Name: Slipstream
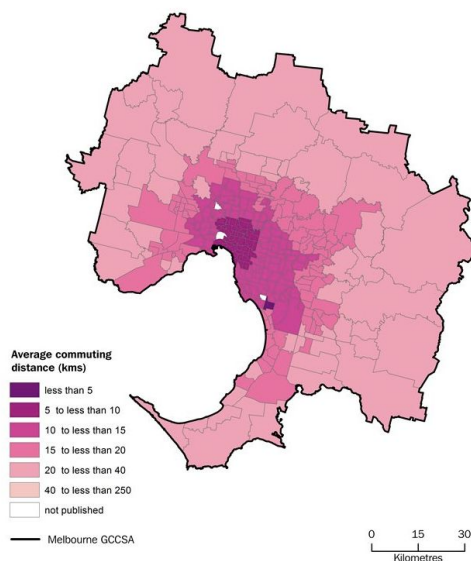GitHub: https://github.com/neatht/SlipstreamINFO30005
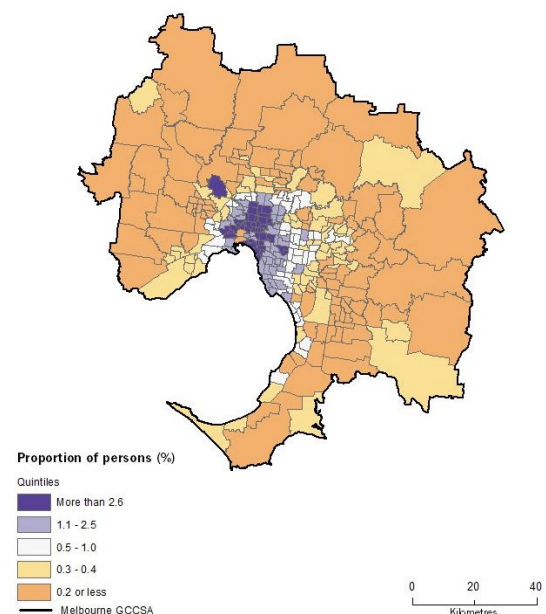
Problem Statement

The problem we have decided to tackle is the growing congestion in the City of Melbourne. The City of Melbourne reported 1.5 million commuters every day, and that number is increasing (2015). The current infrastructure is unable to hold these people for their commute, which leads to major congestion during peak hours. It was reported that over the last 5.5 year period, the average speed of commuters has fallen 8.1 percent, the largest change in any capital city in Australia. (Australian Automobile Association, 2018). Our goal is to help relieve congestion by motivating more people to take alternative forms of transport into the city, specifically cycling.

De Silva and Lightfoot recorded Melbourne transport volume with 1 535 587 people who commute to the city every day, of which 75% (1 152 845) use cars as their main form of transport compared to this 1.2% of people (or 19 104) ride a bike to work(2010). Our target demographic are people who live 0 to 15 kilometers from the city centre who commute to work during rush hour, specifically people in the 5 to 15 kilometer range. According to a report provided by the Australian Bureau of Statistics people in the 5 to 15 kilometer range usually choose to drive to work and not cycle, with about 60% choose to drive and only 2.6% choosing to cycle (MAP2). However we believe they are close enough to feasibly cycle, and unlike the 0 to 5 kilometer range, do not already cycle giving us a large potential demographic of people who could be convinced to cycle to work instead of driving.

MAP 1 - AVERAGE COMMUTING DISTANCE FROM USUAL RESIDENCE - Greater Melbourne, SA2s, 2016(a)

MAP 2 - PROPORTION OF PERSONS WHO BICYCLED TO WORK - SA2s within Greater Melbourne, 2016

Average commuting distance (kms)

- less than 5
- 5 to less than 10
- 10 to less than 15
- 15 to less than 20
- 20 to less than 40
- 40 to less than 250
- not published

— Melbourne GCCSA

0   15   30
Kilometres

Proportion of persons (%)

Quintiles

- More than 2.6
- 1.1 - 2.5
- 0.5 - 1.0
- 0.3 - 0.4
- 0.2 or less

— Melbourne GCCSA

0   20   40
Kilometres

The problem is worth addressing because of the costs it creates in our economy and our everyday life. A 2019 audit by Infrastructure Australia found the cost of traffic congestion to the economy to be $5,485,000,000 per year, estimated to rise to $10,379,000,000 by 2031. This cost also affects individuals, with an estimated cost of $1,000 per year lost to congestion. It has also been found that being stuck in traffic can have a detrimental effect on mental health, leading to stress and depression. There is also a cost to the environment. A car releases 271 grams of CO2 per km driven, whereas a person cycling releases only 16g. (Stevenson, 2018)

The cause of the problem could be the lack of modern infrastructure for cars in the city. It has been reported that the amount of congestion continues to rise, with travel speeds between the CBD and Tullamarine Airport dropping nearly 20 percent between 2013 and 2018 (Willingham, 2018), and car infrastructure has struggled to keep up. However, the government has already invested $27.3 million to build new bike lanes and safety precautions for St Kilda Road, $15.3 million to make key cycling safer and $22.7 million to fix missing links in the current network of cycle pathways (Victoria State Government, 2020), yet people have failed to utilize this infrastructure. People's safety concerns and their lack of awareness of cycling has also led to the slow adaptation of infrastructure, with a survey indicating that 80% of people do not ride to work because of safety concerns.

There have been several approaches trying to solve the problem that has failed in the past. Bike Share Scheme implemented by the government 2010 failed due to low station destiny and a lack of access in the inner suburbs, with the program, only earned back half of the funding investment (The Age, 2019). Similar non-government approaches such as OBike have also failed in the past. The ABC reported the scheme was unable to secure the bikes resulting in them being vandalized, dumped in rivers or hanged on trees.

BICYCLE Network4 is another app with a large following introduced to encourage people to use bikes over other forms of transport. However, it is not focused on safety and is instead focused on the health benefits of cycling and has a paid membership scheme which may deter people from joining.

Unlike the past failures of other implementations, we aim to implement a solution that doesn't focus on physical implementation, but instead focus on social motivation to get people to use the already in place infrastructure. We hope this will be more effective.

Proposed Product

We propose to make an app aimed towards city commuters encouraging them to ride their bikes instead of driving cars on their daily commute, in order to reduce congestion. Our app will include a Map, Community, and Road Safety functions and tailored for Melbourne commuters.

Map

Our map functionality will include three alternative riding pathways to and from given destinations: Safe, Speed, and Scenic. The safe will provide the safest route available taking into consideration the characteristics of the road such as bike barriers and specific bike paths. Speed will provide the fastest bike route to a given destination to suit more experienced riders that are more focused on reaching a destination rather than general safety. Our Scenic route will prioritize routes through parks and landmarks to provide a sense of variation and add to the commuting experience. We will also add navigation functionality which will guide the user through their chosen route.

According to a survey more than 80% of participants stated that they were discouraged to ride to work due to the perception of safety, by providing a safety feature we can ensure that people will feel comfortable riding on the roads.

Community

Our community functionality will create a space where friends can compete and show their accomplishments enhancing the social aspect of bicycle riding. It will consist of a leader board comparing distance biked, along with statistics such as calories burnt, streaks, and carbon dioxide saved, creating a sense of public accountability when biking a friendly competition between friends to motivate commuters to ride bikes more. Additionally, a simple text only community forum where bicycle riders can post their achievements and organize meetups with other members to share their bike riding journey together. All functionality will be implemented with users accessing them through individual accounts to track posts, statistics, and friends within the app.

This should motivate people to get out and ride by using social pressure and people's competitive nature. People like to have the most miles ridden on leaderboards and don't like to miss out on social activities. We can use this to hopefully get people riding instead of taking the car to work, reducing congestion.

Safety

Our safety functionality will consist of safety tips on the website home page and a wiki of safety tips and information to help keep our users informed about weather conditions or roadworks, and how to keep themselves safe when they ride. It will also contain a map of bicycle repair shops, with the nearest one highlighted, along with the numbers of repair shops in the area that will come to you (if available). The safety mode of our map will keep our users safe when they ride, hopefully motivating people whose primary concern is safety to ride.

Further Considerations

If we are tight on time, we will cut the following features
- Community forum
- Live directions
    - Can be replaced by sending them to google maps
- Scenic/Safe Routes

- If the google maps API doesn't work well, or we have trouble with our safety database, we will instead rank the few routes google maps gives us by default by speed and safety, instead of actively finding routes that go out of your way to be safe
- Road safety tips
- Fancy animations

If we have extra time we will implement the following features
- Live chat
- A system to find group rides according to the person's preferred ride and time availability, instead of just a forum for finding group rides
- Facebook twitter implement. Share when you reach milestones
- Water stations and bike parking on the map

Schedule

	Meetings	Due Dates
Week 1	Monday 11:00am-1:00pm (Workshop)	
Week 2	Monday 11:00am-1:00pm (Workshop) Thursday 2:00pm-4:00pm	
Week 3	Monday 11:00am-1:00pm (Workshop) Wednesday 2:00pm-4:00pm	
Week 4	Monday 11:00am-1:00pm (Workshop) Wednesday 2:00pm-4:00pm Friday 2:00pm-4:00pm	Project Proposal (5%)
Easter Break	Wednesday 2:00pm-4:00pm Thursday 2:00pm-4:00pm Ideally finish Mockup App Server.	
Week 5	Monday 11:00am-1:00pm (Workshop) Wednesday 2:00pm-4:00pm Friday 2:00pm-4:00pm	Mockup App Server (10%)
Week 6	Monday 11:00am-1:00pm (Workshop) Wednesday 2:00pm-4:00pm Friday 2:00pm-4:00pm	
Week 7	Monday 11:00am-1:00pm (Workshop) Wednesday 2:00pm-4:00pm Friday 2:00-4:00pm	Front-End(5%) + API Server(10%)
Week 8	Monday 11:00am-1:00pm (Workshop) Wednesday 2:00pm-4:00pm	
Week 9	Monday 11:00am-1:00pm (Workshop) Wednesday 2:00pm-4:00pm	
Week 10	Monday 11:00am-1:00pm (Workshop) Wednesday 2:00pm-4:00pm	Report(20%) System(40%)

if we have more work than anticipated we will also meet on Thursday 2-4pm
Subject to change due to the COVID-19 changing the timeline on an ongoing basis.

All meetings will occur online via google hangouts.

Times were figured out according to https://www.when2meet.com/?8924753-H3NFM.

Reference

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https://www.theage.com.au/national/victoria/goodbye-blue-bikes-melbourne-s-bike-share-scheme-canned-20190830-p52m9e.html
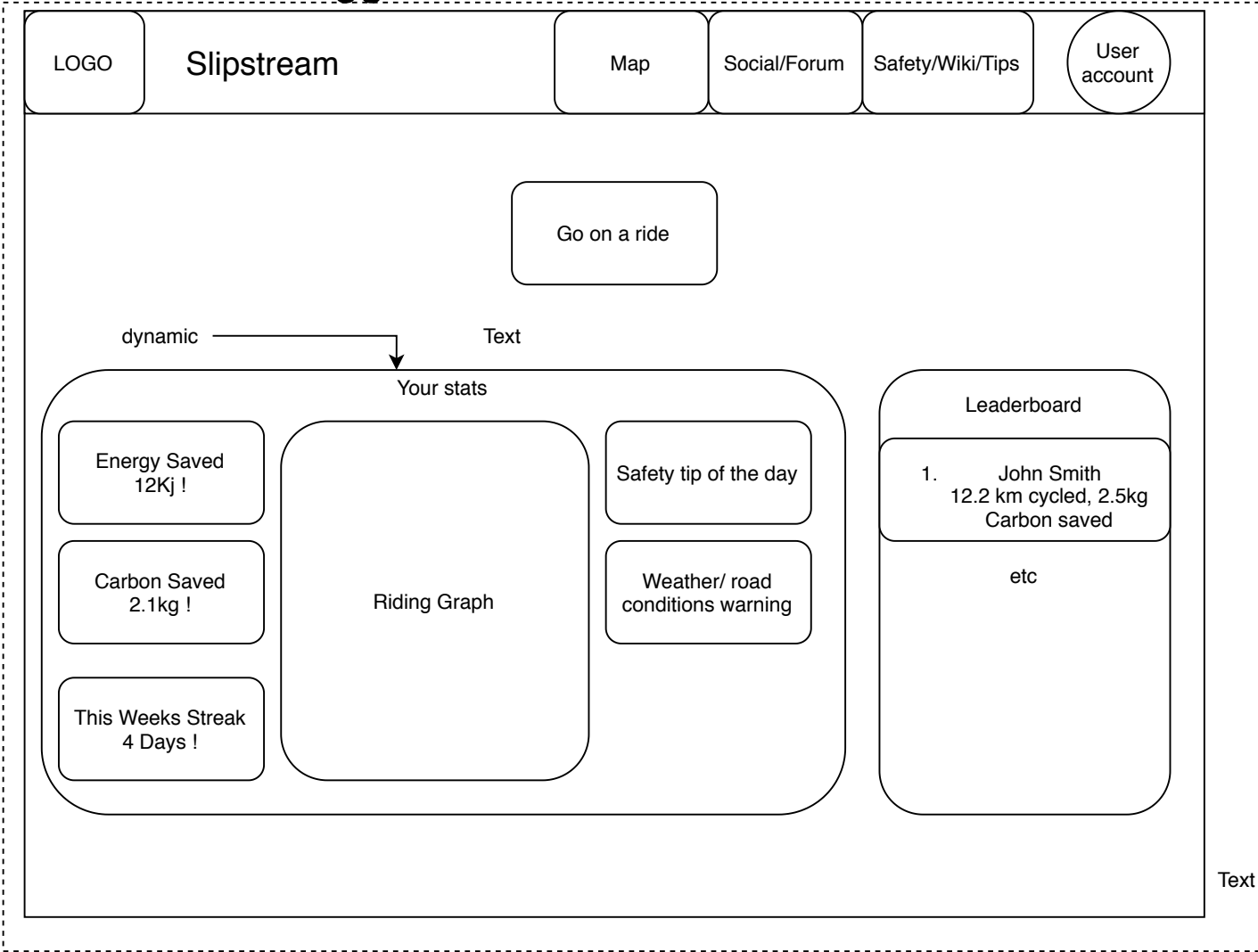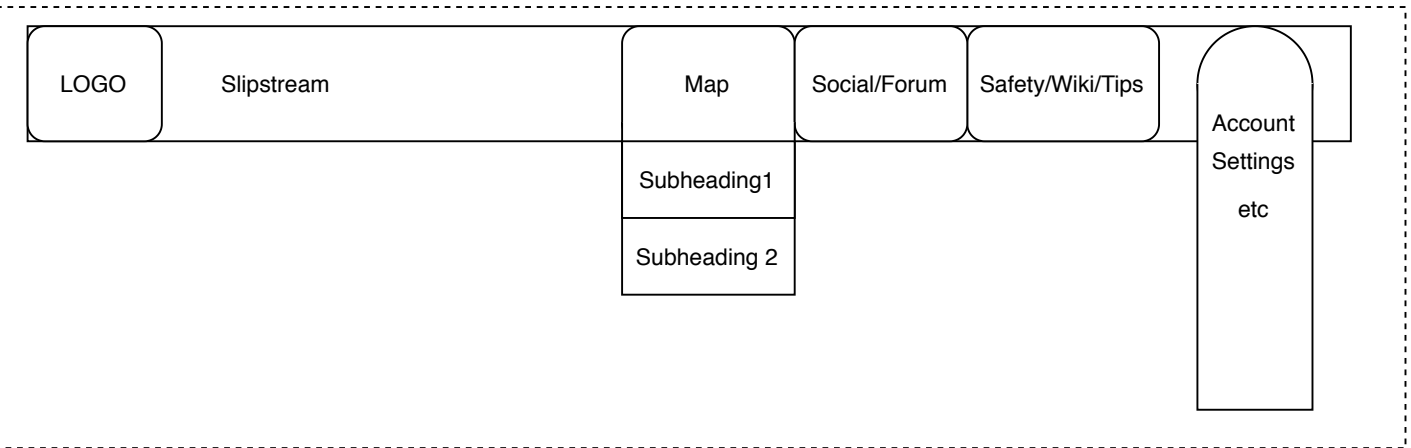
Landing Page

Same as above

| DIRECTIONS | COMMUNITY | TIPS |

Home screen logged in

LOGO | Slipstream | Map | Social/Forum | Safety/Wiki/Tips | User account

Go on a ride

dynamic ——————→ Text

Your stats

Energy Saved
12Kj !

Carbon Saved
2.1kg !

Riding Graph

Safety tip of the day

Weather/ road
conditions warning

This Weeks Streak
4 Days !

Leaderboard

1.   John Smith
12.2 km cycled, 2.5kg
Carbon saved

etc

Text

Text

navigation bar functionality

LOGO | Slipstream | Map | Social/Forum | Safety/Wiki/Tips | Account Settings etc

Subheading1

Subheading 2

User Forum

Something like this

map mobile functionality

Screen 1 (From / To input):

From [_____]

To [_____]

[Go]

Screen 2 (Options list):

Safe

Time Taken: 10 min
Safety: 10.2

Speed

Time Taken: 10 min
Safety: 10.2

Scenic
Time Taken: 10 min
Safety: 10.2

Screen 3 (Options list with arrows):

Safe

Time Taken: 10 min
Safety: 10.2

Time Taken: 10 min
Safety: 10.2

Scenic
Time Taken: 10 min
Safety: 10.2

Screen 4 (Map view):

back to options

A map

share to facebook/twitter etc

Map functionality Webiste
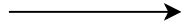
Same as above

From _____

To _____

Go

Same as above

SAFE

Time: 10 minutes

Safety Rating: 9/10

SPEED

Time: 5 minutes

Safety Rating: 6/10

SCENIC

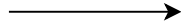Time: 15 minutes

Safety Rating: 7/10

SAFE

SPEED

SCENIC

*expands out when

selected*

Map of route
functionality to swap back to the other options

Start Route

Click to share to facebook!

Tip/Wiki

Same as above

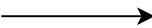|				
Tip #1	Tip #3	Tip #5	Tip #7	Tip #9
Tip #2	Tip #4	Tip #1	Tip #8	Tip #10

Same as above

Expands out to tip article

Tip #1 ⟶

Tip #5 | Tip #7 | Tip #9

Tip #1 | Tip #8 | Tip #10