

Coursera Statistical Inference - Quiz 2

Question 2

Suppose that diastolic blood pressures (DBPs) for men aged 35-44 are normally distributed with a mean of 80 (mm Hg) and a standard deviation of 10. About what is the probability that a random 35-44 year old has a DBP less than 70?

```
pnorm(70, mean=80, sd=10)
## [1] 0.1586553
```

Question 3

Brain volume for adult women is normally distributed with a mean of about 1,100 cc for women with a standard deviation of 75 cc. What brain volume represents the 95th percentile?

```
qnorm(.95, mean=1100, sd=75)
## [1] 1223.364
```

Question 4

Refer to the previous question. Brain volume for adult women is about 1,100 cc for women with a standard deviation of 75 cc. Consider the sample mean of 100 random adult women from this population. What is the 95th percentile of the distribution of that sample mean?

```
sd <- 75 / sqrt(100)
qnorm(.95, mean=1100, sd=sd)
## [1] 1112.336
```

Question 5

You flip a fair coin 5 times, about what's the probability of getting 4 or 5 heads?

```
1 - pbinom(3, 5, .5)
## [1] 0.1875
```

Question 6

The respiratory disturbance index (RDI), a measure of sleep disturbance, for a specific population has a mean of 15 (sleep events per hour) and a standard deviation of 10. They are not normally distributed. Give your best estimate of the probability that a sample mean RDI of 100 people is between 14 and 16 events per hour?

```
sd <- 10 / sqrt(100)
pnorm(16, mean=15, sd) - pnorm(14, mean=15, sd)
## [1] 0.6826895
```

Question 8

The number of people showing up at a bus stop is assumed to be Poisson with a mean of 5 people per hour. You watch the bus stop for 3 hours. About what's the probability of viewing 10 or fewer people?

```
ppois(10, 3*5)  
## [1] 0.1184644
```