



# **MATTHEW WONG**

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Urban design portfolio

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# Hi, I'm Matt!

I'm a curious software developer interested in data science and programming for social good.

I'm currently pursing a Bachelor of Science in Computer Science at Simon Fraser University. My professional work experience includes working as a developer at BC children's Hospital and St. Paul's Hospital, where I contributed to innovative healthcare technologies.

Born and raised in Richmond, BC, I try to use my expertise to create applications that address societal challenges, promote social good, and hopefully to solve urban design problems through data-driven solutions.

Inspired by his father, who is blind, Matthew is committed to developing technology that bridges gaps in accessibility and empowers people to overcome everyday challenges.

# Matthew Wong

Software Engineer with Interests in ML,  
Social Good and Full Stack

 [WongMatthew](#)

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## BACKGROUND

**Languages:** Python • ReactJS/React-Native • TypeScript • C/C++ • HTML • CSS • NodeJS • ExpressJS • Tailwind • NextJS

**Technologies:** Cloud(AWS/Azure) • Web(Flask/FastAPI) • Database(SQL/pandas/Oracle) • ML(SkLearn/Tensorflow) • API

## AWARDS AND ACHIEVEMENTS

### Major League Hacking Top 50 Hackers of 2022

JULY 2022

- Out of the 150,000 students who participated in hackathons and community events, my story was one of 50 that was recognized due to my projects and impact on other students in the community

## WORK EXPERIENCE

### BC Children's Hospital Digital Lab - Development Team

Vancouver, BC

Full Stack Software Developer Intern

MAY 2022 - DEC 2022

- Led the development of a **Tensorflow-PointNet** machine learning **Flutter** app to identify head deformations during skeletal development in young infants with a 93% accuracy
- Designed and implemented backend and frontend infrastructure using **NodeJS, Javascript, Typescript, NextJS, React, CSS/Tailwind, PostgreSQL, Prisma, GraphQL**
- Participated in the complete development cycle, including planning, setting up **CI/CD**, deploying on **AWS** and **Azure**, developing within **Agile** sprints, and launching and maintaining projects
- Built and used **APIs**, and **Content-Management Systems** to serve control data flowing between the front and backend

### Providence Healthcare St. Paul's Hospital - Development Team

Vancouver, BC

Full Stack Software Developer Intern

APR 2023 - AUG 2023

- Developed an internal finance app for St. Paul's Hospital, utilizing **Oracle, JS, CSS, and HTML**, streamlined the payment and billing process for all hospital departments, resulting in \$1.52 million annual cost savings
- Completely overhauled an internal disease research database, utilizing **Oracle, PL/SQL, JS, HTML**, and **CSS** to design and implement a new user-friendly interface, and integrated cutting-edge research tools
- Designed (**ERD modelling**) and on my own built the functionality to solve a polymorphic association between invoices and the many possible form input types that could be given to a single invoice using **PL/SQL, Quick SQL** and **Oracle**

## PROJECTS AND SELECT COMPETITIONS

### SFUNoche | Educational Planning App

Open Source Development

NextJS, Vercel, Prisma, Auth0, Redux, MaterialUI, PassportJS, Flowbite, Tailwind

FEB 2023

- Spearheaded the development team and served as secondary project manager for SFU Noche, an all-in-one platform for students that streamlines course planning, schedule building, and professor and course reviews
- Built the front-end using **NextJS**, providing a highly responsive user interface, and utilized **Framer Motion** to implement animations and interactive designs to enhance the user experience
- Utilized **Flowbite** to enable rapid prototyping, and **Tailwind** for efficient and consistent styling throughout the platform
- Integrated authentication and user management features using **Auth0** and **PassportJS** to provide secure access control

### Diversify | Social Media App | BCHacks - Best Diversity in Tech

University of British Columbia

Python, ReactJS, Flask, Sklearn, Pandas, Numpy, Firebase

FEB 2022

- Diversify is a mobile app that connects hiring managers to minority groups to promote diversity in the workplace
- Lead the design, training, and deployment of a **TF-IDF recommendation system** with 84% accuracy using **SkLearn**
- Supported the team by designing and building the web app's UI in **ReactJS** and **Figma**

### SafePulse | Overdose Relief App | HawkHacks - 1st Place Overall

Wilfred Laurier University

Python, Figma, Flask, ReactJS, Twilio, ReactJS, TailwindCSS

MAY 2022

- Mobile support app to reduce overdose deaths by providing resources and live aid to drug users and dialing 911 automatically when an overdose occurs
- Oversaw the development of the user authentication and dialing feature with **Twilio**
- Designed the UI/UX in **Figma** and implemented design concepts using **ReactJS** to create an intuitive and accessible app

## EDUCATION

### Simon Fraser University

Burnaby, BC

- Bachelor of Applied Science in Computer Science

JAN 2026

### Lighthouse Labs

Vancouver, BC

- Certification in Data Science

AUG 2021

# Professional Development Media



## About Here

<https://www.youtube.com/c/AboutHere>

Mainly addresses issues related to housing, rentals and small businesses. He discusses challenges these sectors face socially and legislatively in North America while exploring solutions to overcome them.



## NotJustBikes

<https://www.youtube.com/c/NotJustBikes>

Showcases examples of quality public transit and urban design mainly in Europe and Asia while contrasting them to North American practices and explaining why better transit orientated urban design matters.



## The Urbanist

<https://www.theurbanist.org/>

They offer a deep analysis of a wide variety of urbanism news from across the world while providing insights into both the positive and negative changes occurring in different cities and countries.



## Strong Towns Podcast

<https://www.strongtowns.org/podcasts>

The podcast sheds light on how to strengthen cities financially through smarter urban planning. Unpacks technical aspects and impacts of legislation, zoning and infrastructure on urban developments by featuring industry experts.



## RMTransit

<https://www.youtube.com/@RMTransit>

RMTransit highlights large train-orientated transit projects around the world, explains their designs and impacts. He focuses on describing how they've positively transformed the countries or cities they reside in.



TORAKE  
JAPANESE CUISINE

# Restaurant Review & Neighbourhood Briefing





# Torake: What it is, Why it matters and Where did it come from?

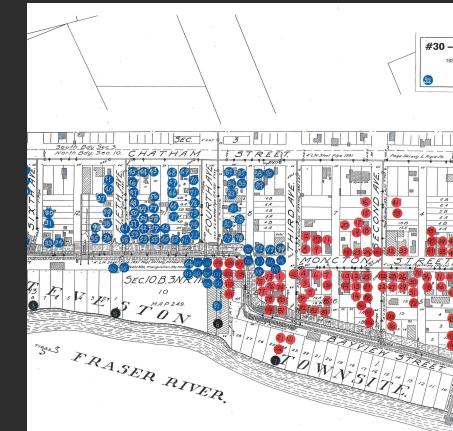
In 2023, Richmond welcomed another Japanese restaurant, Torake. Torake, like many other restaurants in Richmond, is a small local business that aimed to serve high quality food that is reflective of the culture of Richmond. The owners of the restaurant grew up in Vancouver, bringing strong community roots and a deep connection to the cultural identity of Richmond to their cuisine. The restaurant is a reminder of the long standing impact Japanese culture has in Richmond and how changing demographics have shaped modern eating habits. I selected Torake because the restaurant peaked my curiosity; it's a modern and pricey Japanese restaurant that opened in a random suburban corner plaza with low foot traffic and only houses surrounding it for multiple blocks, nonetheless it flourished. The history of Japanese cuisine goes back to 1880-1930, when Steveston, a part of Richmond, was still a fishing town made up of a majority of Japanese immigrants. Post World War 2, the Japanese population has shrunk significantly in Richmond, however, their heritage and cuisine has always been prominent in Richmond. I want understand how and why Japanese cuisine has continued to flourish in contrast to the population of ethnic Japanese in Richmond and to explore the demographics of the restaurant, my neighbourhood and the areas around me to better understand why Torake has become so popular!



#### Sushi Platter from Torako



## **Steveston in the 1940's looking West on Moncton**



**Map of Steveston, aka 'Japan Town', blue and red dots mark Japanese businesses and residences**



Entrance of Torake



## Torake Demographics: Population Change

Let's start by looking at the total population change of Torake's corresponding Census Track, the area around Torake and of Richmond as a whole. These will give us a general idea of how Richmond is growing and if the area's around Torake has seen any extraordinary growth. We can observe in Figure 1 that the Total Population dropped in 2021 compared to 2016, this may be because during COVID numbers were under-reported. Comparing 2016 and 2024, we see slight population growth.

The 2km radius around CTO143.04 aims to capture the demographics of the immediate neighbourhoods around Torake, which hopefully provides insights into the restaurants local customer base. In Figure 2, we see the same population trends as Figure 1. Something to note, is that within walking distance, there is only one other restaurant, which means that Torake already serves as primary dining location for the surrounding neighbourhoods.

Finally, in Figure 3, we can observe that across Richmond there has been a steadily increasing population. Let's dive a bit deeper into the ethnic backgrounds of those in Richmond, so we can better understand the restaurant demographics.

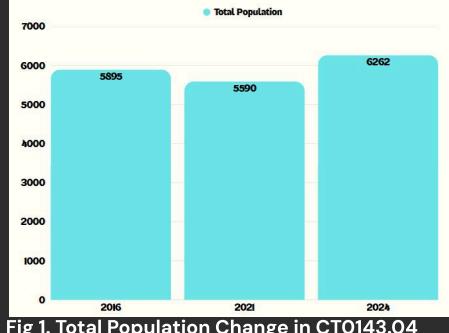


Fig 1. Total Population Change in CTO143.04

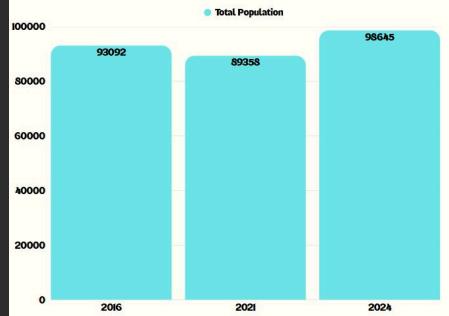


Fig 2. Total Population Change in 2km radius around CTO143.04

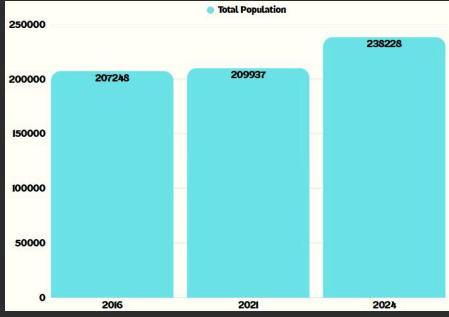
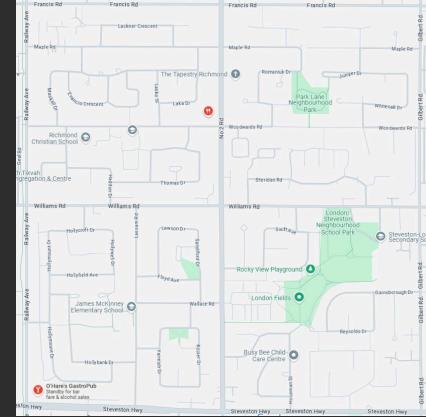


Fig 3. Total Population Change in Richmond

Corner plaza's like those in Figure 4, where Torake resides, are a rarity in Richmond. It's clear that the lack of nearby dining options may also play a role in determining their demographics.

If population across Richmond continues to increase due to urban sprawl, the value of a walkable restaurant rises leading to potentially more restaurant goers.

With the information provided thus far, it's possible that it's missing key demographics as it doesn't capture commuting behavior from the bus stops or access from the main roads.



Map of area surrounding Torake, highlighting restaurants



Fig 4. Photo of Corner Plaza with Torake



# Torake Demographics: Ethnocultural Population

At a glance, we can observe from Figure 1, that Richmond has a majority visible minority population. This population primarily consists of those identifying as Asian origin (74.8%) and secondarily, having European origin (25.4%).

Something interesting to note, is that the ethnic origins that make up Richmond are the inverse of the rest of BC.

I chose to look at the Total Visible Minority population and hone in on the Chinese and Japanese communities.

After exploring the data, It's clear that East Asians, especially Chinese, make up most of Richmond's population. From Figures 2 and 3, the Chinese population outnumbers all others in Richmond.

I wanted to include the Japanese population even though it is significantly smaller because Torake is Japanese and I want to understand if there's a cultural or relevant Japanese population that contributes to its demographic.

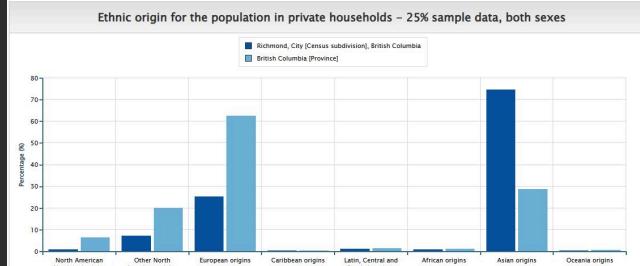


Fig 1. Ethnic Origins for the Population of Richmond and BC

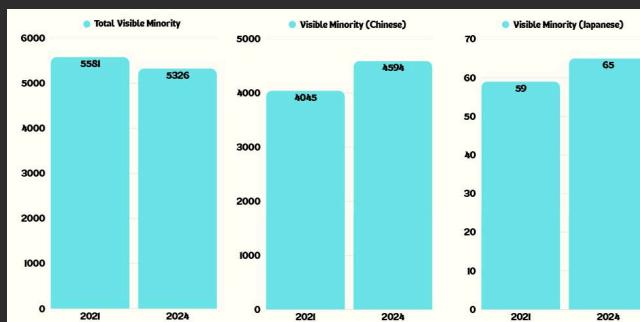


Fig 2. Total Visible Minority Status, Visible Chinese Minority and Visible Japanese Minority in CTO143.04

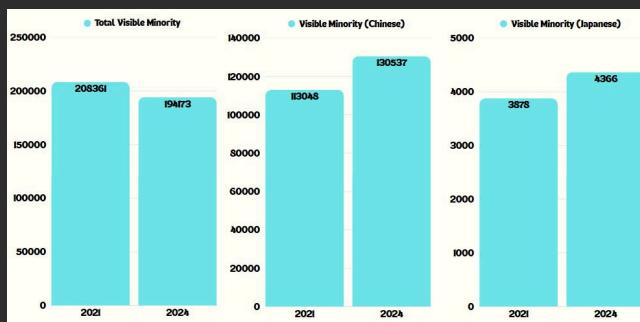


Fig 3. Total Visible Minority Status, Visible Chinese Minority and Visible Japanese Minority in Richmond

The total non minority population in Richmond cannot be overlooked. From Figures 4 and 5, the total non minority populations in both the census track and all around Richmond have increased overtime. However, there is a chance that this is incorrect because 2021 may have been under reported due to COVID.

Regardless, even though the non minorities is a much smaller proportion of the population, many residents have likely lived in Richmond for many years and have familiarized themselves with Asian foods including Japanese.

The mix of cultures in Richmond, though primarily ethnically Chinese, in combination with Richmond's Japanese heritage might explain why Japanese restaurants like Torake can succeed even without a strong Japanese population.

Aside from ethnicity and local cultural influences, residents must also have the means to support eating out, income levels may also provide insight into Torake's demographics.

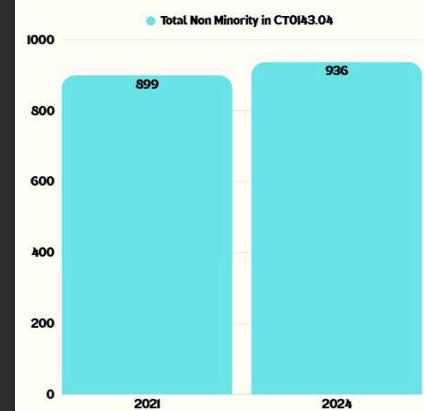


Fig 4. Total Non-Minority in CTO143.04

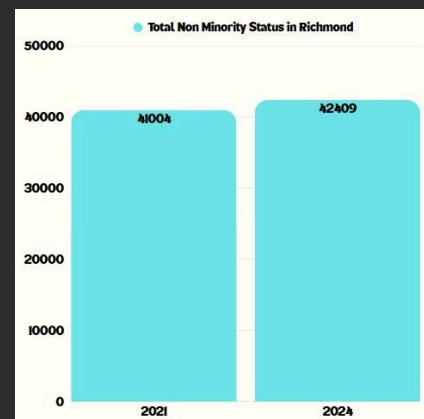


Fig 5. Total Non Minority in Richmond



## Torake Demographics: Total Median Household Income

Another important demographic to think about is the total median household income, it reflects the potential spending power of local residents and can illustrate their financial growth overtime.

In Figure 1, the total median household income adjusted for inflation from 2020 to 2024 rose by almost \$40,000 in the census track where Torake is located.

We can see a similar case in Figure 2, the total median household income adjusted for inflation in Richmond increased by approximately 40% as well.

A potential reason for such a large increase in total median household income may be housing values.

Figure 3 portrays the Vancouver Median Housing Prices from Jan 1990 to Jan 2022 while adjusted for inflation, house values have quadrupled over approximately 30 years.

Richmond median housing price data was unavailable for those time periods, I chose to use Vancouver's housing data as it closely aligns with Richmond's average detached sale prices from the same time, Jan 2022.

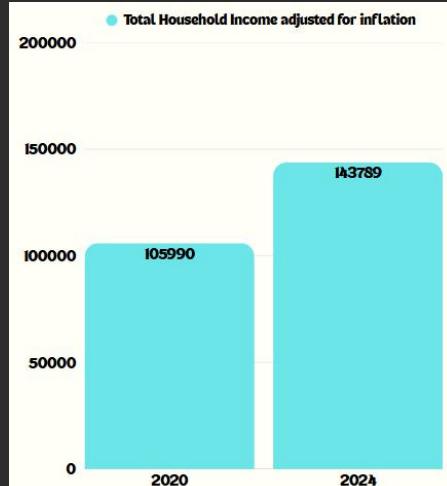


Fig 1. Total Median Household Income (adjusted) in CTO143.04

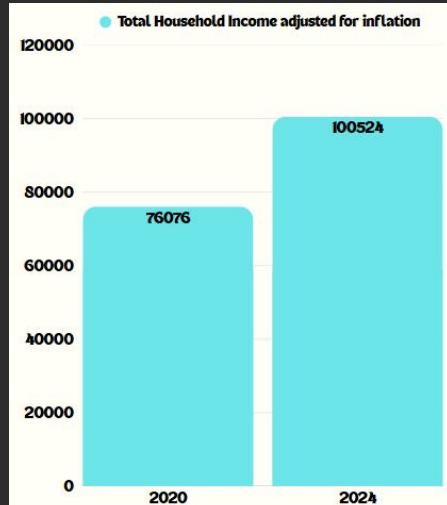


Fig 2. Total Median Household Income (adjusted) in Richmond

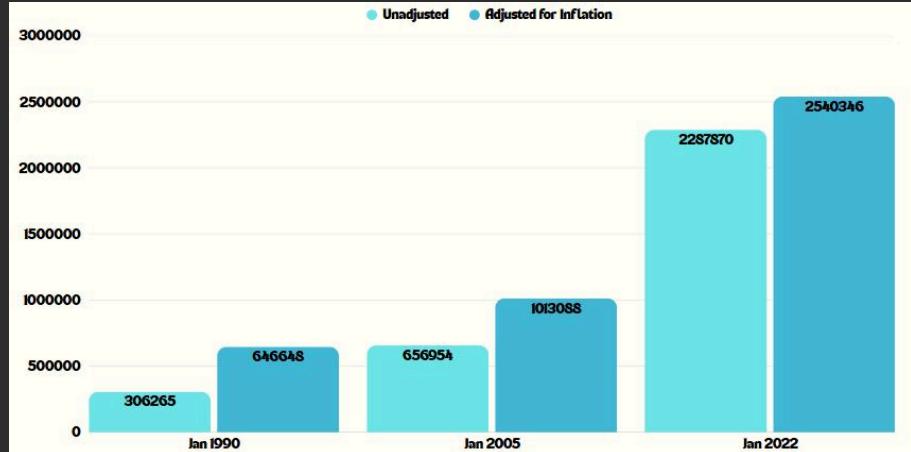


Fig 3. Vancouver Median Housing Prices Jan 1990 – Jan 2022

The past few years of housing prices have been fairly stable compared to the previous 30 years of explosive growth as seen in Figures 3 and 4. Home owners that purchased their home in the past 10–30 years are able to build significant equity because of the massive increase in housing prices. This wealth results in a population that is able to spend more on leisure such as dining.



Fig 4. Average Detached Home Sales Price in Richmond 2022–2025



# Torake Demographics: Age of Residents

To understand the demographics more, I looked at the age of local residents to see if they could be old enough to be home owners, this could justify the sharp increases in median household income.

Figure 1 shows that the average age of residents in the census track where Torake resides has stayed the same from 2021 to 2024.

Figure 2 only reinforces the fact that the average age in Richmond is early 40's as the average age for 2021 and 2024 was 43 and 41 respectively.

The relatively stable age suggests that Richmond has long term and established residents, not a short term population such as students who rent. This supports my previous idea that residents are home owners who purchased their homes in the past 10+ years. Furthermore, those in their 40's are typically more established and financially stable; they can afford to eat out more often. These factors contribute to the restaurant's demographic.

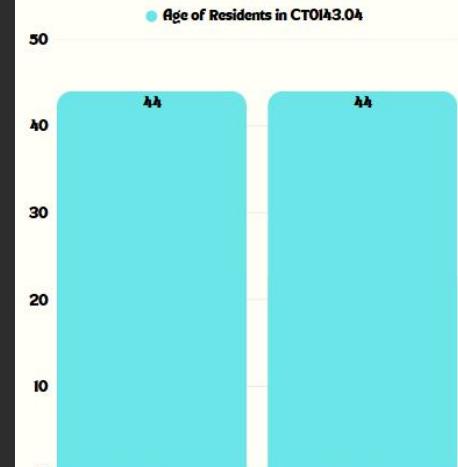


Fig 1. Age of Residents in CTO143.04

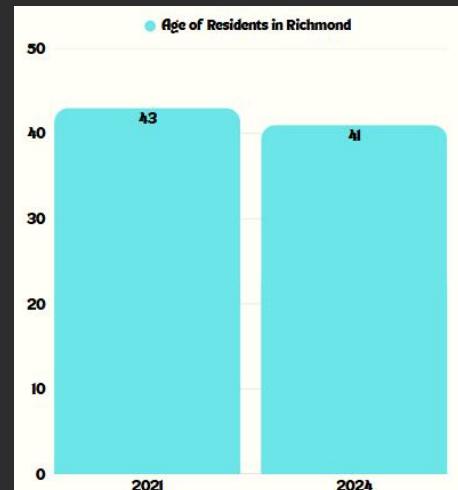


Fig 2. Age of Residents in Richmond

Across Figures 4, 5 and 6, the largest age group is 50-64, then 65-85 and finally 35-49. These figures reinforce the previous suggestion that Richmond has long term and established home owners.

The large amount of children in CTO143.04 and the rest of Richmond, in combination with a more mature population, points towards primarily family households.

Within the census track and the surrounding neighbourhoods, residents aged 20-34 is the lowest. This gap in the population implies that these area's, which are mainly detached houses, are unaffordable for the vast majority because of the income disparity.

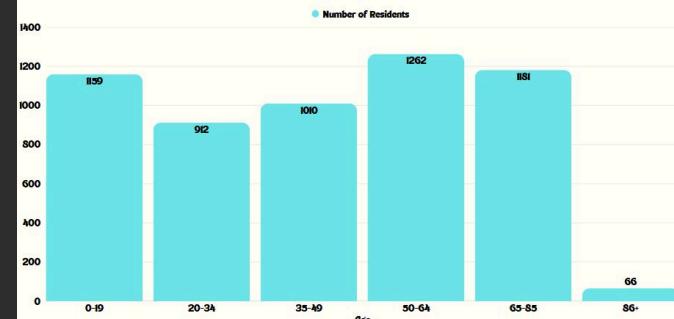


Fig 4. Age of Residents in CTO143.04

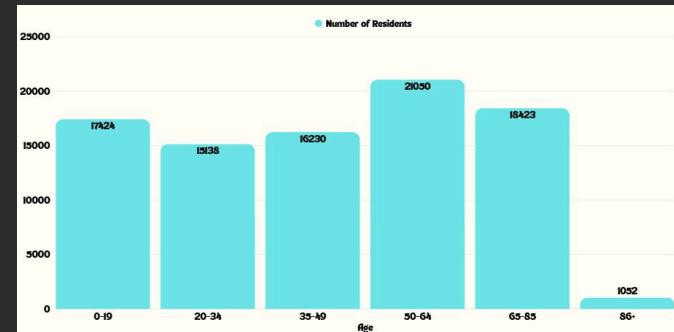


Fig 5. Age of Residents in 2km radius around CTO143.04

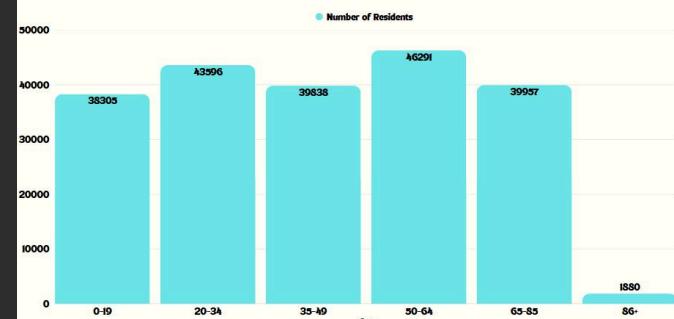
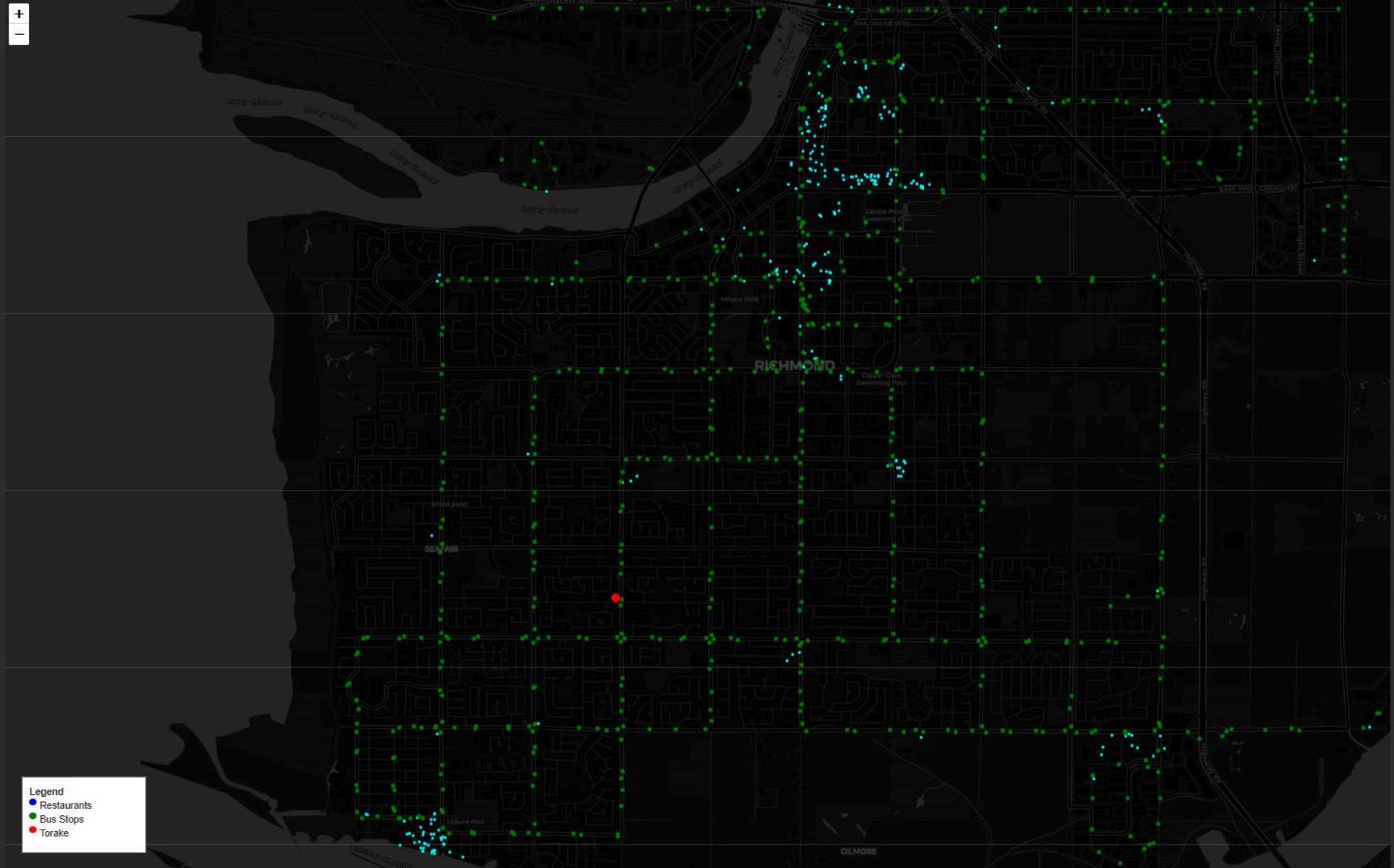


Fig 6. Age of Residents in Richmond

# Interactive Context Map



Context Map for Majority of Richmond – Click on the title to access the map online!

# Interactive Context Map



Context Map for immediate neighbourhoods around Torake – Click on the title to access the map online!

# Interactive Context Map



Context Map for CT0143.04 – Click on the title to access the map online!

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# Personal Socials



Matthew Wong

🏆 Prev @ BCCH & St Paul's 🏆 | 🎖 MLH Top 50 2022 🎖 |

⚡ President of SFU Surge ⚡ | 💻 CS@SFU 💻 | 🔥

LighthouseLabs DS Alum 🔥

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 SFU Surge

 Simon Fraser University

 Websites



Matthew Wong



Matthew Wong



Matthew Wong

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