

Here's a new idea for treating advanced melanoma, the most serious kind of skin cancer: genetically engineer white blood cells to better recognize and destroy cancer cells, then infuse these cells into patients. The subjects in a small initial study were 11 patients whose melanoma had not responded to existing treatments. One outcome of this experiment is measured by a test for the presence of cells that trigger an immune response in the body and so may help fight cancer. Here are data for a matched pair design of the 11 subjects: counts of active cells per 100,000 cells before and after infusion of the modified cells. The difference (after minus before) is the response variable.

After	44	10	4	95	21	702	16	54	36	96	109
Before	17	1	4	0	4	1	3	20	1	9	3
Difference	27	9	0	95	17	701	13	34	35	87	106

- Using the t procedures, does this data give convincing evidence that the count of active cells is higher after treatment? (You have to state the hypothesis, find all the variables from the sample, find the  $t_{stat}$ , calculate the  $P_{value}$  and state the conclusion)

- Knowing that the sample size was only 11, does this data set violate any of the conditions that allows us to carry a t-dist significance test?