



(PROJECT)

# TAMING THE SILVER TSUNAMI: THE AGE-IN-PLACE LANEWAY HOUSE

RESEARCH PROJECT  
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THE  
INTERDISCIPLINARY  
IMPACT OF  
CREATIVE PRACTICE  
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MADA,  
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- 01. v2 Exterior Render
- 02. v2 Bird's Eye Axonometric
- 03. v2 Kitchen Render
- 04. v2 Living Room Render
- 05. v2 Bedroom Render
- 06. v2 Prototype Exterior
- 07. v2 Prototype Exterior
- 08. v2 Prototype Kitchen
- 09. v2 Prototype Millwork Detail
- 10. v2 Prototype Bedroom with Medical Module
- 11. v2 Prototype Bedroom

## AGE-IN-PLACE HOUSING

The world's population is getting older. In Canada, for example, seniors currently comprise 10% of the population. This will increase to 20% by 2026. Although many will continue to lead active lives, a significant number of these seniors will become frail, experiencing a variety of health issues that severely limit their ability to live independently.

Unfortunately, most homes are designed for healthy individuals and cannot easily accommodate the complex ergonomic, medical, and cognitive needs of people as they grow old. This is particularly true for those who are frail.

According to the Canadian Frailty Network, "Frailty is a patient health state associated with getting older; involving multiple serious health issues that increase an individual's vulnerability for extended acute care or end-of-life care. 25% of seniors over the age of 65 and 50% of seniors 85 years of age and older have frailty and are at higher risk of adverse health outcomes. They require a greater share of community resources, need more hospital services, and are likely to have extended stays in long-term care. Frail seniors account for 40% of acute care services and occupying 85% of acute care beds."<sup>1</sup>

While this high level of care is medically necessary for many of these individuals, studies indicate that up to 40% of frail seniors could continue to live independently, and in their own home, provided that domestic environment could support their specific needs. This would reduce medical costs, free up acute care resources, and improve quality of life for the frail senior and their family.

The Age-in-Place Laneway House Project is a 42sqm (460sqft) residence designed to help frail seniors live independently, and safely, for an extended period of time. It is a prefabricated portable unit with a mass customized modular interior and comprehensive digital infrastructure. Both the physical and digital environments can be adapted to meet the specific health profile of the resident both upon initial move-in and as their needs evolve. The house provides these high levels of support within a well-designed domestic environment that looks and feels like home. The house is designed to be temporarily located in the backyard of a property owned by a frail senior, a family member, or a friend. It provides the necessary support

to allow frail individuals to continue living in their own community close to family and friends for a longer period of time, with a higher quality of life, an increased feeling of independence and agency, and with less burden on family members and other caregivers.

The Age-in-Place Laneway House Project provides ergonomic accommodations such as wheelchair accessibility, human factors provisions for a range of mobility, stability, stamina, and reach limitations,. It also provides graduated supports for basic Activities of Daily Living (ADL). Medical accommodations consist of home health therapies such as oxygen, renal, physical exercise, cognitive conditioning; monitoring of vital signs; ambient behavior monitoring; and tele-medicine support. Cognitive accommodations include smart home control systems that allow for varying levels of automation; ADL memory supports for cooking and personal care; medication management; social communication; and adaptive digital interfaces that can be tailored to varying levels of technological familiarity and evolving degrees of physical and cognitive capability.

The Laneway House is an affordable and accessible strategy for placing these supports into an independent community based housing option. It is often too expensive and disruptive to retrofit these accommodations into an existing house, particularly in consideration of the relatively limited life span of most frail seniors.

The project is part of a unique four year collaboration between the University of Calgary's Faculty of Environmental Design and the Cummings School of Medicine that brings together architecture researchers with physicians and medical researchers from the W21C Initiative within the O'Brien Institute for Public Health. External collaborators include the Alberta Real Estate Foundation, Canadian Mortgage and Housing Corporation (CMHC), the Calgary Foundation, the Brenda Stafford Foundation, the City of Calgary, and Alberta Health Services. More recently the Laneway House has been part of a TM Forum Catalyst Project involving Telus, Orange, and Accenture.

1. <http://www.cfm-nce.ca/frailty-in-canada/#sthash.drdbKxvPdpuF>