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Leveraging GIS to Investigate Food Availability in Neighborhoods Characterized by Social Housing

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Geographic Information Systems and Research
ADS 807



Strategic Purpose

A successful GIS is one that is aligned with the purpose for the organization as a whole, thereby helping provide what the organization needs to stay true to that purpose.

Thinking About GIS
Tomlinson, 2013, p. 13

A close-up photograph of a young boy with light brown hair and blue eyes. He is smiling broadly, showing his teeth, and holding a whole orange carrot in his mouth. He is wearing a white t-shirt. The background is a soft-focus indoor setting with a green plant visible on the left.

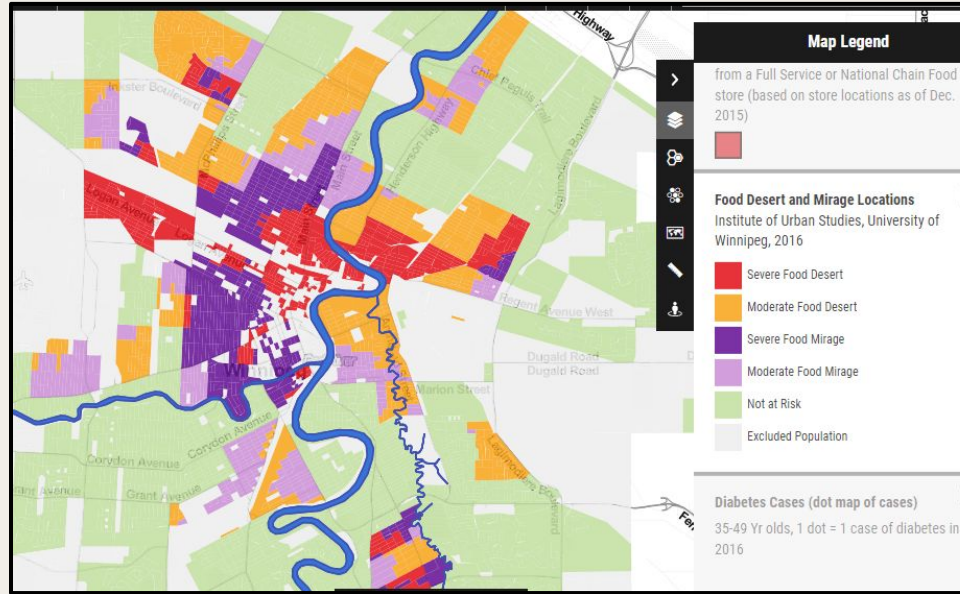
Food Scarcity and Food Insecurity

Food insecurity is a significant and persistent problem in Canada.

In the **Waterloo Region** over 3,000

Geographical Information Systems

GIS capabilities used to be limited to a few, however with cloud technology it is available on the internet and mobile devices. This allows GIS to be used by anyone as a tool for organizing information and promoting better communication, collaboration and decision making (Tomlinson, 2013).



Impact of Food Insecurity



- Students who live with food insecurity often have challenges with their mental health and sense of well-being.
- Regulating their emotions and engaging with the peers and teachers in socially appropriate ways are also a challenge for children who do not have regular meals.
- Anxiety and depression occur at higher rates for children who experience food insecurity.

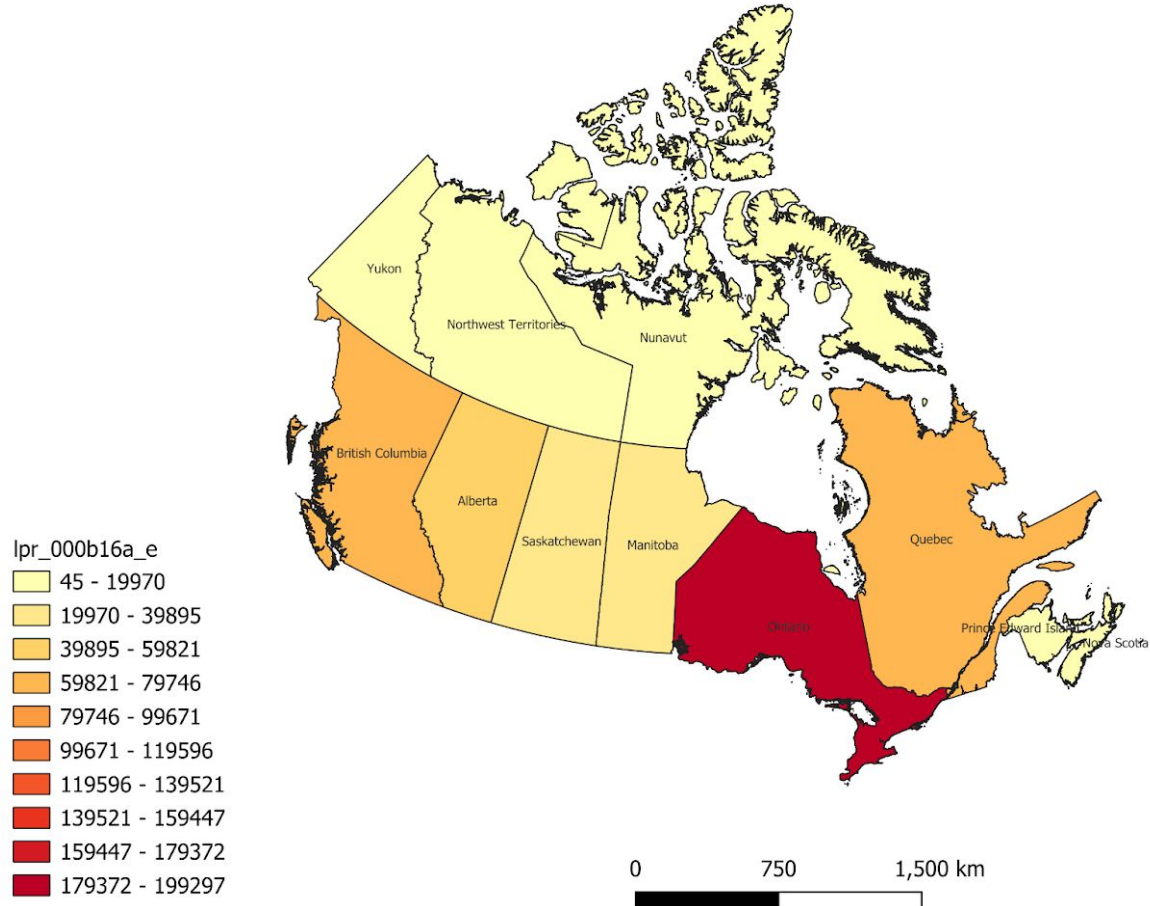
Impact of Immigration*

Western and European countries have seen sharp increases in immigration over the last decade.

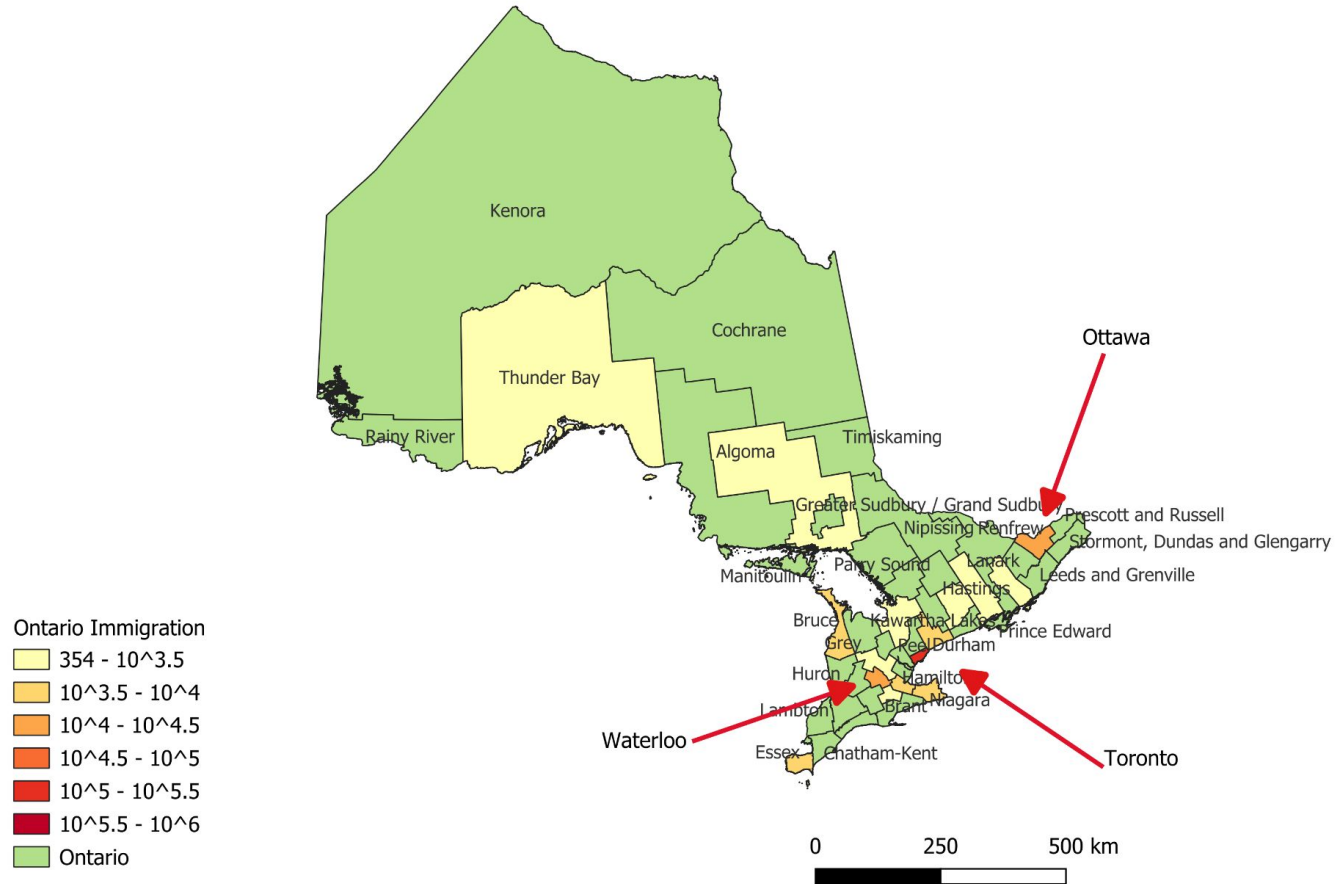
Between July 1, 2022 and June 30, 2023 Canada welcomed over 460, 000 people.

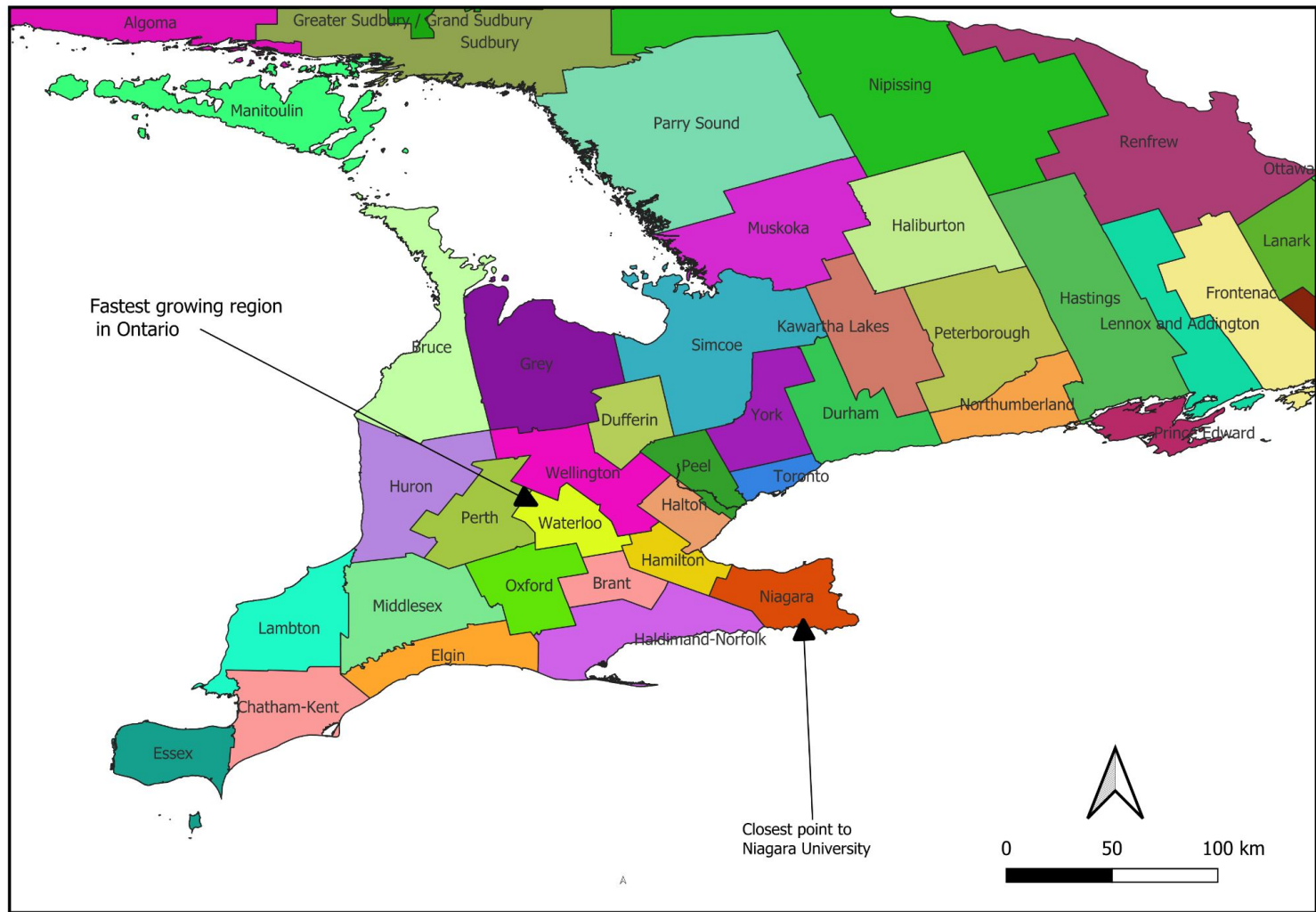


Canada



Immigration in Ontario 2022 - 2023





What is the impact on existing
Social Problems?



GIS and Research

In traditional ways of examining research data relationships are examined without considering spatial or location relevance.





Literature Review

Studies of food environments in Buffalo have found that many of the neighborhoods have insufficient access to healthy foods due to a lack of supermarkets. Further, in examining the food landscape in Buffalo, other research has identified that grocery stores are over-represented in predominantly white areas while non-white areas are underserved (Bradley, 2024).





Research Questions

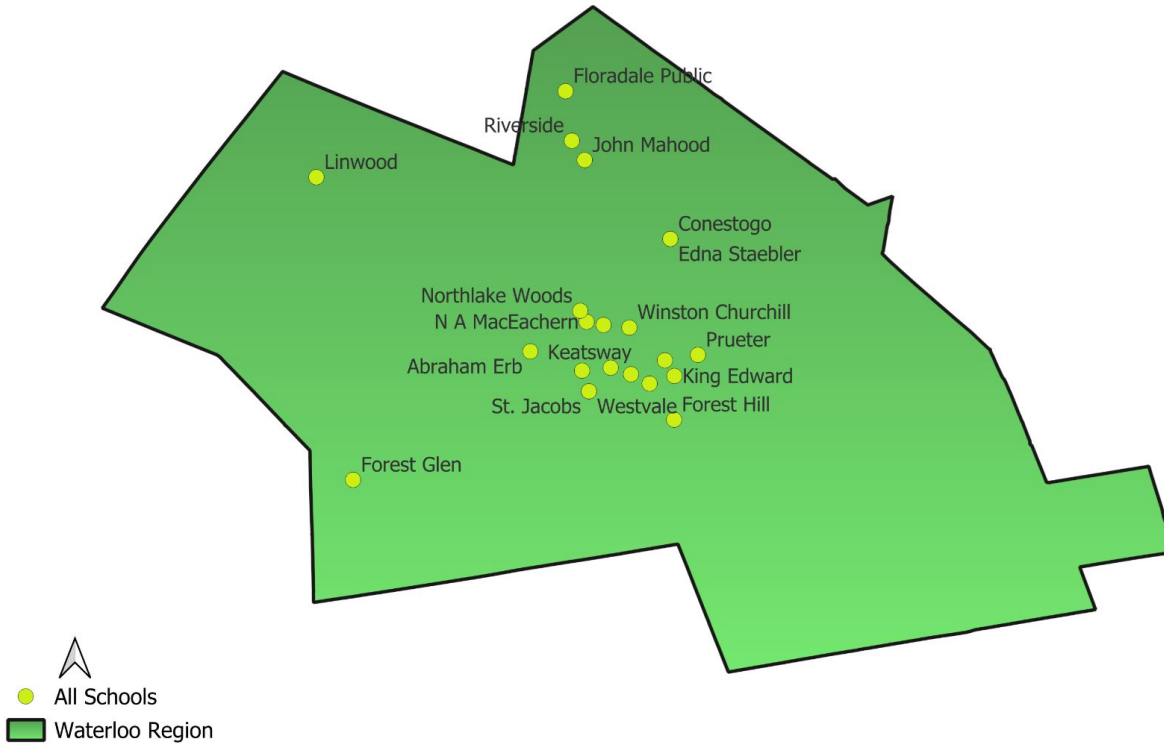
1. Are there food retailers who sell healthy and nutritious food in walking distance to neighborhoods with social housing?
2. Are the available food retailers reasonably priced or offering discounted prices?
3. Are food banks or food hampers located near social housing?

Research Methodology

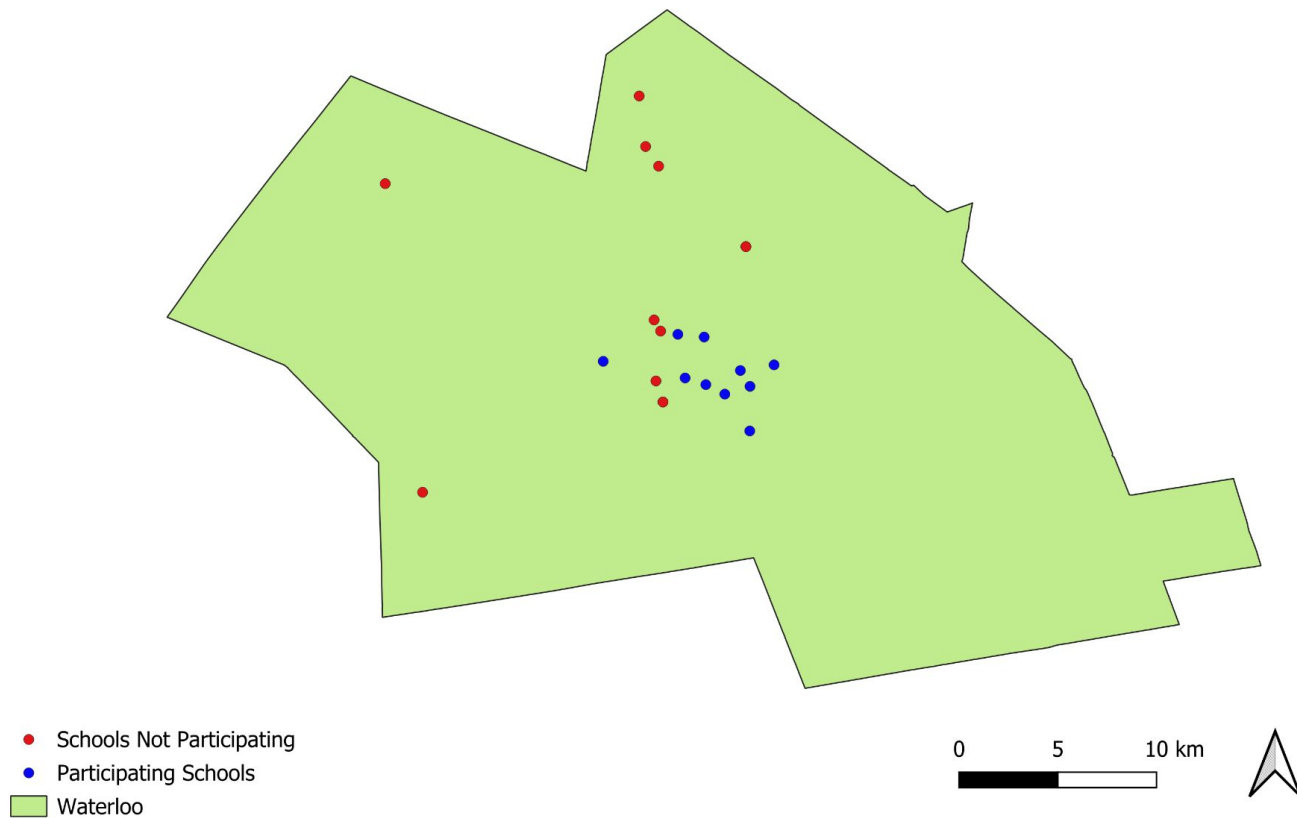
Methodological Approach	This study takes a qualitative approach to examine the availability of food retailers in proximity to neighborhoods characterized by social housing.
Convenience Sampling	Students who receive Food4Kids support receive their food bags from their home school. The coordinates of all 20 schools supervised by Superintendent Newlands, were used to create a shapefile.
Data Collection	To investigate the proximity of food retailers to schools, the coordinates of 40 food retailers were used to create a shapefile. This layer was added to the existing layer of schools. To explore the third research question, a second data layer was created using the same method to create a shapefile for the food banks and food hampers in the region.
Data Analysis	Descriptive statistics (frequencies, mean, median, mode) were used to analyze the data. Where there was missing data in a question from a respondent, the average response was used.



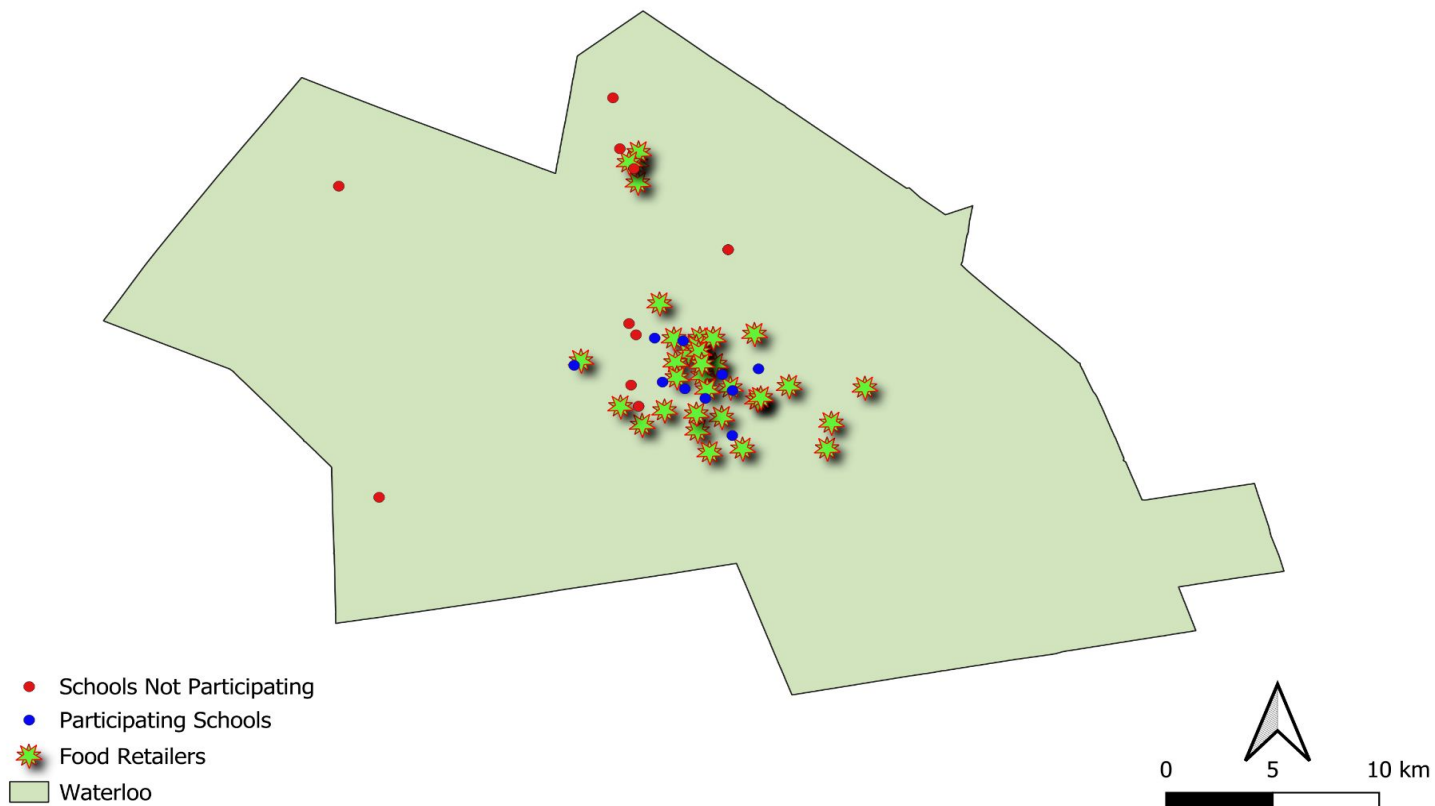
Waterloo Region District SchoolsFOS6



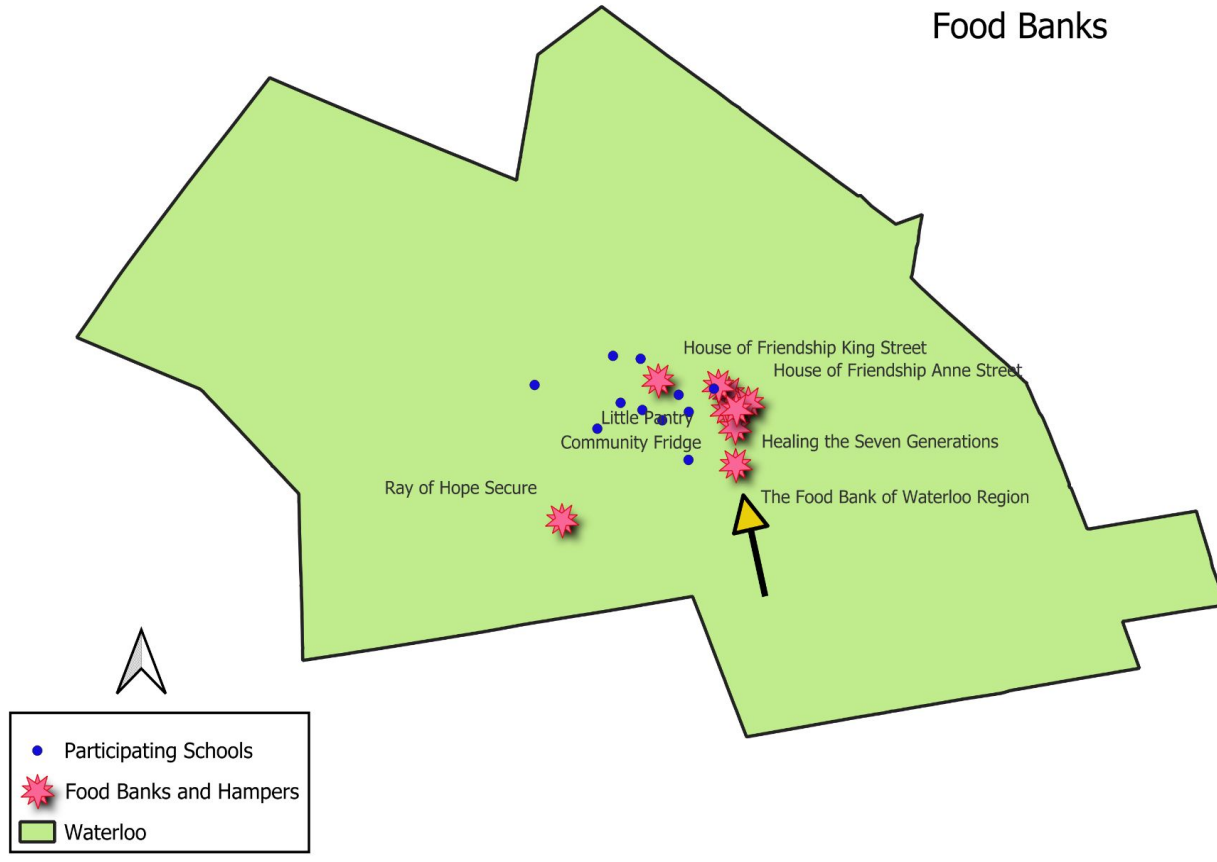
Waterloo Region Schools



Waterloo Region Schools and Neighborhood Food Retailers



Waterloo District Food4Kids Schools and Food Banks

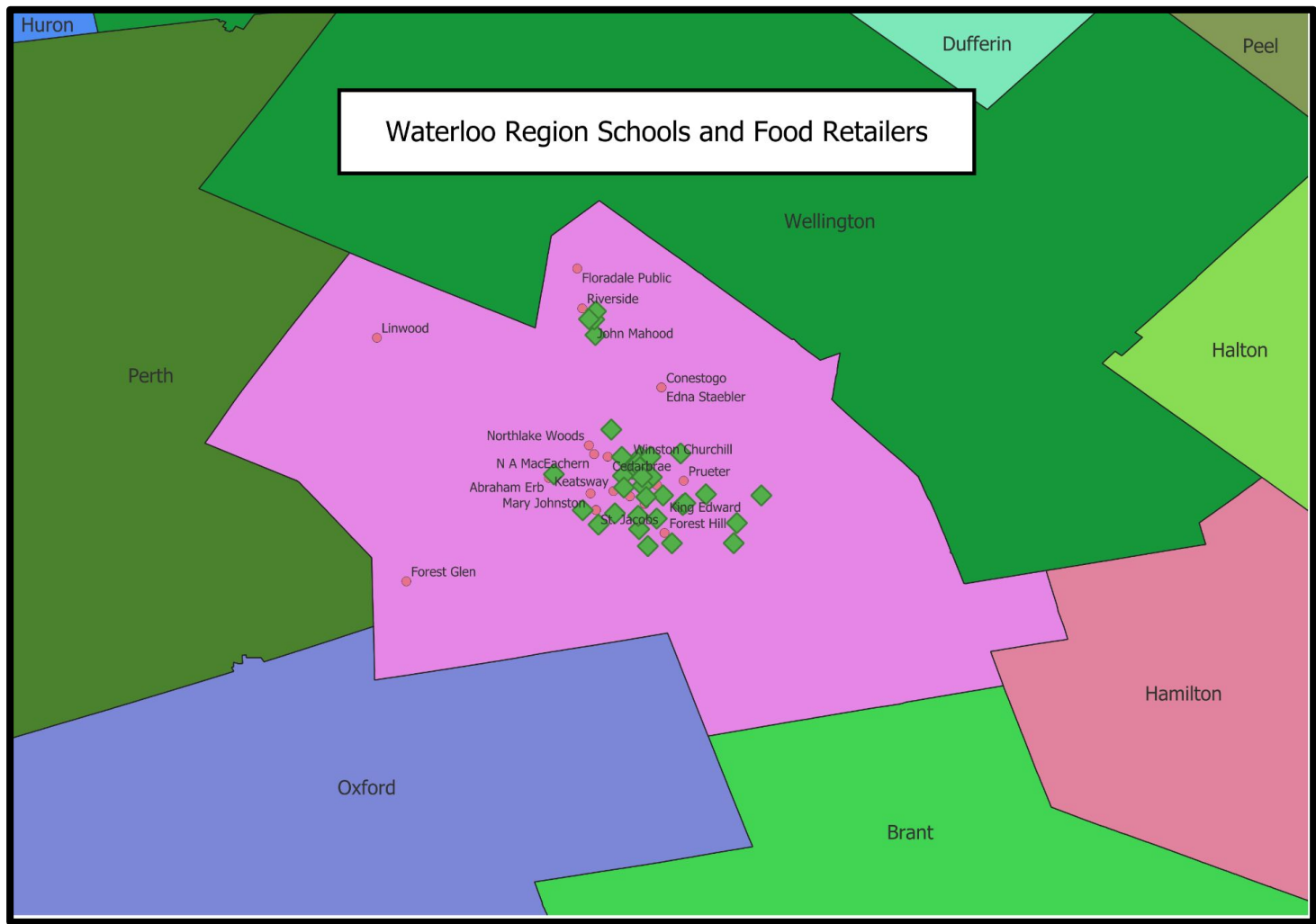




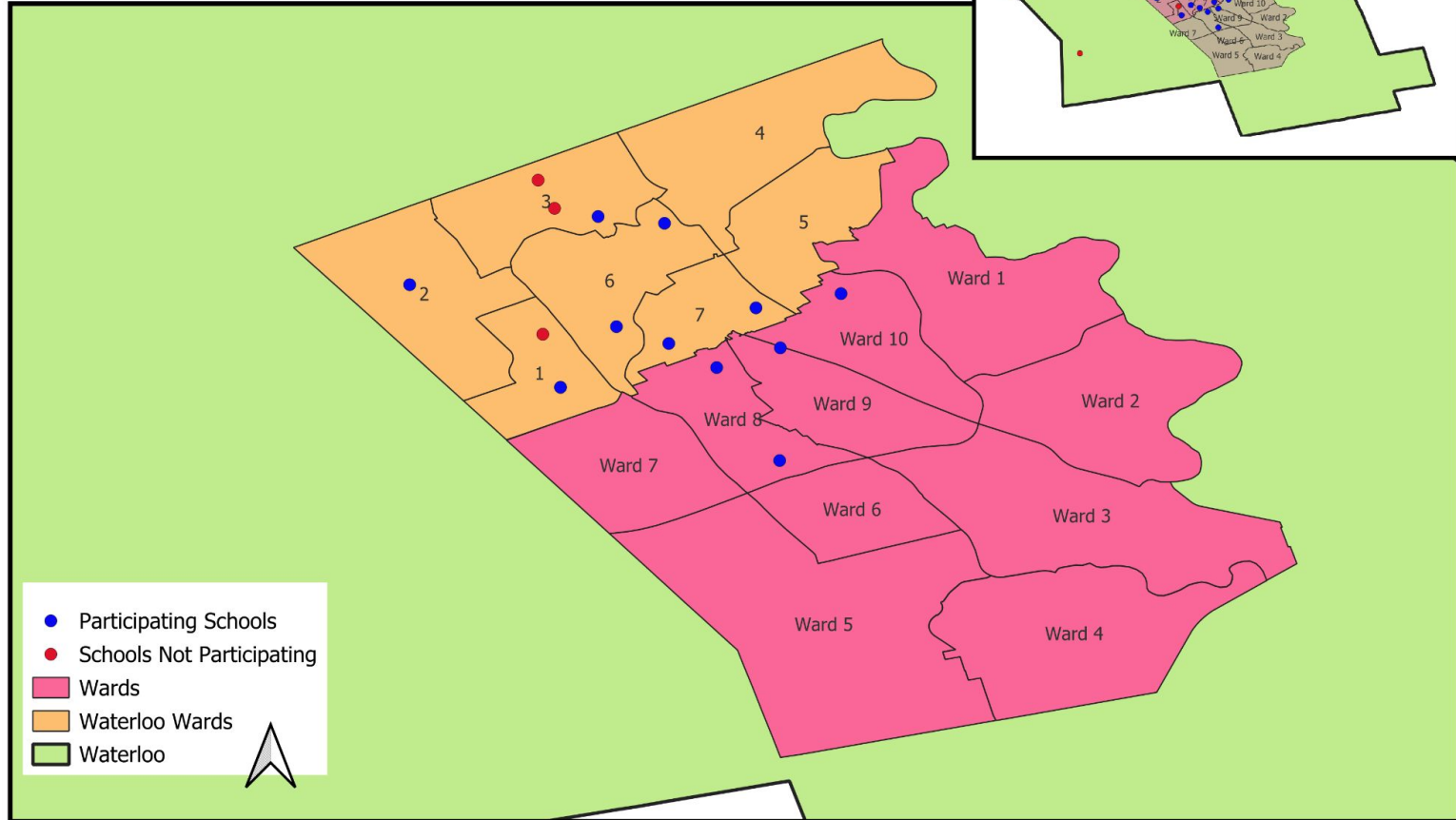
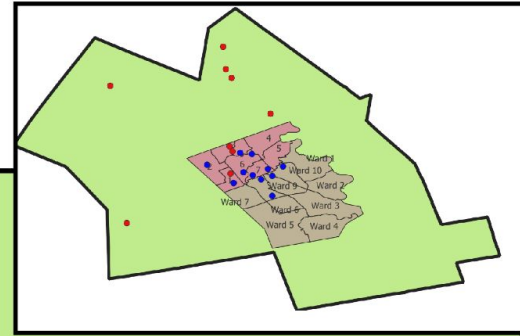
Study Results

The study results derived from GIS maps indicate that schools are well situated in the Waterloo Region with reasonable proximity, 15 - 20 minute walk, to a number of discount food retailers that offer nutritious food for families.

From the analysis of the GIS maps it was evident that the food banks are situated in the downtown core and not in proximity to schools or neighborhoods.



Waterloo and Kitchener Wards and WRDSB Schools





Thank You!

ADS 807



01

Presentation

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06



Required skills



Empathy

Mercury is the closest planet to the Sun and the smallest



Team work

Venus has a beautiful name and very high temperatures



Speech skills

Despite being red, Mars is actually a cold place



Studies timeline

01

Course 1

Venus is the second planet from the Sun

02

Course 2

Jupiter is the biggest planet in the Solar System

03

Course 3

Despite being red, Mars is a cold place

Skill development

Fine motor skill

Mercury is the closest planet to the Sun and the smallest one in the Solar System—it's only a bit larger than the Moon



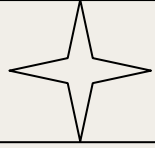
Gross motor skill

Venus has a beautiful name and is the second planet from the Sun. It's hot and has a poisonous atmosphere

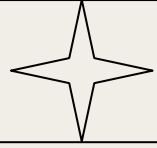


Awesome words





Main areas of child development



42%

Cognitive

Jupiter is the biggest planet
of them all



37%

Emotional

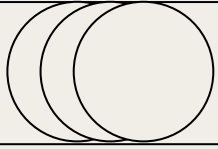
Saturn is composed of
hydrogen and helium



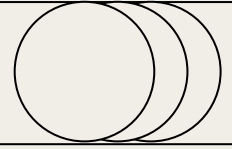
21%

Language

Neptune is the farthest
planet from the Sun



Child and family jobs



Caseworker

Mercury is the closest planet to the Sun



Childcare

Venus is the second planet from the Sun



Advisor

Mars is actually a very cold place



Nanny

Jupiter is the biggest planet of them all



Counselor

Saturn is composed of hydrogen and helium



Educator

Neptune is the farthest planet from the Sun

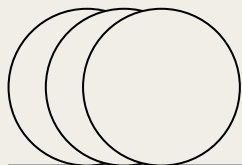


“This is a quote, words full of wisdom that
someone important said and can make the
reader get inspired.”

—Someone Famous

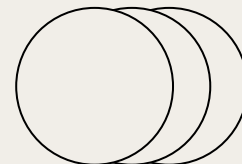


Nanny vs. childcare



Nanny

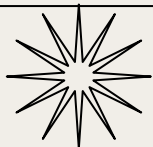
Mercury is the closest planet to the Sun and a very small planet



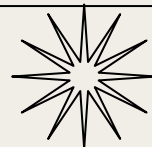
Childcare

Venus has a beautiful name and is the second planet from the Sun





Global college locations



Jupiter

It's the biggest planet in
the Solar System



Saturn

Saturn is a gas giant and
has several rings



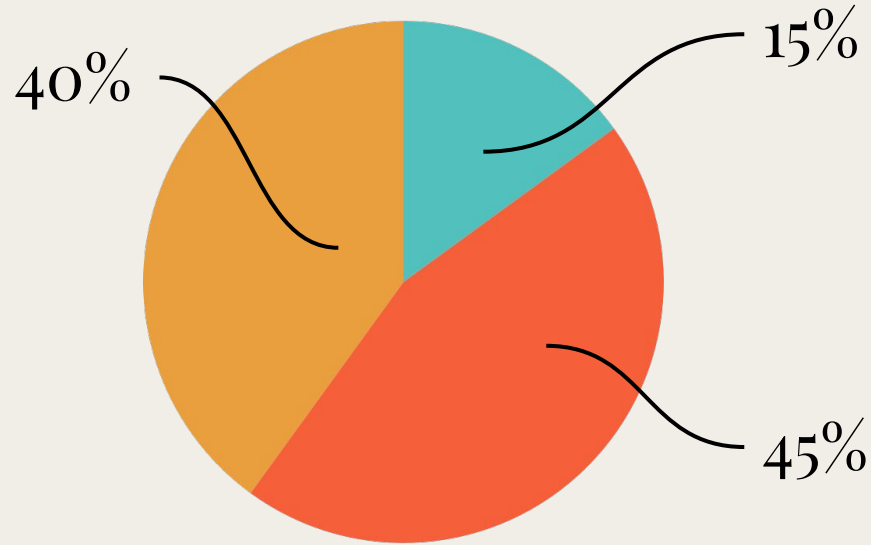
147,350

Big numbers catch your audience's attention





Job opportunities



Advisor

Mercury is the closest planet to the Sun



Counselor

Venus is the second planet from the Sun

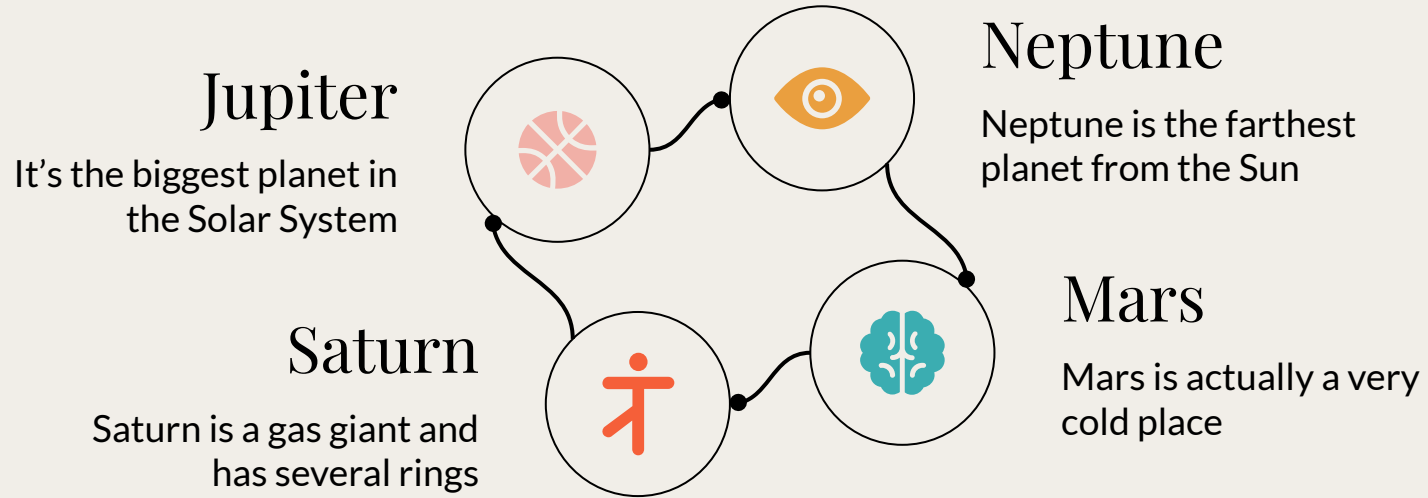


Nanny

Mars is actually a very cold place

Follow the link in the graph to modify its data and then paste the new one here. **For more info, click here**

Gross motor skill development



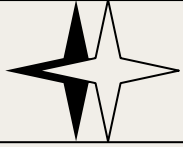


03

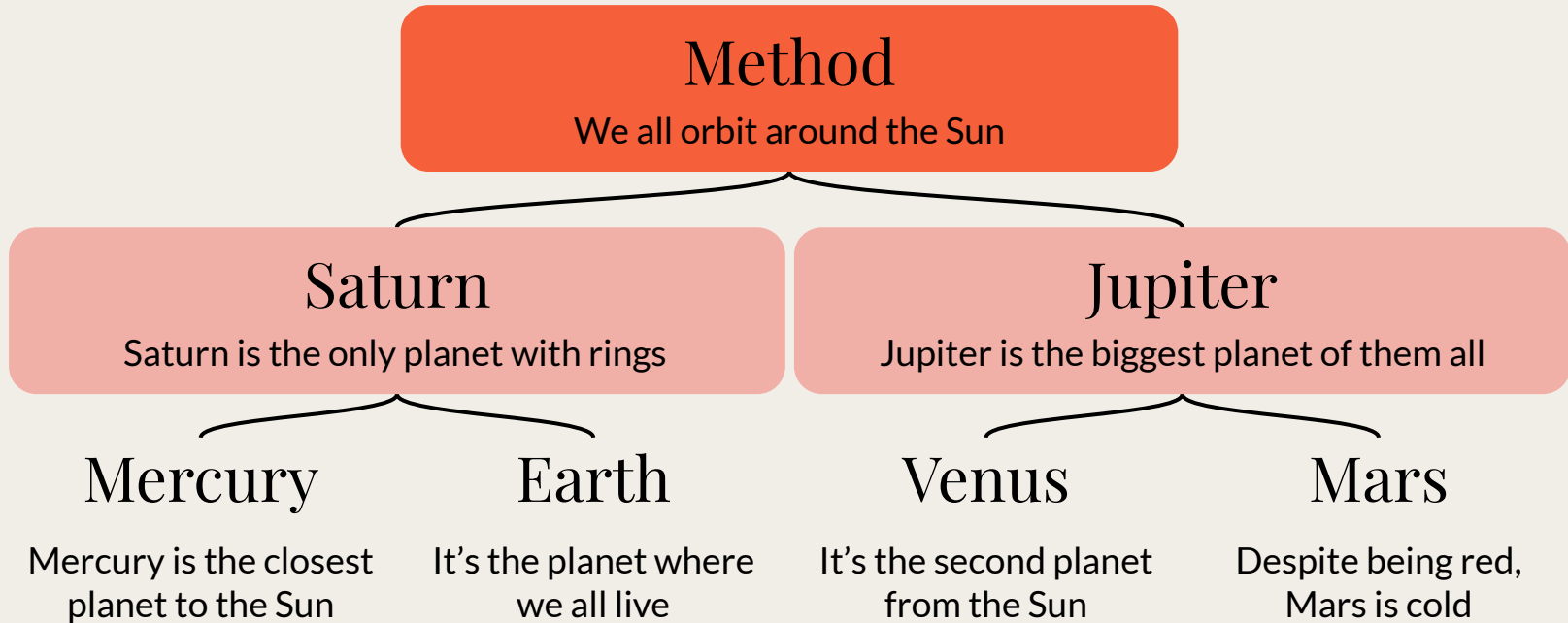
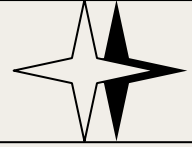
Campus

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Teaching method



Student checklist

- ☒ Saturn is a gas giant and a big planet
- ☒ Mercury is the closest planet to the Sun
- ☐ Venus is the second planet from the Sun
- ☒ Mars is actually a very cold place
- ☐ Jupiter doesn't have a solid surface
- ☒ Neptune is very far away from the Sun





#57

Mercury is the smallest planet

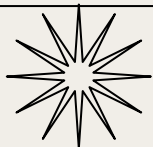
+3.5

We all live in the Earth

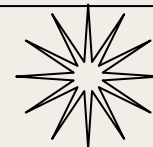
65k

Despite being red, Mars is cold





Expected salary growth



37% Advisor

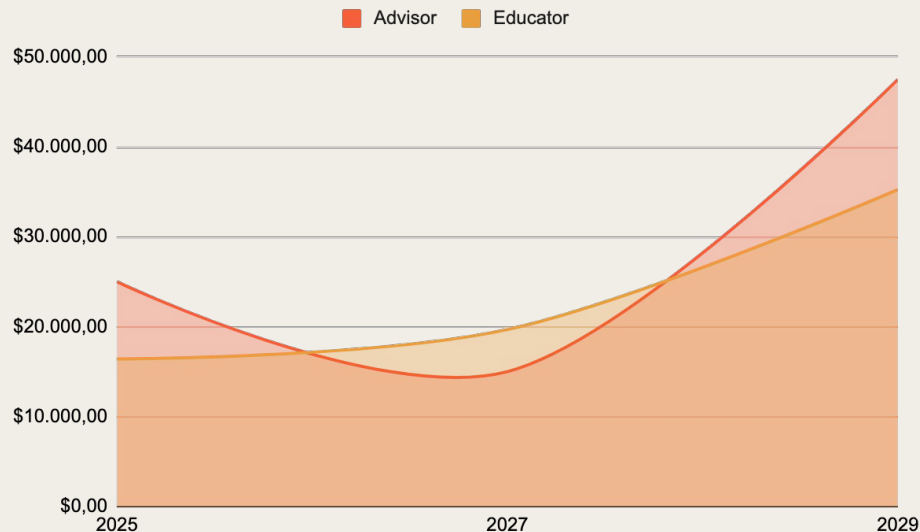


Mercury is the closest planet to the Sun

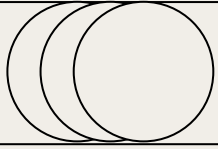
25% Educator



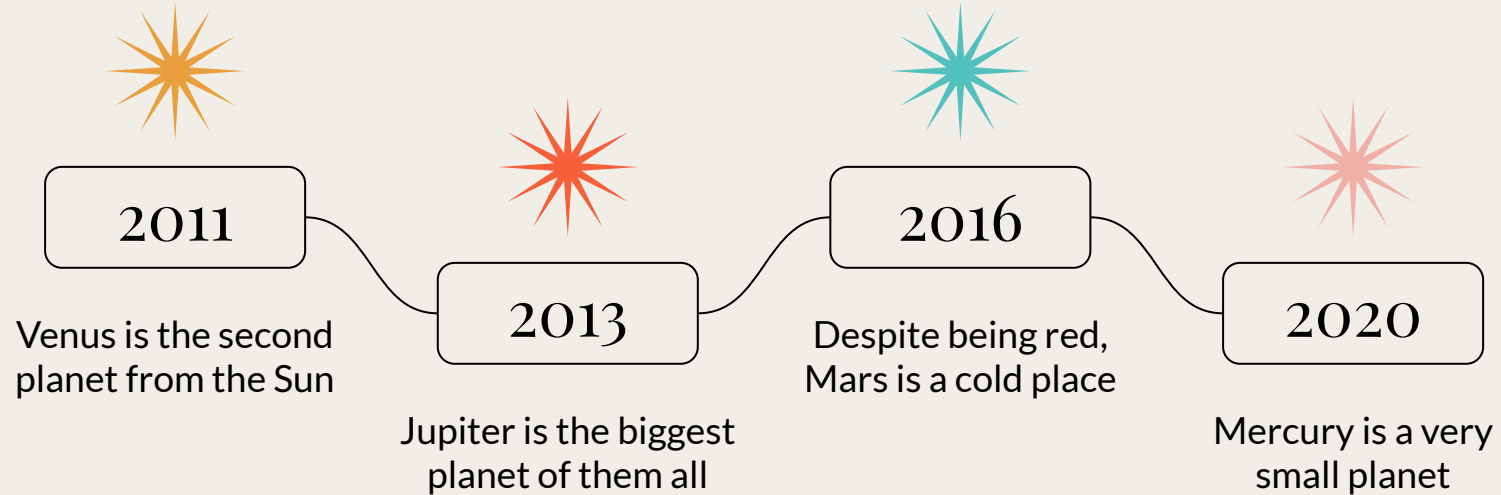
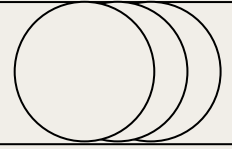
Saturn is a gas giant and the biggest planet



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College history timeline

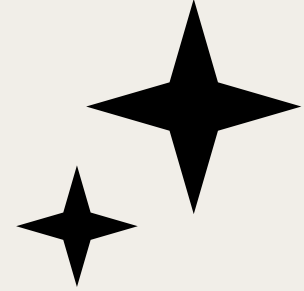
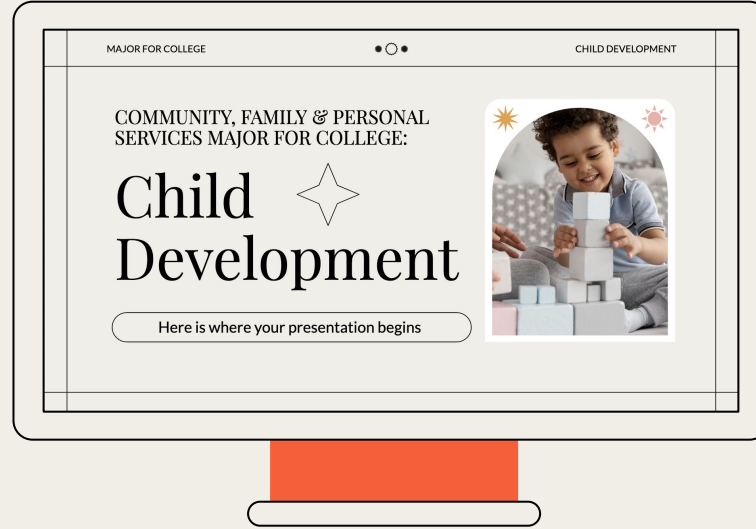
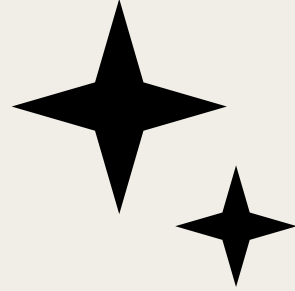




Whoa!

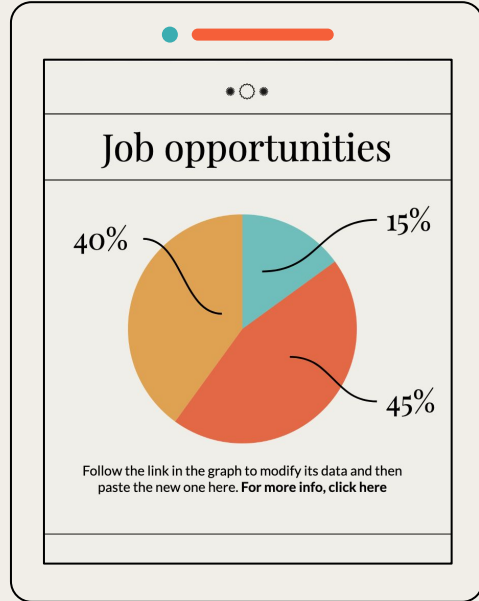
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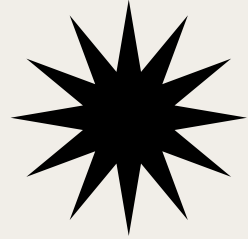
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Tablet app

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Thanks!

Do you have any questions?

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Photos

- Close up on child playing with didactic game
- Fluffy clouds on a windy sky
- Young kids exploring together the nature
- Child exploring the forest on environment day
- Natural grass close up
- Teenage student in headphones sitting at table and typing on notebook
- Young student working on assignment
- Pretty teenager happy to be back at university
- Medium shot smiley man holding smartphone
- Psychologist helping a little girl in speech therapy indoors
- Young child exploring the nature
- Full shot happy kids playing together
- Grass in blurred background
- Psychologist helping a little girl in speech therapy indoors
- Close up on children enjoying didactic game
- Close up on ground texture detail
- Adult man and woman posing together
- Young beautiful plump woman loving her body
- Front view of beautiful woman posing by the beach
- Sunset sky with clouds background
- College students in library
- Yellow pansy flower plant over the fertile soil
- Clear ocean water texture
- Medium shot kids playing in american desert