

CURRICULUM OF SCIENTIFIC AND TEACHING ACTIVITY

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Leonardo Grilli

Born in Pistoia, 13th April 1970
Resident in Buggiano (PT) Via Pascoli 6

Email: grilli@ds.unifi.it
Web: www.ds.unifi.it/grilli

Current position

Associate Professor in Statistics (Professore Associato di ruolo in Statistica SECS-S/01), Faculty of Economics, Department of Statistics “G. Parenti” – University of Florence

Current lectureships and appointments at the University of Florence

- ✓ Course on Descriptive Statistics (“Statistica – Modulo A”, corso di laurea in Statistica)
- ✓ Course on Introductory Statistics (“Statistica I”, corso di laurea in Economia Aziendale) [joint with Carla Rampichini]
- ✓ Course on Statistical Modelling (“Modelli Statistici (avanzato)”, corso di laurea magistrale in Scienze Statistiche) [joint with Carla Rampichini]
- ✓ Member of the following committees:
 - Giunta del Dipartimento di Statistica “G. Parenti”
 - Comitato della Didattica e Commissione Piani di Studio del corso di laurea in Statistica
 - Comitato della Didattica della laurea magistrale in Scienze Statistiche

Education and career

- ✓ Degree in Economics at the University of Florence (April 1996).
- ✓ PhD in Applied Statistics at the Department of Statistics “G. Parenti” – University of Florence (February 2000)
- ✓ Temporary researcher at the Department of Statistics “G. Parenti” – University of Florence (April 2000 to December 2001)
- ✓ Official in the Statistics area – Government of the Tuscany region (January 2002 to October 2002)
- ✓ Assistant Professor (Ricercatore) in Statistics (SECS-S/01) at the University of Florence from November 2002
- ✓ Qualified to the position of Associate Professor in Statistics (SECS-S/01) in December 2005
- ✓ Associate Professor (Professore Associato) in Statistics (SECS-S/01) at the University of Florence from 30th December 2010

Teaching: a) undergraduate

- ✓ Practical lessons for some courses of the degree in Statistics at the University of Florence, from academic year 2000/01
- ✓ Several introductory Statistics courses (descriptive statistics and classical inference) at the University of Florence (for the degrees in Statistics, Business Economics, Economics and Engineering of Quality), from academic year 2002/03 (at least one course per year)
- ✓ Module on regression analysis of the labour market within the course Labour Economics of the degree in Economics at the University of Florence, academic year 2006/07
- ✓ Course on statistical modelling for the second-level degree in Statistics at the University of Florence (Modelli Statistici – avanzato, Laurea Magistrale in Scienze Statistiche), academic years 2008/2009 and 2009/2010 (joint with C. Rampichini)

[The student ratings of the courses are published on <http://valmon.ds.unifi.it/sisvaldidat/unifi/>]

Teaching: b) Phd courses

- ✓ Lessons on multilevel analysis for the PhD in Applied Statistics at the Department of Statistics, University of Florence (from academic year 2003/04)
- ✓ Lessons on multilevel and longitudinal analysis for the PhD in Statistics at the University “L. Bocconi” of Milan (February 2009)

Teaching: c) seminars and short courses

- ✓ Lessons on multilevel analysis for the following institutions:
 - Italian Statistical Society (several courses, the last one in October 2011)
 - London School of Economics and Political Science, June 2010
 - Banca d'Italia, March 2010
 - Universidad de Castilla-La Mancha, April 2008
 - Department of Econometrics, University of Geneva, April-May 2007
 - Vienna Institute of Demography, December 2006
 - University of Economics in Bratislava, April 2006
 - Athens University of Economics and Business, September 2005
 - Master in Applied Statistics at the University of Sassari (June 2004 and 2005)
- ✓ Lessons on causal inference for the following institutions:
 - Italian Statistical Society (course in May 2010)
 - University of Bristol (June 2011)

Teaching: d) supervised theses

- ✓ Claudia Sani: *Valutazione degli apprendimenti degli studenti della scuola primaria italiana: un'analisi multilivello*. Tesi di laurea in Scienze Statistiche. 19 aprile 2011.

Research interests

My research mainly deals with random effects models for multilevel analysis, with methodological advances concerning the specification and estimation of models in complex frameworks such as: duration data, multivariate qualitative responses, informative sampling designs, sample selection

bias. The methodological work is joined with applications on real data, often concerning the effectiveness of universities (e.g. student ratings, occupational chances of the graduates), but I also made applications on demographic and socio-economic data. In the last few years I also investigated methods for causal inference, in particular in the framework of principal stratification of C. Frangakis and D. Rubin, with a couple of published papers on the effectiveness of degree programmes and a submitted paper on partial non-compliance in clinical trials.

Publications: a) papers in peer-reviewed journals

1. Sani C. & Grilli L. (2012) Differential variability of test scores among schools: a multilevel analysis of the fifth-grade Invalsi test using heteroscedastic random effects. To appear in: *Journal of Applied Quantitative Methods*.
2. Grilli L., Rampichini C., Salmaso L., Lunardon N., Samuh M. (2012) The use of permutation tests for variance components in linear mixed models. To appear in: *Communications in Statistics - Theory and Methods*.
3. Bartolucci F. & Grilli L. (2011) Modelling partial compliance through copulas in a principal stratification framework. *Journal of the American Statistical Association*, 106, pp. 469-479.
4. Grilli L. & Rampichini C. (2011) The role of sample cluster means in multilevel models: a view on endogeneity and measurement error issues. *Methodology: European Journal of Research Methods for the Behavioral and Social Sciences*. 7(4): 121–133.
5. Grilli L. & Rampichini C. (2010) Selection bias in linear mixed models. *Metron: International Journal of Statistics*. vol. LXVIII, n. 3, pp 309-329.
6. Grilli L. & Mealli F. (2008) Nonparametric Bounds on the Causal Effect of University Studies on Job Opportunities Using Principal Stratification. *Journal of Educational and Behavioral Statistics*, 33(1), pp 111-130.
7. Grilli L. & Rampichini C. (2007) Multilevel factor models for ordinal variables. *Structural Equation Modeling*, 14(1), pp 1-25.
8. Grilli L. & Rampichini C. (2007) A multilevel multinomial logit model for the analysis of graduates' skills. *Statistical Methods and Applications*, 16(3), pp 381-393.
9. Testa M.R. & Grilli L. (2006) The Influence of Childbearing Regional Contexts on Ideal Family Size in Europe. *Population*, 61(1-2), pp 109-138.
10. Grilli L. (2005) The random effects proportional hazards model with grouped survival data: a comparison between the grouped continuous and continuation ratio versions. *Journal of the Royal Statistical Society - Series A*, 168(1), pp 83-94.
11. Rampichini C., Grilli L. & Petrucci A. (2004) Analysis of university course evaluations: from descriptive measures to multilevel models. *Statistical Methods and Applications*, 13(3), pp 357-373.
12. Grilli L. & Pratesi M. (2004) Weighted estimation in multilevel ordinal and binary models in the presence of informative sampling designs. *Survey Methodology*, 30(1), pp 93-103.
13. Grilli L. & Rampichini C. (2003) Alternative specifications of multivariate multilevel probit ordinal response models. *Journal of Educational and Behavioural Statistics*, 28, pp 31-44.
14. Grilli L. & Rampichini C. (2002) Specification issues in stratified variance component ordinal response models. *Statistical Modelling*, 2, pp 251-264.
15. Grilli L. & Rampichini C. (2002) Scomposizione della dispersione per variabili statistiche ordinali. *Statistica*, anno LXII, n. 1, pp 111-116.
16. Biggeri L., Bini M. & Grilli L. (2001) The transition from university to work: a multilevel approach to the analysis of the time to obtain the first job. *Journal of the Royal Statistical Society - Series A*, 164 (2), pp 293-305.

Publications: b) papers in books

17. Grilli L. & Rampichini C. (2012) Multilevel models for ordinal data. In: Kenett R and Salini S (eds.) *Modern Analysis of Customer Surveys: with Applications using R*. Chapter 19. Wiley.
18. Grilli L. (2011) Causal inference through principal stratification: a special type of latent class modelling. In Fichet B, Piccolo D, Verde R, Vichi M (Eds) *Classification and Multivariate Analysis for Complex Data Structures*. Springer-Verlag Berlin Heidelberg. pp 265-270.
19. Grilli L. & Rampichini C. (2009) Multilevel models for the evaluation of educational institutions: a review. In Bini M, Monari P, Piccolo D, Salmaso L (Eds) *Statistical methods for the evaluation of educational services and quality of products*. Physica-Verlag, pp 61-80.
20. Grilli L. & Rampichini C. (2007) A Multilevel Analysis of Graduates' Job Satisfaction. In *Effectiveness of University Education in Italy: Employability, Competences, Human Capital* (L. Fabbri ed.), pp 29-42. Heidelberg: Physica-Verlag.
21. Grilli L. & Mealli F. (2007) University Studies and Employment. An Application of the Principal Strata Approach to Causal Analysis. In *Effectiveness of University Education in Italy: Employability, Competences, Human Capital* (L. Fabbri ed.), pp 219-232. Heidelberg: Physica-Verlag.
22. Gottard A., Grilli L. & Rampichini C. (2007) A chain graph multilevel model for the analysis of graduates' employment. In *Effectiveness of University Education in Italy: Employability, Competences, Human Capital* (L. Fabbri ed.), pp 169-182. Heidelberg: Physica-Verlag.

Publications: c) working papers with no corresponding journal or book article

23. Francavilla F., Giannelli G.C. & Grilli L. (2010) Mothers' Employment and their Children's Schooling: a Joint Multilevel Analysis for India. DSE Working Paper 7/2010. University of Florence.
24. Grilli L. & Gori E. (1996) L'approccio dei processi di conteggio ai modelli di regressione per dati di durata. *Working Paper n. 69* – Department of Statistics - University of Florence. 2P Editor.

Publications: d) other

25. Grilli L. & Rampichini C. (2006) *A review of random effects modelling using glamm in Stata*. Review written for the Multilevel Modelling Software Reviews of the Centre for Multilevel Modelling, University of Bristol.
26. Grilli L. & Rampichini C. (2005) Selection bias in random intercept models. *Multilevel Modelling Newsletter*, 17 (1).
27. Grilli L. & Rampichini C. (2004) Book review: Methodology and Epistemology of Multilevel Analysis (Daniel Courgeau ed.). *European Journal of Population*, 20(3), pp 289-291.

Recent contributions at conferences (from 2009)

- Bini M., Grilli L. (2011) An analysis of the careers of Italian PhD graduates: are they over-educated? 8th meeting of the Classification and Data Analysis Group of the Italian Statistical Society, Pavia 7-9 September 2011.
- Grilli L., Varriale R. (2011) Latent growth models with multiple indicators: a longitudinal analysis of student ratings. 8th meeting of the Classification and Data Analysis Group of the Italian Statistical Society, Pavia 7-9 September 2011.
- Grilli L., Rampichini C. (2011) A review of multilevel models for ordinal data. Workshop on Modern Analysis of Customer Satisfaction Surveys. University of Milan, 14th June 2011.
- Grilli L., Varriale R. (2011) Specification issues in latent growth models with multiple indicators. Scientific Meeting of the Italian Statistical Society Bologna, 8th-10th June 2011.
- Sani C., Grilli L. (2011) Differential variability of test scores among schools: a multilevel analysis of the 5th grade Invalsi test using heteroschedastic random effects. INNOVAZIONE E SOCIETÀ 2011 - Metodi statistici per la valutazione dei servizi, Firenze 30 maggio- 1 giugno 2011.
- Grilli L., Rampichini C. (2011) A review of multilevel models for ordinal data. INNOVAZIONE E SOCIETÀ 2011 - Metodi statistici per la valutazione dei servizi, Firenze 30 maggio- 1 giugno 2011.
- Grilli L., Varriale R. (2011) Latent growth models with multiple indicators: a longitudinal analysis of student ratings. INNOVAZIONE E SOCIETÀ 2011 - Metodi statistici per la valutazione dei servizi, Firenze 30 maggio- 1 giugno 2011.
- Bini M., Grilli L., Rampichini C. (2010) Labour market outcomes of university graduates and the role of contextual factors: a multilevel analysis. *International Conference of the Royal Statistical Society*, September 2010, Brighton.
- Bini M., Grilli L., Rampichini C. (2010) Contextual factors of the external effectiveness of the Italian university: a multilevel analysis. *COMPSTAT 2010*, August 2010, Paris.
- Bini M., Grilli L. (2010) An analysis of the careers of Italian PhD graduates: are they over-educated? *The second Biennial Meeting of the EARLI Special Interest Group 18 Educational Effectiveness*, August 2010, Leuven.
- Grilli L., Rampichini C. (2010) The role of sample cluster means in effectiveness evaluation. *The second Biennial Meeting of the EARLI Special Interest Group 18 Educational Effectiveness*, August 2010, Leuven.
- Bartolucci F. & Grilli L. (2010) Likelihood inference for a semi-parametric causal model addressing partial compliance by continuous principal strata. *International Workshop on Statistical Modelling*, July 5-9th, 2010 Glasgow.
- Bini M., Grilli L., Rampichini C. (2010) Contextual factors of the external effectiveness of the university education: a multilevel approach. *45th Scientific Meeting of the Italian Statistical Society*, June 16–18, 2010, Padua.
- Grilli L. & Rampichini C. (2010) Measurement error induced by sample cluster means in multilevel models. *Statistics for complex problems: the multivariate permutation approach and related topics* in honor of the 70th birthday of Fortunato Pesarin, June 14–15, 2010, Padua. (slides)
- Grilli L., Rampichini C., Salmaso L., Samuh M.H. (2010) A Review of Diagnostic Tests in Multilevel Models. *Statistics for complex problems: the multivariate permutation approach and related topics* in honor of the 70th birthday of Fortunato Pesarin, June 14–15, 2010, Padua.
- Bini M. & Grilli L. (2009) *Analysis of italian survey data on PhD graduates: is job consistent with education?* Contributed paper at *Joint Statistical Meetings*, Washington DC, August 1-6, 2009.

- Bartolucci F. & Grilli L. (2009) *Causal inference in trials with partial compliance by means of continuous principal strata: a likelihood approach based on copulas*. Contributed paper at *Joint Statistical Meetings*, Washington DC, August 1-6, 2009.
- Grilli L. & Rampichini C. (2009) *A review of multilevel value-added models in education*. Conference *Innovazione e Società 2009*, Brescia, June 24-26, 2009.
- Grilli L. & Rampichini C. (2009) *Multilevel value-added models for the evaluation of educational institutions*. Conference *Multivariate methods and models for evaluating public services*, Rimini, May 25-26, 2009.

Research projects (as leader)

- FINVALI 05: Offerta formativa di secondo livello e domanda di lavoro qualificato. (Progetto cofinanziato dall'INVALSI)

Research projects (as member)

- Condizione attuale e prospettive occupazionali dei dottori di ricerca – progetto finanziato dal Comitato Nazionale per la Valutazione del Sistema Universitario (CNVSU) (31.03.09-30.11.10, coord. B. Chiandotto)
- PRIN 2008: Analisi delle strutture latenti: nuove frontiere nei metodi e nei modelli statistici (coord. P. Monari)
- PRIN 2006: Metodi e modelli statistici per la valutazione dei processi formativi (coord. P. Monari)
- PRIN 2003: Reti bayesiane ed inferenza causale: metodologia ed applicazioni (coord. G. Consonni)
- PRIN 2002: Transizioni università-lavoro e valorizzazione delle competenze professionali dei laureati: modelli e metodi di analisi multidimensionale delle determinanti (coord. L. Fabbris)
- PRIN 2001: Reti bayesiane e modelli grafici (coord. G. Consonni)
- PRIN 1999: Valutazione della qualità, efficacia ed efficienza nei servizi alla persona, con particolare riferimento all'istruzione e alla sanità (coord. E. Gori)

Miscellanea

- ✓ Member of the Italian Statistical Society
- ✓ Member of the Nucleo di Valutazione of the University of Pavia
- ✓ Referee for the following scientific journals: *American Sociological Review*, *Communications in Statistics – Theory and Methods*, *Computational Statistics and Data Analysis*, *Education Economics*, *Empirical Economics*, *Journal of Educational and Behavioral Statistics* (Outstanding Reviewer Award for 2008 and 2009), *Journal of Official Statistics*, *Journal of the Royal Statistical Society – Series A and C*, *Psychological Methods*, *Statistical Methods and Applications*, *Statistical Modelling*, *Structural Equation Modeling*, *Statistics in Medicine*.