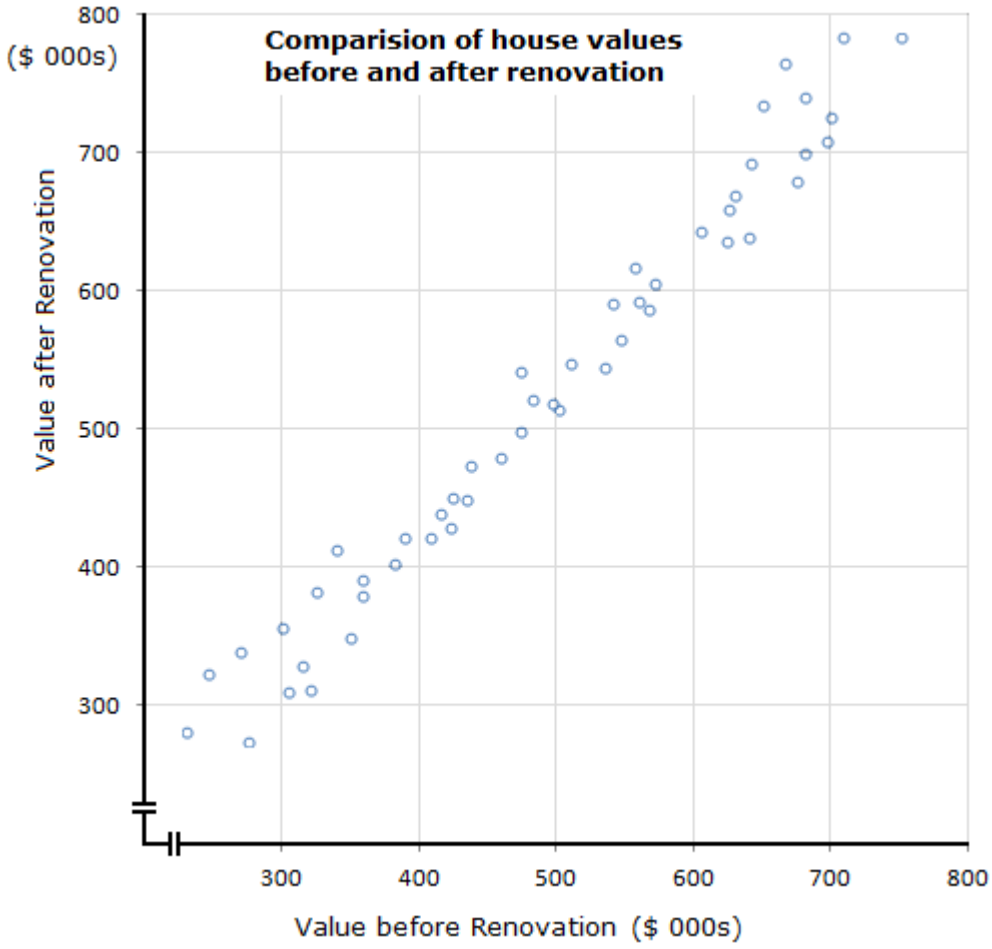
Level 1 Data Practice #8

Betaville real estate agents are interested in how much a house increases in value after it has a major renovation of bathrooms and kitchens.

They want to know if it is worth the money to renovate before a sale, or if the cost of the renovation is more than the increase in value.

The results of their survey are shown below:



1. Describe the general relationship between the values before and after renovation.

   Describe any unusual features of the relationship.

2. Show on the graph some houses where the renovation has been most successful in increasing value.

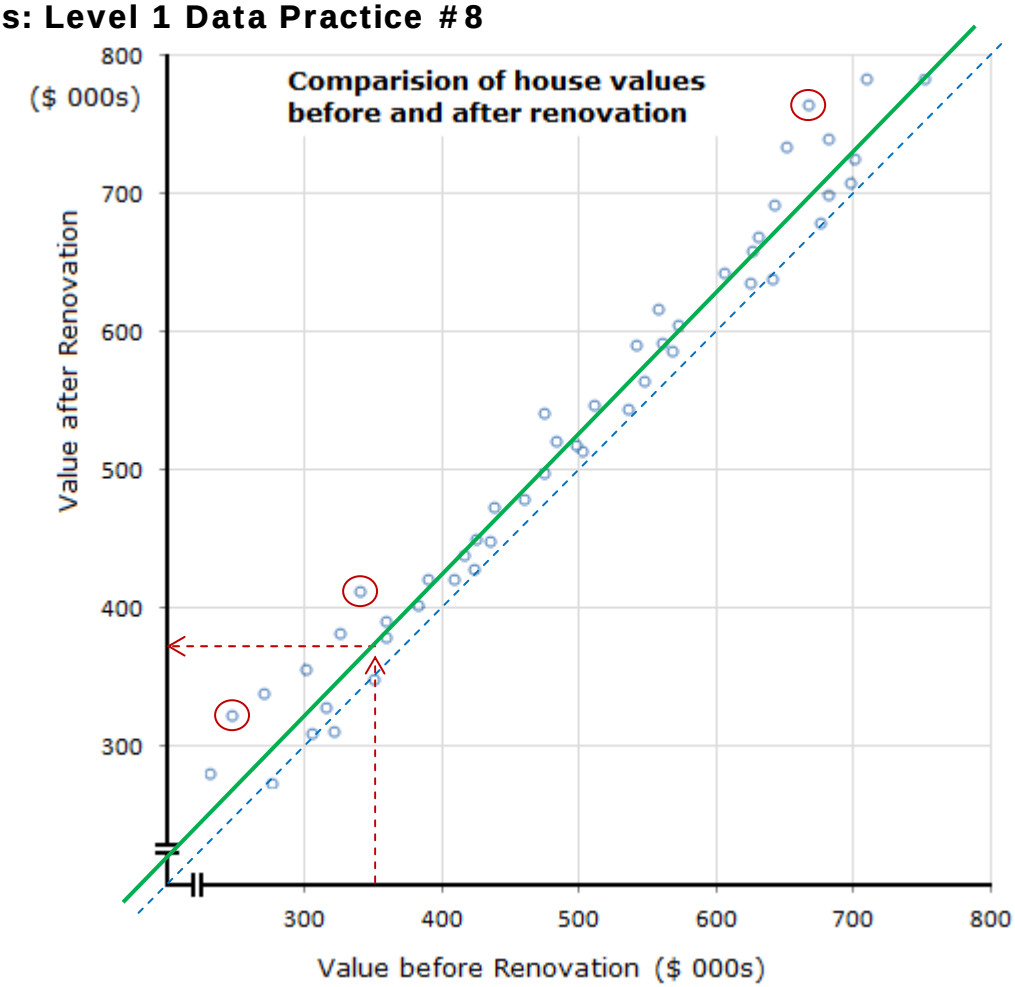
3. Estimate the new value of a $350,000 house after a renovation. Show your working.

   How much has the typical value gone up? Show your working.

4. Does renovation increase the values of cheaper houses more than expensive ones?

   How reliable do you believe your answer is?

Answers: Level 1 Data Practice #8



1. There is a strong, positive linear correlation between the value before and after renovation.

   The correlation is strongest at the middle, and weakens at the highest and lowest values (as the data spreads out further from the line of best fit).

2. The most successful renovations are those furthest above the green line of best fit. Some of them have been circled in red.

3. A value of around $375,000 could be expected. The dotted red lines to the green line of best fit shows how this was calculated.

   (You must not use the value already at about $350,000 to estimate a value after of $350,000 – that is only one value, and not a typical one in this case. Predictions should be from the overall pattern, not single cases.)

   Typically houses go up in value by around $20,000 to $30,000. This is the gap between the dotted blue line which is where houses have not changed in value, and the green line of best fit, which shows the most typical change.

4. The green line appears to be moving slightly further away from the dotted blue line, which suggests that expensive houses increase in value more. (Note: this is looking at straight dollar increase, in percentage terms cheaper houses gain much more.)

   However, as the angle of the green line is hard to work out exactly, and even a small change in gradient will affect my answer, I do not think this is a reliable answer.

   Also the cheapest and most expensive houses have much more variability in change, which again makes me feel it is not very reliable to say expensive ones gain more.