

Chiara Di Gravio

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EDUCATION

- Vanderbilt University** 2018 - 2023
PhD in Biostatistics *Nashville, TN (USA)*
- Thesis: *Designs and Analysis Methods for Modern Biomedical Studies with Longitudinal Outcomes*
- Advisers: Jonathan S Schildcrout, PhD and Ran Tao, PhD
- The University of British Columbia** August 2015
MSc in Statistics *Vancouver, BC (Canada)*
- Thesis: *Instrumental variables selection: a comparison between regularization and post-regularization methods*
- Adviser: Gabriela Cohen Freue, PhD
- Sapienza University of Rome** March 2013
MSc in Actuarial and Financial Science *Rome, Italy*
- Thesis: *Automobile insurance and direct compensation: Italian and French systems*
- Adviser: Paola Verico, PhD
- Conferred cum laude
- Sapienza University of Rome** October 2009
BSc in Statistics, Finance and Insurance *Rome, Italy*
- Conferred cum laude

WORK EXPERIENCE

- Research Associate** July 2023 - Present
Imperial College *London (UK)*
- Provided statistical analyses for the Real-time Assessment of Community Transmission (REACT), the Cohort Study of Mobile Phone Use and Health (COSMOS) and the Airwave Study.
Adviser: David C Muller, PhD
- Research Assistant** Jan 2019 - June 2023
Vanderbilt University *Nashville, TN (US)*
- Design and analysis of resource efficient studies for longitudinal data. Advisers: Jonathan S Schildcrout, PhD and Ran Tao, PhD
- Integration of Randomized Controlled Trials and Observational Data. Adviser: Amir Asiaee, PhD
- Provided statistical analyses for The Vanderbilt Inpatient Cohort Study (VICS). Advisers: Jonathan S Schildcrout, PhD and Sunil Kripalani, MD
- Statistician** Sept 2015 - July 2018
MRC Lifecourse Epidemiology Unit *Southampton, UK*
- Statistician for the “Nutrition, Development and Lifelong Health in Transitioning Populations” programme

PUBLICATIONS

Welch S, **Di Gravio C**, Schildcrout JS, Trochez R, Shi Y, Nair D, Vasilevskis EE, Mixon AS, Bell SP, Kripalani S (2024). “Days not at Home: Association of Vulnerability with Healthcare Utilization After Hospitalization for Heart Failure”. *Journal of General Internal Medicine*. *In press*.

Di Gravio C, Schildcrout JS, Tao R (2024). “Efficient Designs and Analysis of Two-Phase Studies with Longitudinal Binary Data”. *Biometrics*, 80(1). [[Paper](#)][[Code](#)]

Issarapu P, Arumalla M, Elliott HR, Nongmaithem SS, Sankareswaran A, Betts M, Sajjadi S, Kessler NJ, Bayyana S, Mansuri SR, Derakhshan M, Krishnaveni GV, Shrestha S, Kumaran K, **Di Gravio C**, Sahariah SA, Sanderson E, Relton CL, Ward KA, Moore SE, Prentice AM, Lillycrop KA, Fall CHD, Silver MJ, Chandak GR and the EMPHASIS study group (2023). “DNA methylation at the suppressor of cytokine signaling 3 (SOCS3) gene influences height in childhood”. *Nature Communication*, 14, 5200.

Asiaee A, **Di Gravio C**, Mei Y, Huiling JD (2023). “Leveraging Observational Data for Efficient CATE Estimation in Randomized Controlled Trials”. Preprint available at <https://arxiv.org/abs/2306.17478>.

Di Gravio C, Tao R, Schildcrout JS (2023). “Design and analysis of two-phase studies with multivariate longitudinal outcomes”. *Biometrics*, 79(2), pp 1420-1432. [[Paper](#)] [[Code](#)]

Schildcrout JS, Harrell F, Heagerty P, Haneuse S, **Di Gravio C**, Garbett S, Rathouz P, Shepherd B (2022). “Model-assisted analyses in longitudinal, ordinal outcomes with absorbing states”. *Statistics in Medicine*, 41(4), pp 2497-2512.

Nongmaithem SS, Beaumont RN, Dedaniya A, Wood AR, Ogunkolade BW, Hassan Z, Krishnaveni GV, Kumaran K, Potdar RD, Sahariah SA, Krishna M, **Di Gravio C**, Mali ID, Sankareswaran A, Hussain A, Biswajit WB, Khan AKA, Knight BA, Frayling TM, Finer S, Fall CHD, Yajnik CS, Freathy RM, Hitman GA, Chandak GR (2022). “Babies of South Asian and European Ancestry Show Similar Associations with Genetic Risk Score for Birth Weight Despite the Smaller Size of South Asian Newborns”. *Diabetes*, 71(4), pp 821-836.

Antoun E, Issarapu P, **Di Gravio C**, Shresta S, Betts M, Saffari A, Sahariah SA, Sankareswaran A, Arumalla M, Prentice AM, Fall CHD, Silver M, Chandak GR, Lillycrop K and the EMPHASIS study group (2022). “DNA methylation signatures associated with cardiometabolic risk factors in children from India and The Gambia: results from the EMPHASIS study.” *Clinical Epigenetics*, 14(6).

Sahariah SA, Gandhi M, Chopra H, Kehoe SH, Johnson MJ, **Di Gravio C**, Patkar D, Sane H, Coakley PJ, Karkera AH, Bhat DS, Brown N, Margetts BM, Jackson AA, Kumaran K, Potdar RD, Fall CHD (2022). “Body composition and cardiometabolic risk markers in children of women who took part in a randomized controlled trial of a pre-conceptional nutritional intervention in Mumbai, India”. *The Journal of Nutrition*, 152(4), pp 1070-1081.

Starnes J, **Di Gravio C**, Irlmeier R, Moore R, Okoth V, Rogers A, Ressler D, Moon T (2021). “Characterizing multidimensional poverty in Migori County, Kenya and its association with depression.” *PLOS ONE* 16(11): e0259848.

Banerdt J, Mateyo K, Yan Y, Liu D, Zuo Y, **Di Gravio C**, Thome J, Riviello E, Saylor D, Ely W, Heimburger D (2021). “Risk factors for delirium among hospitalized patients in Zambia”. *PLOS ONE* 16(4): e0249097.

Kostelanetz S, **Di Gravio C**, Schildcrout JS, Roumie C, Conway D, Kripalani S (2021). “Should we implement geographic or patient-reported social determinants of health measures in cardiovascular patients?” *Ethnicity and Disease*, 31(1), pp 9-22.

Kumaran K, Joshi SM, **Di Gravio C**, Coakley PJ, Lubree H, Joglekar C, Bhat DS, Kinare AS, Bavdekar A, Bhav SA, Pandit AN, Osmond C, Yajnik CS Fall CHD (2020). “Do components of adult height predict body composition and cardiometabolic risk in a young adult South Asian Indian population? Findings from a hospital-based cohort study in Pune: The Pune Children’s Study.” *BMJ Open*, 10(10): e036897.

Nunn RL, Kehoe SH, Chopra H, Sahariah SA, Gandhi M, **Di Gravio C**, Coakley PJ, Cox VA, Sane H, Shivshankaran D, Marley-Zagar E, Margetts BM, Jackson AA, Potdar RD, Fall CHD (2019). “Dietary micronutrient intakes among women of reproductive age in Mumbai slums”. *European Journal of Clinical Nutrition*, 73(11), pp 1536-1545.

Di Gravio C, Lawande A, Potdar RD, Sahariah SA, Gandhi M, Brown N, Chopra H, Sane H, Kehoe SH, Marley-Zagar E, Margetts BM, Jackson AA, Fall CHD (2019). “The association of maternal age with fetal growth and newborn measures: the Mumbai Maternal Nutrition Project (MMNP)”. *Reproductive Science*, 26(7), pp 918-927.

Di Gravio C, Krishnaveni GV, Somashekara R, Veena SR, Kumaran K, Murali Krishna, Karat SC, Fall CHD (2018). “Comparing BMI with skinfolds to estimate age at adiposity rebound and its associations with later cardio-metabolic risk markers”. *International Journal of Obesity*, 43(4), pp 683-690.

Vasan S, Osmond C, Canoy D, Christodoulides C, Neville M, **Di Gravio C**, Fall CHD, Karpe F (2018). “Comparison of regional fat measurements by dual-energy X-ray absorptiometry and conventional anthropometry and their association with markers of diabetes and cardiovascular disease risk.” *International Journal of Obesity*, 42(4), pp 850-857.

Lawande A, **Di Gravio C**, Potdar RD, Sahariah SA, Gandhi M, Chopra H, Sane H, Kehoe SH, Marley-Zagar E, Margetts BM, Jackson AA, Fall CHD (2018). “Effect of a micronutrient-rich snack taken pre-conceptionally and throughout pregnancy on ultrasound measures of fetal growth: the Mumbai Maternal Nutrition Project (MMNP)”. *Maternal & Child Nutrition Journal*, 14(1):e12441.

Cortina MB, **Di Gravio C**, Osmond C (2017). “El problema de todos los cumpleaños”. *Laberintos e Infinitos*. Numero 45.

Chandak G, Silver M, Saffari A, Lillycrop K, Shrestha S, Sahariah SA, **Di Gravio C**, Goldberg G, Tomar A, Betts M, Sajjadi S, Acolatse L, James P, Issarapu P, Kumaran K, Potdar RD, Prentice A, Fall CHD and the EMPHASIS study group (2017). “Protocol for the EMPHASIS study; epigenetic mechanisms linking maternal pre-conceptional nutrition and children’s health in India and Sub-Saharan Africa”. *BMC Nutrition*, 3(81).

Inskip H, Ntani G, Westbury L, **Di Gravio C**, D’Angelo S, Parsons C, Baird J (2017). “Getting

started with tables". *Archives of Public Health*; 75(14).

PRESENTATIONS

- CMStatistics** December 2023
Invited oral presentation Berlin, Germany
Analysis of Ordinal Longitudinal Data under Case-Control Sampling: Studying Mortality in Critically Ill Patients [[Slides](#)]
- Demystifying Long COVID** December 2023
Oral presentation Madrid, Spain
The Relationship between Self-Reported Persistent Symptoms post-COVID-19 and Employment among Adults in England, UK
- ENAR 2023 Spring Meeting** March 2023
Oral presentation Nashville (TN), USA
Efficient Study Designs and Analysis Methods for Binary Longitudinal Data: an Application to the Lung Health Study [[Slides](#)]
- ENAR 2022 Spring Meeting** March 2022
Oral presentation Houston (TX), USA
Efficient Design and Analysis of a Two-Phase Study with Longitudinal Binary Outcomes [[Slides](#)]
- Vanderbilt Department of Biostatistics Weekly Seminar** September 2021
Oral presentation Nashville (TN), USA
Design and Analysis of Two-Phase Studies with Multivariate Longitudinal Outcomes [[Slides](#)]
- ENAR 2021 Spring Meeting** March 2021
Oral presentation Virtual
Design and Analysis of Two-Phase Studies with Multivariate Longitudinal Outcomes [[Slides](#)]
- ENAR 2020 Spring Meeting** March 2020
Oral presentation Virtual
Multiple imputation of an expensive covariate in outcome dependent sampling designs for longitudinal data [[Slides](#)]
- 10th World Congress on Development Origins of Health and Disease** October 2017
Poster presentation Rotterdam, NL
The association of maternal age with fetal growth and newborn measures: the Mumbai Maternal Nutrition Project (MMNP)
- 61th Annual Scientific Meeting: Society of Social Medicine** September 2017
Poster presentation Manchester, UK
Comparing BMI with skinfolds to estimate age at adiposity rebound and associations with later cardio-metabolic risk markers
- Nutrition and Nurture in Infancy and Childhood** June 2017
Poster presentation Grange-over-Sands, UK
A pre-conceptional micronutrient-rich food-based snack for women in Mumbai slums did not increase ultrasound measures of fetal growth

20th Annual SNEHA - MRC International Workshop

February 2017

Oral presentation

Pune, India

Comparing BMI with skinfolds to estimate age at adiposity rebound and associations with later cardio-metabolic risk markers

19th Annual SNEHA - MRC International Workshop

February 2016

Poster presentation

Hyderabad, India

A pre-conceptional micronutrient-rich food-based snack for women in Mumbai slums did not increase ultrasound measures of fetal growth

UBC Department of Statistics Weekly Seminar

August 2015

Oral presentation

Vancouver (BC), Canada

Instrumental variables selection: a comparison between regularisation and post-regularisation methods

SOFTWARE

dames

Author and Maintainer

R package to run designs and analysis methods for resource efficient studies with a binary longitudinal outcome. [Available on GitHub](#).

binaryMM

Maintainer

R package to fit flexible marginalised models for binary correlated outcomes. [Available on CRAN](#).

TEACHING AND MENTORSHIP

Teaching Assistant

Imperial College London

London, UK

- Introduction to Statistical Thinking and Data Analysis (Fall 2023)

Vanderbilt University

Nashville, TN (USA)

- BIOS7330 Regression Modelling Strategies (Spring 2022)
- BIOS7632 Advanced Statistical Inference (Statistical Learning) (Spring 2021)
- DS5440 Data Science Algorithms (Fall 2020, 2021, 2022)
- MSCI Biostatistics II (Spring 2020)
- BIOS6301 Introduction to Statistical Computing (Fall 2019)
- BIOS6312 Modern Regression Analysis (Spring 2019)

The University of British Columbia

Vancouver, BC (Canada)

- STAT300 Intermediate Statistics for Applications (Fall 2013, 2014).
- STAT200 Elementary Statistics for Applications (Spring 2014, 2015 and Summer 2015).

Guest Lecturer

Imperial College London

London, UK

- “*Logistic Regression and Optimization Algorithms*”. Machine Learning (Spring 2024)
- “*Regularised Regression Models*”. Machine Learning (Spring 2024)

Vanderbilt University

Nashville, TN (USA)

- “*Overview of Maximum Likelihood Estimation*”. BIOS7330 Regression Modelling Strategies (Spring 2022 and 2023)

Research Supervision

MRC Lifecourse Epidemiology Unit

Southampton, UK

- Co-supervisor for students in the Statistics with Application in Medicine MSc at the University of Southampton

Adam Von Ende (Summer 2017). Main Supervisor: Sarah Crozier, PhD

Daniella Gossage (Summer 2016). Main Supervisor: Clive Osmond, PhD

AWARDS

ENAR Distinguished Student Paper Award 2023

W. S. Gossett Award for Exceptional Research 2022

Awarded by the Department of Biostatistics at Vanderbilt University for exemplary dissertation work.

Exceptional TA (Teaching Assistant) Award 2021

Selected by students and faculty in the Data Science Institute at Vanderbilt University.

Best Poster Award 2016

Awarded at the 19th Annual SNEHA - MRC International Workshop. Pune, India

Faculty of Graduate Studies, UBC International Partial Tuition Scholarship 2014

UBC Department of Statistics Graduate Entrance Scholarship 2013

Student Collaboration Scholarship 2009

Awarded by the Department of Statistics at Sapienza University of Rome based on student's academic performance

SKILLS

Languages & Tools: R, STATA, Python, SPSS, SQL (basic), Git and GitHub

Dashboards Tableau (basic)

Languages Italian (native), English

EXTRACURRICULAR ACTIVITIES

Reviewer

- From June 2016, peer-reviewed articles for:
BMJ Open, Pediatrics, Obesity, International Journal of Epidemiology, JAMA Pediatrics, Journal of Epidemiology and Community Health, BMC Pediatrics

Biostatistics Graduate Student Association, Vanderbilt University

- Secretary (2023)
- Treasurer (2020-2022)

MRC Lifecourse Epidemiology Unit

- Organised and led R training session for statisticians of the MRC Lifecourse Epidemiology Unit (2017)
- Programme representative to liaise with the MRC Lifecourse Epidemiology Unit publications database team (2017-2018)

Coursera

- Member of the Global Translator Community (2015 - 2020)
- Specializations completed (2015 - present): Google Data Analytics (Google), Python for everybody (University of Michigan), Data science (Johns Hopkins University), Machine learning (University of Washington), Applied data science with Python (University of Michigan)

The University of British Columbia

- Co-organised the 2014 SFU/UBC Statistics Joint Seminar, a biannual seminar intended to give UBC and SFU graduate students a chance to raise awareness about areas of research in statistics, network with other students and faculty members, and share their research
- Organised weekly Italian classes for beginners at St. John's College UBC (Fall 2013)