



Montana deer and elk hunting population:

Hunter retention, recruitment, and population change

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Questions

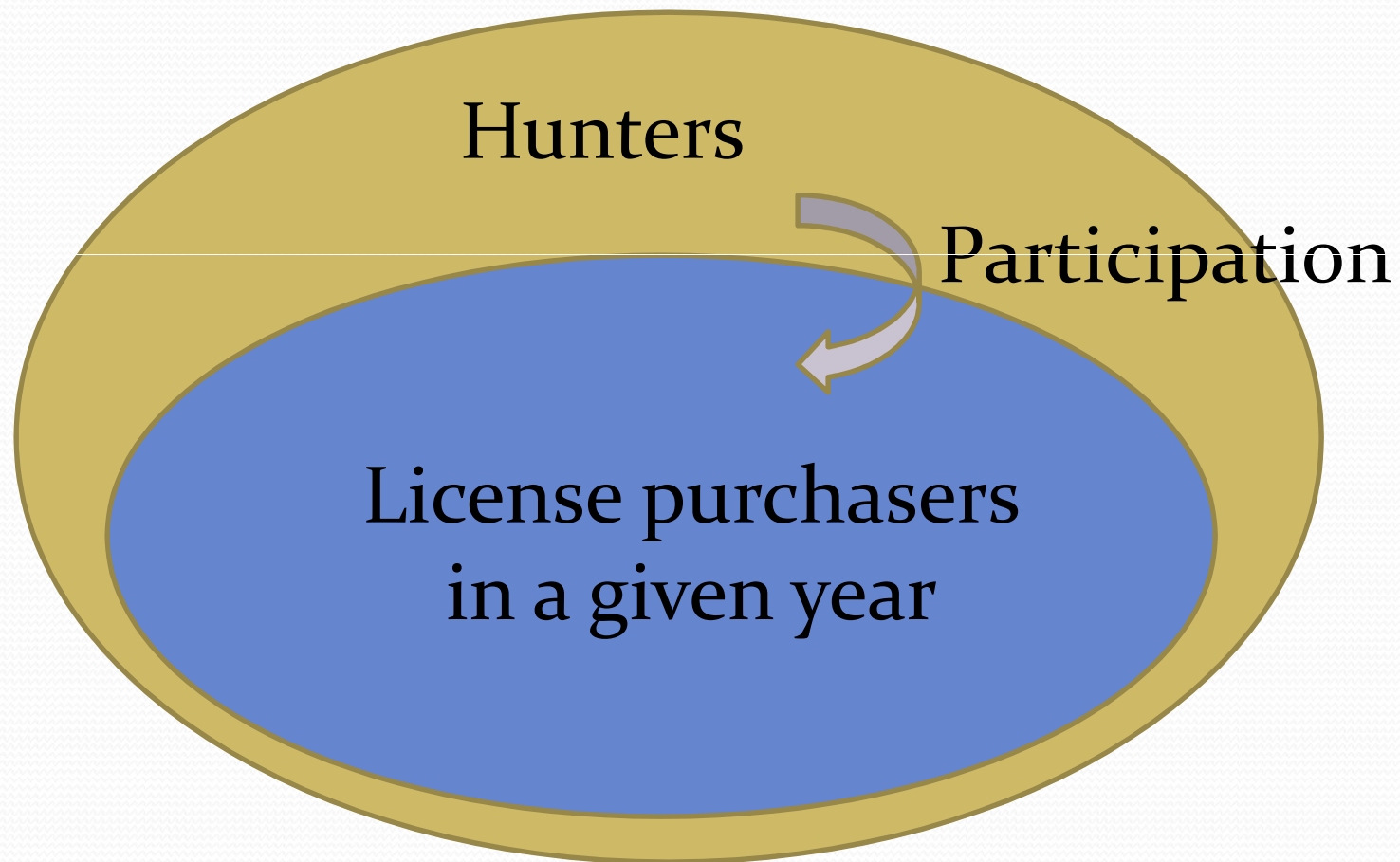
- What is the trend in the deer and elk hunter population in Montana?
 - What factors influence participation?



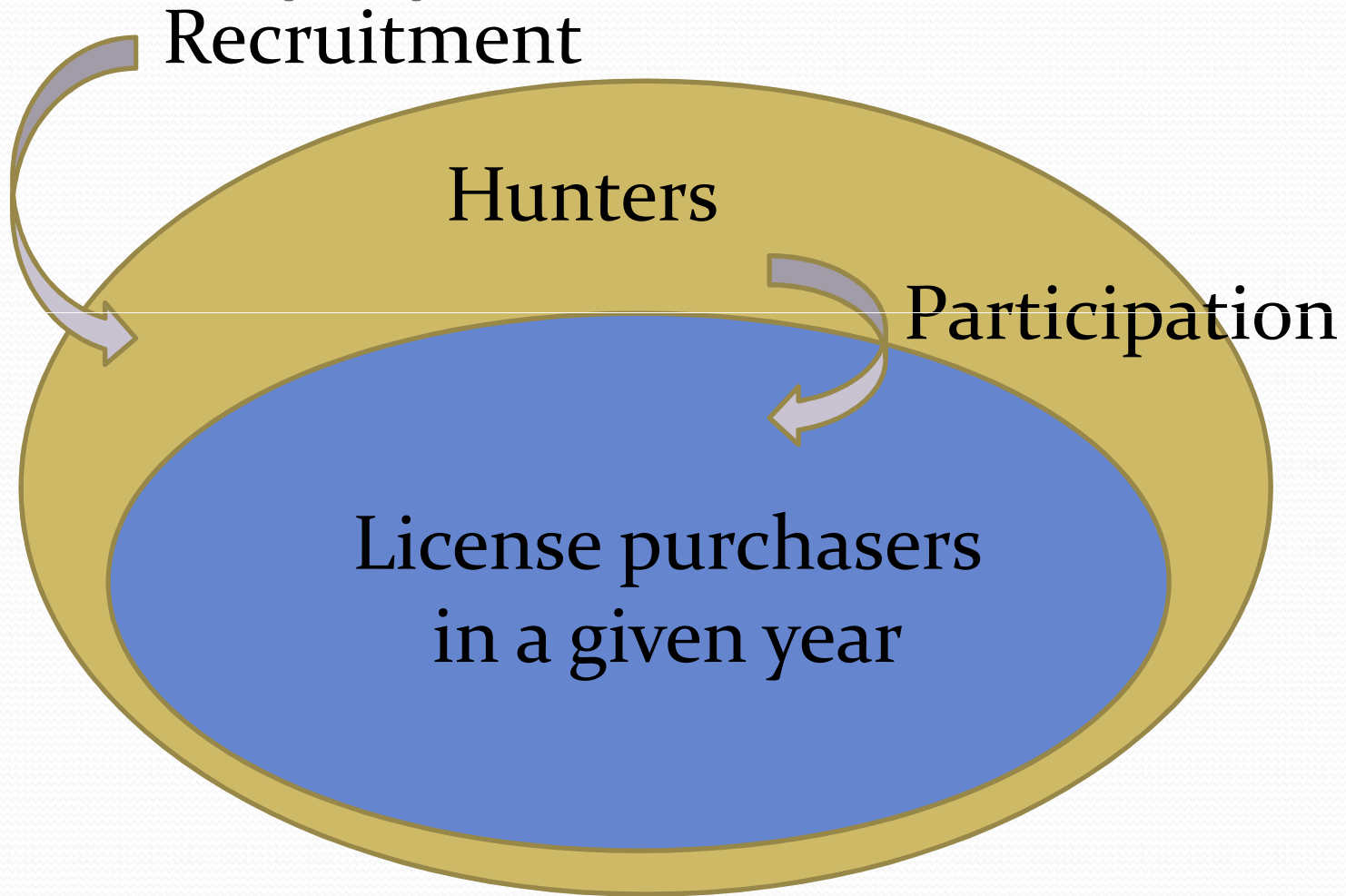
Hunter population



Hunter population



Hunter population



Hunter population

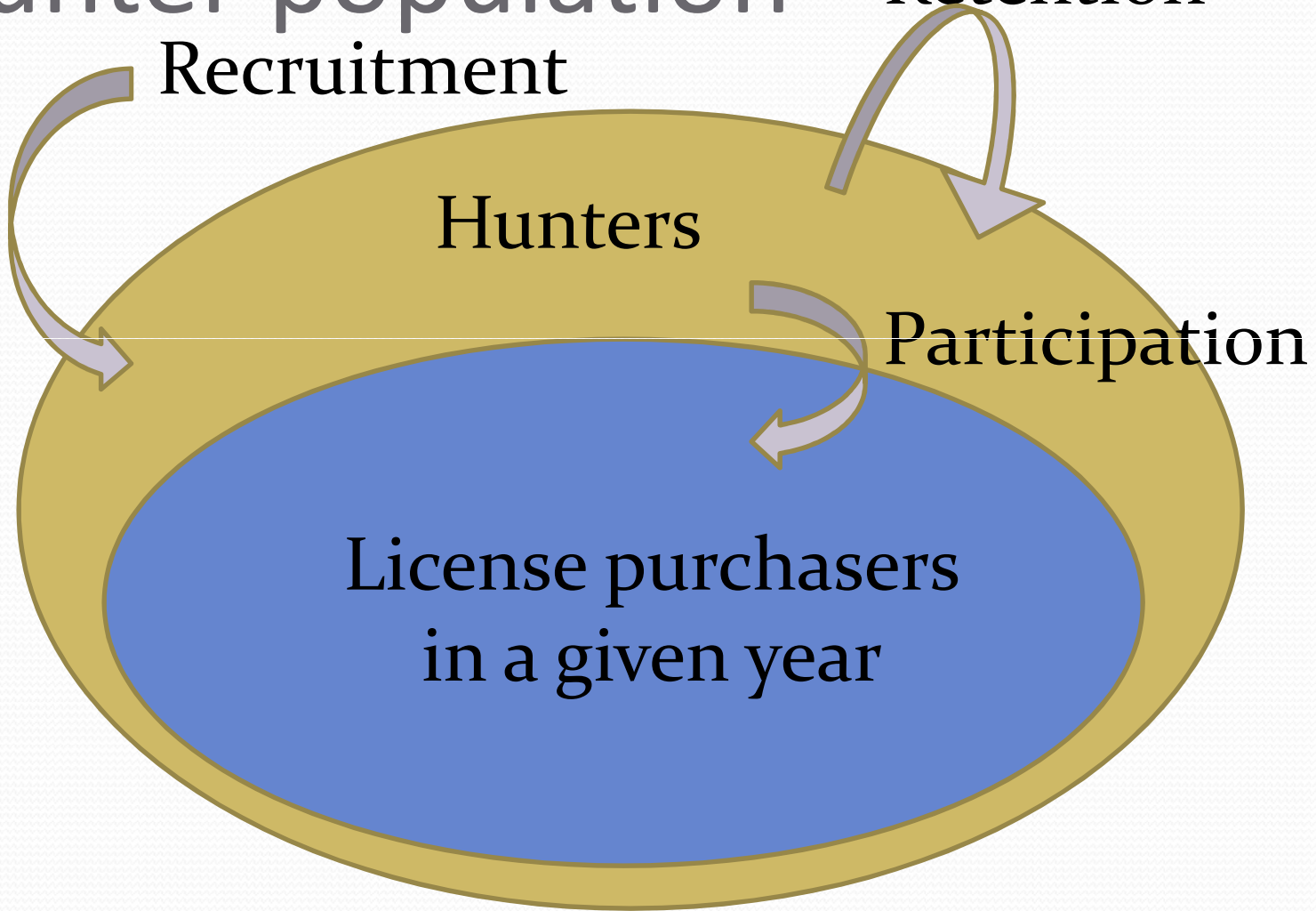
Retention

Recruitment

Hunters

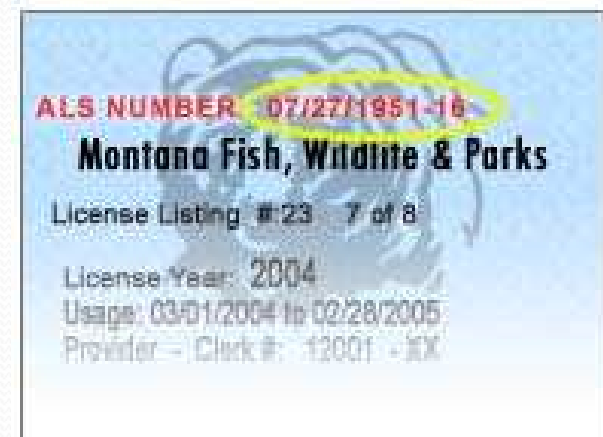
Participation

License purchasers
in a given year



Methods

- Automated Licensing System database
 - Accurate tracking of purchases through time
 - Available in 2002
 - >490,000 deer and elk hunters



Mark-recapture of hunters

- License purchases are “captures”
- Build a history of purchases
- Analyze as mark-recapture data



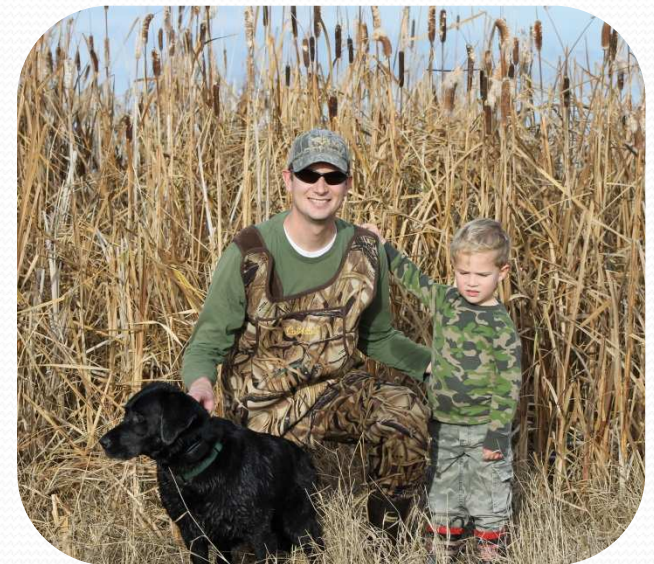


Application to hunters

- Survival – hunter retention
- Detection – probability of purchasing a license
- Recruitment – hunter recruitment

Are there generational differences?

- Birth Cohorts
 - Traditionalists (born 1900 – 1945)
 - Baby Boomers (born 1946 – 1964)
 - Generation Xers (born 1965 – 1980)
 - Millennials (born 1981 – 2000)



Are there demographic differences?

- Gender
- Age
- Residency





Are there affects of licenses?

- Opportunity
 - Number of antlerless licenses sold
- Price
 - Resident and non-resident



Results

- Recruitment
 - Residents < Non-residents ($\beta=-1.121$, $SE=0.15$)
 - Males < Females ($\beta=-0.62$, $SE=0.02$)
 - Older < Younger ($\beta = -0.052$, $SE=0.001$)
 - Resident & non-resident license price (negative)



Results

- Retention

- Residents > Non-residents ($\beta = 0.29$, SE = 0.14)
- Males > Females ($\beta = 0.84$, SE = 0.02)
- Older < Younger ($\beta = -0.0015$ SE = 0.0006)
- Resident & non-resident license price (negative)



Results

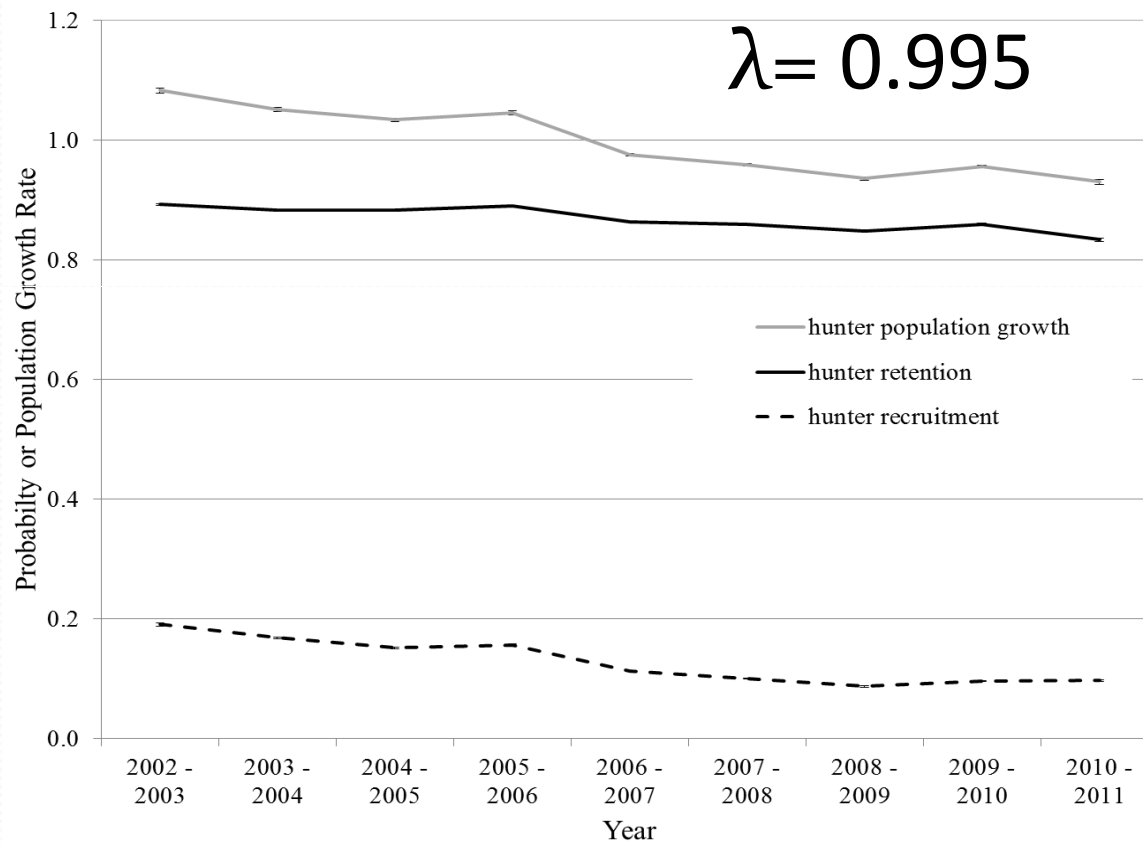
- Birth Cohorts
 - Retention
 - Baby Boomer > GenXers = Traditionalists > Millennials
 - Recruitment
 - Baby Boomer > Traditionalists > GenXers = Millennials



Results

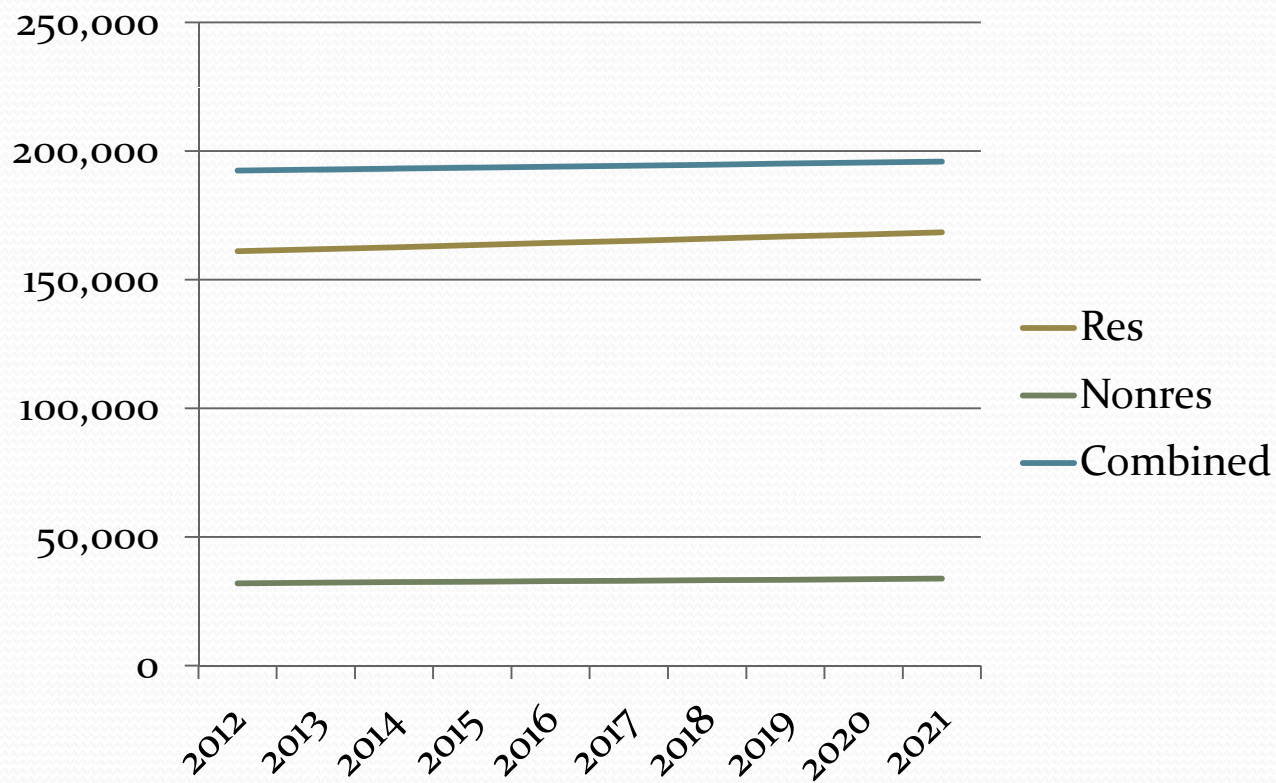
- Price - Retention
 - Residents - \$16 → \$20
 - 0.94 → 0.92
 - Non-residents - \$578 → \$794
 - 0.74 → 0.53

Growth Rate



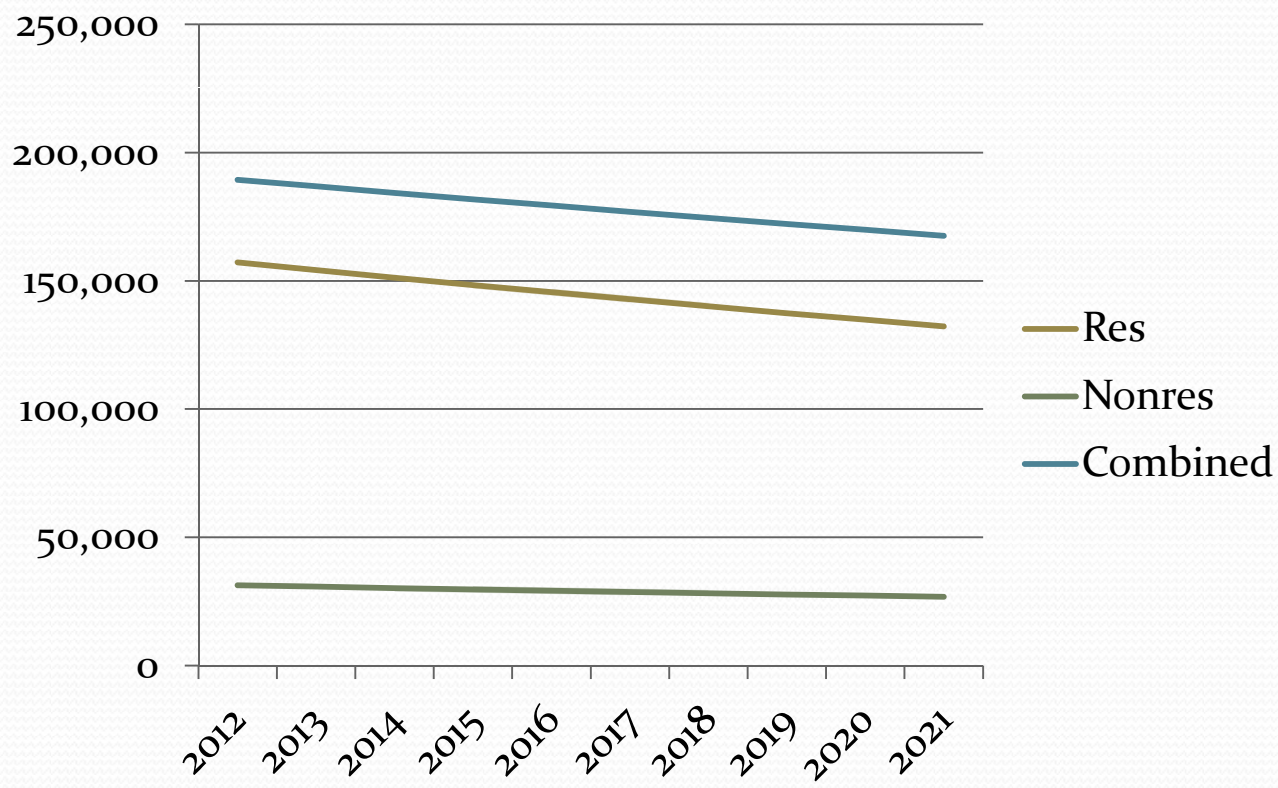
Growth Projections

**Growth predictions: 10-year average
annual growth**



Growth Projections

Growth predictions: 3-year average annual growth



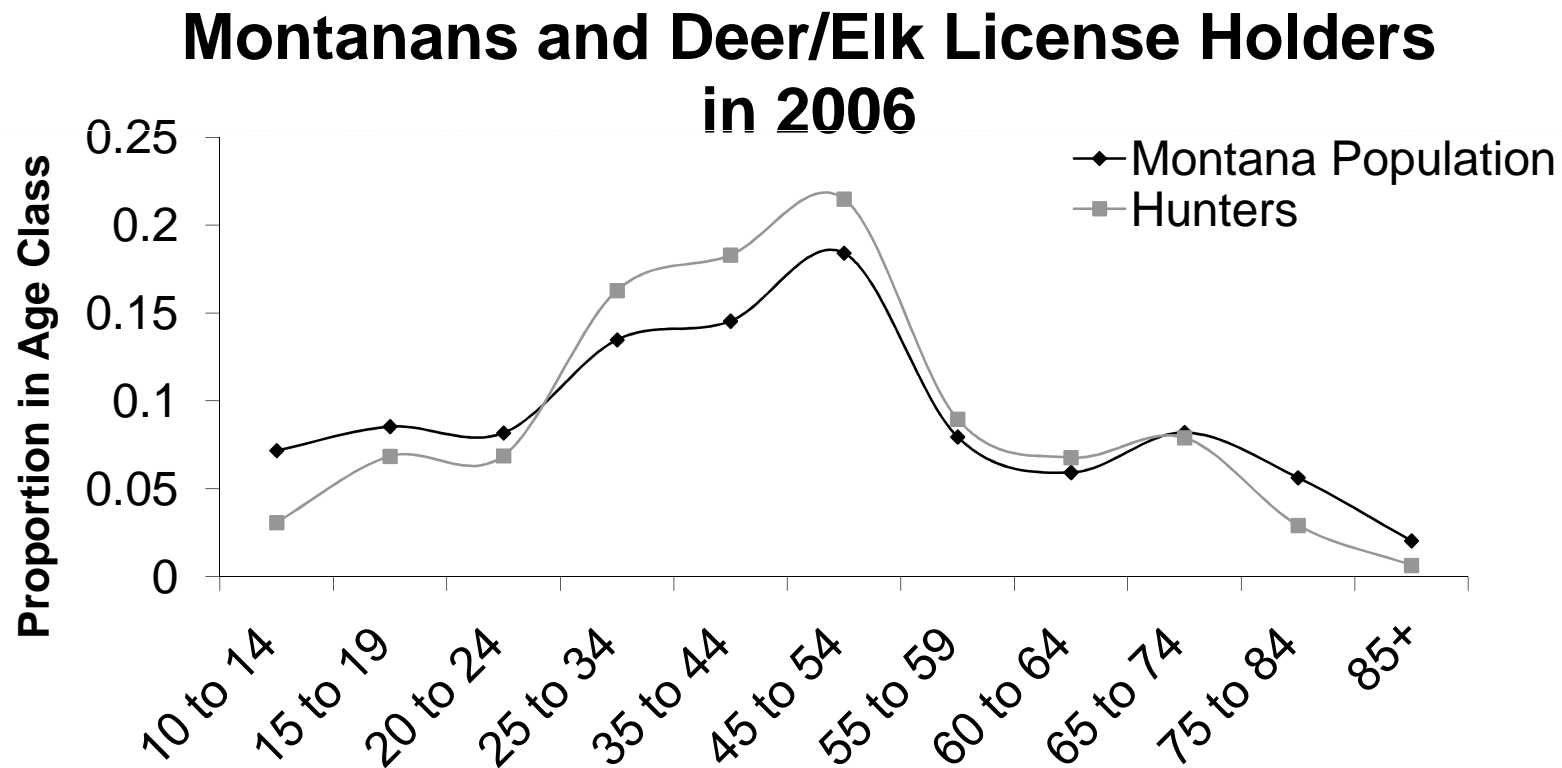


Discussion

- Hunter retention is more influential on change in hunter numbers than recruitment
 - 2011 example: retention = 0.83 and recruitment = 0.096
 - To remain stable, deer and elk hunter population would require:
 - 9% increase in retention, or
 - 200% increase in recruitment

Discussion

- Changing societal values? Or just demographics?





Discussion

- Baby-boomers
 - Concern about replacement
- Non-residents
 - Target new non-resident hunters



Discussion

- Hope for the future
 - Current birth pulse
 - Targeted recruitment and retention

Questions?

- Acknowledgments:
 - Funding from license fees and Federal Aid in Wildlife Restoration

