Monitoring and modeling the causes and consequences of urban intensification in Waterloo Region

Prof. Dawn Cassandra Parker

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URBAN
GROWTH
& CHANGE
RESEARCH
GROUP

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Collaborators: Jeff Casello, Jennifer Dean, Region of Waterloo, Cites of Waterloo and Kitchener, Kitchener-Waterloo Association of Realtors,
Coldwell Banker Peter Benninger Realty,
plus many undergraduate and grad student team members

Conceptualizing our models:
What relationships explain intensification/recentralization?
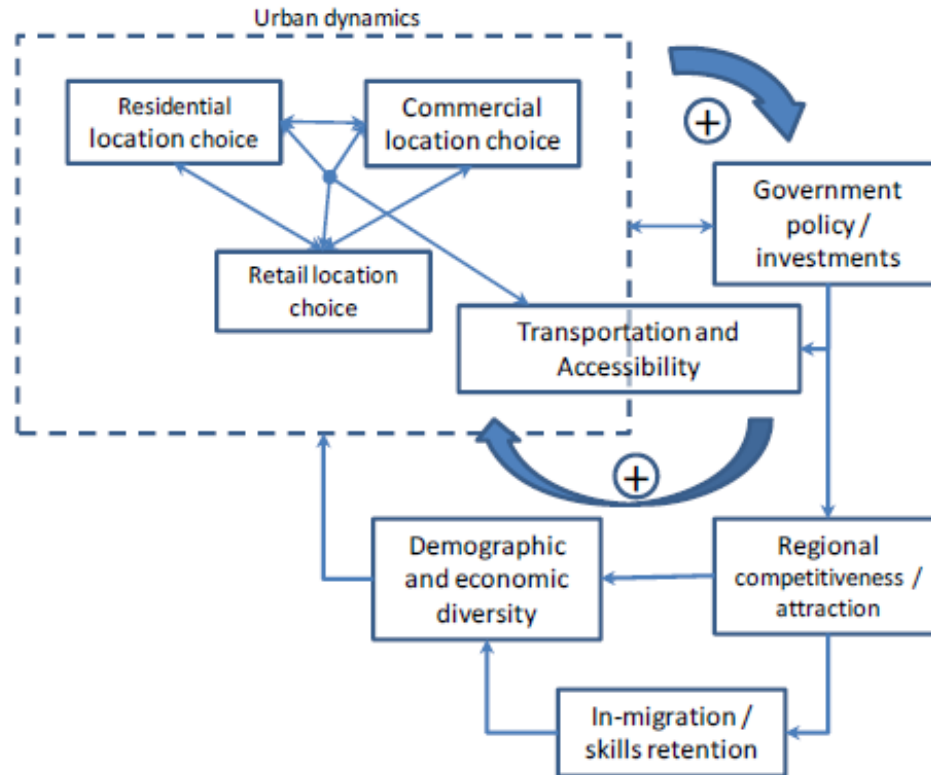
Research Hypothesis: "Public transit development can cause land use intensification."

The hypothetical stages of transit driven intensification:

- Development of new transit service improves accessibility levels.
- Changes attractiveness of areas for different activities and residence classes.
- Changes the demand for commercial and residential properties.
- Transforms land uses and or densities through redevelopment activities.

Prerequisites:

- Adjustment of zoning and land use transformation policies.
- Adaptation of social norms.

Pedram Fard

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Operationalizing the Model:
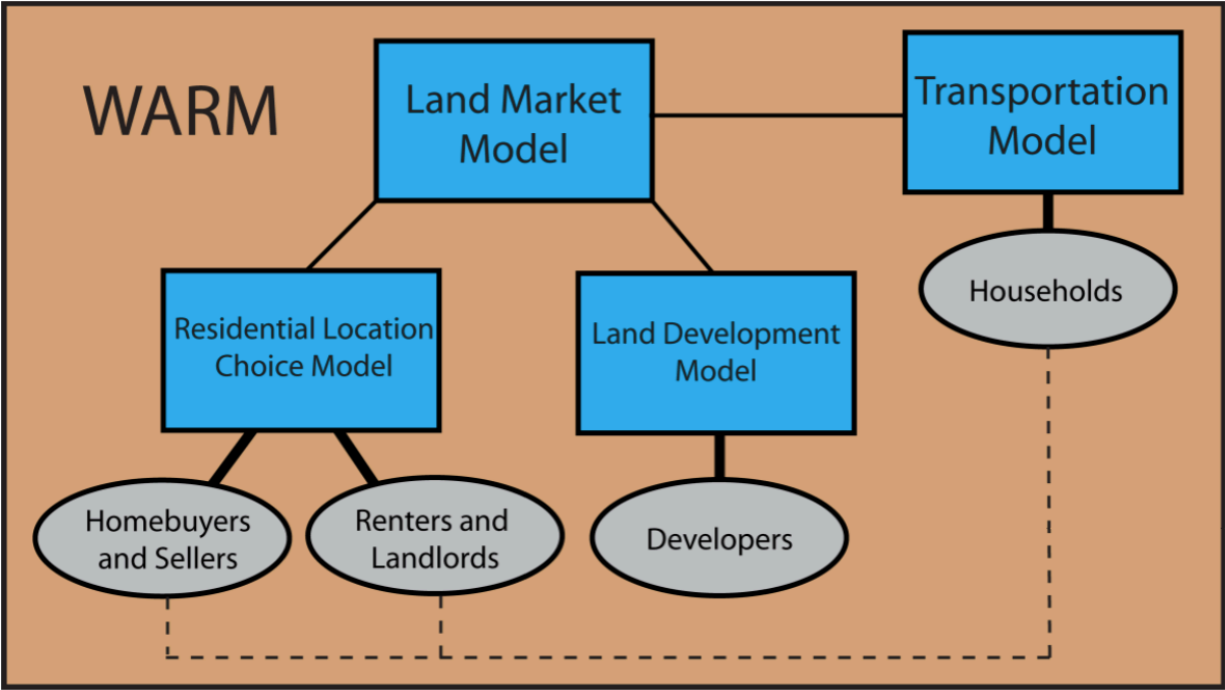
Research structure for our group

- Focused sub-projects (student theses) create model building blocks
- Agent-based model brings building blocks together
- Student projects show examples of this work
  - Statistical land value model (Robert Babin)
  - *Renter survey (Xinyue Pi)
  - Buyer/seller survey (Yu Huang)
  - Travel model (Kevin Yeung)
  - Developer model (Jinny Tran)
  - *Realtor interviews/focus groups (Justin Cook)

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Understanding the Kitchener-Waterloo Rental Market – Results from a 2016 Survey

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Xinyue Pi | Master of Environmental Studies
School of Planning | University of Waterloo

Thesis Objectives and Research Questions
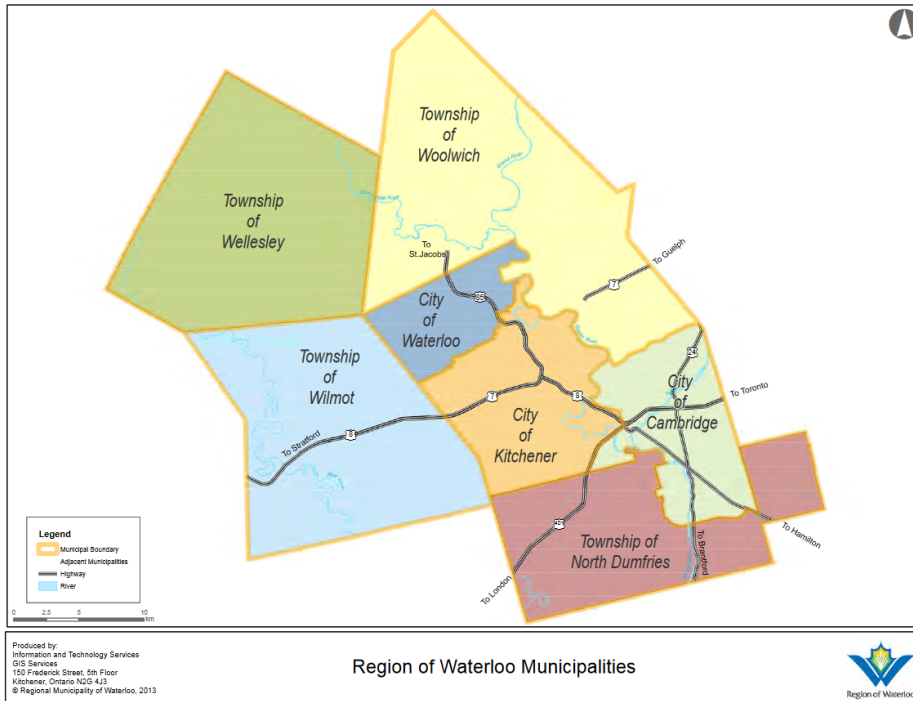
Objective 1:

To understand the structure of rental housing demand in Kitchener-Waterloo.

Objective 2:

To investigate the relationship between rental prices and housing related characteristics.

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Study Area: Kitchener-Waterloo


Region of Waterloo Municipalities

- **Location**: Southern Ontario
- **Demographics** (2016, census)
  - 233,222 in Kitchener; 104,986 in Waterloo
  - Higher population growth rate
  - Younger average age
  - Aging population
- **Public transport**
  - Upcoming LRT

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Demand and Supply Dynamics：Supply

- **Waterloo student housing surge**
  - A **surplus** of 1,200 bed
  (Town and Gown Committee, 2015)
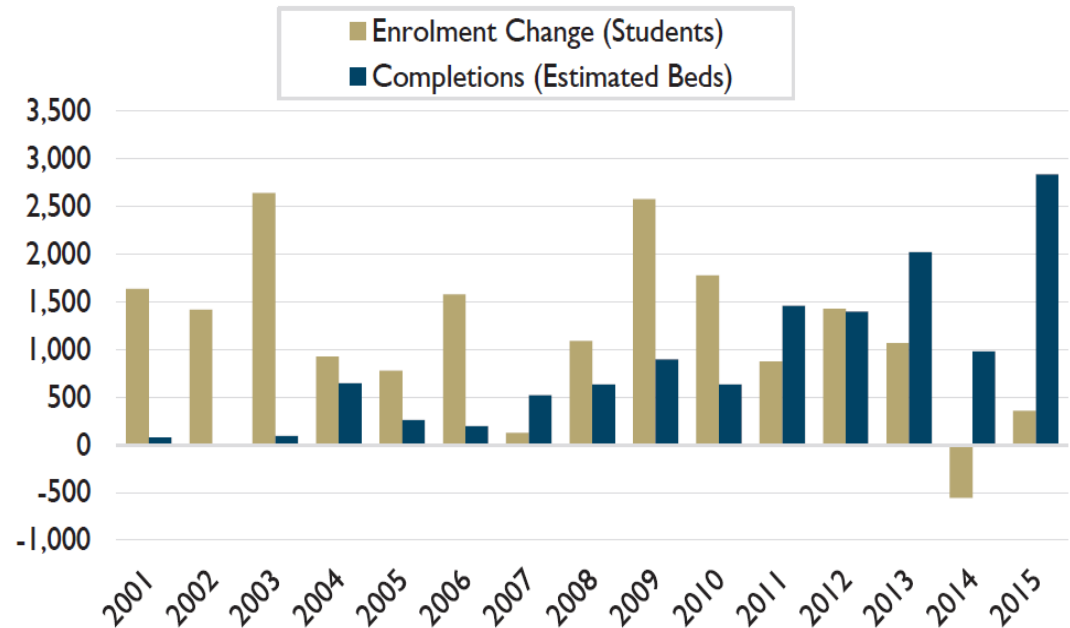
"Growth rate of student housing has exceeded the enrolment increase" -CMHC(2017)

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Demand and Supply Dynamics: Demand

- **Demand gradually matches supply**
  - Immigration
  - Senior renters
  - International students
  - Fewer moving to ownership
  - Stabilized vacancy rate
    - 2015: 2.4%
    - 2016: 2.2%
    - 2017: 1.9%

"Growth in demand matched unprecedented growth in supply. An improving job market for younger people, eroding affordability and strong immigration raised rental demand."

Erica McLerie
Senior Market Analyst, CMHC

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Objective 1: To understand the structure of rental housing demand in KW.

➡ Method 1: Survey Method

Design the Survey

- Structure of the questionnaire (51 questions)

Part A	Residential characteristics
Part B	Residential location choice
Part C	Renting behaviours
Part D	LRT and location choice
Part E	Household characteristics and travel behavior

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Conduct the Survey

- Time period: June – November, 2016
- Total number of respondents: **290**

Recruitment approaches	Respondents recruited	
	#	**%**
Mailing recruitment posters	176	60.7%
Facebook	90	31.0%
Public libraries and outreach	9	3.1%
KW Neighbourhood Associations	2	0.7%

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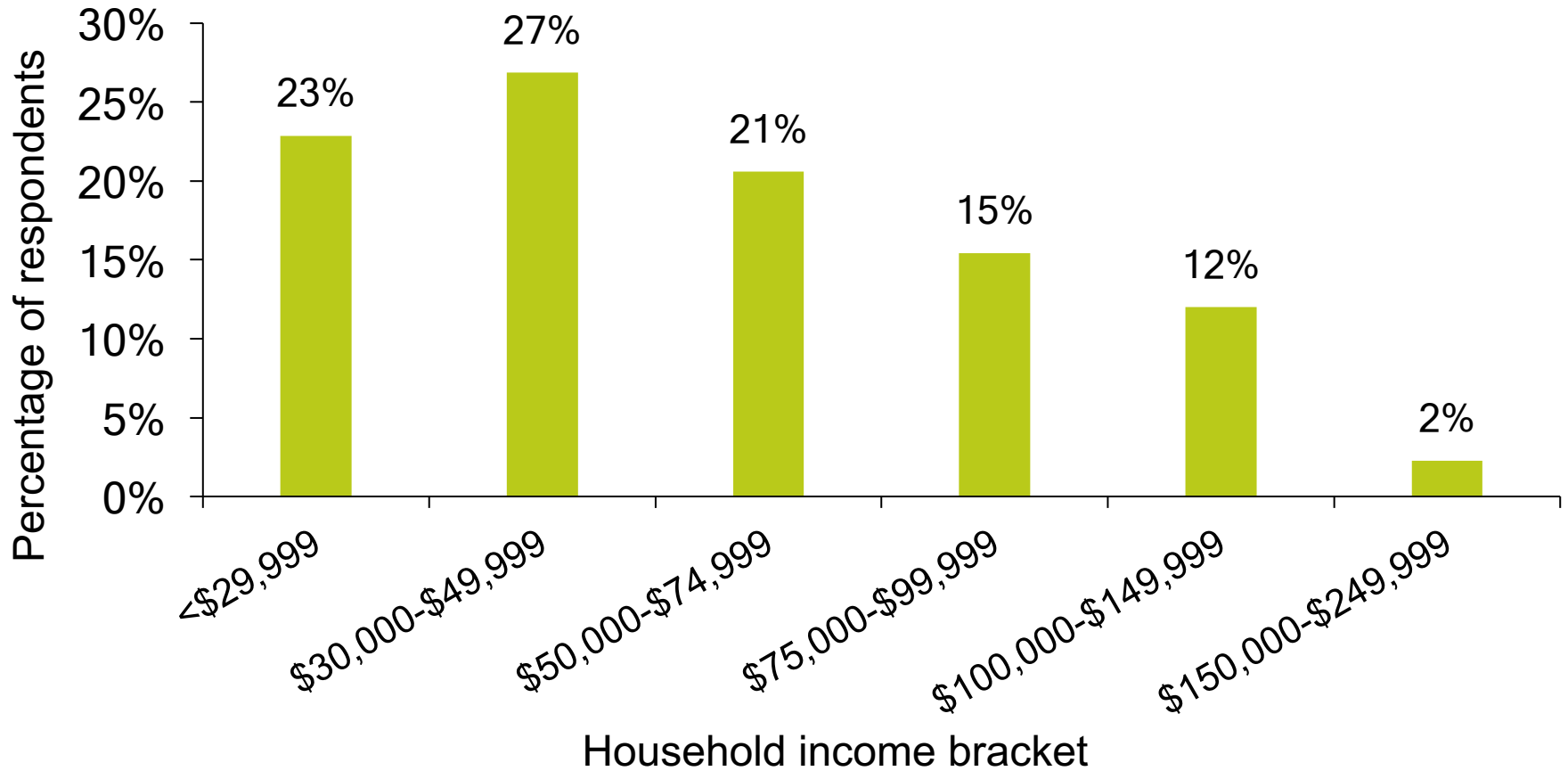# Demographics of Respondents: Age Distribution
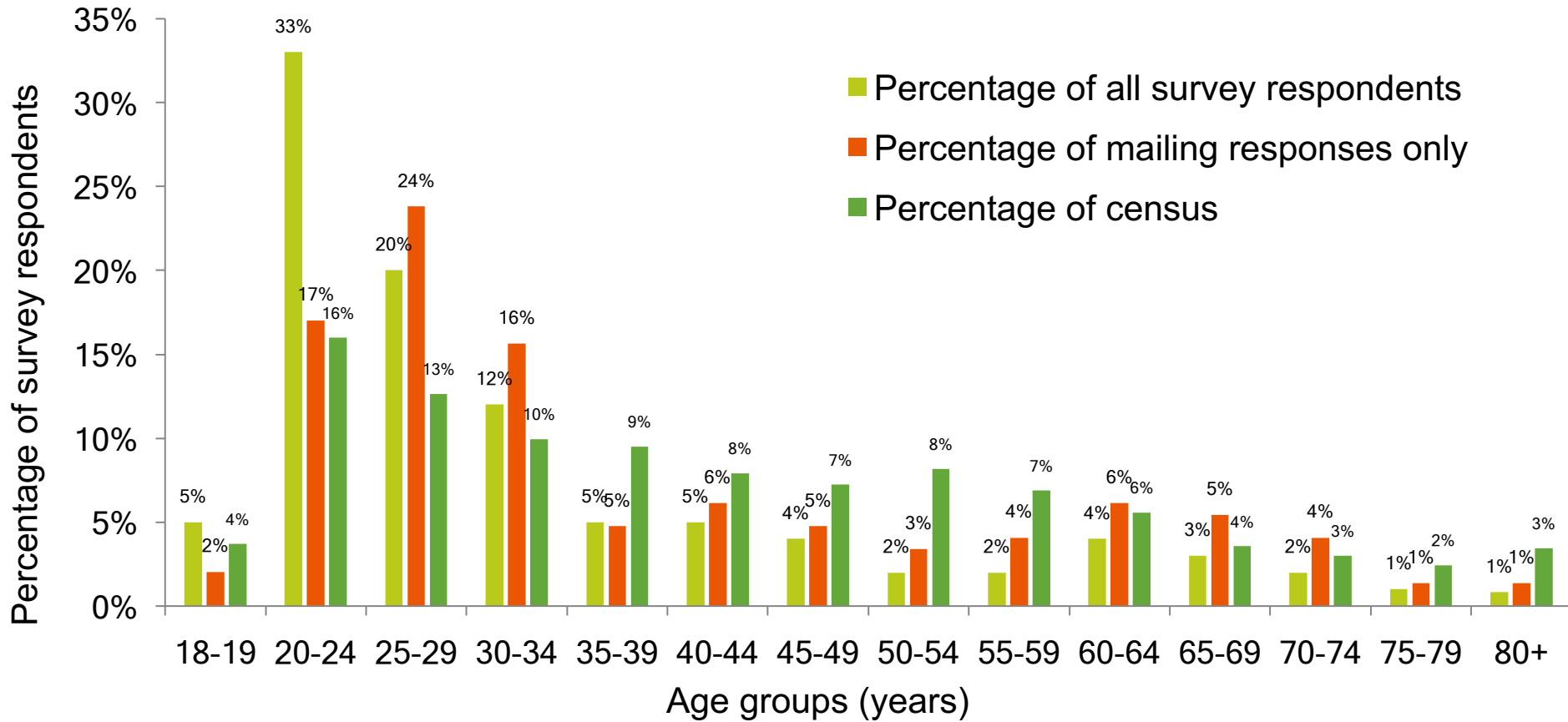
Demographics of Respondents: Household Type

Other household: two or more people sharing a private dwelling, but do not constitute a census family

Multi-family 0%

Couple-family without children at home 20%

Couple-family with children at home 9%

Lone-parent family 9%

One-person 20%

Other 42%

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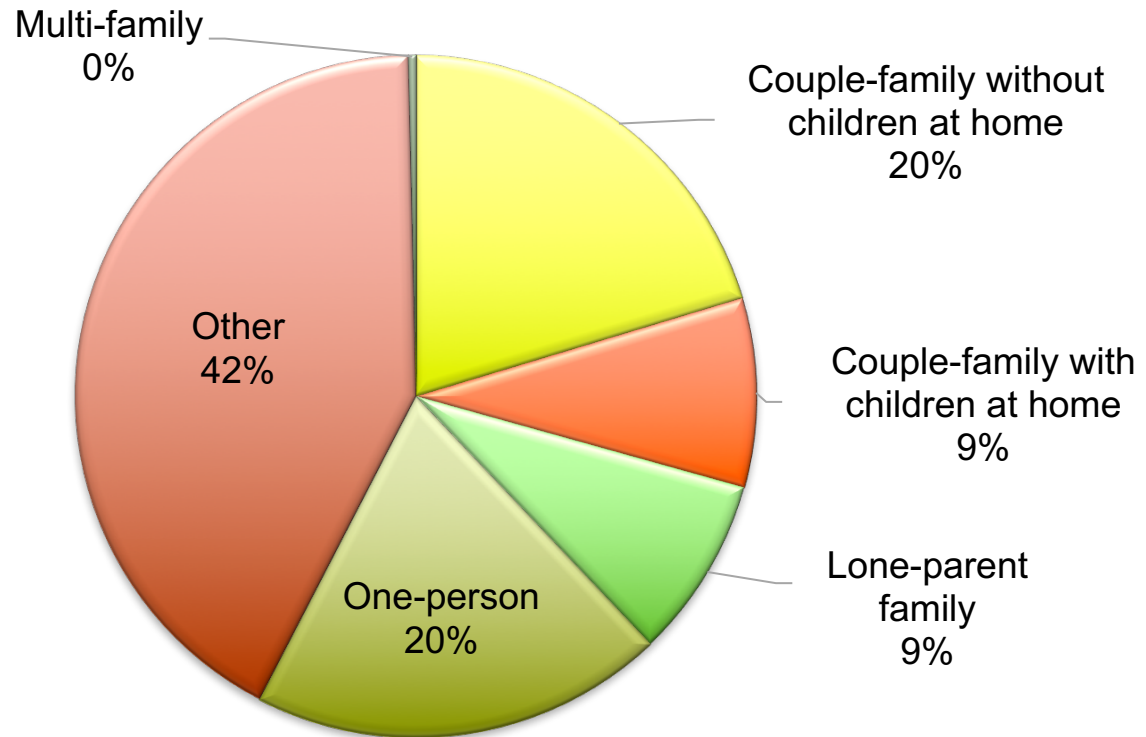
Q14. What reasons have motivated you to move to and live in your current residence? (Please select all that apply)

Reason	Percentage
More affordable	37%
Better acccessibility to transit	31%
Better accessibility to facilities	31%
Better environmental quality	24%
For my or my partner's education	17%
Getting a new job	14%
Downsize	12%
Upsize	11%
Closer to my/my partner's workplaces	9%
Getting married/partnership	7%
Seeking new job opportunities	4%
For child's education/childcare	3%
Expanding family size	3%
Relationship status	3%

Percentage of Respondents

Q15-1. Please rate the importance of each residential characteristic in your renting decision

Percentage of respondents

Characteristic	Rating
Rental price	4.6
Ease of maintenance	3.8
Housing type	3.8
Size of room/residence	3.8
Number of bedrooms	3.7
Availability of parking	3.5
Flexibility of lease/cotract	3.5
Number of full bathroom	3.4
Central air	3.3
Private bathroom	3.2

Legend: ■ Not at all important ■ Not important ■ Neutral ■ Important ■ Very important
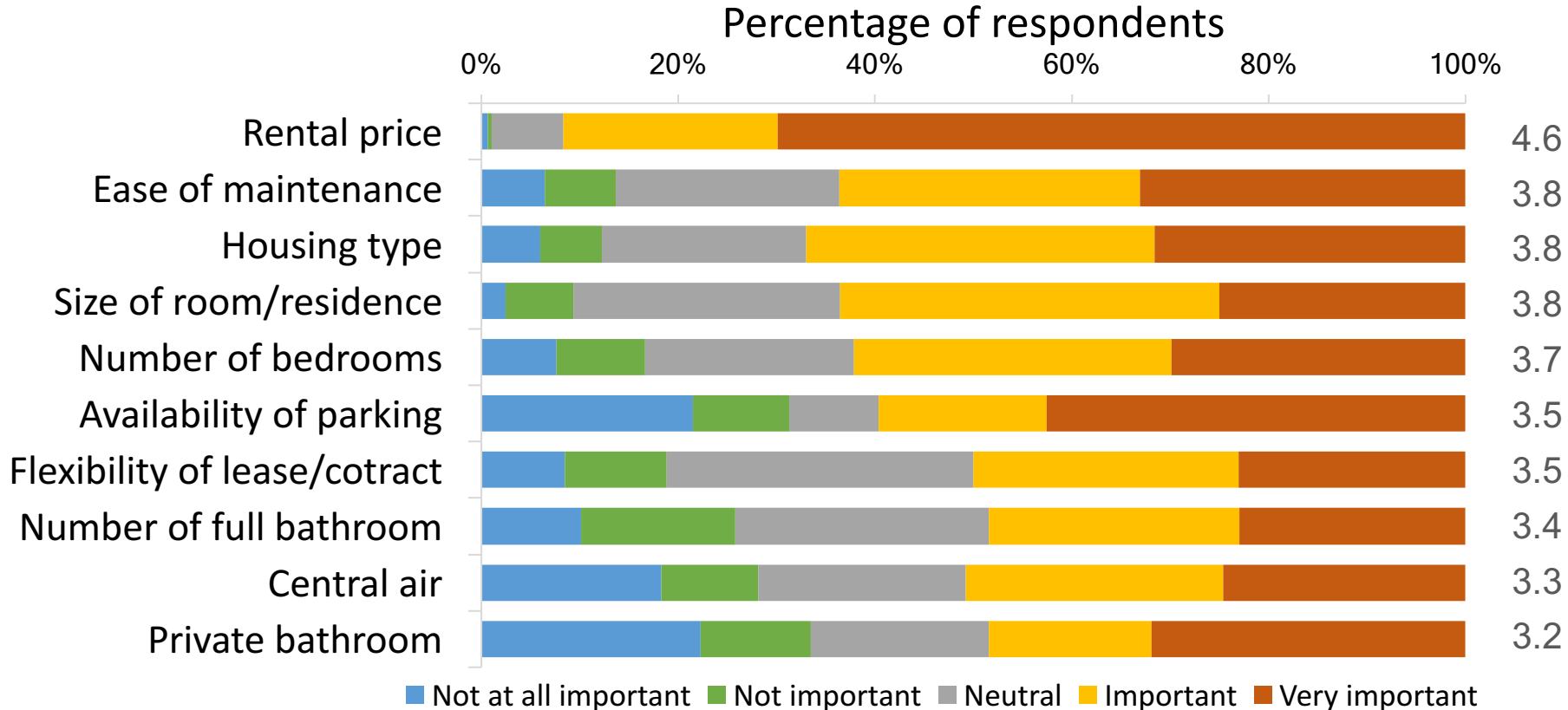
Neighbourhood Characteristics:
Q16-1-a: Please rate the importance of each Built Environment characteristic in your renting decision

Percentage of respondents

Ease of walking — 4.2
Traffic noise — 3.7
Land use mix — 3.5
Ease of cycling — 3.2
Density of housing — 3.0

Not at all important · Not important · Neutral · Important · Very important
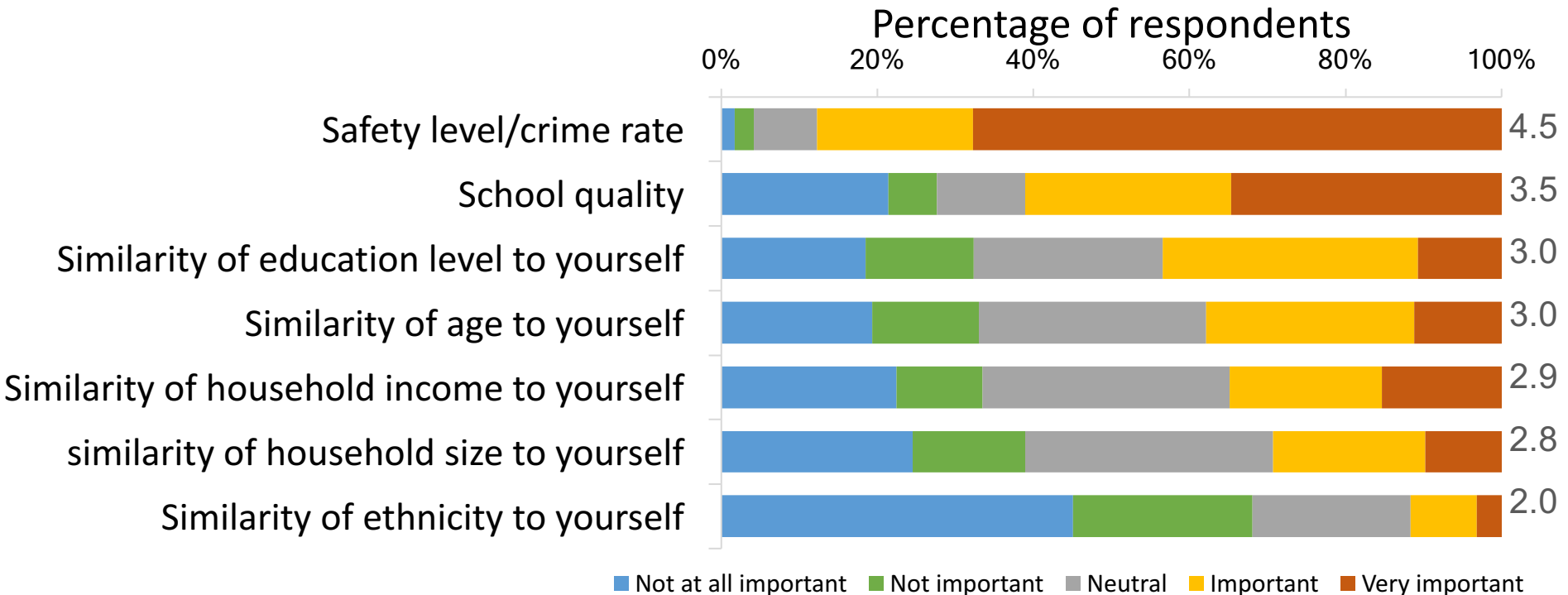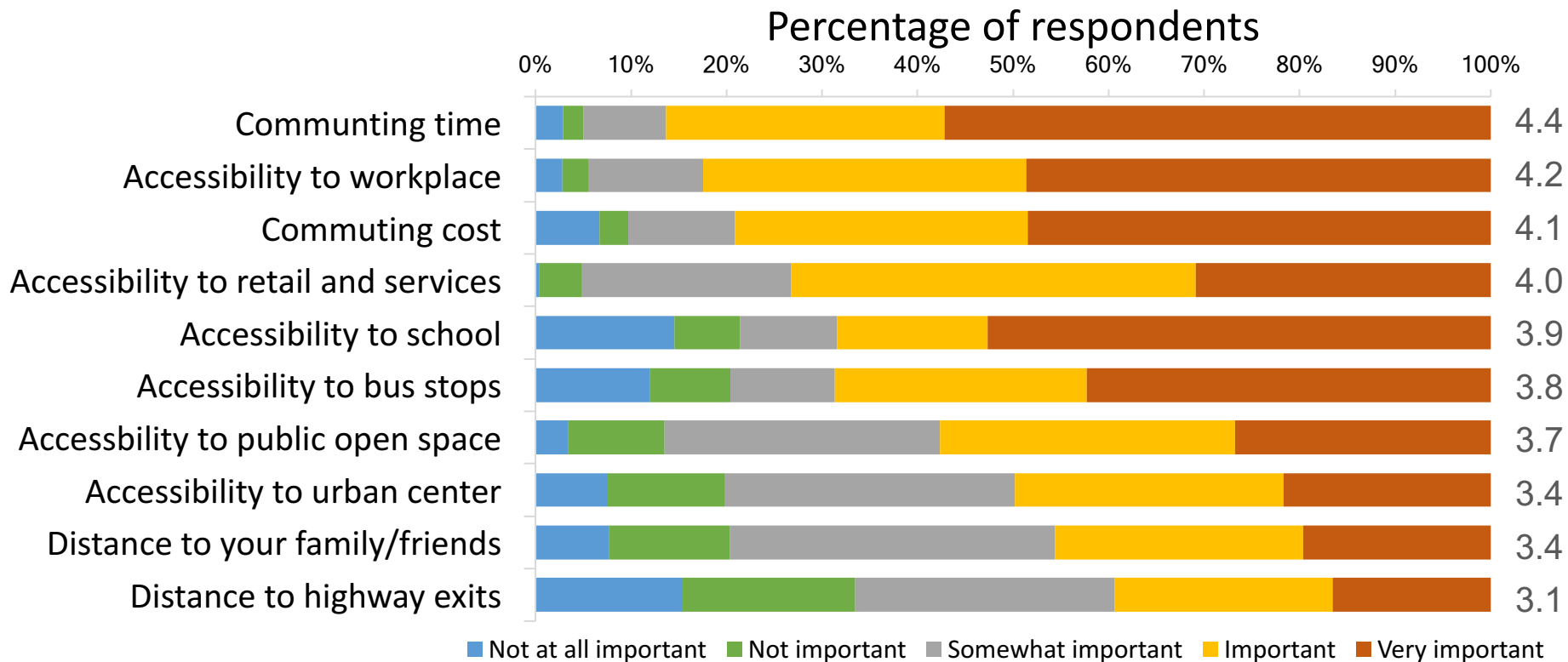
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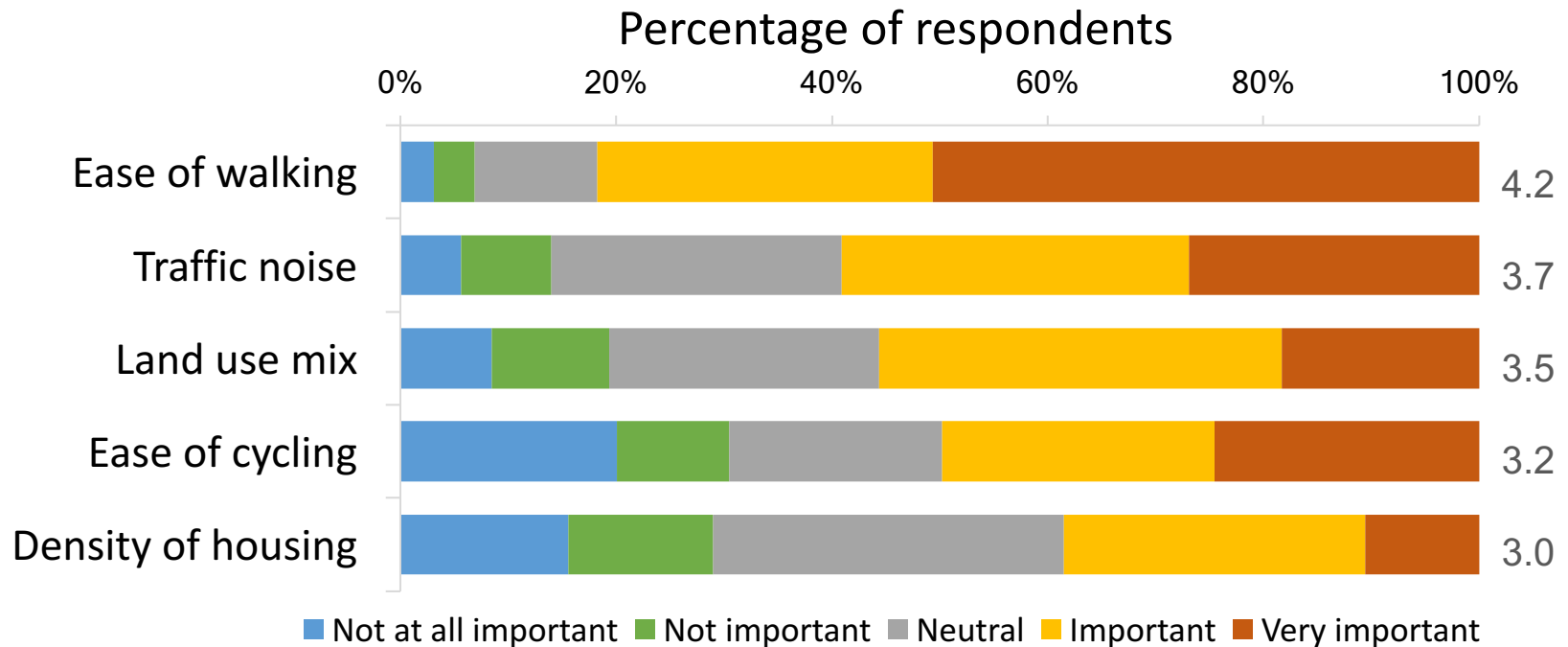
Neighbourhood Characteristics:
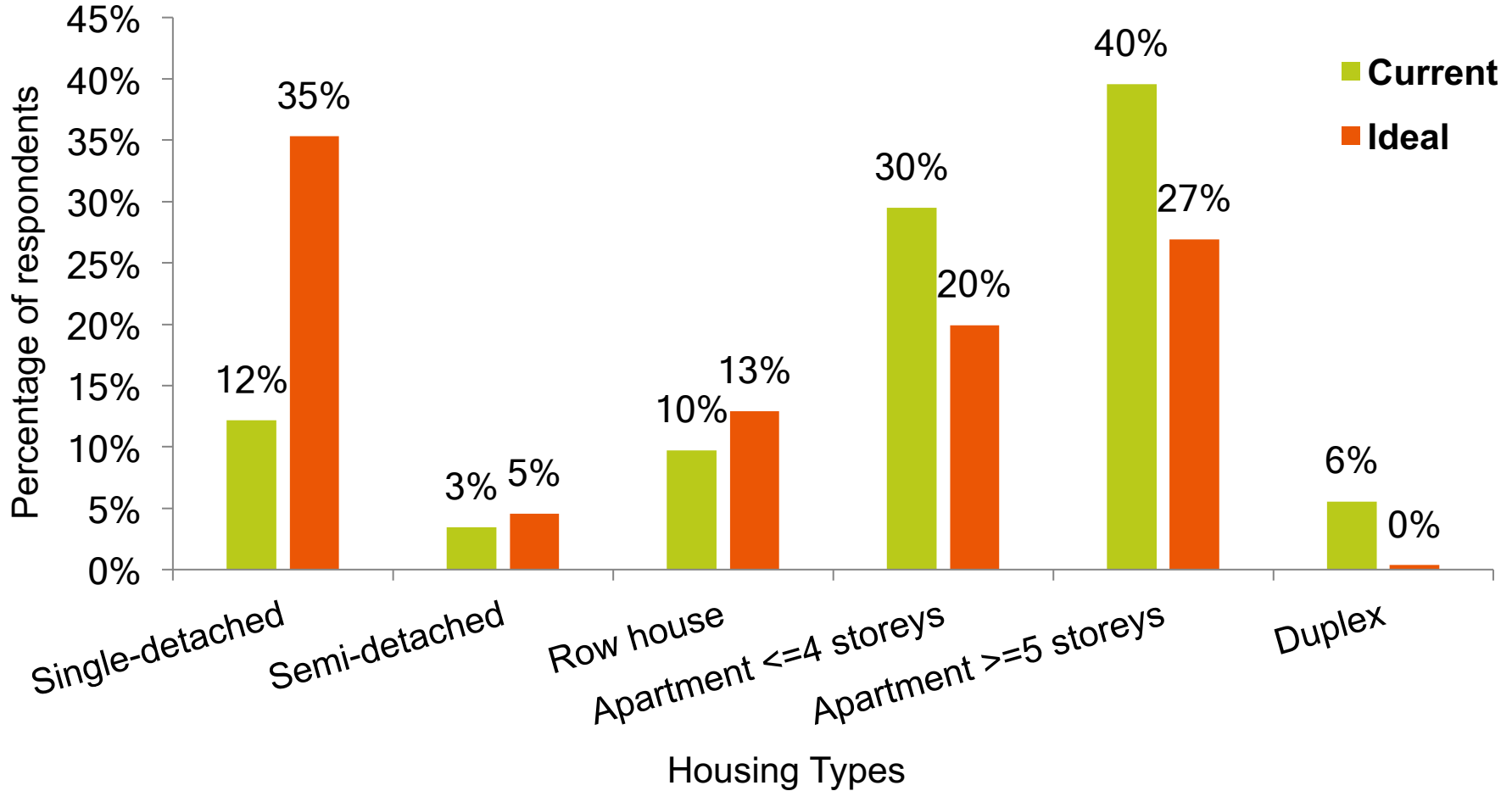Q16-1-a: Please rate the importance of each Socio-Demographic characteristic in your renting decision

Neighbourhood Characteristics:
Q16-1-a: Please rate the importance of each Accessibility characteristic in your renting decision

Percentage of respondents

Characteristic	Rating
Communting time	4.4
Accessibility to workplace	4.2
Commuting cost	4.1
Accessibility to retail and services	4.0
Accessibility to school	3.9
Accessibility to bus stops	3.8
Accessbility to public open space	3.7
Accessibility to urban center	3.4
Distance to your family/friends	3.4
Distance to highway exits	3.1

Legend: ■ Not at all important ■ Not important ■ Somewhat important ■ Important ■ Very important

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Housing Types: Current vs. Ideal

Housing Types: by Subgroups

Current

Ideal
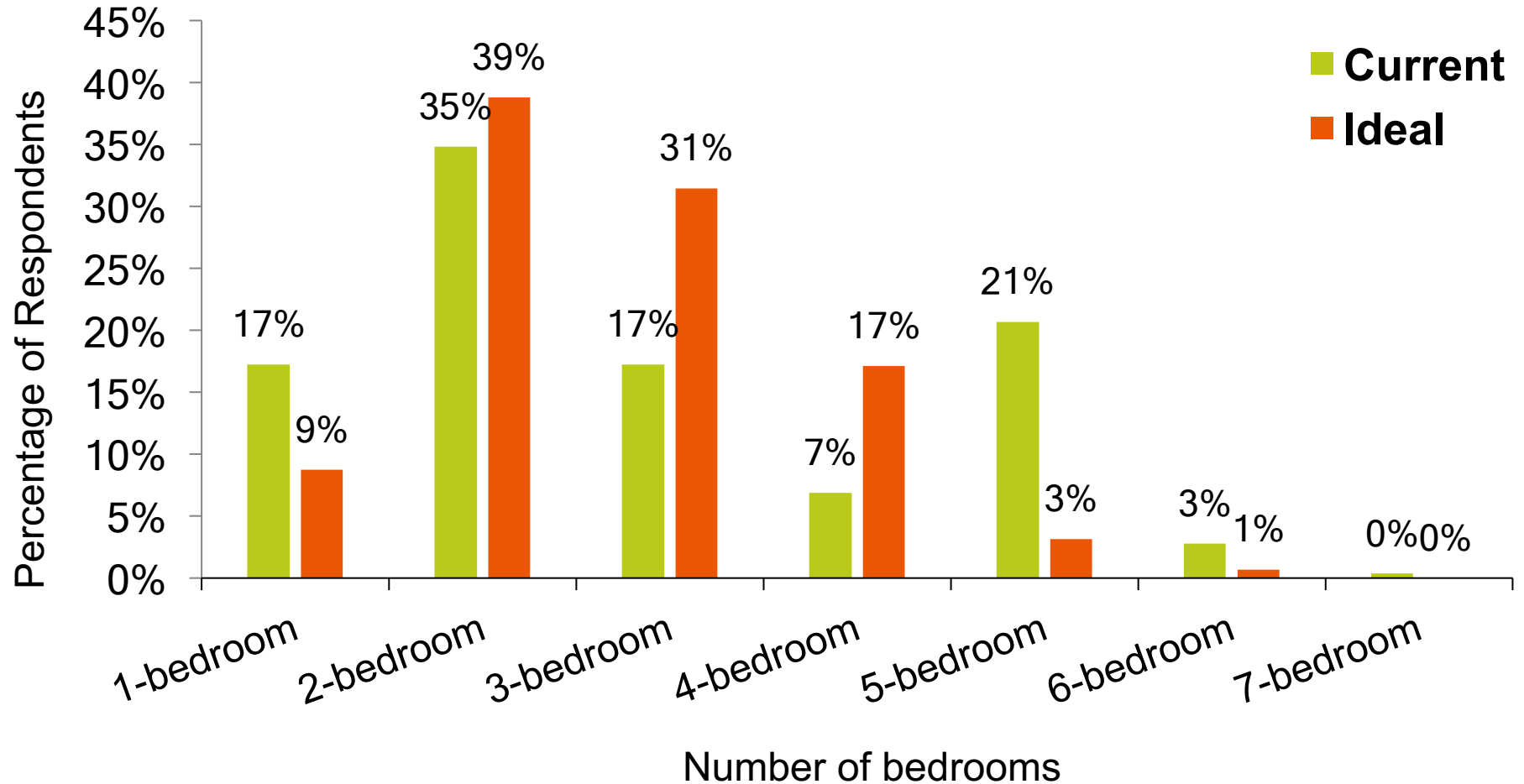
- **18-24 and 55+ age groups** mostly live in apartment buildings

- The **higher the income** is, a higher the percentage of respondents of the group lives in high-rise apartments.
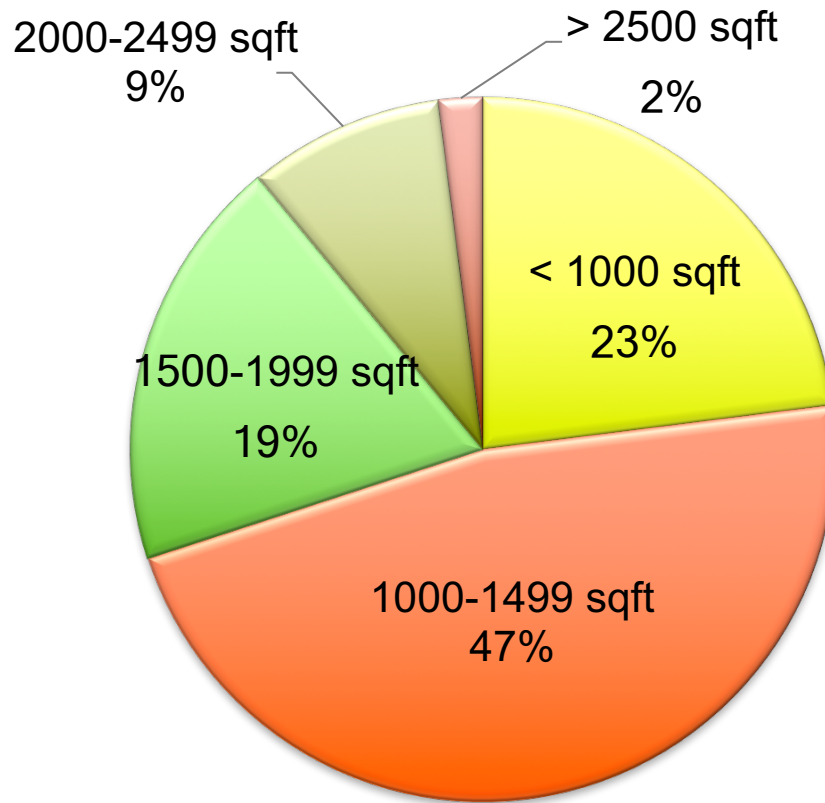
- **Couples with children** have the greatest desire towards renting a house, especially single-detached

- **Retired, seniors and students** generally prefer apartments to houses.
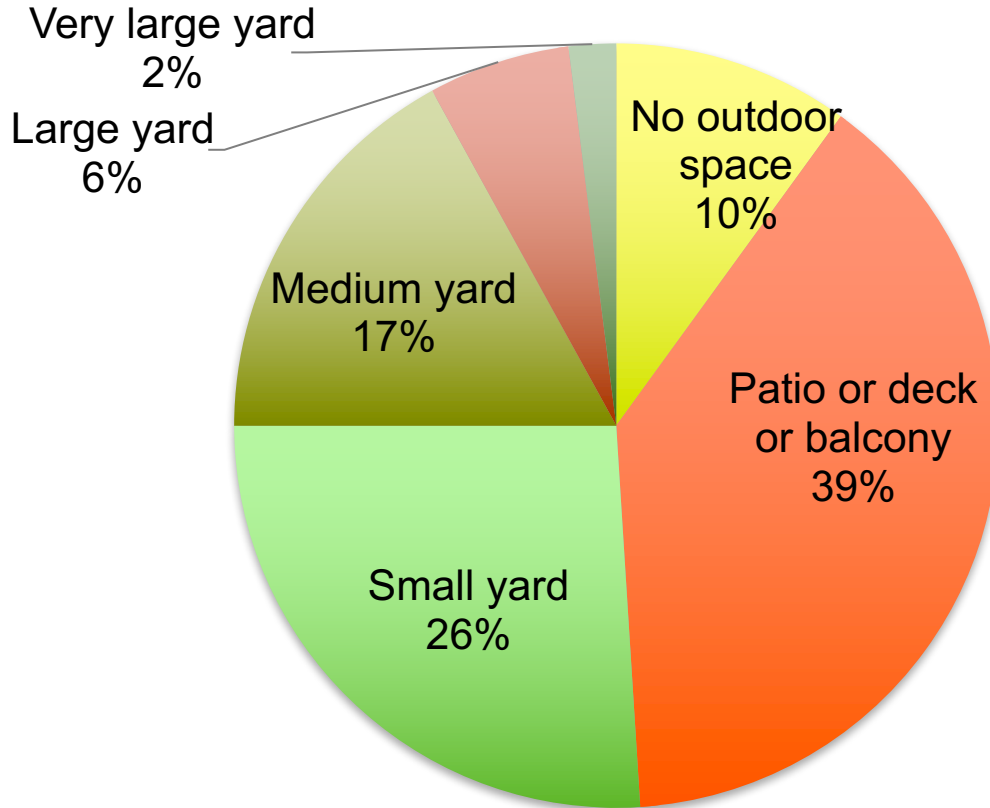
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Number of bedrooms: Current vs. Ideal

Ideal Housing Size

2000-2499 sqft
9%

> 2500 sqft
2%

< 1000 sqft
23%

1500-1999 sqft
19%

1000-1499 sqft
47%

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Ideal Yard Size

- **Medium/small yards**:
  - Couples with children
  - Couples without children
  - Lone-parent families

- **Patio/deck/balcony**:
 - Students
  - Seniors
  - One-person households

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Renting vs. Buying

- **60%** respondents **plan to buy** a home in the future
  - **Student** households have the highest tendency
  - **Retired** households generally do not have the plan
  - Those who have the plan estimate to buy in **6 years** on average

- **24%** respondents **have owned** a home before. But many of them choose renting for:
  - **Less responsibility** (58%)
  - **Downsizing** (42%)

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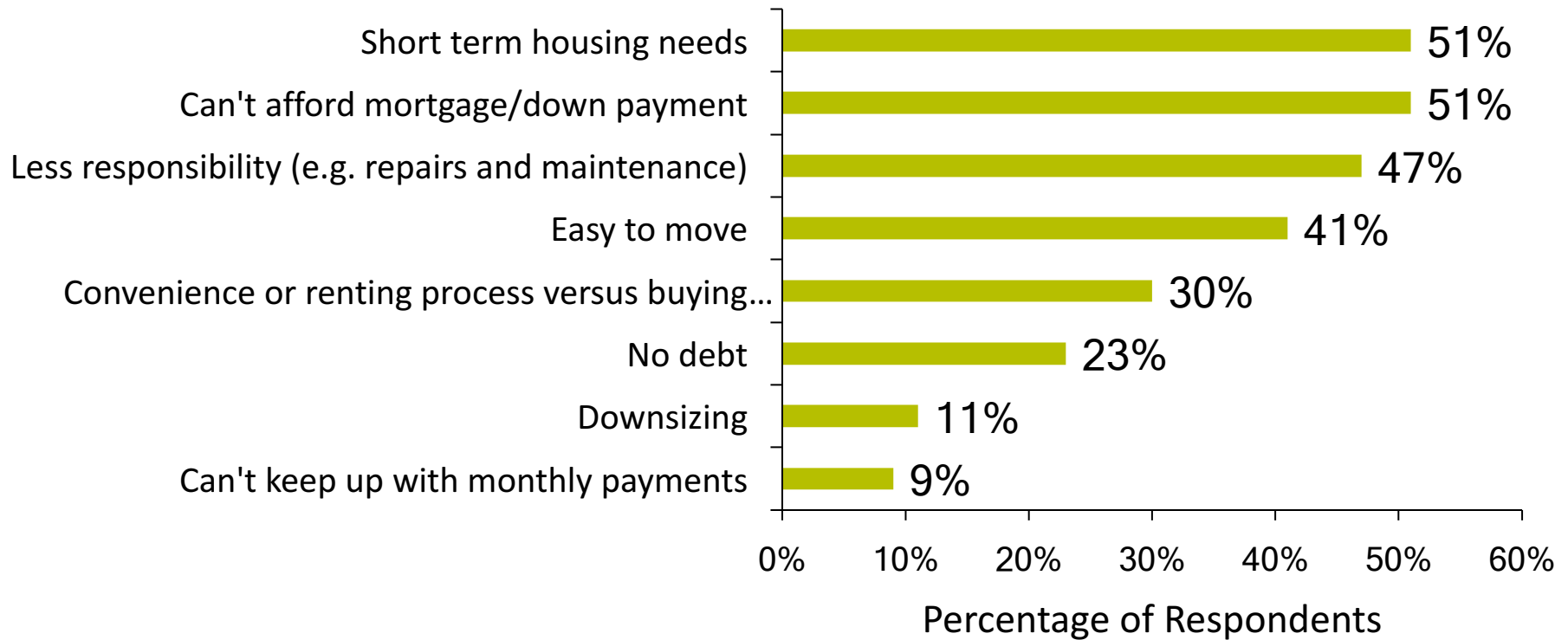
LRT and Location Choice

- **Central Transit Corridor** (CTC)

Area within around 800 meters or roughly a 10-minute walk distance from LRT stops

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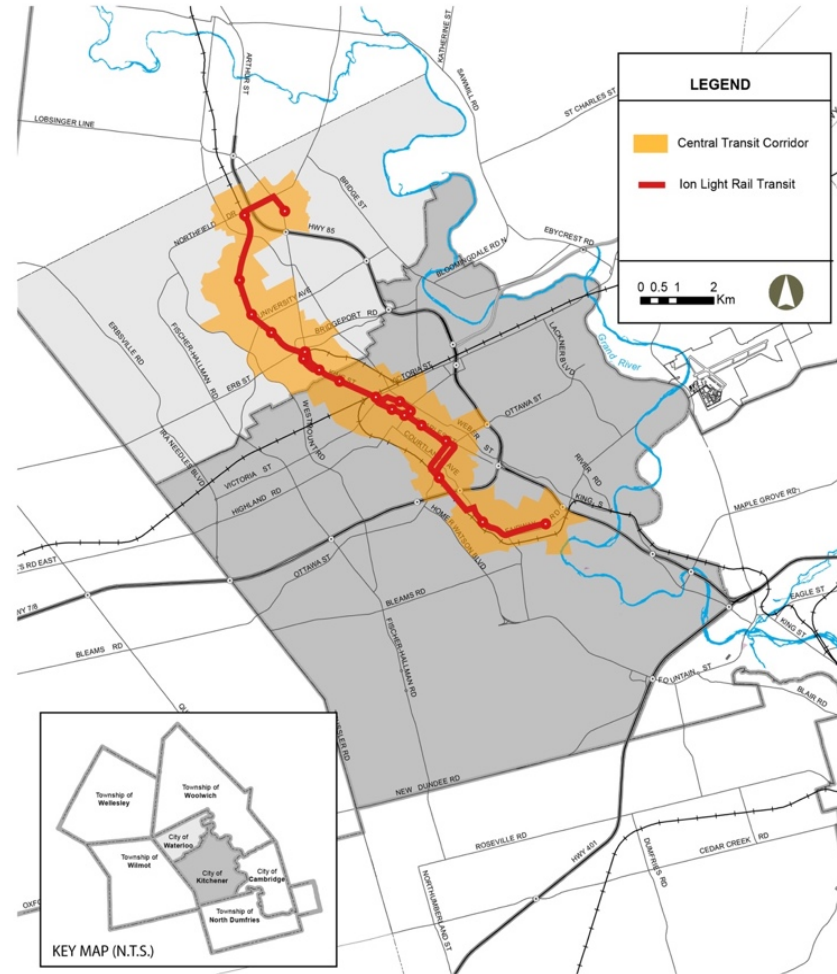
Q27. Is your current residence inside the CTC area?

In CTC, Waterloo 33%

In CTC, Kitchener 20%

Outside CTC, Waterloo 17%

Outside CTC, Kitchener 30%

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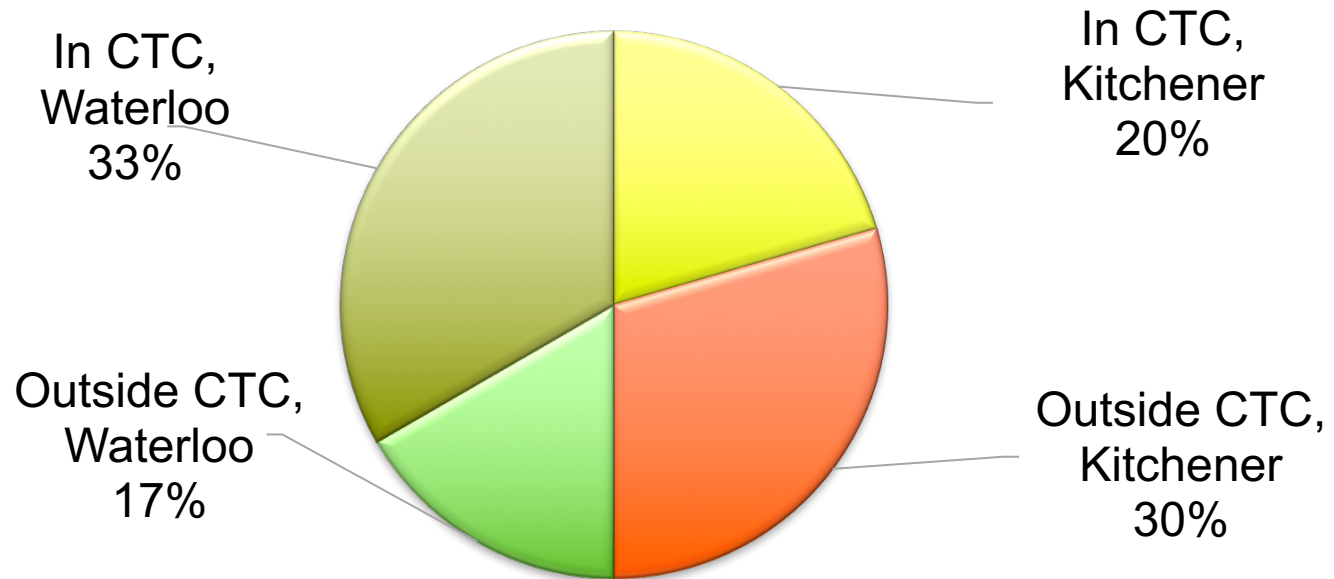
Q30. What is your general attitude towards the LRT system in Kitchener-Waterloo

IN CTC

- Very negative 6%
- Negative 10%
- Very positive 20%
- Positive 31%
- Neutral 33%

OUTSIDE CTC

- Very negative 5%
- Very positive 17%
- Positive 27%
- Neutral 30%
- Negative 21%

TOTAL

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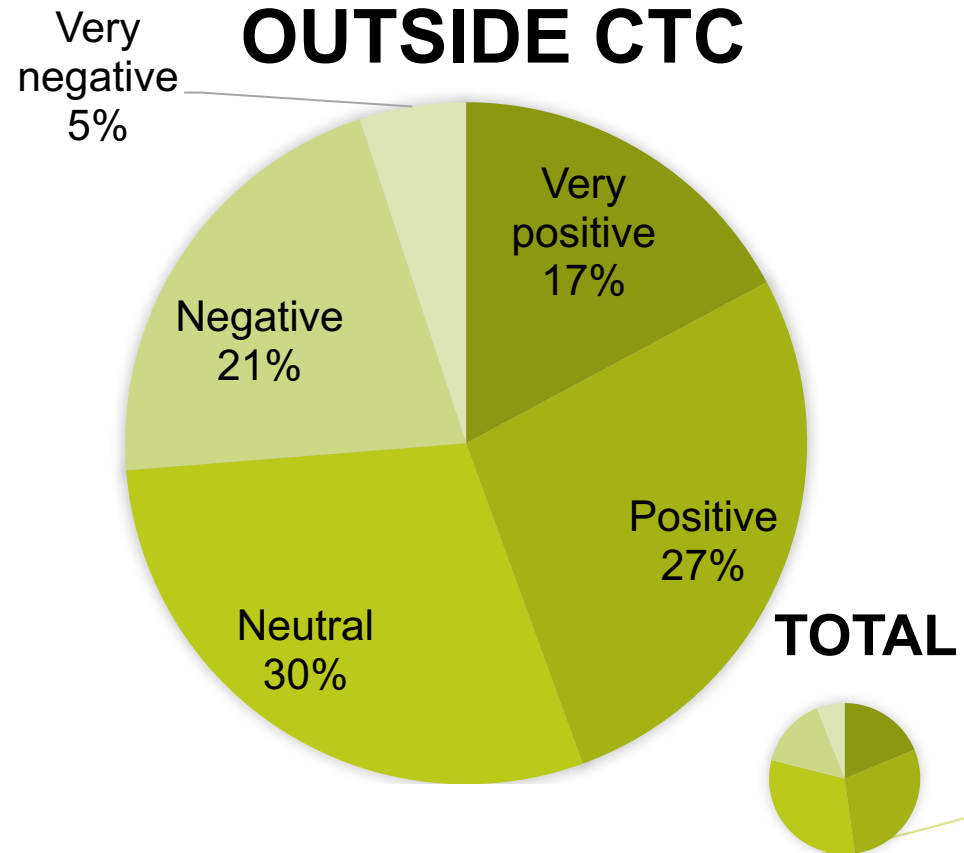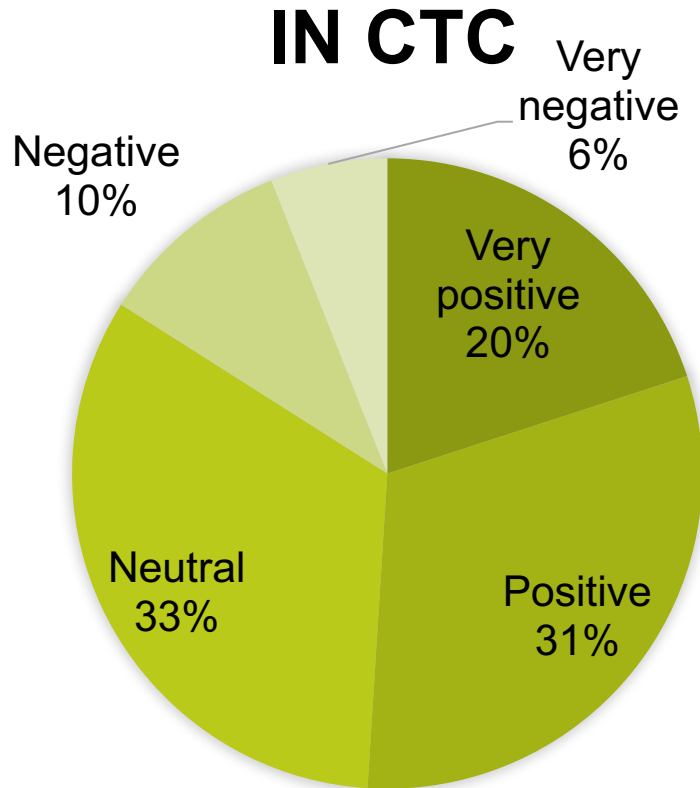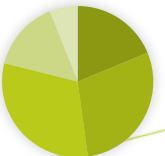
Q34. For what trip purposes might you use the LRT system (Please select all that apply)
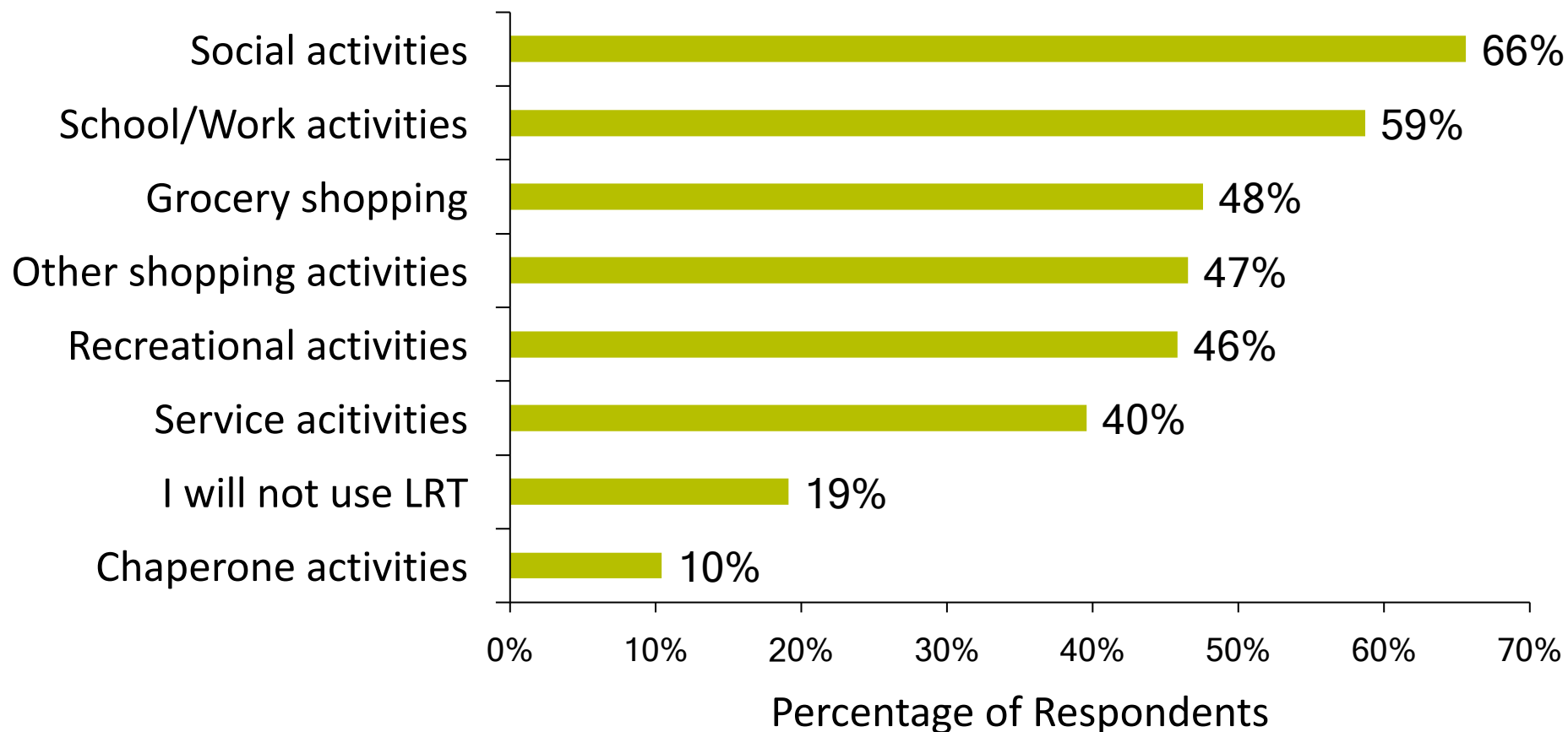
Trip Purpose	Percentage
Social activities	66%
School/Work activities	59%
Grocery shopping	48%
Other shopping activities	47%
Recreational activities	46%
Service acitivities	40%
I will not use LRT	19%
Chaperone activities	10%

Percentage of Respondents

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Method 2: Hedonic Modelling

- Hedonic Model:

  - Statistical model to **deconstruct** housing price/rental price
  - Identifying relationship between rental prices and each **individual** characteristic

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Model Specification

Logged adjusted rent$_i$

$= \alpha + \beta_0 * Household + \beta_1 * Residential + \beta_2 * Neighbourhood + \beta_3 * Behavioural + \varepsilon$

Household$_i$ =

$$\begin{bmatrix} Household\ with\ children_i \\ One-person\ household_i \\ Other\ household_i \\ Retired\ household_i \\ Student\ household_i \\ Unemployed\ household_i \\ Household\ income_i \end{bmatrix}$$

Residential$_i$ =

$$\begin{bmatrix} Number\ of\ bedrooms_i \\ Number\ of\ bathrooms_i \\ High-rise\ apartment_i \\ Low-rise\ apartment_i \\ Age\ of\ residence_i \end{bmatrix}$$

Behavioural$_i$
$= Renting\ a\ room_i$

Neighbourhood$_i$ =

$$\begin{bmatrix} Walkability_i \\ School\ quality_i \\ Perception\ of\ safety_i \\ Open\ space\ access_i \\ Open\ space\ adjacency_i \\ Regional\ raod\ adjacency_i \\ Transit\ access_i \\ In\ CTC_i \end{bmatrix}$$

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Hedonic Model Result

Category	Significant variables	Effect per unit increase	Level of significance
Household variables	Student household	10.34%	**
	Household with children	-9.12%	*
	One-person household	-8.53%	**
	Household income (per $1,000)	0.12%	***
Structural variables	Number of bathrooms	18.02%	***
	Number of bedrooms	15.02%	***
	High-rise apartment	7.83%	*
	Low-rise apartment	-8.39%	*
Neighbourhood variable	In CTC	7.48%	**
Behavioural variable	Renting a room	12.04%	*
R-squared	0.85		

Planning Implications

"Vibrant urban and rural communities require a range and mix of housing options"

-Region of Waterloo (2010)

➢ Increase the variety of rental housing options
 – Especially for **couples with and without children**

➢ Monitor the development of **student** rental housing

➢ Promote social **inclusion and integration** within renters

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Limitations

- **Survey**:
  - Underrepresentation of renters with lower education level
  - Rental housing address collection on Kijiji
  - Answers to ideal questions may not reflect the "true" preferences

- **Model**:
  - Data limitation (e.g. living area and yard size)
    - Use rent per sqft as dependent variable

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Thank you!

- Advisor: Dr. Dawn Parker
- Committee: Dr. Xiongbing Jin
- Reader: Dr. Kevin Curtis
- Research Team: Yu Huang and Robert Babin

Project Financial Support

Social Sciences and Humanities
Research Council of Canada

Conseil de recherches en
sciences humaines du Canada

Canada

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ION LRT Impacts on Real Estate in the Region of Waterloo
- Realtor Perspectives

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Justin Cook - Master's Candidate
Dr. Jennifer Dean
Dr. Dawn Parker

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Background

Qualitative Approach

- Deeper understanding of why people are buying in the CTC
- Complementing quantitative research to draw stronger conclusions

Why Realtors?

- Key informants with specialized knowledge
- Emotional/cultural interpreters

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Engagement Process

Participant Realtors

– Partnership with Kitchener Waterloo Association of Realtors

– 25 Realtors from the Region of Waterloo with 2 to 33 years of experience

Engagement Format

– Focus groups had 3 to 15 Realtors present in each

– Semi-structured format allowed for flexibility

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Sample Questions

- Will the LRT will affect the real estate market in the Region?

- How is the LRT considered for its:
    - proximity to potential homes?
    - commuting options (for you/your family)?
    - investment opportunity?

- What is the process that you go through with clients to narrow down and decide on a home?

- Do your clients look for specific a type of home or neighbourhood? What is it that most look for? (driven by demographics?)

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Key Discussion Points

Three broad themes emerged from discussions:

1. CTC development and investment

2. Resident perception of attractiveness of CTC

3. CTC creating connections within region and beyond

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Findings: 1. CTC Development and Investment

Encouraging Investment in Real Estate

- Understood as stimulating land value uplift

- Investors primarily from within the Region and GTA

- CTC Investment potential more desirable than long term residence

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Findings: 1. CTC Development and Investment

"Tech Hub" Development

- Key piece of infrastructure supporting growth

- Connecting residents with emerging employment trends

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Findings: 1. CTC Development and Investment

Regional Image

- Signifier of Region's status as "the Silicon Valley of the north"

- Symbol of the Region being "world class"

  - Allowed for comparison with many other international centers

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Findings: 1. CTC Development and Investment

*"We're seeing investment, local people that are buying in uptown, or downtown **just for investment purposes**. I think the families, the 30 plus demographic, that are now looking for more investment opportunities, they realize [the CTC] is something they can grasp and they realize that's **an up and coming area**."*

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Findings: 2. Resident Perceptions

Lifestyle Choice

- More attractive to new residents than long term

- CTC is attractive for relative affordability of services and amenities

- Reflected the services and amenities available in other cities

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Findings: 2. Resident Perceptions

Aging Populations

- View the CTC as desirable due to amenities

- Lack of affordable/appropriately sized options preventing downsizing

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Findings: 2. Resident Perceptions

Long Term Residents

- Viewed more favourably as construction nears completion

- Few long-term residents show interest in using it

- Compared to Conestoga Parkway as likely to be more appreciated/used over time

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Findings: 2. Resident Perceptions

*"Even some of the **older demographics**, I think they **are really looking forward to [the LRT]**. They are definitely buying to be close to it, not right on it but somewhat close to it, within a block or two. So it will be really good. I think it will impact [the Region] in a positive way."*

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Findings: 3. Creating Connections

Connecting the Region

- Bringing Kitchener and Waterloo together as a seamless urban environment

- Extension to Cambridge will bring the Region together as a unified whole

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Findings: 3. Creating Connections

Connecting Southern Ontario

- Seen as a localized connection to Toronto and other near by municipalities

- Increased connectivity with GO/high-speed rail essential next step

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Findings: 3. Creating Connections

*"In a real estate perspective, all the **condos**, the **Google** building… the **Zehr** group building; those are only there **because of the LRT**. They're looking at it as it's not just a north and south train, **it's connection** to Barrie, Hamilton, Niagara. All these places are going to have LRT that lead **to these fast trains** that all spine into Toronto. That's what [people are] investing on."*

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Future Research

Ongoing Interviews with Realtors

- Additional depth

- Financialization of housing

- Decision making processes

After the ION is in operation?

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Questions?

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