Create Data Tables

Excel Step-by-Step How-to for PC

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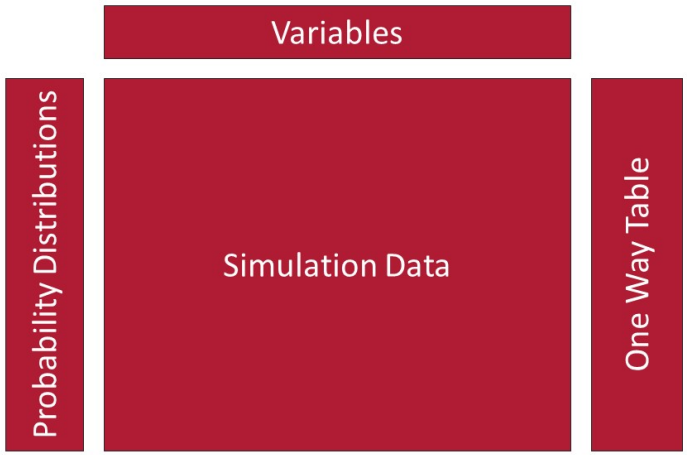
Create a One-way Data Table

Excel Step-by-Step How-to for PC

Instructions: Use this guide to create a one-way data table using Excel.

Data requirement: Probability distribution for a scenario, simulations of the scenario (enough for stable data output)
Sample Data: Stocking and distributing standard and luxury cars

Step	Instructions and Screenshots
1. Arrange your data so you can reference the probability distribution and simulations.	At the end of this process, the data should be formatted as follows: 

This example includes probability distributions for standard and luxury cars. The one-way table will represent the standard car variables effect on profit.

	STANDARD		
	Frequency	Relative Freq.	Cumlative Prob.
10	2	0.02	0
11	1	0.01	0.02
12	6	0.06	0.03
13	3	0.03	0.09
14	6	0.06	0.12
15	3	0.03	0.18
16	7	0.07	0.21
17	7	0.07	0.28
18	6	0.06	0.35
19	14	0.14	0.41
20	6	0.06	0.55
21	9	0.09	0.61
22	10	0.1	0.7
23	13	0.13	0.8
24	7	0.07	0.93
			1

		Fleet	Upgrades				
	Standard	15	5	33	12	AVG	449.92
	Luxury	10		39	14		

Replication	S- Demand	L- Demand	S-Sales	S-Surplus	S-Ups	L -sales	Profit
1	17	12	15	2	2	8	478
2	23	12	15	8	8	2	442
3	23	10	15	8	8	2	442
4	20	11	15	5	5	5	460
5	17	12	15	2	2	8	478
6	24	10	15	9	9	1	436
7	18	11	15	3	3	7	472
8	20	10	15	5	5	5	460
9	21	10	15	6	6	4	454
10	19	13	15	4	4	6	466
11	15	13	15	0	0	10	490
12	22	11	15	7	7	3	448
13	16	11	15	1	1	9	484

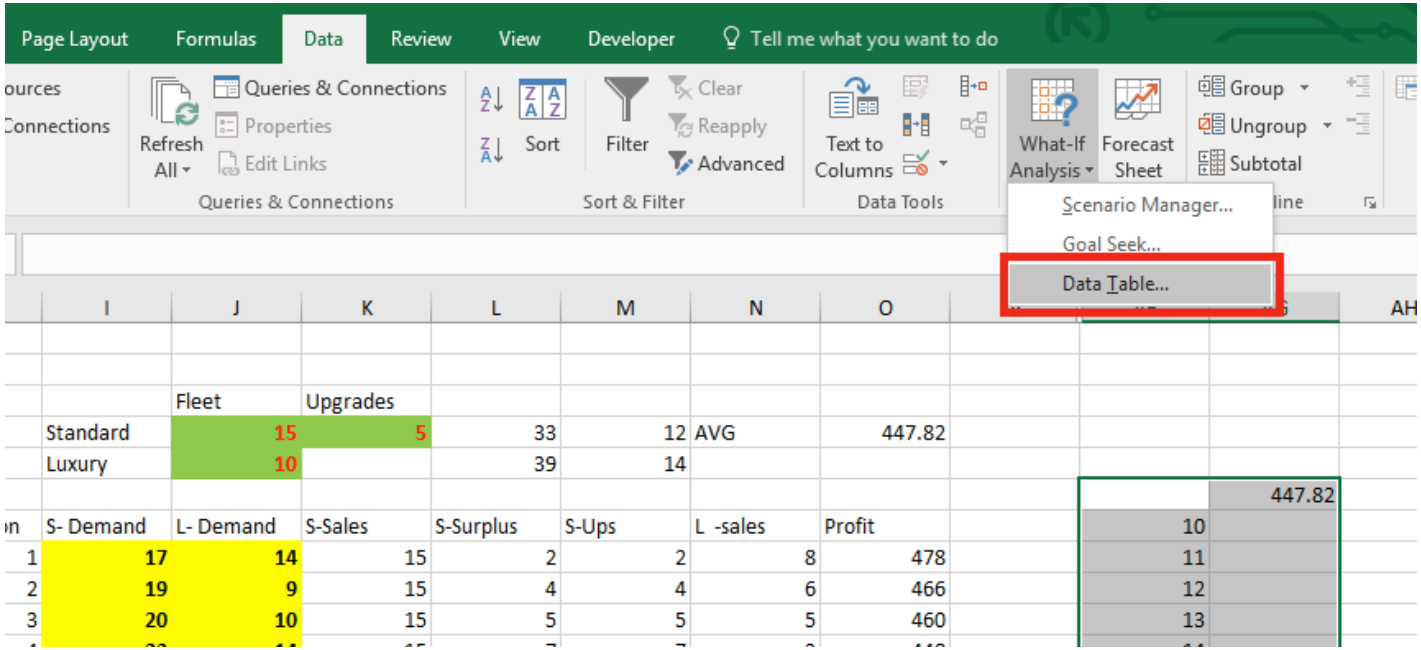
2. Enter the range of variables being evaluated in this table in a column to the right of your data.

For this example, the range of 10 to 24 standard cars is being evaluated. Reference the average profit above the column to the right.

		Fleet	Upgrades					
	Standard	15	5	33	12	AVG	451.252	
	Luxury	10		39	14			=O10

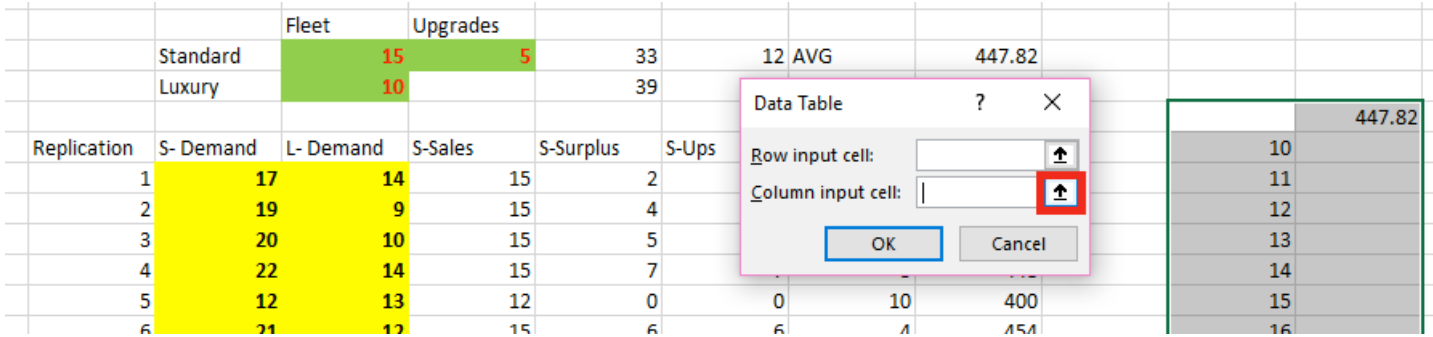
Replication	S- Demand	L- Demand	S-Sales	S-Surplus	S-Ups	L -sales	Profit	
1	20	11	15	5	5	5	460	10
2	13	11	13	0	0	10	430	11
3	16	12	15	1	1	9	484	12
4	13	11	13	0	0	10	430	13
5	17	12	15	2	2	8	478	14
6	17	13	15	2	2	8	478	15
7	18	10	15	3	3	7	472	16
8	12	13	12	0	0	10	400	17
9	21	12	15	6	6	4	454	18
10	17	10	15	2	2	8	478	19
11	24	9	15	9	9	1	436	20
12	19	12	15	4	4	6	466	21
13	23	13	15	8	8	2	442	22
14	19	12	15	4	4	6	466	23
15	17	11	15	2	2	8	478	24

3. Select the two columns and navigate to the data tab. Select What-If Analysis and Data Table.

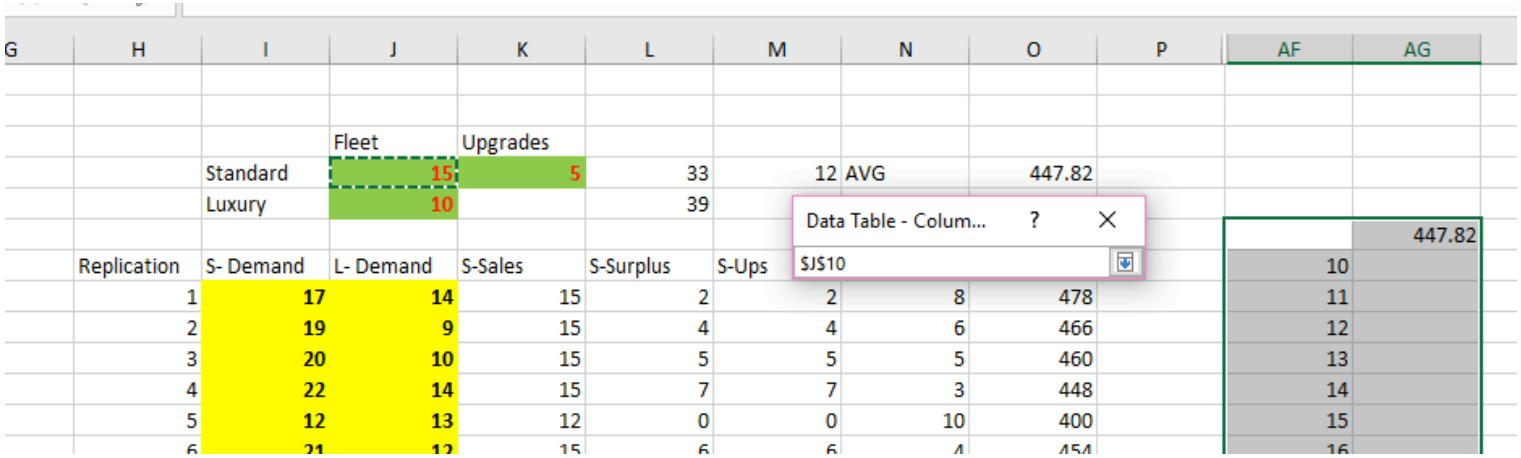


4. Populate the data table with the correspondin g column data.

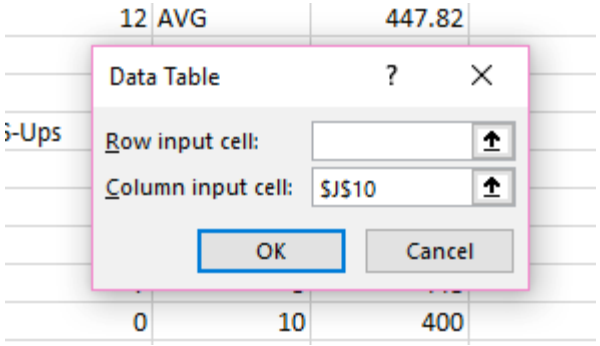
In this case, it is the Standard Fleet cell.



Select the desired cell.



Click OK.



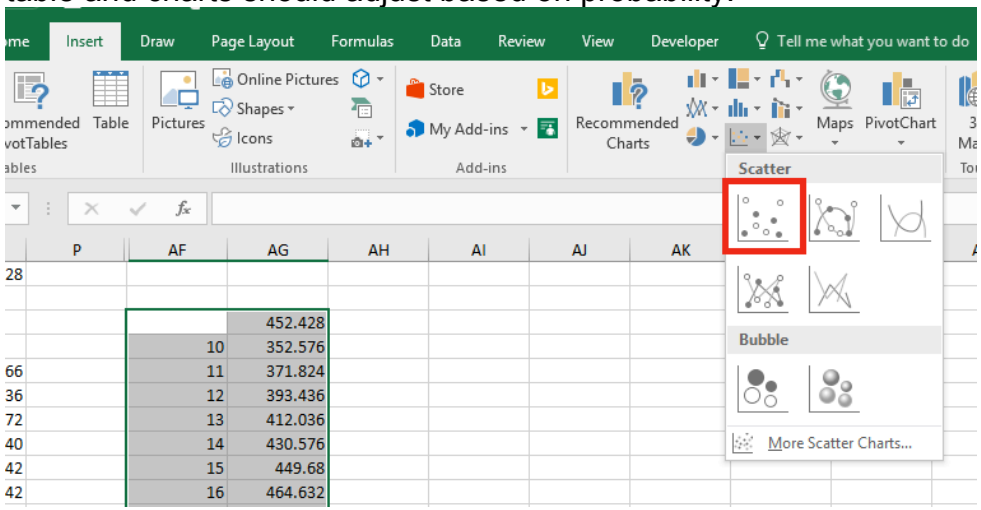
TIP: If the data table is not populating with new numbers…

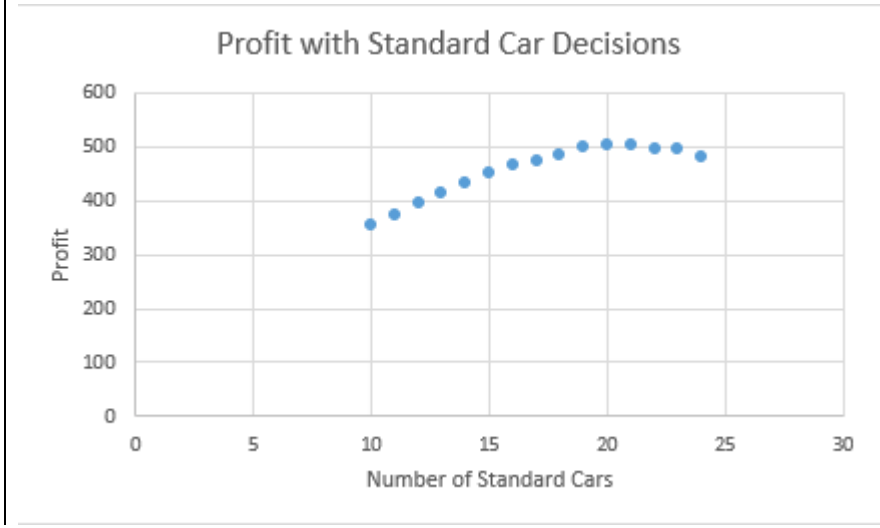
press F9 to recalculate your data tables.

	452.428
10	352.576
11	371.824
12	393.436
13	412.036
14	430.576
15	449.68
16	464.632
17	474.46
18	486.064
19	498.46
20	504.4
21	502.528
22	497.032
23	496.312
24	482.248

5. Visualize the data table. Select the one-way table and navigate to Insert. Select Scatter and customize the labels.

Change the number of standard cars that will be stocked and recalculate the table. The numbers in the table and charts should adjust based on probability.



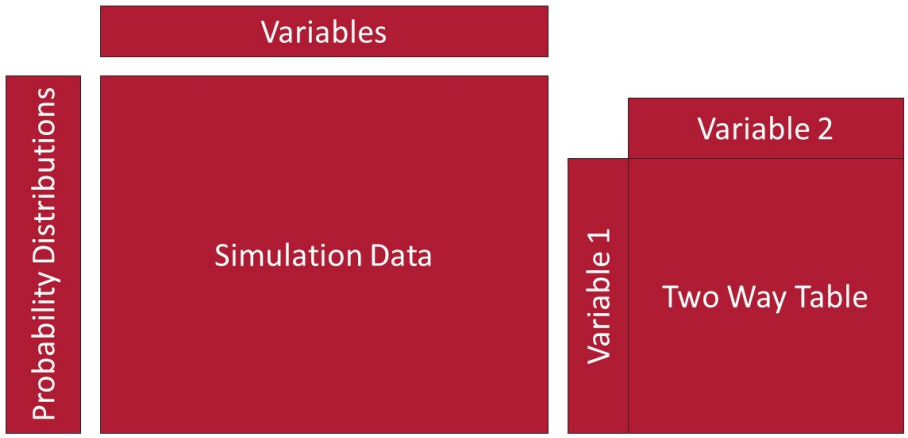


Create a Two-way Data Table

Excel Step-by-Step How-to for PC

Instructions: Use this guide to create a two-way data table using Excel.

Data requirement: Probability distributions for at least two scenarios, simulations of the scenario (enough for stable data output)
Sample Data: Stocking and distributing standard and luxury cars

Step	Instructions and Screenshots
1. See "Create a One-way Data Table" for initial data formatting.	At the end of this process, the data should be formatted as follows:  For now, start with the probability distributions, simulations, and variables.

	STANDARD		
	Frequency	Relative Freq.	Cumlative Prob.
10	2	0.02	0
11	1	0.01	0.02
12	6	0.06	0.03
13	3	0.03	0.09
14	6	0.06	0.12
15	3	0.03	0.18
16	7	0.07	0.21
17	7	0.07	0.28
18	6	0.06	0.35
19	14	0.14	0.41
20	6	0.06	0.55
21	9	0.09	0.61
22	10	0.1	0.7
23	13	0.13	0.8
24	7	0.07	0.93
			1
	LUXURY		
	Frequency	Relative Freq.	Cumlative Prob.
6	1	0.01	0
7	4	0.04	0.01
8	2	0.02	0.05
9	6	0.06	0.07
10	13	0.13	0.13

		Fleet	Upgrades				
	Standard	15	5	33	12	AVG	450.052
	Luxury	10		39	14		

Replication	S- Demand	L- Demand	S-Sales	S-Surplus	S-Ups	L -sales	Profit
1	17	11	15	2	2	8	478
2	17	8	15	2	2	8	478
3	21	14	15	6	6	4	454
4	16	13	15	1	1	9	484
5	19	13	15	4	4	6	466
6	16	11	15	1	1	9	484
7	23	13	15	8	8	2	442
8	18	14	15	3	3	7	472
9	23	11	15	8	8	2	442
10	22	12	15	7	7	3	448
11	21	12	15	6	6	4	454
12	19	10	15	4	4	6	466
13	24	12	15	9	9	1	436
14	18	13	15	3	3	7	472

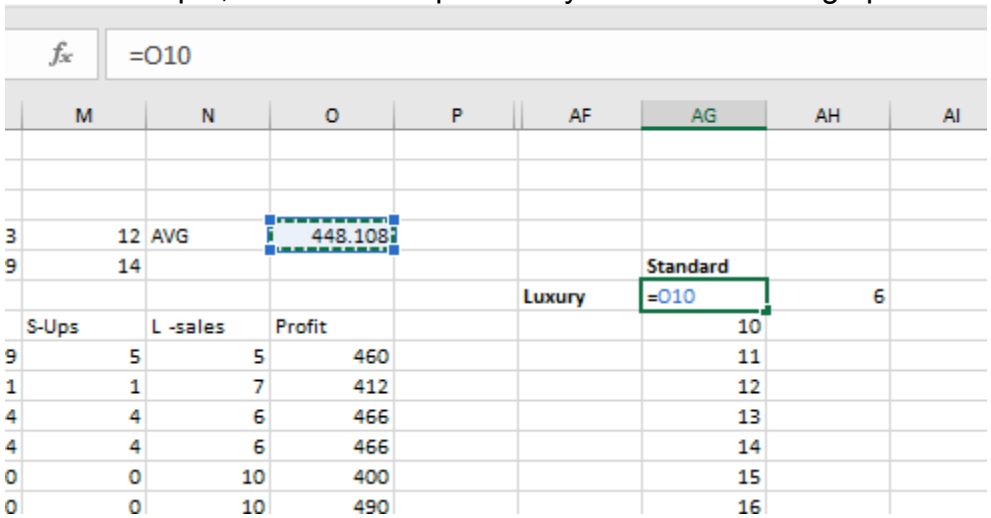
2. To the right of the data simulations, outline the two variables being evaluated. Put one variable in a column and one in a row, creating a matrix.

This example evaluates the stocking of standard cars in the column and the stocking of luxury cars in the row.

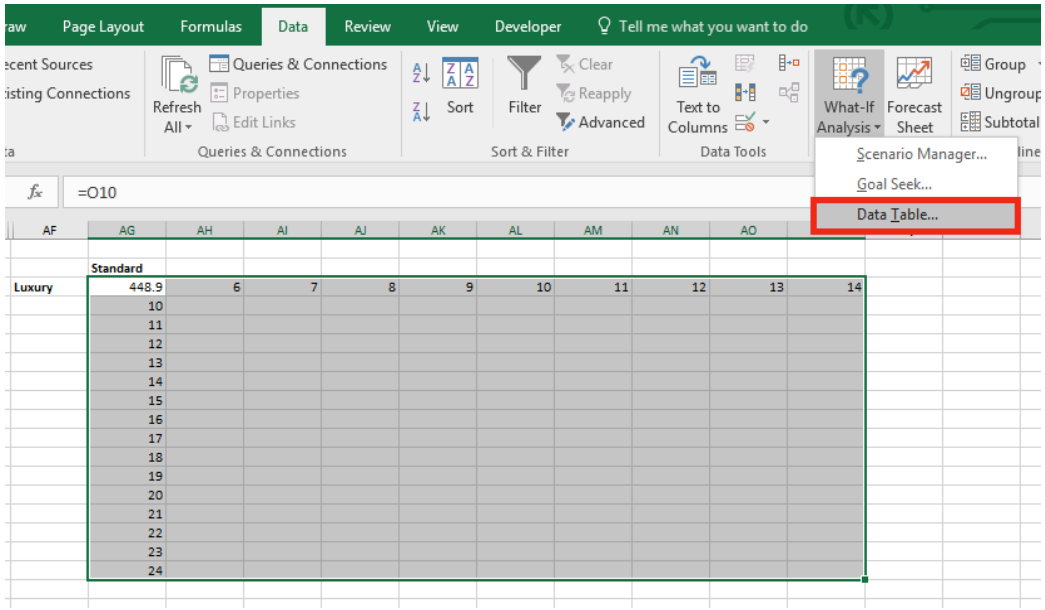
	Standard								
Luxury		6	7	8	9	10	11	12	13	14
	10									
	11									
	12									
	13									
	14									
	15									
	16									
	17									
	18									
	19									
	20									
	21									
	22									
	23									
	24									

3. Reference the dependent in the cell between the two variables.

In this example, reference the previously calculated average profit.

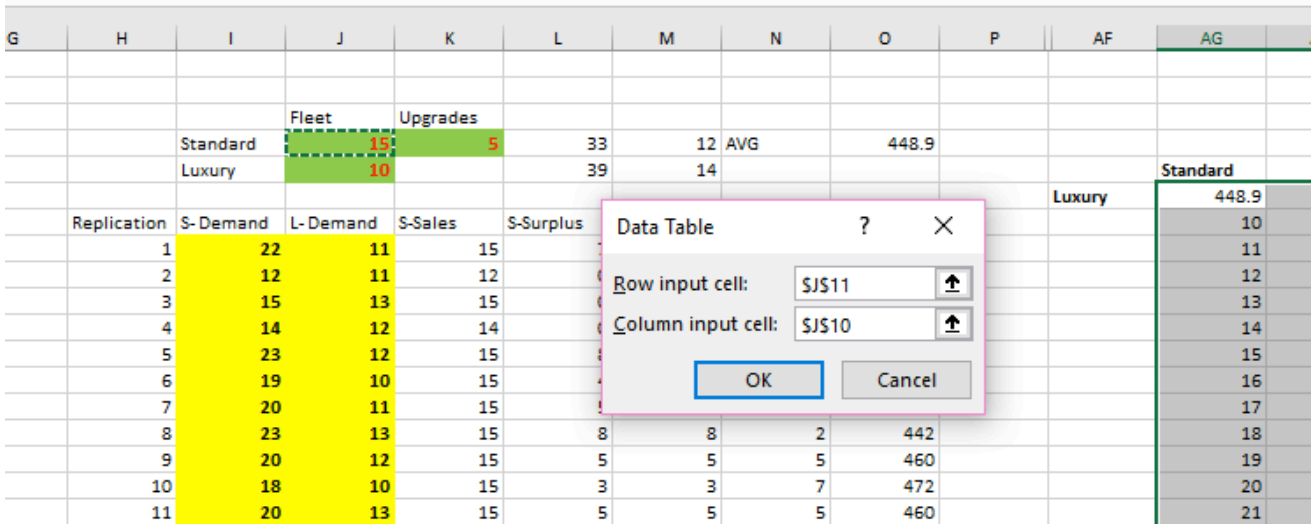


4. Highlight the entire matrix and navigate to the Data tab. Select What-If Analysis and Data Table.



5. Populate the row input cell field with the variable represented at the top of the data table. Populate the column input cell with the variable represented along the side of data table.

For this example, the row input cell is the number of luxury cars to stock (J11) and the column input cell is the number of standard cars to stock (J10).
Click OK.



			Fleet	Upgrades							
		Standard	15	5	33	12	AVG	448.9			
		Luxury	10		39	14					

Replication	S- Demand	L- Demand	S-Sales	S-Surplus				
1	22	11	15					
2	12	11	12					
3	15	13	15					
4	14	12	14					
5	23	12	15					
6	19	10	15					
7	20	11	15					
8	23	13	15	8	8	2	442	
9	20	12	15	5	5	5	460	
10	18	10	15	3	3	7	472	
11	20	13	15	5	5	5	460	

Data Table

Row input cell: J11

Column input cell: J10

OK Cancel

	Standard					
Luxury	449.608	6	7	8	9	10
10	448.9	448.9	448.9	448.9	448.9	448.9
11	448.9	448.9	448.9	448.9	448.9	448.9
12	448.9	448.9	448.9	448.9	448.9	448.9
13	448.9	448.9	448.9	448.9	448.9	448.9
14	448.9	448.9	448.9	448.9	448.9	448.9
15	448.9	448.9	448.9	448.9	448.9	448.9
16	448.9	448.9	448.9	448.9	448.9	448.9
17	448.9	448.9	448.9	448.9	448.9	448.9
18	448.9	448.9	448.9	448.9	448.9	448.9
19	448.9	448.9	448.9	448.9	448.9	448.9

	Standard					
Luxury	448.864	6	7	8	9	10
10	266.136	287.032	310.292	329.892	353.056	
11	283.488	305.296	328.508	351.444	371.176	
12	305.28	327.316	350.144	370.8	392.704	
13	326.736	349.192	372.032	390.828	413.812	
14	346.608	368.368	389.324	409.956	429.136	
15	364.428	384.628	407.624	428.424	450.46	
16	378.6	401.56	422.936	444.996	467.404	
17	394.836	418.72	434.372	458.592	479.008	
18	406.236	426.484	451.52	468.072	482.56	
19	413.1	438.832	459.536	473.532	501.736	

TIP: If the data table is not populating with new numbers…

press F9 to recalculate your data tables.

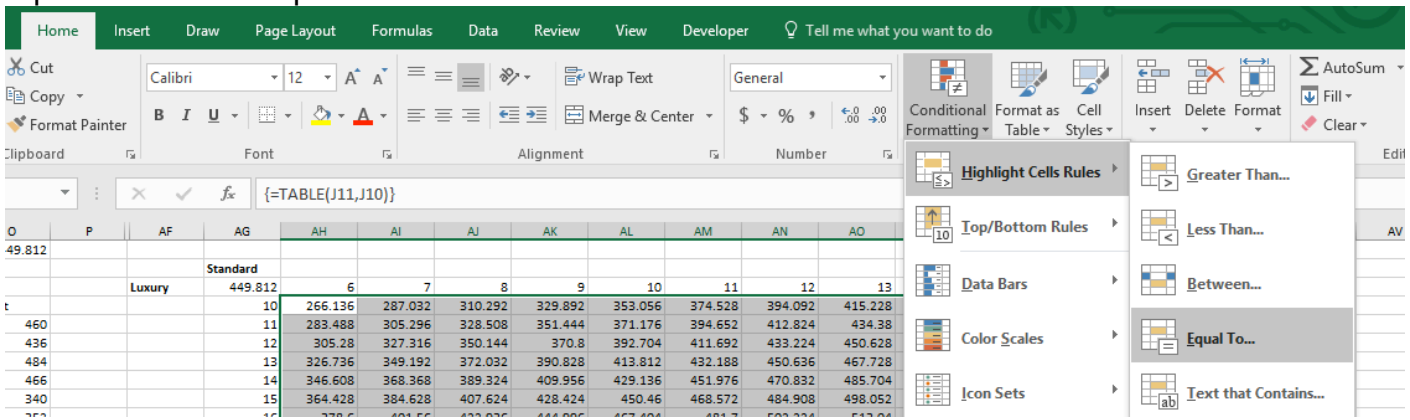
6. Identify the best outcome from the scenarios.

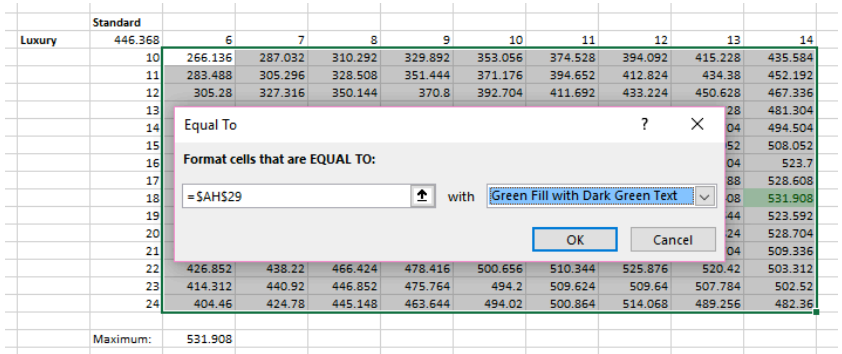
Identify the maximum profit using the =MAX() function.

=MAX(AH13:AP27)

	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP
		Standard									
	Luxury	449.812	6	7	8	9	10	11	12	13	14
		10	266.136	287.032	310.292	329.892	353.056	374.528	394.092	415.228	435.584
		11	283.488	305.296	328.508	351.444	371.176	394.652	412.824	434.38	452.192
		12	305.28	327.316	350.144	370.8	392.704	411.692	433.224	450.628	467.336
		13	326.736	349.192	372.032	390.828	413.812	432.188	450.636	467.728	481.304
		14	346.608	368.368	389.324	409.956	429.136	451.976	470.832	485.704	494.504
		15	364.428	384.628	407.624	428.424	450.46	468.572	484.908	498.052	508.052
		16	378.6	401.56	422.936	444.996	467.404	481.7	502.224	513.04	523.7
		17	394.836	418.72	434.372	458.592	479.008	495.644	507.564	521.788	528.608
		18	406.236	426.484	451.52	468.072	482.56	507.032	517.932	523.408	531.908
		19	413.1	438.832	459.536	473.532	501.736	517.424	523.74	527.644	523.592
		20	416.28	441.688	466.064	481.344	504.04	520.184	525.468	521.824	528.704
		21	417.312	446.536	461.276	481.44	508.18	518.876	515.52	527.704	509.336
		22	426.852	438.22	466.424	478.416	500.656	510.344	525.876	520.42	503.312
		23	414.312	440.92	446.852	475.764	494.2	509.624	509.64	507.784	502.52
		24	404.46	424.78	445.148	463.644	494.02	500.864	514.068	489.256	482.36
		Maximum:	531.908								

Navigate to the Home tab and select Conditional Formatting. Set the condition to highlighting cells that equal the maximum profit.





	Standard									
Luxury	446.368	6	7	8	9	10	11	12	13	14
	10	266.136	287.032	310.292	329.892	353.056	374.528	394.092	415.228	435.584
	11	283.488	305.296	328.508	351.444	371.176	394.652	412.824	434.38	452.192
	12	305.28	327.316	350.144	370.8	392.704	411.692	433.224	450.628	467.336
	13								28	481.304
	14								04	494.504
	15								52	508.052
	16								04	523.7
	17								88	528.608
	18								08	531.908
	19								44	523.592
	20								24	528.704
	21								04	509.336
	22	426.852	438.22	466.424	478.416	500.656	510.344	525.876	520.42	503.312
	23	414.312	440.92	446.852	475.764	494.2	509.624	509.64	507.784	502.52
	24	404.46	424.78	445.148	463.644	494.02	500.864	514.068	489.256	482.36
	Maximum:	531.908								

For this example, the highest profit is yielded when 14 luxury and 18 standard cars are stocked. Test that you have a stable data set by recalculating your data table. If the optimal cell is the same, then you have enough simulations. If it changes, then create more replications for your data set.

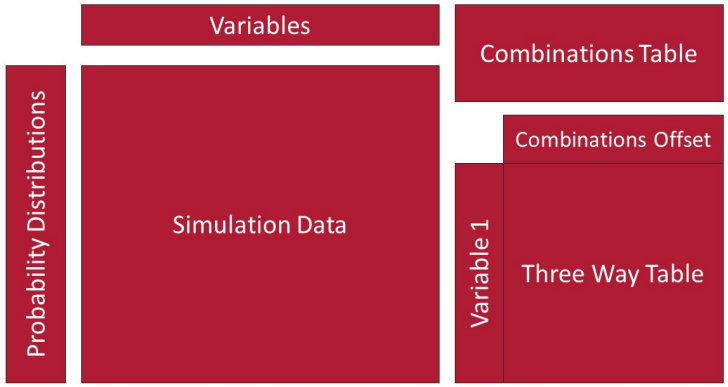
	Standard									
Luxury	446.368	6	7	8	9	10	11	12	13	14
	10	266.136	287.032	310.292	329.892	353.056	374.528	394.092	415.228	435.584
	11	283.488	305.296	328.508	351.444	371.176	394.652	412.824	434.38	452.192
	12	305.28	327.316	350.144	370.8	392.704	411.692	433.224	450.628	467.336
	13	326.736	349.192	372.032	390.828	413.812	432.188	450.636	467.728	481.304
	14	346.608	368.368	389.324	409.956	429.136	451.976	470.832	485.704	494.504
	15	364.428	384.628	407.624	428.424	450.46	468.572	484.908	498.052	508.052
	16	378.6	401.56	422.936	444.996	467.404	481.7	502.224	513.04	523.7
	17	394.836	418.72	434.372	458.592	479.008	495.644	507.564	521.788	528.608
	18	406.236	426.484	451.52	468.072	482.56	507.032	517.932	523.408	531.908
	19	413.1	438.832	459.536	473.532	501.736	517.424	523.74	527.644	523.592
	20	416.28	441.688	466.064	481.344	504.04	520.184	525.468	521.824	528.704
	21	417.312	446.536	461.276	481.44	508.18	518.876	515.52	527.704	509.336
	22	426.852	438.22	466.424	478.416	500.656	510.344	525.876	520.42	503.312
	23	414.312	440.92	446.852	475.764	494.2	509.624	509.64	507.784	502.52
	24	404.46	424.78	445.148	463.644	494.02	500.864	514.068	489.256	482.36
	Maximum:	531.908								

Create a Three-way Data Table

Excel Step-by-Step How-to for PC

Instructions: Use this guide to create a three-way data table using Excel.

Data requirement: Probability distributions for at least two scenarios, simulations of the scenario (enough for stable data output)
Sample Data: Stocking and distributing standard and luxury cars

Step	Instructions and Screenshots
1. See "Create a One-way Data Table" for initial data formatting.	At the end of this process, the data should be formatted as follows:  For now, start with the probability distributions, simulations, and variables.

	STANDARD		
	Frequency	Relative Freq.	Cumlative Prob.
10	2	0.02	0
11	1	0.01	0.02
12	6	0.06	0.03
13	3	0.03	0.09
14	6	0.06	0.12
15	3	0.03	0.18
16	7	0.07	0.21
17	7	0.07	0.28
18	6	0.06	0.35
19	14	0.14	0.41
20	6	0.06	0.55
21	9	0.09	0.61
22	10	0.1	0.7
23	13	0.13	0.8
24	7	0.07	0.93
			1
	LUXURY		
	Frequency	Relative Freq.	Cumlative Prob.
6	1	0.01	0
7	4	0.04	0.01
8	2	0.02	0.05
9	6	0.06	0.07
10	13	0.13	0.13

		Fleet	Upgrades					
	Standard	15	5	33	12	AVG	450.052	
	Luxury	10		39	14			
Replication	S- Demand	L- Demand	S-Sales	S-Surplus	S-Ups	L -sales	Profit	
1	17	11	15	2	2	8	478	
2	17	8	15	2	2	8	478	
3	21	14	15	6	6	4	454	
4	16	13	15	1	1	9	484	
5	19	13	15	4	4	6	466	
6	16	11	15	1	1	9	484	
7	23	13	15	8	8	2	442	
8	18	14	15	3	3	7	472	
9	23	11	15	8	8	2	442	
10	22	12	15	7	7	3	448	
11	21	12	15	6	6	4	454	
12	19	10	15	4	4	6	466	
13	24	12	15	9	9	1	436	
14	18	13	15	3	3	7	472	

2. To the right of the data simulations, outline the variables that will be evaluated. This will be achieved by creating a table of possible combinations of two of the variables and a matrix of the third variable and counter.

Start by creating a table with each possible combination of two of the variables that should be evaluated. In this case, a combination of 12-13 luxury cars and 2-5 upgrades are being tested.

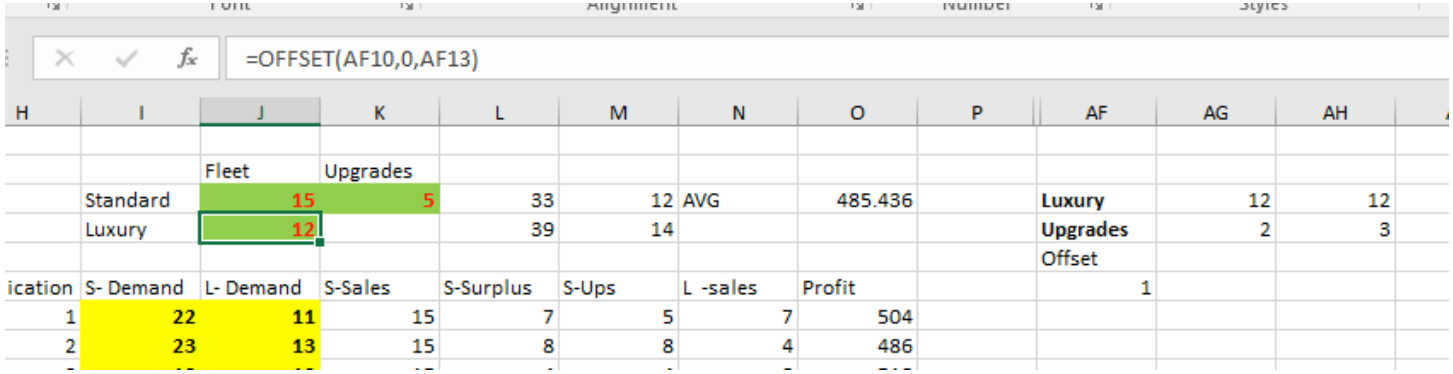
Luxury	12	12	12	12	13	13	13	13
Upgrades	2	3	4	5	2	3	4	5

=OFFSET(reference, rows, columns)

Use the offset function to allow the data table to count through these combinations that have been laid out. Label the offset and give it a starting value of 1.

Luxury	12	12
Upgrades	2	3
Offset		
1		

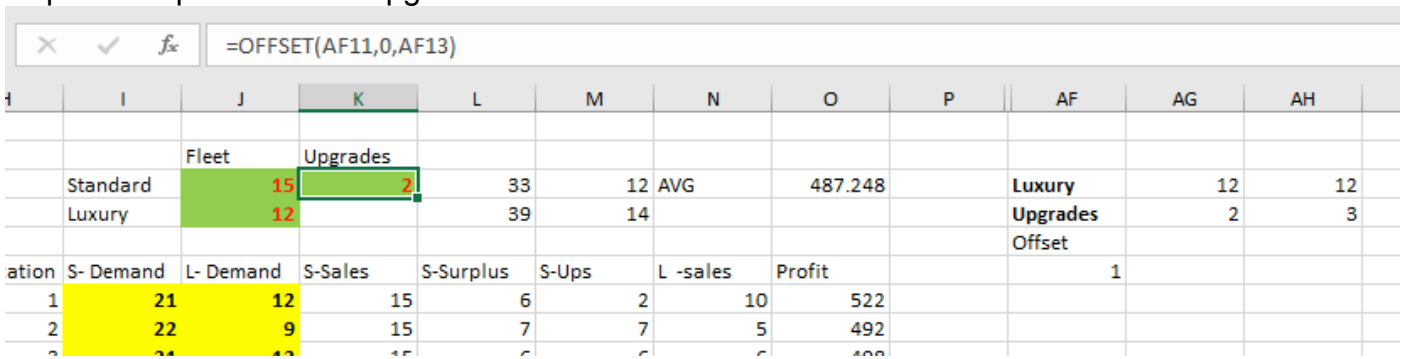
Populate the variable decision cell (in this example, luxury fleet cell) with the offset function. The reference is the cell labeled “Luxury” beside the combinations table, the rows is zero, and the number of columns is the number below the label “Offset.”



=OFFSET(AF10,0,AF13)

H	I	J	K	L	M	N	O	P	AF	AG	AH
		Fleet	Upgrades								
	Standard	15	5	33	12	AVG	485.436		**Luxury**	12	12
	Luxury	12		39	14				**Upgrades**	2	3
									Offset		
ication	S- Demand	L- Demand	S-Sales	S-Surplus	S-Ups	L -sales	Profit		1		
1	**22**	**11**	15	7	5	7	504				
2	**23**	**13**	15	8	8	4	486				

Repeat this process with Upgrades.



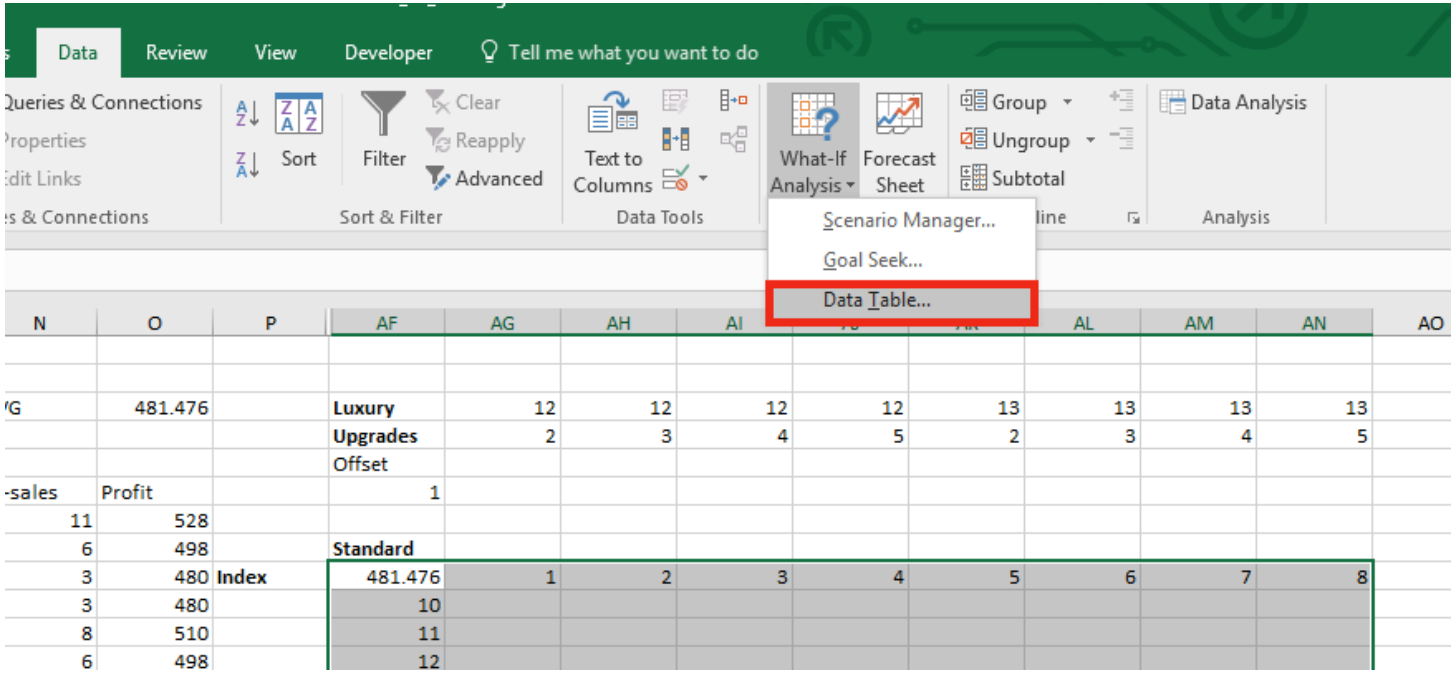
=OFFSET(AF11,0,AF13)

I	J	K	L	M	N	O	P	AF	AG	AH
	Fleet	Upgrades								
Standard	15	2	33	12	AVG	487.248		**Luxury**	12	12
Luxury	12		39	14				**Upgrades**	2	3
								Offset		
S- Demand	L- Demand	S-Sales	S-Surplus	S-Ups	L -sales	Profit		1		
21	**12**	15	6	2	10	522				
22	**9**	15	7	7	5	492				

Create a second table below the combinations table. The table should mimic those created for two-way data tables. The column of the table holds the possibilities for the third variable. In this case, that is the standard car stock. The row of the table holds an index for each column of the combinations table.

P	AF	AG	AH	AI	AJ	AK	AL	AM	AN
	Luxury	12	12	12	12	13	13	13	13
	Upgrades	2	3	4	5	2	3	4	5
	Offset								
	1								
	Standard								
Index	481.476	1	2	3	4	5	6	7	8
	10								
	11								
	12								
	13								
	14								
	15								
	16								
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								

3. Highlight the matrix and navigate to the Data tab. Select What-If Analysis and Data Table.



4. Populate the row input cell and the column input cell with the appropriate data.

The row input cell should reference the offset counter (the cell below the label offset) and the column input cell should reference the standard fleet cell.

J10 =O10

	I	J	K	L	M	N	O	P	AF	AG	AH
8											
9		Fleet	Upgrades								
10	Standard	15	2	33	12	AVG	481.476		Luxury	12	12
11	Luxury	12		39	14				Upgrades	2	3
12									Offset		
13	S- Demand	L- Demand	S-Sales	S-Surplus	S-Ups				1		
14	16	11	15	1							
15	21	11	15	6					Standard		
16	24	13	15	9					481.476	1	2
17	24	11	15	9					10		
18	19	12	15	4					11		
19	21	11	15	6					12		
20	20	14	15	5	5	7	504		13		
21	22	12	15	7	7	5	492		14		
22	21	9	15	6	6	6	498		15		
23	15	11	15	0	0	11	498		16		

Data Table

Row input cell: AF13

Column input cell: J10

OK Cancel

Standard								
482.28	1	2	3	4	5	6	7	8
10	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
11	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
12	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
13	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
14	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
15	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
16	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
17	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
18	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
19	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
20	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
21	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
22	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
23	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476
24	481.476	481.476	481.476	481.476	481.476	481.476	481.476	481.476

Standard								
486.288	1	2	3	4	5	6	7	8
10	394.644	394.74	396.384	394.632	417.556	417.352	414.928	416.572
11	412.896	412.212	412.608	413.232	434.056	432.352	433.372	432.064
12	431.748	436.356	433.212	433.344	451.516	454.108	452.776	450.892
13	451.188	451.632	453.228	451.248	465.136	467.656	468.076	469.624
14	470.832	472.968	470.184	471.78	486.508	484.792	484.972	487.168
15	483.3	485.508	487.776	484.008	498.712	497.212	500.536	496.492
16	498.864	498.408	498.924	496.68	509.044	510.952	507.964	512.032
17	503.772	515.772	515.628	506.544	513.16	522.244	522.652	517.684
18	512.304	520.416	520.416	513.576	526.564	523.264	524.476	522.868
19	516.432	518.196	521.52	522.996	535.852	528.868	531.808	531.34
20	529.032	523.104	525.156	523.812	529.348	527.584	531.82	533.188
21	513.888	524.664	525.36	522.444	524.848	532.888	533.608	523.696
22	517.884	523.596	519.564	511.596	512.392	516.796	516.448	512.812
23	517.128	503.772	513.3	522.276	511.792	498.244	505.228	510.004
24	508.608	513.036	483.816	502.548	485.464	498.256	501.484	489.532

TIP: If the data table is not populating with new numbers…

press F9 to recalculate your data tables.

6. Identify the best outcome from the scenarios.

Use the same methods that are found in "Create Two-way Data Table" to identify the maximum profit.

Luxury	12	12	12	12	13	13	13	13
Upgrades	2	3	4	5	2	3	4	5
Offset								
1								
Standard								
486	1	2	3	4	5	6	7	8
10	394.98	394.68	396.972	395.484	415.156	415.552	416.212	417.124
11	415.356	412.392	415.08	414.804	434.08	434.224	432.508	433.024
12	432.648	432.12	430.968	432.6	450.28	450.364	450.448	448.78
13	449.22	451.776	449.58	451.452	471.736	469.492	470.296	469.084
14	468.744	467.832	469.896	468.732	487.504	486.676	486.232	484.48
15	483.924	483.336	484.212	485.328	500.608	498.484	493.192	501.592
16	498.528	501.84	499.404	500.82	509.536	509.308	511.108	506.572
17	514.752	508.08	508.212	512.916	516.82	518.056	520.54	515.956
18	521.58	516.06	520.956	519.612	516.712	527.596	523.564	521.296
19	521.292	522.84	519.576	520.152	533.236	527.8	529.576	525.328
20	525.432	513.912	525.336	520.344	522.952	531.34	531.436	525.82
21	526.608	525.576	518.58	519.588	521.164	524.968	525.556	517.78
22	524.568	516.528	516.42	520.116	518.656	519.016	517.864	520.636
23	521.88	509.076	507.492	512.808	513.484	510.772	508.168	514.972
24	499.332	489	495.948	505.716	496.96	493.348	489.088	492.532
Maximum:	533.236							

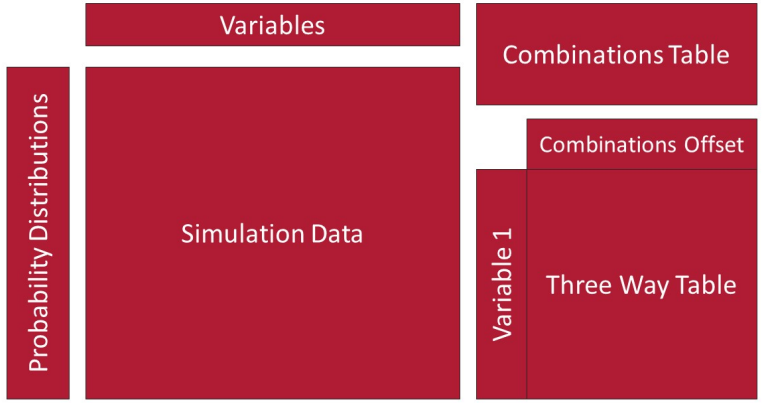
For this example, the highest profit is yielded when 13 luxury and 19 standard cars are stocked and 2 upgrades are available. Test that you have a stable data set by recalculating your data table. If the optimal cell is the same, then you have enough simulations. If it changes, then create more replications for your data set.

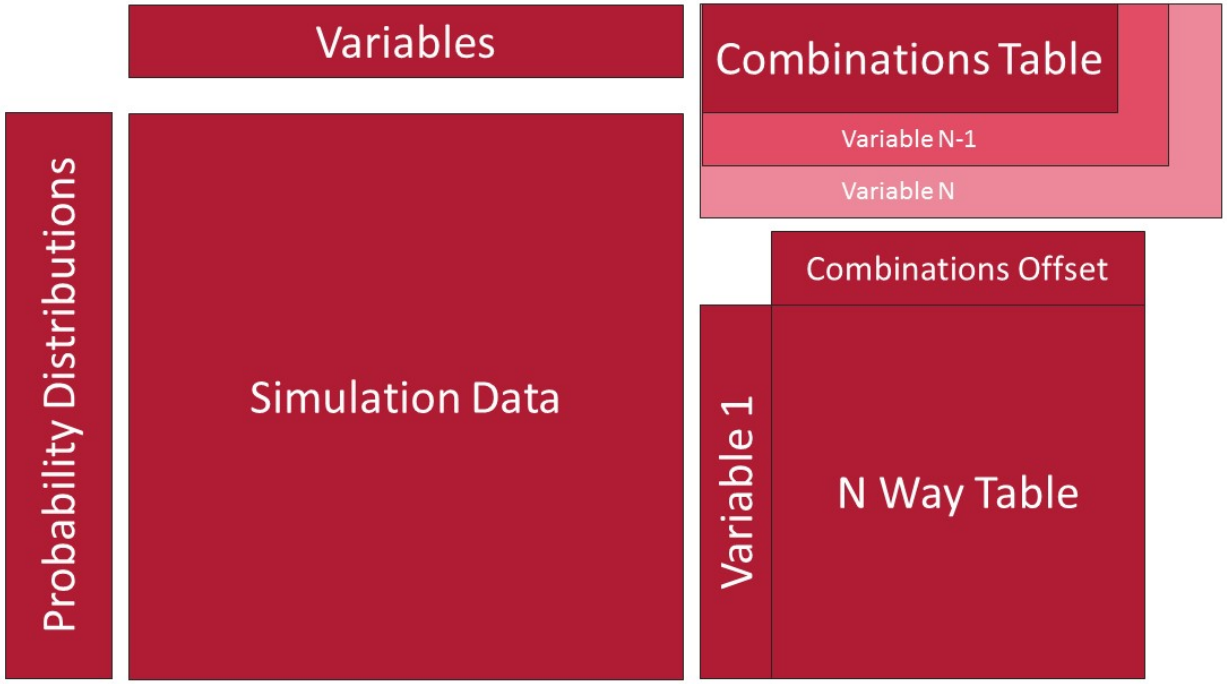
Create an n-way Data Table

Excel Step-by-Step How-to for PC

Instructions: Use this guide to create an n-way data table using Excel.

Data requirement: Probability distributions for at least two scenarios, simulations of the scenario (enough for stable data output)
Sample Data: Stocking and distributing standard and luxury cars

Step	Instructions and Screenshots
1. Follow the "Creating a Three-way Data Table" tutorial for the basis of this process.	The data can start by looking like this: 

2. Edit the combinations table in order to factor in the desired number of variables.	For each additional variable, add a row to the combination table. Then add each possibility for that row. You will need to add to the number of columns of this table if the options for the additional variable are greater than or equal to the smallest number of options present so far in the table.  Repeat the process of setting up the offset function, and the rest of the process follows that of the three-way table.