

## **Commuting time from home to work as a component of work-life balance dimension in the framework of quality of employment indicators – evidence from Israeli Labour Force Survey**

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## Introduction

The *Statistical Framework on Measuring Quality of Employment* is composed of many different indicators that cover various dimensions of quality of employment. One of these dimensions is work-life balance, based on the understanding that the quality of employment is influenced by how it interferes with the worker's personal life quality and the available amount of time for leisure and/or family. One of the factors that reduce personal free time is the *commuting time between home and work*.

Commuting time is an important factor for most employed persons. It influences the work-life balance and must be taken into account when planning one's work and leisure time. Commuting may take considerable time and have economic consequences in terms of transportation costs and influence where businesses and employees choose to settle. It may have different impacts on different groups of employees and, for instance, be particularly important for employees with young children. Commuting may also have legal and economic consequences, for instance in relation to accidents on the way to or from work. At the societal level, commuting plays a key role in urban planning and in the planning of public transport. For Statistical geographical classification: commuting data helps statistical agencies define statistical geographical units, such as functional urban areas and labour market areas.

The growing possibilities to work from distance that comes with technological development allows in some cases employees to work while commuting, e.g. on the train or bus to work. The question is then whether to consider the time spent as commuting time or work time? Hence, new ways of teleworking call for a reconsideration of the concept of commuting time and its measurement.

In Israel the Commuting time subject was investigated in the Social Survey from 2002, the question is with interval possible answers (0-14 min, 15-29 min and ect.). From 2018, a direct question on the time to work was added to Labour Force Survey, as a continuous variable.

In this work, we will represent first findings of the analysis of this variable by several characteristics. And for the first time new variable of "time out of work" among employed persons was generated and estimated.

## Methodology and definitions (new indices)

**Employed persons** - employed persons with commuting time  $>0$ , not included absent from work neither working from home.

22% of employed persons (not included absent from work) had non-known in almost one of the next variables: commuting time, number of actual working-days or mean hour per day.

5% of employed persons (not included absent from work) worked from home.

The findings based of 73% of employed persons (not included absent from work).

**Commuting time** – A direct question among employed persons, the index is Mean duration of commuting time between work and home (one way). Maximum commuting time is 240 min.

**Employed persons with commuting time to work more than hour** - There is some possible attitudes to decide what long commuting time, absolute and relative. After some checking on the data, we decided to take threshold 60 mins and more, about 15 percent of the employed persons.

Following absence of time use survey, we tried to learn about the time use in Israel indirectly. We can divide the day of the worker to three main parts: work, sleeping and arrangements and leisure time. The internal division change from individual to other, but it makes sense that we can estimate these parts among common groups.

We estimated the first component by LFS and calculate the working hours and the commuting time (together).

We estimated the second component by social survey 2017 - the sleeping's hours (about 7 hours) and add 1 hour per day to other arrangements.

The third component of the day is leisure or potential leisure time.

#### Definitions:

$L_w$ : Number of potential leisure's hours per week

$L_d$ : Number of potential leisure's hours per working days

$WH_w$ : actual working hours per week (source: LFS)

$CT_d$ : commuting time (one way) per day (source: LFS)

$NWD_w$ : actual working days per week (source: LFS)

**Table 1. Actual working days, estimate from LFS (for population groups \* sex\* age\*extent of work**

workings days		Men			Women		
		Jews	Arabs	Others	Jews	Arabs	Others
Full-time work	15-17	5.18	5.18	5	4.86	5.51	5.17
	18-24	5.18	5.33	5.53	5.13	5.13	5.17
	25-34	5.15	5.35	5.27	5	5.1	5.23
	35-44	5.13	5.35	5.21	5.02	5.15	5.3
	45-54	5.19	5.36	5.36	5.05	5.15	5.22
	55-64	5.23	5.38	5.15	5.07	5.18	5.21
	65+	5.24	5.46	5.33	5.13	5.58	5.42
Part-time work	15-17	2.34	2.41	2.53	2.18	2.12	2.24
	18-24	3.15	3.08	3.13	3.2	3.39	3.46
	25-34	3.28	3.54	3.36	3.65	3.94	3.74
	35-44	3.47	4.01	3.78	3.79	4.34	4.25
	45-54	3.62	3.99	3.86	3.86	4.35	4.26
	55-64	3.59	4.05	3.3	3.89	4.32	4.29
	65+	3.71	4.51	3.68	3.68	3.77	3.98

#### Constants:

7 days per week

24 hours per day

8 hours for sleeping and other arrangements (based on social survey 2017)

**$L_w$ : Number of potential leisure's hours per week**

$$L_w: 7 \times 24 - \{WH_w + [CT_d \times 2 \times NWD_w]\} - 8 \times 7$$

$$L_w = 112 - \{WH_w + [CT_d \times 2 \times NWD_w]\}$$

**$L_d$ : Number of potential leisure's hours per working days**

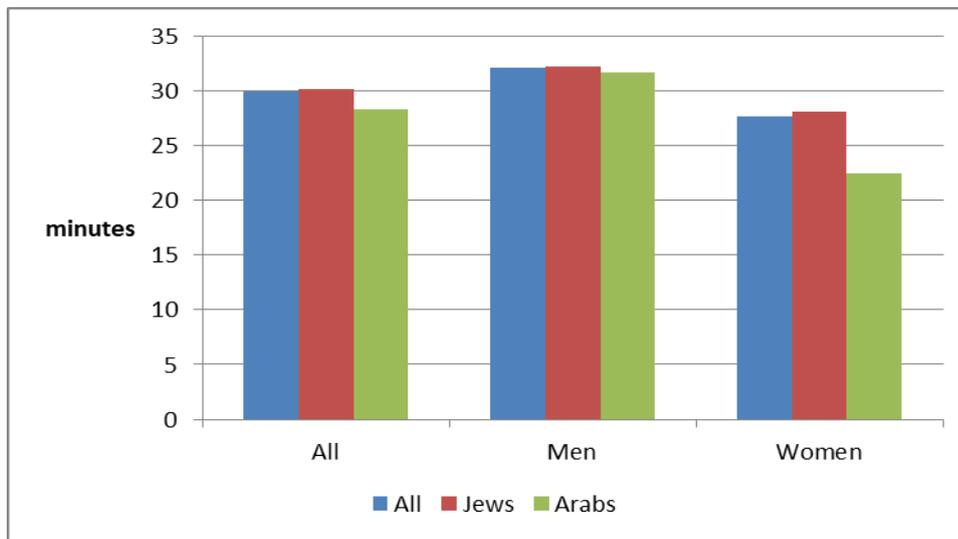
$$L_d: \frac{(24 \times NWD_w) - [WH_w + (CT_d \times 2 \times NWD_w)] - 8 \times NWD_w}{NWD_w}$$

$$L_d = 16 - \frac{[WH_w + (CT_d \times 2 \times NWD_w)]}{NWD_w} = 16 - \frac{WH_w}{NWD_w} - CT_d \times 2$$

## Main findings

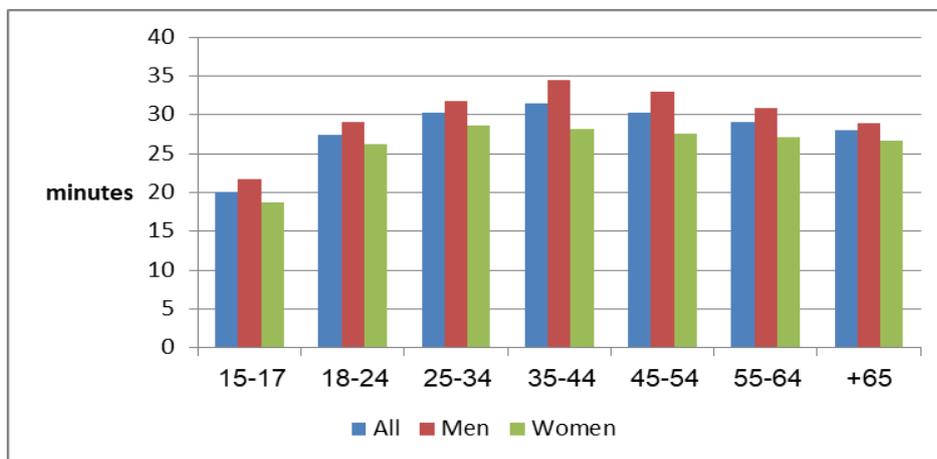
The average duration time between home and work in Israel in 2018 was 29.89 mins. The commuting time among men was longer than among women, 32.06 mins compared with 27.63 mins. The commuting time among Arabs was 2 mins less than among Jews. The difference was among women, the commuting time among Jewish women longer than among Arabic women, about 5.5 mins.

**Figure 1. Commuting time (one way) by population group and sex, 2018**



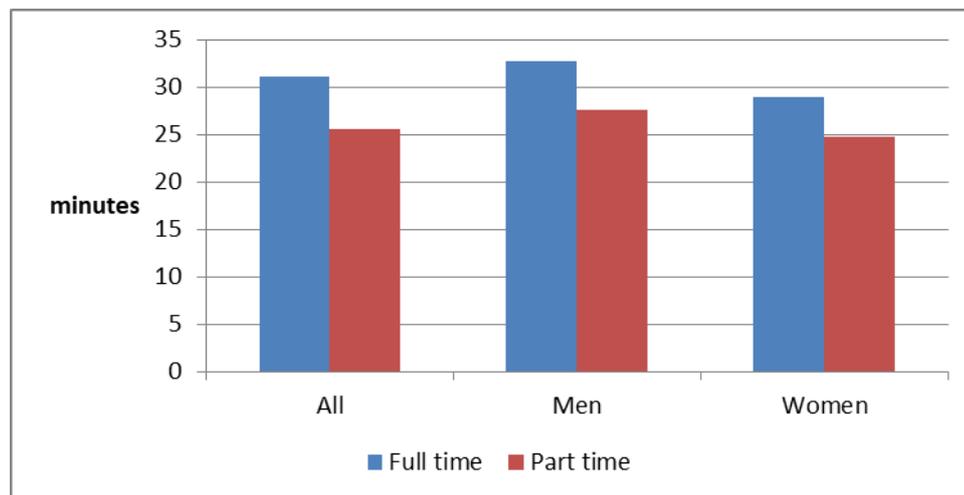
The commuting time in the prime working age groups (25-54) was longer than other age groups about 30-31 mins compared with 20 mins among youngers (15-17) and 28 mins among elders (65+). The difference between men and women among aged 35-44, was more than 6 mins.

**Figure 2. Commuting time (one way) by age and sex, 2018**



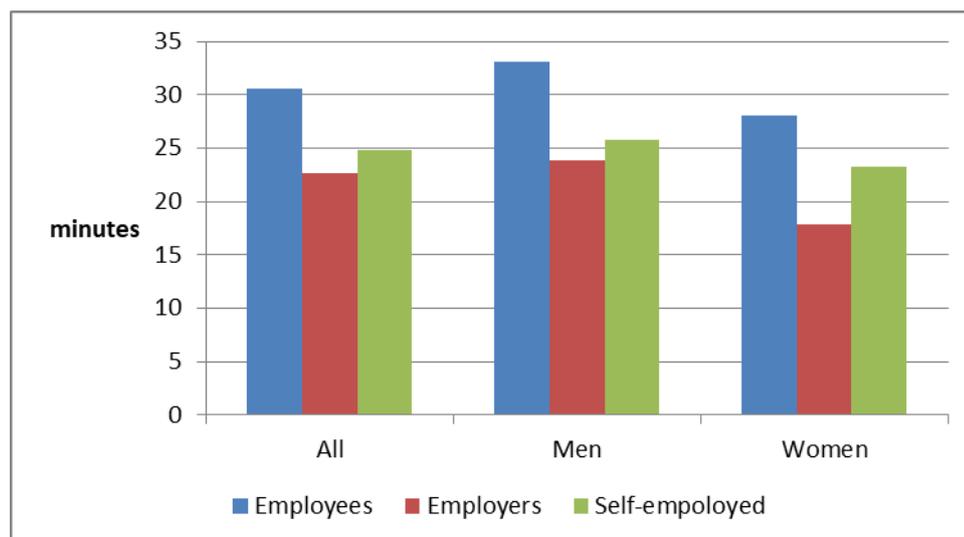
The commuting time among employed persons who worked usually full-time was longer than among those who worked usually part-time, 31.04 mins compared with 25.59 mins.

**Figure 3. Commuting time (one way) by extent of work-usual and sex, 2018**



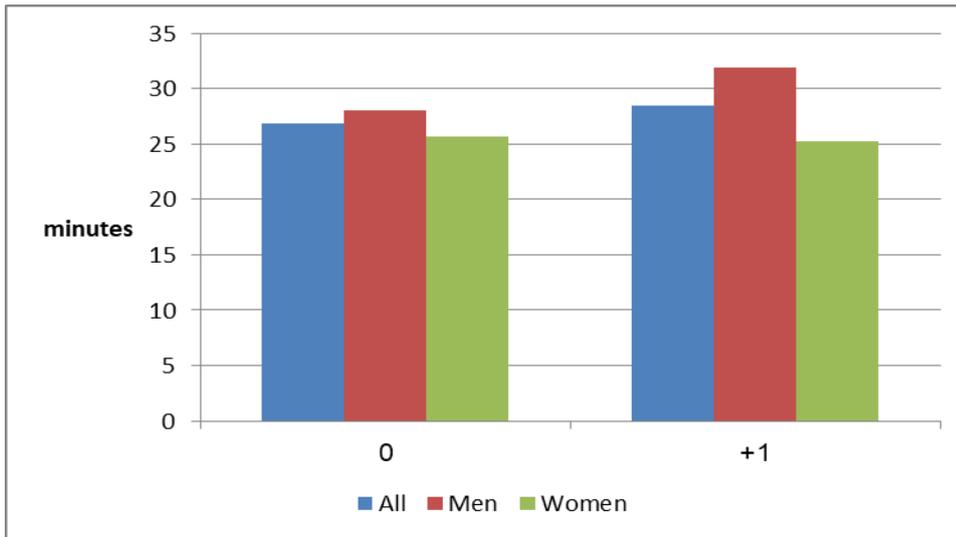
The commuting time among employees was longer than other status of employments, 30.5 mins compared with 22.7 among employers and 24.8 mins among self-employed. The main difference between men and women was among employers, 23.8 mins compared with 17.8, but among self-employed the difference was only 2.5 mins.

**Figure 4. Commuting time (one way) by status of work and sex, 2018**



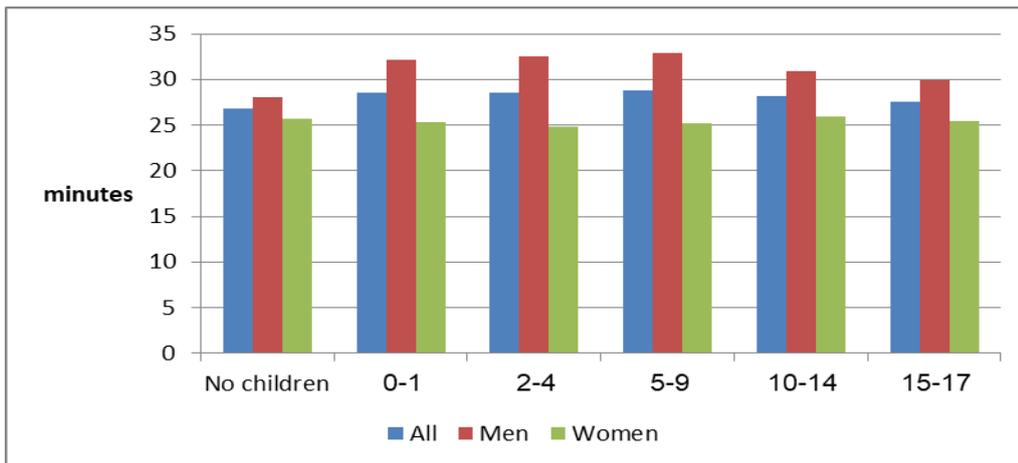
The commuting time among women with or without children in household was quite similar, but among men there was difference, the commuting time among men with children was higher than men without children in four mins.

**Figure 5. Commuting time (one way) by number of children in household and sex, 2018**



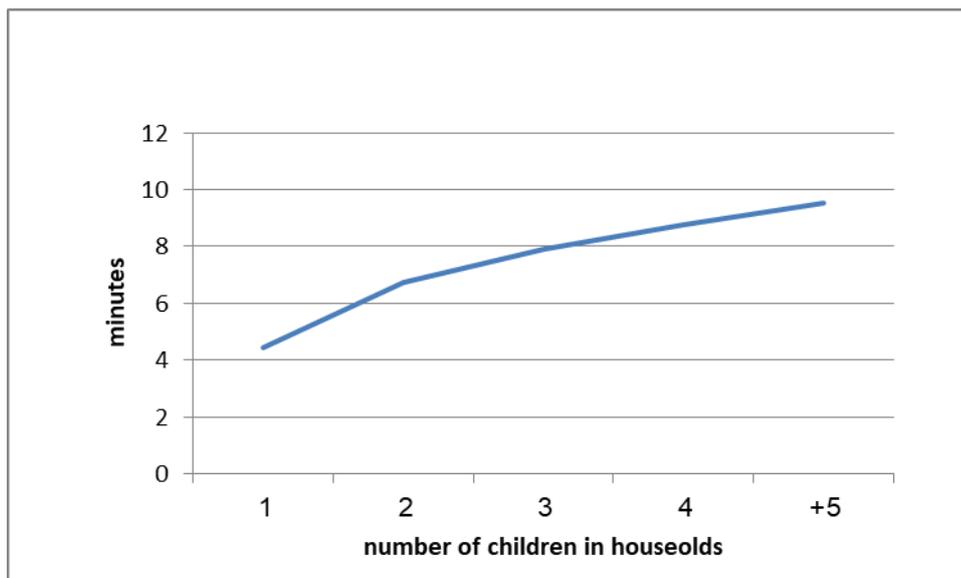
The gap between men and women were higher when the youngest child was 0-9 (6-7 mins), than when the youngest child was bigger (10-17) (4-5 mins).

**Figure 6. Commuting time (one way) by age of youngest child in household and sex, 2018**



The gap between men and women was higher as such as number of children in household were higher: the commuting time of women with 4 children was 23 mins, and with 5 or more children was 21.76 mins.

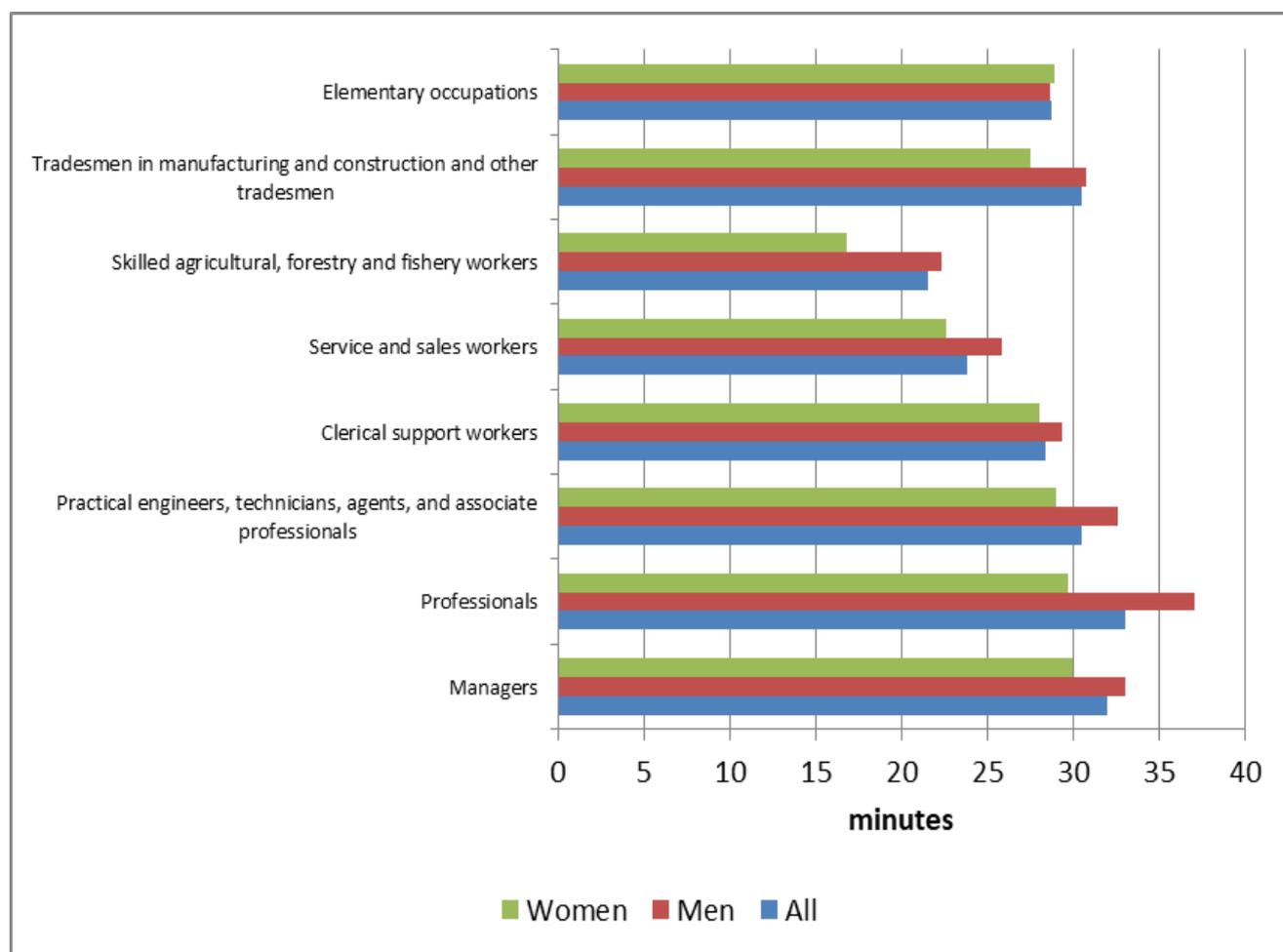
**Figure 7. Commuting time (one way), gap between men and women, by numbers of children in household, 2018**



## Commuting time by occupations and sex

The commuting time among Elementary occupations employed persons, was the highest 36 mins, compared to other employed persons. Among Professionals employed persons the commuting time was 33 mins, and among Skilled agricultural, forestry and fishery employed persons the commuting time was only 21.5 mins. The highest gap between men and women was among Professionals employed persons, men spent 7 mins more than women, on the other side among Clerical support employed persons the gap was only 1.3 mins and among Elementary occupations employed persons women's commuting time higher than men (about 0.5 min).

**Figure 8. Commuting time (one way) by occupations and sex, 2018**

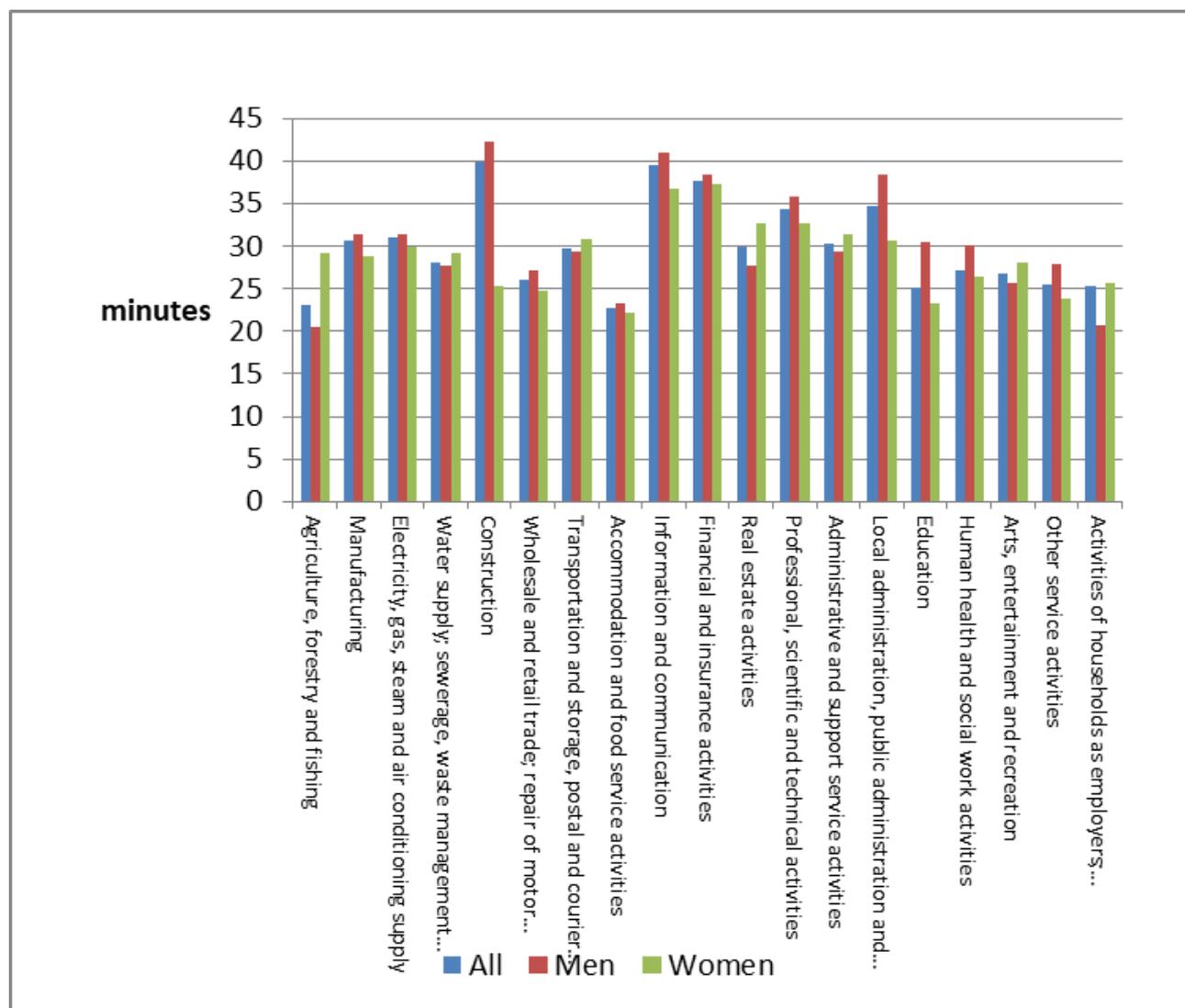


## Commuting time by industry and sex

There was variance in commuting time with respect to industries employed persons, the highest commuting time were among Construction employed persons and among Information and communication employed persons, about 39.5 mins. The lowest commuting time was among Accommodation and food service activities employed persons and Agriculture, forestry and fishing employed persons about 22-23 mins.

The commuting time of men were higher than women among the next industries: Construction (17 mins), Local administration, public administration, defence and compulsory social security and education (more than 7 mins). On the other side the commuting time of women were higher than men among the next industries: Agriculture, forestry and fishing (about 8.5 mins) Real estate activities and Activities of households as employers (about 5 mins).

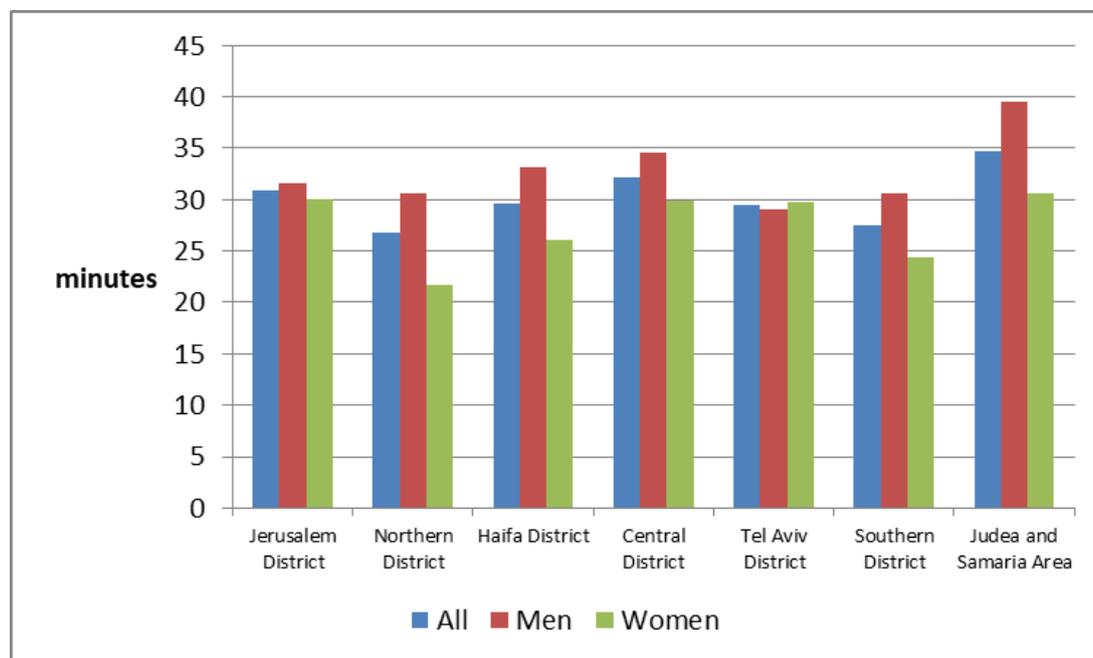
**Figure 9. Commuting time (one way) by industries and sex, 2018**



## Commuting time by district of residence

The employed persons with the highest commuting time lived in Judea and Samaria Area (34.6 mins), the employed persons with the lowest commuting time lived in Northern and southern Districts (26-27 mins). The highest gap between men and women were on Judea and Samaria Area and southern District (about 9 mins), on the other side the commuting time of women in Tel Aviv district is higher than men.

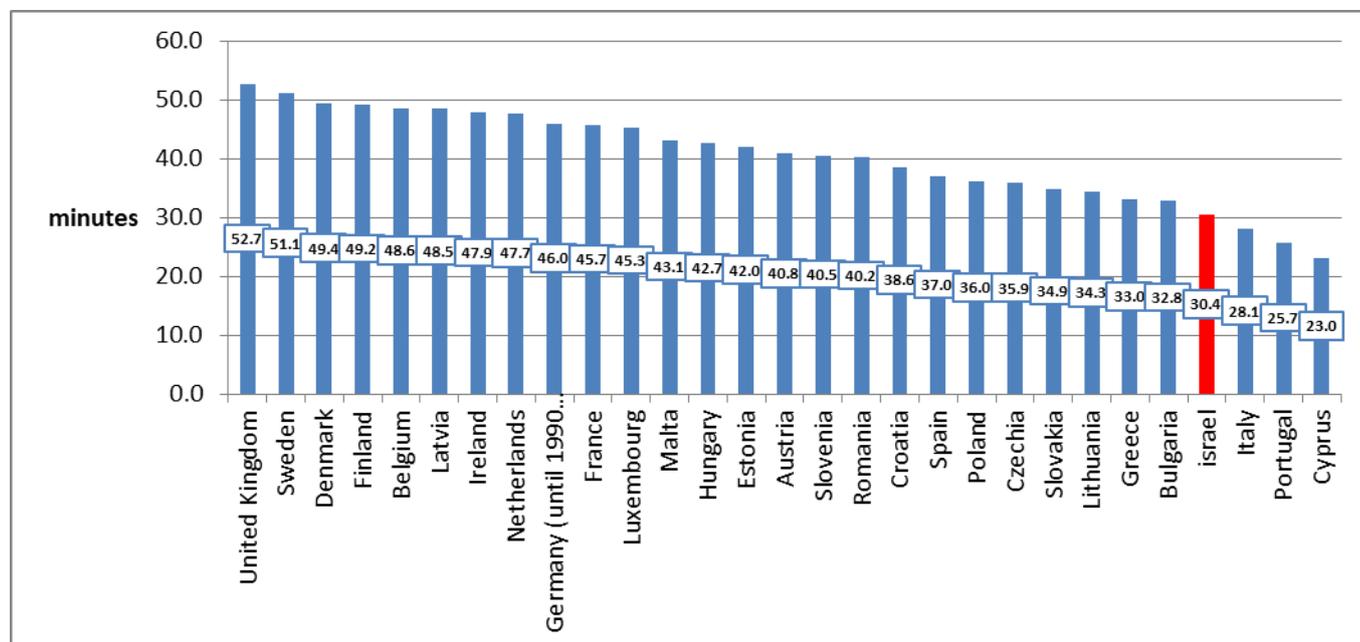
**Figure 10. Commuting time (one way) by district of residence and sex, 2018**



## International comparison

In the Eurostat countries mean duration of commuting time one-way between work and home (aged 25-64 in 2015) was higher than in Israel, 42 mins compare to 30.4 mins in Israel, the gap didn't change among men neither women. Israel, relatively, had short mean duration of commuting time one-way between work and home compare to Eurostat countries. The differences between countries can be explained by many reasons, as, size of countries, the quality of public transport and traffic at roads and the norms of each community how to decide the combination between place of residence and place of work.

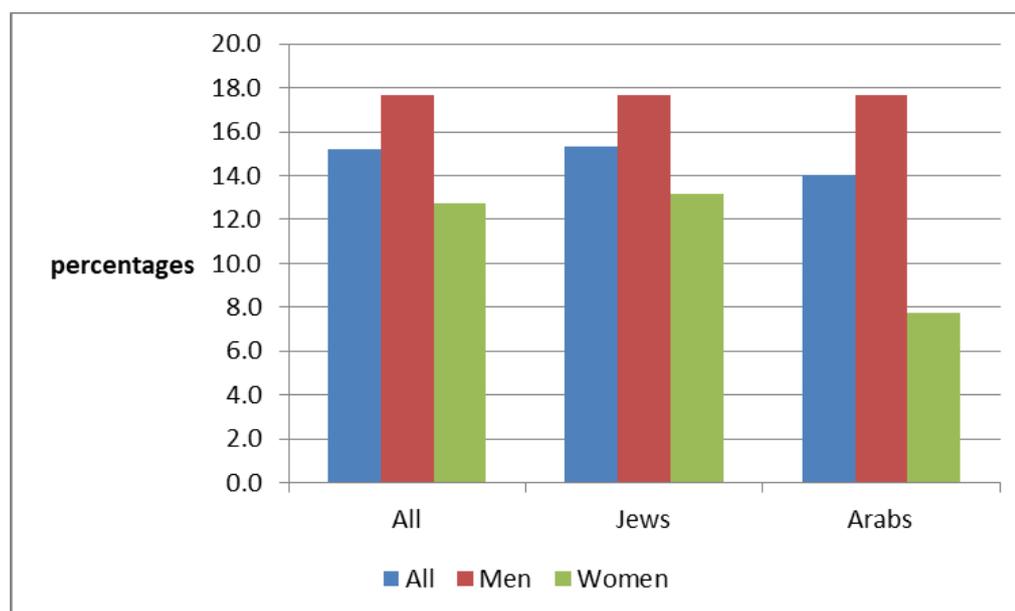
**Figure 11. Commuting time (one way) international comparison, aged 25-64**



## Employed persons with commuting time to work more than one hour

15.2% of employed persons had commuting time more than one hour, 17.6% among men (no difference among Arabs and Jews) and 12.7% among women 13.2% among Jewish women employed persons and 7.7% among Arabs women.

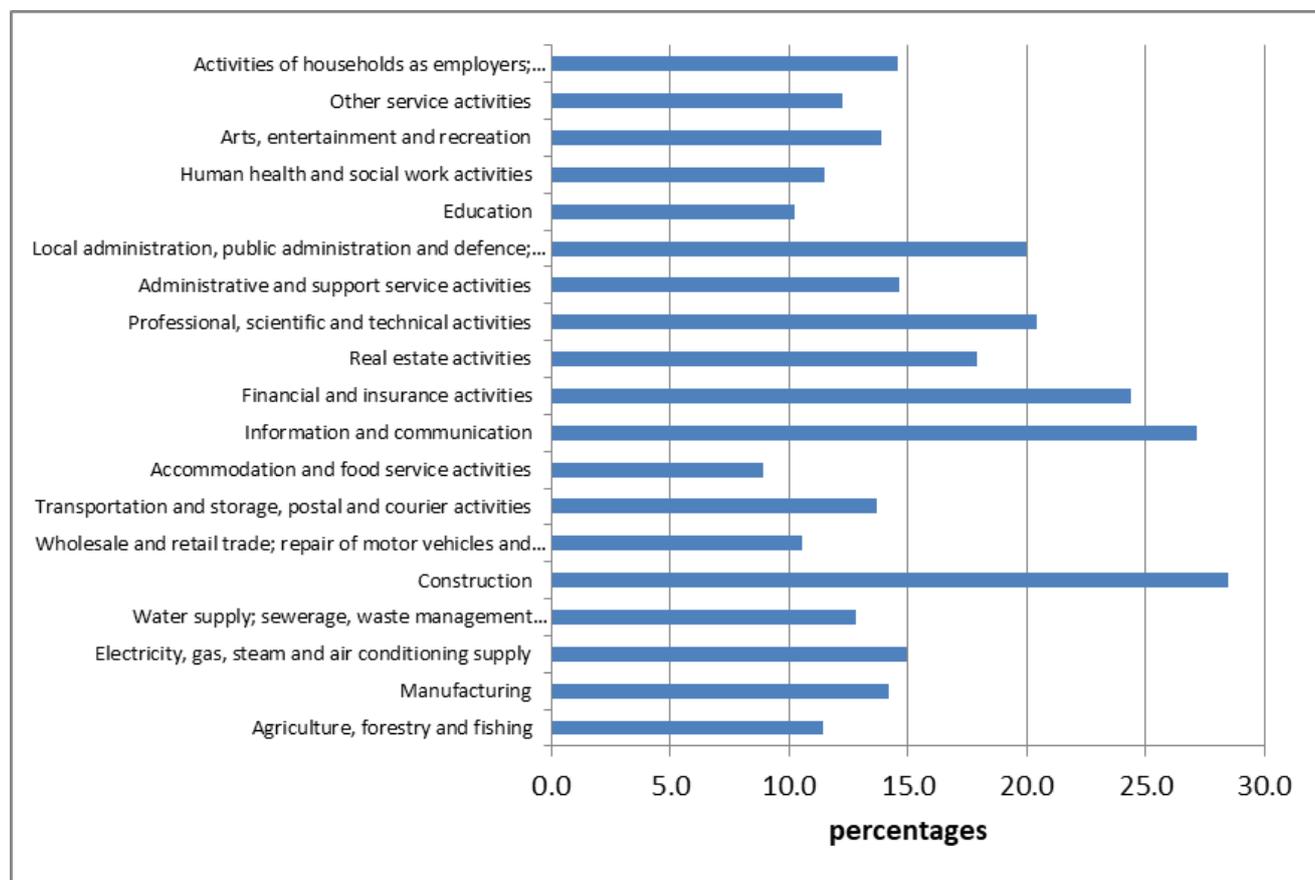
**Figure 12. Share of employed person with commuting time (one way) more than one hour, by population group and sex, 2018**



The share of women among employed persons with a long commuting time was 41%, lower than their share among employed persons with commuting time (without absent temporarily from work).

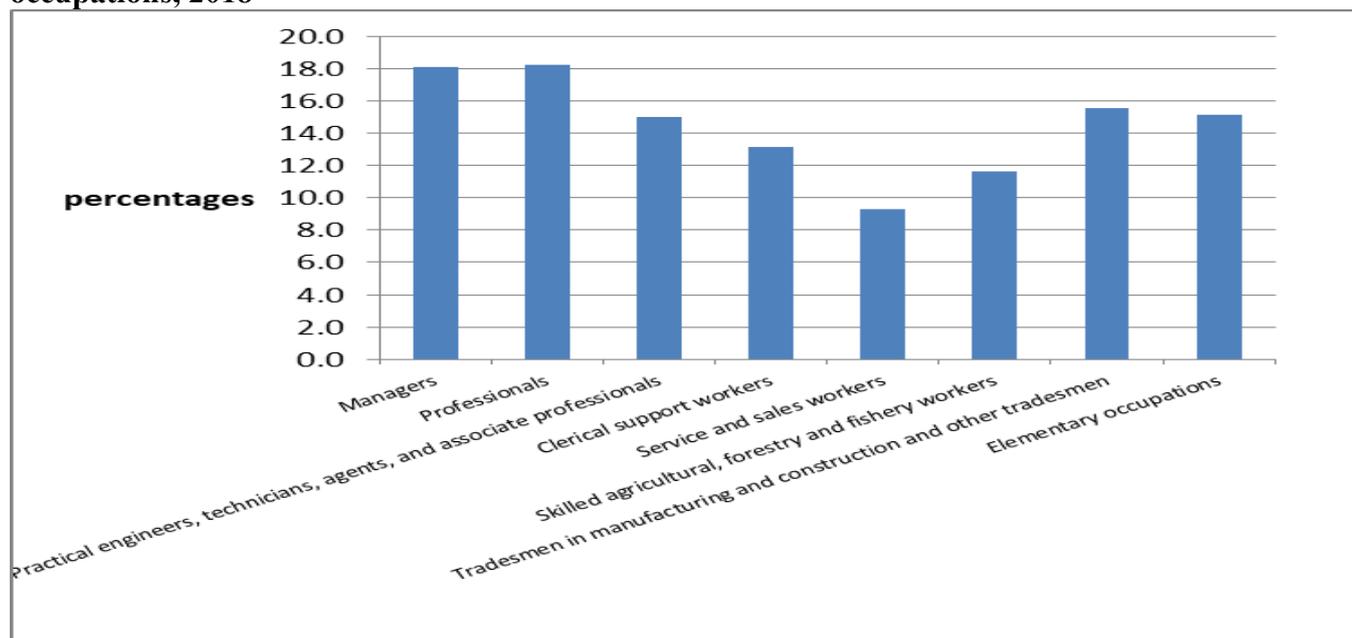
28.5% of employed persons in construction and, 27.1% of employed persons in Information and communication had commuting time more than one hour, but only 8.9 of employed persons in Accommodation and food service activities and 10.2% in education had commuting time more than one hour. 12.8% among employed persons with commuting time more than one hour worked in Manufacturing; Mining and quarrying, 10.9% worked in Information And Communication and 10.6% in Professional, Scientific And Technical Activities.

**Figure 13. Share of employed person with commuting time (one way) more than one hour, by industries, 2018**



18.2% among employed persons in managers and 18.1% among Professionals occupations had commuting time more than one hour, but only 9.3% in Service and sales workers occupations had commuting time one hour and more. 35.7% among employed persons with commuting time more than one hour worked in Professionals occupations, but only 5.8% worked in Elementary occupations and 0.5% worked in Skilled agricultural, forestry and fishery workers.

**Figure 14. Share of employed person with commuting time (one way) more than one hour, by occupations, 2018**



21.2% of employed persons among Judea and Samaria Area and 17.4% among Central District had commuting time more than one hour; on the other hand just 10.9% among Tel Aviv District and 12.0% among Northern District had commuting time more than one hour.

## Potential leisure time (not on work neither sleeping)

Table 1. Employed persons (not included absent from work), by time not in work neither sleeping, and other characteristics

	Thousand	Percentages	I = Time not in work, commuting time and 8 hours a day for						Average hours per week of potential leisure	Average hours per workingdays in a week of potential leisure
			hours per week							
			0-14	15-27	28-55	56-69	70-83	84+		
All	2637.7	100.0	..	0.2	13.4	47.3	21.2	17.9	69.3	9.0
Men	1330.2	100.0	..	0.3	20.7	52.8	14.6	11.6	65.1	8.6
Women	1307.6	100.0	-	0.0	5.9	41.7	28.0	24.4	73.7	9.5
Jews	2167.4	100.0	..	0.1	13.4	45.7	21.5	19.2	69.8	9.0
Arabs	375.6	100.0	..	0.3	11.8	55.7	20.7	11.5	67.3	9.1
15-17	24.6	100.0	-	-	..	8.0	10.2	80.8	94.2	10.9
18-24	246.6	100.0	..	..	7.3	41.8	21.6	29.2	74.2	9.4
25-34	613.1	100.0	..	0.1	13.3	48.7	21.4	16.5	68.9	8.9
35-44	675.5	100.0	..	0.2	15.5	50.3	21.1	12.9	67.2	8.8
45-54	539.3	100.0	..	0.2	15.5	49.9	21.3	13.1	67.3	8.9
55-64	388.2	100.0	..	0.1	13.6	47.5	21.3	17.4	69.1	9.1
65+	150.5	100.0	-	..	8.1	33.0	22.3	36.6	76.6	10.1

Table 2. Full-time Employed persons (not included absent from work), by time not in work neither sleeping, and other characteristics

	Thousand	Percentages	I = Time not in work, commuting time and 8 hours a day for						Average hours per week of potential leisure	Average hours per workingdays in a week of potential leisure
			hours per week							
			0-14	15-27	28-55	56-69	70-83	84+		
All	1861.3	100.0	..	0.2	18.9	66.6	14.2	-	61.7	8.3
Men	1074.2	100.0	..	0.3	25.7	65.1	8.9	-	59.7	8.2
Women	787.1	100.0	-	0.1	9.8	68.6	21.5	-	64.5	8.6
Jews	1476.8	100.0	..	0.2	19.7	66.6	13.5	-	61.5	8.2
Arabs	312.3	100.0	..	0.3	14.1	66.7	18.8	-	63.1	8.7
15-17	3.0	100.0	-	-	..	64.0	27.7	-	65.0	8.7
18-24	146.4	100.0	..	..	12.2	69.9	17.7	-	63.3	8.6
25-34	442.2	100.0	..	0.1	18.4	67.2	14.3	-	61.9	8.3
35-44	514.1	100.0	..	0.3	20.4	65.7	13.7	-	61.4	8.3
45-54	407.2	100.0	..	0.2	20.5	65.7	13.5	-	61.4	8.3
55-64	274.1	100.0	..	0.2	19.2	66.9	13.6	-	61.6	8.3
65+	74.3	100.0	-	..	16.4	66.1	17.3	-	62.7	8.5

Table 3. Part-time Employed persons (not included absent from work), by time not in work neither sleeping, and other characteristics

	Thousand	Percentages	I = Time not in work, commuting time and 8 hours a day for						Average hours per week of potential leisure	Average hours per workingdays in a week of potential leisure
			hours per week							
			0-14	15-27	28-55	56-69	70-83	84+		
All	776.5	100.0	-	-	..	1.0	38.1	61.0	87.6	10.8
Men	256.0	100.0	-	-	..	1.2	38.5	60.3	87.5	10.5
Women	520.4	100.0	-	-	..	0.9	37.8	61.3	87.6	10.9
Jews	690.6	100.0	-	-	..	0.9	38.7	60.4	87.5	10.7
Arabs	63.3	100.0	-	-	..	1.1	30.3	68.4	88.0	11.2
15-17	21.6	100.0	-	-	-	..	7.7	92.2	98.3	11.2
18-24	100.2	100.0	-	-	..	0.6	27.4	72.0	90.1	10.6
25-34	171.0	100.0	-	-	-	0.9	40.0	59.1	87.0	10.5
35-44	161.5	100.0	-	-	..	1.5	44.6	53.8	85.8	10.6
45-54	132.1	100.0	-	-	..	1.1	45.2	53.6	85.7	10.7
55-64	114.1	100.0	-	-	-	0.9	40.0	59.2	87.0	11.0
65+	76.2	100.0	-	-	..	0.6	27.1	72.2	90.1	11.7

The main influence on potential leisure (time not in work neither sleeping) is extent of work, however there was gap between men and women, full time women's employed persons has 5 hour per week as a potential leisure more than men, and 0.4 hour more per working day, but among part-time employed persons there was no gap in weekly level, but by working day level – women had 0.4 hours more than men.

Full time Arabs employed persons had 1.5 hours more than Jews in weekly hours, and 0.5 hours in the working days level.

The full-time Youngers employed persons had more potential leisure time than elders (3-4 hours more than elders), part-time aged 15-17 had about 13 hours more than aged 25-64 at the weekly level, but just 0.5 hour more per working days.

## Conclusions and future developments

In this work we shows first and preliminary results of analyzing new variables on commuting time that were added to Israeli Labour Force Survey from 2018. To get and analyze the complete picture and influence of commuting time on work-life balance we proposed following steps:

1. Add more questions about commuting, as modes of commuting (public transport, car...).
2. Merge data on commuting time with income data.
3. Add question on commuting time to studies.
4. Add question on place of studies.

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