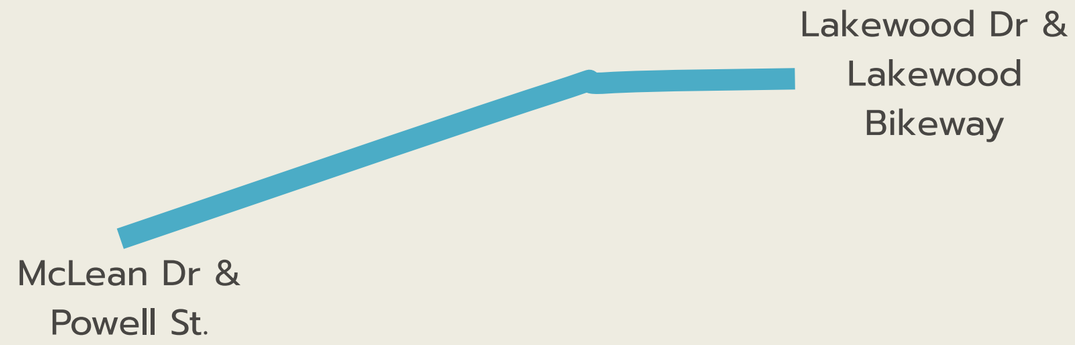

329 000

J2

Option #1: W Kent Ave

- Surrounded by industrial warehouses
- Connects significant streets, linking various parts of Vancouver while avoiding traffic
- Secluded area with growing residential development

Option #2: Greenway



- Surrounded by commercial businesses & industrial spaces
- Connects East Vancouver to Downtown Vancouver
- Part of a built bicycle greenway

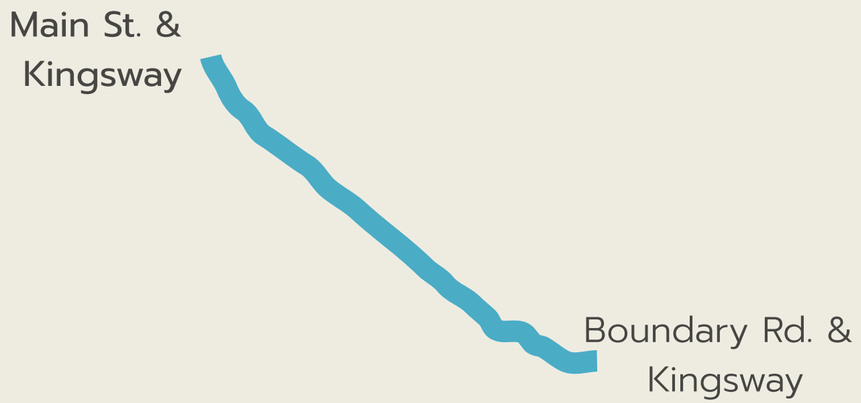
Option #3: Lillooet Street

Lillooet St & E Hastings St.

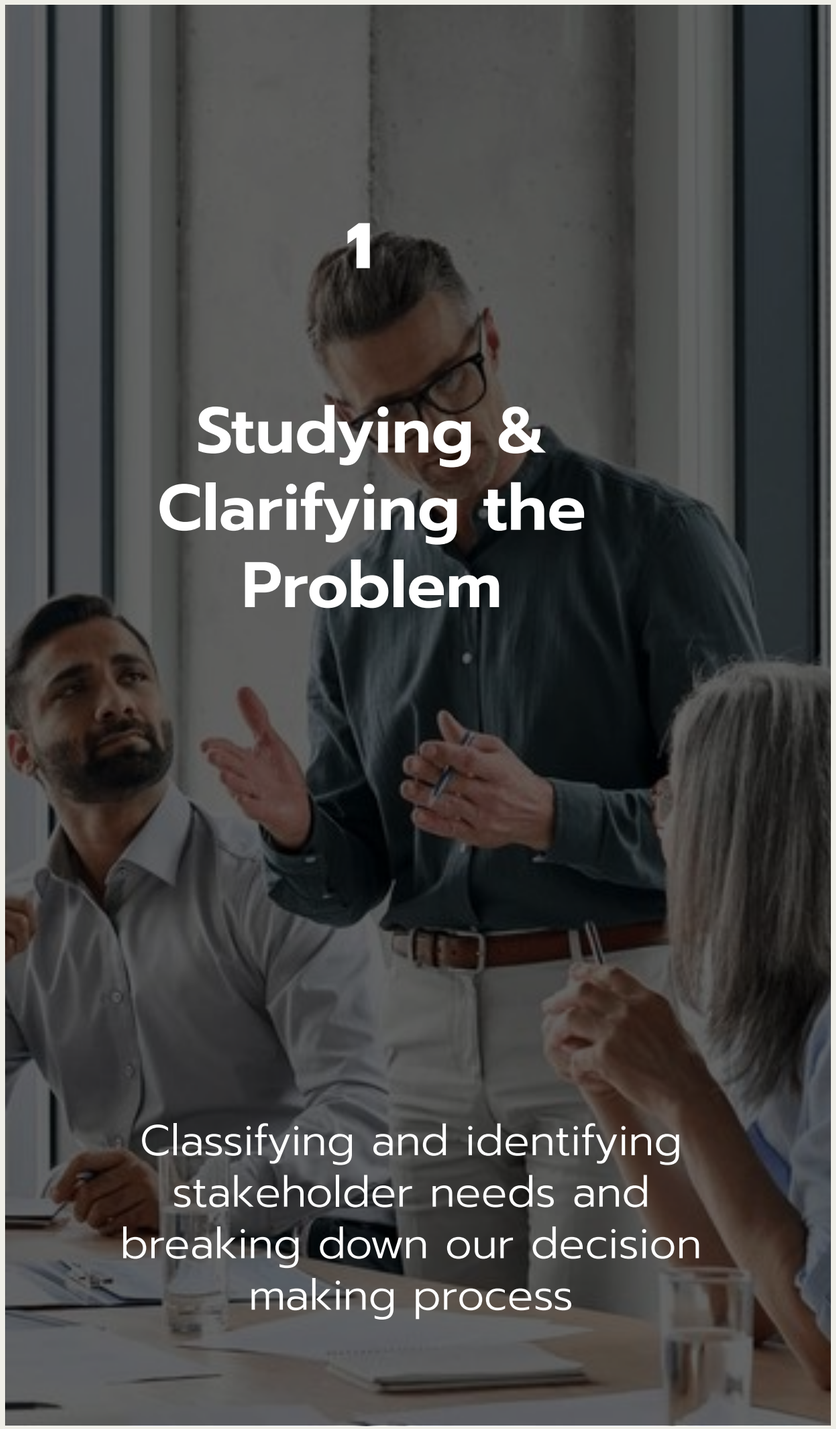
Hebb Ave & Central Valley Greenway

- Residential area holding numerous households
- Part of the Hastings-Sunrise community
- Family-oriented community with local parks and schools

Option #4: Kingsway



- Combination of commercial and residential areas
- Connects Burnaby, Vancouver, and Downtown Vancouver
- Local business reflecting upon Vancouver's culture



1

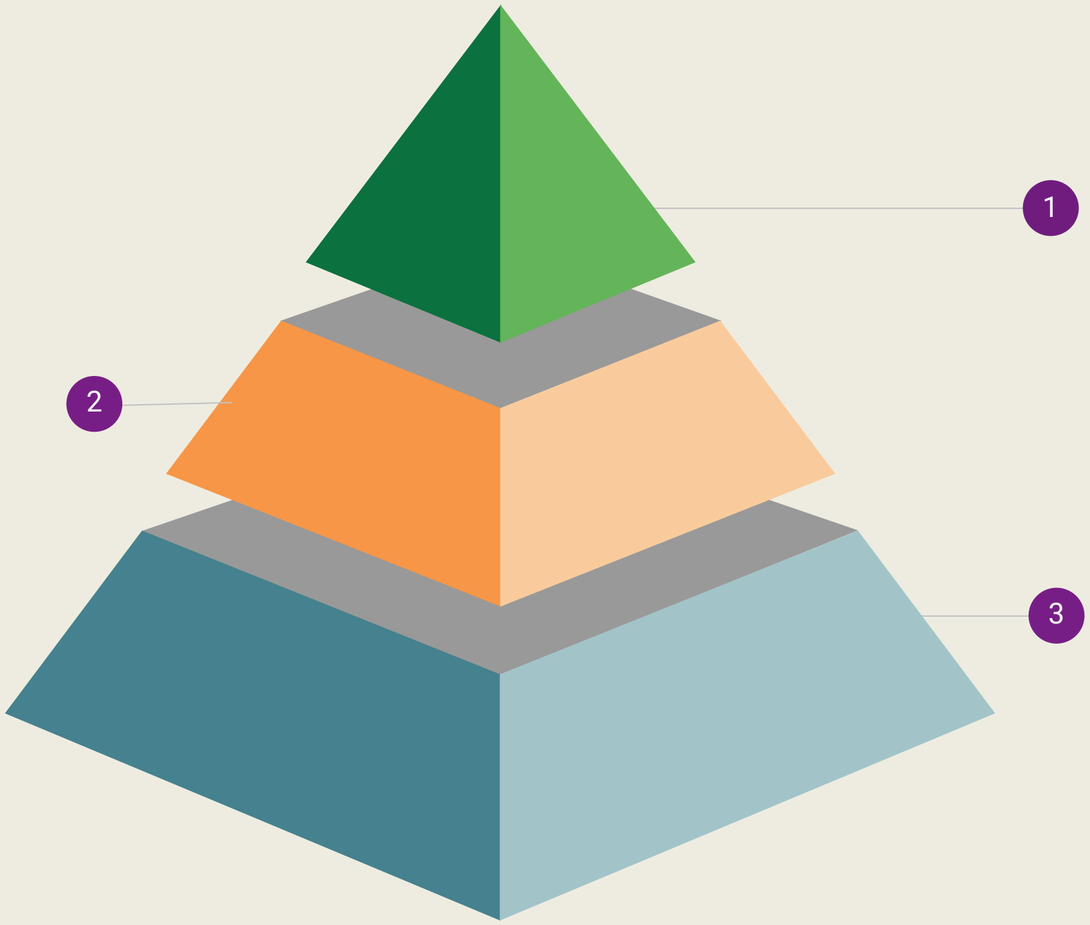
Studying & Clarifying the Problem

Classifying and identifying stakeholder needs and breaking down our decision making process

STAKEHOLDERS

SECONDARY STAKEHOLDERS

- Car share companies & users
- Local workforces
- Cyclists
  - Recreational
  - Family
  - Students



PRIMARY STAKEHOLDERS

- Emergency services
- City of Vancouver

TERTIARY STAKEHOLDERS

- Taxi Drivers

STAKEHOLDER NEEDS

Emergency Services

- Low traffic and commute times
- Space for emergency vehicles
- Enforcement of traffic laws

Local Workforce

- Commute times
- Safety

Taxi Drivers

- More foot traffic
- More parking/loading spots

City of Vancouver

- Success of the project
- Citizen satisfaction
- Safe environment
- Meet 2040 Transportation Goal

Car Share companies/users

- Availability near bike lanes

Cyclists

University Students

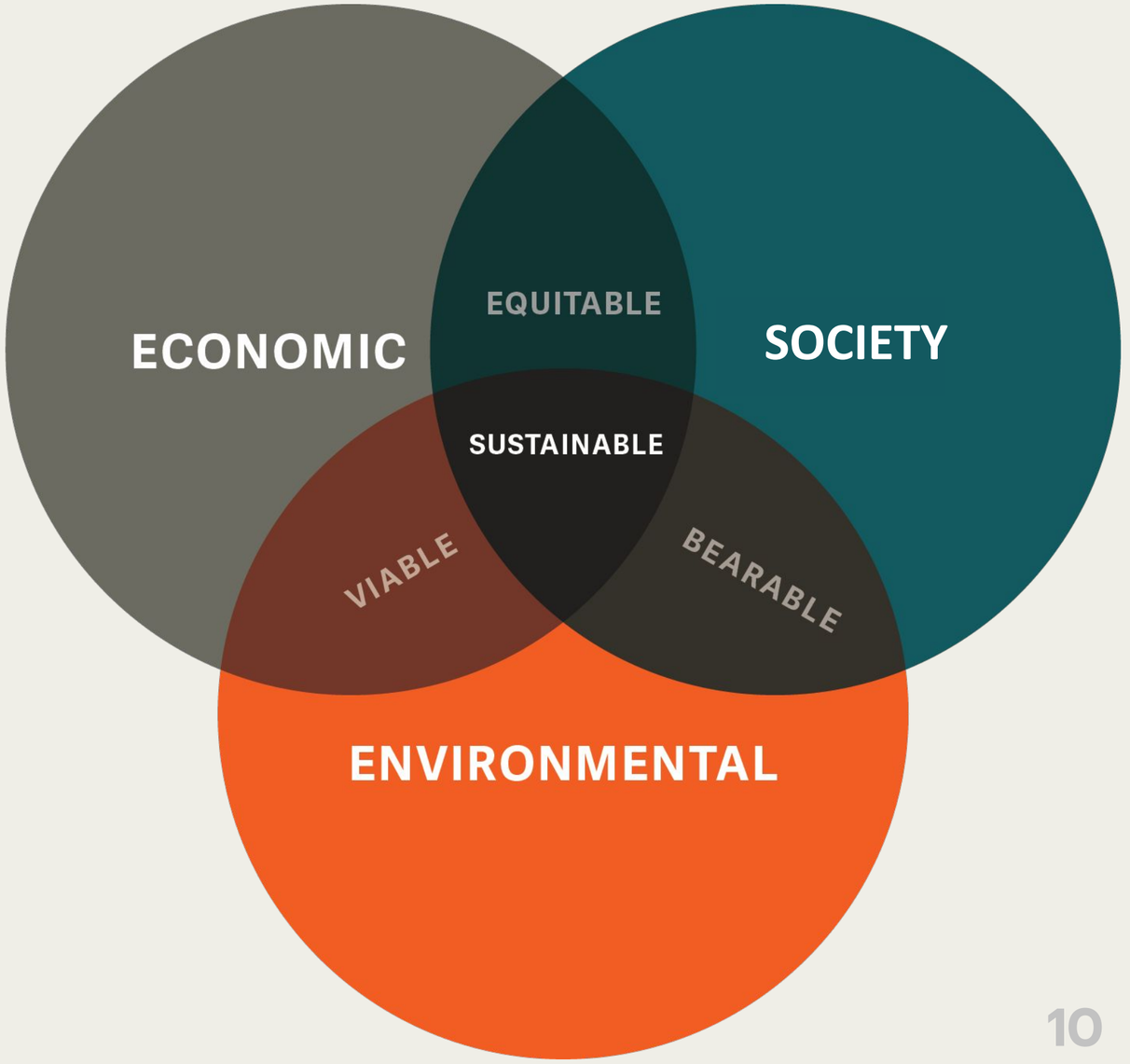
- Comfort
- Safety

Family Cyclists

- Transit around bike lanes
- protected bike lanes

BREAKING DOWN A COMPLEX SYSTEM

- Causal Loop Diagrams
- Identify how each node affects the dimensions of sustainability
- Helps further evaluate the impacts of our decision



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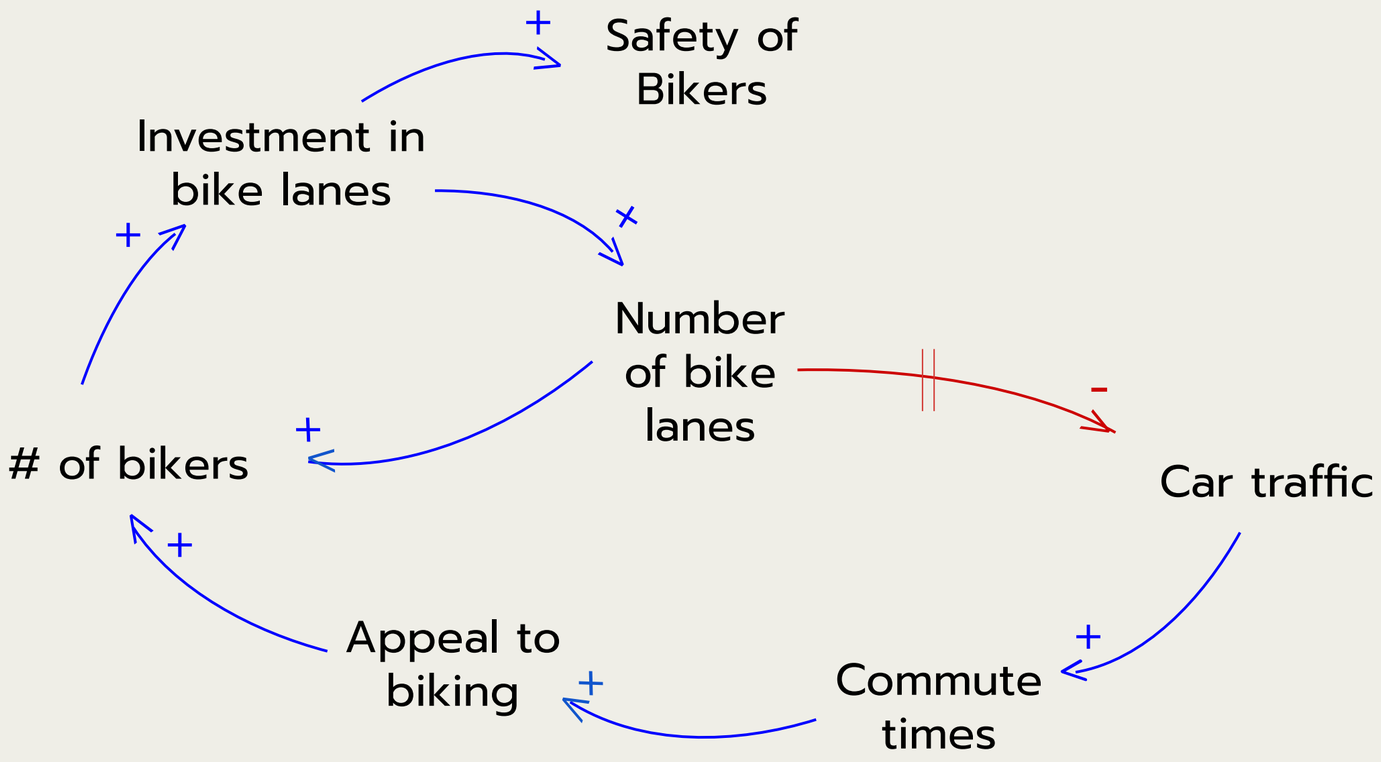
Lower levels of car traffic positively influenced the societal aspects of sustainability.



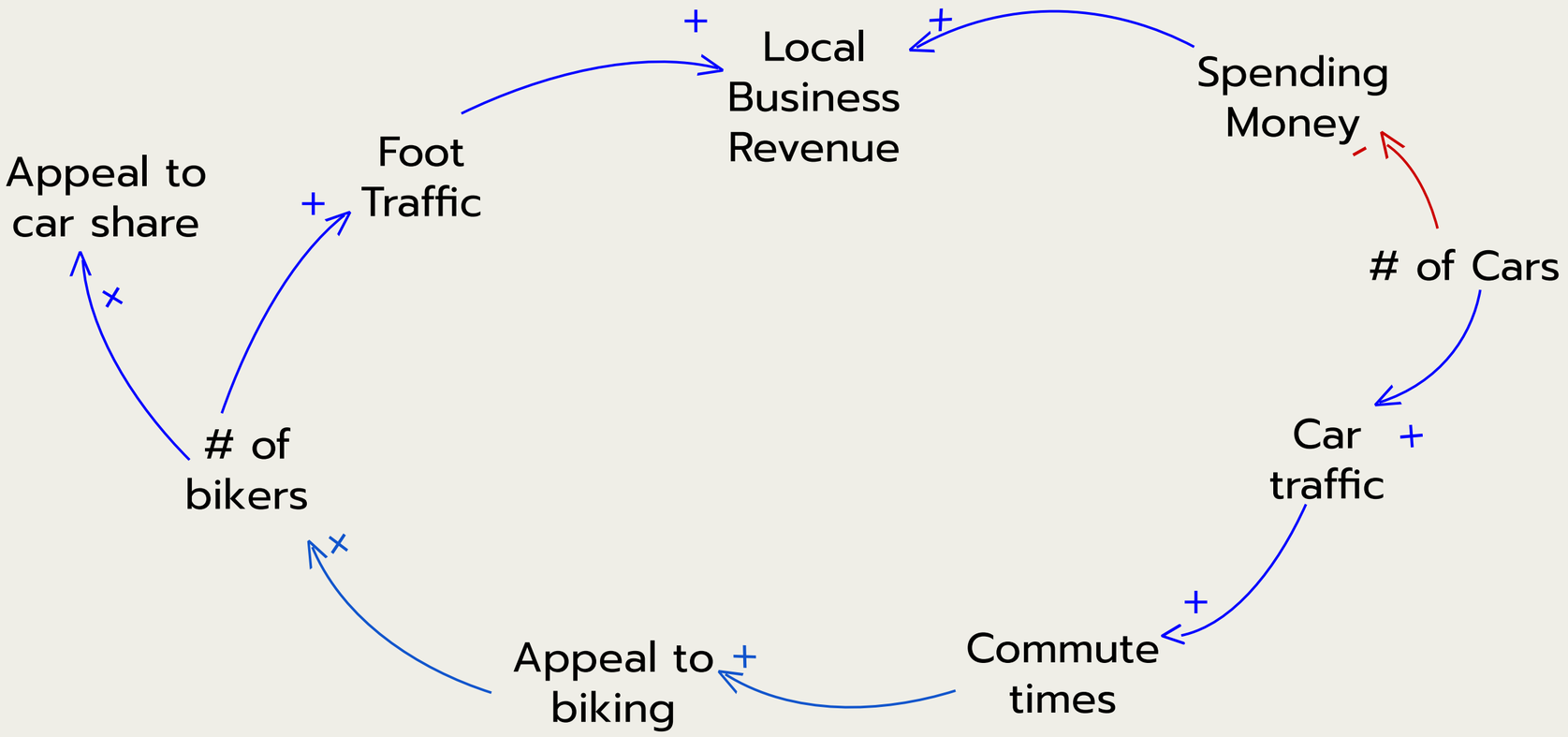
Societal Impacts:

↑ Emergency Service efficiency

↑ Public transit efficiency

↑ Bike lanes

The Causal Loop Diagram indicates that implementing a bike lane will have economic and equitable benefits.



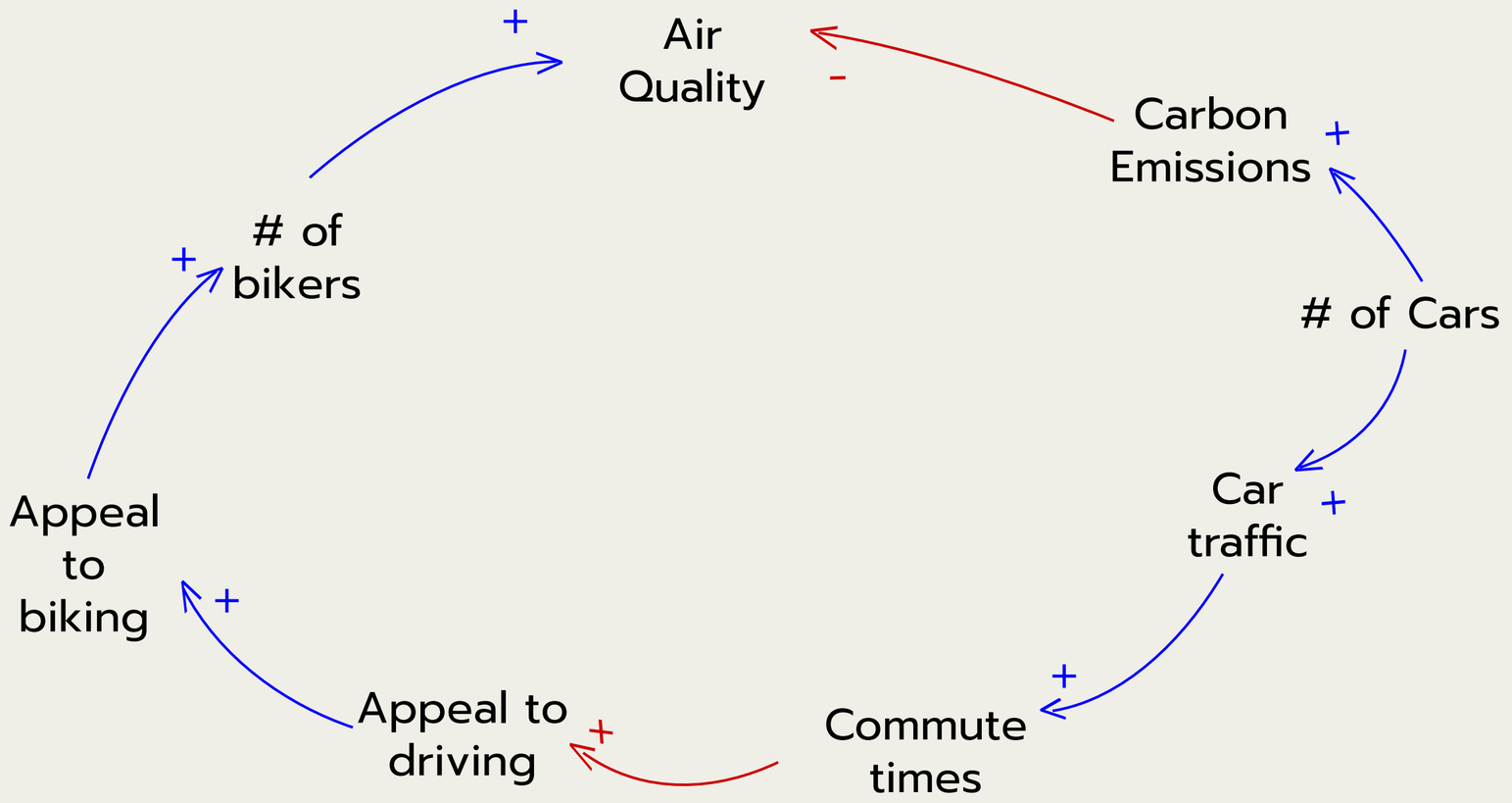
Economic Impacts:

↑ Car Share Usage

↑ Local Business Revenue

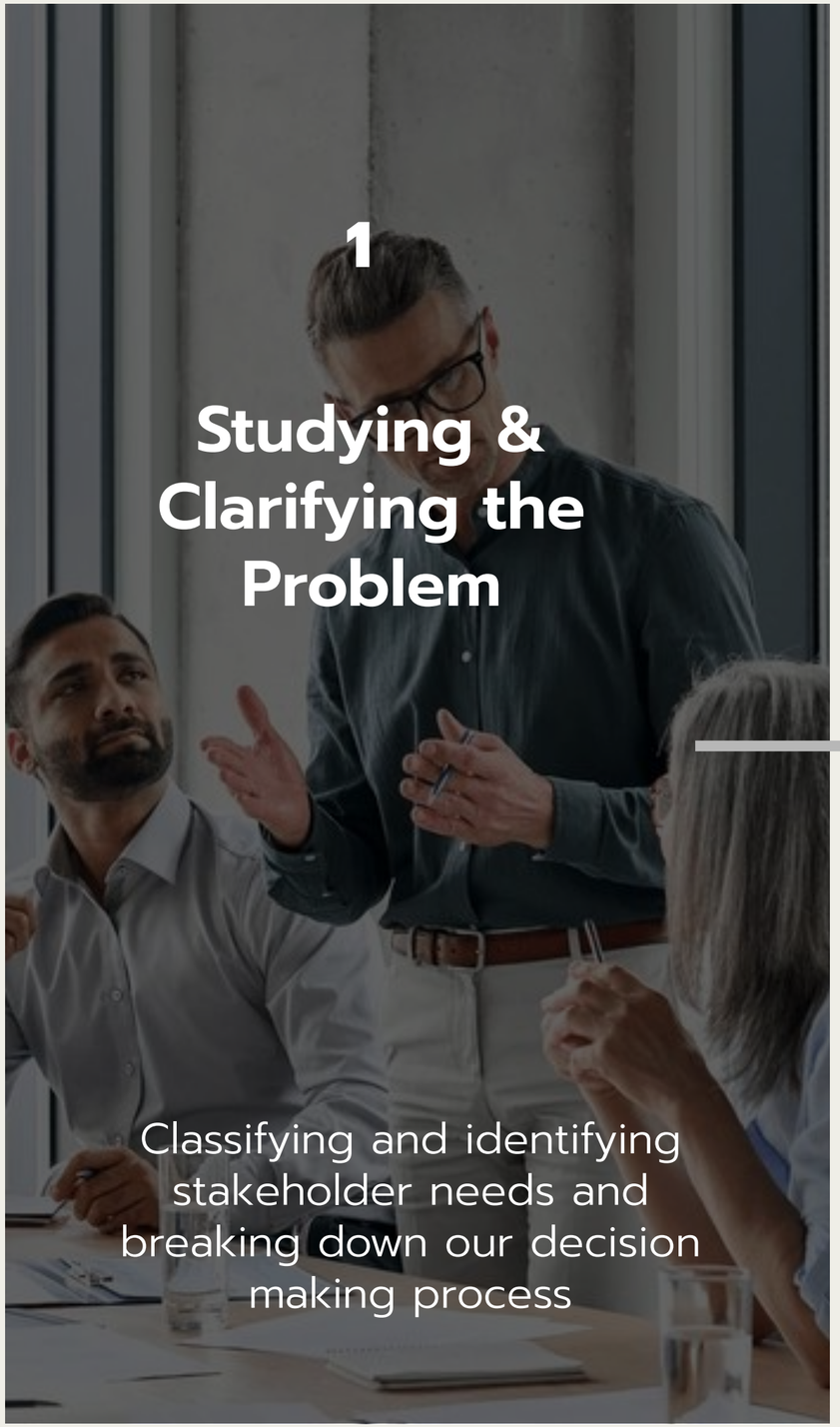
↑ Spending Money

An increase in car traffic can improve air quality with a bike lane that gives citizens the option to cycle.



Environmental Impacts:

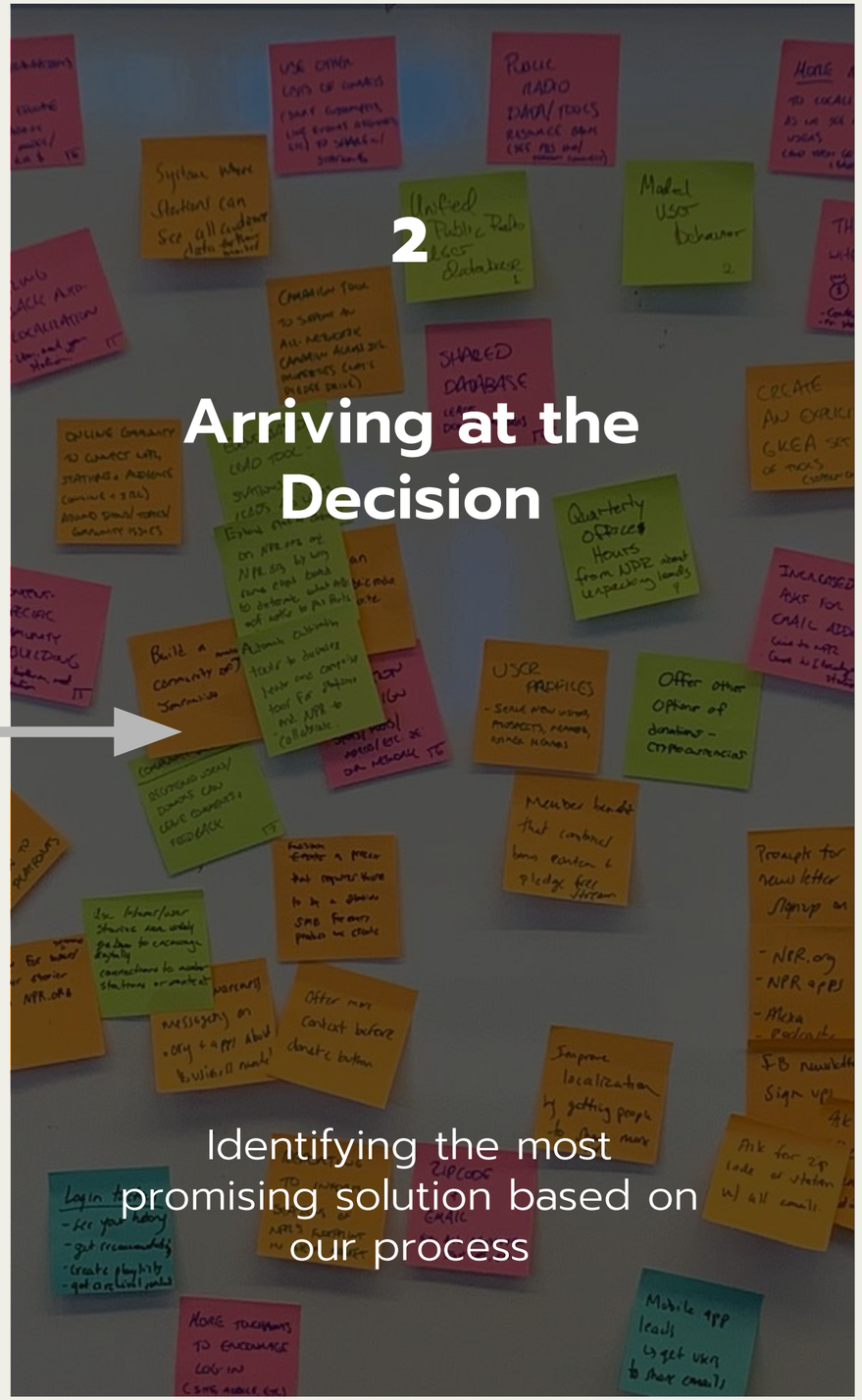
- ↑ Appeal To Biking
- ↑ Foot Traffic
- ↑ Public Transit Efficiency



1

Studying & Clarifying the Problem

Classifying and identifying stakeholder needs and breaking down our decision making process



2

Arriving at the Decision

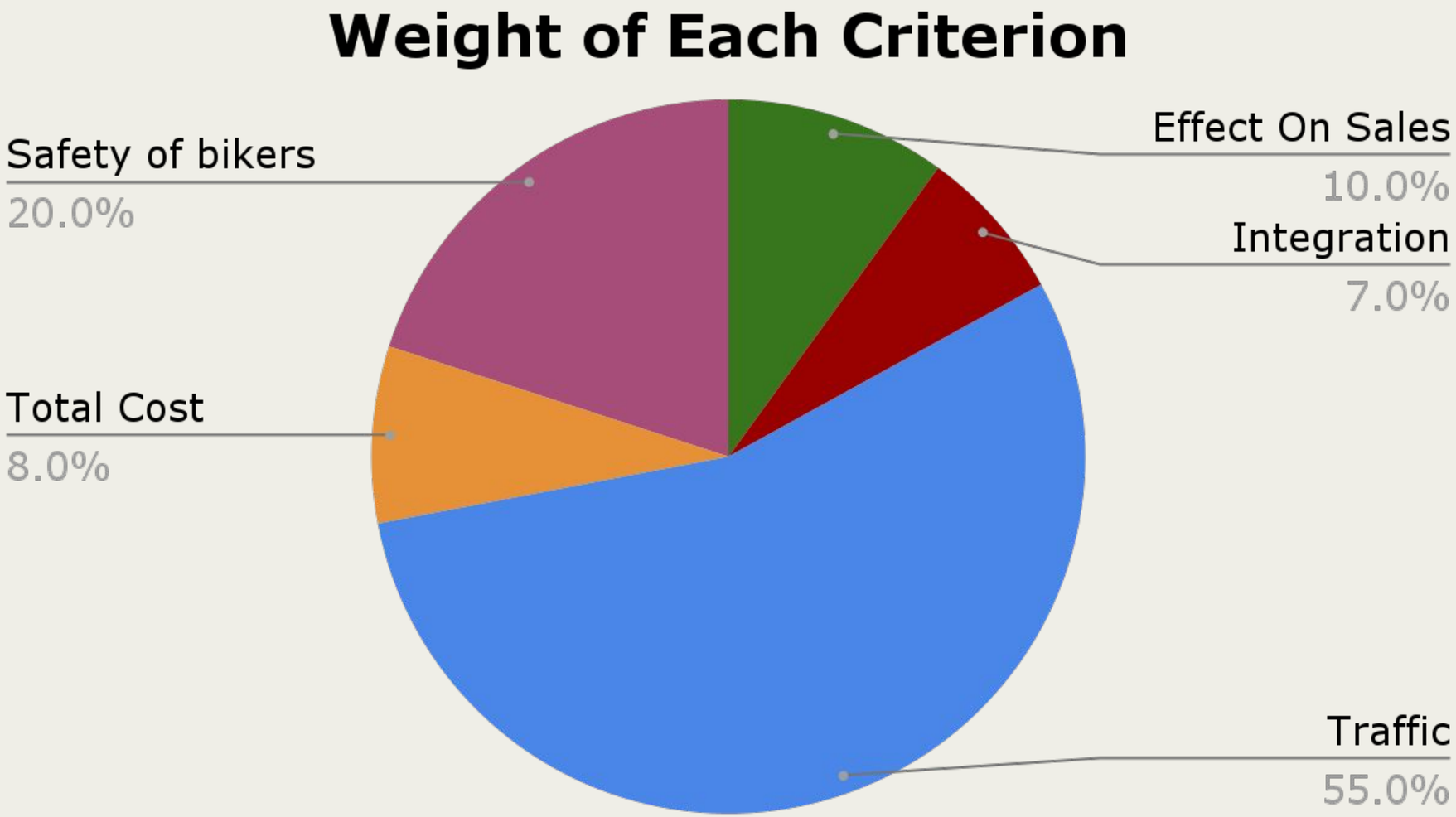
Identifying the most promising solution based on our process

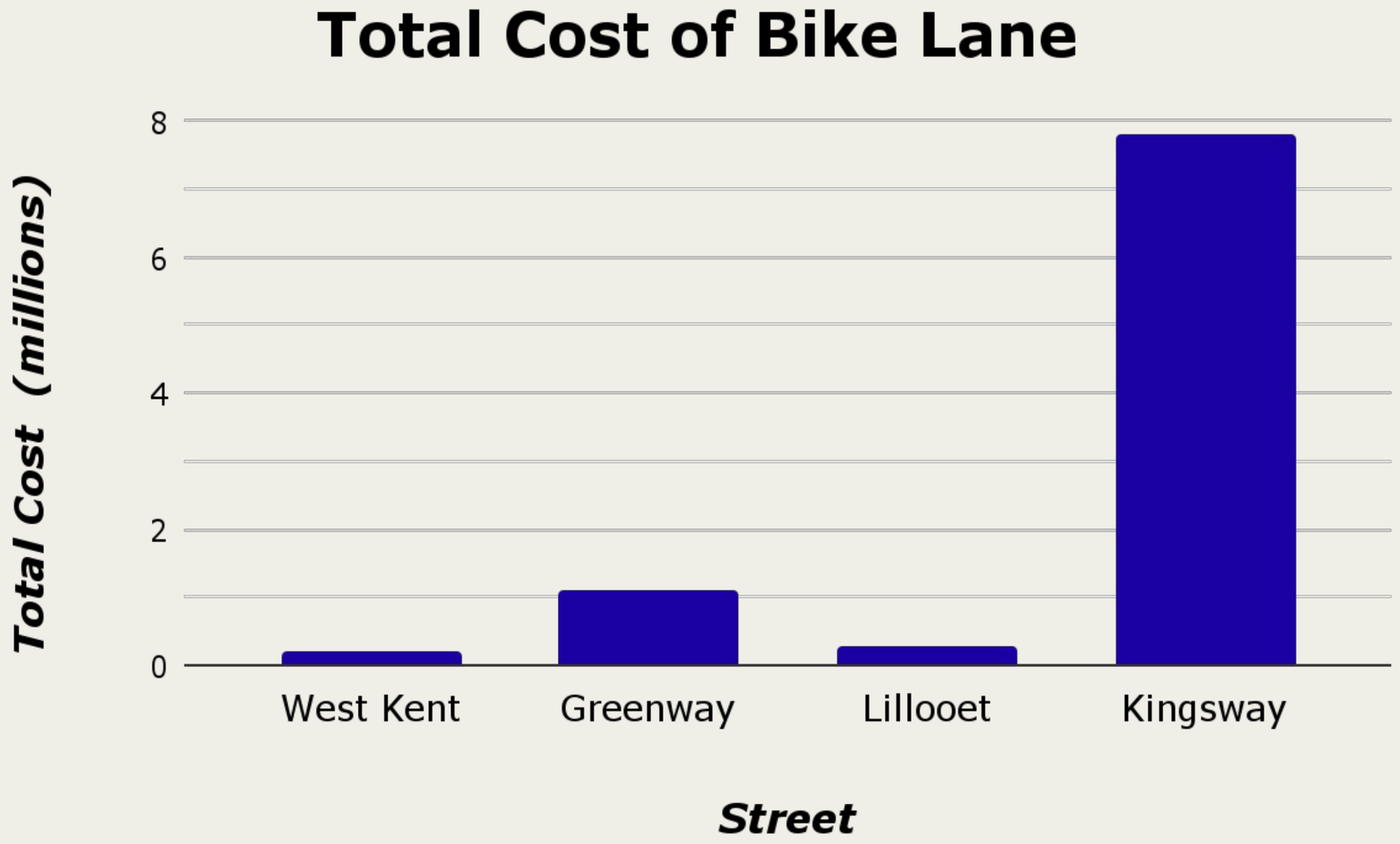
Weighted Decision Matrix

- Evaluate multiple criteria at once
- Make Complex Decisions
- Analyze Decisions as a whole

Criteria	Weight	Raw	Score
Efficient Decision Making	100%	10	10

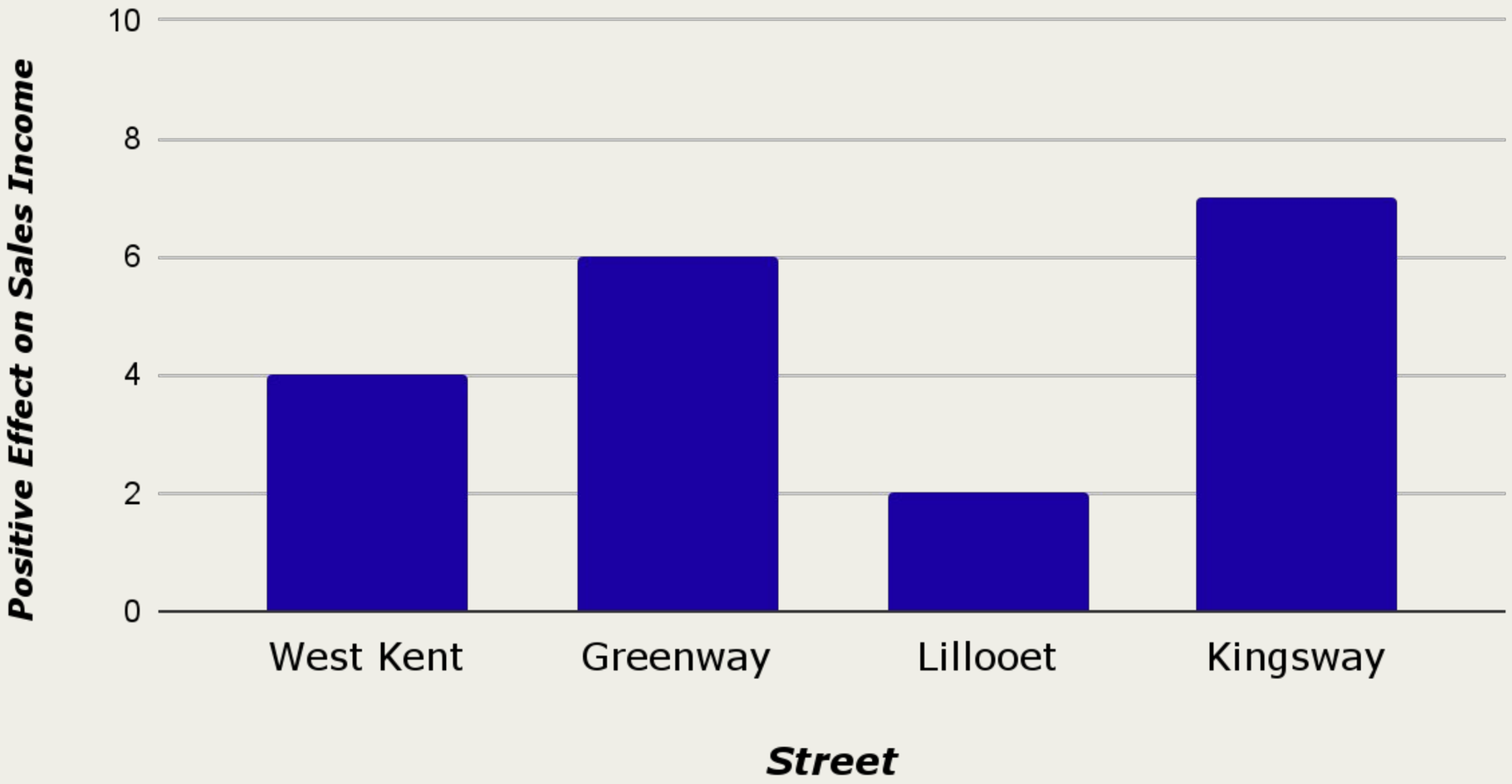
Weighting The WDM



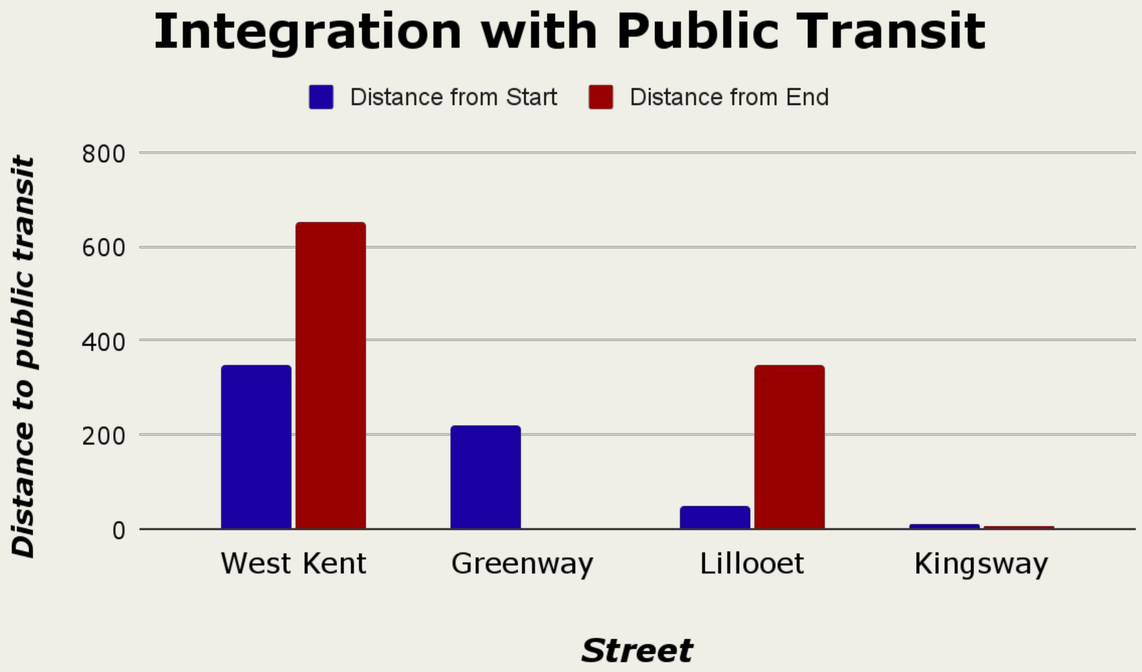


Although a bike lane on Kingsway is the most expensive, we projected that it would have the most positive economic impacts.

Increase in Local Business Income



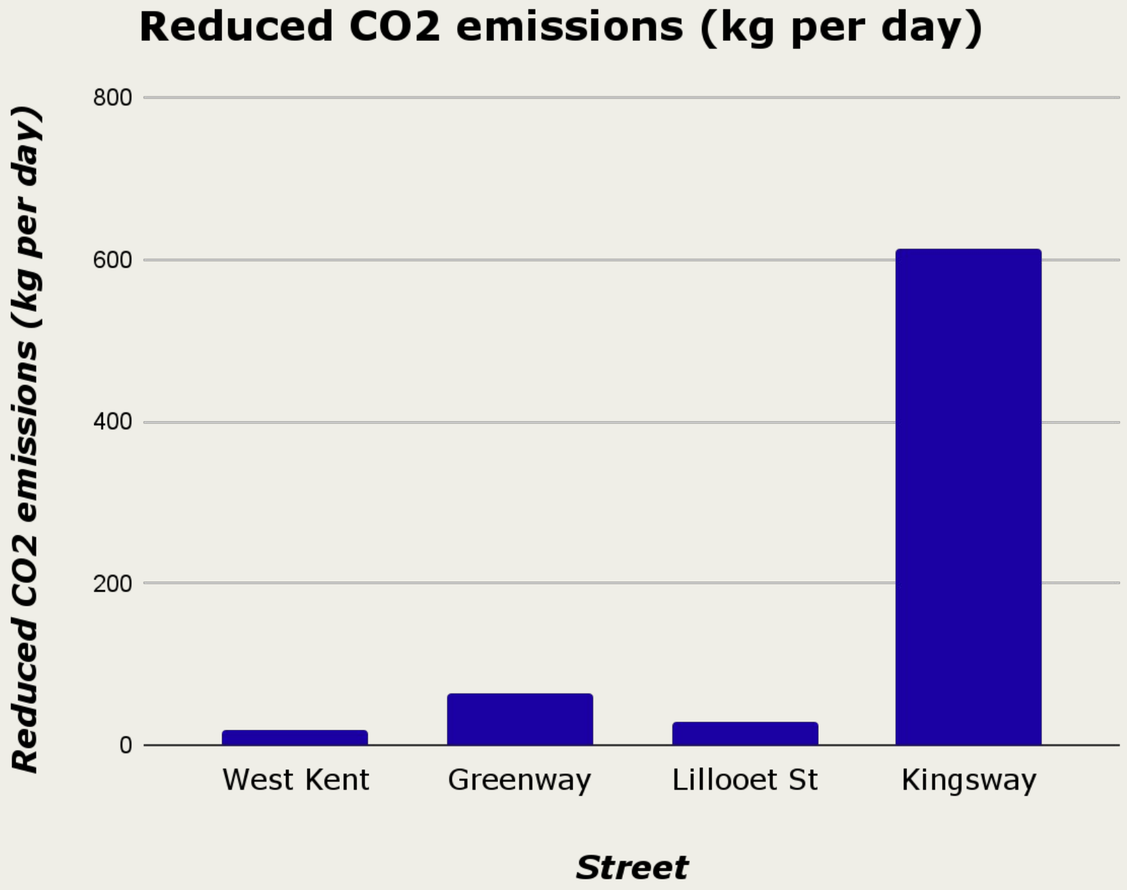
A bike lane on Kingsway would increase foot traffic and drive up sales from local businesses along the road.



Kingsway and Greenway perform significantly better in providing safety and accessibility to public transit.

THE ROLE OF TRAFFIC

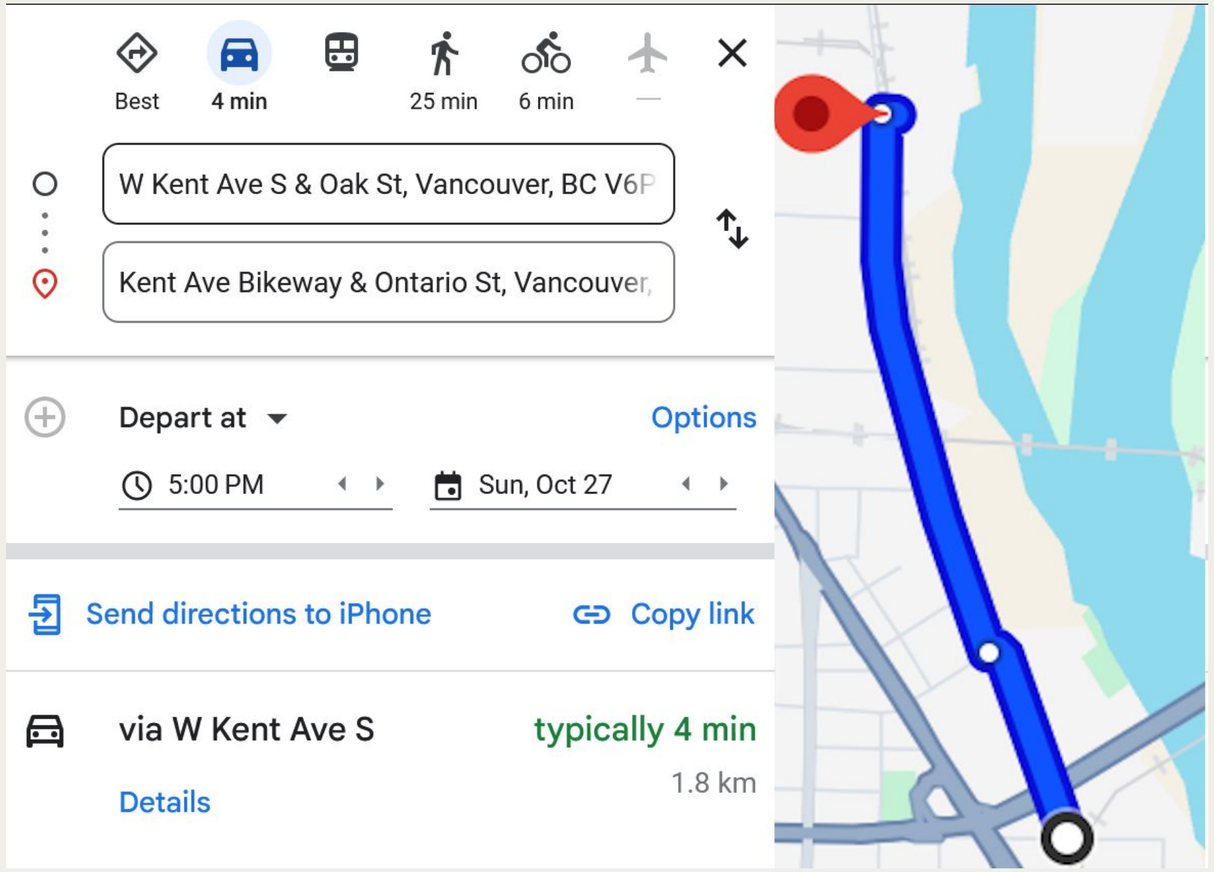
- Bikes/cars on the road
  - Commute time
  - Carbon emissions
  - Bike lane usage
- Safety
- Revenue of bike share companies
- Revenue of car share & taxi companies



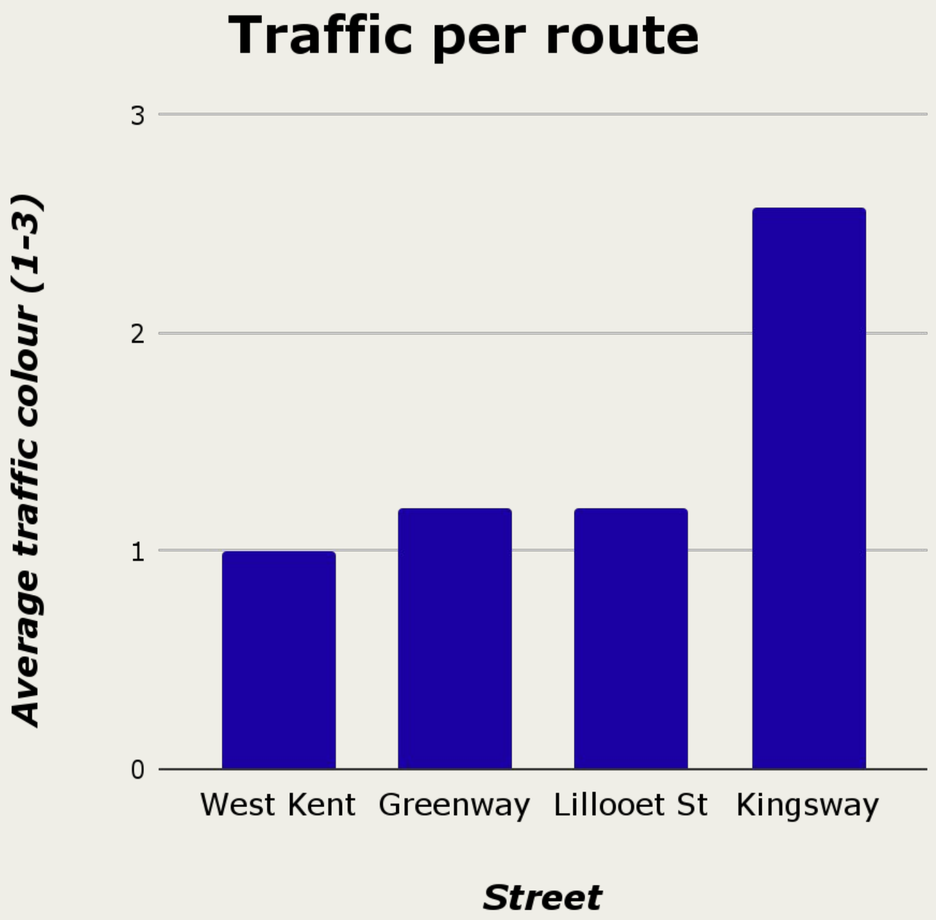
TRAFFIC DATA COLLECTION

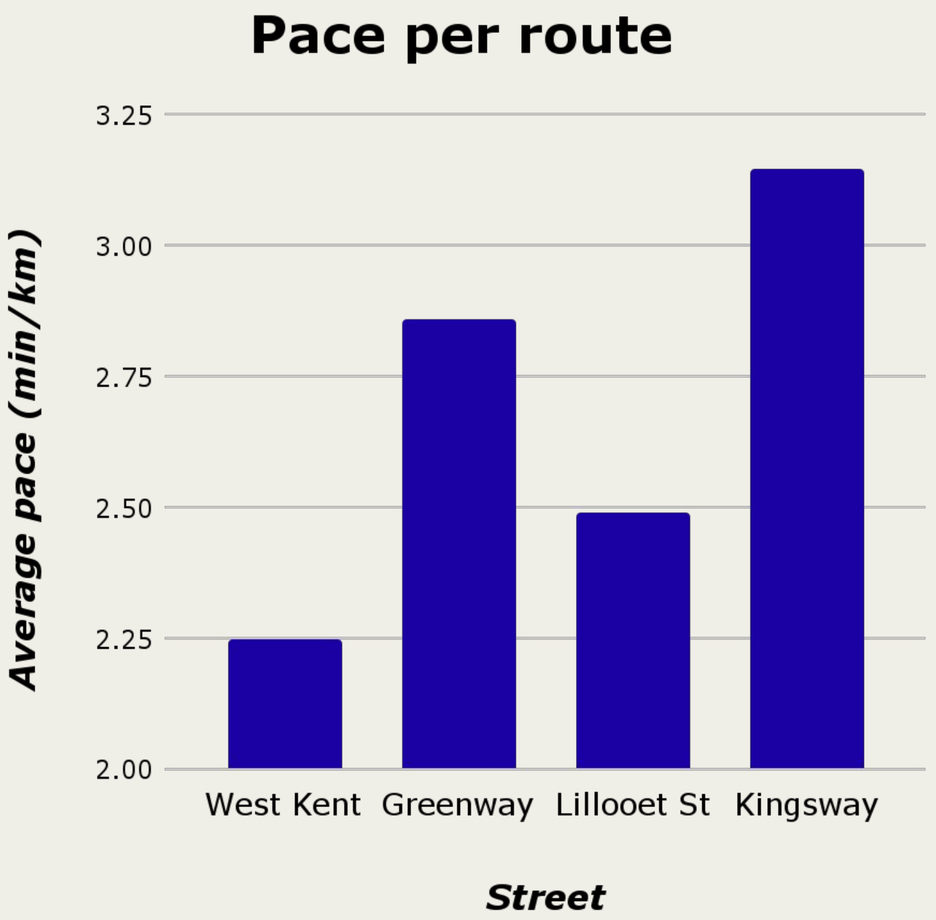
- Traffic data
  - Vancouver maps
  - TomTom traffic index
  - Google maps

- October 21-27
  - 8:00 AM
  - 12:00 PM
  - 5:00 PM



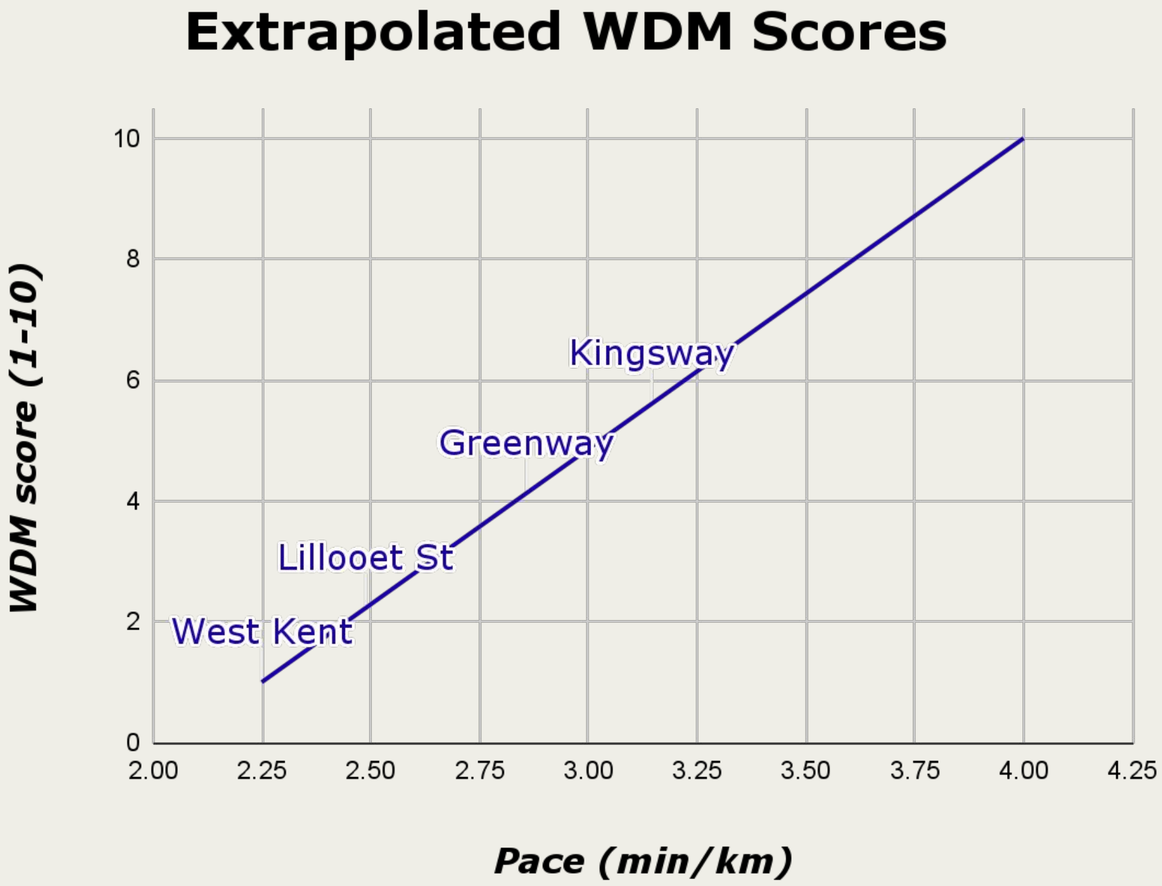
KINGSWAY EXPERIENCES THE MOST TRAFFIC





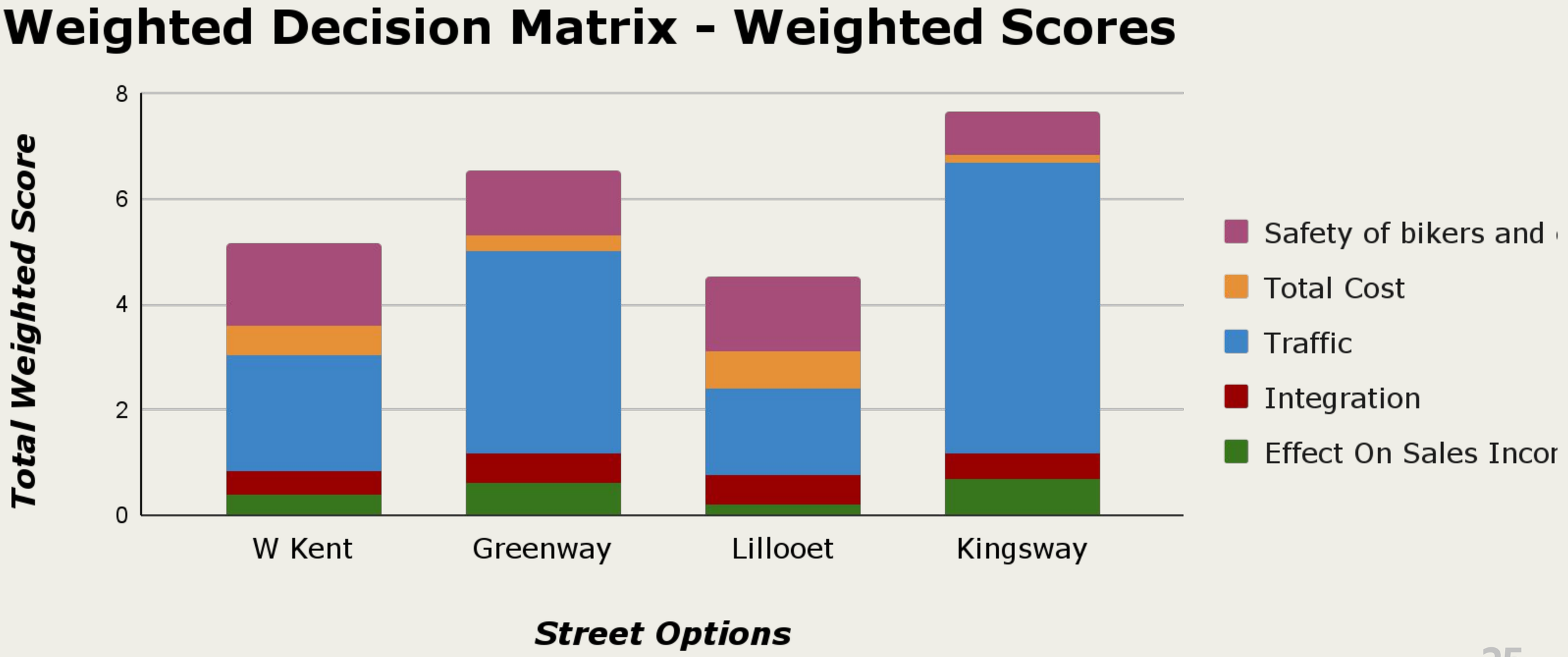
KINGSWAY EXPERIENCES THE MOST TRAFFIC

- Values scaled based on both graphs
- Minimum ~2 mins/km
- Maximum ~4 mins/km




E 10th Ave.
E 10th Ave.
7TH AVE
PEAK
690-7325
Mount Pleasant
Since 1888
autoplan
7AM - 9:30AM
MON-FRI
ENDS
100m
Broadway Subway Project

KINGSWAY IS THE OPTIMAL CHOICE FOR A PROTECTED BIKE LANE

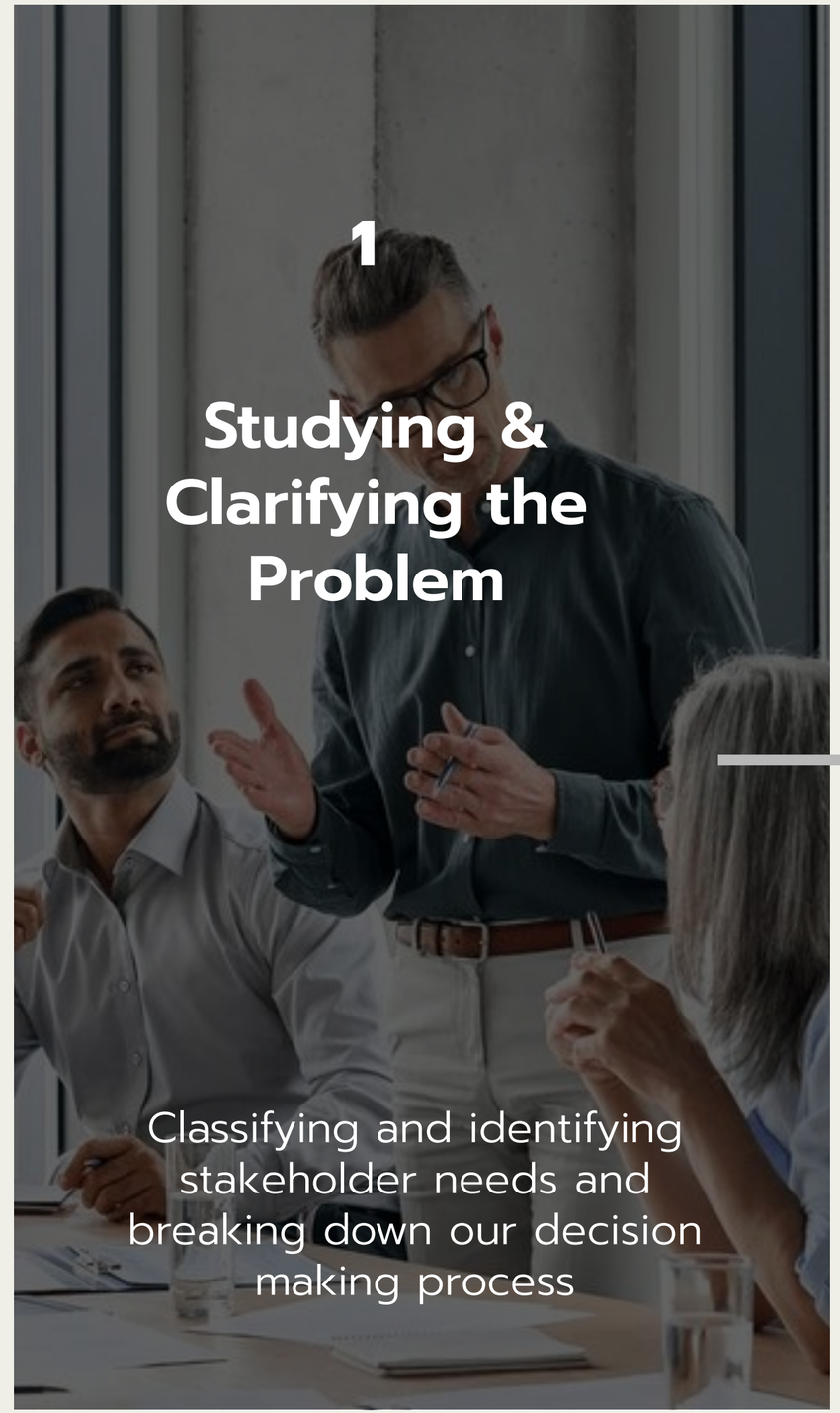


PROS

- Increase of Safety
- Most impactful & useful
- Increase foot traffic for businesses
- Decrease of 613.25 kg of CO_2 per day
- Reduced Traffic Congestion

CONS

- Construction time
- Cost-$7,800,000
- Parking Space
- Intersection Risks
- May redirect traffic



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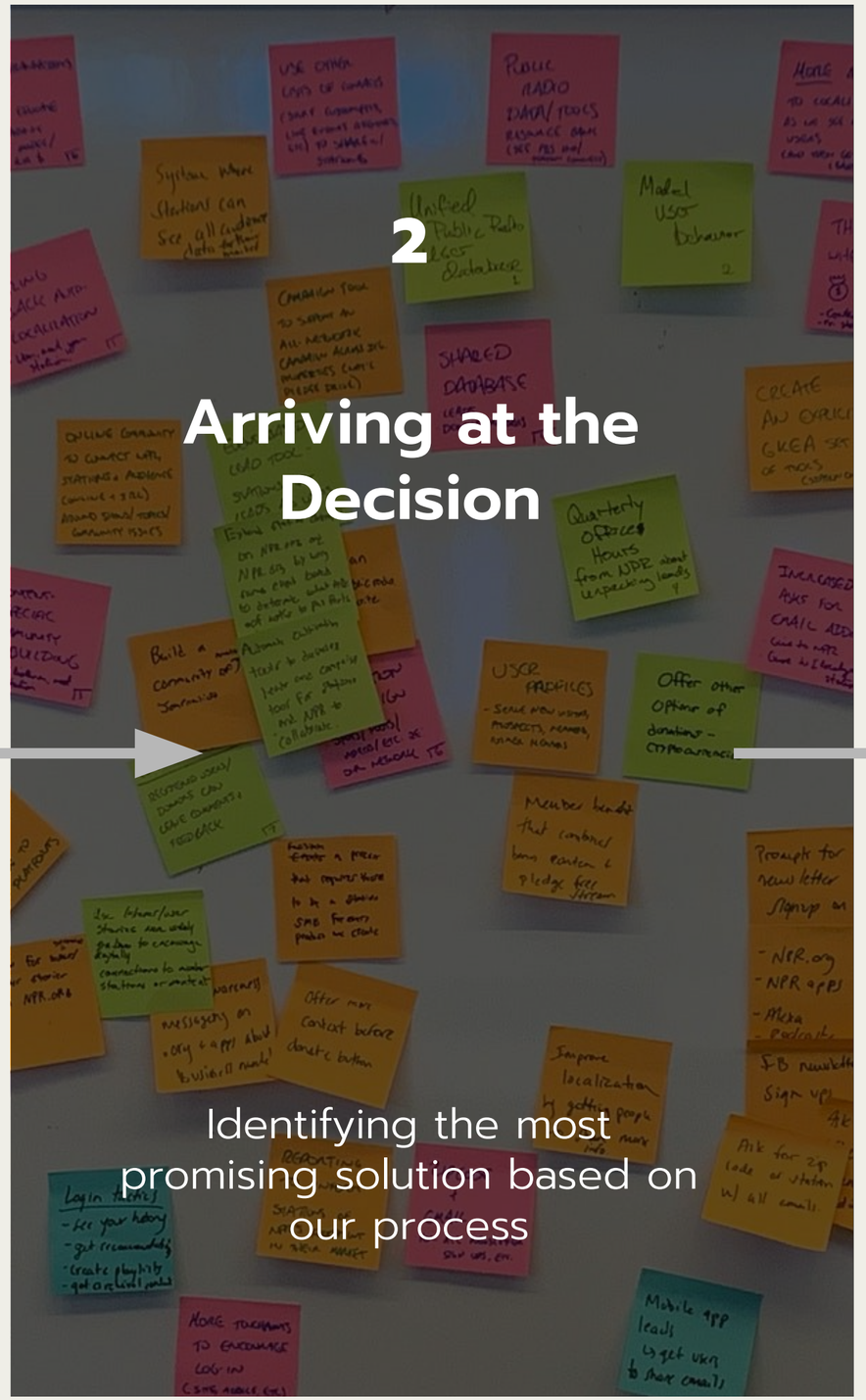

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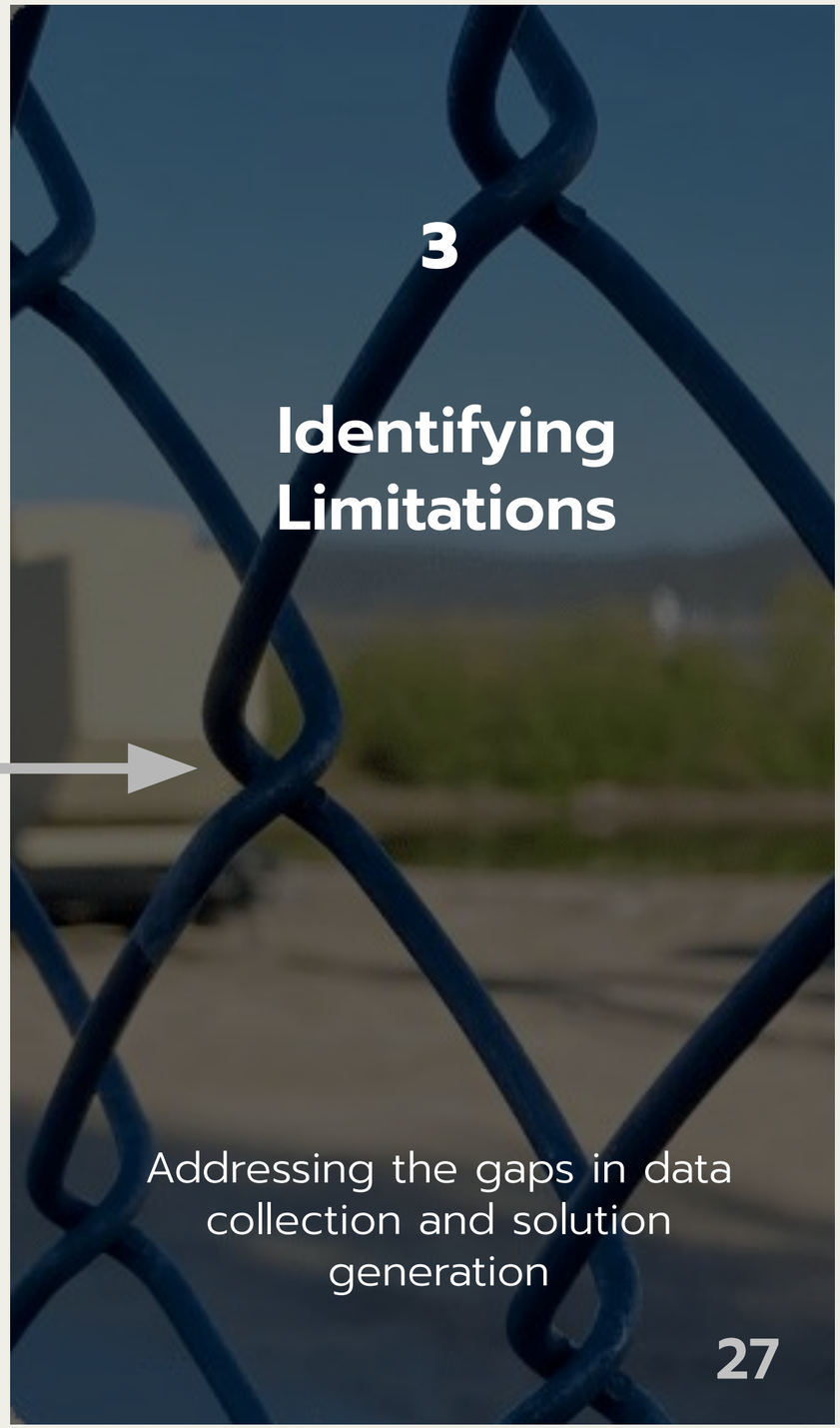
Identifying the most promising solution based on our process



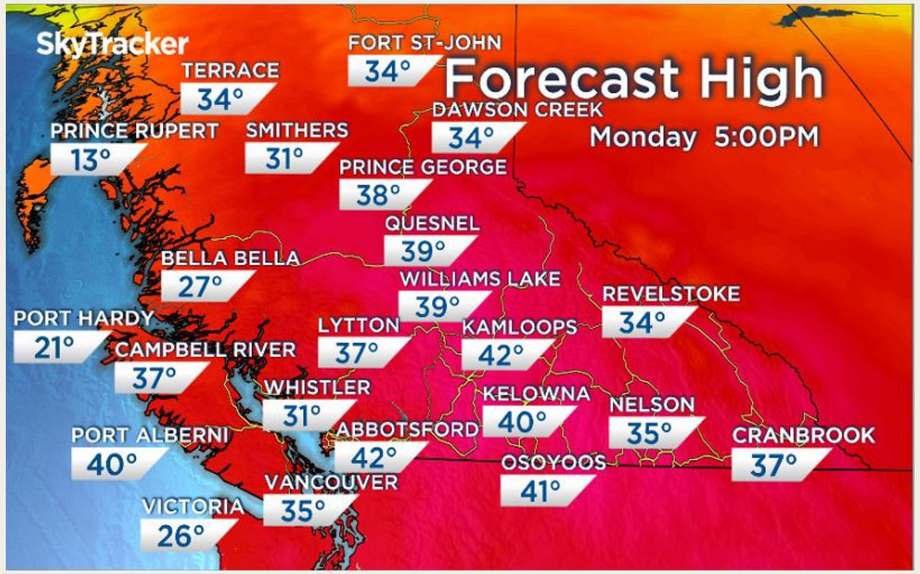
3

Identifying Limitations

Addressing the gaps in data collection and solution generation

LIMITATIONS IN OUR ANALYSIS

- Absence of concrete quantitative data
- No real consultation with stakeholders
- Seasonal traffic change
  - Roads tend to get busier with different weather conditions
  - May affect routes differently



IN SUMMARY:

Methodology:

- Identified and classified stakeholders
- Broke down the complex system
- Analyzed the system using a CLD
- Weighted Decision Matrix based on stakeholder needs

We Addressed

- Dimensions of Sustainability
- Needs of the stakeholders

Most Optimal Bike Lane

- Kingsway

REFERENCES

https://vancouver.ca/files/cov/design-guidelines-for-all-ages-and-abilities-cycling-routes.pdf
https://www.tcat.ca/wp-content/uploads/2016/08/Costing-of-Bicycle-Infrastructure-and-Programs-in-Canada.pdf
https://ecf.com/system/files/Cycle_More_Often_2_Cool_Down_the_Planet.pdf
https://www2.gov.bc.ca/assets/gov/driving-and-transportation/funding-engagement-permits/grants-funding/cycling-infrastructure-funding/active-transportation-guide/2019-06-14_bcatdg_compiled_digital.pdf
https://www.google.ca/maps
https://vancouver.ca/news-calendar/hastings-sunrise.aspx
https://vancouver.ca/streets-transportation/city-greenways.aspx
https://marinegateway.com/
https://www.tripadvisor.ca/AttractionsNear-g154943-d9576254-Marine_Drive-Vancouver_British_Columbia.html
https://weatherspark.com/y/476/Average-Weather-in-Vancouver-British-Columbia-Canada-Year-Round
https://www.translink.ca/-/media/translink/documents/plans-and-projects/frequent-transit-network/fast_and_frequent_transit_map.pdf
https://vancouver.ca/files/cov/2022-transportation-survey-report.pdf

Gen AI Usage

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