Ames Housing Data/ Kaggle Challenge

DSI - 13 Project_2

Julian Broche - East Coast cohort

I've been hired by Grimes Asphalt & Paving to explore the Ames Iowa dataset, in order to solicit customers within the city limits of Ames, Iowa.

I support an iOS App/Marketing campaign utilizing EDA and Predictive MODEL

Problem Statement

Does paving your driveway lead to statistically significant higher valuation overall and offset cost?

Let's find out……

Qualitative Findings

- Often **overlooked** feature of a home

- Value is partially determined by the surrounding neighborhood, if your homes driveway is in bad shape and all others are in good shape, your home will have a **lower perceived value**

- Usually paving a driveway will give you a return of **AT LEAST** the cost of it being installed

- The average asphalt driveway costs about between **$2,924 - $6,549** to install

- While it increases the value of your home, a nice paved driveway can also help sell your home **FASTER**

Grass Create

Source: manarolla-creat.com

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Quantitative Findings
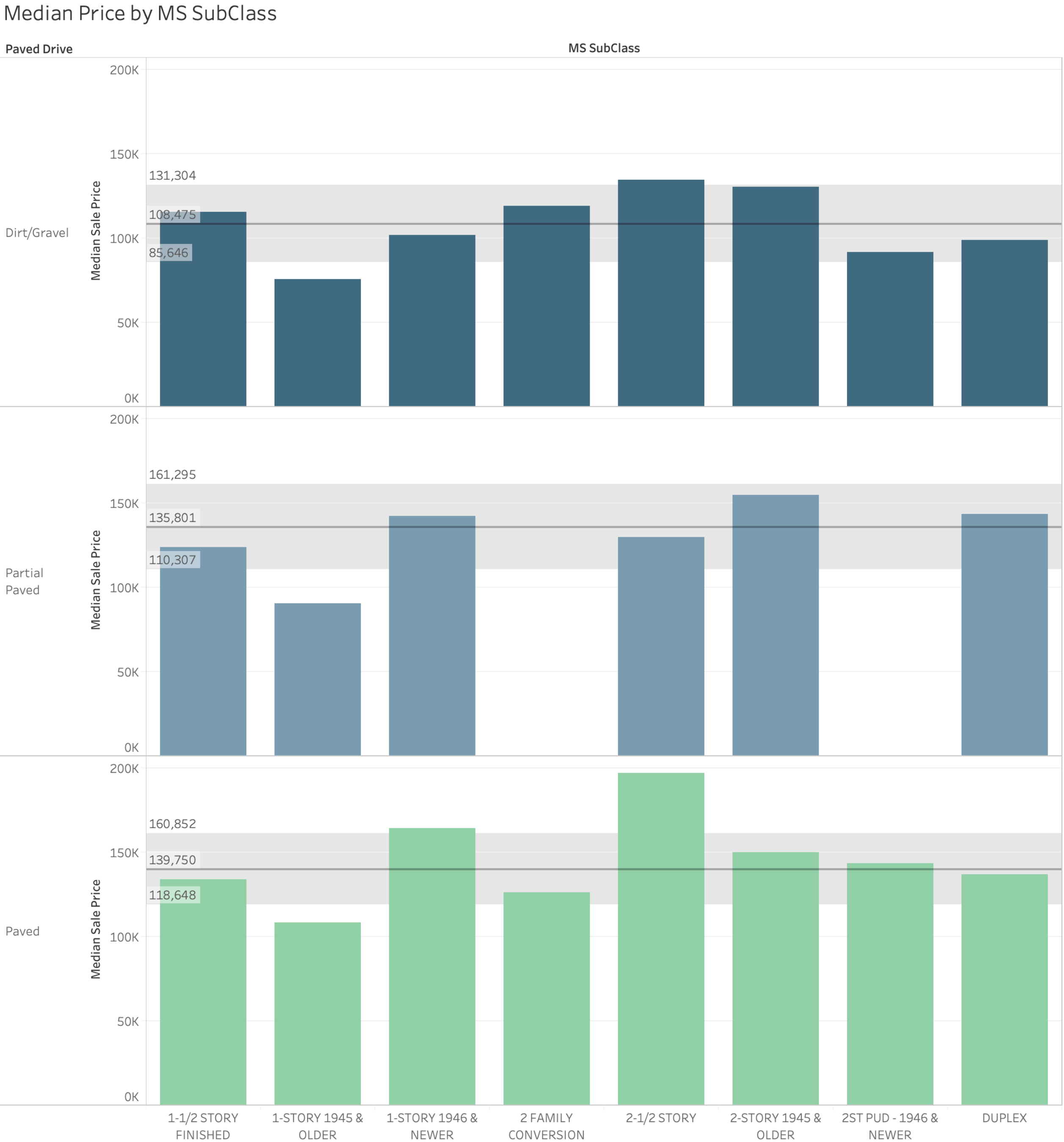
Does data support initial qualitative research?

Overall Paving Equates to Higher Valuation

Confidence Intervals for Paved, Partial Paved and Unpaved Driveways by MS_SubClass show statistical significance

95% CI for Paved = ~$119k - $161k

95% CI for Partial = ~$110k - $161k

95% CI for Dirt/Gravel = ~$86k - $131k

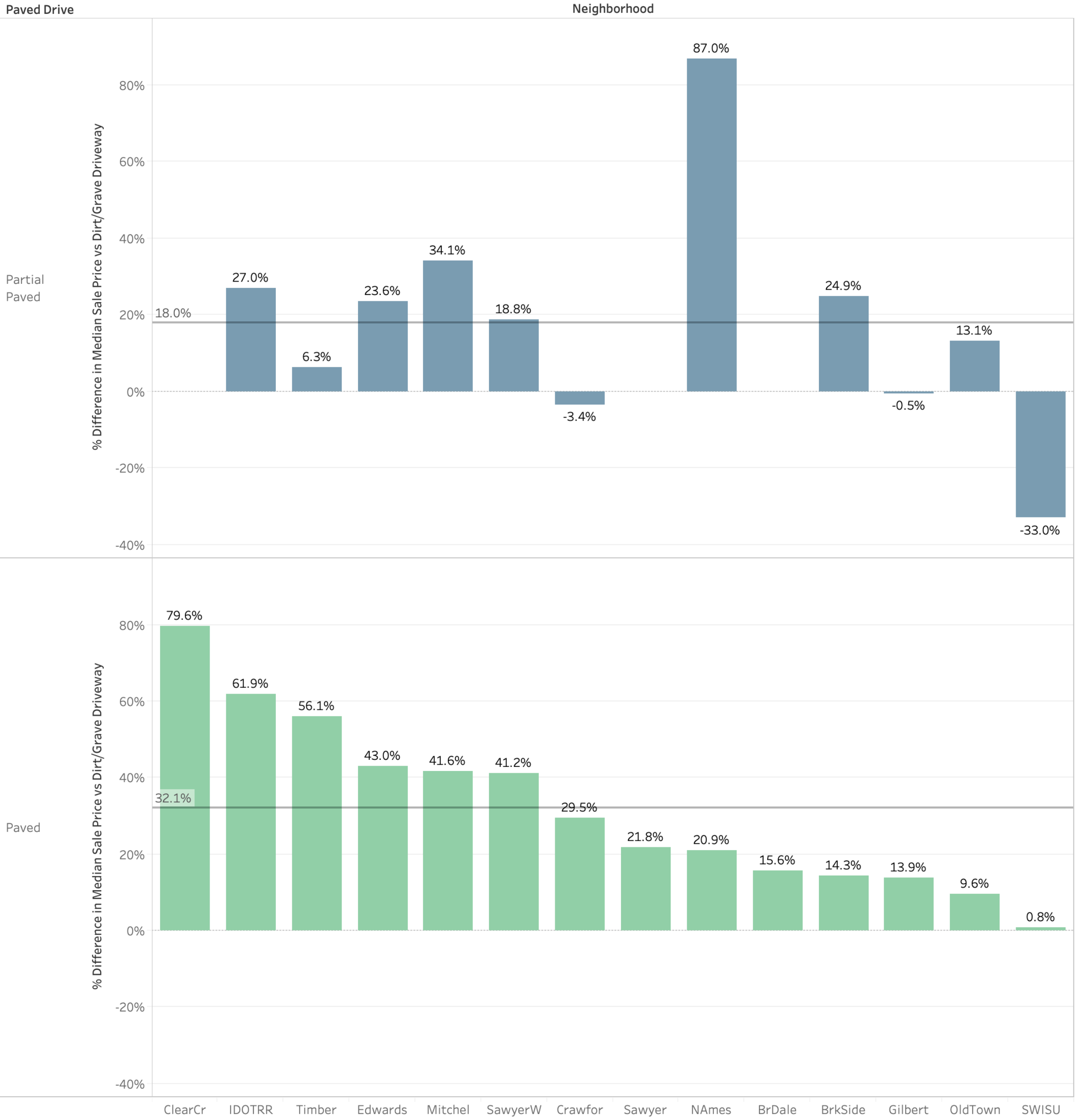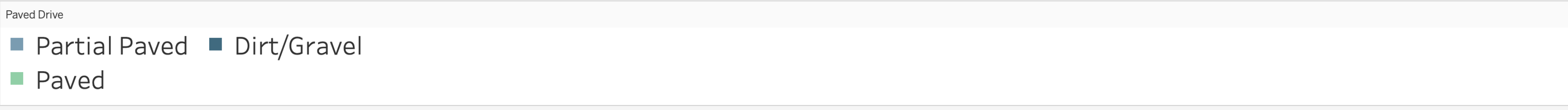Median Price by MS SubClass

What the D*ff?

Homes with Paved and Partial Paved driveways on average are higher by 32% and 18% respectively, compared to homes in the same neighborhood
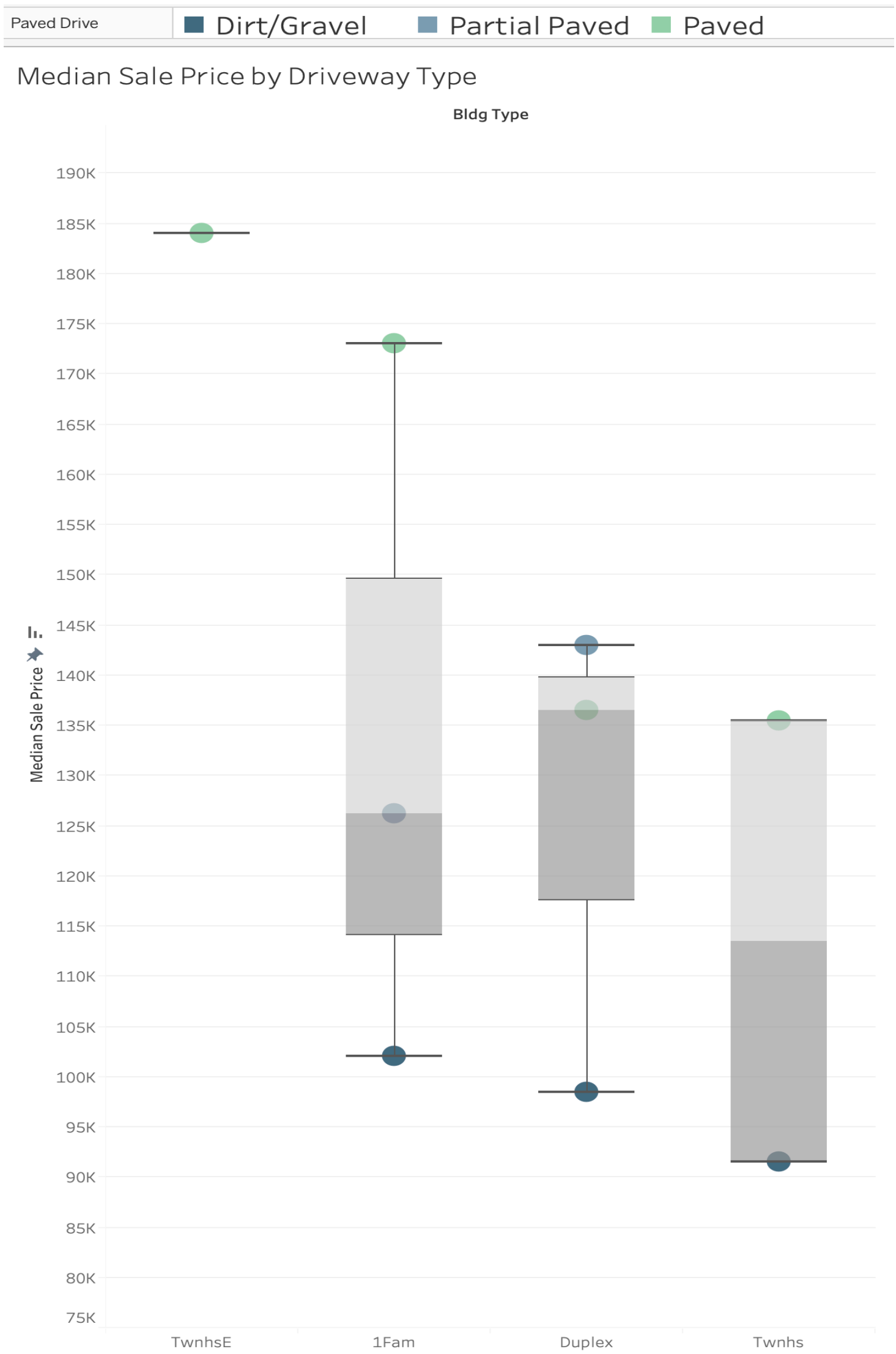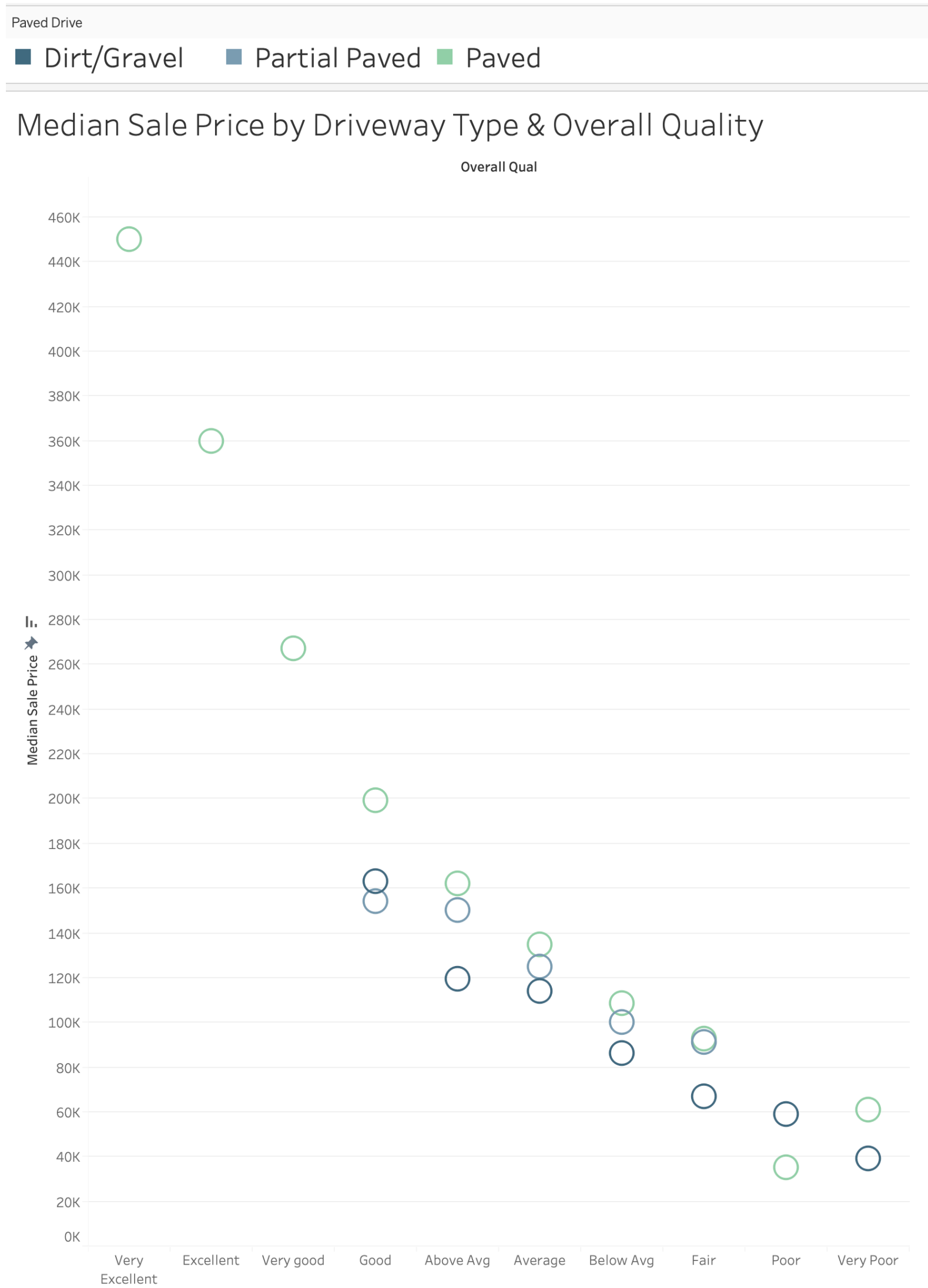
Paved Drive
■ Partial Paved   ■ Paved

Median Price By Neighborhood

Paved Drive   Neighborhood

Partial Paved — % Difference in Median Sale Price vs Dirt/Grave Driveway:
- 18.0% (reference line)
- 27.0%
- 6.3%
- 23.6%
- 34.1%
- 18.8%
- -3.4%
- 87.0%
- 24.9%
- -0.5%
- 13.1%
- -33.0%

Paved — % Difference in Median Sale Price vs Dirt/Grave Driveway:
- 32.1% (reference line)
- 79.6%
- 61.9%
- 56.1%
- 43.0%
- 41.6%
- 41.2%
- 29.5%
- 21.8%
- 20.9%
- 15.6%
- 14.3%
- 13.9%
- 9.6%
- 0.8%

Neighborhoods: ClearCr, IDOTRR, Timber, Edwards, Mitchel, SawyerW, Crawfor, Sawyer, NAmes, BrDale, BrkSide, Gilbert, OldTown, SWISU

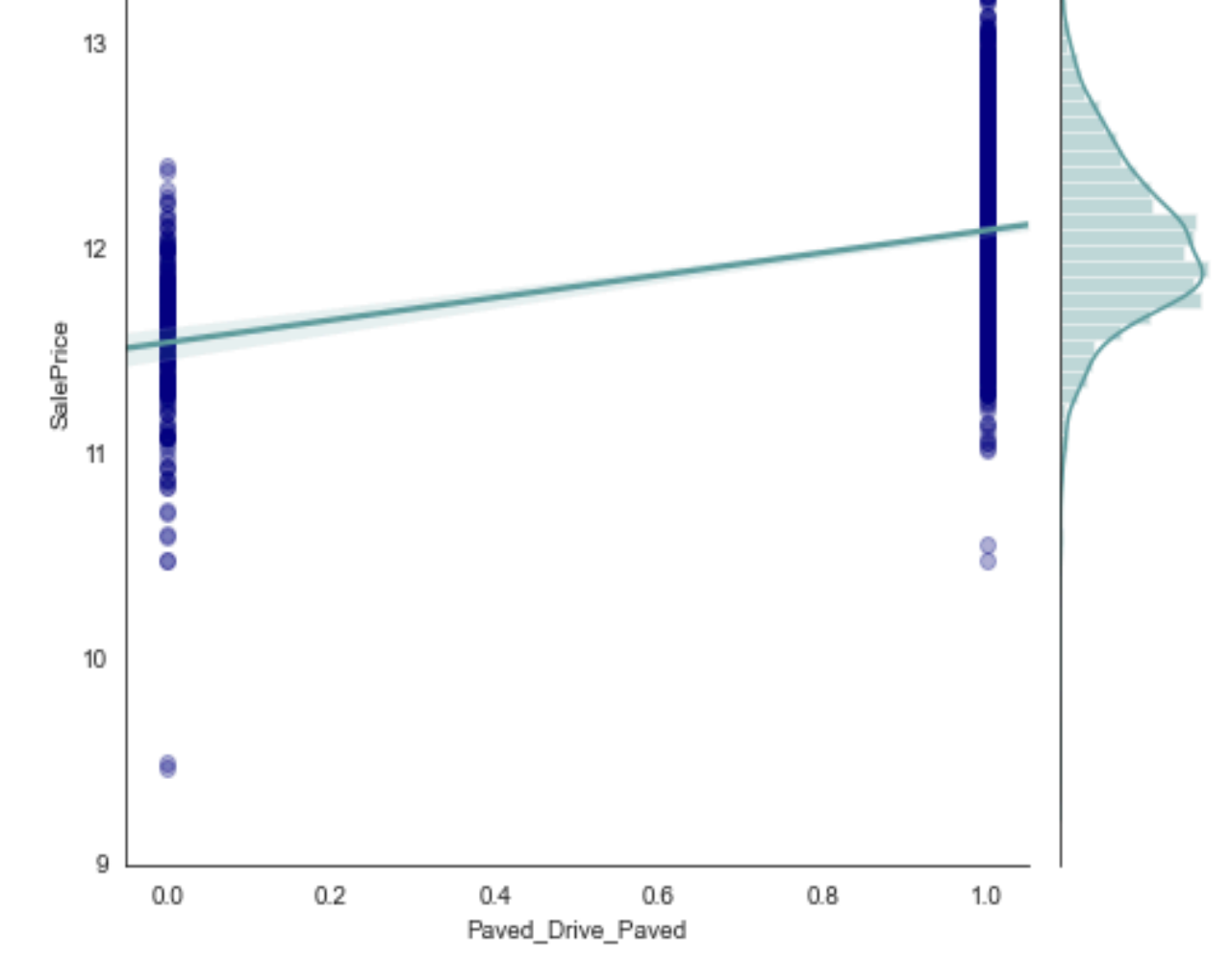Since the 50's things are looking up for Paved Drive Ways

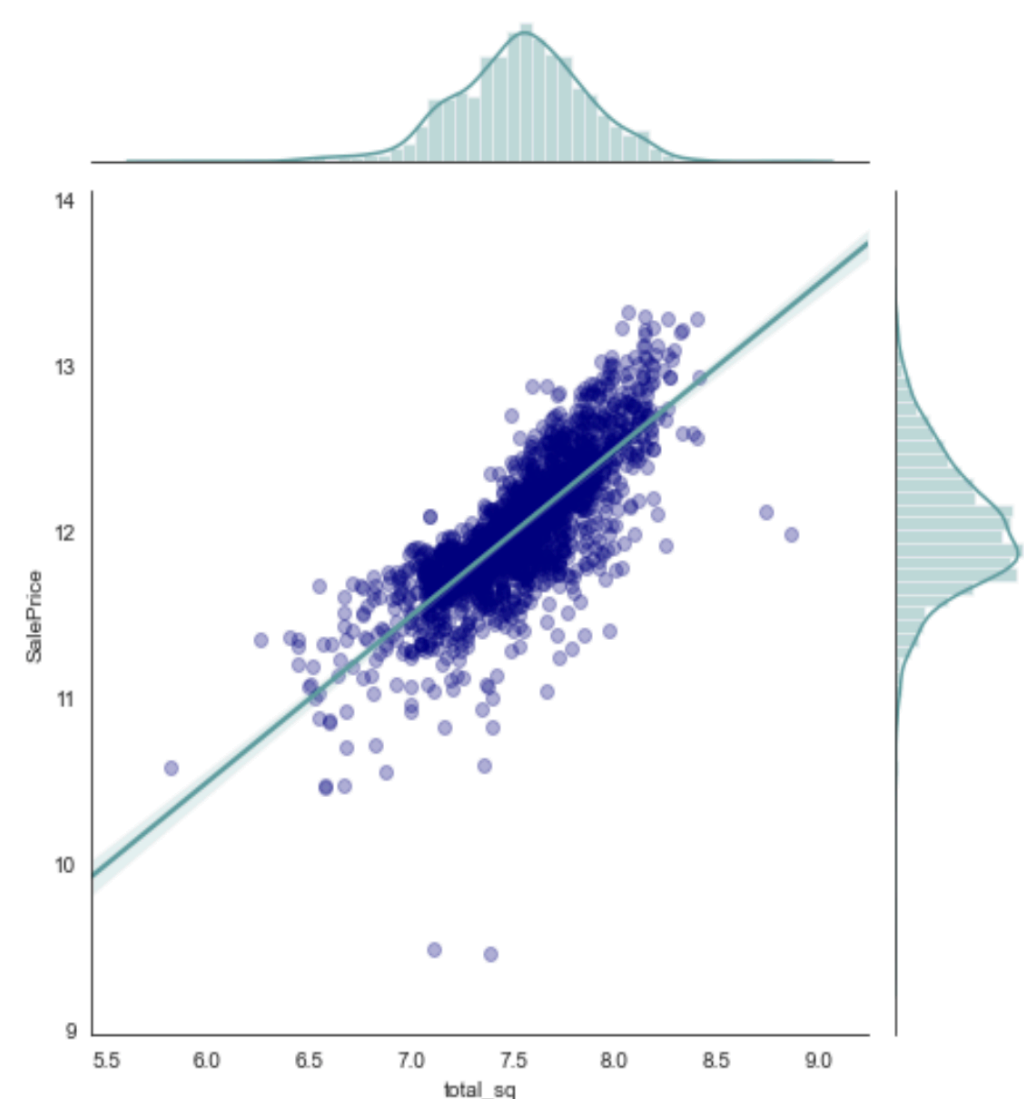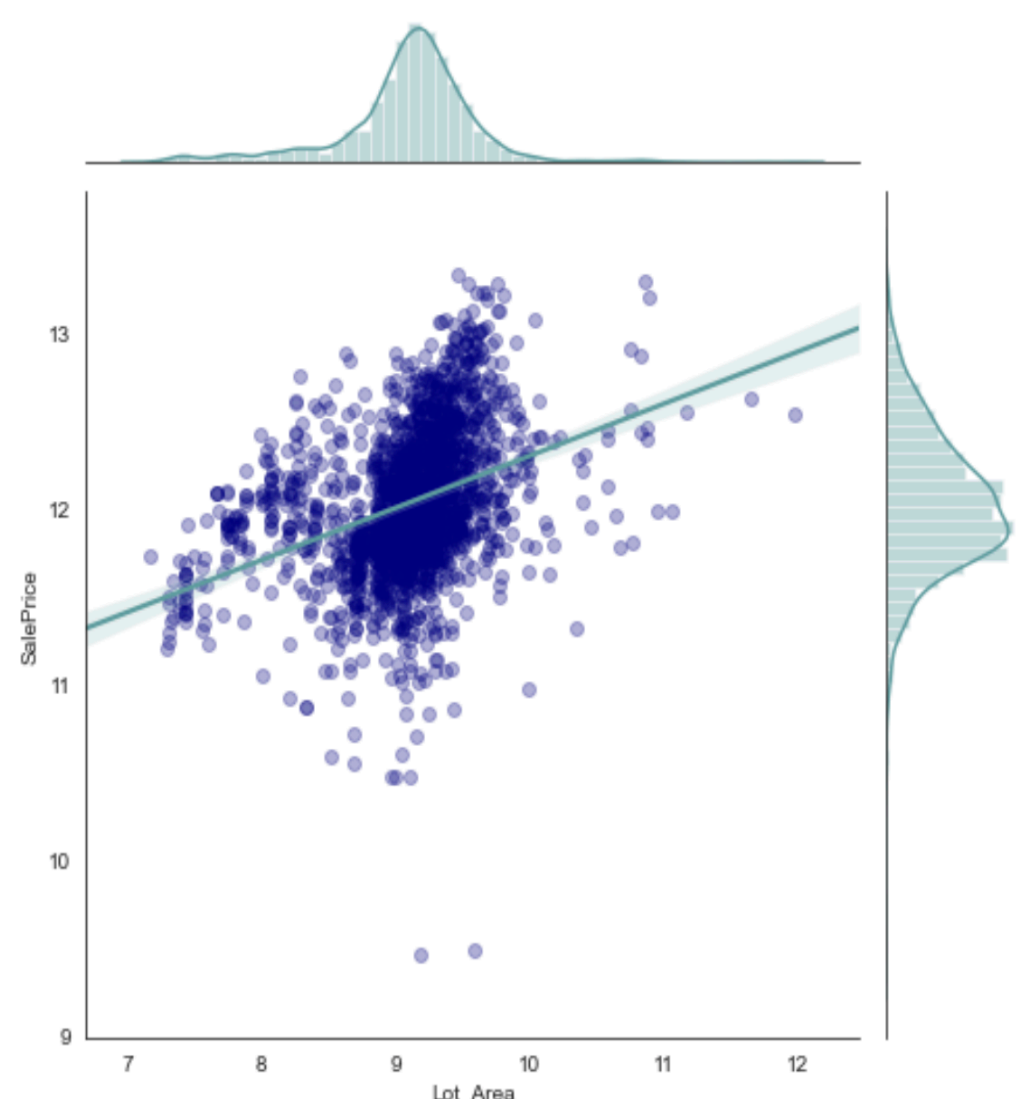# Plot on Plots on Plots

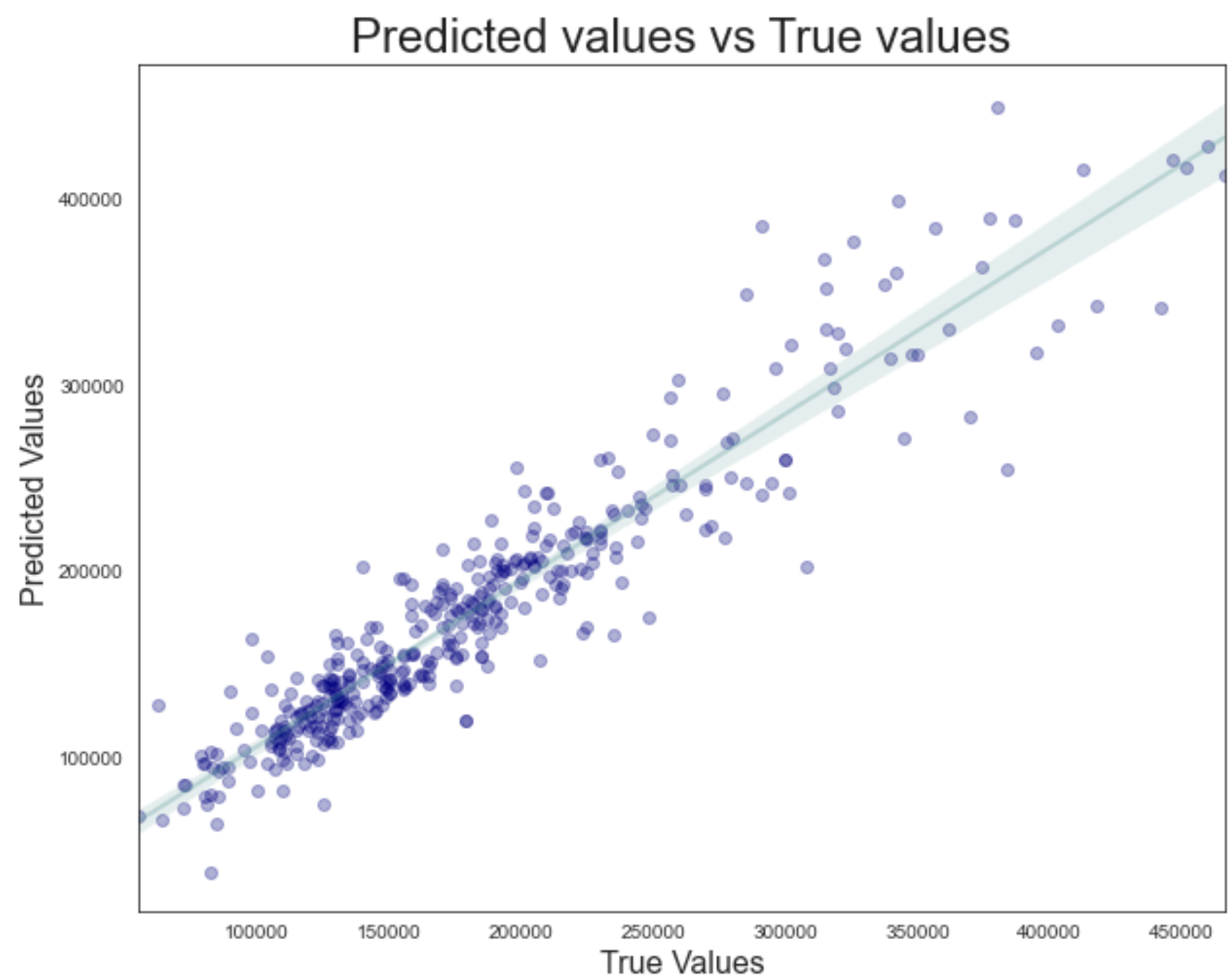# Lets Talk Model

Lets Talk Model Features

MS_SubClass
MS_Zoning
Lot_Area
Alley
Neighborhood
Bldg_Type
Overall_Qual
1st_Flr_SF
2nd_Flr_SF
Garage_Area
Paved_Drive
Total_sq
Ratio_lotsq
Age
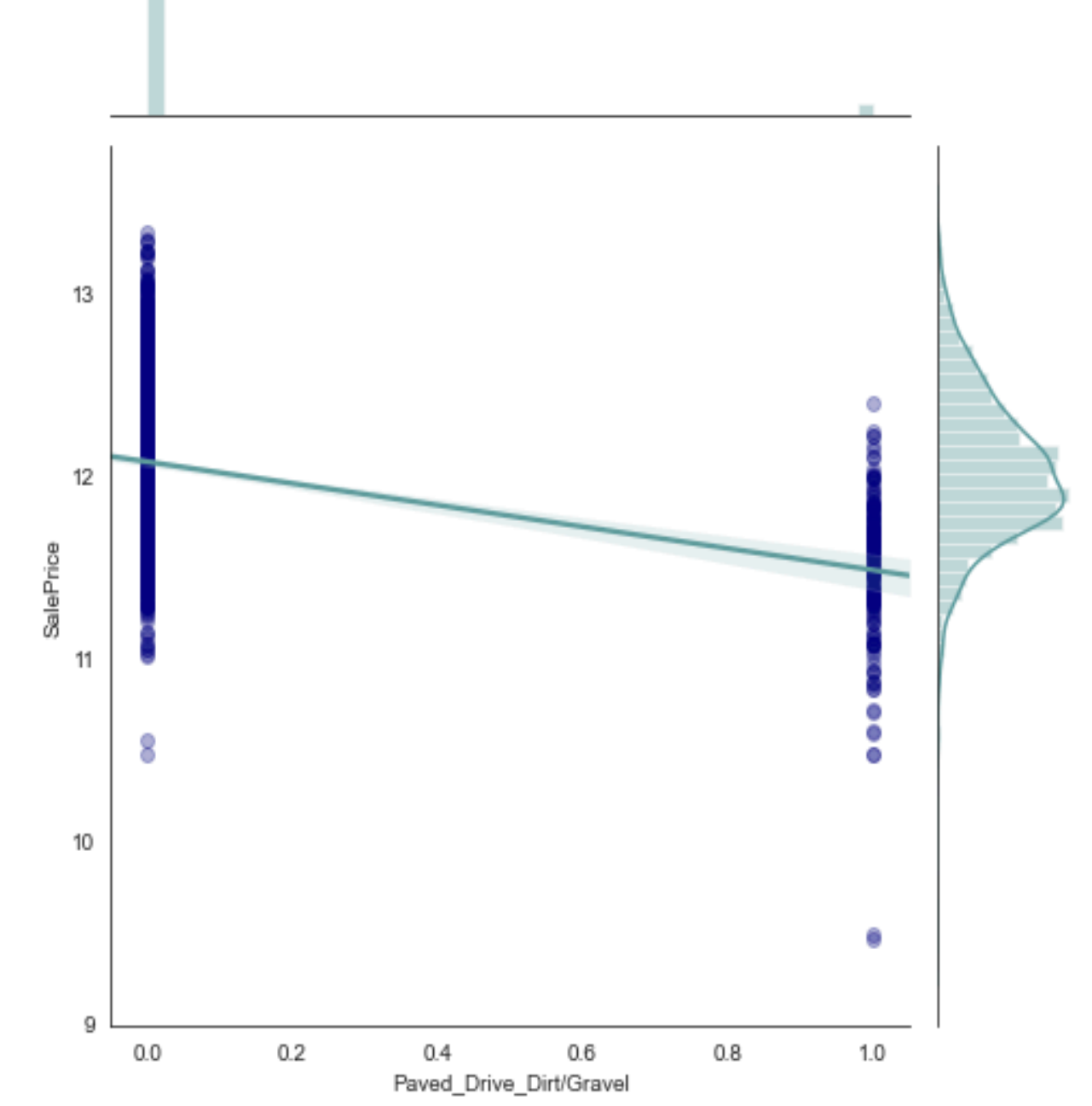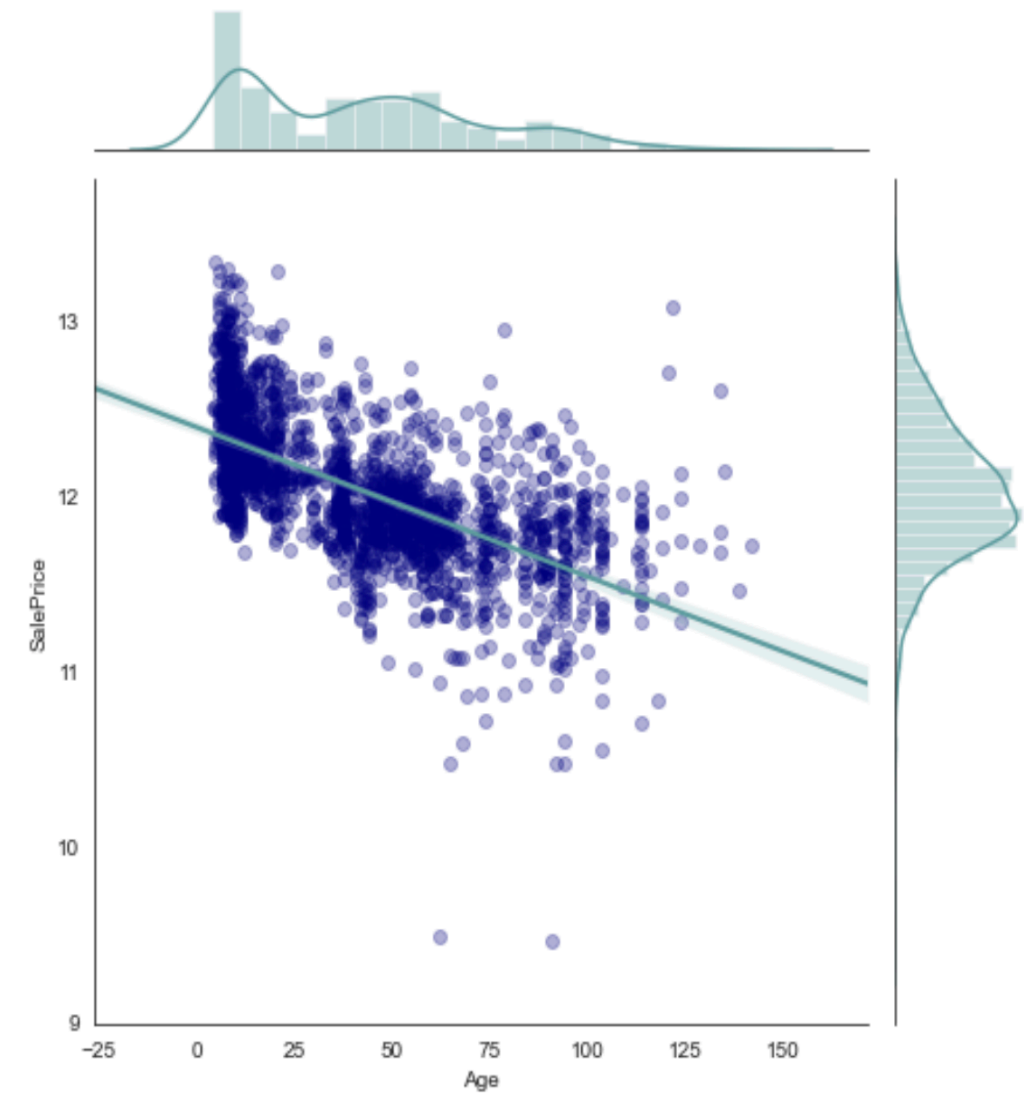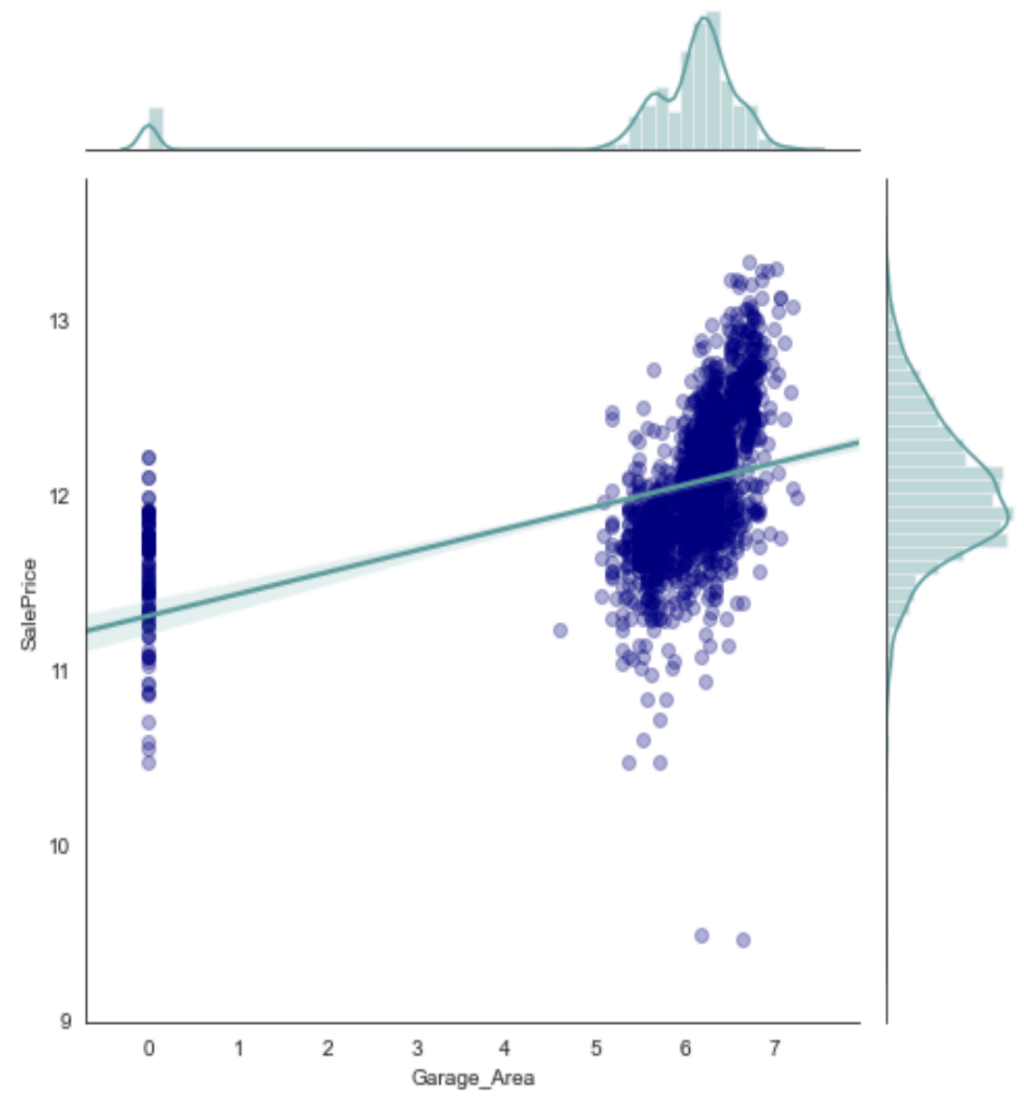
Lets Talk Model Performance + Hypothesis

Predicted values vs True values

Metrics	
MSE	651624374
RMSE	25,526
MSLE	0.0191
MAE	12,799
R^2	0.8873
Adjusted R^2	0.8693

Beta (β) Coefficients	
Overall_Qual_10	$168,572
Neighbor_StoneBr	$38,080
MS_Zoning_I	$16,744
1st_Flr_SF	$62 per sq
Paved_Driveway	$4036

$H_0:$ The average difference in SalePrice between Paved and Unpaved Driveways is Zero

$H_A:$ The average difference in SalePrice between Paved and Unpaved Driveways is not Zero

P_value = 1.55 , we failed to reject our null hypothesis, we need to rethink our question

Recommendation

Recommend property owners to invest into repaving an existing driveway or paving a new one

Data clearly shows it adds value + pays for itself!

Let's pave the way to your success.

Call 1-800-GRIMES

#p2done

Sources

https://www.jkpavement.com/will-a-paved-driveway-add-value-to-my-home/

https://www.homeadvisor.com/cost/outdoor-living/install-asphalt-paving/

http://manarolla-creat.com/grass-create/

Data Visualizations on Tableau

https://public.tableau.com/profile/julian.broche#!/vizhome/AmesIowadata_viz/Dashboard1?publish=yes