Problem Set #2

MACS 30100, Dr. Evans

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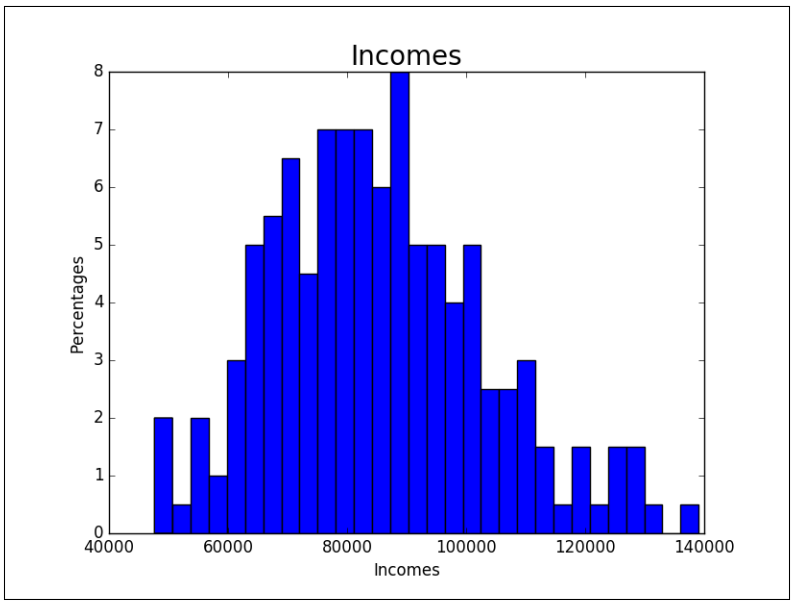
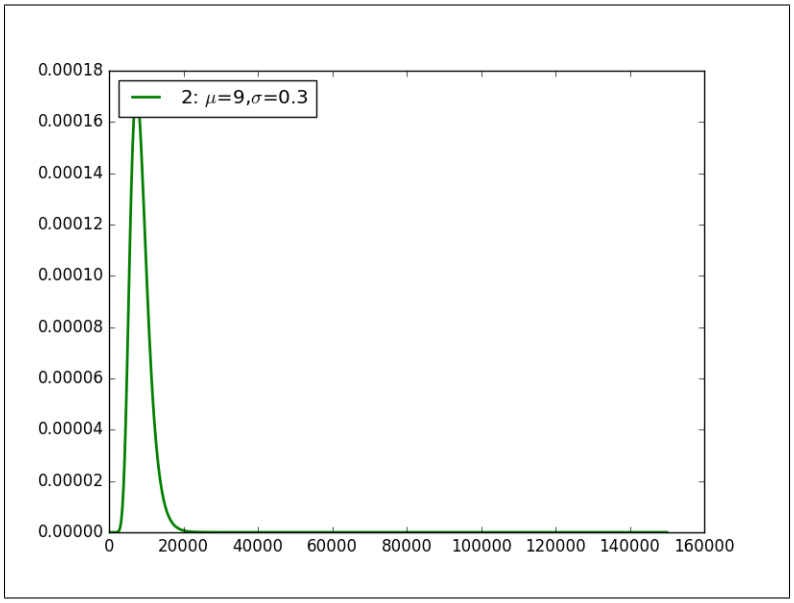
Part 1(a).

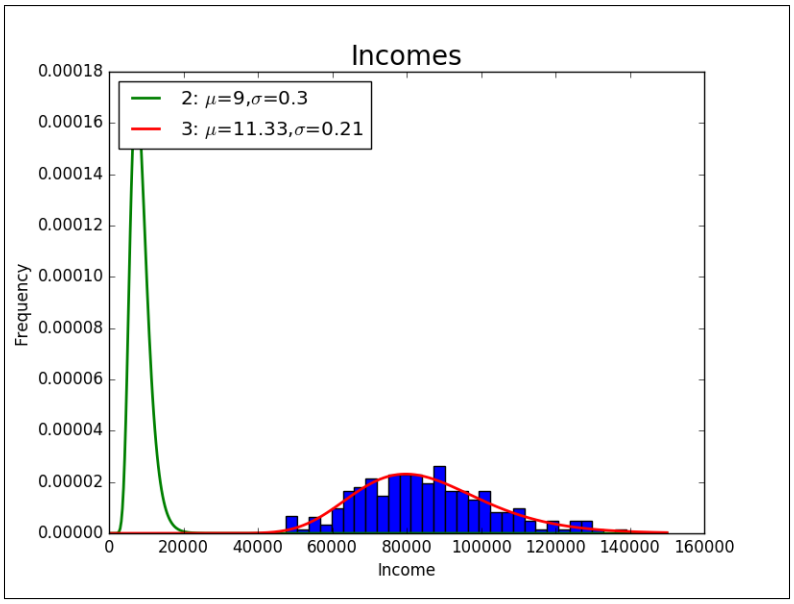


Part 1(b).

Log likelihood = -8298.63695601



Part 1(c).



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MLE mean = 11.3314403301
MLE sigma = 0.211674583829
Log likelihood function value: -2239.534744
Variance/Covarience Matrix:
[0.00014668 0.00017025]
[0.00017025 0.00030278]

Part 1(d).
chi squared of H0 with 2 degrees of freedom p-value = 0.0
We can reject the null hypothesis.

Part 1(e).
Percentage of students will earn more than 100,000: 19.58
Percentage of students will earn less than 75,000: 30.77

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Part 2(a).
Beta0 = 0.252015425596
Beta1 = 0.0129518865934
Beta2 = 0.400302306248
Beta3 = -0.0100091666596
Sigma = 0.0518140029396

The variance-covariance matrix is:

[1. 0. 0. 0. 0.]
[0. 1. 0. 0. 0.]
[0. 0. 1. 0. 0.]
[0. 0. 0. 1. 0.]
[0. 0. 0. 0. 1.]

Log-likelihood: 407.89171935524257

Part 2(b).

chi squared of H0 with 5 degrees of freedom p-value = 0.0

We can reject the hypothesis that age, average temperature and number of children have no effect on sick days