

# **Version 9.0.0 - Calibration/Validation**

WFRC / MAG

# Mode Choice

The validation results for the Mode Choice portion of the model are shown in this section. The observed data comes from the Utah Transit Authority 2019 On-Board Survey as well as the 2012 Household Travel Survey.

## Mode Choice Constants

The mode choice constants within the model used to estimate mode shares are shown below:

**Table 1: Mode Choice Constants**

<IPython.core.display.HTML object>

```
// label: fig-mc-consts
// fig-cap: Mode Choice Constants
// echo: false
Inputs.table(transpose(constants))
```

<IPython.core.display.HTML object>

## Mode Share

The following figure provides an interactive view to understand the mode share by different modes, periods, and purposes between modeled and observed data.

**Figure 1: Mode share between model and observed by mode, period, and purpose.**

```
viewof plotSelect = Inputs.select(new Map(['Mode', 'Mode'], ['Motorized / Non-Motorized',
viewof periodSelect = Inputs.select(new Map(['Peak', 'PK'], ['Off-Peak', 'OK'], ['Daily'
```

```

viewof purposeSelect = Inputs.select(new Map(['Home-based Work', 'HBW'], ['Home-based Co

dataLT = transpose(dataLong)
filtered_data = dataLT.filter(function(dataL) {
  return plotSelect == dataL.Title &&
    periodSelect == dataL.Period &&
    purposeSelect == dataL.TripPurpose;
})

import {GroupedBarChart} from "@d3/grouped-bar-chart"
import {Legend, Swatches} from "@d3/color-legend"
import {howto, altplot} from "@d3/example-components"

```

## Plot

```

//https://observablehq.com/@d3/grouped-bar-chart
key = Legend(chart.scales.color, {title: "Data Source"})
chart = GroupedBarChart(filtered_data, {
  x: d => d.Mode,
  y: d => d.Percent,
  z: d => d.DataSource,
  yLabel: "Percent",
  yDomain: [0,1],
  zDomain: ['Model','Observed'],
  width,
  height: 500,
  colors: ["#376092", "#77933c"]
})

```

## Table

```

//| echo: false
Inputs.table(filtered_data)

```

## Boardings

<IPython.core.display.HTML object>

The following figure provides an interactive view to understand the transit boarding trips, linked trips, transfer ratios, and mode surveyed between modeled and observed data.

**Figure 2: Transit boardings by trip, linked trip, transfer ratio, and mode surveyed.**

```
viewof bPlotSelect = Inputs.select(new Map([['Trips', 'Trips'], ['Boardings by Linked Trip', 'Boardings by Linked Trip']])

dataBLT = transpose(boardLong)
filtered_bData = dataBLT.filter(function(dataL) {
  return bPlotSelect == dataL.Title &&
    "Value" == dataL.View;
})
```

### Plot

```
key2 = Legend(chart2.scales.color, {title: "Data Source"})
chart2 = GroupedBarChart(filtered_bData, {
  x: d => d.Mode,
  y: d => d.ViewValue,
  z: d => d.DataSource,
  yLabel: "Value",
  zDomain: ['Model', 'Observed'],
  width,
  height: 500,
  colors: ["#376092", "#77933c"]
})
```

### Table

```
///| echo: false
Inputs.table(filtered_bData)
```

**Figure 3: Transit boardings – absolute and relative difference between model and observed.**

```
viewof bPlotSelect2 = Inputs.select(new Map([['Trips', 'Trips'], ['Boardings by Linked Trip', 'Boardings by Linked Trip']])
```

```
viewof metric = Inputs.radio(new Map([["Absolute", "Diff"], ["Relative", "PercentDiff"]]),

filtered_bData2 = dataBLT.filter(function(dataL) {
  return bPlotSelect2 == dataL.Title  &&
    metric == dataL.View;
})
```

## Plot

```
//https://observablehq.com/@d3/diverging-bar-chart
import {DivergingBarChart} from "@d3/diverging-bar-chart"
chart3 = DivergingBarChart(filtered_bData2, {
  x: d => d.ViewValue,
  y: d => d.Mode,
  xFormat: metric === "Diff" ? "+,d" : "+%",
  width,
  height: 500,
  colors: d3.schemeRdBu[3]
})
```

## Table

```
///| echo: false
Inputs.table(filtered_bData2)
```