Visual Management of Marketing Programs

Discovering the Hidden Value in Your Customer Data

AUTHOR
Eileen McDaniel, PhD
Co-founder
Freakalytics

CONTRIBUTOR
Stephen McDaniel
Co-founder
Freakalytics

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Introduction

Marketers have long described their customers in "segments", generalized categories based on perceptions of customer demographics and buying behaviors. Now that most companies have detailed customer demographic and transaction databases, marketers have the ability to assign individual customers to segments created using data analysis. This capability can radically alter a company's marketing program, uncovering invaluable information regarding key customer segments and how they respond to various marketing campaigns. Additionally, these databases can be used to develop models to estimate Lifetime Value (LTV) for individual customers. LTV can be a powerful tool, increasing the success of marketing programs by determining ideal investment of marketing dollars in the near and long-term. The insights gained from customer segmentation and LTV analysis can be utilized by marketers to dramatically improve marketing program decisions including campaign messaging, spending levels and timing issues.

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In this case study, we used customer demographic and sales databases from a boutique winery in combination with Tableau Software, an innovative and intuitive data visualization product, to uncover information vital to designing a dynamic, cutting-edge marketing program. We developed a segmentation scheme in which we assigned each customer to a segment, which the winery can use to more effectively target customers with segment-specific marketing efforts. We also estimated LTV to quantify the estimated future spend of each customer, so the winery can adjust the messaging and costs of marketing campaigns based upon the recipient. Then, we integrated customer segmentation and LTV to create a multi-dimensional view of each customer to maximize the winery's Return on Investment (ROI) from the marketing program.

The final step was compiling a complete, visual report of this information for the winery's management. We used Tableau to create a compelling, yet easy-to-understand series of three strategic dashboards that displays crucial results obtained from customer segmentation and LTV estimates. The strategic dashboards provide key customer insights for the winery, enabling them to develop a data-driven strategic marketing plan based on the winery's previous and ongoing marketing programs.

Boutique Winery Case Study

Our client is a premium West Coast winery with annual revenues of $4.1 million (note that all data have been modified from their original values for confidentiality purposes). They have a very strong direct-to-consumer business, comprising 60% of sales and 87% of gross profit. The main route of new customer acquisition is the winery's tasting room, where visitors can sample and buy wine, sign up for emails and newsletters, and join the wine club.

Prior to this work, the winery's management identified general customer segments based on their tasting room observations and experiences. However, they were unable to target specific customer segments with tailored marketing programs and campaigns. Additionally, customer dynamics of the winery were rapidly changing with a massive influx of "casual" visitors attracted by recent press coverage. Management expressed concerns about the long-term cost of these potentially lower value customers, and hoped to adjust their discount strategy and marketing budget to ensure that they were targeting the most profitable customers.

We used demographic and purchase data to identify customer segments incorporating every individual in the customer database. We also calclated LTV estimates for each customer. The ultimate goals were to target existing customers with appropriate and cost-effective marketing programs and to quickly assign new customers to segments. Ideally, programs would be narrowed to those customers most likely to respond with high spending and to improve customer acquisition by understanding the sources and types of new customers.

Single Sale Attribution: One Sale at a Time

Looking at a single sale transaction in a vacuum is the simplest and most common method for measuring campaign success. Single sale attribution typically incorporates recent purchases and response rates to specific marketing efforts.

Traditionally, single sale attribution was done due to a lack of capability to connect longer term outcomes with marketing activities. Data warehouses have helped this situation, but companies also need to further develop their analytic modeling programs to help with attributing sales to the correct campaign and channels.

The primary weakness of single sale attribution is that lower loyalty customers could be the biggest spenders at that particular point in time (typically in response to a deep discount), which is not a good long-term strategy. In reality, campaigns that deliver lower short-term sales could lead to long-term engaged and loyal customers.

Customer Segmentation: the Parts are Greater Than the Whole

Our approach to customer segmentation is based on rules developed by analyzing company databases. The rules group customers with similar socio-demographic traits and purchasing behaviors. While marketers often segment customers to obtain guidance for product development and marketing decisions, few have used data to identify and assign individual customers to segments.

Customer databases may contain or can be enriched by demographic data such as age, gender, estimated income, and education. Sales databases typically consist of information regarding sale amount, frequency of purchase, discounts and purchase channel (online, retail, phone, etc.). Additional information of interest may include other information about the relationship between the customer and the company, such as participation in loyalty programs, customer service contacts, and responses to surveys.

Contacting all customers with every marketing campaign can exhaust marketing budgets and drastically lower ROI. Matching segments with previous successful marketing efforts can be used to better tailor future strategy and greatly improve ROI. The most important aspect of customer segmentation is to create generalized segments that the marketer can use to evaluate optimum advertising methods, products, services and purchasing channels.

Some examples of questions that can be explored with segmentation analysis include:

- Are emails or catalogs more likely to get a response from a particular customer segment?
- Which segments have spent more this holiday season versus last year's?
- How much did each segment spend in response to the last marketing campaign?

Based on observation and experience in their tasting room, winery management divided their customers into four groups. Our analysis of the available data verified the existence of these four segments, which we describe here:

- **Casual Visitor-** typically tourists on afternoon outings to relax and socialize, often as part of a tour group
- **High Roller-** higher income professionals who like to "see and be seen" and enjoy being treated as a "special guest"
- **Luxury Estate-** "bluebloods" who prefer to be low-key, but appreciate the finer things in life
- **Wine Enthusiast-** a diverse group who loves wine, but is also willing to take the time to wait and collect at a good price

Example 1 - All segments are not created equal: Finding the most valuable segments.

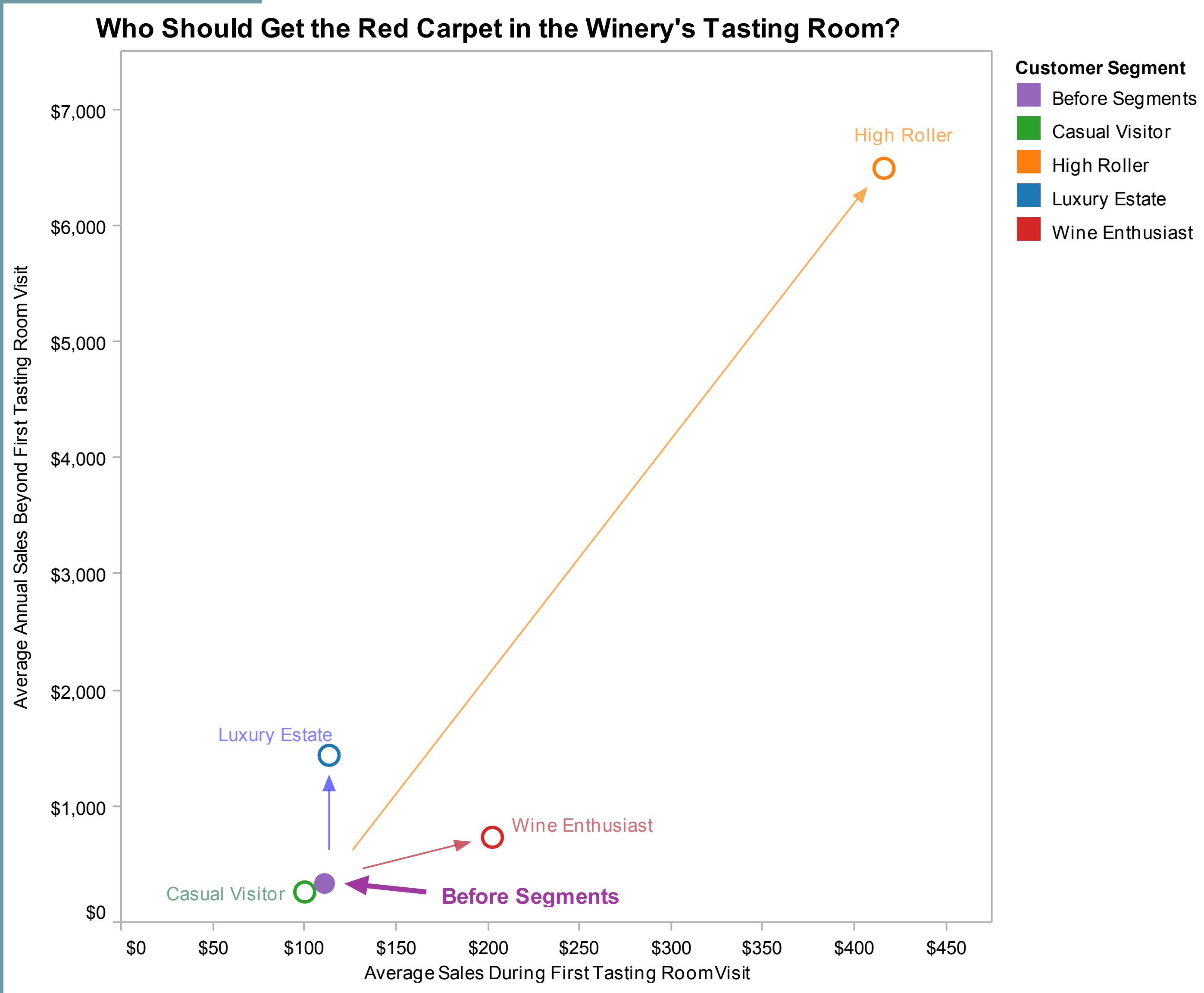
To illustrate the value of segmentation to the winery's marketing program, we used Tableau Software to visualize the relationship between average sales and net worth for all customers combined and for each segment separately.

Average sales during the twelve-month period from July 2008 through June 2009 were plotted along the vertical axis. Net worth was estimated using zip code of residence and plotted along the horizontal axis. The solid purple dot labeled "Before Segments" represents the entire customer base, or the average customer, who had a net worth of $350,000 and winery sales of $250.

After segmentation, we found that Luxury Estate and High Roller are much wealthier than the average customer (Luxury Estate has triple the wealth).

Casual Visitor and especially Wine Enthusiast have less than average wealth. If we ranked the segments according to sales, Luxury Estate and High Roller also spent more than average, but High Roller spent the most by far. Casual Visitor and Wine Enthusiast also spent less, with Wine Enthusiast again trailing behind. If we had simply looked at the sales for all of the customers combined, we would have thought everyone behaved similar to Casual Visitor, and missed crucial information regarding the high value customers. Now, marketing to all of the winery's customers in the same way does not make much sense.

Example 2 - First impressions: Predict the value of a customer after the first tasting room visit



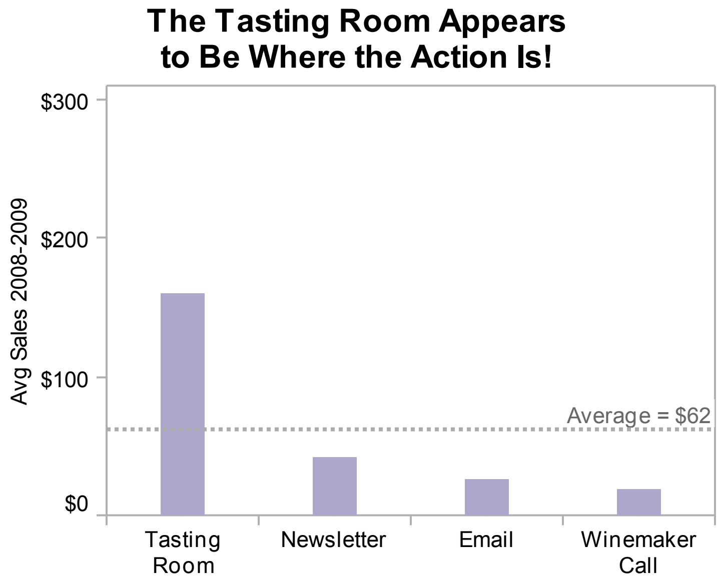
The winery needed a method to assess the potential future value of a new customer that has either made their first purchase or signed up for newsletters in the tasting room. To accomplish this, we looked at how much a customer spends in the first year on any purchase from the winery after visiting the tasting room (e.g., future tasting room visits, wine club, shipments by mail) relative to how much was spent during his/her first tasting room visit.

The solid purple dot represents the typical customer of the winery, who spent a little over $100 in the first tasting room visit and about $200 in the following year. Once again, breaking this down into segments tells a different story. Luckily all four segments spent more in the following year than they spent in the tasting room- but the segments varied widely. High Roller not only had the most sales in the first tasting room visit, but they continued to be great customers, spending over fifteen times the original amount. Luxury Estate also spent thirteen times more in the following year. The sales for Wine Enthusiast and Casual Visitor also increased, although not nearly as much. This informs the winery that they should tailor their marketing efforts; perhaps by pulling out all the stops for High Rollers, paying some personalized attention to Luxury Estate and using less expensive marketing techniques for Wine Enthusiasts and Casual Visitors.

To determine which of the four marketing channels used by the winery generate the most response from customers, we calculated average sales across the entire customer base for each channel.

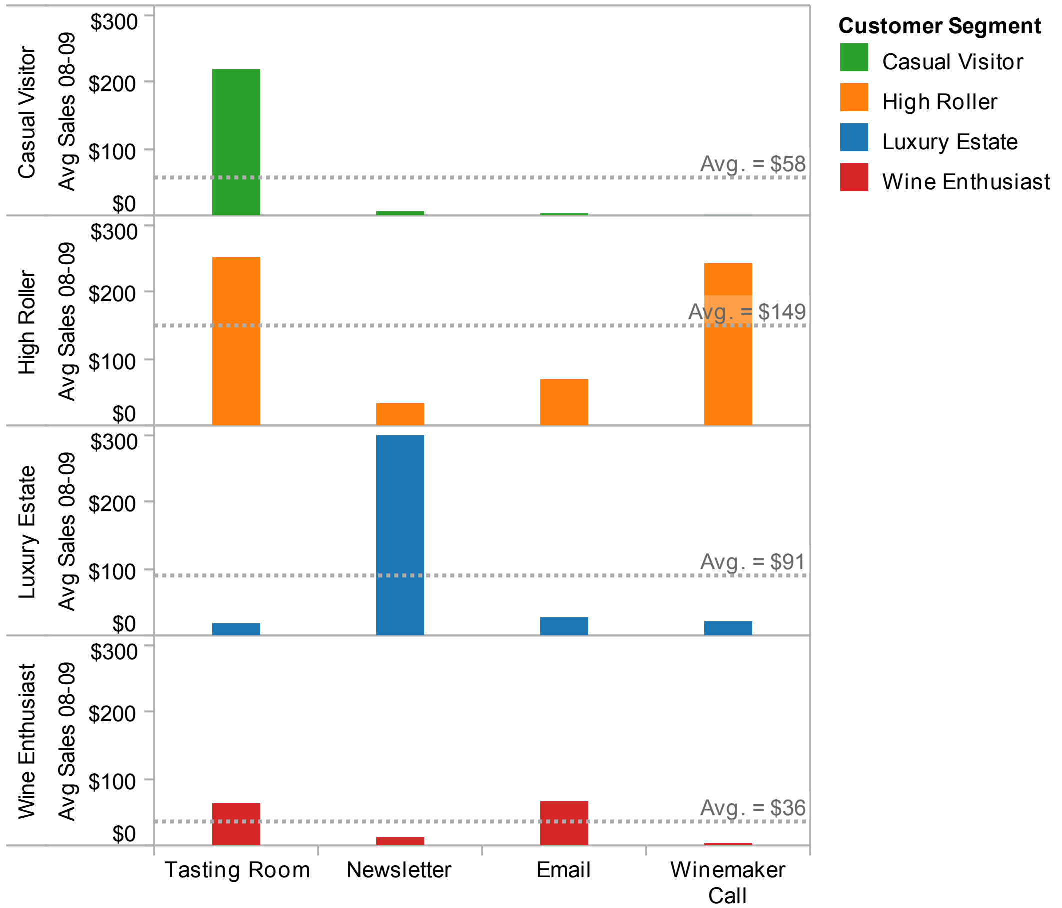
Example 3 - Tailoring to specifications: Designing a segment-specific marketing program by investigating marketing channels

To determine which of the four marketing channels used by the winery generate the most response from customers, we calculated average sales across the entire customer base for each channel.



By far, sales were highest in the tasting room- nothing new here! They were higher than all the other types combined. Newsletter and emails were next, with winemaker phone calls being the least productive. The average sale across all programs was $62. Then, we looked at sales attributed to each marketing channel divided by segment.

Diffferent Channels for Different Segments



High Roller had the highest average sales overall, and also was the big spender in the tasting room, along with Casual Visitor, which had the third highest average sales. High Roller also responded to winemaker phone calls. Luxury Estate, which had the second highest average sales, had a strong response to newsletters. Wine Enthusiast, which has the lowest average sales across the board, has slight peaks at tasting room and emails. The winery can use this information to target the right segments, saving time and effort; for instance, newsletters are more costly than emails to produce so they should be sent only to Luxury Estate.

Although customer segmentation was extremely valuable in allowing us to see way beyond the "typical" winery customer, we still had a large amount of data available to generate a more detailed picture.

Lifetime Value Estimates (LTV): Look into the Future

Customer LTV models estimate the future value of an individual customer to a company and can help maximize the long-term ROI of a marketing program. The benefits of LTV are both tactical and strategic, as the results can be used to not only develop a particular marketing campaign but also to measure the true impact of a marketing program on sales over time. LTV is dynamic, incorporating more information about demographics and purchasing behavior as it becomes available to refine the model. Although LTV includes the term "lifetime", it is often calculated for a specific time period depending on the nature of the business, e.g., several years for a baby clothing store or decades for a car manufacturer. However, the farther out the prediction, the less confident an analyst can be in the results.

When assessing the LTV of new or prospective customers, it is simplest to start with metrics that are used in customer segmentation, such as basic demographics or purchasing behavior. However, estimates of LTV are more detailed than customer segmentation since they create a continuum of values for different customers (e.g., $325, $362, $390) rather than strict categories (e.g., Casual Visitor and Luxury Estate). Because of this, more complex metrics can be added, including how likely the customer is to upgrade to premium services, influence other consumers to buy certain products, or be an early adopter of innovative products or services. One of the major limitations of LTV is that it is complex to calculate- which is why we won't go into the detailed steps in this case study, but we will show how these values can be effectively used by marketers.

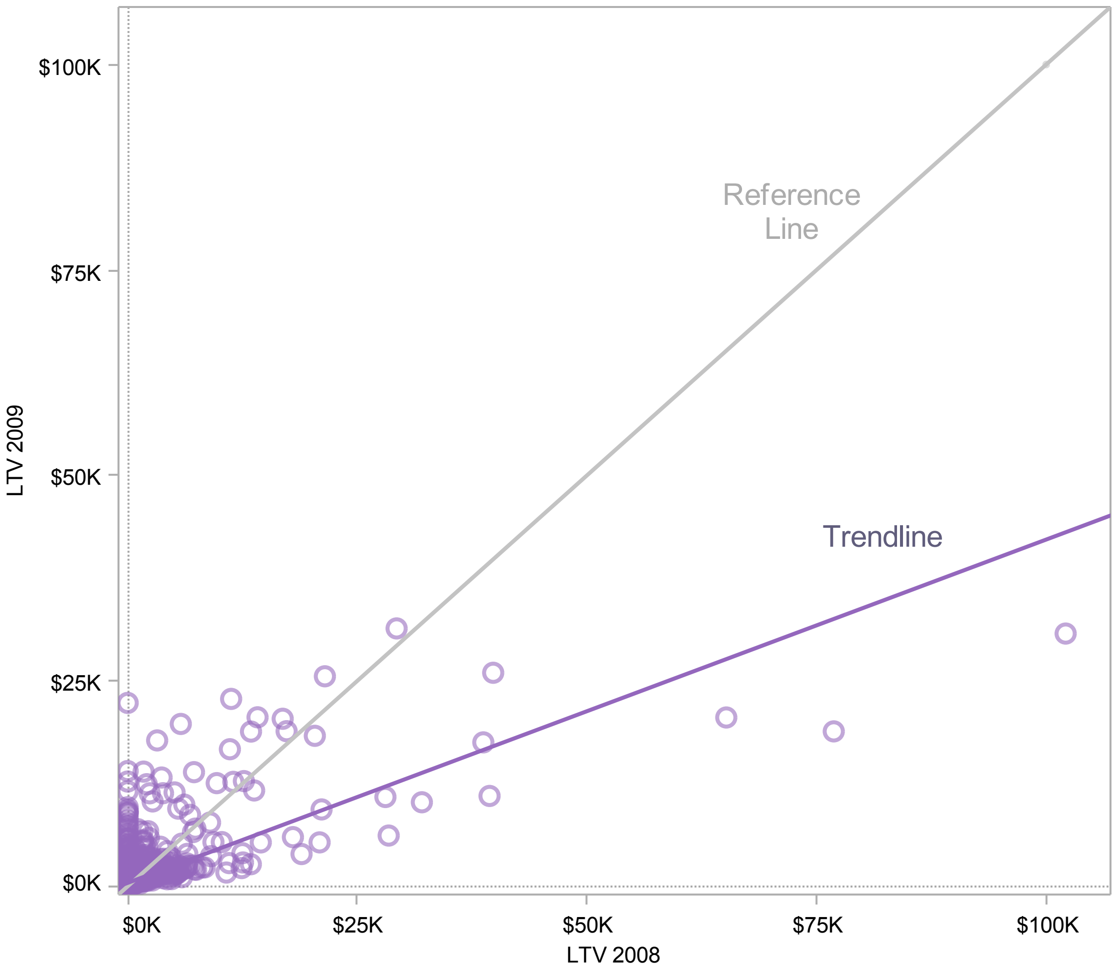
Sample questions that can be asked with LTV are:

- Which channels and campaigns deliver new customers that have a higher LTV?
- Which product categories are critical to attracting high LTV customers?
- What discount levels encourage high LTV customers to make a purchase?

Example 1 - What a difference a year makes: tracking changes in LTV over time

To help refine the winery's marketing program, we used Tableau and the company database to develop LTV estimates. Since LTV can change over time with new information, such as recent purchases or response to particular marketing efforts, we examined how LTV estimates of customers increased or decreased in 2009 compared to valuations based on data through 2008 for the same customers.

Lifetime Value of the Winery's Customer Base Decreased in 2009



We calculated LTV for each customer based on data from 2008 and 2009, and plotted LTV 2009 against LTV 2008 (each purple circle represents one customer; most are overlaid in the lower left quadrant).

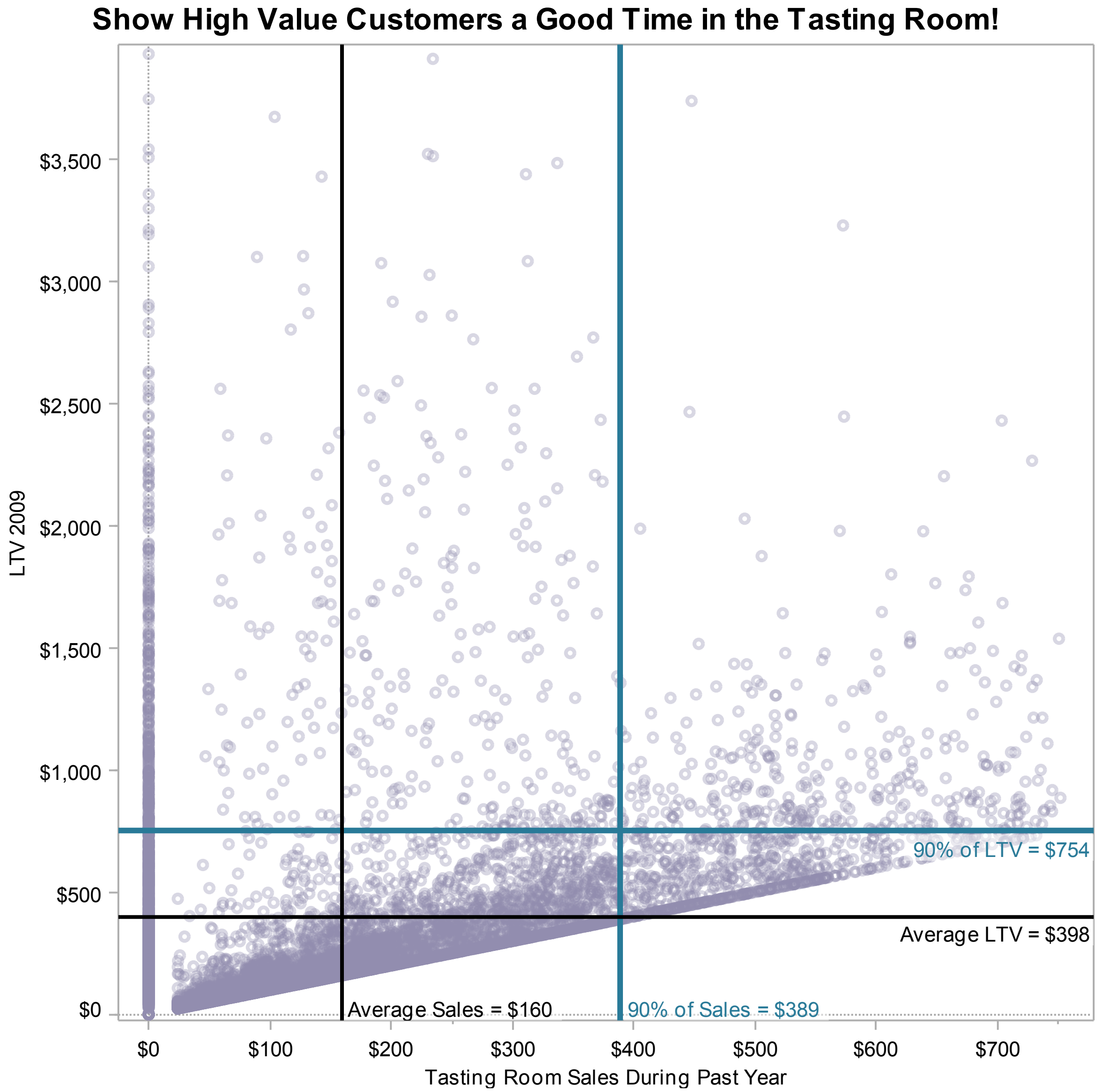
If the LTV did not change between the two years, the ratio of LTV 2009 to LTV 2008 would be one. This is illustrated on the graph by the light purple line labeled "Reference Line" – any points found on this line would have a ratio of one. If a point is to the left of this line (towards the vertical axis) the ratio is greater than one, i.e., the customer's LTV increased from 2008 to 2009 (Good) If a point is to the right of this line (toward the horizontal axis) the ratio is less than one, i.e., the customer's LTV decreased from 2008 to 2009 (Bad)

Unfortunately, when we drew a trend line to summarize all of the customers (the dark purple line), it fell to the right of the reference line, so overall, the LTV of our customers dropped from 2009 to 2008. What happened and what can the winery do to fix this? First, if we had excluded the customers that had LTV of about $25,000 or higher, the new trend line would show an increase in 2009

LTV. Due to changes in the economy, our higher value customers may be buying less high-end wine. The winery may want to develop a special offer to encourage this group to purchase. Also, the winery may have acquired lower value customers, so the winery's marketing messages should be adjusted to attract more high value customers. Later in this paper, we'll look into this graph in more detail.

Example 2 - The positive relationship between tasting room sales and LTV

To determine how valuable the tasting room is to the winery, we looked at how tasting room sales influence LTV.



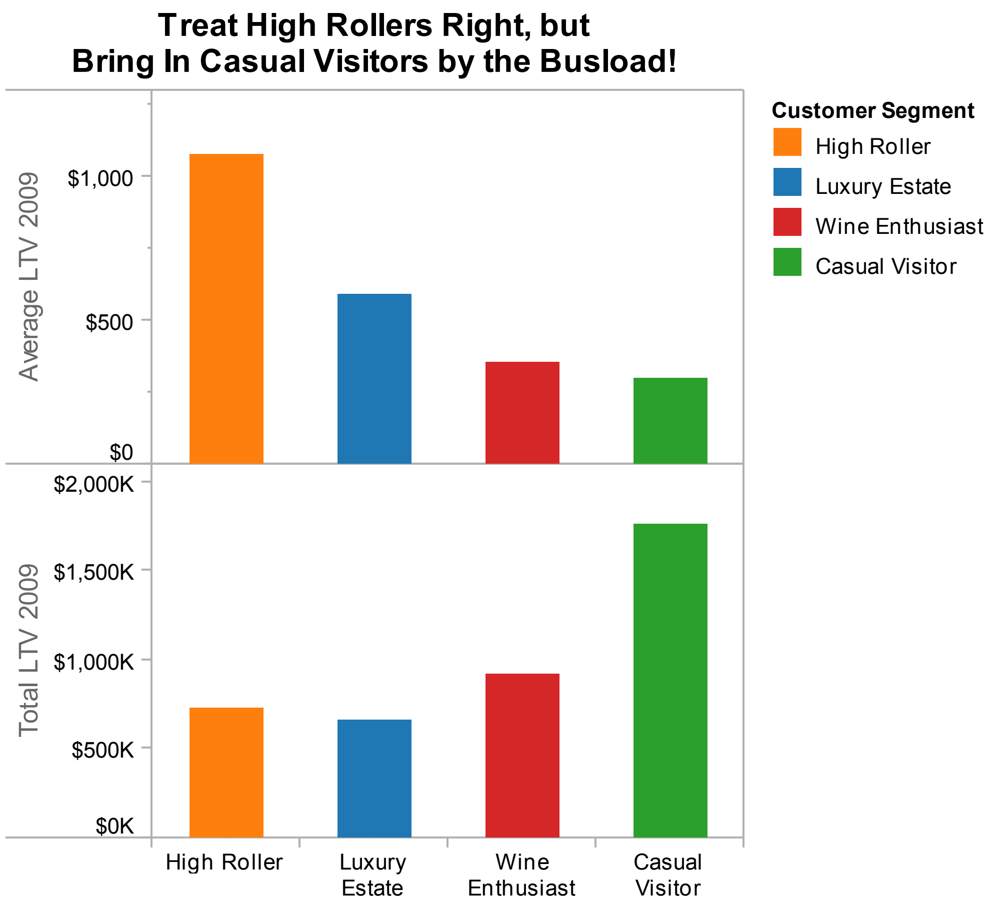
We graphed LTV 2009 versus tasting room sales for the twelve-month time period. The average customer spent $160 in the tasting room and had an LTV of $398. Sales for ninety-percent of the customers were less than $390, and LTV was less than $755. Although this graph doesn't show all of them, the remaining ten-percent were extremely high value customers, with average sales of greater than $1900 and average LTV of over $6000. This may inform winery management to provide perks to customers who spend a great deal in the tasting room.

Now the final step: we incorporate Customer Segmentation and LTV in order to paint a more complete picture of the individual customer.

Maximize Your Insights: Integrate Customer Segmentation and LTV

Although both customer segmentation and LTV have merits on their own, you can obtain the most valuable insights when you break down LTV by segment.

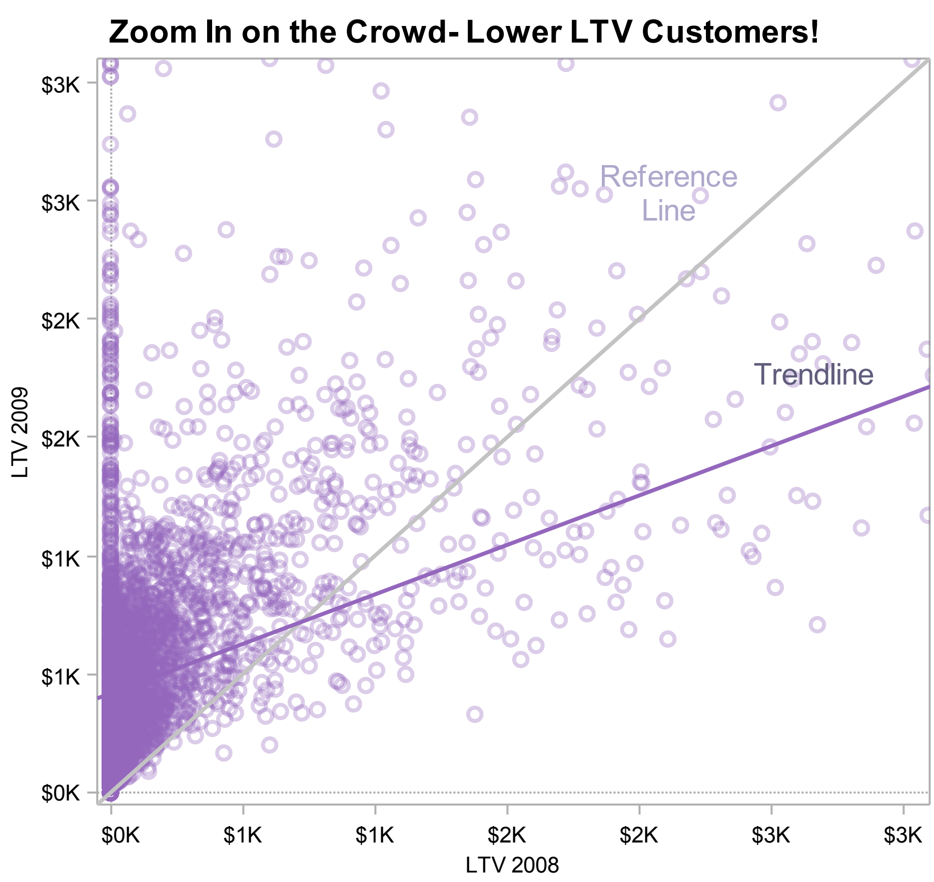
Example 1 - Wine and Dine: The future of the winery depends on determining which segments should get the royal treatment
To know which segments are essential to the winery's future bottom line, we looked at LTV estimates for 2009 for each segment.



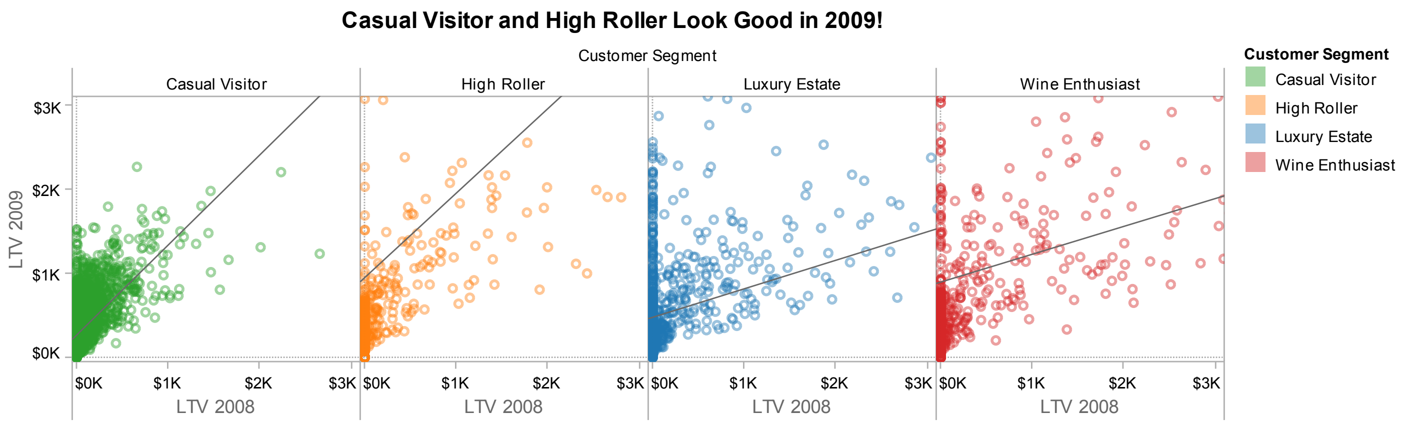
The upper pane shows average LTV divided by segment. Average LTV is useful because it helps the winery assess the potential of an individual customer once he or she has been assigned a segment. The average LTV of High Roller is far greater than any of the other three segments and not too much less than all of them combined! Therefore, on an individual basis, the typical High Roller is predicted to be the winery's most valuable customer. This corresponds to the original customer segmentation analysis, since this segment had the highest tasting room visit sales and annual sales. The lower pane depicts total LTV for each segment. This is important to see which segments as a group have the largest potential sales to the winery. Casual Visitor has the highest total LTV, which makes sense since this segment has the most customers, although from segmentation analysis we saw that they have the only third highest sales. The other three segments have similar total LTV. Marketing efforts may involve encouraging Casual Visitor to buy wine in bulk by offering discounts, but this requires further analysis.

Example 2 - Changes in LTV between 2008 and 2009 among segments

For maximum impact, you can integrate customer segmentation with LTV to add insight to daily, weekly and quarterly marketing programs. For instance, we investigated how the winery's marketing efforts (e.g., campaigns and publicity) affected LTV in 2009 versus 2008, divided by customer segment. Tableau was extremely effective in visualizing these results.



This view is simply a zoomed-in version of the graph depicting LTV 2009 versus LTV 2008 found in the previous section describing LTV ("Lifetime Value of the Winery's Customer Base Decreased in 2009"). Only LTV values of $3,000 or less are shown, since this is where the bulk of the customers can be found. The trend line is dark purple. If the trend line is higher than a 45-degree angle (represented by the light purple reference line) the ratio of 2009 LTV to 2008 LTV is greater than one, indicating an increase in overall LTV over time. If the angle is less than 45 degrees, there was a decrease in LTV. The largest concentration of points demonstrates that most of the customers actually have positive ratios. The overall trend line is negative because the customers with extremely high LTV in 2008 had a much lower LTV in 2009, which pulled the trend line down. We then looked at how this information differs by segment.



We graphed LTV calculated for 2009 versus LTV in 2008, divided by segment. We found significant increases in LTV for Casual Visitor and High Roller, and a large decline in LTV for Luxury Estate. Wine Enthusiast showed a decline in LTV, particularly in those customers that were on the high end of the range of LTV in 2008. If we had excluded the customers that had LTV of about $25,000 or higher, the new trend line would show an increase in 2009 LTV.

How does this help the winery management evaluate the success of their marketing program? First, this demonstrates that each segment has significant differences in shopping behavior, so it is crucial to develop a marketing plan for each segment. We make the assumption at this point that we would like to retain all these customers- in reality, a company may want to discourage certain segments from being customers, as they actually cost money.

For Casual Visitor, LTV increased, so whatever marketing efforts the winery undertook appear to appeal to this group. Marketing efforts were successful in engaging High Roller, because LTV increased , and since the average LTV is relatively high, the winery may be willing to spend more per customer as compared to Casual Visitor. The LTV of Luxury Estate declined a great deal, but this may be skewed by the two customers whose LTV was approximately $25,000 in 2008 (a relatively large amount) but declined in 2009. However, the winery may also want to focus a lot of attention not only on obtaining new customers similar to these, but also on retaining them. Looking at the Wine Enthusiast, we had a similar issue with customers that had 2008 LTV of over $25,000 – their LTV decreased in 2009, so for some reason they were not motivated to continue to buy.

Roadmap for the Future: Summarizing Results in a Strategic Dashboard

Finally, we used Tableau's dashboard feature to summarize our results in a strategic dashboard. Winery management can find relevant information at a glance which they can use to plan and fine-tune the marketing program. The dashboard has four components: 2009 LTV and customer counts divided by segment, sales by different channel separated by segment, the change in LTV between 2008 and 2009 for each segment, and the relationship of LTV 2009 and tasting room sales. Using Tableau, it is easy to apply filters to highlight the areas of interest, e.g., only customers who spent more than $5000 in the tasting room or information about Wine Enthusiast customers only.

ABOUT THE AUTHOR

Co-founder **Eileen McDaniel** is a consultant, educator and frequent editor in applied visual analytics and marketing analytics. Eileen has a graduate-level Certificate in Marketing Analytics from the M.B.A. Program at the University of Washington- Seattle and a Ph.D. from The University of North Carolina-Chapel Hill. Her research focused on the nexus of applied social and environmental sciences and centered on uniting the community, environmental managers and scientists to develop practical management solutions. Eileen won several fellowships and grants, a national research award, and a teaching award based on her work with upper-level undergraduate students.

Eileen has published white papers on applied marketing analytics with Freakalytics and Tableau Software. She was the editor of "Rapid Graphs with Tableau Software" and a reviewer of "SAS for Dummies". Eileen also spearheaded the course development for all Freakalytics public training materials. Eileen is passionate about helping people generate relevant, actionable and broadly accessible visual analytic insights to help improve business decision-making.

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