Sample Size Determination Tool, Version 2.0

VDOT Virginia Department of Transportation

Step 1: Input number of MOEs (max is 12). Clear out old data.

Step 2: Select type of MOEs

Step 3: Insert simulation results from four random seeds for selected MOEs

User Inputs

Constants

Outputs

Sample Size (N) = Number of Model Runs
Sample Mean (Xs) = (1/N) (X1 + X2 + X3 … + XN)
Sample Standard Deviation (Ss) = √[(Σ(X-Xs)2)/(N-1)]
Sampling Error = t (Ss/√N)
Confidence Level = Xs ± t (Ss/√N)
% of Sample Mean (E) = % Tolerance * Xs Sample Size Needed = [(t)2 * (Ss)2] / (E)2

The "t" statistic is the hypothsized number of standard deviations away from the mean corresponding to the required confidence level and sample size in a t-distribution.

Inputs

Confidence Interval:	95%
Tolerance Error:	10%
Number of MOEs:	3

Output

Number of Required Runs: **10**

*Minimum number of required runs = 10

Location (optional)	NB 295 - E Capitol St to Benning Rd	NB 295 - Benning Rd to NHB Ave	NB 295 - NHB Ave to Douglas St	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Runs (Seeds)	***Travel Time***	***Travel Time***	***Travel Time***									
100	653.4	594.4	592.8									
101	652.0	591.0	588.4									
102	652.8	593.1	591.5									
103	652.5	589.3	586.6									

**Results from four random seeds*

Statistics

X_s	=	652.7	591.9	589.8
S_s	=	0.6	2.3	2.8
E	=	65.3	59.2	59.0
t	=	3.18	3.18	3.18

Sampling Error	=	0.94	3.62	4.53
95% Interval Lower	=	651.7	588.3	585.3
95% Interval Upper	=	653.6	595.6	594.4
% of Sample Mean	=	0.14%	0.61%	0.77%
Sample Size Needed	=	**4**	**4**	**4**

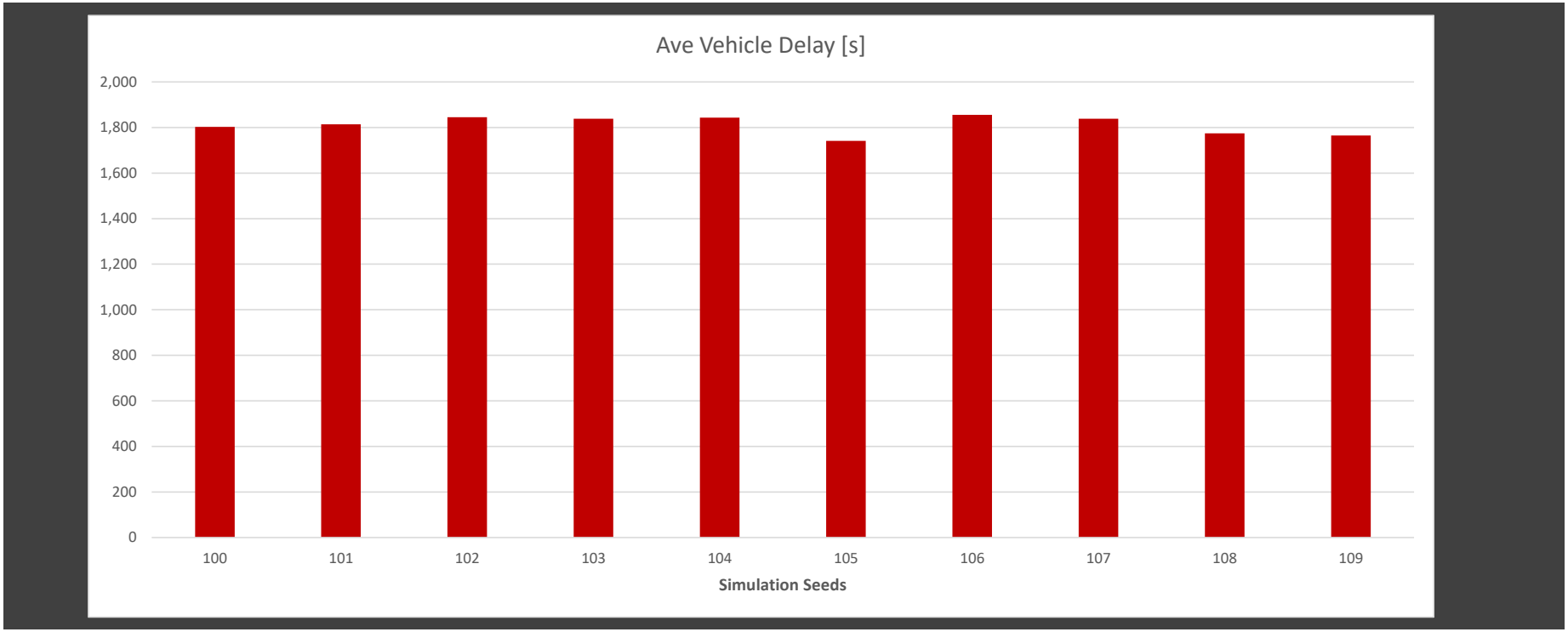
AM Peak Hour | Existing AM

Kimley»Horn

Network Consistency Check

AM Peak Period

Seed Number		Ave Vehicle Delay [s]	Unserved Vehicle Demand	Average Vehicle Speed [mph]	Average Vehicle Delay from Stopping [s]	Total Delay for All Vehicles [1000 s]	No. Vehicles on Network at End of Simulation	No. Vehicles Arrived throughout Simulation
100		1,802.6	13,434	104.0	86,513	6,037	24,002	58,923
101		1,813.8	13,178	103.1	86,631	6,343	24,138	58,933
102		1,844.7	13,782	100.9	86,649	6,399	24,506	58,761
103		1,838.5	13,181	102.4	86,405	6,279	24,659	58,596
104		1,843.0	13,983	102.0	86,420	6,186	24,667	58,643
105		1,741.7	14,001	104.5	86,491	5,739	23,412	59,035
106		1,855.4	13,860	105.1	86,087	6,120	24,831	58,676
107		1,838.7	13,846	104.1	86,215	6,348	24,408	58,549
108		1,774.3	13,936	102.3	86,559	6,032	23,750	58,816
109		1,764.8	12,943	101.2	86,275	5,974	23,578	59,022
Average	=	1812	13,614	103.0	86,424	6,146	24,195	58,795
Standard Deviation	=	39	393	1.4	184	206.6	496	177
% Stdev	=	2%	3%	1%	0%	3%	2%	0%


Ave Vehicle Delay [s]
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
100
101
102
103
104
105
106
107
108
109
Simulation Seeds