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# A Dashboard View of Hunting and Fishing Metrics in the United States: 2010 – 2020

Methodology and Definitions

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## Overview

The national/regional sportsman dashboard provides a visual representation of hunting and fishing license/permit sales; summarizing both recent and long-term trends. Participation metrics are presented for sportspersons as a whole and also broken out over demographic groups, including residency, gender, age group. These breakouts allow for easy comparison of participation dynamics across a diverse range of customers. The data used to compile these scorecards comes largely from each state’s electronic license sales database.

## Data Preparation

Ten years of license/permit sales records (Jan 1<sup>st</sup> 2010 to June 30<sup>th</sup> 2020) were provided by each participating state. Each states’ data were cleaned, summarized and stored in a new database (maintained by Southwick Associates) in order to facilitate analysis. The structure of the database allows the metrics of interest to be estimated using simple queries sent to the database.

### States Providing Summary Data

Some states chose to summarize their own license records using a set of procedures laid out by SA. Those states include FL, NE and MA. Results were reviewed by SA, but ultimately all calculations for those states were performed by agency staff.

### Customer Deduplication

A customer deduplication step was performed based on three characteristics: date of birth, the first three letters of the last name, and the first two letters of the first name. Customer deduplication was only performed if the customer duplication rate was found to be 5% or higher, since there is a margin of error with any deduplication process. Several states chose not to share personally identifiable data with SA (including CT, KS, MN and ND). Customer deduplication could not be performed for those states.

## Youth and Senior Customers

States vary on whether they require youth and seniors to maintain a license in order to fish or hunt. Therefore, youth (those 17 years or younger) and senior (those 65 or older) sportsmen are not included in this dashboard.

## **Metrics of Interest & Definitions**

Four metrics were used to characterize sportsperson participation dynamics. Definitions are included below:

1. **Participants** – The total number of unique sportspersons (anglers or hunters) who purchased (or carried over) a license/permit each year<sup>1</sup>.
2. **Recruits (New Participants)** – The number of new customers who purchased a license; defined as participants who bought a license in a given year, but didn't buy a license granting that permission in any of the previous 5 years. For example, a new fishing participant in 2015 may have bought a fishing license in 2009 (or earlier) but did not buy a fishing license anytime from 2010 to 2014.
3. **Churn Rate** – This metric demonstrates annual turnover in fishing or hunting, and only applies to the full-year time period. Of the total number of customers that buy a license in a given year, churn is the percentage of those customers who fail to buy a license in the next year. For example, suppose 100,000 people held a fishing license in a state in 2017. Of these anglers, only 60,000 of them held a fishing license in the following year (2018). The churn rate for anglers in 2018 therefore equals  $40,000 / 100,000$  (40%).
4. **Participation Rate**<sup>2</sup> – The ratio of unique sportspersons (state residents only) to the state population for a given customer segment.

## **Defining Permission in Dashboard**

The current dashboard allows the user to focus upon three different privilege groups: anglers, hunters and all sportsmen (which includes anyone holding a fishing OR hunting license). These groups and the types of licenses they hold are summarized in Table 1 below:

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<sup>1</sup> Note that any multi-year or lifetime licenses are also be accounted for (details on page 4). Any customers buying sport or combo licenses are included in both hunter and angler counts.

<sup>2</sup> Participation rates are calculated with the help of an in-house database of relevant US Census data (Southwick updates this database annually to reflect the most recent state population estimates).

**Table 1.** Permission Group Definitions

Permission Group	License Types Included
Fishing - All Anglers	fish, combo
Hunting - All Hunters	hunt, combo
Sports - All Anglers and Hunters	fish, hunt, combo

## Demographic Segments

Metrics are further summarized at the three demographic dimensions for specified categories:

- **Residency:** (Resident or Nonresident): A resident is someone who lives in the state of interest. Identifying residency can be challenging as customers may move year to year. Therefore residency is determined using the following priority:
  - 1) Transaction-specific residency provided by the state
  - 2) License type purchased (if the state offers residency-specific licenses)
  - 3) Other license purchases by the same customer (assuming the state offers offers at least some residency-specific licenses)
  - 4) customer address or residency as provided by the state
- **Gender:** (Male or Female)
- **Age:** (18-24, 25-34, 35-44, 45-54, 55-64). The age is calculated by subtracting current year from the customer's birth year.

## Treatment of Multi-year & Lifetime Licenses

- **Multi-year:** For identifying participation, the licenses are counted in the year of purchase, and also for subsequent years remaining. For example, a person who purchases a 3-year license in 2017 would be counted as a participant in 2017, 2018, and 2019.
- **Lifetime:** License sales occurring between Jan 1<sup>st</sup> 2010 and June 30<sup>th</sup> 2020 are included, and that customer is counted in every subsequent year following their purchase. This approach involves a necessary compromise because there is usually no way to track participation for lifetime license holders with 100% certainty.<sup>3</sup>

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<sup>3</sup> The approach to counting lifetime licenses was selected for its simplicity; agencies need only to send records since 2010. Excluding prior years was considered acceptable since lifetime license holders typically make up a very small percentage of hunters and anglers in a state, and archived license records are often challenging to link with current license databases.

## **Treatment of Missing Data**

It is expected that certain customer characteristics (e.g., gender, age, residency) will be unknown for a small percentage of records. When estimating results by demographic segment, the demographic percentages are scaled to match totals. For example, say 100,000 people buy fishing licenses in a given year, and 69% are male, 30% are female, and 1% are gender unknown. The estimated number of males is then set to equal  $100,000 * 69 / (69+30)$ , and the number of females is set to equal  $100,000 * 30 / (69+30)$ . Since the percentage customers missing demographic information is usually very small, this is likely a reasonable estimate.