



# MarketDial

White Paper Series  
Representative Sites

Minimize  
bias and  
maximize  
your testing  
results

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**Ty Bodily**

Manager of Data Science, MarketDial

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# Minimize bias and maximize your testing results

*Ty Bodily, Manager of Data Science, MarketDial*

## What it takes to avoid bias in store selection

In general market testing, the larger the sample size, the more robust and reliable the test. But for retail and other location-based testing, a large sample size isn't practical or even possible.

What does it take to minimize bias and maximize insights from a small sample size? It takes a proven system with guardrails that help ensure confidence in the results.



## What is bias in testing?

Bias is any quality of a sample that causes it to respond differently to a test than the population from which it was drawn. For example: If you test a price increase only in locations frequented by people with high incomes, you may not get the same results as if you tested locations that represent a range of incomes.

Income level becomes a bias that distorts the testing outcome and can negatively influence any resulting conclusions.

# The challenge of unbiased A/B testing

Instead of tens of thousands of samples, many brick-and-mortar retailers have dozens to hundreds. This makes it more difficult to determine which sample locations will yield the most reliable results across the retailer's footprint. It takes a robust set of site attribute data to achieve unbiased samples. But that can be difficult to obtain.

This white paper provides insights on how to mitigate bias in A/B testing, enabling you to create a source of truth for reliably repeatable experimentation.

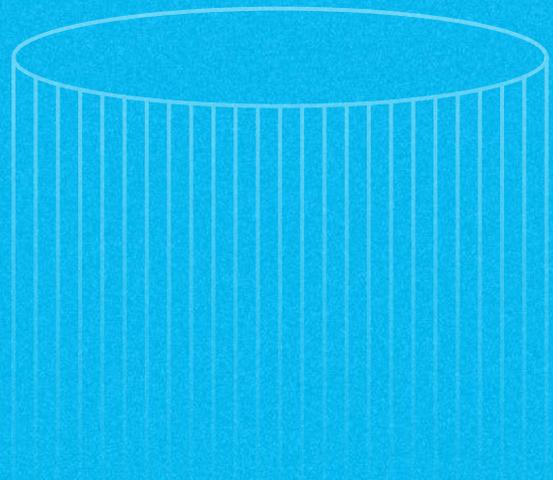
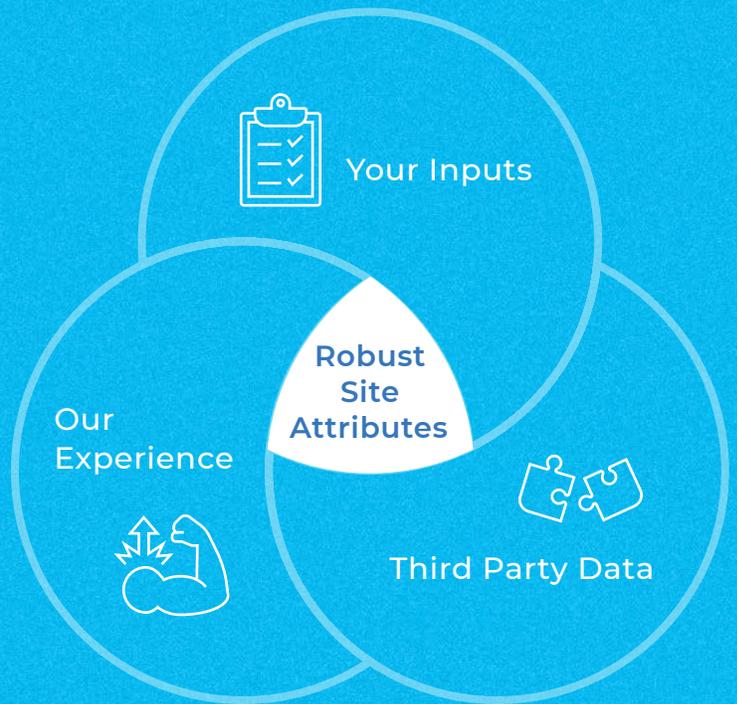
## Identifying the right attributes

Drawing on our expertise and informed by a client's perspective of the attribute variables that are most important to a specific test, we overlay data from third parties to enrich the attributes known about each site. This enables you to understand your customers in new, more robust ways.

### Third-party data includes:

- ▶ Competitive density
- ▶ Geographic nuances  
(important if regulations differ from state to state)
- ▶ Socioeconomic indicators  
(income, education, employment)
- ▶ Urban vs. rural
- ▶ Age
- ▶ Race
- ▶ Household size
- ▶ Consumer expenditures according to product categories
- ▶ Shopping preferences  
(specific locations and online vs. brick and mortar)

These details and more create a way to meaningfully distinguish sites from one another.



# Weighting the variables

Once you have a picture of each location's variables, you can determine which are most relevant to your testing hypothesis. [>Learn how to create a testable hypothesis.](#) It's also important to consider whether you seek results that apply across your fleet or to a specific kind of store, consumer, geography, etc. within your fleet. Case in point: You may have self-standing locations and locations within other stores. If you are only interested in the self-standing locations, you would make that variable a top priority.

## How we help clients determine the most unbiased locations to use:

- 1** The MarketDial software identifies the variables that are most important to the outcome of the test. What emerges is a sample representative location using a general set of the best-candidate variables. Typically this means reducing the attribute data points to a set of 10-20 variables that reveal the desired location characteristics.
- 2** The software then assigns weights to the variables based on uniqueness. This ensures that sets of correlated variables will not dominate the subsequent sample selection process.
- 3** With all the above elements in place, the MarketDial sample selection algorithm then picks the samples that best represent the client's broader fleet.

Although complex, this process takes active MarketDial clients just minutes to complete. The key is to gather the data that makes up the site variables in the beginning—as part of the onboarding process. Then the data is ready, embedded with the third-party overlay, for use at a moment's notice.

*“We have to use the Palm Beach store!”*

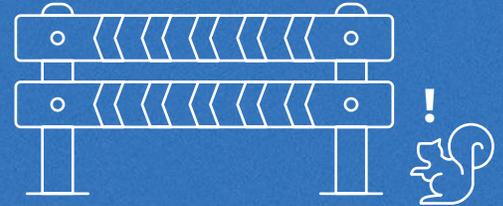


Having a statistically rigorous process using MarketDial's technology helps diffuse distortions that may result if a decision-maker wants to include a favored location. That location would need to have the desired attributes to be relevant to a specific test.

# The value of guardrails

With testing comes some degree of bias. It's important to recognize that and actively work to minimize it. The more hands-on the process, the more opportunity there is for unintentional—or intentional—bias. The MarketDial platform provides guardrails to ensure the experimentation is consistent, reliable, and scalable.

The system guides you in selecting samples based on reasonable default weights. You can adjust those, to some degree. But, overall, the guardrails enable a range of users to confidently create valid A/B testing.



Guardrails provide intuitive guidance and keep a test from becoming too biased. But that's not the only safety net built into the MarketDial process. Our Client Success team provides hands-on support to help a client make the most of the system and optimize their experiments.

## Empowering a culture of experimentation, from novice to advanced

As you get more comfortable creating tests, you may want more control over the levers used to determine the representative locations. At that point, it's important to have access to the following analytics to make it easy to see why a sample is or isn't representative of your fleet.



With these insights, advanced users can adjust input parameters, such as site attributes or weights. This enables anyone—from new marketing hires to sophisticated data scientists—to successfully construct rapid, reliable, precise experiments. It also ensures that employee turnover doesn't derail your testing strategy.

# What you don't know can compromise your test



Some level of bias exists in any test, but you can take action to minimize it through careful identification, prioritization and selection of the variables that make up your location attributes. As complicated as this seems, MarketDial makes it intentionally easy to get the reliably robust insights you need to reveal opportunities and avoid risk.

## Why MarketDial

More than 100 leading companies and global brands rely on MarketDial to help them create a culture of experimentation with intentionally easy A/B testing. MarketDial's simple interface makes asking "what if?" the cost-effective protocol for intelligent action. [Learn how now](#)

## About Ty Bodily, Manager of Data Science, MarketDial

As Ty was getting his bachelor's and master's degrees of science at Brigham Young University, he developed a passion for data and all it can inspire. His desire to dive deep into methodology questions led him to research and innovate ways to amplify analytic accuracy. This made for an ideal fit with MarketDial, where Ty brings his entrepreneurial approach to the powerful data discipline he continues to hone for the benefit of our customers. When not imagining the nuances of sample selection, Ty is playing piano, enjoying all that Salt Lake City offers to enhance his fitness, and reading fantasy/sci-fi.

