

Water Use Patterns in Florida-Friendly Landscapes

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Overview

- Why study irrigation water use in Florida-Friendly Landscapes?
- Who are UF/IFAS's residential Florida-Friendly Landscaping (FFL) Program clients?
- What are they doing differently?
- What can we learn from them?

Introduction



A diversely planted FFL yard
(photograph courtesy of Michael Gutierrez)

Conceptual Framework

- Assessments of water consumption and parcel-level data have shown that installation of low water-use landscaping can result in irrigation savings:
 - In Nevada, Sovocool et al. (2006) found that landscape conversions from turfgrass to water-efficient plants resulted in a 30% decrease in average annual main-meter consumption.
 - In Florida, Boyer et al. (2014) determined that single-family homes with FFL used 50% less irrigation than traditionally landscaped homes.

Purpose of Study

- Research problem:
 - Mechanisms underlying reduced irrigation use in regionally-appropriate landscapes remained unknown
- Purpose of study:
 - Identify a) perceptions, attitudes, knowledge, behaviors; b) landscape characteristics; and c) irrigation system features associated with outdoor water use among homeowners with Florida-friendly yards

Survey Instrument

- Comprised of multiple-choice and Likert-scale questions that elicited
 - Demographics
 - Environmental views
 - Self-reported irrigation and landscaping practices
- Distributed
 - To 224 single-family homes with FFL
 - In southwest Florida in 2017
 - Hillsborough, Manatee, Pasco, Pinellas, & Polk Counties

Analysis

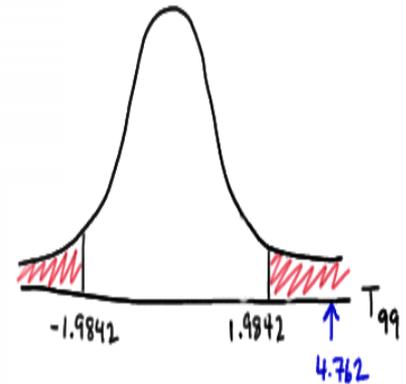
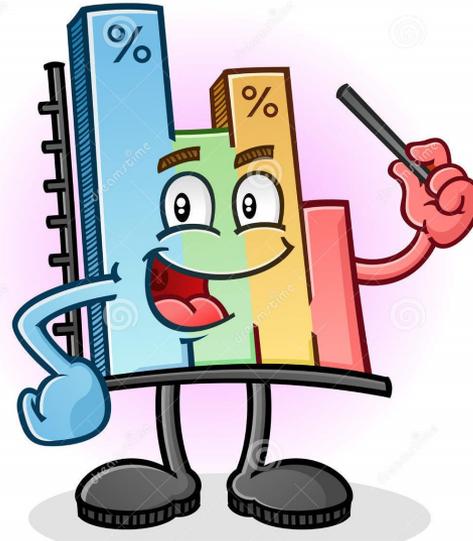
- Compared

- Demographics
- Attitudes
- Knowledge
- Practices



- Using

- Descriptive statistics
- Relative frequency distributions
- Logistic regression analysis



- On a final dataset of 141 responses

Results

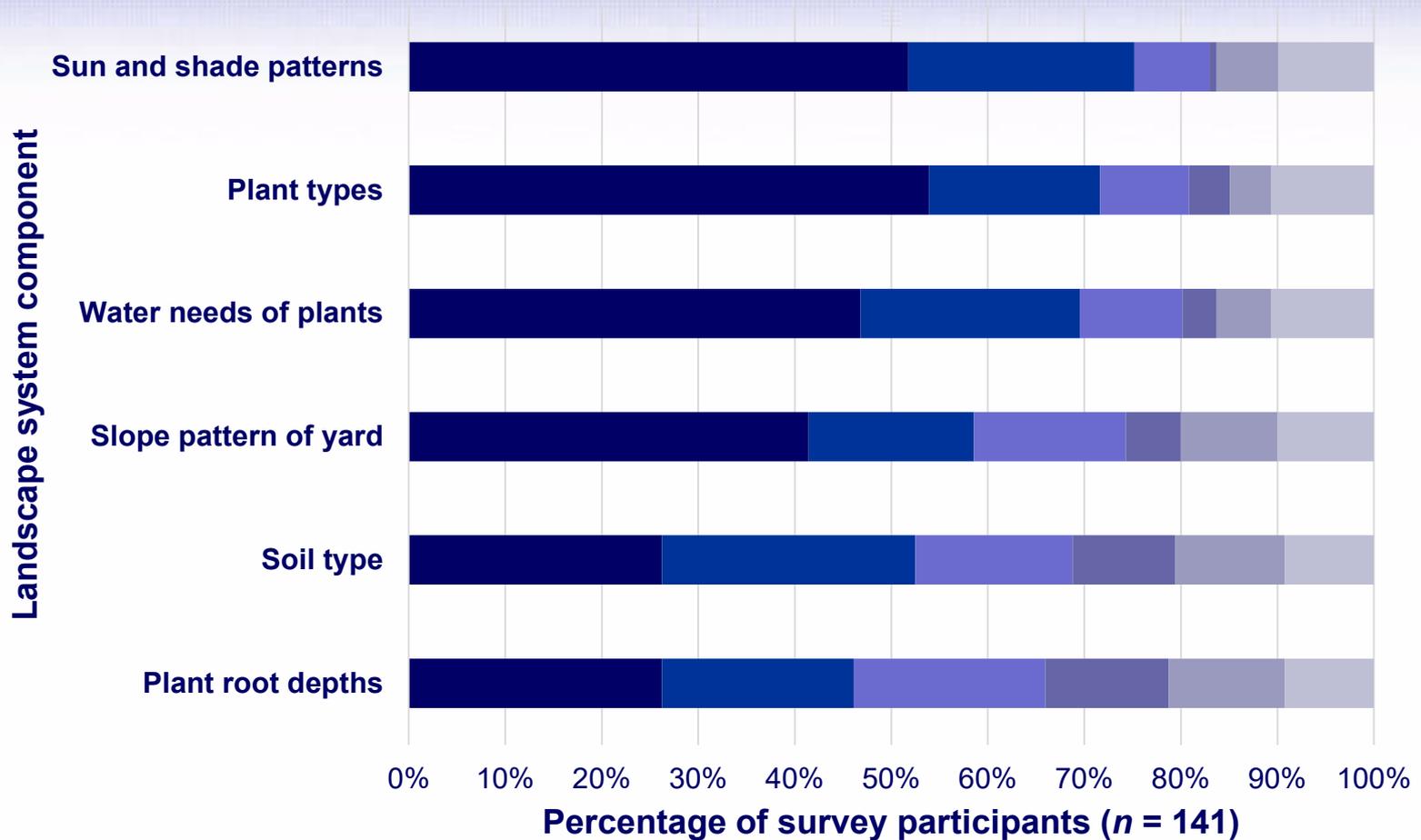
- Demographics
 - Largely college graduates or professionals
 - With household incomes starting at \$50,000
 - Median property value of \$231,573
 - Mean age of 63 years
 - And mean water conservation attitude score of 4.35 on a 5-point scale regarding quantity and use

Results

Mean ratings of agreement ranging from strongly disagree (1) to strongly agree (5) with statements regarding water use and conservation ($n = 134$)

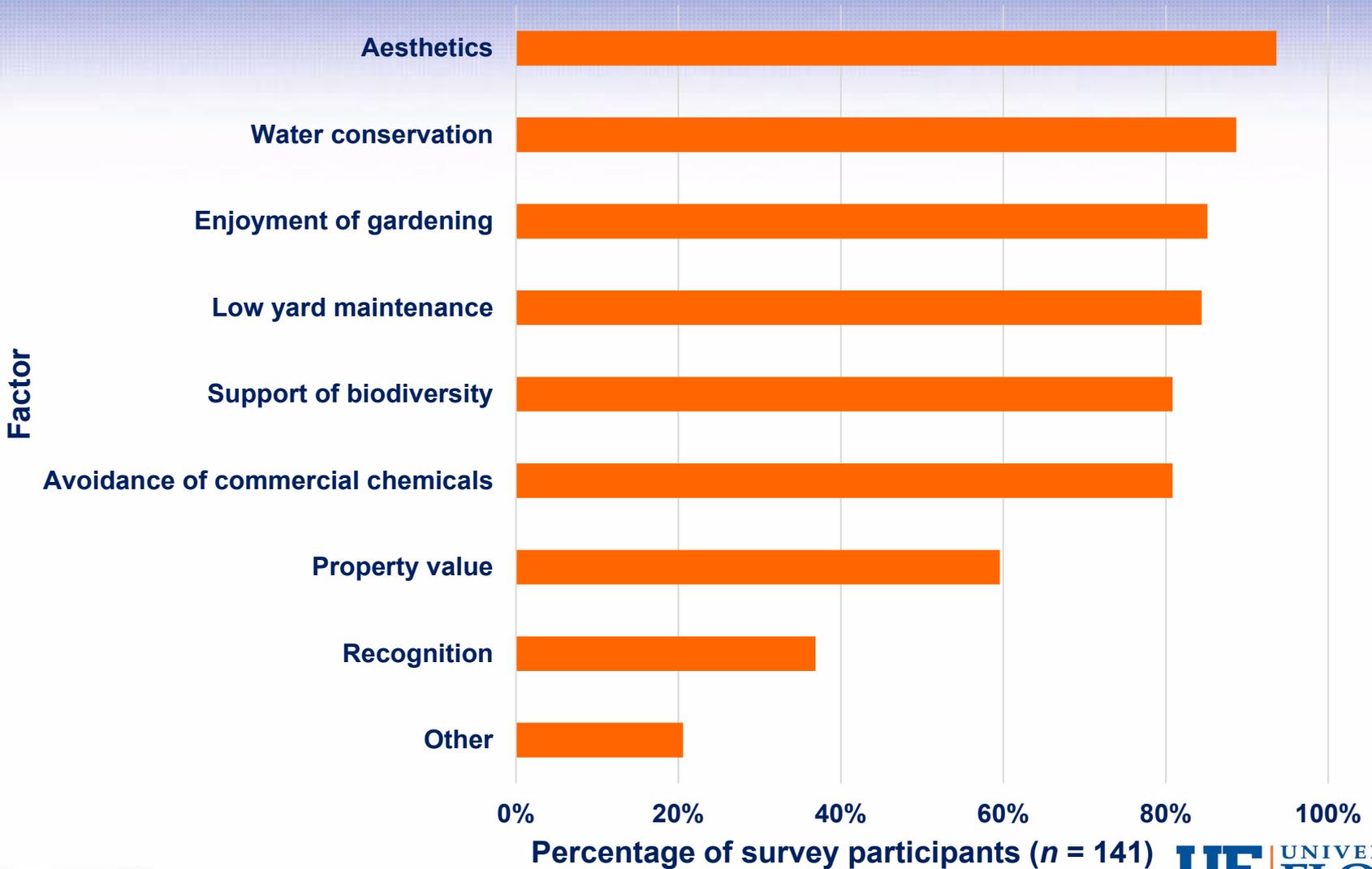
Statement	<i>M</i>	<i>SD</i>
<i>Any development decision should include assessing the impact on the water supply.</i>	4.66	0.84
<i>The issues related to the conservation and availability of water affect me.</i>	4.46	1.00
<i>Community growth should be limited to manage water scarcity.</i>	4.34	1.01
<i>In water planning, the economy is not more important than the environment.</i>	4.26	0.98
<i>Water conservation is an issue that I think about frequently.</i>	4.25	1.02
<i>There is not enough water in my state to meet future needs.</i>	4.10	0.99

Results

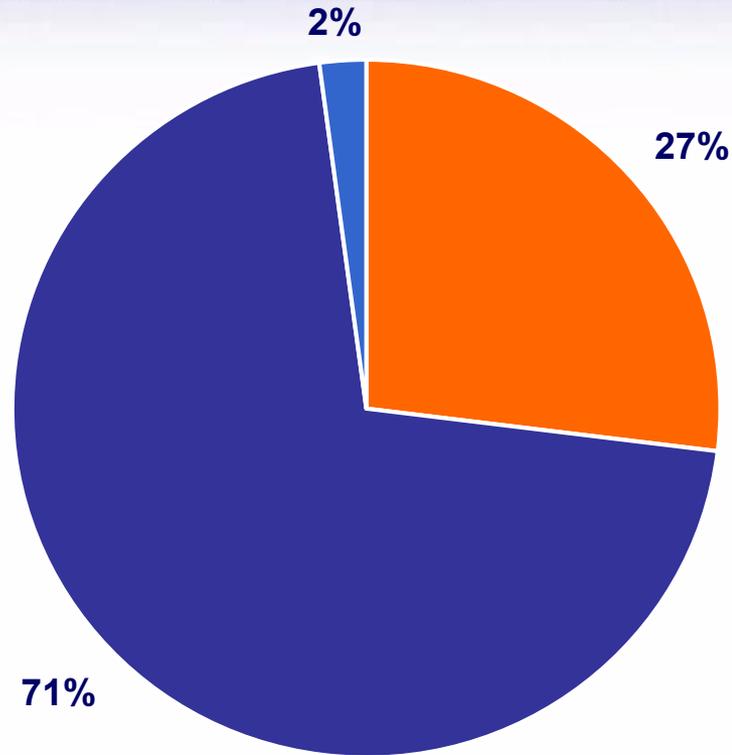


■ Extremely familiar ■ Moderately familiar ■ Somewhat familiar
■ Slightly familiar ■ Not at all familiar ■ No response

Results

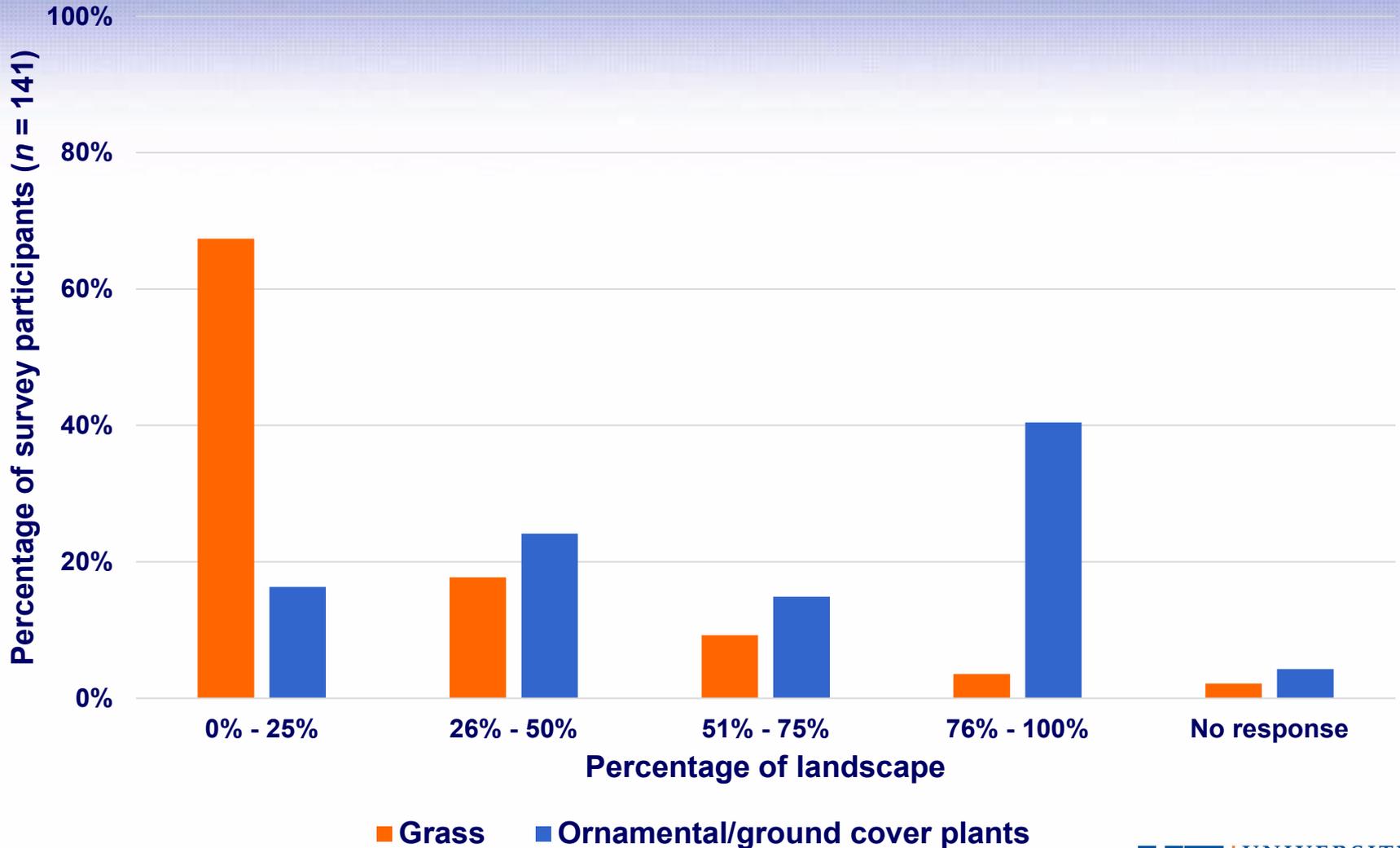


Results

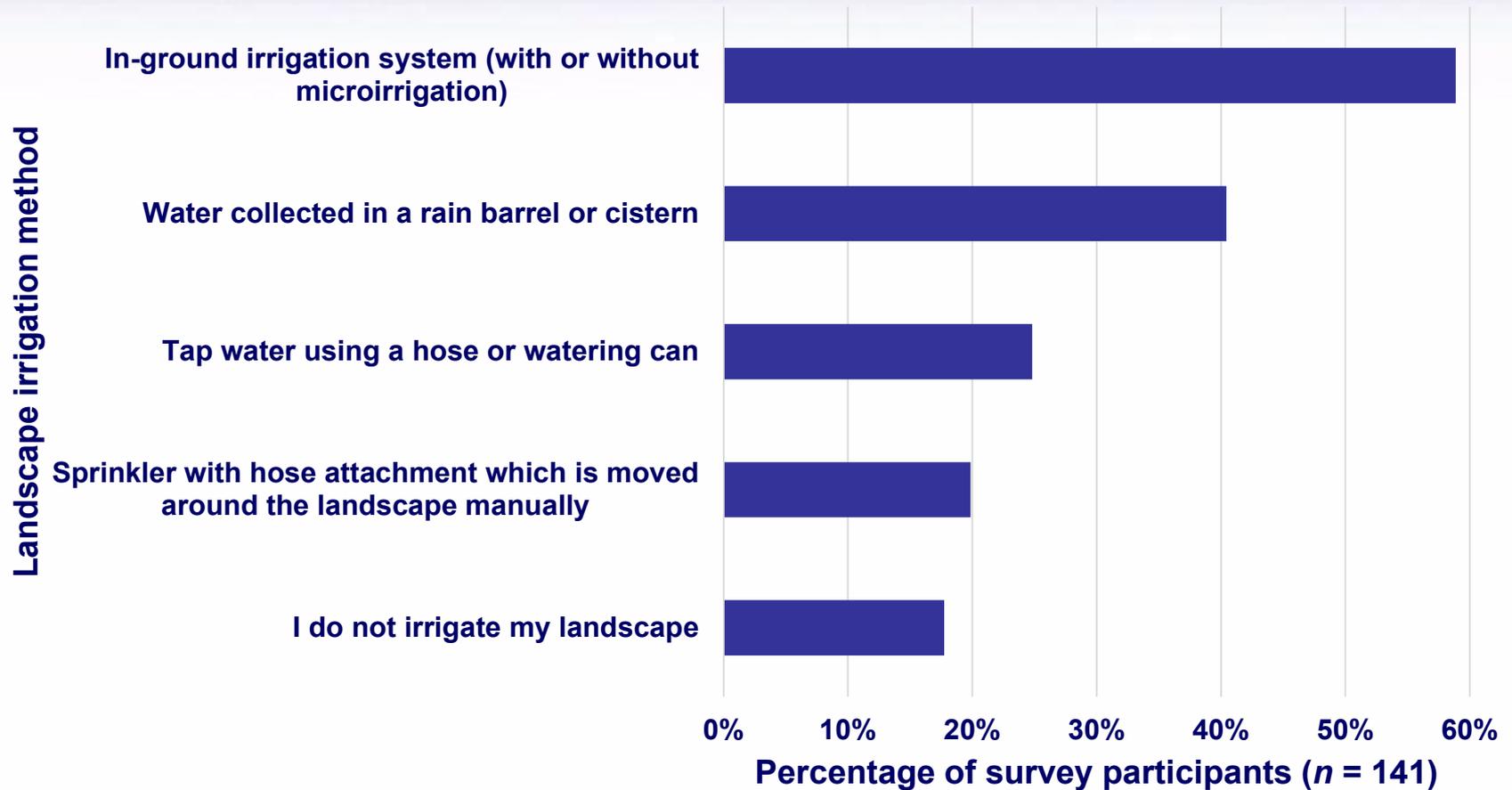


■ Belongs to HOA with yardcare rules ■ Does not belong to an HOA with yardcare rules ■ No response

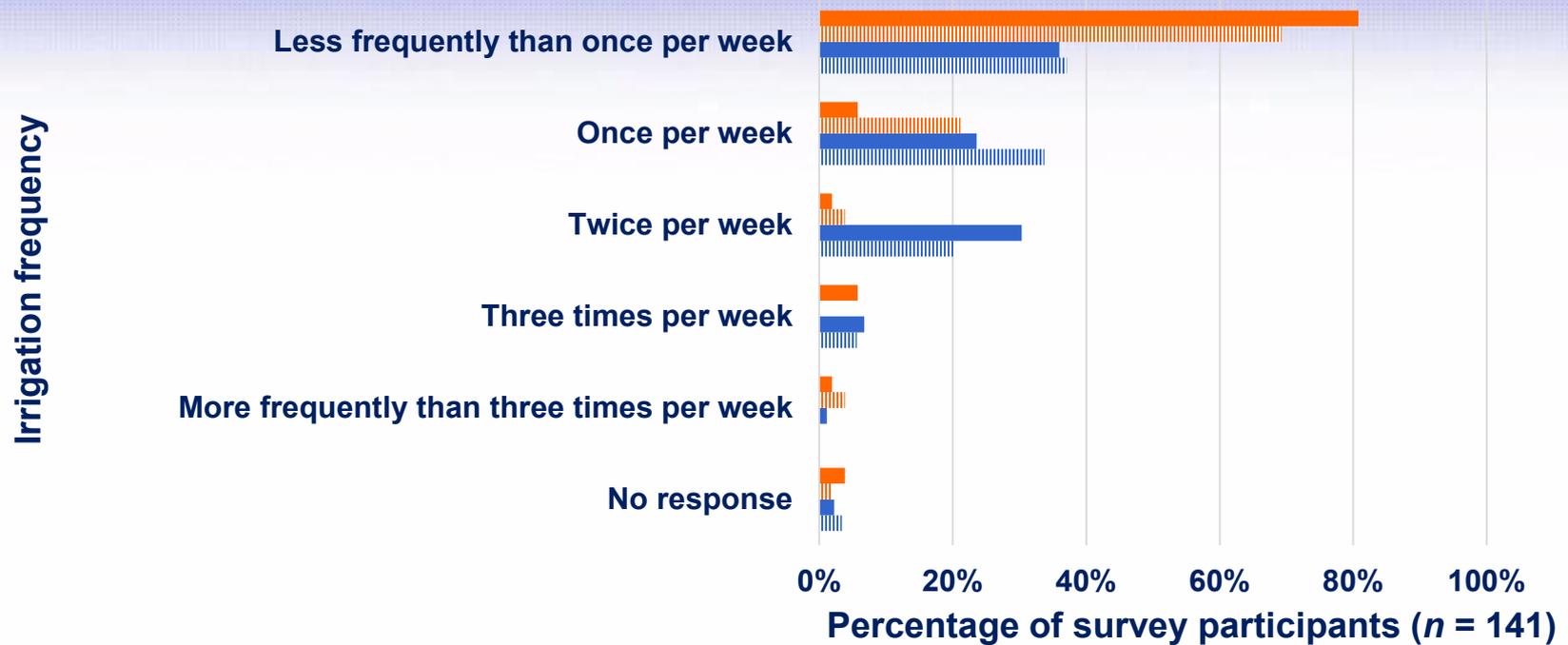
Results



Results



Results



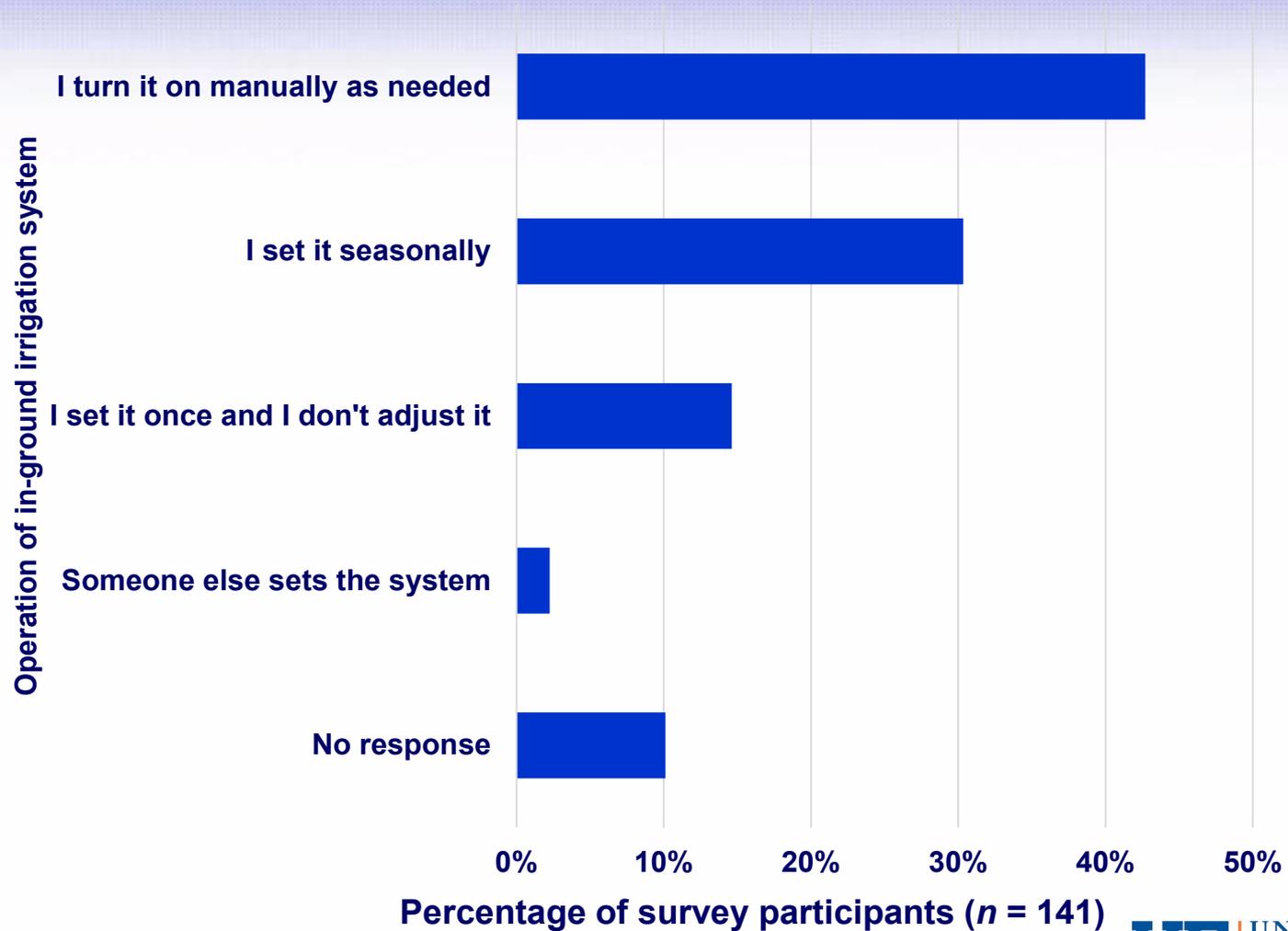
Warm season

- Homes without in-ground irrigation system
- Homes with in-ground irrigation system

Cool season

- Homes without in-ground irrigation system
- Homes with in-ground irrigation system

Results



Results

Results of logistic regression analysis, performed to evaluate the effects of structural, socioeconomic, and attitudinal factors on **warm season landscape watering frequency**, based on ($n = 130$) valid responses to survey questions regarding the regression model's dependent and independent variables

Predictor	<i>B</i>	<i>SE</i>	Wald χ^2	Odds Ratio
(Constant)	3.36	1.95	2.95	28.75
Just market value of home (in hundred thousand U.S. dollars)	0.73	0.25	8.89**	2.08
In-ground irrigation system in home	1.86	0.52	12.83***	6.41
Grass-free landscape	-1.23	0.52	5.55*	0.29
Water conservation attitude score	-1.42	0.42	11.36***	0.24

Note: $R^2 = 0.49$ (Nagelkerke, 1991)

* $p \leq 0.05$

** $p \leq 0.01$

*** $p \leq 0.001$

Conclusions

- Water-saving yard care practices are governed by aesthetic considerations, environmental concerns, and extensive knowledge of the landscape and irrigation system.
- Yet these are further shaped by neighborhood-scale forces such as property values and HOA membership.
- A broad freedom to design and maintain the landscape according to the homeowner's discretion facilitated the choices that comprised adherence to the principles of the FFL Program.

Recommendations

- Findings suggest
 - Targeting audiences based on HOA membership, environmental views, and demographics could enhance outdoor water conservation efforts
 - Working with intermediaries such as builders and HOAs may be even more effective

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References

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