

## Describing Data with Pictures

**CREDIT:** The questions on this document were written by Erik Packard, PhD, Associate Professor of Mathematics at Colorado Mesa University.

- Problem 4

- The table gives data on the adsorption into the blood taken on 20 healthy female subjects for a pair of drugs, one generic and the other reference name brand drug. Half were picked at random and received the generic drug first and the rest took the reference drug first. In all cases, a washout period separated the two drugs so that the first had disappeared before the subject took the second.

Subject:	A	B	C	D	E	F	G	H	I	J
Reference:	4110	2536	2769	3853	1832	2436	1999	1719	1829	2594
Generic:	1755	1148	1603	2254	1309	2120	1851	1878	1685	2643

Subject:	K	L	M	N	O	P	Q	R	S	T
Reference:	2354	1864	1022	2256	938	1339	1262	1438	1735	920
Generic:	2738	2202	1254	3051	1287	1930	1964	2549	3335	3044

- A) Give a stemplot for the difference (Reference – Generic).
- B) Give a histogram for the differences (Reference – Generic).

- Problem 6

- The following table gives the population of Colorado by year and the crime rate per 100,000 for various crimes.

Year	Population	Murder	Forcible Rape	Robbery	Vehicle Theft
1980	2,878,407	6.9	52.5	160.1	448.3
1981	2,963,000	8.1	45.6	159.5	413.9
1982	3,045,000	6.0	44.5	150.6	397.3
1983	3,139,000	6.4	41.9	126.4	372.7
1984	3,178,000	5.8	39.0	114.0	397.3
1985	3,231,000	5.8	40.9	124.2	432.9
1986	3,267,000	7.0	42.3	144.8	486.0
1987	3,296,000	5.8	40.8	118.8	436.3

1988	3,290,000	5.7	38.6	98.8	422.0
1989	3,317,000	4.4	36.2	90.0	452.9
1990	3,294,394	4.2	46.2	90.6	428.4
1991	3,377,000	5.9	47.0	107.4	426.4
1992	3,470,000	6.2	47.3	120.5	509.0
1993	3,566,000	5.8	45.8	116.7	450.3
1994	3,656,000	5.4	43.2	106.9	392.9
1995	3,747,000	5.8	39.5	96.2	387.5
1996	3,823,000	4.7	46.2	98.2	397.8
1997	3,893,000	4.0	43.1	83.3	413.7
1998	3,971,000	4.6	47.4	81.5	405.1
1999	4,056,133	4.6	41.4	75.3	364.8
2000	4,301,261	3.1	41.2	70.5	394.3
2001	4,430,989	3.6	43.6	80.2	473.8
2002	4,501,051	4.0	45.9	79.5	515.1
2003	4,547,633	4.1	42.1	82.2	501.7
2004	4,601,403	4.4	42.3	81.3	521.6
2005	4,665,177	3.7	43.4	84.6	559.5

- Give a time plot for the robbery rate per 100,000.

• Problem 7

- Here is the number of full-time faculty in graduate departments of Sociology by rank and gender for 2000 – 2001.

	Instructor	Assistant Professor	Associate Professor	Full Professor	Total:
Female	61	565	502	476	1604
Male	39	618	683	1383	2723
Total:	100	1183	1185	1859	4327

- Give a pie chart and bar graph for the ranks of the males.