Bus Stops and Perceived Safety Through a Gender Lens
Introduction

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Let's Start!
Bus Stops and Perceived Safety Through a Gender Lens
Project location

Boston & Cambridge
MBTA Bus #1 inbound & outbound

https://www.mbta.com/schedules/1/line
Goal: find whether gender plays a role in how safe people feel waiting for the bus and whether safety perceptions are different in the daytime vs nighttime.
Two parts:

1. bus stop safety audit
   *text survey*

2. PATI data, cleaning and visualizing
   *(Plan for Accessible Transit Infrastructure)*
   *MBTA, Massachusetts Bay Transportation Agency*
1. Project overview
   - bus stop safety audit
   - text survey

2. Steps taken
   - SlickText

3. Results

4. Hopes for the future

5. Q&A/Feedback

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- PATI dataset
  - clean and visualize
Bus Stop Safety Audit

How safe do you feel waiting for the bus at this stop?

bus stop ID: 2

What is this?
This is a research study by a student at Northeastern University. Your responses will help bring visibility to the experiences of folks who use the bus stops along this route in the daytime or nighttime.
NURS# 21-04-25
Please email questions to busstopaudit@gmail.com

How to participate
1. Choose your language:
   - English
   - Spanish
   - Portuguese
   - Haitian Creole
2. Text the name of the language to 888-719-0590
3. Complete the 5 questions
   About your experience while waiting at this bus stop, how many minutes you usually wait, how safe you feel and if you identify as a woman.

Rules
- You must be at least 18 years old to participate.
- Standard messaging and data rates apply.
- Participants will be entered for a chance to win one of 10 $50 Visa gift cards.
- Deadline - July 15th
- Winners will be contacted July 17th

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1. bus stop safety audit
text survey

2. PATI dataset
clean and visualize
Project overview

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Hopes for the future

Q&A/Feedback

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2. PATI dataset
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**Project overview**

- **bus stop safety audit**
- **text survey**

**Steps taken**

- **PATI dataset**
- **clean and visualize**

**Results**

**Hopes for the future**

**Q&A/Feedback**
Project overview

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Steps taken

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Q&A/Feedback
1. Project overview

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1. bus stop safety audit
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Project overview

1. bus stop safety audit
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Steps taken

3. 33 out of 46 bus stops

Results

Hopes for the future

Q&A/Feedback
1. Project overview

- Bus stop safety audit
  - Text survey

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3. Results

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1. **bus stop safety audit**
   - **text survey**

   **Rules**
   - If you have any questions about this study, please email the researchers: bus.stop.audit@gmail.com
   - If you have any questions about your rights as a research participant, please email Northeastern University's Office of Human Subject Research Protection: irb@neu.edu
   - Let's get started!
   - Reply with the Bus Stop ID number (it's on the poster)

   **Sample Response**
   - This is a sample response to an open ended survey question.

   **Your Question**
   - Thanks! first question:
   - Do you identify as a woman?
   - A: yes
   - B: no
   - C: I prefer not to answer
1. Project overview
   - bus stop safety audit
     - text survey

   How safe do you feel waiting at this bus stop when the sun is out?
   - A: very safe
   - B: safe
   - C: neutral
   - D: not safe
   - E: not safe at all
   - F: I don't use this bus stop when the sun is out
   - G: I prefer not to answer

2. Steps taken
   - PATI dataset
     - clean and visualize
1. **Project overview**

   **Steps taken**

   1. **bus stop safety audit**
   2. **text survey**

   **Your Question:**
   How safe do you feel waiting at this bus stop when it's night time?

   **Sample Response:**
   G

   **Results**

   **Hopes for the future**

   **Q&A/Feedback**

   1. **PATI dataset**
   2. **clean and visualize**
1. Project overview
   - **Bus stop safety audit**
   - **Text survey**

2. Steps taken
   - **PATI dataset**
   - **Clean and visualize**

3. Results

4. Hopes for the future

5. Q&A/Feedback

- **Your Question**
  - About how many minutes do you usually wait at this stop before the bus gets here?
  - Reply with the number of minutes or text NO if you don’t usually use this bus stop.

- **Sample Response**
  - This is a sample response to an open ended survey question.
1. Project overview
   - bus stop safety audit
   - text survey

2. Steps taken
   - PATI dataset
   - clean and visualize

3. Results

4. Hopes for the future

5. Q&A/Feedback
1. **Project overview**

   - **Steps taken**
     - bus stop safety audit
     - text survey

   - **Results**

   - **Hopes for the future**

   - **Q&A/Feedback**

2. **PATI dataset**

   - clean and visualize

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Project overview

Steps taken

Results

Hopes for the future

Q&A/Feedback

Bus stop safety audit

text survey

PATI dataset

clean and visualize

About how many minutes do you usually wait at this stop before the bus gets here?

Reply with the number of minutes or text NO if you don’t usually use this bus stop

This is a sample response to an open ended survey question.
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Sample Response:
This is a sample response to an open-ended survey question.
Breakdown of responses
Southbound | MBTA bus route 1

- Bus Stop Where a Survey Poster was Posted
- Bus Stop that received Survey Responses
- GTFS compatible stops (stops for which bus arrival and departure times are available)
- Bus Stop Where a Survey Poster was Posted

- 1 Survey response, reported they identify as a woman
- 1 Survey response, reported they Do Not identify as a woman
- 1 Survey response, reported they prefer not to answer whether or not they identify as a woman

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**Results**

**1. Bus Stop Safety Audit**

- Text Survey
  - For perceived safety in the daytime:
    - 78 respondents
    - 37 identifies as a woman
    - 3 not safe at all
    - 3 prefers not to answer identity question
    - 18 doesn't use the bus stop at night and identifies as a woman
    - 9 doesn't use the bus stop at night and does not identify as a woman
  - For perceived safety at nighttime:
    - 60 respondents
    - 28 not safe at all
    - 3 prefers not to answer identity question

**2. PATI Dataset**

- Clean and visualize
**Steps taken**

1. **bus stop safety audit**
2. **text survey**

**Results**

**Perceived Safety Score Scale**

- 5 = very safe
- 4 = safe
- 3 = neutral
- 2 = not safe
- 1 = not safe at all

**Hopes for the future**

**Q&A/Feedback**

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- **PATI dataset**
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Project overview

Results

Steps taken

Hopes for the future

Q&A/Feedback

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Daytime vs Nighttime Perceived Safety Score of Survey Participants

MBTA Bus route 1

Safety Feeling Score Scale:
5 = very safe
4 = safe
3 = neutral
2 = not safe
1 = not safe at all

Includes:
110 responses for daytime (73 identify as women, 37 do not identify as women, 3 preferred not to answer how they identify)
91 responses for nighttime (50 identify as women, 28 do not identify as women, 3 preferred not to answer how they identify)

Bus IDs: 9, 64, 57, 58, 66, 67, 68, 71, 73, 74, 75, 80, 86, 89, 91, 93, 95, 97, 99, 110, 188, 864, 858, 1505, 189

Figure 1
Both identity groups experience a drop in feelings of safety from daytime to nighttime. folks who identify as women report feeling slightly safer during the daytime (+.07 points), but experience a greater drop from daytime to nighttime, 1.16 points, than that of folks who don’t identify as women, .79 points.
Bus stop safety audit & PATI dataset combined
bus stop safety audit + PATI dataset results

Safest feeling bus stops

Daytime

For folks who identify as women

Amenities at stop 67: 🌳 🎪 🎣 🌷 🚴

Amenities at stop 74: 🌳 🎪 🎣 🌷 🚴

For folks who do not identify as women
bus stop safety audit + PATI dataset results

Safest feeling bus stops

Nighttime

For folks who identify as women

ID: 73, safety score: 3.71

Amenities at stop 73:

For folks who do not identify as women

ID: 67, safety score: 3.67

Amenities at stop 67:
Least safe feeling bus stops

Daytime

For folks who identify as women

For folks who do not identify as women

Amenities at stop 10590: ⛽️ ⛽️ ⛧ 🛺 🚴
bus stop safety audit + PATI dataset results

Least safe feeling bus stops

For future reference only.

Amenities at stop 10590: 🛀️ ⛔️ 🚫 🚴

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bus stop safety audit + PATI dataset results

Least safe feeling bus stops

Nighttime

For folks who identify as women

Amenities at stop 58:  
Amenities at stop 6:  

For folks who do not identify as women

Amenities at stop 57:  

bus stop safety audit + PATI dataset results
Stop ID 57 by Boston Medical Center
bus stop safety audit + PATI dataset results

Average safety feeling scores reported by folks who identify as women

Daytime vs Nighttime | MBTA Bus Route 1

Amenities at bus stop

<table>
<thead>
<tr>
<th>Bus Stop ID</th>
<th>Daytime Score</th>
<th>Nighttime Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>1.07</td>
<td>1.33</td>
</tr>
<tr>
<td>74</td>
<td>1.33</td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>0.59</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>1.50</td>
<td></td>
</tr>
<tr>
<td>856</td>
<td>1.67</td>
<td></td>
</tr>
<tr>
<td>89</td>
<td>1.42</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1.14</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Safety Feeling Score Scale

Only includes data from bus stops that received 3 or more responses for daytime or 3 or more responses for nighttime from folks who identify as women.
Bus stop ID 6
Bus stop ID 6
Average safety feeling scores reported by folks who do not identify as women

Daytime vs Nighttime | MBTA Bus Route 1

<table>
<thead>
<tr>
<th>Bus Stop ID</th>
<th>Amenities at bus stop</th>
<th>Safety Feeling Score Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>74</td>
<td>🚴‍♂️ Bike</td>
<td>4.67 (day)</td>
</tr>
<tr>
<td>67</td>
<td>🚳️ Bench, 🌿 Trees</td>
<td>0.83 (night)</td>
</tr>
<tr>
<td>73</td>
<td>🚴‍♂️ Bike, 🌿 Trees, 🍱 Trash Can</td>
<td>1 (neutral)</td>
</tr>
<tr>
<td>57</td>
<td>🚴‍♂️ Bike, 🎃 Lantern, 🍱 Trash Can</td>
<td>2.67 (not safe)</td>
</tr>
<tr>
<td>10590</td>
<td>🚴‍♂️ Bike, 🎃 Lantern, 🍱 Trash Can</td>
<td></td>
</tr>
</tbody>
</table>

Only includes data from bus stops that received 3 or more responses for daytime or 3 or more responses for nighttime from folks who do not identify as a women.