Business Model Evaluation

Given revenue history and transaction history,
determine if the business model of an annual 10% price increase
to all customer accounts at renewal is working… or not

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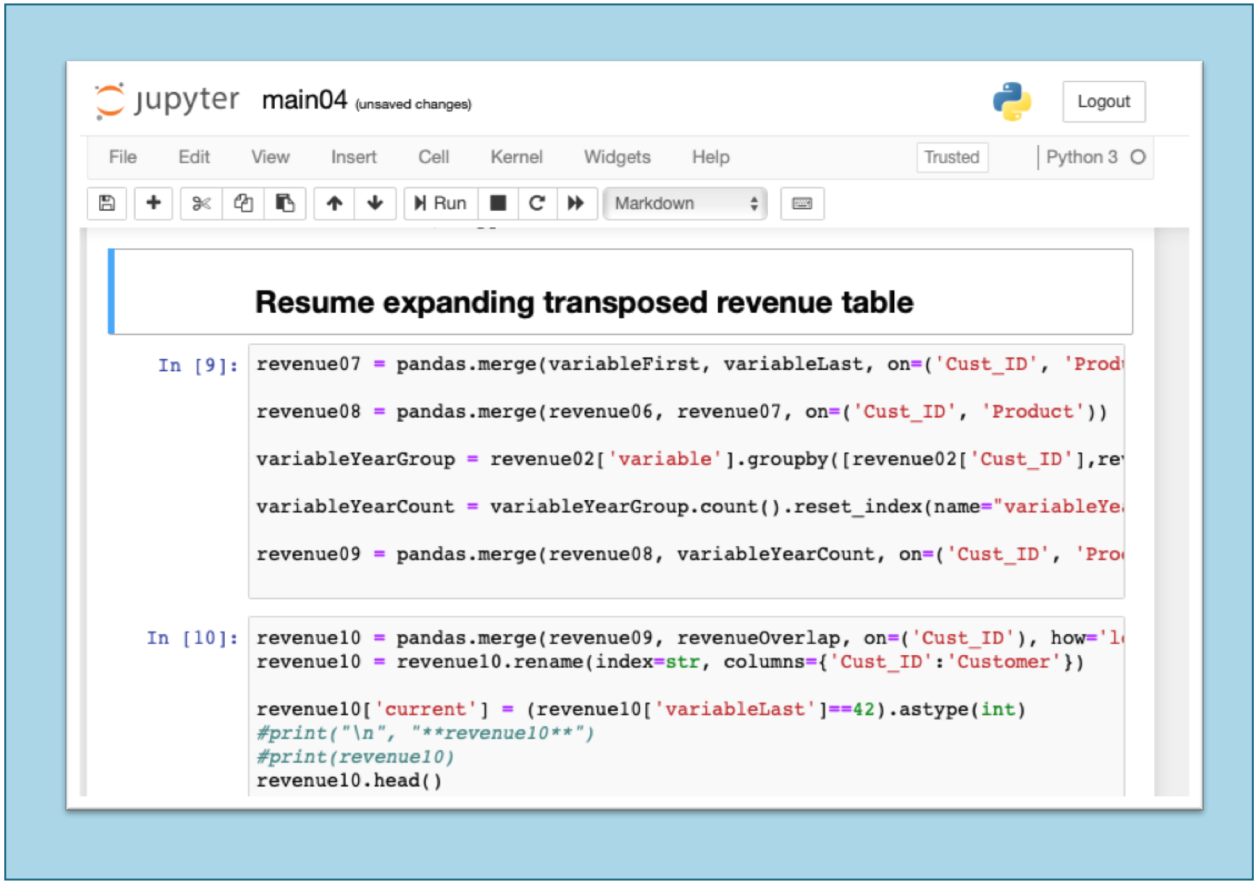
Project Execution

- Initial data in Excel
- Git repository
- Python with Pandas
- Jupyter Notebook

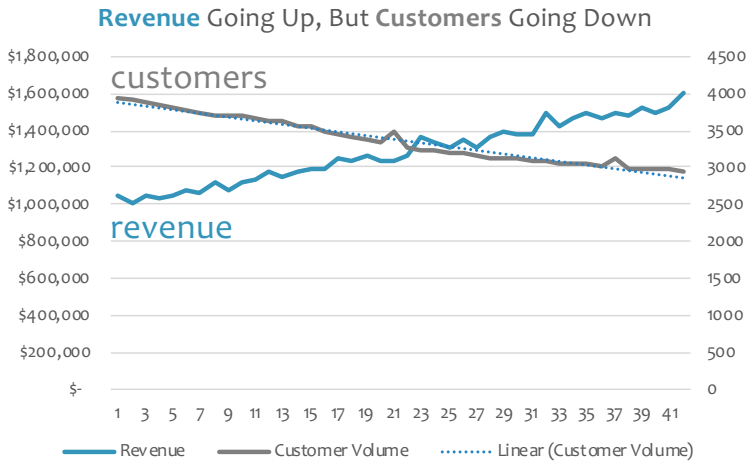


Questions, Observations, More Questions

- How robust is the data?
  - The revenue history does not contain full customer histories, including engagement start data; we have a 42-month interval where some clients have been engaged, some start, some are current, some are not
  - We don't have transaction history for every client that has revenue history
  - The transaction history doesn't specify product, while some customers use both products simultaneously, ratio unknown
- What is the process that creates this data?
  - What is the initial pricing assessment?
  - Are contracts signed yearly and enforced for the duration of the year?
  - Or can the client discontinue any month? Will a client be charged if not using the service at all?
  - Are those negative values charge-offs? How do *they* happen?
- Is the 10% growth rate reasonable?
  - Yes, a large regional bank grows account volume this way, but a small legal firm?
  - Does the customer value this product by the number of transactions/inquiries, the number of warnings returned, or the number of useful warnings? Probably the latter.
  - Are former customers proceeding with a competitor or with internal analytics?

Nope, Business Model Not Working

Assuming we have a healthy sample, we see that the volume of customers is decreasing. This is no recipe for success.



OK… But if the business model is successful with certain customers, somewhere: where is that, and can we recommend a course of action?

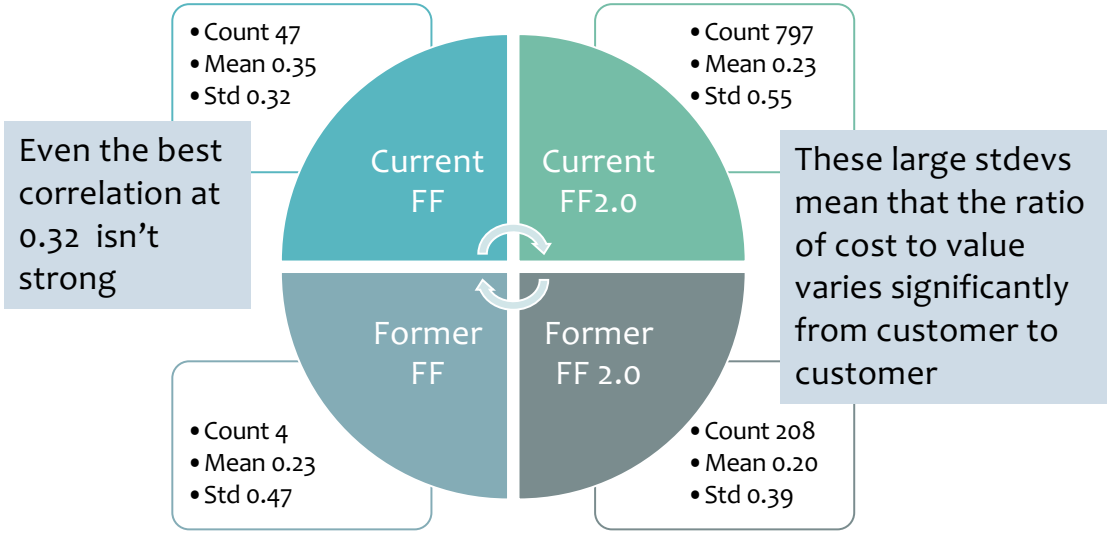
- If the assumed growth rate of 10% is too low, the company is unnecessarily forgoing revenue
- If the assumed growth rate is too high, the company will lose customers due to a perceived increase in cost without a corresponding increase in value.

Final Method and Its (Not Helpful) Results

Method (Executed in Python)

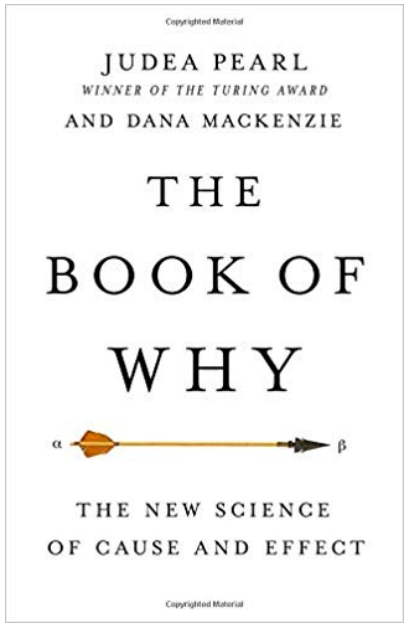
1. Determine cost per transaction for each month (a)
2. Based on compound interest principles, create a dummy value for each month representing the assumed 10% annual growth (b)
3. For pure FraudFinder and FraudFinder 2.0 customers only, decomposed by current or not current, determine the correlation between (a) and (b)

Results: Correlation for Each Group



We haven't found a pocket of success yet. Recommendation for next steps: Find out why customers leave. Perform case studies of individual customers. Collect and explore attribute data to develop the capability to predict which customers are at-risk. With that insight, revisit the business model.

Hi, I'm Anna, and I Like to Start With *Why?*



I was first introduced to Bayesian ideas in Nate Silver's *The Signal and The Noise.* I tried a graduate certificate program locally, but it had no Bayes teaching. I had plenty of fraud data, but kept getting confused about Bayes techniques. Now that I have read *The Book of Why*, I realize I have always needed Pearl's do-operator concept.

Pearl disambiguates among association, intervention, and counterfactual thinking. His tools help us answer the ultimate question *Why?* instead of our stalling at correlation.

Thank you