TWO VARIABLE COST ALLOCATION CALCULATOR
EXCEL VERSION WEBINAR
PRESENTERS

Todd Hansen, AICP
Assistant Research Scientist
Transit Mobility Program
Texas A&M Transportation Institute

Rich Garrity
Senior Associate RLS
& Associates, Inc.
Wilmington, North Carolina
PRESENTATION OVERVIEW

- Importance of cost allocation
- Discussion of two-variable methodology
- Overview of the Excel application version
- Stages of data input for the application
- Allocation outputs and reports
- Further uses of results for transit agencies
WHAT IS THE CALCULATOR?

- Application tool to help transit agencies accurately allocate costs
- Built on both Microsoft Excel and Microsoft Access, with the same functionality
- Requires no special skills in Excel to use the calculator tool
- Relies on standard transit agency data – no new data collection is necessary
- Can be used to allocate cost to individual routes/services or groups of routes
  - Federal grant programs, contracts with human service agency, modes of service, purchased transportation, UZAs and geographic jurisdictions
WHY TWO-VARIABLES?

Transit costs will vary based both on time and distance

- Time measured by total vehicle hours
- Distance measured by total vehicle miles

Consider the following example:

- A route operates 11.25 revenue hours and 166 revenue miles per day
- A route operates 12.00 revenue hours and 166 revenue miles per day

**Do these two routes cost the transit agency the same to operate?**
**KEY DEFINITIONS**

- **Fully Allocated Cost**: represents the full cost of a transit route or service, including all costs incurred by the transit agency—both variable and fixed.

- **Variable Costs**: costs that are mainly a function of the amount of service provided (Ex. fuel, parts, and driver wages)

- **Fixed Costs**: costs that do not change with the amount of service provided (Ex. facility maintenance, administration salaries, computers)
  - **Direct Costs**: costs associated with assets and functions owned by the transit agency
  - **Indirect Costs**: indirect fixed costs are those associated with functions or assets utilized (but not directly managed by) the transit agency
ACCOUNTING METHODOLOGY

Two variable cost allocation by Vehicle Hours and Vehicle Miles

Variable Costs
- Allocated by Vehicle Hours and Miles
- Operations (excluding Fuel) by % hours
- Vehicle Maintenance and Fuel by % miles

Fixed Costs
- Allocated based on the % of variable costs
- Non-Vehicle Maintenance and Administration
APPLICATION METHODOLOGY—
FOUR-STEP PROCESS

1. Service Data
2. Financial Data
3. Operational Data
4. Allocate Costs
OVERVIEW OF EXCEL COMMANDS

- **Navigation** – Buttons on the Navigation Menu page or tabs at the bottom of the workbook
- **Saving Data** – Data entry pop-up menus actively save data when closed
- **Data Entry Menu** – Common action buttons in each menu:
  
  ![Add](Add) ![Clear](Clear) ![Delete](Delete) ![Save & Exit](Save & Exit)

- **Deleting Data** – Clear all records on the page with the trash can button
- **Exporting Data** – Export data on the page into PDF reports
- **Return to Start** – Finish and Back to Menu in each page to return to the Navigation Page.
NAVIGATION MENU

- Application opens on the Navigation Menu page
- Two options to move through the application:
  1. Use the buttons on the Navigation Menu page
  2. Use the tabs at the bottom of the Excel workbook
- Steps 1 through 3 must be completed in order before allocating costs in Step 4
Service Data —
Characteristics of the Routes and Services

- **Route / Service Name**: Given name of the service
- **NTD Mode**: Options include nine fixed-route and demand responsive travel modes
- **NTD Jurisdiction**: Options include Urbanized Area (UZA) or Rural Area (non-UZA). UZAs can be named by the user, and multiple UZAs are allowed
- **Service Type**: Options include Directly Operated or Purchased Transportation
- **Sponsored Type**: Options include General Public Service or Sponsored
- **Funding Source**: Options include Section 5307 Urbanized, Section 5311 Non-Urbanized, Section 5310 Elderly & Disabled, or other sources

Users are required to enter information for NTD mode, route/service name, NTD jurisdiction, service type, sponsored type, and federal funding source. NTD mode, NTD Jurisdiction, service type, sponsored type, and federal funding labels will come from a dropdown list, while route/service names will be user-defined. Users can overwrite NTD jurisdiction names for UZAs and labels for federal funding programs. This application allows users to categorize routes/services by different UZAs or the Non-UZA area. Users can choose to distinguish a route/service further with user-defined information about its geographic area.

Click to Enter Service Data
Finish and Back to Menu
**Service Data — Characteristics of the Routes and Services**

**Data Entry Commands**

- Click the **Add** button to add the route/service to the Data List.

- Click the **Clear** button to clear all existing route/services in the Data List.

- Click on the **Delete** button to delete a route/service from the Data List.

- Click the **Save & Exit** button to exit the Data Entry Menu.
Service Data — Characteristics of the Routes and Services

Some route/service characteristics can be customized from the preset options:

**Route/Service Name**
To allocate costs for a route that operates in two different areas, input the route name twice with an applicable sub-description.
- Ex. “Route 1 – Rural” and “Route 1 – Urban”

**NTD Jurisdiction**
Name the UZA or write-in another geographic area. Click within the window, then type in the name applicable to the route.
- Ex. “UZA - Waco” or “McLennan County”

**Federal Funding Source**
Write in a custom funding source name. Click within the window, then type in the name of the main funding source for the route.
- Ex. “Head Start” or “Local Contract”
Service Data —
Characteristics of the Routes and Services

Step 1: Enter Service Data

Required
- Route / Service Name: Route 1
- NTD Mode: Demand Response
- NTD Jurisdiction: Rural Area (non-UZA)

Service Type: Directly Operated
Sponsored Type: General Public Service
Funding Source: 5311 Non-Urbanized

Add
Clear
Delete
Save & Exit
Financial Data — Expenses information from Chart of Accounts

- **Choose USOA Object Class**: Select the appropriate USOA Object Class for the expense from the available options.

- **Subclass**: Select the appropriate subclass for the expenses from the available options, corresponding with the use of the expense for the transit agency.

- **Enter Amount ($)**: Write in the amount of the expense using numeric text only; no commas are necessary.
Financial Data — Expenses information from Chart of Accounts

Data Entry Commands
- Click the Add button to add the cost entry to the Data List.
- Click the Clear button to clear all existing cost entries in the Data List.
- Click on the Delete button to delete a cost/entry from the Data List.
- Click the Save & Exit button to exit the Data Entry Menu.
Financial Data — Expenses information from Chart of Accounts

Cost Applicability

- For each cost entry, choose with routes/services which are applicable for the expense

- Use the checkboxes to select applicable routes/services

- Click the Select All box to select all routes/services

- Click the Select All box again to unselect all routes/services

- Checkboxes reset after each Add
Financial Data — Expenses information from Chart of Accounts

Step 2: Enter Financial Data

Choose USOA Object Class: Salaries and Wages
Enter Amount ($): $100,000
Select Applicable Service: Operator

Data List:
- USOA Code: 5011.1, USOA Object Class: Salaries and Wages, Subclass: Operator, Function: VehOps, Amount: $100,000
- USOA Code: 5011.1, USOA Object Class: Salaries and Wages, Subclass: Operator, Function: VehOps, Amount: $100,000

Add, Clear, Delete, Save & Exit
Operational Data — Information for each route/service

- **Revenue Hours**: Number of revenue hours for the route/service
- **Vehicle Hours**: Number of total vehicle hours for the route/service
- **Revenue Miles**: Number of revenue miles for the route/service
- **Vehicle Miles**: Number of total vehicle miles for the route/service.

*Revenue hours/miles must be less than or equal to vehicle hours/miles *

- **Passenger Trips**: Number of passenger trips for the route/service.
Operational Data — Information for each route/service

Data Entry Commands
- Click the **Add** button to add the route/service to the Data List
- Click the **Clear** button to clear all existing routes/services in the Data List
- Click on the **Delete** button to delete a route/service from the Data List
- Click the **Save & Exit** button to exit the Data Entry Menu

<table>
<thead>
<tr>
<th>Revenue Hours</th>
<th>Revenue Miles</th>
<th>Passenger Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Hours</td>
<td>Vehicle Miles</td>
<td></td>
</tr>
</tbody>
</table>

Would like further allocation by sponsor?
Operational Data — Information for each route/service

Suballocation for Shared Ride Demand Responsive
Uses passenger hours and passenger miles to suballocate costs for modes indicated as Sponsored Service

For a sponsored service, click the check box Would like further allocation by sponsor?

- **Name**: Name of the sponsored service
- **Passenger Hours**: Number of passenger hours for the sponsored service
- **Passenger Miles**: Number of passenger miles for the sponsored service
- **Sponsored Trips**: Number of passenger trips for the sponsored service.
Operational Data — Information for each route/service

Step 3: Enter Operational Data

Select Applicable Service:

<table>
<thead>
<tr>
<th>NTD Mode</th>
<th>Route / Service Name</th>
<th>NTD Jurisdiction</th>
<th>Service Type</th>
<th>Sponsored Type</th>
<th>Funding Program</th>
<th>Service ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand Response</td>
<td>Route 1</td>
<td>Rural Area (non-UZA)</td>
<td>Directly Operated</td>
<td>General Public Service</td>
<td>5311 Non-Urbanized</td>
<td>1</td>
</tr>
<tr>
<td>Motorbus</td>
<td>Route 2</td>
<td>Urbanized Area (UZA)</td>
<td>Directly Operated</td>
<td>General Public Service</td>
<td>5307 Urbanized</td>
<td>2</td>
</tr>
<tr>
<td>Volunteer Driver Program</td>
<td>Route 3</td>
<td>Rural Area (non-UZA)</td>
<td>Directly Operated</td>
<td>Sponsored</td>
<td>5311 Non-Urbanized</td>
<td>3</td>
</tr>
</tbody>
</table>

Revenue Hours: 400
Vehicle Hours: 500
Revenue Miles: 10000
Vehicle Miles: 12000
Passenger Trips: 1000

Add
Clear
Delete
Save & Exit
## Operational Data

Information for each route/service

### Step 3: Enter Operational Data

<table>
<thead>
<tr>
<th>NTD Mode</th>
<th>Route / Service Name</th>
<th>NTD Jurisdiction</th>
<th>Service Type</th>
<th>Sponsored Type</th>
<th>Funding Program</th>
<th>Service ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand Response</td>
<td>Route 1</td>
<td>Rural Area (non-UZA)</td>
<td>Directly Operated</td>
<td>General Public Service</td>
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<tr>
<td>Motorbus</td>
<td>Route 2</td>
<td>Urbanized Area (UZA)</td>
<td>Directly Operated</td>
<td>General Public Service</td>
<td>5307 Urbanized</td>
<td>2</td>
</tr>
<tr>
<td>Volunteer Driver Program</td>
<td>Route 3</td>
<td>Rural Area (non-UZA)</td>
<td>Directly Operated</td>
<td>Sponsored</td>
<td>5311 Non-Urbanized</td>
<td>3</td>
</tr>
</tbody>
</table>

| Revenue Hours     | 1000                 | Revenue Miles          | 50000              | Passenger Trips | 500                  |
| Vehicle Hours     | 1000                 | Vehicle Miles          | 50000              |                |                      |

Would like further allocation by sponsor?

### Data List

<table>
<thead>
<tr>
<th>Route / Service Nbr</th>
<th>Revenue Hours</th>
<th>Vehicle Hours</th>
<th>Revenue Miles</th>
<th>Vehicle Miles</th>
<th>Passenger Trips</th>
<th>Sponsor</th>
<th>Passenger Hours</th>
<th>Passenger Miles</th>
<th>Sponsored Trips</th>
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</thead>
<tbody>
<tr>
<td>Route 1</td>
<td>400</td>
<td>500</td>
<td>10,000</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Route 2</td>
<td>600</td>
<td>750</td>
<td>12,000</td>
<td>14,000</td>
<td>800</td>
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<td>Route 3</td>
<td>1,000</td>
<td>1,000</td>
<td>50,000</td>
<td>50,000</td>
<td>500</td>
<td>Local</td>
<td>800</td>
<td>35,000</td>
<td>400</td>
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<tr>
<td>Route 3</td>
<td>1,000</td>
<td>1,000</td>
<td>50,000</td>
<td>50,000</td>
<td>500</td>
<td>Veterans</td>
<td>400</td>
<td>20,000</td>
<td>100</td>
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</table>

Add | Clear | Delete | Save & Exit
Allocate Costs —
*Putting the three data sets together*

Allocate expenses information at the push of a button once data has been entered in the previous steps.

- Click on the **Click to Allocate Costs** button at the top of the page.
- Click on the **Generate Summary Report** button to navigate to the summary report tab and view the cost allocation tables.
Allocate Costs —
Putting the three data sets together

To view reports, click on the “Generate Summary Report” button

- Application will navigate to the summary report tab with cost allocation tables
- Separate tables are generated for costs by each group of routes/services
- Use the scroll bar at the bottom of the Excel workbook to view each table for different groups of routes
- To export a PDF report of all records on the page, click the Print to PDF button

<table>
<thead>
<tr>
<th>NTD Mode</th>
<th>Cost Allocation</th>
<th>Performance Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Administration</td>
<td>Service Effectiveness Measures</td>
</tr>
<tr>
<td></td>
<td>Non-Vehicle Maintenance</td>
<td>Cost Efficiency Measures</td>
</tr>
<tr>
<td></td>
<td>Vehicle Maintenance</td>
<td>Cost Effectiveness Measure</td>
</tr>
<tr>
<td></td>
<td>Vehicle Operations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vehicle Operations - Fuel</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commuter Bus</td>
<td>$37,808</td>
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<tr>
<td></td>
<td>$29,423</td>
<td>2.98</td>
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<td>$102,341</td>
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<td>$141,719</td>
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<td>$433,547</td>
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<tr>
<td></td>
<td>2.83</td>
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<tr>
<td></td>
<td>0.12</td>
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<tr>
<td>Demand Response</td>
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<td>$173,256</td>
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<td>$14,365</td>
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<td>$324,889</td>
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<td></td>
<td>0.58</td>
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<tr>
<td></td>
<td>0.03</td>
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<tr>
<td>Motorbus</td>
<td>$228,402</td>
<td>62.88</td>
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<td>$123,178</td>
<td>3.65</td>
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<td>$1,949,046</td>
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<td></td>
<td>6.77</td>
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<td></td>
<td>0.40</td>
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<td>Vanpool</td>
<td>$13,184</td>
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<td></td>
<td>$7,606</td>
<td>2.83</td>
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<tr>
<td></td>
<td>$29,388</td>
<td>70.04</td>
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<tr>
<td></td>
<td>$62,233</td>
<td>2.83</td>
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<td>$119,061</td>
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<td></td>
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<tr>
<td></td>
<td>0.05</td>
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<tr>
<td>Total</td>
<td>$219,745</td>
<td>66.05</td>
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<tr>
<td></td>
<td>$175,895</td>
<td>3.60</td>
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<td>$48,851</td>
<td>53.62</td>
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<td></td>
<td>$1,521,852</td>
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<td>$2,820,943</td>
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<td>5.41</td>
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</tr>
<tr>
<td></td>
<td>0.29</td>
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</tbody>
</table>
Allocate Costs —
Putting the three data sets together

The Cost Allocation tab uses the data input into the previous three tabs to allocate variable and fixed costs. Users click the “Click to Allocate Costs” button to allocate expenses by vehicle hours and miles data (or passenger hours and miles for shared ride demand responsive service), and then click the “Generate Summary Report” button to generate the report. Users must re-click the “Click to Allocate Costs” and “Generate Summary Report” buttons if any data point in the previous three tabs is changed.

**Cost Allocation**

<table>
<thead>
<tr>
<th>NTD Mode</th>
<th>Operational Cost by Transit Function</th>
<th>Total Allocated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand Response</td>
<td>$5,576</td>
<td>$3,717</td>
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<tr>
<td>Motorbus</td>
<td>$7,471</td>
<td>$4,981</td>
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<tr>
<td>Volunteer Driver Program</td>
<td>$16,953</td>
<td>$11,302</td>
</tr>
<tr>
<td>Total</td>
<td>30,000</td>
<td>20,000</td>
</tr>
</tbody>
</table>
RESULTS AND OUTCOMES

- Create a consistent, equitable, transparent allocation process
- Report data to NTD / prepare data for State reporting
- Know cost of services and measure performance
- Use for planning and pricing services
- Understand costs by funding source
- Prepare information for monthly requests for reimbursements
- Automating accounting and financial reporting processes
- Budget future operating expenses and funding need
AVAILABLE ONLINE

- Today’s PowerPoint
- Today’s webinar recording
- Both application versions
- Instruction manual
- Data results Excel workbook
UPCOMING ANNOUNCEMENTS

Upcoming Financial Management Book
to published by National RTAP

National RTAP Conference
September 15-18, 2019
DoubleTree by Hilton
Portland, Oregon

https://www.nationalrtap.org/News/2019-Conference
In partnership with Oregon Department of Transportation
CONTACT INFORMATION

Todd Hansen
Texas A&M Transportation Institute
t-hansen@tti.tamu.edu

Rich Garrity
RLS & Associates, Inc.
richg@cris.com