

Liquor & Locations



“Perfect” Store Location



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graph LR; A[Data] --> B[Insights]; B --> C[Model]; C --> D[Inference]; D --> E[Locations];
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Data

Insights

Model

Inference

Locations

DATA

Jan 2015 - Mar 2016

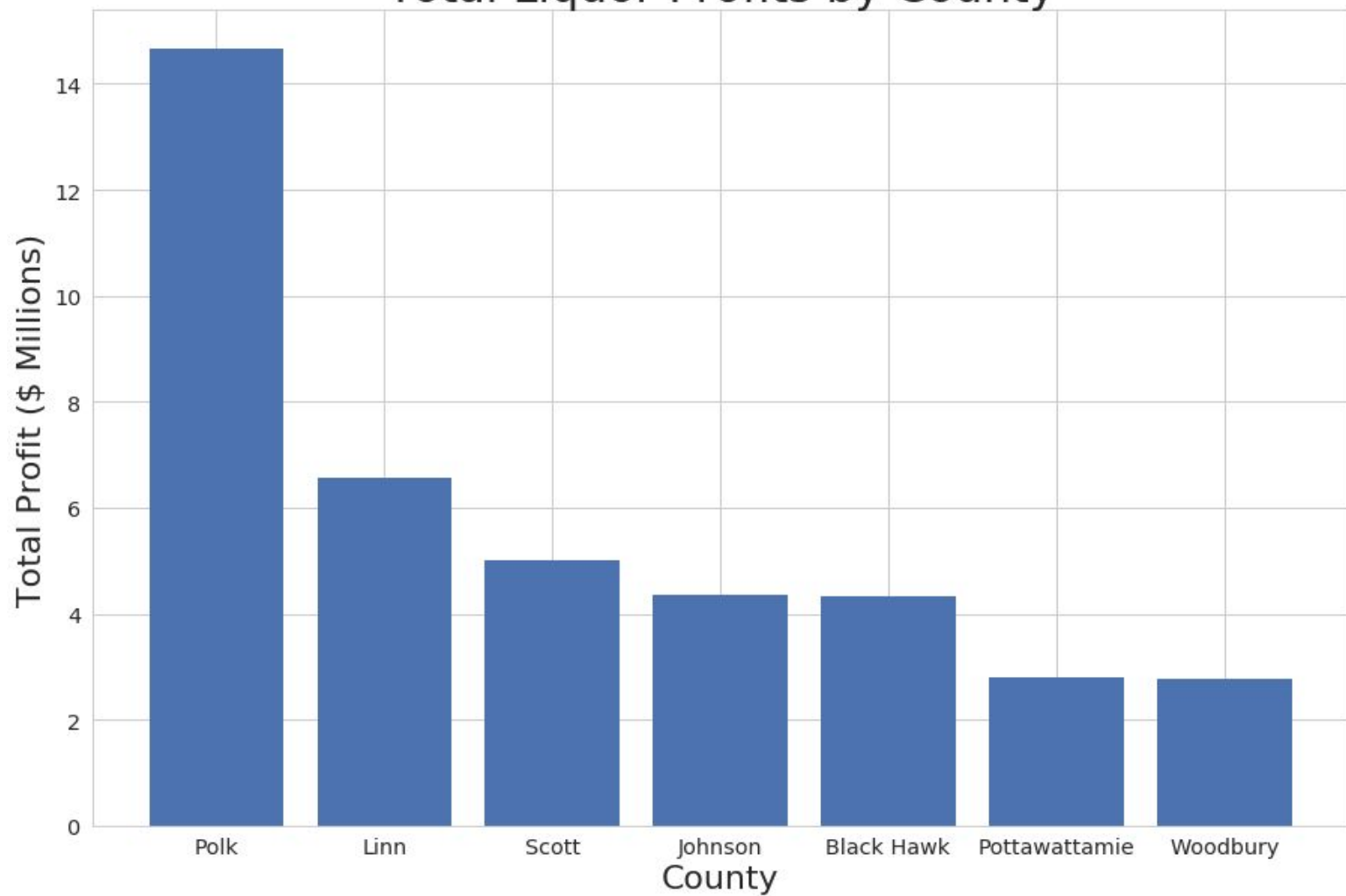
Transaction

Median

Bottles Sold	Sale (Dollars)	Volume Sold (Liters)	Profit	Price per Bottle
6	67.14	4.5	22.38	11.88

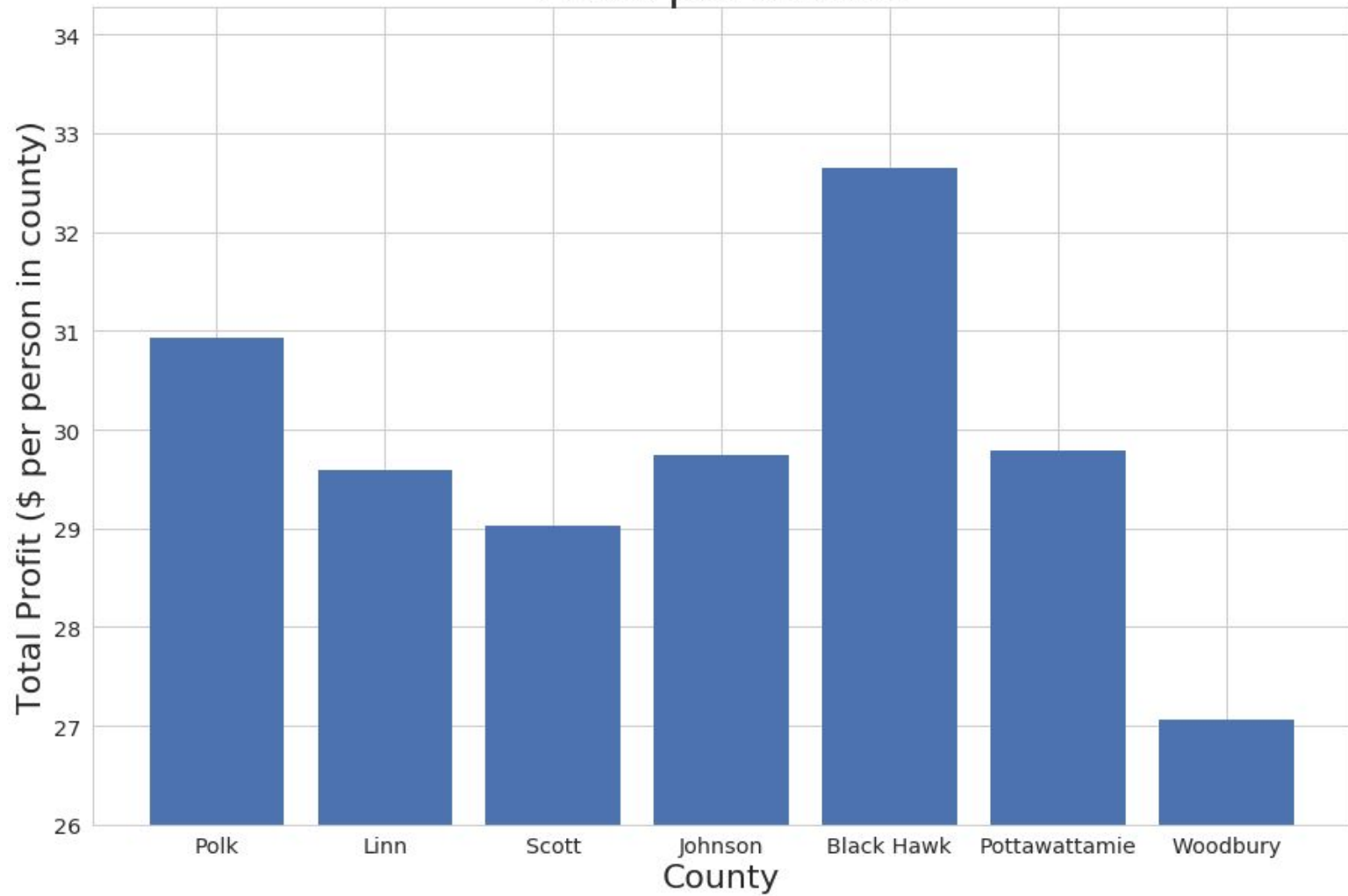
INSIGHTS

Total Liquor Profits by County

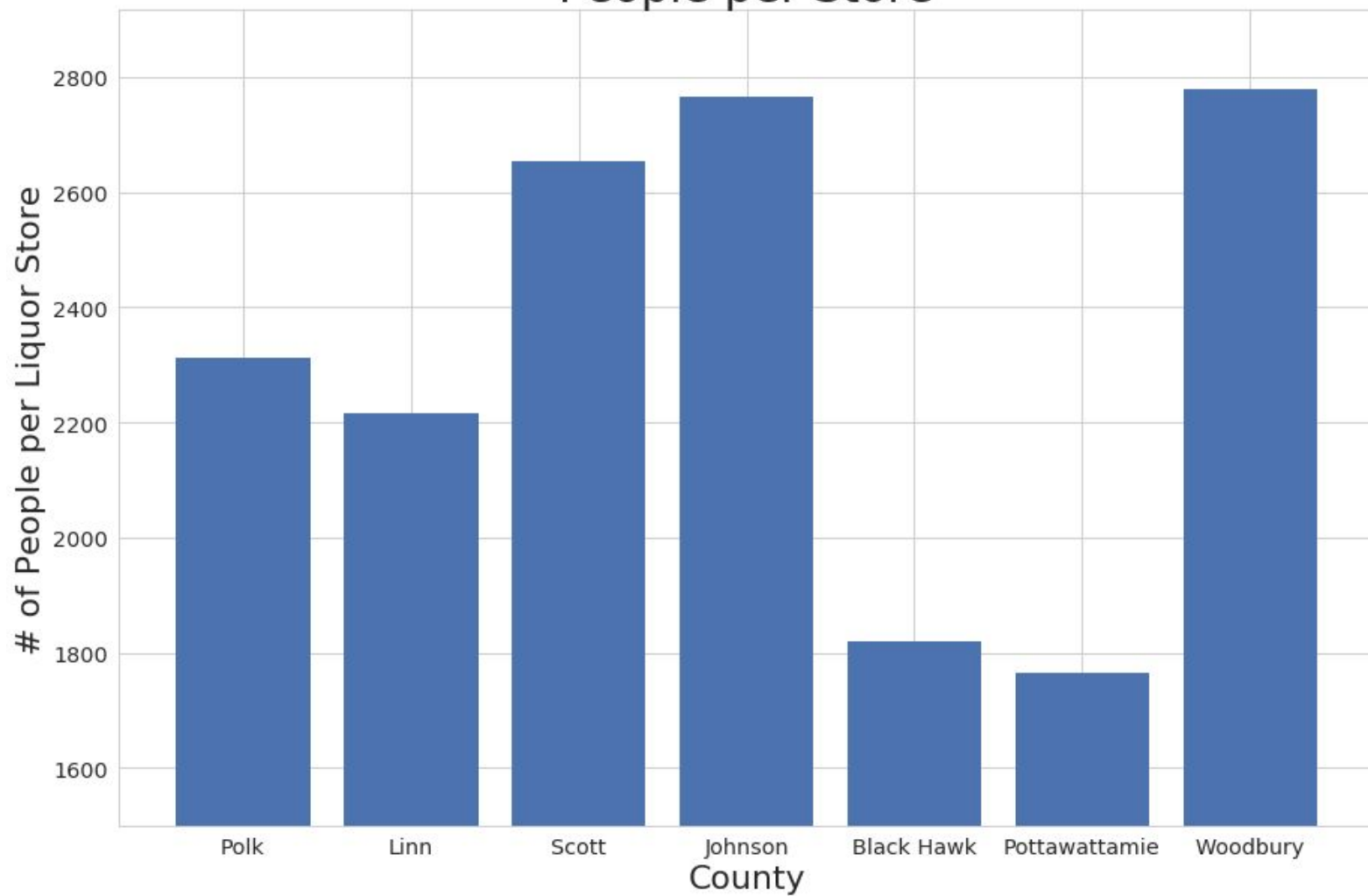


TOP STORE	COUNTY	TOTAL PROFIT
Central City 2	Polk	\$946k
Hy-Vee Iowa City	Johnson	\$681k
Benz Distributing	Linn	\$533k
Lot-A-Spirits	Scott	\$509k
Hy-Vee Council Bluff	Pottawattamie	\$456k
Charlies Wine And Spirits	Woodbury	\$330k
Hy-Vee Cedar Falls	Black Hawk	\$303k

Profit per Person



People per Store



MODEL

County Bottles Sold Price per Bottle

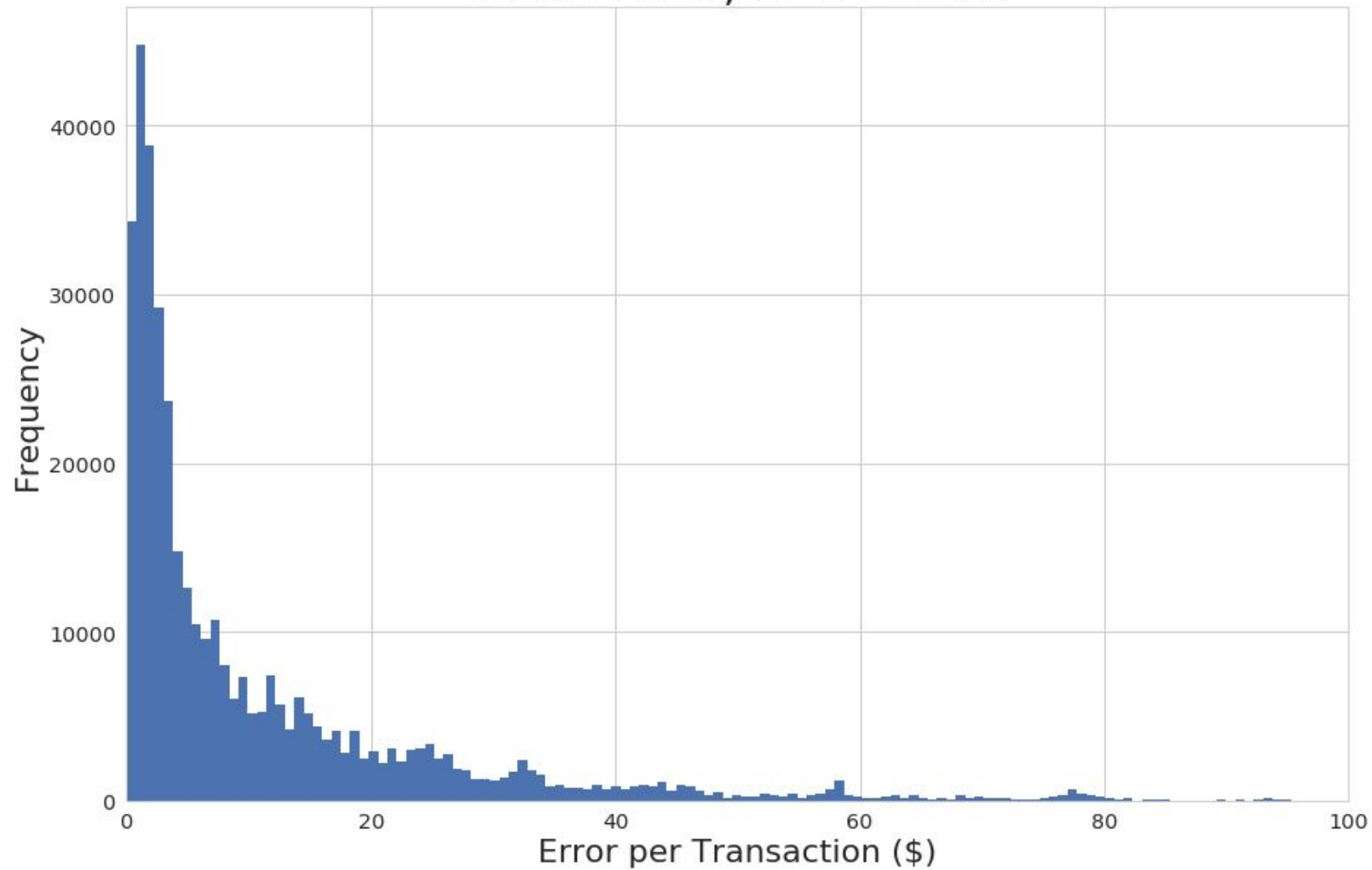
OLS Regression Results

Dep. Variable:	Profit	R-squared:	0.584
Model:	OLS	Adj. R-squared:	0.584
Method:	Least Squares	F-statistic:	1.554e+05
Date:	Thu, 08 Feb 2018	Prob (F-statistic):	0.00
Time:	19:38:07	Log-Likelihood:	-3.8295e+06
No. Observations:	886078	AIC:	7.659e+06
Df Residuals:	886069	BIC:	7.659e+06
Df Model:	8		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
const	-16.5462	0.072	-228.735	0.000	16.688	-16.404
Bottles Sold	2.4197	0.003	956.044	0.000	2.415	2.425
Price per Bottle	1.9287	0.002	817.317	0.000	1.924	1.933
County_Johnson	3.6509	0.085	43.156	0.000	3.485	3.817
County_Linn	1.6172	0.074	21.787	0.000	1.472	1.763
County_Polk	1.5334	0.066	23.157	0.000	1.404	1.663
County_Pottawattamie	2.8398	0.094	30.266	0.000	2.656	3.024
County_Scott	0.7829	0.080	9.786	0.000	0.626	0.940
County_Woodbury	2.6565	0.096	27.596	0.000	2.468	2.845

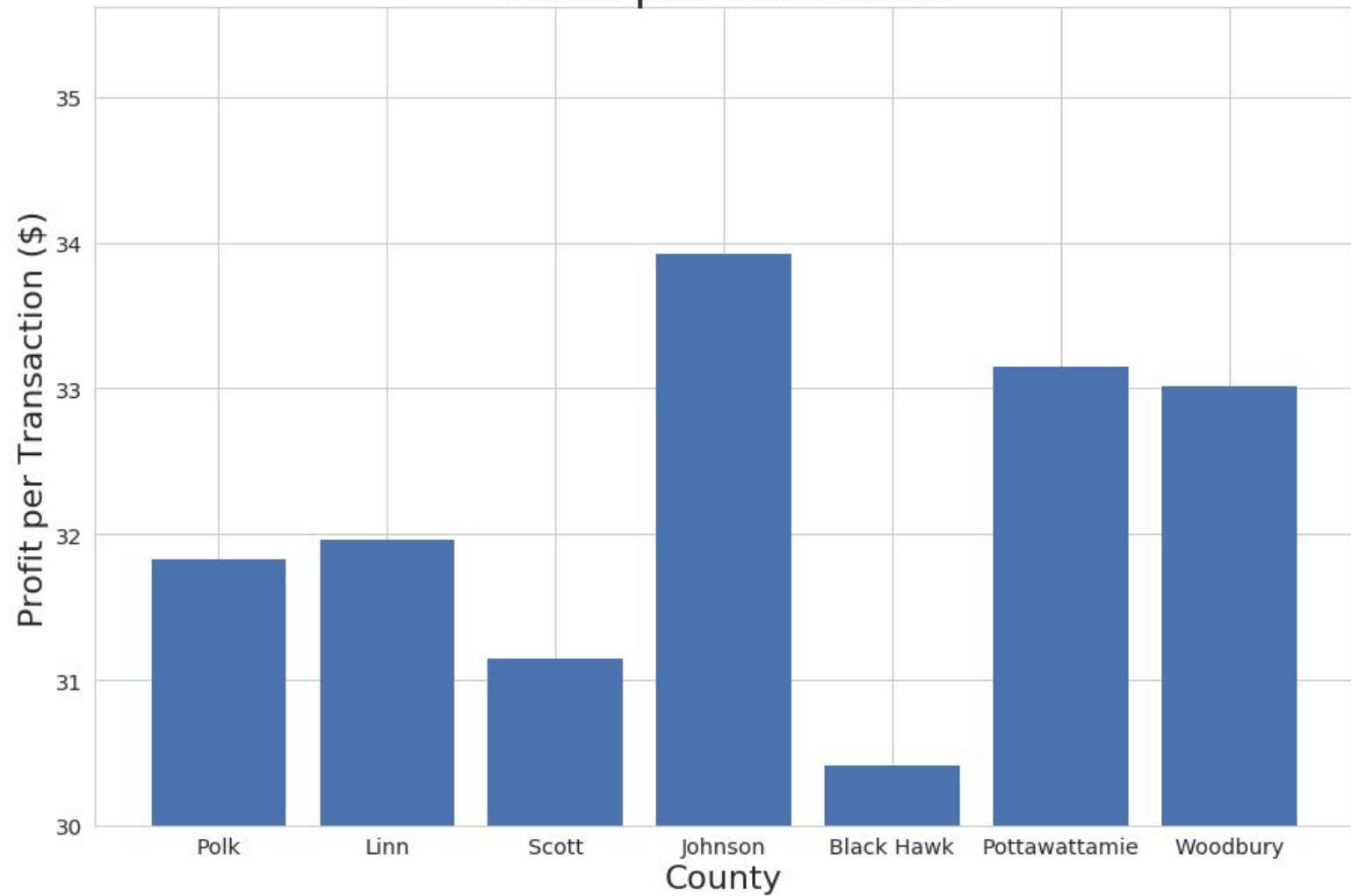
Omnibus:	106360.372	Durbin-Watson:	1.998
Prob(Omnibus):	0.000	Jarque-Bera (JB):	971238.116
Skew:	-0.233	Prob(JB):	0.00
Kurtosis:	8.108	Cond. No.	151.

Model Error, $R^2 = 0.58$



INFERENCE

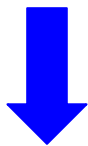
Profit per Transition



LOCATIONS

	Polk	Linn	Scott	Johnson	Black Hawk	Pottawattamie	Woodbury
Profit per Person	30.93	29.59	29.03	29.74	32.64	29.79	27.06
People per Store	2312	2217	2653	2765	1821	1766	2778
(Predicted) Profit per Transaction	31.83	31.96	31.14	33.92	30.41	33.15	33.01

	Polk	Linn	Scott	Johnson	Black Hawk	Pottawattamie	Woodbury
Profit per Person	0.95	0.91	0.89	0.91	1	0.91	0.83
People per Store	0.83	0.8	0.96	1	0.66	0.64	1
(Predicted) Profit per Transaction	0.94	0.94	0.92	1	0.9	0.98	0.97



Polk

Linn

Scott

Johnson

Black Hawk

Pottawattamie

Woodbury

Score

0.74

0.68

0.79

0.91

0.59

0.57

0.81

RANK

4

5

3

1

6

7

2

FUTURE

- Improvements
 - Future predictions using ~one year's worth a data? Doesn't make sense
 - +10 years of history to produce trends
 - More features
 - Should measure what's important according to the store's business model
 - Throughput rate?
 - Include other losses
 - Alcohol tax rate per county
 - Weighting scoring variables

QUESTIONS