

OC Parks Trails Pilot Program

2021 Data Analysis Highlights

Dr. Christopher A. Monz

Noah Creany M.S., PhD Candidate



Presentation Outline

1) Overview of Trails Pilot Program

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graph TD; A[1) Overview of Trails Pilot Program] --> B[2) 2021 Survey Results]; B --> C[3) Behavioral & Ecological Monitoring];
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2) 2021 Survey Results

3) Behavioral & Ecological Monitoring

Some perspectives....

Work with the “trails we have”



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graph TD; A[Work with the "trails we have"] --> B[Managers prescribe trail management— we assist with the evaluation]; B --> C[Adaptive Management Learn By Doing]; C --> D[Field research designs often have unexpected variability];
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Managers prescribe trail management—
we assist with the evaluation

Adaptive Management Learn By Doing

Field research designs often have
unexpected variability



Trails Pilot Program

Management:

- Use Restrictions
- Direction Designation

Goals

- Safety
- Reduce Conflict
- Evaluate Effectiveness of Trail Management

Study Design:

- Pre/Post
- Control/Treatment

TRAIL USE CHANGES — SANTIAGO OAKS

	Original Trail Use		Trail Use Change
Pony Trail	<ul style="list-style-type: none">• Hiking, biking and equestrian• Bidirectional	➔	<ul style="list-style-type: none">• Hiking and equestrian only• Bidirectional
Yucca Ridge Trail	<ul style="list-style-type: none">• Hiking, biking and equestrian• Bidirectional	➔	<ul style="list-style-type: none">• Hiking, biking and equestrian• Downhill only
Chutes Ridgeline Trail	<ul style="list-style-type: none">• Hiking, biking and equestrian• Bidirectional	➔	<ul style="list-style-type: none">• Biking only• Downhill only
Peralta Hills Trail	<ul style="list-style-type: none">• Hiking, biking and equestrian• Bidirectional	➔	<ul style="list-style-type: none">• Hiking and equestrian only• Bidirectional
Cactus Canyon Trail	<ul style="list-style-type: none">• Hiking, biking and equestrian• Bidirectional	➔	<ul style="list-style-type: none">• Hiking, biking and equestrian• Downhill only

TRAIL USE CHANGES — ALISO AND WOOD CANYONS

	Original Trail Use		Trail Use Change
Lynx Trail	<ul style="list-style-type: none">• Hiking, biking and equestrian• Bidirectional	➔	<ul style="list-style-type: none">• Biking only• Downhill only
Cholla Trail	<ul style="list-style-type: none">• Hiking, biking and equestrian• Bidirectional	➔	<ul style="list-style-type: none">• Biking: uphill only• Hiking and equestrian: bidirectional

TRAIL USE CHANGES — LAGUNA COAST

	Original Trail Use		Trail Use Change
Laguna Ridge Trail	<ul style="list-style-type: none">• Hiking, biking and equestrian• Bidirectional	➔	<ul style="list-style-type: none">• Biking only• Downhill only
Old Emerald Trail	<ul style="list-style-type: none">• Hiking and biking• Bidirectional	➔	<ul style="list-style-type: none">• Biking: downhill only• Hiking: bidirectional

Pilot Program Visitor Evaluations

6 Statements:

- Activity Type Restrictions
 - *“Restricting activity types on some trails creates **safer conditions** for everyone”*
 - *“Restricting activity types on some trails **reduces conflict**”*
- Direction Designation
 - *“Designating the direction of trails use creates **safer conditions** for everyone”*
 - *“Designating the direction of trails use **reduces conflict**”*
- Visitor Experience
 - *“Overall, the new trail regulations have increased the **quality of my experience**”*
 - *“Overall, the new trail regulations create a **better experience for all visitors**”*

Pilot Program Agreement

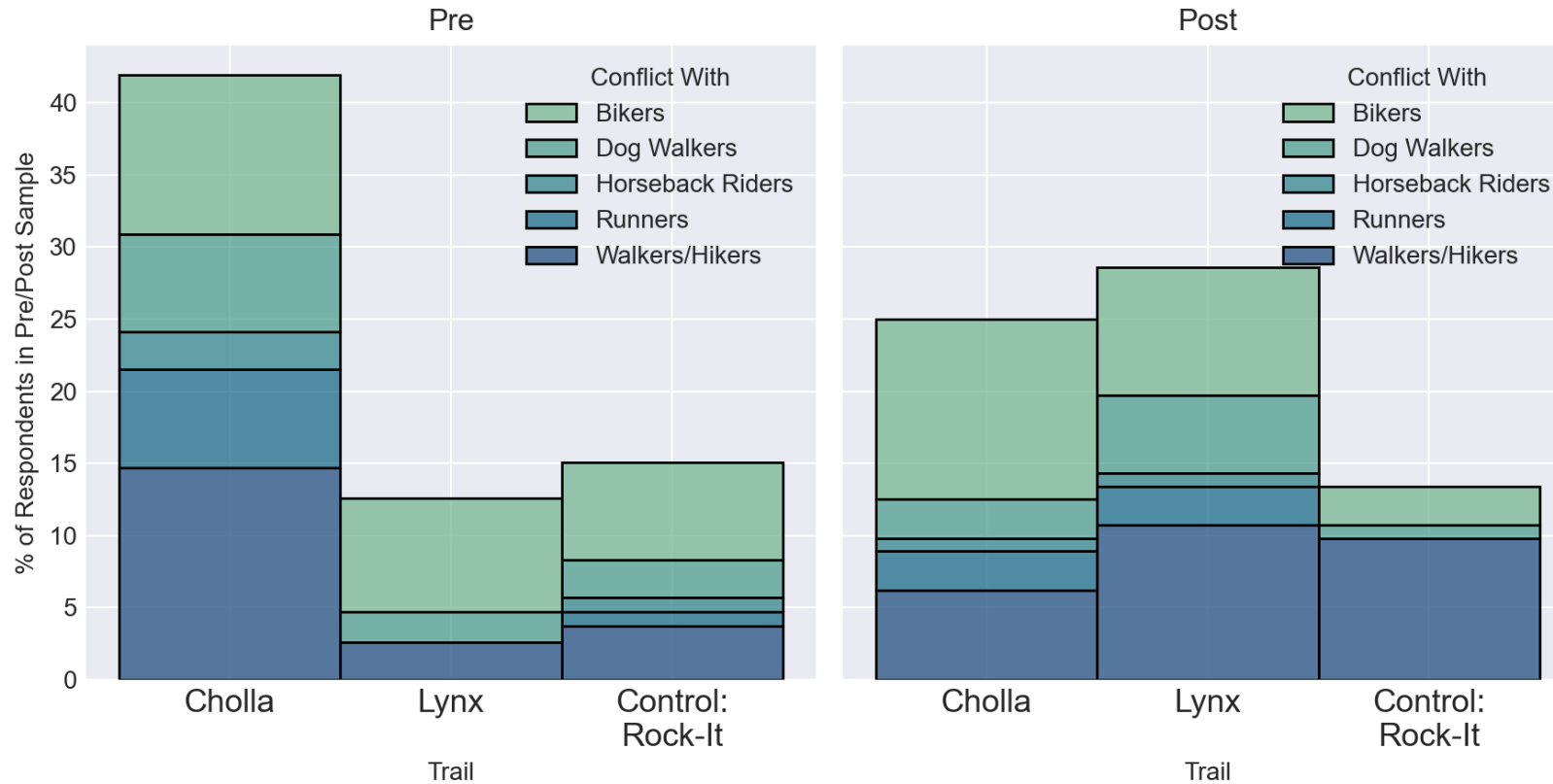
Pilot Program Visitor Evaluations

Management	N	Treatment		Control		Overall Mean	
		Pre	Post	Pre	Post	Pre	Post
Restricting activity types on some trails creates safer conditions for everyone.	975	3.56	4.04**	3.83	4.01	3.64	4.03
Restricting activity types on some trails reduces conflict.	950	3.50	3.95**	3.60	3.94	3.52	3.95*
Designating the direction of trail use creates safer conditions for everyone.	959	3.74	4.20**	3.97	4.13	3.81	4.18
Designating the direction of trail use reduces conflict.	948	3.57	4.08**	3.81	3.85	3.64	4.02
Overall, the new trail regulations (i.e. activity type/direction of use) have increased the quality of my experience.	959	3.52	3.80**	3.74	3.82	3.58	3.81
Overall, the new trail regulations (i.e. activity type/direction of use) create a better experience for all visitors.	951	3.64	4.04**	3.89	3.99	3.72	4.03

*p<.05 , **p<.001

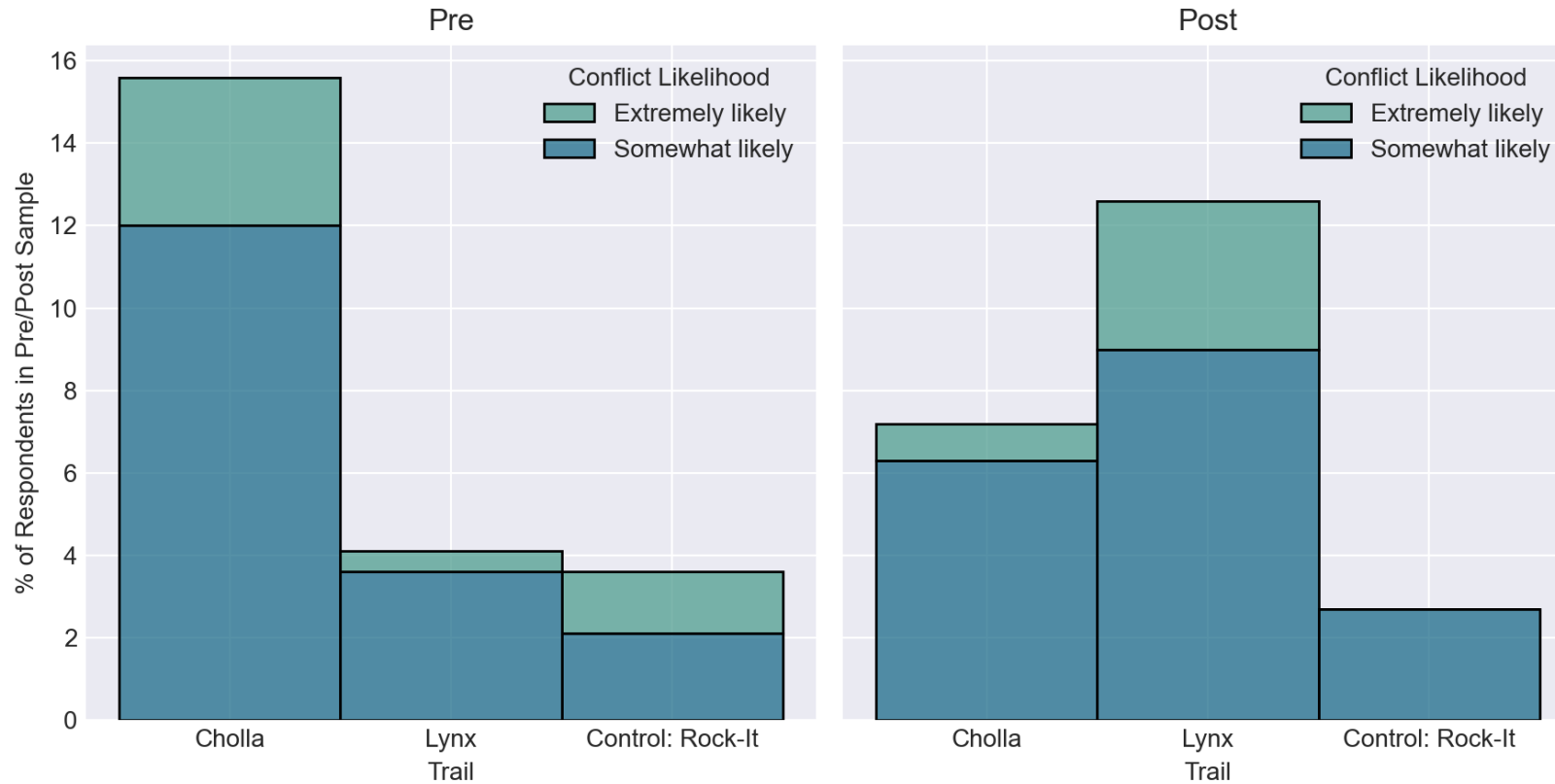
Visitor Reported Conflict Aliso and Wood Canyons

Aliso and Wood Canyons Pre/Post Visitor Reported Conflict by Trail



Visitor Reported Conflict Aliso and Wood Canyons

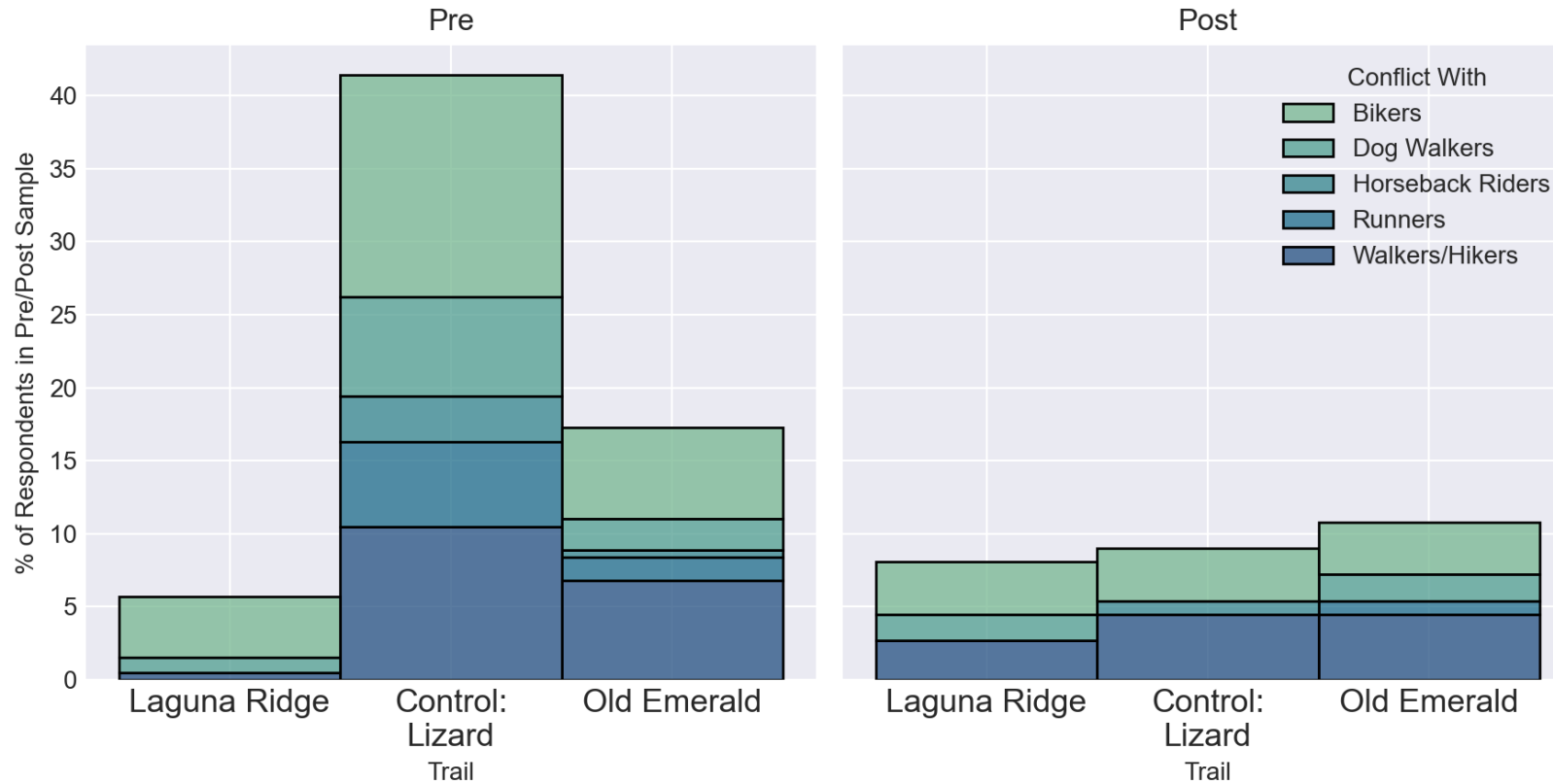
Aliso and Wood Canyons Pre/Post Conflict Likelihood



Trail	Conflict Likelihood Mean	
	Pre	Post
Cholla	2.78	2.58
Lynx	2.42	2.97
Rock-it	2.48	2.53

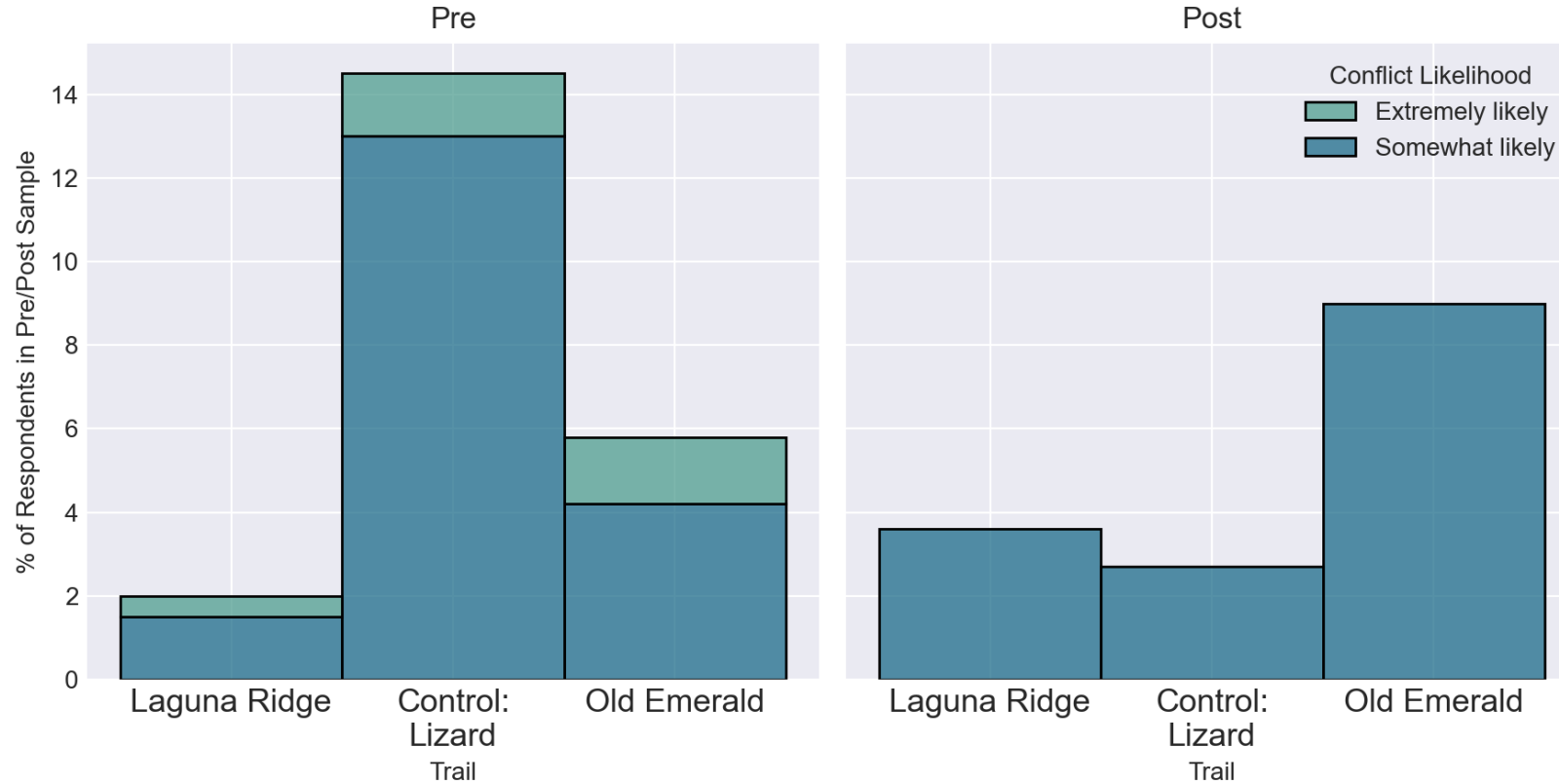
Visitor Reported Conflict Laguna Coast

Laguna Coast Pre/Post Visitor Reported Conflict by Trail



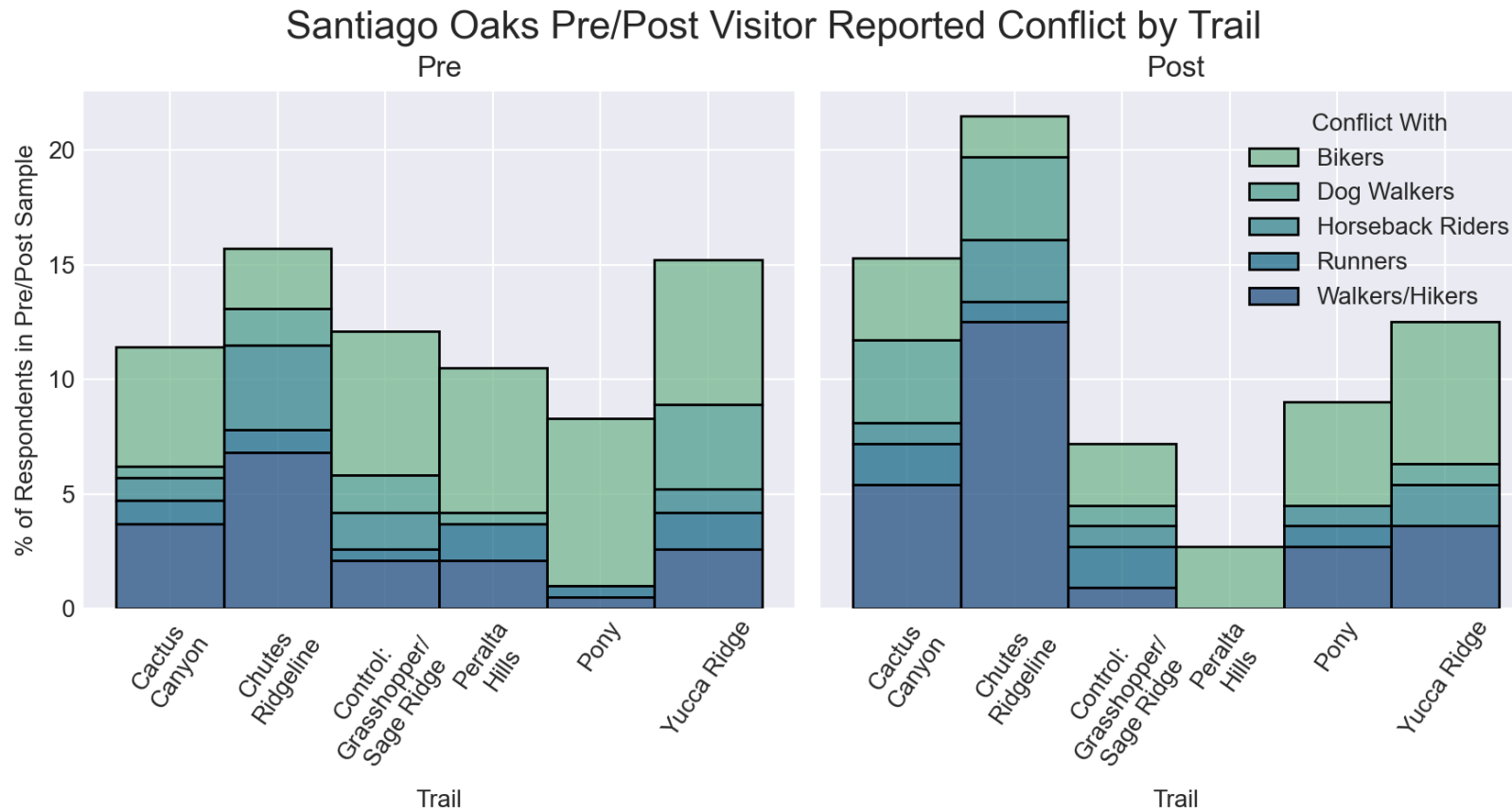
Visitor Reported Conflict Laguna Coast

Laguna Coast Pre/Post Conflict Likelihood

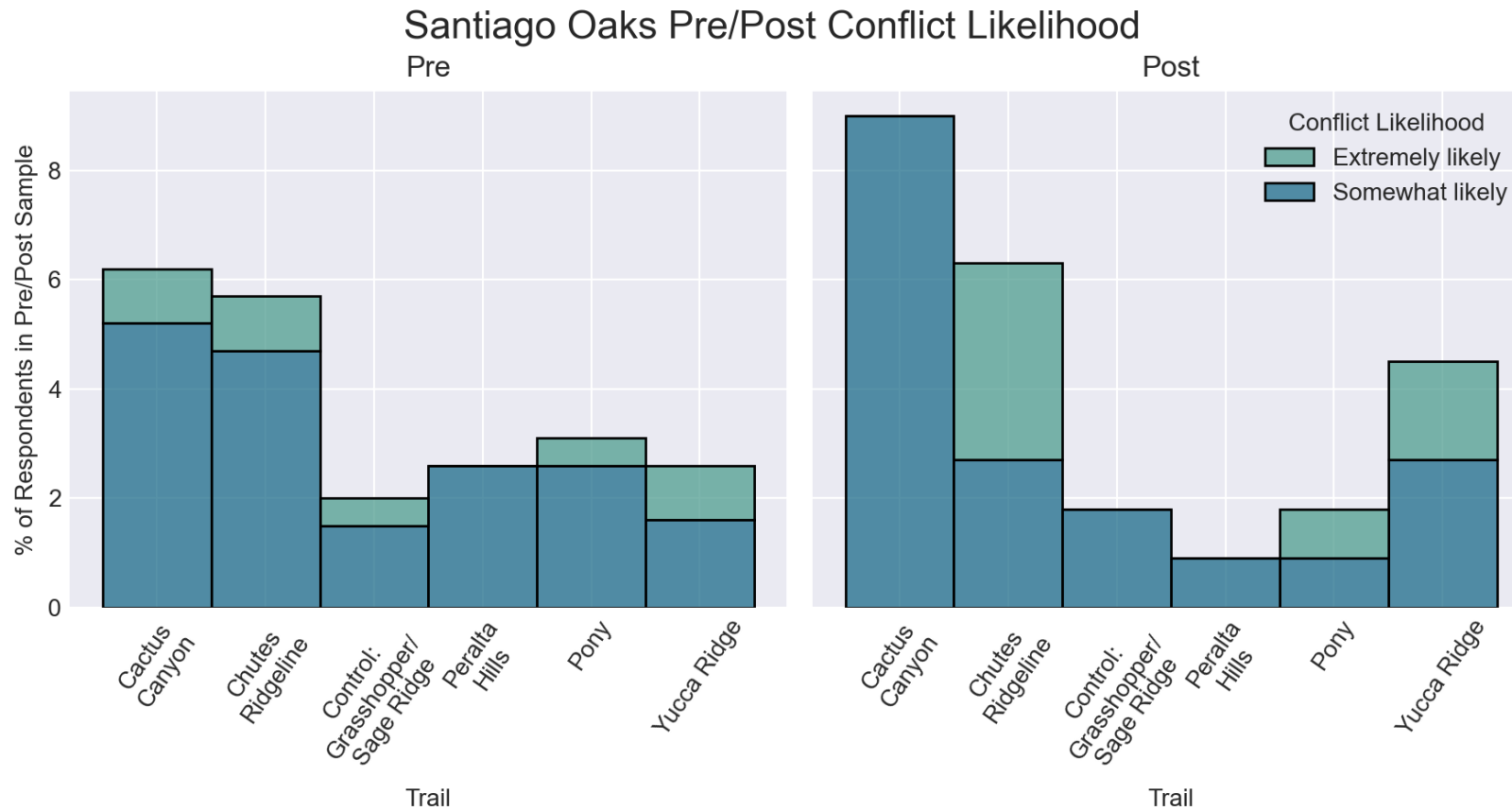


Trail	Conflict Likelihood Mean	
	Pre	Post
Laguna Ridge	2.36	3.12
Old Emerald	2.91	3.58
Lizard	2.77	2.40

Visitor Reported Conflict Santiago Oaks



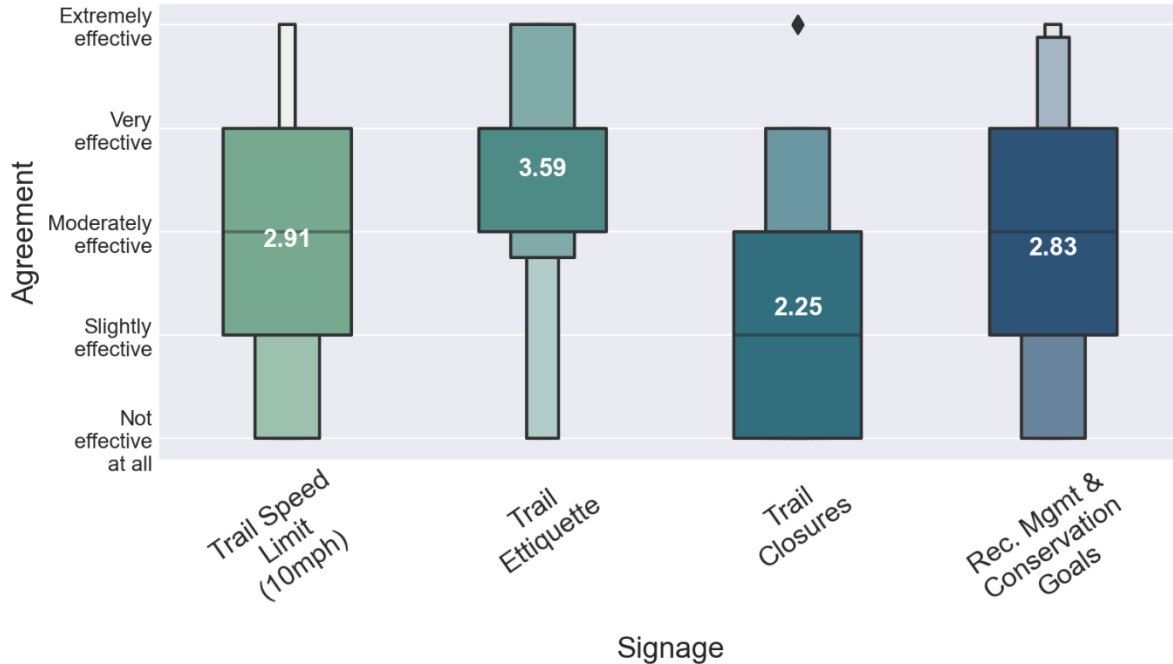
Visitor Reported Conflict Santiago Oaks



Trail	Conflict Likelihood Mean	
	Pre	Post
Cactus	3.32	3.47
Chutes	2.48	2.74
Grasshopper/ Sage Ridge	2.39	2.50
Peralta	2.28	2.67
Pony	2.87	2.83
Yucca*	1.97	2.79

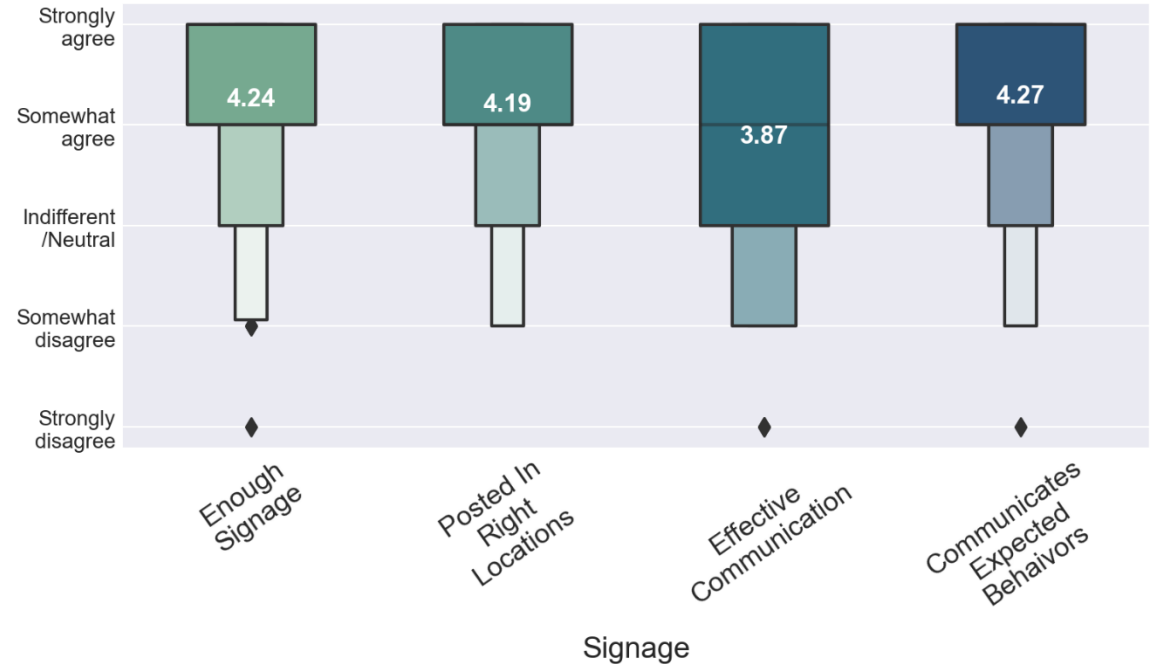
Signage Effectiveness Aliso and Wood Canyons

Aliso and Wood Canyons Pre-Pilot Program Signage Evaluations



Note: Means indicated in white text.

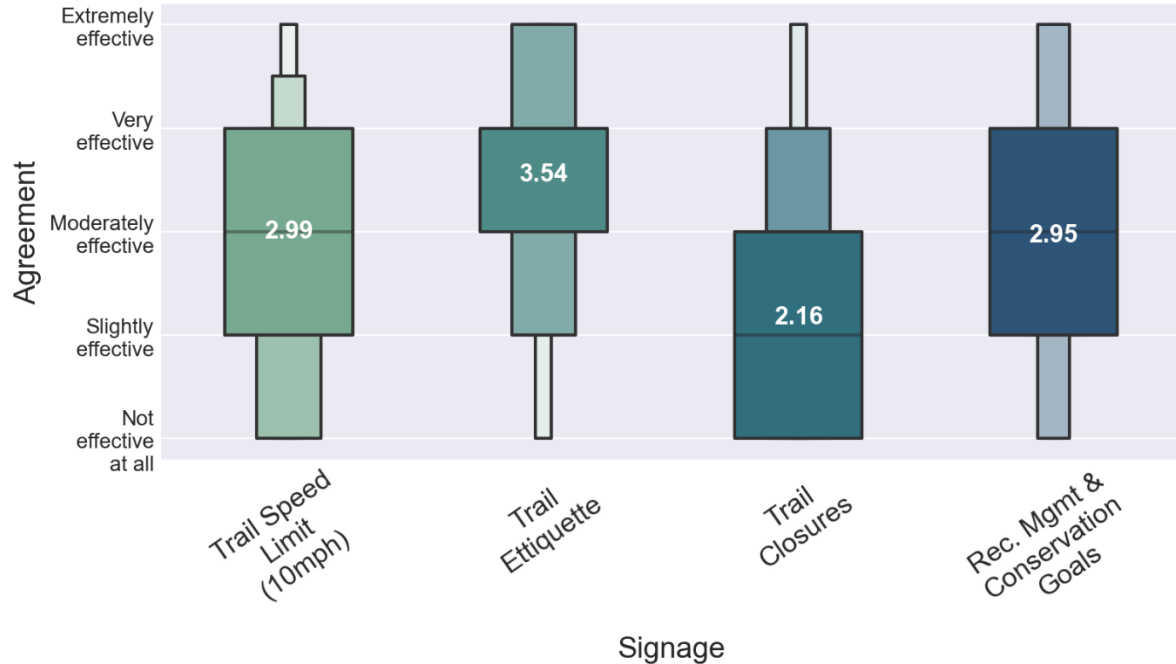
Aliso and Wood Canyons Post-Pilot Program Signage Evaluations



Note: Means indicated in white text.

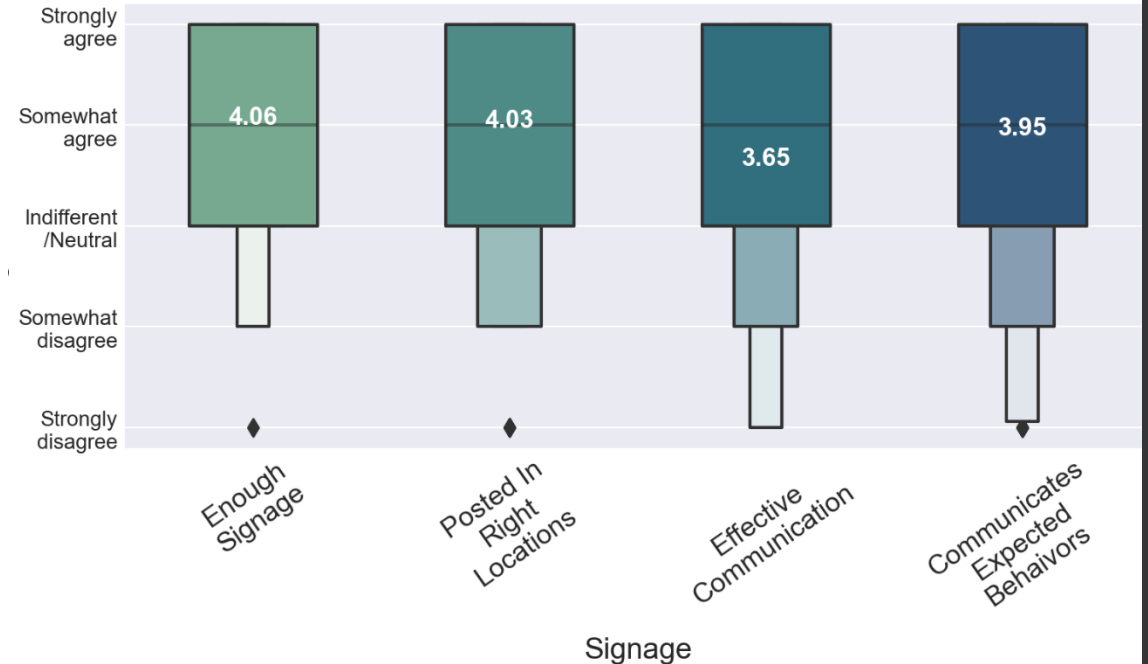
Signage Effectiveness Laguna Coast

Laguna Coast Pre-Pilot Program Signage Evaluations



Note: Means indicated in white text.

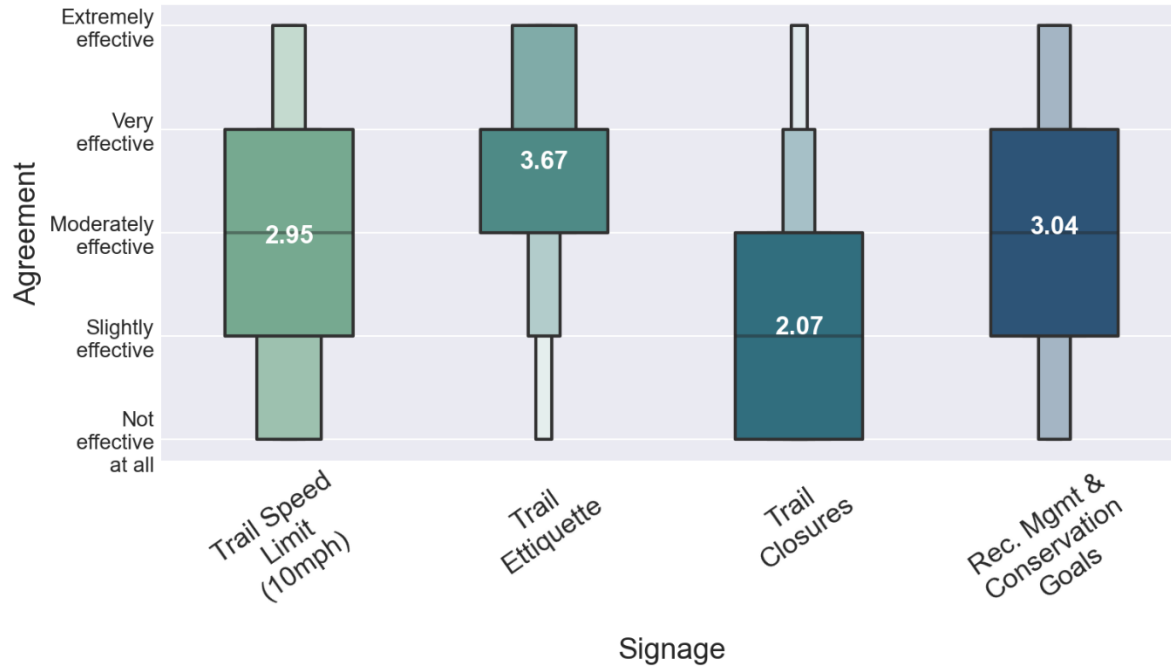
Laguna Coast Post-Pilot Program Signage Evaluations



Note: Means indicated in white text.

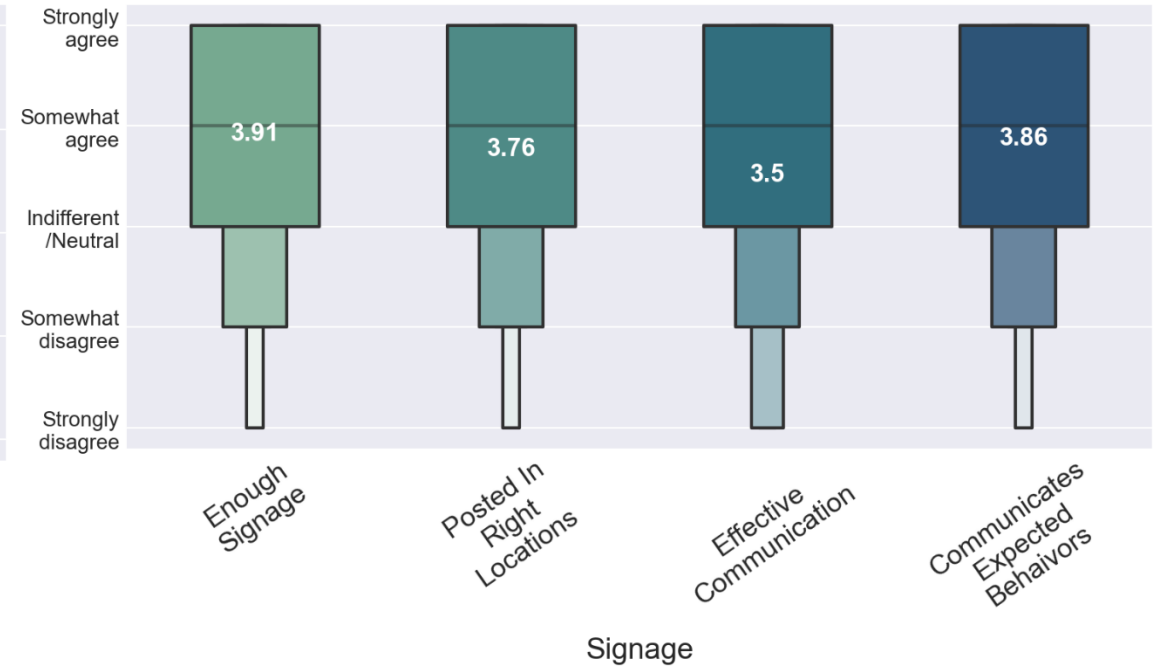
Signage Effectiveness Santiago Oaks

Santiago Oaks Pre-Pilot Program Signage Evaluations



Note: Means indicated in white text.

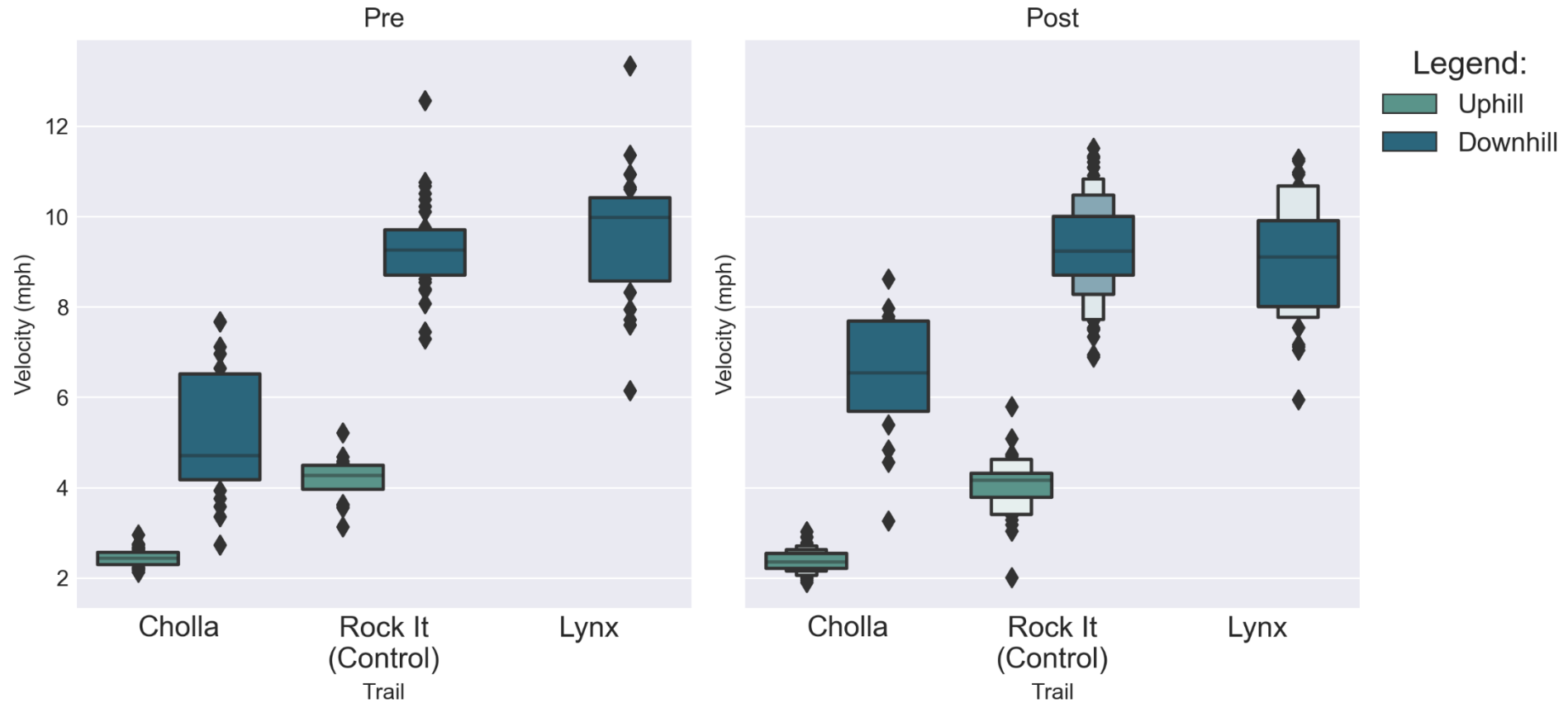
Santiago Oaks Post-Pilot Program Signage Evaluations



Note: Means indicated in white text.

Strava Metro MTB Speed Aliso and Wood Canyons

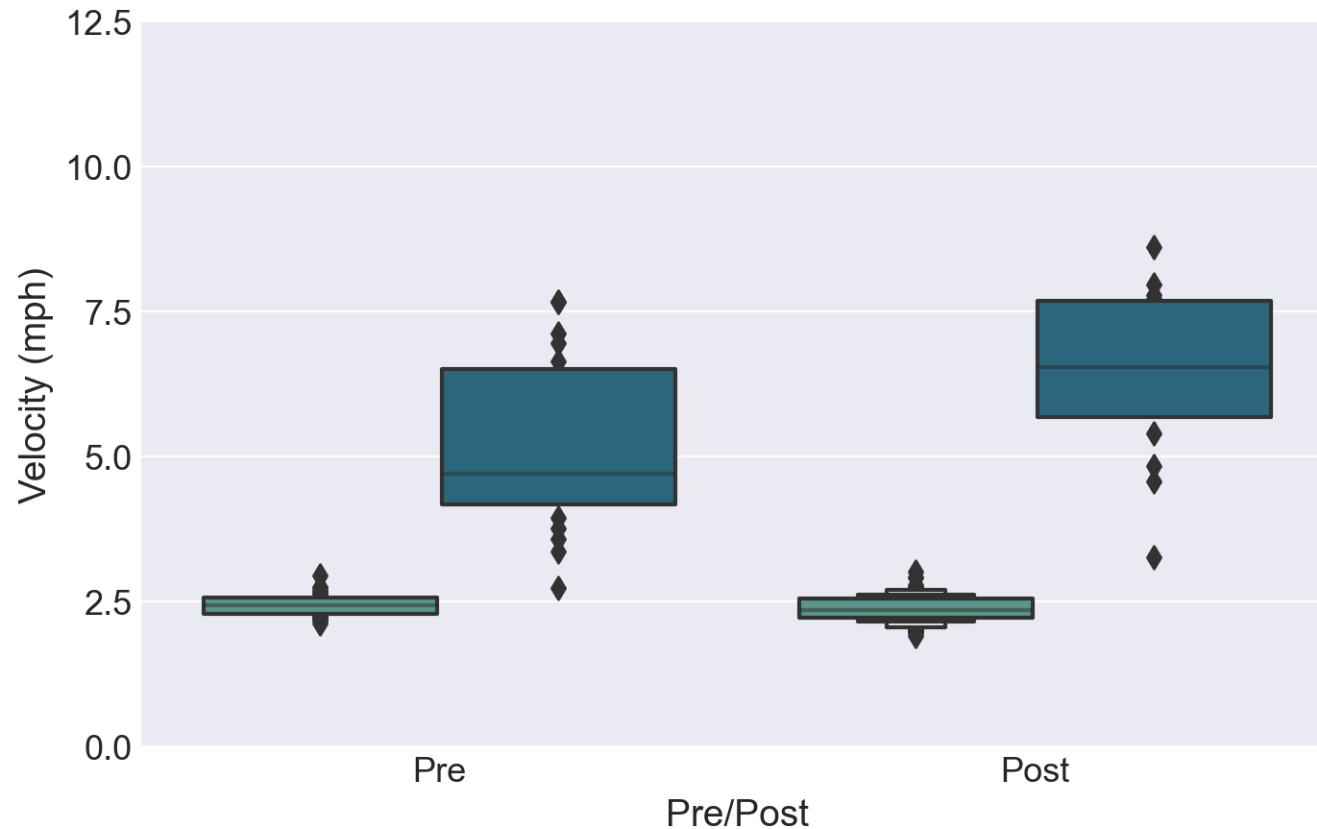
Aliso and Wood Canyons Pre/Post Strava Mountain Bike Mean Velocity



Strava Metro MTB Speed

Aliso and Wood Canyons: Cholla

Cholla Pre/Post Strava Mountain Bike Mean Velocity



Legend:

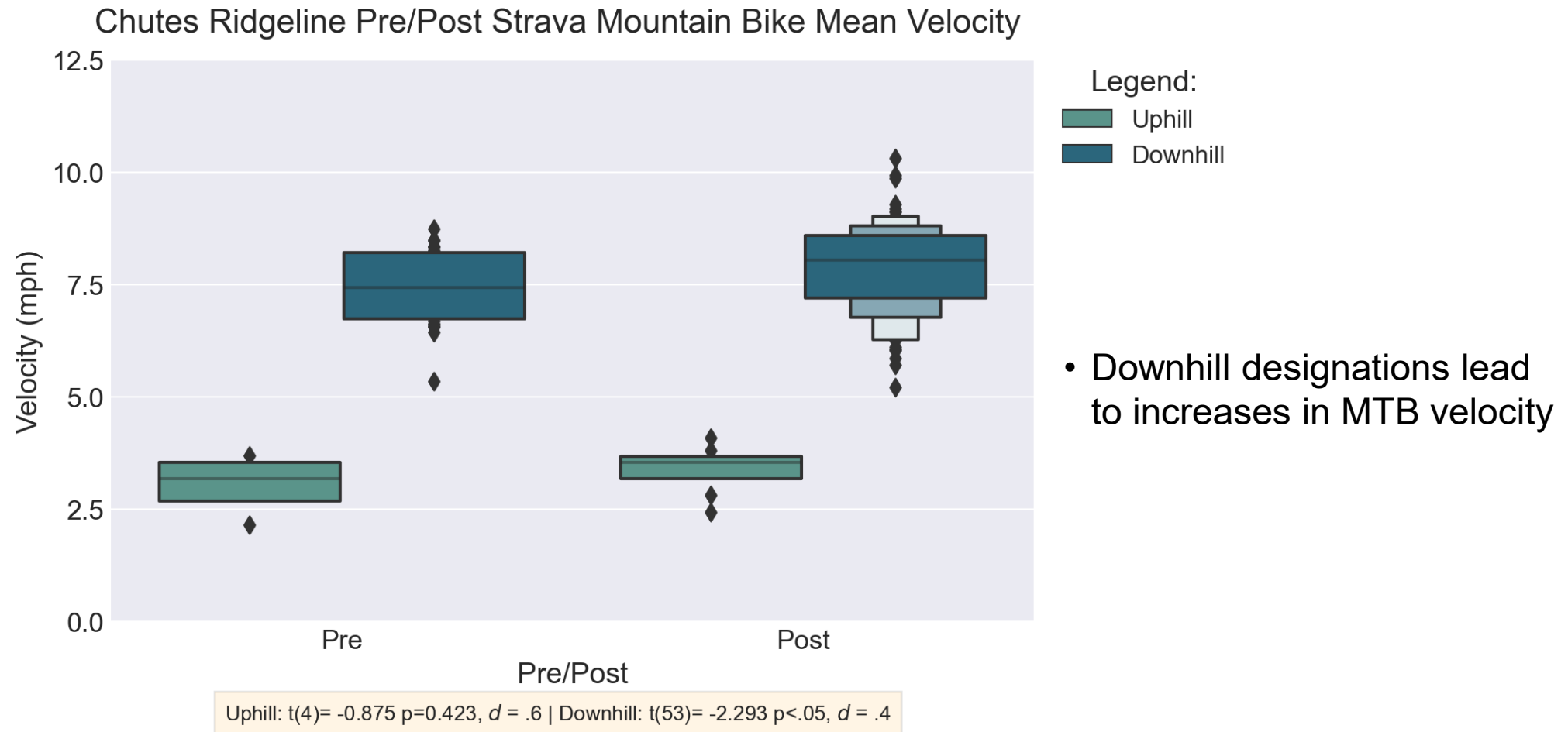
- Uphill
- Downhill

- Despite uphill MTB designation, increase in MTB downhill velocity
- Important to understand existing patterns of spatial behavior when creating new trail management

Uphill: $t(50) = 1.444$ $p = 0.155$, $d = .3$ | Downhill: $t(30) = -2.585$ $p < .05$, $d = .9$

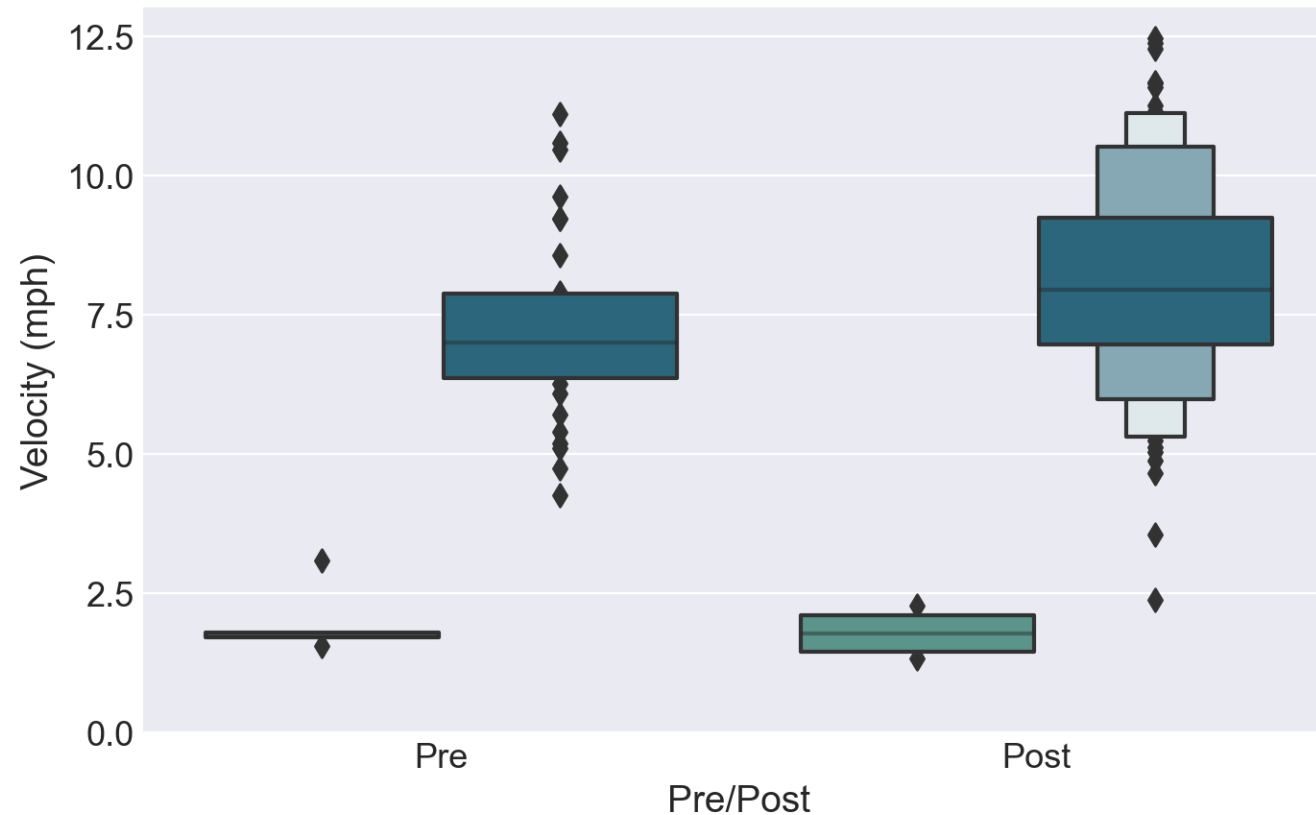
Strava Metro MTB Speed

Santiago Oaks: Chutes Ridgeline



Strava Metro MTB Speed Santiago Oaks: Grasshopper

Grasshopper Pre/Post Strava Mountain Bike Mean Velocity



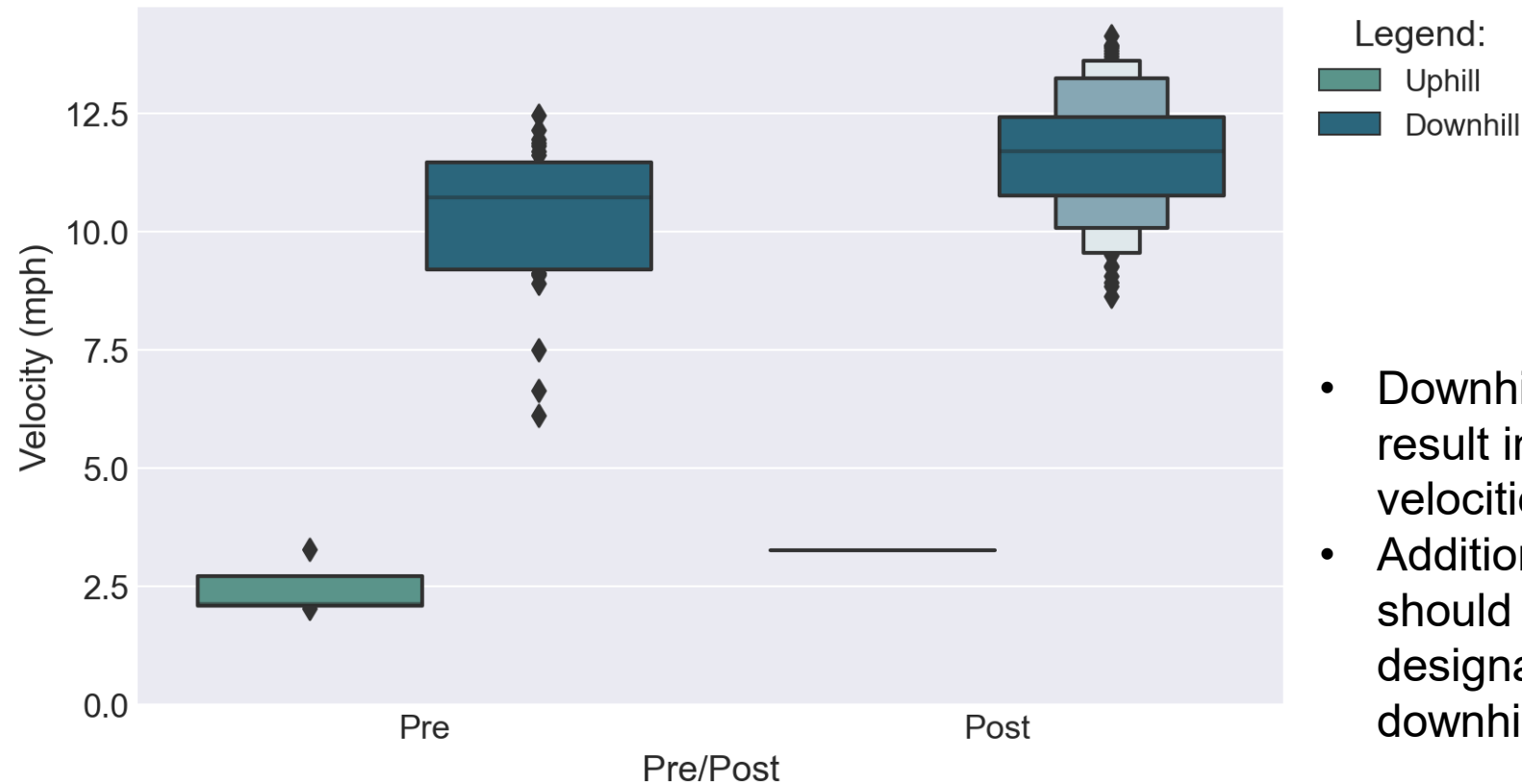
Legend:
Uphill
Downhill

- New trail management on some trails can introduce new dynamics on other trails
- Trails are not independent

Uphill: $t(6) = 0.524$ $p = 0.616$, $d = .3$ | Downhill: $t(51) = -2.207$ $p < .05$, $d = .4$

Strava Metro MTB Speed Santiago Oaks: Yucca Ridge

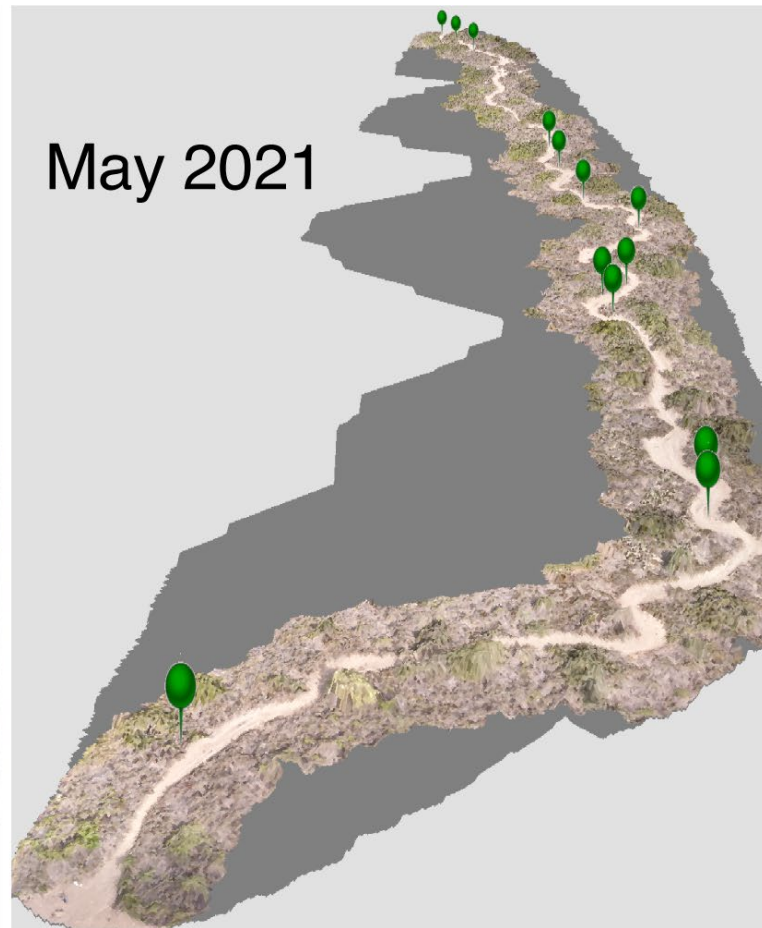
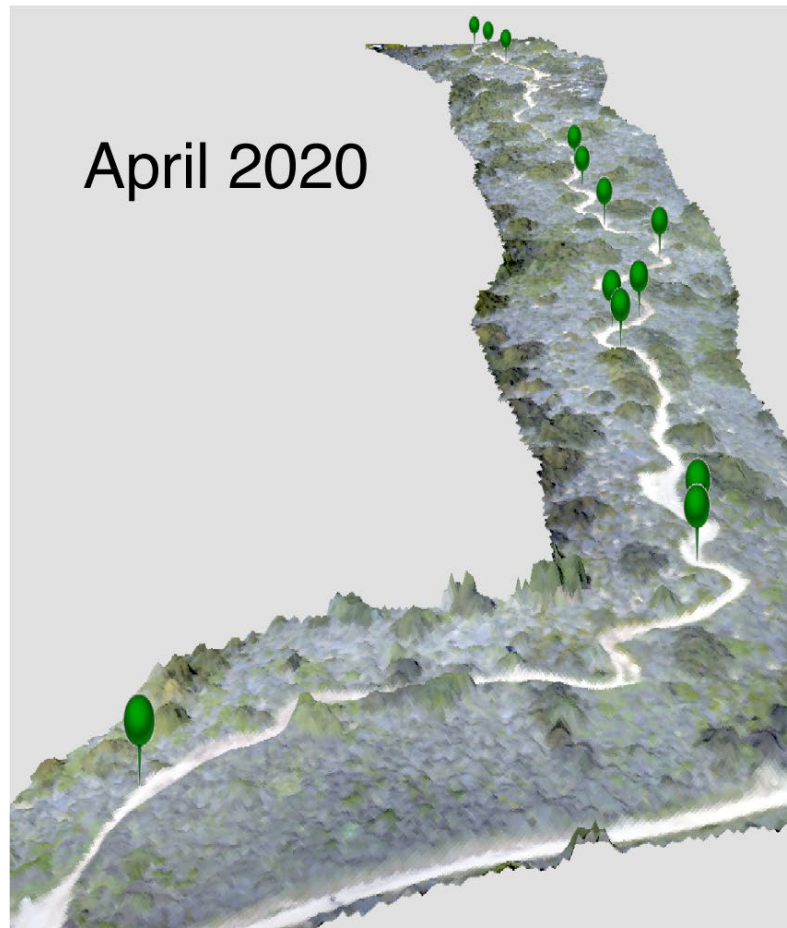
Yucca Ridge Pre/Post Strava Mountain Bike Mean Velocity



Downhill: $t(36) = -4.205$ $p < .001$, $d = 1.0$

- Downhill designations result in increased velocities
- Additional considerations should be made before designating multi-use trails downhill only

Drone Trail Impact Assessment: Cholla (Aliso and Wood Canyons)



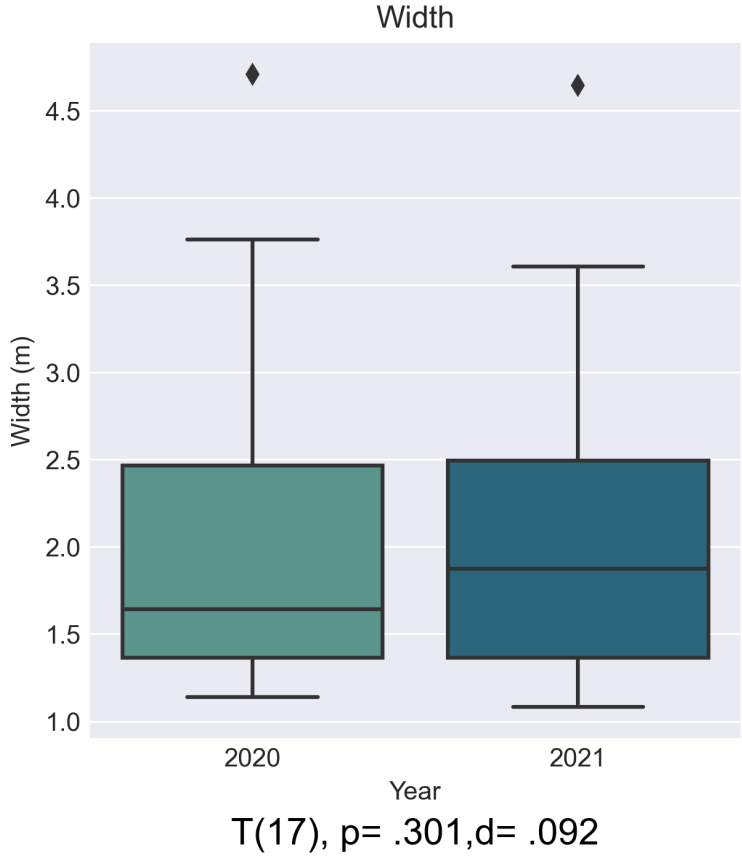
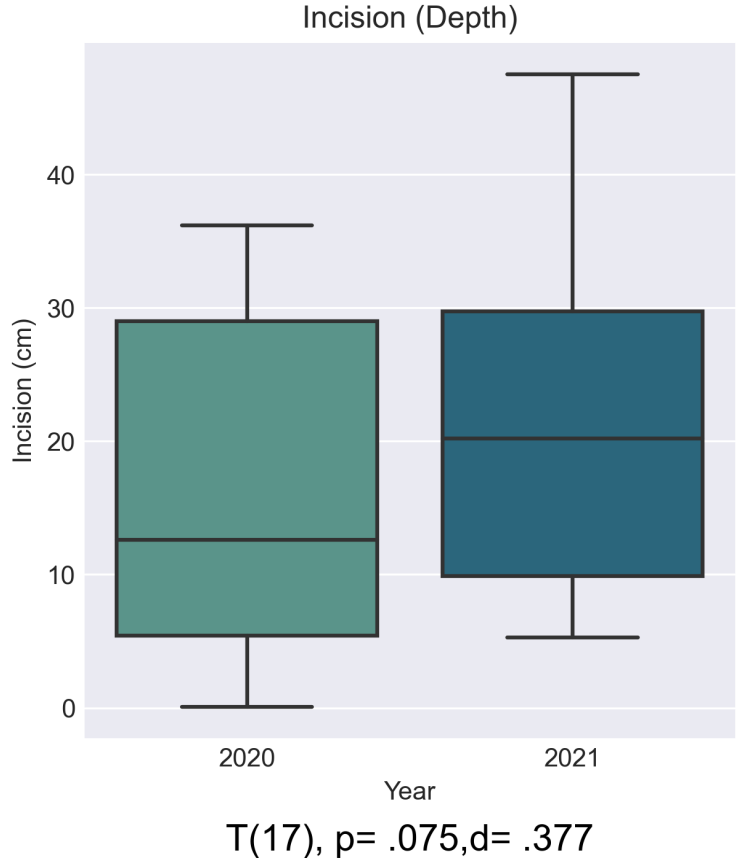
Indicators of Trail Degradation:

- Total area of exposed soil/
trampled vegetation
- **Trail width**
- **Trail Incision**
- Presence of muddy sections
- Presence of informal (visitor
created trails)
- Presence of abandoned trail
sections
- Small footprint features
(informal trail features,
garbage, etc.)

Indicators like incision, width
are important for managing
both ecological and social
conditions of trails

Trail Disturbance Indicators:

Cholla Incision & Width: 2020 vs. 2021



- Monitoring ecological change as a result of new trail management.
- 2020-2021 trends suggest increased erosion and vegetation loss.
- “Shifting baselines” for trail management

Summary

- High degree of visitor support for Trails Pilot Program (TPP)
- Trend towards reduced visitor conflicts
- “Spillover” effects on Control trails
- Behavioral responses from TPP direction designations
- Ongoing trail ecological assessments to understand biophysical effects of TPP

Thank You!

Questions?