Preferences for Groundwater Management: A Survey of Kansas Irrigators

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KANSAS STATE UNIVERSITY | Agricultural Economics

2019

Preferences for Irrigation Water Management

We ask you to complete this short survey so that we can better understand the true preferences of farmers over groundwater management. We hope to use the results to make reliable policy recommendations.

One potential method to conserve groundwater is to use a Local Enhanced Management Area (LEMA) to define multi-year quantity allocations for water rights within a defined boundary. The following questions ask your preferences over possible LEMA characteristics.

1. Indicate how much water use should be reduced **on average** in the area(s) where you irrigate (an "area", for example, could be defined as a township). (Note that 0% means no change in average water use, and 10% means a 10% reduction in use.)

	0%	2.5%	5%	10%	15%	20%	25%	>25%
Best Option	☐	☐	☐	☐	☐	☐	☐	☐
Worst Option	☐	☐	☐	☐	☐	☐	☐	☐

For the following questions, assume that a LEMA is going to be implemented in your area(s).

2. Indicate the best and worst methods to use when calculating the allocated quantity of water use for each water right within an area.

	Percent reduction from an individual's historical use.	Senior water rights receive a larger allocation.	Every water right in area receives the same allocation (inches/acre).
Best Option	☐	☐	☐
Worst Option	☐	☐	☐

3. Indicate the best option for how allocations should differ across the Groundwater Management District (GMD).

	Same reduction in water use across the entire GMD.	Larger reductions in water use in areas with greater depletion
Best Option	☐	☐

4. Should a LEMA allow for trading of allocations within areas? Assume that the rules of trading are created so an individual can only sell allocations if they use less water than they used historically.

	Trading allowed	Trading NOT allowed
Best Option	☐	☐

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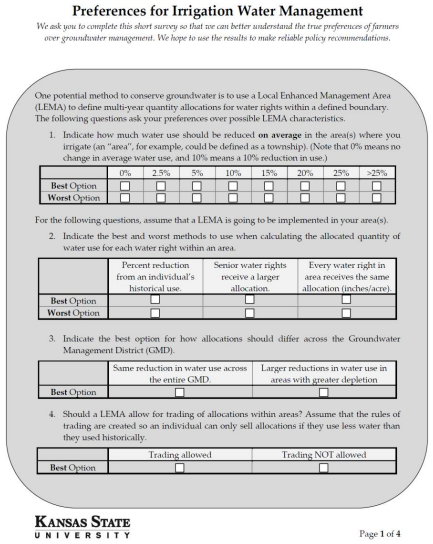
Preferences for GMD 1 Irrigation Water Management

You can complete this survey online using the QR code or url.

http://bit.ly/gmd1s4hf68



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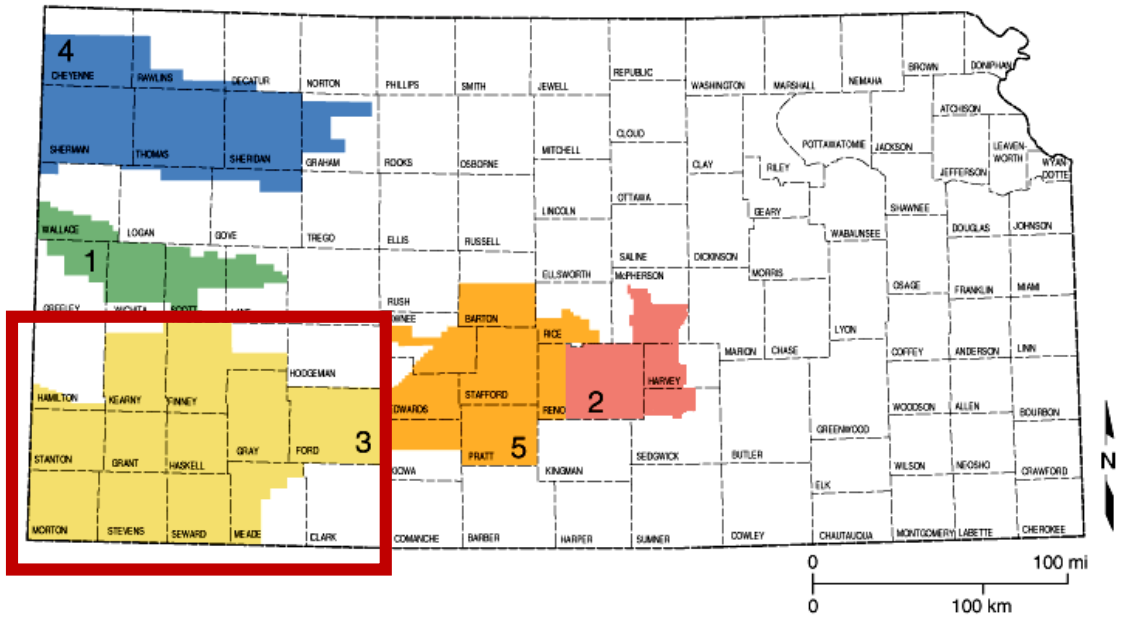

GMD 3 Survey (2019)

Response Rate

- 3,961 surveys delivered
- 653 surveys completed or partially completed
- 16% response rate

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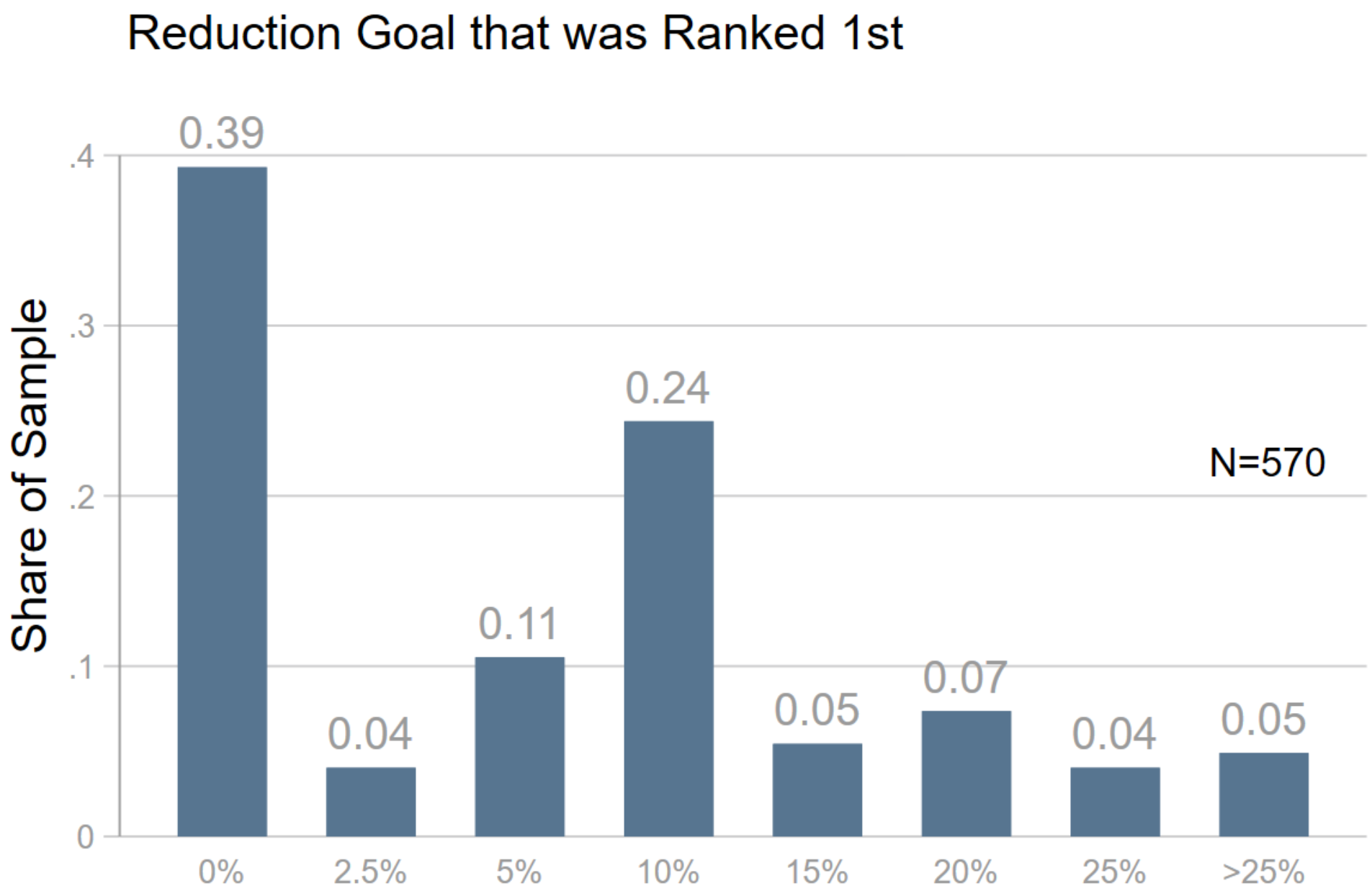
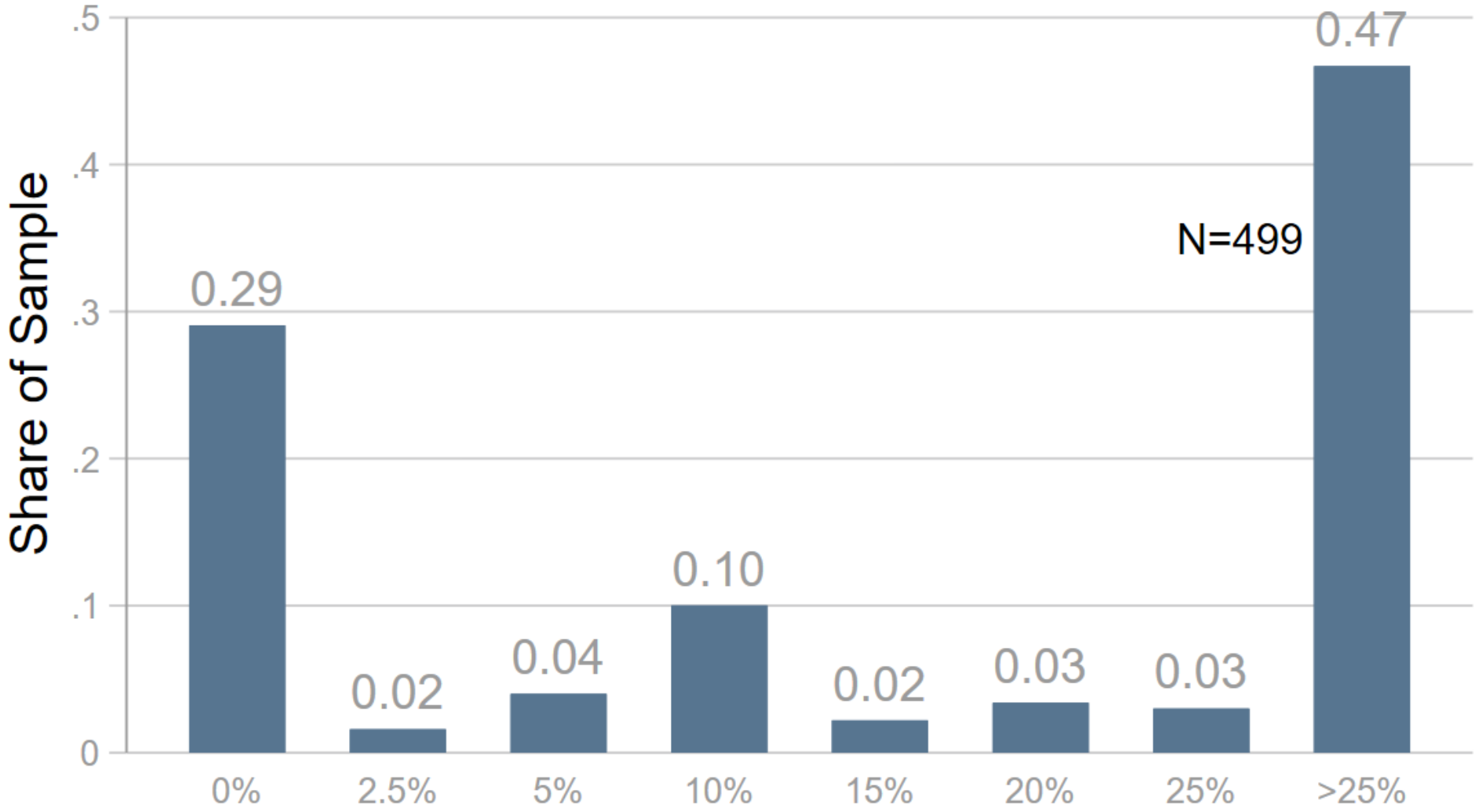
Worst Option	☐	☐	☐	☐	☐	☐	☐	☐


Reduction Goal that was Ranked 1st
Share of Sample
0
.1
.2
.3
.4
0.39
0.04
0.11
0.24
0.05
0.07
0.04
0.05
N=570
0%
2.5%
5%
10%
15%
20%
25%
>25%

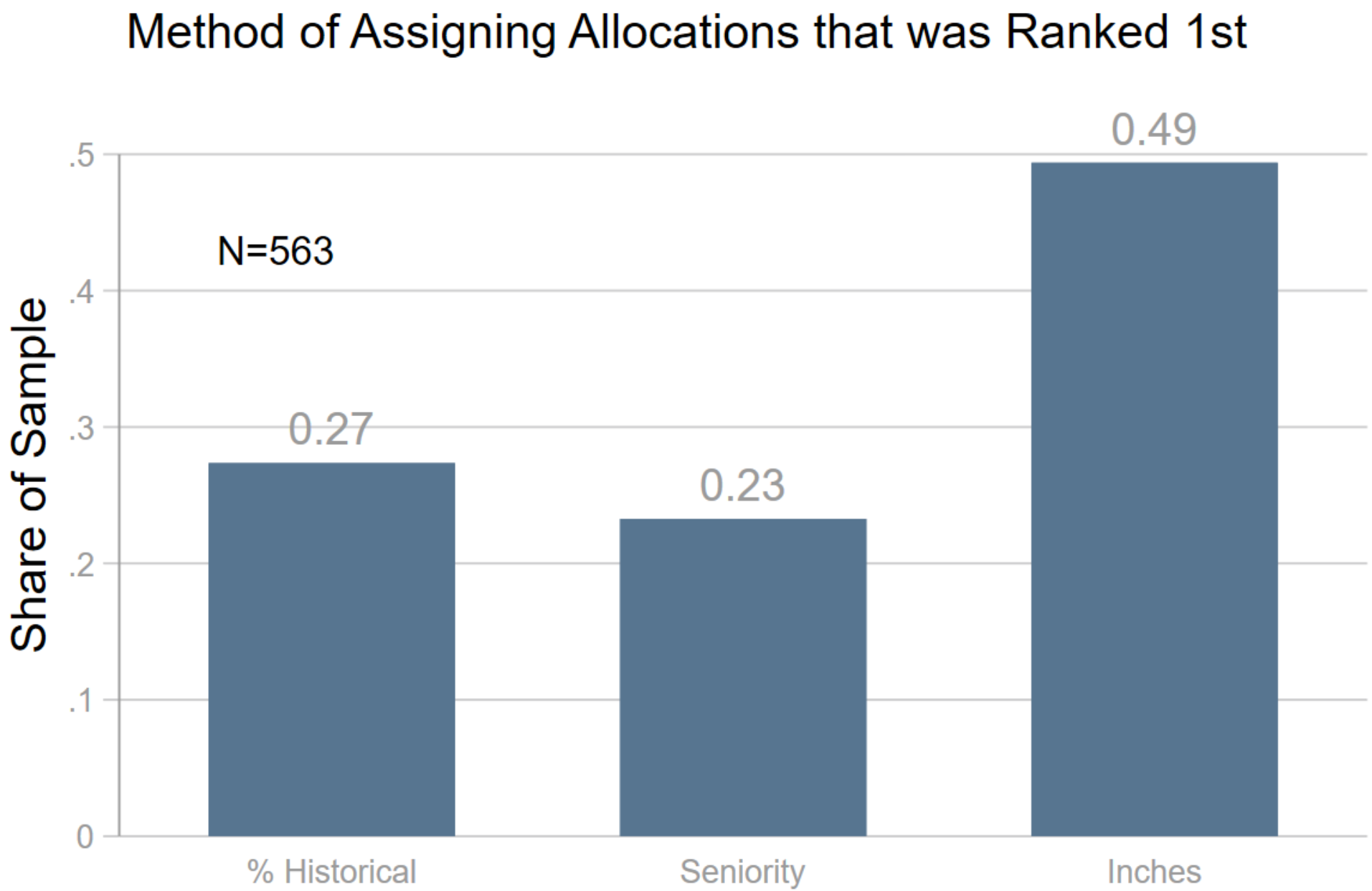
Reduction Goal that was Ranked Worst



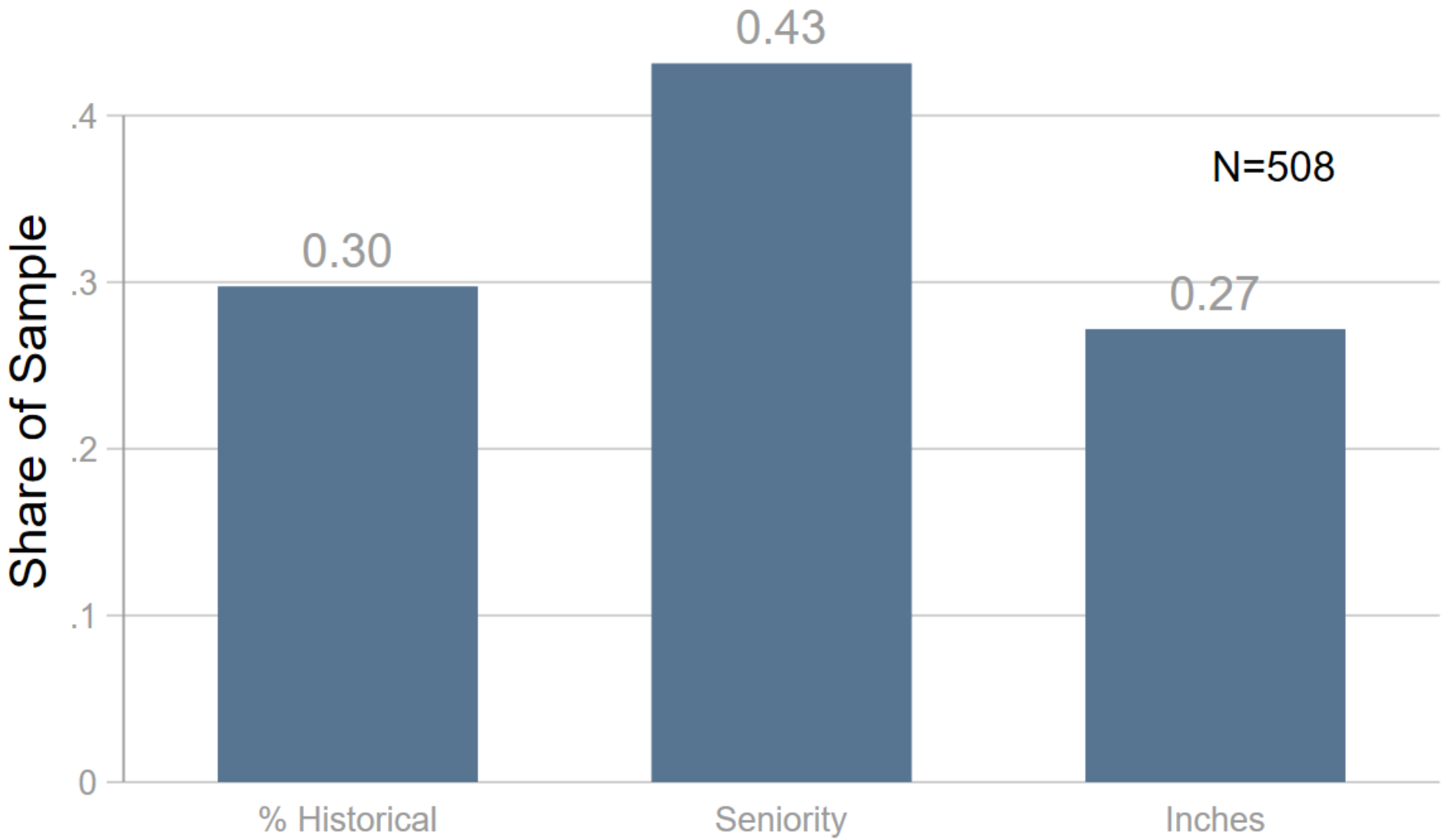
For the following questions, assume that a LEMA is going to be implemented in your area(s).

2. Indicate the best and worst methods to use when calculating the allocated quantity of water use for each water right within an area.

	Percent reduction from an individual's historical use.	Senior water rights receive a larger allocation.	Every water right in area receives the same allocation (inches/acre).
Best Option	☐	☐	☐
Worst Option	☐	☐	☐


Method of Assigning Allocations that was Ranked 1st
Share of Sample
.5
.4
.3
.2
.1
0
N=563
0.27
0.23
0.49
% Historical
Seniority
Inches

Method of Assigning Allocations that was Ranked Worst



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Preferences for GMD 1
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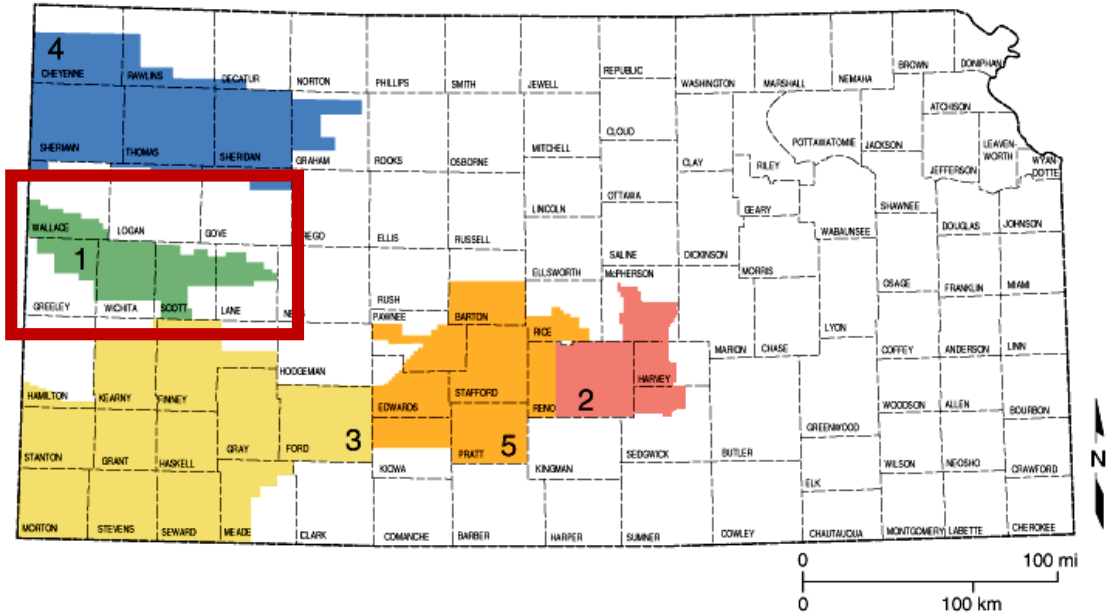


GMD 1 Survey (2021)

Response Rate

- 832 surveys delivered
- 184 surveys completed or partially completed
- 22% response rate

LEMA Questions

1. Choice Scenario #1

	LEMA	No LEMA
Goal for Reduction in Water Use	10%	Water use only limited by existing water rights.
Method of Assigning Allocations	**Inches** using **Average** Irrigated Acres	
I would prefer… (check one)	☐	☐

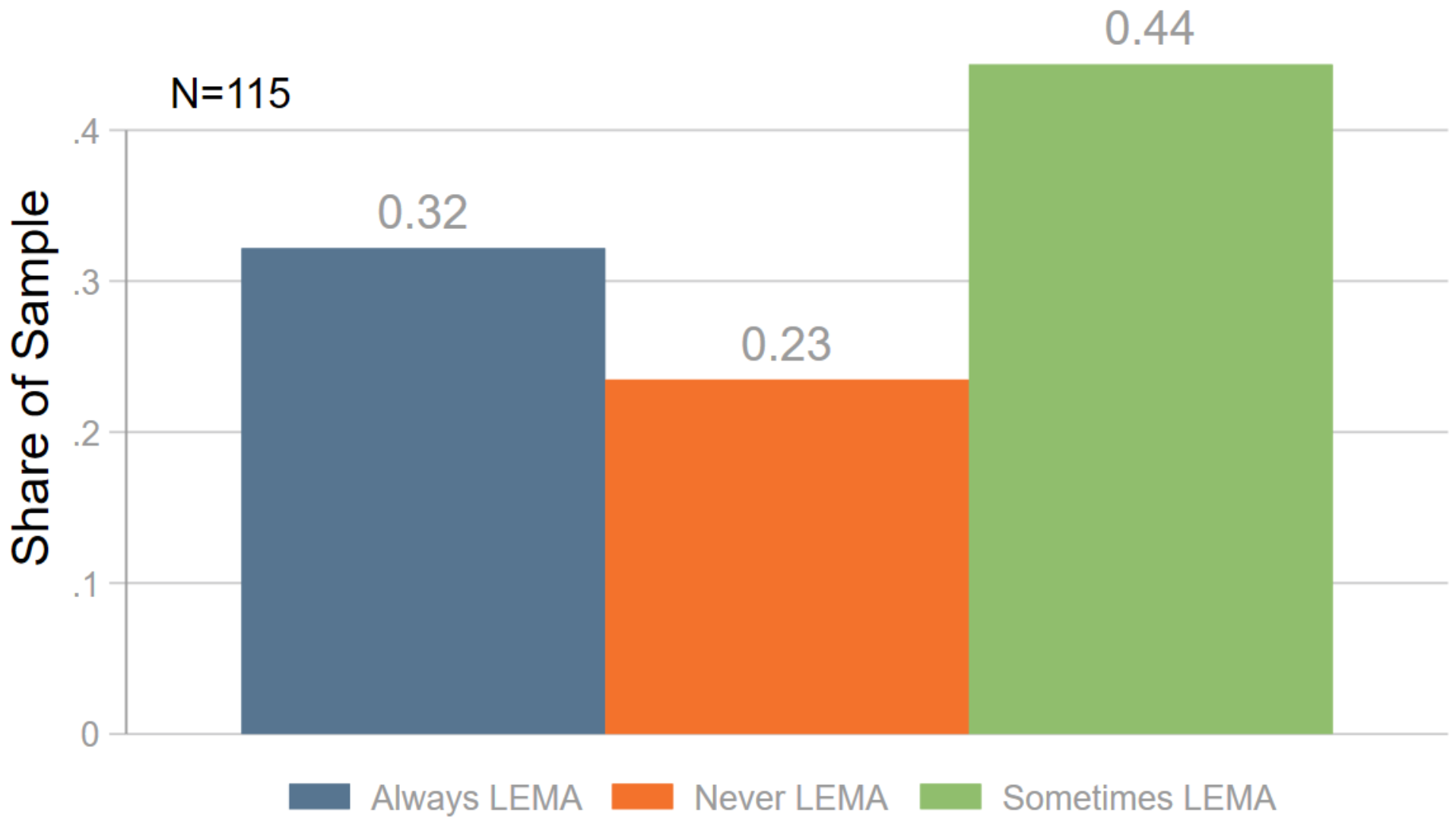
LEMA Scenarios

Goal for Reduction in Use
10%
15%
20%
25%

Allocation Method	Description
Percent of Historical Water Use	Allocation is equal to a percent of the average volume pumped in a recent multi-year period.
Percent of Water Right Authorized Quantity	Allocation is equal to a percent of the water right's authorized (certified) quantity.
Inches using Average Irrigated Acres	Allocation = Inches × LEMA Acres where LEMA Acres are calculated as the average of irrigated acres for a recent, multi-year period.
Inches using Maximum Irrigated Acres	Allocation = Inches × LEMA Acres where LEMA Acres are calculated as the maximum of irrigated acres for a recent, multi-year period.
Inches using Water Right Authorized Acres	Allocation = Inches × LEMA Acres where LEMA Acres are the authorized acres according to the water right.

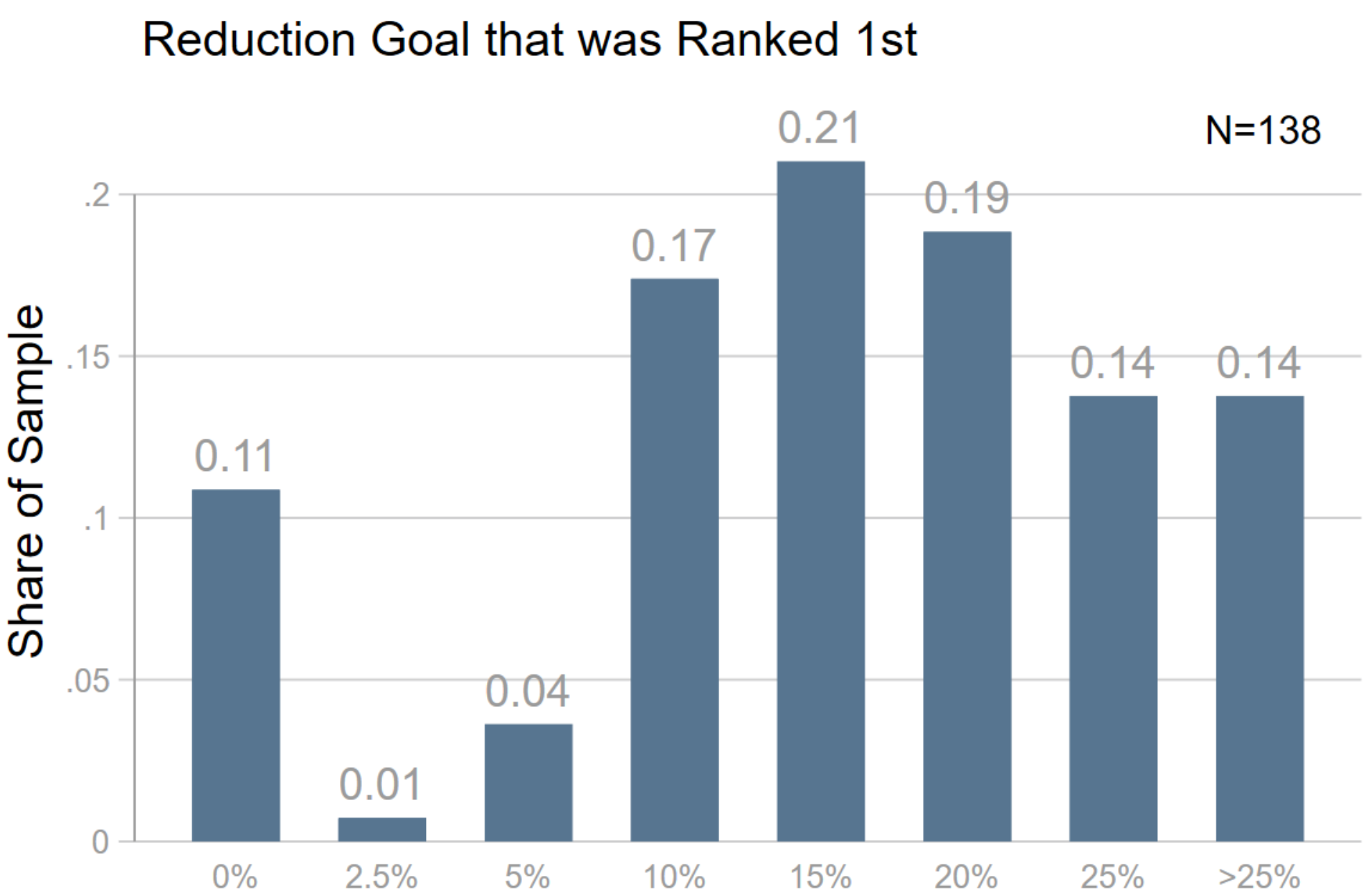
1. Most respondents support a LEMA.

Selection Across all Choice Scenarios



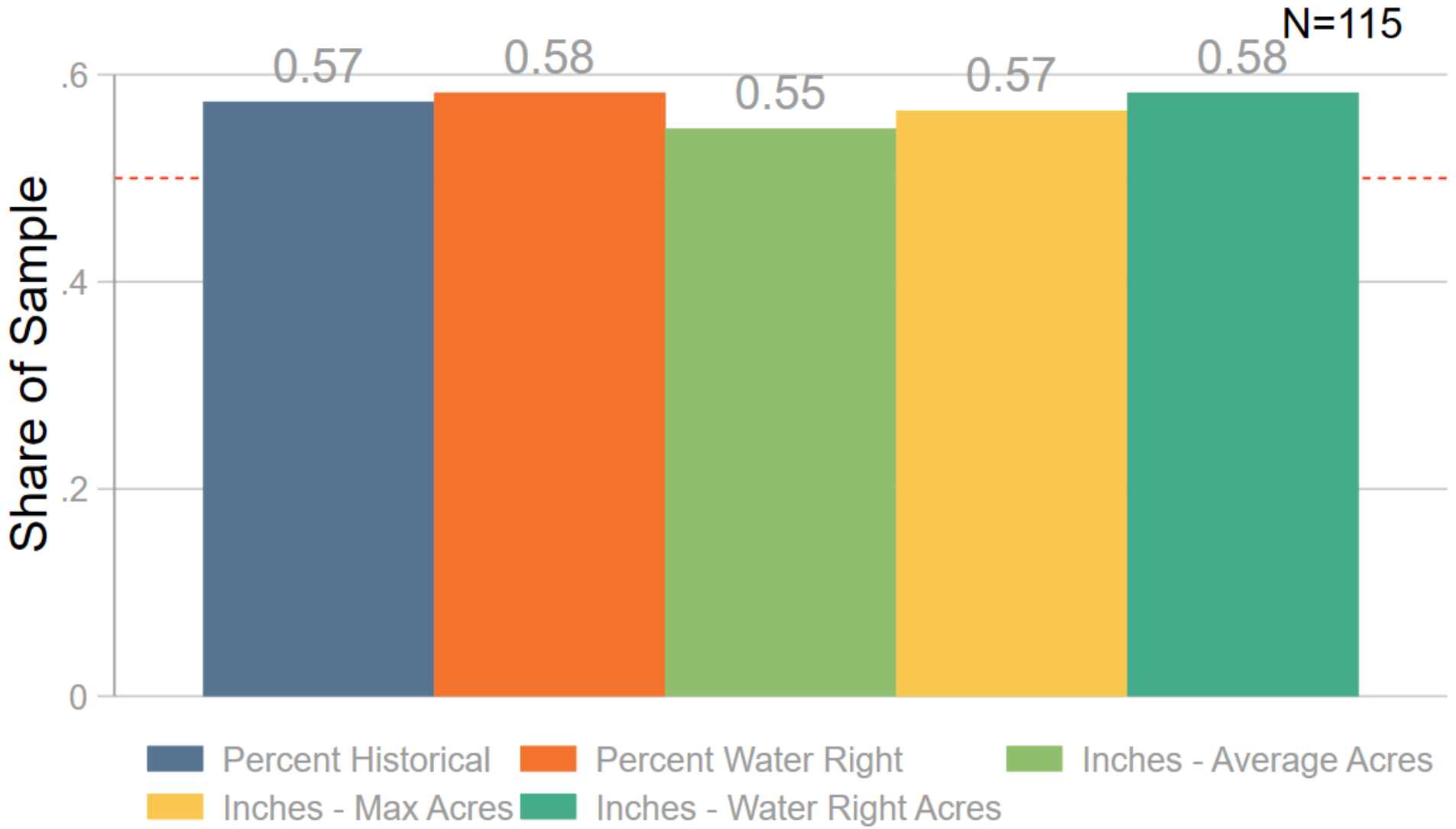
11. Indicate below what you think is the 1st best, 2nd best, and worst option for the overall goal of reductions in water use in the area where you irrigate.

	0%	2.5%	5%	10%	15%	20%	25%	>25%
1st Best	☐	☐	☐	☐	☐	☐	☐	☐
2nd Best	☐	☐	☐	☐	☐	☐	☐	☐
Worst	☐	☐	☐	☐	☐	☐	☐	☐

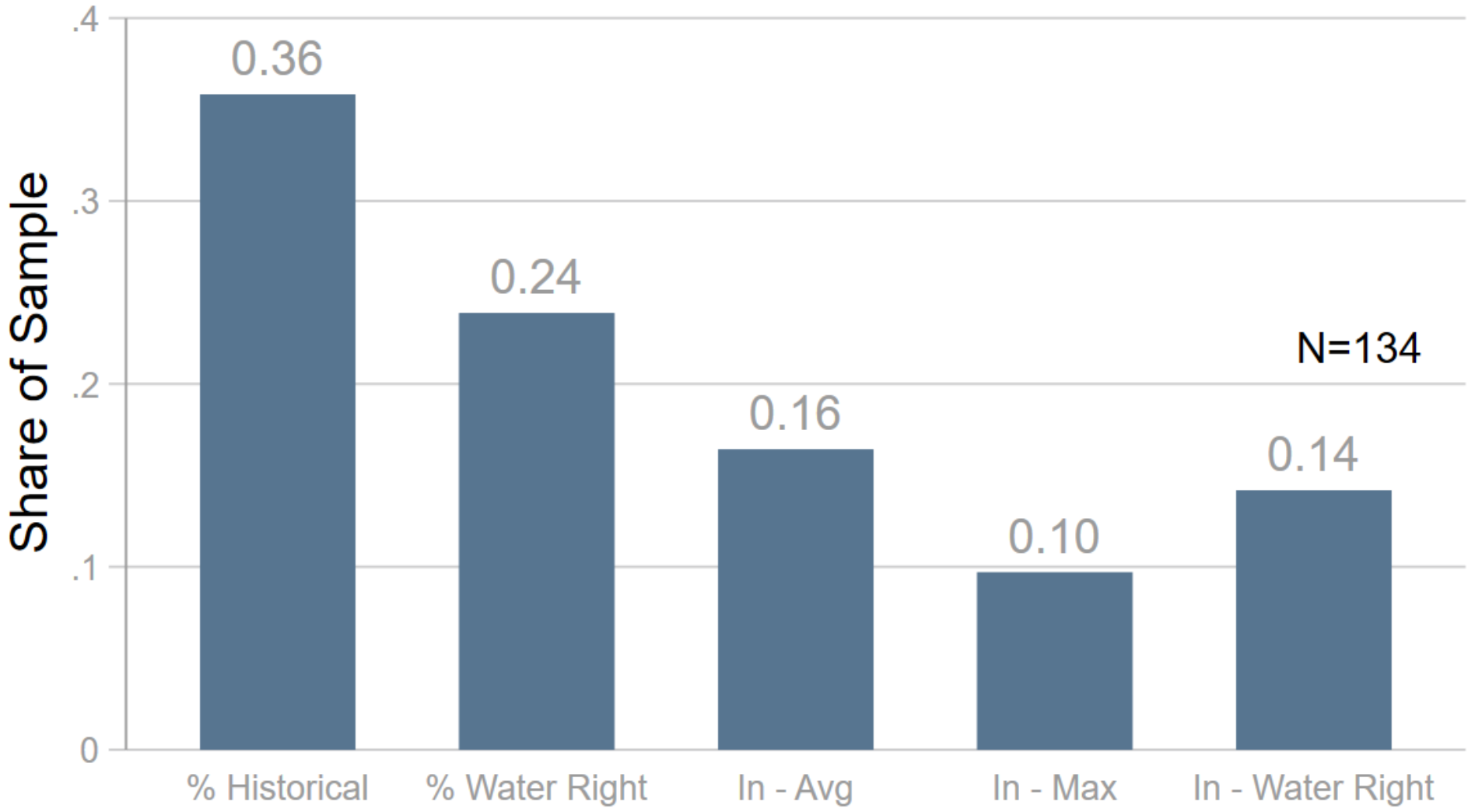

Reduction Goal that was Ranked 1st
N=138
Share of Sample
.2
.15
.1
.05
0
0.11
0.01
0.04
0.17
0.21
0.19
0.14
0.14
0%
2.5%
5%
10%
15%
20%
25%
>25%

2. No clear most preferred method of assigning allocations.

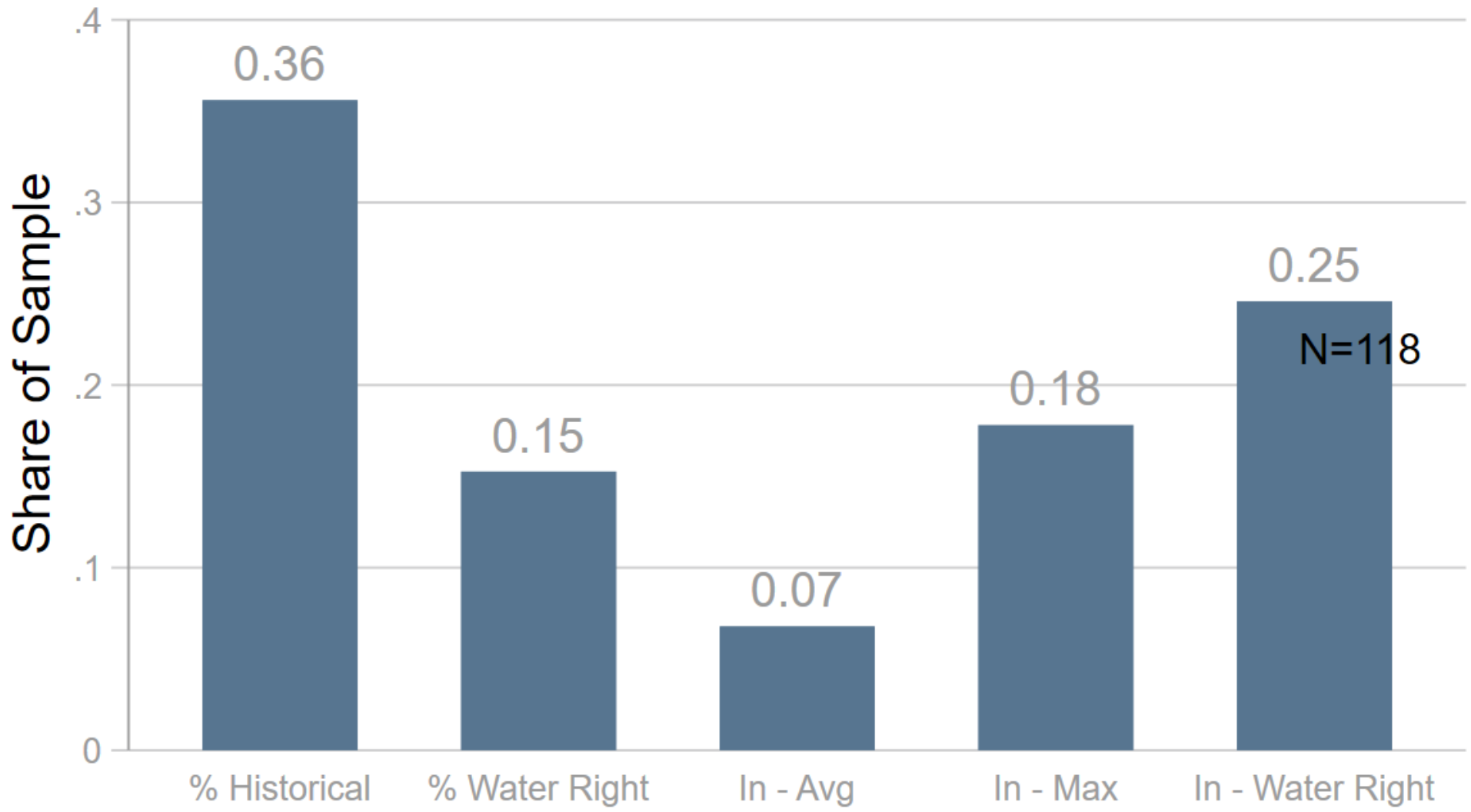
Selected LEMA for each Method of Assigning Allocations



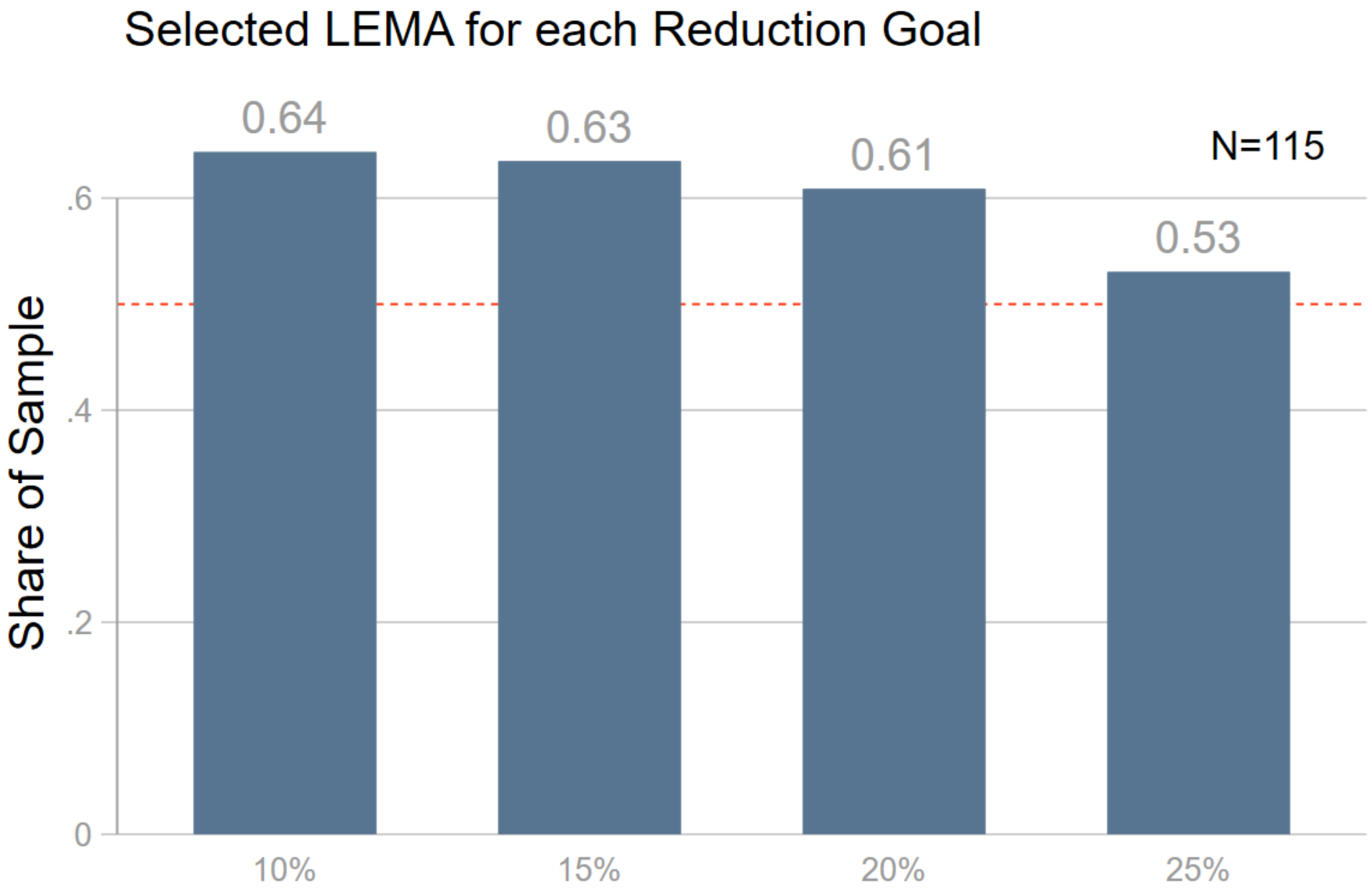
Method of Assigning Allocations that was Ranked 1st



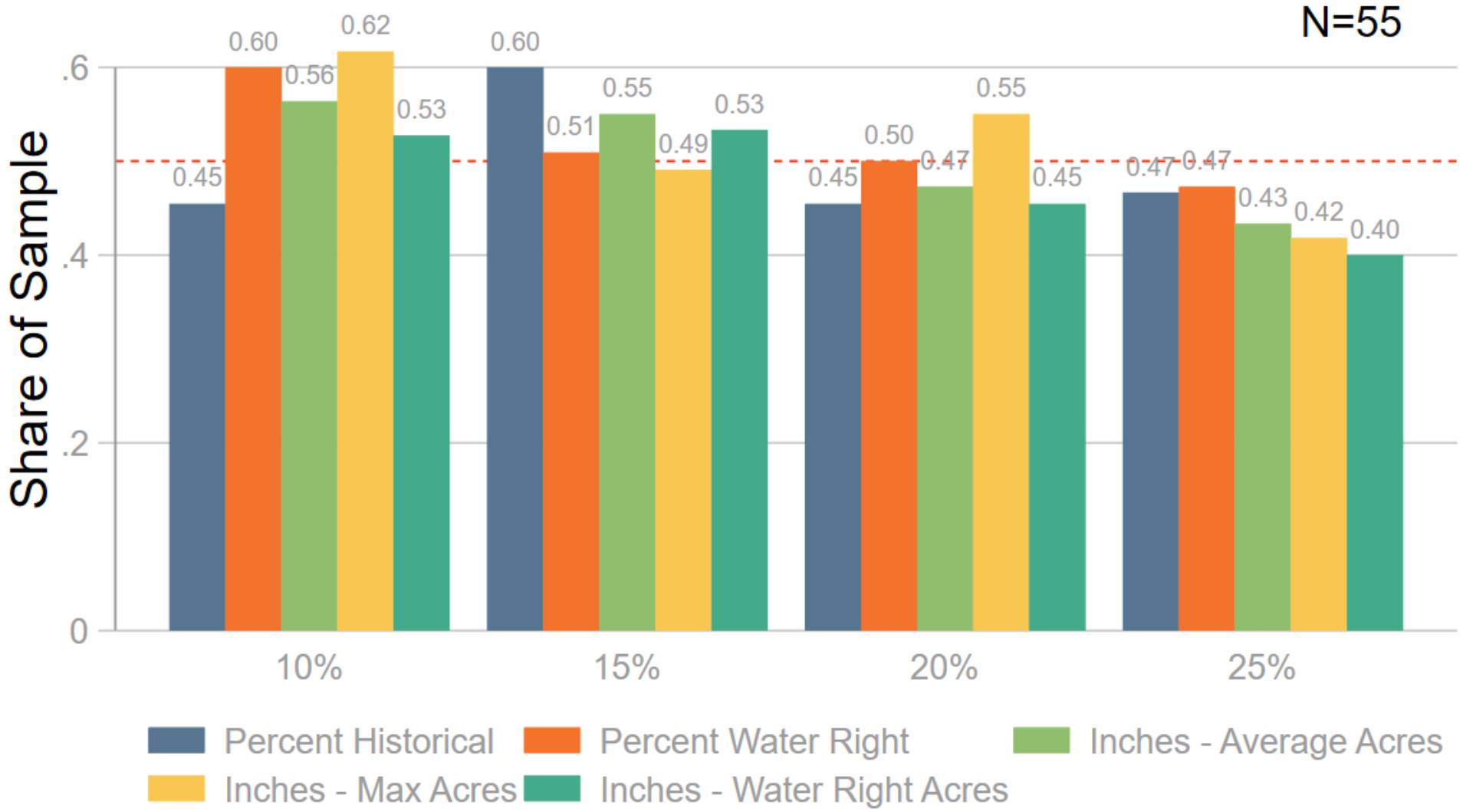
Method of Assigning Allocations that was Ranked Worst



3. Support for LEMA decreases about 10-20 percentage points once allocation method is defined.


Selected LEMA for each Reduction Goal
0.64
0.63
0.61
0.53
N=115
.6
.4
.2
0
Share of Sample
10%
15%
20%
25%

Selected LEMA for Each Choice Scenario



Summary of Regression Results

	Preferred Reduction in Water Use
Resource Characteristics	
Saturated Thickness ↑	↓
Density of Wells ↑	↑
Farmer Characteristics	
Proportion of Farm Irrigated ↑	↓
Owner-operator rather than tenant or landlord	↑
Agree with statement that water rights are private property	↓
Historical depth applied	-
Age	-
Education	-

Questions?

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