Fabrication of Interview Data

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Introduction

There are several ways of task simplification (Blasius and Thiessen, *Assessing the Quality of Survey Data*, 2012, Sage, London):

First, the respondents can simplify their lives, which results in, for example, response styles such as acquiescence and disacquiescence, or in extreme straight-lining and arbitrary responses.

Second, the (employees of an) institute can simplify their lives, for example, by using “copy and paste”-procedures.

Third, the interviewers can simplify their lives, for example, by faking or partly faking the interviews.

Data Fabrication

“’Interviewer falsification’ means the intentional departure from the designed interviewer guidelines or instructions, unreported by the interviewer, which could result in the contamination of data. ‘Intentional’ means that the interviewer is aware that the action deviates from the guidelines and instructions.” AAPOR (2003: 1)

There is no definition for falsifications by employees of survey research institutes, but copy and paste should be part of it.

Simple Response Pattern

	Response pattern I					Response pattern II				
Item	1	2	3	4	5	1	2	3	4	5
A (+)	x					x				
B (+)	x					x				
C (-)	x									x
D (+)	x					x				
E (+)	x					x				
F (-)	x									x

Methodology

Principal component analysis (PCA) and *factor analysis* make the severest assumptions and therefore are least adapted to the task of screening data. They assume that the input data have metric properties.

When the data consist of ordered categories, such as Likert-type responses, *categorical* (or nonlinear) *principal component analysis* (CatPCA) is the better choice.

Multiple correspondence analysis (MCA) is particularly suited for the analysis of unordered categorical (i.e., nominal) data, including missing values.

The methods have in common that they can be used to transform a set of observed variables into a smaller set of latent variables (factors, dimensions). That is, they belong to a family of scaling methods where the dependent variables are latent and on continuous scales, while the independent variables are the observed ones. The latent variables are normally distributed with mean of zero and standard deviation of one. Further, PCA and MCA provide unique factor scores that can be used for identifying response patterns.

Data: PISA 2009, 2012; PIAAC

Trust in PISA (Principal Data, 2009, 2012)

Using the 2009 and 2012 PISA data, the quality of the reports from principals of the participating schools was examined on a cross-national basis.

Two measures of data quality were employed (in addition to unit response rate and item nonresponse):

1) The frequency of providing Undifferentiated Response Pattern (UPR), i.e., same response to all items in several domains.

2) The number of times Identical Response Pattern (IRP) occurred across a large segment of the questionnaires within each country.

In 2009: 73 countries, N=18,277 principles participated in 71 countries (response rate is 99%). In 2012: 64 countries, N=17,769 principles participated (response rate is 98%).

In 2009, three domains were evaluated (cf., Blasius and Thiessen, 2015): school climate, resource shortages, and management practices.

The school climate domain was introduced by the statement "In your school, to what extent is the learning of students hindered by the following phenomenon?" a) teachers' low expectations of students, b) student absenteeism, c) poor student-teacher relations, d) disruption of classes by students, …, l) students intimidating or bullying other students, m) students not being encouraged to achieve their full potential".

Four response options were provided: not at all, very little, to some extent, a lot. Number of response combinations: 4^{13}= 67,108,864.

To simplify matters, we restrict our calculations to the 17,635 principals (or 96.5%) who responded to all 13 items.

While approx. 67 million response combinations are possible, for elementary statistical reasons not every response pattern has the same probability of occurring since the items are inter-correlated and the marginals of the four response categories are unequally distributed.

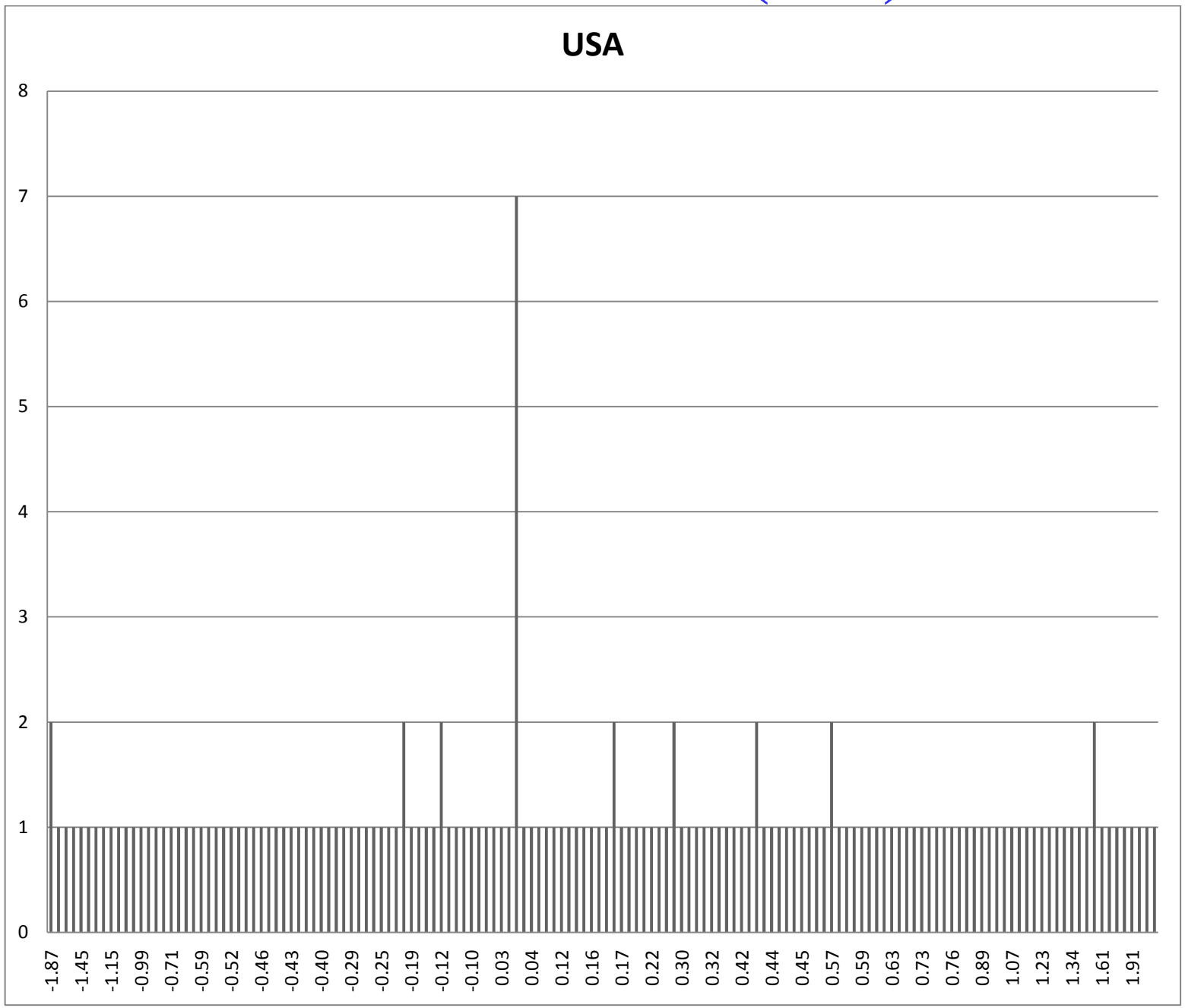
Out of a total of 229,225 responses (13 × 17,635), there are

- 68,888 “not at all” (= 30.1%),
- 103,784 “very little” (= 45.3%),
- 45,898 “to some extent” (= 20.0%),
- 10,685 “a lot” (= 4.7%).

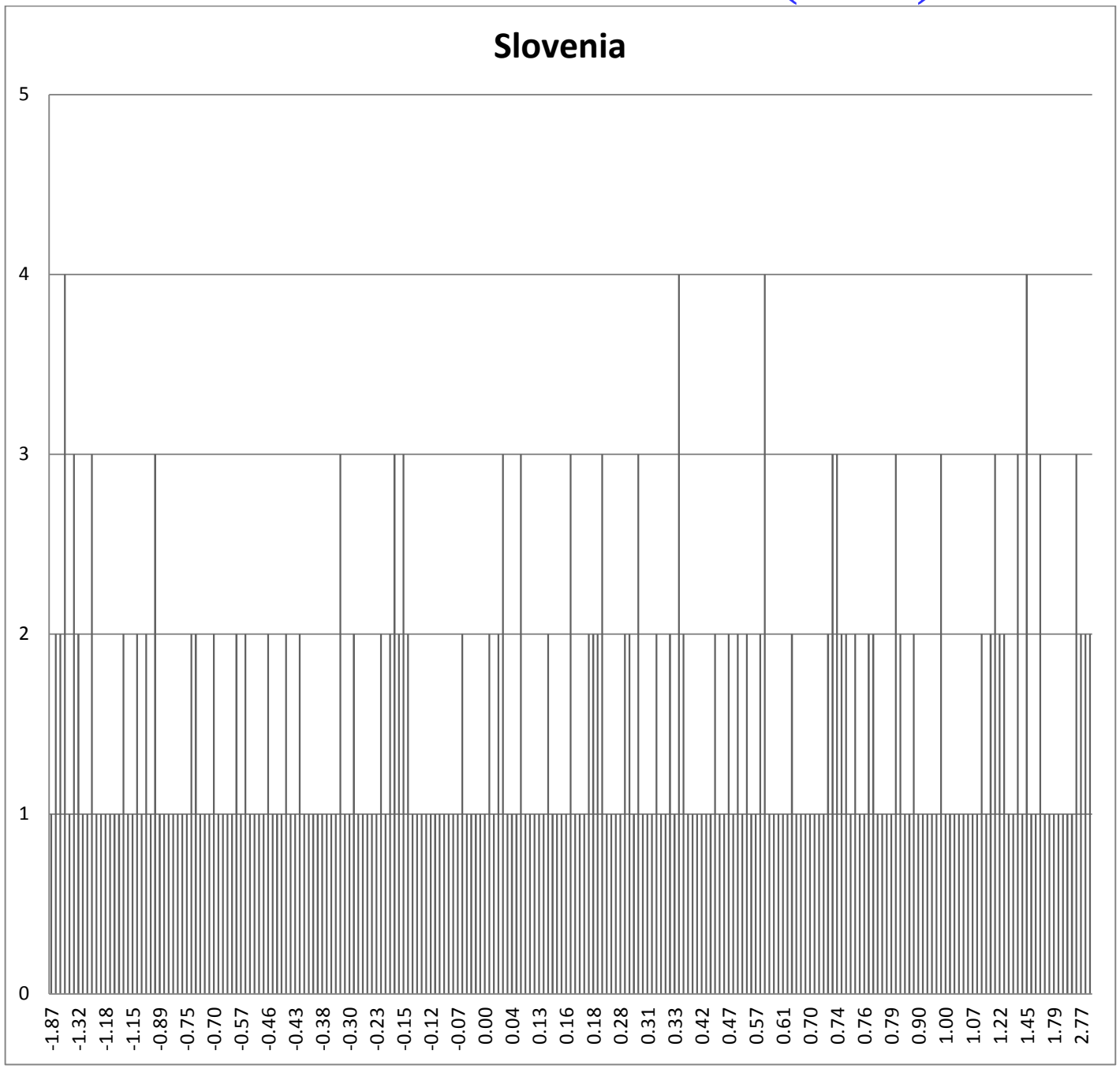
PISA 2009: Percentages of responses and number of undifferentiated response patterns (URPs)

	School climate		Resource shortages		Management practices	
Category	In %	Nb. of URPs	In %	Nb. of URPs	In %	Nb. of URPs
Not at all/ Never	30.1	283	44.2	1,016	3.4	7
Very little/ Seldom	45.3	135	25.1	20	15.1	6
To some extent/ Quite often	20.0	11	20.7	11	44.1	109
A lot/ Very often	4.7	13	10.0	15	37.5	346
N	17,624	442	17,310	1,062	17,440	468

Barcharts of school climate data (2009): USA



Barcharts of school climate data (2009): Slovenia



Overview of findings by country, school climate domain, 2009

Country	Schools	% of MD	% MV	% URPs	% IRPs
Australia	353	0.0	0.0	5.7	10.8
Canada	978	0.6	2.5	2.5	13.8
Finland	203	0.0	0.5	0.0	4.0
Germany	226	5.8	2.8	1.0	1.4
Greece	184	0.0	6.5	0.6	5.2
Italy	1,097	0.0	5.0	0.9	8.0
Netherlands	186	2.2	2.7	4.0	7.9
Russia	213	0.0	7.0	1.0	0.5
Slovenia	341	0.0	2.3	0.3	30.6
Sweden	189	0.0	2.1	1.6	2.7
Switzerland	426	0.7	2.1	3.1	8.0
UA Emirates	369	0.0	7.6	6.7	22.3
UK	482	5.0	2.8	5.2	18.2
United States	165	0.0	1.8	5.6	8.6
Total	18,461	1.2	3.6	2.5	6.2

Number of duplicates by country, 184 variables, 2009

	single cases	duplicates	triplets	quadruplets	N
All countries	18,019	91	8	2	18,233
Italy	1,051	13	1	-	1,080
Slovenia	279	20	6	1	341
Dubai/UAE	298	33	-	1	368
All other countries[(1)]	16,391	25	1	-	16,444

[(1)]All other countries include duplicates, triplets, and quadruplets ***within*** and ***between*** the countries.

Duplicates within the remaining countries: Australia (1), Austria (3), Belgium (1), Columbia (2), Czech Republic (1), Mexico (3), The Netherlands (2), Portugal (1), Qatar (2), Slovak Republic (1), Spain (4), Switzerland (2), Trinidad and Tobago (1), Uruguay (1).

Sum = 25; there is no single duplicate between the countries, i.e. that from any two countries any two principals have the same response pattern. This case does not exist.

Triples within the countries: Latvia (1).

Number of duplicates by country, three domains only (40 variables), 2009

	single cases	duplicates	triplicates	quadruplets	N
All countries	17,844	146/91	19/8	4/2	18,233[(1)]
Italy	1,029	21/13	3/1	-	1,080
Slovenia	209	41/20	14/6	2/1	341
Dubai/UAE	273	44/33	1/0	1/1	368
All other countries[(3)]	16,360	37/25	2/1[(2)]	1/0	16,444

[(1)] In addition, there is one instance of six IRPs, one of seven IRPs, and one of 11 IRPs.
[(2)] At least one triplet appears in the entire data set as part of (1).
[(3)] The differences between the sum of all countries (all other countries, Italy, Slovenia, and Dubai/UAE) and "all countries" can be explained by a few IRPs between the countries (6 + 7 + 11 + 3×2 (from the differences in the duplicates) – 1×3 (from the differences in the triplets) = 17,844 – 1,029 – 209 – 273 – 16,360 = 27 cases).
Duplicates (d), triplets (t), and quadruplets (q) within the remaining countries: Australia (1d), Austria (5d), Belgium (1d), Columbia (3d), Czech Republic (1d), India (1q), Latvia (2d, 1t), Mexico (4d), Montenegro (1d), The Netherlands (2d), Portugal (1d), Qatar (2d), Slovak Republic (1d), Spain (7d), Sweden (1d), Switzerland (3d, 1t), Trinidad and Tobago (1d), Uruguay (1d).

PISA 2012, undifferentiated responses:

Three domains were evaluated: resource shortages (13 items, four-point scales, running from “not at all” to “a lot”), teachers’ morale and intention (10 items in two blocks, four-point scales, running from “strongly agree” to “strongly disagree”), teachers’ appraisal (7 items, four-point scales, running from “no change” to “a large change”).

Resource shortages: “Is your school’s capacity to provide instruction hindered by any of the following issues?
A lack of qualified science teachers
A lack of qualified mathematics teachers
…
Shortage or inadequacy of instructional space (e.g. classrooms).”

To simplify matters, we restrict our calculations to the 16.853 principals (or 94.8%) who responded to all 13 items.
While approx. 67 million response combinations are possible, for elementary statistical reasons not every response pattern has the same probability of occurring since the items are inter-correlated and the marginals of the four response categories are unequally distributed.

Out of a total of 219,089 responses (13 × 16,853), there are

- 94,671 “not at all” (= 43.2%),
- 61,245 “very little” (= 28.0%),
- 44,829 “to some extent” (= 20.5%),
- 18,344 “a lot” (= 8.4%).

PISA 2012: Percentages of responses and number of undifferentiated response patterns (URPs)

Category	Resource shortages		Teachers' morale		Teachers' appraisal	
	In %	Nb. of URPs	In %	Nb. of URPs	In %	Nb. of URPs
Not at all/ strongly agree/ no change	43.2	867	29.7	283	37.3	997
Very little/ agree/ small change	28.0	39	55.9	850	26.3	140
To some extent/ disagree/ moderate change	20.5	20	13.5	5	27.0	214
A lot/ strongly disagree/ large change	8.4	11	0.9	0	9.3	117
N	16,853	937	17,058	1,138	17,038	1,468

PISA 2012, identical response patterns (country-wise evaluation):

Three domains were evaluated (missing cases excluded):

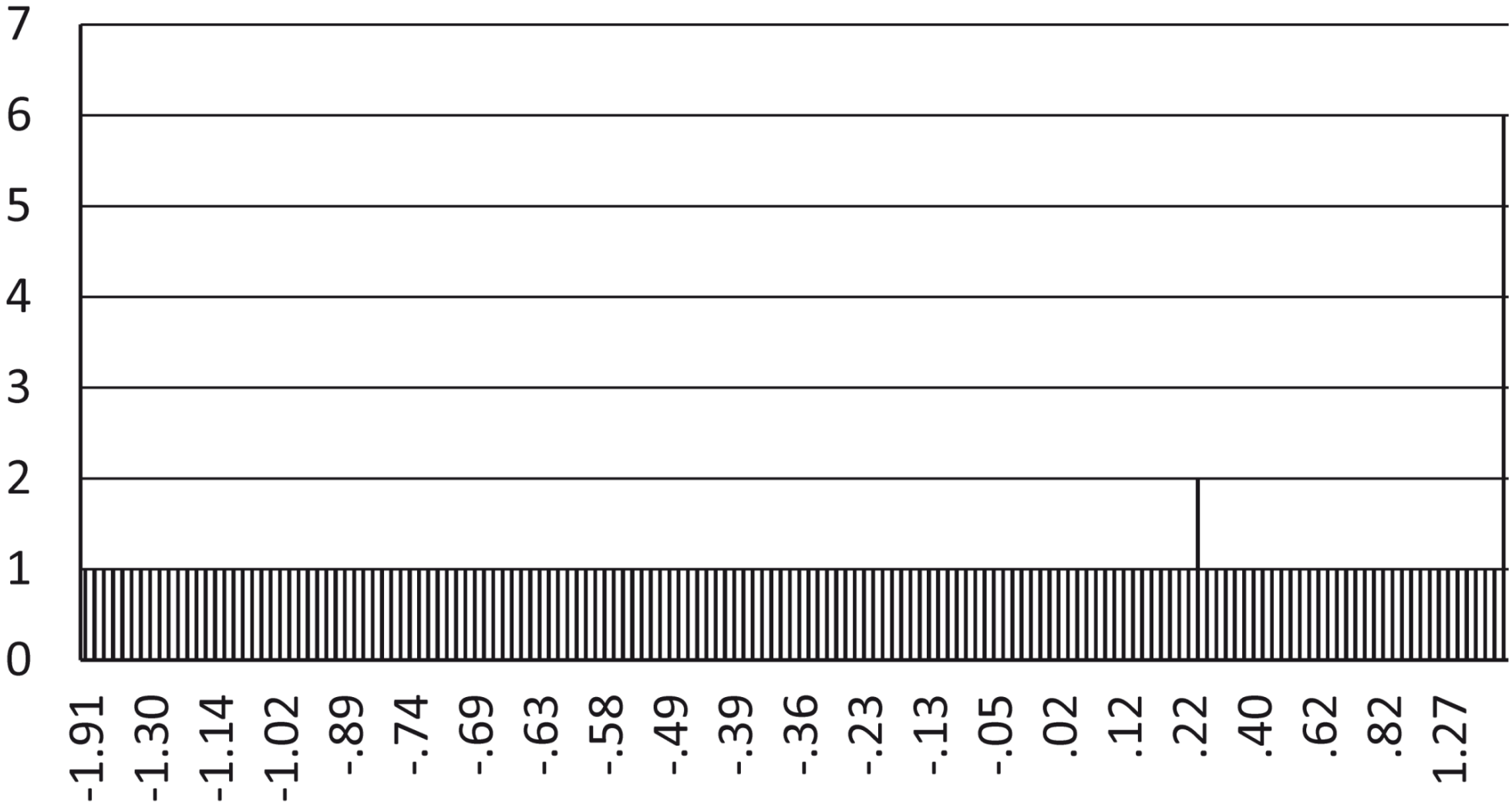
Resource shortages (13 items, four-point scales, running from “not at all” to “a lot”), N=16,853 (937 URPs).

Learning hindrance (19 items, four-point scales, running from “not at all” to “a lot”), N=16,710 (259 URPs).

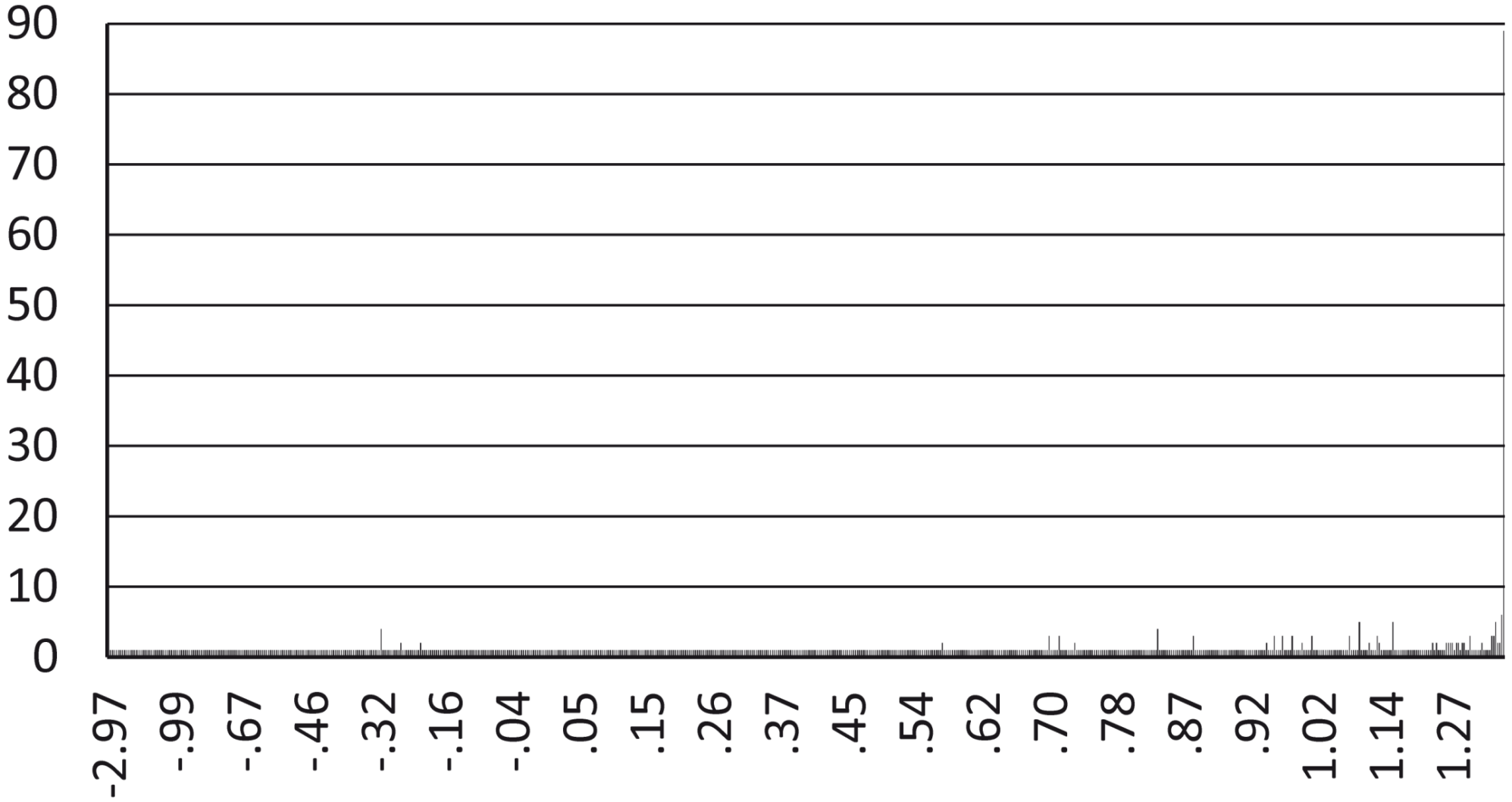
School leadership (21 items, six-point scales, running from “did not occur” to “more than once a week), N=16,363 (25 URPs).

All three items sets together (53 items), N=15,189.

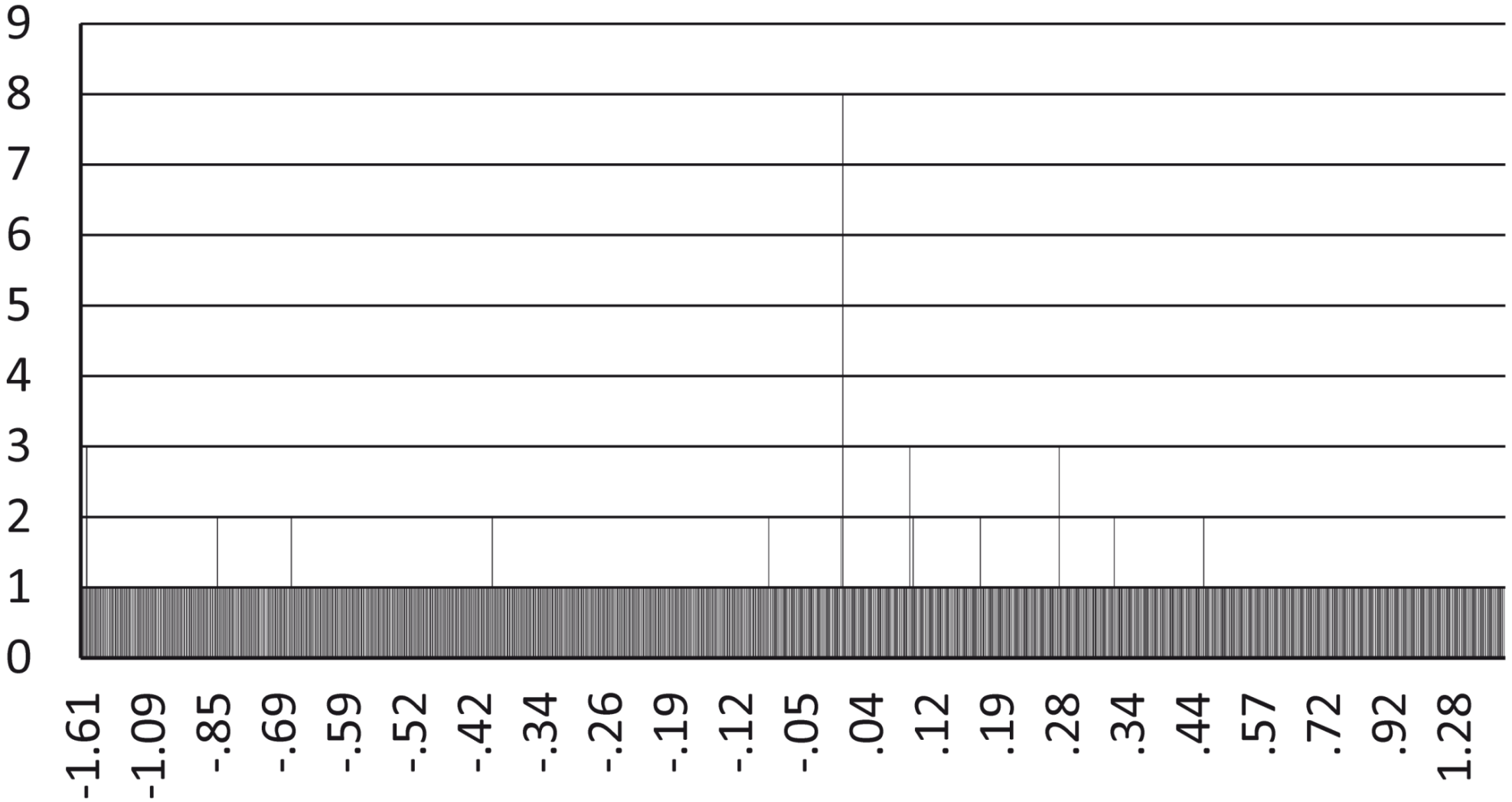
Resource shortages: Norway (N=160)



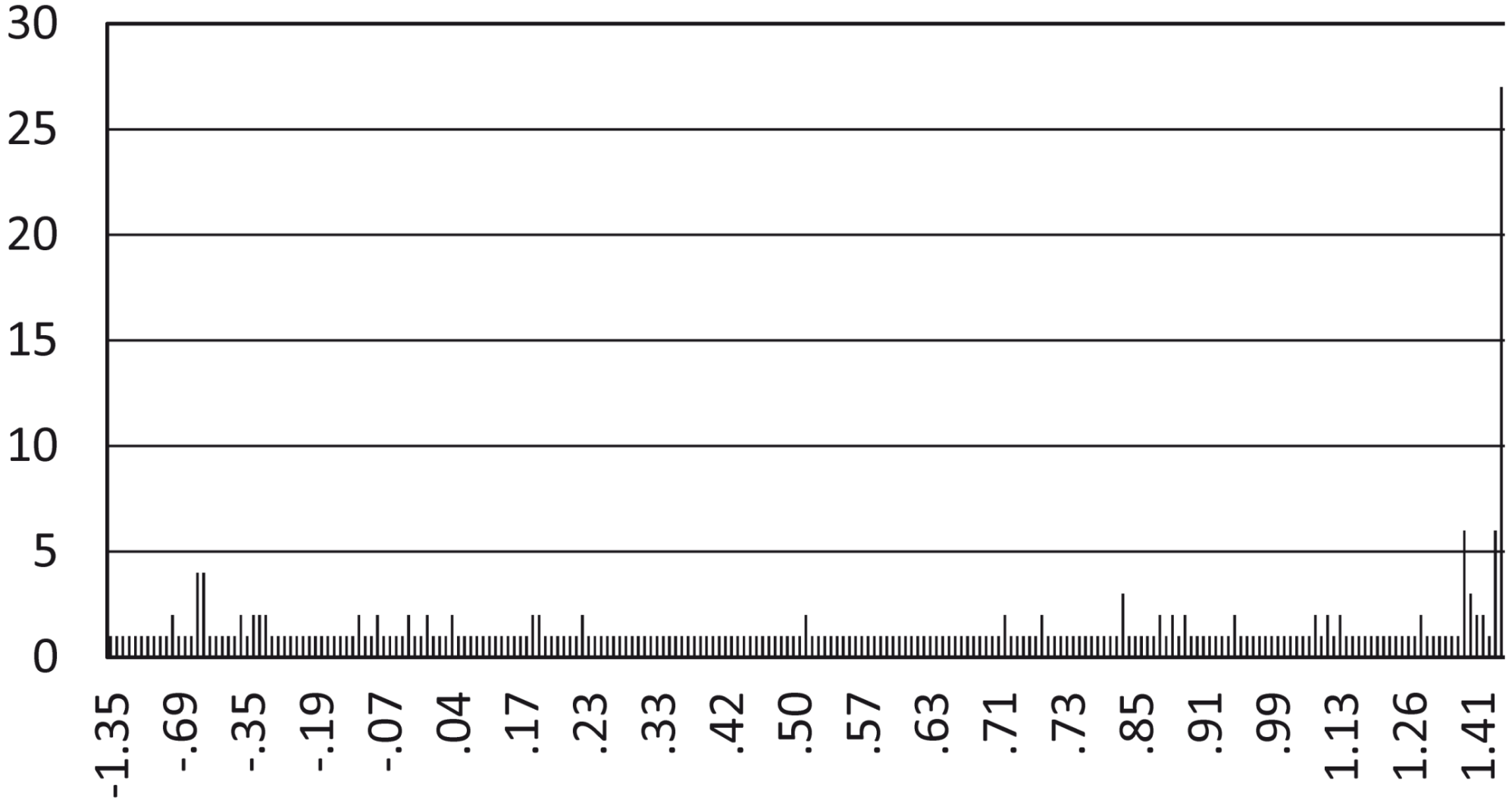
Resource shortages: Canada (N=863)



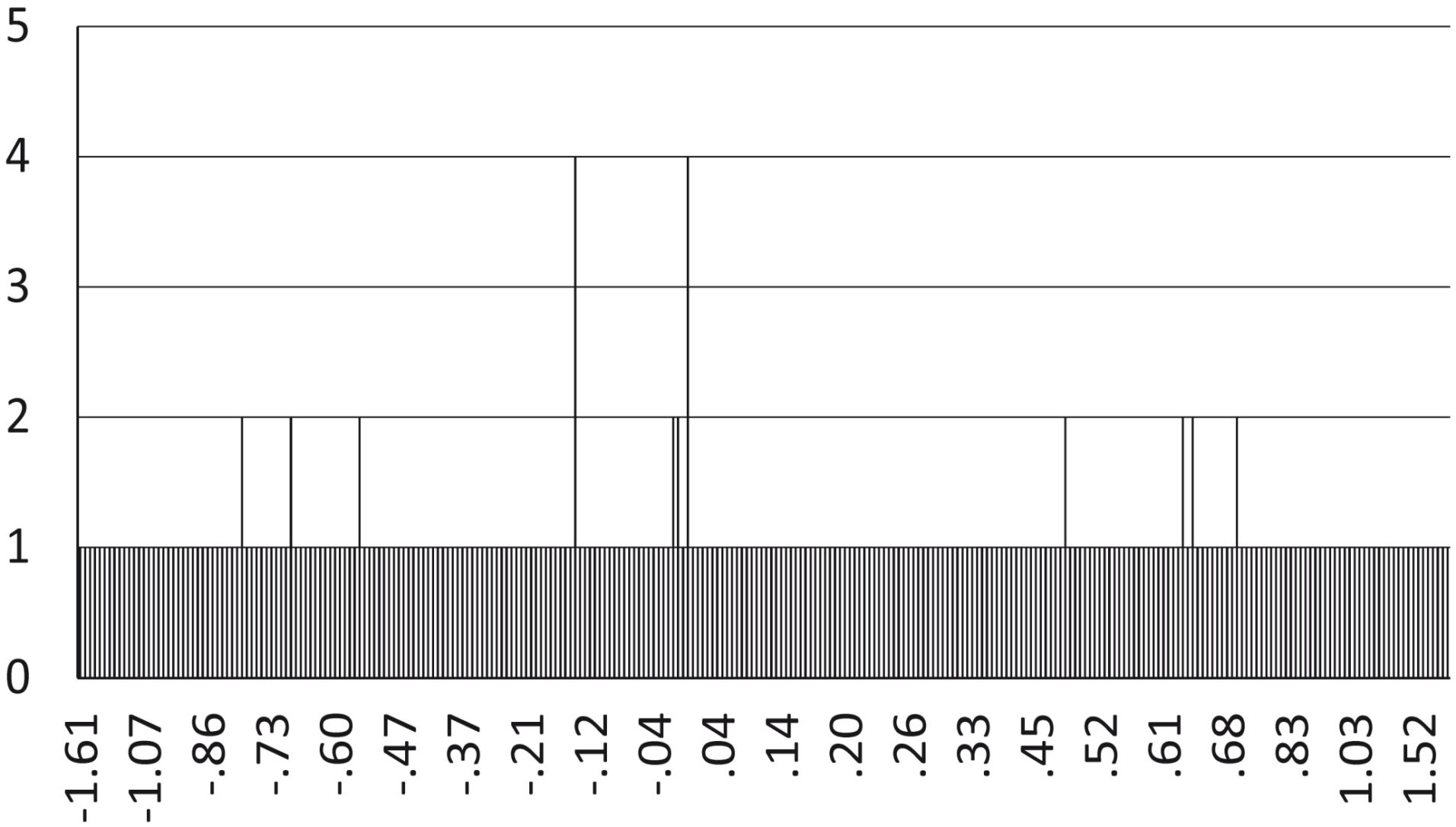
Learning hindrance: Canada (N=853)



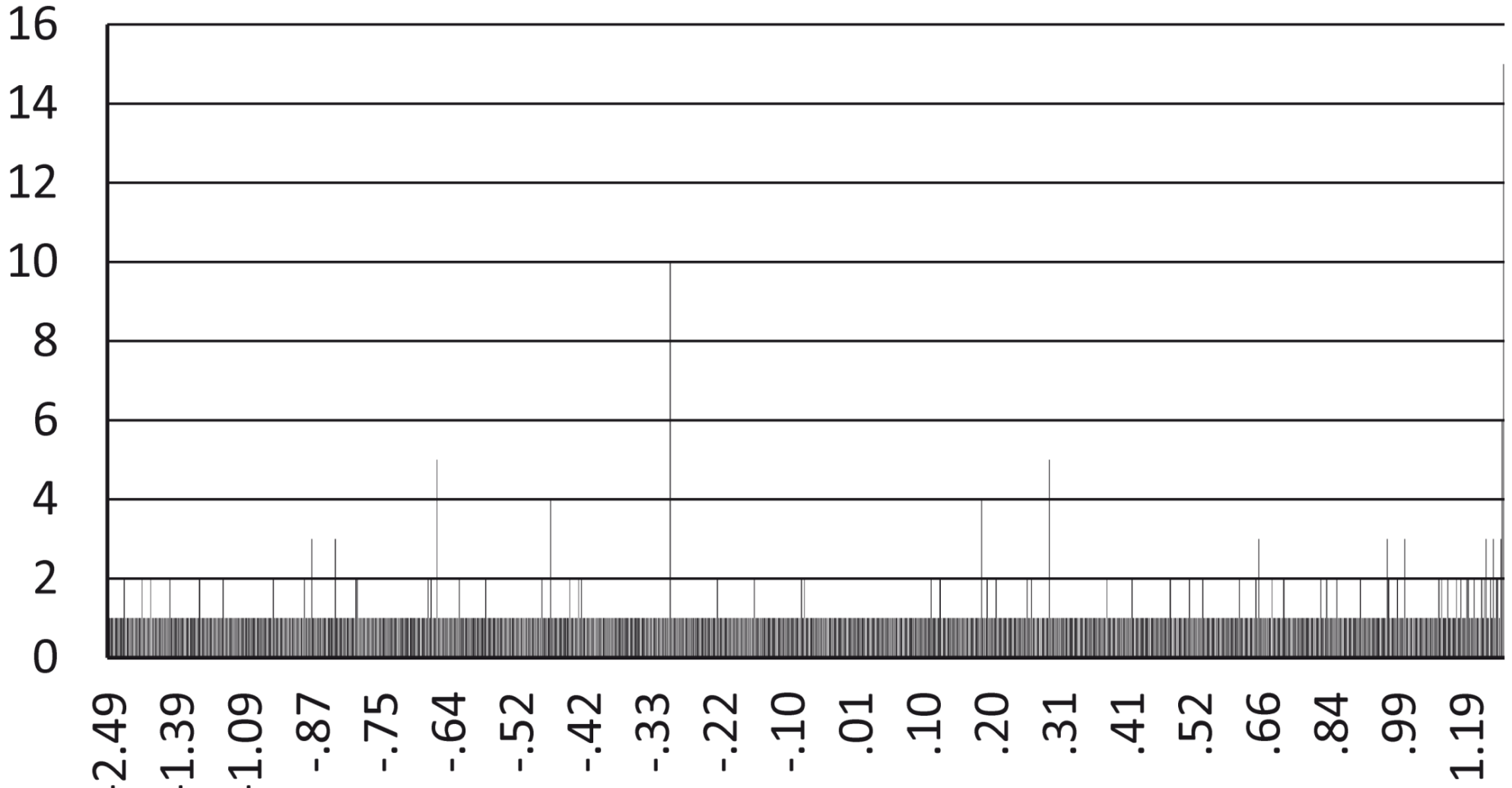
Resourse shortages: Slovenia (N=297)



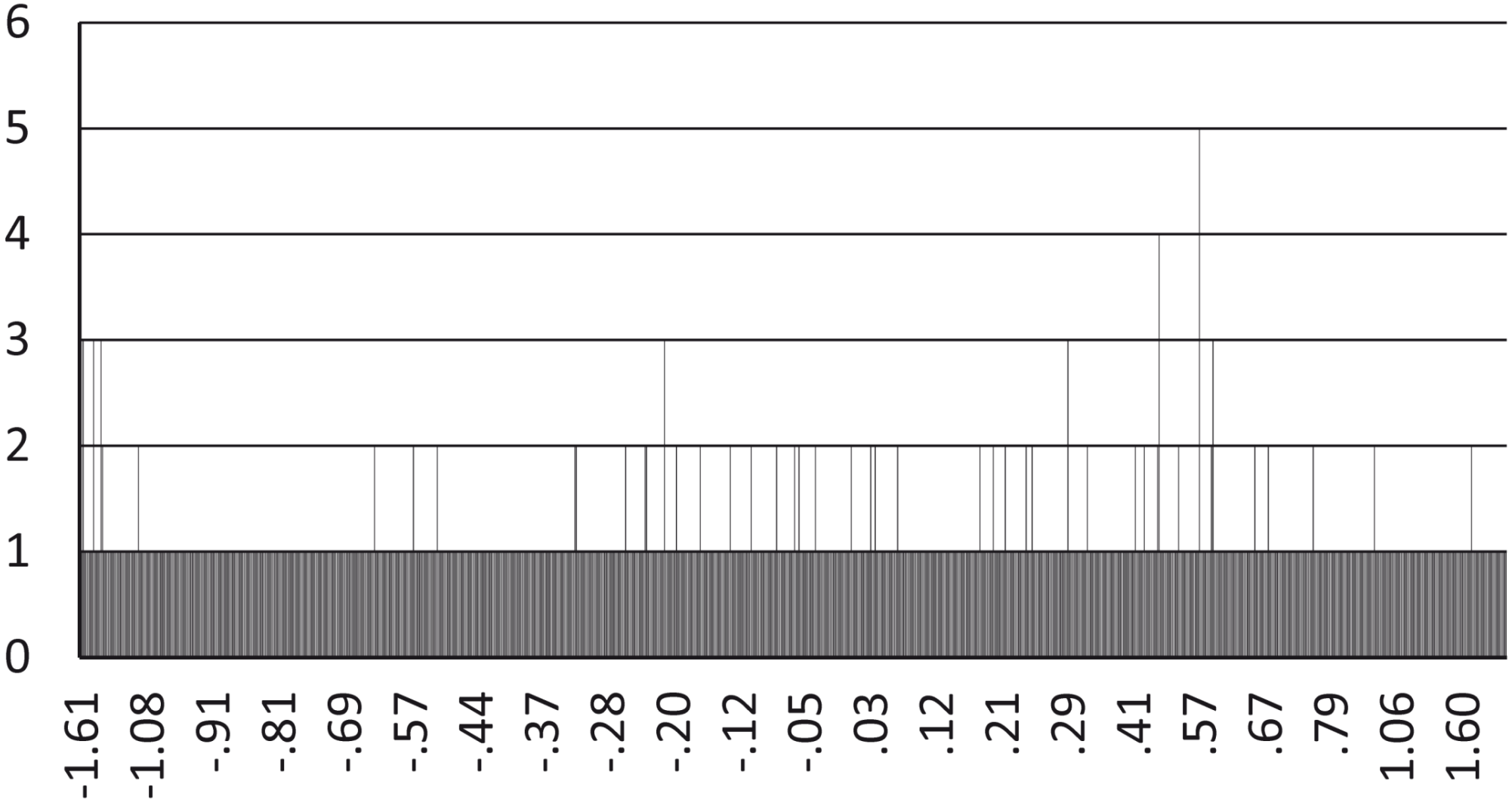
Learning hindrance: Slovenia (N=295)



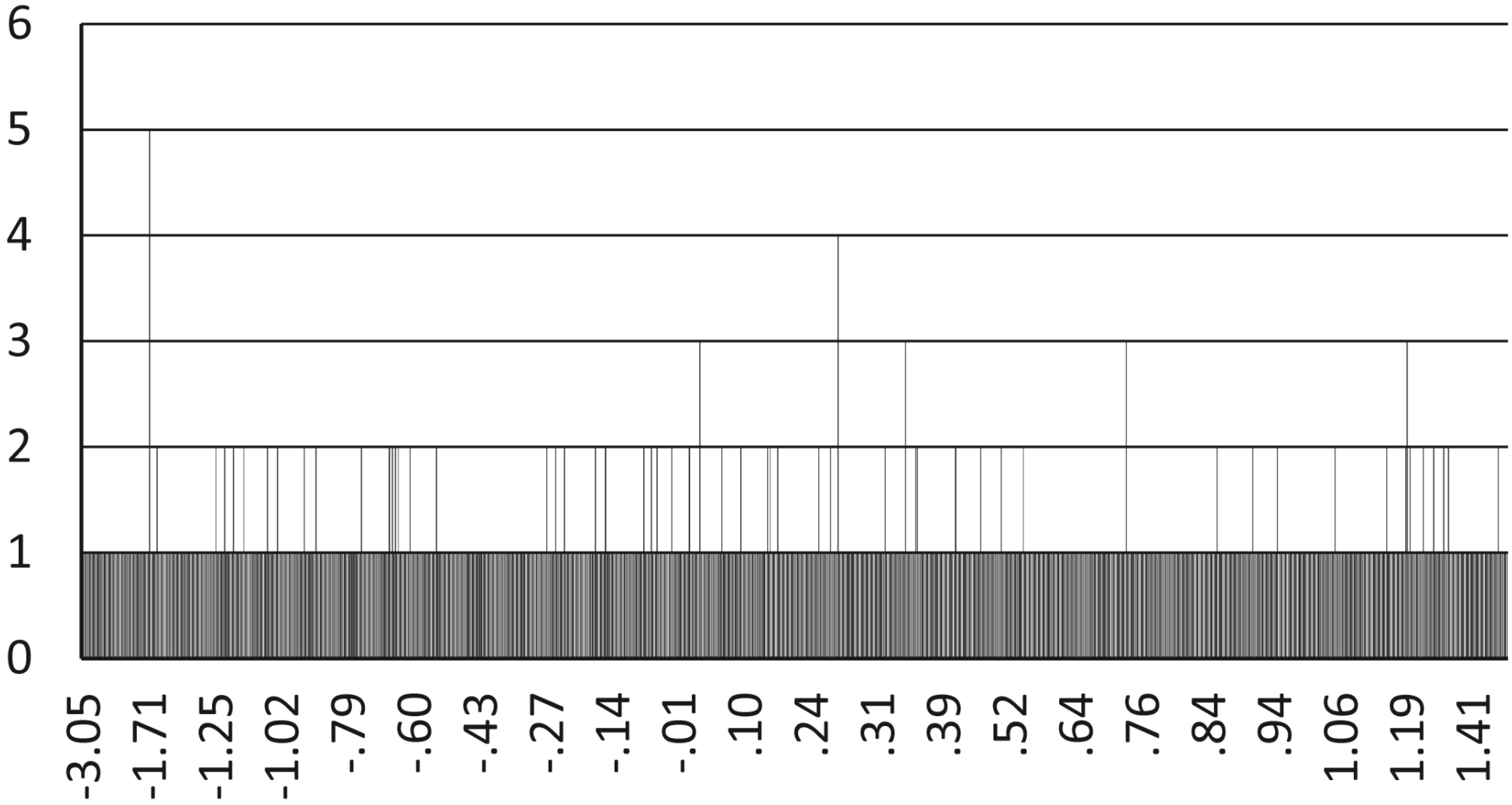
Resource shortages: Italy (N=1,061)



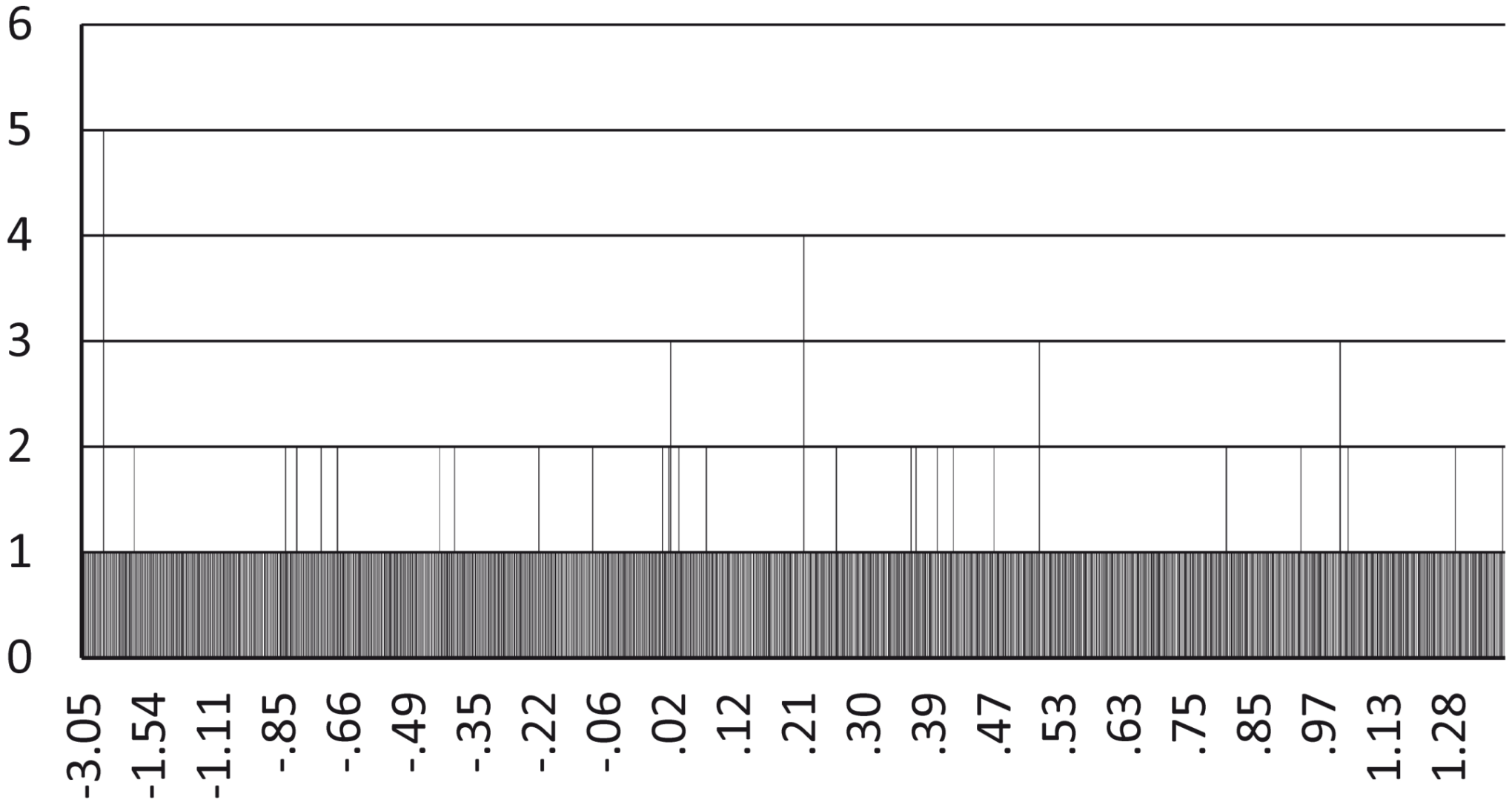
Learning hindrance: Italy (N=1,013)



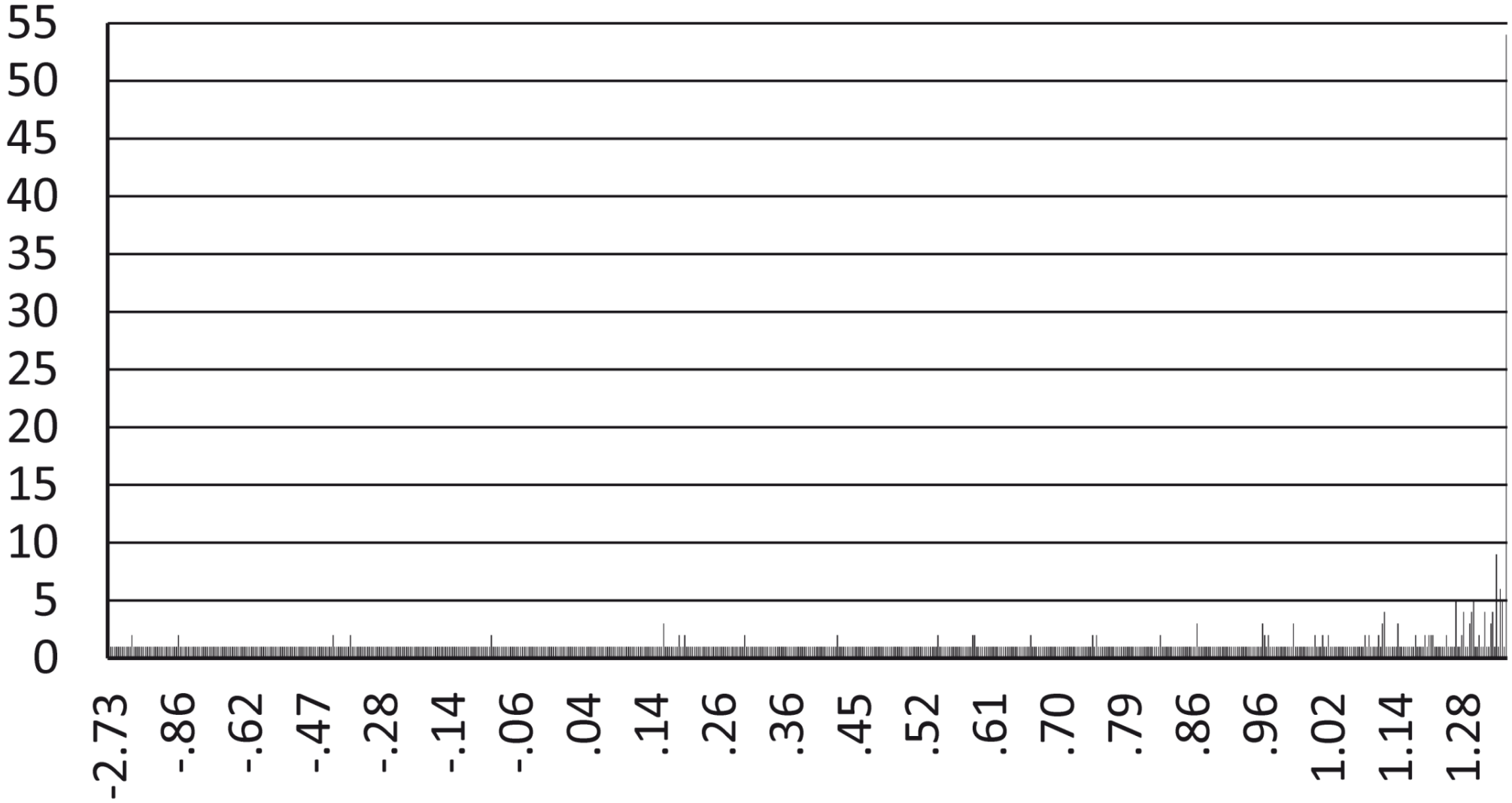
School leadership: Italy (N=1,041)



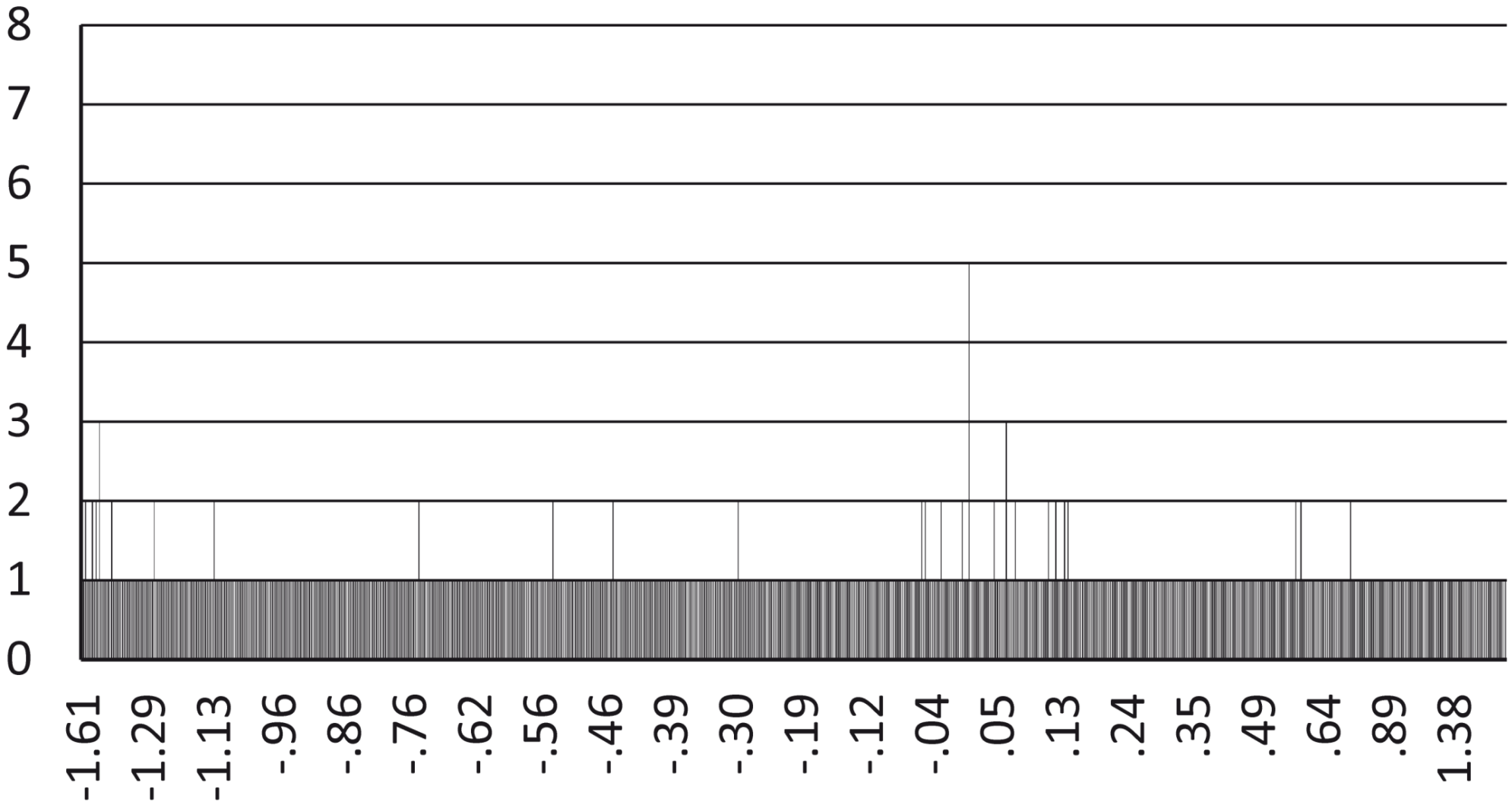
Multiple responses: Italy (N=913)



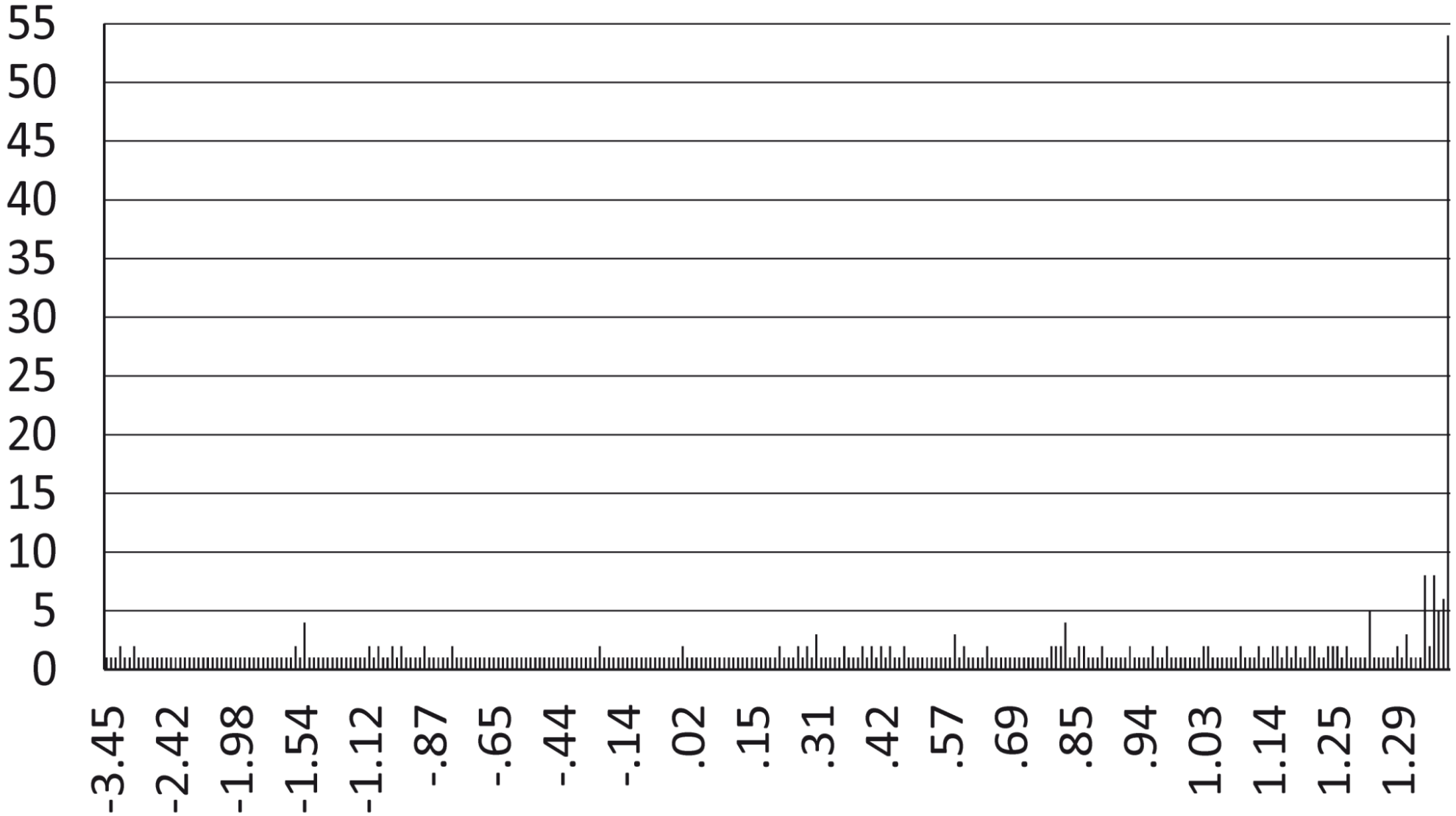
Resource shortages: Spain (N=865)



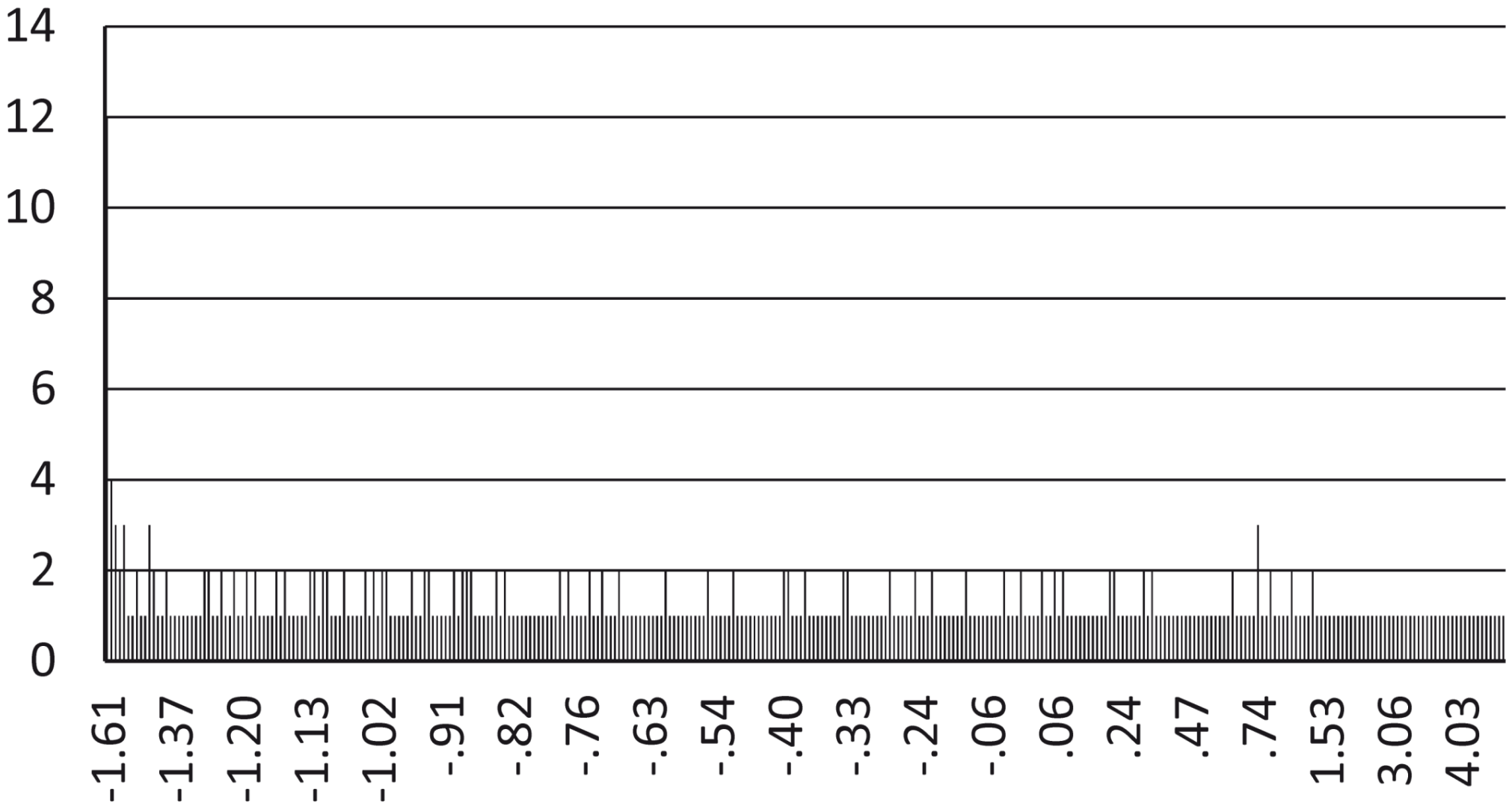
Learning hindrance: Spain (N=845)



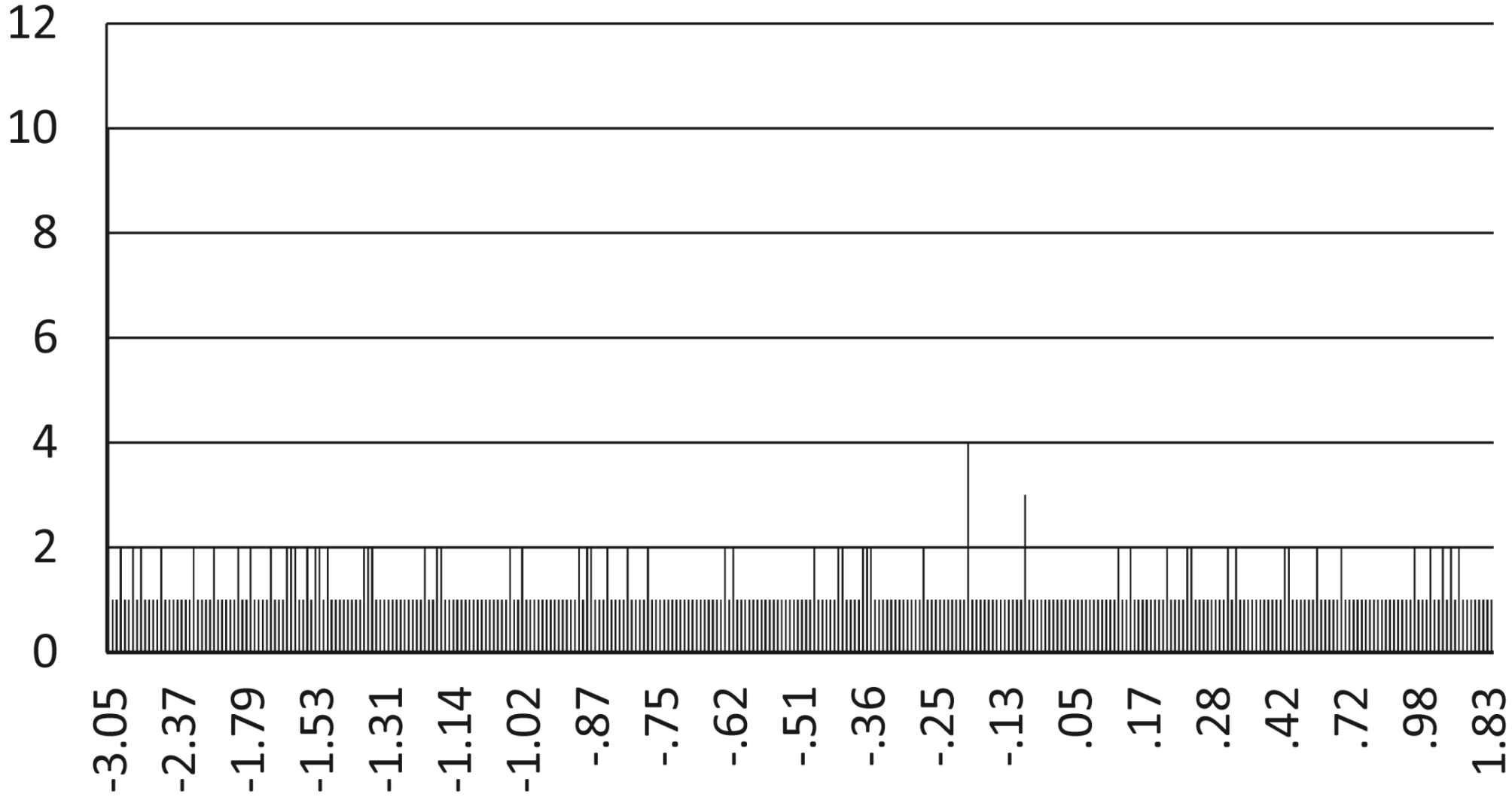
Resource shortages: United Arab Emirates (N=431)



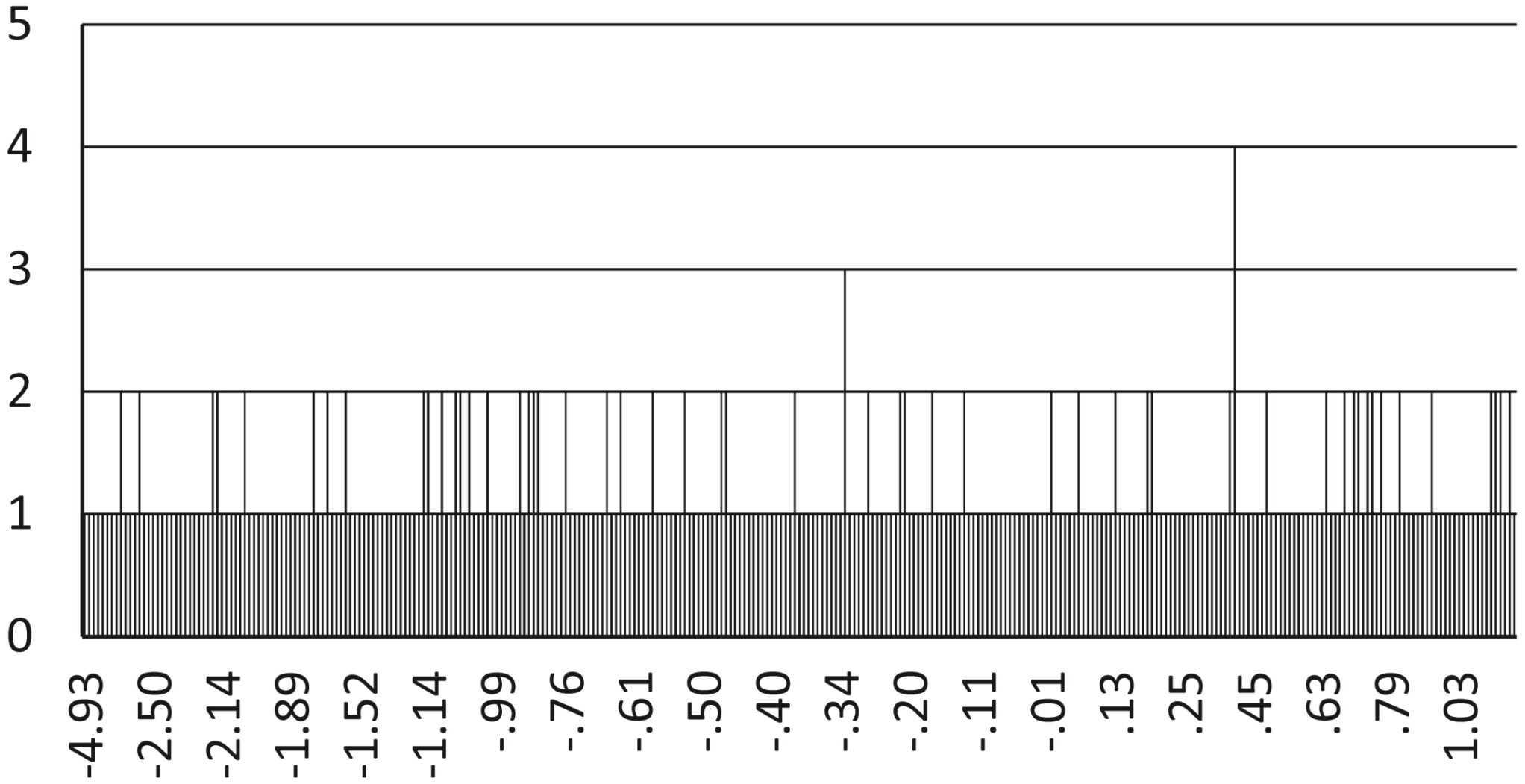
Learning hindrance: United Arab Emirates (N=413)



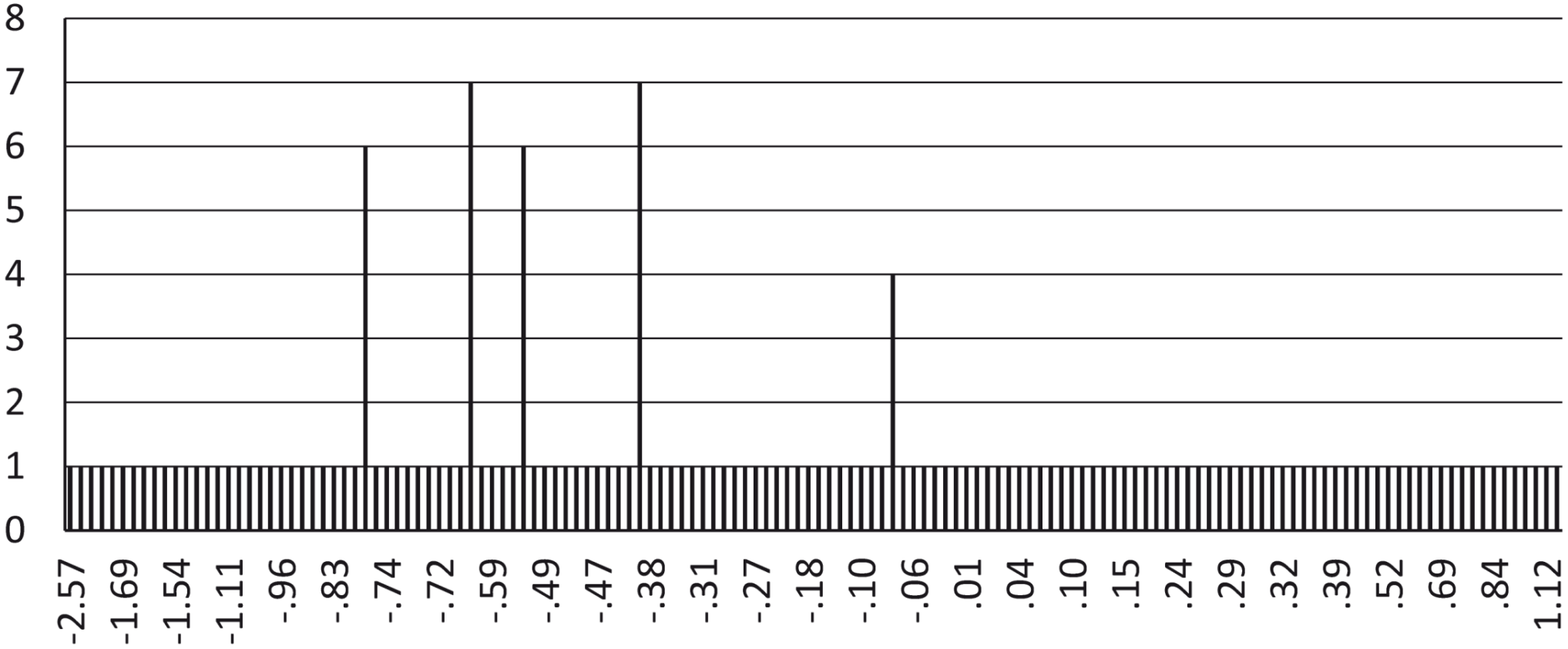
School leadership: United Arab Emirates (N=411)



Multiple responses: United Arab Emirates (N=370)



Multiple Responses: Albania (N=167)



Country Statistic for Identical Response Pattern

IRPs	All countries	Alba-nia	United Arab	Italy	Spain	Peru	Slove-nia	Other countries
1	14,894	137	259	847	723	197	280	12,451
2	117		52	24	13	1	5	20*
3	4		1	3				0
4	3	1	1	1				0
5	1			1				0
6	3	2				1		0
7	2	2						0

*Australia (1), Austria (1), Belgium (2), Colombia (2), Czech Republic (4), Indonesia (1), Japan (2), Latvia (1), Mexico (1),Vietnam (1), Romania (3), Uruguay (1).

There are two IRPs with two cases *between* the countries.

PIAAC Data

Item group table: In everyday life, how often do you usually … (H_Q01a) (N= 197,350; listwise deletion), *skill use everyday life - literacy*

- read directions or instructions?
- read letters, memos or e-mails?
- read articles in newspapers, magazines or newsletters?
- read articles in professional journals or scholarly publications?
- read books, fiction or non-fiction?
- read manuals or reference materials?
- read bills, invoices, bank statements or other financial statements?
- read diagrams, maps, or schematics?

In total: 8 items with categories: (1) Never, (2) Less than once a month, (3) Less than once a week but at least once a month, (4) At least once a week but not every day, (5) Every day

Item group table: I would now like to ask you some questions about how you deal with problems and tasks you encounter. To what extent do the following statements apply to you? (N=195,941; listwise deletion), *learning strategies*

- When I hear or read about new ideas, I try to relate them to real life situations to which they might apply
- I like learning new things
- When I come across something new, I try to relate it to what I already know
- I like to get to the bottom of difficult things
- I like to figure out how different ideas fit together
- If I don't understand something, I look for additional information to make it clearer

In total: 6 items in two groups with categories: (1) Not at all, (2) Very little, (3) To some extent, (4) To a high extent, (5) To a very high extent

Skill use everyday life (CatPCA and URPs, 8 items)

		CatPCA Solution				URPs	
Country	N	Mean	Standard deviation	Min.	Max.	Mean	Max
Austria	102	0.298	0.294	-1.44	0.69	0.013	0.27
Belgium	71	-0.004	0.273	-0.62	0.49	0.007	0.08
Canada	475	0.254	0.305	-1.16	0.84	0.008	0.16
Chile	77	-0.695	0.488	-1.97	0.15	0.093	0.69
Cyprus	55	-0.572	0.410	-1.75	0.29	0.024	0.20
Czech Republic	78	-0.047	0.293	-1.01	0.64	0.006	0.06
Denmark	144	0.310	0.207	-0.53	0.81	0.009	0.06
Estonia	103	0.100	0.282	-0.48	0.76	0.008	0.06
Finland	114	0.529	0.177	0.00	0.90	0.003	0.03
France	43	-0.059	0.325	-1.02	0.47	0.012	0.18
Germany	113	0.418	0.247	-0.25	1.03	0.004	0.04
Greece	49	-0.576	0.584	-1.74	0.54	0.023	0.14
Ireland	53	0.162	0.276	-0.57	0.66	0.011	0.09
Israel	73	-0.332	0.479	-1.64	0.37	0.058	0.45
Italy	75	-0.684	0.437	-1.44	0.37	0.047	0.38

Japan	87	-0.057	0.275	-0.87	0.50	0.009	0.13
Korea	113	-0.216	0.366	-1.15	0.59	0.048	0.30
Lithuania	66	-0.739	0.482	-1.66	0.29	0.030	0.21
Netherlands	79	0.300	0.272	-0.85	0.71	0.008	0.10
New Zealand	90	0.539	0.176	-0.05	0.92	0.006	0.15
Norway	80	0.562	0.160	0.15	0.86	0.003	0.04
Poland	137	-0.020	0.399	-1.85	0.57	0.022	0.33
Russian Federation	64	-0.544	0.355	-1.45	0.06	0.041	0.24
Singapore	74	-0.015	0.254	-0.68	0.43	0.020	0.11
Slovak Republic	77	-0.205	0.380	-1.39	0.63	0.020	0.16
Slovenia	48	0.121	0.303	-0.52	0.74	0.010	0.09
Spain	85	-0.297	0.328	-1.05	0.43	0.035	0.20
Sweden	97	0.436	0.201	-0.06	0.85	0.005	0.08
United Kingdom	111	0.151	0.337	-1.33	0.79	0.008	0.15
United States	86	0.391	0.309	-1.36	0.86	0.017	0.26
Total	2,919	0.063	0.482	-1.97	1.03	0.018	0.69

Learning strategies (CatPCA and URPs, 6 items)

		CatPCA Solution				URPs	
Country	N	Mean	Standard deviation	Min.	Max.	Mean	Max
Austria	102	0.024	0.232	-0.77	0.54	0.063	0.32
Belgium	71	-0.274	0.212	-0.90	0.19	0.080	0.35
Canada	475	0.246	0.238	-0.91	1.06	0.108	0.53
Chile	77	0.215	0.343	-1.29	0.78	0.083	0.30
Cyprus	55	0.132	0.269	-0.76	0.81	0.125	0.54
Czech Republic	78	-0.059	0.261	-0.82	0.59	0.068	0.48
Denmark	144	0.274	0.211	-0.22	1.16	0.084	0.71
Estonia	103	-0.207	0.263	-0.83	0.39	0.085	0.26
Finland	114	0.402	0.147	-0.15	0.81	0.089	0.25
France	43	0.070	0.286	-1.10	0.61	0.064	0.20
Germany	113	-0.030	0.200	-0.42	0.87	0.045	0.24
Greece	49	0.063	0.408	-1.42	0.86	0.155	0.74
Ireland	53	0.076	0.225	-0.46	0.82	0.110	0.33
Israel	73	0.071	0.327	-1.12	0.66	0.097	0.39
Italy	75	0.186	0.315	-1.03	0.92	0.193	0.67

Japan	87	-0.886	0.355	-2.80	-0.26	0.053	0.37
Korea	113	-0.968	0.342	-1.80	-0.22	0.103	0.82
Lithuania	66	-0.355	0.537	-2.07	0.57	0.127	0.69
Netherlands	79	-0.225	0.294	-1.21	0.51	0.057	0.17
New Zealand	90	0.277	0.178	-0.18	0.78	0.103	0.31
Norway	80	0.201	0.169	-0.29	0.67	0.055	0.14
Poland	137	0.063	0.309	-1.23	1.35	0.126	0.70
Russian Federation	64	-0.184	0.375	-1.16	0.61	0.205	0.54
Singapore	74	-0.258	0.218	-0.83	0.24	0.105	0.20
Slovak Republic	77	-0.086	0.572	-1.71	1.42	0.205	0.81
Slovenia	48	0.048	0.198	-0.47	0.58	0.155	0.76
Spain	85	0.103	0.271	-0.64	0.91	0.088	0.26
Sweden	97	0.279	0.173	-0.13	0.68	0.068	0.22
United Kingdom	111	-0.048	0.341	-2.02	0.65	0.105	0.59
United States	86	0.386	0.242	-0.35	0.96	0.117	0.33
Total	2,919	0.020	0.429	-2.80	1.42	0.101	0.82

Learning strategies – interviewer statistics

Finland	CatPCA-Solution			
Int-ID	Mean	N	Std.Dev	URPs
1001	0.549	54	0.689	.07
1010	-0.818	30	1.637	.13
1022	0.477	55	0.719	.07
1036	-0.428	30	1.417	.13
1078	0.433	36	0.596	.06
1101	0.370	44	0.635	.11
1124	0.350	38	0.570	.08
Total	-0.005	5,157	1.002	.09

$F = 2,0$; $df = 113/5,043$; $p < ,001$; $\eta^2 = ,04$

New Zealand	CatPCA-Solution			
Int-ID	Mean	N	Std.Dev	URPs
10	0.371	27	0.822	.15
92	0.470	29	0.833	.07
262	-0.363	34	0.922	.00
513	-0.452	28	1.086	.07
570	-0.134	44	0.777	.05
645	0.670	54	0.992	.17
870	-0.516	56	1.037	.11
891	0.517	51	1.103	.20
Total	0.004	5,696	0.997	.10

$F = 2,6$; $df = 89/5,606$; $p < ,001$; $\eta^2 = ,04$

Japan	CatPCA-Solution			
Int-ID	Mean	N	Std.Dev	URPs
102	-2.001	27	1.603	.37
308	-0.740	31	1.095	.06
601	-0.462	26	1.099	.00
905	-0.467	26	1.337	.04
1107	0.529	62	0.769	.07
1305	-0.419	31	0.844	.03
3004	-0.870	45	1.508	.18
3202	0.220	26	0.798	.00
Total	-0.023	3,067	1.023	.05

$F = 4,2$; $df = 86/2,980$; $p < ,001$; $\eta^2 = ,11$

Lithuania		CatPCA-Solution		
Int-ID	Mean	N	Std.Dev	URPs
124	-0.934	85	1.095	.29
131	0.526	47	0.700	.06
221	-0.441	26	0.684	.08
423	0.695	27	0.584	.04
522	-0.826	100	1.106	.12
603	0.616	178	0.572	.69
920	0.514	163	0.735	.10
959	-1.223	74	1.166	.22
Total	-0.010	4,665	0.996	.13

$F = 14,7$; $df = 65/4,599$; $p < ,001$; $\eta^2 = ,17$

Greece	CatPCA-Solution			
Int-ID	Mean	N	Std.Dev	URPs
8	1.028	65	0.989	.34
13	-0.430	135	0.525	.14
34	0.513	64	0.706	.59
41	0.572	44	1.372	.30
44	-0.979	179	0.360	.74
56	-1.060	122	1.140	.14
93	0.985	122	0.651	.07
182	-0.588	105	0.824	.74
Total	-0.009	4,391	1.008	.16

$F = 21,8$; $df = 48/4,342$; $p < ,001$; $\eta^2 = ,19$

Slovakia		CatPCA-Solution		
Int-ID	Mean	N	Std.Dev	URPs
340	0.597	157	0.808	.22
700	-1.028	159	1.445	.20
800	-0.115	150	0.550	.29
837	0.141	114	0.530	.08
840	-1.003	158	1.016	.29
858	1.381	115	0.669	.81
863	0.821	84	0.797	.39
1034	-1.398	55	1.352	.25
1050	0.818	66	0.615	.35
1071	-1.092	60	0.808	.38
Total	-0.003	5,394	1.007	.21

$F = 24,4$; $df = 76/5,317$; $p < ,001$; $\eta^2 = ,26$

Conclusion

- Using scaling methods such as PCA, CatPCA and MCA allows for detecting identical und undifferentiated response patterns.
- In general, simple response pattern are caused by the respondents and by the interviewers, stereotype answers mainly by the interviewers; all of these behaviours can be understood as a way of *task simplification* (either by the respondents or the interviewers).
- The percentages of undifferentiated and identical response pattern can be used as a method for assigning the quality of the survey data.
- As shown, it is possible to distinguish between respondent and interviewer simplification. The methods should be applied during the field period where suspicious interviews can be detected (and checked).

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