Selling Smart Growth

Communicating the Direct Benefits of More Accessible, Multi-Modal Locations to Households, Businesses and Governments

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Smart Growth refers to compact, multi-modal development. This can provide many benefits to residents, businesses and governments. We can do better at communicating these benefits.

Summary
Households often face trade-offs between housing and transportation costs: they can choose a cheaper house at the urban fringe where transportation is expensive, or pay more for a home in a more accessible and multi-modal, “Smart Growth” neighborhood where transport is cheaper. Urban fringe homes generally offer more space per dollar, and so appear to be better investments, but there are other economic factors to consider. By shifting household spending from transport to real estate, Smart Growth tends to increase household wealth, and by providing more affordable transport options it increases economic resilience. It increases mobility options for non-drivers, which increases their economic opportunities and reduces drivers’ chauffeuring burdens. Smart Growth reduces residents’ traffic risks, and improves their fitness and health. Smart Growth also increases real estate industry profits, local economic development and property tax revenues. This report examines these factors and describes how to communicate them to consumers, real estate professionals and policy makers.
Introduction

When choosing home locations, households often make trade-offs between housing and transportation costs: urban fringe areas have cheaper housing but more expensive transport, and urban neighborhoods have cheaper transport and more expansive housing. Although there is growing discussion of the relative merits of urban and suburban home locations, they often overlook significant household benefits of choosing more compact, multi-modal residential locations.

For convenience sake this report often uses the terms sprawl for dispersed, urban fringe, automobile-dependent areas, and Smart Growth (also called Location Efficiency or Location Affordability and Transit-Oriented Development) for more compact, accessible and multi-modal neighborhoods. Table 1 contrasts these two development patterns. Sprawl refers to areas where automobiles are essential, while Smart Growth refers to areas where automobiles are optional, to typical households.

### Table 1 Comparing Smart Growth and Sprawl (SGN 2011; Litman 2013)

<table>
<thead>
<tr>
<th></th>
<th>Sprawl</th>
<th>Smart Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth pattern</td>
<td>Urban fringe (greenfield) development</td>
<td>Infill (brownfield) development.</td>
</tr>
<tr>
<td>Density</td>
<td>Lower-density, dispersed activities</td>
<td>Higher-density, clustered activities</td>
</tr>
<tr>
<td>Land use mix</td>
<td>Homogeneous (housing, services and businesses are geographically separated)</td>
<td>Mixed uses (housing, services and businesses are located close together)</td>
</tr>
<tr>
<td>Scale</td>
<td>Large scale. Large blocks and wide roads. Less detail, since people experience the landscape at a distance, as motorists.</td>
<td>Human scale. Smaller blocks and roads. More detail, since people experience the landscape up close, as pedestrians.</td>
</tr>
<tr>
<td>Transport</td>
<td>Automobile-oriented. Poorly suited for walking, cycling and transit.</td>
<td>Multi-modal. Supports walking, cycling and public transit as well as automobiles.</td>
</tr>
<tr>
<td>Roadway design</td>
<td>Roads are less connected and designed to maximize vehicle traffic volume and speed</td>
<td>Roads are well connected and designed to accommodate various users and activities</td>
</tr>
<tr>
<td>Planning process</td>
<td>Unplanned, with little coordination between jurisdictions and stakeholders.</td>
<td>Planned and coordinated between jurisdictions and stakeholders.</td>
</tr>
</tbody>
</table>

This table compares sprawl and Smart Growth. Put simply, sprawl is where automobile ownership is essential and Smart Growth is where it is optional for most households.

There is considerable research on sprawl costs and Smart Growth benefits (Burchell, et al. 2005; Ewing and Hamidi 2014; Litman 2014), much of which is technical and focuses on infrastructure and environmental impacts. There is less information oriented to help consumers, businesses and local officials understand the direct benefits they can gain from more compact and accessible home locations. This report is intended to help fill that gap.

This is a timely issue. Surveys indicate that a growing portion of consumers value urban features such as accessibility and multi-modalism, but face various obstacles that discourage them from choosing Smart Growth locations, including myths about the dangers of urban living, and policies that favor sprawl over urban housing. Providing more information about Smart Growth benefits can help some, possibly many, households to choose home locations that best serve their long-term needs, and leverages additional indirect benefits to businesses, local communities and the environment.
Household Benefits
Households often make trade-offs between housing and transportation costs; they can choose a cheaper house at the urban fringe, or pay more for a home in a more accessible, multi-modal urban neighborhood. Many studies have examined these trade-offs in developed (Haas, et al. 2006; Quednau 2016; ULI 2009) and developing countries (Morrison 2014; Isalou, Litman and Shahmoradi 2014), and new tools can help evaluate these trade-offs (CNT 2015; FHWA 2011).

Smart Growth is more accessible and multimodal. It is more compact and mixed, so common destinations are closer together, and more are within convenient walking and bicycling distances. In addition, their transportation systems are designed for active modes (walking and bicycling), micro modes (e-scooters and e-bikes), and public transit. This reduces the time and money that residents must spend travelling, and is particularly beneficial for people who cannot, should not, or prefer not to drive for most travel. Figure 1 is a heatmap showing average commute duration in a typical North American urban region (Oklahoma City). It shows that residents of central neighborhoods have far shorter duration commutes than in suburban areas at the urban fringe.

Figure 1 Commute Duration (Mineta Institute Commute Duration Mapping System)

Various analysis tools quantify the transportation cost savings provided by a more accessible and multimodal location where residents can own fewer vehicles, drive less and rely more on other travel modes. For example, the Housing and Transportation (H+T) Affordability Index integrates housing price and transport expenditure data to provide neighborhood level information on housing and transport costs (CNT 2016). Figure 2 illustrates a typical analysis. The left image indicates the areas where housing is considered affordable (housing expenditures total less than 30% of household budgets, indicated in yellow). The right image shows the areas considered overall affordable (housing and transport expenditures together total less than 45% of household budgets, indicated in yellow). Sprawled areas tend to have more affordable housing, but urban neighborhoods tend to have the greatest overall affordability because their higher housing costs are more than offset by lower transport costs.
Figure 2  Pittsburgh Housing and Transport Costs (http://htaindex.cnt.org/user-guide)

This figure illustrates housing and transport cost trade-offs. The left image indicates that sprawled areas tend to have the most affordable housing (indicated in yellow), but the right image shows that urban neighborhoods tend to have the greatest overall affordability because their higher housing costs are more than offset by lower transport costs.

To meet basic mobility needs, sprawled areas require that most adults own a personal automobile and drive high annual miles, which typically costs $4,000 or more annually. Inner suburbs provide better, and Transit Oriented Development (TOD) provides the best, accessibility and mobility options, allowing households to reduce vehicle ownership and use, and associated costs (Arrington and Sloop 2009; CNT 2015; Adam Millard-Ball 2015; Schneider, Handy and Shafizadeh 2014).

Figure 3  Comparing Typical Housing Expenditures

A typical $60,000-annual-income household can afford to spend $27,000 on housing and transport combined. Smart Growth reduces transport and increases housing expenditures.
In a typical situation (Figure 3), a household can choose between an urban fringe house that requires spending 25% of income on housing and 20% on transportation (two cars); an inner suburb that requires spending 33% on housing and 12% on transport (one car); or a Transit-Oriented Development (TOD) that requires spending 40% on housing and 5% on transport (car-free) for a TOD house. Each option has the same total housing and transport costs (45% of budget), so in the short-run they seem financially equal. Conventional real estate sales practices often highlight that households can obtain better value, they pay less per square foot, with urban fringe housing (Figure 4), and common banking practices, which only consider housing costs and ignore transport costs, tend to favor the urban fringe house, described as “drive till you qualify” (Hanson, Schnier and Turnbull 2012; Lewyn 2013).

**Figure 4 Comparing Price Per Square Foot by Urban Area (DataQuick)**

Real estate sales analyses often compare costs per square foot, which generally implies that sprawled, automobile-dependent areas provide the best value, although this ignores other economic factors such as transport costs. Households can often save overall by choosing a house in an accessible, multi-modal neighborhood due to their transport cost savings.

However, since housing tends to appreciate and vehicles rapidly depreciate in value (see box below), their long-term household wealth impacts differ significantly. Table 2 illustrates a typical example. Accounting for other costs (transportation, maintenance, insurance, property taxes and utilities), a typical $60,000-annual-income household can afford $10,783 in annual mortgage payments in an urban fringe location with high transport costs. With a $100,000 down payment this can purchase a $251,975 house. After a decade the household will have paid off $83,263 in loan principle. If the same household chooses a Transit Oriented Development (TOD) with lower transport costs, it can afford $19,044 annual mortgage payments. With the same down payment this can purchase a $368,405 house that in a decade pays $147,053 toward the loan principle, building $63,789 more equity than the urban fringe location.
Table 2  Comparing Expenditures by a Typical $60,000 Annual Income Household

<table>
<thead>
<tr>
<th>portion of income spent on transportation</th>
<th>Urban Fringe (20%)</th>
<th>Inner Suburb (12%)</th>
<th>TOD (5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total transport budget</td>
<td>$12,000</td>
<td>$7,200</td>
<td>$3,000</td>
</tr>
<tr>
<td>Vehicle (including taxis and rentals)</td>
<td>$7,900</td>
<td>$4,800</td>
<td>$1,600</td>
</tr>
<tr>
<td>Fuel</td>
<td>$4,000</td>
<td>$2,000</td>
<td>$400</td>
</tr>
<tr>
<td>Public transit</td>
<td>$100</td>
<td>$400</td>
<td>$1,000</td>
</tr>
<tr>
<td>Total portion of income spent on transportation</td>
<td>20%</td>
<td>12%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Table illustrates another example. A $65,000 annual-income household can afford to spend about $30,000 annually on housing and transportation, which can finance a large 2,000 sq. ft. urban townhouse or apartment, but not a crowded 1,200 sq. ft. single-family suburban house.

Table 4  City Versus Suburb Housing & Transport Costs

| compared with suburban single-family housing, urban multi-family housing has lower land, construction, parking, maintenance, heating/cooling costs and transportation costs. As a result, households can generally afford a larger, urban townhouse or apartment than a suburban single-family house. |
|-------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Land price per acre                             | City (multi-family) | $1,000,000 | $107 | $200,000 | $20,000 | $20,000 |
| Houses per acre                                 | Suburb (single-family) | $200,000 | 4 | $20,000 | $40,000 | $20,000 |
| Construction costs per square foot (ICC 2016)   | Infrastructure (driveway & utility connections) | $20,000 | $1,517 | $40,000 | $1,904 |
| Parking garage spaces                           | $20,000 | $600 | 0.5 | $2,000 | $600 | $600 |
| Cost per parking space                          | $20,000 | $1,517 | 2.0 | $1,750 | $600 | $600 |
| House square feet                               | $2,000 | $1,517 | 1,200 | $1,750 | $600 | $600 |
| Total capital costs                             | $294,000 | $313,862 | $291,975 | $311,456 | $291,975 | $311,456 |
| Annualized capital costs (5%, 25 yrs.)          | $20,860 | $20,860 | $20,860 | $20,860 | $20,860 | $20,860 |
| Maintenance expenses                            | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 |
| Heating and cooling                             | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 |
| Transportation expenses                         | $5,000 | $10,000 | $5,000 | $10,000 | $5,000 | $10,000 |
| Total annual housing and transport costs        | $29,860 | $35,441 | $29,860 | $35,441 | $29,860 | $35,441 |

Are these costs realistic? A growing body of research examines how land use factors such as density, mix, walkability and transit accessibility affect vehicle ownership and use, and associated costs (CARB 2010-2015). An urban fringe location requires most household to own one vehicle per adult, each driven 15,000 or more annual miles. Although lower-income households use many strategies to minimize their vehicle costs, such as owning older cars, purchasing minimal insurance, and performing their own maintenance when possible, it is difficult to spend less than about $6,000 annually to legally own and operate a high-annual-mileage vehicle. Households in accessible, multi-modal neighborhoods, such as downtowns and successful transit oriented developments, typically own half as many vehicles as they would in sprawling locations, and some households, particularly those with low incomes, are car-free (Arrington and Sloop 2009; Schneider, Handy and Shafizadeh 2014).
Why Urban Center Housing Values Tend To Appreciate Faster than Urban Fringe Housing

Real estate values appreciate faster in central urban neighborhoods than at the urban fringe, making it a superior investment, and experts predict this to continue over the long run for the following reasons (ULI 2016):

- Market surveys indicate that a growing portion of households value urban amenities such as walkability, diversity, and convenient access to diverse services and activities.
- Current demographic trends (a growing Millennial cohort and aging Baby Boomers) are increasing the portion of households that value urban amenities such as neighborhood walkability.
- Many negative factors of urban living, including crime risk and inferior public services, have declined in recent years, and new technologies, such as improved traveler information and carsharing, are further improving the safety and convenience of urban living.
- Urban areas tend to be economically productive and resilient, and many of their neighborhoods are considered very livable, which attracts higher income households.
- Although North America has an abundant supply of urban fringe housing, there is a limited supply of urban neighborhood land suitable for residential development, which is likely to drive up prices.
- Many jurisdictions allow density increases in urban neighborhoods, which raises land values.

Consumer expenditure surveys are likely to understate these benefits because many household own more vehicles than is essential, such as a car or truck that is only used occasionally for recreational purposes. Living in an accessible, multi-modal neighborhood gives residents the option of reducing their transportation costs if needed due to financial stresses such as loss of income or a new household expense, an option that is unavailable to residents of more automobile-dependent areas where most adults are expected to have a personal vehicle that is needed for nearly all trips. In this way, Smart Growth development increases household economic resilience, which explains why, for otherwise comparable households, housing foreclosure rates tend to be lower in Smart Growth communities (Gilderbloom, Riggs and Meares 2015; Won, Lee and Li 2017).

Housing also builds equity by appreciating in value, as illustrated in the box above and Figure 5 below. Current demographic and economic trends are causing real estate values to appreciate much faster in city centers than in suburbs. For example, in 2015, average city home values grew by 11.3% compared with 6.7% in suburbs (Pan 2016).
Figure 5  Urban, Suburban and Rural Home Values Over Time (www.zillow.com)

During the last two decades, housing values increased much more in urban than in suburban or rural areas, reflecting the increased value that many households place on urban amenities. This suggests that Smart Growth housing will appreciate more rapidly than in less urban areas, providing higher returns on investment.

Figure 6 illustrates the combined effects of increased urban housing investment and appreciation on long-term household wealth for the housing options described in Table 2, assuming that property values appreciate 1% annually at the urban fringe, 2% annually in inner suburbs, and 3% annually in TODs. The dashed lines show house values and the dark lines show net equity (house value minus mortgage debt). Starting with the same total budget and down payment, after 25 years the TOD house accrues $771,358 in equity, 2.4 times the $323,141 equity of the urban fringe house.

Figure 6  House Value and Equity Appreciation

With a $100,000 down payment and a $27,000 annual budget for housing and transportation combined, a household can afford a $251,975 urban fringe house, a $313,862 inner suburb house, or a $368,405 TOD house. Over the long term, the more valuable urban house generates far more household wealth.
This highlights differences in value appreciation between the urban fringe and TOD houses. Due to its higher initial value and greater land value appreciation, after one decade the TOD home gains an additional $63,789 in equity, after 25 years it gains an additional $448,217 in value, and if, starting at age 25, a household consistently chooses more accessible homes with lower transport costs and invests the savings in real estate, they can retire with approximately $1.8 million in equity at age 65, approximately one million dollars more than the urban fringe house.

Considering all costs, including land, infrastructure such as driveways and utility connections, construction and operating costs such as utilities, mid-rise, wood-frame townhouses and apartment buildings with minimum parking facilities tend to have the lowest cost per square foot or meter, and so allow households to purchase the largest house within a given budget (ICC 2015; Litman 2017). As a result, public policies that support the development of such housing, such as allowing higher densities and more diverse housing types, and reduced parking requirements in urban residential neighborhoods, tend to increase housing affordability and reduce household crowding.

Having affordable mobility options and lower energy costs (JRC 2011) tends to increase economic resilience, a household’s ability to respond to unexpected economic shocks such as reduced incomes or increased cost burdens. For example, if their wages decline, their car breaks down or fuel prices spike, residents of accessible, multimodal communities can commute and run errands by walking, bicycling and public transit. Residents of automobile dependent areas have no such options, and so are often forced to pay more than they can afford for cars and fuel. This helps explain significantly lower housing foreclosure rates in more compact, walkable neighborhoods (Gilderbloom, Riggs and Meares 2015; Won, Lee and Li 2017). Figure 6 illustrates this effect in the San Francisco Bay area.

**Figure 7 San Francisco Bay Area Housing Foreclosure Rates** (Schafran 2011)

More accessible, multimodal areas tend to have much lower housing foreclosure rates than more automobile-dependent, sprawled areas, indicating the increased resilience provided by more diverse mobility options.
Not all households will take advantage of all potential cost savings. For example, for status and recreation sake, many urban households spend more on vehicles than necessary to meet their basic mobility needs, but they benefit from having affordable options available if needed due to reduced income, vehicle failures, or energy price spikes, options that are unavailable in sprawled, automobile-dependent areas. This helps explain why urban neighborhood housing has significantly lower foreclosure rates than in sprawled areas (Lucy and Herlitz 2009; Pivo 2013; Rauterkus, Thrall and Hangen 2010), and why foreclosure rates tend to increase with neighborhood vehicle ownership rates (NRDC 2010).

**Figure 8  Urban Fringe Versus Infill Equity Appreciation**

Due to their higher value and greater appreciation, compared with urban fringe housing, TOD homes gain an additional $63,789 in equity after one decade, $448,217 after 25 years, and if a household consistently chooses homes with lower transport costs and invests the savings in real estate, at age 65 they retire with $1.8 million in equity, approximately one million dollars more than an urban fringe house.

Living in a more accessible and multi-modal neighborhood provides other direct household benefits. It reduces the travel time residents must spend accessing services such as shops, schools and parks, and by providing convenient alternatives to driving, it gives non-drivers more independent mobility which reduces drivers’ chauffeuring burdens. This helps residents *age in place*, that is, continue living in their communities as they grow older and become limited in their ability to drive (AARP 2011).

Smart Growth tends to significantly increase traffic safety (Figure 9) and improve public fitness and health, due to the combination of reduced driving, lower traffic speeds, improved travel options for higher-risk drivers (youths, seniors, and people impaired by alcohol or drugs), and more walking and cycling (CDC 2010; Litman and Fitzroy 2014). Dumbaugh and Rae (2009) and Marshall and Garrick (2011) find that U.S. neighborhoods with more compact, multi-modal communities with more connected street networks have much lower per capita traffic fatality rates than sprawled, automobile-dependent areas.
Sprawled counties have about four times the per capita traffic fatality rates as Smart Growth counties.

An extensive body of research indicates that Smart Growth provides significant health benefits. For example, a major study by Frederick, Riggs and Gilderbloom (2017) found that, accounting for various demographic factors, there is significant positive relationship between modal diversity (the portion of trips made by non-automobile travel modes) and positive public health outcomes including healthier behaviors reported in the Gallup/Healthway’s Well-Being Index, more leisure quality reported by Sperling’s Cities Ranked and Rated, more access to exercise reported by the Environmental Systems Research Institute, less sedentary living and obesity reported in the Center for Disease Control’s Diabetes Interactive Atlas, more Years of Potential Life Lost (an indicator of longevity and overall health), and higher birth weights (an indicator of infant health) reported by the National Center for Health Statistics. These relationships are stronger than many other sociological, geographical, and economic indicators including density, latitude, race, education and income, suggesting that living in a more multimodal community provides significant health benefits. Ewing and Hamidi (2014) found that Smart Growth significantly increases residents’ lifespans; for every doubling in their Sprawl Index, life expectancy increases approximately 4% which translates into a three-year difference in life expectancy between residents of more and less compact counties.

A ten-year study of Perth, Australia residents found that their overall health improved if they moved from sprawled to more compact, walkable urban neighborhoods (Giles-Corti, et al. 2013). For every local shop, residents’ walking activity increased by 5-6 minutes per week, and for every recreational facility available such as a park or beach, residents’ physical activity increased by another 21 minutes per week. Similarly, by comparing Vancouver, BC neighborhoods, Frank, et al. (2010) found that adults living in the 25% most walkable neighborhoods walk, bike and take transit 2-3 times more, drive approximately 58% less than those in more auto-oriented areas, and are half as likely to be overweight than those in the least walkable neighborhoods, and each additional grocery store within a 1-kilometer distance from an individual’s residence was associated with an 11% reduction in the likelihood of being overweight.
This is not to ignore other important factors to consider when choosing home locations. Some people are poorly suited to urban living because they own large pets, are anti-social, or uncomfortable with cultural diversity. However, some commonly-cited objections are based on inaccurate information or self-fulfilling prophecies. For example, many people believe that cities are dangerous. Although some urban areas (particularly commercial districts and areas with concentrated poverty) have higher crime rates, a law-abiding person’s risk of being a crime victim are comparable in cities, suburbs and rural areas (Litman 2015). All else being equal, crime rates tend to decline with urban density and mix, due to more passive surveillance (also called eyes on the street) as more residents and by-passers can see and report possible threats (Gilderbloom, Riggs and Meares 2015). Some crimes, such as vehicle assaults, thefts and vandalism, tend to increase with vehicle ownership, and Smart Growth features that increase passive surveillance, such as improved walkability and more mixed development, tend to reduce crime rates (Hillier and Sahbaz 2006). Cities are safer than suburbs overall, considering both crime and traffic risks (Myers, et al. 2013). Some impoverished neighborhood schools perform poorly, but other urban schools perform well, and such problems tend to decline as urban neighborhoods become more diverse. Safety and school quality concerns should rationally affect which urban neighborhoods a household should consider living in, but do not really justify choosing sprawl over more compact neighborhoods.

Living in a more accessible and multi-modal neighborhood is particularly beneficial to physically and economically disadvantaged people (Jaffe 2016). It tends to increase their integration (they are less geographically isolated), economic opportunity (they have better access to education, employment and services), and economic mobility (they are more likely to become economically successful) (Ewing and Hamidi 2014; Lens and Monkkonen 2016). Using data from the Harvard Equality of Opportunity Project, Ewing, et al. (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 – a 16% increase relative to their counterparts who remained in concentrated poverty.

Table 4 lists various advantages and disadvantages of living in urban neighborhoods that households should consider when making location decisions.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased household wealth generation</td>
<td>Higher housing costs per square foot</td>
</tr>
<tr>
<td>Transportation cost savings</td>
<td>Less privacy</td>
</tr>
<tr>
<td>Improved accessibility, less time spent driving</td>
<td>Less greenspace (smaller gardens)</td>
</tr>
<tr>
<td>Improved mobility for non-drivers and reduced chauffeuring burdens on drivers</td>
<td>More noise and air pollution exposure</td>
</tr>
<tr>
<td>Increased economic resilience and opportunity</td>
<td>More local traffic and parking congestion</td>
</tr>
<tr>
<td>Increased traffic safety</td>
<td>Higher crime and lower quality schools in some neighborhoods</td>
</tr>
<tr>
<td>Improved fitness and health</td>
<td>More housing options (e.g., apartments)</td>
</tr>
<tr>
<td>More cultural diversity</td>
<td>More cultural diversity</td>
</tr>
<tr>
<td>Increased economic opportunity and mobility</td>
<td>Increased economic opportunity and mobility</td>
</tr>
</tbody>
</table>

Smart Growth has various advantages and disadvantages to consider when choosing home locations.
Businesses
Smart Growth benefits many businesses and industries (USEPA 2013). Real estate agents earn higher commissions and developers can earn greater profits if their customers spend less on transportation and more on housing. Figure 10 compares the commissions earned on the three housing options described in Table 2: the TOD house provides a 46% larger commission than the urban fringe house. Developer profits also tend to increase with the higher housing demand and prices.

Figure 10 Real Estate Agent Commissions (Table 2 Housing Values, 5% Commissions)

This does not mean that real estate agents or developers should expect all households to choose Smart Growth neighborhood homes even if they truly prefer urban fringe locations, but they have good reasons to encourage home buyers to consider housing in neighborhoods with lower transportation costs and to explain the various benefits they can enjoy, as previously described.

More compact, multi-modal development tends to increase regional economic activity in several ways (Angel and Blei 2015; IEDC 2006; Kooshian and Winkelman 2011). More compact and accessible development increases the number of jobs available to potential workers and the pool of workers available to businesses (Levine, et al. 2012); increases total jobs and property values in an area; reduces transportation costs; increases infrastructure efficiencies and reduces parking facility costs; and provides agglomeration efficiencies (Melo, Graham and Noland 2009; Renaissance Planning Group 2012). Residents of compact, walkable urban neighborhoods tend to shop locally, increasing local business activity and helping to create more attractive commercial centers.

Figure 11 Jobs Created Per Million Dollar Expenditure (ACEEE 2011)
Because housing development is more labor-intensive than vehicle and fuel production, shifting spending from transportation to housing increases regional employment and business activity (Figure 8). According to one study, a one million dollar expenditure on either new construction or housing renovations generates approximately three full-time-equivalent direct jobs plus ten indirect and ancillary jobs, which is far higher than expenditures on motor vehicles and fuel (FCM 2012). Because public transit is particularly labor intensive, shifting expenditures from private vehicles to public transit tends to significantly increase regional employment and productivity, as indicates in Table 5.

**Table 5** Economic Impacts per $1 Million Expenditures (Chmelynski 2008)

<table>
<thead>
<tr>
<th>Expense category</th>
<th>Employment Full Time Equivalent Jobs</th>
<th>Compensation (wages) 2006 Dollars</th>
<th>Value Added 2006 Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto fuel</td>
<td>12.8</td>
<td>$516,438</td>
<td>$1,139,110</td>
</tr>
<tr>
<td>Other vehicle expenses</td>
<td>13.7</td>
<td>$600,082</td>
<td>$1,088,845</td>
</tr>
<tr>
<td>Average household bundles</td>
<td>17.3</td>
<td>$627,465</td>
<td>$1,292,362</td>
</tr>
<tr>
<td>Public transit</td>
<td>31.3</td>
<td>$1,591,993</td>
<td>$1,815,823</td>
</tr>
</tbody>
</table>

A million dollar spending shifted from fuel to a typical bundle of consumer goods adds 4.5 jobs to the U.S. economy, and shifts to public transit spending add 18.5 jobs. Regional impacts are much larger.

These factors help explain why per capita Gross Domestic Product (GDP) tends to decline as per capita vehicle travel increases (Figure 12): many of the factors that lead to sprawl and automobile dependency tend to reduce economic productivity.

**Figure 12** Per Capita GDP and VMT For U.S. States (FHWA’s Highway Statistics and the Bureau of Economic Account’s Gross Domestic Product By Metropolitan Area).

Per capita economic productivity increases as vehicle travel declines. (Each dot is a U.S. state.)

This and other research indicate that many of the factors that encourage automobile travel are overall economically harmful, and Smart Growth policies that reduce per capita vehicle travel, and associated costs tend to support economic development.

As a result, real estate and development industries, business organizations, and economic development agencies all have good reasons to encourage households to choose homes located in more accessible, multi-modal neighborhoods where they can spend less of their budget on transportation and more on housing, and support Smart Growth development policies that help create such neighborhoods.
**Local Government**

Smart Growth can provide fiscal benefits to municipal and regional governments by reducing costs and increasing revenues (CMAP 2014; McKeeman 2012; OEP 2012). More compact development tends to reduce the costs of providing public infrastructure and services (Burchell, et al. 2005; Litman 2014). Smart Growth development typically reduces public infrastructure construction costs by a third and ongoing public services costs by 10% (SGA 2013). It costs government less to provide services such as emergency response and school transportation in more compact areas (Figure 13). Although rural residents traditionally accept lower quality services, such as unpaved roads and volunteer fire departments, sprawled development attracts households that demand urban-quality services in low-density, urban fringe locations where they are expensive to provide.

**Figure 13**  
*Transportation Costs Per Student* (SGA 2015, p. 11)

Wisconsin Department of Public Instruction data show that school transport costs are high for low-density development (under 50 school pupils per square mile) and decline with density.

If households spend less on transport and use the savings to purchase more valuable homes, they pay more total property taxes, as illustrated in Figure 14. Smart Growth policies can further increase tax revenue if they allow more commercial development.

**Figure 14**  
*Annual Property Tax Payments*

Higher value real estate generates more per capita property tax revenue, which allows local governments to provide more public services or reduce tax rates.
Smart Growth also increases tax revenues per acre of land, and therefore total government revenue within a particular jurisdiction (Minicozzi 2012). Figures 15 and 16 illustrate this effect.

For example, one study found that 3.4 acres of mixed urban development in Sarasota County, Florida provides the same number of housing units as 30.6 acres of suburban housing, consumes about one-tenth the land, has only 57% the infrastructure costs, and provides 8.3 times as much tax revenue (PIP 2009). Because of their lower costs and higher revenues, the annual return on infrastructure investment (annual tax revenue relative to annualized public infrastructure costs) is about 35% for compact development, compared with only 2% for sprawl, so an urban highrise repays its infrastructure costs in about three years, compared with 42 years for suburban multi-family development.

The additional revenue can allow municipal governments to provide better public services or reduce overall tax rates, and the additional business activity increases overall economic productivity and resilience. Because Smart Growth residents tend to impose lower public service costs and pay more property taxes per capita, they often subsidize households in sprawled areas (Nenshi 2016). As a result, municipal governments have good economic reasons to implement policies that support more compact and multi-modal development where residents can spend less on transport and more on housing.
Benefits Summary
Table 6 summarizes various Smart Growth benefits identified in this report. Our challenge is to communicate these benefits to appropriate audiences using concepts and terms that they understand.

Table 6: Summary of Direct Smart Growth Benefits

<table>
<thead>
<tr>
<th>Smart Growth</th>
<th>Households</th>
<th>Businesses</th>
<th>Local Governments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Increased household wealth generation</td>
<td>• Larger real estate commissions</td>
<td>• More efficient public infrastructure and services</td>
</tr>
<tr>
<td></td>
<td>• Transportation cost savings</td>
<td>• Increased housing demand and developer profits</td>
<td>• More tax revenue per capita and acre</td>
</tr>
<tr>
<td></td>
<td>• Improved accessibility, less driving</td>
<td>• More regional employment, business activity and economic productivity</td>
<td>• More diverse and resilient tax base</td>
</tr>
<tr>
<td></td>
<td>• Improved mobility for non-drivers and reduced chauffeuring burdens on drivers</td>
<td>• More local customers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• More economic resilience and opportunity</td>
<td>• Increased pool of potential employees</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Increased traffic safety</td>
<td>• Infrastructure savings, such as reduced parking facility costs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Improved fitness and health</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• More housing options</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• More cultural diversity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• More economic opportunity and mobility</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Smart Growth provides various benefits to households, businesses and local governments.

Smart Growth implementation involves various policy changes. Table 7 identifies their typical impacts on households, businesses and local governments. It may be helpful to communicate the benefits of particular policy changes on particular groups. For example, allowing more multi-family housing with reduced parking requirements benefits lower-income households that want affordable housing in accessible neighborhoods, and allowing denser and more mixed development can help businesses.

Table 7: Impacts of Typical Smart Growth Policy Changes

<table>
<thead>
<tr>
<th>Policy Changes</th>
<th>Households</th>
<th>Businesses</th>
<th>Local Governments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allow denser and more mixed development</td>
<td>Allows more households to live in urban areas</td>
<td>More local development, business activity and agglomeration efficiencies</td>
<td>Increases tax revenues</td>
</tr>
<tr>
<td>Allow more multi-family housing</td>
<td>Allows more low-income households to live in urban areas</td>
<td>More local development and business activity</td>
<td>Increases tax revenues but may increase some public service costs</td>
</tr>
<tr>
<td>Reduce parking requirements and more efficient parking management</td>
<td>Reduces housing costs, particularly for carfree households</td>
<td>Reduces building costs</td>
<td>May generate revenue but requires more enforcement</td>
</tr>
<tr>
<td>Improve walking, cycling and public transit</td>
<td>Provides savings, improves mobility and health</td>
<td>Can increase business activity</td>
<td>Can reduce costs compared with car travel</td>
</tr>
<tr>
<td>More public services located in city centers, less at the urban fringe</td>
<td>Benefits urban residents, increases costs to urban fringe residents</td>
<td>Increases urban business activity, agglomeration efficiencies</td>
<td>Tends to increase building costs and increase efficiencies</td>
</tr>
<tr>
<td>Location-based development fees (charge higher fees for urban fringe housing)</td>
<td>Provides savings to urban residents, increases costs to urban fringe residents</td>
<td>Tends to reduce costs to urban businesses</td>
<td>Can reduce the costs of providing public services</td>
</tr>
</tbody>
</table>

Smart Growth involves various policy changes that have various impacts.
Resources for Evaluating Smart Growth Benefits
Several information resources can help measure and communicate the benefits of Smart Growth locations. My blog, Smart Growth Loves Heatmaps (Litman 2021) describes websites that illustrate these benefits with informative and beautiful heatmaps.

For example, the Housing and Transportation (H+T) Affordability Index provides information on the cost of both housing and transportation as a portion of average household income at the neighborhood level, in easy to understand maps. While housing alone is traditionally deemed affordable when consuming no more than 30% of income, the H+T Index incorporates transportation costs—usually a household’s second-largest expense—to show that location-efficient places can be more livable and affordable. Figure 17 illustrates its results for the Chicago area. The map on the left shows average housing spending relative to incomes, the map on the right shows average housing and transportation spending relative to incomes. Note the greater housing and transportation affordability near many rail transit stations, indicating that transit-oriented development can increase overall affordability.

Figure 17 Madison Tax Revenue Per Developed Acre (https://htaindex.cnt.org)

These maps illustrate the H+T Affordability Index maps. Lighter shades indicate greater affordability. The map on the left shows housing affordability, the map on the right shows housing and transportation affordability. Note the greater overall affordability near many rail transit stations.

TRUE (https://truebytlc.com) provides information for real estate agents and developers on housing that reflect home purchase, operations (e.g., utility) and transportation affordability goals.

Table 8 The True Lifestyle Cost Method (https://truebytlc.com)

<table>
<thead>
<tr>
<th>Mortgage</th>
<th>Utilities</th>
<th>Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest rates</td>
<td>House size</td>
<td>Work location</td>
</tr>
<tr>
<td>Taxes</td>
<td>House age</td>
<td>Local transportation options</td>
</tr>
<tr>
<td>Homeowners insurance</td>
<td>Weather data</td>
<td>Fuel prices</td>
</tr>
<tr>
<td></td>
<td>Type of heating and cooling</td>
<td>Vehicle expenses (maintenance and tools)</td>
</tr>
<tr>
<td></td>
<td>Number of occupants</td>
<td>Vehicle insurance</td>
</tr>
</tbody>
</table>

The TRUE calculator considers various housing and transportation cost factors.
Critiquing and Improving Information Resources

Although many organizations and publications promote Smart Growth, few effectively communicate the benefits described in this report. This section evaluates gaps and recommends improvements.

Many professional and advocacy organizations promote Smart Growth, but they primarily consider a public policy perspective, and tend to focus on a limited set of impacts. Few provide information oriented toward consumers making household location decisions. For example, the About Smart Growth and Smart Growth Online websites describe how Smart Growth can provide infrastructure and transportation resource savings, and livability benefits, but there is no information oriented toward consumers making location decisions concerning the increased wealth generation of shifting household expenditures from transport to housing, economic resilience from having more affordable transport options, or traffic safety benefits. These websites include information for developers concerning successful Smart Growth projects, but no information for real estate professionals concerning the higher commissions they can earn, or toward local officials concerning increased per capita tax revenues.

There is growing recognition of the trade-offs between housing and transport costs, including development of tools such as the Housing and Transportation (H+T) Index that helps households understand these trade-offs, and the Location Efficient Mortgage concept can allow some households to borrow more for a home in a more accessible location due to its lower transport costs (CNT 2015), and some highlight community livability benefits (Knight Frank 2020), but they seldom highlight the additional wealth generated when households shift expenditures from transport to housing.

Some popular real estate advisors recognize some benefits of urban living, such as improved neighborhood walkability and reduced commute travel time, but ignored many of the benefits discussed in this report. For example, a recent MoneySense article, City or Suburbs: Where Can You Afford to Live? compared advantages and disadvantages of urban and suburban living, including shorter and cheaper commutes in urban areas, and cheaper homes and larger yards in suburban areas, but overlooked most benefits of choosing an urban location identified in this report, such as increased household wealth generation and resilience, increased safety and health, and improved mobility for non-drivers.

To discuss Smart Growth benefits it is necessary to overcome some myths. Some people assume that Smart Growth requires all households to be carfree and live in high-rise apartments, with no suburban development. In fact, in most cities (those that are not geographically constrained), most benefits can be achieved with moderate densities (10-20 residents per acre), with most households living in a single-family home with a car. Smart Growth is not anti-suburb. Compact suburbs with good walking and cycling conditions, good bus services, diverse housing types, and an attractive downtown or commercial street, can achieve most Smart Growth benefits.

It is also important to address myths about the risks and problems of urban living. Many people have exaggerated fears about urban crime rates, due to outdated and inaccurate information. For example, crime maps (Figure 18) show more crimes in urban neighborhoods than at the urban fringe, which suggests that cities are dangerous. But dense, mixed urban areas have more of just about everything per area (acre, hectare, square-mile or -kilometer): more people, businesses, wealth, poverty, social services, productivity, tragedy, generosity and crime, and some types of crime are associated with certain land use types, such as banks and bars. As a result, the relatively high number of crimes reported in city centers does not really indicate that denser development causes responsible people to become criminals or increases the risk a typical person faces of becoming a crime victim (Lerner 2014).
Crimes tend to concentrate in urban centers due to the concentration of people, businesses, motor vehicles, poverty and social services. This does not mean that increased development density increases total crime or that individuals face greater risk by living in urban neighborhoods.

Smart Growth advocacy, including information in this report, is based on rational arguments about the benefits of more compact, accessible, multi-modal development. Such information is useful but insufficient because households make decisions based on their emotions as well as their minds. It is therefore important to use market analysis techniques to better understand the factors that affect these decisions, and develop appropriate responses. Smart Growth marketing materials can emphasize positive concepts such as those in the box below, plus images and stories that illustrate direct benefits to households, businesses and local governments. These materials can target specific demographic groups that are facing location decisions.

**Examples of Positive Smart Growth Terms and Concepts**

- Convenience and fun
- Transportation cost savings
- Shorter commutes: less stress and more family time
- Walk and bikeability
- Fitness and health
- Community livability & vibrancy
- Cultural diversity
- Local economic development
- Economic resilience
- Outstanding investment values
- Reduced traffic accident risk

This is not intended to criticize Smart Growth advocacy organizations, but rather to identify additional arguments and information resources that can further increase their effectiveness.
Conclusions
Families often make trade-offs between housing and transportation costs: they can spend less for a house at the urban fringe where transportation costs are high, or spend more for housing in a more accessible, multi-modal neighborhood where they can own fewer cars and drive less, and spend significantly less on vehicles and fuel. In the short run, these trade-offs often approximately offset each other so the household spends the same total on combined housing and transportation in either location. However, over the long run, housing tends to appreciate in value while vehicles depreciate, so Smart Growth housing tends to generate far more long-term wealth.

Figure 19  Housing and Transportation Cost Trade-Offs

Urban fringe housing tends to be cheaper but has higher transportation costs, while housing in more accessible and multi-modal neighborhoods costs more but reduces transport expenses. These often offset each other, so households pay the same total in both locations. However, urban housing tends to appreciate in value while vehicles depreciate, so Smart Growth housing tends to generate more long-term wealth.

In a typical situation, a sprawled, automobile-dependent urban fringe location requires the household to spend least 20% of its budget on transport, but if the same household locates in a central, multi-modal urban neighborhood, must only spend 5% or less of its budget on transport. Using standard investment guidelines that households devote no more than 45% of their total budgets on transport and housing combined, a $60,000 annual income household can afford a $251,975 urban fringe home or a $368,405 Transit-Oriented Development (TOD) home. The TOD home accrues an additional $63,789 equity (wealth) after ten years, $448,217 after 25 years, and $1,016,561 after 40 years, indicating that an average-income household can retire with an extra million dollars simply by choosing homes with low transport costs and spending the savings on real estate or other investments with 3% annual returns.

Smart Growth neighborhoods provide other benefits to households, businesses and local governments, including reduced commuting time, increased economic resilience and opportunity, improved mobility for non-drivers which reduces drivers’ chauffeuring burdens, increased safety and fitness, increased local business profits and employment, infrastructure cost savings, and increased tax revenues.

Consumer expenditure survey data understates these benefits because living in an accessible, multi-modal neighborhood gives residents the ability to reduce their transportation costs if needed due to financial stresses such as loss of income or a new household expense, an option that is unavailable to residents of more automobile-dependent areas where most adults are expected to have a personal vehicle that is needed for nearly all trips. In this way, Smart Growth development increases household
economic resilience, which explains why its residents experience far lower foreclosure rates than similar households in automobile-dependent areas.

There are many ways that households can take advantage of these opportunities; they do not need to live car-free in a central city Transit-Oriented Development to achieve these benefits. For example, households can reduce their vehicle costs by choosing a suburban home that is within convenient walking distance of shops, schools and bus routes, and so needs just one rather than two cars.

By creating more compact and accessible communities where residents drive less and rely on more affordable modes, Smart Growth policies can provide direct benefits to households, businesses and local governments. These benefits are often overlooked or undervalued in policy analysis. As a result, advocates can increase support for Smart Growth by providing better information about these benefits.

Many current real estate marketing practices tend to favor sprawl over Smart Growth. Houses are often compared by cost per square foot; measured that way, urban fringe homes often seem better investments than TOD, since they offer more space per dollar, although they actually build less equity over the long run. Similarly, simplistic crime analysis implies that urban areas are dangerous, although cities actually tend to be safer and healthier overall. More comprehensive and accurate information can encourage households to choose more accessible, multi-modal neighborhood.

This is a timely issue. Consumer surveys indicate that a large and growing portion of households value urban neighborhood features such as transportation cost savings and neighborhood walkability, and are willing to pay a premium to do so. These households are more likely to choose urban locations and support Smart Growth policies if given more positive information about their potential benefits.

Advocates can better communicate these benefits to households, businesses and community leaders. Smart Growth is often portrayed as a personal sacrifice needed to reduce public service costs and environmental risks. We can change this narrative to include more direct benefits. To build support, Smart Growth advocates can employ marketing techniques, to better understand people’s fears and prejudices and identify appropriate positive messages concerning the benefits of urban living. This should include appropriate analysis tools that quantify benefits, such as the additional household wealth generated, plus safety and health benefits, of choosing to live in an accessible neighborhood, plus positive images and stories that touch people’s hearts.

Smart Growth is a great product. Our challenge is to better answer the question that many stakeholders ask, “What’s in it for me?”
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