**Designing New Products using Choice Models in R**

When creating a new product like this Chevrolet Silverado, designers often face tough decisions. Should the truck have a smaller bed so that we can give more leg room to the passengers?

* Should we make the truck larger, even though the fuel economy will go down?
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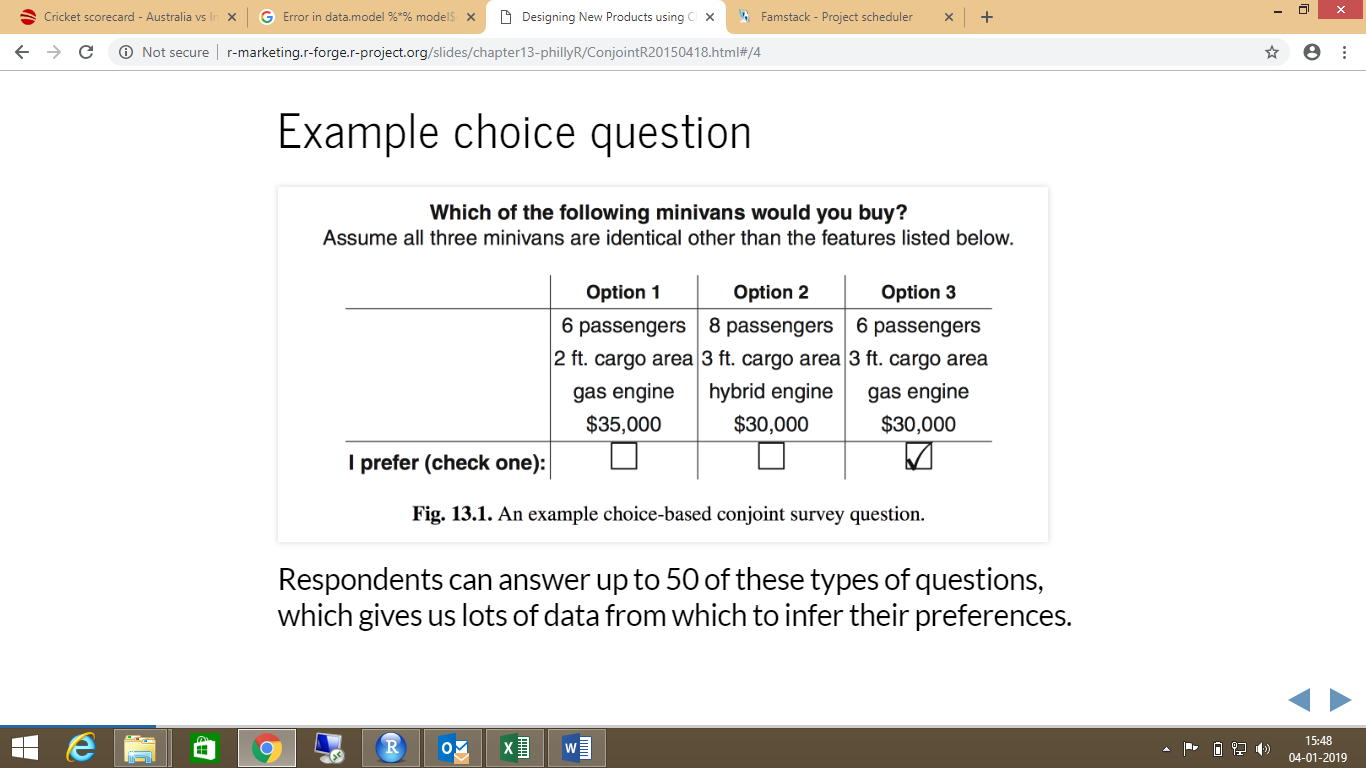
Finding the voice of the customer

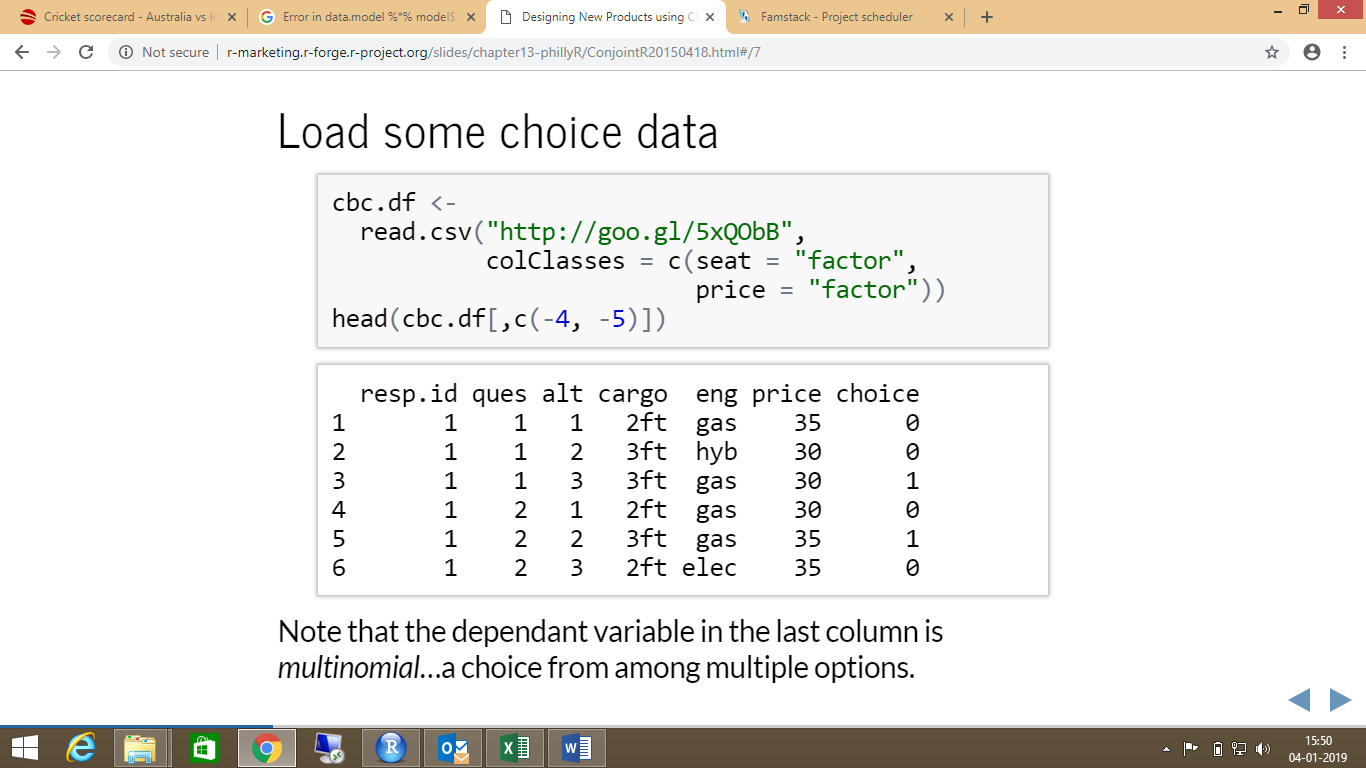
Better designers spend time talking to potential customers about what they want and that is *sort-of* helpful.

But customers typically want “everything”

Key idea

1. Ask customers to choose from among alternative designs (something consumers do every day).
2. Use a choice model to *infer* their preferences from the choices.
3. *Predict* whether they will buy alternative designs using the model.





Why model?

* As with any other multivariate data set, looking at univariate marginal summaries only tells part of the story.
* While we can see that customers tend to choose 6-seat minivans and tend to choose gas engines, it is hard to say whether seats or engines has a stronger influence on choice.
  + What if in the survey the 6-seat minivan options tended to have gas engines?
* As with many multivariate problems, the solution is a regression model (of a special type.)

**Willingness-to-pay**

In a model like m3 where we estimate a single parameter for price, we can compute the average willingness-to-pay for a particular level of an attribute by dividing the coefficient for that level by the price coefficient.

 So, on average, customers are willing to pay $2750 more for 3ft of cargo space versus 2ft.