



Call the right play: How health economists' toolkit can help estimate pharmaceutical asset values

Jason Shafrin, PhD

Senior Managing Director, FTI Consulting

Adjunct Professor, Mann School of Pharmacy, University of Southern California

The financial value of pharmaceutical—and all other—assets can be readily quantified...

Asset value quantification...

$$NPV_{asset} = \sum_t \frac{\pi_t}{(1+r)^t}$$

π_t : Profits in year t

The financial value of pharmaceutical—and all other—assets can be readily quantified...but data is lacking prior to launch making accurate predictions problematic

Asset value quantification...

$$NPV_{asset} = \sum_t \frac{\pi_t}{(1+r)^t}$$

π_t : Profits in year t

...depends on having reliable inputs

$$NPV_{asset} = \sum_t P(success) \frac{(Price_t - VariableCost_t)(Quantity_t) - (Fixed costs_t)}{(1+r)^t}$$

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Economists can assist in helping estimating value-based price... but not all prices in the real-world are value-based

$$NPV_{asset} = \sum_t P(success) \frac{(\text{Price}_t - VariableCost_t)(Quantity_t) - (Fixed costs_t)}{(1 + r)^t}$$

Yes	No
• Can estimate value-based price based on targeted product profile (TPP) and early economic models • Can use data on historical drug prices and rebates (e.g., SSR Health) • Can simulate price trends with different competitor entry scenarios • Can conduct payer interviews or surveys to estimate willingness to pay	• Detailed data on net prices often hard to find • Predicting future competitive dynamics hard to predict given high frequency of drug failures • Non-researchers may have a better 'feel' for payer willingness to pay based on real-world negotiations

Quantity estimation is another area where economists' skills could be useful

$$NPV_{asset} = \sum_t P(success) \frac{(Price_t - VariableCost_t)(Quantity_t) - (Fixed costs_t)}{(1+r)^t}$$

Historically, analysts have estimated likely sales quantities based on drug analogies, but this approach requires picking the right analogy and is often not data driven

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Example

Project sales for a new gene therapy treating pediatric patients with Type 1 diabetes?



Gene therapy



Diabetes medication

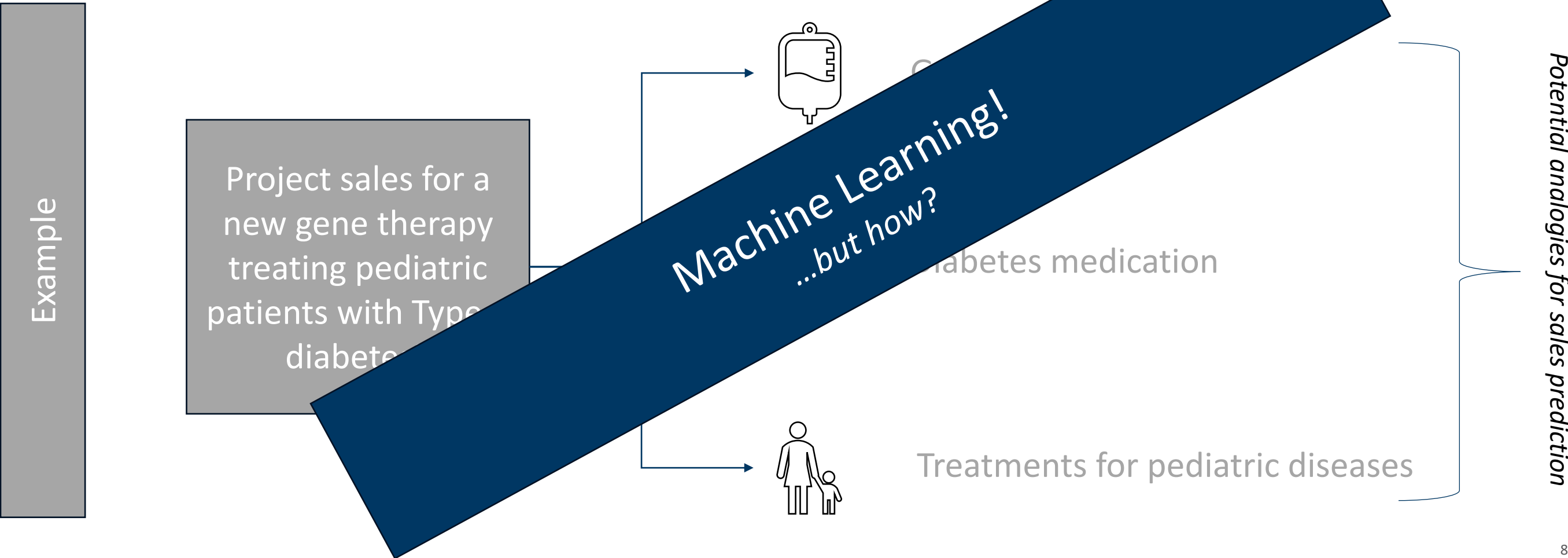


Treatments for pediatric diseases

Potential analogies for sales prediction

Solution: Use machine learning to pick the analogous diseases, products and relevant features...but how?

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