THE EFFECTS OF GENDER ON INTERNET USE



Subject: TIME MBE 2022

Student: Styliana Pontiki

Supervisor: Mr. Costas Hadjiyiannis

Semester: Winter 2022-2023

<u>Contents</u>

- Introduction
- Data Description
- Descriptive Statistics
- Data and Methodology
- Results and Conclusion
- Bibliography
- Appendix

Introduction

From the beginning of the appearance of the Internet, it is known that women used it less than men – the term usually did not appear in the early years – either because they were at home doing coursework or not working. In the late 2000s, where the internet evolved, firms started implementing computers and therefore providing services via internet to their clients. The employers were mainly men, due to their educational characteristics and that is why women maintained the low percentage of internet use.

Nowadays, women's' internet use is still not equal to that of men, because of the abilities of them, according to <u>Ono and Zavodny (2003)</u>, their personal characteristics specifically. These might be how quickly their adaptation is in new technology, how keen they are in working online (hybrid), and their capability of learning correctly the software an organization is working with.

The general outcome is that there is a remaining gender gap and its factors affecting the internet use, with a greater weight towards women, slightly changing, but still, a huge gender gap. Some key factors assisting this point are, according to <u>Garín-Muñoza, Pérez-Amaral and Valarezo (2022)</u>, that women do not use the internet usually as men, and indeed women use less services either online (<u>Web Foundation, 2020</u>) or at work within the internet rather than men.

In this study, we will examine the gender effects on internet use, while dealing with different categories of the variables used. Starting with the description of the variables, following with some expected results driven from the graphs, to finally derive the results and conclusion remarks.

Data Description

In the probit models displayed further in the study, we will examine the effects of gender on internet use. The probit models which were created are using as reference group the Occasional_Use and Usual_Use of internet respectively, whilst also including the variables affecting them. These would be gender, education, household income, age, countries, and years. The models are as follow:

Occasional_Use i_t = f(Gender i_t , Education i_t , Income i_t , Age i_t , Countries i_t , Years t)

Usual_Use i_t = f(Gender i_t , Education i_t , Income i_t , Age i_t , Countries i_t , Years t

Where subscript i represents the individual and subscript t refers to the year.

The dependent variable is a binary variable taking the value 1 if the individual has used the internet occasionally; 0 otherwise (usually).

The explanatory variables are the following categorical variables:

Gender: 1 if male; 0 if female.

Education: Three education groups: Low_educ; Medium_educ; High_educ.

Income: Four income groups: Low_Inc; Medium_Inc; Average_Inc; High_Inc.

Age: Five age groups: Age_0_24; Age_25_36; Age_37_50; Age_51_65; Age_66_AO.

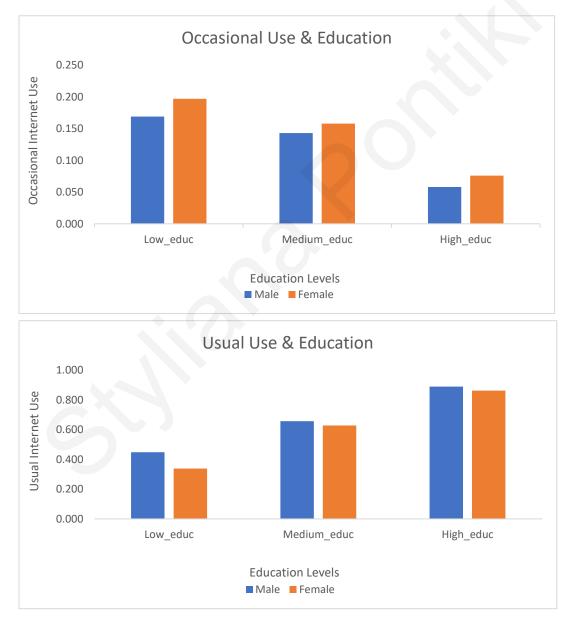
Countries: Twenty-nine countries: AT, BE, BG, CY, CZ, DE, DK, EE, FI, FR, HR, HU, IE, IS, IT, LT, LU, LV, ME, MK, NL, NO, PL, PT, RO, RS, SE, SI, SK.

Years: 8 years of ESS Rounds: Year_2002, Year_2004, Year_2006, Year_2008, Year_2010, Year_2016, Year_2018, Year_2020

However, for our models, we excluded the years 2012 and 2014 due to collinearities. As a result, we ended up with a total of 178128 observations. But before that, let us move on to the descriptive statistics.

Descriptive Statistics

In this section, each variable used in running the probit model with its categories, will be presented using graphs, for us to assume what are the expected results. The graphs were created based on the gender effects on internet use. The categories that are going to be examined are education, income, age, countries, and years of ESS rounds. Starting with the education levels, one can observe from the graphs below, that is expected for all the levels of education and being a male, the internet use to be usual, and therefore, it is expected for all the levels of education and being a female, the internet use to be occasional.



This outcome could be due to gender differences among the countries and the age groups, since one "owning" all levels of education, has the privilege of usually using the internet. This assumption

concludes that for someone to use the internet on a usual basis, it is expected to have higher education, and therefore higher income to enjoy the internet services – and most likely be a male.

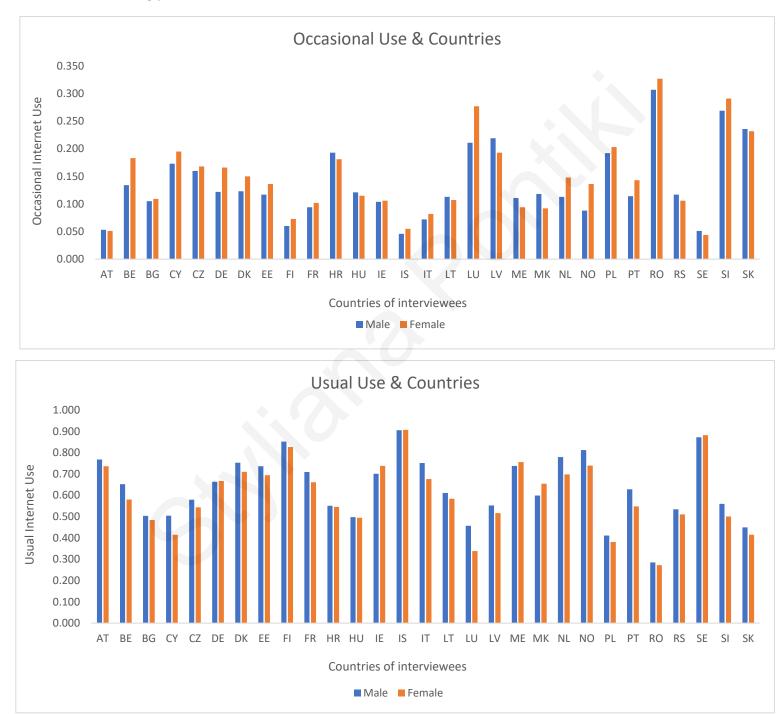
Adding to the previous, from the graphs below, it is expected for all the levels of income, and being a male, the internet use to be usual, and therefore, it is expected for all the levels of income and being a female, the internet use to be occasional. This outcome answers – part of it – our preceding assumption, that being a male and having higher education, can lead to higher income.



Having said that, the next graphs are related to the age groups. Will this assumption be true in combination with the age of the sexes?

Occasional Use & Age 0.200 0.180 0.160 0.140 **Occasional Internet Use** 0.120 0.100 0.080 0.060 0.040 0.020 0.000 Age_0_24 Age_25_36 Age_37_50 Age_51_65 Age_66_AO Age Groups Male Female Usual Use & Age 1.000 0.900 0.800 0.700 Usual Internet Use 0.600 0.500 0.400 0.300 0.200 0.100 0.000 Age_0_24 Age_25_36 Age_66_AO Age_37_50 Age_51_65 Age Groups Male Female

One thing someone can inspect looking at the coming graphs, is the U-shape that stands out in both. Again, there are similarities between the two types of the internet use, with men usually using the internet and women occasionally using the internet. The answer to the assumption is nearly answered, with the part of countries coming up to have the final data picture. Also, an interesting point from the first graph is that women between the ages 51 to 65 are more likely to occasionally use the internet, more than any other age category. One might say that this fact is expected, because as people grow older, they tend to turn to less harmful pursuits in their spare time, maybe forget how to use it, or simply when a person is elderly, they do not know how to use it.



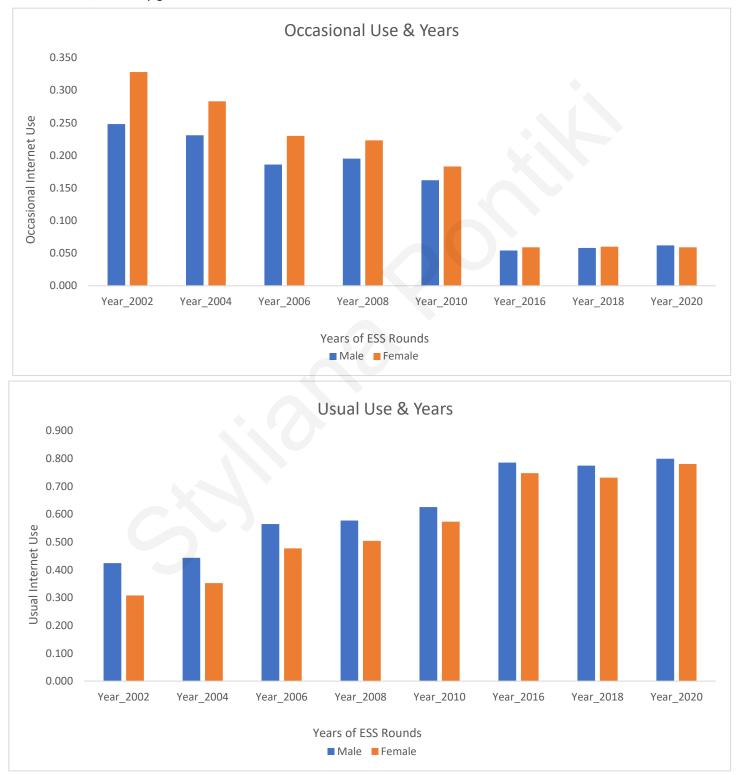
Lastly, below are the graphs of the categories of countries for occasional and usual internet use accordingly.

To decide if the assumption finally works, the higher education must align with the higher income and age group, in a country with high living standard – based on the male sex. Having said that,

males in high living standard countries are more likely to use the internet usually rather than females in high living standard countries, except IE, where female are usually using the internet. Few

exceptions are stated in the first graph too, where women in low living standard countries like Hungary, Latvia, and Montenegro, are less likely to occasionally use the internet.

Finally, the following graphs show the frequency of years of the ESS rounds as to the type of internet use, based by gender.



As expected, as we reach year 2020, males are more likely to usually use the internet, rather than females, which use it occasionally. And it is clear from the first graph, that after year 2010, the wide spread of technology and therefore the use of internet is mostly usually used by both sexes.

Overall, our assumption is correct and aligns perfectly with the type of sex and its effects on the internet use, a point which will be tested with probit models right below.

Data and Methodology

Probit Model (Occasional_Use)

For the specific study, the data are collected from the European Social Survey(ESS) official website. The model that is being used is the probit one via Stata 17, to calculate the probability for both genders to either use the internet occasionally or usually, combining different factors which may contribute to shaping the various results. From the model, Year_2012 and Year_2014 are excluded which corresponds to ESS six and seven rounds, as well as some of the countries including Greece and Israel, due to collinearities.

To start with, this probit model uses the variable Occasional_Use as the reference group and in the
results below which are placed in a table, one can observe the different outcomes for both sexes:

	Variables	Coefficients	P> z	Male	P> z	Female	P> z	
Occasional_Use				Coefficients				
	Male	-0.071	0.000					
	Medium_educ	-0.062	0.000	-0.080	0.000	-0.047	0.000	
	High_educ	-0.439	0.000	-0.500	0.000	-0.394	0.000	
	Medium_inc	0.067	0.000	0.044	0.011	0.069	0.000	
	Average_inc	0.009	0.474	-0.034	0.067	0.033	0.047	
	High_inc	-0.165	0.000	-0.215	0.000	-0.130	0.000	
	Age_25_36	0.201	0.000	0.162	0.000	0.238	0.000	
	Age_37_50	0.529	0.000	0.472	0.000	0.582	0.000	
	Age_51_65	0.731	0.000	0.705	0.000	0.764	0.000	
	Age_66_AO	0.694	0.000	0.687	0.000	0.719	0.000	
	BE	0.024	0.549	-0.056	0.349	0.094	0.088	
	BG	0.160	0.000	0.152	0.018	0.163	0.005	
	CY	0.356	0.000	0.341	0.000	0.371	0.000	
	CZ	0.083	0.039	0.094	0.111	0.072	0.186	
	DE	-0.006	0.879	-0.062	0.294	0.046	0.398	
	DK	-0.195	0.000	-0.209	0.001	-0.184	0.001	
	EE	0.227	0.000	0.206	0.001	0.246	0.000	
	FI	-0.047	0.298	-0.106	0.107	0.003	0.963	
	FR	-0.086	0.037	-0.086	0.155	-0.084	0.131	
	HR	0.358	0.000	0.380	0.000	0.343	0.000	
	HU	-0.063	0.139	-0.030	0.634	-0.085	0.140	
	IE	0.127	0.004	0.107	0.100	0.133	0.028	
	IS	-0.178	0.002	-0.206	0.014	-0.162	0.041	
	IT	0.216	0.000	0.166	0.015	0.257	0.000	
	LT	0.266	0.000	0.299	0.000	0.261	0.000	
	LU	-0.078	0.123	-0.101	0.166	-0.050	0.478	

	LV	0.254	0.000	0.327	0.000	0.222	0.001
	ME	0.445	0.000	0.453	0.000	0.418	0.000
	МК	0.415	0.000	0.455	0.000	0.370	0.000
	NL	-0.170	0.000	-0.185	0.002	-0.161	0.003
	NO	-0.174	0.000	-0.268	0.000	-0.087	0.121
	PL	0.097	0.017	0.103	0.084	0.084	0.126
	РТ	0.221	0.000	0.142	0.043	0.281	0.000
	RO	0.465	0.000	0.447	0.000	0.476	0.000
	RS	0.424	0.000	0.447	0.000	0.400	0.000
	SE	-0.273	0.000	-0.239	0.001	-0.323	0.000
	SI	0.466	0.000	0.460	0.000	0.471	0.000
	SK	0.386	0.000	0.419	0.000	0.361	0.000
	Year_2004	-0.125	0.000	-0.096	0.000	-0.155	0.000
	Year_2006	-0.303	0.000	-0.259	0.000	-0.346	0.000
	Year_2008	-0.383	0.000	-0.314	0.000	-0.449	0.000
	Year_2010	-0.522	0.000	-0.452	0.000	-0.589	0.000
	Year_2016	-1.164	0.000	-1.081	0.000	-1.244	0.000
	Year_2018	-1.222	0.000	-1.125	0.000	-1.312	0.000
	Year_2020	-1.243	0.000	-1.134	0.000	-1.343	0.000
Num of Obvs	178128			84028		94100	
R^2	0.1362			0.1332		0.1404	

For the variables, starting with the Occasional_Use, the predicted probability of using the internet occasionally while maintaining a high income in the household, is 0.215 lower for male and 0.130 lower for female, a difference up to 0.085. The same goes for the level of education, as for male the predicted probabilities of having secondary and tertiary education while using occasionally the internet, are both lower than that of female (-0.080 and -0.500, -0.047 and -0.394, accordingly). Note that the variables Medium_educ and High_educ are statistically significant, with p-values being equal to zero. Moving on to the age categories, it is observed that the peak of the higher probabilities of occasional internet use for both men and women are between the ages 51-65, with 0.705 and 0.764 respectively.

Now for the countries, it is noticed that the ones with a high living standard like DK and NL, have lower predicted probabilities for men and women living there and using the internet occasionally (-0.209 and -0.184, -0.185 and -0.161, accordingly), than the countries with a medium living standard such as RO and SK, which have positive predicted probabilities of 0.447 for male and 0.476 for female, as well as 0.419 for male and 0.361 for female, respectively. Our analysis concludes with the countries with a low living standard, like Czechia, which has the lowest positive predicted probability for both male and female, with the numbers reaching to 0.094 and 0.072, while maintaining 0.111 and 0.186 p-values, accordingly. Finally, for the years of ESS rounds, besides the variables Year_2004 and Year_2006 which have the lowest negative predicted probabilities, for all the other years the predicted probabilities are from 0.5 and higher, for both sexes.

Probit Model (Usual_Use)

Moving on to the next probit model, using the same independent variables as before but with the change of the reference group which is now the Usual_Use, the results were the following:

	Variables	Coefficients	P> z	Male	P> z	Female	P> z
Usual_Use					Co	oefficients	
	Male	0.080	0.000				
	Medium_educ	0.551	0.000	0.507	0.000	0.586	0.000
	High_educ	1.274	0.000	1.306	0.000	1.241	0.000
	Medium_inc	0.368	0.000	0.418	0.000	0.341	0.000
	Average_inc	0.663	0.000	0.762	0.000	0.583	0.000
	High_inc	0.913	0.000	1.034	0.000	0.807	0.000
	Age_25_36	-0.606	0.000	-0.536	0.000	-0.665	0.000
	Age_37_50	-0.977	0.000	-0.947	0.000	-1.006	0.000
	Age_51_65	-1.562	0.000	-1.533	0.000	-1.608	0.000
	Age_66_AO	-2.404	0.000	-2.276	0.000	-2.559	0.000
	BE	0.097	0.003	0.152	0.001	0.038	0.396
	BG	-0.738	0.000	-0.783	0.000	-0.697	0.000
	СҮ	-0.652	0.000	-0.623	0.000	-0.692	0.000
	CZ	-0.090	0.005	-0.118	0.012	-0.068	0.121
	DE	0.034	0.281	0.082	0.072	-0.025	0.558
	DK	0.754	0.000	0.715	0.000	0.798	0.000
	EE	-0.049	0.147	-0.111	0.025	0.006	0.887
	FI	0.486	0.000	0.470	0.000	0.513	0.000
	FR	0.144	0.000	0.107	0.023	0.178	0.000
	HR	-0.472	0.000	-0.515	0.000	-0.439	0.000
	HU	-0.448	0.000	-0.514	0.000	-0.397	0.000
	IE	0.290	0.000	0.230	0.000	0.346	0.000
	IS	0.964	0.000	0.848	0.000	1.117	0.000
	IT	-0.105	0.004	-0.016	0.768	-0.188	0.000
	LT	-0.460	0.000	-0.536	0.000	-0.429	0.000
	LU	0.222	0.000	0.208	0.001	0.216	0.001
	LV	-0.199	0.000	-0.270	0.000	-0.160	0.004
	ME	-0.398	0.000	-0.414	0.000	-0.347	0.000
	МК	-0.611	0.000	-0.736	0.000	-0.489	0.000
	NL	0.850	0.000	0.812	0.000	0.892	0.000
	NO	0.643	0.000	0.699	0.000	0.585	0.000
	PL	-0.365	0.000	-0.370	0.000	-0.361	0.000
	РТ	-0.186	0.000	-0.122	0.033	-0.241	0.000
	RO	-0.965	0.000	-0.996	0.000	-0.938	0.000
	RS	-0.740	0.000	-0.781	0.000	-0.699	0.000
	SE	0.860	0.000	0.757	0.000	0.973	0.000
	SI	-0.110	0.001	-0.108	0.025	-0.109	0.016
	SK	-0.580	0.000	-0.580	0.000	-0.582	0.000
	Year_2004	0.309	0.000	0.260	0.000	0.373	0.000
	Year_2006	0.666	0.000	0.588	0.000	0.763	0.000
	Year_2008	1.009	0.000	0.905	0.000	1.133	0.000
	Year_2010	1.299	0.000	1.170	0.000	1.450	0.000
	Year_2016	1.930	0.000	1.785	0.000	2.103	0.000
	Year_2018	2.126	0.000	1.957	0.000	2.317	0.000

	Year_2020	2.327	0.000	2.114	0.000	2.558	0.000
Num of	178128			84028		94100	
Obvs							
R^2	0.4157			0.3937		0.4377	

For the variables, starting with the Usual_Use, the predicted probability of using the internet usually while maintaining a high income in the household, is 1.034 higher for male and 0.807 higher for female, a difference up to 0.227. The same goes for the level of education, as for male the predicted probability of having secondary education while using occasionally the internet, is lower than that of female (0.507 and 0.586, accordingly). On the other hand, the predicted probability of female having tertiary education while usually using the internet, is lower than that of male (1.241 and 1.306, respectively). Note that for both variables Medium_educ and High_educ, the p-values are equal to zero and therefore, there is statistical significancy. Moving on to the age categories, it is observed that the peak of the higher negative probabilities of usual internet use, for both men and women, are from the age 61 and over, with 2.276 and 2.559, respectively.

Now for the countries, it is noticed that the ones with a high living standard like DK and NL, have positive predicted probabilities for men and women living there and using the internet usually (0.715 and 0.798, 0.812 and 0.892, accordingly), than the countries with a medium living standard such as RO and SK, which have negative predicted probabilities of 0.996 for male and 0.938 for female, as well as 0.580 for male and 0.582 for female, respectively. Our analysis concludes with the countries with a low living standard, like Slovenia, which has the lowest negative predicted probability for both male and female, with the numbers reaching to 0.108 and 0.109, while maintaining 0.025 and 0.016 p-values, accordingly. Finally, for the years of ESS rounds, besides the variables Year_2004 and Year_2006 which have the lowest positive predicted probabilities, for all the other years the predicted probabilities are from 1 and higher, for both sexes.

Results and Conclusion

Both probit models can be noticed with some similarities and differences. The results were the opposite, for both sexes, for the different factors affecting the two types of internet use, as expected.

Starting from the last variable category, the years of ESS rounds, as the years go by, it is more likely people to usually use the internet and not occasionally. For example, there is a big difference between the variable Year_2020 for occasional internet use and the variable Year_2020 for usual internet use. This can be shown from the numbers, since the predicted probabilities of using occasionally the internet are less likely for both male and female, up to 1.134 and 1.343 respectively, and the predicted probabilities of using usually the internet are more likely, up to 2.114 and 2.558 accordingly.

Moving up to the countries, depending on the category of living standard they are, the probabilities are different. For example, countries with low living standard, like Bulgaria, its predicted probabilities of a male or female living in this country and using the internet occasionally, are higher than the predicted probabilities of using the internet usually, with probabilities 0.152 and 0.163 and probabilities -0.783 and -0.697, accordingly. Note that the variable BG is statistically significant only for the usual internet use, in addition with the p-values for both sexes for the occasional internet use (0.018 for male and 0.005 for female).

Countries with medium living standard, like Estonia, have higher predicted probabilities for both sexes in using occasionally the internet rather than usually using the internet, with probabilities of 0.206 and 0.246, and probabilities of -0.111 and 0.006, respectively. Note that statistically significant is only the female living in Estonia for occasional internet use. Finally, countries with high living standard, like Iceland, its predicted probabilities of a male or female living in this country and using the internet occasionally, are lower than the predicted probabilities of using the internet usually, with probabilities -0.206 and -0.162, and probabilities 0.848 and 1.117, respectively.

The last categories from the results are the age groups, income, and education. For the age groups, as a person grows older, the use of the internet is less, and it can be shown from the higher predicted probabilities in all the age groups for occasional internet use. Coming to the income part, it is observed something strange. The average income is statistically insignificant for the occasional internet use, rather than the average income for the usual internet use. Adding to that, the predicted probabilities of the average income in the usual internet use are higher than those of the predicted probabilities of the average income in the occasional internet use for, male and female, with probabilities 0.762 and 0.583, and probabilities of -0.034 and 0.033, respectively. Finishing with the education variables, all the predicted probabilities of the occasional internet use. From the last part, it can be definite that, the higher the level of education for a person, the more likely are going to use the internet more often.

From the results, one can conclude that in general, when a person gets older, they have less interest in the use of the services offered. This aligns with the country of origin and the sex of a person, and as we saw from our analysis, the gender gap is better observed within the predicted probabilities of women. However, there is still hope the gap can be minimized and why not eliminated. Moreover, let us not forget the assumption we made in the beginning, that if a person has a higher education level, therefore has a higher household income, therefore leaves in a country with high standard living and the opposite – ignoring the minor exceptions. Finally, our results match the bibliography analysis too, where women are more likely to use less the internet than men.

Bibliography

- [March 2003]. Hiroshi Ono, Madeline Zavodny. Gender and the Internet. <u>https://www.jstor.org/stable/42955858</u>
- [September 2022]. Teresa Garín-Muñoza, Teodosio Pérez-Amaral, Ángel Valarezo. Evolution of the internet gender gaps in Spain and effects of the Covid-19 pandemic. <u>https://doi.org/10.1016/j.telpol.2022.102371</u>
- [March 10th, 2020] .Web Foundation. The gender gap in internet access: using a womencentred method. <u>https://webfoundation.org/2020/03/the-gender-gap-in-internet-access-using-a-women-centred-method/</u>
- [December 2005]. Deborah Fallows. *How women and Men Use the Internet*. <u>https://www.pewresearch.org/internet/2005/12/28/how-women-and-men-use-the-internet/</u>
- European Social Survey. Download interviewer data | European Social Survey (ESS)

Appendix

Probit Models

Occasional_Use

. probit Ocassional_Use Male Medium_educ High_educ Medium_inc Average_inc High_inc Age_25_36 Age_37_50 Age_51_65 Age_66_A0 BE BG CY > CZ DE DK EE FI FR HR HU IE IS IT LT LU LV ME MK NL NO PL PT RO RS SE SI SK Year_2004 Year_2006 Year_2008 Year_2010 Year_2016 Year_ > 2018 Year_2020

Iteration	0:	log	likelihood	=	-72110.062
Iteration	1:	log	likelihood	=	-62646.579
Iteration	2:	log	likelihood	=	-62290.55
Iteration	3:	log	likelihood	=	-62288.92
Iteration	4:	log	likelihood	=	-62288.92

Probit regression

Log likelihood = -62288.92

Number of ob	s = 178,128
LR chi2 (45)	= 19642.29
Prob > chi2	= 0.0000
Pseudo R2	= 0.1362

Ocassional Use	Coefficient	Std. err.	z	P> z	[95% conf.	intervall
					-	
Male	0709385	.0080811	-8.78	0.000	0867772	0550997
Medium_educ	0617973	.0099741	-6.20	0.000	0813462	0422485
High_educ	4394156	.0137404	-31.98	0.000	4663463	4124849
Medium_inc	.0669319	.0110487	6.06	0.000	.0452769	.0885869
Average_inc	.0088649	.012395	0.72 -9.93	0.474	0154289 1972043	.0331588
High_inc Age_25_36	1646893 .2014184	.0165896 .0189926	10.61	0.000 0.000	.1641936	1321743 .2386433
Age_25_50 Age_37_50	.5288075	.0174287	30.34	0.000	.4946479	.5629671
Age 51 65	.7305765	.0170065	42.96	0.000	.6972445	.7639085
Age_66_A0	.6939991	.0175049	39.65	0.000	.65969	.7283082
BE	.024288	.0405519	0.60	0.549	0551923	.1037684
BG	.1603165	.0433241	3.70	0.000	.0754029	.2452301
CY	.3561664	.0554009	6.43	0.000	.2475826	.4647501
CZ	.0829184	.0401213	2.07	0.039	.004282	.1615548
DE	0060414	.0397382	-0.15	0.879	0839269	.0718441
DK	1945627	.0420149	-4.63	0.000	2769104	1122151
EE	.2274901	.0414808	5.48	0.000	.1461892	.3087909
FI	0466078	.0448208	-1.04	0.298	134455	.0412393
FR	0856549	.0410716	-2.09	0.037	1661538	0051559
HR	.3578611	.0434231	8.24	0.000	.2727534	.4429689
HU	0628838	.0425361	-1.48	0.139	1462531	.0204855
IE	.1269287	.0441876	2.87	0.004	.0403226	.2135348
IS	177573	.0575492	-3.09	0.002	2903673	0647787
IT	.2164296	.0460199	4.70	0.000	.1262322	.3066271
LT	.2663997	.0428524	6.22	0.000	.1824105	.3503889
	0776061	.0503374			1762656	.0210534
LU			-1.54	0.123		
LV	.2542496	.0488533	5.20	0.000	.158499	.3500002
ME	.4453707	.0538582	8.27	0.000	.3398107	.5509308
MK	.4145818	.0660908	6.27	0.000	.2850462	.5441175
NL	1702987	.040627	-4.19	0.000	2499262	0906712
NO	1740337	.0409898	-4.25	0.000	2543722	0936952
PL	.0966318	.0405315	2.38	0.017	.0171915	.1760721
РТ	.2213819	.0457829	4.84	0.000	.1316491	.3111147
RO	.464917	.0508148	9.15	0.000	.365322	.5645121
RS	.4243642	.0564675	7.52	0.000	.31369	.5350384
SE	2727819	.0511278	-5.34	0.000	3729905	1725733
SI	.4658542	.0401611	11.60	0.000	.38714	.5445685
SK	.3863539	.0425688	9.08	0.000	.3029205	.4697872
Year_2004	1246296	.017094	-7.29	0.000	1581332	091126
Year_2006	3025116	.0184847	-16.37	0.000	3387409	2662822
Year_2008	3828018	.0177619	-21.55	0.000	4176146	347989
Year_2010	5223293	.0173678	-30.07	0.000	5563696	488289
Year_2016	-1.163783	.019703	-59.07	0.000	-1.202401	-1.125166
Year 2018	-1.221881	.0191668	-63.75	0.000	-1.259448	-1.184315
Year 2020	-1.242932	.021432	-57.99	0.000	-1.284938	-1.200926
cons	9117793	.0436437	-20.89	0.000	9973195	8262392
_cons	911//95	.0430437	-20.09	0.000		0202392

Occasional_Use if Male==1

. probit Ocassional_Use i.Medium_educ i.High_educ i.Medium_inc i.Average_inc i.High_inc i.Age_25_36 i.Age_37_50 i.Age_51_65 i.Age_66_A0 i. > BE i.BG i.CY i.CZ i.DE i.DK i.EE i.FI i.FR i.HR i.HU i.IE i.IS i.IT i.LT i.LU i.LV i.ME i.MK i.NL i.NO i.PL i.PT i.RO i.RS i.SE i.SI i.S > K i.Year_2004 i.Year_2006 i.Year_2008 i.Year_2010 i.Year_2016 i.Year_2018 i.Year_2020 if Male==1

Iteration 0:	log likelihood = -32454.677
Iteration 1:	log likelihood = -28299.663
Iteration 2:	log likelihood = -28133.775
Iteration 3:	log likelihood = -28133.101
Iteration 4:	log likelihood = -28133.101

Probit	regres	510N

Number of obs	=	84,028
LR chi2(44)	=	8643.15
Prob > chi2	=	0.0000
Pseudo R2	=	0.1332

Log li	kelihood		2813	3.101
--------	----------	--	------	-------

Ocassional_Use	Coefficient	Std. err.	Z	P> z	[95% conf.	interval]
1.Medium educ	0798047	.0149715	-5.33	0.000	1091484	050461
1.High_educ	500126	.0211583	-23.64	0.000	5415955	4586564
1.Medium_inc	.0435025	.0170717	2.55	0.011	.0100427	.0769624
1.Average_inc	0341735	.0186717	-1.83	0.067	0707694	.0024224
1.High_inc	2146318	.0241913	-8.87	0.000	2620459	1672177
1.Age_25_36	.1622384	.0272223	5.96	0.000	.1088837	.2155931
1.Age_37_50	.4724496	.0249162	18.96	0.000	.4236147	.5212846
1.Age_51_65	.7047738	.0242196	29.10	0.000	.6573042	.7522434
1.Age_66_A0	.6874029	.0251201	27.36	0.000	.6381684	.7366373
1.BE	0561698	.0599963	-0.94	0.349	1737604	.0614207
1.BG	.1518756	.0643083	2.36	0.018	.0258337	.2779175
1.CY 1.CZ	.3406837	.0826084 .0592366	4.12 1.59	0.000 0.111	.1787742 0217963	.5025933 .2104071
1.DE	0615456	.0585923	-1.05	0.294	1763843	.0532931
1.DL 1.DK	2087093	.0615288	-3.39	0.001	3293035	0881151
1.EE	.2064631	.0619972	3.33	0.001	.0849509	.3279754
1.FI	1064387	.0661196	-1.61	0.107	2360307	.0231533
1.FR	0864121	.0607308	-1.42	0.155	2054422	.0326181
1.HR	.3800338	.0643654	5.90	0.000	.2538799	.5061877
1.HU	0300653	.0632154	-0.48	0.634	1539653	.0938346
1.IE	.1070209	.0649996	1.65	0.100	0203761	.2344179
1.15	205533	.0837574	-2.45	0.014	3696945	0413715
1.13 1.IT	.1662726	.0680791	2.44	0.014	.0328401	.2997051
1.LT	.2987337	.0654925	4.56	0.000	.1703708	.4270965
1.LU	1013335	.0730795	-1.39	0.166	2445665	.0418996
1.LV	.3272424	.0759476	4.31	0.000	.1783878	.4760969
1.ME	.4530131	.0764267	5.93	0.000	.3032195	.6028066
1.MK	.4553283	.0954949	4.77	0.000	.2681618	.6424949
1.NL	1849449	.0602842	-3.07	0.002	3030997	0667901
1.NO	2676155	.0603794	-4.43	0.000	3859569	1492741
1.PL	.1032391	.0598073	1.73	0.084	013981	.2204591
1.PT	.1420001	.0700254	2.03	0.043	.0047528	.2792473
1.RO	.4467451	.0752602	5.94	0.000	.2992377	.5942525
1.RS	.4468785	.0820194	5.45	0.000	.2861234	.6076335
1.SE	2394447	.0730673	-3.28	0.001	3826539	0962355
1.SI	.4595388	.0593445	7.74	0.000	.3432257	.575852
1.51 1.SK	.4190424	.0630421	6.65	0.000	.2954821	.5426027
1.Year 2004	096193	.0251367	-3.83	0.000	1454601	0469259
-						
1.Year_2006	2587394	.0272333	-9.50	0.000	3121157	2053632
1.Year_2008	3138275	.0261009	-12.02	0.000	3649844	2626706
1.Year_2010	4523653	.0254775	-17.76	0.000	5023003	4024304
1.Year_2016	-1.081276	.0289549	-37.34	0.000	-1.138027	-1.024526
1.Year_2018	-1.12465	.0281402	-39.97	0.000	-1.179804	-1.069496
1.Year_2020	-1.133844	.03155	-35.94	0.000	-1.195681	-1.072007
_cons	9508126	.0642061	-14.81	0.000	-1.076654	824971

Occasional_Use if Male==0

. probit Ocassional_Use i.Medium_educ i.High_educ i.Medium_inc i.Average_inc i.High_inc i.Age_25_36 i.Age_37_50 i.Age_51_65 i.Age_66_AO i.BE i. > BG i.CY i.CZ i.DE i.DK i.EE i.FI i.FR i.HR i.HU i.IE i.IS i.IT i.LT i.LU i.LV i.ME i.MK i.NL i.NO i.PL i.PT i.RO i.RS i.SE i.SI i.SK i.Year_2 > 004 i.Year_2006 i.Year_2008 i.Year_2010 i.Year_2016 i.Year_2018 i.Year_2020 if Male==0

Iteration 0: log likelihood = -39589.101 Iteration 1: log likelihood = -34229.138 Iteration 2: log likelihood = -34032.204 Iteration 3: log likelihood = -34031.22 Iteration 4: log likelihood = -34031.22

Probit regressio				LR Pro	ber of obs = chi2(44) = b > chi2 = udo R2 =	11115.76 0.0000
Ocassional_Use	Coefficient	Std. err.	Z	P> z	[95% conf	. interval]
1.Medium_educ	0472349	.0134784	-3.50	0.000	073652	0208177
1.High_educ	3939482	.0182997	-21.53	0.000	4298149	3580815
<pre>1.Medium_inc</pre>	.0685693	.0145687	4.71	0.000	.0400152	.0971234
1.Average_inc	.0330753	.0166636	1.98	0.047	.0004153	.0657353
1.High_inc	1302993	.022964	-5.67	0.000	175308	0852907
1.Age_25_36	.2380768	.0266149	8.95	0.000	.1859125	.290241
1.Age_37_50	.5816884	.0244822	23.76	0.000	.5337042	.629672
1.Age_51_65	.7637862	.0239677	31.87	0.000	.7168103	.810762
1.Age_66_A0	.7186618	.0245697	29.25	0.000	.6705062	.7668174
1.BE	.0940736	.0551001	1.71	0.088	0139207	.202067
1.BG	.1634466	.0586756	2.79	0.005	.0484445	.278448
1.CY	.3708177	.0747502	4.96	0.000	.22431	.517325
1.CZ	.0721263	.0545808	1.32	0.186	03485	.179102
1.DE	.0457094	.0541239	0.84	0.398	0603716	.151790
1.DK	1842852	.0576109	-3.20	0.001	2972004	0713
1.EE	.2460731	.0559334	4.40	0.000	.1364456	.355700
1.FI	.0028157	.0610349	0.05	0.963	1168106	.12244
1.FR	0841645	.0557896	-1.51	0.131	19351	.025181
1.HR	.3426525	.0588627	5.82	0.000	.2272837	.458021
1.HU	0850484	.0575713	-1.48	0.140	1978861	.027789
1.IE	.1328607	.0603564	2.20	0.028	.0145642	.251157
1.IS	1621173	.0793546	-2.04	0.041	3176495	00658
1.IT	.2571001	.0624992	4.11	0.000	.1346039	. 379596
1.LT	.260636	.0570702	4.57	0.000	.1487805	.372491
1.LU	0495016	.0697331	-0.71	0.478	1861759	.087172
1.LV	.2220728	.0643999	3.45	0.001	.0958513	. 348294
1.ME	.4181983	.0765633	5.46	0.000	.2681371	.568259
1.MK	. 370463	.0919629	4.03	0.000	.1902191	. 550706
1.NL	160787	.0550564	-2.92	0.003	2686955	052878
1.NC	0866259	.0559314	-1.55	0.121	1962494	.022997
1.NU 1.PL	.0844343	.0551739	1.53	0.121	0237046	. 192573
1.PT	.2810491	.0608385	4.62	0.000	.1618079	.400290
1.RO	.4760826	.0689373	6.91	0.000	.3409679	.611197
1.RS	.3995288	.0779824	5.12	0.000	.2466861	.552371
1.SE	322771	.0720727	-4.48	0.000	4640308	181511
1.SI	.4711754	.0545788	8.63	0.000	.364203	.578147
1.SK	.361243	.0577511	6.26	0.000	.2480529	.474433
1.Year_2004	1551505	.0234298	-6.62	0.000	2010719	109229
1.Year_2006	346217	.0252892	-13.69	0.000	395783	29665
1.Year_2008	4485368	.0243462	-18.42	0.000	4962545	4008193
1.Year_2010	5892935	.0238479	-24.71	0.000	6360346	542552
1.Year_2016	-1.243813	.0270065	-46.06	0.000	-1.296745	-1.19088
1.Year_2018	-1.311847	.0262856	-49.91	0.000	-1.363366	-1.26032
1.Year_2020	-1.343324	.0293175	-45.82	0.000	-1.400785	-1.285863
_cons	9251643	.0594223	-15.57	0.000	-1.04163	8086986

Usual_Use

. probit Usual_Use Male Medium_educ High_educ Medium_inc Average_inc High_inc Age_25_36 Age_37_50 Age_51_65 Age_66_A0 BE BG CY CZ DE DK EE FI F > R HR HU IE IS IT LT LU LV ME MK NL NO PL PT RO RS SE SI SK Year_2004 Year_2006 Year_2008 Year_2010 Year_2016 Year_2018 Year_2020

Iteration 0:	log likelihood = -117133.06
Iteration 1:	log likelihood = -69650.723
Iteration 2:	log likelihood = -68440.897
Iteration 3:	log likelihood = -68436.823
Iteration 4:	log likelihood = -68436.822

Probit regression

Т

Probit regression	Number of obs = 178,128
	LR chi2(45) = 97392.49
	Prob > chi2 = 0.0000
Log likelihood = -68436.822	Pseudo R2 = 0.4157

Usual_Use	Coefficient	Std. err.	z	P> z	[95% conf.	interval]
Male	.0801574	.0077871	10.29	0.000	.0648951	.0954198
Medium educ	.5514076	.0098303	56.09	0.000	.5321407	.5706746
High educ	1.273994	.0132632	96.05	0.000	1.247998	1.299989
Medium inc	.3679274	.0107355	34.27	0.000	.3468861	.3889686
Average inc	.6631328	.0116901	56.73	0.000	.6402206	.6860449
High inc	.9125606	.0158077	57.73	0.000	.8815781	.943543
Age 25 36	6055794	.0178983	-33.83	0.000	6406595	5704993
Age 37 50	9768665	.0167749	-58.23	0.000	-1.009745	9439884
Age_51_65	-1.562448	.0165478	-94.42	0.000	-1.594881	-1.530015
Age 66 A0	-2.404376	.0176012	-136.60	0.000	-2.438874	-2.369878
BE	.0972933	.0325642	2.99	0.003	.0334687	.1611179
BG	7382549	.0348313	-21.20	0.000	806523	6699868
CY	652405	.0512798	-12.72	0.000	7529115	5518985
CZ	0898572	.0320624	-2.80	0.005	1526984	027016
DE	.0337041	.0312868	1.08	0.281	0276169	.0950252
DK	.753727	.0344332	21.89	0.000	.6862392	.8212148
EE	0486036	.0335395	-1.45	0.147	1143399	.0171327
FI	.4863881	.0367155	13.25	0.000	.4144269	.5583492
FI	.1443835	.0322893	4.47	0.000	.0810976	.2076694
HR	4717531	.0363382	-12.98	0.000	5429747	4005314
HU	4477427	.0337866	-12.98	0.000	5139633	3815221
IE	.2896008	.0360709	8.03	0.000	.2189032	.3602984
IS	.9640499	.0500705	18.64	0.000	.8627001	1.0654
IT	1054201	.0368953	-2.86	0.004	1777336	0331067
LT	4602998	.0345003	-13.34	0.000	527919	3926805
LU	.221694	.0452194	4.90	0.000	.1330655	.3103225
LV	1989765	.0426451	-4.67	0.000	2825593	1153937
ME	3976853	.045803	-8.68	0.000	4874576	307913
МК	6114462	.056201	-10.88	0.000	7215981	5012943
NL	.8495331	.0329261	25.80	0.000	.7849992	.9140671
NO	.6433813	.0331607	19.40	0.000	.5783875	.7083752
PL	3651727	.0330428	-11.05	0.000	4299355	30041
PT	185599	.038115	-4.87	0.000	2603031	1108949
RO	9647258	.0498409	-19.36	0.000	-1.062412	8670394
RS	7398406	.0475143	-15.57	0.000	8329669	6467144
SE	.8597391	.0425032	20.23	0.000	.7764345	.9430438
SI	1096625	.0330083	-3.32	0.001	1743576	0449674
SK	5802518	.0359088	-16.16	0.000	6506318	5098718
Year_2004	.3085332	.0187848	16.42	0.000	.2717156	.3453508
Year_2006	.6655916	.0197606	33.68	0.000	.6268615	.7043217
Year_2008	1.008981	.0191206	52.77	0.000	.9715057	1.046457
Year_2010	1.298972	.018777	69.18	0.000	1.26217	1.335774
Year_2016	1.930474	.0198892	97.06	0.000	1.891492	1.969456
Year_2018	2.125664	.01984	107.14	0.000	2.086778	2.164549
Year_2020	2.326738	.0218487	106.49	0.000	2.283915	2.36956
_cons	7436404	.0366381	-20.30	0.000	8154496	6718311

Usual_Use if Male==1

. probit Usual_Use i.Medium_educ i.High_educ i.Medium_inc i.Average_inc i.High_inc i.Age_25_36 i.Age_37_50 i.Age_51_65 i.Age_66_A0 i.BE i.BG i.CY i.CZ i.DE i.DK i.EE i.FI i.FR i.HR > i.HU i.IE i.IS i.IT i.LT i.LU i.LV i.ME i.MK i.NL i.NO i.PL i.PT i.RO i.RS i.SE i.SI i.SK i.Year_2004 i.Year_2006 i.Year_2008 i.Year_2010 i.Year_2016 i.Year_2018 i.Year_2020 if Ma > le==1

Iteration	0:	log	likelihood	=	-53830.02
Iteration	1:	log	likelihood	=	-33169.939
Iteration	2:	log	likelihood	=	-32638.317
Iteration	3:	log	likelihood	=	-32636.924
Iteration	4:	log	likelihood	=	-32636.924

Probit regress Log likelihood				l	Number of obs = LR chi2(44) = Prob > chi2 = Pseudo R2 =	42386.19 0.0000
Usual_Use	Coefficient	Std. err.	z	P> z	[95% conf.	interval]
1.Medium_educ	.5074218	.014353	35.35	0.000	.4792905	.5355532
1.High_educ	1.306402	.0200401	65.19	0.000	1.267124	1.34568
1.Medium_inc	.418304	.01639	25.52	0.000	.3861802	.4504278
1.Average_inc	.7617253	.0174671	43.61	0.000	.7274905	.7959602
1.High_inc	1.033744	.0227164	45.51	0.000	.9892205	1.078267
1.Age_25_36	5358324	.0254523	-21.05	0.000	5857179	4859468
1.Age_37_50	9474469	.0237961	-39.82	0.000	9940864	9008073
1.Age_51_65	-1.533441	.0234287	-65.45	0.000	-1.57936	-1.487521
1.Age_66_A0	-2.276461	.0249103	-91.39	0.000	-2.325284	-2.227638
1.BE	.1524578	.0475792	3.20	0.001	.0592042	.2457114
1.BG 1.CY	783102 6232737	.0514177 .0739008	-15.23 -8.43	0.000 0.000	8838789 7681165	6823251 4784308
1.CV 1.CZ	1179876	.0470301	-8.45	0.000		
1.CZ 1.DE	.0819651	.0476301	1.80	0.012	210165 0074634	0258103 .1713936
1.DE 1.DK	.7154405	.0496564	14.41	0.000	.6181157	.8127653
1.EE	1114898	.0497344	-2.24	0.025	2089675	0140121
1.FI	.4699636	.053281	8.82	0.000	.3655348	.5743924
1.FR	.1074244	.0474183	2.27	0.023	.0144861	.2003626
1.HR	5146156	.0535482	-9.61	0.000		409662
1.HU	5139853	.0500627	-10.27	0.000		415864
	.2296702	.0524216				
1.IE			4.38	0.000		.332414
1.IS	.8480324	.0722495	11.74	0.000		.989638
1.IT	0160331	.0542537	-0.30	0.768		.090302
1.LT	5361311	.0530144	-10.11	0.000	6400374	432224
1.LU	.2081082	.0631701	3.29	0.001	.0842971	.331919
1.LV	2696785	.0674929	-4.00	0.000	4019621	137394
1.ME	413646	.064043	-6.46	0.000	5391679	28812
1.MK	7358998	.0816115	-9.02	0.000	8958554	575944
1.NL	.8116443	.0484538	16.75	0.000	.7166766	.90661
1.NO	.6987004	.0481307	14.52	0.000		.793034
1.PL	3697807	.0483064	-7.65	0.000		275101
1.PT	1224142	.0575028	-2.13	0.033		009710
1.RO	9961717	.0730215	-13.64	0.000		853052
1.RS	7809297	.0685668	-11.39	0.000		646541
1.SE	.7574393	.0602394	12.57	0.000		.875506
1.SI	1079044	.0483021	-2.23	0.02	2025748	01323
1.SK	5800046	.0528254	-10.98	0.000	6835404	476468
1.Year_2004	.2604769	.0263327	9.89	0.000	.2088657	.312088
	.5880127	.0278706	21.10	0.000	.5333873	.642638
1.Year 2008	.9051554	.0269063	33.64	0.000	.8524201	.957890
1.Year_2010	1.169562	.0263719	44.35	0.000		1.2212
1.Year_2016	1.785014	.0279974	63.76	0.000		1.83988
1.Year_2010	1.956642	.0278834	70.17	0.000		2.01129
_						
1.Year_2020	2.114302	.0310134	68.17	0.000		2.17508
_cons	6330489	.0531283	-11.92	0.000	7371785	5289192

Usual_Use if Male==0

. probit Usual_Use i.Medium_educ i.High_educ i.Medium_inc i.Average_inc i.High_inc i.Age_25_36 i.Age_37_50 i.Age_51_65 i.Age_66_A0 i.BE i.BG i.
> CY i.CZ i.DE i.DK i.EE i.FI i.FR i.HR i.HU i.IE i.IS i.IT i.LT i.LU i.LV i.ME i.MK i.NL i.NO i.PL i.PT i.RO i.RS i.SE i.SI i.SK i.Year_2004 i
> .Year_2006 i.Year_2008 i.Year_2010 i.Year_2016 i.Year_2018 i.Year_2020 if Male==0

Iteration	0:	log	likelihood	=	-63033.081
Iteration	1:	log	likelihood	=	-36008.203
Iteration	2:	log	likelihood	=	-35450.508
Iteration	3:	log	likelihood	=	-35446.145
Iteration	4:	log	likelihood	=	-35446.144

Probit regression

Log likelihood = -35446.144

Number of obs	=	94,100
LR chi2(44)	=	55173.87
Prob > chi2	=	0.0000
Pseudo R2	=	0.4377

Usual Use	Coefficient	Std. err.	z	P> z	[95% conf	interval]
	coerricient	564. 611.	2	17[2]	[55% com.	intervarj
1.Medium_educ	.5863025	.0136227	43.04	0.000	.5596024	.6130025
1.High_educ	1.241156	.0179369	69.20	0.000	1.206	1.276311
<pre>1.Medium_inc</pre>	.3405224	.0143734	23.69	0.000	.312351	.3686937
<pre>1.Average_inc</pre>	.58254	.0159362	36.55	0.000	.5513057	.6137743
1.High_inc	.806786	.0223132	36.16	0.000	.7630529	.8505192
1.Age_25_36	6654023	.0252877	-26.31	0.000	7149653	6158393
1.Age_37_50	-1.006246	.0237599	-42.35	0.000	-1.052815	9596777
1.Age_51_65	-1.60816	.0235089	-68.41	0.000	-1.654237	-1.562084
1.Age 66 A0	-2.559078	.0251195	-101.88	0.000	-2.608311	-2.509844
1.BE	.0381098	.0449238	0.85	0.396	0499392	.1261588
1.BG	6965658	.0475523	-14.65	0.000	7897665	6033651
1.CY	692027	.0715526	-9.67	0.000	8322675	5517865
1.CZ	0682314	.0440342	-1.55	0.121	1545368	.0180741
1.DE	0253274	.043241	-0.59	0.558	1100781	.0594234
1.DK	.7979722	.0481345	16.58	0.000	.7036304	.892314
1.EE	.0064922	.0456612	0.14	0.887	0830021	.0959865
1.FI	.5132736	.050968	10.07	0.000	.4133781	.6131692
1.FR	.1776546	.0442793	4.01	0.000	.0908688	.2644403
1.HR	4390333	.0496892	-8.84	0.000	5364223	3416443
1.HU	396982	.046005	-8.63	0.000	4871501	306814
1.IE	.3461769	.0500655	6.91	0.000	.2480504	.4443034
1.IS	1.117103	.0746694	14.96	0.000	.9707537	1.263453
1.IT	1876249	.0505903	-3.71	0.000	2867801	0884697
1.LT	4289301	.0459824	-9.33	0.000	5190539	3388062
1.LU	.2160062	.0658515	3.28	0.001	.0869396	.3450728
1.LV	1597621	.0557736	-2.86	0.004	2690762	0504479
1.ME	3467869	.0663255	-5.23	0.000	4767825	2167912
1.MK	4887476	.0782281	-6.25	0.000	6420719	3354233
1.NL	.8915366	.0451204	19.76	0.000	.8031023	.979971
1.NO 1.PL	.5845306 3608241	.0460892 .0455346	12.68 -7.92	0.000	.4941974 4500703	.6748639 2715779
1.PL 1.PT	2410845	.0512569	-4.70	0.000	3415462	1406227
1.RO	9379324	.0683251	-13.73	0.000	-1.071847	8040177
1.RS	698716	.0661733	-10.56	0.000	8284133	5690186
1.SE	.9732639	.0603556	16.13	0.000	.8549691	1.091559
1.SI	1090151	.0454096	-2.40	0.016	1980162	020014
1.SK	5819575	.0491459	-11.84	0.000	6782817	4856332
1.Year_2004	.3732233	.0270746	13.78	0.000	.320158	.4262886
1.Year_2006	.7634128	.0283036	26.97	0.000	.7079387	.8188868
1.Year_2008	1.133248	.0274509	41.28	0.000	1.079446	1.187051
1.Year_2010	1.449911	.0270266	53.65	0.000	1.39694	1.502882
1.Year_2016	2.102635	.0285799	73.57	0.000	2.04662	2.158651
1.Year_2018	2.317049	.0285465	81.17	0.000	2.261099	2.372999
1.Year_2020	2.557553	.03116	82.08	0.000	2.496481	2.618626
_cons	8007895	.0506557	-15.81	0.000	9000729	7015061