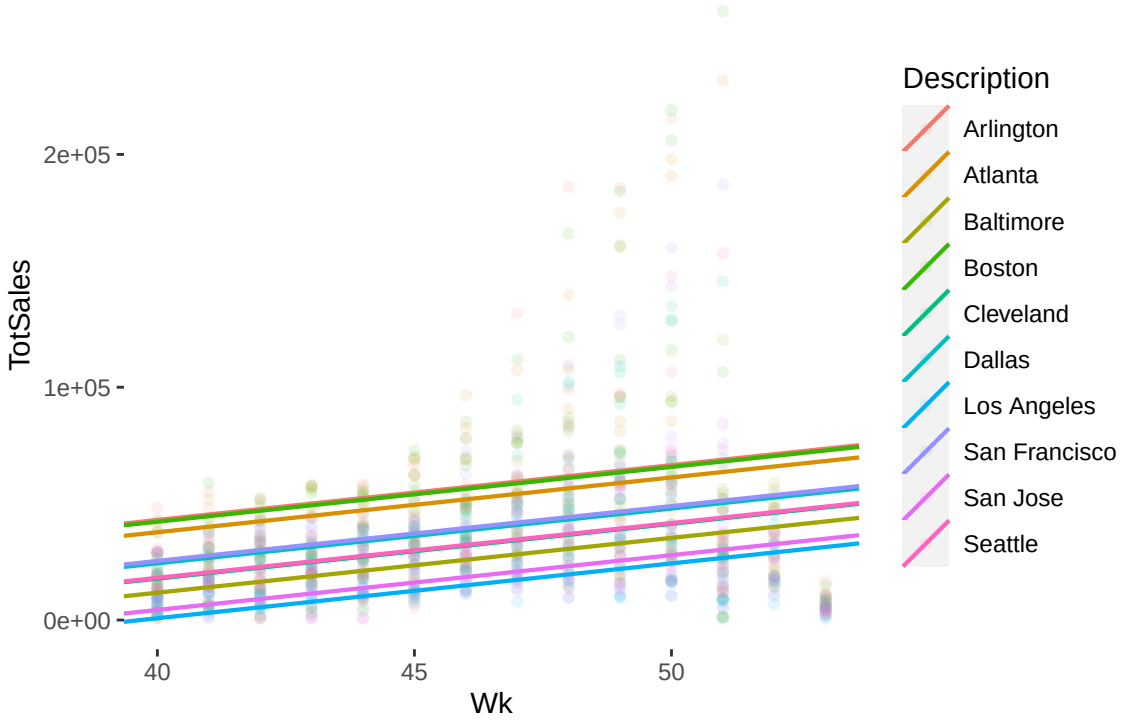
Bayesian Modeling Regression-Simple Homework

Building a Simple Bayesian Regression Model

1. Load the data from last weeks homework *(the SalesTrans, Q4).*
2. Build a model in LM using the formula: TotSales ~ Wk + Description.
3. Build a dataframe and organize the parameters as shown below:

Description	Intercept	Slope
Arlington	-51201.20	2354.665
Atlanta	-56482.81	2354.665
Baltimore	-82439.59	2354.665
Boston	-51960.80	2354.665
Cleveland	-76406.34	2354.665
Dallas	-69838.76	2354.665
Los Angeles	-93407.42	2354.665
San Francisco	-68790.56	2354.665
San Jose	-89863.70	2354.665
Seattle	-76050.13	2354.665

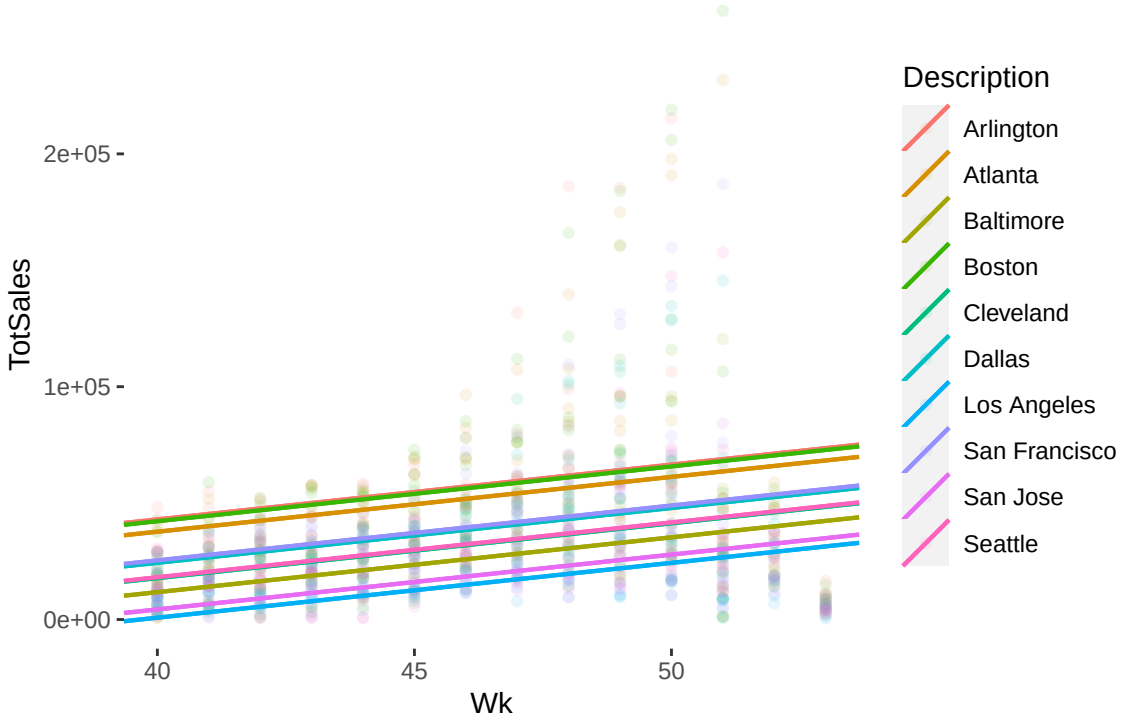
4. Create a visualization as shown below:



5. Now, create a Baysian model, using the lm parameters as priors. Show both sets of parameters in a dataframe as shown below:

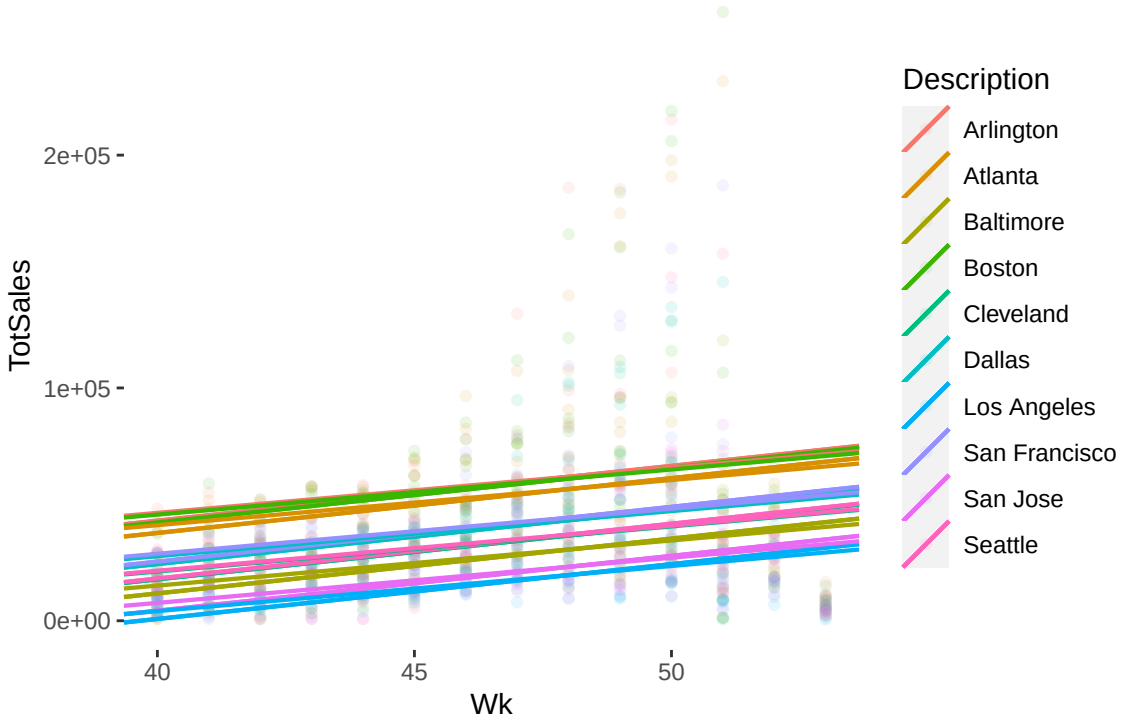
Description	Intercept	Slope	Intercept1	Slope1
Arlington	-51201.20	2354.665	-51201.12	2354.655
Atlanta	-56482.81	2354.665	-56481.42	2354.655
Baltimore	-82439.59	2354.665	-82441.88	2354.655
Boston	-51960.80	2354.665	-51960.65	2354.655
Cleveland	-76406.34	2354.665	-76406.42	2354.655
Dallas	-69838.76	2354.665	-69839.24	2354.655
Los Angeles	-93407.42	2354.665	-93408.97	2354.655
San Francisco	-68790.56	2354.665	-68791.45	2354.655
San Jose	-89863.70	2354.665	-89863.21	2354.655
Seattle	-76050.13	2354.665	-76048.74	2354.655

6. Now show the Bayesian models on the same plot as lm:



7. Finally, adjust the priors for the model - increase the intercept parameters by 20K *(be sure and use a "tight" sigma on the priors - maybe 100)*

Description	Intercept	Slope	Intercept1	Slope1	AdjIntercept	Intercept2	Slope2
Arlington	-51201.20	2354.665	-51201.12	2354.655	-31201.20	-31203.42	1938.635
Atlanta	-56482.81	2354.665	-56481.42	2354.655	-36482.81	-36484.17	1938.635
Baltimore	-82439.59	2354.665	-82441.88	2354.655	-62439.59	-62439.89	1938.635
Boston	-51960.80	2354.665	-51960.65	2354.655	-31960.80	-31963.46	1938.635
Cleveland	-76406.34	2354.665	-76406.42	2354.655	-56406.34	-56406.69	1938.635
Dallas	-69838.76	2354.665	-69839.24	2354.655	-49838.76	-49837.38	1938.635
Los Angeles	-93407.42	2354.665	-93408.97	2354.655	-73407.42	-73405.64	1938.635
San Francisco	-68790.56	2354.665	-68791.45	2354.655	-48790.56	-48790.18	1938.635
San Jose	-89863.70	2354.665	-89863.21	2354.655	-69863.70	-69864.54	1938.635
Seattle	-76050.13	2354.665	-76048.74	2354.655	-56050.13	-56051.77	1938.635


TotSales
2e+05
1e+05
0e+00
40
45
50
Wk
Description
Arlington
Atlanta
Baltimore
Boston
Cleveland
Dallas
Los Angeles
San Francisco
San Jose
Seattle