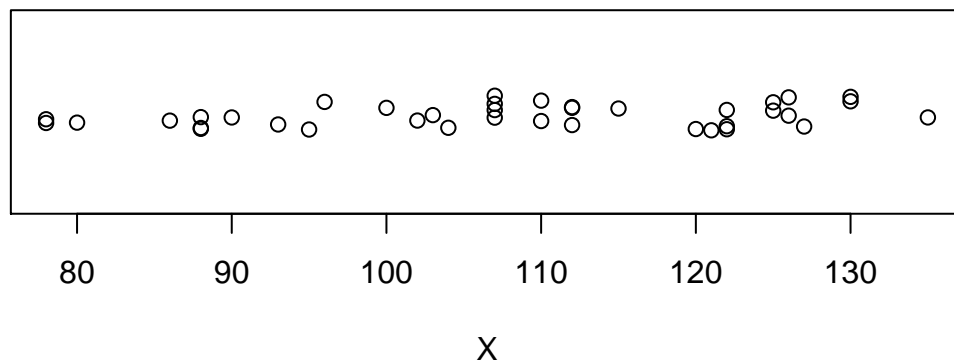**Stat 371-003, Solutions to Homework #2**

1. Textbook: 2.79 (pg 69) [Use R]

   You could get the data into R with

   ```
   x <- scan("http://www.biostat.wisc.edu/%7Ekbroman/teaching/stat371/data_2-79.txt")
   ```

   Then use `mean(x)`, `median(x)`, and `sd(x)` to get summary statistics: mean ≈ 107.9, median = 108.5, SD ≈ 16.1.

   A dotplot looks nice. Use `stripchart(x, method="jitter", pch=1)`. (You could also make a histogram.)

   The data are reasonably symmetric.

2. Textbook: 8.1 (pg 316)

   No, we cannot conclude that Arizona exacerbates respiratory problems. We would need to know whether breathing problems get better or worse when people move to Arizona. It's possible that people with respiratory problems move to Arizona because the dry air is good for them.

3. Textbook: 8.20 (pg 333)

   Plan III is the best, because any tier effects would be balanced across the treatment and control groups. Plan I is next best. Plan II is the worst, as treatment would be confounded with tier location.

4. [Numbers of deaths]

   False. One needs to look at *rates*. The population was 248 million in 1990 and 180 million in 1960, so the death rate actually went down.

5. [NFIP study]

   The difference in frequencies among grade 2 children that received and not receive the vaccine may not be due entirely to the vaccine, as the children differen in ways other than the treatment. This comparison would be biased *against* the vaccine.

6. [Cervical cancer]

   No. One must consider the confounding factor of sexual activity.

7. [Stopping smoking]

   No. Likely people stopped smoking *because* they were sick, rather than the reverse.