Results

GR_Duration_Linear Mixed Models

ANOVA Summary

Effect	df	F	p
Distance	1, 17.43	151.179637770	5.095263107e −10
Transecto	1, 16.26	54.628347466	0.000001384
Contexto	2, 2.29	0.673159070	0.588976761
Population	2, 2.19	1.428951933	0.400975884

Warning: All random slopes involving "Population" have been removed for the random effects grouping factor 'Individual'. −− Factor 'Population' does not vary within the levels of random effects grouping factor 'Individual'.

Note. Model terms tested with Satterthwaite method.

Warning: Numerical problems with the maximum−likelihood estimate (e.g., gradients too large). This may indicate that the specified random effects parameters (random intercepts and random slopes) cannot be estimated from the available data. Consider carefully reducing the random effects structure, but be aware this may induce unknown risks of anti−conservative results (i.e., p−values might be lower than nominal).

Note. The following variable is used as a random effects grouping factor: 'Individual'.

Note. Type III Sum of Squares

Model summary

Fit statistics

Deviance	Deviance (REML)	log Lik.	df	AIC	BIC
−7883.533798828	−7824.597119418	3912.298559709	23	−7778.597119418	−7635.466036741

Note. The model was fitted using restricted maximum likelihood.

Sample sizes

	Levels of RE grouping factors
Observations	Individual
3726	20

Fixed Effects Estimates

Term	Estimate	SE	df	t	p
Intercept	0.201651111	0.018737726	2.461195600	10.761770875	0.003946803
Distance	0.001425396	0.000115928	17.428952477	12.295512912	$5.095263107e-10$
Transecto (1)	0.042353239	0.005730303	16.258062751	7.391099206	0.000001384
Contexto (1)	−0.005259662	0.020384359	2.308875673	−0.258024399	0.817604559
Contexto (2)	0.019529953	0.016843786	3.374781061	1.159475274	0.321671140
Population (1)	0.028962414	0.017400823	2.310188565	1.664427860	0.220998723
Population (2)	−0.015467474	0.020543171	2.171413031	−0.752925357	0.524610435

Note. The intercept corresponds to the (unweighted) grand mean; for each factor with k levels, k – 1 parameters are estimated. Consequently, the estimates cannot be directly mapped to factor levels.

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GR_Max Freq_Linear Mixed Models

ANOVA Summary

Effect	df	F	p
Distance	1, 14.53	58.291028791	0.000001865
Transecto	1, 15.04	6.005821789	0.026972670
Contexto	2, 2.84	0.136401615	0.877881543
Population	2, 15.37	0.087485379	0.916685169

Warning: All random slopes involving "Population" have been removed for the random effects grouping factor 'Individual'. -- Factor 'Population' does not vary within the levels of random effects grouping factor 'Individual'.

Warning: Model fit is singular. Specified random effects parameters (random intercepts and random slopes) cannot be estimated from the available data. Carefully reduce the random effects structure, but this practice might inflate the reported p-value, and invalidates the analysis.

Note. Model terms tested with Satterthwaite method.

Note. The following variable is used as a random effects grouping factor: 'Individual'.

Note. Type III Sum of Squares

Model summary

Fit statistics

Deviance	Deviance (REML)	log Lik.	df	AIC	BIC
49364.107554062	49321.864381085	−24660.932190542	23	49367.864381085	49510.995463762

Note. The model was fitted using restricted maximum likelihood.

Sample sizes

	Levels of RE grouping factors
Observations	Individual
3726	20

Fixed Effects Estimates

Term	Estimate	SE	df	t	p
Intercept	244.899187997	29.293570316	5.297733609	8.360168643	0.000301491
Distance	1.044830349	0.136850037	14.526323263	7.634856174	0.000001865
Transecto (1)	9.293726347	3.792308504	15.035257504	2.450677822	0.026972670
Contexto (1)	13.589728890	28.167224081	3.833085439	0.482466034	0.655726203
Contexto (2)	7.257871998	44.856897250	24.973283747	0.161800580	0.872764856
Population (1)	8.684309168	20.855083516	16.087142216	0.416412102	0.682611245
Population (2)	−6.787596542	24.523356119	15.330227475	−0.276780899	0.785645382

Note. The intercept corresponds to the (unweighted) grand mean; for each factor with k levels, k – 1 parameters are estimated. Consequently, the estimates cannot be directly mapped to factor levels.

GR_Max Power_Linear Mixed Models

ANOVA Summary

Effect	df	F	p
Distance	1, 22.06	1548.523318099	6.254554543e −22
Transecto	1, 19.54	2302.786504325	9.558863756e −22
Contexto	2, 7.09	1.000264512	0.414332938
Population	2, 18.95	3.729112179	0.043089800

Warning: All random slopes involving "Population" have been removed for the random effects grouping factor 'Individual'. –– Factor 'Population' does not vary within the levels of random effects grouping factor 'Individual'.

Note. Model terms tested with Satterthwaite method.

Warning: Numerical problems with the maximum–likelihood estimate (e.g., gradients too large). This may indicate that the specified random effects parameters (random intercepts and random slopes) cannot be estimated from the available data. Consider carefully reducing the random effects structure, but be aware this may induce unknown risks of anti–conservative results (i.e., p–values might be lower than nominal).

Note. The following variable is used as a random effects grouping factor: 'Individual'.

Note. Type III Sum of Squares

Model summary

Fit statistics

Deviance	Deviance (REML)	log Lik.	df	AIC	BIC
21531.740810788	21540.160986474	−10770.080493237	23	21586.160986474	21729.292069151

Note. The model was fitted using restricted maximum likelihood.

Sample sizes

	Levels of RE grouping factors
Observations	Individual
3726	20

Fixed Effects Estimates

Term	Estimate	SE	df	t	p
Intercept	108.882576768	0.537115516	18.657276187	202.717243255	1.185593894e−32
Distance	−0.259403367	0.006591993	22.058963194	−39.351281022	6.254554543e−22
Transecto (1)	10.942252651	0.228023654	19.539332263	47.987357755	9.558863756e−22
Contexto (1)	−0.337276597	0.273961618	4.961221767	−1.231108940	0.273431197
Contexto (2)	1.171167695	1.454549776	29.377568210	0.805175398	0.427187480
Population (1)	0.543004303	0.469713640	21.537081031	1.156032647	0.260331321
Population (2)	0.650874747	0.538700021	18.930117525	1.208232266	0.241835622

Note. The intercept corresponds to the (unweighted) grand mean; for each factor with k levels, k − 1 parameters are estimated. Consequently, the estimates cannot be directly mapped to factor levels.

GR_rel.Max Time_Linear Mixed Models

ANOVA Summary

Effect	df	F	p
Distance	1, 15.07	3.397711505	0.085037405
Transecto	1, 266.11	72.111623630	1.453633907e−15
Contexto	2, 10.47	2.302928613	0.148280969
Population	2, 16.79	3.881841279	0.041142843

Warning: All random slopes involving "Population" have been removed for the random effects grouping factor 'Individual'. -- Factor 'Population' does not vary within the levels of random effects grouping factor 'Individual'.

Warning: Model fit is singular. Specified random effects parameters (random intercepts and random slopes) cannot be estimated from the available data. Carefully reduce the random effects structure, but this practice might inflate the reported p-value, and invalidates the analysis.

Note. Model terms tested with Satterthwaite method.

Note. The following variable is used as a random effects grouping factor: 'Individual'.

Note. Type III Sum of Squares

Model summary

Fit statistics

Deviance	Deviance (REML)	log Lik.	df	AIC	BIC
−951.576349341	−895.322450773	447.661225386	23	−849.322450773	−706.191368096

Note. The model was fitted using restricted maximum likelihood.

Sample sizes

	Levels of RE grouping factors	
Observations	Individual
3726	20

Fixed Effects Estimates

Term	Estimate	SE	df	t	p
Intercept	0.354520667	0.014293028	23.568054533	24.803747615	2.146542950e −18
Distance	−0.000259340	0.000140694	15.073863494	−1.843288232	0.085037405
Transecto (1)	−0.030440388	0.003584657	266.107860256	−8.491856312	1.453633907e −15
Contexto (1)	0.033362882	0.015552135	6.231461627	2.145228462	0.073908020
Contexto (2)	0.007263796	0.174733584	322.596163819	0.041570693	0.966866653
Population (1)	−0.028455440	0.014352456	19.352474770	−1.982618186	0.061787952
Population (2)	−0.003674518	0.016101550	17.256395726	−0.228208949	0.822166095

Note. The intercept corresponds to the (unweighted) grand mean; for each factor with k levels, k − 1 parameters are estimated. Consequently, the estimates cannot be directly mapped to factor levels.