

A ICT specialists

A.1 ICT specialists

Since 2011 the **ICT specialists** in the Czech Republic have been divided into two main groups according to the **International Standard Classification of Occupations (ISCO-08)**:

- **ICT professionals, managers and engineers** include ICT service managers (133); Software and apps developers and analysts (251); Database and network professionals (252); ICT sales professionals (2434) and Electronics&Telecommunications engineers (2152+2153).
- **ICT technicians** include ICT operations and user support technicians (351); Telecommunications and broadcasting technicians (352); Computer hardware installers (7422).

In a narrower definition ICT specialists are divided to **ICT professionals (only ISCO 25)** comprising analysts and software and computer applications developers, specialists in the field of databases and computer networks, and **ICT technicians (only ISCO 35)** comprising ICT operations and user support technicians (including networks administrators) and telecommunications&broadcasting technicians. Such definition is in this publication used for international comparisons and for information on earnings of ICT specialists in the Czech Republic.

Data on the **numbers and structure** of ICT specialists come from the **Labour Force Sample Survey (LFS)** of the Czech Statistical Office (CZSO). Tables present average annual data for given years. Data since 2011 are not fully comparable with data for the previous years because of transition to the ICT specialists' definition by the CZ-ISCO in 2011. Further information on the Czech LFS can be found at:

<https://www.czso.cz/csu/czso/employment-and-unemployment-as-measured-by-labour-force-survey-annual-averages>

The **Eurostat Labour Force Survey Database** was used as a data source for the international comparison. For more information see:

http://ec.europa.eu/eurostat/statistics-explained/index.php/EU_labour_force_survey

Data on **earnings (average monthly gross wages)** of ICT specialists come from the **Structural Earnings Statistics (SES)** and are available in a comparable time series since the ref. year 2012. For further information see: <https://www.czso.cz/csu/czso/structure-of-earnings-survey-2015>

Further information on ICT specialists can be found at:

<https://www.czso.cz/csu/czso/ict-odbornici>

A.2 Tertiary students and graduates in ICT field of education

ICT field of education (Computing: ISCED 48) is according to the international classification ISCED 97 divided into two detailed fields: **Computer science** (ISCED 481) and **Use of computers** (ISCED 482).

In the Czech Republic tertiary education includes **Higher professional education and University education**. Higher professional education includes education at higher professional schools (ISCED 655). University education is provided by Universities at Bachelor's or equivalent level (ISCED 6), Master's or equivalent level (ISCED 7) and Doctoral or equivalent level (ISCED 8).

Data on ICT field of education come from the **Ministry of education, youth and sports in the Czech Republic** data sources.

Further information on ICT field of education can be found at:
https://www.czso.cz/csu/czso/studenti_a_absolventi_vysokoskolskeho_studia_v_oboru_informatika

A ICT specialists

Table A1 ICT specialists in the Czech Republic

	Thousand persons		
	2013	2014	2015
Total	152,5	160,4	155,1
Women	14,7	14,3	14,7
Occupation			
ICT Professionals, managers and engineers, total	73,3	83,6	86,0
Software and apps developers and analysts	41,3	44,9	44,9
ICT technicians, installers and servicers, total	79,0	76,9	69,1
ICT operations and user support technicians	57,5	52,5	48,6
Age group			
20-29 years	33,9	31,8	34,1
30-39 years	62,5	65,7	57,5
40-49 years	34,0	37,4	40,6
50+ years	22,0	25,5	22,9
Highest level of education attainment			
Tertiary	88,1	91,9	93,8
Secondary with A-level examination	56,8	61,5	57,0
Other (lower)	7,4	7,0	4,3

Figure A1 ICT specialists

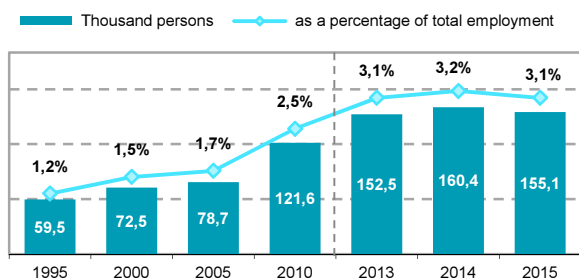
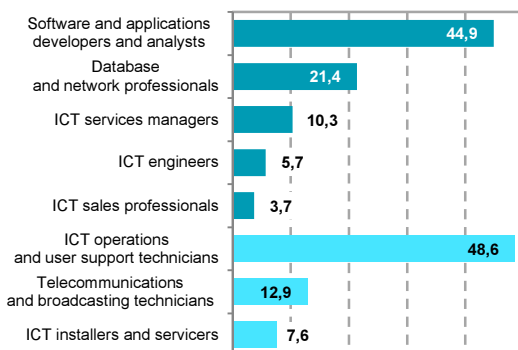


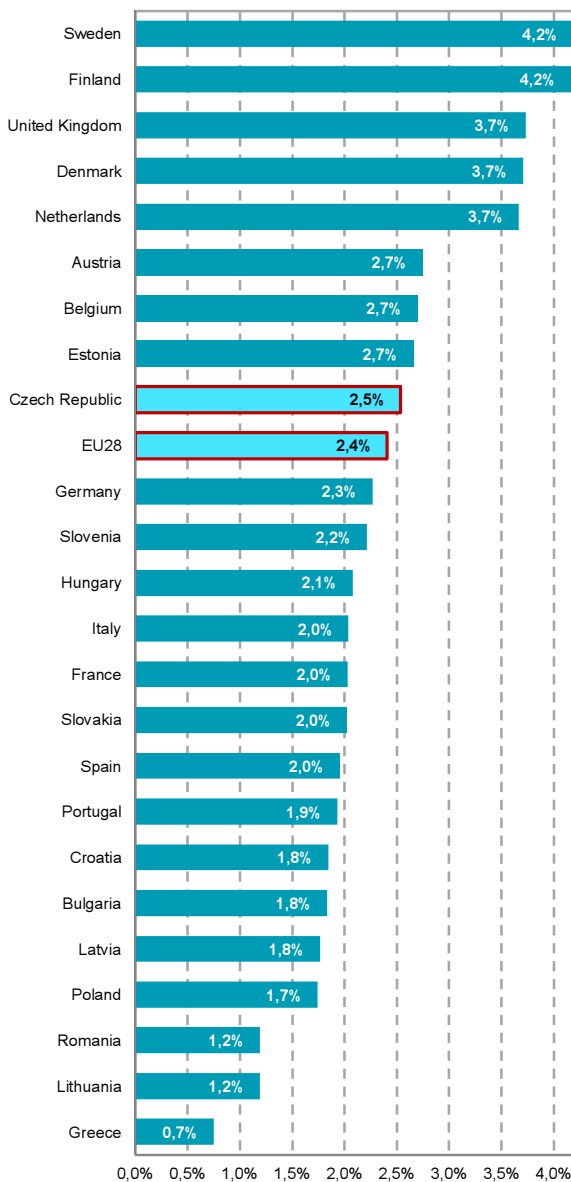
Figure A2 ICT specialists by occupation (thous.); 2015



Source: CZSO, Labour Force Survey

A ICT specialists

Figure A3 ICT professionals and technicians*; 2015
(as a percentage of total employment)



* Only ISCO 25: ICT professionals and
ISCO 35: Information and communications technicians

Source: Eurostat, European Labour Force Survey

A ICT specialists

Table A2 ICT professionals, managers and engineers in the Czech Republic

	Thousand persons		
	2013	2014	2015
Total	73,3	83,6	86,0
Women	8,4	8,2	8,8
Occupation			
Software and apps developers and analysts	41,3	44,9	44,9
Database and network professionals	15,8	18,4	21,4
ICT services managers	6,5	10,1	10,3
ICT engineers	4,9	5,4	5,7
ICT sales professionals	4,7	4,8	3,7
Age group			
20-29 years	13,5	16,0	17,1
30-39 years	30,4	31,8	32,5
40-49 years	16,6	18,9	22,5
50+ years	12,7	16,8	14,0
Highest level of education attainment			
Master's and Doctoral	51,1	59,2	60,9
Bachelor's and Higher professional	11,2	12,4	11,5
Other (lower)	11,1	12,6	13,6

Figure A4 ICT professionals, managers and engineers

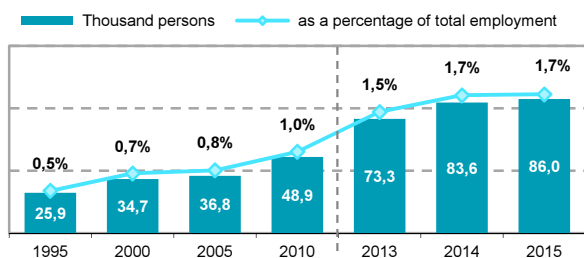


Figure A5 ICT professionals by sex in 2015

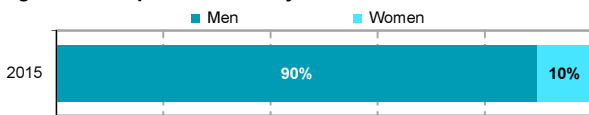
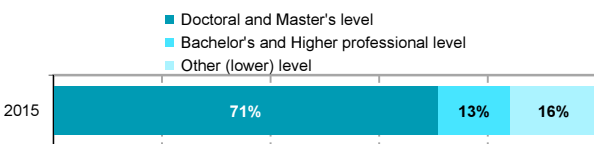


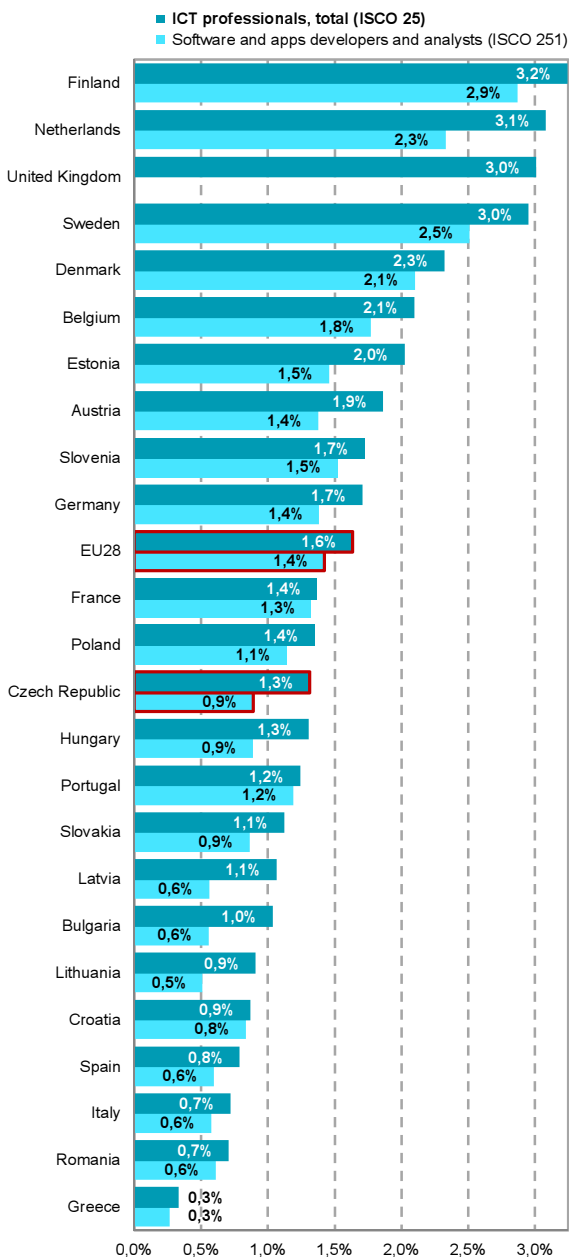
Figure A6 ICT professionals by level of education in 2015



Source: CZSO, Labour Force Survey

A ICT specialists

Figure A7 ICT Professionals; 2015
(as a percentage of total employment)



Source: Eurostat, European Labour Force Survey

A ICT specialists

Table A3 ICT technicians, installers and servicers in the Czech Republic

	Thousand persons		
	2013	2014	2015
Total	79,0	76,9	69,1
Women	6,3	6,1	5,9
Occupation			
ICT operations and user support technicians	57,5	52,5	48,6
Telecommunications and broadcasting technicians	15,2	16,4	12,9
ICT installers and servicers	6,3	7,9	7,6
Age group			
20-29 years	20,4	15,8	17,0
30-39 years	32,1	33,9	25,0
40-49 years	17,3	18,5	18,2
50+ years	9,3	8,7	8,9
Highest level of education attainment			
Tertiary	27,0	20,9	21,4
Secondary with A-level examination	44,7	49,4	44,4
Other (lower)	7,3	6,5	3,4

Figure A8 ICT technicians, installers and servicers

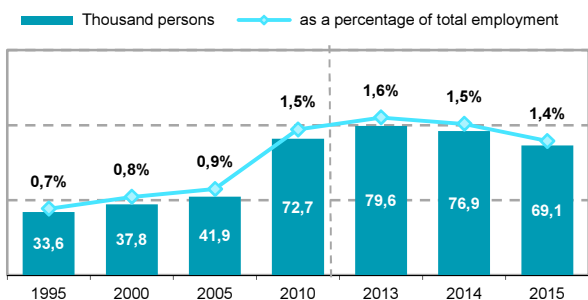


Figure A9 ICT technicians, installers and servicers by sex

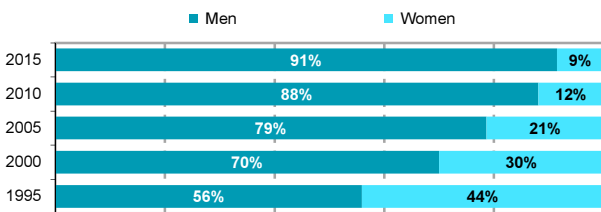
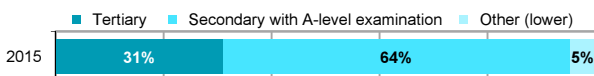


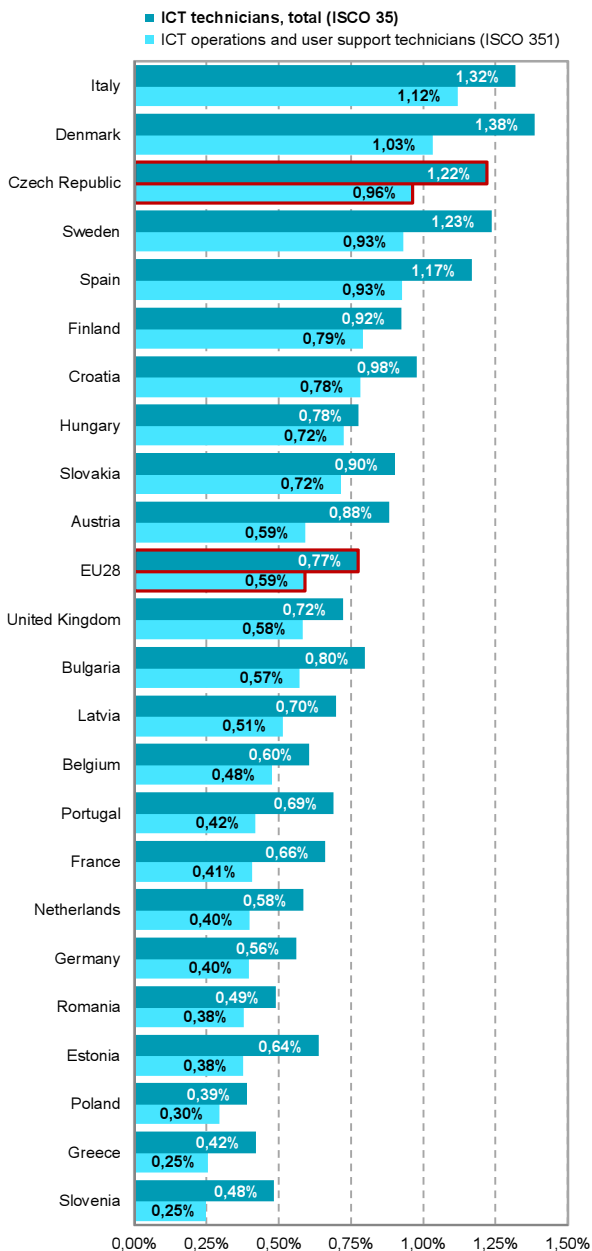
Figure A10 ICT technicians, installers and servicers by level of education



Source: CZSO, Labour Force Survey

A ICT specialists

Figure A11 ICT technicians; 2015
(as a percentage of total employment)



A ICT specialists

Table A4 Earnings of ICT professionals in the Czech Republic

average (mean) gross monthly wage in CZK

	2013	2014	2015
Total	46 933	49 259	51 319
Men	47 868	50 206	52 296
Women	40 574	42 381	43 701
Age group			
25-34 years	43 200	45 124	47 296
35-44 years	54 440	56 903	58 751
45-54 years	49 102	50 431	52 543
55+ years	43 345	45 441	46 338
Highest level of education attainment			
Master's and Doctoral	52 428	54 387	56 172
Bachelor's and Higher professional	41 681	43 611	46 238
Secondary with A-level examination	42 029	43 324	44 930
Field of activity (sector)			
Business (business enterprise sector)	48 278	50 558	52 643
Non-business (government sector)	30 756	32 006	33 607
Industry (NACE Sections)			
Manufacturing (NACE: C)	43 085	43 760	45 769
Transportation and storage (NACE: H)	41 308	42 627	47 189
Information and communication (NACE: J)	50 802	54 238	56 457
Financial and insurance activities (NACE: K)	59 827	59 932	61 962
Public administration (NACE: O)	31 680	33 055	34 929

Figure A12 Average gross monthly wage of ICT professionals

■ CZK ▲ as % of the total/ in business/ in government sector monthly wage

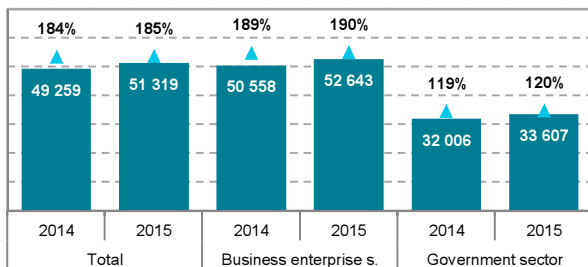


Figure A13 Average gross monthly wage of ICT professionals in selected occupations in 2015 (CZK)



Source: CZSO, Structural Earnings Statistics

A ICT specialists

Table A5 Earnings of ICT operations and user support technicians in the Czech Republic

average (mean) gross monthly wage in CZK

	2013	2014	2015
Total	35 204	36 080	36 724
Men	35 757	36 657	37 297
Women	31 596	32 282	32 899
Age group			
25-34 years	33 022	33 626	33 884
35-44 years	38 142	39 492	40 234
45-54 years	35 706	35 939	37 771
55+ years	38 196	38 587	38 352
Highest level of education attainment			
Master's and Doctoral	42 427	43 325	44 126
Bachelor's and Higher professional	34 789	35 143	37 345
Secondary with A-level examination	31 764	32 936	33 150
Field of activity (sector)			
Business (business enterprise sector)	36 152	36 877	37 437
Non-business (government sector)	25 862	27 047	28 377

Figure A14 Average gross monthly wage of ICT operations and user support technicians by sector

■ CZK ▲ as % of the total/ in business/ in government sector monthly wage

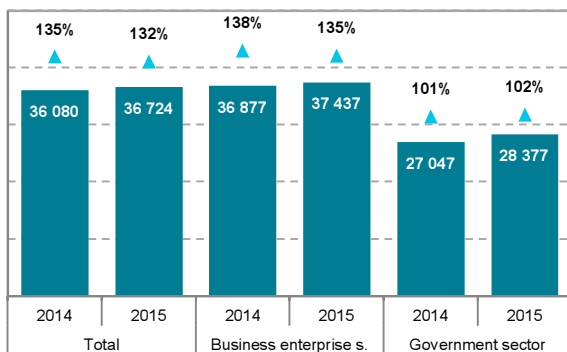
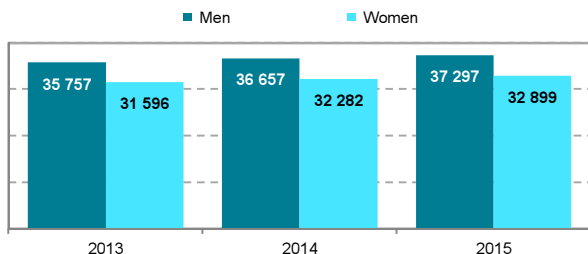


Figure A15 Average gross monthly wage of ICT operations and user support technicians by sex (CZK)



Source: CZSO, Structural Earnings Statistics

A ICT specialists

Table A6 Tertiary education students in the field of ICT (Computing) in the Czech Republic

	number of students		
	2013	2014	2015
Total	23 897	22 899	21 935
Women	3 913	3 982	3 830
Field of education			
Computer science	18 416	17 770	17 122
Computers usage	5 521	5 159	4 832
Education level			
Higher professional	1 260	1 173	1 000
Bachelor programmes	15 876	14 976	14 295
Master programmes	5 681	5 683	5 576
Doctoral programmes	1 096	1 081	1 077
Nationality			
Czech Republic	20 042	18 803	17 559
Foreign	3 855	4 096	4 376

Figure A16 Tertiary education students of Computing

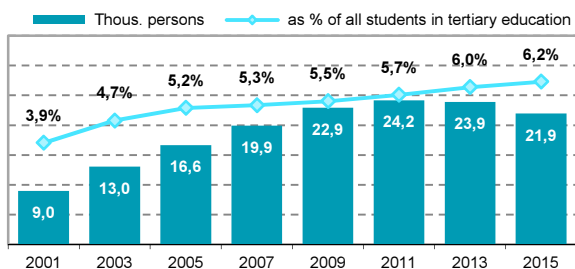


Figure A17 Tertiary students of Computing by educ. level

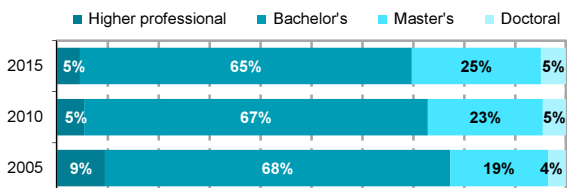
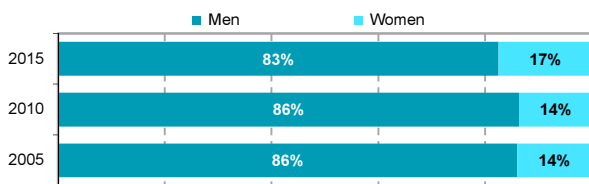


Figure A18 Tertiary students of Computing by sex



Source: The Ministry of Education, Youth and Sports

A ICT specialists

Figure A19 Tertiary education students of Computing; 2014
(as a % of all students in tertiary education)

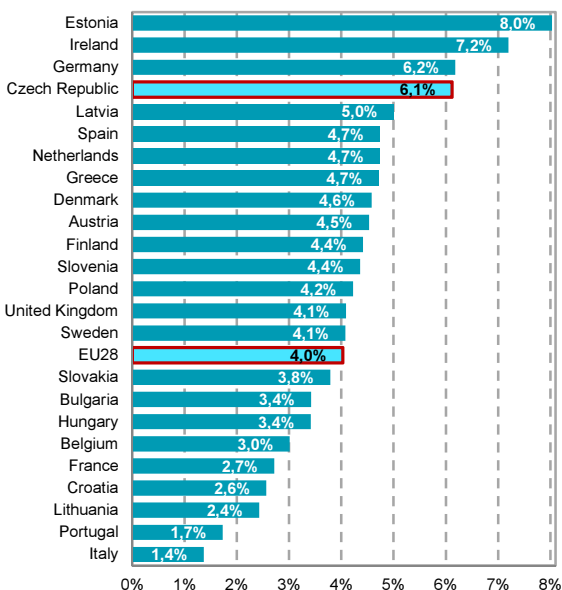
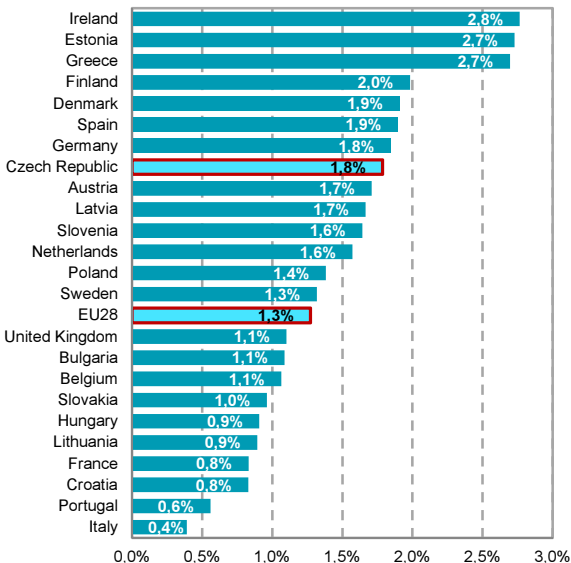


Figure A20 Tertiary education students of Computing; 2014
(as a % of total population aged 20 to 29 years)



A ICT specialists

Table A7 Students of ICT field of education (Computing) at Bachelor's level in the Czech Republic

	number of students		
	2013	2014	2015
Total	15 876	14 976	14 295
Women	2 476	2 456	2 288
Field of education			
Computer science	12 444	11 969	11 575
Computers usage	3 443	3 017	2 727
Nationality			
Czech Republic	13 128	12 062	11 195
Foreign	2 748	2 914	3 100

Figure A21 Bachelor's students of Computing, total

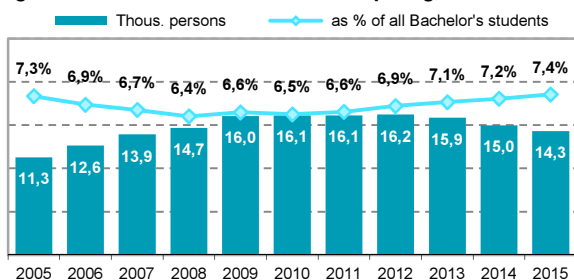


Figure A22 Bachelor's students of Computing - Men

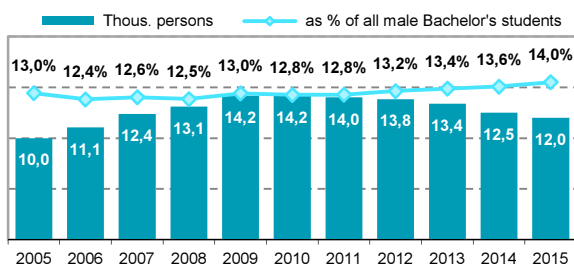
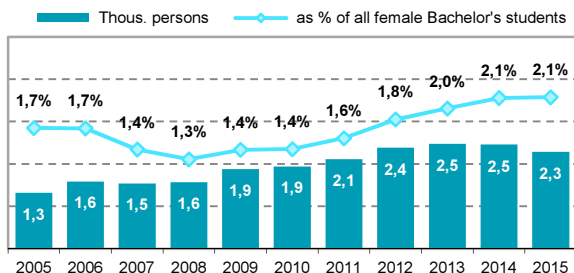


Figure A23 Bachelor's students of Computing - Women



Source: The Ministry of Education, Youth and Sports

A ICT specialists

Figure A24 Students of Computing at Bachelor's or equivalent level of education*; 2014 (as a % of all Bachelor's students)

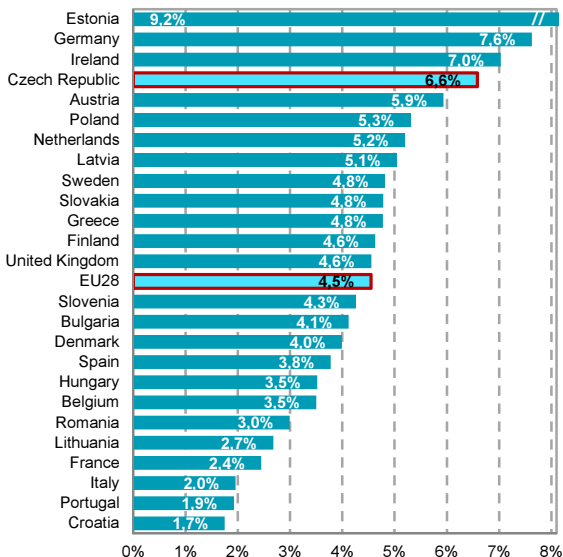
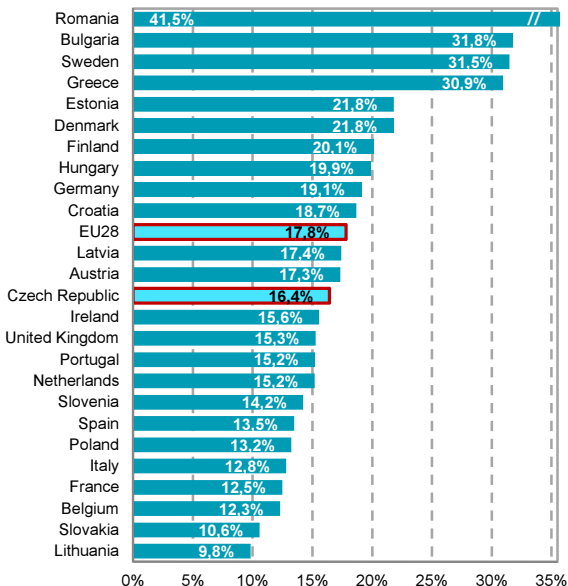


Figure A25 The proportion of women among all students of Computing at Bachelor's or equivalent level*; 2014 (%)



* ISCED level 6

Source: Eurostat

A ICT specialists

Table A8 Students of ICT field of education (Computing) at Master's level in the Czech Republic

	number of students		
	2013	2014	2015
Total	5 681	5 683	5 576
Women	892	980	1 070
Field of education			
Computer science	3 852	3 791	3 711
Computers usage	1 847	1 907	1 870
Nationality			
Czech Republic	4 784	4 701	4 517
Foreign	897	982	1 059

Figure A26 Master's students of Computing, total

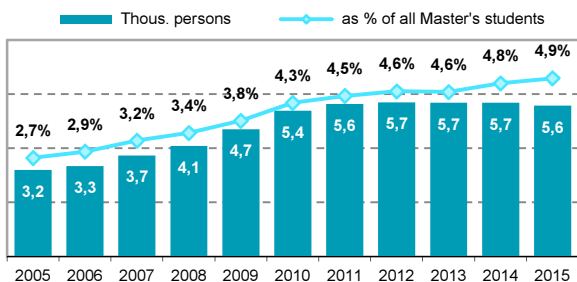


Figure A27 Master's students of Computing - Men

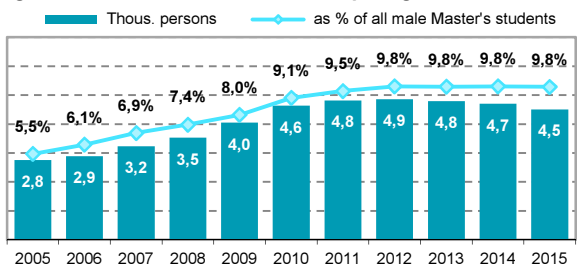
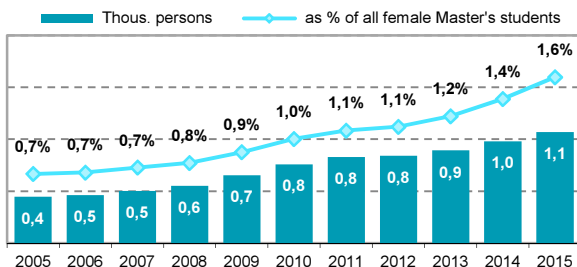


Figure A28 Master's students of Computing - Women



Source: The Ministry of Education, Youth and Sports

A ICT specialists

Figure A29 Students of Computing at Master's or equivalent level of education*; 2014 (as a % of all Master's students)

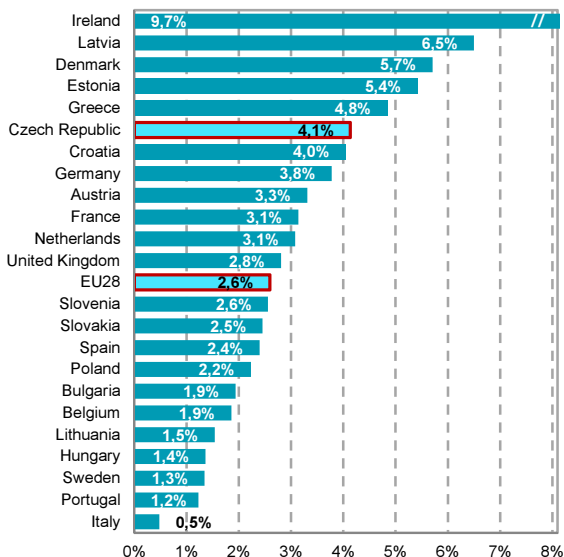
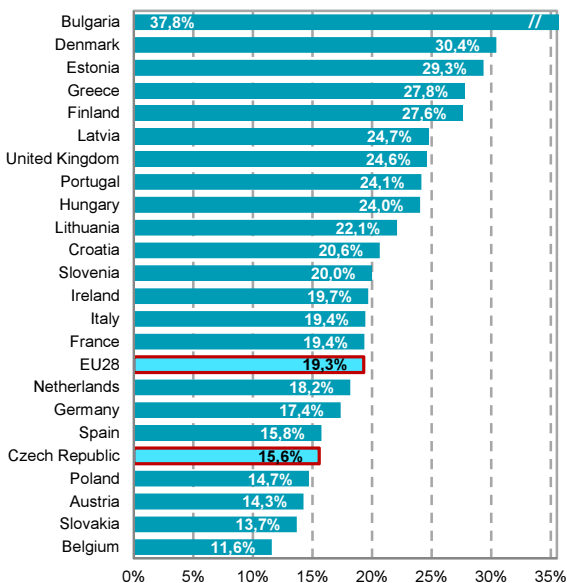


Figure A30 The proportion of women among all students of Computing at Master's or equivalent level*; 2014 (%)



* ISCED level 7

Source: Eurostat

A ICT specialists

Table A9 Graduates from tertiary education in ICT field of education (Computing) in the Czech Republic

	2013	2014	2015
			number
Total	4 762	4 468	4 599
Women	691	727	810
Field of education			
Computer science	3 460	3 293	3 461
Computers usage	1 314	1 179	1 151
Education level			
Higher professional	258	214	249
Bachelor programmes	2 596	2 479	2 554
Master programmes	1 817	1 696	1 703
Doctoral programmes	92	79	93
Nationality			
Czech Republic	4 024	3 822	3 831
Foreign	738	646	768

Figure A31 Graduates from tertiary education in Computing

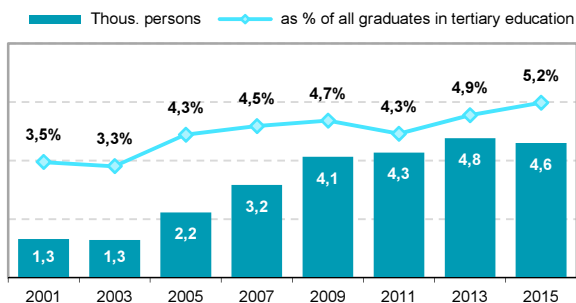


Figure A32 Graduates in Computing by tertiary education level

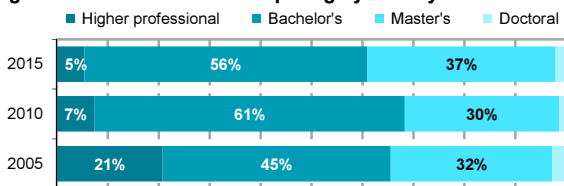
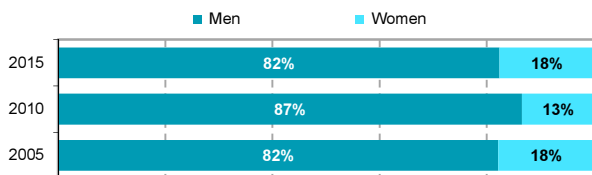


Figure A33 Graduates from tertiary ed. in Computing by sex



Source: The Ministry of Education, Youth and Sports

A ICT specialists

Figure A34 Graduates from Bachelor's or equivalent level* of education in Computing; 2014 (thous.)

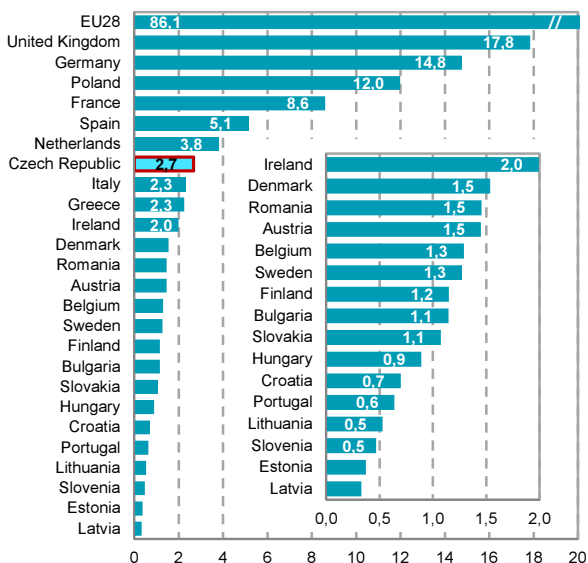
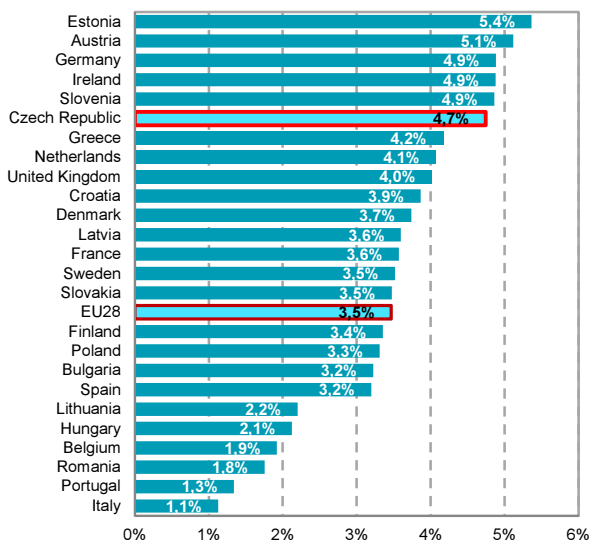


Figure A35 Graduates from Bachelor's or equivalent level* in Computing; 2014 (as a % of all bachelor's graduates)



* ISCED 6

Source: Eurostat

A ICT specialists

Figure A36 Graduates from Master's or equivalent level* of education in Computing ; 2014 (thous.)

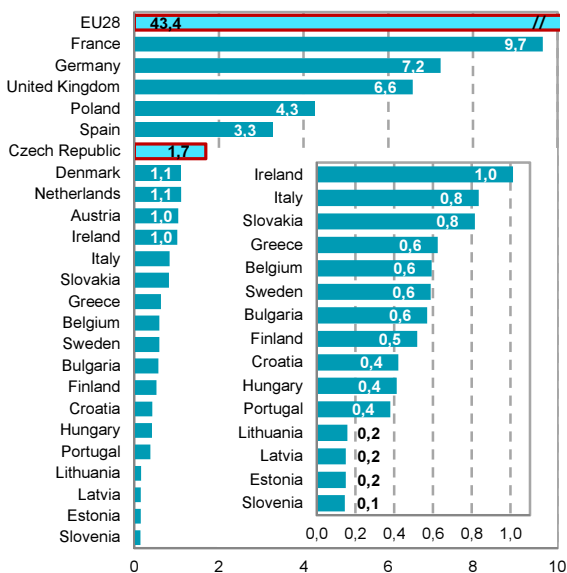
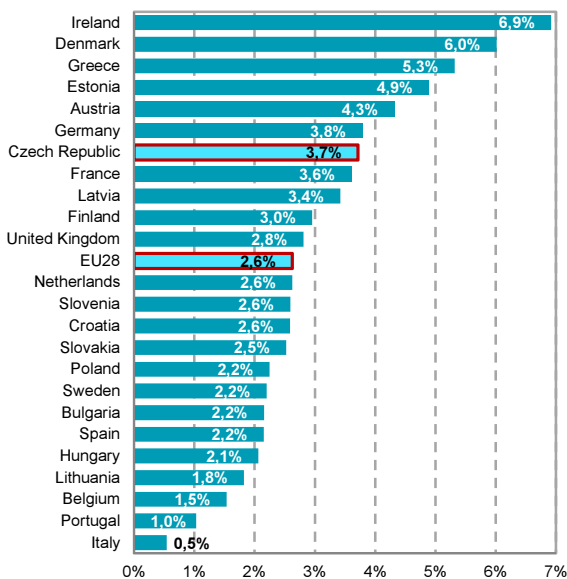


Figure A37 Graduates from Master's or equivalent level* in Computing; 2014 (as a % of all master's graduates)



* ISCED 7