



Geo Spatial Analysis

Deliverable 1

Maps of Retailer in USA

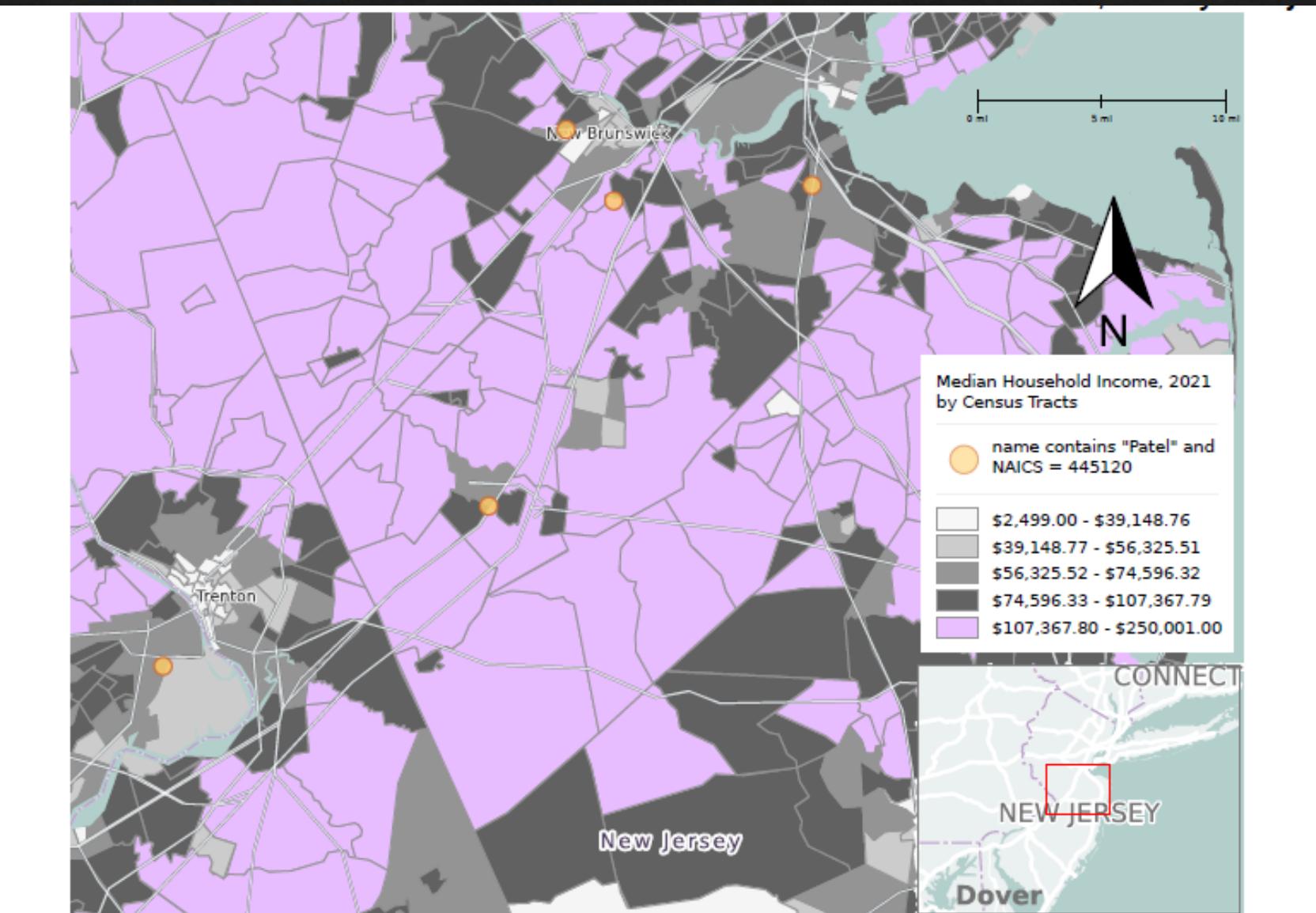
(we have chosen "Patel Brothers" Stores for this part)

Part 1: Geodemographic Spatial Correlation

For this part you will evaluate the locational distribution for a retailer in the United States relative to a demographic variable of your choice.

- ❖ We have chosen "Patel Brothers" Stores and plotted it over Median Household Income by Census Tracts (Categorized on Local quantiles)
- ❖ Through this map we observe that "Patel Brothers" Stores are located at places with Medium to high income household areas

Exhibit 1: Patel Brother store's locations in New Jersey (New Brunswick and Trenton) overlaid on Median household income (categorized on local quintiles)

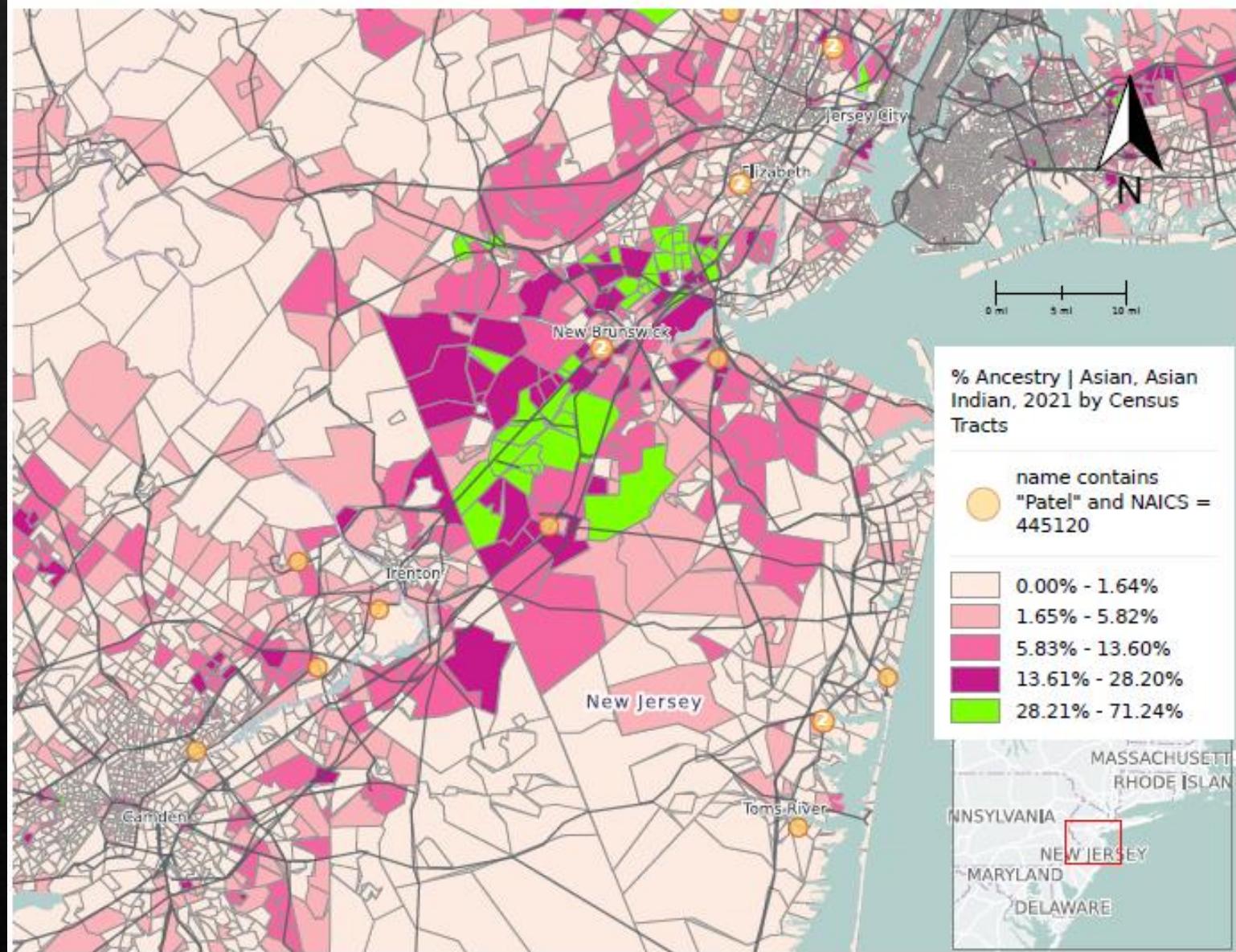


Part 2: Spatial Auto-correlations

For this map pick one relevant demographic variable, rate such as %, median, average etc..., not (#) and map it thematically by Zip, CT or lock in any market in the US – Can be any city in the USA – max 150 km across

- ❖ Here we have plotted "Patel Brothers" Stores locations overlaid over % concentration of Asian Indian Origin population

Exhibit 2: Patel Brothers store's locations overlaid on Asian Indian Population Concentration based on National Quantiles



Observations on Spatial Auto-correlation

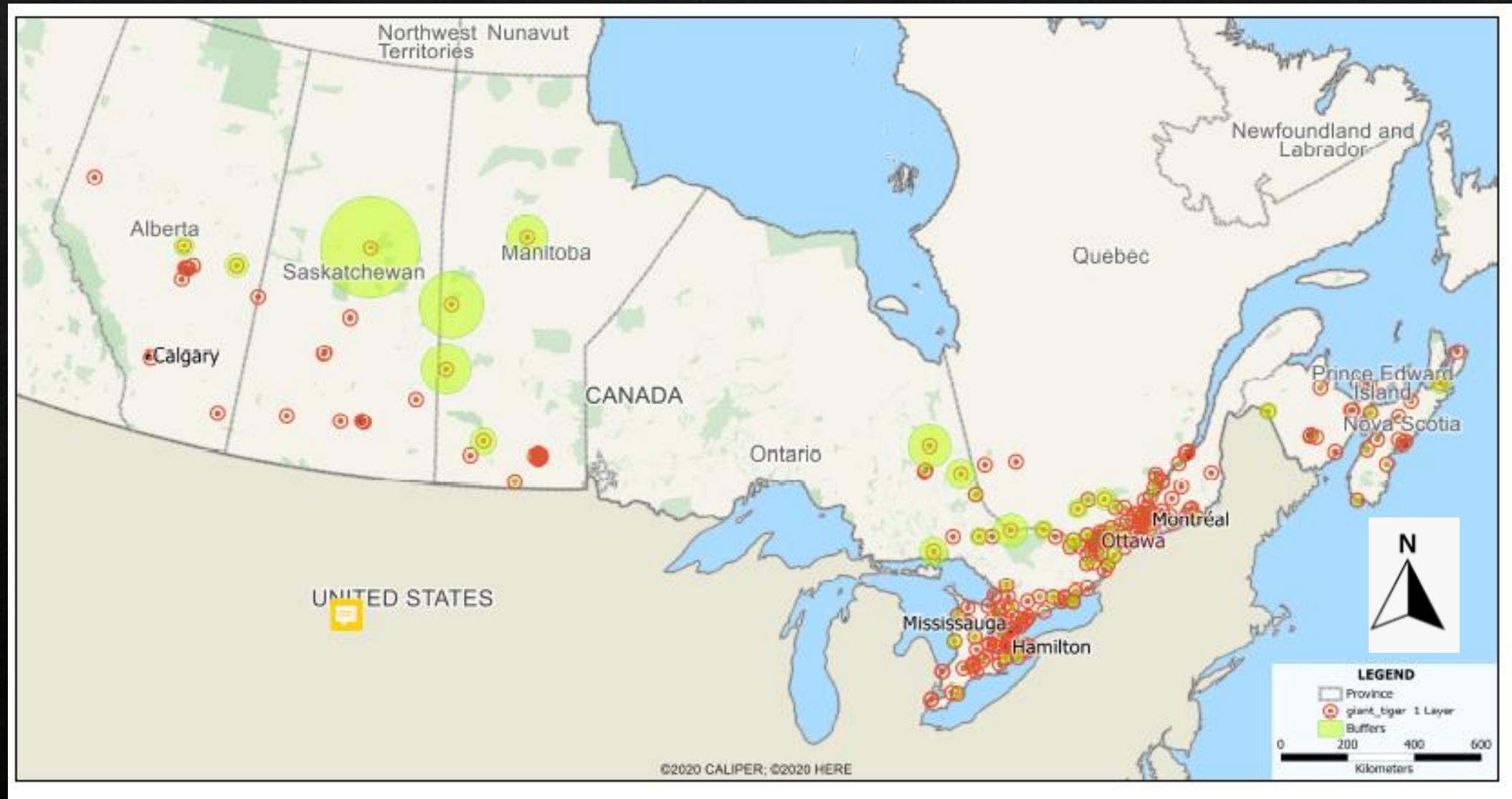
We chose "Patel Brothers" Stores locations in New-Jersey.

- ❖ About "Patel Brothers" Stores: They are a chain of Indian Grocery stores, which started operations in Sep-1974. They currently have about 52 locations in USA, of which have studied store concentration in New Jersey
- ❖ Since the store under consideration focuses on selling Indian grocery, we super-imposed store locations on Asian Indian origin population in cities around New Jersey
- ❖ A quick look at map on Slide 2 (Exhibit 2) shows that most stores are centrally located in areas with high Asian Indian population concentration (>10%)
- ❖ Moreover, Slide 1 (Exhibit 1) also shows that Patel Brother stores target mid to high household income areas

Deliverable 2 - Tasking

Identifying a new location for Giant Tiger Stores

Part 2: Map 1 (Exhibit 3)- Existing Giant tiger locations in Canada with buffers for population size of 15000



Part 2- (Exhibit 4) -We have shortlisted small town of Essex for new Giant Tiger location

- We have shortlisted a location in Essex
- Longitude and Latitude of this location are 42.171420, -82.817716
- This map presents a 10km buffer around new location with existing nearest store being >20km away

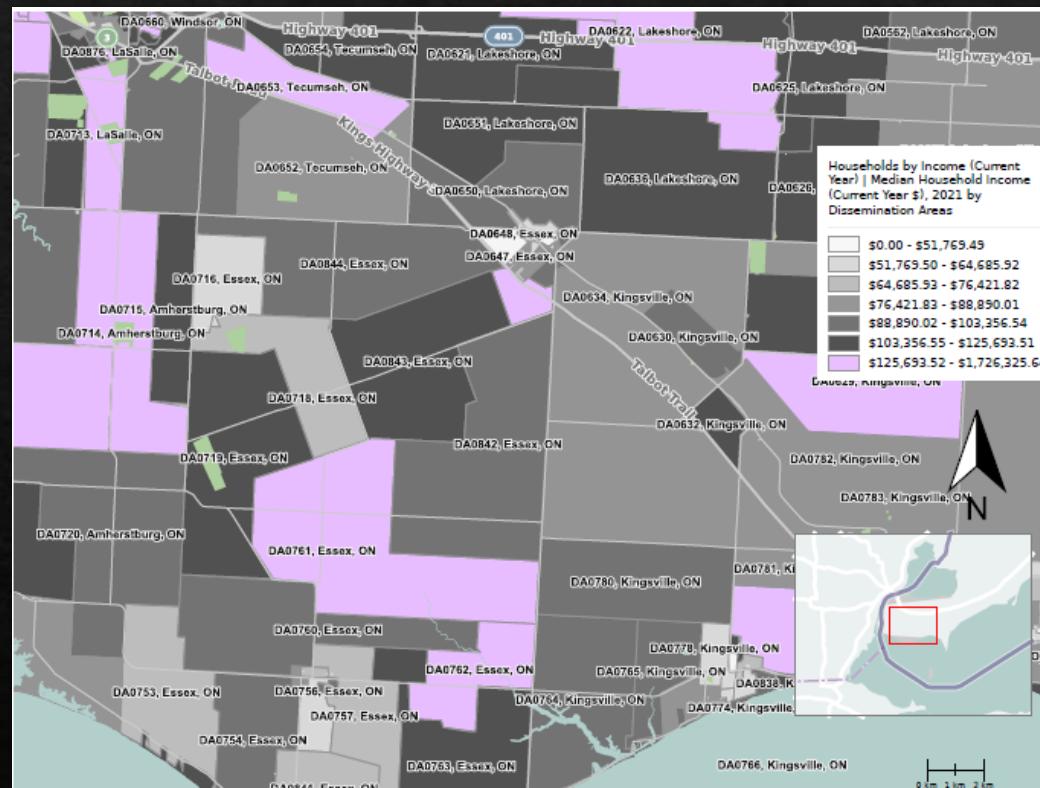


Exhibit 5: Demographic report for new location

10 Kilometers Total	
Attribute	
Estimated Median Income	\$83,265
Population	17,018
Male	8,544
Female	8,491
Age 5 to 9	999
Age 10 to 14	1,103
Age 15 to 19	1,095
Age 20	213
Age 21	198
Age 22	187
Age 23	218
Age 24	242
Age 25 to 29	852
Age 30 to 34	796
Age 35 to 39	911
Age 40 to 44	1,185
Age 45 to 49	1,235
Age 50 to 54	1,425
Age 55 to 59	1,337
Age 60 to 64	1,188
Age 65 to 69	1,096
Age 70 to 74	751
Age 75 to 79	484
Age 80 to 84	356
Age 85+	366
Estimated Median Age	44.10
Families in HH	4,969
Private Households	6,485
Native Language English	15,396
Native Language French	411
Native Language Multiple Eng Fr	68
Native Lang Multiple Response	123
Native Language Other	818
Hospital	0
Hotel	1
Museum	1
Restaurant	23
School	5
Shopping	0

Exhibit 6: Essex household incomes are in line with Giant Tiger's target audience

- Essex is a relatively medium income area which bodes well for Giant Tiger given it focuses on a relatively medium income households with cost conscious customers



Why we selected Essex and Radius band of 10km?

- ❖ **Population at optimal level:** A new Giant tiger store needs an exclusive population of 15000 to be profitable. As per Maptitude, a 10km radius around the store has a population of 17018, which should help the store be financially viable
- ❖ **Negligible possibility of cannibalisation:** Given the nearest store is >25km away at Windsor, we see relatively negligible possibility of cannibalisation of sales for Windsor store
- ❖ **Smooth supply chain operations and stocking possible:** At the same time Windsor store is close enough to keep the supply chain and stocking operations smooth for new proposed location (viz. Essex)
- ❖ **Right target audience with relatively median average income:** Average household income in Essex is about CAD83k, which is mildly higher than national average but is not extra-ordinarily high. This makes it the right target audience for Giant tiger which focuses on cost conscious customer.
- ❖ **Real Estate cost more favourable:** Real estate costs in Essex are favourable and are in line with company strategy to target locations which are outside of existing metros and are not expensive to operate/lease. The attached link provides an insight into cost of living in Essex, across various parameters (when compared with Ontario and National Averages) - <https://www.areavibes.com/essex-on/cost-of-living/>

Part 3: Sam's Club Iowa Locations

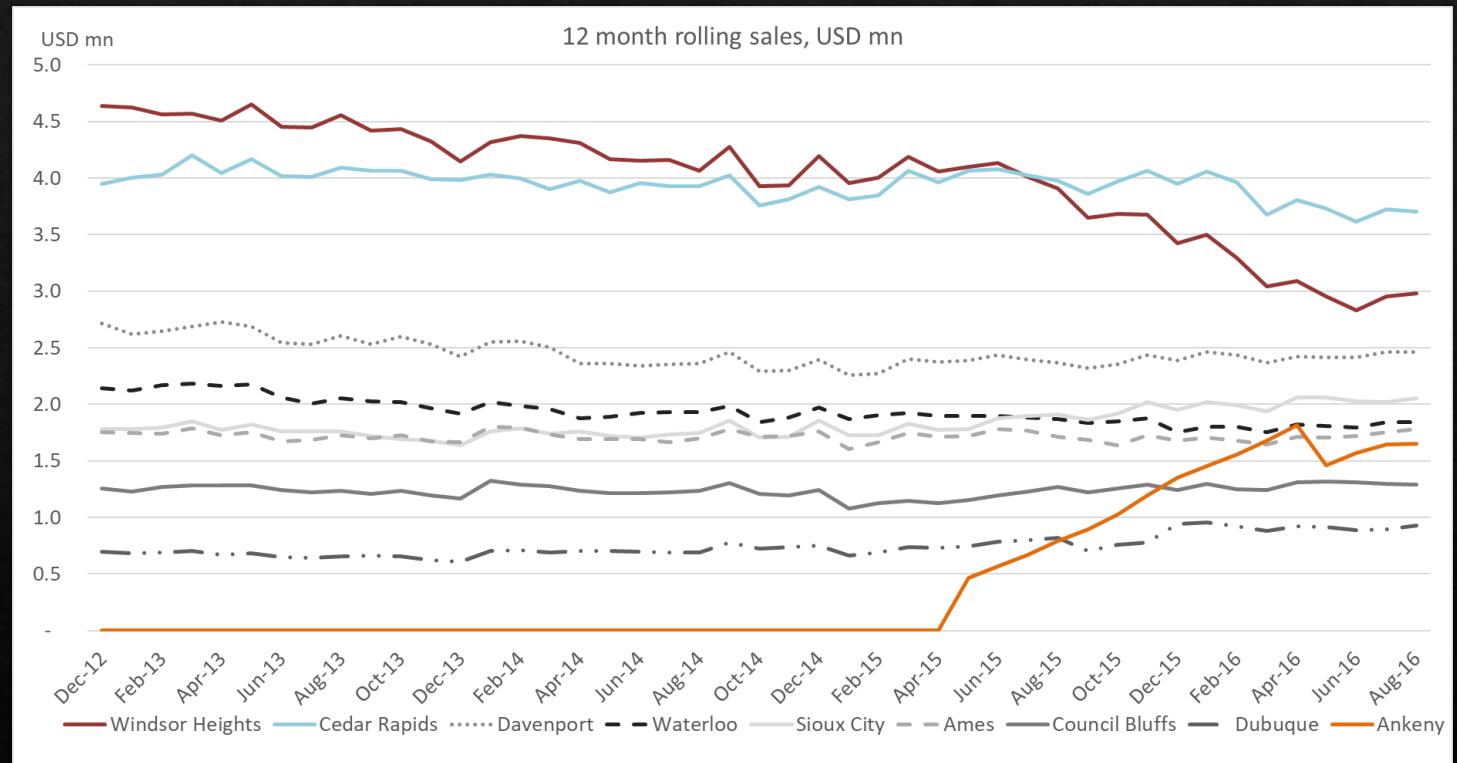
**Analysing the cannibalisation of existing store sales after Ankeny
store opened**

Part 3: Q1 (Exhibit 7)- Rolling sales of each store in January of each year and final month (unit USD mn)

USD mn, Rolling 12 month sales	Jan-13	Jan-14	Jan-15	Jan-16	Aug-16
Sam's Club 6344 / Windsor Heights	4.6	4.3	4.0	3.5	3.0
Sam's Club 8162 / Cedar Rapids	4.0	4.0	3.8	4.1	3.7
Sam's Club 8238 / Davenport	2.6	2.5	2.3	2.5	2.5
Sam's Club 6514 / Waterloo	2.1	2.0	1.9	1.8	1.8
Sam's Club 6432 / Sioux City	1.8	1.8	1.7	2.0	2.0
Sam's Club 6568 / Ames	1.7	1.8	1.6	1.7	1.8
Sam's Club 6472 / Council Bluffs	1.2	1.3	1.1	1.3	1.3
Sam's Club 4973 / Dubuque	0.7	0.7	0.7	1.0	0.9
Sam's Club 6979 / Ankeny				1.5	1.7
Iowa Total	18.8	18.5	17.0	19.3	18.7

Q2: Exhibit 8- Graph of rolling sales of all months

- Here we observe that after Ankeny store was opened, there was a relatively sharper decline in sales Windsor heights store (Apr-15 onwards)



Q3: Exhibit 9- Impact of Ankeny store opening on Windsor heights store

	May-15	May-16	Change
Annual 12 month rolling sales, USD mn			USD mn
Windsor Heights	4.1	3.0	-1.15
Ankeny	0.5	1.5	0.99
Total Iowa	18.3	18.4	0.05
% share in total Iowa sales			bp
Windsor Heights	22.4%	16.1%	-631
Ankeny	2.5%	7.9%	540
% change YoY			
Windsor Heights		-28.0%	
Ankeny		213.3%	
Total Iowa		0.3%	

Understanding the cannibalization impact

- ❖ New store in Ankeny is about 28Kms away from current Windsor heights store
- ❖ Since they are in same county (Polk), we observed cannibalisation of sales for Windsor stores
- ❖ For this analysis we compare May-15 to May-16 12 month rolling sales (May-16 would entail sales from June-15 to May-16, making it full 12 months)
- ❖ During this period we saw that 12 month rolling sales of Windsor heights declined by about USD1.15mn from USD 4.1mn to USD 3mn. During the same period Ankeny store saw a sales increase of USD0.99mn (assuming few days sales in May-15, we subtract it from May-16 12 month rolling sales to derive incremental sales). Given sales gain in Ankeny stores is broadly in line with corpus of sales lost by Windsor stores, it makes for a strong case of cannibalisation
- ❖ Moreover, in terms of share in total Iowa state sales, Windsor heights share declined by 631bp (from 22.4% to 16.1%) while Ankeny gained market share by 540bp to 7.9%, again testifying to cannibalisation
- ❖ Annual Windsor heights sales declined by 28%YoY during the year while Ankeny store sales more than tripled to USD1.5mn dollars, increasing by 213%YoY

Thank You