Gameday Transportation Data Science

It’s not just about which play to run

Tim Lomax, Regents Fellow
Madison Metsker-Galarza
Texas A&M Transportation Institute
Workshop on Operational Data Science
February 2019
1920 – Fewer Seats

Mid-90s – Football Traffic Planning Began

Early version of shared-ride lot
4th Largest Texas Downtown

GAMEDAY

<table>
<thead>
<tr>
<th></th>
<th>120,000+ attendees &amp; workers</th>
<th>0 Freeways</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downtown Houston</td>
<td>150,000 workers</td>
<td>7 Freeways</td>
</tr>
<tr>
<td>Downtown Austin</td>
<td>125,000 workers</td>
<td>4 Freeways</td>
</tr>
<tr>
<td>Downtown Dallas</td>
<td>145,000 workers</td>
<td>6 Freeways</td>
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</tbody>
</table>
Some Perspective

Downtowns in Fort Worth and San Antonio - about 50,000 employees

**Downtown Houston**
- 150,000 workers
- 7 Freeways

**Downtown Austin**
- 125,000 workers
- 4 Freeways

**Downtown Dallas**
- 145,000 workers
- 6 Freeways

MONDAY through FRIDAY

| 75,000 students, faculty, staff | 0 Freeways |

**Downtown Houston**
- 7 Freeways

**Downtown Austin**
- 4 Freeways

**Downtown Dallas**
- 6 Freeways

4th Largest Texas Downtown
Where We Started - 2013

• Big game performance in 2013 was not acceptable
• $485 million stadium investment
• Our resources:
  – 25,000+ gameday parking spaces, 90+ buses, experienced staff, committed people
  – Individual traffic groups doing good job, but we needed one system; one plan
• Resource needs:
  – Transportation technology upgrades, personnel, communication and coordination
Where We Started - 2013

Aggieland Postgame

% of Congested Major Roads

- 24%
- 20%
- 16%
- 12%
- 8%
- 4%
- 0%

-1:00 0:00 1:00 2:00 3:00 4:00

Hours Before/After End of Game

- Typical big game. 1 hour of persistent high congestion.
- Enormous game. 2 hours of persistent high congestion.
- 45 minutes until congestion growth on city streets.
- Slow decline in congestion.

Auburn '13
Alabama '13
New Gameday Traffic Plan

% of Congested Major Roads

Aggieland Postgame

24%
20%
16%
12%
8%
4%
0%

Use more streets than 2013.

Tennessee '16

End of Game

Goal Line '16

Alabama '15

Alabama '13

Traffic onto streets quicker.

Congestion crosses the goal line sooner.
## Typical Gameday Stats

### Bus Riders

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>12,700</td>
</tr>
<tr>
<td>2014</td>
<td>27,300</td>
</tr>
<tr>
<td>2015</td>
<td>30,100</td>
</tr>
<tr>
<td>2016</td>
<td>27,400</td>
</tr>
<tr>
<td>2017</td>
<td>26,050</td>
</tr>
<tr>
<td>2018</td>
<td>25,500</td>
</tr>
</tbody>
</table>

### Parking Details
- **2014 to 2018**
  - ~22,000 parked cars
Extending Gameday to Every Day

• Research findings, New ideas, New technology, Best practices, New applications
• Experience and training are vital
• We can efficiently handle 120,000+ fans \textit{once!}
  – Move away from Kyle, then toward your destination.
  – You don’t get high priority the 2d time we see you.
• We work the plan & rapidly respond to events
  – Cameras, controllers, communication give us significant capabilities and fan connections.
• Several times each year we are a “metro suburb”
Campus Technology Initiative

Solicit technology demonstrations via RFI process

Demonstration & Evaluation

COMPANY

ATM
TTI and Campus Partners Are...

Assess
Deploy
Integrate
Evaluate
Findings

Students are playing a key role.
Smart Intersection Proof of Concept

- Bus arriving for turn ....
- Overhead sensors note pedestrians.
- Signal display warns pedestrians.
- App alerts pedestrians.
- Grant application for College Station deployment.
Autonomous Shuttle Would Provide Useful Mobility Option on Campus

- Strongly Agree – 54% > 98%
- Agree – 44%
- Disagree – 1%
- Not Sure – 1%
Automated vehicles are here – and more are coming!

How do the public agencies plan for:
- AVs to help with safety and mobility needs
- What is needed to safely accommodate AVs?
- Safe introduction of AVs into mixed traffic?

Texas A&M participating at state and national level to:
- Create network of proving grounds
- Encourage new levels of public safety
- Establish Community of Practice on testing and demonstration of best practices
- Accelerate the pace of safe deployment
Sponsored Research Projects

- Federal Highway Administration
- National Cooperative Research Programs
- State DOT agencies
- Metropolitan Planning Organizations (MPOs)
- National Transportation Operations Academy

Conference Presentations

Practitioner Workshops

Research > Testing > Deployment > Evaluation > Research
• Local and proven experiences create a better set of skills

• Bigger advantages when against competitors

• “Living Laboratory” – the 4th largest downtown in Texas provides you the ability to test out ideas in a real-world setting

• Leveraging our local resources and expertise
  – Who better to fix Aggies’ problems than Aggies?