Comparing a Convenience Sample Against a Random Sample of Duck Hunters

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Introduction

- Rich duck hunting tradition & bounty in Illinois
  - 1901: 4 Illinois hunters harvest ~850 ducks in 1 day
  - 1902: First duck limits were established in U.S.

Photo by Josh Stafford
Introduction

• 1865: 1 statewide duck zone established
• 1977: 2 duck zones established
• 1980: 3 duck zones established
• 1991: USFWS implement 5-year plans
• 2011: 4th duck zone option recommended to USFWS by Illinois Department of Natural Resources (IDNR)
Introduction

• IDNR managers typically receive feedback by:
  – Phone calls
  – E-mails
  – Illinois Waterfowl Hunter Survey (I.W.H.S.)
  – Public meetings
Map of Potential Options for Duck Hunting Zones

Potential Duck Hunting Zones
Current Duck Hunting Zones
Introduction

• Attendees to public meetings may not represent the general population
  – Attendance to meetings will be influenced by
    • # of mallards harvested
    • # of days hunted
    • # of counties hunted
    • # of years hunting
Methods - Random Survey

• Illinois Waterfowl Hunter Survey (I.W.H.S.)
  – Administered annually since 1981
  – Mail survey to 5,000 stamp purchasers
    • Randomized
    • Recipients receive a harvest card prior to season
  – What’s calculated:
    • Participation
    • Harvests
Methods - Open Houses (O.H.)

• IDNR hosted 5 open houses throughout Illinois in June 2011
  – Disseminate information to the public
  – Gather attendees’ opinions

• Illinois Natural History Survey administers questionnaire to every attendee
  – Questions on:
    • Participation
    • Harvest
Map of Potential Options for Duck Hunting Zones

- Open house locations
Methods

• Independent variable:
  – O.H. attendee
  – I.W.H.S respondent

• Dependent variables:
  – # of counties hunted
  – # of years hunting
  – # of days hunted
  – # of mallards harvested

• Chi-square analyses and effect sizes
Results

• Response rates:
  – I.W.H.S. – 54% \((n = 2,558)\)
  – O.H. – 99% \((n = 480)\)
  – 91% of O.H. returned I.W.H.S.
Results

How did you hear about the meetings?

- Word of Mouth: 55%
- E-mail: 27%
- IDNR Website: 25%
- Article: 19%
- Other: 14%
Results - Duck Zone Boundaries

χ² = 136.86, p < .001, Cramer’s V = .28
Results - Season Dates

\[ \chi^2 = 116.50, \ p < .001, \text{ Cramer’s } V = .26 \]
Results- Days Hunting

χ^2 = 372.94, p < .001, Cramer’s V = .44
Results – Mallard Harvest

$\chi^2 = 340.61, p < .001, \text{ Cramer’s } V = .42$
### Results – Counties, Years, & Age

<table>
<thead>
<tr>
<th></th>
<th>Open House</th>
<th>Mail Survey</th>
<th>t</th>
<th>P-value</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td># of counties hunted</td>
<td>$\bar{x} = 1.6$</td>
<td>$\bar{x} = 1.3$</td>
<td>5.57</td>
<td>$p &lt; .001$</td>
<td>.32</td>
</tr>
<tr>
<td># of years hunted</td>
<td>$\bar{x} = 30.3$</td>
<td>$\bar{x} = 22.0$</td>
<td>9.00</td>
<td>$p &lt; .001$</td>
<td>.48</td>
</tr>
<tr>
<td>Age of respondent</td>
<td>$\bar{x} = 47.9$</td>
<td>$\bar{x} = 45.9$</td>
<td>2.46</td>
<td>$p &lt; .05$</td>
<td>.13</td>
</tr>
</tbody>
</table>
Discussion

• Open-house attendees did not represent the “average” IL duck hunter.
  – More experienced (Cornicelli & Grund 2011, Johnson et al. 1993)
  – Higher harvest (Johnson et al. 1993)
  – More days hunting (Johnson et al. 1993)
  – Older hunters
Discussion

• Issue salience:
  – 91% of attendees returned I.W.H.S.
  – As opposed to 54% of I.W.H.S. response rate

• Attendees have significant interest in duck hunting
  – Attendees may be more critical than non-attendees (McComas & Scherer 1998, Johnson et al. 1993)
    • More dissatisfied than mail survey hunters
  – Undersampled stratum
Discussion

• Management decision issues:
  – Non-representational feedback
  – Non-attendees have less interest
    • 36% will accept whatever IDNR determines
  – Necessary at local levels
    • Hunters demand a role in managing wildlife
    • Strengthens relationship with hunters
    • Supplement random data with meetings
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