TWO VARIABLE COST ALLOCATION CALCULATOR
ACCESS VERSION WEBINAR
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 Access 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 Access to use the calculator tool
- Relies on standard transit agency data – no new data collection is necessary
- Can be used to allocate costs 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 ACCESS COMMANDS

- **Navigation** – Buttons on the Navigation Menu to open tabs
- **Saving Data** – Application saves data as you enter it
  - Also has save buttons throughout the application tabs
- **Status** – shows the total number of data points currently entered
- **Data Selection** – Multiple ways to select and edit data
  1. Move between selections using the **Left and Right Arrow** buttons
  2. Click on a selection in the data list on the page
OVERVIEW OF ACCESS COMMANDS

- **Deleting Data** – multiple methods to delete data in the database
  - Selecting a record and click the Delete button
  - Clear all records with the **Reset Data for a New Year’s Allocation** button on the Navigation Menu
  - Clear sets of records with the **Delete Data Batches** button on the Navigation Menu

- **Return to Start** – Click the **Save & Close Form** button to return to the Navigation Menu

**Software License**

Access application can be used with a current software license by downloading the Microsoft Access 2016 Runtime extension online.
**NAVIGATION MENU**

- Application opens on the Navigation Menu page
- Buttons link to each step of the allocation process
- Steps 1 through 3 be completed in order before allocating costs in Step 4
- Menu also includes options for management of the database

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1:</strong> Enter Service Data</td>
<td>Enter your list of services (e.g., routes and programs).</td>
<td>0 service(s) entered</td>
</tr>
<tr>
<td><strong>Step 2:</strong> Enter Financial Data</td>
<td>Enter your operating expense data.</td>
<td>0 expense(s) entered Total value: $0</td>
</tr>
<tr>
<td><strong>Step 3:</strong> Enter Operational Data</td>
<td>Enter operational data for each service (e.g., vehicle hours and miles)</td>
<td>0 service(s) have complete operational data</td>
</tr>
<tr>
<td><strong>Step 4:</strong> Run Cost Allocation</td>
<td>Perform cost allocation. This may take a few seconds. <em>Note: you must re-run Step 4 if you change any data in Steps 1, 2, or 3</em></td>
<td>STOP! You need to complete Steps 1, 2, and 3 before running the cost allocation</td>
</tr>
<tr>
<td>View Reports</td>
<td>View cost allocation results. (Opens the reports menu.)</td>
<td>STOP Run Step 4 before viewing reports</td>
</tr>
</tbody>
</table>

**Database Management**

- Export Data
- Reset Data for a New Year's Allocation
- Delete Data Batches
- Exit
STATUS

- Shows the number of data records currently entered in Steps 1 through 3
- Updates automatically as records are edited in each tab.
- Status windows for Step 4 will state whether to “GO IF READY” to allocate cost information or “STOP” to go back to previous steps
- View Reports status shows if the reports are ready to view once costs are allocated
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
- **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
**Service Data —**  
*Characteristics of the Routes and Services*

**Data Editing Methods**

- **Edit A Route/Service** — navigate to the record using the **left arrow** and **right arrow** buttons or click on the route/service to highlight and edit the record.

- **Delete A Route/Service** — navigate to a record to highlight it, then click **Delete** button.

- Click the **Save & Add a New Service** button to save the route/service and reset the data entry blanks for the next entry.

- Once finished, click the **Save & Close Form** button to return to the Navigation 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**
Click the View / Edit Areas button to open the Service Areas, then edit the names of the UZA or add a new geographic area
- Ex. “UZA - Waco” or “McLennan County”

**Federal Funding Source**
Click the View / Edit Funding Prog. button to open the Funding Program tab. Type in the bottom row to name and code the new funding program.
- Ex. “Head Start” or “Local Contract”
Financial Data — Expenses information from Chart of Accounts

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

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

- **Amount Cost:** Write in the amount of the expense using numeric text only; no commas are necessary
**Financial Data ——**

**Expenses Information from Chart of Accounts**

**Data Editing Methods**

- **Edit A Cost Entry**— navigate to the record using the **left arrow** and **right arrow** buttons or click on the cost entry to highlight and edit the record

- **Delete A Cost Entry** — navigate to a record to highlight it, then click **Delete** button

- Click the **Save & Add a New Cost Entry** button to save the cost entry and reset the data entry blanks for the next entry

- Once finished, click the **Save & Close Form** button to return to the Navigation Menu
Financial Data —
Expenses information from Chart of Accounts

Cost Applicability

- For each cost entry, choose the routes/services to which the cost applies

- Click the multiple-choice button in the Cost Applicability box that corresponds with the service; then the appropriate dropdown options will appear

- If the expense is applicable to all routes use the “All Services” choice
Financial Data —  
Expenses information from Chart of Accounts

View All Cost Entries

- Within the Cost Entries List tab, click the View All Cost Entries button
- Allows view of the existing cost entries by each separate expense entry rather than aggregated expenses by transit cost function
- The bottom of the form displays the grand total of expenses entered

Cost Entries List

<table>
<thead>
<tr>
<th>Edit</th>
<th>Cost ID</th>
<th>USOA Object Class</th>
<th>USOA Sub Class</th>
<th>Annual Cost</th>
<th>Cost Applies to</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>Salaries and Wages</td>
<td>5011.1</td>
<td>Operator</td>
<td>$330,000.00</td>
<td>All</td>
</tr>
<tr>
<td>25</td>
<td>Salaries and Wages</td>
<td>5011.2</td>
<td>Dispatcher</td>
<td>$170,000.00</td>
<td>All</td>
</tr>
<tr>
<td>26</td>
<td>Salaries and Wages</td>
<td>5011.4</td>
<td>Vehicle Maintenance</td>
<td>$170,000.00</td>
<td>All</td>
</tr>
<tr>
<td>27</td>
<td>Salaries and Wages</td>
<td>5011.5</td>
<td>Non-Vehicle Maintenance</td>
<td>$80,000.00</td>
<td>All</td>
</tr>
</tbody>
</table>
Financial Data — Expenses information from Chart of Accounts

Summary of Entered Costs

<table>
<thead>
<tr>
<th>Code Group</th>
<th>Title</th>
<th>Vehicle Operations</th>
<th>Fuel</th>
<th>Vehicle Maintenance</th>
<th>Non-Vehicle Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>$100,000.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 Editing Methods

- **Edit A Route/Service** – navigate to the record using the **left arrow** and **right arrow** buttons or click on the route/service to highlight and edit the record

- Click the **Save & Go to Next Service** button to save the route/service and reset the data entry blanks for the next entry

- Once finished, click the **Save & Close Form** button to return to the Navigation Menu
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

- **Sponsor**: Name of the sponsored service. In the Sponsored Services Data tab, first click Edit/View Sponsors to enter names of sponsored routes.

- **Passenger Hours**: Number of passenger hours for the sponsored service

- **Passenger Miles**: Number of passenger miles for the sponsored service

- **Passenger Trips**: Number of passenger trips for the sponsored service
## Operational Data

*Information for each route/service*

<table>
<thead>
<tr>
<th>Route / Service</th>
<th>Mode</th>
<th>Revenue Hours</th>
<th>Vehicle Hours</th>
<th>Revenue Miles</th>
<th>Vehicle Miles</th>
<th>Passenger Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route 1</td>
<td>Demand Response</td>
<td>400</td>
<td>500</td>
<td>20,000</td>
<td>24,000</td>
<td>1,500</td>
</tr>
<tr>
<td>Route 2</td>
<td>Motor Bus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Route 3</td>
<td>Vanpool</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>400</td>
<td>500</td>
<td>20,000</td>
<td>24,000</td>
<td>1,500</td>
</tr>
</tbody>
</table>
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 **Step 4: Run Cost Allocation** button on the Navigation Menu. Allocation will run and navigation will go to Cost Allocation Results tab
  - Or click **View Reports** button to open the Reports tab

- Choose the Cost Allocation Type and Output format type before clicking **View Results**
Allocate Costs —

Putting the three data sets together

View Reports Options

- **View Reports**: opens a tab on the fully allocated cost and performance measures for the selected option.

- **Export Report (PDF)**: launches a prompt to save a PDF version of the report for the selected option.
Allocate Costs —

Putting the three data sets together

View Reports Options

- **View Results Table**: opens a tab on the fully allocated costs and performance measures in a table format rather than a report

<table>
<thead>
<tr>
<th>NTDMo</th>
<th>Sum Of Total Veh Ops</th>
<th>Sum Of Total Veh Ops Fuel</th>
<th>Sum Of Total Veh Main</th>
<th>Sum Of Total Gen Adm</th>
<th>Sum Of Total Non Veh</th>
<th>Sum Of Total Cost</th>
<th>Sum Of Pass Trips</th>
<th>Passengers per Revenue</th>
<th>Cost per Rev</th>
<th>Cost per Rev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commuter Bus</td>
<td>$241,719.27</td>
<td>$22,527.00</td>
<td>$102,980.56</td>
<td>$37,897.51</td>
<td>$28,423.13</td>
<td>$433,547.47</td>
<td>17,000</td>
<td>0.12</td>
<td>$72.26</td>
<td>$2.99</td>
</tr>
<tr>
<td>Demand Response</td>
<td>$185,983.97</td>
<td>$14,362.85</td>
<td>$68,290.33</td>
<td>$50,516.71</td>
<td>$20,792.35</td>
<td>$339,946.20</td>
<td>2,300</td>
<td>0.03</td>
<td>$84.99</td>
<td>$5.15</td>
</tr>
<tr>
<td>Motor Bus</td>
<td>$1,045,363.72</td>
<td>$96,760.26</td>
<td>$449,340.92</td>
<td>$228,401.68</td>
<td>$123,178.40</td>
<td>$1,943,044.99</td>
<td>210,000</td>
<td>0.40</td>
<td>$62.68</td>
<td>$3.66</td>
</tr>
<tr>
<td>Vanpool</td>
<td>$62,533.04</td>
<td>$6,349.89</td>
<td>$29,388.19</td>
<td>$13,184.10</td>
<td>$7,606.12</td>
<td>$119,061.34</td>
<td>1,900</td>
<td>0.05</td>
<td>$70.04</td>
<td>$2.83</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,535,600.00</strong></td>
<td><strong>$140,000.00</strong></td>
<td><strong>$650,000.00</strong></td>
<td><strong>$330,000.00</strong></td>
<td><strong>$180,000.00</strong></td>
<td><strong>$2,835,600.00</strong></td>
<td><strong>231,200</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Export Results Table (Excel)**: launches a prompt to save an Excel version of the allocation results table for the selected option
**Allocate Costs — Putting the three data sets together**

### Allocation Results by Mode

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand Response</td>
<td>$41,666.67</td>
<td>$10,549.45</td>
<td>$7,912.09</td>
<td>$5,466.20</td>
<td>$21,864.80</td>
<td>$87,459.21</td>
</tr>
<tr>
<td>Motor Bus</td>
<td>$66,666.67</td>
<td>$11,868.13</td>
<td>$8,901.10</td>
<td>$7,948.72</td>
<td>$31,794.87</td>
<td>$127,179.49</td>
</tr>
<tr>
<td>Vanpool</td>
<td>$41,666.67</td>
<td>$17,582.42</td>
<td>$13,186.81</td>
<td>$6,585.08</td>
<td>$26,340.33</td>
<td>$105,361.31</td>
</tr>
</tbody>
</table>

**Grand Total**

|                  | $150,000.00    | $40,000.00     | $30,000.00     | $20,000.00     | $80,000.00     | $320,000.00     |

Wednesday, May 8, 2019
Database Management

Resetting and deleting the database

Reset Data

Click the **Reset Data for a New Year’s Allocation** button to clear all financial data, operational data, and prior cost allocation results.

Delete Batches of Data

Click the **Delete Data Batches** button on the Navigation Menu to open the Delete Batches of Data tab.

*Clicking any option will show a prompt asking to confirm the deletion selection.*
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