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Problem 14.20

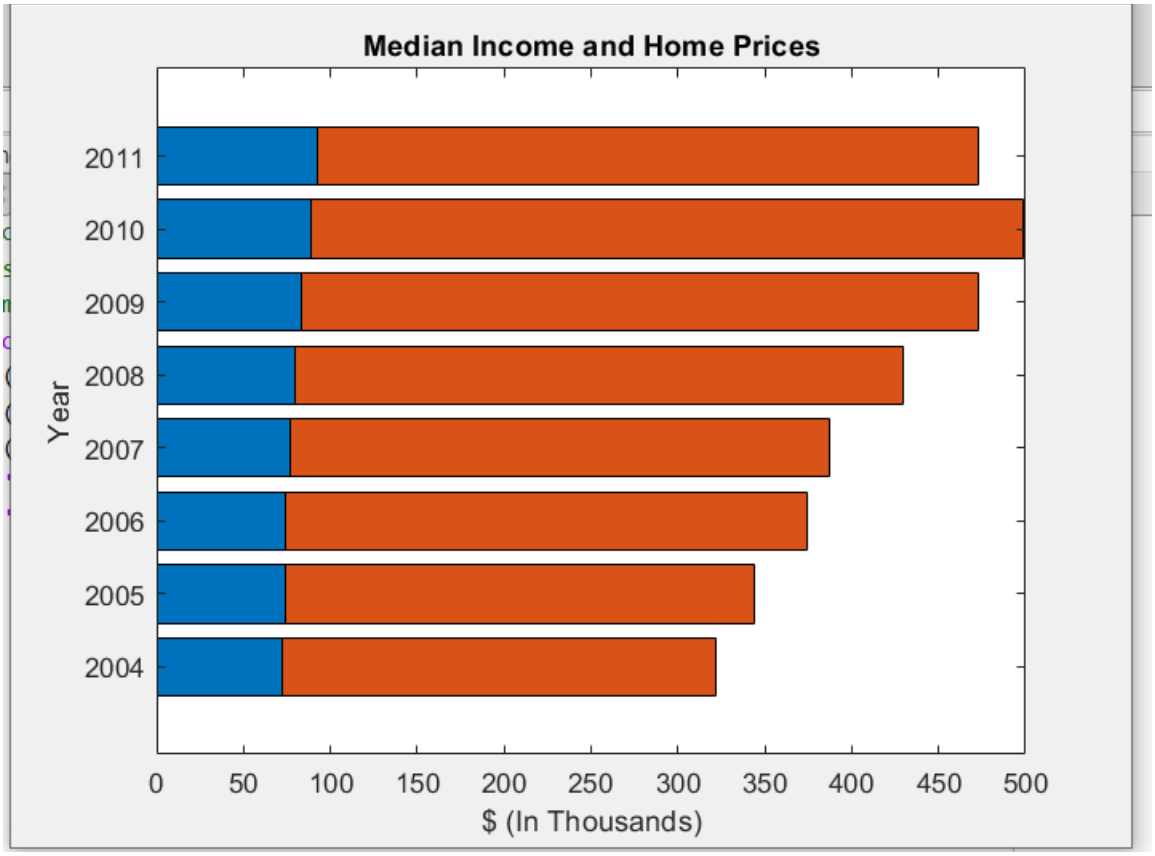
```
% Brandon MacLaren, Nick McCullough, Ryan McLenithan, AERE 161, Lab7, #14.2
% Purpose: Create a horizontal stacked barchart to store the given
% information
```

- - - -(insert your solution here)

```
load houseafford.dat %load the information from the given data set
h=barh(houseafford(2:3,:)','stacked'); %set format for the graph
xlabel('$ (In Thousands)')%Create label for x axis
ylabel('Year') %create label for the y axis
set(h,'Xdata',houseafford(1,:)) %set the spacing and years
title('Median Income and Home Prices') %create a title for the graph
```

Output 1:

------*(insert output (your results) here)*



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Problem 14.3

```
% Brandon MacLaren, Nick McCullough, Ryan McLenithan, AERE 161, Lab7, #14.3
% Purpose: use the two given vectors and input them into min, max
```

- - - -(insert your solution here)

```
%Create the two vectors with the given specifications
vec1 = randi([1 5],1,20);
vec2 = randi([1 500],1,20);

%For vector 1 find the min, max, mean, median, standard deviation, and mode
%using the given functions
disp('For vector 1:')
fprintf('Minimum = %d\n', min(vec1))
fprintf('Maximum = %d\n', max(vec1))
fprintf('Mean = %.1f\n', mean(vec1))
fprintf('Median = %.1f\n',median(vec1))
fprintf('Standard Deviation = %.1f\n', std(vec1))
fprintf('Mode = %.1f\n\n', mode(vec1))

%For vector 2 find the min, max, mean, median, standard deviation, and mode
%using the given functions
disp('For vector 2:')
fprintf('Minimum = %d\n', min(vec2))
fprintf('Maximum = %d\n', max(vec2))
fprintf('Mean = %.1f\n', mean(vec2))
fprintf('Median = %.1f\n',median(vec2))
fprintf('Standard Deviation = %.1f\n', std(vec2))
fprintf('Mode = %.1f\n', mode(vec2))

%Set graph spefications
subplot(1,2,1)
histogram(vec1)
subplot(1,2,2)
histogram(vec2)
```

Output 1:

------(insert output (your results) here)

Lab7
For vector 1:
Minimum = 1
Maximum = 5
Mean = 3.0
Median = 3.0
Standard Deviation = 1.3

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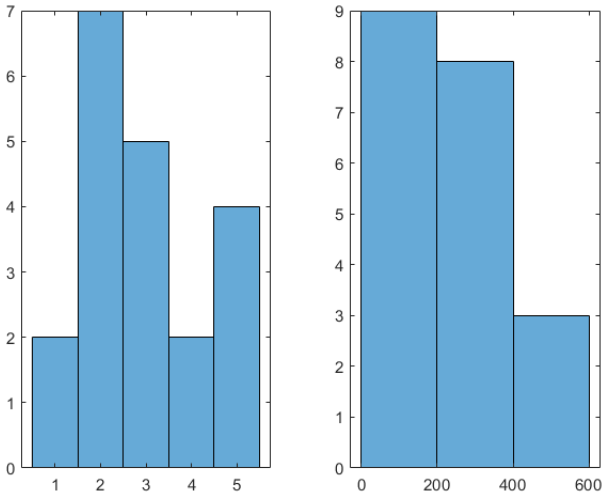
Mode = 2.0

For vector 2:
Minimum = 56
Maximum = 490
Mean = 225.8
Median = 209.0
Standard Deviation = 131.2
Mode = 56.0



- No, the mean and median should not be the exact same for each vector, it is too random for that to happen.
- No, the standard deviation wouldn't be the same, but the decimal place would shift over one because of the increased range.

Problem 14.7

```
% Brandon MacLaren, Nick McCullough, Ryan McLenithan, AerE161, Lab 7, #14.7


% write a function to receive a vector as an input argument and will
% then calculate and return the moving average of every two elements.


% x = {x1, x2, x3, ... xn}
% let's first create the function equation then a vector script to call % the function in and perform
the necessary equation on the vector
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- - - -*(insert your solution here)*

```
function answer = average(everytwo) % average function created with future vector to be called
"everytwo"


z = length(everytwo); % this is our variable for length of everytwo
i = 0; % set i equal to zero to start our “for” statement
for i=1:z-1 % create a for statement until (length) z-1
    answer(i)=(everytwo(i) + everytwo(i+1)) / 2;
    % equation for the average of everty two values
end % end for
end % end function
```

```
clear,clc % clears code
everytwo = [1 3 5 7 9 11 13 15 17 19 21 23 25]; % create random vector
% now let's call our function to average every two values
average(everytwo) % call average of everytwo vector to display the ans
```

Output 1:

------*(insert output (your results) here)*

```
>> prob14point7
```

```
ans =

     2     4     6     8    10    12    14    16    18    20    22    24
```

Problem 14.10

What is the difference between the mean and the median of a data set if there are only two values in it?

- - - -*(insert your solution here)*

There is no difference if the values are numerical.. median is equal to the middle, mean is the two values added and divided by two.. which gets you to the middle, or median. Let's say 5 and 10. The middle is 7.5 and of course that's the same as 15/2.

Problem 14.12

```
% Brandon MacLaren, Nick McCullough, Ryan McLenithan, AERE 161, Lab 7 problem 14.12,
% Purpose: To compare and find each class (cell) in cell arrays that
% are most common between the two cell arrays
```

- - - -*(insert your solution here)*

```
clear,clc % clears code

s1 = {'EC 101', 'CH 100', 'MA 115'}; % creates the first cell array
```

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```
s2 = {'CH 100', 'MA 112', 'BI 101'}; % second cell array

intersect (s1,s2) % use an intersect function to find the
% "intersection" aka where the two cell arrays meet, which would
% identify the same value between the two cell arrays, CH 100
```

Output 1:

------*(insert output (your results) here)*

```
ans =

  1×1 cell array

    {'CH 100'}
```