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Seeking a Multiplier Effect: Measuring Turf Removal Market Transformation

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Irvine Ranch Water District



Serving:

- Irvine
- Tustin
- Lake Forest
- Orange
- Newport Beach
- Costa Mesa
- Unincorporated Orange County

A California Special District Serving Central Orange County

Reliable High-Quality Water & Sewer Service.
Efficient. Cost Effective. Environmentally Sensitive.
High Level of Customer Satisfaction.

IRWD Serves 20% of Orange County



IRWD's Focus: Outdoor Savings

- 16% reduction target from SWRCB
 - State mandate creates conditions for innovation
 - 80% of accounts are residential-potable
- New Outdoor Allocation formula
 - 30% reduction in potable outdoor allocation
 - Drought-tolerant plants and drip/spray irrigation
- Rightscape Campaign & Workshop Series
 - The right plants, equipment, and schedule
- Turf Removal Program
 - Highly impactful, data rich, & ripe for study



RightScape™

Major Questions

PROGRAM IMPACT

- Are we saving water?
- Customer participation

MOTIVATION & NORMS

- Installing drought-tolerant landscapes
- Participants and non-participants
- New markets

MULTIPLIER EFFECT

- Measurable program diffusion rate
- Landscape types

FEEDBACK & INSTITUTIONAL LEARNING

- Do any patterns emerge from our analysis?

The Grand Plan: Nested Study

Step 1: Turf program evaluation (Group 1)

- Group 1: Turf removal program participants
- Annual evaluation of savings and effectiveness

Step 2: Program participation survey (Group 1)

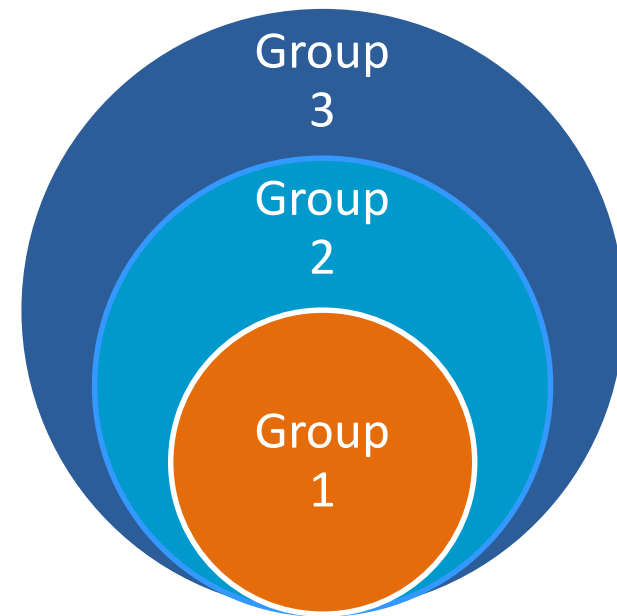
- On-going, semi-annual survey

Step 3: Multiplier effect study (Group 2)

- Group 2: Customers who converted their landscapes, but did not participate in the turf removal program
- Utilize spatial-temporal statistical analyses to determine and/or measure a multiplier effect

Step 4: Landscape preference survey (Group 3)

- Group 3: **Non-participants with grass**



Turf Removal Program – Irvine Ranch Water District

- Turf Removal Program Overview
 - Began in 2011
 - Minimum of 250 sq. ft.; no maximum
 - Irrigation conversion required
 - Pre & post inspections by IRWD staff
 - \$2 per sq. ft. res/\$1 per sq. ft. CII
 - Leverage other rebates & partnerships
 - Over 1500 participants



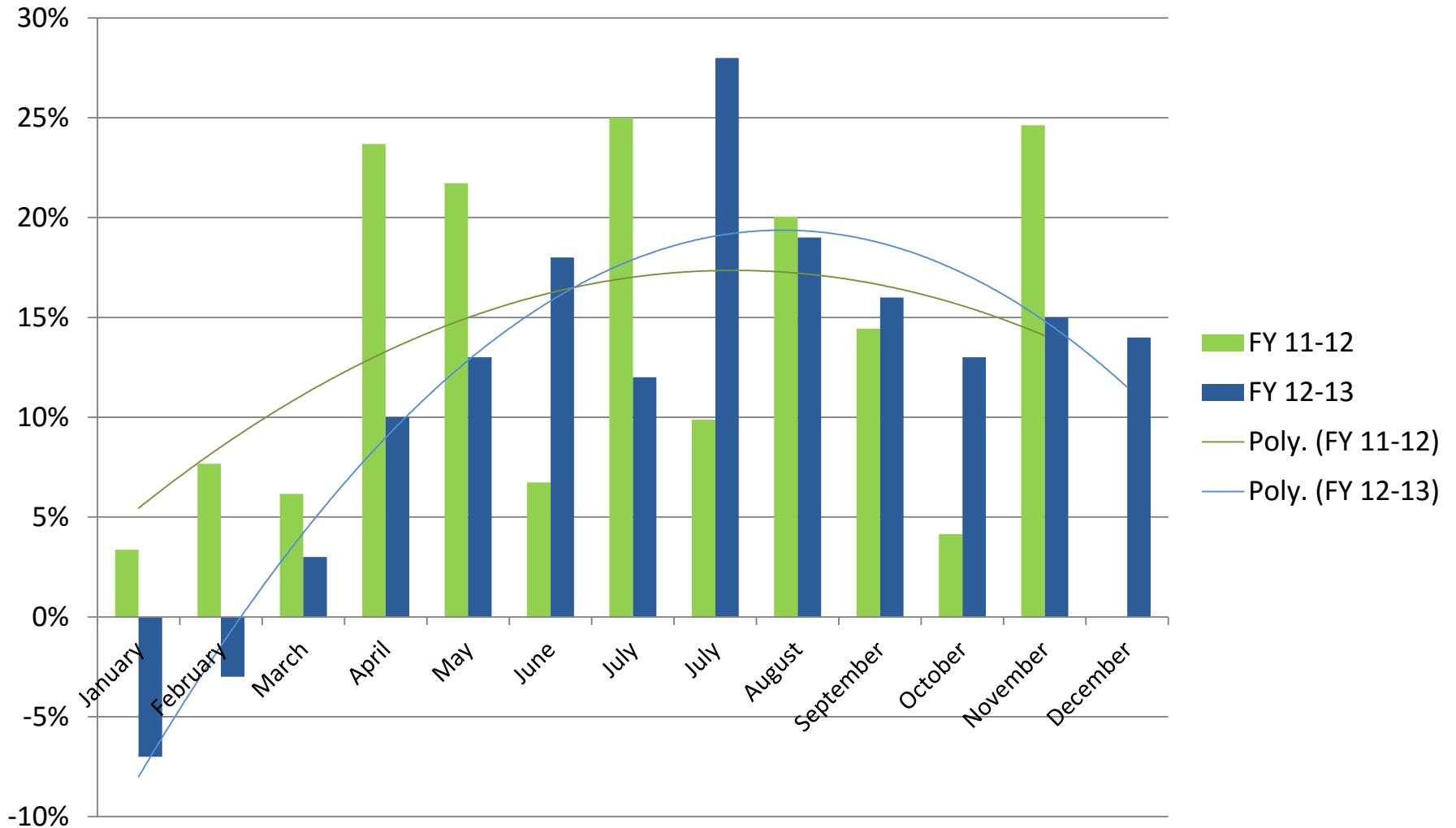
Total Residential Water Savings

	ACRE FEET/YEAR SAVINGS	AVERAGE % REDUCTION
FY11-12	1.35	-17.4%*
FY12-13	0.85	-8.8%*
OVERALL SAVINGS	2.19	-12.7%*

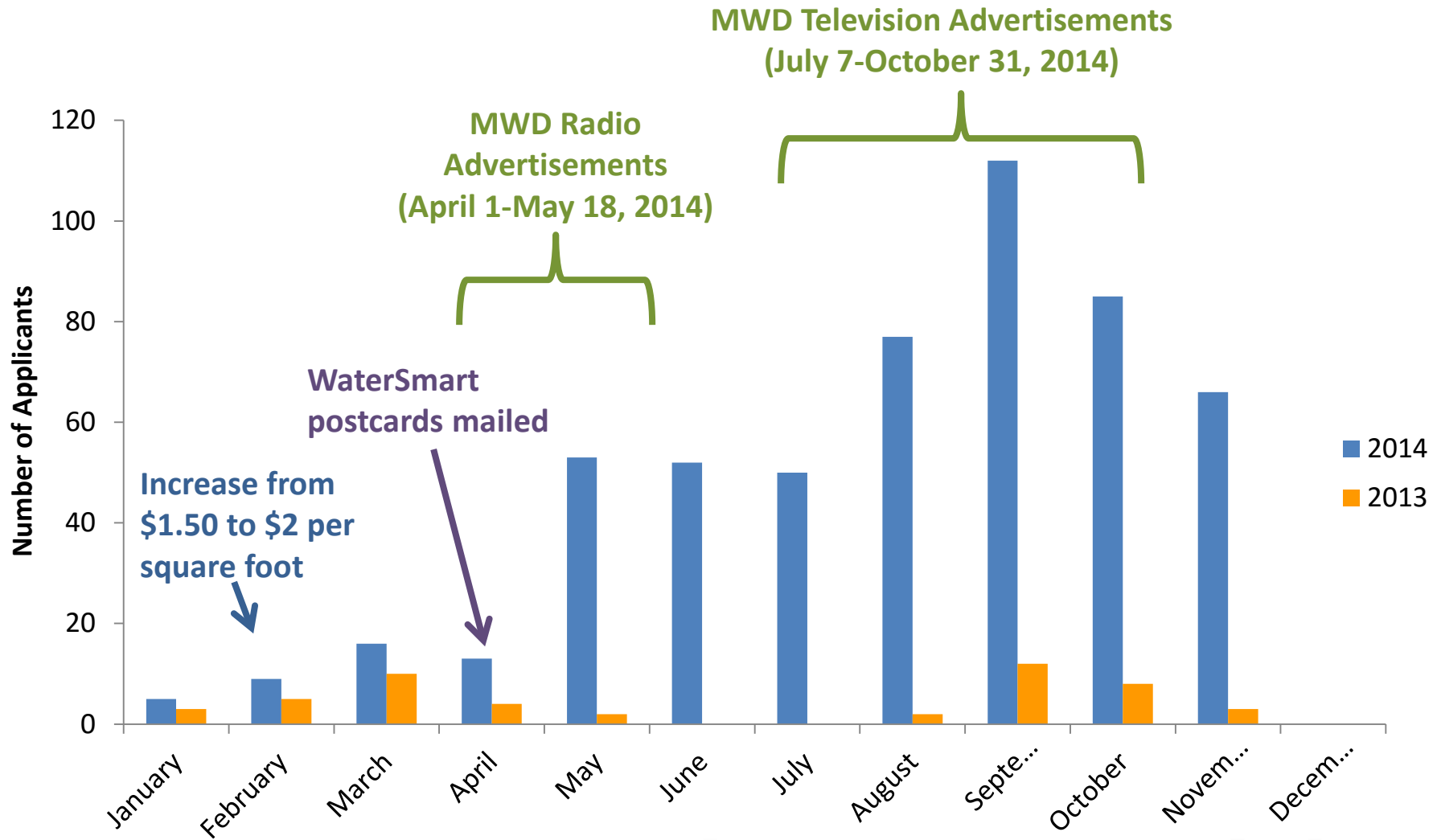
*Data are not weather normalized



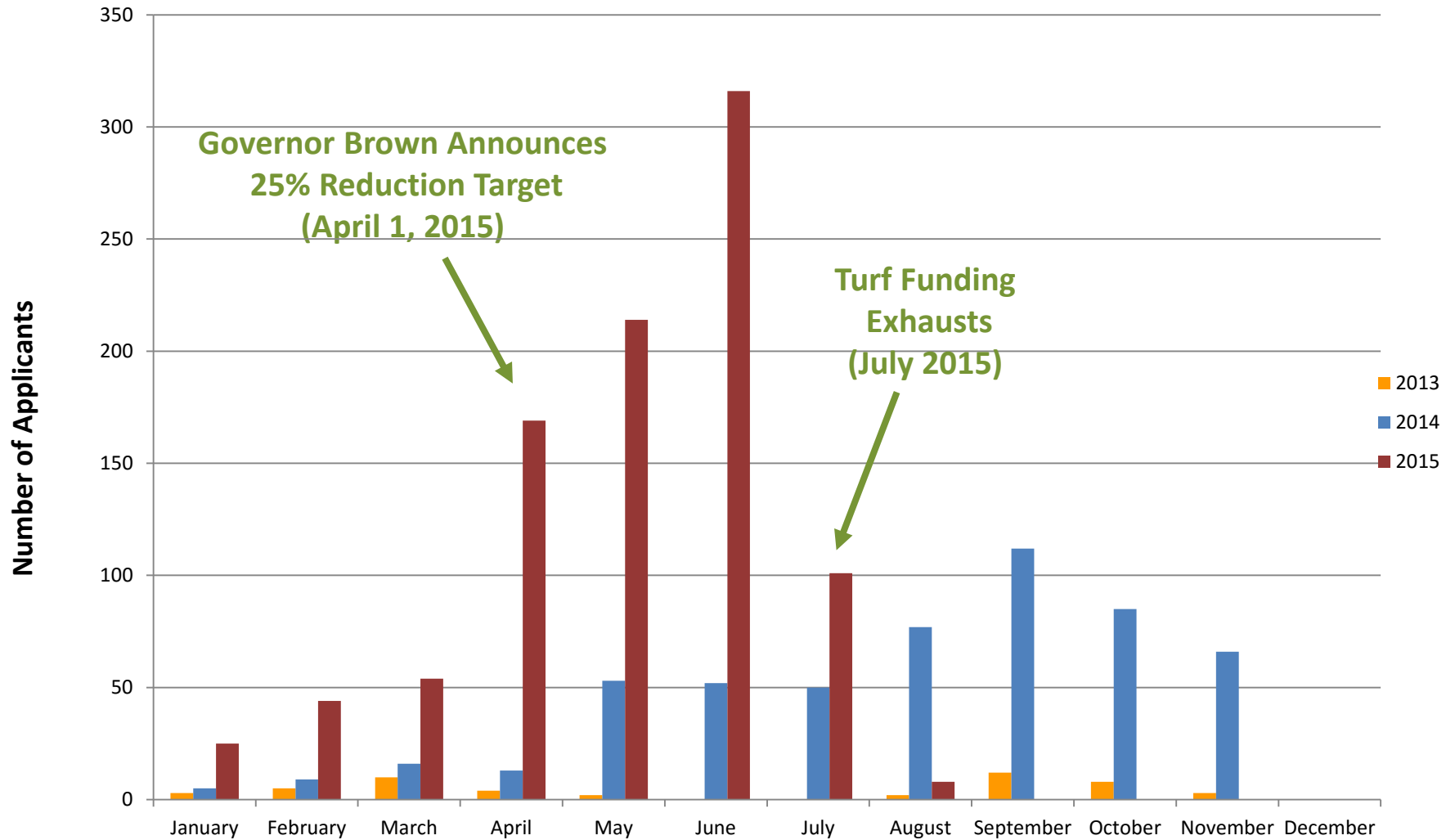
Water Savings by Month



Program Participation & Outreach, 2013-2014



Program Participation, 2013-2015



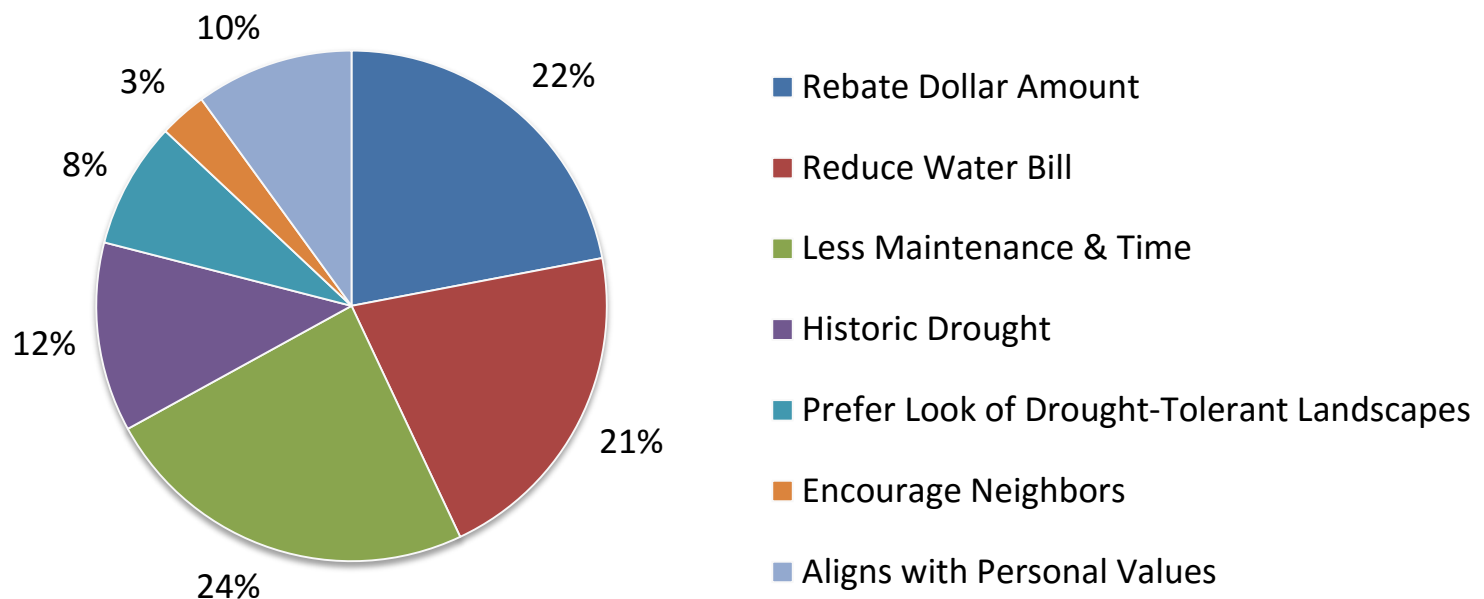
Landscape Design Choices

- Front yard is inherently public
 - Open to view
- External display of internalized public expectations of maintenance, aesthetics, & appearance
- Homeowners are risk averse
- Countering the ‘Neighborhood Effect’
 - Societal norms vary at different scales
 - Actions influenced by formal and informal institutions
 - Our aim with the turf program



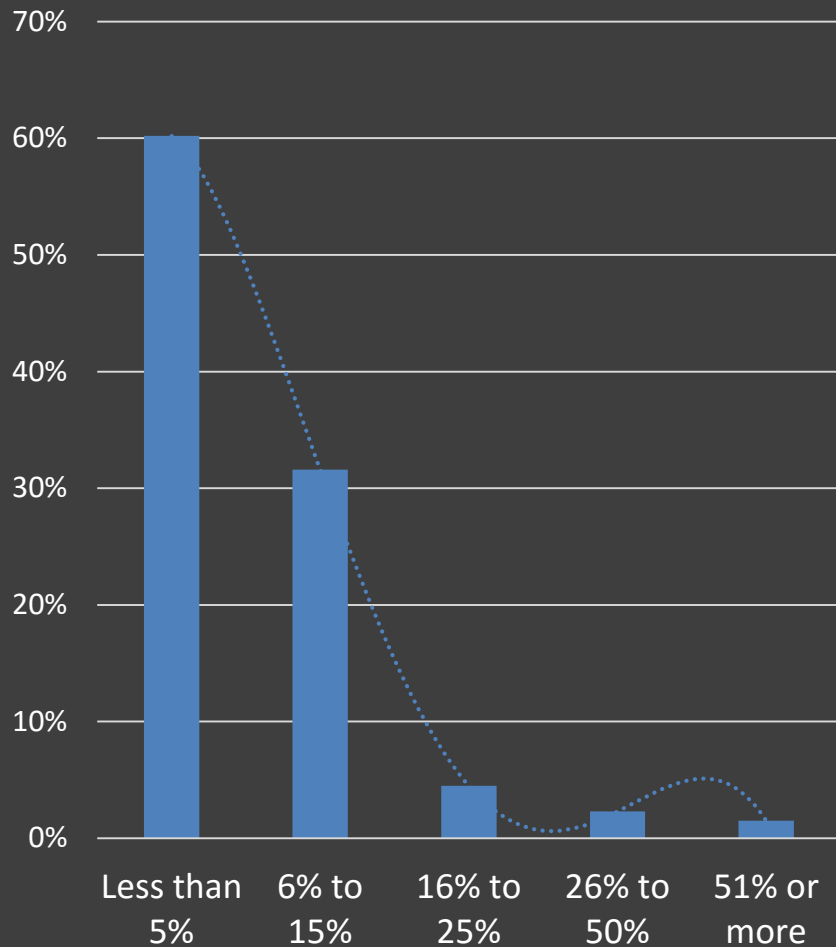
Exploring the Continuum of Motivation

- Extrinsic motivation
 - Actions driven by external rewards; money, praise, rebates
 - Becomes more common as we age and acquire social responsibilities
- Intrinsic motivation
 - Actions internally driven by “inherent satisfaction”
 - Tasks related to deeply held values are more motivating

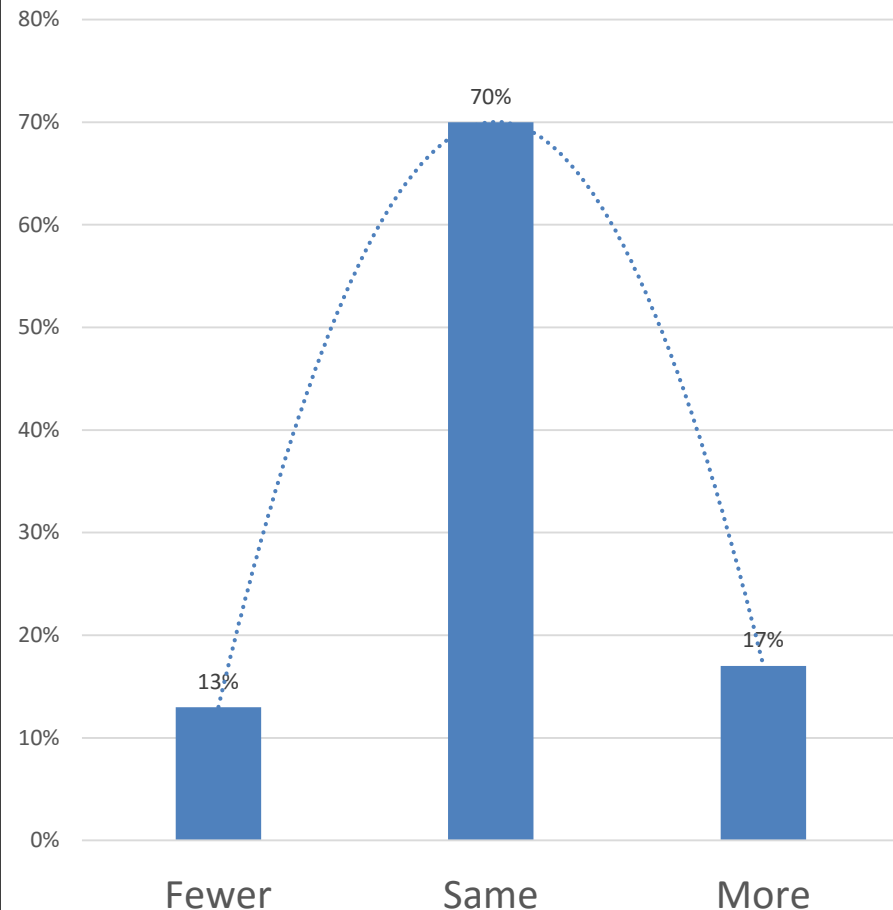


Perception— Self and the Other

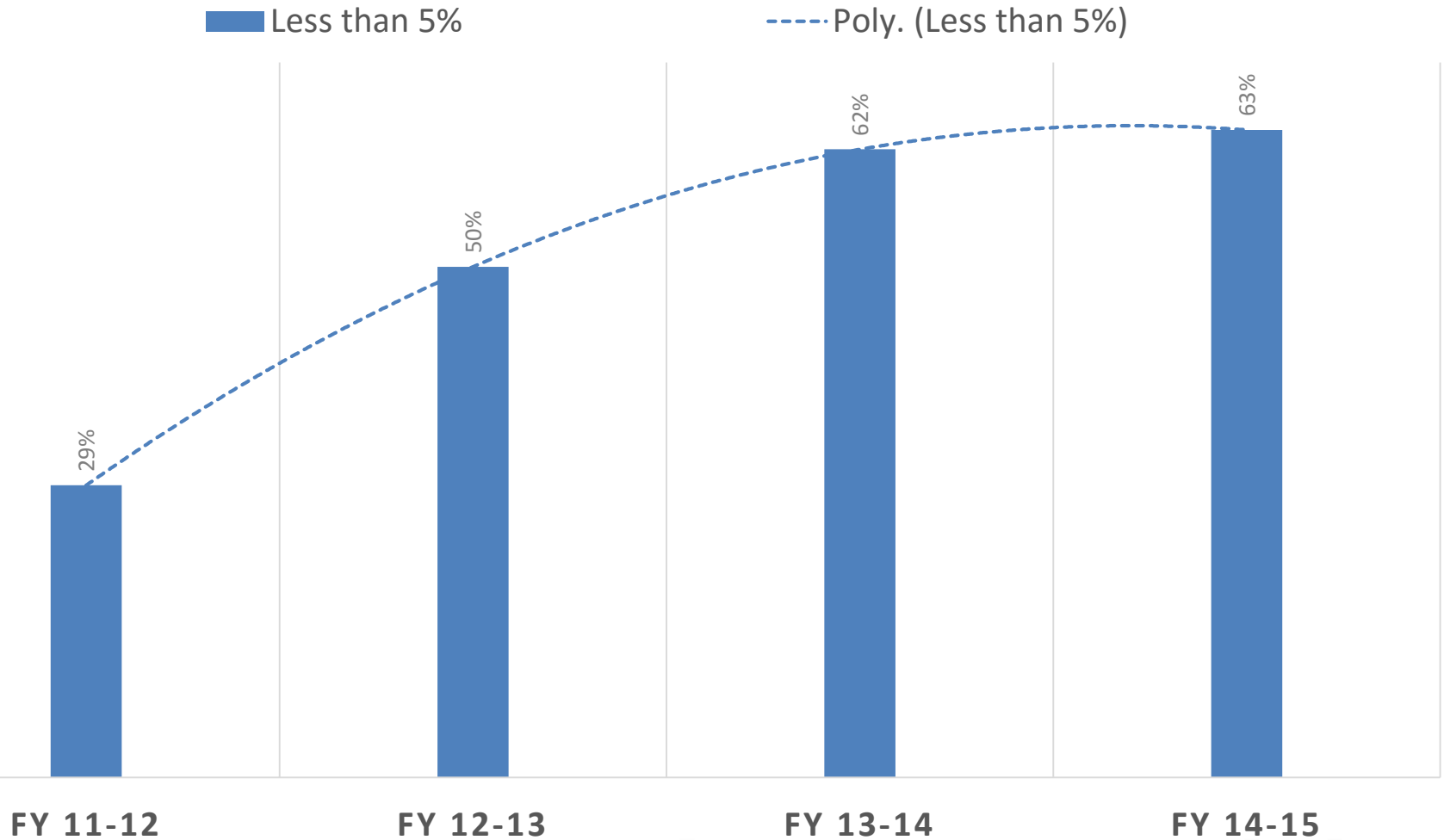
Percent of Drought Tolerant Landscapes in Your Neighborhood



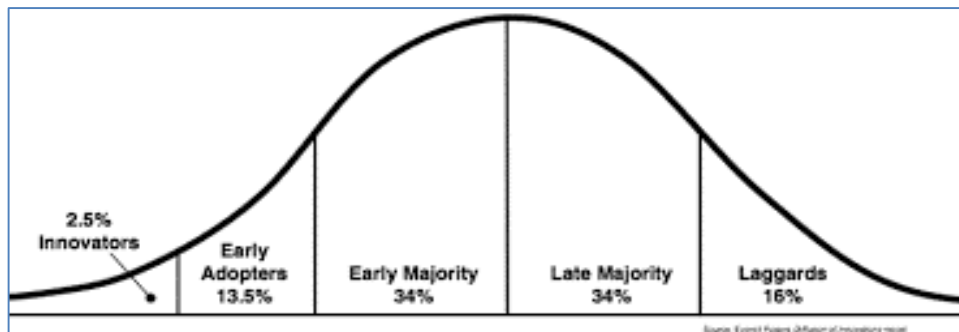
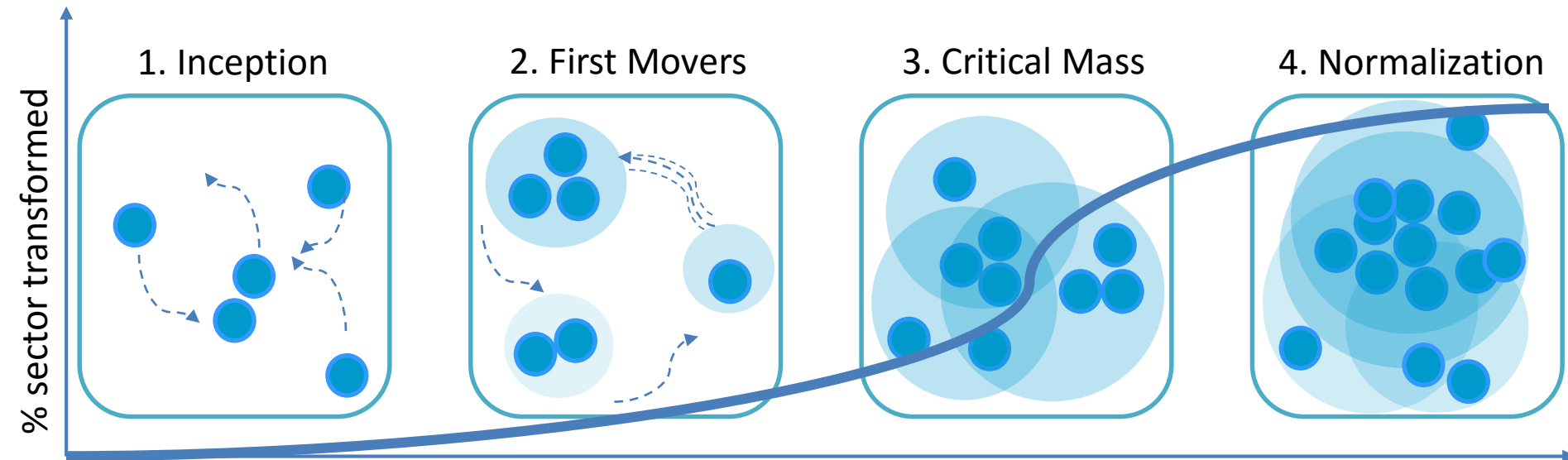
Perception of Other Neighborhoods' Drought Tolerant Landscapes



Are We Reaching New Markets?



Multiplier Effect - Market Transformation



Adapted from: International Institute for Environment and Development

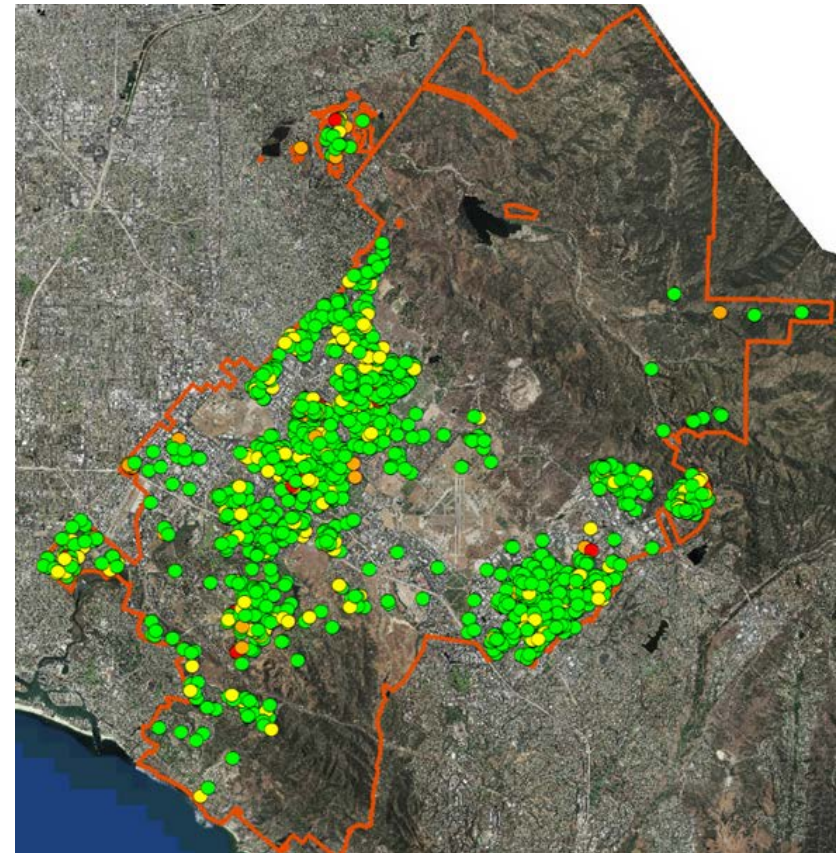
Pilot Study – Multiplier Effect

- Measuring the market transformation effect of the turf removal program.
- Who participated in the turf removal program?
- Which neighbors removed their turf within a certain distance of participants?
- When did they remove their turf?
- What type of landscape was installed in place of turf.



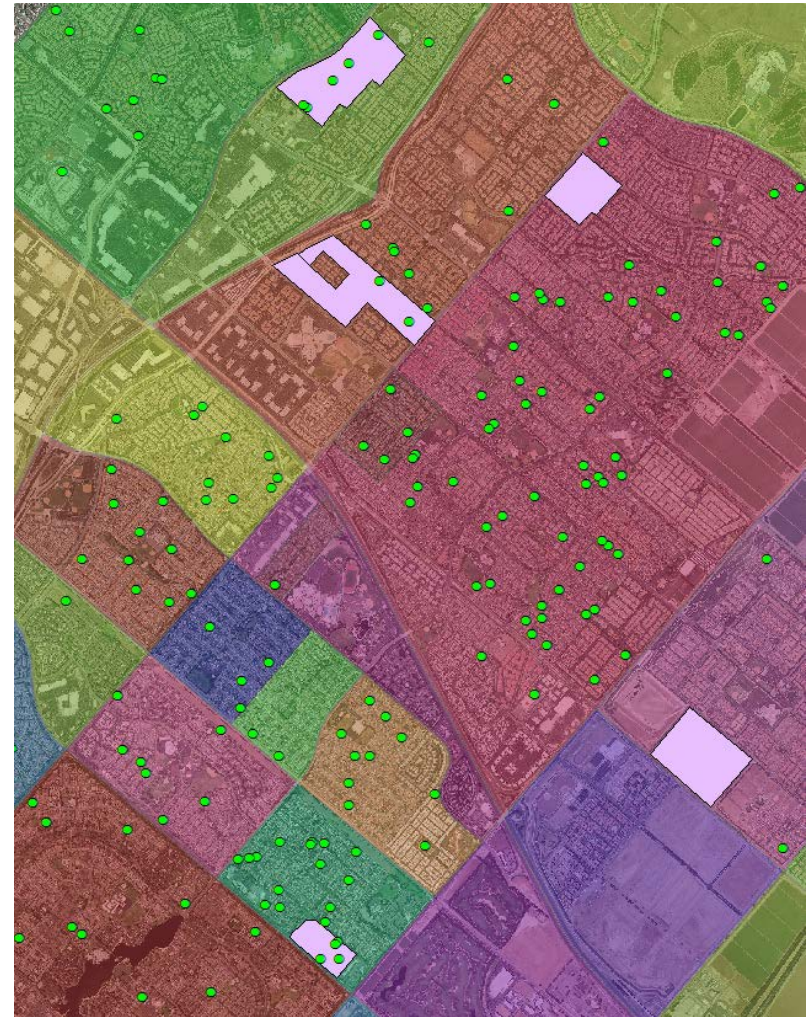
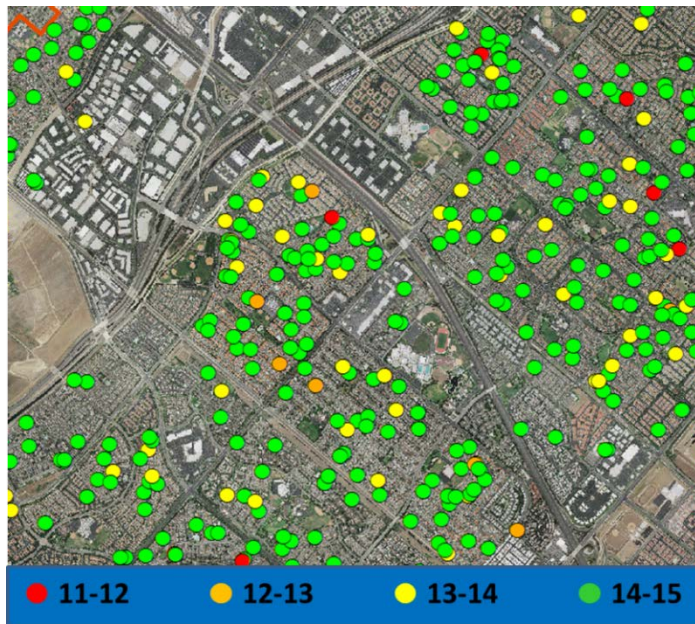
Using Existing Data For Initial Review

- Initially, using GIS data on the locations of the turf removal participants
 - Certain neighborhoods (defined as 150-200 houses)
 - higher concentrations of turf removal participants than others
- Review a few of those neighborhoods with;
 - High (5 homes or more) and medium (2 to 4 homes) concentrations of participations
- Were there similar levels of turf conversions with non-participants? (L&J)
 - No correlation was found at the neighborhood scale
 - “Monkey-see, monkey do” not so apparent
 - Obviously strong market effect at regional scale
 - However, only looked at 2 or 3 neighborhoods.



Analyzing a Larger Group

- The Pilot study will entail a selection of 14 neighborhoods.
 - Range of concentrations of turf removal participants
 - at least 3100 parcels
- Reasonably represents the demographics of the Irvine Ranch Water District service area.



Gathering Survey Information

- What did they install?
- When did they install their drought tolerant garden?
- Where is their house located relative to a turf removal participant?
- Why did they convert their turf?
- How much water was saved?



Survey of Landscape Archetypes



Brown lawn



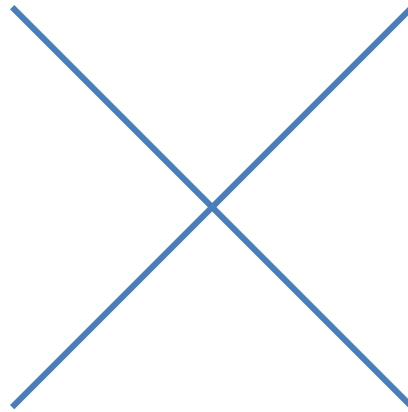
Artificial Turf



Desert/Southwest



Drought Tolerant



On-Site Data Collection

- ArcGIS Collector (free!)
- Green Infrastructure Template
 - Integrates with ArcGIS
 - On-site digitization of landscape types
 - Help us determine % of landscape archetypes
 - Spatial pattern
- Data collection through tablet & smart phone



Ultimate Outcomes

- Determine if there is any type of multiplier effect associated with turf removal program.
- Does the multiplier effect increase or decrease in response to Social, economic, or demographic variables.
- Demographics data from sources such as SCAG (Southern California Association of Governments), US Census Bureau, and Orange County Assessor's office.
- Additional demographic data of specific interest will be collected from the survey as well.
- We will consolidate demographic data from various GIS layers.



Ultimate Outcomes

- Finding a correlation associated with certain landscape types.
 - Ex. we see a lot of clustering of artificial turf
- If water savings correlates to any particular landscape types.
- To show (with some statistical certainty) that each dollar invested in the turf removal program not only yields savings from program participants, but from their neighbors who likely mimicked their behavior.
 - Your Board will like this (wink wink)



Thank you!

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