51,300

Prepare for the best – Empower Emergency Response through Mobile App

Presented to: City of Vancouver

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Executive Summary

Objective

*How can city of Vancouver ensure **effective Emergency Response** using mobile app?*

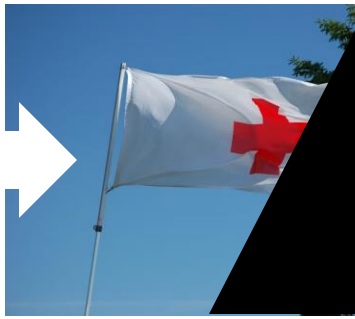
Key Questions

How can Vancouver prepare effectively to mitigate disaster consequences?

How can Vancouver allocate supplies and resources effectively immediately after disaster?

How can Vancouver recover effectively using volunteers?

Emergency Life Cycle



Risk Map
Using Risk Map to identify areas with the most risks to prepare and stock supplies

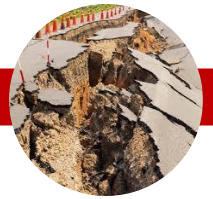
Priority Model
Using priority model to identify which areas to supply resources effectively while saving costs

Volunteer Management
Prioritized volunteer request through skills availability and proximity analysis

Emergency Response Life Cycle has different phases with key pain points

Key Phases

Mitigation and Preparedness



Disaster Happens

Response

Recovery

Key Activities

- Conducting Assessment
- Prepare Response Plan
- Resources Stocking

- Resource Allocation
- Information Dispatch
- Rescue Activities

- Volunteer Recruit and Management
- Rebuilding Activities

Key Pain Points

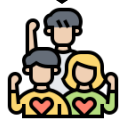
Individual Decision Making

Effective Stocking

Limited Resources Supply

Effective Resources Allocation

Varying Damage Levels

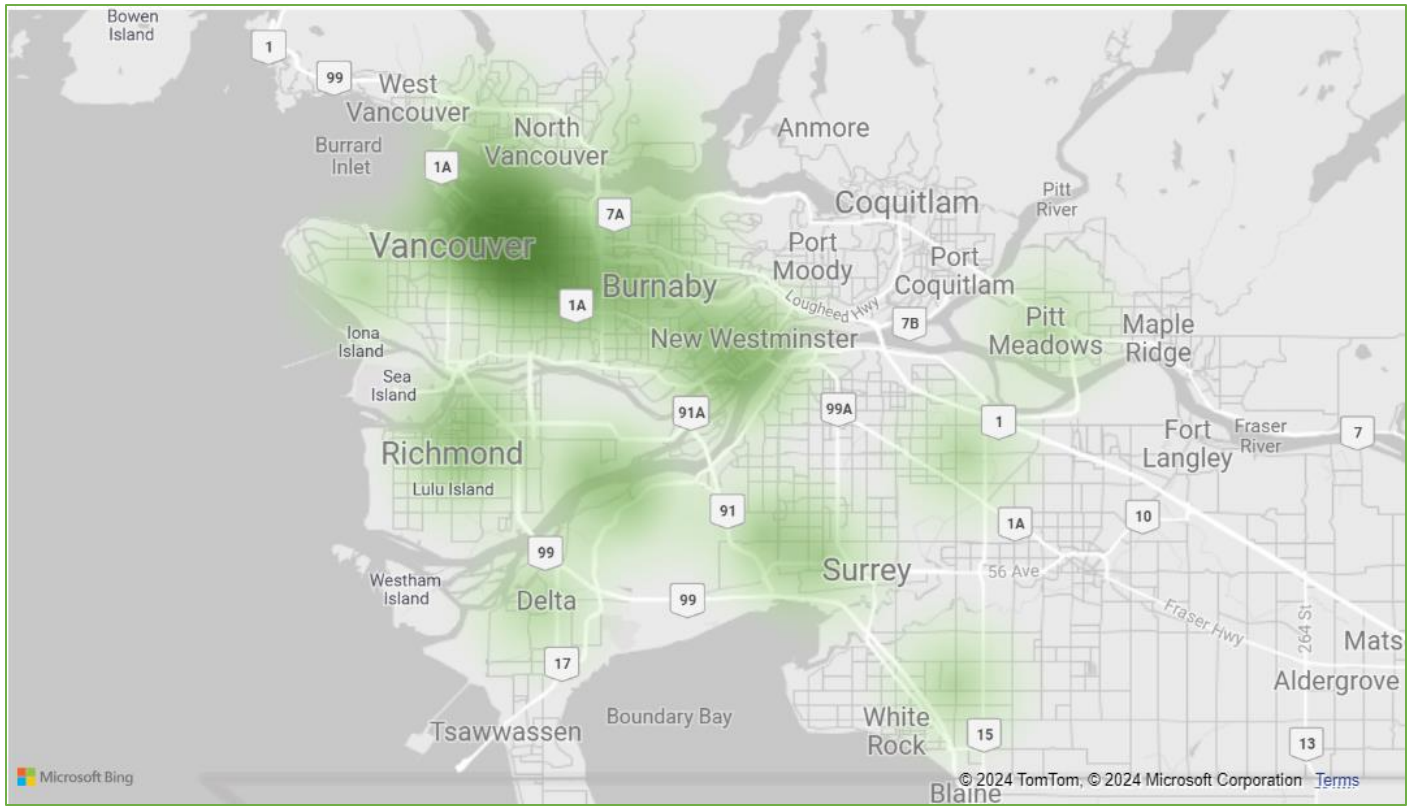


Effective Volunteer Management

Mitigation Phase – Risk Level Map Feature

How to effectively communicate and execute optimal resource stocking level?

Ignition Risk Level Map by Risks and Postal Area



Usage

Highlight the risk for each location

Install emergency facilities based on the area risk levels

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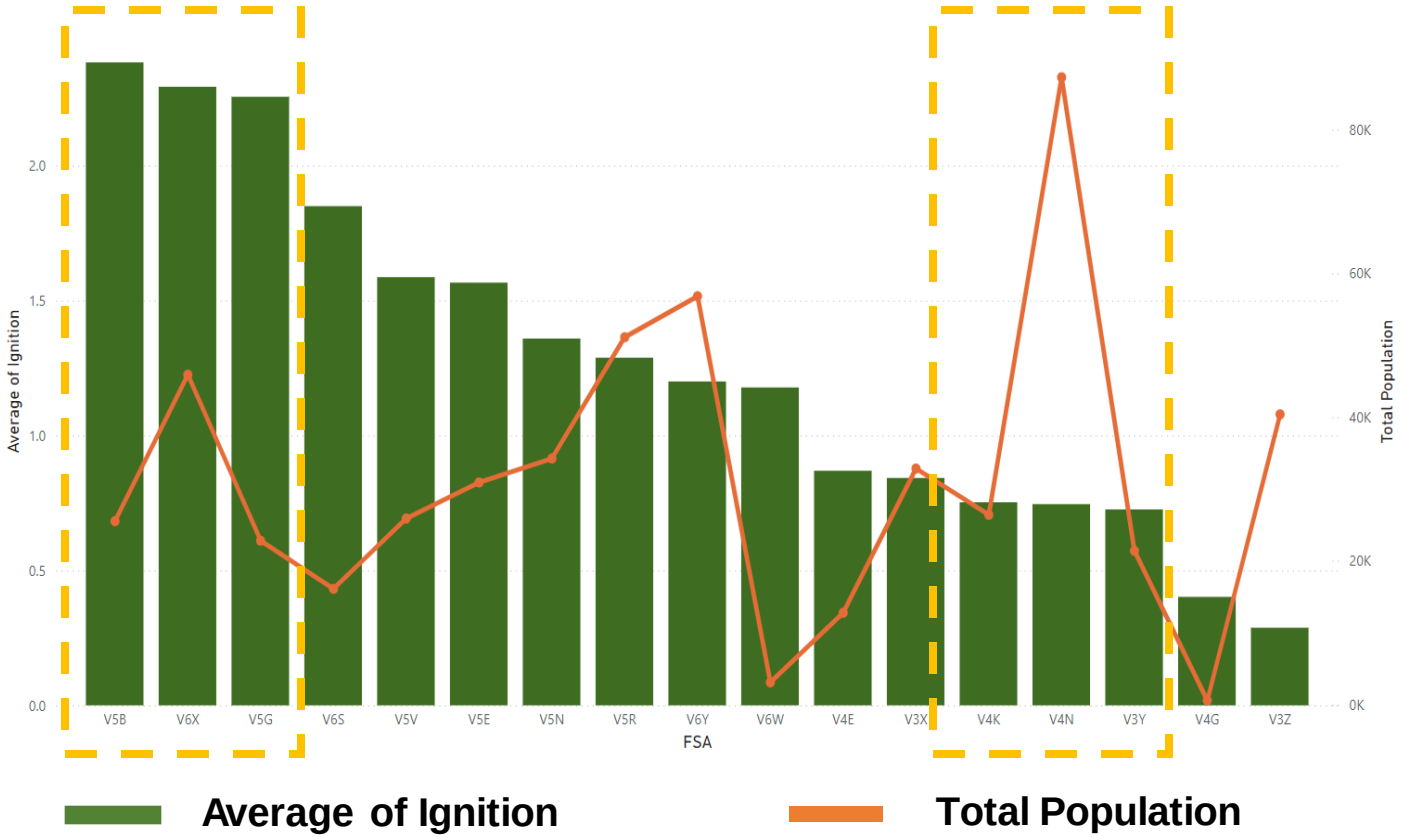
Alert citizens of upcoming threats for food and water stockpile

Response Phase – Analysis

How to effectively prioritize resource allocation between different postal areas?

Average of Mean Ignition and Total Population by FSA



Key Takeaway

There is no relationship between risks and total population

Population is not a reliable variable to determine resource allocation priority

Priority model needs to include a diverse set of variables

Response Phase – Methodology

How to effectively prioritize resource allocation between different postal areas?

Model Structure

Priority Score = W1* **Vulnerable Population** + W2* **Low Income Household** + W3* **One Person Household** + W4* **High Rise Building**

Methodology

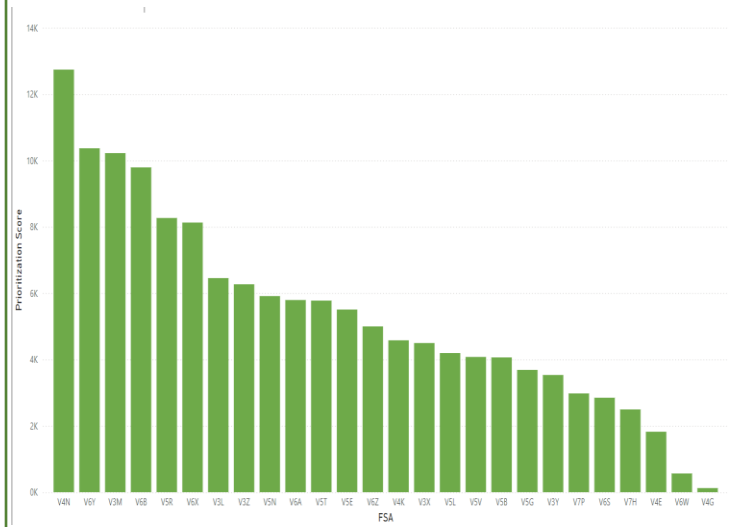
Analytical Hierarchy Process

	Children	Older People	Pop	Low Income	One Person	High Rise
Children	1.00	1.00	4.00	7.00	0.50	5.00
Older People	1.00	1.00	4.00	7.00	0.50	5.00
Pop	0.25	0.25	1.00	5.00	0.14	0.33
Low Income	0.14	0.14	0.20	1.00	0.11	0.33
One Person	2.00	2.00	7.00	9.00	1.00	8.00
High Rise	0.2	0.2	3	3	0.13	1

Variable Weights

Children	0.221
Older People	0.221
Population	0.065
Low Income	0.027
One Person	0.39
High Rise	0.076

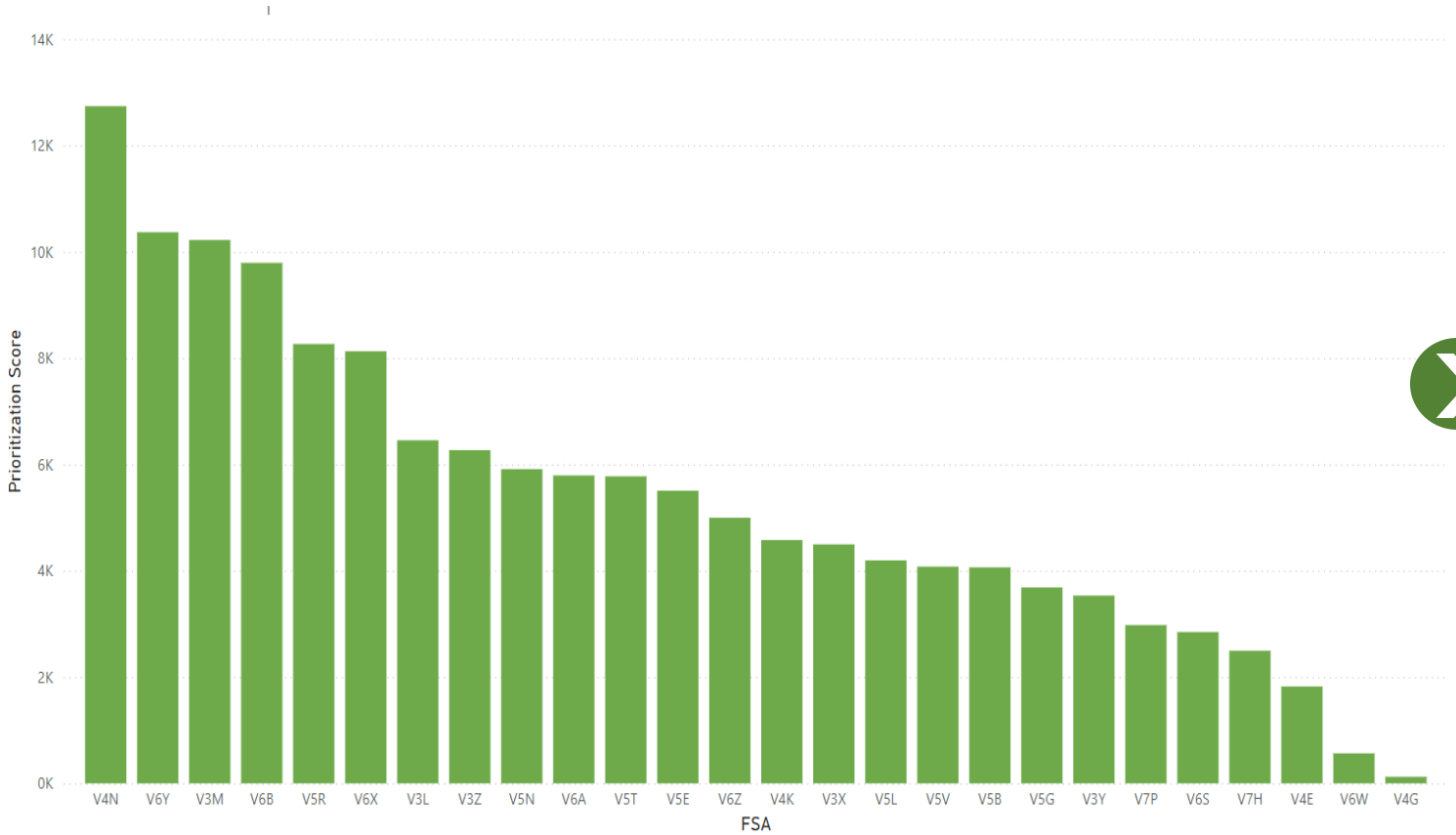
Priority Score Bar Chart



Response Phase – Prioritization Score Chart Feature

How to effectively prioritize resource allocation between different postal areas?

Prioritization Bar Chart by Area Code



Usage

Surrey Northeast, New Westminster Southwest, Richmond, Vancouver

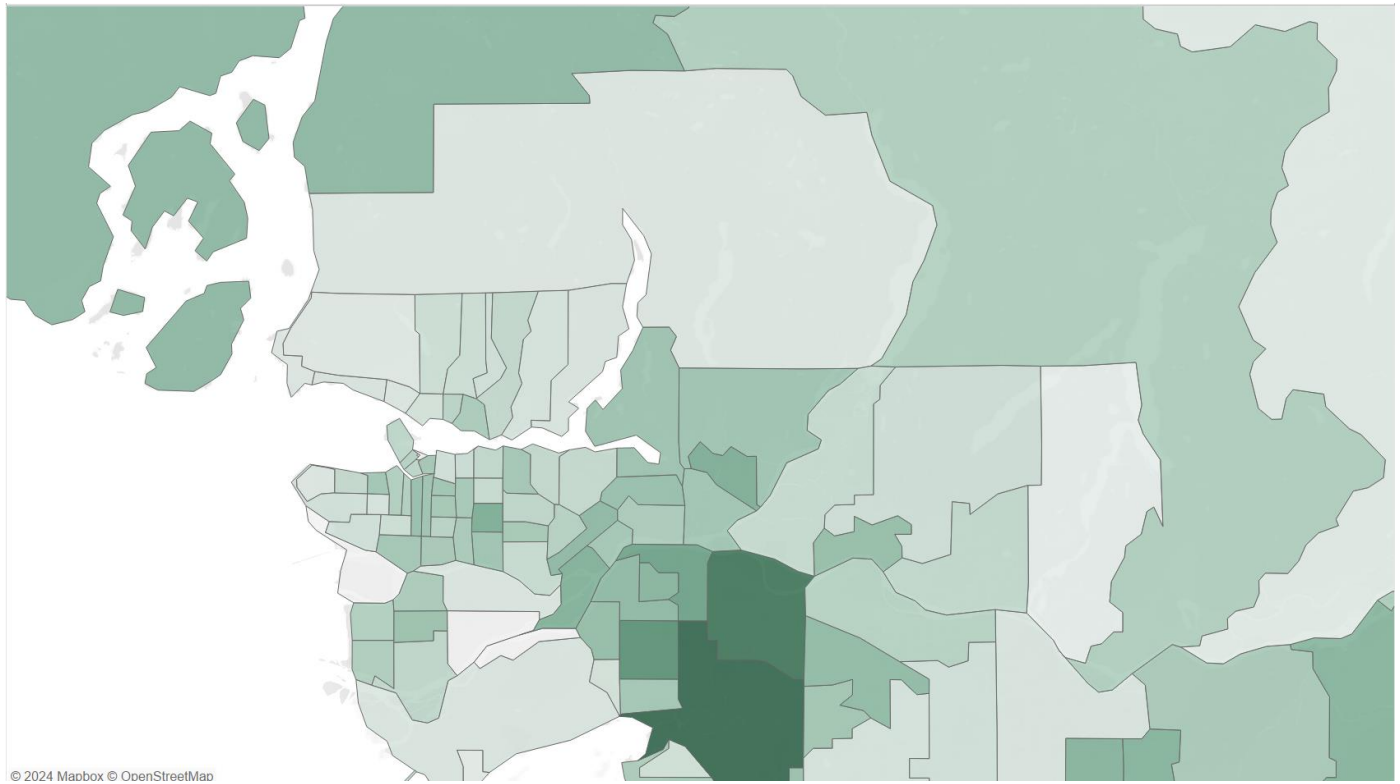
Postal areas with the highest prioritization score should be supplied first

Government can optimize prioritization score for sending volunteers and helps

Recovery Phase – Analysis

How to effectively manage volunteers between area code?

Health Worker Concentration by Area Code



High Low

Key Takeaway

Different Areas have different concentration of skills

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Volunteering requests are overwhelming if sent to all Vancouver Areas

Volunteering Requests should be filtered by skills availability and proximity

Recovery Phase – Skills Availability Feature

How to effectively manage volunteers between area code?

Worker Concentration by Area Code and Occupation

Usage

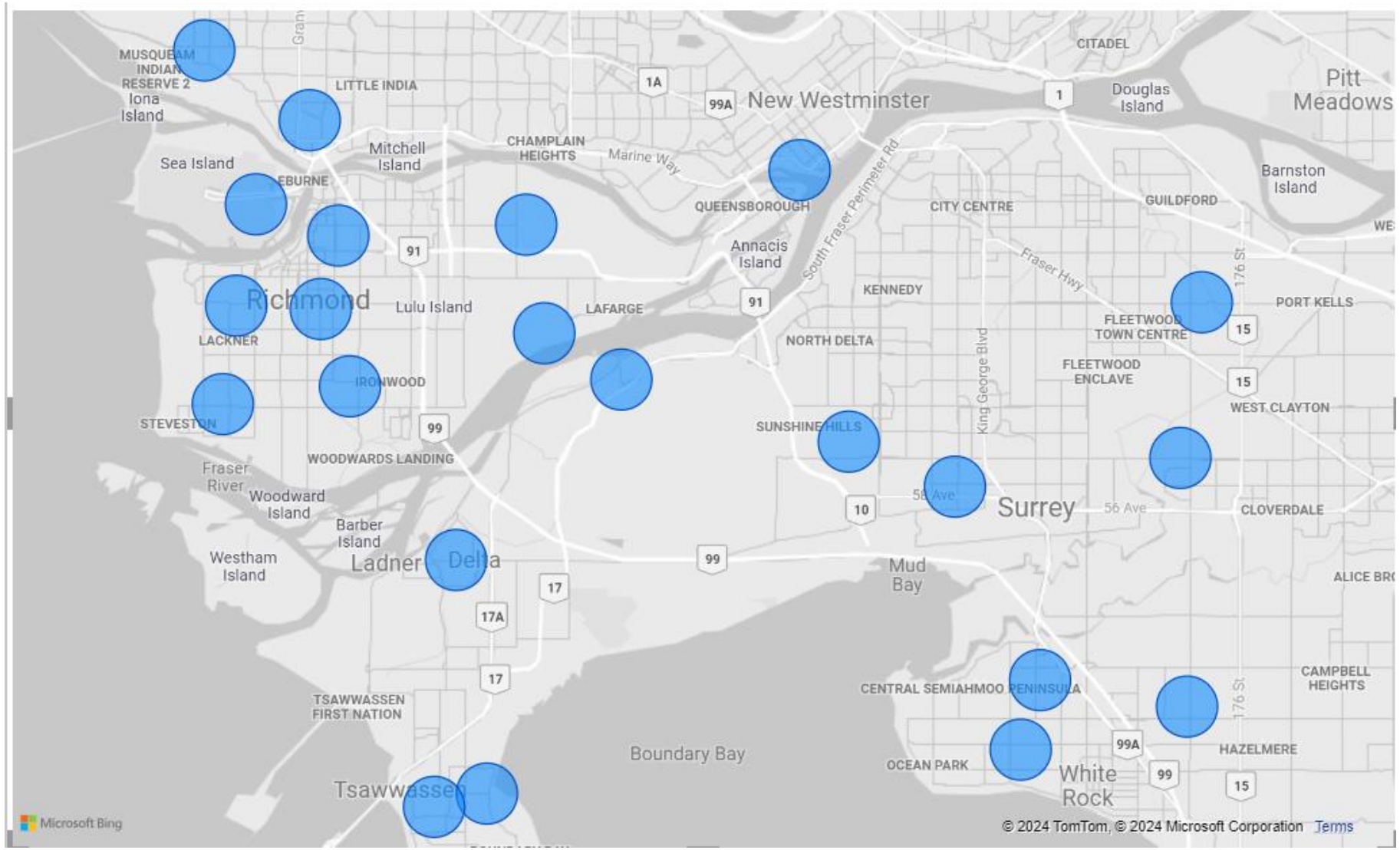
Request is submitted

The app will look for nearby area code with available skills

Volunteering Requests will be shown to nearby volunteers with available skills

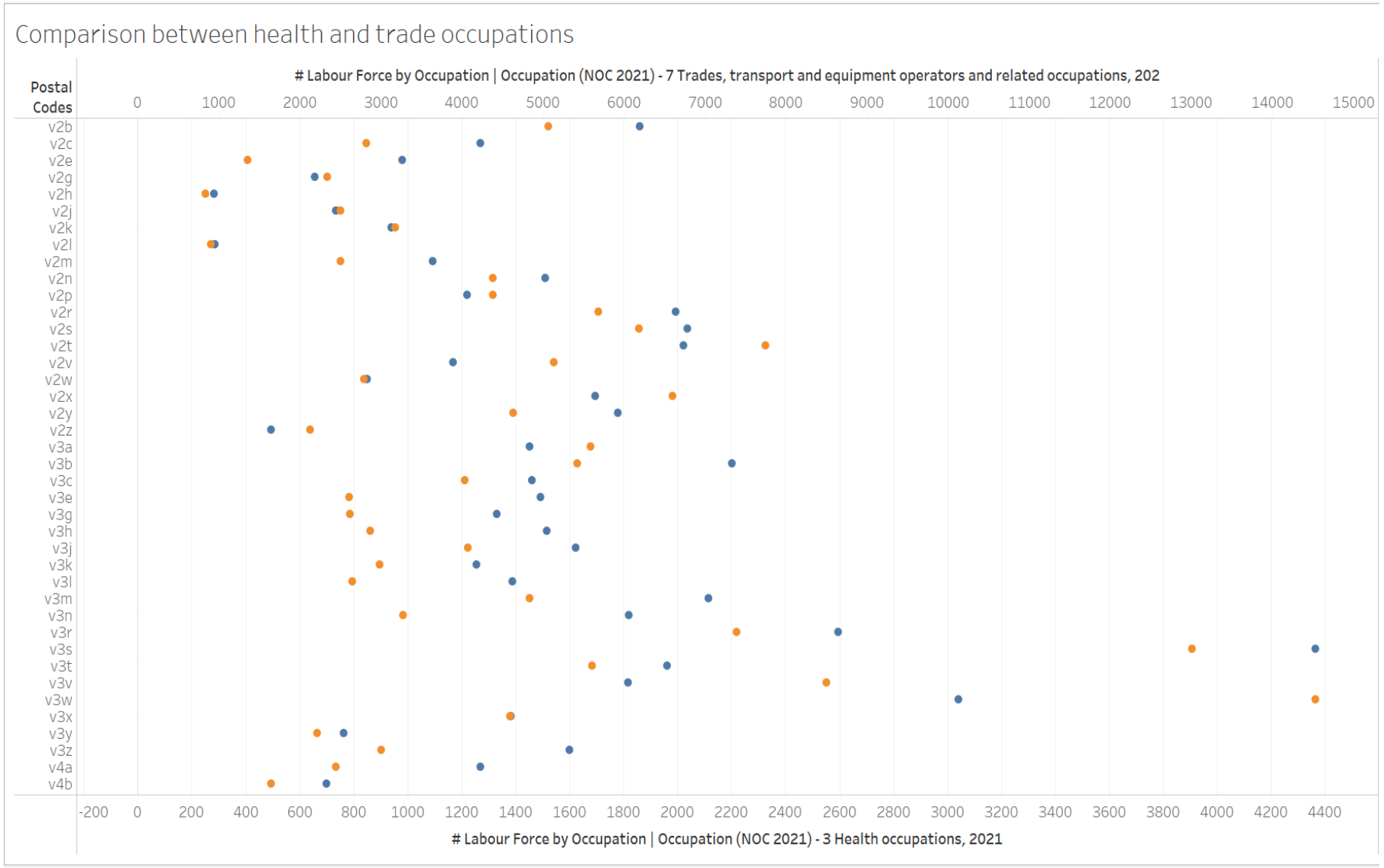

Q&A

Appendix



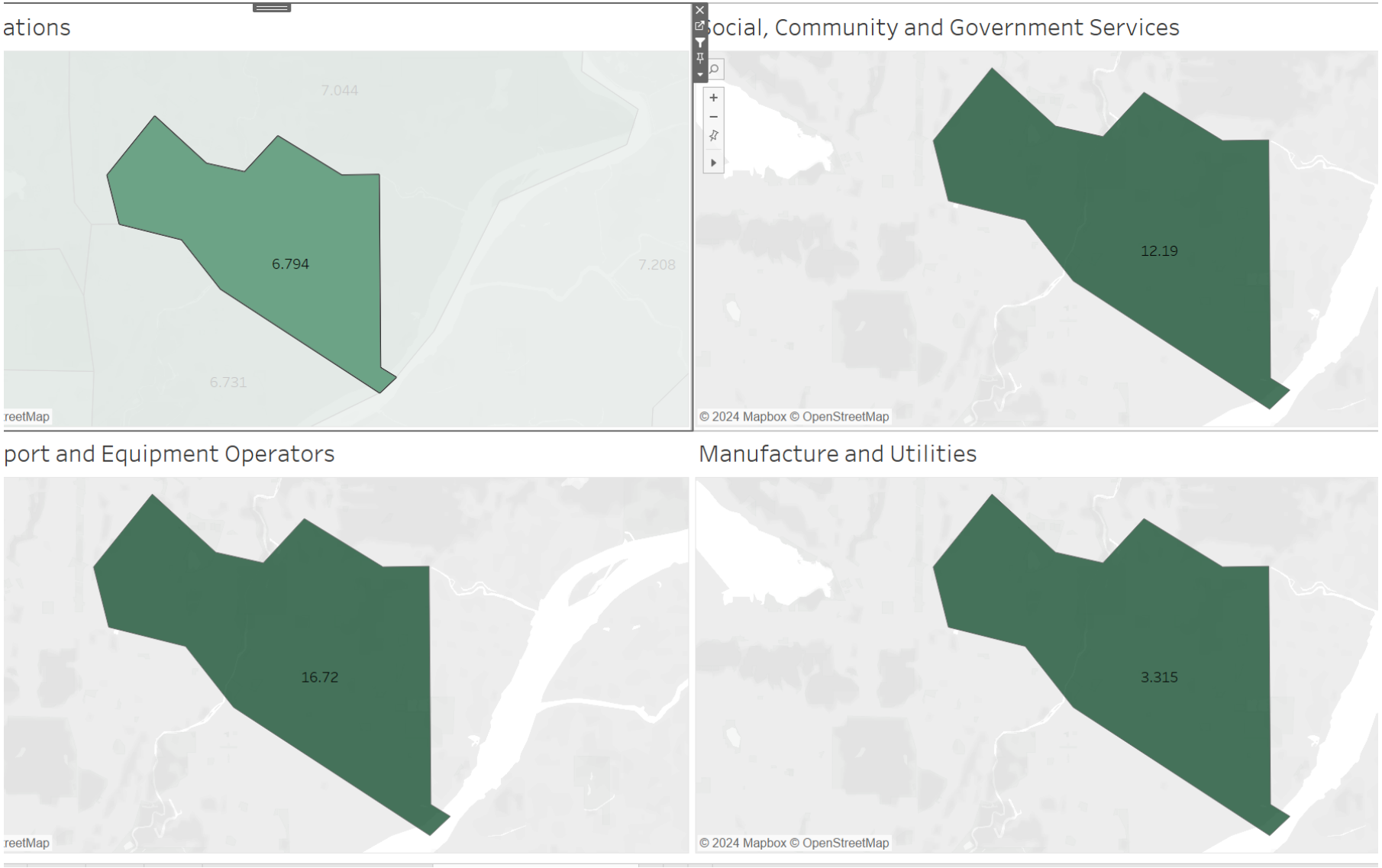
Map by Flood risk

Appendix



Scatterplot between Health and Trade Occupations

Appendix



Variance between different skills across the same region