

MEHDI DAGDOUG

PERSONAL INFORMATION

Born on March 6, 1996

Nationality: French

Personal details.

Address: 1415 Rue du Fort, Montréal, Québec, Canada, H3H 0C5

Phone : +1 613 252 6185

PRESENT POSITION

Assistant Professor in the Department of Mathematics and Statistics at McGill University

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EDUCATION

2019–2022: Ph.D. in Mathematics, University Bourgogne Franche-Comté.

Supervision: Camelia Goga (Université de Bourgogne Franche-Comté) and David Haziza (University of Ottawa).

Thesis: "Statistical learning for high-dimensional sampling", defended on July 12, 2022.

2017-2019: Master of Science in Statistical Modeling, option Research in Statistics. University of Franche-Comté.

2014-2017: Bachelor in Mathematics, option Applied Mathematics. University of Franche-Comté.

PROFESSIONAL EXPERIENCE

Assistant Professor

McGill University, Department of Mathematics and Statistics

01/08/2023 - Present

Montréal, Canada

Assistant professor in the Department of Mathematics and Statistics, Tenure-track position.

Postdoctoral researcher in statistics

University of Ottawa, Department of Mathematics and Statistics

01/11/2022 - 31/07/2023

Ottawa, Canada

Postdoctoral fellowship supervised by Professor David Haziza.

Attaché temporaire d'enseignement et de recherche

Laboratory of Mathematics of Besançon

01/09/2022 - 31/10/2022

Besançon, France

Temporary professor position for teaching and research at the Université de Franche-Comté.

Ph.D. student with teaching contract

Laboratory of Mathematics of Besançon

01/10/2019 - 31/08/2022

Besançon, France

Ph.D. scholarship funded by the Région Bourgogne Franche-Comté and Médiamétrie. Research and teaching activities for the Université de Franche-Comté.

Research internship

Laboratory of Mathematics of Besançon

Besançon, France

01/03/2019 - 31/08/2019

Redaction of a Master's thesis entitled "Model-assisted approaches and nonresponse in survey sampling" under the supervision of Professor Camelia Goga (Université de Bourgogne Franche-Comté).

Research and development for anomaly detection for avionics data with semi-supervised statistical learning models.

AWARDS AND HONORS

- 2023: Laureate of the first edition of the **Jean-Claude Deville Prize** of the French Statistical Society.

FUNDING HISTORY

- 2024 - 2029: **NSERC Discovery Grant**. Amount: \$162,500 CAD. Title: "Statistical learning for high-dimensional survey sampling".
- January 2024 - January 2028: **Mitacs Accelerate Proposal**. Amount: \$315,000 CAD. Co-investigator with David Haziza. Title: "Statistical learning procedures for the treatment of unit and item nonresponse in surveys".
- August 2023: **Start-up grants**. Amount: \$150,000 CAD.

RESEARCH AREAS

My main research interests are focused on the following areas:

- Survey sampling theory: model-assisted estimation, high-dimensional asymptotic theory, variance estimation.
- Statistical learning and its applications in survey sampling and missing data.
- Model selection procedures and their applications for complex survey data.

PUBLISHED PEER-REVIEWED ARTICLES

7. Dagdou, M., Dombry, C., & Duchamps, J-J. (2025). An RKHS Perspective on Tree Ensembles. Submitted.
Link: <https://arxiv.org/pdf/2512.00397>.
6. Eustache, E., Dagdou, M., & Haziza, D. (2025). On high-dimensional variance estimation in survey sampling. *Scandinavian Journal of Statistics*, 52(2), 924–959.
Link: <https://doi.org/10.1111/sjos.12776>.
5. Dagdou, M., Goga, C., & Haziza, D. (2025). Statistical inference in the presence of imputed survey data through regression trees and random forests. *Scandinavian Journal of Statistics*, 52(2), 960–998.
Link: <https://doi.org/10.1111/sjos.12777>.
4. Larbi, K., Tsang, J., Haziza, D. & Dagdou, M. (2025). On the use of machine learning methods for the treatment of unit nonresponse in surveys. *Survey Methodology*, 51(1), 275-303.
Link: <https://www150.statcan.gc.ca/n1/en/catalogue/12-001-X202500100003>.
3. Dagdou, M., Goga, C., & Haziza, D. (2023). Model-assisted estimation through random forests in finite population sampling. *Journal of the American Statistical Association*, 118(542), 1234-1251.
Link: <https://doi.org/10.1080/01621459.2021.1987250>.
2. Dagdou, M., Goga, C., & Haziza, D. (2023). Model-assisted estimation in high-dimensional settings for survey data. *Journal of Applied Statistics*, 50(3), 761-785.
Link: <https://doi.org/10.1080/02664763.2022.2047905>.
1. Dagdou, M., Goga, C., & Haziza, D. (2023). Imputation procedures in surveys using nonparametric and machine learning methods: an empirical comparison. *Journal of Survey Statistics and Methodology*, 11(1), 141-188.
Link: <https://doi.org/10.1093/jssam/smab004>.

ARTICLES IN PREPARATION

- An, Z., Dagdoug, M., & Haziza, D. (2025+). Variable selection for linear regression imputation in surveys.
- An, Z., Dagdoug, M., & Haziza, D. (2025+). Crossfitted model-assisted estimating equations.
- Dagdoug, M. & Haziza, D. (2025+). Double machine learning for nonresponse in surveys.

CONFERENCE PROCEEDINGS

3. Dagdoug, M., & Haziza, D. (2025). Statistical Inference for a Finite Population Mean with Machine Learning-Based Imputation for Missing Survey Data. *Proceedings of Statistics Canada Symposium 2024*.
Link: [https://mehdidagdoug.github.io/files/ProceedingsSymposium\(25\).pdf](https://mehdidagdoug.github.io/files/ProceedingsSymposium(25).pdf).
2. Dagdoug, M., Goga, C., & Haziza, D. (2025). Arbres et forêts aléatoires: d'une approche par modélisation assistée au traitement de la nonréponse. *Actes de la 14e édition des Journées de méthodologie statistique de l'Insee (JMS 2022)*.
Link: <https://mehdidagdoug.github.io/files/jms2022.pdf>.
1. Larbi, K., Haziza, D. & Dagdoug, M. (2022). Treatment of unit nonresponse in surveys through machine learning methods : an empirical comparison. *Actes de la 14e édition des Journées de méthodologie statistique de l'Insee (JMS 2022)*.
Link: https://mehdidagdoug.github.io/files/Larbi_Haziza_Dagdoug22.pdf.

SUPERVISION: CURRENT AND PAST STUDENTS

- Postdoctoral researchers:
 - Dr. Caleb Leedy. 08/2025 - 08/2027. Co-supervision with David Haziza. Working jointly with the Bank of Canada via a MITACS grant.
- Ph.D. students:
 - Kalil Bouhadra, McGill University. 09/2025 - Present.
 - An Ziming, University of Ottawa. 08/2023 - Present. Joint supervision with David Haziza.
- M. Sc. Students:
 - Xiao Qi Li, McGill University. 09/2025 - Present.
 - Evelyn Hubbard, McGill University. 09/2024 - Present. Joint supervision with Abbas Khalili.
 - Gulliver Hager, McGill University. 09/2024 - Present.
 - Mila Pourali, McGill University. 01/2025 - Present.
 - John Tsang, University of Ottawa. 08/2023 - 01/2025. Joint supervision with David Haziza. Working jointly with the Bank Of Canada via a MITACS grant.
Thesis: Data integration for two-phase surveys.
- Graduate visiting students:
 - Enzo Abdallah-Herve, student at École Normale Supérieure Paris-Saclay. 04/2024 - 07/2024.
Topic: Covariate shift problems in regression.
 - Kalil Bouhadra: student at École Polytechnique Fédérale de Lausanne (EPFL). 03/2025 - 05/2024.
Topic: High-dimensional statistics with survey data.
- Undergraduate students:
 - Rob Li, McGill University. 05/2025 - 08/2025. NSERC USRA summer research internship. Co-supervised with Hui Shen (postdoctoral fellow at McGill).
Topic: Differential privacy for survey data.

- Rob Li, McGill University. 01/2025 - 04/2025. Honours research project (MATH 470). Topic: Differential privacy.
- Diego Urdapilleta de la Parra, McGill University. 01/2025 - 04/2025. Majors project (MATH 410). Topic: Model selection and aggregation for regression.
- Mila Pourali, McGill University. 05/2024 - 08/2024. Honours research project (MATH 470). Topic: Foundations of semiparametric theory and missing data.
- Xiao Qi Li, McGill University. 05/2024 - 08/2024. Honours research project (MATH 470). Topic: Active Statistical Inference for finite population sampling.
- Simon Savaria, McGill University. 05/2024 - 08/2024. Honours research project (MATH 470). Topic: Resampling methods for variance estimation.
- Yajun Hui, McGill University. 09/2023 - 12/2023. Honours research project (MATH 470). Topic: Estimator selection for survey data.

PRESENTATIONS AT CONFERENCES AND SEMINARS

Plenary conference presentations.

- Dagdoug, M. (2025). Estimation of Uncertainty. *Annual Congress of the German Statistical Society*, Wiesbaden, Germany, 2-5 September 2025.
- Dagdoug, M., Goga, C. & Haziza, D. (2023). Model-assisted estimation through random forests in finite population sampling. *12e Colloque International Francophone sur les Sondages*, Aubervilliers, France, 21-24 mars 2023.

Invited conference presentations.

- Dagdoug, M. & Haziza, D. (2025). Double machine learning for nonresponse in surveys. *EcoSta 2025*, Tokyo, Japan, 21-23 August 2025.
- Dagdoug, M. & Haziza, D. (2025). On the use of machine learning methods for the treatment of unit nonresponse in surveys. *2025 Joint Statistical Meetings*, Nashville, USA, 2-7 August 2025.
- Dagdoug, M. & Haziza, D. (2025). Double Machine Learning for Nonresponse in Surveys. *2025 CMS Summer Meeting*, Québec, Canada, 6-9 June 2025.
- Dagdoug, M. (2024). High-dimensional variance estimation for model-assisted and imputed estimators. *Bank of Canada Workshop: Understanding and Correcting for Non-response Bias*, Ottawa, Canada, 9 December 2024.
- Dagdoug, M. (2024). Variance estimation for survey estimators based on statistical learning models. *CANSSI-CRT Workshop on Modern Methods in Survey Sampling*, Ottawa, Canada, 8 - 10 July 2024.
- Dagdoug, M., Eustache, E. & Haziza, D. (2024). High-dimensional variance estimation in survey sampling. *SIS 2024*, Bari, Italy, 17 - 20 June 2024.
- Dagdoug, M., Eustache, E. & Haziza, D. (2024). Variance estimation for survey estimators based on statistical learning models. *ICSA-Canada Chapter 2024 Symposium*, Niagara Falls, Canada, 7 - 9 June 2024.
- Dagdoug, M., Eustache, E. & Haziza, D. (2024). Variance estimation for survey estimators based on statistical learning procedures. *SSC Annual Meeting*, St. John's, Canada, 2 - 5 June 2024.
- Dagdoug, M. (2024). Variance estimation for survey estimators based on statistical learning procedures. *Séminaire en ligne sur les sondages*, France (online), 18 April 2024.
- Dagdoug, M. & Haziza, D. (2023). Variance estimation for survey estimators based on statistical learning procedures. *16th International Conference of the ERCIM WG on Computational and Methodological Statistics*, Berlin, Germany, 16-18 December 2023.

- Dagdoug, M., Goga, C. & Haziza, D. (2022). Analysis of regression tree and random forest imputation in surveys. *Summer School on Modern Methods in Survey Sampling*, Ottawa, Canada , 5 - 8 July 2022.
 - Dagdoug, M., Goga, C. & Haziza, D. (2022). Model-assisted estimation through random forests in finite population sampling. *Congrès annuel 2022 de la Société de Statistique du Canada*, Ottawa, Canada (online), 30 - 3 June 2022.
 - Dagdoug, M., Goga, C. & Haziza, D. (2022). High-dimensional convergence for model-assisted estimators. *ITA-COSM2022*, Perugia, Italy, 8-10 June 2022.
 - Dagdoug, M., Goga, C. & Haziza, D. (2021). Random forests imputation in surveys. *Joint Statistical Meeting (JSM) 2021*, Seattle, United States (online), 7-12 August 2021.
 - Dagdoug, M., Goga, C. & Haziza, D. (2021). Model-assisted estimation through random forests in finite population sampling. *Statistics 2021 Canada*, Montreal, Canada (online), 15 - 18 July 2021.
 - Dagdoug, M., Goga, C. & Haziza, D. (2020). Model-assisted estimation through random forests in finite population sampling. *13th International Conference of the ERCIM WG on Computational and Methodological Statistics*, London, England (online), 19-21 December 2020.
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Contributed conference presentations.

- Dagdoug, M., Eustache, E. & Haziza, D. (2023). High-dimensional model-assisted estimation for survey data. *SSC 2023 Annual Meeting*, Ottawa, Canada, 28-31 May 2023.
 - Dagdoug, M., Goga, C. & Haziza, D. (2022). Random forests in surveys: from model-assisted estimation to imputation. *Journées de Méthodologie Statistique de l'Insee 2022 (JMS2022)*, Paris, France, 29-31 March 2022.
 - Dagdoug, M., Goga, C. & Haziza, D. (2021). Random forests imputation in surveys. *Forum des Jeunes Mathématicien.ne.s*, Besançon, France, 8-10 December 2021.
 - Dagdoug, M., Goga, C. & Haziza, D. (2021). Model-assisted estimation through random forests in finite population sampling, presentation with Camelia Goga. *11e Colloque International Francophone sur les Sondages*, Bruxelles, Belgium, 6-8 October 2021.
 - Dagdoug, M., Goga, C. & Haziza, D. (2021). Random forests imputation in surveys. *11e Colloque International Francophone sur les Sondages*, Bruxelles, Belgium, 6-8 October 2021.
 - Dagdoug, M., Goga, C. & Haziza, D. (2021). Convergence rates of model-assisted estimators in high-dimensional settings. *63rd ISI World Statistics Congress*, The Hague, Netherlands (online), 11-16 July 2021.
 - Dagdoug, M., Goga, C. & Haziza, D. (2021). Model-assisted estimation through random forests in finite population sampling. *Conference in honor of Fred Smith and Chris Skinner*, Southampton, England (online), 7-9 July 2021.
 - Dagdoug, M., Goga, C. & Haziza, D. (2021). High-dimensional asymptotics for model-assisted estimation. *6ème Journée "Probabilités et statistiques Besançon-Dijon"*, Dijon, France, 5 July 2021.
 - Dagdoug, M., Goga, C. & Haziza, D. (2021). Model-assisted estimation through random forests in finite population sampling. *Congrès annuel 2021 de la Société de Statistique du Canada*, Ottawa, Canada (online), 7-11 June 2021.
 - Dagdoug, M., Goga, C. & Haziza, D. (2021). Model-assisted estimation through random forests in finite population sampling. *52ème Journées de Statistiques de la Société Française de Statistique*, Nice, France (online), 7-11 June 2021.
 - Dagdoug, M. (2019). Imputation and calibration reweighting for surveys with missing data. *Sixième Journée des Jeunes Chercheurs en Mathématiques de l'UBFC*, Besançon, France, 12 April 2019.
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Invited Seminars.

- Dagdoug, M. Statistical learning for finite population sampling: some challenges. *Séminaire de Probabilités et Statistique*, Université de Franche-Comté, 16 December 2024.

- Dagdoug, M., Goga, C. & Haziza, D. (2023). Statistical inference in surveys with random forest imputed estimators. *Séminaire de Statistique, Université Sherbrooke*, 27 November 2023.
- Dagdoug, M., Goga, C. & Haziza, D. (2023). Statistical inference in surveys with random forest imputed estimators. *Centre de Recherches en Mathématiques (CRM), Applied Mathematics Seminars*, Montreal, Canada, 18 September 2023.
- Dagdoug, M., Goga, C. & Haziza, D. (2023). Statistical Inference in the Presence of Imputed Survey Data Through Regression Trees and Random Forests. *Bank of Canada*, Ottawa, Canada, 6 June 2023.
- Dagdoug, M., Goga, C. & Haziza, D. (2022). Imputation par arbres de régression et forêts aléatoires en théorie des sondages. *Séminaire de l'Institut de Statistique de Neuchâtel*, Neuchâtel, Switzerland, 28 April 2022.
- Dagdoug, M., Goga, C. & Haziza, D. (2022). Analysis of regression tree and random forest imputation in surveys. *Séminaire des doctorants du Laboratoire de Mathématiques de Besançon*, Besançon, France, 3 March 2022.
- Dagdoug, M., Goga, C. & Haziza, D. (2022). Analysis of regression tree and random forest imputation in surveys. *Séminaire des doctorants de l'institut mathématiques de Bourgogne*, Dijon, France, 24 February 2022.
- Dagdoug, M., Goga, C. & Haziza, D. (2020). Model-assisted estimation through random forests in finite population sampling. *Séminaire de l'équipe Probabilités et Statistiques du Laboratoire de Mathématiques de Besançon*, Besançon, France (distanciel), 30 November 2020.
- Dagdoug, M., Goga, C. & Haziza, D. (2019). Model-assisted estimation through random forests in finite population sampling. *Séminaire des doctorants du Laboratoire de Mathématiques de Besançon*, Besançon, France, December 2019.

TEACHING CURRICULUM

Teaching at McGill University.

- Winter 2025:
 - MATH 525 (Sampling Theory and Applications).
 - MATH 480 (1 project).
 - MATH 470 (1 project).
 - MATH 410 (1 project).
- Fall 2024:
 - MATH 533 (Regression and Analysis of Variance).
- Summer 2024: MATH 470 (3 projects).
- Winter 2024: MATH 525 (Sampling Theory and Applications).
- Fall 2023:
 - MATH 533 (Regression and Analysis of Variance).
 - MATH 470 (1 project).

Invited courses.

- Fall 2024: Research course in statistics: matrix completion and missing data. Master 2. Lectures, exercise, and coding sessions (15 hours).
- Fall 2022: Research course in statistics: matrix completion. Master 2. Lectures, exercise, and coding sessions (15 hours).

Teaching at the Université de Franche-Comté.

- Teaching in a Master of Science at the Université de Franche-Comté:
 - 2020-2022: Survey sampling in master 2. Lectures, exercise, and coding sessions (18 hours) in 2023 and exercise and coding sessions (12 hours) in 2020 and 2021.
 - 2021: Statistical learning in master 2. Exercise and coding sessions (6 hours, each year).
 - 2020-2022: Python in master 2. Exercise and coding sessions (6 hours, each year).
 - 2019-2021: Oriented-Object programming in master 1. Lectures, exercise, and coding sessions (15 hours, each year).
 - 2019-2021: Advanced R course in master 1. Lectures and coding sessions (12 hours, each year).
- Teaching in a Bachelor of Science:
 - 2022: Elementary statistics in the third year of a Bachelor of Mathematics. Coding sessions and final projects (25 hours).
 - Mathematical tools in the first year of a Bachelor of Biology. Mixed (40 hours in 2019-2020, 20 hours in 2020-2021).

Lecture notes.

- *Linear Regression and Analysis of Variance*, McGill University, 302 slides.
- *Survey Sampling Theory*, McGill University, 236 slides.

RESEARCH VISITS

- University of Neuchâtel, Neuchâtel, Switzerland, May 2022, 2 weeks on the invitation of Professor Yves Tillé.

ADMINISTRATIVE RESPONSIBILITIES

- September 2025: Incoming member of the *New Investigators Committee*, Statistical Society of Canada.
- March 2025: Committee member of the *NSERC - CGS Masters Selection Committee 2025-2026*.
- November 2024 - February 2025: Evaluation committee member of the *FRQNT PhD grants*, category Probability and Statistics.
- July 2024 - June 2027: Committee Member, *Student Travel Grants Committee*, Statistical Society of Canada.
- March 2024: Committee Member, *NSERC USRA and SURA Summer Research Awards - Ranking Committee*, McGill University.
- August 2023 - Present: Committee Member, *Committee of Undergraduate Affairs*, McGill University.
- September 2023 - December 2023: Committee Member, *Statistics Search Committee*, McGill University.
- May 2020 - October 2022: Elected Member of the *Carnot Pasteur Doctorate School*, representing Ph.D. students in mathematics.
- February 2021 - October 2022: Elected Member of the *BFC-Maths Federation*, representing Ph.D. students of the Laboratory of Mathematics of Besançon.

SCIENTIFIC ANIMATIONS

- February 2025 - Present: Member of the *Comité scientifique du 13ième Colloque International Francophone sur les Sondages*.
- August 2023 - Present: Organizer of the *McGill Statistics Seminar* (18 seminars for 2024-2025, 17 for 2023-2024).
- Co-organizer with Valentin Petit (LmB) of the *Septième Journée des Jeunes Chercheuses et des Jeunes Chercheurs en Mathématiques de l'UBFC* (50 participants); website: <https://lmb.univ-fcomte.fr/Septieme-Journee-des-Jeu>
- Member of the organizing committee and webmaster of the *Forum des Jeunes Mathématicien.ne.s 2021* (3 jours, 70 participants); website: <https://jmb2021.sciencesconf.org>.
- Co-organizer with Valentin Petit (LmB) of the *Ph.D. seminar* for the academic year 2021-2022 (14 seminars) and 2020-2021 (15 seminars).

REFEREEING AND EDITORIAL ACTIVITIES

Member of editorial board.

- September 2025: Incoming Editor of the "Early Career Survey Statistician" section of *The Survey Statistician*.

Refereeing for journals.

- Electronic Journal of Statistics.
- Canadian Journal of Statistics.
- Sankhya B.
- Survey Methodology.
- Journal of Survey Statistics and Methodology.
- Journal of Data Science.

INTERACTIONS WITH THE INDUSTRY

- Collaboration with the Bank Of Canada through a Mitacs project. This includes the co-supervision (with David Haziza) of one Ph.D. student, one M.Sc. student and a postdoctoral fellow collaborating with the Bank Of Canada.
- Collaboration with the French company Médiamétrie during my Ph.D. and for the application of the methodology suggested in "Model-assisted estimation through random forests in finite population sampling" on real data collected by Médiamétrie.
- Participation at the *Semaine d'Etude Maths-Entreprises* (SEME) at Besançon, in 2019.
Work in collaboration of Fabio Coppini (Université de Florence) and Émile Parolin (INRIA Saclay) for the Centre Régional De Lutte Contre Le Cancer Georges-François Leclerc in Dijon. This work resulted in the creation of a Python module and a report entitled "First Steps in Image Registration".

INTERACTIONS WITH HIGH-SCHOOL STUDENTS AND VULGARIZATION

- Presentation for "Soup and Science" entitled "Missing data treatment in surveys", February 28, 2024, Montreal.
- "Treatment of missing data in surveys", short talk to introduce research to undergraduates, Undergraduate Research Panel, January 22, 2024, Montreal.
- Popularization workshop entitled "Titanic, entre expédition maritime et promenade en forêts aléatoires", for the "Journée de la recherche en mathématiques", November 17, 2021, Besançon.
- "Les sondages: comment ça marche?", conference for the "Finale du rallye mathématiques des collégiens", June 2, 2022, Dijon.
- "Titanic, entre expédition maritime et promenade en forêts aléatoires", conference for the "Finale du rallye mathématiques des lycéens", June 2, 2022, Dijon.