

# TTR/ATDM Utility Program

## User Guide

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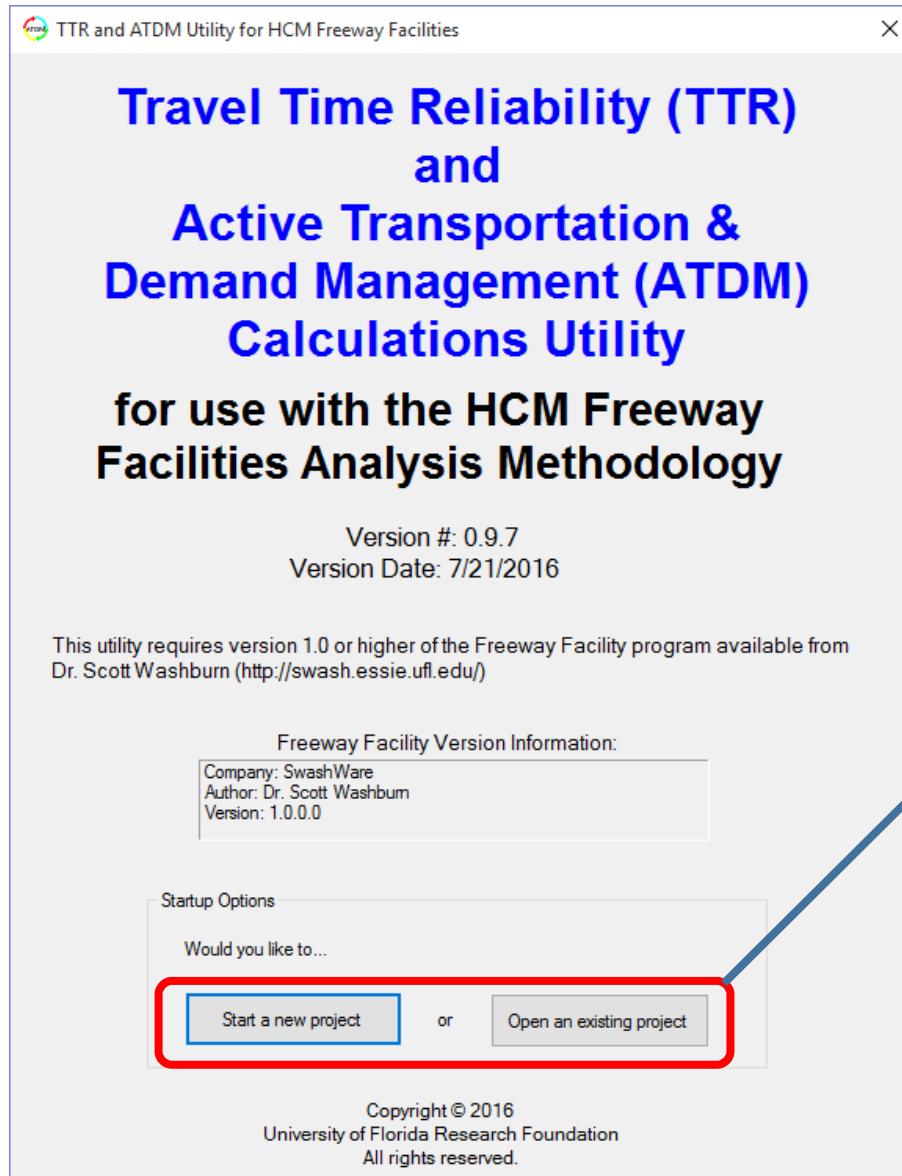
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# Startup Screen



Select 'Start a new project' or 'Open an existing project'.

---

# File Loading/Saving Notes

The program is structured such that multiple files are used for any given project. The TTR/ATDM project file stores the basic project information and links (i.e., file paths) to the following input files:

- Base freeway facility data
- Demand pattern data
- Weather data
- Incident data
- Incident adjustment factors

The above data are stored in their own files, and can be used interchangeably with any given project, but when a project file is saved, it will save the file paths to whichever data files are currently in use.

If ATDM strategies are in use for a project, these settings are currently stored in the project file.

---

# Project Properties

# Fill in Project Information

TTR and ATDM Utility for HCM Freeway Facilities - [Project Properties]

File Help

Project File: G:\My Documents\Projects\Software\HCM Freeway Facilities\FF\_TTR\_ATDM\FHWA Software Utility\bin

**Project Description**

Title

Analysis Date 8/22/2015

Notes Example file that corresponds with Example 1 in HCM 2010 Chapter 10

**Analyst Information**

Name Scott Washburn

Agency/Company UF-TRC

Location N/A

**Scenario Generation Methodology**

Unrestricted  SHRP2-L08  HCM  Include ATDM in Analysis

**HCM Calculation Edition**

5th (2010)  6th (2016)

**Random Number Seeds**

Auto Generate

Base File: TTR\_ATDM Example Files\Base File Example1.xff

**Freeway Facility Information**

Name

From  To

Location N/A

Analysis Direction Eastbound

Analysis Period AMPeak

# Segments 11

# Time Periods 12

**Freeway Facility**

	Segment Type	Length (ft)	Number of Lanes	FFS (mi/h)	
1	Basic	5280.00	3	60.00	
2	OnRamp	1500.00			
3	Basic	2280.00			
4	OffRamp	1500.00			
5	Basic	5280.00			
6	Weaving	2640.00			
7	Basic	5280.00	3	60.00	
8	OnRamp	1140.00	3	60.00	
9	RampOverlap	360.00	3	60.00	
10	OffRamp	1140.00	3	60.00	
11	Basic	5280.00	3	60.00	

Fill in the project description and analyst information.

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Select Scenario Generation Methodology

Project Description

Name: Scott Washburn  
Agency/Company: UF-TRC  
Location: N/A

Notes: Example file that corresponds with Example 1 in HCM 2010 Chapter 10

Scenario Generation Methodology

HCM Calculation Edition

Random Number Seeds

Base File: TTR\_ATDM Example Files\Base File Example1x0ff

Freeway Facility Information

Freeway Facility

Segment Type	Length (ft)	Number of Lanes	FFS (mi/h)
Basic	5280.00	3	60.00
OnRamp	1500.00	3	60.00
Basic	2280.00	3	60.00
OffRamp			
Basic			
Weaving			
Basic			
OnRamp			
RampOver			
OffRamp			
Basic			

Open in Freeway Facility Program

Project Properties   TTR Adjustment Factors   ATDM Strategies   ATDM Plans   TTR Scenarios Listing   Scenario Results   Overall Results   -->>

# Random Number Seeds

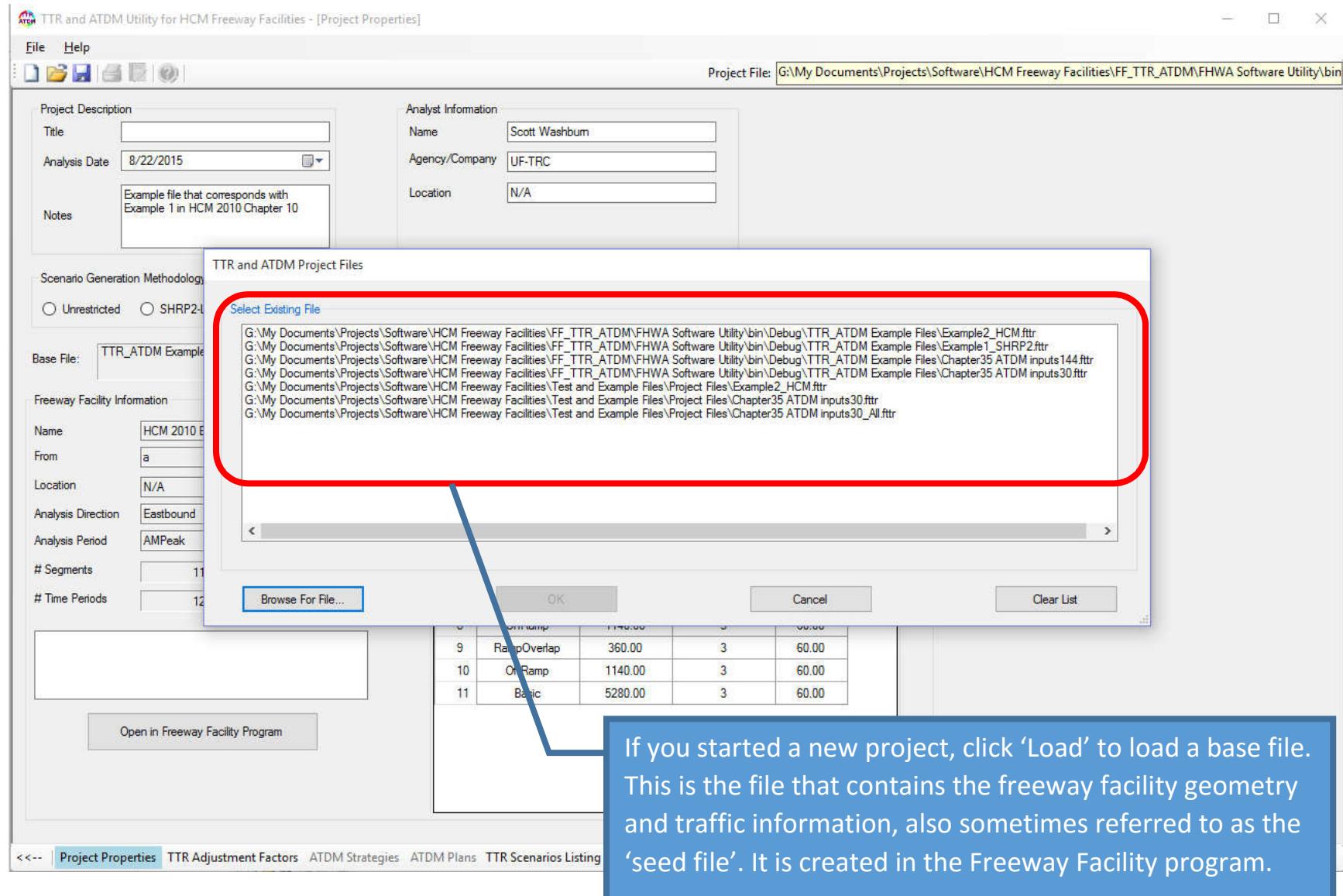
The screenshot shows the 'Project Properties' tab of the software interface. The 'Analyst Information' section includes fields for Name (Scott Washburn), Agency/Company (UF-TRC), and Location (N/A). The 'HCM Calculation Edition' section shows '5th (2010)' selected. The 'Random Number Seeds' section is highlighted with a red box and contains three input fields with the values 2115, 6255, and 3480. A blue callout box points to this section with the following text:

If the HCM scenario-generation methodology is selected, the random number seeds input will be enabled. These values can be set explicitly, or randomly generated.

Below the 'Random Number Seeds' section is a table titled 'Freeway Facility' showing segment details:

	Segment Type	Length (ft)	Number of Lanes	FFS (mi/h)	
1	Basic	5280.00	3	60.00	
2	OnRamp	1500.00	3	60.00	
3	Basic	2280.00	3	60.00	
4	OffRamp	1500.00	3	60.00	
5	Basic	5280.00	3	60.00	
6	Weaving	2640.00	4	60.00	
7	Basic	5280.00	3	60.00	
8	OnRamp	1140.00	3	60.00	
9	RampOverlap	360.00	3	60.00	
10	OffRamp	1140.00	3	60.00	
11	Basic	5280.00	3	60.00	

# Base Freeway Facility File: Open



# Base Freeway Facility File: Information

After loading the base file, the base file information will be displayed. Users can also choose to open the base file in the Freeway Facility Program to get more information.

The following pages will be divided into three sections introducing the unrestricted, SHRP2-L08, and HCM methods, respectively.

Project Description

Title:

Analysis Date: 8/22/2015

Notes: Example file that corresponds to Example 1 in HCM 2010 Chapter 10.

Scenario Generation Methodology

Unrestricted  SHRP2-L08  HCM  Include ATDM in Analysis  5th (2010)  6th (2016)  2115 6255 3480

Base File: TTR\_ATDM Example Files\Base File Example1.xff

Freeway Facility Information

Name: HCM 2010 Example 1

From: a To: l

Location: N/A

Analysis Direction: Eastbound

Analysis Period: AMPeak

# Segments: 11

# Time Periods: 12

Freeway Facility

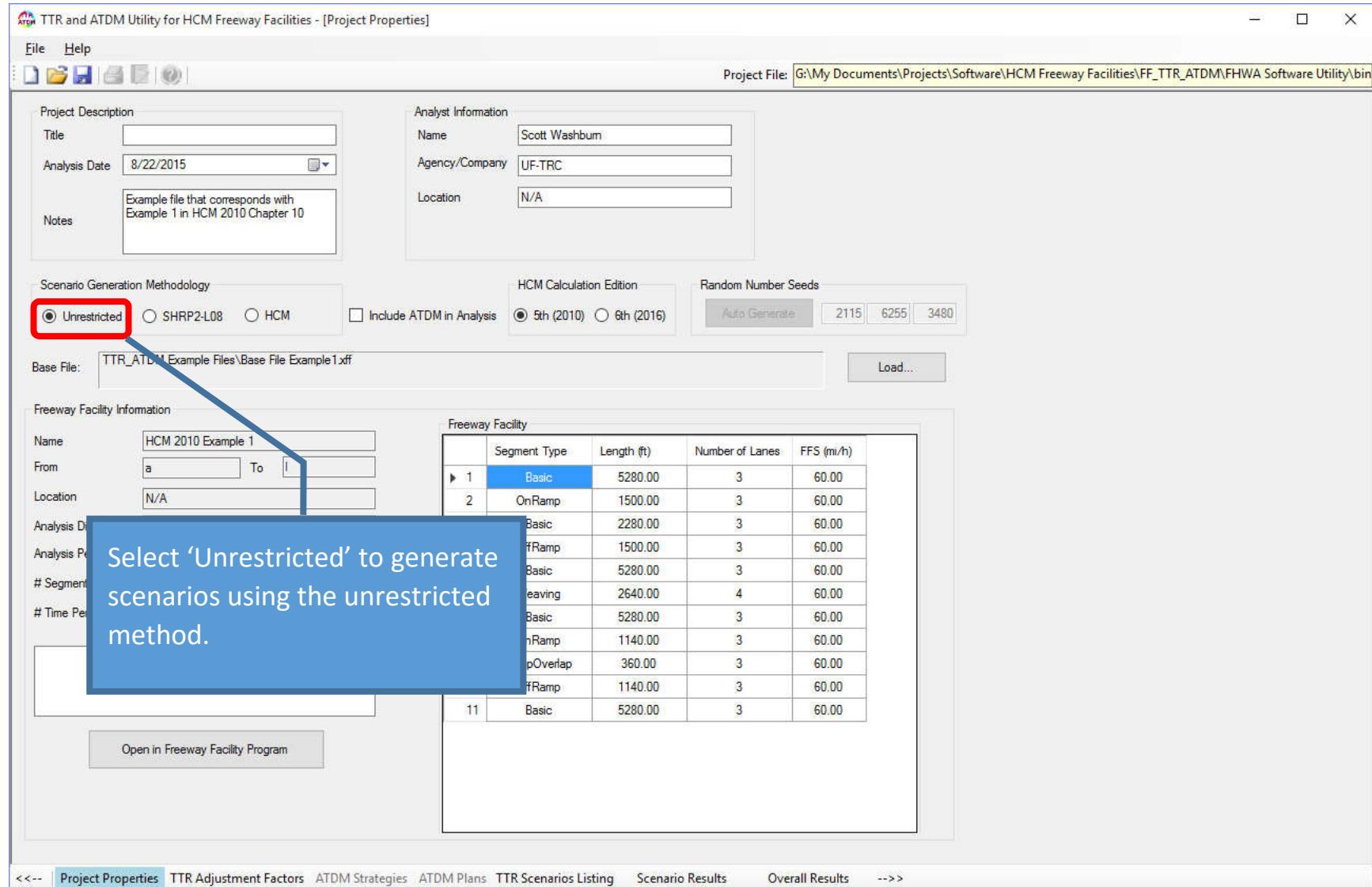
Segment ID	Segment Type	Length (ft)	Number of Lanes	FFS (mi/h)
1	Basic	5280.00	3	60.00
2	OnRamp	1500.00	3	60.00
3	Basic	2280.00	3	60.00
4	OffRamp	1500.00	3	60.00
5	Basic	5280.00	3	60.00
6	Weaving	2640.00	4	60.00
7	Basic	5280.00	3	60.00
8	OnRamp	1140.00	3	60.00
9	RampOverlap	360.00	3	60.00
10	OffRamp	1140.00	3	60.00
11	Basic	5280.00	3	60.00

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

---

# Adjustment Factors: Unrestricted Scenario Generation Methodology

# Select Scenario Generation Method



# Demand Adjustment Factors

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (Unrestricted)]

Add Remove

Demand Weather Incident Work Zone

ID	Demand Level Percentile	Probability (%)	Demand Adj.
1	5	10	0.77
2	15	10	0.93
3	30	20	0.97
4	50	20	1
5	70	20	1.02
6	85	10	1.04
7	95	10	1.05
Total		100	

Any number of levels can be added to each adjustment factor

OK Cancel

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Weather Adjustment Factors

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (Unrestricted)]

File Help

Project File: C:\Users\lovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

Add Remove

Demand Weather Incident Work Zone

ID	Type	Range From	Range To	FFS Adj.	Cap Adj.	Probability (%)
1	Clear	0	0	1	1	50
2	Light Rain	0	0.1	0.98	0.98	8
3	Medium Rain	0.1	0.25	0.94	0.93	4
4	Heavy Rain	0.25	inf	0.93	0.86	2
5	Very Light Snow	0	0.05	0.89	0.96	6
6	Light Snow	0.05	0.1	0.88	0.91	3
7	Medium Snow	0.1	0.5	0.86	0.89	2
8	Heavy Snow	0.5	inf	0.85	0.76	2
9	Low Wind	10	20	0.99	0.99	4
10	High Wind	20	inf	0.98	0.98	2
11	Cool	34	50	0.99	0.99	2
12	Cold	-4	34	0.98	0.98	2
13	Very Cold	inf	-4	0.94	0.91	3
14	Medium Visibility	0.5	1	0.94	0.9	2
15	Low Visibility	0.25	0.5	0.93	0.88	2
16	Very Low Visibility	0	0.25	0.93	0.88	6
Total						100

OK Cancel

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Incident Adjustment Factors

Click on this toolbar button to specify additional incident information.

This screen allows you to specify time and location of incident occurrence.

File Help

Add Remove Incident Time Period and Segment

Demand Weather Incident Work Zone

ID	Type	Max Lanes Blocked	Duration (min)	FFS Adj.	Other
1	No Incident	n/a	0	1	1 50
2	Non-Crash	shoulder	30	0.99	0.99 10
3	Non-Crash	1	30	0.79	0.79 7
4	Non-Crash	2+	60	0.61	0.61 6
5	Property Damage Only Crash	shoulder	45	0.86	0.86 5
6	Property Damage Only Crash	1	45	0.79	0.79 4
7	Property Damage Only Crash	2+	60	0.61	0.61 4
8	Injury Crash	shoulder	60	0.86	0.86 3
9	Injury Crash	1	60	0.79	0.79 2
10	Injury Crash	2+	60	0.61	0.61 1
11	Fatal Crash	shoulder	150		
12	Fatal Crash	1	150		
13	Fatal Crash	2+	150		
Total					

Incident Time Period and Segment

\*Select segment in which incident occurs from table below.

Freeway Facility	Segment Type	Length (ft)	Number of Lanes	FFS (mi/h)
1	Basic	2000.00	3	70.00
2	Basic	2000.00	3	70.00
3	OffRamp	2000.00	3	70.00
4	Basic	2000.00	3	70.00
5	OnRamp	2000.00	3	70.00
6	Basic	2000.00	3	70.00
7	OffRamp	2000.00	3	70.00
8	Basic	2000.00	3	70.00
9	OnRamp	2000.00	3	70.00
10	Basic	2000.00	3	70.00
Wayside		2000.00	2	70.00

\*Select time period in which incident occurs from table below.

Incident Occurrence Time
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

OK Cancel

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Work Zone Adjustment Factors

Click on this toolbar button to specify work zone information.

This screen allows you to specify the start and end locations of a work zone.

The screenshot shows the software interface for specifying work zone segments. A red box highlights the 'Work Zone Segments' button in the toolbar. A blue box highlights the 'Work Zone Segments' dialog box, which contains a table of freeway facility segments and selection controls. A red arrow points from the text 'This screen allows you to specify the start and end locations of a work zone.' to the 'Work Zone Start' and 'Work Zone End' fields in the dialog box. The dialog box also includes buttons for 'Select All Segments', 'Unselect Segments', 'Select Segments', and 'Close Form'. The main window shows a table of work zone segments with columns for ID, Type, Lanes Open, FFS Adj., Cap Adj., and Probability (%).

ID	Type	Lanes Open	FFS Adj.	Cap Adj.	Probability (%)
1	No Work Zone	All	1	1	70
2	Short Term	1	0.8	0.8	5
3	Short Term	2	0.8	0.8	5
4	Short Term	3	0.8	0.8	5
5	Long Term	1	0.7	0.7	5
6	Long Term	2	0.73	0.73	5
7	Long Term	3	0.75	0.75	5
Total					100

Segment Type	Length (ft)	Number of Lanes	FFS (mi/h)
1 Basic	5280.00	3	60.00
2 OnRamp	1500.00	3	60.00
3 Basic	2280.00	3	60.00
4 OffRamp	1500.00	3	60.00
5 Basic	5280.00	3	60.00
6 Weaving	2640.00	4	60.00
7 Basic	5280.00	3	60.00
8 OnRamp	1140.00	3	60.00
9 RampOverlap	360.00	3	60.00
10 OffRamp	1140.00	3	60.00
11 Basic	5280.00	3	60.00

To select an individual segment, left-click (mouse) on the numbered row header at the left of the table. To select multiple segments, left-click on the first segment, hold the mouse button down, and drag the cursor to the last segment and then release the mouse button.

Save Changes

<<- | Project Properties | TTR Adjustment Factors | ATDM Strategies | ATDM Plans | TTR Scenarios Listing | Scenario Results | Overall Results | -->>

# View Scenarios: Options

Screenshot of the TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Scenarios Listing] application window.

The window title is "TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Scenarios Listing]". The menu bar includes File, View Scenarios (which is selected and highlighted with a red box), Run Analysis, and Help. A toolbar with icons for file operations is visible on the left.

A context menu is open over the table, showing options: Show All, Show Selected (which is checked and highlighted with a red box), Show Unselected, Show Per Filter, and Clear Screen. A blue arrow points from the "Show Selected" option in the context menu to the "Show Selected" option in the main menu bar.

The table displays scenario data with the following columns: ID, Total Probability (%), Weather Type, From, To, Incident Type, Max. Lane Blocked, Work Zone Type, Lanes Open, Probability (%), FFS Reduction (%), and Cap Reduction (%). The table has 30 rows of data.

Project File: C:\Users\w.sun2014\Source\Workspaces\Workspace\FHWA Software Utility\bin\Debug\DataFiles\Chap

Scenarios Listing:

ID	Total Probability (%)	Weather Type	From	To	Incident Type	Max. Lane Blocked	Work Zone Type	Lanes Open	Probability (%)	FFS Reduction (%)	Cap Reduction (%)
1		Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
2		Clear	0	0	No Incident	n/a	No Work Zone	All	3.5	0.00	0.00
3		Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
4		Clear	0	0	No Incident	n/a	Long Term	3	0.125	25.00	25.00
5	46	50	Clear	0	0	No Incident	n/a	Long Term	3	0.25	25.00
6	48	85	Clear	0	0	No Incident	n/a	Long Term	3	0.125	25.00
7	247	15	Clear	0	0	Property Damag...	1	No Work Zone	All	0.14	21.00
8	249	50	Clear	0	0	Property Damag...	1	No Work Zone	All	0.28	21.00
9	251	85	Clear	0	0	Property Damag...	1	No Work Zone	All	0.14	21.00
10	289	15	Clear	0	0	Property Damag...	1	Long Term	3	0.01	25.00
11	291	50	Clear	0	0	Property Damag...	1	Long Term	3	0.02	25.00
12	293	85	Clear	0	0	Property Damag...	1	Long Term	3	0.01	25.00
13	1276	15	Medium Rain	0.1	0.25	No Incident	n/a	No Work Zone	All	0.14	6.00
14	1278	50	Medium Rain	0.1	0.25	No Incident	n/a	No Work Zone	All	0.28	6.00
15	1280	85	Medium Rain	0.1	0.25	No Incident	n/a	No Work Zone	All	0.14	6.00
16	1318	15	Medium Rain	0.1	0.25	No Incident	n/a	Long Term	3	0.01	25.00
17									0.02	25.00	30.25
18									0.01	25.00	30.25
19								All	0.0112	21.00	26.53
20								All	0.0224	21.00	26.53
21								All	0.0112	21.00	26.53
22								3	0.0008	25.00	44.90
23								3	0.0016	25.00	44.90
24								3	0.0008	25.00	44.90
25								All	0.105	12.00	9.00
26								All	0.105	12.00	9.00
27								3	0.0075	25.00	31.75
28								All	0.0168	21.00	28.11
29	3476	50	Light Snow	0.05	0.1	Property Damag...	1	Long Term	3	0.0012	25.00
30	3478	85	Light Snow	0.05	0.1	Property Damag...	1	Long Term	3	0.0006	25.00

Total Displayed/Selected Probability: 8.98%/8.98% | Incident Occurrence Segment: 17 | Incident Time Period: 2 | Work Zone Segments: From: 17 To: 17 |

<<-> Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# View Scenarios: Show Scenarios

If 'Show All' is chosen here, all scenario combinations per the specified adjustment factors will be shown in this table.

A user will typically start with this for a new analysis. For the Chapter 35 example settings, this will result in 10,192 scenarios. The user can then reduce the number of scenarios that will be used in an analysis through filtering or direct selection. The process is described on the following slides.

ID	Demand Level(%)	Weather Type	From	To	Incident Type	Max. Lane Blocked	Work Zone Type	Lanes Open	Probability(%)	FFS Reduction(%)	Cap Reduction(%)		
1	X	1	5	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
2	✓	2	15	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
3	X	3	30	Clear	0	0	No Incident	n/a	No Work Zone	All	3.5	0.00	0.00
4	✓	4	50	Clear	0	0	No Incident	n/a	No Work Zone	All	3.5	0.00	0.00
5	X	5	70	Clear	0	0	No Incident	n/a	No Work Zone	All	3.5	0.00	0.00
6	✓	6	85	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
7	X	7	95	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
8	X	8	5	Clear	0	0	No Incident	n/a	Long Term	1	0.125	20.00	20.00
9	X	9	15								0.125	20.00	20.00
10	X	10	30								0.25	20.00	20.00
11	X	11	50								0.25	20.00	20.00
12	X	12	70								0.25	20.00	20.00
13	X	13	85								0.125	20.00	20.00
14	X	14	95								0.125	20.00	20.00
15	X	15	5								0.125	20.00	20.00
16	X	16	15								0.125	20.00	20.00
17	X	17	30								0.25	20.00	20.00
18	X	18	50								0.25	20.00	20.00
19	X	19	70								0.25	20.00	20.00
20	X	20	85								0.125	20.00	20.00
21	X	21	95								0.125	20.00	20.00
22	X	22	5								0.125	20.00	20.00
23	X	23	15								0.125	20.00	20.00
24	X	24	30								0.25	20.00	20.00
25	X	25	50								0.25	20.00	20.00
26	X	26	70								0.25	20.00	20.00
27	X	27	85								0.125	20.00	20.00
28	X	28	95								0.125	20.00	20.00
29	X	29	5								0.125	30.00	30.00
30	X	30	15								0.125	30.00	30.00
31	X	31	30								0.25	30.00	30.00
32	X	32	50								0.25	30.00	30.00
33	X	33	70								0.25	30.00	30.00
34	X	34	85								0.125	30.00	30.00
35	X	35	95								0.125	30.00	30.00
36	X	36	5	Clear	0	0	No Incident	n/a	Long Term	2	0.125	27.00	27.00
37	X	37	15	Clear	0	0	No Incident	n/a	Long Term	2	0.125	27.00	27.00
38	X	38	30	Clear	0	0	No Incident	n/a	Long Term	2	0.25	27.00	27.00
39	X	39	50	Clear	0	0	No Incident	n/a	Long Term	2	0.25	27.00	27.00
40	X	40	70	Clear	0	0	No Incident	n/a	Long Term	2	0.25	27.00	27.00

Total Displayed/Selected Probability: 100.00%/8.98% | Incident Occurrence Segment: 17 | Incident Time Period: 2 | Work Zone Segments: From: 17 To: 17

<<- | Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results ->>

# View Scenarios: Probability

**TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Scenarios Listing]**

File View Scenarios Run Analysis Help

Project File: C:\Users\w.sun\OneDrive\...\Workspace\FHWA Software Utility\bin\Debug\DataFiles\Chap

ID	Demand Level(%)	Weather Type	From	To	Incident Type	Max. Lane Blocked	Work Zone Type	Lanes Open	Probability(%)	FFS reduction(%)	Cap Reduction(%)			
1	X	1	5		Clear	0	0	No Incident	n/a	No Work Zone	All	Sort in Ascending Order	0.00	0.00
2	✓	2	15		Clear	0	0	No Incident	n/a	No Work Zone	All	Sort in Descending Order	0.00	0.00
3	X	3	30		Clear	0	0	No Incident	n/a	No Work Zone	All	Filter	0.00	0.00
4	✓	4	50		Clear	0	0	No Incident	n/a	No Work Zone	All	From:	0	0.00
5	X	5	70		Clear	0	0	No Incident	n/a	No Work Zone	All	To:	100	0.00
6	✓	6	85		Clear	0	0	No Incident	n/a	No Work Zone	All	*Probability range from 0-100	20.00	20.00
7	X	7	95		Clear	0	0	No Incident	n/a	No Work Zone	All	OK	20.00	20.00
8	X	8	5		Clear	0	0	No Incident	n/a	Short Term	1	20.00	20.00	
9	X	9	15		Clear	0	0	No Incident	n/a	Short Term	1	20.00	20.00	
10	X	10	30		Clear	0	0	No Incident	n/a	Short Term	1	20.00	20.00	
11	X	11	50		Clear	0	0	No Incident	n/a	Short Term	1	20.00	20.00	
12	X	12	70		Clear	0	0	No Incident	n/a	Short Term	1	0.25	20.00	
13	X	13	85		Clear	0	0	No Incident	n/a	Short Term	1	0.125	20.00	
14	X	14	95		Clear	0	0	No Incident	n/a	Short Term	1	0.125	20.00	
15	X	15	5		Clear	0	0	No Incident	n/a	Short Term	2	0.125	20.00	
16	X	16	15		Clear	0	0	No Incident	n/a	Short Term	2	0.125	20.00	
17	X	17	30		Clear	0	0	No Incident	n/a	Short Term	2	0.25	20.00	
18	X	18	50		Clear	0	0	No Incident	n/a	Short Term	2	0.25	20.00	
19	X	19	70		Clear	0	0	No Incident	n/a	Short Term	2	0.25	20.00	
20	X	20	85		Clear	0	0	No Incident	n/a	Short Term	2	0.125	20.00	
21	X	21	95		Clear	0	0	No Incident	n/a	Short Term	2	0.125	20.00	
22	X	22	5		Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00	
23	X	23	15		Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00	
24	X	24	30		Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00	
25	X	25	50		Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00	
26	X	26	70		Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00	
27	X	27	85		Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00	
28	X	28	95		Clear	0	0	No Incident	n/a	Long Term	1	0.125	30.00	
29	X	29	5		Clear	0	0	No Incident	n/a	Long Term	2	0.125	27.00	
30	X	30	15		Clear	0	0	No Incident	n/a	Long Term	2	0.125	27.00	
31	X	31	30		Clear	0	0	No Incident	n/a	Long Term	2	0.25	27.00	
32	X	32	50		Clear	0	0	No Incident	n/a	Long Term	2	0.25	27.00	
33	X	33	70		Clear	0	0	No Incident	n/a	Long Term	2	0.25	27.00	
34	X	34	85		Clear	0	0	No Incident	n/a	Long Term	2	0.25	27.00	
35	X	35	95		Clear	0	0	No Incident	n/a	Long Term	2	0.25	27.00	
36	X	36	5		Clear	0	0	No Incident	n/a	Long Term	2	0.125	27.00	
37	X	37	15		Clear	0	0	No Incident	n/a	Long Term	2	0.125	27.00	
38	X	38	30		Clear	0	0	No Incident	n/a	Long Term	2	0.25	27.00	
39	X	39	50		Clear	0	0	No Incident	n/a	Long Term	2	0.25	27.00	
40	X	40	70		Clear	0	0	No Incident	n/a	Long Term	2	0.25	27.00	

Total Displayed/Selected Probability: 100.00%/8.98% | Incident Occurrence Segment: 17 | Incident Time Period: 2 | Work Zone Segments: From: 17 To: 17

<<- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

The 'Probability (%)' column filter is unique.

Users have the option of sorting scenarios with respect to their probability. Users can also specify that only scenarios between a range of probabilities be displayed.

# View Scenarios: Save Scenario Filters

You can save your filter settings so that they can be quickly applied again.

Click on 'Save Filter', which will display a dialog as shown in the next slide.

Note: This button will only be available if filter settings have been changed.

Save Filter Total Displayed/Selected Probability: 17.50%/8.98% | Incident Occurrence Segment: 17 | Incident Time Period: 2 | Work Zone Segments: From: 17 To: 17

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# View Scenarios: Save Filters Settings

This dialog will allow you to name and save your filter settings.

The screenshot shows a software application window titled "TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Scenarios Listing]". The main area displays a grid of 7 rows, each representing a scenario with columns for ID, Demand Level(%), Weather Type, From, To, Incident Type, Max. Lane Blocked, Work Zone Type, Lanes Open, Probability(%)\*, FFS Reduction(%), and Cap Reduction(%). Rows 1, 3, 5, and 7 have a red 'X' icon in the first column, while rows 2, 4, and 6 have a green checkmark icon. A blue callout box points from the text above to a small dialog window in the foreground. This dialog has fields for "ID: 1", "Name: Untitled", and "Filter: Probability: 0.0175,0.035," with "OK" and "Cancel" buttons. The "OK" button is highlighted with a red oval. The status bar at the bottom shows "Save Filter | Total Displayed/Selected Probability: 17.50%/8.98% | Incident Occurrence Segment: 17 | Incident Time Period: 2 | Work Zone Segments: From: 17 To: 17 |". The tabs at the bottom include "Project Properties", "TTR Adjustment Factors", "ATDM Strategies", "ATDM Plans", "TTR Scenarios Listing" (which is selected), "Scenario Results", "Overall Results", and "-->>".

ID	Demand Level(%)	Weather Type	From	To	Incident Type	Max. Lane Blocked	Work Zone Type	Lanes Open	Probability(%) *(1)	FFS Reduction(%)	Cap Reduction(%)		
1	X	1	5	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
2	✓	2	15	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
3	X	3	30	Clear	0	0	No Incident	n/a	No Work Zone	All	3.5	0.00	0.00
4	✓	4	50	Clear	0	0	No Incident	n/a	No Work Zone	All	3.5	0.00	0.00
5	X	5	70	Clear	0	0	No Incident	n/a	No Work Zone	All	3.5	0.00	0.00
6	✓	6	85	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
7	X	7	95	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00

# View Scenarios: Show Per Filter

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Scenarios Listing]

File View Scenarios Run Analysis Help

Project File: C:\Users\w.sun2014\Source\Workspaces\Workspace\FHWA Software Utility\bin\Debug\DataFiles\Chap

Show All  
Show Selected  
**Show Unselected**  
 Show Per Filter  
Clear Screen

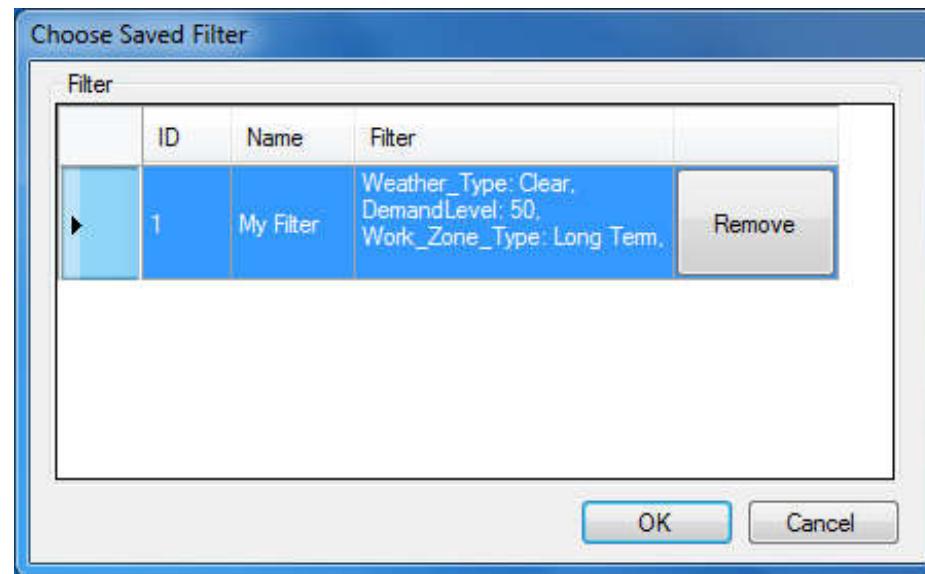
ID	(%)	Weather Type	From	To	Incident Type	Max. Lane Blocked	Work Zone Type	Lanes Open	Probability(%) *(1)	FFS Reduction(%)	Cap Reduction(%)
1		Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
2		Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
3		Clear	0	0	No Incident	n/a	No Work Zone	All	3.5	0.00	0.00
4		Clear	0	0	No Incident	n/a	No Work Zone	All	3.5	0.00	0.00
5	X 5	Clear	0	0	No Incident	n/a	No Work Zone	All	3.5	0.00	0.00
6	✓ 6	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
7	X 7	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00

If you choose to display scenarios according to a previously saved filter, a dialog will appear that will allow you to choose the desired filter – as shown on the next slide.

ID: 1  
Name: Untitled  
Filter: Probability: 0.0175,0.035.  
OK Cancel

Save Filter | Total Displayed/Selected Probability: 17.50%/8.98% | Incident Occurrence Segment: 17 | Incident Time Period: 2 | Work Zone Segments: From: 17 To: 17 |  
<--> Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->

# View Scenarios: Filter



# View Scenarios: Select Scenario

**TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Scenarios Listing]**

File View Scenarios Run Analysis Help

Project File: C:\Users\w.sun2014\Source\Workspaces\Workspace\FHWA Software Utility\bin\Debug\DataFiles\Chap

ID	Demand Level(...)	Weather Type	From	To	Incident Type	Max. Lane Blocked	Work Zone Type *(1)	Lanes Open	Probability(%)	FFS Reduction(%)	Cap Reduction(%)	
1	X	11	50	Clear	0	0	No Incident	n/a	Short Term	1	0.25	20.00
2	X	12	70	Clear	0	0	No Incident	n/a	Short Term	1	0.25	20.00
3	X	13	85	Clear	0	0	No Incident	n/a	Short Term	1	0.125	20.00
4	X	14	95	Clear	0	0	No Incident	n/a	Short Term	1	0.125	20.00
5	X	18	50	Clear	0	0	No Incident	n/a	Short Term	2	0.25	20.00
6	X	19	70	Clear	0	0	No Incident	n/a	Short Term	2	0.25	20.00
7	X	20	85	Clear	0	0	No Incident	n/a	Short Term	2	0.125	20.00
8	X	21	95	Clear	0	0	No Incident	n/a	Short Term	2	0.125	20.00
9	X	25	50	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
10	X	26	70	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
11	X	27	85	Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00
12	X	28	95	Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00
13	X	32	50	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
14	X	33	70	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
15	X	34	85	Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00
16	X	35	95	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
17	X	39	50	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
18	X	40	70	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
19	X	41	85	Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00
20	X	42	95	Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00
21	✓	46	50	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
22	X	47	70	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
23	✓	48	85	Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00
24	X	49	95	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
25	X	60	50	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
26	X	61	70	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
27	X	62	85	Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00
28	X	63	95	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
29	X	67	50	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
30	X	68	70	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
31	X	69	85	Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00
32	X	70	95	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
33	X	74	50	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
34	X	75	70	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
35	X	76	85	Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00
36	X	77	95	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
37	X	81	50	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
38	X	82	70	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00
39	X	83	85	Clear	0	0	No Incident	n/a	Short Term	3	0.125	20.00
40	X	84	95	Clear	0	0	No Incident	n/a	Short Term	3	0.25	20.00

Save Filter | Total Displayed/Selected Probability: 18.00%/8.98% | Incident Occurrence Segment: 17 | Incident Time Period: 2 | Work Zone Segments: From: 17 To: 17 |

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

Right-click on a scenario row to access the selection menu. From here, you can select or unselect individual scenarios.

Selected scenarios are shown with a green check mark in the second column from the left. Unselected scenarios are shown with a red 'X'.

When running an analysis, you will have the option to either run all scenarios displayed in the table or to run only your selected scenarios.

# View Scenarios: Show Selected

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Scenarios Listing]

File View Scenarios Run Analysis Help

Project File: C:\Users\w.sun2014\Source\Workspaces\Workspace\FHWA Software Utility\bin\Debug\DataFiles\Chap

Show All  
Show Selected  
Show Unselected  
Show Per Filter  
Clear Screen

	(%)	Weather Type	From	To	Incident Type	Max. Lane Blocked	Work Zone Type	Lanes Open	Probability(%)	FFS Reduction(%)	Cap Reduction(%)
1		Clear	0	0	Normal	1	Normal	1	1.75	0.00	0.00
2		Clear	0	0	Normal	1	Normal	1	1.75	0.00	0.00
3		Clear	0	0	Normal	1	Normal	1	1.75	0.00	0.00
4		Clear	0	0	Normal	1	Normal	1	1.75	25.00	25.00
5	✓ 46	Clear	0	0	Normal	1	Normal	1	1.75	25.00	25.00
6	✓ 48	Clear	0	0	Normal	1	Normal	1	1.75	25.00	25.00
7	✓ 247	Clear	0	0	Normal	1	Normal	1	1.75	21.00	21.00
8	✓ 249	Clear	0	0	Normal	1	Normal	1	1.75	21.00	21.00
9	✓ 251	Clear	0	0	Normal	1	Normal	1	1.75	21.00	21.00
10	✓ 289	Clear	0	0	Normal	1	Normal	1	1.75	25.00	40.75
11	✓ 291	Clear	0	0	Normal	1	Normal	1	1.75	25.00	40.75
12	✓ 293	Clear	0	0	Normal	1	Normal	1	1.75	25.00	40.75
13	✓ 1276	Medium Rain	0.1	0.1	Normal	1	Normal	1	1.75	6.00	7.00
14	✓ 1278	Medium Rain	0.1	0.1	Normal	1	Normal	1	1.75	6.00	7.00
15	✓ 1280	Medium Rain	0.1	0.1	Normal	1	Normal	1	1.75	6.00	7.00
16	✓ 1318	Medium Rain	0.1	0.1	Normal	1	Normal	1	1.75	25.00	30.25
17	✓ 1320	Medium Rain	0.1	0.1	Normal	1	Normal	1	1.75	25.00	30.25
18	✓ 1322	Medium Rain	0.1	0.1	Normal	1	Normal	1	1.75	25.00	30.25
19	✓ 1521	Medium Rain	0.1	0.1	Normal	1	Normal	1	1.75	21.00	26.53
20	✓ 1523	Medium Rain	0.1	0.1	Normal	1	Normal	1	1.75	21.00	26.53
21	✓ 1525	Medium Rain	0.1	0.1	Normal	1	Normal	1	1.75	21.00	26.53
22	✓ 1563	Medium Rain	0.1	0.1	Normal	1	Normal	1	1.75	25.00	44.90
23	✓ 1565	Medium Rain	0.1	0.1	Normal	1	Normal	1	1.75	25.00	44.90
24	✓ 1567	Medium Rain	0.1	0.1	Normal	1	Normal	1	1.75	25.00	44.90
25	✓ 3187	Light Snow	0.05	0.1	Property Damage	1	Long Term	3	0.0012	12.00	9.00
26	✓ 3191	Light Snow	0.05	0.1	Property Damage	1	Long Term	3	0.0006	12.00	9.00
27	✓ 3229	Light Snow	0.05	0.1	Property Damage	1	Long Term	3	0.0012	25.00	31.75
28	✓ 3434	Light Snow	0.05	0.1	Property Damage	1	Long Term	3	0.0006	21.00	28.11
29	✓ 3476	Light Snow	0.05	0.1	Property Damage	1	Long Term	3	0.0012	25.00	46.08
30	✓ 3478	Light Snow	0.05	0.1	Property Damage	1	Long Term	3	0.0006	25.00	46.08

Total Displayed/Selected Probability: 8.98%/8.98% | Incident Occurrence Segment: 17 | Incident Time Period: 2 | Work Zone Segments: From: 17 To: 17

<<- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

After selecting one or more scenarios, you can choose to exclusively show only those. For example, this table shows the 30 scenarios that have been selected for this analysis.

Choosing the 'Show Unselected' option will display only those scenarios that have not been selected (indicated by a red 'X' in the second column from the left).

# View Scenarios: Displayed Probability

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Scenarios Listing]

File View Scenarios Run Analysis Help

Project File: C:\Users\w.sun2014\Source\Workspaces\Workspace\FHWA Software Utility\bin\Debug\DataFiles\Chap

ID	Demand Level(%)	Weather Type	From	To	Incident Type	Max. Lane Blocked	Work Zone Type	Lanes Open	Probability(%)	FFS Reduction(%)	Cap Reduction(%)	
1	2	15	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
2	4	50	Clear	0	0	No Incident	n/a	No Work Zone	All	3.5	0.00	0.00
3	6	85	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
4	44	15	Clear	0	0	No Incident	n/a	Long Term	3	0.125	25.00	25.00
5	46	50	Clear	0	0	No Incident	n/a	Long Term	3	0.25	25.00	25.00
6	48	85	Clear	0	0	No Incident	n/a	Long Term	3	0.125	25.00	25.00
7	247	15	Clear	0	0	Property Damag...	1	No Work Zone	All	0.14	21.00	21.00
8	249	50	Clear	0	0	Property Damag...	1	No Work Zone	All	0.28	21.00	21.00
9	251	85	Clear	0	0	Property Damag...	1	No Work Zone	All	0.14	21.00	21.00
10	289	15	Clear	0	0	Property Damag...	1	Long Term	3	0.01	25.00	40.75
11	291	50	Clear	0	0	Property Damag...	1	Long Term	3	0.02	25.00	40.75
12	293	85	Clear	0	0	Property Damag...	1	Long Term	3	0.02	25.00	40.75
13	1276	15	Medium Rain	0.1	0.25					6.00	7.00	
14	1278	50	Medium Rain	0.1	0.25					6.00	7.00	
15	1280	85	Medium Rain	0.1	0.25					6.00	7.00	
16	1318	15	Medium Rain	0.1	0.25					25.00	30.25	
17	1320	50	Medium Rain	0.1	0.25					25.00	30.25	
18	1322	85	Medium Rain	0.1	0.25					25.00	30.25	
19	1521	15	Medium Rain	0.1	0.25					21.00	26.53	
20	1523	50	Medium Rain	0.1	0.25					21.00	26.53	
21	1525	85	Medium Rain	0.1	0.25					21.00	26.53	
22	1563	15	Medium Rain	0.1	0.25					25.00	44.90	
23	1565	50	Medium Rain	0.1	0.25					25.00	44.90	
24	1567	85	Medium Rain	0.1	0.25					25.00	44.90	
25	3187	15	Light Snow	0.05	0.1					12.00	9.00	
26	3191	85	Light Snow	0.05	0.1					12.00	9.00	
27	3229	15	Light Snow	0.05	0.1					25.00	31.75	
28	3434	50	Light Snow	0.05	0.1					21.00	28.11	
29	3476	85	Light Snow	0.05	0.1					25.00	46.08	
30	3478	85	Light Snow	0.05	0.1					25.00	46.08	

This area of the lower toolbar indicates two things:

- the total occurrence probability of all the displayed scenarios
- the total occurrence probability of the selected scenarios

In this example, only the selected scenarios are being displayed in the table; thus, the two values are the same.

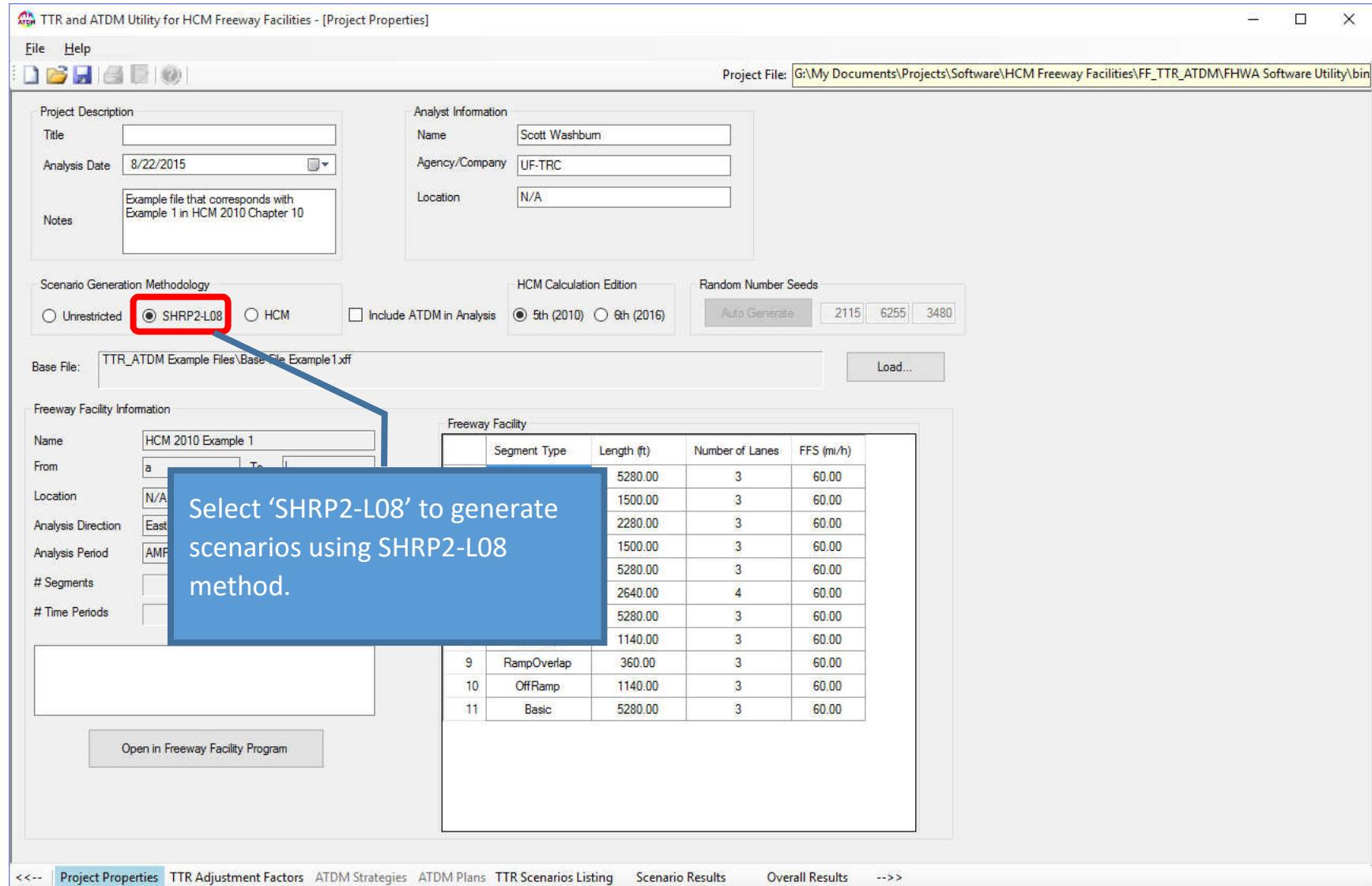
Total Displayed/Selected Probability: 8.98%/8.98% Incident Occurrence Segment: 17 | Incident Time Period: 2 | Work Zone Segments: From: 17 To: 17 |

<<- | Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

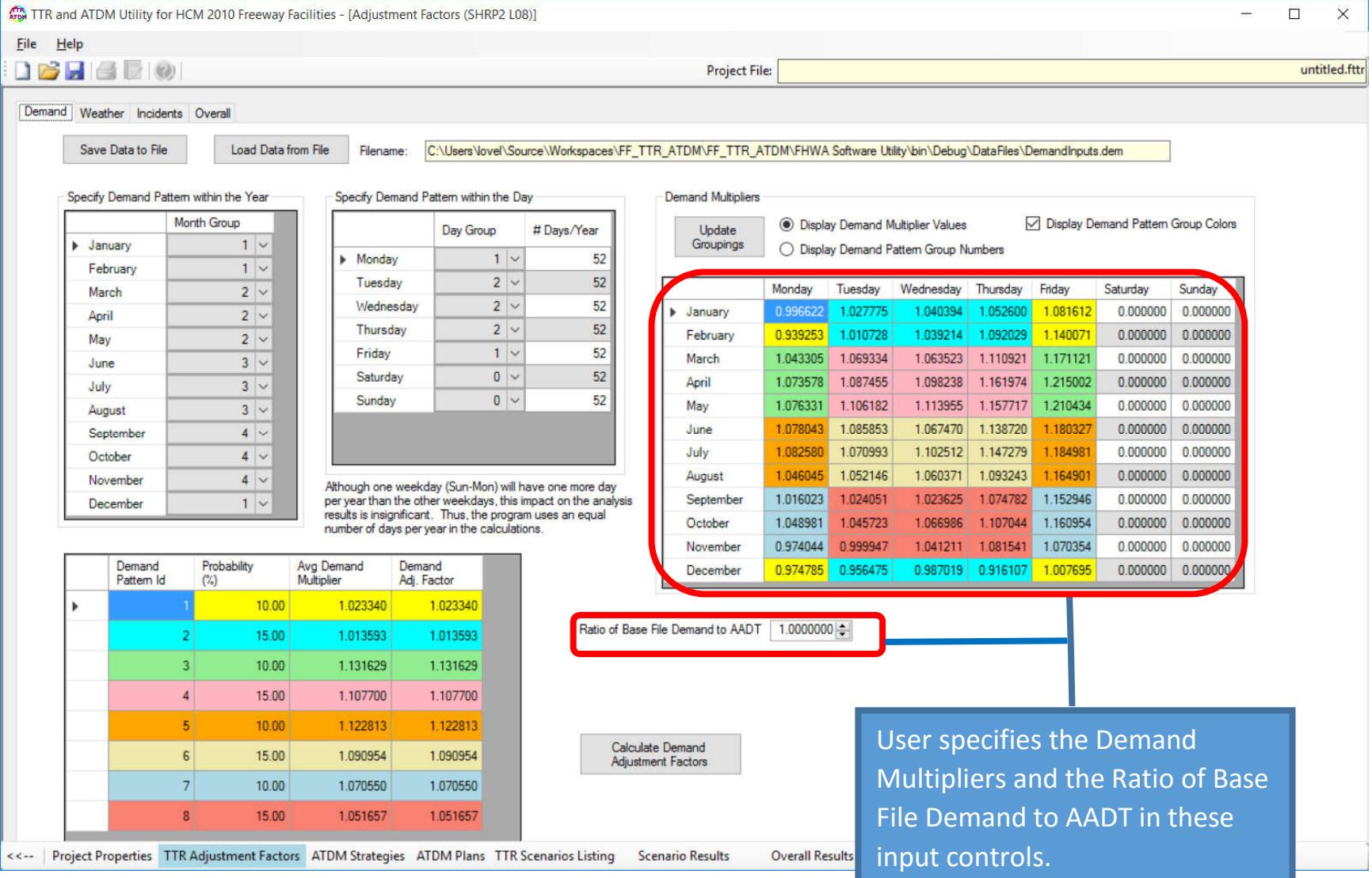
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# Adjustment Factors: SHRP2-L08 Scenario Generation Methodology

# Select Scenario Generation Method



# Demand Adjustment Factors: Demand Multipliers

The screenshot shows the software interface for specifying demand patterns and multipliers. It includes sections for 'Specify Demand Pattern within the Year' and 'Specify Demand Pattern within the Day'. A red box highlights the 'Demand Multipliers' section, which contains a table of values for each month, with the entire table circled in red. Another red box highlights the 'Ratio of Base File Demand to AADT' input control.

**Demand Multipliers**

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
January	0.996622	1.027775	1.040394	1.052600	1.081612	0.000000	0.000000
February	0.939253	1.010728	1.039214	1.092029	1.140071	0.000000	0.000000
March	1.043305	1.069334	1.063523	1.110921	1.171121	0.000000	0.000000
April	1.073578	1.087455	1.098238	1.161974	1.215002	0.000000	0.000000
May	1.076331	1.106182	1.113955	1.157717	1.210434	0.000000	0.000000
June	1.078043	1.085853	1.067470	1.138720	1.180327	0.000000	0.000000
July	1.082580	1.070993	1.102512	1.147279	1.184981	0.000000	0.000000
August	1.046045	1.052146	1.060371	1.093243	1.164901	0.000000	0.000000
September	1.016023	1.024051	1.023625	1.074782	1.152946	0.000000	0.000000
October	1.048981	1.045723	1.066986	1.107044	1.160954	0.000000	0.000000
November	0.974044	0.999947	1.041211	1.081541	1.070354	0.000000	0.000000
December	0.974785	0.956475	0.987019	0.916107	1.007695	0.000000	0.000000

**Ratio of Base File Demand to AADT**

**User specifies the Demand Multipliers and the Ratio of Base File Demand to AADT in these input controls.**

# Demand Adjustment Factors: Month/Day Groupings

The screenshot shows the software interface for specifying demand patterns. Two main sections are highlighted with red boxes:

- specify Demand Pattern within the Year**: A table where each row represents a month and its corresponding 'Month Group' value.
- specify Demand Pattern within the Day**: A table where each row represents a day of the week and its corresponding 'Day Group' value.

A blue arrow points from the 'Day Group' section to a callout box containing the following text:

Although one weekday (Sun-Mon) will have one more day per year than the other weekdays, this impact on the analysis results is insignificant. Thus, the program uses an equal number of days per year in the calculations.

Another blue arrow points from the 'Update Groupings' button to the same callout box.

The 'Demand Multipliers' section includes an 'Update Groupings' button, which is highlighted with a red box. There are three radio button options:

- Display Demand Multiplier Values
- Display Demand Pattern Group Colors
- Display Demand Pattern Group Numbers

The 'Demand Multipliers' table lists monthly multipliers for each day of the week:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
January	0.996622	1.027775	1.040394	1.052600	1.081612	0.000000	0.000000
February	0.939253	1.010728	1.039214	1.092029	1.140071	0.000000	0.000000
March	1.043305	1.069334	1.063523	1.110921	1.171121	0.000000	0.000000
April	1.073578	1.087455	1.098238	1.161974	1.215002	0.000000	0.000000
May	1.076331	1.106182	1.113955	1.157717	1.210434	0.000000	0.000000
June	1.078043	1.085853	1.067470	1.138720	1.180327	0.000000	0.000000
July	1.082580	1.070993	1.102512	1.147279	1.184981	0.000000	0.000000
August	1.046045	1.052146	1.060371	1.093243	1.164901	0.000000	0.000000
September	1.016023	1.024051	1.023625	1.074782	1.152946	0.000000	0.000000
October	1.048981	1.045723	1.066986	1.107044	1.160954	0.000000	0.000000
November	0.974044	0.999947	1.041211	1.081541	1.070354	0.000000	0.000000
December	0.974785	0.956475	0.987019	0.916107	1.007695	0.000000	0.000000

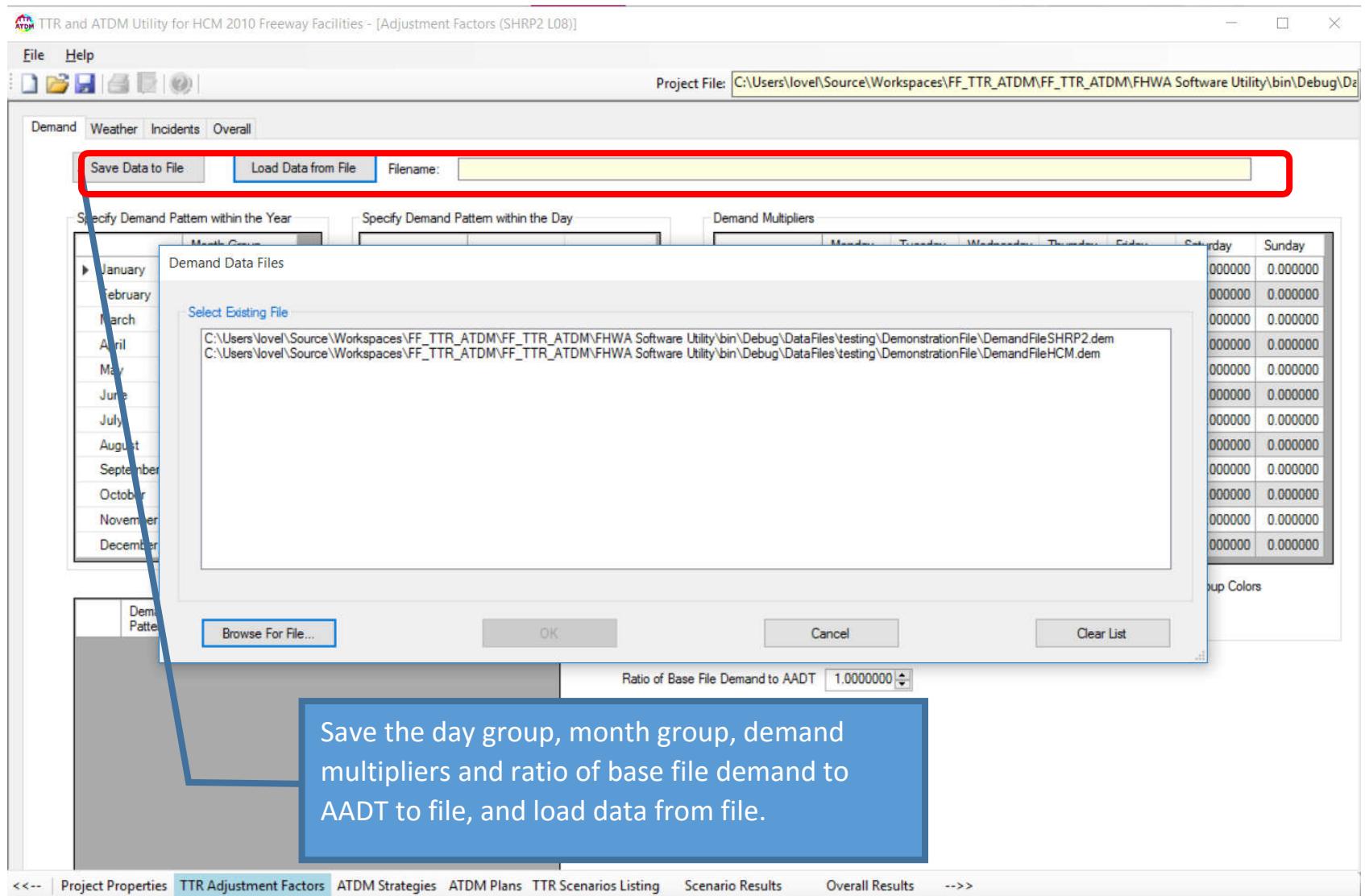
A blue arrow points from the 'Ratio of Base File Demand to ADT' input field to the callout box.

The callout box contains the following text:

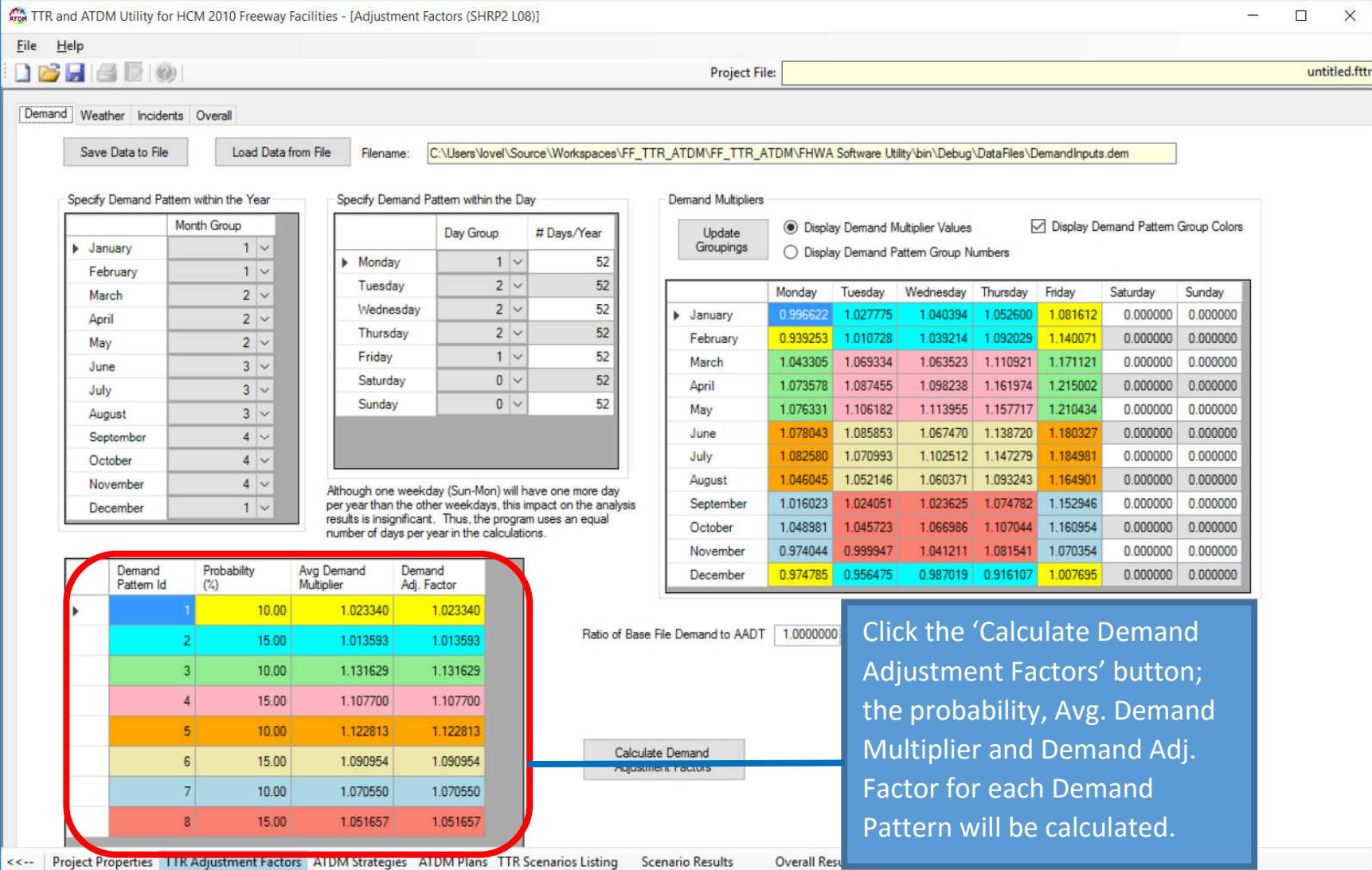
User can set the month and day groups by changing the numbers in the group columns, and click 'Update Groupings' to set the demand patterns.

At the bottom of the interface, there are several navigation links: <<--> Project Properties, TTR Adjustment Factors, ATDM Strategies, ATDM Plans, TTR Scenarios Listing, Scenario Results, Overall Results, -->>, and a 'Calculate Demand Adjustment Factors' button.

# Demand Adjustment Factors: Loading and Saving



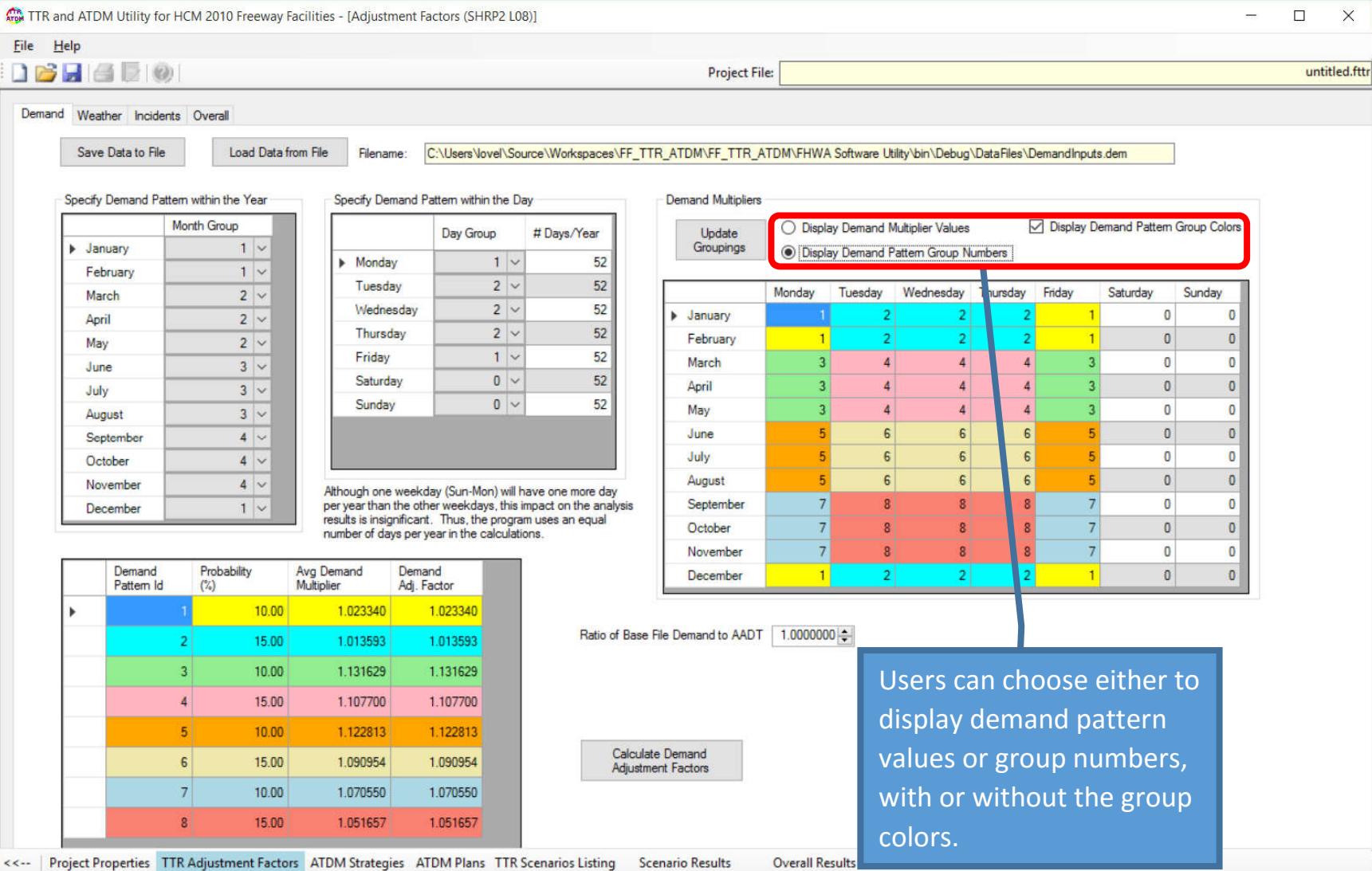
# Demand Adjustment Factors: Calculate DAFs



The screenshot shows the software interface for calculating Demand Adjustment Factors (DAFs). The 'Demand' tab is selected. Key components include:

- Specify Demand Pattern within the Year:** A table showing monthly groupings from January to December.
- Specify Demand Pattern within the Day:** A table showing daily groupings from Monday to Sunday, each with 52 days per year.
- Demand Multipliers:** A table showing weekly multipliers for each day of the week.
- Calculated Demand Adjustment Factors:** A table at the bottom left with columns: Demand Pattern Id, Probability (%), Avg Demand Multiplier, and Demand Adj. Factor. The 'Demand Pattern Id' column is circled in red.
- Text Note:** "Although one weekday (Sun-Mon) will have one more day per year than the other weekdays, this impact on the analysis results is insignificant. Thus, the program uses an equal number of days per year in the calculations."
- Instruction Box:** "Click the 'Calculate Demand Adjustment Factors' button; the probability, Avg. Demand Multiplier and Demand Adj. Factor for each Demand Pattern will be calculated."

# Demand Adjustment Factors: Demand Pattern Display

The screenshot shows the software's main window with several tabs at the top: File, Help, Demand, Weather, Incidents, and Overall. The Demand tab is selected. Below the tabs, there are buttons for Save Data to File and Load Data from File, and a Project File input field containing 'untitled.fttr'. A filename dropdown shows 'C:\Users\lvol\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\DataFiles\DemandInputs.dem'. On the left, two tables allow specifying demand patterns by month and day. A note below the day table states: 'Although one weekday (Sun-Mon) will have one more day per year than the other weekdays, this impact on the analysis results is insignificant. Thus, the program uses an equal number of days per year in the calculations.' On the right, a 'Demand Multipliers' section contains a table with monthly values for each day of the week. Above this table are three radio button options: 'Display Demand Multiplier Values' (unchecked), 'Display Demand Pattern Group Colors' (unchecked), and 'Display Demand Pattern Group Numbers' (checked). A red box highlights the last two options. At the bottom, there is a 'Ratio of Base File Demand to AADT' input field set to '1.0000000' and a 'Calculate Demand Adjustment Factors' button. A blue callout box on the right side of the multipliers table states: 'Users can choose either to display demand pattern values or group numbers, with or without the group colors.'

# Weather Adjustment Factors: Weather Inputs

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]

File Help

Project File: C:\Users\lovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

Demand Weather Incidents Overall

Save Data to File Load Data from File Filename: C:\Users\lovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\DataFiles\WeatherInputs.wea

Calculate Weighted Probabilities by Demand Pattern

View Probabilities By
 Base Probabilities by Month
 Weighted Probabilities by Demand Pattern

	Normal Weather	Medium Rain	Heavy Rain	Light Snow	Light-Med Snow	Med-Heavy Snow	Heavy Snow	Severe Cold	Low Visibility	Very Low Visibility	Minimum Visibility	Total
► January	95.722298	0.738000	0.502000	1.477000	0.213000	0.038000	0.000000	0.000000	0.784000	0.000000	0.525000	99.999
February	96.839203	1.040000	0.144000	0.544000	0.386000	0.000000	0.000000	0.000000	0.727000	0.000000	0.319000	99.999
March	97.414902	1.364000	0.670000	0.000000	0.000000	0.000000	0.000000	0.000000	0.242000	0.000000	0.308000	99.999
April	97.414902	1.364000	0.670000	0.000000	0.000000	0.000000	0.000000	0.000000	0.242000	0.000000	0.308000	99.999
May	97.511803	1.295000	1.086000	0.000000	0.000000	0.000000	0.000000	0.000000	0.108000	0.000000	0.000000	100.001
June	97.726402	0.936000	1.338000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	100.000
July	97.526299	0.865000	1.523000	0.000000	0.000000	0.000000	0.000000	0.000000	0.086000	0.000000	0.000000	100.000
August	98.121101	0.369000	1.141000	0.000000	0.000000	0.000000	0.000000	0.000000	0.369000	0.000000	0.000000	100.000
September	97.869797	1.075000	1.056000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	100.001
October	98.408096	0.486000	0.325000	0.000000	0.000000	0.000000	0.000000	0.000000	0.690000	0.000000	0.091000	100.000
November	97.936897	1.059000	0.709000	0.000000	0.000000	0.000000	0.000000	0.000000	0.294000	0.000000	0.000000	99.999
December	95.714500	0.614000	0.778000	0.695000	0.262000	0.069000	0.000000	0.000000	1.404000	0.000000	0.463000	100.000

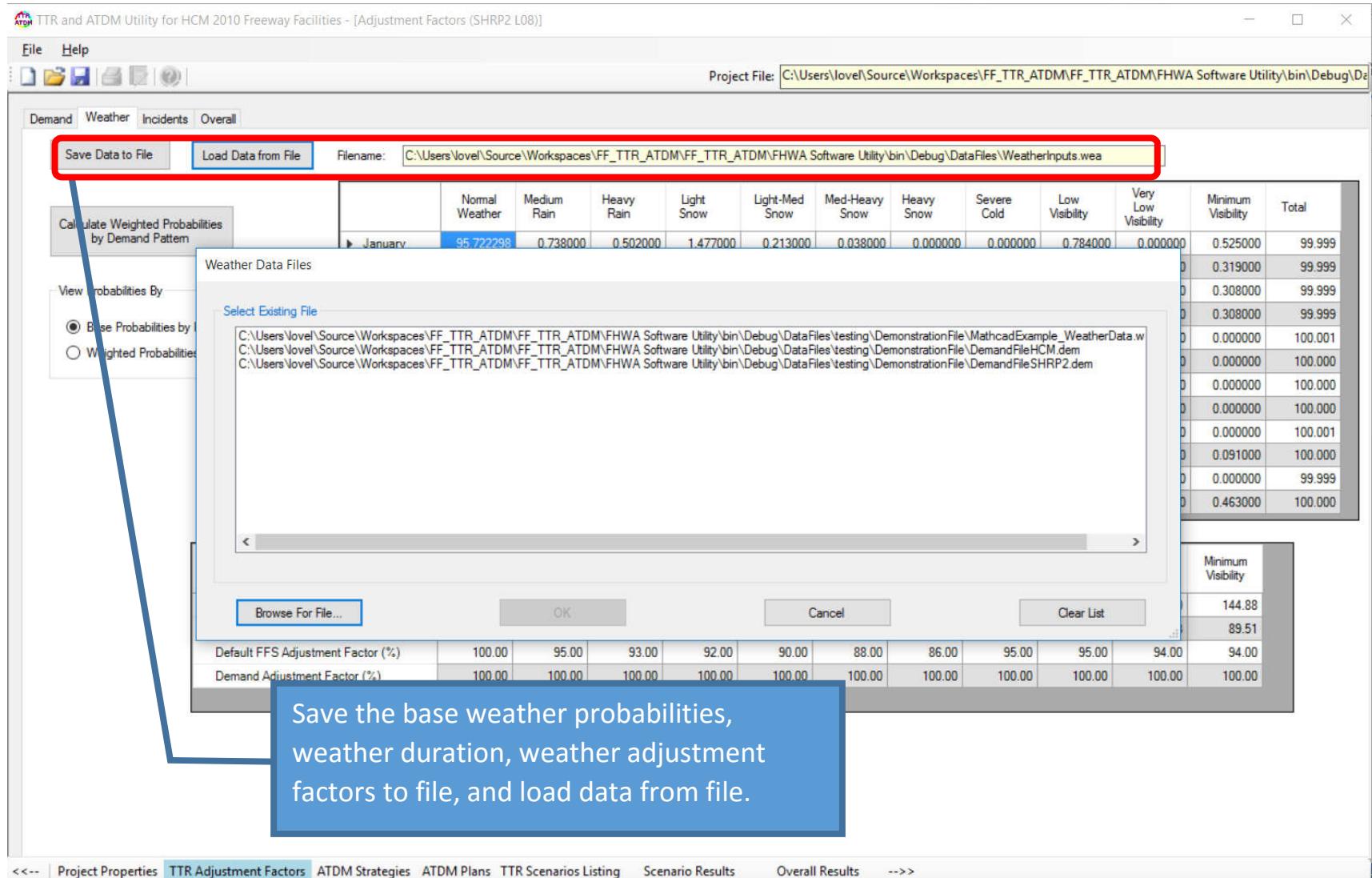
  

	Normal Weather	Medium Rain	Heavy Rain	Light Snow	Light-Med Snow	Med-Heavy Snow	Heavy Snow	Severe Cold	Low Visibility	Very Low Visibility	Minimum Visibility
► Average Duration for Weather Type (min)	0.00	40.22	33.69	93.09	33.35	21.66	7.30	0.00	76.17	0.00	144.88
Default Capacity Adjustment Factor (%)	100.00	92.76	85.87	95.71	91.34	88.96	77.57	91.55	90.33	88.33	89.51
Default FFS Adjustment Factor (%)	100.00	95.00	93.00	92.00	90.00	88.00	86.00	95.00	95.00	94.00	94.00
Demand Adjustment Factor (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

User can change the values of the weather probabilities, weather durations and weather adjustment factors according to their data.

Scenarios Listing Scenario Results Overall Results -->

# Weather Adjustment Factors: Loading and Saving



# Weather Adjustment Factors: Calculate Weighted Weather Probabilities

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]

File Help

Project File: C:\Users\jovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\DataFiles\WeatherInputs.wea

Demand Weather Incidents Overall

Save Data to File Load Data from File Filename: C:\Users\jovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\DataFiles\WeatherInputs.wea

**Calculate Weighted Probabilities by Demand Pattern**

**View Probabilities By**

Base Probabilities by Month  
 Weighted Probabilities by Demand Pattern

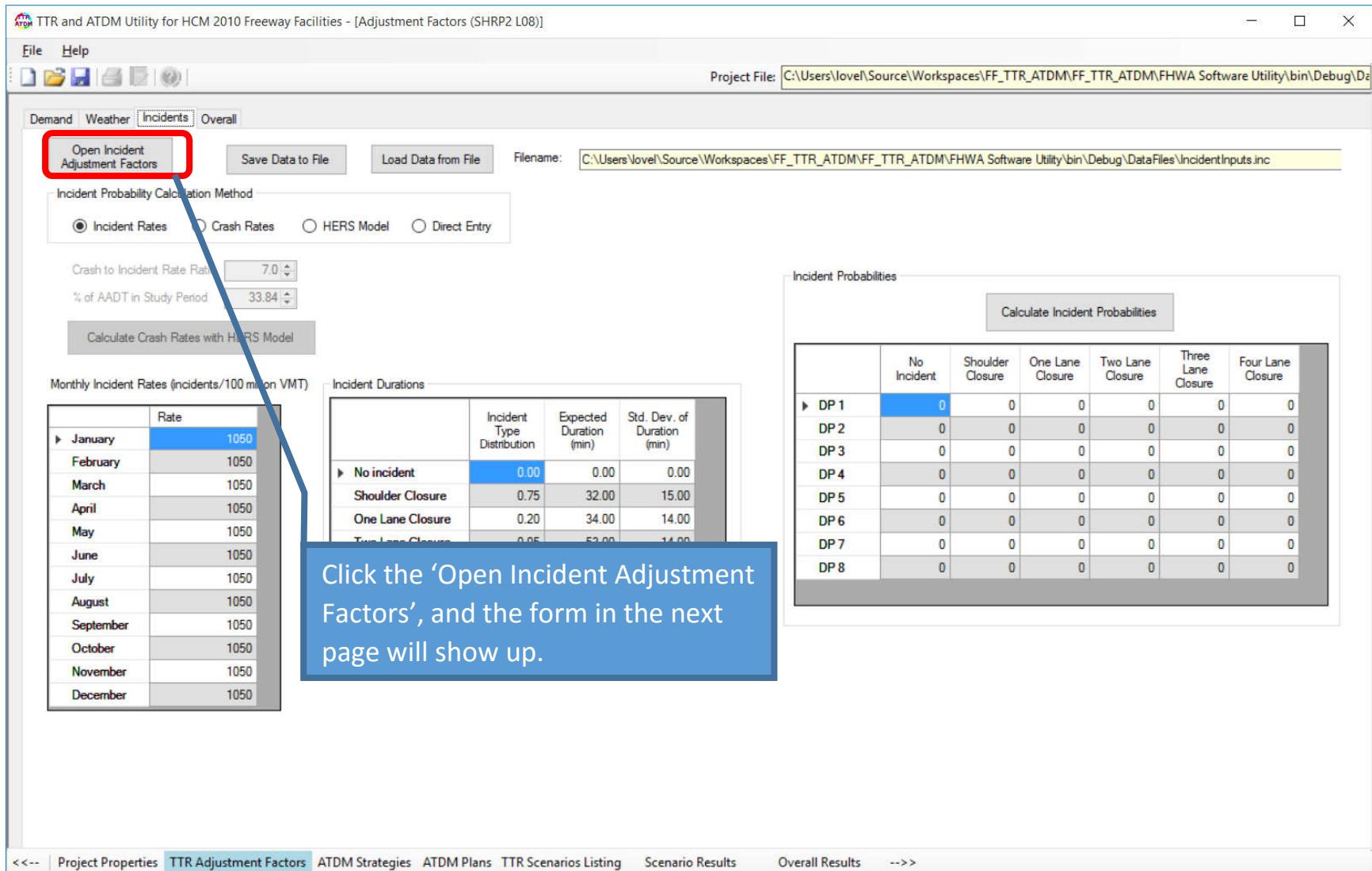
	Normal Weather	Medium Rain	Heavy Rain	Light Snow	Light-Med Snow	Med-Heavy Snow	Heavy Snow	Severe Cold	Low Visibility	Very Low Visibility	Minimum Visibility	Total
► DP 1	96.06326	0.78800	0.48738	0.91923	0.28319	0.03704	0.00000	0.00000	0.98108	0.00000	0.44015	99.999
DP 2	96.11220	0.80389	0.46573	0.89557	0.28968	0.03470	0.00000	0.00000	0.96505	0.00000	0.43251	99.999
DP 3	97.44472	1.34277	0.79800	0.00000	0.00000	0.00000	0.00000	0.00000	0.20077	0.00000	0.21323	99.999
DP 4	97.45124	1.33813	0.82600	0.00000	0.00000	0.00000	0.00000	0.00000	0.19175	0.00000	0.19250	100.000
DP 5	97.79127	0.72333	1.33400	0.00000	0.00000	0.00000	0.00000	0.00000	0.15167	0.00000	0.00000	100.000
DP 6	97.80139	0.70879	1.32895	0.00000	0.00000	0.00000	0.00000	0.00000	0.16113	0.00000	0.00000	100.000
DP 7	98.07936	0.86558	0.68285	0.00000	0.00000	0.00000	0.00000	0.00000	0.34062	0.00000	0.03150	100.000
DP 8	98.08931	0.85295	0.67711	0.00000	0.00000	0.00000	0.00000	0.00000	0.34705	0.00000	0.03353	100.000

	Normal Weather	Medium Rain	Heavy Rain	Light Snow	Light-Med Snow	Med-Heavy Snow	Heavy Snow	Severe Cold	Low Visibility	Very Low Visibility	Minimum Visibility
► Average Duration for Weather Type (min)	0.00	40.22	33.69	93.09	33.35	21.66	7.30	0.00	76.17	0.00	144.88
Default Capacity Adjustment Factor (%)	100.00	92.76	85.87	95.71	91.34	88.96	77.57	91.55	90.33	88.33	89.51
Default FFS Adjustment Factor (%)	100.00	95.00	93.00	92.00	90.00	88.00	86.00	95.00	95.00	94.00	94.00
Demand Adjustment Factor (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Click the 'Calculate Weighted Weather Probabilities by Demand Pattern' button and the form on the right will be updated to show the weather probabilities by demand pattern rather than by month.

<<- | Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->

# Incident Adjustment Factors: Open Adjustment Factors Form



# Incident Adjustment Factors: Loading and Saving

Incident Adjustment Factors

Save Data to File   Load Data from File

Filename:

FFS adjustment factors (SAFs)

Number of Lanes (1 Direction)	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
2	1.00	1.00	1.00	1.00	1.00	1.00
3	1.00	1.00	1.00	1.00	1.00	1.00
4	1.00	1.00	1.00	1.00	1.00	1.00
5	1.00	1.00	1.00	1.00	1.00	1.00
6	1.00	1.00	1.00	1.00	1.00	1.00
7	1.00	1.00	1.00	1.00	1.00	1.00
8	1.00	1.00	1.00	1.00	1.00	1.00

Capacity Adjustment Factors (CAFs)

Number of Lanes (1 Direction)	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
2	1.00	0.81	0.35	0.00	0.00	0.00
3	1.00	0.83	0.49	0.17	0.00	0.00
4	1.00	0.85	0.58	0.25	0.13	0.00
5	1.00	0.87	0.65	0.40	0.20	0.00
6	1.00	0.89	0.71	0.50	0.26	0.00
7	1.00	0.91	0.75	0.57	0.36	0.00
8	1.00	0.93	0.78	0.63	0.41	0.00

Demand Adjustment Factors (DAFs)

Number of Lanes (1 Direction)	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
2	1.00	1.00	1.00	1.00	1.00	1.00
3	1.00	1.00	1.00	1.00	1.00	1.00
4	1.00	1.00	1.00	1.00	1.00	1.00
5	1.00	1.00	1.00	1.00	1.00	1.00
6	1.00	1.00	1.00	1.00	1.00	1.00
7	1.00	1.00	1.00	1.00	1.00	1.00
8	1.00	1.00	1.00	1.00	1.00	1.00

Users can change the values of SAF, CAF, and DAF for the various incident categories, also users can save the data to a file and load it as needed.

# Incident Adjustment Factors: Select Calculation Method

The screenshot shows the software interface for calculating incident adjustment factors. The top menu bar includes File, Help, and various icons. The main window has tabs for Demand, Weather, Incidents, and Overall, with Incidents selected. A toolbar below the tabs includes Open Incident Adjustment Factors, Save Data to File, and Load Data from File. The Project File path is displayed as C:\Users\lvol\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\DataFiles\IncidentInputs.inc. The Incident Probability Calculation Method section contains four radio buttons: Incident Rates (selected), Crash Rates, HERS Model, and Direct Entry. Below this are fields for Crash to Incident Rate Ratio (7.0) and % of AADT in Study Period (33.94). A button to Calculate Crash Rates with HERS Model is present. To the right is an Incident Probabilities grid with columns for No Incident, Shoulder Closure, One Lane Closure, Two Lane Closure, Three Lane Closure, and Four Lane Closure, across eight rows labeled DP 1 through DP 8. A blue callout box points to the Incident Rates radio button with the text: "There are four methods available for determining the incident probabilities."

Incident Probability Calculation Method

Incident Rates    Crash Rates    HERS Model    Direct Entry

Crash to Incident Rate Ratio: 7.0  
% of AADT in Study Period: 33.94

Calculate Crash Rates with HERS Model

Monthly Incident Rates (incidents/100 million VMT)

	Rate
January	1050
February	1050
March	1050
April	1050
May	1050
June	1050
July	1050
August	1050
September	1050
October	1050
November	1050
December	1050

Incident Durations

	Incident Type Distribution	Expected Duration (min)	Std. Dev. of Duration (min)
No incident	0.00	0.00	0.00
Shoulder Closure	0.75	32.00	15.00
One Lane Closure	0.20	34.00	14.00
Two Lane Closure	0.05	53.00	14.00
Three Lane Closure	0.00	69.00	22.00
Four Lane Closure	0.00	69.00	22.00

Incident Probabilities

	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
DP 1	0	0	0	0	0	0
DP 2	0	0	0	0	0	0
DP 3	0	0	0	0	0	0
DP 4	0	0	0	0	0	0
DP 5	0	0	0	0	0	0
DP 6	0	0	0	0	0	0
DP 7	0	0	0	0	0	0
DP 8	0	0	0	0	0	0

There are four methods available for determining the incident probabilities.

Project Properties | TTR Adjustment Factors | ATDM Strategies | ATDM Plans | TTR Scenarios Listing | Scenario Results | Overall Results | -->

# Incident Adjustment Factors: Incident Rates Inputs

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]

File Help

Demand Weather Incidents Overall

Open Incident Adjustment Factors Save Data to File Load Data from File

Project File: C:\Users\lovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\DataFiles\IncidentInputs.inc

Incident Probability Calculation Method

Incident Rates  Crash Rates  HERS Model  Direct Entry

Crash to Incident Rate Ratio: 7.0  
% of AADT in Study Period: 33.84

Calculate Crash Rates with HERS Model

Monthly Incident Rates (incidents/100 million VMT)

	Rate
January	1050
February	1050
March	1050
April	1050
May	1050
June	1050
July	1050
August	1050
September	1050
October	1050
November	1050
December	1050

Incident Durations

	Incident Type Distribution	Expected Duration (min)	Std. Dev. of Duration (min)
No incident	0.00	0.00	0.00
Shoulder Closure	0.75	32.00	15.00
One Lane Closure	0.20	34.00	14.00
Two Lane Closure	0.05	53.00	14.00
Three Lane Closure	0.00	69.00	22.00
Four Lane Closure	0.00	69.00	22.00

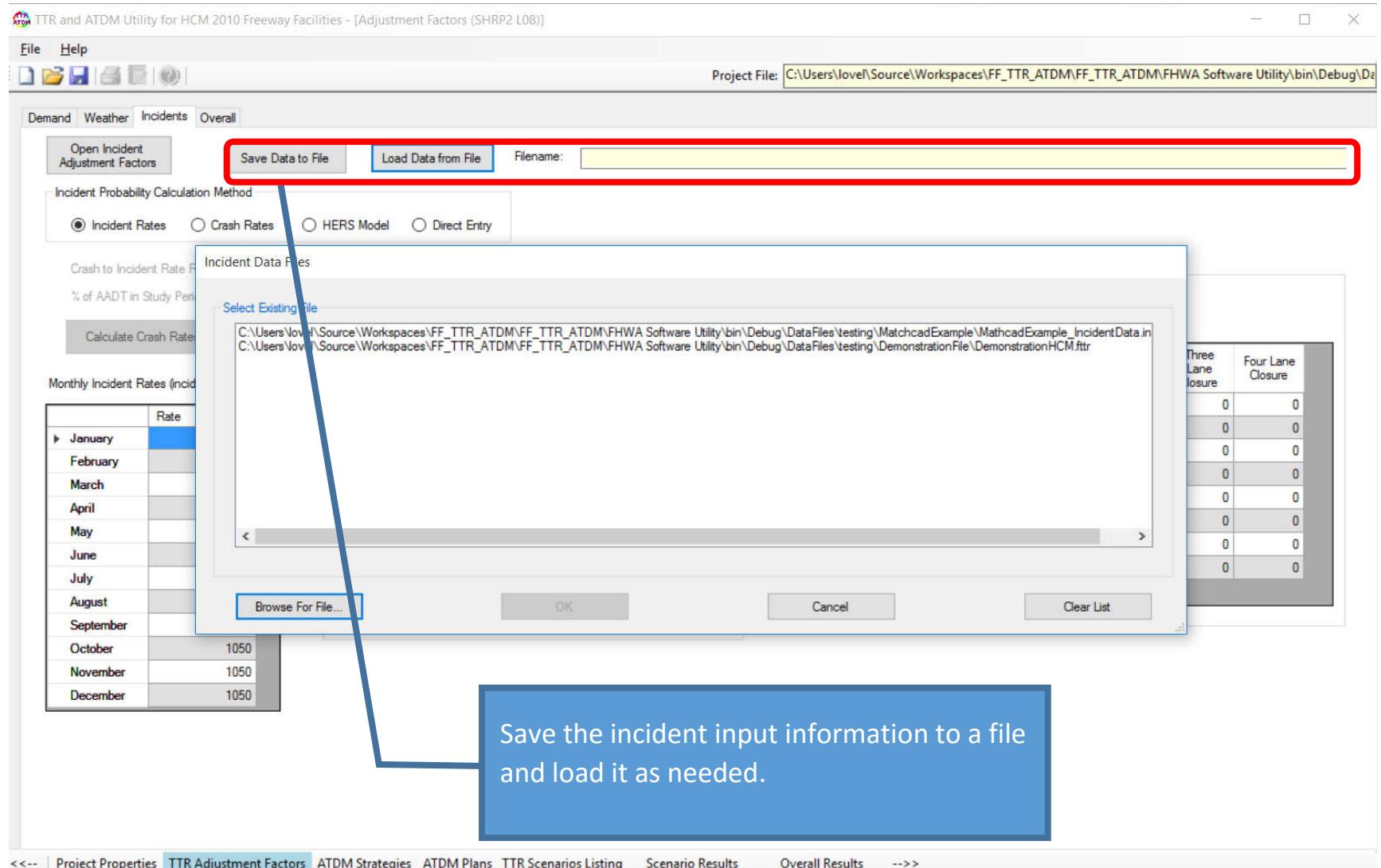
Incident Probabilities

	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
DP 1	0	0	0	0	0	0
DP 2	0	0	0	0	0	0
DP 3	0	0	0	0	0	0
DP 4	0	0	0	0	0	0
DP 5	0	0	0	0	0	0
DP 6	0	0	0	0	0	0
DP 7	0	0	0	0	0	0
DP 8	0	0	0	0	0	0

If 'Incident Rates' is selected, users can change the incident rates, incident duration information according to their needs.

<<- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->

# Incident Adjustment Factors: Loading and Saving



# Incident Adjustment Factors: Calculate Incident Probabilities

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]

File Help

Demand Weather Incidents Overall

Open Incident Adjustment Factors Save Data to File Load Data from File Filename: C:\Users\lowl\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

Incident Probability Calculation Method

Incident Rates  Crash Rates  HERS Model  Direct Entry

Crash to Incident Rate Ratio: 7.0  
% of AADT in Study Period: 33.84

Calculate Crash Rates with HERS Model

Monthly Incident Rates (incidents/100 million VMT)

	Rate
January	1050
February	1050
March	1050
April	1050
May	1050
June	1050
July	1050
August	1050
September	1050
October	1050
November	1050
December	1050

Incident Durations

	Incident Type Distribution	Expected Duration (min)	Std. Dev. of Duration (min)
No incident	0.00	0.00	0.00
Shoulder Closure	0.75	32.00	15.00
One Lane Closure	0.20	34.00	14.00
Two Lane Closure	0.05	53.00	14.00
Three Lane Closure	0.00	69.00	22.00
Four Lane Closure	0.00	69.00	22.00

Incident Probabilities

	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
DP 1	0.797626	0.142790	0.042715	0.016868	0.000000	0.000000
DP 2	0.799443	0.141532	0.042317	0.016709	0.000000	0.000000
DP 3	0.777584	0.156653	0.047127	0.018637	0.000000	0.000000
DP 4	0.781991	0.153609	0.046154	0.018246	0.000000	0.000000
DP 5	0.779206	0.155533	0.046768	0.018493	0.000000	0.000000
DP 6	0.785083	0.151472	0.045472	0.017973	0.000000	0.000000
DP 7	0.788858	0.148862	0.044641	0.017640	0.000000	0.000000
DP 8	0.792361	0.146437	0.043871	0.017331	0.000000	0.000000

If ‘Incident Rates’ were chosen, click the ‘Calculate Incident Probabilities’ button and the probabilities will be calculated.

<<- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->

# Incident Adjustment Factors: Crash Rates Inputs

The screenshot shows the 'TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]' application window. The 'Incident Probability Calculation Method' section is highlighted with a red circle, showing 'Crash Rates' selected. Below it are fields for 'Crash to Incident Rate Ratio' (7.0) and '% of AADT in Study Period' (33.84). A button 'Calculate Crash Rates with HERS Model' is also visible. To the right, the 'Incident Probabilities' table shows probabilities for various closure types across different scenarios (DP 1 to DP 8). A callout box points from the bottom of the circled area to this table.

Incident Probability Calculation Method

Incident Rates  Crash Rates  HERS Model  Direct Entry

Crash to Incident Rate Ratio: 7.0  
% of AADT in Study Period: 33.84

Calculate Crash Rates with HERS Model

Monthly Crash Rates (crashes/100 million VMT)

	Rate
January	0
February	0
March	0
April	0
May	0
June	0
July	0
August	0
September	0
October	0
November	0
December	0

Incident Durations

	Incident Type Distribution	Expected Duration (min)	Std. Dev. of Duration (min)
No incident	0.00	0.00	0.00
Shoulder Closure	0.75	32.00	15.00
One Lane Closure	0.20	34.00	14.00
Two Lane Closure	0.05	53.00	14.00
Three Lane Closure	0.00	69.00	22.00
Four Lane Closure	0.00	69.00	22.00

Incident Probabilities

	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
► DP 1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
DP 2	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
DP 3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
DP 4	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
DP 5	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
DP 6	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
DP 7	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
DP 8	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

If 'Crash Rates' were chosen, users can change the crash rates, incident duration information, crash to incident rate ratio.

<<- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Incident Adjustment Factors: Calculate Incident Probabilities

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]

File Help

Demand Weather Incidents Overall

Open Incident Adjustment Factors Save Data to File Load Data from File Filename: C:\Users\lovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

Incident Probability Calculation Method

Incident Rates  Crash Rates  HERS Model  Direct Entry

Crash to Incident Rate Ratio: 7.0  
% of AADT in Study Period: 33.84

Calculate Crash Rates with HERS Model

Monthly Crash Rates (crashes/100 million VMT)

	Rate
January	150
February	150
March	150
April	150
May	150
June	150
July	150
August	150
September	150
October	150
November	150
December	150

Incident Durations

	Incident Type Distribution	Expected Duration (min)	Std. Dev. of Duration (min)
No incident	0.00	0.00	0.00
Shoulder Closure	0.75	32.00	15.00
One Lane Closure	0.20	34.00	14.00
Two Lane Closure	0.05	53.00	14.00
Three Lane Closure	0.00	69.00	22.00
Four Lane Closure	0.00	69.00	22.00

Incident Probabilities

	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
DP 1	0.797626	0.142790	0.042715	0.016868	0.000000	0.000000
DP 2	0.799443	0.141532	0.042317	0.016709	0.000000	0.000000
DP 3	0.777584	0.156653	0.047127	0.018637	0.000000	0.000000
DP 4	0.781991	0.153609	0.046154	0.018246	0.000000	0.000000
DP 5	0.779206	0.155533	0.046768	0.018493	0.000000	0.000000
DP 6	0.785083	0.151472	0.045472	0.017973	0.000000	0.000000
DP 7	0.788858	0.148862	0.044641	0.017640	0.000000	0.000000
DP 8	0.792361	0.146437	0.043871	0.017331	0.000000	0.000000

If 'Crash Rates' is selected, click the 'Calculate Incident Probabilities' button and the probabilities will be calculated.

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Incident Adjustment Factors: HERS Model

If 'HERS Model' is selected, users can change the incident duration information, % of AADT in study period.

Incident Type	Incident Duration (min)	Expected Duration (min)	Std. Dev. of Duration (min)
No incident	0.00	0.00	0.00
Shoulder Closure	0.75	32.00	15.00
One Lane Closure	0.20	34.00	14.00
Two Lane Closure	0.05	53.00	14.00
Three Lane Closure	0.00	69.00	22.00
Four Lane Closure	0.00	69.00	22.00

Incident	Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
DP 1	0.797626	0.142790	0.042715	0.016868	0.000000
DP 2	0.799443	0.141532	0.042317	0.016709	0.000000
DP 3	0.777584	0.156653	0.047127	0.018637	0.000000
DP 4	0.781991	0.153609	0.046154	0.018246	0.000000
DP 5	0.779206	0.155533	0.046768	0.018493	0.000000
DP 6	0.785083	0.151472	0.045472	0.017973	0.000000
DP 7	0.788858	0.148862	0.044641	0.017640	0.000000
DP 8	0.792361	0.146437	0.043871	0.017331	0.000000

# Incident Adjustment Factors: Calculate Crash Rates

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]

File Help

Demand Weather Incidents Overall

Open Incident Adjustment Factors Save Data to File Load Data from File Filename: C:\Users\lovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

Incident Probability Calculation Method

Incident Rates  Crash Rates  HERS Model  Direct Entry

Crash to Incident Rate Ratio: 7.0  
% of AADT in Study Period: 33.84

**Calculate Crash Rates with HERS Model (1)**

Monthly Crash Rates (crashes/100 million VMT)

	Rate
January	162.32
February	162.32
March	162.32
April	162.32
May	162.32
June	162.32
July	162.32
August	162.32
September	162.32
October	162.32
November	162.32
December	162.32

Incident Durations

	Incident Type Distribution	Expected Duration (min)	Std. Dev. of Duration (min)
No incident	0.00	0.00	0.00
Shoulder Closure	0.75	32.00	15.00
One Lane Closure	0.20	34.00	14.00
Two Lane Closure	0.05	53.00	14.00
Three Lane Closure	0.00	69.00	22.00
Four Lane Closure	0.00	69.00	22.00

Calculate Incident Probabilities (2)

	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
DP 1	0.797626	0.142790	0.042715	0.016868	0.000000	0.000000
DP 2	0.799443	0.141532	0.042317	0.016709	0.000000	0.000000
DP 3	0.777584	0.156653	0.047127	0.018637	0.000000	0.000000
DP 4	0.781991	0.153609	0.046154	0.018246	0.000000	0.000000
DP 5	0.779206	0.155533	0.046768	0.018493	0.000000	0.000000
DP 6	0.785083	0.151472	0.045472	0.017973	0.000000	0.000000
DP 7	0.788858	0.148862	0.044641	0.017640	0.000000	0.000000
DP 8	0.792361	0.146437	0.043871	0.017331	0.000000	0.000000

Click the 'Calculate Crash rates with HERS Model' button, and the crash rates will be calculated.

<<- | Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Incident Adjustment Factors: Calculate Incident Probabilities

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]

File Help

Demand Weather Incidents Overall

Open Incident Adjustment Factors Save Data to File Load Data from File Filename: C:\Users\lovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

Incident Probability Calculation Method

Incident Rates  Crash Rates  HERS Model  Direct Entry

Crash to Incident Rate Ratio: 7.0  
% of AADT in Study Period: 33.84

Calculate Crash Rates with HERS Model (1)

Monthly Crash Rates (crashes/100 million VMT)

	Rate
January	162.32
February	162.32
March	162.32
April	162.32
May	162.32
June	162.32
July	162.32
August	162.32
September	162.32
October	162.32
November	162.32
December	162.32

Incident Durations

	Incident Type Distribution	Expected Duration (min)	Std. Dev. of Duration (min)
No incident	0.00	0.00	0.00
Shoulder Closure	0.75	32.00	15.00
One Lane Closure	0.20	34.00	14.00
Two Lane Closure	0.05	53.00	14.00
Three Lane Closure	0.00	69.00	22.00
Four Lane Closure	0.00	69.00	22.00

Incident Probabilities

Calculate Incident Probabilities (2)

	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
DP 1	0.782048	0.153570	0.046141	0.018241	0.000000	0.000000
DP 2	0.783995	0.152224	0.045712	0.018069	0.000000	0.000000
DP 3	0.760579	0.168372	0.050897	0.020152	0.000000	0.000000
DP 4	0.765298	0.165124	0.049848	0.019730	0.000000	0.000000
DP 5	0.762316	0.167177	0.050511	0.019996	0.000000	0.000000
DP 6	0.768609	0.162843	0.049114	0.019434	0.000000	0.000000
DP 7	0.772653	0.160055	0.048217	0.019075	0.000000	0.000000
DP 8	0.776406	0.157466	0.047387	0.018741	0.000000	0.000000

Click 'Calculate Incident Probabilities' and the probabilities will show up.

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Incident Adjustment Factors: Direct Entry

The screenshot shows the 'TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]' application window. The 'Incident' tab is selected. In the 'Incident Probability Calculation Method' section, the 'Direct Entry' radio button is selected. Below this, a table titled 'Incident Probabilities' displays data for eight rows labeled DP1 through DP8. The first column contains arrows pointing right. The second column, 'No Incident', has a value of 0.797626 highlighted in blue. The other columns represent different closure types: Shoulder Closure, One Lane Closure, Two Lane Closure, Three Lane Closure, and Four Lane Closure. A red box highlights the second column of the table. A blue callout box to the right of the table states: 'If 'Direct Entry' were chosen, users can input the incident probabilities directly and save the direct probabilities for further calculation.'

	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
DP 1	0.797626	0.142790	0.042715	0.016868	0.000000	0.000000
DP 2	0.799443	0.141532	0.042317	0.016709	0.000000	0.000000
DP 3	0.777584	0.156653	0.047127	0.018637	0.000000	0.000000
DP 4	0.781991	0.153609	0.046154	0.018246	0.000000	0.000000
DP 5	0.779206	0.155533	0.046768	0.018493	0.000000	0.000000
DP 6	0.785083	0.151472	0.045472	0.017973	0.000000	0.000000
DP 7	0.788858	0.148862	0.044641	0.017640	0.000000	0.000000
DP 8	0.792361	0.146437	0.043871	0.017331	0.000000	0.000000

# Overall: Probability Threshold

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]

File Help

Demand Weather Incidents Overall

Project File: untitled.fttr

Combined Probabilities

Demand Pattern 1  Probability Threshold Value: 0.00010  Study Period (min) 180 Show Event Number Show Probabilities

No incident Shoulder Closure One Lane Closure Two Lane Closure Three Lane Closure Four Lane Closure

	Normal Weather	Medium Rain	Heavy Rain	Light Snow	Light-Med Snow	Med-Heavy Snow	Heavy Snow	Severe Cold	Low Visibility	Very Low Visibility	Minimum Visibility
No incident	0.076623	0.000629	0.000389	0.000733	0.000226	0.000030	0.000000	0.000000	0.000783	0.000000	0.000351
Shoulder Closure	0.013717	0.000113	0.000070	0.000131	0.000040	0.000005	0.000000	0.000000	0.000140	0.000000	0.000063
One Lane Closure	0.004103	0.000034	0.000021	0.000039	0.000012	0.000002	0.000000	0.000000	0.000042	0.000000	0.000019
Two Lane Closure	0.001620	0.000013	0.000008	0.000016	0.000005	0.000001	0.000000	0.000000	0.000017	0.000000	0.000007
Three Lane Closure	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Four Lane Closure	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Users can set the threshold for the combined probabilities.

Scenario Type	Number	Combined Probability	Study Probability
Demand Only	8	0.767	0.142
Incident Only	32	0.206	0.752
Weather Only	32	0.021	0.085
Incident and Weather	18	0.003	0.019
Total	90	0.997	0.998

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Overall: Select Demand Pattern

The screenshot shows the TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)] application. The window title is "TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]". The menu bar includes "File" and "Help". The toolbar has icons for file operations like Open, Save, and Print. The "Project File:" field shows "untitled.fttr". The tabs at the top are "Demand", "Weather", "Incidents", and "Overall" (which is selected).  
  
The main area is titled "Combined Probabilities". It contains a table of combined probabilities for various demand patterns across different weather conditions. A red box highlights the "Demand Pattern" dropdown set to "1".  
  
Below the table is a summary table:

Scenario Type	Number	Combined Probability	Study Probability
Demand Only	8	0.767	0.142
Incident Only	32	0.206	0.752
Weather Only	32	0.021	0.085
Incident and Weather	18	0.003	0.019
Total	90	0.997	0.998

A blue callout box points to the summary table with the text: "Users can choose to see the combined probabilities of each demand pattern."

At the bottom of the interface, there are navigation links: <<--> Project Properties, TTR Adjustment Factors, ATDM Strategies, ATDM Plans, TTR Scenarios Listing, Scenario Results, Overall Results, and -->>.

# Overall: Select Study Period

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]

File Help

Project File: untitled.fttr

Demand Weather Incidents Overall

**Study Probabilities**

Demand Pattern 1  Probability Threshold Value: 0.00010  Study Period (min) 180 Show Event Number Show Probabilities

	Normal Weather	Medium Rain	Heavy Rain	Light Snow	Light-Med Snow	Med-Heavy Snow	Heavy Snow	Severe Cold	Low Visibility	Very Low Visibility	Minimum Visibility
► No incident	0.012681	0.002732	0.002538	0.001594	0.001470				0.002040		0.000458
Shoulder Closure	0.056364										
One Lane Closure	0.016566										
Two Lane Closure	0.003255										
Three Lane Closure											
Four Lane Closure											

Select 'Study Period' and the adjusted probabilities for study period will show up.

Scenario Type	Number	Combined Probability	Study Probability
► Demand Only	8	0.834	0.091
Incident Only	24	0.140	0.809
Weather Only	32	0.023	0.090
Incident and Weather	11	0.002	0.009
Total	75	0.998	0.999

<<-- | Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Overall: Show Event Number

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]

File Help

Project File: untitled.fttr

Demand Weather Incidents Overall

**Study Probabilities**

Demand Pattern 1  Probability Threshold Value: 0.00010  Study Period (min) 180

Show Event Number **Show Probabilities**

	Normal Weather	Medium Rain	Heavy Rain	Light Snow	Light-Med Snow	Med-Heavy Snow	Heavy Snow	Severe Cold	Low Visibility	Very Low Visibility	Minimum Visibility
No incident	1	1	1	1	1	0	0	0	1	0	1
Shoulder Closure	2	1	0	1	0	0	0	0	1	0	0
One Lane Closure	1	0	0	0	0	0	0	0	0	0	0
Two Lane Closure	1	0	0	0	0	0	0	0	0	0	0
Three Lane Closure	0	0	0	0	0	0	0	0	0	0	0
Four Lane Closure	0	0	0	0	0	0	0	0	0	0	0

Scenario Type Number Combined Probability Study Probability

Demand Only	8	0.767	0.142
Incident Only	32	0.206	0.752
Weather Only	32	0.021	0.085
Incident and Weather	18	0.003	0.019
Total	90	0.997	0.998

Click 'Show Event Number' button to check the number of event, or click 'Show Probabilities' button to check the probabilities.

<<- | Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->

# Overall: Summary of Scenarios

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (SHRP2 L08)]

File Help

Project File: untitled.fttr

Demand Weather Incidents Overall

**Study Probabilities**

Demand Pattern 1  Probability Threshold Value: 0.00010  Study Period (min): 180 Show Event Number Show Probabilities

	Normal Weather	Medium Rain	Heavy Rain	Light Snow	Light-Med Snow	Med-Heavy Snow	Heavy Snow	Severe Cold	Low Visibility	Very Low Visibility	Minimum Visibility
No incident	0.016472	0.002524	0.002341	0.001470	0.001360				0.001885		0.000422
Shoulder Closure	0.041275	0.000680		0.000788					0.000843		
One Lane Closure	0.024692										
Two Lane Closure	0.004875										
Three Lane Closure											
Four Lane Closure											

**Scenario Type**   **Number**   **Combined Probability**   **Study Probability**

Scenario Type	Number	Combined Probability	Study Probability
Demand Only	8	0.767	0.142
Incident Only	32	0.206	0.752
Weather Only	32	0.021	0.085
Incident and Weather	18	0.003	0.019
Total	90	0.997	0.999

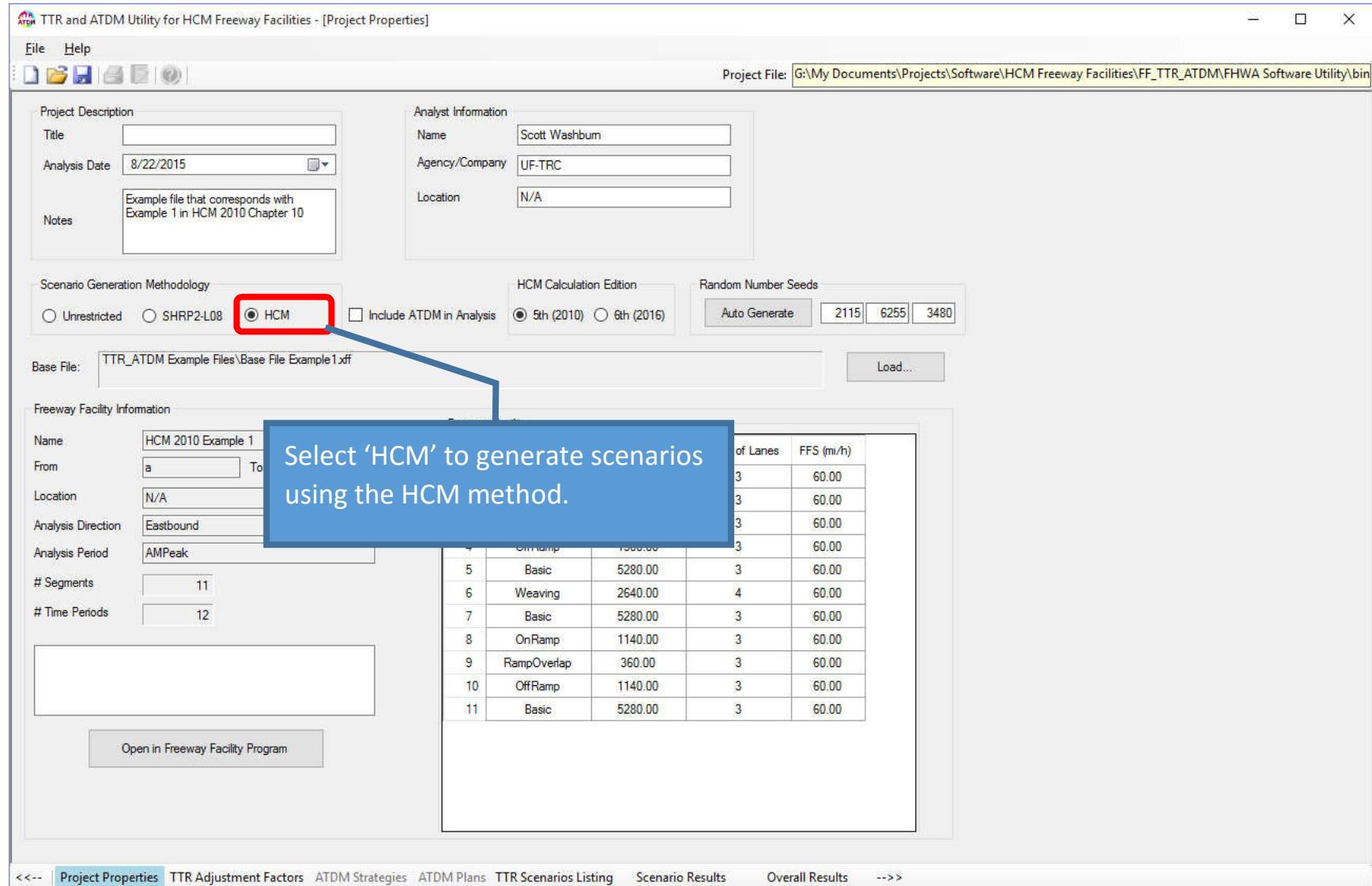
Information about the number of scenarios, combined probability and study period probability.

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

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# Adjustment Factors: HCM Scenario Generation Methodology

# Select Scenario Generation Method



# Random Number Seeds

The HCM scenario-generation methodology includes some stochastic elements; thus, the random number seeds must be specified. For the same set of inputs and same random number seeds, the results will be the same.

Segment ID	Segment Type	Length (ft)	Number of Lanes	FFS (mi/h)
1	Basic	5280.00	3	60.00
2	OnRamp	1500.00	3	60.00
3	Basic			
4	OffRamp			
5	Basic			
6	Weaving			
7	Basic			
8	OnRamp			
9	RampOverlap			
10	OffRamp			
11	Basic			

# Demand Adjustment Factors: Demand Inputs

**TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (HCM)]**

File Help

Project File: untitled.fttr

Demand Weather Incidents

Save Data to File Load Data from File Filename: C:\Users\jovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\DataFiles\DemandInputs.dem

Specify Demand Pattern within the Year

	Month Group
January	1
February	2
March	3
April	4
May	5
June	6
July	7
August	8
September	9
October	10
November	11
December	12

Specify Demand Pattern within the Day

	Day Group	# Days/Year
Monday	1	52
Tuesday	2	52
Wednesday	3	52
Thursday	4	52
Friday	5	52
Saturday	0	52
Sunday	0	52

Although one weekday (Sun-Mon) will have one more day per year than the other weekdays, this impact on the analysis results is insignificant. Thus, the program uses an equal number of days per year in the calculations.

Demand Multipliers

Update Groupings  Display Demand Multiplier Values  Display Demand Pattern Group Counts  
 Display Demand Pattern Group Numbers

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
January	0.996622	1.027775	1.040394	1.052600	1.081612	0.000000	0.000000
February	0.939253	1.010728	1.039214	1.092029	1.140071	0.000000	0.000000
March	1.043305	1.069334	1.063523	1.110921	1.171121	0.000000	0.000000
April	1.073578	1.087455	1.098238	1.161974	1.215002	0.000000	0.000000
May	1.076331	1.106182	1.113955	1.157717	1.210434	0.000000	0.000000
June	1.078043	1.085853	1.067470	1.138720	1.180327	0.000000	0.000000
July	1.082580	1.070993	1.102512	1.147279	1.184981	0.000000	0.000000
August	1.046045	1.052146	1.060371	1.093243	1.164901	0.000000	0.000000
September	1.016023	1.024051	1.023625	1.074782	1.152946	0.000000	0.000000
October	1.048981	1.045723	1.066986	1.107044	1.160954	0.000000	0.000000
November	0.974044	0.999947	1.041211	1.081541	1.070354	0.000000	0.000000
December	0.974785	0.956475	0.987019	0.916107	1.007695	0.000000	0.000000

Ratio of Base File Demand to AADT: 1.000000

Number of Scenario Sets per Demand Pattern: 4

Select the 'TTR Adjustment Factors', specify the demand multipliers, the ratio of base file demand to AADT and number of scenario sets per demand pattern in these input controls.

Calculate Demand Adjustment Factors

Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results

# Demand Adjustment Factors: Month/Day Groupings

The screenshot shows the software interface for specifying demand patterns. Two tables are highlighted with red boxes:

- Specify Demand Pattern within the Year:**

	Month Group
January	1
February	2
March	3
April	4
May	5
June	6
July	7
August	8
September	9
October	10
November	11
December	12
- Specify Demand Pattern within the Day:**

	Day Group	# Days/Year
Monday	1	52
Tuesday	2	52
Wednesday	3	52
Thursday	4	52
Friday	5	52
Saturday	0	52
Sunday	0	52

A blue arrow points from a text box at the bottom left to the 'Update Groupings' button in the 'Demand Multipliers' section.

**Text Box (Bottom Left):**

Set the month and day groups by changing the numbers in the group columns, and click 'Update Groupings' to set the demand patterns.

**Demand Multipliers Section:**

Update Groupings  Display Demand Multiplier Values  Display Demand Pattern Group Colors  
 Display Demand Pattern Group Numbers

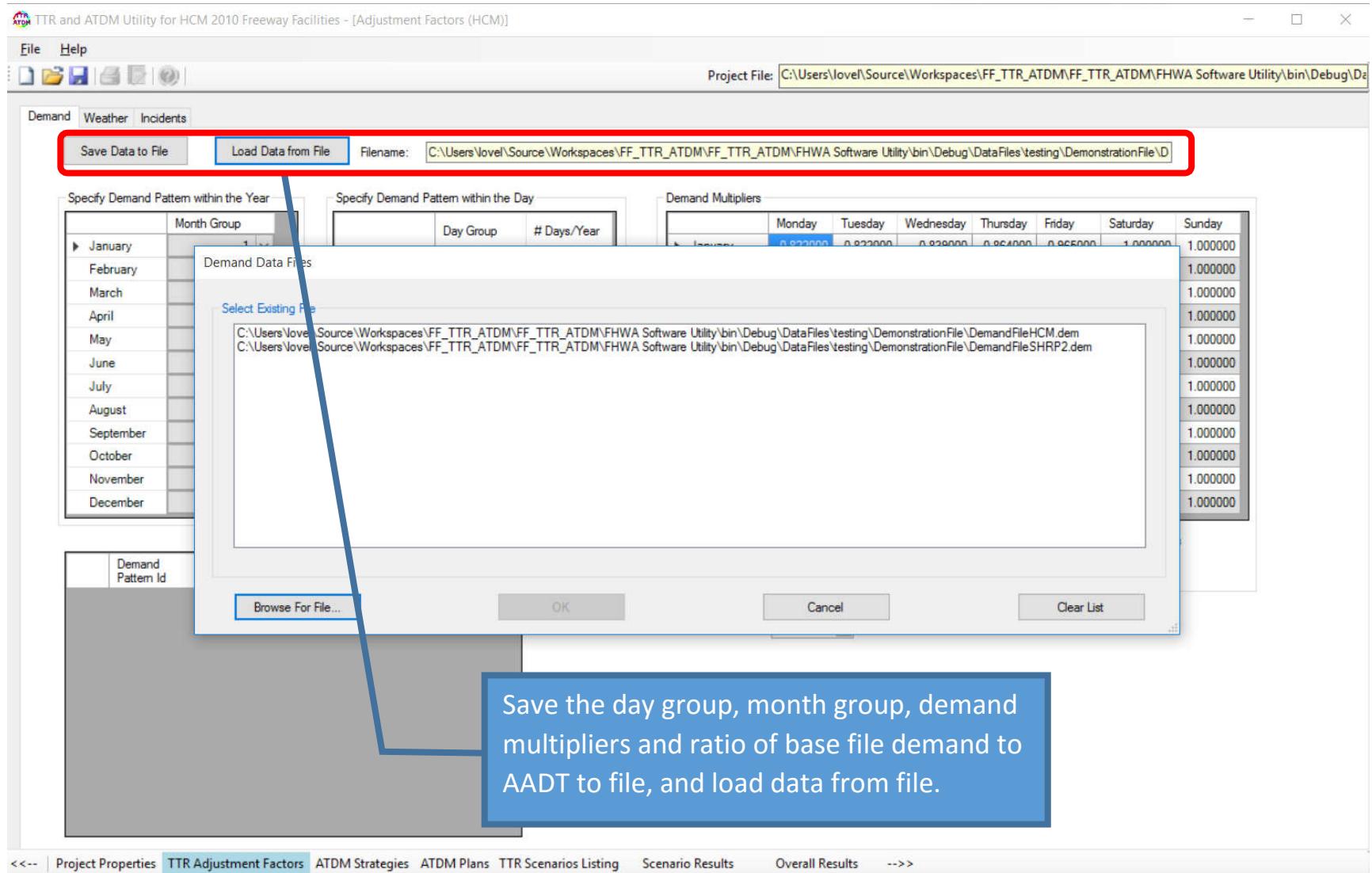
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
January	0.996622	1.027775	1.040394	1.052600	1.081612	0.000000	0.000000
February	0.939253	1.010728	1.039214	1.092029	1.140071	0.000000	0.000000
March	1.043305	1.069334	1.063523	1.110921	1.171121	0.000000	0.000000
April	1.073578	1.087455	1.098238	1.161974	1.215002	0.000000	0.000000
May	1.076331	1.106182	1.113955	1.157717	1.210434	0.000000	0.000000
June	1.078043	1.085853	1.067470	1.138720	1.180327	0.000000	0.000000
July	1.082580	1.070993	1.102512	1.147279	1.184981	0.000000	0.000000
August	1.046045	1.052146	1.060371	1.093243	1.164901	0.000000	0.000000
September	1.016023	1.024051	1.023625	1.074782	1.152946	0.000000	0.000000
October	1.048981	1.045723	1.066986	1.107044	1.160954	0.000000	0.000000
November	0.974044	0.999947	1.041211	1.081541	1.070354	0.000000	0.000000
December	0.974785	0.956475	0.987019	0.916107	1.007695	0.000000	0.000000

Ratio of Base File Demand to AADT: 1.000000

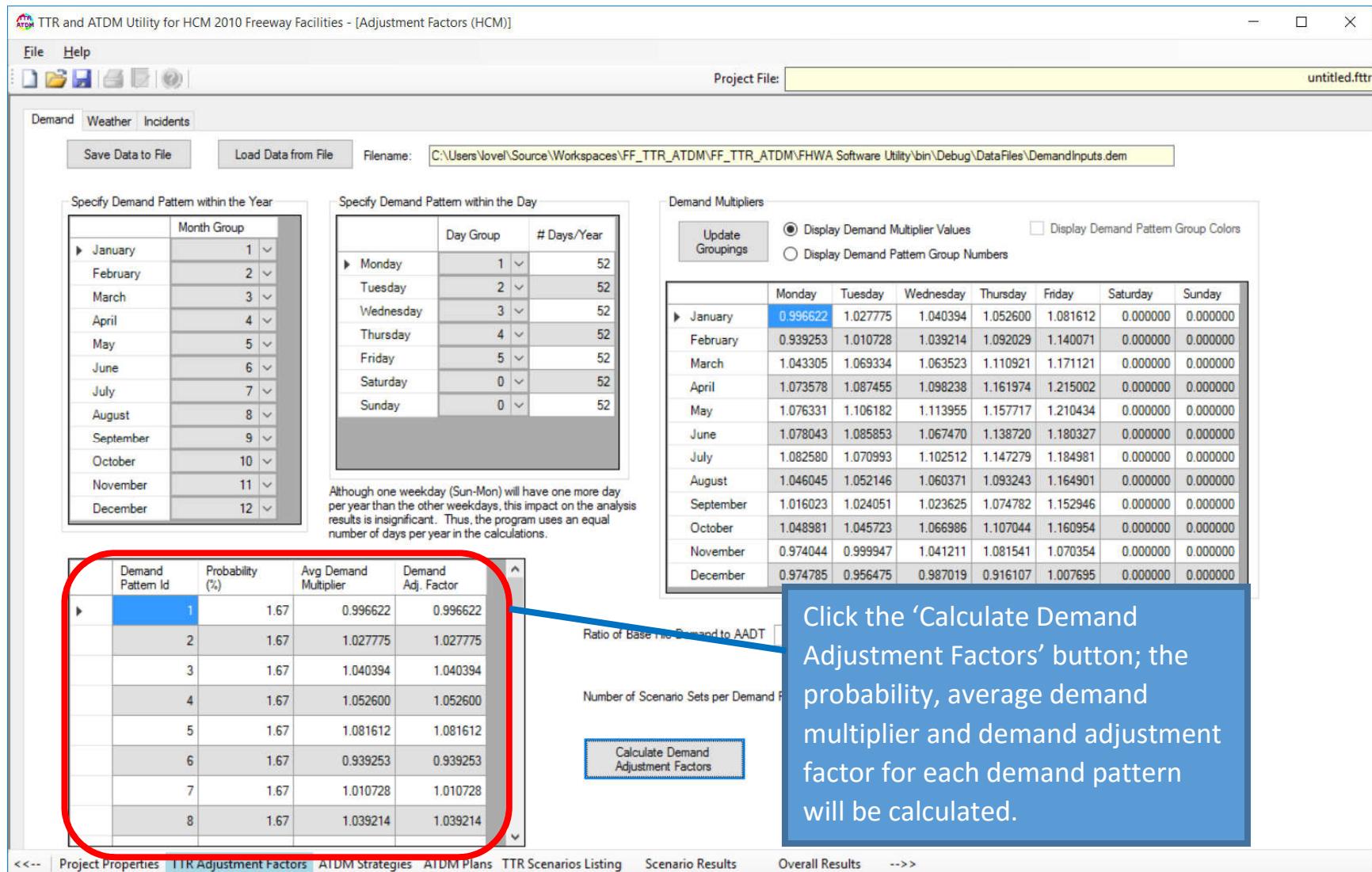
Demand Pattern: 4

Navigation: <<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Demand Adjustment Factors: Saving and Loading



# Demand Adjustment Factors: Calculate DAFs



The screenshot shows the 'Demand' tab of the software. At the top, there are buttons for 'Save Data to File' and 'Load Data from File'. The 'Filename' field contains the path: C:\Users\jovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\DataFiles\DemandInputs.dem.

**Specify Demand Pattern within the Year:**

	Month Group
January	1
February	2
March	3
April	4
May	5
June	6
July	7
August	8
September	9
October	10
November	11
December	12

**Specify Demand Pattern within the Day:**

	Day Group	# Days/Year
Monday	1	52
Tuesday	2	52
Wednesday	3	52
Thursday	4	52
Friday	5	52
Saturday	0	52
Sunday	0	52

Although one weekday (Sun-Mon) will have one more day per year than the other weekdays, this impact on the analysis results is insignificant. Thus, the program uses an equal number of days per year in the calculations.

**Demand Multipliers:**

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
January	0.996622	1.027775	1.040394	1.052600	1.081612	0.000000	0.000000
February	0.939253	1.010728	1.039214	1.092029	1.140071	0.000000	0.000000
March	1.043305	1.069334	1.063523	1.110921	1.171121	0.000000	0.000000
April	1.073578	1.087455	1.098238	1.161974	1.215002	0.000000	0.000000
May	1.076331	1.106182	1.113955	1.157717	1.210434	0.000000	0.000000
June	1.078043	1.085853	1.067470	1.138720	1.180327	0.000000	0.000000
July	1.082580	1.070993	1.102512	1.147279	1.184981	0.000000	0.000000
August	1.046045	1.052146	1.060371	1.093243	1.164901	0.000000	0.000000
September	1.016023	1.024051	1.023625	1.074782	1.152946	0.000000	0.000000
October	1.048981	1.045723	1.066986	1.107044	1.160954	0.000000	0.000000
November	0.974044	0.999947	1.041211	1.081541	1.070354	0.000000	0.000000
December	0.974785	0.956475	0.987019	0.916107	1.007695	0.000000	0.000000

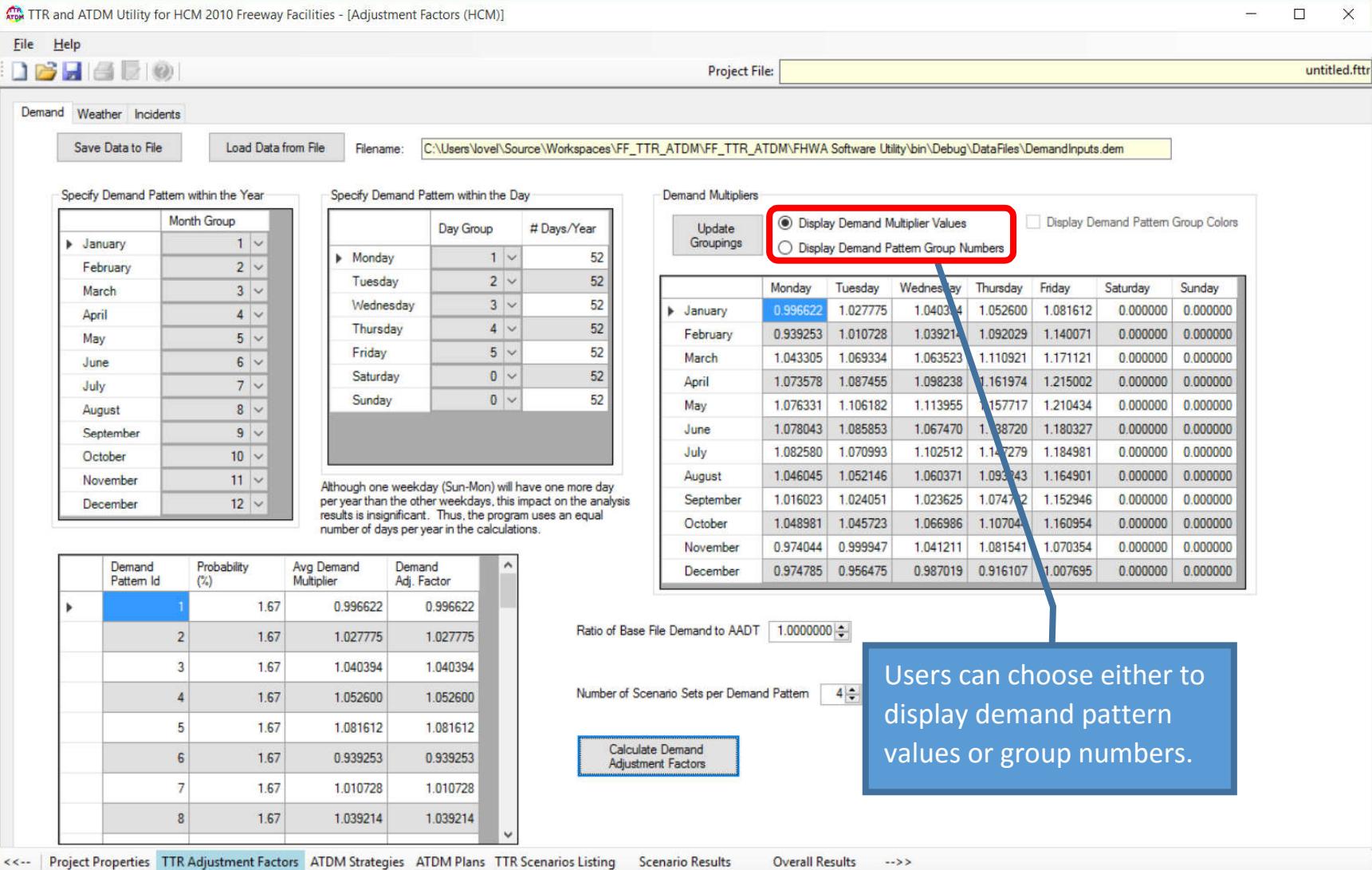
**Calculate Demand Adjustment Factors:**

A callout box points to the 'Calculate Demand Adjustment Factors' button. A text box provides instructions: 'Click the 'Calculate Demand Adjustment Factors' button; the probability, average demand multiplier and demand adjustment factor for each demand pattern will be calculated.'

Below the table, there are buttons for 'Ratio of Base Year Demand to AADT' and 'Number of Scenario Sets per Demand Pattern'.

At the bottom, there are navigation buttons: '<<--', 'Project Properties', 'TTR Adjustment Factors' (which is highlighted in blue), 'ATDM Strategies', 'ATDM Plans', 'TTR Scenarios Listing', 'Scenario Results', 'Overall Results', and '-->>'.

# Demand Adjustment Factors: Demand Pattern Display

The screenshot shows the software interface for specifying demand patterns. It includes sections for 'Specify Demand Pattern within the Year' (with a table for months 1-12), 'Specify Demand Pattern within the Day' (with a table for days of the week), and a note about equal days per year. Below these are two tables: one for 'Demand Multipliers' (listing monthly multipliers) and one for 'Demand Pattern Id' (listing scenario sets per demand pattern). A red box highlights the 'Display Demand Multiplier Values' radio button in the 'Demand Multipliers' section. A callout box states: 'Users can choose either to display demand pattern values or group numbers.' The software has a standard Windows-style menu bar (File, Help) and toolbars.

	Month Group
▶ January	1
February	2
March	3
April	4
May	5
June	6
July	7
August	8
September	9
October	10
November	11
December	12

	Day Group	# Days/Year
▶ Monday	1	52
Tuesday	2	52
Wednesday	3	52
Thursday	4	52
Friday	5	52
Saturday	0	52
Sunday	0	52

Although one weekday (Sun-Mon) will have one more day per year than the other weekdays, this impact on the analysis results is insignificant. Thus, the program uses an equal number of days per year in the calculations.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
▶ January	0.996622	1.027775	1.040394	1.052600	1.081612	0.000000	0.000000
February	0.939253	1.010728	1.039214	1.092029	1.140071	0.000000	0.000000
March	1.043305	1.069334	1.063523	1.110921	1.171121	0.000000	0.000000
April	1.073578	1.087455	1.098238	1.161974	1.215002	0.000000	0.000000
May	1.076331	1.106182	1.113955	1.157717	1.210434	0.000000	0.000000
June	1.078043	1.085853	1.067470	1.138720	1.180327	0.000000	0.000000
July	1.082580	1.070993	1.102512	1.147279	1.184981	0.000000	0.000000
August	1.046045	1.052146	1.060371	1.093743	1.164901	0.000000	0.000000
September	1.016023	1.024051	1.023625	1.074712	1.152946	0.000000	0.000000
October	1.048981	1.045723	1.066986	1.107041	1.160954	0.000000	0.000000
November	0.974044	0.999947	1.041211	1.081541	1.070354	0.000000	0.000000
December	0.974785	0.956475	0.987019	0.916107	1.007695	0.000000	0.000000

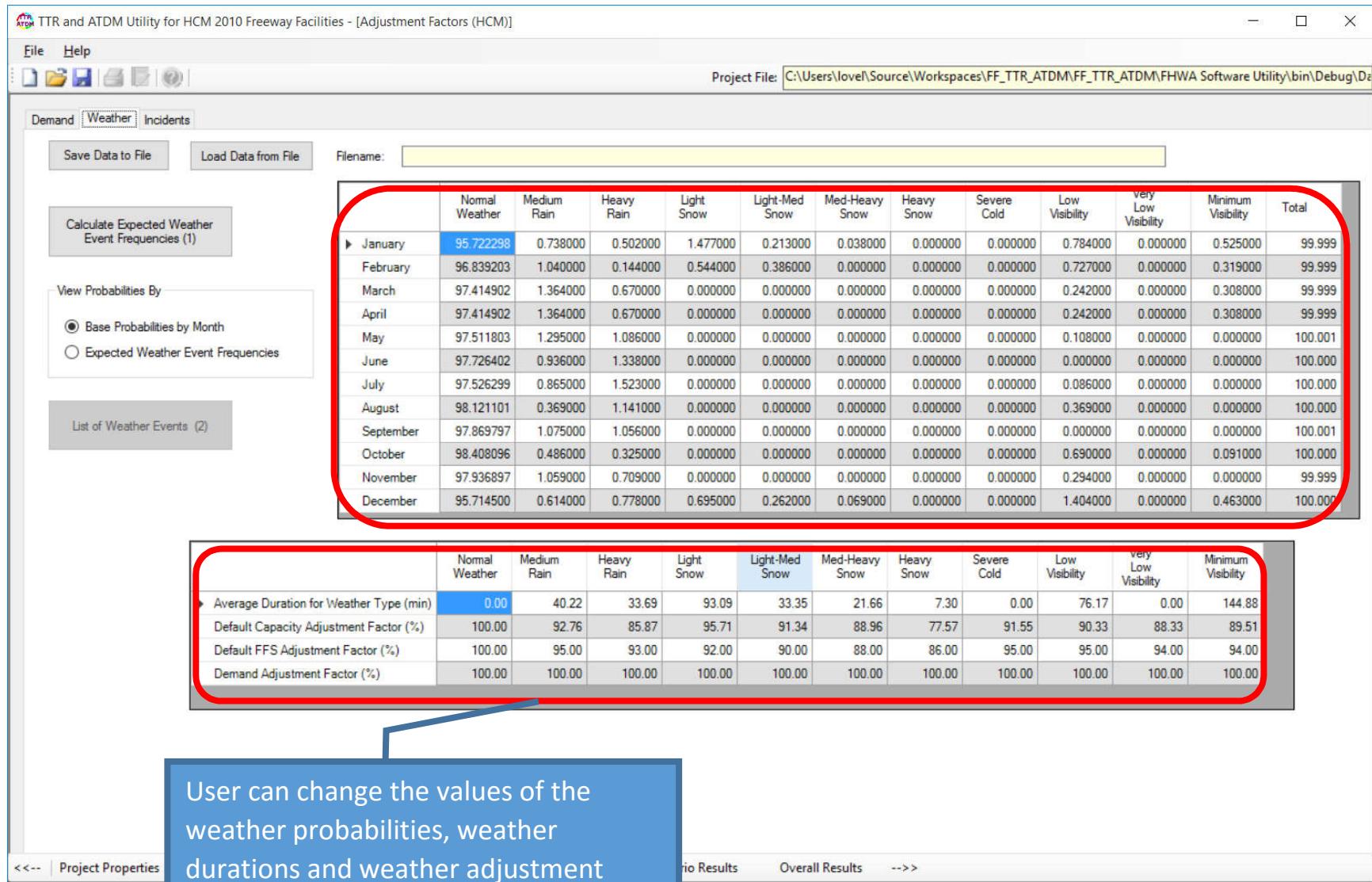
Ratio of Base File Demand to AADT: 1.000000

Number of Scenario Sets per Demand Pattern: 4

Calculate Demand Adjustment Factors

Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Weather Adjustment Factors: Weather Inputs

The screenshot shows the software interface for managing weather adjustment factors. The main window title is "TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (HCM)]". The menu bar includes "File" and "Help". The toolbar has icons for Save Data to File, Load Data from File, and a Project File path: "C:\Users\livel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da". The tabs at the top are "Demand", "Weather" (which is selected), and "Incidents". On the left, there are buttons for "Save Data to File", "Load Data from File", and a "Filename:" input field. Below these are buttons for "Calculate Expected Weather Event Frequencies (1)", "View Probabilities By" (with radio buttons for "Base Probabilities by Month" and "Expected Weather Event Frequencies"), and "List of Weather Events (2)". The main content area contains two tables. The first table, titled "Weather Probabilities by Month", shows monthly probabilities for various weather conditions. The second table, titled "Weather Durations and Adjustment Factors", shows average durations and adjustment factors for different weather types. Both tables have columns for Normal Weather, Medium Rain, Heavy Rain, Light Snow, Light-Med Snow, Med-Heavy Snow, Heavy Snow, Severe Cold, Low Visibility, very Low Visibility, Minimum Visibility, and Total.

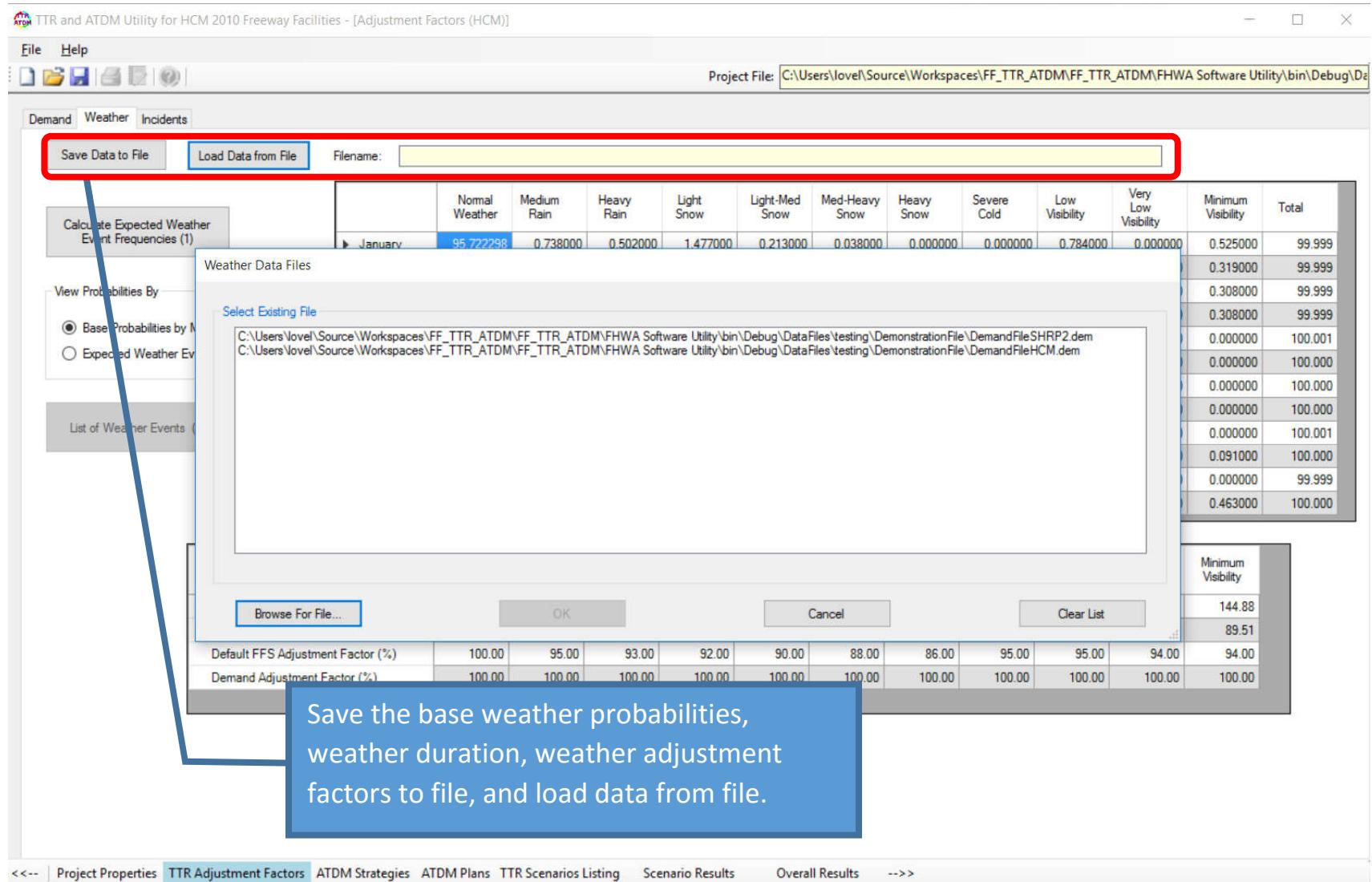
	Normal Weather	Medium Rain	Heavy Rain	Light Snow	Light-Med Snow	Med-Heavy Snow	Heavy Snow	Severe Cold	Low Visibility	very Low Visibility	Minimum Visibility	Total
► January	95.722298	0.738000	0.502000	1.477000	0.213000	0.038000	0.000000	0.000000	0.784000	0.000000	0.525000	99.999
February	96.839203	1.040000	0.144000	0.544000	0.386000	0.000000	0.000000	0.000000	0.727000	0.000000	0.319000	99.999
March	97.414902	1.364000	0.670000	0.000000	0.000000	0.000000	0.000000	0.000000	0.242000	0.000000	0.308000	99.999
April	97.414902	1.364000	0.670000	0.000000	0.000000	0.000000	0.000000	0.000000	0.242000	0.000000	0.308000	99.999
May	97.511803	1.295000	1.086000	0.000000	0.000000	0.000000	0.000000	0.000000	0.108000	0.000000	0.000000	100.001
June	97.726402	0.936000	1.338000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	100.000
July	97.526299	0.865000	1.523000	0.000000	0.000000	0.000000	0.000000	0.000000	0.086000	0.000000	0.000000	100.000
August	98.121101	0.369000	1.141000	0.000000	0.000000	0.000000	0.000000	0.000000	0.369000	0.000000	0.000000	100.000
September	97.869797	1.075000	1.056000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	100.001
October	98.408096	0.486000	0.325000	0.000000	0.000000	0.000000	0.000000	0.000000	0.690000	0.000000	0.091000	100.000
November	97.936897	1.059000	0.709000	0.000000	0.000000	0.000000	0.000000	0.000000	0.294000	0.000000	0.000000	99.999
December	95.714500	0.614000	0.778000	0.695000	0.262000	0.069000	0.000000	0.000000	1.404000	0.000000	0.463000	100.000

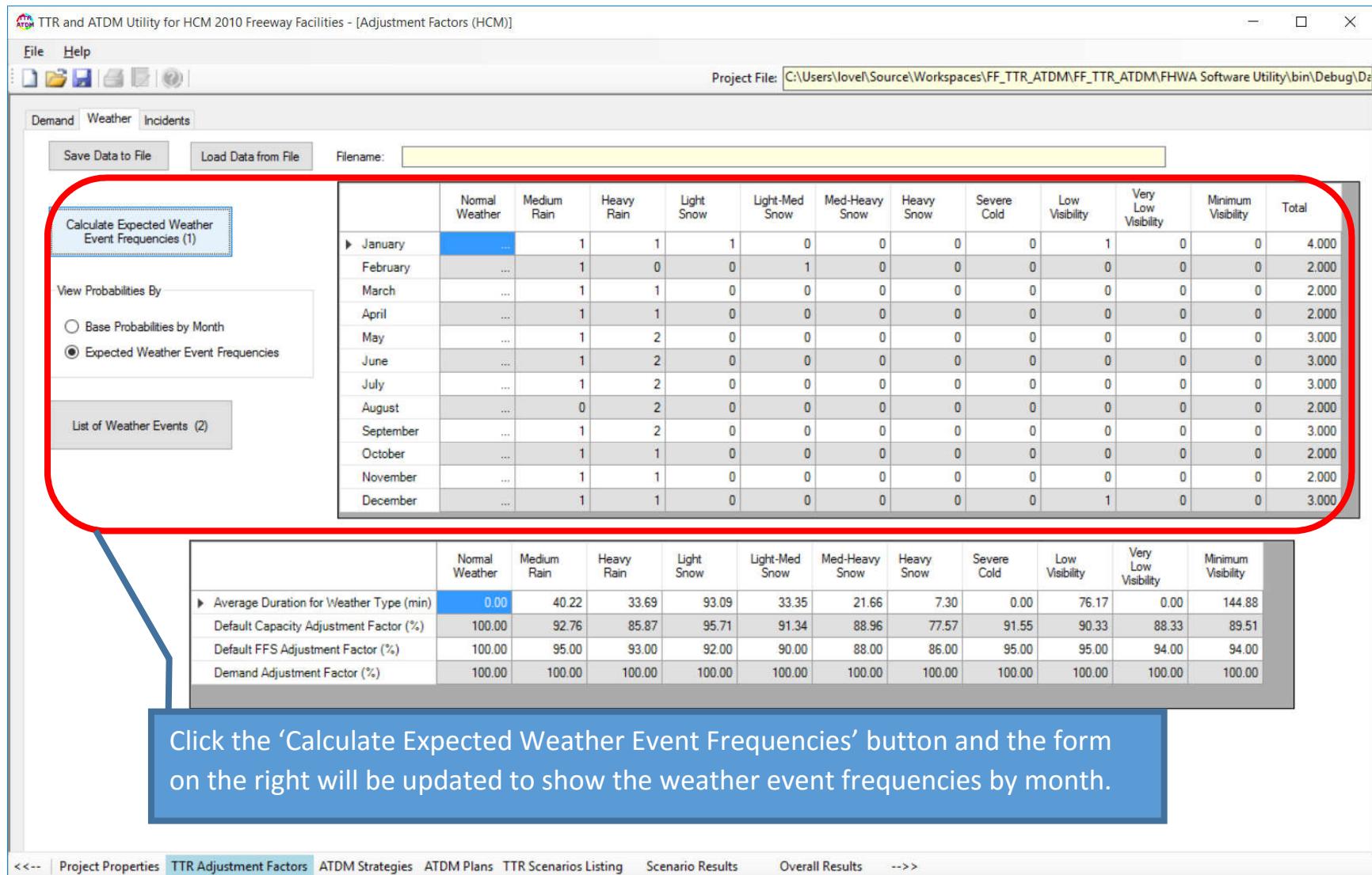
	Normal Weather	Medium Rain	Heavy Rain	Light Snow	Light-Med Snow	Med-Heavy Snow	Heavy Snow	Severe Cold	Low Visibility	very Low Visibility	Minimum Visibility
► Average Duration for Weather Type (min)	0.00	40.22	33.69	93.09	33.35	21.66	7.30	0.00	76.17	0.00	144.88
Default Capacity Adjustment Factor (%)	100.00	92.76	85.87	95.71	91.34	88.96	77.57	91.55	90.33	88.33	89.51
Default FFS Adjustment Factor (%)	100.00	95.00	93.00	92.00	90.00	88.00	86.00	95.00	95.00	94.00	94.00
Demand Adjustment Factor (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

User can change the values of the weather probabilities, weather durations and weather adjustment factors according to their data.

# Weather Adjustment Factors: Saving and Loading



# Weather Adjustment Factors: Calculate Weather Frequencies



Project File: C:\Users\lovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

Demand Weather Incidents

Save Data to File Load Data from File Filename:

**Calculate Expected Weather Event Frequencies (1)**

View Probabilities By

Base Probabilities by Month  
 Expected Weather Event Frequencies

List of Weather Events (2)

	Normal Weather	Medium Rain	Heavy Rain	Light Snow	Light-Med Snow	Med-Heavy Snow	Heavy Snow	Severe Cold	Low Visibility	Very Low Visibility	Minimum Visibility	Total
► January	...	1	1	1	0	0	0	0	1	0	0	4.000
February	...	1	0	0	1	0	0	0	0	0	0	2.000
March	...	1	1	0	0	0	0	0	0	0	0	2.000
April	...	1	1	0	0	0	0	0	0	0	0	2.000
May	...	1	2	0	0	0	0	0	0	0	0	3.000
June	...	1	2	0	0	0	0	0	0	0	0	3.000
July	...	1	2	0	0	0	0	0	0	0	0	3.000
August	...	0	2	0	0	0	0	0	0	0	0	2.000
September	...	1	2	0	0	0	0	0	0	0	0	3.000
October	...	1	1	0	0	0	0	0	0	0	0	2.000
November	...	1	1	0	0	0	0	0	0	0	0	2.000
December	...	1	1	0	0	0	0	0	1	0	0	3.000

	Normal Weather	Medium Rain	Heavy Rain	Light Snow	Light-Med Snow	Med-Heavy Snow	Heavy Snow	Severe Cold	Low Visibility	Very Low Visibility	Minimum Visibility
► Average Duration for Weather Type (min)	0.00	40.22	33.69	93.09	33.35	21.66	7.30	0.00	76.17	0.00	144.88
Default Capacity Adjustment Factor (%)	100.00	92.76	85.87	95.71	91.34	88.96	77.57	91.55	90.33	88.33	89.51
Default FFS Adjustment Factor (%)	100.00	95.00	93.00	92.00	90.00	88.00	86.00	95.00	95.00	94.00	94.00
Demand Adjustment Factor (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Click the 'Calculate Expected Weather Event Frequencies' button and the form on the right will be updated to show the weather event frequencies by month.

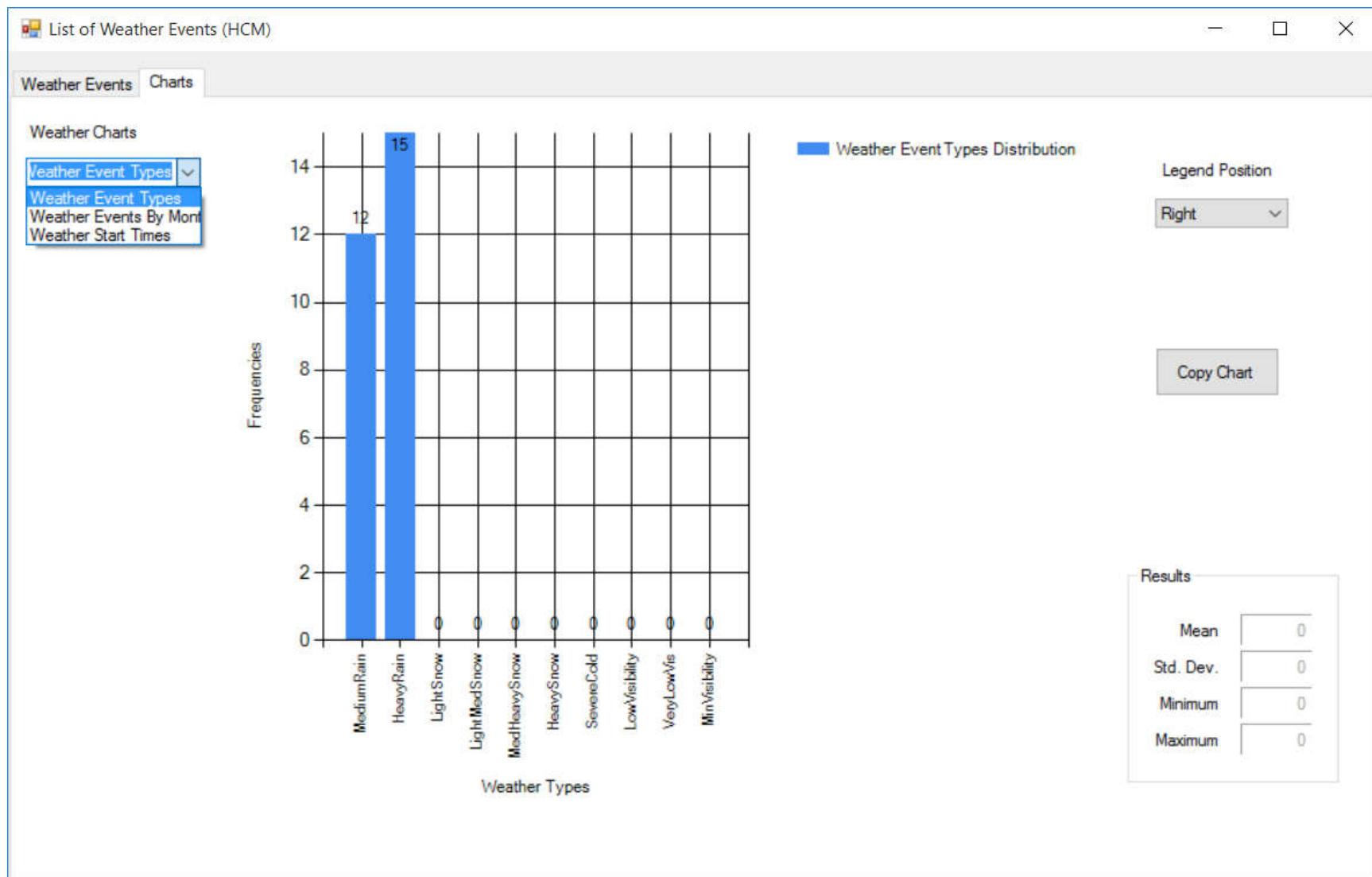
<<-- | Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Weather Adjustment Factors: List of Weather Events

Weather Event #	Associated Month in RRP	Weather Event	Assigned Scenario #	Start Time Period	Duration in TP's	End Time Period	SAF	CAF
1	January	Medium Rain	7	5	3	8	0.95	0.9276
2	January	Heavy Rain	6	13	2	15	0.93	0.8587
3	January	Light Snow	11	5	6	11	0.92	0.9571
4	January	Low Visibility	6	8	5	13	0.95	0.9033
5	February	Medium Rain	39	14	3	17	0.95	0.9276
6	February	Light-Med Snow	38	18	2	20	0.9	0.9134
7	March	Medium Rain	59	1	3	4	0.95	0.9276
8	March	Heavy Rain	42	14	2	16	0.93	0.8587
9	April	Medium Rain	66	16	3	19	0.95	0.9276
10	April	Heavy Rain	63	6	2	8	0.93	0.8587
11	May	Medium Rain	97	6	3	9	0.95	0.9276
12	May	Heavy Rain	99	15	2	17	0.93	0.8587
13	May	Heavy Rain	96	18	2	20	0.93	0.8587
14	June	Medium Rain	108	1	3	4	0.95	0.9276
15	June	Heavy Rain	110	3	2	5	0.93	0.8587
16	June	Heavy Rain	116	11	2	13	0.93	0.8587
17	July	Medium Rain	127	2	3	5	0.95	0.9276
18	July	Heavy Rain	135	12	2	14	0.93	0.8587
19	July	Heavy Rain	122	9	2	11	0.93	0.8587
20	August	Heavy Rain	153	2	2	4	0.93	0.8587
21	August	Heavy Rain	153	4	2	6	0.93	0.8587
22	September	Medium Rain	175	7	3	10	0.95	0.9276
23	September	Heavy Rain	179	7	2	9	0.93	0.8587

Click 'List of Weather Events' and the weather event list screen will show up.

# Weather Adjustment Factors: Charts of Weather Events



Click 'Charts' to check the charts of weather events.

# Incident Adjustment Factors: Open Adjustment Factors Form

The screenshot shows the 'TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (HCM)]' application window. The 'File' and 'Help' menu are at the top. Below them is a toolbar with icons for opening, saving, and loading files. The 'Project File' path is displayed as 'C:\Users\lovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\De'. The main interface has tabs for 'Demand', 'Weather', and 'Incidents'. The 'Incidents' tab is active. A red box highlights the 'Open Incident Adjustment Factors' button. To its right are buttons for 'Save Data to File', 'Load Data from File', and a 'Filename:' input field. Below these are buttons for 'Calculate Incident Frequencies (1)' and 'List of Incident Events (2)'. Under 'Incident Frequency Calculation Method', the 'Incident Rates' radio button is selected. Other options include 'Crash Rates', 'HERS Model', and 'Direct Entry'. There are also input fields for 'Crash to Incident Rate Ratio' (7.0) and '% of AADT in Study Period' (33.84). A button labeled 'Calculate Crash Rates with HERS Model' is present. On the left, there's a table titled 'Monthly Incident Rates (incidents/10 million VMT)' showing a constant rate of 162.32 for all months. In the center, there's a table titled 'Incident Durations' with columns for Incident Type Distribution, Expected Duration (min), Std. Dev. of Duration (min), Minimum Duration (min), and Maximum Duration (min). The data includes rows for 'No incident', 'Shoulder Closure', 'One Lane Closure', 'Two Lane Closure', 'Three Lane Closure', and 'Four Lane Closure'. To the right, there's a table titled 'Incident Frequencies' showing a value of 1 for each month from January to December. A blue callout box points to the 'Open Incident Adjustment Factors' button with the text: 'Click the 'Open Incident Adjustment Factors', and the form in the next page will show up.'

Month	Incident Frequencies
January	1
February	1
March	1
April	1
May	1
June	1
July	1
August	1
September	1
October	1
November	1
December	1

Click the 'Open Incident Adjustment Factors', and the form in the next page will show up.

# Incident Adjustment Factors: Specify Adjustment Factors

Incident Adjustment Factors

Save Data to File   Load Data from File

Filename:

**FFS adjustment factors (SAFs)**

Number of Lanes (1 Direction)	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
2	1.00	1.00	1.00	1.00	1.00	1.00
3	1.00	1.00	1.00	1.00	1.00	1.00
4	1.00	1.00	1.00	1.00	1.00	1.00
5	1.00	1.00	1.00	1.00	1.00	1.00
6	1.00	1.00	1.00	1.00	1.00	1.00
7	1.00	1.00	1.00	1.00	1.00	1.00
8	1.00	1.00	1.00	1.00	1.00	1.00

**Capacity Adjustment Factors (CAFs)**

Number of Lanes (1 Direction)	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
2	1.00	0.81	0.35	0.00	0.00	0.00
3	1.00	0.83	0.49	0.17	0.00	0.00
4	1.00	0.85	0.58	0.25	0.13	0.00
5	1.00	0.87	0.65	0.40	0.20	0.00
6	1.00	0.89	0.71	0.50	0.26	0.00
7	1.00	0.91	0.75	0.57	0.36	0.00
8	1.00	0.93	0.78	0.63	0.41	0.00

**Demand Adjustment Factors (DAFs)**

Number of Lanes (1 Direction)	No Incident	Shoulder Closure	One Lane Closure	Two Lane Closure	Three Lane Closure	Four Lane Closure
2	1.00	1.00	1.00	1.00	1.00	1.00
3	1.00	1.00	1.00	1.00	1.00	1.00
4	1.00	1.00	1.00	1.00	1.00	1.00
5	1.00	1.00	1.00	1.00	1.00	1.00
6	1.00	1.00	1.00	1.00	1.00	1.00
7	1.00	1.00	1.00	1.00	1.00	1.00
8	1.00	1.00	1.00	1.00	1.00	1.00

Specify the values of SAF, CAF, and DAF for the various incident categories. The default values are from the HCM. Also users can save data to a file and load it as needed.

# Incident Adjustment Factors: Select Calculation Method

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (HCM)]

File Help

Demand Weather Incidents

Open Incident Adjustment Factors Save Data to File Load Data from File Filename: C:\Users\lovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\De

Incident Frequency Calculation Method

Incident Rates  Crash Rates  HERS Model  Direct Entry

Calculate Incident Frequencies (1)

Calculate Crash Rates with HERS Model

List of Incident Events (2)

Crash to Incident Rate Ratio: 7.0

% of AADT in Study Period: 33.84

Monthly Incident Rates (incidents/100 million VMT)

	Rate
January	162.32
February	162.32
March	162.32
April	162.32
May	162.32
June	162.32
July	162.32
August	162.32
September	162.32
October	162.32
November	162.32
December	162.32

Incident Durations

	Incident Type Distribution	Expected Duration (min)	Std. Dev. of Duration (min)	Minimum Duration (min)	Maximum Duration (min)
No incident	0.00	0.00	0.00	0.00	0.00
Shoulder Closure	0.75	32.00	15.00	8.70	58.00
One Lane Closure	0.20	34.00	14.00	16.00	58.20
Two Lane Closure	0.05	53.00	14.00	30.50	66.90
Three Lane Closure	0.00	69.00	22.00	36.00	93.30
Four Lane Closure	0.00	69.00	22.00	36.00	93.30

Select which methods you want to calculate the incident frequencies.

Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->

# Incident Adjustment Factors: Incident Rates Inputs

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (HCM)]

File Help

Demand Weather Incidents

Open Incident Adjustment Factors Save Data to File Load Data from File Filename: C:\Users\love1\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

Incident Frequency Calculation Method

Incident Rates  Crash Rates  HERS Model  Direct Entry

Crash to Incident Rate Ratio: 7.0  
% of AADT in Study Period: 33.84

Calculate Crash Rates with HERS Model

If 'Incident Rates' were selected, users can change the incident rates, incident duration information according to their needs.

Monthly Incident Rates (incidents/100 million VMT)

	Rate
January	162.32
February	162.32
March	162.32
April	162.32
May	162.32
June	162.32
July	162.32
August	162.32
September	162.32
October	162.32
November	162.32
December	162.32

Incident Durations

	Incident Type Distribution	Expected Duration (min)	Std. Dev. of Duration (min)	Minimum Duration (min)	Maximum Duration (min)
No incident	0.00	0.00	0.00	0.00	0.00
Shoulder Closure	0.75	32.00	15.00	8.70	58.00
One Lane Closure	0.20	34.00	14.00	16.00	58.20
Two Lane Closure	0.05	53.00	14.00	30.50	66.90
Three Lane Closure	0.00	69.00	22.00	36.00	93.30
Four Lane Closure	0.00	69.00	22.00	36.00	93.30

	1
April	1
May	1
June	1
July	1
August	1
September	1
October	1
November	1
December	1

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Incident Adjustment Factors: Crash Rates Inputs

If 'Crash Rates' were chosen, users can change the crash rates, incident duration information, crash to incident rate ratio.

Project File: C:\Users\lovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

Demand Weather Incidents

Open Incident Adjustment Factors Save Data to File Load Data from File Filename:

Incident Frequency Calculation Method

Incident Rates  Crash Rates  HERS Model

Crash to Incident Rate Ratio 7.0

% of AADT in Study Period 33.84

Calculate Crash Rates with HERS Model

Monthly Crash Rates (crashes/100 million VMT)

	Rate
January	150
February	150
March	150
April	150
May	150
June	150
July	150
August	150
September	150
October	150
November	150
December	150

Incident Durations

	Incident Type Distribution	Expected Duration (min)	Std. Dev. of Duration (min)	Minimum Duration (min)	Maximum Duration (min)
No incident	0.00	0.00	0.00	0.00	0.00
Shoulder Closure	0.75	32.00	15.00	8.70	58.00
One Lane Closure	0.20	34.00	14.00	16.00	58.20
Two Lane Closure	0.05	53.00	14.00	30.50	66.90
Three Lane Closure	0.00	69.00	22.00	36.00	93.30
Four Lane Closure	0.00	69.00	22.00	36.00	93.30

Incident Frequencies (1)

	Incident Frequencies
January	1
February	1
March	1
April	1
May	1
June	1
July	1
August	1
September	1
October	1
November	1
December	1

# Incident Adjustment Factors: HERS Model Inputs

If 'HERS Model' were selected, users can change the incident duration information, % of AADT in study period.

The screenshot shows the software's main window with the title bar 'TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (HCM)]'. The menu bar includes 'File' and 'Help'. The toolbar has icons for Open Incident Adjustment Factors, Save Data to File, and Load Data from File. The 'Project File' path is displayed as 'C:\Users\lowl\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\De'. The 'Incidents' tab is selected, showing three tabs: Demand, Weather, and Incidents. Under 'Incident Frequency Calculation Method', the 'HERS Model' radio button is selected. Below it are fields for 'Crash to Incident Rate Ratio' (7.0) and '% of AADT in Study Period' (33.84). A blue callout box points to the 'Calculate Crash Rates with HERS Model (1)' button. To the right, there is a table titled 'Incident Durations' with columns: Incident Type Distribution, Expected Duration (min), Std. Dev. of Duration (min), Minimum Duration (min), and Maximum Duration (min). The table lists six types of incidents with their respective values. A red box highlights this table. At the bottom, there are navigation links: '<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>'.

	Incident Type Distribution	Expected Duration (min)	Std. Dev. of Duration (min)	Minimum Duration (min)	Maximum Duration (min)
No incident	0.00	0.00	0.00	0.00	0.00
Shoulder Closure	0.75	32.00	15.00	8.70	58.00
One Lane Closure	0.20	34.00	14.00	16.00	58.20
Two Lane Closure	0.05	53.00	14.00	30.50	66.90
Three Lane Closure	0.00	69.00	22.00	36.00	93.30
Four Lane Closure	0.00	69.00	22.00	36.00	93.30

# Incident Adjustment Factors: Calculate Crash Rates

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (HCM)]

File Help

Demand Weather Incidents

Open Incident Adjustment Factors Save Data to File Load Data from File Filename: C:\Users\lovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

Incident Frequency Calculation Method

Incident Rates  Crash Rates  HERS Model  Direct Entry

Crash to Incident Rate Ratio: 7.0  
% of AADT in Study Period: 33.84

Calculate Crash Rates with HERS Model (1)

Calculate Incident Frequencies (2)  
List of Incident Events (3)

Monthly Crash Rates (crashes/100 million VMT)

Month	Rate
January	162.32
February	162.32
March	162.32
April	162.32
May	162.32
June	162.32
July	162.32
August	162.32
September	162.32
October	162.32
November	162.32
December	162.32

Incident Durations

Incident Type Distribution	Expected Duration (min)	Std. Dev. of Duration (min)	Minimum Duration (min)	Maximum Duration (min)
No incident	0.00	0.00	0.00	0.00
Shoulder Closure	0.75	32.00	15.00	8.70
One Lane Closure	0.20	34.00	14.00	16.00
Two Lane Closure	0.05	53.00	14.00	30.50
Three Lane Closure	0.00	69.00	22.00	36.00
Four Lane Closure	0.00	69.00	22.00	93.30

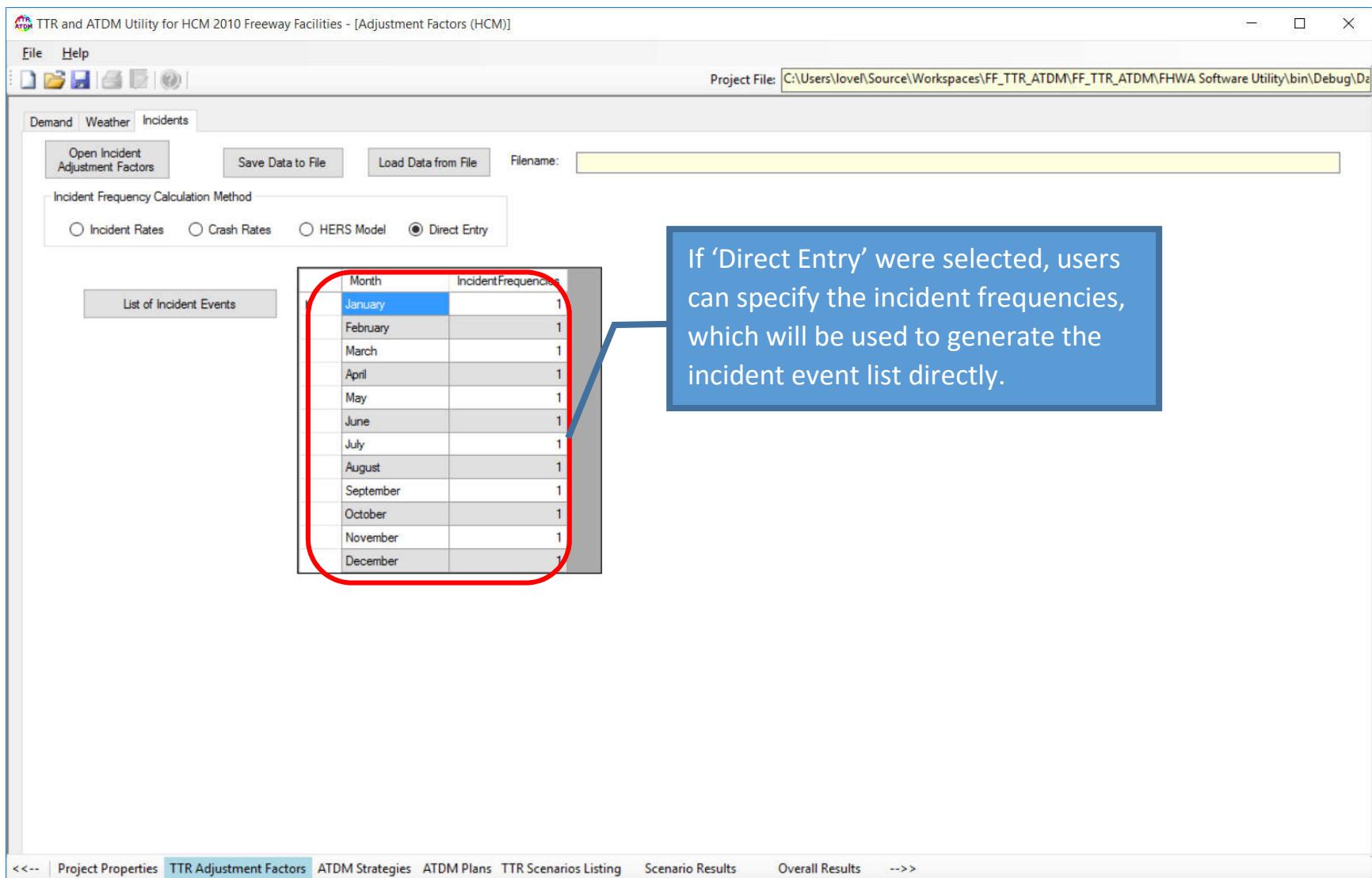
Month Incident Frequencies

Month	Incident Frequencies
January	1
February	1
March	1
April	1
May	1
June	1
July	1
August	1
September	1
October	1
November	1
December	1

Click 'Calculate Crash Rates with HERS Model', and the crash rates will be calculated.

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Incident Adjustment Factors: Direct Entry



# Incident Adjustment Factors: Calculate Incident Frequencies

The screenshot shows the TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Adjustment Factors (HCM)] application. The 'Incidents' tab is selected. In the 'Incident Frequency Calculation Method' section, the 'Incident Rates' radio button is selected. Below it are fields for 'Crash to Incident Rate Ratio' (7.0) and '% of AADT in Study Period' (33.84). A button 'Calculate Crash Rates with HERS Model' is present. To the right, there are two buttons: 'Calculate Incident Frequencies (1)' and 'List of Incident Events (2)', with a red box highlighting them. A callout box points from the bottom left towards these buttons. A table titled 'Monthly Incident Rates (incidents/100 million VMT)' shows rates of 1050 for all months. Another table titled 'Incident Durations' shows expected durations for different closure types. On the far right, a table titled 'Incident Frequencies' lists monthly values from January to December. The bottom navigation bar includes Project Properties, TTR Adjustment Factors (highlighted in blue), ATDM Strategies, ATDM Plans, TTR Scenarios Listing, Scenario Results, Overall Results, and a double-right arrow.

Click 'Calculate Incident Frequencies' and then click 'List of Incident Events', and the incident event list screen will show up.

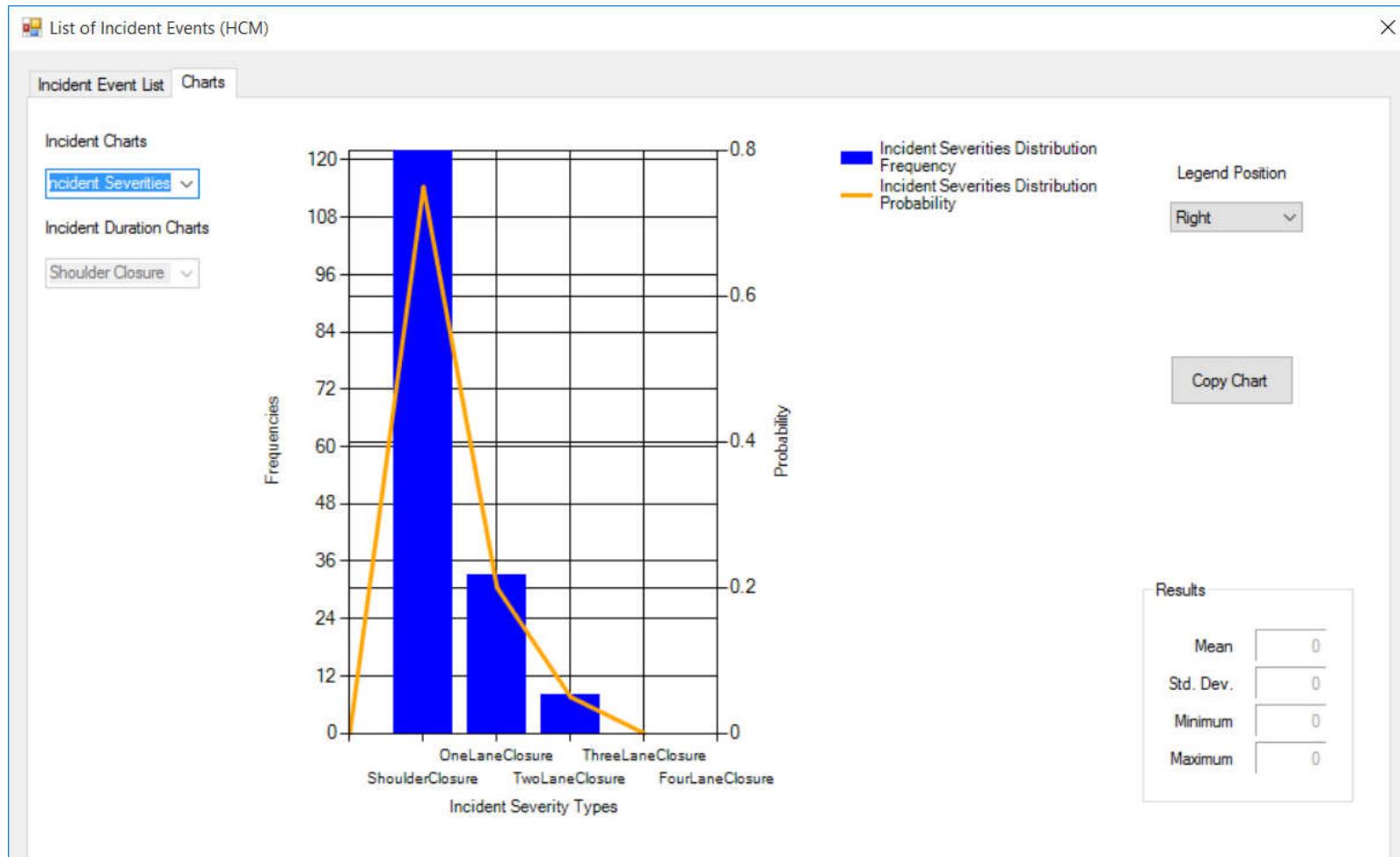
Month	Incident Frequencies
January	0.5695
February	0.588
March	0.6377
April	0.6758
May	0.6744
June	0.7079
July	0.7848
August	0.7154
September	0.7364
October	0.6894
November	0.6894
December	0.6778

# Incident Adjustment Factors: List of Incident Events

Incident #	Scenario #	Severity Type	Start Time Period	Duration in TP's	End Time Period	Location Segment #	SAF	CAF
1	1	TwoLaneClosure	2	1	3	3	1.000	0.170
2	4	ShoulderClosure	4	1	5	2	1.000	0.830
3	20	OneLaneClosure	5	2	7	9	1.000	0.490
4	18	TwoLaneClosure	8	2	10	1	1.000	0.170
5	8	OneLaneClosure	4	1	5	9	1.000	0.490
6	11	OneLaneClosure	7	3	10	4	1.000	0.490
7	5	ShoulderClosure	3	2	5	2	1.000	0.830
8	17	OneLaneClosure	12	3	15	7	1.000	0.490
9	8	TwoLaneClosure	7	1	8	8	1.000	0.170
10	17	OneLaneClosure	11	2	13	6	1.000	0.490
11	8	ShoulderClosure	10	1	11	4	1.000	0.830
12	34	OneLaneClosure	12	3	15	6	1.000	0.490
13	32	OneLaneClosure	2	1	3	3	1.000	0.490
14	21	OneLaneClosure	6	1	7	4	1.000	0.490
15	33	TwoLaneClosure	5	4	9	4	1.000	0.170
16	26	OneLaneClosure	9	2	11	1	1.000	0.490
17	22	ShoulderClosure	3	3	6	7	1.000	0.830
18	37	OneLaneClosure	11	3	14	7	1.000	0.490
19	33	OneLaneClosure	8	2	10	2	1.000	0.490
20	26	OneLaneClosure	1	4	5	11	1.000	0.490
21	33	TwoLaneClosure	9	2	11	3	1.000	0.170
22	26	OneLaneClosure	2	2	4	1	1.000	0.490
23	54	OneLaneClosure	1	3	4	7	1.000	0.490
24	46	ShoulderClosure	6	1	7	9	1.000	0.830
25	58	ShoulderClosure	9	1	10	6	1.000	0.830

Click 'List of Incident Events' and the incident event list screen will show up.

# Incident Adjustment Factors: Charts of Incident Events



Click 'Charts' to check the charts of incident events and check the results statistics of incident durations.

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# Active Traffic and Demand Management (ATDM)

ATDM Strategies can be employed with any of the scenario generation methods. ATDM strategies are grouped into any number of plans. Each plan will be applied to the defined set of scenarios, and results will be reported for the existing condition and each ATDM plan.

# ATDM Strategies: Add and Remove

Any number of items can be added to or removed from each strategy.

ID	Description	Category	Demand Adj.
1	HOT Lane - Static Toll	Control Strategy	1.00
2	HOT Lane - Congestion Price	Control Strategy	1.00
3	Full Facility Static Toll	Control Strategy	1.00
4	Full Facility Dynamic Congestion Price	Control Strategy	1.00
5	Pre-trip Travel Info	Advisory Strategy	1.00
6	Variable Message Signs	Advisory Strategy	0.90
7	Employer TDM	Advisory Strategy	1.00

# ATDM Strategies: Various Strategies

Demand Management   Weather Traffic Management   Traffic Incident Management   Work Zone Traffic Maintenance   HOV/HC							
ID	Description	Category	Demand Adj.	FFS Adj.	Cap Adj.		
1	Vehicle Restrictions (chain controls)	Control Strategy	1.00	1.00	1.00		
2	Pre-trip Travel Info	Advisory Strategy	1.00	1.00	1.00		
3	Variable Message Signs	Advisory Strategy	1.00	1.00	1.00		
4	Demand Management   Weather Traffic Management   Traffic Incident Management   Work Zone Traffic Maintenance   HOV/HOT Lane Management   Shoulder Lane Management   Med						
5	ID	Description	Category	Duration Adj.	Demand Adj.	FFS Adj.	Capacity Adj.
6	1	Incident Command System	Site Management & Traffic Control	1.00	1.00	1.00	1.00
7	2	Traffic Control With On-Site Traffic Management Teams	Site Management & Traffic Control	1.00	1.00	1.00	1.00
8	3	End-of-Queue Advance Warning Systems	Site Management & Traffic Control	1.00	1.00	1.00	1.00
9	4	Pre-trip Travel Info	Advisory Strategy	1.00	1.00	1.00	1.00
10	5	Demand Management   Weather Traffic Management   Traffic Incident Management   Work Zone Traffic Maintenance   HOV/HOT Lane Management   Shoulder Lane Management   S					
11	ID	Description	Category	Demand Adj.	FFS Adj.	Capacity Adj.	
12	1	End-of-Queue Advance Warning Systems	Site Management & Signal Control	1.00	1.00	1.00	
13	2	Speed Feedback Signs	Site Management & Signal Control	1.00	1.00	1.00	
14	3	Automated Speed Enforcement	Site Management & Signal Control	1.00	1.00	1.00	
15	4	Pre-trip Travel Info	Advisory Strategy	1.00	1.00	1.00	
16	5	Demand Management   Weather Traffic Management   Traffic Incident Management   Work Zone Traffic Maintenance   HOV/HOT Lane Management   Shoulder Lane Management   M					
17	ID	Description	Number of HOV/HOT Lanes	Number of HOV/HOT Users (veh/h)	Capacity of HOV/HOT Lanes (veh/h/ln)	Capacity of Mixed Flow Lanes (veh/h/ln)	Capacity Adj.
18	1	Convert Mixed Flow Lanes to HOV Lanes	1	450	1800	2100	0.74
19	2	HOV Lanes Opened to All	1	0	2100	2100	1.00
20	3	Demand Management   Traffic Incident Management   Work Zone Traffic Maintenance   HOV/HOT Lane Management   Shoulder Lane Management   Median Lane Management   Tr					
21	ID	Description	Number of Shoulder Lanes	Number of Users (veh/h or buses/h)	Capacity of Shoulder Lanes (veh/h/ln)	Capacity of Mixed Flow Lanes (veh/h/ln)	Capacity Adj.
22	1	Open Shoulders As Auxiliary Lanes Between Adjacent On And Off Ramps	1	1050	1250	2100	0.83
23	2	Open Shoulders To Buses Only	1	12	1250	2100	0.67
24	3	Open Shoulders To HOVs Only	1	450	1250	2100	0.74
25	4	Demand Management   Weather Traffic Management   Traffic Incident Management   Work Zone Traffic Maintenance   HOV/HOT Lane Management   Shoulder Lane Management   Median Lane Management   0.87					
26	ID	Description	Number of Median Lanes	Number of Users (veh/h or buses/h)	Capacity of Median Lanes (veh/h/ln)	Capacity of Mixed Flow Lanes (veh/h/ln)	Capacity Adj.
27	1	Open Median To Buses Only	1	12	1300	2100	0.75
28	2	Open Median To HOVs Only	1	450	1250	2100	0.80
29	3	Open Median To All Traffic	1	0	1300	2100	0.90
30	4	Demand Management   Weather Traffic Management   Traffic Incident Management   Work Zone Traffic Maintenance   HOV/HOT Lane Management   Shoulder Lane Management   Median Lane Management   Truck Control   0.87					
ID	Description	Percent of Heavy Vehicles (%)	Percentage Banned (%)	PCE/truck	Demand Adj.	Capacity Adj.	
1	Truck Ban	5.00	100.00	2	0.95	1.10	

# ATDM Plans: Add and Remove

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [ATDM Plans]

File Help

Project File: C:\Users\love1\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

Plans

Demand Management Weather Traffic Management Traffic Incident Management Work Zone Traffic Maintenance

\*Select strategies that will be included into the ATDM plan

ID	Included in Plan	Description	Category	Demand Adj.
1	<input type="checkbox"/>	HOT Lane - Static Toll	Control Strategy	1.00
2	<input type="checkbox"/>	HOT Lane - Congestion Price	Control Strategy	1.00
3	<input type="checkbox"/>	Full Facility Static Toll	Control Strategy	1.00
4	<input type="checkbox"/>	Full Facility Dynamic Congestion Price	Control Strategy	1.00
5	<input type="checkbox"/>	Pre-trip Travel Info	Advisory Strategy	1.00
6	<input checked="" type="checkbox"/>	Variable Message Signs	Advisory Strategy	0.90
7	<input type="checkbox"/>	Employer TDM	Advisory Strategy	1.00

Save Changes

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

Any number of ATDM strategy plans can be added or removed.

# ATDM Plans: Specify Plans

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [ATDM Plans]

File Help

Demand Management Weather Traffic Management Traffic Incident Management Work Zone Traffic Maintenance Lane Management Truck Control

Project File: C:\Users\livel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

Plans

+ Add X Remove

\*Select strategies that will be included into the ATDM plan

ID	Included in Plan	Description	Category	Demand Adj.
1	<input type="checkbox"/>	HOT Lane - Static Toll	Control Strategy	1.00
2	<input type="checkbox"/>	HOT Lane - Congestion Price	Control Strategy	1.00
3	<input type="checkbox"/>	Full Facility Static Toll	Control Strategy	1.00
4	<input type="checkbox"/>	Full Facility Dynamic Congestion Price	Control Strategy	1.00
5	<input type="checkbox"/>	Pre-trip Travel Info	Advisory Strategy	1.00
6	<input type="checkbox"/>	Variable Message Signs	Advisory Strategy	1.00
7	<input type="checkbox"/>	Employer TDM	Advisory Strategy	1.00

Please add your description

Give the plan a name and indicate whether this plan should be run in next analysis

Select the specific strategies to include in the plan.

Save Changes

<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

---

# Scenario Listing, Analysis, and Results

# View Scenarios

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Scenarios Listing]

File View Scenarios Run Analysis Help

Project File: C:\Users\lovel\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

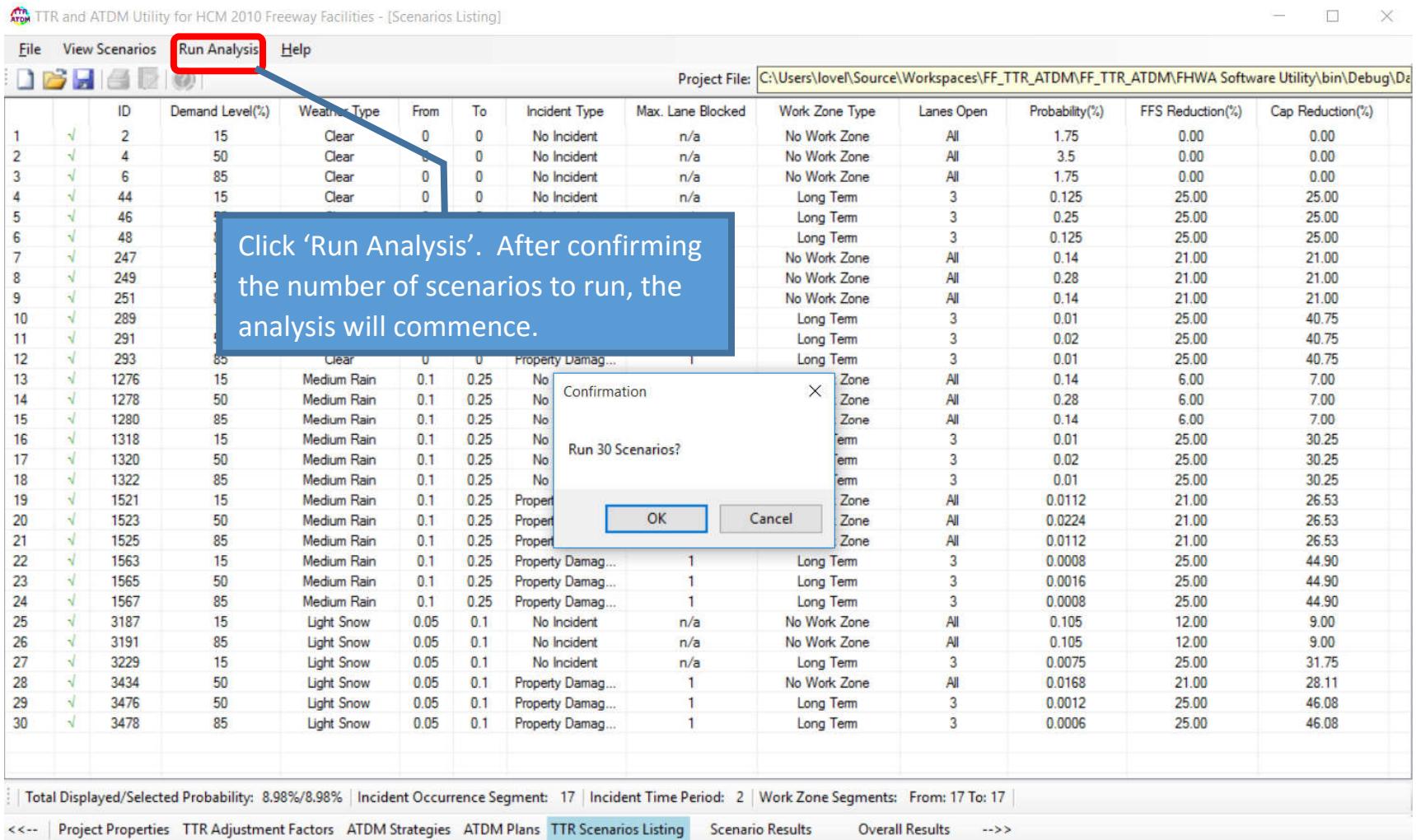
ID	Demand Level(%)	Weather Type	From	To	Incident Type	Max. Lane Blocked	Work Zone Type	Lanes Open	Probability(%)	FFS Reduction(%)	Cap Reduction(%)	
1	2	15	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
2	4	50	Clear	0	0	No Incident	n/a	No Work Zone	All	3.5	0.00	0.00
3	6	85	Clear	0	0	No Incident	n/a	No Work Zone	All	1.75	0.00	0.00
4	44	15	Clear	0	0	No Incident	n/a	Long Term	3	0.125	25.00	25.00
5	46	50	Clear	0	0	No Incident	n/a	Long Term	3	0.25	25.00	25.00
6	48	85	Clear	0	0	No Incident	n/a	Long Term	3	0.125	25.00	25.00
7	247	15	Clear	0	0	Property Damag...	1	No Work Zone	All	0.14	21.00	21.00
8	249	50	Clear	0	0	Property Damag...	1	No Work Zone	All	0.28	21.00	21.00
9	251	85	Clear	0	0	Property Damag...	1	No Work Zone	All	0.14	21.00	21.00
10	289	15	Clear	0	0	Property Damag...	1	Long Term	3	0.01	25.00	40.75
11	291	50	Clear	0	0	Property Damag...	1	Long Term	3	0.02	25.00	40.75
12	293	85	Clear	0	0	Property Damag...	1	Long Term	3	0.01	25.00	40.75
13	1276	15	Medium Rain	0.1	0.25	No Incident	n/a	No Work Zone	All	0.14	6.00	7.00
14	1278	50	Medium Rain	0.1	0.25	No Incident	n/a	No Work Zone	All	0.28	6.00	7.00
15	1280	85	Medium Rain	0.1	0.25	No Incident	n/a	No Work Zone	All	0.14	6.00	7.00
16	1318	15	Medium Rain	0.1	0.25	No Incident	n/a	Long Term	3	0.01	25.00	30.25
17	1320	50	Medium Rain	0.1	0.25	No Incident	n/a	Long Term	3	0.02	25.00	30.25
18	1322	85	Medium Rain	0.1	0.25	No Incident	n/a	Long Term	3	0.01	25.00	30.25
19	1521	15	Medium Rain	0.1	0.25	Property Damag...	1	No Work Zone	All	0.0112	21.00	26.53
20	1523	50	Medium Rain	0.1	0.25	Property Damag...	1	No Work Zone	All	0.0224	21.00	26.53
21	1525	85	Medium Rain	0.1	0.25	Property Damag...	1	No Work Zone	All	0.0112	21.00	26.53
22	1563	15	Medium Rain	0.1	0.25	Property Damag...	1	Long Term	3	0.0008	25.00	44.90
23	1565	50	Medium Rain	0.1	0.25	Property Damag...	1	Long Term	3	0.0016	25.00	44.90
24	1567	85	Medium Rain	0.1	0.25	Property Damag...	1	Long Term	3	0.0008	25.00	44.90
25	3187	15	Light Snow	0.05	0.1	No Incident	n/a	No Work Zone	All	0.105	12.00	9.00
26	3191	85	Light Snow	0.05	0.1	No Incident	n/a	No Work Zone	All	0.105	12.00	9.00
27	3229	15	Light Snow	0.05	0.1	No Incident	n/a	Long Term	3	0.0075	25.00	31.75
28	3434	50	Light Snow	0.05	0.1	Property Damag...	1	No Work Zone	All	0.0168	21.00	28.11
29	3476	50	Light Snow	0.05	0.1	Property Damag...	1	Long Term	3	0.0012	25.00	46.08
30	3478	85	Light Snow	0.05	0.1	Property Damag...	1	Long Term	3	0.0006	25.00	46.08

Total Displayed/Selected Probability: 8.98%/8.98% | Incident Occurrence Segment: 17 | Incident Time Period: 2 | Work Zone: 1

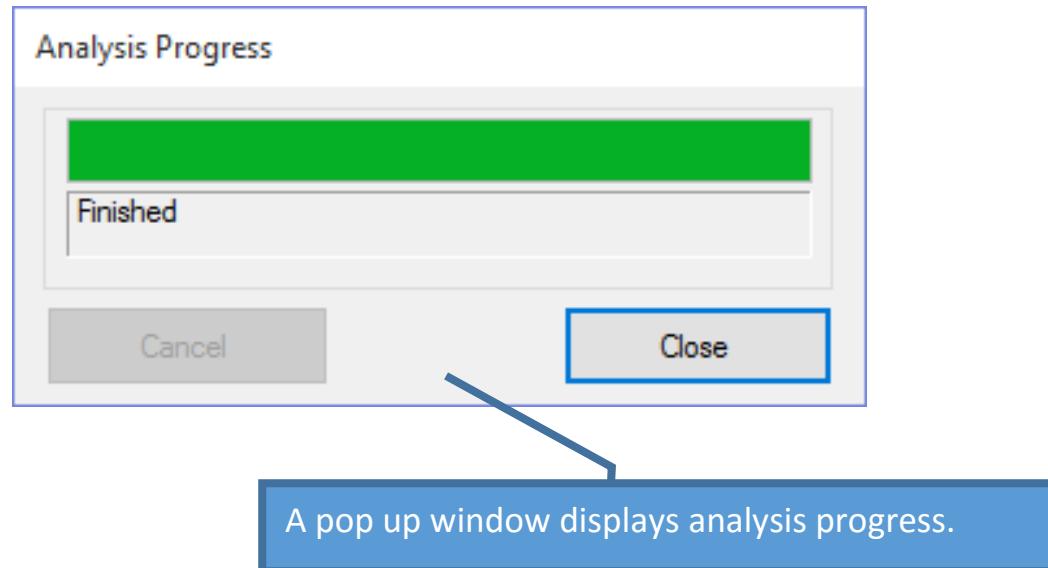
<<-- Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results

Click 'TTR Scenario Listing' and details for each of the generated scenarios (per the unrestricted, SHRP2-L08, or HCM method) will be shown.

# Run Analysis: Click and Confirm



# Run Analysis: Progress Bar



# Scenario Results:

## View Individual Scenario Results

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Scenario Results]

File Help

Project File: C:\Users\love\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

Scenario Number	Demand Level	Weather Type	Incident Type	Incident Lanes Blocked	Workzone Type	Lanes Open	MOEs	Load into Freeway Facility Program	
1	2	15	Clear	No Incident	n/a	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
2	4	50	Clear	No Incident	n/a	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
3	6	85	Clear	No Incident	n/a	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
4	44	15	Clear	No Incident	n/a	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
5	46	50	Clear	No Incident	n/a	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
6	48	85	Clear	No Incident	n/a	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
7	247	15	Clear	Property Damage Only Crash	1	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
8	249	50	Clear	Property Damage Only Crash	1	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
9	251	85	Clear	Property Damage Only Crash	1	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
10	289	15	Clear	Property Damage Only Crash	1	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
11	291	50	Clear	Property Da				<a href="#">View</a>	<a href="#">Load</a>
12	293	85	Clear	Property Da				<a href="#">View</a>	<a href="#">Load</a>
13	1276	15	Medium Rain	No Incident				<a href="#">View</a>	<a href="#">Load</a>
14	1278	50	Medium Rain	No Incident				<a href="#">View</a>	<a href="#">Load</a>
15	1280	85	Medium Rain	No Incident				<a href="#">View</a>	<a href="#">Load</a>
16	1318	15	Medium Rain	No Incident	n/a	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
17	1320	50	Medium Rain	No Incident	n/a	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
18	1322	85	Medium Rain	No Incident	n/a	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
19	1521	15	Medium Rain	Property Damage Only Crash	1	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
20	1523	50	Medium Rain	Property Damage Only Crash	1	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
21	1525	85	Medium Rain	Property Damage Only Crash	1	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
22	1563	15	Medium Rain	Property Damage Only Crash	1	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
23	1565	50	Medium Rain	Property Damage Only Crash	1	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
24	1567	85	Medium Rain	Property Damage Only Crash	1	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>

Scenarios Displayed From: 1 to 30 | Previous 30 scenarios | Next 30 scenarios | First 30 scenarios | Last 30 scenarios | Custom Range | Show All

<<-- | Project Properties | TTR Adjustment Factors | ATDM Strategies | ATDM Plans | TTR Scenarios Listing | **Scenario Results** | Overall Results -->>

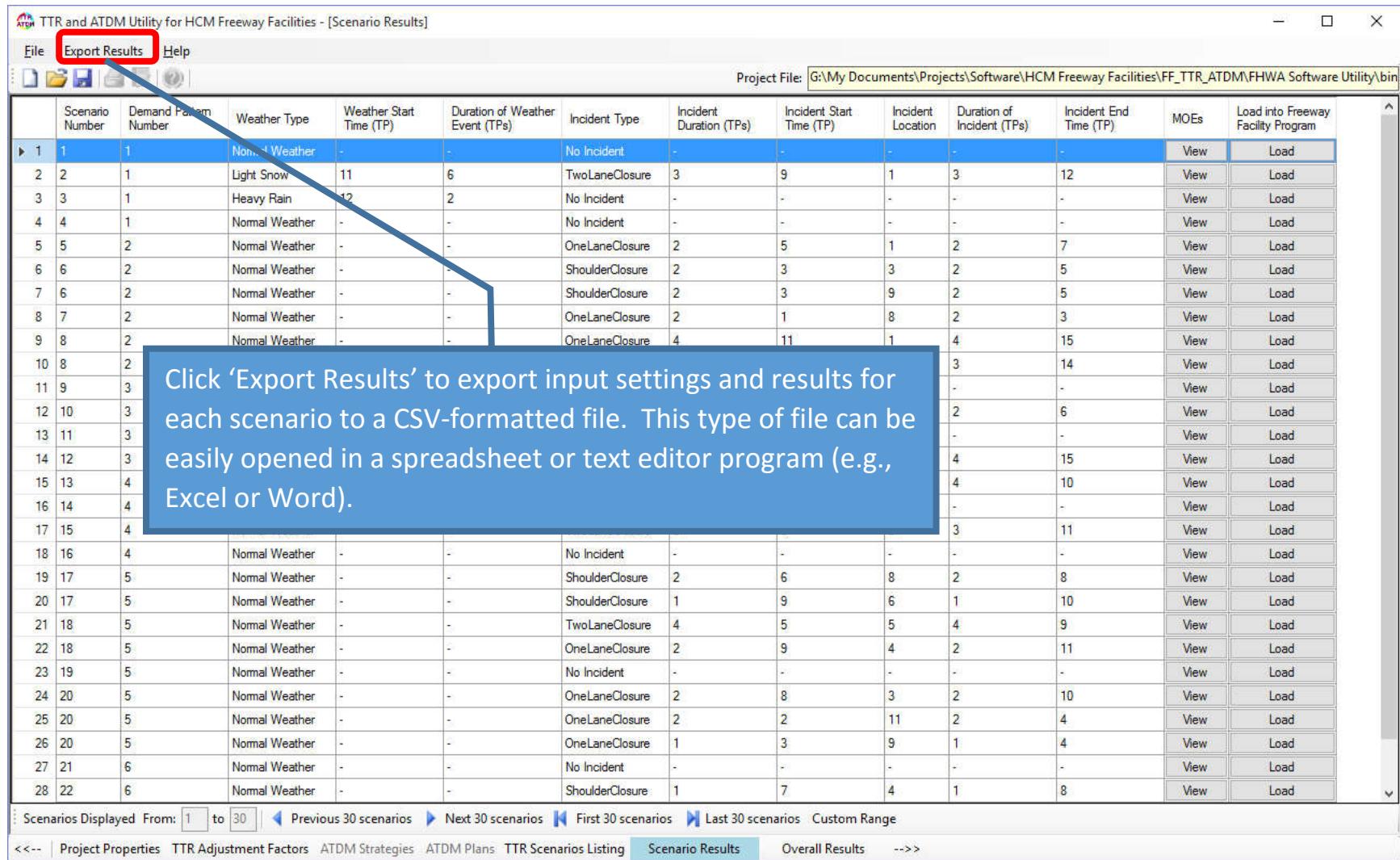
# Scenario Results: Copy Values to Clipboard

Scenario Id: 8 Scenario Number: 249

	Plan ID	Description	Time Period	Travel Time Avg. (min/veh)	Travel Time Index	VMT (demand)	VMT (volume)	VHT	VHD	Speed Avg. (mi/h)	Density (veh/mi/in)	Density (pc/mi/in)
▶	0	Before Scenario	All	6.83	1.05	107542.42	107542.42	1616.98	80.66	66.51	17.79	18.23
	0	Before Scenario	1	6.73	1.04	5018.94	5018.94	74.39	2.69	67.47	13.00	13.42
	0	Before Scenario	2	6.82	1.05	5520.83	5520.83	82.91	4.04	66.59	14.59	14.96
	0	Before Scenario	3	6.83	1.05	6072.92	6072.92	91.33	4.58	66.49	16.07	16.48
	0	Before Scenario	4	6.85	1.05	6675.19	6675.19	100.57	5.21	66.37	17.70	18.14
	0	Before Scenario	5	6.86	1.06	7350.76	7350.76	111.05	6.04	66.19	19.55	20.03
	0	Before Scenario	6	6.82	1.05	8080.49	8080.49	121.36	5.92	66.58	21.36	21.89
	0	Before Scenario	7	6.90	1.06	8883.52	8883.52	135.00	8.10	65.80	23.76	24.35
	0	Before Scenario	8	7.03	1.07	107542.42	107542.42	150.36	10.23	65.47	26.14	26.62
	0	Before Scenario	9	6.89	1.04	5775.95	5775.95	85.75	3.23	67.36	15.09	15.47
	0	Before Scenario	10	6.81	1.04	5198.86	5198.86	77.08	2.81	67.44	13.57	13.91
	0	Before Scenario	11	6.77	1.04	4677.08	4677.08	69.27	2.45	67.52	12.19	12.50
	0	Before Scenario	12	6.76	1.04	4210.23	4210.23	62.30	2.15	67.58	10.96	11.24
	0	Before Scenario	13	6.74	1.04	5775.95	5775.95	85.75	3.23	67.36	15.09	15.47
	0	Before Scenario	14	6.74	1.04	5198.86	5198.86	77.08	2.81	67.44	13.57	13.91
	0	Before Scenario	15	6.73	1.04	4677.08	4677.08	69.27	2.45	67.52	12.19	12.50
	0	Before Scenario	16	6.72	1.04	4210.23	4210.23	62.30	2.15	67.58	10.96	11.24
	1	Plan 1	All	6.77	1.04	86726.14	86726.14	1293.57	54.62	67.04	14.23	14.58
	1	Plan 1	1	6.72	1.04	4047.35	4047.35	59.92	2.10	67.54	10.55	10.81
	1	Plan 1	2	6.91	1.05	1152.65	1152.65	66.77	2.16	66.60	11.75	12.05

Click 'Copy Values to Clipboard' to copy values to paste into another program (e.g., Excel or Word).

# Scenario Results: Export Values to File

Click 'Export Results' to export input settings and results for each scenario to a CSV-formatted file. This type of file can be easily opened in a spreadsheet or text editor program (e.g., Excel or Word).

	Scenario Number	Demand Pattern Number	Weather Type	Weather Start Time (TP)	Duration of Weather Event (TPs)	Incident Type	Incident Duration (TPs)	Incident Start Time (TP)	Incident Location	Duration of Incident (TPs)	Incident End Time (TP)	MOEs	Load into Freeway Facility Program
►	1	1	Nominal Weather	-	-	No Incident	-	-	-	-	-	<a href="#">View</a>	<a href="#">Load</a>
2	2	1	Light Snow	11	6	TwoLaneClosure	3	9	1	3	12	<a href="#">View</a>	<a href="#">Load</a>
3	3	1	Heavy Rain	12	2	No Incident	-	-	-	-	-	<a href="#">View</a>	<a href="#">Load</a>
4	4	1	Normal Weather	-	-	No Incident	-	-	-	-	-	<a href="#">View</a>	<a href="#">Load</a>
5	5	2	Normal Weather	-	-	OneLaneClosure	2	5	1	2	7	<a href="#">View</a>	<a href="#">Load</a>
6	6	2	Normal Weather	-	-	ShoulderClosure	2	3	3	2	5	<a href="#">View</a>	<a href="#">Load</a>
7	6	2	Normal Weather	-	-	ShoulderClosure	2	3	9	2	5	<a href="#">View</a>	<a href="#">Load</a>
8	7	2	Normal Weather	-	-	OneLaneClosure	2	1	8	2	3	<a href="#">View</a>	<a href="#">Load</a>
9	8	2	Normal Weather	-	-	OneLaneClosure	4	11	1	4	15	<a href="#">View</a>	<a href="#">Load</a>
10	8	2								3	14	<a href="#">View</a>	<a href="#">Load</a>
11	9	3								-	-	<a href="#">View</a>	<a href="#">Load</a>
12	10	3								2	6	<a href="#">View</a>	<a href="#">Load</a>
13	11	3								-	-	<a href="#">View</a>	<a href="#">Load</a>
14	12	3								4	15	<a href="#">View</a>	<a href="#">Load</a>
15	13	4								4	10	<a href="#">View</a>	<a href="#">Load</a>
16	14	4								-	-	<a href="#">View</a>	<a href="#">Load</a>
17	15	4								3	11	<a href="#">View</a>	<a href="#">Load</a>
18	16	4	Normal Weather	-	-	No Incident	-	-	-	-	-	<a href="#">View</a>	<a href="#">Load</a>
19	17	5	Normal Weather	-	-	ShoulderClosure	2	6	8	2	8	<a href="#">View</a>	<a href="#">Load</a>
20	17	5	Normal Weather	-	-	ShoulderClosure	1	9	6	1	10	<a href="#">View</a>	<a href="#">Load</a>
21	18	5	Normal Weather	-	-	TwoLaneClosure	4	5	5	4	9	<a href="#">View</a>	<a href="#">Load</a>
22	18	5	Normal Weather	-	-	OneLaneClosure	2	9	4	2	11	<a href="#">View</a>	<a href="#">Load</a>
23	19	5	Normal Weather	-	-	No Incident	-	-	-	-	-	<a href="#">View</a>	<a href="#">Load</a>
24	20	5	Normal Weather	-	-	OneLaneClosure	2	8	3	2	10	<a href="#">View</a>	<a href="#">Load</a>
25	20	5	Normal Weather	-	-	OneLaneClosure	2	2	11	2	4	<a href="#">View</a>	<a href="#">Load</a>
26	20	5	Normal Weather	-	-	OneLaneClosure	1	3	9	1	4	<a href="#">View</a>	<a href="#">Load</a>
27	21	6	Normal Weather	-	-	No Incident	-	-	-	-	-	<a href="#">View</a>	<a href="#">Load</a>
28	22	6	Normal Weather	-	-	ShoulderClosure	1	7	4	1	8	<a href="#">View</a>	<a href="#">Load</a>

Scenarios Displayed From: 1 to 30 | Previous 30 scenarios | Next 30 scenarios | First 30 scenarios | Last 30 scenarios | Custom Range

<<-- | Project Properties | TTR Adjustment Factors | ATDM Strategies | ATDM Plans | TTR Scenarios Listing | Scenario Results | Overall Results -->>

# Scenario Results: Load into Freeway Facility Program

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Scenario Results]

File Help

Project File: C:\Users\love\Source\Workspaces\FF\_TTR\_ATDM\FF\_TTR\_ATDM\FHWA Software Utility\bin\Debug\Da

	Scenario Number	Demand Level	Weather Type	Incident Type	Incident Lanes Blocked	Workzone Type	Lanes Open	MOEs	Load into Freeway Facility Program
1	2	15	Clear	No Incident	n/a	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
2	4	50	Clear	No Incident	n/a	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
3	6	85	Clear	No Incident	n/a	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
4	44	15	Clear	No Incident	n/a	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
5	46	50	Clear	No Incident	n/a	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
6	48	85	Clear	No Incident	n/a	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
7	247	15	Clear	Property Damage Only Crash	1	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
8	249	50	Clear						<a href="#">Load</a>
9	251	85	Clear						<a href="#">Load</a>
10	289	15	Clear						<a href="#">Load</a>
11	291	50	Clear						<a href="#">Load</a>
12	293	85	Clear						<a href="#">Load</a>
13	1276	15	Medium Rain						<a href="#">Load</a>
14	1278	50	Medium Rain	No Incident	n/a	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
15	1280	85	Medium Rain	No Incident	n/a	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
16	1318	15	Medium Rain	No Incident	n/a	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
17	1320	50	Medium Rain	No Incident	n/a	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
18	1322	85	Medium Rain	No Incident	n/a	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
19	1521	15	Medium Rain	Property Damage Only Crash	1	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
20	1523	50	Medium Rain	Property Damage Only Crash	1	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
21	1525	85	Medium Rain	Property Damage Only Crash	1	No Work Zone	All	<a href="#">View</a>	<a href="#">Load</a>
22	1563	15	Medium Rain	Property Damage Only Crash	1	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
23	1565	50	Medium Rain	Property Damage Only Crash	1	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>
24	1567	85	Medium Rain	Property Damage Only Crash	1	Long Term	3	<a href="#">View</a>	<a href="#">Load</a>

Scenarios Displayed From: 1 to 30 | [Previous 30 scenarios](#) [Next 30 scenarios](#) [First 30 scenarios](#) [Last 30 scenarios](#) [Custom Range](#) [Show All](#)

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Please Select Scenario Version:

- [Before](#)
- [After Plan 1](#)

# Overall Results: Copy Values to Clipboard

TTR and ATDM Utility for HCM 2010 Freeway Facilities - [Overall Results]

File Help

Project File: G:\My Documents\Projects\Software\HCM Freeway Facilities\Test and Example Files\Project Files\Chap

**Summary Table**   **Charts**

Plan ID	Description	Travel Time (min)	Travel Time Index	VMT (demand)	VMT (volume)	VHT	VHD	Speed Avg. (mi/hr)	Density (veh/mi/hr)	Density (pc/mi/hr)
0	Before Scenarios (Min)	6.78	1.04	99870.08	99870.08	1491.24	64.52	53.88	16.40	16.81
0	Before Scenarios (Max)	8.44	1.30	111926.89	111926.89	2077.12	478.23	66.07	22.81	23.38
0	Before Scenarios (Mean)	6.99	1.08	105974.90	105974.53	1630.37	116.45	65.15	17.93	18.38
0	Before Scenarios (50%)	7.50	1.16	107542.42	107542.42	1739.76	273.89	60.68	19.14	19.62
0	Before Scenarios (80%)	7.91	1.22	111926.89	111924.72	1888.89	352.57	66.31	20.78	21.30
0	Before Scenarios (95%)	8.21								
0	Before Scenarios (Std. Dev)	0.33								
0	Before Scenarios (Misery Index)	1.29								
0	Before Scenarios (SemiStd.Dev)	2.61								
1	Plan 1(Min)	6.75								
1	Plan 1(Max)	7.91	1.22	90273.48	90273.48	1572.22	282.60	67.30	17.29	17.73
1	Plan 1(Mean)	6.91	1.06	85455.39	85455.39	1300.55	79.76	65.81	14.31	14.66
1	Plan 1(50%)	7.37	1.13	86726.14	86726.14	1363.87	180.02	61.78	15.00	15.38
1	Plan 1(80%)	7.80	1.20	90273.48	90273.48	1480.84	258.46	66.99	16.29	16.70
1	Plan 1(95%)	7.89	1.22	90273.48	90273.48	1560.73	282.60	67.24	17.17	17.60
1	Plan 1(Std. Dev)	0.27	0.04	4141.60	4141.60	83.60	52.12	2.38	0.92	0.94
1	Plan 1(Misery Index)	1.22								
1	Plan 1(SemiStd.Dev)	2.40								

**Copy Values to Clipboard**

Click 'Copy Values to Clipboard' to copy values to paste into another program (e.g., Excel or Word).

<<-- | Project Properties TTR Adjustment Factors ATDM Strategies ATDM Plans TTR Scenarios Listing Scenario Results Overall Results -->>

# Overall Results: Copy Chart to Clipboard

