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Problem 4: Report

Using your Ad-Engine, decide and explain your answer to the following:

If Facebook charges you $2 per-person to learn their stance on Gun control, if available, is the juice worth the squeeze?

We can find the answer to this question by calculating the VPI with decision nodes Ad1, and Ad2, with a utility map of {"S": {0: 0, 1: 1776, 2: 500}}, where the utility values are the dollars that someone spends to buy a Defendatron. Assuming we know no other evidence the code would look like:

```
ad_engine = AdEngine('../dat/adbot-data.csv', ["Ad1", "Ad2"], {"S": {0: 0, 1: 1776, 2:
500}})
evidence = {}
vpi = ad_engine.vpi("G", evidence)
```

If the VPI returned is >= 2, then it would be worth it to pay Facebook for this information. The returned VPI is ~20.77, thus it is worth it to pay Facebook for this information. This VPI could even warrant us to pay up to $20 for this information and have it still be worth it.

If you *knew* someone to be in support of Gun Control (G=1), and Google is offering $0.25 per person to tell you their political affiliation, is the juice worth the squeeze?
The setup for this problem would look something like this:

```
ad_engine = AdEngine('../dat/adbot-data.csv', ["Ad1", "Ad2"], {"S": {0: 0, 1: 1776, 2:
500}})
evidence = {"G": 1}
vpi = ad_engine.vpi("P", evidence)
```

This is because we know someone is in support of Gun control, and we want to know the VPI of information P. The VPI after running this is 0.0. This means the information of P is irrelevant to the problem at hand. Therefore, the juice is NOT worth the squeeze.

In a small paragraph, argue for whether or not you believe this practice should be considered ethical, especially if each individual's characteristics were collected via social media. Compare this practice to targeted political advertising wherein ads are curated based on perceived in-group. If your group does not have a consensus on this question, log your discussion for this problem instead.

We discussed that this is ethical in the context of a product that is free. For companies like Google and Facebook to make money, their monetization strategy heavily relies on targeted ads. Ads that are targeted towards the users they have are more likely to make customers more happy with their ad experiences, as well as make more money for the company so that they don't need to turn to other monetization strategies, like forcing users to pay for their product. We think of it as a tradeoff: you could have Google with no ads, or no targeted ads, but you would have to pay a $20/month membership fee to it, OR you could have a free experience where you contribute to the product by engaging on ads (something that is financially equivalent to free for the user). When it comes to political ads, this is fine as long as this is for a free product and the ad generating algorithm is the same for political ads as it is for non-politically affiliated ads.