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附录1　江苏省南京市动物路杀调查研究涉及路段基本信息表

Appendix 1　Information for sampling roads in investigation of animals vehicle collisions in Nanjing City, Jiangsu Province, China

编号 No.	道路等级 Road class	长度 Length (km)	车道数目 No. of lanes	道路宽度 Road width (m)	道路周围主要生境 Main habitats around the road
G1	国道	21.65	8	40-60	居住区、开阔地、林地
G2	国道	12.38	6	20-40	居住区、林地
G3	国道	56.57	6	20-40	居住区、开阔地
S1	省道	47.37	4/6	20-50	居住区、农田
S2	省道	15.97	4	15-35	居住区、林地
S3	省道	21.40	4	15-35	居住区、林地
X1	县乡道	19.37	2	10-20	居住区、农田
X2	县乡道	9.84	4	15-30	林地、开阔地
X3	县乡道	19.72	2	10-20	林地、开阔地

附录2 南京市陆生脊椎动物路杀事件回归模型结果。P_farm: 缓冲区内耕地面积占比; P_build: 缓冲区内建筑面积占比; P_grass: 缓冲区内草地面积占比; P_forest: 缓冲区内林地面积占比; P_water: 缓冲区内水体面积占比; Ele: 海拔高度; Sinu: 道路曲折度; Length: 取样单元道路长度; Lane: 车道数目; Speed: 道路最高限速; Iso: 道路隔离带; Roadtype: 道路类型; D_trunk: 到最近高架桥的距离; D_arte: 到最近城市主干道的距离; D_subarte: 到最近城市次干道的距离; D_road: 到最近道路的距离; D_river: 到最近河流(线状水体)的距离; D_lake: 到最近湖泊湿地(面状水体)的距离。

Appendix 2 Results of the regression model for roadkill incidents of terrestrial vertebrates in Nanjing. P_farm, Proportion of crop land in the buffer zone; P_build, Proportion of buildings in the buffer zone; P_grass, Proportion of grassland in the buffer zone; P_forest, Proportion of woodland in the buffer zone; P_water, Proportion of water bodies in the buffer zone; Ele, Elevation; Sinu, Road tortuosity; Length, Road length of the sampling unit; Lane, Number of lanes; Speed, Maximum speed limit of the road; Iso, Road isolation zone; Roadtype, Road type; D_trunk, Distance to the nearest elevated highway; D_arte, Distance to the nearest urban trunk; D_subarte, Distance to the nearest urban secondary road; D_road, Distance to the nearest road; D_river, Distance to the nearest river (linear water bodies); D_lake, Distance to the nearest lake wetland (surface water bodies).

模型类型 Model type	自变量	Estimate	Std. Error	z value	Pr(>|z|)
负二项式模型 Negative	自然景观 AIC: 1,107.89				
binomial model	(Intercept)	–0.278	0.077	–3.611	< 0.001***
	P_farm250	–0.288	0.097	–2.976	0.003**
	P_build250	–0.245	0.110	–2.218	0.027*
	P_fore250	–0.005	0.101	–0.048	0.962
	P_gras500	–0.044	0.085	–0.511	0.609
	P_gras1000	–0.078	0.087	–0.902	0.367
	P_fore1000	0.083	0.083	1.002	0.316
	P_farm1000	0.213	0.090	2.366	0.018*
	P_build1000	0.037	0.092	0.399	0.690
	道路特征 AIC: 1,120				
	(Intercept)	1.082	1.279	0.846	0.398
	Ele	–0.067	0.081	–0.833	0.405
	Sinu	0.064	0.094	0.680	0.497
	Length	–0.081	0.083	–0.977	0.329
	Lane1	–0.449	0.435	–1.032	0.302
零膨胀负二项式模型	Speed40	–1.445	1.347	–1.073	0.283
Zero-inflated negative	Speed50	–1.657	1.558	–1.064	0.287
binomial model	Speed60	–1.716	1.300	–1.321	0.187
	Speed70	–1.856	1.323	–1.404	0.160
	Speed80	–1.911	1.315	–1.454	0.146
	Iso1	0.575	0.213	2.702	0.007**

模型类型 Model type	自变量	Estimate	Std. Error	z value	Pr(>|z|)
	RoadtypeNR	0.302	0.287	1.051	0.293
	RoadtypePR	0.027	0.254	0.105	0.916
	线性特征 AIC: 1,092.97				
	(Intercept)	–7.810	4.540	–1.720	0.085
	D_river	1.878	1.084	1.732	0.083
	D_lake	–1.066	1.709	–0.624	0.533
	D_trunk	–1.403	1.035	–1.356	0.175
	D_subarte	–2.391	2.275	–1.051	0.293
	D_arte	–0.733	0.767	–0.956	0.339
	D_road	–16.927	10.036	–1.687	0.092

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

附录3　南京市鸟类路杀事件回归模型结果。P_farm: 缓冲区内耕地面积占比; P_build: 缓冲区内建筑面积占比; P_grass: 缓冲区内草地面积占比; P_forest: 缓冲区内林地面积占比; P_water: 缓冲区内水体面积占比; Ele: 海拔高度; Sinu: 道路曲折度; Length: 取样单元道路长度; Lane: 车道数目; Speed: 道路最高限速; Iso: 道路隔离带; Roadtype: 道路类型; D_trunk: 到最近高架桥的距离; D_arte: 到最近城市主干道的距离; D_subarte: 到最近城市次干道的距离; D_road: 到最近道路的距离; D_river: 到最近河流(线状水体)的距离; D_lake: 到最近湖泊湿地(面状水体)的距离。

Appendix 3　Results of the regression model for roadkill incidents of birds in Nanjing. P_farm, Proportion of crop land in the buffer zone; P_build, Proportion of buildings in the buffer zone; P_grass, Proportion of grassland in the buffer zone; P_forest, Proportion of woodland in the buffer zone; P_water, Proportion of water bodies in the buffer zone; Ele, Elevation; Sinu, Road tortuosity; Length, Road length of the sampling unit; Lane, Number of lanes; Speed, Maximum speed limit of the road; Iso, Road isolation zone; Roadtype, Road type; D_trunk, Distance to the nearest elevated highway; D_arte, Distance to the nearest urban trunk; D_subarte, Distance to the nearest urban secondary road; D_road, Distance to the nearest road; D_river, Distance to the nearest river (linear water bodies); D_lake, Distance to the nearest lake wetland (surface water bodies).

模型类型	自变量	Estimate	Std. Error	z value	Pr(>|z|)
负二项式模型	自然景观 693.23				
Negative binomial	(Intercept)	–1.166	0.105	–11.120	< 0.001***
model	P_farm250	–0.169	0.125	–1.357	0.175
	P_build250	–0.302	0.151	–1.996	0.046*
	P_fore250	0.148	0.123	1.202	0.230
	P_gras500	0.084	0.103	0.816	0.414
	P_gras1000	–0.104	0.110	–0.951	0.342
	P_fore1000	–0.007	0.118	–0.061	0.951
	P_farm1000	0.236	0.111	2.125	0.034*
	P_build1000	–0.097	0.137	–0.710	0.477
	道路特征 717.34				
	(Intercept)	–33.604	10845491.482	0.000	1.000
	Ele	–0.225	0.116	–1.943	0.052
	Sinu	–0.009	0.121	–0.076	0.939
	Length	0.054	0.107	0.503	0.615
	Lane1	0.101	0.513	0.197	0.843
	Speed40	32.566	10845491.482	0.000	1.000
	Speed50	32.070	10845491.482	0.000	1.000
	Speed60	31.846	10845491.482	0.000	1.000
	Speed70	32.311	10845491.482	0.000	1.000
	Speed80	31.725	10845491.482	0.000	1.000
	Iso1	0.705	0.285	2.474	0.013*

模型类型	自变量	Estimate	Std. Error	z value	Pr(>|z|)
	RoadtypeNR	0.273	0.386	0.708	0.479
	RoadtypePR	0.294	0.339	0.866	0.387
	线性特征 690.89				
	(Intercept)	–1.171	0.107	–10.991	＜0.001***
	D_river	–0.446	0.161	–2.767	0.006**
	D_lake	–0.171	0.103	–1.660	0.097
	D_trunk	0.263	0.100	2.619	0.009**
	D_subarte	0.166	0.102	1.631	0.103
	D_arte	0.402	0.112	3.591	＜0.001***
	D_road	–0.029	0.094	–0.308	0.758

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

附录4　南京市兽类路杀事件回归模型结果。P_farm: 缓冲区内耕地面积占比; P_build: 缓冲区内建筑面积占比; P_grass: 缓冲区内草地面积占比; P_forest: 缓冲区内林地面积占比; P_water: 缓冲区内水体面积占比; Ele: 海拔高度; Sinu: 道路曲折度; Length: 取样单元道路长度; Lane: 车道数目; Speed: 道路最高限速; Iso: 道路隔离带; Roadtype: 道路类型; D_trunk: 到最近高架桥的距离; D_arte: 到最近城市主干道的距离; D_subarte: 到最近城市次干道的距离; D_road: 到最近道路的距离; D_river: 到最近河流(线状水体)的距离; D_lake: 到最近湖泊湿地(面状水体)的距离。

Appendix 4　Results of the regression model for roadkill incidents of mammals in Nanjing. P_farm, Proportion of crop land in the buffer zone; P_build, Proportion of buildings in the buffer zone; P_grass, Proportion of grassland in the buffer zone; P_forest, Proportion of woodland in the buffer zone; P_water, Proportion of water bodies in the buffer zone; Ele, Elevation; Sinu, Road tortuosity; Length, Road length of the sampling unit; Lane, Number of lanes; Speed, Maximum speed limit of the road; Iso, Road isolation zone; Roadtype, Road type; D_trunk, Distance to the nearest elevated highway; D_arte, Distance to the nearest urban trunk; D_subarte, Distance to the nearest urban secondary road; D_road, Distance to the nearest road; D_river, Distance to the nearest river (linear water bodies); D_lake, Distance to the nearest lake wetland (surface water bodies).

模型类型	自变量	Estimate	Std. Error	z value	Pr(>|z|)
负二项式模型 Negative	自然景观 791.21				
binomial model	(Intercept)	–0.875	0.102	–8.596	＜0.001***
	P_farm250	–0.365	0.129	–2.825	0.005**
	P_build250	–0.207	0.142	–1.454	0.146
	P_fore250	–0.171	0.139	–1.229	0.219
	P_gras500	–0.143	0.119	–1.202	0.229
	P_gras1000	–0.050	0.116	–0.427	0.669
	P_fore1000	0.103	0.107	0.958	0.338
	P_farm1000	0.191	0.123	1.560	0.119
	P_build1000	0.067	0.117	0.572	0.567
	道路特征 789.37				
	(Intercept)	1.166	1.493	0.781	0.435
	Ele	0.009	0.101	0.086	0.931
	Sinu	0.146	0.124	1.179	0.238
	Length	–0.202	0.111	–1.817	0.069
	Lane1	–1.191	0.693	–1.717	0.086
零膨胀负二项式模型	Speed40	–2.252	1.597	–1.410	0.159
Zero-inflated negative	Speed50	–2.329	1.876	–1.241	0.214
binomial model	Speed60	–2.220	1.520	–1.460	0.144
	Speed70	–2.915	1.566	–1.861	0.063
	Speed80	–2.422	1.542	–1.570	0.116
	Iso1	0.428	0.274	1.562	0.118
	RoadtypeNR	0.331	0.371	0.891	0.373

模型类型	自变量	Estimate	Std. Error	z value	Pr(>|z|)
	RoadtypePR	–0.151	0.330	–0.458	0.647
	线性特征 780.92				
	(Intercept)	–0.953	0.910	–1.047	0.295
	D_river	0.011	0.267	0.039	0.969
	D_lake	–0.627	0.615	–1.021	0.307
	D_trunk	–0.378	0.507	–0.746	0.456
	D_subarte	0.313	0.297	1.056	0.291
	D_arte	0.347	0.439	0.791	0.429
	D_road	–0.387	0.792	–0.489	0.625

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$