**Case Study**

What Makes Diamonds so Expensive?

*Dick De Veaux*

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Gold has been the standard precious commodity for financial futures markets for decades, but diamonds may soon give them a run for their money. Martin Rapaport, a diamond exchange executive, is hoping for a late 2016 to early 2017 launch of futures market in diamonds (see <http://www.marketwatch.com/story/forget-gold-diamonds-may-be-the-next-big-thing-in-the-futures-market-2015-08-04?siteid=bigcharts&dist=bigcharts>)

Gold pricing is straightforward. Although there are slight variations in purity (some coins are only 91.7% – 22 karat gold, while bars and other buillion coins are 99.99% pure – 24 karat), the prices are based on one (constantly changing) theoretical price called the spot price.

But diamonds are different. With gold, if you buy a bar 10 times as heavy as another, you’ll pay about 10 times as much. With diamonds, it’s more complicated. Not only is the size (carat weight) important, but anyone who’s ever thought about buying a diamond knows about the four C’s: Carat, Cut, Color and Clarity.

We have data on some 2690 Diamonds that were “scraped” off the web by Lou Valente of JMP. We want to explore the relationship between each of the four C’s and the price of a diamond. We’ll also build a model to see how well we can predict the price of a diamond knowing the four C’s.

Data: Diamond.csv

Questions:

The relationship of Price with:

1. Big diamonds are more expensive? (but not necessarily linearly)
2. Colorless diamonds are more expensive (D,E and F are colorless, then G - K)?
3. Clarity matters too (Internally Flawless down to Included)?
4. Cut (Ideal, Very Good, Good, Fair, Poor)?

But which matters most? What are the tradeoffs?