



## Task O2/A1.1

# NATIONAL STATICAL DATA RELATED TO ACCIDENTS IN THE CONSTRUCTION AND FACTORIES SECTOR FOR EACH PARTICIPATING COUNTRY - SPAIN



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## 1. INTRODUCTION

In this Intellectual Output 2, the key situations will be proposed to be included in the 3D environments. As we have indicated in the aims of the work package the key situations will be based on previous reports, taking into account the main risk situations in robotic construction companies and the application of health and environmental prevention measures currently applied in this sector. These situations will be sent to all partners who will comment any addition or change that should be done.

In this subtask O2/A1.1, the main objective of this report is to compile the national statistical data related to accidents in construction sector.

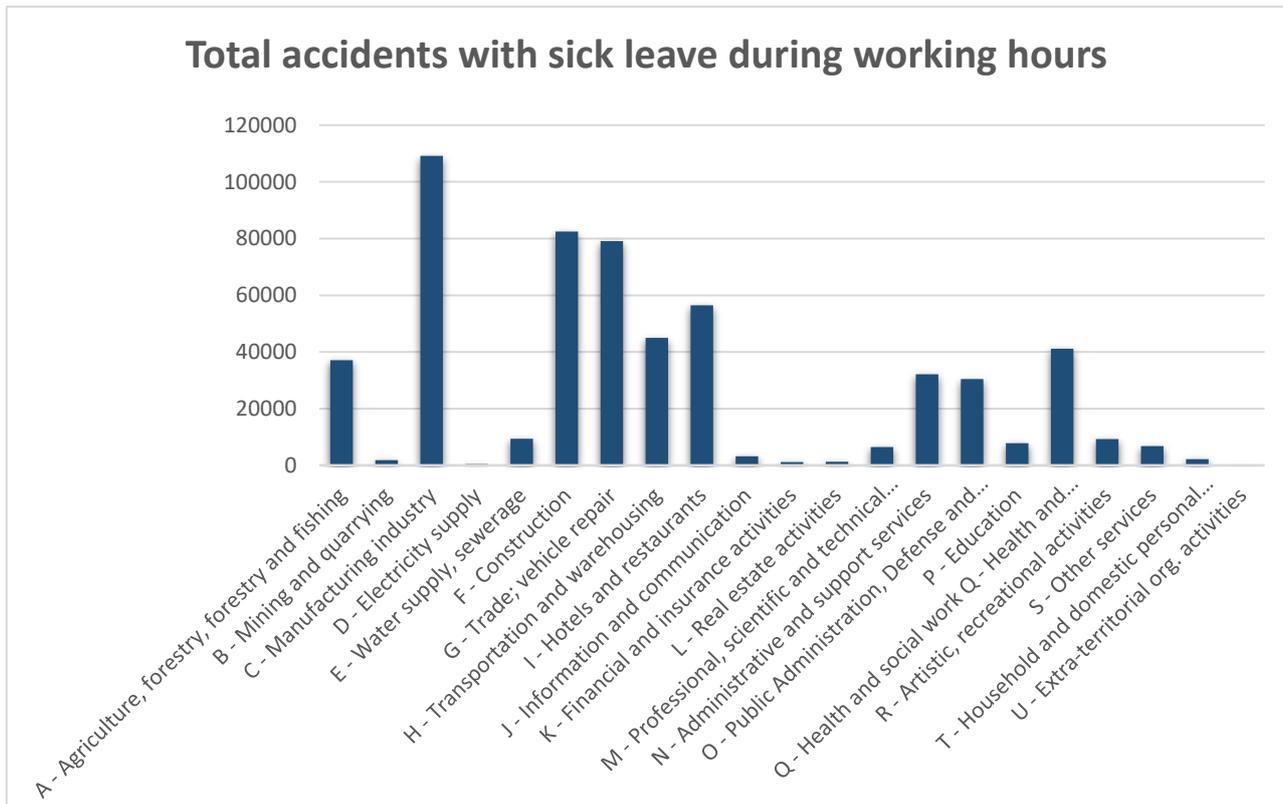


## 2. INFORMATION COLLECTED

In 2019, the number of occupational accidents with sick leave was 650,602, while the number of occupational accidents without sick leave was 724,321.

Of the 650,602 occupational accidents, 562,756 were during the working day and 87,846 in itinere.

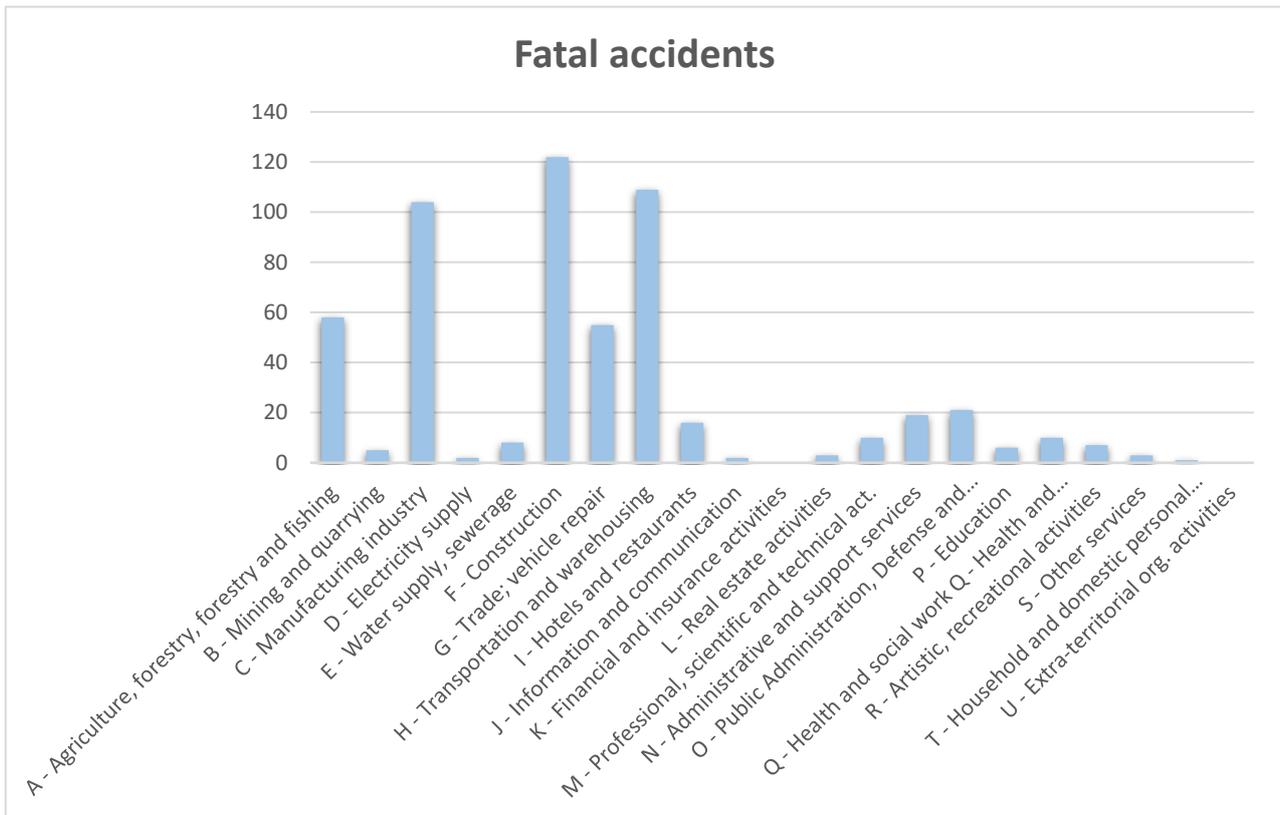
In the following graph we can see the accidents with sick leave that occurred during the working day (excluding those in itinere) according to the sector of activity.





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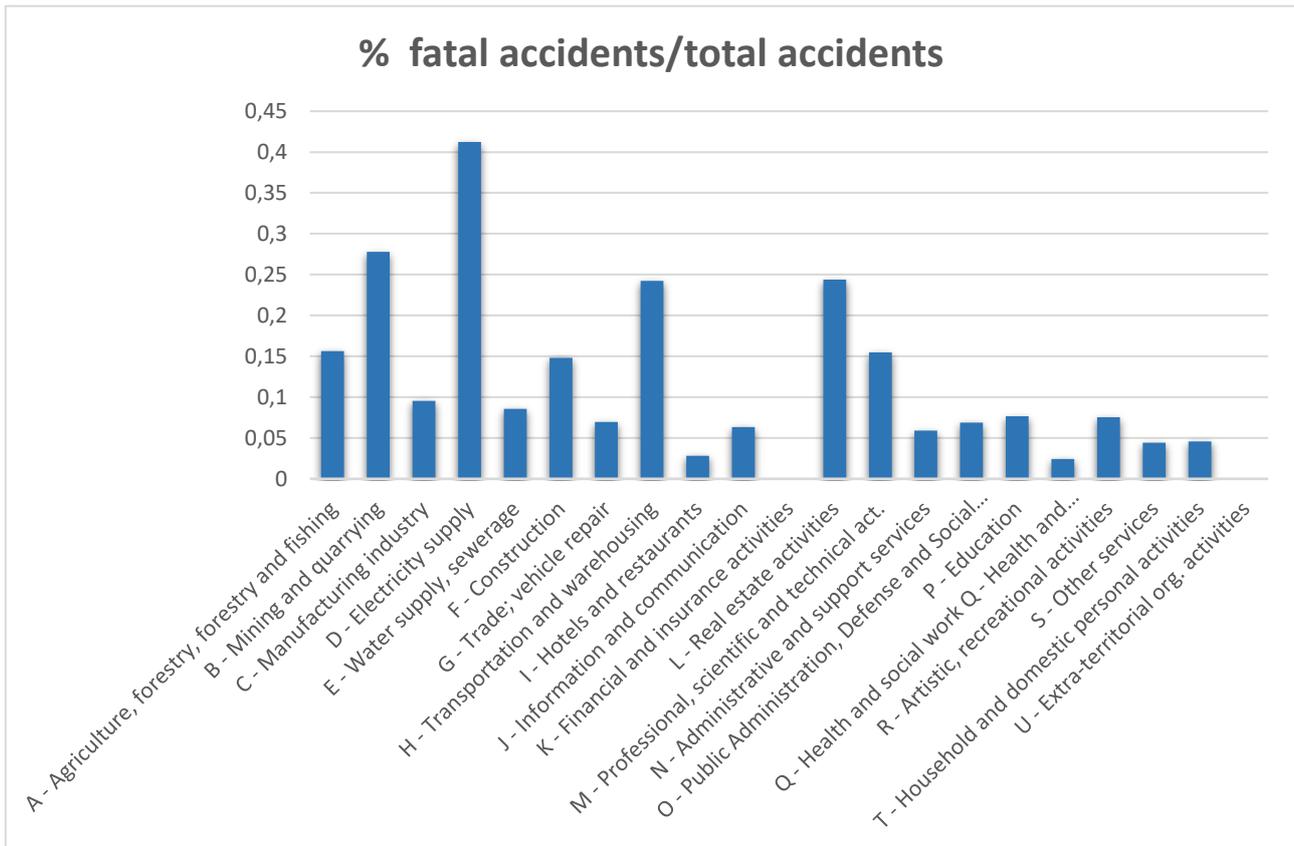
If we break down these accidents that occurred during the working day (excluding those in itinere) and we only keep the accidents that were fatal in these sectors, we obtain the following graph:





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Establishing a ratio between the number of fatal accidents/numbers of total accidents we obtain as a percentage:





## 2.1. Accident statistics in factories

The industries associated with the construction sector for which statistical information is available are those shown in the following table.

### OCCUPATIONAL ACCIDENTS WITH SICK LEAVE, ON THE WORKING DAY AND IN ITINERE, BY SEVERITY, SECTION AND DIVISION OF ECONOMIC ACTIVITY

SECTION AND DIVISION	DURING WORKING HOURS				IN ITINERE			
	Total	Slight	Serious	Fatal	Total	Slight	Serious	Fatal
Extraction of metallic minerals	133	131	2	-	17	16	1	-
Wood and cork industry, except furniture, basketry and wickerwork	4073	4006	64	3	175	169	3	3
Manufacture of rubber and plastic products	5084	5061	20	3	416	410	6	-
Manufacture of other non-metallic mineral products	5972	5900	64	8	337	333	3	1
Metallurgy; manufacture of iron, steel and ferroalloy products	6210	6163	40	7	337	333	3	1
Manufacture of fabricated metal products, except machinery and equipment	20073	19929	133	11	1184	1167	15	2



## 2.2. Accident statistics in construction site

### OCCUPATIONAL ACCIDENTS WITH SICK LEAVE, ON THE WORKING DAY AND IN ITINERE, BY SEVERITY, SECTION AND DIVISION OF ECONOMIC ACTIVITY

SECTION AND DIVISION	DURING WORKING HOURS				IN ITINERE			
	Total	Slight	Serious	Fatal	Total	Slight	Serious	Fatal
Building construction	35151	34626	466	59	1673	1638	26	9
Civil engineering	4052	4001	43	8	200	191	5	4
Specialized construction activities	43226	42665	506	55	2525	2473	37	15
<b>TOTAL</b>	<b>82429</b>	<b>81292</b>	<b>1015</b>	<b>122</b>	<b>4398</b>	<b>4302</b>	<b>68</b>	<b>28</b>

### OCCUPATIONAL ACCIDENTS WITH SICK LEAVE, ON THE WORKING DAY AND IN ITINERE, ACCORDING TO SEVERITY, BY OCCUPATION OF THE INJURED WORKER

WORKER'S OCCUPATION	DURING WORKING HOURS				IN ITINERE			
	Total	Slight	Serious	Fatal	Total	Slight	Serious	Fatal
Workers in structural construction and related works	42773	42169	539	65	1694	1653	35	6
Construction and installation finishers (except electricians), painters and related workers	18874	18621	232	21	1003	981	18	4
Construction and mining laborers	15968	15761	179	28	685	671	8	6



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**OCCUPATIONAL ACCIDENTS WITH SICK LEAVE, BY SEVERITY, BY TYPE OF PLACE WHERE THE INJURED WORKER WAS LOCATED.**

ACCIDENT SCENE	During working hours			
	Total	Slight	Serious	Fatal
Construction work - building under construction	34892	34451	398	43
Construction work - building under demolition, renovation or maintenance	14780	14528	216	36
Quarry, open pit mine, excavation, trench	1999	1953	38	8
Subway works	249	243	5	1
Works in water	55	54	1	-
Works in hyperbaric environment, underwater	14	13	1	-
Works, construction, quarry, open pit mine - Unspecified	4001	3940	53	-
<b>TOTAL CONSTRUCTION SITE, CONSTRUCTION, QUARRY, OPEN PIT MINE</b>	<b>55990</b>	<b>55190</b>	<b>712</b>	<b>88</b>



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ACCIDENT SCENE	During working hours			
	Total	Slight	Serious	Fatal
Earthmoving	2001	1969	25	7
New construction - buildings	17799	17599	216	24
New construction - civil engineering, roads, bridges, dams, harbors	2418	2380	34	4
Renovation, repair, addition, maintenance - all types of buildings	16655	16368	250	37
Demolition of all types of constructions	752	738	14	-
Earthmoving, construction, demolition - Unspecified	2753	2721	32	-
<b>TOTAL EARTH MOVING, CONSTRUCTION, DEMOLITION</b>	<b>42378</b>	<b>41735</b>	<b>571</b>	<b>72</b>



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There are no official statistics on the form or contact that produced the occupational accident by occupational sector, but we did find statistics that group all workers injured on sick leave, during working hours and in itinere, according to severity, by the form or contact that produced the injury.

**OCCUPATIONAL ACCIDENTS WITH SICK LEAVE, ON THE WORKING DAY AND IN ITINERE, BY SEVERITY, BY FORM OR CONTACT THAT PRODUCED THE INJURY**

	DURING WORKING HOURS				IN ITINERE			
	Total	Slight	Serious	Fatal	Total	Slight	Serious	Fatal
<b>TOTAL</b>	<b>562756</b>	<b>557863</b>	<b>4332</b>	<b>561</b>	<b>87846</b>	<b>86624</b>	<b>1062</b>	<b>160</b>
<b>Electrical contact, with fire, temperatures or hazardous substances</b>	<b>19644</b>	<b>19480</b>	<b>141</b>	<b>23</b>	<b>159</b>	<b>159</b>	<b>-</b>	<b>-</b>
Contact with an electric arc or lightning (passive) (no material contact with the element)	474	467	5	2	13	13	-	-
Direct contact with electricity, receive electric shock	475	449	20	6	3	3	-	-
Contact with direct flames or objects or environments with high temperatures	6393	6323	62	8	19	19	-	-
Contact with cold or icy object or environment	324	319	5	-	14	14	-	-
Contact with hazardous substances - through nose, mouth, by inhalation	737	722	8	7	6	6	-	-
Contact with hazardous substances - through skin and eyes	8860	8831	29	-	25	25	-	-
Contact with hazardous substances - through the digestive system by swallowing	72	71	1	-	2	2	-	-



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Contact with electrical, fire, heat or hazardous substances - Unspecified	2309	2298	11	-	77	77	-	-
<b>Drowning, to be buried, to be engulfed</b>	<b>989</b>	<b>966</b>	<b>7</b>	<b>16</b>	<b>18</b>	<b>16</b>	<b>-</b>	<b>2</b>
Drowning in a liquid	55	49	-	6	2	-	-	2
Being buried under a solid	88	77	6	5	2	2	-	-
Being enveloped by, surrounded by gases or particles in suspension	602	596	1	5	2	2	-	-
Drowning, being buried, being enveloped - Unspecified	244	244	-	-	12	12	-	-
<b>Strike against a stationary object, worker in motion</b>	<b>143554</b>	<b>141754</b>	<b>1713</b>	<b>87</b>	<b>20521</b>	<b>20359</b>	<b>160</b>	<b>2</b>
Blow on or against as a result of a fall of the worker	89087	87521	1480	86	15443	15309	132	2
Struck by tripping over or against a stationary object	44883	44705	177	1	4569	4544	25	-
Blow against stationary object, worker in motion - Unspecified	9584	9528	56	-	509	506	3	-
<b>Crash or blow against a moving object, collision with a moving object, collision with</b>	<b>87289</b>	<b>86665</b>	<b>599</b>	<b>25</b>	<b>5369</b>	<b>5316</b>	<b>53</b>	<b>-</b>
Crash or blow against an object or fragments - projected	12534	12445	84	5	199	196	3	-
Crash or blow against an object - falling or dislodged	35016	34723	281	12	463	461	2	-



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Collision with or striking an object - rolling or turning	16754	16678	74	2	448	444	4	-
Collision or strike against an object, including vehicles - stationary worker	8027	7060	55	3	2157	2142	15	-
Collision with an object, vehicle or person - worker in motion	9955	9876	76	3	1795	1772	23	-
Strike at sea	92	88	4	-	1	1	-	-
Collision or strike against a moving object, collision with - Unspecified	4911	4886	25	-	306	300	6	-
<b>Contact with material agent, cutting, sharp, hard</b>	<b>58854</b>	<b>58596</b>	<b>254</b>	<b>4</b>	<b>222</b>	<b>218</b>	<b>3</b>	<b>1</b>
Contact with a cutting material agent - knife, blade, etc.	41632	41450	179	3	69	68	1	-
Contact with a sharp material agent - nail, sharp tool, etc.	7634	7604	29	1	45	44	-	1
Contact with scratching - grater, sandpaper - or hard material	3058	3047	11	-	10	10	-	-
Contact with material agent, cutting, sharp, hard - Unspecified	6530	6495	35	-	98	96	2	-
<b>Getting trapped, crushed, amputated</b>	<b>19241</b>	<b>18673</b>	<b>486</b>	<b>82</b>	<b>446</b>	<b>443</b>	<b>3</b>	<b>-</b>
Being caught, crushed - in something in motion	4451	4329	115	7	125	124	1	-
Getting caught, being crushed - under something moving	3462	3315	91	56	59	58	1	-



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Being trapped, being crushed - between something moving and another object	9078	8936	123	19	204	203	1	-
Amputation, severing of a limb, hand or finger	760	634	126	-	7	7	-	-
Being trapped, crushed, amputated - Unspecified	1490	1459	31	-	51	51	-	-
<b>Overexertion, psychological trauma, radiation, noise, etc.</b>	<b>195815</b>	<b>195627</b>	<b>188</b>	<b>-</b>	<b>4914</b>	<b>4897</b>	<b>17</b>	<b>-</b>
Physical overexertion - on the musculoskeletal system	191864	191694	170	-	4769	4752	17	-
Exposure to radiation, noise, light, or pressure	645	644	1	-	6	6	-	-
Psychical trauma	669	664	5	-	21	21	-	-
Overexertion, psychological trauma, radiation, noise, etc. - Not specified	2637	2625	12	-	118	118	-	-
<b>Bites, kicks, etc. (from animals or persons)</b>	<b>8684</b>	<b>8623</b>	<b>56</b>	<b>5</b>	<b>382</b>	<b>376</b>	<b>6</b>	<b>-</b>
Bites, scratches	816	814	2	-	28	27	1	-
Sting of an insect, fish	560	557	1	2	4	4	-	-
Blows, kicks, headbutts, strangulation, etc.	6686	6636	47	3	306	302	4	-
Biting, kicking, kicking, etc. (from animals or persons) - Unspecified	622	616	6	-	44	43	1	-
<b>Heart attacks, strokes and other strictly natural causes</b>	<b>1265</b>	<b>606</b>	<b>438</b>	<b>221</b>	<b>49</b>	<b>18</b>	<b>12</b>	<b>19</b>
<b>Traffic accidents<sup>(1)</sup></b>	<b>22184</b>	<b>21702</b>	<b>384</b>	<b>98</b>	<b>55312</b>	<b>54385</b>	<b>791</b>	<b>136</b>



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<b>Other form or contact not included in the previous sections</b>	<b>2268</b>	<b>2253</b>	<b>12</b>	<b>-</b>	<b>156</b>	<b>153</b>	<b>3</b>	<b>-</b>
<b>No information</b>	<b>2972</b>	<b>2918</b>	<b>54</b>	<b>-</b>	<b>298</b>	<b>284</b>	<b>14</b>	<b>-</b>

<sup>(1)</sup>Traffic accidents do not include railway, air and maritime accidents.

### 3. CONCLUSIONS OF COMPILED DATA

Construction is the sector with the highest number of occupational accident fatalities. However, despite being the sector that leads this statistic it is not the activity with the highest number of accidents, which indicates that those that do occur present a greater risk than those produced in other sectors.

According to the Ministry of Labor's occupational accident statistics, in Spain construction is the sector that accumulated the most fatal accidents during 2019. Of the 82,429 accidents recorded, 122 were fatal, which represents 0.15%. If we compare with the industry, which in this same period has suffered 120,809 accidents of which 119 have been fatal, we will obtain a percentage of fatal accidents versus total accidents of 0.10% which means a lower rate of fatal accidents with respect to the construction sector.

The main causes of occupational accidents are overexertion of the musculoskeletal system, blows on or against the ground as a result of the worker falling, and blows resulting from tripping over or against a stationary object. On the other hand, the main causes of fatal accidents are heart attacks and strokes, falls, traffic accidents, and entrapments and amputations.

The above causes go some way to understanding why the construction sector has a higher ratio of deaths resulting from occupational accidents than other occupational activities. The working conditions of each job determine the consequences of this type of accident. There is a big difference between slipping in an office causing a fall to ground level and slipping on a scaffolding 3 meters above the ground.

It is therefore necessary to implement robots and automatons in the construction sector to reduce the number of occupational accidents and make the working environment a safer and healthier place.