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IZA DP No. 16049

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ABSTRACT

On the Road to Equity: Examining Income-Related Inequalities in Ownership of Safer Vehicles*

Using administrative DVLA data matched with micro-data from Understanding Society – the UK Household Longitudinal Study we estimate income-related inequalities in ownership of vehicles with a set of safety features and we apply a regression-based decomposition method for rank-dependent inequality measures to estimate the source of inequalities. We find systematic pro-rich inequalities in ownership of passively safer vehicles that are almost entirely explained by the characteristics of the vehicles, mainly their price and year of manufacture. A wide range of variables measured at the household level including demographics, risk aversion and time preference proxies, personality traits, cognitive ability, and education plays a much less pronounced and, in most cases, non-statistically significant contribution to overall inequality. These findings reveal inequity in access to passively safer vehicles with potential effects on the socio-economic gap in road-traffic injuries and mortality rates, requiring regulatory intervention.

JEL Classification: I10, I14, R41

Keywords: income inequalities, car's safety, concentration indexes, United Kingdom

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1. Introduction

Road traffic injuries comprise the eighth leading cause of death for all age groups worldwide (WHO, 2018). There were 1.35 million road traffic deaths in 2016 globally, while 20-50 million people suffer non-fatal injuries (WHO, 2018). In 2020, 1,516 persons lost their lives in road accidents in the UK, with the total road accident cost estimated at 1.5% of the UK's gross domestic product (GDP) (OECD, 2021) and about 3% of GDP globally (WHO, 2018). Despite these multidimensional impacts, few "epidemics" receive less attention from the literature than road traffic accidents.

The few available studies show the presence of socio-economic gradient in both incidence and consequences of road accidents. Harper et al. (2015) found that vehicle accident mortality rates in the USA were 4.3 times higher in 2010 (vs. 2.4 times higher in 1995) for those with a higher education degree versus those without secondary education. European studies also reveal the presence of socioeconomic inequalities in road-traffic injury and the related mortality rates (Hasselberg et al., 2005; Stickley et al., 2021).[1]

Especially in light of recent technological innovations concerting vehicles safety measures, access to safer vehicles represents a key source of the observed socio-economic gradient in road accident fatalities (Harper et al., 2015; Stickley et al., 2021) along with unsafe behaviours such as drunk-driving (Impinen et al., 2011). However, probably due to the limited availability of data on vehicle characteristics, matched with individual characteristics (Anbarci et al., 2009), including socio-economic status (SES), there is a lack of empirical evidence on socioeconomic inequalities in ownership of passively safer vehicles and their main underlying sources.

The socio-economic inequalities in access to safer vehicles are of paramount relevance from the social welfare and regulatory perspective. Existing literature shows a strong association between SES and health risky behaviours, which became wider in response to health promotion activities and/or the availability of new less harmful alternatives (Cawley and Rhum, 2011). As such, and given continuous vehicle safety features development due to technological progress, the presence of socio-economic inequality in the ownership of safer vehicles can result in a striking conflict between efficiency and

[1] In a related context, using aggregated country-level data, Anbarci et al. (2009) explored the positive relationship between traffic fatalities and levels of economic growth.

equity —road accident mortality risks may decline while inequalities in road accident risks may increase.[2] From a normative point of view, if the underlying SES gradient in ownership of safer vehicles reflects individual preferences (such as risk aversion or time preference) it may represent a legitimate source of variation; however, a gradient due to price effects or lack of information may instead call for regulatory policies.

Using merged administrative vehicles data with *Understanding Society —the UK Household Longitudinal Study* (UKHLS), this is the first paper, according to the best of our knowledge, that shed light on the extent and the sources of income-related inequalities in ownership of vehicles with a set of safety features. Regression-based decomposition techniques are also implemented to explore what lies behind the observed pro-rich inequalities in safer vehicles ownership; particularly, the contribution of socioeconomic and demographic factors, cognitive ability, personality traits along with risk aversion and time preference proxies, and a set of vehicle characteristics.

2. Data & Methods

UKHLS wave 5 is linked to administrative data from DVLA records and a third-party car database that contains detailed information on vehicles accessible to household members.[3] We focus on eight vehicle's passive safety features (Table 1).[4] To assess income-related inequality in vehicle's safety features we use long-run average household income (up to 5 waves) collected between UKHLS waves 1 (2009–2011) and 5 (2013-2015). Household income is deflated, equivalised using the modified OECD scale, and long-transformed.[5]

[2] This is consistent with Contoyannis and Forster (1999) argued that when responsiveness to health promotion policies varies across socio-economic groups, i.e. a higher take-up rate among the better-off, average population health and inequalities in health may both increase.

[3] The UKHLS dataset is a multi-purpose nationally representative UK panel household survey. Details on the matching procedure of the UKHLS micro-data with administrative data records (based on the reported vehicle registration from household members) and with a third-party vehicle database (based on the model of the vehicle and other characteristics) are available elsewhere (https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/mainstage/user-guides/user-guide-linked-data-dvla.pdf).

[4] Our working sample is restricted to include those household members who reported having access to vehicle(s) available at the household as well as to exclude those vehicles that are sorn and non-taxed and, thus, cannot be used; excluding missing cases on vehicles' passive safety features and all variables used in our analysis resulted in a working sample of 4,001 observations.

[5] Our long-run income may be considered as a proxy of the household's permanent income, less vulnerable to transitory income shock and, thus, more relevant to durable goods, such as vehicles.

Table 1: Vehicle's passive safety measures.

	Mean
Anti-lock braking system†	0.976
Electronic brakeforce distribution system†	0.914
Brake assistance†	0.734
Stability control†	0.522
Traction control†	0.542
Side airbags†	0.904
Head airbag†	0.711
Driver's knee airbag†	0.115

†Dichotomous variable for having the feature in vehicle's (standard) equipment.

We follow Erreygers and Van Ourti (2011) and, given the binary nature of our outcome variables, we use the Erreygers normalization to the concertation index (EI) in order to measure income-related inequalities in vehicle's safety features.[6] The EI can be estimated as:

$$EI = 4 \times \mu \times CI \qquad (1)$$

The CI stands for the concentration index:

$$CI = \frac{2 \times cov(y_i, r_i)}{\mu} \qquad (2)$$

where, y_i is the safety feature for each household's vehicle, μ stands for its mean value, r_i is a monotonically increasing function of long-run income measuring the relative position in the income distribution, and $cov(.)$ is the covariance. In our study, positive (negative) values of the EI indicate pro-rich (pro-poor) inequalities in ownership of passively safer vehicles.

[6] Inequality results when using Wagstaff's normalization of the CI for bounded outcomes (Erreygers and Van Ourti, 2011) are available in Table A.1 (appendix); they have the same statistical significance patterns as our EI inequality results. The percentage contributions of explanatory variables in the decomposition analysis are insensitive between Wagstaff's index and the EI.

The decomposition of the EI is based on regression analysis of the association between vehicle safety features and a set of explanatory covariates (X). We can write the EI as:

$$EI = 4 \times \left[\sum_k \left(\delta_k \overline{X^k} CI_k\right) + CGI_\varepsilon\right] \quad (3)$$

where, the contribution of each covariate (X) can be calculated as four times the product of: i) the corresponding regression coefficient (δ_k); ii) its covariate's mean ($\bar{X}$); and iii) it's covariate unequal distribution by income using CI_k; CGI_ε is the generalized CI for residuals.[7] Our regression-based decomposition analysis is based on generalized linear models (GLM) with binomial family and probit link to model our binary vehicle's passive safety features.[8] Average partial effects (derived from the GLM) were used, instead of δ_k, in eq. 3. Bootstrapping with 500 replications is used to obtain standard errors for the total contribution of each variable to the total income-related inequalities.

Our set of Xs used in the decomposition analysis (eq.3), are collected at UKHLS wave 5 (unless otherwise stated); they are found to be associated with income and the demand for vehicles with certain characteristics.[9] Given that multiple household members may have access to the same vehicle, our set of explanatory variables (X) is defined at the household level. We account for the average age of all household members having access to household vehicles, the highest education at the household level, household composition, household size, and the number of children. We also control for the highest Big Five personality trait and cognitive ability at the household level.[10] Risk-taking and

[7] In other words, CGI_ε can measure the observed income-related inequality in our vehicle's passive safety features outcomes that is not explained by our set of covariates.

[8] GLM are preferred to probit models as they allow for consistent results in categorical regressors irrespective of the chosen reference category (Yiengprugsawan et al., 2010)

[9] As such, our decomposition analysis will allow us to explore whether observed income-related inequalities in ownership of vehicles with passive safety features are mainly driven by the association between long-run income and the other covariates that might be associated with ownership of vehicles with certain passive safety features. For instance, it has been shown that personality, lifestyle, and demographic characteristics are associated with individual's demand for a certain type of vehicles (Choo and Mokhtarian, 2004).

[10] Cognitive ability and Big 5 personality traits are collected at UKHLS wave 3 and are used here. The following Big 5 personality traits are used: agreeableness, conscientiousness, extraversion, neuroticism, and openness to experience. Turning to cognitive ability, in this study, we use measures for: the number of correct answers to a series of five (simple) numerical subtraction questions; verbal fluency, is measured by counting the number of correct responses to naming as many animals as the respondent can in 60 minutes; practical numerical knowledge, measured by counting the number of correct answers to five questions. For all cognitive ability and Big 5 personality traits the highest score at the household level among those having access to vehicles are accounted for in our decomposition analysis.

time preference proxies are also included as they may be associated with risky behaviours (Cawley and Ruhm, 2011).[11] Finally, we account for vehicle price, year of manufacture and a dichotomous variable for vehicle's brand reliability[12] as potential confounders in the association between household income and ownership of vehicles with certain features.[13]

3. Results

Table 2 presents the EI for the vehicle's safety measures. All EIs are statistically significant and show the presence of pro-rich income-related inequality in the ownership of vehicles with all safety features examined. The EI range between 0.013 and 0.169 across the safety features.

Table 2: Income-related inequalities

	EI	Std. Error
Anti-lock braking system	0.013**	0.006
Electronic brakeforce distribution system	0.050***	0.010
Brake assistance	0.102***	0.016
Stability control	0.169***	0.018
Traction control	0.168***	0.018
Side airbags	0.048***	0.011
Head airbag	0.081***	0.016
Driver's knee airbag	0.055***	0.012

p<0.05;*p<0.01.

[11] UKHLS allows for questions on risk taking and proxies of time preference. At UKHLS Wave 1, respondents are asked whether they are persons who are fully prepared to take risks; responses are collected on a scale from zero to 10, with zero referring to avoiding taking risks and 10 being fully prepared to take risks. The highest score at the household level is used in our analysis as a proxy of risk-taking attitudes within the household. A set of delayed gratification questions are asked at UKHLS wave 5, which serve as our proxies for time preference. Specifically, a scale from zero to 10, where zero means "strongly disagree" and 10 means "strongly agree" is collected for: giving up comfort to reach goals; hard work pays off in the end. For both questions, we employed the highest values at the household level indicating less value to immediate pleasure and, thus, a low time preference attitude.

[12] Our brand's reliability dichotomous variable takes the value of one if the brand of the household's vehicle is included in the top 10 more reliable brands (for which vehicle data are available in our linked DVLA dataset) according to reliability scores produced by Consumers Report, an non-profit consumer organization dedicated to consumer oriented research (further details on their ranking methodology and results are available at: https://www.consumerreports.org/cars/car-reliability-owner-satisfaction/guide-to-car-reliability-owner-satisfaction-a9213219653/).

[13] Table A2 (Appendix) provides a description of all explanatory variables along with their mean values. It should be noted here that the main conclusions based on the inequality results of our paper remained the same when we exclude from our working sample all explanatory variables that are not collected at UKHLS wave 5 (and, thus, our sample is not affected by attrition across waves).

Table 3 shows that the observed pro-rich inequalities resulted from factors that are correlated with income and ownership of safer vehicles, rather than a “pure income role”. Across all safety features examined, vehicle price and year of manufacture are those contributing the most to the observed income-related inequalities; this suggests that the most advanced safety features are in the newest and most expensive vehicles. Much more limited is the contribution of vehicle’s brand reliability, ranging between 3% and 11.5%.

Risk taking and time preferences, personality traits, and cognitive ability, have a less pronounced and non-systematic role on explaining income-related inequalities in ownership of passively safer vehicles.[14] On remaining covariates, the number of children (household size) exerts systematic but relatively lower in magnitude contributions to widening (narrowing) income-related inequality associated with five (one) of our safety features.

[14] Table A3 (Appendix) presents the decomposition results that include the detailed decomposition for each Big 5, cognitive ability and proxies of risk taking and time preference rather than the aggregated results presented in Table 3. Overall, detailed results on Big 5 personality trains show non-systematic contributions apart from conscientiousness and extraversion that exert statistically significant (at least at the 10% level) but low in magnitude (about 1.5% and 3.7%) contributions on income-related inequalities in brake assistance and head airbags safety features, respectively.

Table 3: Decomposition of the income-related inequalities in vehicles' safety features.

	Anti-lock braking		Electronic brakeforce distribution		Brake assistance		Stability control		Traction control		Side airbags		Head airbag		Driver's knee airbag	
	Cont†	**%**	**Cont†**	**%**	**Cont†**	**%**	**Cont†**	**%**	**Cont†**	**%**	**Cont†**	**%**	**Cont†**	**%**	**Cont†**	**%**
HH income	-0.0013	-10.2	0.0055	11.0	-0.0057	-5.6	0.0203	12.0	0.0162	9.7	0.0114	24.0	-0.0198	-24.6	0.0139	25.4
HH mean age	0.0008*	6.8	0.0006	1.2	0.0005	0.5	0.0015	0.9	0.0006	0.4	0.0001	0.1	0.0006	0.8	-0.0008	-1.4
HH education	-0.0051*	-40.9	-0.0019	-3.8	-0.0002	-0.2	-0.0038	-2.3	-0.0017	-1.0	-0.0016	-3.4	-0.0007	-0.8	0.0071	13.0
HH composition	0.0013	10.4	0.0014	2.7	0.0009	0.8	-0.0040	-2.4	-0.0030	-1.8	0.0020	4.3	0.0044	5.5	0.0007	1.3
Personality traits	-0.0001	-1.2	0.0000	0.0	0.0007	0.7	0.0020	1.2	0.0012	0.7	-0.0001	-0.2	-0.0021	-2.6	-0.0002	-0.4
Cognitive abilities	-0.0002	-1.9	-0.0041	-8.1	0.0011	1.0	-0.0026	-1.5	-0.0005	-0.3	-0.0037	-7.7	0.0005	0.6	0.0006	1.1
Risk-taking/time preference	-0.0013	-10.4	-0.0004	-0.7	0.0001	0.1	0.0000	0.0	0.0008	0.5	-0.0024	-5.1	0.0028	3.5	-0.0016	-3.0
Household size	-0.0022*	-17.8	0.0006	1.3	-0.0015	-1.5	-0.0039	-2.3	-0.0052	-3.1	0.0005	1.1	-0.0049	-6.0	-0.0017	-3.1
# of kids	0.0043**	34.3	0.0067**	13.3	0.0122***	11.9	0.0081*	4.8	0.0086**	5.1	0.0000	-0.1	0.0033	4.0	0.0044	8.0
Vehicle price	0.0105***	83.6	0.0133***	26.4	0.0403***	39.5	0.0710***	42.0	0.0737***	44.0	0.0189***	39.7	0.0480***	59.5	0.0107***	19.5
Year of manufacture	0.0092***	73.8	0.0271***	54.0	0.0454***	44.5	0.0575***	34.0	0.0542***	32.3	0.0215***	45.1	0.0399***	49.5	0.0206***	37.6
Reliable brand	0.0014***	11.5	0.0049***	9.8	0.0028***	2.8	0.0071***	4.2	0.0063***	3.7	0.0009	1.8	0.0011	1.4	-0.0008	-1.4
Total explained	0.0173	**138.0**	0.0538	**107.1**	0.0966	**94.5**	0.1531	**90.4**	0.1511	**90.2**	0.0475	**99.7**	0.0733	**90.9**	0.0529	**96.6**
Residual	-0.0048	-38.0	-0.0036	-7.1	0.0056	5.5	0.0162	9.6	0.0164	9.8	0.0002	0.3	0.0074	9.1	0.0018	3.4
EI	0.0130	**100.0**	0.050	**100.0**	0.102	**100.0**	0.169	**100.0**	0.168	**100.0**	0.048	**100.0**	0.081	**100.0**	0.055	**100.0**

†Contribution (aggregate contribution for the categorical variables).
*p<0. 10;**p<0.05; ***p<0.01.

4. Conclusion

Using unique data built by merging administrative DVLA data to UKHLS, we find systematic pro-rich inequalities in ownership of passively safer vehicles. Decomposition analysis reveals that the observed inequalities are almost entirely explained by vehicle price and year of manufacture — the more expensive and modern vehicles equipped with the most advanced safety features are concentrated among the better-off. Demographics, risk aversion, time preferences and personality traits play a much more limited contribution to overall inequality. Our findings suggest that the pro-rich inequalities in access to safer vehicles may exacerbate existing socioeconomic gradient in road-traffic injury and mortality rates. This calls for public interventions in the vehicle market, i.e., subsidization policies supporting the purchase of safer cars by the more disadvantaged.

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On the road to equity: examining income-related inequalities in ownership of safer vehicles

Appendix

Table A1: Estimates of income-related inequalities (Wagstaff's CI)

	Wagstaff's CI	Std. Error
Anti-lock braking system	0.134**	0.060
Electronic brakeforce distribution system	0.159***	0.032
Brake assistance	0.131***	0.021
Stability control	0.170***	0.018
Traction control	0.169***	0.018
Side airbags	0.138***	0.031
Head airbag	0.098***	0.020
Driver's knee airbag	0.135***	0.029

**p<0.05; ***p<0.01.

Table A2: Descriptive statistics of the variables used for the decomposition analysis (N=4,001).

	Mean	Standard deviation
Mean income	7.256	0.378
Mean age	50.487	14.114
Highest education level at HH level		
Degree†	0.430	0.495
Other higher education†	0.179	0.384
A level†	0.193	0.394
GCSE†	0.122	0.328
Other qualification†	0.045	0.207
No qualification†	0.030	0.172
HH composition		
Lone parent†	0.030	0.171
Couple with children†	0.263	0.440
Couple with no children†	0.350	0.477
Single, no elderly†	0.064	0.245
Single, elderly†	0.066	0.249
Other household composition†	0.226	0.418
Highest Big Five personality trait scores at HH level		
Agreeableness	5.930	0.869
Conscientiousness	5.891	0.912
Extraversion	5.044	1.220
Neuroticism	3.935	1.350
Openness	4.985	1.150
Highest cognitive ability scores at HH level		
# correct subtractions	4.771	0.655
Verbal fluency	25.261	6.277
Numeracy	4.183	0.887
Household size	2.757	1.265
Number of kids	0.556	0.929
Highest risk-taking and risk preference proxies at HH level		
Risk-taker	5.921	2.328
Give up comfort to reach goals	5.080	2.588
Hard work pays off in the end	7.977	1.948
Characteristics of the vehicle		
Missing price†	0.102	0.303
Price (in price bounds, £)	3.899	2.255
Year of vehicle manufacture	2008.2	3.540
Reliable brand†	0.219	0.414

† Binary variable.
Note: Vehicle price (available in price bounds in the dataset) is coded as an ordinal index with: 0 standing for missing price data; 1 for a price less than £10.000; 2 for £10.000 – £14.999; 3 for £15.000 – £19.999; 4 for £20.000 – £24.999; 5 for £25.000 – £29.999; 6 for £30.000 – £34.999; 7 for £35.000 – £39.999; 8 for more than £40.000. Missing price data is a dichotomous variable that takes the value of one for missing price data; zero otherwise.

Table A3: Decomposition of the income-related inequalities in vehicles' safety features — detailed data on Big 5, cognitive ability and risk-taking/time preference measures.

	Anti-lock braking		Electronic brakeforce distribution		Brake assistance		Stability control		Traction control		Side airbags		Head airbag		Driver's knee airbag	
	Cont†	%	Cont†	%	Cont†	%	Cont†	%	Cont†	%	Cont†	%	Cont†	%	Cont†	%
HH income	-0.0013	-10.2	0.0055	11.0	-0.0057	-5.6	0.0203	12.0	0.0162	9.7	0.0114	24.0	-0.0198	-24.6	0.0139	25.4
HH mean age	0.0008*	6.8	0.0006	1.2	0.0005	0.5	0.0015	0.9	0.0006	0.4	0.0001	0.1	0.0006	0.8	-0.0008	-1.4
HH education	-0.0051*	-40.9	-0.0019	-3.8	-0.0002	-0.2	-0.0038	-2.3	-0.0017	-1.0	-0.0016	-3.4	-0.0007	-0.8	0.0071	13.0
HH composition	0.0013	10.4	0.0014	2.7	0.0009	0.8	-0.0040	-2.4	-0.0030	-1.8	0.0020	4.3	0.0044	5.5	0.0007	1.3
Agreeableness	-0.0001	-0.9	-0.0003	-0.5	0.0002	0.2	0.0002	0.1	0.0003	0.2	-0.0001	-0.3	0.0003	0.4	0.0004	0.8
Conscientiousness	-0.0002	-1.4	0.0005	0.9	0.0015*	1.5	0.0009	0.5	0.0013	0.8	-0.0003	-0.6	0.0007	0.9	-0.0004	-0.8
Extraversion	-0.0008	-6.2	0.0003	0.5	-0.0003	-0.3	-0.0001	0.0	-0.0010	-0.6	0.0002	0.4	-0.0030*	-3.7	-0.0016	-2.9
Neuroticism	0.0000	-0.2	0.0000	0.1	0.0000	0.0	-0.0001	0.0	-0.0001	0.0	0.0000	-0.1	-0.0001	-0.1	0.0000	0.0
Openness	0.0009	7.6	-0.0005	-0.9	-0.0007	-0.7	0.0010	0.6	0.0006	0.4	0.0002	0.4	0.0000	-0.1	0.0014	2.5
# correct subtractions	0.0006	4.8	0.0005	0.9	-0.0008	-0.8	-0.0021	-1.3	-0.0017	-1.0	-0.0014	-2.9	-0.0029	-3.7	0.0024	4.4
Verbal fluency	-0.0009	-7.3	-0.0022	-4.3	-0.0004	-0.4	-0.0003	-0.2	0.0013	0.8	-0.0018	-3.9	0.0040	4.9	0.0009	1.6
Numeracy	0.0001	0.6	-0.0024	-4.7	0.0023	2.2	-0.0002	-0.1	0.0000	0.0	-0.0005	-1.0	-0.0005	-0.6	-0.0027	-4.9
Risk-taker	-0.0014	-11.0	-0.0003	-0.6	0.0004	0.3	0.0004	0.3	0.0009	0.5	-0.0020	-4.2	0.0019	2.4	-0.0025	-4.5
Give up comfort to reach goals	0.0000	-0.2	0.0000	0.0	0.0000	0.0	-0.0001	-0.1	0.0000	0.0	0.0002	0.3	0.0000	-0.1	0.0000	0.0
Hard work pays off in the end	0.0001	0.8	-0.0001	-0.1	-0.0003	-0.3	-0.0003	-0.2	0.0000	0.0	-0.0006	-1.2	0.0009	1.2	0.0008	1.5
Household size	-0.0022*	-17.8	0.0006	1.3	-0.0015	-1.5	-0.0039	-2.3	-0.0052	-3.1	0.0005	1.1	-0.0049	-6.0	-0.0017	-3.1
Number of kids	0.0043**	34.3	0.0067**	13.3	0.0122**	11.9	0.0081*	4.8	0.0086**	5.1	0.0000	-0.1	0.0033	4.0	0.0044	8.0
Vehicle price	0.0105***	83.6	0.0133***	26.4	0.0403***	39.5	0.0710***	42.0	0.0737***	44.0	0.0189***	39.7	0.0480***	59.5	0.0107***	19.5
Year of vehicle manufacture	0.0092***	73.8	0.0271***	54.0	0.0454***	44.5	0.0575***	34.0	0.0542***	32.3	0.0215***	45.1	0.0399***	49.5	0.0206***	37.6
Reliable brand	0.0014***	11.5	0.0049***	9.8	0.0028**	2.8	0.0071***	4.2	0.0063***	3.7	0.0009	1.8	0.0011	1.4	-0.0008	-1.4
Total explained	**0.0173**	**138.0**	**0.0538**	**107.1**	**0.0966**	**94.5**	**0.1531**	**90.4**	**0.151**	**90.2**	**0.0475**	**99.7**	**0.0733**	**90.9**	**0.0529**	**96.6**
Residual	-0.0048	-38.0	-0.0036	-7.1	0.0056	5.5	0.0162	9.6	0.0164	9.8	0.0002	0.3	0.0074	9.1	0.0018	3.4
EI	**0.013**	**100.0**	**0.050**	**100.0**	**0.102**	**100.0**	**0.169**	**100.0**	**0.168**	**100.0**	**0.048**	**100.0**	**0.081**	**100.0**	**0.055**	**100.0**

†Contribution (aggregate contribution for the categorical variables).
*p<0. 10;** p<0.05;***p<0.01.