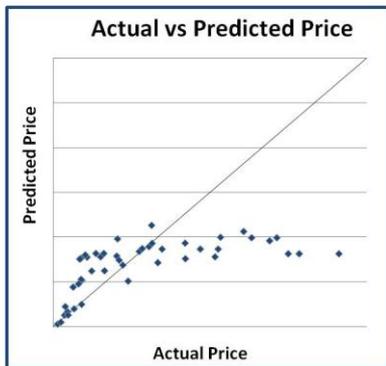
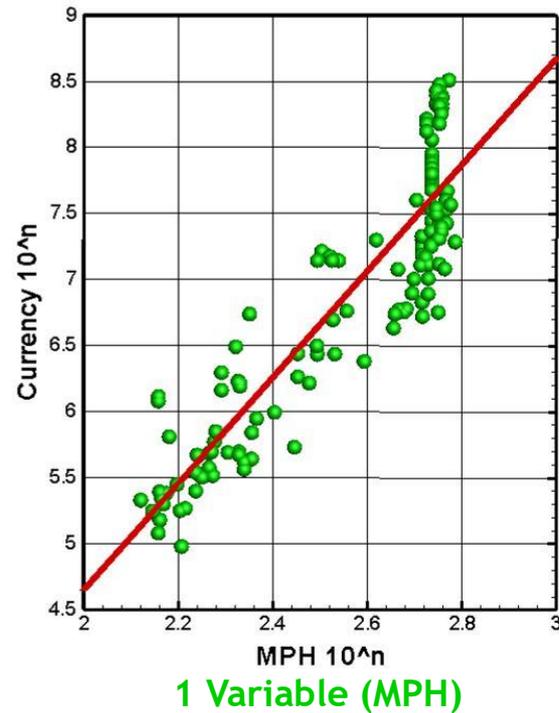


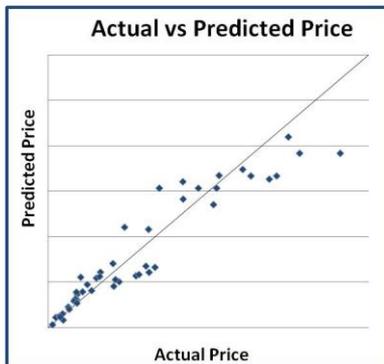
What are Value Response Surfaces? What are Value Estimating Relationships (VERs)?

- Value Responses Surfaces reveal how markets react to changes in attributes (features)
 - 3 dimensions: 2 horizontal for valued attributes, 1 vertical for \$
 - May be modulated by several (8 or more) variables (attributes)
- VERs are used to depict Value Response surfaces
 - Statistical analysis used to derive VERs
 - Markets' (buyers') votes for attributes that they like (willing to pay more to get more) & dislike (willing to pay more to get less)

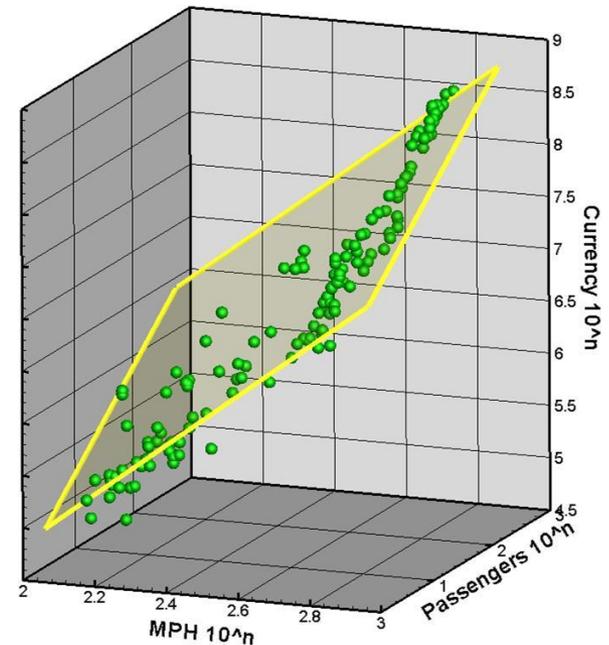


If we consider speed as valued attribute, we notice that as we add speed, the price (as for aircraft) rises (right). If speed were a perfect predictor of price (above), the predicted prices (again, as for aircraft) would exactly match the actual prices (all the dots would be on the 45° line). Other forces (features) are at work.





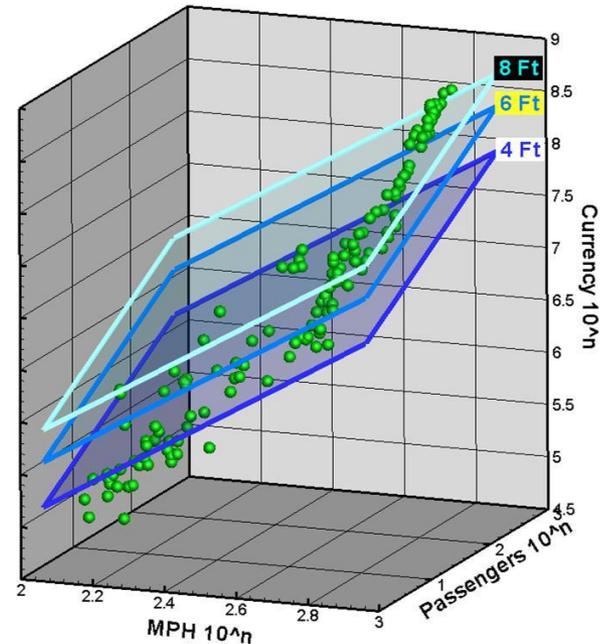
Adding passenger capacity as a valued attribute creates a Value Response Surface (right). The 2 variable equation (speed and passenger capacity) that predicts prices is closer to actual prices (above). We should consider other valued features.



2 Variables (MPH & Passenger Capacity)



Adding cabin height as a valued attribute permits multiple Value Response Surfaces (right). The 3 variable equation (speed, passenger capacity & cabin height) that predicts prices is closer still to actual prices (above).



3 Variables (MPH, Passenger Capacity & Cabin Height)

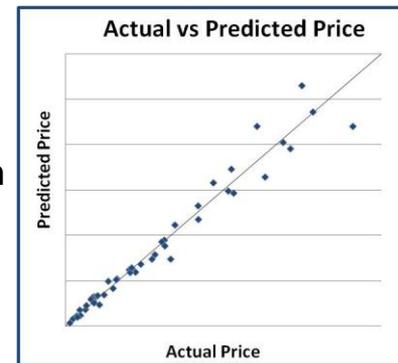


4 Variables (MPH, Passenger Capacity, Cabin Height & Range)

Range has value too, and it shows up as a statistically significant contributor to overall product value for aircraft (left). Adding range reduced the overall error as predictions approach actual prices.

The number of engines is an important feature too. Adding it into the mix (right) yields more error reduction. Note how much better this 5 variable equation predicts prices than those that preceded it. Observe, too, that the predictions are not perfect.

5 Variables (MPH, Passenger Capacity, Cabin Height, Range & Number of Engines)



Value Response Surfaces/ VERs Conclusions

Customers demonstrate that

- Statistically significant Value Estimating Relationships (VERs) based on their behaviors predict sustainable market prices
- Many product features (or attributes or variables) influence those buying behaviors
- Studies omitting important features may lead to incorrect pricing
- No Value Estimating Relationship perfectly predict outcomes