This presentation premiered at WaterSmart Innovations

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Do Homeowners Who Remove Turf Influence Their Neighbors to Follow?

Santa Margarita Water District

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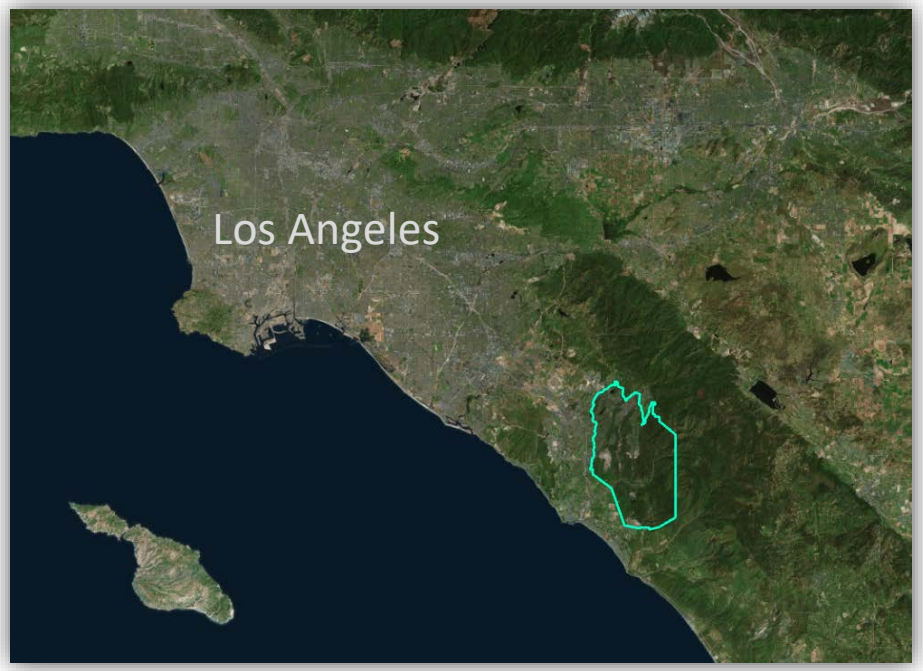
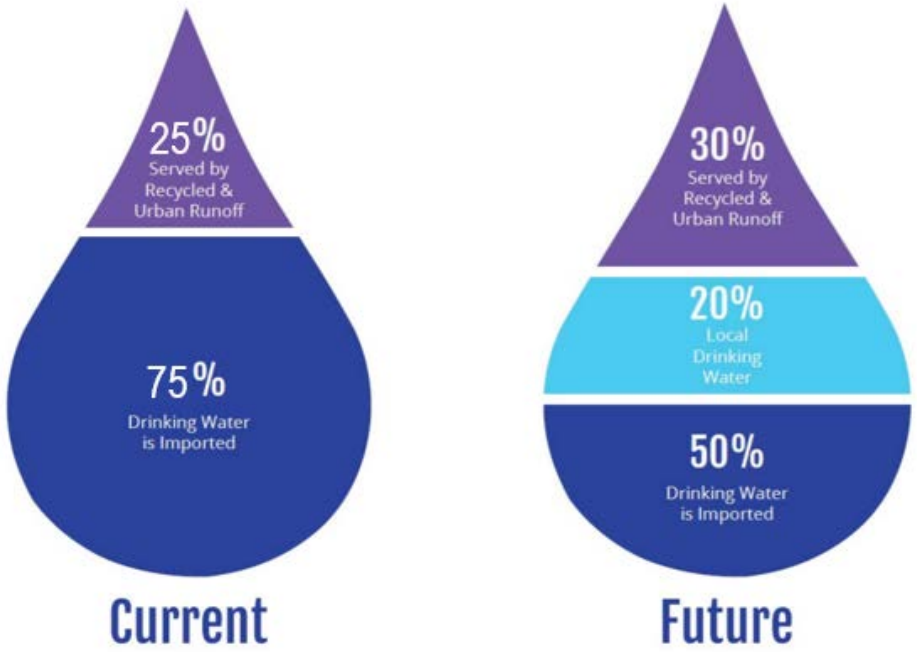
Overview



Santa Margarita Water District (SMWD)

165,000 Residents & growing
57,000 Service Connections
36,000 Single Family Residences
- Budget-Based Tiered Rate Structure

Total Water Supply:
30,500
Acre-Feet



Landscape Change Program Participants (PP)

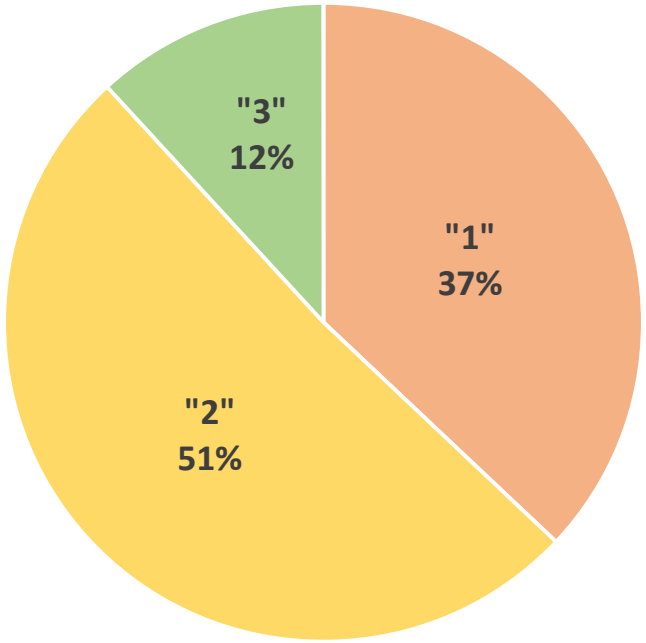
January 2014 – May 2018

- 970 Single Family Residential (SFR) participants
- 843,000 sq.ft. turf removed (mean = 867 sq.ft.; median = 640 sq.ft.)

***Represents Known Change** (only 2.5% of SFR parcels)*

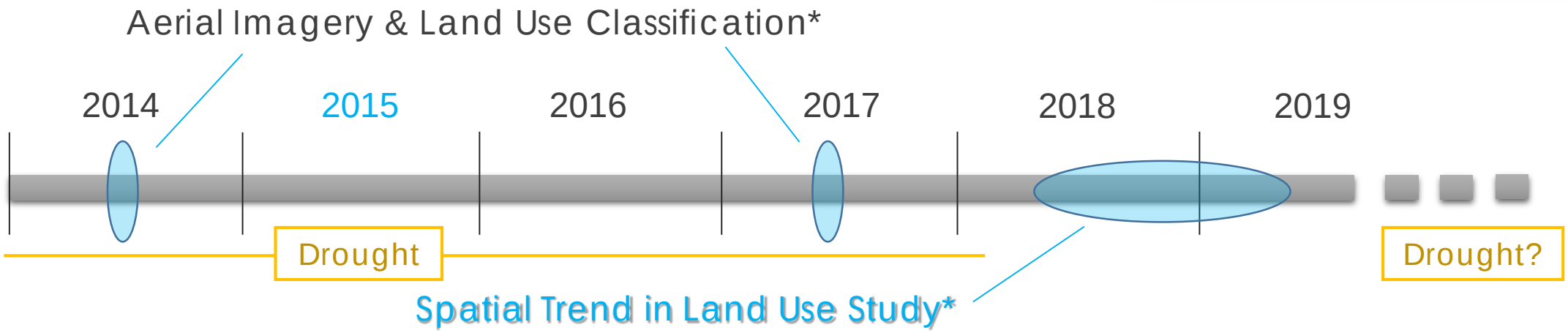
Turf Removal Stats & Warts

970 total projects
Synthetic Turf rebates = 60% of participation
Aesthetics: subjective ranking of all projects; “1-3”



Highly Scientific
Aesthetic Score
“1” = Blah
“2” = Meh
“3” = Yeah!

Budget-Based Rate Structure Implementation (2015)

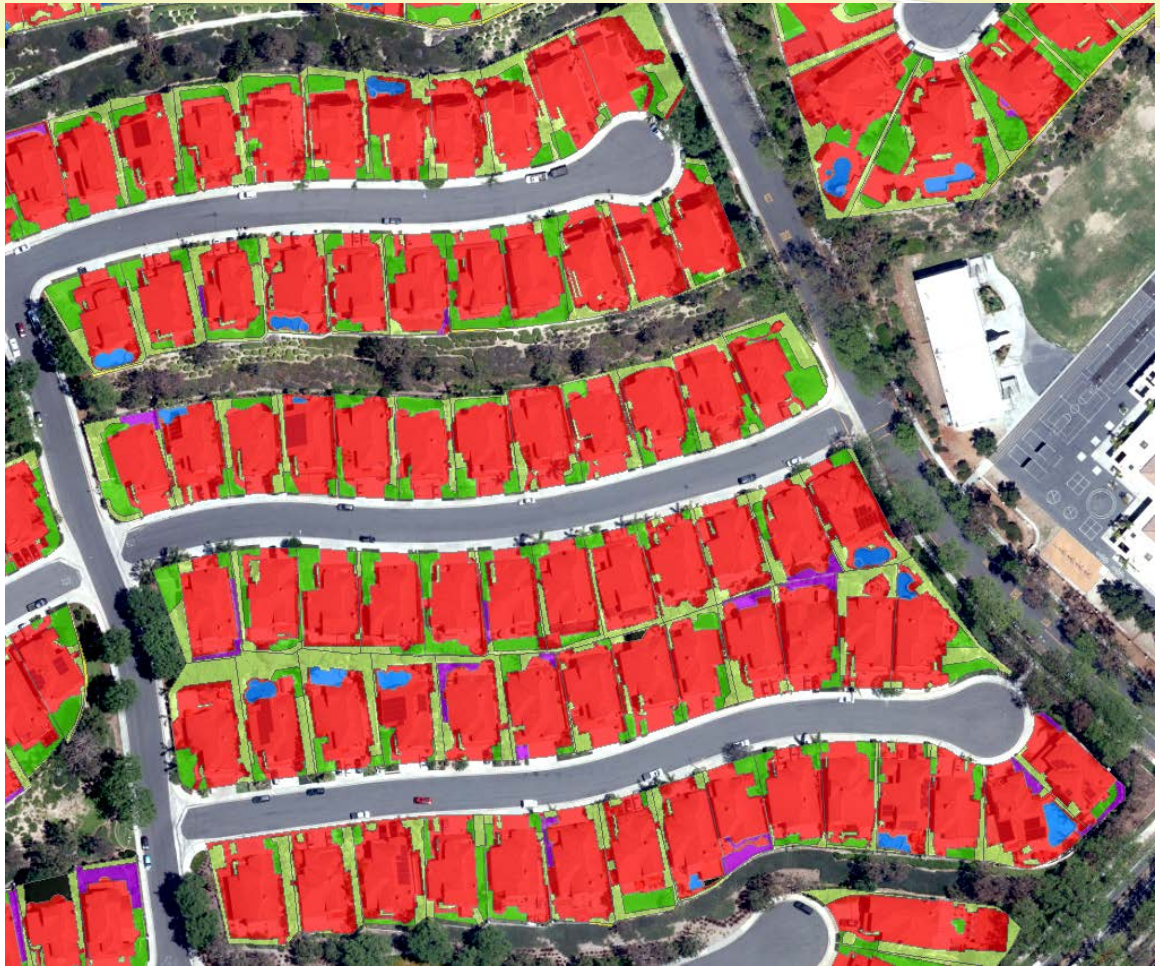


Key Questions of Study

1) How are SFR landscapes changing?
2) Is there a residual effect of Program Participation (PP) on land use?
3) Are there Explanatory Variables that "provoke" residual land use change?

* Consultants: Eagle Aerial & Quantum Spatial

Q1: Can We Identify Landscape Change?



2014

2017

Red = Impervious / **Dark Green** = Turf / **Light Green** = Shrub / **Black** = Syn. Turf / **Purple** = Irrigable, Not Irrigated

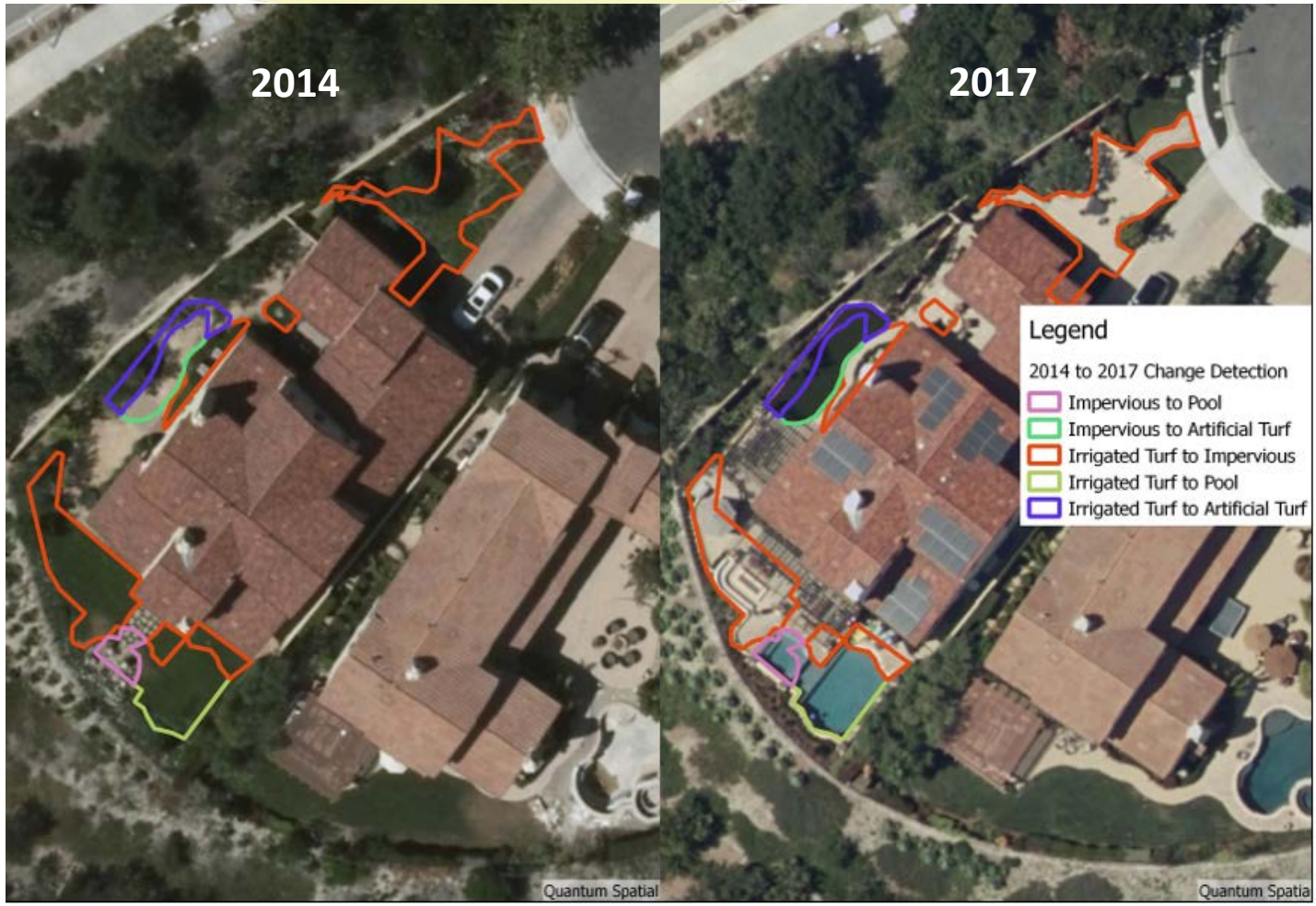
SFR Landscape Change Trends - Net Change -

Largest removals to net land use:

- **Irrigated Turf**
- **Irrigated Vegetation**

Largest additions to net land use:

- **Impervious Surface**
- **Synthetic Turf**

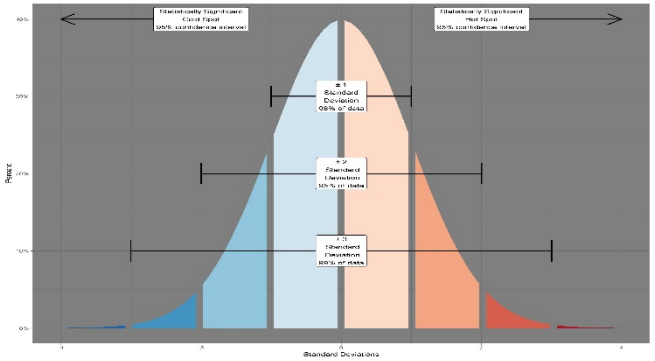


Net Change, 2014-2017									
Class Description:	Impervious	Pools	Landscape	Turf	Nat. Lands	Irrg. Not Irrigated	Horse Corral	Open Water	Artificial Turf
Count: Additions	6926	668	4635	2788	29	2039	2	9	2897
Count: Removals	4239	349	6184	6815	145	1851	13	3	394
Additions-Removals	2687	319	-1549	-4027	-116	188	-11	6	2503

Q2: Is There a Spatial Pattern in Land Use that Extends from Program Participation (PP)?

- Heatmaps constructed for:
  - PP & each of the major land change vectors (4)

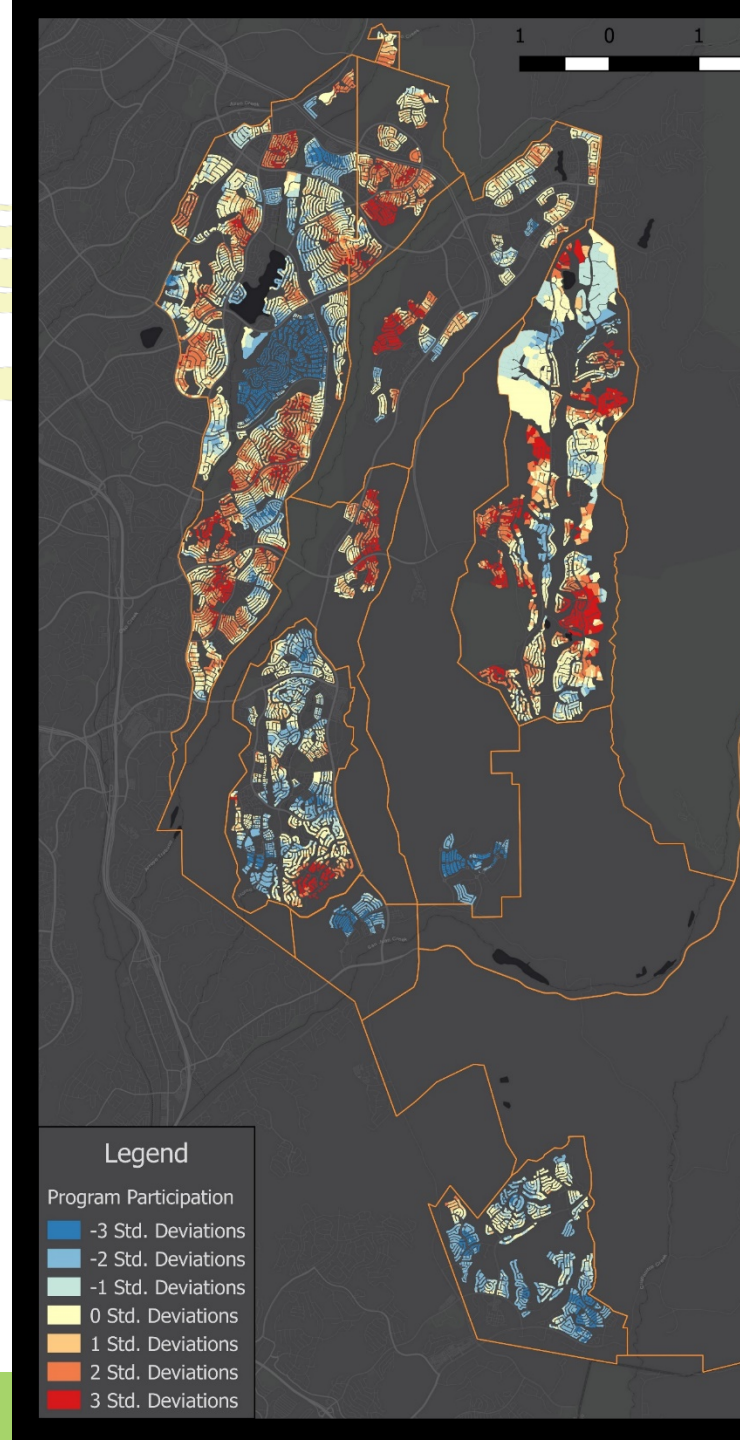
Cool colors =
lower than expected rate of change
(-2 std.dev a significant cold spot)



Warm colors =
higher than expected rate of change
(+2 std.dev a significant hotspot

Getis-Ord Gi* spatial statistic

If there is a residual effect of land use change based on proximity to PP, then PP hotspots and landscape change vector hotspots should line up.



Spatial Analysis Findings:

Being in a hotspot neighborhood for **Program Participation** had a **strong residual impact** on:

- ➕ Addition of:
  - Impervious Surface
- ➖ Removal of:
  - Irrigated Vegetation
  - **Irrigated Turf**

- Effect most strongly observed with **Irrigated Turf**
  - Removal rate 45% higher than would be expected if change were randomly distributed

- Addition of synthetic turf occurred close to the rate one would expect to see by chance → other factors drive synthetic turf addition…

Demographic Analysis

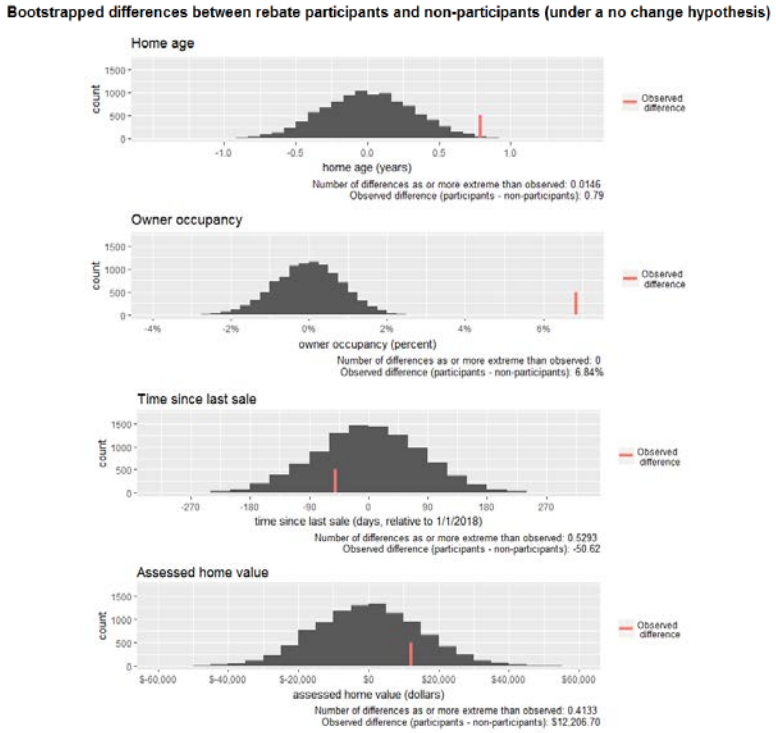
Q3: Are there certain types of homes to target to "provoke" landscape change?

Do demographics of program participants differ significantly from non-participants?

Data available at the parcel level:

- Home Age
- **Owner Occupancy**
- Time Since Last Sale
- Assessed Value of Home

Bold = statistically & practically significant



Conclusion: only owner occupancy demonstrates a practical significant difference between the two groups, with home owners having higher participation rates.

Demographic Analysis

Q3: Are there certain types of homes to target to "provoke" landscape change?

Do demographics differ between landscape change hot spots and cold spots? **YES**

	Home Age	Time Since Last Sale	Owner Occupancy	Assessed Home Value
Artificial Turf Addition	significantly **younger**	significantly **more recently sold**	significantly **higher owner occupancy**	significantly **higher values**
Impervious Surface Addition	significantly **older**	significantly **less recently sold**	significantly **higher owner occupancy**	significantly **lower values**
Irrigated Turf Removal	significantly **older**	significantly **less recently sold**	significantly **higher owner occupancy**	significantly **higher values**
Irrigated Vegetation Removal	significantly **older**	No statistical difference between hot and cold spots	significantly **higher owner occupancy**	significantly **lower values**

For each cell, read "Hotspot homes are…."

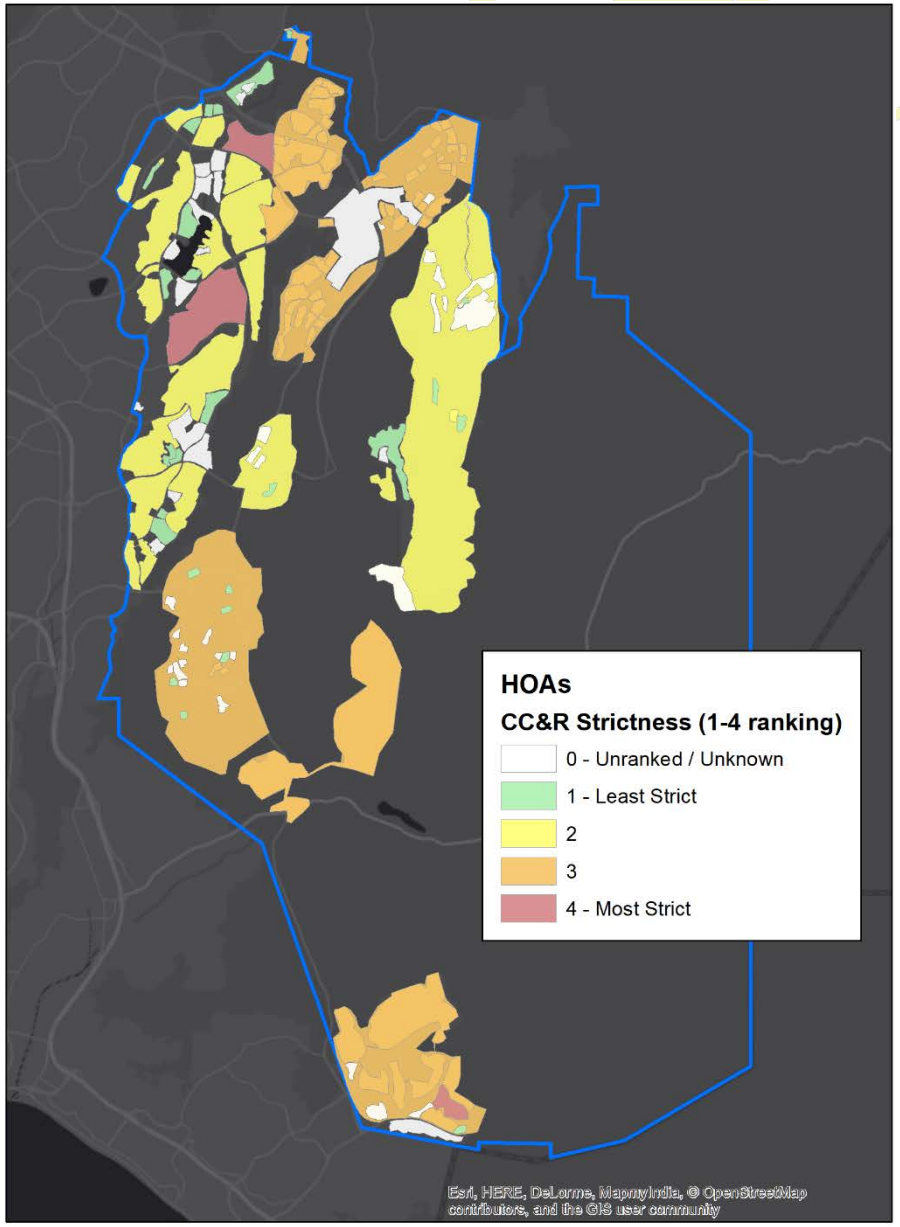
HOA's

Finding:
HOA parcels show a significantly higher rate of residual landscape change impact.

HOA "Strictness" & Demographics:
How strict HOA landscape enforcement and restrictions are may matter.

Logic-Based Conclusions:

- Rebate marketing to parcels in strictness "2" HOA's may be most effective:
  - High owner occupancy
  - Older homes
  - Much less recently sold



Application & Next Steps

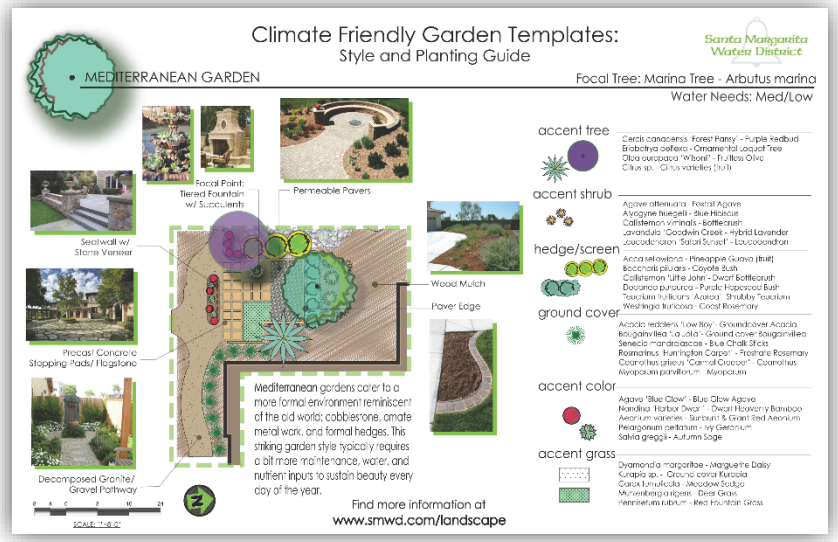
Finding:
We know which parcels are more prone to undertake landscape changes.

↘ Target efforts for specific landscape change

Phase 3 & 4 of Study:
Network Analysis:
Further explore how people may move through community & how that influences landscape change.

- Corner lot? Key influencers?
- HOA & City turf removal… what affect?

Water Savings Study:
We know the *how* & *where* of turf removal.
Need to know the *what*: water savings!



Partner with HOA's for Landscape Design Templates

Thank You.

Questions?

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