*Write a paragraph explaining how the variances of each component compare with each other. In this paragraph, you will address the following question: how much variance is explained by Component 1, Component 2, Component 3?*

The eigenvalues from PCA are in descending order. The leading principal components can explain higher portions of the variance of the dataset than the rest of the principal components. Component 1 can explain 27.69%, Component 2 can explain 20.95% and Component 3 can explain 19.09%

*h. How do the variances of each component compare? In other words, how much variance is explained by Component 1, Component 2, Component 3, etc.?*

Component 1 can explain 81.86%, Component 2 can explain 15.30% and Component 3 can explain 2.29%

*How does the screeplot from the uncorrelated data compare with the screeplot from the government data?*

Screeplot from the uncorrelated data is relatively flat, while for government data, the screeplot show a steep decline in principal components.

Since the uncorrelated data are uncorrelated, meaning for the standardized matrix, the off-diagonal are closer to 0. So the standardized matrix is "similar" to an identity matrix. As a result Eigenvalues are close to 1 and as a result the variance explained are relatively similar .Thus the screeplot is quite flat.

Unlike uncorrelated data, government data are often correlated, so we can expect the off-diagonal is different from 0. As opposite to uncorrelated data, the Eigenvalues will be different. As a result some eigenvalues will be significantly higher than some, as a result we could have a steeper screeplot.