CONTEXTUALIZING PRIVACY FOR OLDER ADULTS IN CANADA

5th Annual Symposium of Applications of Contextual Integrity at York University, Canada

Paola Marmorato – Carleton University

Ruchi Swami – Carleton University

Sanchita Kamath - Manipal Academy of Higher Education

Nadila Asikaer - University of Waterloo

Heather Molyneaux - National Research Council of Canada

Cosmin Munteanu - University of Waterloo

Elizabeth Stobert – Carleton University

MOTIVATION

- Canada: Older adults' population is increasing
- Technology:
  - Increased use by Older Adults
  - Services: adopting technology and moving to online based platforms
  - Can be used to support aging in place
- Technologies for aging in place bring privacy implications
- Survey: generalize existing findings from the literature
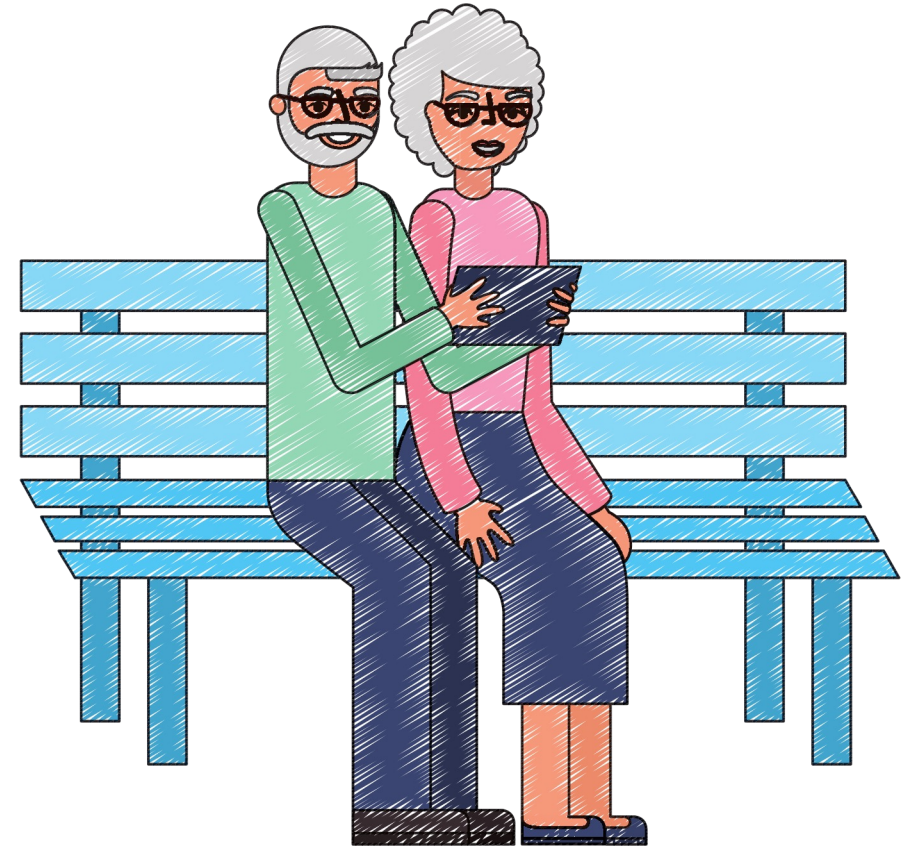
Older Adults: Technology Use

- "Aging in place"
  - Strategy for healthy aging that centers on the need to support older adults in their own homes
  - Technology innovations provide support for successful aging
- Older Adults and Technology
  - Often dismissed as "technologically inept"
  - Internet use increased 6.3 points from 2020 to 2022 (82.6%) for 65+.
  - Impact of Covid: Medical, financial, social aspects are now online, and older adults cannot avoid using technology

Privacy and Older Adults

- Privacy Concerns and Privacy Management
- Quan-Haase and Ho:
    - Social Concerns
    - Institutional Concerns
    - Security-Privacy Concerns
- Older adults have more institutional concerns than social concerns in comparison to younger population
- Institutional concerns are related to organizations (private and government) getting access to or using unauthorized information
- The study uses Quan-Haase and Ho's finding in survey formation and CI framework to analyze participants' privacy concerns

Research Question

Through the contextual integrity lens, what are the privacy concerns relating to the technology use of older adults in Canada within the context of aging in place?

Survey Design

- The survey is divided into five sections:
  - Demographics
  - Activities of daily living
  - Technology use,
  - Support for technology
  - Security and privacy behaviors and concerns
- Questions are Likert scales
- Contexts found in Quan-Haase and Ho were used to inform the development of the "Privacy" section

Methods

Participants:

- Inclusion Criteria:
  - 65+Living in Canada
  - Comfortable with either English or French
- As of September 5, 2023:
  - 33 participants
  - 65-84 (Average age = 73)
 - (20 female, 12 males, 1 non-identified)

Procedure:

- Online Survey – approximately 15 minutes
- Participants receive a $5 CAD Coffee-Shop Gift Card

# Privacy Attitude Scale

- Most participants were privacy concerned
  - Fundamentalists: protective of their privacy
  - Pragmatists: consider the pros and cons of sharing
- Westin Scale (1967) is one of the most used scales in Privacy Research
- Does not uncover further story or consider contextual informational norms

Westin Segmentation Index
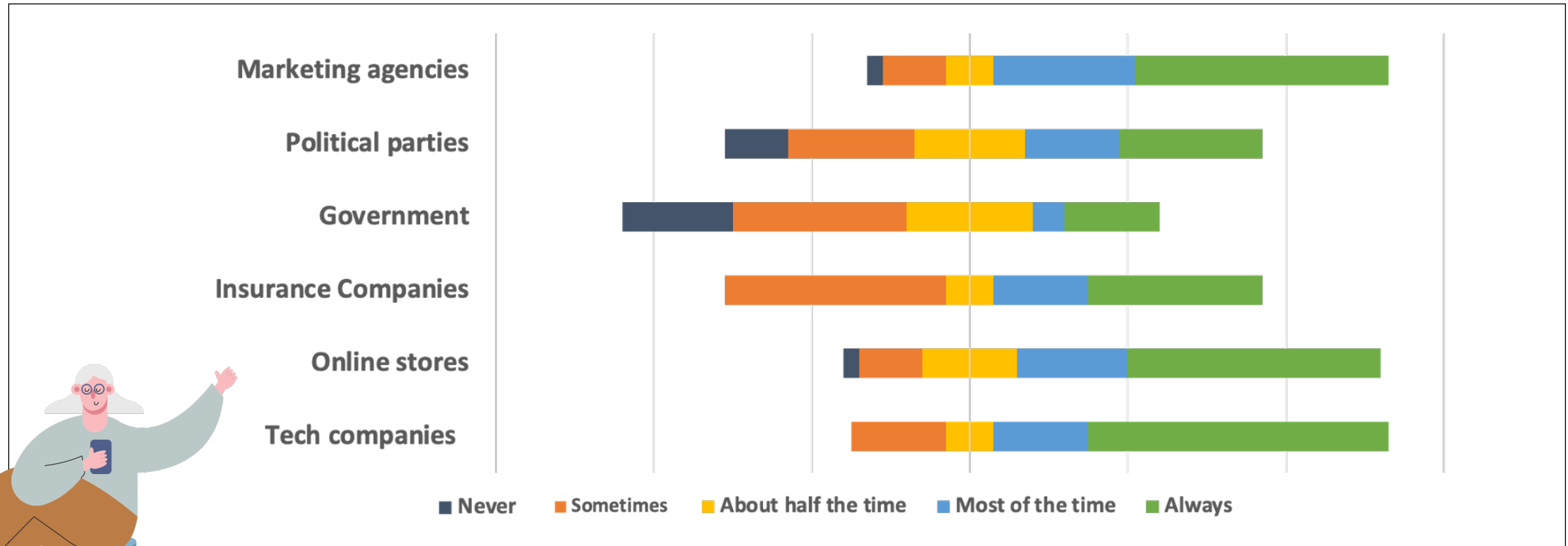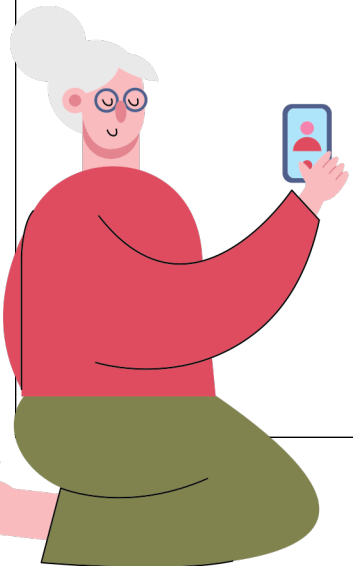
Number of Participants
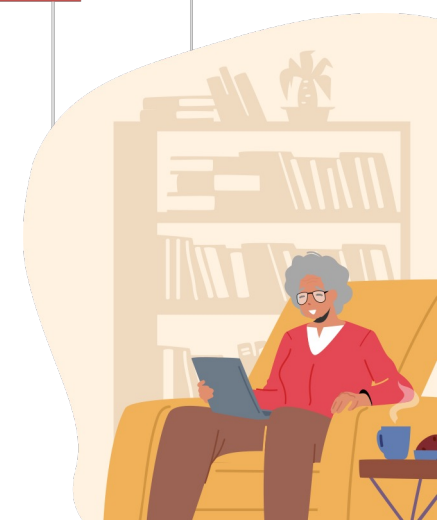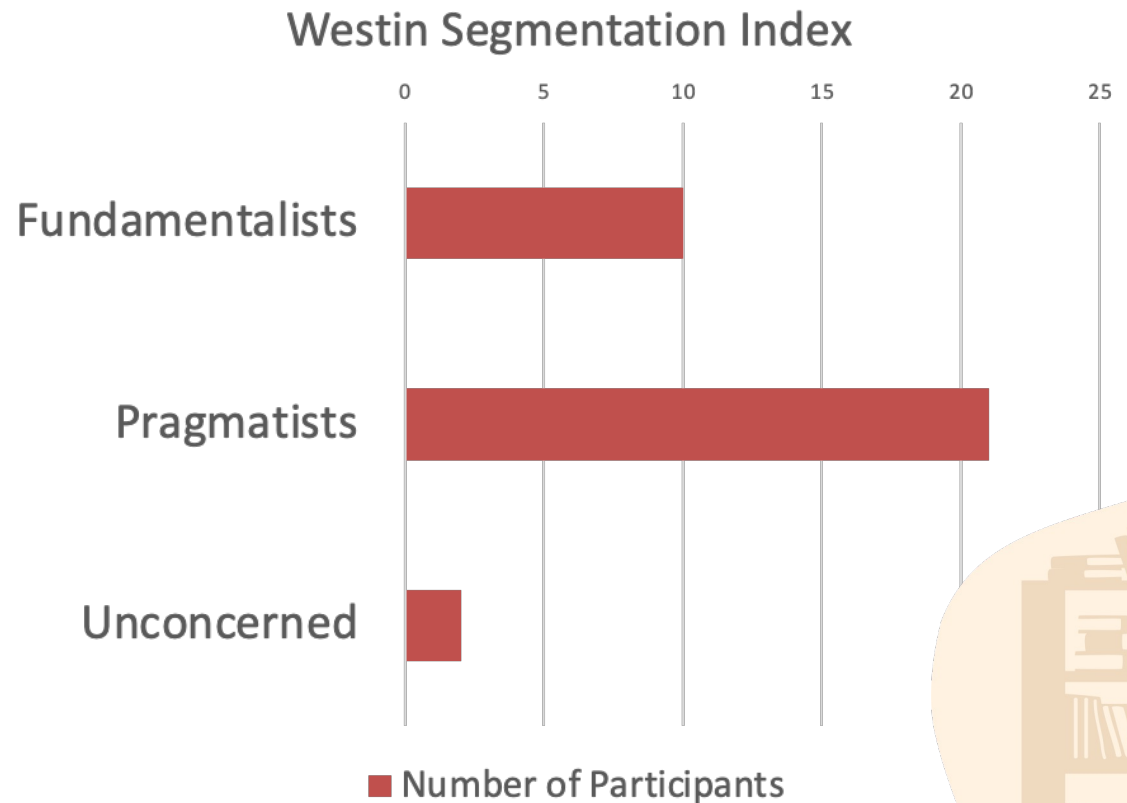
Institutional Privacy
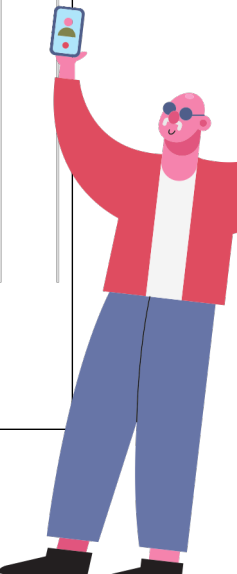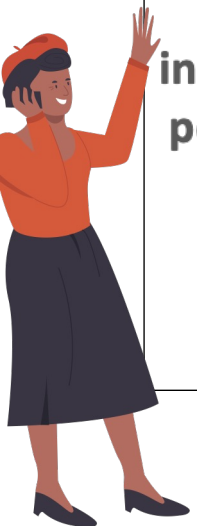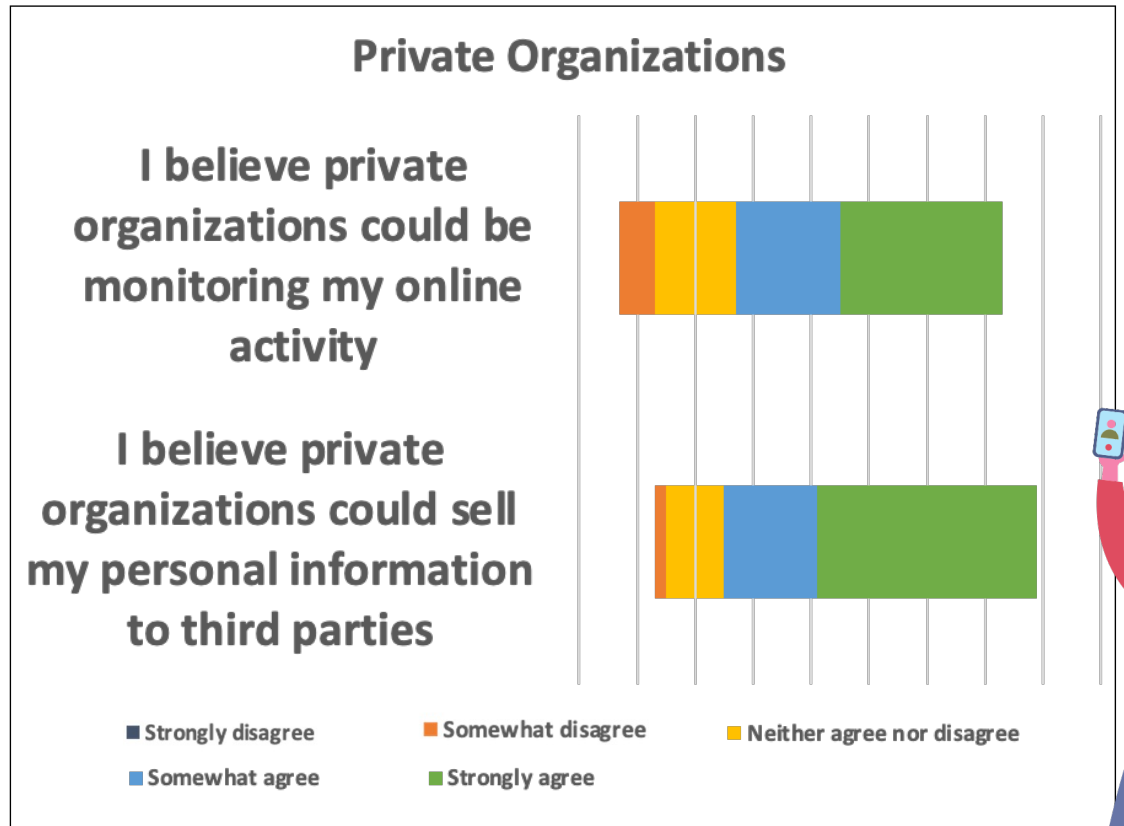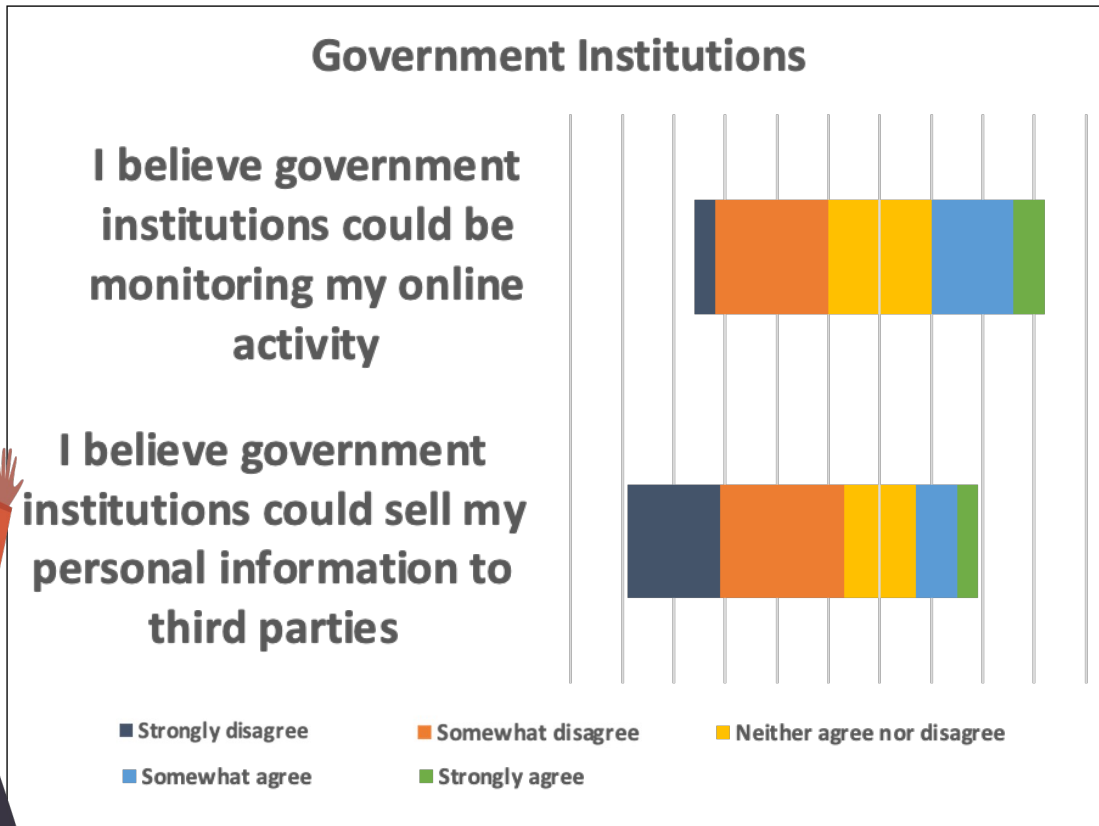
Privacy Concerns Frequency based on Information Recipient

Trust in Sharing based on Information Attributes
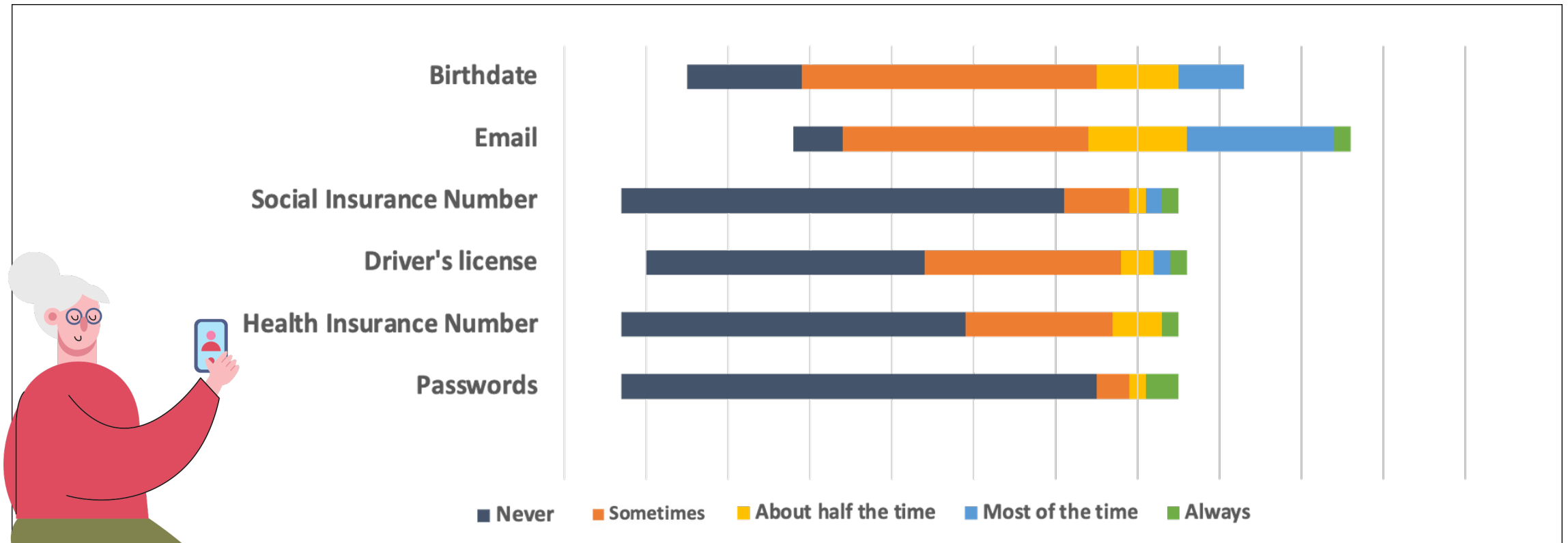
Ongoing Challenges and Mitigation

- Difficulty recruiting a diverse population of Older Adults in Canada
  - Reaching out Provincially
- Survey does not give in-depth responses
  - Steppingstone for qualitative research

Thank you!

Paola Marmorato

paolachavesmarmorato@cmail.carleton.ca

Ruchi Swami

ruchiswami@cmail.carleton.ca

If you (or someone you know) are interested in participating in our research, please contact us at spirl@scs.carleton.ca

References

[1] Canadian Internet Registration Authority. 2021. Trends in Internet Use and Attitudes: Findings from a Survey of Canadian Internet Users. Technical Report. The Strategic Counsel.
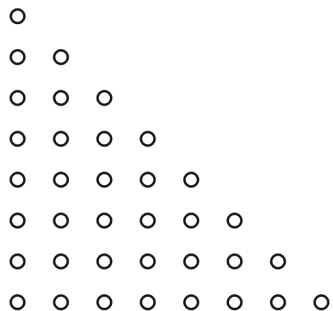
[2] Louise Barkhuus. 2012. The mismeasurement of privacy: using contextual integrity to reconsider privacy in HCI. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. 367–376.

[3] Statistics Canada. 2016. 150 years of immigration in Canada. Technical Report.

[4] Statistics Canada. 2021. Smartphone use and smartphone habits by gender and age group, inactive. Technical Report.

[5] Jordan Davidson and Christoph Schimmele. 2019. Evolving Internet Use Among Canadian Seniors. (July 2019).

[6] Alisa Frik, Leysan Nurgalieva, Julia Bernd, Joyce Lee, Florian Schaub, and Serge Egelman. 2019. Privacy and Security Threat Models and Mitigation Strategies of Older Adults. 21–40. Add content here

[7] Kristen R Haase, Theodore Cosco, Lucy Kervin, Indira Riadi, and Megan E O'Connell. 2021. Older adults' experiences with using technology for socialization during the COVID-19 pandemic: Cross-sectional survey study. JMIR aging 4, 2 (2021), e28010.

[8] Rachel V Herron, Nancy EG Newall, Breanna C Lawrence, Doug Ramsey, Candice M Waddell, and Jennifer Dauphinais. 2021. Conversations in times of isolation: Exploring rural-dwelling older adults' experiences of isolation and loneliness during the COVID-19 pandemic in Manitoba, Canada. International Journal of Environmental Research and Public Health 18, 6 (2021), 3028.

[9] Solove Daniel J. 2006. A Taxonomy of Privacy. University of Pennsylvania Law Review 154 (Jan. 2006), 477. Add content here

[10] Nathan Malkin. 2022. Contextual Integrity, Explained: A More Usable Privacy Definition. IEEE Security & Privacy (2022).

[11] Andrew Mcneill, Lynne Coventry, Jake Pywell, and Pamela Briggs. 2017. Privacy Considerations when Designing Social Network Systems to Support Successful Ageing. 6425–6437.

References

[[12] Benjamin Morrison, Lynne Coventry, and Pam Briggs. 2021. How do Older Adults feel about engaging with Cyber-Security? Human Behavior and Emerging Technologies 3, 5 (Dec. 2021), 1033–1049. https://doi.org/10.1002/hbe2.291

[13] Helen Nissenbaum. 2004. Privacy as contextual integrity. Wash. L. Rev. 79 (2004), 119.

[14] Anabel Quan-Haase and Dennis Ho. 2020. Online privacy concerns and privacy protection strategies among older adults in East York, Canada. Journal of the Association for Information Science and Technology 71, 9 (2020), 1089–1102.

[15] Hirak Ray, Flynn Wolf, Ravi Kuber, and Adam J Aviv. 2021. Why Older Adults (Don't) Use Password Managers.. In USENIX Security Symposium. 73–90.

[16] Pamela Robinson and Peter A Johnson. 2021. Pandemic-driven technology adoption: public decision makers need to tread cautiously. International Journal of E-Planning Research (IJEPR) 10, 2 (2021), 59–65.

[17] Eva-Maria Schomakers and Martina Ziefle. 2019. Privacy Concerns and the Acceptance of Technologies for Aging in Place. 313–331. https://doi.org/10.1007/978-3-030-22012-9_23

[18] Kalpana Shankar, L. Jean Camp, Kay Connelly, and Lesa Huber. 2012. Aging, Privacy, and Home-Based Computing: Developing a Design Framework. IEEE Pervasive Computing 11, 4 (Oct. 2012), 46–54. https://doi.org/10.1109/MPRV.2011.19

[19] D. Townsend, F. Knoefel, and R. Goubran. 2011. Privacy versus autonomy: A tradeoff model for smart home monitoring technologies. In 2011 Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE, Boston, MA, 4749–4752. https://doi.org/10.1109/IEMBS.2011.6091176

[20] Xiying Wang, Tiffany Knearem, Fanlu Gui, Srishti Gupta, Haining Zhu, Michael Williams, and John Carroll. 2018. The Safety Net of Aging in Place: Understanding How Older Adults Construct, Develop, and Maintain Their Social Circles. 191–200. https://doi.org/10.1145/3240925.3240935

[21] David Wavrock, Grant Schellenberg, and Christoph Schimmele. 2021. Internet use Typology of Canadians: Online Activities and Digital Skills. (Nov. 2021).

[22] Janine L. Wiles, Annette Leibing, Nancy Guberman, Jeanne Reeve, and Ruth E. S. Allen. 2011. The Meaning of "Aging in Place" to Older People. The Gerontologist 52, 3 (10 2011), 357–366. https://doi.org/10.1093/geront/gnr098arXiv:https://academic.oup.com/gerontologist/articlepdf/52/3/357/1559672/gnr098.pdf

[23] Anabel Quan-Haase and Isioma Elueze. Revisiting the privacy paradox: Concerns and protection strategies in the social media experiences of older adults. In Proceedings of the 9th international conference on social media and society, pages 150–159, 2018

[24] O. of the P. C. of Canada, "2022-23 Survey of Canadians on Privacy-Related Issues," Jun. 14, 2023. https://www.priv.gc.ca/en/opc-actions-and-decisions/research/explore-privacy-research/2023/por_ca_2022-23/ (accessed Sep. 14, 2023).