An investigator in the Immunology Laboratory in the Wisconsin Clinical Cancer Center conducted an experiment on 8 cancer patients to test the effect of two types of interferon (A & D) at two doses (15 and 45 units). The interferon is administered on a specified day and a blood sample is drawn. A one week period for washout is allowed before the next dose is administered. The brand of interferon was alternated as indicated on Table I, but the dose was given in the same order, 15 units followed by 45 units. For each blood sample drawn, a particular assay is done to measure the percent of tumor cells killed. The assays are done three times, with the killer cell (called NK cells) to target (tumor) cell ratios at 12.5/1, 25/1, and 50/1.

The data from this experiment are given in Table II. Note that two pretreatment measurements are given, at Day 0 and Day 1. Also note that some data are missing.

The investigator wishes to address the following research questions:

1. Is there an interferon effect?

2. Does the brand of interferon matter?

3. Is there a dose effect?

The tables, attached on the next two pages, are prepared by the experimenter.

You are to work in groups to perform preliminary analysis of these data. Each group should decide on a group analytical strategy and arrive at a group solution. Each group should prepare a common set of key graphs (2 pages maximum). In addition, each individual should indicate separately what he/she learned from this exercise (one page maximum). This could include technical points from the analysis, design considerations, or issues relating to group dynamics.

Please submit your group report (informal, up to 2 pages of text and up to 2 pages of key graphs) and your individual comments on Brightspace by 12:20pm on February 12.

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Table I

	1 0	2 1	3 2	4 8	5 9	6 15	7 16	8 22	9 23	10 29	11	12
cells (↑) pled	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑ samples blood drawn	
rferon ven (⇑)		⇑		⇑		⇑		⇑			⇑ indicates drug given	
nferon lose		15		15		45		45				
rtient / Interferon Type												
1		D		A		D		A				
2		D		A		D		A				
3		A		D		A		D				
4		A		D		D		A				
5		A		D		A		D				
6		D		A		A		D				
7		D		A		A		D				
8		A		D		D		A				

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Table II

NK CELL CYTOTOXICITY (% SPECIFIC ^{51}Cr Release)

	E/T	1 Day 0	2 Day 1	3 Day 2	4 Day 8	5 Day 9	6 Day 15	7 Day 16	8 Day 22	9 Day 23	10 Day 24	11	12
	12.5 1	12.2	3.2	10.5	3.1	4.7	2.3	7.0	1.1	6.0	NO		
	25 2	15.4	5.7 D	17.2	8.3	6.0 A	4.5	18.6 D	0.9	10.7 A	↓	ND	means no data avail
	50 3	13.0	7.0	19.1	7.5	6.9	7.7	19.7	1.3	7.4			
	4												
	12.5 5	2.3	6.1	10.0	5.0	8.3	2.5	13.5	4.7	9.4	1.1		
	25 6	5.6	4.9 D	16.1	8.6	10.7 A	3.7	19.6 D	9.9	14.5 A	5.5		
	50 7	5.2	11.5	14.7	13.9	12.1	5.2	27.6	14.2	19.7	16.3		
	8												
	12.5 9	24.9	20.0	32.5 A	1.4	ND D	12.6	13.2	9.2	13.0 D	9.5		
	25 10	31.6	30.7 A	40.2	3.1	39.8	17.0	21.1 A	16.1	29.6	23.5		
	50 11	31.9	22.8	50.7	7.6	51.0	24.1	31.4	24.8	42.5	31.2		
	12												
	12.5 13	5.9	10.3	9.9	6.1	17.4	9.7	23.3	5.0	10.5	3.1		
	25 14	10.1	9.7 A	16.8	9.8	26.2 D	19.2	24.0 D	9.4	16.8 A	7.2		
	50 15	7.4	13.6	27.3	14.5	28.8	28.6	26.6	13.9	22.3	10.4		
	16												
	12.5 17	8.1	10.3	8.2	3.7	3.7 D	6.1	5.5 A	0.1	-1.3	2.0		
	25 18	9.1	9.7 A	14.0	6.2	6.5	11.3	11.6	2.0	0.8 D	3.2		
	50 19	14.4	13.6	20.0	5.4	10.8	17.5	13.8	3.7	4.8	5.7		
	20												
	12.5 21	8.8	4.5	18.8	6.5	16.6	8.6	7.0	6.0	20.3	4.3		
	25 22	18.6	9.4 D	24.6	14.1	24.9 A	12.1	12.3 A	13.8	27.7 D	9.0		
	50 23	30.1	11.8	33.9	23.4	38.2	17.1	21.5	19.1	31.4	13.6		
	24												
	12.5 25	8.8	4.4	10.5	2.7	13.0	3.6	7.9 A	2.6	11.6 D	6.0		
	25 26	19.6	8.9 D	15.0	5.8	22.6 A	12.7	15.6	3.8	12.1	7.0		
	50 27	27.9	13.2	25.1	11.8	26.5	15.9	17.2	5.7	13.1	9.8		
	28												
	12.5 29	-1.6	1.3	8.1	6.5	18.0 D	7.1	2.8 D	4.4	2.9 A	2.9		
	25 30	3.3	1.9 A	16.0	1.9	27.0	6.0	5.9	4.3	7.1	3.2		
	50 31	2.4	3.2	19.2	6.4	34.1	7.5	7.4	7.2	8.4	3.0		

E/T = Effector (NK cell) to Target cell ratio