



# Mosaic In-market Testing

## Small Data Testing + Big Data Analytics

“Big Data” analytics offer a wealth of insights, yet testing remains the only way to prove cause-and-effect impact. Like panning for gold in the flow of market data, big data analytics can sift out valuable nuggets from back-end data. Testing, in contrast, puts you on the front lines. You’re there up close, controlling the marketing mix to give you the insights you want, measuring performance, and watching your customers’ real-world behavior... hidden from view just a few steps away. Analytics and testing are not an either-or proposition, but related sets of tools with a combined impact greater than the sum of the parts.

“Small data” testing gives you the speed, agility, and clarity to accelerate learning, react quickly, and give you a higher-resolution view of the marketplace. Instead of waiting for useful data, tests are designed to give you just enough of the right information. Every data point adds one piece of new insight, so proven results come more quickly. Plus tests can be designed to give you very granular insights. Price changes and new creatives can have a fleeting impact that gets lost in the noise once they flow into your database. Tests capture the details to let you see many small changes that can add up to a big lift.

Think of data as raw materials. Like the gears of your “marketing machine,” analytics should run continuously to process data, gather new insights, and refine statistical models. Testing is like the cogs on the gears: frequent, discrete events to leverage analytical insights, test new ideas, and optimize key elements of the marketing mix to push the machine to new levels of productivity.



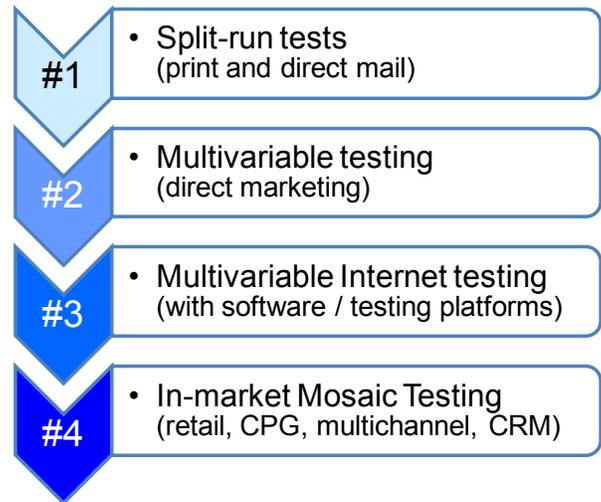
Tests require proactive planning. Each test should have a strategic focus while testing the tactical details. Then results can flow back into your database to help refine statistical models with new information and deeper insights. You cannot test everything, so only the high-potential insights from your analytics – along with new ideas and changing market opportunities – should be culled for in-market tests.

Testing and analytics can form a continuous cycle to build knowledge, refine marketing programs, and improve customer selection and understanding. Statistical modeling can quickly and cheaply analyze an immense amount of data to identify key variables that affect customer response and marketing effectiveness. But modeling and data-mining are reactive: they pull information from existing data, but cannot uncover insights the data simply do not hold. Testing is proactive: you design a test to give you the insights you want. Testing’s strength is clear, accurate, proven insights with a small sample of data.

## **Four Generations of Marketing Testing**

In-market testing has been around since the start of newspaper advertising in the early 1900s, when multiple print runs allowed for different mail-order ads in the same daily paper. This led to the term “split-run testing” (also called A/B, test-control, controlled-store or matched-market, or champion-challenger tests). For the next 80 years, advertisers saw impressive gains from testing offers and creatives in newspapers ads, direct mail packages, and other marketing channels.

While marketers embraced one-variable-at-a-time split-run testing, a small group of statisticians – outside of mainstream statistics and completely unknown to the business world – were working on new ways to test more variables more efficiently. Innovations in the field of “design of experiments,” starting in the 1920s, led to numerous types of designs and advanced techniques for multivariable testing. But like many new technologies, the academic science took years to reach the marketplace. Technical papers received little attention outside of statistical journals until articles began to trickle into the popular press in the late 1990s.



### **The 2<sup>nd</sup> and 3<sup>rd</sup> Generations**

While 1<sup>st</sup> generation split-run techniques are still widely used, 2<sup>nd</sup> generation testing – the big leap from one-variable to multivariable techniques – was born in the late 1990s. In-market multivariable testing began in direct mail (where A/B testing was common) and then progressed into other marketing channels.

*(A personal note... When I was writing early articles and talking to marketers in the 1990s, the biggest hurdle was convincing executives that “multivariable testing” was real. After all, how can anyone claim to have some magic formula that the industry experts never heard of... and seems to contradict the basic Scientific Method? It wasn't until a few forward-thinking executives agreed to try it that others finally began to accept the possibility.)*

The 3<sup>rd</sup> generation brought multivariable testing to the Internet. Early articles like “The Quest for Net Profit” (*Inter@ctive Week*, 1999) and “E-Testing in Internet Time” (*Target Marketing*, 2000) foreshadowed the explosive growth of multivariable techniques online. Following the first Internet test in 2000 (a 25-element banner ad test with the #1 online advertiser at the time), entrepreneurs developed online platforms that simplified landing page and website tests. However, their singular (and successful) focus eclipsed marketers’ awareness of the extensive off-line potential for multivariable testing. Internet platforms showed that multivariable testing worked. The next step was to develop more efficient, channel-focused statistics and strategies.

### **Mosaic Testing: The 4<sup>th</sup> Generation of In-market Testing**

The 4<sup>th</sup> generation takes testing from a one-size-fits-all approach to a customized toolbox and flexible strategy for different industries, channels, programs, and objectives. 4<sup>th</sup> generation “Mosaic Testing” has brought three key innovations to the art, science, and implementation of in-market tests.

## 1. Elements (the art)

Like the tiles in mosaic art, the elements of a test – the specific marketing-mix variables and test settings – determine the range of design options and “potential energy” for success. In these fluid early stages, endless possibilities make the choice of elements challenging, yet this aspect of the “art” of testing begins to solidify your options for test design and insights.

Many bold, bright new ideas offer greater flexibility to employ different statistical test designs and can have a dramatic market impact with relatively small sample size. In contrast, the selection of fewer, similar, less well-defined elements may restrict design options and lead to a longer-running test in order to see statistically-significant differences. For example, a test of packaging, pricing, graphics, and in-store advertising may lead to more “colorful” combinations than an e-mail test where all elements are copy changes within the text of the email. That said, if you plan to test shipping fees, then every element might encompass small changes to pricing, purchase thresholds, terms, and messaging – perhaps less colorful, but very valuable in optimizing sales and costs.



Textbook statistics do not tell you how to select test elements, yet the choice of elements defines your potential for success. Tests require a structured approach from the start to bridge the conflicting demands of the marketplace and statistical theory, linking the two throughout test design, execution, and analysis.



The art – the strategy of mosaic testing – acts like the cables in a suspension bridge: with a constant back-and-forth connection from the solid statistical structure atop the marketplace to the fast-moving, ever-changing mix of customers zooming by. Mosaic testing integrates a market-focused strategy that holds it all together.

## 2. Design (the science)

Multivariable testing is based on 90 years of specialized statistical research that has led to dozens of test strategies with hundreds of possible designs... all with zero consideration of the unique challenges of in-market testing (historically, academic statisticians and marketers seldom crossed paths). Mosaic testing draws from this last century of research to create hybrid tools for in-market “front line” testing. Some statistical techniques are bypassed while others are reinforced. Since the marketplace is far from a stable consistent laboratory environment, the science needed to be updated for real-world use.

Some of the innovations in mosaic testing include:

- Robust design strategies that hold up to unstable market forces. Statistically, this means orthogonal vs. optimal design structures, two-level “square” vs. multi-level asymmetrical elements, balanced test recipes, etc.
- Hybrid test designs to integrate multiple objectives. Instead of freely adding all elements into the same pot to create one large complex test, a better approach is often to combine multiple test designs into one over-arching strategy.

Creative and offer elements can be divided into large “main effects” designs and smaller designs with more combinations in order to analyze interactions in greater depth. Like a home with different flooring in the kitchen, sunroom, and family room, different mosaic tests can be linked together to optimize multiple objectives within one test strategy.

- Tessellated designs – guided by the type of test elements.  
The test elements (like tessera in a mosaic) determine the reasonable universe of mosaic test designs. Instead of starting with the statistics and making all variables fit the same structure, the test design must leverage the elements’ characteristics. Large concepts may be broken down to component pieces that can be tested and then recombined in the optimal combination. For example, one offer test included 4 ways to present the value proposition, 3 types of premiums, and multiple messages. The ideas were divided into 11 two-level test elements to pinpoint the optimal combination within a robust test design (with results leading to a 34% jump in transactions).

### **3. Alignment (in-market implementation)**

Even with hard-and-fast statistical requirements and fluid test elements, the art and science must align with market reality. In-market testing is unique as a “front line” science rather than laboratory research. Data are pointless if they do not represent real-world shopper behavior and repeatable purchases. The use of statistical techniques, translation of test designs into store layout and marketing programs, and analysis and interpretation of results must all conform to the dynamic reality of the marketplace.

In particular:

- a) Elements alone and in combination must be well-defined to be impactful yet manageable – as clear and distinct as the square tiles of a mosaic artwork, so they’re easy to mix-and-match and confirm correct setup of each mosaic combination.
- b) Sample size must be sufficient for a powerful test and clear assessment of variation. A mosaic test may need only 1/10<sup>th</sup> the sample size of an A/B test, but must be large enough to:
  - Separate natural variation from the impact of test elements (with often large and inconsistent market noise)
  - Measure store-to-store differences to separate local effects from the “global” impact of test elements
  - Pinpoint small changes that add up to a big lift (the larger the business, the smaller the change that should be detected)
  - Ensure consistent results that accurately predict real-world sales (to allow more rapid and confident rollout of results)
- c) Statistical techniques for in-market testing should focus on power and efficiency. Numerous techniques need to be employed in both the design and analysis of in-market tests. However – in contrast to modeling or other “big data” analytics – good up-front planning should lead to a relatively simple design and straightforward analysis of results. Like a skilled violinist, an experienced test expert achieves maximum impact from an efficiency of movement. Testing looks easy when done well. With straightforward execution, the results are easy to understand. With a full knowledge of all available techniques, the statistical expert knows which methods to avoid, along with the few best techniques needed to clarify and quantify market reality.

## **Case Study: Mosaic Testing in CRM**

The CRM program for one market leader included a 14-effort series of direct mail, e-mail, and package inserts to increase sales from existing customers. They wanted to test changes to the creatives, offers, and number and mix of touches. The team brainstormed ideas and concentrated the list to focus on two tests of 11 creative elements and 6 elements of the offer and contact stream.

The 12-recipe creative test (testing 12 out of 2,048 possible combinations) identified 4 significant elements with a 7.5% impact on response rate. The 16-recipe offer test showed the significance of all 6 main effects plus interactions (how each element changed in combination with others). The new CRM program outperformed the 7-years-strong control as much as 15% and reduced test time from 3½ years to 9 months!

This case study is a good example of the four key benefits of Mosaic Testing:

1. **Accelerated learning** = faster, proven insights within dynamic high-value markets.
2. **Deeper insights** = more marketing-mix variables tested in greater depth. If it's true that "the more you test, the more you learn," then mosaic testing gives you the tools to learn 10x faster than standard test-control techniques, plus see granular results that are normally difficult to separate from the market noise.
3. **Greater confidence** = leveraging sample size efficiency, mosaic test results have lower experimental error with predicted results close to actual rollout.
4. **Focused flexibility** = test strategies that are well-aligned with marketing objectives and constraints. Every test has unique challenges and opportunities. Mosaic testing lets you pinpoint the right strategy for concise, cost-effective, customized shopper marketing and consumer insights.

### **Invest in testing where the risk, cost, and reward are high**

The cost and value of marketing, advertising, and in-store programs increases as you move from research to the front lines of the marketplace.

Mosaic testing gives you the tools to manage the risk and cost while accelerating insights and ensuring profitable results. You can quickly test many new ideas, quantify the impact of each, define the optimal mix, rollout results, and prove your ROI while your competitors fall further behind.

In-market testing with one brushstroke with Artestry's mosaic testing.



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