Anne Ruiz-Gazen

Full Professor of Statistics
Toulouse School of Economics
April 2024

Date of Birth: December 23, 1966
Citizenship: French
Address: Grand Établissement Toulouse School of Economics, 1 Esplanade de l'Université, 31080 Toulouse Cedex 6
Phone number: +33 (0)5 61 12 87 67
Email: anne.ruiz-gazen@tse-fr.eu
Web: https://www.tse-fr.eu/fr/people/anne-ruiz-gazen

Affiliation:

Department of Mathematics and Statistics, Toulouse School of Economics, University Toulouse Capitole (UTC).

Education:

- **Habilitation à Diriger des Recherches** in Statistics ; "Contribution to Robust Statistics and Multivariate Data Analysis" ; Supervisor: C. Thomas-Agnan ; June 2004, UT1C.
- **PhD** from University Toulouse III in Statistics ; " Estimation robuste d'une matrice de dispersion et projections révélatrices " ; Supervisor: H. Caussinus ; February 1993.
- **Master:** Applied Mathematics (Statistics), Toulouse III, 1989.
- **Bachelor:** Mathematics, Toulouse III, 1987-1988.

Research interests: multivariate data analysis, robust statistics, outlier detection, compositional data analysis, survey sampling, spatial econometrics and statistics.

Publications and editorial activity

Publications in international journals

[42] Alfons, A., Archimbaud, A., Nordhausen, K., Ruiz-Gazen, A. (2024), "Tandem clustering with invariant coordinate selection", Econometrics and Statistics, 27 pages, in press.

[41] Rieser, C., Ruiz-Gazen, A., Thomas-Agnan, C. (2023), "Edgewise outliers of network indexed signals", IEEE Transactions on Signal Processing.

[40] Lopuhaä, H.P., Gares, V., Ruiz-Gazen, A., (2023), "S-estimation in Linear Models with Structured Covariance Matrices", Annals of Statistics, 51(6), 2415–2439.

[39] Goga, C., Ruiz-Gazen, A. (2023), "Jean-Claude Deville: mathematics lover, high-flying researcher and visionary". Discussion paper, Survey Methodology 49(2), 321-337.

[38] Médous, E., Goga, C., Ruiz-Gazen, A., Beaumont, J.-F., Dessertaine, A., Puech, P. (2023), "QR Prediction for Statistical Data Integration". Survey Methodology 49(2), 385-410.

[37] Thomas-Agnan, C., Laurent, T., Ruiz-Gazen, A. (2023), "Covariates impacts in spatial autoregressive models for compositional data". Journal of Spatial Econometrics, 4(5).

[36] Archimbaud, A., Boulfani, F., Gendre, X., Nordhausen, K., Ruiz-Gazen, A., Virta, J. (2023). "ICS for multivariate functional anomaly detection with applications to predictive maintenance and quality control". Econometrics and Statistics, 28 pages, in press.

[35] Archimbaud, A., Drmac, Z., Nordhausen, K., Radojicic, U., Ruiz-Gazen, A. (2023). "Numerical considerations and a new implementation for ICS". SIAM Journal on Mathematics of Data Science (SIMODS), 5(1), 97-121.

[34] Médous, E., Goga, C., Ruiz-Gazen, A., Beaumont, J.-F., Dessertaine, A., Puech, P. (2023), " Many-to-One indirect sampling with application to the French postal traffic estimation ". Annals of Applied Statistics 17 (1), 838-859.

[33] Palarea-Albaladejo, J., Martin-Fernandez, J.-A., Ruiz-Gazen, A., Thomas-Agnan, C. (2022). " lrSVD: An efficient imputation algorithm for incomplete high-throughput compositional data". Journal of Chemometrics, 36(12): e3459.

[32] Nguyen, T. H. A., Laurent, T., Thomas-Agnan, C. and Ruiz-Gazen, A. (2022). Analyzing the impacts of socio-economic factors on French departmental elections with CoDa methods. Journal of Applied Statistics, 49(5), 1235-1251.

[31] Nordhausen, K. and Ruiz-Gazen, A. (2022). "On the usage of joint diagonalization in multivariate statistics". Journal of Multivariate Analysis, vol. 188, published on line.

[30] Boulfani, F., Gendre, X., Ruiz-Gazen, A. and Salvignol, M. (2022). "A statistical approach for sizing an aircraft electrical generator using extreme value theory". CEAS Aeronautical Journal, 13(1), 21-32.

[29] Nguyen, T. H. A., Thomas-Agnan, C., Laurent, T. and Ruiz-Gazen, A. (2021). "A simultaneous spatial autoregressive model for compositional data". Spatial Economic Analysis, 16(2), 161-175.

[28] Fischer, D., Berro, A., Nordhausen, K. and Ruiz-Gazen A. (2021), "REPPlab: An R package for detecting clusters and outliers using exploratory projection pursuit", Communications in Statistics, Simulation and Computation, 50(11), 3397-3419.

[27] Bachoc, F., Genton, M., Nordhausen, K., Ruiz-Gazen, A. and Virta J. (2020), "Spatial Blind Source Separation", Biometrika 107 (3), 627–646.

[26] Nguyen T. H. A. , Ruiz-Gazen, A., Thomas-Agnan, C. and Laurent, T. (2019), "Multivariate Student versus Multivariate Gaussian Regression Models with Application to Finance", Journal of Risk and Financial Management, Special Issue Applied Econometrics, 12(1), 58-78.

[25] Chakir, R., Laurent, T., Ruiz-Gazen, A., Thomas-Agnan, C. and Vignes, C. (2018), "Exploring land use prediction errors from area frame survey data", Case Studies in Business, Industry and Government Statistics, 7(1), 33-48.

[24] Archimbaud, A. Nordhausen, K. and Ruiz-Gazen, A. (2018). "ICS for multivariate outlier detection with application to quality control", Computational Statistics and Data Analysis, 128, 184-199.

[23] Archimbaud, A. Nordhausen, K. and Ruiz-Gazen, A. (2018). "Unsupervized outlier detection with ICSOutlier", the R Journal, 10(1), 234-250.

[22] Boistard H., Lopuhaä, H. and Ruiz-Gazen, A. (2017). "Functional central limit theorems for single-stage sampling designs", Annals of Statistics, 45 (4), 1728-1758.

[21] Juillard, H., Chauvet, G. and Ruiz-Gazen, A. (2017). "Estimation under cross-classified sampling with application to a childhood survey", Journal of the American Statistical Association, 112 (518), 850-858.

[20] Chakir, R., Laurent, T., Ruiz-Gazen, A., Thomas-Agnan, C. and Vignes, C. (2016). "Spatial scale in land use models: Application to the Teruti-Lucas survey", Spatial Statistics, Volume 18, Part A, 246-262.

[19] Villa-Vialaneix, N. and Ruiz-Gazen, A. (2015). "Beyond model visualization for multi-dimensional data: high-dimension and complex non numeric data". Statistical Analysis And Data Mining, 8(4), 232–239. Discussion paper.

[18] Goga, C. and Ruiz-Gazen, A. (2014). "Efficient Estimation of Nonlinear Finite Population Parameters Using Nonparametric Estimation", Journal of the Royal Statistical Society series B, 76, 1, 113-140.

[17] Filzmoser, P., Ruiz-Gazen, A. and Thomas-Agnan, A. (2014). " Identification of local multivariate outliers", Statistical Papers, 55, 1, 29-47.

[16] Beaumont, J.-F., Haziza, D. and Ruiz-Gazen, A. (2013). "A unified approach to robust estimation in finite population sampling", Biometrika, 100, 555-569.

[15] Boistard, H., Lopuhaä, H. P. and Ruiz-Gazen, A. (2012). "Approximation of rejective sampling inclusion probabilities and application to high order correlations", Electronic Journal of Statistics, 6, 1967-1983, 2012.

[14] Laurent, T., Ruiz-Gazen, A. and Thomas-Agnan, C. (2012). "GeoXp: an R package for interactive exploratory spatial data analysis". Journal of Statistical Software, Vol. 47, Issue 2.

[13] Genton, M. and Ruiz-Gazen, A. (2010)."Visualizing Influential Observations in Dependent Data". Journal of Graphical and Computational Statistics, 19(4), 808-825.

[12] Berro, A., Larabi Marie-Sainte, S. and Ruiz-Gazen, A. (2010). "Genetic Algorithms and Particle Swarm Optimization for Exploratory Projection Pursuit". Annals of Mathematics and Artificial Intelligence, 60, 153-178.

[11] Croux, C., Fekri, M. and Ruiz-Gazen, A. (2010)." Fast and Robust estimation of the Multivariate Errors in Variables Model ". Test, 19, 2, 286-303 (B).

[10] Goga, C., Deville, J.-C. and Ruiz-Gazen, A. (2009). Use of functionals in linearization and composite estimation with application to two-sample survey data. Biometrika, 96(3), 691-709.

[9] Caussinus, H. and Ruiz-Gazen, A. (2009). Discussion of the paper "Invariant Co-ordinate selection" by Tyler, D.E., Critchley, F., Dümbgen, L. and Oja, H., Journal of the Royal Statistical Society, 71 (3), p. 582.

[8] Ruiz-Gazen, A. and Villa, N. (2007). Storms prediction: logistic regression vs random forest for unbalanced data. Case Studies in Business, Industry and Government Statistics, 1(2), 91-101.

[7] Fekri, M. and Ruiz-Gazen, A. (2006). Robust estimation in the simple errors-in-variables model, Statistics & Probability Letters, 76, 16, 1741-1747.

[6] Daouia, A. and Ruiz-Gazen, A. (2006). Robust Nonparametric Frontier Estimators: Qualitative Robustness and Influence Function, Statistica Sinica, 16, 1233-1253.

[5] Croux C. and Ruiz-Gazen, A. (2005). High breakdown estimators for principal components : the projection-pursuit approach revisited, Journal of Multivariate Analysis 95, 1, 206-226.

[4] Fekri, M. and Ruiz-Gazen, A. (2003). Robust weighted orthogonal regression in the errors-in-variables model, Journal of Multivariate Analysis 88, 89-108 (A).

[3] Caussinus, H., Fekri, M., Hakam, S. and Ruiz-Gazen, A. (2003). A monitoring display of Multivariate Outliers, Computational Statistics and Data Analysis vol. 44, 1-2, 237-252.

[2] Aragon, Y., Haughton, D., Haughton, J., Leconte, E., Malin, E., Ruiz-Gazen, A. and Thomas-Agnan, C. (2003). Explaining the Pattern of Regional Unemployment : the case of the Midi-Pyrenées Region, Papers in Regional Science, 82, 155-174.

[1] Ruiz-Gazen, A. (1996). A very simple robust estimator for a dispersion matrix, Computational Statistics and Data Analysis, 21, 149-162.

Publications in French journals

[12] Goga C. and Ruiz-Gazen A. (2019)."Estimating the odds-ratio using auxiliary information", Annales de l'I.S.U.P., Volume 63, Fascicule 2-3.

[11] Chakir, R., Laurent, T., Ruiz-Gazen, A., Thomas-Agnan, C. and Vignes, C. (2017). "Prédiction de l'usage des sols sur un zonage régulier à différentes résolutions et à partir de covariables facilement accessibles", Revue Economique, 68 (3), 471-490.

[10] Ruiz-Gazen, A. (2012). "Robust statistics: a functional approach". Annales de l'I.S.U.P., 56(2-3), 49-64, 2012.

[9] Jutand M.-A. et Ruiz-Gazen, A. (2011). "L'enseignement à distance en statistique et l'usage de logiciels au travers de deux exemples". Statistique et enseignement, 2(2), 25-39.

[8] Bonnal, L., Favard, P., Laurent,T. and Ruiz-Gazen,A. (2011). "Pourquoi le coût de l'éducation est-il plus élevé en zone rurale ? Le cas de la région Midi-Pyrénées". Revue d'Economie régionale et urbaine, 5, 887-910.

[7] Thomas-Agnan, C. and Ruiz-Gazen, A. (2007), "A propos de l'ouvrage "Analyse statistique des données spatiales", de Jean-Jacques Droesbeke, Michel Lejeune et Gilbert Saporta, paru aux éditions Technip en 2006", Courrier des statistiques no 121-122, mai-décembre 2007, p.91-92.

[6] Ruiz-Gazen, A. (2006). Introduction à la discussion de l'article de M. Fréchet (Journal de la Société Statistique de Paris, 1940), Journal de la Société Française de Statistique, 147, 2, 17-21.

[5] Aragon, Y., Haziza, D. et Ruiz-Gazen, A. (2005). Les simulations dans l'enseignement des sondages avec le logiciel Genesis sous SAS et la bibliothèque Sondages sous R, La Revue MODULAD, 32, 86-91.

[4] Caussinus, H., Hakam, S. et Ruiz-Gazen, A. (2003). Projections révélatrices contrôlées, Groupements et structures diverses ", Revue de Statistique Appliquée, LI (1), 37-58.

[3] Caussinus, H., Hakam, S. et Ruiz-Gazen, A. (2002). Projections révélatrices contrôlées, Recherche d'individus atypiques, Revue de Statistique Appliquée, L (4), 81-94.

[2] Baccini, A., Caussinus, H. et Ruiz-Gazen, A. (2001). Apprentissage progressif en Analyse Discriminante, Revue de Statistique Appliquée, XLIX (4), 87-99.

[1] Fekri, M. et Ruiz-Gazen, A. (2000). Propriétés asymptotiques et fonction d'influence d'un estimateur simple et robuste de matrice de dispersion, Comptes Rendus de l'Académie des Sciences de Paris, t.330, Série I, 505-508.

Publications in Proceedings and Books

[28] Ruiz-Gazen, A., Thomas-Agnan, C., Laurent, T., Mondon, C. (2023). "Detecting outliers in compositional data using Invariant Coordinate Selection". In *Robust and Multivariate Statistical Methods*. Nordhausen, K., Yi, M. (eds). Springer, Cham, p. 197-224.

[27] Thomas-Agnan, C., Laurent, T., Ruiz-Gazen, A., Nguyen, T. H. A., Chakir, R. and Lungarska, A. (2021). "Spatial simultaneous autoregressive models for compositional data: application to land use". In *Advances in Compositional Data Analysis*, Festschrift in Honour of Vera Pawlowsky-Glahn, Eds. Filzmoser, P., Hron, K., Martin-Fernandez,J.-A., Palarea-Albaladejo, J., p. 225-249. Springer, Cham.

[26] Boulfani, F., Gendre, X., Ruiz-Gazen, A. and Salvignol, M. (2020) "Anomaly detection for aircraft electrical generator using machine learning in a functional data framework", MIC-ElectricApps, Global Mosharaka Congress on Electrical Engineering.

[25] Favre-Martinoz, C., Ruiz-Gazen, A., Beaumont, J.-F. and Haziza, D. (2017), "Robustness in survey sampling using the conditional bias approach with R implementation", *Studies in Theoretical and Applied Statistics*, Springer, 3-13.

[24] Goga, C. and Ruiz-Gazen, A. (2017) "Statistiques sur les données, exhaustivité et échantillonnage", *Les Big data à découvert*, CNRS editions, 140-141.

[23] Liski, E., Nordhausen, K., Oja, H. and Ruiz-Gazen, A. (2016). "Combining Linear Dimension Reduction Subspaces", *In Recent Advances in Robust Statistics: Theory and Applications*. Agostinelli, C., Basu, A., Filzmoser, P., Mukherjee, D. (Eds.), 131-149, Springer India, New Delhi.

[22] Fekri, M. and Ruiz-Gazen, A. (2015). "A B-Robust Non-Iterative Scatter Matrix Estimator: Asymptotics and Application to Cluster Detection Using Invariant Coordinate Selection", In: Modern Nonparametric, Robust and Multivariate Methods, Nordhausen, Klaus et Taskinen, Sara (eds.) Springer. 395-423.

[21] Beaumont, J.-F., Haziza, D. and Ruiz-Gazen, A. (2015). "Mesures d'influence et robustesse en sondages". Chapitre 9 de Méthodes robustes en statistique, Eds : J.-J. Droesbeke, G. Saporta et C. Thomas-Agnan, Technip.

[20] Croux, C., Dehon, C. and Ruiz-Gazen, A. (2015). "Mesures de robustesse", Chapitre 2 de Méthodes robustes en statistique, Eds : J.-J. Droesbeke, G. Saporta et C. Thomas-Agnan, Technip.

[19] Ruiz-Gazen, A. (2015). "Détection graphique de données atypiques pour données dépendantes, Chapitre 10 de Méthodes robustes en statistique, Eds : J.-J. Droesbeke, G. Saporta et C. Thomas-Agnan, Technip.

[18] Salameh F., Picot A., Chabert M., Leconte E., Ruiz-Gazen A. and Maussion (2015). "Variable Importance Assessment in Lifespan Models of Insulation Materials: A Comparative Study". Proceedings of 10th IEEE International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives, 198-204.

[17] Ruiz-Gazen, A., Berro, A. and Larabi Marie-Sainte, S. (2010). "Detecting Multivariate Outliers using Projection Pursuit with Particle Swarm Optimization". Compstat2010, 89-98.

[16] Larabi Marie-Sainte, S., Berro, A. and Ruiz-Gazen, A. (2010). "An Efficient Optimization Method for Revealing Local optima of Projection Pursuit Indices". ANTS'10, 60-71.

[15] Caussinus, H. and Ruiz-Gazen, A. (2009). Exploratory Projection Pursuit. Chapitre 3 dans Data Analysis, Ed. : G. Govaert. Hermès.

[14] Chauvet, G., Goga, C. and Ruiz-Gazen, A. (2008). Estimation de variance en presence de deux échantillons : linearisation et bootstrap. *Méthodes de sondage : applications aux enquêtes longitudinales, à la santé, aux enquêtes électorales et aux enquêtes dans les pays en développement*. Eds. Guibert et al., Dunod.

[13] Ruiz-Gazen, A. and Tyler, D. (2007). Discussion of the invited session "Robustness and data analysis", International Statistical Institute 2007 proceedings (4 pages).

[12] Caussinus, H. and Ruiz-Gazen, A. (2007). Classification and generalized principal component analysis. In Selected contributions in data analysis and classification, Eds Brito et al., Springer, p. 539-548.

[11] Aragon, Y., Goga, C. and Ruiz-Gazen, A. (2006). Estimation non-paramétrique de quantiles en présence d'information auxiliaire, dans *Méthodes d'enquêtes et sondages : pratiques européenne et nord-américaine* sous la direction de P. Lavallée et L.-P. Rivest, Dunod, p. 377-382.

[10] Goga, C., Deville, J.-C. and Ruiz-Gazen, A. (2006). Linéarisation par la fonction d'influence pour des données issues de deux échantillons, dans *Méthodes d'enquêtes et sondages : pratiques européenne et nord-américaine* sous la direction de P. Lavallée et L.-P. Rivest, Dunod, p. 382-387.

[9] Caussinus, H. and Ruiz-Gazen, A. (2006). Projection Pursuit Approach for Categorical Data, dans *Multiple correspondence analysis and related methods*, eds. J. Blasius and M. Greenacre, 405-418.

[8] Aragon, Y. and Ruiz-Gazen, A. (2004). Utilisation des procédures SAS dans l'enseignement des sondages, dans *Echantillonnage et méthodes d'enquêtes* sous la direction de P. Ardilly, Dunod, Col. Sciences Sup., p. 34-39.

[7] Caussinus, H. and Ruiz-Gazen, A. (2003). Projections révélatrices exploratoires, chapitre 3 de Analyse des données, Ed. G. Govaert, Hermès.

[6] Aragon, Y., Perrin, H. and Ruiz-Gazen, A. (2001). Comparaison de ratios sur des domaines dans un plan complexe, dans *Enquêtes, modèles et applications*, Eds. J.-J. Droesbeke et L. Lebart, Dunod.

[5] Caussinus, H. and Ruiz-Gazen, A. (1999). Generalized Principal Component Analysis, Encyclopedia of Statistical Science Update Volume 3, Eds. S. Kotz, C. Read, and D. Banks, New York, Wiley.

[4] Croux, C. and Ruiz-Gazen, A. (1996). A fast algorithm for robust principal components based on projection pursuit, COMPSTAT 96, Physica-Verlag, 211-216.

[3] Caussinus, H. and Ruiz-Gazen, A. (1995). Metrics for finding typical structures by means of principal component analysis, Data Science and its Applications, 177-192.

[2] Caussinus, H. and Ruiz-Gazen, A. (1993). Projection Pursuit and Generalized Principal Component Analysis, New Directions in Statistical Data Analysis and Robustness, Birkhause Verlag Basel, 35-46.

[1] Caussinus, H. and Ruiz-Gazen, A. (1990). Interesting projections of multidimensional data by means of generalized principal component analysis, COMPSTAT 90, Physica-Verlag, 121-126.

R packages

[7] ICSClust in collab. with A. Alfons, A. Archimbaud and K. Nordhausen

[5] ICS in collab. with K. Nordhausen, A. Alfons, A. Archimbaud, H. Oja, and D. Tyler.

[5] REPPlabShiny in collab. with T. Janka and K. Nordhausen.

[4] ICSShiny in collab. with A. Archimbaud, J. May and K. Nordhausen.

[3] ICSOutlier in collab. with A. Archimbaud and K. Nordhausen.

[2] REPPlab in collab. with A. Berro, D. Fischer, K. Nordhausen.

[1] GeoXp in collab. with T. Laurent and C. Thomas-Agnan.

Patents

[2] "Method for determining the level of unusulness of individuals, in particular in order to statistically detect unusual individuals in a multivariate context", A. Archimbaud, A. Ruiz-Gazen, C. Soual - US Patent App. 17/784,615, 2023.

[1] "Detection of outlying observations in electronic chips", inventor (30%) of a national patent (number WO2010/O86456A1) with Ippon Innovation, 2010.

Book (edited)

Advances in Contemporary Statistics and Econometrics, Springer, in collab. with A. Daouia, 2021.

Studies in Theoretical and Applied Statistics, Springer, in collab. with C. Perna and M. Pratesi, 2018.

Méthodes de sondage : applications aux enquêtes longitudinales, à la santé, aux enquêtes électorales et aux enquêtes dans les pays en développement, Dunod, in collab. with Guilbert, P., Haziza, D., Tillé, Y., 2008.

Associate Editor:

Survey Methodology, since 2024.

Statistical Papers since 2021.

Journal of Multivariate Analysis, since 2019.

CSDA, Annals of Statistical Data Science, 2019-2023.

Case Studies in Business, Industry and Government Statistics, 2007-2021.

Member of editorial committee: Revista de Matemática: Teoría y Aplicaciones, 2009-2018.

Preprints

"B-splines calibration" (in collab. with C. Goga), 2013.

Doctoral students and doctoral committees

Doctoral students and habilitations

[11] Supervision of Camille Mondon (co-supervisor: C. Thomas-Agnan), 2023- ····. Title: *Analyse statistique de densités aléatoires : détection d'atypiques et classification supervisée.*

[10] Supervision of Colombe Becquart (co-supervisor: A. Archimbaud), 2023- ····. Title: *Extension of the Invariant Coordinate Selection to cluster identification and rating scale data.*

[9] Supervision of Estelle Medous (co-supervisor: C. Goga), 2020-2023. Title: *Intégration de données pour l'amélioration de la précision des estimations de trafic postal en France.*

[9] Supervision of Lukas Dargel (main supervisor: C. Thomas-Agnan), 2020-2023. Title: *Spatial flow models for Geomarketing applications.*

[8] Supervision of Yasser Abbas (main supervisor: A. Daouia), 2020- ····. Title: *A new perspective on M-quantile regression: from L1 to Lp optimization.*

[7] Supervision of Fériel Boulfani (co-supervisor: X. Gendre), 2018-2021. Title: *Caractérisation du comportement dynamique de systèmes électriques aéronautiques à partir d'analyses statistiques.*

[6] Supervision of Thi Huong An Nguyen (co-supervisor: C. Thomas-Agnan), 2017-2019. Title: *Spatial methods for compositional data with application to electoral data in political economy.*

[5] PhD of Aurore Archimbaud (co-supervisor: K. Nordhausen), 2015-2018. Title: *Statistical methods for outlier detection adapted to data in high dimension.*

[4] PhD of Hélène Juillard (co-supervisors: G. Chauvet and S. Legleye), 2013-2016. Title: *Estimation and variance estimation for longitudinal surveys, application to the ELFE survey*

[3] PhD of Souad Larabi Marie-Sainte (co-supervisor: A. Berro), 2007-2011. Title: *Biologically inspired Algorithms for Exploratory Projection Pursuit.*

[2] PhD of Salvador Flores (co-supervisor: M. Mongeau), 2007-2011. Title: *Optimisation pour la statistique robuste.*

[1] PhD of Sébastien Markley (co-supervisor: M. Simioni), 2004-2008. Title: *Intégration de données spatiales dans les modèles de choix discrets. Application à la modélisation des comportements d'achat des ménages français.*

Supervisor of the habilitation of N. Villa-Vialaneix, 2014 (chercheur INRA, Auzeville) and C. Goga, 2014 (MCF, University of Burgundy).

Doctoral and habilitation committees

M. Chaouch, 2008 (referee, University of Burgundy), K. Nordhausen, 2008 (referee, University of Tampere, Finland), E. Josserand, 2011 (President of the jury, University of Burgundy), P. Ilmonen, 2011 (opponent, University of Tampere, Finland), M. Langel, 2012 (referee, University of Neuchâtel, Switzerland), A. Shehzad, 2012 (referee, University of Burgundy), P. Lardin, 2012 (University of Burgundy), A. Gallon Gomez, 2013 (University of Toulouse 3), E. Chautru, 2013 (referee, Télécom ParisTech), T. Verdebout, 2013 (habilitation, referee, Université Lille 3), O. de La Riva, 2014 (referee, University of Southampton, U.K.) C. Bruffaerts, 2014 (referee, Université Libre de Bruxelles, Belgium), K. Claudio, 2014 (referee, Université de Bordeaux), N. Villa, 2014 (habilitation, jury member), C. Goga, 2014 (habilitation, jury member), G. Chauvet, 2014 (habilitation, jury member, Ensai/Crest, Rennes), M. El Asri, 2014 (referee, Université d'Avignon et des pays de Vaucluse), C. Hasler, 2015 (referee, University of Neuchatel), M. Binois, 2015 (president of the jury, Ecole des Mines de Saint-Etienne), H. Do Van, 2015 (President of the jury, University of Toulouse), A. Godichon, 2016 (President of the jury, University of Burgundy), D. Molina, 2016 (member of the jury, University of Granada), J. Josse, 2016 (habilitation, member of the jury, University Paris Orsay), Anne de Moliner, 2017 (member of the jury), Beatriz Cobo Rodríguez, 2018 (member of the jury, University of Granada), Alyssa Imbert, 2018 (member of the jury, UT1C), Antoine Rebecq, 2019, (referee, Université de Paris-Nanterre), Hadrien Lorenzo, 2019 (member of the jury, Université de Bordeaux), Madalina Olteanu, 2019 (habilitation, referee, Université Paris 1 Panthéon Sorbonne), Mamadou Dione, 2020 (member of the jury, Institut Polytechnique de Paris), Robin Genuer, 2021 (habilitation, jury member, Université de Bordeaux), Clément Lejeune, 2021 (présidente du jury, Informatique, Université Paul Sabatier), Ramon Ferri Garcia, 2021 (rapporteur, Université de Granada, Espagne), Gaëlle Lefort, 2021 (présidente de jury, INRAE d'Auzeville, UT1C), Christoph Muehlmann, 2021 (rapporteur, Université Technique de Vienne, Autriche), Zaïneb Smida, 2021 (assesseur, Université de Montpellier), Christopher Rieser, 2022 (rapporteur, Université Technique de Vienne, Autriche), Mehdi Dagdoug, 2022 (rapporteur, Université de Franche Comté), Cécile Spychala, 2022 (rapporteur, Université de Franche-Comté), Julien Rémy, 2023 (assesseur, Université Libre de Bruxelles, Belgique), Gaspard Bernard, 2023 (assesseur, Université Libre de Bruxelles, Belgique), Julie de Sousa, 2023 (rapporteur, Palacký University in Olomouc, République Tchèque), Esther Eustache, 2023 (rapporteur, Université de Neuchâtel), Ziqing Dong, 2023 (rapporteur, Université de Neuchâtel), Téo Nguyen, 2023 (rapporteur, UPPA, Pau et Macquarie University, Australie).

Collective responsibilities

- At Grand Établissement TSE

Member of the restricted recruitment committee of the Mathematics department of the GE TSE since 2023.

Elected member of the **Research Council** of the GE TSE since 2023.

Gender equality mission manager of the GE TSE since 2024.

Member of the finance commission of the research council since 2023.

Member of the harassment prevention committee CARE (Combatting Abuse, Respecting

Equality) since 2024.

Responsible of the Master 2 Statistique et Économétrie. Responsible of the apprenticeship program of the Master 2 Statistique et Économétrie and Data Science for Social Sciences (more than 15 students per year). Member of the **pedagogical council** of GE TSE.

- At TSE:

Secretary of the academic group MADS at Toulouse School of Economics 2015-2017 and 2021-2023

Responsible of the Master 2 Statistics and Econometrics of Toulouse School of Economics since 2015 (co-accreditation with UT3 until 2021), between 20 and 45 graduated students per year. Responsible of the apprenticeship program and of the statistical consulting course. Member of the pedagogical council of Toulouse School of Economics.

Responsible of the Master 2 Statistics and Econometrics (E-Learning) of Toulouse between 2007 and 2012 (convention with the "Agence Universitaire de la Francophonie" for 3 scolarships), between 10 and 15 graduated students per year. Creator and co-responsible of the "Diplôme de statistique appliquée" (E-learning) between 2008 and 2012, around 15 students per year.

Member of selection committees for the applied mathematics section for assistant professor and professor positions: from 1998 to 2007, 2009, 2012, 2013, 2014.

Organizer of the MADStat seminar: 2018-2019.

- At UTC:

Head of the Mathematics Department of UT1C between April 2011 and March 2014. Member of the board of directors, invited member of the governing board (CA) and of the scientific advisory board (CS), at UT1C. Invited member of the board of directors and of the pedagogical council of the Ecole d'Economie de Toulouse. Among the tasks: allocation of the courses in mathematics (more than 8000 hours) to the 30 members (permanent and nonpermanent) of the department and to temporary teachers.

Elected member of the CFVU (committee on teaching and student life) 2012-2023, and member of the CAC (Academic council), elected member of the governing board 1997-2001, elected member of the faculty of economics council (2002-2006).

- At national level :

Treasurer of the group "Enquêtes, Modèles et Applications", Société Française de Statistique, 2014-2017.

Elected member of the CSQ (Conseil Scientifique Qualifié) at the University Toulouse 2, 2011-2015 and 2023-....

Member of selection committees in applied mathematics for assistant professor (MCF) and professor (PR) positions: University of Pau (1998-2001, MCF), University Toulouse 2 (1999-2008, 2012, MCF), University of Grenoble (2009, MCF, 2010, PR), University of Burgundy (2011, PR), University of Bordeaux (2014, PR), University of Pau (2015, PR), University of Rennes 2 (2015, 2 MCF), University of Strasbourg (2016, MCF), Ecole Centrale de Nantes

(2016, PR), University of Compiègne (2016, PR), University of Rennes 2 (2017, PR), INSA of Rennes (2017, MCF), University of Bordeaux (2018, MCF), University of Montpellier (2018, PR), Université Technologique de Compiègne (Présidente, 2019, MCF), Université Rennes 2 (2019, PR), Université de Dijon (2020, MCF), University of Marseille (2022, PR), University of Grenoble (2023, MCF, transfer), University of Montpellier (2023, Junior chair), University Toulouse 2 (2024, PR), University of Avignon (CDD enseignant-chercheur, 2024).

- At international level:

Treasurer (elected) in the **Executive Committee of FenStatS** (Federation of European National Statistical Societies, since 2023.

Member of the jury of the Data Analysis competition 2021 of the IASC (International Association of Statistical Computing).

Elected member of the **Board of Directors of IASC-ERS** (International Association of Statistical Computing, European Regional Section), 2018-2022.

Member of the **Management Committee** of the European **COST Action** "Computationally-intensive methods for the robust analysis of non-standard data" 2014-2019.

President of the **European Course on Advanced Statistics** 2014-2015 and vice-president 2011-2014.

Scientific committees and conference organizing committees

- Member of **scientific committees:**

President of the scientific committee of the Journées de Statistique, Bordeaux, 2024.

Chair for the International Conference on Robust Statistics, Toulouse, 2023.

54èmes Journées de Statistique, Bruxelles, 2023.

World Statistical Conference (WSC), ISI 2021 for IASC.

Data Science, Statistics and Visualization, virtual, 2021.

International Conference on Robust Statistics, Vienna, 2020 (rescheduled in 2021).

CMStatistics 2019, London, 2019.

International Conference on Robust Statistics, Ecuador, 2019.

Vice-president of the scientific committee of the 10ème colloque francophone sur les sondages, Lyon, 2018.

President of the scientific committee of the 8ème colloque francophone sur les sondages, Dijon, 2014.

46èmes Journées de Statistique, Rennes, 2014.

7ème colloque francophone sur les sondages, Rennes, 2012.

8th workshop on Spatial Econométrics and Statistics, University of Franche-Comté, 2009.

Journées Maasc (funded in 2009: TSE, Toulouse, 2010: IMB, Dijon, 2011: Ensai, Bruz, 2012: TSE, Toulouse, 2013: Médiamétrie, Paris, 2014: Ensai, Bruz, 2015: Médiamétrie, Paris, 2016: Nantes, 2017: EDF, 2018: Médiamétrie).

39èmes Journées de Statistique d'Angers, 2007.

5ème colloque francophone sur les sondages, Marseille, 2007.

Premières Rencontres des Jeunes Statisticiens, Aussois, 2005.

- Member of **organizing committees** and session organizer

Chair of the organizing committee of ICORS 2023, May 2023 in Toulouse (120 participants).

Member of the organizing committee of the conference in honor of Christine Thomas-Agnan, June 2022 in Toulouse.

Member of the organizing committee of the CODA conference, June 2022 in Toulouse.

Organizer of one session at WSC 2021.

Organizer of 2 sessions at DSSV 2021

"Recent developments in multivariate data analysis" session organizer at 10th, 11th, 12th and 13th CMStatistics (in collab. with K. Nordhausen), London, 2017, Pisa, 2018, London 2019, virtual 2020.

Vice-chair of the organizing committee of the useR! conference (more than 1200 participants), Toulouse, 2019.

Organizer of the session in honor of Jean-Claude Deville at the 10th Colloque Francophone sur les Sondages, Lyon, 2018.

Organization of the first French-Finish workshop on Invariant Component Selection (in collab. with K. Nordhausen and with the support of the French Embassy in Finland), Toulouse, 2017.

5èmes Rencontres R, at UT1C, 2016.

"Modern multivariate methods with R" session organizer at 9th ERCIM (in collab. with K. Nordhausen), Sevilla, 2016.

"R packages for multivariate outliers detection" session organizer at 8th ERCIM (in collab. with K. Nordhausen), London, 2015.

"Robustness in survey sampling" session organizer at 7th ERCIM, Pisa, 2014.

"Spatial econometrics" session organizer at 6th ERCIM, London, 2013.

45èmes Journées de Statistique, ESC of Toulouse, 2013.

5th World Conference of the Spatial Econometrics Association (SEA) at UTI Capitole, 2011.

"A (not so) short introduction to R" (in collab. with C. Bontemps), Gremaq, Toulouse, 2011.

First and Third Journées Maasc, TSE, Toulouse, 2009 and 2012.

Premières Rencontres des Jeunes Statisticiens, Aussois, 2005.

Fourth Workshop on Spatial Econometrics and Statistics at UT1C, 2005.

First Workshop on Spatial Econometrics and Statistics at UT1C, 2002.

Communications, visiting, refereeing activity, scientific associations affiliations, grants and contracts

Invited communications and seminars

[79] "Multivariate functional outlier detection using Invariant Coordinate Selection", 4th Annual Meeting of Vietnam Applied Statistics Network, Hanoi, April 2024.

[78] "Statistique robuste et sondages", webinar organized by the group "Enquêtes" of the SFdS, September 2023.

[77] "Statistique robuste et sondages", Opening conference, 12ème colloque international francophone sur les sondages, Paris, May 2023.

[76] "Outlier detection in compositional data using Invariant Coordinate Selection", Icors 2022, virtual, July 2022.

[75] "Detecting outliers in compositional data using in-variant coordinate selection", workshop MACD, Brussels, May 2022.

[74] Keynote speaker, "Statistical data integration using a prediction approach", Itacosm, Perugia, May 2022.

[73] Présidence scientifique rencontre ANRT CIFRE, "Méthodes statistiques pour la détection d'anomalies", April 2022.

[72] "Statistical data integration using a prediction approach for finite population inference", Séminaire Econométrie-Big Data, Marseille, April 2022.

[72] "Many-to-One indirect sampling with application to the French postal traffic estimation" with E. Médous, Séminaire MADS-TSE, March 2022.

[71] "Un approche par prédiction pour l'intégration de données", 11ème colloque international francophone sur les sondages, November 2021.

[70] "De la pratique des enquêtes à la théorie des sondages", conférence d'ouverture du forum des jeunes mathématicien.nes, December 2021.

[69] "Research in Survey Sampling: from Practice to Theory", WSC ISI, virtual, July 2021.

[68] "La Statistique et le hasard", conference for the general public, Fête de la Science, Association Fermat Science, Beaumont de Lomagne, October 2020.

[67] "Multivariate Student versus Multivariate Gaussian Regression", 2 Seminars at Insa Rennes, December 2019 and ISAE Toulouse, January 2020.

[66] "Multivariate outlier detection with ICS: application to quality control". Cladag2019, Cassino, Italy, September 2019.

[65] "Multivariate Student versus Multivariate Gaussian Regression models", CAPS 2019, International Conference on Applied Probability and Statistics, Hanoi, April 2019.

[64] "Invariant coordinate selection for outlier detection with application to quality control". CMStatistics, Pisa, December 2018.

[63] "Outlier Detection with ICS". Séminaire Université de Liège, November 2018.

[62] "Multivariate Outlier Detection with ICS". Journée UT1C-UT3, September 2018.

[61] "Multivariate Outlier Detection with ICS: Application to Quality Control". Icors, Leuven, July 2018.

[60] "Estimation and variance estimation under the cross-classified sampling design". Canssi, Montreal, May-June 2018.

[59] "Using Invariant Coordinate Selection for outlier detection in high dimension". GDR Mascot-Num, Nantes, March 2018.

[58] "Estimation pour un plan de sondage produit. Application à l'enquête Elfe". Maasc, Paris, November 2017.

[57] "The ELFE survey and its complex survey design", CMStatistics, London, December 2017.

[56] "Estimation under cross-classified sampling with application to the Elfe survey", The 5th Italian Conference on Survey Methodology, Bologna, June 2017.

[55] "Notions et intuitions sur les sondages", conférence pour challenge Graines de sondeurs, Irem de Dijon, March 2017.

[54] "Les sondages et leurs limites. De la théorie à la pratique", conférence grand public, les lundis du 85, Tournefeuille, April 2017.

[53] "Robust estimation in surveys using the conditional bias approach and implementation with R", CMStatistics 2016, Sevilla, December 2016.

[52] "Processus empiriques en sondages. Application à l'estimation du taux de pauvreté", 9ème Colloque francophone sur les sondages, Gattineau, Canada, October 2016.

[51] " A unified approach for robustness in survey sampling", 48th Scientific Meeting of the Italian Statistical Society, Salerno, 2016.

[49] "Land use predictions on a regular grid at different scales and with easily accessible covariates. Application to the Teruti-Lucas survey", MIAT INRA Toulouse, seminar, 2016, 11th SSIAB conference, Rennes, 2016.

[48] "Notions et intuitions sur les sondages", conference, Remise des prix du challenge "Graines de Sondeur", University of Bordeaux, for high school pupils and their professors in mathematics, 2016.

[47] "Estimation pour un plan de sondage produit. Application à l'enquête Elfe", Institut de Mathématiques de Toulouse, 2016.

[46] "Functional central limit theorems in Survey Sampling", 6ème Journée Maasc, Rennes, 2014.

[45] "Taking into account auxiliary information for estimating complex finite population parameters in surveys", Delft University, seminar, 2014.

[44] "Taking into account auxiliary information for estimating complex finite population parameters in surveys", University of Turku, Finland, seminar, 2014.

[43] "Approximation of rejective sampling inclusion probabilities and applications", 2nd conference of the International Society of Nonparametric Statistics, Cádiz, Spain, 2014.

[42] "Prise en compte d'information auxiliaire pour l'estimation de paramètres complexes sur des données d'enquête", Rencontres de Statistique Avignon-Marseille, 2014.

[41] "Dimension reduction using Projection Pursuit and Orthogonal Projectors Average", XIXth International Symposium on Mathematical Methods Applied to the Sciences, San Jose, Costa Rica, 2014.

[40] "Méthodes statistiques appliquées à la prévision d'orage", conference for the general public, Fête de la Science, Association Fermat Science, Beaumont de Lomagne, 2013.

[39] "Approximation of rejective sampling inclusion probabilities and application to high order correlations", Graybill conference on modern survey statistics, Colorado State University, USA, 2013.

[38] "Méthodes statistiques robustes", seminar TISIC at IFSTTAR, Paris, 2013.

[37] "Mise en place d'une vitrine de statistique appliquée à l'Université de Toulouse", Journée Bonus Qualité Formation, Toulouse 2, 2011.

[36] "Multivariate outliers detection using ICS", 4th ERCIM conference, London, 2011.

[35] "Présentation du package R GeoXP et du hair-plot pour données dépendantes", seminar Inra, Toulouse, 2011.

[34] "Statistique robuste : une approche fonctionnelle", journée de la robustesse, 2nd seminar Transericod, Avignon, 2011.

[33] "EPP-Lab : une nouvelle interface pour l'exploration de données par projections révélatrices", seminar Ensai, Rennes, 2011.

[32] "Estimation de paramètres non-linéaires par des méthodes non-paramétriques en population finie. Application à l'estimation de l'indice de Gini" (presented in collab. with C. Goga), seminar Ined, Paris, 2011.

[31] "EPP-Lab: a JAVA interface for exploratory projection pursuit", 3rd ERCIM conference, London, 2010.

[30] "Detecting multivariate outliers using projection pursuit with particle swarm optimization", seminar, Tampere, Finland, 2010.

[29] "Enseignement à distance : l'expérience du Master statistique et économétrie de Toulouse", Journée Satellite STID, JdS, Marseille, 2010.

[28] "A unified approach to robust estimation in finite population sampling", International Conference on Indicators and Survey Methodology, Vienna, 2010.

[27] "Detecting multivariate outliers using projection pursuit with particle swarm optimization", COMPSTAT 2010, Paris, 2010.

[26] "The use of Monte Carlo simulations in teaching survey sampling", ICOTS8, Slovenia, 2010.

[25] "Plots for the detection of influential observations in dependent data", 2nd ERCIM conference, Cyprus, 2009.

[24] "Definition and use of the influence function in survey sampling", International Conference on Robust Statistics, Parma, 2009.

[23] "Détection d'observations atypiques et/ou influentes multivariées pour des données géo/-référencées", seminar at Bordeaux 1, Strasbourg and Dijon, 2009.

[22] "Méthodes d'apprentissage en Statistique : concepts de base et applications", Journées Femmes et Mathématiques, Toulouse, 2008.

[21] "Linearization and Composite Estimation for Two-sample Survey Data", 40èmes Journées de Statistique, Ottawa, 2009.

[20] "Analyse exploratoire de données spatiale : mise en oeuvre interactive et nouveaux outils", seminar at University of Leuven and Liège, 2008.

17

[19] "Exploratory tools for spatial multivariate outlier detection", International Conference on Robust Statistics, Buenos-Aires, 2007.

[18] "Estimation de variance dans le cas de deux échantillons : mise en œuvre avec SAS". Club SAS Stat *Statistique d'Enquête et Sondages*, 2007.

[17] "Mise en pratique de la théorie des sondages : quelques exemples", journée *Statistique et Sondages*, Toulouse III, 2007.

[16] "Analyse exploratoire de données géoréférencées : mise en œuvre interactive et nouveaux outils", seminar EPFL, Lausanne, University Mohammed V, Rabat, University of Dortmund, University of Geneva, University of Neuchâtel, 2007.

[15] "GeoXp : un module de R pour l'analyse exploratoire de données géoréférencées", seminair INSEE Toulouse (presented by C. Thomas-Agnan), 2006.

[14] "GeoXp: an R package for interactive exploratory data analysis", seminar, Vienna, 2006.

[13] "Estimation robuste dans le modèle linéaire sur variables entachées d'erreur", seminar University Toulouse III, 2006.

[12] "Robust indices of spatial autocorrelation", International Conference on Robust Statistics, Lisbon, 2006.

[11] "GEOXP: an R package for interactive exploratory spatial data analysis ", Joint Statistical Meeting, Seattle, 2006.

[10] "Statistique exploratoire spatiale avec GeoXp", seminar, Dijon, 2006.

[9] "Analyse de données multivariées pour la détection de groupes et structures diverses", seminar of LORIA, Nancy, 2005.

[8] "Estimation non-paramétrique robuste de frontière de production", seminar ULG, Belgium, 2005.

[7] "Robust Nonparametric Frontier Estimators and Outlier Detection", DREaM (Diagnostics Robustness Exploration and Modelling) workshop, United Kingdom, 2005.

[6] "Robustness of nonparametric frontier estimators", International Conference on Robust Statistics, Beijing, China, 2004.

[5] "Robustness in the Errors-in-Variables model", Statistics and Econometrics seminar, University Carlos III, Madrid, 2004.

[4] "Détection et caractérisation de valeurs atypiques multivariées par ACP généralisées", Club SAS, Paris, 2003.

[3] "Determinants of the physicians's fees : a probit model with spatial dependencies", 2nd Workshop on Spatial Econometrics, Dijon, 2003.

[2] "Robustesse dans le modèle linéaire sur variables entachées d'erreur", 34èmes Journées de Statistique, Brussels, 2002.

[1] 'Propriétés asymptotiques d'un estimateur robuste de matrice de variances-covariances et application à l'Analyse en Composantes Principales ", seminar University Mohammed V, Rabat, 2001.

+ more than 70 contributed presentations at international and national conferences.

Roundtables and workshops:

Invited to a roundtable on "L'enseignement des sondages", 5ème colloque francophone sur les sondages, Marseille, 2007.

Invited to a roundtable on "L'enseignement à distance", 41èmes Journées de Statistique, Bordeaux, 2009.

Invited to a roundtable on "Les avancées récentes de l'enseignement à distance en ligne des méthodes d'enquête et d'analyse statistique", 6ème colloque francophone sur les sondages, Tanger, 2010.

Invited to "la nuit des chercheurs", Toulouse, 2011.

Invited to the 21èmes rencontres CNRS Jeunes "Sciences et Citoyens", participation to the workshop on "Enquêtes et sondages : que mesurent-ils ?", Poitiers, 2011.

Animation of a roundtable on Research for the 25th anniversary of the "Magistère Economiste Statisticien", IMT, Toulouse, 2013.

Animation of a roundtable on "R in the fields of econometrics and marketing" at the 5èmes Rencontres R, Toulouse, 2016.

Visiting

- International :

INPT, Rabat: from 02/04/01 to 30/04/01, from 12/05/03 to 29/05/03 and from 05/03/07 to 18/03/07.

Statistics Canada, Ottawa: from 20/05/05 to 23/05/05 and from 16/10/19 to 31/10/19.

University of Technology in Vienna: from 10/12/06 to 17/12/06 (European Science Fundation) and from 09/07/18 to 14/07/18.

University of Genève: from 08/10/07 to 14/10/08.

Bentley College, Boston, USA: from 04/02/08 to 08/02/08.

Rutgers University, New-Jersey, USA: from 09/02/08 to 17/02/08.

University of Montréal: from 29/02/08 to 14/03/08.

University of Tampere, Finland: from 03/11/10 to 13/11/10, 19/08/14 to 04/09/14, 2 weeks in August 2015 and 2 weeks in August 2016 (CRoNoS funding).

University of Delft, The Netherlands: one week in October 2015 (Delft University funding).

Center for Mathematical Modeling, University of Chile, 2 weeks in February 2017 (CMM funding).

Statistics Canada, from October 16 to 31, 2019.

VIASM (Vietnam Institute of Advanced Studies in Mathematics), from March 1 to April 30, 2024 (funded by a research project of the Viasm).

- **National:**

ENSAI, Rennes: from 15/02/11 to 18/02/11 and from 29/04/13 to 03/05/13.

Institut de Mathématiques de Bourgogne, Dijon : from 06/03/06 to 10/03/06, from 29/01/07 to 31/01/07, from 04/10/08 to 06/10/08, from 16/02/09 to 19/02/09, from 20/10/10 to 24/10/10, from 06/03/13 to 10/03/13, one week in March 2017.

Refereeing activity

Advances in Data Analysis and Classification, Bernoulli, Canadian Journal of Statistics, Computational Statistics, Computational Statistics and Data Analysis, CSBIGS, Econometrics and Statistics, Economie et Statistique, International Journal of Applied Mathematics & Statistics, International Statistical Review, ISTAT working papers, Journal of the American Statistical Association, Journal of Applied Econometrics, Journal of Computational and Applied Mathematics, Journal of Data Science, Statistics and Visualization, Journal de la Société Française de Statistique, Journal of Multivariate Analysis, Journal of Official Statistics, Journal of the Royal Statistical Society, series B., Journal of Statistical Planning and inference, Journal of Statistical Software, Journal of Survey Statistics and Methodology, Metron, Neurocomputing, Psychometrika, REVSTAT Statistical Journal, Revue Internationale des Technologies en Pédagogie Universitaire, Revue Statistique et Enseignement de la SFdS, Sociological Methods and Research, Statistical Methods and Applications, Statistics and Computing, Statistics in Medicine, Statistical Methods in Medical Research, Survey Methodology, Statistics and Probability Letters, Technometrics.

Expert for an ANR project, for 2 projects from NWO (Netherlands Organisation for Scientific Research), for 2 Joint Projects from the Austrian Science Fund (FWF), for a "Programme de subvention à la découverte pour le conseil de recherches en sciences naturelles et en génie" from Canada, for a Mitacs research project from Canada, and for 3 Mandats d'Impulsion Scientifique for the national scientific research center in Belgium.

Affiliations

- Elected member of the International Statistical Institute, since 2017.
- International Association for Statistical Computing (section of the International Statistical Institute), since 1993,

- Société de Mathématiques Appliquées et Industrielles, since 1997,
- Société Française de Statistique, since 1997,
- Association Internationale des Statisticiens d'Enquêtes, since 2000.
- Société Mathématique de France, 2010-2021.
- Association Femmes et Mathématiques, since 2011.

Grants and contracts

VIASM grant: funding for a two months visit at the Vietnam Institute of Advanced Study in Mathematics, March and April 2024.

Airbus: PhD support contract with Airbus from 2019 to 2021.

La Poste : PhD support contract with La Poste from 2021 to 2023.

ANR ModuLand : usage des sols, modèles, dynamique et décisions (programme blanc - SHS1), responsable: C. Thomas-Agnan, 2012-2016.

Convention with la DREAL Midi-Pyrénées (Direction régionale de l'environnement, de l'aménagement et du logement), on Aeral interpolation methods with research assistant and internships supervision (in collab. with C. Thomas-Agnan, T. Laurent and M. Goulard), 2010-2013.

Project "Zéro défaut" in collaboration with Ippon Innovation. Development of statistical tools for the detection of outliers in multivariate data, with engineers and internships supervision, 2008-2015.

Contract with EUMETSAT (Météo France). Responsible of the "Associated Scientist Activity" for convective systems detection (in collab. with N. Villa), 2006-2007.

Contract with l'Observatoire de la vie étudiante de Toulouse I. Responsible of the design of a survey, 2005.

Project with le Rectorat de l'Académie de Toulouse (in collab. with Y. Aragon, L. Bonnal, C. Thomas-Agnan), 2004-2006.

Project with le Conseil Régional de Midi-Pyrénées (in collab with Y. Aragon, E. Leconte, O. Perrin, C. Thomas-Agnan), 2000 - 2010.

Convention with l'URCAM Midi-Pyrénées (in collab. with I. Dubec and E. Leconte), 1999 - 2003.

Project with ALPHA M.O.S. (in collab. with A. Baccini and H. Caussinus), 1999.

Aide à Projet Nouveau du C.N.R.S., 1999 - 2001.

Project with le Conseil Régional de Midi-Pyrénées (in collab. with Y. Aragon, C. Diack, M. Johnson, E. Malin and C. Thomas-Agnan), 1996 - 1998.

Teaching and pedagogical activities

Teaching

TSEconomist Awards: elected "Best Teacher of the year" by the Master 1 students in 2014-2015, 2015-2016, 2018-2019 and 2023-2024, and by the Master 2 students in 2019-2020.

Course, 3 hours on "Introduction to Outlier detection", Vasn (Vietnamese applied statistics network), Hanoi, March 20, 2024.

Workshop, 8 hours Course on Invariant Component Selection for doctoral students and researchers (Cost Action, European Union), Cyprus, April 2018.

Inra formation Ingé+: half a day on spatial econometrics for Inra engineers, Dijon, 2010.

Master Finance Actuariat :
Data Mining with SAS, 2010-2013.

Master at TSE:
Refresher in Probability, 2019-···

Master 2 Statistics and Econometrics :
Statistical consulting: students advisor for consulting projects (group of 4 students),
Data Mining (in English),
Survey sampling (in English),
Outlier detection (in English),
Internship supervisor and member of internship defense jury.

Master 2 Statistique et Econométrie (E-learning):
Survey sampling.

Master 1 in Economics and in Economics and Statistics:
Applied multivariate data analysis with SAS and R,
Introduction to Big Data,
High dimensional machine learning and data analysis methods.

Magistère Economiste Statisticien (first year): Multivariate Data Analysis with R.

Licence 2 Economie et Droit et Economie et Gestion (responsable, 400 students) in 2012-2013 and 2014-2015:
Statistics (with R).

Licence 1 Economie et Droit et Economie et Gestion (responsible, 1000 students) in 2015-2016:
Descriptive Statistics (with R).

Before 2010

Doctoral formation at Ined (French demographics institute), University Paris I: "Survey sampling" with B. Riandey, 2004-2005 and 2005-2006.

Workshop CNRS on survey sampling for researchers in Sociology, Demographics and Geography, with M. Lejeune and B. Riandey, 2003.

Master Statistique et Econométrie :
Director of the program, 2001-2003,
Statistical consulting: students advisor for consulting projects (group of 4 students),
Survey sampling,
Spatial statistics and econometrics,
Internship supervisor and member of internship defense jury.

Master Statistique et Econométrie (E-learning):
Participation to its creation and organization,
Pedagogical tutor,
Survey sampling
Spatial statistics and econometrics.

Master Recherche Sciences de Gestion:
Statistics with ActivStat and SPSS.

Master Systèmes d'Information et Aide à la Décision :
Introduction to Statistics with SPSS.

Préparation à l'Agrégation économie et gestion de l'école Supérieure de Gestion : Statistics.

3ème année d'I.U.P. d'Ingénierie économique :
Mathematical Statistics,
Statistics simulations with SAS,
Internship supervisor and member of internship defense jury.

Maîtrise Sciences de Gestion et Maîtrise M.S.T.C.F. :
Statistics and Econometrics with SPSS.

Master Sciences Economiques :
Applied statistics with SAS.

Licence 3 Economie et Mathématiques :

Mathematical Statistics.

Licence 3 Sciences économiques et d'économétrie :
Multivariate data analysis with SAS.

D.E.U.G.S. M.A.S.S. :
Probability and Statistics.

Pedagogical activities

"Référente logiciels pédagogiques" pour le département de mathématiques d'UT1C (participation au comité de pilotage) 2016-2022.

Participation to the creation of the **Ecole d'Economie de Toulouse** (new curriculum and organisation), 2010-2011.

Participation to the IDEFI project **FREDD**: "Former les économistes de demain" (Initiatives d'excellence en formations innovantes). Active learning proposal (project-based learning), 2011- 2012, tested in 2012-2013 and organized since 2013 by economists.

Responsible (in collab. with C. Maurel) of the project "Vitrine de Statistique Appliquée" (**Bonus Qualité Formation** funding) for combining ressources in Statistics from the University of Toulouse at the undergraduate level, 2010-2012.

"Correspondant **TICE**" (Technologies de l'Information et de la Communication pour l'Enseignement) at UT1C since 2011.

Member of the **CIES** (Centre Interuniversitaire de l'Enseignement Supérieur) of Midi-Pyrénées, 2006-2008.