

Evolving Response to Smart Irrigation Controllers Among Homeowners in Central Florida

Maria C. Morera, Paul F. Monaghan, and Michael D. Dukes

Department of Agricultural Education and Communication
Department of Agricultural and Biological Engineering
University of Florida
Institute of Food and Agricultural Sciences

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Background

Orange County Smart Irrigation Pilot Project

- Collaboration between UF/IFAS and Orange County Utilities to assess the water conservation potential of soil moisture sensors (SMS) and evapotranspiration (ET) controllers under residential high-water use conditions
- 167 single-family homes with excessive irrigation received 1 of 5 treatments in 2011
 - Contractor-programmed SMS
 - Contractor-programmed ET
 - UF/IFAS-programmed SMS (SMS Pgm)
 - UF/IFAS-programmed ET (ET Pgm)
 - Or monitoring only (MO) for comparison

Background



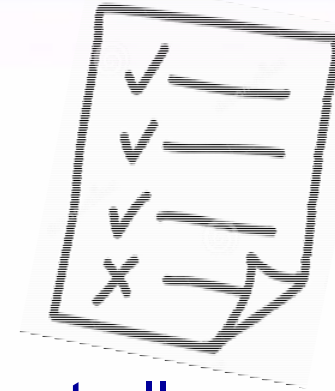
SMS and ET smart irrigation controllers tested in Orange County, Florida (Davis and Dukes, 2015)

Conceptual Framework

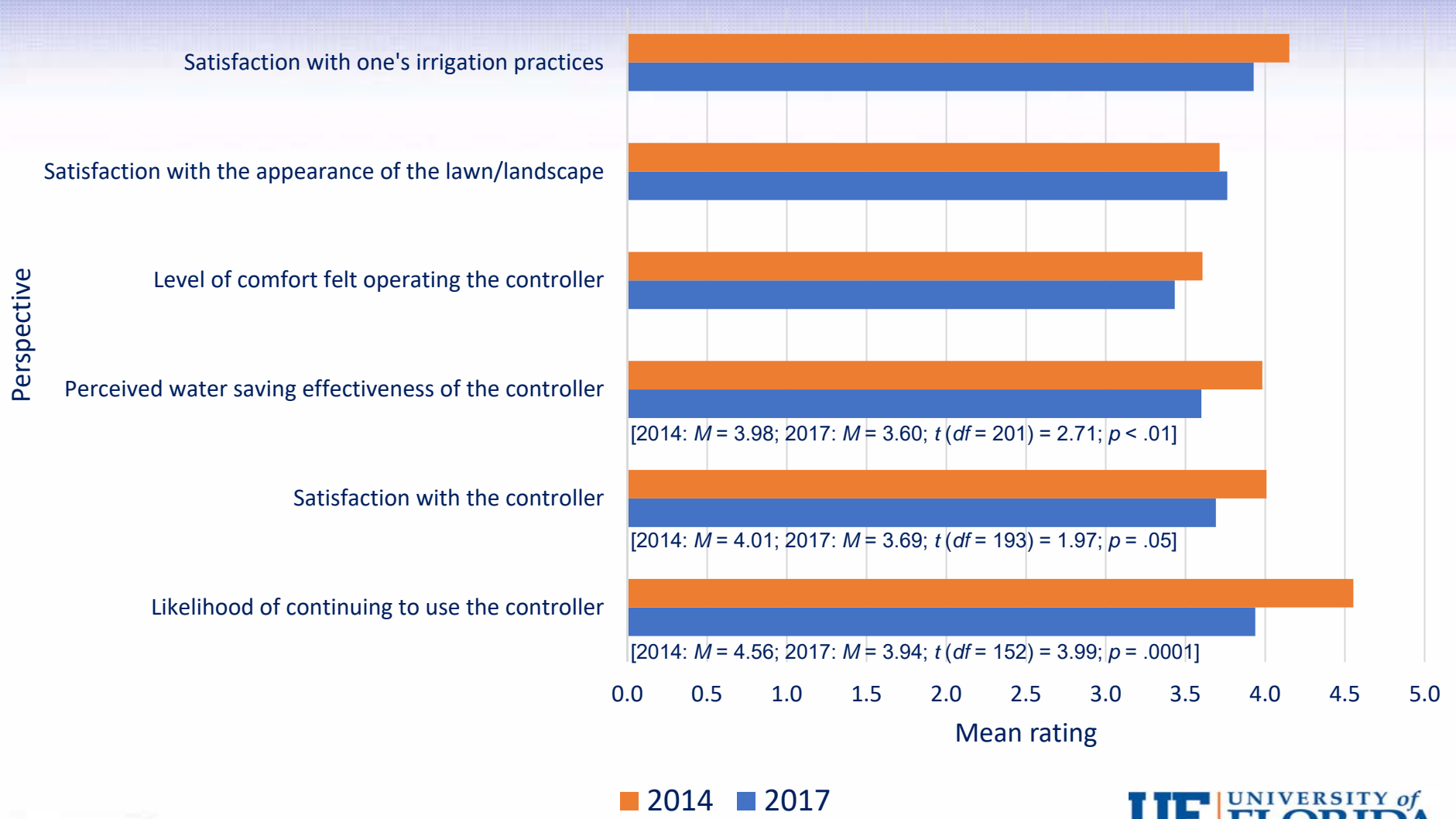
- Efficiency improvements are responsible for the bulk of declining single-family residential water demands over the last two decades and there remains potential for significant irrigation savings (DeOreo and Mayer, 2012; Mayer and DeOreo, 2010).
- Gaining widespread adoption of efficient water-using technologies and behaviors, however, requires an understanding of public perceptions and attitudes toward water use and conservation (Attari, 2014; Dziegielewski, 2003).
- Technology performance is critical to significant decreases in irrigation yet customer satisfaction, knowledge, and experiences contribute to acceptance of efficient technologies (Lee and Tansel, 2013; Morera et al., 2017).
- A paucity of longitudinal studies compounds the difficulties of understanding the mechanisms of long-term adoption of water-saving irrigation technologies.

Purpose and Analysis

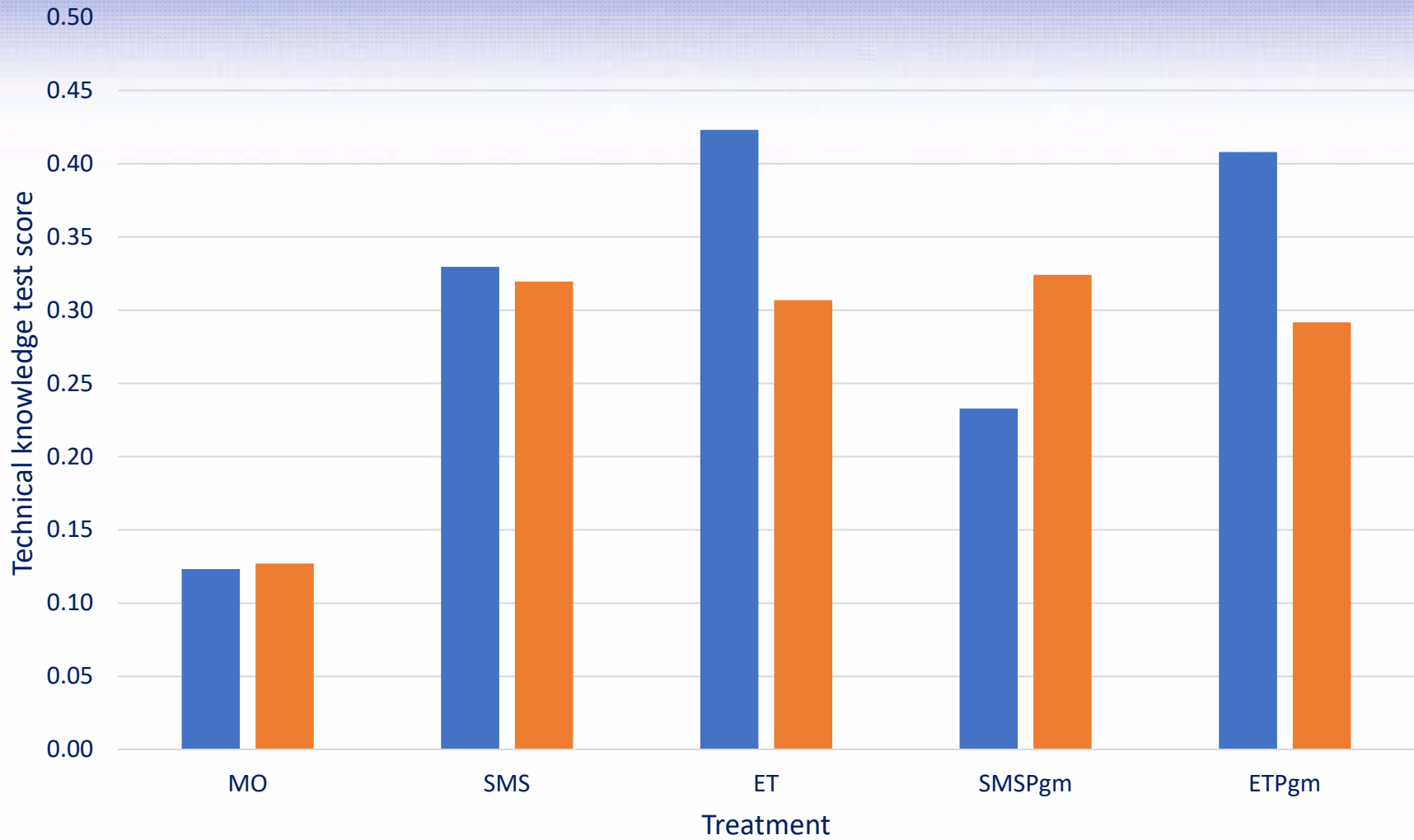
- Based on survey data collected in 2014 and 2017, this study documents evolving
 - Views
 - Technical knowledge
 - Irrigation practices
 - Feedback on the performance of the controllers
- Using
 - Relative frequency distributions
 - Independent means *t*-tests
 - Logistic regression analysis



Results

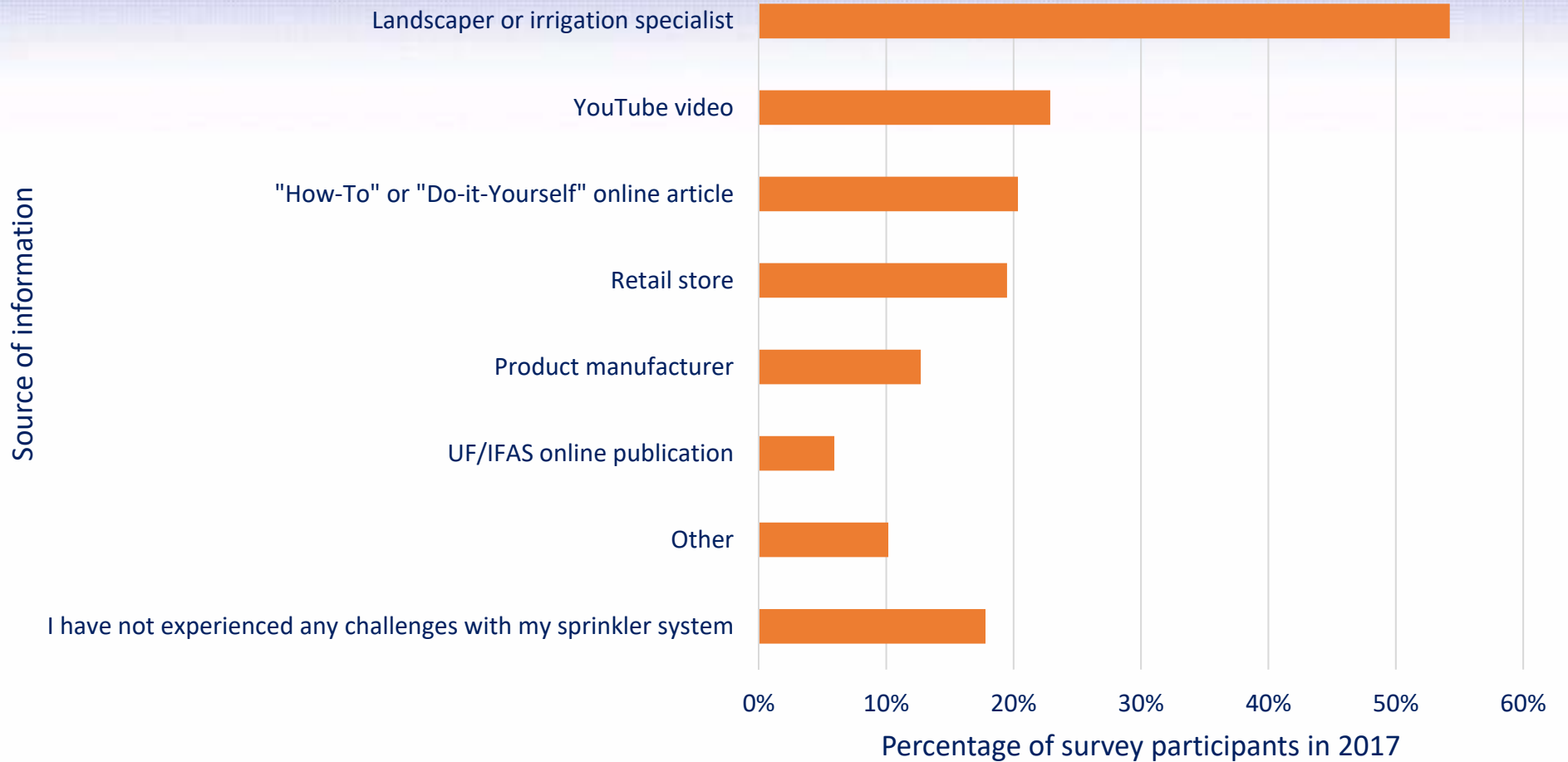


Results



■ 2014 ■ 2017

Results



Results

Results of logistic regression analysis performed to evaluate the effects of homeowners' perceptions, experiences, knowledge, and age on the **likelihood of continuing to use their installed controllers** after 2017, based on ($n = 80$) valid responses to survey questions regarding the regression model's variables

Predictor	<i>B</i>	<i>SE</i>	Wald χ^2	Odds
(Constant)	3.55	3.16	1.26	34.71
Satisfied with irrigation practices	0.48	0.74	0.43	1.62
Satisfied with the appearance of lawn/landscape	1.35	0.70	3.76	3.87
Considers controller effective in saving water	0.70	0.67	1.08	2.01
Water conservation attitude score	-0.07	0.67	0.01	0.93
Received tutorial	-0.77	0.67	1.33	0.46
Experienced challenge(s) with the controller	-1.64	0.64	6.48*	0.20
Technical knowledge test score	-0.03	0.37	0.01	0.97
Age	-0.01	0.03	0.23	0.99

Note: $R^2 = .36$ (Nagelkerke, 1991)

* $p < .05$.

Conclusions

- Levels of satisfaction with the controllers and the likelihood of continuing to use them remain high among a majority of survey participants
- Yet the proportion who feel this way decreased significantly between 2014 and 2017
 - 11% increase in new homeowners
 - Some controllers stopped working
- Lack of understanding remained a frequently reported challenge
- Disseminating information in creative ways to increase the “user-friendliness” of the controllers could best enhance their continued use

Acknowledgements

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