

# Does Cut really matter when purchasing a diamond ring?

## A Multivariate data analysis

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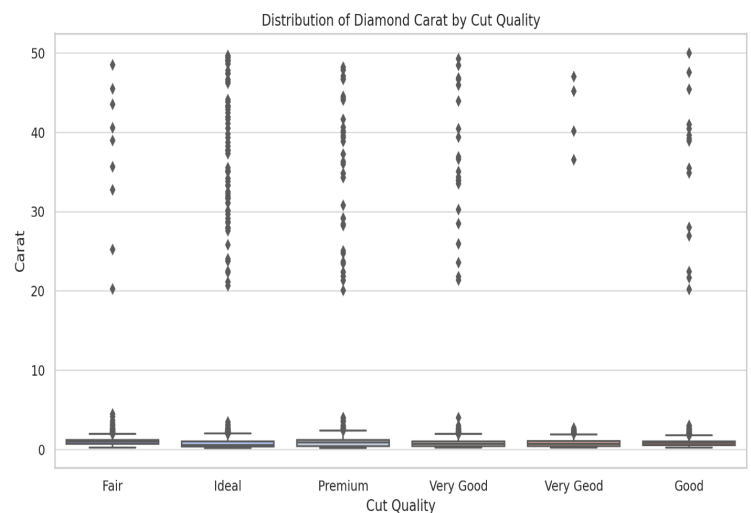
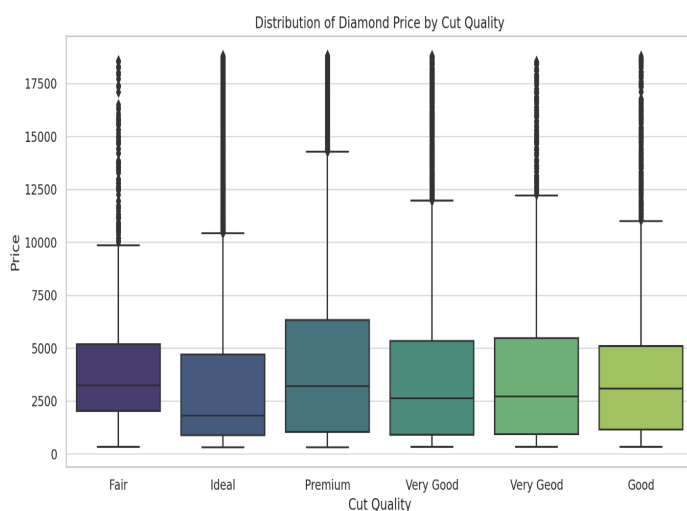
### Background / Objective:

Cut quality is one of the most important metrics determining a diamond's scintillation and beauty when assessing a diamond in the marketplace. A good cut will improve the natural beauty of the stone, making it look larger and more luminous. For buyers, cut quality also relates to the price paid and the weight in carats. Diamonds are a significant investment; in fact, the average price of a diamond in this dataset is around \$5,000, with prices ranging from a few hundred dollars to over \$18,000. Understanding how cut quality factors into the value equation is thus essential for buyers to gauge their budget, required size, and personal style preference before choosing a diamond ring.

### Method:

The dataset used in this analysis consists of 47,940 records, detailing diamond attributes such as price, carat, clarity, cut, color, and size. This multivariate analysis examines the role of cut quality through the following:

1. **Box Plot of Price by Cut Quality:** The box plot analysis shows how diamond prices are distributed across cut quality, highlighting apparent price differences.
2. **Box Plot of Carat by Cut Quality:** In the 2nd analysis we explore the relationship of carat distribution across each cut grade to see if larger or smaller diamonds are more common with certain cuts.
3. **Scatter Plot of Price and Carat by Cut Quality:** and finally, the 3rd visualization examines the combined impact of carat and cut quality on price, helping to identify price trends across carat sizes.





### Discussion:

We see that when it comes to buying diamonds, the quality of the cut plays a crucial role in determining both the price and the buyer's choice. For many shoppers, a diamond's sparkle and overall beauty are paramount. They might be willing to spend extra on higher-quality cuts like "Ideal" and "Premium," as these options deliver exceptional brilliance that truly catches the eye.

On the other hand, some buyers may be more focused on the size of the diamond rather than its cut quality. For them, opting for a lower cut grade, such as "Fair," allows them to enjoy a larger carat while staying within budget. This decision illustrates how personal preferences can greatly influence purchasing choices in the diamond market.

Ultimately, whether someone prioritizes stunning aesthetics or a bigger stone, understanding the impact of cut quality on price can help buyers make informed decisions that align with their desires and financial considerations.