

Scenario Analysis Tool



This manual describes the Crystal Ball Scenario Analysis tool. The Scenario Analysis tool lets you determine which what inputs (assumption values) produce a specific forecast result.

For the Scenario Analysis tool, there is a general description, an introduction tutorial, and a description of all dialogs, fields, and options.

In this manual

Overview

The Scenario Analysis tool is a Visual Basic program that extends the functionality of Crystal Ball. This particular tool displays the input scenarios (set of assumption values) that created particular outputs (forecast results).

This document describes the Scenario Analysis tool, provides a step-by-step tutorial for using it, and describes the options.

Scenario Analysis tool

The Scenario Analysis tool runs a simulation, and sorts and matches all the resulting values of a target forecast with their corresponding assumption values. This lets you investigate which combination of assumption values give you a particular output.

You can run the Scenario Analysis tool on any Crystal Ball model. You simply select one forecast to analyze, and then the target forecast's percentile or value range you want to examine. The resulting table shows all the forecasts values in the designated range, sorted, along with the corresponding assumption values.

Scenario Analysis example

In the Crystal Ball Examples folder there is a Toxic Waste Site.xls spreadsheet you can use to experiment with the Scenario Analysis tool. This spreadsheet model predicts the cancer risk to the population from a toxic waste site. This spreadsheet has four assumptions and one forecast.

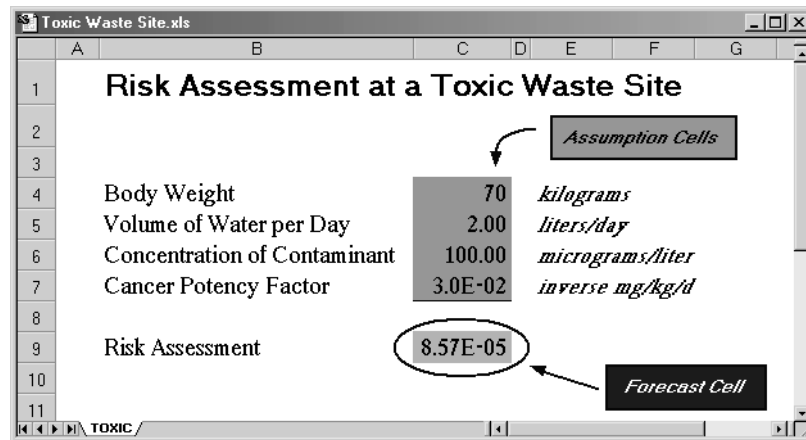


Figure 1 Toxic Waste Site spreadsheet

To run Scenario Analysis:

1. In Excel with Crystal Ball loaded, open the spreadsheet Toxic Waste Site.xls.

2. Select CBTools > Scenario Analysis.

The Specify Target dialog appears.

3. Select the Risk Assessment forecast.

4. Click on Next.

The Specify Options dialog appears.

5. In the Range Of Forecast Results section, specify a percentile range between 95 and 100 percent.
6. In the While Running section, select Show Only Target Forecast.
7. In the Simulation Control section, enter 1000 as the maximum number of trials to run.

8. Click on Start.

The tool creates a table of all the forecast values within the range specified in step 5, along with the corresponding value of each assumption for each trial.

	A	B	C	D	E	F
	Paste Selected Scenario				Concentration of Contaminant in Water	CPF
	Paste Next Scenario					
	Paste Previous Scenario					
	Reset Original Values					
1		Risk Assessment	Body Weight	Volume of Water per Day		
4	95.00%	2.05E-04	49.78816531	2.72	90.77	4.1E-02
5	95.10%	2.05E-04	74.48795828	4.01	108.02	3.5E-02
6	95.20%	2.06E-04	44.67990732	2.98	86.83	3.6E-02
7	95.30%	2.08E-04	64.72517009	3.19	96.47	4.4E-02
8	95.40%	2.09E-04	70.1408065	3.63	103.16	3.9E-02
9	95.50%	2.10E-04	75.63810404	3.70	109.20	3.9E-02
10	95.60%	2.11E-04	78.2091741	4.34	110.79	3.4E-02

Figure 2 Scenario Analysis Results for Toxic Waste Site

Windows Note: For the next few steps, you might want to arrange the windows in Excel vertically, so that you can see the results next to the original workbook.

9. Select the row with the 98.00%.

10. Click on Paste Selected Scenario.

The assumption and forecast values for that scenario appear in the Toxic Waste Site workbook.

11. Click on Paste Next Scenario.

In the workbook, the assumption and forecast values change to the values for the next scenario (for 98.10%).

12. Click on Reset Original Values.

In the workbook, the original assumption and forecast values appear in the workbook.

Interpreting the results

In this example, you generated 1000 trials worth of forecast values. Since you selected to analyze all the percentiles between 95 and 100, the resulting table lists all 1000 forecast values, sorted from lowest risk to greatest risk, along with the assumption values that Crystal Ball generated for each trial.

One way to analyze the Scenario Analysis results is to identify a particular forecast value and see what assumption values created that forecast value.

Another way to analyze the Scenario Analysis results is to generate an Excel chart with the data. For example, you might create a scatter chart comparing the risk assessment with the CPF, as shown below.

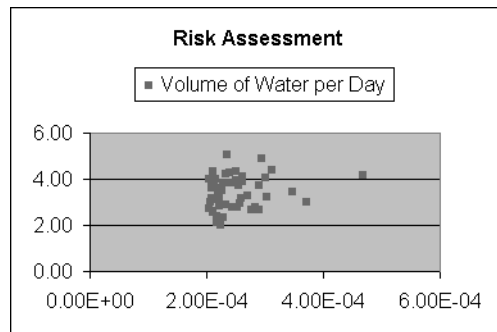


Figure 3 Scatter plot of Risk Assessment and CPF

Scenario Analysis dialogs

Specify Target (Step 1 Of 2) dialog

The Specify Target dialog lets you analyze the corresponding assumptions for a specified forecast or cell.

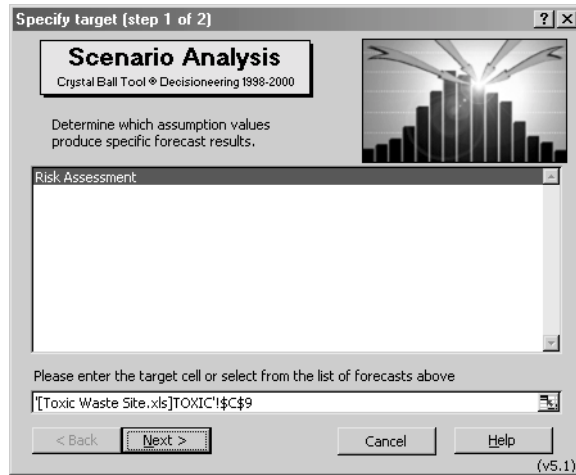


Figure 4 Specify Target dialog for Scenario Analysis

The fields for this dialog are:

Forecast List Lists all the forecast cells in all open spreadsheets. When you select a forecast from the list, its cell information automatically appears in the Enter Target Cell field.

The first forecast is selected by default.

Enter Target Cell Describes the cell location of the selected forecast or formula. If you select a forecast from the list above, the cell information automatically appears in this field.

You can use this field to select a formula cell instead of a forecast.

Next Opens the next dialog for defining tool options.

Specify Options (Step 2 Of 2) dialog

This dialog lets you specify the range of forecast values you want to analyze, which forecast charts to display while running the tool, and the number of trials to run for the analysis.

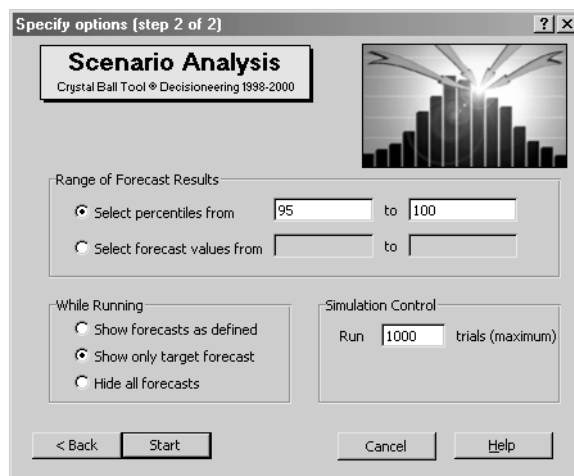


Figure 5 Select Input Options (Step 2 of 2) dialog for Scenario Analysis

The fields and options in this dialog are:

Range Of Forecast Results

Lets you select to analyze either a range of percentiles or a range of forecast values. All scenarios resulting in a forecast value that falls within the specified range appear in the final table, along with their corresponding assumption values.

For the percentile range, you must enter the lower and upper percentiles (both numbers between 0 and 100). For the forecast value range, you must enter the lower and upper limits for the values.

While Running

Defines the maximum number of trials to run. This setting overrides the maximum number of trials in the Crystal Ball Run Preferences dialog.

Simulation Control

Sets the number of Crystal Ball trials to run. This option temporarily overrides the setting in the Crystal Ball Run Preferences dialog.

The range of scenarios are taken from this set of forecast values.

