



NE Predictive and Preventative Lapsing Angler

RBFF State R3 Program Grants

Overview

Nebraska Game and Parks Commission's (NGPC) primary goal of this program was to determine if a predictive model can be used to target likely-to-lapse (LTL) anglers with a personalized marketing campaign and thus improve angler retention rates. If a predictive model could be used to target yet-to-lapse anglers, marketing efforts can be more targeted and effective, cost less, and reduce the need for more costly reactivation efforts.

Results

Predictive Model

- 37,784 anglers were identified as likely-to-lapse (LTL)
- Higher than expected numbers of LTL anglers purchased permits prior to engagement
- LTL anglers with predictive values from 0.5-0.6 were more likely to buy permits than anglers with values over 0.65
- Angler behavioral changes due to pandemic conditions likely affected predictive model accuracy

Campaign

- Over 14,000 LTL anglers were engaged during the campaign
- Campaign-induced lift appears maximized at 2 weeks
- Treatment groups bought permits at a significantly-higher rate than control groups
- LTL anglers engaged by email bought permits at significantly-higher rates than those engaged by mail
- Only 1% of engaged LTL anglers bought permits above the rates seen in the control groups
- \$13,331 of permit sales was attributed to engagement of LTL anglers
- While electronic engagements generated more lift, the higher relative availability of LTL anglers without email addresses accounts for electronic engagements providing 42% of income gains.
- Potential income was potentially reduced by higher-than-expected retention of LTL anglers due to pandemic influences
- LTL anglers that bought permits before their engagement period were less likely to buy one-day permits than those in the treatment/control groups

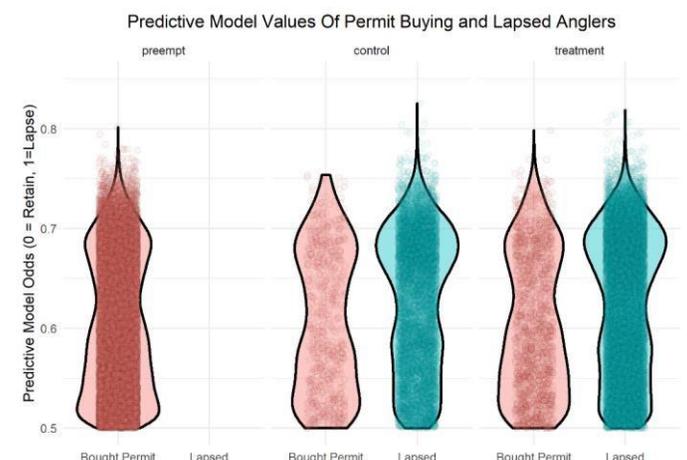
Partners

- Nebraska Game and Parks Commission
 - Fisheries Division, Research and Education
 - Communications Division, Marketing and Permits
- Recreational Boating & Fishing Foundation (RBFF)

“Predicting which anglers may lapse – and taking steps to prevent that lapse – is one of the ways we can use our data and technology to provide better service to our customers, keep our anglers engaged and ensure stable funding for important conservation efforts.”

- Jim Douglas, Director, Nebraska Game and Parks Commission

One objective of the campaign was to determine if particular ranges of LTL values from the predictive model were more likely to purchase permits. Likely-to-lapse anglers that had predictive model values over 0.65 were more likely to lapse than anglers with values below 0.6. If future campaigns use the predictive model and do not have the financial resources to engage all LTL anglers, efforts should be focused on LTL anglers with model values below 0.6 to maximize return.



Methodology

NGPC's predictive model was created by in-house fisheries research staff using machine learning techniques with predictive features analyzing their licensed angler database using demographic information, license buying histories, and economic indicators from 2010 through 2016. When applied to annual license sales during 2017, the predictive model identified 51,582 anglers as unlikely to buy a 2018 annual fishing license. This list included 51.0% of the anglers who eventually lapsed during 2018. An additional 18,263 false-positive predictions were included in the list which resulted in a precision rate of 64.4%. If a temporarily-staged campaign were initiated in April and predicted, likely- to-lapse anglers were engaged at the same in 2018 as their 2017 permit sale, 11,272 of the false positives could be identified by eliminating any anglers who had already purchased a 2018 license, resulting in a realized precision of 82.6%.

Benefits

Due to angler behavior changes during pandemic conditions (more retained anglers), it was not possible to evaluate the full lift potential of either the predictive model or the engagement techniques utilized.

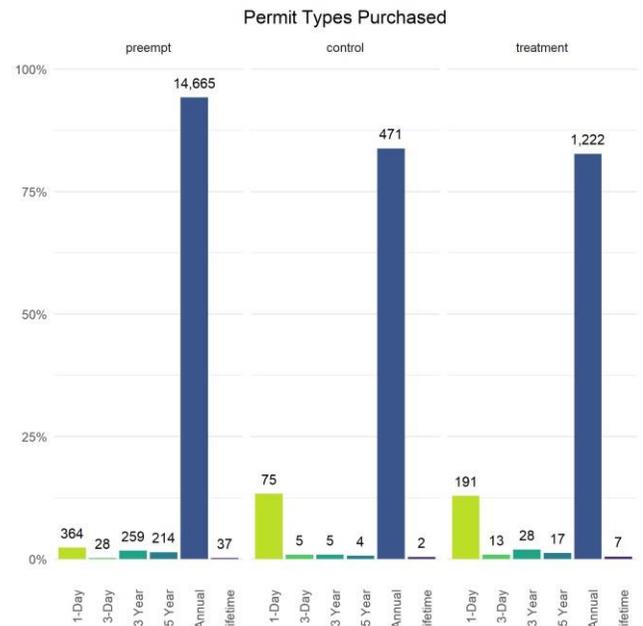
Given a return to traditional, post-pandemic angler behavior, it is still anticipated that the predictive model will allow for more targeted and cost-effective campaigns.

Future Plans/Lessons Learned

In upcoming years, the predictive model should continue to be evaluated to determine if more effective targeting of LTL anglers is possible.

Obtaining email addresses for anglers should be prioritized as returns on the campaign indicated that the electronic treatment group was more effective in both effect and cost.

LTL anglers were most likely (above 83%) to purchase Annual fishing permits regardless if they were engaged. Anglers that bought permits before their previous 2019 purchase dates were even more likely to purchase annual permits at the expense of one-day permits than other anglers. This may have been due to covid-19 related impacts as anglers had more time early in the year to fish and may have anticipated more opportunities throughout the year making annual licenses more attractive. Interestingly, there were lifetime licenses sold to LTL anglers in all groups.



Postal and email reminders to renew a fishing license were crafted with a regional message that suggested local quality fishing locations. Each had five regional variations.



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