Analysis of Sociological Data Portfolio

SOCI 109

Courtney Cheung

Contents

Section 1: Income Inequality

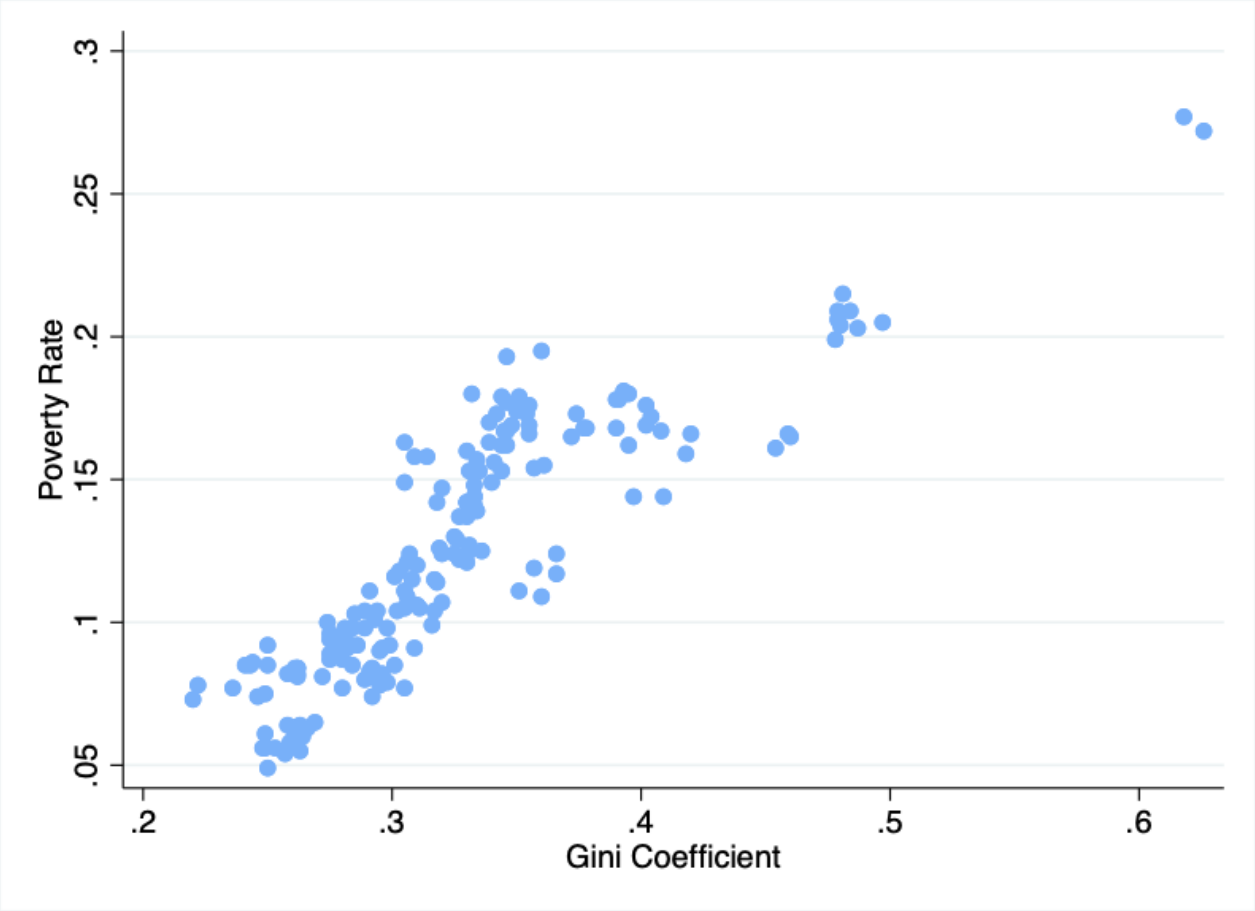


Figure 1: Poverty Rate vs. Gini Coefficient, 2015-2020

Data source: OECD (2022), Income inequality (indicator). doi: 10.1787/459aa7f1-en (Accessed on 04 August 2022). OECD (2022), Poverty rate (indicator). doi: 10.1787/0fe1315d-en (Accessed on 04 August 2022).

From 2015 to 2020, poverty rate and income inequality (measured using the gini coefficient) were positively related in OECD countries. As income inequality increased, the poverty rate also increased.

	GDP Per Capita	Poverty Rate
GDP Per Capita	1.0000	
Poverty Rate	-0.4425	1.0000

Table 1: Correlations between GDP Per Capita and Poverty Rate, 2015-2020

Data source: OECD (2022), Gross domestic product (GDP): GDP per head, US $, current prices, current PPPs, url: https://stats.oecd.org/ (Accessed on 04 August 2022). OECD (2022), Poverty rate (indicator). doi: 10.1787/0fe1315d-en (Accessed on 04 August 2022).

From 2015-2020, there was a weak/moderate negative correlation between GDP per capita and poverty rate.

Assignment #1

Observations	1,567		
Variables	9		
Variable Name	**Storage type**	**Display format**	**Variable label**
location	str9	%9s	Location
time	int	%8.0g	Time
gdp	float	%9.0g	Total GDP
gdp_pc	float	%9.0g	GDP Per Capita
employment	float	%9.0g	Employment Rate
lfp	float	%9.0g	Labor Force Participation Rate
unemployment	float	%9.0g	Unemployment Rate
gini	float	%9.0g	Gini Coefficient
poverty	float	%9.0g	Poverty Rate

Table 2: Description of Merged Dataset

Data source:
OECD (2022), Gross domestic product (GDP): GDP, US $, constant prices, constant PPPs, reference year 2015, millions; Gross domestic product (GDP): GDP per head, US $, current prices, current PPPs; LFS by sex and age - indicators: Employment-population ratios; LFS by sex and age - indicators: Labour force participation rate; LFS by sex and age - indicators: Unemployment rate; url: https://stats.oecd.org/; Income inequality (indicator). doi: 10.1787/459aa7f1-en; Poverty rate (indicator). doi: 10.1787/0fe1315d-en; (Accessed on 12 August 2022).

I looked at 1567 observations of merged data on total GDP, GDP per capita, employment rate, labor force participation rate, unemployment rate, gini coefficient, and poverty rate in OECD countries.

Variable	Obs	Mean	Std. dev.	Min	Max
location	0				
time	1,567	2010.595	6.258056	2000	2021
gdp	1,451	3667788	9248807	2734.699	5.90E+07
gdp_pc	1,438	32318.94	19056.4	1488.582	114804.6
employment	1,187	65.23914	7.848417	37.03209	84.64157
lfp	1,187	71.11521	6.387476	49.64126	87.37057
unemployment	1,187	8.442508	4.995717	1.809079	36.31185
gini	467	0.3227859	0.0610538	0.22	0.626
poverty	467	0.1202784	0.043456	0.045	0.288

Table 3: Summary of Merged Dataset

Data source:
OECD (2022), Gross domestic product (GDP): GDP, US $, constant prices, constant PPPs, reference year 2015, millions; Gross domestic product (GDP): GDP per head, US $, current prices, current PPPs; LFS by sex and age - indicators: Employment-population ratios; LFS by sex and age - indicators: Labour force participation rate; LFS by sex and age - indicators: Unemployment rate; url: https://stats.oecd.org/; Income inequality (indicator). doi: 10.1787/459aa7f1-en; Poverty rate (indicator). doi: 10.1787/0fe1315d-en; (Accessed on 12 August 2022).

Above are the number of observations, mean, standard deviation, min, and max of each variable in the data.

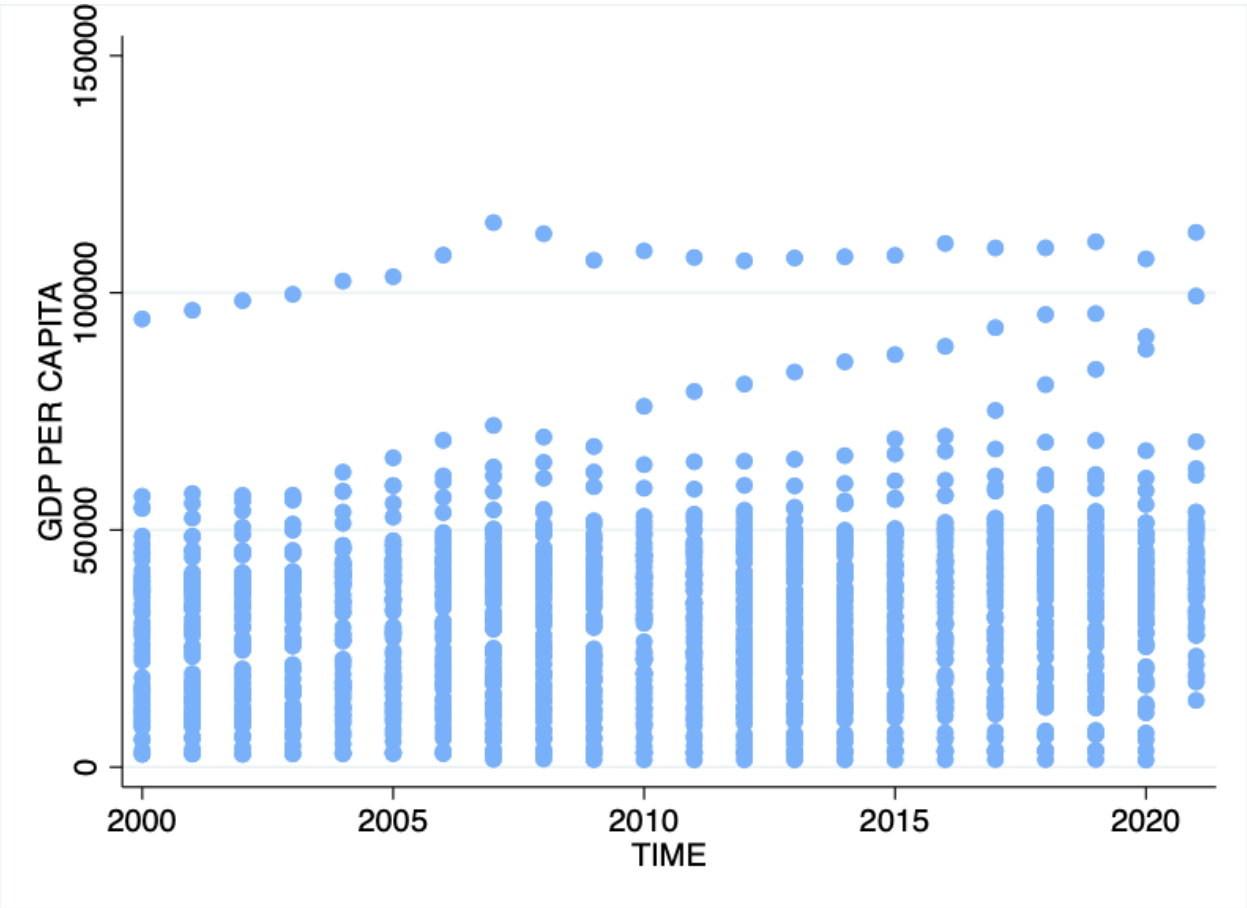


Figure 2: GDP Per Capita vs. Time, 2000-2021

Data source:
OECD (2022), Gross domestic product (GDP): GDP, US $, constant prices, constant PPPs, reference year 2015, millions; Gross domestic product (GDP): GDP per head, US $, current prices, current PPPs; LFS by sex and age - indicators: Employment-population ratios; LFS by sex and age - indicators: Labour force participation rate; LFS by sex and age - indicators: Unemployment rate; url: https://stats.oecd.org/; Income inequality (indicator). doi: 10.1787/459aa7f1-en; Poverty rate (indicator). doi: 10.1787/0fe1315d-en; (Accessed on 12 August 2022).

GDP per capita has mostly stayed constant, with a slight upward trend. The country with the largest GDP per capita has increased from slightly below $100000 to slightly above $100000.

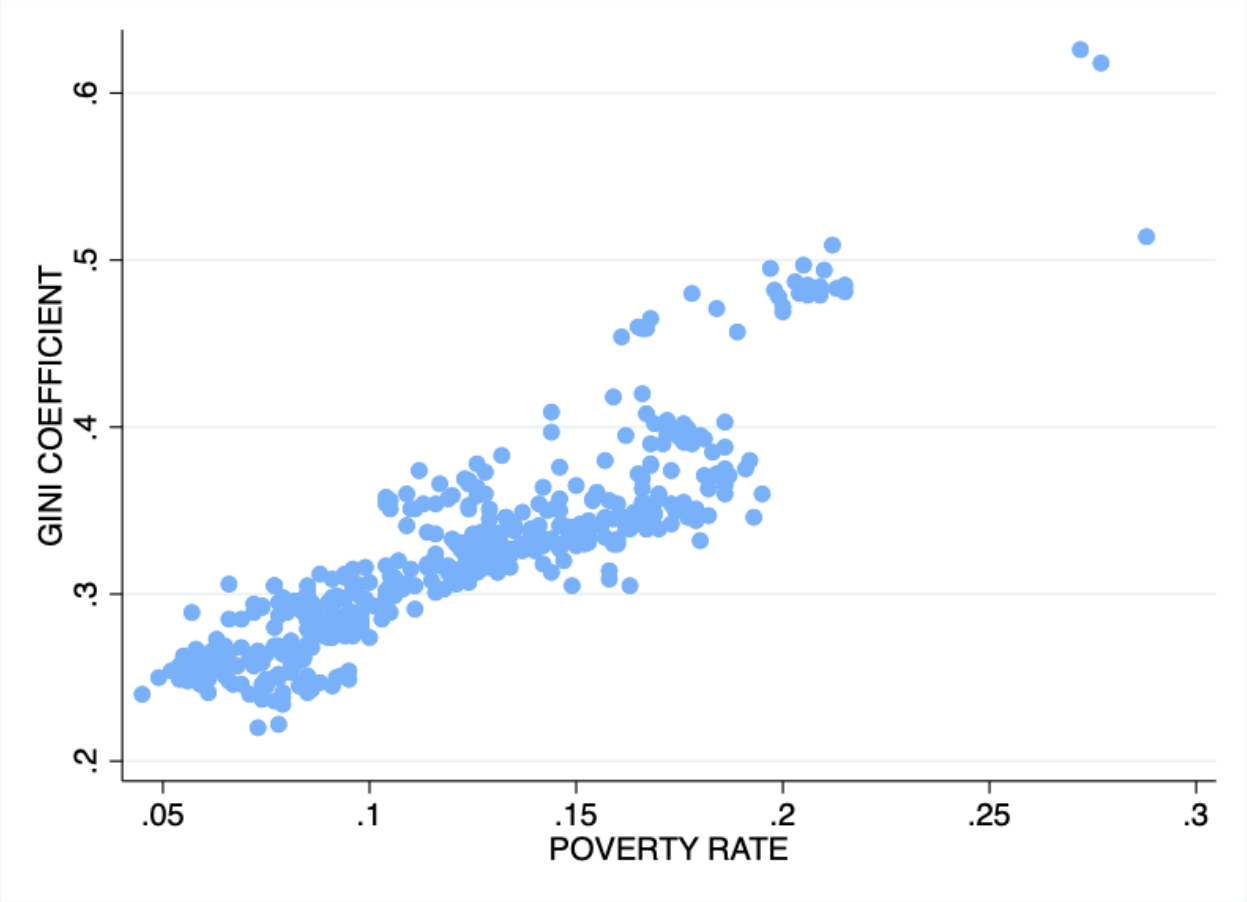


Figure 3: Gini Coefficient vs. Poverty Rate, 2000-2021

Data source:
OECD (2022), Gross domestic product (GDP): GDP, US $, constant prices, constant PPPs, reference year 2015, millions; Gross domestic product (GDP): GDP per head, US $, current prices, current PPPs; LFS by sex and age - indicators: Employment-population ratios; LFS by sex and age - indicators: Labour force participation rate; LFS by sex and age - indicators: Unemployment rate; url: https://stats.oecd.org/; Income inequality (indicator). doi: 10.1787/459aa7f1-en; Poverty rate (indicator). doi: 10.1787/0fe1315d-en; (Accessed on 12 August 2022).

There is a positive linear relationship between poverty rate and income inequality because there is a strong upward trend as poverty rate increases, and the data points almost form a line. The lowest gini coefficient is about .2 at a poverty rate of .05, and the highest is about .6 at a poverty rate of .27.

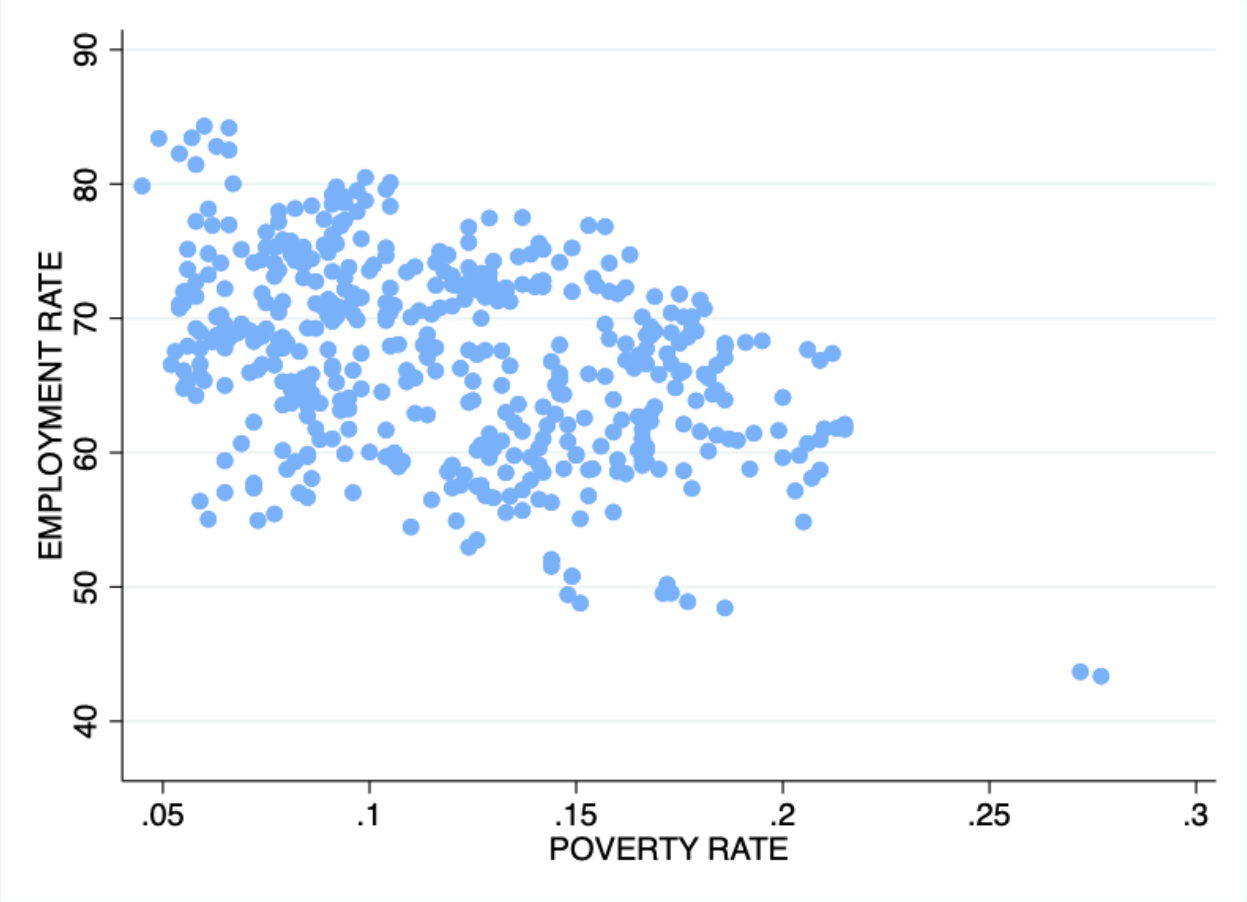


Figure 4: Employment Rate vs Poverty Rate, 2000-2021

Data source:
OECD (2022), Gross domestic product (GDP): GDP, US $, constant prices, constant PPPs, reference year 2015, millions; Gross domestic product (GDP): GDP per head, US $, current prices, current PPPs; LFS by sex and age - indicators: Employment-population ratios; LFS by sex and age - indicators: Labour force participation rate; LFS by sex and age - indicators: Unemployment rate; url: https://stats.oecd.org/; Income inequality (indicator). doi: 10.1787/459aa7f1-en; Poverty rate (indicator). doi: 10.1787/0fe1315d-en; (Accessed on 12 August 2022).

There is a negative relationship between poverty rate and employment rate because there is a downward trend as poverty rate increases. The highest employment rate is about 85% at a poverty rate of .05, and the lowest is about 43% at a poverty rate of .27.

Section 2: Labor

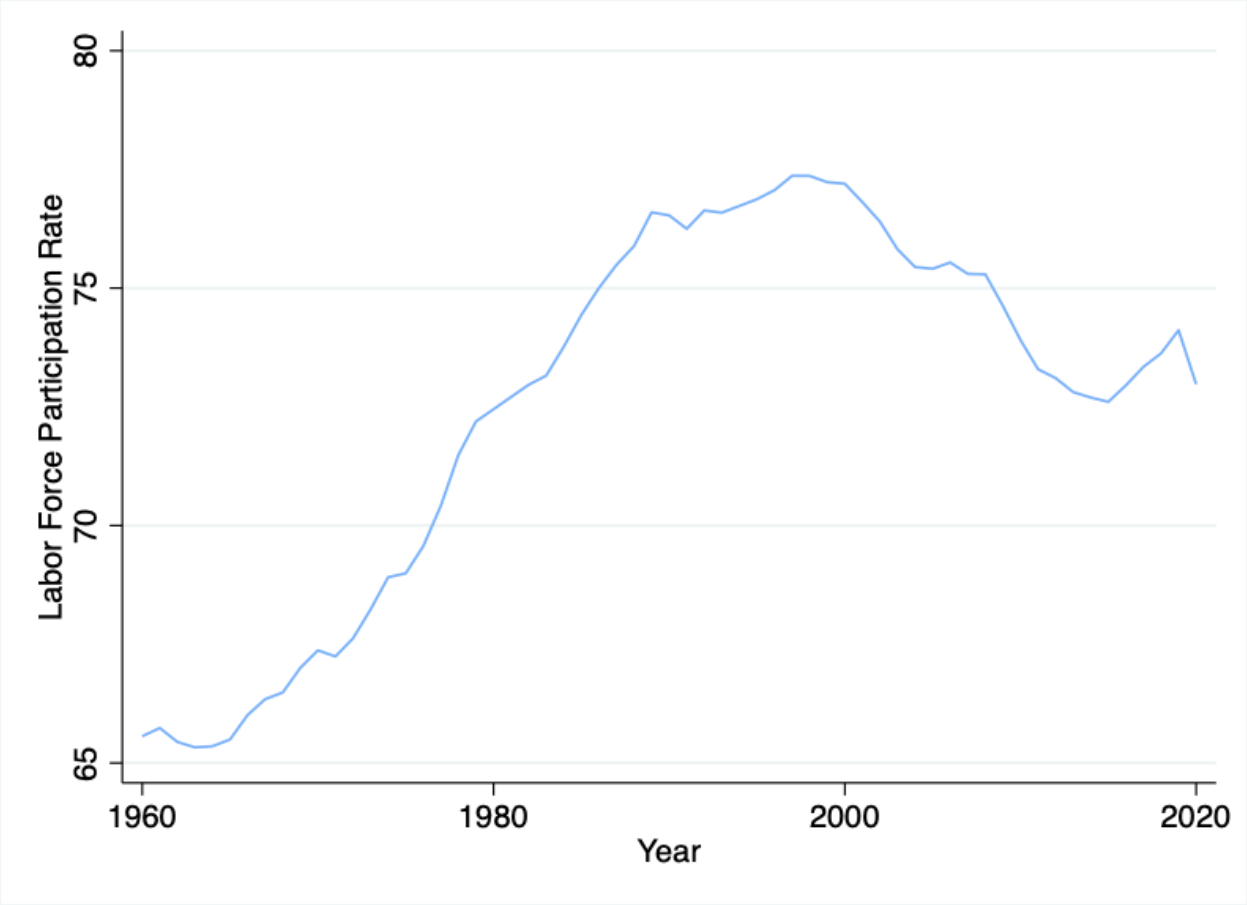


Figure 5: Labor Force Participation Rate in the US, 1960-2020

Data source: OECD (2022), LFS by sex and age - indicators: Labour force participation rate, url: https://stats.oecd.org/ (Accessed on 08 August 2022).

From 1960 to 2020, the labor force participation rate of 15-64 year olds in the US reached a low point at about 66% in 1963. The highest rate was about 78% in 1997, and then it dipped to about 73% in 2016. The trend seems to peak again around 2018, but not to the extent that it did in 1997.

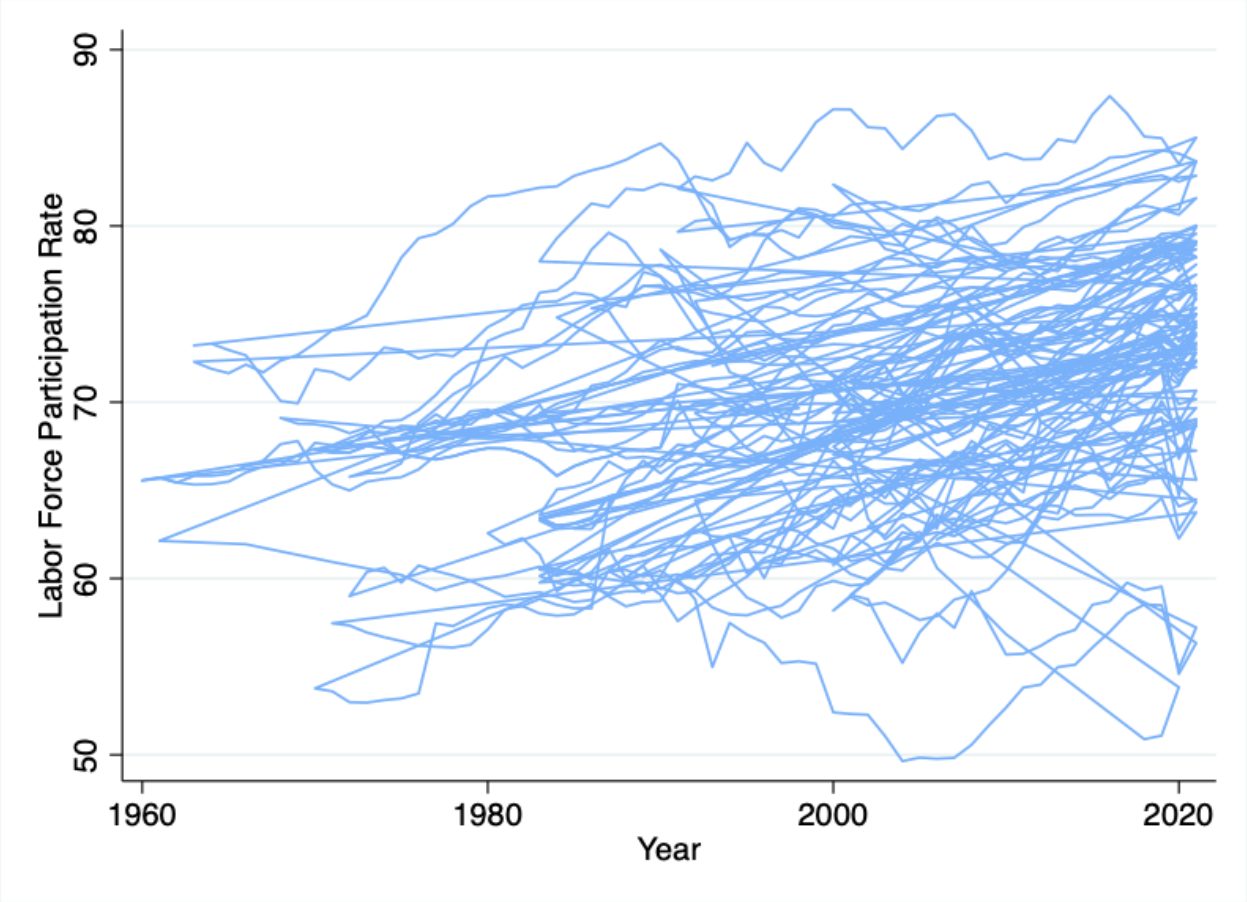


Figure 6: Labor Force Participation Rate, 1960-2020

Data source: OECD (2022), LFS by sex and age - indicators: Labour force participation rate, url: https://stats.oecd.org/ (Accessed on 08 August 2022).

From 1960 to 2020, the labor force participation rates of 15-64 year olds in OECD countries tended to increase, however, the graph does not identify the trends of the individual countries.

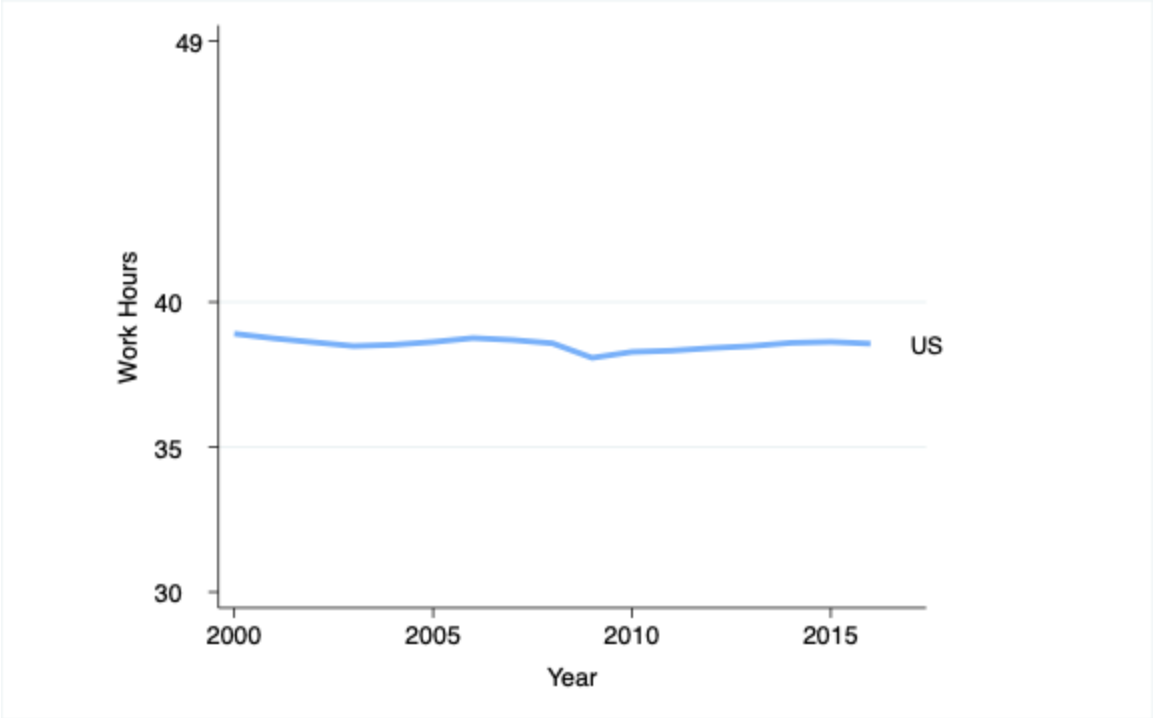


Figure 7: Average Weekly Work Hours in the US, 2000-2016

Data source: OECD (2022), LFS by sex and age - indicators, url: https://stats.oecd.org/ (Accessed on 09 August 2022).

From 2000 to 2016, 15-64 year olds in the US consistently worked around 38 hours per week on average.

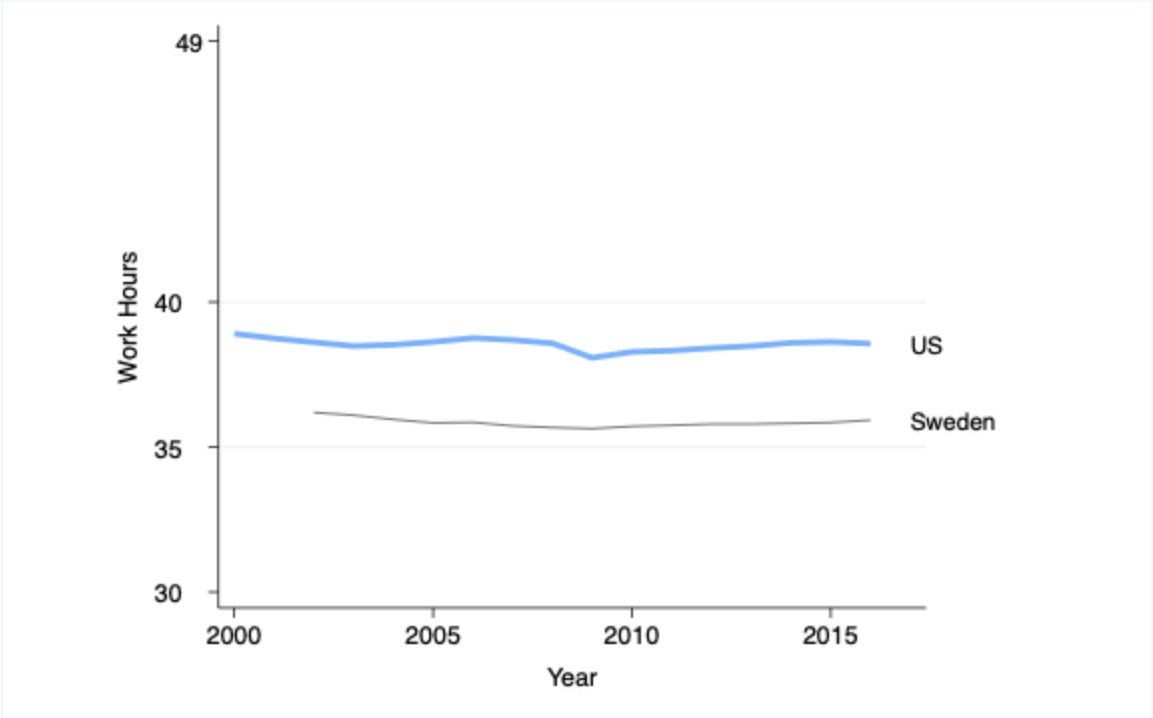


Figure 8: Average Weekly Work Hours, US Compared to Sweden, 2000-2016

Data source: OECD (2022), LFS by sex and age - indicators, url: https://stats.oecd.org/ (Accessed on 09 August 2022).

From 2003 to 2016, 15-64 year olds in the US consistently worked around 3 more hours per week on average compared to Sweden.

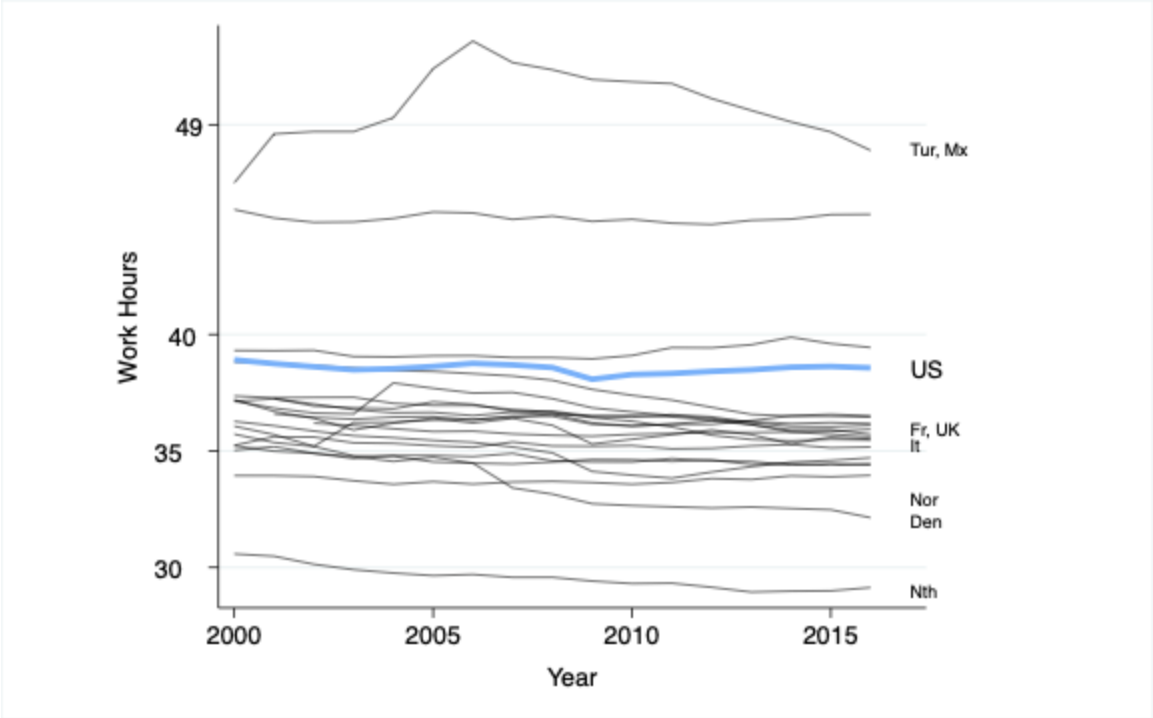


Figure 9: Average Weekly Work Hours, 2000-2016 (1)

Data source: OECD (2022), LFS by sex and age - indicators, url: https://stats.oecd.org/ (Accessed on 09 August 2022).

From 2000 to 2016, 15-64 year olds in the US consistently worked more hours per week on average compared to France, the UK, Italy, Norway, Denmark, and the Netherlands, but less compared to Turkey and Mexico.

Country	Work Hours
Australia	35.71433
Austria	35.60679
Belgium	35.16844
Canada	35.5
Denmark	32.13797
Finland	36.17628
France	36.10425
Germany	34.45439
Ireland	34.70621
Italy	35.4744
Mexico	45.15065
Netherlands	29.13927
Norway	33.9535
Portugal	39.44038
Spain	36.45102
Sweden	35.9281
Turkey	47.89575
United Kingdom	36.51093
United States	38.56566

Table 4: Average Weekly Work Hours, 2016

Data source: OECD (2022), LFS by sex and age - indicators, url: https://stats.oecd.org/ (Accessed on 10 August 2022).

In 2016, 15-64 year olds in the Netherlands worked the lowest number of hours per week on average, while those in Turkey worked the longest out of the available countries.

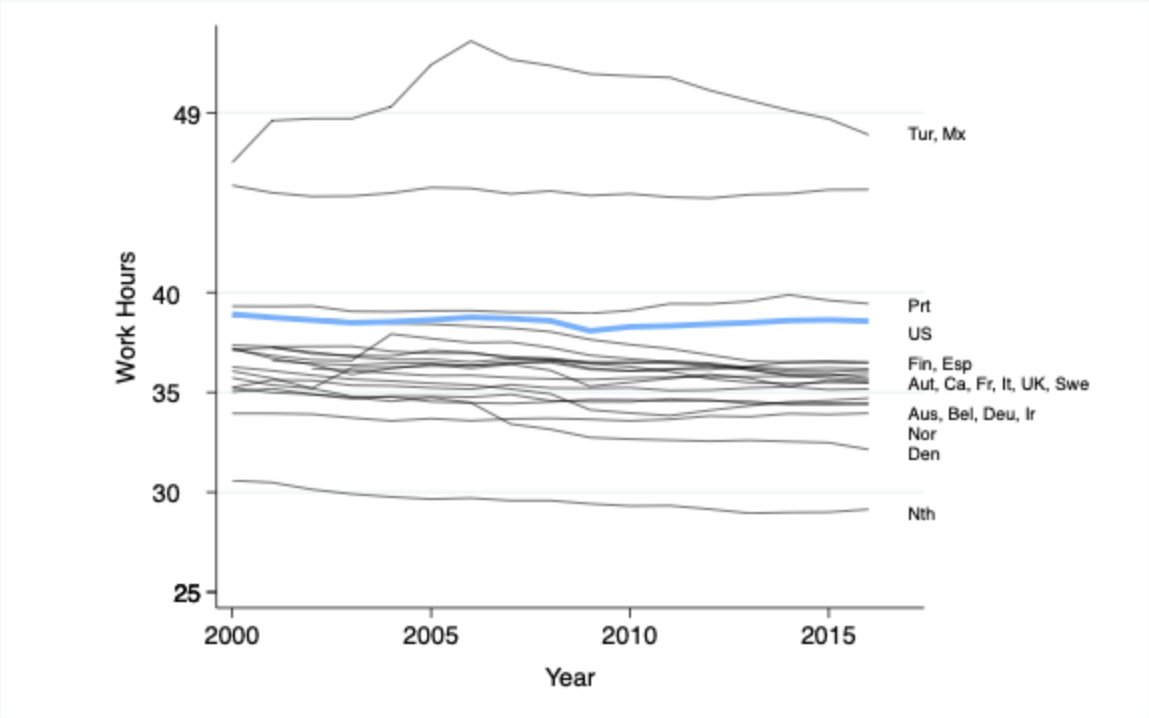


Figure 10: Average Weekly Work Hours, 2000-2016 (2)

Data source: OECD (2022), LFS by sex and age - indicators, url: https://stats.oecd.org/ (Accessed on 10 August 2022).

From 2000 to 2016, 15-64 year olds in the US consistently worked more hours per week on average compared to Finland, Spain, Austria, Canada, France, Italy, the UK, Sweden, Australia, Belgium, Germany, Ireland, Norway, Denmark, and the Netherlands, but less compared to Turkey, Mexico, and Portugal.

Worktime	N	Mean	p50	Min	Max
Full Time	3429	41.28793	40.8	34.5	55.8
Part Time	3372	20.02794	20.3	10.5	28.6
TOTAL	3429	36.91216	37.9	15.7	52.4
Total	10230	32.81352	37.6	10.5	55.8

Table 5: Work Time in Europe, 2012-2021

Data source: Eurostat (2022), url:https://ec.europa.eu/eurostat/data/database.

Above are the number of observations, mean, median, and max of the average number of work hours in Europe from the Eurostat data, by work time. On average, full time workers work about twice as long as part time workers, which is to be expected.

sex	N	Mean	p50	Min	Max
Female	3406	31.69498	35.1	10.5	51.4
Male	3404	33.84927	39.7	11	55.8
TOTAL	3420	32.89658	37.3	10.7	54.4
Total	10230	32.81352	37.6	10.5	55.8

Table 6: Work Time in Europe by Sex, 2012-2021

Data source: Eurostat (2022), url:https://ec.europa.eu/eurostat/data/database.

Above are the number of observations, mean, median, and max of the average number of work hours in Europe, by sex. Based on the mean values, males work about 2 hours longer than female workers per week on average.

average weekly hours worked	Freq.	Percent	Cum.
10.5	1	0.01	0.01
10.6	1	0.01	0.02
10.7	3	0.03	0.05
10.8	2	0.02	0.07
11	3	0.03	0.1
11.1	1	0.01	0.11
11.3	1	0.01	0.12
11.4	4	0.04	0.16
11.5	4	0.04	0.2
11.6	3	0.03	0.22
11.7	4	0.04	0.26
11.8	5	0.05	0.31
12	2	0.02	0.33
12.1	2	0.02	0.35
12.2	4	0.04	0.39
12.3	5	0.05	0.44
12.4	8	0.08	0.52
12.5	1	0.01	0.53
12.6	8	0.08	0.61
12.7	10	0.1	0.7
12.8	9	0.09	0.79
12.9	10	0.1	0.89
13	6	0.06	0.95
13.1	4	0.04	0.99
13.2	4	0.04	1.03
13.3	2	0.02	1.05
13.4	5	0.05	1.09
13.5	2	0.02	1.11
13.6	1	0.01	1.12
13.7	4	0.04	1.16
13.8	3	0.03	1.19

13.9	4	0.04	1.23
14	2	0.02	1.25
14.1	1	0.01	1.26
14.2	1	0.01	1.27
14.3	2	0.02	1.29
14.4	3	0.03	1.32
14.5	1	0.01	1.33
14.6	2	0.02	1.35
14.7	2	0.02	1.37
14.8	7	0.07	1.44
14.9	4	0.04	1.48
15	8	0.08	1.55
15.1	7	0.07	1.62
15.2	14	0.14	1.76
15.3	13	0.13	1.89
15.4	24	0.23	2.12
15.5	26	0.25	2.38
15.6	23	0.22	2.6
15.7	32	0.31	2.91
15.8	19	0.19	3.1
15.9	18	0.18	3.27
16	18	0.18	3.45
16.1	20	0.2	3.65
16.2	18	0.18	3.82
16.3	14	0.14	3.96
16.4	24	0.23	4.19
16.5	13	0.13	4.32
16.6	13	0.13	4.45
16.7	13	0.13	4.57
16.8	16	0.16	4.73
16.9	12	0.12	4.85
17	21	0.21	5.05
17.1	9	0.09	5.14
17.2	24	0.23	5.38

17.3	25	0.24	5.62
17.4	16	0.16	5.78
17.5	16	0.16	5.93
17.6	17	0.17	6.1
17.7	15	0.15	6.25
17.8	16	0.16	6.4
17.9	20	0.2	6.6
18	6	0.06	6.66
18.1	18	0.18	6.83
18.2	27	0.26	7.1
18.3	22	0.22	7.31
18.4	27	0.26	7.58
18.5	25	0.24	7.82
18.6	27	0.26	8.08
18.7	32	0.31	8.4
18.8	41	0.4	8.8
18.9	33	0.32	9.12
19	48	0.47	9.59
19.1	45	0.44	10.03
19.2	42	0.41	10.44
19.3	52	0.51	10.95
19.4	51	0.5	11.45
19.5	51	0.5	11.95
19.6	57	0.56	12.5
19.7	62	0.61	13.11
19.8	71	0.69	13.8
19.9	68	0.66	14.47
20	59	0.58	15.04
20.1	75	0.73	15.78
20.2	85	0.83	16.61
20.3	77	0.75	17.36
20.4	69	0.67	18.04
20.5	81	0.79	18.83
20.6	72	0.7	19.53

20.7	74	0.72	20.25
20.8	70	0.68	20.94
20.9	50	0.49	21.43
21	74	0.72	22.15
21.1	70	0.68	22.83
21.2	57	0.56	23.39
21.3	48	0.47	23.86
21.4	50	0.49	24.35
21.5	56	0.55	24.9
21.6	42	0.41	25.31
21.7	39	0.38	25.69
21.8	43	0.42	26.11
21.9	56	0.55	26.66
22	42	0.41	27.07
22.1	38	0.37	27.44
22.2	38	0.37	27.81
22.3	37	0.36	28.17
22.4	35	0.34	28.51
22.5	24	0.23	28.75
22.6	24	0.23	28.98
22.7	23	0.22	29.21
22.8	26	0.25	29.46
22.9	16	0.16	29.62
23	22	0.22	29.83
23.1	24	0.23	30.07
23.2	17	0.17	30.23
23.3	16	0.16	30.39
23.4	13	0.13	30.52
23.5	26	0.25	30.77
23.6	17	0.17	30.94
23.7	10	0.1	31.04
23.8	12	0.12	31.15
23.9	6	0.06	31.21
24	14	0.14	31.35

24.1	23	0.22	31.57
24.2	12	0.12	31.69
24.3	10	0.1	31.79
24.4	18	0.18	31.96
24.5	18	0.18	32.14
24.6	13	0.13	32.27
24.7	12	0.12	32.39
24.8	14	0.14	32.52
24.9	10	0.1	32.62
25	9	0.09	32.71
25.1	6	0.06	32.77
25.2	13	0.13	32.89
25.3	7	0.07	32.96
25.4	11	0.11	33.07
25.5	8	0.08	33.15
25.6	4	0.04	33.19
25.7	13	0.13	33.31
25.8	5	0.05	33.36
25.9	11	0.11	33.47
26	12	0.12	33.59
26.1	8	0.08	33.67
26.2	2	0.02	33.69
26.3	8	0.08	33.76
26.4	3	0.03	33.79
26.5	6	0.06	33.85
26.6	6	0.06	33.91
26.7	8	0.08	33.99
26.8	2	0.02	34.01
26.9	7	0.07	34.08
27	6	0.06	34.13
27.1	3	0.03	34.16
27.2	3	0.03	34.19
27.3	5	0.05	34.24
27.4	2	0.02	34.26

27.5	6	0.06	34.32
27.6	4	0.04	34.36
27.7	4	0.04	34.4
27.8	4	0.04	34.44
27.9	4	0.04	34.48
28	6	0.06	34.54
28.1	4	0.04	34.57
28.2	1	0.01	34.58
28.3	3	0.03	34.61
28.4	2	0.02	34.63
28.5	5	0.05	34.68
28.6	5	0.05	34.73
28.7	8	0.08	34.81
28.8	4	0.04	34.85
28.9	7	0.07	34.92
29	3	0.03	34.95
29.1	9	0.09	35.03
29.2	9	0.09	35.12
29.3	4	0.04	35.16
29.4	4	0.04	35.2
29.5	9	0.09	35.29
29.6	14	0.14	35.43
29.7	11	0.11	35.53
29.8	6	0.06	35.59
29.9	9	0.09	35.68
30	8	0.08	35.76
30.1	6	0.06	35.82
30.2	2	0.02	35.84
30.3	7	0.07	35.9
30.4	7	0.07	35.97
30.5	6	0.06	36.03
30.6	9	0.09	36.12
30.7	8	0.08	36.2
30.8	12	0.12	36.31

30.9	9	0.09	36.4
31	11	0.11	36.51
31.1	11	0.11	36.62
31.2	11	0.11	36.73
31.3	13	0.13	36.85
31.4	22	0.22	37.07
31.5	29	0.28	37.35
31.6	11	0.11	37.46
31.7	17	0.17	37.62
31.8	14	0.14	37.76
31.9	9	0.09	37.85
32	14	0.14	37.99
32.1	13	0.13	38.11
32.2	16	0.16	38.27
32.3	13	0.13	38.4
32.4	12	0.12	38.51
32.5	12	0.12	38.63
32.6	12	0.12	38.75
32.7	16	0.16	38.91
32.8	13	0.13	39.03
32.9	13	0.13	39.16
33	12	0.12	39.28
33.1	17	0.17	39.44
33.2	20	0.2	39.64
33.3	19	0.19	39.82
33.4	16	0.16	39.98
33.5	18	0.18	40.16
33.6	17	0.17	40.32
33.7	12	0.12	40.44
33.8	14	0.14	40.58
33.9	16	0.16	40.73
34	15	0.15	40.88
34.1	19	0.19	41.07
34.2	17	0.17	41.23

34.3	16	0.16	41.39
34.4	14	0.14	41.52
34.5	16	0.16	41.68
34.6	13	0.13	41.81
34.7	17	0.17	41.97
34.8	20	0.2	42.17
34.9	21	0.21	42.38
35	19	0.19	42.56
35.1	17	0.17	42.73
35.2	26	0.25	42.98
35.3	24	0.23	43.22
35.4	23	0.22	43.44
35.5	23	0.22	43.67
35.6	15	0.15	43.81
35.7	13	0.13	43.94
35.8	17	0.17	44.11
35.9	23	0.22	44.33
36	14	0.14	44.47
36.1	23	0.22	44.69
36.2	22	0.22	44.91
36.3	26	0.25	45.16
36.4	28	0.27	45.43
36.5	24	0.23	45.67
36.6	37	0.36	46.03
36.7	30	0.29	46.32
36.8	44	0.43	46.75
36.9	33	0.32	47.08
37	47	0.46	47.54
37.1	49	0.48	48.02
37.2	49	0.48	48.49
37.3	55	0.54	49.03
37.4	40	0.39	49.42
37.5	40	0.39	49.81
37.6	31	0.3	50.12

37.7	36	0.35	50.47
37.8	48	0.47	50.94
37.9	36	0.35	51.29
38	38	0.37	51.66
38.1	38	0.37	52.03
38.2	50	0.49	52.52
38.3	49	0.48	53
38.4	32	0.31	53.31
38.5	55	0.54	53.85
38.6	49	0.48	54.33
38.7	61	0.6	54.93
38.8	66	0.65	55.57
38.9	63	0.62	56.19
39	77	0.75	56.94
39.1	70	0.68	57.62
39.2	70	0.68	58.31
39.3	83	0.81	59.12
39.4	82	0.8	59.92
39.5	98	0.96	60.88
39.6	114	1.11	61.99
39.7	109	1.07	63.06
39.8	127	1.24	64.3
39.9	134	1.31	65.61
40	152	1.49	67.1
40.1	152	1.49	68.58
40.2	148	1.45	70.03
40.3	158	1.54	71.57
40.4	147	1.44	73.01
40.5	138	1.35	74.36
40.6	139	1.36	75.72
40.7	112	1.09	76.81
40.8	123	1.2	78.02
40.9	103	1.01	79.02
41	82	0.8	79.82

41.1	97	0.95	80.77
41.2	103	1.01	81.78
41.3	93	0.91	82.69
41.4	99	0.97	83.66
41.5	104	1.02	84.67
41.6	75	0.73	85.41
41.7	77	0.75	86.16
41.8	80	0.78	86.94
41.9	62	0.61	87.55
42	63	0.62	88.16
42.1	46	0.45	88.61
42.2	58	0.57	89.18
42.3	57	0.56	89.74
42.4	47	0.46	90.2
42.5	52	0.51	90.7
42.6	38	0.37	91.08
42.7	39	0.38	91.46
42.8	38	0.37	91.83
42.9	48	0.47	92.3
43	36	0.35	92.65
43.1	43	0.42	93.07
43.2	27	0.26	93.33
43.3	24	0.23	93.57
43.4	29	0.28	93.85
43.5	27	0.26	94.12
43.6	32	0.31	94.43
43.7	37	0.36	94.79
43.8	23	0.22	95.01
43.9	21	0.21	95.22
44	25	0.24	95.46
44.1	25	0.24	95.71
44.2	30	0.29	96
44.3	24	0.23	96.24
44.4	21	0.21	96.44

44.5	19	0.19	96.63
44.6	17	0.17	96.79
44.7	24	0.23	97.03
44.8	9	0.09	97.12
44.9	18	0.18	97.29
45	13	0.13	97.42
45.1	8	0.08	97.5
45.2	13	0.13	97.62
45.3	13	0.13	97.75
45.4	11	0.11	97.86
45.5	12	0.12	97.98
45.6	11	0.11	98.08
45.7	11	0.11	98.19
45.8	8	0.08	98.27
45.9	11	0.11	98.38
46	9	0.09	98.47
46.1	8	0.08	98.54
46.2	6	0.06	98.6
46.3	4	0.04	98.64
46.4	3	0.03	98.67
46.5	7	0.07	98.74
46.6	4	0.04	98.78
46.7	1	0.01	98.79
46.8	5	0.05	98.84
46.9	6	0.06	98.9
47	2	0.02	98.91
47.1	1	0.01	98.92
47.2	5	0.05	98.97
47.3	3	0.03	99
47.4	2	0.02	99.02
47.5	2	0.02	99.04
47.6	1	0.01	99.05
47.7	6	0.06	99.11
47.9	2	0.02	99.13

48	1	0.01	99.14
48.1	4	0.04	99.18
48.2	4	0.04	99.22
48.3	3	0.03	99.25
48.4	1	0.01	99.26
48.5	4	0.04	99.3
48.6	3	0.03	99.33
48.8	4	0.04	99.36
48.9	2	0.02	99.38
49	5	0.05	99.43
49.3	2	0.02	99.45
49.4	2	0.02	99.47
49.7	2	0.02	99.49
49.8	1	0.01	99.5
49.9	1	0.01	99.51
50	1	0.01	99.52
50.1	2	0.02	99.54
50.2	2	0.02	99.56
50.3	1	0.01	99.57
50.4	1	0.01	99.58
50.6	4	0.04	99.62
50.7	2	0.02	99.64
50.9	4	0.04	99.68
51.1	3	0.03	99.71
51.2	1	0.01	99.72
51.3	1	0.01	99.73
51.4	2	0.02	99.75
51.5	5	0.05	99.79
51.6	1	0.01	99.8
51.8	2	0.02	99.82
52	2	0.02	99.84
52.1	1	0.01	99.85
52.4	1	0.01	99.86
52.5	1	0.01	99.87

52.6	1	0.01	99.88
52.7	1	0.01	99.89
53	1	0.01	99.9
53.2	1	0.01	99.91
53.3	1	0.01	99.92
53.4	1	0.01	99.93
53.7	1	0.01	99.94
54	1	0.01	99.95
54.3	1	0.01	99.96
54.4	1	0.01	99.97
54.6	1	0.01	99.98
55.2	1	0.01	99.99
55.8	1	0.01	100
Total	10,230	100	

Table 7: Frequency Table of Work Time in Europe, 2012-2021

Data source: Eurostat (2022), url:https://ec.europa.eu/eurostat/data/database.

Above are the frequencies of average weekly hours worked in Europe. The most frequent work time in the dataset is 44.7 hours.

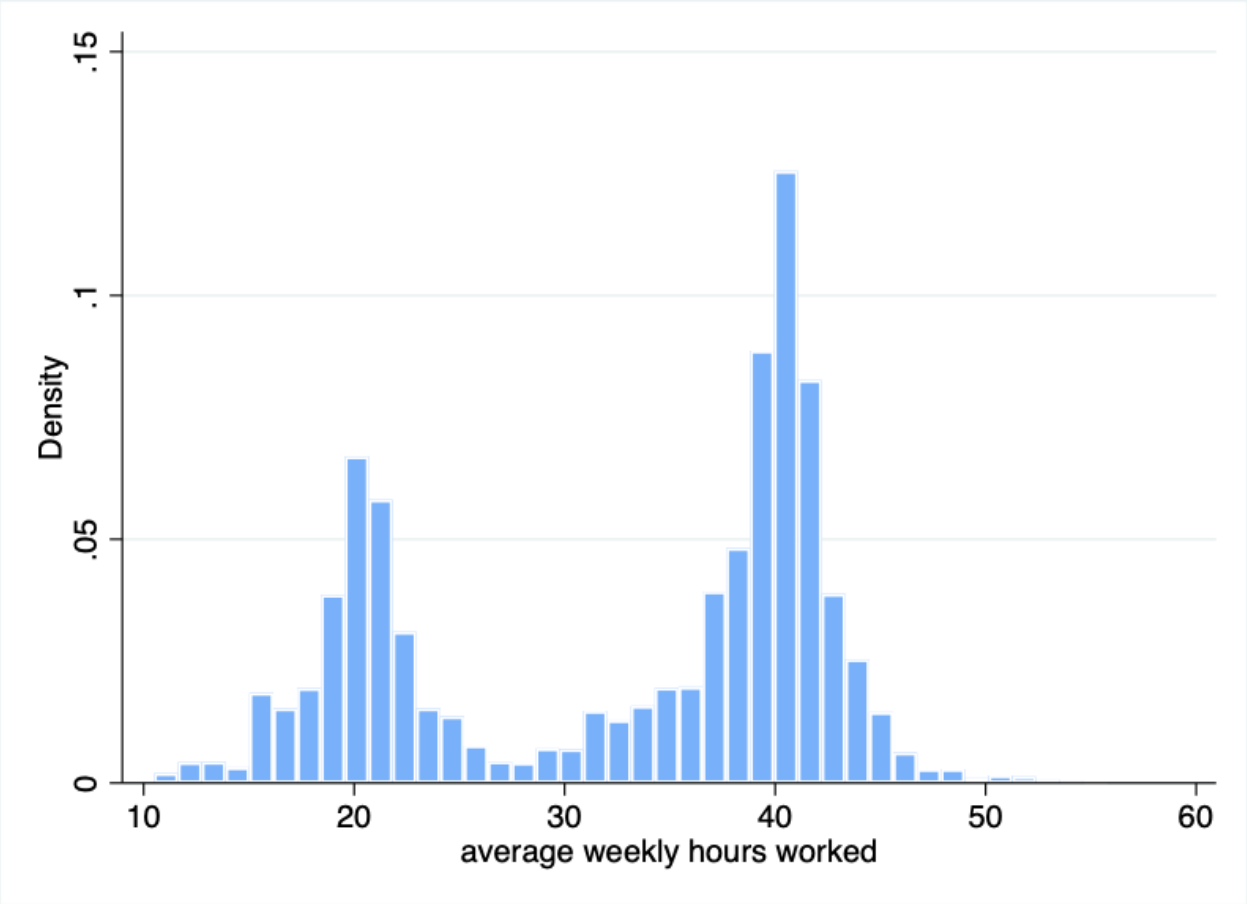


Figure 11: Histogram of Work Time in Europe, 2012-2021

Data source: Eurostat (2022), url:https://ec.europa.eu/eurostat/data/database.

The histogram is bimodal, showing that the two most common average weekly hours worked for people in Europe are about 40 hours and 20 hours. This reflects the frequency table from above, but also makes sense intuitively because the first peak would be the center of the normal distribution for part time workers, and the second for full time workers.

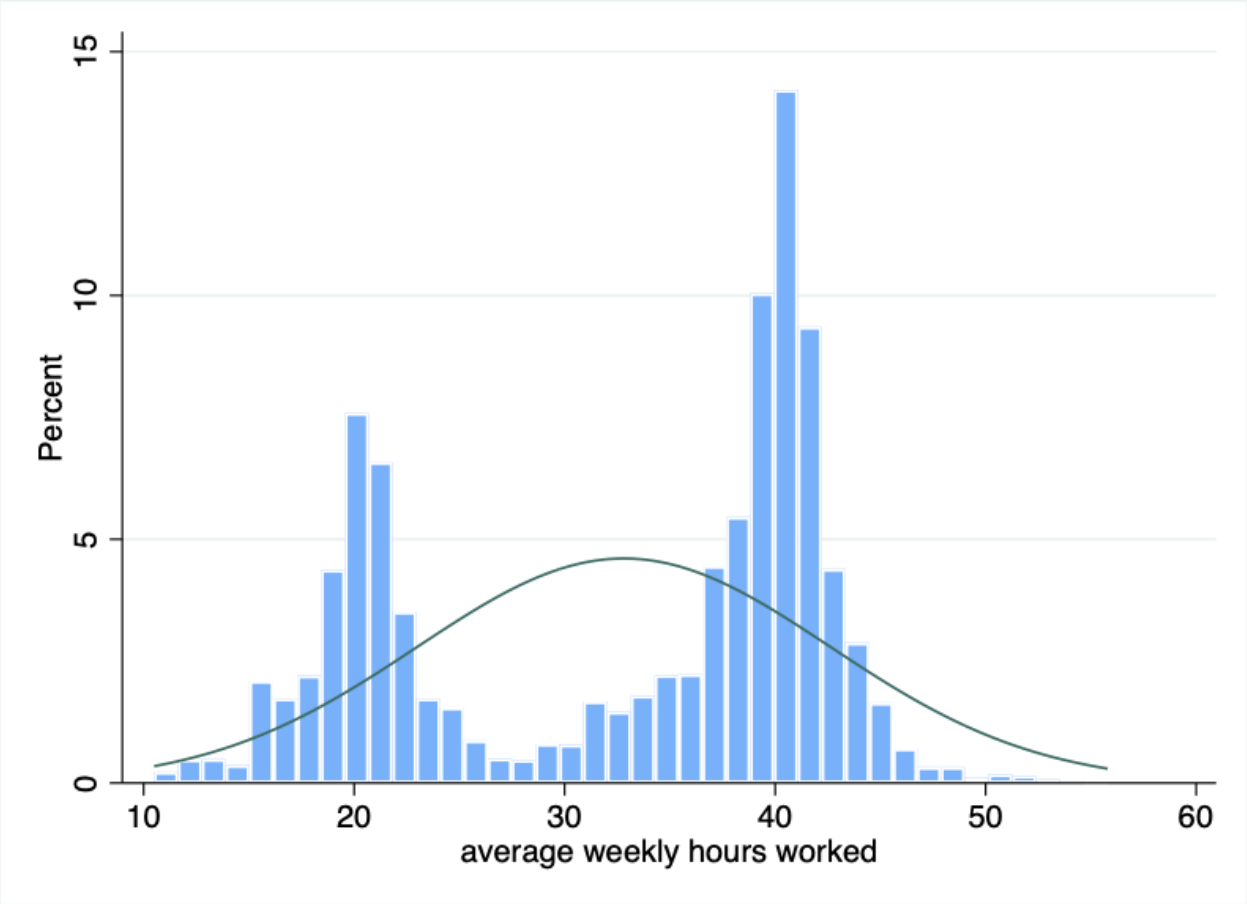


Figure 12: Histogram of Work Time in Europe with Normal Curve, 2012-2021

Data source: Eurostat (2022), url:https://ec.europa.eu/eurostat/data/database.

The average work time in Europe does not follow a normal curve, however full time and part time workers seem to follow normal distributions individually.

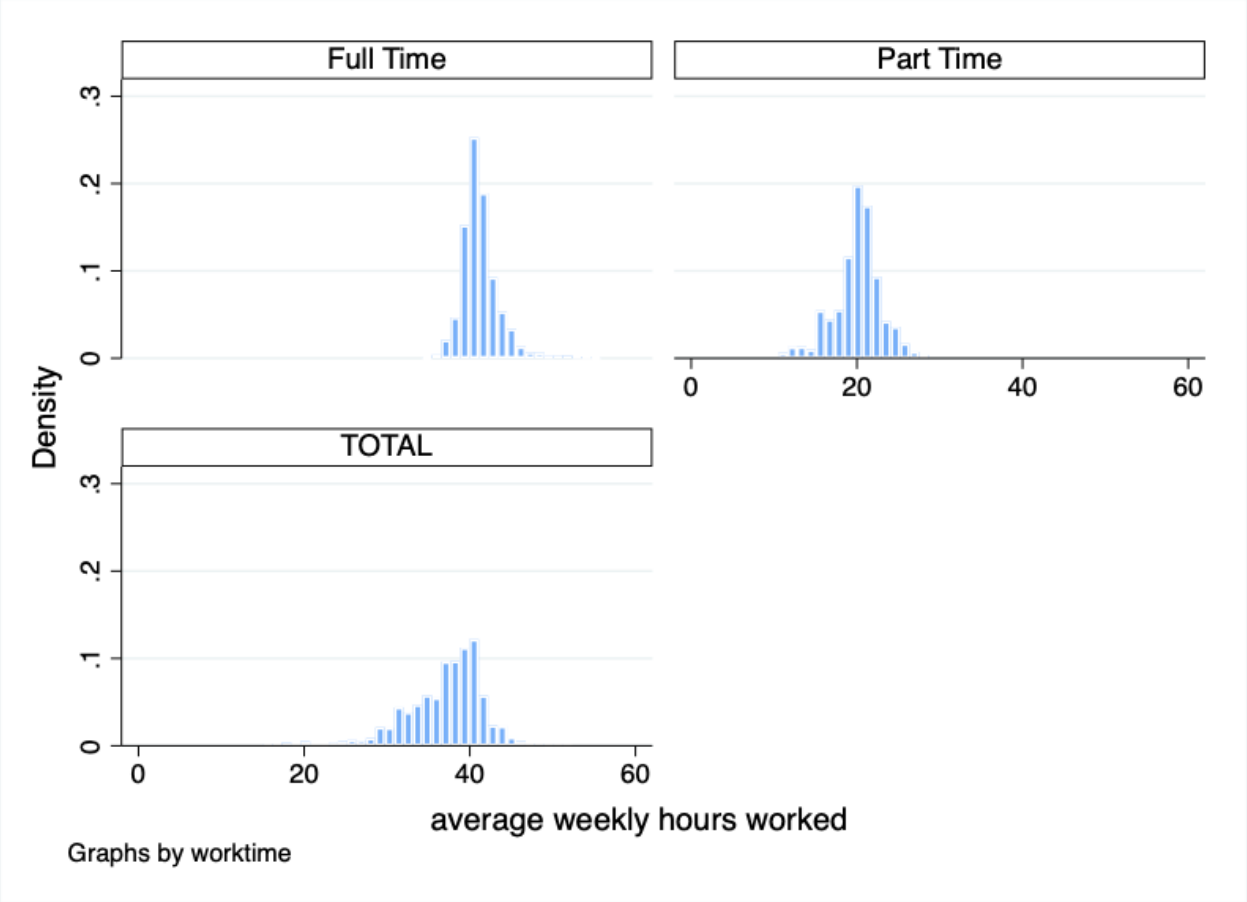


Figure 13: Histogram of Work Time in Europe by Work Time, 2012-2021

Data source: Eurostat (2022), url:https://ec.europa.eu/eurostat/data/database.

The individual histograms of part time and full time workers' average weekly hours worked, confirm that each follows an approximately normal distribution centered around 20 hours and 40 hours, respectively. The histogram for the total, is slightly skewed left, with the most frequent work time being 40 hours.

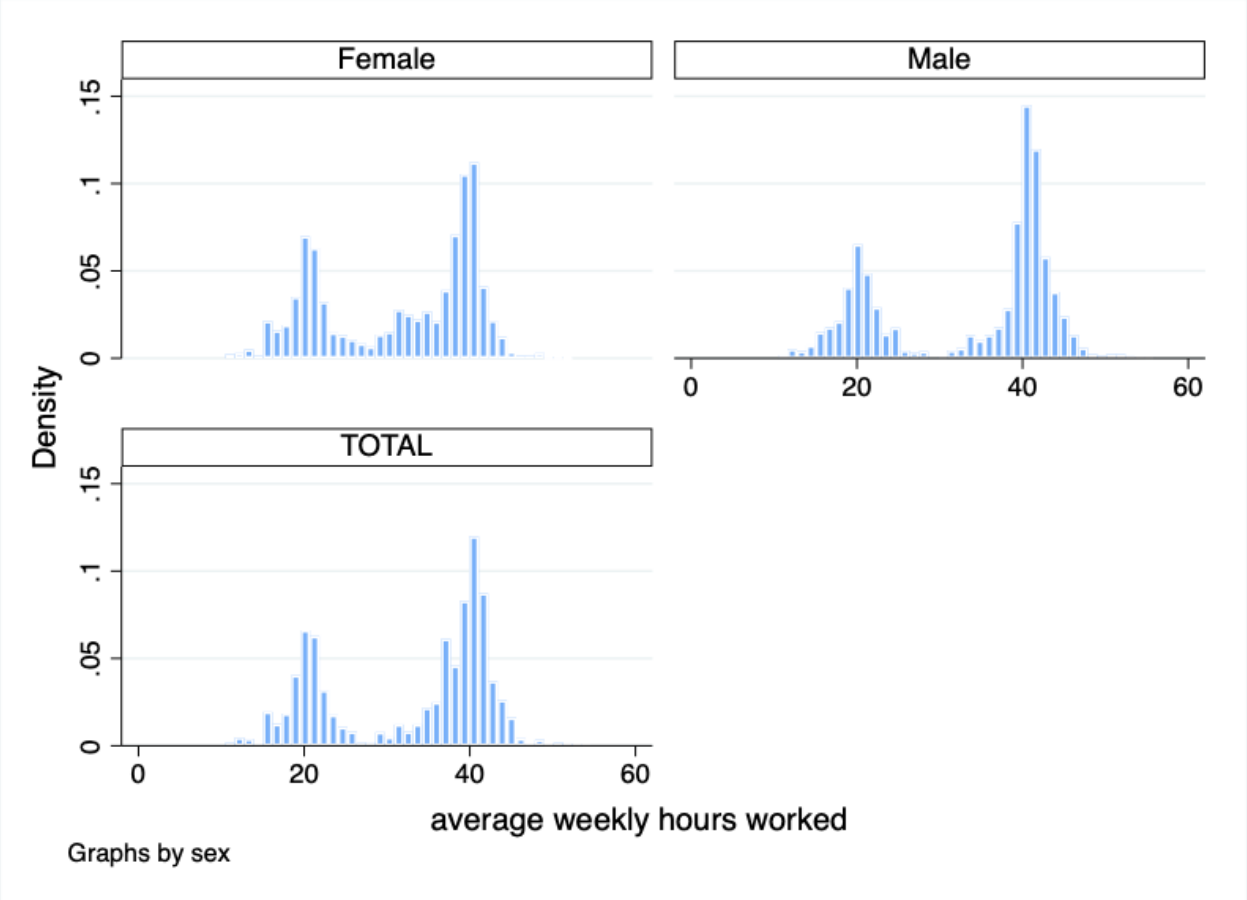


Figure 14: Histogram of Work Time in Europe by Sex, 2012-2021

Data source: Eurostat (2022), url:https://ec.europa.eu/eurostat/data/database.

The histograms for the average weekly hours worked by males and the total, show two distinct peaks, while the histogram for females shows less of a distinction between the two peaks. There almost seems to be a middle peak in the distribution for females, indicating that a notable portion of females worked about 35 hours on average per week.

Assignment #2

COUNTRY	Real Minimum Wages
BEL	22897.17
CZE	11954.5
LUX	25808.14
NLD	25328.38
POL	16157.38

Table 8: Real Minimum Wages for a Selection of Countries, 2020

Data source: OECD (2022), Real minimum wages, url: https://stats.oecd.org/ (Accessed on 21 August 2022).

Above are the real annual minimum wages in Belgium, Czech Republic, Luxembourg, Netherlands, and Poland from 2020. Luxembourg had the highest real minimum wage, and Poland had the lowest.

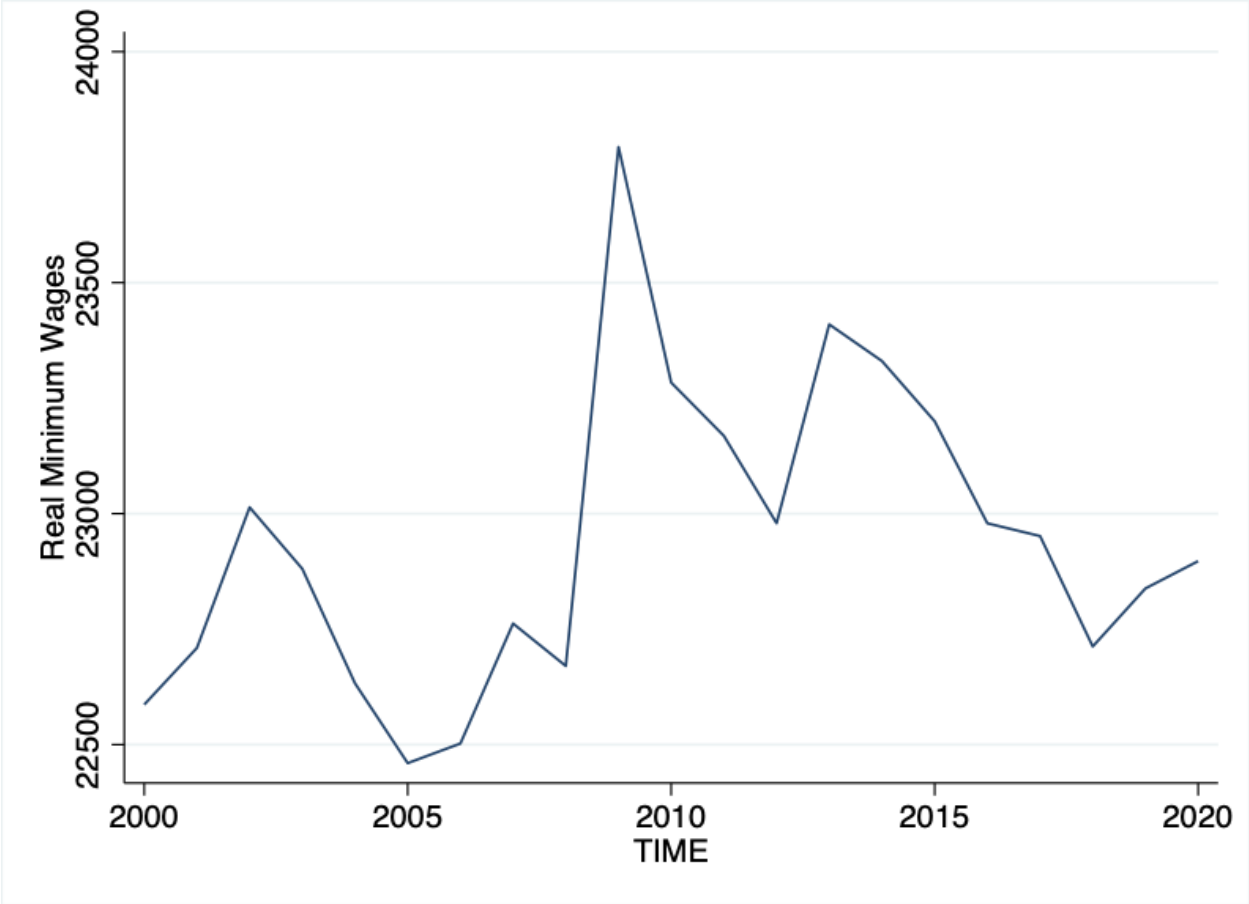


Figure 15: Real Minimum Wage in Belgium, 2000-2020

Data source: OECD (2022), Real minimum wages, url: https://stats.oecd.org/ (Accessed on 21 August 2022).

The graph shows the fluctuation in real minimum wages in Belgium from 2000 to 2020. There is a peak in 2009, and a low point in 2005. The real minimum wage in 2020 was slightly higher than it was in 2000, but the graph does not tell us about causation.

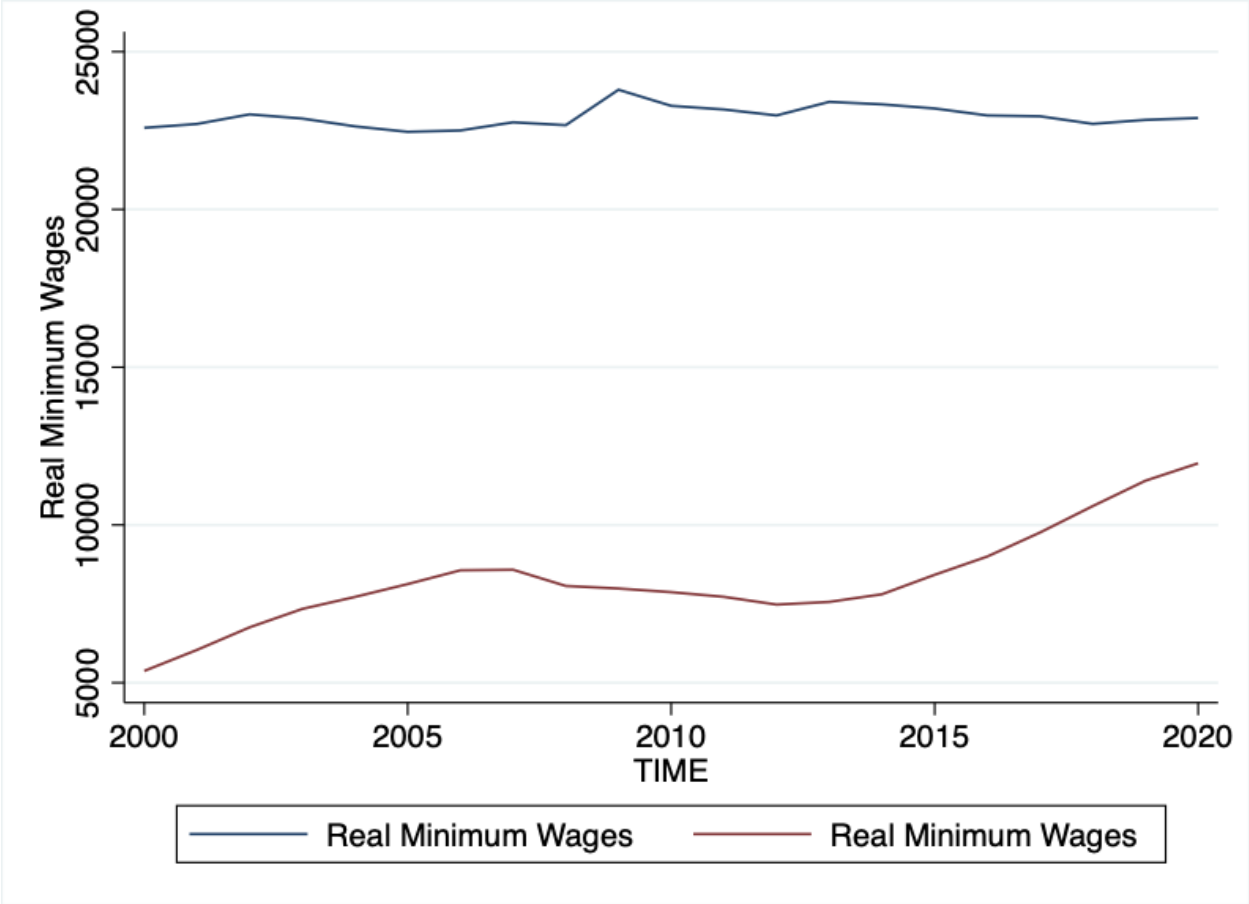


Figure 16: Real Minimum Wage in Belgium and Czech Republic, 2000-2020

Data source: OECD (2022), Real minimum wages, url: https://stats.oecd.org/ (Accessed on 21 August 2022).

The graph shows the real minimum wages for Belgium and the Czech Republic from 2000 to 2020. It shows that Belgium has had a higher real minimum wage than the Czech Republic overall, but it does not tell us about causation either.

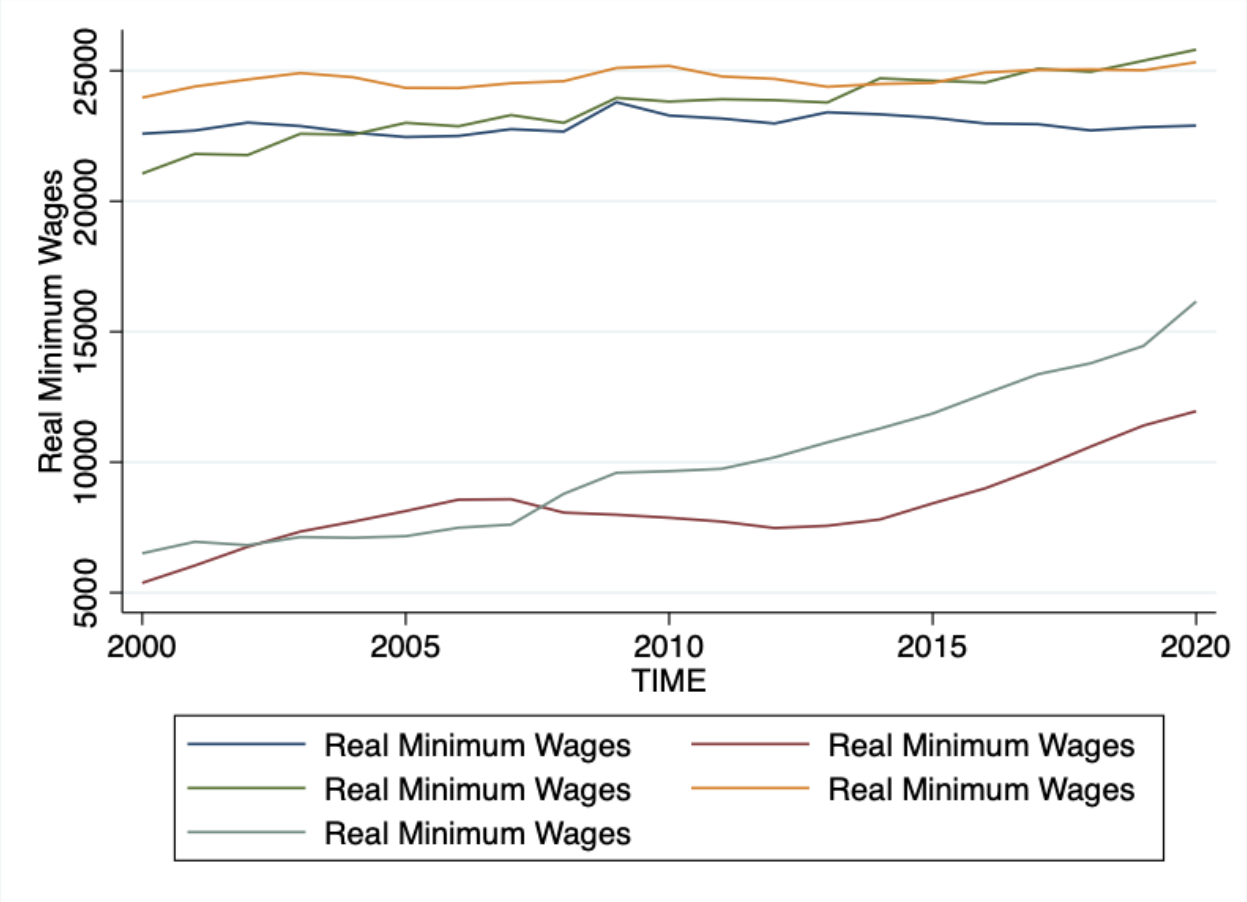


Figure 17: Real Minimum Wages for a Selection of Countries, 2000-2020

Data source: OECD (2022), Real minimum wages, url: https://stats.oecd.org/ (Accessed on 21 August 2022).

The graph compares the real minimum wages for Belgium, Czech Republic, Luxembourg, Netherlands, and Poland from 2000 to 2020. It shows that Luxembourg, Netherlands, and Belgium have had higher minimum wages than Poland and the Czech Republic. It does not tell us that this is caused by time or by the proximity of the countries relative to one another.

Variable	Mean	p50	Min	Max
upw	198.7825	196.4992	40.76706	351.9353

Table 9: Unpaid Work Statistics

Data source: OECD (2022), Time Use, url: https://stats.oecd.org/ (Accessed on 21 August 2022).

Above are the mean, median, min, and max of time spent doing unpaid work, measured in minutes per day, in OECD countries.

sex	Mean	p50	Min	Max
MEN	131.5025	141	40.76706	186.1361
TOTAL	200.0493	196.4992	131.7064	263.8879
WOMEN	264.7957	253.2541	215.0089	351.9353
Total	198.7825	196.4992	40.76706	351.9353

Table 10: Unpaid Work Statistics by Sex

Data source: OECD (2022), Time Use, url: https://stats.oecd.org/ (Accessed on 21 August 2022).

Above are the mean, median, min, and max of time spent doing unpaid work in OECD countries for men, women, and total. On average, women do more unpaid work than men.

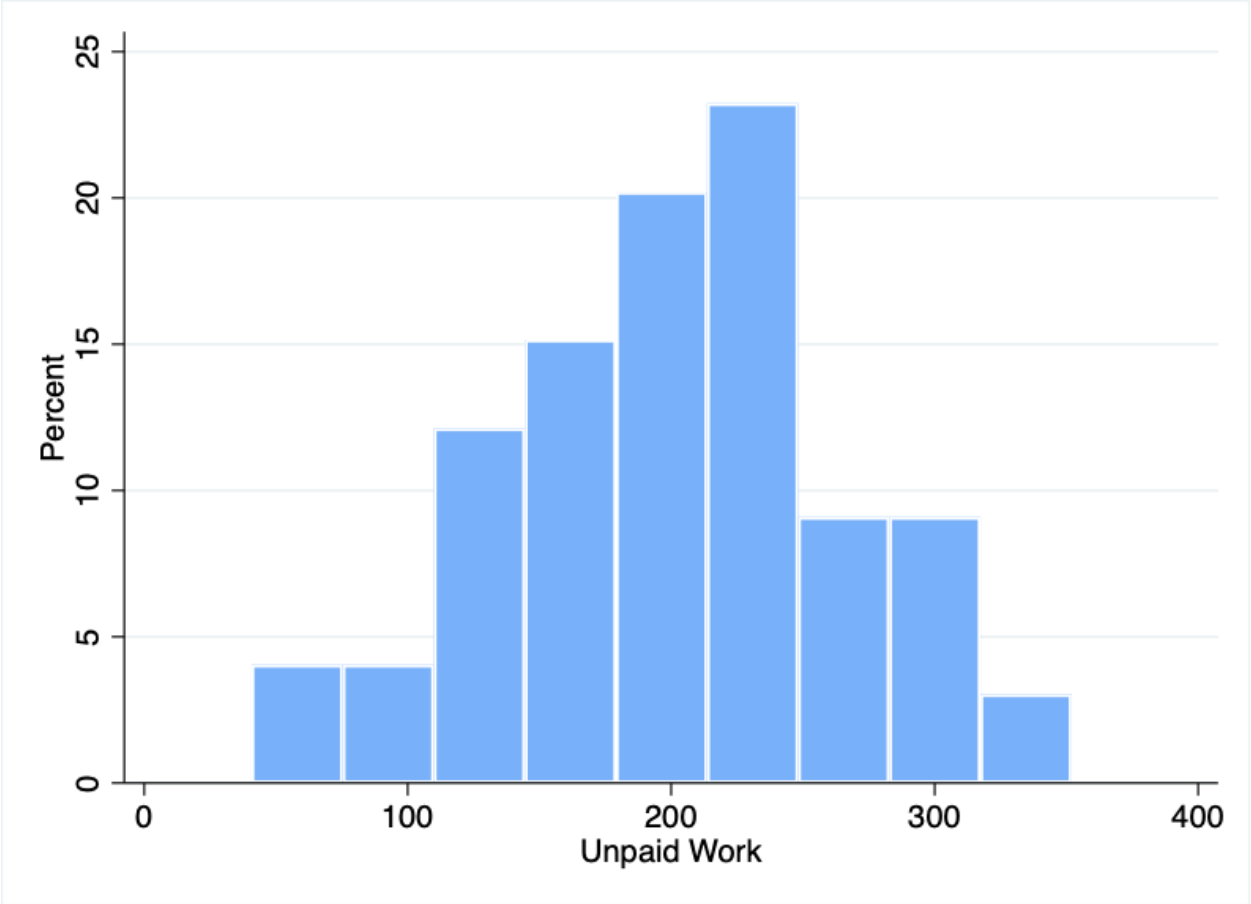


Figure 18: Time Spent Doing Unpaid Work

Data source: OECD (2022), Time Use, url: https://stats.oecd.org/ (Accessed on 21 August 2022).

The graph shows the time spent doing unpaid work in OECD countries for 15-64 year olds, as a percentage. The mean of the average time spent was around 220 minutes. There is an approximately normal distribution, with a low of 50 minutes and a high of 350 minutes.

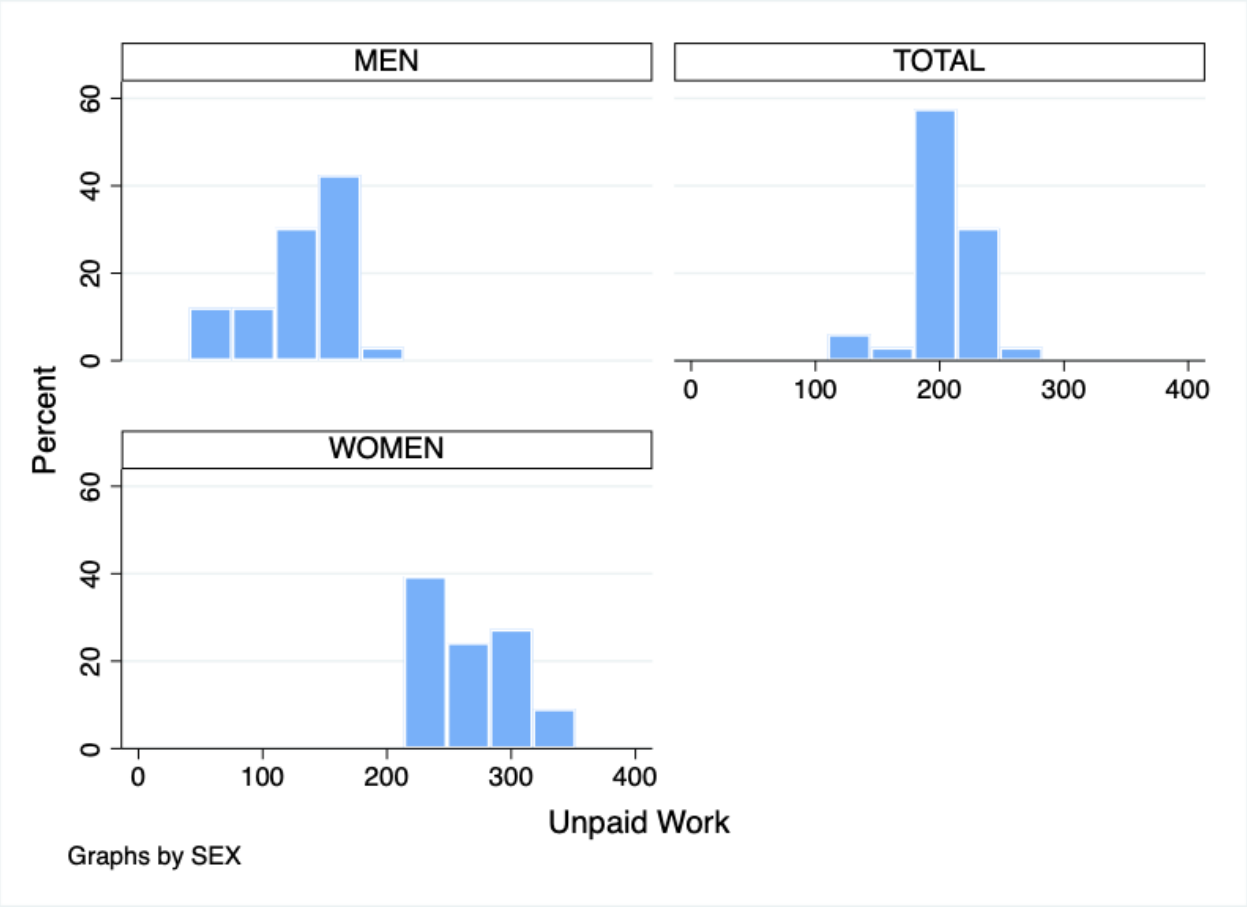


Figure 19: Time Spent Doing Unpaid Work by Sex

Data source: OECD (2022), Time Use, url: https://stats.oecd.org/ (Accessed on 21 August 2022).

The graph shows the time spent doing unpaid work in OECD countries for 15-64 year olds, as a percentage, and grouped by sex. It shows the mean for men (around 150 minutes) to be lower than the mean for women (around 250 minutes). Although it does not tell us about causation, sex could have a causal relationship to these differences in unpaid work time due to time spent taking care of children.

Section 3: Education

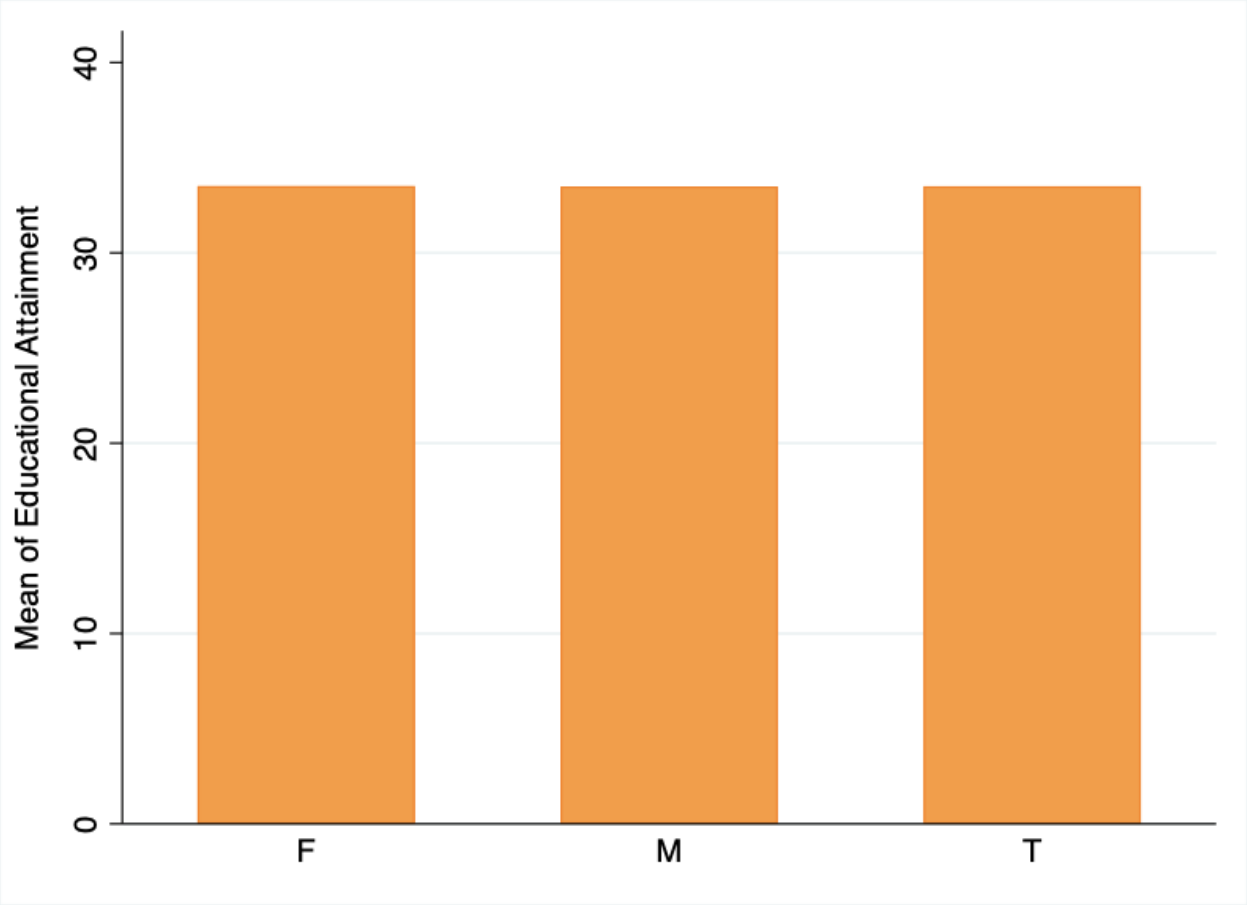


Figure 20: Educational Attainment by Sex, 2019

Data source: OECD (2022), Educational Attainment Statistics, url: https://stats.oecd.org/ (Accessed on 16 August 2022).

Educational attainment is the same among females, males, and the total in OECD countries.

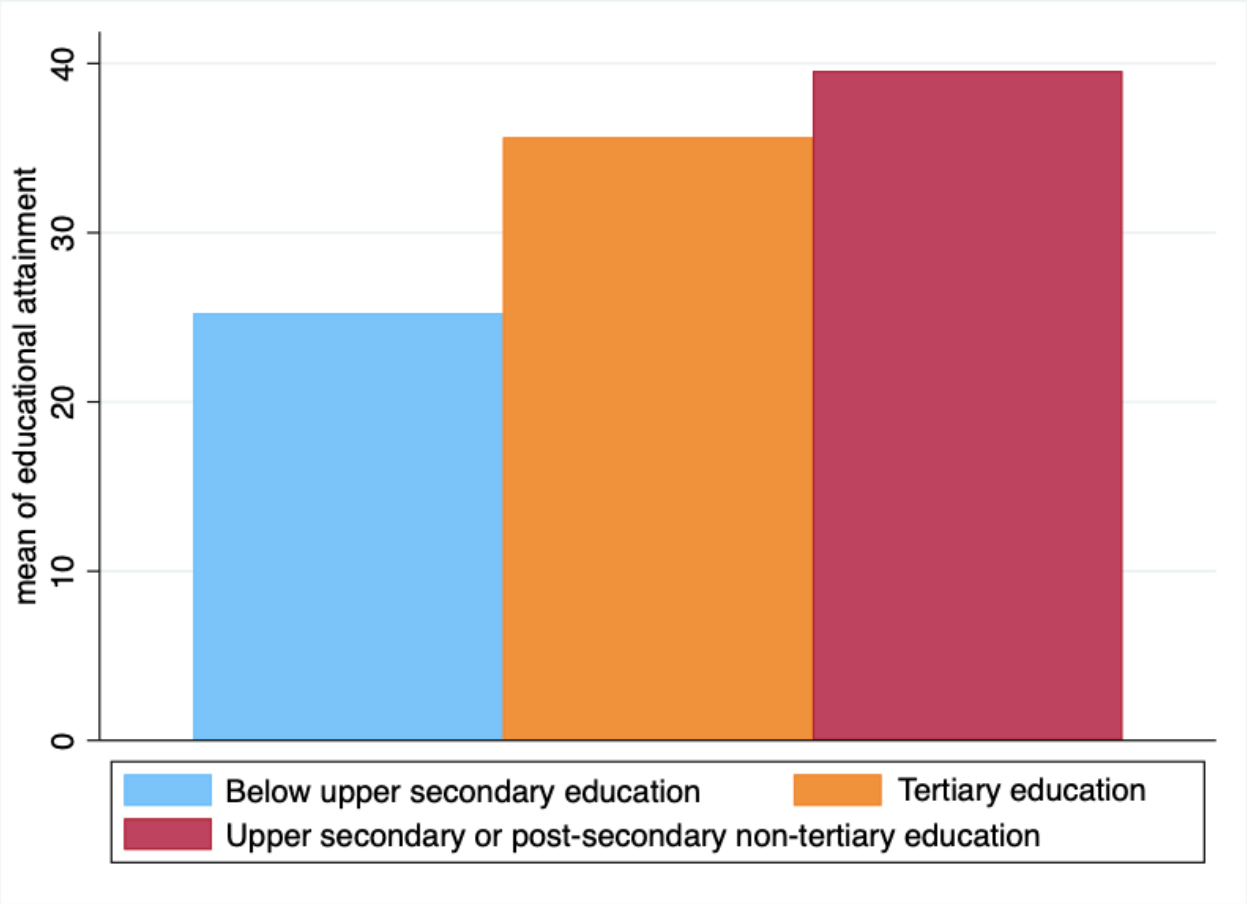


Figure 21: Educational Attainment by Education Level, 2019

Data source: OECD (2022), Educational Attainment Statistics, url: https://stats.oecd.org/ (Accessed on 16 August 2022).

Those with an upper secondary or postsecondary non-tertiary education had the highest educational attainment on average, while those with below upper secondary education had the lowest.

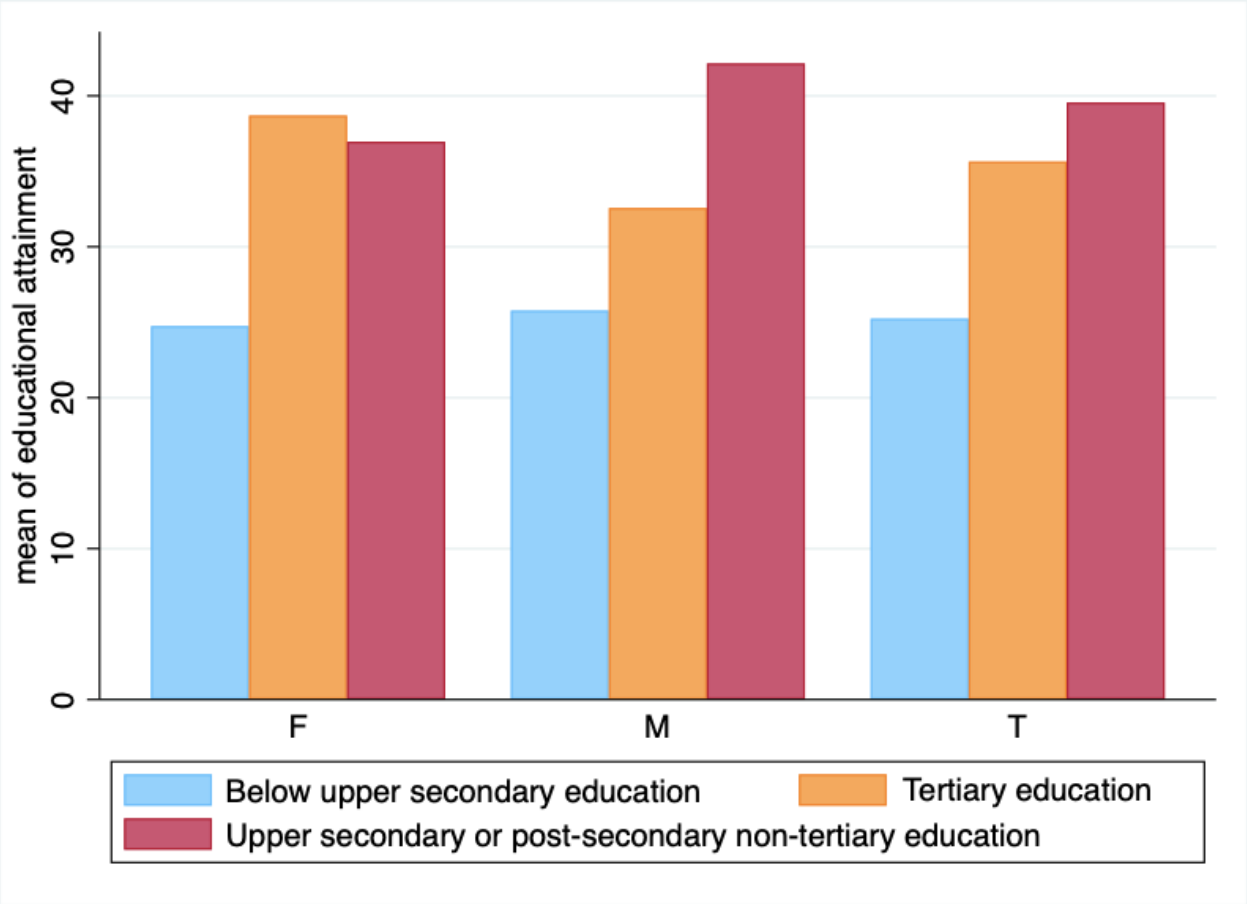


Figure 22: Educational Attainment by Education Level and Sex, 2019

Data source: OECD (2022), Educational Attainment Statistics, url: https://stats.oecd.org/ (Accessed on 16 August 2022).

Educational attainment for males and the total follow the same pattern as educational attainment overall. Among females, those with tertiary education had higher educational attainment on average compared to upper secondary or postsecondary non-tertiary education.

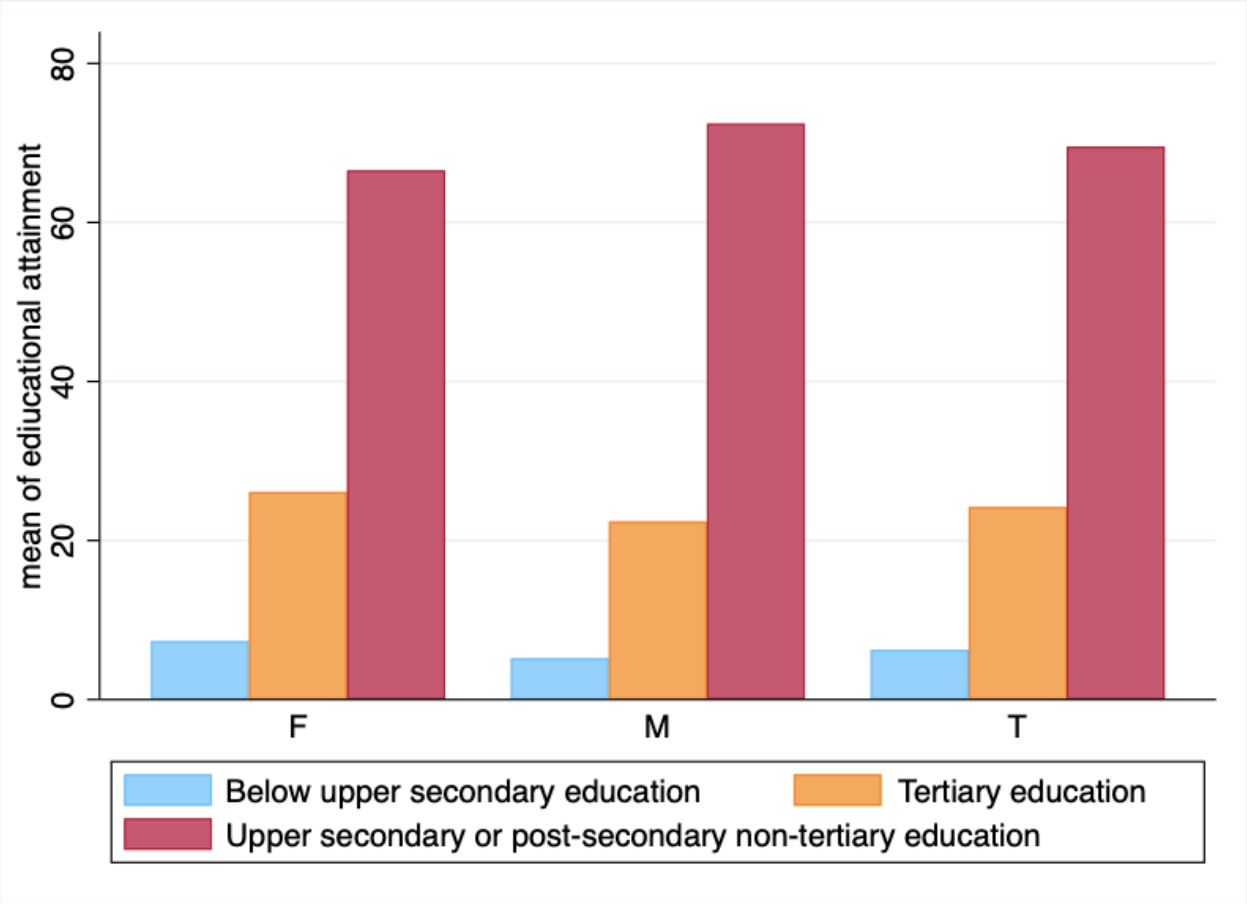


Figure 23: Educational Attainment in the Czech Republic, 2019 (bar)

Data source: OECD (2022), Educational Attainment Statistics, url: https://stats.oecd.org/ (Accessed on 16 August 2022).

In the Czech Republic, each sex followed a similar pattern of educational attainment: Those with upper secondary or post-secondary non-tertiary education had more than double the educational achievement compared to those with tertiary education, and those with tertiary education had more than triple the educational achievement compared to those with below upper secondary education.

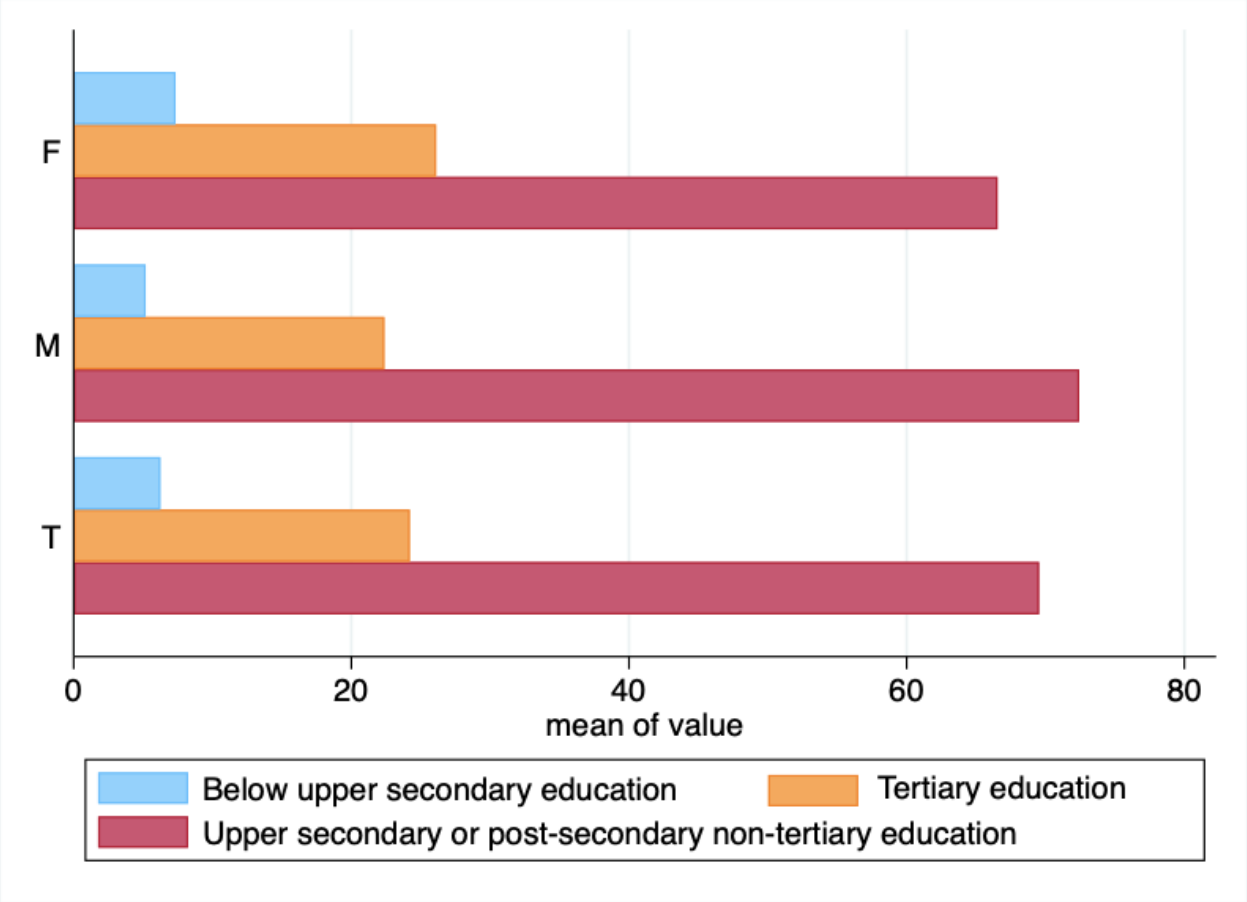


Figure 24: Educational Attainment in the Czech Republic, 2019 (hbar)

Data source: OECD (2022), Educational Attainment Statistics, url: https://stats.oecd.org/ (Accessed on 16 August 2022).

In the Czech Republic, each sex followed a similar pattern of educational attainment: Those with upper secondary or post-secondary non-tertiary education had more than double the educational achievement compared to those with tertiary education, and those with tertiary education had more than triple the educational achievement compared to those with below upper secondary education.

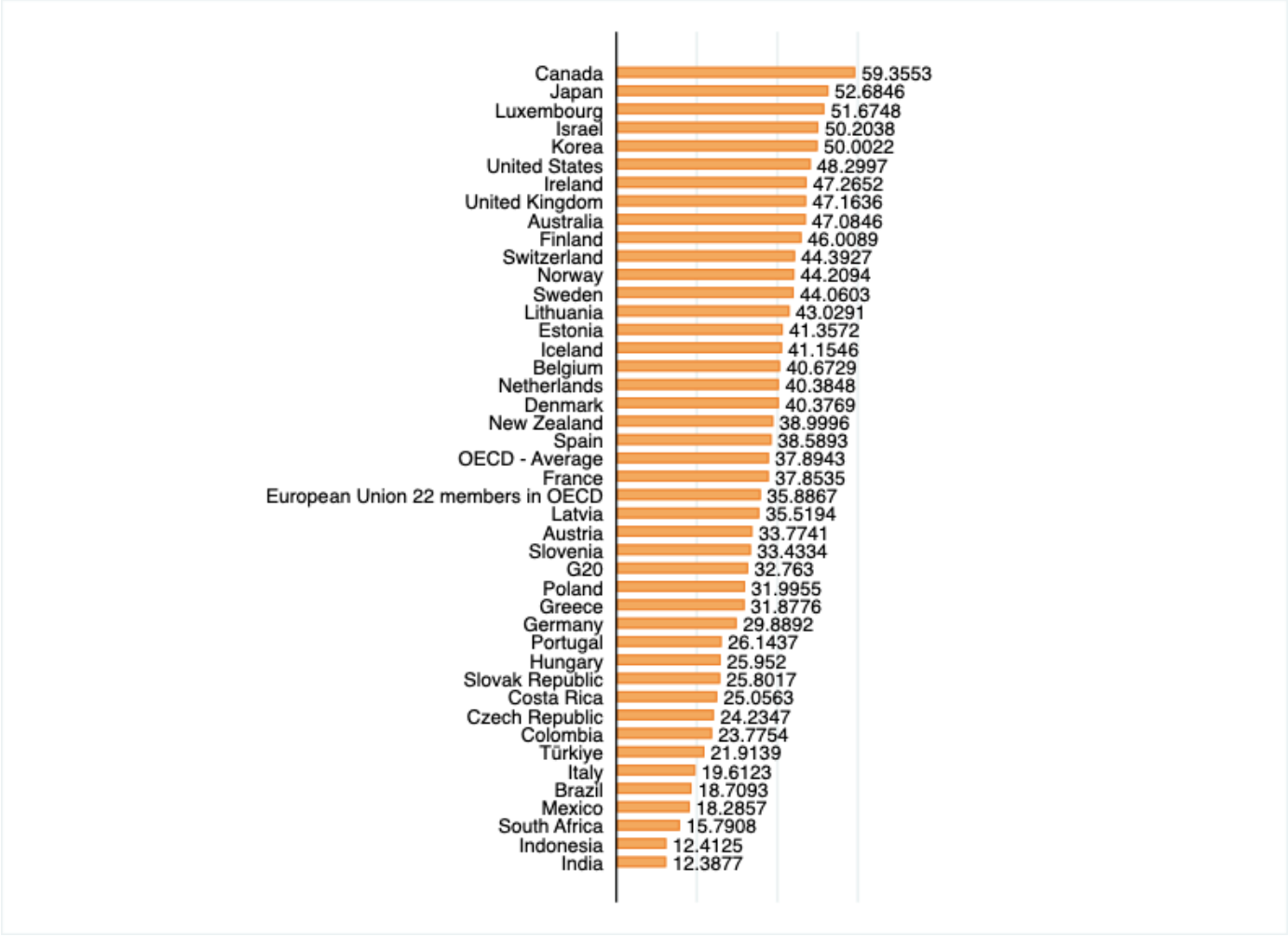


Figure 25: Comparative Tertiary Education Attainment Across Countries, 2019

Data source: OECD (2022), Educational Attainment Statistics, url: https://stats.oecd.org/ (Accessed on 16 August 2022).

Among OECD countries, Canada measured the highest in educational attainment with a tertiary education, at 59.3553, while India had the lowest, at 12.3877. The average of OECD countries was 37.8943.

	Life Expectancy	GDP Per Capita	Tertiary Education
Life Expectancy	1		
GDP Per Capita	0.6229	1	
Tertiary Education	0.5347	0.6419	1

Table 11: Correlations for Life Expectancy, GDP Per Capita, and Tertiary Education

Data source: OECD (2022), url: https://stats.oecd.org/.

GDP per capita and life expectancy, tertiary education and life expectancy, and tertiary education and GDP per capita, each have a moderate positive correlation, indicating that as one increases, the other also increases with a moderate linear association.

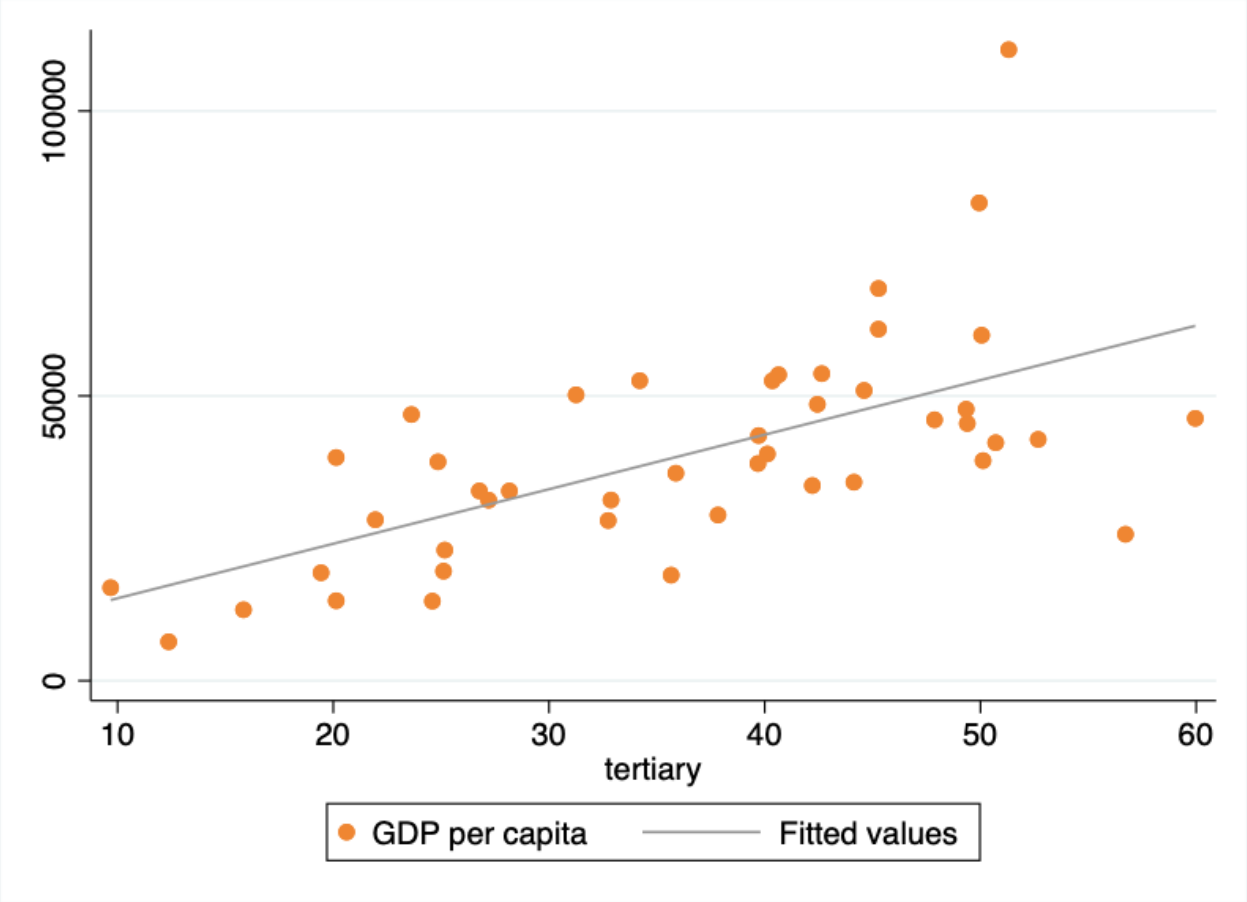


Figure 26: GDP Per Capita vs. Tertiary Education, Fitted

Data source: OECD (2022), url: https://stats.oecd.org/.

GDP per capita and tertiary education are positively correlated, with the regression line having a y intercept around $25000 for OECD countries.

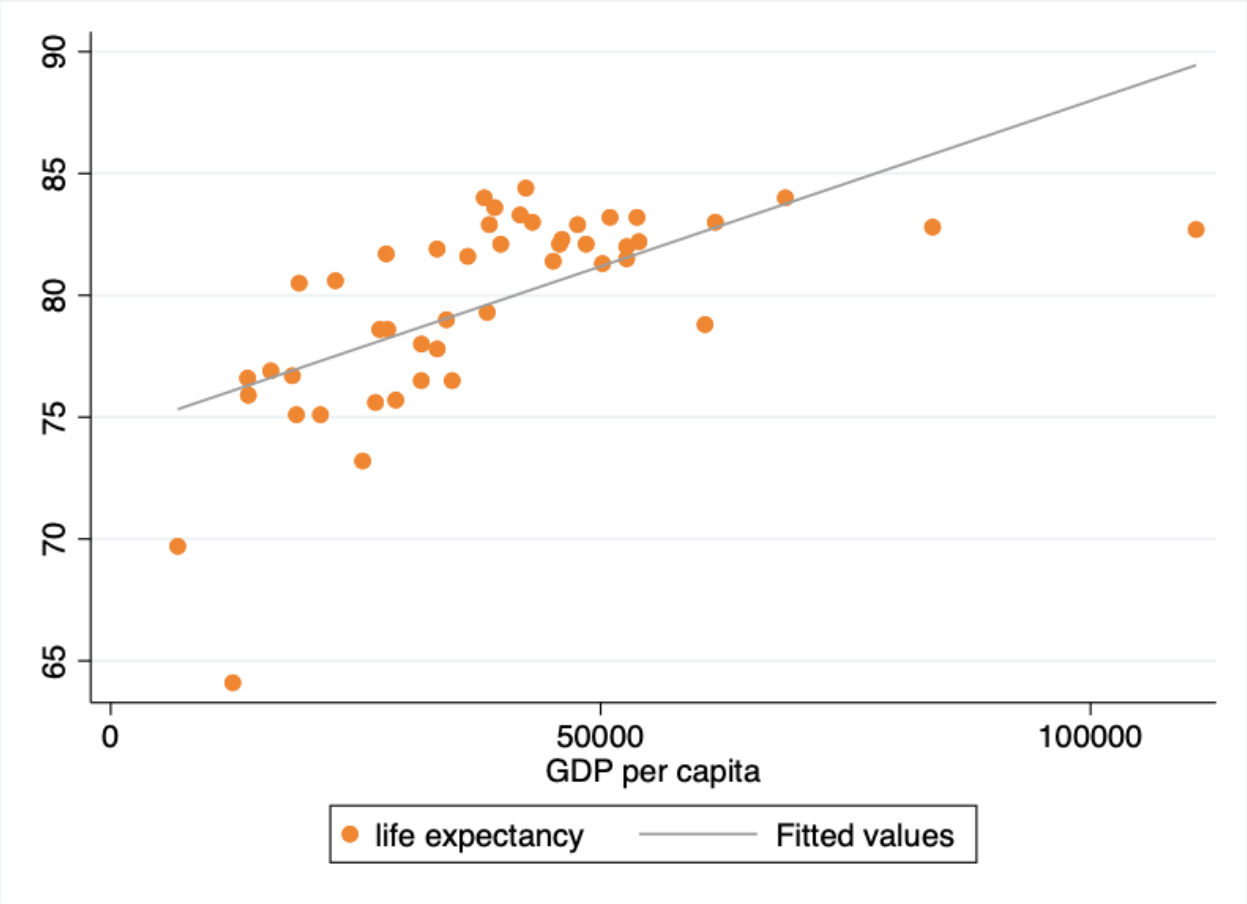


Figure 27: Life Expectancy vs. GDP Per Capita, Fitted

Data source: OECD (2022), url: https://stats.oecd.org/.

Life expectancy and GDP per capita are positively correlated, with the regression line having a y-intercept around 75 years for OECD countries.

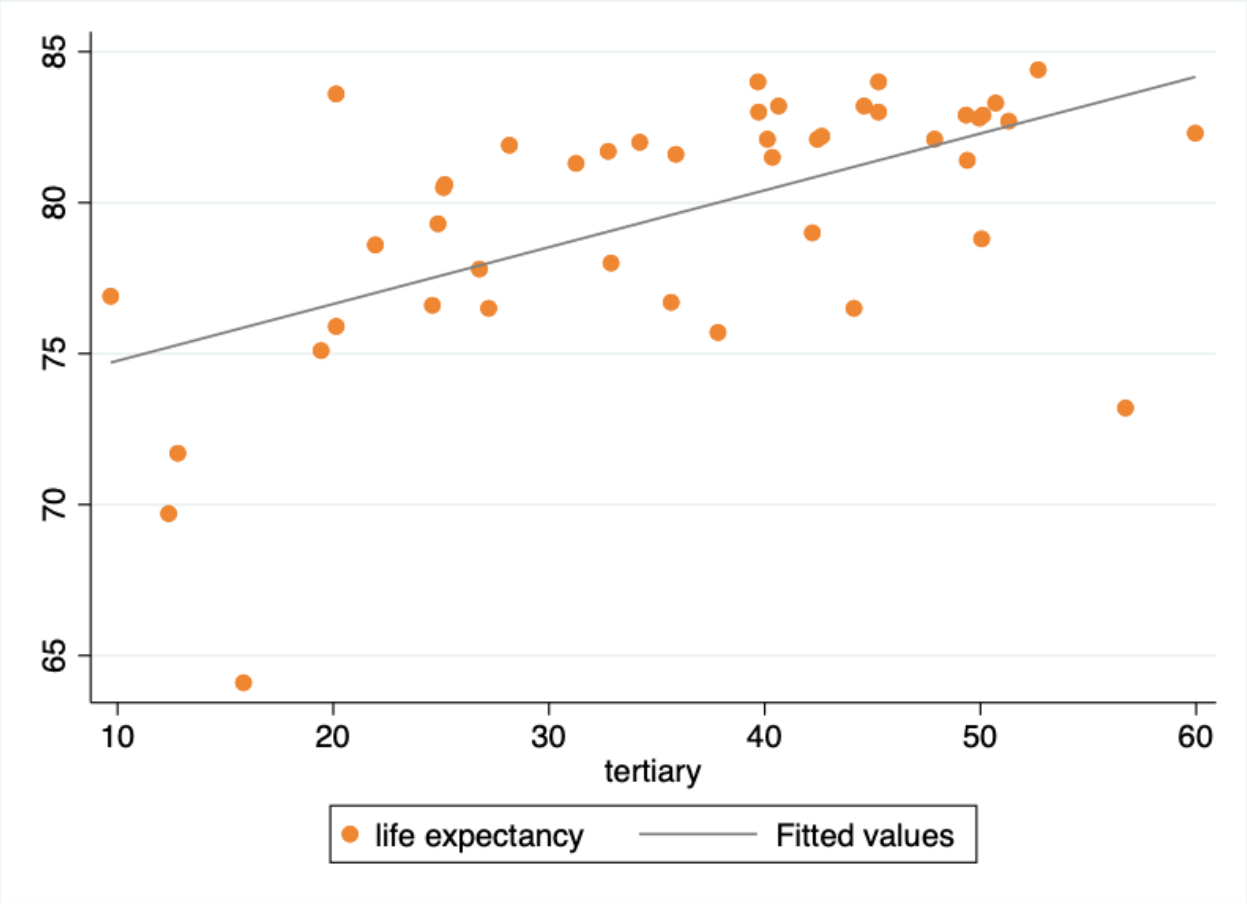


Figure 28: Life Expectancy vs. Tertiary Education, Fitted

Data source: OECD (2022), url: https://stats.oecd.org/.

Life expectancy and tertiary education are positively correlated with the regression line having a y-intercept around 75 years for OECD countries.

	GDP Per Capita
Tertiary Education	957.4093*** (5.24)
Constant	4900.257 (0.70)
Number of Observations	45
R-Squared	.3899
t-values in parentheses, ***P<0.01, **P<0.05, *P<0.1	

Table 12: Regression of Tertiary Education and GDP Per Capita

Data source: OECD (2022), url: https://stats.oecd.org/.

Tertiary Education and GDP Per Capita have a positive, statistically significant relationship. The regression has 45 observations, and the low R-squared value indicates that the model does not explain much of the variation in GDP Per Capita.

Assignment #3

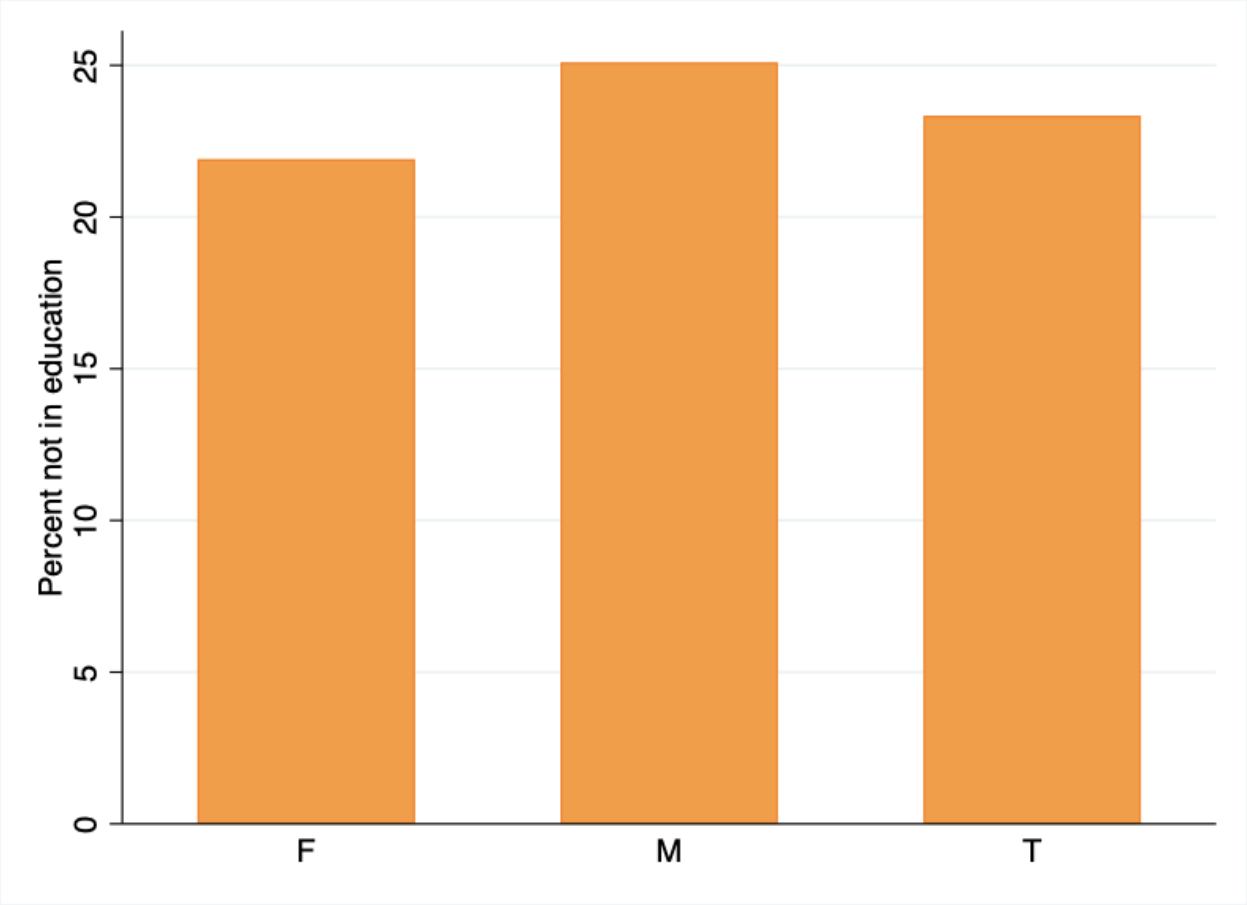


Figure 29: Percentage of People Not in Education, by Sex, 2020

Data source: OECD (2022), Transition from School to Work, url: https://stats.oecd.org/ (Accessed on 26 August 2022).

For 18-24 year olds in OECD countries, the mean percentage of males not in education (approx. 25%) was greater than the mean percentage of females not in education (approx. 22%). The mean percentage of the total not in education was around 23%.

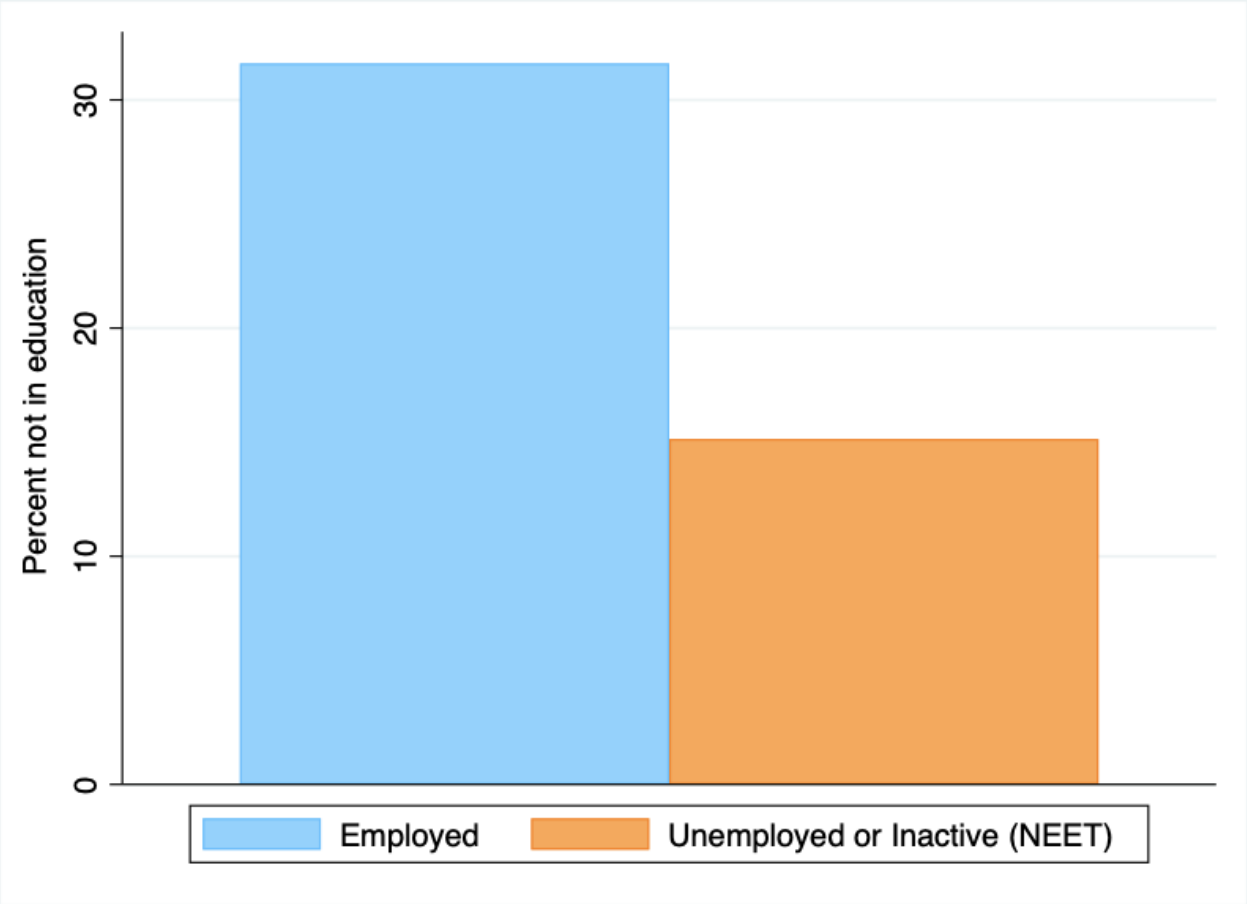


Figure 30: Percentage Not in Education, by Edu. and Labor Force Status, 2020

Data source: OECD (2022), Transition from School to Work, url: https://stats.oecd.org/ (Accessed on 26 August 2022).

The mean percentage of employed people not in education (approx. 31%) was greater than the mean percentage of unemployed or inactive people (approx. 15%).

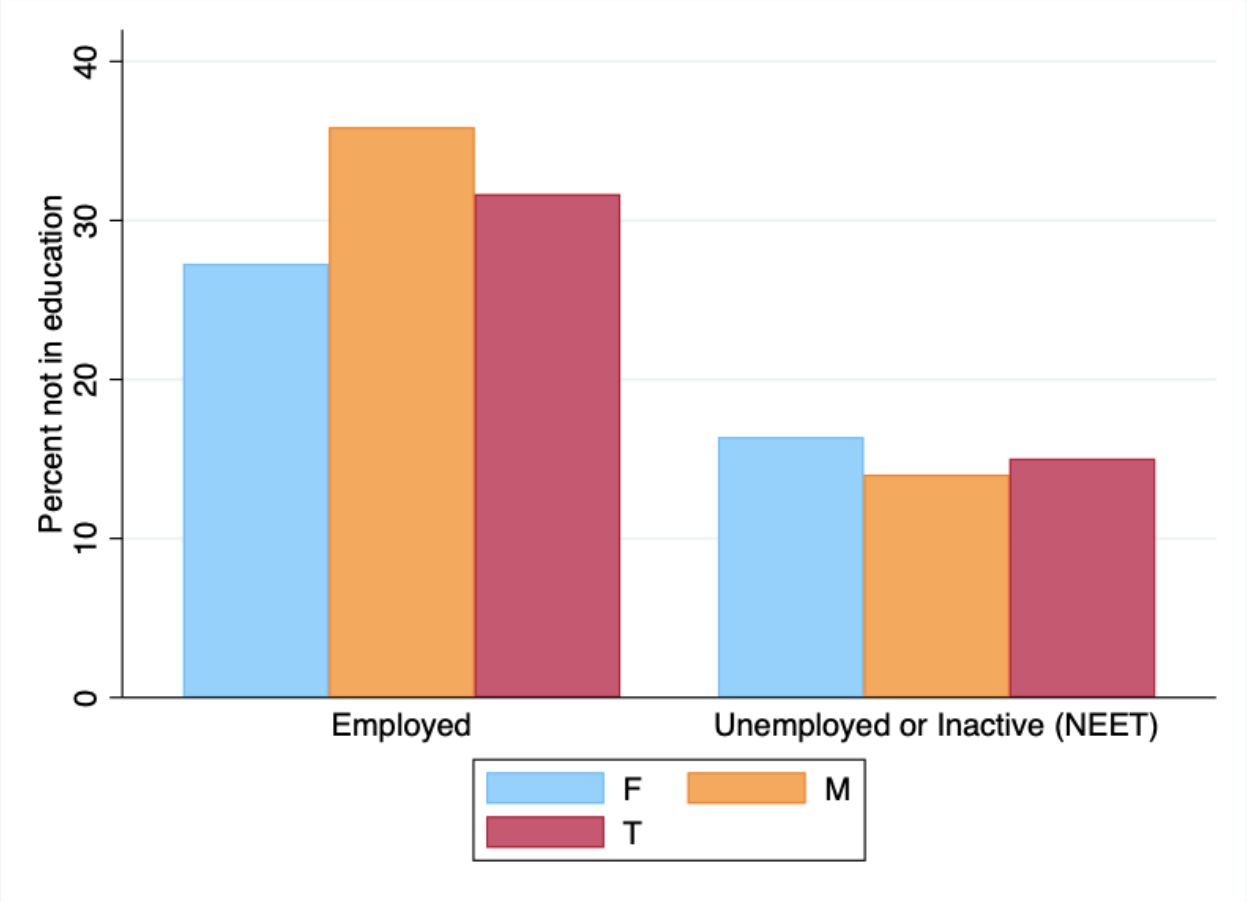


Figure 31: Percentage Not in Education, by Sex and Edu. and LFS, 2020

Data source: OECD (2022), Transition from School to Work, url: https://stats.oecd.org/ (Accessed on 26 August 2022).

Among those who are not in education, the percentage of men who are employed is more than the percentage of men who are unemployed. In general, the percentage of people who are employed is more than the percentage of people who are unemployed. Among those who are NEET, there is a higher percentage of females than males.

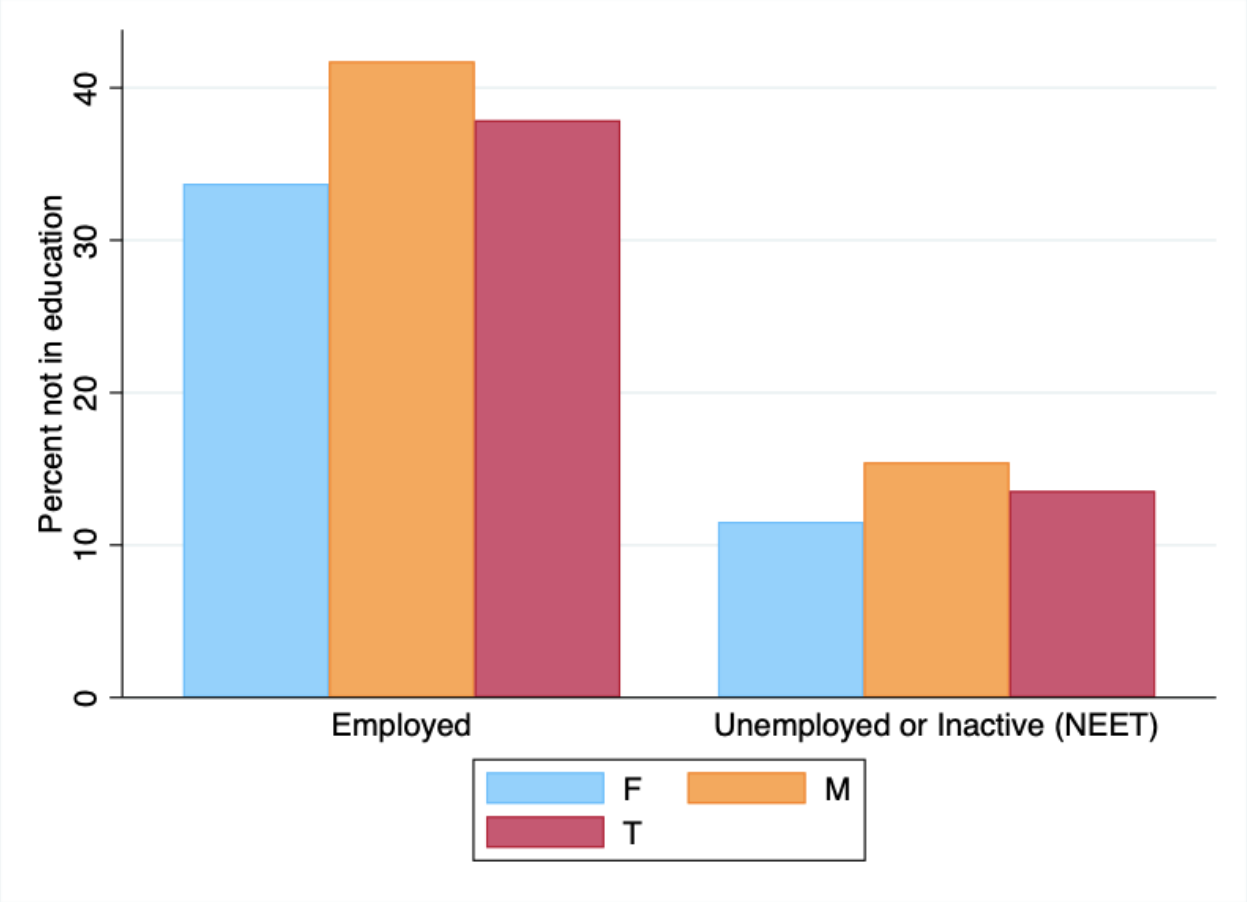


Figure 32: Percentage Not in Education, by Sex and Edu. and LFS, Canada, 2020

Data source: OECD (2022), Transition from School to Work, url: https://stats.oecd.org/ (Accessed on 26 August 2022).

Among those who are not in education, the percentage of men who are employed is more than the percentage of men who are unemployed. In general, the percentage of people who are employed is more than the percentage of people who are unemployed. This differs from the average in OECD countries because there is a higher percentage of males than females who are NEET.

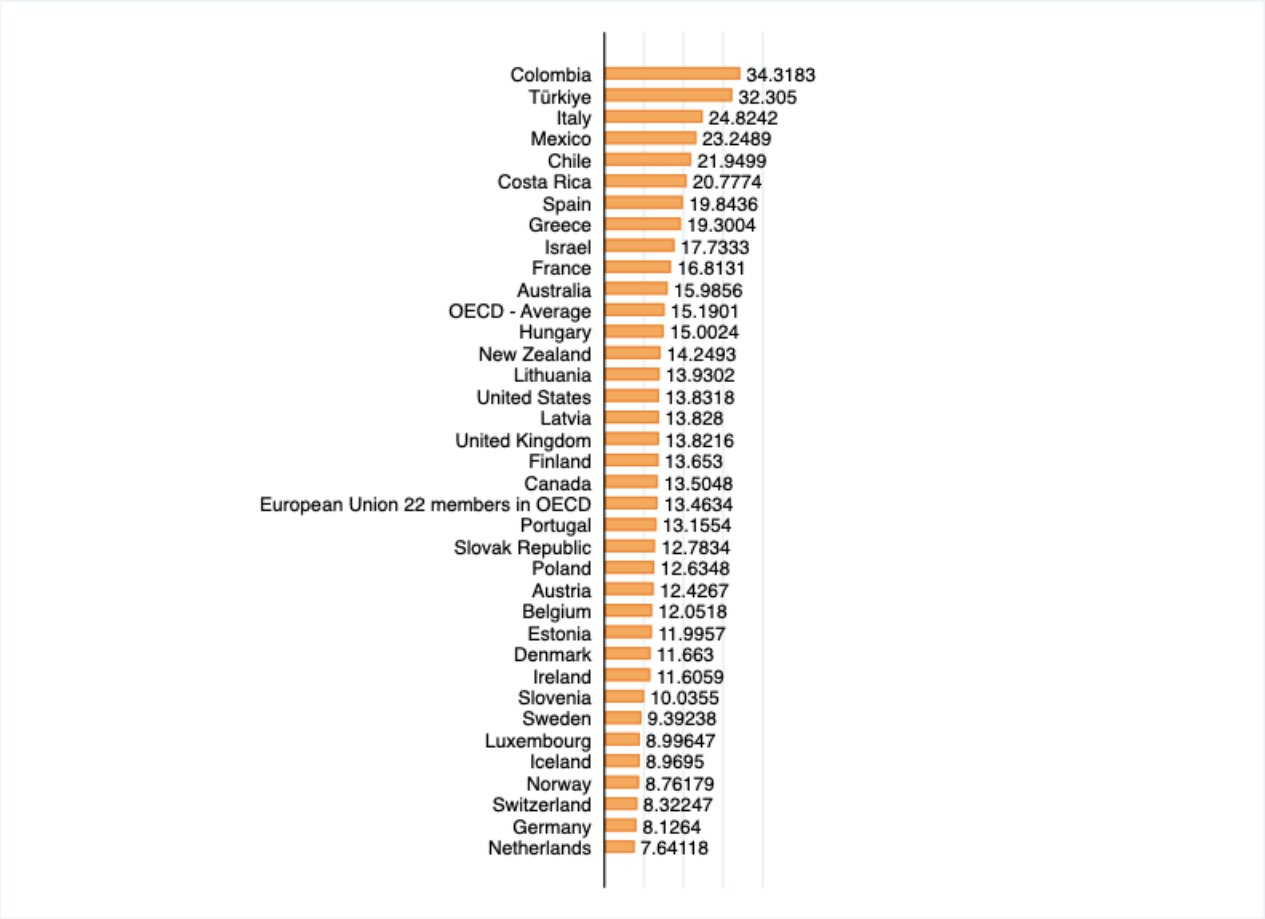


Figure 33: Percentage of People Not in Education and NEET, 2020

Data source: OECD (2022), Transition from School to Work, url: https://stats.oecd.org/ (Accessed on 26 August 2022).

Columbia had the highest percentage of people not in education and NEET, at 34.3183%. On the other hand, the Netherlands had the lowest percentage, around 7.64118%. The OECD average was 15.1901%

	university	highschool	civic
university	1		
highschool	-0.3684	1	
civic	0.5905	-0.5105	1

Table 13: Correlations in Education and Civic Engagement

Data source: OECD (2022), Transition from School to Work, url: https://stats.oecd.org/ (Accessed on 26 August 2022).

For OECD countries, civic engagement has a moderate positive correlation of 0.5905 with the percentage of 25-64 year olds with at least a university degree, and a moderate negative correlation of -0.5105 with the percentage having at least a high school degree. This means that as the percentage having at least a university degree increases by one, the civic engagement increases by 0.5905, whereas, as the percentage having at least a highschool degree increases by one, civic engagement decreases by 0.5101. Additionally, having at least a highschool degree is negatively correlated with having at least a university degree, indicating that as one increases, the other decreases.

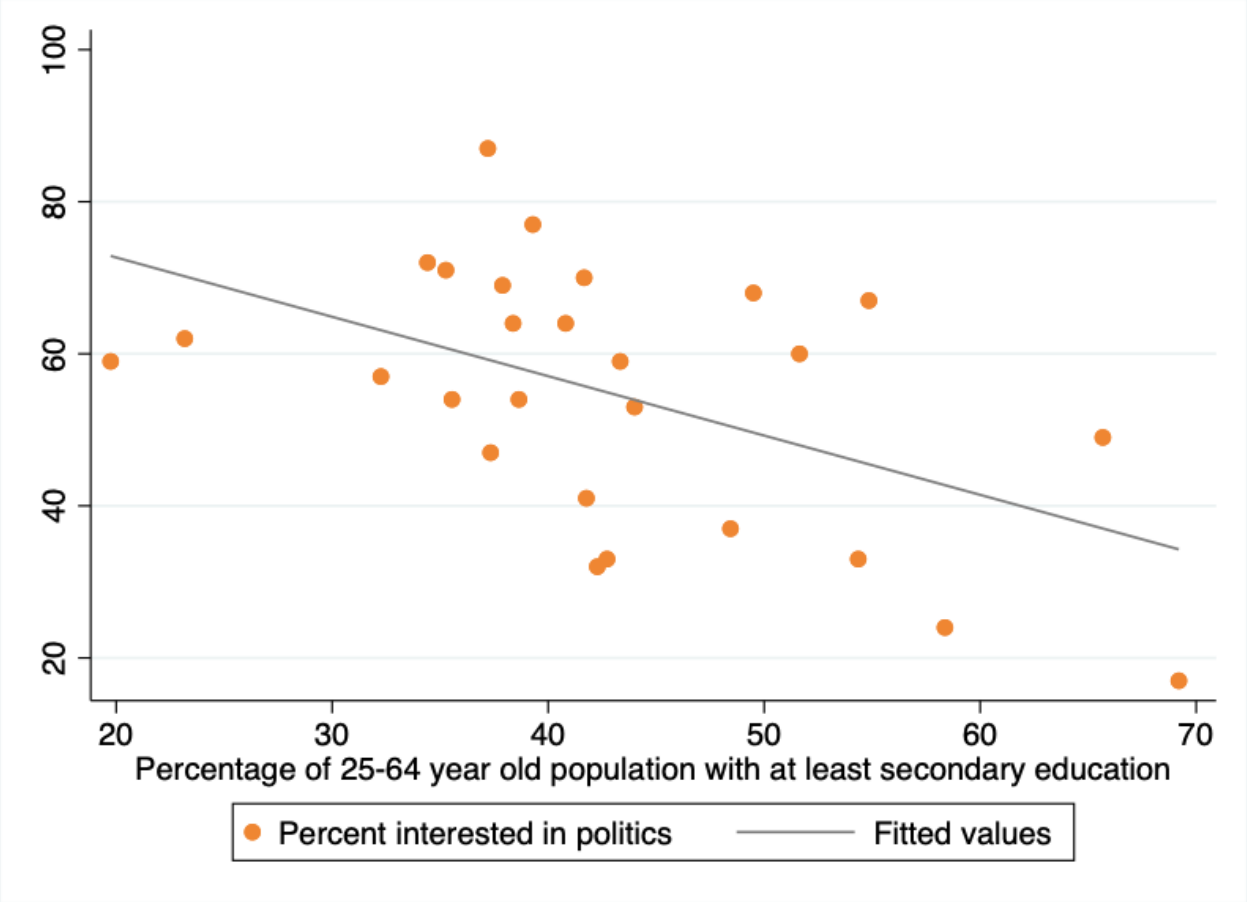


Figure 34: Civic Engagement vs. Secondary Education, Fitted

Data source: OECD (2022), Social Outcomes, url: https://stats.oecd.org/ (Accessed on 26 August 2022).

As the percentage of the 25-64 year old population with at least a secondary education increases, the percentage of the population interested in politics decreases. The downward and somewhat linear trend of the data, reflects the correlation coefficient shown in the table.

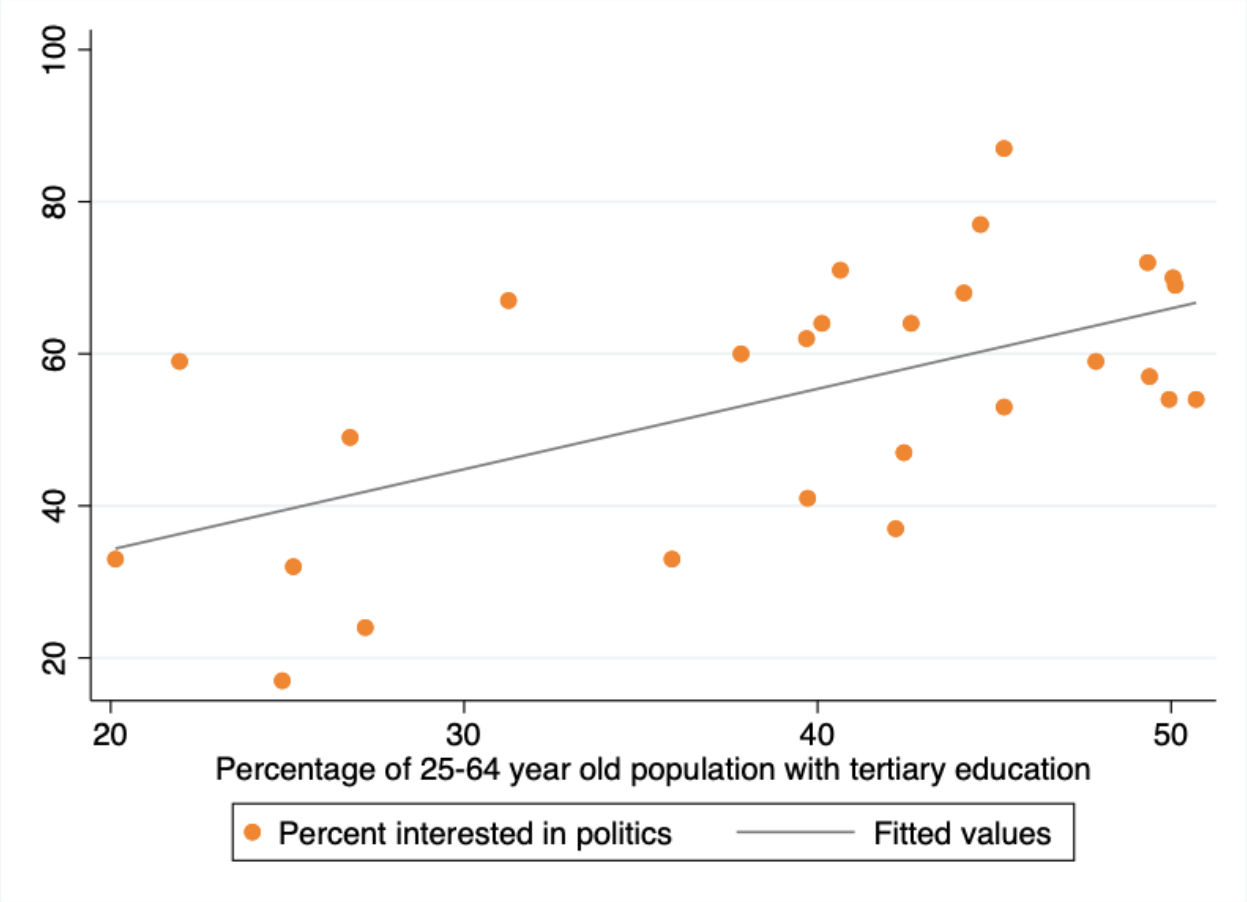


Figure 35: Civic Engagement vs. Tertiary Education, Fitted

Data source: OECD (2022), Social Outcomes, url: https://stats.oecd.org/ (Accessed on 26 August 2022).

As the percentage of the 25-64 year old population with at least a tertiary education increases, the percentage of the population interested in politics increases. The upward and somewhat linear trend of the data, reflects the correlation coefficient shown in the table.

	civic
university	1.058** (3.66)
_cons	13.09 (1.12)
R-squared	0.3487
obs	27
t-values in parentheses, ***P<0.01, **P<0.05, *P<0.1	

Table 14: Regression of University Education and Civic Engagement

Data source: OECD (2022), Transition from School to Work, url: https://stats.oecd.org/ (Accessed on 26 August 2022).

The percentage of the 25-64 year old population having at least a university education has a positive and statistically significant relationship with civic engagement, with a p-value less than 0.01. The regression coefficient indicates that as the university percentage increases by one unit, civic engagement increases by 1.058. There are 27 observations, and the constant is 13.09. The low R-squared value of .3487 indicates that the model does not explain much of the variation in civic engagement.

Section 4: Gender

Variables	wagegap
earlyedu	-0.1290296 (-1.08)
fertility	-4.315818 (-0.69)
edu	0.1160593 (1.29)
womunpaid	-0.1121165* (-1.99)
childmarriage	14.38097* (1.88)
constant	38.29898* (2.10)
observations	24
R-squared	0.4277
t-values in parentheses, ***P<0.01, **P<0.05, *P<0.1	

Table 15: Regression of Wage Gap and a Selection of Variables

Data source: OECD (2019), Early education or primary school participation rate; Fertility rate; Education; Unpaid work time; Laws pertaining to child marriage; url: https://stats.oecd.org/; Gender wage gap; url: https://www.genderindex.org/data/; (Accessed on 23 August 2022)

As early education increases by one unit, the wage gap decreases by .1290296. As fertility increases by one unit, wage gap decreases by 4.315818. As education increases by one unit, wage gap increases by .1160593. The following are statistically significant along with the constant: As the time spent doing unpaid labor increases by one unit, wage gap decreases by 0.1121165. As laws pertaining to child marriage increase by one unit, wage gap increases by 14.38097. The low R-squared value indicates that the model does not explain much of the variation in wage gap.

	womunpaid
mleave	0.0251184 (0.22)
fertility	57.22202** (2.63)
_cons	110.515*** (3.01)
observations	30
R-squared	0.2093
t-values in parentheses, ***P<0.01, **P<0.05, *P<0.1	

Table 16: Regression of Women Unpaid Work, Maternity Leave, and Fertility Rate

Data source: OECD (2022), url: https://stats.oecd.org/.

As weeks of paid maternal leave increases by one unit, women's unpaid work increases by .025. It has a p-value of .829, which is not very statistically significant. As the fertility rate increases by one unit, women's unpaid work increases by 57.222. It has a p-value of .014, which is statistically significant. This could be because the number of hours caring for children increases. The constant is highly statistically significant, and the R-squared is .209, which indicates that the model does not explain much of the variation women's unpaid work.

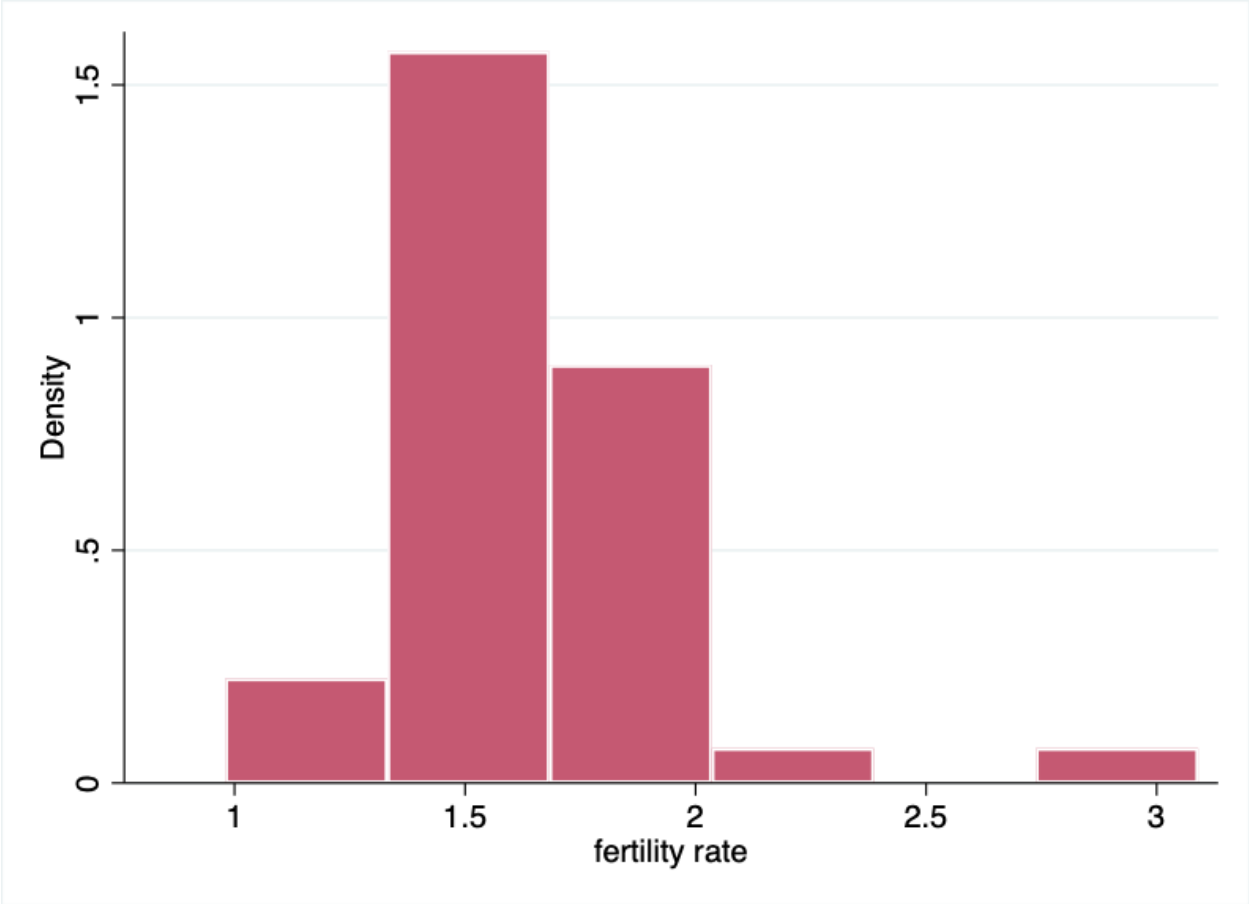


Figure 36: Histogram of Fertility Rate

Data source: OECD (2022), url: https://stats.oecd.org/.

The most common fertility rate is 1.5 for OECD countries.

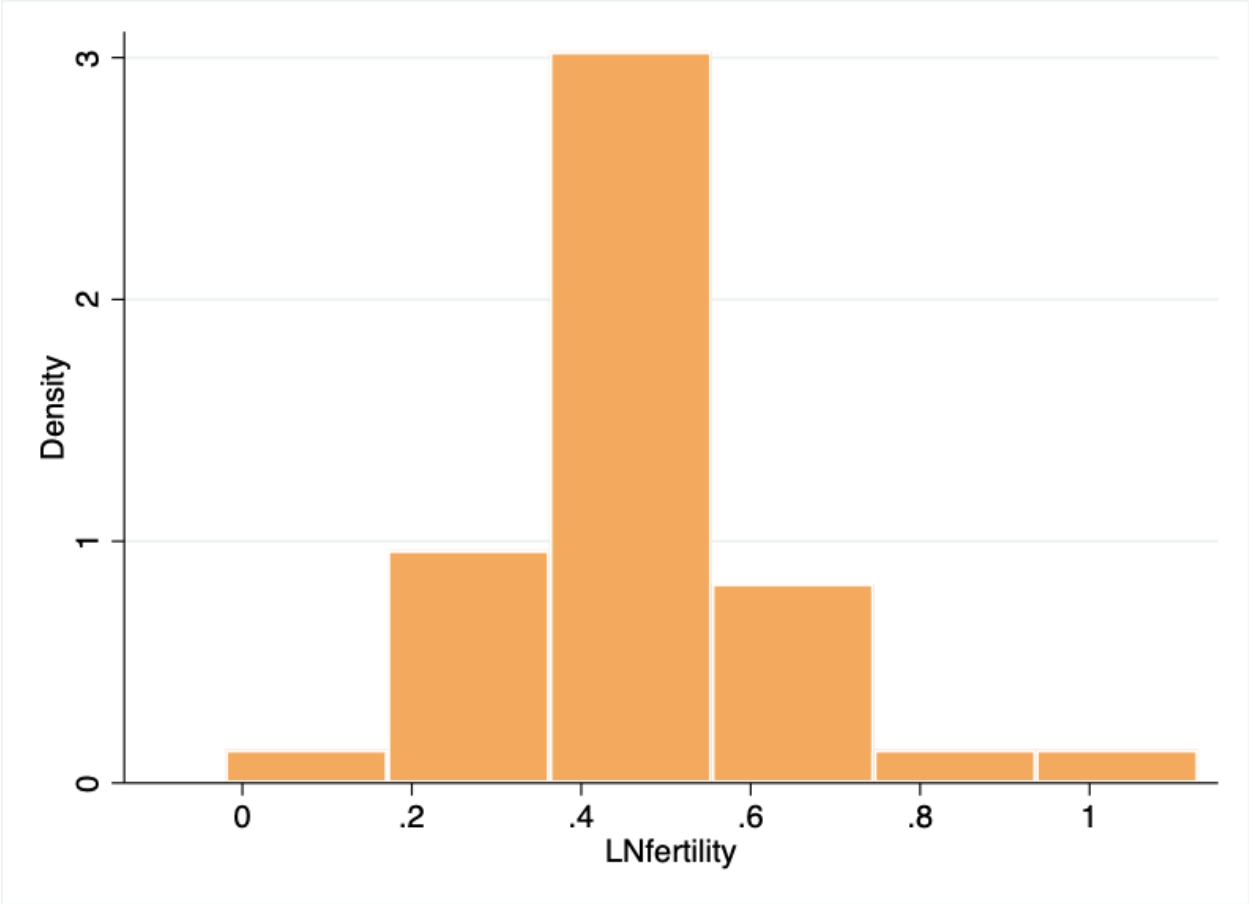


Figure 37: Histogram of Fertility Rate (Log)

Data source: OECD (2022), url: https://stats.oecd.org/.

The distribution of the log of the fertility rates is approximately normal, with the most common value being .4.

	womunpaid
mleave	0.0251184 (0.22)
fertility	57.22202** (2.63)
_cons	110.515*** (3.01)
observations	30
R-squared	0.2093
t-values in parentheses, ***P<0.01, **P<0.05, *P<0.1	

Table 17: Regression of Women Unpaid Work, Maternity Leave, and Fertility (Log)

Data source: OECD (2022), url: https://stats.oecd.org/.

As weeks of paid maternal leave increases by 1%, women's unpaid work decreases by .007%. As the fertility rate increases by 1%, women's unpaid work increases by .467%. This is statistically significant, and indicates that there is a causal relationship. The constant is also highly statistically significant, but the R-squared value is low, indicating that the model does not explain much of the variation in women's unpaid work.

Creative Piece: Social Protections and Economic Equality

The purpose of social protections is to help people manage different life circumstances, such as having children, finding housing, and retiring, which affect their economic well being. While social protections may benefit individuals, I wanted to know if social protections work toward equality among groups. More specifically, I looked into the question: To what extent is the amount spent on social protections indicative of economic equality? I believed there would be a strong positive correlation between the amount of money spent on social protections and the following measures of economic inequality: Poverty Gap, Income Inequality, and Gender Wage Gap. For example, if more money is spent on protections such as paid maternal leave there would be more gender equality in terms of wage. Furthermore, I expected that there would be a causal relationship between at least one of the variables, and I tested this using linear regression analysis.

Variable	Obs	Mean	Std. dev.	Min	Max
Year	925	2014.459	2.905386	2010	2019
Social Expenditure	296	20.66568	5.474122	7.274	31.613
Poverty Gap	718	.1181936	.0431952	.045	.288
Gini Coefficient	718	.3185125	.0603033	.22	.626
Gender Wage Gap	792	15.54823	8.23556	0	39.6

Table 1: Summary Statistics for Merged Data

Data source: OECD (2022), Social Expenditure - Aggregated data: Net Total Social Expenditure, in % GDP, url: https://stats.oecd.org/ (Accessed on 31 August 2022). OECD (2022), Income inequality (indicator). doi: 10.1787/459aa7f1-en (Accessed on 31 August 2022). OECD (2022), Poverty gap (indicator). doi: 10.1787/349eb41b-en (Accessed on 31 August 2022). OECD (2022), Employment: Gender wage gap, url: https://stats.oecd.org/ (Accessed on 31 August 2022).

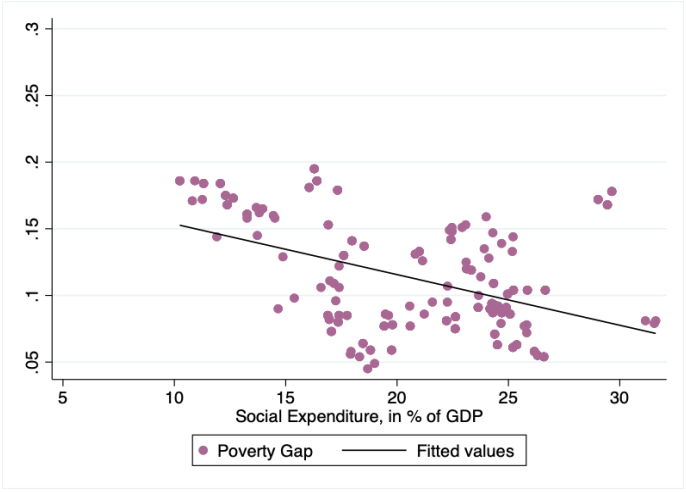
I merged data from four OECD datasets, selecting data from 2010 to 2019. The variables include: the net total social expenditure as a percentage of GDP, the poverty gap measured as the ratio by which the mean income of the poor falls below the poverty line (half the median household income of the total population), income inequality measured by the gini coefficient, and the gender wage gap defined as the difference between median earnings of men and women relative to median earnings of men. Table 1 shows the summary statistics from the merged dataset, which include the variables and their number of observations, mean, standard deviation, minimum, and maximum. A main takeaway from the table is that there are 296 observations for social expenditure. This gives context to my analysis, which includes three linear regressions using social expenditure as the independent variable.

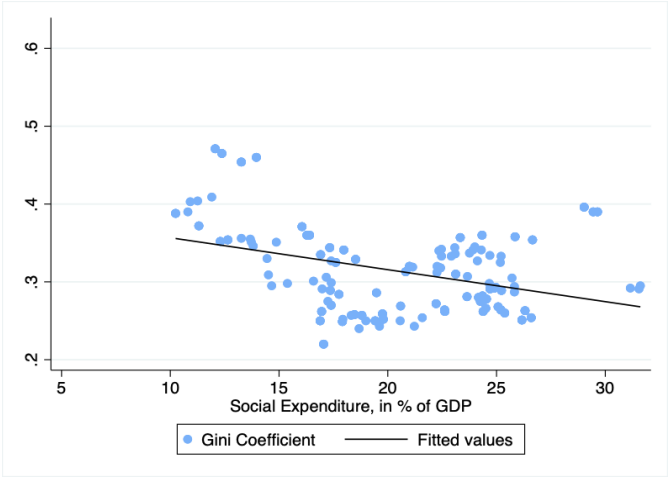
	Social Expenditure
Poverty Gap	-0.4613
Gini Coefficient	-0.3727
Gender Wage gap	-0.1644

Table 2: Correlations for Social Expenditure

Data source: OECD (2022), Social Expenditure - Aggregated data: Net Total Social Expenditure, in % GDP, url: https://stats.oecd.org/ (Accessed on 31 August 2022). OECD (2022), Income inequality (indicator). doi: 10.1787/459aa7f1-en (Accessed on 31 August 2022). OECD (2022), Poverty gap (indicator). doi: 10.1787/349eb41b-en (Accessed on 31 August 2022). OECD (2022), Employment: Gender wage gap, url: https://stats.oecd.org/ (Accessed on 31 August 2022).

Table 2 shows the correlation coefficients of each dependent variable relative to social expenditure, describing their linear associations found in the data. The poverty gap, gini coefficient, and gender wage gap, each have a negative correlation to social expenditure. This indicates that as one increases, the other decreases. Overall, it seems that as more money is spent on social protections, economic inequality decreases.





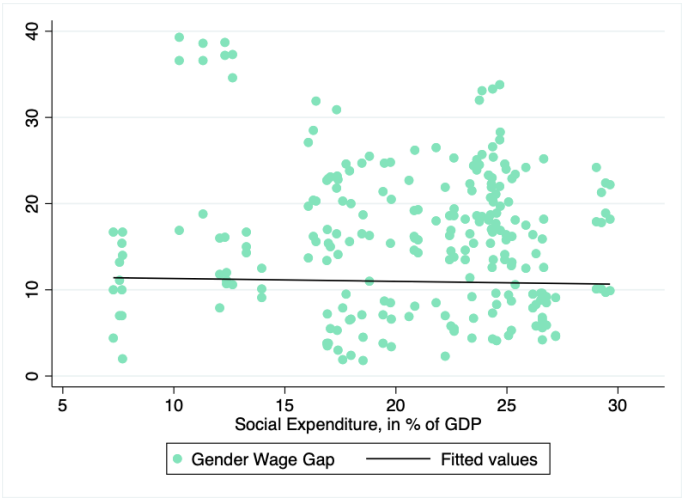


Figure 1: Economic Inequality vs. Social Expenditure, Fitted, 2010- 2019,

Data source: OECD (2022), Social Expenditure - Aggregated data: Net Total Social Expenditure, in % GDP, url: https://stats.oecd.org/ (Accessed on 31 August 2022). OECD (2022), Income inequality (indicator). doi: 10.1787/459aa7f1-en (Accessed on 31 August 2022). OECD (2022), Poverty gap (indicator). doi: 10.1787/349eb41b-en (Accessed on 31 August 2022). OECD (2022), Employment: Gender wage gap, url: https://stats.oecd.org/ (Accessed on 31 August 2022).

The scatterplots in Figure 1 reflect the correlation coefficients from the previous table, and show how the points are distributed relative to their regression lines. The poverty gap and the gini coefficient form a moderately linear distribution that descends as social expenditure increases, reflecting their moderate correlation coefficients. Gender wage

gap, on the other hand, does not resemble a line, which reflects its weak correlation coefficient. Poverty gap has a regression line with a slightly steeper slope compared to the gini coefficient, but both are steeper than the almost horizontal regression line for gender wage gap. This means that, if there were to be any causal relationships, a one unit increase in social expenditure would impact the poverty gap the most, and gender wage gap the least.

	Poverty Gap	**Gini Coefficient**	**Gender Wage Gap**
Social Expenditure	-.0038002*** (-7.58)	-.0041082*** (-5.90)	-.0818321 (-0.84)
Constant	.1916323*** (18.02)	.3978564*** (26.94)	17.62226 (8.45)
Number of Observations	234	234	236
R-squared	0.1987	0.1306	0.0030
t-values in parentheses, ***P<0.01, **P<0.05, *P<0.1			

Table 3: Regression of Economic Inequality vs. Social Expenditure, 2010- 2019

Data source: OECD (2022), Social Expenditure - Aggregated data: Net Total Social Expenditure, in % GDP, url: https://stats.oecd.org/ (Accessed on 31 August 2022). OECD (2022), Income inequality (indicator). doi: 10.1787/459aa7f1-en (Accessed on 31 August 2022). OECD (2022), Poverty gap (indicator). doi: 10.1787/349eb41b-en (Accessed on 31 August 2022). OECD (2022), Employment: Gender wage gap, url: https://stats.oecd.org/ (Accessed on 31 August 2022).

Lastly, to find out about causality, I found the regression coefficients, their statistical significance, and R-squared values. According to table 3, the poverty gap and the gini coefficient have highly statistically significant results, while gender wage gap does not. However, the low R-squared values indicate that social expenditure does not explain much of the variation in those measures of economic equality. Specifically, a one unit increase in social expenditure causes the poverty gap to decrease by .0038002, but only accounts for .1987% of the variation. Similarly, a one unit increase in social expenditure causes the gini coefficient to decrease by .0041082, but only accounts for .1306% of the variation.

In conclusion, the OECD data tells us that there are negative correlations between the amount spent on social protections and measures of economic inequality. Of the measures I analyzed that are impacted by social expenditure, only a small percentage of their variation is due to social expenditure. That said, social expenditure causes a slight decrease in the poverty gap and income inequality, but does not have a significant impact on gender wage gap.

Roadmap

In SOCI 109, I learned how to look for sociological data using databases such as OECD, Eurostat, and World Bank. I learned how to clean the data, create visualizations, and analyze data using Stata, as well as how to interpret sociology research papers, think about research questions, and answer my own research questions. I most enjoyed testing out different ways to customize graphs using Stata commands and features while compiling and editing the work I did in this class for this portfolio. The most important thing I learned about analysis of sociological data is to not just get statistical results, but to be able to discuss with others about what it means in context.

I would like to improve my quantitative research and analysis skills by reading more about different topics, such as education, mental health, and gender, as well as getting involved in data collection. In the future I plan to continue doing the sociology elective track as a data science major, and look for research opportunities in sociology research.