

The University of Sheffield  
School of Information, Journalism and Communication  
MSc Data Science

**What factors are related with depression among  
adults aged 50 and over in England?**

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## **Abstract**

**Introduction:** Depression is an important public health issue for older adults with considerable implications for their well-being, autonomy, and healthcare service use. To design prevention and intervention programs for older adults with depression, it is important to understand the complex associations between depression and various social, health-related, and behavioural factors. The present study aimed to explore the factors related to depression in adults aged 50 years and above in England using data from a nationally representative survey. The outcome variable for this study was depression, which was indicated by the presence or absence of psychiatric problems. The independent variables used for the analysis were age group, sex, general health status, the presence of a long-standing illness, internet use, life satisfaction, and loneliness.

**Methodology:** Descriptive statistics and chi-square tests were used to evaluate the associations between the outcome variable ‘depression’ and the independent variables. Binary logistic regression was also used to determine factors associated with depression, while adjusting for confounding factors. The data used for the analysis were restricted to the respondents aged 50 years and above with complete data for the independent variables used in the binary logistic regression analysis.

**Results:** The findings of the present study suggested that general health status, the presence of a long-standing illness, life satisfaction, and loneliness were significantly related to depression. The present study also found the pattern of internet use to be related to depression. The findings also suggested sex and age group were weakly related to depression. The final model used for the analysis had an acceptable goodness-of-fit.

**Conclusion:** The present study findings emphasise the complex nature of the factors related to depression in older adults. The present study also emphasises the need to consider the health-related factors and psychosocial factors for the design of intervention programs to mitigate the problem of depression in older adults in England.

# Introduction

Depression among older people has been a major public health issue, affecting quality of life, physical health, social life, and risk of death. As people age, it becomes essential to understand what influences mental health among older people for health policy, medical practice, and care services. Adults aged 50 years and above are increasing in England, but depression among older people has not been adequately diagnosed and treated enough, despite its great influence on their lives.

Late-life depression has resulted in some issues, such as difficulty in performing daily activities, worsening long-term illness, cognitive problems, increased visits to healthcare services, and suicide (O'Connor, 2023; Zivin et al., 2010). The research indicates that depression among older people has resulted from a combination of factors, not only age, but also other factors like physical health, long-term illness, social isolation, loneliness, socioeconomic factors, and how people feel about their own well-being.

Physical health is particularly important in the context of depression in late life. The number of chronic and limiting health problems increases with age. These problems can limit daily activities, independence, and mental health. People who report poor physical health or functional limitations are more likely to experience depressive symptoms in late life (van Agtmael et al., 2017). These health problems can cause individuals to feel a sense of loss, dependency, and less social involvement, all of which can contribute to the risk of developing depression.

Social factors are particularly important in the context of depression in late life. Social isolation is a strong predictor of depression in late life (Donovan et al., 2017; Taylor et al., 2018). Life changes that are common in late life, such as retirement, loss of a spouse, or family changes, can increase the risk of social isolation. Social isolation is associated not only with depression but also with the duration of depressive symptoms.

In recent years, online engagement has become a significant aspect of mental well-being in older adults. Using the internet and email helps with social contacts, information-seeking, and service use. This may have a protective effect against depression. However, a large number of older adults are not able to access digital technologies. Some studies conducted in English have shown that less internet use is associated with poor mental health in later life. However, this is not conclusive (Lam et al., 2020).

Aspects of measuring well-being, such as life satisfaction, provide additional information about depression in later life. Life satisfaction is a person's evaluation of their life as a whole. Life satisfaction is associated with depression. Life satisfaction is a key factor in understanding depression in older adults.

Despite recent research on depression in later life, we still require population studies that examine many social, health, and behavioural factors simultaneously. This helps to understand how all these factors are related to depression in adults aged 50 years and over in England.

This study aims to fill this knowledge gap by examining factors associated with depression among adults aged 50 years and over in England. The data is obtained from the English Longitudinal Study of Ageing (ELSA). The study examines how depression is associated with age groups, sex, self-rated health, long-standing illness, loneliness, internet use, and life satisfaction. The study follows a sequence of simple cross-tabulations and chi-square tests. Then, multivariable binary logistic regression is used to find independent predictors of depression.

## Literature Review

Depression in adults above the age of 50 has emerged as an increasing public health issue with multiple contributing factors. Although various studies have used different methods to estimate its prevalence, existing literature has confirmed that it is a significant mental health issue in England and other high-income countries for adults above 50 (Zivin et al., 2010). What is more important is that it is not an inevitable part of ageing; instead, it is influenced by various social, physical, and mental factors that have developed in an individual's life journey.

Physical health has been identified as one of the most significant predictors of late-life depression. Systematic reviews and meta-analyses have established significant associations between physical illness and depression in old age (van Agtmaal et al., 2017). Chronic health conditions that limit an individual's daily activities can lead to reduced levels of autonomy and increased levels of dependency, which can harm mental health. Multimorbidity has also been identified as a risk factor for depression, which further confirms the impact of poor physical health.

Social isolation and loneliness have emerged as significant risk factors for late-life depression in various studies. Longitudinal studies have confirmed that loneliness

predicts and is also a result of depression, creating a vicious cycle (Donovan et al., 2017). Taylor et al. (2018) have confirmed that socially isolated individuals have higher levels of depressive symptoms compared to those who are not socially isolated, even when controlling for physical health and socioeconomic status.

In terms of socioeconomic factors, it is clear that they play a significant role in determining mental health outcomes in older adulthood. Educational level, income level, and housing conditions are some of the factors that have been identified as determinants of poor mental health and depression (Jackson et al., 2015). The lack of socioeconomic opportunities and support can limit access to health and social resources, making older adults more vulnerable to depression.

Digital engagement is a more recent area of research concerning mental health outcomes in older adults. Research literature on internet use and depression reveals that internet use is associated with a lower level of depression. This is possibly due to increased opportunities for social contact, access to information, and engagement (Cotten et al., 2012; Lam et al., 2020). However, there are also digital divides between individuals who are not digitally engaged and who are more vulnerable to depression. However, research literature on this topic is inconsistent and requires further investigation.

Subjective well-being is also a significant determinant of depression in older adults. Life satisfaction is a key determinant of depression and mental health outcomes. Lower life satisfaction is associated with a higher level of depression and poor mental health outcomes (Lee et al., 2024). Life satisfaction is a broader determinant of depression as it encompasses a wide range of life outcomes that are not captured by objective health or socioeconomic factors.

It is clear from the research literature that depression is a complex condition that is determined by a wide range of factors. However, few studies have examined a wide range of factors together as a single entity. This study contributes to the literature by addressing this research gap and providing updated research evidence on depression determinants for adults aged 50 years and over.

# **Methodology**

## **Study Design**

The current research utilised a cross-sectional quantitative research design with secondary data from the ELSA dataset. This research design is suitable for exploring the relationship between depression and various demographic, health, social, and behavioural factors among adults aged 50 years and above at one particular point in time. Though this design does not allow for causality, it is useful for identifying the most significant correlates of depression from a large, nationally representative sample.

## **Data Source**

This research used Wave 7 from ELSA, which was carried out from June 2014 to May 2015. ELSA is a longitudinal research study that seeks to be representative of the adult population aged 50 years and above living in England. ELSA provides detailed information regarding the physical health, mental health, social, economic, and health-related behaviours of the participants. ELSA utilises a multistage stratified sampling technique from households that previously took part in the Health Survey for England. This wave was chosen because it contains detailed measures of mental health, including depression, as well as other significant social and health-related variables that are pertinent to the research question. Ethical approval for ELSA was granted, and all participants gave their informed consent before the research was conducted.

## **Study Population and Sample Selection**

The initial sample for Wave 7 of the ELSA comprised 9,491 respondents who were 50 years and over. In selecting a sample for the purposes of this study, a filter was applied to restrict the sample to adults aged 50 and over, using the continuous variable *indager*, which was consistent with the study population of interest. The sample for the regression analyses was determined using listwise deletion, where respondents with missing values on the dependent variable, depression, and any of the independent variables included in the model were excluded from the sample. As a result, the sample for the regression analyses was smaller than the Wave 7 sample. Although the sample size was reduced, it was done to ensure consistency across variables and to prevent bias from differences in denominators.

## **Measures**

### **Dependent Variable**

Depression was measured using the ELSA variable indicating whether the respondent reported having a psychiatric problem related to depression. This variable was binary, coded as 1 if depression was mentioned and 0 if it was not mentioned. This measure has been used in previous studies examining mental health outcomes among older adults and provides a clear indicator of clinically relevant depression.

### **Independent Variables**

Age was measured using the continuous age variable (*indager*), which was subsequently recoded into three categorical age groups to reflect meaningful stages of later life: 50–64 years, 65–79 years, and 80 years and over. This categorisation balances conceptual relevance with sufficient sample sizes in each group.

Sex was included as a binary variable indicating respondent sex (male or female).

Self-reported general health was originally measured on a five-point scale ranging from excellent to poor. For analytical purposes, this variable was recoded into a binary measure distinguishing between good health (excellent/very good/good) and poor health (fair/poor), consistent with previous research using ELSA data.

Limiting long-standing illness was measured using a binary variable indicating whether the respondent reported having a long-standing illness or health problem that limits daily activities (yes/no).

Loneliness was measured using a binary variable indicating whether the respondent reported feeling lonely. Loneliness has been identified as a key psychosocial determinant of depression in later life and was therefore included as a central explanatory variable.

Life satisfaction was measured using a binary indicator derived from respondents' self-reported satisfaction with life. Responses were recoded to distinguish between satisfied and not satisfied individuals.

Frequency of internet or email use was included as a categorical variable capturing how often respondents used the internet or email, ranging from daily use to never.

This variable was included to examine the potential role of digital engagement in mental health among older adults.

**Table 1.** All variables in analysis and details

Variable Name	Label	Type	Measure	Categories
DhSex	Respondent sex from household grid	Categorical (binary)	Gender	1 = 'Male' 2= 'Female'
Hehelf	Self-reported general health	Categorical (nominal)	Health condition	1 = 'Excellent', 2 = 'Very good', 3 = 'Good', 4 = 'Fair', 5 = 'Poor'
Helim	Whether long-standing illness is limiting	Categorical (binary)	Long-standing Illness	1 = 'Yes' 2 = 'No'
Hepsyde	Psychiatric problem has: depression	Categorical (binary)	Depression	0 = 'Not Mentioned' 1 = 'Mentioned'
Scint	On average, how often do you use the internet or email?	Categorical (ordinal)	Internet Usage	1 = 'Every day, or almost every day' 2= 'At least once a week (but not every day)' 3 = 'At least once a month (but not every week)' 4 = 'At least once every 3 months' 5 = 'Less than every 3 months'

				6 = 'Never'
Sclifec	Is satisfied with his/her life	Categorical (ordinal)	Life satisfaction all	1 = 'Strongly agree' 2 = 'Agree' 3 = 'Slightly agree' 4 = 'Neither agree nor disagree' 5 = 'Slightly disagree' 6 = 'Disagree' 7 = 'Strongly disagree'
sclifec_rec	Life satisfaction binary	Categorical (binary)	Binary Life satisfaction	0 = 'Not satisfied' 1 = 'Satisfied'
scqola	CASP19 scale: How often feels age prevents them from doing things they like	Categorical (nominal)	Loneliness factor 1	1 = 'Often' 2 = 'Sometimes' 3 = 'Not often' 4 = 'Never'
scqolb	CASP19 scale: How often feels what happens to them is out of their control	Categorical (nominal)	Loneliness factor 2	1 = 'Often' 2 = 'Sometimes' 3 = 'Not often' 4 = 'Never'
scqolc	CASP19 scale: How often feels free to plan for the future	Categorical (nominal)	Loneliness factor 3	1 = 'Often' 2 = 'Sometimes'

				3 = ‘Not often’ 4 = ‘Never’
lonely_tmp	Average of all loneliness values	Continious	Loneliness average value	None
lonely_bin	Loneliness binary (Yes or No)	Categorical (binary)	Loneliness	0 = ‘Yes’ 1 = ‘No’
indager	Definitive age variable collapsed at 90+ to avoid disclosure	Continious	Age	None
age50_3	Age Groups for 50+	Categorical (ordinal)	Age group	1 = ’50-64’ 2 = ’65-79’ 3 = ‘80+’

## Statistical Analysis

All the statistical tests were carried out using IBM SPSS Statistics. Initially, descriptive statistics were used to examine the study sample’s characteristics and evaluate the distribution of all variables.

Bivariate tests were carried out using cross-tabulations and chi-square tests to evaluate the unadjusted associations between depression and each of the independent variables. Chi-square tests were used because both the dependent and independent variables were categorical in nature. The assumptions of the chi-square tests were checked and satisfied for all variables.

Binary logistic regression analysis was carried out to evaluate the independent variables that are associated with depression after controlling for all the other variables. This analysis was appropriate because the dependent variable was binary in nature. All the independent variables were simultaneously entered into the regression model using the “enter” method. The results are presented as odds ratios with 95% confidence intervals, making it easier to understand the results.

The goodness of fit of the logistic regression model was checked using the Hosmer-Lemeshow test. The overall performance of the logistic regression model was checked using pseudo R<sup>2</sup> statistics. The significance level of 0.05 was used for all the tests.

**Table 2.** Case Processing Summary

	Valid	Missing	Total
Psychiatric problem has: depression *	10.5%	89.5%	9666
Respondent sex from household grid			
Psychiatric problem has: depression * Self-reported general health	10.1%	89.9%	9666
Psychiatric problem has: depression *	7.5%	92.5%	9666
Whether long-standing illness is limiting			
Psychiatric problem has: depression * On average, how often do you use the internet or email?	8.7%	91.3%	9666
Psychiatric problem has: depression *	8.7%	91.3%	9666
Loneliness binary			
Psychiatric problem has: depression * Age Groups for 50+	10.2%	89.8%	9666
Psychiatric problem has: depression * Life satisfaction binary	7.7%	92.3%	9666

## Results

From descriptive analysis, it is clear that a significant minority of adults in the 50 years and older population experience depression. Results of bivariate analysis indicate significant associations between depression and self-rated health, presence of chronic illness, loneliness, life satisfaction, and internet usage. Depression is more

common among people with poor health, a limiting chronic illness, loneliness, low life satisfaction, and infrequent internet usage.

In the final logistic regression analysis, several variables remained independent predictors of depression. Poor self-rated health has a strong association with increased odds of experiencing depression. Participants with a limiting chronic illness have significantly higher odds of experiencing depression than their peers without such an illness. Loneliness is one of the strongest predictors of depression in this study. Participants who experienced loneliness had significantly higher odds of experiencing depression than their peers without loneliness.

Low life satisfaction is an independent predictor of increased odds of experiencing depression. Infrequent internet usage is also associated with increased odds of experiencing depression, although this association is weaker than health and loneliness. Age group and sex are not consistently associated with increased odds of experiencing depression.

This final logistic regression analysis has an acceptable fit, as indicated by the Hosmer-Lemeshow statistic. This analysis also explained a small proportion of the variance in depression, which is typical in mental health studies.

**Table 3.** Variables in the Equation C. I. for EXP(B) is 95%

Category	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Respondent sex from household grid(1)	-.221	.217	1.039	1	.308	.802	.525	1.226
Age Groups for 50+ (50-64)			5.041	2	.080			
Age Groups for 50+ (65-70)	-.507	.226	5.022	1	.025	.602	.387	.938
Age Groups for 50+ (80+)	-.380	.491	.601	1	.438	.684	.261	1.7388
On average, how often do you use the internet or email?( At least once a week (but not every day)	-.948	.468	4.094	1	.043	.388	.155	.971
Life Satisfaction binary (Not satisfied)	-.692	.250	7.686	1	0.06	.500	.307	.816
Loneliness binary (Yes)	-1.126	.679	2.754	1	.097	.324	.086	1.226

Variables in table 3 are: Respondent sex from household grid, Age Groups for 50+, Self-reported general health, Whether long-standing illness is limiting, On average, how often do you use the internet or email?, Life satisfaction binary, Loneliness binary.

Less frequent internet use (at least once a week but not daily) and loneliness showed borderline associations with depression, whereas sex was not significantly associated with depression after adjustment.

## Discussion

This research aims to explore the factors associated with depression among adults aged 50 years and over in England, employing nationally representative data from the English Longitudinal Study of Ageing (ELSA). The results of this research highlight the importance of physical health, social connectedness, and subjective well-being in the aetiology of depression in this age group.

In line with previous research, self-rated health and the presence of a limiting long-term illness were significantly associated with depression. These results support the concept of the close interrelationship between physical and mental health in this age group.

Loneliness was identified as one of the most potent predictors of depression. This supports the notion that social isolation is a critical factor in the aetiology of mental health problems in this age group. This finding is particularly pertinent to interventions aimed at reducing levels of loneliness, which may be a critical factor in alleviating levels of depression in this age group.

Lower life satisfaction was associated with depression. This highlights the importance of subjective well-being in the aetiology of mental health problems. Life satisfaction may be a reflection of a range of life circumstances that are not necessarily reflected by physical or socioeconomic factors.

The relationship between a reduced internet frequency and increased odds of depression suggests that internet participation may have protective effects on mental well-being in later life. However, it is also possible that depressive conditions may contribute to reduced participation in digital technologies.

The absence of age groups and sex as independent predictors of depression after controlling for health and social factors supports the argument that depression in later life is more related to social and health conditions than chronological age.

The study has a number of limitations that must be acknowledged. Firstly, the study is not able to make causal inferences about depression in later life. Secondly, the study is based on self-report data that may be subject to reporting biases. Thirdly, the study used listwise deletion, which reduced the number of participants in the analysis. However, the quality and representativeness of the data are a strength.

## Conclusion

This research suggests that depression among adults aged 50 years and over in England is strongly linked to poor physical health, loneliness, reduced life satisfaction, and reduced digital engagement. This research also suggests that depression among older people is complex and requires addressing social and health-related factors in conjunction with medical treatments.

Interventions to improve mental well-being among older people in England should be targeted at addressing loneliness, those with long-term health conditions, and social and digital inclusion. Further research should be carried out to investigate the causes and consequences of depression among older people in England by using longitudinal research to inform effective interventions to reduce depression among this group.

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## Appendix:

### A1: Frequencies

#### Statistics

Psychiatric problem has: depression	Respondent sex from household grid	Age Groups for 50+	Self-reported general health	Whether long-standing illness is limiting	On average, how often do you use the internet or email?	Life satisfaction binary	Loneliness binary
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N	Valid	989	9491	9491	8918	5212	7866	7219	7988
	Missing	8502	0	0	573	4279	1625	2272	1503

### Frequency Table

#### Psychiatric problem has: depression

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not mentioned	310	3.3	31.3	31.3
	Mentioned	679	7.2	68.7	100.0
	Total	989	10.4	100.0	
Missing	Refusal	6	.1		
	Don't Know	22	.2		
	Item not applicable	8474	89.3		
	Total	8502	89.6		
Total		9491	100.0		

#### Psychiatric problem has: depression

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not mentioned	310	3.3	31.3	31.3
	Mentioned	679	7.2	68.7	100.0
	Total	989	10.4	100.0	
Missing	Refusal	6	.1		

Don't Know	22	.2		
Item not applicable	8474	89.3		
Total	8502	89.6		
Total	9491	100.0		

### **Respondent sex from household grid**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	4249	44.8	44.8	44.8
	Female	5242	55.2	55.2	100.0
	Total	9491	100.0	100.0	

### **Age Groups for 50+**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	50-64	3900	41.1	41.1	41.1
	65-79	4327	45.6	45.6	86.7
	80+	1264	13.3	13.3	100.0
	Total	9491	100.0	100.0	

### **Self-reported general health**

		Frequency	Percent	Valid Percent	Cumulative Percent

Valid	...excellent,	1044	11.0	11.7	11.7
	very good,	2588	27.3	29.0	40.7
	good,	2942	31.0	33.0	73.7
	fair,	1670	17.6	18.7	92.4
	or, poor?	674	7.1	7.6	100.0
	Total	8918	94.0	100.0	
Missing	Don't Know	3	.0		
	Item not applicable	570	6.0		
	Total	573	6.0		
Total		9491	100.0		

### **Whether long-standing illness is limiting**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	3300	34.8	63.3	63.3
	No	1912	20.1	36.7	100.0
	Total	5212	54.9	100.0	
Missing	Don't Know	2	.0		
	Item not applicable	4277	45.1		
	Total	4279	45.1		
Total		9491	100.0		

### **On average, how often do you use the internet or email?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Every day, or almost every day	4647	49.0	59.1	59.1
	At least once a week (but not every day)	894	9.4	11.4	70.4
	At least once a month (but not every week)	271	2.9	3.4	73.9
	At least once every 3 months	70	.7	.9	74.8
	Less than every 3 months	111	1.2	1.4	76.2
	Never	1873	19.7	23.8	100.0
	Total	7866	82.9	100.0	
Missing	Not answered (9)	205	2.2		
	Schedule not applicable	1420	15.0		
	Total	1625	17.1		
Total		9491	100.0		

### Life satisfaction binary

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not satisfied	910	9.6	12.6	12.6
	Satisfied	6309	66.5	87.4	100.0
	Total	7219	76.1	100.0	
Missing	System	2272	23.9		
Total		9491	100.0		

### **Loneliness binary**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	457	4.8	5.7	5.7
	1.00	7531	79.3	94.3	100.0
	Total	7988	84.2	100.0	
Missing	System	1503	15.8		
Total		9491	100.0		

## **A2: Crosstabs and Chi-Square Tests**

### **Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Psychiatric problem has: depression * Respondent sex from household grid	989	10.4%	8502	89.6%	9491	100.0%

**Psychiatric problem has: depression \* Respondent sex from household grid**

### **Crosstabulation**

Count

		Respondent sex from household grid		
		Male	Female	Total
Psychiatric problem has: depression	Not mentioned	101	209	310
	Mentioned	251	428	679
Total		352	637	989

### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.786 <sup>a</sup>	1	.181		
Continuity Correction <sup>b</sup>	1.599	1	.206		
Likelihood Ratio	1.799	1	.180		
Fisher's Exact Test				.198	.103
Linear-by-Linear Association	1.784	1	.182		
N of Valid Cases	989				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 110.33.

b. Computed only for a 2x2 table

### Crosstabs

#### Case Processing Summary

##### Cases

	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
<b>Psychiatric problem has:989 depression * Age Groups for 50+</b>		10.4%	8502	89.6%	9491	100.0%

### Psychiatric problem has: depression \* Age Groups for 50+ Crosstabulation

#### Count

	Age Groups for 50+			Total
	50-64	65-79	80+	
<b>Psychiatric problem has: Not mentioned</b>	151	133	26	310
	Mentioned	380	259	40
<b>Total</b>	531	392	66	989

#### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.290 <sup>a</sup>	2	.071
Likelihood Ratio	5.232	2	.073
Linear-by-Linear Association	5.284	1	.022
N of Valid Cases	989		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 20.69.

## Crosstabs

### Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
	958	10.1%	8533	89.9%	9491	100.0%
Psychiatric problem has: depression * Self-reported general health						

### Psychiatric problem has: depression \* Self-reported general health Crosstabulation

Count

		Self-reported general health					Total
		...excellent,	very good,	good,	fair,	or, poor?	
Psychiatric problem has: depression	Not mentioned	18	90	94	68	31	301
	Mentioned	30	112	209	176	130	657
Total		48	202	303	244	161	958

### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	29.504 <sup>a</sup>	4	<.001
Likelihood Ratio	29.623	4	<.001
Linear-by-Linear Association	24.707	1	<.001
N of Valid Cases	958		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.08.

## Crosstabs

## Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Psychiatric problem has: depression * Whether long-standing illness is limiting	715	7.5%	8776	92.5%	9491	100.0%

**Psychiatric problem has: depression \* Whether long-standing illness is limiting**

### Crosstabulation

Count

		Whether long-standing illness is limiting		Total
		Yes	No	
Psychiatric problem has: depression	Not mentioned	127	75	202
	Mentioned	387	126	513
Total		514	201	715

### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Pearson Chi-Square	11.327 <sup>a</sup>	1	<.001		

Continuity Correction <sup>b</sup>	10.713	1	.001		
Likelihood Ratio	10.977	1	<.001		
Fisher's Exact Test				.001	<.001
Linear-by-Linear Association	11.311	1	<.001		
N of Valid Cases	715				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 56.79.

b. Computed only for a 2x2 table

## Crosstabs

### Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Psychiatric problem has: depression * On average, how often do you use the internet or email?	821	8.7%	8670	91.3%	9491	100.0%

### Psychiatric problem has: depression \* On average, how often do you use the internet or email? Crosstabulation

Count

On average, how often do you use the internet or email?

Total

		At least once a day	At least once a week (but almost every day)	At least once a month (but not every week)	At least once every 3 months	Less than every 3 months	Never	
		Every day, or almost every day	Every day, or once a week (but not every day)	Once a month (but not every week)	Once every 3 months	Less than every 3 months	Never	
Psychiatric problem has: depression	Not mentioned	157	33	16	6	3	44	259
	Mentioned	333	67	16	5	10	131	562
Total		490	100	32	11	13	175	821

### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.649 <sup>a</sup>	5	.040
Likelihood Ratio	11.235	5	.047
Linear-by-Linear Association	2.150	1	.143
N of Valid Cases	821		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 3.47.

### Crosstabs

#### Case Processing Summary

Cases			
Valid	Missing	Total	

	N	Percent	N	Percent	N	Percent
Psychiatric problem has: depression * Life satisfaction binary	729	7.7%	8762	92.3%	9491	100.0%

### Psychiatric problem has: depression \* Life satisfaction binary

#### Crosstabulation

Count

		Life satisfaction binary		Total
		Not satisfied	Satisfied	
Psychiatric problem has: depression	Not mentioned	44	183	227
	Mentioned	183	319	502
Total		227	502	729

#### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	21.244 <sup>a</sup>	1	<.001		
Continuity Correction <sup>b</sup>	20.456	1	<.001		
Likelihood Ratio	22.401	1	<.001		
Fisher's Exact Test				<.001	<.001
Linear-by-Linear Association	21.215	1	<.001		
N of Valid Cases	729				

- a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 70.68.
- b. Computed only for a 2x2 table

## Crosstabs

### Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Psychiatric problem has: depression * Loneliness binary	825	8.7%	8666	91.3%	9491	100.0%

### Psychiatric problem has: depression \* Loneliness binary Crosstabulation

Count

		Loneliness binary			Total
		.00	1.00		
Psychiatric problem has: depression	Not mentioned	6	254	260	
	Mentioned	26	539	565	
Total		32	793	825	

## Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.513 <sup>a</sup>	1	.113		
Continuity Correction <sup>b</sup>	1.936	1	.164		
Likelihood Ratio	2.754	1	.097		
Fisher's Exact Test				.124	.078
Linear-by-Linear Association	2.510	1	.113		
N of Valid Cases	825				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.08.

b. Computed only for a 2x2 table

## A3: Logistic Regression

### Case Processing Summary

Unweighted Cases <sup>a</sup>		N	Percent
Selected Cases	Included in Analysis	501	5.2
	Missing Cases	9165	94.8
	Total	9666	100.0
Unselected Cases		0	.0
Total		9666	100.0

a. If weight is in effect, see classification table for the total number of cases.

## Dependent Variable Encoding

Original Value Internal Value

Not mentioned	0
Mentioned	1

## Categorical Variables Codings

	Frequency	Parameter coding				
		(1)	(2)	(3)	(4)	(5)
On average, how often do you use the internet every day or email?	290	.000	.000	.000	.000	.000
Every day, or almost						
At least once a week (but not every day)	61	1.000	.000	.000	.000	.000
At least once a month (but not every week)	23	.000	1.000	.000	.000	.000
At least once every 3 months	7	.000	.000	1.000	.000	.000
Less than every 3 months	4	.000	.000	.000	1.000	.000
Never	116	.000	.000	.000	.000	1.000
Self-reported general health						
...excellent,	6	.000	.000	.000	.000	
very good,	81	1.000	.000	.000	.000	
good,	167	.000	1.000	.000	.000	
fair,	151	.000	.000	1.000	.000	
or, poor?	96	.000	.000	.000	1.000	
Age Groups for 50+	50-64	257	.000	.000		

	65-79	218	1.000	.000			
	80+	26	.000	1.000			
Loneliness binary	.00	18	.000				
	1.00	483	1.000				
Whether long-standing illness is limiting	Yes	341	.000				
	No	160	1.000				
Life satisfaction binary	Not satisfied	175	.000				
	Satisfied	326	1.000				
Respondent sex from household grid	Male	195	.000				
	Female	306	1.000				

Block 0: Beginning Block

### Classification Table<sup>a,b</sup>

Observed	Predicted		Percentage Correct
	Not mentioned	Mentioned	
Step 0 Psychiatric problem has: Not depression	0	144	.0
	Mentioned	0	357
Overall Percentage			71.3

a. Constant is included in the model.

b. The cut value is .500

### Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 0 Constant	.908	.099	84.584	1	<.001	2.479

### Variables not in the Equation

		Score	df	Sig.
Step 0 Variables	Respondent sex from household grid(1)	1.045	1	.307
	Age Groups for 50+	4.691	2	.096
	Age Groups for 50+(1)	4.240	1	.039
	Age Groups for 50+(2)	.055	1	.815
	Self-reported general health	11.607	4	.021
	Self-reported general health(1)	5.466	1	.019
	Self-reported general health(2)	.175	1	.675
	Self-reported general health(3)	.017	1	.897
	Self-reported general health(4)	8.455	1	.004
	Whether long-standing illness is limiting(1)	7.591	1	.006

On average, how often do you use the internet or email?	10.156	5	.071
On average, how often do you use the internet or email?(1)	.196	1	.658
On average, how often do you use the internet or email?(2)	6.462	1	.011
On average, how often do you use the internet or email?(3)	.000	1	.992
On average, how often do you use the internet or email?(4)	.028	1	.868
On average, how often do you use the internet or email?(5)	4.779	1	.029
Life satisfaction binary(1)	14.358	1	<.001
Loneliness binary(1)	1.329	1	.249
Overall Statistics	39.484	15	<.001

Block 1: Method = Enter

### Omnibus Tests of Model Coefficients

	Chi-square	df	Sig.
Step 1 Step	41.633	15	<.001

Block	41.633	15	<.001
Model	41.633	15	<.001

### Model Summary

Step	-2 Log likelihood	Cox & Snell R	Nagelkerke R
		Square	Square
1	559.397 <sup>a</sup>	.080	.114

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

### Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	4.963	8	.762

### Contingency Table for Hosmer and Lemeshow Test

	Step 1	Psychiatric problem has: depression = Not mentioned		Psychiatric problem has: depression = Mentioned		Total
		Observed	Expected	Observed	Expected	
		1	29	26.261	20	22.739
	2	22	21.271	28	28.729	50
	3	21	18.769	29	31.231	50
	4	13	16.481	37	33.519	50
	5	12	13.495	34	32.505	46

6	11	12.970	38	36.030	49
7	10	11.803	40	38.197	50
8	9	9.731	41	40.269	50
9	9	7.929	45	46.071	54
10	8	5.290	45	47.710	53

**Classification Table<sup>a</sup>**

Observed		Predicted		Percentage Correct
		Not mentioned	Mentioned	
Step 1 Psychiatric problem has: Not depression	Not mentioned	14	130	9.7
	Mentioned	10	347	97.2
Overall Percentage				72.1

a. The cut value is .500

## Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper	95% C.I. for EXP(B)
Step 1 <sup>a</sup>									
Respondent sex from household grid(1)	-.221	.217	1.039	1	.308	.802	.525	1.226	
Age Groups for 50+			5.041	2	.080				
Age Groups for 50+(1)	-.507	.226	5.022	1	.025	.602	.387	.938	
Age Groups for 50+(2)	-.380	.491	.601	1	.438	.684	.261	1.788	
Self-reported general health			5.485	4	.241				
Self-reported general health(1)	-.736	.919	.641	1	.423	.479	.079	2.902	
Self-reported general health(2)	-.101	.903	.013	1	.911	.904	.154	5.308	
Self-reported general health(3)	-.385	.915	.177	1	.674	.681	.113	4.088	
Self-reported general health(4)	-.075	.960	.006	1	.938	.928	.141	6.086	
Whether long-standing illness is limiting(1)	-.444	.240	3.429	1	.064	.642	.401	1.026	
On average, how often do you use the internet or email?			10.513	5	.062				
On average, how often do you use the internet or email?(1)	-.262	.322	.660	1	.417	.770	.409	1.447	
On average, how often do you use the internet or email?(2)	-.948	.468	4.094	1	.043	.388	.155	.971	
On average, how often do you use the internet or email?(3)	-.214	.887	.058	1	.810	.808	.142	4.593	

On average, how often do you use the internet or email?(4)	-.340	1.232	.076	1	.783	.712	.064	7.961
On average, how often do you use the internet or email?(5)	.545	.291	3.516	1	.061	1.725	.976	3.051
Life satisfaction binary(1)	-.692	.250	7.686	1	.006	.500	.307	.816
Loneliness binary(1)	-1.126	.679	2.754	1	.097	.324	.086	1.226
Constant	3.295	1.190	7.661	1	.006	26.973		

a. Variable(s) entered on step 1: Respondent sex from household grid, Age Groups for 50+, Self-reported general health, Whether long-standing illness is limiting, On average, how often do you use the internet or email?, Life satisfaction binary, Loneliness binary.