1. THE PROBLEM & RESEARCH OBJECTIVES

- Caregiver-Employees (CEs): Individuals providing unpaid care usually to a loved one or friend while working in the paid labor force.

- CEs are the backbone in providing care for the aged, potentially saving millions of dollars in health expenditures; yet, they’re prone to ill-health and work counterproductivity due to struggle to maintain a healthy work-life balance.

- Literature focuses on mitigating counterproductivity and optimizing work-life balance by implementing caregiver-friendly workplace policies; however, more research is needed as this population is poorly understood.

- The most common caregiving task in Canada is assisted-transport involving running errands for the care recipient or driving them to appointments. As societies age, accessibility to vital services has become an increasingly concern to health and transport policy makers.

- Core Research: To better understand how accessibility to vital services may impact CEs work-life balance, quality of life, and overall well-being.

- Objectives:
  1. Create service areas and accessibility scores to vital services in Hamilton Census Metropolitan Area (CMA)
  2. Identify locations in Hamilton CMA that may pose highest assisted-transport burden, based on sociodemographic and low potential accessibility to vital services
  3. Suggest areas of future implementation to mitigate assisted-transport dependence and improve the wellbeing of CEs.

2. STUDY AREA

- Location: Midway between Niagara Falls & Toronto
- Size Area: 1,400 sq. km
- 15% urban
- Cities in CMA: Hamilton, Burlington, and Grimsby
- CMA Pop: 725,000
  - 25th most populous in Canada
  - 85% reside urban
  - Age 45+ (>= 20%) at least 45+ years of age

- Physical Barriers:
  - Niagara Escarpment
  - Industrial Zone

3. METHODS BLENDING ARCGIS & R

4. VISUAL & TABULAR RESULTS

5. UPCOMING WORK

- GPS and daily trip diary recording of CE participant’s work commute and assisted-transport tasks
- Analytics: 3D GeoVisualization (Space-Time series) to identify what part of the trip takes the most time, why, and whether conducting assisted-transport tasks impacts their health. If so, what are the factors?

- Tools: 3D Analyst / Space-Time Cube via ArcGIS

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**Highlights**

- **Service Area & Accessibility (Figure 2 & 3):**
  - With public transit – 75% of the CMA have walkable access to at least 1 service
  - Without public transit – 41%

- **Different Types of Assisted-Transport Demand (Figure 5):**
  - See below Table 1 for details

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**Table 1**

- | Demand Level | Potential Assisted Transport Demand | Travel Time Threshold |
- | --- | --- | --- |
- | Negligible | 0 – 1 accessibility scores | 0 |
- | Low | 2 – 5 accessibility scores | 5 |
- | Medium | 6 – 9 accessibility scores | 10 |
- | High | 10 – 19 accessibility scores | 15 |
- | Critical | 20 or more accessibility scores | 20 |

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**Figure 1**

**Figure 2**

**Figure 3**

**Figure 4**

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**6. SOURCES**