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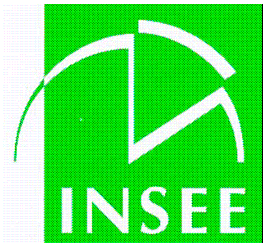
Document de travail



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**Cécile Brousse, Thibaut De Saint Pol, François Gleizes,
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Summary

In 2006, a team of researchers from seven European countries headed by David Rose and Eric Harrison, with the backing of the U.K. Office for National Statistics, submitted to national statistical institutes (NSIs) a European socio-economic classification project entitled ESeC (for European Socio-economic Classification). Following the reservations voiced mainly by France and the attempts to implement ESeC reported by some NSIs in Bled in June 2006, Eurostat's Labour Market Unit issued a call for bids to assess the relevance of the ESeC consortium proposal : four countries, including France, offered to examine this issue. INSEE, with the aid of DARES and the Centre Maurice Halbwachs (CMH), has undertaken a range of studies over the years 2008 and 2009, most of them being presented in this document.

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Table

INTRODUCTION

For many decades now, the French "Occupations and Socio-occupational Categories" (Professions et Categories Socioprofessionnelles : PCS) classification has allowed social players, government agencies, and academics to analyse changes in French society. Concurrently, the past several years have witnessed a growing need for European and international comparisons. This calls for the development of one or more classifications that can be used by all countries, covering both occupations and socio-occupational categories.

Thus, at the behest of Eurostat and international organisations, International Standard Classification of Occupations (ISCO) has gradually spread over the worldwide statistical system, becoming in many countries the unique reference classification for the analysis of occupations. In France, this classification, differs significantly from the "Occupations and Socio-occupational Categories" (PCS) : its primary focus is on tasks performed in a particular occupation, without taking into account the status (self-employed/employee) or the distinction between public and private sectors, .

Since the late 1990s, the future of PCS has been predicated on advances in the European ESeC project. In August-September 1999, INSEE's Executive Committee decided that no substantial change in French socio-occupational categories "should be implemented" ahead of the planned discussions on the construction of a European socio-economic classification. In the same period, the European Commission ordered a series of studies on the feasibility of developing a European socio-economic classification suitable for use in the common core of EU household (consumer) surveys. In 2006, two British teams headed by David Rose and Eric Harrison, with the backing of the U.K. Office for National Statistics, submitted a project entitled ESeC (for European Socio-economic Classification) to national statistical institutes (NSIs).

From a theoretical point of view, the originators sought to base their ESeC prototype on John Goldthorpe's social class schema. This is one of the features that the European project shares with the British classification of social categories (NS-SEC). The Goldthorpe schema underwent significant changes in the 1980s-1990s. The ESeC prototype rests on its later version, centred on the concept of "employment relations". [1]

Goldthorpe's class schema

The first essential distinction on which Goldthorpe bases his class schema is ownership of the means of production: the schema distinguishes between owners and employees. Within the first group, the schema

[1] Goldthorpe discusses the schema most notably in chapter X of his book, *On Sociology : Numbers, Narratives, and the Integration of Research and Theory* (Goldthorpe, 2000).

separates employers, who purchase employees' labour, from the self-employed[2]. This initial framework is fairly common in the theory of social class, and Goldthorpe himself devotes little space to justifying it.

The divisions within the "employees" category are more specific. They are based on "employment relations", which may be defined by the formal and informal ties between the employer and employees, and among employees themselves. For Goldthorpe, what determines social status is the position occupied in the employment-relations sphere—particularly the form of compensation and the type of labour contract. He draws inspiration from the economic theories of principal/agent and transaction costs. The type of labour contract and the form of compensation are the outcome of steps taken by the employer to maximise the efficiency of the employee's labour, bearing in mind that this efficiency partly depends on the worker's effort. The harder the effort is to monitor, the more the employer will choose the type of "employment relation" that offers the greatest incentive for the employee to invest in the employer's objectives. This representation of the workplace generates two polar types of "employment relations":

- In the "service relationship", work is hard to supervise, and the degree of specific human capital (i.e., the employee's knowledge specifically linked to his/her job and to the employer organisation) is high. The employee's effort is hard to supervise, and his/her potential departure from the firm would cause a significant loss because of the non-transfer of knowledge. Accordingly, rather than introduce costly inspection or coercive procedures, it is more efficient for the employer to promote employee motivation through generous compensation, career prospects, and the guarantee of job stability. Workers employed in a "service relationship", who are usually high-skilled, will thus enjoy stabler contracts and various advantages such as easier access to training. In terms of wage earnings, pay ought to rise sharply with age, as guaranteed advancement is what will induce the employee to remain in the firm.

- The "labour contract" relationship may be defined as the exact opposite of the service relationship. Work is easy to supervise, and the specific human capital is low. Typically, it is rather easy to replace one employee by another. There is far less need to motivate employees and guarantee their stability. People working under "labour contracts" will tend to have more precarious contracts.

Between these two ideal-typical relations lies a continuum of "mixed" situations, resembling the "labour contract" in some ways and the "service relationship" in others.

In its current form, the ESeC prototype is made up of ten classes, nine of them refering to the active population in employment. Among these, some classes are only composed of self-employed occupations (classes 4 and 5), others only of employees (classes 3, 6, 7, 8 et 9) and finally others put together these two populations (classes 1 and 2). Concerning the employees, those in class 1 are supposed to represent a pure "service relationship" and those in class 9 a "labour contract" relationship; but the intermediate classes—besides the self-employed

[2] It should be noted that this distinction between employers and self-employed persons with no employees is not taken up in the ESeC project.

classes 4 and 5— correspond to “mixed” situations. Thus employees in class 6 are fairly similar to those of classes 8 and 9 in that they hold blue-collar jobs and enjoy relative autonomy at work, but they also differ because of their “knowledge of organisational needs” (Harrison and Rose, 2006), and in particular because they supervise other employees. According to the logic of the Goldthorpe schema, they should therefore enjoy greater job stability, as their mobility would be more costly for the employer.

Table 1: EseC prototype

ESeC Class	Designation in analytic version	*French translation of analytic designation*	Most common occupations
1	Large employers higher grade professional, administrative & managerial occupations	*Chefs de grandes entreprises,* *Cadres dirigeants et membres des professions libérales de niveau supérieur*	Engineer, doctor, pharmacist, architect financial manager, consultant, employer
2	Lower grade professional, administrative and managerial occupations and higher grade technician and supervisory occupations	*Cadres dirigeants et membres des professions libérales de niveau inférieur, encadrants et techniciens de niveau supérieur*	Nurse, teacher technician, computer technician, maintenance technician, schoolteacher (*professeur des écoles/ institutrice*)
3	Intermediate occupations	*Professions intermédiaires*	Business secretary, administrative officer, social worker (F), office worker (F), administrative assistant (F), teacher for the disabled (F), sales engineer
4	Small employer and self employed occupations (exc agriculture etc.)	*Chefs de petites et moyennes entreprises (hors agriculture)*	Shopkeeper (F), business manager, restaurant owner/manager, hotel owner/manager (F), craft worker, real-estate agent
5	Self employed occupations (agriculture etc.)	*Chefs de petites et moyennes entreprises dans l'agriculture, etc.*	Farmer (M), farm owner (M), farmer (F), winegrower, farm owner (F), co-working spouse, lumberjack
6	Lower supervisory and lower technician occupations	*Encadrement de niveau inférieur et professions techniques de niveau inférieur*	Overseer, railroad worker, policeman, construction-site supervisor, building watchman, shop foreman, store manager
7	Lower services, sales & clerical occupations	*Professions de niveau inférieur dans le commerce or les services*	Kindergarten assistant (F), nursing assistant (F), sales attendant (F), cashier (F), salesman
8	Lower technical occupations	*Professions de niveau inférieur dans le domaine technique*	Housepainter, auto mechanic, plumber/heating contractor, gardener, pastry cook
9	Routine occupations	*Professions routinières*	Cleaning lady, forklift operator, maintenance worker, delivery-truck driver, coach driver
10	Never worked and long-term unemployed	*Personnes n'ayant jamais travaillé or en chômage de longue durée*	

SUMMARY

Test of ESeC prototype on working conditions

In this study, the working conditions of French employees are analysed by applying three different classifications: the ESeC prototype, ISCO-08, and PCS (the French classification of occupations and socio-occupational categories). Conducted on data from working-conditions surveys, issued from the 1998 and 2005 ad-hoc Labour Force Surveys, this operation aims to assess the information contribution or loss due to the use of the ESeC prototype as a substitute for the other two classifications in the study of working conditions.

By analysing indicators on work intensity, autonomy at work, checks on working hours, and exposure to physical risk, we can draw conclusions about the explanatory power of the three classifications. All in all, none of them consistently outperforms the others for the study of working conditions. However, as they do not use the same criteria to categorise employees, the use of each classification sends a different message.

For instance, the ESeC prototype reveals two classes of employees who combine intensive and physically demanding working conditions—classes not identified by PCS or less clearly identified by ISCO-08. This observation applies mainly to “Higher grade blue collar workers” (class 6 of the ESeC prototype), which comprises supervisors. Conversely, PCS identifies non-skilled blue-collar workers as having very distinctive working conditions (little autonomy at work). But this finding is strongly qualified by the ESeC prototype, which combines the least-skilled blue- and white-collar workers into class 9, “Routine occupations”.

These results raise questions about the heterogeneity of ESeC-prototype classes (particularly classes 6 and 9) and the ESeC prototype’s highly aggregated divisions, that conduct to group together persons with very different working conditions into a single class.

Comparison of explanatory power of full and simplified ESeC versions with regard to household living conditions

So far, most studies on ESeC’s explanatory power have concentrated on the labour market in terms of employment or working conditions. By contrast, we broaden the examination of the ESeC prototype by looking at household living conditions variables—more specifically, cultural participation.

From a methodological point of view, this paper compares the explanatory power of (1) the simplified version of ESeC, based on the ISCO occupation alone, and (2) the full version of ESeC, which, in addition to the ISCO occupation code, requires data on status (self-employed/employee), organisation size for employers, and supervisory status for employees. The data used come from the SILC (Statistics on Income and Living Conditions) survey and an additional module on cultural participation conducted in France in 2006.

The main results of this study are, on one hand that the full and simplified ESeC versions yield relatively similar results and on the other hand, that the supervision dimension does not seem relevant for analysing cultural participation.

Occupational mobility measured via ESeC: high volatility of class 6

Does the occupational mobility as described using the ESeC prototype yield the standard results on socio-occupational mobility in France ? Does the use of ESeC alter the analysis of occupational mobility (1) from a quantitative standpoint, by producing greater or lesser mobility, and (2) from a qualitative standpoint, by emphasising specific criteria for mobility between social groups ? This study will attempt to answer to these two questions, and to the broader one about the stability of the ESeC prototype. That is why, we compare ESeC with two nine-category classifications derived from the French (PCS), then with an empirical classification based on employment-relations, education, and wage variables.

The ESeC prototype yields results that are fairly consistent with what we know of recent occupational mobility in France. However, among the lessons derived from this study, it is worth noting the very high mobility of higher grade blue and white collar workers accordind to ESeC . In particular, the group with the highest mobility is the same for men and women (ESeC 6 “Higher grade blue collar workers”): nearly four men out of ten and one woman out of two who were in this group in 1998 moved to a new social group between 1998 and 2003. Their destinations are very diverse: for example, 15 % of men in ESeC 6 moved to ESeC 8 and 9 (a generally downward mobility), and the same proportion shifted to ESeC 1 and 2 (a generally upward mobility).

The role of supervisory functions in the ESeC prototype explain the high mobility of the ESeC 6. Eight times out of ten, these movements out of ESeC 6 are due to a change in supervisory functions; in one case out of five, the supervisory functions have changed without modifying the ISCO occupation. This assessment is even more significant when we look at entries into the class instead of exits: one-third of workers entering ESeC 6 have kept the same ISCO occupation but have acquired a supervisory status that they previously lacked. In others words, it is not uncommon to record either (1) the social “mobility” of blue-collar workers who had between zero and three employees under their supervision in 1998, and who performed supervisory activities in 2003, or (2) in the opposite direction, movements of “supervisors” in 1998 who had lost that status in 2003 without changing occupations.

Is prototype EseC easily understood by the general public ?

This study analyses the prototype's legibility: are respondents capable of classifying themselves in a given category of ESeC? For this analysis, we surveyed 4,000 people, asking all of them to classify themselves in the French PCS. We then selected two smaller groups of respondents, asking the first to classify themselves in the "analytic" version of ESeC with detailed class descriptions, and the second group to classify themselves in the "simplified" version of ESeC with short "common term" headings, designed for the general public.

The first result of this study is that, "all other things being equal", the number of respondents who classified themselves correctly in the "common-terms" version was 1.3 times the number who did so in the analytic version. Despite their greater precision, the "analytic" titles are therefore less intelligible than the "common terms".

The second lesson is that respondents found it easier to recognise where they stood in the nine-category French classification, since 46 % situated their occupations correctly versus 38 % with ESeC.

However, these overall results of the self-positionning question hide high disparities. Thus, members of PCS class 1, "Farmers" (*agriculteurs-exploitants*) and class 2, "Craft workers, retailers, and business owners" (*artisans, commerçants et chefs d'enterprise*) overwhelmingly recognised their positions in both classifications. Conversely, a large majority of members of intermediate occupations classified themselves incorrectly: only 26 % recognised their categories in PCS, 29 % in ESeC.
All other things being equal, skilled lower-grade white-collar workers and skilled blue-collar workers find their positions more easily in PCS than in ESeC, whichever ESeC version is used. Conversely, higher-education graduates are the group that positions itself with the fewest errors in ESeC.

Supervision as a classification criterionn

The updated International Standard Classification of Occupations (ISCO-08) and the ESeC prototype both use the supervision criterion to categorise and classify individuals. In the spirit of these classifications, the exercise of hierarchical authority indicates a senior position in the organisational ranking. Consequently, when they perform supervisory tasks, respondents cannot be classified on the basis of their occupation alone, but must undergo a specific classification procedure.
Our study on this topic addresses the very notion of supervision and, using an experimental statistical procedure, seeks to describe the heterogeneity of tasks that the term encompasses in practice. Indeed, we can distinguish several different profiles under the general term "supervisors": from the senior corporate executive, taking strategic decisions for all his or her subordinates, to the "ground-level" supervisor, with little autonomy and assigned the task of implementing decisions taken elsewhere. We therefore do not find supervision to be a

univocal criterion that can be easily objectivated. On the contrary, it is subject to interpretation and can embrace very different realities.

In these circumstances, the wording of survey questions on supervision becomes a central issue. The existing nuances between recommendations from the ILO, the ESeC consortium, and Eurostat on the wording of this question, as well as on its statistical use, produce substantially different measures of this same phenomenon. With a looser definition and a vaguer wording, Eurostat finds three times as many supervisors as the ILO. ESeC designers have opted for an intermediate approach. On the one hand, it more restrictive than Eurostat: despite abandoning the mention of the supervisory function's formal character, they recommend that only workers supervising at least three persons should be counted. On the other hand, ESeC takes a less narrow approach than the ILO: its designers do not restrict the category to administrative and industrial supervisors, and do not confine it to persons whose main task is supervision. Depending on the point of view chosen and despite relatively similar concepts, the measurement of supervision appears to be vary considerably from one definition to another. This criterion is intended to serve as a criterion in the construction of a socio-economic classification, but it is a complex phenomenon, whose observation fluctuates radically according to the measurement method used.

If we want to use the supervision criterion, we must therefore carefully weigh our classification objectives, define the appropriate terms and phrasing to attain them, and harmonise practices and definitions in the field.

TEST OF ESEC PROTOTYPE APPLIED TO WORKING CONDITIONS

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This paper aims to analyse working conditions of employees in France in terms of the ESeC prototype (hereafter: ESeC). It draws upon recent publications[3] concerning working conditions based on the French "Occupations and Socio-occupational Categories" system (Professions et Catégories Socioprofessionnelles: hereafter PCS). We classify the results of the Working Conditions Survey according to ESeC, the International Standard Classification of Occupations 2008 (ISCO-08), and PCS, in order to assess the information gains or losses arising from using ESeC rather than the other two classifications. The paper is intended as an examination of the explanatory power of ESeC, not a study of working conditions themselves.

The paper is based on the data from the Working Conditions Survey conducted as a supplement to the 1998 and 2005 Labour Force Surveys. The scope of the paper is restricted to employees (i.e., wage- and salary-earners, to the exclusion of other components of the Labor force). The paper is divided into four sections dealing with work intensity, job autonomy, monitoring of working time, and exposure to physical risk factors, followed by a concluding section that summarises our findings.

1. Very high work intensity for employees in ESeC class 6

In this section, we examine work intensity in terms of time pressures, multiple tasking, and interpersonal pressures. Time pressure of work is proxied by: having to work quickly, having to drop one task to perform a more urgent one, and how work pace is set. Multiple tasking by employees is identified as having to switch tasks to meet the needs of the enterprise. Contact with the public and the occurrence of tensions with the public or in the workplace offer a proxy for interpersonal pressure. Tables 1a, 1b, and 1c present the nine indicators used for this analysis.

In 2005, 94 % of employees declared that they were exposed to at least one of the nine work-intensity factors used for the study. Contact with the public (68 %) and often having to drop one task to perform a more urgent one (59 %) are the work-intensity factors most often reported. Nearly half of

[3] Primarily Bué *et al.* (2007).

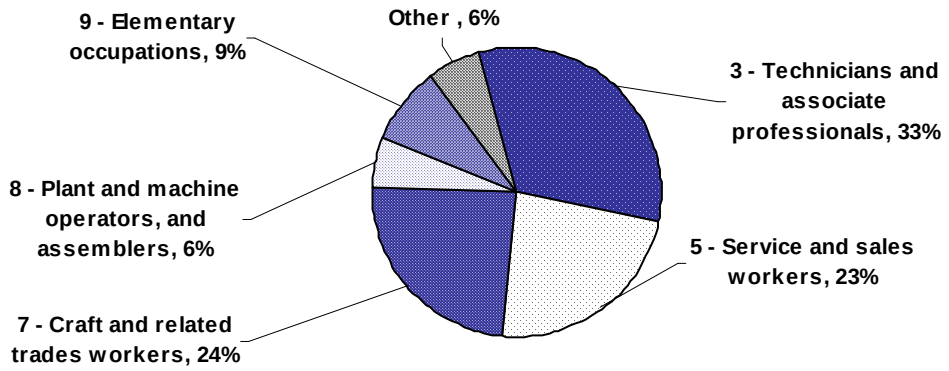
employees (47 %) listed at least four work-intensity factors. An analysis of work intensity according to ESeC, ISCO-08, and PCS identifies considerable disparities among employees.

ESeC class 6 (*Higher grade blue collar workers*[4], about 10 % of employees) is characterised by distinctly higher work intensity than the average for all employees. Time pressure is particularly high, as 57 % reported always or often having to work quickly and 71 % often having to drop one task to perform a more urgent one ; these figures were 9 points and 12 points, respectively, higher than the average for all employees. Class 6 is also the category for which multiple tasking is most prevalent, with 33 % declaring they must switch tasks to meet the needs of the enterprise, i.e., 14 points higher than the average for all employees. Lastly, class-6 employees frequently experience tense situations in the workplace ; 35 % declared that they experience tense situations with superiors and 28 % with co-workers; in both cases, the percentages are 8 points higher than the average for all employees.

Class 6 is actually a sub-population of employees with singular characteristics, combining supervisory tasks and supervised-worker status. The breakdown of ESeC class 6 into ISCO-08 major groups reveals the great diversity of occupations it contains. Class 6 includes both “Elementary occupations” (9 %) and “Technicians and associate professionals” (33 %), with education levels ranging from primary education to the first stage of tertiary education.

Charts 1a and 1b - Composition of ESeC class 6[5]: Higher grade blue collar workers

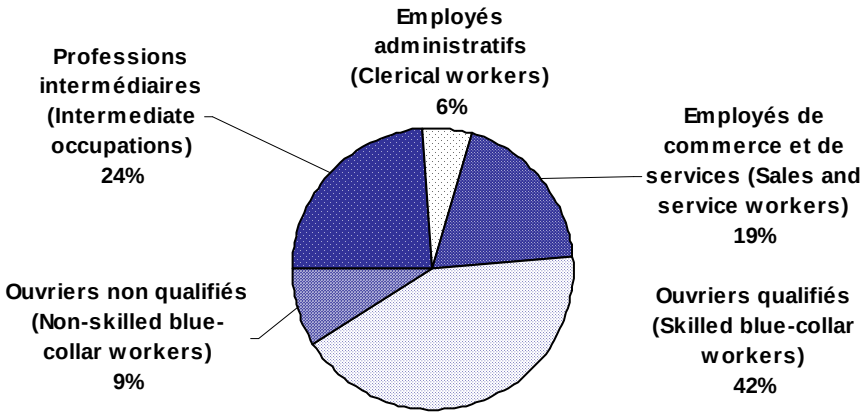
a. according to ISCO-08



[4] Major components of this class include overseers, rail workers, policemen, construction-site supervisors, building superintendents, workshop foremen, and retail shop managers. See Appendix 3 for more detailed information on the content of ESeC prototype classes.

5 The composition of this ESeC class changed considerably between 1998 and 2005: the portion of service and sales workers increased by 6 points; while the portion of intermediate occupations fell 7 points.

b. according to PCS



Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES[6]

The peculiar position in the workplace (employees combining supervisory tasks and supervised-worker status) and the particularly demanding work pace (always having to work quickly, constraints to be met within one hour, etc.) probably explain the higher occurrence of tense situations. The atypical character of class 6 is underscored by the breakdown of the number of work-intensity factors declared (charts 2a, 2b, and 2c): 62 % of employees in this class declared at least four work-intensity factors, compared with the 47 % average for all employees. But the above-average work intensity in class 6 is not attributable to the frequency of contact with the public; in 2005, 69 % reported contact with the public, or just one percentage point more than the average for all employees. However, class 6 joined class 8 (*Skilled workers*, about 9 % of employees) in exhibiting the highest increase (10 points) since 1998.

ESeC class 7 (*Lower grade white collar workers*, about 13 % of employees) is distinguished by a very high occurrence of contact with the public. 85 % of employees in this class reported contact with the public and 64 % a work pace imposed by an external demand requiring an immediate response (compared with 68 % and 53 %, respectively, for all employees).

Lastly, employees in ESeC class 8 (*Skilled workers*) and class 9 (*Routine occupations*, about 20 % of employees) are characterised by below-average work intensity. Interpersonal pressure was below average for both classes, as 47 % and 53 %, respectively, reported contact with the public (compared with 68 % for all employees); among those in contact with the public, fewer experience tense situations or have their work pace imposed by an external demand requiring an immediate response. By contrast, the percentages whose work pace is imposed by standard times or production-related tasks to be completed within one hour are higher than average (32 % and 33 % for classes 8

[6] DARES : Directorate for Research, Studies, and Statistics, a joint unit of the French ministries in charge of labor and employment.

and 9, respectively). Multiple tasking is frequent, with 26 % and 22 % of employees in classes 8 and 9, respectively, declaring they have to switch tasks to meet the needs of the enterprise.

Table 1a - Work intensity according to ESeC **%**

	Year	1	2	3	6	7	8	9	Total
Always or often having to work quickly	1998	56	53	51	61	50	44	51	52
	2005	54	51	45	57	47	37	44	48
Often having to drop one task to perform a more urgent one	1998	68	59	60	68	58	54	38	56
	2005	71	66	68	71	60	51	39	59
Switching tasks to meet the needs of the enterprise	1998	19	16	17	34	21	33	28	23
	2005	12	14	14	33	16	26	22	19
Work pace imposed by standard times or production-related task to be completed within one hour	1998	16	20	15	36	17	30	32	23
	2005	18	21	15	41	19	32	33	25
Work pace imposed by an external demand requiring an immediate response	1998	60	62	61	59	65	36	38	54
	2005	58	59	61	59	64	34	37	53
Contact with the public	1998	63	74	71	59	81	37	46	62
	2005	66	78	73	69	85	47	53	68
of which: experiencing tense situations with the public (among employees in contact with the public)	1998	54	55	48	46	50	29	38	48
	2005	47	49	43	41	43	25	31	42
Experiencing tense situations with superiors	1998	38	34	30	40	30	28	27	31
	2005	30	31	25	35	27	26	22	27
Experiencing tense situations with co-workers	1998	29	26	21	31	24	17	20	24
	2005	23	22	18	28	21	15	16	20

Note: the lowest value of each line is highlighted in grey, the highest value in black
Scope of coverage : employees
Source: 1998 and 2005 Working Conditions Survey - DARES

Table 1b - Work intensity according to ISCO-08 **%**

	Year	0	1	2	3	4	5	6	7	8	9	Total
Always or often having to work quickly	1998	40	68	48	57	54	52	37	48	55	43	52
	2005	47	61	46	54	47	50	36	40	48	39	48
Often having to drop one task to perform a more urgent one	1998	66	74	47	66	63	56	42	60	38	39	56
	2005	73	78	58	70	66	60	47	58	37	42	59
Switching tasks to meet the needs of the enterprise	1998	42	13	11	22	22	21	35	32	34	23	23
	2005	30	11	8	19	18	18	36	27	29	18	19
Work pace imposed by standard times or production-related task to be completed within one hour	1998	16	16	14	24	18	20	12	32	42	21	23
	2005	17	16	15	27	19	23	21	34	46	24	25
Work pace imposed by an external demand requiring an immediate response	1998	56	66	54	66	64	64	19	43	37	31	54
	2005	54	62	52	64	62	64	23	43	37	33	53
Contact with the public	1998	63	70	77	68	66	82	27	43	36	49	62
	2005	63	71	81	70	71	87	47	54	45	57	68
of which: experiencing tense situations with the public (among employees in contact with the public)	1998	68	53	57	53	43	50	15	31	41	30	48
	2005	62	43	51	47	40	44	16	27	28	29	42
Experiencing tense situations with superiors	1998	43	38	31	36	29	31	19	33	31	21	31
	2005	39	33	27	31	25	28	26	27	28	17	27
Experiencing tense situations with co-workers	1998	28	30	26	25	21	26	12	21	20	20	24
	2005	30	23	22	22	18	23	16	17	16	16	20

Note: the lowest value of each line is highlighted in grey, the highest value in black
Scope of coverage : employees
Source: 1998 and 2005 Working Conditions Survey - DARES

Table 1c - Work intensity according to PCS **%**

	Year	Cadres	PI	EA	ECS	OQ	ONQ	Total
Always or often having to work quickly	1998	58	53	51	48	51	49	52
	2005	54	50	46	45	46	44	48
Often having to drop one task to perform a more urgent one	1998	59	61	63	53	51	41	56
	2005	67	67	66	55	51	42	59
Switching tasks to meet the needs of the enterprise	1998	11	19	23	20	33	35	23
	2005	9	16	19	16	29	31	19
Work pace imposed by standard times or production-related task to be completed within one hour	1998	16	22	17	16	37	31	23
	2005	17	24	17	19	40	37	25
Work pace imposed by an external demand requiring an immediate response	1998	59	62	64	56	43	29	54
	2005	56	62	61	55	43	28	53
Contact with the public	1998	69	73	68	79	44	27	62
	2005	72	75	73	83	54	30	68
of which: experiencing tense situations with the public (among employees in contact with the public)	1998	54	55	49	45	37	26	48
	2005	46	49	45	39	29	22	42
Experiencing tense situations with superiors	1998	35	35	30	27	33	25	31
	2005	29	30	27	23	29	22	27
Experiencing tense situations with co-workers	1998	28	26	22	24	21	19	24
	2005	21	22	19	21	18	17	20

Note: the lowest value of each line is highlighted in grey, the highest value in black
Scope of coverage : employees
Source: 1998 and 2005 Working Conditions Survey - DARES

Cadres (Managers/professionals)

EA: *Employés administratifs* (Clerical workers)

ECS: *Employés de commerce et de services* (Sales and service workers)

OQ: *Ouvriers qualifiés* (Skilled blue-collar workers)

ONQ: *Ouvriers non qualifiés* (Non-skilled blue-collar workers)

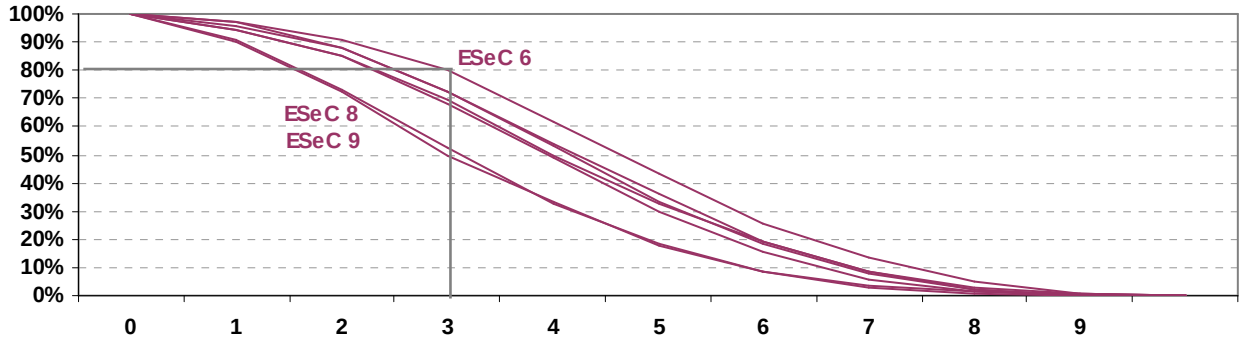
PI: *Professions intermédiaires* (Intermediate occupations)

Depending on whether work intensity is analysed according to ESeC, ISCO-08, or PCS, employees fall into different sub-populations. ESeC class 6 singles out employees subject to high work intensity; ISCO-08 does so to a far lesser degree; PCS, not at all. The PCS category of non-skilled blue-collar workers (about 10 % of employees) has a much lower occurrence of exposure to work-intensity factors. Under ISCO-08, employees in major groups 6 (*Skilled agricultural, forestry and*

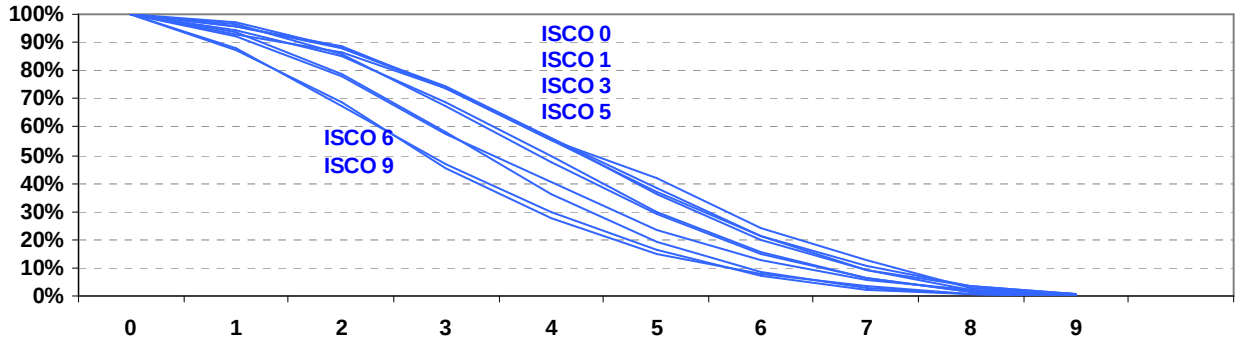
fishery workers, about 2 % of employees) and 9 (*Elementary occupations*, about 10 % of employees) declared a number of work-intensity factors approximating the number reported by non-skilled blue-collar workers in PCS.

Charts 2a, 2b, and 2c - Breakdown of number of reported work-intensity factors in 2005

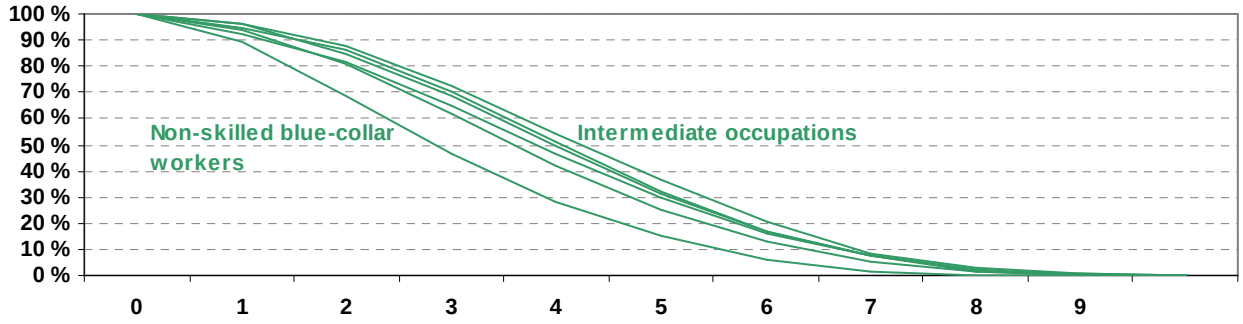
a. according to ESeC



b. according to ISCO-08



c. according to PCS

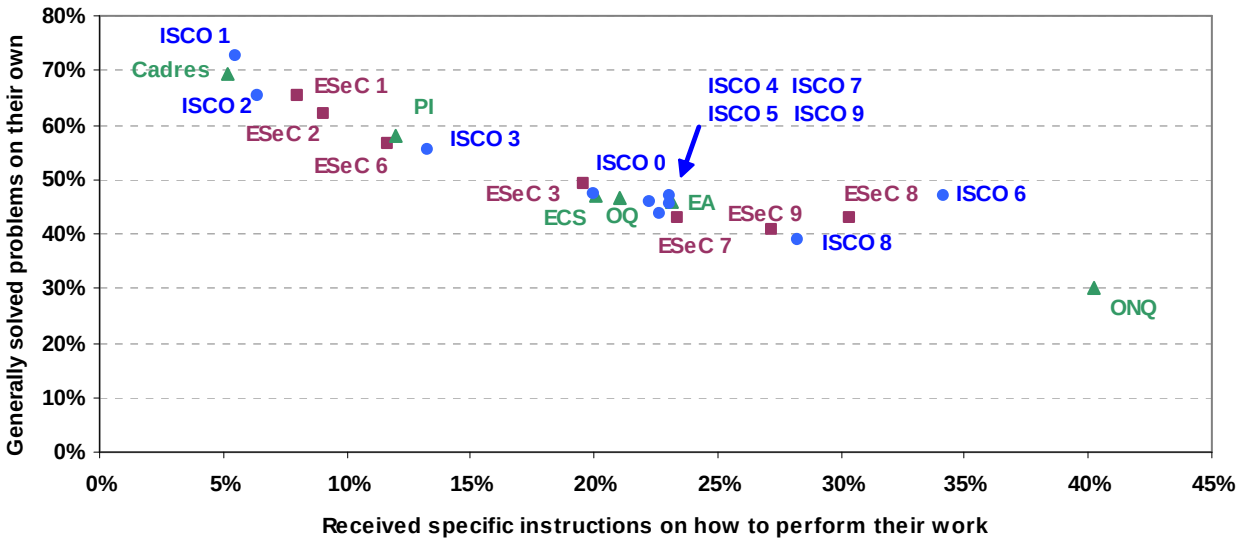


How to read this chart: In 2005, 80 % of employees in ESeC class 6 declared they were exposed to at least three of the nine work-intensity factors.
Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

2. ESeC fails to identify the low job autonomy of non-skilled blue-collar workers

Employees in the PCS category of non-skilled blue-collar workers have a very low degree of job autonomy: in 2005, only 30 % reported generally solving problems on their own, and 40 % received specific instructions on how to perform their work (Table 2c). No ESeC class has so low a degree of job autonomy; the lowest figure in ESeC is the 41 % of employees in class 9 (*Routine occupations*), who generally solve problems on their own, and the highest percentage who receive specific instructions on how to perform their work is the 30 % of employees in class 8 (*Lower technical occupations*) (Table 2a). In terms of the degree of job autonomy, ESeC classes show less differentiation than PCS categories (Chart 3).

Chart 3 - Two job-autonomy indicators in 2005



Scope of coverage : employees
Source : 2005 Working Conditions Survey - DARES

Key:
Cadres (Managers/professionals)
EA: *Employés administratifs* (Clerical workers)
ECS: *Employés de commerce et de services* (Sales and service workers)
OQ: *Ouvriers qualifiés* (Skilled blue-collar workers)
ONQ: *Ouvriers non qualifiés* (Non-skilled blue-collar workers)
PI: *Professions intermédiaires* (Intermediate occupations)

Non-skilled blue-collar workers in PCS are distributed across three ESeC classes: *Higher grade blue collar workers* (ESeC 6), *Lower technical occupations* (ESeC 8), and *Routine occupations* (ESeC 9), accounting for 9 %, 26 % and 29 %, respectively, of the members of those classes. ESeC thus combines non-skilled blue-collar workers with other employees displaying vastly different characteristics. Class 9 (*Routine occupations*), for instance, comprises the non-skilled blue-collar

workers mentioned above (29 %), skilled blue-collar workers (29 %), and service and sales workers (34 % - Chart 4b). Thirty-nine percent of non-skilled blue-collar workers classified under *Routine occupations* declared that they receive specific instructions on how to perform their work, compared with only 18 % of the service and sales workers in the class (Table 5b). Similarly, only 28 % of non-skilled blue-collar workers classified under *Routine occupations* reported generally solving problems on their own, compared with 50 % of service and sales workers.

Like ESeC, ISCO-08 fails to identify any sub-population of employees with as low a degree of job autonomy as the non-skilled blue-collar workers in PCS, and it also combines the latter with employees experiencing different working conditions. PCS non-skilled blue-collar workers account for 62 %, 15 %, 26 % and 37 %, respectively, of ISCO-08 classes 6 (*Skilled agricultural, forestry and fishery workers*), 7 (*Crafts and related trades workers*), 8 (*Plant and machine operators, and assemblers*), and 9 (*Elementary occupations*).

On the other hand, ISCO-08 major group 1,(*Managers*, about 5 % of employees), is characterised by very high job autonomy, as only 6 % report receiving specific instructions on how to perform their work and 73 % generally solve problems on their own. The 73 % figure is 8 points higher than for ESeC class 1, and 3 points higher than for *Cadres* (managers and professionals) in PCS.

Table 2a - Degree of job autonomy according to ESeC **%**

	Year	1	2	3	6	7	8	9	Total
Receiving specific instructions on how to perform their work	1998	6	6	11	9	16	23	24	14
	2005	8	9	20	12	23	30	27	18
Generally solving problems on one's own	1998	72	68	56	64	49	45	43	56
	2005	65	62	49	57	43	43	41	51
Solving problems in certain specific cases	1998	15	16	18	17	17	16	15	16
	2005	19	19	22	20	21	18	18	20
Ability to change time periods for doing the job	1998	50	44	38	46	22	38	23	36
	2005	49	43	39	46	23	39	25	37

Note : the lowest value of each line is highlighted in grey, the highest value in black
Scope of coverage : employees
Source: 1998 and 2005 Working Conditions Survey - DARES

Table 2b - Degree of job autonomy according to ISCO-08 **%**

	Year	0	1	2	3	4	5	6	7	8	9	Total
Receiving specific instructions on how to perform their work	1998	17	3	4	8	15	17	24	19	26	18	14
	2005	20	6	6	13	22	23	34	23	28	23	18
Generally solving problems on one's own	1998	54	85	72	62	52	51	43	50	40	45	56
	2005	47	73	65	56	46	46	47	47	39	44	51
Solving problems in certain specific cases	1998	24	7	13	19	18	16	16	16	16	13	16
	2005	26	16	18	21	22	20	17	20	19	17	20
Ability to change time periods for doing the job	1998	29	54	41	47	37	19	28	43	28	22	36
	2005	35	51	40	47	36	21	30	46	31	25	37

Note: the lowest value of each line is highlighted in grey, the highest value in black
Scope of coverage : employees
Source: 1998 and 2005 Working Conditions Survey - DARES

Table 2c - Degree of job autonomy according to PCS **%**

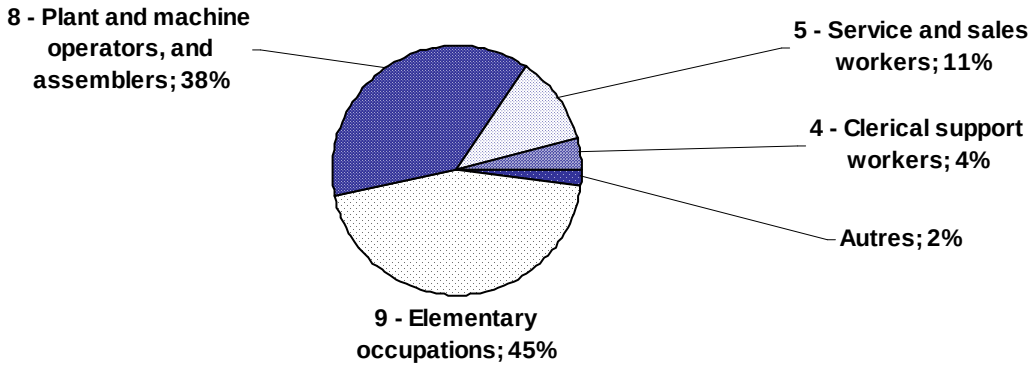
	Year	Cadres	PI	EA	ECS	OQ	ONQ	Total
Receiving specific instructions on how to perform their work	1998	3	7	16	16	18	33	14
	2005	5	12	23	20	22	40	18
Generally solving problems on one's own	1998	80	64	52	49	49	36	56
	2005	70	58	46	47	47	30	51
Solving problems in certain specific cases	1998	10	18	19	15	16	13	16
	2005	17	21	23	18	20	18	20
Ability to change time periods for doing the job	1998	50	43	35	18	38	26	36
	2005	49	43	35	22	38	28	37

Note: the lowest value of each line is highlighted in grey, the highest value in black
Scope of coverage : employees
Source: 1998 and 2005 Working Conditions Survey - DARES

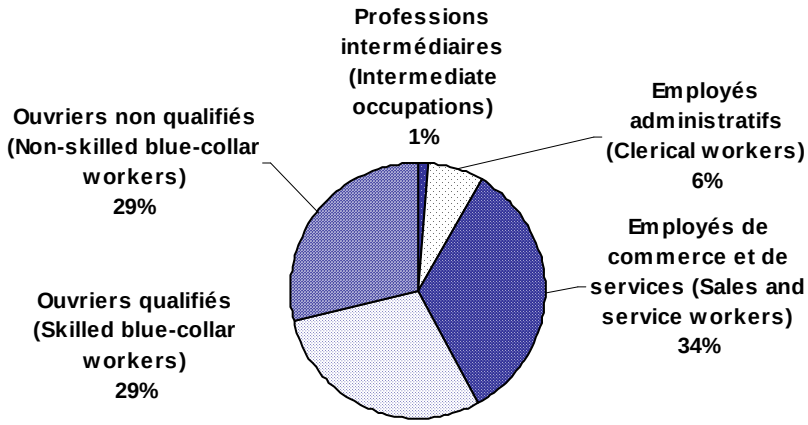
Key :
Cadres (Managers/professionals)
EA: *Employés administratifs* (Clerical workers)
ECS: *Employés de commerce et de services* (Sales and service workers)
OQ: *Ouvriers qualifiés* (Skilled blue-collar workers)
ONQ: *Ouvriers non qualifiés* (Non-skilled blue-collar workers)
PI: *Professions intermédiaires* (Intermediate occupations)

Charts 4a and 4b - Composition of ESeC class 9: Routine occupations[7]

a. according to ISCO-08



b. according to PCS



Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

3. Increasingly formalised working-time monitoring, particularly for ESeC class 6

Working-time monitoring increased on the whole, with 48 % of employees declaring their working time was monitored in 2005, or 4 % more than in 1998. According to ESeC, only class 1 (*Higher salariat*, about 9 % of employees) was not subjected to increased monitoring, with 74 % of

[7] The composition of this ESeC class changed perceptibly between 1998 and 2005: the proportion of service and sales workers increased by 9 points, while the proportions of skilled blue-collar and non-skilled blue-collar workers fell 6 and 2 points respectively. This phenomenon is also visible with ISCO-08, as the share of "Elementary occupations" increased by 10 points, while the share of "Plant and machine operators, and assemblers" fell 8 points.

employees in class 1 reporting no monitoring (Table 3a). Class 6 (*Higher grade blue collar workers*) experienced the largest increase in monitoring (10 points) between 1998 and 2005.

In PCS, non-skilled blue-collar workers are characterised by a higher occurrence of working-time monitoring: 33 % declared they have to clock in and clock out, and 26 % that their working hours are monitored by management. All told, in 2005, 68 % of non-skilled blue-collar workers declared that their working time was monitored (Table 3b).

In ESeC, the most monitored class came in at 59 %, or 9 points less (Table 3a). The gap is again attributable to the amalgamation of non-skilled blue-collar workers with other employees within the ESeC classes. In class 9 (*Routine occupations*), 74 % of non-skilled blue-collar workers are monitored, versus only 38 % of service and sales workers (Table 5b). Similarly to what was observed for job autonomy, ESeC classes exhibit less differentiation in terms of working-time formalisation than PCS categories.

Table 3a - Working-time monitoring according to ESeC **%**

	Year	1	2	3	6	7	8	9	Total
No monitoring of working time	1998	69	65	62	59	52	44	43	56
	2005	74	60	54	49	47	41	41	52
Clocking in/out	1998	7	12	16	16	17	18	21	16
	2005	8	17	24	22	24	22	26	21
Signing in/out and timesheets	1998	4	5	4	8	7	7	11	7
	2005	4	7	6	14	8	8	14	9
Working time monitored by management	1998	20	18	18	16	25	31	25	22
	2005	15	16	15	16	21	29	19	18

Note: the lowest value of each line is highlighted in grey, the highest value in black
Scope of coverage : employees
Source: 1998 and 2005 Working Conditions Survey - DARES

Table 3b - Working-time monitoring according to ISCO-08 **%**

	Year	0	1	2	3	4	5	6	7	8	9	Total
No monitoring of working time	1998	35	82	69	61	54	58	58	45	32	54	56
	2005	41	81	68	52	45	52	52	43	30	52	52
Clocking in/out	1998	2	9	5	19	21	9	3	19	34	10	16
	2005	1	9	8	27	29	17	3	23	42	15	21
Signing in/out and timesheets	1998	6	1	4	5	7	8	9	7	11	7	7
	2005	3	4	6	8	9	9	15	9	12	13	9
Working time monitored by management	1998	56	7	22	15	17	25	30	29	23	29	22
	2005	55	6	19	12	17	22	30	26	16	20	18

Note: the lowest value of each line is highlighted in grey, the highest value in black
Scope of coverage : employees

Source: 1998 and 2005 Working Conditions Survey - DARES

Table 3c - Working-time monitoring according to PCS **%**

	Year	Cadres	PI	EA	ECS	OQ	ONQ	Total
No monitoring of working time	1998	75	64	51	61	42	39	56
	2005	76	56	44	57	37	32	52
Clocking in/out	1998	7	14	18	8	24	24	16
	2005	9	20	25	13	30	33	21
Signing in/out and timesheets	1998	3	5	8	6	9	8	7
	2005	4	8	9	10	12	9	9
Working time monitored by management	1998	15	18	23	25	25	29	22
	2005	11	15	22	19	21	26	18

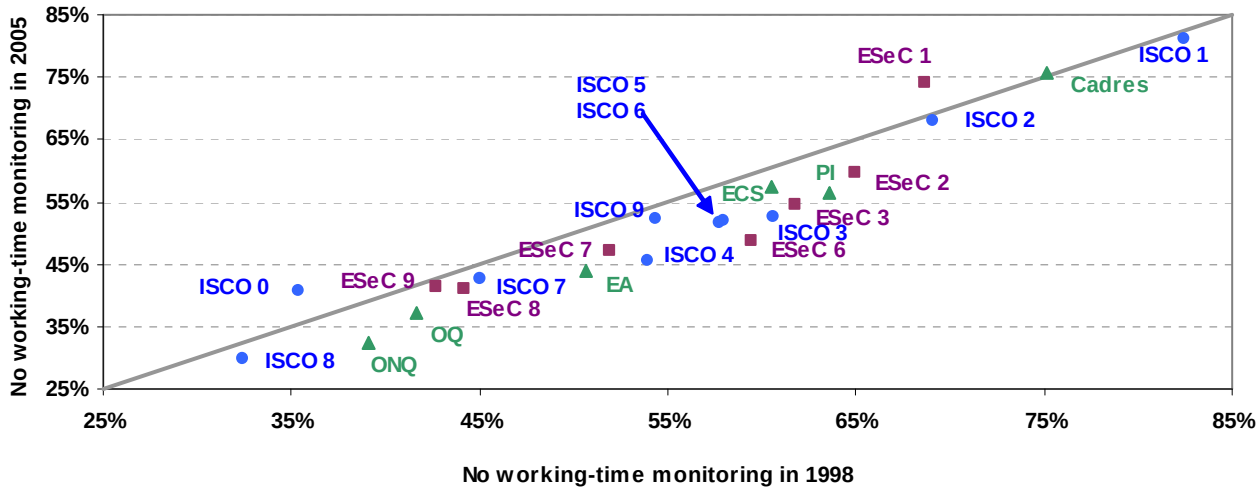
Note: the lowest value of each line is highlighted in grey, the highest value in black
Scope of coverage : employees
Source: 1998 and 2005 Working Conditions Survey - DARES

Key:
Cadres (Managers/professionals)
EA: *Employés administratifs* (Clerical workers)
ECS: *Employés de commerce et de services* (Sales and service workers)
OQ: *Ouvriers qualifiés* (Skilled blue-collar workers)
ONQ: *Ouvriers non qualifiés* (Non-skilled blue-collar workers)
PI: *Professions intermédiaires* (Intermediate occupations)

ISCO-08 major group 8 (*Plant and machine operators, and assemblers*, about 9 % of employees), is characterised by even more prevalent working-time monitoring than for non-skilled blue-collar workers in PCS: 70 % of employees in major group 8 declared that their working time is monitored, and 42 % that they must clock in and clock out (Table 3b). This proportion is 9 points higher than for non-skilled blue-collar workers in PCS and 16 points higher than for ESeC class 9 (*Routine occupations*).

ISCO-08 also features a major group 1 (*Managers*), with a low occurrence of working-time monitoring, as only 19 % in 2005 declared their working time is monitored. No ESeC class or PCS category has such a low degree of monitoring; the lowest figures are the 26 % of employees in ESeC class 1 (*Higher salariat*) and the 24 % of *Cadres* (managers and professionals) in PCS, who declared that their working time is monitored. ISCO-08 offers greater differentiation in terms of working-time monitoring than either ESeC or PCS (chart 5).

Chart 5 - Change in working-time monitoring between 1998 and 2005



Scope of coverage : employees
Source: 1998 and 2005 Working Conditions Survey - DARES

Key:
Cadres (Managers/professionals)
EA: *Employés administratifs* (Clerical workers)
ECS: *Employés de commerce et de services* (Sales and service workers)
OQ: *Ouvriers qualifiés* (Skilled blue-collar workers)
ONQ: *Ouvriers non qualifiés* (Non-skilled blue-collar workers)
PI: *Professions intermédiaires* (Intermediate occupations)

4. Exposure to physical risk factors increased distinctly for ESeC class 6

Exposure to physical risk factors stabilised overall between 1998 and 2005. Of the six physical risk factors examined, the average number declared remained just below two. Considerable disparities persisted, however. According to ESeC, 64 % of employees in class 3 (*Higher grade white collar workers*, about 15 % of employees) were exposed to none of the six physical risk factors in 2005, compared with only 6 % of class 8 (*Skilled workers*). These extreme proportions are of the same magnitude for PCS categories, as 64 % of *cadres* (managers and professionals) declared none of the six physical risk factors compared with only 4 % of non-skilled blue-collar workers. The differences are greater with the ten ISCO-08 major groups; 77 % of major group 1 (*Managers*) were exposed to none of the six physical risk factors, compared with only 2 % of major group 6 (*Skilled agricultural, forestry and fishery workers*).

The categories least exposed to physical risk factors in 1998 saw only a slight change in their situation, while categories with the highest exposure saw that exposure increase (Chart 6). Skilled and non-skilled blue-collar workers, under PCS, and *Skilled workers* (ESeC class 8) on average experienced a slight increase in their exposure to physical risk factors between 1998 and 2005. In

1998, the employees in these categories declared they were exposed to more than three of the six physical risk factors. ESeC class 6 (*Higher grade blue collar workers*) stands out with a significant increase in exposure to physical risk factors between 1998 and 2005, when 62 % declared they must carry or move heavy loads (+9 points), 60 % reported performing painful or tiring movements (+11 points), and 32 % declared they were exposed to jolts or vibrations (+9 points). The agricultural workers assigned to ISCO-08 major group 6 also experienced a high increase in exposure to physical risk factors: 83 % reported performing painful or tiring movements (+11 points), 52 % declared experiencing jolts or vibrations (+12 points), and 33 % exposure to intense noise (+9 points).

Table 4a - Exposure to physical risk factors at work according to ESeC **%**

	Year	1	2	3	6	7	8	9	Total
Standing postures for long periods	1998	26	40	20	74	66	86	71	54
	2005	24	42	14	76	63	83	71	52
Painful postures for long periods	1998	19	23	22	44	42	63	52	37
	2005	17	21	20	46	36	63	47	34
Having to carry or move heavy loads	1998	14	23	13	53	50	67	51	38
	2005	14	25	12	62	52	68	54	39
Performing painful or tiring movements	1998	10	18	9	49	43	63	51	34
	2005	10	19	10	60	44	65	55	36
Exposure to jolts or vibrations	1998	9	5	3	23	5	30	23	13
	2005	7	6	4	32	8	36	26	15
Exposure to intense noise	1998	6	9	7	28	11	33	31	18
	2005	7	11	7	31	12	37	29	18

Note: the lowest value of each line is highlighted in grey, the highest value in black
Scope of coverage : employees
Source: 1998 and 2005 Working Conditions Survey - DARES

Table 4b - Exposure to physical risk factors at work according to ISCO-08 **%**

	Year	0	1	2	3	4	5	6	7	8	9	Total
Standing postures for long periods	1998	53	12	46	39	17	79	88	86	55	89	54
	2005	65	10	42	39	18	73	91	84	51	87	52
Painful postures for long periods	1998	43	10	19	27	24	46	70	62	51	56	37
	2005	42	11	17	27	22	39	77	62	47	49	34
Having to carry or move heavy loads	1998	33	9	14	29	18	55	69	67	50	53	38
	2005	46	9	15	31	20	56	71	69	53	56	39
Performing painful or tiring movements	1998	29	5	10	23	13	47	72	62	51	56	34
	2005	37	5	12	26	16	49	83	64	54	59	36
Exposure to jolts or vibrations	1998	28	2	3	9	4	5	40	30	39	11	13
	2005	33	2	4	12	6	9	52	35	45	16	15
Exposure to intense noise	1998	6	5	7	14	9	12	24	32	45	20	18
	2005	8	4	9	16	9	12	33	36	46	19	18

Note: the lowest value of each line is highlighted in grey, the highest value in black
Scope of coverage : employees
Source: 1998 and 2005 Working Conditions Survey - DARES

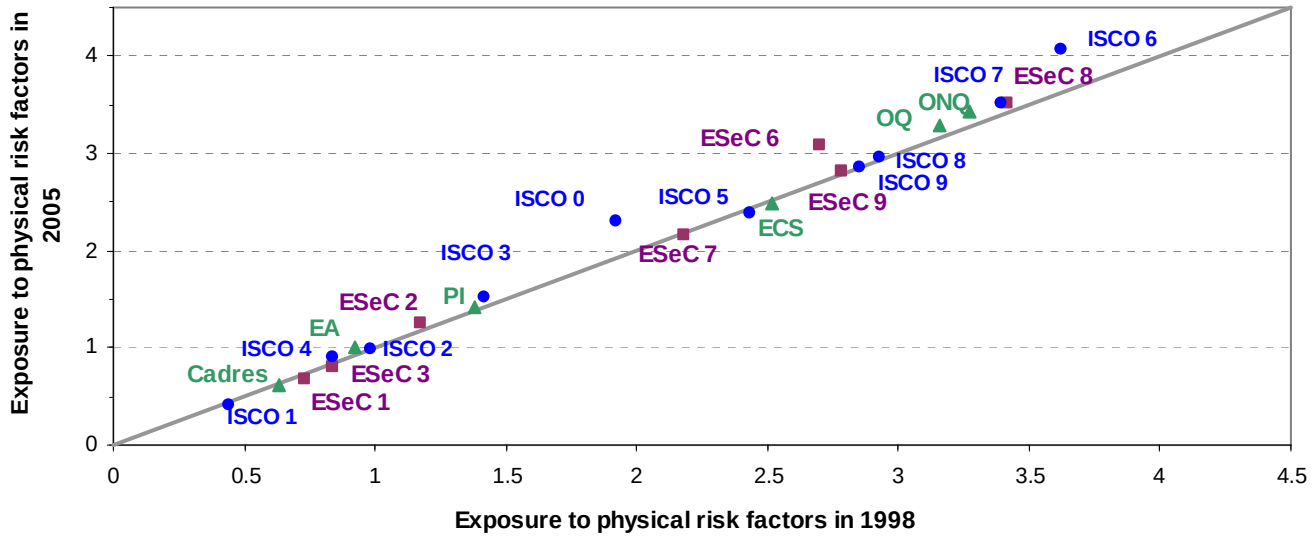
Table 4c - Exposure to physical risk factors at work according to PCS **%**

	Year	*Cadres*	PI	EA	ECS	OQ	ONQ	Total
Standing postures for long periods	1998	26	46	21	81	72	85	54
	2005	22	44	23	78	70	84	52
Painful postures for long periods	1998	13	26	27	49	56	60	37
	2005	13	25	25	43	54	56	34
Having to carry or move heavy loads	1998	10	26	17	55	61	61	38
	2005	11	28	20	57	64	64	39
Performing painful or tiring movements	1998	6	21	14	50	57	62	34
	2005	7	23	16	53	61	69	36
Exposure to jolts or vibrations	1998	3	8	6	4	35	23	13
	2005	3	9	9	8	42	29	15
Exposure to intense noise	1998	6	12	8	12	36	37	18
	2005	7	14	8	11	38	40	18

Note: the lowest value of each line is highlighted in grey, the highest value in black
Scope of coverage : employees
Source: 1998 and 2005 Working Conditions Survey - DARES

Key:
Cadres (Managers/professionals)
EA: *Employés administratifs* (Clerical workers)
ECS: *Employés de commerce et de services* (Sales and service workers)
OQ: *Ouvriers qualifiés* (Skilled blue-collar workers)
ONQ: *Ouvriers non qualifiés* (Non-skilled blue-collar workers)
PI: *Professions intermédiaires* (Intermediate occupations)

Chart 6 - Change in the average number of physical risk factors between 1998 and 2005



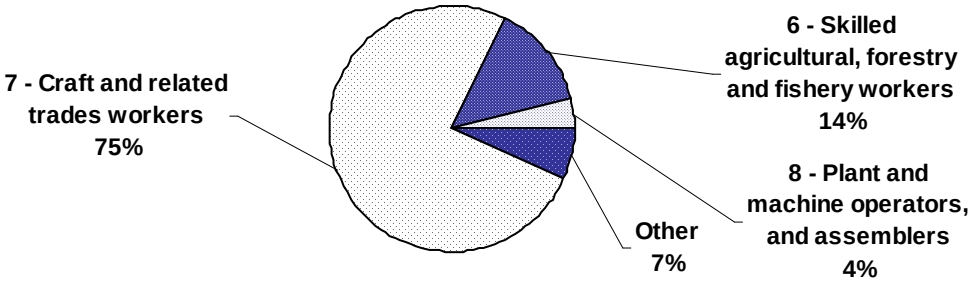
Scope of coverage : employees
Source: 1998 and 2005 Working Conditions Survey - DARES

Key:
Cadres (Managers/professionals)

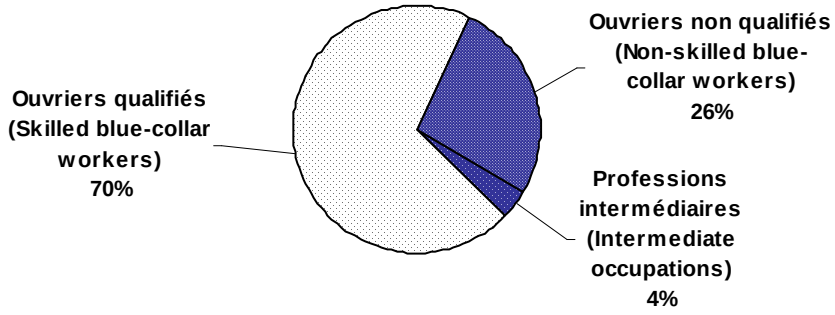
EA: *Employés administratifs* (Clerical workers)
ECS: *Employés de commerce et de services* (Sales and service workers)
OQ: *Ouvriers qualifiés* (Skilled blue-collar workers)
ONQ: *Ouvriers non qualifiés* (Non-skilled blue-collar workers)
PI: *Professions intermédiaires* (Intermediate occupations)

Charts 7a and 7b - Composition of ESeC class 8: *Skilled workers*

7a. according to ISCO-08



7b. according to PCS

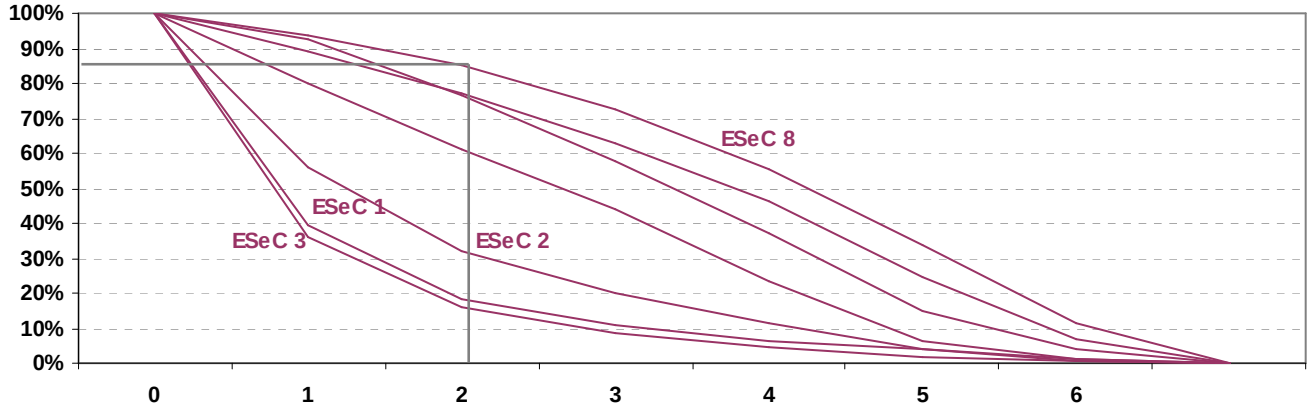


Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

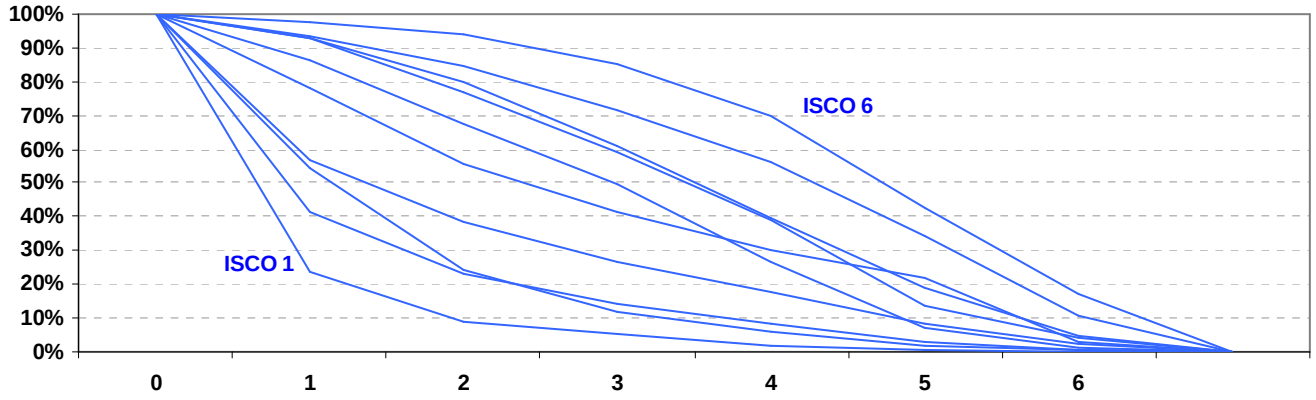
ESeC class 8 (*Skilled workers*)—75 % of whom are "Craft and related trades workers" in ISCO-08 major group 7—has by far the greatest exposure to physical risk factors. In 2005, 65 % reported having to perform painful or tiring movements, 36 % being subject to jolts or vibrations, and 37 % exposure to intense noise (compared with 36 %, 15 % and 18 %, respectively, for all employees). The employees in ESeC class 8 declared more physical risk factors than workers in class 9 (*Routine occupations*) and even more than non-skilled blue-collar workers under PCS.

Charts 8a, 8b, and 8c - Breakdown of number of physical risk factors in 2005

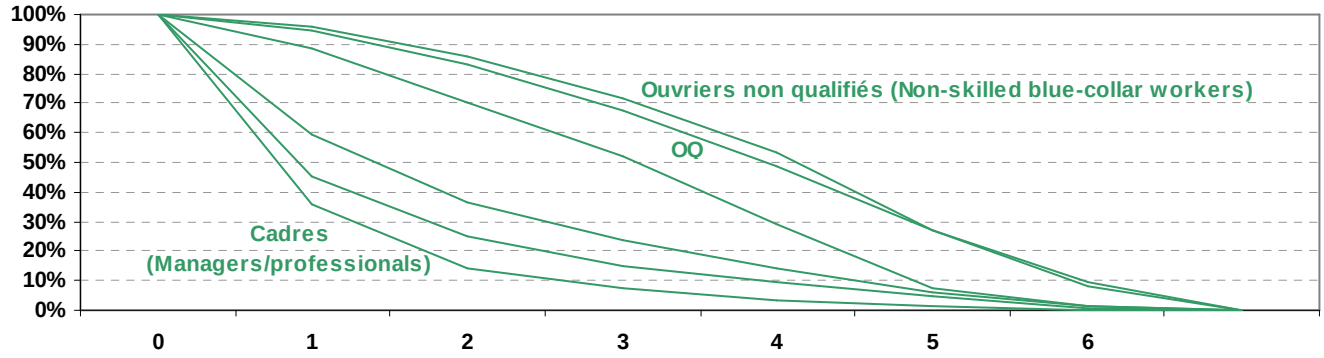
a. according to ESeC



b. according to ISCO-08



c. according to PCS



How to read this chart: In 2005, 85 % of employees in ESeC class 8 declared they were exposed to at least two of the six physical risk factors.
Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

Key:
Cadres (Managers/professionals)
OQ: *Ouvriers qualifiés* (Skilled blue-collar workers)

5. Summary findings on explanatory power of ESeC prototype with respect to working conditions

After examining separately work intensity, job autonomy, working-time monitoring, and exposure to physical risk factors, we can draw a number of conclusions concerning ISCO-08, PCS and ESeC:

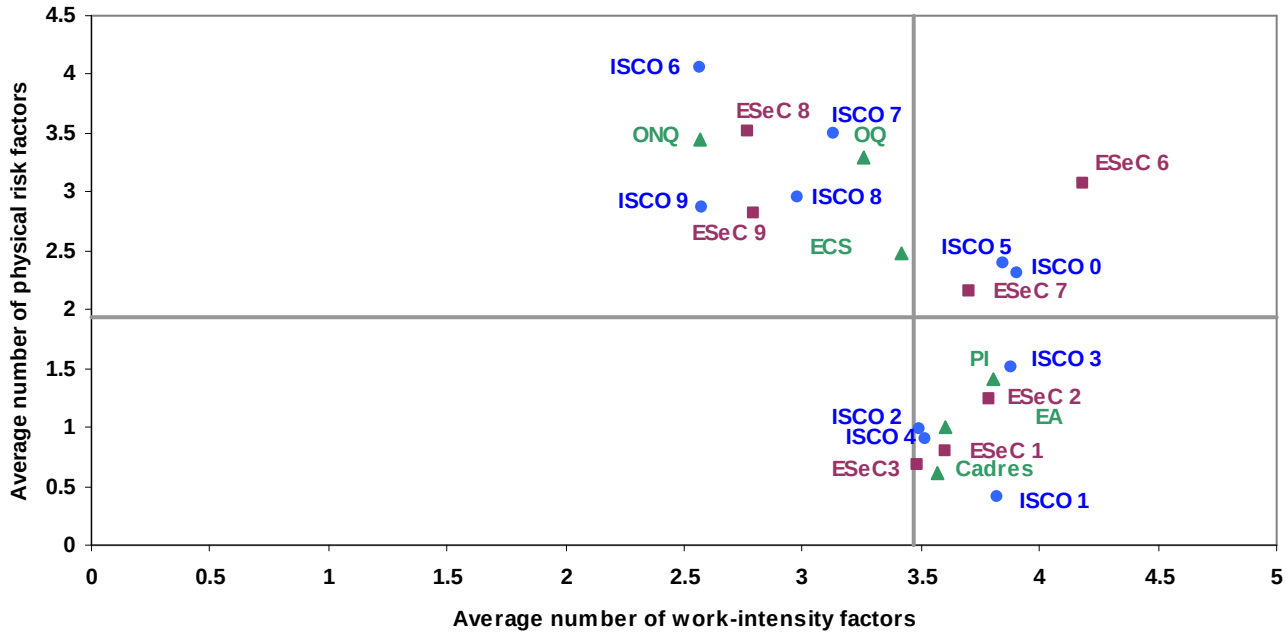
- ESeC class 6 (*Higher grade blue collar workers,* about 10 % of employees) is characterised by much higher work intensity than other employee categories (time pressure, tense situation in the workplace). Employees assigned to class 6 also experienced a sharp increase in working-time monitoring and exposure to physical risk factors between 1998 and 2005. This change is related to the increase in the proportion of service and sales workers and the decline in the proportion of employees in intermediate occupations.

- ISCO-08 major group 1 (*Managers*, about 10 % of employees), has very low exposure to physical risk factors, minimal working-time monitoring, and high job autonomy.

- ISCO-08 major group 6 (*Skilled agricultural, forestry and fishery workers*, about 2 % of employees), is characterised by very high exposure to physical risk factors, low job autonomy, and low contact with the public.

- The category of non-skilled blue-collar workers in PCS (about 10 % of employees) is distinguished by much lower work intensity than the other classes of employees, a very low job autonomy, a higher occurrence of working-time monitoring, and high exposure to physical risk factors.

Chart 9 - Work intensity and exposure to physical risk factors in 2005



Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

Key:
Cadres (Managers/professionals)
EA: *Employés administratifs* (Clerical workers)
ECS: *Employés de commerce et de services* (Sales and service workers)
OQ: *Ouvriers qualifiés* (Skilled blue-collar workers)
ONQ: *Ouvriers non qualifiés* (Non-skilled blue-collar workers)
PI: *Professions intermédiaires* (Intermediate occupations)

Chart 9 illustrates these conclusions by cross-tabulating the "exposure to physical risk factors" dimension against the "work intensity" dimension. It provides the basis for suggesting a typology of ESeC classes[8]:

- Classes 1 and 2, and to a lesser extent class 3, are characterised by above-average work intensity and low exposure to physical risk factors.

- At the other extreme, classes 8 and 9 have high exposure to physical risk factors but below-average work intensity. But work intensity is not absent, as nearly 75 % of employees in classes 8 and 9 reported at least two of the nine possible work-intensity indicators.

[8] This "typology" is based simply on the two indicators (average number of intensity factors + exposure to physical risk factors) and was not conducted by an automatic analysis and classification method. Multiple correspondence analysis applied to the 23 indicators in Tables 1 to 4 resulted in a first factorial plane formed by plotting employees by exposure to physical risk factors on the first axis, and by work intensity on the second axis. This multiple correspondence analysis provides no more insight than cross-tabulating the two indicators: work intensity against exposure to physical risk factors.

- Classes 6 and 7 are characterised by both high work intensity and high exposure to physical risk factors.

This analysis indicates that ESeC identifies two classes of employees with a specific set of working conditions, combining high work intensity and high exposure to physical risk factors. These classes do not stand out in PCS, and do so to a lesser degree in ISCO-08. Our finding holds primarily for class 6 (*Higher grade blue collar workers*). ISCO-08 major group 5, (*Service and sales workers*, about 15 % of employees), and major group 0, (*Armed forces occupations*, about 1 % of employees), also have above-average exposure to physical risk factors and work intensity, but this is less pronounced than for ESeC class 6.

By contrast, PCS identifies non-skilled blue-collar workers as having strongly atypical working conditions. For the least-skilled employees, ESeC, by amalgamating blue-collar workers and lower-grade white-collar workers in class 9 (*Routine occupations*), seems to combine sub-populations of employees with non-homogeneous working conditions (Table 5). Class 8 (*Skilled workers*) which comprises only blue-collar workers, is on the whole subjected to harsher working conditions than class 9 (*Routine occupations*).

This finding raises broader questions regarding the heterogeneity of ESeC classes, particularly classes 6 and 9, and regarding the relevance of ESeC for analysing working conditions. The highly aggregate nature of ESeC leads to amalgamating workers with vastly different working conditions in the same class. To attempt to answer these questions, charts 10 to 17 cross-tabulate the four indicators discussed in the first section of this paper: average number of work-intensity factors, average number of physical risk factors, not being subject to working-time monitoring, and generally solving problems on one's own. The points on the coordinate plane correspond to the average values for sub-populations of employees, cross-tabulating an ESeC class against ISCO-08 or PCS.

Tables 5a and 5b - Heterogeneous working conditions for employees in *Routine occupations*

a. according to ISCO-08

	Year	5 - Service and sales workers	8 - Plant and machine operators, and assemblers	9 - Elementary occupations
Receiving specific instructions on how to perform their work	1998	25	27	19
	2005	33	30	23
Generally solving problems on one's own	1998	53	39	45
	2005	44	37	43

Work pace imposed by standard times or production-related task to be completed within one hour	1998	30	42	19
	2005	33	46	23
No monitoring of working time	1998	58	30	54
	2005	51	28	52
Contact with the public	1998	72	35	47
	2005	71	43	56
Exposure to intense noise	1998	17	45	20
	2005	15	46	18

b. according to PCS

	Year	ECS	OQ	ONQ
Receiving specific instructions on how to perform their work	1998	17	22	32
	2005	18	25	39
Generally solving problems on one's own	1998	50	45	35
	2005	50	42	28
Work pace imposed by standard times or production-related task to be completed within one hour	1998	16	43	34
	2005	19	45	42
No monitoring of working time	1998	65	36	33
	2005	62	31	26
Contact with the public	1998	64	46	23
	2005	71	56	23
Exposure to intense noise	1998	14	37	42
	2005	10	39	44

How to read this table: 33 % of the service and sales workers (ISCO major group 5) assigned to ESeC class 9, Routine occupations, declared that they receive specific instructions on how to perform their work.
Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

Key :
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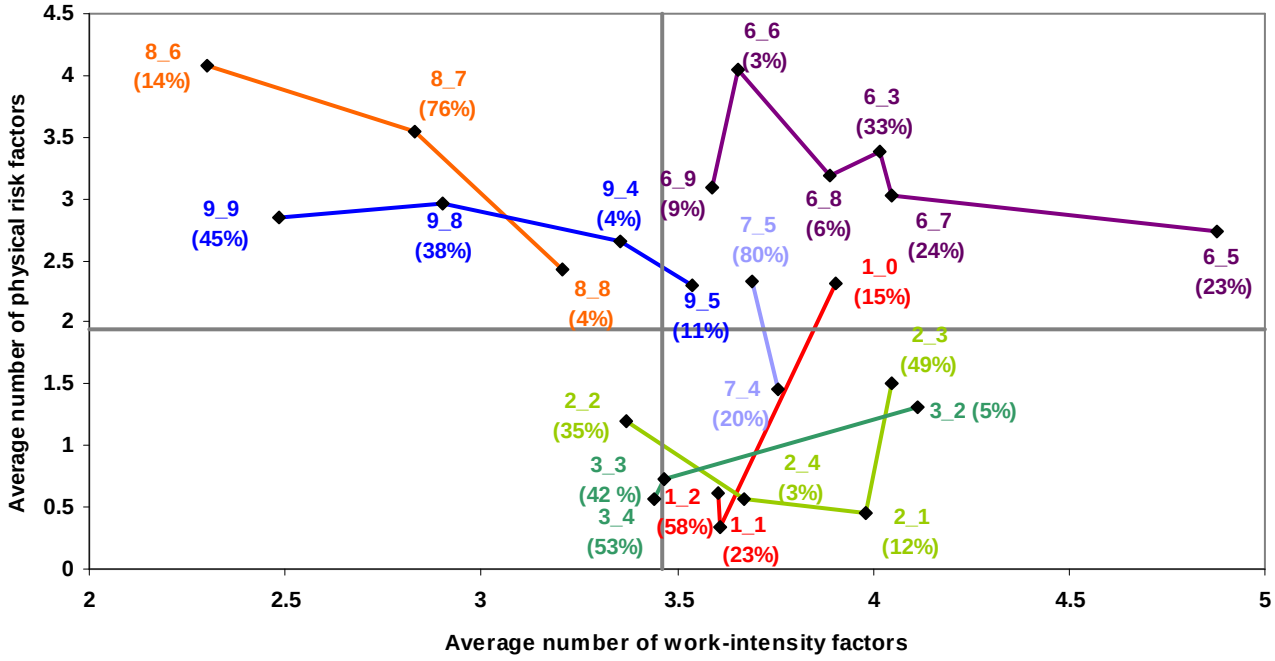
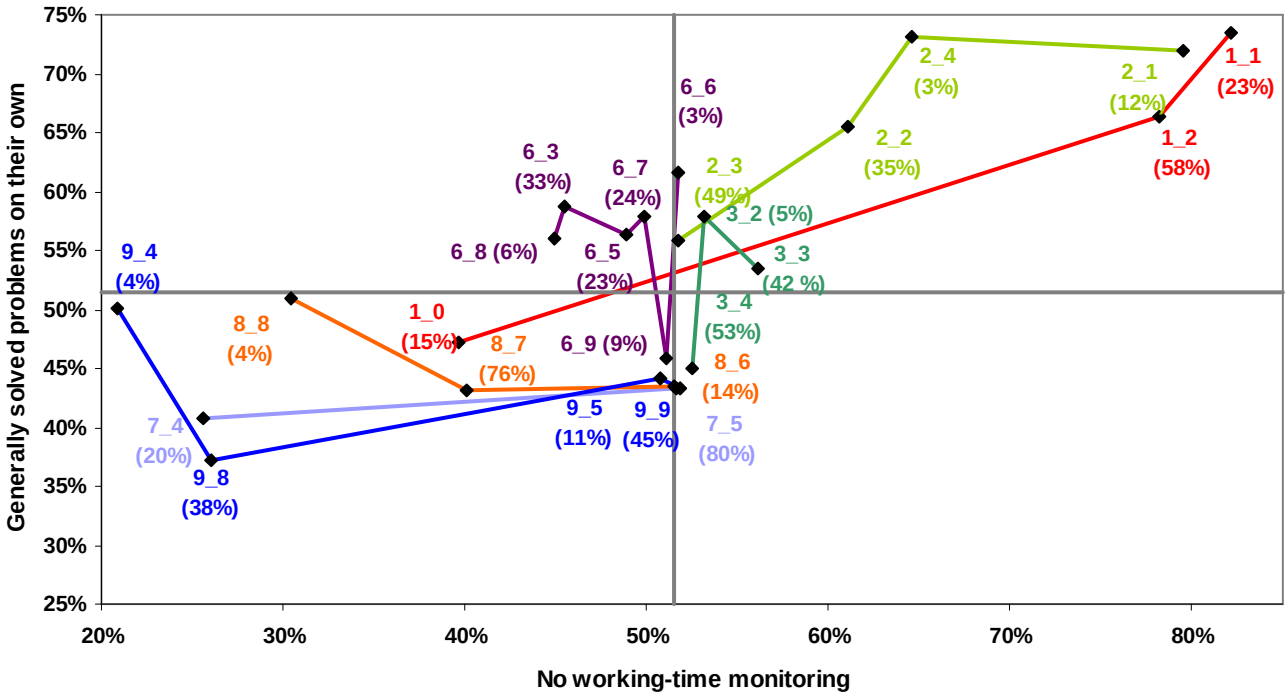
PI: *Professions intermédiaires* (Intermediate occupations)

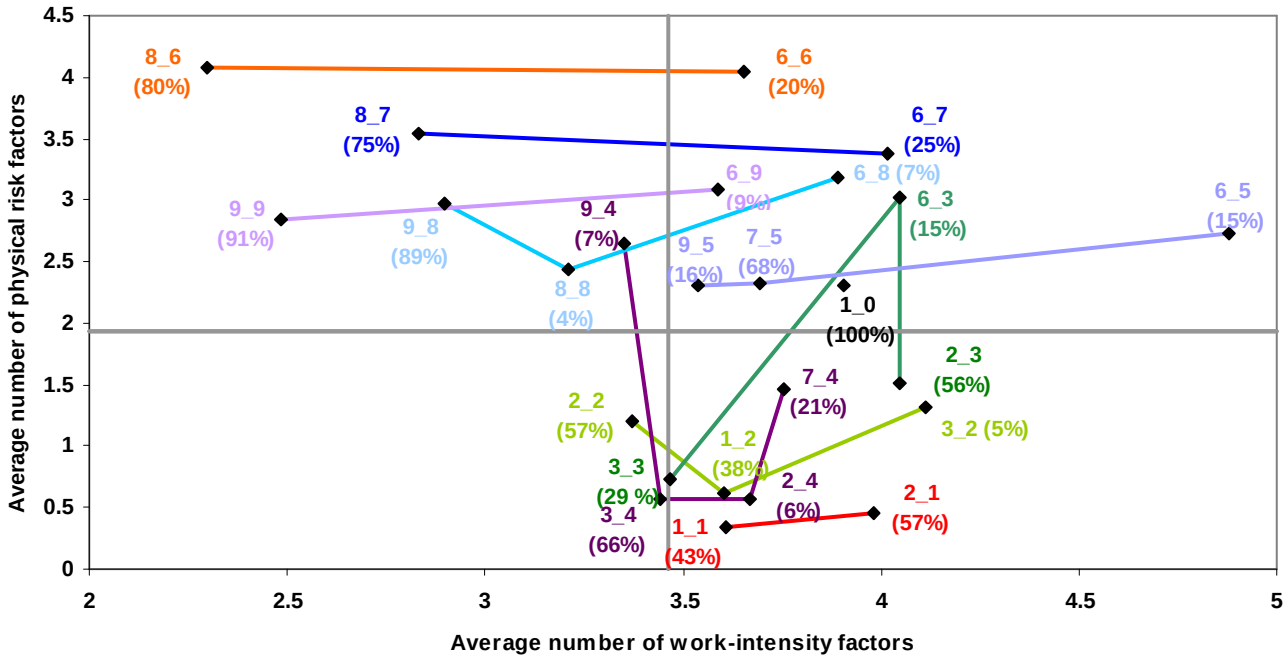
Charts 10 and 11 - Plotting ESeC * ISCO-08 sub-populations according to ESeC classes

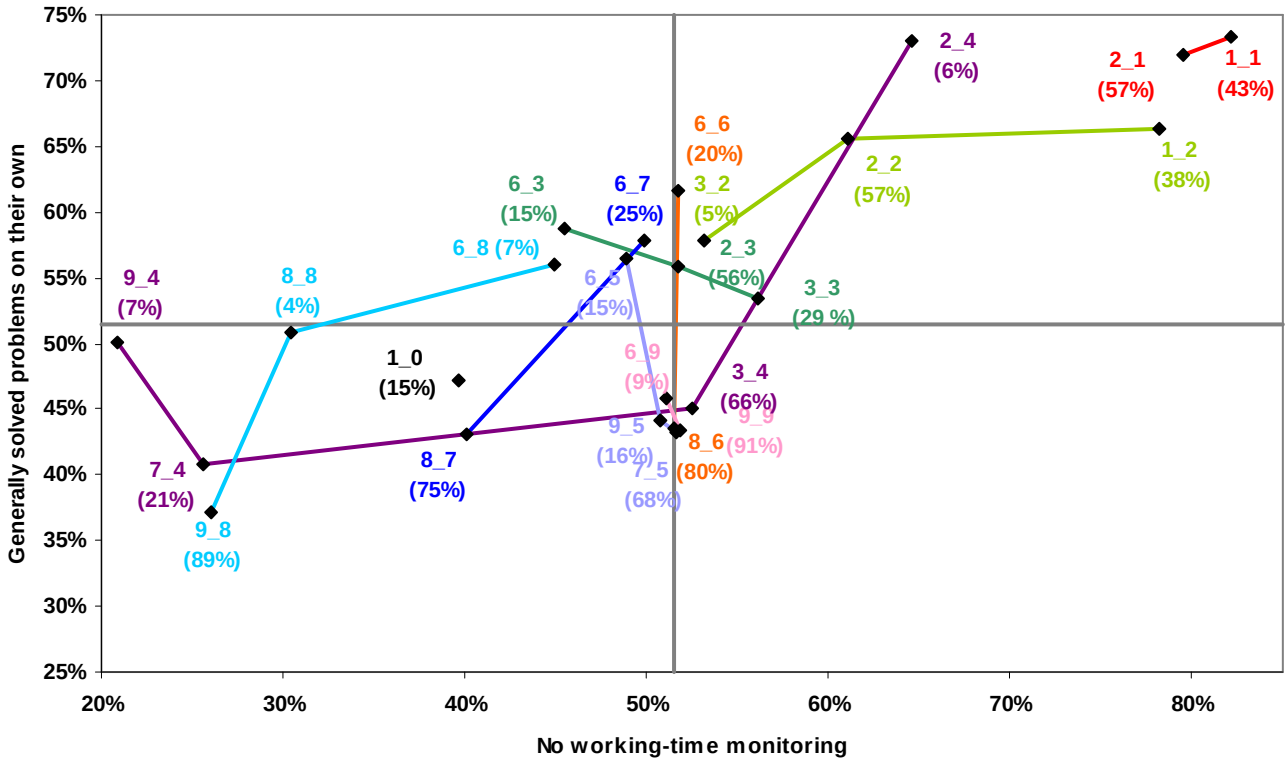




How to read this chart: The first character of the identifier corresponds to the ESeC class, the second to the ISCO-08 major group. ESeC class 1 (in red) is composed as follows: 15 % “Armed forces occupations” (ISCO-08 major group 0), 23 % “Managers” (ISCO-08 major group 1), and 58 % “Professionals” (ISCO-08 major group 2). Employees in armed forces occupations who are assigned to ESeC class 1 declared on average 3.9 work-intensity factors and 2.3 physical risk factors.
Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

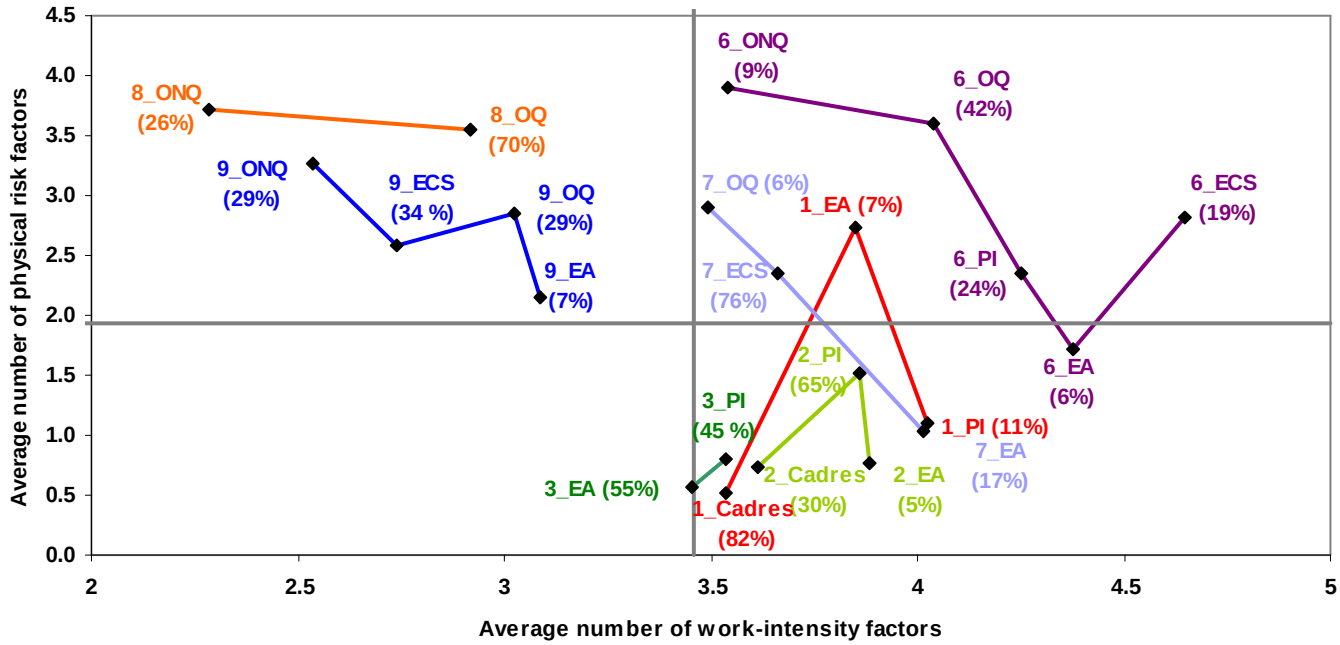
Charts 12 and 13 - Plotting ESeC*ISCO-08 sub-populations according to ISCO-08 major groups

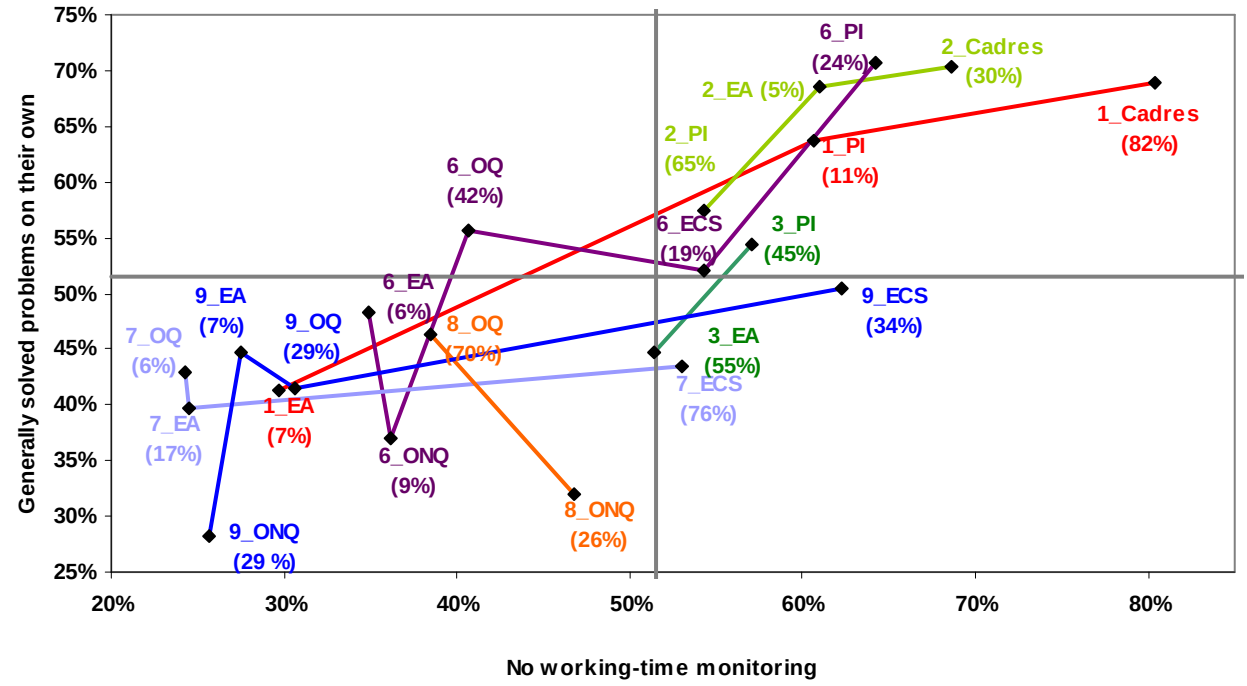




How to read this chart: The first character of the identifier corresponds to the ESeC class, the second to the ISCO-08 major group. ISCO-08 major group 1 (in red) is composed as follows: 43 % Higher salariat (ESeC class 1) and 57 % Lower salariat (ESeC class 2). Employees in higher salariat who are assigned to ISCO-08 major group 1 declared on average 3.6 work-intensity factors and 0.3 physical risk factors.
Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

Charts 14 and 15 - Plotting ESeC*PCS sub-populations according to ESeC classes



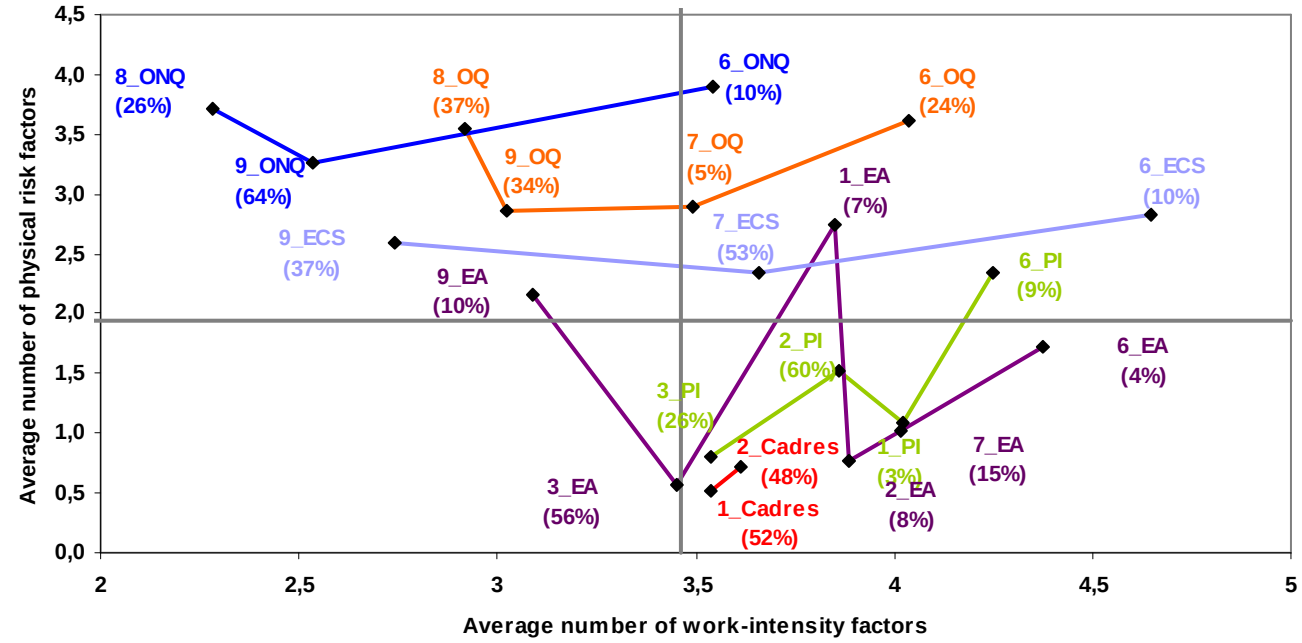


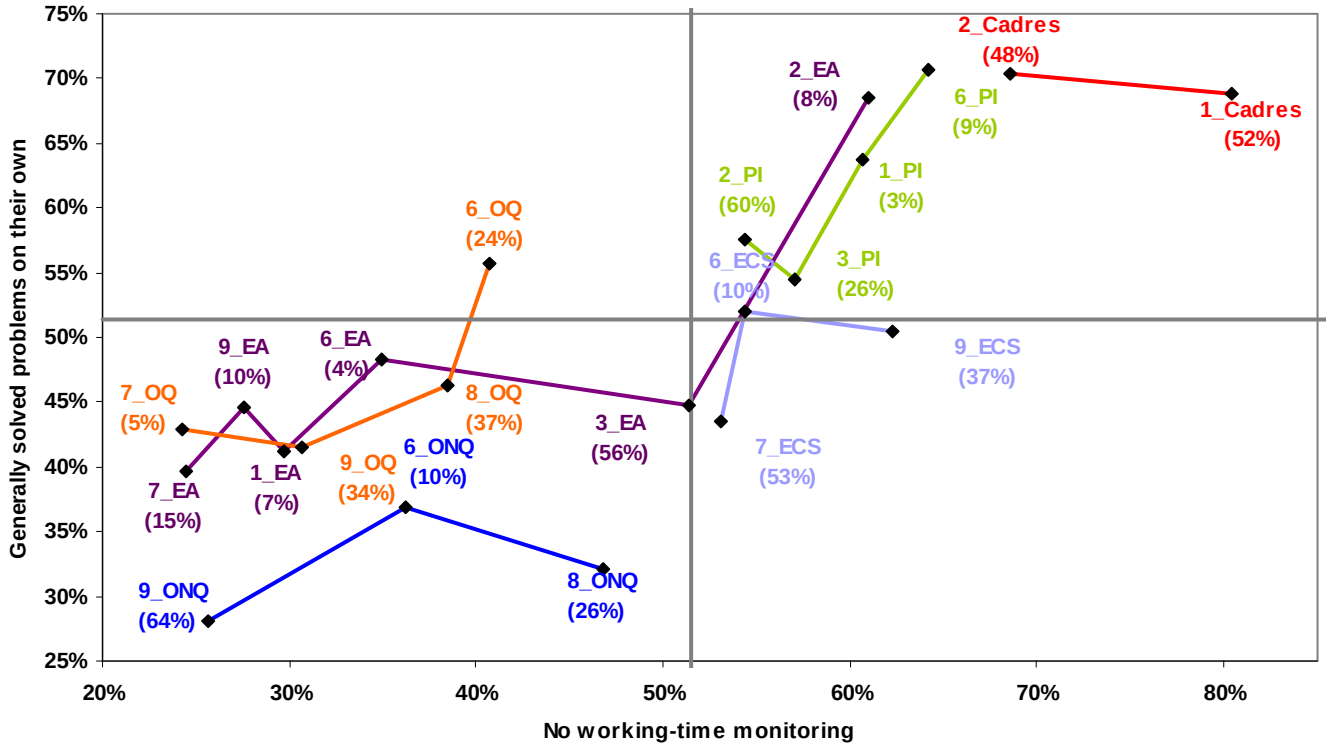
How to read this chart: The first character of the identifier corresponds to ESeC class, the second to the PCS category. ESeC class 1 (in red) is composed as follows: 82 % Cadres (managers and professionals), 11 % intermediate occupations, and 7 % clerical support workers. Cadres (managers and professionals) who are assigned to ESeC class 1 declared on average 3.5 work-intensity factors and 0.5 physical risk factors.
Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

Key :
Cadres (Managers/professionals)
EA: *Employés administratifs* (Clerical workers)

ECS: *Employés de commerce et de services* (Sales and service workers)
OQ: *Ouvriers qualifiés* (Skilled blue-collar workers)
ONQ: *Ouvriers non qualifiés* (Non-skilled blue-collar workers)
PI: *Professions intermédiaires* (Intermediate occupations)

Charts 16 and 17 - Plotting ESeC*PCS sub-populations according to PCS categories





How to read this chart: The first character of the identifier corresponds to ESeC class, the second to the PCS category. The PCS category of Cadres (managers and professionals) (in red) is composed as follows: 52 % Higher salariat (ESeC class 1), and 48 % Lower salariat (ESeC class 2). Employees in the ESeC Higher salariat class who are assigned to ISCO major group 1 declared on average 3.5 work-intensity factors and 0.5 physical risk factors.

Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

Key :
Cadres (Managers/professionals)
EA: *Employés administratifs* (Clerical workers)
ECS: *Employés de commerce et de services* (Sales and service workers)
OQ: *Ouvriers qualifiés* (Skilled blue-collar workers)
ONQ: *Ouvriers non qualifiés* (Non-skilled blue-collar workers)
PI: *Professions intermédiaires* (Intermediate occupations)

Several conclusions can be drawn from these charts:

- ESeC class 1 comprises an atypical sub-population of employees: “Armed forces occupations” (ISCO-08 major group 0). Employees in this occupation are classified as clerical support workers in PCS, a choice that is not fully satisfactory with respect to working conditions. Employees are characterised by high monitoring of working time (mainly by management), limited job autonomy, and severe physical constraints. In terms of working conditions, this sub-population of employees is closer to ESeC class 7 than to ESeC class 1.

- The distinction in PCS between (a) the “*cadres*” category (managers/professionals) and (b) “intermediate occupations” seems to be more relevant than the distinction between ESeC classes 1 and 2. We base this conclusion on the fact that the working-conditions profile of PCS “*cadres*” assigned to ESeC class 2 is closer to that of “*cadres*” in ESeC class 1 than to the “*intermediate occupations*” in ESeC class 2.

- Employees performing a supervisory function have atypical working conditions characterised by very high work intensity. Further, in each ISCO-08 or PCS category, the employees who would be assigned to ESeC class 6 have greater job autonomy (proxied by “Generally solving problems on one’s own”). Placing these employees in the same class therefore makes sense with respect to working conditions. However, the class is heterogeneous, especially in terms of exposure to physical risk factors at work. To some extent, supervisors appear to share the same exposure to physical risk factors as the persons they supervise.

Lastly, we have tried to estimate the loss of information arising from the transition from ISCO-88 to ESeC by decomposing the variance of the four indicators discussed above. For a given classification, the variance of an indicator can be decomposed into two parts: an intraclass variance measuring its variability within classes, and an interclass variance measuring the differences between classes. The ratio of interclass variance to total variance (R^2) accordingly measures the explanatory power of the classification under examination (Table 6). We performed an initial classification by cross-tabulating the ISCO-88 code at minor-group level and supervisory status (yes/no). These two variables are the items required to assign ESeC codes to employees. This classification is therefore the most

detailed decomposition possible without additional variables. It mitigates the inconvenience of ESeC's low explanatory power in regard to working conditions. Similarly, we broke down the variance of the four indicators according to ISCO-88, ISCO-08, and PCS. We find that the explanatory power of these classifications with respect to working conditions is comparable and that none of the classifications stands out as being better overall.

Table 6 : Portion of variance (R^2) explained by the different classifications **%**

Classification (number of classes)	**ISCO-88 minor groups * Supervision** (118 * 2)	**ESeC** (7)	**ISCO-88** (10)	**ISCO-08** (10)	**PCS** (6)
Composite indicator of work intensity	12.4	5.8	4.7	5.1	3.0
Generally solving problems on one's own	7.0	3.5	3.5	3.5	4.6
No monitoring of working time	12.4	4.1	6.4	5.8	7.1
Composite indicator of exposure to physical risk factors	40.0	30.2	30.8	28.7	31.5

Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

METHODOLOGY

Working Conditions Surveys

(translated from Bue et al., 2007: see References below)

"DARES has carried out and analysed Working Conditions Surveys [in France] since 1978. They have been repeated every seven years, in 1984, 1991, 1998, and 2005. The responses relate to working conditions as perceived by respondents. In 1978 and 1984, the survey examined only employees. Since 1991, it has examined all economically active persons in employment, whether or not they are considered employees. The results presented here concern only employees.

"The surveys are conducted in respondents' homes on a representative sample of the population aged 15 years or older in employment. They supplement the INSEE Labour Force Survey (LFS). Through 2002, the LFS was conducted annually, in March of each year, and respondents were asked about their working conditions after completing the LFS questionnaire. Since 2002, the LFS has been conducted on a "continuous" basis, over six three-month periods. Respondents are interviewed face-to-face twice (the first and last times) and four times by telephone. The Working Conditions Survey—the first survey to supplement the new Continuous LFS—is conducted during the sixth and last interview. The questionnaire is submitted to all economically active respondents in employment among those interviewed for the sixth time for the Labour Force Survey, i.e., 19,000 persons in 2005."

ESeC CODING

ESeC class 6 comprises "Lower supervisory and lower technician occupations". The ESeC User Guide recommends that "someone should be supervising at least three people in order to be regarded as a supervisor". The detail on the number of persons supervised was not available in the 1998 Working Conditions Survey. On the other hand, the 2005 survey has the question "Do you have one or more people under your orders or authority?" followed by "If so, how many?". To avoid introducing bias in the comparison of working conditions in 1998 and 2005, supervisors are considered to be those employees who declare having one or more persons under their authority. For information purposes, table 7 presents the differences arising from whether or not the number of persons supervised is taken into account for ESeC coding.

Table 7 - Impact on ESeC coding of the three-people-supervised cut-off rule

		ESeC without cut-off for number of people supervised						
		1	2	3	6	7	8	9
ESeC class with cut-off of three people supervised	1	100	0	0	0	0	0	0
	2	0	100	0	0	0	0	0
	3	0	9.5	90.5	0	0	0	0
	6	0	0.7	0	99.4	0	0	0
	7	0	0	0	7.1	92.9	0	0
	8	0	0	0	14.8	0	85.2	0
	9	0	0	0	6.9	0	0	93.1

How to read this table: 9.5 % of employees in class 3 would be assigned to class 2 if the cut-off rule of at least three people supervised were ignored.
Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

ISCO-08 CODING

Occupations were coded under ISCO-08 on the basis of a provisional conversion table designed by INSEE. The input data required are the ISCO-88 three-digit occupation code, the activity of the local unit under NACE rev. 1 divided into 17 sections, the size of the local unit, employment status (self-employed, salaried employee, or unpaid family worker) and whether or not the person is a supervisor.

Table 8 - Breakdown of employees according to ISCO-88 and ISCO-08

ISCO-08	ISCO-88											
	Not coded	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
Not coded	0.0			0.3					0.8	0.5		1.6
0		1.4										1.4
1			5.2									5.2
2				12.2	2.5							14.7
3					17.4	1.5			0.7	1.7		21.2
4						12.0						12.0
5			0.1			0.7	13.0				1.0	14.8
6								1.6				1.6
7									9.2			9.2
8										8.5		8.5
9											9.9	9.9
Total	0.0	1.4	5.3	12.6	19.8	14.1	13.0	1.6	10.7	10.6	10.9	100.0

How to read this table: 2.5 % of employees belong to ISCO-88 major group 3 (Intermediate occupations) and ISCO-08 major group 2 (Professionals).
Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

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Annex 1 : Breakdown of employees of ESeC

a. according to ISCO-08

%

ISCO-08	ESeC							Total
	1	2	3	6	7	8	9	
0	1	0	0	0	0	0	0	1
1	2	3	0	0	0	0	0	5
2	6	9	1	0	0	0	0	15
3	0	12	6	3	0	0	0	22
4	0	1	8	0	3	0	1	12
5	0	0	0	2	10	0	2	15
6	0	0	0	0	0	1	0	2
7	0	0	0	2	0	7	0	9
8	0	0	0	1	0	0	8	9
9	0	0	0	1	0	0	9	10
Total	9	24	15	10	13	9	20	100

Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

%

ISCO-08	ESeC							Total
	1	2	3	6	7	8	9	
0	2	0	0	0	0	0	0	2
1	2	3	0	0	0	0	0	5
2	4	7	2	0	0	0	0	14
3	0	11	5	3	0	0	0	19
4	0	1	10	0	3	0	1	15
5	0	0	0	2	11	0	3	15
6	0	0	0	0	0	2	0	2
7	0	0	0	2	0	9	0	11
8	0	0	0	0	0	0	9	10
9	0	0	0	1	0	0	7	8
Total	9	21	17	9	14	11	20	100

Scope of coverage : employees
Source: 1998 Working Conditions Survey - DARES

b. according to PCS

%

PCS	ESeC							Total
	1	2	3	6	7	8	9	
Managers and professionals (*cadres*)	8	7	0	0	0	0	0	15
Intermediate occupations	1	16	7	2	0	0	0	26
Administrative workers	1	1	8	1	2	0	1	14
Service and sales workers	0	0	0	2	10	0	7	18
Skilled blue-collar workers	0	0	0	4	1	6	6	17
Non-skilled blue-collar workers	0	0	0	1	0	2	6	9
Total	10	24	15	10	13	9	20	100

Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

%

PCS	ESeC							Total
	1	2	3	6	7	8	9	
Managers and professionals (*cadres*)	6	7	0	0	0	0	0	13
Intermediate occupations	1	13	6	3	0	0	0	23
Administrative workers	2	1	10	1	3	0	2	17
Service and sales workers	0	0	0	1	10	0	5	16
Skilled blue-collar workers	0	0	0	4	1	8	7	20
Non-skilled blue-collar workers	0	0	0	1	0	3	6	10
Total	9	21	16	9	14	11	20	100

Scope of coverage : employees
Source: 1998 Working Conditions Survey - DARES

Annex 2a: Occupations (ISCO-08 sub-major groups) accounting for largest shares of ESeC classes

ESeC class	ISCO-08	% in ESeC class
1	21: Science and engineering professionals	27
	12: Administrative and commercial managers	22
	25: Information and communications technology professionals	15
	03: Armed forces occupations, other ranks	15
2	23: Teaching professionals	21
	31: Science and engineering associate professionals	19
	33: Business and administration associate professionals	19
	13: Production and specialised services managers	11
	32: Health associate professionals	10
3	41: General and keyboard clerks	44
	33: Intermediate occupations, finance and administration	35
6	31: Science and engineering associate professionals	25
	72: Metal, machinery and related trades workers	13
	51: Personal service workers	8
	33: Business and administration associate professionals	7
	71: Building and related trades workers, excluding electricians	6
7	53: Personal care workers	40
	52: Sales workers	32
	42: Customer services clerks	11
8	72: Metal, machinery and related trades workers	34
	71: Building and related trades workers, excluding electricians	27
	61: Market-oriented skilled agricultural workers	13
	74: Electrical and electronic trades workers	9
9	91: Cleaners and helpers	34
	83: Drivers and mobile plant operators	18
	82: Assemblers	13
	93: Labourers in mining, construction, manufacturing and transport	10
	51: Personal service workers	7

Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

Annex 2b: Occupations (PCS) accounting for largest shares of ESeC classes

ESeC class	PCS	% in ESeC class
1	388a: IT research and development engineers and managers	12
	373d: Managers in other administrative departments of small and medium-sized	7
	532a: Gendarmes (rank below *adjudant*)	5
2	341a: Secondary-school teachers having obtained tenure via *agrégation* or	7
	421b: Primary-school teachers	6
	431f: Nursing professionals, in paid employment	6
3	542a: Secretaries	15
	523a: Clerical staff, civil service (incl. in education)	15
	543a: Clerical staff in book-keeping or financial departments	11
	543d: Clerical support workers in business firms	9
6	483a: Foremen in mechanical engineering and metalworking	4
	481a: Worksite supervisors (without management-level [*cadre*] status)	4
	653a: Skilled warehouse workers	3
	636d: Chefs, cooks, and food preparers	3
7	563a: Registered and approved child carers, foster families	15
	526a: Personal-care workers in health services (civil service or private sector)	9
	525d: Hospital orderlies, kitchen workers and cleaners (civil service or private	9
	553a: Non-specialised salespersons	7
	653a: Skilled warehouse workers	6
	552a: Shop cashiers	5
	554a: Food salespersons	5
8	681b: Building finishers and related trades - non-skilled blue-collar workers	6
	634c: Skilled motor-vehicle mechanics and repairers	5
	632a: Skilled masons	5
	681a: Building frames and related trades (non-skilled blue-collar workers)	5
9	563b: Personal-care workers, domestic cleaners and helpers (employed by	9
	563c: Home-based personal-care workers, domestic cleaners and helpers	7
	525c: Kitchen workers and cleaners (civil service, excl. schools and hospitals)	6
	641a: Heavy-truck and lorry drivers (in paid employment)	6
	684a: Cleaners (other than civil service)	5
	676a: Non-skilled freight-handling workers	5
	643a: Delivery drivers, couriers (in paid employment)	5

Scope of coverage : employees
Source: 2005 Working Conditions Survey - DARES

Annex 3: Table from article by Cécile Brousse (INSEE, Employment Division), "ESeC: the European Union's Socio-economic Classification project", *Courrier des statistiques*, English series no. 15, 2009 annual issue, p. 29 (slightly amended)

Table 1: European socio-economic classification project (ESeC)*

Class	Type of employment relation	Designation in "analytic version"	*French translation of "analytic" designation*	Designation for general public ("common term")	*French translation of "common term"*	Most common occupations
1	Service relationship	Large employers, higher grade professional, administrative and managerial occupations	*Chefs de grandes entreprises, cadres dirigeants et membres des professions libérales de niveau supérieur*	Higher salariat	*No equivalent term in French*	Engineer, doctor, pharmacist, architect financial manager, consultant, employer
2	Modified service relationship	Lower grade professional, administrative and managerial occupations and higher grade technician and supervisory occupations	*Cadres dirigeants et membres des professions libérales de niveau inférieur, encadrants et techniciens de niveau supérieur*	Lower salariat	*ditto*	Nurse, teacher technician, computer technician, maintenance technician, schoolteacher (*professeur des écoles/ institutrice*)
3	Mixed	Intermediate occupations	*Professions intermédiaires***	Higher grade white collar workers	*Employés (cols blancs) de niveau supérieur*	Business secretary, administrative officer, social worker (F), office worker (F), administrative assistant (F), teacher for the disabled (F), sales engineer
4	Not applicable	Small employer and self-employed occupations (excl. agriculture etc.)	*Indépendants sans salarié et chefs de petites entreprises (hors agriculture)*	Petit bourgeoisie or independents****	*Petite bourgeoisie ou indépendants non agricoles*	Shopkeeper (F), business manager, restaurant owner/manager, hotel owner/manager (F), craft worker, real-estate agent
5	Not applicable	Small employer and self-employed occupations (agriculture etc.)	*Agriculteurs sans salarié et chefs de petites exploitations agricoles, etc.*	Petit bourgeoisie or independents****	*Petite bourgeoisie ou indépendants (domaine agricole)*	Farmer (M), farm owner (M), farmer (F), winegrower, farm owner (F), co-working spouse, lumberjack
6	Mixed	Lower supervisory and lower technician occupations	*Encadrants de niveau inférieur et professions techniques de niveau inférieur*	Higher grade blue collar workers	*Ouvriers (cols bleus) de niveau supérieur*	Overseer, railroad worker, policeman, construction-site supervisor, building watchman, shop foreman, store manager
7	Modified labour contract	Lower services, sales, and clerical occupations	*Professions de niveau inférieur dans le commerce et les services*	Lower grade white collar workers	*Employés (cols blancs) de niveau inférieur*	Kindergarten assistant (F), nursing assistant (F), sales attendant (F), cashier (F), salesman
8	Modified labour contract	Lower technical occupations	*Professions techniques de niveau inférieur*	Skilled workers	*Ouvriers qualifiés*	Housepainter, auto mechanic, plumber/heating contractor, gardener, pastry cook
9	Labour contract	Routine occupations	*Professions routinières*	Semi- and non-skilled workers	*Ouvriers semi-qualifiés ou non-qualifiés*	Cleaning lady, forklift operator, maintenance worker, delivery-truck driver, coach driver
10		Never worked and long-term unemployed	*Personnes n'ayant jamais travaillé ou en chômage de longue durée*	Unemployed	*Chômeurs*	

Source: Eric Harrison and David Rose, *The European Socio-economic Classification (ESeC)*, Draft User Guide (University of Essex, February 2006)

*Translations suggested by author of this article.
**The project authors routinely use the term “classes” to denote ESeC level-1 groups. Borrowing from Goldthorpe, the project’s overall architecture is described as “class schema”.
***This category is not equivalent to the one used in the French PCS classification (level 1).
****Terms used by Harrison and Rose.

COMPARISON OF EXPLANATORY POWER OF FULL AND SIMPLIFIED ESEC VERSIONS WITH REGARDS TO CULTURAL PARTICIPATION

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Our study aims to compare the explanatory power of the full and simplified versions of ESeC. In addition to the ISCO occupation ("minor group"), the full version requires information on individual status (self-employed/employee), size of employer organisation, and supervisory status for employees. The simplified version is based solely on the ISCO minor group.

Most studies on ESeC explanatory power to date have concentrated on the labour market, from the standpoint of jobs or working conditions. In contrast, we set out to broaden the analysis of the relevance of the ESeC prototype by focusing on variables that pertain to household living conditions.

1. French socio-economic classes viewed with the full and simplified versions of the ESeC classification

Both versions of the ESeC classification were built on the active population in employment, using the conversion matrix recommended by the ESeC user guide[9]. The versions yield the distributions shown in Table 1. The data used are those of the SILC (Statistics on Income and Living Conditions) Survey and an additional module on cultural participation collected in France in 2006.

The widest gap between the two versions concerns the near-disappearance of ESeC Class 6 (ESeC 6), now confined to "Precision, handicraft, craft printing and related workers" (ISCO 73). The share of the *lower salariat* (ESeC 2) loses six points in the simplified version, while the share of *higher grade white collar workers* (ESeC 3) rises in the same proportion. The share of *skilled workers* (ESeC 8) gains four points; those of *semi- and nonskilled workers* (ESeC 9) and *lower grade white collar workers* (ESeC 7) gain three points each. ESeC 4 loses two points, while ESeC 5 gains two. The only constant share is that of the *higher salariat* (ESeC 1).

[9] Eric Harrison and David Rose, *The European Socio-economic Classification (ESeC)*, Draft User Guide, February 2006.

Table 1- Distribution of active population in employment under the two ESeC versions

ESeC code	Nom	Share (%) using full ESeC	Share (%) using simplified ESeC	Gap between versions (points)
6	Higher grade blue collar workers	9.4	0.3	-9.1
2	Lower salariat	19.1	12.7	-6.4
3	Higher grade white collar workers	17.1	22.9	+5.7
8	Skilled workers	7.9	11.5	+3.6
9	Semi- and non-skilled workers	16.6	19.9	+3.3
7	Lower grade white collar workers	9.0	12.1	+3.1
4	Petit bourgeoisie or independents	5.3	3.0	-2.3
5	Petit bourgeoisie or independents (agriculture)	2.2	4.3	+2.0
1	Higher salariat	13.5	13.5	+0.1

Scope of coverage: active population in employment.
Source: 2006 SILC.

2. What is the explanatory power of the two versions in regard to cultural participation?

The goal of ESeC construction is to aggregate individuals with similar socio-economic characteristics, in particular that of sharing different forms of participation. If we focus, for example, on museum or cinema attendance, we should be able to determine whether the full version of the ESeC prototype—most notably the use of the "supervisor" variable—increases or does not increase the classification's relevance for describing society and individual participation.

❑ *Describing cultural-participation forms*

We shall concentrate here on the active population in employment. The variables analysed are the fact of having engaged (or not) in one of the following activities in the previous 12 months:

- going to the cinema
- attending a local event (school or neighbourhood fair, show, contest in which children, neighbours, or friends participated)

- attending a match, race, tournament or other sports event (athletics competition, air meet, etc.)
- going to the theatre or café-theatre
- going to a concert or musical event (classical, pop, jazz, rock, opera, musical, ballet, etc.)
- attending another type of live entertainment (circus, sound-and-light show, parade, street show, etc.)
- visiting a museum or exhibition (painting, photography, science and technology, local museum, etc.)
- visiting a monument or historic site, such as a castle, church, or historic town district
- visiting a natural site labelled as outstanding (cliff, cave, natural park, etc.).

Owing to the insufficient number of respondents involved, we consolidated the “theatre”, “concerts”, and “other live entertainment” variables. Similarly, we grouped “museum or exhibition” with “monument or historic site”.

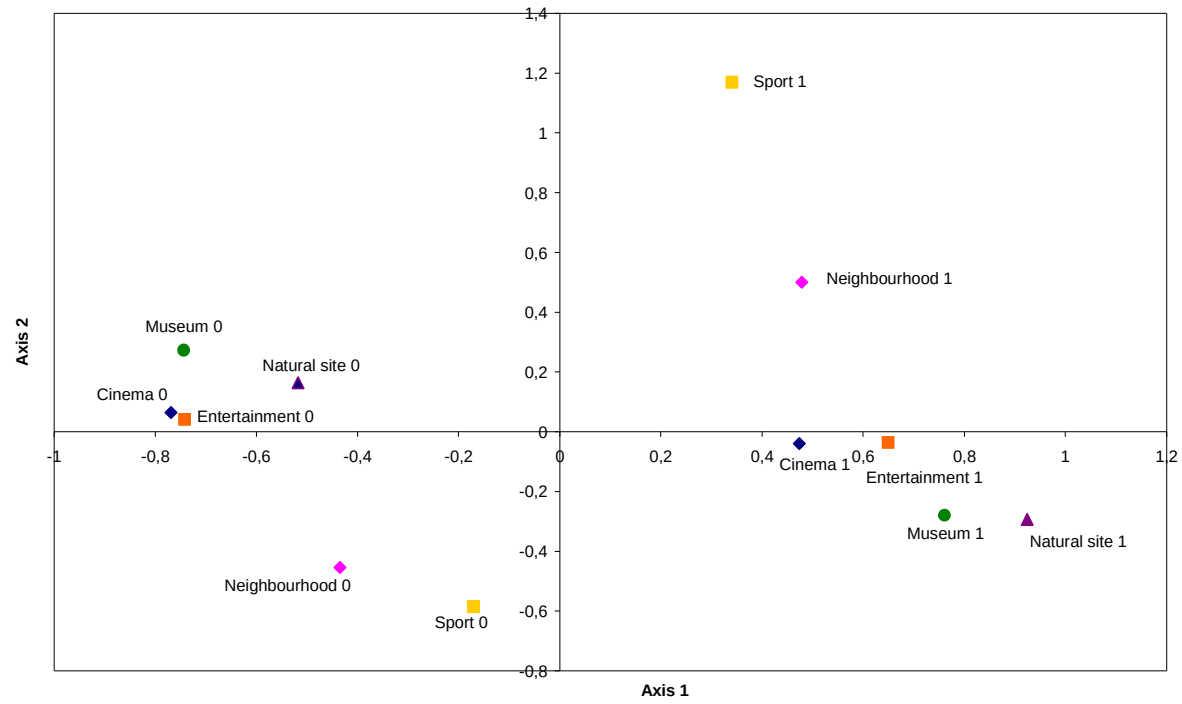
To represent these behaviours as neutrally as possible, we used a factor analysis method: multiple correspondence analysis (MCA: see box). The analysis of the share of inertia explained by each factor led us to select four factor axes representing 81 % of total inertia, i.e., of the initial information—a very good score.

Multiple correspondence analysis

Multiple correspondence analysis (MCA) is a data analysis technique for reducing a complex system of correlations to a smaller number of dimensions. MCA is an extension of factor correspondence analysis (FCA), here applied not to a contingency table but to a complete disjunctive table. MCA thus seeks to obtain a good representation of individuals in a narrower space than that of the original variables. For this, we build factors designed to provide an optimal summary of the initial information. Factors are ranked: Axis 1 concentrates a maximum of information; in other words, it offers the best one-dimensional summary of the n-dimensional point cloud containing the n initial variables. However, this axis omits part of the information. Axis 2 concentrates the maximum remaining information. It is orthogonal to the first and, in combination with the latter, provides the best summary in a two-dimensional space. Axis 3 plots a further and smaller portion of the total information contained in the point cloud. Further axes are added for as long as the information they provide seems relevant. The coordinates of the additional variables projected on the MCA axes are, by construction, those of the barycentre of the individuals to whom the variables apply.

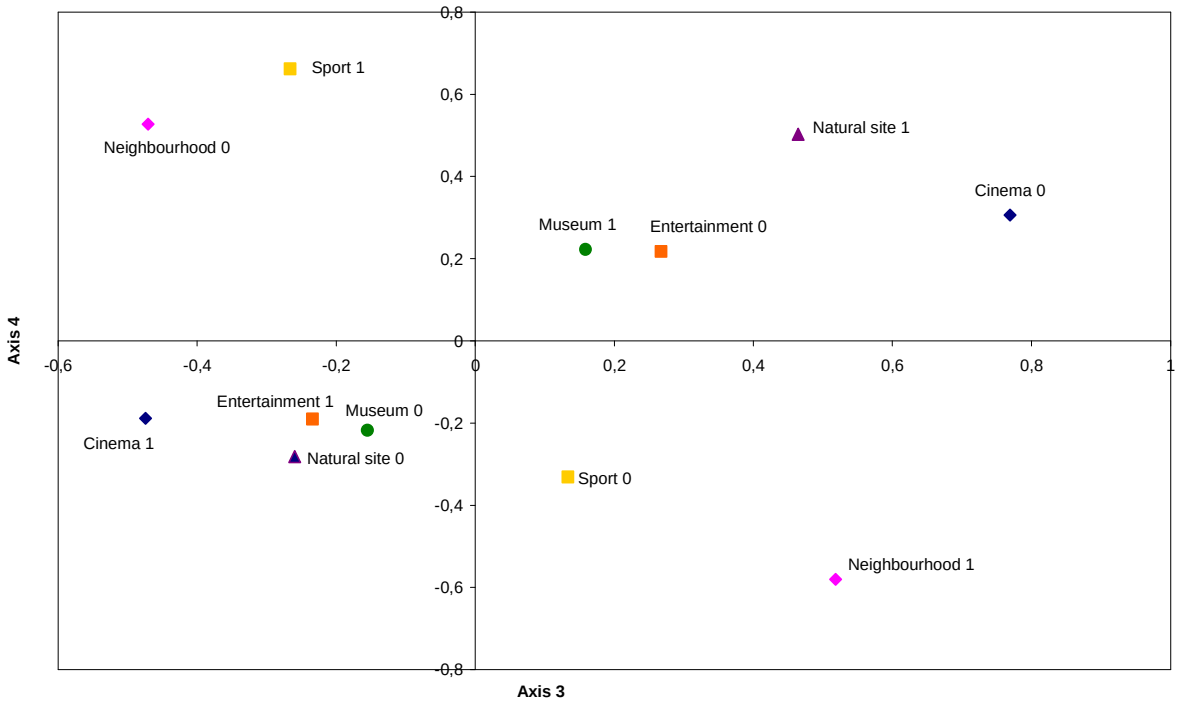
As Figure 1 shows, Axis 1 separates respondents with varied forms of cultural participation (visits to natural sites, museums, entertainment shows, cinema, etc.) from respondents with no participation in such activities.

Figure 1 - Projection of active variables on Axes 1 and 2



Axis 2 separates respondents who have attended sports or local events from those who have visited museums and natural sites. On the other hand, the two groups are not divided with regard to cinema and live-entertainment attendance.

Figure 2 - Projection of active variables on Axes 3 and 4



Axis 3 divides persons who attend the cinema, live entertainment, and sports events from persons who attend local events and visit natural sites and museums (Figure 2).

Axis 4 separates persons who attend sports events and visit natural sites and museums from persons who attend local events, live entertainment, and the cinema.

❑ *Socio-demographic variables and cultural participation*

The four axes materialise the four strongest oppositions in terms of cultural participation in our population. We can characterise them using other variables that are not included in the construction of the axes and serve only to interpret them. These are known as additional variables. Here, we have projected four variables on the axes just described:

- Gender
- Educational attainment, divided into four levels: below *baccalauréat* ("*Bac*"); *baccalauréat*; *baccalauréat* + 2 years of higher education; higher-education degree.
- Supervisory status at work, summarised by two levels: the person is or is not a supervisor—i.e., performs supervisory tasks or not.
- Age, subdivided into five classes: under 30; between 30 and 40; between 40 and 50, between 50 and 60; over 60.

Figure 3 - Projection of socio-demographic variables on Axes 1 and 2

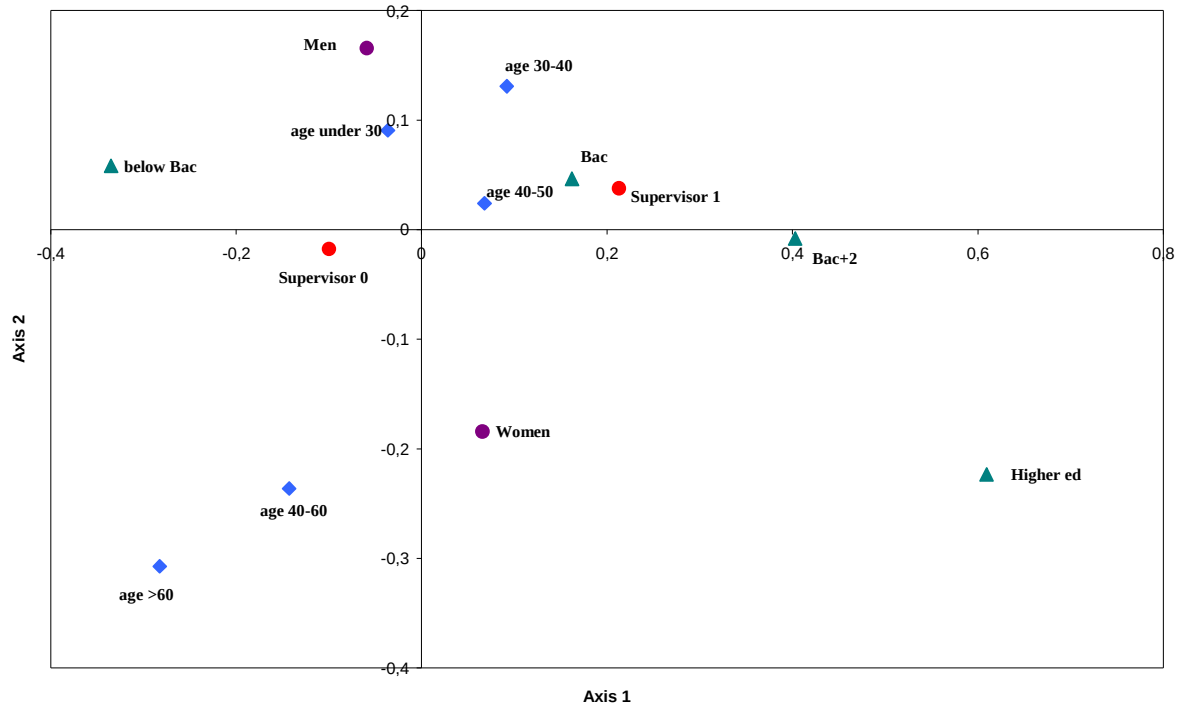
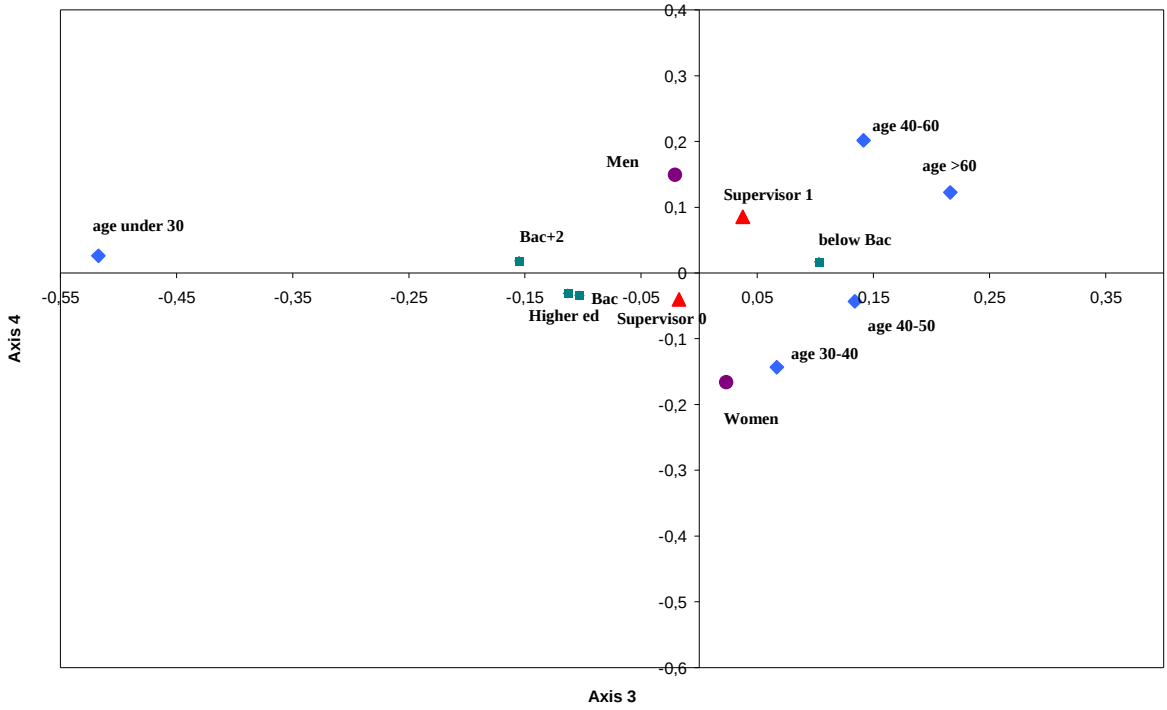


Figure 4 - Projection of socio-demographic variables on Axes 3 and 4



Axis 1 draws a line between respondents with varied forms of cultural participation and respondents with no such participation. It clearly highlights the education effect: the person's position on Axis 1 rises, on average, with educational attainment. Supervisors appear to rank higher than non-supervisors on Axis 1. The "supervision" effect does, however, seem weaker than the education effect. On Axis 2, men and young people appear to prefer sports and local events to museums and natural sites—unlike women and older people.

Axis 3 mainly divides younger people, particularly the under-30s, from the rest of the population; to a lesser extent, it also separates respondents with the *baccalauréat* or higher diploma from those without the *baccalauréat*. Demographic characteristics are less well projected on Axis 4. The "man" status, however, is projected on the positive side of the axis and the "woman" status on the negative side, i.e., people who attend neighbourhood events, live entertainment, and the cinema, but do not attend sports events or visit natural sites.

Note that the "supervisor" variable, somewhat conspicuous on Axis 1, is rather poorly projected on the other axes—a sign that the variable weakly discriminates between cultural-participation groups.

❑ *Characterising groups with socio-occupational categories*

In this section, we examine the extent to which the projection of ESeC classes in the full and simplified versions on the factor spaces explains and characterises the divisions materialised by the spaces. Because we project the ESeC classes as additional variables, they do not modify the axes.

The first three ESeC classes are projected on the positive side of Axis 1. The full and simplified versions of Class 1 overlap, and Classes 2 and 3 are fairly close: the simplified version has a slightly higher coordinate and therefore seems to better depict the division materialised by Axis 1. On the negative side of the axis (persons with minimal recreational activity), we observe the opposite. The two versions remain close, but the full version is projected somewhat better. The projections of simplified Classes 4 and 7 are especially poor.

The differences are far less pronounced on Axis 2. The points of the two versions remain close, but some major divergences appear. Simplified Class 4 (*Petit bourgeoisie or independents*) is projected on the negative side of the axis (people who visit museums and natural sites), which is not the case with the full version of the class. On balance, the simplified version does not seem inferior to the full version. In fact, its projection is of slightly better quality.

Class 5 (*Petit bourgeoisie or independents - agriculture*) of the full version of ESeC is strongly projected on the positive side of Axis 3, i.e., persons who attend local events and visit natural sites. The projection is slightly less positive for the simplified version of the class. Simplified Class 6 is also somewhat less well projected on the positive side of the axis. While the simplified Class 8 (*Skilled workers*) is projected on the positive side of Axis 3, these points are still close to the origin and therefore poorly projected. But the two ESeC versions seem fairly convergent, a pattern also clearly visible on Axis 4.

Figure 5 - Projection of ESeC Classes in full version (ESeC 1-9) and simplified version (ESeC S1-S9) on Axes 1 and 2

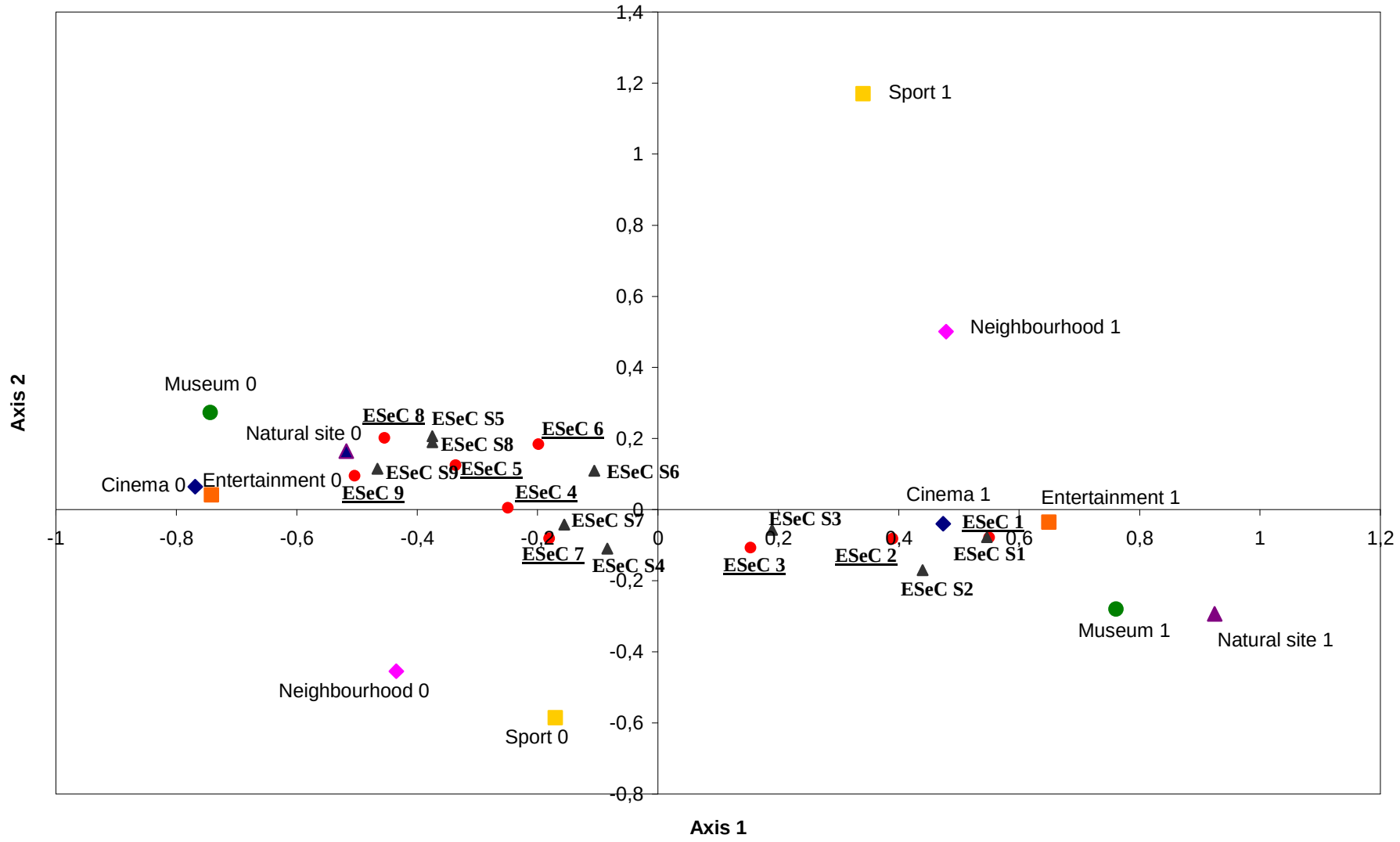
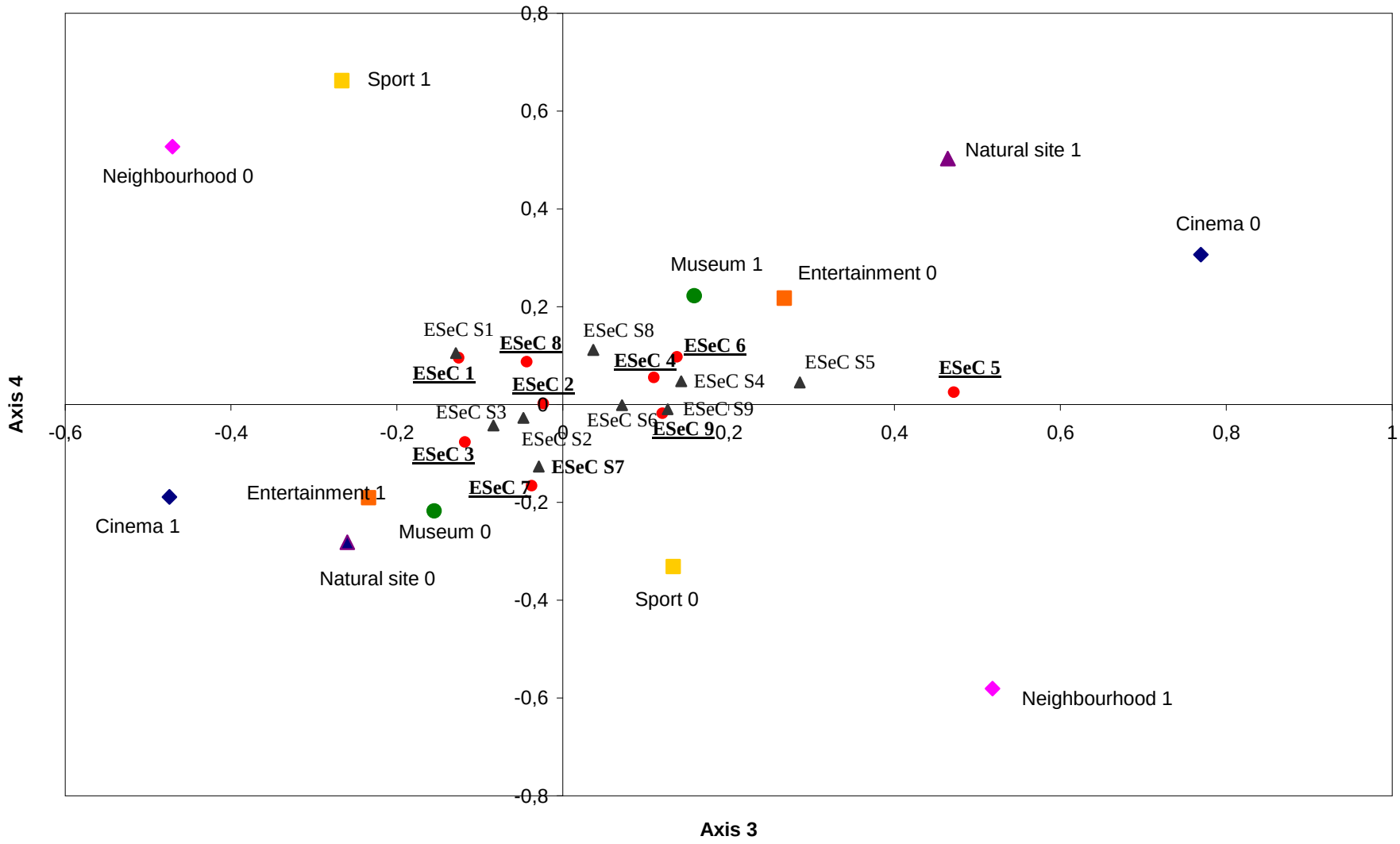


Figure 6 - Projection of ESeC Classes in full version (ESeC 1-9) and simplified version (ESeC S1-S9) on Axes 3 and 4



- ***Assessment of the two versions' explanatory power***

To examine with greater precision the linkage between cultural participation and the two versions of the ESeC prototype, we prepared an automatic ascending hierarchical classification (ACH) from the results of the multiple correspondence analysis (MCA) of cultural participation. More specifically, we used ACH to classify respondents on the basis of their coordinates for the first four MCA factors.

The examination of the decrease in inter-class inertia during the aggregation process led us to define four cultural-participation ("CP") classes.

CP Class	**1**	**2**	**3**	**4**
Population	2,135	3,334	2,550	1,651
Share (%)	22.1	34.5	26.4	17.1

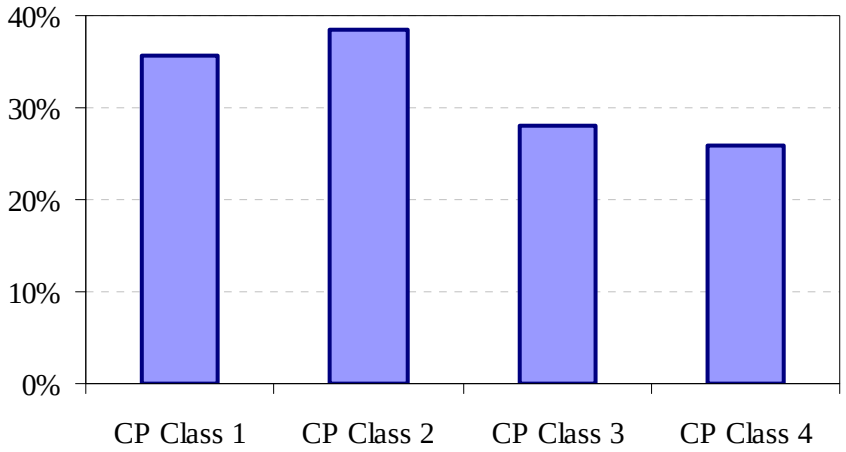
CP Class 1 comprises respondents who all reported attending shows (theatre, concert, live entertainment) and museums (including exhibitions, monuments, and historic sites). Many of them also reported visiting a natural site or going to the cinema. But none said that they have attended a sports event.

CP Class 2 includes "omnivorous" respondents engaging in the most varied forms of cultural participation. All have been to a sports event and a live entertainment show. A much larger proportion have also attended the cinema or local events.

CP Class 3 is composed of the respondents reporting the least cultural participation. None has been to a live show, sports event, local event or natural site. They also include a smaller percentage of museum- and cinema-goers.

CP Class 4 consists of respondents who have not attended a sports event, who have seldom attended local events or visited museums or natural sites, but who have gone to the cinema more often than persons in Classes 1-3.

Figure 7 - Share of supervisors by cultural-participation (CP) class



The share of supervisors varies between 25 % and 35 % across the four classes. CP Class 2, which scores the highest cultural participation, is the one with the highest percentage of supervisors. Next, for a more precise study of the linkage between the ESeC prototype (full and simplified) and our typology, we built the contingency tables cross-tabulating our four CP classes with ESeC socio-occupational classes.

For the full version of ESeC:

		ESeC Class								
CP Class		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	**Actual pop.**	**419**	**555**	**387**	**80**	**54**	**155**	**168**	**103**	**214**
	Theoretical pop.	314	427	358	92	51	201	185	166	342
2	**Actual pop.**	**593**	**690**	**514**	**132**	**75**	**349**	**223**	**285**	**473**
	Theoretical pop.	490	666	559	143	79	313	290	259	535
3	**Actual pop.**	**222**	**377**	**426**	**149**	**57**	**246**	**261**	**250**	**562**
	Theoretical pop.	375	510	427	109	60	240	222	198	409
4	**Actual pop.**	**188**	**311**	**293**	**54**	**43**	**159**	**188**	**113**	**302**
	Theoretical pop.	243	330	277	71	39	155	143	128	265

For the simplified version of ESeC:

CP Class		ESeC Class 1	2	3	4	5	6	7	8	9
1	**Actual pop.**	**420**	**410**	**517**	**58**	**85**	**7**	**223**	**167**	**248**
	Theoretical pop.	315	291	483	52	91	5	254	233	412
2	**Actual pop.**	**597**	**436**	**750**	**65**	**146**	**8**	**328**	**408**	**596**
	Theoretical pop.	492	454	754	81	143	8	396	364	643
3	**Actual pop.**	**222**	**259**	**534**	**77**	**105**	**5**	**361**	**336**	**651**
	Theoretical pop.	376	347	576	62	109	6	303	278	492
4	**Actual pop.**	**188**	**212**	**385**	**34**	**78**	**4**	**237**	**144**	**369**
	Theoretical pop.	244	225	373	40	71	4	196	180	318

We can then construct the chi-square for each cell, which indicates the cell's contribution to the linkage between the two variables—in other words, the deviation from a situation where the two variables are independent.

Chi-square per cell for full version of ESeC:

CP Class	ESeC Class (full version) 1	2	3	4	5	6	7	8	9	Line total
1	**35.1**	**38.5**	2.4	1.5	0.2	10.4	1.6	23.8	**48.2**	161.8
2	21.5	0.8	3.6	0.9	0.2	4.0	15.3	2.6	7.1	56.1
3	**62.4**	**34.6**	0.0	14.3	0.2	0.2	7.0	13.6	**57.2**	189.5
4	12.3	1.1	1.0	4.0	0.4	0.1	13.9	1.8	5.2	39.8

Chi-square per cell for simplified version of ESeC:

CP Class	ESeC Class (simplified version) 1	2	3	4	5	6	7	8	9	Line total
1	**34.9**	**48.9**	2.4	0.8	0.4	0.5	3.7	18.7	**65.0**	175.4
2	22.4	0.7	0.0	3.0	0.1	0.0	11.7	5.4	3.4	46.8
3	**63.3**	22.4	3.1	3.8	0.2	0.3	11.1	12.0	**51.7**	167.9
4	12.7	0.7	0.4	0.9	0.8	0.0	8.5	7.2	8.1	39.3

The cells where chi-square exceeds 30 are shown in boldface. Broadly speaking, the cells in question are identical. The linkage between our CP class 1 and ESeC Class 9 is closer in the simplified version. But the linkage rates are higher for CP Class 1 and ESeC Classes 1, 6, and 8 in the full version, as well as for CP Class 3 and ESeC Classes 2, 4, 8, and 9 in the full version.

The chi-square for the contingency table works out at 447.2 for the full version of ESeC and 429,4 for the simplified version. The linkage between cultural-participation classes and ESeC is thus slightly greater for the full ESeC version than for the simplified version. But the difference is small.

THE ESEC CLASSIFICATION APPLIED TO OCCUPATIONAL MOBILITY IN FRANCE: ANOTHER PERSPECTIVE

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Monitoring occupational experience is a way of studying the stability of a classification at an individual level. It makes it possible to verify that movements between social groups are not too frequent, and are justified in terms of the definition of the classification. We first pose the question of whether occupational mobility as described using the Prototype ESeC[10] can identify usual results regarding socio-occupational mobility in France. Then we ask whether using the ESeC results in a change of perspective in the analysis of occupational mobility – first from a quantitative point of view, in its creating more or less mobility; and then from a qualitative point of view, in its placing the accent on specific criteria of mobility between social groups. Regarding these two points, ESeC is compared with two nine-point classifications stemming from the French classification of Occupations and Socio-Occupational Categories (*Professions et Catégories Socioprofessionnelles* – PCS), and with the empirical classification empirical classification based on employment relations, education and wages, as constructed in Brousse *and alii.* (2007, part one).

Box 1

The 2003 Training and Vocational Qualification Survey (Enquête sur la Formation et la Qualification Professionnelle, FQP 2003)

The FQP 2003 survey collected information on employment and qualifications (formal education, post-formal training). The information collected on the occupation also concerns several specific points in the trajectory of a given individual (entry into working life, situation at the time of the survey[11] and five years before the survey, monitoring of all the changes in employment taking place in the five years preceding the survey). We use that information here by comparing the social group occupied in 1998 with the group occupied in 2003, for those persons who declared they were employed at both those dates and for several definitions of the social groups. The occupation is coded using the PCS classification,

[10] We will at times use the term "ESeC" alone, but we are always referring to the Prototype ESeC, as presented by the User Guide dated February 2006 (Harrison and Rose, 2006).

[11] The individual's occupational position is also compared to that of his or her ascendants, so that the survey is frequently used to study social mobility in France (see, for example, Erikson, Goldthorpe and Portocarero, 1979).

gathering many items of information on the title of the occupation, the occupational status (family worker, self-employed, salaried business manager, other salaried employee), the qualification, the function occupied, and also the sector of activity and the size of the company. This information is used to code the occupation in the Isco sub-group (three digits)[12]. To code the ESeC category, in addition to the Isco sub-groups, we also use questions on employment status ("Do you exercise your occupation… on your own account? as a salaried employee?"), on the number of employees employed by business owners ("Do you have employees? How many?"), and finally the questions "Do you have one or several employees under your authority?" and if so, "How many employees do you have under your authority?", which contributes to defining the status of "supervisor" as understood by the ESeC. All these criteria are used to determine what ESeC category the person belongs to, and can also be used in working out alternative classifications.

The former edition of the FQP survey (1993) is used on some occasions (table 2). It proposes information similar to the one described previously, between 1988 and 1993, except for the number of subordinate people (for the people having answered that they had employees under their authority).

A (brief) panorama of occupational mobility in France between 1998 and 2003 with the ESeC prototype

15.3 million persons employed in 2003, between ages 30 and 54 as of that date, were already employed in 1998. Out of these, we focused on the 14.9 million individuals to whom we can attribute an ESeC category at both dates[13]. A quarter of the men (26 %) changed ESeC categories between the two dates, compared to a fifth of the women (19 %). For men and for women, the largest flux (in number) is toward the "lower salariat" and corresponds in large measure to promotions, in particular from the "higher grade white collars" and "lower grade white collars" categories[14]. There are also a lot of trajectories from "higher salariat" to "lower salariat," both in terms of flux and of proportion of the group of origin: For men as for women, 13 % of persons in "higher salariat" were in "lower salariat" five years later. Men also stand out due to mobility, in the world of unskilled labour, between "semi and unskilled workers" and "skilled workers" toward "higher grade blue collars," and also from "higher grade blue collars" and "skilled workers" toward "lower salariat." Here we note the marked presence of a "technical promotion path," already pointed out in other work done on socio-occupational mobility in France (Chapoulie, 2000). As for women, 8 % of them who were in the "semi and unskilled workers" category moved to the "lower grade white collars" category, which, in addition to mobility toward "lower salariat," tends to show the pre-eminence of an "administrative" promotion path, in the world of white-collar workers. These trajectories seem to be made in "stages" – people rarely move directly from "semi and unskilled workers" to "lower salariat." The "intermediate" categories of "white collars" and "blue collars" (of "higher" and "lower" level) consequently play an important role in mobility, either as starting categories or as arrival categories.

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[12] ISCO is itself coded based on the national PCS classification by applying a conversion table or "crosswalk."

[13] The missing values are most often the result of the impossibility of ISCO coding in 3 headings (six cases out of ten). For the rest of the cases, the values are missing from the occupational-status variable, as defined in the User Guide (Harrison and Rose, *op. cit.*).

[14] For the Prototype ESeC, we use here, in our comments and tables, the « common terms » of the User Guide instead of the full titles of classes, with the exceptions of the ESeC4 and ESeC5 categories (which are designated by the same common term), for which we use "independants 4" and "independants 5".

The least mobile categories among men are found among independents (categories 4 and 5), and also in Classes 1 and 2, which can be considered as the upper end of the socio-economic hierarchy (Harrison and Rose, *op. cit.)* In all these starting categories, the rate of mobility varies from 4 % for farmers ("independents 5") to 22 % for men in the "lower salariat." Female mobility has in common with male mobility a strong stability among farmers (6 % mobile) and among members of categories 1 and 2.

Two strong divergences between men and women appear. The first is the mobility of "white collars": Whereas these categories are mobile and offer frequent promotions for men, they seem to offer women fewer possibilities for evolution. A male "higher grade white collar" has twice as many chances of being promoted to the "lower salariat" or "higher salariat" than a woman in the same category. The second difference is the lower mobility of women in the "lower salariat"; 4 % of them attain "higher salariat" status as against 9 % for men. So, while the Prototype ESeC may not be optimally suited to analysis in terms of upward or downward mobility (due to the difficulty of hierarchising the classes[15]), the analysis of mobility between ESeC classes, and in particular access to Classes 1 and 2, is revelatory of mobility trajectories that are differentiated according to sex, and which again are reflected in recent work done on socio-occupational mobility in France (for example on the barriers to promotion for women, see Baraton [2006]).

[15] Harrison and Rose (*op. cit.*) point out that "the classes are not consistently ordered according to some inherent hierarchical principle. However, so far as overall economic status is concerned, Classes 1 and 2 are advantaged over Classes 3, 6, 7, 8 and 9."

Table 1. Changes in prototype ESeC class between 1998 and 2003 for persons employed at both dates

ESeC class in 1998		higher salariat	lower salariat	higher grade white collar	indepdts4	indepdts5	higher grade blue collar	lower grade white collar	skilled workers	semi and unskilled workers	total
higher salariat	*Men*	**83**	11	1	1	0	1	0	1	1	100
	Women	***80***	*13*	*3*	*0*	*0*	*0*	*1*	*1*	*1*	*100*
lower salariat	*Men*	8	**79**	3	1	0	3	1	2	2	100
	Women	*3*	***88***	*5*	*0*	*0*	*1*	*1*	*0*	*1*	*100*
higher grade white collar	*Men*	7	18	**65**	2	0	2	4	1	3	100
	Women	*3*	*8*	***81***	*0*	*0*	*0*	*4*	*1*	***3***	*100*
independents 4	*Men*	2	3	1	**83**	0	2	1	4	5	100
	Women	*0*	*4*	*2*	***83***	*1*	*0*	*5*	*2*	*4*	*100*
independents 5	*Men*	0	0	0	1	**96**	0	0	1	0	100
	Women	*0*	*0*	*2*	*0*	***96***	*0*	*0*	*1*	*1*	*100*
higher grade blue collar	*Men*	4	10	3	4	1	**62**	2	8	7	100
	Women	*3*	*13*	*11*	*2*	*0*	***53***	*8*	*1*	*6*	*100*
lower grade white collar	*Men*	1	7	7	3	0	5	**67**	3	7	100
	Women	*0*	*3*	*9*	*1*	*0*	*2*	***78***	*1*	*6*	*100*
skilled workers	*Men*	1	5	1	3	1	7	1	**72**	10	100
	Women	*0*	*3*	*4*	*2*	*1*	*3*	*7*	***68***	*11*	*100*
semi and unskilled workers	*Men*	1	4	2	2	0	5	4	8	**75**	100
	Women	*0*	*1*	*4*	*1*	*0*	*2*	*8*	*2*	***82***	*100*
total	***Men***	**14**	**21**	**6**	**6**	**4**	**8**	**5**	**16**	**19**	**100**
	Women	***7***	***23***	***24***	***3***	***1***	***2***	***19***	***2***	***18***	***100***

Reading : among men employed in 1998 and in 2003, age 30 to 54 in 2003, and who were in the "higher salariat" in 1998, 83 % remained in the higher salariat in 2003. 11 % moved to the "lower salariat".

Field : persons age 30 to 54 as of 31 December 2003, employed in 1998 and in 2003.

Source : Training and Vocational Qualification (Formation et qualification professionnelle) survey 2003.

Over a long period, the 1993 FQP survey make it possible to code the profession at the time of the survey, and five years before, in ESeC. We have the same information except for the number of employees under one's authority, which is not available in this survey. Thus we use an alternative solution consisting in giving the status of "supervisor" to the employee as soon as she states that she has at least one other employee (and not three like previously) under her authority: We name EseCbis this alternative nomenclature. Even if that reduces the proportion of supervisors, there is no notable impact on the rates of mobility between 1998 and 2003 (table 2). Above all, the comparison with 1993 (two last columns) highlights that mobility between social groups remained almost stable between the periods 1988-1993 and 1998-2003: the total proportions of mobiles are almost equivalent (a quarter of mobiles for the men and a fifth for the women). This result must be interpreted with great caution due to possible differences in the coding of the categories between the two surveys[16]. If true, it may somewhat contradict the results when starting from the social groups in the national classification (in which qualified and unqualified employees were distinguished) found by Monso (2006), which would rather illustrate a general rise in the mobility between social groups. In particular, the mobility of the "higher grade blue collars" was already strong over the period 1988-1993, and does not seem to have increased since (it could even have slightly decreased for women), with a constant definition of the category. This category thus does not seem to be more "volatile" than before, in spite of the fact that supervising functions are more frequent and more common (Wolff, 2005).

Therefore, even if the EseC prototype makes it possible to find again some results obtained with the French social groups deriving from the national classification (low mobility of independents, administrators, managers and higher grade professionals, low mobility among women), it gives different results on other points (strong mobility among the workers and non-manual employees who are in the middle of the social hierarchy, stability of the mobility during the nineties…). At this stage, it is not possible to bring an explanation if one does not try to compare more precisely the EseC prototype and social groups derived from the French classification.

[16] Practically speaking, it was also necessary to build a conversion table, for the job in 1988, between the sector of activity coded in two national nomenclatures : NAP 73 and NAP 93. We started with the "theoretical" conversion table, the problem of which was that it was not bijective (in particular, a great number of sectors of the NAP 73 had been split into more detailed sectors in NAP 93). Thus we isolated, in this table, the most frequent NAP 73 / NAP 93 couples ("statistical" conversion table). The assumption is made that, when one looks at the things at a global level, biais is not too important.

Table 2. Changes in prototype ESeC among employees between 1998 and 2003

	Proportion of changes (ESeC) 1998-2003		**Proportion of changes (ESeCbis) 1998-2003**		**Proportion of changes (ESeCbis) 1988-1993**	
ESeC group in 1998	*Men*	*Women*	*Men*	*Women*	*Men*	*Women*
1. Higher salariat	*17*	*20*	17	17	17	15
2. Lower salariat	*21*	*12*	22	13	17	13
3. Higher grade white collar	*35*	*19*	36	21	37	20
4. Independants (excluding agriculture)	*17*	*17*	18	20	18	19
5. Independants (agriculture)	*4*	*4*	4	6	10	*ns*
6. Higher grade blue collars	*38*	*47*	34	40	33	47
7. Lower grade white collars	*33*	*22*	35	23	34	22
8. Skilled workers	*28*	*32*	32	31	30	26
9. Semi and unskilled workers	*25*	*18*	25	19	23	16
Total	***25***	***18***	**26**	**19**	**25**	**19**

Reading : among men employed in 1998 and in 2003, age 30 to 54 in 2003, and who were in the ESEC 1 category in 1998, 17 % changed groups between 1998 and 2003.

Field : persons age 30 to 54 as of 31 December 2003, employed in 1998 and in 2003.

Source: Training and Vocational Qualification (Formation et qualification professionnelle) survey 2003.

A comparison with other classifications derived from national classification (PCS)

In order to provide points of comparison, we start with alternative classifications formed on the basis of the French PCS classification. The PCS Classification has in a great part been built upon French work institutions, as defined by law and collective agreements, and has also taken into account the willing to build homogeneous categories according to social position. This social position integrates the position in employment relations, but mainly through institutional statuses, whereas ESeC intends to start from more factual relations. Besides, social

position in the PCS is also obviously linked to other aspects like social practices or educational attainment. At its most aggregate level, this classification can be used to isolate six “social groups”: farmers and smallholders, artisans/shopkeepers/company managers, administrators/managers/higher grade professionals (henceforth called “managers and higher intellectual professions”), intermediate-grade professionals (henceforth called “middle-level occupations”), non-manual employees, workers. At a finer level (coded in two digits), it can also be used to make a distinction between skilled and unskilled workers, which we have done here. For white-collar workers, we use the distinction between skilled and unskilled non-manual employees proposed by Olivier Chardon (see for example Alonzo and Chardon, 2006). Starting with that principle, we propose two alternatives:

- a distinction between “administrative and commercial” middle-level occupations (in the public or private sector) on the one hand and “industrial” middle-level occupations, technicians and foremen on the other. We have named this classification GS9A.

- a distinction, within managers and higher intellectual professions, between managers in the public service, on the one hand, and managers in enterprise and the liberal professions on the other. We have named this classification GS9B.

In each of these cases, we arrive at a classification in nine classes, that is, the same number of classes as in the Prototype ESeC. At that point an initial comparison of the proportions of mobile individuals resulting from each of the classifications can be made (table 3).

Table 3. Proportion of changes of social group according to several classifications

In %

	Prototype ESeC	Variants on the PCS (nine positions)		Socio-occupational groups (PCS six positions)
		GS9A	GS9B	
Percentage of mobile men	24.5	22.3	21.7	18.0
Percentage of mobile women	18.4	17.4	17.4	14.3

Reading: among men age 30 to 54 in 2003, employed in 1998 and in 2003, 24.5 % changed ESeC class between those two dates.

Field: persons age 30 to 54 as of 31 December 2003, employed in 1998 and in 2003.

Source: Training and Vocational Qualification (Formation et qualification professionnelle) survey 2003.

The proportion of mobile individuals obtained by comparing six-position socio-occupational groups (derived from the one-digit PCS classification) in 1998 and in 2003 is 18 % for men and 14 % for women. Proportions of

mobile persons are much lower than in the ESeC (25 % and 18 % respectively), but it is to be expected that the higher number of classes in ESeC will induce, mechanically, more mobility. When, starting with the PCS, we move to nine-position classifications, GS9A and GS9B produce quasi-identical mobility rates – 22 % for men and 17 % for women. This is still slightly lower than the mobility rates in ESeC. For women, this variation is not significant; for men, it remains very weak. Globally speaking, ESeC does not seem to create any additional socio-professional mobility, or very little, except for the mobility linked to a higher number of classes. This result is not self-evident, because ESeC was not built *a priori* to reflect the French social structure precisely, and one could expect that it would generate categories with more blurred contours, and thus more porous, that those resulting from the national PCS classification. If we obtain more mobility with ESeC, it is then primarily because of a higher number of classes: we are then brought back to the question of the "optimal" number of classes.

From that point on, we use GS9A (which distinguishes between administrative and commercial middle-level occupations and technical middle-level occupations) more specifically, since it offers a slightly more balanced distribution among the social groups than GS9B (the managers and higher intellectual professions group being much more limited in size than that of middle-level occupations). This classification is different from ESeC in particular since, being inspired by the French PCS classification, it tends to be based more on legal qualifications and statuses (public-service grades, collective-bargaining agreements, etc.), whereas ESeC is based on a representation of employment relations (relationship to the hierarchy, etc.). Below (Table 4) we give the rates of mobility in social group GS9A.
Studying mobility using this classification leads to several results that were obtained using ESeC, in particular low mobility among agricultural workers and the higher classes (managers and higher intellectual professions). Among men, unskilled workers appear as highly mobile – a result found in more marked fashion than in ESeC: The mobility rate reached 40 % for unskilled white-collar workers and 36 % for unskilled blue-collar workers. Among women, the most mobile categories are again found among the blue-collar workers (skilled or unskilled). The spread between mobility among men and mobility among women was maintained, and is visible in particular with administrative and commercial middle-level occupations (respectively 30 % and 16 %) and skilled white-collar workers (respectively 40 % and 17 %), which recalls the results obtained with ESeC for the "lower salariat" and "lower grade white collars."

For men and women together, 22 % of individuals changed ESeC groups between the two dates. Among them, more than a third did not change social groups, as that term is understood in GS9A. The converse is a little more rare: Among persons who changed social groups in GS9A, a fourth did not change ESeC groups. This supports the idea that mobility as calculated in the Prototype ESeC and in the classifications derived from the PCS coincides only in part. In particular, ESeC engenders a large share of mobility that is not visible using the classifications derived from the PCS.

Table 4. Proportion of individuals who changed social groups (GS9A classification)

In %

	Proportion of mobile individuals	
Group in 1998	Men	Women
Managers, higher intellectual professions	10	10
Administrative and commercial middle-level occupations	30	16
Skilled white-collar	27	18
Craftsmen, tradesmen and general managers	17	24
Farmers	4	4
Industrial middle-level occupations	27	32
Unskilled white-collar	40	17
Skilled blue-collar	19	25
Unskilled blue-collar	36	26
Total	22	17

Reading: among men age 30 to 54 in 2003, belonging to the category of managers and higher intellectual professions in 1998, 10 % changed social groups (according to the GS9A classification) between 1998 and 2003.

Field: persons age 30 to 54 as of 31 December 2003, employed in 1998 and in 2003.

Source: Training and Vocational Qualification (Formation et qualification professionnelle) survey 2003.

If we focus more precisely on the principal trajectories in ESeC which do not appear in GS9A, we observe that half of them are in the direction of the “lower salariat” and “higher grade blue collars” groups. The most frequent paths are indicated in the table 5. We can offer two main interpretations. The first has to do with the role of the “supervisor” variable: without changing occupations, a person can change social groups in ESeC terms because the individual has been assigned supervisory duties over subordinates that he or she did not have beforehand. That is the case, for example, with a *gendarme* who becomes a warrant officer (he or she can change from “higher grade white collar” to “lower salariat” in ESeC terms, yet remain a “skilled white-collar worker” in GS9A terms); or with a mason who had taken on supervision of a crew on a construction site (and thereby moved from “skilled blue collar” to “higher grade blue collar” while still remaining a “skilled blue-collar worker” in terms of GS9A) when interviewed in 2003, but had no one under his authority in 1998. A second interpretation has to do with the very specific character, in ESeC, of the “higher salariat” and “lower salariat” categories, which introduce fine distinctions, from the point of view of employment relations, within the “managers and higher intellectual professions” group. As an example, a teacher with an *agrégé* degree and a research-and-development engineer

will be classified in the same category in the GS9A classification on the basis of the required level of skill. Yet in ESeC terms, the former would be in the “lower salariat” whereas the latter would be in the “higher salariat”, and the passage from one profession to another would cause a social mobility. This is not aberrant if we remember the theoretical framework on which ESeC is based (Harrison and Rose, *op. cit.*), which gives an important weight, in the determining of the social position, to the specific knowledge acquired by an individual on the organization in which she works: an interpretation would be that the engineer would have “specific knowledge” which would for example make her more difficult to replace[17].

Table 5. Principal mobilities in prototype ESeC that are not found in the GS9A classification

Starting class	Arrival class	Number of persons concerned (thousands)
Higher grade white collars	Lower salariat	137
Skilled workers	Higher grade blue collars	124
Higher salariat	Lower salariat	110
Semi and unskilled workers	Higher grade blue collars	85
Lower salariat	Higher grade white collars	81

Reading: Among persons age 30 to 54 in 2003 employed in 1998 and in 2003 and who moved from "higher grade white collars" to "lower salariat," 137 thousand remained stable in the GS9A classification.

Field: persons age 30 to 54 in 2003, employed in 1998 and in 2003, and who changed ESeC groups between those two dates.

Source: Training and Vocational Qualification (Formation et qualification professionnelle) survey 2003.

The converse case – transitions in the GS9A classification that are not accompanied by a transition in ESeC – corresponds to a large degree to trajectories toward middle-level administrative occupations, managers and higher intellectual professions, and skilled workers (together accounting for half of all cases). This appears to correspond to a (relative) lack of correspondence between the ESeC prototype and some French institutional specificities, in particular in the public service and the industrial sector, where specific collective-bargaining agreements apply. In the first instance, we can give the example of a lower secondary-school teacher who earns the status of certified *agrégé* secondary teacher, yet who still remains in the “lower salariat” in ESeC. In the second instance, we can cite the transition from unskilled blue-collar construction worker to skilled mason. This transition is meaningful from the point of view of a classification based on the PCS, which is itself influenced by

[17] In this example, what is at issue for ESeC, then, is not whether the teacher is more or less skilled than the engineer, but rather the more or less specific nature of her skills and what “market power” these skills give her. It is only one personal interpretation of the differences between ESeC and the national PCS classification: we wants especially to show here that these differences can be interpreted trough the theorical frameworks on which each classification is based, without being systematically brought back to an error of coding, or a fortuitous consequence of this coding.

the status of the applicable collective-bargaining agreement in France. For ESeC, on the other hand, this case may correspond to stability within the “skilled workers” category.

Coming to the end of this brief analysis of occupational mobility with the ESeC prototype, we can keep in mind several things. First, it is absolutely possible to lead studies on career mobility with the ESeC prototype, at least in the French context: the results are rather coherent with studies using other classifications, in particular those resulting from the national PCS classification. Though ESeC shows some specificities, the number of “aberrant” mobilities, that is unexpected movements between social groups without any link with the theoretical framework of the classification, may remain limited. One can however point out a relatively high proportion of downward movements, in particular among male managers and executives, who seem to go rather often from the “higher salariat” to the “lower salariat”, sometimes without any significant change as regards wages or employment relations. However, this remark might also applies to the national PCS classification, given the significant rise in downward mobilities and a persistent blur in the coding between the managers and higher intellectual professions, on one hand, and the middle-level occupations, on the other hand (Monso, *op. cit.*). Some other transitions from one ESeC category to another can be put into question, and could be linked to French specificities that would badly be taken into account by ESeC (this is what we tried to illustrate with the example of the childminders): a comparative work should be carried out in order to see whether these cases arise in a similar way in other countries, in order to possibly make changes in the “conversion table” allowing to build ESeC (based on job in the Isco classification and variables of professional status).

The second thing we can stress is that the total volume of mobility “created” by ESeC remains relatively moderate. Though it is slightly higher than mobility resulting from the social groups derived from the national classification, this is primarily because there are more classes in ESeC. On its most aggregate level, a classification is expected to be rather stable in time, at an individual level, in order to study economic, social or demographic facts that have a certain persistence (political opinions, fecundity behaviours, mortality…). Globally speaking, ESeC seems to meet this requirement. It should be noted, from this point of view, a possible convergence with the social groups resulting from the national PCS classification: whereas mobility between the social groups derived from the PCS increased in the nineties, the transitions between ESeC categories seem to have remained stable. Both nomenclatures yield now comparable rates of mobility, once one had taken into account their different number of classes.

However (this is the third point to keep in mind), on a finer level, there remains a certain number of categories which yield a high number of mobilities in the course of a career, in particular the “higher grade blue collars”: four men out of ten, and one woman out of two, who were in this category in 1998 moved towards another category between 1998 and 2003. That may be a lot if we try to use the social group in the way already described, giving a (rather) constant mark of social position. On one hand, the existence of the “higher grade blue collars”, and more broadly the importance given to the function of “supervisor” in the definition of ESeC, lead to wonder whether determining social position thanks to employment relations (which can evolve quickly) does not contradict the requirement for stability of social position. On the other hand, one should pay attention to the

frequent moves, at an individual level, between the status of “supervisor” and the one of “not-supervisor” which could be related to the fact that the place of these functions in the social structure is itself moving.

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Is prototype ESeC easily understood by the general public ?

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As the future socio-economic classification is destined to play a major role in the European social debate, special care must be taken to ensure its legibility so that it can be widely disseminated. In this respect, the ESeC prototype (hereafter: ESeC) has a distinctive feature that deserves study: its classes are designated by two sets of terms. The first is a set of "common-terms" for the general public (hereafter: the common-terms version), the second set constitutes an "analytic version" for specialists.

The "analytic" titles are longer and more detailed than the "common-terms", and some refer directly to the "employment relations" theory (see box). For instance, "routine occupations" emphasises the repetitiveness of low-skilled blue- and white-collar occupations. Unexpectedly—given ESeC's conceptual base—the "common-terms" make ample reference to skills, as illustrated by designations such as "semi- and non-skilled workers" and "higher or lower grade workers". The analytic version is more abstract and focuses on "occupations", while the common-terms version designates people engaged in certain types of occupations. For example, the "skilled workers" and the "lower grade white collar workers"18 in the ESeC common-terms version are the equivalents of the analytic version's "lower technical occupations" and "lower services, sales and clerical occupations" respectively.

We therefore felt the need to compare the legibility of the two variants of the ESeC draft for one category of potential users of statistics: the respondents to a household survey. In November 2007, we accordingly conducted a survey of 4,000 persons in six French regions. We asked one-half of the sample to classify their present or past occupations in the ESeC analytic version, and the other half to do so in the common-terms version (question E1). We then asked both groups to classify their occupations in a nine-category variant of the French classification of occupations and socio-occupational categories (Professions et Catégories Socio-Professionnelles: PCS), which we chose as the reference against which to compare ESeC (question E2). The test did not seek to legitimise the use of self-classification, as a detailed occupational coding is, of course, the most accurate and objectivatable method of assigning social categories to respondents.

Our study comprises two parts. First, we compare the two ESeC versions with a view to assessing which is more legible. We analyse the discrepancies between the classes selected by respondents themselves and those assigned by the statistical institute—discrepancies that we use as an index of low intelligibility of the class defined by the statistical institute. In the second part, we compare the intelligibility of ESeC with that of the French PCS. The first exercise is relatively simple, since it consists in measuring the effect of class names on respondents' answers. The second exercise is more complex, for the differences between PCS and ESeC concern not only the category names but also the boundaries defined for social groups. We shall assume that the propensity to classify one's occupation in the right category mainly depends on how the category is defined and designated. Naturally, the classification of an occupation in a list is a more complicated operation, but the format of the present contribution to the INSEE report to Eurostat did not enable us to explore other avenues.

To make our text and tables easier to understand, we have adopted the following convention. When we refer to the socio-occupational groups of the French PCS in which respondents classify themselves (answer to question E2), we use the term "self-chosen social group". We give the name of the social group, followed by the corresponding number, for example: "Farmers" [PCS 01]. "Coding-based social group" denotes the occupational code obtained by manual or automatic coding of the occupational title, enhanced with responses collected from the individual census schedule (employment status, occupational position, activity and size of employer organisation, function). Symmetrically, when we refer to the ESeC class chosen by the respondent (answer to question E1), we use the term "self-chosen ESeC class". We give the class name followed by its number, for example: "Small employer and self employed occupations (exc agriculture etc.)" [ESeC 5]. By contrast, when we refer to the class obtained from a conversion table from the employment status and ISCO (1988 version), in keeping with the derivation matrix prepared by D. Rose and E. Harrison, we specify that this is the "coding-based ESeC class". Lastly, we use the term "social category" to designate both ESeC classes and PCS social groups.

Box : Translating ESeC class names into French: a delicate but highly instructive operation

To assess the legibility of the "analytic" and "common-terms" variants of ESeC, we had to translate the class names into French. We tried to choose names that are credible for a statistical institute and as close as possible to the English terms. We opted for a literal transposition of the "analytic" terms and a judicious translation of the "common-terms" for the general public. Thus, rather than translate the "common-terms" literally, we have used standard terms, some even borrowed directly from the French classification (ouvrier, employé, cadre, contremaître, etc.). Applying this principle, class 6, "lower supervisory and lower technician occupations", becomes "contremaîtres, agents de maîtrise, chefs d'équipe", which seemed to us to reflect the content of the class more precisely than ouvriers très qualifiés, which would have been the literal translation of "higher grade blue collar workers". We had to overcome three difficulties. The first was the lack of a French equivalent of the English term "salariat", which originates in a very old distinction in the United Kingdom between salary-earners, i.e., workers receiving fixed compensation (salary), and wage-earners, i.e., employees paid on a piece-work basis (wages). This distinction is echoed in the modern separation between the "service class" (whose compensation is trust-based) and workers employed under a "labour contract". Given this difficulty, we translated "higher salariat" as cadre supérieur et dirigeant and "lower salariat" as cadre moyen. The second problem was the lack of a direct equivalent of the term "workers", which, depending on the context, can be rendered by travailleurs or ouvriers et employés. We preferred to translate "worker" by ouvrier, because we wanted to assess the extent to which service workers and female cleaners in ESeC class 9 identified themselves with non-skilled blue-collar workers—bearing in mind that in France they are classified with personal-service workers. The third difficulty was that, in our view, the term "Petit bourgeoisie" is outmoded and its political connotations too strong to allow a literal translation. We restricted the translation of "Petit bourgeoisie or independents" to the term indépendant. In French, the expressions artisans, commerçants on the one hand, and exploitants agricoles on the other, would have been more advisable, but ESeC designers did not choose them despite the existence of the respective English equivalents "craft workers and retailers" and "farmers" (or "farm owners").

Table A : ESeC prototype in English and French

ESeC prototype classes: English designations

"Analytic" version : long titles
"Common-terms" version : short titles

ESeC 1
Large employers, higher grade professional, administrative & managerial occupations
Higher salariat

ESeC 2
Lower grade professional, administrative and managerial occupations and higher grade technician and supervisory occupations
Lower salariat

ESeC 3
Intermediate occupations
Higher grade white collar workers

ESeC 4
Small employer and self employed occupations (exc agriculture etc.)
Petit bourgeoisie or independents

ESeC 5
Self employed occupations (agriculture etc.)
Petit bourgeoisie or independents

ESeC 6
Lower supervisory and lower technician occupations
Higher grade blue collar workers

ESeC 7
Lower services, sales & clerical occupations
Lower grade white collar workers

ESeC 8
Lower technical occupations
Skilled workers

ESeC 9
Routine occupations
Semi- and non-skilled workers

ESeC prototype classes : French translations

"Analytic" version : long titles
"common-terms" version : short titles

ESeC 1
Chefs de grandes et moyennes entreprises, cadres et professions libérales de niveau supérieur
Cadres supérieurs et dirigeants

ESeC 2
Cadres et professions libérales de niveau inférieur, superviseurs et techniciens de niveau supérieur
Cadres moyens

ESeC 3
Professions intermédiaires
Employés de niveau supérieur

ESeC 4
Indépendants et chefs de petites entreprises (hors agriculture)
Petits indépendants (hors agriculture)

ESeC 5
Indépendants et chefs de petites entreprises (en agriculture)
Petits indépendants (en agriculture)

ESeC 6
Superviseurs et techniciens de niveau inférieur
Contremaîtres, agents de maîtrise, chefs d'équipe

ESeC 7
Professions de niveau inférieur dans le commerce et les services
Employés de niveau inférieur

ESeC 8
Professions de niveau inférieur dans le domaine technique
Ouvriers qualifiés

ESeC 9
Professions routinières
Ouvriers semi et non qualifiés

The "common-terms" version of ESeC is more intelligible than the analytic version…

In the absolute, there are two possible causes for the discrepancies between respondents' self-descriptions and the coding process: (1) respondents do not assess their social positions in the same way as the classification does, or (2) the class has a low statistical describability because of the lack of stability and precision in the coding process. For instance, as Alain Chenu has shown, farmers and blue-collar workers are highly describable: a given farmer or blue-collar worker is very likely to be classified in the same category, regardless of the source used. By contrast, lower-grade white-collar workers (*employés*) and intermediate occupations have low describability. As a result, depending on the coding context, secretaries are not always classified as lower-grade white-collar workers, or primary-school teachers as members of the intermediate occupations.

In the test reported here, coding variability is identical for both classifications, since the ESeC "common-terms" and analytic versions differ only in the class names submitted to respondents. We used the same procedures to code both respondent samples: the same interviewers, the same PCS to-ISCO and ISCO to-ESeC conversion tables, and the same coding operators to manually reprocess the category titles. In such conditions, we can

effectively measure the specific impact of class designations by the greater or lesser divergence between self-chosen (subjective) class and statistically assigned class.

Many respondents seemed disoriented when asked to place their current or past occupation in the “analytic version” of EseC (see annex 2): 18 % said they were incapable of doing so, versus only 8 % in the “common-terms” version. While the number of positioning “errors” was slightly higher in the “common-terms” version, overall, “all other things being equal”, the number of respondents who classified themselves correctly in the “common-terms” version was 1.3 times the number who did so in the analytic version. Despite their greater precision, the “analytic” titles are therefore less intelligible than the “common terms”.

…particularly for skilled blue-collar workers

Over one-half of “skilled blue-collar workers” (*ouvriers qualifiés*) classified themselves adequately in class 8 of the ESeC common-terms version, versus fewer than one in five in the analytic version, the title of class 8—“Lower technical occupations”—being particularly abstruse. In fact, more than one-third of skilled blue-collar workers did not even try to classify their occupations in the analytic version; the rest fell back on related categories: 15 % identified themselves with “routine occupations” [ESeC 9], 11 % with “lower services, sales & clerical occupations” [ESeC 7], 9 % with “intermediate occupations” [ESeC 3] and 8 % with “lower supervisory and lower technician occupations” [ESeC 6].

Although the divergences between the two ESeC versions for the other population categories are not as sharp, they are significant. Executives, managers, professionals, supervisors and, to a lesser extent, office workers located themselves more easily in the common-terms version. Accordingly, the designation “higher salariat” (*cadres supérieurs et dirigeants*) [ESeC 1] is more relevant than “large employers, higher grade professional, administrative & managerial occupations”, and “lower salariat” (*cadres moyens*) [ESeC 2] is more easily perceived than “lower grade professional, administrative and managerial occupations and higher grade technician and supervisory occupations”. Likewise, “higher grade blue collar workers” (*contremaîtres, agents de maîtrise, chefs d’équipe*) [ESeC 6] is far better understood than its analytic equivalent “lower supervisory and lower technician occupations”. Lastly, the notion of “intermediate occupations” did not prove popular among office workers, who preferred the title “higher grade white collar workers”.

By contrast, craft workers, retailers, sales and service workers, as well as very low-skilled blue- and white-collar workers, were more receptive to the titles in the ESeC analytic version” “Small employer and self employed occupations (exc agriculture etc.)” [ESeC 4] was better perceived than “petit bourgeoisie or independents” (*petits indépendants*), and “lower services, sales & clerical occupations” better than “lower grade white collar workers” (*employés de niveau inférieur*) [ESeC 7]. With regard to the lowest-skilled white-collar workers, the term “routine

occupations" (*professions routinières*), while not widely used, proved to be more appropriate than "semi- and non-skilled workers" (*ouvriers semi et non qualifiés*) [ESeC 9].

The two ESeC versions also share some common features. Farmers [ESeC 5] consistently identify themselves very well with their class, whichever title is suggested to them: "self employed occupations (agriculture etc.)" or "petit bourgeoisie or independents [in agriculture]".

The less relevant a class designation, the more respondents tend to fall back on adjacent classes. As this transfer is not symmetrical, the composition of the self-chosen classes may turn out to be relatively distant from the expected composition. This phenomenon is particularly visible with the ESeC analytic version. For instance, if we take respondents' self-descriptions, "lower technical occupations" [ESeC 8] contains three times as many non-skilled blue- and white-collar workers [ESeC 9] than employees "officially" belonging to class 8. Among respondents who declared themselves members of intermediate occupations [ESeC 3], we find twice as many coding-based members of class 2 than actual members of class 3. The likely reason is that the French PCS, as well, contains an "intermediate occupations" category comprising technicians, healthcare workers, and primary-school teachers—all of which are occupations that ESeC categorises in class 2. Likewise, among respondents who classify themselves in "lower supervisory and lower technician occupations" [ESeC 6], we find more coding-based members of ESeC class 2 than actual members of class 6. Here as well, many respondents from ESeC class 2 were attracted to the "technician" title despite its being qualified as "lower".

The observed discrepancies in the common-terms version are similar but smaller, as the gaps between self-chosen class and coding-based class are narrower. But we find another type of distortion: the persons self-described as "lower grade white collar workers" [ESeC 7] actually comprise more "higher grade white collar workers" [ESeC 3] than coding-based members of ESeC 7.

Respondents position themselves more accurately in the French PCS…

As the official version of the French PCS classification comprises only six socio-occupational groups at its most aggregated level, we split three of its groups in two in order to obtain nine categories as in ESeC. First, we divided group 3, *cadres et professions intellectuelles supérieures* (managers and higher-grade intellectual occupations) into *directeurs généraux, cadres dirigeants* (chief executives, senior managers) and *autres cadres et professions intellectuelles supérieures* (other managers and professionals and higher-grade intellectual occupations). The first sub-group attracts growing interest, notably among social partners; we created it for this test, even though it does not exist as such in the official classification. We then split *ouvriers* (blue-collar workers) and *employés* (lower-grade white-collar workers) into skills-based sub-groups. We divided blue-collar workers into two groups using the criteria in PCS, whose second level already separates skilled from non-skilled blue-collar workers. As the "skilled lower-grade white-collar workers" and "non-skilled lower-grade white-collar workers" do not exist in PCS, we borrowed the definitions provided by Olivier Chardon.

Table A: French PCS classification in French and English

Social groups in PCS (French national classification - 9-category variant)

	French title	**English translation**
PCS 10	*Agriculteurs exploitants*	Farmers
PCS 20	*Artisans, commerçants, chefs d'entreprise*	Craft workers, retailers, and business owners
PCS 31	*Directeurs généraux, cadres dirigeants*	Chief executives, senior managers
PCS 32	*Autres cadres et professions intellectuelles supérieures*	Other managers and professionals and higher-grade intellectual occupations
PCS 40	*Professions intermédiaires*	Intermediate occupations
PCS 51	*Employés qualifiés*	Skilled lower-grade white-collar workers
PCS 61	*Ouvriers qualifiés*	Skilled blue-collar workers
PCS 52	*Employés non qualifiés ou semi-qualifiés*	Non-skilled or semi-skilled lower-grade white-collar workers
PCS 62	*Ouvriers non qualifiés ou semi-qualifiés*	Non-skilled or semi-skilled lower-grade blue-collar workers

Unsurprisingly, respondents find it easier to recognise themselves in the French PCS: 46 % classified their occupations correctly in the national system, versus 38 % on average for all ESeC titles combined (see annex 3). Only 4 % said they were unable to classify their occupations in PCS, compared with an average 8 % in the common-terms version of ESeC and 17 % in the analytic version.

To minimise the "designations" effect, we subsequently restrict our examination to the respondents whom we asked to classify themselves in the ESeC common-terms version, then in PCS. Using a multinomial regression, we study the cases in which the respondent's self-description matches the official PCS classification but not the ESeC coding, and vice versa.

… especially if they are office workers or skilled blue-collar workers

"Clerks" [ISCO 4], skilled blue-collar workers [ISCO 8], and, to a lesser extent, "legislators, senior[19] officials and managers" [ISCO 1] are over-represented among persons whose self-identification in the ESeC common-terms version diverges from their coding-based classification but is identical in the French PCS.

Many "clerks" [ISCO 4] recognised themselves in the PCS "skilled lower-grade white-collar workers" (*employés qualifiés*) category. But a far smaller proportion classified themselves as "higher grade white collar workers" [ESeC 3]. Fifty-seven percent of the members of the "skilled lower-grade white-collar workers" social group [PCS 51] recognised themselves in the French classification, while only 27 % of "higher grade white collar workers" found their correct position in ESeC, with 37 % regarding themselves as "lower-grade white-collar

workers" [ESeC 7]. In France, the notion that occupations can be "lower" or "higher" than others is unpopular. Indeed, the adjective "lower" (*inférieur*) is never used in the French socio-occupational classification.

The case of skilled blue-collar workers is more complex, for the PCS approach to skills differs from that of ISCO—and hence ESeC. In the French classification, a given manual (blue-collar) occupation can be performed at two skill levels. Accordingly, PCS treats "skilled fitter" and "non-skilled fitter" as two different occupations. In ISCO, by contrast, a given occupation must correspond to a single minor group. A blue-collar worker holding a non-skilled job under the criteria of French collective agreements (between employers and employees in an industry) and of the French classification may well be classified in the "craft and related trades workers" major group [ISCO 7], then, after derivation, in the "skilled workers" class [ESeC 8]. But a non-skilled fitter under French collective agreements also ends up as a "skilled worker" in ESeC class 8. As a result, we may find a gap between the respondent's self-described skill level and the one defined by ESeC at the end of the coding process. The convergence between respondents' self-descriptions and the social positions assigned to them by the statistical institute is thus necessarily greater when the national classification is applied.

However, we should point out some similarities between the French classification and ESeC. There are very few cases where the self-chosen social category matches the coding-based social category among members of "intermediate occupations" [ISCO 3]: only 24 % in PCS and 32 % in ESeC. Thirty-two percent of persons classified under "intermediate occupations" in PCS selected the "skilled lower-grade white-collar workers" category [PCS 51]. This confusion is caused by the double meaning of *employés* in French: on the one hand, in a broad sense, the term can denote the same category as "employees" in English, i.e., persons working for someone else; on the other hand, in a more restrictive sense and in contrast to blue-collar workers (*ouvriers*), *employés* designates lower-skilled personal service workers or clerical workers, i.e., the equivalent of (lower-grade) white-collar workers in English. Meanwhile, members of ESeC class 2, "lower salariat" (*cadres moyens*), categorised themselves in ESeC classes 1, 3, and 6. The difficulty for members of intermediate occupations in classifying themselves may be compounded by imprecision in the coding of these occupations, whose describability in both PCS and ESeC is weak.

By contrast, the correspondence between self-descriptions and coding-based classifications is very strong for professionals—a category whose high describability we noted earlier. An "all other things being equal" analysis shows that, whatever the classification tested, professionals find it easier than employees to position themselves correctly. The phenomenon is slightly more pronounced when the reference is PCS: 87 % of "farmers" [PCS 10] and 79 % of "craft workers, retailers, and business owners" [PCS 20] recognised themselves in the French classification, along with 83 % of "self employed occupations (agriculture etc.)" [ESeC 5] and 68 % of "small employer and self employed occupations (exc agriculture etc.)" [ESeC 4] in ESeC. However, 9 % of small professionals in crafts and services classified themselves under "higher salariat" [ESeC 1]. Some business owners with 8-9 employees mistakenly identified themselves as "managers" (*dirigeants*), a designation confined—by construction—to business owners with ten or more employees. This risk does not exist in PCS, since all professionals are grouped in the same category, whatever the size of their enterprise.

Annex 1: Self-identification module

The **self-identification module** was collected in six French regions[20] through face-to-face interviews in November 2007. The sample comprised 3,893 persons aged 18+ who were currently in employment or had already been employed, and had filled in a census form a few days earlier. The study was confined to the 3,564 people whose current or past occupations we were able to classify in PCS and ESeC, and who answered at least one of the two questions on self-identification, even by choosing "don't know".

A very large majority of non-respondents to the self-identification module consist of persons who failed to give their occupations. The main reason for the high non-response rate is that the module was linked to a self-administered census test. Non-response was particularly significant among older women, low-skilled blue-collar workers, the economically inactive, and persons with low educational attainment.

Table A: Response rate for self-identification module and reasons for non-response

In %

Respondents	91.6
Non-respondents	9.2
Breakdown:	
- occupation title missing	*7.8*
- occupation could not be coded in an ISCO category	*0.6*
- respondent's employment status missing	*0.2*
- respondent failed to answer questions E1 and E2	*0.7*

Source: self-identification module attached to census test, November 2007, INSEE.

The response rates exhibit the same structure regardless of whether respondents were asked to classify themselves in the analytic or common-terms version of ESeC.

As shown by the comparison with the Continuous Labour Force Survey conducted in metropolitan France, the sample's socio-occupational structure does not display major bias. For instance, the socio-demographic characteristics of unemployed and economically inactive persons are similar in both surveys, and those of persons in employment are very close. The self-identification module slightly under-represents young people aged 18-34—particularly women in employment—but it over-represents men in employment aged 60+ and women aged 34+.

[20] Limousin, Picardie, Provence - Alpes - Côte-d'Azur, Bretagne, Languedoc-Roussillon, and Corsica

By comparison with the Continuous Labour Force Survey, the module over-represents clerical workers and intermediate occupations, and under-represents farmers, skilled agricultural and fishery workers, and craft workers (self-employed and employees). But the gaps observed are not significant.

Occupational coding:

We coded respondents in ESeC classes by means of a three-stage process:

- For 86 % of respondents, we were able to code the title of the current (or previous) occupation, supplemented by additional variables, under the French PCS classification at the detailed four-character level. When the occupation title was not specific enough, we coded to three or even just two characters.
- In the second stage, we used PCS and the French classifications of economic activities and products to classify respondents under the three-digit "minor groups" of the International Standard Classification of Occupations, 1988 version (ISCO-88).
- In the final stage, we constructed the nine ESeC classes from ISCO using information provided by the respondent, such as employment status, supervision of one or more persons or no supervision, and—for business owners—the number of employees.

Questionnaire in self-identification module

To compare European countries, statistical institutes propose a classification of occupations into nine groups.

E1: In which group would you classify your occupation? *(Circle the correct answer)*
Show code card Version A, no. 1

A Large employers, higher grade professional, administrative & managerial occupations
(*Chefs de grandes et moyennes entreprises, cadres et professions libérales de niveau supérieur*)

B Lower grade professional, administrative and managerial occupations and higher grade technician and supervisory occupations
(*Cadres et professions libérales de niveau inférieur, superviseurs et techniciens de niveau supérieur*)

C Intermediate occupations (*Professions intermédiaires*)

D Small employer and self employed occupations (exc agriculture etc.)
(*Indépendants et chefs de petites entreprises [hors agriculture]*)

E Self employed occupations (agriculture etc.)
(*Indépendants et chefs de petites entreprises [en agriculture]*)

F Lower supervisory and lower technician occupations
(*Superviseurs et techniciens de niveau inférieur*)

G Lower services, sales & clerical occupations
(*Professions de niveau inférieur dans le commerce et les services*)

H Lower technical occupations
(*Professions de niveau inférieur dans le domaine technique*)

I Routine occupations (*Professions routinières*)

J Don't know (*Ne sait pas*)

To compare European countries, statistical institutes propose a classification of occupations into nine groups.

E1: In which group would you classify your occupation? *(Circle the correct answer)*
Show code card Version B, no. 2

A Higher salariat (*Cadres supérieurs et dirigeants*)
B Lower salariat (*Cadres moyens*)
C Higher grade white collar workers (*Employés de niveau supérieur*)
D Petit bourgeoisie or independents (exc agriculture etc.) (*Petits indépendants [hors agriculture]*)
E Petit bourgeoisie or independents (agriculture etc.) (*Petits indépendants [en agriculture]*)
F Higher grade blue collar workers (*Contremaîtres, agents de maîtrise, chefs d'équipe*)
G Lower grade white collar workers (*Employés de niveau inférieur*)
H Skilled workers (*Ouvriers qualifiés*)
I Semi- and non-skilled workers (*Ouvriers semi et non qualifiés*)
J Don't know

In France, occupations are usually grouped in a slightly different way.

E2: In which group would you classify your occupation? *(Circle the correct answer)*
Show code card Version A, no. 2

A Farmers (*Agriculteurs exploitants*)
B Craft workers, retailers, and business owners (*Artisans, commerçants, chefs d'entreprise*)
C Chief executives, senior managers (*Directeurs généraux, cadres dirigeants*)
D Other managers and professionals and higher-grade intellectual occupations (*Autres cadres and professions intellectuelles supérieures*)
E Intermediate occupations (*Professions intermédiaires*)
F Skilled lower-grade white-collar workers (*Employés qualifiés*)
G Skilled blue-collar workers (*Ouvriers qualifiés*)
H Non-skilled or semi-skilled lower-grade white-collar workers (*Employés non qualifiés or semi qualifiés*)
I Non-skilled or semi-skilled lower-grade blue-collar workers (*Ouvriers non qualifiés or semi qualifiés*)
J Don't know

Annex 2 :
Comparison of respondents' self-description in ESeC common-terms and analytic versions

Table 1 : In which category of the ESeC analytic version did respondents classify their occupations?

ESeC class chosen by respondent in analytic version	Coding-based ESeC class									Total
	ESeC 1	ESeC 2	ESeC 3	ESeC 4	ESeC 5	ESeC 6	ESeC 7	ESeC 8	ESeC 9	
ESeC 1	24	7		3		5	1		0.4	5
ESeC 2	37	26	8	3		10	2		1	12
ESeC 3	7	30	22	4		15	12	9	8	16
ESeC 4	10	4	2	74	3	6	1	1	1	8
ESeC 5	1	0.3		2	75	1		1	0.4	3
ESeC 6	5	12	10			17	1	8	3	7
ESeC 7	3	5	23	6	3	12	40	11	21	14
ESeC 8	1	3	5		1	7	6	18	16	6
ESeC 9	1	1	7	2	4	9	16	15	29	9
No response	12	13	22	7	13	18	22	36	21	18
All classes	100	100	100	100	100	100	100	100	100	100

Interpretation: 7 % of members of ESeC class 2 identify themselves as higher-grade professionals.
Scope of coverage: persons in employment or having worked previously, aged 18+.
Source: self-identification module attached to census test, November 2007, INSEE.

Table 2: In which category of the ESeC common-terms version did respondents classify their occupations?

ESeC class chosen by respondent in common-terms version	Coding-based ESeC class									Total
	ESeC 1	ESeC 2	ESeC 3	ESeC 4	ESeC 5	ESeC 6	ESeC 7	ESeC 8	ESeC 9	
ESeC 1	32	12	0.4	11		0.6				7
ESeC 2	29	38	12	5	4	14	2		2	15
ESeC 3	11	18	27	6	2	14	17	5	6	14
ESeC 4	13	3	1	68	6	1	2	2	1	7
ESeC 5		0.2		3	83	1				3
ESeC 6	4	9	8			27	2	3	0.3	7
ESeC 7	2	6	33	2	2	7	34	6	21	15
ESeC 8	4	7	7	3		28	21	55	34	18
ESeC 9	1	1	2			1	5	23	26	7
No response	3	6	10	2	4	6	17	7	10	8
All classes	100	100	100	100	100	100	100	100	100	100

Interpretation: 12 % of members of ESeC class 2 identify themselves as higher-grade professionals
Scope of coverage: persons in employment or having worked previously, aged 18+.
Source: self-identification module attached to census test, November 2007, INSEE.

Table 3: Match between self-chosen and coding-based classes: results of logistic regressions for the two ESeC versions

	Respondent's choice matches coding for *ESeC common-terms version*			Respondent's choice matches coding for *ESeC analytic version*		
Effect	Esti-mated odds ratio	95 % confidence interval	Significance	Esti-mated odds ratio	95 % confidence interval	Significance
Intercept			****			****
ESeC 1 Large employers higher grade professional, administrative & managerial occupations	0.78	[0.5; 1.1]	ns	0.92	[0.6; 1.4]	ns
ESeC 2 Lower grade professional, administrative and managerial occupations and higher grade technician and supervisory occupations						
ESeC 3 Intermediate occupations	0.60	[0.4; 0.9]	***	0.83	[0.6; 1.2]	ns
ESeC 4 Small employer and self employed occupations (exc agriculture etc.)	3.55	[2.3; 5.6]	****	7.99	[5; 12.7]	****
ESeC 5 Self employed occupations (agriculture etc.)	7.91	[3.8; 16.7]	****	8.45	[4.7; 15.3]	****
ESeC 6 Lower supervisory and lower technician occupations	0.61	[0.4; 0.9]	**	0.60	[0.4; 0.9]	**
ESeC 7 Lower services, sales & clerical occupations	0.87	[0.6; 1.2]	ns	1.94	[1.3; 2.9]	****
ESeC 8 Lower technical occupations	2.02	[1.4; 3]	****	0.65	[0.4; 1.2]	ns
ESeC 9 Routine occupations	0.57	[0.4; 0.8]	****	1.15	[0.8; 1.6]	ns

Scope of coverage: persons in employment or having worked previously, aged 18+.
Source: self-identification module attached to census test, November 2007, INSEE.

Reference choices are highlighted in grey
If probability > 10 % → choice not significant (ns)
If 5 % < probability < 10 % → choice significant *
If 1 % < probability < 5 % → choice significant **
If 0.1 % < probability < 1 % → choice significant ***
If probability < 0.1 % → choice significant ****

Table 4: Match between self-chosen and coding-based classes: results of detailed logistic regressions for the two ESeC versions

Effect	Respondent's choice matches coding for *ESeC common-terms version*			Respondent's choice matches coding for *ESeC analytic version*		
	Esti-mated odds ratio	95 % confidence interval	Significance	Esti-mated odds ratio	95 % confidence interval	Significance
Intercept			****			****
Version A - analytic version	0.89	[0.7; 1.1]	ns	0.86	[0.7; 1.1]	ns
Version B - common-terms version						
Supervises						
Does not supervise	0.86	[0.7; 1.1]	ns	1.11	[0.9; 1.4]	ns
Female	0.80	[0.6; 1.1]	ns	0.74	[0.5; 1]	*
Male						
Age 18-34	0.99	[0.7; 1.4]	ns	1.09	[0.8; 1.5]	ns
Age 35-49	1.04	[0.7; 1.6]	ns	0.82	[0.5; 1.3]	ns
Age 50-59						
Age 60+	0.90	[0.5; 1.5]	ns	0.60	[0.4; 1]	*
French nationality	0.46	[0.2; 0.9]	**	0.44	[0.2; 1]	**
French nationality by acquisition	0.83	[0.5; 1.2]	ns	0.98	[0.6; 1.5]	ns
Foreign nationality						
ISCED 0 and 1: Primary education	1.27	[0.9; 1.8]	ns	0.93	[0.6; 1.3]	ns
ISCED 2 and 3: Secondary education (*collège*, *lycée professionnel*, CAP and BEP vocational certificates)	1.55	[1.1; 2.2]	**	1.28	[0.9; 1.9]	ns
ISCED 4: Post-secondary education (non-tertiary) (*lycée*, *baccalauréat*)	1.30	[0.8; 2]	ns	1.70	[1.1; 2.7]	**
ISCED 5: First stage of tertiary education	0.96	[0.7; 1.3]	ns	0.88	[0.6; 1.3]	ns
ISCED 6: Second stage of tertiary education	1.80	[1.1; 2.8]	**	2.11	[1.3; 3.4]	***
No response to education question	1.89	[1.3; 2.9]	***	1.29	[0.8; 2]	ns
ISCO 1 Legislators, senior officials and managers						
ISCO 2 Professionals	0.68	[0.5; 1]	*	1.46	[1; 2.2]	*
ISCO 3 Intermediate occupations	1.04	[0.7; 1.5]	ns	1.76	[1.1; 2.7]	***
ISCO 4 Clerks	4.09	[2.3; 7.2]	****	2.80	[1.6; 5]	****
ISCO 5 Service workers and shop and market sales workers + ISCO 0 Armed forces occupations	4.06	[2.6; 6.3]	****	1.81	[1.1; 3]	**
ISCO 6 Skilled agricultural and fishery workers	1.03	[0.6; 1.7]	ns	2.28	[1.4; 3.8]	***
ISCO 7 Craft and related trades workers	0.83	[0.5; 1.3]	ns	1.63	[1; 2.7]	**
ISCO 8 Plant and machine operators and assemblers						
ISCO 9 Elementary occupations	1.63	[1.2; 2.3]	***	4.46	[3.1; 6.4]	****
Employees	0.95	[0.3; 2.8]	ns	1.36	[0.6; 2.9]	ns
Self-employed, business owners	0.73	[0.5; 1.1]	ns	1.41	[0.9; 2.2]	ns
Unpaid family workers						
No response to employment-status question	1.10	[0.7; 1.8]	ns	1.17	[0.7; 2]	ns
Economically active, in employment	1.34	[0.9; 2]	ns	1.33	[0.9; 2.1]	ns
Unemployed	1.40	[0.9; 2.1]	ns	0.68	[0.4; 1.1]	ns
Retired	1.04	[0.5; 2.3]	ns	1.21	[0.5; 3]	ns
Other economically inactive			****			****
No response to activity-status question	0.89	[0.7; 1.1]	ns	0.86	[0.7; 1.1]	ns

Scope of coverage: persons in employment or having worked previously, aged 18+.
Source: self-identification module attached to census test, November 2007, INSEE.

Reference choices are highlighted in grey
If probability > 10 % → choice not significant (ns)
If 5 % < probability < 10 % → choice significant *
If 1 % < probability < 5 % → choice significant **
If 0.1 % < probability < 1 % → choice significant ***
If probability < 0.1 % → choice significant ****

Table 5: Match, by occupation, between self-chosen and coding-based ESeC classes

		ESeC analytic version	ESeC common-terms version
Total	Non-response	17	8
	Mismatch	52	55
	Match	31	37
ISCO 1	Non-response	7	1
	Mismatch	44	51
	Match	50	49
ISCO 2	Non-response	12	6
	Mismatch	56	45
	Match	32	49
ISCO 3	Non-response	11	7
	Mismatch	67	61
	Match	22	32
ISCO 4	Non-response	23	10
	Mismatch	53	67
	Match	24	23
ISCO 5 ISCO 0	Non-response	21	15
	Mismatch	51	56
	Match	29	29
ISCO 6	Non-response	20	6
	Mismatch	26	31
	Match	54	63
ISCO 7	Non-response	19	4
	Mismatch	46	36
	Match	35	60
ISCO 8	Non-response	17	5
	Mismatch	50	68
	Match	33	27
ISCO 9	Non-response	26	11
	Mismatch	47	65
	Match	27	24

Scope of coverage: persons in employment or having worked previously, aged 18+.
Source: self-identification module attached to census test, November 2007, INSEE.

Annex 3:
Comparison between respondents' self-identification in ESeC and French national classification (PCS)

Table 6: In which PCS social group did respondents classify their occupations?

PCS social group chosen by respondent	Coding-based PCS social group									
	PCS 10	PCS 20	PCS 31	PCS 32	PCS 40	PCS 51	PCS 52	PCS 61	PCS 62	
PCS 10	87	0.4	1					0.3	1	3
PCS 20	1	79	35	2	3	2	4	4	2	9
PCS 31		7	25	19	4	2		1		4
PCS 32		2	30	66	23	5	1	1	0.3	14
PCS 40	2	2	7	8	24	10	4	3	2	10
PCS 51	2	4		3	32	57	38	25	10	29
PCS 52	2	1		0.3	2	12	29	7	12	9
PCS 61		2		1	5	6	10	48	36	13
PCS 62	3	0.4		0.3	0.1	1	8	10	33	6
No response	4	2	2	2	5	5	6	2	3	4
All classes	100	100	100	100	100	100	100	100	100	100

Scope of coverage: persons in employment or having worked previously, aged 18+.
Source: self-identification module attached to census test, November 2007, INSEE.

Table 7: Match between self-chosen and coding-based social categories: result of logistic regression

	Respondent's self-description matches PCS coding		
Effect	Esti-mated odds ratio	95 % confidence interval	Significance
Intercept			****
Version A - analytic version			
Version B - common-terms version	0.95	[0.8; 1.1]	ns
PCS 10 Farmers	21.54	[12; 38.5]	****
PCS 20 Craft workers, retailers, and business owners	12.20	[8.7; 17.1]	****
PCS 31 Chief executives, senior managers	1.05	[0.6; 1.7]	ns
PCS 32 Other managers and professionals and higher-grade intellectual occupations	5.97	[4.5; 7.9]	****
PCS 40 Intermediate occupations			
PCS 51 Skilled lower-grade white-collar workers	4.00	[3.2; 5]	****
PCS 52 Non-skilled or semi-skilled lower-grade white-collar workers	1.30	[1; 1.7]	**
PCS 61 Skilled blue-collar workers	2.86	[2.2; 3.7]	****
PCS 62 Non-skilled or semi-skilled lower-grade blue-collar workers	1.59	[1.2; 2.1]	***

Scope of coverage: persons in employment or having worked previously, aged 18+.
Source: self-identification module attached to census test, November 2007, INSEE.

Table 8: Match between self-chosen and coding-based social categories: result of detailed logistic regression

	Respondent's self-description matches PCS coding		
Effect	Esti-mated odds ratio	95 % confidence interval	Significance
Intercept			****
Version A - analytic version			
Version B - common-terms version	0.95	[0.8; 1.1]	ns
Supervises	0.93	[0.8; 1.1]	ns
Does not supervise			
Female			
Male	0.77	[0.7; 0.9]	***
Age 18-34	0.84	[0.7; 1]	ns
Age 35-49			
Age 50-59	1.02	[0.8; 1.3]	ns
Age 60+	0.71	[0.5; 1]	**
French nationality			
French nationality by acquisition	1.04	[0.7; 1.5]	ns
Foreign nationality	1.10	[0.7; 1.7]	ns
ISCED 0 and 1: Primary education	0.71	[0.5; 0.9]	**
ISCED 2 and 3: Secondary education (*collège*, *lycée professionnel*, CAP and BEP vocational certificates)			
ISCED 4: Post-secondary education (non-tertiary) (*lycée*, *baccalauréat*)	1.10	[0.9; 1.4]	ns
ISCED 5: First stage of tertiary education	1.26	[1; 1.6]	*
ISCED 6: Second stage of tertiary education	1.19	[0.9; 1.6]	ns
No response to education question	0.98	[0.8; 1.2]	ns
ISCO 1 Legislators, senior officials and managers	6.50	[4.6; 9.1]	****
ISCO 2 Professionals	2.38	[1.8; 3.2]	****
ISCO 3 Intermediate occupations			
ISCO 4 Clerks	3.85	[2.9; 5]	****
ISCO 5 Service workers and shop and market sales workers + ISCO 0 Armed forces occupations	2.27	[1.7; 3]	****
ISCO 6 Skilled agricultural and fishery workers	9.98	[6.5; 15.3]	****
ISCO 7 Craft and related trades workers	4.31	[3.1; 5.9]	****
ISCO 8 Plant and machine operators and assemblers	2.53	[1.8; 3.5]	****
ISCO 9 Elementary occupations	1.42	[1; 2]	**
Employees			
Self-employed, business owners	1.67	[1.3; 2.1]	****
Unpaid family workers	1.19	[0.6; 2.2]	ns
No response to employment-status question	0.87	[0.6; 1.2]	ns
Economically active, in employment			
Unemployed	1.07	[0.8; 1.5]	ns
Retired	1.32	[1; 1.8]	*
Other economically inactive	1.03	[0.8; 1.4]	ns
No response to activity-status question	1.03	[0.6; 1.8]	ns

Scope of coverage: persons in employment or having worked previously, aged 18+.
Source: self-identification module attached to census test, November 2007, INSEE.

Table 9: Match between self-chosen and coding-based ESeC classes, by ISCO occupation (major group)

		ESeC: all titles combined	ESeC common-terms version	9-category PCS
ISCO 1	Non-response	4	1	1
	Mismatch	47	51	30
	Match	49	49	69
ISCO 2	Don't know	9	6	4
	Mismatch	50	45	51
	Match	41	49	45
ISCO 3	Non-response	9	7	4
	Mismatch	64	61	71
	Match	27	32	24
ISCO 4	Non-response	17	10	4
	Mismatch	60	67	42
	Match	23	23	54
ISCO 5 and ISCO 0	Non-response	18	15	5
	Mismatch	54	56	55
	Match	29	29	40
ISCO 6	Non-response	14	6	2
	Mismatch	28	31	23
	Match	58	63	75
ISCO 7	Non-response	11	4	3
	Mismatch	41	36	44
	Match	48	60	54
ISCO 8	Non-response	10	5	3
	Mismatch	59	68	59
	Match	30	27	38
ISCO 9	Non-response	18	11	6
	Mismatch	57	65	65
	Match	25	24	29

Scope of coverage: persons in employment or having worked previously, aged 18+.
Source: self-identification module attached to census test, November 2007, INSEE.

Table 10: Breakdown by occupation and position in PCS and ESeC common-terms version

	Match ESeC common-terms version Match PCS	Mismatch ESeC common-terms version Match PCS	Match ESeC common-terms version Mismatch PCS	Mismatch ESeC common-terms version Mismatch PCS	Total
ISCO 1	14.3	10.0	4.5	4.0	7.6
ISCO 2	12.7	10.5	20.5	9.4	12.1
ISCO 3	7.2	10.3	25.3	23.5	17.5
ISCO 4	10.7	22.1	4.9	12.8	13.2
ISCO 5 and ISCO 0	10.2	18.2	14.9	16.6	15.4
ISCO 6	12.4	4.3	3.1	2.1	4.8
ISCO 7	18.7	7.8	13.9	5.8	10.2
ISCO 8	8.3	8.0	4.2	11.0	8.7
ISCO 9	5.5	8.8	8.7	14.8	10.5
	100	100	100	100	100
Total	20.4	22.5	16.2	40.8	100

Scope of coverage: persons in employment or having worked previously, aged 18+.
Source: self-identification module attached to census test, November 2007, INSEE.

Table 11: Positioning in PCS and ESeC common-terms version: results of multinomial regression

Determinant	Factor to be explained	Estimated coefficient	Pr > ChiSq
Intercept	Match in PCS and in ESeC	-2.03	<.0001
	Match in PCS and mismatch in ESeC	-1.68	<.0001
	Mismatch in PCS and match in ESeC	-1.36	<.0001
	Mismatch in PCS and in ESeC		
Supervises	Match in PCS and in ESeC	-0.08	0.6164
	Match in PCS and mismatch in ESeC	0.39	0.0052
	Mismatch in PCS and match in ESeC	0.16	0.3092
	Mismatch in PCS and in ESeC		
Does not supervise			
Female			
Male	Match in PCS and in ESeC	-0.40	0.0124
	Match in PCS and mismatch in ESeC	-0.11	0.4712
	Mismatch in PCS and match in ESeC	0.02	0.8959
	Mismatch in PCS and in ESeC		
Age 18-34	Match in PCS and in ESeC	-0.32	0.123
	Match in PCS and mismatch in ESeC	-0.45	0.0159
	Mismatch in PCS and match in ESeC	-0.48	0.0291
	Mismatch in PCS and in ESeC		
Age 35-49			
Age 50-59	Match in PCS and in ESeC	-0.03	0.8871
	Match in PCS and mismatch in ESeC	-0.03	0.8914
	Mismatch in PCS and match in ESeC	0.05	0.8402
	Mismatch in PCS and in ESeC		
Age 60+	Match in PCS and in ESeC	-0.25	0.4213
	Match in PCS and mismatch in ESeC	-0.09	0.7405
	Mismatch in PCS and match in ESeC	0.27	0.3824
	Mismatch in PCS and in ESeC		
ISCED 0 and 1: Primary education	Match in PCS and in ESeC	-0.58	0.0402
	Match in PCS and mismatch in ESeC	-0.35	0.1751
	Mismatch in PCS and match in ESeC	0.03	0.9209
	Mismatch in PCS and in ESeC		
ISCED 2 and 3: Secondary education (*collège*, *lycée professionnel*, CAP and BEP vocational certificates)			
ISCED 4: Post-secondary education (non-tertiary) (*lycée*, *baccalauréat*)	Match in PCS and in ESeC	0.29	0.181
	Match in PCS and mismatch in ESeC	0.33	0.0912
	Mismatch in PCS and match in ESeC	0.44	0.0567
	Mismatch in PCS and in ESeC		
ISCED 5: First stage of tertiary education	Match in PCS and in ESeC	0.55	0.0313
	Match in PCS and mismatch in ESeC	0.41	0.074
	Mismatch in PCS and match in ESeC	0.77	0.0022
	Mismatch in PCS and in ESeC		
ISCED 6: Second stage of tertiary education	Match in PCS and in ESeC	0.51	0.0975
	Match in PCS and mismatch in ESeC	0.46	0.1131
	Mismatch in PCS and match in ESeC	0.49	0.1092
	Mismatch in PCS and in ESeC		

ISCO 1 Legislators, senior officials and managers	Match in PCS and in ESeC	2.22	<.0001
	Match in PCS and mismatch in ESeC	1.85	<.0001
	Mismatch in PCS and match in ESeC	0.24	0.5404
	Mismatch in PCS and in ESeC		
ISCO 2 Professionals	Match in PCS and in ESeC	1.29	<.0001
	Match in PCS and mismatch in ESeC	0.80	0.0063
	Mismatch in PCS and match in ESeC	0.63	0.016
	Mismatch in PCS and in ESeC		
ISCO 3 Intermediate occupations			
ISCO 4 Clerks	Match in PCS and in ESeC	1.21	<.0001
	Match in PCS and mismatch in ESeC	1.56	<.0001
	Mismatch in PCS and match in ESeC	-0.88	0.0078
	Mismatch in PCS and in ESeC		
ISCO 5 Service workers and shop and market sales workers + ISCO 0 Armed forces occupations	Match in PCS and in ESeC	0.95	0.0017
	Match in PCS and mismatch in ESeC	1.21	<.0001
	Mismatch in PCS and match in ESeC	0.16	0.5211
	Mismatch in PCS and in ESeC		
ISCO 6 Skilled agricultural and fishery workers	Match in PCS and in ESeC	3.21	<.0001
	Match in PCS and mismatch in ESeC	2.11	<.0001
	Mismatch in PCS and match in ESeC	1.00	0.0386
	Mismatch in PCS and in ESeC		
ISCO 7 Craft and related trades workers	Match in PCS and in ESeC	2.80	<.0001
	Match in PCS and mismatch in ESeC	1.48	<.0001
	Mismatch in PCS and match in ESeC	1.28	<.0001
	Mismatch in PCS and in ESeC		
ISCO 8 Plant and machine operators and assemblers	Match in PCS and in ESeC	1.48	<.0001
	Match in PCS and mismatch in ESeC	0.85	0.0046
	Mismatch in PCS and match in ESeC	-0.78	0.0332
	Mismatch in PCS and in ESeC		
ISCO 9 Elementary occupations	Match in PCS and in ESeC	0.57	0.1041
	Match in PCS and mismatch in ESeC	0.66	0.0212
	Mismatch in PCS and match in ESeC	-0.23	0.4368
	Mismatch in PCS and in ESeC		
Employees			
Self-employed, business owners	Match in PCS and in ESeC	0.80	0.0003
	Match in PCS and mismatch in ESeC	-0.42	0.1157
	Mismatch in PCS and match in ESeC	-0.48	0.0852
	Mismatch in PCS and in ESeC		
Unpaid family workers	Match in PCS and in ESeC	0.83	0.2447
	Match in PCS and mismatch in ESeC	0.50	0.5165
	Mismatch in PCS and match in ESeC	-1.05	0.3629
	Mismatch in PCS and in ESeC		

Scope of coverage: persons in employment or having worked previously, aged 18+.
Source: self-identification module attached to census test, November 2007, INSEE.

RELEVANCE OF SUPERVISION AS A CLASSIFICATIONAL CRITERION

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Socioeconomic classification systems occasionally draw on existing community-covering standards for scaffolding. Reutilizing these standards within a statistical framework enables statisticians to reintegrate category tools actually forged in the field. This has been the policy adopted for *Professions et Catégories Socioprofessionnelles* (PCS) occupations and trades classifications, which have heavily recycled the standards developed under collective agreements – shaped, bargained and drafted to cover each branch of the French economy.

However, there are situations where it is just not feasible to employ these standards falling 'outside' the statistical systems sphere. International arenas and environments still generate few forged-in-the field standards, and are consequently not conducive to the development of this type of classification framework.

When such standards are lacking, or indeed when statisticians aren't keen in using indigenous information to forge their tools, the alternative will hinge on using exclusively 'objective' descriptors of individual socioeconomic characteristics. This policy implies ignoring (either by force or by choice) categories that have been built and shaped by the individuals themselves, and opting instead to work on building ad hoc categories, forged by the statistician, based on the individual datasets available.

Most of the social stratification research into the categorization of social space has drawn intensively on work scoped as the sphere in which living conditions are forged, at least on a broad-based scale. Within this perspective, occupying a hierarchical position in firms is widely touted as an indicator (among others, such as: job status, type of profession). Line management responsibility, holding authority over other workers, a supervisory role are therefore criterions that should be integrated into a socioeconomic classification system.

The theoretical framework governing the 'employment relationship', as developed by John Goldthorpe, therefore gives supervision centre stage [Goldthorpe, McKnight, 2002]. Goldthorpe's conceptualization considers supervision, when attributed to an employee, as unequivocally flagging a wage nexus that cannot be confined to the straightforward signature of a 'labour contract': any employer that delegates a share of their hierarchical prerogatives is building a relationship of trust with the authority-empowered employees – a relationship that necessarily involves relinquishing total control over work-tasks. It logically follows that supervisors, by definition, and regardless of their position in the authority system, will gain a greater degree of autonomy.

In social stratification terms, under this scheme, the supervision criterion becomes critically decisive when focusing on the least-skilled positions. This is where the supervision function takes on its full meaning, differentiating these supervisory-role employees (sharing a personal relationship with their employer) from other employees on purely piecework-based labour contracts with zero autonomy and subject to routine supervision. In higher spheres of qualification, especially among professionals, the supervision attribute loses much of its differentiational power: regardless of whether supervision is involved, the role is immediately pigeonholed under 'service relationship', in a position where the employee-employer relation is grounded as a relationship of trust.

Worldwide: supervision in the ISCO overhaul

The International Labour Organization (ILO), as part of the programme to overhaul its *international standard classification of occupations* (ISCO), has innovated by introducing this conceptualization of supervision into the process of re-engineering the tool itself. This re-structured ISCO release (version '08') includes six 'supervisors' unit groups. Most of the task areas are covered, since it is now possible to differentiate:

- mining supervisors (3121)
- manufacturing supervisors (3122)
- construction supervisors (3123)
- office supervisors (3341)
- cleaning and housekeeping supervisors in offices, hotels and other establishments (5151)
- shop supervisors (5222)

Technical supervisors are all grouped at classification level 3 where they form a fully-fledged sub-group of their own, whereas cleaning supervisors and clerical supervisors are scattered across different baseline groups and therefore only become visible at classification level 4. Furthermore, several supervisor groups do not appear to have been assigned a set place in ISCO-08: they operate in task areas on a par with skilled trades, warehousing, grading, maintenance or food services.

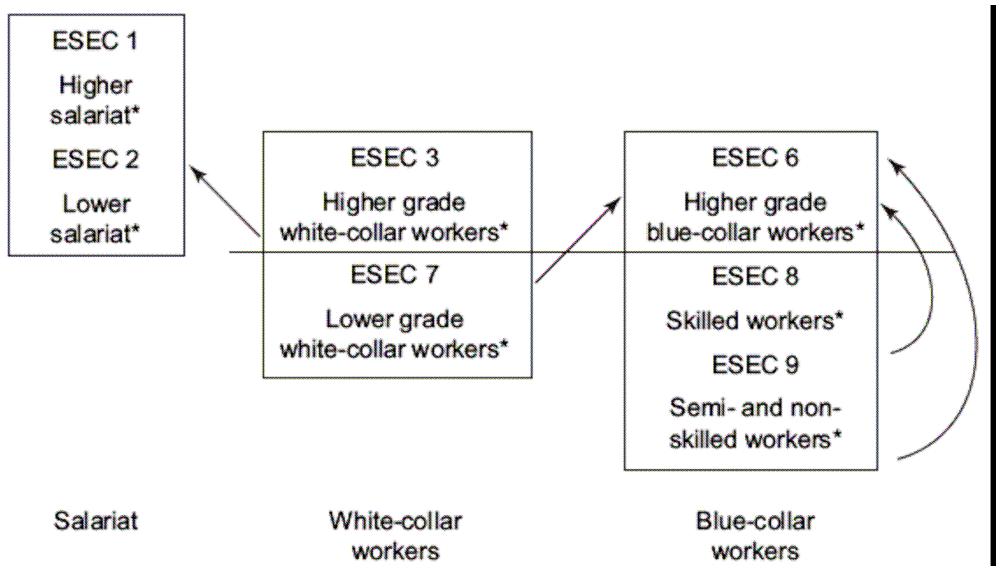
Europe: supervision in the EseC

Before the ISCO overhaul, the prototype ESeC had already taken on the role scripted by J. Goldthorpe for supervision to split social space into separate subgroups. Schematically speaking, the ESeC version delivered in the 2006-dated user guide [Harrison, Rose, 2006] collates occupational code (in the 3-digit version of the ISCO-88 framework), employment status (employee of self-employed) and size of the organization (over or under 10 employees) to complete the first step: assigning individual roles into a hierarchical matrix comprising 9 class-groups of increasing skills that distinguishes small employers (ESeC 4 and 5), high-grade employers and managerial occupations (ESeC 1 and 2), white collar workers (ESeC 3

and 7) and blue collar workers (ESeC 6, 8 and 9). In the second process step, individuals from lower classes, i.e. falling 'under' the grey cut-off bar in Figure 1, get a shot at being reclassified: if they state that their responsibilities include supervisory functions, they get reassigned to one of the higher-grade groups (illustrated by the black arrows).

This supervision criterion therefore makes it possible to reclassify a number of individuals occupying relatively low-skill positions but whose employers have nevertheless decided to differentiate through this supervisory function. For the French statistician, this operation raises many questions. While supervision has already been broadly integrated as a classifier concept across the Anglosphere (as evidenced in the British NS-SEC classes), its use remains marginal in the French statistics system[21]. Hence, the supervision criterion does not feature in the fourteen dimensions used to code the French occupational classifications system. The supervision question ("Do you have one or more people who take orders from you or work under your authority?") does feature in numerous INSEE surveys, but only as an opener to help clarify the hierarchical structure of individual businesses, and never as a criterion for rereading social space.

Figure 1 – Reclassifying supervisors in ESeC



Note that figure 1 does not feature ESeC classes 4 or 5, which cover small enterprises employing less than ten staff (self-employed in class 4, farmers in class 5).
Arrows illustrate second-step reclassifications. The grey bar is the cut-off threshold for supervisors, who must fall above the line at the end of the classification procedure).
Source for class terms (*): [Harrison & Rose, 2006].

[21] The French *Professions et Catégories Socioprofessionnelles* (PCS) occupational classifications system essentially frameworks a conceptual form of hierarchy, hence the identification of a class of "intermediate professions" largely clustering foremen and section leaders – and whose primary function is theoretically tied to supervisory tasks. However, this hierarchical dimension is only addressed through occupation titles and through tasks flagging these titles, if collective agreements are to be believed. Unlike the ESeC prototype, the PCS system does not tackle supervision through a direct question.

The supervision concept therefore continues to fuel debate: What is supervision? Is it a task clearly boundaried in the job description, and identifiable through the employee's position within their company's organizational structure? Or is it a fuzzier notion, tied to the unspoken forms of authority that some employees appear to hold over others, born in richer experience, or greater capacities? As the statisticians are themselves unsure how to define the concept, it breeds doubt as to how their survey respondents will board the questions designed to pinpoint this reality. What are the various cues framing supervision actually measuring?

The International Labour Organization has itself pumped a great deal of time and effort into debating the supervision concept and how it is received first-off by respondents to statistical censusing [Torterat, 2008]. Research in Europe, notably in Germany, has run up against the same issues. Furthermore, this research has highlighted a high level of disparity in how European surveys have framed the question and in the data collection guidelines outlining the functions targeted [Bauer, Müller, Pollak, Weiss, Wirth, 2009]. It is precisely to look deeper into these questions that INSEE accompanied a census test with a module querying supervisory tasks taken on by respondents in the current or past employment.

This contribution therefore tackles three goals: to sketch out the various tasks encompassed in the term 'supervision', identify the symbolic value of these tasks, and characterize the descriptors best-geared to designating these tasks in a questionnaire-format survey.

1. Different types of supervisors in the workplace

Only rare surveys have been given sufficiently free rein to extensively quiz employees on the management-grade taskwork they do. The "supervision module" was designed to delve deeper into this issue, and cross-check respondents' feedback. Our aim here is to capitalize fully on the data potential of this questionnaire to test the meaning given to the responses by systematically cross-matching them together.

❑ *Numerous questions over supervision*

The questionnaire features two allied supervision-related questions:

> *In your core job activity, do your tasks include supervising other people? (Yes / No)*
>
> *Do you have one or more people who take orders from you or work under your authority? (Yes / No)*

These are the two question formats most widely used in European surveys. Our goal is to spell out what they mean in relation to the other questions in the module. The first point to underline is that these two questions are not entirely duplicate, since respondents do not respond in the same way: the second question hones in tighter than the first. Among the working population surveyed (and working in establishments that count at least one employee), 35 % stated they had one or more people taking orders from them or under their

authority. These same respondents virtually always confirmed that supervising people was one of their mission tasks. Added to this subpopulation were another 8 % of respondents who had no-one working for them but still stated they had a supervisory role. The first question format, framed using the term ‘supervising’, therefore elicits more positive responses that the second format, which uses the discernibly more restrictive terms ‘orders’ and ‘authority’. We will hone in on these differences later on, when we look into the line management practices declared by respondents.

A third question investigates line management responsibility with even broader endorsement: the vast majority of respondents that replied to these questions in the affirmative stated that they formed part of the 62 % of respondents who felt they occupied a leading or mid-range position:

> *In your main job, do you feel you are essentially …? (In a leadership position / in a mid-range position / in a task execution position)*

The supervision module does not stop at these initial inquiries, but delves further by quizzing respondents on the practices underpinning these alleged responsibilities. Each of the respondents that state they run or supervise the work of one or more employees (i.e. when they give a yes-response to one of the first two questions or at least do not declare themselves in a task execution position) is asked to describe exactly what this influence materializes as, by answering six questions:

> *In the course of your job, do you (or might you need to)...*
>
> *A. specify [to subordinates or people supervised] the tasks they need to complete?*
>
> *B. explain to them how they need to go about their work?*
>
> *C. assess their results/performance?*
>
> *D. implement disciplinary measures?*
>
> *E. award them pay increases or increase their bonuses?*
>
> *F. define the key (strategic) focuses of the company?*

If the respondent replies yes to one of these questions, they are systematically asked to state whether they feel they have the authority to take this responsibility alone, or whether they need to “consult with colleagues or superiors first”. This battery of questions makes it possible to fine-tune what the respondents understand by “supervising”, giving “orders” or holding “authority”.

The sample and collecting the data

The survey was carried out in November and December 2007 on a sample of 4000 individuals aged 18 years or over, who were either in work or had been, in the four regions of Limousin, Brittany, Provence-Alpes-Côte-d'Azur and Languedoc-Roussillon. Only one individual was surveyed per household, being the one whose birthday was closest to the date of the survey.

In contrast to the German project, the sample was not divided into two: the different variants of the questions were put to everybody. However, the order in which questions are put might influence the response, so we therefore instituted two sub-samples, each with a different order. Each of the two questionnaires was printed on differently coloured paper for ease of identification by the researcher; selection was made on the basis of the last figure of the number on the address form.

The questionnaire

Half the sample answered version A of the supervision module (see appendix 1), the other half version B; subjects were selected on the basis of the last figure of the number on the address form. Versions A and B of the supervision module differed in two respects: the order in which the first two questions on supervision were put, and the way the European classification system was presented.

- in version A (on blue paper), the questions on supervision were presented in the order A1, B1, C1, and the European classification of social groups was presented with complex headings (as used by researchers);

- in version B (on pink paper), the questions on supervision were presented in the order B1, A1, C1, and the European classification of social groups was presented with simple headings (as used by the general public).

Versions A and B of the module included the following:

- *Through the use of additional questions, identification of those who have (or had) a supervisory role*
- *Supervisory tasks (where applicable)*
- *The way work is organised (alone or in a team)*
- *The degree of autonomy*
- *Responsibilities and hierarchical position*
- *Self-classification in the French and European social classification systems*

❑ *A supervisor typology system*

Each question format attempts to capture a dimension of what responsibility relationships may entail. The first two deal with the influence certain supervisors exert on the very definition of work *as it is done*. The next three focus on the organizational resources given to certain supervisors to enable them fulfil the supervisor function. The final question, which is more abstract in shape, shifts away from a purely subordination-based frame to poll the scope of initiative-taking capacity over the company's future.

The net result is that the order in which the questions appear reproduces a grade pacing the incidence of positive responses: task A (specify the tasks to complete) gets more yes-

responses than subsequent tasks, down to task F ("define strategic business focuses"), which rarely gets used for feedback (Table 1).

Tableau 1 – Supervision-based tasks **%**

		No	Yes, if consulting with colleagues or superiors	Yes, independently
		(=1)	*(=2)*	*(=3)*
A	specify the tasks to complete	55,8	12,6	31,6
B	dictate how tasks are to done	58,3	7,0	34,7
C	assess their results	67,2	11,0	21,8
D	take sanctions	84,8	9,4	5,8
E	give pay rises/set bonuses	88,7	6,1	5,1
F	Define strategic business focuses	82,1	12,3	5,6

Survey coverage: employed population (excluding unpaid family workers) in companies counting at least one employee.
Source: Supervision Module.

Here again, responses tend to get nested, since a yes-response to the last questions will tend to also imply a yes-response to the first questions. However, this trend is far from systematic, surfacing several configurations within the supervision responsibilities sphere. To capture (and encapsulate) this complexity, we have developed a typology template to surface the key traits of respondent behaviour.

Within the survey coverage of the employed population (on salary or not) and working in establishments that count at least one employee, we are able to differentiate five classes:

- The ***governors*** are the respondents stating they can independently decide to take disciplinary action on one of their subordinates, award a pay rise or bonus or set strategic business focuses (in algorithmic terms: *D=3* or *E=3* or *F=3*);
- The ***directors*** independently decide on the tasks to be completed and how their subordinates should execute the tasks, plus they also have sole authority for assessing the performance of their subordinates (*non-governor* and *A=3* and *B=3* and *C=3*);
- The ***team leaders*** perform one of the six listed tasks, but only after first consulting with their colleagues or superiors; they sometimes get the freedom to decide the tasks to be completed, how their subordinates should execute the tasks, or to assess their subordinates – but are never allowed to perform all three of these *directors*' prerogatives at the same time[22] (*non-governor* and *non-director* and [*A>1* or *B>1* or *C>1* or *D>1* or *E>1* or *F>1*]);

[22] A closer look at the responses to the supervision module reveals that certain *team leaders* affirm that they are free to set tasks or task completion guidelines alone (*A=3* or *B=3*). That said, they rarely declare being left

- The ***monitors*** do not perform any of the six listed tasks, yet still declare they occasionally have to “organize other people’s work” or “control the quality of other people’s work” (questions D3 and D4 in the supervision module);
- The ***doers*** cluster whoever is left over from the previous classes: respondents that failed to declare any supervisory tasks whatsoever in their occupation description.

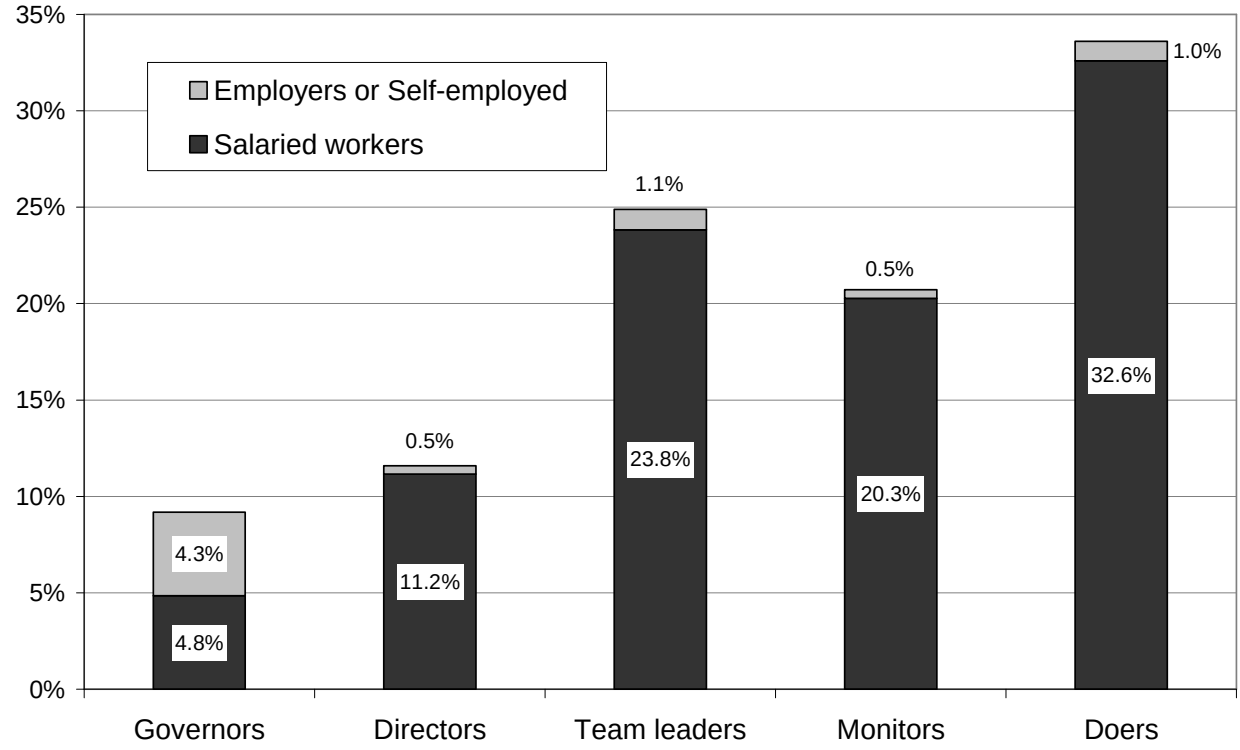
The terms assigned to designate these five classes (*governors*, *directors*, *team leaders*, *monitors*, *doers*) do not match to any definition-set published in the literature; they are proposed simply for readership purposes. They were taken from the interpretation of the classes built and recycled here in order to give the clearest possible integration of the specific features characterizing the groups observed. Cross-correlation analysis between the variables describing supervisory tasks confirms that these collapses are well-grouped (see annex 1).

❑ *A supervisor grade hierarchy clearly perceived by the socio-professional cluster-groups*

The *governors* class clusters the vast majority of non-salaried respondents (Figure 2): around two out of three employers or self-employed are nested in this first supervisor cluster. As we shall expected it, it is much rarer to find salaries workers who are *governors*, and the one in twenty counted are generally either employees ranking high in the company management chain or else teachers giving voice to a perception of their job, seen as pupil ‘management’. The other supervisor-role classes (*directors*, *team leaders* and *monitors*) almost exclusively feature salaried employees.

free to independently assess their subordinates (*C=3*), which as a prerogative appears to be virtually exclusively down to *directors*.

Figure 2 – Respondent status according to supervisor class



Reading: Of the supervision module respondents in the survey coverage above, 4.8 % are salaried governors.
Key : light grey boxing = own account, business managers; dark-grey boxing = employees.
Survey coverage: Employed population (excluding unpaid family workers) in companies counting at least one employee.
Source: Supervision Module.

Furthermore, there is a fairly tight link between this supervisor typology system and the *PCS* socio-professional classification categories. The *governors* class is over-represented by farmers, trade workers, retailers and own-account business managers, and possibly even managing directors and top-tier executives (Table 2). The *directors* group specifically clusters executives at the next tier down. The handful of higher-grade professionals and intermediate occupations are classed under the *team leaders*, while the *monitors* comprise employers and skilled labour. The list is rounded off by the last class, the *doers*, with a high count of employees and unskilled or semi-skilled labour.

This ordering system confirms that the different types of line responsibility relationships identified are not randomly distributed across the organization: the most 'noble' tasks, such as shaping business strategy or wage policy, are assigned to the highest-grade professionals. Supervisory tasks tied to routine job supervision roles are entrusted to *director*-class middle managers, or else to *team leader*-class senior technicians who are granted even less autonomy.

Table 2 – Links between supervisor class and *PCS* socio-professional category

	Doers	Monitors	Team leaders	Directors	Governors
Independent farmer	-31.7	-18.4	3.3	-7.4	**54.2**
	(6.9)	*(9.0)*	*(13.3)*	*(1.4)*	***(15.1)***
Trade workers, retailers, own-account business managers	-31.6	-21.1	-10.6	-2.2	**65.4**
	(3.9)	*(4.4)*	*(4.8)*	*(3.5)*	***(6.9)***
Managing director, top-tier executive	-35.8	-21.6	-11.3	**14.9**	**53.7**
	(3.5)	*(5.6)*	*(6.0)*	***(7.9)***	***(10.1)***
Other executives and higher-grade intellectual workers	-20.8	-14.5	**12.8**	**10.5**	12.0
	(3.9)	*(3.4)*	***(3.9)***	***(3.3)***	*(2.4)*
Intermediate profession	-13.0	-7.5	**5.8**	9.1	5.6
	(3.0)	*(3.3)*	***(3.1)***	*(2.3)*	*(1.4)*
Skilled employees			Ref=0		
Skilled labour	0.8	-9.5	2.9	5.1	0.6
	(4,3)	*(3,5)*	*(4,2)*	*(2,9)*	*(1.4)*
Unskilled or semi-skilled employees	**15,8**	-4,7	-11,5	0,5	-0.1
	(3,9)	*(3,9)*	*(3,0)*	*(2,5)*	*(1.1)*
Unskilled or semi-skilled labour	**11,8**	-3,8	-2,7	-4,4	-0.8
	(4.4)	*(4.3)*	*(3.9)*	*(1.7)*	*(1.0)*

Method: The coefficients are derived from unordered polytomous logistic regression modelling explaining supervisor classes by the PCS, coded into nine positions, and by organization size (control variable; results not shown). Coefficients expressed as differences of likelihood (bootstrapped standard deviations).
Reading: Compared against a skilled employee (the "Ref" term), the likelihood of unskilled labour belonging to the doers class, all other things being equal, is 12 points higher.
Survey coverage: Employed population (excluding unpaid family workers) in companies counting at least one employee.
Source: Supervision Module.

These findings confirm that Goldthorpe had guessed right: the assignment of supervisory tasks is indeed the distinctive sign of a higher social position within the company, and different supervisor-task configurations manifest differentially through the company's ranks. While it seems clear that there is a good rationale for using this kind of criterion within a socio-economic classification, the supervision task-boundarying perimeter that the classification would need to capture still has to be determined: are we looking specifically to identify *governors* or should the target be extended to encompass *directors*, *team leaders,* or even *monitors*?

- ***The ISCO-08 framework less clear in discriminating supervisor profiles***

The ILO classification of occupations is fuzzier in its hierarchization of these supervisor classes (Table 3). Mirroring the *PCS* system, the *governor* cluster counts significantly more *managers* and more *professionals*. The *monitors* class collapses *Intermediate professions*, *Clerical support workers, Service and sales workers* and *Plant and machine operators*. In between these two supervisor classes, there is little in the ISCO classification to differentiate the *directors* and *team leaders* clusters.

This slacker connection between supervisor class and ISCO classification very likely stems from the greater weight given to the industry variable in building the ISCO framework (than in the *PCS*). The factor that surfaces as most tightly correlated to the supervisor classes remains the skill required for the position – a feature more correlated to the *PCS* structure than the ISCO framework. Supervisory functions appear to be more evenly distributed, equally spanning office work, industry, agriculture or trades work. The decisive factor for describing supervisory tasks in France is not type of activity but position rank: from employees and labour up to managers and chief executives.

Table 3 – Links between supervisor class and ISCO-08 classification

	Doers	Monitors	Team leaders	Directors	Governors
Armed forces occupations	-13.8	-3.4	23.2	-3.1	-2.8
	(12.3)	*(7.3)*	*(12.3)*	*(7.0)*	*(6.0)*
Managers	-24.1	-4.6	0.8	2.6	**25.3**
	(4.8)	*(3.6)*	*(5.2)*	*(4.2)*	***(4.7)***
Professionals	-9.8	3.3	1.6	-3.1	**7.9**
	(5.7)	*(3.4)*	*(4.4)*	*(3.8)*	***(2.7)***
Intermediate professions	-8.6	**8.2**	1.1	-0.1	-0.6
	(4.8)	***(3.6)***	*(4.6)*	*(3.5)*	*(2.1)*
Clerical support workers	4.7	**14.6**	-6.2	-8.7	-4.4
	(5.2)	***(3.9)***	*(4.4)*	*(2.9)*	*(2.2)*
Service and sales workers	-0.3	**13.9**	-5.2	-4.3	-4.1
	(5.7)	***(3.7)***	*(4.6)*	*(3.4)*	*(2.3)*
Skilled agricultural workers	5.0	5.6	-1.9	-15.6	6.9
	(8.5)	*(6.8)*	*(7.7)*	*(2.6)*	*(4.7)*
Craft and related trade workers			Ref=0		
Plant and machine operators	**13.1**	**9.0**	-10.9	-7.2	-4.0
	(5.5)	***(4.5)***	*(4.8)*	*(3.1)*	*(2.2)*
Elementary occupations	**25.3**	5.0	-15.4	-8.8	-6.0

	(5.8)	*(3.9)*	*(5.0)*	*(3.2)*	*(2.2)*

Method: The coefficients are derived from unordered polytomous logistic regression modelling explaining supervisor classes by ISCO classification, coded into ten positions, and by organization size (control variable; results not shown). Coefficients expressed as differences of likelihood (bootstrapped standard deviations).
Survey coverage: Employed population (excluding unpaid family workers) in companies counting at least one employee.
Source: Supervision Module.

However, as underlined in the introduction to this section, the Goldthorpe class scheme, like the ESeC framework system, only mobilizes the supervision criterion in what are the least-highly-graded areas of social space: holding line management responsibilities are only decisive as a class definer for employees or labour that Harrison & Rose term “lower grade” (Figure 1) – or for “higher-grade white collar workers” that will be reclassified “lower salariat” if they state they supervise. Most of the respondents we identified as *governors*, plus most *directors* even, will probably be automatically assigned to higher-ranking ESeC framework classes based solely on their ISCO occupations code. Supervision takes shape as an active criterion once the statistical analyst starts to classify the employees and operative labour – which can be nested under “higher-grade workers” or “lower-grade workers” depending on whether or not they direct other staff.

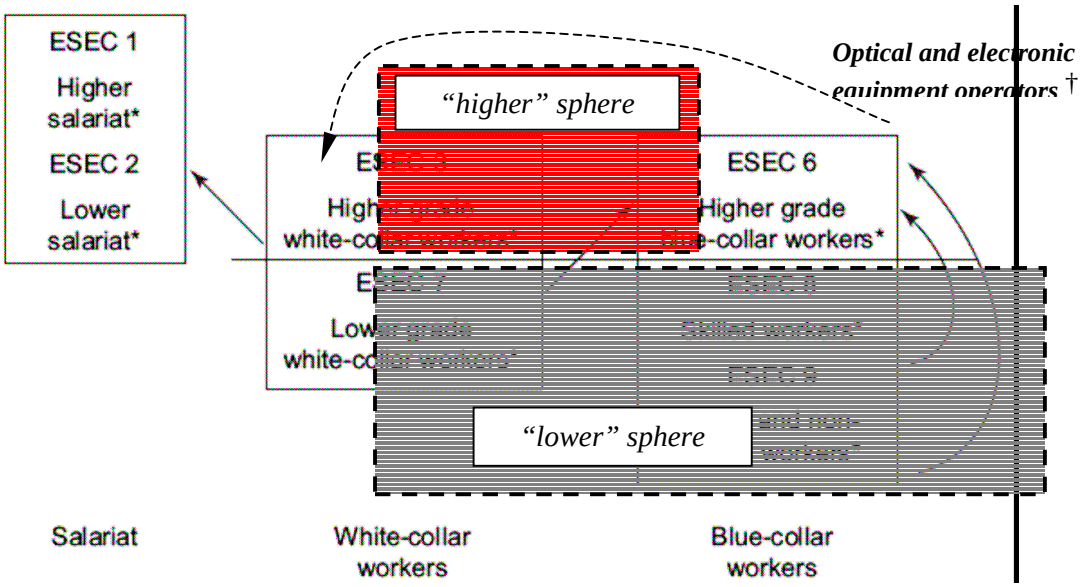
2. Effect of supervision in frameworking the ESeC

Our focus here is specifically oriented towards the survey coverage scope spanning employees and contract labour, for which – from the ESeC standpoint – supervisory responsibility is a key determinant in occupational classification. To reiterate what was outlined in the introduction, the procedure for building ESeC classes can be distilled down into a two-step process:

- ✓ The “occupations aggregation” step: the variables occupation status, employment status (self-employed or employee) and size of organization are collated and interviewees assigned into one of the nine classes that, at the end of the procedure, will form the ESeC classification;
- ✓ The “supervision” step: certain interviewees get re-assigned to a higher class if they report responsibility for supervising the work of others.

Our aim in this section now is to focus on describing what happens between the two steps. The “occupations aggregation” step provides a first-run division of the social space and determines the zones – highlighted in Figure 3 – where the supervision criterion becomes the classifier.

Figure 3 – The two coverage spheres affected by the "supervision" variable in ESeC



On one side, there are the interviewees whose occupation identified by the "occupations aggregation" step belongs to the "labour contracts" sphere, i.e. falling "under" the grey cut-off bar (Figure 1 and 3) boundarying this sphere from the "service relationship" sphere: if they do not supervise other workers, these interviewees will be classified under "semi- and non-skilled workers" or "lower-grade white collar workers" (ESeC 9, 8 or 7) – with supervisors being re-assigned to the "higher-grade blue-collar workers" group via the "supervision" step (ESeC 6). On the other side, the "supervision" step re-aligns "higher-grade white-collar workers" to ESeC class 3 if they do not manage the work of others, and to ESeC class 2 ("lower salariat") if they do.

To facilitate readership, we have termed these two spheres "lower" and "higher", respectively.

❑ *"Lower" and "higher": highlighting cluster output from the "occupations aggregation" step*

The ESeC designers proposed to use ISCO-08 to characterize the surveyed professions[23]. At the "occupations aggregation" step, ESeC recycles the 3-digit ISCO code – cross-referenced against employment status and size of the organization – to build nine classes.

Step two in the ESeC procedure (supervision) has different effects on the different groups formed:

---

† *Optical and electronic equipment operators* (code '313' under the 3-digit ISCO-88) are processed separately: classed ESeC 6 when they do not supervise other workers, and ESeC 2 when they are supervisors.

[23] At the time the ESeC User Guide was drafted, the framework system used to build the European classification was still ISCO-88. A new revised version has since been published (ISCO-08) that will now need to be integrated into the ESeC coding procedure. This new version is set to rewrite the equation, since one of the innovations introduced is to use supervision as a classifier criterion for certain shortlisted professions.

- Regardless of their ISCO code, the self-employed will, according to organization size, get classed ESeC 1 ("higher salariat"), ESeC 2 ("lower salariat"), or ESeC 4 or 5 ("petit bourgeoisie or independents");
- Employees, though, feel the effects of the "supervision criterion" differently (see annex 2 for details on the re-classifications) depending on the sphere they occupy:
    - "lowers": lower-sphere employees, if they supervise, are reclassified as ESeC 6 ("higher-grade blue-collar workers"), which is mainly a catch-all for these types of transfer[24] ;
    - "highers": higher-sphere employees, if they supervise, join ESeC class 2 ("lower salariat"), which already hosts own-account managers, small retailers, professionals and higher-grade technicians;
    - "others": this spill-over sphere clusters individuals who – straight from phase one of the ESeC-building procedure – are classed "higher" than the grey-barred cut-off given in Figure 1. They are respondents occupying positions that the designated ISCO code – reframed in the ESeC approach – reveals a higher-grade skills level. For these individuals, the supervision criterion has no effect[25]: The employment relation that ties them to their employer is the service relationship, built on mutual trust. In this situation, supervising is no longer shortlisted as an elective criterion.

Is this difference in classification process according to procedure target-sphere justifiable from the supervisory tasks angle? Is the skills level of a "lower" supervisor destined to join ESeC class 6 really different to the skills level of a "higher" supervisor set to be reclassified as "lower salariat" (ESeC 2)?

❑ *No difference between "lowers" and "highers" when seen from the supervisory tasks angle*

Interviewees from different 'home' spheres do not project themselves the same way into the supervisor classes we have built. First observation: Compared to the overspill class "others", "lowers" and "highers" count significantly fewer supervisors (Table 4). Of those employees not tied to the supervision criterion (the "others" sphere), nearly two in three respondents are *governors*, *directors* or *team leaders*. They are only half as many (percentagewise) among the "lower-sphere" and "higher-sphere" subpopulations.

Since both these spheres cluster relative less-skilled occupations, they can intuitively be expected to enrol fewer supervisors than the "others" sphere. More unexpected, however, is the finding that there is no significant difference between "lower"-sphere and "higher"-sphere on this point. The "higher"-sphere supervisors appear to get assigned similar supervisory

[24] Only safety and quality inspectors (ISCO-88 code '315'), precision, handicraft, craft printing and related workers ('730') and precision workers in metal and related materials ('731') are assigned straight into ESeC class 6 right from ESeC creation step one.

[25] Except, as stated earlier, for "optical and electronic equipment operators".

roles to perform at a similar rate to the “lower”-sphere supervisors: the two spheres each count just as many (read: *as few*) *governors*, *directors* and *team leaders*.

Table 4 – Supervisor profiles according to sphere

	Sphere profile…								Sphere total
	“lower”		*“higher”*			*“other”*			
	%	*Diff*	%	*Diff*		%	*Diff*		%
Governor	3.0		3.9	2.1	*(1.5)*	**9.7**	**5.8**	***(1.5)***	5.2
Director	10.7		8.0	-1.9	*(2.0)*	**17.0**	**6.0**	***(1.9)***	12.0
Team leader	21.9	*Ref*	22.8	2.0	*(3.1)*	**33.6**	**11.1**	***(2.9)***	25.7
Monitor	22.0		25.8	3.2	*(2.7)*	18.8	-2.5	*(2.7)*	21.9
Doer	42.4		39.6	-5.4	*(3.7)*	**21.0**	**-20.4**	***(2.7)***	35.2
	100.0		100.0			100.0			100.0

Methods : The first column (%) gives the percentage of supervisors per type in each of three spheres identified under the ESeC structural framework. The second column (Diff) reports the differences of likelihood that a respondent member of one of the three spheres (with the “lower” sphere as baseline) will be classed in one of the supervisor profile categories. Differences of likelihood estimated by unordered polytomous logistic regression explaining membership of one of the supervisor classes by – in addition to sphere – the variables age, gender, and size of organization. The figure in brackets is an estimator of the bootstrapped standard deviation of the difference of likelihood.
Reading : Close to 10 % of respondents classed as “other”-sphere are governors. All other things being equal (i.e. controlling for age, gender and size of organization), compared to a “lower”-sphere employee, the likelihood of an “other-sphere” respondent being classed among the governors is 6 points higher. This difference is significant at 5 % (SD=1.5).
Survey coverage : Employees at companies counting at least one employee.
Source : Supervision Module.

That the two spheres are relatively homogenous in terms of supervisor profiles is a finding itself: the two populations, although impacted differently by the supervision criterion at the ESeC class assignment step, do not actually present any clear-cut inter-distinguishing features in terms of the *supervisory tasks actually taken on in practice*. It is not, therefore, the type of supervisory tasks delegated that can explain why either of the two spheres is affected differently by the supervision criterion. The ESeC designers established their classification system case solely on the basis of conceptual grounds borrowed from Goldthorpian analysis. These same conceptual grounds also led them to split the “lower” and “higher” spheres pair at the “occupations aggregation” step, and to class them differently according to whether they adopted supervisory responsibilities. Analysis of the supervisory tasks taken on cannot, however, surface any empirical rationale to justify this kind of process differentiation.

❑ *Similar work situations*

The “higher”-sphere supervisors cannot even be distinguished from “lower-sphere” supervisors by their response behaviour to the survey questions on their work situation. Just over half stated they had been formally delegated the supervisory tasks they carry out: Many of them act as supervisors without the function being tagged to them in the company’s organization structure. This kind of scenario appears distinctly less common in the “others” sphere.

The “higher”-sphere and “lower”-sphere supervisors both claim distinctly fewer subordinates than “other”-sphere supervisors (Table 5). Analysis of median/mean differences does highlight strong variability in the subordinate headcounts declared.

Table 5 – Median and mean subordinates tabulated against sphere profile

	Sphere profile…					
	“lower”		*“higher”*		*“other”*	
	Med	Mean	Med	Mean	Med	Mean
Governor	6	14	9	88	18	112
Director	4	19	4	10	3	40
Team leader	1	5	1	7	4	19
Pooled	2	10	3	17	4	40

Reading: The “lower”-sphere governors average 14 subordinates (median = 6).
Survey coverage: Employees at companies counting at least one employee.
Source: Supervision Module.

Both “higher”-sphere and “lower”-sphere supervisors find their professional work constrained by their team: they spend more time in teamwork, and their work pace is more often “dictated by being immediately dependent on the work of one or more colleagues”. However, here again, there is little to separate them. The only clear-cut difference is that “lower”-sphere supervisors are more often specifically compelled to “strictly apply” orders and instructions and to follow procedures or how-to material.

This shortlist of empirical results helps to pinpoint the employees and operative labour personnel who declare that they supervise work who will therefore be reclassified in higher-level ESeC clusters: essentially team-scale managers within the company, whose work – tightly regulated by standard performance guidelines and production procedures, and heavily dependent on the work of other staff – comprises a major relational dimension. Some of these socialized inter-worker relations may – either formally or informally – be interpreted as falling under the banner of supervision, authority or control.

On of the difficulties inherent to using statements from employees canvassed at their workplace is the low level of objective feedback on their supervision functions – in contrast with more highly-skilled professions where supervisory-type responsibilities are more formally contoured. This means that the main risk faced will be relative time-course variability in the responses given by the same interviewee: these shifting responses in spontaneous perceived experience will fluctuate with the respondent’s mood at a given point in time, creating ‘noise’ in the ESeC classification that will be difficult to iron out through statistical analysis [Brousse, Monso, Wolff, 2006].

Another difficulty that warrants consideration is that empirical analysis of questions spanning supervision through to work situation cannot differentiate between the “lower” and “higher” sphere profiles, despite the fact that the supervision criterion will not impact them in the same way over the second ESeC-building phase. If this processing difference cannot be justified by the supervisory tasks taken on, then there is probably an unobservable variable (skills?) at work. The ESeC design team has given little to substantiate these methodological choices: in

the few document materials available, discussion on the theoretical-conceptual basis remains evasive while any discussion on the empirical basis has been completely sidestepped.

3. "Authority" or "supervision": the right term for the right supervisor

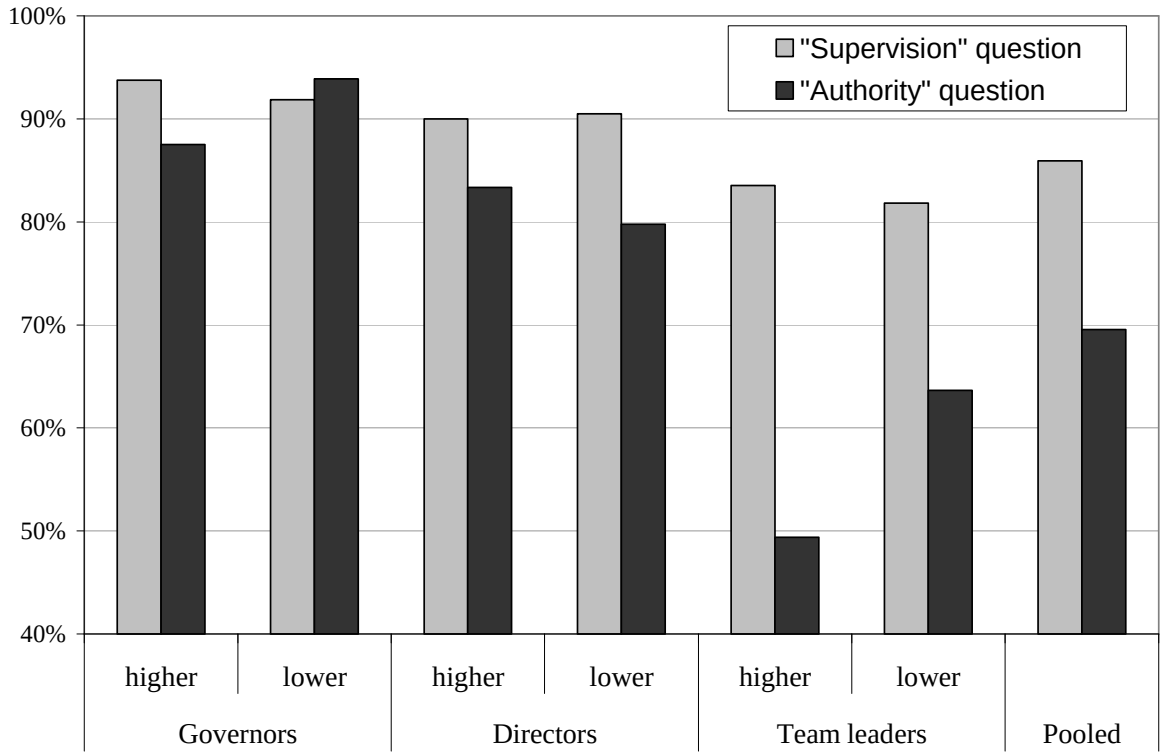
We use this section to flip standpoint and study the propensity of the interviewees to give yes-responses to one of the question options on supervision. One of points we were quick to highlight early with the supervision module was the fact that the question employing the terms "authority" and "orders" was more restrictive than the question format using the labeller "supervision". Respondents who identified with the first question often gave a yes-response to the second, whereas the reverse was false.

- ***Team leaders slower to recognize themselves in the "authority" term-set***

The response behaviours to these questions, when delivered as a per-supervisor and per-sphere breakdown, reveal that it is mainly in the *team leaders* class that reactions to the two term formats diverged. The *team-leaders* class showed significant variance between employees stating they "supervise" and employees – in smaller numbers – claiming they have "one or more people taking orders [from them] or under [their] authority" (Figure 4).

These two questions are not therefore targeting the same supervisor populations. The division stems mainly from *team leaders*, who tend to remain outside the sphere contour when questioned with the second question framed. Even more of the "higher"-sphere *team leaders* distance themselves on this question, creating a sharp in-sphere split between the "supervision" term-set and the "authority" term-set.

Figure 4 – Rate of yes-responses to one of the two questions targeting supervision, according to sphere and supervisor profile



Reading : 94 % of governors profiled as “higher” sphere state they “supervise the work of other employees”.

Recap : The “supervision” question: In your main job, is supervising the work of other employees one of your assigned tasks ? (Yes / No)
The “authority” question: Do you have one or more people who take orders from you or work under your authority (Yes / No)

Survey coverage : Governors, director and team leaders in the employed population (excluding unpaid family workers) in companies counting at least one employee.
Source : Supervision Module.

It thus transpires that designing the question format with the term “authority” or the term “supervision” leads to tangibly different measures: ‘authority’-oriented interviewing is more restrictive than ‘supervision’-oriented interviewing and will tend to draw fewer yes-responses from the *team leader* class. This clearly highlights how it is critical for a socio-economic classification system to hone its definitions of the term-sets for addressing the supervision issue.

- ***Analysis on different question-formats proposed through the grey literature***

Several definitions can be found in grey literature on classification frameworking. Our analysis focuses on these definitions from the standpoint of the supervisor classes forged:

- ESeC definition [Harrison & Rose, 2006]: For ESeC designers, a supervisor has to "supervise"[26] the work of at least three subordinates;
- Eurostat definition [Eurostat, 2008]: European document support material accompanying Labour Force Surveys advises member-State national statistics offices to define supervisors as workers who have been formally assigned supervisor responsibilities;
- ILO definition: The ILO approach, which leans towards a more restrictive definition of the supervisors category, has opted to pre-classify supervisors among the administrative and industry-centric professions (Introduction). From the broad body of trades professions, only building and mining-related professions open the way to being classed under supervisor categories. It is also important to point out that under ILO guidelines, only employees whose main task is supervisory should be qualified as supervisors;
- The "authority" definition: Finally, since the option is catered for in the supervision module and since all three previous definitions are built exclusively on the question that borrows supervision as its key term[27], we propose an alternative question frame using the term authority[28].

The expansive dataset generated by the supervision module makes it possible to build variables capturing these four definitions.

The Eurostat and authority supervisor definitions present closely overlapping profiles in terms of population distribution, both in our supervisor classes and within ISCO-08 level 1. The ESeC definition appears to stray, also showing weaker correlation with the supervisor classes. This is probably explained by the fact that the number of subordinates is flawed as an indicator of a supervisor's positional "level": floor-level "team-scale" managers may actually have to supervise large teams, while governors ranking high in the company's echelons may only have to manage the work of a handful of associates (who in turn will be managing other teams themselves). The number of subordinates doesn't show a very close correlation with the supervisory "level".

[26] For our French survey, we have opted to borrow a question-format framed through a literal translation of the English-language term rather than the other term-set available in the module which uses the words "authority" and "orders".

[27] Refresher: "In your core job activity, do your tasks include supervising other people?"

[28] "Do you have one or more people who take orders from you or under your authority?"

Table 6 – Different definitions of the supervisor subpopulations

	Whole coverage				**Blue and white collar workers only (4, 5, 6, 7, 8 and 9 ISCO-08 codes)**			
	ILO	Eurostat	ESeC	Authority	ILO	Eurostat	ESeC	Authority
Pooled	7.2	30.5	19.4	34.9	7.5	20.4	11.9	25.4
Supervisor classes								
Governor	19.6	90.8	56.4	93.3	23.1	82.7	40.4	94.2
Manager	18.5	70.4	50.0	79.6	30.1	66.7	51.6	79.6
Team leader	11.8	53.2	33.5	64.3	14.6	45.8	23.6	57.6
Monitor	0.8	2.5	0.3	2.2	1.3	1.7	0.4	2.2
Doer	0.5	0.7	0.2	1.8	0.5	0.5	0.2	2.1
ISCO-08 (1-digit)								
0- Armed forces	0.0	57.1	28.6	66.7				
1- Legislators, senior officials and managers	22.7	67.4	50.0	78.8				
2- Professionals	0.0	44.5	29.8	44.0				
3- Intermediate professions	5.7	35.0	22.5	37.8				
4- Clerical support workers	12.1	14.4	8.2	16.3	12.1	14.4	8.2	16.3
5- Service and sales workers	7.3	22.3	11.6	29.2	7.3	22.3	11.6	29.2
6- Skilled agricultural workers	0.0	37.0	15.2	43.5	0.0	37.0	15.2	43.5
7- Craft and related trade workers	6.8	35.6	22.7	47.2	6.8	35.6	22.7	47.2
8- Plant and machine operators	12.7	21.6	14.2	20.9	12.7	21.6	14.2	20.9
9- Elementary occupations	0.0	8.1	5.4	12.9	0.0	8.1	5.4	12.9

Survey coverage : Employed population (excluding unpaid family workers) in companies counting at least one employee.
Source: Supervision Module.

The ILO definition of supervisory positions is much more restrictive than the previous ones: firstly because it stands that supervisory tasks should be identified as the main task of the respondent, secondly because only those among the administrative and industry-centric professions have to be classified supervisors (when supervision is their main task). Hence, only 7.2 % of the respondents fall into the ILO definition of supervisors. Only one over five governors and managers are identified as ILO supervisors. They are rare among team leaders (one over ten) and almost inexistent among monitors and doers. Even when considering blue and white collar workers only, the proportion of ILO supervisors appears to be far below ESeC, Eurostat and “Autority” ones.

Conclusion

Critical analysis of the supervisory tasks taken on reveals a broad panel of disparate practices and highlights different levels of supervisor-grade personnel. This heterogeneity subsequently generates strong variability in the responses on the supervision question according to question frame and terms used. Supervision does not therefore appear to be the fully objective and easily measureable criterion needed for grounding a socio-economic classification framework. Supervision is more a work-task characteristic that is given different interpretations in the field and that crosscuts potentially remote practices.

This makes it critical to scrupulously fine-tune the framing of supervision-related questions. The term-set used to build the question frame and the allied characteristics to be factored in remain to be defined: should supervision be set as core task, formally assigned, with more than three subordinates?

Current state-of-the-art on this issue tends to enrol diverse statistical processing practices with assorted recommendations. The ISCO redraft together with the project European socio-economic classification (ESeC) integrating the supervision construct offers an excellent opportunity to revisit this unresolved topic.

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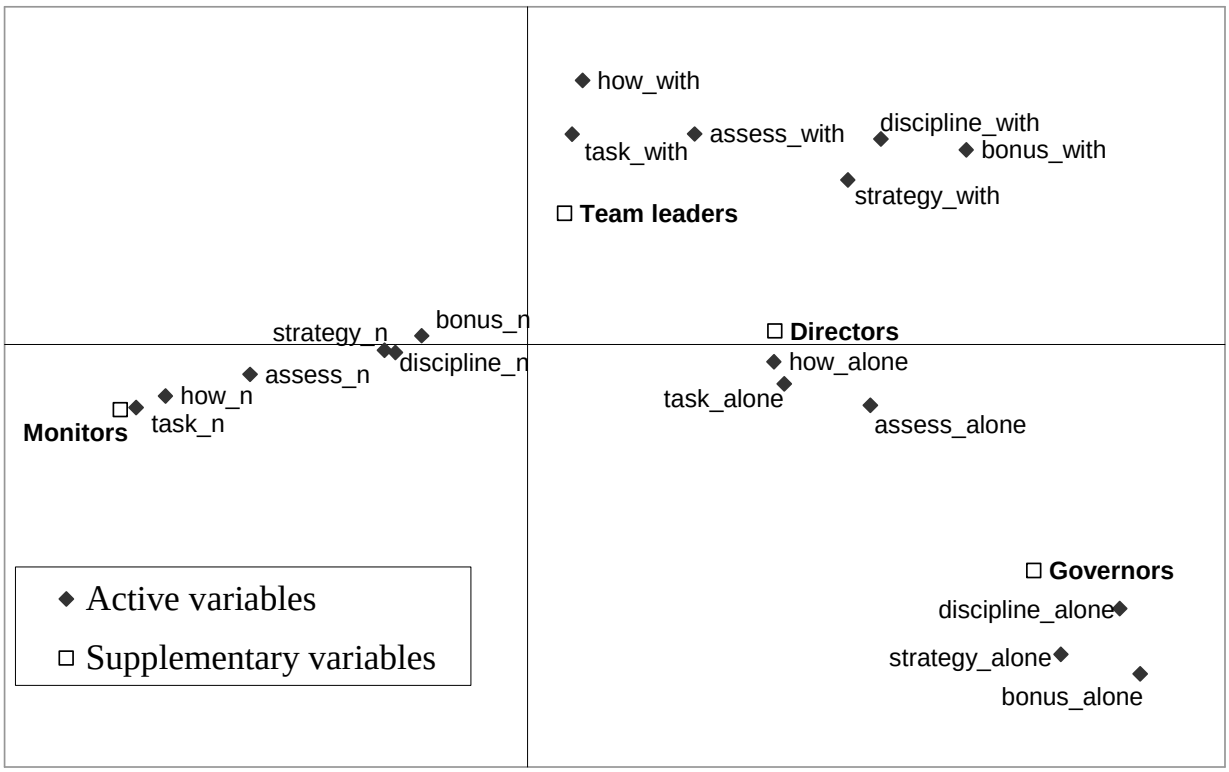
Annex 1

Multiple correspondence analysis (MCA) on the full survey coverage scope of the population employed in organizations counting at least one employee, excluding operatives/doers, makes it possible to visually map out the four supervisor classes proposed..

The results illustrate how correlations between supervision-related variables roughly revolve around four cluster points. This MCA profile materializes the specificity of the respondents who do not hold any supervisory responsibilities (at left of the figure) polarized against supervisors empowered to act autonomously on issues such as pay rises, disciplinary sanctions and corporate strategy (at far right). Between these two poles are a further two sub-clusters: Supervisors who are not given the autonomy they need to act alone (at top) and supervisors who have a certain amount of latitude or leeway, but only for defining the jobsheets of their subordinates (bordering the horizontal axis, at right).

Figure – Factorial plane of the MCA taking supervision variables as active variables



Reading : For each of the six supervision variables (as ordered in Table 1: task, how, assess, discipline, bonus, strategy), the three possible modalities are coded, as following: 'Yes, alone' = _alone, 'Yes, consulting first' = _with, 'No' = _n.
Survey coverage : Employed population in companies counting at least one employee, excluding operatives/doers.
Source : Supervision Module.

The projected output, modelled with an additional variable, for our type-system correlated well with this organization of social space in the primary factorial plane.

Annex 2

Employee class clusters according to profession at the first step of the EseC procedure

ISCO-08	"higher" sphere → *Supervisors will be reclassified to EseC class 2*	"lower" sphere → *Supervisors will be reclassified to EseC class 6*	"others" sphere → *The "supervision" criterion is not a decisive factor*
0	011 Armed forces (other ranks)		010 Armed forces (officers)
1			100 Legislators, senior officials and managers 110 Legislators and senior officials 111 Legislators and senior government officials 114 Senior officials of special interest organisations 120 Other corporate managers 121 Directors and chief executives 122 Production and operations managers 123 Other specialist managers 130 Managers of small enterprises nes 131 Managers of small enterprises
2			200 Professionals 210 Phys, math, engine science professionals 211 Physicists, chemists and related professionals 212 Mathematicians, statisticians and related professionals 213 Computing professionals 214 Architects, engineers and related professionals 223 Nursing and midwifery professionals 230 Teaching Professionals 231 College, university and HE teaching professionals 232 Secondary education teaching professionals 233 Primary and pre-primary education teaching professionals 234 Special education teaching professionals 235 Other teaching professionals 240 Other professionals 241 Business professionals 242 Legal professionals 243 Archivists, librarians and related information professionals 244 Social science and related professionals 245 Writers and creative performing artists 246 Religious professionals 247 Public service administrative professionals

3	300	Technicians and associate professionals			310	Physical, engineering & science ass professionals
	330	Teaching associate professionals			311	Physical and engineering science technicians
	331	Primary education teaching associate professionals			312	Computer associate professionals
	332	Pre-primary education teaching associate professionals			314	Ship and aircraft controllers and technicians
	333	Special education teaching associate professionals			315	Safety and quality inspectors
	340	Other associate professionals			320	Life science and health associate professionals
	341	Finance and sales associate professionals			321	Life science technicians and related associate professionals
	343	Administrative associate professionals			322	Health associate professionals (exc. Nursing)
	346	Social work associate professionals			323	Nursing and midwifery associate professionals
	347	Artistic, entertainment and sports associate professionals			334	Other teaching associate professionals
					342	Business service agents and trade brokers
					344	Customs, tax and related government associate professionals
					345	Police inspectors and detectives
					348	Religious associate professionals
4	400	General Clerks	413	Material-recording and transport clerks		
	410	Office Clerks	421	Cashiers, tellers and related clerks		
	411	Secretaries and keyboard operators	422	Client information clerks		
	412	Numerical clerks	414	Library, mail and related clerks		
	419	Other office clerks				
	420	Customer services clerks				
5			512	Housekeeping and restaurant services workers	500	Service, shop, market sales workers
			513	Personal care and related workers	510	Personal and protective service workers
			514	Other personal services workers	511	Travel attendant and related workers
			516	Protective service workers	521	Fashion and other models
			520	Models, salespersons and demonstrators		
			522	Shop, stall and market salespersons and demonstrators		
6			600	Agricultural and fisheries workers	621	Subsistence agriculture and fishing workers
			610	Skilled agriculture and fisheries workers		
			611	Market gardeners and crop growers		
			612	Animal producers and related workers		
			613	Crop and animal producers		
			614	Forestry and related workers		
			615	Fishery workers, hunters and trappers		

7		700	Craft and related workers	730	Precision, handicraft, craft printing and related workers
		710	Extraction and building trades workers	731	Precision workers in metal and related materials
		711	Miners, shotfirers, stonecutters, carvers		
		712	Building frame and related trades workers		
		713	Building finishers and related trades workers		
		714	Painters, building structure cleaners and related trades		
		720	Metal, machinery and related trades		
		721	Metal moulders, welders, sheet-metal workers etc		
		722	Blacksmiths, tool makers and related trades		
		723	Machinery mechanics and fitters		
		724	Electrical and electronic equipment mechanics and fitters		
		732	Potters, glass makers and related trades		
		733	Handicraft workers in wood, textile, leather and related materials		
		734	Craft printing and related trades workers		
		740	Other craft and related workers		
		741	Food processing and related trades workers		
		742	Wood treaters, cabinet makers and related trades		
		743	Textile, garment and related trades		
		744	Pelt, leather and shoemaking trades		
8		800	Plant and machine operators and assemblers		
		810	Stationary plant and related operators		
		811	Mining and mineral-processing plant operators		
		812	Metal-processing plant operators		
		813	Glass, ceramics and related plant operators		
		814	Wood-processing and papermaking plant operators		
		815	Chemical-processing plant operators		
		816	Power production and related plant operators		
		817	Industrial robot operators		
		820	Machine operators and assemblers		
		821	Metal and mineral products machine operators		
		822	Chemical products machine operators		
		823	Rubber and plastic products machine operators		
		824	Wood products machine operators		
		825	Printing, binding and paper products		

			machine operators	
		826	Textile, fur and leather products machine operators	
		827	Food and related products machine operators	
		828	Assemblers	
		829	Other machine operators nec	
		830	Drivers and mobile plant operators	
		831	Locomotive engine drivers and related workers	
		832	Motor vehicle drivers	
		833	Agricultural and other mobile plant operators	
		834	Ships deck crews	
9		900	Elementary occupations general	
		910	Sales and services elementary occupations	
		911	Street vendors and related workers	
		912	Shoe cleaning and other street services elementary occupations	
		913	Domestic and related helpers, cleaners and launderers	
		914	Building caretakers, window and related cleaners	
		915	Messengers, porters, doorkeepers and related workers	
		916	Garbage collectors	
		920	Agricultural, fishery and related labourers	
		921	Agricultural, fishery and related labourers	
		930	Labourers in mining, construction, manufacturing, transport	
		931	Mining and construction labourers	
		932	Manufacturing labourers	
		933	Transport labourers and freight handlers	