

22. Car Repair Costs Listed below are repair costs (in dollars) for cars crashed at 6 mi/h in full-front crash tests and the same cars crashed at 6 mi/h in full-rear crash tests (based on data from the Insurance Institute for Highway Safety). The cars are the Toyota Camry, Mazda 6, Volvo S40, Saturn Aura, Subaru Legacy, Hyundai Sonata, and Honda Accord. Is there sufficient evidence to conclude that there is a linear correlation between the repair costs from full-front crashes and full-rear crashes?

Front	936	978	2252	1032	3911	4312	3469
Rear	1480	1202	802	3191	1122	739	2767

23. Blood Pressure Measurements Listed below are systolic blood pressure measurements (in mm Hg) obtained from the same woman (based on data from "Consistency of Blood Pressure Differences Between the Left and Right Arms," by Eguchi, et al., *Archives of Internal Medicine*, Vol. 167). Is there sufficient evidence to conclude that there is a linear correlation between right and left arm systolic blood pressure measurements?

Right Arm	102	101	94	79	79
Left Arm	175	169	182	146	144

24. Crickets and Temperature One classic application of correlation involves the association between the temperature and the number of times a cricket chirps in a minute. Listed below are the numbers of chirps in 1 min and the corresponding temperatures in °F (based on data from *The Song of Insects* by George W. Pierce, Harvard University Press). Is there sufficient evidence to conclude that there is a linear correlation between the number of chirps in 1 min and the temperature?

Chirps in 1 min	882	1188	1104	864	1200	1032	960	900
Temperature (°F)	69.7	93.3	84.3	76.3	88.6	82.6	71.6	79.6

25. Gas Prices Gas prices have been very volatile in recent years. The table below lists gas prices (dollars per gallon) at randomly selected Connecticut stations at the time of this writing (based on data from AOL Autos). Is there sufficient evidence to conclude that there is a linear correlation between prices of regular gas and prices of premium gas? For the gas stations that sometimes post only the price of regular gas, can you use those prices to get a good sense of the price of premium gas?

Regular	2.77	2.77	2.79	2.81	2.78	2.86	2.75	2.77
Mid-Grade	3.00	2.77	2.89	2.93	2.93	2.96	2.86	2.91
Premium	3.07	3.09	3.00	3.06	3.03	3.06	3.02	3.03

26. Gas Prices Repeat the preceding exercise using the prices of regular gas and the prices of mid-grade gas.

27. Sports Diameters (cm), circumferences (cm), and volumes (cm³) from balls used in different sports are listed in the table below. Is there sufficient evidence to conclude that there is a linear correlation between diameters and circumferences? Does the scatterplot confirm a *linear* association?

	Baseball	Basketball	Golf	Soccer	Tennis	Ping-Pong	Volleyball	Softball
Diameter	7.4	23.9	4.3	21.8	7.0	4.0	20.9	9.7
Circumference	23.2	75.1	13.5	68.5	22.0	12.6	65.7	30.5
Volume	212.2	7148.1	41.6	5424.6	179.6	33.5	4780.1	477.9