

## DECISION ANALYSIS

# **SMART with Sensitivity Analysis**

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If we're going to do a sensitivity analysis, what can we change? Let's go back and look at the numbers we fed in. We cannot change anything in the work table. This is information that's factual. It can't be altered. So the only numbers we can change are, in fact, the weights for the goals. And this is why I said that it's both difficult to get the weights, but it's also not that important to get the weights.

So let's suppose, for example, that the teenage kid throws a tantrum and says something like this, "You have put a score of 25, a weight of 25, on the 'cool' factor. The cool factor might not be very important to you, but think about what it means to me. If I'm not cool, I'm never going to mix with the right people. I'm going marry the wrong person. I'm not going to have the right contacts to get the right job when I come out of college. Look what you are doing to my future by putting a weight of 25 on the cool factor." So in the sensitivity analysis, you could say, "Okay. You've got a point. Let's make it 50." Change the weight on the cool factor, look at the scores, and the Honda still wins. But notice that the pickup, which is a fairly acceptable vehicle for the teenager, is beginning to look a really close second. So one could go back and say - or the teenager might force you to go back and say - "What happens if we make that, not 50, but 100?" And lo and behold, the pickup wins. Well, at this point the teenager might be happy, but the grandparents might be saying, not thinking it through properly, "Well, you've got a weight of 100 for everything except for the price. The price is important, too. Let's make that 100 as well." Well, it so happens, of course, that the pickup is the cheapest vehicle. So that makes the pickup look even better.

So notice what we are doing in the sensitivity analysis here. We have a situation where, if we change a weight and it doesn't change the ranking, then we've got a situation where we can say, "See, makes no difference, let's stick with the decision." If we change the weight in a way that seems plausible and it changes the ranking, then it's quite possible that one might go a new decision. It looks as though it's in play, and it's then a question of people discussing and it's a question of whether the parents are indulgent parents or not.

So, in a sense, by doing the sensitivity analysis on the weights, one has a win-win situation. No change in the ranking, and you've got a robust decision. An acceptable change in weights changes the ranking. Well that means that either option is probably reasonable, and so one can talk about it.

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