interest, or any eventuality that precludes the main event of interest from occurring. Usually the assumption is made that all such censoring times and lifetimes are independent. In this case one uses either the Kaplan–Meier estimator or the Nelson–Aalen estimator to estimate the survival function. However, if the competing risk or censoring times are not independent of X, then there is no generally acceptable way to estimate the survival function. There has been considerable scattered work devoted to this problem of dependent competing risks in the past several years and this paper presents a survey of such work.

Peter Dalgaard

SEMINAR I ANVENDT STATISTIK.

Seminaret afholdes kl. 15.15 i lokale 21.1.25, Panum Instituttet, Blegdamsvej 3.
(Indgangen Nørre Alle 20 ved Københavns Tandlægeskole kan også benyttes).

Der serveres te i Biostatistisk Afdeling på gangarealet 33.4.11 kl. 14.45.

Mandag d. 3. oktober 1994.

Jeanine J. Houwing–Duistermaat, Department of Medical Statistics, Leiden University. (Joint work with Hans C. van Houwelingen).

Titel:

Testing goodness of fit via random effect models with application to pedigree data.

Resumé:

The generalized linear model $E[Y_i] = h^{-1}(X_i'\beta)$ with h a link function and X_i a vector of covariates, will be imbedded in the following random effect model: $E[Y_i|u_i] = h^{-1}(X_i'\beta + u_i)$, with $COV(u_i) = \tau^2 R$. For $\tau^2 = 0$ the random effect model is a generalized linear model, hence testing goodness of fit of a generalized linear model can be done by testing $\tau^2 = 0$ in the corresponding random effect model, where the choice of the correlation matrix R depends on the kind of lack of fit one would like to test for. In linear regression, an exponential correlation matrix which reflects distances in the covariate space can be used to test whether observations close to each other deviate from the model in the same direction. For pedigree data, a correlation structure which reflects correlation due to a genetic effect can be used to test whether familial aggregation exists.

To test the hypothesis $\tau^2 = 0$ versus $\tau^2 > 0$ in the random effect models, the following statistic Q (or a properly scaled version of it) can be used:

$$Q = (Y - h^{-1}(X'\beta))'R(Y - h^{-1}(X'\beta)).$$

For Y normally and for Y binomially distributed, the expectation and variance of Q under the null hypothesis of no correlation will be given. Since Q is a quadratic form, the distribution of Q can be approximated by a scaled chi-square distribution.

The test will be applied to a linear regression example and to a data set containing 7 small pedigrees with observations on a continuous blood factor. To show the performance of Q in testing whether familial aggregation exists in a set of pedigrees, the results of a simulation study will be given.

Peter Dalgaard

SEMINAR I TEORETISK STATISTIK

Seminaret afholdes **onsdag den 14. september 1994, kl. 15.15** på Institut for Teoretisk Statistik, Handelshøjskolen i København, Julius Thomsens Plads.

Peter van der Heijden og Jos Dessens

Faculty of Social Sciences, Utrecht University

A model for relating latent class analysis to continuous explanatory variables

Resumé

Latent class analysis (see, for example, Goodman, 1974) aims to explain the relations between manifest categorical variables by assuming the existence of a categorical latent variable. The categories of this latent variable are coined latent classes. Given a latent class, the manifest variables are independent. Apart from the latent class probabilities (i.e. the probabilities to fall into each of the latent classes) and the conditional probabilities (the probabilities to fall into each of the levels of each of the manifest variables given the level of the latent variable, i.e. the latent class), interest regularly goes out to the conditional probabilities to fall into each of the latent classes, given some profile of responses on the manifest variables. These latter conditional probabilities can be used to classify individuels into one of the categories of the latent variable.

In many practical situations people are not only interested in membership of latent classes, but also in the relation between explanatory variables and latent class membership. For this purpose the earlier mentioned classification is sometimes used. However, it seems better not to use a two-step procedure (first step: determine classification; second step: relate classification to explanatory variables), but instead to use a procedure that fulfills both objectives simultaneously.

If the explanatory variables are categorical, procedures are used that are known under the name simultaneous latent class analysis (Clogg and Goodman, 1984). Here latent class models are estimated for each category of the response variable. If no further restrictions are imposed, we are dealing with heterogeneous simultaneous latent class analysis. It is possible to assume that the conditional probabilities are homogeneous across groups, and then we are dealing with homogeneous latent class analysis.

If there are more categorical explanatory variables, it is possible to use homogeneous latent class analysis and not only to restrict the conditional probabilities but also to restrict the latent class probabilities. By restricting the latent class probabilities to follow specific loglinear models Hagenaars (1990) shows how the categorical explanatory variables are related to the latent classes obtained by latent class analysis. Van der Heijden, Mooijaart and de Leeuw (1992) deal with the same object using a multinomial logit model to relate explanatory variables to latent classes (compare also Forman, 1992).

This work can be taken one step further by letting one or more of the explanatory variables be continuous. Because the continuous variables are continuous on an individual level, we do not deal with a contingency table problem anymore. Both the categorical as well as the continous explanatory variables are related to the latent class probabilities by a multinomial logit model. This model was among a series of possibilities proposed by Dayton and Macready (1988), but not worked out in much detail.

The model is estimated using the EM algorithm. In the E-step the latent individual probabilities are calculated as a function of the current estimates for the latent class probabilities and the conditional probabilities. In the M-step the conditional probabilities are estimated from the latent individual probabilities, and the latent class probabilities are estimated also from the latent individual probabilities, but under the restriction that they are a function of the explanatory variables.

Since we do not deal with a contingency table, but with data on the individual level, chi-squared tests cannot be used to test the model against the data. However, these tests can be used to test a model against a more restricted version (where additional restrictions are imposed on explanatory variables).

References

1. Clogg, C.C. and Goodman, L.A. (1984). Latent structure analysis of a set of multidimensional contingency tables. *J. Amer. Stat. Ass.* **79**, 762–771.
2. Dayton and Macready (1989). Concommitant latent variable models. In: R. Langeheine and J. Rost. *Latent trait and latent class models*. New York: Plenum Press.
3. Goodman, L.A. (1974). Explanatory latent structure analysis using both identifiable and unidentifiable models. *Biometrika* **61**, 215–231.
4. Hagenaars, J.A. (1990). *Categorical longitudinal data. Log-linear, panel, trend and cohort analysis*. London: Sage.
5. Van der Heijden, P.G.M., Mooijaart, A., and de Leeuw, J. (1992). Constrained latent budget analysis. In: P. Marsden (Ed.) *Sociological Methodology* 1992.

Forskningsadjunkt/-assistent ved Biostatistisk Afdeling

Ved Biostatistisk Afdeling, Københavns Universitet er en heltidsstilling som forskningsadjunkt eller –assistent efter kvalifikationer ledig til besættelse snarest og foreløbig for et år.

Den ene halvdel af stillingen vedrører statistisk bistand til projektet "Kost, Kræft og Helbred". Den anden halvdel vedrører de første måneder nogle mindre statistiske analyseopgaver, på længere sigt statistiske analyser i forbindelse med Østerbro-undersøgelsen, en bred kohorteundersøgelse med vægt på hjertesygdommenes epidemiologi.

Arbejdet skal fortrinvis foregå i Biostatistisk Afdeling og med hyppig kontakt til de involverede epidemiologer.

Ansøgerne skal tilkendegive, om de søger ansættelse som forskningsadjunkt eller som forskningsassistent. Ansættelse forudsætter forskningsmæssige kvalifikationer som i den ordinære stillingsstruktur, dvs. for forskningsadjunkter, videnskabelige kvalifikationer som Ph.D. eller tilsvarende, og for forskningsassistenter, kandidatniveau.

Ansøgninger til stiillingen vil blive forelagt et fagkyndigt bedømmelsesudvalg. Den enkelte ansøger vil få tilsendt den del af bedømmelsesudvalgets indstilling, der vedrører den pågældende. Løn og pension i.h.t. overenskomst mellem AC og Staten: adjunkttillægget udgør 35.768,29 kr. om året, assistenttillægget udgør 24.694,12 kr. om året.

Nærmere oplysning fås hos professor Niels Keiding, Biostatistisk Afdeling, Københavns Universitet, tlf. 35 32 79 03.

Skriftlig ansøgning senest 15. september 1994, kl. 12.00, til:

Biostatistisk Afdeling
Københavns Universitet
Blegdamsvej 3
2200 København N

DANSKE SLAGTERIER

Axelborg, Axeltorv 3
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Telefax 33 11 68 14
Telex 22 975 ds dk
Telegram "danslagt"

Statistiker / epidemiolog til Veterinærafdelingen i København

Til DANSKE SLAGTERIERs Veterinærafdeling på Axelborg i København søges en statistiker eller epidemiolog.

Jobbet:

Planlægning af epidemiologiske undersøgelser, herunder undersøgelser over sygdomsudbredelser, observationelle analytiske studier samt kliniske afprøvninger
Definition og vedligehold af forskningsmæssige databaser
Statistisk opgørelse af data under anvendelse af relevant statistisk/epidemiologisk teknik (som fx. logistisk regression, log-lineære modeller og Cox regression)
Medvirken ved formidling af forsøgsresultater

Kvalifikationer:

Cand. scient. (statistik), cand. stat eller dokumenterede kvalifikationer i statistik og/eller epidemiologi gennem relevant uddannelse
Solid brugererfaring i SAS-systemet en fordel
Gode samarbejdsevner
Selvstændighed
Udadvendthed

Vi kan tilbyde:

Gode samarbejdsrelationer til et team af fagfolk med forsknings- og forsøgsmæssige opgaver
Et tæt samarbejde med en anden statistiker
Faglige udfordringer
Gode muligheder for efteruddannelse
Løn efter kvalifikationer
Pensionsordning

Yderligere oplysninger kan fås ved henvendelse til afdelingschef Jan Mousing, tlf. 33960658. Skriftlig ansøgning vedlagt relevante data sendes til ovenstående adresse, Personaleafdelingen.

DANSKE SLAGTERIER er svinekødsektorens brancheorganisation. Organisationens medlemmer er slagteriselskaberne samt en række virksomheder, der ejes af slagteriselskaberne eller har direkte tilknytning til disse. DANSKE SLAGTERIER koordinere hovedparten af svinekødsektorens forsknings-, forsøgs-, og udviklingsarbejde og varetager danske svineproducenters og slagteriers interesser over for offentligheden samt myndigheder i ind- og udland.

Kalender

DSTS: *Aftenmøde.* Afholdes i Auditorium 10, H.C. Ørsted Instituttet, Universitetsparken 5, 2100 København Ø. Arrangeres af Dansk Selskab for Teoretisk Statistik.

CEG: *Seminar.* Afholdes i Foredragssalen, Bygning 43, Statens Seruminstitut, Artillerivej 5, 2300 København S. Arrangeres af Center for Epidemiologisk Grundforskning, Statens Seruminstitut.

SFE: *Seminar i anvendt statistik.* Afholdes paa Panum Instituttet, Blegdamsvej 3, 2200 København N. Lokale, se nedenfor. Arrangeres af Biostatistik Afdeling, Københavns Universitet.

SOC: *Seminar i teoretisk statistik.* Afholdes paa Institut for Teoretisk Statistik, Handelshøjskolen i København, Julius Thomsens Plads. Arrangeres af Statistisk Institut, Sociologisk Institut, Københavns Universitet og Institut for Teoretisk Statistik, Handelshøjskolen i København.

1. september Sander Greenland: A critical look at meta-analytic methods. **CEG**, kl. 10.00.

7. september M.L. Moeschberger (Department of Preventive Medicine, The Ohio State University): Summary of conclusions and discussion of statistical methods employed in the Framingham heart study. **SFE**, Dam Auditoriet, kl. 14.00.

12. september M.L. Moeschberger (Department of Preventive Medicine, The Ohio State University): Statistical methods for dependent competing risks. **SFE**, Lokale 21.1.25a, kl. 15.15.

14. september P. van der Heijden og J. Dessens (Faculty of Social Sciences, Utrecht University): A model for relating latent class analysis to continuous explanatory variables. **SOC**, kl. 15.15.

14. september J.A. Hagenaars (Department of Methodology, Faculty of Social Sciences, Tilburg University): Loglinear analysis of categorical longitudinal data by means of latent variable models. **DSTS**, kl. 19.30.

3. oktober Jeanine J. Houwing-Duistermaat (Department of Medical Statistics, Leiden University): Testing goodness of fit via random effect models with application to pedigree data. **SFE**, lokale 21.1.25, kl. 15.15.