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Affordable-Accessible Housing in a Dynamic City

Why and How to Increase Affordable Housing in Accessible Neighborhoods

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This classic 34-unit apartment building located on a half-acre lot near two bus lines and a neighborhood commercial center is a good example of affordable-accessible housing.

Abstract

This report examines ways to evaluate housing affordability, identifies problems caused by unaffordability, and describes *affordable-accessible housing*, which refers to lower priced homes located in areas with convenient access to essential services and activities, which minimizes household cost burdens. Affordable-accessible housing typically consists of lower-priced apartments, townhouses, small-lot single-family and accessory suites located in compact, multimodal neighborhoods. Demand for affordable-accessible housing is growing. Increasing affordable-accessible housing development can help achieve various economic, social and environmental objectives. Many current policies discourage such development, leading to shortages, particularly in growing cities. Policy and planning reforms described in this report can increase affordable-accessible housing development. For illustrated examples of affordable-accessible housing types see the *Affordable-Accessible Housing Photo Essay* (www.vtpi.org/aff_acc_photo.pdf).

Contents

Introduction 9
Defining and Measuring Affordable-Accessible Housing 10
Housing and Transportation Cost Analysis 21
Gentrification, Displacement and Filtering 34
Housing Policy and Homelessness 38
Testing this Analysis in Various Cities 38
Affordable-Accessible Housing Benefits and Cost 40
Affordable-Accessible Housing Demand 45
Dynamic City Planning 46
Factors Affecting Affordable Housing Development 48
Affordable-Accessible Housing Development Strategies 50
Examples 69
Criticisms and Controversies 76
Conclusions 80
References 83

Affordable-accessible housing typically consists of small-lot single-family homes, townhouses, and apartments located in compact, walkable, mixed-use urban neighborhoods with nearby stores and good public transit services.

Executive Summary

Many hard-working families are stressed by economic forces that drive up living costs faster than wages. This results, in part, from public policies that favor costly housing and transportation options over more affordable alternatives. Since these are most households' two largest expenses, such policies significantly increase household cost burdens. A rational and compassionate society ensures that all households can afford basic housing and transportation. For many households, this is best provided by *affordable-accessible housing*, that is, inexpensive housing in walkable urban neighborhoods. Many cities have a shortage of such housing, forcing low- and moderate-income households to choose between inferior housing, isolated locations or excessive financial burdens. This study investigates causes and solutions to this problem.

Increasing affordable-accessible housing supply can provide numerous savings and benefits, including direct benefits to occupants – it is equivalent to increasing lower-income household's wealth – plus various indirect economic, social and environmental benefits from reduced motor vehicle travel and sprawl. Increasing affordable housing supply in successful urban neighborhoods is a critical civil rights issue. This report integrates the following issues related to such development:

1. *Affordability.* Experts recommend that households spend less than 30% of their budgets on housing (including rents or mortgages, maintenance, property taxes, utilities, etc.), or 45% on housing and transport combined.
2. *Accessible (also called "location efficient") development.* Development in compact, multimodal neighborhoods that provide convenient and affordable access to services and activities. Residents of such neighborhoods tend to own fewer vehicles, drive less, rely more on alternative modes, save on transportation expenses, and impose lower external costs than they would in more sprawled, automobile-dependent areas.
3. *Dynamic (also called "Responsive") planning.* Communities must respond to changing demands and conditions. Current demographic and economic trends are increasing demand for affordable-accessible housing, and increasing the benefits to society of accommodating this increased demand.

Affordability can be evaluated in various ways that lead to very different conclusions as to the nature of the problem and the best solutions. In the past, affordability was often defined as households spending less than 30% of their budgets on rents or mortgages, but since households often make trade-offs between housing and transportation costs, many experts now recommend evaluating affordability based on lower-income households' ability to spend less than 45% of their budgets on housing and transport combined. This recognizes that a cheap house is not really affordable if it has high operating or transport expenses, and households can afford to spend more for efficient housing located in accessible, multi-modal neighborhoods where operating and transport costs are low. Many commonly-used affordability indicators are biased because they reflect average rather than lower-income household budgets, ignore operation and transport costs, or only consider single-family housing, ignoring more affordable housing types such as townhouses and apartments. These biases can lead to suboptimal policies.

There are various ways to increase affordability, but some are better overall. Poor quality housing located in undesirable areas is cheap but increases other costs and risk to occupants. Urban fringe land is inexpensive but displaces openspace and has high public service and transportation. Governments can subsidize housing or require developers to subsidize a portion of units, but this can generally only satisfy a small portion of total affordable housing needs and often reduces development of moderate-priced housing, reducing future housing affordability. Generally, the best solution overall is to reduce impediments to developing lower-priced, infill housing in walkable neighborhoods, providing the greatest total benefits to occupants and society.

Table ES-1 **Affordable Housing Approaches**

Strategy	Advantages	Disadvantages
Undesirable housing. Inferior houses in unpleasant or dangerous areas.	Occurs naturally; requires no public policy intervention or subsidy.	Is uncomfortable and dangerous, and often concentrates poverty.
Urban expansion. Build basic housing in currently undeveloped areas	Cheap land reduces development costs and allows larger parcels	Increases costs of providing public service and occupants transportation, and displaces openspace
Subsidies. Government or charity subsidies, and mandates that force developer to sell some units below-market prices	Increases housing affordability for qualifying households.	Usually only serves a small portion of affordable housing needs, is costly and often reduces moderate-priced housing supply.
Affordable infill cost reductions. Reduce costs and impediments to lower-priced infill development.	Supports infill housing which provides many benefits. Can reduce costs and increase supply of all housing types. Requires no subsidy.	Requires changing development practices, overcoming local political opposition, and addressing problems such as spillover parking.

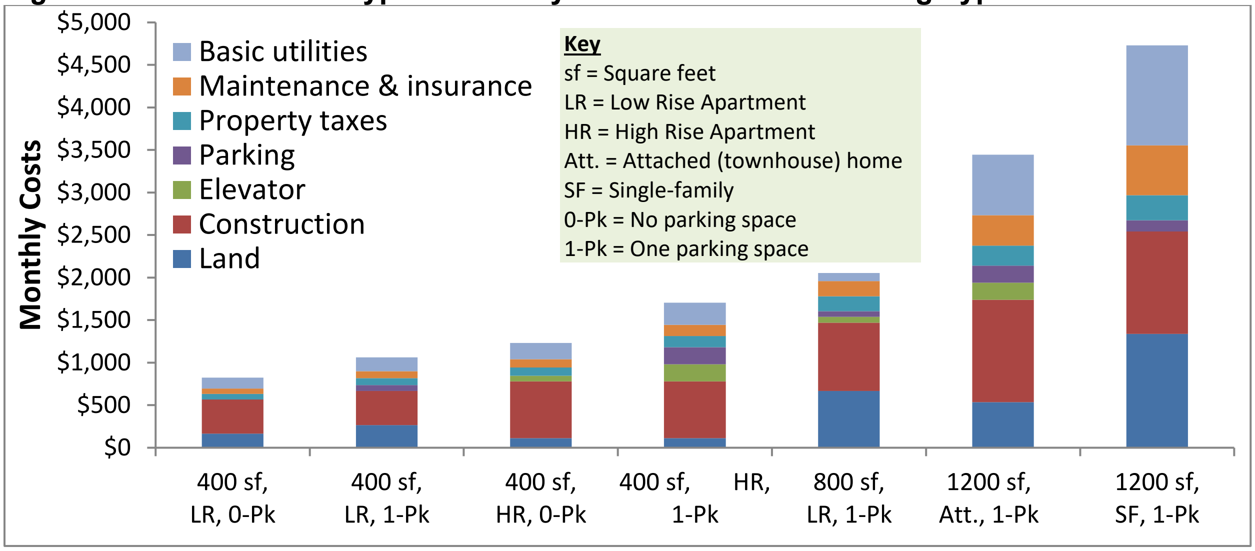
There are several ways to increase housing affordability, each with advantages and disadvantages. Most communities should implement a combination of these to meet all affordable housing demands.

Most communities implement a combination of these strategies, and some are complementary. For example, reducing affordable infill housing development impediments and costs can increase the number of housing units provided per dollar of subsidy, and urban-fringe housing can be appropriate and affordable to some households (those that can drive and are relatively self-sufficient, and so require little access to urban jobs and services). However, it is important to consider all their advantages and disadvantages; when all impacts are considered, increasing affordable-infill development often turns out to provide the greatest net benefits to occupants and society overall.

Various housing types are particularly suitable for affordable-accessible development, including small-lot single family, adjacent (duplexes and townhouses), apartments, and secondary suites. Current demographic and economic trends are increasing demand for such housing. Some households need subsidized housing, but most affordable housing is developed by commercial firms and rented or sold for profit without subsidy.

This study investigates factors that affect overall household costs including land and construction costs, operating expenses (repairs, maintenance, and utilities), location (and therefore transport costs) and age. It developed the *Housing Affordability Analysis Spreadsheet*, which can be used to evaluate how these factors affect overall affordability. Housing and transport are the two largest expenses in most household budgets and so significantly affect overall affordability. Figure ES-1 illustrates typical costs of various housing types. The most affordable housing type, low-rise apartments with unbundled parking (parking rented separately from housing) is illegal to build in most urban neighborhoods due to restrictions on density and minimum parking requirements. As a result, many households are forced to choose larger and more expensive homes than they want, and so consume more land, pay more for housing, and compete for the limited supply of lower-priced housing, which drive up their prices. It can also force households that prefer urban locations into urban-fringe areas, which increases sprawl-related costs.

Figure ES-1 **Estimated Typical Monthly Costs of Various Housing Types**



This figure compares typical costs for various housing types. Low-rise, multi-family housing without parking has the lowest costs, but is often prohibited by density restrictions and parking requirements.

This analysis indicates that with supportive public policies, developers can build basic low-rise apartments in urban neighborhoods that initially have moderate prices, and if enough are built in a city their inflation-adjusted prices will decline 10-30% over a decade, creating a stock of low-priced housing. If cities fail to allow such development, those households are forced to spend more on housing than affordable, or move to less accessible areas with cheaper housing but more expensive transportation.

Table ES-2 summarizes various benefits of meeting affordable-accessible housing demands, so any household can find inexpensive housing located in accessible neighborhoods. Affordable-accessible housing is the opposite of gentrification: it creates communities where diverse households live together. Affordable-accessible housing tends to support economic development by increasing developer profits, real estate commissions, property taxes, local business activity, and agglomeration efficiencies.

Table ES-2 **Affordable-Accessible Housing Benefits**

Economic	Social	Environmental
• Housing and transport cost savings. • Improved accessibility: reduced time spent driving. • Increased traffic safety. • Road and parking facility savings • More efficient public services. • Improved employee recruitment and retention. • Higher productivity and tax revenues. • Enables aging in place.	• Affordability: savings to low-income families. • Improved public fitness and health. • More inclusive communities. • Reduced homelessness and associated social problems. • Improved economic opportunity and mobility for disadvantaged groups. • More independent mobility for non-drivers and reduced chauffeuring burdens. • Livelier streets and neighborhoods.	• Resource-efficient: reduced per capita land and energy consumption. • Reduces motor vehicle travel and pollution emissions. • Preserve openspace (forests and farmlands). • Less impervious surface, water pollution and flooding risks. • Reduced noise pollution.

Compared with unaffordable or sprawled housing, affordable-accessible housing provides numerous benefits.

Despite these benefits, affordable infill development faces many obstacles. Many current policies discourage affordable infill development; the most affordable housing types, such as small apartments and townhouses with unbundled parking, are prohibited or discourage in most urban neighborhoods reflecting prejudices against compact housing types and lower-income households. Affordable-accessible housing reflects more diverse household demands and community planning goals.

In North America most affordable-accessible housing consists of low-rise apartments built before 1975, after which higher construction costs, more burdensome zoning codes requirements, and neighborhood resistance discouraged such development. Analysis in this study indicates that under favorable conditions (moderate land prices and construction costs, minimal fees and delays, unbundled parking, etc.) it is possible to build new housing that is affordable to second-income quintile households, and over time these become affordable to the lowest income quintile, provided that this supply increases with demand.

Increasing moderate-priced housing supply tends to increase lower-priced affordability in two ways: through *filtering*, as some low-priced housing residents move into the new units, and over time as the new units depreciate in value (Been, Ellen and O'Regan 2019 and 2023; Myers and Jungho 2020; Park 2020; Phillips, Manville and Lens 2021; Zuk and Chapple 2016). Since just 1-2% of homes on the market are new – most households live in older homes – changes in housing *supply* have much more effect on affordability than *new home prices*; even if the new units initially cost more than lower-income households can afford, they become more affordable with age. With supportive policies, developers can earn reasonable profits building moderate-priced homes in accessible neighborhoods.

Local residents often oppose affordable-accessible housing development (Keshet 2015). Some of this opposition reflects concerns about direct impacts such as construction disruptions, loss of privacy and increased traffic, which can be mitigated with thoughtful design and management strategies (Table ES-3). However, opposition often reflects exaggerated fears that lower-priced housing will cause social problems such as increased crime, and reduced school performance and local property values. Although concentrated poverty tends to increase social problems, most lower-priced housing occupants are responsible and law abiding low-wage workers, students and pensioners. Affordable-accessible housing can help reduce overall crime rates by increasing passive surveillance, improving economic opportunities for at-risk residents, and reducing motor vehicle crimes. Infill development also benefits existing residents by increasing local business activity, reducing regional traffic problems (due to lower trip generation rates compared with sprawled locations), and because current residents may themselves want lower-priced local housing options.

Table ES-3 **Potential Responses to Neighborhood Concerns**

Problem	Potential Responses
Fear of lower-income neighbors	Education about the types of households that occupy affordable housing and their neighborhood risks.
Traffic and parking congestion	Affordable-accessible housing residents tend to generate much less traffic and parking than conventional models predict, and any negative impacts can be mitigated.
Increased noise	Improved noise regulation enforcement.
Shading from tall buildings	Consider solar access in building design to minimize shading.
Reduced property values	Research concerning actual property value impacts (property values often increase).
Higher property taxes (if property values increase)	Offer tax deferments, so residents do not pay higher taxes until they sell their property.

Many neighborhood impacts can be addressed with improved design, management and education.

There is often opposition to affordable infill since opponents generally have little to lose and much to gain from higher housing prices, and it is effective due to a political power imbalance: development opponents tend to be well organized and politically powerful while the lower-income households that demand such housing are generally unaware of their interests and politically weak (Einstein, Palmer and Glick 2018), resulting in less affordable-accessible housing development than is socially optimal considering consumer welfare impacts (including benefits to low-income households that will occupy the new housing) and regional benefits (including reductions in overall traffic and parking congestion, traffic accidents, pollution emissions and crime rates, plus increased business activity compared with more sprawled development).

There are many possible ways to increase housing affordability, as summarized in Table ES-4 (next page). Some strategies are better than others overall because they reduce rather than shift costs, and support other strategic objectives such as reducing traffic problems and sprawl. For example, affordable housing mandates reduce housing costs for some households but increase costs for others, and urban fringe development reduces land costs but increases infrastructure and transport costs. In contrast, allowing higher densities and reducing parking requirements reduces overall development costs and provides other benefits.

Some relatively modest policy reforms can greatly improve affordability and accessibility, and therefore the lives of physically and economically disadvantaged people. These include changes to zoning codes to allow more diverse housing types, reduced parking requirements, improving walking and cycling conditions, and improved public transit service. These reforms help increase the amount of affordable housing built by private developers or the amount of affordable housing produced by a given subsidy. Even if the new housing is initially unaffordable, it can become affordable over time as it ages.

There is considerable debate concerning the causes and solutions to housing unaffordability. Some experts argue that it is caused by urban containment policies and so is best solved with urban expansion, but most objective research indicates that in the attractive, growing, geographically-constrained cities where housing is least affordable, excessive housing prices are caused primarily by impediments to infill development, since such cities cannot expand outward sufficiently to significantly reduce prices, but they can grow upward.

Of course, every household is unique: some prefer driving and being automobile-dependent regardless of where they are located, while others have members that cannot, or prefer not to, drive and value having good transport options. Many households are in between: their housing and transport decisions are influenced by policy and planning decisions such as the type and pricing of housing and travel options available. To maximize benefits, affordable-accessible housing should be diverse to meet diverse housing demands, including various household sizes and types, access to openspace, vehicle parking, and various neighborhood types.

Increasing affordable-accessible housing is a practical way to help disadvantaged people help themselves by reducing their cost burdens and increasing their economic opportunities; in other words, it helps households be poor but happy. This challenges conventional policy goals. Conservatives tend to be primarily concerned with improving poor people’s employment opportunities, while liberals tend to be primarily concerned with achieving more equitable wealth distribution; both assume that society’s goal is to help lower-income households afford larger homes and more automobile travel. Yet, for many households, reducing cost burdens is the best overall ways to improve opportunity and happiness.

Table ES-3 **Affordable-Accessible Housing Strategies**

Strategies	Impacts
Ineffective and Sometimes Harmful	
Urban blight	Reduces housing costs but harms communities and concentrates poverty
Cheap suburban development	Reduces housing costs but increases transport and sprawl costs
Rent control	Benefits existing residents but reduces lower-priced housing development
Preserve older, affordable housing	Preserves old, cheap housing but may reduce new, denser development
Restrict rental-to-owner conversions	Benefits existing residents but reduces lower-priced housing development
Generally Effective But Costly	
Support housing development and purchase	Primarily benefits affluent homebuyers. May do little to increase affordability
Social housing	Increases affordable housing supply
Inclusionary zoning (affordability mandates)	Subsidizes housing for some households but increases costs to others
Targeted housing subsidies	Benefits people who receive subsidies, but may displace others
Subsidize urban fringe transportation	Is costly and exacerbates traffic problems
Sweat equity and volunteer construction	Potential is generally small compared with total affordable housing needs
Most Effective and Beneficial	
Increase allowable densities and heights	Allows more affordable, compact, infill development
Allow and support compact housing types	Allows more affordable, compact, infill development
Minimize & prorate fees for inexpensive housing	Reduces costs of inexpensive, infill housing development
Reduce development regulations	Reduce building approval time, expense and uncertainty
Expedite affordable housing approval	Reduces costs and time for lower-priced housing approvals
Density bonuses and requirements	Encourages developers to build more affordable housing
Lending reforms and incentives	Reduces development financing costs
Identify parcels suitable for infill	Helps developers build infill housing
Provide free or inexpensive land	Helps developers build affordable housing
Brownfield remediation	Makes contaminated land available for development
Land value tax and undeveloped land surtax	Encourages more compact urban development, reduces land speculation
Encourage turnover of used houses	Increases the supply of used (and therefore lower-priced) housing
Reform development and utility fees and taxes	Encourage more compact and affordable housing development
Reform lending policies	Correct lending rules that favor sprawled and automobile-dependent housing
Affordable housing targets and requirements	Encourages or requires communities to accept affordable housing
Favor accessible locations for public housing	Increases accessible-affordable housing supply and demand.
Allow smaller lots and urban parcel subdivision	Increases the supply of smaller urban lots
Dynamic zoning	Allows communities to respond to increased affordable-accessible housing demand
Address community concerns	Reduces community opposition to affordable infill development
Improve building design	Reduces neighborhood opposition to affordable infill development
Improve building efficiency	Reduces operating costs, which increases long-term affordability
Address specific market distortions	Correct market distortions that reduce affordable housing
Smart growth reforms	Encourages more compact development and reduces infill development costs
Traffic and parking management	Reduces traffic and parking problems, and therefore opposition to infill development
Unbundle parking	Reduces development costs and vehicle ownership
Reduced & more accurate parking requirements	Reduces costs and increases land supply for affordable infill housing
Allow development on parking lots	Often provides excellent sites for affordable-accessible housing
Improve affordable transportation options	Improves accessibility, reduces household transport costs, reduces traffic impacts
Discourage or prohibit rental restrictions	May increase the number of rental units available in a community
Affordable housing maintenance programs	Preserves existing affordable housing stock

This table summarizes various ways to support affordable-accessible housing development.

Introduction

Many responsible families are financially stressed by economic forces that increase their basic living costs faster than their incomes. This partly results from public policies that favor costly housing and transportation over cheaper alternatives. Since these are most households' two largest expenses, such policies significantly reduce affordability. Reducing these costs is equivalent to raising household incomes. Stegman (2019) argues that increasing affordable housing supply in successful urban neighborhoods is the most important civil rights issue of our time. Of course, people's needs and preferences vary, and households don't always choose the cheapest housing or transport available, but improving affordable housing and transport options lets households choose the combination that best meets their needs.

There are various ways to increase affordability. Some housing is inexpensive due to its poor condition or undesirable location, and so is uncomfortable and unsafe. Urban fringe housing can use cheap land but displaces openspace and has high infrastructure and transport costs. Governments and charities can subsidize housing, or developers can be required to sell or rent units below market prices, but this can generally only satisfy a small portion of total affordable housing needs and can reduce total housing development which increases prices of non-subsidized units. Another solution is to reduce impediments to *affordable-accessible housing* development, to allow more development of lower-priced housing in walkable neighborhoods where residents have convenient access to services and activities without needing a car.

Most communities implement a combination of these strategies, and some are complementary. For example, increasing allowable densities and reducing parking requirements increases both market-priced affordability and the number of below-market units that can be developed with a given subsidy budget. It is important to consider all of these factors when evaluating strategies for increasing housing affordability.

When all impacts are considered, affordable-accessible housing is generally the best way to increase affordability. Surveys indicate that many households want to live in accessible, multi-modal neighborhoods, meeting this demand provides community benefits. Affordable-accessible housing is resource efficient: it requires less land, reduces public infrastructure and service costs, allows household to save money and reduce their total congestion, accident risk and pollution costs compared with living in sprawled areas. As a result, virtually everybody benefits if any household that wants can find suitable affordable-accessible housing options. However, there are many obstacles to the development of such housing.

This report explores these issues. It describes ways to define and measure affordability, examines factors that affect housing and transport costs, identifies the benefits and costs of more affordable infill, evaluates ways to encourage affordable-accessible housing, examines barriers to their implementation, and describes some successful affordable-accessible housing encouragement programs. It integrates these concepts:

1. *Affordability.* Housing and transport are considered affordable if they require less than 45% of household budgets.
2. *Accessibility.* Household's ability to access important services and activities, and therefore their transportation cost burdens and economic opportunities.
3. *Dynamic (also called "Responsive") planning.* This refers to communities' ability to respond to changing demands.

These issues are not new, but new economic trends that increase the value of urban living are increasing their importance. This study should be useful to people involved in housing and transport affordability, economic opportunity, sustainable urban development, efficient transport, urban economics, and public health and safety.

Defining and Measuring Affordable-Accessible Housing

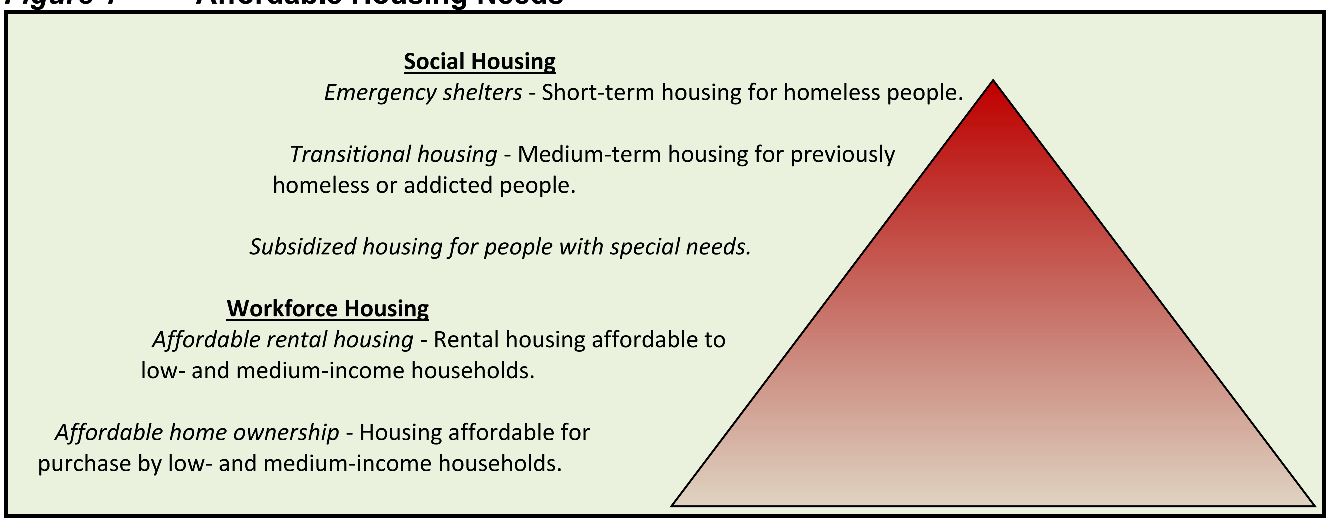
This section discusses ways to define and measure affordability and accessibility, and factors that affect them.

What is Affordability?

Affordability refers to people's ability to purchase *basic* (or *essential*) goods and services such as healthcare, food and shelter. *Affordable housing* is traditionally defined as housing expenses (rents or mortgages, and sometimes property taxes, insurance, maintenance and basic utilities) costs less than 30% of household income or budgets (Zillow 2015; Anacker 2019; Bieri 2015). Since households often face tradeoffs between housing and transport costs, many experts define affordability as households being able to spend less than 45% of budgets on housing and transport combined (CNT 2008). This recognizes that an inexpensive house is not truly affordable if located in an isolated, automobile-dependent area with high transport costs, and households can rationally spend more for housing in more accessible, multi-modal neighborhoods if that reduces their transport costs. Some affordability indicators are disaggregated by income category (usually quintiles) to identify impacts on lower-income households (Myers and Park 2019).

The figure below illustrates various affordable housing demands, which include a relatively small number of households with special needs (disabilities, severe poverty, etc.) that require *social* (subsidized) housing, and a larger number of lower-wage workers, pensioners, students and artists who need low-priced *workforce* housing to rent or purchase.

Figure 1 **Affordable Housing Needs**



Affordable housing demands range from a small number people who need subsidized social housing to a much larger number of households that need lower-priced workforce housing to rent or purchase. Virtually all of these households can also benefit from living in an accessible location where transportation costs are relatively low.

Table 1 lists some commonly used housing affordability indexes and data sources.

Table 1 **Housing Affordability Indicators**

Indicator
ACCRA Cost of Living Index (www.coli.org), compares costs of living by region for top income quintile households (it is intended to help business professionals negotiate relocation wage adjustments).
Demographia International Housing Affordability Survey (www.demographia.com/dhi.pdf) reports the ratio of median house prices to median incomes for cities around the world.
An HSH index (www.hsh.com/finance/mortgage/salary-home-buying-25-cities.html) calculates the salary needed to purchase a median-priced house
National Home Builder's *Housing Opportunity Index* (www.nahb.org/reference_list.aspx?sectionID=135) indicates the portion of homes sold in an area affordable to median income households.
The National Association of Realtors provides housing price data (www.realtor.org/topics/existing-home-sales/data).
Zillow Home Value Index (www.zillow.com/research/zhvi-methodology-6032) reports sales prices of various house types.
Zillow (www.zillow.com) and *Zumper* (www.zumper.com) report and compare home rental prices.
The *Housing + Transportation Index* (http://htaindex.cnt.org) and the *Location Affordability Portal* (www.locationaffordability.info) provide combined housing and transport cost data for various locations.
The U.S. Census *Building Permits Survey* (www.census.gov/construction/bps/msaannual.html) provides data on the number and value of new housing approvals in geographic areas.
The U.S. Bureau of Labor Statistic's *Consumer Expenditure Surveys* (www.bls.gov/cex) and the *American Housing Survey* (www.census.gov/programs-surveys/ahs.html) provide data on housing and transport consumption.
Money left over after paying for housing (http://theatln.tc/2osNlcu), indicates the average amount of money that workers have left over after paying for housing.

Various indicators and data sets are used to evaluate affordability. They vary in scope and perspective.

Many of these are incomplete or biased (Hertz 2015c; Jewkes and Delgadillo 2010; Njie 2015; Zillow 2015):

- The ACCRA Cost of Living Index are based on the highest income quintile household spending, and so do not reflect average or lower-income households.
- Most are based on average or median prices and incomes, and so do not reflect impacts on lower-income households, and therefore do not directly reflect affordability (Myers and Park 2019).
- Most only consider house purchase prices, and do not reflect *rental* housing affordability, although this is a major housing affordability issue.
- Some, such as the *Demographia International Housing Affordability Survey*, ignore or underweight multi-family housing, which tends to exaggerate housing unaffordability in compact cities.
- Most ignore housing operation and transport costs. As a result, they exaggerate the affordability of cheap but inferior quality houses that have high operating costs, and houses in areas with high transport costs.
- They tend to exaggerate unaffordability in higher-income regions by basing calculations on percentages of income rather than spending ability. For example, an impoverished region with $50,000 annual incomes and $10,000 annual housing costs would be considered affordable, while a more economically successful region with $80,000 annual incomes and $40,000 annual housing costs would be considered unaffordable, although their after-housing cost disposable income is identical.

Richard Florida (2017) evaluates affordability based on the income remaining after households pay housing and transport costs. Cities that rank least affordable when evaluated based on percent of income devoted to housing, such as San Francisco, New York and Boston, tend to rank best in terms of residual income because their high incomes more than offset high housing costs (Table 2). Their high wages drive up the costs of labor-intensive services such as restaurant meals and plumbing repairs, but are offset by those cities' low transport costs. As a result, higher cost cities leave households with more discretionary spending. This is important because more accessible and economically successful communities tend to increase *economic mobility*, the chance that children born in lower-income households become more economically successful as adults (Ewing, et al. 2016; Oishi, Koo and Buttrick 2018).

Table 2 **After Paying for Housing, How Much do Workers have Left?** (Florida 2017)

	Average Worker	Creative Class	Service Class	Working Class
Metros With The Most Money Left Over				
San Jose	$48,566	$80,503	$14,372	$23,109
San Francisco	$45,200	$71,741	$16,806	$26,920
Washington DC	$43,308	$70,030	$13,925	$21,539
Boston	$42,858	$66,871	$16,206	$25,233
New York	$42,120	$71,245	$17,861	$27,343
Metros With The Least Money Left Over				
Orlando	$25,774	$50,002	$12,903	$21,173
Las Vegas	$26,194	$53,137	$14,394	$27,103
Riverside, CA	$27,296	$54,191	$13,501	$20,777
Miami	$27,482	$53,809	$12,099	$20,452
Virginia Beach-Norfolk	$28,448	$51,601	$13,284	$22,939

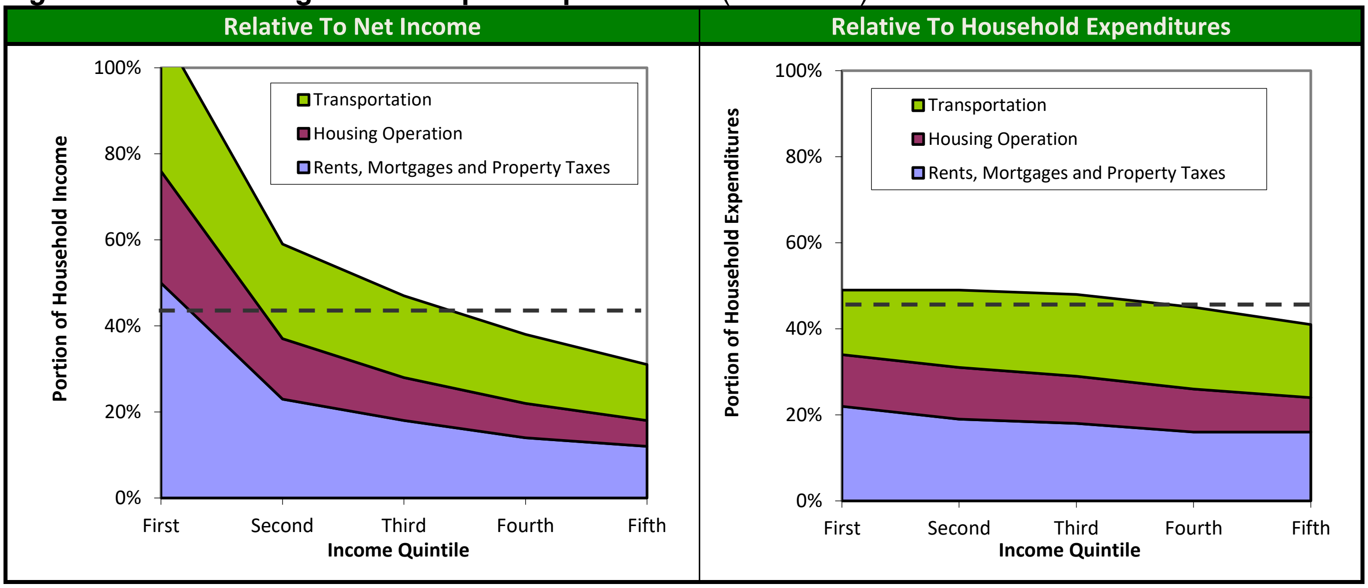
Urban regions with high housing costs often tend to have high wages. High-cost-high0wage cities are considered unaffordable if evaluated based on portion of household budgets spent on housing, but tend to rank best if evaluated based on residual budget after paying for housing. This suggests that working households are generally best off economically in high-cost-high-wage cities. (Data form the U.S. Bureau of Labor Statistics and U.S. Census)

This is not to suggest that these indicators are useless; they are often the only indicators available. However, anybody who works with their results should understand their omissions and biases and take them into account when making conclusions about what house or housing policy is truly optimal overall. For example, a policy that helps lower-income households purchase houses that have high operation or transport costs do not necessarily help improve overall affordability.

How incomes are measured affects affordability analysis. Affordability is primarily concerned with costs to lower-income households, because excessive housing and transport costs can leave insufficient money to purchase other essential goods. Higher-income households may spend a major portion of their income on multiple luxury houses and vehicles without threatening their ability to buy essential goods. As a result, affordability analysis should generally focus on cost burdens to lower-income households, typically measured as the first and second lowest income quintiles (fifth of all households). Affordability analysis sometimes uses *family adjusted incomes* which reflect household size and composition, since larger families must spend more on essential goods such as food and healthcare (Haughton and Khandker 2009; HUD 2014).

This analysis may be based on *gross incomes* (including taxes), *net income* (after taxes), *family-adjusted income equivalents* (which account for household size) or *expenditures*. *Incomes* tend to reflect short-term wealth, while *expenditures* reflect long-term wealth since households sometimes have temporary low incomes, for example, when workers are unemployed or take time off to attend college, and so represent higher- and lower-bounds for affordability. The following figures show the portion of U.S. household expenditures devoted to housing and transport measured by net income and total household expenditures.

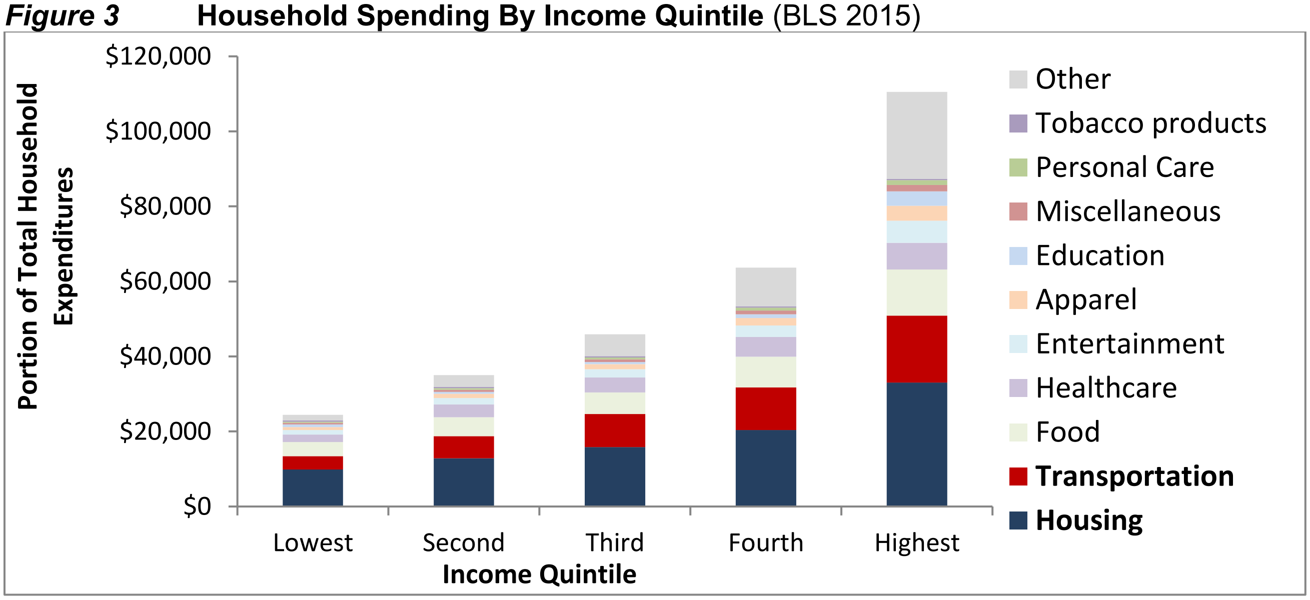
Figure 2 **Housing and Transport Expenditures** (BLS 2013)



Most households spend more on housing and transport than is considered affordable: 45% of income or expenditures.

The figure below shows average household expenditures by income quintile (fifth of all households). Housing and transportation are the largest expenditure categories.

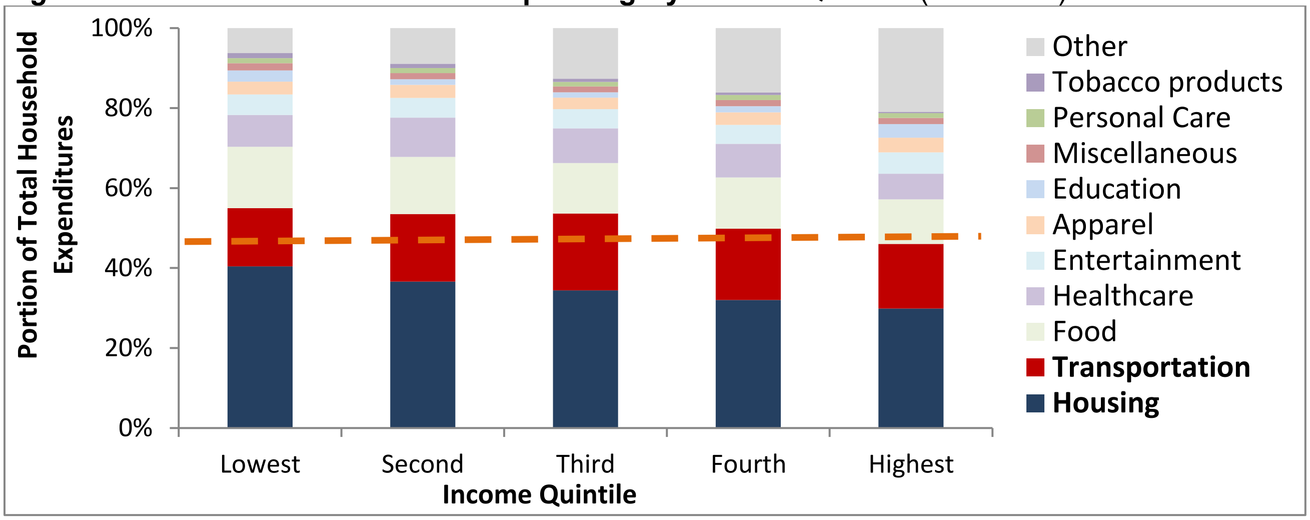
Figure 3 **Household Spending By Income Quintile** (BLS 2015)



This figure illustrates average household expenditures by income quintile (fifth of all households), highlighting the portion devoted to transportation and housing.

The figure below shows the *portion* of household budgets devoted to various spending categories. Housing and transportation costs are regressive, their share of household spending declines with income, and excepting the highest income quintile, all income classes spend more on housing and transport than is considered affordable (45% of total spending, indicated by the orange line).

Figure 4 **Portion of Household Spending By Income Quintile** (BLS 2015)

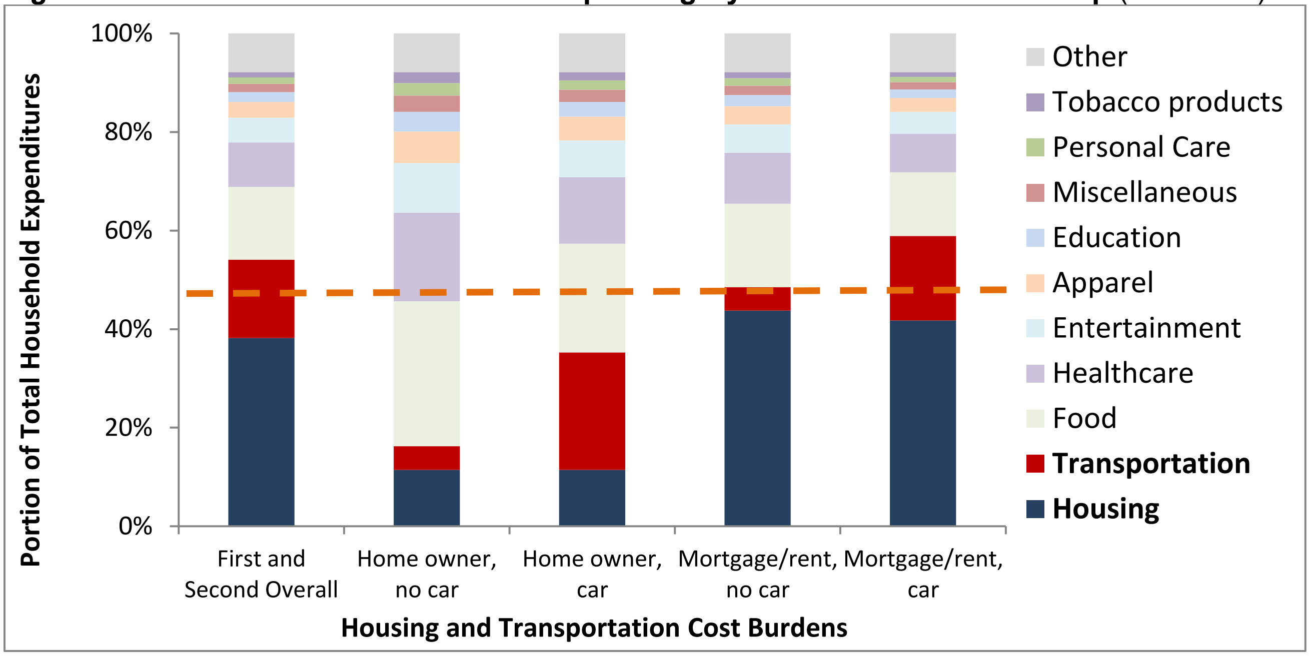


Housing and transportation are regressive: their share of household budgets decline with income, and are only considered affordable (less than 45% of total spending) for the highest income quintile.

These results are similar to findings in the major report, *Beyond Traffic 2045* (USDOT 2017, p. 101), which estimated that middle- and low-income American households spend about 40% of their incomes on housing and nearly 20% on transportation. On average, households spend about four times as much on housing and transport as they do on food, and six times as much as on healthcare. Similarly, Reene, et al. (2017) found that households in U.S. TOD station areas on average spent only 14% of their budget on transportation compared to 19% for households in transit-adjacent developments (TADs), providing $2,760 average annual savings. When lower-income households struggle to afford basic goods such as food and healthcare, the real cause is usually unaffordable housing and transport that leaves insufficient money for other goods. Small reductions in housing and transport costs can allow households to afford other essential goods.

Of course, actual spending varies depending on circumstances. Since approximately a third of lower-income households own their homes and a quarter are car-free (they own no vehicles), these average statistics understate the cost burdens on those that pay rents or mortgages, and own automobiles. The following figure shows spending by lower-income (average of First and Second income quintiles) households, assuming that home-owning households spend 70% less on housing, and car-fee households spend 70% less on transportation, than overall averages, and with adjustments to other spending categories based on their budget shares. For example, it assumes that home-owing households in these income classes spend only $3,408 annually on housing compared with the $11,361 overall average, and car-free households spend $1,422 on transport compared with the $4,741 overall average, leaving more money to spend on other goods, while rent/mortgage paying households spend $12,435 on housing, and car-owning households spend $5,104 on transport. This indicates that lower-income households that pay rents or mortgages and own a motor vehicle devote 59% of their budgets to housing and transport, 31% more than considered affordable.

Figure 5 **Lower-Income Household Spending By Home and Car Ownership** (BLS 2015)



This figure adjusts expenditures by the two lowest income quintiles to account for house and vehicle ownership, and therefore their housing and transportation cost burdens. It assumes that home-owning households spend 70% less on housing, and car-free households spend 70% less on transport than overall averages, with the savings redistributed to other spending categories based on their budget share. This indicates that lower-income households that rent or mortgage paying, car-owning households devote approximately 60% of their total household budgets to housing and transport, far more than the 45% considered affordable, leaving little money to spend on other essential goods.

Home Ownership and Affordability

Home ownership has both advantages and disadvantages. Owners gain stability and control over their property, and under favorable conditions can build financial equity (net wealth), but they lose mobility (the ability to relocate), incur additional responsibilities and costs, and in unfavorable conditions lose wealth. Considering all costs, ownership is generally more expensive than renting a comparable home, so households can often build more equity by renting a home and investing the savings. The disadvantages of ownership are particularly large for lower-income households.

Many current public policies, such as tax discounts and government home mortgage programs, favor home ownership over renting, which may lead lower-income households to purchase more expensive houses than they can afford, and to the degree that these policies favor single-family suburban housing, they can lead those households to spend more on transportation than is affordable. Excessive household spending on housing and transportation, and high home foreclosure rates, are indications of unaffordable house purchasing.

Some studies indicate that more compact development can reduce other consumer costs, by increasing retail agglomeration efficiencies and competition. Handbury and Weinstein (2014) found that the elasticity of consumer prices with respect to city size is -1.1%, indicating that each 10% increase in urban population reduces prices by 1.1%.

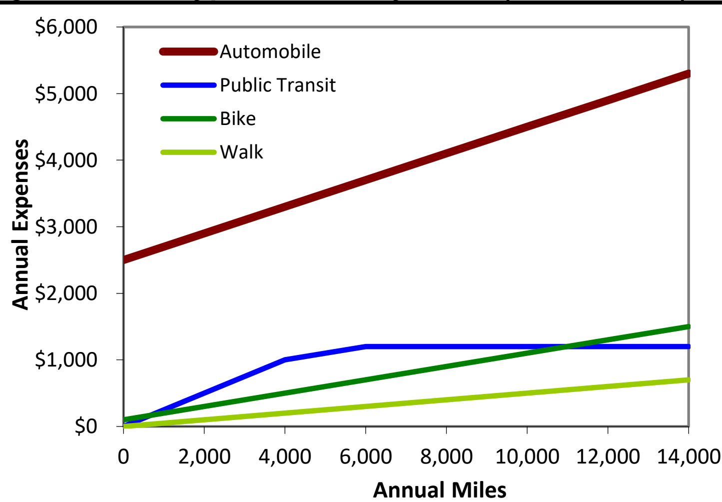
What is Accessibility?

Accessibility (or just *access*) refers to the ease of reaching services, activities and destinations, together called *opportunities*. Various factors affect accessibility (Litman 2013):

- *Mobility* – The ease and speed of motor vehicle travel.
- *Transport options* – The quality of walking, cycling, automobile, public transit and taxi services.
- *Prices* – direct costs of owning and operating automobiles, and public transport fares.
- *Transport network connectivity* – The quality of connections among paths, roads and modes.
- *Land use accessibility* – the geographic distribution of services and activities.
- *User information* – The ease of obtaining information on transport options.

Accessibility is evaluated using various indicators which reflect various perspectives (*Abogo*; Rodier and Spiller 2012). Conventional planning often evaluates transport system performance based primarily on vehicle traffic conditions using indicators such as roadway level-of-service and average traffic speeds. Newer indicators also consider other modes or measure the number of destinations that can be reached within a given travel time, taking into account both travel speed and trip distances, and therefore land use factors. Few of these indicators consider financial costs and therefore affordability (Litman 2007). If affordability is considered at all, conventional transport planning generally only measures vehicle operating costs, such as fuel prices and road tolls, and sometimes transit fares.

Figure 6 **Typical Costs by Mode (Litman 2007)**



Automobile travel is relatively expensive. It typically costs $2,000-4,000 in fixed expenses plus 20-30¢ per mile in operating expenses. Public transit fares average 25¢ per mile, or less for frequent users who purchase annual passes. Walking costs about 5¢ and cycling about 7¢ per mile in incremental costs (shoes and bikes). Affordable modes tend to be slower than driving and so require compact, mixed-use neighborhoods that minimize travel distances and maximize land use accessibility.

Of course, mobility needs and abilities vary. Some people can rely on walk, bike and use public transit more than others. Although lower-income motorists can minimize their costs by owning older, low-value vehicles, performing their own maintenance and repairs, and purchasing minimal insurance (sometimes driving uninsured), it is difficult to spend less than $3,200 annually to own and operate an automobile, and the older vehicles owned by lower-income motorists tend to be unreliable, so even vehicle-owning households need alternatives as fallbacks. As a result, transport affordability depends on the quality of affordable modes (walking, cycling and transit), and since these modes are relatively slow, they require compact development to minimize travel distances (Keough 2011). Neighborhoods that provide such accessibility are called *walkable*, *multimodal*, *new urbanist*, *smart growth*, *location-efficient*, or *transit-oriented*.

What is Inclusivity?

Inclusivity means that communities accommodate diverse people and activities, including children, seniors and people with disabilities and other special needs. Inclusivity planning requires balancing diverse goals including affordability, physical mobility and accessibility, economic opportunity, health and safety, plus recreation and fun for many types of people. References below provide guidance for inclusivity planning.

Information for Inclusive Planning

8-80 Cities (2021), *Building Better Cities with Young Children and Families*, 8080 Cities https://880cities.org/wp-content/uploads/2017/11/BvLF-8-80-Cities-Report-Final.pdf. Planning practices to engage our youngest citizens and families in city building: global scan of best practices.

AARP and CNU (2021), *Enabling Better Places: A Handbook for Improved Neighborhoods*, American Association of Retired Persons (www.aarp.org); at https://bit.ly/3v5Aeh0.

Kristin N. Agnello (2020), *Child in the City: Planning Communities for Children and Their Families*, Plassurban (https://plassurban.com); at https://plassurban.com/?page_id=859.

Kristin N. Agnello (2020), *Zero to 100: Planning for an Aging Population*, Plassurban (https://plassurban.com); at www.plassurban.com/wp-content/uploads/2019/05/Zero_to_100_age-friendly_Housing_final.pdf.

Child in the City (www.childinthecity.org) works to support children in cities, promote and protect their rights, connect people around these shared objectives and give a platform for the exchange of research results and good practices directed at the creation of child-friendly cities.

Cities for All (https://cities4all.org) is an international campaign to make all cities inclusive and accessible.

Gehl Associates (2018), *Space to Grow: Ten principles that support happy, healthy families in a playful, friendly city*, Gehl Institute (https://gehlinstitute.org); at https://bit.ly/3hETTk4.

Nikita Luke, et al. (2021), *What Makes a Child-Friendly City? Redesigning Safer and Healthier Urban Spaces for Young People*, City Fix (https://thecityfix.com); at https://bit.ly/33XEjrJ.

NACTO (2016), *Global Street Design Guide*, National Association of City Transportation Officials (www.nacto.org) and the Global Designing Cities Initiative (www.globaldesigningcities.org); at https://globaldesigningcities.org/publication/street-users.

Shane Phillips (2024), *Modeling Inclusionary Zoning's Impact on Housing Production in Los Angeles: Tradeoffs and Policy Implications*, Turner Center for Housing Innovation (ternercenter.berkeley.edu); at https://bit.ly/4gctfe1.

Geetam Tiwari (2014), *Planning and Designing Transport Systems to Ensure Safe Travel for Women*, Paper 2014-04, International Transport Forum (www.internationaltransportforum.org); at https://bit.ly/2S97dT8.

UNICEF (2017), *Child Friendly Cities Initiative*, United Nations Children's Fund (www.unicef.org); at https://s25924.pcdn.co/wp-content/uploads/2018/05/CFCI-handbook-NewDigital-May-2018.pdf.

Urban 95 (https://bernardvanleer.org/ecm-article/2018/urban95-creating-cities-for-the-youngest-people), asks, 'If you could experience the city from 95 cm – the height of a 3 year old – what would you do differently?'

What is Affordable-Accessible Housing?

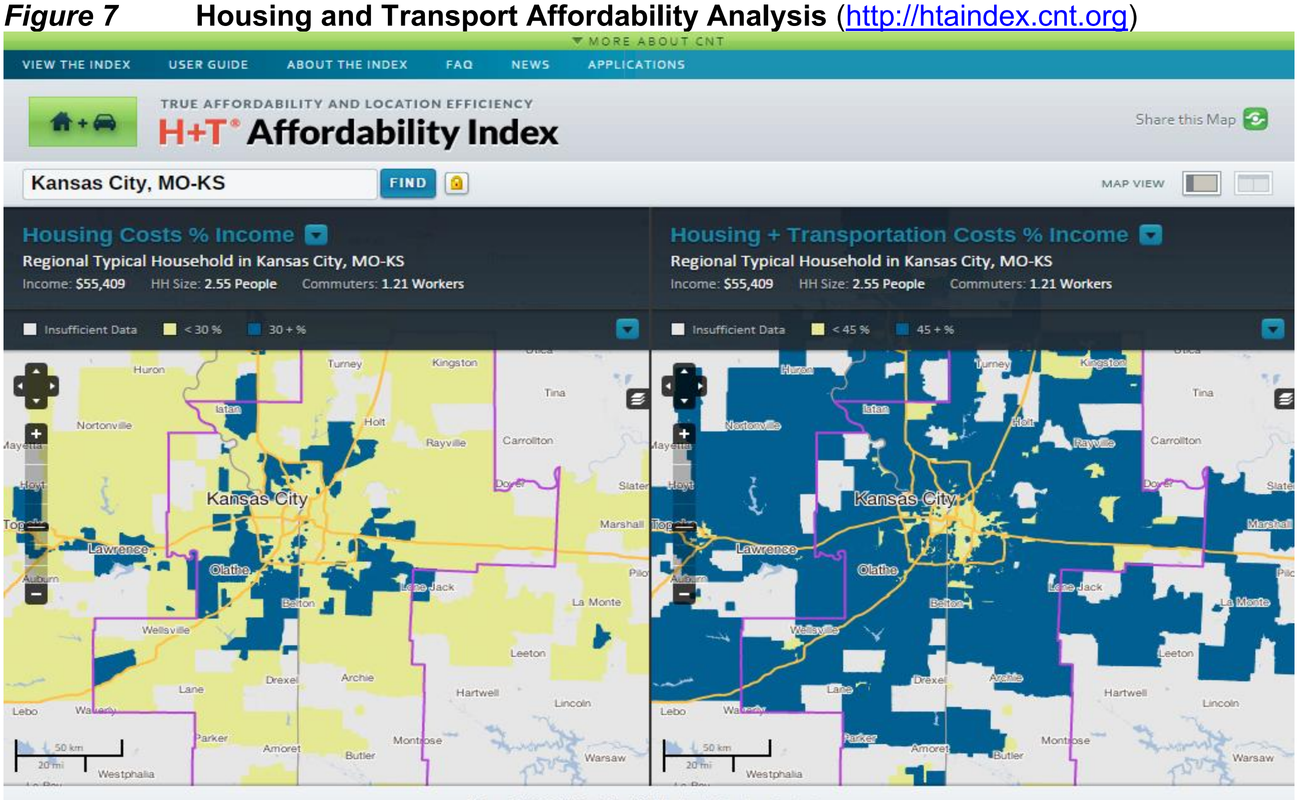
Affordable-accessible (also called *location efficient*) housing refers to lower-priced housing located in accessible, multimodal neighborhoods where residents can minimize their vehicle ownership and use. Affordable-accessible housing is the opposite of gentrification: it creates communities where diverse households live together. It generally needs a combination of the attributes listed in the box below

Affordable-Accessible Housing Attributes

- Diverse, adequate quality, inexpensive housing options.
- Unbundled parking (so households are not forced to pay for parking spaces they do not need).
- Durable and energy efficient buildings (minimal maintenance, repairs and basic utility expenses).
- Accessible (close to services) and multimodal (good walking, cycling, transit and carsharing) locations.
- Some units designed to accommodate people with disabilities.
- Universal design (transportation facilities and services accommodate people with disabilities).
- Housing and neighborhoods are safe and have good public services such as schools.

New tools, such as the *Housing + Transportation Affordability Index* (CNT 2015), the *Location Affordability Portal* (Ewing and Hamidi 2015; USHUD and USDOT 2015), and the *Location Matters* website (Burda and Singer 2015) measure combined housing and transport affordability for specific areas (illustrated below). Accessible, multimodal neighborhoods are generally most affordable overall. Housing foreclosure rates, an indicator of unaffordability, also tend to be lower in multimodal areas, indicating reduced financial risk, particularly for lower-income households (Amidan 2025; Gillen 2012; NRDC 2010; Pivo 2013).

Figure 7 **Housing and Transport Affordability Analysis** (http://htaindex.cnt.org)



Considering just housing costs, suburban and rural areas seem most affordable (yellow), but these areas have high transport costs. Considering both housing and transport costs, urban neighborhoods are most affordable overall.

Affordable-Accessible Housing Types

Various housing types are suitable for affordable-accessible development:

- *Small-lot single-family housing.* Stand-alone houses on 2,000 to 4,000 square foot lots.
- *Accessory units* (also called *secondary suites* or *granny flats*). Self-contained living units, with separate entrances, bathrooms and kitchens, within single-family homes.
- *Laneway houses* (also called *garage conversion*). Accessory units behind or next to a main house, sometimes above or replacing a garage.
- *Townhouses* (also called *rowhouses* or *attached housing*). Connected houses with shared walls but separate entrances.
- Multiplexes (two- to eight-unit attached homes).
- *Low-rise apartments*. Rentals or owner-occupied condominiums in 2-6 story, usually wood-frame buildings. These include various designs, such as courtyard and bungalow apartments.
- *Micro-apartments* (apartments less than 500 square feet).
- *Residential over commercial*. Apartments located above a store or other commercial space on the first and sometimes second floor of an urban building.
- *Industrial or commercial conversions*. Older buildings converted to residential uses, such as loft apartments.
- Housing developed on underused parking lots.

Figure 8 **Typical Affordable-Accessible Housing Types** (Litman 2011; Parolek 2014)


Small-lot single-family housing.


Accessory Units


Laneway houses


Duplex


Townhouses


Residential over retail

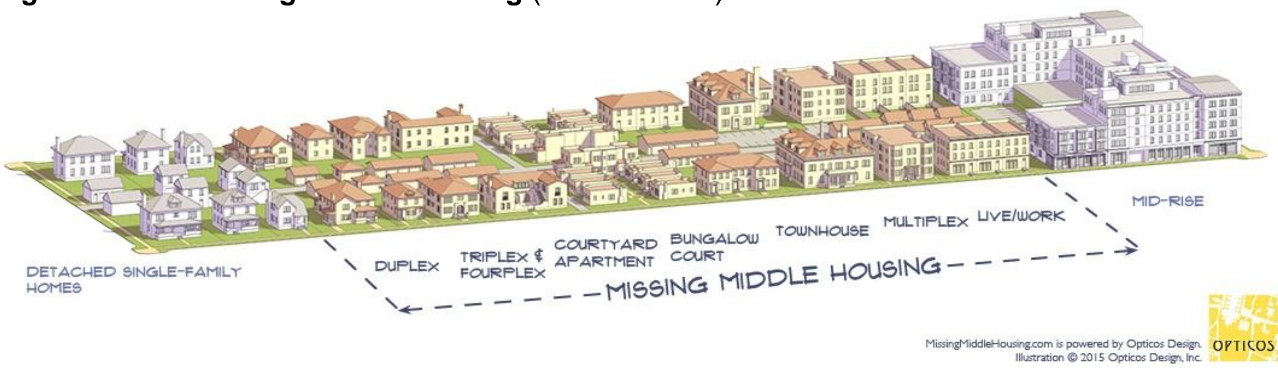

Low-rise Apartment


Loft apartments


High-rise Apartment

Most residential neighborhoods forbid or discourage construction of the lowest-cost housing types include townhouses, multi-plexes (two to eight units) and low-rise apartments, called *missing middle* housing since they are denser than single-family housing but less dense than high-rise (Burda and Collins-Williams 2015; Parolek 2014; Portland 2014; Vallianatos 2017), as illustrated below. These fit into the *Transect* concept, which defines specific development patterns for a range of zones that transition from rural to urban cores.

Figure 9 **Missing Middle Housing** (Parolek 2014)



Missing middle housing includes moderate-density, lower-cost housing types suitable for urban neighborhood infill.

In most North American cities a major portion of existing affordable housing consists of these housing types. Most were built prior to 1975, after which rising construction costs, less favorable tax policies, more restrictive zoning codes, higher parking requirements, and neighborhood opposition made such development financially unattractive. The report, *The Low-Rise Speculative Apartment* (Smith 1964), examined the economics of such development. Cecchini (2015) and Let's Go LA (2014) analyze factors that discourage such development, and potential policy reforms to make it more financially attractive. The *Housing Affordability Analysis Spreadsheet* (Litman 2015c) includes a section ("Apt Rent") which identifies the minimum rents needed for such projects to be successful; input values can be adjusted to test how different building types and conditions affect the business case for smaller, new apartment buildings. Various planning reforms allow lower-priced housing to be built (Sightline Institute 2016).

Figure 10 **Examples of Lower-Cost Apartments**

Most cities have many examples of small, lower-cost apartments that fit into residential neighborhoods but can no longer be built due to stricter regulations.

Housing and Transportation Cost Analysis

This section discusses specific factors that affect housing and transport costs. Also see Fisher (2016); Ford (2009); Hogan (2014); Hoyt and Schuetz (2020); Klein (2022); Lewis (2016); Turner Center (2018); Urban Institute (2016).

Land

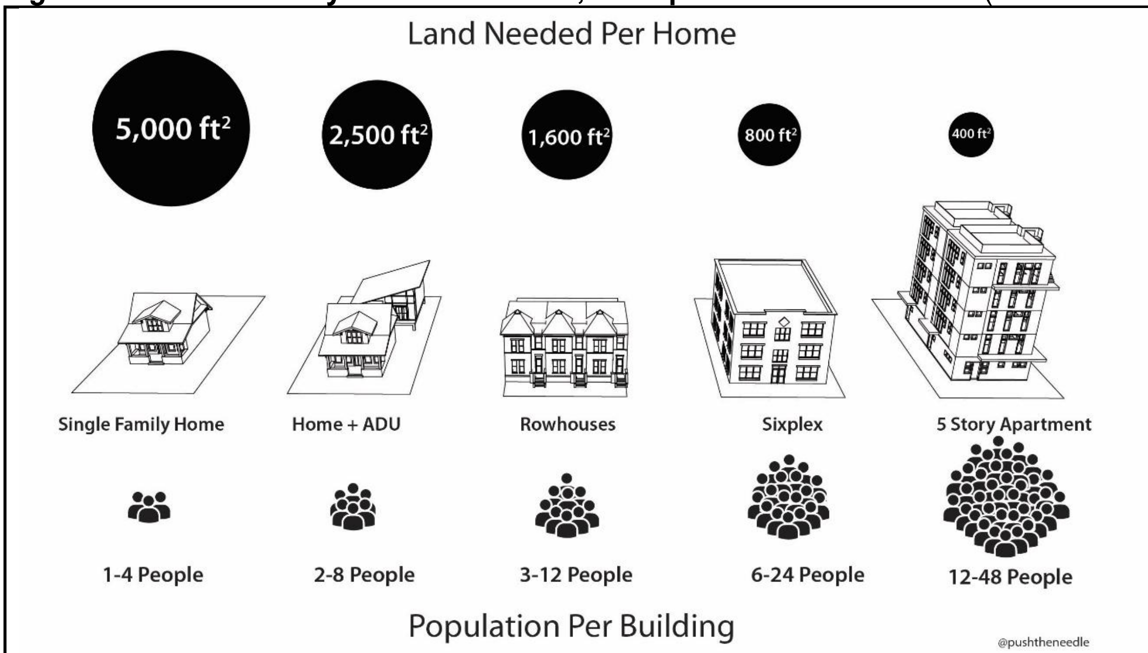
Land costs per housing unit depend on land prices (dollars per acre or hectare) times land consumption per unit (the inverse of density). Land prices vary significantly with higher prices in denser and more attractive neighborhoods. High land prices encourage higher density development resulting in relatively constant land costs per housing unit: urban neighborhoods typically have 4-8 times higher land prices and densities as suburban area. The following table and figure compare typical land consumption for various housing types.

Table 3 **Typical Densities and Land Consumption by Housing Type**

	Large-lot Single-family	Medium-Lot Single-Family	Small-Lot Single-Family	Attached (Townhouses)	Mid-Rise Multi-Family	High-Rise Multi-Family
Stories	1-3	1-3	2-3	2-3	4-8	Over 8
Units/acre	Less than 2	2-5	5-10	15-30	20-60	Over 50
People/acre	Less than 5	4-15	10-30	20-60	40-120	Over 100
Sq. feet per unit	35,000	15,000	6,000	3,000	1,200	700

Building size and per unit land consumption vary significantly depending on housing type.

Figure 11 **How many Homes Does a 5,000 square-foot Lot Create?** (DiRaimo 2021)



The number of people per parcel or per square foot of land varies wildly depending on housing type.

Missing Middle housing types are five to twenty times more efficient as single-family housing.

Land prices also tend to increase with accessibility, representing the capitalized value of transportation cost savings. Urban land price increases can be minimized with policies described later in this report, including land value taxes, affordable housing inclusionary zoning, windfall gains taxes, and broadly distributed upzoning so higher densities are allowed in many locations rather than just a few parcels.

Planning, Approval and Development Fees

Development incurs various approval requirements and fees, for example, for utility and stormwater connections, sidewalks and traffic impact studies and fees, which can total tens of thousands of dollars per unit (Zielinski 2023). Project planning and approval, often called *soft costs*, add expenses, delay and uncertainty which increase total costs. These can be particularly significant because they occur early during the development process and so have relatively high borrowing costs (Glaeser and Ward 2008). McLaughlin (2016) found that every month of building permit approval delay reduces the long-run housing supply elasticity (the increase in new housing in response to increased hosing prices) by 0.03.

Site Preparation

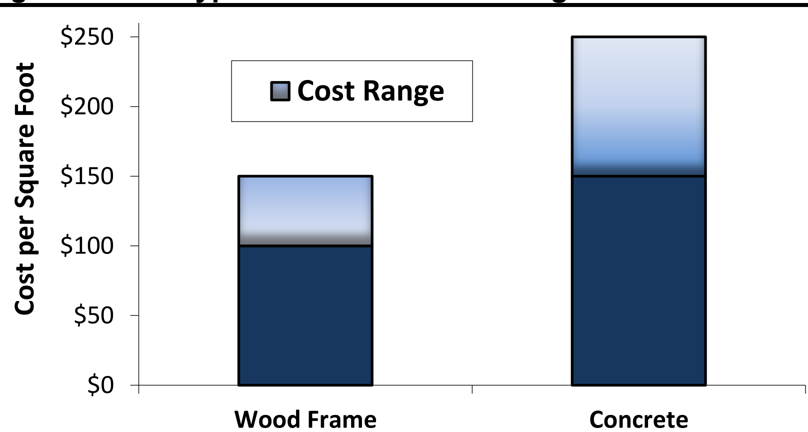
Site preparation *hard costs* include ground preparation, retaining walls, driveways, utility connections, etc. Under favorable conditions these can be as low as 10% of construction costs, but are often higher due to planning requirements and fees. Large-scale development can minimize soft costs due to economies of scale, although urban-fringe development may have high costs for infrastructure such as driveways, utility lines, water and sewage. Some jurisdictions impose development fees to cover off-site public costs, such as road and utility network expansions. Unit costs are often high for small scale infill projects due to high planning and design requirements, and sometimes demolition and brownfield cleanup expenses.

Construction

Construction costs vary by building type and materials, location, business cycle (costs increase during booms), design, materials, and amenities (ICC 2015). A number of strategies are often proposed to reduce these costs, including smaller homes, modular construction and use of shipping containers, but the savings are often modest and they can introduce new problem including occupant dissatisfaction, construction problems and design limitations (Atler 2015; LaTronica 2016).

Low-rise wood-frame housing tends to have the lowest construction cost. Mid-rise podium construction, with one to three stories of concrete beneath two to six stories of wood-frame, tends to have moderate construction costs (Braunstein 2016). The figure below compares wood frame and concrete construction costs, although this does not account for some additional costs for taller buildings such as elevators and extra fire protection (sprinklers and fire escapes). Urban development often involves trade-offs between the lower unit land costs but higher construction costs of taller buildings: high rise can generally be justified where land costs are several million dollars per acre, where land prices are lower, low-rise, wood-frame or podium buildings, are generally most affordable.

Figure 12 **Typical Residential Building Construction Costs** (ICC 2015)



Wood frame buildings tend to have the lowest construction costs, typically $100-150 per square foot, compared with $150-250 for concrete, but concrete buildings can be taller, which reduces land costs, and so becomes cost-effective where land prices are high.

Several factors can increase construction costs:

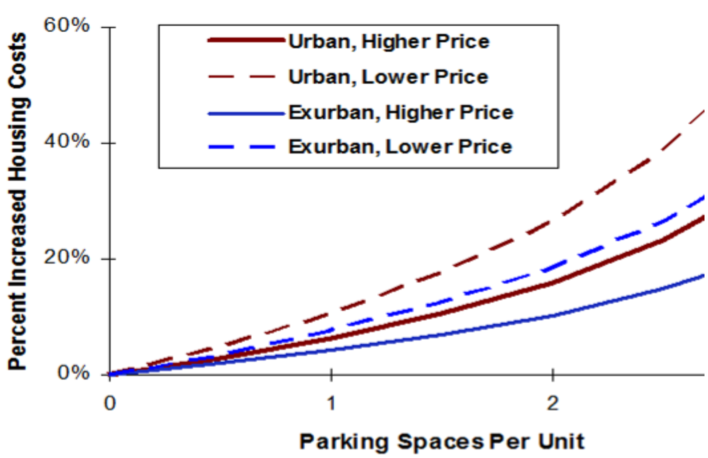
- High-rise construction requires more expensive foundations, structures and services such as elevators, which require more sophisticated skills that increase labor costs.
- Energy efficient design, such as increased insulation, better doors and windows, and more efficient mechanical systems (heating, water heaters, lighting, etc.). These costs are often repaid over time through future savings.
- Improved aesthetics (more attractive design, materials and landscaping).
- Improved safety features such as fire resistant materials, fire escapes, smoke and carbon monoxide alarms and seismic security (earthquake resistance).
- Universal design (ability to accommodate people with diverse needs, including wheelchair users), which requires wider doors and hallways, stairway ramps, and elevators (commercial building elevators typically cost $50,000-300,000 each)

Some of these features provide long-term savings and benefits, so many house buyers will demand them and willingly pay the higher price, but regulations that require such features can increase construction costs and may reduce housing affordability.

Parking Facility Costs

Parking lots, driveways and garages add land and construction costs. Construction costs typically range from $5,000 per space for surface parking up to $60,000 for structured or underground spaces, plus operating costs. Parking lots and driveways often consume more land than is devoted to buildings. Parking costs are relatively modest for higher-priced housing, but can significantly increase total costs of lower-priced housing in high land price areas, illustrated below, so minimum parking requirements are a major deterrent for affordable-accessible housing (Hurd 2014; Portland 2012). Lower-income households in accessible locations have low vehicle ownership rates and so need relatively few parking spaces. Since each driveway eliminates one on-street parking space, off-street parking requirements often result in little or no increase in total parking supply. Various management strategies can help reduce the number of parking spaces needed, such as sharing parking facilities among various users, efficient pricing, unbundling (renting parking spaces separately from housing, so instead of renting an apartment with two “free” parking spaces, occupants pay $800 for the apartment and $100 for each parking space), improved regulation, and carsharing can help reduce the number of parking spaces needed to serve a residential development.

Figure 13 **Increased Per Unit Housing Price Due to Parking Costs** (Litman 2024)



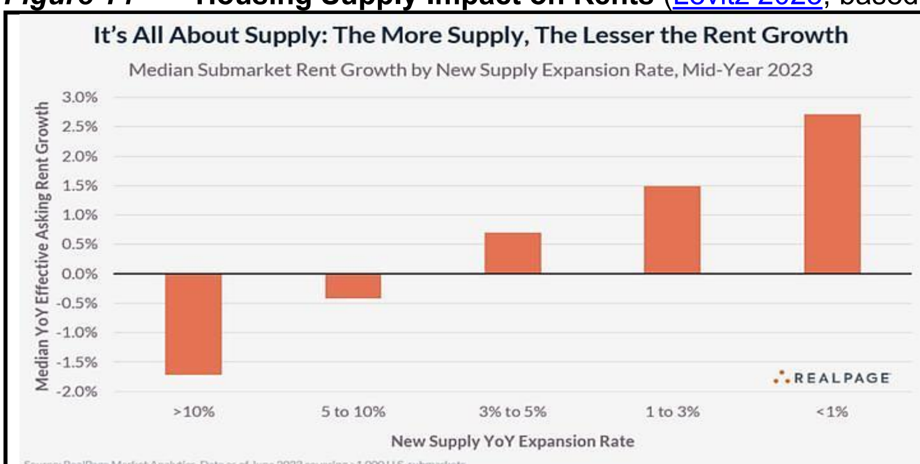
This figure shows parking costs as a percentage of development costs for various housing types. The percentage is greatest for lower price urban housing. As a result, high parking requirements in zoning codes are often a major deterrent to affordable-accessible housing development.

Transaction and Financing Costs
In North America, real estate agent fees and transfer fees and taxes together often total more than 10% of home sales prices, which is much higher than in most other developed countries (The Economist 2020). Land acquisition, planning, site preparation and construction costs occur months or years before a project is completed and so require construction financing, which tends to have relatively high rates. Even modest additional costs or delays early in the development process can significantly increase final housing prices; a $10,000 expense or six month delay early in the development process can add $20,000 to final housing prices. Low-priced infill projects tend to be particularly sensitive to these costs because developers are often smaller firms, and buyers often have weaker credit ratings, resulting in higher interest rates.

Housing Supply and Age
Building more moderate-priced housing tends to increase both moderate- and low-income affordability, through *filtering*, as some households will move from lower- to higher-priced units (Been, Ellen and O'Regan 2019 and 2023; Myers and Park 2020; Millsap 2023; Zuk and Chapple 2016).

A study that compared parcels with various allowable densities in Portland, Oregon found that both upzoning and higher density zoning led to significantly greater development and more housing supply than in areas with lower allowable densities (Dong 2021). A study by economist Evan Mast (2019), described in *The Connectedness of Our Housing Ecosystem* (Herriges 2019), tracked the previous residences of the occupants of 802 new multifamily developments in 12 North American cities, and the previous residences of the households that replaced them, through six cycles. It found that building market-price apartments causes a kind of housing musical chairs, as households move into new units. This analysis indicates that for every 100 new market-rate units built, approximately 65 units are freed up in existing buildings nearby, accommodating up to 48 moderate- and low-income families. Another major study, *Do New Housing Units in Your Backyard Raise Your Rents?* found that in New York City, each 10% increase in multi-family housing stock reduces rents and sales prices within 500 feet by 1% (Li 2019).

Figure 14 **Housing Supply Impact on Rents** (Levitz 2023, based on Parson 2023)



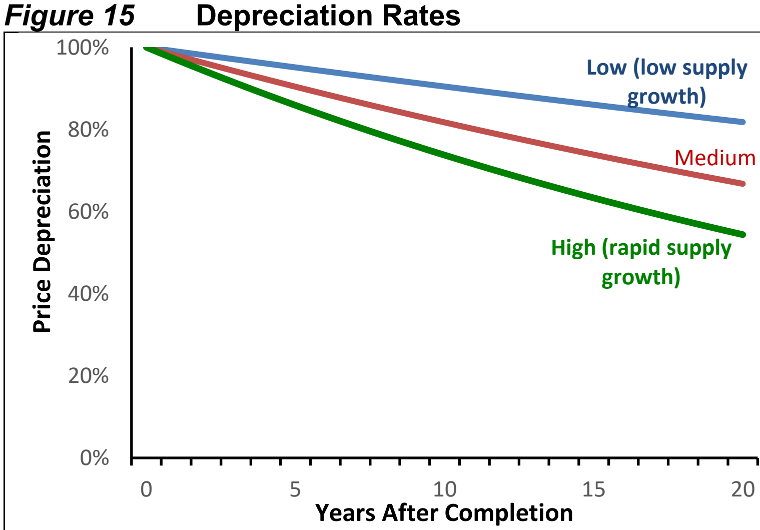
This and other studies show that rents tend to decline or increase at lower rates in areas where more rental housing is developed.

A 2023 study found that housing supply increased more, apartment rents increased much less (less than overall inflation) in growing cities that reformed development policies to encourage affordable infill (Horowitz and Canavan 2023). The study found that 2017 to 2023 rent inflation averaged 1% in Minneapolis; 7% in New Rochelle, New York; 2% in Portland, Oregon; and 4% in Tysons, Virginia, compared with 31% in the U.S. overall. For example, before 2018, New Rochelle only permitted an average of 37 new homes annually, but after rezoning the downtown area to allow apartments the annual permit average increased to 989. Although rents rose 12% from 2017 to 2020, they declined 5% from 2020 to February 2023 as more homes became available. Although rents remain fairly high in these four cities, they are certainly lower than would occur had they not allowed more housing. The fact that rents grew faster, often much faster, in nearby towns and cities, shows that no city can solve regional housing affordability on its own; this suggests that federal, state or provincial incentives are needed to achieve overall affordability goals.

Myers and Park (2020) found that in the hundred largest U.S. metropolitan regions between 1980 and 2018, increases in moderate-priced apartment supply increased affordability for very low-income households (earning less than 50% of area median incomes) through filtering. In years when more housing was built more lower-priced housing units became available and as properties grew older, their rents and residents' average incomes declined. A total of 69,000 additional low-income occupied units were generated annually between 2000 and 2006, more than three times the 22,000 units added annually by federal apartment subsidy programs, with another 92,000 low-income units added annually through low-income housing tax credit subsidies. From 1990 to 2011 filtering increased the low-income occupancy share by an added 11.3% of 1960s-built apartments, 8.6% of 1970s-built apartments, and 10.3% of 1980s-built apartments. From 2011 to 2018, when fewer new apartments were built, the low-income share declined by 3.8% to 6%. As new construction declined, so has affordability. As one study author explained, "In decades past it was the substantial flow of new construction, largely targeted to middle- and higher-income groups, that enabled the filtering process to operate. In the face of its current constriction, well below levels normally associated with employment growth, we gain fresh appreciation for the broader benefits of housing construction."

Most affordable housing consists of older homes that have depreciated in value. Housing typically depreciates 1-3% annually, accounting for overall inflation, with higher rates for rental than owner-occupied (Rosenthal 2014). For tax purposes, residential rental property is typically depreciated at 3.6% annually for 27.5 years. Depreciation rates are lower if housing supply grows slower than demand and increase as supply grows relative to demand, as illustrated below. As a result, housing affordability depends on housing construction rates relative to housing demand (which is affected by changes in households and incomes) during the previous decade: to increase future housing affordability, build lots of basic housing now.

Figure 15 **Depreciation Rates**



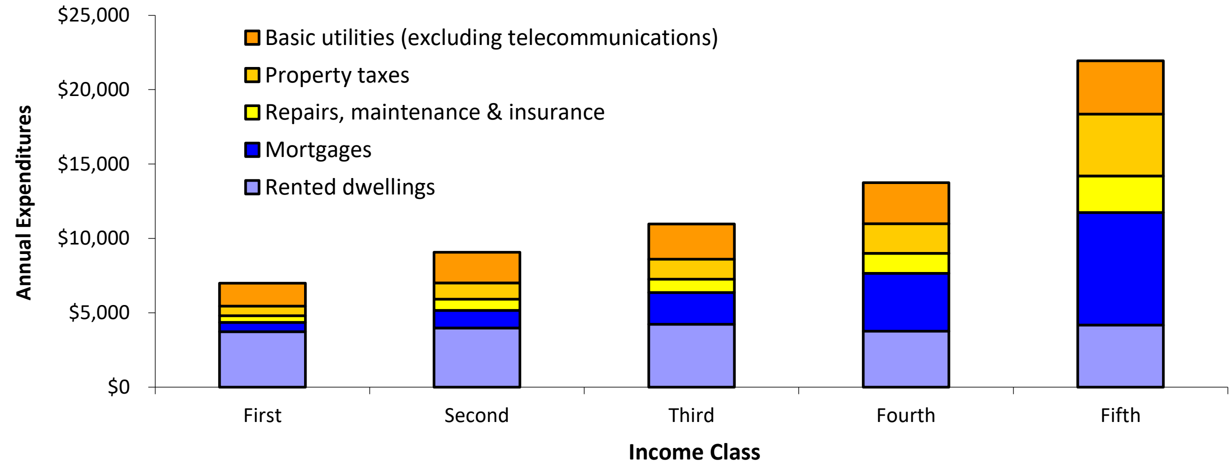
Housing typically depreciates 1-3% annually, depending on market conditions. Depreciation rates are slower If housing supply grows less than demand, and increases if supply growth is higher relative to demand.

In this way, increasing middle-priced housing supply helps increases affordability even if the new units are initially more expensive than lower-income households can afford.

Housing Operating Expenses (Taxes, Insurance, Maintenance, Repairs and Basic Utilities)

Housing operating expenses include property taxes, insurance, basic utilities (water and power), repairs and maintenance, plus condominium and homeowner association fees. The figure below illustrates these expenses. Rent or mortgages typically represent 55-65%, and operating expenses 35-45%, of total housing costs. For every dollar that first and second income quintile households spent on mortgages they spent 17¢ on property taxes, 12¢ on repairs, maintenance and insurance; and 37¢ on basic utilities. These costs are regressive and increasing (McCue 2025). Kontokosta, Reina and Bonczak (2019) found that lower-income households devote 7% of their budgets to energy, three times higher than high-income households.

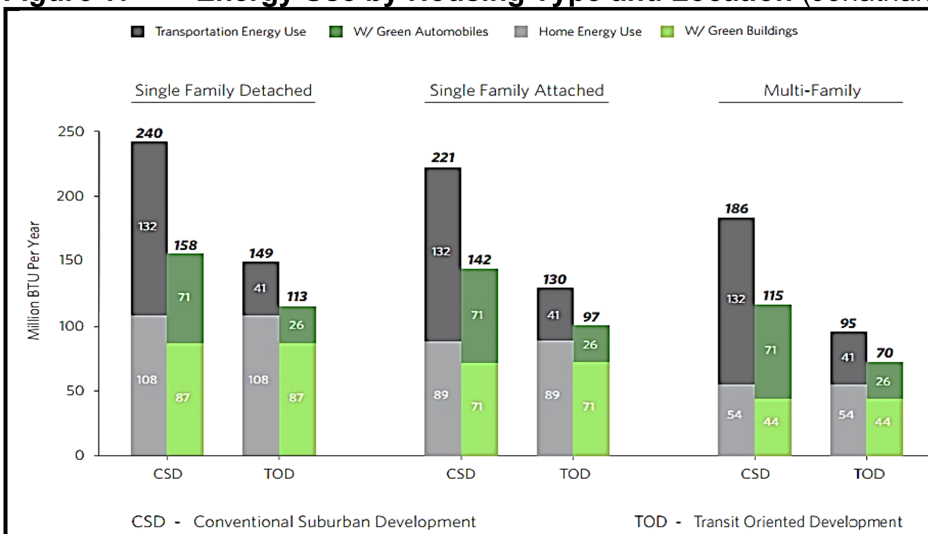
Figure 16 **Housing Expenditures by Income Class** (BLS 2012)



More than a third of housing expenditures are devoted to operating costs including maintenance, repairs, insurance, property taxes and basic utilities. These costs tend to be high for older and larger houses.

Apartment residents use about half as much energy for heating, cooling, lighting and appliances as single-family homes, as illustrated below, due to a combination of smaller households, smaller homes, shared walls and more efficient utilities. Additional savings can be achieved with more efficient transport and buildings.

Figure 17 **Energy Use by Housing Type and Location** (Jonathan Rose Company 2011)



Single-family houses consume 108 million British Thermal Units (BTUs) for heating, cooling, lighting and appliances, 21% more than the 89 million BUTs used in attached single-family (i.e., townhouse) homes, and twice the 54 million BTUs used to operate multi-family (condominiums and apartments) homes.

Additional energy savings can be achieved by locating in a transit-oriented development and by using "green building" design.

Rents and condominium fees incorporate many operating expenses including maintenance, repairs and sometimes utilities. Condominium fees typically range from 20-50¢ per square foot, and average of $236 per month overall (Table C-10-00, U.S. Census 2015). Rental property managers typically charge about 10% of rents to cover administration.

Repair, maintenance and utility costs tend to increase with building size and age, and so are often high for inexpensive older houses. Although lower-income homeowners often perform some of their own home maintenance and repairs, they generally require professional help for major projects. Older houses typically require $2,000 to $5,000 annually for maintenance and repairs, and $2,000 to $4,000 annually for basic utilities, depending on size, fuel and climate. Property insurance tends to be lower in urban than rural areas due to faster emergency response times and professional fire departments. As a result, older, low-priced single-family houses often have $4,000-8,000 higher operating costs than newer housing. Energy efficient houses tend to have significantly lower foreclosure rates indicating that house operating costs affect affordability and economic security (Kaza, Quercia and Tian 2014).

Household Transportation Costs

On average, lower-income (first and second income quintile) households spend $4,200-5,000 annually on transportation (BLS 2012; "Table S-O4C-AO" US Census 2013), or about 16% of total household expenditures, but this varies significantly depending on travel patterns. Households can spend less than $1,000 on local travel if they rely primarily on walking and bicycling, or less than $2,000 if they must also purchase monthly transit passes. Although lower-income motorists use various strategies to minimize their vehicle costs, such as purchasing older vehicles and performing their own maintenance when possible, they typically must spend at least $3,000 annually to own and legally operate a low-annual-mileage vehicle, and $5,000 if they drive high annual miles. As a result, transport affordability depends on households' ability to minimize vehicle ownership, for example, sharing a vehicle among multiple drivers or being car-free.

They quality of non-automobile accessibility options affects people's ability to reduce their vehicle ownership and associated expenses. Transportation affordability therefore depends on the quality of walking and cycling conditions, the quality of public transit and taxi services, and land use accessibility factors such as density, mix and connectivity (Brookings Institute). Table 4 illustrates how location affects the transport expenditures of a typical low-income, two-adult household. Households located in compact, multimodal neighborhoods tend to own fewer vehicles, drive less and spend much less on transportation than they would in sprawled, automobile-dependent areas (Ewing and Hamidi 2014; USHUD and USDOT 2015). Not all households minimize their transport costs: many own more vehicles and drive more than necessary (Smart and Klein 2018), but households can take advantage of cost savings opportunities if available.

Table 4 **Two-Adult, Low-income Household Transportation Costs Example**

	City Center	Urban	Suburban	Exurban
Motor vehicles	0	1	1-2	2
Vehicle expenses (ownership, rentals and taxis)	$500	$3,200	$5,600	$9,600
Other transport expenses (walking, cycling, transit)	$1,000	$800	$400	$400
Total transport expenses	*$1,500*	*$4,000*	*$6,000*	*$10,000*
Transport portion of $20,000 total income	7.5%	20%	30%	50%

Because automobiles are costly, households can save by locating in compact, multimodal neighborhoods where vehicle ownership can be minimized.

Housing and Transportation Costs Summary

Table 5 summarizes factors that affect housing and transportation cost.

Table 5 **Housing and Transport Cost Factors**

Category	Description	Typical Values
Land	Raw land costs.	Costs range from a few thousand dollars per acre in rural areas up to millions of dollars per acre in city centers. Costs per housing unit decline with density.
Site preparation	Planning and site preparation include design, permits, fees, retaining walls, sidewalks, driveways and utility connections.	Typically 10-30% of construction costs
Construction	Costs of constructing houses.	Woodframe $100-150/sf; concrete $150-250/sf., depending on conditions and quality
Parking	Costs of building driveways and garages.	From $5,000 per space for surface parking up to $60,000 for underground, plus land and operating costs
Finance	Costs of financing development and ownership.	Construction finance 6%, ownership finance 5%
Age	Buildings depreciate in value over time.	Prices decline 1-2% annually, depending on markets
Operating expenses	Property taxes and insurance, repairs, maintenance, condo fees, and basic utilities.	20-60% of mortgages. These costs tend to increase with building value, size and age.
Rental mgmt.	Rental property management costs.	10% of rents.
Transport	Incremental vehicle ownership and operation, public transit and taxi fares.	From less than $1,000 in accessible, multimodal up to $10,000 in sprawled, automobile-dependent areas.

This table summarizes the various housing and transport costs.

Various tools can be used to evaluate the total costs of various housing options, including the *Housing and Transportation Affordability Index* (http://htaindex.cnt.org), which accounts for both housing and transport costs, the *L-Cycle* (www.housingpolicy.org/lcycle) rental housing lifecycle costing tool, and the *Envision Tomorrow Prototype Model* (www.envisiontomorrow.org/enhanced-roi). The *Affordable-Accessible Housing Analysis Spreadsheet* (www.vtpi.org/Aff_acc_hou.xls), developed for this study, indicates how factors such as land prices, density, building size, operating expenses, and transport expenses affect total costs and affordability. The table and figure below illustrate typical costs of various new urban housing types.

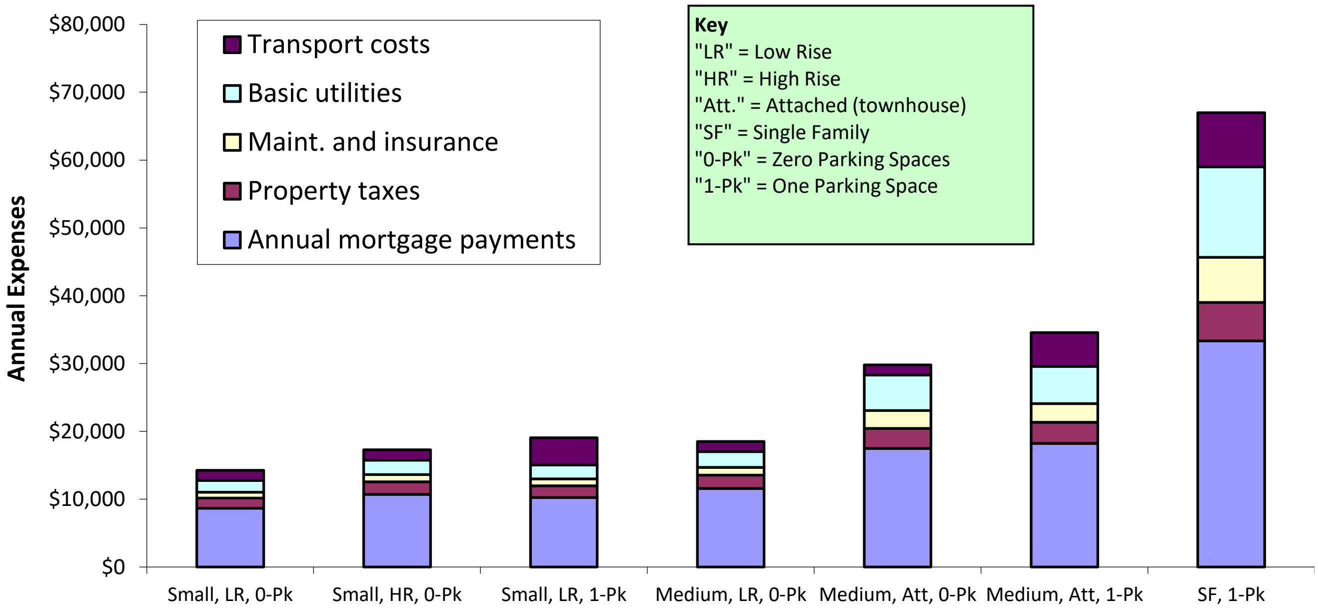
Table 6 **Annual Housing and Transport Expenses for New Urban Housing** (Litman 2015c)

	Small, LR MF, 0-Pk	Small, HR MF, 0-Pk	Small, LR MF, 1-Pk	Med., LR MF, 0-Pk	Med., LR Att., 0-Pk	Med., LR, Att., 1-Pk	Small SF, 1-Pk
Mortgage	$8,684	$10,727	$10,246	$11,579	$17,466	$18,247	$33,332
Property taxes	$1,476	$1,824	$1,742	$1,968	$2,969	$3,102	$5,667
Maint. and insurance	$868	$1,073	$1,025	$1,158	$2,620	$2,737	$6,666
Basic utilities	$1,737	$2,145	$2,049	$2,316	$5,240	$5,474	$13,333
Transport Costs	$1,500	$1,500	$4,000	$1,500	$1,500	$4,000	$4,000
Total	*$14,266*	*$17,269*	*$19,061*	*$18,521*	*$29,795*	*$33,560*	*$62,998*
Minimum Income	***$31,702***	***$38,375***	***$42,358***	***$41,159***	***$66,212***	***$74,578***	***$139,996***

This table summarizes total housing and transportation expenses for various types of new urban housing types, and minimum monthly incomes needed for this to be affordable (45% of income). Key: see Figure 11 (next page).

This analysis indicates that the lowest-priced new urban housing usually consists of low-rise multi-family apartments, either rented or owned (cooperatives or condominiums). For example, this indicates that it is possible to spend $14,266 annually on housing and transport for a new 600 square-foot apartment, and $21,820 annually for a 1,000 square-foot apartment, provided they are located in an accessible, multimodal area where residents need not own a car. However, such housing is illegal to develop in most neighborhoods: it is too dense and lacks required parking spaces.

Figure 18 **Urban Housing and Transport Costs**



This graph compares housing and transport costs for various new housing types. Low-rise, multi-family housing has the lowest costs, particularly if it has zero parking. Such housing is often prohibited or burdened with various development costs, which makes new housing unaffordable to most lower-income households.

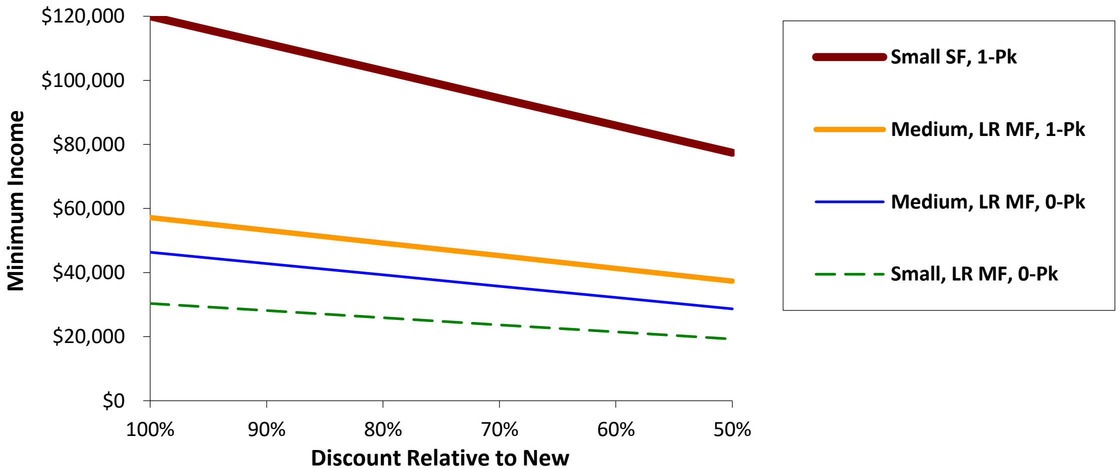
Additional development expenses and delays add relatively more to the ultimate price (what residents pay to purchase or rent) of inexpensive infill housing than to more expensive housing built in large-scale developments, as described in the box below. Affordable-accessible housing development therefore requires minimal and predictable development costs, fees and delays.

Following a Nickel Through The Development Process
Many development costs are multiplicative: financing, most taxes, sales commissions and developer profit targets (the profit developers must earn, on average, to justify investments) are all proportionate to project costs. As a result, each additional dollar of development cost adds more than a dollar to the ultimate prices that consumers pay for housing, and because many costs rely on borrowed money, project delays increase housing prices and reduces affordability.

For example, a $50,000 planning study for a ten unit project directly costs $5,000 per unit, but because it occurs early in the development process it incurs 3-6% annual construction financing costs, 10% real estate transaction taxes and fees plus 10-20% developer profits and sales commissions, adding $10,000 in total costs, which raises the minimal possible retail price from $150,000 to $160,000. Similarly, a planning regulation that delays a project by a year can add thousands of dollars per unit in additional financing and development costs.

In normal markets, most affordable housing consists of older housing with prices driven down by continual development of new homes (figure below), depreciation increases if more housing is constructed (Taylor 2016), so failure to build new moderate-priced housing reduces future housing affordability.

Figure 19 **Minimum Income Required By House Age**

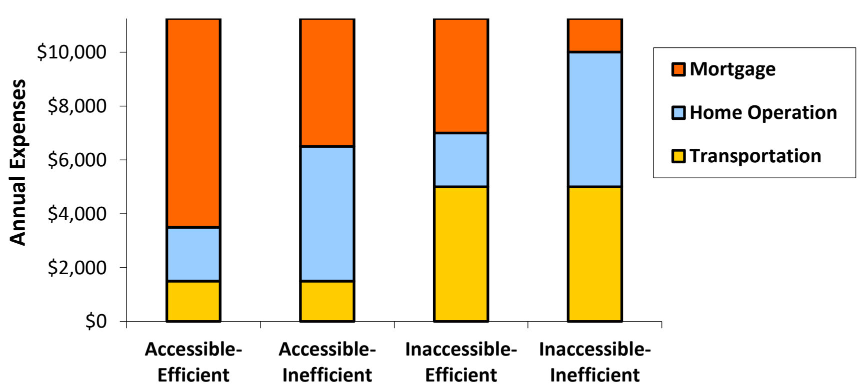


In a normal market, housing prices decline 1-2% annually, so 20-40 year old housing provides inexpensive housing.

Some households have special needs that require subsidized housing, but most factors discussed previously also affect social housing development costs. For example, charities can usually build more housing units within a given budget if allowed higher densities and fewer parking spaces than zoning codes currently allow, and occupants save on transport if their housing is located in accessible, multimodal neighborhoods.

A key finding of this research is that housing operation and transportation costs vary widely. For example, annual operating expenses range from about $2,000 for an efficient (well insulated and maintained) apartment or townhouse to more than $5,000 for an inefficient single-family house, and annual transport costs range from $1,500 in an accessible location to more than $5,000 in a sprawled, automobile-dependent location. A household with $25,000 annual income can afford to spend $11,250 on housing and transport; an inefficient house in an automobile-dependent location leaves just $1,250 for mortgages, as illustrated below.

Figure 20 **Affordability by Housing Condition and Location**



A household with a $25,000 income should spend up to $11,250 annually on housing and transport. This is only possible with efficient housing that minimizes operating expenses located in an accessible neighborhood that minimizes transport costs. Affordability indicators that ignore these factors encourage households to purchase less efficient and accessible housing tan is optimal overall.

Table 7 summarizes an affordability analysis example for a 12-unit apartment built on a 6,000 sq-ft. lot. This indicates that under favorable conditions (moderate land prices, low construction costs and minimal parking requirements), new 750 square foot apartments could rent for less than $1,400 per month, and 10-20% less if developed by a charitable organization, which eliminates real estate transaction and profit costs, making them affordable to many lower-income household if located in a neighborhood with low transport costs.

Table 7 **12-Unit Apartment Building Financial Analysis** (Litman 2015c)

	Total	Per Unit
Parcel size (square feet)	6,000	
Stories	3	
Units	12	
Parking spaces	4	
Parking space construction costs	$5,000	
Total building size (interior square feet)	10,000	
Construction costs (per square foot)	$120	
Land development costs (relative to construction)	15%	
Construction finance (interest rate)	6%	
Developer's profit target	10%	
Real estate marketing, fees and commission	10%	
Long-term finance (interest rate)	5%	
Long term loan duration (years)	30	
Building Construction Costs		
Building space (square feet)	*10,000*	*750*
Building lot coverage	*56%*	
Floor Area Ratio (FAR)	*1.67*	
Land costs	$300,000	$25,000
Demolition	$30,000	$2,500
Land development costs	$180,000	$15,000
Construction	$1,200,000	$100,000
Parking costs	$20,000	$1,667
Carrying Costs	$103,800	$8,650
Developer profit	$183,380	$15,282
Total Development Costs	*$2,017,180*	*$168,098*
Real estate marketing, fees and commission	$201,718	$16,810
Total retail price	**$2,218,898**	**$184,908**
Rental Costs		
Monthly mortgage payment (100% financed)	$12,029	$1,002
Operating costs (percentage of mortgage)	30%	
Occupancy rate	95%	
Owner annual profit target	10%	
Minimum rent	**$16,460**	**$1,372**
Transportation Costs		
Vehicles owned		0
Fixed costs (per vehicle year)		$3,500
Annual vehicle travel (vehicle-miles)		3,000
Variable costs (per vehicle-mile)		$0.25
Public transit and taxi fares (annual)		$1,000
Other transportation expenses		$100
Total transportation expenses		**$1,850**
Affordability		
Minimum income for less than 30% on rent		**$4,572**
Min. income for less than 45% on rent & transport		**$3,391**

*This table illustrates the development costs, rents and affordability of a three-story, 12-unit, apartment building on a 6,000 square foot lot, using the "Apt Rent" tab of the "*Housing Affordability Analysis Spreadsheet.*" Developers and building owners could cover all costs and earn 10% annual profits, making this a worthwhile investment.*

When new, these units would be affordable to moderate-income households if located in accessible areas with minimal transport expenses, and can become affordable to lower-income households if enough are built to help reduce rents in older buildings.

Regulatory Effects on Housing Affordability

Common land use regulations and other constraints on urban development significantly increase housing prices (Choi, Walsh and Goodman 2020; EM 2018; Levine 2006; Taylor 2015). Many of these policies are considered "exclusionary," they are intended to exclude poor and minority households from affluent neighborhoods (APA 2023; Kahlenberg 2017). A detailed study by Gyourko and Krimmel (2021) finds that regulations, which they call a "zoning tax," typically adds $100,000 to the cost of a residential parcel in a high-demand community. Glaeser and Ward (2008) found that minimum lot size and other land use controls are associated with reductions in new construction and significantly higher housing prices in Boston, MA. Analyzing California development policies, Jackson (2016) found that each additional land use regulation reduces residential permits by an average of 4%, with the greatest reductions caused by restrictions on development density and floor area ratios, other restrictions on urban infill, and growth management measures that limit the rate, intensity, type and distribution of development. Choi, Walsh and Goodman (2020) found that in U.S. during the last two decades, urban regions, stricter zoning and land-use regulations, constrained land supply and employment growth tended to increase the prices of lower-priced housing relatively more than higher-priced housing, which reduced affordability and increased inequity.

The study, "Regulatory Barriers and Affordable: Housing: Problems and Solutions," (EM 2020), published by the U.S. Department of Housing and Urban Development concludes that:

- Local zoning and regulations, lengthy permitting processes, and "not in my backyard" opposition are primary causes of restricted housing supply and rising housing prices.
- An insufficient supply of affordable housing contributes to homelessness, housing cost burdens, and reduced economic growth.
- Several promising approaches can reduce barriers and increase the supply of affordable housing.

Affordable Infill Housing Activism
There is a growing set of affordable housing advocacy organizations and publications. Below are examples.

Bay Area Renters Federation (www.sfbarf.org).

Scott Beyer (2016), "Yimby Nation: The Rise of America's Pro-Housing Political Coalition," *Forbes* (www.forbes.com); at http://bit.ly/2ldBV8r.

Frances Bula (2016), "Advocates Want Developments Instead Of Single-Family Houses In Vancouver," *Globe and Mail* (www.theglobeandmail.com); at http://bit.ly/29MJnRB.

Heidi Groover (2016), "More Growth Please: Yes In My Backyard Movement Builds In Seattle," *The Stranger* (www.thestranger.com); at http://bit.ly/2nLaQuN.

Sara Maxana (2016), *YIMBY Keynote Speech*, Yes In My Backyard Conference (http://yimbytown.com); at www.youtube.com/watch?v=TmHNqdPdxn0.

Seattle for Everybody (https://seattleforeveryone.org)

YIMBY Toronto (www.yimbytoronto.org).

External Factors Affecting Housing Prices

Various external factors affect housing demand (the number of consumers who want housing in a particular area, and the amount they are willing to pay for it), and therefore housing purchase and rental prices, including the attractiveness of an urban region and specific neighborhoods, local employment and income rates, they types of housing available in an area, and changes in local housing supply. National and international financial policies can turn housing into a commodity that drive up prices (Farha 2017). Some models can predict these impacts. For example, Fisher (2016) found that in San Francisco, all else being equal, a 1% employment gain increases average rents 0.95%, a 1% average wage increase raises rents 1.74%, and a 1% increase in the housing stock reduces rents 1.7%. Analyzing California's housing prices, Taylor (2015) concluded that when a county's home prices increase 10%, new housing demand (the number of new housing units demanded as a share of existing housing) decreases approximately 8%, and all else being equal, when neighboring counties home prices increase by 10%, demand for new housing increases about 2%. This information can be used to predict how trends or polices will affect future housing costs, for example, the number of additional housing units needed to maintain or reduce housing prices and rents.

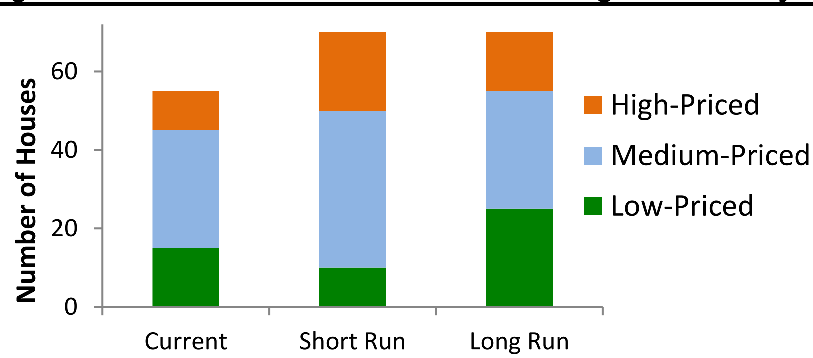
Rebuilt versus Replacement

Like most assets, housing depreciates in value as it ages, becoming less safe, comfortable and suitable to occupants, more costly to maintain, and less valuable. Since older buildings provide a major portion of inexpensive housing there are often debates concerning whether such buildings should be rebuilt or replaced. It is important to use comprehensive analysis when evaluating such options. This should consider:

1. Structural safety and durability (replace failing, aging and outdated materials and equipment).
2. Building energy efficiency (weatherization, insulation, appliance efficiency, etc.)
3. Protection from special hazards (reducing earthquake, flood, wildfire and tornado risks).
4. Remove hazardous materials (reduce exposure to lead, asbestos and mould, and improve indoor air quality).
5. More diverse and flexible units, including larger family-size units.
6. Universal design (accommodating people with disabilities with ramps, wider doors, etc.).
7. Better sound dampening and privacy between units.
8. Improved design, such as more shared space for socializing, more daylighting, and better window orientation.
9. More efficient traffic and parking management, and free up land for greenspace or more units.
10. Rooftop gardens and solar panels.
11. More total units.

Considering just one or two factors, retrofits are often cheaper, but considering several, replacement is often more cost effective and beneficial overall, particularly if the number of units increases. Replacing a smaller number of older units with a larger number of newer units may slightly reduce affordable housing supply in the short-term but significantly increase it in the long term as price depreciate (Morales 2016).

Figure 21 **Current Versus Future Housing Affordability**



Most low-priced housing consists of older, depreciated homes that initially had higher prices. Infill development may displace some low-priced housing in the short run, but by adding middle-priced homes this increases total housing supply, which drives down prices, and increases total low-priced units over the long run. As a result, allowing more infill tends to increase long-run affordability.

Gentrification, Displacement and Filtering

Upzoning, redevelopment and amenities such as public transit improvements and bikelanes are sometimes criticized for causing *gentrification* (more affluent people moving into minority and lower-income neighborhoods) and *displacement* (minority and lower-income residents forced out of their neighborhoods). Critics often exaggerate the harms and underestimate the benefits of urban redevelopment: in many cases a major portion of new affluent households are minority (Hymowitz 2017), and many lower-income residents benefit from redevelopment and improved non-auto travel options provided they are not displaced (Demsas 2021; Freemark 2023; Gibbons and Hyra 2023; Grein 2022; Litman 2017; Su, Freemark and Curran-Groome 2026).

Several local policies can increase affordable housing and reduce displacement (Chapple, et al. 2023). Building more moderate-priced housing tends to increase both moderate- and low-prices housing affordability as some occupants of lower-priced units move to new homes, and over time as the new houses depreciate, a process called *filtering* (Been, Ellen and O'Regan 2019 and 2023; Blumgart 2021; Bratu, Harjunen, and Saarimaa 2021; Chapple 2016; Maltman 2023; Rosenthal 2014; Singer 2024). On major study concludes that controlling for other factors, a 10% increase in market housing supply correlates with 5% less rent growth in subsequent years, and a 10% increase in a ZIP code's housing supply means average rents grew by 1.4% less than in comparable areas with no supply growth (Rodnyansky, Su, and Horowitz 2025).

How Filtering Increases Affordability

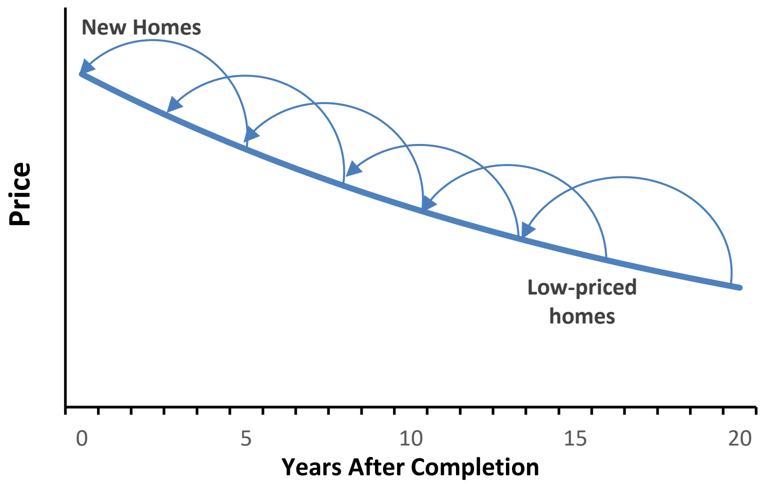
Filtering reflects the fact that most affordable housing consists of older, depreciated homes that become available as their occupants move into newer, more expensive units. Researchers find that increasing the supply of moderate-priced new homes increases affordability overall. Even if the new homes are too expensive for lower-income households they increase affordability by freeing up existing units and allowing older apartments to depreciate.

Recent studies have measured this effect (Li 2019). For example, economist Evan Mast (2019) tracked the previous residences of occupants in 802 new multifamily buildings in 12 North American cities, and the previous residences of the households that replaced them, through six cycles. He found that about two-thirds of the new buildings' occupants move from nearby less-expensive homes, so every 100 new market-rate units free up approximately 70 lower-rent apartments. For example, if a new building has 100 residential units with $3,000 per month average rents, about 66 of the occupants typically moved from nearby apartments with $2,600 average rents, which in turn are occupied by 44 families that move from nearby apartments with $2,200 average rents, and so on, as illustrated below. The results are equivalent to building 29 $1,800 per month, 19 $1,600 per month and 12 $1,400 per month apartments.

Research indicates that adding 100 new $3,000 per month units typically frees up about 66 local $2,600 units, which in turn frees up 44 $2,200 units, 29 $1,800 units, 19 $1,600 units, and 12 $1,400 units as nearby households move.

Of course, the magnitude of these effects varies depending on conditions. If enough new units are built to satisfy demand for moderate-rent housing (the new $3,000 per month units), older housing depreciate more rapidly, creating a larger pool of lower-rent apartments, but if the number of new units is small compared with demand, older apartments will depreciate less and have less turnover, resulting in higher rents and less supply.

Figure 22 **Filtering from Lower to Higher Priced Homes**



Increasing home construction allows more households to move from older, lower-priced homes, freeing up supply and driving down prices of older, depreciated homes.

This filtering process increases overall affordability even if the new units are too expense for most households.

Mast's 2019 study, *The Effect of New Luxury Housing on Regional Housing Affordability*, found that for every 100 new market-rate units built approximately 65 units are freed up in existing buildings, accommodating up to 48 moderate- and low-income families. Similarly, a New York University study, *Do New Housing Units in Your Backyard Raise Your Rents?* (Li 2019), found that in New York City, each 10% increase in multi-family housing stock reduces rents and sales prices within 500 feet by 1%. These studies indicate that increasing housing supply tends to reduce housing prices, particularly over the long-run, although Zuk and Chapple emphasize that this does not eliminate the need for subsidized housing.

A study of housing markets in 100 U.S. urban regions also found that new market-price apartments create affordable housing for very low-income households earning less than 50% of area median incomes through filtering and depreciation (Myers and Park 2020). In years when there is substantial moderate- and higher-priced housing construction, filtering increased lower-rent housing. Between 1990 and 2011, new moderate-priced housing construction increased the low-income occupancy share by 11% of 1960s-built apartments, 8.6% of 1970s-built apartments, and 10% of 1980s-built apartments. From 2011 to 2018, when fewer new apartments were built, the low-income share declined by 3.8% to 6%. As new construction declined, so has affordability. As one study author explained, "In decades past it was the substantial flow of new construction, largely targeted to middle- and higher-income groups, that enabled the filtering process to operate. In the face of its current constriction, well below levels normally associated with employment growth, we gain fresh appreciation for the broader benefits of housing construction."

Pennington analyzed San Francisco area housing prices near new developments that replaced fire damaged buildings and therefore randomly located (Blumgart 2021). She found that, although new buildings attracted higher income residents, which can be considered gentrification, nearby rents declined 1.2% to 2.3%, displacement risk (residents moving to lower-income zip codes) declined over 17%, and residents of nearby rent-regulated apartments were a third less likely to experience evictions. Cole-Smith and Muhammad's study, *The Impact of an Increasing Housing Supply on Housing Prices* (2020), evaluated the impacts of rental housing supply increases on average apartment rents in Washington DC between 2000 and 2018. They found that adding about 2,100 rental units annually reduced average city apartment rents an estimated 5.8% compared with what would have otherwise occurred, resulting in actual 2018 average rents of $3,030 compared with $3,207 if supply had not increased, and they predict that if planned future increases do not occur, average 2025 apartment rents will be $3,261 instead of $3,090.

Asquith, Mast and Reed's 2019 study, *Supply Shock Versus Demand Shock: The Local Effects of New Housing in Low-Income Areas*, found that new buildings decrease nearby rents by 5-7% relative to locations slightly farther away or developed later, and increase in-migration from low-income areas. They found a small amenity effect (i.e., new residents make neighborhoods more attractive), but this was overwhelmed by the price reductions provided by the increased supply. Contrary to common concerns, new buildings slow rather than initiate or accelerate local rent increases.

Bratu, Harjunen and Saarimaa (2021) found similar results using comprehensive data from Helsinki, Finland. They found that each 100 new, centrally located market-rate units created roughly 60 units in the bottom half of neighborhood income distribution through vacancies, including 29 vacancies in neighborhoods in the bottom quintile of the income distribution. Mense (2025) analyzed how annual weather variations that affect the number of new housing completions affect rents in German communities. If a wet summer conditions prevent building exterior work being completed before winter, construction is delayed for a season. As a result, local summer rainfall patterns affect the number of new homes available during the subsequent winter. The study found that a 1% increase in new supply lowers average rents by 0.19%, which effectively reduces rents of lower-quality units, and disproportionately increases the number of second-hand units available for rent. The housing quality at a household's previous address is a poor predictor of the housing quality at the current address, suggesting that new housing supply triggers supply of rental housing units across the housing quality spectrum. This indicates that new housing supply shifts the overall rent distribution, effectively reducing housing costs of all renter households.

Greenaway-McGrevy (2022 and 2023) also analyzed the effects of Auckland, New Zealand's 2016 zoning code reforms on housing production. After the reform, new housing units permitted more than doubled from about 6,000 in 2015 to over 14,300 in 2020, consisting mostly of compact, attached homes. Economist Matthew Maltman evaluated the impacts of upzoning at his website, *One Final Effort* (https://onefinaleffort.com). He found:

- After Auckland upzoned about 75% of suburban land to allow multifamily housing, housing supply increased significantly and inflation-adjusted rents declined.
- Building completions lag consents (i.e. project approvals) by about two years, so a surge in consents in 2021 should start increasing supply and driving down prices in 2023. Auckland is predicted to increase its total housing supply by 5-6% during the next two years.
- In Minneapolis, pro-density policies such as upzoning significantly increased housing production, reduced rents and reduced homelessness compared with peer cities.

Figure 23 **Auckland Housing Consents** (Maltman 2023)

After Auckland was upzoned in 2016, multifamily housing consents (approvals) increased significantly, and rents started to decline.

McLaughlin (2016) used real estate data to calculate the elasticity of housing supply relative to demand:

- The 30-year average elasticity is 0.20, starting at 0.29 in 1999 and declining to 0.17 in 2016.
- Long-run elasticity at the metropolitan level varies from over 0.8 in Las Vegas, Raleigh-Durham-Chapel Hill, N.C., and Albuquerque, N.M., to under 0.05 in San Francisco, Los Angeles, and New Orleans.
- Local bureaucracy, rather than zoning, accounts for much of these differences. For every month delay in approving new building permits, long-run supply elasticity drops by .03.

For this analysis it is important to differentiate between gentrification and displacement (McMillan 2021). Neighborhood reinvestment (new buildings and businesses), and the population and economic growth it stimulates, can benefit low income residents with better economic opportunities, public safety and public services, but not if they are displaced. Studies by Cortright (2018), Rosenthal (2014), and Zuk and Chapple (2016) indicate that increasing neighborhood housing supply reduces low-income household displacement, although subsidized housing has greater impacts than market-rate units, and market-rate housing production can increase lower-income housing prices in the short-run, despite long-run price reductions. Montreal (Andrew-Gee 2018), Portland and Seattle (Rosenberg 2018) provides empirical evidence that increasing housing supply can reduce prices, or at least price escalation, in affected markets.

Freeman, et al. (2023) assessed the effects of gentrification by tracking where households moved from gentrifying neighborhoods. They found little difference in the socioeconomic status or access to the urban core at destination neighborhoods of residents originating in gentrifying areas compared to the destination neighborhoods of residents originating in nongentrifying areas, indicating that residential mobility outcomes are no worse for residents of gentrifying and nongentrifying neighborhoods. This suggests that displacement reduction efforts should apply regardless of a neighborhood's gentrification status, not just gentrifying areas.

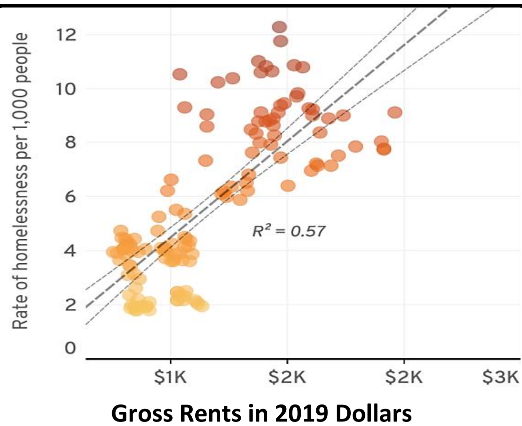
Some studies find that housing prices tend to increase in areas with increased housing supply (Freemark 2019; Zahirovich-Herbert and Gibler 2014), but such correlations do not demonstrate causation since developers tend to build new market-rate developments in areas where housing demand and prices are growing (Boustan et al. 2019). Such research does not demonstrate that increasing housing supply will necessarily drive up existing housing rents or prices, or displace existing residents. As Freemark stated about his study, “In no way is it suggesting that increases in the number of housing units won’t eventually lead to lower prices overall.” Supply skeptics often ignore this conclusion, claiming incorrectly that this study demonstrates that upzoning increases rather than reduces housing prices.

Housing Policy and Homelessness

Several studies find that homelessness rates increase with housing prices (Horowitz, Hatchett and Staveski 2023). The book, *Homelessness is a Housing Problem* (Aldern and Colburn 2022) shows that local apartment rents and availability are the most important factors affecting homelessness rates, more important than poverty, addiction or mental illness rates. Describing their research, Colburn explained, “Pretty soon it became very clear that rental costs and vacancy rates were by far the biggest predictor of rates of homelessness in a community. It’s not the only factor. There are all sorts of complicated phenomenon, but it’s a far more convincing phenomenon than anything else.”

Although poor, addicted and mentally ill individuals experience more homelessness, their prevalence do not affect overall community homelessness rates. Cities such as Cleveland, Chicago and Detroit have high poverty rates but low homelessness rates due to their affordable housing. Affordable market housing makes it easier for people to transition from supportive housing into more conventional homes, which frees up beds for people who need support. Few homelessness reduction plans take these findings into account and so fail to support zoning reforms that increase overall affordability (Einstein and Willison 2023).

Figure 24 **Rents Versus Homelessness Rates for U.S. Cities** (Aldern and Colburn 2022)



Although people who are poor, addicted or mentally ill are more likely to experience homelessness, higher rates of people with those conditions do not necessarily cause higher rates of homelessness.

The most important factor affecting homelessness rates is housing prices: higher market rents lead to more homelessness.

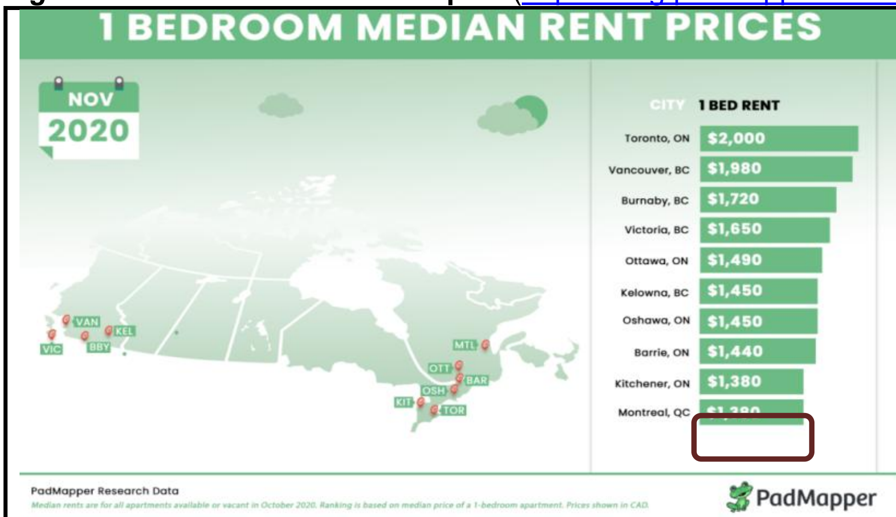
Testing this Analysis in Various Cities

This cost analysis can be tested based on actual market prices. For example, starting in 2009 the city of Minneapolis enacted several policy changes to increase affordability including reduced and then eliminated minimum parking requirements, upzoning and establishing minimum building heights in high-density zones, allowing accessory dwelling units and duplexes, and reducing minimum lot size requirements. A comprehensive review found that these policies have resulted in more housing development and reduced rent growth than other Midwestern cities (Liang, Staveski and Horowitz 2024). From 2017 to 2022, Minneapolis increased its housing stock 12% while rents grew by just 1%, while the rest of Minnesota added only 4% to its housing stock and rents increased 14%, despite similar population growth rates.

Vancouver and Victoria, British Columbia are attractive, economically successful and geographically constrained. Their housing prices increased significantly since 2000. As a result, conventional indicators such as median/median ratios rate them as unaffordable (Cox and Pavletich 2015). However, these high prices primarily involve land-intensive housing types such as single-family homes. More compact housing types, such as townhouses and apartments have experienced much smaller price increases and are relatively affordable (Metro Vancouver 2015). As a result, geographically constrained cities may seem unaffordable if measured based on single-family houses, but not if more compact housing types are considered.

The graph below compares average apartment rents in Canadian cities. Montreal rents are the lowest, 30% lower than Toronto and Vancouver and 20% lower than Victoria. What explains this difference? According to A Visual Guide To Detached House Zones In 5 Canadian Cities, Montreal allows multifamily housing on 54% of developable land, about twice as much as in Toronto, Vancouver and Victoria. As a result, many Montreal neighborhoods consist primarily of "missing middle" housing types, townhouses and low-rise apartments, which tend to be cheaper to build and operate than single-family detached housing (Polèse 2020).

Figure 25 **Canadian Rent Report** (https://blog.padmapper.com/canadian-rent-trends)



Montreal apartment rents are 30% lower than in comparable large cities. This reflects the city's more flexible zoning codes that allow multi-family housing in most areas, resulting in many middle-income neighborhoods that contain an abundance of townhouses and low-rise apartments, which are the lowest-cost types of urban housing, considering land, construction and operating costs.

This is not to understate the challenges lower-income households face finding affordable housing in expensive cities; the lower-priced housing options often have undesirable features such as small sizes, undesirable locations and unattractive views. However, these examples demonstrate that market principles do apply to urban housing: in desirable, geographically constrained cities, the prices of land-intensive housing types, such as larger, single-family homes, increase significantly, while the prices of more space-efficient housing types increase less. This illustrates the importance of policies that support affordable-accessible housing development in attractive, geographically-constrained cities. It is unrealistic to increase their affordability by expanding outwards; even using optimistic projections, the potential increase in their residential land supply is too small to drive down prices, and urban fringe locations have much higher public infrastructure and household transportation costs. More infill development can increase overall affordability.

Of course, responses must be tailored to specific conditions. Reforms that allow more compact, lower-priced housing development in urban neighborhoods are appropriate in most cities; strategies that increase affordable housing and transport to urban fringe areas may be appropriate in growing cities where urban expansion is justified; and inclusionary zoning and rent control may be justified in areas experiencing rapid reinvestment and price increases (NHC 2014-2016). However, it is important to consider all impacts: urban fringe housing increases transport costs, and inclusionary zoning and rent controls tend to reduce new housing development, and so benefit some households (those that quality for subsidized housing) but harm others (those that do not), and reduce future affordability. Various policy instruments and planning practices can help minimize displacement and maximize benefits to existing, lower-income residents during urban redevelopment (Gourley 2018; Morisson and Bevilacqua 2018).

Affordable-Accessible Housing Benefits and Cost

This section describes various affordable-accessible housing benefits and costs.

Perhaps the best way to identify affordable-accessible housing benefits is to consider the problems that result from unaffordable housing and transport, and sprawled development.

Problems Associated with Unaffordable Housing and Transportation (Taylor 2015)

- Residents live with chronic financial stress and are vulnerable to financial crises, for example, if they have a vehicle failure, accident, illness or lose a job.
- Households spend a greater portion of their budgets on housing and transport, leaving many lower-income households with insufficient money to purchase other essential goods such as healthy food and healthcare.
- Fewer households can shift from renting to owning their homes, and therefore building wealth.
- Houses are more crowded, causing stress, and in some cases, reduced academic achievement.
- Households have fewer neighborhood location options which results in longer commutes.
- Businesses may have difficultly recruiting and retaining employees, and must pay higher wages.
- Reduced population and business growth reduces overall economic productivity and tax revenue.

Problems Associated with Sprawl (Ewing and Hamidi 2014; Furth 2022; Litman 2015b)

- Increased costs of providing public infrastructure and services (roads, parking facilities, utility lines, emergency services, school transportation, etc.).
- Slower emergency response times.
- Increased per capita land consumption which reduces land available for farming and wildlife habitat.
- Reduced accessibility, particularly for non-drivers, increases the money and time spent on transport.
- Increased per capita traffic congestion, traffic accidents and pollution emissions.
- Reduced walking and cycling for transportation, resulting in reduced public fitness and health.
- Communities are more homogenous, resulting in less integration of economically and socially excluded groups, and poverty concentration.

Affordable-accessible housing helps reduce virtually all of these problems. Of course, more compact development can also impose costs. The following pages discuss these impacts. Not every affordable-accessible housing policy or project has all of these benefits and costs, but most have several, and all of these potential impacts should be considered when they are evaluated.

Affordable Housing and Economic Opportunity (Mr Money Mustache)
Large city residents tend to earn relatively high incomes but face high housing costs. For example, in a typical large city, single-family houses in nearby suburbs often costs $600,000-800,000, resulting in $6,000 monthly housing and automobile expenses for a typical commuter. However, a nice two-bedroom central area apartment, can be rented for $2,400 per month, or about $1,500 per person in total housing and transport costs. At that rate, workers earning just $40,000 per year or $20 per hour can spend less than half their total income on housing and transport, leaving plenty of budget flexibility for other expenses and investments.

Potential Benefits

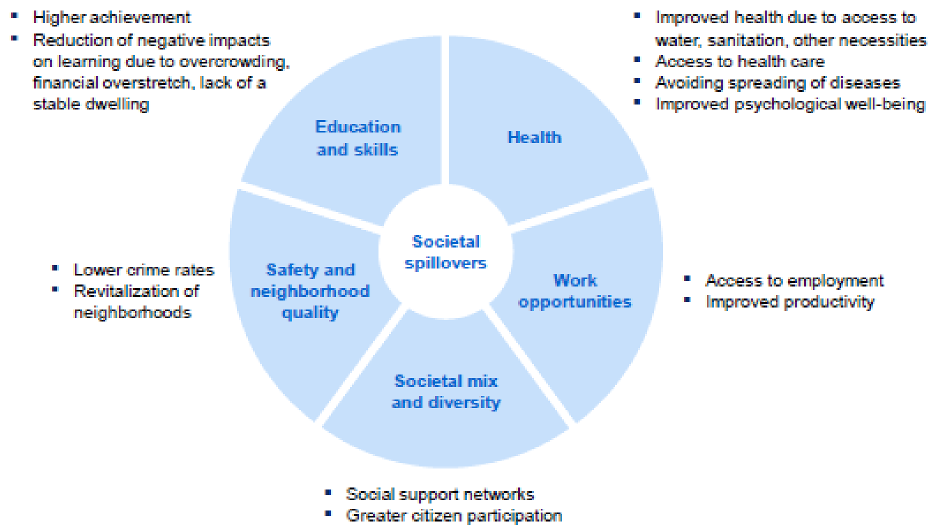
- *Household savings and affordability.* Low housing and transport costs leave households with more money to spend on other goods, which is particularly important for lower-income households.
- *Improved accessibility, particularly for non-drivers, and reduced chauffeuring burdens.* Improved accessibility directly benefits non-drivers, and drivers benefit from reduced need to chauffeur non-drivers.
- *Reduced homelessness and associated problems*. Increasing the supply of affordable-accessible housing can help reduce homeless and associated problems such as illnesses, crime and public drunkenness.
- *Allows aging-in-place.* Affordable-accessible housing suitable for seniors and people with disabilities allows residents to remain in their communities through lifecycle changes.
- *Congestion reduction and infrastructure savings.* Residents of more accessible, multimodal locations drive less and so cause less traffic and parking congestion, and reduce road and parking facility costs.
- *Traffic safety.* More accessible, multimodal neighborhoods usually have significantly lower per capita traffic fatality rates compared with sprawled, automobile-dependent areas.
- *Energy conservation and emission reductions.* Residents of compact, multimodal neighborhoods tend to consume less energy for housing and transport, and emit less pollution.
- *Reduced crime, increased security.* Crime rates tend to decline in more walkable, compact, mixed urban neighborhoods, and with more economic opportunity for at-risk populations (see box on the following page).
- *Smart growth benefits.* More compact development helps preserve openspace and reduce public service costs.
- *Increased economic opportunity*, particularly for physically and economically disadvantaged people. Improved access to education and employment tends to increase employment rates and wages.
- *Increased economic productivity and development.* More compact, accessible development increases property values, economic productivity, and tax revenues.
- *More local services.* More residents increase the number of stores, restaurants and other services in an area.
- *Increased transit efficiency*. More transit users increase load factors and operating cost efficiency.
- *More affordable consumer goods*. More compact and connected urban areas tend to have lower prices.

Potential Costs

- *Increased local congestion.* Compact development may increase local traffic and parking problems.
- *Less private greenspace.* Denser development reduces the size of lawns and gardens.
- *Less privacy and quiet.* Compact neighborhoods tend to have less privacy and more noise exposure.
- *Reduced views and sunlight.* Taller buildings can block views and solar access.
- *Loss of character homes.* Infill development often involves replacing smaller, older, and sometimes historically unique houses with larger, often multi-family housing.
- *Increases in some development costs.* More compact development can increase the local disruptions (vehicle traffic, noise and dust) caused by construction, and sidewalk and stormwater management costs.
- *Increases some public service costs.* More lower-income households may increase demand for some public services including schooling, welfare, and public transportation.

People sometimes claim that multi-family housing development degrades neighborhoods and reduces local property values, but this is generally untrue; although some properties my decline in value others increase, often resulting in net gains in property value and tax revenues (Cecchini 2016).

Figure 26 **Affordable Housing Benefits** (Woetzel, et al. 2014)



Improving access to affordable housing can provide a variety of economic, social and environmental benefits. Even people who will never occupy such housing benefits from having an adequate supply in their communities

Affordable-Accessible Housing and Crime

A common objection to affordable housing development is the assumption that, by attracting poor people and increasing density, it increases crime. There is some truth and lots of inaccuracy in this assumption.

Concentrated poverty can increase total crimes by creating communities where criminal behavior is normalized and residents have limited economic opportunities (Fraser, Oakley and Levy 2013). Conversely affordable-accessible housing development can reduce crime rates by allowing disadvantaged households to move into more mixed-income neighborhoods, which improves at-risk peoples' economic opportunity, such as poor teenagers' employment options.

Simplistic analysis may lead to false conclusions concerning these impacts. For example, crime mapping generally shows that more crime occur in dense neighborhoods, but this does not really means that higher densities increase crime rates or risks to individuals. Academic studies indicate that, all else being equal, per capita crime rates are negatively associated with development density and mix, and pedestrian activity. For example, Hillier and Sahbaz (2006) found that burglary and robbery rates declined with residential density, on streets with more through traffic, and if commercial and residential buildings are located close together. Similarly, Li and Rainwater (2000) found that crime rates in Irving, Texas are primarily explained by socioeconomic factors such as income, and land use factors that affect crime opportunity. For example, assault and robbery rates are highest in areas with concentrated poverty, residential burglary rates are higher in affluent neighborhoods where fewer residents are home during daytimes, and automobile thefts are highest in large malls where numerous vehicles in large parking lots provide opportunities.

Although per capita crime rates tend to increase as communities increase from towns (under 100,000 residents) to medium-size cities (up to one million residents), large cities have significantly lower crime rates, as illustrated in the following graph. The lower crime rates in large cities probably reflects a combination of less concentrated poverty, as more middle- and higher-income residents move into inner neighborhoods, increase accessibility and economic opportunity for low-income residents, more walking activity in urban neighborhoods, and reductions in vehicle ownership and automobile-related crimes.

Economic Benefits

By reducing resource costs and improving accessibility, affordable-accessible housing can increase economic productivity and development. This section discusses specific ways this occurs.

Economic Opportunity

Affordable-accessible housing is particularly beneficial to economically disadvantaged households (Semuels 2017; Sisson 2018). Analysis by Stacy, et al. (2019) indicates *spatial mismatch*, long commute distances between economically disadvantaged groups and entry-level jobs, indicating that affordable infill can improve their employment opportunities. Accommodating more lower-income households is the opposite of *gentrification* (the displacement of lower-income households by wealthier households), it allows diverse households to live together in attractive neighborhoods, which helps economically disadvantaged children to attend better schools, have more diverse neighbors, and better access to jobs and services. Children raised in concentrated poverty face severe academic and economic barriers; living in more mixed income neighborhoods tends to improve their peer support, positive role models and social connections, reducing multi-generational poverty (Basolo 2013; DHUD 2012; Kristian 2020).

Using their Sprawl Index, Ewing and Hamidi (2014) found that compact, multi-modal Smart Growth development tends to increase integration (poor and racial minorities are less geographically isolated) and economic opportunity (disadvantaged people's ability to access education and employment opportunities), and increases economic mobility (the chance that children born in low-income families will become economically successful as adults); doubling their compactness index increases the probability that a child born to a family in the bottom income quintile will reach the top quintile by age 30 by about 41% (Ewing, et al. 2016; Sisson 2018). Using different research methods, Chyn (2016) found that children who left concentrated poverty neighborhoods are 9% (4 percentage points) more likely to be employed as adults relative to their non-displaced peers, and have $602 higher average annual earnings – an 16% increase relative to their counterparts who remained in concentrated poverty. Lens and Monkkonen (2016) and Furth (2022) find that regulations that limit infill development increase economic segregation.

Household Wealth Generation

Households significantly increase their long-term wealth by choosing more expensive houses with lower transportation costs over cheaper houses with higher transport costs (Gillen 2012; USEPA 2014). Motor vehicles tend to depreciate rapidly while housing tends to appreciate, particularly if located in areas desirable due to their accessibility. This can have large impacts on long-term wealth. For example, in the short-term, spending $20,000 annually on a mortgage and $5,000 on transport has the same total cost as a $15,000 annual mortgage and $10,000 on transport, but after a decade the additional $5,000 mortgage payments accrues about $100,000 in additional equity (wealth) compared with the additional $5,000 spent on vehicles and fuel.

Local Businesses and Municipal Benefits

By reducing transportation costs and increasing the portion of household budgets devoted to housing, affordable infill tends to benefit local businesses, including developers and the contractors they employ, and real estate professionals. It also tends to increase local property tax revenues, increasing funding for local governments. In most regions, automobile expenditures tend to generate relatively little employment and business activity because vehicle and fuel industries support few local jobs, so shifting household expenditures from transportation to housing supports local economic development (NERA 2024). More compact development also tends to reduce the costs of providing public infrastructure and services.

Regional Productivity Benefits

More affordable-accessible housing can significantly increase economic productivity. The study, *Housing Affordability and Economic Productivity,* (NERA 2024) found that in Greater London, a 1% reduction in housing price to wage ratios typically increases productivity 0.14% within a 20 km radius. Affordable-accessible housing tends to increase productivity by providing *agglomeration efficiencies* (Melo, Graham and Noland 2009), and by reducing *spatial mismatch* (excessive distances between homes and jobs) which expends the pool of employees available to businesses so they can attract suitable employees and workers can more quickly find jobs (O'Connell 2016; Stacy, et al. 2019). Empirical evidence indicates that regional productivity tends to increase with density and transit ridership and decline with per capita VMT (Litman 2014). A Federal Reserve Bank study estimate that infill development restriction imposed a "regulatory tax" of about 20% in Washington DC and Boston, and 50% in San Francisco and Manhattan (Glaeser, Gyourko and Saks 2005). Saks (2004) found lower employment and wage growth in urban areas where regulations limit new building development. She found that each one standard deviation increase in regulatory costs reduces residential construction 17% and causes even larger increases housing prices. She also found lower long-run employment gains in metropolitan areas with a low elasticity of housing supply. Similar effects are found in developing country cities such as Kuala Lampur, Mexico City and Mumbai (Guerra 2015; Jog 2015; Morrison 2014; Sabri, Ludin and Johar 2013).

Summary

The table below summarizes affordable-accessible housing benefits and costs. Not all impacts apply everywhere, but most are common.

Table 8 **Affordable-Accessible Housing Benefits and Costs**

	Benefits	Costs
Internal (impacts occupants)	Financial savings (particularly lower transport costs) Improved accessibility for non-drivers More local services Higher property values Increased physical fitness and health Increased economic opportunity Allows aging in place Reduced traffic accident risk Reduced chauffeuring burdens	Higher housing costs Less private greenspace Less privacy More exposure to noise and local air pollution More exposure to poverty and associated social problems Increases in some development costs
External (impacts other people)	Reduced homelessness and associated problems Reduced traffic and parking congestion Reduced road and parking infrastructure costs Reduced traffic accidents Energy conservation and emission reductions Reduced crime rates Local economic development Higher property values and tax revenues More efficient transit services	More local traffic and parking congestion Reduced views and sunlight Lost character homes More local poverty and associated social problems Increases in some development costs Increases in some public services costs

Affordable-accessible housing has various benefits and costs compared with less affordable or more sprawled housing.

Affordable-Accessible Housing Demand

An important question in this analysis is the demand for affordable-accessible housing, that is, the amount of lower-priced, compact housing located in accessible neighborhoods that would be rented or purchased.

Although only a minor portion of current North American housing is affordable-accessible, real estate market studies indicate that an increasing portion of households want to live in more accessible, multimodal neighborhoods, provided they are attractive, safe and affordable (PEW 2014). The National Association of Realtor's 2017 *Community Preference Survey* found that a majority of households prefer to live in an accessible and walkable urban neighborhood even if that required living in a townhouse or apartment, over a detached single-family house located in an isolated, automobile-dependent area (NAR 2017). Levine and Frank (2007) found that many automobile-dependent community residents would prefer more walkable, mixed-use neighborhoods provided that they have appropriate amenities and design features.

Current demographic and economic trends are increasing affordable-accessible housing demand (Litman 2009; Missing Middle - Demand 2015; Walsh 2023):

- Aging population is increasing the number of retirees, many with limited incomes, and the number of people who cannot or should not drive.
- Lagging incomes are increasing demand for lower price housing and transport options.
- Increased urbanization and congestion is increasing demand for walking, cycling and grade-separated transit.
- Improving travel options (better walking and cycling conditions, transit services, etc.) and more attractive urban conditions (lower crime rates, more parks, streetscaping, etc.) are increasing urban housing demand.
- Health and environmental concerns increase demand for walking, cycling and public transit.
- Changing preferences, particularly by younger households, increase demand for urban living.

As a result of these trends, if, in a particular community households demanded 10,000 affordable-accessible housing units in 2000, demand is likely to be 20,000 today and more than 30,000 in 2040. Many urban areas are thousands of units short of market demand for such housing. Affordable-accessible housing development is particularly appropriate in cities with the following attributes:

- Rapid population and economic growth.
- Geographic constraints limit urban expansion.
- Existing stock of lower-priced housing is limited.
- Aspires to support economic development, help disadvantaged households, and protect the environment.

Of course, every household has unique needs and preferences that affect their housing demands. For example, larger households need houses with sufficient bedrooms; some households enjoy gardening or have pets that require yards (demands that can sometimes be satisfied with rooftop and allotment gardens, shared yards and public parks); and some households have hobbies or businesses that require studios, workshops or garages in their building or available for rent nearby. Some households will only choose urban neighborhoods that have well-rated schools or other services. Some households will only choose housing that lacks parking spaces if vehicle rental services are located in or near the building. To be attractive to consumers, affordable-accessible housing must responds to these needs and preferences.

Dynamic City Planning

A dynamic city responds to growing demand for affordable-accessible housing by removing unnecessary impediments and increasing support, for example, by allowing more affordable housing types, increasing allowable densities, and improving affordable travel options (Braga 2018; Garde and Song 2021). Many jurisdictions are slow to do this, in fact, they sometimes respond to increased demand by adding more restrictions on growth and affordability. For example, a California Legislative Analyst Office study, *California's High Housing Costs: Causes and Consequences* (Taylor 2015), concludes that the state's high housing prices result primarily from local restrictions on compact infill housing. Other attractive urban regions face similar shortages due to similar restrictions on infill development.

The table below lists common public policies that discourage affordable housing and transportation options. Some of these are clearly intended to exclude lower-priced housing due to the perceived negative impacts that such housing has on neighborhoods (Hertz 2015; Mangin 2014). Others reflect biased and sometimes outdated planning practices, such as the assumption that "transportation" means automobile travel so increases in traffic congestion is a major problem (infill development may increase local traffic, but in compact, multi-modal areas with low vehicle trip generation rates, this reduces regional traffic problems), and affordable modes are unimportant. Some obstacles to infill development are subtle, technical practices that unintentionally favor higher priced housing and transport, and lower density development.

Table 9 **Examples of Policies That Discourage Affordable-Accessible Housing**

Affordable Housing	Affordable Transportation	Compact Development
• Minimum parcel size and restrictions on subdivision • Restrictions on building density, floor area ratios (FARs), height and lower-priced housing types • Restrictions on mixed-use development (such as apartments over commercial) • Minimum parking and setback requirements • Fees and design requirements that increase housing development costs	• Streets that lack sidewalks • Wider roads designed for high traffic speeds, which create barriers to walking and cycling. • Urban freeways that divide communities • Abundant, subsidized parking supply • Underinvestment in public transport • Lack of cycling facilities • Low fuel prices	• Restrictions on development density and compact housing types • Urban fringe infrastructure investments (roads, water and sewers lines, etc.) not charged directly to users • Minimum parking requirements • Public facilities (schools, post offices, etc.) that are difficult to access without a car

Many current policies favor more expensive housing and transport over more affordable options.

Of course, virtually all of these policies benefit somebody and so seem reasonable and justified from some perspectives. Restrictions on density and multi-family housing are intended to preserve neighborhood homogeneity and exclude poverty, and minimum parking requirements are intended to improve motorists' convenience. However, their impacts are cumulative and synergistic (implemented together, their total impacts tend to be larger than their individual impacts). For example, restrictions on density in residential urban neighborhoods force lower-priced housing to be developed along busy arterials where residents are exposed to noise, air pollution and risk (Grabar 2021), at the urban fringe where transportation costs are high, so lower-income households face the double burden of high housing and transportation costs.

Local opposition, commonly called NIMBY ("Not In My Backyard") is a major constraint on affordable-accessible housing development (Hilber and Robert-Nicoud 2013; Monkkonen 2016). Some objections reflect concerns about direct impacts such as construction disruption and traffic problems that can often be addressed with design and management strategies, but opposition often reflects fears that lower-priced housing will attract poor households that cause social problems and reduce property values. This is understandable since residents can suffer if their neighborhood becomes economically distressed (i.e., a "slum"), but such concerns are often exaggerated: most affordable housing residents are responsible and law abiding, a few lower-priced housing units seldom degrades a neighborhood, and better housing for lower-income households can help reduce social problems overall. At best, excluding poor residents from a neighborhood simply moves them elsewhere. As previously discusses, affordable-accessible housing can help reduce total regional social and traffic problems by increasing at-risk residents' economic opportunities and by reducing total vehicle ownership and use. Infill development can direct benefit local residents by increasing neighborhood services (more shops and restaurants), housing options that allow current residents to *age in place* when they downsize from single-family homes, and higher property values provided by higher allowable densities. The table below lists potential responses to potential community concerns.

Table 10 **Addressing Neighborhood Affordable Housing Concerns**

Concern	Response
Construction disruption	Careful project management to minimize disruptions
Reduced privacy	Good design and landscaping to maximize privacy
Increased traffic and parking problems	Affordable infill housing residents tend to own relatively few vehicles and drive less than in sprawled locations, which reduces regional traffic problems
Lower-income households are dangerous and demanding	Existing residents may want affordable-accessible housing in the future in order to *age in place* (continue living in their community as they grow old) or to allow family members and friends to live nearby (AARP and CNU 2021)
Increased crime	Most affordable-accessible housing residents are responsible and law abiding. Affordable-accessible, mixed income development tends to reduce total crime.
Reduced property values	Allowing increased density tends to increase rather than reduce property values
Increased tax rates, if property values increase	The additional taxes will be recouped when the property is sold. Municipal governments can offer tax deferral policies, so taxes are paid upon sale.
Changes "neighborhood character"	Changes can be good as well as bad, including more local services and more vibrant and inclusive neighborhoods

Many objections to affordable-accessible housing are exaggerated and can be addressed through good planning.

Residents' ability to block affordable infill development reflects a political power imbalance: urban infill opponents tend to be vocal and well organized, while the ultimate beneficiaries, lower-income households that would be future residents, are generally unaware of their interests and not politically influential. Their interests are represented by developers, who are often criticized as "only motivated by profits," and therefore morally suspect. These political forces result in less affordable infill housing development than is optimal from social welfare (considering benefits to future residents) or regional (considering community benefits such as reduced traffic problems) perspectives.

Factors Affecting Affordable Housing Development

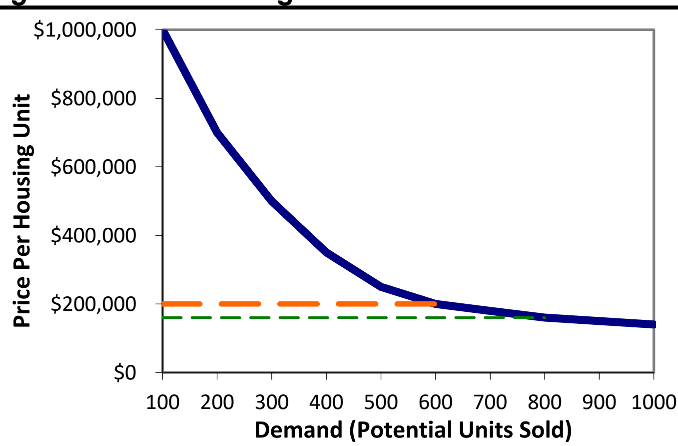
This section describes factors that affect the amount of affordable-accessible housing that will be developed in an area.

Many factors can affect housing development costs. As previously described, the lowest cost housing to construct, considering land, construction, operating and household transportation expenses, is generally mid-rise (3-6 story), wood-frame townhouses and apartments, with unbundled parking, located in a walkable urban neighborhood. Such development often faces obstacles include restrictions on multi-family housing, restrictions on building density and height, minimum parking requirements, and housing lending policies that favor single-family over compact and mixed development (Marohn, et al. 2017).

Because it is difficult to assemble urban land parcels, affordable infill projects are often small, consisting of four to forty units. Many development regulations and costs are fixed, which favors larger over smaller projects. For example, a $50,000 development fee or traffic impact study adds just $500 per unit for a large 100 unit project, but $5,000 for a small 10 unit project. U.S. Federal residential policies prohibit lending for developments in which more than 20% of the building space is used for commercial, which means that a mixed-use building with ground-floor retail must be at least five stories tall, higher than allowed in many urban areas (CMAC 2017). As a result, planning regulations and requirements tend to discourage smaller, mixed, lower-cost housing projects (An, et al. 2017).

Developer and real estate profits tend to be proportionate to sales prices; for example, a $400,000 unit provides twice the potential profit as a $200,000 unit. For this reason, developers will generally build as many higher-priced units as the market can bear before moving down the demand curve to lower-priced units. As a result, density restrictions or cost increases can significantly reduce the number of lower-priced units built. For example, a developer with a one-acre parcel that could accommodate up to 50 units might build 10 high-priced, 20 medium-priced, and 20 lower-priced units, reflecting the demand curve; but if density restrictions limit the parcel to 30 units, the developer will usually eliminate the less profitable, lower-priced units. Similarly, if additional expenses, such as minimum parking requirements or added fees increase construction costs from $160,000 to $200,000 for a basic unit, the minimal feasible sales price (development costs plus 10% profit) increases from $176,000 to $220,000. The figure below illustrates a typical housing demand curve, which shows the number of new housing units sold at various prices in a neighborhood. In this case, a $176,000 to $200,000 per unit price increase reduces potential sales from 800 to 600 units, which means that 200 households would pay $176,000 for a basic apartment, but cannot due to density restrictions or added development costs that raise the cheapest units' price to $200,000.

Figure 27 **Housing Sales Demand Curve**



This demand curve shows the number of housing units that could be sold at various prices. If the number of buildable units is constrained, developers will generally produce higher-priced units since they are most profitable. Only after the higher-priced market is saturated will they build lower-priced housing, even if the potential market is large.

As a result, the minimum feasible price (the cheapest housing that developers could justify building) increases as development costs and construction delays increase.

Some studies have estimated the price increases caused by development fees, regulations such as restrictions on residential neighborhood density and building heights, and planning approval requirements that add costs and delays (Albouy and Ehrlich 2017; Hoyt and Schuetz 2020). In a comprehensive study of U.S. cities, Stacy, et al. (2023) found that upzoning is associated with a statistically significant increases in housing supply and downzoning is associated with increased rents and reduced supply of housing affordable to middle-income renters. Analyzing development fees in various California cities, Mawhorter, Garcia and Raetz (2019) found that such fees range from $12,000 to $75,000 per multi-family housing unit, and from $21,000 to $157,000 per single-family home, representing 6% to 18% of median home prices, depending on location. Kendall and Tulip (2018) estimate that these costs raise detached house prices in large Australian cities by 42-73%, and apartment by 26-85%. These costs increased dramatically over the past two decades due to a combination of rising urban housing demand and increased regulations.

Many real examples show how development restrictions and fees reduce the lower-priced housing production. In 2003 a developer proposed the Bohemia and Castana, a pair of three- and four-story mixed-use buildings with 71 residential units, a third of which were to be moderate-price rentals, in the Cook Street Village, a walkable urban neighborhood in Victoria, BC. The proposal was rejected due to local residents' objections to what they considered the project's excessive size, although the area already has many four-story apartment buildings. Instead, the developer constructed a three-story building with 51 condominiums but no rental units. In a city with nearly 50,000 houses, 20 fewer moderate-priced units is too small to notice, but if this is typical, it indicates that community resistance reduces affordable infill housing development by 40% compared with what the market demands.

Relatively modest policy changes can significantly affect housing economics. For example, four-story apartment buildings are a "sweet spot" for affordability and energy efficiency (Anderson 2024). Upzoning from three to four allowable stories can significantly increase affordable housing supply.

Affordable-Accessible Housing Development Strategies

This section describes and evaluates various affordable-accessible housing development strategies.

Ineffective and Sometimes Harmful

Urban Blight

In mature, low-growth cities, affordable housing often consists of old, inefficient housing in undesirable neighborhoods. Although such housing is cheap, it is often uncomfortable and sometimes dangerous, costly to operate due to high maintenance and utility costs, and if concentrated in "slums," tends to exacerbate social problems such as crime and multi-generational poverty. Some jurisdictions prohibit certain improvements to lower-priced housing, such as adding elevators and balconies to older apartment buildings in an area, in order to prevent price increases and gentrification (Vogelpohl and Buchholz 2017).

Cheap Suburban Development

Urban fringe housing can be easy to develop due to low land costs, minimal neighborhood opposition and avoidance of some infrastructure costs (such as sidewalks and stormwater connections), but such savings are often offset by increased transportation costs, including vehicle expenses, travel time and traffic accidents, plus other costs of sprawl, including higher costs of providing public infrastructure and services.

Can Sprawl Save Us All?

Some people argue that affordable housing requires sprawled urban development (Angel 2016), based on research indicating that cities that expand tend to have cheaper new housing (Romen 2016), which drives down overall housing prices. Affordable infill is challenging to develop. As a result, some experts blame housing unaffordability on regulatory restrictions on urban expansion, and recommend pro-sprawl policies as a housing affordability strategy.

The reality is more complicated (Litman 2015b). First, much of the research showing more affordable housing in sprawled areas is incomplete and biased; high-housing-priced cities tend to be attractive, economically successful and geographically constrained, while the cheapest housing tends to be located in slower-growing and unconstrained cities. It would be wrong to assume that allowing expansion in cities such as New York, Seattle and Vancouver would cause their housing to become as affordable as in Cleveland, Oklahoma City on Winnipeg, as sprawl advocates imply.

Second, lower housing costs in sprawled areas are approximately offset by higher transportation costs, which is why many experts recommend that household affordability be measured based on housing and transport costs combined. Third, sprawl increases the costs of providing public infrastructure and services. More compact and connected development can reduce these costs, savings that should be passed onto occupants.

Not all urban expansion is sprawl. Urban fringe development can be compact and mixed, creating functional suburban towns and rural villages with diverse housing and transportation options. Smart urban expansion can provide the best of all worlds: more diverse housing options, more affordable housing and transportation, and opens space preservation from reduced per capita land consumption.

In most cases, attractive and unaffordable cities should allow urban expansion to increase housing supply and reduce prices, but this development should reflect Smart Growth principles that result in more efficient and overall affordable development.

Rent Control

Rent control (also called *rent stabilization*) regulates landlords' ability to raise rents to existing tenants (www.planetizen.com/definition/rent-control). This increases affordability for current occupants, but by reducing rental housing profitability tends to reduce housing quality (landlords have less incentive to maintain their properties, and may have incentives to make housing so unpleasant that current renters leave), and may reduce the profitability, and therefore the development of new lower-priced housing, reducing total supply and affordability (Gibb, Soaita and Marsh 2023; Jenkins 2009; Merrefield 2021; Tatian 2013; for an alternative perspective see Collins 2009). For example, after St. Paul citizens passed a rent control policy that limits rent increases for both existing and new housing to 3% per year, regardless of inflation, building permits declined 80% compared with previous years (Lindeke 2022). Developers cited revenue uncertainty leading to reluctance from lenders. In a study of German rental markets, Mense, Michelsen and Kholodilin (2023) found rent controls tend to increase unregulated housing rents and reduces mobility of renters living in rent-controlled units, since they cannot afford market rents.

Rent controls can have other undesirable impacts. Because occupants only maintain below-market rents if they stay in their current homes, rent control discourages them from moving to new locations that may be more appropriate, for example, to improve access to jobs, schools or family members.

Preserve Existing Affordable Housing Stock

There are many ways to preserve affordable housing stock (Lubell 2016; Treskon and McTarnaghan 2016). Some cities restrict demolitions to preserve older, cheaper housing, although this can discourage infill if new development is denser than what previously existed, resulting in fewer total units and less future housing affordability (Phillips, et al. 2021).

Economic Reforms

Some analysts argue that foreign speculative investments and corporate ownership (such as real estate investment trusts, REITs) cause housing price inflation and so recommend monetary, tax and regulatory reforms to discourage such investment (Dauncey 2017). However, academic studies find that their effects are small, neutral or positive (Bertolet 2017a). One detailed study found that residential equity REIT tend to increase multifamily house prices but reduce rents by increasing rental housing supply (Banti and Phylaktis 2024)

Restrict Rental-To-Owner Conversions

Jurisdictions sometimes prohibit owners from converting rental units to condominiums in order to protect affordable rental housing supply. However, this reduces the supply of affordable condominiums and reduces the incentive for developers to build more rental units.

Effective But Often Costly

These strategies are generally effective at providing affordable housing to some households, but often have high unit costs, and so are seldom able to serve all affordable housing needs.

Favorable Financing

Policies such as low interest rates and mortgage interest tax deductions can reduce home purchase costs. However, these policies primarily help middle- and higher-income households purchase more expensive homes, and they drive up housing prices so much of the value is capitalized into real estate values. Lower-income households often benefit little.

Social Housing Development

Social housing refers to subsidized housing built to serve lower-income households. Most communities have some social housing to serve households with special needs, such as seniors and people with disabilities, and some jurisdictions have large amounts of social housing designed to accommodate low- and moderate income households. Such housing can ensure that lower-income households are able to live in cities and neighborhoods with high housing costs, but they can create problems: occupants must accept the units that are available even if they are suboptimal in design or location, they can concentrate poverty, and they may discourage households from moving to new locations that may offer better economic opportunities. In most communities it is infeasible for social housing programs to meet all affordable housing needs (Förster and Menking 2016).

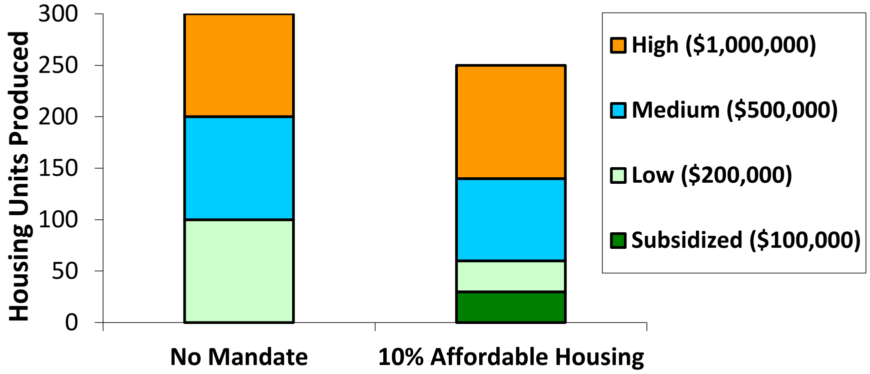
Affordable Housing Mandates (Inclusionary Zoning)

Affordable housing mandates (also called *Inclusionary zoning* or *linkage fees*) require developers to sell or rent a portion (typically 5-20%) of housing units below market prices or contribute to an affordable housing fund (NHC 2014-2016). This helps create more affordable housing in growing communities, and if broadly applied the costs are partly capitalized into land values (Egan 2016; Jacobus 2015; Pickford 2015). However, this strategy can usually satisfy only a small portion of affordable housing demand, and by increasing development costs it often reduces total housing production and therefore overall affordability over the long run (Cortright 2021; Phillips 2024; Schneider 2018). As one expert explains,

> While inclusionary zoning provides large benefits for a small number of low- and middle-income households, most empirical evidence indicates that it drives up prices for others and reduces access to housing overall. The policy’s emphasis on providing below-market-rate housing in new construction that’s identical to market rate housing means that resources dedicated to social housing won’t go as far — or be distributed as equitably — as they could be if they were targeted to low-income individuals as housing vouchers or cash. (Hamilton 2018)

For example, if the cheapest housing units cost $200,000 to build, and regulations require that 10% be priced at $100,000, the nine other units each bear an additional $11,111 ($100,000/9) cost. This is small for high-priced housing (1% of a million dollar unit) but large for lower-priced housing (5% of a $200,000 unit). This can significantly reduce the number of moderate-priced homes built. Inclusionary requirements increase affordability for the households that receive the below-market units, but reduces affordability for other households, many of whom are equally deserving but less lucky when subsidized units are allocated. The figure below illustrates this effect.

Figure 28 **Affordable Housing Mandate Impacts on Housing Production**



If developers are required to sell 10% of units below production costs, they must recover the subsidy costs by building larger and higher-priced units, and fewer smaller, lower-priced units. This reduces total housing production and increases future prices, particularly for medium-priced housing.

Actual responses vary depending on conditions (Litman 2016). Bertolet (2017b), Means and Stringham (2012), and Schuetz, Meltzer and Been (2011) provide empirical evidence that affordable housing mandates often reduce total housing development and increase future prices. To minimize negative effects, affordable housing mandates should be implemented with other incentives to encourage development such as increased allowable density and reduced parking requirements, should only apply where there is significant latent demand for new housing, and should exempt moderate-priced housing (ULI 2016). For example, if housing is considered affordable if priced under $200,000 per unit, mandates should only apply to housing over $400,000, since $200,000-400,000 units increase future housing affordability.

Targeted Subsidies
Another common strategy that may have undesirable consequences is to subsidize a particular group's rents or mortgages. Where lower-priced housing supply is limited, such subsidies may drive up rents and displace other deserving households. For example, a rent subsidy for lower-income seniors will help that group outbid and displace other households that want lower-priced housing, such as people with disabilities, students and service workers. Some well-intended housing subsidies, such as those for teachers and artist, can be unfair overall, since many of the beneficiaries are more affluent and economically able than the households they displace (Cohen 2016; IMO 2016). Analyzing the effects of U.S. housing vouchers on rents, Susin (2002) found that low-income households in metropolitan areas with more vouchers experienced faster rent increases than those where vouchers are less abundant. In the 90 biggest metropolitan areas, vouchers raised rents by 16% on average, reflecting the low supply elasticity in the lower priced rental housing market. This indicates that targeted subsidies only increase overall affordability if implemented with policies to increase affordable housing supply. Williams (2015) describes various ownership and financing methods for preserving affordable rental housing.

Subsidize Urban Fringe Transportation
Affordable housing is sometimes located at the urban fringe where land prices are lower but transportation is costly, particularly for non-drivers. In response, governments and charities may subsidize automobile ownership and expand public transit service. However, this is costly and exacerbates other problems including congestion, road and parking facility costs, accidents and pollution emissions.

Increase Minimum Wages
Increasing minimum wages gives lower-wage workers more money to spend on housing, but that tends to drive up housing prices which reduces affordability for other households. Agarwal, Ambrose and Diop (2022) analyzed how minimum wage rates affect rents. They found that each 1% increase in minimum wages reduced in the number of lease defaults by affected households by 1.1%, so after a state raised minimum

wages, affected renters' defaulting rates declined 1.7 percentage points, reducing total monthly rent defaults by 10.6%. However, this effect decreases over time as rents increased, which offset about 55% of the additional income.

Sweat Equity and Volunteer Construction

Housing can be built by owners or volunteers. This is common in developing countries and rural areas where simple homes are often built with traditional methods, but is less appropriate for modern urban buildings which require specialized materials and skills. Many households that most need affordable housing are unsuitable builders due to inexperience, disabilities and heavy work schedules, and amateur-built housing often has imperfections that cause future problems and reduce resale values.

Most Cost Effective and Beneficial

Upzoning (Increase Allowable Densities and Heights)

Many jurisdictions limit parcel size, development density, building heights, floor area ratios (FARs), multi-family housing, and conversions of commercial or industrial buildings to residential uses, and require minimum parking and setbacks (Cutler 2014; Freemark, et al. 2023; Glaeser and Ward 2008). Eliminating or reducing such policies allows more compact, affordable infill development, and allows more diverse housing types that accommodate diverse housing needs, such as families with children. Upzoning to allow more building height and size tend to encourage more and larger units, increasing affordability (Millsap 2023). The following reforms encourage affordable infill (Agnello 2020; LGLA 2016; SPUR 2017):

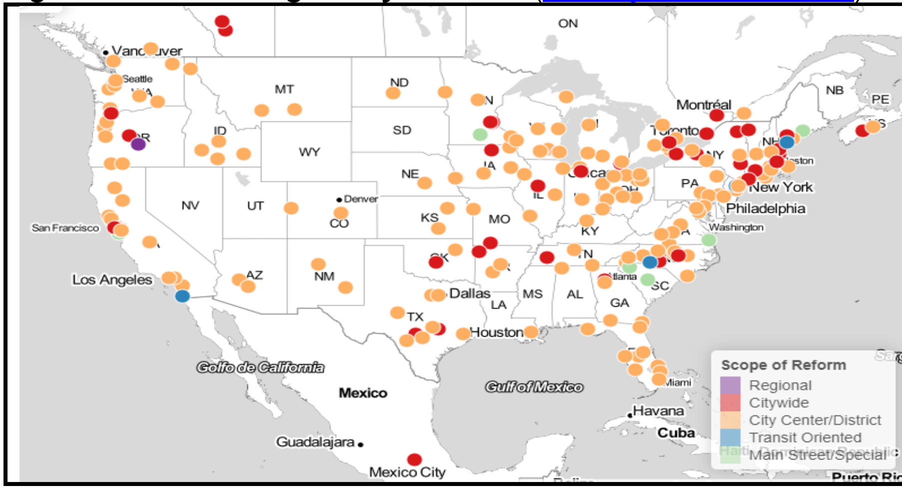
- Change R1 (single-family only) to zoning that allows townhouses and small-lot subdivisions.
- Add a density bonus for building small townhouses or small lots; for example, in the RD1.5 zone, allow 1000 SF lot area per unit up to certain percentage of units if they are smaller units.
- This can encourage developers to build larger units, add a density bonus for providing 3BR or 4BR apartments; for example, allow 0.20 additional units for every 3BR and 0.30 additional units for every 4BR, up to a maximum. FAR, height, and setbacks would have to be generous enough to make the extra FAR usable. Do not count the floor area devoted to more than two bedrooms per unit, in FAR (floor area ratio) calculations.
- Legalize midblock duplexes, corner triplexes, and multiple accessory units (Andersen 2016 and 2023).

Upzoning increases land prices per acre but by allowing more units per acre reduces land costs per home. Critics argue that upzoning reduces affordability, at least in the short-run, which may be true if a few parcels are upzoned but not for large-scale upzoning which creates a competitive market for higher-density parcels (Hamilton 2024). Phillips (2022) defines this as a *zoning buffer*. When upzoning is limited in scale, zoning buffers remain small, resulting in land value increases that are largely captured by incumbent property owners. He upzoning at least a quarter of parcels in attractive urban neighborhoods. Litman (2021) argues that affordability requires a competitive market for upzoned land with at least three upzoned parcels on the market for every desired infill project. Because a typical parcel is sold about once a decade, this means that for affordability sake, a city should upzone 30 parcels for each additional annual infill project needed. For example, if regional population is growing at 1.5% annually, a 1,000 home neighborhood should add 15 units annually to accommodate its share of growth. If a typical multiplex or townhouse infill project adds three net units, the neighborhood needs five of those infill projects annually. To ensure that developers can find affordable land, the market needs at least 150 parcels upzoned to allow multiplexes and townhouse. With a competitive market for upzoned land, land prices may increase modestly, but not the huge increases that occur when a single parcel is upzoned.

Upzoning is often characterized as a market solution to housing shortages and unaffordable housing, but a recent zoning reform in Auckland, New Zealand shows that it also increases social (non-market) housing supply (Greenaway-McGrevy 2024). The proportion of housing starts issued to government institutions increased from 3.1% during the ten years prior to the reform up to 9.9% during the six subsequent years, a threefold increase in social housing development. Proportions this high were last seen in New Zealand prior to the 1980s neoliberal reforms that substantially reduced state intervention in the economy. These findings suggest that zoning reform can enable both the market and the state to construct more housing.

Reduce or Eliminate Parking Minimums
Parking minimums in zoning codes require property owners to provide a certain number of parking spaces at each destination, so parking facility expenses are added to building costs. Driveways, parking lots and garages are costly, particularly for lower-priced housing in areas with high land costs. For example, a two-car garage typically adds 5-10% to the cost of a million-dollar suburban house, but 10-20% to the cost of a basic apartment in an urban area with high land prices (Lehe 2018; Litman 2024). Parking mandates are economically inefficient and unfair. They significantly increase development costs, increase automobile ownership and use, and force many families to pay for costly parking spaces that they do not need. Since vehicle ownership tend to increase with income, this is regressive, forcing many lower-income household to subsidize parking spaces for their more affluent neighbors. A major technical study found that in Colorado cities, parking reform can boost homebuilding by 40% to 70% than is feasible with current mandates (EcoNorthwest 2024). These effects are largest in transit oriented developments and other denser urban areas. Many jurisdictions are now eliminating parking minimums, as illustrated in the following map.

Figure 29 **Parking Policy Reforms** (Parking Reform Nework)



This dynamic map produced by th Parking Reform Network identifies North American jurisdictions that are reforming their parking policie for efficiency and fairness.

Reduce Barriers to Affordable-Accessible Housing Types
Identify and reduce existing policies and planning practices that add unnecessary costs, delay and uncertainty to the development of inexpensive, compact housing types most suitable for affordable infill (An, et al. 2017; LAO 2016; Cecchini 2015; Curran and Wake 2008; Ikeda and Washington 2015):

- *Small-lot single-family housing.* Stand-alone houses on 2,000 to 4,000 square foot lots.
- *Accessory units*. Self-contained units with separate entrances, kitchens and bathrooms.
- *Laneway houses* and *garage conversion*. Small houses built behind or next to a main house, sometimes above or replacing a garage.
- *Townhouses* (also called *rowhouses* or *attached housing*). Houses with shared walls but separate entrances.
- *Low-rise (2-6 story) apartments*, used for either rentals or owner-occupied condominiums.
- *Micro-apartments* (apartments less than 500 square feet).
- Additional floors added to existing buildings.
- *Residential over commercial*. Apartments located above a commercial space in an urban building.
- *Industrial or commercial building conversions* to residential uses, such as loft apartments.
- Housing developed on underused parking lots.

Government Land Assembly in High-Accessibility Neighborhoods

Central neighborhood locations can provide high levels of accessibility, giving residents time and financial savings, and other benefits. This reduces disparities in access between drivers and non-drivers, which helps achieve social equity goals. To be efficient and equitable, communities should ensure that anybody who wants, particularly physically, economically and socially disadvantaged groups, can find suitable housing in a central, multimodal urban neighborhood. However, such housing is scarce, so governments can be justified in efforts to support moderate-priced development in such neighborhoods.

In compact areas with moderate- to high-land prices, the most affordable housing tends to be midrise (3-6 story) multifamily housing with unbundled parking. For good design and efficient construction, and to minimize negative impacts on neighbors, such housing generally requires at least a half-acre, and preferably a full acre parcel in a prime location. In many communities, land has been subdivided into smaller parcels, so efficient land assembly is critical to delivering affordable-accessible housing.

The most efficient way to do this is through government leadership, offering property owners generous prices with a threat of emanant domain to expropriate needed parcels if required. Governments can either build social housing or auction parcels to private developers with affordability requirements. Many people would consider this excessive, particularly helping private developers build profitable housing, but this can be considered an alternative to the land expropriation needed to expand roadways to accommodate more urban-fringe development. These reflect two different transportation paradigms: expropriating central-neighborhood land for housing increases accessibility, expropriating land to expand urban highways increases mobility while reducing accessibility by displacing and severing urban neighborhoods.

Minimize and Prorate Development and Utility Fees for Lower-Priced, Infill Housing

Development fees typically add 6-18% to housing costs (Mawhorter, Garcia and Raetz 2019). Fixed costs and fees represent a larger share of total costs for smaller and cheaper housing projects, and public utilities and services are more costly to provide in sprawled locations. For example, requiring a traffic study, an elevator, or an extra parking space may add less than 2% to the final price of a large, expensive housing unit, but 5-10% to a small, compact, lower-priced unit. Minimize such fees, provide discounts and exemptions for affordable infill housing projects, and charge fees per square foot rather than per unit, in order to reduce the fees charged for smaller and cheaper units (An, et al. 2017; SPUR 2017).

Reduce Development Regulations and Requirements

Many studies indicate that development regulations reduce housing production and increase prices, particularly for lower-priced housing (An, et al. 2017; Monkkonen 2016; Reid and Raetz 2018). Japanese national building laws limit local governments' ability to regulate urban infill, resulting in higher densities and faster development than occurs in most affluent countries. California law now requires local governments to accept housing development targets, but these are seldom achieved; a proposed law would streamline the approval process for affordable infill multi-housing development, making such housing "by-right," which eliminates discretionary local regulations that often delay or prevent affordable housing construction (LAO 2016). Development regulations in most European countries allow multi-family infill development in most urban neighborhoods, and reward local governments financially for meeting growth targets (Hirt 2014).

Expedite Lower-Priced Development Approval and Permitting

Expedite the development approval and permitting process for lower-priced housing in order to reduce their costs and uncertainty, and make such projects more attractive to developers. This can include, for example, eliminating traffic and parking impact studies (justified because affordable-accessible development tends to generate far less traffic and parking than standard models predict), and shorter planning review and permitting periods for developments that meet affordable-accessible housing guidelines.

Density Bonus and Requirements
Allow higher densities and greater heights than normal in exchange for more affordable housing units. This supports compact, affordable, infill development while preventing land value increases that would result if increased density were allowed for higher priced housing units. It some cases municipal governments can require minimum building density and height in accessible locations, for example, at least four stories along major arterials, and three stories along minor arterials, with flexibility to allow design variations (Black 2012).

Such policies must be carefully designed to be successful. For example, detailed analysis of Seattle's *Housing Affordability and Livability* (HALA) plan, which couples up-zoning with affordable housing mandates (Seattle 2016), indicates that the additional revenue from upzoning is far less than affordable housing mandate costs, reducing total housing production and affordability (Bertolet 2017). It is important to understanding market conditions when implementing policies such as density bonuses and affordable housing mandates.

Identify Parcels Suitable For Affordable-Accessible Development
Governments or private organizations can maintain a database of lots suitable for affordable infill housing. Existing parking lots and lower-density shopping malls are particularly appropriate locations for moderate-priced infill development (Romem and Garcia 2020).

Provide Free or Inexpensive Land for Affordable Housing
Governments often control various land parcels, including outdated public facilities and land acquired though unpaid taxes. They can donate or sell at a discount appropriate parcels to affordable housing development, particularly for social housing to accommodate people with special needs.

Brownfield Remediation
Brownfields are sites whose development potential is constrained by perceived or real environmental contamination, including many in urban areas suitable for affordable housing. Cleaning up these sites by enforcing legal requirements on past owners or through subsidies can make them suitable for development.

Land Value Tax and Undeveloped Land Surtax
Land value taxes that shift property tax burdens from buildings to land value tends to encourage more compact, accessible development, and reduces land speculation (Rybeck and Rybeck 2012). This makes buildings cheaper to construct, improve and maintain, and discourages land price increases and speculation, resulting in more affordable, infill development on high-value sites.

Reform Taxes, Development Fees and Utility Rates to Support Compact Development
Development fees, taxes and utility rates can be structured to encourage compact development by providing discounts or exemptions for compact, infill developments with lower-priced units and lower vehicle ownership rates, reflecting their lower public infrastructure and service costs (HUD 2008). For example, most development impact fees are charged by the housing unit, regardless of size, although larger units tend to have larger and higher income households who require more public infrastructure and services; Parent (2016) recommends charging these fees by the square foot to more accurately reflect public costs. Traffic impacts fees should be reduced for lower-priced housing and social housing (housing intended for lower-income households) to reflect their low traffic generation rates (Howell, et al. 2018). Special discounts can be offered for affordable housing, similar to lower tax rates for heritage buildings and senior households. Federal and state tax policies can also be reformed to support accessible-affordable housing.

Reform Lending Practices to Support More Compact, Mixed, Multi-Housing Development

Some existing lending practices tend to discourage developers from building, and households from purchasing, compact, mixed, multi-family housing. For example, real estate agents and banks general only consider housing costs when determining what housing is affordable and maximum borrowing ability, which ignores the higher transportation costs of urban fringe locations (CNT 2008), and current U.S. Federal-backed mortgage program rules limit compact, mixed development, which make it difficult to finance construction or renovation of affordable urban infill (Marohn, et al. 2017; RPA 2016). Provide loan guarantees, tax incentives and public-private partnerships that help minimize development borrowing costs (Black 2012).

Affordable Housing Targets and Requirements

Many urban communities resist affordable infill housing, or impose excessive regulations. To address this, local governments can establish targets for the number of new affordable housing units that should be developed, or regional, state or provincial governments can establish requirements for such development (Monkkonen 2016; White, Wilkins and Pinto 2016). For example, the State of California is development regulations which will streamline local regulations and reduce legal barriers to infill development (LAO 2016).

Dynamic Zoning

Incorporate automatic adjustments to zoning codes to achieve strategic objectives. For example:

- Change "single-family" into "residential" zoning to allow multi-plexes, townhouses and low-rise apartments in neighborhoods that currently only allow detached single-family houses.
- Increase allowable densities, building heights, floor area ratios (FARs), suites, and uses in certain areas or for certain land use categories, based on a time schedule (e.g., a 10% annual increase), when affordable housing supply is below, or if housing prices exceed defined targets.
- Allow taller buildings and higher densities on corner and larger lots, which minimizes impacts on neighbours. In areas with two-story height limits, allow three stories on corner lots, plus one additional story for each 10,000 square feet, so a 10,000+ square meter corner lot may be up to four stories.
- Allow new buildings to be up to 1.5 times higher than existing adjacent buildings. For example, if existing homes are two stories, new homes may be three.
- Allow taller buildings along collectors (typically up to four stories) and arterials (typically up to six stories).
- Automatically increase the allowable heights of single-family parcels adjacent to a commercial development by one story, and allow automatic conversion to multi-family on these parcels after ten years.

Reform Taxes to Encourage Development of Affordable Rental Buildings

Taxes can be structured to encourage affordable housing development. For example, in the past Canadian federal taxes had accelerated depreciation rates (10% on wood-frame buildings and 5% on concrete ones) for purpose-built rental housing project. Investors could keep these gains so long as they invested the proceeds into a similar value building, with a provision that allowed rental owners to pool these capital cost allowances and carry them forward to another property acquired with the proceeds, to encourage further building (Moffatt and Boessenkool 2023). These policies resulted in much more rental building development.

Address Community Concerns

Neighborhood opposition to affordable infill development often results from concerns that can be addressed with better information and more responsive policies, converting NIMBYs to YIMBYs (“Yes In My Back Yard”). This can involve design *charrettes* (the popular term for community workshops) that bring together residents, designers, public officials and other stakeholders early in the planning process to develop “preferred entitlement paths,” to identify ways to mitigate negative impacts and maximized benefits of projects. This gives developers guidance for creating proposals that meet community context and goals, in which case receive streamlined project approval (PMS 2009). Local governments can facilitate this by establishing a standard process for initiating and funding design charrettes, and using their results to facilitate planning approval. Infill advocates can emphasize the opportunities that new development offers to improve neighborhood livability by incorporating features such as walkways, parks and artwork, using *Beauty in My Backyard* (www.bimby.org.uk) resources.

The following table identifies specific responses to neighborhood concerns.

Table 11 **Potential Responses to Neighborhood Concerns** (NMHC 2007; NPH 2003)

Problem	Potential Responses
Fear of lower-income neighbors	Education about the types of households that occupy affordable housing and their neighborhood risks.
Traffic congestion	Analysis about the relatively low trip generation rates of affordable-accessible housing residents (typically half or quarter of average units).
Parking congestion	Analysis of affordable-accessible housing parking demand (typically less than half of average units), and improved parking management and enforcement.
Increased noise	Improved noise regulation enforcement.
Shading from tall buildings	Consider solar access in building design to minimize shading.
Reduced property values	Research concerning actual property value impacts (in many situations property values actually increase if higher density development is allowed).
Higher property taxes (if property values increase)	Offer tax deferments, so residents do not pay higher taxes until they sell their property.

Many neighborhood impacts can be addressed with improved design, management and education.

Encourage Turnover in Used Housing Markets
Many current policies, such as real estate transaction taxes and fees, and tax discounts for senior homeowners, discourage households from moving and selling homes, which reduces used housing supply; reducing these incentives can help increase the supply of lower-priced housing.

Improve Building Design
Opposition to infill often reflects unhappiness with design rather than density. Municipal governments can support design contests, planning workshops and community involvement to encourage better design (Agnello 2020). The *Affordable Housing Design Advisor* (www.designadvisor.org), the *Congress for New Urbanism* (www.cnu.org), the *Missing Middle* (www.missingmiddlehousing.com) and Portland's Infill Design (www.portlandoregon.gov/bps/34024) provide resources for improving lower-priced housing design. Design improvements, such as more attractive buildings, can be required in exchange for higher allowable densities.

Improve Building Energy Efficiency
Encourage developers to incorporate resource-efficient design when building affordable housing, and use lifecycle cost analysis to optimize decisions that involve trade-offs between construction and operating costs (EEFA 2015). This can be implemented by requiring developers to meet standards such as LEED Ratings.

Address Specific Housing Market Distortions
Certain market conditions can increase housing costs and reduce affordability housing supply, including foreign investment market speculation, unoccupied housing, and short-term rentals (such as Air BNB). If these become significant, they can be reduced with specific policies such as special sales taxes on house purchases by foreign buyers, special property taxes on unoccupied housing units, and restrictions on the number of housing units that can be dedicated to short-term rentals in an area.

Favor Accessible Locations for Public-Supported Housing

Governments help finance housing for many types of people, including people with disabilities, low incomes, members of the military, and various other groups. These programs can favor accessible locations, such as Transit Oriented Development, for such housing (Nedwick and Burnett 2015; World Bank 2018).

Smart Growth Reforms

Various policies, such as those described in Table 12, can encourage more compact, mixed, accessible development. Such measures can reduce development costs by allowing higher densities that reduce parking requirements, increase transportation affordability, and help achieve other economic, social and environmental objectives (Ikeda and Washington 2015). Smart growth policies can be implemented in both existing urban areas and in newer suburban communities (Larco 2010).

Table 12 **Examples of Smart Growth Reforms** (Litman 2005)

Strategy	Description
Comprehensive community planning	Planning process which identifies strategic development goals, objectives and targets
Intergovernmental coordination	Effective coordination among various levels of government
Location-based fees	Structure development fees based on the costs of providing public services
Smart tax policies	Correct tax policies that encourage sprawl
Smart growth public facilities	Locate and design schools, parks and other public facilities for multimodal accessibility
Reform zoning codes	Reduce restrictions on density and mix, and excessive parking requirements
Encourage urban redevelopment	Encourage urban redevelopment with infrastructure investments
Growth controls	Limit urban expansion into farmlands and valuable habitat
Transport planning reforms	Improve alternative modes and encourage more efficient transport
More neutral transport funding	Reduce dedicated roadway and parking funds. Apply least-cost planning
Mobility management	Implement mobility management as an alternative to roadway expansion
Parking management	Implement parking management as an alternative to parking facility expansion
Educate decision-makers	Educate decision-makers about smart growth policies and benefits.
Land use impact evaluation tools	Develop better tools for evaluating land use impacts.

This table describes smart growth reforms that support urban development and increase accessibility.

Compact development can provide various direct and indirect benefits, some of which are often overlooked (Ewing and Hamidi 2014; Litman 2015b). These include transportation cost savings, travel time savings, improved accessibility for non-drivers, improved public fitness and health, plus increased household wealth generation and economic opportunity. Providing information on these benefits to households making location decisions (where to rent or buy a house), real estate professionals, and public officials concerning where and how to support residential development supports smart growth development.

Improve Affordable Transportation Options

Walking, cycling, public transit and carsharing are resource-efficient and affordable transportation options. Improving these modes can provide many benefits to users and society, and allows households to reduce their transportation costs. This is particularly important in lower-income areas. This can be done by applying more comprehensive and multi-modal planning and investment practices.

Implement Traffic and Parking Management

Opposition to infill development often reflects residents' concerns about increased traffic and parking congestion. Such concerns are often exaggerated since lower-income, accessible neighborhood residents tend to own far fewer vehicles and generate fewer trips than regional averages (Millard-Ball 2015; Schneider, Handy and Shafizadeh 2014), and the following strategies can further reduce these problems.

Table 13 **Traffic and Parking Management Strategies** (Litman 2006)

Strategy	Description
Traffic calming	Change roadway designs to limit traffic speed.
Mobility management	Use policies and programs to encourage use of more efficient transport options, such as shifting from peak to off-peak, and from automobile to more resource-efficient modes.
Improve travel options	Improve walking, cycling and public transit to reduce automobile ownership and use.
Carsharing	Develop carsharing services to reduce households' need to own automobiles.
Shared parking	Parking spaces serve multiple users and destinations.
More accurate requirements	Adjust parking standards to more accurately reflect demand in a particular situation.
Remote parking	Provide off-site or urban fringe parking facilities.
Efficient parking pricing	Charge motorists directly and efficiently for using parking facilities.
Unbundle parking	Rent or sell parking facilities separately from building space.
Bicycle facilities	Provide bicycle storage and changing facilities.
Improve user information	Provide convenient and accurate information on parking availability and price, using maps, signs, brochures and electronic communication.
Overflow parking plans	Establish plans to manage occasional peak parking demands.
Address spillover impacts	Monitor and address spillover problems, such as residents using forbidden parking spaces.
Improve enforcement	Insure that parking regulation enforcement is efficient, considerate and fair.

Management strategies can reduce traffic and parking problems, and therefore opposition to infill development.

Unbundle Parking

Parking unbundling means that parking spaces are rented separately from building spaces, so for example, rather than paying $1,000 a month for an apartment with two "free" parking spaces, residents pay $800 per month for an apartment plus $100 for each parking space they want to use, so renters are not forced to pay for parking they do not need. This is particularly appropriate for affordable-accessible housing since lower-income occupants tend to own fewer than average vehicles. This reduces development costs and encourages households to reduce their vehicle ownership, which can help reduce traffic problems.

Reduced and More Accurate Parking Requirements

Reduce minimum parking requirements and adjust them in response to demographic, geographic and management factors, such as those summarized in the following table. This can significantly reduce the costs of infill housing development, and many of these strategies encourage households to reduce their vehicle ownership and use, which reduces traffic problems (Fox Tuttle 2021; Manville 2010).

Table 14 **Parking Requirement Adjustment Factors** (Litman 2006)

Factor	Description	Typical Adjustments
Density	Number of residents or housing units per acre/hectare	Reduce requirements 1% for each resident per acre (e.g. 15% at 15 residents per acre and 30% at 30 res. Per acre)
Land use mix	Range of land uses located within convenient walking distance	Reduce requirements 5-10% in mixed-use developments. Additional reductions possible with shared parking
Transit accessibility	Nearby transit service frequency and quality	Reduce requirements 10% within ¼ mile of frequent bus service, and 20% within ¼ mile of a rail transit station
Carsharing	Whether a carsharing service is available nearby	Reduce residential requirements 10-30% if carsharing is located in or near a residential building
Walkability	Walking environment quality	Reduce requirements 5-15% in walkable communities, and more if walkability allows more shared and off-site parking
Demographics	Age and physical ability of residents or commuters	Reduce requirements 20-40% for housing for young (under 30) elderly (over 65) or disabled people
Income	Average income of residents or commuters	Reduce requirements 10-20% for the 20% lowest income households, and 20-30% for the lowest 10%
Housing tenure	Whether housing is owned or rented	Reduce requirements 20-40% for rental versus owner occupied housing
Pricing	Parking that is priced, unbundled or cashed out	Reduce requirements 10-30% for cost-recovery pricing (i.e. parking priced to pay the full cost of parking facilities)
Unbundled parking	Parking sold or rented separately from building space	Unbundling parking typically reduces vehicle ownership and parking demand 10-20%
Parking & mobility mgmt.	Parking and mobility management programs implemented at a site	Reduce requirements 10-40% at worksites with effective parking and mobility management programs

This table summarizes various factors that can allow parking supply and zoning requirements to be reduced.

Extensive research indicates that parking requirements really do increase housing costs and reduce affordable housing supply (Jia and Wachs 1998; Litman 2024). For example, Manville (2010) found that when parking requirements were removed in downtown Los Angeles, developers provide more housing and less parking, and a greater variety of housing types: housing in older buildings, and lower-priced housing with unbundled parking. Similarly, analysis of 23 recently completed Seattle-area multifamily housing developments reveals that parking subsidies increase monthly rents approximately 15% or $246 per month for each occupied unit; that approximately 20% of occupants own no motor vehicles, and during peak periods 37% of parking spaces are unoccupied (London and Williams-Derry 2013). The authors conclude that "the practice of providing abundant "cheap" parking actually makes rental housing more expensive."

Reduced and more flexible parking requirements, with more efficient parking management, reflects a new parking planning paradigm. The old paradigm assumed that "transportation" consists primarily of automobile travel so the primary planning goal is to make driving inexpensive and convenient. The new paradigm recognizes the value of other modes, particularly in urban conditions, and recognizes the significant costs that abundant parking and the increased vehicle traffic it creates, and so considers excessive and underpriced parking to be inefficient and unfair, particularly for lower-income households which tend to own fewer than average vehicles.

Allow Development on Existing Parking Lots
Many urban areas have conveniently-located, underutilized parking facilities which can provide excellent affordable housing building sites (CNT 2006).

Discourage or Prohibit Rental Restrictions
Some condominiums have covenants that forbid or significantly impede owners from renting their units. This reduces the supply of affordable rental units. Regulations or tax policies can discourage such restrictions.

Affordable Housing Maintenance and Rehabilitation Programs
Many communities have an existing stock of affordable housing, some of which is poorly maintained and may become uninhabitable (Lubell 2016). Targeted assistance can help maintain and restore this housing stock. This can include low-interest loans home improvement loans that must be repaid when the building is sold. Such programs can favor housing in accessible locations to increase the supply of affordable-accessible housing.

Summary

Table 16 summarizes these affordable-accessible housing development strategies. It indicates that there are many possible ways to increase housing affordability, but they vary significantly in their total benefits and costs. Some affordability strategies increase other household costs, such as house operating expenses and transportation costs, including vehicle expenses, travel time and traffic accidents. Some strategies increase external costs, such as costs to governments and businesses of providing public infrastructure, and the traffic congestion, accidents and pollution emissions caused by increased per capita vehicle travel. Some strategies require financial subsidies.

In general, the most cost effective and beneficial strategies overall are those that reduce housing and transportation resource costs, including land consumption, infrastructure requirements, vehicle ownership and total travel, rather than economic transfers that require subsidies or in other ways, shift costs. Although some people need subsidized housing, the strategies that reduce housing production costs, such as allowing more compact housing types with reduced parking requirements, increases the number of housing units that can be produced with a given subsidy.

Some of these impacts vary depending on analysis scale. For example, infill development can increase local traffic and parking congestion, but affordable-accessible housing tends to generate 50-80% fewer vehicle trips and parking demand than conventional traffic models predict (Millard-Ball 2015). These repercussions can be further reduced with traffic and parking management strategies, and by reducing total vehicle ownership and use, tends to reduce regional traffic and parking congestion.

Table 15 **Affordable-Accessible Housing Strategies**

Strategies	Impacts
Ineffective and Sometimes Harmful	
Urban blight	Reduces housing costs but harms communities and concentrates poverty
Cheap suburban development	Reduces housing costs but increases transport and sprawl costs
Rent control	Benefits existing residents but reduces lower-priced housing development
Preserve older, affordable housing	Preserves old, cheap housing but may reduce new, denser development
Restrict rental-to-owner conversions	Benefits existing residents but reduces lower-priced housing development
Generally Effective But Costly	
Support housing development and purchase	Primarily benefits affluent homebuyers. May do little to increase affordability
Inclusionary zoning (affordability mandates)	Subsidizes housing for some households but increases costs to others
Social housing	Increases affordable housing supply
Targeted housing subsidies	Benefits people who receive subsidies, but may displace others
Subsidize urban fringe transportation	Is costly and exacerbates traffic problems
Sweat equity and volunteer construction	Potential is generally small compared with total affordable housing needs
Most Effective and Beneficial	
Raise allowable densities and heights	Allows more affordable, compact, infill development
Allow and support compact housing types	Allows more affordable, compact, infill development
Minimize & prorate fees for inexpensive housing	Reduces costs of inexpensive, infill housing development
Reduce development regulations	Reduce building approval time, expense and uncertainty
Expedite affordable housing approval	Reduces costs and time for lower-priced housing approvals
Density bonuses and requirements	Encourages developers to build more affordable housing
Lending reforms and incentives	Reduces development financing costs
Identify parcels suitable for infill	Helps developers build infill housing
Provide free or inexpensive land	Helps developers build affordable housing
Brownfield remediation	Makes contaminated land available for development
Land value tax and undeveloped land surtax	Encourages more compact urban development, reduces land speculation
Encourage turnover of used houses	Increases the supply of used (and therefore lower-priced) housing
Reform development and utility fees and taxes	Encourage more compact and affordable housing development
Reform lending policies	Correct lending rules that favor sprawled and automobile-dependent housing
Affordable housing targets and requirements	Encourages or requires communities to accept affordable housing
Favor accessible locations for public housing	Increases accessible-affordable housing supply and demand.
Allow smaller lots and urban parcel subdivision	Increases the supply of smaller urban lots
Dynamic zoning	Allows communities to respond to increased affordable-accessible housing demand
Address community concerns	Reduces community opposition to affordable infill development
Improve building design	Reduces neighborhood opposition to affordable infill development
Improve building efficiency	Reduces operating costs, which increases long-term affordability
Address specific housing market distortions	Correct market distortions that reduce affordable housing availability
Smart growth reforms	Encourages more compact development and reduces infill development costs
Traffic and parking management	Reduces traffic and parking problems, and therefore opposition to infill development
Unbundle parking	Reduces development costs and vehicle ownership
Reduced & more accurate parking requirements	Reduces costs and increases land supply for affordable infill housing
Allow development on parking lots	Often provides excellent sites for affordable-accessible housing
Improve affordable transportation options	Improves accessibility, reduces household transport costs, reduces traffic impacts
Discourage or prohibit rental restrictions	May increase the number of rental units available in a community
Affordable housing maintenance programs	Preserves existing affordable housing stock

This table summarizes various ways to support affordable-accessible housing development.

The table below summarizes which level of government or organization can implement these policies.

Table 16 **Affordable-Accessible Housing Strategy By Actor**

Federal & State	Regional & Local	Non-Government
• Change tax policies to reduce incentives that favor larger houses and home ownership over smaller and rental housing. • Support public transit and transit-oriented development • Streamline development regulations • Favor accessible locations for public housing • Encourage turnover of used housing • Provide funding for affordable housing • Support urban brownfield remediation • Reform lending program rules and practices	• Reduce minimum lot sizes and increase allowable densities and heights in accessible neighborhoods • Allow affordable housing types, such as secondary suites, mixed use developments and building conversions. • Reduce or eliminate minimum parking requirements in accessible areas • Improve neighborhood compensation for infill development impacts • Encourage used housing turnover • Favor accessible locations for public housing • Favor accessible neighborhoods for public infrastructure improvements, such as streetscaping, parks and better schools • Provide affordable housing incentives or inclusionary requirements • Reduce development fees and expedite the approval for affordable-accessible housing • Allow development of existing parking lots • Support affordable travel modes (walking, cycling and public transit) • Discourage or prohibit restrictions on housing unit rentals (for example, in condominiums)	• Create coalitions and working groups that include affordable housing advocates and developers to identify obstacles and opportunities to support affordable-infill housing, and educate communities about the importance of such policies • Mortgage lenders can recognize the transportation cost savings of more accessible locations and resulting reductions in housing foreclosure risks, and so allow better lending terms for housing in such areas. • Planning organizations can sponsor research and professional development programs that support affordable infill • Planning organizations can sponsor compact affordable housing design contests • Transportation agencies and engineers can shift from roadway level-of-service to multi-modal level-of-service when evaluating infill project transport impacts. • Reform lending program rules and practices

Many strategies can increase housing affordability.

Table 17 compares five major affordable housing development strategies and identifies where they are most appropriate. This suggests that no single affordable housing strategy can solve all housing unaffordability problems; most communities need a combination of strategies to serve different demands and conditions. Government sponsored and subsidized housing programs, including programs to help low-income households maintain and weatherize older homes, are important but can only address a small portion of total affordable housing demands. Urban fringe development can provide cheap housing but tends to have high infrastructure and future transportation costs, and so is only truly affordable if it is planned and located to maximize accessibility and transport options. Inclusionary zoning may provide a modest amount of affordable housing where demand is very strong, but should otherwise be avoided to prevent reducing new housing construction. Removing unjustified restrictions and costs for urban infill is generally the most cost efficient option overall, often has the greatest potential for increasing affordable-accessible housing, and can provide the greatest total benefits, but can be politically difficult due to opposition from existing residents.

Table 17 Comparing Affordable Housing Strategies

Description	Advantages and Disadvantages	Most Appropriate Applications
Help lower-income homeowners maintain and weatherize older houses.	Can increase the safety and more affordability of older houses.	Where there is an abundant supply of inexpensive but deteriorating housing stock.
Government sponsored and subsidized housing	Serves special needs. Can coordinate and use public resources unavailable to private developers. Tends to be costly, and cannot meet total demand for lower-priced housing.	To serve special housing needs, including workforce housing where development costs are very high, such as in successful and attractive cities.
Encourage private development on inexpensive, urban-fringe land	Can provide relatively inexpensive housing. Has high infrastructure and future transport costs, and so is not affordable overall.	In cities where growth justifies urban expansion, with planning to create complete and multi-modal neighborhoods along utility and transit corridors.
Affordable housing mandates	Can create new affordable housing without government subsidy. Potential is generally modest, and unless housing demand is very strong will reduce total housing development.	Only apply where housing demand is very strong to avoid reducing total development.
Remove unjustified restrictions and costs for urban infill	Tends to reduce the total costs of housing production, which increases total housing supply and allows markets to respond to demand. Impacts are unpredictable and may be slow. Infill development can impose costs and create controversies.	Apply wherever possible, and in conjunction with other strategies.

Housing affordability strategies vary in where they are most appropriate.

Examples

Examples of affordable-accessible housing development policies and projects are described below. Also see *Affordable Housing Best Practices* (www.huduser.org/portal/bestpractices), *Legalizing Inexpensive Housing* (www.sightline.org/series/legalizing-inexpensive-housing) and *Yes, Other Countries Do Housing Better: Political Lessons from Ten Nations About Building Affordable* (www.sightline.org/series/winning-abundant-housing).

Analysis

National Zoning Atlas (www.zoningatlas.org)

The National Zoning Atlas provides analysis and maps of local zoning codes and how they affect affordability.

Location Efficient Development

The Housing and Transportation Affordability Index (http://htaindex.cnt.org) and the *Institute for Location Efficiency* (www.locationaffordability.info) promote *location efficient development*, housing located in accessible areas with low transport costs.

Location-Based Utility and Development Fees

Austin, Texas uses a *Smart Growth Matrix* (www.ci.austin.tx.us/smartgrowth) to calculate a development's public costs based on its location, design, transit access, compliance with neighborhood plans and projected tax revenue. Development fees can be reduced based on high scores. The City of Calgary (2016) location-based development fees are significantly higher in sprawled areas to reflect the higher costs of providing public infrastructure and services there. Fees range from $2,593 per multi-unit unit, $6,267 for a single family home, and $422,073 to $464,777 per hectare in suburban locations.

GreenTRIP

The *GreenTRIP* (www.transformca.org/GreenTRIP) certification program for new residential and mixed use developments. It rewards projects that reduce traffic and greenhouse gas emissions. GreenTRIP expands the definition of green building to include transport to and from the buildings. Each certified project receives a *Project Evaluation Report* which describes the project location, details and inventories how the project meets GreenTRIP standards. This typically includes features such as an accessible and multimodal location, parking management, carshare services, discounted public transit passes, and affordable housing.

Relative Housing Price Appreciation

Choi, Walsh and Goodman (2020) found that between 2000 and 2019 less expensive home prices increased proportionally more than higher-priced homes in regions with higher employment growth, stronger zoning and land-use regulation, and less land available for development, but were not affected by the investor share of home transactions (i.e., speculative house purchases). They found that housing bottom quartile household cost burdens increased 8.8%, compared with just 0.5% for top quartile households. As a result, low-income household's residual income (total income minus housing costs) decreased 5.8% but increased 8.0% for high-income households, resulting in greater inequality growth if measured by residual income than by standard indicators.

Transit and Housing Guidance (ODOT 2022)

The Oregon Department of Transportation's *Oregon Transit and Housing Study* provides guidance for integrating transit and land use development to achieve strategic goals including government cost efficiency, household affordability, transit service efficiency, environmental protection, public health and quality of life.

Affordable Infill as a VMT Reduction Strategy
Griesenbeck (2023) identified how affordable infill housing subsidy and encouragement programs can help achieve Oregon State vehicle travel and emission reduction targets. These programs provide financial rewards to developer for building affordable housing in accessible, multimodal neighborhoods.

Urban Land Trusts
The article, "Still the ONE: Lessons from a Small City's Big Commitment to Affordability," (Campoli 2023) describes how Burlington, Vermont created a local community land trust to provide affordable home ownership. It helps lower-income households purchase a shared-equity home which after several years can be sold with enough value for a down payment on a market-rate house.

Location Efficiency Reduces Housing Foreclosure Rates
Wang and Immergluck (2019) found much lower home foreclosure rates in accessible, central/high-density areas where households have good access to local services and jobs, and can minimize their transportation costs. Pivo (2013) found similar results for multi-family housing. Analysis of more than 40,000 homes in Chicago, Jacksonville, and San Francisco indicates that mortgage default rates increase significantly with household vehicle ownership, and decreases with local Walk Scores in high income areas but increases with higher Walk Scores in low income areas (Rauterkus, Thrall and Hangen 2010). This suggests that Smart Growth often reduces foreclosure rates but can be overwhelmed by poverty.

Affordable Housing Policies in Attractive, Economically Successful Cities
The report, *Room for More: SPUR's Housing Agenda for San Jose* (SPUR 2017) examines factors that increase housing costs, and practical ways to increase affordable infill housing supply, and achieve other planning objectives, in San Jose, California, the heart of Silicon Valley. The report emphasizes development of compact, walkable urban villages, with mid-rise, mixed-use buildings, policies for reducing the costs of developing lower-priced units, and targeted programs for financing affordable housing.

Affordable Accessible Housing Development Review (https://bit.ly/2EmJV2w)
The *Housing and Mobility Toolkit for San Mateo County* (Alexander and Kott 2019) critically evaluates various case studies of efforts to develop affordable housing in walkable and transit-oriented neighborhoods to provide guidance for implementing successful programs in other communities.

Housing Affordability Dashboard
The *Housing Market Affordability Indicators Dashboard* (www.upforgrowth.org/hmaid), by Up For Growth, aggregates statistics on changes in home rents and purchase prices, land use regulation, renter and homeowner cost burdens, and how housing production compares to household and job growth.

Affordable Housing in Montreal (Polèse 2020; Shoag 2019)
Montreal housing is relatively affordable due to policies that encourage mid-rise development: 78% of the city's 779,805 residences are apartments in a building with fewer than five stories, row houses, or semidetached houses, compared with 35% of houses in Canada overall. The city produced approximately 10,000 *Grow Homes*, narrow, prefabricated, lower-priced row houses sold in an unfinished state. New Grow Home are priced at approximately $150,000, compared with $360,000 for a single-family home.

Automobile Ownership and Economic Opportunity
Michael Smart and Nicholas Klein (2015) analyzed how automobile and transit access influences access to basic services and activities including health care, shops, school and jobs. They found that improving automobile access is associated with increased employment and incomes, but the additional vehicle costs are often greater than the income gains. Transit provides basic mobility for people who do not to own a car.

Policies

Mixed-Income Housing TOD Action Guide
The *Mixed-Income Housing TOD Action Guide* (CTOD 2009) describes many of the same strategies recommended in this report to help create more affordable-accessible housing:

- Adjust Zoning to Promote Diversity
- Brownfield Remediation.
- Community Land Trusts
- Condominium Conversion Controls
- Development Agreements
- Fast Track Permitting
- Fee Waivers, Reductions, Deferrals
- First-Right-of-Refusal Laws for Tenants and Nonprofits
- Implement physical transit-access improvements
- Improve transit knowledge
- Incentive-Based Zoning
- Inclusionary Zoning
- Joint Public/Private Development
- Land Banking
- Limited Equity Housing Co-ops
- Linkage fees
- Parking Maximums for Transit Areas
- "Project Based" Section 8 Preservation
- Provide greater access to transit discounts and resources
- Public Land Dedication or Write-Downs
- Public Land Disposition Plan
- Reduced Parking Requirements
- Regulatory Accommodation for Small Sites
- Rent Control
- Self-help programs
- Site parks & schools
- Site social service facilities
- Subsidized housing redevelopment/renovation
- Support start-up nonprofit developers
- Target-property Acquisition & Rehabilitation funds
- Tax Forgiveness for Affordable Housing Back Taxes
- TOD-Targeted Homeownership Assistance
- TOD-Targeted Housing Financing
- Transfer taxes

Japan Encourages Affordable Infill with Minimal Zoning Restrictions (Beyer 2016; Harding 2016)
Housing prices in Japanese cities are much lower than in most Western cities. This results, in part, from federal policies that minimize development regulations and encourage urban infill. In 2014 there were 142,417 housing starts in the city of Tokyo (population 13.3m, no empty land), more than the 83,657 housing permits issued in the state of California (population 38.7m), or the 137,010 houses started in England (population 54.3m). These policies resulted from a financial crisis and real estate bubble in the 1990s which caused governments to relax development rules through the Urban Renaissance Law of 2002, which made it easier to rezone land. The building laws are national, local governments can do little to limit development, which allows higher density and faster infill development than occurs in most developed countries.

Housing Value and Flipping Taxes (Kershaw and Minh 2016)
Some experts propose progressive property surtaxes applied to home values above a threshold, such as one million dollars, with dollar-for-dollar deductions of the tax on income taxes paid by all household members. Proponents argue that such taxes would be borne primarily by non-resident owners, income tax evaders and criminals who use their proceeds to buy homes, because they would have paid little or no provincial or federal income tax to deduct from the surtax.

To discourage residential property speculation governments could tax house sale capital gains with rates that decline over time. For instance, if flipped within six months, 100% of capital gains could be subject to tax, but the rate would decline as the time and become zero after about two years. This should discourage "shadow flipping" in which real estate brokers using an "assignment clause" in sales contracts so that a property changes hands multiple times with increasing prices before formally closing a deal.

Affordable-Accessible Housing in Chicago Suburbs

The report, *Quality of Life, (e)Quality of Place* (Saunders and Smith 2014), evaluates demand for affordable-accessible housing in Chicago's northern suburbs and identifies specific policy reforms and planning strategies to help meet those demands.

California Inclusionary Zoning Law

California's *density bonus* law requires jurisdictions to offer bonuses for affordable housing, such as increasing allowable building size to allow up to 35% more dwelling units than what would otherwise be permitted in exchange for more affordable housing. Cities may also establish their own voluntary incentive programs to encourage affordable housing, such as Berkeley's *Voluntary Green Pathway* process that streamlines development reviews to reduce uncertainty associated with gaining approval in exchange for more affordable housing, fair labor practices, energy efficiency and public open space.

Accessible Suburban Multi-Family

Nearly a quarter of suburban housing is multifamily, but often has poor accessibility due to inadequate connections (sidewalks, paths and roads) to nearby destinations. This results, in part, from regulatory and planning practices. Various policy and planning reforms can improve suburban accessibility including increased street connectivity, improved walkability to facilitate active transport both within development and to adjacent destinations, and better parking facility design (Larco 2010).

Residential Garage Conversions

Santa Cruz, CA has a special program to encourage development of *Accessory Dwelling Units* (ADUs, also known as *mother-in-law* or *granny* units) to increase housing affordability and urban infill (www.ci.santa-cruz.ca.us/pl/hcd/ADU/adu.html). These often consist of converted garages. The city has ordinances, design guidelines and information for such conversions. A Vancouver, BC firm *Smallworks* (www.smallworks.ca) specializes in small lane-way (alley) housing, typically converted garages.

Redeveloping Parking Lots

The study, *Paved Over: Surface Parking Lots or Opportunities for Tax-Generating, Sustainable Development?*" (CNT 2006) evaluates the potential economic and social benefits if surface parking lots around transit stations were developed into walkable, mixed-use, transit-oriented developments, with case studies of nine suburban communities with rail transit service. The analysis concludes that such development could help meet the region's growing demand for affordable, workforce, senior, and market rate housing near transit, and provides various other benefits including increased tax revenues and reduced per capita vehicle travel.

Compact Neighborhoods Policy

Massachusetts offers incentives for municipal governments to develop compact, diverse, walkable neighborhoods (http://tinyurl.com/pa4dl3u). The State offers preferred treatment for state funds for projects in districts with zoning that promotes mixed land uses, housing for a range of incomes, and homes for "diverse populations," including families with kids, people with disabilities, and the elderly.

Vancouver EcoDensity Program

The city of Vancouver's EcoDensity Program is implementing various policy reforms and programs to encourage affordable, high quality, attractive, and energy efficient infill development in accessible areas. Such development tends to significantly reduce motor vehicle ownership and use (Wong 2012).

Rethinking Social Housing in Mexico Project (Forsyth, et al. 2016)

A major study by the Harvard University Graduate School of Design, *Revitalizing Places: Improving Housing and Neighborhoods from Block to Metropolis*, identified urban planning and design interventions to help improve housing and urban development practices. It considers various planning objectives including economic development, social equity and community livability. It discusses benefits and costs of increasing urban densities, challenges of urban infill, the diversity of housing demands and ways to satisfy them. It identified four key strategies focused on creating communities that are more sustainable and inclusive.

1. Policies and programs to support more and better infill development in core cities and suburbs. These include simplifying infill developments, promoting public acceptance of infill, and promoting accessory apartments.
2. Urban expansion that with appropriate infrastructure and services, and innovative designs to comprehensively develop neighborhoods and new towns.
3. Strategies to retrofit existing areas in response to concerns about existing developments. This includes upgrading inadequate services and infrastructure, creating attractive, mixed-use neighborhood centers, improving access to jobs and services, and dealing with abandoned housing.
4. Improving data coordination and performance indicators. Data and information sharing is key to understand the effects of policies and programs. Indicators can provide feedback on the process and interim achievements, helping recalibrate and improve actions.

The report builds on research and examples from around the world that define optimal urban development patterns, and the policies that help make this happen, including regulatory and planning reforms, infrastructure financing options, land assembly methods, government agency coordination, infrastructure and housing investment practices, property tax policies, and improved public engagement and data collection practices. Although the study focused on Mexico, many of the concepts apply to all cities, in both developed and developing countries.

French Affordable Housing Policies (Calavita and Mallach 2010)

When French developers build subdivisions or condo projects, nonprofit housing corporations enter into contracts with the developer to buy blocs of apartments or houses, up to half of the units. Based on those contracts, the nonprofits apply for a package of government loans, grants, and tax breaks so they can both buy the units and make sure they remain affordable. When the projects are completed, the nonprofit buys the units and operates them as affordable rental housing. On top of that, the government also provides tax incentives for mom and pop owners to buy condos and rent them to affordable and middle-income renters; and it also offers combinations of tax incentives and zero percent second mortgages to enable moderate-income families to buy homes and condos in the same developments.

Multi-Family Tax Exemption

Seattle, Washington's Multifamily Property Tax Exemption Program (www.seattle.gov/housing/incentives/mfte.htm) provides tax exemptions for multifamily development in targeted areas in exchange for 20% of units being provided below market prices to eligible households.

Attracting Residents to Transit-Oriented Neighborhoods

The report, *Choosing Where We Live: Attracting Residents to Transit-Oriented Neighborhoods* (MTC 2010), identifies various housing market segments and describes ways to make urban development more attractive in response to each groups' specific needs and preferences. It includes specific recommendations for improving walking and cycling condition, transit service quality, neighborhood livability (quiet, cleanliness and safety), school quality and accessibility, parking management, and urban housing affordability.

Developing Countries

Developing (low income) as well as developed countries often experience the problems of sprawl and the benefits of affordable-accessible housing; for example, they are reflected in the large portion of low-income resident's budgets that are spent on public transit fares, and public protests from fare increases (Linke 2016). Comprehensive housing affordability analysis has been performed in developing countries (Aribigbola 2011). In Qom City, Iran, suburban-area households spend a significantly larger portion of their monthly income on housing and transport than in central districts (Isalou, Litman and Shahmoradi 2014). In Mexico, public policies encourage cheap urban fringe development which burdens many low-income households with poor quality and inaccessible homes (Guerra 2015; Morrison 2014). Sabri, Ludin and Johar (2013), found that, although housing costs are lower in more isolated areas, total housing and transport costs are lower in transit-oriented neighborhoods closer to rail station. A McKinsey Global Institute report, *A Blueprint For Addressing The Global Affordable Housing Challenge* (Woetzel, et al. 2014) recommends a combination of increased urban densities, reduced construction costs, improved operations reduced financing costs, and government subsidies to ensure that housing is affordable in developing countries.

Dynamic Zoning (Braga 2018).

In an article, *Toward Dynamic Zoning Codes*, Patrick Braga proposes that development policies incorporate triggers which would automatically change zoning codes to reflect changing needs. Below is an example.

> "If building footprints in a block reach 70% of maximum physical buildout and if according to the American Community Survey 70% of households in that block's Block Group are occupied by renters, then within 60 days of the ACS data's release, the Planning Department must increase the zoning of all parcels in that block by one transect zone. Within 90 days, the Planning Department must make a recommendation to the Planning Board and the City Council whether to modify the zoning of parcels within 500 feet of the Census Block Group, either by allowing more diverse uses or by increasing the zoning district to the next transect zone."

Projects

Regional Housing Development Report Card

The annual *Greater Boston Housing Report Card* (Bluestone, et al. 2016) investigates regional housing market trends and recommends policies to achieve housing development goals. This includes analysis of the number, cost and location of new housing units, including details concerning cost factors that reduce affordability. The 2016 report found that the region's housing development costs are high due to:

- Very high land costs in desirable areas.
- Strong government regulations for rental housing, especially for low-income families, the elderly, and the disabled and this drives up the cost of construction. The broad application of these regulations makes housing is suburbs almost as costly as in urban areas.
- Strong focus on preserving "community character," which means little or no new construction and a limit on the size and density of developments under current zoning regulations.
- High quality housing produced, due to factors such as public requirements for "green" construction.

Cochrane Affordable Development (www.abag.ca.gov/services/finance/fan/cochrane.htm)

Cochrane Village is an affordable housing development in the Morgan Hill Ranch Business Park in the city of Morgan Hill, California. In the late 1980s the business park struggled to find business occupants, in part because of high employee housing costs, so businesses, local government and a non-profit developer cooperated to build 96 apartments and town houses, a playground and daycare facility, located with convenient access to retail shops.

Affordable-Accessible Housing Checklist
The following strategies tend to support affordable-accessible housing development.

- Allow subdivision of urban parcels
- Allow higher development densities and taller buildings
- Reduce and allow more flexible parking requirements
- Support diverse housing options (micro, family homes, lofts, etc.)
- Allow accessory units (secondary suites and garage-to-living space conversions).
- Allow mixed-use development, such as housing over retail.
- Provide local services and amenities for lower-income households (schools, parks, shops, etc.)
- Improve affordable travel modes (walking, cycling, public transit, delivery services, etc.)
- Provide carsharing and bikesharing services
- Locate subsidized public housing in accessible, multi-modal neighborhoods
- Support economic incubator policies (policies that allow small, innovative businesses)

Housing Affordability Policies for Developing Countries

The World Resources Institute report, *Confronting the Urban Housing Crisis in the Global South: Adequate, Secure, and Affordable Housing* (King, et al. 2017), explores obstacles to adequate, secure, and affordable housing in the global South, and policies that can increase affordable housing in developing country cities. Addressing the challenges of inadequate, insecure, and unaffordable housing within and around the city is essential to achieving economic, social equity and environmental sustainability goals. It estimates that 330 million urban households currently live in inadequate, insecure or unaffordable housing, and this is forecasted to increase to 440 million by 2025. It identifies three key contributing factors: the growth of informal or substandard settlements, overemphasis on home ownership, and inappropriate policies or laws that exclude poor from cities. It presents a new approach to analyzing housing options that considers a broad spectrum of options that combine various elements of ownership, space, services, and finance. The report proposes three scalable approaches to addressing these challenges: upgrading of informal settlements, promoting rental housing, and converting under-utilized urban land to affordable housing.

Rich Sorro Commons, San Francisco, California (USEPA 2006)

Rich Sorro Commons is a mixed-use project with 100 affordable units and approximately 10,000 square feet of retail. Conventional standards would require 130 to 190 parking spaces but it was constructed with only 85 spaces due to proximity to high quality transit services, on-site carshare vehicles, and tenants' relatively low incomes. The avoided parking requirements free up space for a childcare center and more ground-level retail, which generate additional annual revenues (each 300 square-foot space avoided provides $7,740 in additional annual rent), making housing more affordable. Two carshare vehicles give residents, access to a car without the costs of ownership – a particularly important benefit for low-income households.

Criticisms and Controversies

This section discusses various criticisms of affordable-accessible housing development.

Urban Expansion Advocates

Argument. Some experts argue that housing unaffordability results primarily from urban containment policies that discourage urban expansion (Cheshire 2009; Cox and Pavletich 2015; Demographia 2009; Mildner 2014). They therefore advocate more urban expansion instead of affordable-accessible housing.

Counter-arguments. This analysis reflects several omissions and biases.

- Their analysis fails to account for confounding factors: urban containment policies tend to be implemented in attractive and geographically constrained cities. That housing prices increase with such policies does not prove that they are the primary cause of those high prices, or that eliminating such policies would significantly increase affordability (Quigley and Rosenthal 2005). Other researchers conclude that constraints on compact, urban infill contribute more to housing unaffordability than urban containment, particularly in attractive, constrained cities with high housing prices (Ganong and Shoag 2012; Levine 2006; Lewyn and Jackson 2014; Manville 2010; Taylor 2015).
- Their analysis ignores operating and transportation costs, and tends to overweigh single-family housing prices and undercount more affordable, multi-family housing, and so exaggerates the affordability of older housing (which tend to have high operating costs), and urban-fringe housing (which tend to have high transport costs). More comprehensive analysis, described in this report, indicates that compact, infill development often has the lowest total household costs.
- Their analysis ignores additional costs of sprawl and benefits of compact development, and therefore additional reasons that communities should favor affordable-accessible over affordable-sprawl housing.
- They generally ignore evidence of growing demand for affordable-accessible housing.
- Their analysis fails to consider various ways that smart growth policies can reduce housing costs, as described in Table 19, and therefore possible ways to ensure that infill development is affordable.

Table 19 **Smart Growth Household Affordability Impacts**

Reduces Affordability	Increases Affordability
• Urban growth boundaries (reduces developable land supply) • Increases infrastructure design requirements (curbs, sidewalks, sound barriers, etc.)	• Increased development density (reduces unit land costs) • Reduced parking and setback requirements (reduces land requirements per housing unit) • More diverse, affordable housing options (secondary suites, apartments over shops, loft apartments) • Reduced fees and taxes for infill development, reflecting their lower costs • Reduced transport costs.

Many Smart Growth strategies can increase housing affordability.

Although urban expansion can reduce unit land prices, and some households prefer urban fringe locations, this does not reduce the value of affordable infill development. Virtually everybody benefits if the growing demand for affordable-accessible housing is served, so any household that wants can find an affordable compact home in an accessible, multi-modal neighborhood, rather than be forced to live at the urban fringe.

Preference For Single-Family Housing

Argument. Most North American households prefer single-family housing, as indicated by real estate market survey and the premiums many households willingly pay for such housing. As a result, efforts to develop and market more compact housing types will be ineffective and fail to respond to consumer demands.

Counter-arguments. Consumer surveys such as the *National Community Preference Survey* (NAR 2013), and the *Home Location Preference Survey* (Pembina 2014), indicate that a significant and growing portion would choose more compact housing types if they have suitable features including good designs, accessible and multimodal locations, attractive and safe neighborhoods, and low costs (Stevens 2024). Single-family housing is most preferred by families with young children; the number of such households is peaking while other types of households are growing which suggests that much of the growth in housing demand will be for more compact housing types, including urban apartments and townhouses suitable for young adults and seniors. Many of the attributes that attract people to lower-density, single-family housing are social features, such as perceived security, status and efficient public services, which are increasingly associated with more compact, urban housing.

This is not to suggest that all households will choose to live in city-center, high-rise apartments, but it does indicate that because North America has a large supply of lower-density, single-family housing, much of the growth in housing demand will be for more compact housing in urban neighborhoods, and that consumer demand for such housing will increase with policies that improve design, accessibility, amenities and public service quality of such housing. These policies would not only benefit the households that choose such housing, but by reducing single-family housing demand, can increase affordability for those households that do prefer single-family homes, particularly in attractive, geographically constrained cities where housing costs are particularly high.

Density Critics

Argument. Many people assume that dense urban development is physically and mentally unhealthy, causing problems such as poverty, crime, illness, depression and "nature deficit disorder."

Counter-arguments. There is actually little evidence that the densities that typically result from affordable-accessible housing development are unhealthy and cause social problems (1000 Friends 1999). Increased densities may increase some health risks, such as exposure to noise and local air pollutants, but reduces others, such as traffic fatalities and sedentary living. Suburban residents have more access to private greenspace (private gardens and lawns), but in well-planned cities residents have more access to public greenspace (public parks), and by reducing per capita land consumption urban residents help preserve total regional openspace. Residents of more compact, multimodal neighborhoods tend to be healthier and live longer than they would in more automobile-dependent, sprawled areas (Ewing and Hamidi 2014). There is no evidence that a middle-class household that moves from a sprawled area to a typical smart growth community will become poorer, less healthy or more criminal.

Local Residents

Argument. Local residents and their organizations often oppose affordable-accessible housing development due to concerns about direct impacts, such as construction disruption and increased traffic and parking congestion, and due to fears of social problems such as increased local crime and reduced school performance. Even people who want to increase affordable housing in their region often oppose the development of such housing in their neighborhoods, creating a sort of "prisoners' dilemma" (Hertz 2015). Much of this resistance is rooted in fear of change and social diversity, and the perceived social status of lower-density development (Nematollahi, Tiwari and Hedgecock 2015).

Counter-arguments. Some concerns are legitimate but often exaggerated, and can usually be addressed with good planning. Affordable-accessible housing residents tend to own fewer vehicles and drive less than average, which minimizes local traffic and parking problems and reduces regional problems compared with the same residents locating in more automobile-dependent locations. Conventional traffic models tend to underestimate these impacts and so exaggerate traffic and parking problems (Millard-Ball 2015; Schneider, Handy and Shafizadeh 2014), and even if infill housing increases local traffic it reduces regional compared with the same households locating in sprawled, automobile-dependent neighborhoods.

Negative neighborhood impacts may be offset by local benefits such as increased demand for services which can lead to more and better businesses, plus more affordable housing options that residents may value, for example, in order to age in place (continue living in their community after they downsize into a smaller home) or if they want lower-income friends or family members (such as adult children or elderly parents) to live nearby. Most lower-price housing residents are responsible and law abiding; it is wrong to assume that in a typical situation, increasing affordable housing will significantly increase social problems and, to the degree that it reduces poverty concentration, it tends to reduce these problems overall.

Affordable Housing Advocates

Argument. Some affordable housing advocates are skeptical that market reforms that reduce development costs and increase allowable densities can increase affordability since the new homes tend to be too expensive for low-income families (Cruickshank 2015; Lewyn 2015; Nall, Elmendorf and Oklobdzija 2022). They argue that upzoning drives up housing prices and displacement. They tend to favor regulations and subsidized housing.

Counter-arguments. Although new housing is generally too expensive for lower-income households, it can increase housing affordability in three ways.

1. Some current occupants of lower-priced units trade-up to a more expensive new housing.
2. Some new owners rent their units at relatively low prices.
3. House prices tend to decline over time due to wear and changing styles, so relatively expensive housing eventually becomes affordable, provided that more is built each year to meet demand.

In most communities, subsidies can only serve a minor portion of the total lower-priced housing demand. Most lower-income households depend on market-produce housing; policies which affect the production of such housing affect current and future housing prices. In most cases, the number of new units built is many times greater than those displaced, and even if the new units are initially too expensive for lower-income households, increasing supply tends to drive down rents in the short term through filtering, and more over the long term as the new units become cheaper through depreciation (Morales 2016).

Policy reforms described in this report which reduce housing development costs increase the number of households that can be built with a given subsidy budget. For example, a charity or agency with one acre of land and a two-million dollar budget to build social housing might be able to build six single-family homes with two-car parking garages, ten townhouses with one covered parking space per unit, twenty garden apartments with one parking space per unit, and thirty apartments with eight unbundled parking spaces available to households that need them.

Academic studies show that upzoning and other policies that increase infill development frees up lower-priced housing, and increases affordability (Been, Ellen and O'Regan 2019 and 2023; Dong 2021; Mast 2019; Rosenthal 2014; Zuk and Chapple 2016). A recent review of this research, *The Effect of Market-Rate Development on Neighborhood Rents* (Phillips, Manville and Lens 2021), found that new market-rate development usually increases nearby housing affordability, including lower-priced rentals, through filtering. To minimize displacement problems the researchers recommend that market infill should be directed to higher-resource communities, with complementary policies such as tenant protections and public housing development.

Growth Machine Versus Homevoters

Argument. Some critics argue that urban development politics is dominated by a "growth machine," in which elected officials and zoning boards are influenced by coalitions of business and civic leaders interested mainly in economic growth, resulting in excessive development, which harms poor households. According to this hypothesis, housing prices are driven up by development policies that favor higher-priced development. An alternative, developed by the economist William Fischel, is the "homevoter hypothesis," argues that development politics are dominated by homeowners, who are also interested primarily in maximizing their home values, and therefore limit development in existing neighborhoods in order to keep housing scarce, resulting in too little development, which harms poor households.

A study by Been, Madar and McDonnell (2014), "Urban Land-Use Regulation: Are Homevoters Overtaking the Growth Machine?" used detailed New York City housing sales data to test these hypotheses. The study compared *upzones* (zoning changes that increase allowed density) and *downzones* (zoning changes that reduce allowed density). It found that in most cases, proximity to amenities such as public transit stations and high quality public schools lead to more downzones, and neighborhoods with population growth, indicating consumer demand, were also associated with downzoning. Downzoning was strongly correlated with neighborhoods that have high home ownership rates and mostly white residents: parcels in tracts with high homeownership rates were 43% more likely to be downzoned and 25% less likely to be upzoned, and parcels in Census tracts that were over 80% white were more than seven times more likely to be downzoned than parcels in tracts that were less than 20% white. Parcels in districts with high voter turnout were 230% more likely to be downzoned, and 53% less likely to be upzoned.

These results support the homevoter hypothesis, in which local homeowners vote to limit development in their neighborhoods, resulting in less development than the market demands, which increases property values and reduces housing affordability. This suggests that development politics in New York City, and probably other attractive cities, are dominated by homeowners who prefer less development, and particularly less affordable development, than needed to meet market demands, through restrictions in infill development densities and multi-family housing.

Conclusions

A rational and compassionate society ensures that all households have affordable housing and transportation options. Many cities fail to do this. As a result, low- and moderate-income households are often forced to choose between inferior housing, isolated locations, or excessive financial burdens that leave insufficient funds for other essential goods. This study investigates causes and solutions to this problem.

Unaffordability can be evaluated in various ways that lead to different conclusions as to the nature of the problem and how it should be solved. Experts previously recommended that households spend less than 30% of their budgets on housing, but since households often make trade-offs between housing and transportation costs, many now recommend spending less than 45% of budgets on housing and transport combined, recognizing that a cheap house is not really affordable if located in an area with high transport expenses, and households can afford to spend more for an energy-efficient house located in an accessible, multi-modal neighborhood where utility and transport costs are low.

Many commonly-used affordability indicators are incomplete or biased: they often reflect average rather than lower-income households; ignore operation (maintenance and utility) costs and transport costs; ignore rental housing; and only consider single-family housing costs, ignoring more compact and affordable housing types such as condominiums and townhouses. These biases can lead to sub-optimal housing policies, such as cheap urban-fringe housing with high infrastructure and transport costs.

This study investigated various factors that affect affordability, including land prices, density, construction costs, operating expenses (repairs, maintenance, insurance and utilities) and location (and therefore transport costs). It developed the *Housing Affordability Analysis Spreadsheet*, which can be used to evaluate how specific factors affect total costs.

Table 20 compares four general approaches for increasing affordable housing; each has advantages and disadvantages. Most communities use a combination of these, for example, providing affordable housing subsidies and reducing lower-priced infill development costs in order to maximize the number of affordable units that will be built within the available budget.

Table 20 **Affordable Housing Approaches**

Approach	Advantages	Disadvantages
Undesirable housing. Inferior houses in unpleasant or dangerous areas.	Occurs naturally; requires no public policy intervention or subsidy.	Is uncomfortable and dangerous, and often concentrates poverty.
Urban expansion. Build basic housing in currently undeveloped areas	Cheap land reduces development costs and allows larger parcels	Increases costs of providing public service and occupants transportation, and displaces openspace
Subsidies. Government or charity subsidies, and mandates that force developers to sell some units below-market prices	Increases housing affordability for qualifying households.	Usually only serves a small portion of affordable housing needs, is costly and often reduces moderate-priced housing supply.
Affordable infill cost reductions. Reduce costs and impediments to lower-priced infill development.	Supports infill housing which provides many benefits. Can reduce costs and increase supply of all housing types. Requires no subsidy.	Requires changing development practices, overcoming local political opposition, and addressing problems such as spillover parking.

There are several ways to increase housing affordability, each with advantages and disadvantages. Most communities should implement a combination of these to meet all affordable housing demands.

Automobile dependency imposes significant costs, typically adding $3,500 to $5,000 annually for each additional automobile a household must own, which can finance $50,000 to $150,000 larger mortgages, allowing households to spend more on housing in accessible locations. Since motor vehicles rapidly depreciate while real estate appreciates in value, households tend to build long-term wealth by shifting expenditures from transportation to housing. More multimodal locations also reduce travel time, accident risk and sedentary living, and increase economic opportunity and resilience by providing cost savings opportunities available when needed. As a result, lower-income households can benefit by locating in accessible, multimodal neighborhoods with low transport costs.

This analysis indicates that, considering both housing and transport expenses, affordable-accessible housing generally has the lowest total costs, and provides other benefits, as summarized in Table 21. Affordable-accessible housing is the opposite of gentrification: it creates communities where diverse type of households can live together. Businesses and governments also benefit from affordable-accessible housing that allows households to save on vehicle and fuel costs and spend more on housing, since housing expenditures provide greater developer profits, real estate commissions, property taxes and local economic activity.

Table 21 **Affordable-Accessible Housing Benefits**

Increased Household Affordability	Reduced Vehicle Travel	Reduced Sprawl
Households have cheaper housing and transport options	More multimodal neighborhoods reduce per capita vehicle travel	More compact housing types developed in more accessible locations
Improved housing options, particularly for disadvantaged households Household financial savings Reduced homelessness and associated social problems such as crime Creates more diverse neighborhoods, allowing "aging in place" Higher property values and tax revenues	Reduced traffic and parking congestion Reduced road and parking infrastructure costs Reduced traffic accidents Reduced chauffeuring burdens More efficient public transit services	Reduced per capita land consumption Reduced costs of providing public infrastructure and services Improved accessibility and economic opportunity for disadvantaged residents Energy conservation and pollution emission reductions More local economic development

Compared with unaffordable or sprawled housing, affordable-accessible housing provides numerous benefits.

Despite these benefits, affordable development faces significant obstacles. Current policies discourage affordable infill development; affordable housing types, such as small apartments with unbundled parking, are illegal to build in most urban neighborhoods reflecting the assumptions that "normal" households want single-family housing with garages, and low-priced housing attracts undesirable people, so public policies should exclude them from most neighborhoods. Policies that support affordable infill housing reflect more diverse demands and community goals, and more optimistic assumptions about lower-income households.

Many objections to affordable infill housing reflect narrow and exaggerated fears. It is untrue that the development density increases normally required for affordable-accessible housing cause mental illness and crime rates to rise, or local property values to decline. In fact, by providing stable housing for at-risk populations they can reduce total mental illness and crime risks, and by allowing more development to occur per acre, they can increase property values while reducing costs per housing unit. Affordable infill housing residents tend to own fewer vehicles and drive less than in sprawled, automobile-dependent areas, so, although affordable-accessible housing may increase local traffic and parking impacts, they reduce regional impacts, benefitting communities overall.

A key insight of this study is that increasing affordable-accessible housing supply does not necessarily require special incentives or subsidies, it simply requires increased development of moderate-priced housing, which becomes low-priced, affordable housing over time. Because developer profits tend to increase with housing prices, they will only produce moderate-priced housing if their costs are low. Analysis in this report indicates that with supportive municipal policies, developers can earn reasonable profits building moderate-priced housing in accessible urban neighborhoods. Even if initially priced more than affordable to lower-income households, it tends to become affordable as it ages or if operated by a non-profit society.

There are many possible ways to support affordable housing development. Some strategies are better than others overall because they reduce housing construction costs, rather than shifting costs, and support other strategic objectives such as reducing traffic problems and sprawl. For example, affordable housing mandates reduce housing costs for some households but increase costs for others, and urban fringe development reduces land costs but increases infrastructure and transport costs. In contrast, increasing allowable densities and reducing parking requirements reduces overall development costs and provides other benefits.

Current residents often oppose affordable-accessible housing development. Some of this opposition reflects concerns about direct impacts, such as construction disruptions, reduced privacy and increased traffic, which can be mitigated with thoughtful design and management strategies. Infill development can benefit existing residents by increasing local services, reducing regional traffic problems, and because current residents may themselves want lower-priced housing options in their neighborhoods sometime in the future. Much of the opposition reflects fears that lower-priced housing will attract poor residents who increase problems such as crime and poor school performance. There is some truth and much inaccuracy in these fears. Although social problems tend to increase with concentrated poverty, most lower-priced housing occupants are responsible and law abiding low-wage workers, students and pensioners. Research described in this report indicates that affordable-accessible housing can help reduce overall crime rates by increasing passive surveillance, improving economic opportunities for at-risk residents, and reducing motor vehicle crimes.

Opposition to infill development tends to be effective due to a political power imbalance: development opponents tend to be well organized and politically powerful while the lower-income households that demand such housing are generally unaware of their interests and politically weak, resulting in less affordable-accessible housing development than is socially optimal considering consumer welfare impacts (including benefits to low-income households that will occupy the new housing) and regional benefits (including reductions in overall traffic and parking congestion, traffic accidents, pollution emissions and crime rates, plus increased business activity compared with more sprawled development).

This analysis challenges conventional assumptions about how best to help disadvantaged people. Currently, conservative economists are primarily concerned with increasing their education and employment opportunities through economic expansion, while most liberal economists are primarily concerned with wealth redistribution through special targeted policies and programs; both want to help lower-income households afford larger homes and more vehicle travel. Affordable-accessible housing development emphasizes a different approach, it helps households be poor but happy.

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