In a Fast-Paced City

SLOW MOVING VEHICLES
Presentation Overview

Two Areas of Focus

Slow Moving Vehicles in Nashville
• Types of Operations
• Regulations
• Issues & Solutions being Explored

Dockless Vehicles
• Types of Operations
• Issues
• Regulations being Developed (Piloted)

General Discussion on the Topic
What is a slow moving vehicle?
Slow Moving Vehicles in Nashville

Travel Under 25 MPH

Pedi-Cabs

Pedal Carriage

Low-Speed Vehicles

Horse Carriages
## Current Operations of Slow Moving Vehicles in Nashville

<table>
<thead>
<tr>
<th>Operators</th>
<th>Type</th>
<th>Number of Vehicle Permits</th>
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<tbody>
<tr>
<td>Nashville Pedicab</td>
<td>Pedi-Cabs</td>
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<td>Music City Rickshaw</td>
<td>Pedi-Cabs</td>
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<td>Nashville Pedal Tavern</td>
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<td>Sprocket Rocket</td>
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<td>JoyRide</td>
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<td>Cruzzin’</td>
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<td>Southern Comfort Carriage</td>
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<td>Cumberland Carriage Tours</td>
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<td>American Melody Carriages</td>
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<td><strong>Total</strong></td>
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## Current Operations of Slow Moving Vehicles in Nashville

<table>
<thead>
<tr>
<th>Horse-Drawn Carriages  (Ch. 12.54)</th>
<th>License Company</th>
<th>License Drivers</th>
<th>Regulate Routes/Zones</th>
<th>Regulate Times</th>
<th>Number Permitted Companies</th>
<th>Number Permitted Vehicles</th>
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Not just happening in Nashville....
Other Vehicles in Nashville
Currently Unregulated by Metro Nashville

- Nashville Party Barge
- Nashville Tractor
- Off the Wagon Tours
- The Sound Nashville Music Tour
- Old Town Trolley Tours
- Gray Line Tours

- Nashville’s Party Porch
- Jack’d Up Nashville
- NashTrash Tours
- Redneck Comedy Bus Tour
- Music City Rollin’ Jamboree

- Honky Tonk Party Express
- Ultimate Party Bus
- Kooter Ray’s
- Nashville Food Adventure
- Music City Brew Tours

- Platform/Open Air Party-Vehicles*
- Ultimate Party Bus
- Kooter Ray’s
- Nashville Brews Cruise

Sightseeing/Tour Vehicles
Growing Concerns
Impeding Safety
Traffic Flow
Noise Increasing Conflicts
## Traffic & Safety

### Average Travel Speed Through Intersection

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Average Travel Speed Through Intersection</th>
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<tbody>
<tr>
<td>Pedal Carriage</td>
<td>5.7 mph</td>
</tr>
<tr>
<td>Pedi-Cab</td>
<td>7.2 mph</td>
</tr>
<tr>
<td>Horse Carriage</td>
<td>3.8 mph</td>
</tr>
<tr>
<td>Low-Speed Vehicle</td>
<td>13.6 mph</td>
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<tr>
<td>Motor Vehicle</td>
<td>16.5 mph</td>
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</table>

### Kinetic Energy (ft-lbs) at Different Speeds

<table>
<thead>
<tr>
<th>Vehicle Weight (lbs.)</th>
<th>25 mph</th>
<th>35 mph</th>
<th>45 mph</th>
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<td>3,000</td>
<td>63,021</td>
<td>123,520</td>
<td>204,187</td>
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</tbody>
</table>

### Figure 8-1: Deviation from Average Speed vs. the Collision Rate (Solomon Curve)

Collision rate (per 100 million vehicle miles)

- Variation from average speed, mph
- Collision rate

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**Kinetic Energy Associated with Increasing Speed**

- **Pedal Carriage**: 5.7 mph
- **Pedi-Cab**: 7.2 mph
- **Horse Carriage**: 3.8 mph
- **Low-Speed Vehicle**: 13.6 mph
- **Motor Vehicle**: 16.5 mph

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**Vehicle Weight (lbs.)**

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<tr>
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<th>Kinetic Energy (ft-lbs)</th>
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</table>
# 2017 Traffic Counts

(April & May 2017 from 3:00 PM to 7:00 PM)

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>Pedicab</th>
<th>Pedal Carriage</th>
<th>Horse Carriage</th>
<th>Low-Speed Vehicle</th>
<th>Tour Bus</th>
<th>Motor Vehicles</th>
<th>Percent Slow Moving Vehicle</th>
<th>Percent Tour Bus</th>
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<tr>
<td>Peak Hour Times - PM (4 to 6 PM)</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>10</td>
<td>80</td>
<td>11,680</td>
<td>0.1%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Non-Peak Hour Times - PM (3 to 4 PM &amp; 6 to 7 PM)</td>
<td>2</td>
<td>9</td>
<td>3</td>
<td>69</td>
<td>70</td>
<td>6,198</td>
<td>1.3%</td>
<td>1.1%</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>Pedicab</th>
<th>Pedal Carriage</th>
<th>Horse Carriage</th>
<th>Low-Speed Vehicle</th>
<th>Percent Slow Moving Vehicle (Average)</th>
<th>Percent Slow Moving Vehicle (High)</th>
<th>Hourly Slow Moving Vehicle (High)</th>
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</thead>
<tbody>
<tr>
<td>Non-Peak Hour Times - PM (3 to 4 PM &amp; 6 to 7 PM)</td>
<td>2%</td>
<td>11%</td>
<td>4%</td>
<td>83%</td>
<td>1.3%</td>
<td>4.2%</td>
<td>27</td>
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</table>

**Time of Day Rules** (Monday through Friday)

All SMVs: Prohibited Operation between 7-9 a.m. and 4-6 p.m.

Horse Carriage: Only after 6 p.m.
Low-Speed Vehicles (LSVs)

NATIONALLY
• Approved Federally (NHTSA) in 1998
• Envisioned to be used in protected environments (gated communities and campus settings)

TENNESSEE LAW (TCA 55-1-122 & TCA 55-8-191)
• "Low speed vehicle" means any four-wheeled electric or gasoline vehicle, excluding golf carts, whose top speed is greater than twenty miles per hour (20 mph) but not greater than twenty-five miles per hour (25 mph), including neighborhood electric vehicles. LSVs must comply with the standards in 49 CFR 571.500.

• A low speed vehicle as defined in § 55-8-101 may be operated only on streets where the posted speed limit is thirty-five miles per hour (35 mph) or less. This subdivision (a)(1) does not prohibit a LSV from crossing a road or street at an intersection where the road or street has a posted speed limit of more than thirty-five miles per hour (35 mph).

• A county or municipality may prohibit the operation of LSVs on any road under its jurisdiction if the governing body of the county or municipality determines that the prohibition is necessary in the interest of safety.

• The department of transportation may prohibit the operation of LSVs on any road under its jurisdiction if it determines that the prohibition is necessary in the interest of safety.

Source: Insurance Institute for Highway Safety, Highway Loss Data Institute
### Review of Other Cities

<table>
<thead>
<tr>
<th>Allow/Regulate</th>
<th>Pedal Taverns</th>
<th>Pedicabs</th>
<th>Horse Carriages</th>
<th>LSV</th>
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<tr>
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Additionally, Time of Day Rules
Prohibited Operation between 7:00-9:00 a.m. and 4:00-6:00 p.m. Monday through Friday

Low-Speed Vehicles
Current Service Area

Prohibited Routes
- Interstate System
- West End Ave
- Broadway (upper)
- Charlotte Ave
- Church Street
- 21st Ave
- KVB/Shelby Ave
- James Robertson Pkwy
- Rosa L Parks Blvd
Destinations

- Hotels, Bars, & Tourist Destinations
Roadway Characteristics

Greater Consideration

- Roadway Posted Speeds
- Number of Lanes
- Traffic Volumes
Low-Speed Vehicles

- Restrict Operations (Options)
  - *Reaffirm roadways prohibited* (speed, volume, etc.) or *restrict to designated routes*
  - *Could further limit operations by prohibiting tours*

- Prohibit Restriction of Traffic Flow (*i.e., no stopping on routes for tours, already provisions for loading/unloading*)

- Monitor/Enforce Operations (*Require GPS units on vehicles*)

- Enforcement/Education of Parking
  - *Passenger Loading vs Freight Loading - Unloading/Loading of passengers must transpire within 3 minutes (according to Passenger Curb Loading Zone regulations – Freight is 30 minutes)*

- Add Excessive Noise Provision (*similar to Pedal Carriages*)

- Ensure LSV Comply with Equipment Requirements (*NHTSA Standards: headlamps, mirrors, seatbelts, etc.*)

- Enforce Alcohol Restrictions for Passengers

- Maintain Existing Permit Levels - 56
Low-Speed Vehicles

PRELIMINARY FINDINGS/RECOMMENDATIONS
Pedal Carriages

- Restrict Routes - Limit routes similar to LSV, but allow to request additional areas or routes with TLC approval
- Consider Requiring Motor-Assist Capabilities
- Enforcement of Noise Restrictions
- Maintain Existing Permit Levels - 19
Pedal Carriages

Downtown
Pedal Carriages

Midtown & the Gulch
Pedicabs

- Consider Requiring Motor-Assist Capabilities
- Consider Adding Noise Restrictions Similar to Pedal Carriages
- Consider Adding Alcohol Provisions Similar to LSVs
- Maintain Existing Permit Levels - 23
Horse-Drawn Carriages

Issues/Concerns
- Traffic Conflicts
- Stand Location
- Limitation of Downtown Streets

Important Aspects to Consider
- Topography of Downtown Streets
- Desire for Visibility
- Need for Popular Destinations
Horse-Drawn Carriages

ANALYSIS

Slope Concerns

Undesirable

Safety
Horse-Drawn Carriages

**PRELIMINARY FINDINGS/RECOMMENDATIONS**

- **Adjacent to busy intersection**
- **Sometimes queues spillback onto Broadway**
- **Availability of space encourages competition and unsafe operations**
- **Occupies valuable on-street parking and loading space**

### Desired Routes/ Destinations

- **Route Options**
  - Existing Stand
  - Potential Stand Location

- **Broadway**

- **1st Avenue South**

- **Less queuing issues**
- **Currently underutilized**
- **Still maintains high visibility for tourists**
- **Could potentially lease space to carriage companies as a revenue generator**
Horse-Drawn Carriages

Additional Recommendations

- Limit Number of Carriages (per stand or on street)
- Employ the use of staff to manage carriage stands
  - Metro or Downtown Partnership Employee
  - Would treat like a taxi stand with first-in-first-out queueing model
  - Would help regulate flow of carriages into downtown traffic (e.g., one carriage departs every 15 minutes) and oversee other TLC regulations
- Revise Current Route & Consider Additional Routes
  - TPAC/Courthouse Area
  - Bicentennial Mall
  - Stadium/East River
- Maintain Existing Permit Levels - 17
Horse-Drawn Carriages
Additional Horse-Drawn Carriage Routes

Limited Use Routes
- Friday, Saturday & Sunday
- Coordination with Events
Shifting Gears

Shared Active Transportation
Dockless Transportation
Dockless On-Demand Personal Mobility
Dockless Mobility
Shared Urban Mobility
Shared Mobility
Since January 2017

- **Bird** – Scooters
- **GOAT** – Scooters
- **JUMP** – Bicycles
- **Pace** – Bicycles
- **Lime** – Bicycles & Scooters
- **Ofo** – Bicycles
- **Skip** – Scooters
- **Spin** – Bicycles & Scooters
- **Mobike** – Bicycles
- **Vbikes** – Bicycles
Not necessarily new...but technology & investment levels are...
Issues

- Regulatory Framework Not In Place
  - Oversight and Operations
  - Application Requirements
  - Number of Permits/Fleet Size
  - Service Area, Hours of Operation
  - Fee Structure
  - Equipment Standards/Requirements
  - Insurance Requirements

- Other Issues & Concerns
  - Parking
  - Obstruction of Pedestrian Access/Walkways
  - Sidewalk Use
  - Damaged and/or Abandoned Devices (Clutter)
  - Access/Equity
  - Potential Impact on Existing Bike Share Programs
Opportunities

- First Mile/Last Mile Connections
- Data Sharing
- Equity & Increased Mobility Options
- Education & Awareness
- Use of Technology to Manage Use & Parking
Stay Tuned

Memphis – Began Pilot Program in June

Nashville – Working on Pilot Program

Other Pilots Underway
- Austin
- Charlotte
- Chicago
- Denver
- Minneapolis
- San Francisco
- Santa Monica
- Washington, DC