

# Christopher Belanger

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## EDUCATION

### **University of Ottawa**

**Adjunct Professor**, 2024 – Present.

**Postdoctoral Fellowship**, 2022

**MBA**, 2021

### **University of Toronto**

**PhD**, Philosophy of Modern Physics, 2015

**BSc Hon**, Physics and Mathematics, 2007

## EMPLOYMENT EXPERIENCE

**Belanger Analytics, Managing Partner**. 2021 – Present.

- Specializing in rapid-response analytics and research projects with a focus on geospatial analysis, healthcare systems research, management and organizational studies, data visualization, and interactive web application development including dashboards.

**Ottawa Neighbourhood Study, Data Scientist**, 2020 – 2025.

- Spearheaded a geospatial data-science project in collaboration with the City of Ottawa to collect, process, and analyze data about rental apartment availability and affordability, including making data available via an application programming interface (API) for City of Ottawa use in research and service delivery.
- Led collection and analysis of geospatial and administrative data about food retailers for a comprehensive study of inequities in Ottawa's food environment.

**University of Ottawa Faculty of Medicine/Institut du Savoir Montfort, Postdoctoral Fellow**, 2022.

- Supervised by Dr. Lise Bjerre, Institut du Savoir Montfort Chair in Family Medicine, my research focused on geospatial analysis of access to healthcare and evaluating the impacts of virtual care in Ontario.
- My research led to multiple peer-reviewed publications, including a first-authored paper in the CMAJ's Open Access Journal, and produced new methods and open-source tools.

**Natural Resources Canada, Policy Advisor: Strategic Science Policy**, May 2018 - Sept. 2019.

- Led the skills and diversity stream of NRCan's 2019 Medium-Term Planning (MTP), delivering an evidence-based cross-Department plan that the Deputy Minister and ADMs praised for its high quality.
- Worked with executives to design and implement data-driven governance and control systems for the Canadian Council of Forest Ministers (CCFM), strengthening accountability and decision-making.

**Ontario Ministry of Health and Long-Term Care,**

**Policy Advisor to the Assistant Deputy Minister, Senior Program Consultant** Oct. 2014 - May 2018.

- Integrated data-driven analysis with direct policy and strategy advice to the ADM and Directors on primary care and home and community care.
- Led ministry negotiations on two >\$30M funding agreements for electronic medical records (EMRs).
- Led oversight for Ontario's investments in EMRs for community-based clinicians.

## PUBLICATIONS (PEER-REVIEWED)

**Belanger, C.**, Timony, P. E., Bélizaire, A., Desilets, A., Fitzsimon, J. P., Gauthier, A. P., Godfrey, L., Karunanathan, S., Kehoe MacLeod, K., Muray, M.-N., Peixoto, C., & Bjerre, L. M. (2026). Going the distance: A cross-sectional geospatial analysis quantifying province-wide inequities in travel-based access, and fragility of access to French-language primary care provided by family physicians in Ontario, Canada. *BMJ Open*, 16(4), e099965. <https://doi.org/10.1136/bmjopen-2025-099965>

Timony, P. E., **Belanger, C.**, Bélizaire, A., Desilets, A., Gauthier, A., Karunanathan, S., Muray, M.-N., Peixoto, C., Fitzsimon, J. P., Godfrey, L., & Bjerre, L. M. (2025). Rethinking the way we measure access to language-concordant health services for minority language populations: A secondary

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- analysis of publicly available physician and population data in Ontario, Canada. *BMJ Open*, 15(10), e100610. <https://doi.org/10.1136/bmjopen-2025-100610>
- Martin-Schreiber, V., Peixoto, C., Batista, R., **Belanger, C.**, Tanuseputro, P., Hsu, A. T., & Bjerre, L. M. (2026). Health Data for Linguistic Minority Group Research in Canada: Proof-of-Concept Centralized Health Care Metadata Repository Development and Usability Study. *JMIR Infodemiology*, 6, e77242. <https://doi.org/10.2196/77242>
- Mulvey, M., **Belanger, C.** and Bakker, D. (2025), "Working it out: service displacement and the dynamics of consumer adaptation", *Journal of Services Marketing*, Vol. 39 No. 5, pp. 458-474. <https://doi.org/10.1108/JSM-06-2024-0302>
- Ménard A, Chasteen AL, van Gameren M, Bedri N, Yang M, **Belanger C**, Fraser S. New Love, Old Stereotypes: Ageism in Social Media Discourses on The Golden Bachelor. *Journal of Social Media Research (JSOMER)*. 2025. [Early access]. Available at: [https://jsomer.org/index.php/pub/Forthcoming\\_Articles](https://jsomer.org/index.php/pub/Forthcoming_Articles)
- A Nguyen; K Carr; M Fitzgerald; M Sawada; **C Belanger**; D Dussault; V Nguyen; E Kristjansson; C Kendall. (2025) Integrating siloed data: A methodological approach to housing research in Ottawa, Canada. *Wellbeing, Space and Society*, Vol. 9, <https://doi.org/10.1016/j.wss.2025.100282>
- Belanger C**, Peixoto C, Francoeur S, Bjerre LM. (2024) Patient and Provider Satisfaction With a Geomapping Tool for Finding Community Family Physicians in Ontario, Canada: Cross-Sectional Online Survey Study. *JMIR Form Res*. 2024 Jul 9;8:e56716.
- Ménard A, O'Sullivan T, Mulvey M, **Belanger C**, Fraser S (2024). Perceptions of Hospital Care for Persons With Dementia During the COVID-19 Pandemic: A Social Media Sentiment Analysis, *The Gerontologist*, Volume 64, Issue 7, July 2024, gnad155, <https://doi.org/10.1093/geront/gnad155>
- Belanger C.**, Chreim, S. & Bonaccio, S. The Experience and Implications of Meaningless Work in the Public Sector. *Journal of Business Ethics* (2024). <https://doi.org/10.1007/s10551-024-05646-7>
- Belanger C.**, Carr, K., Peixoto, C., Bjerre, L.M. (2023) Distance, access and equity: a cross-sectional geospatial analysis of disparities in access to primary care for French-only speakers in Ottawa, Ontario. *Canadian Medical Association Open Access Journal*. 1(3):E434–42. <https://doi.org/10.9778/cmajo.20220061>
- Fitzsimon JP, **Belanger C**, Glazier RH, et al. (2023) Clinical and economic impact of a community-based, hybrid model of in-person and virtual care in a Canadian rural setting: a cross-sectional population-based comparative study. *BMJ Open* 13(5). British Medical Journal Publishing Group: e069699. <https://doi.org/10.1136/bmjopen-2022-069699>. **\*This paper was a top-ten article of 2024 per the CIHR Institute of Health Services and Policy Research (CIHR-IHSPR) and Canadian Association for Health Services and Policy Research (CAHSPR):** <https://cihr-irsc.gc.ca/e/53930.html>
- Fitzsimon J, Patel K, Peixoto C, et al. (2023) Family physicians' experiences with an innovative, community-based, hybrid model of in- person and virtual care: a mixed-methods study. *BMC Health Services Research* 23(1): 573. <https://doi.org/10.1186/s12913-023-09599-x>
- Buchanan S, Peixoto C, **Belanger C**, et al. (2023) Investigating Patient Experience, Satisfaction, and Trust in an Integrated Virtual Care (IVC) Model: A Cross-Sectional Survey. *The Annals of Family Medicine*. <https://doi.org/10.1370/afm.2978>
- Ménard A, O'Sullivan T, Mulvey M, **Belanger C**, Fraser S. (2023). Perceptions of hospital care for persons with dementia during the COVID-19 pandemic: A social media sentiment analysis. *The Gerontologist*. <https://doi.org/10.1093/geront/gnad155>
- Cambon J, Hernangómez D, **Belanger C**, & Possenriede D. (2021). tidygeocoder: An R package for geocoding. *Journal of Open Source Software*, 6(65), 3544. <https://doi.org/10.21105/joss.03544>
- Lewis, C. T., & **Belanger, C.** (2015). The generality of scientific models: A measure theoretic approach. *Synthese*, 192(1), 269–285. <https://doi.org/10.1007/s11229-014-0567-2>
- Belanger C.** (2013). On two mathematical definitions of observational equivalence: Manifest isomorphism and reconsidered. *Studies in History and Philosophy of Science Part B: Studies in History and Philosophy of Modern Physics*, 44(2), 69–76. <https://doi.org/10.1016/j.shpsb.2012.11.001>

### PUBLICATIONS UNDER PEER REVIEW

- Belanger, C.**, Pond, G., & Boatman, M., & Mangotich, M. Road Safety in the Canadian Army: Review and Recommendations.

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## SELECTED PUBLISHED R PACKAGES (OPEN-SOURCE DATA SCIENCE SOFTWARE)

**pseudohouseholds** (2023). Creator, author.

- Given an arbitrary set of spatial regions and road networks, generate pseudohouseholds that can be used for travel burden analysis. <https://cran.r-project.org/package=pseudohouseholds>

**tardis** (2022). Creator, author.

- Text Analysis with Rules and Dictionaries for Inferring Sentiment: Measure text's sentiment with custom dictionaries and simple rules covering negations and modifiers. <https://CRAN.R-project.org/package=tardis>

**valhallr** (2021). Creator, author.

- A tidy R interface to the open-source Valhalla routing engine for vehicle routing, isochrones, and origin-destination analyses. <https://CRAN.R-project.org/package=valhallr>

**tidygeocoder** (2021). Author, Google Maps module.

- A unified R interface to several online geocoding services. <https://cran.r-project.org/package=tidygeocoder>

**storywranglr** (2021). Creator, author.

- Explore visualizations of Twitter trends with the 'Storywrangler' API. <https://CRAN.R-project.org/package=storywranglr>

## SELECTED CONFERENCE PRESENTATIONS AND INVITED TALKS

A Wan, **C Belanger**, LM Bjerre. *Localized Physician Retirement Risk in Ontario: An Exploratory Cross-Sectional Geospatial Study*. [Poster]. Canadian Association for Health Services and Policy Research (CAHSPR) Annual Meeting, 2025.

**Belanger, C.**, Timony, P., Bélizaire, A., Desilets, A., Fitzsimon, J., Gauthier, A., Godfrey, L., Laferrière G., Peixoto, C., & Bjerre, L.M. *Going the Distance: Quantifying Province-Wide Inequities in Travel-Based Access to French Language-Speaking Primary Care in Ontario*. [Oral presentation] Canadian Health Workforce Conference, Ottawa, Ontario, Canada Nov 2024.

Timony P., **Belanger C.**, Bélizaire A., Desilets A., Fitzsimon J., Gauthier A., Godfrey L., Laferrière G., Peixoto C., & Bjerre L.M. *Assessing language-concordant care: Rethinking the way we measure access to health services for minority language populations*. [Oral presentation] Canadian Health Workforce Conference, Ottawa, Ontario, Canada Nov 2024.

**Belanger, C.**, Timony, P., Bélizaire, A., Desilets, A., Fitzsimon, J., Gauthier, A., Godfrey, L., Laferrière G., Peixoto, C., & Bjerre, L.M. *Distribution and language abilities of primary care physicians in Ontario*. [Oral Presentation] North American Primary Care Research Group (NAPCRG), Quebec City, Nov 2024.

Timony P., **Belanger C.**, Gauthier A., Desilets A., Bélizaire A., Peixoto C., Laferrière G., Fitzsimon J., Godfrey L., & Bjerre, L.M. *Assessing language-concordant care: Rethinking the way we measure access to health services for minority language populations*. [Oral Presentation] Trillium Primary Health Care Research Day 2024, Toronto, Oct 2024.

**Belanger C.**, Timony P., Gauthier A., Desilets A., Bélizaire A., Peixoto C., Laferrière G., Fitzsimon J., Godfrey L., & Bjerre, L.M. *Assessing language-concordant care: Distribution and language abilities of Ontario physicians, and impact on travel burden for patients*. [Poster] Trillium Primary Health Care Research Day 2024, Toronto, Oct 2024.

**Belanger C.**, Timony, P., Gauthier, A., Desilets A., Taillon M, Godfrey, L., Bjerre, L. M. *Primary Care and French-Language Minorities: Exploring regional access and inequities in language-concordant primary care for French speakers*. [Poster]. Canadian Association for Health Services and Policy Research (CAHSPR) Annual Meeting, Ottawa, Canada, May 2024.

**Belanger C.**, Peixoto C., Francoeur S., Bjerre L.M. *Patient and provider satisfaction with a geomapping tool for finding community family physicians: A cross-sectional survey study in Ontario, Canada* [Poster] Canadian Association for Health Services and Policy Research (CAHSPR) Annual Meeting, Ottawa, Canada, May 2024.

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- Belanger C.**, Timony, P., Gauthier, A., Desilets A., Taillon M, Godfrey, L., Bjerre, L. M. *Family physicians in Ontario: their prevalence, distribution, and French-language abilities* [Oral Presentation] Ministry of Health/ Ontario Health : Monthly Evidence Café, Apr 2024
- Ménard A, O'Sullivan T, Mulvey M, **Belanger C**, Fraser S. Abstracts and/or Papers Read. (2023, October). Perceptions of hospital care for persons with dementia during the COVID-19 pandemic: A social media sentiment analysis. Canadian Association on Gerontology Conference, Toronto, Canada.
- Lever, M., Mulvey, M., **Belanger, C.**, Primossi, V. Crowdsourcing insights into travel accessibility: A social listening playbook. Travel and Tourism Research Association Canada Chapter Conference. (September 2023)
- Belanger, C.**, Carr, K., Peixoto, C., Bjerre, L.M. Distance, access and equity: a cross-sectional geospatial analysis of disparities in access to primary care for French-only speakers in Ottawa, Ontario. Health Canada 2023 Colloquium on the Health of Official Language Minority Communities. (March 2023)
- Bjerre, L., **Belanger, C.**, Fitzsimon, J., Peixoto, C. "I need a family doctor!! How can I find one?" – Docmapper.ca: An interactive map to support (language-concordant) access to primary care. Trillium Primary Health Care Research Day (October 2022).
- Belanger, Christopher**, Samia Chreim, and Silvia Bonaccio. "Feeding the Beast: The Experience of Meaninglessness at Work in the Public Sector." *Academy of Management Proceedings* 2022, no. 1 (August 2022): 12121. <https://doi.org/10.5465/AMBPP.2022.12121abstract>.
- Belanger, Christopher**. "Scraping Data from the Web with R." Presentation to the Public Health Agency of Canada (PHAC). (September 2021). [https://github.com/chris31415926535/talk\\_phac\\_data\\_scraping](https://github.com/chris31415926535/talk_phac_data_scraping).

## SELECTED GRANTS, AWARDS, AND SCHOLARSHIPS

- **2020 Pierre Maurer Metropolitan Life Scholarship:** Highest GPA of uOttawa's intensive MBA cohort.
- **2020 MBA Alumni Association Award:** For a data science project in support of the Ottawa Food Bank.
- **2020 James F. Roache Award:** For the highest outstanding ethical standards in uOttawa's MBA program.
- **2011 Ontario Graduate Scholarship**
- **2009-2010: SSHRC Doctoral Fellowship**

## SELECTED DATA-SCIENCE, ANALYTICS, AND SOFTWARE DEVELOPMENT PROJECTS

### **Docmapper.ca / TrouvezUnMedecin.ca, an online interactive map for finding family physicians.**

- Docmapper is an online bilingual interactive map that helps patients in Ottawa find local family physicians who speak their preferred language. Based on data from the CPSO and produced in conjunction with the uOttawa Department of Family Medicine. As of January 2024 serves over 100 patients per day.

### **"Social Astronomy," a Web Application for Social Media Netnography and Analytics.**

- Interactive online software for collecting and analyzing billions of posts from the social media site Reddit, enabling analysts to rapidly and iteratively generate and test hypotheses. Full-stack application using SolidJS frontend, backend analytical APIs written in node.js and R Plumber, and ElasticSearch.

### **Optimizing Road Inspection Routes in Kingston, Ontario.**

- This applied research project, done with the Royal Military College of Canada and the City of Kingston, applied machine learning/AI and optimization techniques to large data sets, including road network data, to develop routes that met Ministry of Transportation-mandated inspection requirements while also minimizing travel times.

### **Optimizing Food Bank Locations.**

- Executed a geospatial data-science project for the Ottawa Food Bank to find ways to minimize clients' travel burden. This co-authored work won the 2020 Telfer MBA Alumni Association Award.

### **Creating A Twitter Bot to Find COVID-19 Vaccination Appointments.**

- When COVID-19 vaccines first became available, it was difficult to find appointments. As a public service I created an open-source Twitter bot that tweeted available appointments within 50km of Ottawa, Ontario.