

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



THE NON-SAVERS

AN EVALUATION OF TURF CONVERSION PROPERTIES THAT DON'T SAVE WATER

Toby Bickmore

Hillery Francis

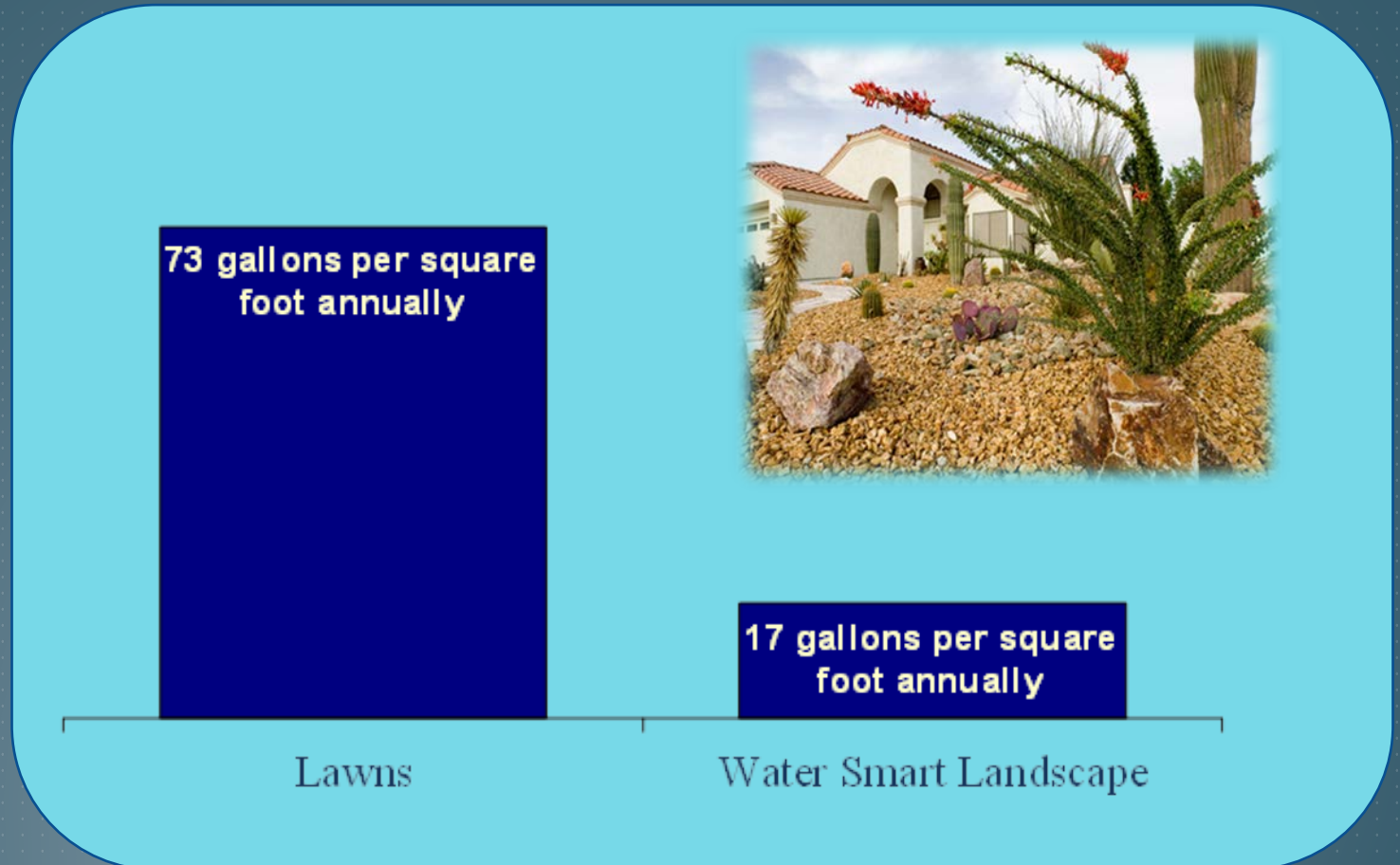
SNWA Conservation

WATER SMART LANDSCAPES (WSL) PROGRAM

- ▶ Replace turf grass with desert landscaping (including artificial turf)
- ▶ Current incentive of \$1.50 per square foot up to 5,000 square feet
- ▶ \$1 for all additional grass
- ▶ Fiscal year cap of \$300,000
- ▶ Plants – 50% (existing or new)
- ▶ Mulch – rocks, bark, artificial turf (no concrete)
- ▶ Irrigation – no leaks, pressure regulator and filter, drip emitters that flow less than 20 gph
- ▶ Must remove at least 400 ft of turf unless smaller amount removes entire front or back turf



COMPARISONS OF ANNUAL WATER APPLICATION LAWN VS WATER SMART LANDSCAPE



WATER SMART LANDSCAPES PROGRAM

Program Process

SF Residential

- ▶ Customer submits mail or online application
- ▶ Conservation calls customer and schedules appt
- ▶ Pre-conversion site inspection to determine if property qualifies, take pictures, make sure application is signed. (**No measurements taken**) – 30 minute appt
- ▶ 6-months to finish work – on their own, with contractor or both
- ▶ Customer calls Conservation when finished and schedules post-conversion site inspection
- ▶ At Post-site we take measurements and assure conditions met
- ▶ If conditions not met, customer given 60-days or remainder of 6 months to complete work



WATER SMART LANDSCAPES PROGRAM

- ▶ Purpose of pre conversion site inspection
 - ▶ Verify turf areas (obtain pictures of all areas to be converted)
 - ▶ Explain program conditions and provide additional handouts if needed
 - ▶ If participant applied on-line, obtain signature on application
- ▶ Conservation Aide will sign application when all program conditions have been verified
 - ▶ Participant has six-months from that date to complete project
- ▶ Pre-conversion measurements are only taken under unique circumstances



TWO TYPES OF APPOINTMENTS

- ▶ Set appointment
 - ▶ Time specific appointment
 - ▶ Arrival time can be either 15 minutes before or after the appointment time
- ▶ At-Convenience Appointment
 - ▶ Day specific with arrival time between 8:00 am - 3:00 pm
 - ▶ Homeowner is not required to be home
- ▶ Post-conversion site inspections are generally scheduled “At-Convenience”
- ▶ Note: All on-line applicants have to be present to sign the application

WATER SMART LANDSCAPES PROGRAMS

NON-SAVERS



- ▶ Through history of program (2000 to present), approximately 14% of single family residential Water Smart Landscape customers show no water savings
- ▶ In general, out of every 10 customers, 1 customer will have increased water usage, 1 customer will have no water savings and 8 will have water savings
 - ▶ Determined through pre and post consumption analysis
- ▶ Despite not having 100% of customers saving, the program still sees an overall water savings of 55 gallons per square foot converted



WATER SMART LANDSCAPES PROGRAMS

NON-SAVERS

- ▶ Over past 10 years, several evaluations completed on these customers
- ▶ Looked at key characteristics such as lot size, conversion etc. size but no key contributor has been identified
- ▶ In this study we wanted a more in-depth analysis of the properties and the conversion process to see if we could identify why this is happening



WATER SMART LANDSCAPES PROGRAMS

NON-SAVERS

- ▶ Evaluated properties that received a rebate in 2008
 - ▶ Looked at 100 properties across the Las Vegas valley that have shown no savings or increased water consumption after their conversion
 - ▶ Looked at 100 properties across the Las Vegas valley that have shown a savings after their conversion
 - ▶ Each group randomly selected from a total population of conversions finished in 2008 - 6,853
 - ▶ Some customers applied to the program in 2007 and some in 2008
 - ▶ 2007 applicants were eligible for a \$2 per sq ft rebate
 - ▶ 2008 applicants were eligible for a \$1.50 per sq ft rebate
 - ▶ In evaluating 2008 participants, 5 year consumption data was available for pre and post conversion.

PROPERTY DATA

- ▶ General Variables Evaluated
 - ▶ Construction year – previous Water Smart Home Consumption Study demonstrated consumption decrease in newer homes (built after 2003) in Las Vegas valley (turf banned in front yards and smaller lot sizes)
 - ▶ Pool presence and size
 - ▶ Lot size – total landscaping area and conversion size
 - ▶ In Southern NV, landscape irrigation accounts for 60-90% of total home watering
 - ▶ Home size, taxable value – affluence
 - ▶ Ownership change

PROPERTY DATA

- ▶ Quantitative Data
 - ▶ Conversion size
 - ▶ Conversion area – front yard, back yard or both
 - ▶ Conversion Type – xeric, artificial turf, hardscapes or mixture
 - ▶ Turf remaining after the conversion – front yard, back yard or both
 - ▶ Plant density after conversion
 - ▶ Site Inspector – do certain inspectors have more successful conversions? (20 different inspectors used)

PROPERTY DATA

- ▶ Qualitative Data
 - ▶ Based on site photos taken
 - ▶ Our subjective evaluation of turf quality – five point scale ranging from very good to very poor



ANALYSIS

- ▶ Five years pre- and post-conversion consumption obtained
 - ▶ Averages of pre- and post-conversion consumption used to rank properties
- ▶ Multivariate regression analysis to determine variable effect on average savings and saver group (saver versus non-saver)
- ▶ Descriptive statistics gathered for independent variables
 - ▶ Average and median for the saver and non-saver groups
- ▶ Top 10 best savers and worst non-savers evaluated



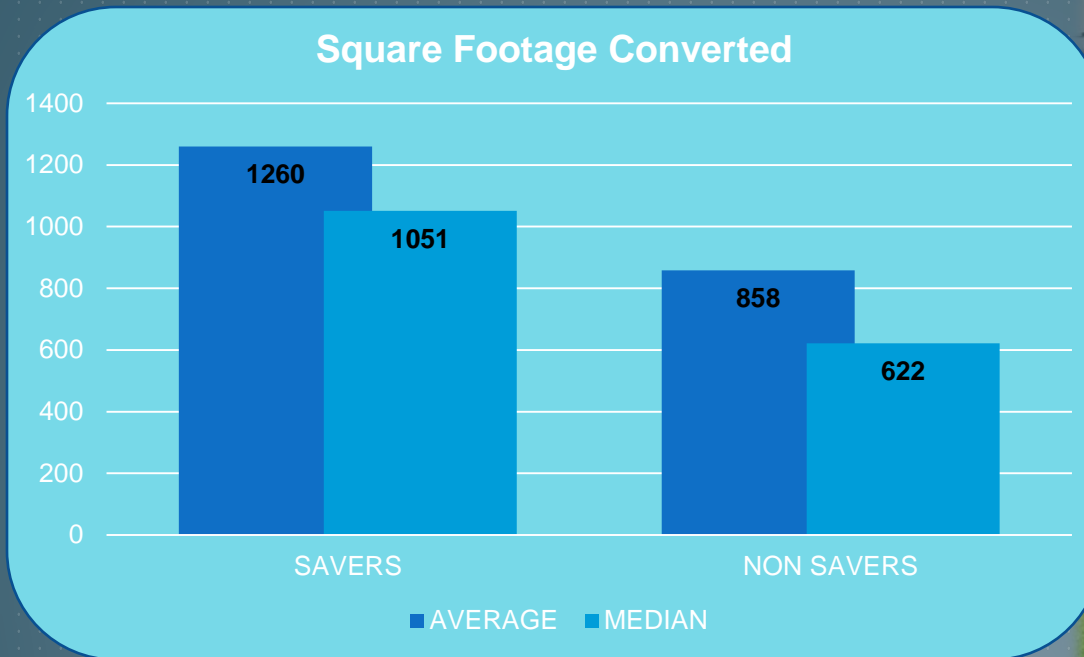
RESULTS

- ▶ Multivariate Regression
 - ▶ Adjusted $R^2 > 0.25$ for all variables
 - ▶ P values > 0.05 for *most* variables
- ▶ Inconsistent results
 - ▶ Low explanation of variation in dependent variable (savings)
 - ▶ Null hypothesis rejected for some, but not all



RESULTS

► Square Feet Converted



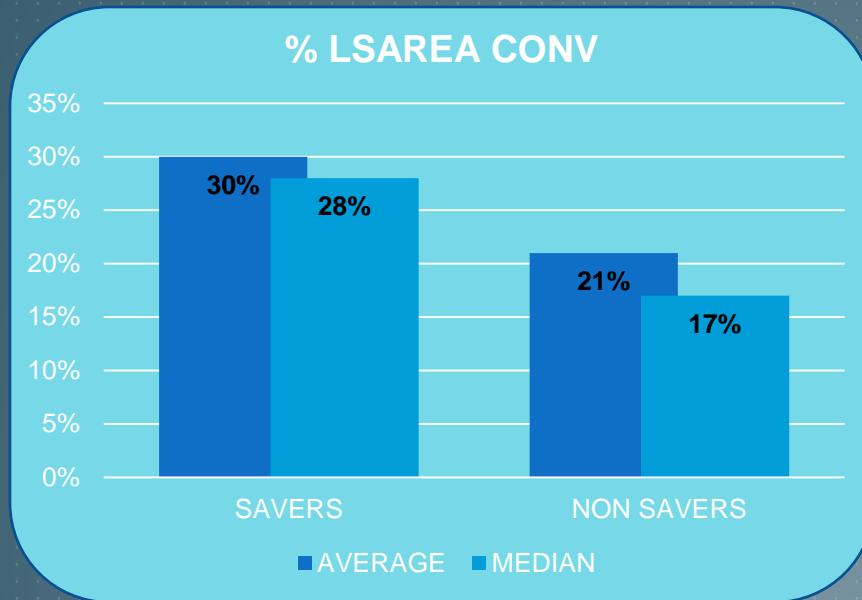
Non-Saver



Saver

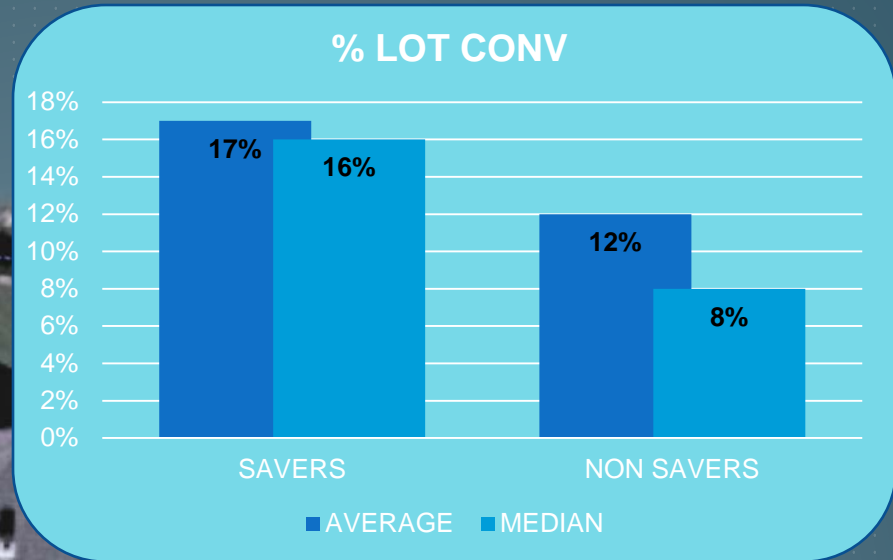
RESULTS

► Percent Landscape Converted



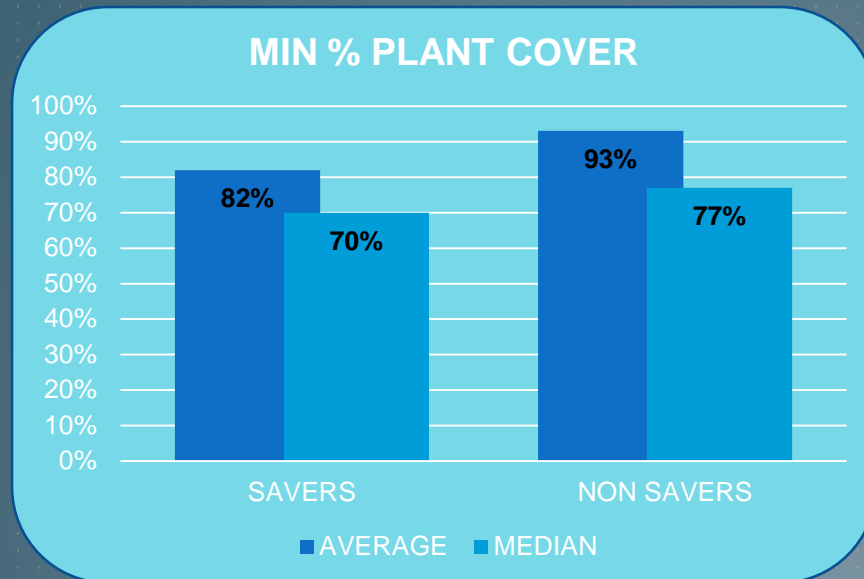
RESULTS

► Percent Lot Converted



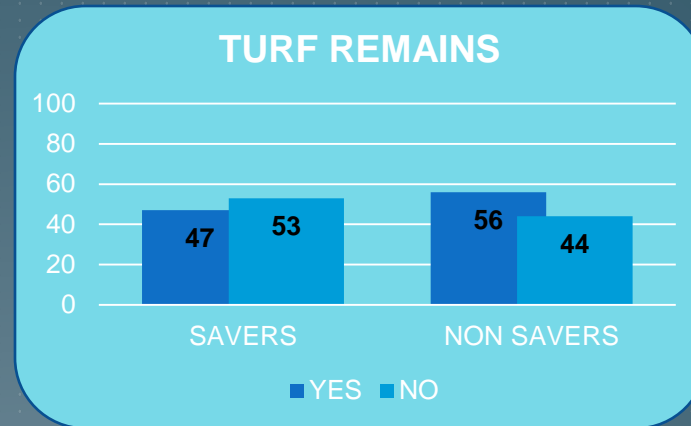
RESULTS

▶ Percent Plant Coverage

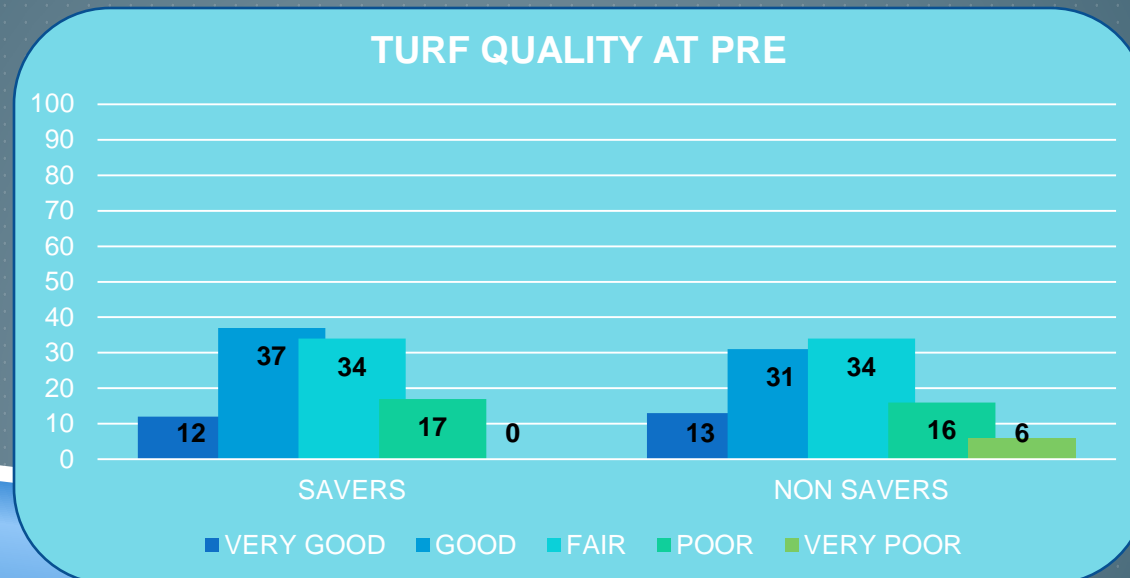


RESULTS

► Turf Remains after Conversion



► Turf Quality



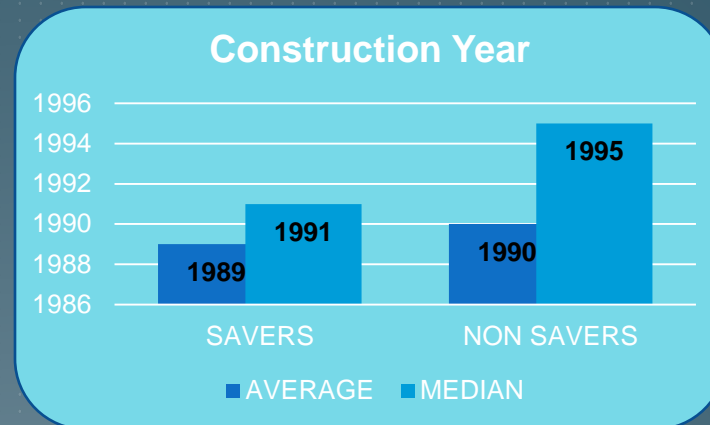
RESULTS

- ▶ In this sample group, properties with very poor turf were more inclined to not save

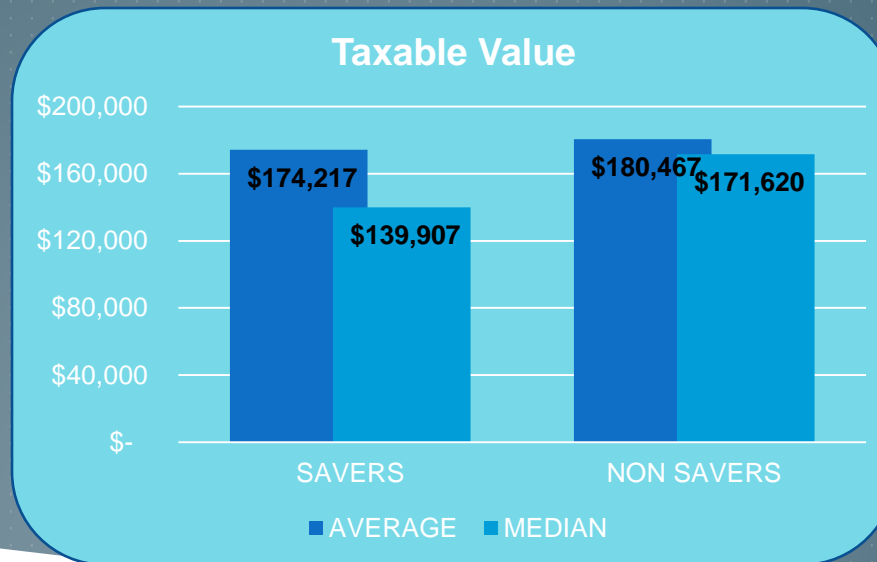


RESULTS

► Construction Year

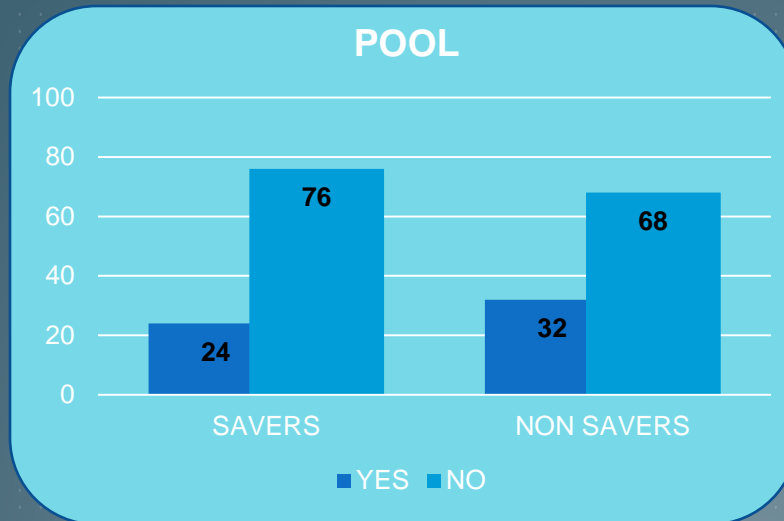


► Taxable Value



RESULTS

► Pool



Non-Saver

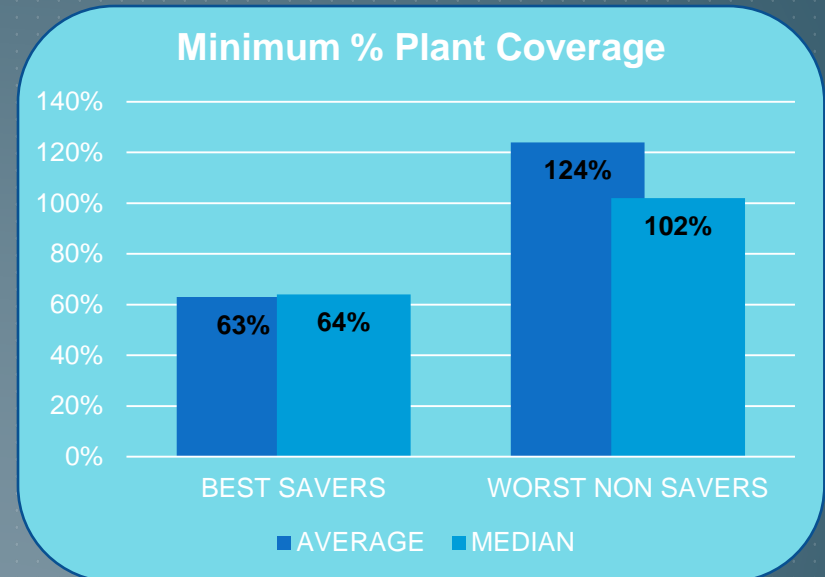
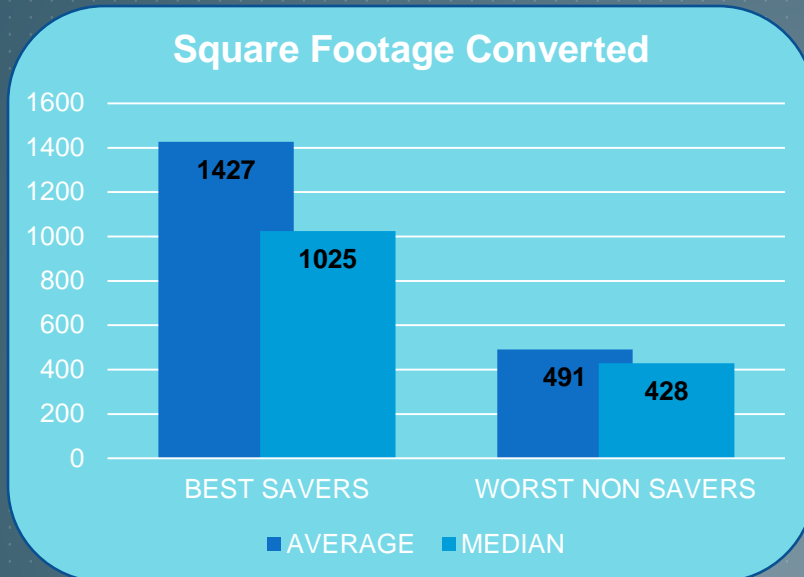


Saver

- Rebate Amount – 44 of 100 Losers were in \$2 rebate and 42 of 100 Savers were in \$2 rebate

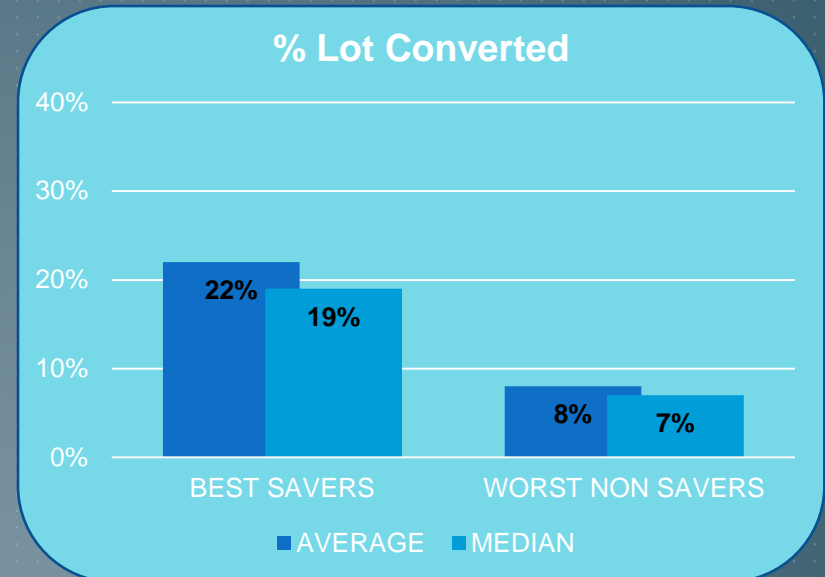
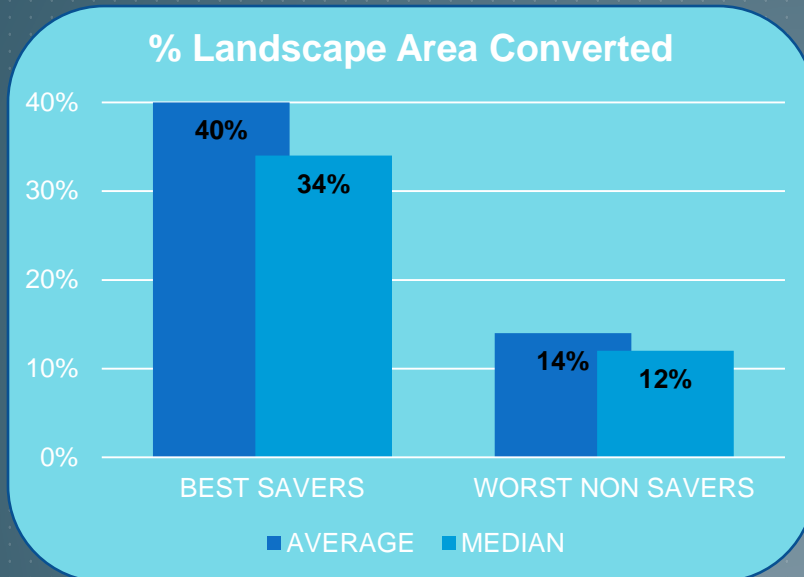
RESULTS

- ▶ The 10 best savers and the 10 worst non-savers were compared



RESULTS

- ▶ The 10 best savers and the 10 worst non-savers were compared



RESULTS

- ▶ In general no 'silver bullet' was found that would result in programmatic changes to help eliminate the 'non-saver' group
- ▶ General qualitative data such as turf quality or which site inspector met with the customer had no impact on conversion success or not
- ▶ Some property and conversion characteristics did have marked differences that at least provide us information that is helpful in understanding what occurs with these conversions
- ▶ No predictive value was found in the results

Questions/Comments/Discussion



Toby Bickmore
SNWA Conservation
toby.bickmore@snwa.com
(702) 862-3759

Hillery Francis
SNWA Conservation
hillery.francis@snwa.com
(702) 862-3747

Johann Feller
SNWA Conservation
johann.feller@snwa.com
(702) 691-5210