

CHAPTER 1: INTRODUCTION

1.1 Background

The goal that all governments and city planners should strive for is to build cities more inclusive, safe, resilient, and sustainable. As of 2023, half of humanity, 4 billion people, live in cities. Even though the birth rate has slowed down, the rate of urbanization has not. It is estimated that by 2050, two out of every three people are likely to be living in cities or other urban centers, according to a new United Nations report. As more and more people keep moving to cities in search of jobs, education, and a better quality of life, the problem of sustainability begins to emerge. *“Many countries will face challenges in meeting the needs of their growing urban populations, including for housing, transportation, energy systems, and other infrastructure; as well as for employment and basic services such as education and health care,”* said the United Nations Department of Economic and Social Affairs (DESA).

People are beginning to realize the effects of bad urban planning and design, not only for themselves but the environment they live in. The rapid development of urban areas has led to numerous issues like congestion, polluted air, carbon emissions, high housing costs, and widening inequality. Cities are also the major contributors to the global warming. Cities occupy just 3% of the Earth’s surface land area but account for 60-80% of energy consumption and 75% of carbon emissions (Jane Jacobs, 1992). Among those who are affected are GenZ and Millennials. They are currently fighting the rising cost of housing, and living, much greater than previous generations. GenZ and Millennials also have to face the effect of climate change to a greater extent, all while coping with the highest level of loneliness seen in any generation. All of these factors and changes will impact the future city designs and thus, in turn, force people and businesses to adapt.

1.2 What has already been done on this issue

Walkable cities, walkability, and other related issues have been extensively researched ever since the 1970s. This model is a response to American urban

planning after WW2, specifically the urban sprawl and car dependency culture. Today, a walkable city is a part of a movement to help reduce the impact of bad urban planning on the environment, the economy, and the lives of the people within it. A walkable city shared more than just a few attributes of a sustainable city.

In researching this subject, the author found that there are a lot of books, and research papers written regarding this issue by authors from all over the world. However, there is little information on this issue available in Vietnamese. The term walkable city is not familiar to many Vietnamese people. If you type “walkable city” into the Google search bar, the closest answer you’ll get is the walkable street. So, it is obvious that this is not a common topic of conversation among Vietnamese. Of course, there are few research written by Vietnamese researchers that discuss this issue, but of course, they are all written in English, and none of them focus on college students' awareness of the issue.

1.3 Objectives

Research question: What are the young generations' perceptions of walkable cities?

Research objectives:

- Explore young people's perception of a walkable city, its benefits, flaws and setbacks, and their attitude toward it.
- How businesses should adapt according to the new demographic trends.

Research method: This study uses in-depth interviews to collect data and deductive coding to analyze data.

1.4 Thesis structure

The remainder of this study is structured as follows: Chapter 2 present a literature review of walkability, walkable city, its characteristics, and benefits; Chapter 3 methodology that the author has used; Chapter 4 discuss the results and provide suggestion to improve awareness among college student; finally, Chapter 5 will provide some practical implementations and conclude the study.

CHAPTER 2: LITERATURE REVIEW

2.1 Walkability definition

The term ‘walkability’ was first coined by Jane Jacobs, in her book *The Life and Death of Great American Cities* in the 60s. Since then, there have been a lot of definitions for the walkable city, however, there are 2 that simplify it best:

Walkability is *the extent to which the built environment supports and encourages walking by providing pedestrian comfort and safety, connecting people with varied destinations within a reasonable amount of time and effort, and offering visual interest in journeys throughout the network* (Southworth, 2008).

Walkability is *“the extent to which the built environment is friendly to the presence of people walking, living, shopping, visiting, enjoying or spending time in an area”* (Burden, 2010).

2.2 Walkable cities – what are they?

In summary, a walkable city is a city where:

- Walking is a default mode of transportation for everyone, regardless of age, income, and ability.
- Enable people to travel from where they currently are to where they need to be without the need for a personal vehicle. Personal vehicles are still allowed to coexist, but unnecessary.
- The entire city is designed and planned out so that it would best serve people’s mobility and improve their quality of life, i.e. adequate PT system, amenities are equally spread and easy to access.
- A walkable city has many elements of a sustainable city.

2.3 Characteristics of a walkable city

To better understand it, we need to explore the characteristics of a walkable city:

Human-centric Pedestrian first	In a walkable city, pedestrians are given priority over motorists. Motor vehicle speed and numbers are reduced and, in some areas, banned entirely, commonly also known as Car-free city.
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	<p>The city has a human-scale design, with block lengths and building sizes tightly regulated.</p> <p>Street has many facilities that allow pedestrians to stop, stay, and spend time like parks, plazas, and small parks.</p>
<p>Equality Inclusivity Diversity</p>	<p>In a walkable city, being able to freely travel, access, and enjoy the city is recognized as a basic human right. To that end, a city must promote diversity, equality, and inclusivity.</p> <p>Diversity in this context doesn't necessarily mean race, ethnicity, or religion, but rather age, income, and occupation.</p> <p>Inclusive toward those with disabilities (vision or hearing impairments, wheelchairs, and cane users).</p> <p>Meanwhile, Equality means providing social mobility, i.e. the opportunity to move around, to access the city's services and amenities, to find jobs, and to build a better life.</p> <p>In short, a walkable city should provide the same opportunity for everyone and not discriminate against any targeted group.</p>
<p>Accessibility</p>	<p>A walkable city allows everyone easy access to schools, hospitals, offices, shops, parks, libraries, outdoor coffees, and public spaces like town squares, and parklets.</p> <p>This is archived through Transit-Oriented Development (TOD). By providing many alternative modes of transportation like bus, bicycle, train, subway, walking and spacing them within 10–20 min of where people are. (This is also called the 15-minute city).</p>
<p>Continuity Connectivity</p>	<p>The streets of the city must be linked continuously, allowing people to travel everywhere within the city unobstructed. This means providing many alternative routes, if one path is closed for maintenance, others should still be available. At the same time minimize dead-end streets and cul-de-sacs.</p>

<p>Aesthetics Attractiveness Visually Interesting</p>	<p>For a city to be walkable, it must have things that attract people, i.e. a reason for them to walk. Cities should be places people want to be in, not just pass by quickly. In the theory of “walk appeal,” Steve Mouzon argues that how far people will walk depends on what they encounter along the way. This could be walkable public spaces, beautiful city squares, attractive architecture, historical buildings, landmarks, and public arts. Mystery alleys and building design also add to the city a sense of mystery and intrigue, which provokes curiosity and compels visitors to explore them.</p>
<p>Comfortable Pleasantness Enjoyable</p>	<p>Comfortable means clean air, low noise level, sidewalks are wide enough to accommodate a large number of people, and clean with good quality pavements and furniture. Protecting people from harsh weather and motorists. Reduce encroachments into the pedestrian right-of-way.</p>
<p>Safety Security</p>	<p>Safety means that pedestrians should be protected from motorized traffic, while security means that pedestrians should be protected from crime and incivilities.</p> <p>The city must provide the people with safety, or the perception of safety, from crime, and accidents both in the morning and at night. The feeling unsafe negatively impacts people’s willingness to walk.</p> <p>Adequate light can help make people feel safer and increase nighttime activities.</p> <p>Traffic calming measures to slow driving speeds and reduce traffic volumes like chokers, chicanes, speed bumps, raised crosswalks, narrowed streets, rough paving, traffic diverters, roundabouts, and landscaping; Physical separation from fastmoving cars, or buffers, include curb extensions, parklets,</p>

	stormwater management features, parking, cycle racks, cycle share stations, and curbside cycle tracks; Adequate time and signalization protection when crossing intersections
Convenient	The city as a whole is built to assist people to move around. This could be benches, public toilets, signs and pathfinders. An example is the ramps built to aid wheelchair users.
Mix land use/ Mixed zoning High-density/ Compact	Instead of separating the places where people live, work, and entertain. A walkable city mixes these functions so that the travel distance is reduced dramatically.
Mixed-use buildings	In urban sprawl design, a house is just for living, called single-family residential. In a walkable city, houses usually have mixed functions. People can live on the upper floors and do business on the bottom as seen in many Asian cities, and towns.
Distinctiveness	Cities should not look identical to one another. Rather, there should be a variety of buildings; shapes, sizes, materials, and colors. Each city can enhance its identity by embracing its architectural styles.
Variety	Urban streets need to accommodate a variety of speeds. Depending on age and ability, people will walk at different speeds. Typically, walking speeds range from 0.3 m/s–1.75 m/s or 1 km/h–6 km/h. Walkable streets must designed to accommodate a variety of transportation modes.
Sociability	Cities are meant to promote social interaction, therefore, one of the main tasks is to foster a sense of belonging and social cohesion. This can be done by allowing for a range of experiences and community activities that help people form connections, like festivals, parades, etc.

<p>Conspicuous Visibility Transparency</p>	<p>Transparency is the extent to which the pedestrian environment is obvious, clear, and/or transparent, i.e. the degree to which people can see or perceive human activity beyond the edge of a street makes a pedestrian environment more attractive. This is achieved through windows, outdoor displays, and sidewalk cafés. A transparent environment allows one to sense the social and natural life of a place through first-hand observation.</p>
<p>Vibrant Activated</p>	<p>Vibrant is the degree to which varied applications of shop front/housing materials, design, color, and décor add interest to the pedestrian experience. Activating main streets, where people can gather and interact (e.g., pedestrian pocket parks and plazas) helps foster a sense of visually active frontages.</p>
<p>Sense of place Community focus</p>	<p>A walkable city fosters a sense of place, which helps people and visitors form an emotional attachment to it. The city also strives to preserve and strengthen the community's heritage.</p>
<p>Clean</p>	<p>Streets are clean and well-maintained, clear of garbage, litter, broken glass, or graffiti. Have an adequate number of garbage bins.</p>
<p>Sustainable</p>	<p>A walkable city must be a sustainable city.</p>
<p>Policy support</p>	<p>According to the Global Walkability Index 2006, policy support refers to the commitment and support of local authorities through funding and resources devoted to pedestrians and PT; Existence and enforcement of relevant pedestrian safety laws and regulations; Degree of public outreach for pedestrian and driving safety and etiquette.</p>

Table 2 - 1. Walkable city characteristics

2.4 Student's awareness

According to a study done by Siti Rechal (2019), awareness can be explained as understanding something that happens around us. awareness can be used to know someone's perception of what they feel or understand in some aspects. Awareness is divided into some cases; social awareness, culture awareness, self-awareness, health awareness, and leadership awareness.

2.5 Why walkable cities are important

2.5.1 Why people today don't walk more

Walking is the best possible exercise. Habituate yourself to walk very far. - Thomas Jefferson (August 19, 1785, in a letter to Peter Carr).

Walking is the oldest and most basic form of transportation. Before the age of the automobile, people simply walked to get to where they needed to be. It is an enjoyable, sustainable, and healthy mode of transportation. There were also horses, wagons, rail, and of course, bicycles. People walk for all kinds of reasons, Some walk To school, to work, To shopping, to meet friends, to recreation, or just simply to enjoy walking.

Walking also provides many benefits to people and the city as it is the most environmentally friendly, costs next to nothing, and provides basic and natural daily exercise needed to keep people healthy and in shape. The overall environmental and health benefits of walking have been extensively analyzed and discussed in literature over the years (Fernando Fonseca, et al., 2022).

Even though walking is the most fundamental form of human activity, in the 21st century, people no longer consider walking as a natural form of transportation. Rather, most people just choose to drive whenever they to go somewhere. In his book *Exercised the Science of Physical Activity, rest and Health*, professor of human evolutionary biology Daniel Lieberman stated: The average hunter-gather takes 10-15000 steps a day, an average American pre pandemic take 4700 steps a day...20% Americans take the necessary the amount recommended by health organization-150 minutes per week. He reasons that we have created a world where exercise has become a choice, and a person in today's world has to make a

conscious choice to go to the gym and get exercise. The situation is most clearly observed in developed Western countries like America, where car-dependence culture has heavily affected how people travel and their health. This means walking is the only activity left to give them some sort of daily exercise. But walking has been mitigating in today's society. Why? Because driving is *considered* to be more convenient.

2.5.2 Urban sprawl and Car dependence culture

“If you plan cities for cars and traffic, you get cars and traffic. If you plan for people and places, you get people and places.” - Fred Kent, Project for Public Space.

The 20th century was undoubtedly the century of automobiles. Thanks to industrialization, cars, and motorbikes have become more and more affordable, leading to an explosion in their numbers across the globe. Mass-produced car has revolutionized the way people move about in cities which led to their domination in cities. As of 2022, there are about 290 million cars in the US, with a population of 338 million. A similar situation is in Vietnam, where there are over 67 million motorcycles in a population of 98.5 million. This means that everyone who can own a vehicle does own one.

As more and more people begin to rely on the convenience of driving, developed cities all over the world have changed in response to it, they began to transform to accommodate the newly increased number of vehicles. Having a car became a “must” for people in these cities. Not only does owning a private car define an individual’s socioeconomic status, but the degree of car ownership plays a role in defining the status of an economically advanced city (Simon Ng, 2012).

Even though no one can deny their usefulness, they nevertheless result in an unintended effect, a city design and planning called urban sprawl, typically seen in American suburbs. Sprawl is low-density residential housing with single-use zoning, abundant free parking, with lots of cul-de-sacs, and resides dozens of miles from the city’s center. Urban sprawl began with the expansion of cities into rural areas and accelerated greatly during the last half of the 20th century. Urban Sprawl

is widespread in the 21st century, as approximately half of Americans expected to live in suburbs. The resulting environments tend to be car-oriented and out of human scale (Duy Think Do, 2018). Separating where people live and work, increases the distance people need to travel every day. This creates a car-dependency culture, where cities are designed solely to accommodate driving, meaning that people who live in these cities are forced to drive to get places. This makes driving a car the default transport mode of residents, especially when public transport is poorly provided (Simon Ng, 2012). This ultimately results in a city with lots of highways cutting right through the city, depriving those who live in it from walking, making driving their only choice. Urban density and urban sprawl. In short, these types of cities are no longer built for humans, but instead, for cars. Which led to a large number of issues regarding climate change, livability, health, and socioeconomic. Over time, people started to realize the negative effects of a car-oriented city on their city and their lives.

2.5.3 Negative effects of bad urban planning and design

Winston Churchill once said of architecture, “*We shape our buildings and thereafter they shape us*”. What that means is: that the way we build our cities affects the way we live and travel within them.

Impact on Health

Automobiles allow people to be more independent when it comes to travel. However, it is also associated with many health hazards, including air pollution, motor vehicle crashes, and pedestrian injuries and fatalities (Susan Claris, 2016).

Inactive population

Physical inactivity is the cause of most chronic diseases according to The World Health Organization. An estimated 3.2 million people die each year due to inactivity, making it the fourth leading factor of mortality.

Obesity epidemic

According to a 2016 WHO report, an estimated 13% of adults (1.9 billion people) aged 18 years and older are overweight globally, and over 650 million of those are obese. In the United States, it is estimated that over two-thirds of the

population is overweight or obese. According to the CDC and the National Center for Health Statistics, 30% of the U.S. population, 20-year-olds or above, roughly 60 million people, are obese. This is a serious problem because according to a WHO report, obesity is now one of the leading causes of death worldwide. Globally, 8% of deaths (4.7 million people) in 2017 were the result of obesity. Even though obesity does not directly respond to these deaths, but can increase their likelihood of occurring. Being overweight or obese can lead to a variety of ailments such as cardiovascular diseases, diabetes, musculoskeletal disorders, and cancers....(Susan Claris, 2016).

There are many factors that contribute to the rise of obesity like consumption of unhealthy food, DNA.. but also, a lack of physical activity due to the built environment. One study looked at the health data of more than 200,000 people in concluded that those who lived in urban sprawl were likely to walk less, weigh more, and have greater incidence of hypertension than people living in more compact areas, according to Jeff Peck.

Mental health issue

Research has shown that isolation also results in increasing the level of depression and anxiety among people (Susan Claris, 2016).

Environment health risk

Car-centric cities also negatively impact the environment, which in turn affects the lives of many people living in them. Urban transportation is the single largest source of air and noise pollution, with serious public health impacts. Emissions from motorized vehicles contain harmful chemicals, including particulate matter, nitrogen oxide, and sulfur dioxide which contribute to local air pollution. Exposure to these pollutants increases a person's risk of cardiac and respiratory diseases, including asthma and lung cancer. Long-term repeated exposure to high levels of ozone and particulates can diminish lung functions and trigger asthma and other respiratory illnesses. An estimated 3.7 million deaths worldwide were caused by air pollution (WHO, 2012).

A large number of cars also create noise pollution, contributing to several health problems, such as sleep disturbance, cardiovascular issues, poor work and school performance, and hearing impairment.

Heat is another major concern in urban areas. High-level temperatures can cause a wide range of health problems like heat syncope, fainting, heat edema, or swelling (Susan Claris, 2016).

Impact on the Economy

Health care cost

Lack of exercise among the population is estimated to cost Europe a sum of 80.4 billion euros every year. In the UK, physical inactivity has cost them an estimated 14.2 billion Euro annually, roughly 8.3% of national health spending. The United States spends around 190 billion dollars per year on treating obesity-related diseases. The CDC also estimated the direct medical costs of physical inactivity totaled more than \$76 billion in 2000.

Approximately 40 million Americans suffer from asthma, and its economic cost is estimated at \$56 billion in the United States alone. Asthma is also responsible for only a fraction of the 200,000 annual “premature deaths” that are attributed to air pollution (Susan Claris, 2016).

A US Surgeon General report has pointed out that the loneliness epidemic among young generations has resulted in a total of \$6.7 billion each year spent on excess healthcare costs. (JP Aramouni, 2023).

Car related cost

Transportation is the second-largest expense for American households after housing. According to the AAA (American Automobile Association), it costs the average American over \$9,500 a year just to own a car. This number is much worse for lower-income Americans, who spend between between 17% and 29% of their income on cars. Some of these costs include gasoline costs, repair costs, tax, and insurance costs. Car-related costs are huge considering the little time they are used. People only drive a few hours per day, meaning most of the time, they are just sitting there taking up valuable space in people's houses.

Parking cost

Personal vehicles, regardless of kind, needed space to accommodate them. They can be the width of roads, parking space in houses, on-street, or around the malls. More vehicles mean more room is needed to move and house them, which led to a massive expansion of parking lots in cities. This is most clearly observed in US cities, where most cities fill their spaces with huge empty parking lots.



Figure 2 - 1. Downtown Houston, Texas, 1970s

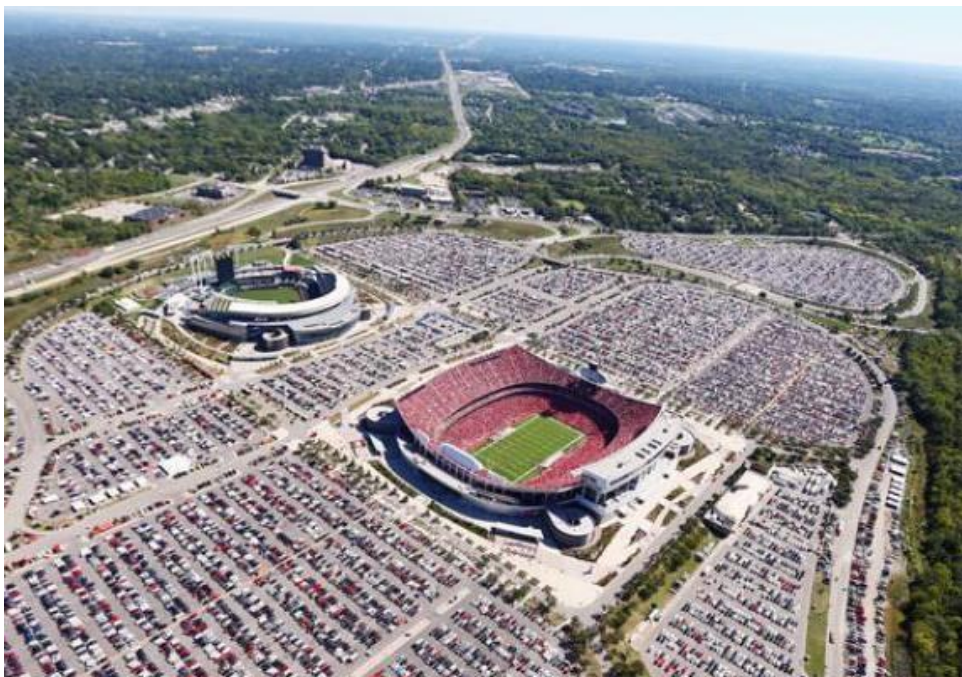


Figure 2 - 2. Truman Sports Complex, Kansas City, Missouri.

So, how much do all of these parking spaces cost the US economy? The Parking Cost, Pricing, and Revenue Calculator has calculated that parking facilities cost the US economy more than 1 trillion dollars every year. According to Daniel Baldwin Hess, 2021, there are an estimated eight parking spaces for every car, which makes parking spaces take up about one-third of land area in U.S. cities nationwide. This is in part because the US’s post-World War II development has introduced minimum parking requirements, forcing real estate developers to make room for cars. Spaces were needed near office buildings, malls, amenities such as hospitals, parks, schools, and of course, in people’s houses. Sometimes, parking space can take up as much as twice the amount of a drive-through. This results in a big problem: not enough space. City land area is a limited and valuable resource, and more space dedicated to cars means less for housing, businesses, parks, and other land uses that benefit citizens and contribute to local tax bases.

Although many think that parking is free, it is actually the opposite. Parking spaces are being publicly subsidized. According to one report, it costs an average of 0,22 dollars per mile of external parking the for average car.

Estimate External Parking Costs (2022 U.S. Dollars per Vehicle-Mile)				
Vehicle Class	Urban Peak	Urban Off-Peak	Rural	Average
Average Car	0.400	0.200	0.150	0.220
Compact Car	0.380	0.190	0.143	0.209
Electric Car	0.410	0.210	0.160	0.230
Van/Light Truck	0.440	0.220	0.165	0.242
Rideshare Passenger	0.000	0.000	0.000	0.000
Diesel Bus	0.000	0.000	0.000	0.000
Electric Bus/Trolley	0.000	0.000	0.000	0.000
Motorcycle	0.300	0.150	0.113	0.165
Bicycle	0.020	0.010	0.008	0.011
Walk	0.000	0.000	0.000	0.000
Telework	0.000	0.000	0.000	0.000

Figure 2 - 3. Source: The cost of parking

Worst, parking facility mandates force people who don’t own a car to subsidize facilities they do not need. For every dollar motorists spend on their vehicles, somebody spends about a dollar on parking.

Infrastructure cost

Roads demand more land in construction than rail and cost up to eighty times as much to build (Mimi Sheller, 2000). In the US, it is estimated that \$3.6 trillion is required by 2020 for repairing and upgrading existing infrastructure.

Inefficient transport

Car is very inefficient at transporting large amounts of people compared to public transportation like buses, trains, or just walking. This is simply because cars occupy a much larger space to transport 1 person compared to all other modes.

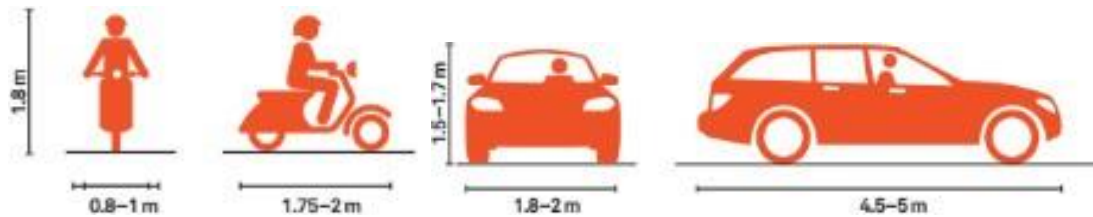


Figure 2 - 4. Source: Global Street Design, NACTO

Cost of congestion

It is simple math, the more time you spend stuck in traffic, the less time you will have to work. According to INRIX, US drivers wasted 8 billion extra hours stuck in traffic across the country in 2015. A similar situation also happened in HCC, where congestion cost the city an estimated 6 billion dollars every year, according to HCMC Department of Transport 2022 report.

Why do more roads lead to more congestion? It is called induced demand, a widely studied phenomenon dated all the way back to the 1960s. What happened is that when the city adds more road in an attempt to “reduce” congestion, it increase the road supply, combined with the slashing of the budget for public transportation, leading to more people switching to driving, the roads are then filled up, and the cycle continues until the city is literally run out of space.

Environmental Costs

Paving land for parking imposes environmental costs including stormwater management, heat island effects, aesthetic degradation, and greenspace loss (reduced farmland, wildlife habitat, etc.).

Impact on the environment

Bad urban planning also makes cities more vulnerable to the elements.

Air pollution

Jeff Peck famously said: *You Can't Spell "Carbon" Without "Car"*. And he's right.



Figure 2 - 5. Global CO2 emissions from transport, 2018 (OurWorldinData.org).

We can clearly see that automobiles are the largest contributors to emissions, over 70% in total. And of course, the worst offense among them is personal vehicles. Even though cars have become cleaner in recent decades, there is simply too much of them occupying the urban landscape. This is exacerbated by urban sprawl because it forces people to travel much greater distances to get to places. Jeff Peck has pointed out in his book, that it actually the suburbs are the ones that have the highest level of carbon emission, not the the city center. The reason lies in the way people used to measure it, by square miles. But Jeff said that: *"The best way to measure carbon is per person"*. And it turns out, the higher the density, the less people have to travel, thus lower carbon emission per person.

Noise Pollution

Another environmental concern in cities nowadays is noise pollution. Yet again, the main source of noise pollution in urban areas is automobiles, mostly due to the engines and the honks. On average, car traffic produces 79 decibels of sound, whereas human conversation is 65 decibels (Jane Jacobs, 1992). This could have detrimental effects on nature, wildlife, and human activities. Studies have shown that noise pollution can disrupt certain senses that animals rely on to find food, reproduce, avoid predators, etc. which can weaken ecosystems in an already human-dominated environment.

Heat island effect

The Urban Heat Island (UHI) effect happens when an area in the city is significantly warmer than surrounding rural areas. The heat island effect is caused by two factors: dark surfaces such as asphalt paved roads and rooftops; these surfaces can reach temperatures of 50°–70° F higher than surrounding air. The lack of trees and other vegetation in urban areas to provide shade and cool the air through evapotranspiration. As cities sprawl outward, the UHI effect expands, both in geographic extent and in intensity, because the more people drive, the more carbon they emit (Susan Claris, 2016).

Resource consumption

Resource depletion is another major global issue. Automobiles with combustion engines are one of the worst consumers of energy, as they use just 15% of the fossil fuel deposited into the automotive engine, with the remaining 85% escaping as waste heat.

Impact on society

Urban sprawl isolates people

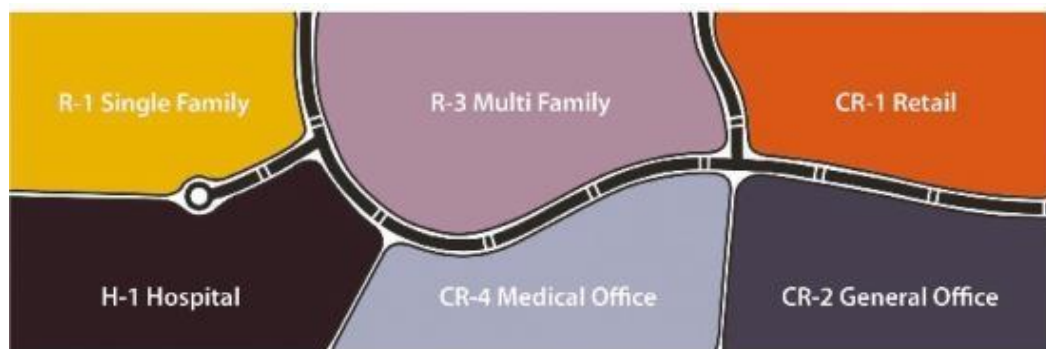


Figure 2 - 6. Urban sprawl and monofunctional area, Jeff Peck

By separating people from where they work, live, shop, and recreate, urban sprawl has aided in the alienation of our community. With the lack of safe public spaces, people have been denied the chance to meet and form connections with others, children can't play on the street because it is too dangerous. It is clear that improving car access has resulted in poorer access for pedestrians (Ravetz 1980), and with that, reduced social capital.

Loneliness epidemic

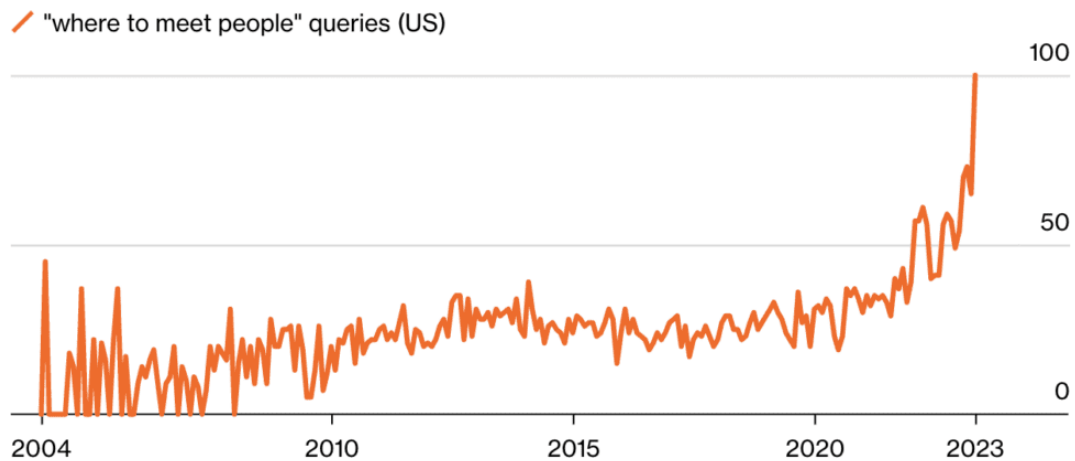


Figure 2 - 7. The loneliness epidemic is a search term. Source: Google trends

There is evidence of a loneliness epidemic among younger generations. An online survey with 250 young people who had felt lonely and suicidal at some point in their lives (Casabianca, et al., 2022).

Note that social isolation and loneliness are related, but they are not the same. According to the U.S. Surgeon General’s 2023 report, stated that: *social isolation is objectively having few social relationships, social roles, group memberships, and infrequent social interaction. Meanwhile, loneliness is a subjective internal state. It’s the distressing experience that results from perceived isolation or unmet need between an individual’s preferred and actual experience.* This means that a person can feel lonely even if they are surrounded by others.

Impact of loneliness on people and society

Loneliness has detrimental effects on physical and mental health. The U.S. Surgeon General 2023 report found that loneliness and social isolation increase the risk for premature death by 26% and 29% respectively. In addition, poor or insufficient social connection is associated with an increased risk of disease, anxiety, and depression among many others. In the same report, the US Surgeon General stated: *“The lack of social connection can have significant economic costs to individuals, communities, and society. Social isolation among older adults alone accounts for an estimated \$6.7 billion in excess Medicare spending annually”*.

Impact on inequality

Equity refers to the distribution of resources and opportunities.

Social Mobility

One-third of Americans can't drive, among them are elders, children, poor people, and those with disabilities. In a city where driving is essential and lacks adequate PT, they are disproportionately affected. Inaccessible transportation is a key barrier for people with disabilities to enter the workforce, as it is difficult to find job opportunities when you can't drive and the office is 2 hours away. An OECD study showed that the employment rate of working-age people with a disability was only 44% compared with 75% for people without a disability. Without a decent well-paying job, it is even harder to afford a house or access to crucial services like school and hospital. The lack of education and healthcare then further social inequality.

These groups are also disproportionately exposed to environmental hazards, according to one 15-year research (Jane Jacobs, 1992).

The human cost of car-centric cities

Speed kills

Speed is the single most important factor in the safety of a street (global street design). According to the WHO, there is a total of 1.24 million road traffic deaths, and 20 to 50 million people are seriously injured each year. The majority of these deaths happen in and around urban areas. The majority of these deaths are pedestrians and bicyclists, children, and older people.

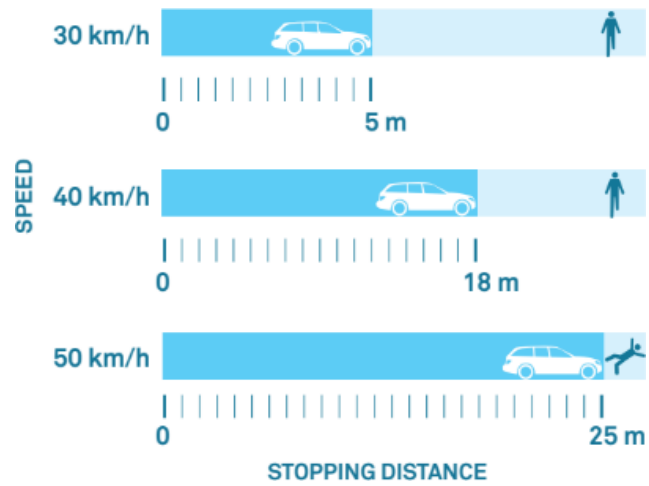


Figure 2 - 8. The relationship between speed and stopping distance. Sources: *Global street design*



Figure 2- 9. Drives' visual focus diminishes as speed increases. Source: *Global street design*

The faster the speed, the more drivers' vision diminishes. Faster speed also means an increase the fatality since there isn't enough time to react, resulting in a high death toll. According to two studies from UK and US, it is reported that: 5% of pedestrians are killed when struck by a car traveling 20 mph; 37-45 % of pedestrians are killed when struck by a car traveling 30 mph; 83-85 % of pedestrians are killed when struck by a car traveling 40 mph.

The cost of lives lost and serious injuries caused by road crashes have a significant impact on the economy.

Security issues in the metropolitan area

As mentioned above, car-centric cities disproportionately affect women, children, and other vulnerable minorities. According to a 2014 survey, 37% of Americans, nearly half of whom were women (48%), felt unsafe walking alone at night near their homes. A 2006 household survey in Delhi revealed that lack of perceived safety is the reason why women can't participate in the workforce.

Children who live in these cities rely on their parents for traveling since distances are too great and the streets are too dangerous to walk. The lack of dependant mobility has created a series of barriers and obstacles that inhibit them from an active and independent life.

2.6 Benefits of walkable cities

A walkable city provides many benefits to its people and the city itself. This study has broken them down into 5 main aspects, based on their repeated appearance.

2.6.1 Health benefits

“Walking is a man's best medicine” - Hippocrates, father of modern medicine.

More Active and Healthier People

The most noticeable advantage of walkability in a community is the health benefit of exercise for the citizens. Residents of walkable neighborhoods are twice as likely to meet daily recommended amounts of physical activity. This is because, in a walkable community, it is easy to accumulate 30 minutes of activity or more.

since the built environment encourages them to walk, according to the Victoria Transport Policy Institute (2022). People live in such a city not only walk because they have to, nor because it is easier, but also because they want to.

Among the health benefits are:

A study by Walk with a Doc has found numerous walking-related health benefits from a list of 100 findings. For instance: reduces the risk of coronary heart disease, stroke, and colon cancer, and lowers the level of cholesterol, blood pressure, and body fat. Walking can also help increase your metabolism, make your heart healthier, tone your muscles, strengthen your immune system, and increase your energy levels. Physically active people tend to live longer as increased walking activity has been linked to reduced chronic disease rates in healthier older women, older men, college students, and adolescents.

Higher levels of social connection also result in better health outcomes. According to the US Surgeon General 2023 report, community-level social capital is positively associated with a reduced burden of disease and risk for all-cause mortality. The report noted that: *on average, a one-unit increase in social capital increases the likelihood of survival by 17% and of self-reporting good health by 29%.*

Reduce obesity rate

Studies have pointed out that the rates of obesity and diabetes are lower in more walkable neighborhoods. According to Transport for London, the likelihood of individual obesity decreases by 4.8% for every km of walking. A CDC study concluded that as the level of obesity is reduced, so is the risk of cardiovascular disease, diabetes, high cholesterol, cancer, and higher amounts of anxiety and depression for people. People who live in New York County walk 80 minutes more each month and weigh an average of six pounds less than people living in Geauga County. European countries with the highest rates of walking and bicycling have less obesity, diabetes, and hypertension than the United States (Pucher and Dijkstra 2003).

Improve mental health

According to the U.S. Surgeon General, social connection is a significant predictor of longevity and better physical, cognitive, and mental health, while social isolation and loneliness are significant predictors of premature death and poor health.

A study found that those who walk for more than 8.6 minutes per day are 33% more likely to report better mental health. Walking helps with the production of endorphins to counteract stress and lower cortisol levels, improve sleep, reduction of symptoms of mild depression the increase self-confidence.

Healthier environment

A healthier environment comes with the reduction of exposure to the hazards of air pollution, which greatly lowers the chance of mortality. More trees also help to protect people from heat and provide people with a more comfortable environment to live and walk.

Enhancing creative thinking and productivity

An increase in walking is correlated with higher levels of productivity and creative thinking. According to a Stanford study, a person's creative output increases by an average of 60% when walking. Anecdotally, it is known that several great thinkers of the past used to walk when they needed to boost creativity. Steve Jobs, the late co-founder of Apple, made a habit of the walking to meetings. President Barack Obama did the same. In Samsung's new Silicon Valley headquarters, employees are never more than a floor away from stepping outside for a walk.

2.6.2 Economic benefits

A healthy population is a productive population

A healthier population is more economically productive and contributes to a larger labor supply and more tax revenue.

Reduce healthcare-related costs

A healthy person can save a lot of money on medical needs, which in turn reduces the burden on the healthcare sector and diverts the limited resources to other sectors like education, and transportation.

For most people, walking is the most accessible and affordable way to get exercise. Simply by walking more, people don't need to spend time and money on gym memberships.

Quick side note: Recently, there was a breakthrough in obesity medicine, 2 new miracle weight-less drugs called Ozempic and Wegovy, both made by Novo Nordisk. But the catch is that you start using it, you have to continuously take it or else the effect will wear off. This means people have to spend a lot of money every year. Thanks to the massive number of potential consumers, when the news broke, the company's value skyrocketed to more than the GDP of Denmark. However, if people are generally more healthy by getting daily exercise, they don't have to spend any money on this "miracle drug" at all.

Walking is good for business.

Walkable environments are not just healthier but also wealthier. Evidence has shown that walkable cities tend to generate more income compared to other cities. And it is not hard to see why. A more beautiful and livable city genuinely attracts more people and businesses, resulting in higher spending. For example, the creation of a cycle track on 9th Avenue in New York led to a 49% increase in retail sales locally based business (Pham Minh Hai, 2018).

A survey of consumers in Portland, Oregon, concluded that pedestrians there spend much more than drivers. The more people walk, the more likely they would spend money on street shops, and stores. Why? Lower speed, like walking, allows them to see clearer and have more time to check out things instead of focusing on the road. This is completely opposite to car-dependant cities, where people usually just couldn't wait to drive pass them.

Activated, vibrant public spaces can also stimulate a stronger night-time economy.

Efficient land use

Since walking doesn't need parking space, by reducing the amount of cars, the city can reduce the amount of land required for transport facilities. (One car can take up as much space as 20 pedestrians). Combined with mixed-zoning and

mixed-use housing means more room for small businesses and thus, more efficient land use.

Increase property value

Studies also point out, people are willing to spend more money to live in a walkable neighborhood. A study of real estate by Leinberger finds that houses in walkable neighborhoods are 40% higher in price as opposed to houses in the suburbs. The study results show that in the Seattle region, the premium price is at 50%; in Denver, 150%, in New York City, 200%. Another study found that each additional Walk Score point was associated with an increase of between \$500 and \$3,000 in home values.

Vehicle-related cost

Manufacturing costs: First of all, the manufacture of cars constitutes a major environmental impact in itself in terms of materials and energy use.

Infrastructure cost: The construction of facilities for pedestrians is many times cheaper than infrastructure for private vehicles. Walking infrastructure requires fewer materials and reduces construction impacts on the environment. The maintenance costs over the long term are also cheaper since walking doesn't damage roads as much as cars.

Transport Efficiency: Public transportation can move the same amount of people at a fraction of the cost compared to cars, which makes them an obvious alternative for both people and the city.

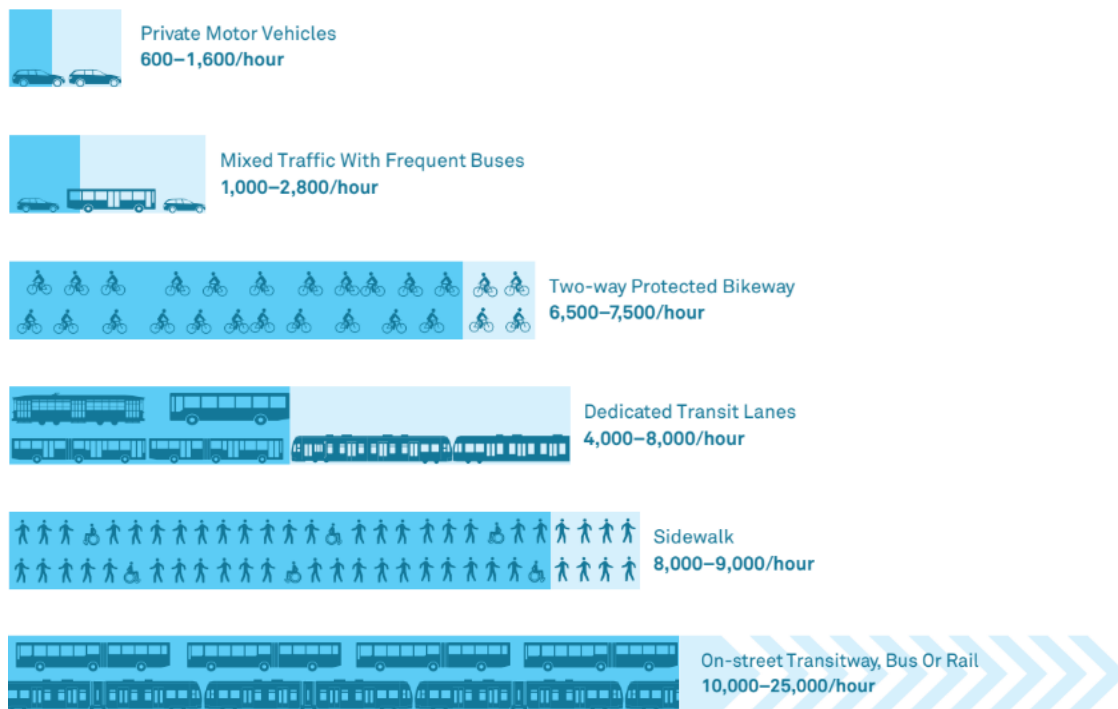


Figure 2 - 10. Hourly capacity of a 3 m-wide lane by different modes at peak conditions. Source: Global Street Design

Reduce congestion: “Adding lanes to solve traffic congestion is like loosening your belt to solve obesity” - Glen Hiemstra, CEO and Founder of Futurist.com.

Walking and PT is also more efficient in transporting a large number of people. As the PT system gets expanded throughout the city, as seen in many EU cities, and Asia, people can move from one end of the city to the other without ever need for a car. This will greatly help reduce traffic congestion. And less congestion means less wasted time and money.

Reduce travel time: The mix-used, compact nature of the walkable city also helps reduce the travel distance for people. Since everything people need is only about 15 minutes away from where they are, they don’t have to travel far, this in turn reduces their travel time.

Reduce transportation cost: A more efficient public transportation system helps reduce the cost of transporting people and goods. An unlimited annual pass on New York’s MTA buses and subways and Chicago’s CTA buses and trains cost

\$1,524 and \$1,260, respectively. This is much less than the amount an average American spends on their car, as seen below.

Share of Income Spent on Housing and Transportation, 2014
\$20,000–\$35,000 household income

Location of neighborhood where working families live	Housing	Transportation	Total
In central city	32%	22%	54%
Near other employment center	35%	31%	66%
Away from employment center	33%	37%	70%

Figure 2 - 11. Source: U.S Department of Transportation

Easy access to the city amenities means that people don't have to spend money on cars and their expenditures (fuel, maintenance, parking costs). Instead, they can walk, use bikes, and other cheaper modes of public transportation.

Provide affordable housing

Walkable cities provide more affordable housing for people. Since there are many places and activities in the city for people to go to and spend time outside, they don't have to spend a lot of money on housing.

Environmental Costs

In Houston, trees provide \$1.3 billion in stormwater benefits as trees and green alleys are 3-6 times more effective in managing stormwater per 1000 dollars invested than conventional methods (Pham Minh Hai, 2018).

Active streets facades

A more beautiful, attractive city also has economic value. Promoting walking contributes to the vibrancy of the streetscape and thriving active street frontages, thus increasing the attractiveness of the area and its monetary evaluation.

Beautiful, lively cities attract people and tourism and investment

A more beautiful city also attracts more tourism, foreign and domestic investment, more business, and talented entrepreneurs. The most famous example is Times Square, which after switching to a more pedestrian-friendly model,

attracted more than 365,000 people each day. For tourists, walking is the best way to experience a city since it increases the ‘imageability’ of a place – the quality that makes it recognizable and memorable (Marianne Knapskoga, et al., 2018).

Charles Landry, the expert behind the concept of the “Creative City”, asserts that today, when deciding where to live, 64% of people choose the city before the company or the job. *“Companies are choosing walkable downtowns because that’s where talented workers want to be. These places [...] support creativity among their employees, and help these companies live up to high standards of corporate responsibility.”*

The Highline effect

The High Line is a 2.33 km long elevated linear park, created on a former New York Central Railroad on the west side of Manhattan, New York. The most significant impact this project has on the community and its surrounding area is its economic, social, and livability. According to the Public Square CNU Journal: *“The “High Line effect” has shown how an iconic pedestrian park, funded with only \$115 million of public investment, can generate over \$2 billion in private investment surrounding the park, attracting five million visitors a year, creating 12,000 new jobs and doubling the property value in the neighborhood.”.*

2.6.3 Livability benefits

Safety

By reducing the amount of vehicles and lower speeds, narrow streets, and fewer lanes, walkable cities can create a safe environment for the residents. Shortening crosswalk distances by one meter can reduce pedestrian crashes by 6% (Pham Minh Hai, 2018). Sweden and the Netherlands have initiated Vision Zero and Sustainable Safety, programs that aim at preventing all serious road crashes and reducing the unnecessary loss of life.

Security

A walkable environment can naturally aid the prevention of crimes. Increasing the number of people on the streets helps discourage criminal behaviors. One study showed that an increase in social connections results in a 21% reduction

in murders and a 20% reduction in motor vehicle thefts. Jane Jacobs called it “*safety in numbers*” and “*eyes on the street*”. In contrast, the “*broken window theory*” suggests that poor environment quality directly relates to the increase of anti-social behaviors, such as vandalism or other forms of crimes, leading to feelings of insecurity by citizens.

Walking has recreational value

Parks are a valuable resource in the city. In densely populated areas, where many people live in small spaces without outdoor private space, cities must create shared open spaces that everyone can use. Public spaces allow people to escape from the turmoil and stress of urban life, to slow down and to enjoy nature. Greening public spaces in cities also helps provide outdoor comfort for people promote health and well-being and a better quality of life and provide people with opportunities to contact with nature, according to Jeff Peck.

Increase the quality of life

According to Dalkey and Rourke, quality of life is a person’s sense of well-being, level of happiness, and life satisfaction. According to Juozas Ruževičius there are 9 main indicators of quality of life ranked by level of importance: material welfare; health; political stability and safety; family life; social life; climate and geographical location; employment; political freedom; gender freedom (Ralf Risser, et al., 2006). Because walkable cities offer many benefits in terms of social and economic while mitigating many downsides of urban life, they tend to meet many of those requirements, as evidenced by the fact that many of the happiest countries are all walkable cities like Amsterdam, Helsinki, and Paris. These cities are visually attractive, have fewer cars, adequate public transportation systems, lots of parks, town squares, and outdoor shops, and provide genuinely good living conditions to their citizens.

2.6.4 Social benefits

Reduce social inequality

A walkable city with public space has also been recognized as a key to achieving equity between differences of social class, ethnicity, gender, age, and

ability (Kim Dovey and Elek Pafka, 2020). Well-funded public transportation and services can aid those who either can't afford to buy a car or can't use it, access to the entire city with ease. This helps the poor and less fortunate groups in society to not miss out on job opportunities and get a chance to work their way up the social ladder and improve their prospect.

A more safe environment allows children to be more independent. Parents who live in walkable cities don't need to constantly keep their children in check, and the children can be free to play outside and be more creative.

People with disabilities benefit directly from investments in universally accessible pedestrian infrastructure, which helps improve their mobility and independence. More than 1 billion people, or 15 percent of the global population, live with some form of disability, and this number is growing.¹⁸ There is a higher incidence of disability among the poor, women, and elderly, and children from poor and ethnic minority families are at significantly higher risk of having a disability.

Promote social interaction and reduce isolation

Increased walking among people ultimately results in increasing social interaction, according to one study by the University of the West of England. The more people walk, and in larger numbers, the more chance those people would run into each other, interact, and strike up a conversation. Walkable cities also provide more interesting destinations to explore and activities to try out, making life in the walkable city less isolated. For example, the explosion in e-commerce is due to the isolation and inconvenience people are facing. Since it is too much of a hassle to drive 30km to buy groceries each time, people just simply choose to order everything they need online. This resulted in the mass disappearance of malls and supermarkets in America. In contrast, malls and marketplaces in European walkable cities are still doing fine, since people can just walk 5-10 minutes to get to them.

Increase social capital

Social capital refers to the quality of relationships among people in a community, measured by the frequency of positive interactions, the number of neighborhood friends and acquaintances, and their sense of community connections, particularly among people of different economic classes and social backgrounds (us surgeon general). Residents of walkable neighborhoods have been shown to have higher measures of social capital. A study in the Republic of Ireland Leyden 2003 found a city's walkability increases social capital by as much as 80%, bolstering shared values, trust, participation in volunteering, political involvement, and a sense of identity. Which led to a dramatic reduction in drug crime (30%), vandalism (31%), and burglary (22%).

Promote the community's identity

As mentioned above, a modern city should strive to adapt while persevering in its identity and cultural heritage. One of the best examples of this is Japan. Since forever Japan has learned to incorporate things from other cultures and to make them their own. An excellent example of this is what they did to a Starbucks coffeehouse in Oharai-machi.





Figure 2 - 12. Japanese traditional Starbucks' exterior and interior. Source: <https://stories.starbucks.com/asia/stories/2021/new-store-with-traditional-japanese-design/>

Yes, that is a Starbucks coffeehouse. They have taken a global brand, often with identical modern architecture, and managed to give it an Edo-era façade. Not only does it preserve traditional Japanese architecture, but at the same time it also has a modern interior design. Proving that if you do it right, you can have the best of both worlds.

2.6.5 Environmental benefits

Climate-friendly environment

Since vehicles are the top sources of carbon emissions, by reducing their number, we will also reduce the level of carbon emissions. Better yet, ban them completely. No more cars, no more pollution and the need to consume oil. This helps make the city more resilient against the elements, reduces the UHI effect, and provides more greenery for both people and animals. Other environmental benefits include effective stormwater management, and reduce urban noise levels (trees and vegetation have been found to help reduce noise by 3- 5 decibels. Less noise pollution also means greater biodiversity.

2.6.6 A walkable city is a sustainable city

Sustainable city definition

According to the United Nations: “*Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*”

Sustainability Indicator

Sector	Indicator	Measures
Economy	Unemployment rates/ Jobs	Underemployment/employment/unemployment rates; Percentage of green jobs in the local economy; Average professional education years of the labour force.
	Economic growth	Annual GDP growth rate; Annual GNP growth rate; Net Export Growth rates (% increase of country’s total exports minus the value of its total imports per annum; Foreign Direct Investments (Capital/Earnings accrued from listed FDI’s per annum).
Environment	Green spaces	Percentage of preserved areas/reservoirs/waterways/parks in relation to total land area; Percentage of trees in the city in relation to city area and/or population size.
	Reduce greenhouse gases/ Energy efficiency	Total amount of GHG emissions per city and per capita; Percentage of total energy consumed in the city that comes from renewable sources.
Mobility	Mobility	Transportation mode split (Percentage of each mode of transportation, i.e. private, public, bicycles, pedestrians); Average commute time and cost

	Water quality/ Availability	Total amount of water availability; Water quality index/score; Proportion of population with access to adequate and safe drinking water.
	Air quality	Levels of Particulate Matter (PM10 – mg/m ³); Levels of Particulate Matter (PM2.5 – mg/m ³).
	Waste/ Reuse/ Recycle	Recycling rate (Percentage diverted from waste stream); Volume of solid waste generated.
Social	Complete neighborhood/ Compact city	Access to local/ neighbourhood services within a short distance; Crime rates; Measures of income distribution and inequality.
	Housing	Percentage of social/ affordable/ priority housing; Breakdown of the housing sector by property type (owner occupied/ rental, single occupant/couples/family/multifamily, etc.).
	Quality public space	Percentage of roadways in good condition; Percentage of green space (public parks) coverage in relation to city area and/or population size.
	Education	Number of schools with environmental education programs; Adult literacy rate.
	Sanitation	Percentage of population with access to waterborne or alternative (and effective) sanitary sewage infrastructure.
	Health	Mortality rate/ Life expectancy; Percentage of population with access to health care services.

Table 2 - 2. Sustainable Cities International's Indicators for Sustainability list.

From its definition and indicators, it is easy to see that a walkable city is a subset of a sustainable city. The 2 aspects that are not covered are Unemployment rates/Jobs and Economic growth.

2.6.7 Drivers of change

Social trends

Increase urbanization rate

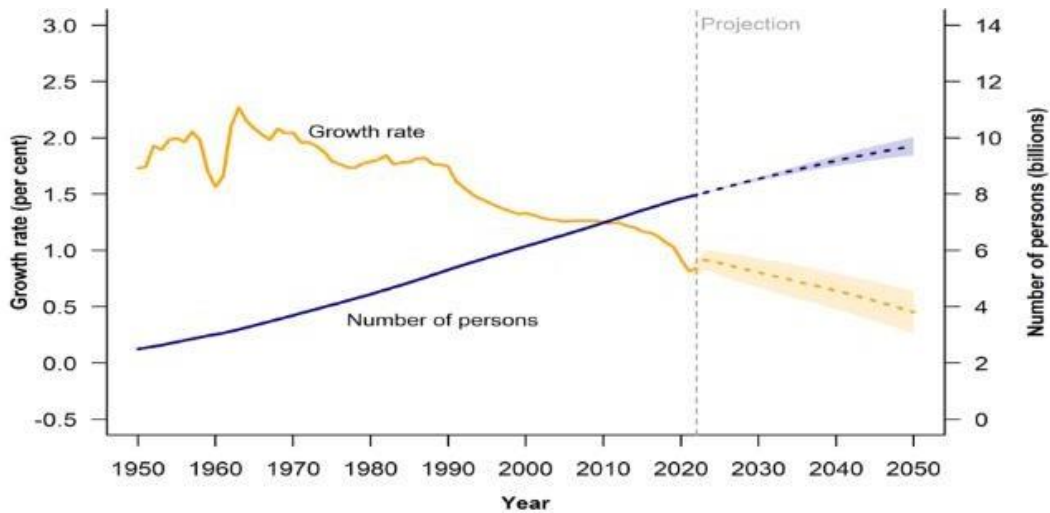


Figure 2 - 13. Global population size and annual growth rate. World Population Prospects – 2022.

In 1960, 1 billion people lived in the city, today, 55% of the world's population currently live in cities, that's over 4 billion people, and this figure is estimated to increase to about two-thirds, or 6.5 billion people, by 2050. Urbanization indeed opens up many opportunities for citizens, high-paying jobs, better healthcare and education, etc. However, the larger number of dwellers also presents many issues and pressure on the system. One of which is the need to expand the limited infrastructure and public services to accommodate the new residents. According to estimates by the Organization for Economic Cooperation and Development (OECD), governments worldwide would have to spend approximately \$71 trillion by 2030 to provide adequate global infrastructure for electricity, road and rail transport, and water. This puts immense pressure on land

and natural resources, and the need to reduce environmental shortcomings like housing shortages, pollution, and traffic congestion.

It is not just the increasing the number of people who contribute to these changes. New demographics such as an aging population also put pressure on the city to provide them with services and needs. The lack of effective urban planning compromises the quality of life of the urban population. Jeff Peck stated in his book: *“Young people find urban life simply more appealing. Educated millennials value walkability, and are moving to more walkable places. 64% of them choose first where they want to live, and only then do they look for work; 77% say they plan to live in an urban core”*.

Economic trend

With increasing living expenses, people all over the world began to switch to a more sustainable lifestyle. This means cutting costs wherever they can, like the cost of owning a car. In “The Great Car Reset,” Richard Florida stated: *“Younger people today no longer see the car as a necessary expense or a source of personal freedom. In fact, it is increasingly just the opposite: not owning a car and not owning a house are seen by more and more as a path to greater flexibility, choice, and personal autonomy”*. According to a recent study, a full 63% of millennials want to live in a place where they don’t need a car. Combined with the rising housing cost, the lack of job opportunities compared to their parent generation, and the lack of social interaction had created a major shift in young people’s demand for cars and nice houses in the suburbs.

Environmental trend

People are increasingly aware of the seriousness of climate change and are willing to take more actions to mitigate it. Hence the idea of a walkable city gets so much attention and support from many citizens in developed countries, like those who live in New York City and the Netherlands.

CHAPTER 3: METHODOLOGY

3.1 Methods

The methodology used in this study is largely based on studies of Leiserowitz (2010); Shane Timmons, Pete Lunn (2022) and (Belize, 2016), which are largely about people's perception of climate change. These studies provide a necessary framework and understanding for the author about the appropriate research method, build a questionnaire, conduct interviews, and collect and analyze data.

3.2 Data collection

This study uses in-depth interview method to gather data. This involves conducting intensive individual interviews with a small number of respondents to explore their perspectives on this particular issue. In-depth interviews are used to explore new issues in depth and offering a more complete picture of what happening and why (C.R.Kothari, 2004). This study also used structured interviews as described by Kothari (2004). Such interviews involve the use of a set of predetermined questions. However this type of interview method tends to costly and time-consuming.

Data were collected from 25/7 to 30/7 (group 1), and from 27/9 to 28/9 (group 2). The second group will be interviewed using a revised list of questions with less number of questions (8 questions), and it will be done through an online method (Googlemeet).

All of the interviews will be recorded using a smartphone. Data was then generated in the form of transcripts. Interviewees will give their answers in Vietnamese, then those answers will be manually converted into English transcripts.

3.3 Data analysis

This study uses deductive coding to analyze data, which starts with a predefined set of codes based on the literature review research framework in Chapter 2. Data then excerpts excerpt to codes. By comparing the established

framework with the interviewee’s answers, we can find out how much they know, new unexplored details, shortcomings, and more.

3.4 Questionnaire design

The questions that were designed in this study followed the guidelines of the studies of Shane Timmons, Pete Lunn (2022) and Belize (2016). The questionnaire is divided into 5 sections, each with a different purpose, not just to explore their perception regarding this topic, but also to aid them, since it is expected that most of them wouldn’t know much about this topic about this topic prior to their interviews. By allowing them time to set up a basic understanding of this topic, it is possible that they would perform better than otherwise. Note that this only applies to the first group.

3.5 Sampling interview

It is necessary to conduct a sampling interview (or pilot study) before scheduling for the main interview. Pilot interviews are crucial to examine the validity of the questions, make sure there is no bias from the authors and that the questionnaires are correctly stated, easy to understand, and yield the best result from the subjects. Questions are then adjusted, added, and removed in case of duplication. Pilot interviews also facilitated the author to obtain experience in conducting in-depth, semi-structured interviews (Mohd Aliff et al., 2017). After the questionnaire has been adjusted, then begin planning for the interviews.

3.6 Recruitment

17 participants were chosen for this research. Of which there are 11 males and 6 females. Their ages range from 19 to 24 years old. Most of the participants are college students or graduated.

		Participants’ information			Interview’s information		
		Gender	Age	English level	Date	Time started	Duration (Minute)
Group 1	1	Male	20	Good	25/7	17:10	50
	2	Female	21	Good	26/7	11:59	47

	3	Male	21	Average	26/7	15:49	38
	4	Male	22	Excellent	26/7	21:08	44
	5	Female	21	Below average	28/7	13:48	29
	6	Male	20	Very good	28/7	17:48	31
	7	Male	19	Good	29/7	11:49	32
	8	Female	21	Good	29/7	15:50	20
	9	Male	24	Excellent	29/7	17:02	20
	10	Female	21	Good	30/7	9:54	32
	11	Male	21	Average	30/7	10:32	34
Group 2	12	Male	22	Good	27/9	13:29	19
	13	Male	20	Below average	27/9	13:50	17
	14	Female	22	Average	27/9	16:51	19
	15	Male	22	Average	27/9	20:03	12
	16	Female	22	Good	27/9	20:57	21
	17	Male	23	Good	28/9	8:51	9

Table 3 – 1. Participants and Interview's information

3.7 Conducting interview

The author has an interview protocol to follow for every interview to ensure consistency and increase the reliability of the findings (Julianne Holt-Lunstad, Susan Golant, 2023). The protocol is as follows: The approach must be friendly and informal. Before the interview starts, the author will engage in a little small talk to break the ice and establish a friendly atmosphere. Jacob and Furgerson (2012) suggest that building a good rapport with the participants could facilitate better responses. Then the author explains to the participants the purpose of this study, what is expected of them, and how the interview will go. Then the interviewee is informed about the confidentiality agreement of the interview, i.e. guaranteed anonymity, before they give consent to be recorded.

All the participants are asked the same set of questions, however, there will be a different approach that would best suit each interviewee and increase

effectiveness (C.R.Kothari, 2004). The interview will stop until the saturation point is reached, when he/she finds that he/she is not obtaining any new data, or the new information is negligible, is reached. This point is a subjective judgment that is decided by the researcher. (Kumar, 2005).

The interview time range from 30-60 minutes depending on the participant, but will not exceed 90 minutes (Jacob & Furgerson, 2012).

3.8 Things I did to make the interviews more effective

It takes about 1 hour to go through all the questions, but the interview is scheduled in a 2 hours range. More time means that the participant isn't unoccupied and will be more relaxed to answer. The places chosen by the participant must be quiet, undisturbed, and comfortable.

All the interviews are phrased like a conversation between 2 friends, as a more informal atmosphere will make them comfortable, so they would be more likely to provide more insight into the matter. The interviewees are given plenty of time to think and encouraged to try their best. Participants were told to give their best guess and were incentivized to answer correctly (C.R.Kothari, 2004). Because the purpose is to explore how much does participant knows, it is important to have a lot of probes and follow-up questions like: Could you give me an example? I'm not sure I understand what you just said, can you elaborate more on that? What else? Is that all, anything more... Encourage phrases like: "Come on, try harder!", "That's right!", "Exactly!". Other important skills include body language. The author found that being interested in the participant's answer through nodding, smiling, inviting hand gestures, and words like "Yeah" had a positive effect on the interview.

Last but not least, all of the interviews will be in the form of face-to-face interviews. The reason is that all the participants are GenZ in the age of 19 to 24 years old, and young people today have short attention spans. According to Hampton and Keys (2016) and Shatto and Erwin (2016), the duration of human attention span is reduced through generation – 12 seconds for millennials while 8 seconds for Gen Z, especially with a boring and unfamiliar topic like the future of

the city. So it is important to keep them engaged and entertained throughout the interview. This task will be difficult to accomplish if done through an online method. This, however, would not apply to group 2.

CHAPTER 4: RESULTS AND DISCUSSION

4.1. Result

4.1.1 Perception of walkable city

Walkable city definition and its important

Only two participants (P9, P10) had seen the term walkable city prior to their interviews.

All participants failed to correctly describe what is a walkable city, but to varying degrees, for example: (P5), (P10), and (P11) mistaken walkable cities for the famous walkable street in HCMC center. But most thought that walkable cities only allow walking.

Despite not fully understanding what a walkable city is, all of them understand why a walkable city is gaining attention globally, their answers mostly include improving people's health and reducing the negative impact of climate change. There is also the need to save money (P6) and reduce parking spaces in urban areas (P3).

Walkable city characteristics

When it comes to identifying walkable city characteristics, most of them have a very basic understanding of it. The 2 most common answers are “ a clean, green environment” and “less carbon emissions”. Other include: plenty of trees, less noise and air pollution (P3, P5, P6); more friendly (P1, P2); must be fun, with wide open streets to accommodate many people at the same time (P6, P7, P4, P8); have things that attract people (P8), like street vendors (P7) and other amenities (P6); sustainable development orientation, use green and recycle energy (P2, P9); vertical development with lots of high rise building and a dense MRT system (P3, P4); safe from traffic accident (P4, P7); easy mobility (P11) and less congestion (P6); finally, active and comfortable (P9).

(P4) added: Walkable city needs crosswalks, and sidewalk laws to support pedestrians...has many destinations like marketplaces, and hospitals, making it more convenient [to walk].

Why do people walk

When it comes to why people choose to walk, the number one and usually the first answer is health. Next is environmental awareness. Other reasons mentioned are financial reasons, like saving money (P1, P2, P6), because [walking] is much cheaper than driving (P9); relaxing, recreating, and enjoying the city (P4, P11), nature (P6) and looking at stuff and the surrounding [environment] (P9, P10); to be able to walk with friend and pets (P4, P5); [walking is] more convenience and proactive in term of mobility (P2).

What impacts people's decision to walk

When it comes to what impacts people's decision to walk, all of them performed quite well, such as: [The city] is unsafe to walk (P1); lack of crosswalks, traffic management, [roads] are too many vehicles and congestion (P11); due to distance (P3); people's habits (P6); family situation, i.e. force to drive many [family members].

They are also aware of the numerous problems that city dwellers are facing today, such as:

- Due to the convenience and prevalence of motorcycles. With the increasing level of income, an average working person can easily afford to buy a motorcycle (P8);
- Motorcycles are also much faster [than walking] (P1, P3, P5, P8, P10, P11);
- Because of busy urban lifestyle...With unfavorable working hours, if [you] don't drive, [you] won't be able to make it in time (P9);
- The distance is too far from where I am ... with most jobs concentrated at the city's center (P4);
- The city isn't designed for walking (P2), [with] inadequate infrastructure
- (P6);

- Vietnamese public transportation system is still inadequate (P9) and failed to meet the needs of many people (P4, P7);
- Vietnamese parents don't want their children to walk (P4) because the roads are too dangerous, too many drivers (P5, P7, P8).

Other answers include: people are lazy and love convenience; The weather is unpredictable, and [usually] hot; Due to pollution (P11); Health constraint (P6); There is no need/reason [for walking] (P8); There are many convenient ride-hailing services like Grab (P10).

4.1.2 Perception of walkable city benefits

Health benefits

All participants agree that walking helps to improve people's physical health and mental health, stated that:

Walking allows people to: Exercise every day reduces [the chance of] obesity (P1) cardiovascular disease (P2), and respiratory, and improve leg muscles and bones (P3); Reduce unnecessary stress (P10), improve psychology, limit negative thoughts (P11, P7); Help people feel better [mentally], and be more optimistic (P8).

Social benefits

Almost every participant failed to name the aspect of social. The only exception is (P9), who is not only able to identify it but also recognizes the benefit regarding inequality, said:

[Walkable city helps] reduce the gap between rich and poor [because] people can go further to find a job (P9).

Economic benefits

All participants have a very good understanding of the economic benefits of a walkable city, answers include:

- [A healthy population] is more productive due to improved spirit, thus increasing consumption of goods, which generated more taxes and GDP (P9);

- Social management. High-density [city] makes it easier to manage the same number of people because tracking a walking person is easier for those who drive (P6);
- Reduce dependence on gasoline and less likely to be affected by gasoline prices (P1);
- Reduce energy, resources, fuel, minerals, and oil consumption and switch to more natural energy sources like wind and solar (P9);
- Improve the shoe industry, because if many people switch to walking more, then many fashion shops would thrive....like in Japan, China, and New York. Also because walking means people would tend to notice things, while driving, you can't (O16)

Other answers include: Reducing the need to build bridges and other infrastructure (P8); Saves up parking space in houses (P3, P10) and city areas (P6, P3); Save money and time due to congestion (P3, P10); Allow the delivery of goods more convenient (P1); Beautiful cities attract more tourists (P2, P8); Help tourists save travel costs (P1); Developed [walkable] cities attract more investment, and company headquarters are much more likely to be set up here (P6, P9, P10); Reduce hospital-related costs for people and the city like insurance and healthcare (P4, P6, P7, P11); Reduce the cost of hiring guards for parking (P10); Reduce vehicle management, if you walk more, there will be less need for traffic police (P4); Less chance of losing one's motorbike (P6).

Environmental benefits

Most of the participant's answers were only associated with the impact of cars and traffic on the environment, like reducing carbon emissions, noise pollution, cleaner air and, help protect the environment (P4); Reduce mining resources (P3); Allowing other species to thrive (P6).

Livability benefits

Few participants failed to name livability, but were able to identify its benefits, such as: Making the city more beautiful and convenient for people (P7);

Allowing people can spend more time together and for themselves (P4); No traffic jams, easy to move (P11); Reduce accident risks (P10); Makes the city more bustling (P8) by providing more theaters, workshops, book sales, and street exhibitions (P7); Increase public places (P9); Improved traffic safety (P6).

4.1.3 Perception of flaws and setbacks

Participants were able to point out some of the flaws of walkable cities, most notable are:

- [Walkable communities] in Germany still have a lot of criminals (P1);
- If you use the train, you have to wait for [it]...but if you have money, you can buy a car and sit [comfortably] alone... I just don't want to make that trade-off (P3)
- If the city restricted the use of cars, then when many people need to use cars at the same time, it would put a huge pressure on the [transport] system; Walking could lead to more littering, due to the lack of public awareness; Risk of being robbed at night, [walking] during the day make you sweaty and uncomfortable (P4);
- If people don't buy cars, car companies will lose profit (P5);
- During rush hour, instead of traffic jams, there will be train jams; There will still be unemployment because some companies will be forced to close down like oil stations (P9);

Other include: [Cities] need time to adapt and money to make the transition...because Vietnam is still a developing country (P11); There could be enough capital but might not be enough talented people to implement it (P9); Even if the transition is a success, what are you gonna do do with the massive amount of vehicle? (P1); People's mind is difficult to change and will be those who oppose it (P8, P10, P11); It is also more difficult to convince adults than younger people (P2). There are [always] those who like houses with gardens, like Americans (P4).

4.1.4 Attitude and support toward the walkable city

All participants said they wished to be able to walk in their city.

Almost every participant said they think over the long term, these benefits do outweigh the flaws and setbacks. For example: when the population exceeds the infrastructure capacity, walking will be much better [for the city] (P4).

When it comes to supporting it, all of the participants said yes, they would support it. However, there are some caveats to this. Most notable is (P4), which said:

“Support for it is entirely dependent on the situation you are in. If the situation is extremely urgent, then there would be no walkable city here”.

On the other hand, (P1) does support a walkable city, however, he said it would require a stable economy for it to work. But most important is (P3) response: “I would support it, but because I haven't experienced it, so I don't know how to judge it correctly”.

4.2 Discussion

The results show that most participants don't know much about this topic and have a very basic understanding of the issue. They were only able to identify things regarding to mode of transport and the negative impact of personal vehicles on the environment like congestion, and carbon emissions. Most of them don't much about things like rising housing costs and loneliness epidemic, demographic shifts, and the increasing urbanization rate. Most of them were easy to identify benefits such as Health, Economic and Environmental, but failed to identify benefits such as reduce inequality, and efficient land use.

It is worth pointing out that even though they don't know much about this issue beforehand, they have shown a great level of interest in it. All of them are also welcoming the prospect of a walkable city, with a few notable preservations. All participants said they wanted to live in a more walkable environment. They also think that over the long term, a walkable city will be much better than a regular city and that all of them would support it.

The result also pointed out that group 1 performed much better than group 2. The reason is because the interview time of group 2 is much shorter, they also have fewer set-up questions to support them. However, a deeper comparison shows that

group 2 level of understanding is not too different from group 1. As they also can only identify benefits regarding health, economic, environment, and not social and livability.

This study found that the reason for their different level of understanding depends on 2 factors. First is their English skills. As mentioned in Chapter 1, most of the literature regarding this subject is written in English, so it not hard to conclude that a participant's awareness of this issue is heavily affected by how good is their English skill. We can see that those who possess high-level English skills tend to know more and provide deeper insight into each aspect and vice versa. Second and the most important factor, is the lack of first-hand experience. Participants who have had lived in walkable city like (P9) and (P17), has much better knowledge about its benefits compared to (P5). (P9) said that:

[Malaysia] is one of the most developed countries in South East Asia. There, people mostly travel by bike, tourists use the train, and MRT. Only those who work a lot use cars to move around... Vietnam is slow to develop compared to other neighbours since their [PT system] is already widespread... each station is 500m apart at maximum, and each train arrives every 5 minutes, so you don't need to worry about wait time".

Using this analysis we can also draw a correlation to other aspects that most of them aren't aware of, like housing benefits, car-related benefits, and social benefits. Since most of them are still undergraduate college students, they don't own a car or a house, so, understandably, they wouldn't know much about their benefits. And of course, since they are all able-bodied and have a motorcycle, they wouldn't understand that there are many people out there who rely on public-funded transport systems to support their needs.

Other factors to be considered are: The a lack of available information. Since Vietnam is still a developing country, walkable city is not a common topic in their daily life. And also, potentially, their age, as the older you are, the more you would know.

CHAPTER 5: CONCLUSION

This study has highlighted the importance of creating a walkable city, young people's perception about it. The study concluded that over the long run, this city model provides many benefits and helps mitigate many problems that cities today are facing. The study also found that, even though young generations know very little about this topic, they nevertheless have a positive attitude toward it.

5.1 Practically implementations

It is obvious that young generations are more concern about health, the environment and its longevity. They also aware of the numerous problems that they are facing in urban environment. Even though they don't know much about its solution, the walkable city, they nevertheless support it. This will have a major impact on many industries such as car manufacturing. With the rising concern about carbon emissions and air pollution, car manufacturers will need to switch to a more environmentally-friendly mode of transport, like bicycles, electric vehicles, buses like many other developed walkable cities. In a walkable city, businesses and residential area are also closer to each other, which open up the opportunity for a new kind of delivery vehicle that is more environmental-friendly like the cargo bike.

Also based on the result, the industry that most benefits from this are probably the fashion industry. Young generations are more focus on their appearance and have more disposable income. Walking more will incentivize them to dress more and dress better. Other things that young people like are shoes, skateboarding, hanging out in public places, and taking pictures at beautiful locations, and eating out. Businesses will have to adapt to these new demand.

Developers can work with local officials to experiment with a new urban houses and apartment designs that are more compact, visually interesting and perhaps, include on it solar panels. As research has pointed out, a more beautiful and walkable area will attract more businesses, tourists and local customers because those who walk tend to spend more than those who drive.

5.2 Lesson from Singapore and Seoul

Singapore and Seoul, two developed cities have begun to transition their city around people and away from personal vehicles, with detailed plans and visions like the Seoul Transport Vision 2030, which aims to transform into a more walkable model. Vietnam, another Asian country, with similar culture and problems like rapid urbanization and an explosion in car ownership. Vietnam should and must follow their example and also, avoid their mistake. Not just for the purpose of saving money for the economy, but also for countless lives in the coming decades and leave behind a better city for the millions that come after us.