Zack van Allen, PhD, MBA
Researcher & Data Scientist
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PROFESSIONAL SUMMARY

Experienced researcher proficient in all aspects of the research process, including experimental design, study implementation, quantitative and qualitative analysis, and producing comprehensive reports and presentations. Author of 21 peer-reviewed scientific papers with over 1400 citations. Ten years of experience using R / SAS for data analysis, modeling, and visualization. Proven track record in managing budgets, projects, and teams to deliver high-quality, actionable insights.

SKILLS

- Machine Learning
- R Programming
- Natural Language Processing
- Project Management

- Qualitative Research
- Systematic Reviews
- Data Visualization
- Managing Cross-Functional Teams

PROFESSIONAL EXPERIENCE

Senior Research Associate | Department of Family Medicine, University of Ottawa   2024-present
- Building Innovation Hub for AI Tools in primary care
- Advising and supporting family medicine physicians' research projects and programs
- Assessing efficacy of AI tool for providing feedback on medical resident research projects
- Applying Natural Language Processing to inform medical resident curriculum development

Research Fellow [Mitacs-Banting Postdoc] | University of Ottawa, Health Science   2023-2024
- Compared machine learning algorithms for classification of functional dependence in elderly
- Applied multi-level modelling to uncover role of physical activity in stroke survivor recovery
- Co-supervised PhD student project and provided statistical consulting services

Research Associate | Ottawa Hospital Research Institute   2023-2024
- Applied cluster analysis to identify behavioral profiles for targeted health interventions
- Analyzed theory-based predictors of plasma donation intention in national Canadian sample
- Conducted systematic review and meta-analysis on multiple health behaviour interventions

Research Coordinator | Ottawa Hospital Research Institute   2018-2023
- Led multi-province project on diabetic retinopathy screening in minority groups
- Compared machine learning algorithms for predicting healthy aging and healthcare utilization
- Served on executive committee for multi-hospital study on organ donation decision-making
- Managed cross-functional team of healthcare experts for complex data analysis project

Research Assistant | Department of Innovation in Medical Education, University of Ottawa   2017-2018
- Developed stress inoculation training resources for medical students

Research Assistant | Department of National Defence   2015-2017
- Co-authored reports on leadership profiles for Major-General and Rear Admiral positions

EDUCATION

- **PhD,** Psychology, University of Ottawa   2019-2023
- **M.B.A**, Carleton University   2017-2019
- **M.A**, Psychology, Carleton University   2014-2016
- **B.A**, Psychology, Carleton University   2009-2014

Representative Research and Analytics Projects

van Allen, Z. M, Dionne, N., & Boisgontier, M. (under review). Prospective classification of functional dependence: Insights from machine learning and 39,927 participants in the Canadian Longitudinal Study on Aging. *Physical Therapy Journal*. https://medrxiv.org/cgi/content/short/2024.07.15.24310429v1
- Compared the ability of supervised learning techniques (i.e., Random Forest, XGBoost, Naïve Bayes, Neural Networks, and Logistic Regression) to classify functional dependence in a sample of Canadians aged 45-85.
- Identified 18 predictor variables which were able to classify functional dependence over a six year time frame with a balanced accuracy of 81.9% on the test data.

van Allen, Z. M, Bacon, S., Bernard, P., Brown, H., Desroches, S., Kastner, M., ... Presseau, J. (2023). Clustering of health behaviours in Canadians: A multiple behaviour analysis of data from the Canadian Longitudinal Study on Aging. *Annals of Behavioural Medicine*. https://doi.org/10.1093/abm/kaad008
- Applied unsupervised learning techniques (i.e., hierarchical cluster analysis) to a sample of n = 40k from the Canadian Longitudinal Study of Aging to identify seven distinct clusters of individuals based on their health impacting behaviours.
- Observed sociodemographic patterning in the health behaviour clusters are provided recommendations for population level interventions based on the identified clusters in collaboration with a multidisciplinary team of subject matter experts.

van Allen, Z., Dogba, M. J., Brent, M. H., Bach, C., Grimshaw, J. M., Ivers, N. M., ... & Presseau, J. (2020). Barriers to and enablers of attendance at diabetic retinopathy screening experienced by immigrants to Canada from multiple cultural and linguistic minority groups. *Diabetic Medicine*, e14429. https://doi.org/10.1111/dme.14429
- Developed theory informed interview guides to assess barriers and enablers to eye screening for three cultural and linguistic minority groups.
- Managed data collection and performed site visits to oversee interviews in the homes of participants. Interviews were conducted in the participants first language.

van Allen, Z. M., Orsholits, D., Boisgontier, M. P. (2024). Pre-stroke physical activity matters for functional limitations: A longitudinal control study of 12,860 participants. *Physical Therapy Journal*. https://doi.org/10.1101/2023.09.14.23295576
- Applied multilevel modelling to longitudinal data using a case-matched design which matched stroke survivors and stroke-free participants using propensity scores.
- Observed an interaction between stroke status and physical activity on functional limitations such that physical activity has a greater effect on functional limitations for stroke-survivors than for stroke-free participants.

van Allen, Z.M., & Presseau, J. (2024). A multiple behaviour temporal network analysis for health behaviours during COVID-19. *British Journal of Health Psychology*. https://doi.org/10.31234/osf.io/kmubv
- Merged and cleaned raw longitudinal and cross-sectional data from the iCARE study
- Applied temporal network analysis to describe how health behaviours influenced each other over time during the pandemic.

van Allen, Z. M., & Zelenski, J. M. (2018). Testing trait state isomorphism in a new domain: An exploratory manipulation of openness to experience. Frontiers in Psychology. https://doi.org/10.3389/fpsyg.2018.01964

- Designed and conducted a week-long randomized controlled trial to enhance creative thinking ability using Qualtrics
- Applied multi-level modelling to assess individual trajectories of participants over time