Housing Unaffordability from a Resident's Point of View

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By

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To my wife, Pauline, for always being there.

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INTRODUCTION

Housing is traditionally classified as unaffordable if a resident spends a too high proportion or amount of their income and savings on it, and so they cannot afford the other necessities of life. This practical criterion, however, does not factor in what the resident likes in a home and thinks they can afford. I formulate a new theoretical criterion of housing affordability from a resident's point of view. This new criterion is derived from the magnitude of the mismatch between where the resident can afford to live and where they would realistically most prefer to live. One measure of this mismatch is the loss of utility from being unable to afford their unconstrained socially most preferred attributes of a home. A second mismatch is their consumption disequilibrium between socially and monetarily most preferred attributes of a home.

Each mismatch may be mitigated by paying a compensatory amount to upgrade to a home with more preferred attributes, such as when thinking of moving from the current home or improving it. This compensatory expenditure is the criterion of the affordability of an alternative or improved home from a resident's point of view. Examples of compensatory expenditures for loss of utility and consumption disequilibrium are quantified and compared for residents in two mid-sized Canadian cities that had reputations as affordable places to live in 1987 and 2020.

One mismatch is social, and the other is economic if a resident has two scales of residential preferences in mind for evaluating home attributes. The first scale has social utilities representing the social usefulness of the attributes. The second scale has the willingness to pay for attributes, representing the potential for economic asset accumulation that is assumed to conform with prices in the local real estate market. Revisions of a resident's social and economic utilities, in conjunction with adjustments of local prices of home attributes, will produce changes in loss of utility and consumption disequilibrium. Individual and neighbourhood reasons for these changes and differences between types of residents are hypothesized.

Social data used in these statistical comparisons are for up to 103 respondents in Saskatoon, SK, in 1985 and 1987 and 74 respondents in Windsor, ON, in 2020. They rated the desirability of owned single-detached(-like) homes in a human-computer simulation game or an online surveying project, respectively. Their rating data are statistically decomposed into social utilities for levels of 12 attributes of the dwelling

unit, neighbourhood environment, neighbours, and the home's accessibilities. In addition, economic data are the sale prices and attributes of approximately 2,900 single-detached(-like) homes in each city. These are statistically analyzed to predict the implicit prices of the same attributes as rated by respondents. Saskatoon respondents were recent movers within the city, and Windsor respondents were inner-city residents. They, however, had similar personal and household characteristics. They represent members of a paired sample, separated by place and time when interpreting three revisions of social and economic utilities. These revisions translate into changes in loss of utility, consumption disequilibrium, and compensatory expenditures from 1987 to 2020.

First, respondents' unconstrained residential preferences differ from 30 years ago for six of the 12 generic attributes of single-detached(-like) homes, while their preferences for the six remaining attributes have stayed the same. One process of revision of residential preferences is by means of a resident's calculation or interpolation of social utilities for new types of homes. Another revision process results from a resident's evolving social and economic needs and desires, producing a reassessment of their social utility for the same attributes of existing homes over time.

A resident's reactions to changes in the prices of home attributes are additional potential causes of revisions of unconstrained and budget-constrained preferences from 1987 to 2020. In general, calibrated hybrid housing price models predict marginally increasing prices of approximately 2,900 sold and resold homes in two inner-city neighbourhoods in Windsor since 1981 or 1986. Single-detached(-like) homes in these neighbourhoods where respondents lived, were quite affordable, overall, during the study period. However, a further prediction is the higher price of a minority of homes with improvements to attributes of the dwelling unit and neighbourhood. Hybrid models' coefficients quantify the increasing prices of additional bedrooms and bathrooms, a finished full basement, and central air conditioning installation. Predicted changes in home prices are also correlated with occurrences of events inside a neighbourhood, such as an economic recession or a high unemployment rate.

Second, the differences between the respondents' unconstrained and budget-constrained social utilities confirm the unaffordability for many respondents of the highest-priced unconstrained most preferred attributes. These most preferred attributes' unaffordability cumulates to an average one-tenth loss of utility for respondents in Windsor and a one-quarter loss of utility in Saskatoon if they chose their budget-constrained most preferred attributes and not their unconstrained most preferred ones. Budget-constrained utilities represent residential preferences for affordable home

attributes after the superimposition of prices of those attributes. Hedonic housing price models predict compensatory amounts for affording the unconstrained most preferred attributes over budget-constrained most preferred ones. The average cumulative compensatory expenditures are approximately $47,000 for respondents in Windsor and $21,000 for respondents in Saskatoon. Coefficients from a multiple linear regression predict higher compensatory expenditures than amounts paid by four past or current public subsidies in Canada.

Third, a compensatory expenditure for a loss of utility is more salient than a consumption disequilibrium as the criterion of the affordability of a single-detached(-like) home in 1987 and 2020. This is because respondents value the social usefulness of a home more than its potential as an economic asset. Even so, a home will be similarly unaffordable for those who accentuate their monetarily most preferred attribute levels. The average consumption disequilibria for the three attributes of the dwelling unit are only somewhat smaller than the average predicted compensatory expenditures.

In conclusion, up to one-half of approximately 70 respondents in each of two mid-sized Canadian cities in 1987 or 2020 would need to have paid an unaffordable amount as a compensatory expenditure if they wanted a home with their socially most preferred levels of 12 attributes. This compensatory expenditure would reduce their moderate loss of utility from being unable to afford their unconstrained socially most preferred attribute levels if they accentuated social utilities in evaluations of homes. If they accentuated economic utilities, another compensatory expenditure would reduce a consumption disequilibrium that three-quarters or more of them had from not favouring their monetarily most preferred attribute levels. These high compensatory expenditures would probably negate alternative ways of affording a socially or monetarily preferred home, such as by sacrificing the initial conditions of home attributes, and later renovating the dwelling, finishing a full basement, or building an extension on a smaller dwelling. The pessimistic forecast is the restlessness of a resident waiting to upgrade to a home with at least some of their unconstrained most preferred attributes even after becoming an owner-occupier in an affordable new-build home.

LIST OF ABBREVIATIONS

B	Unstandardized regression coefficient
BC	Budget-constrained
C1	'Wealthier' first cluster of Windsor respondents in 2020
C2	'Poorer' second cluster of Windsor respondents in 2020
CA	California
CI	Confidence interval
CMA	Census Metropolitan Area
CT	Census tract
DA	Dissemination area
DF	Degrees of freedom
G	Glengarry
GWCUS	Glengarry, Wellington-Crawford, University, and Sandwich
MLS	Multiple Listing Service
NS	Not significant
ON	Ontario
QC	Quebec
SK	Saskatchewan
t	Value of the T-distribution
UC	Unconstrained
UK	United Kingdom
US, USA	United States
WADDALS	Weighted Additive Model by Alternating Least Squares
WC	Wellington-Crawford
Z	Value of the standard normal distribution

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RESIDENTIAL PREFERENCES AND HOUSING AFFORDABILITY

Abstract

A new theoretical criterion of housing affordability from a resident's point of view is derived from the magnitude of the mismatch between where the resident can afford to live and where they would realistically most prefer to live. One measure of this mismatch is the loss of utility from being unable to afford the unconstrained socially most preferred attributes if a resident accentuates social utilities in evaluations of homes. If they accentuate economic utilities, a second mismatch is their consumption disequilibrium from socially not favouring their monetarily most preferred attributes. Single-detached(-like) homes are described by levels of 12 attributes of the dwelling unit, neighbourhood and neighbours, and home's accessible places. A mismatch may be mitigated by paying a compensatory expenditure to upgrade to a home with more preferred attributes. This compensatory expenditure is the criterion of the affordability of an alternative or improved home from a resident's point of view. Examples of compensatory expenditures for loss of utility and consumption disequilibrium are quantified and compared for residents in two mid-sized Canadian cities in 1987 and 2020.

Keywords: Compensatory expenditure, consumption disequilibrium, loss of utility, mid-sized Canadian cities, single-detached home attributes.

Mismatches

How much a resident likes or desires a characteristic or attribute of a home is an expression of their residential preferences. For example, most residents prefer more than less living space, a friendly neighbourhood and neighbours rather than unfriendly ones, an accessible location to useful places instead of an inaccessible one, and an appreciating value of an asset and not a

depreciating one. In general, a person's preferences are retrieved or activated from cognitive values for entities such as homes when making a choice; or they may be constructed or interpolated from other cognitive values at the time of choice in unfamiliar environments (Fujishige and Yang 2012; Warren, McGraw and Van Boven 2011). Just because something is preferred, however, does not guarantee it will be chosen (Jansen 2014).

A resident's ideal home will have their most preferred attributes of house type and size, neighbourhood environment and neighbours, and accessible places. The resident is assumed mentally to disaggregate this ideal home, similar to other homes, into its characteristics or attributes and then to focus on these attributes as opposed to the home as a whole and the neighbourhood as a surrounding. The ideal home's most preferred attributes will be attainable if they are realistic and affordable in the local area. The resident should aim to buy or rent them, as nothing better is locally available from their point of view.

A mismatch will occur when a resident cannot choose this available home with the most preferred attributes. Even if available, they may be constrained from buying or renting it by insufficient current income, savings, and assets, including borrowed finances from institutions and/or family, and without scrimping on the other necessities of life. They will have to choose a less preferred home or stay there until they can afford to buy the ideal home or rent it. This will produce a mismatch between where they prefer to live and where they can afford to live. Preferred homes may, therefore, be unaffordable from many residents' points of view, even before inflating prices create indisputable unaffordability for everybody.

One measure of this mismatch is the loss of utility from not affording a home with the socially most preferred attributes. A second mismatch is the consumption disequilibrium between a home's socially and monetarily most preferred attributes. Single-detached(-like) homes are described by levels of 12 attributes of the dwelling unit, neighbourhood environment and neighbours, and the home's accessibilities. Each mismatch may be reduced by paying a compensatory expenditure to upgrade to a home with more preferred attributes. This compensatory expenditure is the criterion of the affordability of an alternative or improved home from a resident's point of view. Examples of compensatory expenditures for losses of utility and consumption disequilibria will be calculated and compared for residents in two mid-sized Canadian cities in 1987 and 2020.

Residential preferences

Everybody complains about mismatches between attributes of homes where they currently live and where they prefer to live: a home may be too big or too small, inconveniently located, too expensive to maintain or too depreciated to be bothered with (Barrett 2023; Schwanen and Mokhtarian 2004). These mismatches will naturally occur over time, not only as buildings get older but also as a resident's needs and desires evolve, for example, through their life course or in response to societal trends. They will deliberately occur if the current home aligns with future needs and desires. And perhaps worst of all, they will regrettably occur from day one if a resident is constrained from choosing their most preferred home and is stressed by the sacrificed loss of value or utility.

A residential mismatch produces a potential loss of utility if a resident cannot afford their unconstrained (UC) socially most preferred home and its component attributes (Artle and Varaiya 1978). Herein, the resident is evaluating the social usefulness of the attributes of homes without being constrained by their budget for housing. Alternatively, a residential mismatch may also occur if they evaluate the monetary value of attributes as appreciating or depreciating assets. Their consumption disequilibrium for each attribute of a home is the price gap between the monetary values of their monetarily most preferred attribute and their socially most preferred one (Quigley and Weinberg 1977; Weinberg, Friedman and Mayo 1981). A monetarily most preferred attribute is the affordable highest-priced one in the local real estate market, assuming that individual willingness to pay for housing has evolved to conform with observed prices.

On the one scale of social preferences, an operational loss of utility is the cumulated or maximum difference between the resident's social utilities for the attribute levels of the home, such as their most preferred ones and their experienced ones. This loss of utility from one home versus another quantifies a resident's "residential neighbourhood type dissonance", estimated in another study from commuters' stated preferences for four physical neighbourhood attributes contrasted with their actual location in an urban or suburban community (Schwanen and Mokhtarian 2004).

On the other scale of economic preferences, a consumption disequilibrium is the cumulated or maximum difference between the prices of affordable highest-priced attribute levels in the local real estate market and a resident's budget-constrained (BC) most preferred ones also in the market. Affordable highest-priced attribute levels are a resident's monetarily most preferred ones within their budget for housing. In comparison, their BC most preferred attributes are their socially most

preferred ones that are also affordable within their budget for housing. A resident will accentuate a scale of economic preferences in their mind for calculating gaps between these prices.

Either way, many residents may lose utility or suffer consumption disequilibrium for house type and size if they cannot afford their most preferred type and size of home or do not socially value the highest-priced type and size of the home, respectively. More examples of losses of utility and consumption disequilibria will be calculated for attributes of single-detached(-like) homes in two mid-sized Canadian cities. They will also be statistically compared in the different years of 1987 and 2020, in case they adapt to revised residential preferences and house prices over time.

Unaffordable homes and compensatory expenditures

A consumption disequilibrium basically specifies a compensatory expenditure that a resident can pay to reduce a residential mismatch by upgrading to a higher-priced home. A resident will want to pay this compensatory expenditure if they are accentuating their scale of economic preferences and acquiring their monetarily most preferred home or attribute. Analogously, a compensatory expenditure for reducing a loss of utility is calculated as the difference between implicit prices of UC most preferred attributes and other attributes, such as experienced ones or BC most preferred ones. A resident will want to spend this probably unaffordable amount to reduce a loss of utility if they are upgrading from a BC most preferred home attribute to an UC most preferred one according to their scale of social preferences. Compensatory expenditures for reducing a loss of utility or a consumption disequilibrium are functions of sale prices of the same attributes of homes as rated by a resident's utilities. Prices will also be analyzed for single-detached(-like) homes in two mid-sized Canadian cities before 1987 or 2020.

The inability to pay these compensatory expenditures explains a resident's stay in a home even when they intend or expect to move (Clark and Lisowski 2018; Coulter, van Ham and Feijten 2011; De Groot, Mulder et al. 2011). They may be frustrated by the unavailability of an affordable home with preferred attributes after they proceed from thinking about moving to searching for a new home (Lei and Liu 2022; Myers, Park and Cho 2021). If they move, an unaffordable compensatory expenditure is another explanation than unfamiliarity with a new housing market as to why a long-distance mover or divorcing mover relocates again a short distance away (Clark and Huang 2004; Coulter and van Ham 2013). An affordable original home may turn out to be too small etc. until a settled household

finds a better one. It is also another explanation than social links between residents' lives as to why young people move in and out of the parental home (Coulter, van Ham and Findlay 2015). An independent home on a tight budget may be too expensive to maintain or too depreciated to be bothered with, while a return to the parental home provides time to find a replacement. They may be one of many residents who are restless to move until they can afford the compensatory expenditure for a home with socially or monetarily more preferred attributes (Winke 2021). More mobile residents may energize the local real estate market, but this may be an unnecessary expense for them and the stability of their homes and neighbourhoods (Clark, van Ham and Coulter 2014; Imbroscio 2012; Robson, Lymperopoulou and Rae 2008).

A resident may, therefore, invoke their individualized compensatory expenditures as the criterion of the affordability of alternative homes when thinking of either moving from the current home or improving it (Hanhoerster 2015; Seek 1983). Predicted compensatory expenditures will be useful for not only a resident but also a real estate professional advising them to spend more (or less) on a more preferred home (Fuster and Zafar 2016; 2021). Both the resident and the practitioner will know the increase or decrease in utility or consumption disequilibrium for a home after spending more or less on its attributes. Once they know the specific attributes causing unaffordable compensatory expenditures, they may learn to personally reduce a mismatch between a preferred and an affordable home within budget. They can exploit their savings to improve housing conditions under their control, such as by renovating the home, building an extension or a garage, planting trees, or compromising location and neighbourhood.

Their sacrifice for affording a preferable home may be to initially tolerate mismatched levels of house type and size or basement condition and home renovations if a loss of utility or a price gap can be reduced by a future home extension or home improvements, respectively. Residents may utilize their labour, skills, and materials for more affordable exterior and interior home renovations (Wilson and Kashem 2017). Alternatively, mismatches that they personally cannot alter over time, such as house age and exterior finish or lot size, may be minimized from the beginning if housing providers pass along savings to them. These four attributes' conditions are controlled by a homeowner or home builder who may more practically manipulate their affordability than other social or locational attributes (Duncan and Rowe 1993). Home builders may buy land from a municipal land bank for more affordable residential lots, as has been the case in Saskatoon (Davis 1976).

The criterion of housing affordability

Altogether, my theoretical and operational criterion of housing affordability has two elements: (1) a resident's loss of utility or a consumption disequilibrium from being unable to afford a home having their most preferred attributes, and (2) their predicted expenditure to compensate for this loss of utility or price gap. It, therefore, "distinguish[es] between the individual's conception of what is and is not affordable and society's judgement" (Hancock 1993). It, furthermore, is on a usable continuous monetary scale rather than above or below a discrete percentage or amount. The method for calculating this new criterion incorporates a resident's BC utilities for attributes.

Budget-constrained utilities supplement quantifiable preferences in the form of UC residential utilities for home attributes (Ben-Akiva, McFadden and Train 2019; Karsten 2007). They may subsume UC utilities as articulations of preferences if a resident optionally inserts the budget constraint into evaluations of attributes (Verhetsel et al. 2017). Budget-constrained utilities differ in theory because they filter out unaffordable preferred homes from the UC utility function. A resident can enact these by superimposing omnipresent personal finances onto utility functions for ranking (im-)practical choices of new homes. They can do this while remaining independent from joint influences of local market conditions and the homes' availability (Booi and Boterman 2020; Desbarats 1983; Maclennan and Williams 1979; Timmermans, Molin and van Noortwijk 1994).

Unconstrained utilities are operationally transformed into BC utilities by superimposing a resident's budget for housing onto prices of attributes. This budget, from their point of view, is expressed in their search price for a new home 'if they looked for one tomorrow'. Their search price range will synthesize their available finances for housing after they have experience with the local housing market. A search price range is hopefully wide enough to accommodate exogenous fluctuations, such as in short-term trends of prices or mortgage interest rates. It should also accommodate estimated operating and travel costs of living in a sustainably affordable home (Abelson 2009; Park and Kim 2022), as long as affordability stress from these costs declines over time (Marks and Sedgwick 2008).

For sure, a resident's financial constraints may impede them from exercising their preferences when choosing types of new homes (Andersson, Abramsson and Malmberg 2019; De Vos, Van Acker and Witlox 2016; Howley, Scott and Redmond 2009; Hrast et al. 2019; Li et al. 2020). For example, "lower education degree and income imply they may

be less able to act on their preferences and think differently about residential mobility" (Jiang, Feng and Timmermans 2020, 5). And "[residential] preferences are inherently connected to assumptions about what is realistic (in terms of price, for instance)" (Booi and Boterman 2020, 96). In other words, when residents behave as if they assimilate what they can or cannot afford into their residential preferences, this may rationalize constrained choices of less preferred new homes (Kahneman and Thaler 2006; Niedomysl 2008; Sirgy, Grzeskowiak and Su 2005).

My theoretical and operational criterion supersedes the normal practical criterion of an affordable home when the resident consumes more than the minimally acceptable standard of housing and goods and services within a prescribed amount of their budget (Ezennia and Hoskara, 2019, 2022; Meen and Whitehead 2020; Thalmann 1999). This amount may be measured as a maximum percentage of their current income, such as 30% allocated to housing expenditure (Choi and Ramaj 2023; Marks and Sedgwick 2008). It, alternatively, may be measured by their minimum (residual) income for housing after subtracting expenditures on other necessities (Stone, Burke and Ralston 2011). Indeed, house prices or rental costs in relation to income are residents' key criteria for a sustainably affordable home in the long term, whereas non-housing cost criteria such as reduced transportation costs or energy bills have an equal or lower rank (Ezennia and Hoskara 2021).

Theoretical and methodological criticisms of the practical criteria for attaining an affordable home and living in one have inspired refinements with newly available secondary and survey data. Specified percentage or dollar amounts of income have been adjusted for the observed itemized housing costs and incomes, including other financial assets of different types of residents and their households (e.g., Baker, Mason and Bentley 2015; Gan and Hill 2009; Sunega and Lux 2016). They also have been adjusted in alignment with residents' opinions about living costs and amenities and perceptions of future trends in house prices (e.g., Bourassa and Haurin 2016; Heylen 2023; Perera and Lee 2021).

Notwithstanding, these refined practical criteria would exclude from consideration an established owner-occupier who perceives the unaffordability of preferable housing from their point of view, even though they consume more than a minimally acceptable standard of housing (Park and Kim 2022). They, contrarily, would include a resident who cannot afford a minimally acceptable standard home within their budget for housing but who has chosen their most preferred home or something close to it (Abelson 2009). And, thus, who "only face a potential affordability problem if they could not afford standard housing consumption even if that were their consumption choice" (Thalmann 2003, 296). Analogously,

"households such as young, childless singles who spend little time at home might well argue that, given their preferences, housing is too expensive for them to spend voluntarily enough of their resources to consume [this minimally acceptable standard]" (Galster and Lee 2021, 10).

Other authors have consequently hypothesized different theoretical criteria for housing affordability than practical ones. For example, "middle-income households also find it increasingly difficult to afford housing in central, metropolitan areas with good jobs, transport and cultural facilities. This is not a problem of poverty: they can afford to buy or rent further from the metropolitan centre, but rather indicative of increasing spatial inequalities in access to city resources" (Haffner and Hulse 2021, 70). And, "other homebuyers may be forced to compromise on some dimension of housing services to find a less expensive property. In particular, constrained homebuyers may purchase a smaller home, or a home in a less desirable neighbourhood (e.g., lower school quality or longer commute), or some combination thereof" (Park 2021, 347). And, "in comparison to the traditional affordability measure, [a] new consumption-adjusted measure indicates substantially greater inequality in housing affordability as prevails in Israel's three largest cities in 2015" (Ben-Shahar, Gabriel and Golan 2017, 11).

Past and current policies for more affordable owned housing

The application of a more general criterion of housing affordability than the practical ones is furthermore confirmed by subsidies to owners of homes with more expensive attributes than minimally acceptable ones in Canada. Private housing providers and public policymakers have tried to adjust local prices of attributes or amounts of housing wealth necessary for residents to afford more preferred homes (Careless 2020; Case, Quigley and Shiller 2012; Quigley and Raphael 2004; Varady 2010). Canadian examples of private housing providers potentially discounting prices include their deductions for waived development fees and standards or prospective financial assistance for renovations (Burby, Salvesen and Creed 2006). Municipal development fees of approximately $23,000 have been waived for building a new single-detached home in Windsor's inner-city neighbourhoods since 2016 (Pearson 2016). The Canadian government's residential rehabilitation assistance program has applied to on-reserve housing since 2018. It previously provided forgivable loans up to $16,000 to low-income homeowners for rehabilitating houses lacking basic facilities

or needing major structural, electrical, plumbing, heating, or fire safety repairs (Canada Mortgage and Housing Corporation 2005).

Examples of increasing people's wealth for housing include transferring public funds to homeowners via mortgage payment relief. A provincial program in Saskatchewan began in 1982 for a couple of years until interest rates declined. It would save a homeowner up to approximately $13,000 in mortgage payments over five years by reducing the annual interest rate to 13.25% for a $50,000 mortgage, for example, down from its fixed rate maximum of 19.5%. More recently, since 2018, the Canadian government's first-time home buyer's incentive program would save $19,000 in mortgage payments over 25 years at a 6% annual interest rate: for example, if a participant buys a used home for $200,000 after making the minimum 5% down payment from savings along with 5% more loaned from the incentive program (Government of Canada 2018). A lump sum loan (with deferred repayment until after the subsequent sale of the home or the next 25 years) should have a larger effect on a resident's willingness to pay for a home than either a reduced minimum down payment or reduced annual interest rate for a mortgage (Fuster and Zafar 2021; Lundy 2021).

Note that the four public subsidies are summarized as benchmarks for the subsequent predicted price differences at two different times in two historically affordable real estate markets. Interestingly, none are subsidies of affordable new-build owned housing, whose combination of attributes will be evaluated with residents' preferences and priced against their budgets for housing in the concluding chapter. New-build owned housing may eventually be resurrected as an affordable solution if "local governments may want to use subsidies, together with a variety of housing policy tools such as density bonuses or mandatory inclusionary zoning, to achieve visible additions to supply at a variety of price points" (Ahsan 2019; Been, Ellen and O'Regan 2019, 33; Brysch and Czischke 2022).

Observed preferences and prices

A loss of utility will be experienced when a resident cannot afford their UC most preferred attributes of a home and instead chooses other affordable attributes. A compensatory expenditure is a dollar amount they can spend to acquire the UC most preferred attributes. A resident's loss of utility and compensatory expenditure for home attributes at a particular time is more fully theorized in Chapter 2. Also theorized are BC utilities for attributes whose affordability is constrained by the budget for housing expressed in a search price for a new home. Losses of utility and compensatory

expenditures will adapt to fluctuating home prices and residents' preferences and budgets over time, such as from 1987 to 2020.

A resident's UC and BC preferences may fluctuate in time and place if they have revised social, environmental or economic values for liked and disliked homes, where a home is composed of attributes of its dwelling unit, the surrounding environment and its residents, and its accessible places (e.g., Benjamin and Paaswell 1981; Knight and Menchik 1976; Phipps and Clark 1988). Revisions of attributes' valuations may be caused by not only the evolution in the needs, aspirations, budgets, and social environments of similar residents over time but also shifts in their available housing alternatives and the prices of attributes of these (Warren, McGraw and Van Boven 2011; Wolday and Böcker 2023).

Residential preferences may also fluctuate if a resident alternates between two potentially different cognitive scales of value for each attribute of a home. Two cognitive scales distinguish, respectively, between the attribute's usefulness in terms of social utility and its worth as an economic asset based on a sale price (Judson, Iyer-Raniga and Horne 2014; Phipps 1987). Divergences between these two scales may create the consumption disequilibrium discussed in Chapter 7 as an affordable amount needed for upgrading from the socially most preferred level of an attribute to the highest-priced monetarily most preferred one.

A resident may only make this upgrade if they are prepared to switch from their scale of social preferences to their other scale of economic preferences for evaluating home attributes, such as when they are planning on moving. While they should willingly pay a compensatory expenditure for a loss of utility, they may not want to spend money to reduce a consumption disequilibrium for an attribute. They may already have higher social utility for an attribute that is not necessarily the highest-priced one. Two distinct scales of residential preferences in a resident's mind are further theorized in Chapter 2 in preparation for substantive analyses in Chapters 4, 5 and 7.

In Chapter 4, for example, samples of Canadian residents revised their preferences from 1987 to 2020 by calculating or interpolating utilities for two of the 12 generic attributes of single-detached(-like) homes in their utility functions. Their preferences for four more generic attributes also changed when they evinced indifference between these attributes in 2020 after discriminating between them with high and low utilities in 1987. Revisions of residential preferences are measured by comparing residents' social and economic utilities at two points more than 30 years apart, in Saskatoon, SK, in 1985/1987 and Windsor, ON, in 2020.

Following on in Chapter 5, subsamples of residents have different,