

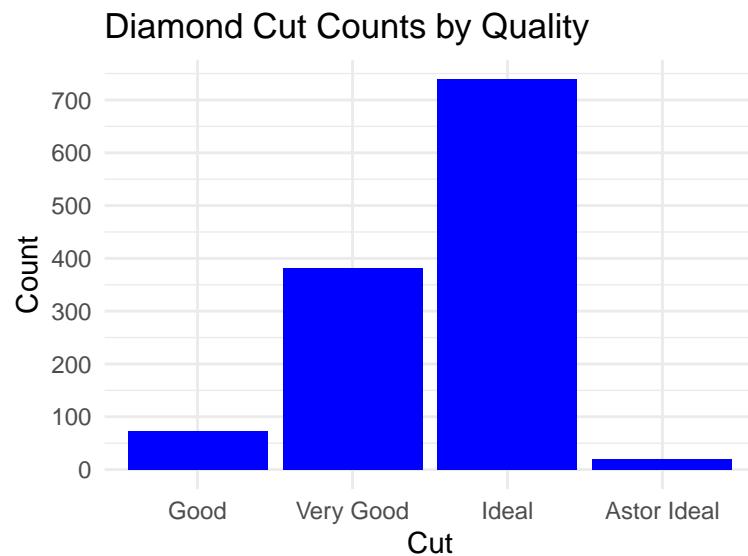
code_chunk_order

2025-03-19

Setup

Univariate

Cut



Color

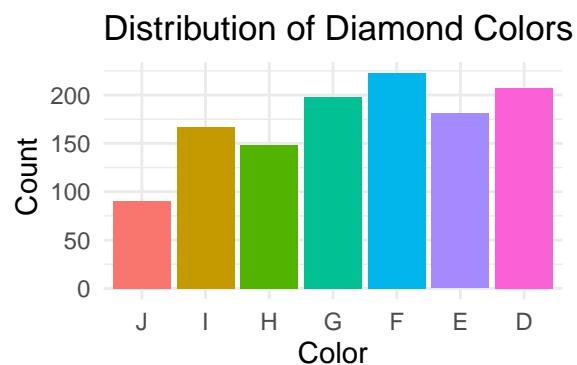


Figure 1: Diamond Color Distribution

Distribution of Diamond Color Groups

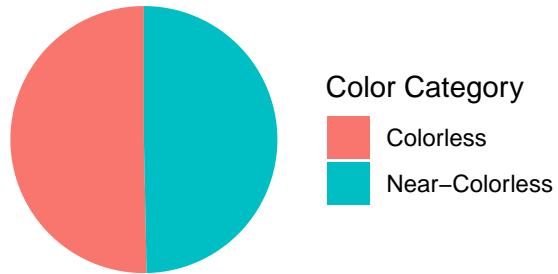


Figure 2: Diamond Color Category visualize through a Pie Chart

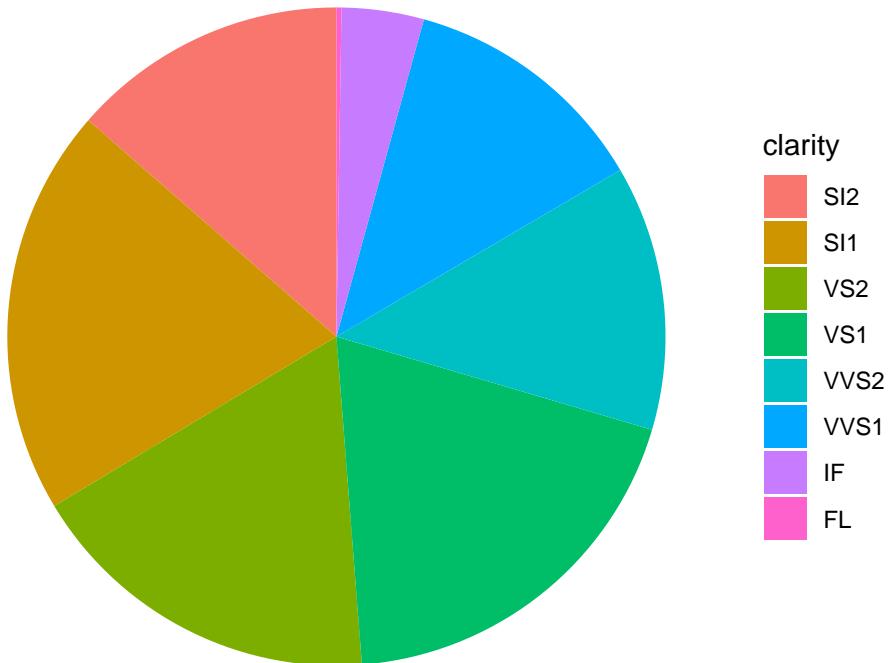
Clarity



Table 1: Frequency Table of Clarity Grades

Clarity	SI2	SI1	VS2	VS1	VVS2	VVS1	IF	FL
Frequency	165	243	214	233	158	149	49	3

Proportion of Clarity Grades Available



Carat

Table 2: Summary of diamond by Carat Range

Carat Range	Count	Proportion
[0,0.25)	22	0.018
[0.25,0.5)	397	0.327
[0.5,0.75)	394	0.325
[0.75,1)	67	0.055
[1,1.5)	198	0.163
[1.5,2)	48	0.040
[2,3)	47	0.039
[3,4)	17	0.014
[4,5)	11	0.009
[5,6)	10	0.008
[6,7)	2	0.002
[7,8)	1	0.001

Diamond Carat Distribution

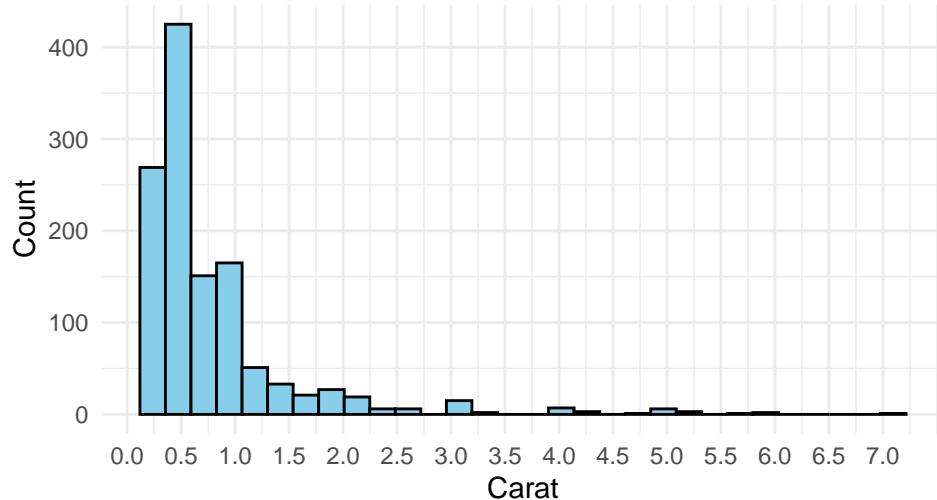
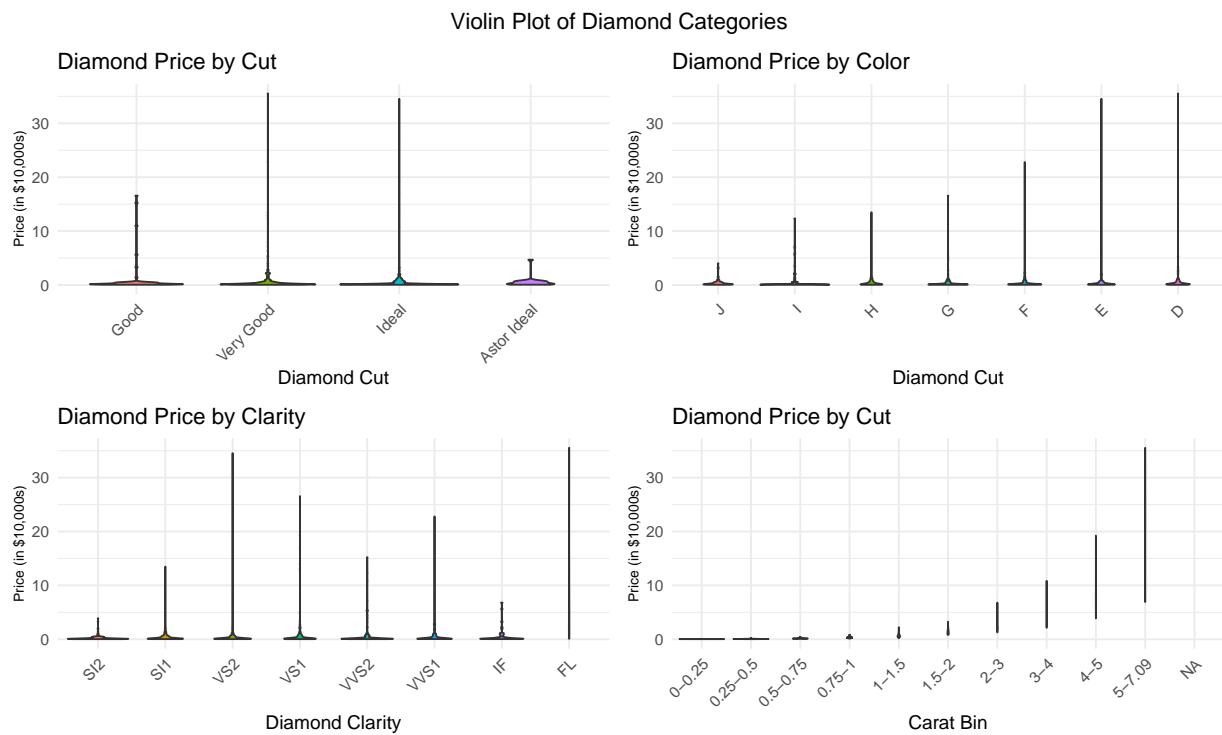


Figure 3: Diamond Carat Distribution

Bivariate Analysis



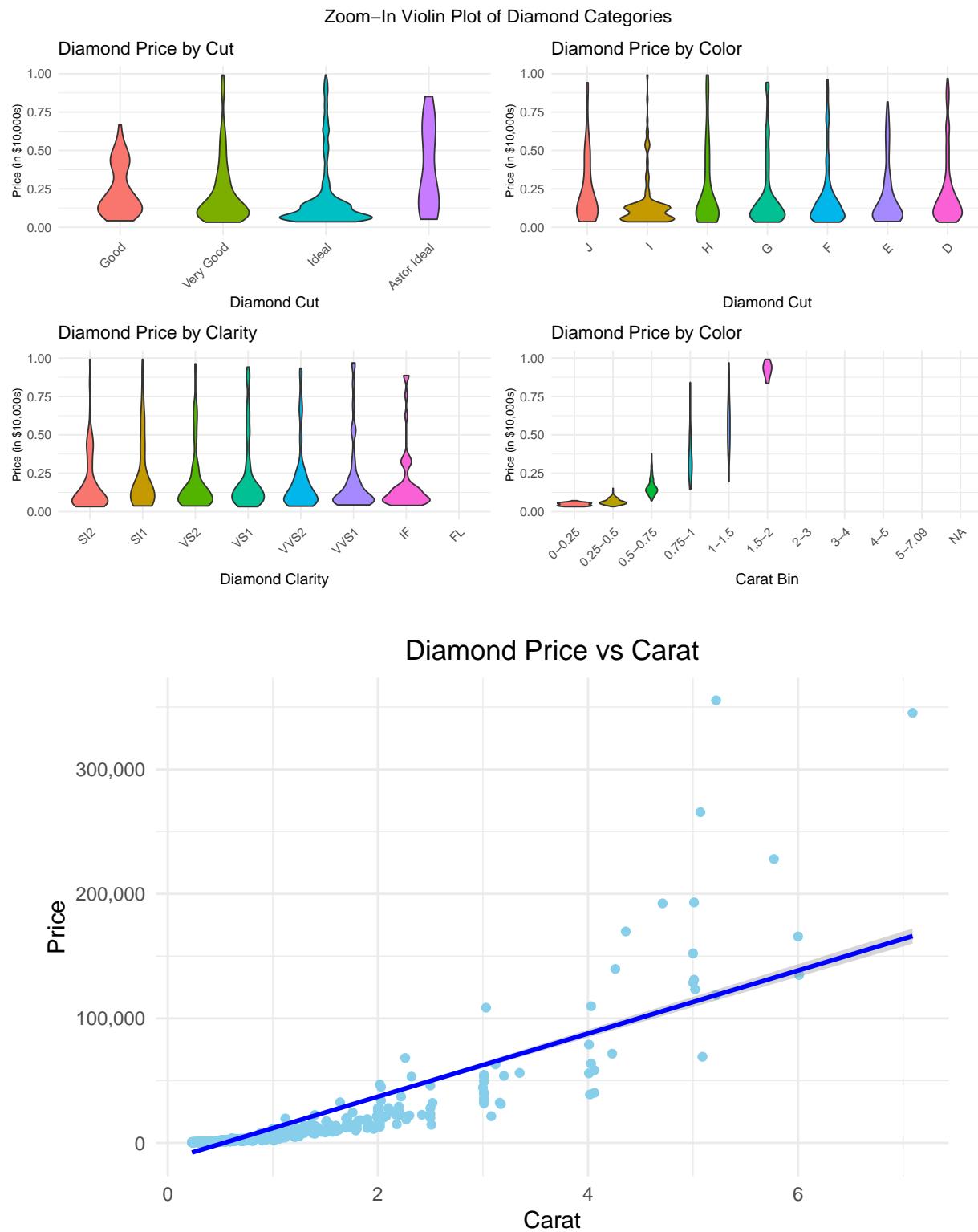


Figure 4: Diamond Price vs Carat Size

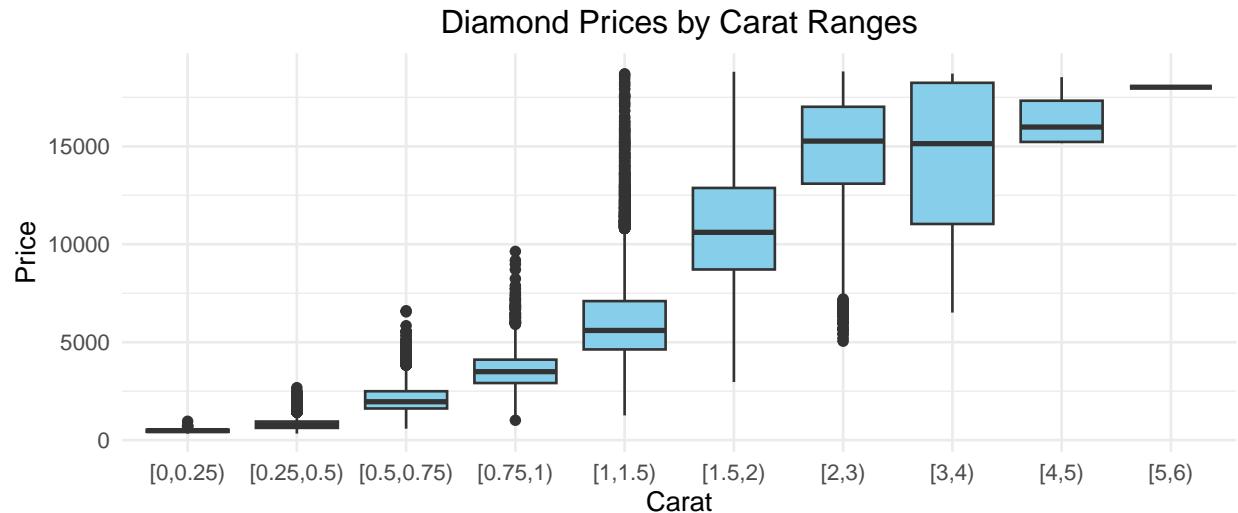
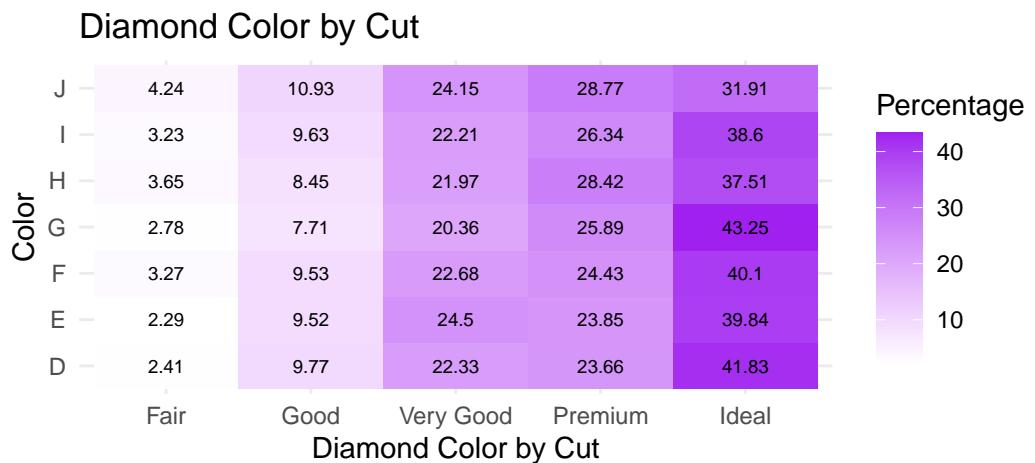


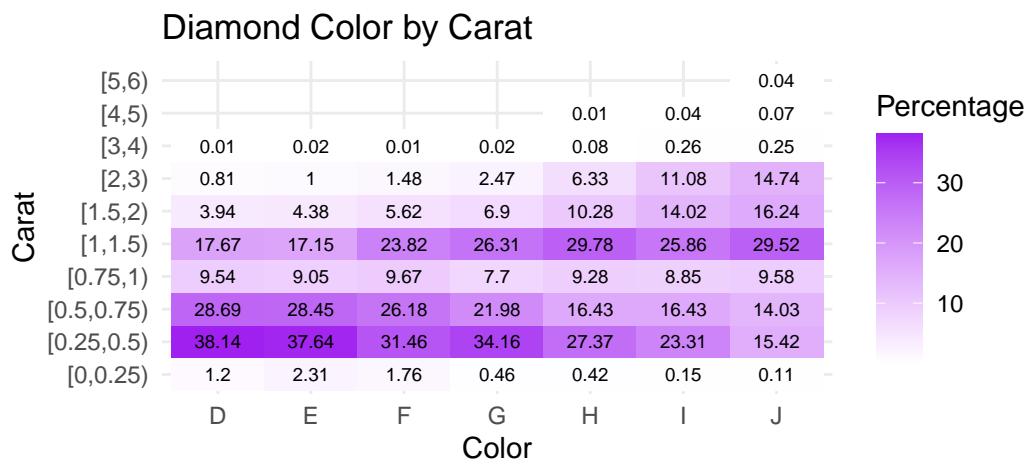
Figure 5: Box and whisker plot

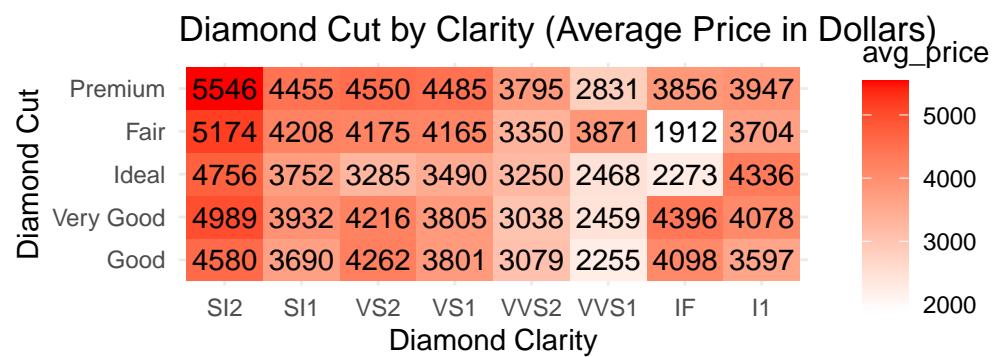
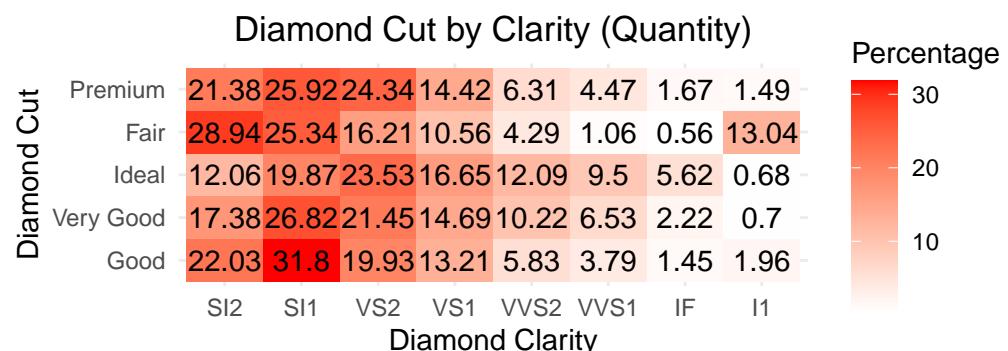
Table 3: Min and Max Prices by Clarity

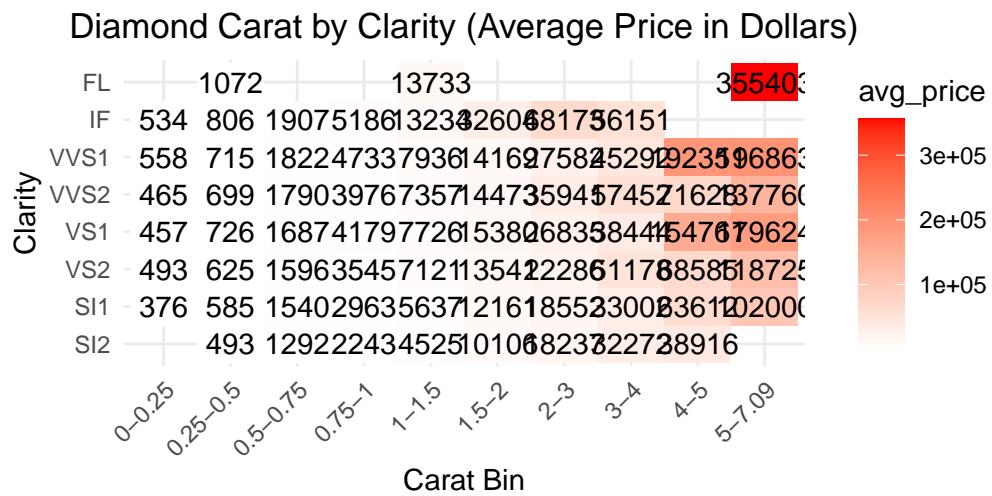
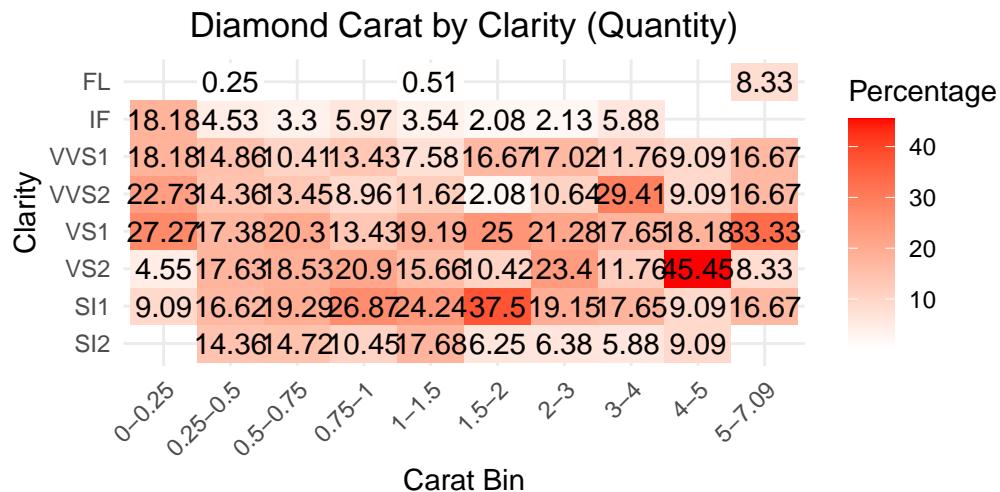
clarity	min_price	max_price
SI2	326	38916
SI1	371	134856
VS2	369	345397
VS1	322	265591
VVS2	354	152210
VVS1	437	227960
IF	405	68173
FL	1072	355403

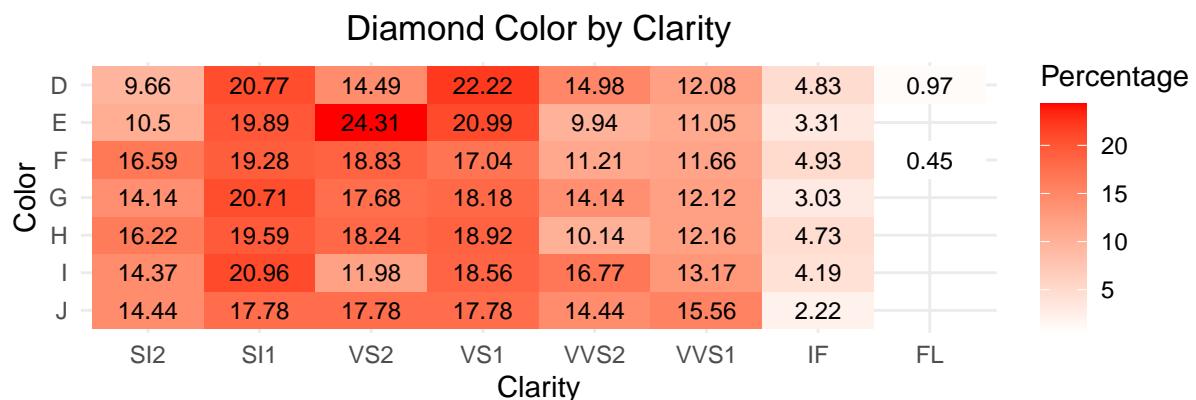
Bivariate analysis on 4Cs











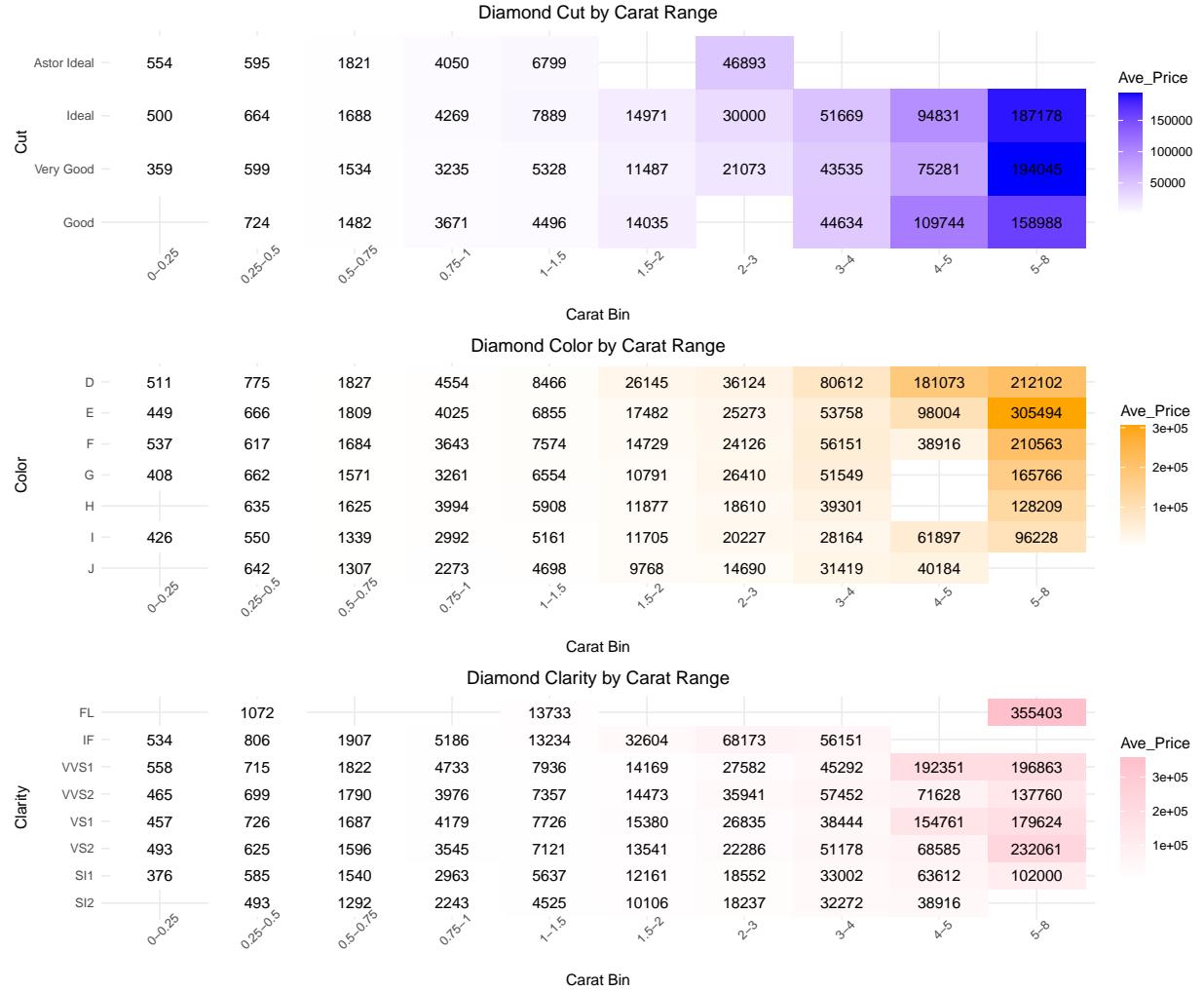


Table 4: Clarity/Color/Cut Max-Min Ave Price Range per Carat Bin

carat_bin	Price_Rng_Cut	Price_Rng_Color	Price_Rng_Clar
0-0.25	195	129	182
0.25-0.5	129	225	579
0.5-0.75	339	520	615
0.75-1	1034	2281	2943
1-1.5	3393	3768	9208
1.5-2	3484	16377	22498
2-3	25820	21434	49936
3-4	8134	52448	25180
4-5	34463	142157	153435
5-8	35057	209266	253403

Simple Linear Regression

Table 5: Summary of Diamond Prices (\$) by Carat Range

Carat Range	Min Price	Max Price	Average Price	Variability (%)
[0,0.25)	326	963	489.56	195.40
[0.25,0.5)	334	2677	802.55	701.50
[0.5,0.75)	584	6607	2082.09	1031.34
[0.75,1)	1013	9636	3550.76	851.23
[1,1.5)	1262	18700	6139.89	1381.77
[1.5,2)	2964	18806	10897.17	534.48
[2,3)	5051	18823	14846.95	272.66
[3,4)	6512	18710	14308.71	187.32
[4,5)	15223	18531	16458.00	21.73
[5,6)	18018	18018	18018.00	0.00

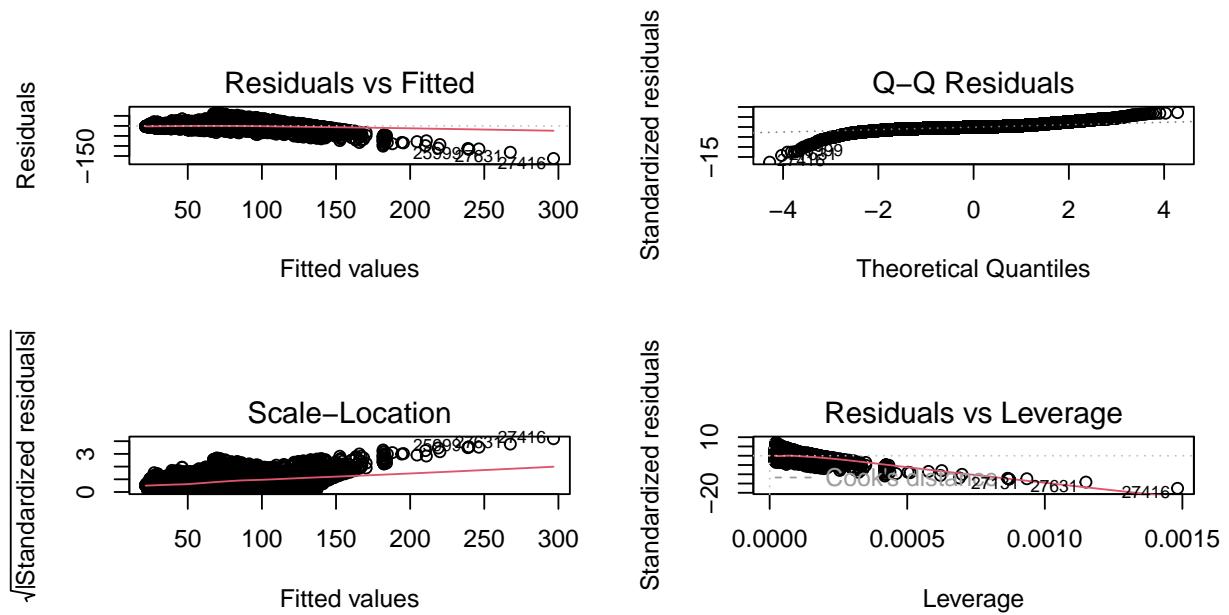


Figure 6: Residuals plot

Series residuals_model_sq

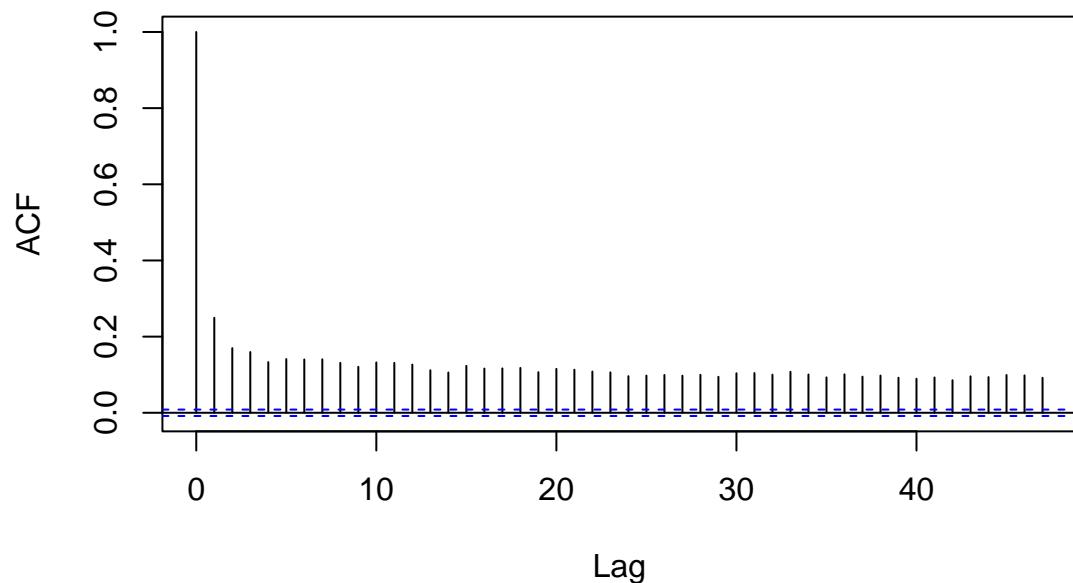


Figure 7: ACF Residual Model