Determination of Traffic Adjustment Factors for Florida's High Tourist Activity Sites

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Outline

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- Data Collection Methodology
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Background and Introduction

- Florida experiences heavy traffic demand on its roadways during the peak tourist season, especially near popular tourist destinations and beaches.

- Heavy demand on peak hours can cause back-ups on roadways that are in close vicinity to these popular tourist destinations and beaches.

Source: https://www.flickr.com/photos/proimos/6905763805
Background and Introduction

- These back-ups in return can potentially affect the accuracy of traffic counts and the seasonal traffic adjustment factors.

- Seasonal traffic adjustment factors are crucial to account for seasonal fluctuations due to Florida's high tourist activity in differing times of the year.

- Traffic count validation is essential to ensure the accuracy of the counts received from temporary and permanent count stations.
Project Objectives

The major goal of this project was to determine traffic adjustment factors for Florida’s popular tourist destination sites/beaches, specifically:

- Perform a literature review (understanding current FDOT data collection methods and calculation methodology for traffic adjustment factors)
- Visit each analysis site and perform traffic count data validation spot checks during peak season hours
- Analyze 12 months worth of traffic count data collected through permanent and temporary traffic counters
- Determine the monthly traffic adjustment factors for selected analysis sites
Data Collection Methodology

- FDOT collects either continuous data through permanently-installed traffic counters or short-term data through temporarily placed counters.
- 8 Florida coastal locations (12 count station sites) with high tourist activity were selected for analysis.

<table>
<thead>
<tr>
<th>Loc. #</th>
<th>Count Station Location</th>
<th>Count Station #</th>
<th>Count Station Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bradenton Beach</td>
<td>134004</td>
<td>Permanent</td>
</tr>
<tr>
<td>2</td>
<td>Bradenton Beach</td>
<td>134111</td>
<td>Permanent</td>
</tr>
<tr>
<td>3</td>
<td>Cocoa Beach</td>
<td>700113</td>
<td>Permanent</td>
</tr>
<tr>
<td>4</td>
<td>Destin</td>
<td>570385</td>
<td>Permanent</td>
</tr>
<tr>
<td>5</td>
<td>Destin</td>
<td>600168</td>
<td>Permanent</td>
</tr>
<tr>
<td>6</td>
<td>South Miami Beach</td>
<td>870031</td>
<td>Permanent</td>
</tr>
<tr>
<td>7</td>
<td>South Miami Beach</td>
<td>870108</td>
<td>Permanent</td>
</tr>
<tr>
<td>8</td>
<td>Key Largo</td>
<td>900164</td>
<td>Permanent</td>
</tr>
<tr>
<td>9</td>
<td>Jacksonville Beach</td>
<td>720062</td>
<td>Permanent</td>
</tr>
<tr>
<td>10</td>
<td>Sarasota</td>
<td>170011</td>
<td>Temporary</td>
</tr>
<tr>
<td>11</td>
<td>Madeira Beach</td>
<td>150031</td>
<td>Temporary</td>
</tr>
<tr>
<td>12</td>
<td>Destin</td>
<td>600123</td>
<td>Temporary</td>
</tr>
</tbody>
</table>
Data Collection Methodology

- FDOT has been sending hourly traffic count data (since July 2017) to the Center for Urban Transportation and Research (CUTR) at the University of South Florida for analysis.

- Permanent sites have hourly counts for every day of the month, whereas temporary sites have hourly counts for 7-10 days of a month.

- These hourly count data are processed by CUTR to develop:
  - AADT: Annual Average Daily Traffic
  - AAWDT: Annual Average Weekday Daily Traffic
  - MADT: Monthly Average Daily Traffic
  - MSF: Monthly Seasonal Factors
  - K and D factors
Data Validation

- A validation study for three temporary and six permanent sites was conducted to spot check traffic counts obtained from FDOT with manual video counts.

- Video data was collected at these sites on Saturdays from 8:00AM - 4:00PM, to capture the recreational characteristics of the beach-going traffic stream on a weekend.

Source: Center for Urban Transportation Research (CUTR), University of South Florida
Most of the FDOT counts and the manual (video) traffic counts are in agreement, with some minor deviations that are statistically deemed acceptable.

Figures depict Manual (Video) Vehicle Counts vs. FDOT Counts for Southbound Direction of Bradenton Beach (Site # 134004)
Data Validation

- FDOT counters are observed to be undercounting when backups are observed.
- The figures below show the ratio between the FDOT and manual video counts varies during the afternoon from 13:00–16:00; manual video counts were observed to be approximately 25% higher than FDOT counts during these hours.
- This variation is correlated to the observed traffic back-ups, when counters are not working as effectively due to vehicles being at a standstill on top of it and the general traffic stream moving bumper to bumper.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Ratio to FDOT</th>
<th>Traffic Back-up Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00-9:00</td>
<td>0.92</td>
<td>No back-ups observed</td>
</tr>
<tr>
<td>9:00-10:00</td>
<td>0.93</td>
<td>No back-ups observed</td>
</tr>
<tr>
<td>10:00-11:00</td>
<td>0.95</td>
<td>No back-ups observed</td>
</tr>
<tr>
<td>11:00-12:00</td>
<td>0.98</td>
<td>No back-ups observed</td>
</tr>
<tr>
<td>12:00-13:00</td>
<td>0.98</td>
<td>No back-ups observed</td>
</tr>
<tr>
<td>13:00-14:00</td>
<td>1.30</td>
<td>☒ 1st 15-min; ☒ 2nd 15-min; ☐ 3rd 15-min; ☒ 4th 15-min</td>
</tr>
<tr>
<td>14:00-15:00</td>
<td>1.22</td>
<td>☐ 1st 15-min; ☒ 2nd 15-min; ☐ 3rd 15-min; ☒ 4th 15-min</td>
</tr>
<tr>
<td>15:00-16:00</td>
<td>1.26</td>
<td>☒ 1st 15-min; ☒ 2nd 15-min; ☒ 3rd 15-min; ☒ 4th 15-min</td>
</tr>
</tbody>
</table>

Figures depict Manual (Video) Vehicle Counts vs. FDOT Counts for Northbound Direction of Bradenton Beach (Site #134004)
Preliminary Results

- Since this study is on-going, figures below have been generated using actual + estimated June, 2018 data to deliver the visuals for the purposes of this presentation.

Figures depict the monthly and weekly traffic variations for permanent type count station (Destin Site #570385) located on the Miracle Strip Parkway SE in Destin.
Preliminary Results

- Data projected in these graphs, ranges from July 2017 to June 2018
- Saturdays were observed to be the busiest days at the tourist site Destin

Figures depict the monthly and weekly traffic variations for permanent type count station (Destin Site #570385) located on the Miracle Strip Parkway SE in Destin
Conclusions and Recommendations

- At the end of this study, revised traffic adjustment factors for the 12 analysis sites will be calculated using traffic count data obtained from FDOT.

- This study is due by the end of November 2018, however one of the sub-tasks of this project, traffic count data spot check validation, has already led to the following important realization:
  - Permanent and temporary traffic counters installed at the analysis sites were observed to be under-counting when there are back-ups observed on the roadway, especially during peak-hours.

- A future study shall collect long duration of manual video data to come up with inflation factors that shall be applied to account for inaccurate vehicle counts on Florida’s high-tourist activity sites/beaches.

- The results of this suggested/proposed prospective study is also projected to affect the adjustment factors for these types of areas.
Q/A