CLOUD SEEDING EXPERIMENT

1. Problem Formulation

The problem is based on the data from the *Cloud Seeding to Increase Rainfall* experiment discussed in your textbook, pages 54-55. This data are also available in the Excel file Case0301.xls located on the FTP server.

The experimental data are the result of a series of weather modification experiments conducted in south Florida from 1968 to 1972. These experiments were designed to test a hypothesis that massive injection of silver iodide into cumulus clouds can, under specified conditions, lead to cumulus growth, thereby increased precipitation. On each of 52 days that were deemed suitable for cloud seeding, a random mechanism was used to decide whether to seed the target cloud on that day or to leave it unseeded as a control. An airplane flew through the cloud in both cases, since the experimenters and the pilot were themselves unaware of whether on any particular day the seeding mechanism in the plane was loaded or not. Precipitation was measured as the total rain volume falling from the cloud base following the airplane seeding run, as measured by radar.

The following is a description of the variables in the data file:

Column	**Name of Variable**	**Description of Variable**
1	RAIN	Total rain volume (acre-feet)
2	CODE	1 for unseeded days, 2 for seeded days.

We will use SPSS to answer the following two questions using the data:

1. Did cloud seeding have an effect on rainfall in this experiment?

2. If cloud seeding did have an effect on rainfall, estimate the effect in terms of how many times the volume of rainfall produced by a seeded cloud is larger than the volume that would have been produced in the absence of seeding.