



"OSH+ for the European Agriculture sector - Stimulating growth in rural areas through capacity building for providers (and beneficiaries) of occupational medicine and OSH services"

C₂-Training Course for Occupational Medicine Physicians

Module 1 - Agriculture and Work – Occupational Medicine perspective (1,2)

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Content

- The rationale for the C2-Training course for occupational medicine physicians - agriculture's importance as an economic sector.
- Occupational health and its importance for employees, employers, OSH experts, occupational medicine doctors working in relationship to the agriculture sector.



Aim of the module

To understand our days trends in agriculture, the weight of this industry

To consider agriculture as a challenging field for occupational physicians

<https://www.youtube.com/watch?v=jwv6pfGcXGc>

- <http://rural.rfi.ro/documentar-agricultura-romaneasca>
- https://www.youtube.com/watch?v=m_B1ndjS44w#action=share

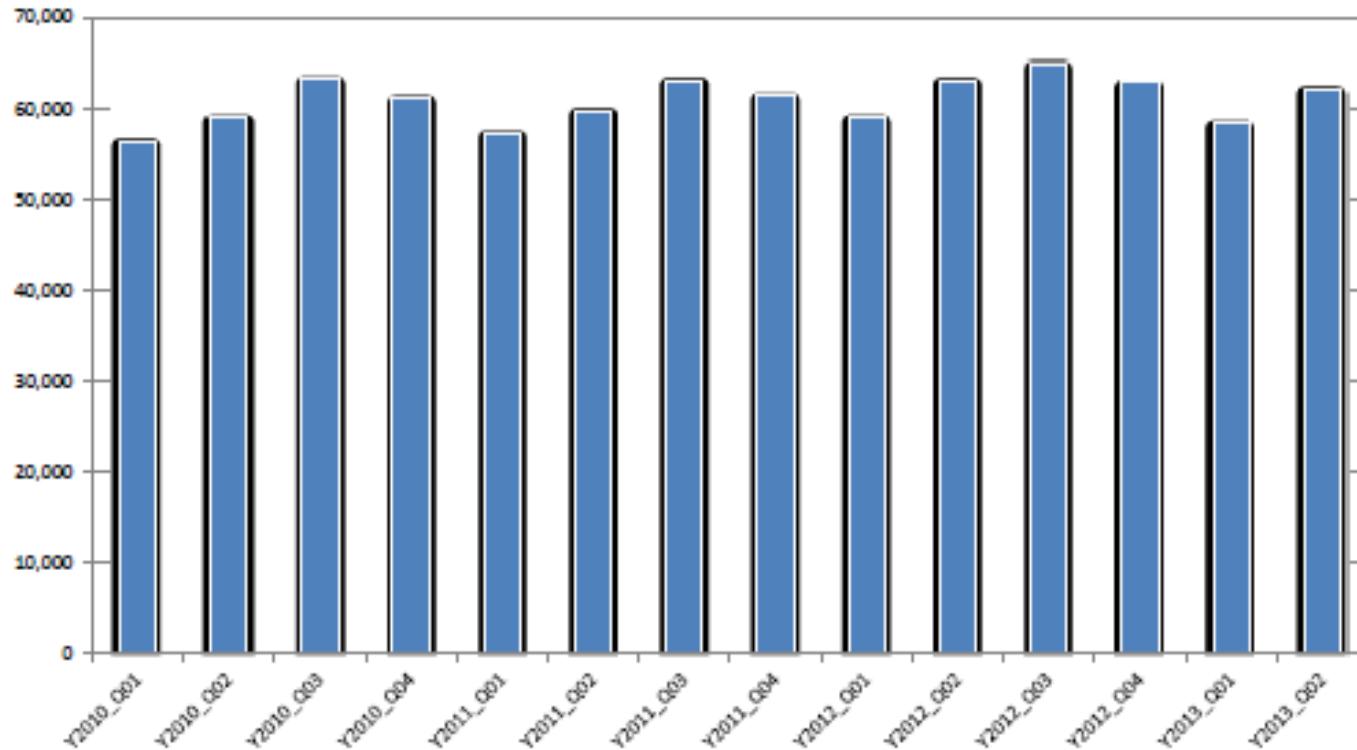


Employment in agriculture - ILO 2011

- Approximately one billion people, or over 1/3 of the available work force, are employed in the global agricultural sector.
- Agriculture in many countries employs the largest percentage of women of any industry
- Between 1997 and 2007, the percentage of people employed in agriculture fell by over four percentage points, a trend that is expected to continue.
- The number of people employed in agriculture varies widely on a per-country basis, ranging from less than 2% in countries like the US and Canada to over 80% in many African nations.
- In developed countries, these figures are significantly lower than in previous centuries.

(<https://en.wikipedia.org/wiki/Agriculture#Workforce>)

Employment in Agriculture, Forestry & Fishing, Selected Countries ('000s)



Source: ILOSTAT, based on Short Term Indicators of the Labor Market.

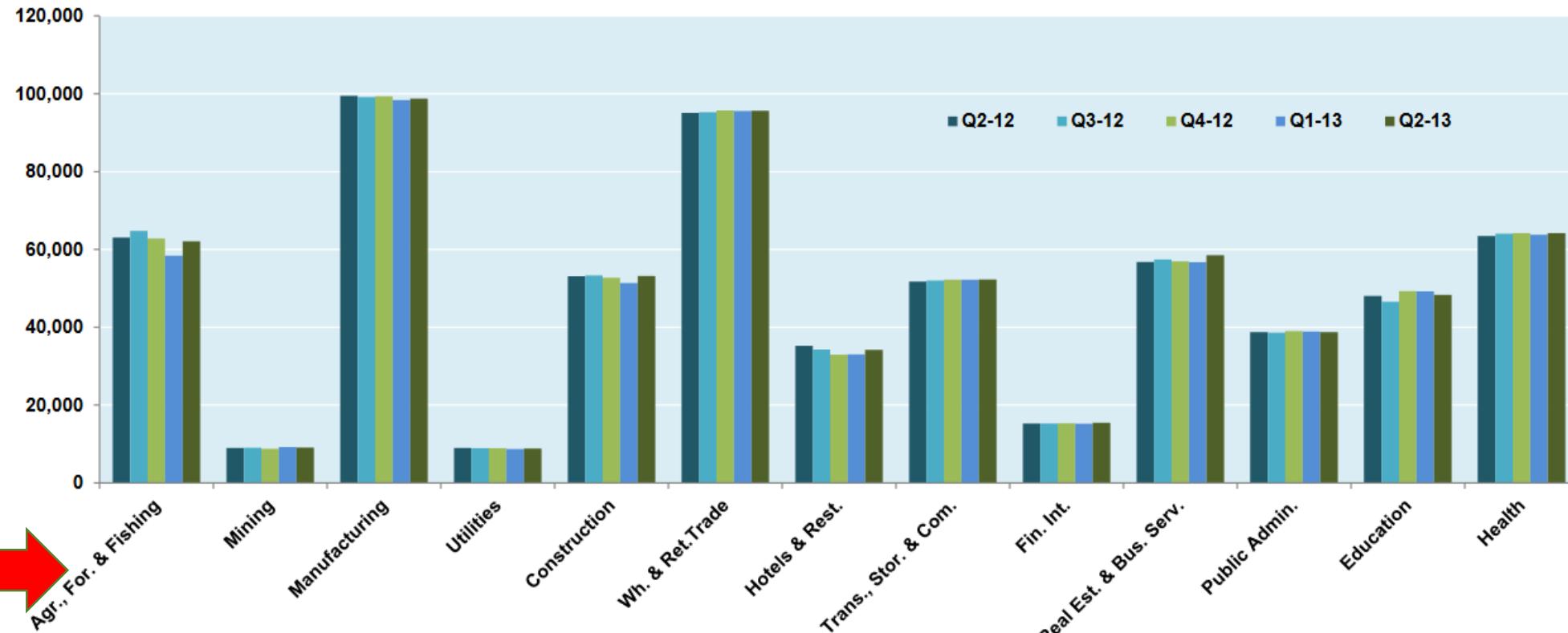
Note: Data are not seasonally adjusted.

Selected Economies include: Australia, Austria, Belgium, Bulgaria, Canada, Chile, Colombia, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Jamaica, Japan, Kazakhstan, Latvia, Lithuania, Luxembourg, Malaysia, Malta, Moldova, Republic of, Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, China, Thailand, Turkey, United Kingdom.

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Source: Employment by Economic Activity, Short Term Indicators of the Labour Market Employment Trends through 2nd Quarter 2013, ILO

Employment by Economic Activity, Selected Economies ('000s)



Source: ILOSTAT, based on Short Term Indicators of the Labor Market.

Note: *Selected Economies include: Australia, Austria, Belgium, Brazil*, Bulgaria, Canada, Chile, Colombia, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Jamaica, Japan, Kazakhstan, Latvia, Lithuania, Luxembourg, Macau, China, Malaysia, Malta, Moldova, Republic of, Netherlands, New Zealand, Norway, Peru*, Philippines, Poland, Portugal, Romania, Russian Federation, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, China, Thailand, Turkey, United Kingdom and United States

Source: Employment by Economic Activity, Short Term Indicators of the Labour Market Employment Trends through 2nd Quarter 2013, ILO

Europe 2020 Strategy



- Europe 2020 logo The Europe 2020 strategy, adopted by the European Council on 17 June 2010, is the EU's agenda for growth and jobs for the current decade.
- It emphasizes smart, sustainable and inclusive growth as a way to overcome the structural weaknesses in Europe's economy, improve its competitiveness and productivity and underpin a sustainable social market economy.

COMMUNICATION FROM THE COMMISSION
EUROPE 2020: A strategy for smart, sustainable and inclusive growth,
EUROPEAN COMMISSION, 2010

Europe 2020

Europe 2020 puts forward three mutually reinforcing priorities that offer a vision of Europe's social market economy for the 21st century:

- ***Smart growth***: developing an economy based on knowledge and innovation.
- ***Sustainable growth***: promoting a more resource efficient, greener and more competitive economy.
- ***Inclusive growth***: fostering a high-employment economy delivering social and territorial cohesion.



COMMUNICATION FROM THE COMMISSION
EUROPE 2020: A strategy for smart, sustainable and inclusive growth,
EUROPEAN COMMISSION, 2010

Common Agricultural Policy

- The Common Agricultural Policy (CAP) is the agricultural policy of the EU.
- Its main objectives are
 - to ensure a decent standard of living for farmers,
 - to provide a stable and safe food supply chain at affordable prices for consumers, and
 - to ensure the development of rural areas throughout the EU.
- A June 2013 reform of the CAP focused on the sustainable management of resources.



(Source: Agriculture, forestry and fishery statistics, Statistical books, 2014, EUROSTAT)

Agriculture trends

- The relative weight of agriculture, forestry and fisheries in the EU-28 economy has been in almost perpetual decline over the last 50 years.
- From 2000 to 2013 the share of agriculture, forestry and fisheries in the EU-28's total economic activity (as measured by gross value added) ***fell from 2.1 % to 1.7 %.***
- **In this context:**
 - Is agriculture a industry which must be taken in consideration?
 - Is it our days' priority?
 - How is the actual EU policy and which are the next years priorities?
 - Agriculture is a future industry?



Rationale to return at agriculture

- Our days – return to agriculture

WHY?

- 9.6 billion people are going to inhabit the planet by 2050 (FAO predicts)
- food production must increase by 70% by 2050
- this has to be achieved in spite of
 - the limited availability of arable lands,
 - the increasing need for fresh water (agriculture consumes 70% of the world's fresh water supply),
 - other less predictable factors, such as the impact of climate change

Rationale for agriculture (2)

Agriculture is perceived our days as something that belongs to history, to the grandfathers ...

BUT	<p>Agriculture is changing due to globalization, climate and societal change.</p> <p>A healthy life involves a healthy environment, a healthy lifestyle, a healthy diet and healthy working conditions.</p> <p>Healthy diet comes from healthy products obtained in agriculture.</p>
HOW?	<p>More efficient, sustainable and high quality agriculture.</p> <p>Green production</p> <p>Energy economy, green sources</p>
WHICH NOT?	<p>Not 'industrializing' agriculture!</p> <p>Not synthetic products!</p> <p>Not genetic modified organisms!</p>

Challenging's in agriculture

- Pesticides, synthetic fertilizers, genetic modifications
- Climate changing (global warming, drought)
- Deforestation, floods



EU economic and demographic aspects

Agriculture place

- Agriculture place
- Project countries situation



The headline targets related to the strategy's key objectives at the EU level

- 75% of the population aged 20 to 64 years to be employed (greater involvement of women, older workers, the better integration of migrants in the work force);
- 3% of GDP to be invested in the research and development (R&D) sector;
- Climate change and energy targets:
 - Greenhouse gas emissions to be reduced by 20% compared to 1990
 - Share of renewable energy sources in final energy consumption to be increased to 20%
 - Energy efficiency to be improved by 20%
- Share of early school leavers to be reduced under 10% and at least 40% of 30 to 34 years old to have completed tertiary or equivalent education.
- Poverty to be reduced by lifting at least 20 million people out of the risk of poverty or social exclusion.

COMMUNICATION FROM THE COMMISSION

EUROPE 2020: A strategy for smart, sustainable and inclusive growth, EUROPEAN COMMISSION, 2010

The headline targets and their evolution

	Headline indicator	Past situation	Current situation			2020 Target
		2008	2014	2015	2016	
Employment	Employment rate, total (% of the population aged 20-64)	70.3	69.2	70.1	71.1	75
R&D	Gross domestic expenditure on R&D (% of GDP)	1.84	2.04	2.03 ^p	:	3.00
Climate change & energy	Greenhouse gas emissions* (index 1990=100)	90.31	77.39	77.88	:	80
	Share of renewable energy in gross final energy consumption (%)	11.0	16.1	16.7	:	20
	Primary energy consumption (Million tonnes of oil equivalent)	1,692.4	1,508.3	1,529.6	:	1,483
	Final energy consumption (Million tonnes of oil equivalent)	1,179.7	1,059.6	1,082.2	:	1,086
Education	Early leavers from education & training, total (% of population aged 18-24)	14.7	11.2 ^b	11.0	10.7	<10.0
	Tertiary educational attainment, total (% of population aged 30-34)	31.1	37.9 ^b	38.7	39.1	≥40.0
Poverty or social exclusion**	People at risk of poverty or social exclusion (Cumulative difference from 2008 in thousands)	:	4759	1956	:	-20000

* Total emissions, including international aviation, but excluding emissions from land use, land use change and forestry.

** People at risk of poverty or social exclusion are in at least one of the following three conditions: at-risk-of-poverty after social transfers (income poverty), severely materially deprived or living in a household with very low work intensity. Persons are only counted once even if they are present in several sub-indicators. The overall EU target is to lift at least 20 million people out of risk of poverty or social exclusion by 2020 with 2008 as a baseline year. All data refer to EU27.

e estimate

p provisional

b break in time series

: Data not available



Source: COMMUNICATION FROM THE COMMISSION EUROPE 2020: A strategy for smart, sustainable and inclusive growth,
EUROPEAN COMMISSION,
2010

Social and work aspects linked to health

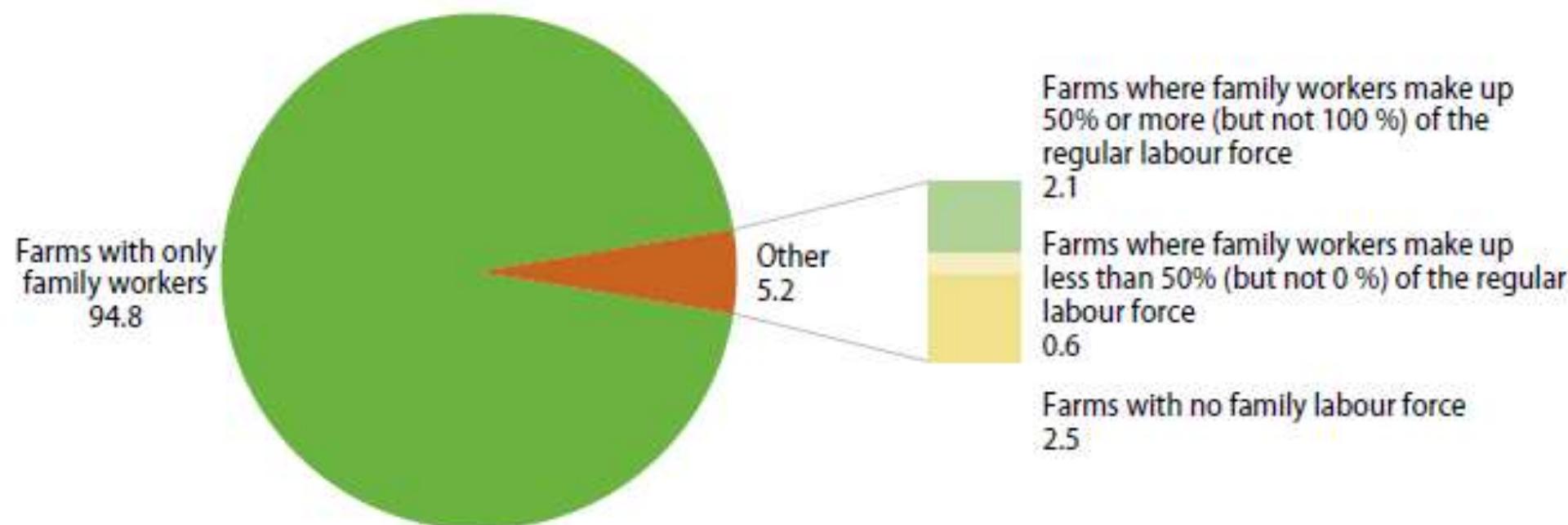
- A major effort will be needed to ***combat poverty and social exclusion*** and ***reduce health inequalities*** to ensure that everybody can benefit from growth. Equally important will be our ability to meet the challenge of promoting a ***healthy and active ageing population*** to allow for social cohesion and higher productivity.
- At EU level, the Commission will work to adapt the legislative framework, in line with 'smart' regulation principles, to evolving work patterns (e.g. ***working time, posting of workers***) and ***new risks for health and safety at work*** and to undertake an assessment of the adequacy and sustainability of ***social protection and pension systems***, and identify ways to ensure ***better access to health care systems***.
- At national level, to fully deploy their social security and pension systems to ensure ***adequate income support*** and ***access to health care***.
- Fiscal consolidation and long-term financial sustainability will need to go hand in hand with important structural reforms, in particular of ***pension, health care, social protection and education systems***.

EU statistics in agriculture

- The United Nations' Food and Agriculture Organization (FAO) declared 2014 to be the **International year of family farming**. The FAO defines a family farm as '[...] an agricultural holding which is managed and operated by a household and where farm labor is largely supplied by that household'.
- Family farms accounted for almost 97 % of the farms in the EU.
- Across all of the farms in the EU-28, family farms provided 86.2% of the regular agricultural labor force and reared 71.1 % of all livestock in 2010.
- Their relative share of the total utilized agricultural area was lower, as they accounted for 67.4 % of the EU-28's farmed area.

(Source: Agriculture, forestry and fishery statistics, Statistical books, 2014, EUROSTAT)

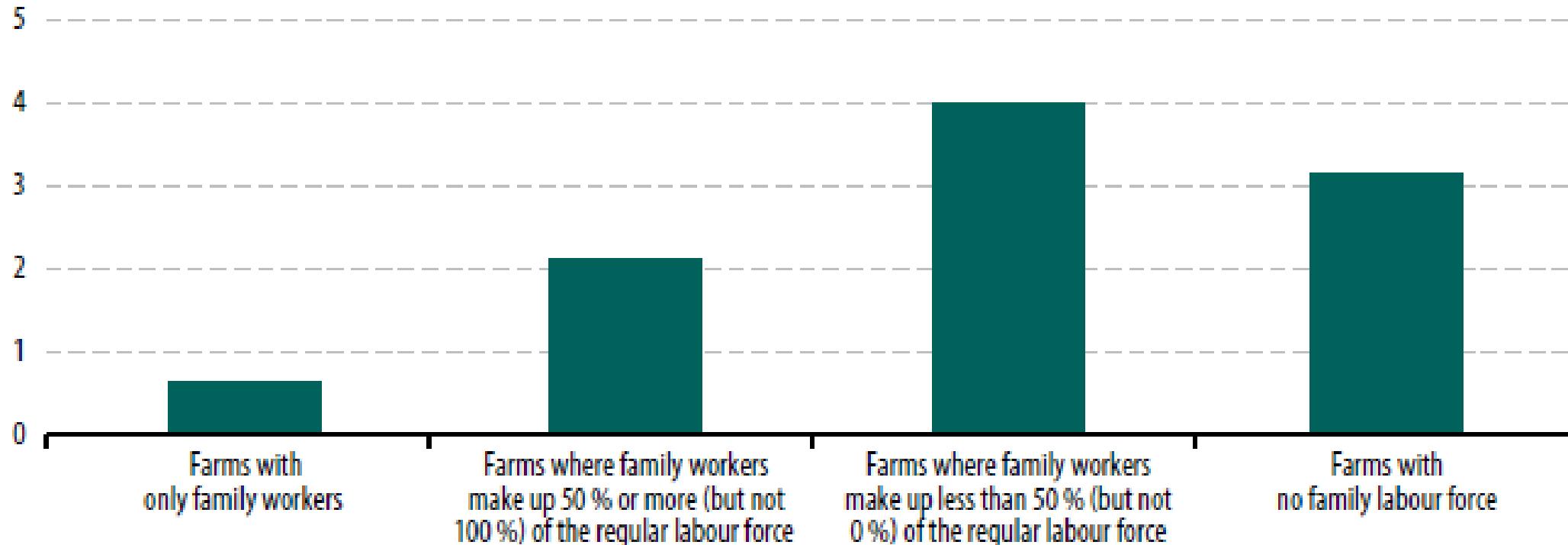
Share of total number of holdings according to the extent of the family labor force, EU-28, 2010 (% of farm holdings)



Source: Eurostat (Farm Structure Survey, 2010)

(Source: Agriculture, forestry and fishery statistics, Statistical books, 2014, EUROSTAT)

Average regular labor force per holding (annual work units)



(*) Note that different scales are used on the y-axis for each part of the figure.

Source: Eurostat (Farm Structure Survey, 2010)

(Source: Agriculture, forestry and fishery statistics, Statistical books, 2014, EUROSTAT)

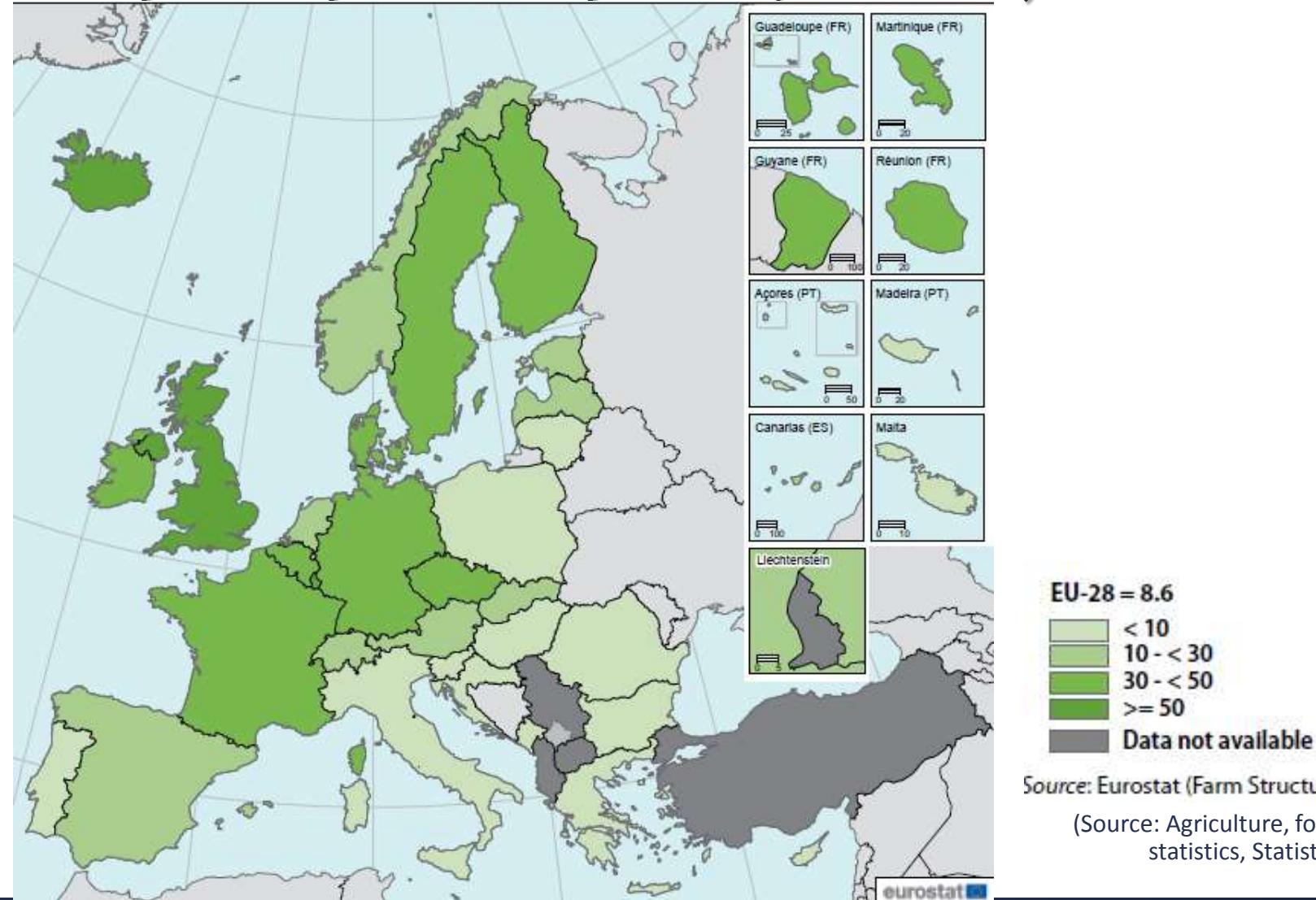
Family farms in EU-28

- Of the 11.9 million family farms in the EU-28 in 2010, almost one third (32.3 %) were located in Romania, while Italy (13.4 %) and Poland (12.6 %) were the only other EU Member States to record double-digit shares of the EU-28 total
- Family farms were also relatively small in Romania, Cyprus, Bulgaria, Hungary, Croatia, Greece, Slovenia, Italy, Portugal and Poland, as each holding cultivated an average area of less than 10 hectares.
- Family farms in the EU-28 cultivated some 118 million hectares of utilized agricultural area in 2010. The largest areas under cultivation by family farms were located in France and Spain (almost 16 million hectares each) with 13.1 % of the EU-28 total each, while Poland, the United Kingdom and Germany also recorded double-digit shares of the EU-28 total.

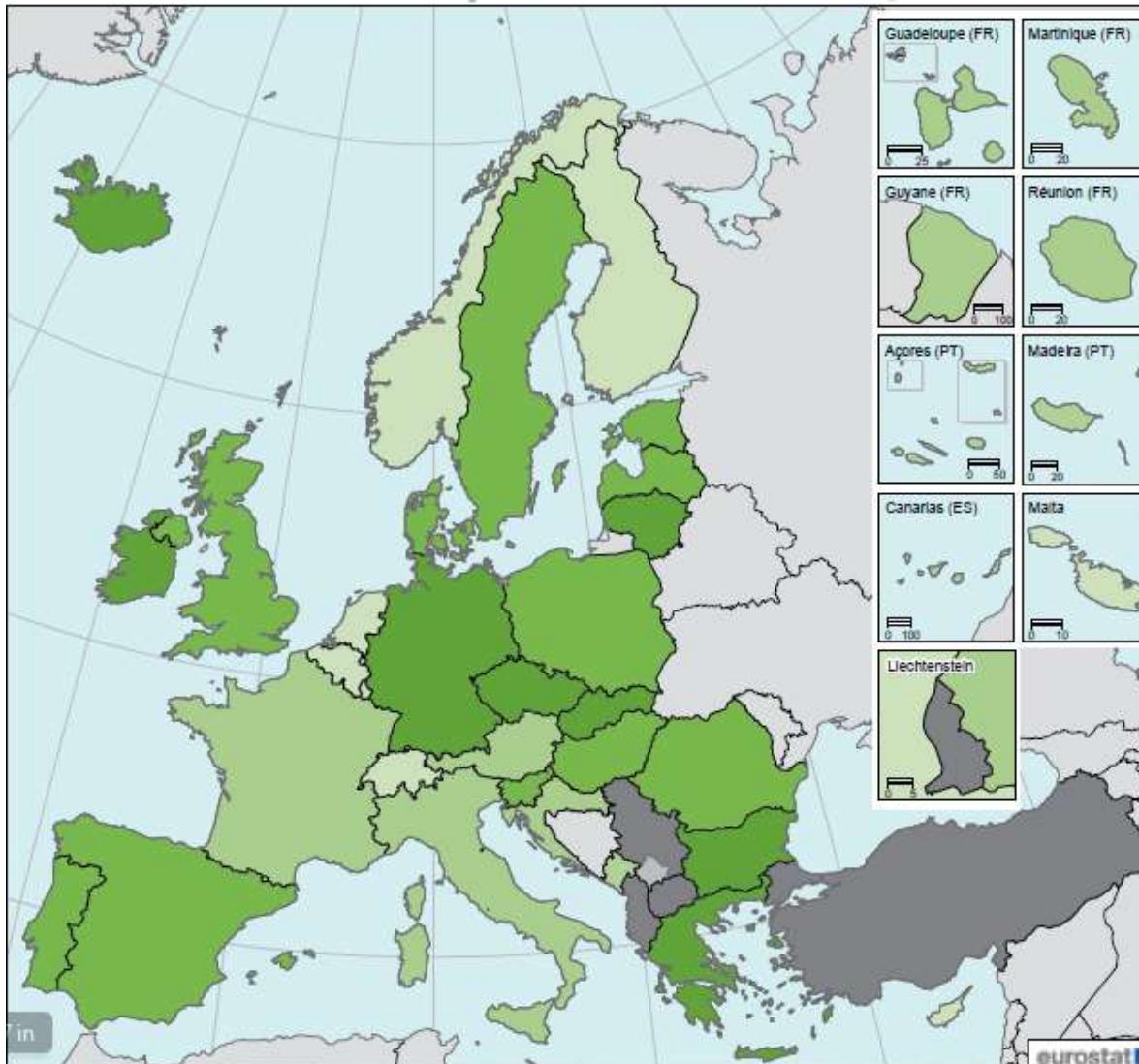
(Source: Agriculture, forestry and fishery statistics, Statistical books, 2014, EUROSTAT)

Average utilized agricultural area per holding for farms with only family workers, 2010 (hectares)

The smallest farms with only family workers were located in Malta, Romania, Cyprus and Bulgaria. By contrast, the largest farms with only family workers were located in the United Kingdom and Luxembourg.



Average utilized agricultural area per holding for farms with no family labor force, 2010 (hectares)



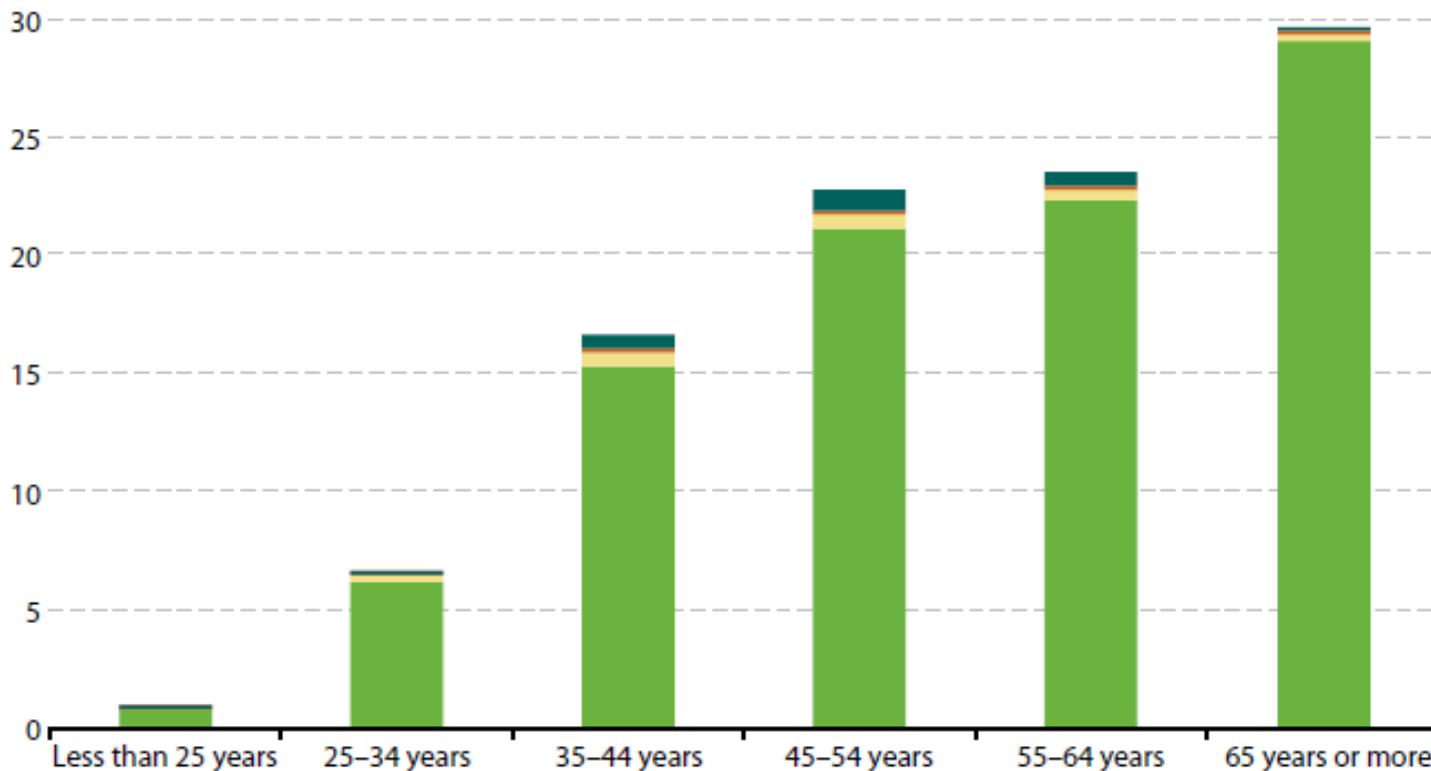
Greece recorded the largest agricultural area among the EU Member States, with an average of almost 2 600 hectares for each farm without any family labor force in 2010, while the next highest area was recorded in Ireland (1 335 hectares per holding).

(Source: Agriculture, forestry and fishery statistics, Statistical books, 2014, EUROSTAT)

Share of the total number of managers according to their age and the extent of the family labor force, EU-28, 2010 (% of total number of managers of all ages)

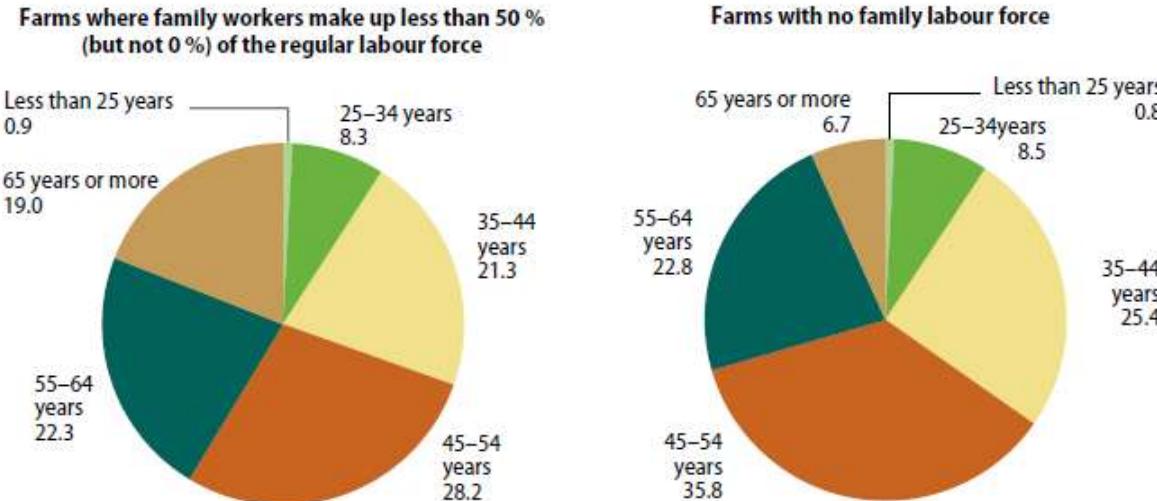
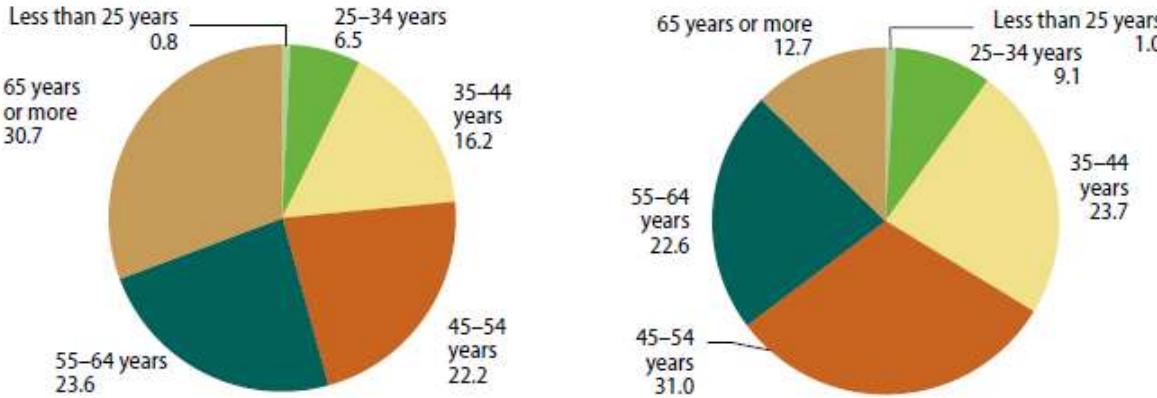
- █ Farms with no family labour force
- █ Farms where family workers make up less than 50 % (but not 0 %) of the regular labour force
- █ Farms where family workers make up 50 % or more (but not 100 %) of the regular labour force
- █ Farms with only family workers

Source: Eurostat (Farm Structure Survey, 2010)



(Source: Agriculture, forestry and fishery statistics, Statistical books, 2014, EUROSTAT)

Share of the total number of managers according to their age and the extent of the family labor force, EU-28, 2010

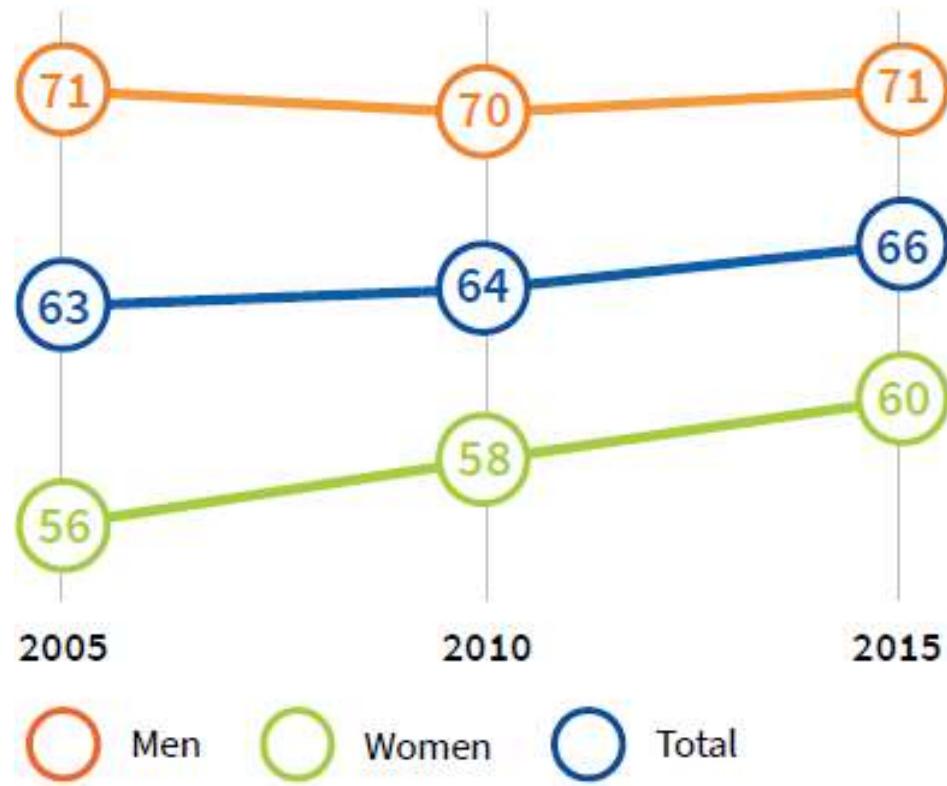


Source: Eurostat (Farm Structure Survey, 2010)

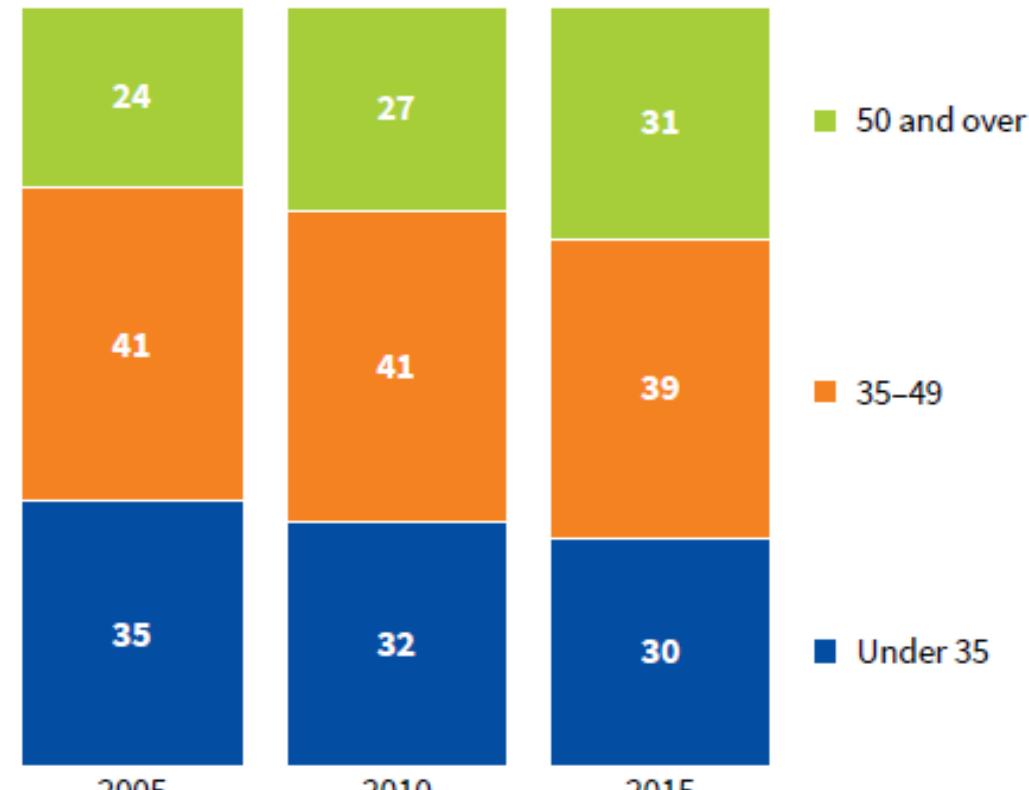
(% of total number of managers for the specified extent of the family labor force)

(Source: Agriculture, forestry and fishery statistics, Statistical books, 2014, EUROSTAT)

Employment rates, by sex (%) and Workforce age structure in the EU28 (%)



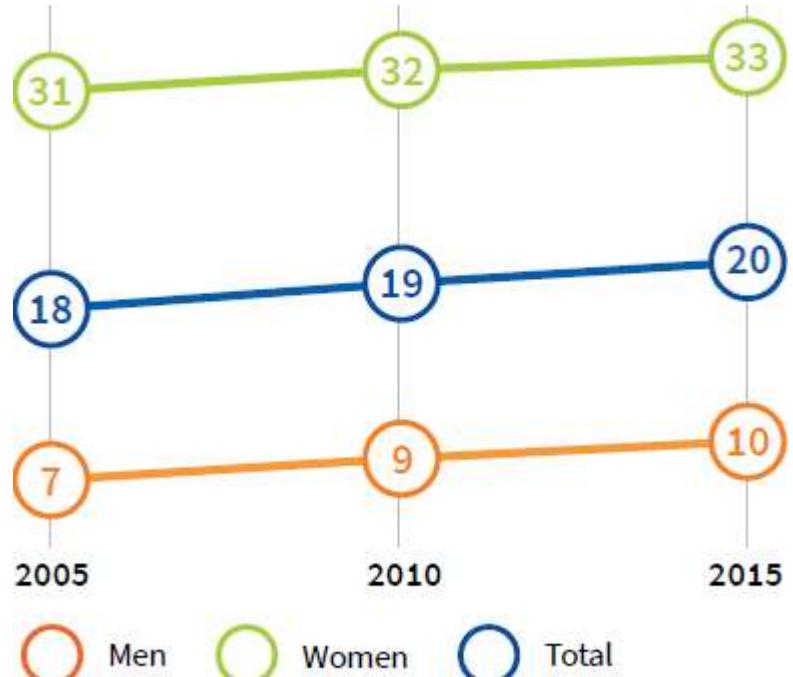
Source: EU-LFS 2005–2015; individuals aged 15 years or over.



Source: EU-LFS 2005–2015.

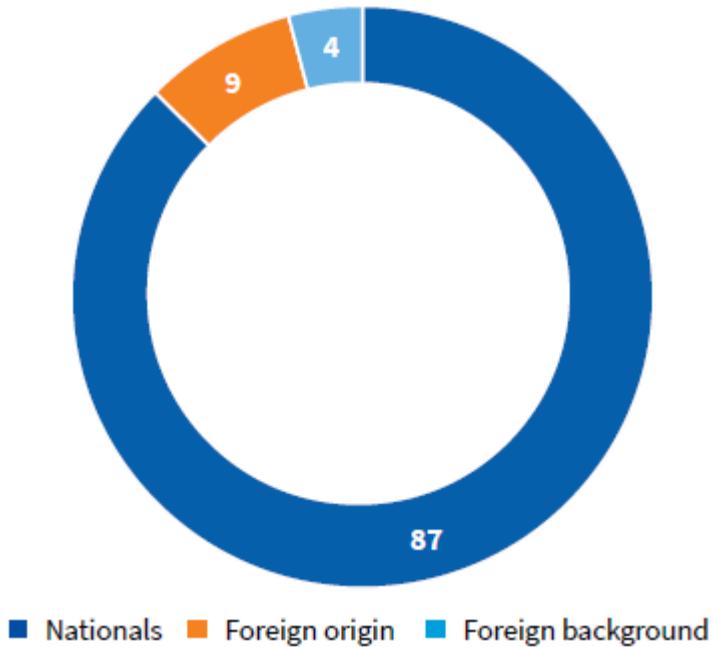
Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Particular cases



source: EU-LFS 2005–2015; individuals aged 15 years or over.

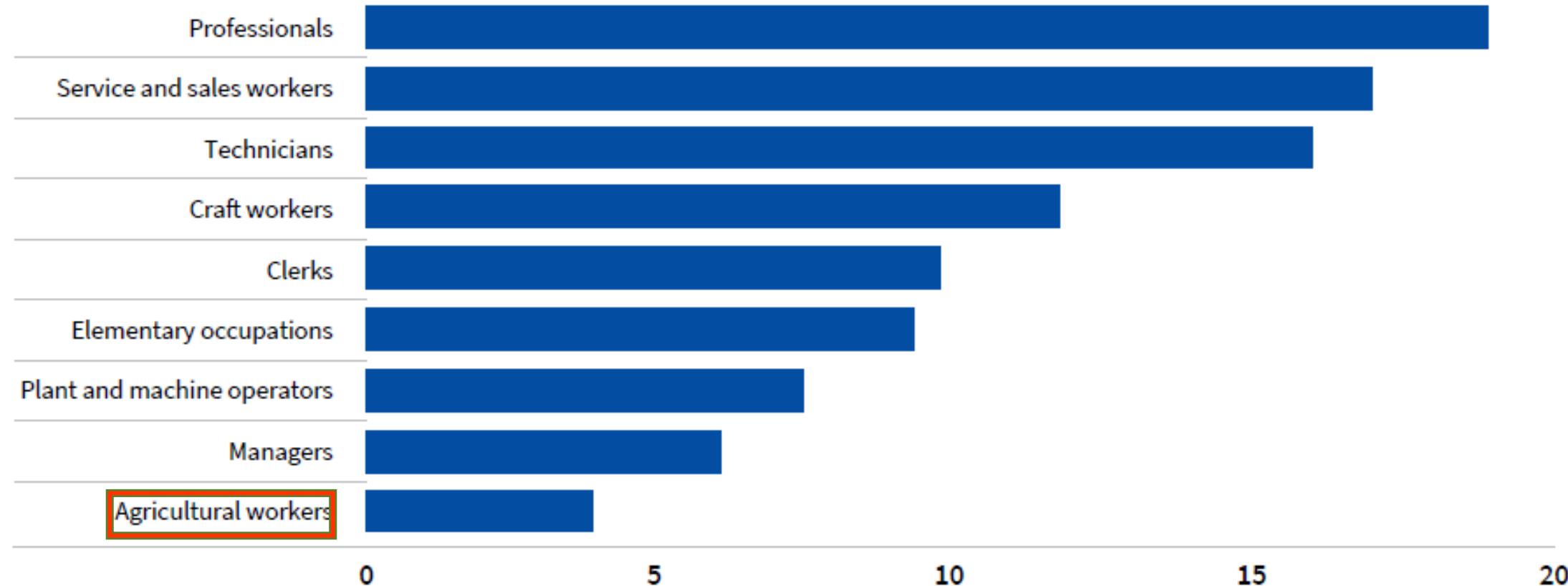
Part-time employment as a proportion of total employment in the EU28, by sex (%)



Workers of foreign origin or with a foreign background, EU28 (%)

Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

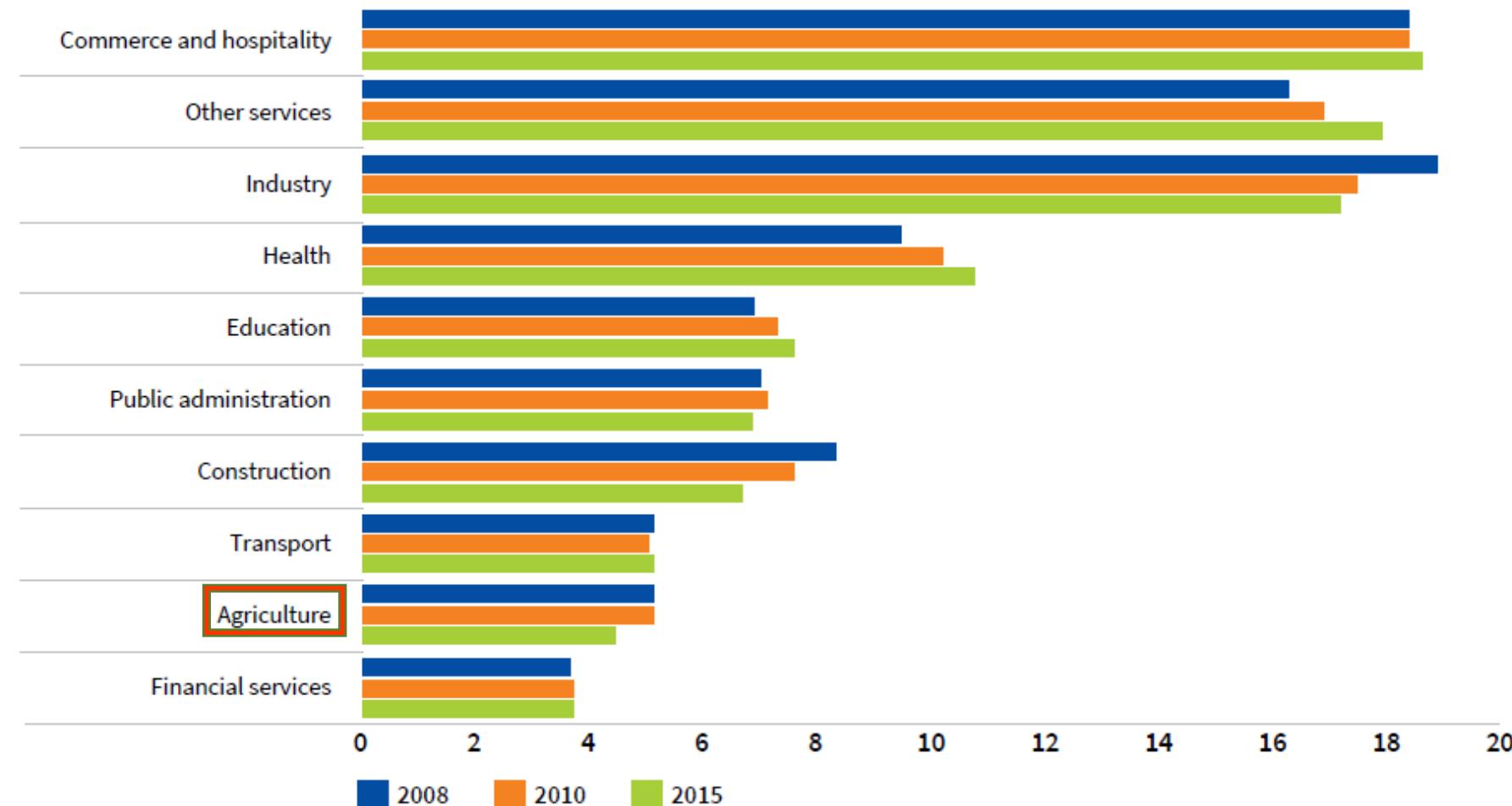
Employment by occupation in the EU28, 2015 (%)



Source: EU-LFS 2015.

Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

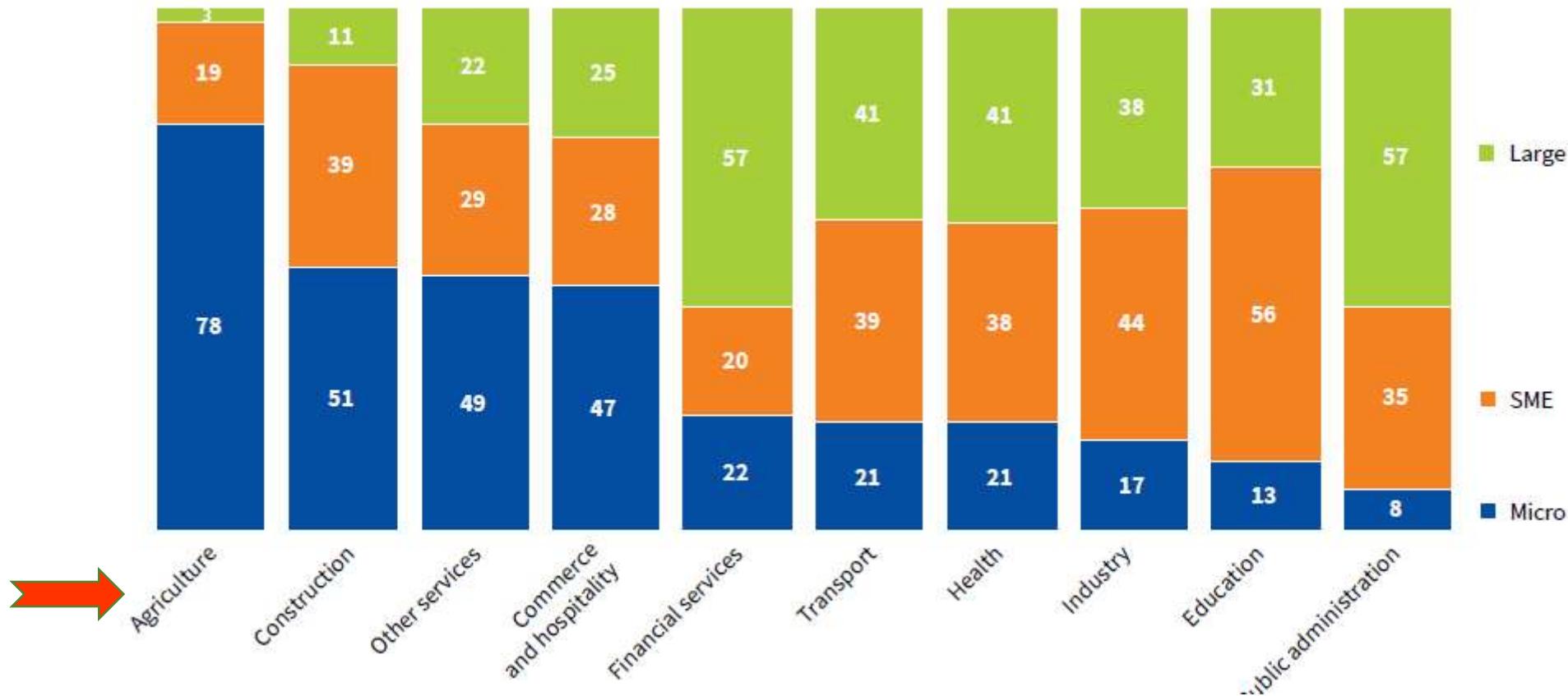
Employment by sector, EU28, 2008–2015 (%)



Source: EU-LFS 2008–2015.

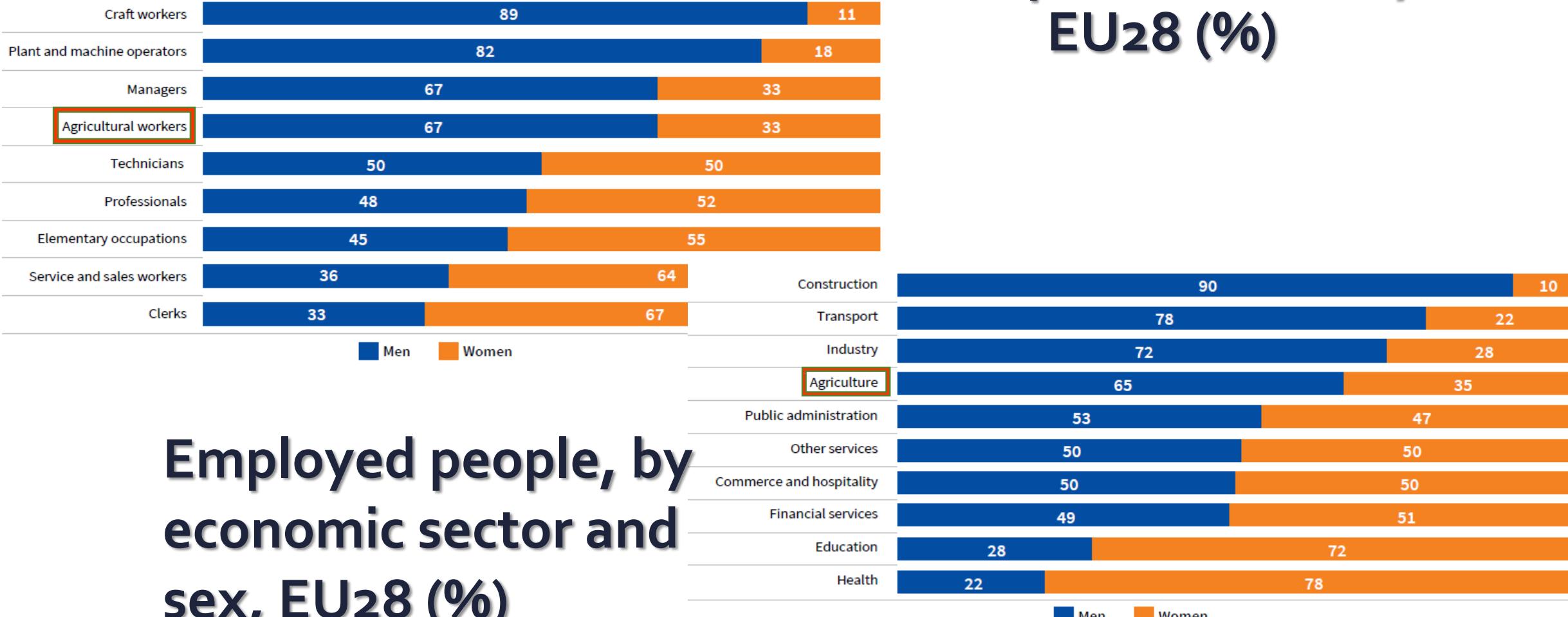
Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Distribution of workers across economic sectors, by company size, EU28 (%)



Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Employed people, by occupation and sex, EU28 (%)

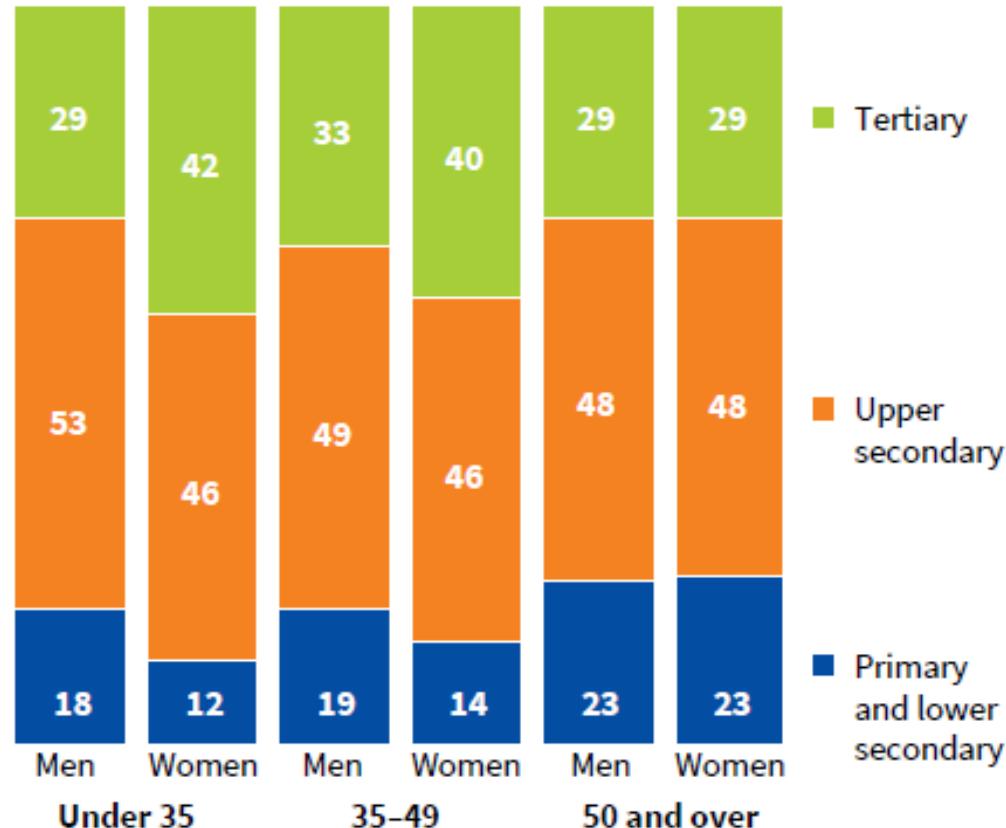


Employed people, by economic sector and sex, EU28 (%)

Source: EU-LFS 2015

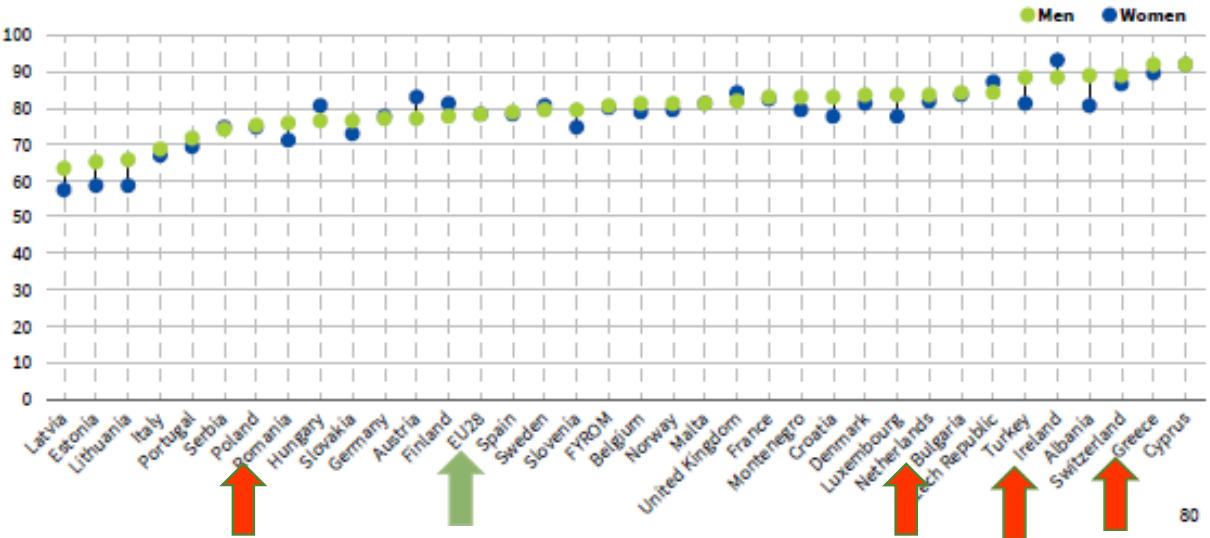
Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Educational level, by age and sex, EU28 (%)

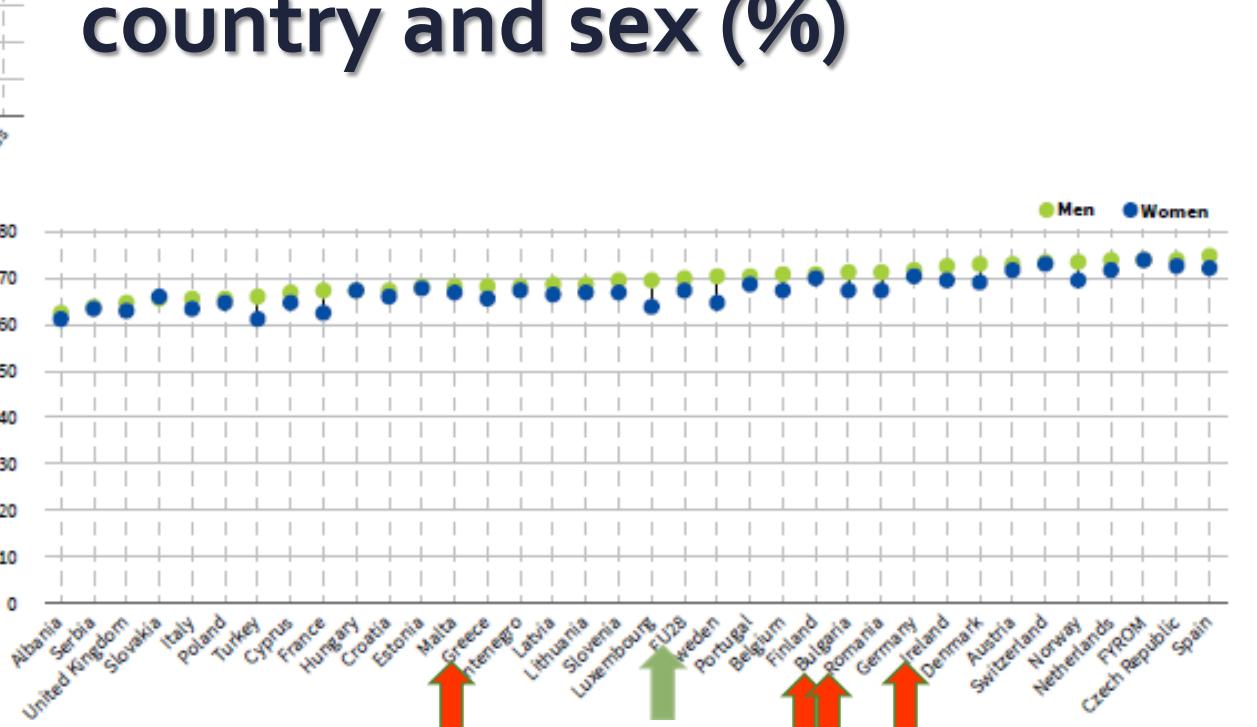


Source: EU-LFS 2015.

Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.



Scores on the Subjective well-being index, by country and sex

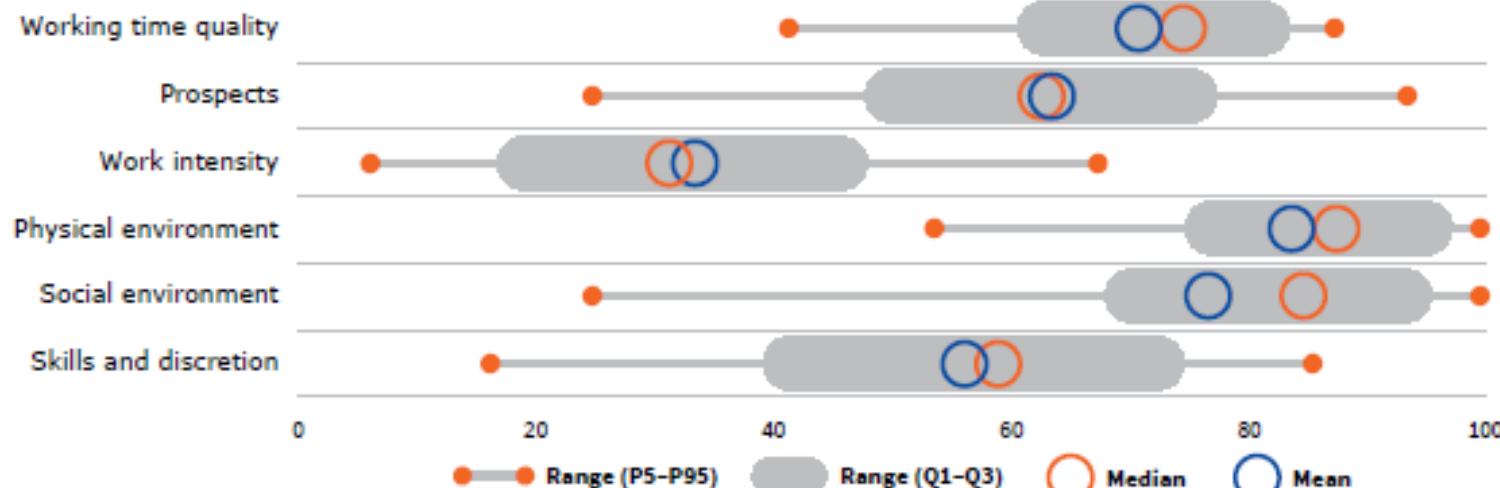


Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Job quality index

- Earnings quality captures the extent to which earnings contribute to workers' well-being in terms of average earnings and their distribution across the workforce.
- Labour market security captures those aspects of economic security related to the risks of job loss and its economic cost for workers. It is defined by the risks of unemployment and benefits received in case of unemployment.
- Quality of the working environment captures non-economic aspects of jobs including the nature and content of the work performed, working-time arrangements and workplace relationships. These are measured as incidence of job strain characterised as high job demands with low job resources.

Overview of job quality indices and their indicators and distribution of six job quality indices in the EU28, 2015



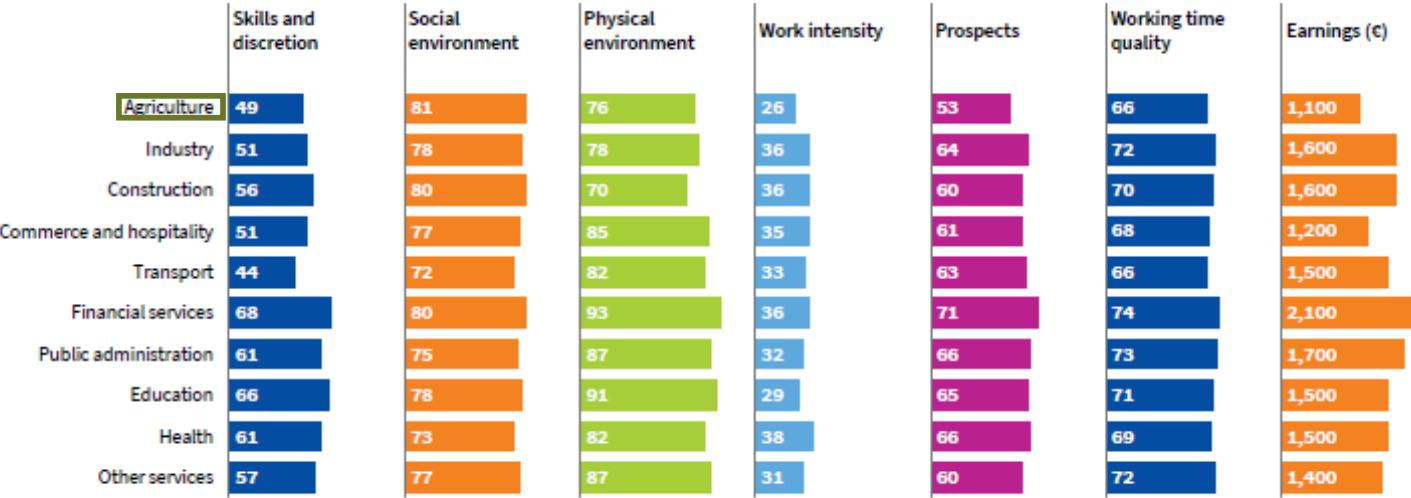
Note: Range Q1-Q3 (the grey boxes) shows the range of the values of the index for the middle 50% of the respondents, when arranging them from lowest to highest. Range P5-P95 (between the orange dots) shows this range for the middle 90% of the respondents.

The well-being indicators

- ‘Subjective well-being’ refers to the WHO-5 index.
- ‘Number of health problems’ is based on a calculation of workers’ health issues.
- ‘Work–life balance’ is a subjective measure of the workers’ own work–life balance.
- ‘Meaningful work’ is based on a scale made up of questions relating to workers’ perceptions of ‘doing useful work’ and a ‘job well done’.
- ‘Sustainable work’ is based on questions around workers’ assessment of their ability to work until the age of 60 and beyond (in the current job or a similar one).
- ‘Ability to make ends meet’ is a measure of one’s finances.
- ‘Engagement’ is based on a series of questions on workers’ relationship with their work.

Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Mean scores on the job quality indices, by economic sector, and by occupation, EU28

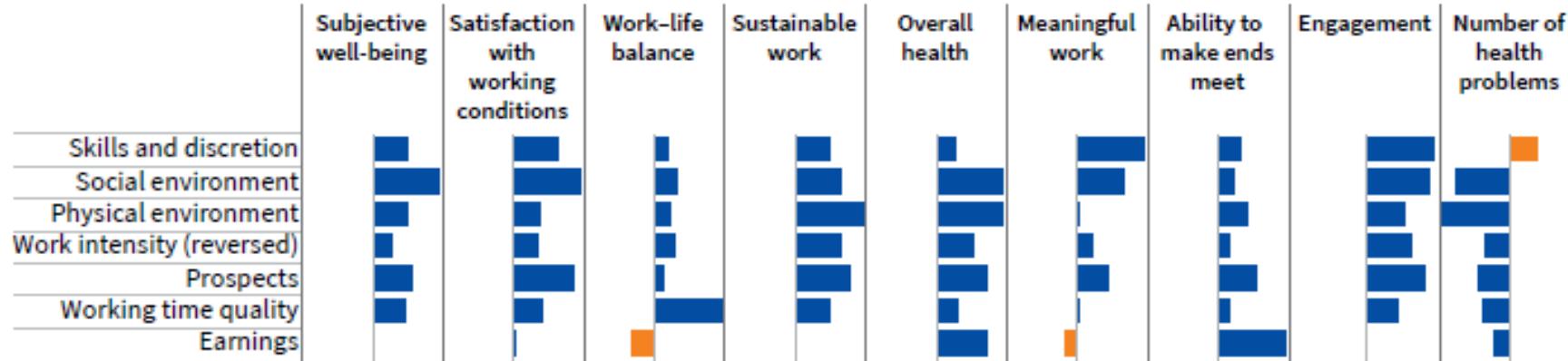


Note: A higher score for work intensity means a less favourable situation for the worker.



Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Association between job quality indices and well-being indicators and correlations between the job quality indices



Note: The bars in the figure represent the relative association between each job quality index and a dependant variable (i.e. the standardised coefficients of the job quality indices), showing only significant coefficients ($p < 0.01$). Blue bars represent associations favourable to workers and orange bars represent unfavourable associations. See text below for more details on the methodology.

	Skills and discretion	Social environment	Physical environment	Work intensity	Prospects	Working time quality	Earnings
Skills and discretion							
Social environment	0.2						
Physical environment	0.2	0.1					
Work intensity	0.1	-0.2	-0.3				
Prospects	0.3	0.2	0.1	0.0			
Working time quality	0.0	0.2	0.2	-0.3	0.0		
Earnings	0.4	0.0	0.1	0.1	0.2	-0.2	

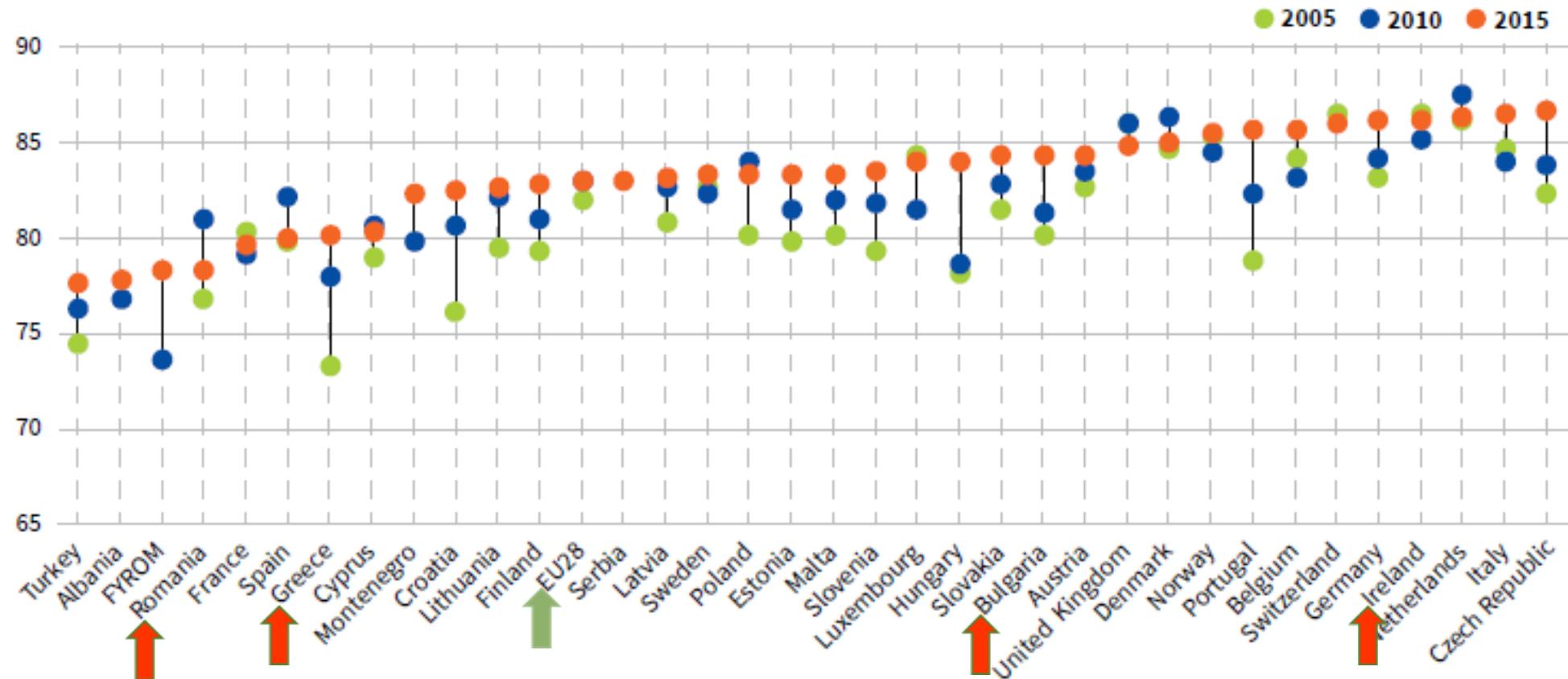
Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Physical environment index: proportion of workers in EU28 (%) and mean index scores (0–100), 2005–2015

	2005	2010	2015
<i>Proportion of workers in EU28 (%)</i>			
Vibrations from hand tools, machinery (a quarter of the time or more)	24	23	19
Noise so loud that you would have to raise your voice to talk to people (a quarter of the time or more)	30	29	27
High temperatures which make you perspire even when not working	25	22	24
Low temperatures whether indoors or outdoors	22	23	21
Breathing in smoke, fumes (such as welding or exhaust fumes), powder or dust (such as wood dust or mineral dust)	19	17	14
Breathing in vapours, such as solvents and thinners	11	10	11
Handling or being in skin contact with chemical products or substances (a quarter of the time or more)	14	15	18
Tobacco smoke from other people (a quarter of the time or more)	20	11	8
Handling or being in direct contact with materials which could be infectious, such as waste, bodily fluids, laboratory materials, etc. (a quarter of the time or more)	9	11	14
Tiring or painful positions	46	46	44
Lifting or moving people	8	9	10
Carrying or moving heavy loads	35	34	32
Repetitive hand or arm movements	62	63	62
<i>Mean index scores (0–100)</i>			
Physical environment index	82	83	83

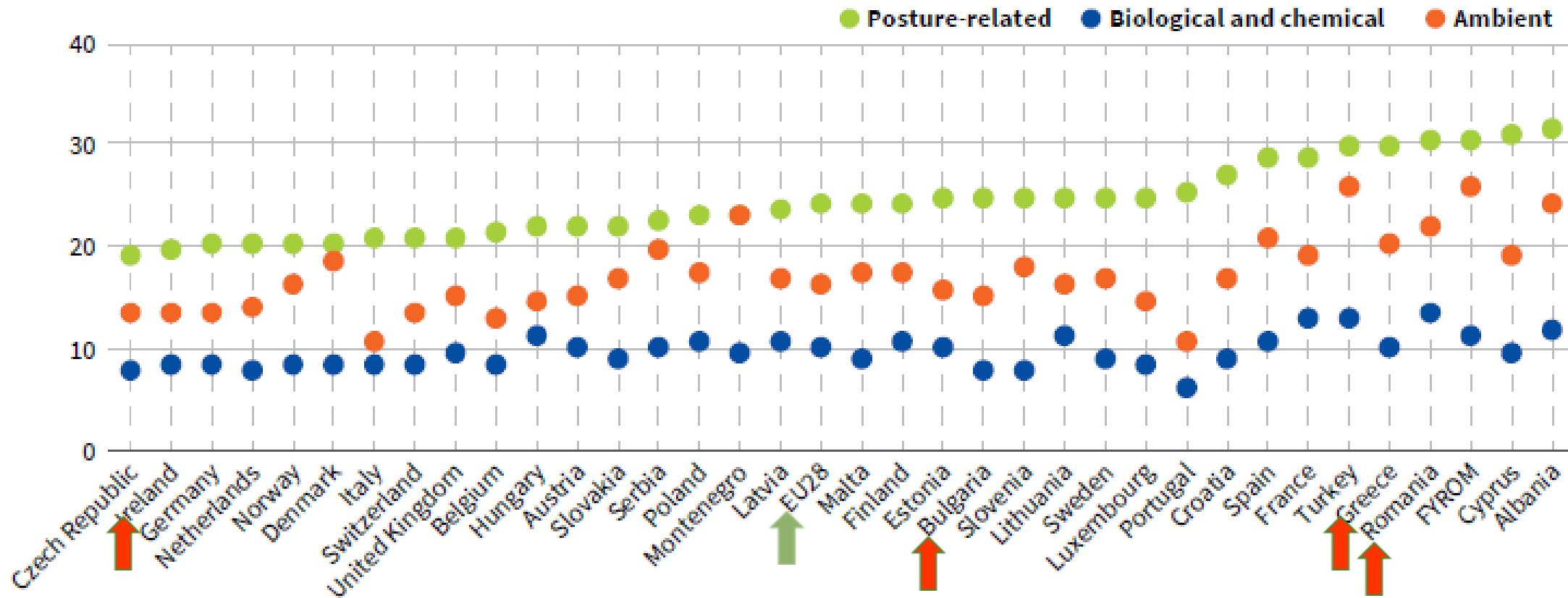
Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Physical environment index (0–100), by country, 2005–2015



Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Exposure to posture-related, ambient and biological and chemical risk indices (0–100), by country



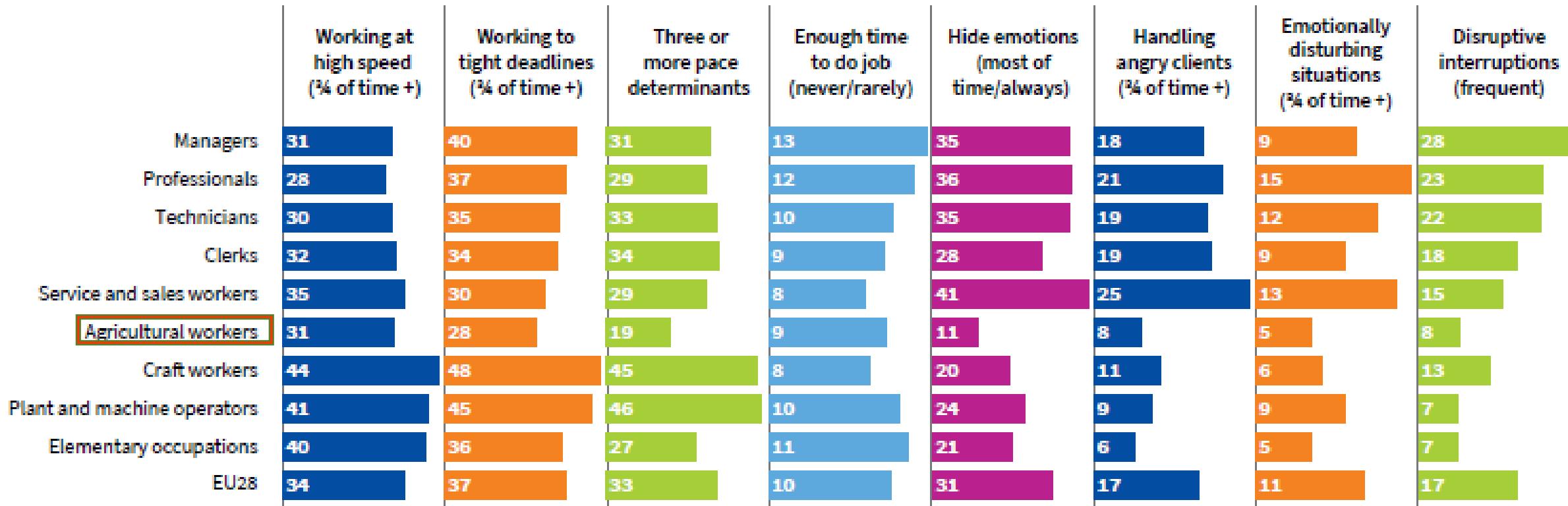
Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Scores on posture-related, biological and chemical and ambient risk indices, by occupation, EU28

	Posture-related risks	Biological and chemical risks	Ambient risks
Managers	17	6	11
Professionals	16	6	10
Technicians	18	9	11
Clerks	16	3	8
Service and sales workers	24	8	14
Agricultural workers	32	13	31
Craft workers	38	21	32
Plant and machine operators	35	14	28
Elementary occupations	30	13	20
EU28 average	24	10	16

Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Components of the Work intensity index, by occupation, EU28 (%)

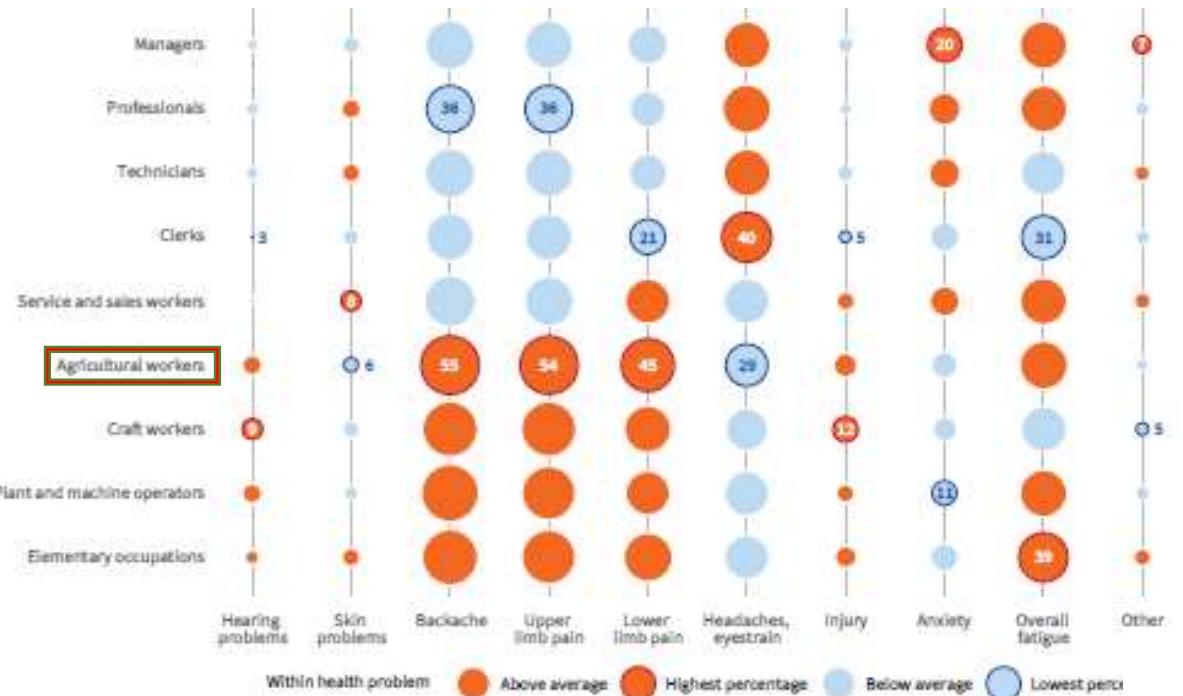


Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

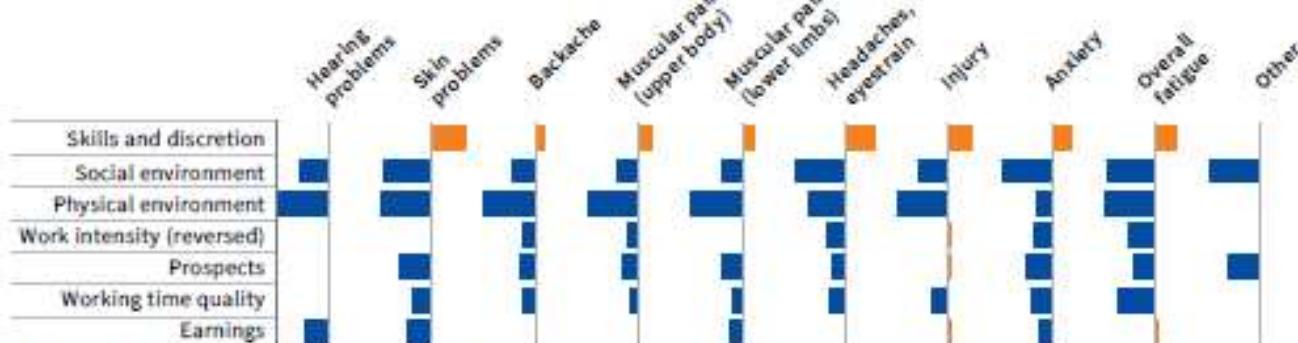


Usual weekly working hours by employment status, occupation, sector and workplace size, EU28 (%)

Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.



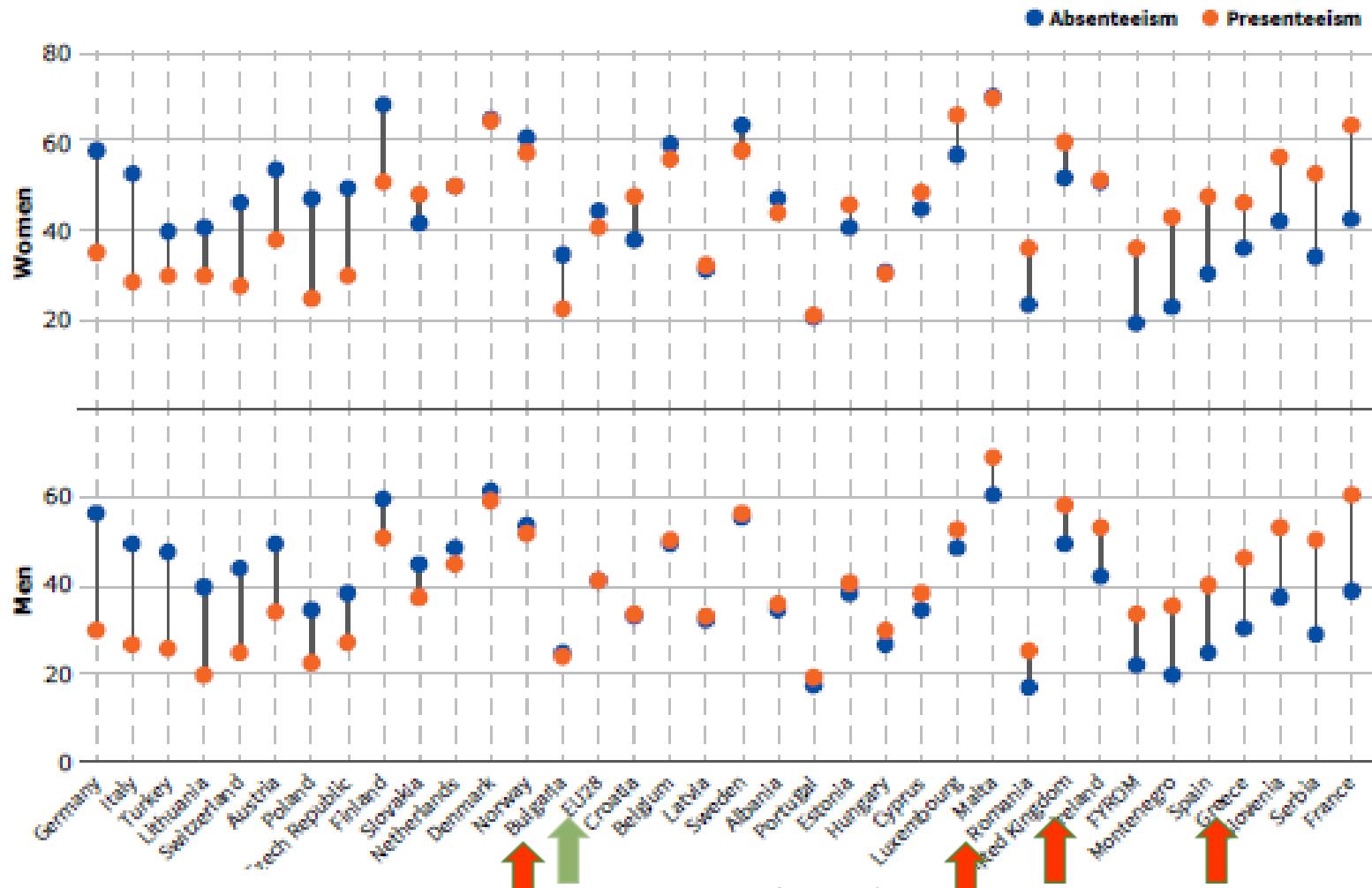
Health problems, by occupation, EU28 (%), and association between job quality indices and health problems



Note: The blue bars represent associations favourable to workers and the orange bars represent unfavourable associations. See note to Figure 32 for more details on the methodology used.

Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Sickness absence and presenteeism, by country and sex



Source: Eurofound (2016), Sixth European Working Conditions Survey – Overview report, Publications Office of the European Union, Luxembourg.

Are you tired?

Take a break!



Agricultural worker

- According to WHO 1962 definitions, an agricultural worker means any person temporarily or permanently employed, irrespective of his legal status, in agricultural activities.
- The peasant, as a socio-professional category, lives in the rural area, having as main occupation the agriculture, in order to ensure its existence.
- At present, besides private households practicing traditional farming, there are forms of organization, private or state, which have as their object either the raising of animals or the agricultural crop production (in forms or associations, possessing land, specific constructions, installations, machines, etc.).



Problems and perspectives in agriculture (1)

- Populations will continue to grow
- Climate changes, global warming
- Water availability will become more precarious
- Large-scale monoculture, culture rotation, industrial agriculture
- Soil Erosion
- Irrigation
- Agriculture and the Loss of Genetic Diversity
- Chemical Contamination. Pollution of groundwater and surface water (nitrate, pesticides)
- Food security
- Residues on food (ex. DDT)
- Pesticide resistance
- Genetically modified organisms (?)
- Risk of crop failure and food shortage.
- Sustainability
- Energy-intensive mechanization, fertilizers and pesticides
- Mitigation of effects of petroleum shortages
- Challenge: to produce 50% more food by 2020

Problems and perspectives in agriculture (2)

How to solve them? Please, discussions, for each item!

- Populations will continue to grow
- Climate changes, global warming
- Water availability will become more precarious
- Large-scale monoculture, culture rotation, industrial agriculture
- Soil Erosion
- Irrigation
- Agriculture and the Loss of Genetic Diversity
- Chemical Contamination. Pollution of groundwater and surface water (nitrate, pesticides)
- Food security
- Residues on food (ex. DDT)
- Pesticide resistance
- Genetically modified organisms (?)
- Risk of crop failure and food shortage.
- Sustainability
- Energy-intensive mechanization, fertilizers and pesticides
- Mitigation of effects of petroleum shortages
- Challenge: to produce 50% more food by 2020

Who can solve agriculture problems ?



Some questions ...

- How old is agriculture?
- How old is occupational medicine?
- When started medicine to deal with agricultural / rural patients?

How old is agriculture? The beginnings (1)

The history of agriculture records the domestication of plants and animals and the development and dissemination of techniques for raising them productively.

Agriculture began independently in different parts of the globe, and included a diverse range of taxa. At least eleven separate regions of the Old and New World were involved as independent centers of origin.

- Wild grains were collected and eaten from at least 20,000 BC.
- From around 9,500 BC, the eight Neolithic founder crops—emmer wheat, einkorn wheat, hulled barley, peas, lentils, bitter vetch, chick peas, and flax—were cultivated in the Levant.
- Rice was domesticated in China between 11,500 and 6,200 BC, followed by mung, soy and azuki beans.
- Pigs were domesticated in Mesopotamia around 11,000 BC, followed by sheep between 11,000 and 9,000 BC.

How old is agriculture? The beginnings (2)

- Cattle were domesticated from the wild aurochs in the areas of modern Turkey and Pakistan around 8,500 BC.
- Sugarcane and some root vegetables were domesticated in New Guinea around 7,000 BC.
- Sorghum was domesticated in the Sahel region of Africa by 5,000 BC. In the Andes of South America, the potato was domesticated between 8,000 and 5,000 BC, along with beans, coca, llamas, alpacas, and guinea pigs.
- Bananas were cultivated and hybridized in the same period in Papua New Guinea.
- In Mesoamerica, wild teosinte was domesticated to maize by 4,000 BC.
- Cotton was domesticated in Peru by 3,600 BC.
- Camels were domesticated late, perhaps around 3,000 BC.

Beginnings of (Occupational) Medicine (1)

- The first recorded data about occupational diseases originate from the time of pharaohs in ancient Egypt. People realized, that the tremendous dust development during the creation of the pyramids is hazardous.
- Furthermore they had precise descriptions about colic's caused by lead poisoning. Those symptoms were just present in people, who were working in the metal production.
- The impact of work on health can be traced to the Edwin Smith Surgical Papyrus, written approximately 1700 BC.
- One of the most renowned text from that time period is Papyrus Ebers. It is thought that this papyrus is from 1550BC. Named after its first owner, Georg Ebers, it contains 880 single diagnosis with its stately size of 19 meters.
- Hippocrates emphasized the relation between environment (air and water) and health and labor based health issues for people carrying heavy loads or minors. Hippocrates himself demanded a job related anamnesis for sick people

Beginnings of (Occupational) Medicine (2)



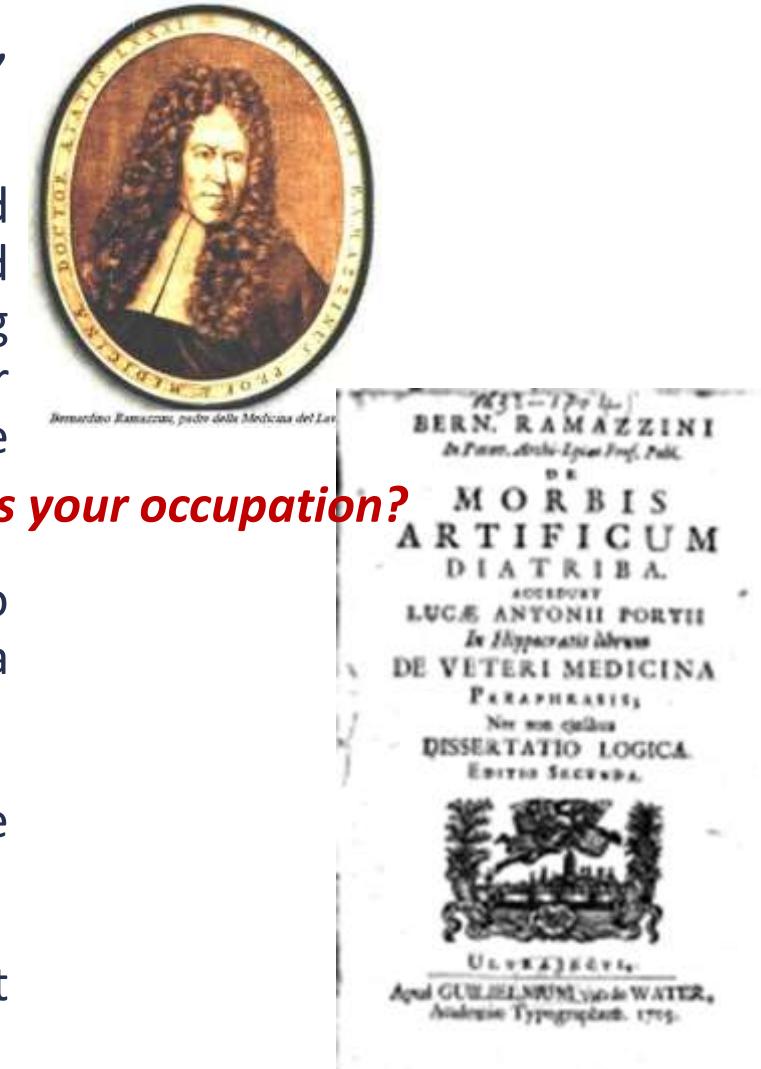
- In the first century AD, Pliny the Elder, a Roman scholar, perceived health risks to those working with zinc and sulfur. He devised a face mask made from an animal bladder to protect workers from exposure to dust and lead fumes.
- In the second century AD, the Greek physician, Galen, accurately described the pathology of lead poisoning and also recognized the hazardous exposures of copper miners to acid mists. He was occupational physician, serving military forces. Galen was physician to Roman gladiators. He learned and applied at his patients diet, fitness, hygiene and preventive measures.

Beginnings of (Occupational) Medicine (3)

- Finger and wrist guards worn by Bronze Age archers represent early personal protective equipment.
- Paracelsus, and Agricola were prominent, figures in the 15th century, with an emphasis on mining and health. Paracelsus, who lived from 1494 to 1541, and Agricola (1494-1555), who addressed the connection between health and work. A complete book of surgery deals only with the profession of the sailor. Furthermore a law was made, that ensured the presence of doctors on English ships.

Beginnings of (Occupational) Medicine (4)

- Ramazzini's (c1700) was the first, who, via documented studies, figured out that certain diseases are linked to specific professions.
- His publication, released 1700, "De morbis artificium diatriba" could be somehow translated as: Essay about diseases of artists and craftsmen. Here he mentions typical complains of "standing profession" like fatigue, tiredness and varicose veins in carpenters or masons. He suggested as prophylaxis and cure breaks where the workers could sit down, wraps or baths.
What is your occupation?
- He figured out that importance for ocular problems related to lightening, alcoholism due to inhalation for the people working in a distillery and several types of asthma in jobs related to dust.
- He also discovered nowadays typical diseases or symptoms like deformations due to posture or one sided movements.
- He recommended for people who are exposed to loud noise to protect themselves with ear muffs.



O4-Occupational health importance (3)

- Ramazzini studied and described the occupational health aspects at:
 - miners, gilders, healers by inunction (physicians who rub mercury in syphilitics), chemists, potters, glass-makers, painters, sulphur-workers, blacksmiths, plasterers and lime workers, apothecaries, cleaners of cesspits, fullers, oilmen, cheese-makers, lutestring-makers, **tobacco-workers**, corpse workers, midwives, nurses, **vintners and brewers**, starch-makers, corn-sifters and measurers, stonecutters, laundresses, **hemp, flax, and silk-workers**, bathmen, salt-workers, workers who stand, **sedentary workers**, runners, horsemen, porters, athletes, workers on minute objects, voice-trainers and singers, farmers, **fishermen**, and soldiers. The second edition included the diseases of the learned, of printers, writers and notaries, confectioners, weavers, coppersmiths **carpenters**, razor and lancet grinders, brick-makers, well diggers, **sailors** and rowers, **hunters**, and soap makers.

Beginnings of (Occupational) Medicine (5)

- In the Middle East Rhazes included occupation in his case studies (9th century).
- James Lind's clinical trial of various dietary treatments of British sailors with scurvy in 1756 and Edward Jenner's 1796 discovery that cowpox vaccination prevents smallpox have modern-day applications as the science and practices of nutrition and immunization are crucial influences on health among the populations of developing and developed countries.
- Sir Percivall Pott (London surgeon) recognized in 1775, small inflammation spots on the testicle of chimney cleaners (the insidious effects of soot on chimney sweepers). He was a major force in getting the British Parliament to pass the Chimney-Sweepers Act of 1788.



Beginnings of (Occupational) Medicine (6)

- Industrial hygiene received another major boost in 1743 when Ulrich Ellenborg published a pamphlet on occupational diseases and injuries among gold miners. Ellenborg also wrote about the toxicity of carbon monoxide, mercury, lead, and nitric acid.



Agricultural health and safety

- Agricultural health and safety engages a multidisciplinary team of medical professionals, veterinarians, safety professionals, engineers, sociologists, epidemiologists, and psychologists, for whom this book serves as an essential resource.



Medical assistance in agriculture

Health surveillance in rural area differs in different countries.

In some is less represented. Rural workers, specially agriculture workers' are checked rarely. Access at medical services can be limited (ex. Romania)

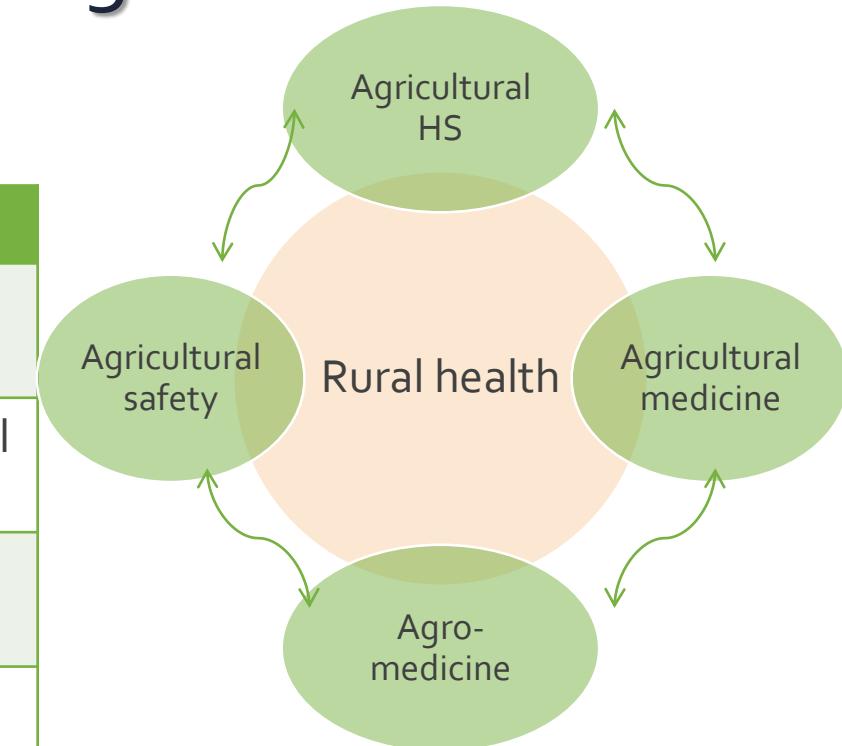
In other countries, there is a branch of occupational medicine dealing with agricultural workers, agricultural medicine (ex. France, USA).

- Family physician
- Nurse
- Occupational physician
- Hygienist



Health care services for rural residents and agricultural workers

Rural health	Health care services for <u>all</u> rural residents
Agricultural HS	Health and safety services that assure the reduction of injuries and illnesses in agriculture population
Agricultural medicine	A discipline which deals with environment and occupational medicine and health, in agriculture
Agro medicine	A process which links medical faculty with extension to provide information, dissemination, and problem solving
Agricultural safety	A discipline of safety professionals who focus on training and apply other methods to reduce acute agricultural injuries



Source: Adapted, Donham Kelley J., Thelin Anders. 2016. Agricultural Medicine, Rural Occupational and Environmental Health, Safety, and Prevention, Second Edition

The components of the field of agricultural medicine



Source: Adapted, Donham Kelley J., Thelin Anders. 2016. Agricultural Medicine, Rural Occupational and Environmental Health, Safety, and Prevention, Second Edition

Occupational health definition

What is Occupational Health?

- The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations by preventing departures from health, controlling risks and the adaptation of work to people, and people to their jobs.

(ILO/WHO 1950)

Occupational health importance

highest degree of physical, mental and social well-being of workers in all occupations	highest degree of health professional active population
preventing departures from health, controlling risks	preventing illnesses, health problems controlling etiological factors
controlling the adaptation of work to people, and people to their jobs.	assuring for each worker proper conditions of work, in according with their status

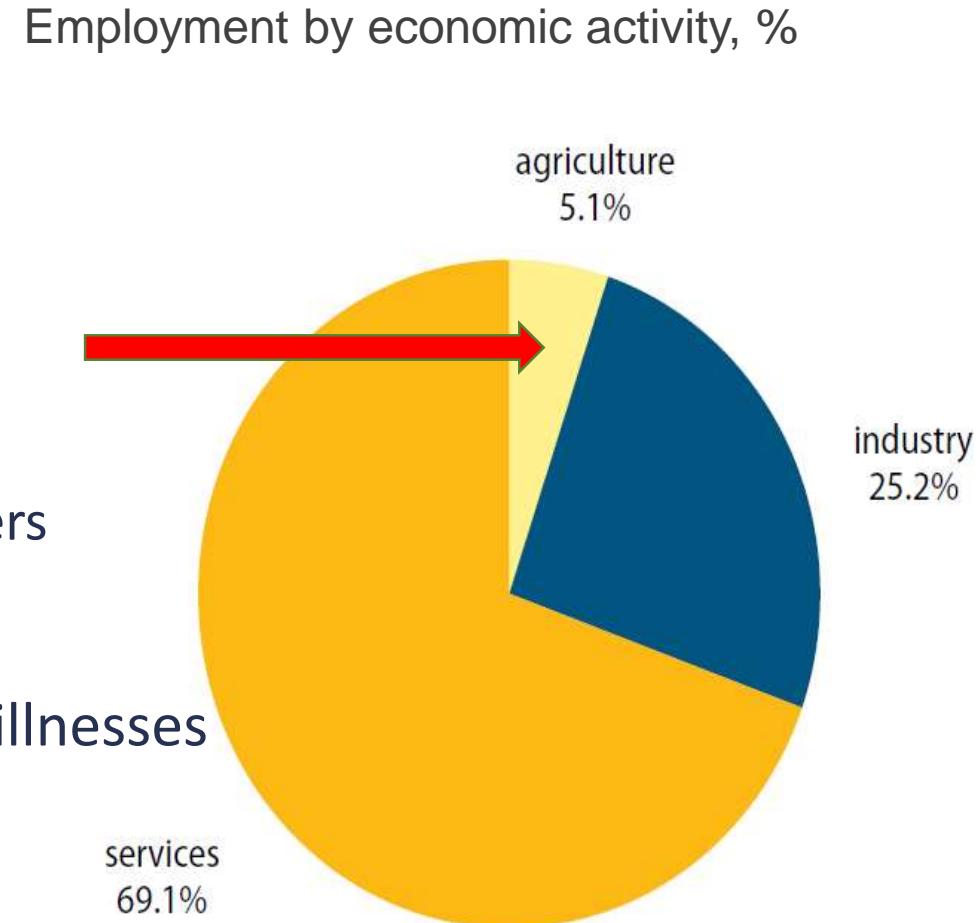
Main role and tasks of OHS and the occupational physician – can differ in different countries

- Identification, assessment and control of the risks from health hazards at work
- Providing training and education
- Surveillance of workers' health in relation to work
- Contributing to occupational rehabilitation
- Organizing first aid.

Occupational health importance for employees

OH's importance for employees

- Workforce
 - ageing
 - becoming more female
 - employing an increasing proportion of migrant workers, both legal and undeclared
 - using more temporary and part-time workers
 - new technologies
- Prevention – absenteeism, presenteeism, illnesses
- Fit for work / workability
- Workers' representatives – better preparation



OH's importance for OSH experts

- Identify hazards / risk management /
- Risk assessment – by law
- Risk Control measures (important for health surveillance or/and emergency procedures)
- Good health for the workers (patients)
- For occupational medicine doctors working in relationship to the agriculture sector – to be inside the problem, to know, understand, collaborate, solve the problems

Occupational health minuses in agriculture

- OH services in agriculture - country and county gaps , deficit.
- OHPs - no experience in the field of agriculture, no practice in some countries.
- Insufficient number of Occupational physicians
- Recording data (?)
- Reporting system (?)
- Occupational nurses deficit, too



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Agriculture, today

- Traditional agriculture vs. modern agriculture (mechanization, automation)
- Mechanization means, tools, ecological pesticides, money, information, agrarian culture
- Family households, farms, lease, agricultural associations, holdings, etc.
- Modern family farms
- Conditions of isolation / living and working away from inhabited areas
- Access to qualified first aid services for accidents and emergency treatment is limited in rural areas
- Access to learning is difficult,
- Long distance shuttle
- Access to industrial goods - sometimes at (far) distance

Risks in rural areas



Access ways - mountain areas, delta

Road quality

High cost of travel

Financial Reward - It's late or inexhaustible

Natural disasters: floods, earthquakes, landslides, locusts, diseases ,etc.

Occupational risks (1)

- 7 (long) days / week
- Daylight, continuous rhythm
- No or very short breaks
- Sleepless - quality of night sleep
- Strong physical effort, sustained, 10-12 hours / day
- Static and dynamic effort
- Orthostatic position, bent forward (digging, weeding, milking, etc.)
- Old, cheap, non-ergonomic, hard to handle tools that can lead to injuries, accidents
- Inappropriate, old, used machinery

Occupational risks (2)

- Noise and vibration - agricultural machinery (tractors, harrows, mowers, etc.)
- Climate (summer - winter), weather (rain, snow, thunderstorms, storms)
- Solar radiation
- Non-ionized electromagnetic radiation
- Zoonosis, insect bites, snake bites, parasitoses
- Dermatoses caused by plants, chemicals, etc.



Occupational risks (3)

- Professional powders (cereals, spores, earth)
- Allergens (pollen, dust, animal hair, insect venom, snakes, etc.)
- Pesticides, insecticides (not recognized/ known)
- Defoliants, fungicides, herbicides, larvacides, molluscicides, nematicides, plant growth regulators, repellents, rodenticides.
- Fertilizers (anhydrous ammonium, phosphates, nitrogen compounds)
- Food Additives (Minerals, Antibiotics, Antiparasitic)
- Disinfectants and detergents
- Carbon Oxide, oils and solvents, ammonia, hydrogen sulphate, methane

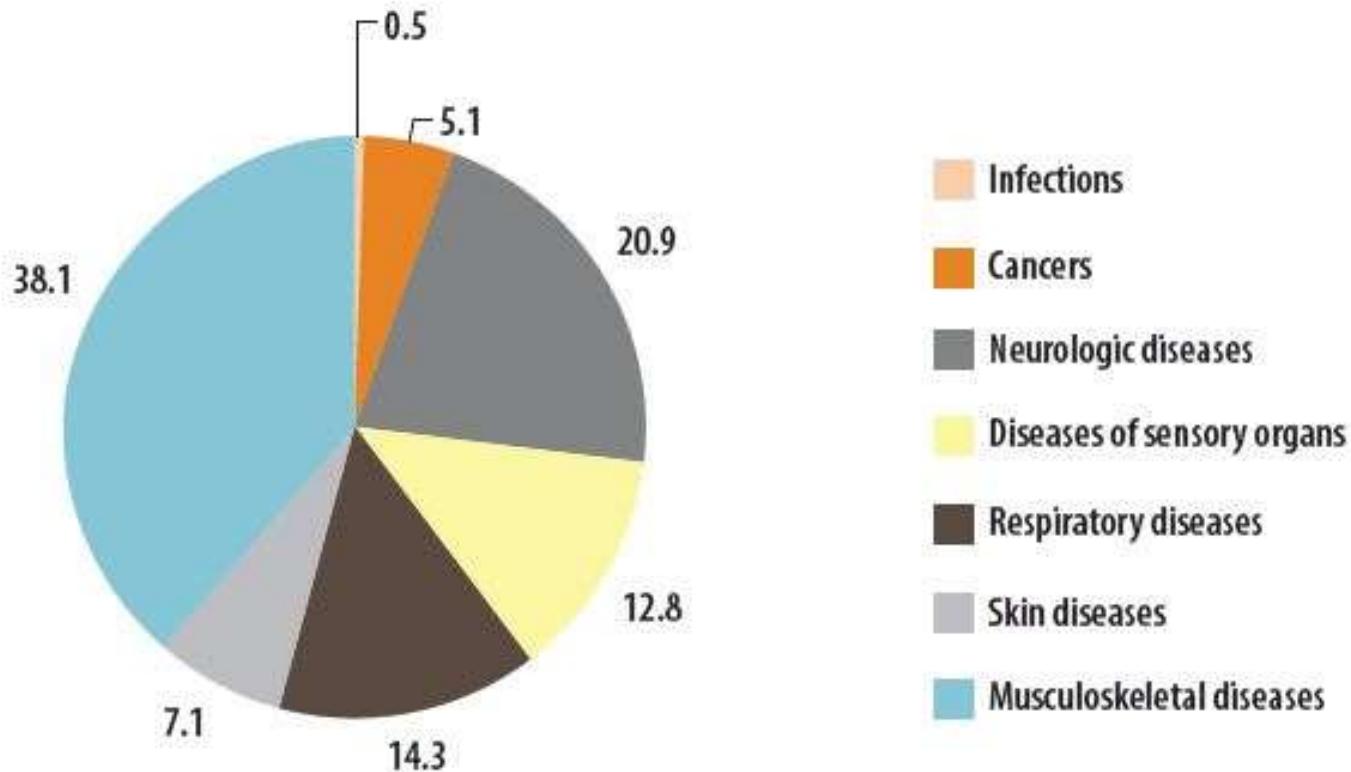
Occupational risks (3)

- Accidents (caused by unsafe conditions and improper actions)
- Different accidents: mechanics, falls, fractures, crushing, trauma
- Electricity
- Occupational diseases
- Work-related diseases
- Worsening of pre-existing diseases



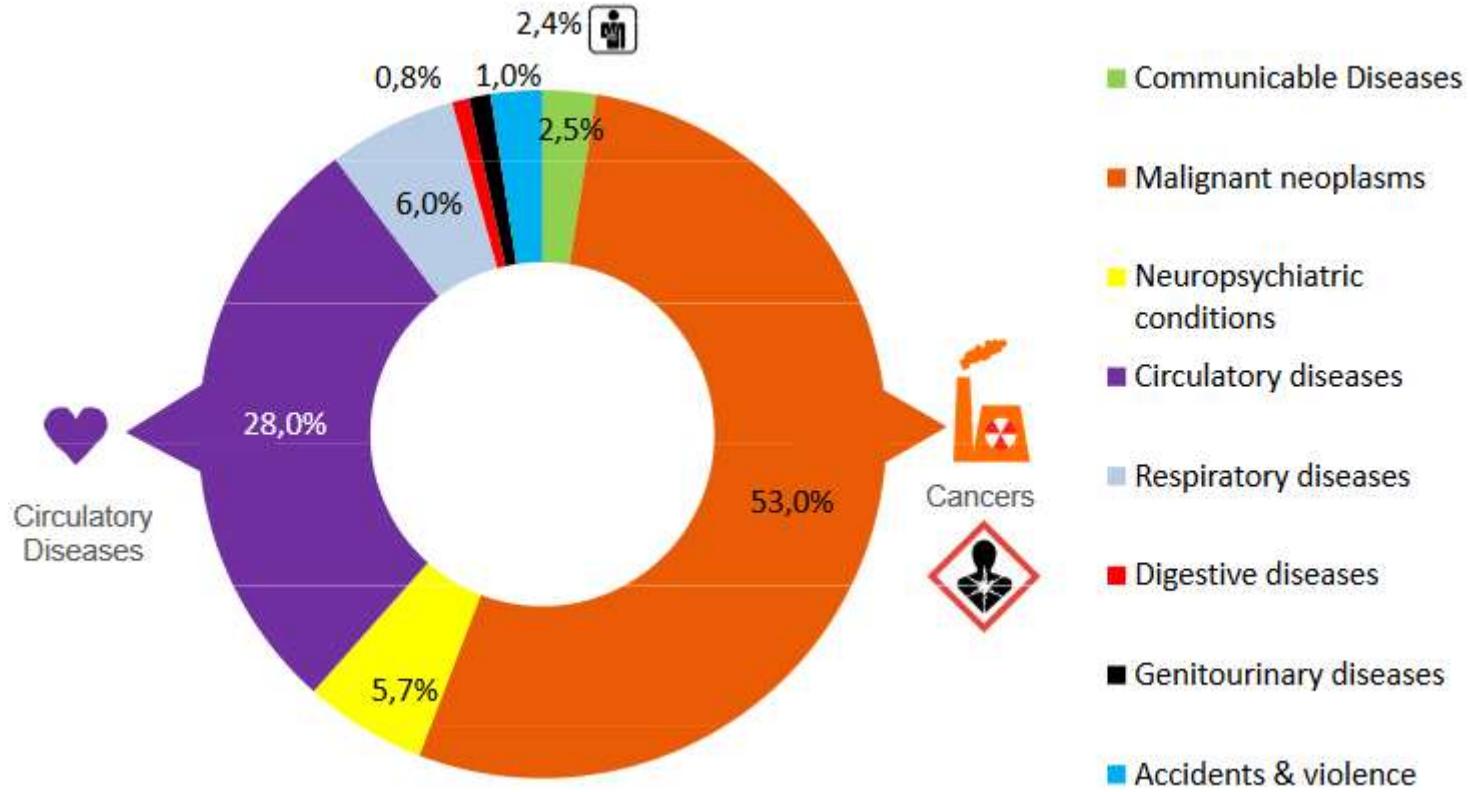
Occupational diseases

Figure 11: Proportion of occupational diseases, EODS obligatory list, 2005



Source: EODS

Work-related annual deaths caused by illnesses in the EU28 (Jukka Takala)



Source: Jukka Takala, Work-related Illnesses Identification, Causal Factors and Prevention, "Safe Work - Healthy Work – For Life", http://gr2014.eu/sites/default/files/Work-related%20Illnesses%20Identification,%20Causal%20Factors%20and%20Prevention%20%E2%80%9CSafe%20Work%20-%20Healthy%20Work%20%E2%80%93%20For%20Life%20%E2%80%9D_0.pdf

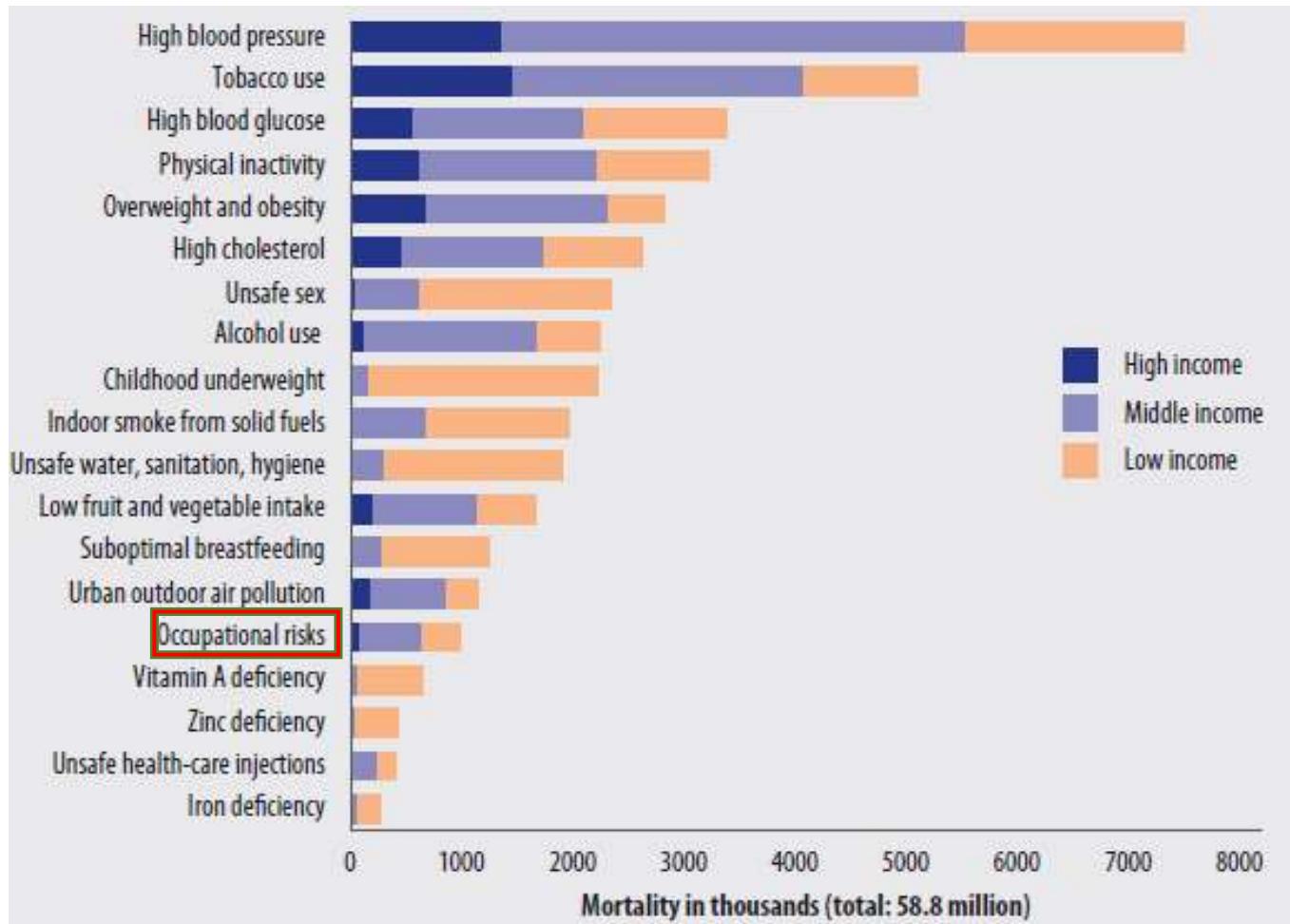
Diagnosis of Occupational Disease

- a) The clinical features must fit in with what is known about the health effects following exposure to the specified agent. The symptoms and signs should fit, and this may be supported in some cases by suitable diagnostic tests.
- b) There must be indication of sufficient occupational exposure. Evidence on exposure may be obtained through taking the occupational history, results of occupational hygiene measurements taken at the workplace, biological monitoring results, and/or records of incidents of over-exposure.
- c) The time interval between exposure and effect must be consistent with what is known about the natural history and progress of the disease. Exposure must precede health effects.
- d) The differential diagnosis must be considered. There are non-occupational conditions that have similar clinical features as occupational diseases, and a physician will have to take.

Few statistical data

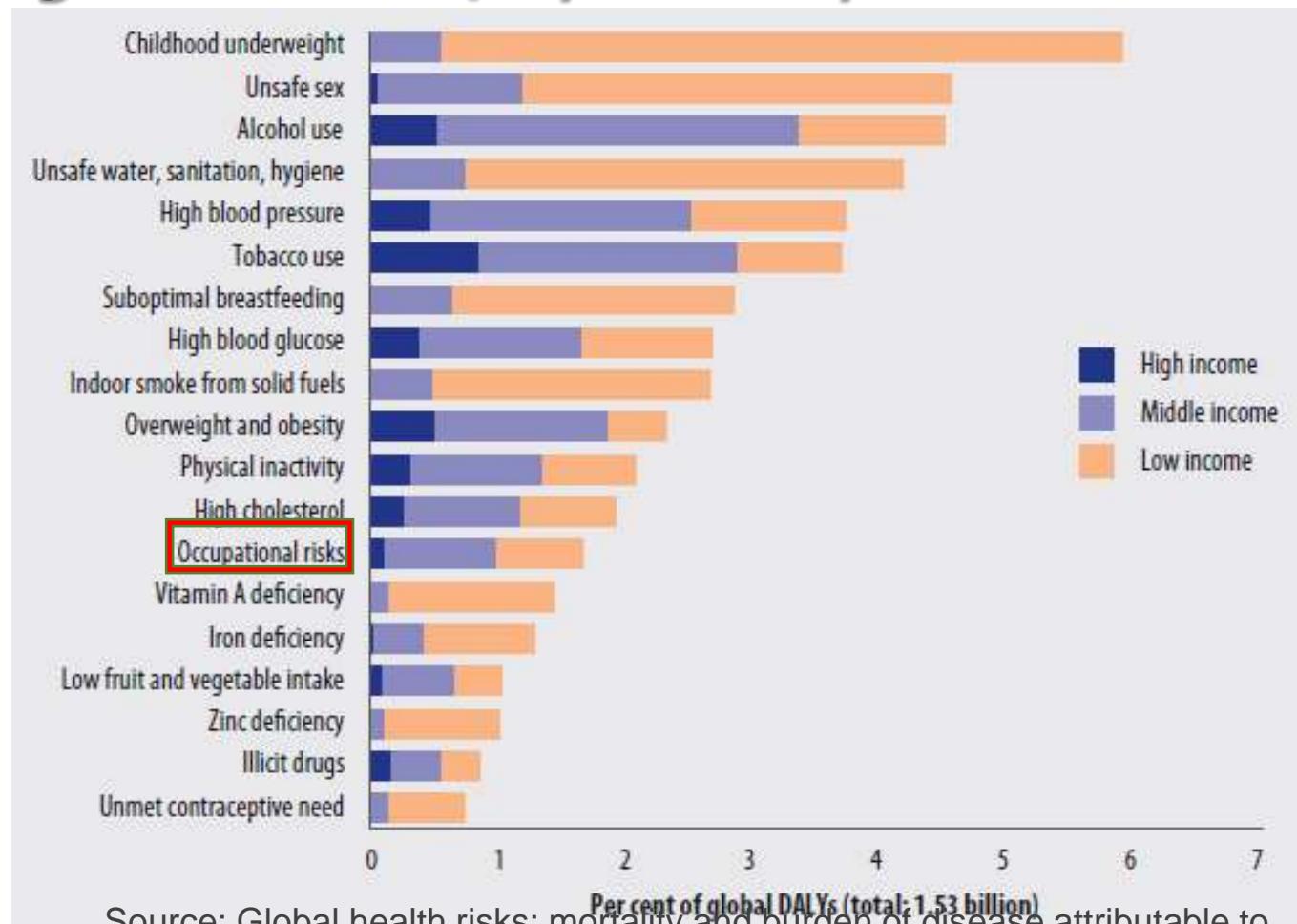
- More than one third of the world's deaths can be attributed to a small number of risk factors.
- The 24 risk factors described in this report are responsible for 44% of global deaths and 34% of DALYs;
- The 10 leading risk factors account for 33% of deaths.
- Understanding the role of these risk factors is key to developing a clear and effective strategy for improving global health.
- An estimated 37% of back pain is attributable to occupational risk factors.
- Low back pain causes considerable morbidity and is a major cause of work absences, resulting in economic loss.

Deaths attributed to 19 leading risk factors, by country income level, 2004



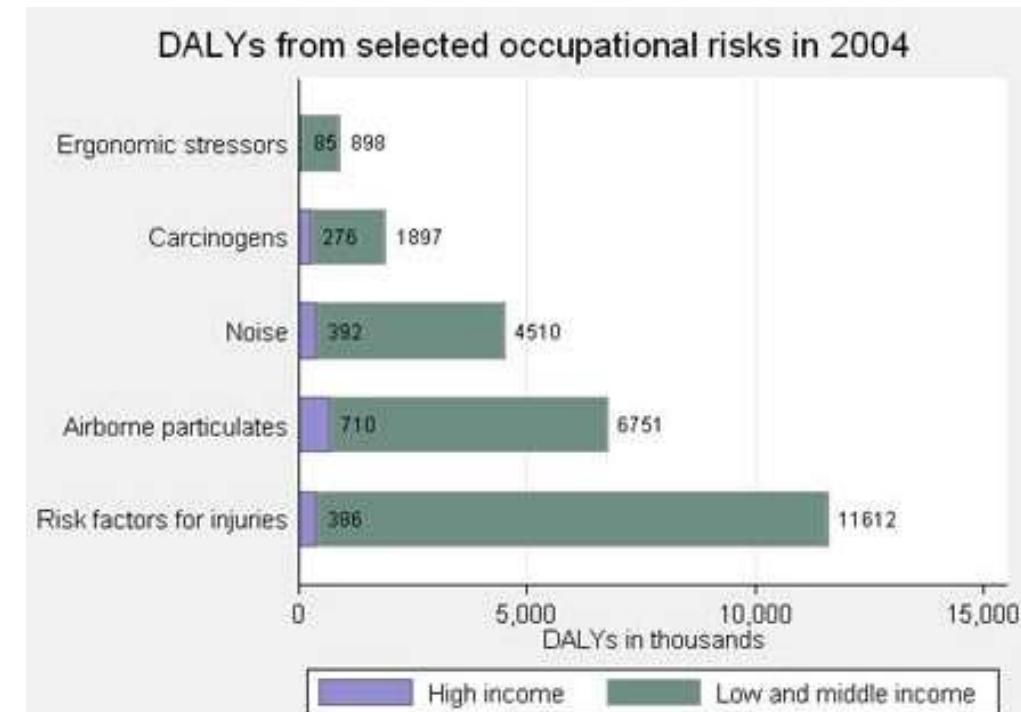
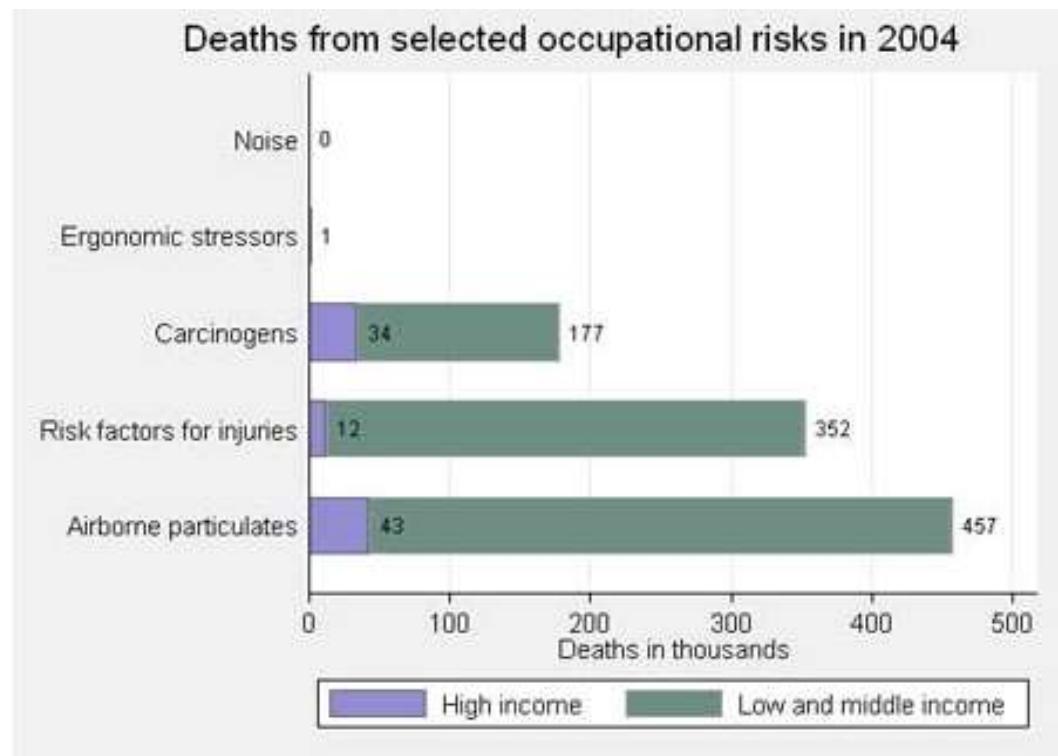
Source: Global health risks: mortality and burden of disease attributable to selected major risks., WHO, 2004

Percentage of disability-adjusted life years (DALYs) attributed to 19 leading risk factors, by country income level, 2004.



Source: Global health risks: mortality and burden of disease attributable to selected major risks., WHO, 2004

Global estimates of occupational burden of disease, for selected risks



Source: Global health risks: mortality and burden of disease attributable to selected major risks., WHO, 2004

Occupational health importance for employers

- Healthy workers – economy
- Workers declared as “Fit for work” - confident employers
- Avoid the risk of accidents, decrease number of accidents;
- Health and safety policy;
- Employers' liability insurance;

Absenteeism

Absences from work lasting three days or more

Country	Headline absence rate	Year of data	Coverage	Trends	Data source	Comments
BG	7.4%	2007	Absence of any duration	Decline since 2002	National Statistics Institute; National Social Security Institute	From 1 January 2007 onwards compensation payment of the sickness certificates changed.
EL	4.7 days approx = 2%	2000	Absence longer than three days	No data	Social Insurance Institute	Covers insured private sector workers only. Estimated absence rate based on a doctoral thesis; <i>reliability of this estimate and comparability with other data not known.</i>
IE	8 days approx = 3.5%	2007	Absence of any duration	Lower than in 1970s	Household survey; employer organizations surveys	Household survey (the Central Statistics Office National Quarterly Household Survey) parallels the methodology of labor force surveys in other countries, such as Finland and the UK.
RO	4.1 days; approx = 1.8%	2008	Not stated	No data	National Health Insurance Agency; labor force survey	Labor force survey measures absence resulting from a disability caused or worsened by work; it does not measure sickness absence.

<https://www.eurofound.europa.eu/observatories/eurwork/comparative-information/absence-from-work>

Source: Absence from work, European Foundation for the Improvement of Living and Working Conditions, 2010

Presenteeism

- ‘Presenteeism’ has emerged as a distinct concept in the last 10 years.
- It is the practice of an employee’s attending work even when they feel too ill to be able to work effectively.
- It may be driven by a sense of loyalty to an employer or fellow workers, by compulsion, or both.
- In 12 of the 28 countries, there are surveys or specific studies addressing the phenomenon. These surveys and studies differ in their depth and sophistication.
- An academic overview adopts a different definition of presenteeism: broader, in that it covers any health problem at work, but narrower, in that it defines presenteeism as involving a reduction in performance (Schultz and Edington, 2007).

<https://www.eurofound.europa.eu/observatories/eurwork/comparative-information/absence-from-work>
Absence from work, European Foundation for the Improvement of Living and Working Conditions, 2010

Estimated costs of absence

Source: <https://www.eurofound.europa.eu/observatories/eurwork/comparative-information/absence-from-work>

Absence from work, European Foundation for the Improvement of Living and Working Conditions, 2010

Country	Compilation of costs	Estimated costs to employer, per annum	National estimated costs, per annum	Social security	Comments
BG	No data	No data	0.41% of GDP	In 2009 the number of sickness absences increased by nearly 30% and the issue of work incapacity certificates increased by around 20%.	GDP figure is total sum paid for temporary work incapacity. Some of the increase has been attributed to the recent use by certain companies of 'fictitious incapacity certificates'.
EL	No data	€153 million – three fifths of the annual spend of the Social Insurance Institute (IKA) and similar bodies	No data	Only figures provided by social insurance providers are available. Costs in 2001 were € 256 million, covering five days on average per insured person. The first three days' wages are paid by employer	Only a thesis from 2001 reporting data from 1998 is available. Analysed costs of IKA and other social insurance providers. Only examines those insured.
IE	Indirect costs often excluded. Direct costs calculated using sick pay, overtime, replacement costs, etc.	Several figures; €793 million – €1.1 billion, but estimates that cost could be as much as €2 billion	Up to 1% of GDP	13,803 claims for occupational injury benefit were made. However this does not include absences of less than three days, the self-employed and certain public sector employments	Non-inclusion of indirect costs could mean actual figure higher
RO	No data	€162.4 million is the employers' contribution to the National Unique Fund for Health Insurance (FNUASS)	No data	Aggregate spending by FNUASS of €208 million. The first half of 2009 indicated a slight increase in this figure.	The employers contribution has a shortfall of €55.2 million.

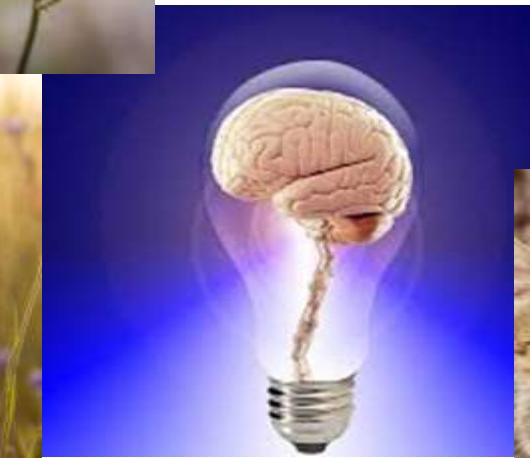
Causes of absence at work



- Acute disease
- Aggravated disease
- Occupational disease
- Work-related disease
- Work accident
- Injury
- Holliday
- Indiscipline

Future in rural areas

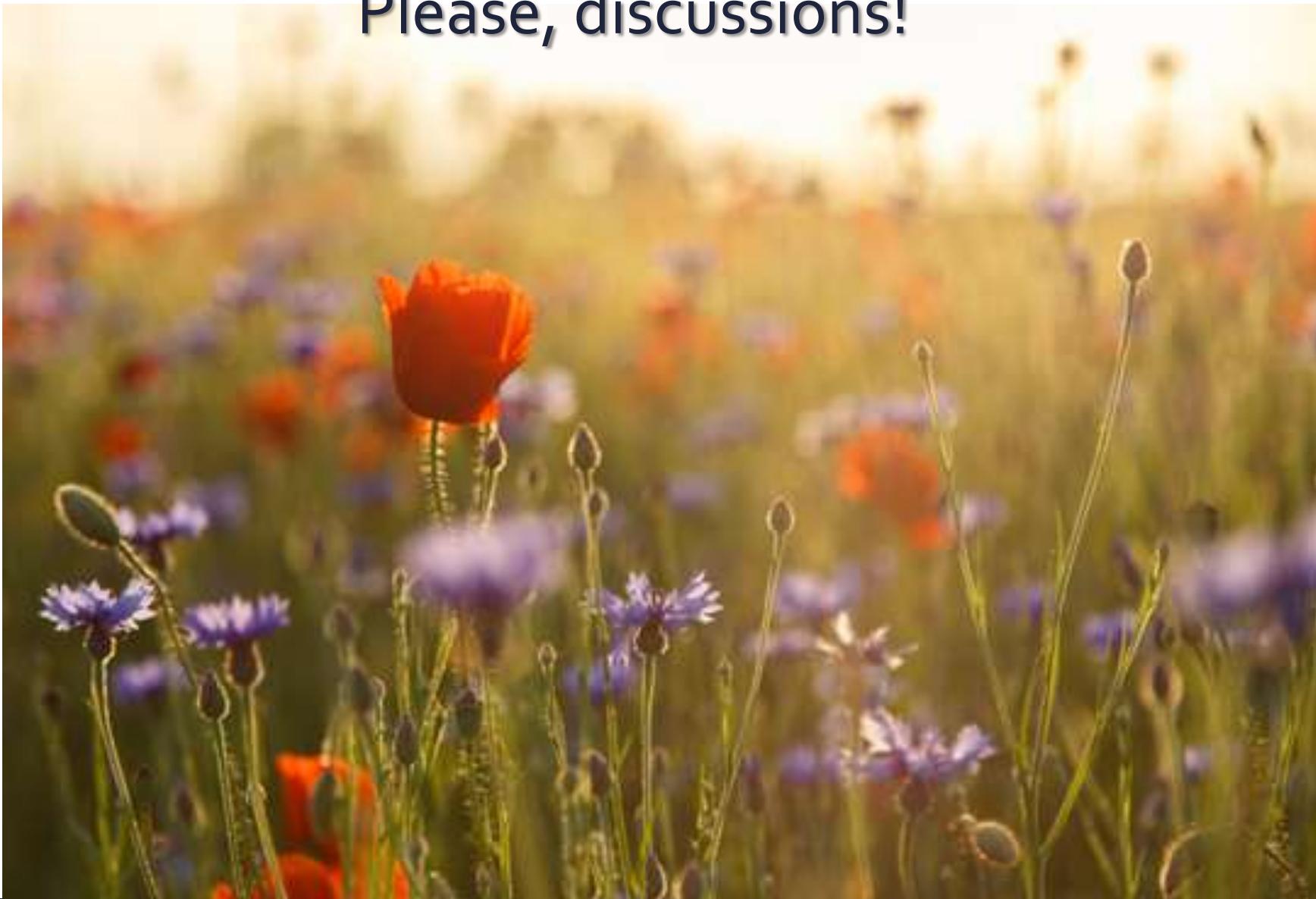
Clean agriculture
Clean WORLD
Intensive agriculture



Unpolluted air, water, soil are coming back to the present!



Please, discussions!



Thank you for your attention !



Questions?