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BACKGROUND

Transit & Active Transportation Require Supportive Community Design

Given the many health, environmental and social benefits associated with active transportation, it is important to encourage people to walk, cycle, and take transit as often as they are able. In order for transit and active transportation to be a reasonable choice, the communities where people live and work need to support that choice.

Community Design Affects Transit & Active Transportation

There is resounding evidence of statistically significant associations between the built environment and travel behavior. The more walkable a neighbourhood is in design, the more often people walk, cycle and use public transit. For example, a Toronto study found that residents from the most walkable neighbourhoods walk for utilitarian reasons (rather than for pleasure) 2.7 times as often, and use transit 2.5 times as often, as residents in the least walkable neighbourhoods and have, on average, a Body Mass Index (**BMI**) that is one point less than residents from the least walkable neighbourhoods (TPH, 2012). One study found that the built environment, which is the man-made surroundings that provide the setting for human activity, accounts for between 48% and 90% of the differences in walking levels (Ewing, 2010).



Community Design Elements

The community design elements that have been found to have the greatest impact on walking, cycling and transit use by residents include the 5 D's – Density, Diversity, Design, Destination and Distance.

Population Density

Population density refers to how many residents and/or employees are located within an area such as a hectare or square kilometres (McKibbin, 2011). A certain level of population density is needed to ensure that there are enough people living or working in an area to support efficient transit service and a range of retail amenities and services. However, population density on its own is unlikely to have a positive effect on active transportation if there are very few destinations, such as stores and restaurants, within a reasonable distance of homes. Density is important because it supports land use diversity and accessibility to destinations which are closely linked to travel behaviour (Ewing, 2010; Zapata-Diomed, Belen, 2016).

Land Use Diversity

Land use diversity refers to the degree to which different land uses, such as residences, jobs, schools, and retail outlets, are located within close proximity to each other (McKibbin, 2011). The closer different destinations are, the more likely people are to meet their daily needs using active transportation. There is strong evidence of a positive relationship between land use diversity and active transportation



(Zapata-Diomed, Belen, 2016; Dunn, 2009; Saelens, 2003). Results from a California study, for example, show that neighbourhoods that support active transportation are places where there are a large number and variety of businesses in a relatively small area (Boarnet, 2010).

Design

Design refers to a range of measures that describe how easy it is to walk, cycle, and use transit. Design features include measures such as sidewalks and bicycle lanes. Having separated spaces for pedestrians, cyclists, transit, and motor vehicles improves overall safety and contributes to a more comfortable environment for all users (Lee, 2004). Cycling lanes and facilities, such as advance stop lanes for cyclists at intersections, have been shown to increase cycling in countries such as Denmark, England, the Netherlands, and the United States (NCCHPP, 2011; TPH 2014).

Another design feature includes traffic calming measures that slow traffic, such as narrowing traffic lanes, lane restrictions, curb extensions or speed bumps, which have been found to encourage active transportation because they increase the perception of safety (NCCHPP, 2011). Intersection density, which refers to the number of intersections in a given area, and

street connectivity, are also important design features because they shorten distances and provide more route options for pedestrians, cyclists, and transit (Ewing, 2010).

Design also includes those elements such as streetscapes, lighting, street furniture (like benches for sitting, umbrellas for shade), building façades, and building setbacks that can help make people feel safe and interested while moving through public spaces in their neighbourhoods (TPH, 2014). These elements are associated with increased active transportation.

Lastly, design can include the parking requirements within communities. Parking has an impact on many other walkable community elements including density and land use diversity (Saelens, 2003). Large parking areas, like those attached to big box stores, encourage driving and create an unappealing, uninviting, and unsafe environment for pedestrians.



Destination Accessibility

Destination accessibility refers to how easy it is to reach destinations such as jobs and retail and is important because it affects how long people need to travel (McKibbin, 2011). We are more likely to choose active transportation if our destinations are easily reached by walking or cycling. There is a strong relationship between the availability of destinations and active travel (Ewing, 2010; Owen, 2010; Zapata-Diomed, 2016). The destinations with the strongest links to active transport include retail, services, post offices, food outlets, transit stops, jobs, and open public spaces such as parks (Zapata-Diomed, 2016).

Walking distance for retail and services is typically considered 400 metres or a 5-minute walk. However, people may be willing to walk farther for higher order transit, schools and work (Saelens, 2003). Cycling distance is typically considered between 1 km and 5 km (Mitra, 2016). If destinations are too far apart, people are more likely to drive (Mitra, 2016).

Distance to Transit

Distance to transit refers to how far an area is from the nearest public transit stop or station (McKibbin, 2011). Having a transit stop nearby is strongly associated with the likelihood that people will take transit. There is strong evidence that shows that the shorter the distance to transit, the more likely individuals will walk or cycle to transit (Zapata-Diomed, 2016).

However, the quality of public transit access relative to car access is important. Being located near a transit stop is less important than where the transit can take you (McKibbin, 2011).

The ideal distance for local transit (which provides travel within a community) from origin (such as a house or job) to the transit stop appears to be 400 metres (Ewing, 2010). Regional transit (which provides travel between communities) is a destination people may be willing to travel farther to and should connect with local transit (Saelen, 2003).



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