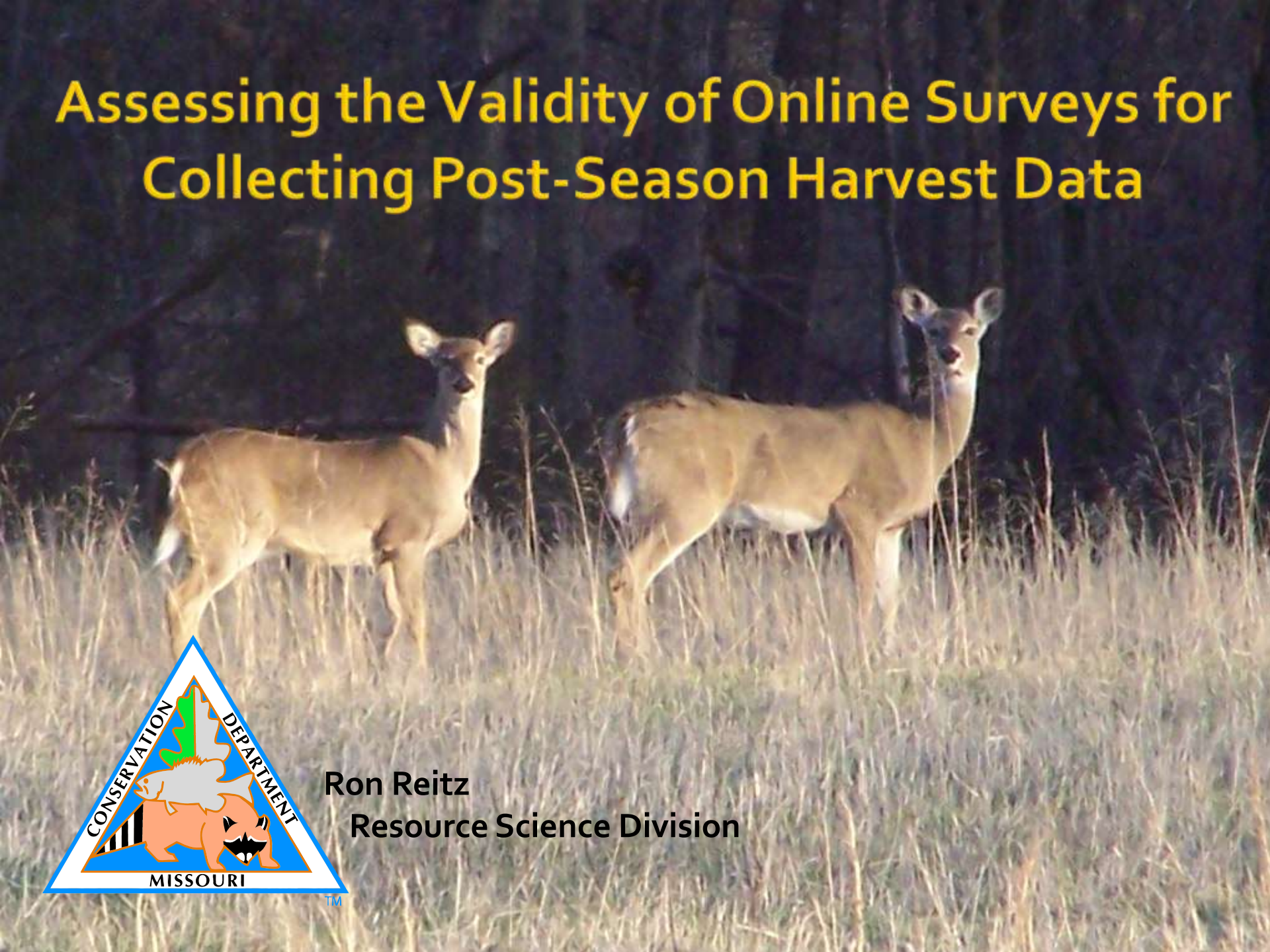
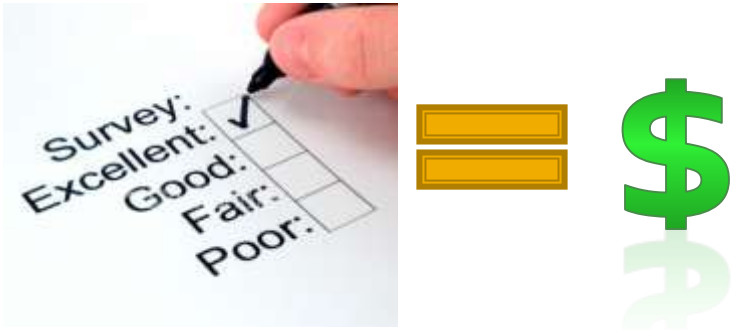
Assessing the Validity of Online Surveys for Collecting Post-Season Harvest Data



Ron Reitz
Resource Science Division

Background

- Fish and wildlife management agencies are looking for ways to decrease the costs of current programs, this may be particularly true of survey research, for which costs can be substantial.
- One avenue being explored is replacing traditional mail-back surveys with internet surveys.



Four Issues

- Sample Validity
- Non-Response Bias
- Stakeholder Bias
- Unverified Respondents

Sample Validity

- For a valid sample, every member of the population must have a known chance of participating.
- It is not possible to obtain a valid sample from a list of email addresses.
- It is not possible to obtain a valid sample through respondent self-selection.
- Exceptions include closed surveys with guaranteed online access and mixed-mode surveys.
- Without a valid sample, all data are questionable.

Non-Response Bias

- People who *do not* respond have the potential to be different from those who *do* respond.
- Without a valid sample frame, the presence or absence of non-response bias cannot be determined.
- People who do respond are more likely to be interested in the topic.
- Email filtering contributes to non-response bias.
- Multiple email addresses contribute to non-response bias.

Stakeholder Bias

- People with a vested interest in results can complete an online survey multiple times (poll crashing).
- Poll crashing can be especially prevalent regarding issues that elicit high levels of concern.
- Internet bots can repeatedly cast votes to influence an online survey's outcome.
- Safeguards for multiple voting can be circumvented.

Unverified Respondents

- Without control over who gains access to an online survey, there is no way to verify respondents' demographic backgrounds.
- Incentives to participate compound the problem by encouraging multiple responses (for valid sample surveys, incentives are appropriate in some instances).

Internet Access of Missouri Deer Hunters

- Only 63% of mail respondents indicated that if required, they would be able to complete the survey online the following year.

2008 Firearms Deer Post-season Survey
Methods

- We used independent samples of firearms deer permit holders to compare response rates and estimates:
  - Traditional mail-back questionnaire (n=17,500)
  - A mail notification requesting recipients go to a specific URL to complete the questionnaire online (n=1,500)

2008 Firearms Deer Post-season Survey
Methods

- Youth
- Resident firearms any-deer
- Non-resident firearms any-deer

Results

- Response rates were:
  - 49.8% (n=8,080) for the mail questionnaire
  - 30.5% (n=426) for the internet questionnaire

19.3% Difference

Results

- Test for differences in :
  - Participation
  - Hunter demographics
  - Harvest estimates
  - Hunter number estimates
  - Opinions/Attitudes

Participation Rates

Did you hunt deer during the 2008 firearms deer season? (Proportion answering "yes")

Permit Type	Mail	Internet
Youth	96.6%	100.0%
Residents	97.4%	97.4%
Non-residents	98.3%	100.0%

Demographics - Age

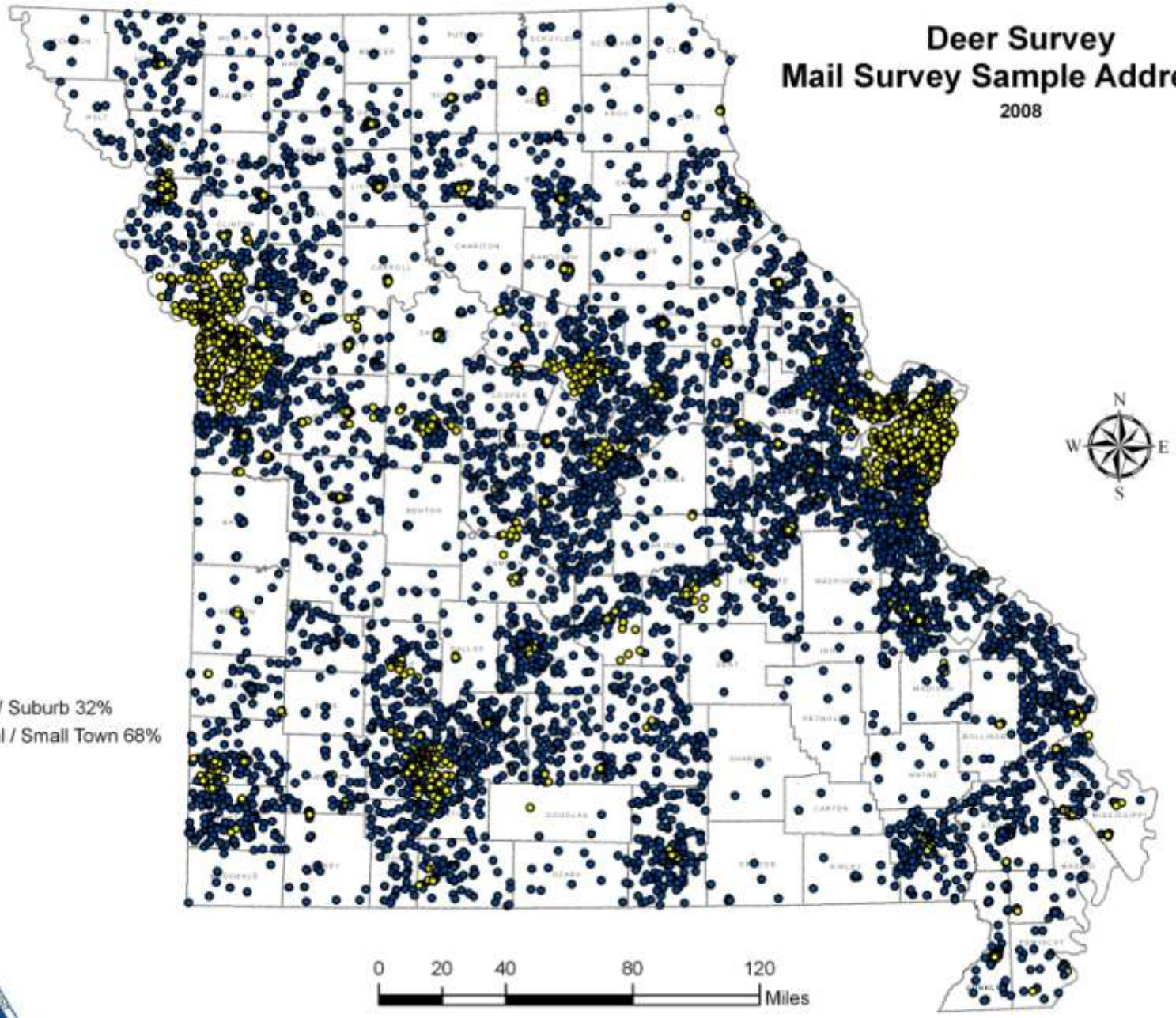
- For the selected mail and internet samples, we found no difference in age distribution (mean=41.6 years).

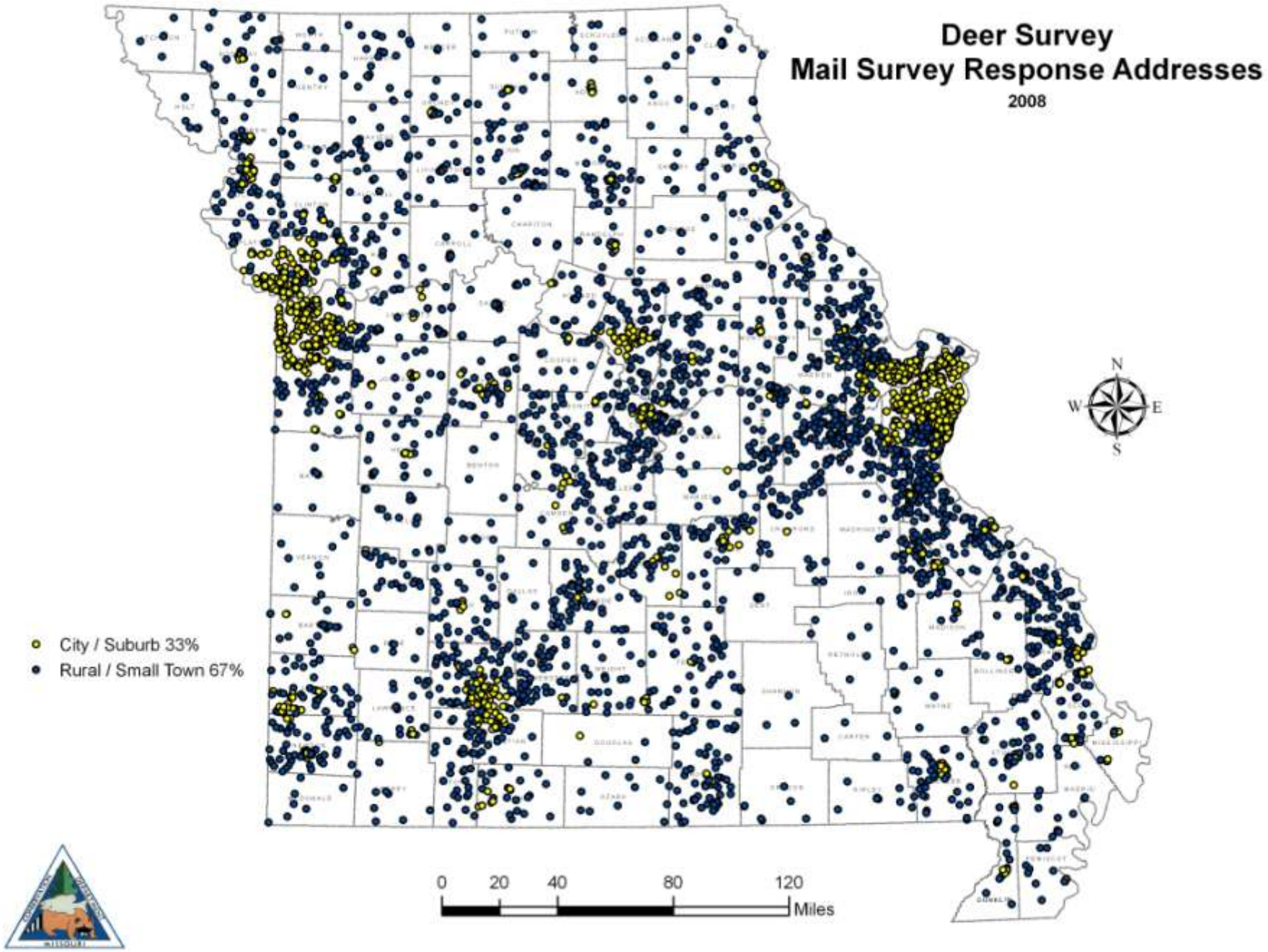
- However, respondents to the internet survey were significantly (p=.0016) younger with a mean age of 43.9 years compared to 46.7 for the mail survey.

Demographics - Gender

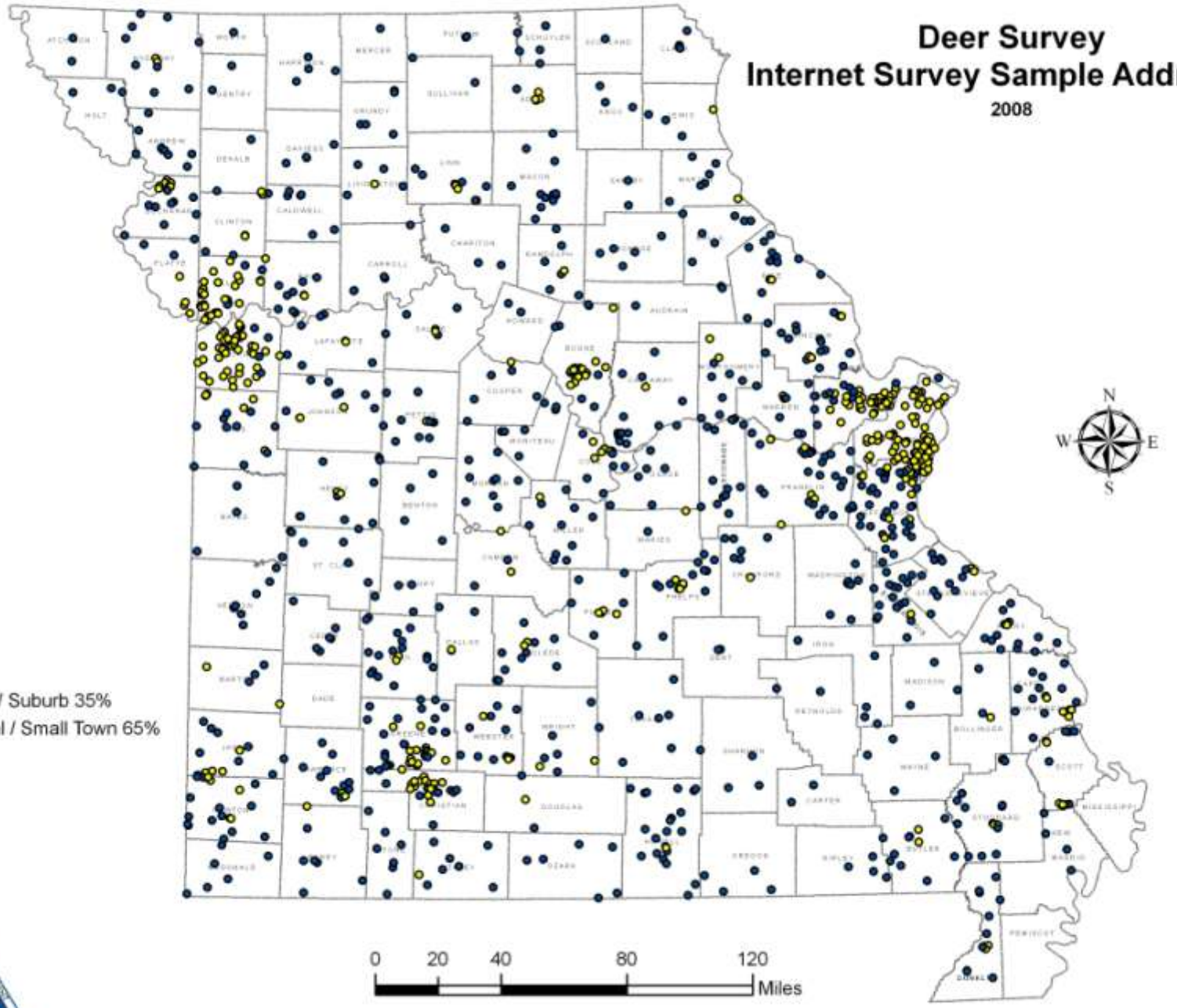
- Analyses indicated no significant differences in gender distribution in sample or survey responses for either method.

Deer Survey
Mail Survey Sample Addresses
2008




Deer Survey
Mail Survey Response Addresses
2008
City / Suburb 33%
Rural / Small Town 67%
N
W
E
S
0
20
40
80
120
Miles

Deer Survey
Internet Survey Sample Addresses
2008



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Internet Survey Response Addresses
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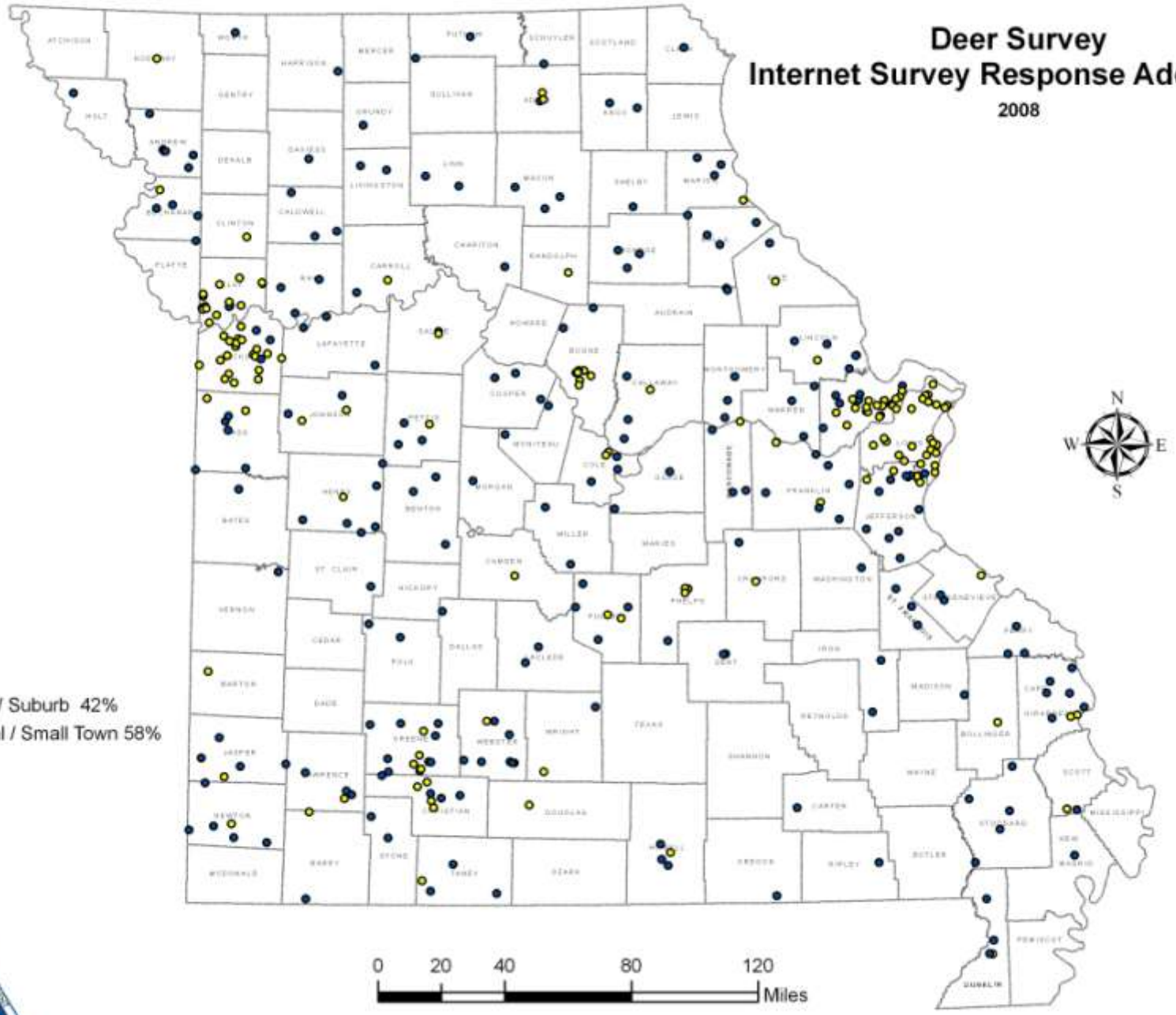
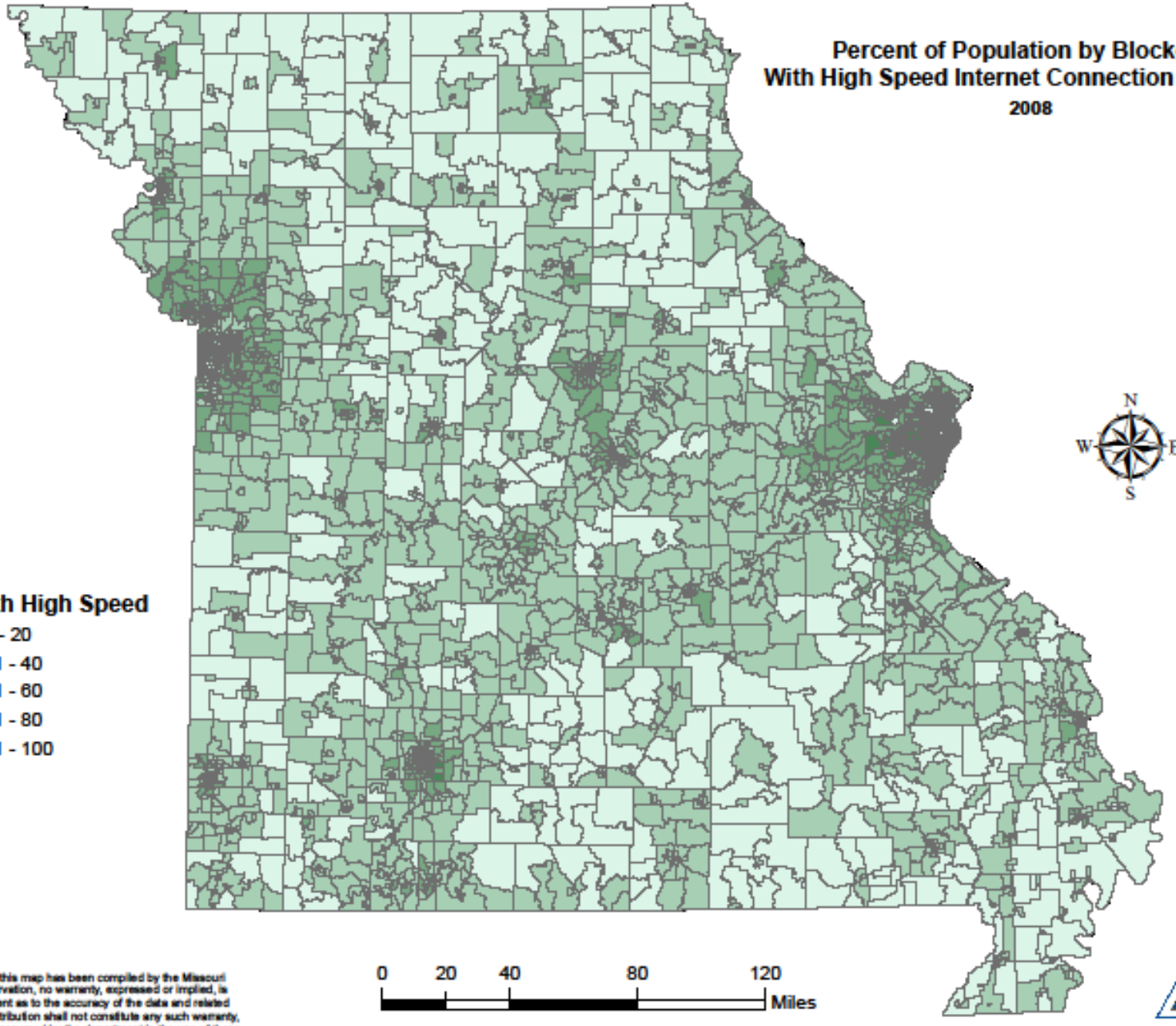


Percent of Population by Blockgroup With High Speed Internet Connection From Home

2008



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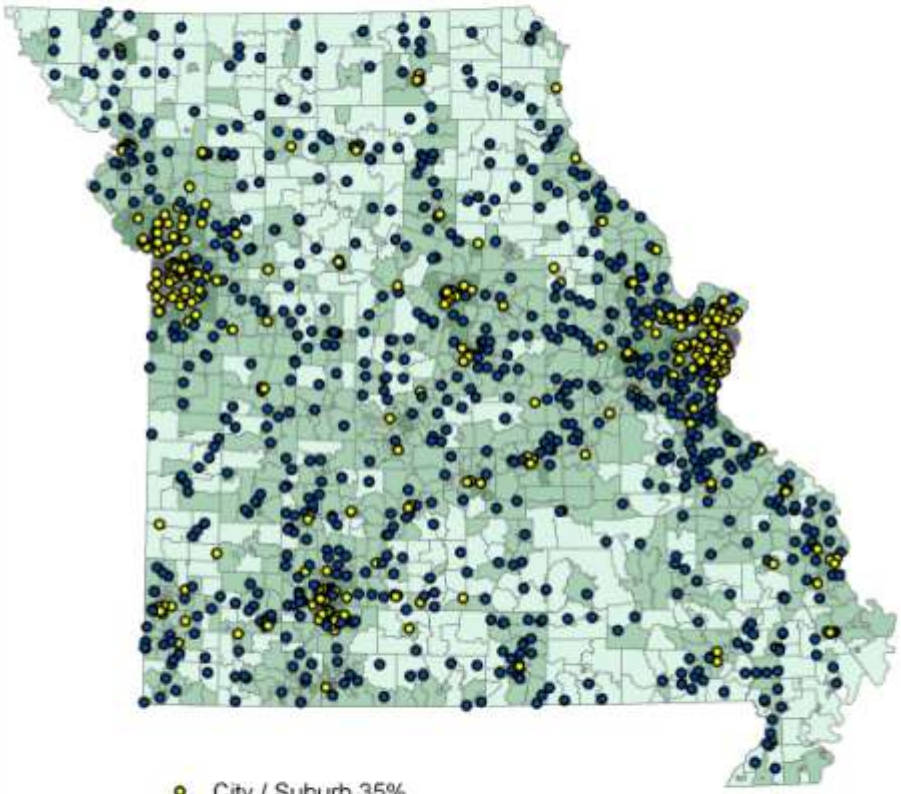
*Map based on survey completed by Mediamark Research (MRI) in 2008

Deer Survey
Internet Survey Sample Addresses
2008

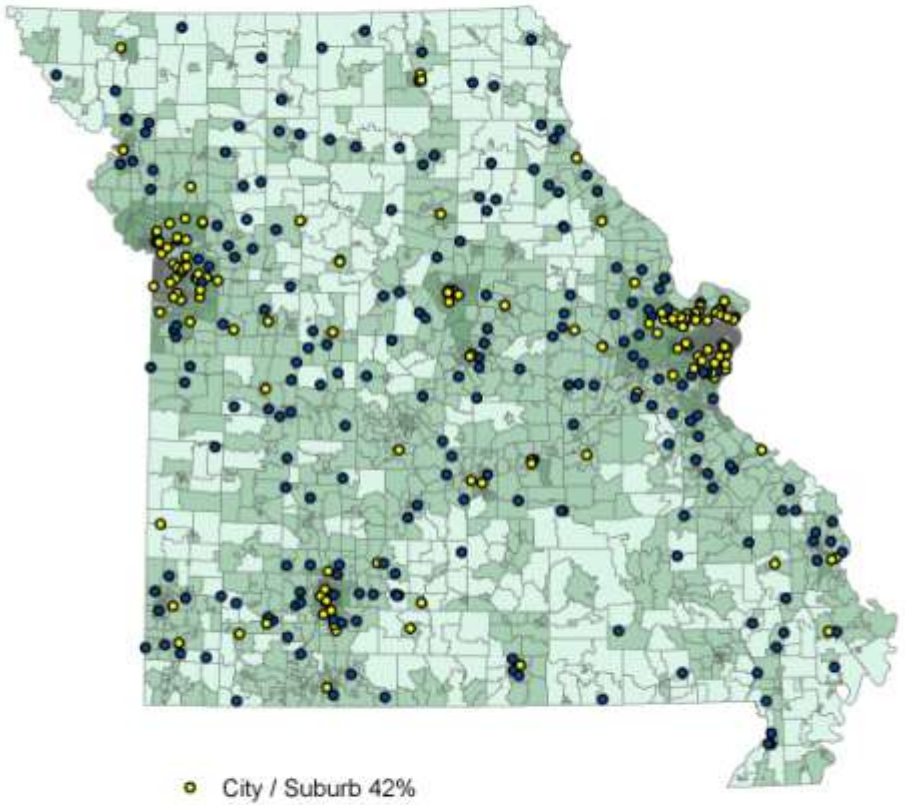


- City / Suburb 35%
- Rural / Small Town 65%

% With High Speed Internet By Blockgroup

- 0 - 20
- 21 - 40
- 41 - 60
- 61 - 80
- 81 - 100

Deer Survey
Internet Survey Response Addresses
2008



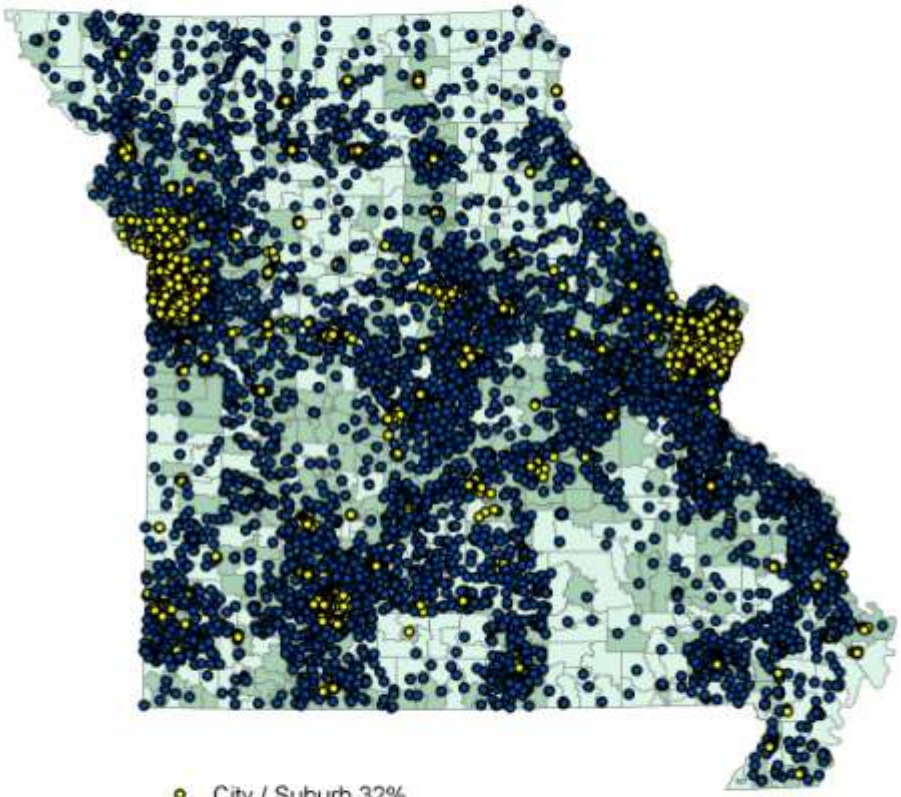
- City / Suburb 42%
- Rural / Small Town 58%

% With High Speed Internet By Blockgroup

- 0 - 20
- 21 - 40
- 41 - 60
- 61 - 80
- 81 - 100

N
W E
S

Deer Survey
Mail Survey Sample Addresses
2008



- City / Suburb 32%
- Rural / Small Town 68%

% With High Speed Internet By Blockgroup

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Deer Survey
Mail Survey Response Addresses
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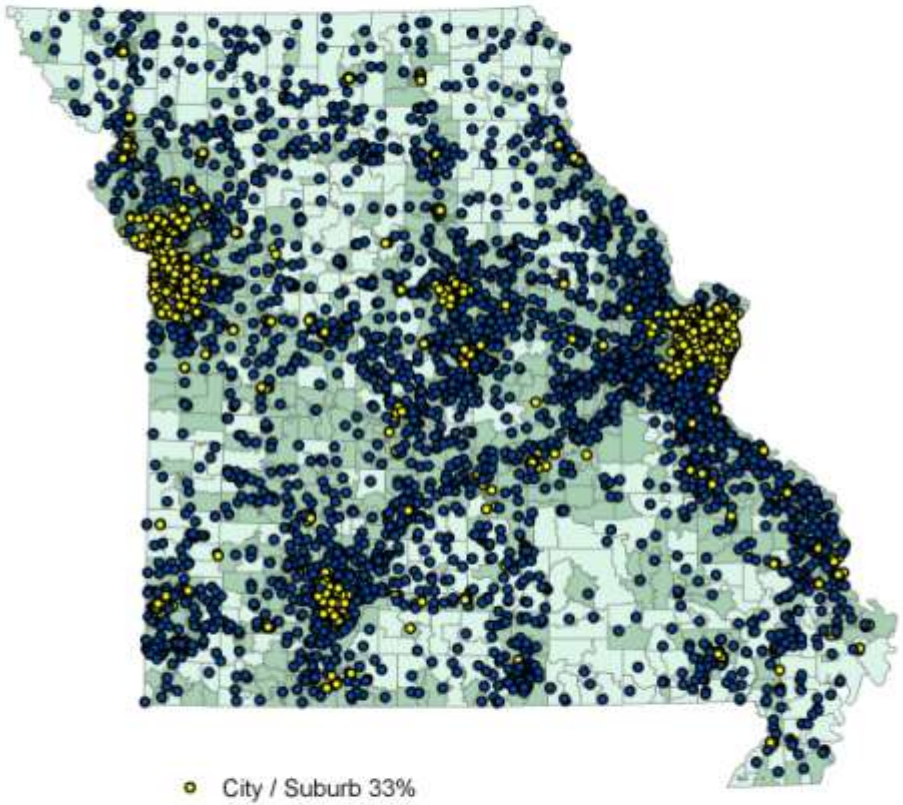

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Percent of Population by Blockgroup With High Speed Internet Connection From Home

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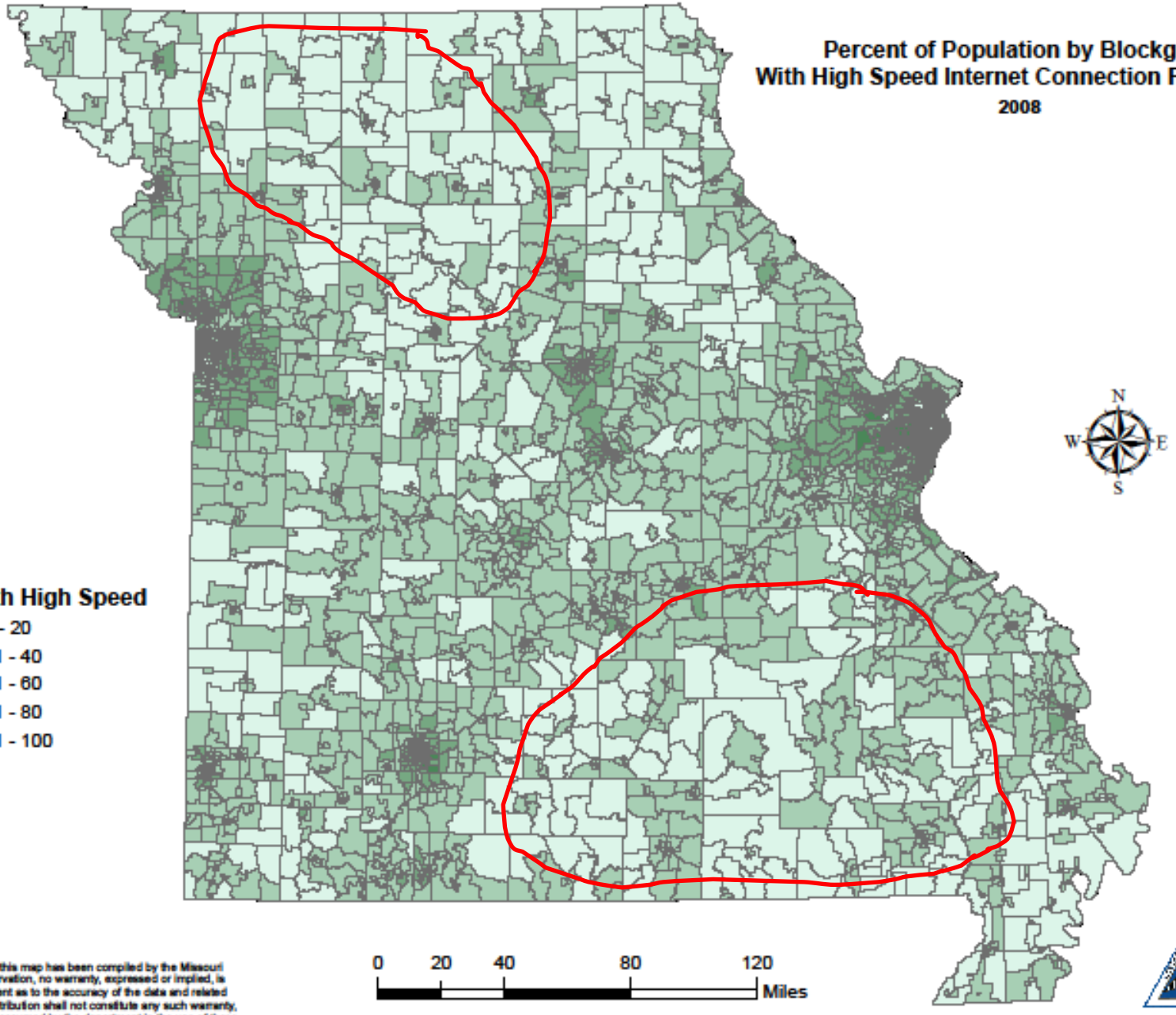

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*Map based on survey completed by Mediamark Research (MRI) in 2008

Demographics-Summary

- Potential age and residency bias in internet survey response (younger-urban).
- *No* indication of gender bias in internet survey response.

Harvest Estimates

- Mail survey – 200,438 deer (CI 192,761-208,115)
- Internet survey – 194,769 deer (CI 160,861-228,677)
- Straight run analysis of datasets without bootstrapping.
- Actual harvest for selected permit types was 169,951 deer.
- Bootstrapped estimate was 187,356 (programmed in non-response adjustments)

No significant difference in harvest estimates.

Hunter Number Estimates

- Mail survey – 301,452 hunters (CI 299,865-303,039)
- Internet survey – 304,842 hunters (CI 299,222-310,462)

No significant difference in hunter estimates.

Attitude/Opinion Items

- Feelings about the deer population in the area you hunt most (too many-too few)
- Type of land hunted during the 2008 firearms deer season (public, private land, both)
- Change in the past 5 years in number of big bucks (more, fewer, same)
- Support for 4-point rule.

No significant difference in attitude/opinion data.

Conclusion

- Sampling issues that can't presently be overcome.
- Internet access continues to be an issue.
- Significantly lower response rate.
- Probable age and residency bias in internet survey response for deer hunters (younger-urban).
- No indication of gender bias in internet survey response.
- No significant difference in statewide harvest and hunter number estimates.
- No significant difference in attitude/opinion data.
- Further study required before implementation. Larger treatment group. Different survey subjects. Finer analysis. Consider possible impacts of observed biases.


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