

Sample Size Determination Tool, Version 2.0

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) = $(1/N) (X1 + X2 + X3 \dots + XN)$
Sample Standard Deviation (Ss) = $\sqrt{[(\sum(X-Xs)^2)/(N-1)]}$
Sampling Error = $t (Ss/\sqrt{N})$
Confidence Level = $Xs \pm t (Ss/\sqrt{N})$
% of Sample Mean (E) = % Tolerance * Xs
Sample Size Needed = $[(t)^2 * (Ss)^2] / (E)^2$

The "t" statistic is the hypothesized 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: 12

Output

Number of Required Runs: 30

*Minimum number of required runs = 10

Location (optional)

	NB - Full Corridor (St A to St B)		SB - Full Corridor (St B to St A)		SB Stanford to 55th		NB 55th to Stanford		SB Jones to Delaware		NB Delaware to Jones	
Runs (Seeds)	Travel Time	Volume	Travel Time	Volume	Travel Time	Volume	Travel Time	Volume	Travel Time	Volume	Travel Time	Volume
100		0	1,240.9	0	24.0	172	235.0	98	59.5	215	56.9	95
101		0		0	22.2	169	207.8	101	60.1	222	57.4	95
102		0		0	23.2	176	287.4	94	53.5	218	56.7	96
103		0		0	22.6	169	222.2	97	53.6	221	56.4	91

*Results from four random seeds

Statistics

X _s =		0.0	1240.9	0.1	23.0	171.6	238.1	97.1	56.7	218.9	56.8	94.0
S _s =	0.0	0.0	620.5	0.2	0.8	3.3	34.7	2.9	3.6	3.4	0.4	2.2
E =		0.0	124.1	0.0	2.3	17.2	23.8	9.7	5.7	21.9	5.7	9.4
t =	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18
Sampling Error =	0.00	0.00	987.29	0.24	1.28	5.23	55.22	4.63	5.74	5.45	0.62	3.55
95% Interval Lower =		0.0	253.6	-0.2	21.7	166.4	182.9	92.5	50.9	213.5	56.2	90.4
95% Interval Upper =		0.0	2228.2	0.3	24.3	176.8	293.3	101.8	62.4	224.3	57.5	97.6
% of Sample Mean =			79.56%	318.24%	5.54%	3.05%	23.19%	4.77%	10.13%	2.49%	1.10%	3.78%
Sample Size Needed =			30	30	4	4	22	4	4	4	4	4

AM Peak Hour 8:30AM - 9:30AM | Existing AM

Network Consistency Check

AM Peak Period 8:00AM - 10:00AM



<u>Seed Number</u>		<i>Ave Vehicle Delay [s]</i>	<i>Unservd Vehicle Demand</i>	<i>Average Vehicle Speed [mph]</i>	<i>Average Vehicle Delay from Stopping [s]</i>	<i>Total Delay for All Vehicles [1000 s]</i>	<i>No. Vehicles on Network at End of Simulation</i>	<i>No. Vehicles Arrived throughout Simulation</i>
100		727.7	13,519	0.0	29,297	4,219	10,961	51,582
101		653.4	12,452	0.0	29,906	3,668	10,316	52,193
102		758.8	14,567	0.0	29,482	4,379	11,126	51,409
103		709.4	13,783	0.0	29,641	4,066	10,664	51,670
104		705.6	13,458	0.0	29,425	4,040	10,708	51,645
105		773.8	13,430	0.0	29,675	4,584	11,476	51,514
106		733.2	13,058	0.0	29,581	4,230	10,926	51,813
107		736.6	12,575	0.0	29,704	4,266	10,912	51,793
108		738.7	13,769	0.0	29,521	4,271	10,926	51,681
109		732.8	13,005	0.0	29,818	4,243	11,001	51,544
Average	=	727	13,362	0.0	29,605	4,197	10,902	51,684
Standard Deviation	=	33	624	0.0	183	240.0	304	217
% Stdev	=	5%	5%	#DIV/0!	1%	6%	3%	0%

