MarketVision RESEARCH®

A BEHAVIORAL SCIENCE FRAMEWORK FOR NEW PRODUCT SHARE ESTIMATION IN HEALTHCARE RESEARCH

It is widely believed in both the industry and academia[1,2] that health care providers tend to overestimate their adoption of new treatments. This may be due to:

Initial excitement for a new option

a lack of consideration of potentially influential factors

dynamics of survey research

In this paper, we will outline methods typically used to adjust for this overstatement, explain their pros and cons, and discuss an alternative approach that offers a comprehensive yet individualized adjustment of new treatment share.

TRADITIONAL METHODS FOR ADJUSTING NEW PRODUCT SHARE OVERSTATEMENT

To better inform forecasts for near-term and peak share estimation, a general practice is to make an adjustment (sometimes referred to as calibration or discounting) to the estimated preference shares. To adjust for overstatement, researchers often use one of two methods as described in detail on the following pages:

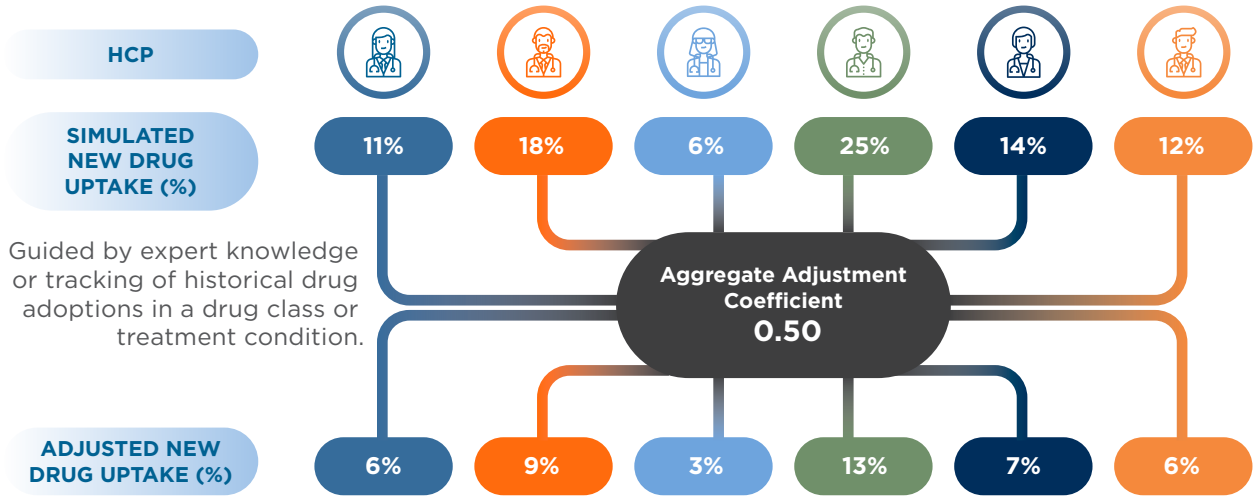
a) **Aggregate overstatement adjustment for all participants in the survey**

b) **Individual overstatement adjustment based on a healthcare provider's stated likelihood to prescribe the new treatment**

a) Aggregate overstatement adjustment for all participants in the survey

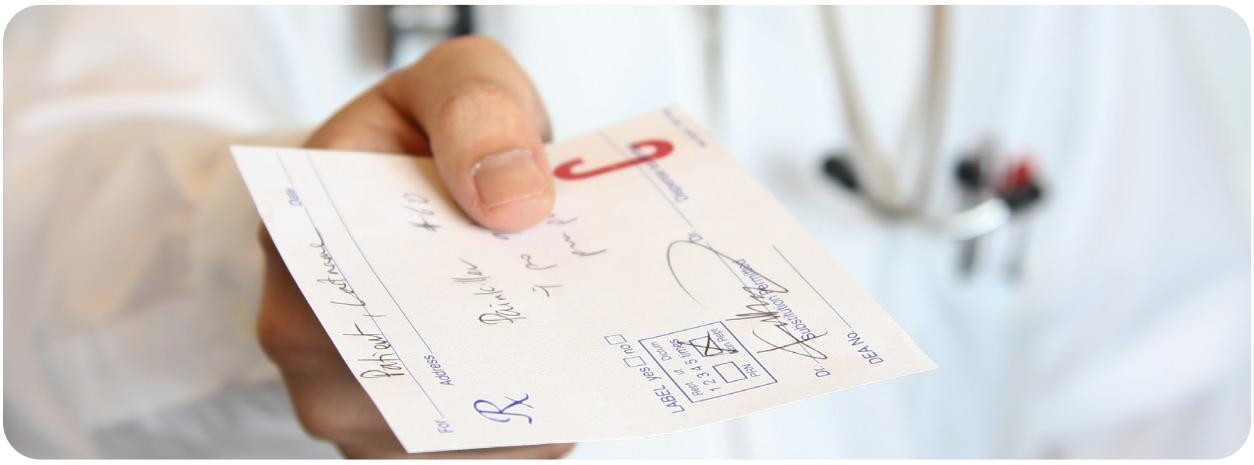
This simple rule-of-thumb approach *[Visual A]* uses a single coefficient to discount the aggregate preference share or the average percentage of patients that are put on a new treatment. Though it is often used as a rough judgement (for example, cut new product share by 50%), confidence can be improved by tracking averages from prior tests and in-market results and updating as is relevant.

VISUAL A.



While this method offers a simple and standardized adjustment, it:

- fails to account for the heterogeneity in healthcare providers' psychographic and behavioral profiles
- when applying to the results of conjoint modeling, is at odds with one of its key benefits – which recognizes that each healthcare provider is unique and estimates their individual preference shares accordingly.



b) Individual overstatement adjustment based on a healthcare provider's stated likelihood to prescribe the new treatment

To adjust the predicted preferences or share of patients, a discrete set of probability coefficients *[Visual B]* are applied to a healthcare provider's stated likelihood to prescribe the new treatment on a Likert or Juster scale.

VISUAL B.

Q. Based on the initial information you read about Product X, how likely are you to prescribe it to your adult patients with <condition>? Please assume Product X is approved and available for the treatment of <condition> in adult patients. *Click here to review the initial information about Product X.*

	Not at all Likely				*Somewhat Likely*						*Extremely Likely*
	0	1	2	3	4	5	6	7	8	9	10
Adjustment Coefficients	0	0.12	0.25	0.44	0.56	0.64	0.69	0.73	0.77	0.79	0.81

Unlike the aggregate method that treats all respondents the same in adjusting for overstatement, this approach *[Visual C]* adjusts the share of those that are less likely to prescribe the new treatment more than those that are more likely to prescribe. This method assumes that those who say they are more likely to prescribe are less inclined to overstate their preference for new treatments.

VISUAL C.

HCP						
SIMULATED NEW DRUG UPTAKE (%)	11%	18%	6%	25%	14%	12%
	Based on each HCP's Stated Likelihood to Prescribe					
Likelihood to Rx	Extremely likely	Likely	Somewhat likely	Extremely likely	Not likely	Somewhat likely
Coefficient	0.81	0.77	0.64	0.81	0.25	0.64
ADJUSTED NEW DRUG UPTAKE (%)	9%	14%	4%	20%	4%	8%

While this method provides a healthcare provider-specific adjustment factor that may better reflect differences between individuals:

- it is a single, stated measurement of likelihood to prescribe that may be affected by the same biases that result in the initial overstatement of new treatment share that we are trying to adjust for
- it overlooks other key physician attitudes and behaviors that can impact in-market drug adoption, beyond just the stated intent to prescribe. For instance, two healthcare providers might express the same intent to prescribe a new drug but differ in their views on unmet needs in the treatment area. A physician who perceives a significant unmet need is more likely to prescribe than one who does not. Therefore, applying the same adjustment factors for both is not appropriate.

Uptake % and adjustment coefficients shown here are for illustrative purposes only

BEHAVIORAL-SCIENCE BASED METHOD FOR ADJUSTING NEW PRODUCT SHARE OVERSTATEMENT

While both methods described above are widely used, MarketVision also utilizes an alternative method that includes a combination of factors to determine how best to adjust share for each individual healthcare provider. The idea of using multiple factors is supported by past research[1,2] indicating that using multiple behavioral measures is more predictive of the actual prescribing behavior of new treatments in the market than simply using one measure.

Our approach to selecting which measures to include is based on a behavioral science framework used across academic and commercial health research to gain a comprehensive understanding of behavioral factors. The COM-B[3] framework identifies three drivers of effective behavior change (e.g., prescribing a new product) – Capability, Opportunity and Motivation. By including survey questions addressing each of these 3 topics, we can create individual adjustment factors for each healthcare provider.

Capability – Individual healthcare provider's ability to behave in a certain way. Examples include:

- Perception of unmet needs in the treatment of patients for a particular condition. The more they see an unmet need, the more likely they may be to use something new that addresses it.
- Awareness of new treatments early in the drug development phase may translate to consideration and earlier adoption.
- Current patient volume and/or prescribing volume in the same therapeutic class or for the same pharmaceutical company as the new treatment. Those with higher volume may be more likely to adopt earlier.

Opportunity – External factors that make a behavior possible. Examples include:

- Administrative burden associated with prescribing/administering treatment may limit use.
- The hospital-specific formulary approval system may delay use of a new treatment.

Motivation – What inspires behavior. Examples include:

- Interest in novel features of a product or the degree to which those features are seen as addressing an unmet need.
- First to try / Cautious follower mindset (expected time to trial / adoption of a new treatment).

In place of a single aggregate coefficient or a few discrete coefficients tied to a single measure (e.g., likelihood to prescribe), the COM-B approach *[Visual D]* uses multiple measures associated with behavior to develop the adjustment coefficients.

VISUAL D.

HCP						
SIMULATED NEW DRUG UPTAKE (%)	11%	18%	6%	25%	14%	12%
Individual Adjustment Coefficients Based on Drivers of Behavioral Changes						
Unmet Needs for Condition Y	No unmet need	Neutral	Neutral	Significant unmet need	No unmet need	Significant unmet need
Administrative Burden	Somewhat	Significantly	Not at all	Somewhat	Significantly	Somewhat
Likelihood to Rx	Extremely likely	Likely	Somewhat likely	Extremely likely	Not likely	Somewhat likely
Coefficient	0.72	0.67	0.78	0.84	0.33	0.76
ADJUSTED NEW DRUG UPTAKE (%)	8%	12%	5%	21%	5%	9%

Selection and weights of these additional measures is customized to each study and is informed by a combination of statistical inference and domain knowledge (drug class, intended use or indication, size of the pharmaceutical company etc.). Careful consideration must be made not only in how these questions are framed for physicians, but also in the selection of the questions that should be used in determining the individual coefficients. Acknowledging the interaction of factors such as unmet needs and order-of-entry for a specific indication or drug class helps with scaling of the adjustment coefficients.

Factors selected, uptake % and adjustment coefficients shown here are for illustrative purposes only. Individual level coefficients are estimated using a statistical function of the included factors.

CONCLUSION

There are multiple ways to reduce over-statement of new product preference share. Some organizations may prefer the traditional methods of adjustment mentioned in this paper based on past success with them. Others may find that for their particular therapeutic area, the traditional methods have not yielded accurate estimates in the past. The behavioral-science based adjustment method outlined in this paper provides an alternate option. It provides an easily explainable framework for selecting influential aspects of physician behavior to provide a more reliable basis for adjusting new product prescribing volume estimates.

REFERENCES

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3. Michie S, Atkins L, West R. (2014) The Behaviour Change Wheel: A Guide to Designing Interventions. London: Silverback Publishing. www.behaviourchangewheel.com.

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**Note that this paper focuses on factors that can influence physician's decisions and can be reasonably measured in survey research. Patient and market factors (e.g., disease prevalence, policy or guideline change etc.) that fall outside a physician's decision algorithm are not considered.*