Tar Heel Bikes

GPS Tracking Data Overview
Agenda

1. Reason for Study
   *What helpful data can we obtain with GPS analysis?*

2. Logistics
   *How will we implement this study?*

3. Risk
   *What risks does THB assume by moving forward?*
Agenda

1. Reason for Study
   *What helpful data can we obtain with GPS analysis?*

2. Logistics
   *How will we implement this study?*

3. Risk
   *What risks does THB assume by moving forward?*
Why perform GPS spatial analysis?

*It can help THB determine...*

**Routes**
- Preferred routes
  - Hill avoidance
  - Streets vs. campus paths

**Exact Destinations**
- Points of interest
- Potential expansion locations

**Program Footprint**
- Amenities within footprint
- Distance Travelled
Why perform GPS spatial analysis?
Why perform GPS spatial analysis?
Agenda

1. Reason for Study
   *What helpful data can we obtain with GPS analysis?*

2. Logistics
   *How will we implement this study?*

3. Risk
   *What risks does THB assume by moving forward?*
## Capital Requirements and Operations

<table>
<thead>
<tr>
<th>Affixing to Bikes</th>
<th>Replacement Deposit</th>
<th>Charging &amp; Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Affixing to Bikes" /></td>
<td><img src="image" alt="Replacement Deposit" /></td>
<td><img src="image" alt="Charging &amp; Maintenance" /></td>
</tr>
</tbody>
</table>
| $5.95/unit × 8 Bikes = $50.00 | ≈$100.00/unit × 8 Units = $800.00 | **Frequency**: every night

**Who:**
- RHAs:
  - *Obtaining user consent*
- THB members:
  - *Charging GPS units*
- ENST 698 members:
  - *Data upload and analysis*
**Research Implementation Plan**

**Study Timeline:** 2 consecutive weeks, late March/early April

![Timeline Diagram]

- **MON:** CHARGE
  - LOT A
  - LOT B
- **TUES:** CHARGE
  - LOT A
  - LOT B
- **WED:** CHARGE
  - LOT A
  - LOT B
- **THURS:** CHARGE
  - LOT A
  - LOT B
- **FRI:** CHARGE
  - LOT A
  - LOT B

**Upload and analyze data**
Agenda

1. Reason for Study
   *What helpful data can we obtain with GPS analysis?*

2. Logistics
   *How will we implement this study?*

3. Risk
   *What risks does THB assume by moving forward?*
Assuming a 20%* chance of theft, there is a fairly low risk that ALL units are stolen.

* Value conservatively estimated from National Bike Registry: https://www.nationalbikeregistry.com/college.html
### Takeaways, Tradeoffs, and Considerations

<table>
<thead>
<tr>
<th></th>
<th>SURVEY</th>
<th>GPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exact Destinations</td>
<td>![Yellow]</td>
<td>![Green]</td>
</tr>
<tr>
<td>Destinations per Trip</td>
<td>![Red]</td>
<td>![Green]</td>
</tr>
<tr>
<td>Reason for Trip</td>
<td>![Green]</td>
<td>![Red]</td>
</tr>
<tr>
<td>Program Footprint</td>
<td>![Red]</td>
<td>![Green]</td>
</tr>
<tr>
<td>Routes Taken</td>
<td>![Red]</td>
<td>![Yellow*]</td>
</tr>
<tr>
<td>Cost</td>
<td>![Green]</td>
<td>![Red]</td>
</tr>
</tbody>
</table>

*Team must account for data point drift.*