

# Curriculum Vitae

## Dipl.-Ing. Dr.techn. Bettina Grün

### Personal Data

Born: February 18, 1979 in Mistelbach, Austria  
Nationality: Austria

### Education

1989–1997 High School, BG & BRG Gänserndorf  
1997–2002 University studies in Applied Mathematics, TU Wien  
2001 ERASMUS exchange program at the Technical University of Denmark (5 months)  
2003–2006 Ph.D. studies in Applied Mathematics, TU Wien

### Career History & Work Experience

03/2003–09/2003 Research assistant, FFF project “E-Direct Marketing Solution”, TU Wien in cooperation with UPPER Network GmbH  
10/2003–02/2004 Research assistant, SFB 010 “Adaptive Information Systems and Modelling in Economics and Management Science”  
05/2004–08/2004 Research assistant, Project “Statistical Computing with R”, WU Wien  
09/2004–12/2004 Visiting fellow at the University of Wollongong, Australia  
01/2005–10/2006 DOC-FFORTE scholarship from the Austrian Academy of Sciences (ÖAW)  
11/2006–10/2007 Research assistant, FWF project “Identification and Estimation of Finite Mixture Models”, TU Wien  
11/2007–now Hertha-Firnberg scholarship from the Austrian Research Foundation (FWF), WU Wien

### Career-related Activities

**Conferences** : Member of the Local Organization Team for useR! 2004 (1st International R User Conference), May 20–22 2004, TU Wien, and of the Organization Committee of useR! 2006 (2nd International R User Conference), June 15–17 2006, WU Wien

### Awards :

- Best paper in track “Marketing Research and Research Methodologies” and special award of the European Journal of Marketing at ANZMAC 2006
- Award in Applied Statistics 2007 of the Austrian Statistical Society (ÖSG) for the Ph.D. thesis
- Highly Commended Award Winner at the Literati Network Awards for Excellence 2008 for the article entitled “Assessing analytical robustness in cross-cultural comparisons” published in “International Journal of Culture, Tourism and Hospitality Research”

**Ad-hoc Reviewer** : Computational Statistics (2008), Computational Statistics & Data Analysis (2006, 2008), Economics and Human Biology (2007), Journal of Computational and Graphical Statistics (2008), Statistics & Computing (2008), R News (2008), Statistical Modelling (2008)

## Publications

- [1] Bettina Grün and Friedrich Leisch. Dealing with label switching in mixture models under genuine multimodality. *Journal of Multivariate Analysis*, 100(5):851–861, May 2009.
- [2] Bettina Grün and Achim Zeileis. Automatic generation of exams in R. *Journal of Statistical Software*, 29(10):1–14, 2009.
- [3] Bettina Grün and Friedrich Leisch. Identifiability of finite mixtures of multinomial logit models with varying and fixed effects. *Journal of Classification*, 25(2):225–247, November 2008.
- [4] Bettina Grün and Friedrich Leisch. Flexmix version 2: Finite mixtures with concomitant variables and varying and constant parameters. *Journal of Statistical Software*, 28(4):1–35, 9 2008.
- [5] Bettina Grün. Fitting finite mixtures of linear mixed models with the EM algorithm. In Paula Brito, editor, *Compstat 2008—Proceedings in Computational Statistics*, volume II, pages 165–173. Physica Verlag, Heidelberg, Germany, 2008.
- [6] Bettina Grün and Friedrich Leisch. Finite mixtures of generalized linear regression models. In Shalabh and Christian Heumann, editors, *Recent Advances In Linear Models and Related Areas*, pages 205–230. Springer, 2008.
- [7] Sara Dolnicar and Bettina Grün. Challenging “factor-cluster segmentation”. *Journal of Travel Research*, 47(1):63–71, 2008.
- [8] Sara Dolnicar and Bettina Grün. Question stability in brand image measurement—Comparing alternative answer formats and accounting for heterogeneity in descriptive models. *Australasian Marketing Journal*, 15(2):26–41, 2007.
- [9] Sara Dolnicar and Bettina Grün. Assessing analytical robustness in cross-cultural comparisons. *International Journal of Culture, Tourism and Hospitality Research*, 1(2):140–160, 2007.
- [10] Bettina Grün and Friedrich Leisch. Fitting finite mixtures of generalized linear regressions in R. *Computational Statistics & Data Analysis*, 51(11):5247–5252, July 2007.
- [11] Bettina Grün, Sara Dolnicar, and John R. Rossiter. Extending Rungie et al.’s model of brand image stability to account for heterogeneity. In *CD Proceedings of the 36th European Marketing Academy Conference*, 2007.
- [12] Melanie Randle, Bettina Grün, and Sara Dolnicar. Segmenting the volunteer market: Learnings from an Australian study. In *CD Proceedings of the 36th European Marketing Academy Conference*, 2007.
- [13] Bettina Grün and Friedrich Leisch. Flexmix: An R package for finite mixture modelling. *R News*, 7(1):8–13, April 2007.
- [14] Sara Dolnicar and Bettina Grün. Cross-cultural differences in survey response patterns. *International Marketing Review*, 24(2):127–143, 2007.
- [15] Sara Dolnicar and Bettina Grün. How constrained a response: A comparison of binary, ordinal and metric answer formats. *Journal of Retailing and Consumer Services*, 14(2):108–122, March 2007.
- [16] Bettina Grün and Friedrich Leisch. Testing for genuine multimodality in finite mixture models: Application to linear regression models. In Hans-Joachim Lenz and Reinhold Decker, editors, *Advances in Data Analysis, Proceedings of the 30th Annual Conference of the Gesellschaft für Klassifikation e. V., Freie Universität Berlin, March 8–10, 2006*, Studies in Classification, Data Analysis, and Knowledge Organization, pages 209–216. Springer-Verlag, 2007.

- [17] Sara Dolnicar and Bettina Grün. The user-friendliness of alternative answer formats. In *CD Proceedings of the Australian and New Zealand Marketing Academy (ANZMAC)*, 2006.
- [18] Sara Dolnicar and Bettina Grün. Answer format suitability — The interdependence of answer format and construct measured. In *CD Proceedings of the Australian and New Zealand Marketing Academy (ANZMAC)*, 2006.
- [19] Bettina Grün and Friedrich Leisch. Fitting finite mixtures of linear regression models with varying & fixed effects in R. In Alfredo Rizzi and Maurizio Vichi, editors, *Compstat 2006—Proceedings in Computational Statistics*, pages 853–860. Physica Verlag, Heidelberg, Germany, 2006.
- [20] Friedrich Leisch and Bettina Grün. Extending standard cluster algorithms to allow for group constraints. In Alfredo Rizzi and Maurizio Vichi, editors, *Compstat 2006—Proceedings in Computational Statistics*, pages 885–892. Physica Verlag, Heidelberg, Germany, 2006.
- [21] Bettina Grün and Friedrich Leisch. Finite mixture model diagnostics using the parametric bootstrap. In Wilfried Elmenreich and Hans Kaiser, editors, *Proceedings of the Junior Scientist Conference 2006*, pages 301–302, Vienna, Austria, April 2006. Vienna University of Technology.
- [22] Michael Hahsler, Bettina Grün, and Kurt Hornik. arules – A computational environment for mining association rules and frequent item sets. *Journal of Statistical Software*, 14(15):1–25, October 2005.
- [23] Bettina Grün and Friedrich Leisch. Bootstrapping finite mixture models. In Jaromir Antoch, editor, *Compstat 2004—Proceedings in Computational Statistics*, pages 1115–1122. Physica Verlag, Heidelberg, Germany, 2004.
- [24] Sara Dolnicar, Bettina Grün, and Friedrich Leisch. Time efficient brand image measurement—Is binary format sufficient to gain the market insight required? In *CD Proceedings of the 33rd European Marketing Academy Conference*, 2004.

## Theses

- [1] Bettina Grün. *Identification and Estimation of Finite Mixture Models*. PhD thesis, Institut für Statistik und Wahrscheinlichkeitstheorie, Technische Universität Wien, September 2006. Friedrich Leisch, advisor.
- [2] Bettina Grün. Identifizierbarkeit von multinomialen Mischmodellen—Anwendungen im Marketing-Bereich. Master’s thesis, Institut für Statistik und Wahrscheinlichkeitstheorie, Technische Universität Wien, 2002. Kurt Hornik and Friedrich Leisch, advisors.

## Technical Reports

- [1] Bettina Grün and Achim Zeileis. Automatic generation of simple (statistical) exams. Report 77, Department of Statistics and Mathematics, Wirtschaftsuniversität Wien, Research Report Series, November 2008.
- [2] Petr Vaněk, Bettina Grün, and Friedrich Leisch. Evaluierung von Max. für “Niedermeyer”. Technical Report E1071-2005-01, Institut für Statistik und Wahrscheinlichkeitstheorie, Technische Universität Wien, Vienna, Austria, 2005.

- [3] Bettina Grün, Petr Vaněk, and Friedrich Leisch. Assoziationsmodell Direkt Marketing SPÖ. Technical report, Institut für Statistik und Wahrscheinlichkeitstheorie, Technische Universität Wien, Vienna, Austria, 2005.
- [4] Michael Hahsler, Bettina Grün, and Kurt Hornik. A computational environment for mining association rules and frequent item sets. Report 15, Research Report Series, Department of Statistics and Mathematics, Wirtschaftsuniversität Wien, Augasse 2–6, 1090 Wien, Austria, April 2005.
- [5] Bettina Grün and Friedrich Leisch. Evaluierung von Max. für “Lutz”. Technical Report E1071-2004-02, Institut für Statistik und Wahrscheinlichkeitstheorie, Technische Universität Wien, Vienna, Austria, 2004.
- [6] Bettina Grün and Friedrich Leisch. Collaborative filtering with transaction data. Technical Report E1071-2004-01, Institut für Statistik und Wahrscheinlichkeitstheorie, Technische Universität Wien, Vienna, Austria, 2004.
- [7] Bettina Grün, Achim Zeileis, and Friedrich Leisch. `max.uppernetwork`: An R package for estimating affinities and similarities. Technical Report E1071-2003-04, Institut für Statistik und Wahrscheinlichkeitstheorie, Technische Universität Wien, Vienna, Austria, September 2003.
- [8] Bettina Grün, Achim Zeileis, and Friedrich Leisch. A benchmark study of the algorithms in `max.uppernetwork`. Technical Report E1071-2003-03, Institut für Statistik und Wahrscheinlichkeitstheorie, Technische Universität Wien, Vienna, Austria, September 2003.
- [9] Bettina Grün, Achim Zeileis, and Friedrich Leisch. Project overview: Algorithms for estimating similarities and affinities. Technical Report E1071-2003-02, Institut für Statistik und Wahrscheinlichkeitstheorie, Technische Universität Wien, Vienna, Austria, September 2003.
- [10] Bettina Grün, Achim Zeileis, and Friedrich Leisch. Literature review: Recommender systems. Technical Report E1071-2003-01, Institut für Statistik und Wahrscheinlichkeitstheorie, Technische Universität Wien, Vienna, Austria, April 2003.

## Presentations

- [1] Bettina Grün and Achim Zeileis. Automatic generation of simple (statistical) exams. Presented at Workshop “R in Teaching and Empirical Research”, Universität für Bodenkultur, Wien, Austria, January 16 2009.
- [2] Bettina Grün and Friedrich Leisch. Identification and estimation of finite mixtures of generalized linear models. Presented at “5. Herbstkolloquium des Graduiertenkollegs ‘Statistische Modellbildung’ 2008”, Dortmund, Deutschland, November 28–29 2008.
- [3] Bettina Grün. Fitting finite mixtures of linear mixed models with the EM algorithm. Presented at “Compstat 2008”, Porto, Portugal, August 24–29 2008.
- [4] Bettina Grün and Friedrich Leisch. FlexMix: Flexible fitting of finite mixtures with the EM algorithm. Presented at the “useR! 2008”, Dortmund, Germany, August 12–14 2008.
- [5] Bettina Grün. Comparing variants of the EM algorithm for finite mixtures of linear mixed effects models. Presented at “Joint Statistical Meetings (JSM 2008)”, Denver, U.S.A., August 3–7 2008.
- [6] Bettina Grün and Friedrich Leisch. Model diagnostics of finite mixtures using bootstrapping. Presented at the “32nd Annual Conference of the German Classification Society (GfKI)”, Hamburg, Germany, July 16–18 2008.

- [7] Bettina Grün and Friedrich Leisch. Finite mixture model diagnostics using the bootstrap. Presented at the “1st Workshop of the ERCIM Working Group on Computing & Statistics”, Neuchâtel, Switzerland, June 19–21 2008.
- [8] John R. Rossiter, Bettina Grün, and Sara Dolnicar. A test of Dillon’s theory of true (brand-specific) versus artifactual (category-inferred) brand-image attributes. Presented at the “EMAC-ANZMAC BIGMAC4 Research Symposium”, Brighton, U.K., May 30 2008.
- [9] Sara Dolnicar, Bettina Grün, and John R. Rossiter. Measuring stability of brand image analysis—Accounting for heterogeneity in descriptive models. Presented at the School of Management and Marketing Research Seminar, University of Wollongong, Australia, January 29 2008.
- [10] Bettina Grün, Sara Dolnicar, and John R. Rossiter. Extending Rungie et al.’s model of brand image stability to account for heterogeneity. Presented at the “36th European Marketing Academy Conference (EMAC)”, Reykjavik, Iceland, May 22–25 2007.
- [11] Bettina Grün and Friedrich Leisch. Dealing with label switching in finite mixture modelling using constrained clustering. Presented at the “31st Annual Conference of the German Classification Society (GfKI)”, Freiburg, Germany, March 7–9 2007.
- [12] Sara Dolnicar and Bettina Grün. The user-friendliness of alternative answer formats. Presented at “ANZMAC 2006”, Brisbane, Australia, December 4–6 2006.
- [13] Sara Dolnicar and Bettina Grün. Answer format suitability — The interdependence of answer format and construct measured. Presented at “ANZMAC 2006”, Brisbane, Australia, December 4–6 2006.
- [14] Bettina Grün and Friedrich Leisch. Fitting finite mixtures of linear regression models with varying & fixed effects in R. Presented at “Compstat 2006”, Rome, Italy, August 28 – September 1 2006.
- [15] Bettina Grün and Friedrich Leisch. Finite mixture model diagnostics using the parametric bootstrap. Poster presentation at the “Junior Scientist Conference (JSC)”, Vienna, Austria, April 19–21 2006.
- [16] Bettina Grün and Friedrich Leisch. Testing for genuine multimodality in finite mixture models. Presented at the “30th Annual Conference of the German Classification Society (GfKI)”, Berlin, Germany, March 8–10 2006.
- [17] Bettina Grün. Identification and estimation of finite mixture models. Presented at the doctoral workshop before the “30th Annual Conference of the German Classification Society (GfKI)”, Berlin, Germany, March 7 2006.
- [18] Sara Dolnicar and Bettina Grün. Cross-cultural findings assessing analytic robustness. Presented at the School of Management and Marketing Research Seminar, University of Wollongong, Australia, February 23 2006.
- [19] Bettina Grün and Friedrich Leisch. Finite mixture model diagnostics using resampling methods. Presented at the “3rd World Conference on Computational Statistics & Data Analysis”, Limassol, Cyprus, October 28–31 2005.
- [20] Bettina Grün and Friedrich Leisch. Analyzing the model fit of finite mixture models. Presented at “Joint Statistical Meetings (JSM 2005)”, Minneapolis, U.S.A., August 7–11 2005.
- [21] Sara Dolnicar, Bettina Grün, and Friedrich Leisch. Can the binary answer format improve survey efficiency without substantial information sacrifice? Presented at the School of Management and Marketing Research Seminar, University of Wollongong, Australia, September 23 2004.

- [22] Bettina Grün and Friedrich Leisch. Bootstrapping finite mixture models. Presented at “Compstat 2004”, Prague, Czech Republic, August 23–27 2004.
- [23] Bettina Grün and Friedrich Leisch. Bootstrapping finite mixture models. Presented at “Statistical Computing 2004”, Schloß Reisenburg, Günzburg, Germany, July 4–7 2004.
- [24] Bettina Grün and Friedrich Leisch. **BayesMix**: An R package for Bayesian mixture modelling. Poster presentation at “useR! 2004”, Vienna, Austria, May 20–22 2004.