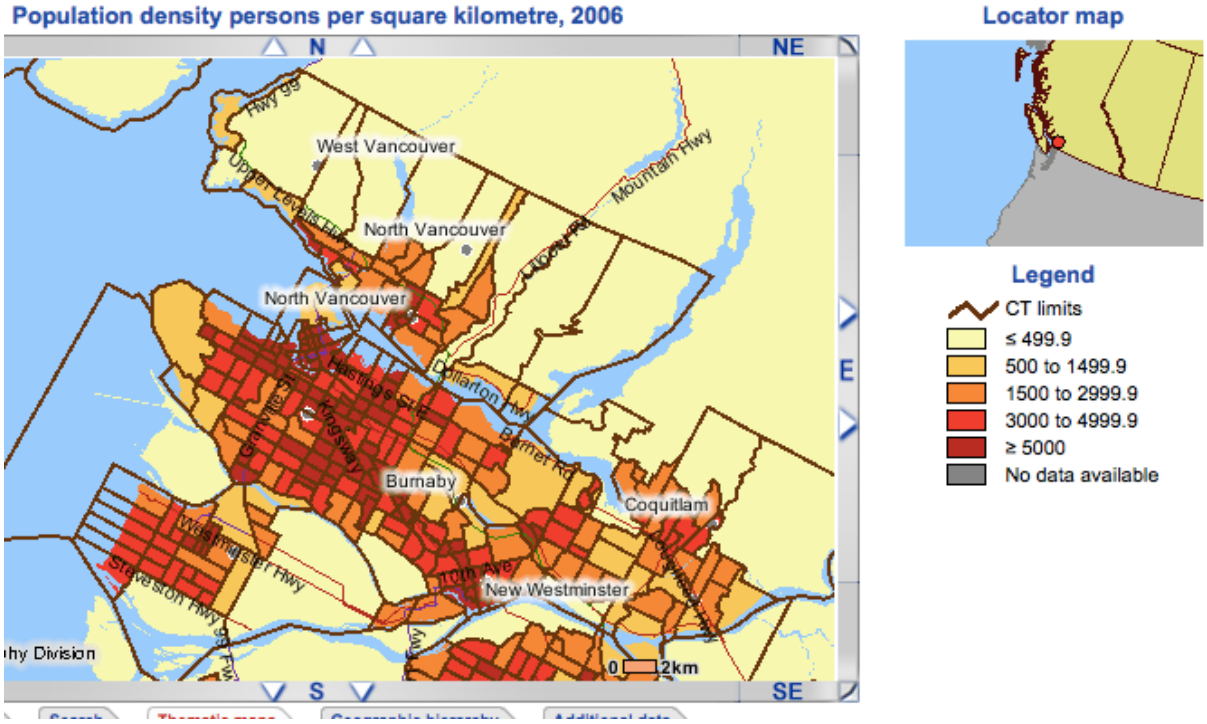
1. **You are to find places in the city that are denser than 10 dwelling units per acre, and those that are less. Provide a map illustration and approximately 200 words of text that explains that.**

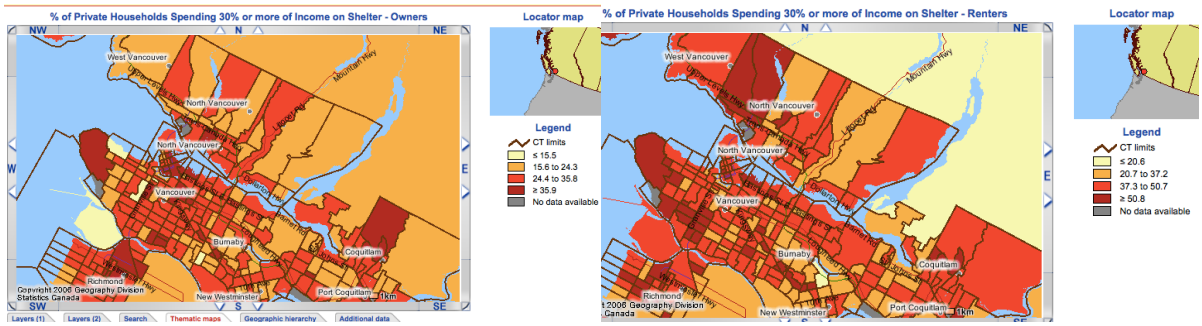


According to my calculation, the highest density shown on the thematic map is 5000 persons per square kilometer, which is 9.1 dwelling units per acre. Due to the limit of showing a higher density of Vancouver residents on the map, I could only assume that the areas having densities higher than 9.1 dwelling units per acre are denser than 10 dwelling units per acre.

Most of the areas denser than 10 dwelling units per acre are aggregated in the original gridiron streetcar city and the walking city; a few seemingly scattered high-density places are actually located at the reginal town center nodes, connected by the SkyTrain system.

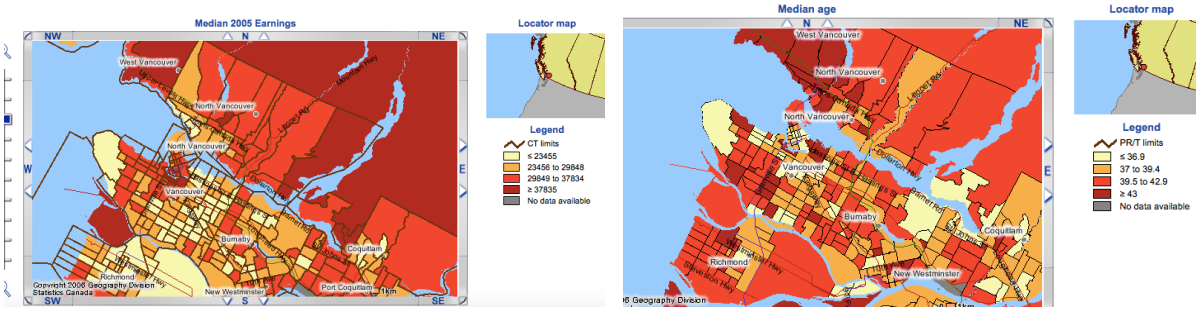
The high-density downtown area is originated from the old walking city, where residents living in townhouses are able to walk for daily needs. With the advent of the streetcar, the travel distance residents could achieve in 20 minutes increased from one-mile walking distance to four miles. The streetcar system initially brought homes and jobs to the area along the streetcar lines and kept continually attracting residents and commercial development due to its reasonable structure after the streetcar was replaced by other rapid transit lines. The town center nodes are created by the *Livable Region Strategic Plan* in 1995 and intensified by a large number of jobs and commercial services planned by the government.

2. You are to find out if there is any pattern of affordability in our city, i.e. any parts where housing generally consumes less than, or more than, 30 percent of a family's average income. Provide a map illustration and approximately 200 words of text that explains that.



% of Private Households Spending 30% or more of Income on Shelter – Owners

% of Private Households Spending 30% or more of Income on Shelter – Renters



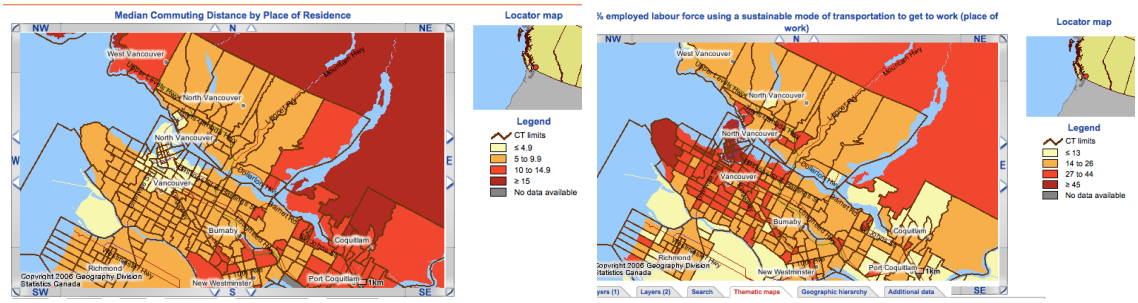
Median 2005 Earnings

Median ages

Most of the places in which people spend more than 30% of their income on their own houses are located at Vancouver's old streetcar city. However, in this area, a larger percentage of people spend more than 30% percentages of their income on renting fees. Residents who live in regions far way from the SkyTrain transportation nodes in West Vancouver, North Vancouver, Richmond are enjoying both the more affordable rent and more affordable purchases of housing.

My first explanation for this pattern is that prices of housing in peripheries are originally lower than that in the old streetcar city. Because of the low-price houses, the percentage people spending on housing would be lower even though residents might have low incomes. Meanwhile, according to the *Median 2005 Earnings* and *the Median age*, residents who live in the old streetcar city have a much lower average income and age compared with residents in other parts of Metro Vancouver. Young professionals might flock to high-density city centers for jobs, spending a large percentage of their income on housing rent. Older people who drive to work might have higher salaries than the youth and are able to afford larger bungalows in suburban with their families rather than tiny apartments in city centers.

2. You are to find out if there is any pattern in the ways that people get to work, and you are to try to explain that, based on what you know or what you have learned in this class. Provide a map illustration and 200 words of text that explains that.



According to the thematic maps, residents who live in downtown had the shortest commuting distance and most sustainable mode of commuting; residents living in Vancouver, North Vancouver, Richmond, and Burnaby had a relatively short commuting distance and a high sustainable transportation mode compared with other suburban areas.

This pattern is in accord with the range of walking city and streetcar city where people could walk, cycle and use public frequent transit, which are sustainable ways of commuting, to satisfy their daily commuting needs. The most salient location in which a large percentage of people go to work or school in a sustainable way is the UBC campus. Since most residents there are young full-time students, who are not wealthy enough to afford cars, they inclined to walk, cycle or use public transit to classes. Residents in the streetcar city are able to take advantage of the parallel street network for a safer and slower walk or ride without sacrificing directness; residents who live in the suburban areas, which are too far away from public transportation while walking and cycling are terribly dangerous, are inclined to drive to work. Since the suburban “super blocks” are not interconnected, residents there have to drive along the circuitous routes, which results in even longer commuting distance. The congested arterials where everyone get stuck may exacerbate the unsustainable situation. Furthermore, a great many families with children are living in sprawled areas. Parents are not only shutting back and forth for jobs, but for their children’s remote schools. Finally, suburban residents are used to driving to stores, banks and other daily commercial needs due to the risk and the absurdly long distance of walking along suburban highways.

4. Now we want you to hone down on one census tract within the larger city. Please choose one based on how well it demonstrates sustainability (affordable housing, use of transit, a wide range of ages housed, etc). Then mine the data for that one tract as indicated above. Provide an aerial photograph of this area from Google maps, and three photographs taken on site (put captions on each photo). Provide a 500 word set of conclusions (synthesis) describing why this census tract is more sustainable than others.

My data is drawn from the *2006 census tract profile* for the UBC campus. I am going to demonstrate UBC's sustainability from its low carbon transportation modes, high-density private dwelling characteristics and other sustainable designs, management and education in the campus.

According to the *2006 census tract profile*, UBC residents and Vancouver citizens had a similar public transportation commuting pattern. But 44% of all residents in UBC walked or bicycled to their jobs while only 8% Vancouver citizens did; only 36% of people in UBC drive to work, compared with that of 67% in Vancouver. In 2006, 74.4% of all occupied private dwellings in UBC were apartments. In contrast, Vancouver's apartments only took up 52% of all kinds of dwellings. Besides that, UBC also had a higher rate of residents living in shared rooms, compared with that of Vancouver.

One reason why residents in UBC chose a more sustainable mode of transportation is shown in its interconnected, pedestrians and cyclists friendly network. Different from most of Vancouver's automobile-oriented 6-line roads, which terrify pedestrians and cyclists, UBC is primarily made up of 3-line roadways with the largest roadway being 4 lines. (Picture 1) UBC had also devoted plenty of road spaces to boulevards and sidewalks. The side friction of UBC's queuing streets slows down shuttling automobiles. In this case, drivers are able to make eye contacts with pedestrians, calming both drivers and pedestrians with the rising sense of humanized automobiles. Besides the spacious sidewalks, the wide Main Mall is completely provided for pedestrians and cyclists. Therefore, Pedestrians and cyclists are able to flow through this system comfortably and quickly. Furthermore, the bus loop in UBC campus provides an extension for walking and cycling. UBC residents are further connected to SkyTrain stations, which provide possibilities for even longer distance travels, by the high-capacity, fast, reliable and rapid buses on the Broadway corridor.

Picture 1

UBC's high-density residence is another significant reason of its sustainability. Ten years had passed since the data of 2006 census tract profile was collected. UBC's incremental population of students had boosted a large number of in-construction residence complexes to

accommodate over ten thousand students. (Picture 2) A large number of these residences are designed to be shared rooms or shared apartments, gradually intensifying the campus. Since most of the young college residents walk or cycle to classes while living in high-density dwellings, their GHG emissions are minimized: UBC students' mode of living is an indispensable part in the realization of UBC's sustainable goal.

Picture 2

Finally, UBC had been devoted to the sustainable strategy of operating the whole campus. UBC is now surrounded by 3000 acres of dense forest from University Endowment Lands; numerous gardens and woods near residences are pouring fresh oxygen into the atmosphere. Besides the sustainable natural environment, the operation and design of on-campus buildings are of great importance. The Centre for Interactive Research on Sustainability (CIRS) (picture 3) is designed to be the most innovative and high-performance building in North America; The C.K. Choi Building set new green building benchmarks worldwide; The UBC Bioenergy Research & Demonstration Facility (BRDF) combined heat and power facility on campus that can produce both clean, renewable heat and electricity. Not only did UBC spend efforts on design and operation of buildings, but on education, research and partnerships. UBC advances sustainability on campus and beyond.

Picture 3

All in all, from my own analysis of UBC campus, I believe it is one of the most sustainable places in Vancouver. I view UBC campus as a living laboratory, a giant sandbox in which there is the freedom to explore all aspects of sustainability creatively and collaboratively.