Los 10 principios del Nuevo Urbanismo Americano: Un análisis de las sedes de grandes empresas tecnológicas de Silicon Valley

The 10 Principles of New Urbanism: An Analysis of Silicon Valley's Big Tech Headquarters

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Daniel Alexander Marroquin[♠]

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Tutor: Dra. Inés Sánchez de Madariaga

Resumen

El Nuevo Urbanismo americano es un enfoque de planificación y desarrollo urbano en EEUU, basado en cómo se han construido ciudades y pueblos antes de la invención del automóvil. Calles peatonalizadas, viviendas y tiendas en las proximidades, parques y espacios públicos accesibles junto a oficinas, escuelas y edificios gubernamentales. Cada uno contribuyendo a la dinámica de un tejido urbano de alta calidad. Los 10 Principios del Nuevo Urbanismo son un conjunto de principios aplicables a cualquier proyecto urbano, de cualquier escala, desde un edificio hasta la escala metropolitana. A continuación, os expongo un sistema de puntuación que he creado para evaluar y clasificar en un ranking las sedes internacionales de las grandes empresas tecnológicas de Silicon Valley para comprobar si estas grandes empresas tecnológicas contribuyen al Nuevo Urbanismo de ciudades peatonalizadas y densas, o favorecen la dispersión suburbana, dependiente del uso del automóvil.

Palabras Clave

10 Principios, Nuevo Urbanismo Americano, San Francisco, Suburbana, Empresas Tecnológicas, Peatón

Abstract

New Urbanism is an American urban planning and development approach based on the principles of how urban areas used to be built before the invention of the automobile. Cities were built as dense urban environments with lots of life and vibrancy at street level with a mix of homes, shops and restaurants next to offices, schools and government buildings, surrounded by parks and public spaces, each one contributing to the dynamics of a high-quality urban fabric. The 10 Principles of New Urbanism are urban planning guidelines that can be applied to any project site of any size, from the small scale of a single building to the large metropolitan scale. I have created a point system to evaluate the international headquarters of Silicon Valley's Big Tech giants to see if these global tech companies are contributing to automobile-based suburban sprawl or to a pedestrian-friendly New Urbanist environment.

Keywords

10 Principles, New Urbanism, Silicon Valley, Headquarters, Big Tech, California

[♠] **Daniel Alexander Marroquin** es alumno de postgrado del Departamento de Urbanística y Ordenación del Territorio de la Escuela Técnica Superior de Arquitectura. Universidad Politécnica de Madrid.
da.marroquin@alumnos.upm.es

1. Introduction

After living in Spain and traveling Europe for several years, I started to realize that there is a serious problem in American society that goes largely unnoticed. There exists an omnipresent problem in American society that touches the very core of how most Americans will spend their days and live out their lives. I am referring to the issue of uncontrolled suburban sprawl. In California it is common to be stuck in automobile traffic for at least an hour or two per day. This is considered a normal part of America daily life. I quickly began to realize that things are quite different on the other side of the Atlantic.

Spain for example, with its dense, rich and vibrant urban fabric, abundance in urban amenities and extraordinary architecture, mixed in together with a world-class public transportation network, makes it really easy to live a life without an automobile. In Spain, I noticed that I spend a lot more of my time outside interacting with the rich urban environment than I ever did so back in my home state of California. There are so many more bars, restaurants, stores and parks per capita in Madrid than even San Francisco. Additionally, most restaurants and bars in Spain have their own outdoor seating area called a terraza, contributing to the dynamics of a high-quality urban outdoor culture and Street scene. In Spain you have a romantic mix of plazas, parks and public spaces with epic statues and monuments that mingle in between shops, houses, offices, schools and public buildings. The streets are kept clean for the most part and there is little to no homelessness or violent crime, making the streets safe to explore and enjoy by day or by night. In essence, making Spain a pedestrian paradise.

Regrettably, most cities in the United States seem to be lacking this high-quality urban fabric and vibrancy that appears to be so common in Spanish cities. To my own astonishment, even small-sized Spanish municipalities like Barbastro for example, located in the foothills of the Pyrenees mountains and only having a population of 17,000 residents seem to be more alive and vibrant at street level than Mountain View, California, which is medium-sized municipality of about 83,000 people located in the middle of Silicon Valley and home to the international headquarters of Google. With very few exceptions, it seems that most American cities have largely been the victim of suburban sprawl, zoning, freeways and the automobile.

Objectives

- This investigative report seeks to find out if Silicon Valley's Big Tech companies, with their massive workforces and large corporate offices are contributing to more automobile-based suburban sprawl or if they are contributing to a pedestrian-friendly urban environment in the San Francisco Bay Area/Silicon Valley Region.

Research Questions

- Are Silicon Valley Big Tech companies contributing to suburban sprawl and in which ways?

Hypothesis

- Silicon Valley's Big Tech companies are contributing to the expansion of suburban sprawl in the San Francisco Bay Area.

What is New Urbanism?

"New Urbanism is a planning and development approach based on the principles of how cities and towns had been built for the last several centuries: walkable blocks and streets, housing and

shopping in close proximity and accessible public spaces. In other words: New Urbanism focuses on human-scaled urban design" (Congress of New Urbanism, 2015). They also state that "New Urbanism is a movement united around the belief that our physical environment has a direct impact on our chances for happy, prosperous lives. New Urbanists believe that well-designed cities, towns, neighborhoods, and public places help create community: healthy places for people and businesses to thrive and prosper" (12th Congress of the New Urbanism, 2004). The objective of New Urbanism is to transform the typical sprawling suburban American city which usually tends to be automobile dependent and divided into single land use zones separating residential housing units from commercial activity with miles of low-density housing into a more compact and densely-interconnected urban area with walkable, vibrant neighborhoods that have an array of mix-use development and commercial activity providing easy access to goods, services and employment opportunities at the neighborhood level, no car required.

At its essence, New Urbanism can be summed up in the 10-minute walk principle (Vogt, 2005). The United States Federal government defines a 10-minute walk as .05 miles or 804.6 meters. The 10-minute walk principle is a New Urbanist planning approach that would like to ensure that all people live and work within a 10-minute walk to most of their daily needs. Daily needs encompass such things as dining, shopping, banking, recreation and entertainment but also include access to public transportation, employment and housing opportunities (Robertson, 2017). Most American cities fail miserably in the 10-minute walk principle, hence the need for New Urbanism. In Europe, New Urbanism is usually referred to as "American New Urbanism." The reason for this is that most European cities already tend to fully incorporate New Urbanist principles into their urban design and morphology and have for centuries.

Why Silicon Valley Big Tech?

It must be noted that "Silicon Valley" is traditionally considered the southern region of the San Francisco Bay Area, specifically Santa Clara County. In recent years, Silicon Valley has become an all-encompassing term for anything tech-related coming out of the San Francisco Bay Area in general. Nevertheless, one of the main problems for residents and urban planners in the San Francisco Bay Area is that according to (Wilks, 2020) "employers in Silicon Valley are adding thousands of jobs to their payrolls every month, and the massive surge of positions has resulted in record-breaking lows in unemployment and a shortage of workers in the area." Why is this a problem one may ask? Because the San Francisco Bay Area has not kept up with the housing demand. According to SPUR, a San Francisco urban planning think tank (Chan, 2020), "the Bay Area has failed to build enough housing from 2000 to 2018 with a shortfall of 699,000 homes. The nine counties in the Bay Area including Santa Clara County built about 316,000 homes that were sold to people with higher incomes. On the other hand, the counties built only 42,500 units of permanent, affordable housing, failing to meet the demand for affordable and middle-income housing, according to the report. Meanwhile, much of the Bay Area population has gotten wealthier, outbidding others for homes and driving up housing costs. Median household income increased 50% from 2000 to 2016, rising from $60,000 to $90,000. SPUR projects that the Bay Area needs to build at least 2.2 million new homes by 2070 — about 45,000 units annually — to keep pace with the projected housing demand in the SF Bay Area."

In conclusion, there are simply not enough residential housing units in the San Francisco Bay Area to meet the demand. This has led to rapid gentrification, evictions and bidding wars for lower-middle-income single-family homes, usually selling for many times over the original asking price leaving many

long-term, lower-middle-income, life-long residents priced out. A study produced by finance website walletwyse.com in 2019 on global average rental prices demonstrates that out of 540 cities, San Francisco has the most expensive rental market in the entire world, averaging about $3,500 per month on a one-bedroom apartment (WalletWyse, 2018). The demand for housing, fueled in large part by the imported legions of overpaid Big Tech workers has converted the San Francisco Bay Area into one of the most expensive metropolitan regions in the world (Charpentrat, 2019). Seemingly overnight, Big Tech has become a major influencer in the direction and future of the San Francisco Bay Area.

For this analysis, I have selected 7 of the largest, most profitable and most well-known technology companies in the San Francisco Bay Area; Apple, Google, Facebook, Twitter, YouTube, Tesla and Salesforce. "Big Tech refers to the major technology companies such as Apple, Google, Amazon, Facebook and Microsoft, which have inordinate influence. Inordinate influence refers to such things as having a global presence, having an annual revenue stream in the billions of dollars, having a large employee workforce in the tens of thousands or more, amongst other indicators of corporate power, wealth and prestige." According to the longest-running tech encyclopedia, computerlanguage.com.

2. Methodology

Introduction to the 10 Principles of New Urbanism:

The 10 Principles of New Urbanism were first introduced by NewUrbanist.org in the early 2000s. NewUrbanism.org is a website based out of Alexandria, Virginia that advocates for New Urbanist principles and policies. It is operated and owned by the Transit-Oriented Development Institute based in Washington D.C. which is an organization that seeks to promote urban development around rail stations. According to their website "The Transit Oriented Development Institute is considered a project of the US High-Speed Rail Association which advocates for developing a high-speed rail system across the United States of America." The Michigan Land Use Institute subsequently refined and rewrote in 2006 the 10 Principles of New Urbanism first drafted by NewUrbanism.org. Both are almost identical but the Michigan Land Use Institute(MLUI) version is a bit more refined and concise, so it will be the one used for this analysis.

Point System:

To properly analyze the situation in the SF Bay Area regarding Big Tech and its influential effects on the local morphology of the region, I have devised a point system that quantifies each of the 10 Principles of New Urbanism into points that can be allocated to any building and/or development project site, at any scale. I will be assigning 0 to 2 points per each principle of New Urbanism. Being as how there are 10 Principles of New Urbanism, each corporate headquarter has a total possibility of 20 points maximum. The number of points distributed will depend on how much of the quantitative measure is actually observed per New Urbanist principle. 0 points will be assigned if the quantitative measure is not observed at all. 1 point will be assigned if a partial amount of the quantitative measure is observed. 2 points will be assigned if a great deal of the quantitative measures are actually observed. Nikos A. Salingaros in his book the 12 lectures on Architecture: Algorithmic Sustainable Design (Salingaros, 2010), explains why having a 2-point system for each observable property is best, in short, for its simplicity as to keep this research investigation as least subjective as possible. With

more points, you have more subjectivity and more of a possibility of having a wider range of overall scores. It is for this reason that I will only allocate 2 points maximum per each New Urbanist principle.

A) Walkability:

"Most needs are within a 10-minute walk of home and work. Street design is friendly to pedestrians because buildings are close to the street and have porches, windows, and doors. Streets have lots of trees and on-street parking, with parking lots and garages placed behind buildings and houses, often connected to alleys. Streets are narrow, which slows traffic dramatically." - MLUI

To evaluate the walkability of the chosen Big Tech HQ, I will be looking to see how many of the "Daily Needs" are met within a 10-minute walk of the corporate headquarter. "Daily Needs" will be defined as a mix of commercial retail sub-grouped into the following 5 categories: Supermarkets/Grocery stores, Bars/Restaurants, Retail/Commercial Stores, Banking/Financial Institutions and Entertainment/Sports. I will be using Walkscore.com which will make a map and subsequent list of all retail stores and local amenities in any specific area, ranked by how near they are to any specific address. This will let determine how many of the daily needs are actually met within a 10-minute walk of the Big Tech HQ.

Point System:

0 points = 2 or less of the daily needs are met within a 10-minute walk

1 point = 3 of the daily needs are met within a 10-minute walk.

2 points = 4 or more of the daily needs are met within a 10-minute walk

B) Connectivity:

"An interconnected street grid disperses traffic and encourages walking." - MLUI

To evaluate the connectivity, I will be looking to see if the corporate Big Tech HQ contributes to an increase in automobile traffic in the surrounding community. I will be using the "typical traffic" feature on Google Maps that lets you see how automobile traffic has historically-on average circulated in any particular place, at any particular time. Most Big Tech companies have a large workforce in the tens of thousands, if not more employees who all work in the same place, at the same time, causing major traffic congestion for the local community. I will be analyzing the automobile traffic around the vicinity of the selected Big Tech headquarter on a Monday afternoon at 5pm during rush-hour traffic and I will be comparing that to the non-workday, typical traffic of a 5pm Saturday afternoon. The vast majority of Big Tech employees have the day off on Saturday, therefore not affecting traffic in the local vicinity.

Point System:

0 Points = A clearly noticeable increase in traffic.

1 Point = A minimal increase in traffic.

2 Points = No noticeable increase in traffic.

C) Mixed-Use and Diversity:

"Neighborhoods, blocks, and buildings offer a mix of shops, offices, apartments, and homes. The neighborhoods welcome people of all ages, income levels, cultures, and races." - MLUI

To evaluate the Mixed Use and Diversity surrounding the selected Big Tech HQ, I will be looking for the mixed-use aspect of urban retail and housing within a 10-minute walk of the Big Tech HQ. Due to the fact that all Big Tech HQ's are already classified as office space, I will not be assigning points for additional office space. Instead, I will be assigning points for being located within a 10-minute walk of a mix of shops and another for being near any type of residential housing unit. I will be using Google maps to measure the distance from the HQ to the nearest residential housing unit. To evaluate a mix of shops near the corporate HQ, I will refer to the Walkability Daily Needs scorecard to see if the Big Tech HQ has any retail/commercial stores and/or any supermarket/grocery stores near it.

Point System:

1 Point= 10-minute walk from residential housing

1 Point= 10-minute walk from a mix of shops of at least one retail/commercial store and one supermarket/grocery store

D) Mixed Housing:

"Zoning allows the close proximity of a wide range of housing types, sizes, and prices." - MLUI

To evaluate the Mixed Housing near the Big Tech HQ, I will be using the zoning maps of the municipalities in and around the Big Tech HQ to see if there exist a mix of residential housing units within a half-mile radius of the corporate HQ. The zoning maps in California classify housing residential units into various subgroups like: Single Family Residential, Low-Density Residential, Medium-Density Residential, High-Density Residential, Multi-Family Residential, Residential-Commercial, Residential Transit Orientated etc.

Point System:

0 Points= 1 or less types of residential housing units are available within a 10-minute walk.

1 Point= 2 types of residential housing units are available within a 10-minute walk.

2 Points= 3 or more types of residential housing units are available within a 10-minute walk.

E) Quality Architecture and Urban Design:

"Buildings emphasize beauty, aesthetics, and comfort and establish a sense of place; public spaces function as civic art, establishing an attractive, quality public realm." - MLUI

To evaluate the Quality Architecture and Urban Design, I will conduct a survey with 10 people, 6 from California and 4 from Spain of different professional and academic backgrounds, ages and genders. First, I will read them the definition of beauty, aesthetics and a sense of place. Then I will show them 10 pictures from different scales and viewpoints of the selected Big Tech HQ. I will then ask the surveyed if the Big Tech HQ is considered beautiful and aesthetically pleasing to them. They must answer yes or no. Secondly, I will ask them if the Big Tech HQ has created a unique and special

sense of place for them, yes or no. If 6 out of 10 people agree that the Big Tech HQ emphasizes beauty and aesthetics, I will be assigning one point. Likewise, if 6 out of 10 people agree that Big Tech HQ also creates a unique and special sense of place for them, I will allocate the second point.

These are the definitions used for this survey:

- Beauty: 1. That, by the perfection of its forms, pleases the eye and/or the ear and by extension, the spirit.
- Aesthetics: the formal study of the principles of art and beauty. Designed to give pleasure through beauty. Concerned with beauty or the appreciation of beauty.
- Sense of Place: A sense of place is a unique collection of qualities and characteristics – visual, cultural, social, and environmental – that provide meaning to a location.

Point System:

1 Point= 6/10 or more people agree that the Big Tech HQ is beautiful and esthetically pleasing

1 Point= 6/10 or more agree that the Big Tech HQ creates a unique and special sense of place

F) Traditional Neighborhood Structure:

"Neighborhoods have definite centers and edges, with public spaces near the center. Each neighborhood contains a range of uses and densities within a 10-minute walk." - MLU

To evaluate the Traditional Neighborhood Structure of the Big Tech HQ, I will be looking for a discernible center and edge to the HQ's campus/property/building. There should exist some type of gathering and/or meeting space at the center. At the very least a plaza, green or memorable space or intersection. I will use Google Maps satellite and street view to look for some type of noticeable center and/or memorable intersection on the property. The second point will be allocated if the Big Tech HQ is open to the general public at large by having some type of open space on its property that the public can access, whether it be a store or a free tour. If the Big Tech HQ opens its corporate doors to the general public, I will assign them the second point.

Point System:

1 Point= Having a notable center and/or memorable intersection

1 Point= Open to the general public

G) Increased Density:

"Buildings, residences, shops, and services are close together to make walking more convenient, services and resources more efficient, and living areas more enjoyable." - MLUI

To evaluate the Increased Density around the Big Tech HQ, I will be examining the population density per square mile of the municipality that the HQ is located in. You cannot have an increase in public services and transportation without an increase in the overall population. To support a New Urbanist pedestrian-friendly urban fabric where most "Daily Needs" can be fulfilled without a car and within a 10-minute walk, good quality public transportation infrastructure is key. The Lincoln Institute of Land Policy's report on The Spatial Structure of Cities in the United States establishes "the critical threshold for light rail is 15,000 Persons Per Square Mile and the critical threshold for bus transit is

5,000 Persons Per Square Mile" (Lewis, R. Knaap, G. Schindewolf, J. 2013). These population thresholds are key for supporting a New Urbanist community. All population figures are from the US Census Bureau 2010. 2020 figures are not yet available at this time.

Point System:

1 Point= 5,000-14,999 people per square mile

2 Points= 15,000 people or more per square mile

H) Smart Transportation:

"A network of high-quality public transit connects cities, towns, and neighborhoods, while pedestrian-friendly design encourages more use of bicycles, rollerblades, scooters, and walking as daily transportation." - MLUI

To evaluate the Smart Transportation infrastructure surrounding the Big Tech HQ, I will be looking for any type of rail transportation station located within a 10-minute walk of the Big Tech HQ. Rail transportation systems include trains, metros, subways, cable cars, trolleys, etc. If there is any type of rail transportation station within a 10-minute walk of the Big Tech HQ, I will allocate them 2 points. If there are no rail transportation stations nearby, the Big Tech HQ will still have an opportunity to earn 1 point based on their "Bikeability Score" on Walkscore.com. Walkscore's "Bikeability Score" ranges from 0 to 100 points. 90–100 points are considered a "Biker's Paradise" in which "Daily errands can be accomplished on a bike." 70–89 point range is considered "Very Bikeable" in which "Biking is convenient for most trips." The 50–69 point range is considered "Bikeable" with "Some bike infrastructure." Lastly, the 0–49 point range is considered "Somewhat Bikeable" with "Minimal bike infrastructure." Anything below 70 points is not good enough to be considered a reliable method of daily transportation, especially to and from work.

Point System:

0 Points= Bikeability Score of 69 or below with no rail transportation station nearby

1 Point= Bikeability Score of 70 or above with no rail transportation station nearby

2 Points= 10-minute walk from any rail transportation station

I) Sustainability:

"The community uses respect for natural systems and eco-friendly technologies like energy efficiency to minimize effects on the environment. The community connects strongly with surrounding farmland, encouraging land preservation and local food consumption." - MLUI

To evaluate the Sustainability of the Big Tech HQ, I will be using the Leadership in Energy and Environmental Design (LEED) sustainable certification program which is the international standard on green building ranking and certification. LEED certification is done by the U.S. Green Building Council and has 4 levels of certification. Regular LEED Certification ranges from 40-49 points. Silver ranges from 50-59 points. Gold ranges from 60-79 points and Certified Platinum is for projects sites that earned 80 points or above.

Point System:

1 Point= Regular LEED or Silver certification.

2 Points= Gold or Platinum certification

J) Quality of Life:

"These design principles produce a life that is well worth living by providing places that enrich, uplift, and inspire the human spirit." - MLUI

To analyze the overall Quality of Life that the Big Tech HQ has brought to the local community, I will be examining the results of the previous 9 principles because they are, in fact, an excellent indicator of a good quality of life in the local neighborhood level. Let me explain further. The Centers for Disease Control and Prevention says that "Quality of life is a broad multidimensional concept that usually includes subjective evaluations of both positive and negative aspects of life. Although health is one of the important domains of overall quality of life, there are other domains as well—for instance, jobs, housing, schools, the neighborhood" (CDC, 2018). In an investigative report published by the Journal of Urban Design called The Effects of New Urbanism on Public Health (Iravani, Rao 2020) they examined all 10 Principles of New Urbanism and their relationship to public health. The conclusion of this informative report explains how every single one of the 10 Principles of New Urbanism contributes to overall better health and well-being. For New Urbanism principles 1 and 2, the report says "The results of the correlation analysis clearly indicate a very strong relationship between (a) connectivity and health and (b) walkability and health." The conclusion for principle 3 states, "Available evidence indicates that residents in mixed-use areas walk and/or cycle more frequently and have better health." For New Urbanist principle number 4 it states, "Studies point to a complete community planning concept with mixed housing for all residents, regardless of income level, age or culture, yields a positive effect on health and well-being," all the way down the list for all 10 New Urbanist principles. This is why I will be evaluating the Quality of Life indicator based on how the Big Tech HQ scored overall on the last 9 principles of New Urbanism. If they scored well, I conclude that they contributed positively to the overall quality of life of the surrounding community.

Point System:

1 Point= Scored at least 10 points in the last 9 principles

2 Points= Scored at least 15 points in the last 9 principles

3. Analysis and Results

*Due to the nature of an academic journal with limited publishing space, only the Apple HQ will be published here in this academic journal. For a full breakdown and in-depth analysis of all 7 of the selected Big Tech HQs, please email me at da.marroquin@alumnos.upm.es

Apple Inc. International Corporate Headquarters: The HQ of Apple is currently located at 1 Apple Park Way in the city of Cupertino, Santa Clara County, California, USA. Apple moved into its new and current headquarters in 2017. Currently, over 12,000 Apple employees commute here every single workday.

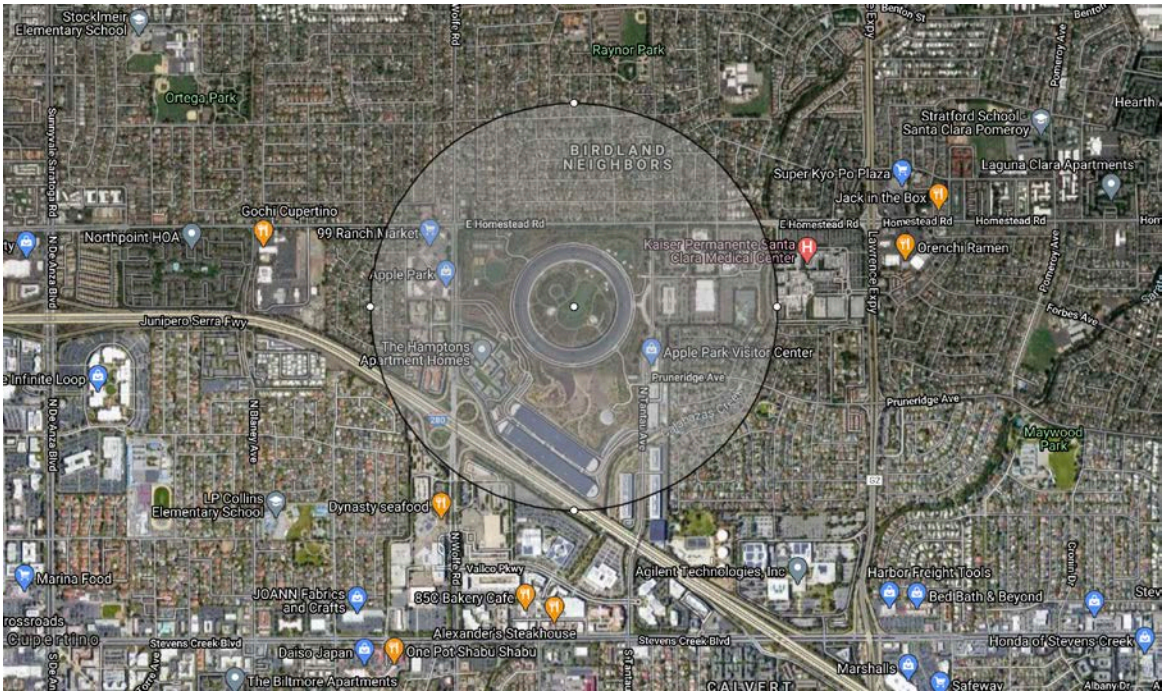


Figure 1. Half mile radius around Apple HQ, satellite view.
Source: Mapdevelopers.com

a) Walkability

Bars/Restaurants

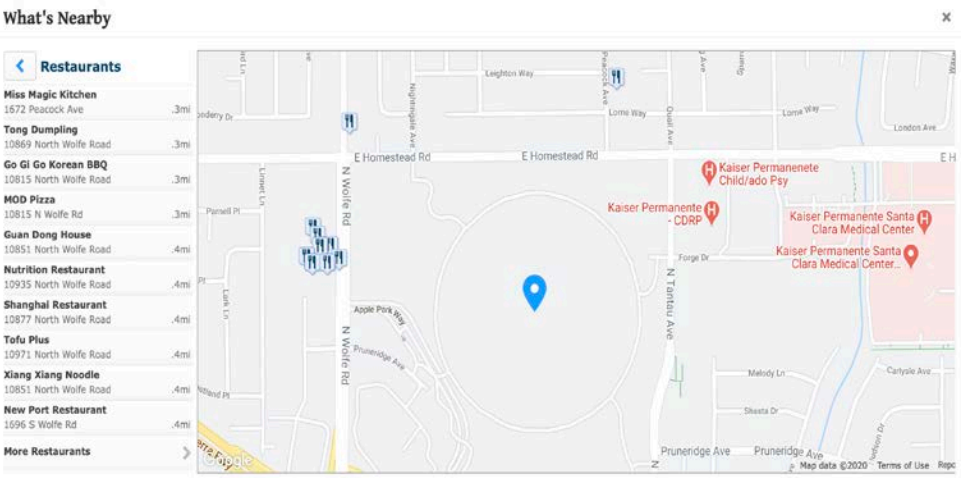


Figure 2. Restaurants near Apple HQ.
Source: Walkscore.com

Bars/Restaurants near Apple HQ = Yes.
There are several restaurants near the Apple HQ that are within a 10-minute walk such as Miss Magic, Kitchen and Go Gi Go Korean BBQ amongst others. The Apple HQ meets the criteria of having at least 1 bar/restaurant within a 10-minute walk.

Supermarkets/Grocery stores

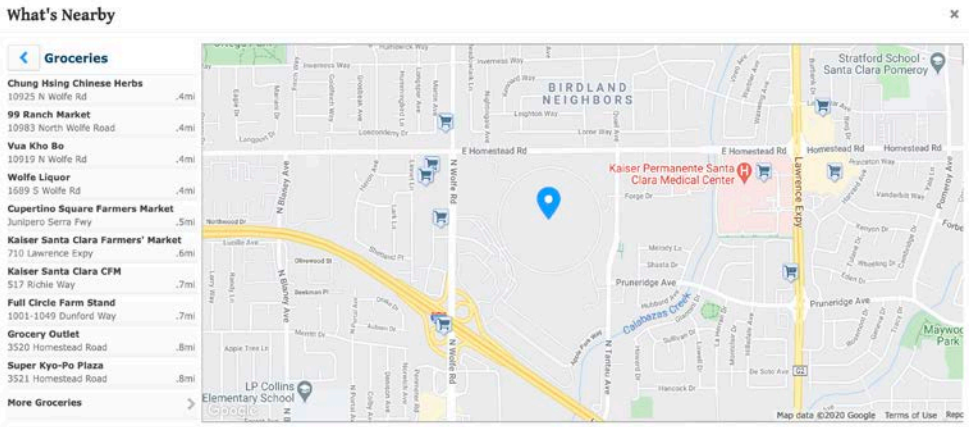


Figure 3. Grocery stores and food markets near Apple HQ.
Source: Walkscore.com

Supermarkets/Grocery stores near Apple HQ = Yes.

There are several grocery stores/markets within a half-mile radius of the Apple headquarters including 99 Ranch Market, Wolfe Liquor store and the Cupertino Square Farmers Market which offers a variety of locally grown high quality produce grown in the surrounding Northern California farmlands.

Retail/Commercial Stores

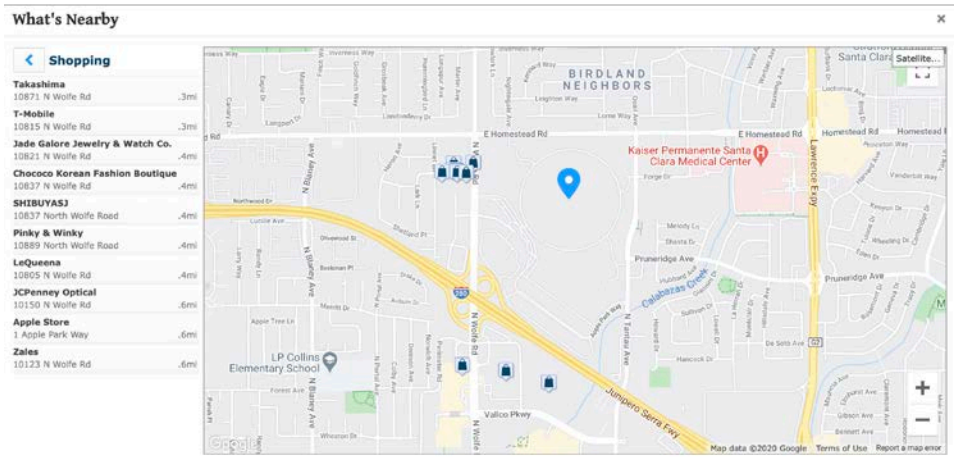


Figure 4. Shopping and retail near Apple HQ.
Source: Walkscore.com

Retail/Commercial Stores near Apple HQ = Yes.

There are several retail stores within a 10-minute walk of the Apple HQ including a T-Mobil cell phone store and a Jewellery store amongst others.

Banking/Financial Institutions

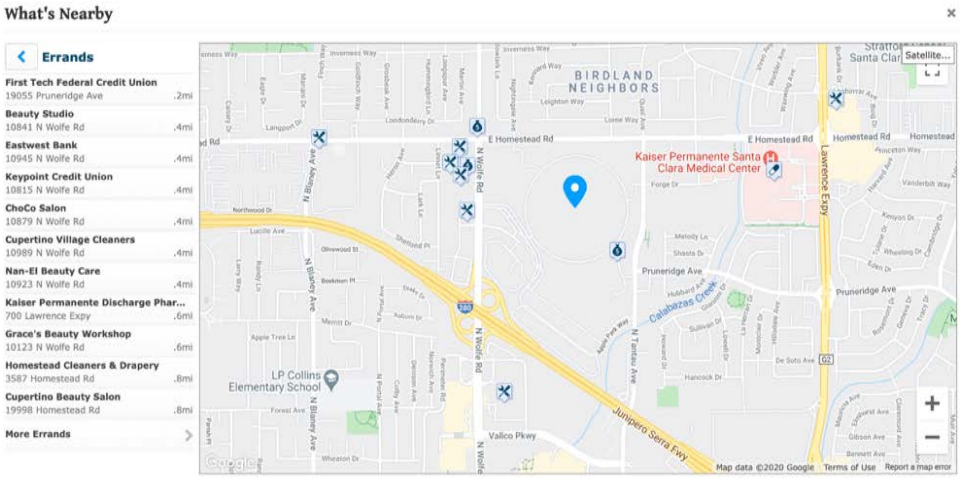


Figure 5. Banking/Financial institutions near the Apple HQ.
Source: Walkscore.com

Banking/Financial Institutions near Apple HQ = Yes.

There are three financial institutions near Apple HQ including First Tech Federal Credit Union, Keypoint Credit Union and Eastwest Bank.

Entertainment/Sports

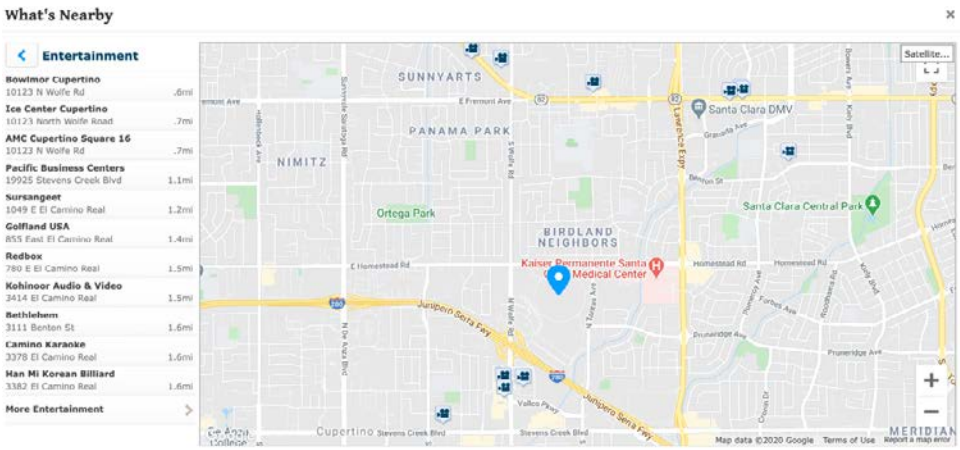


Figure 6. Entertainments and sports near the Apple HQ.
Source: Walkscore.com

Entertainment/Sports near Apple HQ = No.

The nearest sporting or entertainment venue is a bowling facility called Bowlmor Cupertino but it is .6 miles away and falls just short of the half-mile limit.

Apple HQ Daily Needs Score Card:

Bars/Restaurants within a 10-minute walk: **Yes**

Supermarkets/Grocery stores within a 10-minute walk: **Yes**

Retail/Commercial Stores within a 10-minute walk: **Yes**

Banking/Financial Institutions within a 10-minute walk: **Yes**

Entertainment/Sports within a 10-minute walk: **No**

4/5 of the Daily Needs are met within a ten-minute walk of the Apple HQ.

Apple HQ Walkability Total Score = 2 Points.

b) Connectivity

Connectivity analysis: Within the half-mile radius surrounding the Apple HQ you can notice a notable uptick in traffic on Monday (figure 7) as compared to Saturday (figure 8) on Tantau avenue exiting the 280-freeway going northbound toward the Apple HQ. Also, there is a slight increase in traffic on Monday going from east to west on Pruneridge Avenue and on East Homestead Road. It must also be noted that the traffic surrounding the Apple HQ on Monday (figure 7) is colored orange, which is considered medium traffic and not as bad as the red and dark-red colors which symbolizes heavier traffic. According to the traffic maps, we can see that the Apple HQ does indeed seem to increase traffic in the local vicinity but not by a lot. It is for these reasons that I will only be allocating the Apple HQ 1 point on Connectivity.

Apple HQ Connectivity Total Score = 1 Point

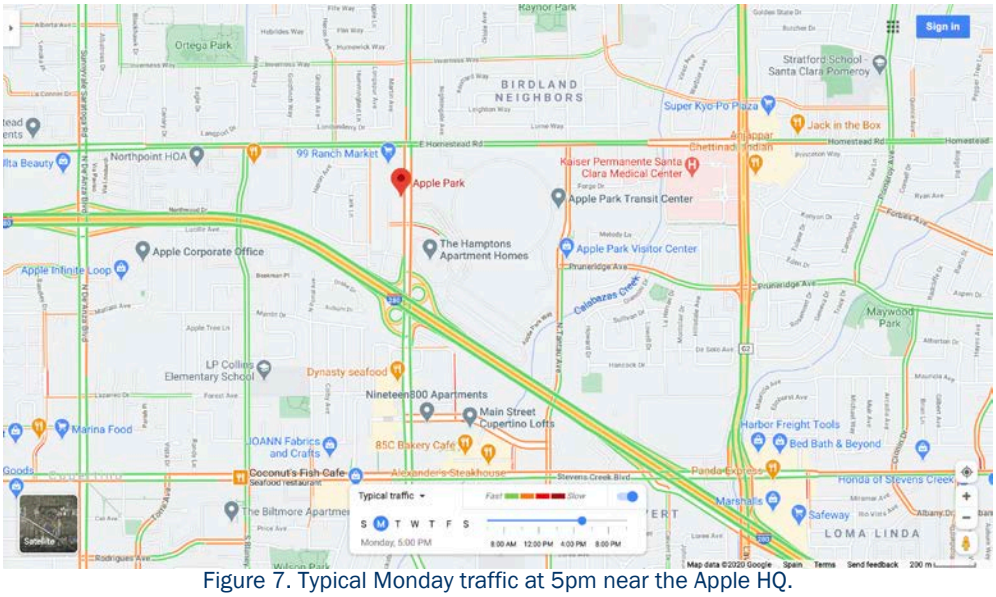


Figure 7. Typical Monday traffic at 5pm near the Apple HQ.
Source: Google Maps

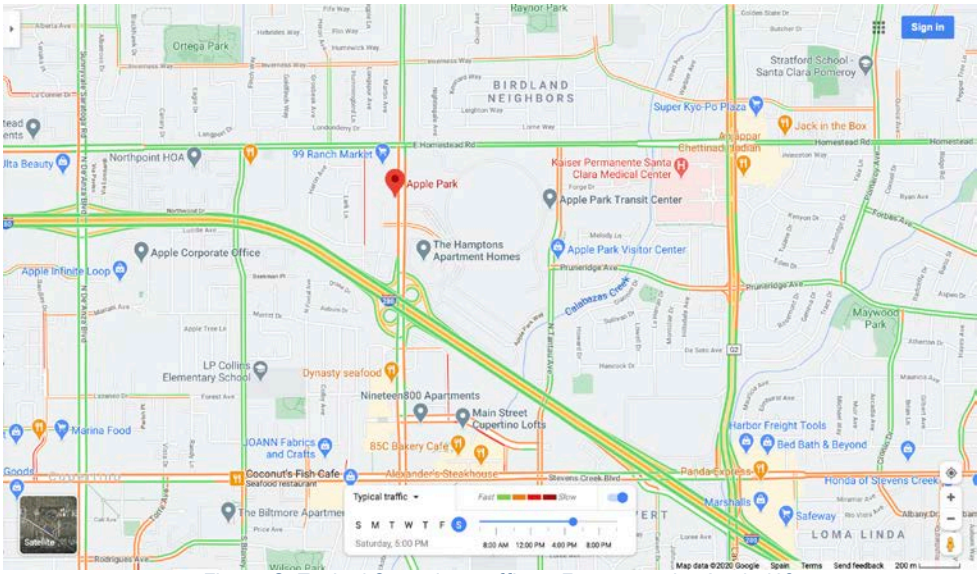


Figure 8. Typical Saturday traffic at 5pm near the Apple HQ.
Source: Google Maps.

c) Mixed-Use and Diversity

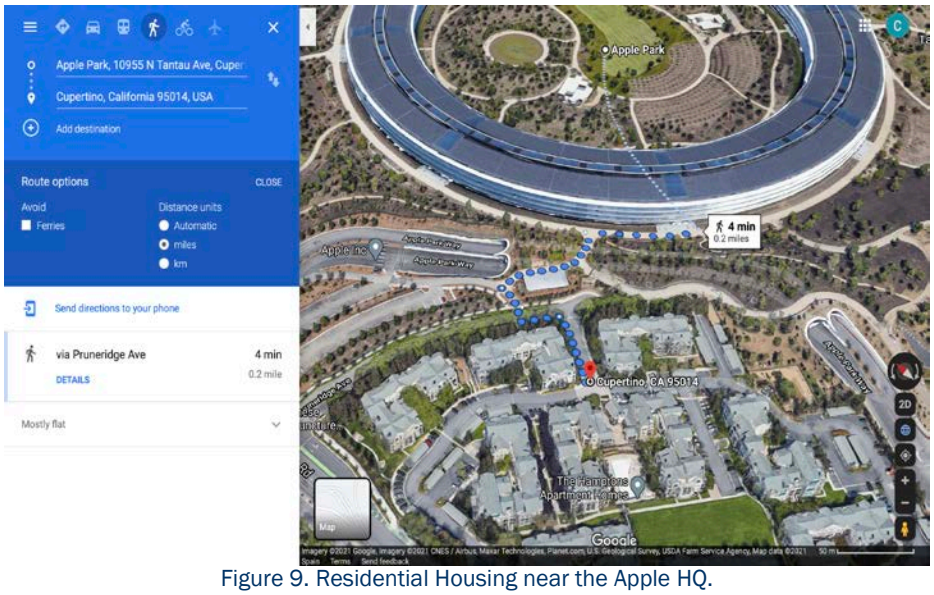


Figure 9. Residential Housing near the Apple HQ.
Source: Google Maps

Residential housing analysis: As you can see in figure 9, the nearest residential unit to the Apple HQ is 0.2 miles. This qualifies Apple HQ for **1 point** for being within a 10-minute walk to residential housing units.

Mix of shops analysis: Referring back to the Daily Needs Score Card from the Walkability section, we can see that the Apple HQ did have at least 1 grocery store and at least 1 commercial retail store within half-mile radius of the Apple HQ, qualifying it for **1 point** for being near a mix of shops.

Apple HQ Mixed-Use and Diversity Total Score = 2 Points

d) Mixed Housing

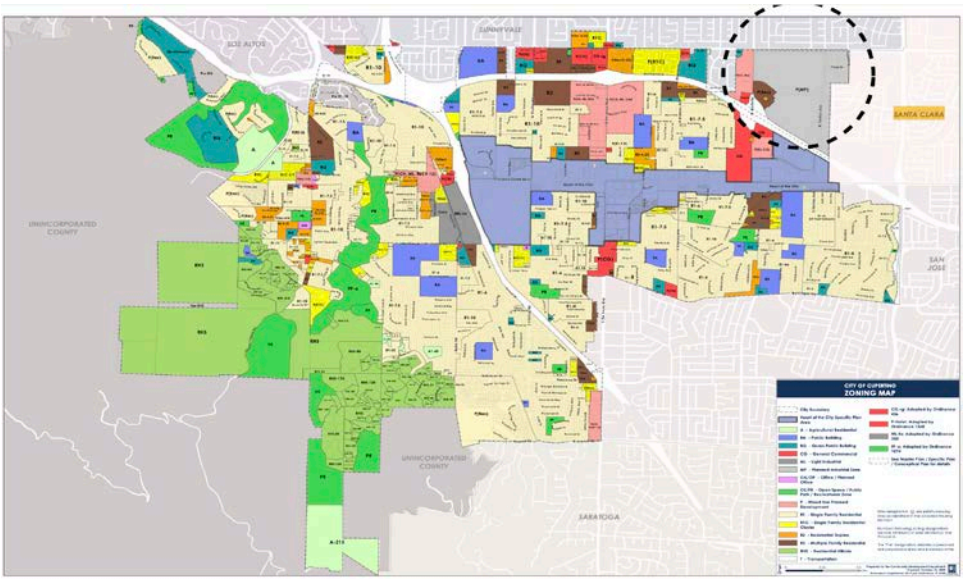


Figure 10. Zoning map of Cupertino, CA with a half-mile radius drawn around the Apple HQ.
Source: The City of Cupertino (Half mile radius around Apple HQ made by author)

Mixed housing analysis: Apple is headquartered in the city Cupertino but is also within a half-mile radius of the city of Sunnyvale on its north and with the city of Santa Clara to its east. When examining the zoning map of the city of Cupertino (figure 10) you can see that there are 2 different types of zoning for residential housing units. Multiple Family Residential in brown labeled "R3" and Mixed-Use Plan Development in pink labeled "P" on the map. When analyzing the zoning map of the city of Sunnyvale (not shown here because of limited publishing space), you can see that "Low Density" residential housing units are also available within a 10-minute walk. Therefore, the Apple HQ has satisfied the requirement of having at least 3 types of residential housing within a 10-minute walk and has earned the maximum of 2 points.

Apple HQ Mixed Housing Total Score = 2 Points

e) Quality Architecture and Urban Design

10 pictures of the Apple HQ from different scales and viewpoints were shown to 10 different people after they were read the definitions of beauty, aesthetics and a sense of place. After showing the surveyed the photos, they were asked if the Apple HQ is beautiful and atheistically pleasing? Then they were asked if the Apple HQ create a unique and special sense of place? *Only 4 of the 10 photos are shown below.

Figure 11. Apple HQ survey pic 1.
Source: Foster and Partners

Figure 12. Apple HQ survey pic 2.
Source: Pinterest

Figure 13. Apple HQ survey pic 3.
Source: Google Maps

Figure 14. Apple HQ survey pic 4.
Source: Pinterest

Question#1: Is the Apple HQ beautiful and atheistically pleasing?

7/10 people surveyed answered, Yes.

Apple will earn **1 Point** for having 6/10 or more people agree.

Question#2: Does the Apple HQ create a unique and special sense of place?

10 /10 people surveyed answered, Yes.

Apple earns **1 Point** for having 6/10 or more people agree.

Apple HQ Quality Architecture and Urban Design Total Score = 2 Points

f) Traditional Neighborhood Structure

Notable center/intersection analysis: The Apple HQ as you can see in figure 15 has a large outdoor park and its center hosts a large outdoor stage area for events and concerts for Apple employees and their guests. Apple will be awarded **1 point** for having a very memorable and notable center.

Public accessibility analysis: The Apple headquarters is equipped with a visitor center that is open to the public. The visitor center comes equipped with a cafeteria where visitors can get something to eat/drink and an Apple store where you can purchase the latest Apple products. The visitor center also has a rooftop terrace with excellent views of the extensive Apple campus. Apple will be awarded **1 point** for being accessible to the public

Apple HQ Traditional Neighborhood Structure Total Score: 2 Points

Figure 15. Large event held in the middle of the Apple HQ.
Source: 925mac.com

g) Increased Density

Increased density analysis: The Apple HQ is located in the city of Cupertino, California which has a land area of 11.2 square miles with a population of 58,302 people according to the 2010 US census. This gives the city of Cupertino a population density of 5,205 people per square mile. This qualifies Apple for 1 point for being in a locality that has the capacity to support a regularly scheduled bus service.

Apple HQ Increased Density Total Score: 1 Point

h) Smart Transportation

Smart transportation analysis: The nearest urban rail station to the Apple HQ is the Lawrence Caltrain Station, which is part of an intercity train line from San Francisco in the north to San Jose/Gilroy to the south. Unfortunately for Apple, it is over an hour away on foot. Also, unfortunately for Apple, the HQ and the surrounding area is rated 62/100 by walkscore.com in terms of Bikeability. According to walkscore.com, this means that the Apple HQ is "Bikeable" but with only "some bike infrastructure." Simply put, there is not sufficient bike infrastructure to

support Apple's daily workforce of 12,000 employees. For this reason, Apple will be allocated 0 points in the area of Smart transportation.

Apple HQ Smart Transportation Total Score: 0 Points

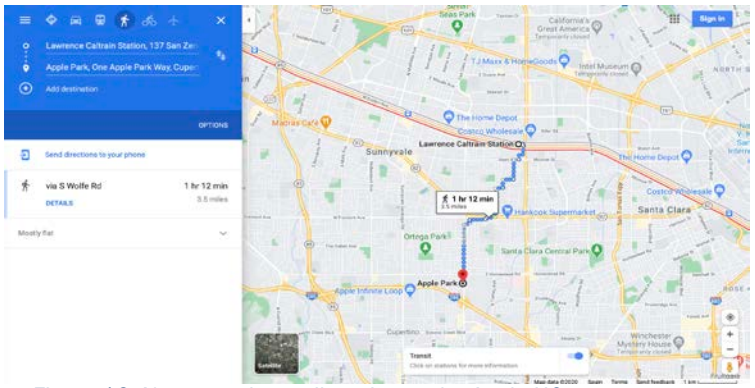
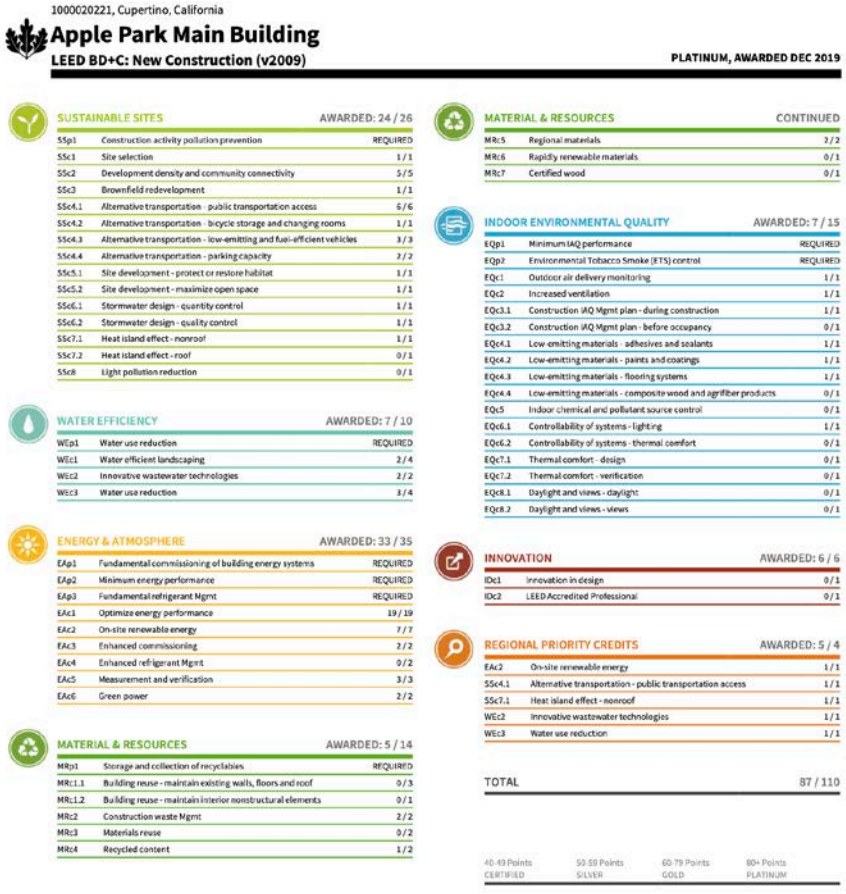


Figure 16. Nearest urban rail station to the Apple HQ.
Source: Google Maps

Figure 17. Apple HQ Bikescore
Source: Walkscore.com

i) Sustainability



1000020221, Cupertino, California

Apple Park Main Building

LEED BD+C: New Construction (v2009) — **PLATINUM, AWARDED DEC 2019**

SUSTAINABLE SITES — AWARDED: 24 / 26

SSp1	Construction activity pollution prevention	REQUIRED
SSc1	Site selection	1 / 1
SSc2	Development density and community connectivity	5 / 5
SSc3	Brownfield redevelopment	1 / 1
SSc4.1	Alternative transportation - public transportation access	6 / 6
SSc4.2	Alternative transportation - bicycle storage and changing rooms	1 / 1
SSc4.3	Alternative transportation - low-emitting and fuel-efficient vehicles	3 / 3
SSc4.4	Alternative transportation - parking capacity	2 / 2
SSc5.1	Site development - protect or restore habitat	1 / 1
SSc5.2	Site development - maximize open space	1 / 1
SSc6.1	Stormwater design - quantity control	1 / 1
SSc6.2	Stormwater design - quality control	1 / 1
SSc7.1	Heat island effect - nonroof	1 / 1
SSc7.2	Heat island effect - roof	0 / 1
SSc8	Light pollution reduction	0 / 1

WATER EFFICIENCY — AWARDED: 7 / 10

WEp1	Water use reduction	REQUIRED
WEc1	Water efficient landscaping	2 / 4
WEc2	Innovative wastewater technologies	2 / 2
WEc3	Water use reduction	3 / 4

ENERGY & ATMOSPHERE — AWARDED: 33 / 35

EAp1	Fundamental commissioning of building energy systems	REQUIRED
EAp2	Minimum energy performance	REQUIRED
EAp3	Fundamental refrigerant Mgmt	REQUIRED
EAc1	Optimize energy performance	19 / 19
EAc2	On-site renewable energy	7 / 7
EAc3	Enhanced commissioning	2 / 2
EAc4	Enhanced refrigerant Mgmt	0 / 2
EAc5	Measurement and verification	3 / 3
EAc6	Green power	2 / 2

MATERIAL & RESOURCES — AWARDED: 5 / 14

MRp1	Storage and collection of recyclables	REQUIRED
MRc1.1	Building reuse - maintain existing walls, floors and roof	0 / 3
MRc1.2	Building reuse - maintain interior nonstructural elements	0 / 1
MRc2	Construction waste Mgmt	2 / 2
MRc3	Materials reuse	0 / 2
MRc4	Recycled content	1 / 2

MATERIAL & RESOURCES — CONTINUED

MRc5	Regional materials	2 / 2
MRc6	Rapidly renewable materials	0 / 1
MRc7	Certified wood	0 / 1

INDOOR ENVIRONMENTAL QUALITY — AWARDED: 7 / 15

EQp1	Minimum IAQ performance	REQUIRED
EQp2	Environmental Tobacco Smoke (ETS) control	REQUIRED
EQc1	Outdoor air delivery monitoring	1 / 1
EQc2	Increased ventilation	1 / 1
EQc3.1	Construction IAQ Mgmt plan - during construction	1 / 1
EQc3.2	Construction IAQ Mgmt plan - before occupancy	0 / 1
EQc4.1	Low-emitting materials - adhesives and sealants	1 / 1
EQc4.2	Low-emitting materials - paints and coatings	1 / 1
EQc4.3	Low-emitting materials - flooring systems	1 / 1
EQc4.4	Low-emitting materials - composite wood and agrifiber products	0 / 1
EQc5	Indoor chemical and pollutant source control	0 / 1
EQc6.1	Controllability of systems - lighting	1 / 1
EQc6.2	Controllability of systems - thermal comfort	0 / 1
EQc7.1	Thermal comfort - design	0 / 1
EQc7.2	Thermal comfort - verification	0 / 1
EQc8.1	Daylight and views - daylight	0 / 1
EQc8.2	Daylight and views - views	0 / 1

INNOVATION — AWARDED: 6 / 6

IDc1	Innovation in design	0 / 1
IDc2	LEED Accredited Professional	0 / 1

REGIONAL PRIORITY CREDITS — AWARDED: 5 / 4

EAc2	On-site renewable energy	1 / 1
SSc4.1	Alternative transportation - public transportation access	1 / 1
SSc7.1	Heat island effect - nonroof	1 / 1
WEc2	Innovative wastewater technologies	1 / 1
WEc3	Water use reduction	1 / 1

TOTAL — 87 / 110

40-49 Points CERTIFIED · 50-59 Points SILVER · 60-79 Points GOLD · 80+ Points PLATINUM

Figure 18. Apple HQ LEED scorecard.
Source: U.S. Green Building Council

Sustainability analysis: The Apple headquarter has been awarded LEED certified Platinum by the U.S. Green Building Council scoring a total of 87/110 points. LEED certified Platinum is the highest possible LEED certification rating available. This earns the Apple HQ 2 points for its green infrastructure.

Apple HQ Sustainability Total Score: 2 Points

j) Quality of Life:

Quality of life analysis: The Apple HQ scored a total of 14 points in the previous 9 principles of New Urbanism. Since Apple scored a total of 10 points or more, they will be allocated an additional 1 point for contributing to the overall quality of life in the surrounding vicinity.

Apple HQ Quality of Life Total Score: 1 Point

4. Discussion and conclusions

Silicon Valley Big Tech Headquarters Total Points Scorecard:

Silicon Valley Big Tech Corporate Headquarters Scorecard

10 Principles of New Urbanism:	Points	Points	Points	Points	Points	Points	Points
	Apple HQ	Facebook HQ	Google HQ	Salesforce HQ	Tesla HQ	Youtube HQ	Twitter HQ
1.Walkability	2	0	0	2	0	1	2
2.Connectivity	1	0	2	1	1	1	1
3.Mixed-Use and Diversity	2	1	1	2	1	2	2
4.Mixed Housing	2	1	0	2	0	1	2
5.Quality Architecture and Urban Design	2	0	1	2	0	0	2
6.Traditional Neighborhood Structure	2	1	2	1	0	0	1
7.Increased Density	1	0	1	2	0	1	2
8.Smart Transportation	0	0	1	2	0	0	2
9.Sustainability	2	2	0	2	0	2	2
10.Quality of Life	1	0	0	2	0	0	2
TOTAL POINTS	15	5	8	18	2	8	18

Figure 19. Big Tech Corporate HQ Scorecard.
Source: Custom made by author.

***The results can be sub-grouped into the following 3 categories:**

15 points and above is contributing to New Urbanism.

11-14 points is not suburban sprawl, yet not quite New Urbanism either.

10 points or less is contributing to suburban sprawl.

The results are quite interesting since it seems that there is no middle ground. Not a single Big Tech HQ scored in the middle range of 11-14 points. It appears that you're either on one side of New Urbanism or on the other, there is no middle ground. You're either for suburban sprawl or for New Urbanism. You're either contributing to a New Urbanist pedestrian-friendly San Francisco Bay Area/Silicon Valley or to a car and freeway dominated suburban version of the same. On one side you have our New Urbanist champions of Twitter (18 points), Salesforce (18 points) and Apple (15 points). On the other side, you have the contributors of suburban sprawl, companies like Google (8 points), YouTube (8 points), Facebook (5 points) and Tesla (2 points). Tesla scored the worst with a grand total of 2 points but is it a surprise to anyone that a Big Tech car manufacturer would help to prop up an automobile-centric world?

To conclude, my hypothesis that the majority of Big Tech corporations are contributing to suburban sprawl was justified. The good news is that there are indeed some Big Tech companies that are in fact, changing course and contributing to a dense, vibrant and walkable urban fabric in the San Francisco Bay Area/Silicon Valley. It would be interesting to analyze additional corporate headquarters in the region and to rank them based on their adherence to the 10 Principles of New Urbanism.

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