Agency Playbook

Welcome to your gateway towards advanced media measurement and scalable data practices through Principia Analytics. Our goal is to enable the success of your agency through our analytics solutions and give you the tools to recognize opportunities for your agency to stand out as an advanced media partner.

For each product below, we provide a modular framework of simple descriptions, pragmatic problem/solution relationships, product benefits and technical descriptions in order for you to best serve clients with Principia Analytics products and services.

This playbook will give you the ability to take a question and provide a simple answer, but still have the tools available to describe each solution more technically. White-labeling data science capabilities will serve as a major differentiator for your firm, and a secret weapon to win new clients.

Benefits of White-Labeled Advanced Analytics

The full scale utilization of Principia's analytics and data science practices empowers your team to better serve your client base and find solutions to some of the toughest problems facing their businesses. Analytics can provide a more whole understanding of your customers, forming relevant interactions that enable a holistic experience across all touchpoints.

Our analytics solutions and expertise can facilitate the anticipation of market demands, warranting your agency to stay ahead of the curve. Principia can ensure your teams are making continuous optimizations, allocation improvements and design advancements in order to better serve your client base.

As a marketer, advanced analytics can be used to help determine which digital media channels, publishers, campaigns and ad groups are performing the best. Coupled with top of the line tracking capabilities, analytics brings visibility and insight into cross channel and cross device behavior of your customer base. Principia can aid your team and client base to better understand the future through consumer behavior forecasts, shifts in customer taste, and audience profiling. An understanding of these results can allow your marketers to be proactive, up-sell, build wholesome customer relationships and know how to acquire new customers.

White-labeling with Principia brings great technical power to your brand, allowing your teams to tout our data science capabilities as your own. The impact of increased analytic capabilities allows your team to be as knowledgeable as ever, enhancing problem solving capacity, building client loyalty and increasing organic growth and providing a major point of distinction in efforts to win more business.

The Problem Solving Advantage

In today's modern business environment, the problems clients face have become increasingly complex and Principia has developed a set of products and services to quickly and effectively solve many of these issues. Our goal is to enable your team to better help your client base by equipping you with straightforward solutions to problems most relevant to your clients.

We have arranged a series of potential questions that can be answered by Principia products and services. Each question hyperlinks to the corresponding product/service detail and also includes a brief answer to the problem stated in language that can be easily understood.

Problems Answered by Causal Attribution
- Is my digital media is working? What is my ROI?
- Are my online sales incremental? Is my media driving sales that help my bottom line?
- Is my paid search media cannibalizing organic search efforts?
- Which ad groups/channels/media buys bring more value to my company?
- How can I show marketing results that can be validated by my executive team?

Problems Answered by Fractional Factorial Experimental Design
- Which of my advertisements perform the best?
- How can I better inform the creation of ads to help grow my business?

Problems Answered by Consumer Segmentation
- What do my consumer groups look like? What do each mean to my business?
- What search keywords provide the most value to my brand?
- In what way can I have consumer types inform the way I run my business?

Problems Answered by Recommendation Engines
- How do I make buying my product easier?
- How can I up-sell & cross-sell my consumers?
- How can I understand consumer purchase behavior in a way that drives more sales?

Problems Answered by Forecasting
- What will my conversions or revenue be next month? Quarter? Year?
- What can I learn from any of my campaign, media and markets via trends?
- What should I budget for a particular period?
- How many users will we have by a certain date?

Problems Answered by a Full Reporting Suite
- Is there a way I can I get my all media performance data at my fingertips in real time?
- How can I get a pulse on the effectiveness of my media in a centralized location?

Does your client still have questions unanswered? Let them know that Principia can contract through your agency to help solve specific data science problems facing their company.

Return to Top

![principia ANALYTICS]

Causal Attribution

Causal Attribution is a way of improving your marketing measurement. It combines the ability to measure the cause and effect of your marketing dollars, to determine whether conversions that occurred were incremental to your bottom line. This is similar the industry standard methodology of Public Service Announcement lift testing, but served in near real-time and with the granularity and efficiency fractional attribution platforms. Below is a visualization of the current marketing attribution space, displaying power of Causal Attribution in both speed, granularity and accuracy.
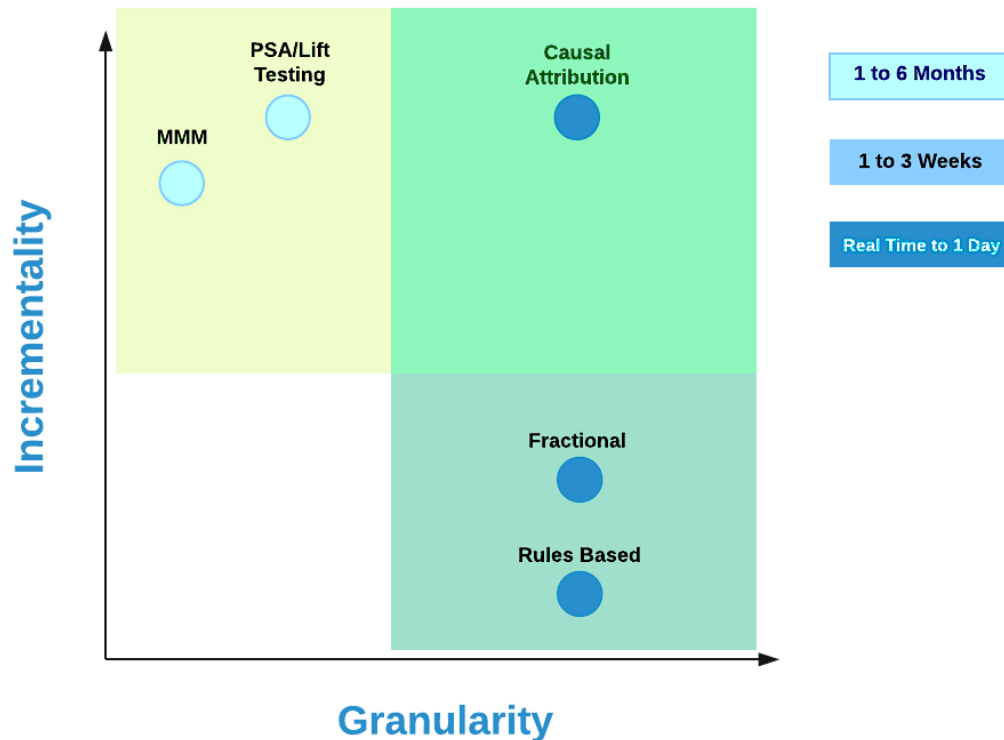
Causal attribution harnesses the best of both the cause and effect relationship between your media and sales, as well as fractional attribution methodologies to optimize your marketing performance. Incrementality is measured by comparing the purchasing actions of people not exposed to advertising (non-viewable media) against those who are exposed (viewable media), forming the test and control groups of a natural experiment.

Causal Attribution: *Q & A*

- **Is my digital media is working? What is my ROI?**

  In near real time, Causal Attribution gives granular level insight into the people who are influenced to buy your product by the media you serve them, and the people who would have bought your product anyways. The resulting transparency allows you to be an incredibly efficient steward of media spend, optimizing return on investment in a granular, but in a straightforward manner.

- **Are my online sales incremental? Is my media dollar driving sales?**

  Traditionally, media providers give us conversion numbers as if their media had convinced every single person who saw their ad to buy. We know that their advertisement has the potential to convert customers, but just because an ad was served it does not mean that it drove the sale. Causal Attribution uses cause and effect experiments to determine the incremental effect of media.

- **Is my paid search media cannibalizing organic search efforts?**

  When paid media is ramped up in search, the extra spend is takes away conversion credit from purchases that would have happened organically and gives the credit to the paid campaign. This is because of paid media historically has the inability to determine the difference between incremental and organic conversion, so you have the potential of good money chasing someone who is going to buy anyways. Causal attribution answers this question by allowing you to find and avoid organic customers in order to pursue new incremental ad groups with your paid media.

- **What ad groups bring more value to my company? How do I find new ones?**

  Causal attribution gives you the ability to recognize ad groups that provide incremental conversions caused by your marketing efforts, versus those who are not. What that means is the data speaks for itself, you will find that some ad groups are surprisingly incremental to your bottom line and that you should invest more into the growth of those groups. On the contrary, other ad groups could show a large amount of conversions by traditional attribution methods, but could actually provide no incremental effect on your bottom line, thus should not be spent towards.

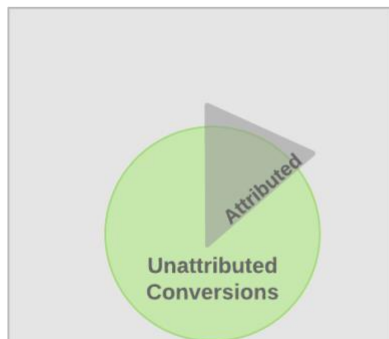- **How can I show marketing results that can be validated by my executive team?**

  Executive teams have been searching for validated relationships between the money they put towards marketing and resulting sales figures, often finding inconsistent correlation between the two. As a result, many executives are skeptical in signing over media budgets, or many will even cut large portions of media spend entirely. Causal attribution puts an end to the guess work and provides 1 to 1 transparency of media spend that can be validated across multiple sources, providing results that satisfies stakeholders.

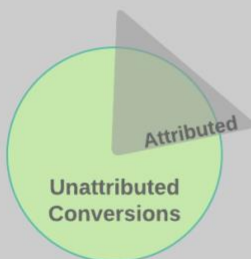# Causal Attribution: *Applications & Benefits*

Optimization fueled growth is the essence of causal attribution. Moving your media dollars towards incremental conversions creates wide-reaching, benefits across your entire digital media landscape. Placing money in better incrementally media buys decreases your overall CPA, increases your ROAS, and allows media professionals to eye their bottom line with increased budget efficiencies.

Causal attribution offers, more than anything, a toolset to capitalize on a paradigm shift in marketing strategy. Traditional methodologies do not offer visibility into what is actually growing sales, therefore traditional optimization often leads to maximizing media attributed conversions rather than maximizing overall conversions for the benefit of the company. Causal attribution methodologies on the other hand, offer clarity into customers that help grow the company, grow sales, and save money on customers who would have purchased anyway.
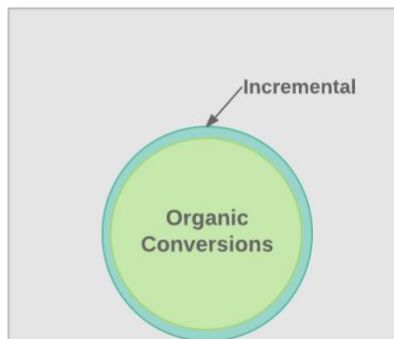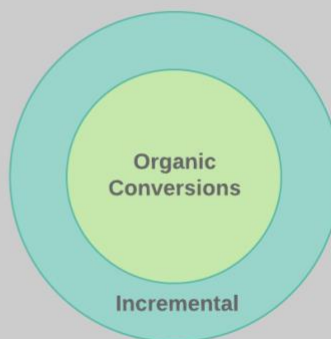
Traditional Media Methods:

Causal Attribution Media Methods:

Incremental

Organic Conversions

Attributed

Unattributed Conversions

"Traditional media metrics offer a bigger slice, while causal attribution metrics offer a bigger pie"

Optimization Towards Traditional Metrics

Optimization Towards Incremental Metrics

Attributed

Unattributed Conversions

Organic Conversions

Incremental

Causal Attribution: *Noodles & Co. Case Study*

Noodles and Company approached our team with a deceivingly simple problem, use media to drive online orders. With no awareness budget, we were restricted to delivering bottom-funnel results via online ordering. Our teams collaboratively determined that Noodles' marketing team not only needed to show that media could drive online orders, but that media was actually driving incremental orders.

This was not about having media 'take credit' for sales that were already going to happen – that wouldn't have moved the needle. What Noodles' marketing team needed to show their finance and executive teams was that without advertising and media, the company would have missed out on a certain percentage of sales and, therefore, revenue.

In turn, measuring the impact our media had on incrementality was a key priority to both maintain and increase advertising budget for the next campaign. With incrementality as our prerogative, we had two primary objectives:

Drive awareness of new offers on the menu

Drive as many online ordering sales as possible

The results spoke for themselves, optimizing towards incrementality, we reduced incremental CPAs decreased 67% from the start of the campaign to the end of the campaign. In other words, the overall effectiveness of media spend at driving new online orders for Noodles & Company more than tripled.

Over the course of the entire campaign, the media run helped to drive 30% incremental total revenue. With margin and media spend included, ROI for the campaign netted out at $2.87. Both the CMO and the CFO from Noodles were finally aligned on the success, and need, for the advertising budgets.

"Innovation is always top of mind for our business… It's great being able to put my finger on which marketing dollars are driving incremental revenue."
*— Jonathan Tress, VP of Marketing, Noodles & Company*
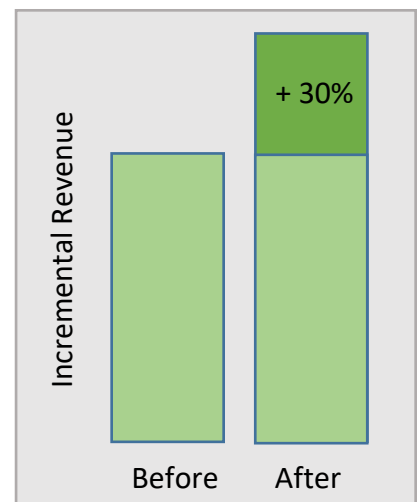
Causal Attribution: *Fundamental Concepts*

Incremental conversions occur directly because of your marketing contribution and are defined as a sale that would not have occurred otherwise. By definition, **incrementality** is the precise measurable amount of change caused by an incremental unit of input, in this case marketing spend. Most digital marketing platforms assume that all sales touched by their media are incremental. This approach is sub-optimal and failing to account for incrementality will result in an inflated return on advertising spend (ROAS). Optimization towards traditional digital marketing sales metrics is a less effective way of improving the bottom line than optimization towards incremental sales. Traditional attribution often makes certain ad groups appear more effective at driving sales than they truly are.
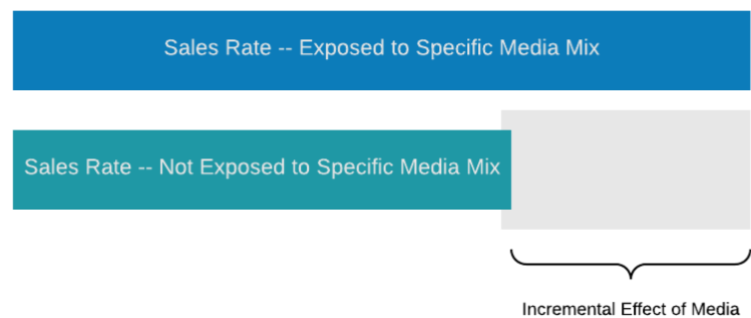
Driving online customers to take an action or buy a product is complicated, and often requires more than one unit of media to convince them to convert. **Attribution** modeling exists to determine which media touchpoints in a consumer's journey matter most to a conversion.
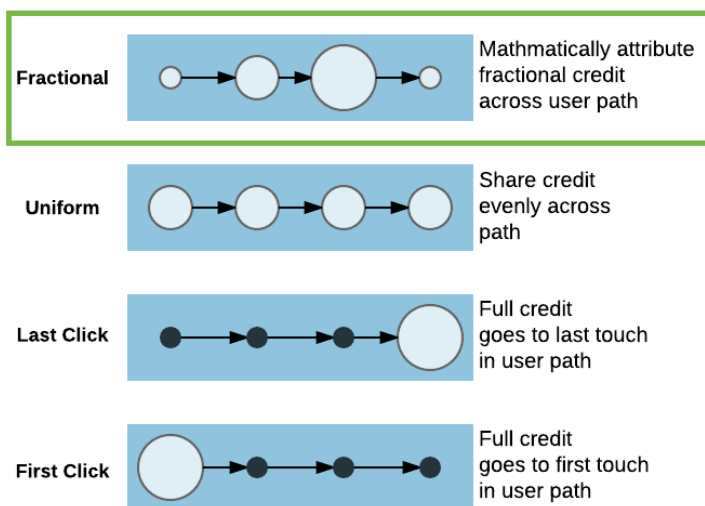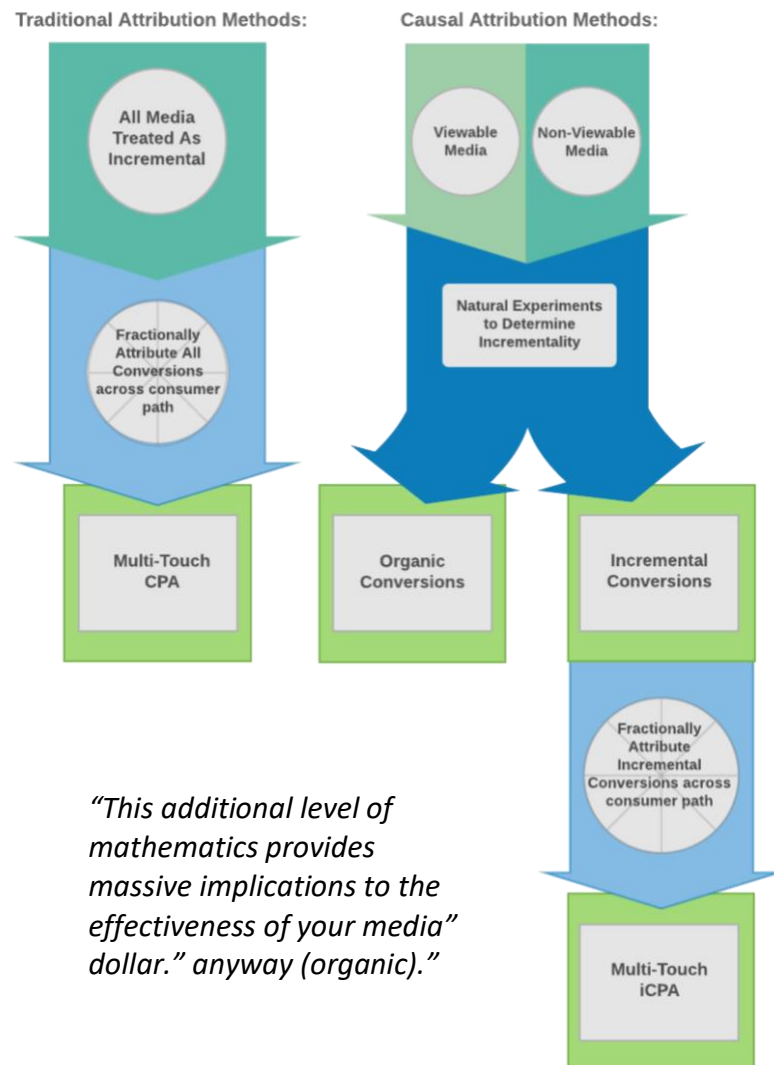

Traditional digital marketing platforms typically give credit to the first or last touchpoint, which may be misleading to media buying teams. **Fractional attribution** partially solves this problem by allocating credit to touchpoints in a customer's journey. Fractional methodologies alone, may also be misleading to media buying teams because they fail to account for incrementality.

Causal Attribution: *Technical Overview*

Causal attribution harnesses the best of both incrementality and fractional attribution to optimize your media performance. Incrementality is measured by comparing the purchasing actions of people not exposed to advertising (non-viewable media) against those who are exposed (viewable media), forming the test and control groups of a natural experiment. By ensuring the control and test groups are highly matched, we can then measure the precise incremental effect of media. These experiments are performed thousands of times algorithmically across your entire digital media campaign. Media lines not possessing sufficient data will then go through statistical inference via Rubin Causal Modeling to determine the likelihood a conversion may be incremental given what we do know.

"This additional level of mathematics provides massive implications to the effectiveness of your media" dollar." anyway (organic)."

The output results in two buckets, sales influenced by media (incremental) and sales that would have occurred anyway (organic). All media touches to every incremental conversion are then fractionally attributed across the consumer's path. This additional level of mathematics provides massive implications to the effectiveness of your media dollar. Spend from lines where sales were non-incremental can then be pulled and reallocated to the most effective media touchpoints for driving incremental conversions. When acted upon, this could result in increased efficiency, improved return on advertising spend, and a deeper understanding of media effectiveness.

Causal Attribution: *Reporting Interface*

Causal attribution has significant utility to media buying, media planning, and marketing fund allocation decisions. However, it is necessary for this information to be easily consumed, understood and acted upon by media buying professionals in order to fully harness its value. Consequently, we developed an all-encompassing reporting suite allowing media professionals to receive readily available media optimization suggestions, along with the ability to drill down, group, and parse for advanced media insight.

Incremental Summary provides high level charts, trends, grouping and filtering to gain a quick pulse of your media's incremental performance

Incremental Detail delivers comparison visualizations of incremental and organic sales and the ability to view iCPA by iConversions through time

Incremental Optimization displays the top and bottom incremental sales performers with the capacity to drill down into and group by various metrics

Dayparting portrays the lag to incremental conversion, giving you power to visualize optimal media buying times

Geo Optimization demonstrates through maps and ranked bar charts the incremental conversions by region, state, and city

Audience and Vendor Overlap exhibit visual interpretations of users that may end up in multiple auctions or platforms at the same time

Fractional Factorial Experimental Design

Fractional factorial is a designed experiment that lets you study the effects of several factors on a certain response. In digital marketing this means that we separate out all the characteristics, or factors, of an advertisement and determine the optimal ad characteristics that have a positive effect on the performance of your digital media.

The experiment's design is fractional, meaning that we only select a subset or 'fraction' of the advertisement factor combinations. We only chose a subset because to select all factor combinations is a large incremental expense for a disproportionately small incremental value to your brand.

Our fractional factorial design intentionally selects advertisement characteristics that allow for selective isolation of factor differences compared to the whole, gaining insight from the resulting interaction variance between factor distinctions.

A/B testing is a common methodology to solving factor effectiveness problems, however, it is limited to a smaller scale and can take much longer gain insight. Fractional factorial design on the other hand, applies its testing across a larger, more relevant subset of your advertisements and corresponding characteristics, quickly providing insight on the various elements within your ads.

Fractional Factorial: *Q & A*

- Which of my advertisements perform the best?

  Fractional factorial can give us the specific characteristics of an advertisement that perform the best, and in doing so you can determine not just which ads are performing the best, but why they are doing well. In turn, your team can then optimize the ads you serve and improve revenue.

- How can I better inform the creation of ads to help grow my business?

  A full understanding of advertisement factors that drive sales is fundamental insight to further creation of advertisements. For example, if you learn that banner ads with yellow backgrounds, buy now call to actions and sales offers perform the best; then your next round of advertisements can be informed by this insight and in turn, increase your sales.

Fractional Factorial: Applications & *Benefits*

The benefits of fractional factorial are fairly straightforward. Given the results of fractional factorial, you can cut the characteristics of your ads that do not work, and invest in the building out of ad characteristics that bring your company more engagement and, in turn, more sales.

The subsequent benefits that come from informed creative optimization include improved ad engagement, intentional creative design, and potentially improved sales figures. Lastly, fractional factorial performance has a significantly larger reach and faster time to results than similar analyses, such as A/B testing.

Fractional Factorial: *Technical Overview*

Our team uses what is called revolution 3 fractional factorial experimental design. The process consists of a deliberately chosen a subset of ad factors, selected so as to take advantage of the fact that most factors are dominated largely by main effects and then lower order interactions.

What this means in laymen's terms, is that we operate under the assumption that the analysis of a single ad characteristic at a time is the most significant consideration to better understanding the performance of your advertisement.

How this looks operationally, is that we pull the full range of factors out of every one of your ads delivered in the digital marketplace. As you can see in the example below, this consists of characteristics like calls to action, background image and even price.

Our team then builds out all these characteristics into a multidimensional space in order to run a large scale comparison of the individual media factor's effectiveness. The fractional factorial statistics then performs iterative experiments to determine which factors of your ads lead to higher media performance and those that do not.

Consumer Segmentation

Empower media professionals to quickly identify key target markets, and recognize areas of opportunity for continued prospecting, thereby advancing the success of initiatives aimed at growing aspirational consumer segments over time.

Segmentation modeling can be thought of as grouping a set of objects based on their similarities, so a common analogy to understand segmentation is "birds of a feather flock together." If we are analyzing a customer base, we will find the groups that are naturally occurring together simply based on their characteristics.

Consumer Segmentation: *Q & A*

- **What do my consumers look like? Who means the most to my business?**

  We can determine the naturally occurring performance groups and their corresponding characteristics that exist in your data as determined by the data itself. That means that rather than guessing who your customer base is and their value to your company, you can instead mathematically arrive at a truer understanding of your customers and the precise value in which they bring.

- **What search keywords provide the most value to my brand?**

  In search advertising your primary tool to finding more customers is keyword bidding. Keyword creation and valuation is often characterized by feeling and guesswork, resulting in a very non-scientific approach to optimization. We combine expertise in natural language processing and segmentation analysis to determine the naturally occurring performance keyword groups and then extrapolate specific keyword characteristics to determine what makes a successful keyword for your brand KPI goals.

Consumer Segmentation: *Applications & Benefits*

The science behind segmentation is powerful and can be broadly applied to many business scenarios. Some of these applications include:

- Given media and sales performance metrics, cluster analysis can determine the types of customers that bring value, and those that don't.
- Presented with personal characteristics such as location, age, interest, and key performance indicators, clustering can determine the exact kind of customer that presents the biggest opportunities for growth and identify core customer groups.
- Advanced applications include using natural language processing outputs in conjunction with media metrics to determine the value of search keywords. Providing significant value to both paid and organic search professionals.

Segmentation analysis can allow media professionals to quickly identify key target markets, and recognize areas of opportunity for continued prospecting, thereby advancing the success of initiatives aimed at growing aspirational consumer segments over time. Segmentation can reduce waste by focusing on the most valuable customers and improving LTV and consumer valuation metrics.

The resulting customer value allocations can be applied to CRM and media data alike, to precisely inform business and media professionals of their customer base. Furthermore, keyword data can be used pinpoint high value SEO keywords and improve organic site performance. Anticipation and proper prediction of consumer purchasing behavior can inform optimal design of promotional offers and targeting, accelerating consumer value enhancement strategies.

In short, the ability to properly classify customers based on the data they produce can lead to new insight, efficiencies and numerous positive externalities that come with a deeper understanding of a customer base.

"Anticipation and proper prediction of consumer purchasing behavior can inform optimal design of promotional offers and targeting, accelerating consumer value enhancement strategies."

Consumer Segmentation: *Technical Overview*

Segmentation is the ability to identify similar types of customer groups based on their individual characteristics. The various modeling methods aim to have customers within groups be as similar as possible, while the characteristics between groups to be as dissimilar as possible. The ability to properly identify customer segments can result in increased budget efficiencies, consumer opportunities, and insight to inform hyper-targeted marketing initiatives. There are two methods to accomplish this via unsupervised machine learning: k-means and hierarchical clustering.

K-Means Cluster Analysis

K-means begins by selecting all the variables of interest and putting them into a multi-dimensional space, where each resulting data point perfectly represents its relationship to all other variables. Our team of data scientist then determines the number of groups that best explains the data with the fewest amount of clusters needed. Some tuning and normalization may then be necesssary to properly determine groups of data. This gives proper cluster analyses the reputation of being as much of an art as a science.
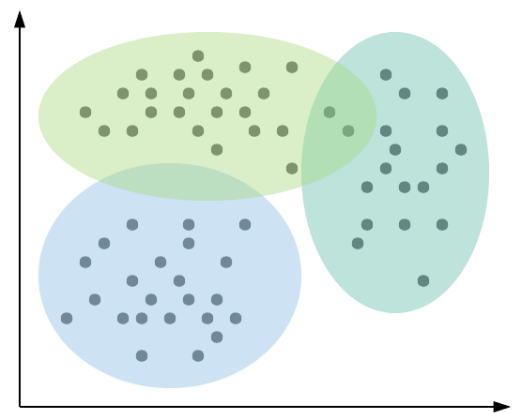
Hierarchical Cluster Analysis
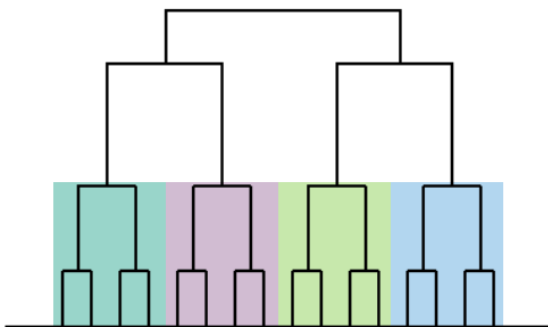
Heirarchical clustering takes an entire set of variables to be clustered, assigning each variable to its own cluster. Then, based upon similarity, it begins to merge similar clusters in a heirarchical nature until it becomes one single cluster. The results are visualized and determined via a dendogram *(left)*. Heirarchical clustering also works backwards from one to many clusters based on dissimilarity.

K-means and heirarchical clustering each have their own strengths and weaknesses. K-means has an oversensitivity to outliers, while heirarchical clustering can be more difficult to determine where exact splits need to be made. Nevertheless, both analyses do a fantastic job of classifying messy data in a way that grows in accuracy as the algorithm encounters more information, which is the essence of machine learning.

Recommendation Engine

Algorithmically deliver product suggestions in your ecommerce flow based on user similarities, product associations, and online behavioral data. This can be operationalized through a supplemental window or side bar that gives up-selling and cross-selling suggestions to the user as they progress through the user flow.

Recommendation engines are the e-commerce version of your best sales person and store assistant all in one, providing product suggestions that make shopping easier and cart sizes bigger.

Recommendation Engine: *Q & A*

- How do I make buying my product easier?

  Recommendation engines offer an avenue for customers to find what they are looking for faster, discover complimentary goods more easily and locate alternative goods quicker. The result is a happier customer base that has a lower bounce rate and a higher average order value, helping your business make more money.

- How can I up/cross sell my consumers?

  From the moment someone arrives at your website, recommendation engines compare past customer behavior based on user characteristics to determine user oriented product suggestions. Once interest is shown an item to item recommendation engine offers suggestions of products based on other products that you have shown interest in to cross-sell. Lastly, complimentary goods can be suggested to up-sell customers in real time using analysis of items that are most often bought together.

- How can I understand consumer purchase behavior in a way that drives more sales?

  Recommendation engines offer an opportunity to have your user interface be consumer behavior focused, insofar as observing and suggesting product to consumers is often profoundly revealing to their behavior and motivations. Recommendation engines offer a way to understand how consumers actually make decisions, and the results can greatly impact your marketing and brand strategy.

Recommendation Engine: *Applications & Benefits*

The foundational concept of recommendation engines is the autonomous delivery of personally relevant products. The process of which provides significant advantages to both the shopper and the company selling the products.

Shoppers given relevant content become increasingly engaged and feel personally valued, cultivating customer loyalty. The logistics of the shopping process are improved and streamlined by the immediate delivery of related and complimentary goods, reducing the stress and confusion of the shopping process.

The use of recommendation engines in the shopping experience results in a powerful boost to profits and gain in ecommerce efficiency. The improvements are due to increases in average order value, greater number of items per order, and enhanced likelihood of purchase.
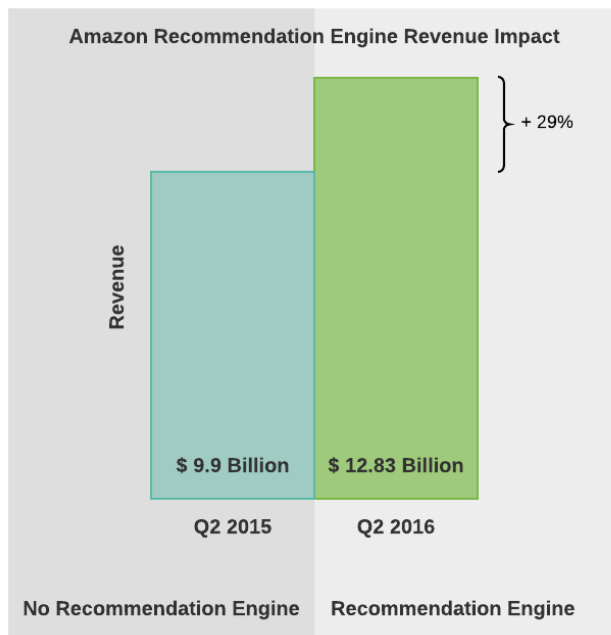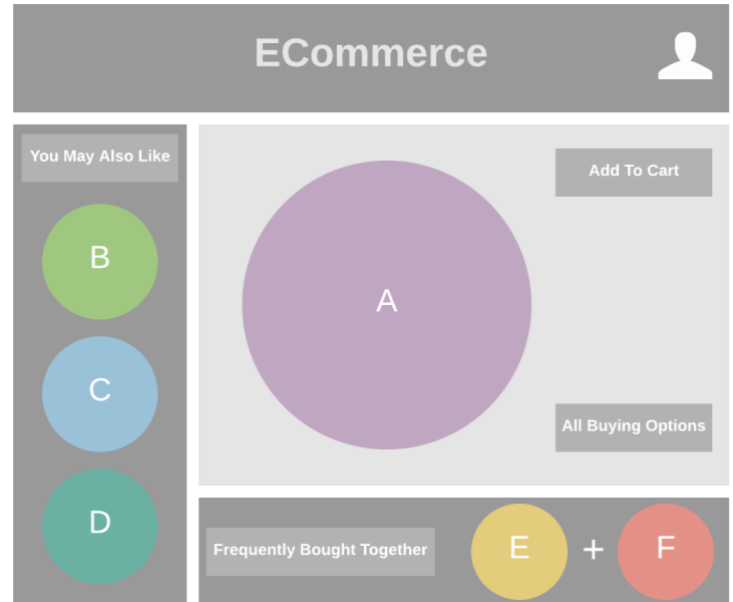
Recommendations can be informed by company goals to deliver product and inventory initiatives. In turn, suggestion metrics can also inform company inventory planning, algorithmically ensuring sufficient supply based on customer demand.

Companies best known for their use of recommendation engines are Amazon, Netflix and YouTube. McKinsey & Company Consulting Group estimates that [35% of consumer purchases](#) on Amazon come via product recommendations and estimate the resulting profit increase is around 29% on their bottom line. Similar gains have been realized by countless ecommerce platforms that have implemented the use of recommendation engines.

Recommendation Engine: *Technical Overview*

Collaborative filtering is the underlying concept that drives today's most innovative recommendation algorithms. The strength of collaborative filtering is that it only requires behavior and not historical context, allowing the user to immediately receive related and complimentary product suggestions the moment they show interest in a particular item.

Suggestion relevancy is determined by building automatic predictions with collaborative filtering using multiple variable relationship viewpoints. The filtering process can be implemented with two viewpoints, item to item, or user to user.

Item to Item collaborative filtering involves rating item distributions by matching items purchased to similar items, combining like items in a recommendation list.
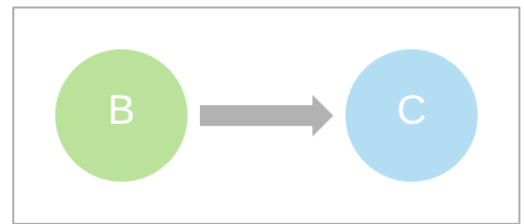
User to User collaborative filtering averages historical user ratings weighted by similarity to determine a recommendation list for target users by item.
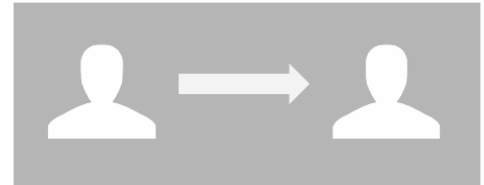
Additionally, collaborative filtering can be supplemented by market basket analysis using association modeling techniques to automate the upselling process based on items that are most often bought together. Association model results can also be used to build customer profiles in addition to dynamic upselling recommendations.
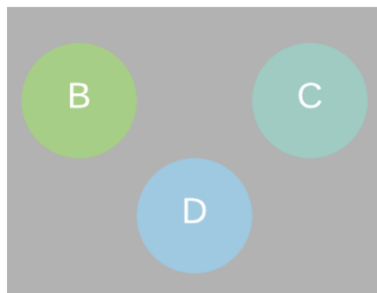
Market Basket modeling involves the building of a sparse binary matrix that indicates whether an item appeared in a cart or not. The matrix is then analyzed to determine the items that most often appear together in a shopping cart.

Forecasting

Trend analysis and forecasting is the use of historic data to determine the direction of future trends. The resulting insight can be used to inform financial budgets, anticipate expenses and track user growth for a projected period of time.

A simple analogy to understand forecasting is that in order to predict the future, we must understand the past and use it to scientifically predict the direction of a particular trend.

Forecasting: *Q & A*

- What will my conversions or revenue be next month? Quarter? Month?

    Forecasting methodologies can take any numeric distribution over a time period and predict the trend of that line going into the future for a pre-defined amount of time. The methods are attentive to differences in weekdays, seasons and larger trends in order to produce a reliable projection of your most important key performance indicators.

- What can I learn from any of my business from forecasting?

    Forecasting can inform budgets given sales outputs, user trends on your website, or even predict sales results given marketing spend. Forecasting can also help your business gain a deeper understanding of supply and demand trends, and inform executives on revenue goals and sales target dates.

Forecasting: *Applications & Benefits*

Forecasting allows businesses to determine the direction of future trends. Operationally, forecasting is incredibly durable insofar as the analysis applies to nearly every portion of your business, therefore the benefits themselves are also far reaching. Businesses realize the benefits of forecasting in cost saving, increased revenue, and enhanced consumer/business understanding. Below are 10 practical benefits to the using forecasting in your business:

Learn From History. Utilizing data from the past can be used to help predict the future, strengthening understanding and in turn, your business.

Anticipate The Future. Though forecasting isn't perfectly clairvoyant, it does provide a verifiable sense of direction, granting your business a foundation for which to understand future results.

Customer Satisfaction. Forecasting can be used to predict ecommerce supply and demand in order to ensure that your business properly anticipates market trends.

Cost Savings. Prediction of demand and spend with forecasting allows your business to determine the optimal staffing and investment decisions.

Industry Leader. Utilization of forecasting techniques allows your business to have a sense of market trends before they happen, enabling you to pivot and accommodate market forces before they happen.

Foresee Threats. Forecasting can reveal drops in conversions or revenue, enabling your teams to recognize and mitigate the threats to your business before they happen.

Inventory Management. Determine the necessary inventory for a conversions period via forecasting methodologies, in order to reduce unneeded cost and risk.

Implementation of forecasting methodologies across all your business units and on a regular basis forces your company to perpetually consider their future. The result is the recognition of market trends before they happen and quantification of the past to understand the future, all with the purpose of driving revenue and cutting costs.

Forecasting: *Technical Overview*

Predicting future results is the overarching goal of forecasting, however, the kinds of business questions and model considerations vary widely. There are two primary conceptual frameworks utilized in forecasting: time series and causal modeling.

Time Series Forecasting focus solely on the patterns of historical data distributions. The data is traditionally a sequence of equally spaced metrics in time with consideration of a single metric, such as sales. Results traditionally include a predicted trend line with intervals of confidence above and below the predicted trend to control for statistical error.
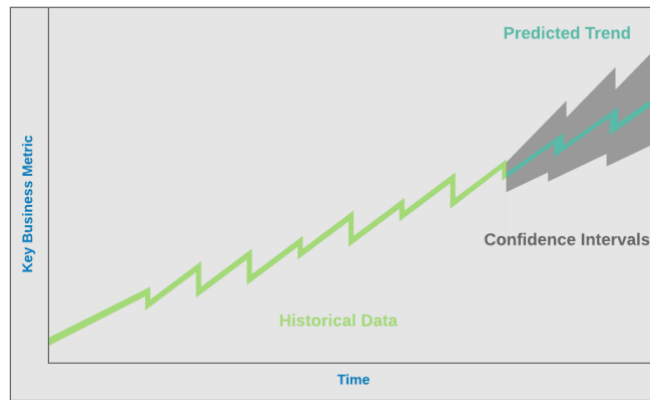

Time series methodologies are completely pattern based, therefore, a series of pattern nuances within the data must be detected and controlled for in order to ensure prediction accuracy. A few of the primary patterns to control for include:

Seasonality is the regular, predictable changes that occur every year. This can occur on a weekly basis with day of week differences, or with larger seasons like Christmas.

Cyclicality refers to regular fluctuations around trend that are not specifically tied to a time of year, think of larger economic expansions or contractions.

Autocorrelation is concerned with a trend line being correlated with itself at a different point in time, consider the idea of a predictable lag behavior given a certain trend.
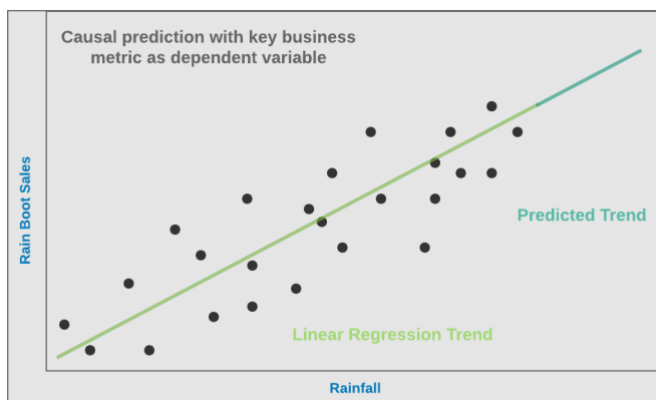
Causal Forecasting differs from time series forecasting in that it estimates based on an assumption that a certain metric has a cause and effect relationship with one or more variables. The result is a prediction given an assumption, for example predicting rain boot sales via weather patterns. The most common causal forecasting method is regression modeling.

Full Reporting Suite

The ability to fully integrate the vast sources of media data is crucial to telling the story of your marketing and business efforts. A full reporting suite ensures that you have a complete picture of your marketing spend and online campaigns in real time.

All solutions are presented in an enterprise level reporting suite that can be easily be accessed online. Give your team and your clients a platform to digest an abundance of useful information in an effective manner, all for the betterment of your business.

Full Reporting Suite: *Q & A*

- Can I get my all media performance data at my fingertips in real time?

  Our reporting solution serves as a single source of truth, delivering a comprehensive suite of pivotal metrics regarding your online media efforts in real time. We remove the headache of soloed and disparate data sources with a platform that delivers a holistic view in a central online location.

- How can I get a pulse on the effectiveness and trends of my media performance in a centralized location?

  We empower digital marketers to clearly interpret results in order to effectively communicate their findings to both clients and executive teams. Our reporting solution removes the fog in your media planning and optimization process, delivering a best in class reporting suite. The outcomes are easily consumed, therefore equipping media professionals to quickly develop strategies to optimize performance.

Full Reporting Suite: *Applications & Benefits*

Our full suite of whitelisted reports are connected to the largest players in the digital media space and require very little spin up time to get your media teams up and running. The tools within the suite provide a significant and immediate impact to your media buying and planning decisions. Tools included are media performance reporting, creative results, geo performance and a SEO dashboard.

Media Performance: Consume information quickly with campaign and executive dashboards, or take a deep dive with media investment, volume and KPIs by hierarchal levels of granularity. Reporting on all media sources, including individual media partners, ad servers and 3rd party sources.

Geo Overview: Slice and dice media performance and volume and KPIs by city, state and region.

Creative Performance: Utilize media volume and KPIs by creative messaging, products/offers, creative size, and background images. Compare performance of different media metrics side by side.

SEO Dashboard: Understand keyword performance and customer segmentation. Who is landing on your site and how did they get there. Actionable results to make optimizations clear.

Additionally, our data science solutions and products are built on a fully integrated reporting suite and can be customized per your clients' needs. Results are made clear and presented in a way that is both simple and sellable. The output of each solution can be viewed online, or downloaded to present to a number of admins and executive teams.

Causal Attribution: Our causal attribution reporting suite can sit alongside standard media reporting.

If there are options not available in our whitelist reporting, we can work on a project basis to provide your team with customizable business intelligence solutions that are built to help digital marketers navigate a complete landscape of data providers.

Next Steps

Our streamlined process involves a requirements gathering session for our team gain an understanding of media practices, technology capabilities and data resources. We then create the necessary data connections, and deliver our automated reporting suite. Audits of historical incrementality performance may also be available after the data connections have been made.

Contact Us

Schedule Requirements Session or Contact Us to Learn More:

Email: Hello@BoulderHeavyIndustries.com   **Call:** 303.867.8826
Email: info@principiaanalytics.com   **Call:** 303.867.8826

About Us

We are a team of data science professionals focused on superlative computational mathematics and advanced data product solutions. The sole intention of our work is to serve our clients with actionable insight and honest transparency using genuine scientific practices.