Quick Start Guide *for* ***Statistical PERT® Beta Edition Version 3***

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Quick Start for using a *Statistical PERT® Beta Edition* Excel spreadsheet

Using a Statistical PERT® spreadsheet is easy! First, download the ***Statistical PERT® Beta Edition*** example workbook for Microsoft Excel , and then use this ***Quick Start*** to understand the basics behind using and modifying your SPERT® spreadsheet.

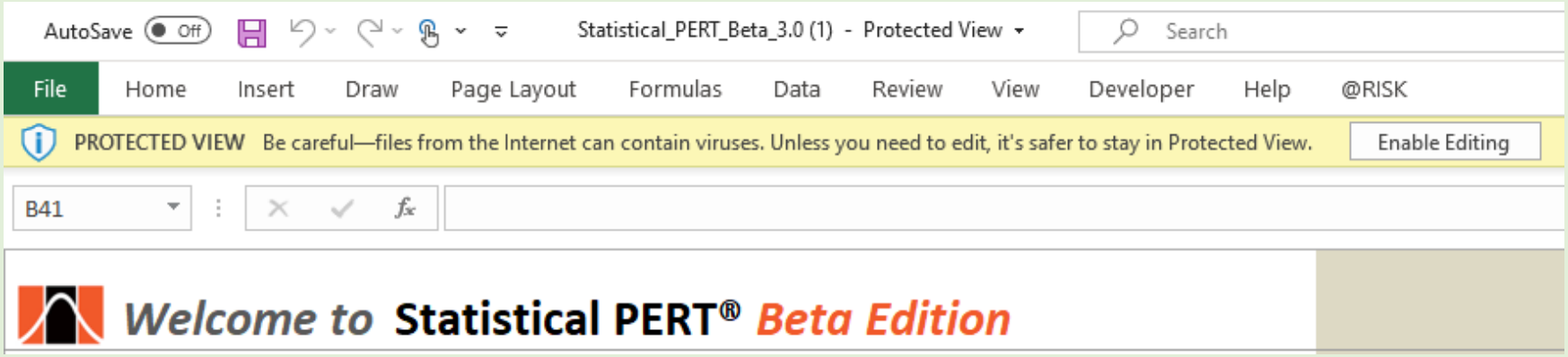
This Quick Start was created from the **Version 3.0 Statistical PERT® Beta Edition** example workbook. Statistical PERT spreadsheets follow the same, basic structure and 3-step estimation process:

1) Create a 3-point estimate (minimum, most likely, maximum) for any uncertainty that has bell-shaped risk properties
2) Render a subjective judgment about *how likely* is the uncertainty's most likely outcome
3) Select any probabilistic planning estimate, or make a risk-based forecast using SPERT-created estimates

Before you download the ***Statistical PERT® Beta Edition*** example workbook or template from https://www.statisticalpert.com, be sure you have Microsoft Excel installed on your computer. You must be running Microsoft Excel 2010, Excel 2013, Excel 2016, Excel 2019 or Microsoft 365. **Statistical PERT is not compatible with Excel Online, Google Sheets, or other spreadsheet software programs**.

Statistical PERT also works on smartphones like the Apple iPhone or any Android-based smartphone – just download the free Microsoft Excel phone app for your iPhone or Android device. Then, either use a full-featured SPERT download on your mobile device, or download SPERT® Mobile to use a special, simplified version of Statistical PERT® Normal Edition made especially for the small screen size of mobile devices.

When you first open a downloaded SPERT file from the Internet, the spreadsheet opens to the **Welcome!** tab. Excel may prompt you with a Protected View notice. To use Statistical PERT, you must press the **Enable Editing** button. (You can run your computer's virus-scanner, firstly, if you wish).



Important Note for using Statistical PERT® Beta Edition Version 3 (and later)

Version 3 of Statistical PERT® Beta Edition includes a new worksheet (**SPERT® Beta MC Simulation** tab) that uses Monte Carlo simulation to perform 10,000 trials of a single, random variable. Depending on an application-level setting in your version of Excel, Excel may re-simulate 10,000 trials every time any cell is altered on any worksheet. This action may noticeably slow down the performance of all Statistical PERT worksheets, even those worksheets that do not use Monte Carlo simulation.

To improve the performance of all Statistical PERT® Beta Edition Version 3 (and later) worksheets, change Excel's formula calculation option to **Automatic Except for Data Tables.** This is an application-level setting—not a file setting—and so you may have to change this setting again if you or another user changes this setting back to **Automatic**.

To make this setting change, do the following:

1) On the Excel Ribbon, identify for the "Calculation" group under the "Formulas" menu selection
2) Click the "Calculation Options" button
3) Select "**Automatic Except for Data Tables**" to increase the speed and calculation performance of all Version 4 SPERT worksheets

Alternatively, if you do not want or need the Monte Carlo simulation worksheet (**SPERT® Beta MC Simulation** tab), you can simply delete this entire worksheet. Deleting the SPERT® Beta MC Simulation worksheet will have no impact to the rest of the worksheets in the Statistical PERT Beta Edition spreadsheet file.

TL;DR

On the Excel Ribbon, look for the "Calculation" group under the "Formulas" menu selection. Then, click the "Calculation Options" button and select "**Automatic Except for Data Tables**" to increase the speed and calculation performance of all Version 4 Statistical PERT® Normal Edition worksheets.

Or, simply delete the **SPERT® Beta MC Simulation** worksheet from this Excel workbook.

Using the SPERT® Beta Edition Example Workbook ***to estimate task duration, expenses, revenue, agile development & more.***

To create probabilistic estimates for bell-shaped uncertainties like task duration, expenses, revenue, agile sprints, event attendance, and more, select:

- **SPERT® Beta for Beginners** to learn how to use Statistical PERT
- **SPERT® Beta (1-Point entry)** to auto-generate three-point estimates using just a **single, one-point estimate** for each uncertainty
- **SPERT® Beta (3-Point entry)** to manually enter **three-point estimates** (minimum, most likely, maximum) for each uncertainty
- **SPERT® Scheduler (Mixed entry)** to use a mixed approach for creating three-point estimates for each uncertainty & to build a project schedule
- **SPERT® Beta (Agile Forecast)** to create a release date forecast for agile software development

*Note: This Quick Start uses **Version 3.0 of Statistical PERT® Beta Edition**. Statistical PERT example workbooks and templates are occasionally updated, so you may see slight differences between this Quick Start and the SPERT file you are using. However, all Statistical PERT spreadsheets operate similarly, so this Quick Start generally applies to any Statistical PERT® Beta Edition download, Version 3 and higher (not all features are available on older versions of SPERT).*

*If you have downloaded the **Statistical PERT® Normal Edition**, you can find the Quick Start for the Normal Edition here.*

What's the Difference between the Beta Edition and the Normal Edition of Statistical PERT®?

Both editions of Statistical PERT make estimating uncertain outcomes easy using Microsoft Excel.

Beta Edition:

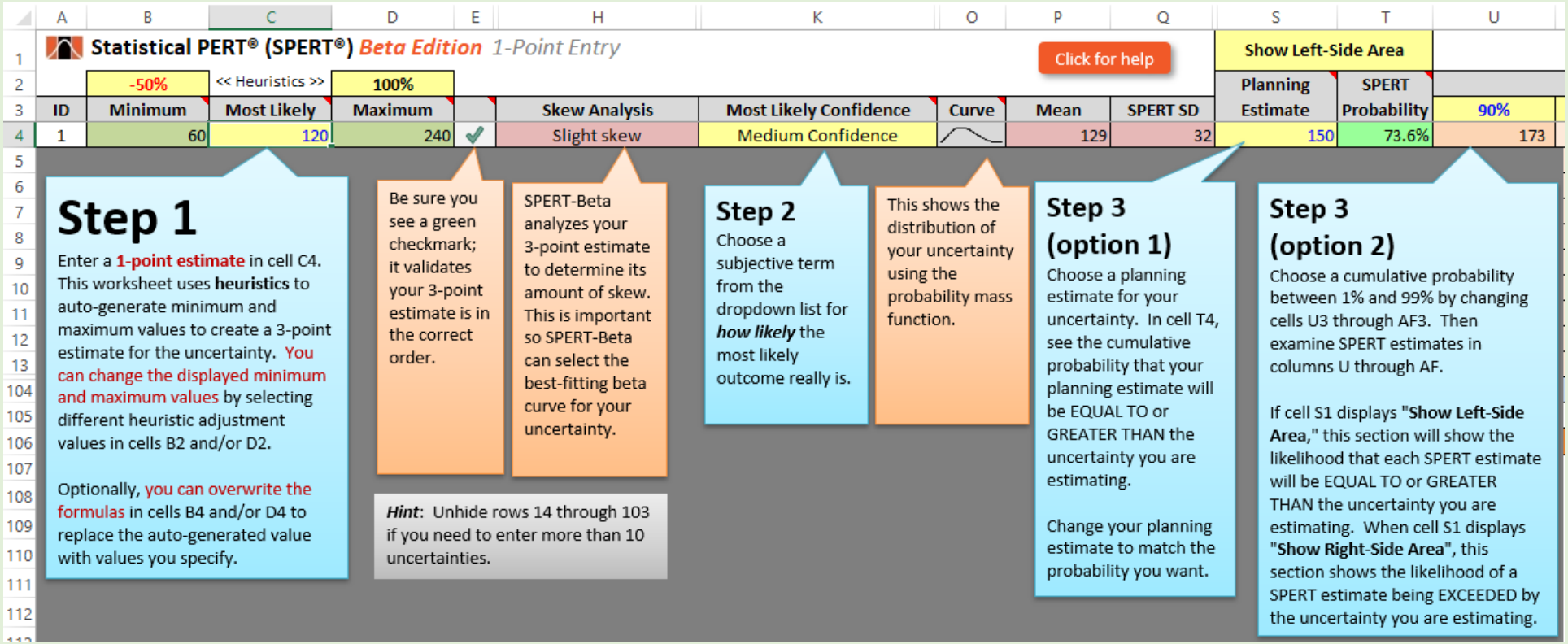
- Models a wider range of bell-shaped uncertainties, including very skewed uncertainties, with greater overall accuracy (vs. the Normal Edition)
- Uses ratio scales to estimate the standard deviation and mean
- Uses 290 pre-determined probability curves to fit the best one for a specific uncertainty
- Uses Excel's BETA.DIST, BETA.INV for the beta distribution (plus NORM.DIST and NORM.INV functions where the Central Limit Theorem applies)
- Cannot be easily changed

Normal Edition:

- Models bell-shaped uncertainties where the underlying uncertain only has mild-to-moderate skewing
- Uses simple formulas that can be easily written into a blank Excel spreadsheet
- Is better supported with whitepapers, brochures, blog articles, and a Pluralsight training course
- Uses Excel's NORM.DIST, NORM.INV functions for the normal distribution
- Can be easily changed

Using the SPERT® Normal (1-Point entry) worksheet

Examine the annotated screenshot below to learn how to enter **single, 1-point estimates** for each uncertainty into the **Statistical PERT® Beta Edition** worksheet, and how to obtain probabilistic estimates for each uncertainty you enter:

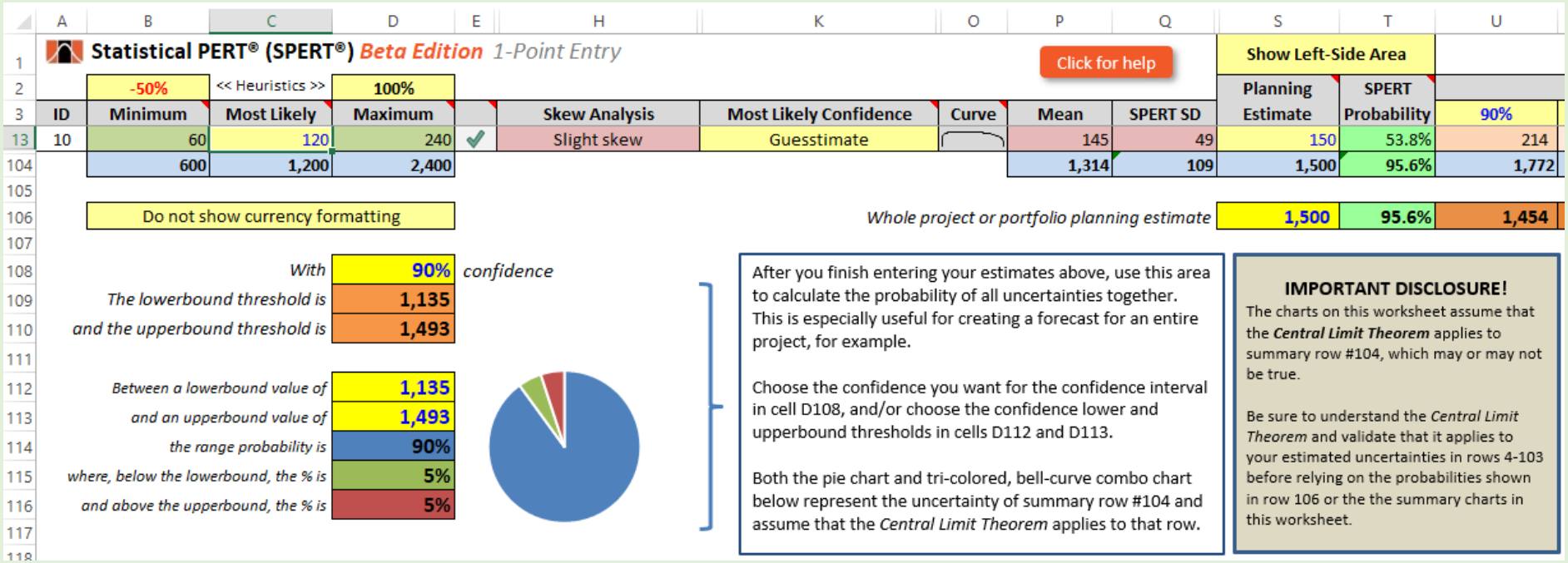


On the bottom half of the **SPERT® Beta (1-Point entry)**, **SPERT® Beta (3-Point entry)**, and **SPERT® Beta (Mixed entry)** worksheets, you will see probabilistic estimates for all the uncertainties you entered, respectively, in those worksheets. You may change any of the cells highlighted with a bright yellow background color. The other cells have formulas in them; do not change those cells.

Use this section to create a range forecast showing the likelihood of all uncertainties having a sum between the lowerbound and upperbound limits.

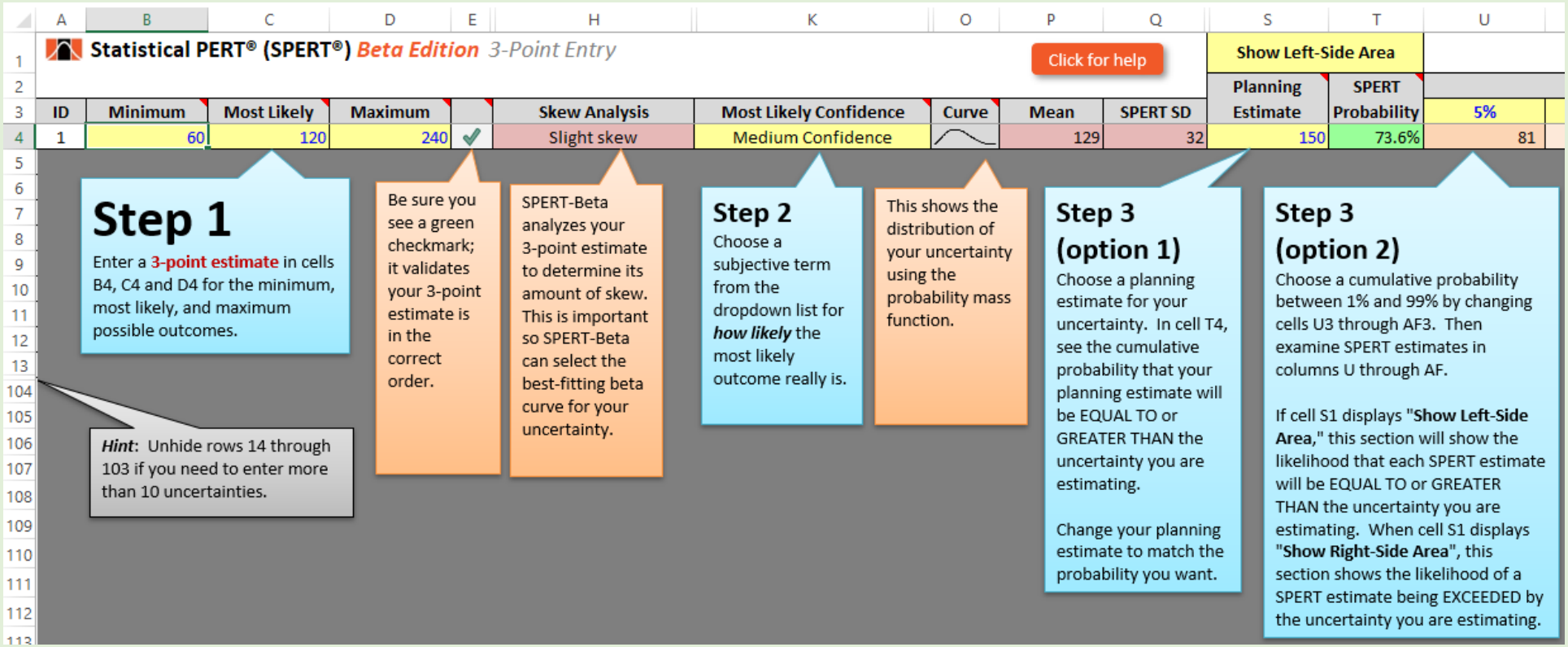
Example using work effort estimates for all tasks on a project *{SPERT® Beta (1-Point entry) worksheet}:*

- Enter all work effort estimates (using effort hours, days, weeks, story points, etc.) in rows 4 through 103
- Create a confidence interval forecast for the project by entering a percentage (like 50% or higher) in cell D108, then see the confidence interval in cells D109 and D110
- Choose a custom interval by specifying both the lowerbound and upperbound limits in cells D112 and D113, respectively, then examine the likelihood that the project's total effort will be within the interval you specified



Using the SPERT® Beta (3-Point entry) worksheet

Examine the annotated screenshot below to learn how to enter **3-point estimates** for each uncertainty into the **Statistical PERT® Beta Edition** worksheet, and how to obtain probabilistic estimates for each uncertainty you enter:



Using the SPERT® Scheduler (Mixed entry) worksheet

This worksheet combines the features of the **1-point entry** and **3-point entry** worksheets into a single worksheet, offering you the flexibility to use global heuristics, row-level calculations, and manual entry of the minimum and/or maximum point-estimates. It also has the feature of creating a probabilistic schedule at the activity level using the project's critical path activities. Below is an example of the input entry table used with this worksheet. The yellow-shaded cells are input cells, and the green-shaded cells are calculated cells (do not change the green-shaded cells).

Statistical PERT® (SPERT®) ***Beta Edition*** *Scheduler & Mixed Entry*

		-50%	< Heuristics >	50%		
Min %	Min point	Minimum	Most Likely	Maximum	Max point	Max %
		3	5	8		
-25%		15	20	40	40	
-25%		11	15	23		
	15	15	20	30		
-25%		60	80	120		
		3	5	10		100%
-25%		23	30	60		100%
		5	10	20	20	
		1	2	3		
-20%		8	10	12		20%

With **Mixed entry**, you can choose three different ways to specify the minimum and maximum point-estimates for each uncertainty. You can:

- Use global heuristics (specified above the **Minimum** and **Maximum** column headings) to calculate minimum and maximum point-estimates for all rows as a percentage of the value(s) entered under the **Most Likely** column (just like with the **1-point entry** worksheet)
- Use a row-specific minimum and/or maximum percentage (**Min %** and **Max %**) to calculate minimum and/or maximum point-estimates as a percentage of each row's **Most Likely** point-estimate
- Enter a minimum and/or maximum point-estimate for any row (under **Min point** and **Max point,** similar to entering values in the **3-point entry** worksheet)

The cell formulas under the **Minimum** and **Maximum** column headings use a precedence order to determine minimum and maximum point-estimates:

- First, if entered, values under the **Min point** and **Max point** are used to create three-point estimates for each uncertainty
- Second, if specified, minimum and/or maximum point-estimates are calculated using the row-specific percentages (these are specified under the **Min %** and **Max %** column headings)
- Third, global heuristics (specified above the **Minimum** and **Maximum** column headings) are used to calculate the minimum and maximum point-estimates for all rows

You can selectively choose when to use global heuristics, row-level percentages, or specific values for the minimum and maximum point-estimates.

With **Mixed entry**, you can use **SPERT® Scheduler**, which allows you to create a probabilistic schedule for your project's critical path activities. To use this feature, expand columns B, C and D, if needed. Then, enter your project's expected start date in cell C1; cell D1 will calculate your project's finish date.

After entering your project's start date in cell C1, begin entering all critical path activities in column A under the **Activity** heading. Use the *Mixed Entry* columns (E through R) to create 3-point estimates for all activities, including your subjective judgment about *how likely* the *most likely* outcome really is for each *most likely* estimate.

Once you have created 3-point estimates for each activity, choose how reliable each activity's duration estimate is in cell B2; the duration estimates in column B under the **Duration** heading are calculated based upon your activity duration inputs. The more reliability you want that your duration estimates will not be exceeded, the larger each duration estimate will be, and the longer your overall project's schedule will be. For a probabilistic schedule, it is common to choose a reliability of between 50% and 95% for the activity estimates.

To adequately buffer your project schedule for instances where the activity duration estimates will be exceeded during the project execution phase, you should include a schedule contingency in cell D105. To calculate the schedule contingency, you can use **Soothsayer™**, a free download on the StatisticalPERT.com website. To learn more about Soothsayer™, you can download and read this PDF whitepaper.

	A	B	C	D
1	SPERT® Scheduler	Start & Finish	8/1/2020	8/23/2021
2	*For scheduling the critical path ONLY!*	90%		24.9%
3	Activity	Duration	Start Date	Finish D
4	Project initiation	6	8/1/2020	8/10/2020
5	Business requirements analysis	28	8/10/2020	9/18/2020
6	Detail design	18	9/18/2020	10/14/2020
7	Prototype	25	10/14/2020	11/18/2020
8	Build solution	98	[illegible]	4/21/2021
9	Migrate to QA	8	4/21/2021	
10	QA UAT	42	5/3/2021	7/1/2021
11	Pre-production prep	13	7/1/2021	7/21/2021
12	Production migration	2	7/21/2021	7/23/2021
13	Project closure	11	7/23/2021	8/9/2021
14				
15				
104	*If needed, unhide rows 16-103*	251		
105		10	*Optional schedule [illegible]*	
106				

Step 1
Enter your project's start date in cell C1. The project's finish date (cell D1) will be calculated for you after you enter all critical path activities and duration estimates.

Step 2
Enter all critical path activities, and estimate each activity using the *Mixed Entry* cells (columns E through K)

Step 3
Use Soothsayer™, a free download on the StatisticalPERT.com website, to calculate a schedule contingency for your project.

The project schedule includes workdays (Monday-Friday) and excludes all weekend days.

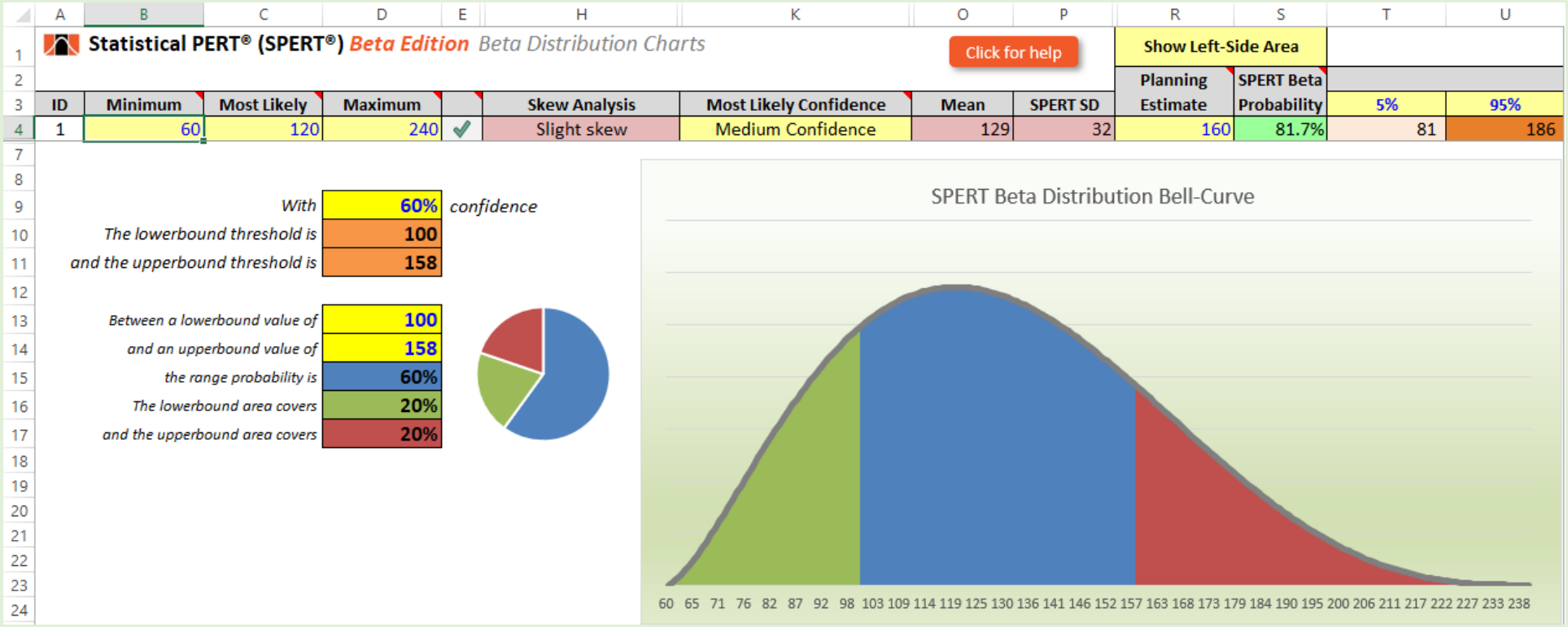
You can adjust your schedule to exclude weekday holidays and other, non-work weekdays by adding non-work days to the **Non-work Day Description** table, which begins on row 107 of the **SPERT® Scheduler (Mixed Entry)** worksheet:

107	Non-work Day Description	Date
108	Labor Day (USA)	9/7/2020
109	Thanksgiving Day (USA)	11/26/2020
110	Day after Thanksgiving Day (USA)	11/27/2020
111	Christmas Break	12/21/2020
112	Christmas Break	12/22/2020
113	Christmas Break	12/23/2020
114	Christmas Break	12/24/2020
115	Christmas Break	12/25/2020

Weekdays that are included in this table will not count as a work day, and your project's finish date (cell D1) will automatically adjust to exclude these dates from the project schedule.

Using the SPERT® Beta Charts worksheet

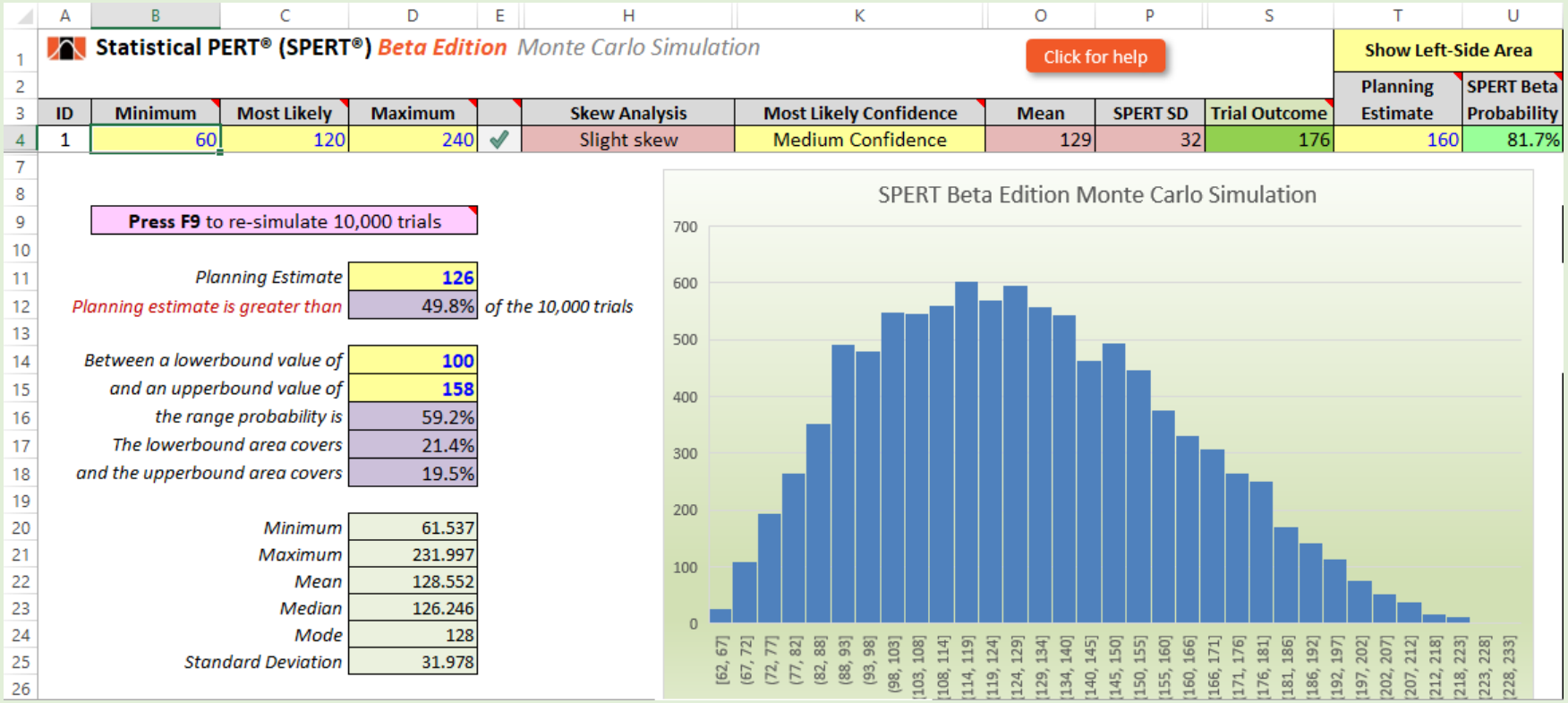
On this worksheet, you can model just one uncertainty and see the implied, bell-shaped probability curve (the probability density function):



Changing *minimum, most likely* and/or *maximum* values (cells B4, C4, and D4, respectively) or changing the *most likely confidence* dropdown (cell K4) will alter the appearance of the tri-colored, bell-shaped curve. The green, blue and red areas under the bell-curve are determined by the values in cells D13 and D14, which determine the lowerbound and upperbound thresholds, respectively.

Using the SPERT® Beta MC Simulation worksheet

On this worksheet, you can model just one random, independent variable **using Monte Carlo simulation** and see the implied, bell-shaped probability curve (the probability density function):



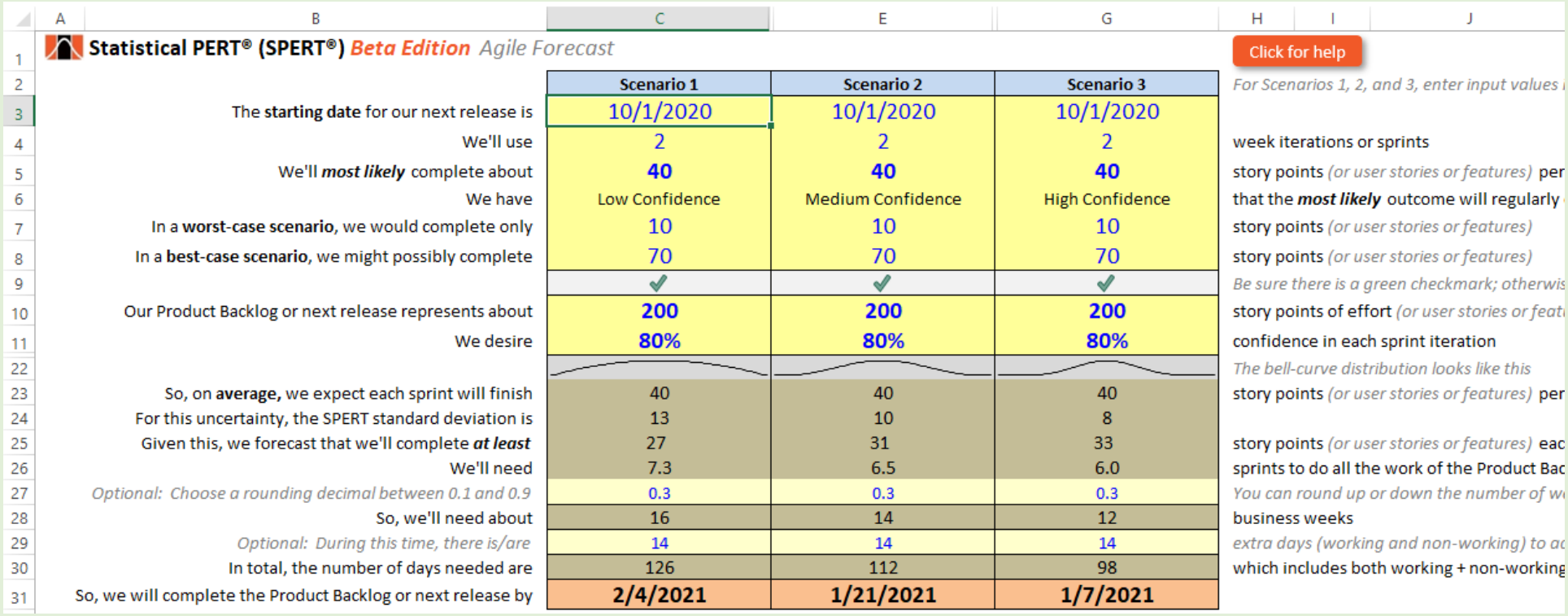
The Monte Carlo simulation uses an Excel data table to sample 10,000 trials of the uncertainty with the characteristics you specified (that this, your 3-point estimate and your *Most Likely Confidence* dropdown selection). To re-simulate, **press F9**. If the Statistical PERT spreadsheet appears sluggish on other worksheets, check the Excel formula calculation setting for Excel. This is an application-level setting.

Here's how to do that: on the Excel Ribbon, look for the "Calculation" group under the "Formulas" menu selection. Then, click the "Calculation Options" button and select "**Automatic Except for Data Tables**" to increase the speed and performance of all Version 3 SPERT worksheets. Or you can simply delete the SPERT® Beta MC Simulation worksheet from this Excel workbook of you don't want or need to use the Monte Carlo simulation capability of Statistical PERT.

Note: This worksheet uses Excel's built-in Histogram chart introduced with Excel 2016. Excel 2010 and 2013 users will instead see an error message inside the histogram chart box. Users of Excel 2010 or 2013 can manually create a histogram chart by visiting this blog post.

Using the SPERT® Agile Forecast worksheet

On this worksheet, you can evaluate different release date options for your agile team using Scrum or for a team that uses regular iteration cycles to plan work:



	A	B	C	E	G	H	I	J
1		**Statistical PERT® (SPERT®)** ***Beta Edition*** *Agile Forecast*				Click for help		
2			**Scenario 1**	**Scenario 2**	**Scenario 3**	*For Scenarios 1, 2, and 3, enter input values*		
3		The **starting date** for our next release is	10/1/2020	10/1/2020	10/1/2020			
4		We'll use	2	2	2	week iterations or sprints		
5		We'll ***most likely*** complete about	**40**	**40**	**40**	story points *(or user stories or features)* per		
6		We have	Low Confidence	Medium Confidence	High Confidence	that the ***most likely*** outcome will regularly		
7		In a **worst-case scenario**, we would complete only	10	10	10	story points *(or user stories or features)*		
8		In a **best-case scenario**, we might possibly complete	70	70	70	story points *(or user stories or features)*		
9			✓	✓	✓	*Be sure there is a green checkmark; otherwis*		
10		Our Product Backlog or next release represents about	**200**	**200**	**200**	story points of effort *(or user stories or feat*		
11		We desire	**80%**	**80%**	**80%**	confidence in each sprint iteration		
22						*The bell-curve distribution looks like this*		
23		So, on **average,** we expect each sprint will finish	40	40	40	story points *(or user stories or features)* per		
24		For this uncertainty, the SPERT standard deviation is	13	10	8			
25		Given this, we forecast that we'll complete ***at least***	27	31	33	story points *(or user stories or features)* eac		
26		We'll need	7.3	6.5	6.0	sprints to do all the work of the Product Bac		
27		*Optional: Choose a rounding decimal between 0.1 and 0.9*	0.3	0.3	0.3	*You can round up or down the number of w*		
28		So, we'll need about	16	14	12	business weeks		
29		*Optional: During this time, there is/are*	14	14	14	*extra days (working and non-working) to a*		
30		In total, the number of days needed are	126	112	98	which includes both working + non-working		
31		So, we will complete the Product Backlog or next release by	**2/4/2021**	**1/21/2021**	**1/7/2021**			

This worksheet uses the same approach for estimating as all SPERT worksheets: Enter a 3-point estimate (cells C5, C7 and C8) and a subjective judgment about the most likely outcome in the C6 dropdown. Use your team's velocity (actual or estimated) in cell C5. Enter the total work represented on your product backlog or the next major release in cell C10. Statistical PERT will generate a standard deviation which is necessary to make a probabilistic date calculation. For higher confidence, the release date will be longer, with less confidence, the release date will be sooner. *Be very cautious about selecting any release date with less than 50% confidence (cell C11), as very often "unknown unknowns" in software development causes work efforts to take longer than expected!*

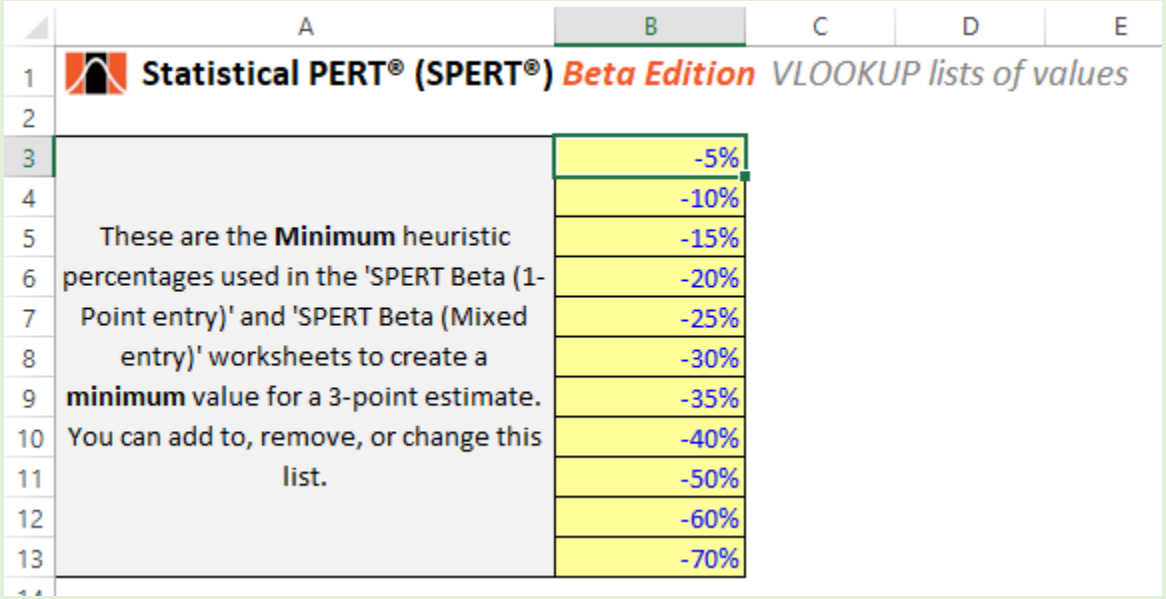
Use the optional rounding decimal (cell C27) to force fractional sprints to be rounded up. In the example above, cell C26 shows it takes 7.3 sprints to complete 200 units of work represented on the product backlog, but that is rounded up to 8 sprints (16 business weeks in cell C28; each sprint is 2 weeks long in the example) by adding an extra 0.3 amount to force rounding up to the next integer amount.

Scenarios 2 and 3 (columns E and G) are independent of Scenario 1. You can use the same or different input values for Scenarios 2 and 3 to do what-if analysis. *Note: This behavior is different than the Agile Forecast worksheet found in the Statistical PERT® Normal Edition.*

Using the VLookups worksheet

In this worksheet, you can modify the **Minimum** and **Maximum** heuristic percentages used on the **(1-point Entry)** and **(Mixed Entry)** worksheets.

You can also make other changes to the lookup tables that are used elsewhere on this spreadsheet (although it is unlikely you will need to do this).



	A	B	C	D	E
1	**Statistical PERT® (SPERT®)** ***Beta Edition*** *VLOOKUP lists of values*				
2					
3	These are the **Minimum** heuristic percentages used in the 'SPERT Beta (1-Point entry)' and 'SPERT Beta (Mixed entry)' worksheets to create a **minimum** value for a 3-point estimate. You can add to, remove, or change this list.	-5%			
4		-10%			
5		-15%			
6		-20%			
7		-25%			
8		-30%			
9		-35%			
10		-40%			
11		-50%			
12		-60%			
13		-70%			

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There are many ways to get more information about Statistical PERT. Visit the Statistical PERT website at https://www.statisticalpert.com and click on the Learn More tab to get more information about Statistical PERT. Also, click on the News & Blog tab to get access to blogs and new information about Statistical PERT.

Have any Questions? Find a Bug? Want to Connect?

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