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## Example 1

```
load count.dat; % loads the count data set into Workspace
load NYCDiseases.mat; % loads the NYC disease data into Workspace
```

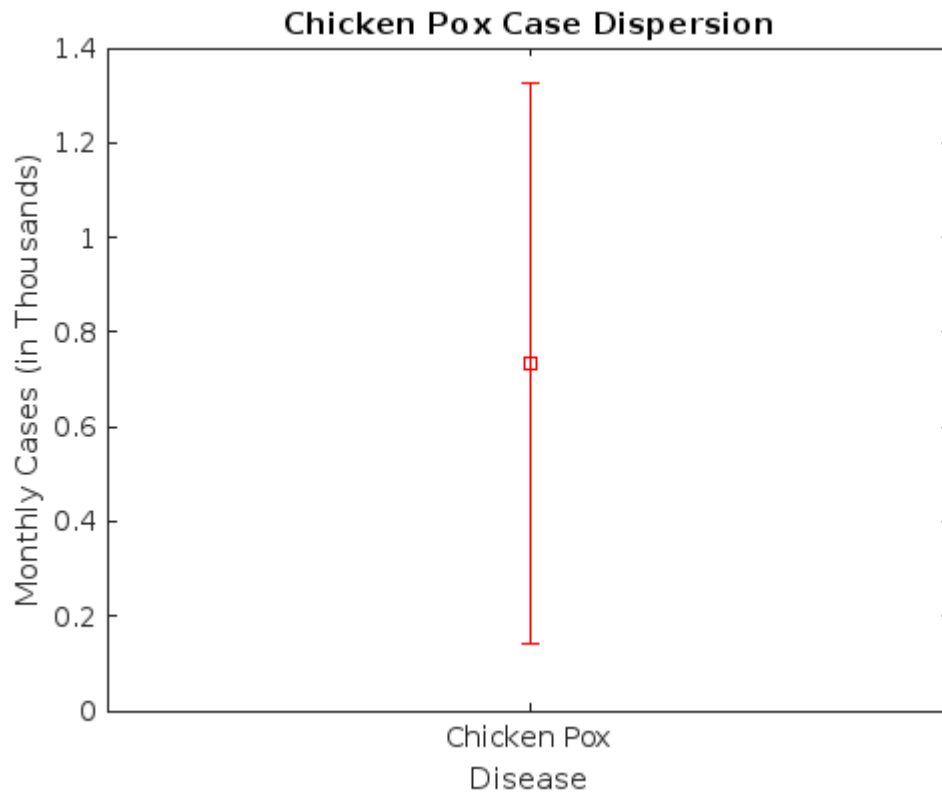
## Example 2

```
fprintf('chicken pox: mean = %g median = %g [max = %g and min = %g]\n', ...
mean(chickenPox(:)), median(chickenPox(:)), max(chickenPox(:)),
min(chickenPox(:)));
```

```
chicken pox: mean = 732.215 median = 602.5 [max = 3058 and min = 43]
```

## Example 3

```
chickenPoxAver = mean(chickenPox(:)); % Calculate overall average chickenpox
chickenPoxSD = std(chickenPox(:), 0); % Calculate overall std chickenpox
figure
errorbar(chickenPoxAver./1000, chickenPoxSD./1000, 'rs')
xlabel('Disease')
ylabel('Monthly Cases (in Thousands)')
title('Chicken Pox Case Dispersion')
set(gca, 'XTickMode', 'manual', 'XTick', 1, ...
'XTickLabelMode', 'manual', 'XTickLabel', {'Chicken Pox'})
```



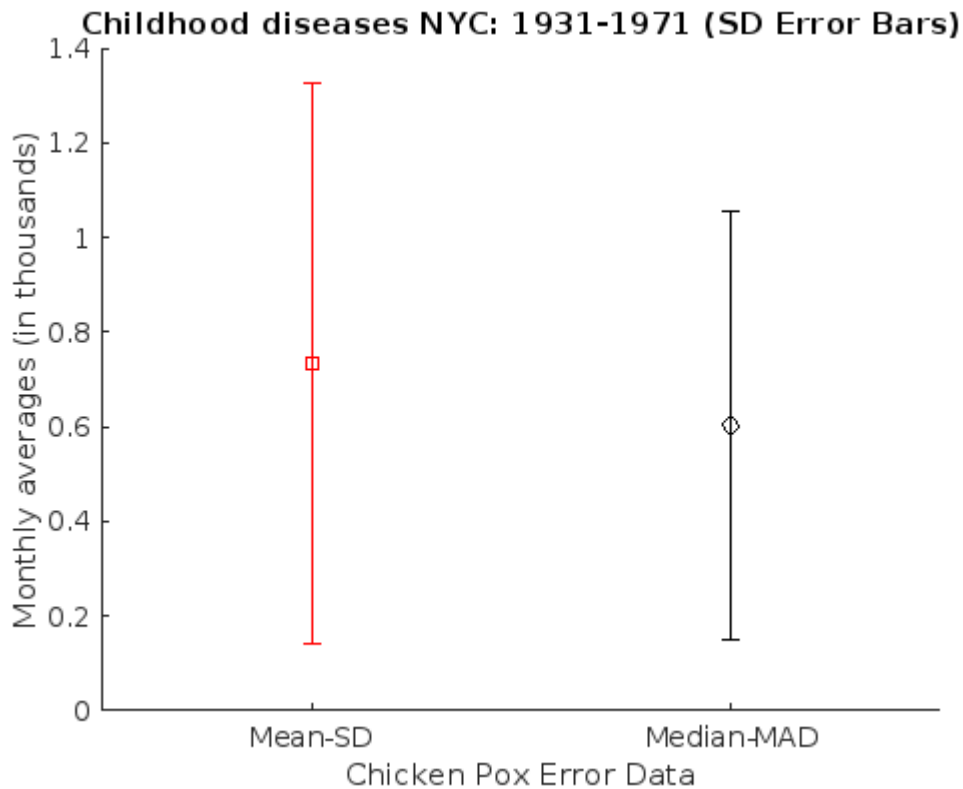
## Exercise 1

```
IntersectionAver = mean(count(:));
IntersectionSD = std(count(:), 0);
figure
errorbar(IntersectionAver,IntersectionSD, 'rs')
xlabel('San Antonio Intersections')
ylabel('Number of Cars')
title('Overall Average Intersection Traffic')
set(gca, 'XTickMode', 'manual', 'XTick', 1, ...
'XTickLabelMode', 'manual', 'XTickLabel', {'Intersections'})
```



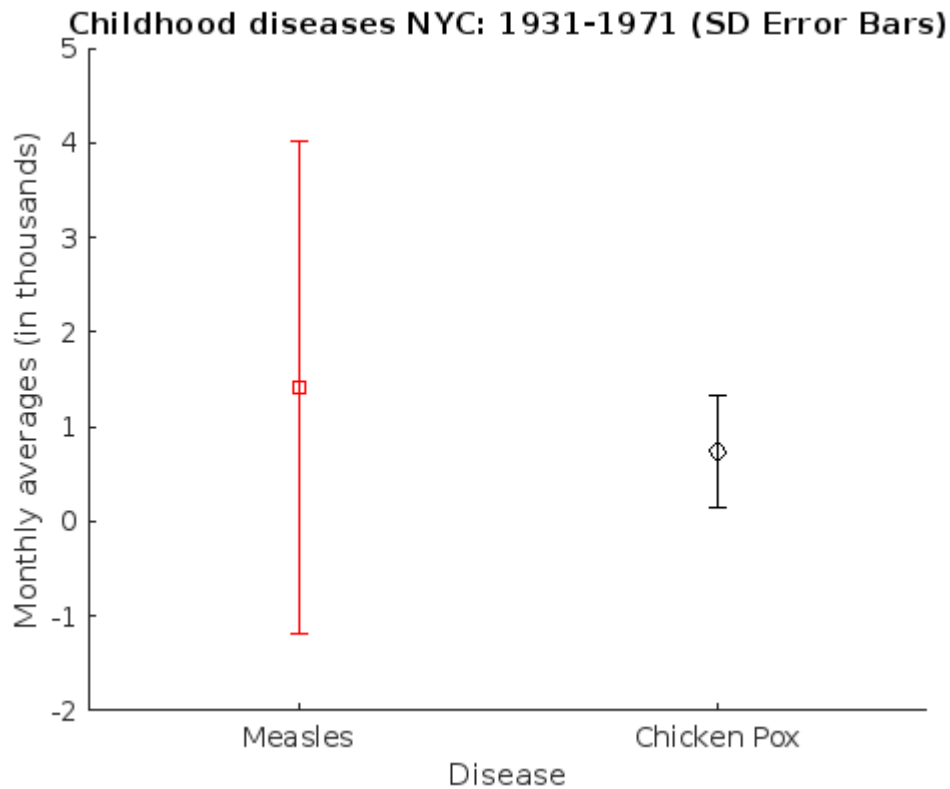
## Example 4

```
ChickenPoxMedian = median(chickenPox(:));
ChickenPoxMAD = mad(chickenPox(:),1);
figure
hold on
errorbar(1, chickenPoxAver./1000, chickenPoxSD./1000, 'rs');
errorbar(2, ChickenPoxMedian./1000, ChickenPoxMAD./1000, 'ko');
hold off
xlabel('Chicken Pox Error Data')
ylabel('Monthly averages (in thousands)')
title('Childhood diseases NYC: 1931-1971 (SD Error Bars)')
set(gca, 'XTickMode', 'manual', 'XTick', 1:2, ...
'XTickLabelMode', 'manual', 'XTickLabel', {'Mean-SD', 'Median-MAD'}, ...
'XLim', [0.5, 2.5])
```



## Example 5

```
measlesAver = mean(measles(:)); % Calculate overall average measles
measlesSD = std(measles(:), 1); % Calculate overall std measles
figure
hold on
errorbar(1, measlesAver./1000, measlesSD./1000, 'rs');
errorbar(2, chickenPoxAver./1000, chickenPoxSD./1000, 'ko');
hold off
xlabel('Disease')
ylabel('Monthly averages (in thousands)')
title('Childhood diseases NYC: 1931-1971 (SD Error Bars)')
set(gca, 'XTickMode', 'manual', 'XTick', 1:2, ...
'XTickLabelMode', 'manual', 'XTickLabel', {'Measles', 'Chicken Pox'}, ...
'XLim', [0.5, 2.5])
```

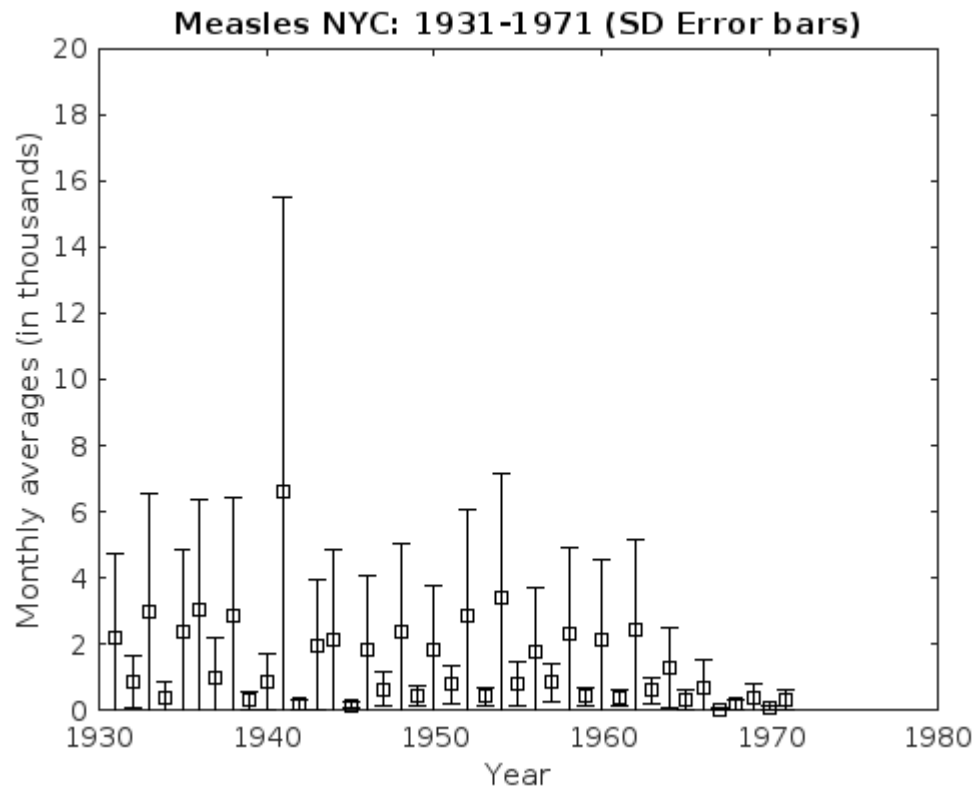


## Exercise 2

% What doesn't make sense on the error bar in example 5 is that the  
% Measles cases are measured in the negative numbers which is impossible as  
% there cannot be a negative amount of Measles cases. There must've been an  
% error in the data recording.

## Example 6

```
measlesByYearAver = mean(measles, 2); % Average monthly measles by year  
measlesByYearSD = std(measles, 1, 2); % Std monthly measles by year  
  
figure  
errorbar(years,measlesByYearAver./1000, measlesByYearSD./1000, 'ks');  
xlabel('Year');  
ylabel('Monthly averages (in thousands)')  
title('Measles NYC: 1931-1971 (SD Error bars)')  
set(gca, 'YLimMod', 'manual', 'YLim', [0,20])
```



## Exercise 3

% The y-label information should not have been cut off at zero because the  
% recorded data dives into the negative numbers and the data isn't properly  
% displayed on the graph.

% The y-label information should be cut off at zero because the recorded  
% data below zero is inaccurate and is most likely derived from an error  
% in the data recording.

% It is more ethical to accurately show the data even if the recorded data  
% is likely to be derived from an error. A visual graph is better when the  
% data is accurately shown and when the y-axis cuts off the data, it makes  
% the graph misleading.

% I tell the viewer that there may have been a few errors during the  
% recording of the data but we accurately recorded the data we got on the  
% graph.

## Example 7

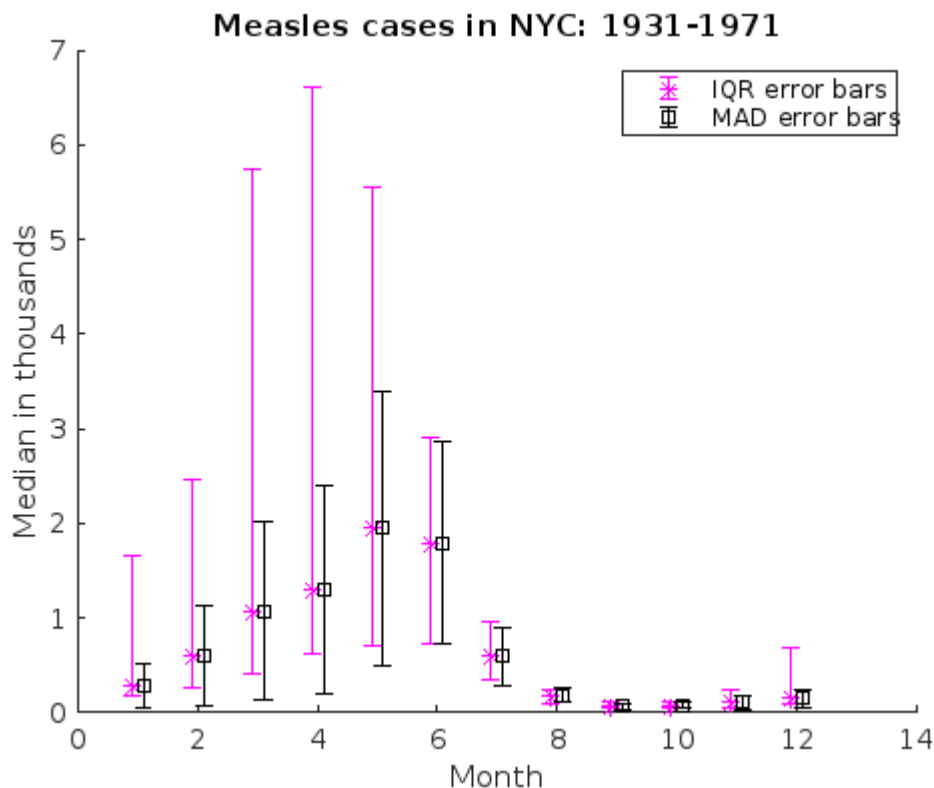
```
measlesByMonthMedian = median(measles, 1); % Median by month
measlesByMonthMAD = mad(measles, 1, 1); % Median absolute deviation by month
measlesByMonthIQR = prctile(measles, [25, 75]); % Percentile for 25 and 75
lowerDist = measlesByMonthMedian - measlesByMonthIQR(1, :);
upperDist = measlesByMonthIQR(2, :) - measlesByMonthMedian;
xPositions = 1:12;
```

---

```

figure
hold on
errorbar(xPositions-0.1, measlesByMonthMedian./1000, ...
lowerDist./1000, upperDist./1000, 'm*')
errorbar(xPositions+0.1, measlesByMonthMedian./1000, ...
measlesByMonthMAD./1000, 'ks')
hold off
xlabel('Month');
ylabel('Median in thousands')
title('Measles cases in NYC: 1931-1971')
legend('IQR error bars', 'MAD error bars', 'Location', 'Northeast')

```



## Exercise 4

```

mumpsByMonthMedian = median(mumps, 1);
mumpsByMonthMAD = mad(mumps, 1, 1);
mumpsByMonthIQR = prctile(mumps, [25, 75]);
lowerDist = mumpsByMonthMedian - mumpsByMonthIQR(1, :);
upperDist = mumpsByMonthIQR(2, :) - mumpsByMonthMedian;
xPositions = 1:12;
figure
hold on
errorbar(xPositions-0.1, mumpsByMonthMedian./100, ...
lowerDist./100, upperDist./100, 'm*')
errorbar(xPositions+0.1, mumpsByMonthMedian./100, ...
mumpsByMonthMAD./100, 'ks')
hold off

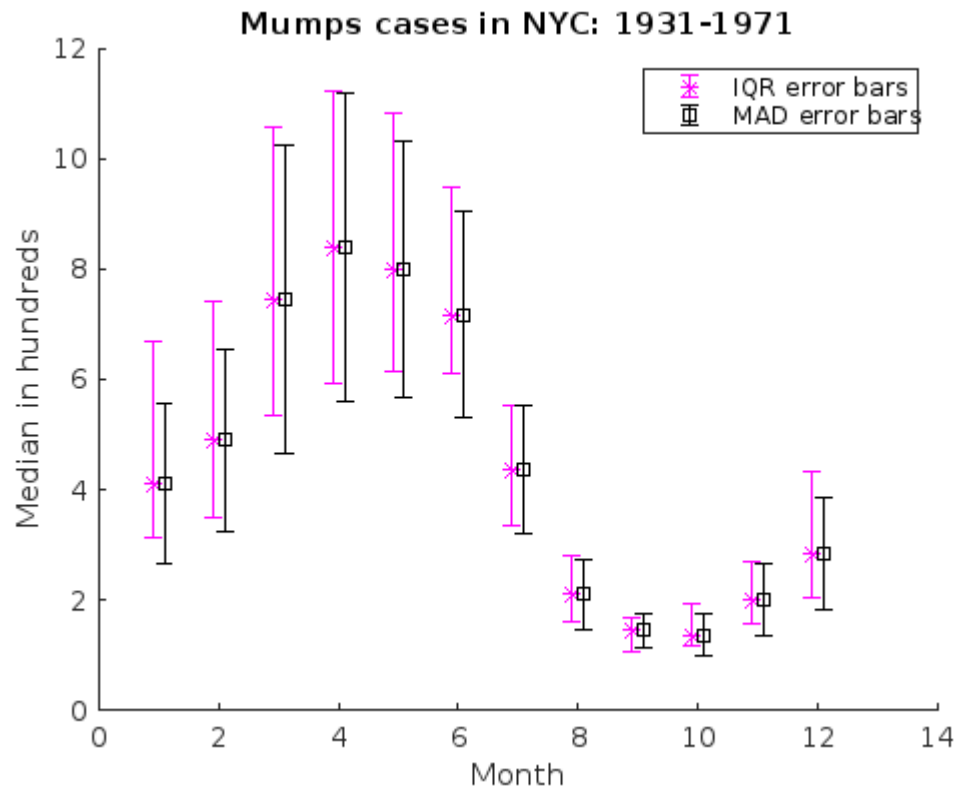
```

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```

xlabel('Month');
ylabel('Median in hundreds')
title('Mumps cases in NYC: 1931-1971')
legend('IQR error bars', 'MAD error bars', 'Location', 'Northeast')

```



*Published with MATLAB® R2023b*