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Healthcare Computing Assessment 3

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CO336 MED SPR: Healthcare Computing (2019/20)

Healthcare Computing Assessment 3

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QUESTION 1

```
ProjData2020A1
```

```
%Q1
Q1AllTotal = table2array(ProjData2020A1((3:3:end),"All ages"));
ATAverage = round(mean(Q1AllTotal));
ATStandardDeviation = round(std(Q1AllTotal)); %Sample not population?

Q1MenTotal = table2array(ProjData2020A1((1:3:end),"All ages"));
MAverage = round(mean(Q1MenTotal));
MStandardDeviation = round(std(Q1MenTotal));

Q1WomenTotal = table2array(ProjData2020A1((2:3:end),"All ages"));
WAverage = round(mean(Q1WomenTotal));
WStandardDeviation = round(std(Q1WomenTotal));

fprintf("All: Mean = " + ATAverage + " Standard Deviation = " + ATStandardDeviation)
fprintf("Men: Mean = " + MAverage + " Standard Deviation = " + MStandardDeviation)
fprintf("Women: Mean = " + WAverage + " Standard Deviation = " + WStandardDeviation)
```

```
All: Mean = 99534 Standard Deviation = 59767
Men: Mean = 48834 Standard Deviation = 33027
Women: Mean = 50701 Standard Deviation = 27572
```

QUESTION 2

```
%Q2
Q2Illness = table2array(ProjData2020A1((1:3:end),"Illness"));

DeathCount = Q1AllTotal(1);
IllnessName = "";
MDeathCount = Q1MenTotal(1);
MenIllnessName = "";
for i=1: length(Q1AllTotal)
    if Q1AllTotal(i) < DeathCount
        DeathCount = Q1AllTotal(i);
        IllnessName = Q2Illness(i);
        if Q1MenTotal(i) < DeathCount
            DeathCount = Q1MenTotal(i);
            MenIllnessName = Q2Illness(i);
            if Q1WomenTotal(i) < DeathCount
                DeathCount = Q1WomenTotal(i);
                WomenIllnessName = Q2Illness(i);
            end
        end
    end
end
fprintf("The least common cause of death in the UK is "+IllnessName)

if MenIllnessName == WomenIllnessName
    fprintf("The least common cause of death for both men and women in the UK is " + MenIllnessName)
else
    fprintf("The least common cause of death for men in the UK is " + MenIllnessName)
    fprintf("The least common cause of death for women in the UK is " + WomenIllnessName)
end
```

```
The least common cause of death in the UK is Diabetes
The least common cause of death for both men and women in the UK is Diabetes
```

QUESTION 3

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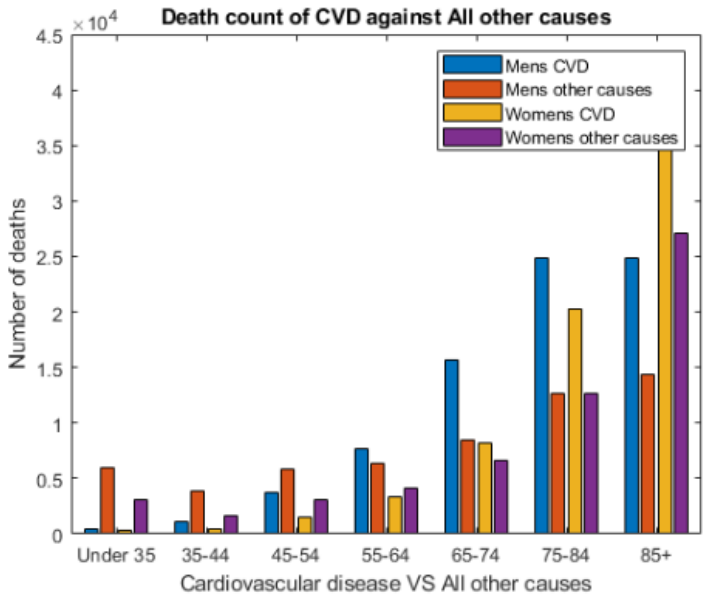
```
%Q3
MenCVDRow = table2array(ProjData2020A1(1,["Under 35","35-44","45-54","55-64","65-74","75-84","85+"]));
WomenCVDRow = table2array(ProjData2020A1(2,["Under 35","35-44","45-54","55-64","65-74","75-84","85+"]));
MenAllOtherCauseRow = table2array(ProjData2020A1(16,["Under 35","35-44","45-54","55-64","65-74","75-84","85+"]));
WomenAllOtherCauseRow = table2array(ProjData2020A1(17,["Under 35","35-44","45-54","55-64","65-74","75-84","85+"]));

x = categorical(["Under 35","35-44","45-54","55-64","65-74","75-84","85+"]);
x = reordercats(x,["Under 35","35-44","45-54","55-64","65-74","75-84","85+"]);
y = [MenCVDRow(:,1) MenAllOtherCauseRow(:,1) WomenCVDRow(:,1) WomenAllOtherCauseRow(:,1);
    MenCVDRow(:,2) MenAllOtherCauseRow(:,2) WomenCVDRow(:,2) WomenAllOtherCauseRow(:,2);
    MenCVDRow(:,3) MenAllOtherCauseRow(:,3) WomenCVDRow(:,3) WomenAllOtherCauseRow(:,3);
    MenCVDRow(:,4) MenAllOtherCauseRow(:,4) WomenCVDRow(:,4) WomenAllOtherCauseRow(:,4);
    MenCVDRow(:,5) MenAllOtherCauseRow(:,5) WomenCVDRow(:,5) WomenAllOtherCauseRow(:,5);
    MenCVDRow(:,6) MenAllOtherCauseRow(:,6) WomenCVDRow(:,6) WomenAllOtherCauseRow(:,6);
    MenCVDRow(:,7) MenAllOtherCauseRow(:,7) WomenCVDRow(:,7) WomenAllOtherCauseRow(:,7)];
bar(x,y)
title("Death count of CVD against All other causes");
ylabel("Number of deaths");
xlabel("Cardiovascular disease VS All other causes");
legend("Mens CVD", "Mens other causes", "Womens CVD", "Womens other causes")
```



The graph shows that CVD is a more common cause of death than ‘all other causes’ for men between the ages of 55-64, 65-74, 75-84 and 85+. And women from the ages of 65-74, 75-84 and 85+.

QUESTION 4

```
%Q4
MensIllnessRows = table2array(ProjData2020A1([1,4,7,10,13,16],["Under 35","35-44","45-54","55-64","65-74","75-84","85+"]));
WomenIllnessRows = table2array(ProjData2020A1([2,5,8,11,14,17],["Under 35","35-44","45-54","55-64","65-74","75-84","85+"]));

bar(x,MensIllnessRows)
title("Mens Illnesses");
ylabel("Number of deaths");
xlabel("Mens Illnesses");
legend("Cardiovascular Disease","Cancer","Respiratory Disease","Diabetes","Dementia and Alzheimers","All other causes","Location","northwest");


bar(x,WomenIllnessRows)
title("Womens Illnesses");
ylabel("Number of deaths");
xlabel("Womens Illnesses");
legend("Cardiovascular Disease","Cancer","Respiratory Disease","Diabetes","Dementia and Alzheimers","All other causes","Location","northwest");
```

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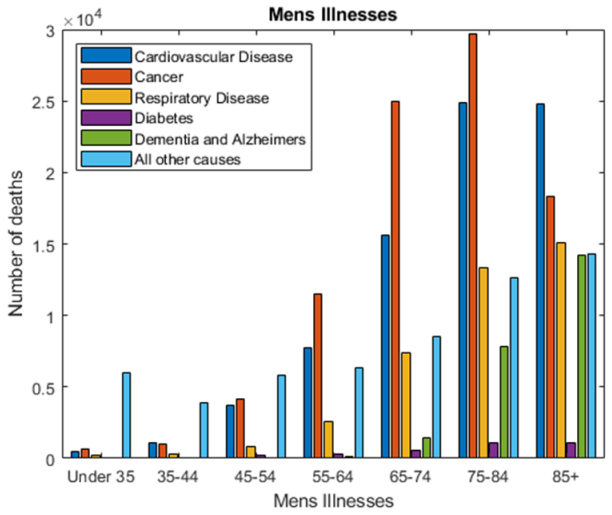
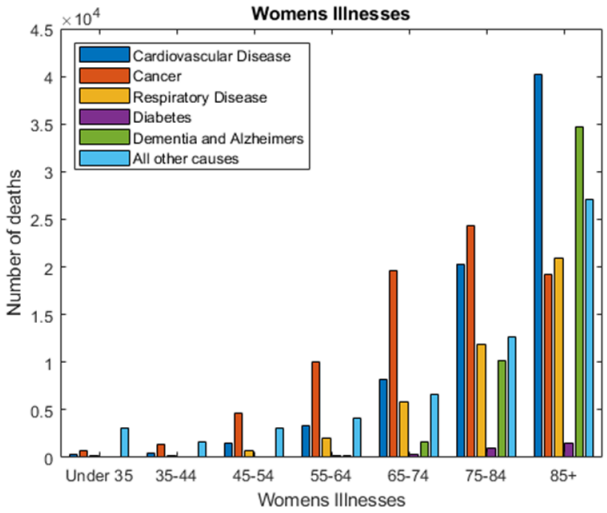
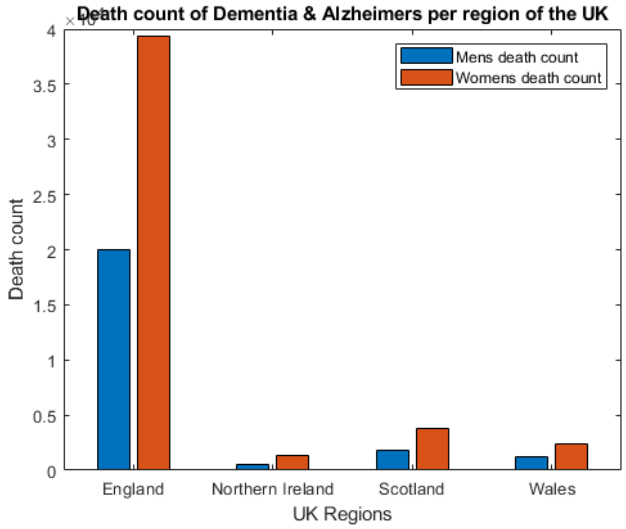





```
ProjData2020A2
MensDAPerRegion = table2array(ProjData2020A2(13,["England","Wales","Scotland","Northern Ireland"]));
WomensDAPerRegion = table2array(ProjData2020A2(14,["England","Wales","Scotland","Northern Ireland"]));
y2 = [MensDAPerRegion(:,1) WomensDAPerRegion(:,1);
    MensDAPerRegion(:,2) WomensDAPerRegion(:,2);
    MensDAPerRegion(:,3) WomensDAPerRegion(:,3);
    MensDAPerRegion(:,4) WomensDAPerRegion(:,4);];
x2 = categorical(["England","Wales","Scotland","Northern Ireland"]);

bar(x2,y2)
title("Death count of Dementia & Alzheimers per region of the UK");
xlabel("UK Regions");
ylabel("Death count");
legend("Mens death count", "Womens death count");
```



QUESTION 5

```
%Q5
UKMensCVDDeath = table2array(ProjData2020A3([1:36],"UK Mens"));
UKWomensCVDDeath = table2array(ProjData2020A3([1:36],"UK Womens"));

p = polyfit(UKMensCVDDeath,UKWomensCVDDeath,1);
f = polyval(p,UKMensCVDDeath);
plot(UKMensCVDDeath,UKWomensCVDDeath,'x',UKMensCVDDeath,f,'-')
title("Correlation in CVD deaths per 100,000 in UK Men and Women from 1981 to 2016")
xlabel("No of Mens CVD deaths per 100,000")
ylabel("No of Womens CVD deaths per 100,000")
```

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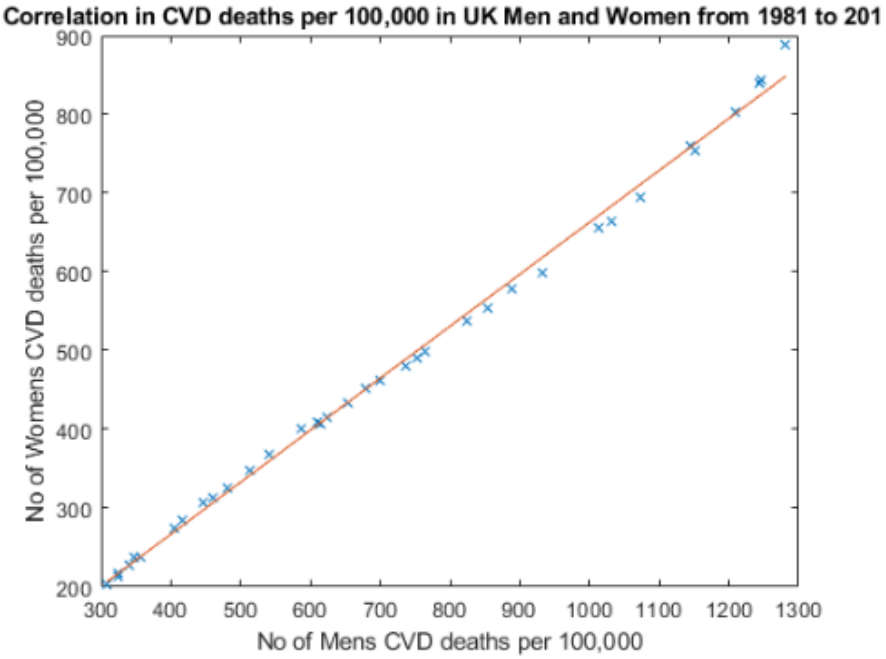

The scatter graph shows a positive correlation between the CVD deaths per 100,000 in men and women that reside in the UK from 1981 to 2016, indicating that it is statistically significant.

QUESTION 6

```
%Q6
ENGMensCVDDeath = table2array(ProjData2020A3([1:36],"ENG Mens"));
ENGWomensCVDDeath = table2array(ProjData2020A3([1:36],"ENG Womens"));
plot(ENGMensCVDDeath,ENGWomensCVDDeath,'x')
hold on
SCOMensCVDDeath = table2array(ProjData2020A3([1:36],"SCO Mens"));
SCOWomensCVDDeath = table2array(ProjData2020A3([1:36],"SCO Womens"));
plot(SCOMensCVDDeath,SCOWomensCVDDeath,'x')
hold off
title("England deaths per 100,000 vs Scotland deaths per 100,000");
xlabel("No of Mens CVD deaths per 100,000");
ylabel("No of Womens CVD deaths per 100,000");
legend("England Deaths per 100,000","Scotland Deaths per 100,000","Location","northwest");
```