Predicting the Impact of the Great Recession on Housing Prices in Ames, Iowa

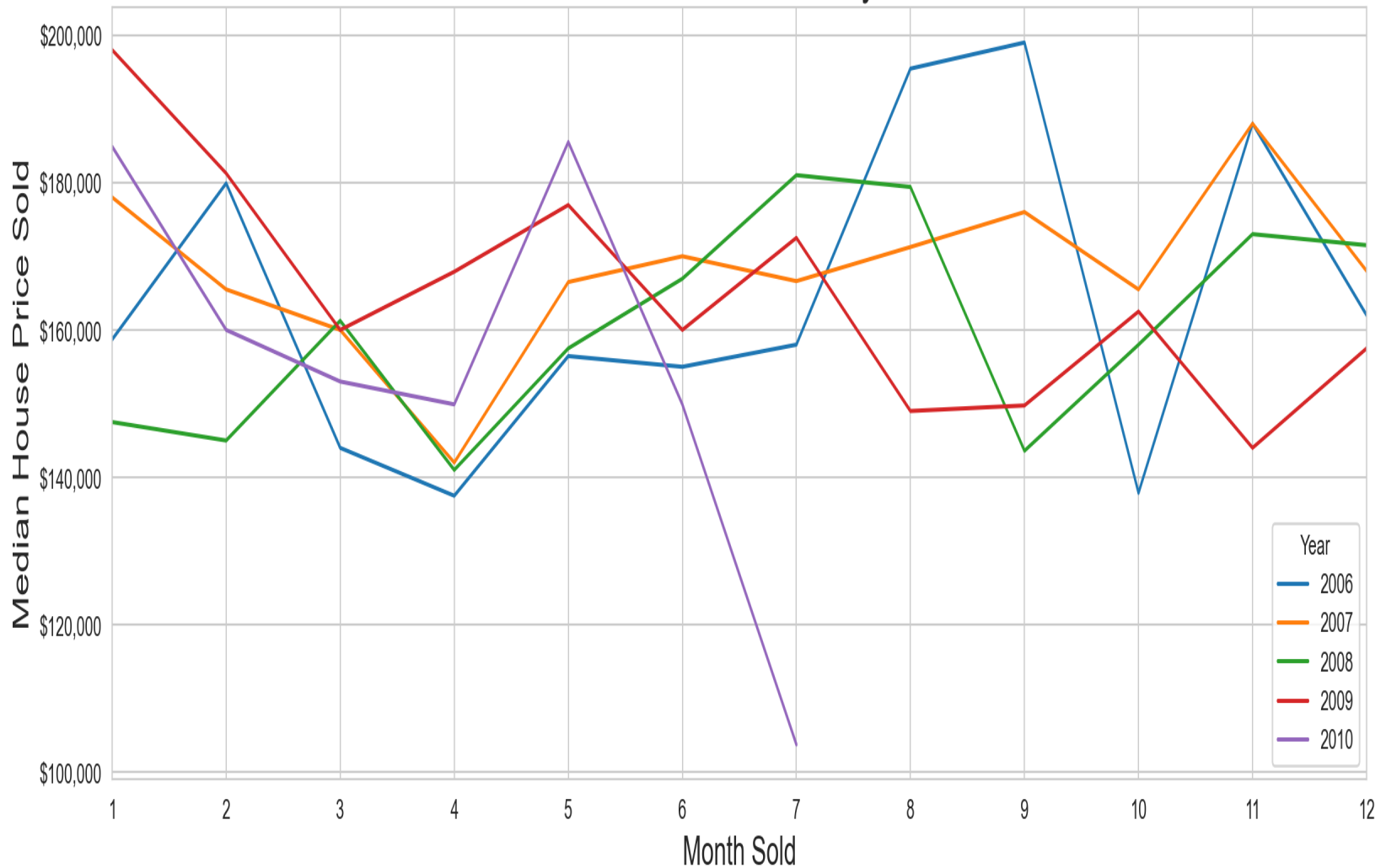**David Kanevsky, DSB 318**

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Number of Houses Sold and Average Price by Year
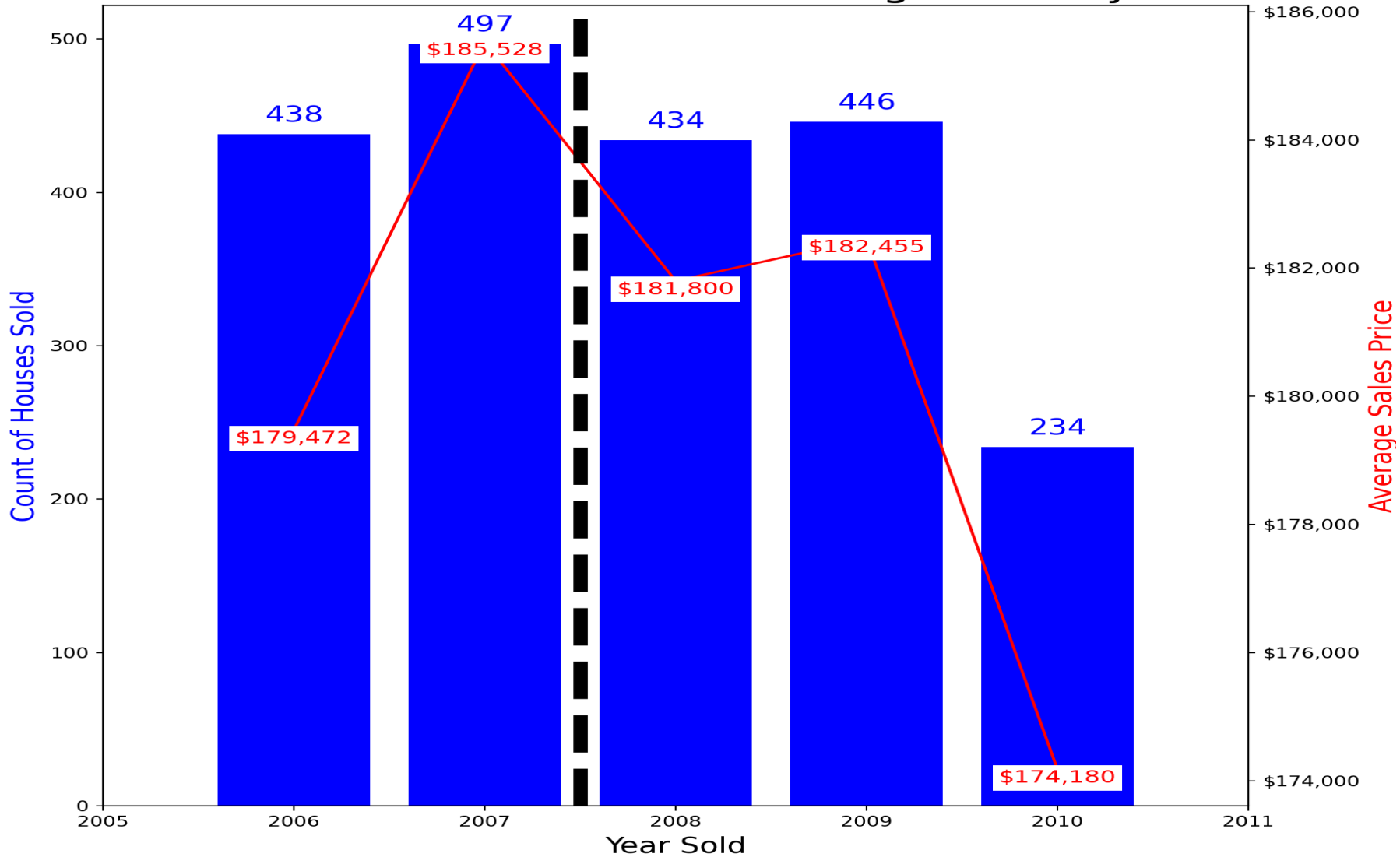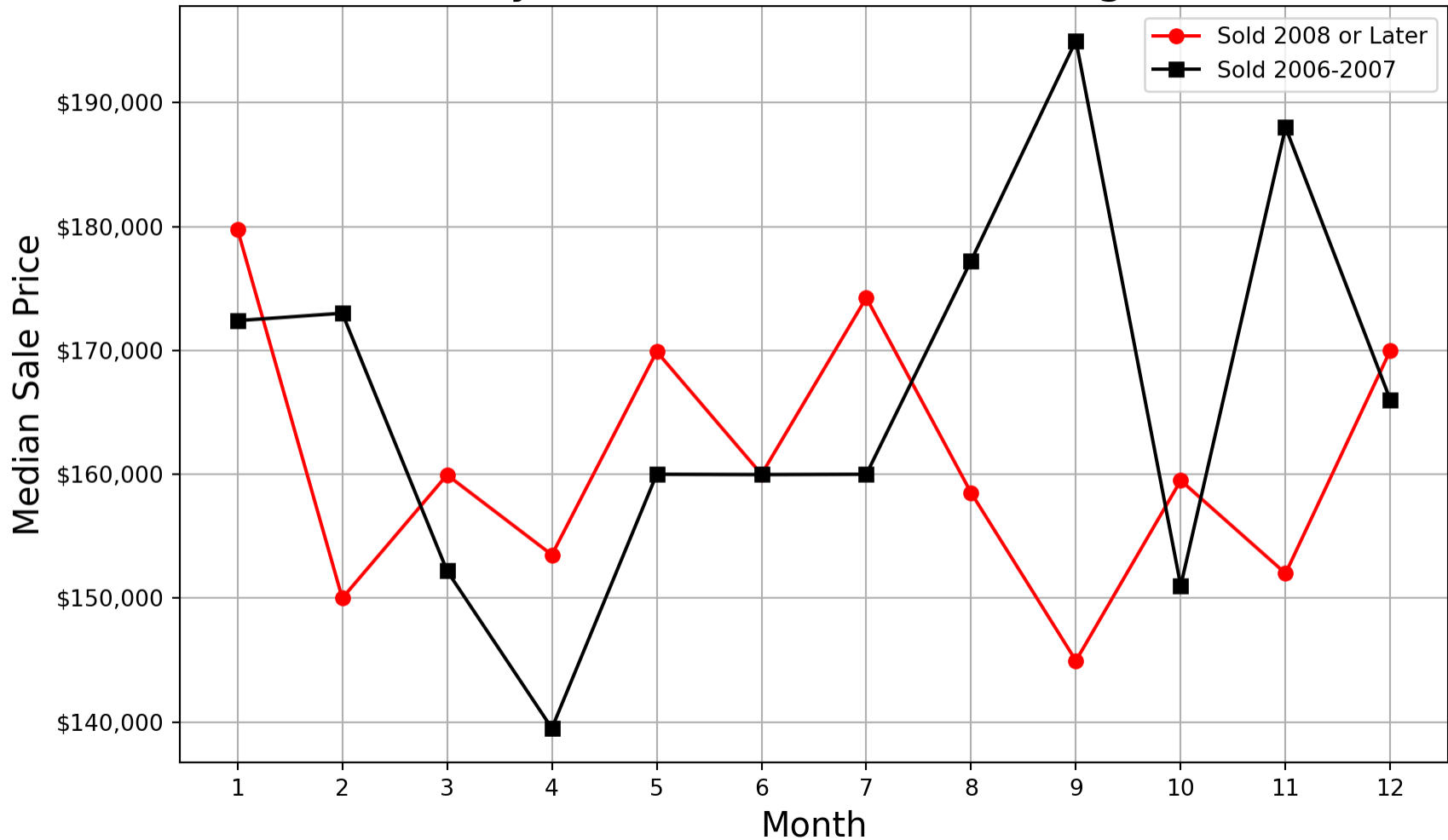
Number of Houses Sold
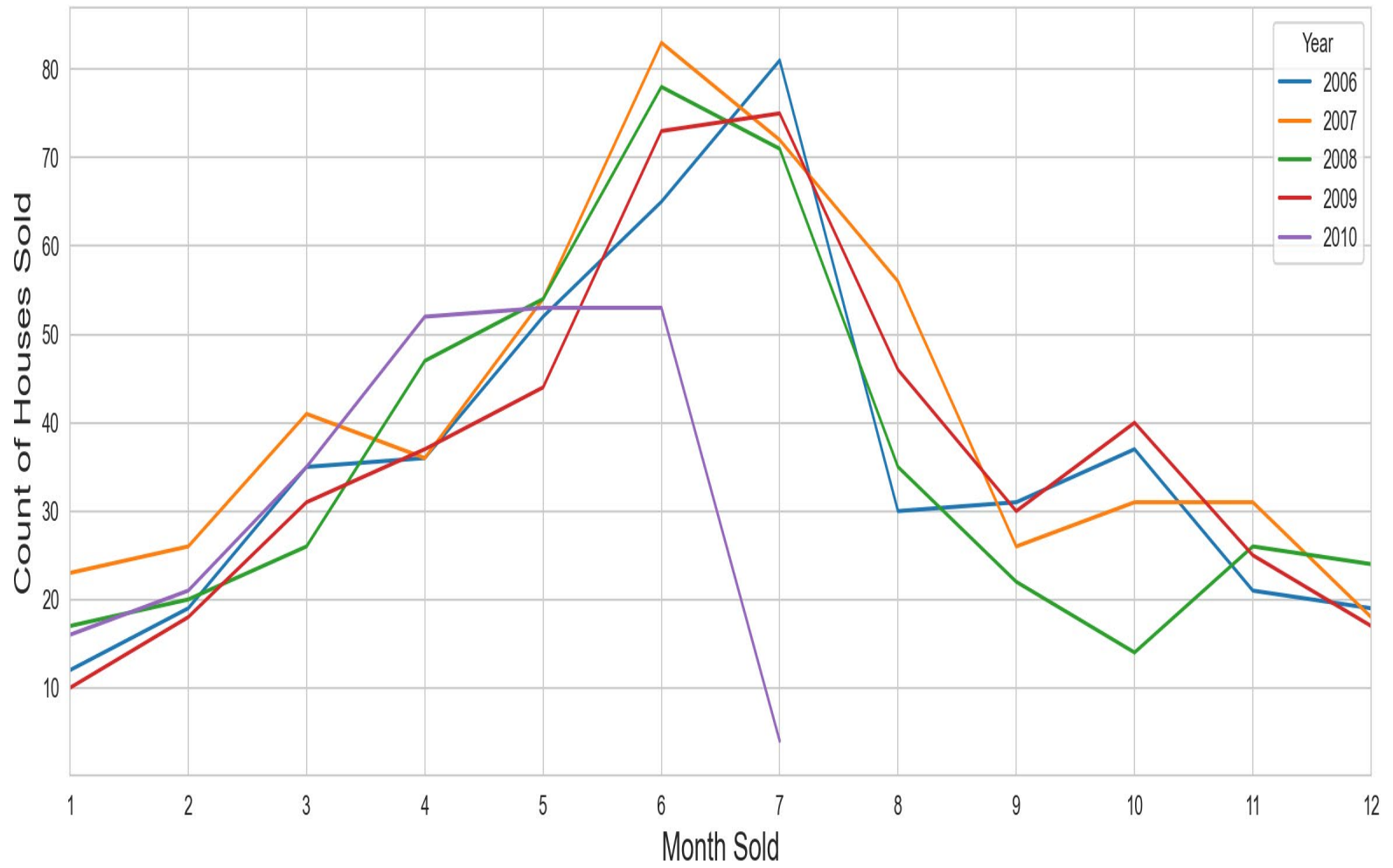
Median Price of House Sold by Month/Year

Median Sale Price by Month Before and During the Financial Crisis

Features Included	Type	Model Name	Test R2	Cross Val Score	RMSE
All numeric data	Linear	lr_numeric	0.893625759	0.880251084	26072.03331
All numeric data with correlation above 0.3 with sale price	Linear	lr	0.900415555	0.861109395	26084.79677
All numeric data with correlation above 0.3 with sale price and standard scaler applied	Linear	lr_scaled	0.879580406	0.871789197	27363.83485
Just categorical variables	Linear	lr_dum	-9.97E+23	-2.24E+23	7.45E+16
7 variables in categorical data	Linear	lr_fewer_dum	-1.29E+24	-2.24E+23	8.20E+16
All numeric data with correlation above 0.3 with sale price and 7 categorical variables	Linear	lr_comb	0.889319921	0.88696376	26460.13761
All numeric data with correlation above 0.3 with sale price and 7 categorical variables	Ridge	ridge	0.887633063	0.889432765	288119.3649
All numeric data with correlation above 0.3 with sale price and 7 categorical variables	Lasso	lasso	0.888093796	0.887033096	26606.29802
All numeric data and 7 categorical variables	Linear	lr_filt_num_cat	0.8967885	0.896964052	24462.88528
All numeric data and 7 categorical variables, without "Sold in Crisis"	Linear	lr_drop_crisis	0.912964927	0.89162179	24363.70671
All numeric data and 7 categorical variables using a standard scaler	Linear	ols	-1.05955E+12	-1.67854E+11	78379736980

Conclusions and Recommendations

- A house being sold during the financial crisis (2008 or later) has limited impact on predicting the price of a house in Ames, IA in part because other variables like the year it's sold is accounting for it in the model. We're better off not including that variable in the model.

- To really see the impact of the financial crisis on housing prices, would want to look at a longer time window – before 2006 and after 2010, to look at impact of financial crisis on housing prices.

- Would also want to adjust housing prices to reflect changes in CPI / purchasing power. For example, 2009 prices slightly higher than 2008 and 2006 (but lower than 2007), but higher prices in 2009 may be lower in purchase power due to inflation.