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 and 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 and 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
```

```
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 Tri
```

```
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)
```