Assessing the Relationship between Mobility and the CASP-19 measure of Quality of Life in Older People

Abstract

Existing research into the relationship between mobility and quality of life has established clear associations, but there is a lack of research utilising the CASP-19 measure of quality of life. The present study aimed to provide clarity on the association between mobility and the CASP-19. The study used data from the English Longitudinal Study of Ageing, and utilised a quantitative approach to analyse the relationships between the variables. It was found that mobility was significantly associated with the CASP-19 measure. Specifically, mobility explained 7.1% of the variance in the CASP-19 measure. This finding is largely consistent with previous literature, although previous research into this association is scarce. The explanations and implications of these findings are discussed alongside methodological limitations. It is recommended that future research utilises a more holistic measure of mobility and draws actionable insights that can improve the lives of older people.

Introduction

Quality of Life (QoL) is a multi-dimensional measure of an individual's position in life, encompassing health, comfort and happiness. Low QoL is a risk marker for poor mental health (Robinson et al., 2016) and all-cause mortality (Phyo et al., 2020). As such, research into the determinants of QoL is essential to improve the vitality and well-being of populations. Whilst older people are able to live happy and fulfilling lives, there is evidence that QoL declines with age (Bowling, 2005) - and this is becoming an increasingly prevalent problem with the ageing population in the UK (Office for National Statistics, 2022). An ageing population represents a growing proportion of people that require valuable support and assistance. However, this increase in support requirements is not being met, partly due to a growing dependency ratio, as 2 million older people in the UK are now living with unmet needs for social care (Age UK, 2024). As such, identifying determinant factors in improving QoL may be more important than ever.

One of the major contributors to QoL is thought to be mobility (e.g., Metz, 2000; La Grow, 2013), characterized by the ability to move freely. This is because mobility encompasses a range of aspects that impact QoL including social contact (Shen et al., 2022), which has been shown to impact physical and mental health and mortality (Holt-Lunstad et al., 2010), and autonomy, which has been shown to be a significant predictor of QoL (Bozkurt et al., 2016). With widespread concerns surrounding the increasing levels of isolation and loneliness experienced by older people (Weger & Morley, 2020), and established associations between loneliness and low QoL (e.g., Jakobsson & Hallberg, 2005), it is vital that the associations between mobility and QoL are examined in detail to improve the lives of older people.

Rosso et al. (2013) found that mobility in older adults was strongly correlated with social engagement of all forms, and this pattern was observed even in the absence of a physical disability. Similarly, Banister and Bowling (2004) found that improving local transport and

enhancing mobility led to an increase in social activities and positively impacted QoL. These studies provide evidence of a relationship between mobility and QoL. However, there is a lack of recent research in this area, and some researchers have identified ways in which urban mobility may restrict QoL. Glazener et al. (2021) identified ten ways in which urban transportation can be detrimental to health, including noise, stress and air pollution. These suggestions shed light on the idea that the mobility-QoL relationship may not be as intuitive as previously thought. Nevertheless, Glazener et al. did not measure the specific impact of urban transportation on QoL, so further research is required in this area to establish the true association. As mobility is increasingly limited with age (Edwards et al., 2008), it is vital to identify how it may impact the QoL of older people so that their lives may be improved.

The CASP-19, developed by Hyde et al. (2003), evaluates QoL through four domains: Control, Autonomy, Self-Realization, and Pleasure. Unlike earlier QoL measures such as the QOLS (Flanagan, 1978) and the WHOQOL (WHOQOL Group, 1994), the CASP-19 has a clear theoretical basis and provides a more comprehensive framework by integrating both positive and negative aspects of QoL. Donoghue et al. (2019) examined how mode of transport impacted QoL in The Irish Longitudinal Study of Ageing and found a positive relationship with the CASP-19 measure. This provides evidence that mobility, specifically in the transportation context, may be a predictor of the CASP-19 measure in older people. However, these findings may lack temporal validity. This is because Donoghue et al. only utilised data from between 2009 and 2011, and with the ageing population in the UK it is not clear whether this relationship is consistent across time. Therefore, further research is required to establish the link between mobility and the CASP-19 measure of QoL. The present study aimed to provide a more up-to-date representation of this relationship in the context of transport mobility. It is a vital research area because understanding the links between these variables can help inform public services and social support to enhance the lives of older people.

Methods

This study utilised data from Wave 7 of the English Longitudinal Study of Ageing (ELSA; Banks et al., 2016), a multidisciplinary study consisting of extensive data from 9666 people living in England. The Wave 7 data was collected between June 2014 and May 2015 and contains demographic, economic, social, psychological, cognitive, health and biological data. The present study specifically utilised the CASP-19 variables (scqola, scqolb, scqolc, …, scqols) and mobility variables including SpCar ("Whether participant has access to a car or van when needed, as passenger or driver."), SpCarA ("Whether participant drives this car or van themselves") and SpTraA ("How often respondent uses public transport").

The CASP-19 measure consists of 19 items (see Figure A1) in which respondents express the extent to which various statements (e.g., "I can do the things that I want to do") apply to them on a 4-point scale ranging from "Never" to "Often". Some of the questions are reverse scored such that they are indicators of a lower QoL (e.g., "I feel left out of things"). To compute the composite value, the CASP-19 variables were recoded according to the scoring method specified by Hyde et al. (2003). The values were then summed to produce the continuous variable out of 57, where higher values represent a better quality of life.

A nominal mobility variable was computed using the mobility variables above, whereby 0 = no access to transport, 1 = public transport only, 2 = drives only, and 3 = drives and public transport. This variable was computed such that each subsequent group represents an increase in mobility level.

A series of analyses were conducted using SPSS on the CASP-19 and Mobility variables to assess the nature of their relationship.

Results

Participants

Out of 9666 participants, 1469 (15.2%) were removed because they had no responses for any of the CASP-19 items, 631 (6.5%) were removed because one or more of their CASP-19 responses were -9 (“Not Answered”) and 122 (1.3%) were removed because they were under the age of 50. Therefore, a total of 2222 participants (23.0%) were excluded from analysis, resulting in a total of 7444 participants. Of the remaining participants, 4091 (55%) were female and 3353 (45%) were male (see Table A4). The modal age category was the 60-69 group which consisted of 3019 (40.6%) participants (see Table A3). The modal mobility category was those who could both drive and use public transport, consisting of 3966 (53.3%) participants (see table A5).

Descriptive Statistics

Table 1 shows the means and standard deviations of the CASP-19 variable.

Table 1: Descriptive Statistics for CASP-19

	N	Mean	Std. Deviation
CASP-19	7444	41.869	8.771

Table 2 presents the mean CASP-19 scores across different levels of mobility. Participants with no transport access had a mean score of 34.1 (*SD* = 9.53), whilst those with the highest level of transport access had a mean score of 43.7 (*SD* = 7.77). This suggests that mean CASP-19 scores tend to increase as mobility levels increase. The higher variance amongst those with no transport access compared with those with the highest transport access is also noteworthy, suggesting that there is more certainty surrounding the high QoL of those with high transport access.

Table 2: Comparison of Mean CASP-19 scores

Mobility Level	Mean	N	Std. Deviation
no transport access	34.0533	413	9.52881
public transport only	39.8161	1305	8.97935
drives only	41.1994	1760	9.12608
public transport and drives	43.6556	3966	7.76914
Total	41.8690	7444	8.77066

Sex Differences in Mobility

A Chi-Square test of independence was performed to evaluate the association between mobility and sex. The association between these variables was significant, $\chi 2$ (1, N = 7444) = 218.371, p < .001. As shown in Table 4, 301 females (7.4%) had the lowest level of mobility, compared with just 112 males (3.3%). Furthermore, 58.3% of males had the highest level of mobility, compared with 49.1% of females. As such, the null hypothesis was rejected, and it was concluded that males had better mobility than females.

*Table 4: Sex * Mobility Level Crosstabulation*

			Mobility Level				Total
			no transport access	public transport only	drives only	public transport and drives	
Sex	Male	Count	112	314	971	1956	3353
		% within Sex	3.3%	9.4%	29.0%	58.3%	100.0%
	Female	Count	301	991	789	2010	4091
		% within Sex	7.4%	24.2%	19.3%	49.1%	100.0%
Total		Count	413	1305	1760	3966	7444
		% within Sex	5.5%	17.5%	23.6%	53.3%	100.0%

*Table 5: Sex * Mobility Chi-Square Test*

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	387.904[a]	3	<.001
Likelihood Ratio	405.053	3	<.001
Linear-by-Linear Association	218.371	1	<.001
N of Valid Cases	7444		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 186.03.

Age Differences in Mobility

A chi-square test of independence was performed to evaluate the association between mobility and age group (Table 20). The association between these variables was significant, $\chi 2$ (1, N = 7444) = 243.125, p < .001. As shown in Table 21, 1776 of the 3966 people with the highest mobility level were aged 60-69 (44.8%), compared with just 10 people in the 90+ age group (0.3%). As such, the null hypothesis was rejected and it was concluded that mobility worsens with age.

*Table 8: Chi-Square Tests Mobility*Age*

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	683.461a	12	<.001
Likelihood Ratio	492.095	12	<.001
Linear-by-Linear Association	243.125	1	<.001
N of Valid Cases	7444		

a. 1 cells (5.0%) have expected count less than 5. The minimum expected count is 4.16.

Table 9: Respondent Mobility * Age Category Crosstabulation

			Age Category					
			50-59	60-69	70-79	80-89	90+	Total
Mobility	no transport access	Count	56	73	121	128	35	413
		% within Respondent Mobility	13.6%	17.7%	29.3%	31.0%	8.5%	100.0%
	public transport only	Count	237	462	405	180	21	1305
		% within Respondent Mobility	18.2%	35.4%	31.0%	13.8%	1.6%	100.0%
	drives only	Count	500	708	404	139	9	1760
		% within Respondent Mobility	28.4%	40.2%	23.0%	7.9%	0.5%	100.0%
	public transport and drives	Count	860	1776	1063	257	10	3966
		% within Respondent Mobility	21.7%	44.8%	26.8%	6.5%	0.3%	100.0%
Total		Count	1653	3019	1993	704	75	7444
		% within Respondent Mobility	22.2%	40.6%	26.8%	9.5%	1.0%	100.0%

Data Analysis

Testing For Normality

A Kolmogorov-Smirnoff test (Table 2) was used to test for normality of the CASP-19 variable. The test statistic (D (7444) = 0.080, $p < .001$) was found to be statistically significant. Therefore, the null hypothesis was rejected and it was concluded that the CASP-19 variable was not normally distributed.

Table 10: One-Sample Kolmogorov Test

Variable		CASP-19
N		7444
Normal Parameters	Mean	41.869
	S.D.	8.771
Most Extreme Differences	Absolute	.080
	Positive	.048
	Negative	-.080
Test Statistic		.080
Asymp. Sig (2-tailed)		<.001

Kruskal-Wallis Test of CASP-19 scores across Mobility

A Kruskal-Wallis test of the CASP-19 and mobility (Table 3) indicated that there was a significant difference in the CASP-19 across the four mobility categories, $X^2(df = 3, N = 7444) = 501.367$, $p < .001$. The mean ranks of CASP-19 scores (Figure A8) were 1993.62 for those with no access to transport, 3201.73 for those with access to public transport only, 3576.70 for those who drive only, and 4138.60 for those who both use public transport and drive.

Post-Hoc tests using Dunn's method with Bonferroni correction (Table 4) indicated that the mean ranks of CASP-19 scores between every level of mobility were significantly different from one another. First, those with no transport access had significantly lower scores than those with access to public transport only, $p < .001$. Second, those with access to public transport only had significantly lower scores than those who only drove, $p < .001$. Finally, those who only drove had significantly lower scores than those who both used public transport and drove, $p < .001$.

Table 11: Independent-Samples Kruskal-Wallis Test Summary (Dependent variable = CASP-19; Independent variable = Mobility).

Total N	7444
Test Statistic	501.367[a]
Degree Of Freedom	3
Asymptotic Sig.(2-sided test)	<.001

a. The test statistic is adjusted for ties.

Table 12: Pairwise Comparisons of Respondent Mobility

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
no transport access-public transport only	-1208.112	121.252	-9.964	<.001	.000
no transport access-drives only	-1583.085	117.424	-13.482	<.001	.000
no transport access-public transport and drives	-2144.979	111.044	-19.316	<.001	.000
public transport only-drives only	-374.973	78.454	-4.780	<.001	.000
public transport only-public transport and drives	-936.867	68.537	-13.670	<.001	.000
drives only-public transport and drives	-561.893	61.511	-9.135	<.001	.000

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Spearman's Correlation of CASP-19 and Mobility

As shown in Table 13, A Spearman's correlation was conducted to evaluate the relationship between CASP-19 scores and mobility. There was a significant positive relationship between the variables, $r_s(7442) = .239$, $p < .001$.

Table 13: Spearman's Rho correlation with bootstrapping and 95% CI:

				Mobility	CASP-19
Mobility	Correlation Coefficient			1.000	.239**
	Sig. (2-tailed)			.	<.001
	N			7444	7444
	Bootstrap	Bias		.000	.000
		Std. Error		.000	.011
		95% Confidence Interval	Lower	1.000	.216
			Upper	1.000	.261
Quality of Life	Correlation Coefficient			.239**	1.000
	Sig. (2-tailed)			<.001	.
	N			7444	7444
	Bootstrap	Bias		.000	.000
		Std. Error		.011	.000
		95% Confidence Interval	Lower	.216	1.000
			Upper	.261	1.000

Simple Linear Regression of CASP-19 scores by Mobility

Having established a significant correlation, a simple linear regression analysis was conducted to evaluate the extent to which Mobility could predict CASP-19 scores.

A significant regression was found (F (1, 7442) = 568.906, p < .001), as shown in Table 15. The R^2 value was 0.071 indicating that mobility explained approximately 7.1% of the variance in the CASP-19 measure (Table 14). The regression equation (Table 16) was:

CASP-19 score = 36.238 + 2.507 (mobility)

That is, for each increase in mobility level, the predicted CASP-19 score increased by approximately 2.51. Confidence intervals indicated a 95% certainty that the slope to predict CASP-19 from mobility was between 2.301 and 2.713 (Table 16).

Table 14: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.266[a]	.071	.071	8.45407

a. Predictors: (Constant), Respondent Mobility

b. Dependent Variable: CASP-19

Table 15: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	40660.398	1	40660.398	568.906	<.001[b]
	Residual	531888.898	7442	71.471		
	Total	572549.296	7443			

a. Dependent Variable: CASP-19

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	36.238	.256		141.760	<.001	35.736	36.739
	Mobility	2.507	.105	.266	23.852	<.001	2.301	2.713

a. Dependent Variable: Quality of Life
b. Predictors: (Constant), Respondent Mobility

Table 16: Coefficients[a]

Discussion

Aims and Findings

The purpose of this study was to further the understanding of how Mobility relates to QoL, specifically that measured by the CASP-19. In terms of demographics, it was found that mobility decreased with age. This finding is not only intuitive, but also coincides with previous literature (e.g., Edwards et al., 2008). It was also found that males had better mobility in old age compared with females, which is also well-supported in the literature (e.g., Byles et al., 2015). This may be due to higher rates of driving cessation amongst females compared to males (Mazer et al., 2021). Previous literature has suggested a number of possible reasons for this, including that males are more often the principal driver of the household (Herbel & Gaines, 2010) and that females may experience a faster rate of cognitive decline than males (Lin et al., 2015). These findings suggest that both age and sex are associated with mobility, and thus may be the focus of certain interventions.

In relating mobility to the CASP-19, the present study found a significant positive relationship between these variables. Whilst this finding coincides with that of Donoghue et al. (2019), the present study is the first to quantify the variance in the CASP-19 measure that is explained by mobility. That is, 7.1% of the variance in the CASP-19 was explainable by differences in mobility. This not only adds to the lack of literature surrounding mobility and the CASP-19 measure, but also provides insight into the extent to which mobility relates to QoL in older people which may help to inform public and social services. However, the association between mobility and QoL does not necessitate causality. This makes interpreting and applying the results of this study difficult. It is likely that mobility and QoL both impact one another, and are both impacted by other variables. For example, Jerri et al. (2008) found that measures of QoL also predicted driving cessation. This suggests that the factors that make up QoL also impact mobility. As such, it is possible that focusing on

mobility as a broad contributor of QoL is an oversimplification, and this is a view shared by other researchers (e.g., Metz, 2000).

Limitations

There are also methodological limitations relating to this study. In the mobility measure, those who reported never using public transport were assumed to have no public transport access. Whilst these concepts both represent a lack of mobility it must be considered that some participants may have had access to public transport but chose never to use it. According to Metz (2000), one of the most important aspects of mobility is the potential to travel, even if no journey is undertaken. Since this study did not distinguish between mobility and potential mobility, the mobility measure may have lacked validity.

There are also methodological limitations relating to the ELSA dataset. The ELSA employed a self-report method that may lack validity and reliability. Older people tend to increasingly struggle with cognitive issues such as memory loss (e.g., Deary at al., 2009), and these cognitive issues may impact the ways in which they answer questions. For example, participants may forget how often they use public transport, or their perception of their QoL may change drastically from one day to the next. As such, participants responses may not be an accurate reflection of their reality and may not be consistent over time. This is a limitation because it means the ELSA may lack validity and reliability and this could have impacted the mobility and CASP-19 measures in the present study.

Conclusion

The present study investigated the association between mobility and the CASP-19 measure of QoL. It aimed to provide further confidence around the relationship between these variables, with the intention of potentially providing mobility recommendations for older people to enhance their QoL. All demographic findings coincided with previous literature, which demonstrates the robustness of these associations. The association between Mobility and the CASP-19 measure has been scarcely demonstrated in previous literature, so the association found in the present study adds confidence to their relationship. However, mobility only predicted 7.1% of the variance in the CASP-19 which suggests that many other factors are involved. Furthermore, causality could not be determined which limits the practical application of these findings.

Future research into the relationship between mobility and quality of life should consider the limitations of the present study. A longitudinal or experimental study would be ideal to establish whether there is a causal relationship between the variables. This would ensure that the findings can be confidently applied in practice. Future research should also consider a more complete and valid measure of mobility. This will ensure the identification of the exact contributing factors that may be able to help maximise the QoL of older people. The limitations of relying on self-report measures of mobility and QoL should also be considered; incorporating other measures like daily diaries or the views of close family and friends may improve the validity and reliability of findings.

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Appendix with SPSS Output

Figure A1: CASP-19 Scoring Properties

Item no	Sub-domain item no		Often	Sometimes	Not often	Never
1	C1	My age prevents me from doing the things I would like to	0	1	2	3
2	C2	I feel that what happens to me is out of my control	0	1	2	3
3	C3	I feel free to plan for the future	3	2	1	0
4	C4	I feel left out of things	0	1	2	3
5	A1	I can do the things that I want to do	3	2	1	0
6	A2	Family responsibilities prevent me from doing what I want to do	0	1	2	3
7	A3	I feel that I can please myself what I do	3	2	1	0
8	A4	My health stops me from doing things I want to do	0	1	2	3
9	A5	Shortage of money stops me from doing the things I want to do	0	1	2	3
10	P1	I look forward to each day	3	2	1	0
11	P2	I feel that my life has meaning	3	2	1	0
12	P3	I enjoy the things that I do	3	2	1	0
13	P4	I enjoy being in the company of others	3	2	1	0
14	P5	On balance, I look back on my life with a sense of happiness	3	2	1	0
15	SR1	I feel full of energy these days	3	2	1	0
16	SR2	I choose to do things that I have never done before	3	2	1	0
17	SR3	I feel satisfied with the way my life has turned out	3	2	1	0
18	SR4	I feel that life is full of opportunities	3	2	1	0
19	SR5	I feel that the future looks good for me	3	2	1	0

From CASP scoring and properties | CASP-19

SPSS Output

Descriptives

Table A2: Descriptive Statistics for CASP-19 Variables

	N	Minimum	Maximum	Mean	Std. Deviation
Quality of Life	7444	5.00	57.00	41.869	8.771
Control	7444	.00	12.00	8.049	2.466
Autonomy	7444	1.00	15.00	10.498	2.702
Self-Realization	7444	.00	15.00	10.123	3.148
Pleasure	7444	.00	15.00	13.200	2.310
Valid N (listwise)	7444				

Table A3: Frequency Table of Age Categories

Age	N	%
50-59	1653	22.2%
60-69	3019	40.6%
70-79	1993	26.8%
80-89	704	9.5%

90+	75	1.0%

Table A4: Frequency Table of Respondent Sex

Sex	N	%
Male	3353	45.0%
Female	4091	55.0%

Table A5: Frequency Table of Mobility

Mobility	N	%
No Transport Access	413	5.5%
Public Transport Only	1305	17.5%
Drives Only	1760	23.6%
Public Transport and Drives	3966	53.3%

Table A6: Comparison of Mean CASP-19 scores by Mobility

Mobility Level	Mean	N	Std. Deviation
no transport access	34.0533	413	9.52881
public transport only	39.8161	1305	8.97935
drives only	41.1994	1760	9.12608
public transport and drives	43.6556	3966	7.76914
Total	41.8690	7444	8.77066

Demographics

*Table A7: Case Processing Summary: Chi-Square Test Sex*Mobility*

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Respondent sex * Mobility Level	7444	100.0%	0	0.0%	7444	100.0%

*Table A8: Sex*Mobility Level Crosstabulation*

			Mobility Level				Total
			no transport access	public transport only	drives only	public transport and drives	
Sex	Male	Count	112	314	971	1956	3353
		% within Sex	3.3%	9.4%	29.0%	58.3%	100.0%
	Female	Count	301	991	789	2010	4091
		% within Sex	7.4%	24.2%	19.3%	49.1%	100.0%
Total		Count	413	1305	1760	3966	7444
		% within Sex	5.5%	17.5%	23.6%	53.3%	100.0%

*Table A9: Sex*Mobility Chi-Square Test*

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	387.904a	3	<.001
Likelihood Ratio	405.053	3	<.001
Linear-by-Linear Association	218.371	1	<.001
N of Valid Cases	7444		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 186.03.

*Table A10: Case Processing Summary Mobility*Age*

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Respondent Mobility * Age Category	7444	100.0%	0	0.0%	7444	100.0%

Table A11: Respondent Mobility * Age Category Crosstabulation

			Age Category					
			50-59	60-69	70-79	80-89	90+	Total
Mobility	no transport access	Count	56	73	121	128	35	413
		% within Respondent Mobility	13.6%	17.7%	29.3%	31.0%	8.5%	100.0%
	public transport only	Count	237	462	405	180	21	1305
		% within Respondent Mobility	18.2%	35.4%	31.0%	13.8%	1.6%	100.0%
	drives only	Count	500	708	404	139	9	1760
		% within Respondent Mobility	28.4%	40.2%	23.0%	7.9%	0.5%	100.0%
	public transport and drives	Count	860	1776	1063	257	10	3966
		% within Respondent Mobility	21.7%	44.8%	26.8%	6.5%	0.3%	100.0%
Total		Count	1653	3019	1993	704	75	7444
		% within Respondent Mobility	22.2%	40.6%	26.8%	9.5%	1.0%	100.0%

*Table A12: Chi-Square Tests Mobility*Age*

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	683.461[a]	12	<.001
Likelihood Ratio	492.095	12	<.001
Linear-by-Linear Association	243.125	1	<.001
N of Valid Cases	7444		

a. 1 cells (5.0%) have expected count less than 5. The minimum expected count is 4.16.

Test of Normality

Table A13: One-Sample Kolmogorov Test

Variable		Quality of Life	Control	Autonomy	Self-Realization	Pleasure	Age
N		7444	7444	7444	7444	7444	7444
Normal Parameters	Mean	41.869	8.049	10.498	10.123	13.200	66.100
	S.D.	8.771	2.466	2.702	3.149	2.310	11.556
Most Extreme Differences	Absolute	.080	.115	.105	.103	.232	.082
	Positive	.048	.056	.050	.061	.218	.042
	Negative	-.080	-.115	-.105	-.103	-.232	-.082
Test Statistic		.080	.115	.105	.103	.232	.082
Asymp. Sig (2-tailed)		<.001	<.001	<.001	<.001	<.001	<.001

Mobility and the CASP-19

Table A14: Independent-Samples Kruskal-Wallis Test Summary (Dependent variable = CASP-19; Independent variable = Mobility).

Total N	7444
Test Statistic	501.367[a]
Degree Of Freedom	3
Asymptotic Sig.(2-sided test)	<.001

a. The test statistic is adjusted for ties.

Table A15: Pairwise Comparisons of Respondent Mobility (Dependent variable = CASP-19; Independent variable = Mobility).

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
no transport access-public transport only	-1208.112	121.252	-9.964	<.001	.000
no transport access-drives only	-1583.085	117.424	-13.482	<.001	.000
no transport access-public transport and drives	-2144.979	111.044	-19.316	<.001	.000
public transport only-drives only	-374.973	78.454	-4.780	<.001	.000
public transport only-public transport and drives	-936.867	68.537	-13.670	<.001	.000
drives only-public transport and drives	-561.893	61.511	-9.135	<.001	.000

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure A16: Pairwise Comparisons of Respondent Mobility with Mean Ranks (Dependent variable = CASP-19; Independent variable = Mobility).

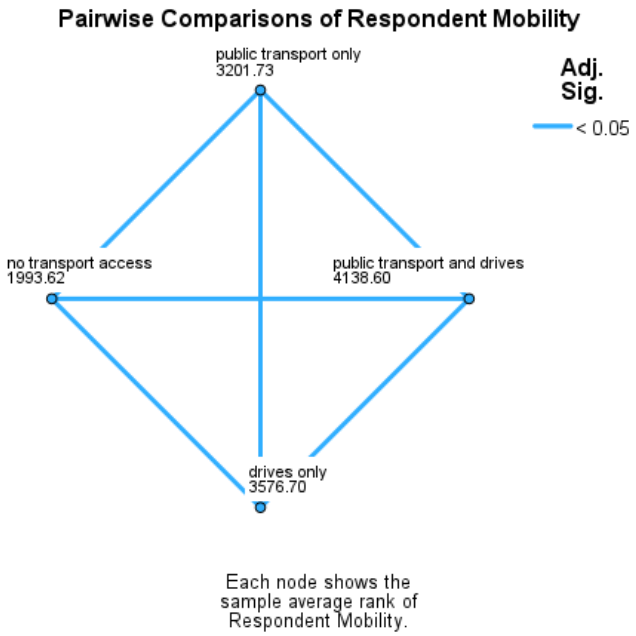

Table A17: Spearman's Rho correlation with bootstrapping and 95% CI (Dependent variable = CASP-19; Independent variable = Mobility).

				Mobility	Quality of Life
Mobility	Correlation Coefficient			1.000	.239**
	Sig. (2-tailed)			.	<.001
	N			7444	7444
	Bootstrap	Bias		.000	.000
		Std. Error		.000	.011
		95% Confidence Interval	Lower	1.000	.216
			Upper	1.000	.261

Quality of Life	Correlation Coefficient			.239**	1.000
	Sig. (2-tailed)			<.001	.
	N			7444	7444
	Bootstrap	Bias		.000	.000
		Std. Error		.011	.000
		95% Confidence Interval	Lower	.216	1.000
			Upper	.261	1.000

Table A18: Confidence Intervals of Spearman's rho (Dependent variable = CASP-19; Independent variable = Mobility).

	Spearman's rho	Significance(2-tailed)	95% Confidence Intervals (2-tailed)[a,b]	
			Lower	Upper
Mobility - Quality of Life	.239	<.001	.217	.261

a. Estimation is based on Fisher's r-to-z transformation.
b. Estimation of standard error is based on the formula proposed by Fieller, Hartley, and Pearson.

Regression

Table A19: Descriptive Statistics

Variable	Mean	Std. Deviation	N
Quality of Life	41.8690	8.77066	7444
Respondent Mobility	2.2465	.93240	7444

Table A20: Correlations

		Quality of Life	Respondent Mobility
Pearson Correlation	Quality of Life	1.000	.266
	Respondent Mobility	.266	1.000
Sig. (1-tailed)	Quality of Life	.	<.001
	Respondent Mobility	.000	.
N	Quality of Life	7444	7444
	Respondent Mobility	7444	7444

Table A21: Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Respondent Mobility[b]	.	Enter

a. Dependent Variable: Quality of Life

b. All requested variables entered.

Table A22: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.266[a]	.071	.071	8.45407

a. Predictors: (Constant), Respondent Mobility

b. Dependent Variable: Quality of Life

Table A23: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	40660.398	1	40660.398	568.906	<.001[b]
	Residual	531888.898	7442	71.471		

Total	572549.296	7443

a. Dependent Variable: Quality of Life, Independent variable: Mobility

Table A24: Coefficients[a,b]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	36.238	.256		141.760	<.001	35.736	36.739
	Mobility	2.507	.105	.266	23.852	<.001	2.301	2.713

a. Dependent Variable: Quality of Life
b. Predictors: (Constant), Respondent Mobility

Table A25: Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	36.2376	43.7578	41.8690	2.33729	7444
Residual	-36.75784	20.76242	.00000	8.45350	7444
Std. Predicted Value	-2.409	.808	.000	1.000	7444
Std. Residual	-4.348	2.456	.000	1.000	7444

a. Dependent Variable: Quality of Life

Figure A26: Histogram of CASP-19 Variable

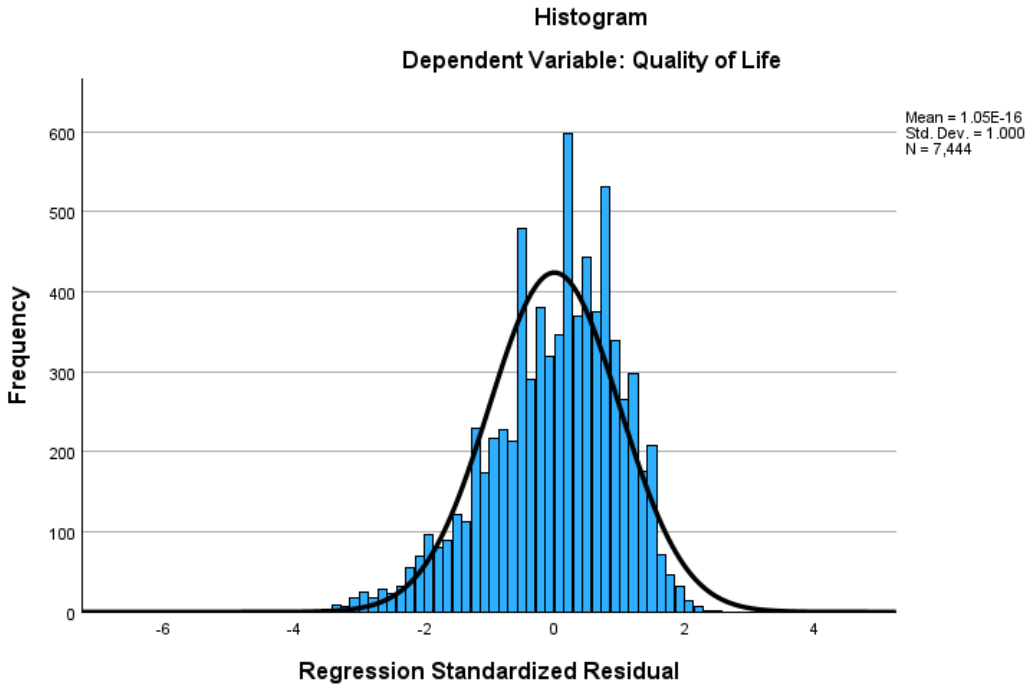

Figure A27: Plot of Standardized Residual

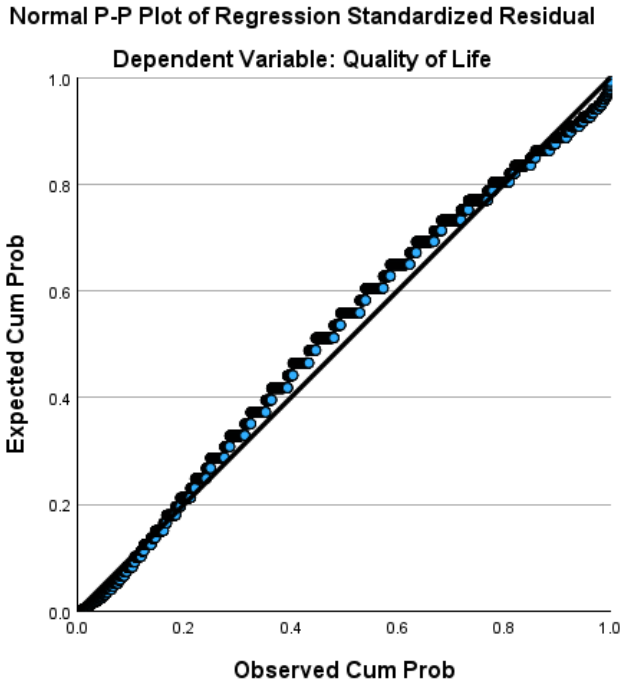

Figure A28: Scatterplot of Standardized Residual of CASP-19 variable