How can I create a Poisson Distribution graph in Excel?

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To create a Poisson Distribution graph in Excel, follow these steps:

1. Open a new Excel spreadsheet and enter your data in a column.

2. In a neighboring column, calculate the Poisson Distribution for each data point using the formula =POISSON(x, mean, cumulative).

3. Highlight both columns of data and go to the Insert tab.

4. Click on the Charts section and select the Scatter or Line chart option.

5. Your Poisson Distribution graph will appear on the spreadsheet.

6. To customize your graph, right-click on the graph and go to the Format Data Series option.

7. From here, you can change the color, style, and labels of your graph.

8. You can also add a trendline to your graph by right-clicking on one of the data points and selecting the Add Trendline option.

9. To add a legend or axis titles, right-click on the graph and go to the Add Chart Element option.

10. Your Poisson Distribution graph is now complete and ready for use.

Create a Poisson Distribution Graph in Excel

The describes the probability of obtaining *k* successes during a given time interval.

If a random variable*X* follows a Poisson distribution, then the probability that *X* = *k* successes can be found by the following formula:

$P(X=k) = \lambda k * e- \lambda / k!$

where:

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λ: mean number of successes that occur during a specific intervalk: number of successese: a constant equal to approximately 2.71828

The following example explains how to create a Poisson distribution graph in Excel.

Example: Poisson Distribution Graph in Excel

To create a Poisson distribution graph, we need to first decide on a value for λ (mean number of successes):

	A	B	C	D	E	F
1	**λ (mean number of successes)**	2.5				
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						

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Next, we need to create a column for each possible

number of successes:

	A	B	C	D	E
1	**λ (mean number of successes)**	2.5			
2					
3	**k (number of successes)**				
4	0				
5	1				
6	2				
7	3				
8	4				
9	5				
10	6				
11	7				
12	8				
13	9				
14	10				
15					
16					
17					
18					
19					
20					
21					
22					

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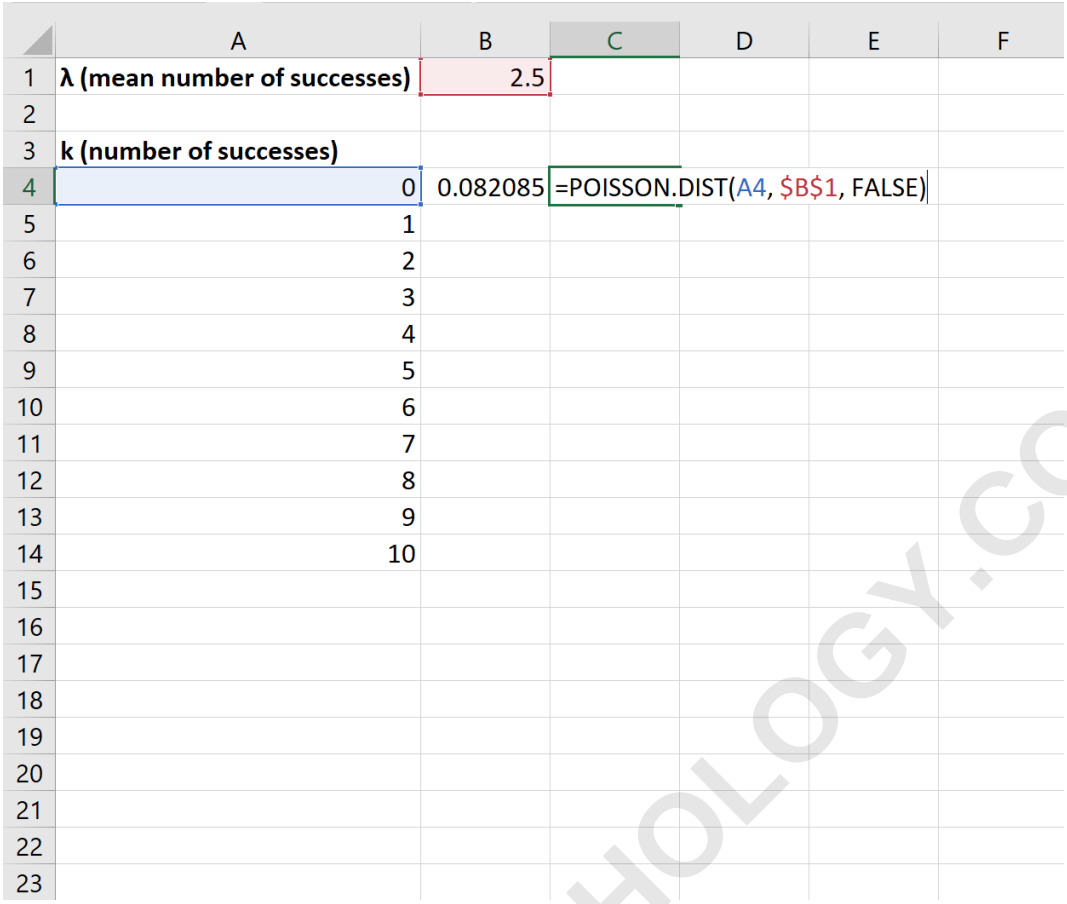
Note that we chose k = 10 possible successes. We could have chosen more, but the probabilities become very small for values greater than 10, as we'll see later in this post.

Next, we can use the POISSON.DIST() function to calculate the Poisson probability for the first number of successes:



	A	B	C	D	E	F
1	**λ (mean number of successes)**	2.5				
2						
3	**k (number of successes)**					
4	0	0.082085	=POISSON.DIST(A4, B1, FALSE)			
5	1					
6	2					
7	3					
8	4					
9	5					
10	6					
11	7					
12	8					
13	9					
14	10					
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We can then copy and paste this formula to the remaining cells in column B:

	A	B	C	D	E	F
1	**λ (mean number of successes)**	2.5				
2						
3	**k (number of successes)**					
4	0	0.082085				
5	1	0.205212				
6	2	0.256516				
7	3	0.213763				
8	4	0.133602				
9	5	0.066801				
10	6	0.027834				
11	7	0.009941				
12	8	0.003106				
13	9	0.000863				
14	10	0.000216				
15						
16						
17						
18						
19						
20						
21						
22						

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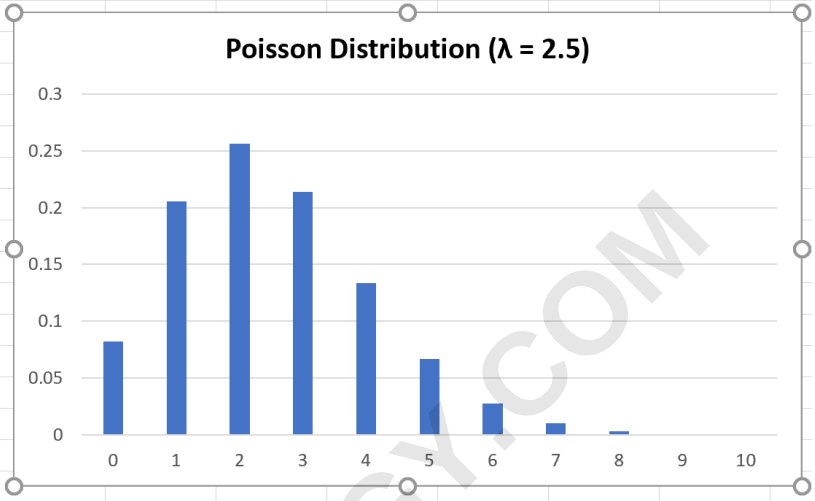
Lastly, we can highlight each of the Poisson probabilities, then click the Insert tab along the top ribbon, then click the Insert Column or Bar Chart icon in the Charts group:

	A	B
1	λ (mean number of successes)	2.5
2		
3	k (number of successes)	
4	0	0.082085
5	1	0.205212
6	2	0.256516
7	3	0.213763
8	4	0.133602
9	5	0.066801
10	6	0.027834
11	7	0.009941
12	8	0.003106
13	9	0.000863
14	10	0.000216



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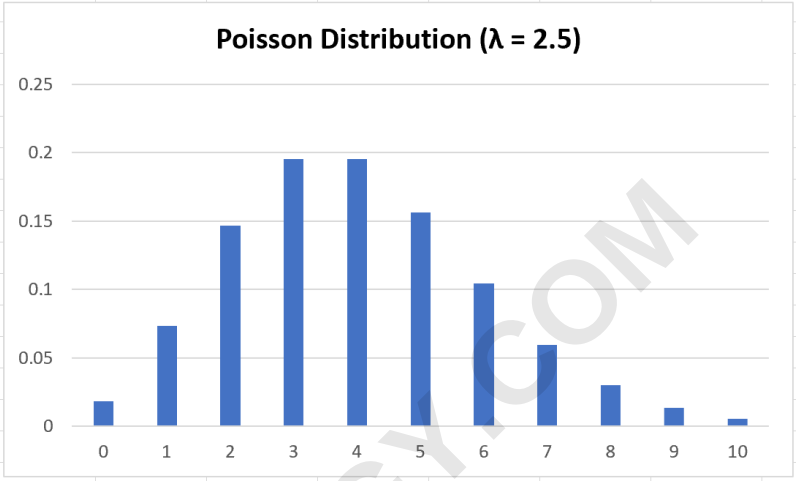
The x-axis of the graph shows the number of successes and the y-axis shows the corresponding probability of that many successes.

Note that if you change the value for λ (mean number of successes), the graph will automatically change to reflect the new probabilities.

For example, if we change the λ value to 4, the Poisson probabilities and the graph will automatically update:

	A	B
1	**λ (mean number of successes)**	4
2		
3	**k (number of successes)**	
4	0	0.018316
5	1	0.073263
6	2	0.146525
7	3	0.195367
8	4	0.195367
9	5	0.156293
10	6	0.104196
11	7	0.05954
12	8	0.02977
13	9	0.013231
14	10	0.005292



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