Comparisons surveys of visitors of Ramat Hanadiv across time 2018-2020

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BRIEF SUMMARY
Four different surveys of visitors were conducted in Ramat Hanadiv in 2018, 2019 and 2020, and explored different aspects of the experience of visitors. There were some differences across time, especially decreases in scores of motivations related to thrill, learn and social, and some changes in nature interactions. **Individuals reported visiting Ramat Hanadiv for relaxing purposes equally after lockdown as in 2020, and reported less going for thrill, learn or social motivations. For most variables, there were no significant changes. This shows that results of the different surveys are consistent, and that the tools we are using are good indicators of visitors' experiences.** These tools can thus be further used for long term monitoring of visitors' experiences in nature reserves.

SURVEYS

Four different surveys of visitors were conducted in Ramat Hanadiv in 2018, 2019 and 2020, and explored different aspects of the experience of visitors (see Table 1 for list of variables explored in each survey).

Table 1: summary of surveys conducted, and variables measured

	2018	2018	2019	2020
	Danielle Bashan – survey before visit (visitors entering Ramat Hanadiv) N=299	Danielle Bashan – survey after visit (visitors exiting Ramat Hanadiv) N=297	Agathe Colleony – survey during or after the visit (priming project) N=1023	Liat Hadar – survey following the lockdown due to COVID-19 crisis N=339
motivations	X			X
nature reserve or urban park	X	X		X
nature interactions			X	X
wellbeing		X		X
PANAS positive			X	X
PANAS negative			X	X
Overall happiness	X	X	X	X
Inclusion nature in self			X	X
Nature relatedness	X	X	X	X
Age	X	X	X	X
Gender	X	X	X	X
Education	X	X		X
Income	X	X		X
Childhood urbanization	X	X		X
Current urbanization	X	X		X

ANALYSES

For each variable of interest, I **looked at differences between years (surveys)**, controlling for demographics (age, gender, income, education, childhood urbanization and current urbanization), using **generalized linear models**. For each model, I also added nature relatedness score as independent variable. I did model selection on each model, and **present only the variables that were significant in the tables of results**.

RESULTS

Respondents demographics across surveys did not significantly differ. Age, gender, education were relatively similar between the four surveys. Income was slightly lower in the 2018 survey after visit (I took this difference into account in the analyses based on this survey, adding an interaction effect between year and income in the model). Nature relatedness scores of respondents did not vary across surveys (see below). Urbanization level of current residence of visitors did not significantly change between 2018 and 2020.

- Overall happiness

There was no significant difference across time (2018 vs 2019 vs 2020) in overall happiness reported by visitors. Respondents who were more connected to nature reported higher overall happiness than other respondents.

	Estimate	Standard Error	P-value
Intercept	1.88	0.03	<0.001
Nature relatedness	0.06	0.009	<0.001

- Inclusion of Nature in Self

There was no significant difference across time (2019 vs 2020) in inclusion of nature in self.

	Estimate	Standard Error	P-value
Intercept	3.79	0.13	<0.001
Age	0.01	0.003	<0.001

- Nature relatedness

There was no significant difference across time (2018 vs 2019 vs 2020) in nature relatedness.

	Estimate	Standard Error	P-value
Intercept	3.19	0.07	<0.001
Age	0.01	0.001	<0.001

Visitors of Ramat Hanadiv are generally connected to nature (see figures below). For comparison, average score of nature relatedness among a sample of Tel Aviv inhabitants, representative of the Israeli population, was 3.10±0.99 in 2018. Visitors of Ramat Hanadiv thus appears to be generally more connected to nature than the average Israeli citizen.
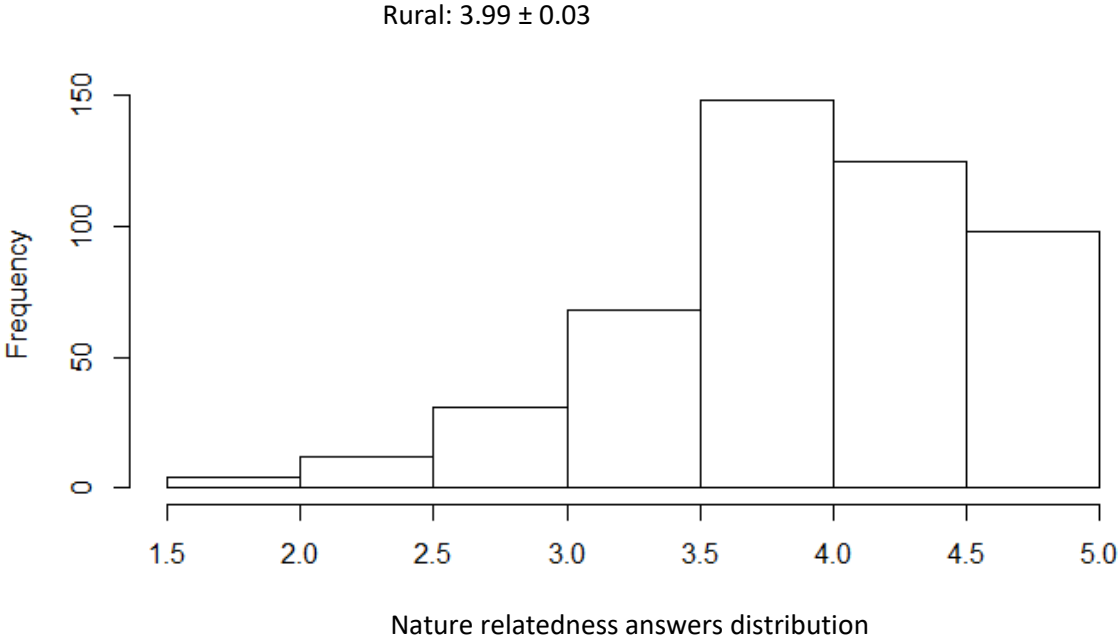
Rural: 3.99 ± 0.03

Nature relatedness answers distribution

Figure: Distribution of nature relatedness levels for a sample of visitors of Ramat Hanadiv living in rural environment, surveyed in 2018.
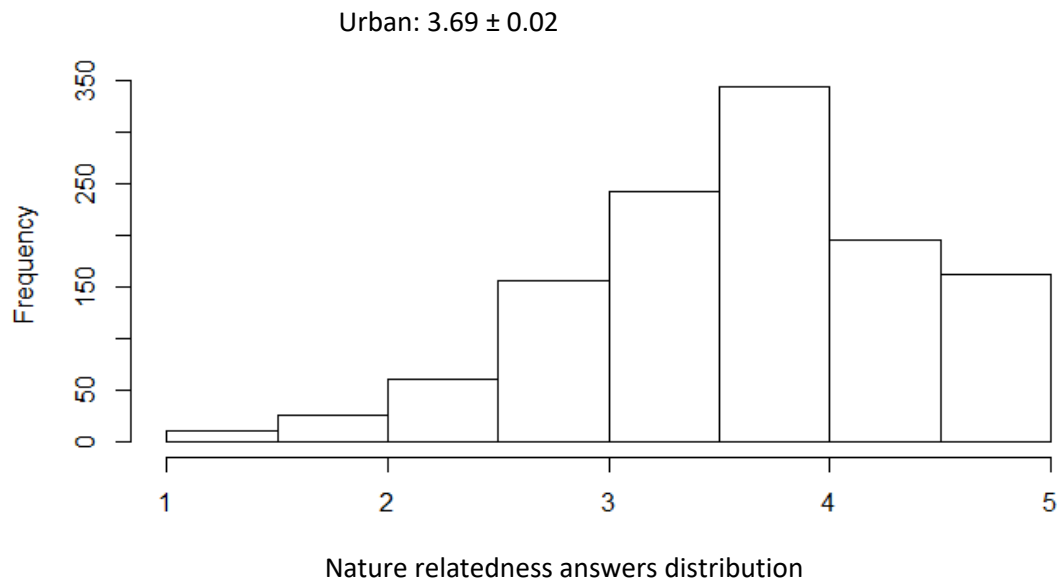
Urban: 3.69 ± 0.02

Nature relatedness answers distribution

Figure: Distribution of nature relatedness levels for a sample of visitors of Ramat Hanadiv living in urban environment, surveyed in 2018.
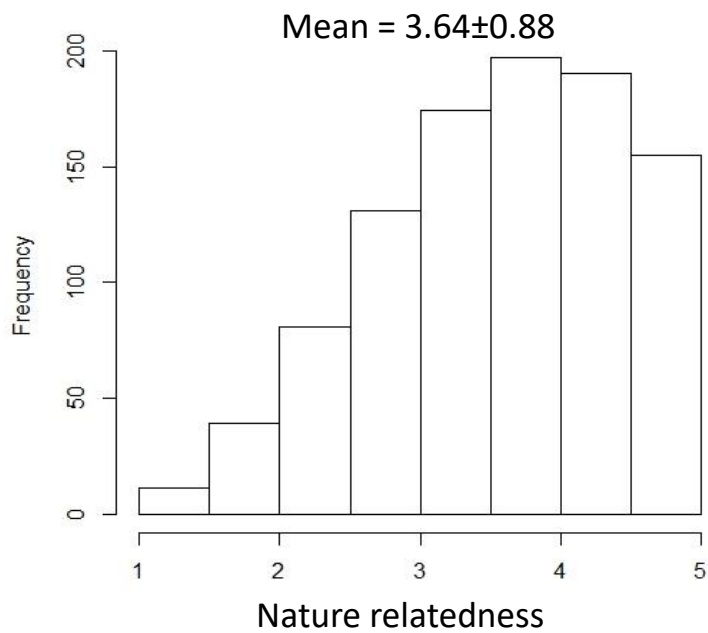
Mean = 3.64±0.88

Nature relatedness

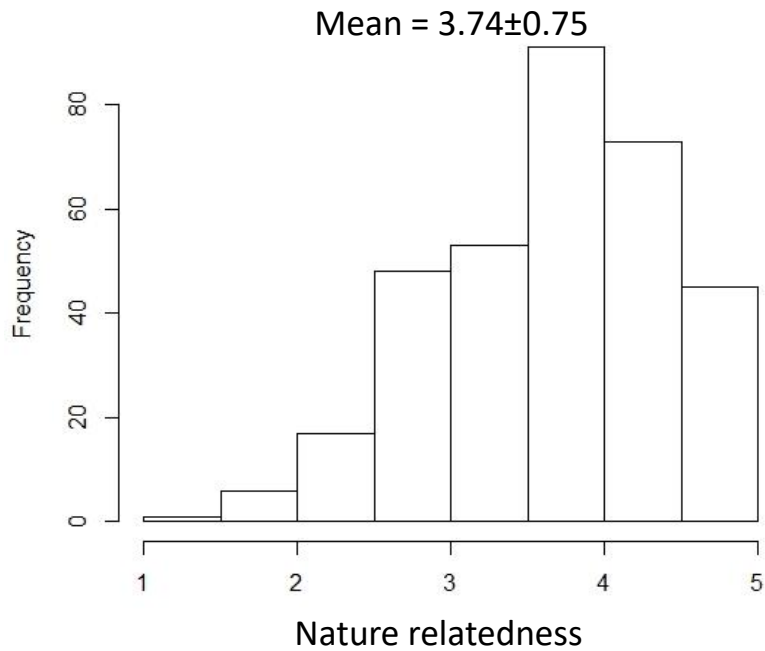Figure: Distribution of nature relatedness levels for a sample of visitors of Ramat Hanadiv surveyed in 2019.

Figure: Distribution of nature relatedness levels for a sample of visitors of Ramat Hanadiv surveyed in 2020.

- Motivations

Overall, thrill was the highest motivation, followed by relax and learn, social being the lowest. This trend was similar in 2018 and 2020.
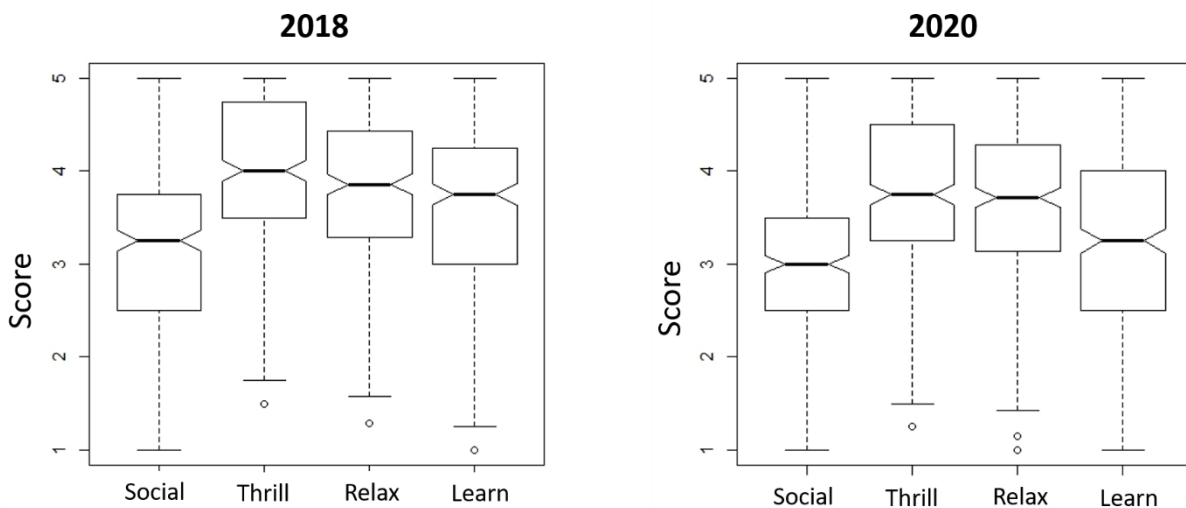
- Motivations – social

Motivation for social aspects of the visit significantly decreased over time (2018 vs 2020). Older respondents and those more connected to nature reported higher scores for social motivation.

	Estimate	Standard Error	P-value
Intercept	171.90	64.75	0.008
Year	-0.08	0.03	0.008
Age	0.008	0.002	<0.001
Nature relatedness	0.34	0.04	<0.001

- Motivations – thrill

Motivation for thrill aspects of the visit significantly decreased over time (2018 vs 2020). Older respondents, female and highly connected to nature individuals reported higher scores of motivation thrill than other individuals.

	Estimate	Standard Error	P-value
Intercept	38.57	18.81	0.04
Year	-0.01	0.009	0.04
Age	0.002	0.000	0.001
Gender – female (ref)	-	-	-
Gender – male	-0.05	0.01	0.002
Nature relatedness	0.09	0.01	<0.001

- Motivations – relax

Motivation for relaxing aspects of the visit did not change over time (2018 vs 2020). Female and highly connected to nature individuals reported higher scores of motivations relax than others.

	Estimate	Standard Error	P-value
Intercept	2.25	0.15	<0.001
Nature relatedness	0.42	0.03	<0.001
Gender – female (ref)	-	-	-
Gender – male	-0.18	0.06	0.002

- Motivations – learn

Motivation for learning aspects of the visit significantly decreased over time (2018 vs 2020). Individuals more connected to nature reported higher scores of motivations learn than others.

	Estimate	Standard Error	P-value
Intercept	385.15	71.95	<0.001
Year	-0.18	0.03	<0.001
Nature relatedness	0.41	0.04	<0.001

- Nature interactions – smell nature

We found a significant increase in smell nature behaviors across time (2019 vs 2020). Older respondents and those more connected to nature reported more smell nature behaviors than others.

	Estimate	Standard Error	P-value
Intercept	-0.04	0.02	0.03
Year	0.22	0.10	0.03
Age	0.01	0.003	<0.001
Nature relatedness	0.45	0.05	<0.001

- Nature interactions – smell non-nature

We found no significant difference in smell non-nature behaviors across time (2019 vs 2020).

	Estimate	Standard Error	P-value
Intercept	-151.75	397.62	0.70
Year	0.07	0.19	0.70

- Nature interactions – see nature

We found a significant decrease in see nature behaviors across time (2019 vs 2020). Individuals who connected to nature reported more see nature behaviors than others.

	Estimate	Standard Error	P-value
Intercept	1385.86	191.53	<0.001
Year	-0.68	0.09	<0.001
Nature relatedness	0.27	0.04	<0.001

- Nature interactions – hear nature

We found no significant difference in hear nature behaviors across time (2019 vs 2020). Respondents who were more connected to nature reported more hear nature behaviors.

	Estimate	Standard Error	P-value
Intercept	1.51	0.15	<0.001
Nature relatedness	0.27	0.04	<0.001

- Nature interactions – hear non-nature

We found a significant decrease in hear non-nature behaviors across time (2019 vs 2020).

	Estimate	Standard Error	P-value
Intercept	819.45	98.03	<0.001
Year	-0.40	0.04	<0.001
Age	-0.002	0.001	0.09
Gender – female (ref)	-	-	-
Gender – male	0.11	0.03	0.003

- Nature interactions – touch nature

We found a significant decrease in touch nature behaviors across time (2019 vs 2020). Men and individuals more connected to nature reported more touch nature behaviors than others.

	Estimate	Standard Error	P-value
Intercept	1152.26	281.53	<0.001
Year	-0.56	0.13	<0.001
Gender – female (ref)	-	-	-
Gender – male	0.30	0.11	0.009
Nature relatedness	0.43	0.06	<0.001

- Nature interactions – pictures nature

We found a significant decrease in taking pictures of nature behaviors across time (2019 vs 2020). Women and individuals more connected to nature reported taking more pictures of nature elements than others.

	Estimate	Standard Error	P-value
Intercept	645.98	231.85	0.005
Year	-0.31	0.11	0.005
Gender – female (ref)	-	-	-
Gender – male	-0.27	0.09	0.004
Nature relatedness	0.30	0.05	<0.001

- Well-being – reflection

We found no difference in this well-being component across time (2018 vs 2020). Older, less educated and more connected to nature individuals showed higher scores of well-being (reflection) than others.

	Estimate	Standard Error	P-value
Intercept	2.17	0.19	<0.001
Age	0.004	0.002	0.05
Education	-0.11	0.03	<0.001
Nature relatedness	0.42	0.04	<0.001

- Well-being – attachment

We found no difference in this well-being component across time (2018 vs 2020). Women, older respondents and those more connected to nature showed higher well-being (attachment) than others.

	Estimate	Standard Error	P-value
Intercept	3.37	0.11	<0.001
Age	0.005	0.001	<0.001
Gender – female (ref)	-	-	-
Gender – male	-0.16	0.04	<0.001
Nature relatedness	0.25	0.02	<0.001

- Well-being – identity

We found a significant increase in this well-being component across time (2018 vs 2020). However, internal reliability of this variable was not satisfactory. Women, older and more connected to nature respondents showed higher scores of well-being (identity) than others.

	Estimate	Standard Error	P-value
Intercept	-0.36	0.11	0.002
Year	0.01	0.005	0.001
Age	0.001	0.000	0.001
Gender – female (ref)	-	-	-
Gender – male	-0.03	0.01	0.003
Nature relatedness	0.03	0.007	<0.001

- Positive affect (PANAS)

We found no difference in positive affect across time (2019 vs 2020). Age, gender and nature relatedness were significantly related to positive affect. Respondents who were women, older, and highly connected with nature reported higher positive affect than men, younger and less connected to nature individuals.

	Estimate	Standard Error	P-value
Intercept	1.46	0.11	<0.001
Age	0.01	0.001	<0.001
Gender – female (ref)	-	-	-
Gender – male	-0.17	0.04	<0.001
Nature relatedness	0.39	0.02	<0.001

- Negative affect (PANAS)

We found no difference in negative affect across time (2019 vs 2020).

	Estimate	Standard Error	P-value
Intercept	9.56	122.21	0.93
Year	-0.004	0.06	0.93

- Perception Ramat Hanadiv as a nature reserve or urban park

On average, visitors of Ramat Hanadiv rate it more as a nature reserve than an urban park (mean = 7.08±2.13, on a scale from 0 – urban park to 10 – nature reserve). We found no difference in this perception across time (2018 vs 2020). Age, education, and nature relatedness were significant predictors of the visitors' perception of Ramat Hanadiv as a nature reserve or urban park. Older, less educated and highly connected to nature respondents perceived Ramat Hanadiv more as a nature reserve than younger, more educated and less connected to nature respondents.

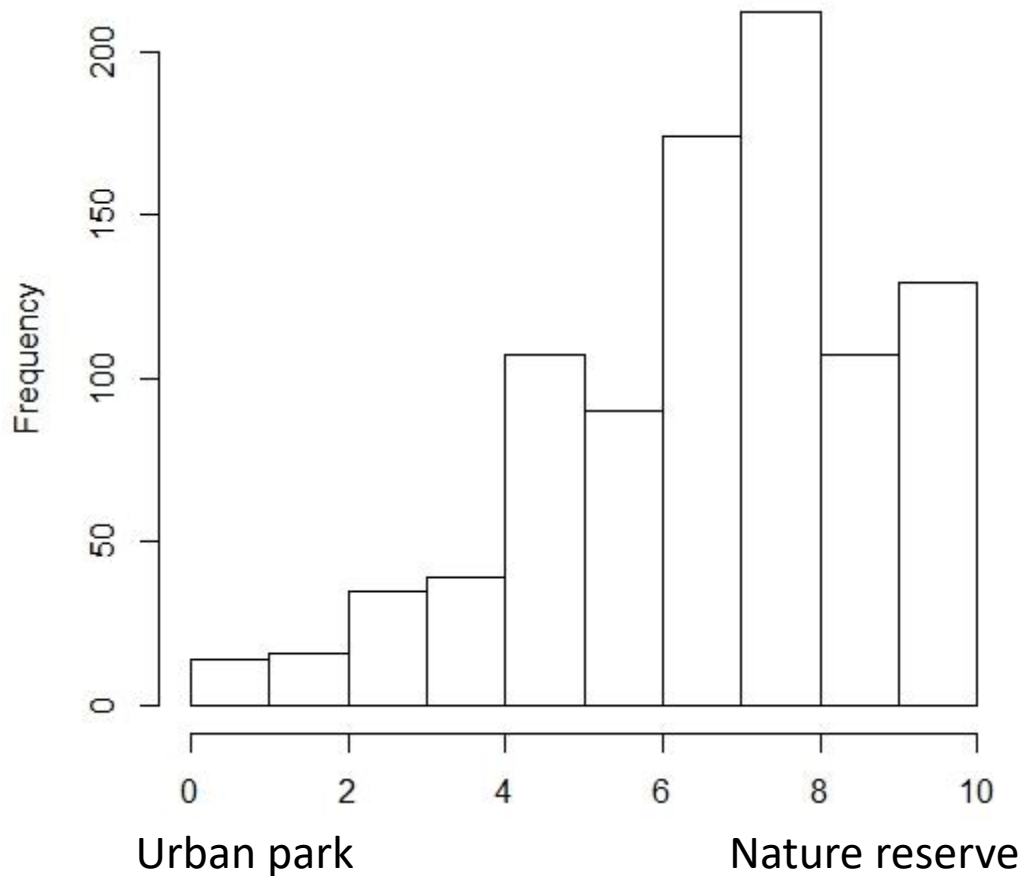|	Estimate	Standard Error	P-value
Intercept	5.50	0.48	<0.001
Age	0.01	0.005	0.01
Education	-0.21	0.07	0.002
Nature relatedness	0.48	0.09	<0.001

Figure: Distribution of perception of Ramat Hanadiv as an urban park or a nature reserve.

- Each motivation

Most motivations did not change across time, and nature relatedness and age were mostly the predictors of each motivation. However, we found a significant decrease in 'Meet people with similar interests', 'experience loneliness', 'escape from the workload', 'have fun', 'learn, gain knowledge', 'travel to historical sites', and 'explore new places' motivations over time.

	Estimate	Standard Error	P-value
Being together as a family			
Intercept	3.63	0.21	<0.001
Nature Relatedness (NR)	0.16	0.04	<0.001
Income	0.04	0.01	0.007
Meet people with similar interests			
Intercept	378.78	113.37	<0.001
Year	-0.18	0.05	<0.001
Age	0.01	0.004	0.001
NR	0.45	0.07	<0.001

Share familiar places with others			
Intercept	1.35	0.28	<0.001
Age	0.01	0.003	0.002
NR	0.42	0.06	<0.001
Experience loneliness			
Intercept	297.32	101.20	0.003
Year	-0.14	0.05	0.003
Age	0.01	0.003	0.002
NR	0.30	0.06	<0.001
Escape from the workload			
Intercept	422.39	116.24	<0.001
Year	-0.20	0.05	<0.001
NR	0.45	0.07	<0.001
Urbanization current place	0.16	0.07	0.02
Feel belong at a place which is not home			
Intercept	0.38	0.27	0.16
Age	0.01	0.003	<0.001
NR	0.56	0.06	<0.001
Feeling safe even if traveling alone			
Intercept	1.34	0.28	<0.001
Age	0.01	0.003	0.005
NR	0.46	0.06	<0.001
Freshen up			
Intercept	164.58	72.22	0.02
Year	-0.07	0.03	0.02
NR	0.29	0.04	<0.001
Lack of need to hurry			
Intercept	2.01	0.23	<0.001
NR	0.41	0.06	<0.001
Relax			
Intercept	2.58	0.19	<0.001
NR	0.40	0.04	<0.001
Relaxation away from the routine			
Intercept	2.38	0.23	<0.001
NR	0.38	0.04	<0.001
Urbanization current place	0.14	0.04	0.004

Be physically active			
Intercept	1.62	0.25	<0.001
Age	0.01	0.003	<0.001
NR	0.43	0.06	<0.001
Do exciting things			
Intercept	1.40	0.27	<0.001
NR	0.48	0.05	<0.001
Urbanization current place	0.15	0.05	0.01
Have fun			
Intercept	300.12	49.51	<0.001
Year	-0.14	0.02	<0.001
NR	0.16	0.03	<0.001
Urbanization childhood place	0.06	0.03	0.02
Look for excitements			
Intercept	1.46	0.27	<0.001
Age	0.009	0.003	0.01
NR	0.45	0.06	<0.001
Learn, gain knowledge			
Intercept	428.10	89.89	<0.001
Year	-0.21	0.04	<0.001
NR	0.42	0.05	<0.001
Travel to historical sites			
Intercept	361.09	97.78	<0.001
Year	-0.17	0.04	<0.001
NR	0.42	0.06	<0.001
Urbanization childhood place	0.13	0.06	0.02
Explore new places			
Intercept	575.22	101.86	<0.001
Year	-0.28	0.05	<0.001
NR	0.43	0.06	<0.001
Urbanization current place	0.22	0.06	<0.001
Visit where friends did not visit			
Intercept	1.07	0.28	<0.001
NR	0.40	0.07	<0.001