A Metrics and Forecasting Report on Turf Badger's Stevens Point Office

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Introduction

Turf Badger is an S corporation based in Wisconsin focusing on lawn care, mosquito, and pest control customer services. To date, the company operates ten offices across four states in the US. At the end of 2022, they opened an additional office in Stevens Point, Wisconsin, whose data on sales from March 2023 and ending in August 2024 serves as the source for this report. Anonymization and an investigation into the data's use for calculating business metrics were performed utilizing R Studio software. However, using Tableau's visualization software, the project focused primarily on producing forecasts for the three main service segments.

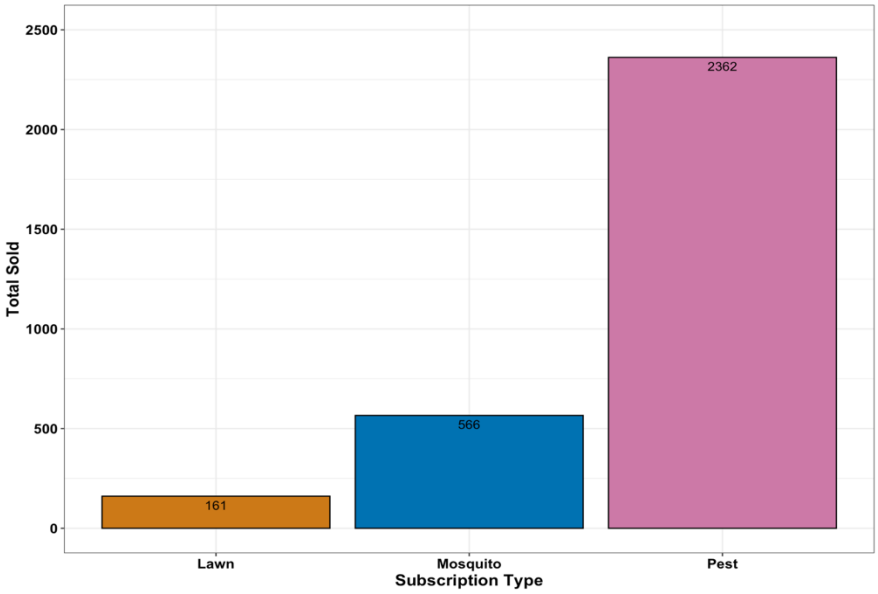
Anonymization & Cleaning

Three informational columns were removed from the original dataset to ensure customer anonymity. These included the customer's name, credit card information, and address. Additionally, the sales representative's identity was anonymized by alphabetically encoding each team member. Four initial test sales from 2021 and 2022 were also removed as they were not applicable to this study. A categorization of customer service type was found within the variables. This variable was consolidated from twenty-three highly segmented subscriptions like "Pest Organic Badger Service Plan," "Lawn Core Aeration," and "Mosquito - Tri-Weekly" into three segmented groups.

These groups included pest control, mosquito control, and lawn care to match their three core services (Figure 1, Below). However, two observations were removed from the dataset at this point as they were indicative of commercial-level sales. Commercial sales provide a significantly higher revenue stream than their traditional individual customer-level services. Thus, these two sales were removed because they are uncommon and would have skewed the

investigative results of the study. Ultimately, this left an initial dataset of 3,089 sales for 15 recorded variables.

Figure 1: All-Time Subscriptions Sold by Turf Badger's Steven Point Office



Metrics

A key metric for understanding the amount of money a customer is expected to spend with a company from their first to last purchase, CLV is calculated utilizing the equation:

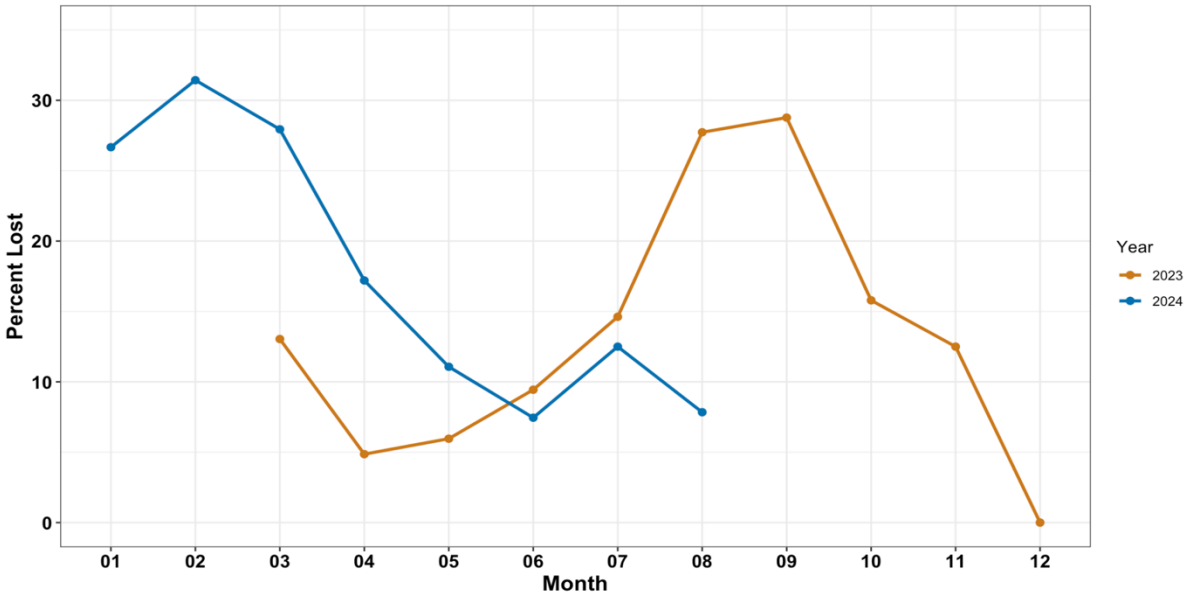
$$CLV = Average\ Order\ Value * Average\ Purchase\ Frequency$$

$$* Average\ Customer\ Lifespan$$

Typically, CLV involves studying customer cohorts and tracking their value over time. This metric enables companies to make decisions to boost customer loyalty, reduce churn, and understand expected cash flows (Fontanella, 2024). For Turf Badger, studying cohorts of their three core service types over time would be particularly helpful. Such a study would allow the company to know which group provides the most ideal customers in terms of long-term revenue. Thus, they should include the date of customer cancellations in their data pipelines so such an analysis is

possible. However, the branch's data allows customer percent lost rates to be analyzed over time (Figure 2, Below).

Figure 2: Percent Customers Lost by Month of 2023 and 2024 for Turf Badger's Stevens Point Office



It is important to note that the percent lost metric was calculated based on the month a customer sold their service plan, not the month they canceled, as this was not recorded. Ultimately, customers who buy service plans in the early months of the year (January to March) and in the late summer months (August to September) have the highest cancellation rates. Based on these patterns, the branch should look to target customers who sign up during these months with promotions and increase contact to build better customer-brand relationships. Perhaps most importantly, the company should look to record why these customers canceled so that they can improve decision-making processes related to keeping them on board.

Forecasting

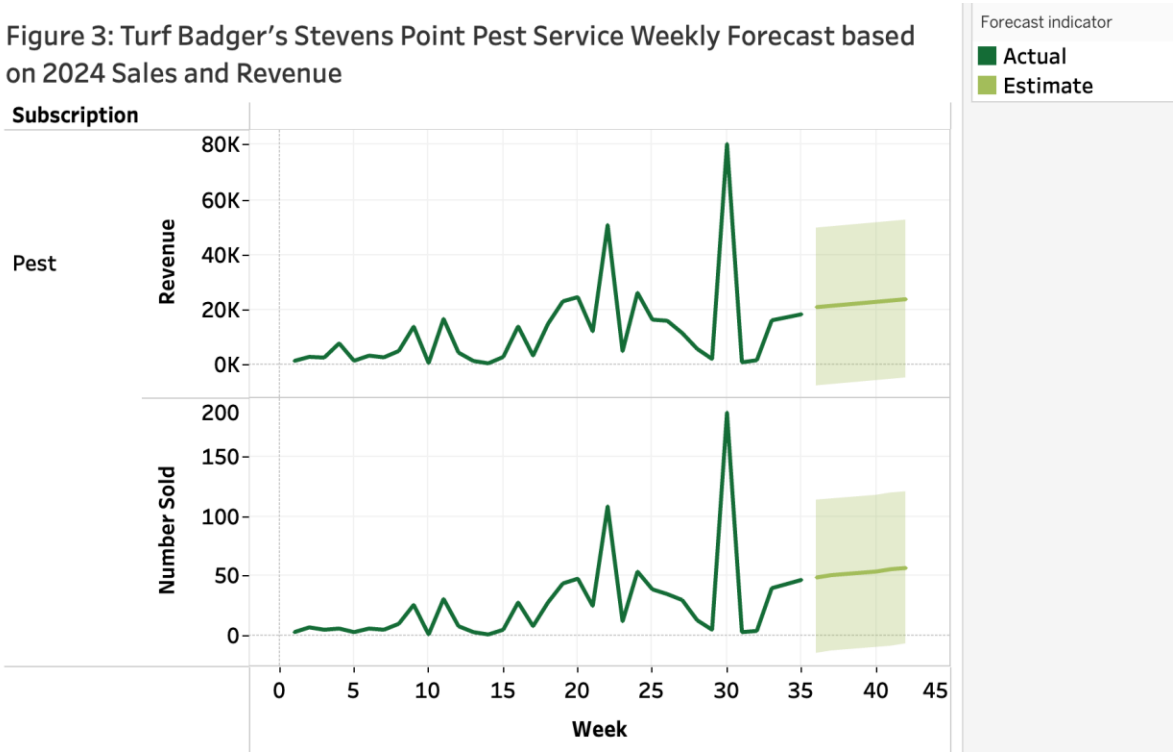
The forecasting aim was to predict future numbers for products sold and revenue for the next seven weeks of operation (September 2nd – October 20th) of 2024. Notedly, Tableau operates by determining the best of eight plausible exponential smoothing models based on the

AIC criterion. An important part of these models is hyperparameter tuning, which involves tweaking model parameters to optimize their predicted outputs. Parameters are learned from the original data and can then control the model's behavior to best fit the data. However, Tableau's tuning process is done behind the scenes, so their outputs are unknown.

Although, these models can capture any seasonality or trends in the data. Seasonality is a measure of fluctuation in an observed value that repeats over time. By capturing seasonality, Turf Badger could improve its inventory demand decision-making processes (Williams, 2024). For instance, they could prevent over-ordering and schedule future orders for pesticide products, all while optimizing sales. Additionally, the models produce a performance metric based on Mean Absolute Scaled Error (MASE) to indicate the quality/reliability of the forecast results. Below, forecasts and assessments of seasonality and model quality are shown for pest, mosquito, and lawn segmented services.

Pest

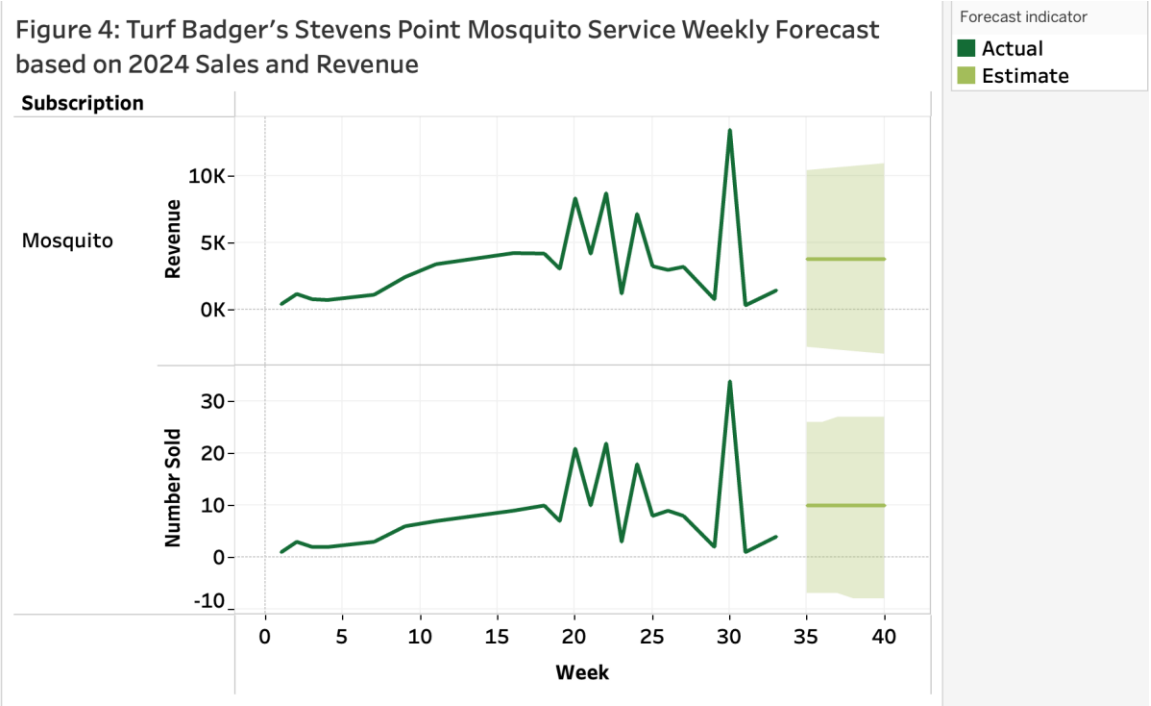
Figure 3: Turf Badger's Stevens Point Pest Service Weekly Forecast based on 2024 Sales and Revenue



Total pest control subscriptions sold, and revenue was forecasted to increase linearly from weeks 36 to 42 by one for sales and $481 dollars for revenue (Figure 3, Above). Overall, seven more subscriptions, up to a max of 57, and $2,886 more revenue, peaking at $28,886, were predicted. The forecast quality was rated as okay, and a trend was found to be 100% present. Based on these findings, Turf Badger should maintain its product inventory and keep its pest operations and sales objectives steady for the next seven weeks.

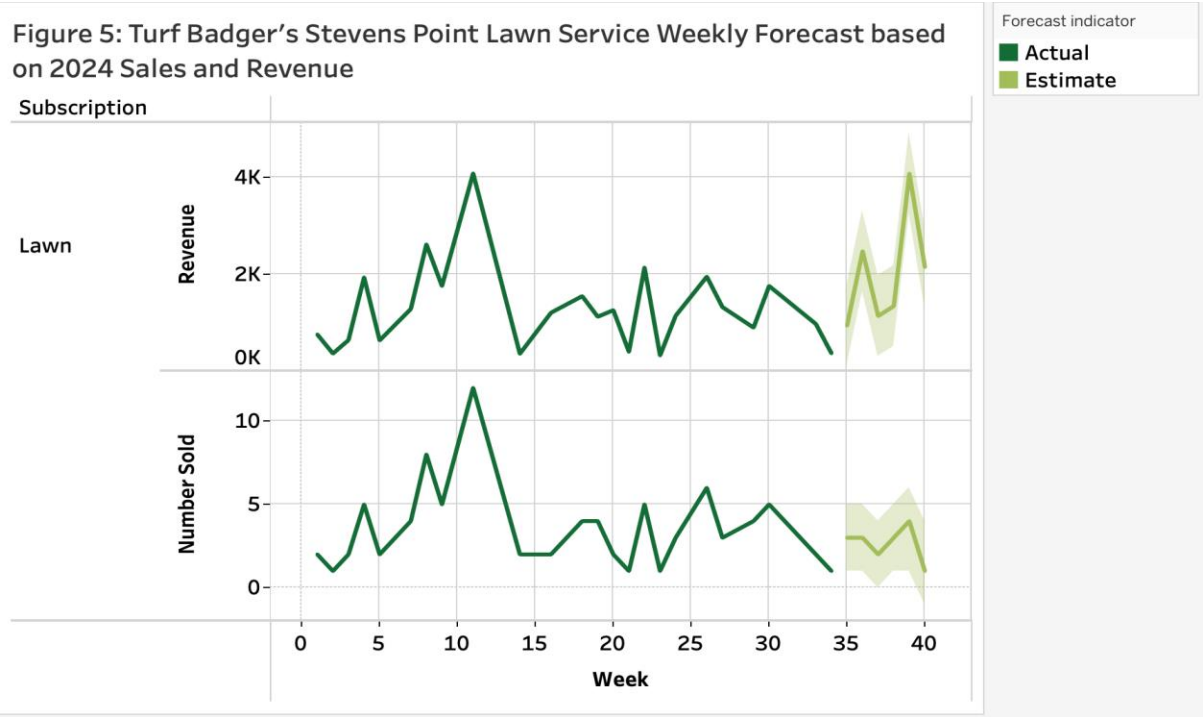
Mosquito

Figure 4: Turf Badger's Stevens Point Mosquito Service Weekly Forecast based on 2024 Sales and Revenue



Mosquito control subscriptions sold and revenue were collectively forecasted to remain the same from weeks 36 to 42 (Figure 4, Above). Overall, 10 subscriptions were predicted per week with $3,796 in revenue. The forecast quality was rated okay, with no trends or seasonality observed. Based on these findings, Turf Badger should expect a consistent product inventory demand and keep their mosquito operations and sales objectives steady for the next seven weeks.

Lawn



Of the product segments, lawn subscriptions sold and revenue had the highest forecast variation (Figure 5, Above). The quality was again rated okay, but seasonality was observed at 100% in 14-week-long cycles. From week 35, where one lawn subscription was sold, a maximum of 4 subscriptions sold is predicted in week 39 (September 23rd – 29th) before declining to the 35-week mark by week 40. Meanwhile, revenue is predicted to increase from $370 to $4,082 from weeks 35 to 39 before a decline projected in week 40.

These predicted increases align with the opinions of Wisconsin subject enthusiasts who declare September a critical month for lawn work (Reis, 2024). Therefore, Turf Badger should increase the availability of lawn equipment to meet demand and push lawn care to potential new customers. Additionally, they might look to upsell existing pest and mosquito subscription

customers through promotional marketing campaigns. However, they must do so efficiently to avoid missing the short window of opportunity.

Conclusions

Initially, Turf Badger's Stevens Point office should look to develop more data pipelines to analyze additional vital metrics. In terms of cancellations, they should increase contact with customers who were sold subscriptions from January through March and August to September to help decrease cancellation rates. In the near future, they should expect relatively steady revenue flows and product demand for mosquito and pest services and look to increase lawn care sales throughout September. Performing upselling campaigns and increasing the availability of lawn equipment would be suggested to optimize sales and efficiency this month.

References

Fontanella, C. (2024, May 30th). How to Calculate Customer Lifetime Value (CLV) & Why it Matters. *HubSpot.* https://blog.hubspot.com/service/how-to-calculate-customer-lifetime-value

Reis, I. M. (2024, August 5th). Fall Lawn Care Calendar for Wisconsin. *LawnStarter.* https://lawnstarter.wpengine.com/blog/wisconsin/fall-lawn-care-calendar-wisconsin/

Williams, M. (2024, September 11th). Seasonality Forecasting: Know Exactly When to Push Sales (And When Not To). *Flieber.* https://www.flieber.com/blog/seasonality-forecasting-know-exactly-when-to-push-sales-and-when-not-to