AADT Allocator Process

Purpose
The Florida Department of Transportation Safety Office is required to identify and address traffic crashes on public roads that are maintained by state or local entity. However, data for local roads is not always complete; therefore, the FDOT Safety must use innovative approaches to account for this shortfall. The AADT Allocator process was developed in order to better estimate traffic volumes (AADT)\(^1\) for all streets and roads in Florida. The underlying principle of the Allocator process is to use the results of the Turnpike State Model (TSM) statewide transportation model and apply it to all roads and streets in Florida. This document describes the Allocator process.

Methodology
AADT Allocator process uses existing data from a variety of sources to get a “best estimate” for AADT volumes on Target Roads (roads that have no FDOT estimates for AADT).

1. Datasets
   a. A Statewide parcel layer published annually from Department of Revenue (DOR) is used to determine number of housing units along target segments.
   b. Data from InfoUSA is used to determine where there are employment sites and the number of persons employed. InfoUSA data is represented as a point feature which is associated with a parcel.
   c. Transportation Statistics Office (TSO) within FDOT Systems Planning publishes a shapefile (AADT.shp) that is derived from the observed AADT (official counts) stored in the Roadway Characteristics Inventory (RCI).
   d. Turnpike State Model (TSM) is a statewide transportation planning model developed by Florida Turnpike Enterprise. TSM provides estimated AADT values generally for all Florida’s major roadways as well as total number of trips by Traffic Analysis Zones (TAZ).
   e. Navteq Street Network is a commercial available street GIS database. Navteq Street Network provides detail street level linear GIS information.

\(^1\) AADT is used to measure exposure (how much or less traffic contributes to the overall safety function of the roadway).
Figure 1 AADT Allocator Process (Flow Chart)
2. GIS and Database Processes: street segments in the Navteq Street Network are divided into two categories (Tier 0 and Tier 1-N):
   a. Tier 0 segments relate to TSO official FDOT AADT or a TSM segment. For the segments, we have an observed or estimated AADT and they are assigned in the following manner:
      i. TSO AADT (observed) values are transferred to Navteq street network using the Roadway ID, Begin Mile post, and end mile post obtained from the AADT.shp.
      ii. Turnpike State Model is used to provide estimated AADT values into the Navteq Street Network that may not have been captured by the TSO AADT.shp dataset.
   b. Tier 1 – N segments are non-Tier 0 segments; they are located inside a TAZ zone and are categorized within a county by a tier value calculated by the Allocator Process. Each TAZ is analyzed separately as a unit and is categorized. Note: all segments within a county have a Roadway ID\(^2\) or Pseudo Roadway ID\(^3\); and segments with the same roadway ID are called a route. Tier values are determined by the following:
      i. Segments that touch a tier 0 segments or a TAZ zone boundary were assigned a tier value of 1, added to tier 1 segments list, and taken out of the tier assigning process.
      ii. Routes that touch a tier 1 route are assigned a tier value of 2, added to tier 2 segments list, and taken out of the tier assigning process.
      iii. The process repeats until every route and segment within the TAZ is assigned a tier value.

3. Assigning Housing Units to Routes
   The street network was overlaid with the DOR parcel shapefile. The street network segments were dissolved on Roadway ID, buffered and intersected with the parcel polygons. Each parcel polygon is tagged with number of housing units. This process generated a list of routes and the sum of housing units.

4. Assigning Employment Units to Routes
   A dataset was obtained from InfoUSA with employment points that were geocoded. These points were intersected with the DOR parcels. Each of these points has a total number of employees. The intersection of the “dissolved by roadway Id” and buffered polygons and parcels also generated a list of routes and the sum of employees.

5. Converting housing units and number of employees to trips
   The total number of housing units and employees within each TAZ were summed. The Turnpike State Model provided a table of number of trips per TAZ. This information generated a trip factor. (Housing unit or employee = x.x trips). Using the trip factor, each route within a TAZ was assigned a volume ((Housing units + # of employees)*trip factor).

6. Using the Tier 1-N structure to assign AADT

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\(^2\) A composite number used by FDOT as an identifier for roadway segments that is made up of a county code, a road section code and a road sub-section code.

\(^3\) A composite number used by FDOT Safety Office as an identifier; it’s used in addition to FDOT Roadway ID numbers and is distinguished by a letter A in the 3 digit placement of the ID.
The Allocator Process maintains a list of how each route is connected to other routes. The final volume of a route is equal to the trips for the route plus the accumulation of trips from higher tiered routes that are connected to the route.

7. Final AADTS

AADTs within a TAZ were developed for routes. Remember that many segments can make up a route. Each route is defined by the “Roadway” field. The final AADTs were stored in the field “AllocatorM” and “FinalVol”

Build Block Datasets

<table>
<thead>
<tr>
<th>Turnpike State Model</th>
<th>Defines tier 0 segments. Defines which segments already have an AADT and which segments/routes need an AADT. Generated by Turnpike State Model and was transferred to the Navteq street network</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT.shp</td>
<td>FDOT AADTs</td>
</tr>
<tr>
<td>Parcels.shp</td>
<td>DOR parcels</td>
</tr>
<tr>
<td>InfoPts.shp</td>
<td>InfoUSA employment points</td>
</tr>
<tr>
<td>FDOT LRS files</td>
<td>Statewide Navteq street network tagged with Roadway Id, Begin and End Mile Post by the FDOT Safety Office.</td>
</tr>
</tbody>
</table>