Motivation

Transportation accounts for 31% of overall emissions

Lack of information about student transportation behavior

No initiatives to address student transportation emissions
How do you get to campus most of the time?

- Car (drive alone)
- Carpool (2+ people)
- Bus
- Rideshare App (Uber or Lyft)
- Bike
- Moped
- Walk
- Other
36% of students who live off campus drive alone

27% of students who live off campus take the bus

Only 10% carpool
Graph showing the number of times a week students get to campus by car

- Juniors: Sample 1 = 5.83, Sample 2 = 5.25
- Seniors: Sample 1 = 5, Sample 2 = 5.25
- Graduate Students: Sample 1 = 4.43, Sample 2 = 4.93

Students driving go to campus 5x per week
70% of off-campus students live in high-density residential complexes.
80% of students surveyed are interested in using a carpooling app.
Carpool App
Incentives

● Refunds on parking passes
  ○ Based on number of carpool rides
  ○ Carpool is 3 or more people

● Better parking
  ○ First 2 lots of Blue Zone
Social Benefits

Safety
Equalizing vehicle access

Developing habits
Less crowded parking lots
Environmental Benefit Analysis

78.5 tons of CO₂ emitted weekly from student commuters
### Inputs for Calculating CO₂ Emissions

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td><strong>Data regarding student commuting</strong></td>
<td></td>
</tr>
<tr>
<td>Total No. of students driving alone to campus</td>
<td>5470</td>
</tr>
<tr>
<td>Total No. of students carpooling to campus</td>
<td>1077</td>
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<tr>
<td>Total Commuting Population</td>
<td>6547</td>
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<tr>
<td><strong>Data regarding trips</strong></td>
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<tr>
<td>Average No. of one way trips per week (car)</td>
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<tr>
<td>Total No. of Trips per week</td>
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<tr>
<td>Total weeks considered in an academic year</td>
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<tr>
<td><strong>Fuel Use</strong></td>
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<tr>
<td>Carbon Content (lb CO₂/gallon)</td>
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<td>Fuel Economy (miles/gallon)</td>
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<tr>
<td>Energy Content of Gasoline (Btu/Gallon)</td>
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</table>
New mode share can lead to a 25% decrease in emissions
Going forward

- App development
- Coordination with administration on incentives
- Carbon neutrality
Questions?
References

- Duke University Climate Action Plan, 2018 Update
- Duke University Sustainability Office
- Duke University Parking and Transportation
- Duke University Progress Report, 2017