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The OTS Cohort on Work Organization and Health: a cohort profile

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1. Abstract

The OTS Cohort is an observational open cohort study of salaried workers aged 25 years or older in Spain, designed to examine longitudinal relationships between labor management practices, work-related psychosocial risks, and health. This cohort profile describes the study design, recruitment procedures, data collection, participation status definitions, response rates and sample attrition patterns across annual survey waves.

Participants were recruited from a contact list of 9,913 members of Comisiones Obreras, Spain's largest trade union, who had previously agreed to be contacted for future work-related research. The cohort included two baseline recruitment waves, conducted in 2023 and 2024, followed by annual online survey waves carried out during the first quarter of each year. Invitations were sent by email and included a link to a self-administered questionnaire, with up to two reminders sent at approximately two-week intervals.

A total of 3,739 participants entered the cohort: 3,174 in 2023 and 565 in 2024. When calculated over participants in the previous wave, response rates were 68.5% in 2024, 65.9% in 2025, and 71.9% in 2026. When pending participants were also included in the denominator, defined as those who had participated two waves earlier but not in the immediately preceding wave, response rates were 57.1% in 2025 and 63.6% in 2026. Re-engagement was observed among pending participants who responded again in the following wave, accounting for 31.7% of pending participants in 2025 and 42.6% in 2026.

Analytical eligibility was assessed at each wave among respondents according to their current labor market situation. Eligible participants included salaried workers currently at work, salaried workers on sickness absence, and participants who had responded in the previous wave and became unemployed during the following year. Permanent losses were defined as explicit withdrawal, full retirement, permanent disability, or non-response in two consecutive waves.

The recruitment strategy and follow-up process should be considered when interpreting findings. The OTS Cohort is not representative of the overall salaried working population in Spain, since participants were recruited from a trade-union contact list, had previously agreed to be recontacted, were aged 25 years or older, and participated voluntarily through an online questionnaire. Accordingly, the cohort should not be used to estimate population prevalences or to describe the distribution of work-related exposures or health outcomes among salaried workers in Spain. Its primary purpose is to support longitudinal analyses of relationships between labor management practices, work-related psychosocial risks, and health.

In this context, selection and attrition processes are relevant insofar as they may affect estimated associations, particularly if participation or loss to follow-up is related to both exposures and outcomes. Overall, attrition-related bias appears to be limited, as standardized differences between participants and non-participants across follow-up waves were generally small. Nevertheless, participants retained over time tended to show somewhat more favorable employment conditions, particularly regarding

whether salary covered basic needs. This may reflect selection processes during follow-up, but also expected changes over time as some workers move toward more stable employment situations. In addition, there was some indication of a possible healthy worker selection effect, since participants who discontinued follow-up tended to report slightly poorer health status than those who remained in the cohort. Taken together, these patterns suggest that attrition bias is likely very low overall, although it cannot be considered entirely negligible when interpreting longitudinal associations between work-related exposures and health outcomes.

The OTS Cohort provides a longitudinal resource for studying changes in work organization, psychosocial risks at work, and health among salaried workers in Spain. This working paper establishes the methodological basis for future studies using the cohort and provides standardized definitions and indicators to support transparent reporting of recruitment, response rates, analytical eligibility, sample attrition, and potential selection processes.

2. Study design, recruitment and data collection

Study design

The OTS Cohort is a longitudinal study of salaried workers aged 25 years or older in Spain, aimed at examining work organization, work-related psychosocial risks and health over time. It is an observational open cohort study with staggered entry in 2023 and 2024. The cohort is based on repeated annual survey waves, allowing participants' employment and working conditions, exposure to work-related psychosocial risks and health status to be followed over time.

Recruitment

Participants were recruited from a contact list of 9,913 members of Comisiones Obreras, Spain's largest trade union, who had previously explicitly agreed to be contacted again for future work-related research in a study conducted two years earlier. Invitations to participate were distributed by email and included a link to a self-administered online questionnaire. Participation was voluntary; before completing the questionnaire, all participants received information about the aims of the study and provided informed consent.

Data collection

Participants entered the cohort through two baseline waves, conducted in 2023 and 2024, and were followed through annual survey waves. Data collection was carried out during the first quarter of each year. Participants received an initial invitation, followed by up to two reminders at approximately two-week intervals if they did not respond. Data were collected through a self-administered online questionnaire developed using LimeSurvey.

3. Participation status and attrition definitions

Contact frame status

Participants remained in the cohort contact frame unless they met one of the criteria for permanent loss. Participants who responded in the previous wave but not in the current wave were classified as pending and remained in the contact frame for the following wave. Participants who did not respond in the previous wave but responded again in the current wave were classified as re-engaged.

Wave response status

Respondents were defined as participants who completed the questionnaire in a given wave. Non-respondents were participants who were invited to participate but did not complete the questionnaire in that wave.

Analytical eligibility status

At each wave, analytical eligibility was assessed among respondents according to their current labour market situation. Participants were considered eligible if they belonged to one of the following groups: (a) salaried workers currently at work; (b) salaried workers on sickness absence; or (c) participants who had responded in the previous wave and became unemployed during the following year.

Participants in group (a) completed the full questionnaire. Participants in groups (b) and (c) answered questions on health status and specific questions about their current situation, but did not answer questions on work-related psychosocial risk exposures or other working conditions.

Respondents who were self-employed or were in a situation implying permanent loss from follow-up, such as withdrawal, full retirement or permanent disability, were classified as ineligible.

Attrition status

Participants were classified as permanent losses if they explicitly withdrew from the study, reported having fully retired, reported having been granted permanent disability status, or failed to respond in two consecutive waves.

4. Baseline characteristics

Table 1. Characteristics of initial contact frame members by participation status in the OTS Cohort

	Did not participate in the OTS Cohort		Participated in the OTS Cohort		
	n	%	n	%	SMD*
Gender					
Men	2802	45.4	1807	48.6	0.064
Women	3367	54.5	1910	51.3	-0.064
Other	5	0.1	5	0.1	0
Age					
25-34	705	11.4	334	8.9	-0.083
35-44	1697	27.5	950	25.4	-0.048
45-54	2026	32.8	1582	42.3	0.197
55 or more	1746	28.3	873	23.3	0.114
Occupational class					
Design	2360	38.2	1881	50.3	0.245
Execution	3814	61.8	1858	49.7	-0.245
Type of contract					
Permanent	4721	77.5	2994	81.0	0.086
Temporary	1369	22.5	704	19.0	-0.086

* SMD: standardized mean difference

Table 2. Baseline characteristics of participants by cohort entry year: 2023 and 2024

	Baseline 2023		Baseline 2024		SMD*
	n	%	n	%	
Total	3174	100	565	100	
Sex					
Men	1556	49	273	48.3	-0.014
Women	1614	50.9	291	51.5	0.013
Intersexual	4	0.1	1	0.2	0.013
Age					
mean $\pm$ SD	49.4 $\pm$ 8.5		49.5 $\pm$ 8.4		0.004
Occupational class					
Design	1611	50.8	270	47.8	-0.06
Execution	1562	49.2	295	52.2	0.06
Employment contract					
Permanent	2750	87.1	485	87.1	-0.001
Temporary	407	12.9	72	12.9	0.001
Working hours					
Full-time	2898	92.1	514	92.8	0.024
Part-time	247	7.9	40	7.2	-0.024
Salary covers basic needs					
Never / Only occasionally / Sometimes	903	28.6	168	30.7	0.044
Always / Often	2250	71.4	380	69.3	-0.044
Caring for dependents					
No	2142	67.5	412	72.9	0.119
Yes	1032	32.5	153	27.1	-0.119
Exposure to psychosocial risks					
High quantitative demands	1488	47.1	267	47.5	0.008
High work pace	1256	39.6	234	41.5	0.038
Low influence	1819	57.8	313	55.7	-0.042
Low possibilities for development	1477	46.6	243	43	-0.072
Job insecurity	1611	53	274	50.9	-0.041
Low support from colleagues	2246	72.1	388	71.2	-0.02
Low support from supervisor	2571	81.4	448	80.1	-0.032
Work-life conflict	1404	45.7	272	50.2	0.091
Low recognition	2415	76.7	426	76.9	0.004
Job strain					
Low strain	738	23.5	126	22.6	-0.023
Passive	897	28.6	159	28.5	-0.003
Active	610	19.5	131	23.5	0.098
High strain	889	28.4	142	25.4	-0.066
Health					
Poor self-rated health	1097	34.6	194	34.3	-0.005
Prevalence of moderate/severe depression	1093	35	214	38.8	0.079
Suicidal ideation	550	17.9	100	18.3	0.011

* SMD: standardized mean difference.

5. Response rates, eligibility and sample attrition

Table 3. Participation, eligibility and sample attrition by wave in the OTS Cohort. Overall sample.

Wave	Responses (a)				Re-engaged (e)			Eligible participants (h)	Ineligible participants			Withdrawal	Two consecutive NR (i)	Permanent losses (j)	Pending (k)
	n	% (b)	% (c)	% (d)	n	% (f)	% (g)		Self-employed	Retired	Permanent disability				
2023	3174	-	-	-	-	-	-	3174	-	-	-	-	-	-	-
2024	2740	73.3%	68.5%	68.5%	-	-	-	2696	5	32	7	2	-	41	958
2025	2110	56.4%	65.9%	57.1%	304	14.4%	31.7%	2052	5	45	8	2	691	746	842
2026	1877	50.2%	71.9%	63.6%	359	19.1%	42.6%	1823	5	39	10	0	575	624	451

(a) Total number of responses in that wave.

(b) Percentage over baseline participants (n = 3739).

(c) Percentage over participants in the previous wave (respondents at t-1). For 2024, the denominator was restricted to participants from the 2023 baseline sample; 2,175 of these participants responded in 2024.

(d) Percentage over the previous wave denominator (responses + pending participants at t-1). For 2024, the denominator was restricted to participants from the 2023 baseline sample.

(e) Participants who did not respond at t-1 but responded at t.

(f) Percentage over total responses at t.

(g) Percentage over pending participants at t-1.

(h) Participants who were salaried workers at the current wave (t), either active or on sickness absence, or who had been salaried and active workers in the previous wave (t-1) and were unemployed at the current wave (t).

(i) Loss to follow-up due to non-response in two consecutive waves.

(j) Retired + permanent disability + withdrawal + two consecutive NR.

(k) Participants who responded at t-1 but not at t. They remain pending until t+1; if they do not respond at t+1, they are classified as permanent losses.

Table 4. Participation, eligibility and sample attrition by wave in the OTS Cohort. 2023 baseline sample.

Wave	Responses (a)				Re-engaged (e)			Eligible participants (h)	Ineligible participants			Withdrawal	Two consecutive NR (i)	Permanent losses (j)	Pending (k)
	n	% (b)	% (c)	% (d)	n	% (f)	% (g)		Self-employed	Retired	Permanent disability				
2023	3174	-		-	-	-	-	3174	-	-	-	-	-	-	
2024	2175	68.5%	68.5%	68.5%	-	-	-	2131	5	32	7	2	-	41	958
2025	1865	58.8%	71.8%	59.5%	304	16.3%	31.7%	1811	4	43	7	2	691	743	525
2026	1600	50.4%	72.8%	66.9%	243	15.2%	46.3%	1554	4	36	6	0	371	413	377

(a) Total number of responses in that wave.

(b) Percentage over baseline participants (n = 3,174).

(c) Percentage over the previous wave participants (responses at t-1).

(d) Percentage over the previous wave denominator (responses + pending participants at t-1).

(e) Participants who did not respond at t-1 but responded at t.

(f) Percentage over total responses at t.

(g) Percentage over pending participants at t-1.

(h) Participants who were salaried workers at the current wave (t), either active or on sickness absence, or who had been salaried and active workers in the previous wave (t-1) and were unemployed at the current wave (t).

(i) Loss to follow-up due to non-response in two consecutive waves.

(j) Retired + permanent disability + withdrawal + two consecutive NR.

(k) Participants who responded at t-1 but not at t. They remain pending until t+1; if they do not respond at t+1, they are classified as permanent losses.

Table 5. Participation, eligibility and sample attrition by wave in the OTS Cohort. 2024 baseline sample.

Wave	Responses (a)				Re-engaged (e)			Eligible participants (h)	Ineligible participants			Withdrawal	Two consecutive NR (i)	Permanent losses (j)	Pending (k)
	n	% (b)	% (c)	% (d)	n	% (f)	% (g)		Self-employed	Retired	Permanent disability				
2023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2024	565	-	-	-	-	-	-	565	-	-	-	-	-	-	-
2025	245	43.4%	43.4%	43.4%	-	-	-	241	1	2	1	0	-	3	317
2026	277	49.0%	65.7%	49.3%	116	41.9%	36.6%	269	1	3	4	0	204	211	74

(a) Total number of responses in that wave.

(b) Percentage over baseline participants (n = 565).

(c) Percentage over the previous wave participants (responses at t-1).

(d) Percentage over the previous wave denominator (responses + pending participants at t-1).

(e) Participants who did not respond at t-1 but responded at t.

(f) Percentage over total responses at t.

(g) Percentage over pending participants at t-1.

(h) Participants who were salaried workers at the current wave (t), either active or on sickness absence, or who had been salaried and active workers in the previous wave (t-1) and were unemployed at the current wave (t).

(i) Loss to follow-up due to non-response in two consecutive waves.

(j) Retired + permanent disability + withdrawal + two consecutive NR.

(k) Participants who responded at t-1 but not at t. They remain pending until t+1; if they do not respond at t+1, they are classified as permanent losses.

Table 6. Sample attrition between the 2023 and 2024 waves.

	2024 participants		2024 non-participants		SMD*
	n	%	n	%	
Total	2175	100	999	100	
Sex					
Men	1081	49.7	475	47.5	-0.043
Women	1092	50.2	522	52.3	0.041
Intersexual	2	0.1	2	0.2	0.028
Age					
mean $\pm$ SD	49.7 $\pm$ 8.4		49.0 $\pm$ 8.7		-0.081
Occupational class					
Design	1131	52	480	48	-0.08
Execution	1043	48	519	52	0.08
Employment contract					
Permanent	1889	86.9	861	87.5	0.017
Temporary	284	13.1	123	12.5	-0.017
Working hours					
Full-time	2013	93	885	90.3	-0.097
Part-time	152	7	95	9.7	0.097
Salary covers basic needs					
Never / Only occasionally / Sometimes	575	26.5	328	33.4	0.152
Always / Often	1597	73.5	653	66.6	-0.152
Caring for dependents					
No	1477	67.9	665	66.6	-0.029
Yes	698	32.1	334	33.4	0.029
Exposure to psychosocial risks					
High quantitative demands	1019	47	469	47.3	0.006
High work pace	816	37.6	440	44.1	0.133
Low influence	1242	57.4	577	58.6	0.024
Low possibilities for development	1013	46.6	464	46.6	0.001
Job insecurity	1082	51.8	529	55.6	0.077
Low support from colleagues	1540	72.1	706	72	-0.002
Low support from supervisor	1763	81.4	808	81.3	-0.004
Work-life conflict	904	42.8	500	51.8	0.18
Low recognition	1630	75.6	785	79.1	0.084
Job strain					
Low strain	526	24.4	212	21.7	-0.063
Passive	628	29.1	269	27.6	-0.034
Active	406	18.8	204	20.9	0.052
High strain	598	27.7	291	29.8	0.047
Health					
Poor self-rated health	722	33.2	375	37.5	0.091
Prevalence of moderate/severe depression	700	32.8	393	39.9	0.15
Suicidal ideation	361	17	189	19.7	0.07

Note: Comparison of the distribution of 2023 characteristics between 2023 participants who did and did not participate in the 2024 wave.

* SMD: standardized mean difference.

Table 7. Sample attrition between the 2024 and 2025 waves.

	2025 participants		2025 non-participants		SMD*
	n	%	n	%	
Total	1806	100	934	100	
Sex					
Men	883	48.9	471	50.4	0.031
Women	921	51	462	49.5	-0.031
Intersexual	2	0.1	1	0.1	-0.001
Age					
mean $\pm$ SD	50.8 $\pm$ 8.1		49.8 $\pm$ 9.0		-0.115
Occupational class					
Design	927	51.4	457	51.1	-0.006
Execution	875	48.6	437	48.9	0.006
Employment contract					
Permanent	1543	89.2	743	87.9	-0.041
Temporary	186	10.8	102	12.1	0.041
Working hours					
Full-time	1568	93.7	769	93	-0.03
Part-time	105	6.3	58	7	0.03
Salary covers basic needs					
Never / Only occasionally / Sometimes	408	24.5	237	29.1	0.102
Always / Often	1254	75.5	578	70.9	-0.102
Caring for dependents					
No	1297	72	599	67	-0.108
Yes	505	28	295	33	0.108
Exposure to psychosocial risks					
High quantitative demands	848	50.2	399	47.6	-0.052
High work pace	614	36.3	328	39	0.055
Low influence	985	58.4	483	57.6	-0.016
Low possibilities for development	751	44.4	353	41.8	-0.051
Job insecurity	738	44.8	348	43.3	-0.03
Low support from colleagues	1167	70.2	589	71.7	0.035
Low support from supervisor	1356	80.4	679	81.5	0.029
Work-life conflict	707	42.7	377	46.6	0.078
Low recognition	1244	74.5	617	74.2	-0.008
Job strain					
Low strain	389	23.1	194	23.3	0.005
Passive	497	29.5	243	29.2	-0.007
Active	369	21.9	178	21.4	-0.013
High strain	427	25.4	217	26.1	0.016
Health					
Poor self-rated health	582	32.3	305	34.1	0.039
Prevalence of moderate/severe depression	569	32.4	301	34.8	0.051
Suicidal ideation	278	16	145	16.8	0.02

Note: Comparison of the distribution of 2024 characteristics between 2024 participants who did and did not participate in the 2025 wave.

* SMD: standardized mean difference.

Table 8. Sample attrition between the 2025 and 2026 waves.

	2026 participants		2026 non-participants		SMD*
	n	%	n	%	
Total	1518	100	592	100	
Sex					
Men	748	49.3	282	47.6	-0.033
Women	768	50.6	309	52.2	0.032
Intersexual	2	0.1	1	0.2	0.01
Age					
mean $\pm$ SD	51.6 $\pm$ 7.9		51.7 $\pm$ 8.9		0.005
Occupational class					
Design	789	52	260	48.5	-0.071
Execution	727	48	276	51.5	0.071
Employment contract					
Permanent	1285	91.1	435	87.9	-0.106
Temporary	125	8.9	60	12.1	0.106
Working hours					
Full-time	1282	93.9	429	91.7	-0.087
Part-time	83	6.1	39	8.3	0.087
Salary covers basic needs					
Never / Only occasionally / Sometimes	337	24.4	143	30.3	0.132
Always / Often	1042	75.6	329	69.7	-0.132
Caring for dependents					
No	1060	71.4	367	69.9	-0.032
Yes	425	28.6	158	30.1	0.032
Exposure to psychosocial risks					
High quantitative demands	690	50	241	50.7	0.015
High work pace	501	36.2	167	35.3	-0.018
Low influence	783	56.7	279	58.9	0.044
Low possibilities for development	605	43.6	213	44.9	0.027
Job insecurity	559	41.9	209	46.1	0.085
Low support from colleagues	988	72.5	344	73.5	0.023
Low support from supervisor	1116	81	383	81.1	0.003
Work-life conflict	573	42.4	197	42.5	0.002
Low recognition	1046	76.2	337	72	-0.095
Job strain					
Low strain	328	23.9	108	22.9	-0.022
Passive	393	28.6	140	29.7	0.025
Active	296	21.5	99	21	-0.013
High strain	357	26	124	26.3	0.008
Health					
Poor self-rated health	489	32.3	193	36	0.079
Prevalence of moderate/severe depression	455	30.6	170	32.6	0.043
Suicidal ideation	249	16.8	93	17.7	0.025

Note: Comparison of the distribution of 2025 characteristics between 2025 participants who did and did not participate in the 2026 wave.

* SMD: standardized mean difference

Table 9. Sample attrition between the 2023 and 2026 waves.

	2026 participants		2026 non-participants		SMD*
	n	%	n	%	
Total	1600	100	1574	100	
Sex					
Men	780	48.8	776	49.3	0.011
Women	818	51.1	796	50.6	-0.011
Intersexual	2	0.1	2	0.1	0.001
Age					
mean $\pm$ SD	49.4 $\pm$ 8.0		49.5 $\pm$ 9.0		0.003
Occupational class					
Design	827	51.7	784	49.8	-0.037
Execution	773	48.3	789	50.2	0.037
Employment contract					
Permanent	1405	87.9	1345	86.3	-0.046
Temporary	194	12.1	213	13.7	0.046
Working hours					
Full-time	1480	93.1	1418	91.2	-0.07
Part-time	110	6.9	137	8.8	0.07
Salary covers basic needs					
Never / Only occasionally / Sometimes	425	26.6	478	30.7	0.092
Always / Often	1173	73.4	1077	69.3	-0.092
Caring for dependents					
No	1081	67.6	1061	67.4	-0.003
Yes	519	32.4	513	32.6	0.003
Exposure to psychosocial risks					
High quantitative demands	782	49	706	45.1	-0.079
High work pace	606	37.9	650	41.3	0.07
Low influence	922	57.9	897	57.6	-0.006
Low possibilities for development	755	47.2	722	46	-0.025
Job insecurity	803	52.5	808	53.5	0.02
Low support from colleagues	1154	73.4	1092	70.8	-0.057
Low support from supervisor	1314	82.5	1257	80.3	-0.057
Work-life conflict	692	44.7	712	46.7	0.04
Low recognition	1209	76.1	1206	77.3	0.028
Job strain					
Low strain	367	23.1	371	24	0.02
Passive	455	28.7	442	28.6	-0.002
Active	311	19.6	299	19.3	-0.007
High strain	454	28.6	435	28.1	-0.011
Health					
Poor self-rated health	524	32.8	573	36.4	0.077
Prevalence of moderate/severe depression	535	34	558	36.1	0.044
Suicidal ideation	263	16.8	287	18.9	0.056

Note: Comparison of the distribution of 2023 characteristics between 2023 participants who did and did not participate in the 2026 wave.

* SMD: standardized mean difference