

PHEB502 Assignment- From Data to Decision Making

Problem 1: The largest public health experiment involved 401,974 children who were randomly assigned to two groups. In one group, 201,229 children were given a placebo. In the other group, 200,745 children were treated with the Salk vaccine designed to prevent polio. Among the children in the placebo group, 115 developed polio, and among the children in Salk vaccine treatment group, 33 developed polio.

Use the methods learned in this course to determine whether there is sufficient evidence to support a claim that the Salk vaccine is effective. Does it appear that the Salk vaccine is effective? Why or why not? Write a brief report summarizing your findings and include specific statistical tests and results.

Problem 2: With sales of Lipitor exceeding \$13 billion each year, it has been the best-selling drug ever. A statistician asked Pfizer for the original data from clinical drug trials of Lipitor, but Pfizer declined to provide the data. The data shown in Table 1 below are based on results given in a Parke-Davis memo from David G. Orloff, M.D., the medical team leader in the clinical trials. The data refer to atorvastatin, and Lipitor is the trade name of atorvastatin. Low-density lipoprotein (LDL) cholesterol is considered the bad cholesterol, so a subject's condition is generally improved if the LDL cholesterol is lowered. The changes in LDL cholesterol listed in the table are measured in mg/dL. Note that when compared to baseline values, negative values in the following data indicate that the LDL cholesterol has been lowered.

Table 1: Changes in LDL Cholesterol from Baseline Values (a negative value represents a decrease)	
Placebo Group:	-3 5 6 -2 -7 8 5 -6 -1 7 -4 3
Group treated with 10 mg of atorvastatin:	-28 -27 -23 -25 -27 -29 -22 -22 -26 -23 -23 -22 -24 -21 -25 -26 -23 -24 -23 -22 -22 -20 -29 -29 -27 -24 -28 -26 -22 -26 -23 -26 -25 -29 -27 -27 -23
Group treated with 20 mg of atorvastatin:	-28 -32 -29 -39 -31 -35 -25 -36 -35 -26 -29 -34 -30
Group treated with 80 mg of atorvastatin:	-42 -41 -38 -42 -41 -41 -40 -44 -32 -37 -41 -37 -34 -31

Analyze the data. Does it appear that atorvastatin treatment has an effect? If atorvastatin treatment does have an effect, is it the desired effect? Does it appear that larger doses of atorvastatin treatment result in greater beneficial effects? Write a brief report summarizing your findings and include specific statistical tests and results.