Practice Exercises:
Interpretation of Optimization Sensitivity Data

The following exercises are based on interpreting the Sensitivity Reports of optimization models built in earlier exercises. To work through the exercises below, you can generate the Sensitivity Reports on models you built yourself, or on the model solutions previously provided.

1. Sensitivity Analysis

Use Solver to generate a Sensitivity Report for Optimization Exercise 1.2 (Transportation and Logistics). Exploit the information within this report to answer the following questions.

a) How much should the wine grower be willing to invest to augment the production capacity of the Malpas vineyard by 10%? By 20%?

b) The manager of Restaurant A is willing to buy more bottles at a 10% discount on additional bottles purchased. Is that acceptable to the wine producer?

c) The manager of Restaurant C is considering cutting back on their order of 1250 bottles. How much of a discount could be offered on each unit they plan to cancel as an incentive to maintain their initial order?

d) The sommelier of Restaurant A would like some of their wine bottles to come from Peyrous. How much extra should the wine producer charge for this?

e) The shipping cost from Malpas to Restaurant A is expected to increase by 3 F/bottle. Should the wine grower re-run the optimization model to calculate a new shipping plan following such increase?

2. Sensitivity Analysis

Use Solver to generate a Sensitivity Report for Optimization Exercise 1.3 (Scheduling). Exploit the information within this report to answer the following questions:

a) What is the maximum number of surplus workers available at any time during the day?

b) Some employees have asked the maintenance supervisor if it was possible to change to another shift. Will the supervisor be able to propose alternative work schedules for them to consider, without increasing the total number of employees needed? Explain.

c) A more efficient organization of work is under consideration that would require only 200 workers present from 8am to 12pm with no changes anywhere else. How many employees would this save on the total staff? Explain.