

Hw1.r

```
1 data <- USArrests$UrbanPop
2
3 png(filename = "Urban_Data.png")
4 plot(data)
5 dev.off()
6
7 mu <- mean(data)
8 std <- sd(data)
9 normalized <- dnorm(data, mu, std)
10
11 png(filename = "Normalized_Data.png")
12 plot(data, normalized,
13       col = "blue",
14       xlab = "% of Peoples", ylab = "Density",
15       main = "Plot of densities for Urban Pop data"
16 )
17 abline(v = mu, col = "red", lty = "dashed")
18 dev.off()
19
20 png(filename = "CDF.png")
21 plot(data, pnorm(data, mean = mu, sd = std),
22       ylab = "Cumulative Distribution Function",
23       xlab = "% of People",
24       main = "CDF for Urban Pop data"
25 )
26 abline(v = mu, col = "red", lty = "dashed")
27 dev.off()
28
29 print(paste0(
30   "Probability that 60% or less of ",
31   "people in a state are living in urban areas: ",
32   pnorm(60, mean = mu, sd = std)
33 ), quote = FALSE)
34 print(paste0(
35   "Probability that 50% to 80% of",
36   "people in a state are living in urban areas: ",
37   pnorm(80, mean = mu, sd = std) - pnorm(50, mean = mu, sd = std)
38 ), quote = FALSE)
39
40 print(paste0(
41   "The 75th percentile ends at a value of: ",
42   qnorm(0.75, mean = mu, sd = std)
43 ), quote = FALSE)
44
```