88. House insulation: Whiteside's data

The Open University (1984) *MDST242 Statistics in Society, Unit A5: Review*, 2nd edition, Milton Keynes: The Open University, Figures 2.5 and 2.6.

These data were collected in the 1960s by Derek Whiteside of the UK Building Research Station. He recorded (among other things) the weekly gas consumption (in 1000 cubic feet) and the average outside temperature (in degrees Celsius) at his own house in south-east England, for 26 weeks before and 30 weeks after cavity-wall insulation had been installed. The house thermostat was set at 20°C throughout. The data are not given in chronological order. How is gas consumption related to outside temperature, and how did this relationship change after insulation? How much energy does the insulation save, allowing for the temperature difference between the inside and outside of the house?

Before insulation		*After insulation*	
Average outside temperature (°C)	*Gas consumption (1000 cubic feet)*	*Average outside temperature (°C)*	*Gas consumption (1000 cubic feet)*
-0.8	7.2	-0.7	4.8
-0.7	6.9	0.8	4.6
0.4	6.4	1.0	4.7
2.5	6.0	1.4	4.0
2.9	5.8	1.5	4.2
3.2	5.8	1.6	4.2
3.6	5.6	2.3	4.1
3.9	4.7	2.5	4.0
4.2	5.8	2.5	3.5
4.3	5.2	3.1	3.2
5.4	4.9	3.9	3.9
6.0	4.9	4.0	3.5
6.0	4.3	4.0	3.7
6.0	4.4	4.2	3.5
6.2	4.5	4.3	3.5
6.3	4.6	4.6	3.7
6.9	3.7	4.7	3.5
7.0	3.9	4.9	3.4
7.4	4.2	4.9	3.7
7.5	4.0	4.9	4.0
7.5	3.9	5.0	3.6
7.6	3.5	5.3	3.7
8.0	4.0	6.2	2.8
8.5	3.6	7.1	3.0
9.1	3.1	7.2	2.8
10.2	2.6	7.5	2.6
		8.0	2.7
		8.7	2.8
		8.8	1.3
		9.7	1.5