# Problem Set #2

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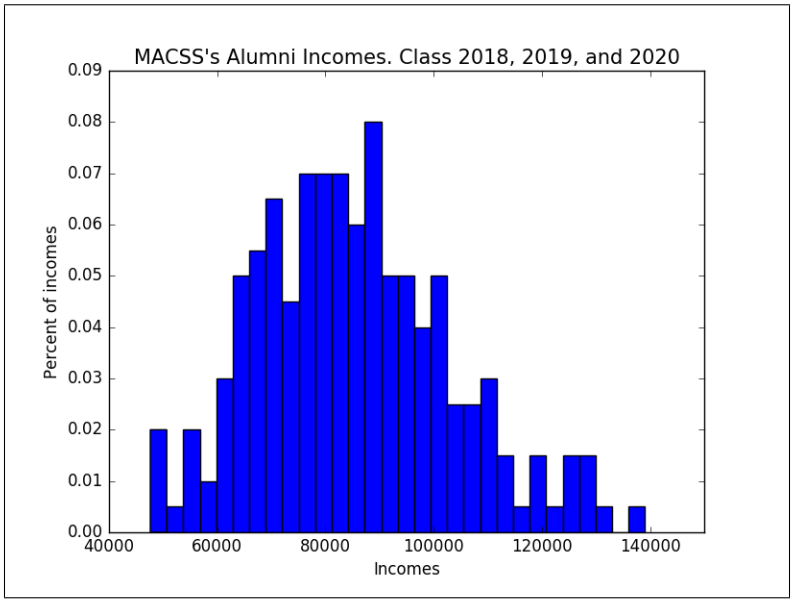
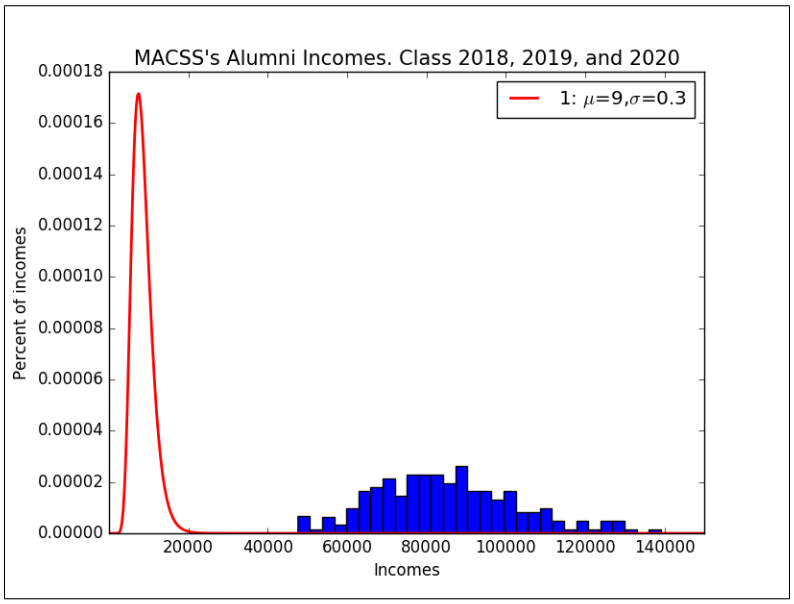
## Problem 1

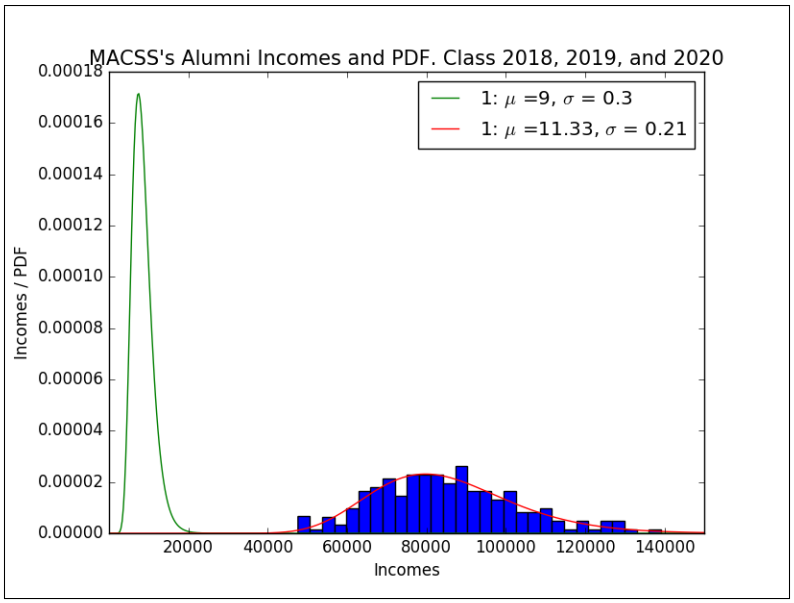
**Part (a).** Histogram




**Part (b).** Log Normal




**Part (c).** Plot




The ML estimate for mu is: 11.3314403337 The ML estimate for sigam is: 0.2116745805 The value of the likelihood function is: 2239.534744 The variance covariance matrix was not reported

**Part (d).** chi squared of H0 with 5 degrees of freedom p-value = 0.0

**Part (e).** The probability of a given MACSS graduate earning more than 100,000 is: 0.196. The probability of a given MACSS graduate earning less than 75,000 is: 0.308.

## Problem 2

**Part (a).**

$\beta_0 = 0.251638279006$ $\beta_1 = 0.012933375689$ $\beta_2 = 0.400501575719$ $\beta_3 =$ -0.00999148530395 $\sigma^2 =$ 9.10199697048e-06

The value of the likelihood function is -1244.4404575458234 The variace covariance matrix is: [[ 6.14366550e-03 -8.70838972e-05 3.66763868e-04 -9.70140279e-05 -9.59700641e-04] [ -1.20289584e-02 -1.49994573e-03 1.46073468e-02 1.11646953e-03 -3.34564177e-03] [ -1.40180891e-03 1.88918325e-05 1.86821306e-04 -1.67073123e-07 -4.67826105e-05] [ 2.10882244e-01 3.79671356e-04 1.18389393e-01 -7.52725417e-03 -1.29225157e-02] [ -5.05874163e-05 -1.79396252e-05 1.55032725e-04 1.18065131e-05 4.24408012e-05]]

**Part (b).**

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