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ECON 599

Midterm

**Common Fallacies**

Statement 1: Doctors have found that in patients with a specified set of symptoms a certain kind of spinal fusion operation produces a success rate of 72% (as measured by the patient’s assessment that he or she feels much better a year later). Therefore if you have those symptoms you should have the operation.

One of the primary issues with this statement is that the doctors are relying on a patient’s self-reported figure about how well they are feeling, instead of assessing symptoms or similar metric which could lead to a question about the quality of the data. Additionally, the assessment took place a year after the procedure. It can be difficult to compare how you feel today against how you felt in the past. You can also be having an ‘easy’ day where your symptoms are already somewhat less severe, making the 1-day assessment less reliable than multiple assessments over time. Lastly, there’s a chance that some of these people would have felt better regardless of getting treated with something as invasive as spinal fusion. Even though it appears to help these patients, there may have been other factors at play making the procedure a bit extreme.

Statement 14: Since every war has a loser, we can deduce, without even having to examine the pre-war debates, that in at least half of the cases the nation’s leaders overestimated their chances of victory.

This statement only holds true if both parties are entering the war for offensive or punitive purposes. There are many wars that are started for the purpose of conquest, where a country will often be forced to defend itself even if they know that they cannot win. There are also instances where a country may be allied with another power and be called to enter a war that they know they cannot win, but they must honor the call of their ally. Lastly, ‘winner’ is often subjective in war. Is the winner the side that achieved their goal? Is it the side that had the least number of lives lost? Is it the side whose civilians were least impacted?

Statement 30: Examining a random sample of wars, I find that the side that initiates the fighting (assume that we have solved the obvious empirical problem this involves) usually loses the war. From this I infer that it is usually politically and/or militarily disadvantageous to strike the first military blow.

We run into similar issues as we did with the previous statement, the first being, what do we mean by winning? Additionally, by extending the conclusion to being either military or political disadvantageous, you widen the net so large that you’re going to find an effect for pretty much any predictor, especially if the motivations behind entering the war aren’t taken into account. There’s also the issue that something may be politically beneficial but a military disaster, or vice versa.

Statement 40: Since most automobile accidents occur in trips of 5 miles or less, I should substitute long drives for short ones whenever possible.

An issue here is that they are not considering the frequency of drives taken. If most people take drives that are 5 miles or less, then it makes sense that there would be more accidents in that range than there are compared to longer drives. It’s also ignoring the types of roads that the drives take place on, there could be more accidents on side roads, which may be used for shorter drives, than there are on a freeway, which may be used for longer drives.

Statement 51. “65% of the deaths in accidents involving SUVs are due to rollovers, whereas only 22% of the deaths in car accidents come from this cause.” (NBC Nightly News, 9/20/00.) From this we can infer that SUVs are much more prone to rollovers than are cars.

The evidence presented doesn’t state anything about the rate at which SUVs experience rollovers compared to other cars. The statement is essentially saying that when an SUV rolls over, it is more deadly than when a different type of car rolls over. SUVs may experience some types of accidents less frequently than other cars do, but that information isn’t provided in the evidence.

Statement 68. The fact that the US was able to keep the USSR out of West Europe without a war shows the efficacy of the policy of deterrence.

The major fallacy here is that the statement is attributing the ‘containment’ of the USSR entirely the US, and is ignoring the efforts of the rest of the non-communist countries that opposed the USSR at the time, especially within NATO. It also ignores the extent at which the USSR expanded their influence in areas that weren’t West Europe. The USSR gained influence over large parts of South America, the Caribbean, the Middle East, and the Far East despite the policy of deterrence. So while the policy may have been effective in an area that was already heavily protected by treaties and international defensive pacts, it’s hard to show that it the policy was effective on a global scale.

**Causal Effects**

**2.1**

1. Inc88 -> Vote88 – Closed Pipe?   
   Inc88 -> Recog88 -> Vote88 – Open Backdoor  
   Vote86 -> Inc88 -> Recog88 -> Vote88 – Open Backdoor  
   Skill -> Vote86 -> Inc88 -> Recog88 -> Vote88 – Open Backdoor
2. Yes, we can estimate the total causal effect of incumbency on vote percentage. By controlling for the vote in 1986 we close the open backdoor path(s) caused by fork in the effects of Political Skill on the 1986 Vote and Recognition in 1988. This keeps a causal path open between Incumbency in 1988 and the Vote in 1988.
3. Yes, we can estimate the direct effect of incumbency on the vote in 1988 but we need to adjust for two additional variables. If we just adjust for the vote in 1986, we still have the effects of Political Skill and Recognition in 1988 to control for. If we just control for political skill, we still have a collider effect from the Vote in 1988 between Incumbency and Recognition, so we need to adjust for the Recognition in 1988 as well. We do not need to control for district leaning as its effects have been closed off by controlling for the vote in 1986.
4. Yes, incumbency confers an advantage, but the advantage is lessened when we control for the votes in 1986. It drops from a mean of .191 and standard deviation of 0.005 to a mean of 0.096 and standard deviation of 0.007. So it is about ½ as effective when we control for the previous year’s vote, but it still confers an advantage of about 10%.

**2.2**

1. The model created had a mean alpha of 0.25, the beta of the simulated 1988 vote was 0.519 with a sigma of 0.039, incumbency had a mean of 0.064 and a sigma of 0.008, showing that the 1990 vote outcome was less impacted by the prevalence of incumbents than the 1988 vote.

2. The prediction intervals for each seat are given on the colab,

3. The model predicted that 260 seats would go to democrats, where the true number of seats was 267. Right now, I attribute this result to luck as I am not fully confident in the method I used to extract the prediction interval or the predicted values from the model.

**2.3**

1. Models are shown on the colab.

2. According to the metrics, the quadratic model is the best, but the linear model with recognition is nearly identical to it. There are some concerns with the quadratic model that may not make it a suitable model, so if I had to choose, I would choose the linear model that included recognition as its metrics are almost the same and it achieves that with less variables.

3. The quadratic model is counter-intuitive in this instance because the mean effect of the quadratic recognition term can negate the linear effect of the recognition term in some cases. It appears as though we’ve added some kind of confounding effect to the model by adding a linear recognition term to the model, and while it did not hurt our metrics, it didn’t significant help them either. In essence, the effect of adding the quadratic term was a net-0, and possibly a negative despite what the metrics show.

It also doesn’t make sense from a traditional standpoint. Second order terms are essentially saying that two variables have an interaction with each other that may affect the outcome of the analysis. Adding a quadratic recognition term is like saying that recognizing a candidate that year has an effect on recognizing the candidate that year? In my opinion, it doesn’t add up.