Nebraska Rangeland Survey 2021 - Summary Statistics of Network Data

About the network part of the survey

Respondents (aka egos) were asked to name up to 15 people (aka alters) involved in rangeland management and the operations of their ranch or farm, including people with whom they work, people with whom they communicate, and people from which they seek advice. After ego named alters, we asked a series of questions about each alter, numbered 1-15.

q13 - Size (aka degree)

The number of people each respondent listed

variable	n	mean	sd	min	median	max
Size	338	4.72	3	1	4	15

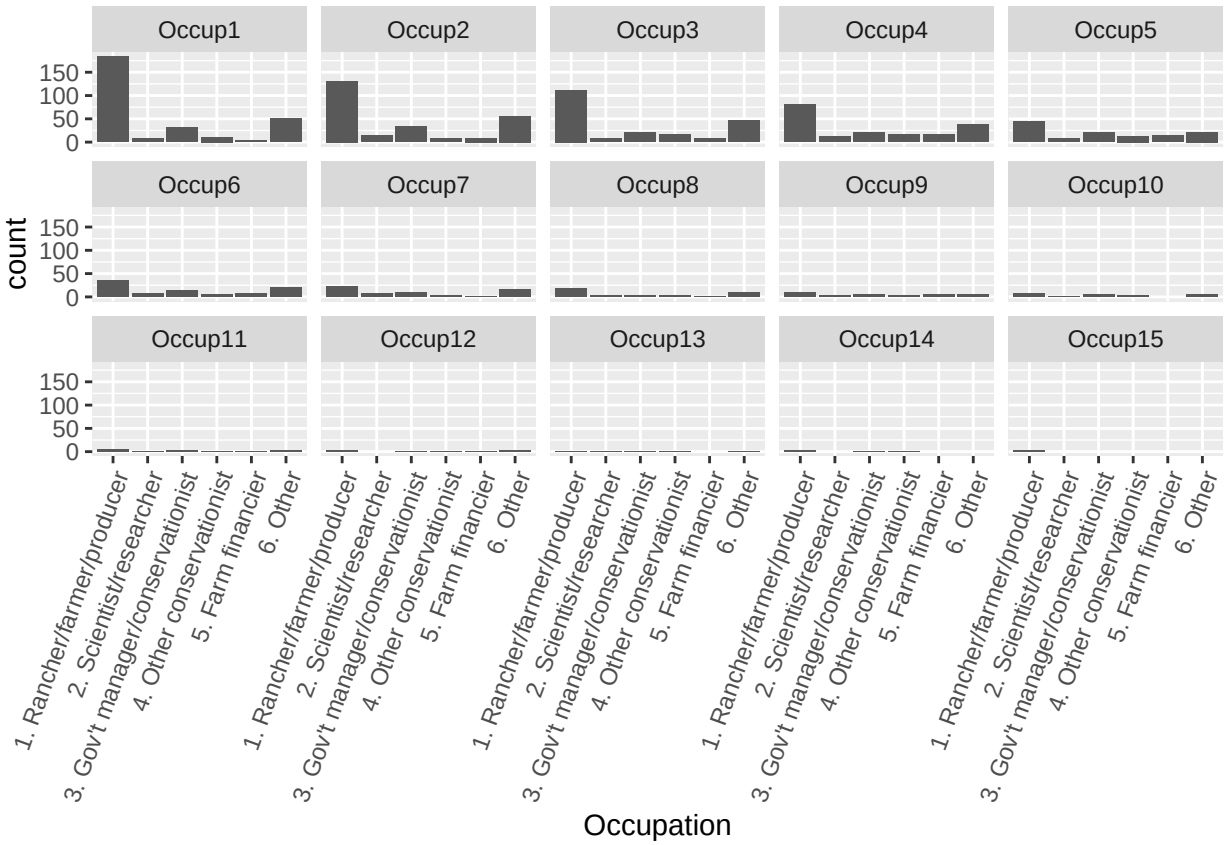
Size	n	percent
1	41	12.13%
2	48	14.20%
3	28	8.28%
4	77	22.78%
5	37	10.95%
6	32	9.47%
7	24	7.10%
8	15	4.44%
9	10	2.96%
10	6	1.78%
11	6	1.78%
12	7	2.07%
14	3	0.89%
15	4	1.18%

q14 - Primary occupation

What is each person's primary occupation?

OccupX corresponds to the occupation of alter X. Each ego was able to list up to 15 alters, thus there is the possiblity of Occup1 to Occup15 for each ego.
(1 = rancher/farmer/producer, 2 = scientist/researcher, 3 = government agency manager/conservationist, 4 = other conservation professional, 5 = farm financier, 6 = other)

variable	n	mode
Occup1	287	1
Occup2	250	1
Occup3	210	1
Occup4	183	1
Occup5	123	1
Occup6	89	1
Occup7	62	1
Occup8	41	1
Occup9	33	1
Occup10	24	1
Occup11	17	1
Occup12	10	1
Occup13	8	1
Occup14	7	1
Occup15	4	1

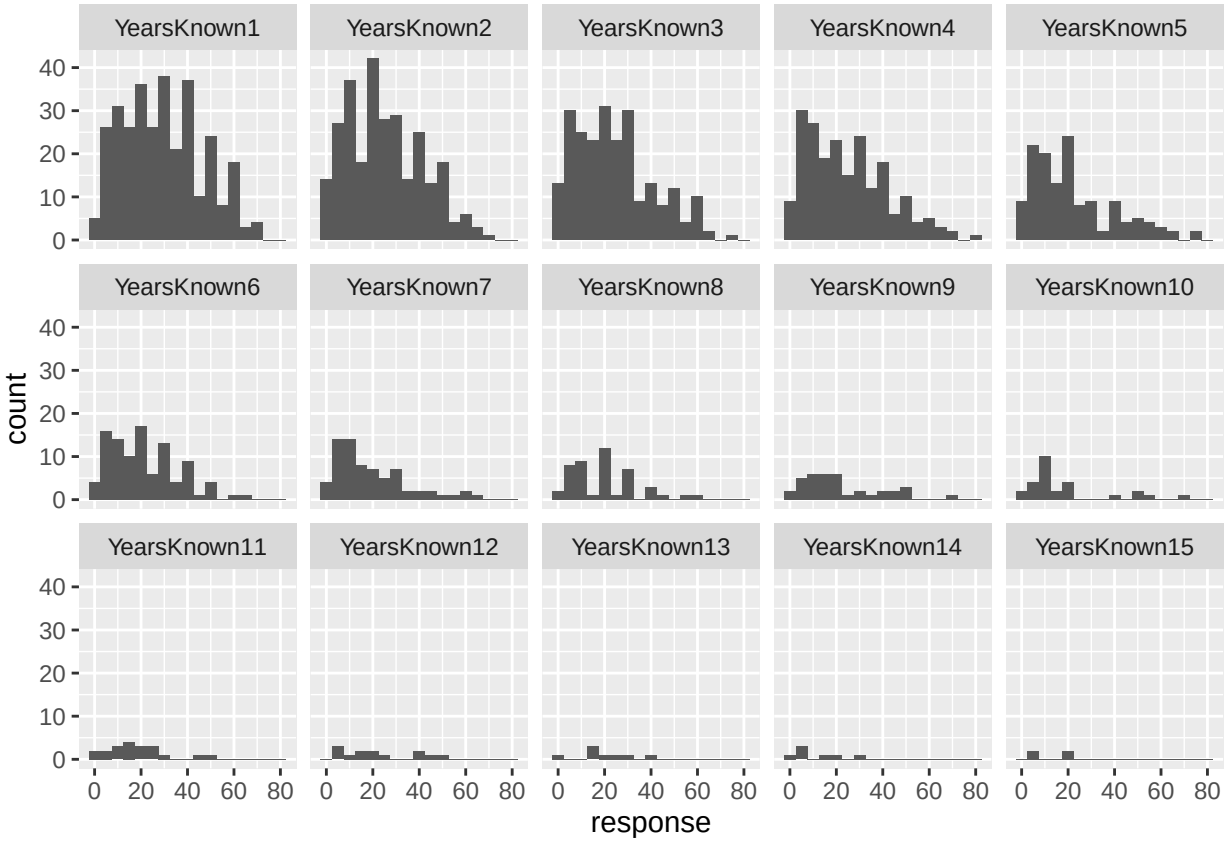


q15 - Years known

How many years have you known each person?

YearsKnownX corresponds to the number of years ego has known alter X. Each ego was able to list up to 15 alters, thus there is the possiblity of YearsKnown1 to YearsKnown15 for each ego.

variable	n	mean	sd	min	median	max
YearsKnown1	313	29.51	16.96	1	30.0	71
YearsKnown2	279	25.20	16.15	1	23.0	70
YearsKnown3	234	24.11	16.70	1	20.0	75
YearsKnown4	208	24.42	17.21	1	21.0	78
YearsKnown5	136	22.00	17.53	1	20.0	75
YearsKnown6	100	21.22	14.20	1	20.0	66
YearsKnown7	70	19.13	15.70	2	15.0	65
YearsKnown8	46	19.48	13.84	2	20.0	60
YearsKnown9	37	22.00	16.77	2	15.0	70
YearsKnown10	27	18.44	17.88	2	12.0	70
YearsKnown11	20	18.10	12.48	1	15.0	48
YearsKnown12	13	22.62	16.01	3	20.0	49
YearsKnown13	8	19.75	11.16	2	17.5	40
YearsKnown14	7	12.43	10.66	2	7.0	32
YearsKnown15	4	12.50	8.81	3	13.5	20



q16 - Information types

What kinds of information do you receive from each person?

Each ego was able to check all options (out of 5) that apply. The data are organized as dummy variables, such that there is a 0/1 variable for each information type and each alter, leading to 5*15=75 variables. Here, we summarized the data to show the number of alters that provide each information type overall.

Type	sum
Ranch or farm operations	914
Ranch or farm technology	509
Conservation practices (prescribed burning, weed control, etc.	589
Financial or insurance programs (CRP, EQIP, etc.)	327
Non-operations	273

In addition, we created summary information variables for each alter (InfoX). InfoX corresponds to the amount of information types that ego received from alter X. For example, if ego received information about ranch operations and conservation practices from alter 1, Info1 would equal 2. These variables can be thought of as a measure of multiplexity (typically multiplexity is used to describe multiple kinds of relationships with an alter).

variable	n	mean	sd	min	median	max
Info1	307	1.92	1.22	1	1.0	5
Info2	270	1.75	1.05	1	1.0	5
Info3	228	1.67	1.04	1	1.0	5
Info4	208	1.75	1.13	1	1.0	5
Info5	133	1.65	0.95	1	1.0	5
Info6	99	1.80	1.07	1	1.0	5
Info7	70	1.73	1.02	1	1.0	5
Info8	46	1.87	1.07	1	1.5	5
Info9	37	1.73	1.02	1	1.0	5
Info10	26	1.85	1.19	1	1.0	5
Info11	20	1.50	0.76	1	1.0	3
Info12	12	1.42	0.67	1	1.0	3
Info13	9	2.22	1.72	1	1.0	5
Info14	7	1.86	1.07	1	2.0	4
Info15	4	2.25	0.96	1	2.5	3

Overall, the average amount of information types is shown below.

n	mean	sd	min	median	max
1476	1.77	1.09	1	1	5

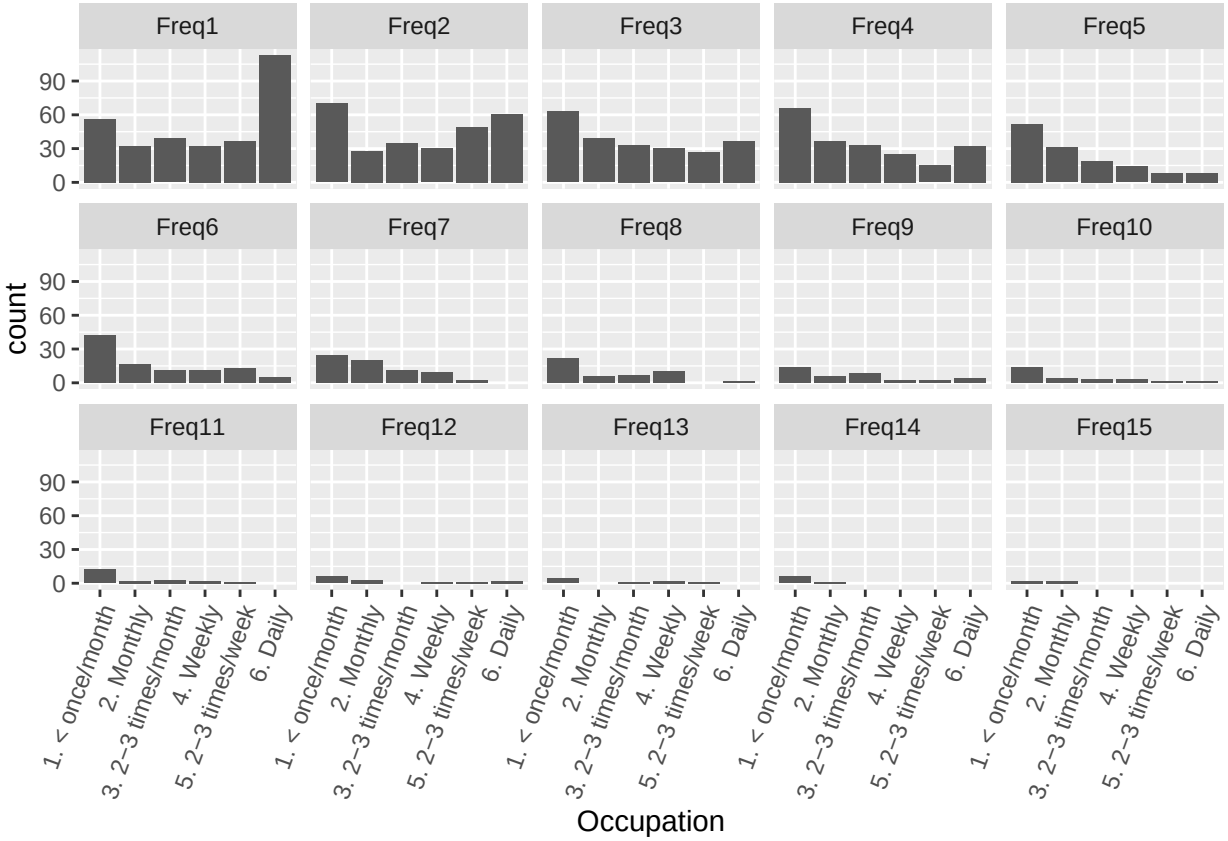
q17 - Frequency

How frequently do you interact with each person?

FreqX corresponds to the how often ego interacts with alter X. Each ego was able to list up to 15 alters, thus there is the possiblity of Freq1 to Freq15 for each ego.

(1 = < once/month, 2 = monthly, 3 = 2-3 times/month, 4 = weekly, 5 = 2-3 times/week, 6 = daily)
Note: These codes were entered differently in the original dataset. We recoded them so that frequency increases in magnitude.

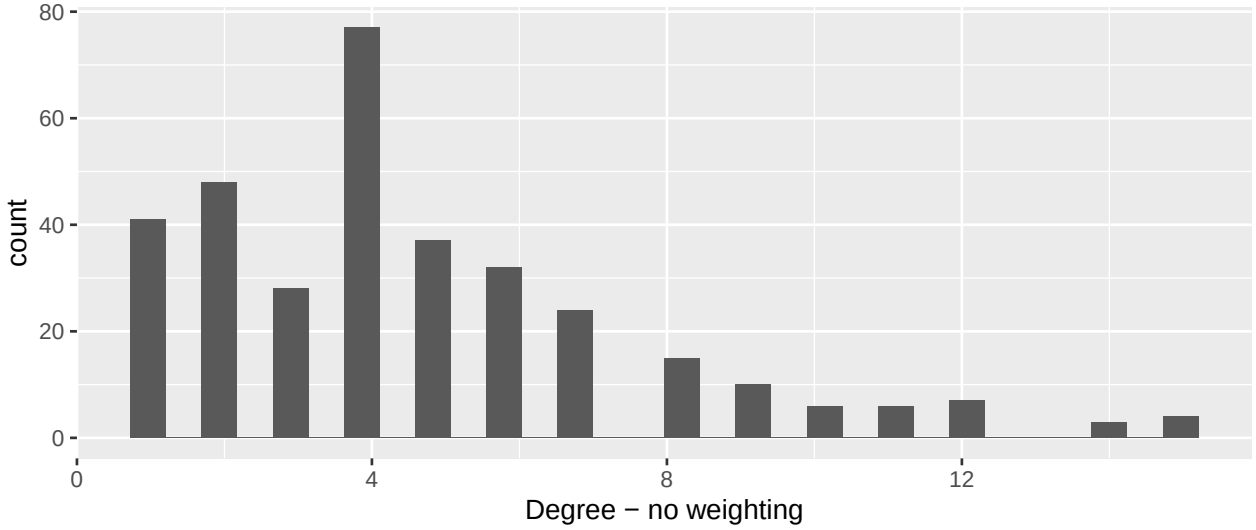
variable	n	mean	sd	min	median	max
Freq1	309	3.97	1.94	1	4.0	6
Freq2	273	3.52	1.93	1	4.0	6
Freq3	229	3.13	1.82	1	3.0	6
Freq4	208	2.91	1.80	1	3.0	6
Freq5	132	2.39	1.53	1	2.0	6
Freq6	98	2.51	1.66	1	2.0	6
Freq7	66	2.17	1.16	1	2.0	5
Freq8	46	2.20	1.36	1	2.0	6
Freq9	36	2.56	1.70	1	2.0	6
Freq10	26	2.08	1.47	1	1.0	6
Freq11	20	1.90	1.29	1	1.0	5
Freq12	13	2.54	1.98	1	2.0	6
Freq13	8	2.50	1.69	1	2.0	5
Freq14	7	1.14	0.38	1	1.0	2
Freq15	4	1.50	0.58	1	1.5	2



Degree (aka size)

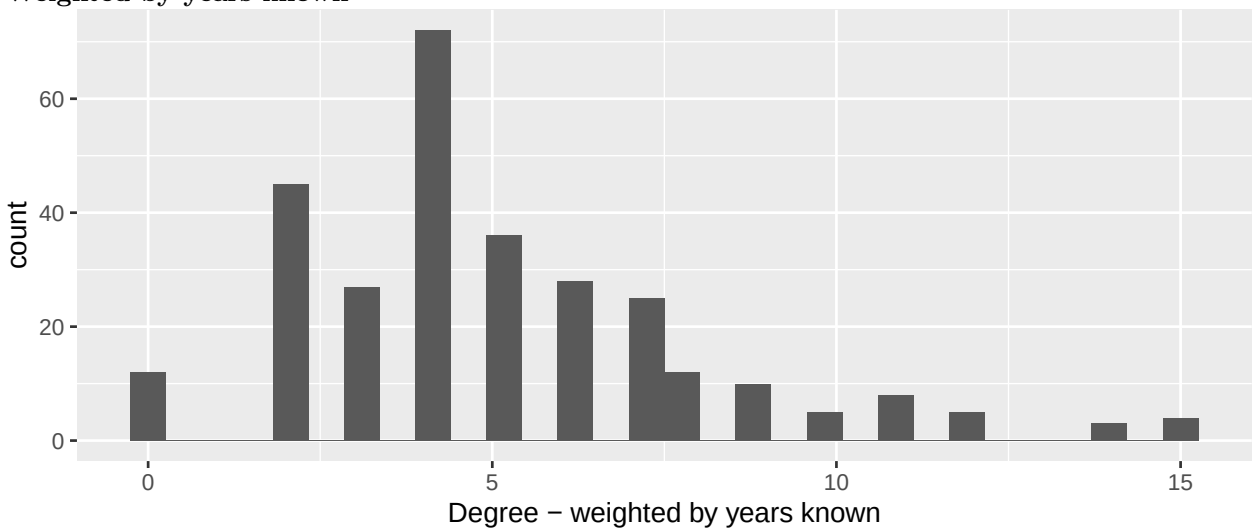
Note: Some egos listed alters but then did not fill out the rest of the network questions. In those cases, we recorded the number of alters (degree) per ego but we are unable to weight the degree based on other network questions for these egos. Thus, you'll see below that the sample size diminishes for weighted degree compared to unweighted degree and the minimum drops to 0.

No weighting



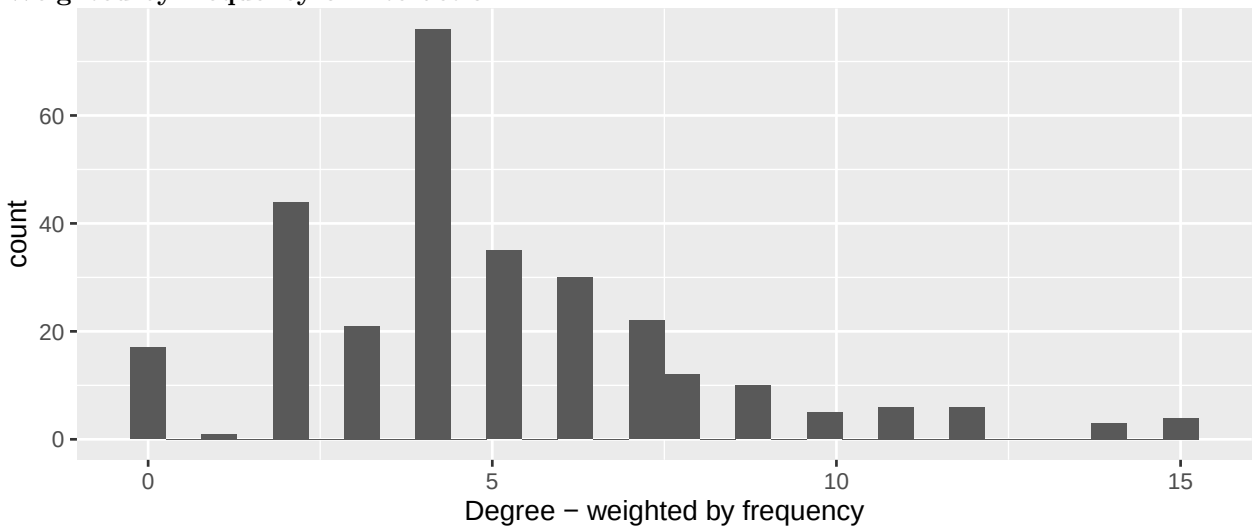
n	mean	sd	min	median	max
338	4.72	3	1	4	15

Weighted by years known



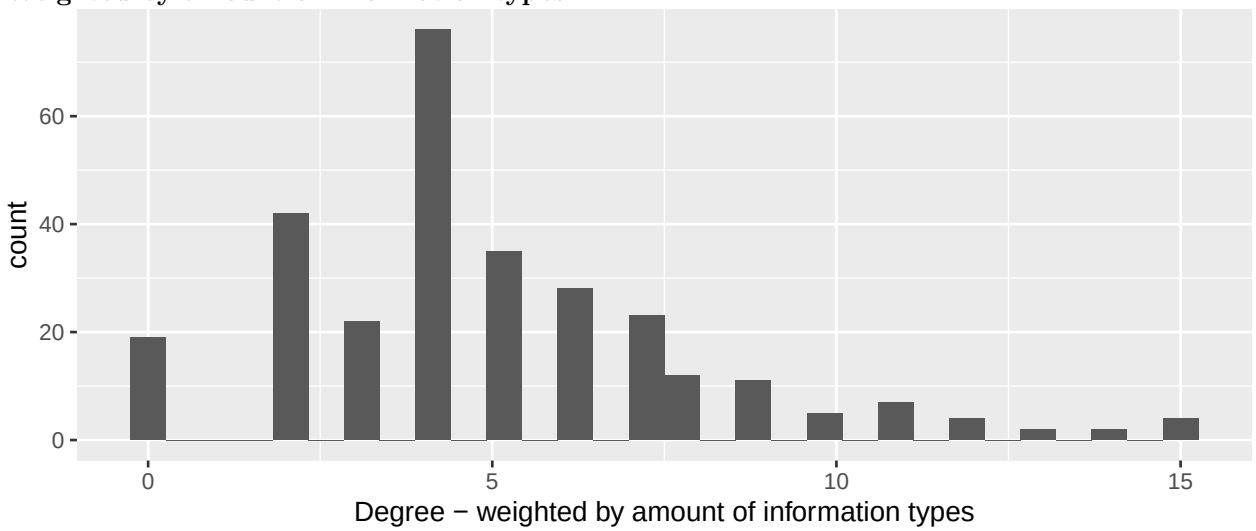
n	mean	sd	min	median	max
292	5.03	2.98	0	4	15

Weighted by frequency of interaction



n	mean	sd	min	median	max
292	4.93	3.02	0	4	15

Weighted by amount of information types



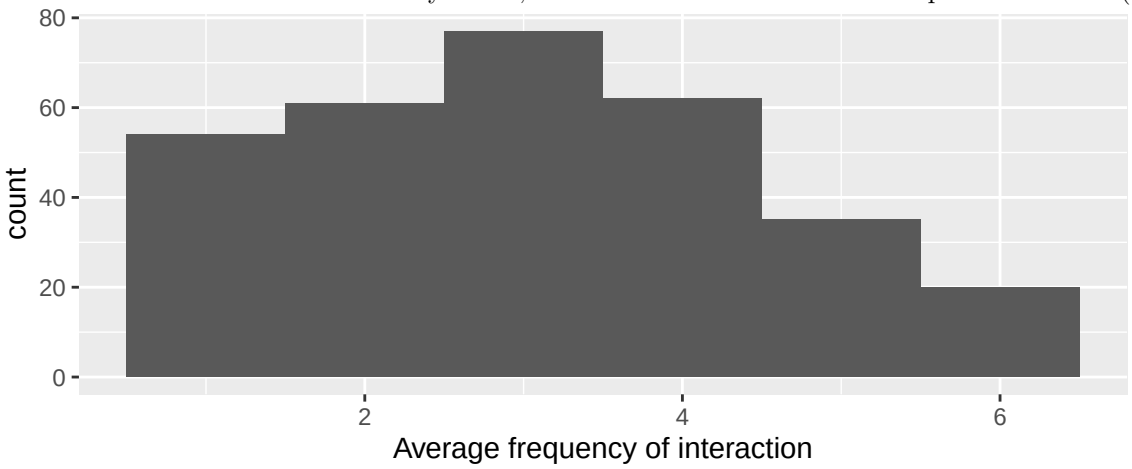
n	mean	sd	min	median	max
292	4.94	3.04	0	4	15

Strength of ties

Average tie strength - Frequency of interaction

(1 = < once/month, 2 = monthly, 3 = 2-3 times/month, 4 = weekly, 5 = 2-3 times/week, 6 = daily)
Note: These codes were entered differently in the original dataset. We recoded them so that frequency increases in magnitude.

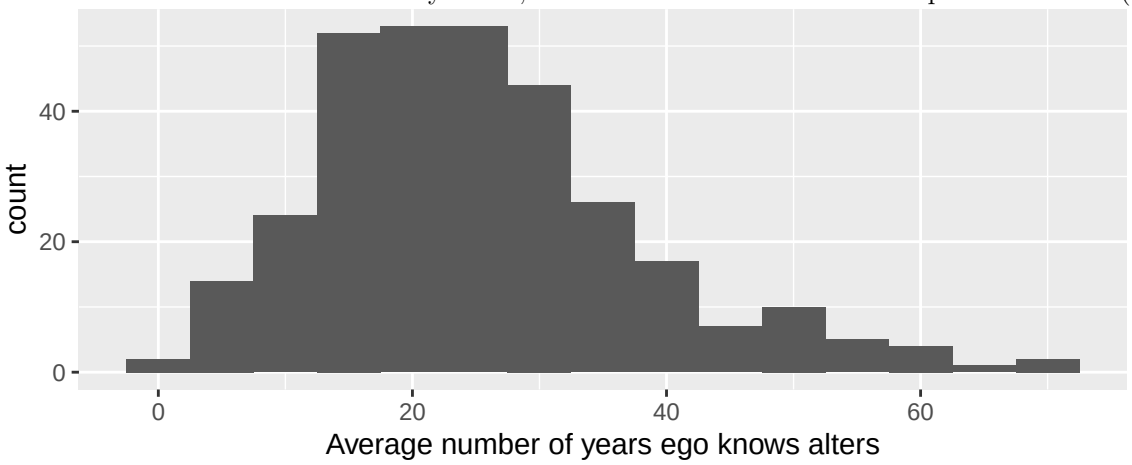
For each ego, we averaged the frequency that they engage with their alters. The average was calculated based on the number of alters they listed, not the total number of alters possible to list (up to 15).



n	mean	sd	min	median	max
309	3.13	1.44	1	3	6

Average tie strength - Years known

For each ego, we averaged the number of years they've known their alters. The average was calculated based on the number of alters they listed, not the total number of alters possible to list (up to 15).



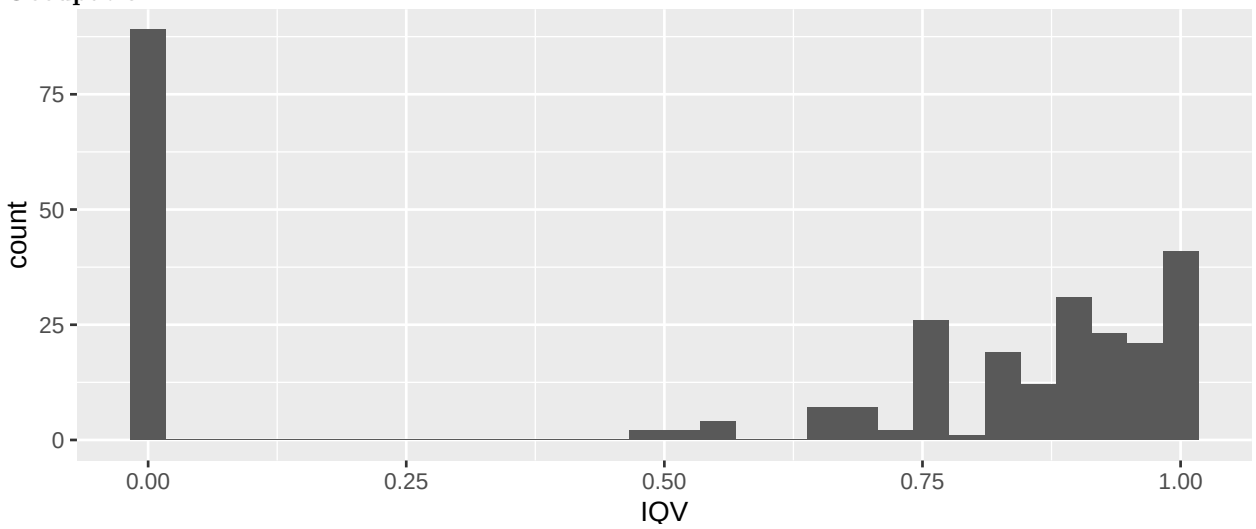
n	mean	sd	min	median	max
314	25.32	12.69	1.5	23.75	71

Alter analysis

Heterogeneity - categorical variables

Index of qualitative variation (IQV) varies from 0 to 1. When all cases are in one category, there is no variation and IQV = 0. When cases are evenly dispersed across categories, variation is at its highest and IQV = 1.

Occupation

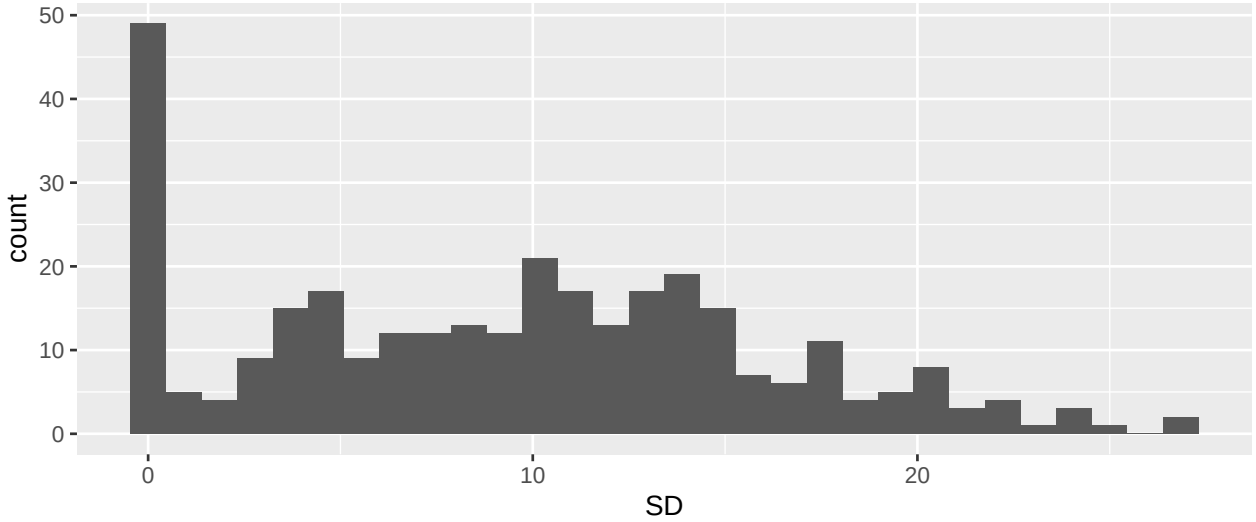


n	mean	sd	min	median	max
287	0.6	0.41	0	0.82	1

Heterogeneity - continuous and ordinal variables

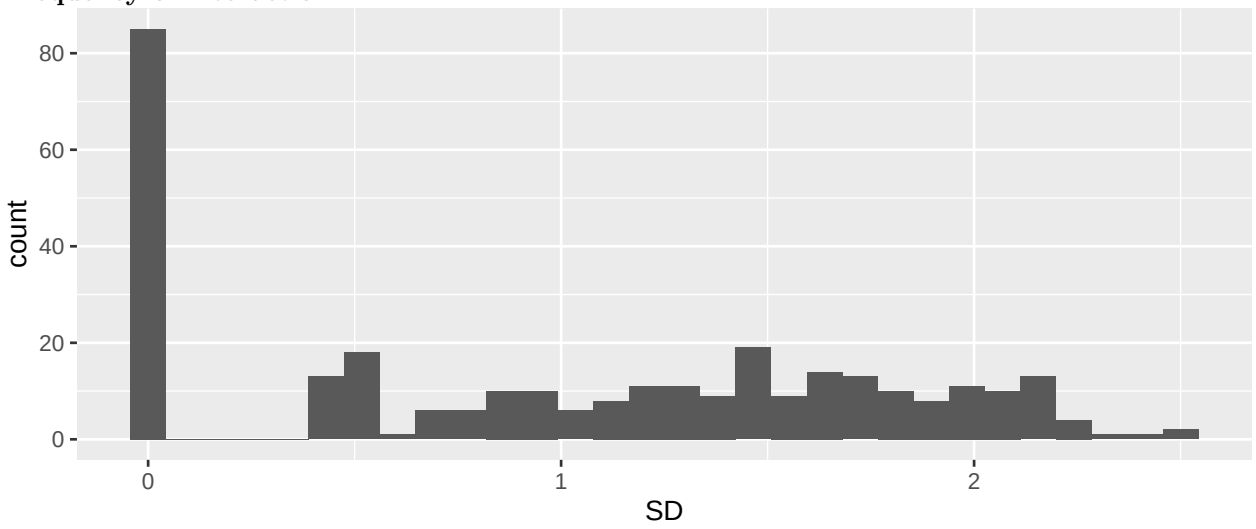
We used standard deviation to measure heterogeneity for continuous and ordinal variables.

Years known



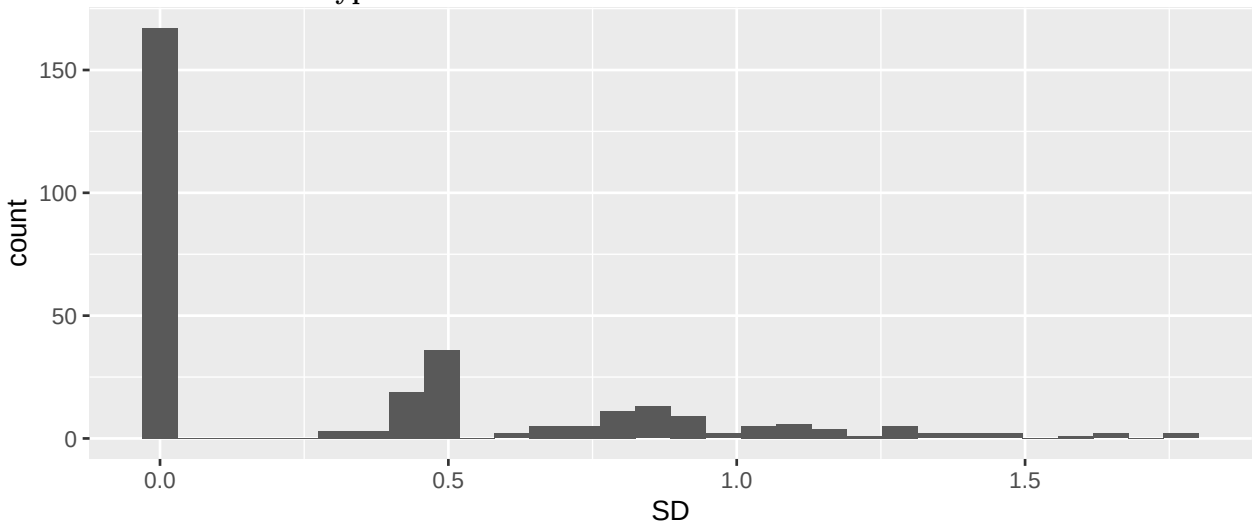
n	mean	sd	min	median	max
314	9.34	6.58	0	9.74	26.84

Frequency of interaction



n	mean	sd	min	median	max
309	0.99	0.77	0	1.07	2.5

Amount of information types

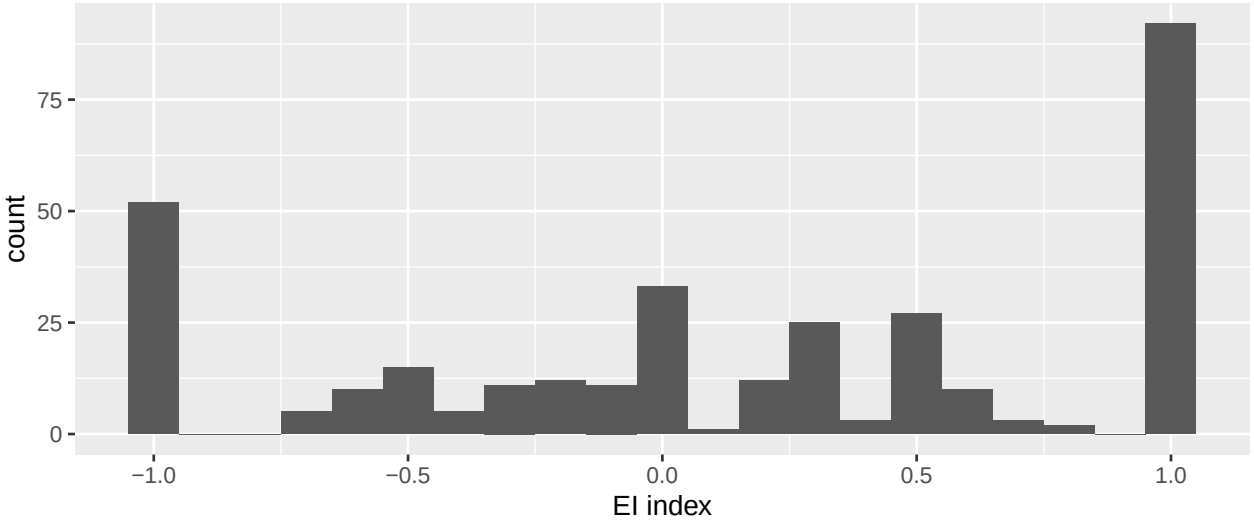


n	mean	sd	min	median	max
307	0.35	0.45	0	0	1.77

Ego-alter similarity (homophily)

Occupation

Assuming that all respondents are ranchers, farmers, or producers based on how we purchased the sample, we can determine how similar they are in terms of occupation with their alters. The external-internal (EI) index is one measure of homophily. The EI index ranges from -1 to +1. When all ties are internal to the group, EI = -1. When all ties are external to the group, EI = +1.

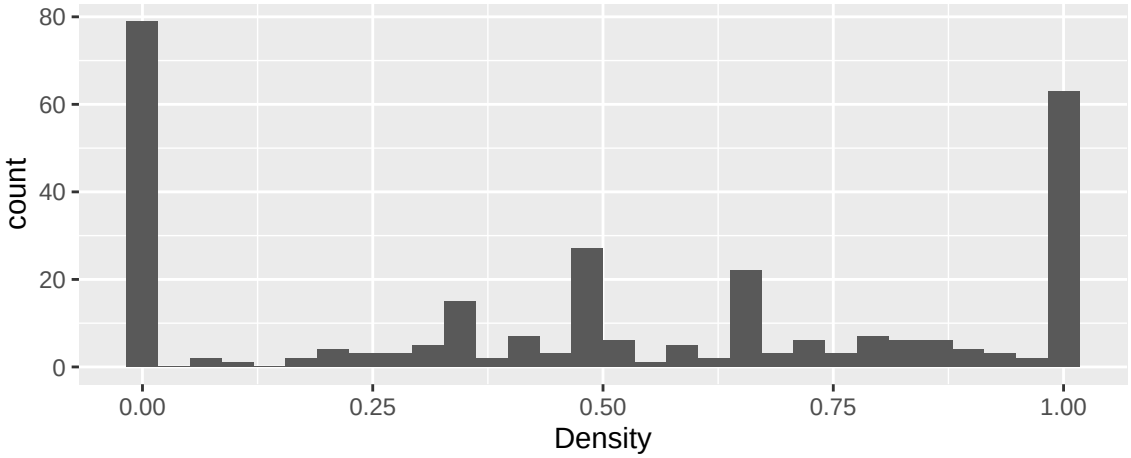


n	mean	sd	min	median	max
329	0.15	0.71	-1	0.2	1

Structure

Density

Density is the number of ties divided by the number of possible ties. It ranges from 0 to 1, where 0 is the lowest density possible (i.e., no ties between alters) and 1 is the highest density possible (i.e., all ties between alters).

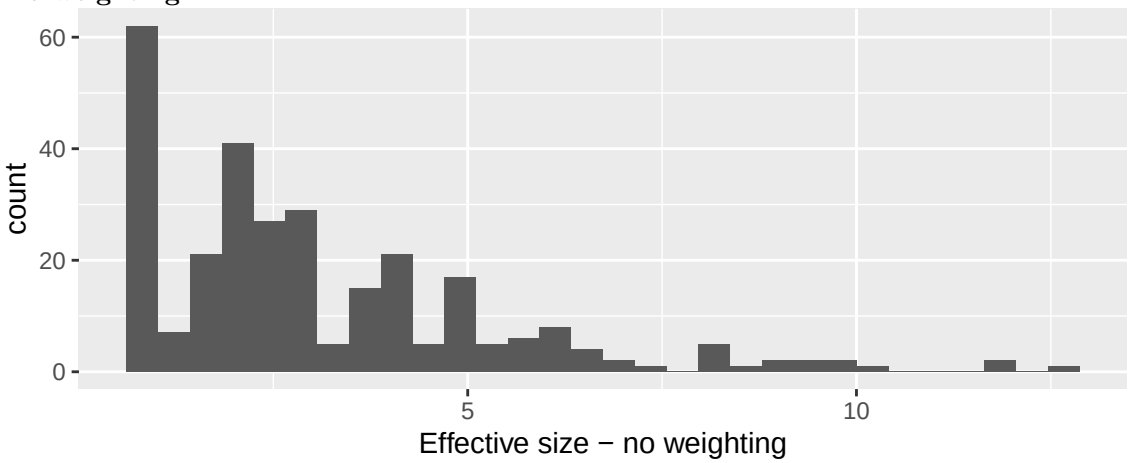


n	mean	sd	min	median	max
292	0.5	0.38	0	0.5	1

Effective size

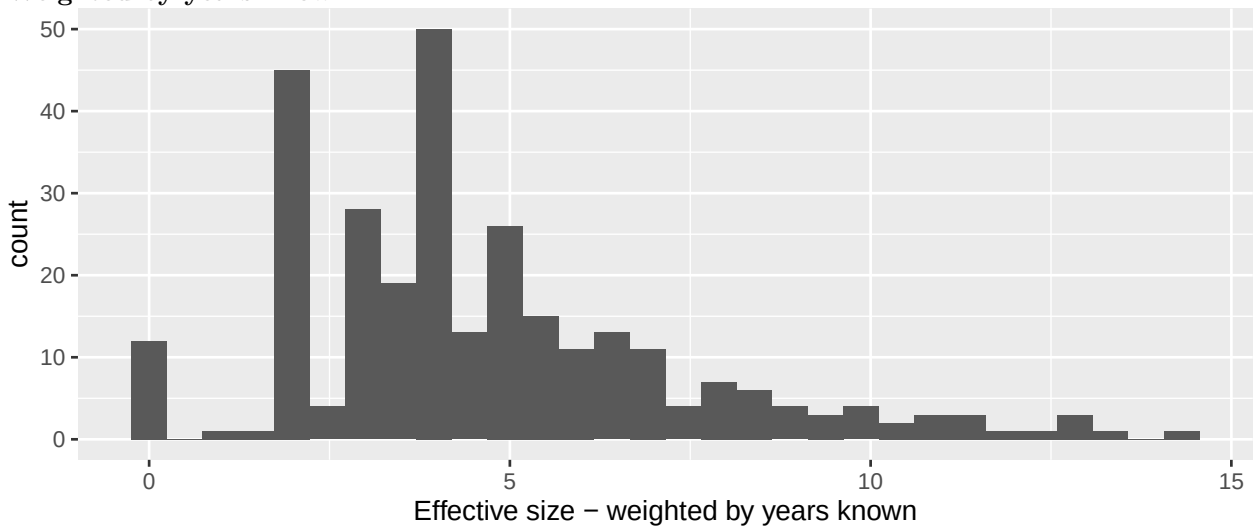
Effective size is the number of alters (i.e., degree) minus the average degree of alters (not including ties to ego). It ranges from 0 to whatever the degree is. Higher effective size is indicative of more structural holes

No weighting



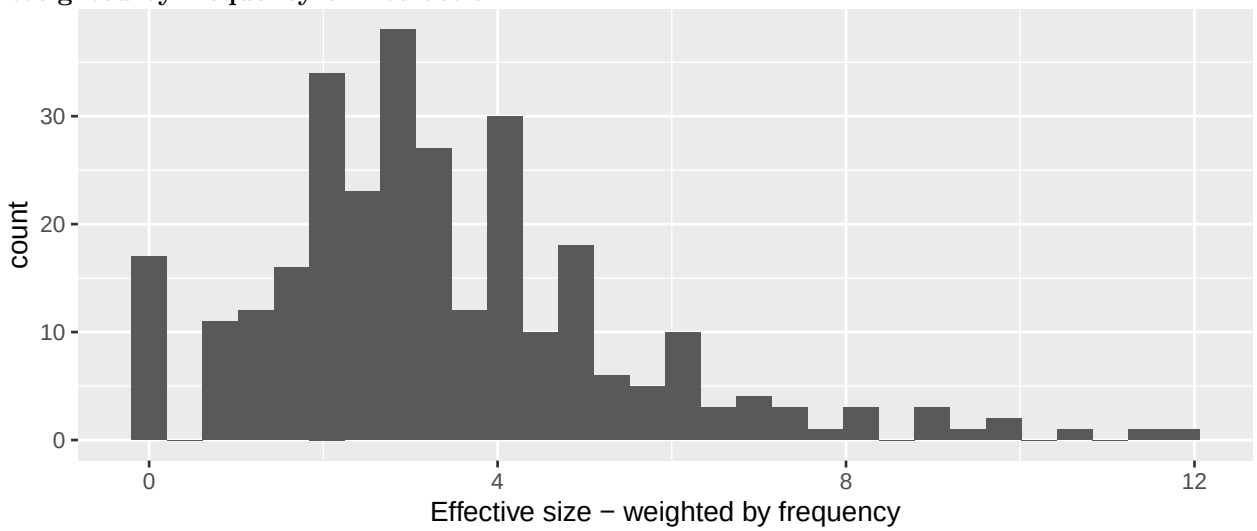
n	mean	sd	min	median	max
292	3.12	2.21	1	2.5	12.85

Weighted by years known



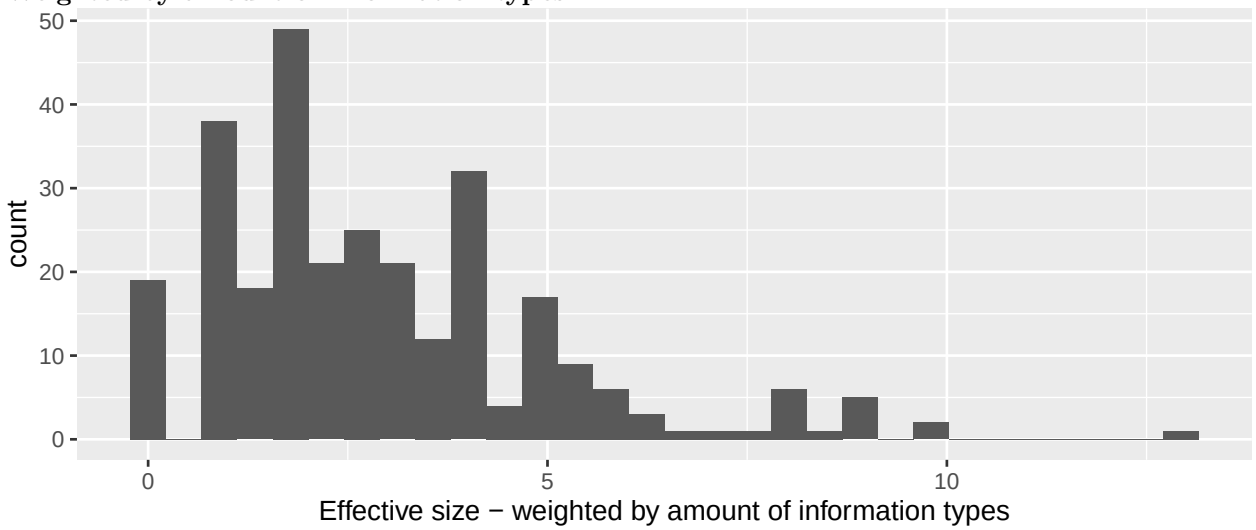
n	mean	sd	min	median	max
292	4.64	2.7	0	4	14.31

Weighted by frequency of interaction



n	mean	sd	min	median	max
292	3.37	2.09	0	3	11.85

Weighted by amount of information types



n	mean	sd	min	median	max
292	2.96	2.1	0	2.5	12.93