Table of Contents


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%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%
% ENGR 132
% Program Description
% ...
%
% Assigment Information
% Assignment:       PS 04, Problem 1
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%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%
```

INITIALIZATION

```
golfDistance = dlmread('Data_GolfDistance.txt');
```

DESCRIPTIVE STATISTICS & FORMATTED TEXT

a. Calculate descriptive statistics for the data: minimum, maximum, range, mean, median, standard deviation. Note: See note at the beginning of PS03 regarding the range command.

```
distMean = mean(golfDistance);
distMed = median(golfDistance);
diststd = std(golfDistance);
distMin = min(golfDistance);
distMax = max(golfDistance);

%b. Display all of the results from the descriptive statistics
 calculations.
fprintf('Golf ball distance mean %.2f\n', distMean)
fprintf('Golf ball distance median %.2f\n', distMed)
fprintf('Golf ball distance standard deviation %.2f\n', diststd)
fprintf('Golf ball distance minimum %.2f\n', distMin)
```

```
fprintf('Golf ball distance maximum %.2f\n', distMax)
```

```
Golf ball distance mean 262.04
Golf ball distance median 263.25
Golf ball distance standard deviation 4.68
Golf ball distance minimum 250.90
Golf ball distance maximum 269.70
```

HISTOGRAM & CDP

a. Generate a histogram using the histogramRight command that uses an appropriate bin edge vector that makes the plot easy to interpret. Use the descriptive statistics and the engineers' requirements to help determine the vector.

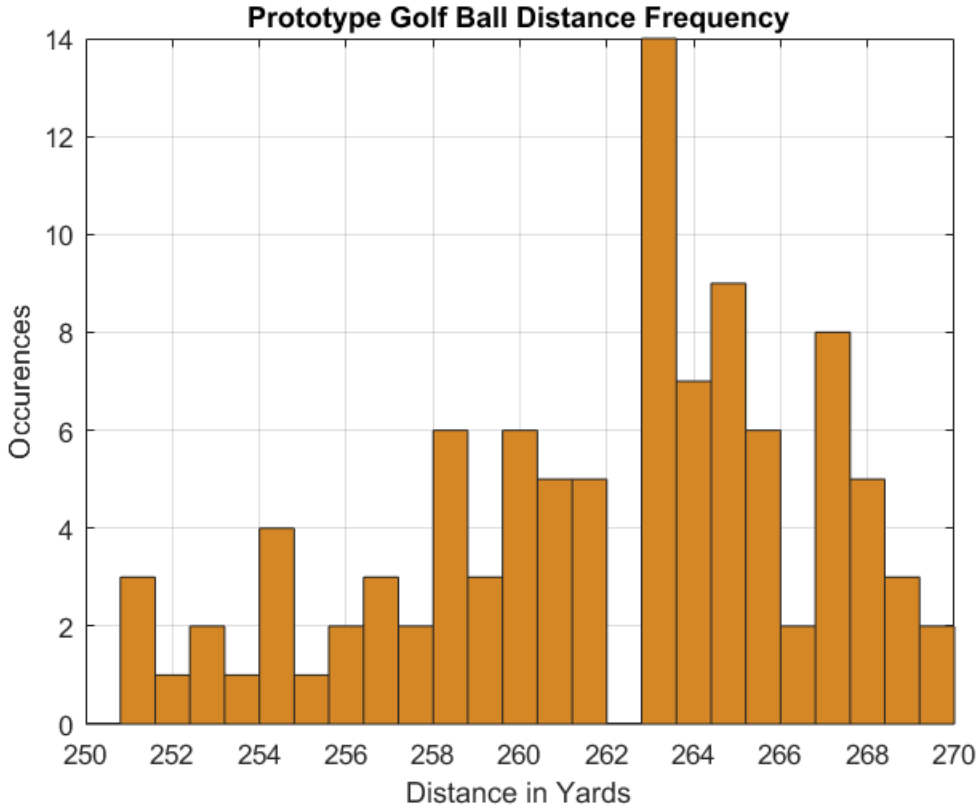
```
figure(1)
histBinEdges = linspace(250,270, 26);
distHist = histogramRight(golfDistance, histBinEdges)
xlabel('Distance in Yards');
ylabel('Occurences');
title('Prototype Golf Ball Distance Frequency');
grid on;

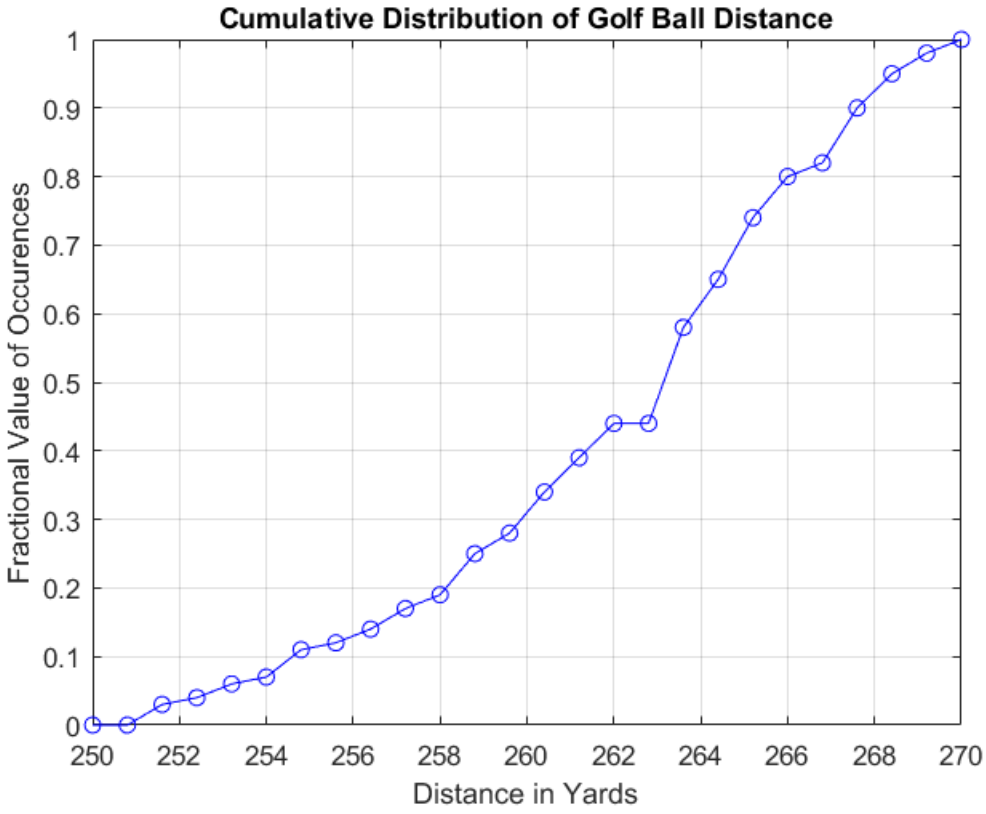
% b. Determine the relative and cumulative fractional values of the
 data.
% Ensure your cumulative frequencies start from ‘0”.
bin_freq = distHist.Values;
dataSize = length(golfDistance);
freq_value = bin_freq / dataSize;
cum_frac= cumsum(freq_value);
cum_frac = [0 cum_frac];

% c. Create a cumulative distribution plot (CDP) using the same number
 of
% bins and bin edges as in the histogram. Place the CDP as a subplot
 below the histogram in the same figure window.
figure(2)
plot(histBinEdges, cum_frac, 'bo-')
xlabel('Distance in Yards');
ylabel('Fractional Value of Occurences');
title('Cumulative Distribution of Golf Ball Distance')
grid on;
```

```
distHist =

         Data: [100x1 double]
       Values: [0 3 1 2 1 4 1 2 3 2 6 3 6 5 5 0 14 7 9 6 2 8 5 3 2]
      NumBins: 25
     BinEdges: [1x26 double]
     BinWidth: 0.8000
    BinLimits: [250 270]
```


Prototype Golf Ball Distance Frequency
Occurences
Distance in Yards
0
2
4
6
8
10
12
14
250
252
254
256
258
260
262
264
266
268
270


Cumulative Distribution of Golf Ball Distance
Fractional Value of Occurences
Distance in Yards
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
250
252
254
256
258
260
262
264
266
268
270

ANALYSIS

Q1

The size range that the company wanted was +/- 4 yards from 260 yards. So the bin edges and bin width was specified by making the width 4, to make technical presentation better for the given range

Q2

The median was approximately 263 yards. We used the value of 0.5 on the y axis and saw where the graph reached that height on the x axis.

Q3

The distribution displays a unimodal negative skew. On the CDP,the slope increases towards the right side of the graph. On the histogram, there is a single peak with the majority of the data clustered towards the right side of the graph. As for the descriptive statistics, the median is greater than the mean

Q4

There is approximately a 49% likelihood that the distance will be between 256 and 264 yards. This is found by finding the difference in cumulative probability between the 2 intervals.

Q5

They cannot moce forward with the next step in development because they expected a 65% of the distances to be within the given range, but only 49% was in the range.

ACADEMIC INTEGRITY STATEMENT

I/We have not used source code obtained from any other unauthorized source, either modified or unmodified. Neither have I/we provided access to my/our code to another. The project I/we am/are submitting is my/our own original work.

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