

Overview Report of the Third European Survey of Enterprises on New and Emerging Risks (ESENER 2019) – Technical Annex

Technical Annex

European Agency for Safety and Health at Work (EU OSHA)

TECHNICAL ANNEX

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1. OSH management – Regressions

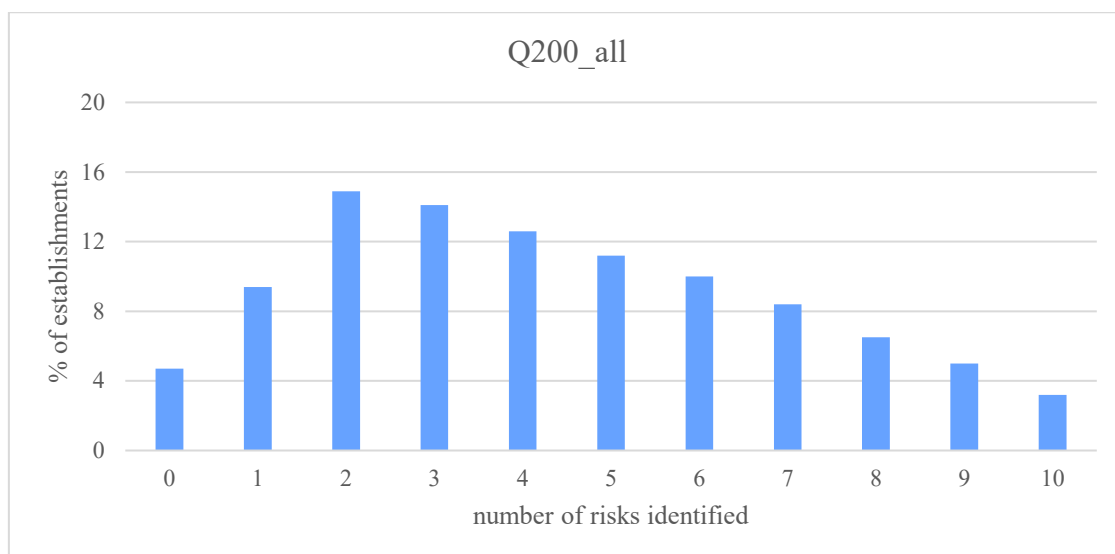
1.1 Health and safety risks in European establishments

1.1.1 Risk evaluation

The assessment of the types of risks identified by establishments starts with a general overview. The aim of this step was to identify the reporting and magnitude of different physical risks among establishments. To do so the summary score of all physical risks was created. More specifically, the reporting of risks was measured on a simple binary scale (yes/no) in 10 specific items, such as prolonged sitting or loud noise. The summary scale was constructed by assigning 1 to the reporting of the risk, and 0 when it was not reported. By summing values from all 10 items, we created a variable on an 11-point scale: from 0 meaning no risks identified to 10 meaning 10 types of risks were identified in this establishment.

The distribution of physical risks summary scale is presented in Figure 1. We observe that this distribution is right-skewed, with a decreasing number of establishments with numerous risks. Close to 5% of all European establishments declared no physical risks. The great majority of them identified between 2 and 3 risks (sum of those two values was 29%), followed by a steady decrease of establishments' share alongside the increasing of number of risks. More than 3% of establishments declared the presence of all 10 types of risks.

Figure 1. Summary scale of physical risks (Q200)



Regression results:

The objective: to understand what OSH and contextual factors are associated with the reporting of physical risks.

Model 1: OSH factors

All OSH factors included are proven to be significant for the reporting of physical risks. All factors have a positive influence, i.e. the presence of an occupational health doctor, an expert dealing with the

ergonomic design, a generalist on health and safety, an expert for accident prevention, and a health and safety representative as well as fulfilling legal obligations as a reason for addressing health and safety. They are all connected with a higher number of physical risks identified. The strongest effect was observed in the case of an occupational health doctor – their presence increases the number of risks reported on average by 0.68.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After the introduction of contextual factors (country, sector, size), all OSH factors still remain significant, although their influence was slightly weaker. It means, regardless of the context, OSH factors have an important influence on the number of risks identified in the establishment.

Country, size and sector were also significant for the number of risks reported among the establishments.

When comparing to Germany, more risks are identified in: Switzerland, Denmark, Estonia, Finland, France, Luxembourg, Latvia, Norway, Slovenia, and the UK. Similar levels of risks as in Germany were observed in Belgium, Cyprus, Spain, Croatia, and Sweden. In the remaining countries, there were fewer risks identified than in Germany.

The bigger the establishment, the more risks were identified (on average 1.77 in big enterprises as compared to small).

When comparing to Trade sector, sectors from A to H, and O exhibited a higher number of risks, whereas sectors from J to N – lower. Sectors with the highest number of reported risks (over 2 more risks compared to Trade) were B (mining), E (water supply, waste) and F (construction) and the lowest number of risks – in K (financial services) and J (information & communication).

Q200 – summary scale		
Variables/Performance Metrics	Model 1 (0)	Model 2 (1)
	Coefficient value (std error)	
Q151_1. Occupational health doctor	0.68*** (0.03)	0.36*** (0.03)
Q151.3. Expert dealing with the ergonomic design	0.34*** (0.03)	0.07*** (0.03)
Q151.4. Generalist on health and safety	0.18*** (0.03)	0.22*** (0.03)
Q151.5. Expert for accident prevention	0.32*** (0.03)	0.26*** (0.03)
Q350.4. Health and safety representative	0.51*** (0.03)	0.28*** (0.03)
Q262.1. Fulfilling legal obligations	0.48*** (0.04)	0.30*** (0.04)
country_code_at		-0.55*** (0.08)
country_code_be		-0.04 (0.08)
country_code_bg		-1.61*** (0.10)

country_code_ch	0.17** (0.08)
country_code_cy	-0.10 (0.10)
country_code_cz	-0.17** (0.08)
country_code_dk	0.30*** (0.08)
country_code_ee	0.21** (0.10)
country_code_el	-1.01*** (0.08)
country_code_es	0.10 (0.07)
country_code_fi	0.20** (0.08)
country_code_fr	0.67*** (0.07)
country_code_hr	-0.09 (0.10)
country_code_hu	-0.46*** (0.08)
country_code_ie	-0.57*** (0.07)
country_code_is	-0.23** (0.10)
country_code_it	-1.23*** (0.07)
country_code_lt	-0.29*** (0.10)
country_code_lu	0.25** (0.10)
country_code_lv	0.45*** (0.10)
country_code_mk	-1.43*** (0.10)
country_code_mt	-0.73*** (0.12)
country_code_nl	-0.27*** (0.08)
country_code_no	0.14** (0.07)
country_code_pl	-0.51*** (0.07)
country_code_pt	-0.37*** (0.08)
country_code_ro	-1.14*** (0.08)
country_code_rs	-0.83*** (0.10)
country_code_se	0.08 (0.08)
country_code_si	0.13 (0.09)
country_code_sk	-0.91*** (0.10)
country_code_uk	0.12* (0.07)
Size_5-9	-0.52*** (0.03)

Size_50-249		0.86*** (0.03)
Size_250+		1.77*** (0.04)
Nace1_A		1.70*** (0.08)
Nace1_B		2.24*** (0.16)
Nace1_C		1.01*** (0.04)
Nace1_D		1.25*** (0.15)
Nace1_E		1.99*** (0.11)
Nace1_F		2.02*** (0.05)
Nace1_H		0.49*** (0.06)
Nace1_I		-0.08 (0.05)
Nace1_J		-1.60*** (0.07)
Nace1_K		-1.88*** (0.08)
Nace1_L		-0.52*** (0.09)
Nace1_M		-0.93*** (0.05)
Nace1_N		-0.25*** (0.06)
Nace1_O		0.31*** (0.06)
Nace1_P		-0.94*** (0.05)
Nace1_Q		-0.52*** (0.04)
Nace1_R		-0.23** (0.08)
Nace1_S		-0.27*** (0.07)
AIC	216834.2	205529.0
BIC	216904.0	206061.1
N	45,420	45,420
R2	0.0697	0.2764

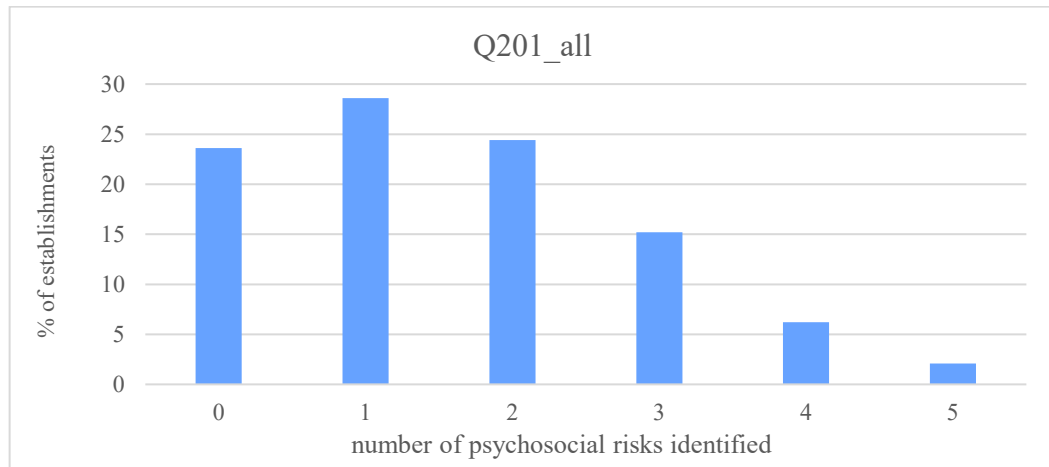
*** p<0.01 ** p<0.05 * p<0.10

Similarly to physical risks, the existence of psycho-social risks were also assessed using a summary scale. The construction was identical to the one for physical risks. The reporting of psycho-social risks was also measured on a simple binary scale (yes/no) in 5 specific items, such as time pressure and job insecurity. The summary scale was constructed by assigning 1 to reporting of the risk, and 0 when it was not reported. By summing values from all 5 items, we created a variable on an 6-point scale: from 0 meaning no risks identified, to 5 meaning 5 types of psycho-social risks identified in this establishment.

The distribution of psycho-social risks summary scale is presented in Figure 2. We observe that this distribution is also right-skewed, with a decreasing number of establishments reporting a higher number of risks. Close to 24% of all European establishments declared no psycho-social risks. More

than half of establishments identified between 1 or 2 risks. Slightly above 6% of them declared 4 risks, and only 2% - declared the presence of all 5 types of psycho-social risks.

Figure 2. Summary scale of psycho-social risks (Q201)



Regression results:

The objective: to understand what OSH and contextual factors are associated with the reporting of psycho-social risks.

Model 1: OSH factors

Five out of 6 OSH factors included were significant for the reporting of psycho-social risks, yet the direction of those factors varied. The presence of an Expert dealing with the ergonomic design influenced positively the number of psychosocial risks reported, i. e. if this Expert is present in the establishment, the number of psycho-social risks identified increased on average by 0.4. The same was found for the presence of a health and safety representative and fulfilling legal obligations as a reason for addressing health and safety. However, the presence of an occupational health doctor and an expert for accident prevention decreased the number of psychosocial risks reported. On the other hand, a generalist on health and safety was not connected with the number of psychosocial risks identified.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After the introduction of contextual factors (country, sector, size), OSH factors still remained significant, although their influence was weaker. An expert dealing with the ergonomic design, a health and safety representative and fulfilling legal obligations increased the number of reported risks, even after controlling for country and establishment size and sector. On the other hand, the presence of an expert for accident prevention became insignificant when contextual factors were introduced. The

presence of a generalist on health and safety became significant, which may suggest that their presence is important for the identification of psychosocial risks depending on the country or sector.

Country, size and sector were also significant for the reported number of risks among the establishments.

When comparing to Germany, more psychosocial risks were identified in: Belgium, Switzerland, Cyprus, Denmark, Finland, Luxembourg, Netherlands, and Sweden. Similar level of risks as in Germany were observed in Estonia, France, Iceland, Latvia, and Malta. In the remaining countries, there were fewer risks identified than in Germany.

Similarly to physical risks, the bigger the establishment, the more psychosocial risks were identified (on average 0.67 more in big enterprises as compared to small).

When comparing to Trade sector, sectors F, H, I, K, L, M, N, O, P, Q, R, S exhibited higher number of risks, whereas sectors A, and C – lower. Sectors with the highest number of risks were Q (human health and social work), I (accommodation and food), and O (public administration), and the lowest number of risks – in C (manufacturing).

It is worth to note that the sectors with a high number of physical risks were characterised by a low number of psycho-social risks, and the opposite.

Q201 – summary scale		
Variables/Performance Metrics	Model 1	Model 2
	(0)	(1)
Coefficient value (std error)		
Q151_1. Occupational health doctor	-0.07*** (0.01)	0.04** (0.02)
Q151.3. Expert dealing with the ergonomic design	0.40*** (0.01)	0.06*** (0.01)
Q151.4. Generalist on health and safety	0.01 (0.02)	0.08*** (0.02)
Q151.5. Expert for accident prevention	-0.09*** (0.01)	0.01 (0.01)
Q350.4. Health and safety representative	0.17*** (0.01)	0.06*** (0.02)
Q262.1. Fulfilling legal obligations	0.14*** (0.02)	0.07*** (0.02)
country_code_at		-0.20*** (0.04)
country_code_be		0.13*** (0.04)
country_code_bg		-0.72*** (0.05)
country_code_ch		0.17*** (0.04)
country_code_cy		0.12* (0.05)
country_code_cz		-0.54*** (0.04)
country_code_dk		0.79*** (0.04)
country_code_ee		0.07 (0.05)
country_code_el		-0.31*** (0.04)
country_code_es		-0.40*** (0.04)

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country_code_fi	0.23*** (0.04)
country_code_fr	0.01 (0.04)
country_code_hr	-0.43*** (0.05)
country_code_hu	-0.52*** (0.04)
country_code_ie	-0.33*** (0.04)
country_code_is	0.02 (0.05)
country_code_it	-0.97*** (0.04)
country_code_lt	-0.84*** (0.05)
country_code_lu	0.16*** (0.05)
country_code_lv	-0.06 (0.05)
country_code_mk	-0.57*** (0.05)
country_code_mt	0.00 (0.06)
country_code_nl	0.17*** (0.04)
country_code_no	0.18*** (0.04)
country_code_pl	-0.45*** (0.04)
country_code_pt	-0.12*** (0.04)
country_code_ro	-0.18*** (0.04)
country_code_rs	-0.63*** (0.05)
country_code_se	0.55*** (0.04)
country_code_si	-0.18*** (0.05)
country_code_sk	-0.78*** (0.05)
country_code_uk	-0.09** (0.04)
Size_5-9	-0.20*** (0.01)
Size_50-249	0.31*** (0.02)
Size_250+	0.67*** (0.02)
Nace1_A	-0.11** (0.04)
Nace1_B	-0.12 (0.08)
Nace1_C	-0.22*** (0.02)
Nace1_D	0.05 (0.08)
Nace1_E	-0.01 (0.06)
Nace1_F	0.07**

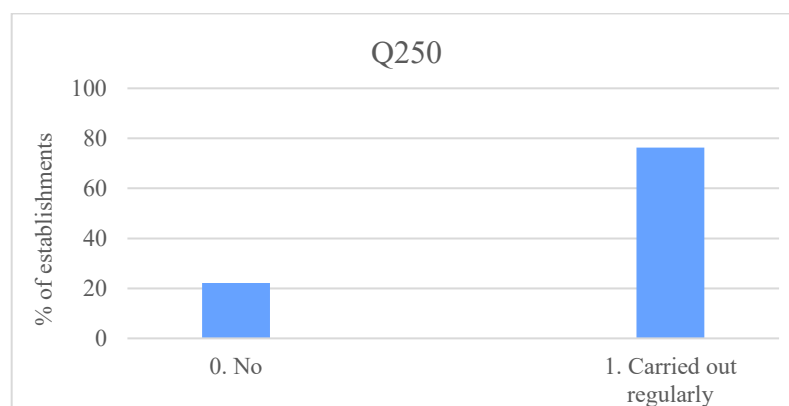
Nace1_H		(0.03)
Nace1_I		0.15***
Nace1_J		(0.03)
Nace1_K		0.39***
Nace1_L		(0.03)
Nace1_M		0.01
Nace1_N		(0.04)
Nace1_O		0.18***
Nace1_P		(0.04)
Nace1_Q		0.15***
Nace1_R		(0.05)
Nace1_S		0.19***
		(0.03)
AIC	153906.2	147057.9
BIC	153976.0	147590.0
N	45,420	45,420
R2	0.0275	0.1642

*** $p < 0.01$ ** $p < 0.05$ * $p < 0.10$

1.2 Measures taken for OSH management

1.2.1 Risk assessment completion

Regular conducting of risks assessments was measured by question (Q250): “Do you regularly carry out workplace risk assessments?” Over 76% of establishments in the EU27 indicated carrying out regular risk assessments.



Regression results:

The analysis of risks assessment was performed using logistic regression method. In this method, we report Odds Ratio, i.e., the probability level that a particular factor influences the outcome variable.

The objective: to understand what OSH and contextual factors are associated with the reporting of regular risk assessments.

Model 1: OSH factors

All five OSH factors had a significant influence on the probability of risk assessment being reported to be carried out regularly. The biggest influence was for the presence of a health and safety representative (the chances of carrying out risk assessment were 203% higher than when there is no health and safety representative in the establishment). Using external OSH providers, fulfilling legal obligations and avoiding fines from labour inspectorate as a reason for addressing health and safety and being visited by labour inspection in the last 3 years also positively influenced the reporting of risk assessments.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After introduction of contextual factors (country, sector, size), OSH factors still remained significant, and the chances for regular risks assessment decreased only slightly, meaning that the OSH factors considered had a strong influence, regardless of country or sector.

When comparing to Germany, lower chances for reporting regular risk assessments were identified in: Austria, Bulgaria, Cyprus, Greece, Iceland, Lithuania, Luxembourg, and North Macedonia. Similar chances for reporting risks assessments as in Germany were observed in Estonia, Malta, and Slovakia. In the remaining countries, there were higher chances for reporting risks assessment than in Germany. The highest probability for reporting risks assessments were in Spain, Slovenia and Italy.

The bigger the establishment, the higher the probability of reporting carrying out regular risk assessment.

When comparing to Trade sector, lower chances for reporting risk assessments were observed in sectors I, J, K, L, M, O, P, R, S, whereas higher chances were found in sectors from A to F and Q. Sectors with the highest probability of reporting regular risk assessment were D (electricity, gas etc. – 298% higher chances than in trade sector), and E (water supply, waste management etc.).

Variables/Performance Metrics	Q250 (carried regularly)	
	Model 1 (0)	Model 2 (1)
	Odds ratio (std error)	
Q350.4. Health and safety representative	3.03*** (0.08)	2.43*** (0.07)
Q262.1. Fulfilling legal obligations	1.99*** (0.07)	1.98*** (0.08)
Q262.5. Avoiding fines from labour inspectorate	1.48*** (0.04)	1.34*** (0.04)
Q154. Visited by labour inspectorate	1.78*** (0.05)	1.69*** (0.05)

Q152. Used external OSH providers	2.79*** (0.07)	2.23*** (0.06)
country_code_at		0.69*** (0.06)
country_code_be		1.25*** (0.11)
country_code_bg		3.80*** (0.59)
country_code_bg		0.46*** (0.04)
country_code_cy		0.62*** (0.06)
country_code_cz		1.36*** (0.12)
country_code_dk		6.06*** (0.69)
country_code_ee		1.10 (0.12)
country_code_el		0.86* (0.07)
country_code_es		7.87*** (0.84)
country_code_fi		2.92*** (0.29)
country_code_fr		1.19** (0.09)
country_code_hr		2.44*** (0.33)
country_code_hu		2.11*** (0.20)
country_code_ie		1.97*** (0.17)
country_code_is		0.49*** (0.05)
country_code_it		5.80*** (0.64)
country_code_it		0.57*** (0.06)
country_code_lu		0.40*** (0.03)
country_code_lv		4.01*** (0.49)
country_code_mk		0.63*** (0.06)
country_code_mt		1.21 (0.17)
country_code_nl		2.17*** (0.19)
country_code_no		2.48*** (0.22)
country_code_pl		3.23*** (0.27)
country_code_pt		1.59*** (0.14)
country_code_ro		4.21*** (0.55)
country_code_rs		2.60*** (0.34)
country_code_se		3.09*** (0.31)

country_code_si		5.81*** (0.78)
country_code_sk		0.88 (0.09)
country_code_uk		4.66*** (0.44)
Size_5-9		0.72*** (0.02)
Size_50-249		1.86*** (0.08)
Size_250+		3.53*** (0.28)
Nace1_A		1.42*** (0.14)
Nace1_B		3.28*** (0.97)
Nace1_C		1.54*** (0.08)
Nace1_D		2.98*** (0.81)
Nace1_E		2.52*** (0.47)
Nace1_F		1.77*** (0.11)
Nace1_H		1.02 (0.07)
Nace1_I		0.85*** (0.05)
Nace1_J		0.51*** (0.04)
Nace1_K		0.76*** (0.07)
Nace1_L		0.66*** (0.06)
Nace1_M		0.70*** (0.04)
Nace1_N		0.98 (0.07)
Nace1_O		0.68*** (0.05)
Nace1_P		0.86* (0.05)
Nace1_Q		1.30*** (0.07)
Nace1_R		0.82** (0.08)
Nace1_S		0.77*** (0.06)
AIC	40683.5	35954.7
BIC	40735.8	36469.4
N	45,420	45,420
Pseudo R2	0.1337	0.2367

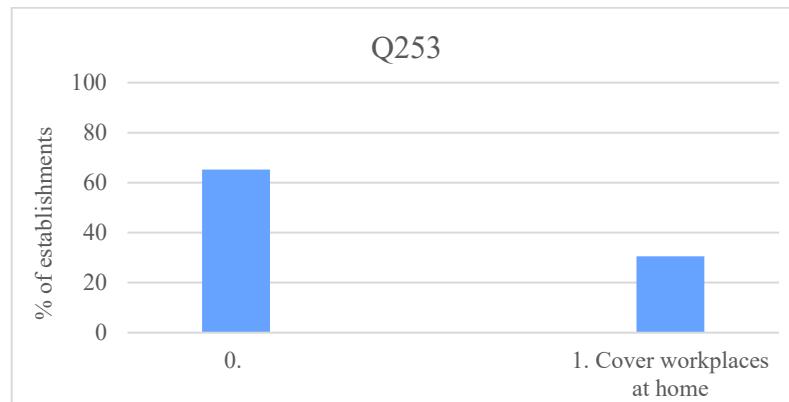
*** $p < 0.01$ ** $p < 0.05$ * $p < 0.10$

1.2.2 Risk assessment design

Workplaces covered by risks assessments

Covering workplaces at home by risks assessments was measured by asking the question (Q253): “Do risk assessments cover workplaces at home?” This question was presented only to those who carried out regular risk assessment (Q250=1) and have employees working from home on a regular basis

(Q111=1). There were 2 possible answers – yes and no. Over 30% of establishments in the EU27 (eligible to answer that question) declared that employees' home were also covered by risk assessments.



Regression results:

The objective: to understand what OSH and contextual factors are associated with covering workplaces at home by regular risk assessments.

Model 1: OSH factors

Four out of five OSH factors had a significant influence on the probability of reporting that risk assessments covered workplaces at home. The biggest influence was for the involvement of employees in the implementation of OSH measures – those companies had a 44% higher probability of covering homes in risk assessments. Additionally, risk assessments being documented in written form, the establishment being visited by the labour inspectorate, and risk assessments being conducted by external providers and internal staff equally, this chance was also increasing. The presence of a health and safety representative though had no influence on the reporting of covering home as workplaces in risk assessments.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After the introduction of contextual factors (country, sector, size), the significance of labour inspectorate visits and documentation of risk assessments diminished. On the other hand, carrying out risk assessments by internal staff became significant, increasing the probability of risk assessments covering home-workplaces.

Country, size and sector play a significant role in the probability of including homes in risk assessment.

When comparing to Germany, higher chances for risk assessments covering home - workplaces were identified only in Spain, Malta and Romania (114% higher than in Germany), and similar chances in Bulgaria, Croatia, Greece, Italy, North Macedonia, Slovenia and the UK. In the remaining – majority of countries - the probability of covering homes in risk assessments was lower than in Germany. The lowest probability was in Portugal (87% lower chances than in Germany).

In case of establishment size, only the biggest enterprises had higher chances for covering homes in risks assessments (as compared to small enterprises).

When comparing to trade sector, higher chances for risk assessments covering home workplaces were observed in sectors B, I, J, K, and N. The lowest chances were in P (education) – 42% lower than in trade. In other sectors, this probability was not significant versus trade.

Q253 (risk assessments covered workplaces at home)		
Variables/Performance Metrics	Model 1	Model 2
	(0)	(1)
	Odds ratio (std error)	
Q350.4. Health and safety representative	1.06 (0.08)	0.98 (0.09)
Q251. Are workplace risk assessments		
- contracted mainly by internal staff	1.10 (0.08)	1.28*** (0.11)
- both about equally	1.20* (0.12)	1.29** (0.14)
Q154. Visited by labour inspectorate	1.16** (0.08)	1.00 (0.07)
Q257. Risk assessment documented in written form	1.30* (0.18)	1.18 (0.18)
Q258. Employees involved in measures implementation	1.44*** (0.13)	1.57*** (0.15)
country_code_at		0.52*** (0.10)
country_code_be		0.56*** (0.09)
country_code_bg		0.86 (0.35)
country_code_ch		0.28*** (0.07)
country_code_cy		0.13*** (0.09)
country_code_cz		0.67** (0.13)
country_code_dk		0.41*** (0.06)
country_code_ee		0.39*** (0.11)
country_code_el		0.82 (0.27)
country_code_es		1.91*** (0.36)
country_code_fi		0.40*** (0.07)
country_code_fr		0.59*** (0.11)
country_code_hr		0.54 (0.22)
country_code_hu		0.51*** (0.13)
country_code_ie		0.37*** (0.08)
country_code_is		0.14*** (0.05)
country_code_it		1.03 (0.27)

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country_code_it	0.18*** (0.08)
country_code_lu	0.33*** (0.12)
country_code_lv	0.21*** (0.08)
country_code_mk	1.19 (0.79)
country_code_mt	0.19*** (0.07)
country_code_nl	0.28*** (0.05)
country_code_no	0.22*** (0.04)
country_code_pl	0.38*** (0.10)
country_code_pt	0.13*** (0.07)
country_code_ro	2.14*** (0.54)
country_code_rs	0.45** (0.18)
country_code_se	0.30*** (0.05)
country_code_si	0.95 (0.30)
country_code_sk	0.24*** (0.10)
country_code_uk	1.11 (0.16)
Size_5-9	1.03 (0.10)
Size_50-249	0.95 (0.09)
Size_250+	1.50*** (0.14)
Nace1_A	1.32 (0.37)
Nace1_B	1.80* (0.76)
Nace1_C	1.16 (0.15)
Nace1_D	1.12 (0.41)
Nace1_E	1.04 (0.37)
Nace1_F	1.25 (0.21)
Nace1_H	1.03 (0.20)
Nace1_I	1.57** (0.33)
Nace1_J	1.65*** (0.25)
Nace1_K	1.80*** (0.32)
Nace1_L	1.34 (0.39)
Nace1_M	1.26 (0.18)
Nace1_N	1.70***

Nace1_O		(0.26)
Nace1_P		1.25
Nace1_Q		(0.20)
Nace1_R		0.58***
Nace1_S		(0.09)
AIC	6245.0	5839.3
BIC	6297.8	6242.1
N	5,456	5,456
Pseudo R2	0.0026	0.0877

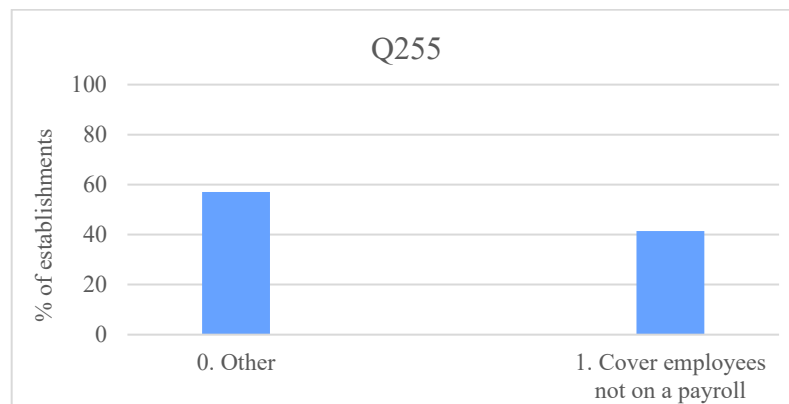
*** $p < 0.01$

** $p < 0.05$

* $p < 0.10$

Types of employees covered by risks assessments

Types of employees covered by risks assessments was measured by question (Q255): “Do risk assessments cover only people directly employed?” This question was asked only those who regularly carried out risk assessments (Q250=1) and have employees both on the payroll and others (Q103=1). There were 2 possible answers – “on the payroll only”, and “other types of workers are also covered”. More than 41% of establishments in the EU27 covered also those workers who are not on a payroll in their risk assessments, and the remaining covered only employees on a payroll.



Regression results:

The objective: to understand which OSH and contextual factors were associated with risk assessments covering also employees not on the payroll.

Model 1: OSH factors

Five out of six OSH factors had a significant influence on the probability of risk assessments covering employees not on the payroll. The biggest influence was the conducting of workplace risk assessment both by internal staff and external providers, which increased the covering of employees not on the payroll by 100%, where when carried out mainly by internal staff, it increased by 67%. The presence of a health and safety representative was also important as it increased the probability by 31%. When risk assessments were documented in written form and when employees were involved in measures'

implementation – the probability of covering employees not on the payroll was also increasing. Reporting a visit by the Labour inspectorate had no influence on covering employees not on the payroll.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After introduction of contextual factors (country, sector, size), all but one OSH factors remained significant. Documentation of risk in written form became insignificant.

Country, size and sector play a significant role in the probability of including employees not on the payroll in risk assessment.

When comparing to Germany, higher chances for including employees not on the payroll in risk assessments were identified in Belgium, Switzerland, Czechia, Greece, Finland, France, Ireland, Iceland, Luxembourg, North Macedonia, Malta, Netherlands, Norway, Portugal, Serbia, Sweden, and United Kingdom. Similar chances as in Germany were observed in Austria, Cyprus, Estonia, Spain, Croatia, Hungary, Italy, Latvia, Poland, Slovenia, and Slovakia. In the remaining countries (Bulgaria, Denmark, Lithuania, Romania) - the probability of covering employees not on the payroll in risk assessments was lower than in Germany. The lowest probability was in Bulgaria (75% lower chances than in Germany), and the highest in Ireland (349% higher probability than in Germany).

Regarding establishment size, the bigger the enterprise, the higher the chances for covering employees not on the payroll in risks assessments (as compared to small enterprises). In big enterprises this probability was 62% higher than in small companies.

When comparing to trade, there was only one sector where the chances for covering employees not on the payroll in risk assessments were lower than in trade – in P (education), by 15%. Similar probability was observed in: D, J, K, L, O, Q, and S. In other sectors, this probability was higher, with the highest value in sector B (mining, 89% higher probability than in trade), and additionally in F (construction).

Q255 (risk assessments covered also employees not on a payroll)		
Variables/Performance Metrics	Model 1 (0)	Model 2 (1)
	Odds ratio (std error)	
Q350.4. Health and safety representative	1.31*** (0.05)	1.23*** (0.06)
Q251. Are workplace risk assessments - conducted mainly by internal staff	1.67*** (0.06)	1.22*** (0.06)
- both about equally	2.00*** (0.11)	1.49*** (0.09)
Q154. Visited by labour inspectorate	1.02 (0.04)	1.04 (0.04)
Q257. Risk assessment documented in written form	1.18** (0.09)	1.05 (0.09)
Q258. Employees involved in measures implementation	1.19*** (0.05)	1.22*** (0.06)
country_code_at		0.96 (0.13)

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country_code_be	2.32*** (0.27)
country_code_bg	0.25*** (0.06)
country_code_ch	1.43** (0.21)
country_code_cy	0.96 (0.17)
country_code_cz	1.45*** (0.17)
country_code_dk	0.49*** (0.06)
country_code_ee	0.87 (0.17)
country_code_el	1.36* (0.21)
country_code_es	1.01 (0.11)
country_code_fi	2.33*** (0.27)
country_code_fr	1.24* (0.14)
country_code_hr	1.02 (0.18)
country_code_hu	1.14 (0.14)
country_code_ie	4.49*** (0.58)
country_code_is	1.70*** (0.30)
country_code_it	1.13 (0.13)
country_code_lt	0.68* (0.14)
country_code_lu	1.43** (0.24)
country_code_lv	1.23 (0.21)
country_code_mk	2.86*** (0.78)
country_code_mt	1.93*** (0.37)
country_code_nl	3.47*** (0.41)
country_code_no	2.98*** (0.34)
country_code_pl	0.82 (0.10)
country_code_pt	1.66*** (0.23)
country_code_ro	0.51*** (0.08)
country_code_rs	2.26*** (0.38)
country_code_se	1.74*** (0.19)
country_code_si	0.82 (0.11)
country_code_sk	0.93 (0.16)

country_code_uk		4.57*** (0.56)
Size_5-9		0.78*** (0.04)
Size_50-249		1.28*** (0.06)
Size_250+		1.62*** (0.09)
Nace1_A		1.59*** (0.23)
Nace1_B		1.89** (0.43)
Nace1_C		1.57*** (0.11)
Nace1_D		0.97 (0.20)
Nace1_E		1.38* (0.23)
Nace1_F		1.68*** (0.14)
Nace1_H		1.40*** (0.14)
Nace1_I		1.22** (0.12)
Nace1_J		1.00 (0.12)
Nace1_K		0.90 (0.13)
Nace1_L		0.96 (0.15)
Nace1_M		1.21* (0.12)
Nace1_N		1.25** (0.13)
Nace1_O		1.02 (0.09)
Nace1_P		0.85** (0.07)
Nace1_Q		0.95 (0.07)
Nace1_R		1.46*** (0.19)
Nace1_S		1.14 (0.13)
AIC	19009.3	17803.9
BIC	19069.9	18266.0
N	14,385	14,385
Pseudo R2	0.0193	0.0870

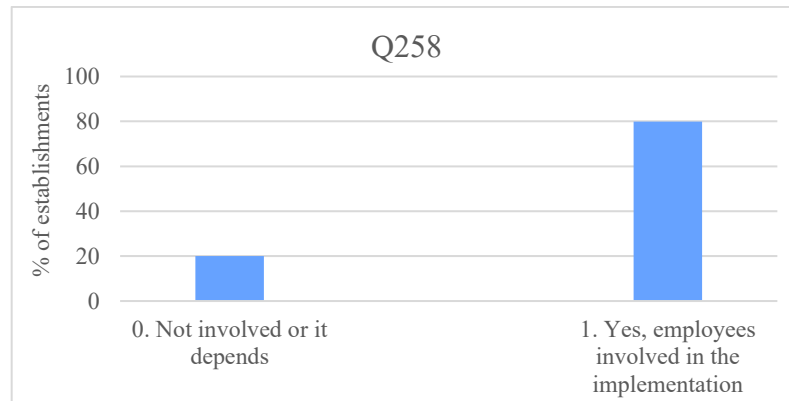
*** $p < 0.01$ ** $p < 0.05$ * $p < 0.10$

1.2.3 Risk assessment execution

What conditions, and do internal establishment factors, result in the involvement of employees in the design of measures following a risk assessment? Do these factors also encourage their immediate implementation? (Q258)

The objective: to understand what factors are associated with employees' involvement in the design and implementation of OSH measures following the completion of risk assessments (Q258). In particular, we sought to understand the impact of OSH and contextual factors on Q258.

Below a histogram of the dependent variable, Q258, is displayed. This question was asked only those who regularly carried out risk assessment (Q250=1). Among them, almost 80% claimed employees are involved in the design of health and safety measures following risk assessment, while 20% said they are not (or it depends on the measure).



Model 1: OSH factors

In model 1 below, five out of 6 OSH-related variables had a strong impact on employee's involvement in the design and implementation of measures following risk assessments. Conducting risk assessments by internal staff was increasing the probability to involve employees in the design of health and safety measures by 50%. Having a health and safety representative increase the odds of establishments involving employees in the design and implementation of OSH measures by 39%. Likewise, having OSH risk assessments conducted by both internal staff and external providers, having a health and safety committee in the establishment and covering by risk assessments also employees not on the payroll increased the odds of involvement of employees in the design and implementation of measures. The only factor which had no influence on involvement of employees was the presence of a works council in the establishment.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After controlling for contextual factors in Model 2, four OSH related factors remained significant, with similar level of odds than in model 1. This means, that their importance is equally important when taking into account the context of the establishment or not. We observe, however, that the presence of a health and safety committee became insignificant, meaning this factor is context-dependent, and the context is more important than this factor. On the contrary, the presence of a works council became significant when we include the context in the analysis, which means that this factor is only working together with the context (is somehow related to the context).

When comparing to Germany, the only country with establishments standing higher chances of involving employees in the design and implementation of OSH measures was Portugal. Establishments standing lower chances than German ones of involving employees in the design and implementation of OSH measures are: Belgian, Bulgarian, Czech ones, Spanish, French, Hungarian, Luxembourgish, Dutch, Romanian, Slovak, and British.

Compared to small companies, micro ones have higher chances of including employees in the design and implementation of OSH measures, while medium and large companies have lower chances. Compared to trade, sectors that are less prone to involve employees is K. Those standing higher chances of involving employees compared to trade are: C, D, and Q, with the remaining sectors having similar chances as trade.

Variables/Performance Metrics	Q258 (employees involved in the design of health and safety measures following risk assessment)	
	Model 1 (0)	Model 2 (1)
Q251. Are workplace risk assessments		
- conducted mainly by internal staff	1.50*** (0.08)	1.46*** (0.08)
- both about equally	1.23*** (0.09)	1.24*** (0.09)
Q350.1. Works council	1.08 (0.06)	1.29*** (0.08)
Q350.3. Health and safety committee	1.23*** (0.07)	1.31 (0.08)
Q350.4. Health and safety representative	1.39*** (0.07)	1.31*** (0.08)
Q255. Risk assessments covered also employees not on a payroll	1.18*** (0.05)	1.21*** (0.06)
country_code_at		1.31 (0.26)
country_code_be		0.62*** (0.09)
country_code_bg		0.40*** (0.09)
country_code_ch		0.75 (0.14)
country_code_cy		-
country_code_cz		0.74** (0.11)
country_code_dk		1.18 (0.19)
country_code_ee		0.73 (0.18)
country_code_el		0.78 (0.15)
country_code_es		0.76* (0.11)
country_code_fi		1.02 (0.16)
country_code_fr		0.54*** (0.08)
country_code_hr		0.98 (0.22)
country_code_hu		0.64*** (0.10)
country_code_ie		1.05 (0.18)
country_code_is		1.16 (0.28)
country_code_it		0.97 (0.15)

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country_code_it	0.98 (0.27)
country_code_lu	0.42*** (0.08)
country_code_lv	1.01 (0.22)
country_code_mk	-
country_code_mt	0.80 (0.18)
country_code_nl	0.58*** (0.08)
country_code_no	1.08 (0.17)
country_code_pl	0.96 (0.16)
country_code_pt	1.70*** (0.32)
country_code_ro	0.66** (0.12)
country_code_rs	0.79 (0.15)
country_code_se	-
country_code_si	-
country_code_sk	0.60** (0.12)
country_code_uk	0.73** (0.11)
Size_5-9	1.23*** (0.08)
Size_50-249	0.78*** (0.05)
Size_250+	0.81*** (0.06)
Nace1_A	1.00 (0.17)
Nace1_B	1.63 (0.51)
Nace1_C	1.20** (0.11)
Nace1_D	1.99** (0.63)
Nace1_E	1.09 (0.23)
Nace1_F	1.07 (0.11)
Nace1_H	1.09 (0.14)
Nace1_I	1.06 (0.13)
Nace1_J	0.91 (0.14)
Nace1_K	0.52*** (0.08)
Nace1_L	1.01 (0.19)
Nace1_M	0.85 (0.10)

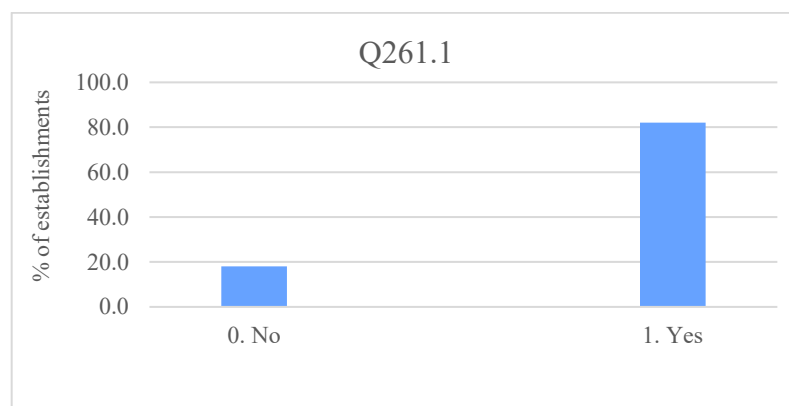
Nace1_N		1.08 (0.14)
Nace1_O		1.02 (0.12)
Nace1_P		0.90 (0.09)
Nace1_Q		1.28*** (0.12)
Nace1_R		1.19 (0.20)
Nace1_S		0.94 (0.14)
AIC	12542.6	12369.2
BIC	12602.4	12794.9
N	12,934	12,934
Pseudo R2	0.0189	0.0402

1.2.4 Non-completion of risks assessments

What conditions are more likely to result in not conducting risks assessments for the reason that the risks are already known? Does lack of heightened awareness in the first instance result in the belief that risk assessments are not necessary?

The objective: to investigate the factors associated with non-completion of risk assessment due to the hazards and risks being known (Q261_1). In particular, we sought to find out the effect of OSH related factors and contextual factors.

The histogram below shows the answers among establishments reporting not carrying out risk assessments. More than 80% of those establishments stated that risks assessments were not carried out because the risks and hazards are known.



Below we discuss our model results.

Q260 (risk assessments not carried out, because risks are known)		
Variables/Performance Metrics	Model 1 (0)	Model 2 (1)

Q200. Types of risks (summary scale)	1.11*** (0.01)	1.10*** (0.01)
Q201. Psychosocial risks (summary scale)	0.95** (0.02)	0.97 (0.02)
Q350_4. Health and safety representative	1.09 (0.06)	1.27*** (0.08)
country_code_at		1.17 (0.20)
country_code_be		0.82 (0.14)
country_code_bg		0.22*** (0.07)
country_code_ch		1.61*** (0.25)
country_code_cy		0.88 (0.18)
country_code_cz		1.56** (0.34)
country_code_dk		0.84 (0.22)
country_code_ee		1.84** (0.50)
country_code_el		0.49*** (0.07)
country_code_es		0.95 (0.25)
country_code_fi		1.82** (0.50)
country_code_fr		1.21 (0.18)
country_code_hr		1.51 (0.53)
country_code_hu		2.85*** (0.78)
country_code_ie		1.29 (0.26)
country_code_is		0.54*** (0.09)
country_code_it		0.37*** (0.09)
country_code_lt		0.96 (0.21)
country_code_lu		0.88 (0.15)
country_code_lv		0.74 (0.19)
country_code_mk		0.89 (0.16)
country_code_mt		0.63* (0.16)
country_code_nl		0.80 (0.14)
country_code_no		0.60*** (0.11)
country_code_pl		2.08*** (0.47)
country_code_pt		2.28*** (0.50)
country_code_ro		0.81 (0.25)

country_code_rs		0.70 (0.20)
country_code_se		0.98 (0.22)
country_code_si		1.01 (0.34)
country_code_sk		0.40*** (0.08)
country_code_uk		2.20*** (0.61)
Size_5-9		1.15** (0.07)
Size_50-249		0.73*** (0.07)
Size_250+		0.50*** (0.09)
Nace1_A		1.56* (0.42)
Nace1_B		2.96 (3.12)
Nace1_C		1.26* (0.16)
Nace1_D		0.89 (0.54)
Nace1_E		1.45 (0.74)
Nace1_F		1.21 (0.18)
Nace1_H		1.40** (0.22)
Nace1_I		1.54*** (0.19)
Nace1_J		1.12 (0.16)
Nace1_K		0.91 (0.15)
Nace1_L		0.94 (0.18)
Nace1_M		1.09 (0.12)
Nace1_N		0.94 (0.13)
Nace1_O		0.77** (0.10)
Nace1_P		0.69*** (0.08)
Nace1_Q		0.99 (0.12)
Nace1_R		1.00 (0.19)
Nace1_S		1.15 (0.17)
AIC	8789.3	8464.1
BIC	8817.7	8868.7
N	8,932	8,932
Pseudo R2	0.0092	0.0578

Model 1: OSH factors.

As expected, the OSH related factors were negatively associated with non-completion of health and safety risk assessments due to risk and hazards being known. For a unit increase in reporting psychosocial risks, the chances of non-completion of risk assessments due to risks being unknown decrease by 5%. On the other hand, a unit increase in the number of reported physical risks is related to higher chances of not carrying out risks assessment due to the fact that risks are known. In other words, no risks assessment due to known risks was connected with reporting of more types of risks, but with less psycho-social risks. The remaining OSH factor - having a health and safety representative is not statistically significant in model 1.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

In Model 2, the effect of reporting psycho-social risks decreased and dropped to non-significant, but the effect of types of (physical) risks stayed significant, with the same odds ratio. It means that psychosocial risks are dependent on the context, whereas physical risks are important regardless of the context. The effect of having a health and safety representative, on the contrary to model 1, was significant. Having an OSH representative increases the odds of reporting non-completion due to knowing the risk and hazards by almost 30%, having accounted for contextual factors.

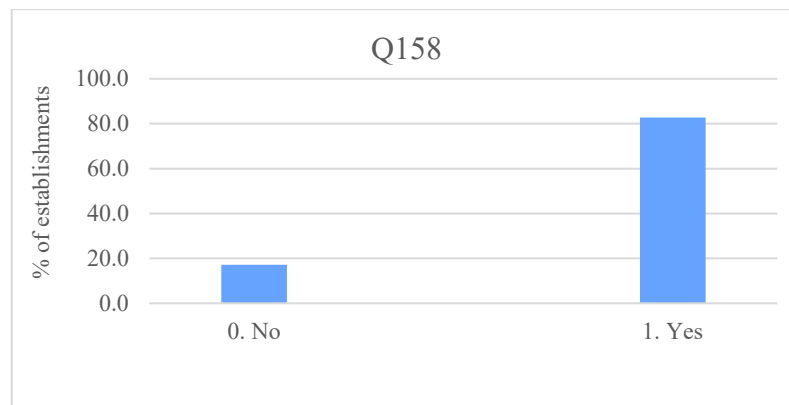
Compared to Germany, countries less prone to complete risk assessments because the risks are already known were: Bulgaria, Greece, Italy, Norway, and Slovakia, while those that are more prone are Switzerland, Czechia, Estonia, Finland, Hungary, Poland, Portugal, and United Kingdom. Compared to small companies, micro ones were more prone to not completing risk assessments because risks are already known, while bigger companies were less prone. Compared to trade, sectors A, C, H, and I were more likely to have not completed risk assessments due to risks being known, while sectors P (only one) were less likely.

1.2.5 Monitoring of staff health and safety

What conditions predict good monitoring of staff health? Does employee involvement in OSH management activities support these processes? Do checks made by inspectorates boost compliance? Does good compliance in one area, i.e. completion of risks assessments, predict execution of other good compliance practices i.e. staff monitoring?

Objective: to investigate the factors associated with recording sick absence (Q158), considering OSH factors and contextual factors.

The histogram below shows that the overwhelming majority of the establishments (87%) do indeed record sick absence of the employees.



Below we show our model results

Q158 (keeping record of employees' absence due to sickness)		
Variables/Performance Metrics	Model 1 (0)	Model 2 (1)
Q154. Visited by labour inspectorate	1.24*** (0.05)	1.18*** (0.05)
Q251. Are workplace risk assessments		
- conducted mainly by internal staff	1.11*** (0.04)	0.93 (0.05)
- both about equally	1.31*** (0.08)	1.16** (0.08)
Q350.4. Health and safety representative	1.75*** (0.07)	1.41*** (0.06)
country_code_at		0.56*** (0.06)
country_code_be		0.63*** (0.07)
country_code_bg		1.67*** (0.27)
country_code_ch		2.26*** (0.41)
country_code_cy		1.78*** (0.37)
country_code_cz		2.17*** (0.33)
country_code_dk		2.25*** (0.32)
country_code_ee		0.37*** (0.05)
country_code_el		2.58*** (0.43)
country_code_es		1.26** (0.14)
country_code_fi		1.27* (0.16)
country_code_fr		0.42*** (0.04)
country_code_hr		5.01*** (1.32)
country_code_hu		0.35*** (0.04)
country_code_ie		5.33*** (0.98)

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country_code_is	1.30 (0.25)
country_code_it	0.60*** (0.05)
country_code_lt	7.71*** (2.83)
country_code_lu	2.30*** (0.56)
country_code_lv	1.23 (0.18)
country_code_mk	9.68*** (4.07)
country_code_mt	4.70*** (1.74)
country_code_nl	12.80*** (3.60)
country_code_no	12.49*** (3.06)
country_code_pl	2.13*** (0.27)
country_code_pt	3.54*** (0.58)
country_code_ro	3.58*** (0.60)
country_code_rs	2.44*** (0.48)
country_code_se	0.96 (0.11)
country_code_si	3.43*** (0.61)
country_code_sk	2.81*** (0.62)
country_code_uk	5.89*** (0.97)
Size_5-9	0.70*** (0.03)
Size_50-249	1.57*** (0.10)
Size_250+	1.69*** (0.14)
Nace1_A	0.82 (0.10)
Nace1_B	0.85 (0.23)
Nace1_C	0.96 (0.06)
Nace1_D	1.70* (0.51)
Nace1_E	1.43* (0.28)
Nace1_F	0.93 (0.07)
Nace1_H	0.95 (0.09)
Nace1_I	0.70*** (0.06)
Nace1_J	0.95 (0.12)
Nace1_K	1.03 (0.14)

Nace1_L		0.85 (0.13)
Nace1_M		0.85* (0.08)
Nace1_N		1.07 (0.11)
Nace1_O		1.07 (0.11)
Nace1_P		1.28*** (0.11)
Nace1_Q		1.55*** (0.14)
Nace1_R		0.81 (0.11)
Nace1_S		1.04 (0.13)
AIC	21895.6	19357.4
BIC	21946.5	19858.1
N	35,782	35,782
Pseudo R2	0.0144	0.1335

Model 1: OSH factors.

The effect of OSH-related factors in Model 1 were all significant. Being visited by a labour inspectorate increased the chances of recording sick absence by 24%; carrying out health and safety risk assessments by internal staff and external providers increased the chances of recording sick absence by 31%, and carried out only by internal staff – by 11%. Additionally, having a health and safety representative was positively associated with recording sick absence and had the biggest influence – increasing the chance for keeping record of employees' absence by 75%.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

When accounting for contextual factors, the effects of the afore mentioned OSH related predictors remained statistically significant, with one exception: risk assessments being conducted by internal staff was no longer significant (thus being highly related to the context).

Compared to Germany countries less prone to record sick leave were Austria, Belgium, Estonia, France, Hungary, and Italy, while those more prone were Bulgaria, Switzerland, Cyprus, Czechia, Denmark, Greece, Spain, Finland, Croatia, Ireland, Lithuania, Luxembourg, North Macedonia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovenia, Slovakia, and the UK. Compared to small companies, micro ones were less prone to record sick leave, while medium and large ones were more prone to do so. Compared to the trade, sectors I, and M were less prone to record sick leave, while D, E, P, and Q appeared to be more prone.

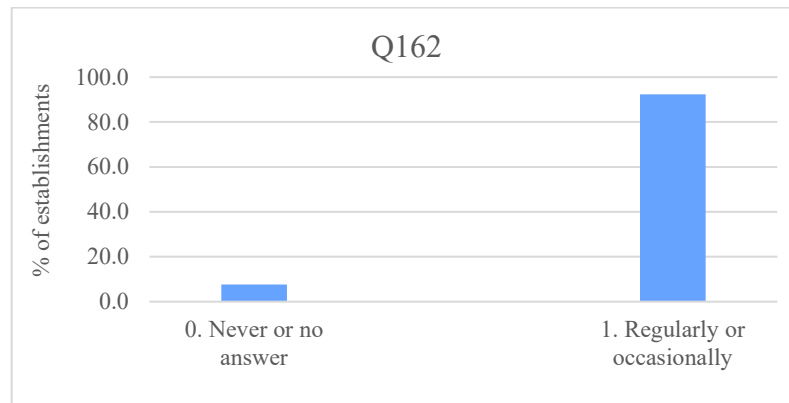
OSH commitment

1.2.6 Discussions on OSH by top management and training of team leaders

What conditions promote managerial commitment to OSH? Does such commitment lead to uptake of training by the establishments?

The objective: to investigate the factors associated with regularly discussing health and safety at top management level (Q162). This variable was dichotomised in the following way. Regularly or occasionally discussing health and safety issues was recoded as 1; the other answers were recoded as 0.

The question was asked only among establishments employing at least 20 persons. The histogram below shows that more than 92% of the establishments surveyed discussed health and safety issues at the top management level either regularly or occasionally, with the remaining part either not doing it or not responding to this question.



Below are the results of the two models.

Variables/Performance Metrics	Q162 (health and safety issues at the top management level discussed regularly or occasionally)	
	Model 1 (0)	Model 2 (1)
Q250. Risk assessment carried out regularly	5.28*** (0.34)	5.08*** (0.37)
Q350.4. Health and safety representative	1.88*** (0.12)	2.03*** (0.15)
country_code_at		0.99 (0.18)
country_code_be		2.02*** (0.37)
country_code_bg		2.76*** (0.99)
country_code_ch		1.52** (0.27)
country_code_cy		2.50*** (0.64)
country_code_cz		5.91*** (1.62)
country_code_dk		1.01 (0.19)
country_code_ee		1.77** (0.48)
country_code_el		2.75*** (0.58)
country_code_es		0.52*** (0.08)
country_code_fi		2.25*** (0.57)

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country_code_fr	2.61*** (0.47)
country_code_hr	1.32 (0.33)
country_code_hu	1.37 (0.27)
country_code_ie	2.34*** (0.54)
country_code_is	1.46* (0.32)
country_code_it	1.66** (0.36)
country_code_lt	1.58* (0.40)
country_code_lu	1.24 (0.24)
country_code_lv	2.37*** (0.72)
country_code_mk	3.14*** (0.90)
country_code_mt	2.67*** (0.90)
country_code_nl	1.40* (0.26)
country_code_no	3.08*** (0.80)
country_code_pl	2.05*** (0.38)
country_code_pt	1.43* (0.28)
country_code_ro	2.97*** (0.85)
country_code_rs	1.18 (0.28)
country_code_se	2.08*** (0.48)
country_code_si	2.78*** (0.74)
country_code_sk	2.87*** (0.74)
country_code_uk	2.39*** (0.51)
Size_50-249	1.10 (0.08)
Size_250+	1.41*** (0.14)
Nace1_A	2.04** (0.64)
Nace1_B	3.17 (2.29)
Nace1_C	1.41*** (0.17)
Nace1_D	1.30 (0.61)
Nace1_E	1.86* (0.66)
Nace1_F	1.93*** (0.36)
Nace1_H	1.34* (0.23)

Nace1_I		1.31*
		(0.19)
Nace1_J		0.70**
		(0.11)
Nace1_K		0.72*
		(0.13)
Nace1_L		1.20
		(0.31)
Nace1_M		0.82
		(0.12)
Nace1_N		1.19
		(0.18)
Nace1_O		0.77**
		(0.10)
Nace1_P		1.17
		(0.14)
Nace1_Q		1.63***
		(0.22)
Nace1_R		1.05
		(0.24)
Nace1_S		1.41
		(0.33)
AIC	8626.8	8356.0
BIC	8650.6	8793.1
N	20,870	20,870
Pseudo R2	0.0936	0.1330

Model 1: OSH factors.

In Model 1, we observe that regular risk assessment was clearly the key factor for regular discussion of health and safety issues at the top management – it increased the chances by 428% (more than 5 times). Additionally, having a health and safety representative was also positively associated with discussing health and safety at top management level as it increased the odds of discussing health and safety issues at managerial level by 88%.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

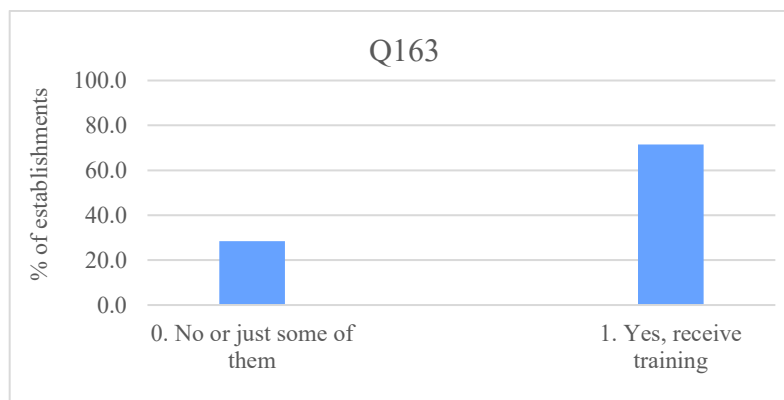
After adding contextual factors, carrying out regular risk assessments remained significant, with almost the same predicting power. Interestingly, after accounting for contextual factors, the effect of having a health and safety representative remained significant and increased to 103%.

Among contextual factors, country was very important, with a majority of countries predicting higher chances for regular discussion of health and safety issues than in Germany. Lower chances were observed only in Spain, whereas in Serbia, Luxembourg, Hungary, Croatia, Denmark, and Austria were on the same level as in Germany.

The size of the establishment did matter: compared to small establishments, the odds of discussing health and safety issues at top managerial level was 41% higher for large establishments, with no significant difference among medium establishments. Compared to trade, the sectors where health and safety issues are discussed at managerial level were A, C, E, F, H, I, and Q, while those less prone to do so were J, K, and O.

The analysis also aimed to investigate the factors associated with managerial training on how to manage health and safety. The question was asked only among establishments employing at least 20 persons.

The histogram below shows that almost 72% of establishments indicated that team leaders and line managers receive training on how to manage health and safety in their teams.



The models' results are discussed below

Q163 (team leaders and line managers receive training on how to manage health and safety in their teams)		
Variables/Performance Metrics	Model 1 (0)	Model 2 (1)
Q162. Health and safety issues at the top management level regularly discussed	2.90*** (0.10)	2.85*** (0.11)
Q350.4. Health and safety representative	2.16*** (0.08)	2.02*** (0.09)
country_code_at		1.37** (0.18)
country_code_be		0.61*** (0.07)
country_code_bg		1.70*** (0.30)
country_code_ch		0.80* (0.09)
country_code_cy		1.00 (0.15)
country_code_cz		5.35*** (0.90)
country_code_dk		0.48*** (0.05)
country_code_ee		1.61*** (0.26)
country_code_el		1.15 (0.15)
country_code_es		1.53*** (0.17)
country_code_fi		0.79** (0.09)
country_code_fr		0.30*** (0.03)
country_code_hr		2.19*** (0.36)

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country_code_hu	1.54*** (0.20)
country_code_ie	1.39*** (0.17)
country_code_is	0.33*** (0.05)
country_code_it	2.50*** (0.35)
country_code_lt	1.16 (0.18)
country_code_lu	0.37*** (0.05)
country_code_lv	1.91*** (0.32)
country_code_mk	1.20 (0.19)
country_code_mt	0.84 (0.14)
country_code_nl	0.43*** (0.05)
country_code_no	1.34** (0.17)
country_code_pl	1.05 (0.11)
country_code_pt	1.11 (0.14)
country_code_ro	0.46*** (0.05)
country_code_rs	1.84*** (0.29)
country_code_se	1.03 (0.13)
country_code_si	1.89*** (0.26)
country_code_sk	0.97 (0.14)
country_code_uk	2.05*** (0.26)
Size_50-249	1.32*** (0.05)
Size_250+	1.85*** (0.10)
Nace1_A	1.35* (0.22)
Nace1_B	1.81** (0.52)
Nace1_C	1.20*** (0.09)
Nace1_D	1.58** (0.15)
Nace1_E	1.22 (0.21)
Nace1_F	1.58*** (0.15)
Nace1_H	0.93 (0.09)
Nace1_I	1.51*** (0.14)
Nace1_J	0.53*** (0.06)

Nace1_K		0.53*** (0.06)
Nace1_L		0.91 (0.15)
Nace1_M		0.62*** (0.06)
Nace1_N		1.20* (0.11)
Nace1_O		0.62*** (0.05)
Nace1_P		0.56*** (0.04)
Nace1_Q		0.91 (0.07)
Nace1_R		0.79* (0.11)
Nace1_S		0.88 (0.12)
AIC	21691.2	19977.1
BIC	21715.0	20414.1
N	20,870	20,870
Pseudo R2	0.0736	0.1513

Model 1: OSH factors.

Both OSH factors selected for this analysis were significant for predicting the team leaders and line managers receiving training on how to manage health and safety in their teams. Regular discussion of health and safety issues at the top management level increased the chances for managers to receive training by 190%, and having a health and safety representative was also associated with receiving training on OSH at managerial level, increasing the chances by 116%.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After accounting for contextual factors, both OSH factors remained significant, with almost the same level of the odds ratio. Compared to small establishments, large ones were more prone to provide training on health and safety at the top managerial level, whereas medium sized establishments were no different. Compared to trade, establishments from sectors J, K, M, O, P, and R were less prone to provide training on health and safety to top managers, yet sectors A, B, C, D, F, I, N were more prone. When comparing to Germany, higher chances for managerial training were noted in Austria, Czechia, Estonia, Spain, Croatia, Hungary, Ireland, Italy, Latvia, Norway, Serbia, Slovenia, and the UK, whereas lower in Belgium, Switzerland, Denmark, Finland, France, Iceland, Luxembourg, Netherlands, and Romania.

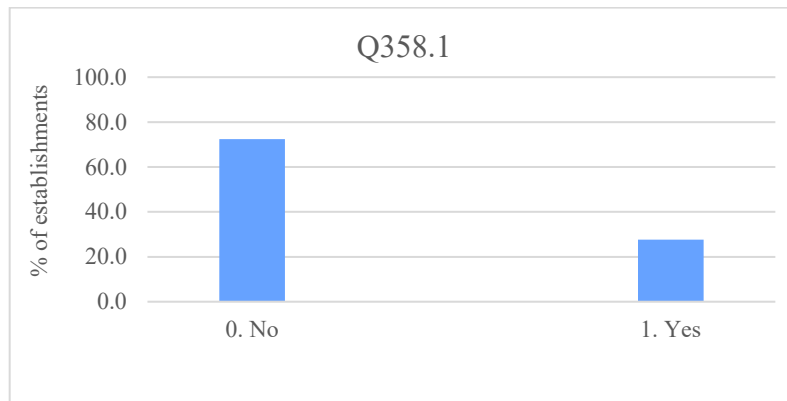
1.3 Sources of OSH advice

1.3.1 Sources of advice

What conditions promote uptake of advice? Do some types of organisations engage with certain sources more commonly than others? Does the uptake of advice from some organisations lead to positive changes in organisational OSH commitment and compliance?

The objective: to investigate the factors associated with establishments using health and safety information taken from employers' organisations.

As showed by the histogram, close to 28% of the establishments surveyed used information taken from employers' organisations.



Results are displayed below

Variables/Performance Metrics	Q358_1 (using health and safety information taken from employers' organisations)	
	Model 1 (0)	Model 2 (1)
Q200. Types of risks (summary scale)	1.08*** (0.00)	1.06*** (0.01)
Q201. Psychosocial risks (summary scale)	1.11*** (0.01)	1.03 (0.01)
Q350.4. Health and safety representative	1.99* (0.04)	1.74*** (0.05)
country_code_at		1.35*** (0.09)
country_code_be		1.42*** (0.10)
country_code_bg		0.39*** (0.04)
country_code_ch		1.23*** (0.09)
country_code_cy		0.35*** (0.04)
country_code_cz		0.13*** (0.01)
country_code_dk		1.15** (0.08)
country_code_ee		0.23*** (0.03)
country_code_el		0.39*** (0.04)

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country_code_es	0.59*** (0.04)
country_code_fi	1.62*** (0.11)
country_code_fr	0.50*** (0.04)
country_code_hr	0.55*** (0.05)
country_code_hu	0.46*** (0.04)
country_code_ie	1.05 (0.07)
country_code_is	0.45*** (0.05)
country_code_it	0.74*** (0.05)
country_code_lt	1.18* (0.10)
country_code_lu	0.67*** (0.06)
country_code_lv	0.92 (0.09)
country_code_mk	0.82** (0.08)
country_code_mt	0.83 (0.09)
country_code_nl	1.79*** (0.13)
country_code_no	1.43*** (0.09)
country_code_pl	0.63*** (0.04)
country_code_pt	0.42*** (0.04)
country_code_ro	0.84* (0.06)
country_code_rs	0.47*** (0.05)
country_code_se	2.26*** (0.16)
country_code_si	3.58*** (0.29)
country_code_sk	0.29*** (0.03)
country_code_uk	1.09 (0.07)
Size_5-9	0.97 (0.03)
Size_50-249	1.32*** (0.04)
Size_250+	1.84*** (0.07)
Nace1_A	1.24*** (0.10)
Nace1_B	1.69*** (0.25)
Nace1_C	1.24*** (0.05)
Nace1_D	1.37** (0.20)

Nace1_E		1.34*** (0.14)
Nace1_F		1.57*** (0.07)
Nace1_H		1.39*** (0.08)
Nace1_I		1.31*** (0.06)
Nace1_J		0.88* (0.07)
Nace1_K		1.19** (0.09)
Nace1_L		1.03 (0.10)
Nace1_M		0.81*** (0.05)
Nace1_N		1.25*** (0.07)
Nace1_O		0.87** (0.05)
Nace1_P		1.10** (0.05)
Nace1_Q		0.17*** (0.05)
Nace1_R		1.14 (0.09)
Nace1_S		1.12* (0.08)
AIC	54278.8	50740.1
BIC	54313.7	51237.4
N	45,420	45,420
Pseudo R2	0.0366	0.1013

Model 1: OSH factors.

The effect of all three OSH related factors were statistically significant and positively associated with taking health and safety information from employees' organisations. The strongest effect was observed in case of a health and safety representative -its presence increased the chances for taking information from employers' organisation by 99%.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

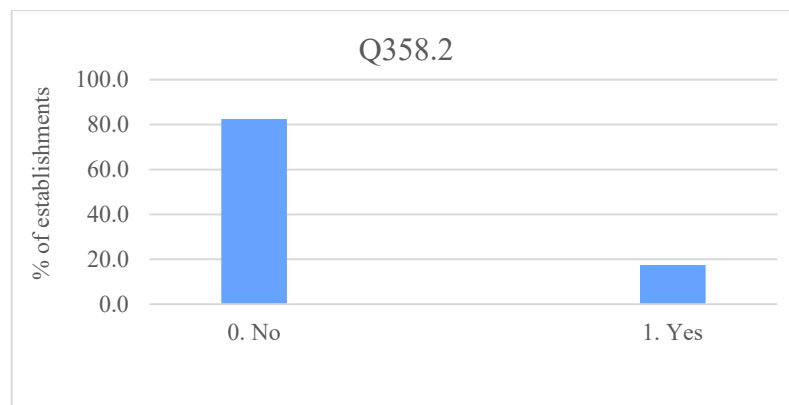
The inclusion of contextual factors decreased the predicting power of OSH factors, and the reporting of psychosocial risks was no longer significant, with two other factors maintaining its significance. The effect of having a health and safety representative dropped from 99% to 74%, but still had the strongest effect. This shows that after holding constant the contextual factor, a health and safety representative and having a high level of perceived physical risks indeed has a positive impact on establishments taking their health and safety organisations from employers' organisations.

Compared to small enterprises medium and large ones tended to use information taken from employers' organisations more. Compared to German establishments, less prone to use OSH information taken from employees' organisations were establishments from Bulgaria, Cyprus, Czechia, Estonia, Greece, Spain, France, Croatia, Hungary, Iceland, Italy, Luxembourg, North Macedonia, Poland, Portugal, Romania, Serbia, and Slovakia, while those from Austria, Belgium, Switzerland, Denmark, Finland, Lithuania, Netherlands, Norway, and Sweden were more prone to do so. Compared to trade, a majority of sectors were more prone to use OSH information taken from employees' organisations, while J, M, O, and Q were less prone.

Trade Unions

The objective: to investigate factors associated with establishments using health and safety information taken from trade unions.

As showed by the histogram, 17.5% of establishments surveyed used information from trade unions.



Below we show the model results.

Q358_1 (using health and safety information taken from trade unions)		
Variables/Performance Metrics	Model 1 (0)	Model 2 (1)
Q200. Types of risks (summary scale)	1.08*** (0.00)	1.07 (0.01)
Q201. Psychosocial risks (summary scale)	1.29*** (0.01)	1.09 (0.01)
Q350.4. Health and safety representative	2.88*** (0.08)	2.17*** (0.07)
country_code_at		1.67*** (0.14)
country_code_be		1.86*** (0.16)
country_code_bg		0.54*** (0.07)
country_code_ch		0.77*** (0.07)
country_code_cy		0.71*** (0.09)
country_code_cz		0.67*** (0.06)
country_code_dk		3.58*** (0.28)

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country_code_ee	0.17*** (0.03)
country_code_el	0.86 (0.09)
country_code_es	1.45*** (0.11)
country_code_fi	3.24*** (0.25)
country_code_fr	1.38*** (0.11)
country_code_hr	0.87 (0.10)
country_code_hu	0.39*** (0.04)
country_code_ie	0.80*** (0.07)
country_code_is	2.90*** (0.28)
country_code_it	0.75*** (0.06)
country_code_lt	0.94 (0.10)
country_code_lu	1.47*** (0.15)
country_code_lv	0.99 (0.12)
country_code_mk	1.04 (0.12)
country_code_mt	0.71** (0.10)
country_code_nl	1.60*** (0.07)
country_code_no	2.80*** (0.21)
country_code_pl	1.18** (0.09)
country_code_pt	0.57*** (0.07)
country_code_ro	1.05 (0.09)
country_code_rs	0.55*** (0.07)
country_code_se	9.07*** (0.72)
country_code_si	1.67*** (0.16)
country_code_sk	1.07 (0.12)
country_code_uk	0.95 (0.07)
Size_5-9	0.80*** (0.03)
Size_50-249	1.73*** (0.06)
Size_250+	3.12*** (0.13)
Nace1_A	1.02 (0.10)
Nace1_B	1.62*** (0.27)

Nace1_C		1.28*** (0.06)
Nace1_D		1.81*** (0.28)
Nace1_E		2.07*** (0.23)
Nace1_F		1.08 (0.06)
Nace1_H		1.40*** (0.09)
Nace1_I		1.22*** (0.08)
Nace1_J		0.86* (0.08)
Nace1_K		1.49*** (0.13)
Nace1_L		1.39*** (0.15)
Nace1_M		0.72*** (0.5)
Nace1_N		1.27*** (0.08)
Nace1_O		2.44*** (0.15)
Nace1_P		3.31*** (0.17)
Nace1_Q		2.39*** (0.12)
Nace1_R		1.58*** (0.15)
Nace1_S		1.43*** (0.12)
AIC	45492.3	40389.7
BIC	45530.2	48887.0
N	45,420	45,420
Pseudo R2	0.0757	0.1816

Model 1: OSH factors.

The effect of all the OSH related factors were statistically significant and positively associated with taking health and safety information from trade unions. The most important was the presence of a health and safety representative, increasing the chances of using information from trade unions by 188%.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

When adding contextual factors, only the effect of having a health and safety representative remained significant for receiving information from trade unions. The effects of perceived psychosocial and physical risks on the other hand dropped to non-significant in Model 2, after accounting for contextual factors. This shows that after holding constant the contextual factors, the number of identified risks in the establishment was no longer an important factor, whereas a health and safety representative

indeed had a positive impact on establishments taking their health and safety information from trade unions.

Compared to small enterprises medium and especially large ones tended to use OSH information taken from trade unions more. When comparing to Germany, the countries less prone to use OSH information taken from trade unions were: Bulgaria, Switzerland, Cyprus, Czechia, Estonia, Hungary, Ireland, Italy, Malta, Portugal, and Serbia, and the countries more prone were: Austria, Belgium, Denmark, Spain, Finland, France, Iceland, Luxembourg, Netherlands, Norway, Poland, Sweden, and Slovenia. Compared to trade, establishments from a majority of sectors were more inclined to use OSH information taken from trade unions apart from sectors J, and M, that were less inclined to do so.

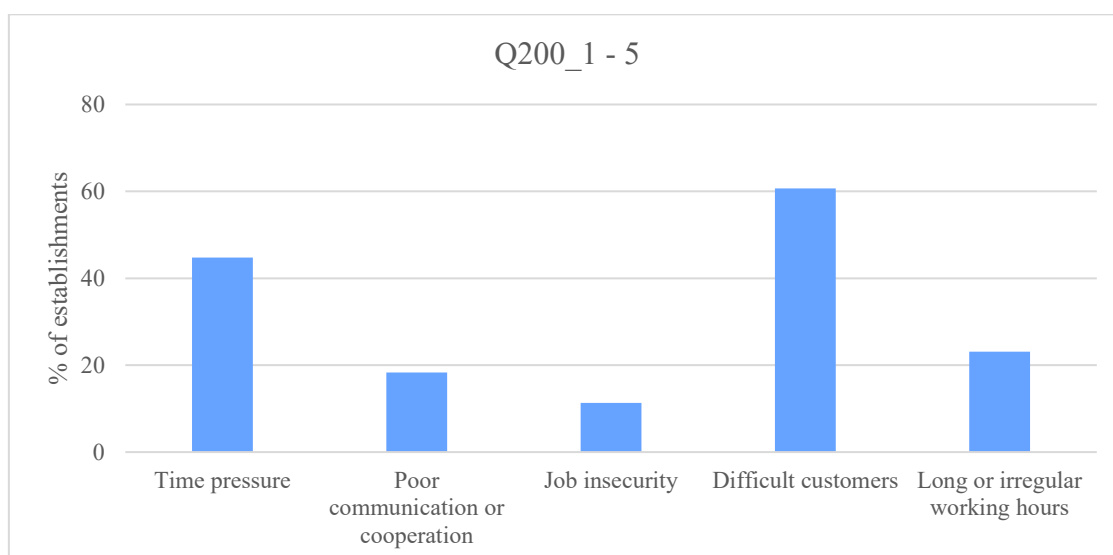
2. New, psychosocial and digitalisation risks and management– Regressions

2.1 Introduction

The objective: How the inclusion of supervisor-employee relationships and organizational aspects into risk assessments influences the reporting of psychosocial risks? Does the existence of an action plan to prevent work-related stress predict the lack of reporting psychosocial risks? Does the presence of a health and safety representative predict the identification of psychosocial risks? How does having a procedure to deal with possible cases of bullying / cases of threat, abuse predict the reporting of psychosocial risks?

As showed by the histogram below, dealing with difficult customers is the most commonly reported psychosocial risk factor, by over 60% of establishments. The second is time pressure, mentioned by almost 45% of establishments. The next risk factors are less frequently reported.

Figure 3. The presence of psychosocial risks within establishments (Q200)



Regression models were estimated separately for each psychosocial risk.

2.2 Time pressure

The objective: to investigate factors associated with the reporting of time pressure as a psychosocial risks in the establishment.

Variables/Performance Metrics	Q201_1 – time pressure	
	Model 1 (0)	Model 2 (1)
	Coefficient value (std error)	
Q350.4. Health and safety representative	1.20*** (0.06)	1.03 (0.06)
Q252.5. Routinely evaluated: supervisor-employee relationships	1.16*** (0.05)	1.03 (0.05)
Q252.6. Routinely evaluated: organisational aspects, such as work schedules	0.92* (0.04)	1.04 (0.06)
Q300. Establishment has a plan to prevent work-related stress	1.10** (0.05)	0.96 (0.05)
Q301. Establishment has a procedure to deal with possible cases of bullying	1.53*** (0.08)	1.26*** (0.07)
Q302. Establishment has a procedure to deal with possible cases of threat, abuse	0.94 (0.05)	0.86*** (0.05)
country_code_at		0.75* (0.12)
country_code_be		0.91 (0.13)
country_code_bg		0.35*** (0.06)
country_code_ch		0.89 (0.15)
country_code_cy		1.00 (0.20)
country_code_cz		0.28*** (0.04)
country_code_dk		2.51*** (0.40)
country_code_ee		0.57*** (0.09)
country_code_el		0.49*** (0.09)
country_code_es		0.37*** (0.05)
country_code_fi		2.44** (0.49)
country_code_fr		0.44*** (0.06)
country_code_hr		0.38*** (0.06)
country_code_hu		0.35*** (0.05)
country_code_ie		0.44*** (0.06)
country_code_is		1.36 (0.30)
country_code_it		0.20*** (0.03)
country_code_lt		0.15*** (0.03)
country_code_lu		0.50*** (0.09)

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country_code_lv	0.52*** (0.09)
country_code_mk	0.29*** (0.06)
country_code_mt	0.76 (0.15)
country_code_nl	2.26*** (0.40)
country_code_no	2.02*** (0.33)
country_code_pl	0.34*** (0.04)
country_code_pt	0.47*** (0.07)
country_code_ro	0.31*** (0.04)
country_code_rs	0.20*** (0.04)
country_code_se	2.49*** (0.43)
country_code_si	0.58*** (0.09)
country_code_sk	0.22*** (0.04)
country_code_uk	0.45*** (0.05)
Size_50-249	1.21*** (0.06)
Size_250+	1.95*** (0.12)
Nace1_A	0.83 (0.18)
Nace1_B	1.87* (0.66)
Nace1_C	1.35*** (0.12)
Nace1_D	1.48 (0.37)
Nace1_E	0.91 (0.16)
Nace1_F	2.31*** (0.28)
Nace1_H	1.39*** (0.16)
Nace1_I	1.15 (0.12)
Nace1_J	2.42*** (0.45)
Nace1_K	1.99*** (0.31)
Nace1_L	0.91 (0.17)
Nace1_M	2.12*** (0.29)
Nace1_N	1.07 (0.12)
Nace1_O	1.41*** (0.14)
Nace1_P	0.96 (0.08)
Nace1_Q	1.17**

Nace1_R		(0.09)
Nace1_S		0.78
		(0.12)
		0.92
		(0.15)
AIC	14778.7	13494.4
BIC	14830.2	13928.7
N	11,636	11.636
R2	0.0111	0.1041

*** p<0.01 ** p<0.05 * p<0.10

Model 1: OSH factors

Five out of six OSH factors included proved to be significant for the reporting of time pressure as a psychosocial risk. Out of those significant, four had positive influence, i.e. they increased the probability of the reporting of time pressure. The most important factor was the establishment having a plan to deal with possible cases of bullying – it increased the chance for identifying time pressure by 53%. Similar, although lower effects, were observed for the presence of a health and safety representative, supervisor-employee relationships evaluated in risk assessments, and when an establishment has a plan to prevent work-related stress. Negative effect was associated with routinely evaluated: organisational aspects, such as work schedules in risk assessments – this factor decreased the reporting of time pressure as a psychosocial risk by 8%.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After introduction of contextual factors (country, sector, size), a majority of OSH factors became insignificant, showing that contextual factors were more important for the reporting of time pressure as a psychosocial risk. The only factor that remained significant was having a plan to deal with possible cases of bullying. Interestingly, having a procedure to deal with possible cases of threat, abuse – insignificant in model 1 – had a negative influence when introducing contextual factors.

When comparing to Germany, a higher chance for the reporting of time pressure were identified in: Denmark, Finland, Netherlands, Norway, and Sweden. A similar level of reporting as in Germany was observed in Belgium, Switzerland, Cyprus, Iceland, and Malta. In the remaining countries, there was less reporting of time pressure as a psychosocial risk factor than in Germany.

The bigger the establishment, the higher the chances for identifying time pressure as a psychosocial risk- on average 95% in big enterprises, and 21% in medium as compared to small.

When comparing to Trade sector, sectors B, C, F, H, J, K, M, O, and Q exhibited higher chances for reporting time pressure as a risk, whereas other sectors were no different than Trade. Sectors with the highest probability (more than 100%) of reporting time pressure were J (information & communication), F (construction), and M (Professional, Scientific and Technical Activities).

2.3 Poor communication or cooperation

The objective: to investigate factors associated with the reporting of poor communication or cooperation as a psychosocial risk in the establishment.

Variables/Performance Metrics	Q201_2 – poor communication or cooperation	
	Model 1	Model 2
	(0)	(1)
	Coefficient value (std error)	
Q350.4. Health and safety representative	1.12** (0.06)	0.96 (0.06)
Q252.5. Routinely evaluated: supervisor-employee relationships	1.04 (0.05)	0.93 (0.05)
Q252.6. Routinely evaluated: organisational aspects, such as work schedules	0.88*** (0.04)	0.96 (0.05)
Q300. Establishment has a plan to prevent work-related stress	1.12*** (0.05)	0.86*** (0.04)
Q301. Establishment has a procedure to deal with possible cases of bullying	1.29*** (0.06)	0.99 (0.06)
Q302. Establishment has a procedure to deal with possible cases of threat, abuse	1.05 (0.05)	0.90* (0.05)
country_code_at		0.47*** (0.07)
country_code_be		1.52*** (0.19)
country_code_bg		0.26*** (0.06)
country_code_ch		1.01 (0.15)
country_code_cy		0.47*** (0.09)
country_code_cz		0.53*** (0.07)
country_code_dk		3.21*** (0.39)
country_code_ee		0.83 (0.14)
country_code_el		0.43*** (0.08)
country_code_es		0.91 (0.11)
country_code_fi		1.50*** (0.21)
country_code_fr		1.37*** (0.16)
country_code_hr		0.71** (0.12)
country_code_hu		0.39*** (0.06)
country_code_ie		0.73** (0.09)
country_code_is		0.33*** (0.08)
country_code_it		0.50*** (0.07)
country_code_lt		0.16*** (0.05)
country_code_lu		1.13 (0.19)
country_code_lv		0.49*** (0.09)

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country_code_mk	0.16*** (0.05)
country_code_mt	0.60*** (0.11)
country_code_nl	2.05*** (0.26)
country_code_no	1.89*** (0.23)
country_code_pl	0.25*** (0.03)
country_code_pt	0.64*** (0.09)
country_code_ro	0.33*** (0.05)
country_code_rs	0.38*** (0.08)
country_code_se	3.53*** (0.35)
country_code_si	0.88 (0.12)
country_code_sk	0.34*** (0.08)
country_code_uk	0.81* (0.10)
Size_50-249	1.63*** (0.08)
Size_250+	3.11*** (0.19)
Nace1_A	1.58** (0.35)
Nace1_B	1.83* (0.60)
Nace1_C	1.43*** (0.13)
Nace1_D	1.39 (0.34)
Nace1_E	1.34 (0.24)
Nace1_F	1.47*** (0.17)
Nace1_H	1.21 (0.14)
Nace1_I	1.13 (0.12)
Nace1_J	1.20 (0.19)
Nace1_K	1.23 (0.18)
Nace1_L	1.31 (0.26)
Nace1_M	1.53*** (0.19)
Nace1_N	1.09 (0.12)
Nace1_O	1.56*** (0.15)
Nace1_P	1.01 (0.09)
Nace1_Q	1.39*** (0.11)
Nace1_R	1.32*

Nace1_S		(0.21)
		1.63***
		(0.26)
AIC	15077.4	13653.3
BIC	15128.9	14087.6
N	11,636	11,636
R2	0.0056	0.1065

*** p<0.01 ** p<0.05 * p<0.10

Model 1: OSH factors

Four out of six OSH factors included proved to be significant for the reporting of poor communication or cooperation as a psychosocial risk. Out of those significant, three have positive influence, i.e. they increase the probability of the presence of poor communication or cooperation. The most important factor is, that the establishment has a plan to deal with possible cases of bullying – it increases the chance for observing poor communication or cooperation by 29%. Similar, although lower effects, were observed for the presence of health and safety representative, and when an establishment has a plan to prevent work-related stress. Negative effect was connected with routinely evaluated: organisational aspects, such as work schedules in risk assessments – this factor decreases the risk of poor communication and cooperation as a psychosocial risk by 12%.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After introduction of contextual factors (country, sector, size), only one OSH factor remained significant: the establishment having an action plan to prevent work-related stress. However, after introduction of contextual factors, this factor was decreasing the probability of reporting poor communication or cooperation by 14%. This means that analysing the factor alone, it is related to a higher likelihood of reporting poor communication, but combined with the effect of country / sector / size, the likelihood is decreasing. Another factor significant in model 2 was the presence of a procedure to deal with possible cases of threat, abuse – insignificant in model 1 – decreasing the chances of reporting poor communication and cooperation. It means that those two factors can reduce the reporting of poor communication only in selected contexts, not overall.

When comparing to Germany, a higher chance for the reporting of poor communication and cooperation were identified in: Belgium, Denmark, Finland, Netherlands, and Sweden. Similar level of reporting as in Germany was observed in Switzerland, Estonia, Spain, Luxembourg, and Slovenia. In the remaining countries, there were less reporting than in Germany.

The bigger the establishment, the higher the chances for identifying poor communication as a psychosocial risk factor - on average 211% in big enterprises, and 63% in medium as compared to small.

When comparing to Trade sector, sectors A, B, C, F, M, O, Q, and S exhibited higher chances for reporting poor communication as a psychosocial risk, whereas other sectors were no different than Trade. Sectors with the highest probability (more than 60%) of the reporting of poor communication were B (Mining and Quarrying) and S (Other Service Activities).

2.4 Job insecurity

The objective: to investigate factors associated with the reporting of job insecurity as a psychosocial risk in the establishment.

Q201_3 – job insecurity		
Variables/Performance Metrics	Model 1 (0)	Model 2 (1)
	Coefficient value (std error)	
Q350.4. Health and safety representative	1.07 (0.06)	1.10 (0.07)
Q252.5. Routinely evaluated: supervisor-employee relationships	1.11** (0.06)	1.10* (0.06)
Q252.6. Routinely evaluated: organisational aspects, such as work schedules	0.94 (0.05)	0.99 (0.06)
Q300. Establishment has a plan to prevent work-related stress	1.10** (0.05)	0.98 (0.05)
Q301. Establishment has a procedure to deal with possible cases of bullying	1.11* (0.06)	0.98 (0.06)
Q302. Establishment has a procedure to deal with possible cases of threat, abuse	1.04 (0.06)	0.99 (0.05)
country_code_at		1.14 (0.22)
country_code_be		2.54*** (0.39)
country_code_bg		1.00 (0.25)
country_code_ch		2.32*** (0.41)
country_code_cy		2.22*** (0.47)
country_code_cz		1.33 (0.23)
country_code_dk		5.84*** (0.83)
country_code_ee		2.22*** (0.43)
country_code_el		2.54*** (0.51)
country_code_es		2.39*** (0.35)
country_code_fi		3.10*** (0.51)
country_code_fr		2.33*** (0.34)
country_code_hr		2.56*** (0.48)
country_code_hu		1.37 (0.26)
country_code_ie		1.25 (0.22)
country_code_is		1.72** (0.40)
country_code_it		1.21 (0.22)
country_code_lt		2.04*** (0.49)
country_code_lu		2.09*** (0.42)

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country_code_lv	4.02*** (0.75)
country_code_mk	1.48 (0.40)
country_code_mt	0.56* (0.17)
country_code_nl	2.62*** (0.40)
country_code_no	1.65*** (0.47)
country_code_pl	1.91*** (0.28)
country_code_pt	1.86*** (0.33)
country_code_ro	1.67*** (0.29)
country_code_rs	3.12*** (0.60)
country_code_se	2.52*** (0.39)
country_code_si	1.65*** (0.29)
country_code_sk	1.57* (0.38)
country_code_uk	2.05*** (0.30)
Size_50-249	1.42*** (0.08)
Size_250+	2.32*** (0.15)
Nace1_A	1.40 (0.33)
Nace1_B	1.21 (0.43)
Nace1_C	1.26** (0.12)
Nace1_D	1.04 (0.27)
Nace1_E	1.24 (0.24)
Nace1_F	1.05 (0.13)
Nace1_H	0.94 (0.13)
Nace1_I	0.79* (0.10)
Nace1_J	1.31 (0.22)
Nace1_K	1.59*** (0.24)
Nace1_L	1.14 (0.24)
Nace1_M	1.50*** (0.20)
Nace1_N	1.31** (0.15)
Nace1_O	1.10 (0.12)
Nace1_P	1.40*** (0.13)
Nace1_Q	0.89

Nace1_R		(0.08)
Nace1_S		1.32
		(0.22)
		1.09
		(0.20)
AIC	12443.9	11933.0
BIC	12495.4	12367.4
N	11,636	11,636
R2	0.0024	0.0517

*** p<0.01 ** p<0.05 * p<0.10

Model 1: OSH factors

Three out of six OSH factors included proved to be significant for the reporting of job insecurity as a psychosocial risk. All of them had a positive influence, i.e. they increased the probability of reporting job insecurity to a similar extent: supervisor-employee relationship evaluated in risk assessment, the plan to deal with possible cases of bullying, and the plan to prevent work-related stress. Other OSH factors were insignificant.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After introduction of contextual factors (country, sector, size), only one OSH factor remained significant: routinely evaluated supervisor-employee relationships. It increased the chances for reporting job insecurity, regardless of the context. Model 2 shows therefore that, in case of other OSH factors, context is more important for the reporting of job insecurity as a psychosocial risk.

When comparing to Germany, a lower chance for the reporting of job insecurity was identified only in Malta, similar level of reporting as in Germany - in Austria, Bulgaria, Czechia, Hungary, Ireland, Italy, and North Macedonia, whereas in the remaining countries there were more chances of identifying job insecurity as a psychosocial risk factor than in Germany.

The bigger the establishment, the higher the chances for reporting job insecurity as a psychosocial risk- on average 132% in big enterprises, and 42% in medium as compared to small.

When comparing to Trade sector, sectors C, K, M, N, and P exhibited higher chances for reporting job insecurity as a psychosocial risk, whereas all other sectors (with the exception of I with lower chance than in Trade) were no different than Trade. The sector with the highest probability (more than 50%) for reporting job insecurity were K (Financial and Insurance Activities).

2.5 Difficult customers

The objective: to investigate factors associated with the reporting of difficult customers as a psychosocial risk in the establishment.

Variables/Performance Metrics	Model 1 (0)	Model 2 (1)
	Coefficient value (std error)	
Q350.4. Health and safety representative	0.97 (0.02)	1.11*** (0.03)
Q252.5. Routinely evaluated: supervisor-employee relationships	1.25*** (0.03)	1.12*** (0.03)
Q252.6. Routinely evaluated: organisational aspects, such as work schedules	1.15*** (0.03)	1.22*** (0.03)
Q300. Establishment has a plan to prevent work-related stress	0.99 (0.03)	0.92** (0.03)
Q301. Establishment has a procedure to deal with possible cases of bullying	1.50*** (0.05)	1.22*** (0.05)
Q302. Establishment has a procedure to deal with possible cases of threat, abuse	-	-
country_code_at		0.82** (0.07)
country_code_be		0.91 (0.08)
country_code_bg		0.50*** (0.05)
country_code_ch		0.99 (0.10)
country_code_cy		1.55*** (0.20)
country_code_cz		0.60*** (0.05)
country_code_dk		1.16* (0.10)
country_code_ee		1.24* (0.14)
country_code_el		0.79*** (0.07)
country_code_es		0.81*** (0.06)
country_code_fi		0.50*** (0.04)
country_code_fr		1.29*** (0.11)
country_code_hr		0.76*** (0.08)
country_code_hu		0.66*** (0.05)
country_code_ie		0.71*** (0.06)
country_code_is		0.80* (0.10)
country_code_it		0.34*** (0.02)
country_code_lt		0.45*** (0.05)
country_code_lu		1.28* (0.17)
country_code_lv		1.04 (0.11)
country_code_mk		0.65*** (0.07)
country_code_mt		1.66*** (0.24)

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country_code_nl	1.78*** (0.07)
country_code_no	0.64*** (0.05)
country_code_pl	0.95 (0.07)
country_code_pt	1.92*** (0.17)
country_code_ro	0.91 (0.07)
country_code_rs	0.52*** (0.05)
country_code_se	0.99 (0.08)
country_code_si	1.19* (0.11)
country_code_sk	0.41*** (0.04)
country_code_uk	0.95 (0.07)
Size_50-249	1.06 (0.04)
Size_250+	1.07 (0.05)
Nace1_A	0.26*** (0.02)
Nace1_B	0.30*** (0.05)
Nace1_C	0.33*** (0.01)
Nace1_D	0.57*** (0.08)
Nace1_E	0.68*** (0.07)
Nace1_F	0.56*** (0.03)
Nace1_H	0.61*** (0.04)
Nace1_I	1.51*** (0.08)
Nace1_J	0.51*** (0.04)
Nace1_K	1.22** (0.10)
Nace1_L	1.32*** (0.14)
Nace1_M	0.67*** (0.04)
Nace1_N	0.84*** (0.05)
Nace1_O	1.51*** (0.10)
Nace1_P	1.83*** (0.10)
Nace1_Q	2.39*** (0.12)
Nace1_R	0.99 (0.08)
Nace1_S	0.99 (0.07)
AIC	47248.8 43235.4

BIC	47308.2	43744.5
N	35,782	35,782
R2	0.0105	0.0968

*** p<0.01 ** p<0.05 * p<0.10

Model 1: OSH factors

Three out of six OSH factors included proved to be significant for the reporting of difficult customers as a psychosocial risk and all of them had positive influence, i.e. they increased the probability of reporting difficult customers. The most important factor was the establishment having a procedure to deal with possible cases of bullying – it increased the chances for reporting difficult customers by 50%. Similar although lower effects were observed for supervisor-employee relationships evaluated in risk assessment and organisational aspects being evaluated in risk assessment. All other factors were insignificant.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After introduction of contextual factors (country, sector, size), all OSH factors remained significant, showing that they are important for the reporting of difficult customers as a psychosocial risk, even accounting for the context. Additionally, the following factors became significant in model 2: having a health and safety representative increased the chances of reporting difficult customers, and the existence of a plan to prevent work-related stress decreased the chances of reporting.

When comparing to Germany, higher chances for reporting difficult customers were identified in: Cyprus, Denmark, Estonia, France, Luxembourg, Malta, Netherlands, Portugal, and Slovenia. A similar level of reporting as in Germany was observed in Belgium, Switzerland, Latvia, Poland, Romania, Sweden, and the United Kingdom. In the remaining countries, there were less reporting than in Germany.

The size of the establishment had no influence of the reporting of difficult customers as a psychosocial risk.

When comparing to Trade, sectors I, K, L, O, P, and Q exhibited higher chances for reporting difficult customers as a psychosocial risk, with sectors R (Arts, Entertainment and Recreation) and S (Other Service Activities) no different than Trade. The remaining sectors had lower chances than Trade.

2.6 Long or irregular working hours

The objective: to investigate factors associated with reporting long or irregular working hours as a psychosocial risk in the establishment.

Q201_5 – long or irregular working hours		
Variables/Performance Metrics	Model 1 (0)	Model 2 (1)
	Coefficient value (std error)	

Q350.4. Health and safety representative	1.13** (0.06)	0.99 (0.06)
Q252.5. Routinely evaluated: supervisor-employee relationships	1.06 (0.05)	0.96 (0.05)
Q252.6. Routinely evaluated: organisational aspects, such as work schedules	1.23*** (0.06)	1.28*** (0.07)
Q300. Establishment has a plan to prevent work-related stress	1.14*** (0.05)	0.91* (0.04)
Q301. Establishment has a procedure to deal with possible cases of bullying	1.13** (0.06)	0.97 (0.05)
Q302. Establishment has a procedure to deal with possible cases of threat, abuse	1.24*** (0.06)	1.02 (0.06)
country_code_at		0.81 (0.12)
country_code_be		1.08 (0.14)
country_code_bg		0.40*** (0.09)
country_code_ch		1.78*** (0.27)
country_code_cy		1.39* (0.25)
country_code_cz		0.80 (0.11)
country_code_dk		2.73*** (0.33)
country_code_ee		0.70** (0.12)
country_code_el		0.69** (0.12)
country_code_es		0.72*** (0.09)
country_code_fi		1.72*** (0.24)
country_code_fr		1.06 (0.13)
country_code_hr		0.43*** (0.08)
country_code_hu		0.73** (0.11)
country_code_ie		1.34** (0.16)
country_code_is		1.57** (0.28)
country_code_it		0.34*** (0.06)
country_code_lt		0.36*** (0.09)
country_code_lu		1.05 (0.18)
country_code_lv		0.99 (0.17)
country_code_mk		0.18*** (0.06)
country_code_mt		1.44** (0.25)
country_code_nl		1.22 (0.16)
country_code_no		1.86*** (0.23)

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country_code_pl		0.40*** (0.05)
country_code_pt		1.15 (0.17)
country_code_ro		1.42*** (0.19)
country_code_rs		0.62** (0.12)
country_code_se		1.59*** (0.20)
country_code_si		0.88 (0.13)
country_code_sk		0.53*** (0.12)
country_code_uk		1.66*** (0.19)
Size_50-249		1.25*** (0.06)
Size_250+		2.23*** (0.13)
Nace1_A		2.06*** (0.44)
Nace1_B		1.59 (0.51)
Nace1_C		1.00 (0.09)
Nace1_D		1.40 (0.32)
Nace1_E		0.97 (0.18)
Nace1_F		1.47*** (0.16)
Nace1_H		2.24*** (0.25)
Nace1_I		2.27*** (0.22)
Nace1_J		1.47** (0.22)
Nace1_K		0.50*** (0.08)
Nace1_L		0.56** (0.13)
Nace1_M		2.02*** (0.24)
Nace1_N		1.51*** (0.16)
Nace1_O		0.99 (0.10)
Nace1_P		0.90 (0.08)
Nace1_Q		1.77*** (0.14)
Nace1_R		2.25*** (0.34)
Nace1_S		1.46** (0.23)
AIC	15254.9	14249.5
BIC	15306.4	14683.8
N	11,636	11,636
R2	0.0098	0.0819

*** p<0.01

** p<0.05

* p<0.10

Model 1: OSH factors

Five out of six OSH factors included proved to be significant for the reporting of long or irregular working hours as a psychosocial risk. All of them had positive influence, i.e. they increased the probability of reporting long or irregular working hours. The only insignificant factor was supervisor-employee relationships evaluated in risk assessment. The most important factors were: the establishment having a procedure to deal with possible cases of bullying – it increased the chances for reporting long or irregular working hours by 24%, as well as routinely evaluated: organisational aspects, such as work schedules in risk assessments – this factor increased the reporting of long or irregular working hours by 23%.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After introduction of contextual factors (country, sector, size), only two OSH factors remained significant, showing that contextual factors are important for the reporting of long or irregular working hours as a psychosocial risk. The most important factors increasing the reporting of long or irregular working hours when accounting for contextual factors are organisational aspects, such as work schedules included in the risk assessment. On the contrary to model 1, the presence of a plan to prevent work-related stress is decreasing the chance for reporting long or irregular working hours when accounting for the context.

When comparing to Germany, higher chances for the reporting of time pressure were identified in: Switzerland, Cyprus, Denmark, Finland, Ireland, Iceland, Malta, Norway, Romania, Sweden, and the UK. A similar level of reporting as in Germany was observed in Austria, Belgium, Czechia, France, Luxembourg, Netherlands, Poland, and Slovenia. In the remaining countries, there was less reporting than in Germany.

The bigger the establishment, the higher the chances for reporting long or irregular working hours as a psychosocial risk - on average 123% in big enterprises, and 25% in medium as compared to small.

When comparing to Trade sector, sectors A, F, H, J, M, N, Q, R, and S exhibited higher chances for reporting long or irregular working hours as a psychosocial risk, whereas K, and L – lower chances, with other sectors no different than Trade.

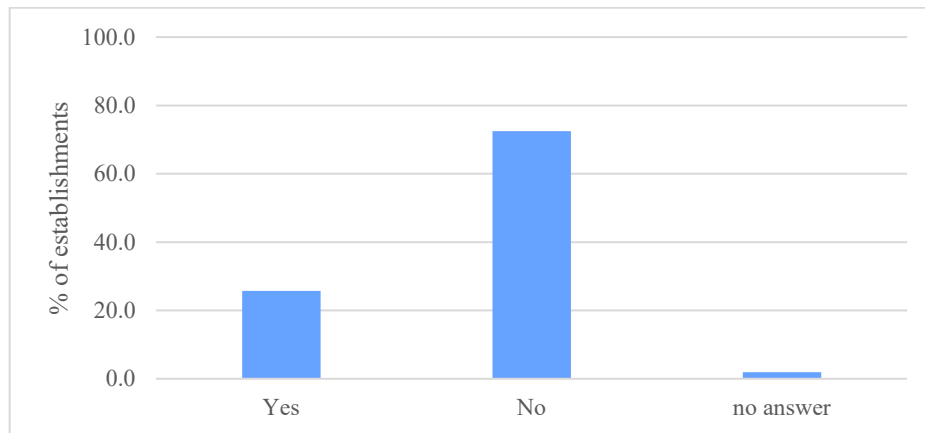
3. Digitalisation– Regressions

3.1 Introduction

Digital technologies are changing workplaces everywhere. There are and will be various impacts of such technologies on working conditions. ESENER asked those establishments reporting the use of at least one digital technology whether the impacts of such technologies on the health and safety of their workers had been discussed.

Overall, only 25.7% of establishments reported that such impacts had been discussed, but more than 70% had not discussed it.

Figure 4. Have the possible impacts of the use of digital technologies on the health and safety been discussed within establishment (Q311)



3.2 Regression results

The objective: to understand what OSH and contextual factors are associated with the impacts of digital technologies on health and safety being discussed.

Q311 – possible impacts of digital technologies have been discussed		
Variables/Performance Metrics	Model 1 (0)	Model 2 (1)
	Coefficient value (std error)	
Q350.4. Health and safety representative	1.53*** (0.04)	1.54*** (0.04)
Q310.1. Used digital technologies: Personal fixed computers	1.35*** (0.05)	1.39*** (0.06)
Q310.2. Used digital technologies: Laptops, smartphones or other mobile devices	1.66*** (0.06)	1.52*** (0.06)
Q310.3. Used digital technologies: Robots interacting with workers	1.45*** (0.07)	1.53*** (0.07)
Q310.4. Used digital technologies: Machines, systems determining the content of the work	1.43*** (0.04)	1.41*** (0.05)
Q310.5. Used digital technologies: Machines, systems monitoring workers' performance	1.54*** (0.05)	1.62*** (0.06)
Q310.6. Used digital technologies: Wearable devices such as smartwatches, glasses	2.66*** (0.012)	2.61*** (0.11)
Q106. Employees working from home (yes)	1.19*** (0.03)	1.31*** (0.04)
country_code_at		0.80** (0.07)
country_code_be		1.58*** (0.13)
country_code_bg		1.49*** (0.15)
country_code_ch		1.03 (0.09)
country_code_cy		0.84 (0.10)

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country_code_cz	1.25*** (0.10)
country_code_dk	1.12 (0.09)
country_code_ee	0.98 (0.10)
country_code_el	0.78*** (0.07)
country_code_es	1.93*** (0.14)
country_code_fi	0.80*** (0.07)
country_code_fr	1.03 (0.08)
country_code_hr	0.87 (0.09)
country_code_hu	5.55*** (0.42)
country_code_ie	2.00*** (0.15)
country_code_is	0.81* (0.09)
country_code_it	0.88* (0.07)
country_code_lt	0.46*** (0.06)
country_code_lu	0.85 (0.09)
country_code_lv	2.76*** (0.26)
country_code_mk	1.44*** (0.14)
country_code_mt	1.53*** (0.18)
country_code_nl	1.73*** (0.13)
country_code_no	0.91 (0.07)
country_code_pl	1.56*** (0.11)
country_code_pt	1.63*** (0.14)
country_code_ro	2.67*** (0.20)
country_code_rs	0.53*** (0.06)
country_code_se	1.95*** (0.15)
country_code_si	0.92 (0.09)
country_code_sk	0.78** (0.09)
country_code_uk	2.26*** (0.16)
Size_5-9	0.92*** (0.03)
Size_50-249	1.07** (0.03)
Size_250+	1.32*** (0.05)

Nace1_A		0.98 (0.09)
Nace1_B		1.20 (0.20)
Nace1_C		0.91** (0.04)
Nace1_D		1.15 (0.18)
Nace1_E		1.08 (0.12)
Nace1_F		0.94 (0.05)
Nace1_H		1.20*** (0.07)
Nace1_I		0.95 (0.05)
Nace1_J		1.56*** (0.11)
Nace1_K		1.43*** (0.11)
Nace1_L		1.30*** (0.12)
Nace1_M		1.34*** (0.07)
Nace1_N		1.41*** (0.08)
Nace1_O		1.27*** (0.07)
Nace1_P		1.66*** (0.08)
Nace1_Q		1.44*** (0.06)
Nace1_R		1.16* (0.10)
Nace1_S		1.28*** (0.09)
AIC	48779.3	46514.6
BIC	48866.0	47061.1
N	43,244	43,244
R2	0.0435	0.0900

*** p<0.01 ** p<0.05 * p<0.10

Model 1: OSH factors

All eight OSH factors included proved to be significant for the impacts being discussed. The direction of the influence of all of the factors was positive, i.e. they increased the chances for the impacts being discussed. When digital technologies are used in the establishment, their impacts are more often discussed, especially in case of wearable devices – if they are used, the chances of discussing the impacts increase by 166%. The presence of a health and safety representative also increased the chances – by 53%. When employees are working from home, the chances for discussing the impacts of digital technologies were higher by 19%.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees

- Sector: G (trade).

After introduction of contextual factors (country, sector, size), all OSH factors still remained significant, and their influence did not change significantly. It means that regardless of the context, the OSH factors considered had an important influence on discussing the impacts of digital technologies.

When comparing to Germany, higher chances of discussing the impact of digital technologies on health and safety were identified in: Belgium, Bulgaria, Czechia, Spain, Hungary, Ireland, Latvia, Macedonia, Malta, Netherlands, Poland, Portugal, Romania, Sweden, and the UK. A similar level to the one in Germany was observed in Switzerland, Cyprus, Denmark, Estonia, France Croatia, Luxembourg Norway, and Slovenia. In the remaining countries, the chances of discussing were lower than in Germany.

The bigger the establishment, the higher the probability of discussing the impacts of digital technologies (on average 32% higher probability in big enterprises as compared to small, and 8% lower probability in micro establishments).

When comparing to Trade sector, sectors H, and from J to S exhibited a higher probability of discussing the impacts, whereas sector C – lower. The sector with the highest probability of discussing the impacts (66% risks compared to Trade) is P (Education).

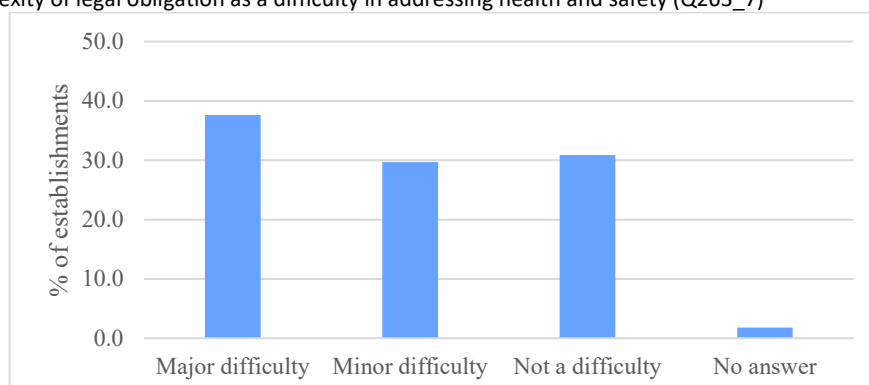
4. Impact of OSH legislation and employee representation– Regressions

4.1 Introduction

The importance of legal obligations in health and safety was asked in the context of addressing health and safety in the establishment. Close to 38% of establishments perceived that the complexity of legal obligations was a major difficulty in addressing health and safety while 31% did not see it as a difficulty.

At the same time, when addressing health and safety in the establishment, fulfilling legal obligations is a major reason for 88.1% of them.

Figure 5. Complexity of legal obligation as a difficulty in addressing health and safety (Q263_7)



4.2 Regression results

The objective: to understand what OSH and contextual factors are associated with the perception of legal obligations as a difficulty or the reason for addressing health and safety in the establishment.

Q263_7 – complexity of legal obligation as major difficulty in addressing health and safety		
Variables/Performance Metrics	Model 1 (0)	Model 2 (1)
	Coefficient value (std error)	
Q350.4. Health and safety representative	0.76*** (0.02)	0.94** (0.02)
Q358.1. Source of information – employers' organisation	1.00 (0.02)	1.09*** (0.03)
Q358.2. Source of information – trade unions	0.97 (0.03)	0.97 (0.03)
Q151. Sum of used OSH services (0-5)	1.00 (0.01)	0.94*** (0.01)
Q152. The use of external providers of OSH services	1.17*** (0.03)	1.17*** (0.03)
Q154. Visited by labour inspectorate	0.96* (0.02)	1.06*** (0.02)
country_code_at		0.65*** (0.04)
country_code_be		1.25*** (0.09)
country_code_bg		0.47*** (0.04)
country_code_ch		0.38*** (0.03)
country_code_cy		0.56*** (0.05)
country_code_cz		0.77*** (0.05)
country_code_dk		0.23*** (0.02)
country_code_ee		0.25*** (0.03)
country_code_el		0.95*** (0.07)
country_code_es		0.56*** (0.04)
country_code_fi		0.20*** (0.02)
country_code_fr		1.14** (0.07)
country_code_hr		0.40*** (0.04)
country_code_hu		0.35*** (0.03)
country_code_ie		0.41*** (0.03)
country_code_is		0.17*** (0.02)
country_code_it		0.81*** (0.05)
country_code_lt		0.16*** (0.02)
country_code_lu		0.58*** (0.05)
country_code_lv		0.15*** (0.02)

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country_code_mk	0.33*** (0.03)
country_code_mt	0.42*** (0.05)
country_code_nl	1.14* (0.08)
country_code_no	0.14*** (0.01)
country_code_pl	0.81*** (0.05)
country_code_pt	0.68*** (0.05)
country_code_ro	0.31*** (0.02)
country_code_rs	0.19*** (0.02)
country_code_se	0.63*** (0.04)
country_code_si	0.32*** (0.03)
country_code_sk	0.64*** (0.06)
country_code_uk	0.30*** (0.02)
Size_5-9	1.05* (0.03)
Size_50-249	0.91*** (0.03)
Size_250+	0.77*** (0.03)
Nace1_A	1.27*** (0.10)
Nace1_B	1.09 (0.17)
Nace1_C	1.12*** (0.04)
Nace1_D	1.43** (0.21)
Nace1_E	1.19* (0.12)
Nace1_F	1.20*** (0.05)
Nace1_H	1.07 (0.06)
Nace1_I	1.22*** (0.06)
Nace1_J	0.84** (0.06)
Nace1_K	0.68*** (0.05)
Nace1_L	0.93 (0.08)
Nace1_M	0.81*** (0.04)
Nace1_N	0.93 (0.05)
Nace1_O	1.29*** (0.07)
Nace1_P	1.42*** (0.06)
Nace1_Q	1.30***

Nace1_R		(0.05)
Nace1_S		1.01
		(0.08)
		0.91
		(0.06)
AIC	56851.4	53515.2
BIC	56912.5	54038.6
N	45,420	43,244
R2	0.0040	0.0643

*** p<0.01 ** p<0.05 * p<0.10

Model 1: OSH factors

Three out of six OSH factors included proved to be significant for the perception that complexity of legal obligations is major difficulty in addressing health and safety in the establishment. The use of external providers of OSH services increased the chances that the establishment perceive complexity of legal obligations as a major difficulty (by 17% compared to establishments that do not use the external providers). On the other hand, the presence of a health and safety representative, and being visited by the labour inspectorate in the last 3 years, decreased (by 24% and 4%, respectively) the chances of perceiving legal obligations as a major difficulty.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After introduction of contextual factors (country, sector, size), the influence of OSH factors became more nuanced. The increase in the probability of perceiving legal obligations as a major difficulty was related to the use of external providers (as in model 1), to recent visits of labour inspectorate (opposite direction in model 1), and to employers' organisation as a source of information (insignificant in model 1). The decrease of the probability was related to the presence of a health and safety representative (similar as in model 1) and to the sum of used OSH services – the more services the establishment used, the less chance it perceived legal obligations as a major difficulty. Finally, trade unions as a source of information had no influence on the perception of complexity of legal obligations.

When comparing to Germany, a higher probability for such perception was identified in: Belgium, France, and the Netherlands. In the remaining countries, there was a lower probability than in Germany, with no country with similar level of probability.

The bigger the establishment, the lower the probability of perceiving legal obligations as a major difficulty -on average 25% lower in big enterprises as compared to small, and 5% higher probability in micro establishments when compared to small.

When comparing to Trade sector, sectors from A, from C to F, I, O, P, Q exhibited higher probability of perceiving legal obligations as a major difficulty, whereas sectors from J, K, M, – lower. Sectors with the highest probability (over 40% more compared to Trade) were in D (Electricity, Gas, Steam and Air Conditioning Supply), and P (Education).

Fulfilling legal obligations as a reason for addressing health and safety

The objective: to understand what OSH and contextual factors are associated with reporting legal obligations as a major reason for addressing health and safety in the establishment.

Q263_7 – reasons for addressing health and safety: fulfilling legal obligation		
Variables/Performance Metrics	Model 1 (0)	Model 2 (1)
	Coefficient value (std error)	
Q350.4. Health and safety representative	1.35*** (0.04)	1.24*** (0.04)
Q358.1. Source of information – employers' organisation	1.19*** (0.04)	1.09** (0.04)
Q358.2. Source of information – trade unions	1.26*** (0.05)	1.22*** (0.05)
Q151. Sum of used OSH services (0-5)	1.18*** (0.01)	1.12*** (0.01)
Q152. The use of external providers of OSH services	1.28*** (0.04)	1.27*** (0.04)
Q154. Visited by labour inspectorate	0.88*** (0.03)	1.04 (0.03)
country_code_at		1.01 (0.13)
country_code_be		0.63*** (0.08)
country_code_bg		1.05 (0.17)
country_code_ch		0.91 (0.11)
country_code_cy		0.51*** (0.07)
country_code_cz		0.50*** (0.06)
country_code_dk		0.18*** (0.02)
country_code_ee		1.41** (0.24)
country_code_el		0.37*** (0.04)
country_code_es		0.61*** (0.07)
country_code_fi		1.43** (0.21)
country_code_fr		0.78** (0.08)
country_code_hr		1.03 (0.17)
country_code_hu		0.47*** (0.05)
country_code_ie		0.43*** (0.05)
country_code_is		0.20*** (0.02)
country_code_it		0.80** (0.09)
country_code_lt		0.45*** (0.06)

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country_code_lu	0.75** (0.11)
country_code_lv	0.57*** (0.08)
country_code_mk	0.10*** (0.01)
country_code_mt	0.56*** (0.09)
country_code_nl	0.78** (0.09)
country_code_no	2.12*** (0.31)
country_code_pl	0.35*** (0.03)
country_code_pt	2.67*** (0.45)
country_code_ro	0.53*** (0.06)
country_code_rs	0.68*** (0.10)
country_code_se	1.73*** (0.27)
country_code_si	0.69*** (0.09)
country_code_sk	0.31*** (0.04)
country_code_uk	0.65*** (0.07)
Size_5-9	0.83*** (0.03)
Size_50-249	1.23*** (0.06)
Size_250+	1.43*** (0.10)
Nace1_A	0.99 (0.10)
Nace1_B	1.14 (0.27)
Nace1_C	1.05 (0.06)
Nace1_D	1.55* (0.37)
Nace1_E	1.19 (0.19)
Nace1_F	1.03 (0.07)
Nace1_H	1.07 (0.08)
Nace1_I	1.09 (0.07)
Nace1_J	0.91 (0.08)
Nace1_K	1.16 (0.12)
Nace1_L	0.99 (0.11)
Nace1_M	0.91 (0.06)
Nace1_N	1.03 (0.08)
Nace1_O	0.99

Nace1_P		(0.08)
Nace1_Q		1.03
Nace1_R		(0.07)
Nace1_S		1.17**
AIC	33358.3	(0.07)
BIC	33419.8	1.32**
N	45,420	(0.15)
R2	0.0253	1.06
		(0.09)

*** p<0.01 ** p<0.05 * p<0.10

Model 1: OSH factors

All six OSH factors included proved to be significant for the reporting of legal obligation as a major reason for addressing health and safety in the establishment. Five factors had a positive influence, i.e. they increased the probability of reporting that legal obligations are the major reason for addressing health and safety. The strongest effect was observed for having a health and safety representative (35% higher chances compared to those establishments where there is no such representative), followed by trade unions as a source of information and the use of external OSH providers. The only factor with a negative effect – i.e. decreasing the chances of reporting legal obligations as a major reason for addressing health and safety - was being visited by the labour inspectorate in the last 3 years.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After introduction of contextual factors (country, sector, size), the influence of OSH factors (all but one) remained significant, showing that even accounting for the context, OSH factors play an important role in understanding legal obligations as a reason for addressing health and safety. The effect of contextual factors was seen in weakening the probability of OSH factors. The only factor whose effect was diminished by adding contextual factors was a visit by the labour inspectorate (insignificant in model 2).

When comparing to Germany, a higher probability for reporting legal obligations a reason for addressing health and safety was found in: Estonia, Finland, Norway, Portugal, and Sweden. A similar probability to that in Germany was observed in Austria, Bulgaria, and Croatia. In the remaining countries, the probability was lower than in Germany.

The bigger the establishment, the higher the probability of reporting legal obligations as a major reason for addressing health and safety - on average 43% higher in big enterprises as compared to small, and 17% lower probability in micro establishments when compared to small.

When comparing to Trade sector, sectors D, Q, and R exhibited a higher probability of reporting legal obligations as a major reason, while all other sectors showed a similar probability as trade.

4.3 Legal mapping survey results

To gain further insight into national legal features, reforms and enforcement approaches, a survey was carried out to collect data from national OSH experts and EU-OSHA focal points across 31 European countries.

Respondents were asked to answer multiple choice questions to provide details on whether their country had introduced relevant legislation, measures or supporting initiatives. While the data collected provides a high-level overview of key national elements, it is clearly difficult to provide a substantive interpretation of the context using this type of information, and there are likely to be some nuances not accounted for. This notwithstanding, the information provides a bird's eye view of developments comparatively.

Figure 6 depicts the survey results using a heat map approach, with the results also grouped using a clustering algorithm. The x-axis shows the country respondents, and the y-axis the survey questions. Each square indicates one answer by one of the responding EU-OSHA focal points.

The colour codes indicate the type of answer given to the question, and are on a scale, as indicated by the legend on the right. The colour red refers to the most comprehensive type of national approach and blue the least. The survey was seeking to learn about coverage of the measure by organisational size. For example, red indicates that all sizes of organisations are in the scope of the measure, whereas dark blue indicates that none are covered.¹

For example, in response to a question with a possible 'yes' or 'no' answer, the first row tells us that all countries except Serbia, Iceland, Luxembourg, the Netherlands and Poland have introduced soft measures within the past 5 years to ease compliance with OSH requirements.

The last row shows that within the past 5 years, the number of OSH inspectors have increased greatly in Ireland and Portugal, increased somewhat in Spain, Luxembourg, the Netherlands and Denmark and decreased in Croatia, Estonia, Cyprus, Finland, France, Bulgaria, Hungary and Lithuania.

We also used a cluster algorithm to see if the results could be partitioned into meaningful groups. The results revealed that there are no strong clusters across Europe for the questions posed. However, results did reveal four weak clusters, with the Netherlands not belonging to any of them. Countries that have given similar answers are grouped together in clusters. The 'tree' at the top shows the 'distance' or extent of the differences within and between the clusters.

For example, when looking at the 'tree', the cluster on the left-hand side comprises Serbia, Belgium, Austria, Ireland, Croatia and Estonia, and is further away from the other clusters, since these countries have simplified rules to ease completion of risk assessments and this simplification took place in the past 5 years for most of them.

¹ In-between these, large, large and medium, or large, medium or micro-sized organisations may be covered. Also, some of the questions provided possible responses in terms of the extent, for example: very large, large, moderate, minor and very minor, while others required simple binary responses, that is, 'yes' or 'no'.

Figure 6: **OSH legal, enforcement and soft measures mapping results**

The next (and largest) cluster consists of Malta, Sweden, Iceland, Cyprus, Spain, Finland, Germany, Latvia, France, Greece and Bulgaria. In the tree, some variation is visible in this cluster, suggesting lack of consistency. It seems for these countries that training is not obligatory for team leaders, and often, OSH employee representatives are not elected by fellow workers. It also seems that for Germany, Latvia, France, Greece and Bulgaria, firms do not have to introduce procedures to deal with difficult or abusive external persons or with causes of staff bullying or harassment.

The third cluster includes Luxembourg, Hungary, Slovakia and Romania. It suggests that the authorities in these countries are less engaged in the provision of online tools for risk assessment to MSMEs, although inspectorates are committed to offering free advisory support.

The fourth cluster comprises Switzerland, Portugal, Poland, Italy, Lithuania, Czechia, Norway, Denmark and Slovenia, countries which have stricter legislation when it comes to mandatory OSH training for managers, obligatory employee representatives and election methods.

Overall, the results show a good general commitment to introducing relevant legislation, reforms and measures to support OSH compliance. While there are clearly challenges in providing a comprehensive approach to enforcement in all areas, it can be assumed that these differences result in establishments putting emphasis on different requirements to varying degrees, or complying with the rules to different extents.

5. Employee participation– Regressions

5.1 Introduction

Employee participation on health and safety was assessed by the presence of health and safety representatives and the way they are appointed. A health and safety representative was reported to be present in 58.5% of all establishments. In a majority of the establishments (55.2%) health and safety representatives were selected by the employer, and in 34.4% - elected by employees.

Figure 7. Forms of employee representation: health and safety representative (Q350_4)

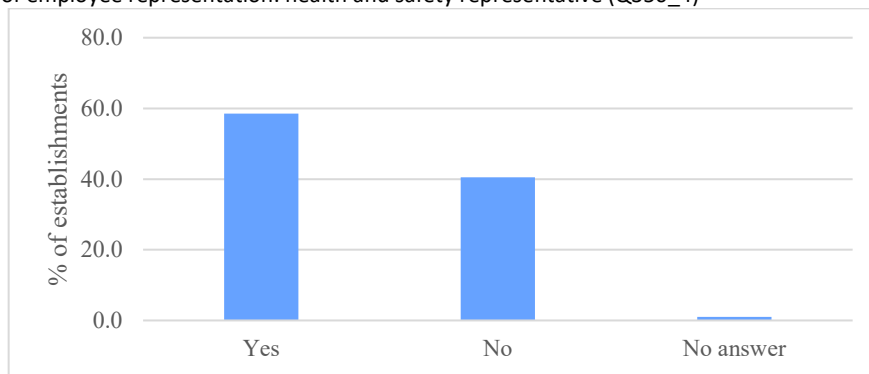
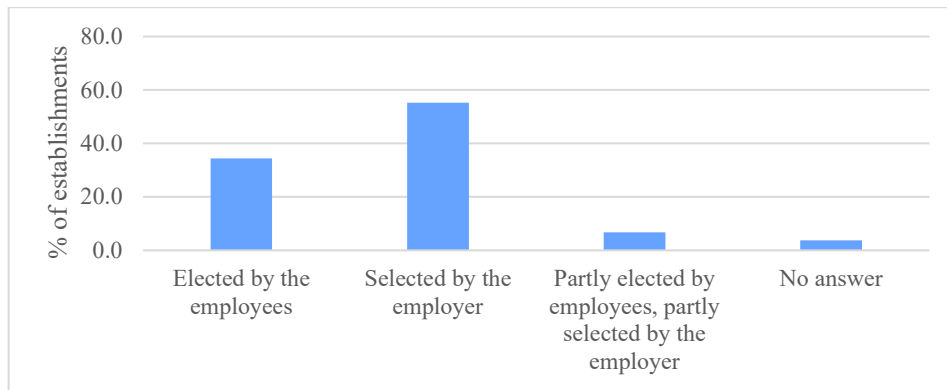


Figure 8. How health and safety representatives are appointed (Q351)



5.2 Regression results

The objective: to understand what OSH and contextual factors are associated with the presence of a health and safety representative in the establishment.

Q350_4 – health and safety representative as a form of employee representation		
Variables/Performance Metrics	Model 1 (0)	Model 2 (1)
	Coefficient value (std error)	
Q262.1. Reasons for addressing health and safety: fulfilling legal obligations	1.05 (0.06)	1.16** (0.07)
Q262.2. Reasons for addressing health and safety: meeting expectations from employees	0.98 (0.04)	1.07 (0.05)
Q262.3. Reasons for addressing health and safety: increasing productivity	1.35*** (0.05)	1.03 (0.04)
Q262.4. Reasons for addressing health and safety: organization's reputation	1.15*** (0.05)	0.99 (0.05)
Q262.5. Reasons for addressing health and safety: avoiding fines from labour inspectorate	1.22*** (0.05)	1.00 (0.05)
Q352. Health and safety regularly discussed between employee representatives and the management	1.89*** (0.08)	1.86*** (0.08)
Q357. Health and safety issues regularly discussed in staff or team meetings	1.19*** (0.05)	1.16*** (0.05)
country_code_at		0.54** (0.13)
country_code_be		0.04*** (0.01)
country_code_bg		0.15*** (0.03)
country_code_ch		0.04*** (0.01)
country_code_cy		0.06*** (0.01)
country_code_cz		0.14*** (0.03)
country_code_dk		0.27*** (0.06)
country_code_ee		0.23*** (0.06)
country_code_el		0.02*** (0.00)
country_code_es		0.13*** (0.03)
country_code_fi		0.16*** (0.03)

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country_code_fr	0.02*** (0.00)
country_code_hr	0.21*** (0.05)
country_code_hu	0.35*** (0.08)
country_code_ie	0.15*** (0.03)
country_code_is	0.08*** (0.02)
country_code_it	0.57** (0.13)
country_code_lt	0.59* (0.16)
country_code_lu	0.13*** (0.03)
country_code_lv	0.04*** (0.01)
country_code_mk	0.18*** (0.04)
country_code_mt	0.34*** (0.10)
country_code_nl	0.08* (0.02)
country_code_no	0.26*** (0.05)
country_code_pl	0.04*** (0.01)
country_code_pt	0.03*** (0.01)
country_code_ro	1.14 (0.33)
country_code_rs	0.18*** (0.04)
country_code_se	0.25*** (0.06)
country_code_si	0.04*** (0.01)
country_code_sk	0.12*** (0.03)
country_code_uk	0.24*** (0.05)
Size_5-9	0.88*** (0.04)
Size_50-249	1.12** (0.05)
Size_250+	1.16** (0.07)
Nace1_A	1.03 (0.15)
Nace1_B	1.08 (0.28)
Nace1_C	0.99 (0.07)
Nace1_D	1.88** (0.54)
Nace1_E	0.76 (0.13)
Nace1_F	1.04 (0.09)
Nace1_H	0.89 (0.09)
Nace1_I	0.81**

		(0.07)
Nace1_J		0.98 (0.13)
Nace1_K		0.86 (0.11)
Nace1_L		0.91 (0.15)
Nace1_M		1.00 (0.10)
Nace1_N		0.82** (0.08)
Nace1_O		0.64*** (0.05)
Nace1_P		0.58*** (0.04)
Nace1_Q		0.79*** (0.06)
Nace1_R		0.59*** (0.08)
Nace1_S		0.72*** (0.08)
AIC	24227.8	20659.7
BIC	24294.8	20170.6
N	32,065	32,065
R2	0.0271	0.1748

*** p<0.01 ** p<0.05 * p<0.10

Model 1: OSH factors

Five out of seven OSH factors included proved to be significant for reporting the existence of a health and safety representative in the establishment. All significant factors had a positive influence, i.e. their presence was connected with a higher probability of the presence of a health and safety representative. The strongest effect was observed in case of holding regular discussions of health and safety issues between employee representatives and the management (by 89%). The next important factor was increasing productivity as a reason for addressing health and safety (by 35%). Two insignificant factors were: fulfilling legal obligations and meeting expectations from employees as reasons for addressing health and safety.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After introduction of contextual factors (country, sector, size), only two OSH factors remained significant and additionally one factor became significant. Holding regular discussions of health and safety between employee representatives and management, and having discussions on the topic in staff or team meetings were important regardless the context, whereas fulfilling legal obligation as a reason to address health and safety had a significant influence for having a health and safety representative only in relation to the context.

There was no country having a higher probability of the presence of a health and safety representative than Germany – only Romania had a similar level of probability and all other countries had lower chances of having a health and safety representative.

The bigger the establishment, the more the chances for a health and safety representative - on average 16% higher in big enterprises as compared to small, and 12% lower in micro establishments.

When comparing to Trade sector, only sector D (by 88%) exhibited a higher probability of having a health and safety representative, whereas sectors I, N, O, P, Q, R, and S – lower.

Health and safety representative elected by employees

The objective: to understand what OSH and contextual factors are associated with the fact that health and safety representatives were elected by employees.

Q351 – health and safety representative elected by employees		
Variables/Performance Metrics	Model 1 (0)	Model 2 (1)
	Coefficient value (std error)	
Q262.1. Reasons for addressing health and safety: fulfilling legal obligations	1.10** (0.05)	1.13** (0.06)
Q262.2. Reasons for addressing health and safety: meeting expectations from employees	1.57*** (0.06)	1.14*** (0.05)
Q262.3. Reasons for addressing health and safety: increasing productivity	0.92*** (0.03)	0.89*** (0.03)
Q262.4. Reasons for addressing health and safety: organization's reputation	0.86*** (0.03)	1.02 (0.05)
Q262.5. Reasons for addressing health and safety: avoiding fines from labour inspectorate	0.88*** (0.03)	0.88*** (0.04)
Q352. Health and safety regularly discussed between employee representatives and the management	1.56*** (0.05)	1.39*** (0.05)
Q357. Health and safety issues regularly discussed in staff or team meetings	1.28*** (0.04)	1.38*** (0.05)
country_code_at		3.49*** (0.39)
country_code_be		24.76*** (3.21)
country_code_bg		2.02*** (0.29)
country_code_ch		1.24 (0.20)
country_code_cy		5.32*** (0.77)
country_code_cz		1.37** (0.18)
country_code_dk		49.84*** (5.60)
country_code_ee		24.92*** (3.19)
country_code_el		12.15*** (1.70)
country_code_es		11.46*** (1.18)
country_code_fi		79.31*** (9.57)
country_code_fr		28.81*** (3.55)
country_code_hr		17.64*** (2.21)
country_code_hu		13.02*** (1.27)
country_code_ie		4.38*** (0.47)

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country_code_is	7.02*** (0.94)
country_code_it	78.92*** (8.42)
country_code_lt	6.85*** (0.84)
country_code_lu	7.59*** (0.94)
country_code_lv	10.18*** (1.67)
country_code_mk	6.15*** (0.85)
country_code_mt	2.44*** (0.42)
country_code_nl	1.82*** (0.24)
country_code_no	49.41*** (5.20)
country_code_pl	17.89*** (2.06)
country_code_pt	5.49*** (0.79)
country_code_ro	5.51*** (0.58)
country_code_rs	5.59*** (0.75)
country_code_se	47.10*** (5.31)
country_code_si	15.64*** (2.09)
country_code_sk	5.90*** (0.78)
country_code_uk	2.33*** (0.25)
Size_5-9	0.65*** (0.03)
Size_50-249	1.60*** (0.06)
Size_250+	2.45*** (0.12)
Nace1_A	1.07 (0.12)
Nace1_B	1.92*** (0.37)
Nace1_C	0.38*** (0.07)
Nace1_D	2.20*** (0.41)
Nace1_E	1.75*** (0.23)
Nace1_F	1.03 (0.07)
Nace1_H	1.23*** (0.10)
Nace1_I	0.87* (0.06)
Nace1_J	0.94 (0.10)
Nace1_K	1.33*** (0.14)
Nace1_L	1.15 (0.16)
Nace1_M	1.14

		(0.09)
Nace1_N		1.06 (0.08)
Nace1_O		1.39*** (0.10)
Nace1_P		1.39*** (0.09)
Nace1_Q		1.43*** (0.08)
Nace1_R		1.19 (0.14)
Nace1_S		1.27** (0.12)
AIC	37372.4	28115.3
BIC	37438.3	28617.6
N	27,868	27,868
R2	0.0232	0.2680

*** p<0.01 ** p<0.05 * p<0.10

Model 1: OSH factors

All seven OSH factors included proved to be significant for the health and safety representative being elected by employees. Four factors had a positive influence: meeting expectations from employees, health and safety regularly discussed between employee representatives and the management, health and safety regularly discussed in staff or team meetings, and fulfilling legal obligations – all increased the probability of health and safety representatives being elected by employees. On the contrary, three other factors – increasing productivity, organization's reputation and avoiding fines from labour inspectorate as reasons for addressing health and safety – decreased the probability of health and safety representatives being elected by employees.

Model 2: OSH + contextual factors.

Reference categories

- Country: Germany
- Establishment size: 10-49 employees
- Sector: G (trade).

After introduction of contextual factors (country, sector, size), six OSH factors still remained significant. The only one that became insignificant was organization's reputation as a reason for addressing health and safety, which means this factor is not important when country / size / sector are taken into account.

When comparing to Germany, higher chances for electing health and safety representative by employees was the case in almost all countries, with the exception of Switzerland, where it was on a similar level. The bigger the establishment, the higher the probability of electing health and safety representative by employees -on average 145% higher in big enterprises as compared to small, and 35% lower probability in micro establishments.

When comparing to Trade sector, sectors D, E, H, K, O, P, Q and S exhibited a higher probability of the election by employees, whereas sectors C and I – lower. The sector with the highest probability (120% compared to Trade) was D (Electricity, Gas, Steam and Air Conditioning Supply).

6. Function of the respondent– Regressions

6.1 Introduction

Function of the respondent was clearly connected with other characteristics of the establishment, particularly size.

Overall, most respondents in ESENER 2019 were owners of their establishments (46.0%). Employees with OSH tasks constituted over 37% of all respondents: 17.2% were managers or specialists with OSH tasks and 20.3% were another employees in charge of OSH. Little over 16% of respondents were managers without OSH tasks.

Country: the share of owners varied from 24.3% in Spain, to 64.3% in Switzerland; the share of manager or specialists with OSH tasks varied from 6.5% in France to 36.3% in Belgium, the share of another employee in charge of OSH varied from 2.5% in Iceland to 46.2% in Italy, the share of managers without OSH tasks varied from 5.0% in Italy to 31.0% in Austria.

Sector: the share of owners varied from 18.8% in O (Public administration and defence), to 64.6% in I (Accommodation and food service); the share of manager or specialists with OSH tasks varied from 8.9% in I to 28.0% in D (Electricity, gas, steam and air conditioning supply), the share of another employee in charge of OSH varied from 11.2% in I to 34.9% in O, the share of managers without OSH tasks varied from 11.5% in A (Agriculture) to 20.6% in E (Water supply; sewerage, waste management and remediation activities).

Size: the share of owners varied from 6.3% in big enterprises, to 57.1% in micro establishments; the share of manager or specialists with OSH tasks varied from 9.4% in micro establishments to 63.1% in big enterprises, the share of another employee in charge of OSH varied from 17.1% in big enterprises to 21.3% in small enterprises, the share of managers without OSH tasks varied from 12.7% in big enterprises to 19.5% in medium enterprises.

Table 1. Distribution of function of the respondent by country

Function of the respondent	at	be	bg	ch	cy	cz	de	dk	ee	el	es
owner	49,4%	37,9%	51,6%	64,3%	54,5%	48,8%	51,5%	55,7%	60,0%	58,0%	24,3%
manager or specialist with OSH tasks	13,2%	36,3%	20,9%	10,1%	25,3%	22,0%	22,8%	29,7%	16,2%	9,5%	17,8%
manager without OSH tasks	31,0%	11,2%	5,1%	16,8%	9,1%	16,5%	15,4%	8,4%	12,3%	14,2%	13,2%
another employee in charge of OSH	6,2%	14,2%	22,1%	8,7%	11,1%	12,5%	10,1%	6,0%	11,5%	18,1%	43,7%
other	0,1%	0,4%	0,2%	0,1%		0,3%	0,1%	0,1%		0,1%	1,0%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Function of the respondent	fi	fr	hr	hu	ie	is	it	lt	lu	lv	mk	mt
owner	59,4%	42,3%	50,4%	49,9%	44,3%	55,0%	33,3%	55,3%	44,0%	52,9%	57,8%	46,3%
manager or specialist with OSH tasks	25,0%	6,5%	24,3%	6,7%	14,3%	12,5%	15,1%	23,3%	17,9%	14,7%	14,1%	14,8%

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manager without OSH tasks	12,0%	15,0%	9,5%	30,6%	28,5%	30,0%	5,0%	9,7%	13,1%	14,7%	16,4%	29,6%
another employee in charge of OSH	3,6%	36,2%	15,8%	12,5%	12,9%	2,5%	46,2%	10,7%	25,0%	17,2%	11,7%	9,3%
other				0,3%			0,3%	1,0%		0,4%		
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Function of the respondent	nl	no	pl	pt	ro	rs	se	si	sk	uk	Total
owner	57,9%	56,4%	62,4%	43,2%	46,4%	34,0%	56,6%	45,3%	39,4%	42,5%	46,0%
manager or specialist with OSH tasks	19,2%	25,9%	8,7%	16,6%	16,8%	13,4%	20,2%	15,3%	11,0%	19,4%	17,2%
manager without OSH tasks	13,9%	13,9%	16,9%	18,5%	16,9%	27,2%	17,6%	23,3%	22,2%	25,8%	16,2%
another employee in charge of OSH	8,9%	3,7%	11,9%	21,3%	19,1%	23,9%	5,5%	15,3%	26,9%	12,1%	20,4%
other	0,1%	0,1%	0,0%	0,3%	0,9%	1,5%	0,1%	0,7%	0,5%	0,2%	0,2%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Table 2. Distribution of function of the respondent by sector

Function of the respondent	A	B	C	D	E	F	G	H	I	J
owner	51,5%	33,3%	41,6%	34,3%	27,3%	45,9%	50,2%	44,7%	64,6%	37,9%
manager or specialist with OSH tasks	12,8%	20,7%	20,7%	28,0%	27,6%	16,3%	14,1%	17,4%	8,9%	20,0%
manager without OSH tasks	11,5%	14,9%	13,8%	14,0%	20,6%	12,7%	16,4%	15,9%	15,1%	17,8%
another employee in charge of OSH	23,6%	29,9%	23,8%	23,8%	23,9%	24,8%	19,1%	21,8%	11,2%	24,2%
other	0,6%	1,1%	0,2%		0,6%	0,3%	0,2%	0,2%	0,2%	0,2%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Function of the respondent	K	L	M	N	O	P	Q	R	S	Total
owner	37,8%	43,3%	42,2%	39,5%	18,8%	47,9%	42,2%	49,1%	51,3%	46,0%
manager or specialist with OSH tasks	17,4%	15,7%	15,5%	23,2%	27,0%	18,9%	23,9%	14,6%	13,2%	17,2%
manager without OSH tasks	18,5%	20,3%	18,5%	16,2%	18,8%	16,4%	19,2%	16,5%	17,7%	16,2%
another employee in charge of OSH	26,2%	20,7%	23,6%	20,9%	34,9%	16,8%	14,3%	19,6%	17,3%	20,4%
other			0,2%	0,2%	0,6%	0,1%	0,4%	0,1%	0,5%	0,2%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Table 3. Distribution of function of the respondent by size

Function of the respondent	5-9	10-49	50-249	250+	Total
owner	57,1%	40,9%	16,9%	6,3%	46,0%
manager or specialist with OSH tasks	9,4%	19,3%	42,0%	63,1%	17,2%
manager without OSH tasks	13,8%	18,2%	19,5%	12,7%	16,2%

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another employee in charge of OSH	19,4%	21,3%	21,1%	17,1%	20,3%
other	0,2%	0,2%	0,6%	0,9%	0,2%
Total	100,0%	100,0%	100,0%	100,0%	100,0%

Risk assessment carried out regularly

The objective: to understand how the function of the respondent influences the relationship between OSH and contextual factors and the fact that risk assessments are carried out regularly in the establishment.

Q250 (risk assessment carried regularly)		
Variables/Performance Metrics	Model 1	Model 2
	Odds ratio (std error)	
Q350.4. Health and safety representative	2.43*** (0.07)	2.37*** (0.07)
Q262.1. Fulfilling legal obligations	1.98*** (0.08)	1.95*** (0.08)
Q262.5. Avoiding fines from labour inspectorate	1.34*** (0.04)	1.34*** (0.04)
Q154. Visited by labour inspectorate	1.69*** (0.05)	1.68*** (0.05)
Q152. Used external OSH providers	2.23*** (0.06)	2.23*** (0.06)
Q113. Function of the respondent (ref. owner)		
Manager or specialist with OSH tasks		1.64*** (0.08)
Another employee in charge of OSH		0.89*** (0.03)
Manager without OSH tasks		0.92** (0.03)
country_code_at	0.69*** (0.06)	0.74*** (0.06)
country_code_be	1.25*** (0.11)	1.24** (0.11)
country_code_bg	3.80*** (0.59)	3.85*** (0.60)
country_code_ch	0.46*** (0.04)	0.48*** (0.04)
country_code_cy	0.62*** (0.06)	0.59*** (0.06)
country_code_cz	1.36*** (0.12)	1.38*** (0.13)
country_code_dk	6.06*** (0.69)	6.30*** (0.72)
country_code_ee	1.10 (0.12)	1.12 (0.12)
country_code_el	0.86* (0.07)	0.90 (0.07)
country_code_es	7.87*** (0.84)	8.39*** (0.91)
country_code_fi	2.92*** (0.29)	2.99*** (0.30)
country_code_fr	1.19** (0.09)	1.32*** (0.10)
country_code_hr	2.44*** (0.33)	2.50*** (0.34)
country_code_hu	2.11*** (0.20)	2.27*** (0.21)
country_code_ie	1.97***	2.09***

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	(0.17)	(0.18)
country_code_is	0.49***	0.51***
	(0.05)	(0.05)
country_code_it	5.80***	6.27***
	(0.64)	(0.71)
country_code_lt	0.57***	0.58***
	(0.06)	(0.06)
country_code_lu	0.40***	0.44***
	(0.03)	(0.04)
country_code_lv	4.01***	4.11***
	(0.49)	(0.51)
country_code_mk	0.63***	0.64***
	(0.06)	(0.07)
country_code_mt	1.21	1.31**
	(0.17)	(0.18)
country_code_nl	2.17***	2.26***
	(0.19)	(0.20)
country_code_no	2.48***	2.56***
	(0.22)	(0.23)
country_code_pl	3.23***	3.37***
	(0.27)	(0.29)
country_code_pt	1.59***	1.65***
	(0.14)	(0.15)
country_code_ro	4.21***	4.49***
	(0.55)	(0.58)
country_code_rs	2.60***	2.83***
	(0.34)	(0.37)
country_code_se	3.09***	3.32***
	(0.31)	(0.32)
country_code_si	5.81***	6.06***
	(0.78)	(0.82)
country_code_sk	0.88	0.99
	(0.09)	(0.10)
country_code_uk	4.66***	4.99***
	(0.44)	(0.47)
Size_5-9	0.72***	0.73***
	(0.02)	(0.02)
Size_50-249	1.86***	1.76***
	(0.08)	(0.08)
Size_250+	3.53***	3.02***
	(0.28)	(0.24)
Nace1_A	1.42***	1.43***
	(0.14)	(0.15)
Nace1_B	3.28***	3.14***
	(0.97)	(0.93)
Nace1_C	1.54***	1.53***
	(0.08)	(0.08)
Nace1_D	2.98***	2.88***
	(0.81)	(0.79)
Nace1_E	2.52***	2.43***
	(0.47)	(0.45)
Nace1_F	1.77***	1.71***
	(0.11)	(0.11)
Nace1_H	1.02	1.02
	(0.07)	(0.07)
Nace1_I	0.85***	0.85***
	(0.05)	(0.05)
Nace1_J	0.51***	0.51***
	(0.04)	(0.04)
Nace1_K	0.76***	0.76***
	(0.07)	(0.07)
Nace1_L	0.66***	0.66***
	(0.06)	(0.07)
Nace1_M	0.70***	0.70***

	(0.04)	(0.04)
Nace1_N	0.98	0.98
	(0.07)	(0.07)
Nace1_O	0.68***	0.68***
	(0.05)	(0.05)
Nace1_P	0.86*	0.87**
	(0.05)	(0.05)
Nace1_Q	1.30***	1.31***
	(0.07)	(0.07)
Nace1_R	0.82**	0.82**
	(0.08)	(0.08)
Nace1_S	0.77***	0.78***
	(0.06)	(0.06)
AIC	35954.7	35790.1
BIC	36469.4	36339.7
N	45,420	45,420
Pseudo R2	0.2367	0.2404

*** $p < 0.01$ ** $p < 0.05$ * $p < 0.10$

The inclusion of the function of the respondent to the models examining the relationship between OSH and contextual factors and OSH dependent variables, did not change this relationship.

Risk assessment carried out regularly – after introduction of the function of the respondent all OSH factors remained significant with the same sign, and the change of odds ratio was not greater than 6%,

There were no changes in the significance and the direction of establishment size influence, although the odds ratio for big enterprises dropped by 51%.

There were no changes in the significance and the direction of sectors influence, and the changes in odds ratio were not greater than 14%

There were only two changes in the significance of country influence, although the magnitude of those changes was small.

The influence of the function of the respondent: if the respondent was a manager or specialist with OSH tasks, the probability of carrying out risk assessments regularly amounted to 64% higher compared to if it was an owner, and 11% and 8% lower in case of another employee in charge of OSH or manager without OSH tasks.