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Measuring the language-related characteristics of occupations using the Occupational and Skills Information System

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Measuring the language-related characteristics of occupations using the Occupational and Skills Information System

by **Louis Cornelissen**

Summary

This report explores the analytical potential of information on the language-related characteristics of occupations in the Occupational and Skills Information System (OaSIS), a database developed by Employment and Social Development Canada (ESDC) that provides a series of descriptors of occupations. The report aims to contextualize the use of language in different occupations by using a selection of descriptors related to work activities, work contexts and required skills. These descriptors include, for example, the level of communication with coworkers required by the occupation, the level of work done directly with the public, the frequency of written communications, or the level of literacy skills required. Occupational information from OaSIS is then used to shed new light on 2021 Census data, including regarding the use of languages at work.

1 Introduction

Statistics Canada produces data on the use of languages in various situations. For instance, the Census of Population has been collecting data on the languages used at work since 2001. This information deals with the relative frequency with which a language is used at work. Workers are asked to identify the language or languages they regularly use at work and to specify the one they use most often. However, the census provides little information on the context in which these languages are used.

While the use of specific languages at work (English, French, etc.) varies from one job to another, there can also be variations in the frequency and complexity of the use of language (understood more broadly as the activity in which people speak, listen to others, read or write) in different professional contexts.[1] For example, some workers spend their time communicating with coworkers or clients, reading or writing, while others can spend almost a full day without having to speak to anyone.

With regard to the use of languages at work, the fact that there are such variations in the language-related characteristics of jobs has a number of implications. First, it implies that the language skills required for jobs are varied. Different jobs require not only different levels of proficiency in one or more languages, but also different levels of literacy and language skills that correspond to different types of tasks. In other words, the language skills required for work are multidimensional. Having a better measure of the language-related characteristics of jobs could help inform policy related to literacy skills and language learning for labour market integration.

Second, the fact that language characteristics vary from one job to another could lead to reconsidering how certain language-of-work indicators are interpreted, including how they relate to broader language dynamics. The usual language-of-work indicators (such as the language used most often at work) tend to give the impression that each worker uses these languages the same way in their job. Often, data on language of work are interpreted as an indicator of language use in the broader public sphere, with the workplace being considered a place of linguistic integration. However, the degree of actual use of languages at work can vary considerably from one job to another, and by extension, from one category of worker to another.[2] Having a better measure of the language characteristics of work could provide a different perspective on language dynamics in the workplace and a better understanding of certain trends in this area.

In Canada, there is very little statistical data available that measure the language characteristics of jobs or workplaces. Some data sources provide information on the language requirements of positions, in particular the knowledge of English and French.[3] However, information on other language dimensions of work is less common.

1. Various studies have examined the language-related aspects of work. See, for example, Boutet (2001), Vine (2018) and Alarcón (2021).
2. As suggested by McAll (1992).
3. See Demers (2020) and Statistics Canada (2024).

One possible approach to fill this data gap is to use a standard occupational classification to characterize the language aspects of each occupational category. While this method does not directly measure the language-related characteristics of specific positions, it does provide more context on the work realities usually associated with each occupational category, and therefore enhances the data sources that provide information on the occupations of people or positions.[4]

To measure the language-related characteristics of work, we propose using information on occupations in the new Occupational and Skills Information System (OaSIS), developed by Employment and Social Development Canada (ESDC) and published in 2023. OaSIS provides information on the work activities and skills required for each occupational category in the National Occupational Classification. This information can be combined with other data sources that provide information on occupations (e.g., census data) to enrich these data and describe the distribution of workers according to the language-related characteristics usually associated with their occupation.

This report presents and explores the potential of the analytical tools provided by OaSIS to analyze language-related characteristics of occupations. It begins with a presentation of OaSIS and a discussion of some considerations for its use (Section 2). Descriptors of the language-related characteristics of occupations in OaSIS are then explored, using a descriptive analysis of the Canadian worker population and 2021 Census data (Section 3). We then present an analysis of the relationship between the language-related characteristics of occupations and languages of work, aimed at identifying certain major trends and avenues for future analyses (Section 4). Finally, Section 5 provides a synthesis and discussion of the results presented in the previous sections.

2 Data sources

2.1 Occupational and Skills Information System (OaSIS)

The Occupational and Skills Information System (OaSIS), developed by Employment and Social Development Canada (ESDC), "provides a comprehensive framework of the skills, abilities, personal attributes, knowledge, and interests that are usually required to work in over 900 different Canadian occupations. It also provides context for the work environment in which these occupations are performed."[5] The occupational profiles in OaSIS are subgroups based on the 2021 National Occupational Classification (NOC).

OaSIS comprises a total of 245 different "descriptors" to describe occupations.[6] These are based on the Skills and Competencies Taxonomy. A set of descriptors can be used to identify certain language-related characteristics of work. For example, there are descriptors for the literacy skills typically required for each occupation (e.g., the required proficiency level in writing, oral comprehension, oral expression, or reading comprehension) or for work activities or contexts that involve interaction or communication (e.g., contact with others, working directly with the public, or the frequency of written communications). The various descriptors are usually measured on a scale. For example, for the descriptor "Communicating with Coworkers" (work activity), a value from "1 – Lowest level" to "5 – Highest level" is attributed to each occupation; the different levels are defined in terms of complexity in relation to the work tasks.

The information on occupations in OaSIS is based on data from O*NET, an American occupational information system developed by the U.S. Department of Labor, Employment and Training Administration.[7] In O*NET, the values assigned to the descriptors for each occupation are taken from an annual survey of a representative sample of workers from about 1,000 occupational categories. Workers complete a questionnaire that generally asks them to rank their job on scales that measure the different descriptors. In some cases, expert assessments are used to complement the data collected from workers.

4. A similar approach was adopted by Vidal-Suñé and Alarcón in Spain, using a crosswalk between the International Standard Classification of Occupations (ISCO) and O*NET developed by Eurostat. They also propose a theoretical framework and a set of methods for analyzing the language-related characteristics of occupations. See Vidal-Suñé and Alarcón (2021).
5. Occupational and Skills Information System — Canada.ca (esdc.gc.ca)
6. OaSIS 2023 Version 1.0.
7. For more information, see O*NET Resource Center (onetcenter.org).

OaSIS is based on information from O*NET. It was built by mapping Canadian and American occupational classifications onto one another, then converting and adapting the descriptor measures. Specific aspects of the National Occupational Classification and the context of the Canadian labour market were taken into account when converting the O*NET data, including by using reference documents on Canadian occupations. To facilitate the development of OaSIS, the measures corresponding to the various descriptors were simplified from their original form in O*NET.[8]

For more information on the OaSIS methodology, please refer to the Occupational and Skills Information System (OaSIS) methodology (esdc.gc.ca).

2.2 Combining OaSIS information with census data

OaSIS provides information on the NOC categories, meaning that it can be used to enrich data sources that provide information on the occupation of people or on positions.

This report presents statistics based on 2021 Census data. The census provides information on the main job of individuals, which can be categorized according to NOC categories and, by extension, OaSIS occupational profiles. The results presented here apply to people aged 15 and older who were employed during the 2021 Census reference week (May 2 to 8, 2021) and who lived in a private household in Canada. For people with more than one job, the occupational information corresponds to the job they spent the most hours at during the census reference week.

OaSIS provides information on 900 occupational profiles, at a more granular level than the 516 NOC unit groups. Since 2021 Census data do not provide information on occupations at a finer level than the 516 NOC unit groups, some OaSIS categories must be combined to match the classification level used in the census (and in most other data sources produced by Statistics Canada). In many cases, the OaSIS categories that need to be combined have different values for the same descriptor. In order to aggregate the information to the NOC unit groups, for each descriptor, we calculated the average of the values of the different OaSIS contributing categories.[9] Where the average value was not an integer, it was rounded to the nearest one; cases where the average value ended in 0.5 were rounded up.

For example, the category “Biologists and related scientists” is a NOC unit group. In OaSIS, however, it is divided into two categories: “Biologists” and “Microbiologists and cell and molecular biologists.” When looking at the descriptor “Communicating with persons outside organization” (work activities) in OaSIS, the required proficiency or complexity level for the first profile is classified as high (value of 4 on the scale corresponding to this descriptor), while the second is classified as moderate (3). To aggregate these two profiles, the values for this descriptor were averaged (3.5), then rounded to the nearest integer (4). As a result, the occupational category of biologists and related scientists is considered to have a high level (4) of communication with people outside the organization.

2.3 Data limitations

The information in OaSIS enriches occupational data and opens up new research avenues. However, there are some limitations.

First, the information in OaSIS refers to occupations, not to specific positions or workers. The occupational categories comprise a set of specific work situations whose actual characteristics can be heterogeneous. Using the different OaSIS descriptors amounts to combining NOC occupations in different ways, therefore providing new ways of describing a data set. However, the descriptors relate to occupations and do not provide additional information on positions or individual workers. The attribution of these positions and workers to occupational categories is done independently in advance and does not rely on information from OaSIS.

8. The descriptor measures provided by OaSIS all correspond to discrete values on ordinal scales, while O*NET provides data files with continuous values as directly measured in the worker survey (including the averages and standard deviations of responses for each descriptor). In other words, OaSIS is based on an adaptation of O*NET survey results, but the requirements associated with transposing and adapting the data to the Canadian context mean that OaSIS tends to stray a little more from this empirical basis.
9. Due to the lack of statistical information about OaSIS categories, a weighted average could not be calculated, where the OaSIS categories would have been assigned a different weight based on the number of people in each category. We therefore had to opt for a simple average.

Then, as mentioned above, the information in OaSIS is the result of a crosswalk with O*NET, an American occupational information system. The particular value of O*NET is its empirical character, that is, the fact that its description of different occupations is based on a survey of workers. However, these data are collected in the United States. While the working assumption is that American and Canadian work realities are generally similar, some distortions could be produced by having to transpose information from one occupational classification to another, as the categories of each do not always match.

Finally, as explained in the previous section, the occupational categories in OaSIS are more granular than the NOC unit groups generally used for statistical purposes. This requires aggregating information from certain OaSIS profiles, which may require merging occupations with somewhat different characteristics. This limitation echoes the previously mentioned limitations about how information in OaSIS relates to occupational categories rather than jobs or workers.

For these different reasons, the information in OaSIS should be considered as providing general indications of occupational characteristics that can be used to combine occupations in new ways and to reveal certain key trends, rather than as specific measures of job characteristics.

3 The language-related characteristics of occupations: presentation of a selection of OaSIS descriptors

OaSIS provides a fairly extensive set of descriptors that can be used to characterize the language-related characteristics of occupations. Here, we present a selection of three types descriptors: work activities (Section 3.1), work contexts (Section 3.2), and skills (Section 3.3). This selection is not intended to be exhaustive, as OaSIS may have other descriptors that could be relevant to the study of the language-related characteristics of occupations.

3.1 Work activities

3.1.1 Presentation of descriptors

We have selected the following from among the various OaSIS descriptors for work activities:

- Communicating with Coworkers[10]
  - ▶ Sharing or providing information or advice to management, supervisors, coworkers and subordinates on work-related topics.
- Communicating with Persons Outside Organization
  - ▶ Sharing or exchanging information with people outside the organization, representing the organization to customers, the public, government or other external sources.
- Performing for or Working Directly with the Public
  - ▶ Working or interacting directly with the public or performing for public audiences.

In OaSIS, for every occupational profile, each of the above descriptors is evaluated on a scale ranging from “1 – Lowest Level” to “5 – Highest Level.” The concept of “level” here refers to both the level of complexity and the scope of the work activities involved.

The levels associated with selected occupations are presented in Table 1, to illustrate the assessment of values for the different descriptors. Different profiles can be identified. For example, some occupations (cooks, plumbers, food and beverage processing labourers) have a low or very low level for each type of activity, while others (police officers, judges) have high or very high levels in each case. For other occupations, the levels vary depending on the type of activity. Human resource professionals and software engineers and designers are characterized by a high level of communication with coworkers, but also by the lowest level of working with the public, while journalists have the highest level of communication with people outside their organization, but a moderate level of communication with coworkers or working with the public.

10. The descriptions and definitions of the descriptors are from OaSIS.

Table 1
Values associated with certain descriptors of work activities from OaSIS, selected occupations

Occupation	Work activities		
	Communicating with coworkers	Communicating with persons outside organization	Performing for or working directly with the public
Human resources professionals	4	3	1
Administrative assistants	3	2	3
Biologists and related scientists	4	4	2
Software engineers and designers	4	2	1
Nurse aides, orderlies and patient service associates	2	2	2
Judges	5	4	5
Secondary school teachers	4	2	3
Police officers (except commissioned)	4	4	4
Journalists	3	5	3
Cooks	2	1	2
Plumbers	2	2	2
Transport truck drivers	2	3	2
Labourers in food and beverage processing	1	1	1

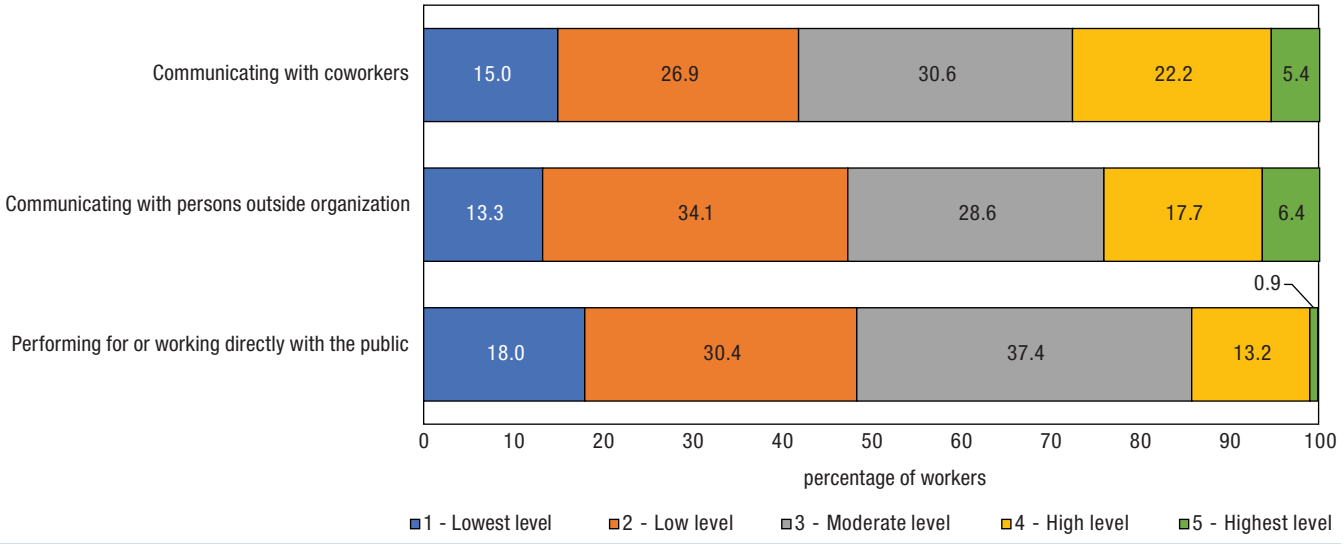
Note: 1 – Lowest level; 2 – Low level; 3 – Moderate level; 4 – High level; 5 – Highest level.
Source: Adapted from the Occupational and Skills Information System (OaSIS).

3.1.2 Distribution of workers by work activity descriptors

The OaSIS descriptors can be used to enrich the 2021 Census data on the occupation of employed people (see Section 2.2).

In 2021, 27.6% of workers in Canada worked in an occupation that involved high or very high levels of communication with coworkers, while 41.9% worked in an occupation with low or very low levels (Chart 1). In comparison, a slightly higher proportion of workers (47.4%) were in occupations classified as having low or very low levels of communication with people outside the organization. For the work activity "performing for or working directly with the public," only 0.9% of Canadian workers were in 1 of the 14 occupations considered to have the highest level of this type of activity.[11]

Chart 1
Distribution of workers by the level of certain work activities that is required by their occupation, Canada, 2021



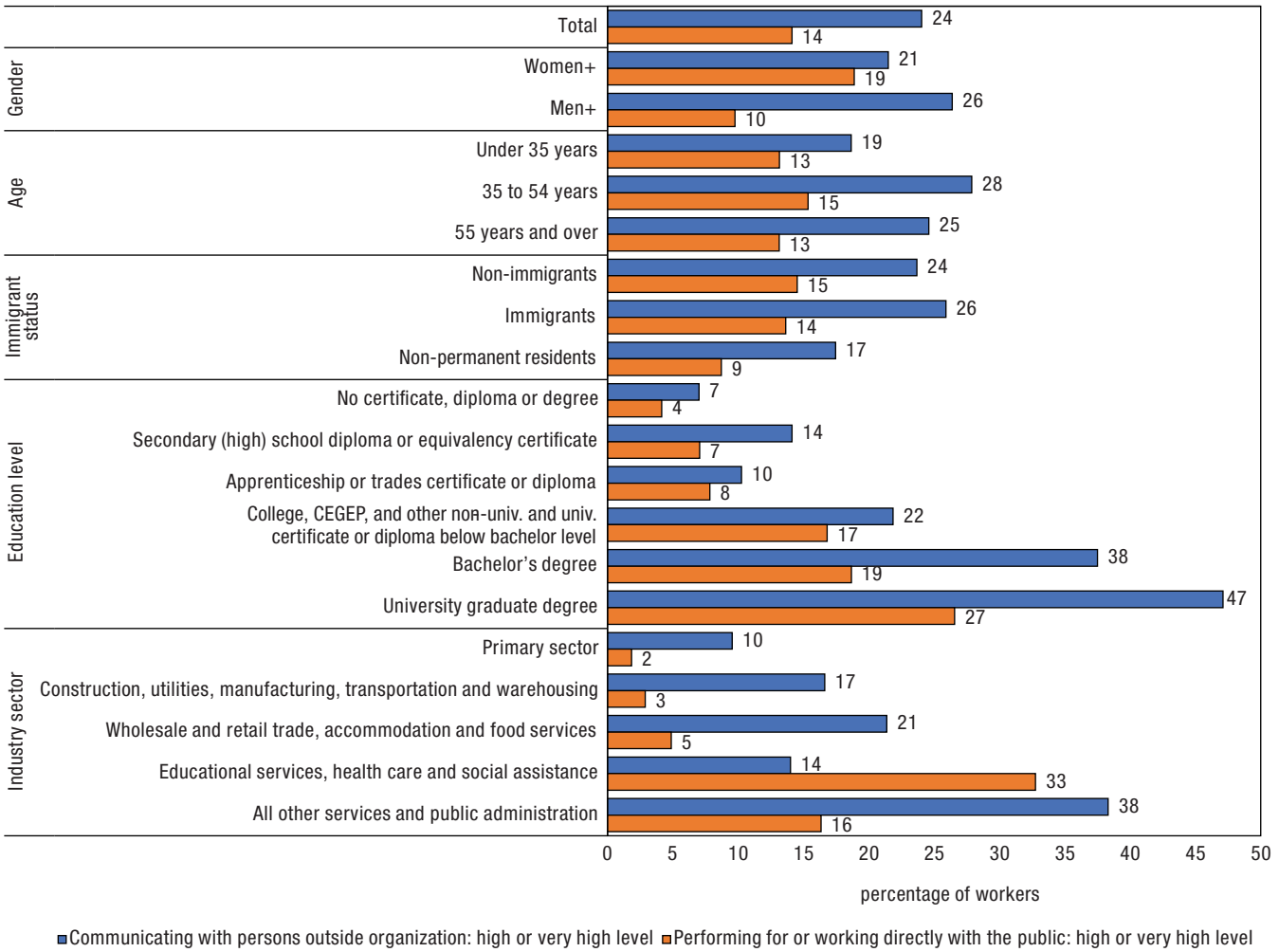
Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

11. These occupations include, for example, judges, dentists, announcers and other broadcasters, and border services, customs and immigration officers.

There are some variations in the distribution of workers by their sociodemographic characteristics (Chart 2). The proportion of people in an occupation involving a high or very high level of performing for the public was higher among women (19%) than men (10%). It also tended to be higher among those with higher educational attainment (27% among those with a graduate degree) and among individuals who work in the educational services, health care and social assistance sector (33%).

There is also a correlation between having attained a higher level of education and being in an occupation requiring higher levels of communication with people outside the organization.[12] University graduates stand out markedly from other workers. For example, working in an occupation with a high level of communication with people outside the organization was more common among workers with a bachelor's degree (38%) or graduate degree (47%) than those with no diploma (7%), a high school diploma (14%) or an apprenticeship or trades diploma (10%).

Chart 2
Proportion of workers in an occupation associated with a high or very high level of certain work activities, by sociodemographic characteristics, Canada, 2021



Note: Gender – Given that the non-binary population is small, data aggregation to a two-category gender variable is sometimes necessary to protect the confidentiality of responses provided. In these cases, individuals in the category "non-binary persons" are distributed into the other two gender categories and are denoted by the "+" symbol.
Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

12. Trends in the levels of communication with coworkers, which are not presented here, are generally comparable with those for communication with people outside the organization.

3.2 Work contexts

3.2.1 Presentation of descriptors

The second type of descriptors relates to work contexts. The selected contexts deal with professional interactions or communications and are measured by their frequency or importance:

- Contact with others (frequency)
  - ▶ The job requires being in contact with others (face-to-face, by telephone, or otherwise) to perform tasks.
- Work with work group or team (frequency and importance)
  - ▶ The job requires working with others in a group or team.
- Face-to-face discussions (frequency)
  - ▶ The job requires having in-person discussions with individuals or teams.
- Written communications (frequency)
  - ▶ The job requires producing administrative or creative written communications.
- Electronic mail (frequency)
  - ▶ The job requires the use of an electronic communication device to send and receive messages.
- Telephone (frequency)
  - ▶ The job requires communicating with others by using a telephone or hand-held radios.
- Public speaking (frequency)
  - ▶ The job requires delivering speeches to an audience (a minimum of five persons).
- Deal with external customers (importance)
  - ▶ The job requires working with members outside of the organization, including clients and the public.
- Coordinating or leading others (importance)
  - ▶ The job requires providing guidance or direction to coworkers or subordinates in accomplishing work activities.

The concepts of frequency or importance should be interpreted specifically in relation to the work task requirements. For instance, the OaSIS descriptor for the frequency of face-to-face discussions refers specifically to discussions that relate to workers' duties, and not, for example, discussions between colleagues during a break.

Table 2 presents the values associated with the different descriptors for the frequency of work contexts for selected occupations.

Table 2
Values associated with certain descriptors of work contexts from OaSIS, selected occupations

	Work contexts						
Occupations	Contact with others	Face-to-face discussions	Work with work group or team	Telephone	Electronic mail	Written communications	Public speaking
Human resources professionals	4	3	4	4	5	3	1
Administrative assistants	4	4	3	4	4	3	1
Biologists and related scientists	4	3	4	4	4	3	2
Software engineers and designers	4	3	4	3	4	3	1
Nurse aides, orderlies and patient service associates	5	4	4	3	3	2	1
Judges	4	4	4	4	4	4	4
Secondary school teachers	5	4	2	3	4	3	5
Police officers (except commissioned)	3	4	4	4	4	4	2
Journalists	4	4	4	5	5	5	3
Cooks	5	4	5	2	1	1	1
Plumbers	4	3	2	4	3	1	1
Transport truck drivers	4	2	1	3	1	1	1
Labourers in food and beverage processing	4	4	4	1	1	1	1

Note: 1 - Once a year or more but not every month; 2 - Once a month or more but not every week; 3 - Once a week or more but not every day; 4 - Every day, a few times per day; 5 - Every day, almost continuously.
Source: Adapted from the Occupational and Skills Information System (OaSIS).

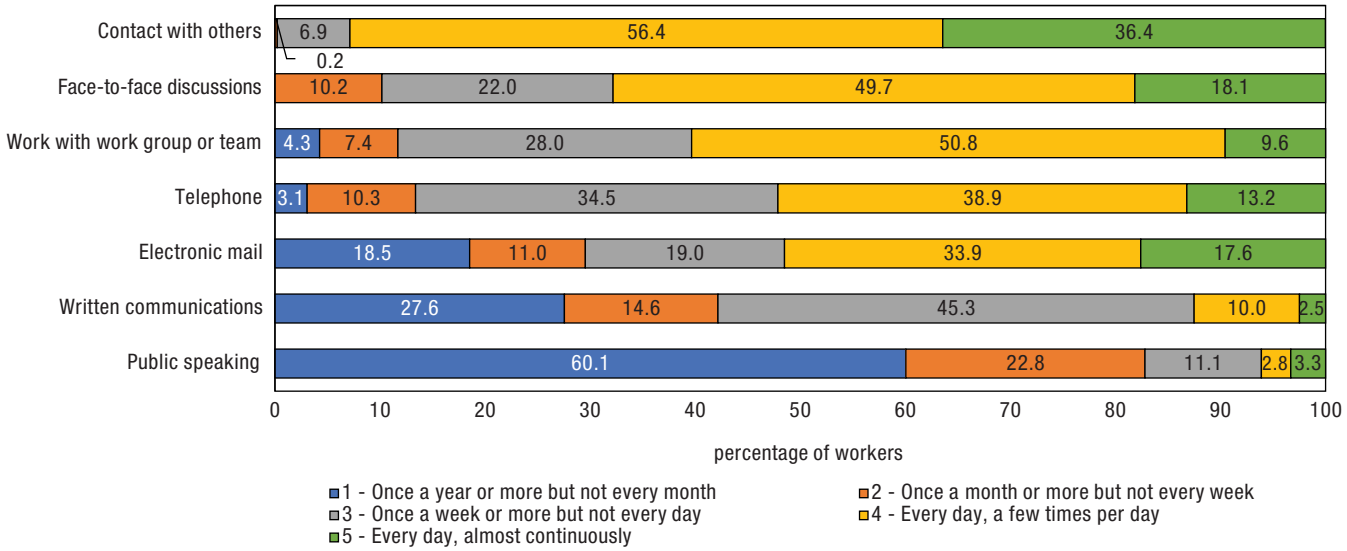
All the selected occupations required contact with other people at least once a week and discussions with others at least once a month. Occupations such as nurse aides, orderlies and patient service associates, secondary school teachers and cooks were classified as requiring being in contact with others on an almost continuous basis.

For the other descriptors, there were occupations in all categories of the frequency scales. For example, cooks are classified as working in teams or groups almost continuously every day, while for transport truck drivers this frequency was of once a year or more, but not every month. Secondary school teachers are the only occupation among the selected occupations to be classified as requiring public speaking almost continuously every day, while journalists stand out for daily and almost continuous use of the telephone, email and written communications.

3.2.2 Distribution of workers by work context descriptors

In Canada, in 2021, a high proportion of workers had to be in contact with others (92.9% of workers were in occupations requiring daily contact), have face-to-face discussions (67.8% on a daily basis) and work in a team or group (60.3% on a daily basis) (Chart 3). Conversely, a small proportion of workers had to speak in public (6.1%) and produce written communication (12.5%) on a daily basis.

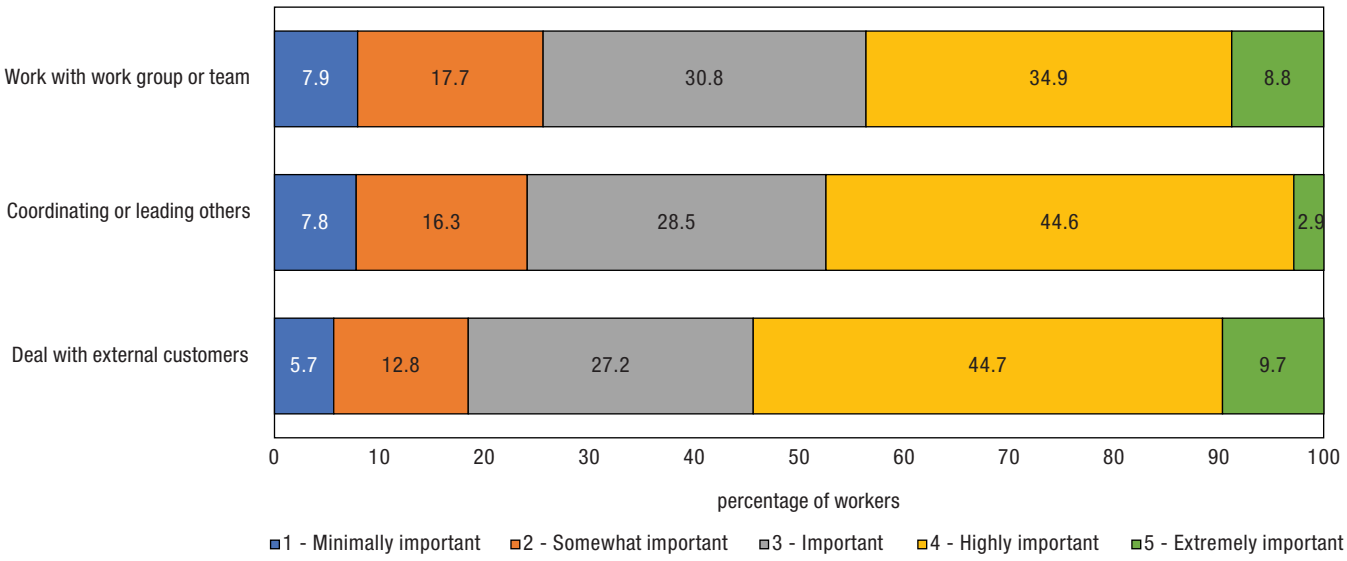
Chart 3
Distribution of workers by the frequency of certain work contexts that is required by their occupation, Canada, 2021



Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

In addition to descriptors related to the frequency of certain work contexts, there are also descriptors about their importance. For example, in 2021, 43.6% of workers in Canada worked in an occupation in which working in teams or groups was very or extremely important, 47.5% worked in an occupation where it was very or extremely important to coordinate or lead others, and 54.4% worked in an occupation where it was very or extremely important to deal with external customers (Chart 4). These different descriptors provide more context about the types of people workers interact with in their job (coworkers, subordinates or customers).

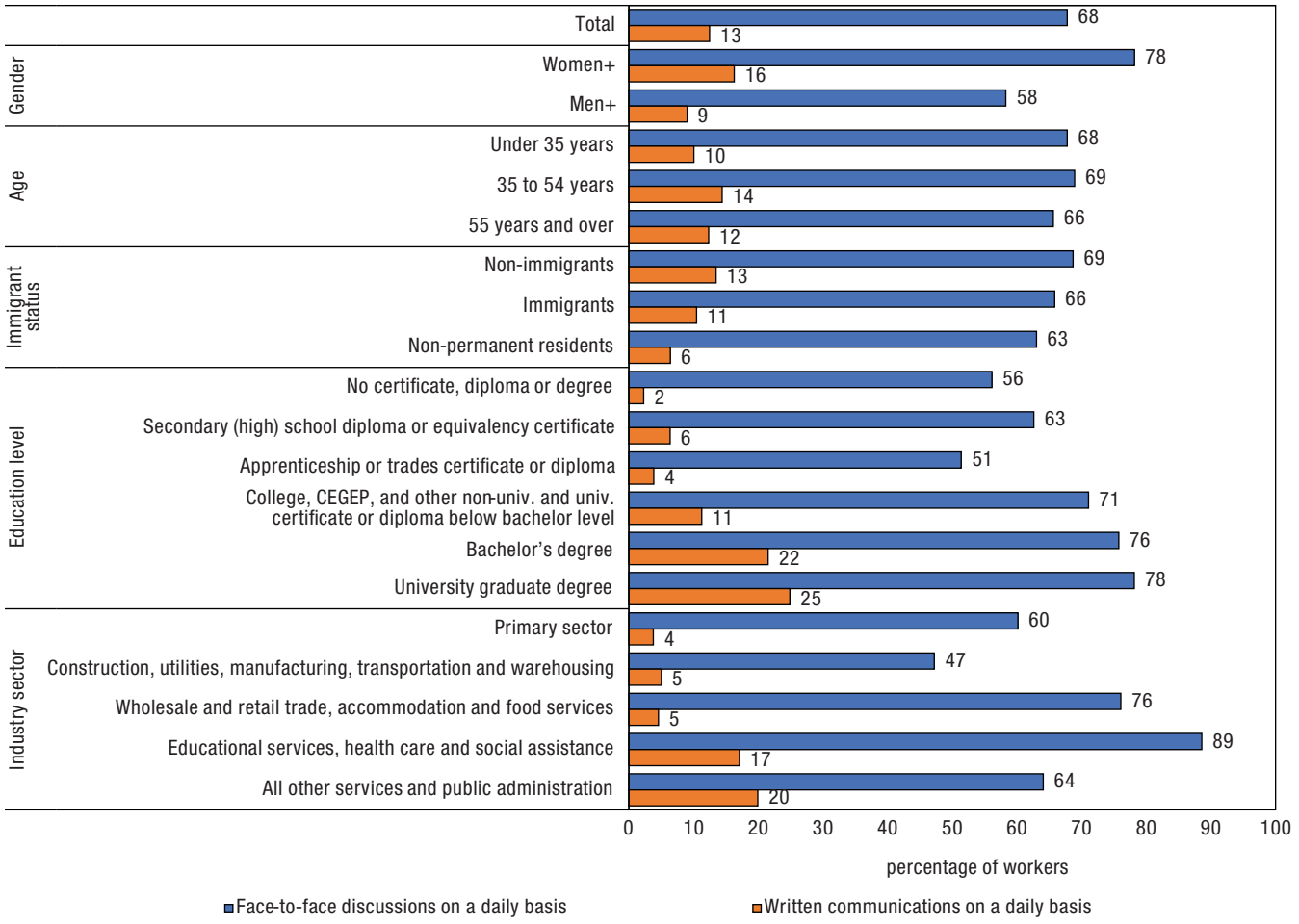
Chart 4
Distribution of workers by the importance of certain work contexts for their occupation, Canada, 2021



Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

As with the work activities, there are some variations in the distribution of workers based on certain sociodemographic characteristics (Chart 5). For example, women were more likely than men to work in an occupation involving face-to-face discussions on a daily basis (78% of women compared with 58% of men) or requiring written communications on a daily basis (16% versus 9%).

Chart 5
Proportion of workers in an occupation requiring face-to-face discussions or written communications on a daily basis, by sociodemographic characteristics, Canada, 2021



Note: Gender – Given that the non-binary population is small, data aggregation to a two-category gender variable is sometimes necessary to protect the confidentiality of responses provided. In these cases, individuals in the category "non-binary persons" are distributed into the other two gender categories and are denoted by the "+" symbol.
Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

The proportions of people in an occupation that requires face-to-face discussions on a daily basis were highest in the educational services, health care and social assistance (89%) and wholesale and retail trade, accommodation and food services (76%) sectors. For educational services and health care, a high proportion of people worked in an occupation that calls for daily written communications (17%). Conversely, this was not the case in the wholesale and retail trade, accommodation and food services sector (5%).

3.3 Skills

3.3.1 Presentation of descriptors

The third type of descriptor indicates the levels of various skills typically required to work in an occupation. Some relate to literacy skills. The following descriptors have been selected to cover both the passive understanding of language and its active production, as well as both oral and written dimensions:

- Oral communication: Oral comprehension
  - ▶ The capability to listen to and understand information and ideas presented through spoken words and sentences.
- Oral communication: Oral expression
  - ▶ The capability to talk to others to convey information effectively.
- Reading comprehension
  - ▶ The capability to understand written information presented through words, sentences, paragraphs, symbols, and images in work-related documents.
- Writing
  - ▶ The capability to communicate in writing by using written words, sentences, paragraphs, symbols, and images and adapted for the needs of the audience.

As with the other descriptors examined previously, occupations are ranked for these different skills on a scale from 1 to 5. The measures for each of the four selected literacy skills are strongly correlated (see Appendix 1). For a given occupation, they never vary by more than one level, and in half of cases, they are the same for all skills. The rankings assigned to a selection of occupations reveal this relative consistency in the levels associated with the different skills (Table 3).

This is why—to facilitate use of these indicators and the presentation of the data—it was deemed appropriate to calculate an average value of literacy skills for each occupation (rounded to the nearest unit). Knowing that the levels associated with each of the four specific skills are highly correlated (they are identical to each other most of the time), this average value can be interpreted as the general level of literacy skills required in an occupation.

Table 3
Values associated with certain descriptors of skills from OaSIS, selected occupations

	Skills				
Occupation	Oral comprehension	Oral expression	Reading comprehension	Writing	General level of literacy skills
Human resources professionals	4	4	4	3	4
Administrative assistants	2	2	2	3	2
Biologists and related scientists	5	5	5	5	5
Software engineers and designers	4	4	4	3	4
Nurse aides, orderlies and patient service associates	2	2	2	2	2
Judges	5	5	5	5	5
Secondary school teachers	3	4	3	3	3
Police officers (except commissioned)	3	3	3	3	3
Journalists	4	4	3	4	4
Cooks	2	2	2	1	2
Plumbers	2	2	2	2	2
Transport truck drivers	1	2	2	2	1
Labourers in food and beverage processing	1	1	1	1	1

Note: 1 – Lowest level; 2 – Low level; 3 – Moderate level; 4 – High level; 5 – Highest level.
Source: Adapted from the Occupational and Skills Information System (OaSIS).

3.3.2 Distribution of workers by skill descriptors

In 2021, 22.8% of workers in Canada were in an occupation that required a high or very high general level of literacy skills, while 46.1% were in an occupation that required a low or very low level (Table 4). These proportions varied only slightly when looking at specific skills (oral comprehension, oral expression, etc.).

Table 4
Distribution of workers by the level of certain skills required by their occupation, Canada, 2021

	Skills				
	Oral comprehension	Oral expression	Reading comprehension	Writing	General level of literacy skills
Levels	percent				
Lowest level	19.2	20.2	23.1	20.4	19.5
Low level	27.6	27.2	23.7	28.8	26.6
Moderate level	30.2	29.7	33.5	30.4	31.1
High level	17.9	17.0	13.2	16.3	17.0
Highest level	5.1	5.8	6.4	4.1	5.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

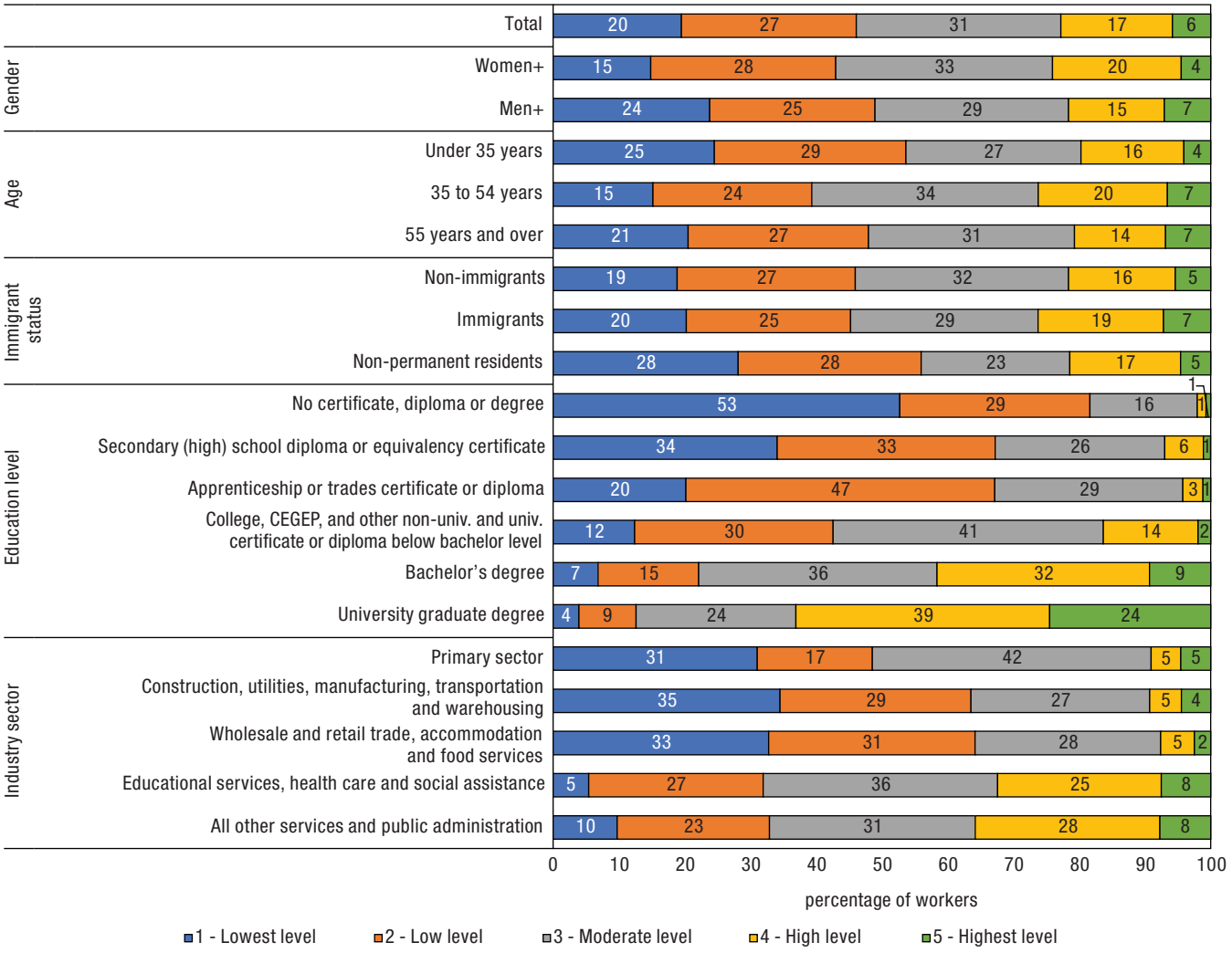
Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

Men (24%) were more likely than women (15%) to be in an occupation requiring a very low overall level of literacy skills and, to a lesser extent, to be in an occupation requiring a very high level (7.0% compared with 4.5%) (Chart 6). Non-permanent residents as well as workers under the age of 35 were overrepresented in occupations requiring lower literacy levels.

There is also a clear correlation between workers' education level and the level of literacy skills associated with their occupation. For example, 82% of workers who did not finish high school were in an occupation requiring a low or very low level of literacy skills, while 85% of those who earned a doctorate or a medical degree were in an occupation requiring a high or very high level of literacy skills. Nearly two-thirds (65%) of people in an occupation that requires very low literacy skills had a high school diploma at most. Meanwhile, half (50%) of people in an occupation requiring a very high skill level had earned a graduate degree.

The educational services, health care and social assistance sectors, as well as other private services and public administration—sectors where levels of education are generally higher—had the highest proportions of workers in occupations that require high or very high levels of literacy.

Chart 6
Distribution of workers by the general level of literacy skills required by their occupation, by sociodemographic characteristics, Canada, 2021



Note: Gender – Given that the non-binary population is small, data aggregation to a two-category gender variable is sometimes necessary to protect the confidentiality of responses provided. In these cases, individuals in the category "non-binary persons" are distributed into the other two gender categories and are denoted by the "+" symbol.
Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

There is sometimes considerable overlap between the literacy skill descriptors in OaSIS and the TEER categories (training, education, experience and responsibilities) (see Appendix 2).

4 Language-related characteristics of occupations and languages of work: An overview

The descriptors of the language-related characteristics for occupations in OaSIS can be used to shed new light on census data on the languages used at work. Unlike occupational information from OaSIS, census data on languages used at work relate directly to individuals and their specific job. For the 2021 Census, respondents were asked what languages they used at work on a regular basis. If they provided more than one language in this first question, they were asked which of those languages they used most often at work.[13]

13. For an overview of the use of languages at work in Canada in 2021, see Cornelissen (2022).

This section looks at data on the use of English and French in certain regions where both languages are widely used at work (Montréal, Ottawa–Gatineau and New Brunswick), as well as the use of languages other than English or French.

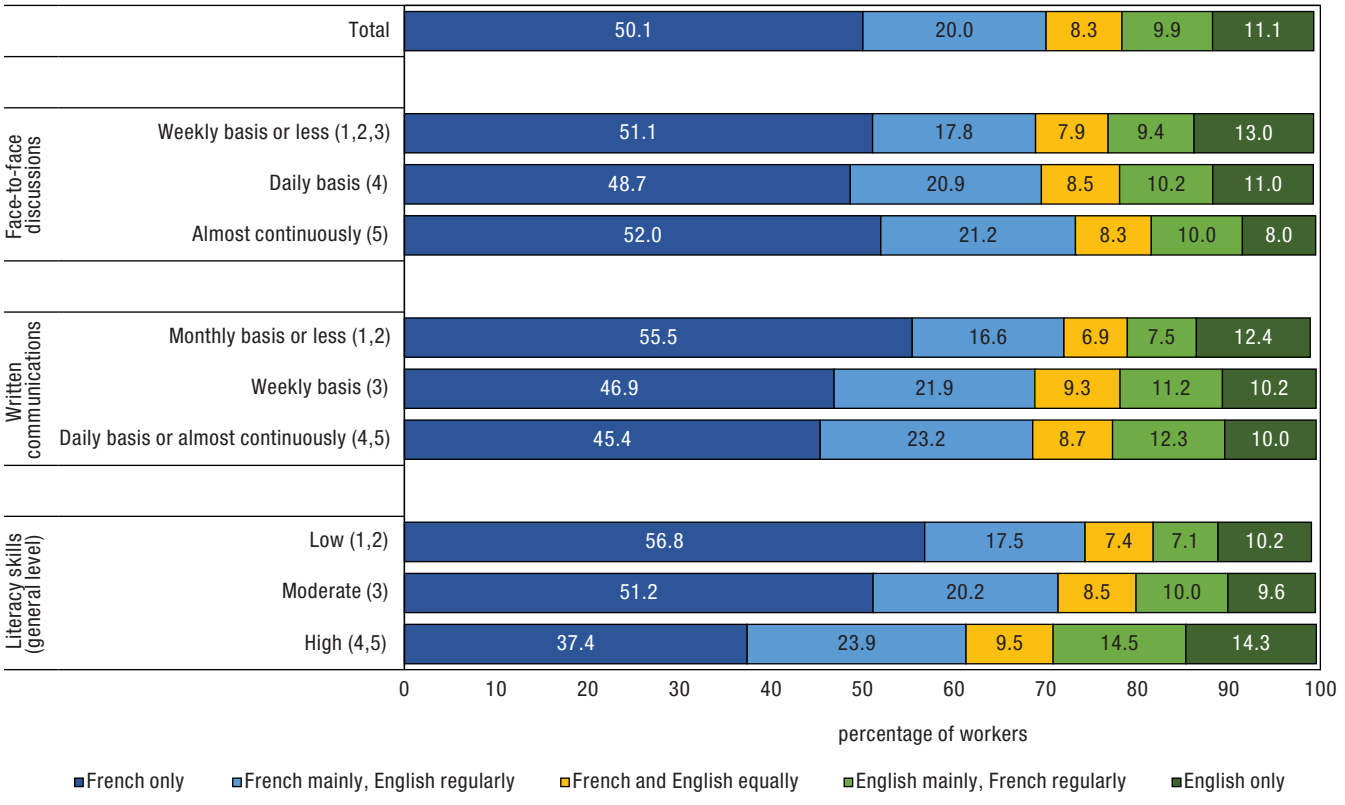
4.1 English and French

4.1.1 Montréal CMA

In 2021, 70.1% of workers in the Montréal census metropolitan area (CMA) reported using French as their main language of work (that is, it was the language they reported using most often at work, excluding cases where they also reported using English equally most often), while 21.0% mainly used English and 8.3% used French and English equally. Bilingualism in the workplace was common: 38.2% of workers used both English and French on a regular basis at work. In total, 88.4% of workers used French on a regular basis, compared with 49.5% for English.

Language use varied based on the activities, contexts or skills associated with workers' occupation. For example, in the Montréal CMA, among workers in an occupation requiring a high general level of literacy, a higher proportion used English at work: 62.3% used English on a regular basis and 28.7% mainly used English, compared with 42.5% and 17.3% respectively in occupations requiring a low literacy level (Chart 7). English–French bilingualism was also higher in occupations requiring a high general level of literacy, with 47.9% of workers in these occupations using a combination of English and French on a regular basis at work.

Chart 7
Use of French and English at work by the frequency of certain work contexts and the general level of literacy skills required by the occupation, Montreal CMA, 2021

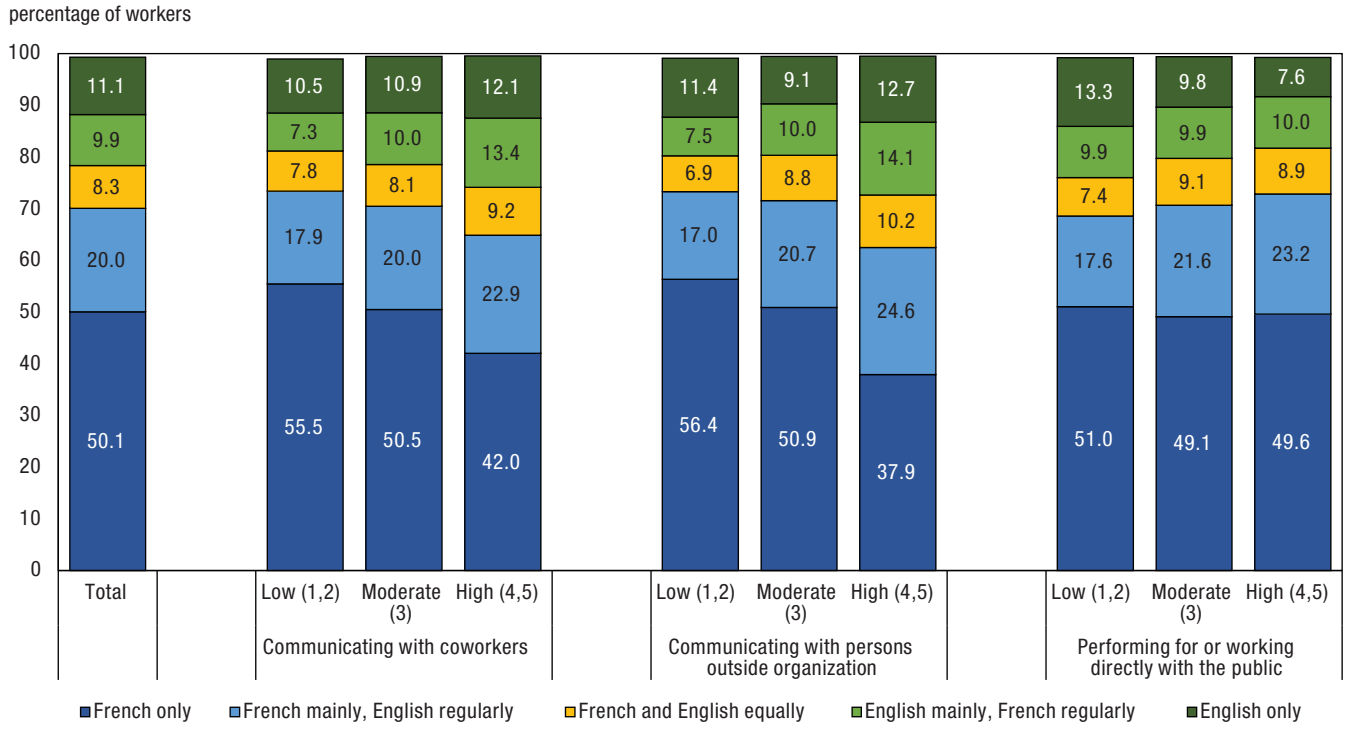


Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

People in an occupation that requires infrequent written communications (monthly or less) used French as their main language of work more often (72.0%), and less often used a combination of English and French on a regular basis (31.0%). With respect to the frequency of face-to-face discussions, workers in an occupation that requires discussions on a daily or almost continuous basis used French more often as their main language (73.3%) and English less often (8.0%).

Considering the type of communication can provide additional insights (Chart 8). In the Montréal CMA in 2021, working in an occupation that requires a high level of communication with coworkers or people outside the organization was associated with a higher tendency to use English as the main work language, as well as a higher tendency of English–French bilingualism. For example, 25.4% of those in an occupation associated with a high level of communication with coworkers mainly used English at work, compared with 17.8% of those in an occupation with a low level of communication with coworkers.

Chart 8
Use of French and English at work by the level of certain work activities required by the occupation, Montreal CMA, 2021



Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

Occupations associated with higher levels of working directly with the public had higher proportions of people who use French at work, be it the main language or simply on a regular basis. For example, among workers in the Montréal CMA in an occupation associated with a high level of work with the public, 91.7% used French at least on a regular basis, compared with 85.9% among workers in an occupation associated with a low level of work with the public.

In summary, the proportion of workers in the Montréal CMA using English at work was lower among workers in an occupation requiring less contact with the public or face-to-face discussions. In contrast, the proportion of English use was higher among workers in an occupation that requires more written communications, more communication with coworkers or people outside the organization, and generally higher literacy skills.

The results regarding work activities (Chart 8) can be difficult to interpret. At first glance, there appears to be a contradiction between the results for working directly with the public (less use of English among high levels) and those for communicating with people outside the organization (more use of English among high levels). Part of the

reason is that "people from outside the organization" includes the general public, but also other types of clients, the government, or other external partners, who are more likely to be outside the Montréal area. In this regard, it is interesting to compare the situation in the Québec CMA, where the demographic weight of the English-speaking population is much lower (see text box).

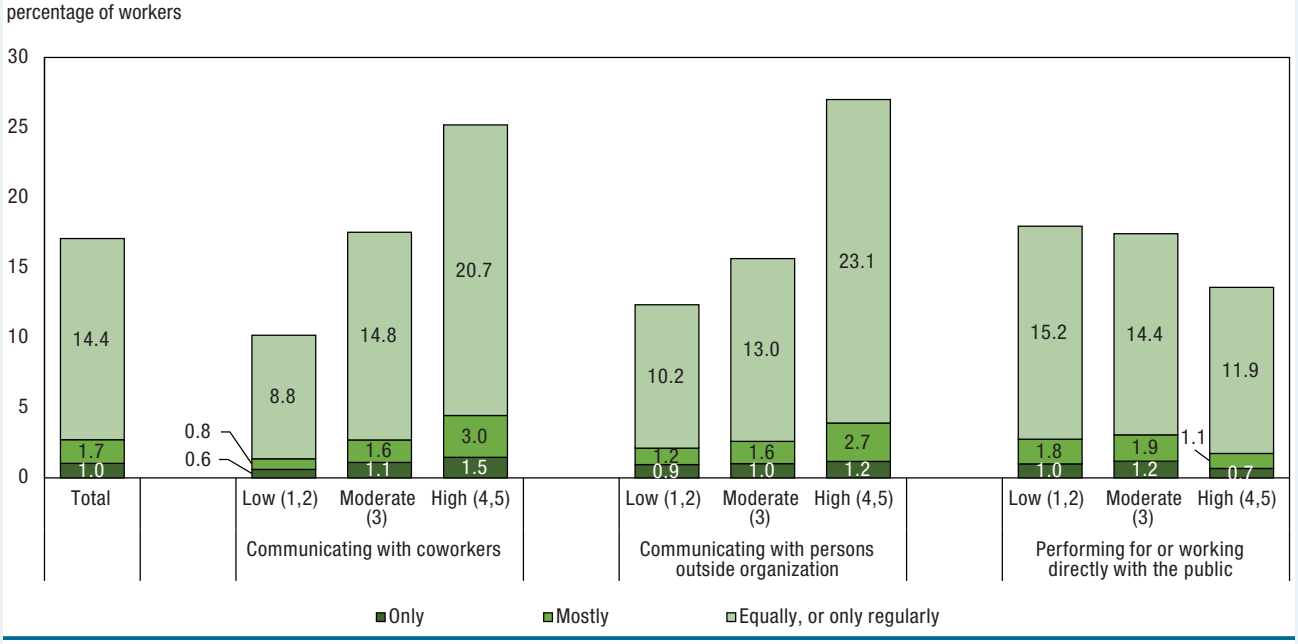
Québec CMA

In 2021, 17.1% of workers in the Québec CMA used English at work on a regular basis and 2.7% used it mainly.

Québec CMA workers in an occupation that requires high levels of communication with coworkers and people outside the organization were more likely to use English at work, be it as the main language or more broadly on a regular basis (Chart 9). The difference between levels of communication was more pronounced than in the Montréal CMA. For example, among workers in the Québec CMA in an occupation associated with a high level of communication with coworkers, 25.2% used English regularly and 4.5% used it mainly, while these proportions were 10.2% and 1.4%, respectively, in occupations associated with a low level of communication.

Moreover, similar to what was observed in the Montréal area, English was used less often by people in an occupation associated with a high level of working directly with the public.

Chart 9
Use of English at work by the level of certain work activities required by the occupation, Québec CMA, 2021



Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

Among workers in the Québec CMA, only 1.2% spoke English most often at home, and this proportion varied little based on the level of communication with coworkers (e.g., 1.4% in occupations with high levels of communication with coworkers). Therefore, it is unlikely that more frequent use of English in occupations that require a higher level of communication with coworkers can be explained by the composition of the workforce in these occupations. One possible explanation would be that people in these occupations are more likely to have contact with customers or partners outside the region.

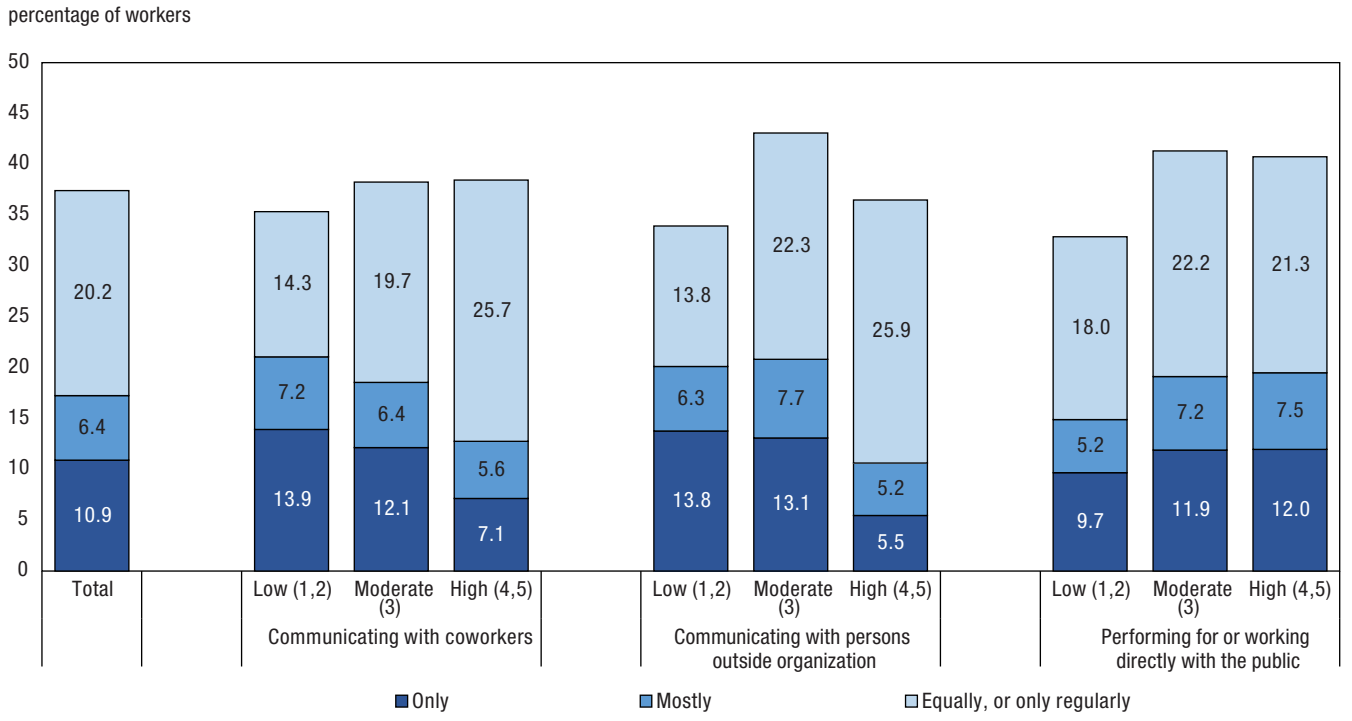
Moreover, these results shed light on the fact that associations between the descriptors of the language-related characteristic of occupations and the languages used at work should not be interpreted too quickly as cause–effect relationships, especially in a context where these different descriptors tend to be correlated with one another. The fact that English is used more often in Quebec in occupations that require high levels of communication with coworkers does not mean that English is used for this type of communications.

4.1.2 Ottawa–Gatineau CMA

In 2021, 77.8% of workers in the Ottawa–Gatineau census metropolitan area (CMA) mainly used English at work and 17.3% mainly used French. Moreover, 26.5% of workers used both English and French on a regular basis (Chart 10).

The use of French as a main language was generally less common among people in an occupation associated with higher levels of communication with coworkers or people outside the organization. For example, 12.8% of those in an occupation associated with a high level of communication with coworkers primarily used French at work, compared with 21.1% of those in an occupation associated with a low level of communication.

Chart 10
Use of French at work by the level of certain work activities required by the occupation, Ottawa-Gatineau CMA, 2021



Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

On the other hand, the use of French as a main language was higher among people in an occupation that requires moderate or high levels of work with the public, compared with those in an occupation associated with a low level of work with the public.

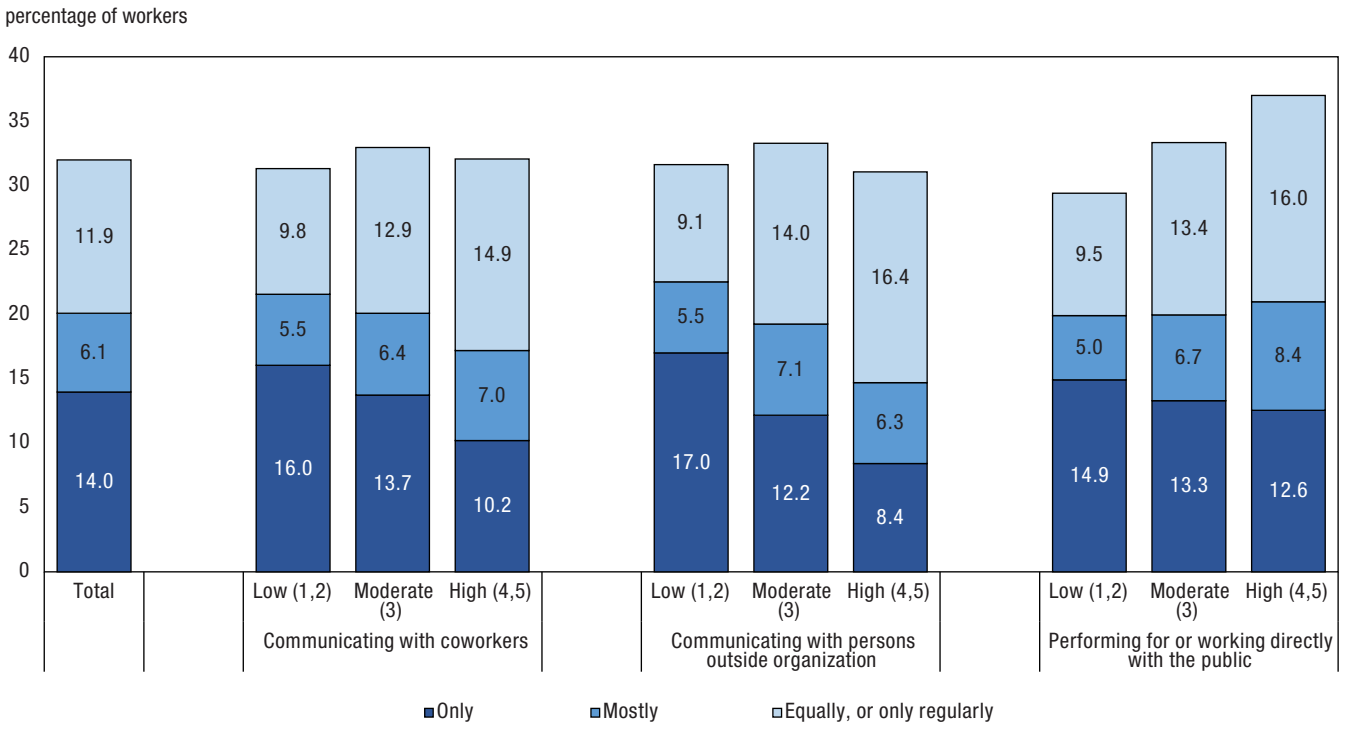
4.1.3 New Brunswick

In 2021, 20.1% of workers in New Brunswick mainly used French at work and 32.0% used it regularly. English–French bilingualism at work was common, with 18.0% of workers regularly using a combination of English and French at work.

The proportion of workers who mainly use French at work in New Brunswick was lower among those in an occupation that required a high level of communication with coworkers or with people outside the organization (Chart 11). The proportion of workers who use French at least on a regular basis varied little based on the levels of communication with coworkers or people outside the organization.

Having an occupation that requires a high level of work directly for the public was not associated with a change in the use of French as the main language of work. However, the regular use of French as a secondary language was more common in occupations associated with a high level of work with the public. In total, 37.0% of workers in an occupation associated with a high level of work with the public used French at least on a regular basis, compared with 29.4% of workers in an occupation associated with a low level of work with the public.

Chart 11
Use of French at work by the level of certain work activities required by the occupation, New Brunswick, 2021

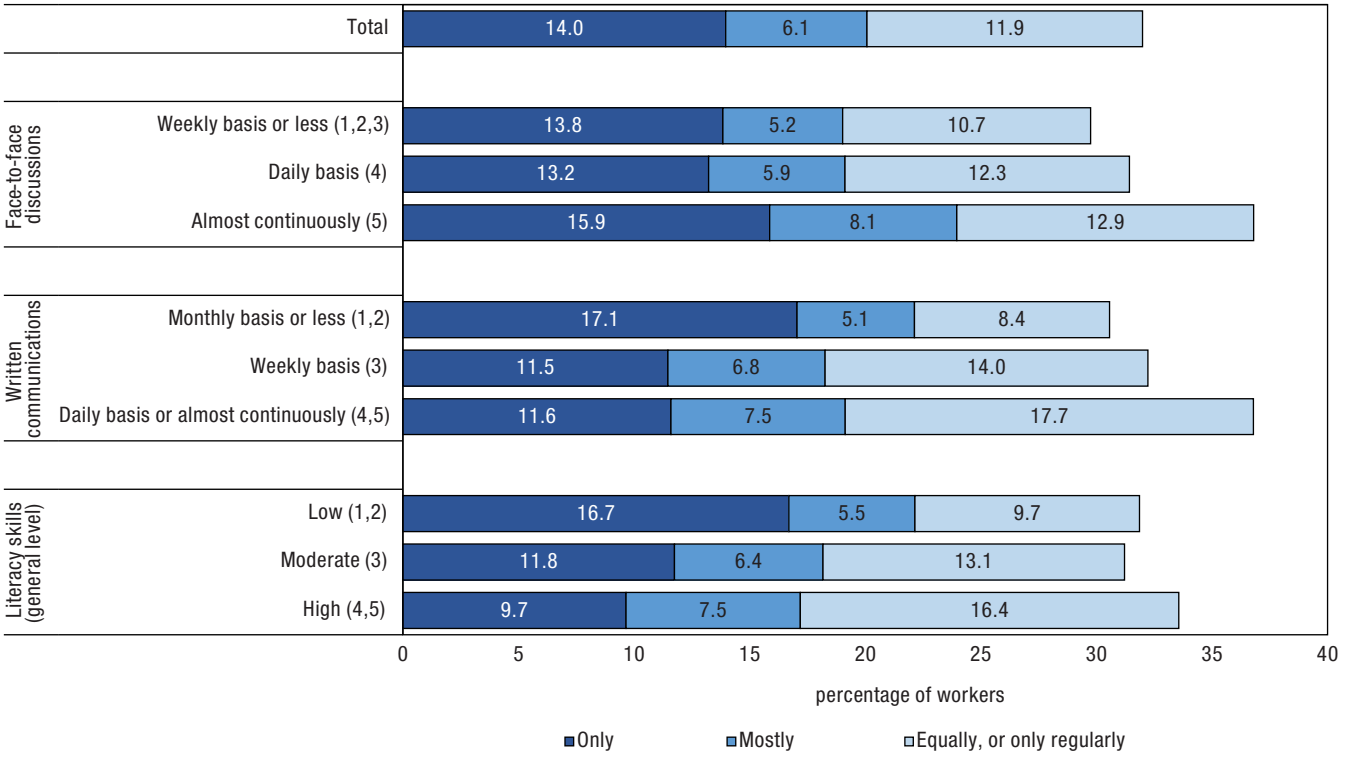


Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

In terms of work contexts, French was the main language of work for 24.0% of workers in an occupation associated with an almost continuous frequency of face-to-face discussions, compared with approximately 19% of other workers who had face-to-face discussions daily, weekly, or less often (Chart 12).

Conversely, the main use of French was more frequent (22.1%) in occupations that require written communications the least often (on a monthly basis or less). However, occupations associated with written communications on a daily basis were those where the use of both English and French on a regular basis was most frequent (25.2%).

Chart 12
Use of French at work by the frequency of certain work contexts and the general level of literacy skills required by the occupation, New Brunswick, 2021



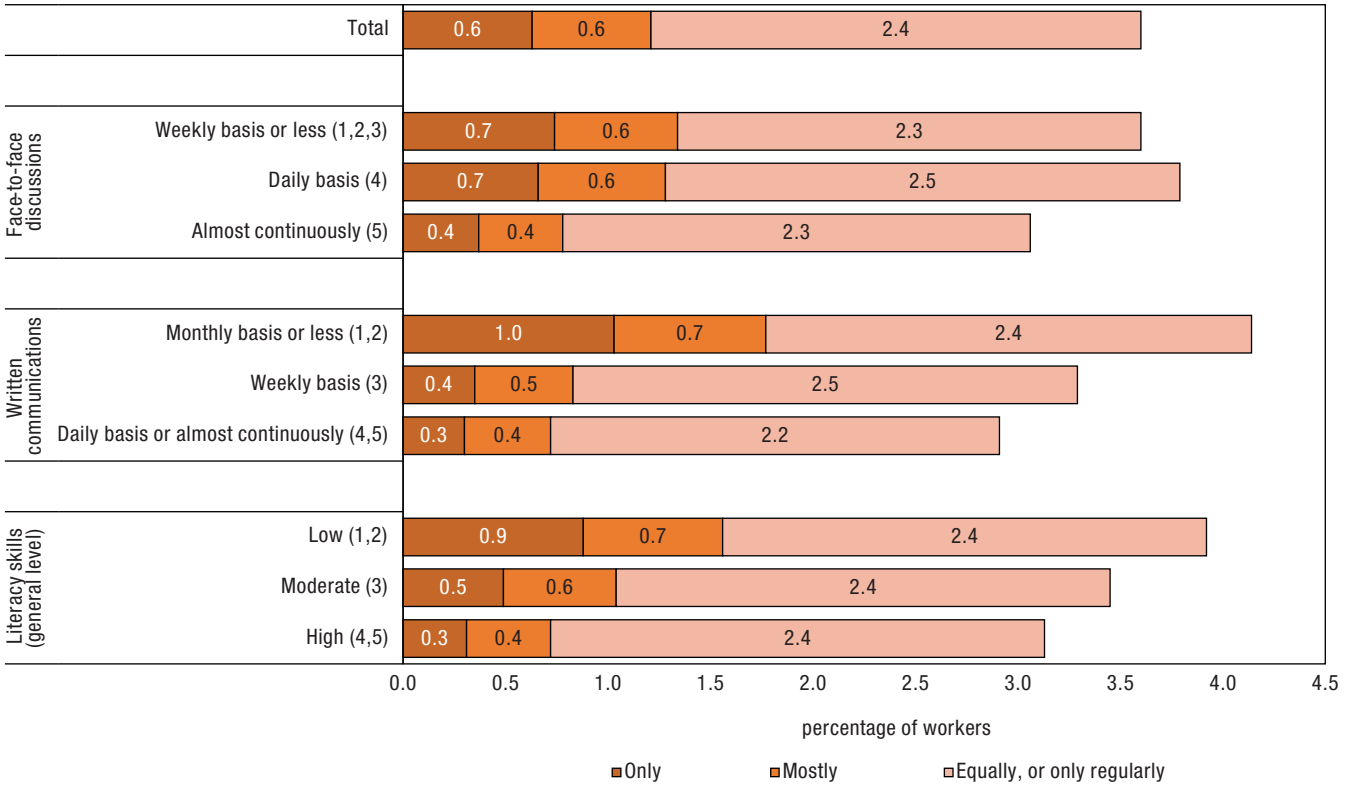
Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

4.2 Non-official languages

In 2021, 3.6% of workers in Canada used a non-official (i.e., a language other than English or French), non-Indigenous language on a regular basis at work.

Use of these languages—especially their primary or exclusive use—was more common among workers in occupations requiring a low literacy level or those involving infrequent face-to-face discussions or written communications (Chart 13).

Chart 13
Use of a non-official and non-Indigenous language at work, by the frequency of certain work contexts and the general level of literacy skills required by the occupation, Canada, 2021



Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

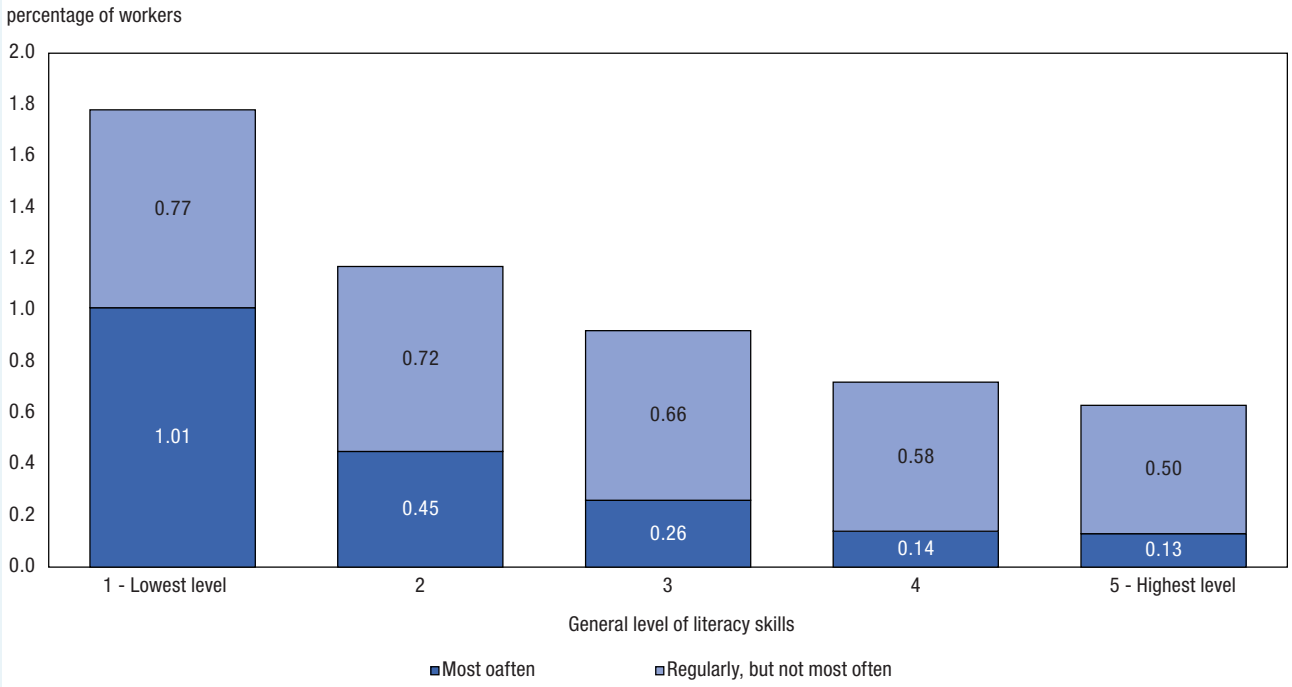
These findings suggest that these languages are used more often in work contexts where the use of language is less essential when performing tasks. This may be due to the fact that tasks involving language or communication by necessity tend to require the use of the more widely known languages in Canada, such as English or French. This may also be due to the fact that workers who do not know or have limited knowledge of English or French tend to be limited to jobs that require lower levels of literacy. Among workers who reported not knowing English or French well enough to conduct a conversation (who represented 0.7% of workers in Canada in 2021), 51.3% worked in an occupation that required a very low general level of literacy skills and 4.4% were in occupations associated with a high or very high level, compared with 19.3% and 22.9% of other workers, respectively.

Individuals who reported using a language at work they don't know well enough to conduct a conversation

In the census, a number of people reported using languages at work that did not correspond to the languages they reported knowing well enough to conduct a conversation. For example, 1.1% of all workers reported using one of the official languages (English or French) at work on a regular basis, yet reported that they could not conduct a conversation in that language, while 0.4% said that this language was the one they used most often at work (including equally with another language).

These proportions were higher among workers in occupations that require a lower level of literacy skills (Chart 14). Among workers in an occupation that requires the lowest general level of literacy, 1.8% reported using regularly at work an official language that they also reported not knowing well enough to conduct a conversation, compared with 0.6% among those in occupations associated with the highest level of literacy requirements. In occupations that require higher levels of literacy skills, it was rare for people to report using an official language most often without reporting knowing it well enough to conduct a conversation.[14]

Chart 14
Proportion of workers who reported using French or English at work while also reporting not being able to hold a conversation in this language, by the general level of literacy skills required by their occupation, Canada, 2021



Sources: Occupational and Skills Information System (OaSIS) and 2021 Census.

Therefore, these seemingly contradictory cases may be explained in part by the fact that these people have occupations that require a lower level of language proficiency, which allows them to use a language at work that they do not know well enough to conduct a conversation in.

14. In 2021, 74% of people who reported using a language most often at work that they did not know well enough to conduct a conversation were in occupations that required low or very low levels of literacy.

5 Summary and discussion of the findings

5.1 A series of descriptors

We presented and discussed roughly 15 different descriptors from OaSIS that can be used to characterize the language-related aspects of occupations.

The work activity descriptors—communicating with coworkers, communicating with persons outside organization, and performing for or working directly with the public—indicate rather concisely the level of certain broad types of communication activities associated with occupations. They have the advantage of clearly setting apart occupations and of providing general synthetic indicators. However, these descriptors relate to general characteristics of occupations, and therefore provide little information on specific language practices and situations involving interactions.

The work context descriptors can be used to describe the frequency and importance of more specific communication tasks and situations, such as face-to-face discussions, written communications, public speaking, telephone use, dealing with external customers, etc. These descriptors often capture fewer differences between occupations (in many cases, workers tend to be concentrated in one or two categories), but have the advantage of capturing some specific language-related characteristics of occupations.

The descriptors for skills—oral comprehension, oral expression, reading comprehension, and writing—are highly correlated and can therefore be summarized as a general index. Moreover, these descriptors are closely linked to the TEER categories (training, education, experience and responsibilities) (see Appendix 2) and, by extension, to the qualification levels (especially academic) of occupations. They primarily reflect the complexity associated with the use of language— rather than the intensity—which is similar to the concept of literacy.

The different descriptors of language characteristics of occupations considered here tend to be correlated. However, this correlation is incomplete, so much so that a certain multidimensionality of work language characteristics must be considered.

Future analyses that use, for example, factorial or cluster analysis methods could be conducted to identify broad dimensions to which the information provided by the different descriptors could be reduced or to develop a general classification of occupations according to their language-related characteristics.[15] These analyses would benefit from drawing on theoretical reflections about the language-related dimensions of work (conceptual framework, typology, etc.).[16]

5.2 Variations by worker characteristics

Generally speaking, the level, frequency and importance of the language or communication aspects of work tend to be higher in occupations that require a high level of qualification (higher TEER categories) and among more educated workers. These findings are consistent with research on literacy, which shows that literacy varies according to level of education, and that, subsequently, a higher level of literacy is associated with positive effects on the labour market, both in terms of employment and income.[17]

Variations by gender are also observed. For example, women are more likely to work in occupations that require a high level of work with the public or more frequent face-to-face discussions and written communications.

Non-permanent residents differ markedly from other workers, in that they are more concentrated in occupations associated with lower levels of literacy activity and skills. However, there are generally few differences between non-immigrants and immigrants (that is, people who obtained a permanent resident permit in their lifetime), at least at an aggregate level. This may seem surprising given the differences in educational attainment between these two

15. Exploratory factor analyses suggest that although the different descriptors related to the language characteristics of occupations tend to be highly correlated, it is nevertheless possible to bring out a multidimensional structure.
16. See Vidal-Suñé and Alarcón (2021) for efforts made in this regard.
17. See, for example, Green and Riddell (2001).

populations[18] and the link that was observed between education and the language-related characteristics of the occupations. Various studies have shown that the labour force outcomes of immigrants, including their access to a job that matches their level of education, varies according to their level of proficiency in the local languages.[19] The relationship between immigrants' language skills, the language-related characteristics of their occupation and their career path should be explored further.

We can formulate the hypothesis that there are interactions between languages used at work and the other language-related characteristics of work. Consider the case of an immigrant who recently arrived in Canada and for whom English or French would be a second language. Their ability to integrate the labour market will depend, among other things, on the relation between their language skills (proficiency level in English or French, but also various other forms of literacy) and the specific language requirements of different types of jobs. Beyond access to employment, the language-related characteristics of their job will then affect the extent to which they will be able to improve their knowledge of their second language during the course of their work. For example, the person will have a better opportunity to gain experience in their second language if they are constantly interacting with coworkers or clients than if they have a job that involves little or no interactions with others. In other words, it may be suggested that that the language-related characteristics of jobs not only count in terms of access to employment, but that they could also potentially have a cascading effect on the subsequent language and career trajectories of workers.

5.3 Variations in languages used at work

The exploratory analysis of the relationships between the different descriptors of language characteristics of occupations and the languages used at work revealed certain trends.

In the Montréal CMA, English was used at work by a smaller proportion of workers in occupations with less contact with the public or face-to-face discussions, but by a higher proportion of workers in occupations that call for more written communications, more communication with coworkers or people outside the organization, and higher literacy skills.

In the Ottawa–Gatineau CMA, the main use of French at work was less common in occupations that require high levels of communication with coworkers or people outside the organization. Conversely, it tended to be more common in occupations that require a moderate or high level of working directly with the public.

In New Brunswick, a greater proportion of workers mainly used French in occupations that require very frequent face-to-face discussions, but also in occupations that call for less frequent written communications and a lower level of communication with people outside the organization. The main use of French varied little when having to work directly with the public, but the secondary use of French by people working mainly in English was more common in occupations involving a higher level of work with the public.

Generally speaking, in the various regions examined, performing for or working directly with the public was associated with greater bilingualism at work, i.e., more frequent use of both English and French. Furthermore, in each case, the main use of French was less frequent—and the main use of English more frequent—in occupations requiring higher literacy skills or higher levels of communication with coworkers or people outside the organization. These occupations also tend to require a higher level of qualifications and to be done by individuals with higher levels of education.

Languages other than English and French tend to be used more in occupations associated with lower levels of literacy skills and language-related work activities. Conversely, English and French tend to be more predominant in occupations with higher levels of literacy skills and language-related activities.

Moreover, information on the language-related characteristics of occupations helps to put certain results about the languages used at work into better context and to better understand them. For example, it was observed that

18. In 2021, 47.5% of immigrant workers in Canada had a bachelor's degree or higher, compared with 27.8% of non-immigrant workers.
19. See, for example, Xu and Hou (2023), Cornelissen and Turcotte (2020) and Bélanger and Vézina (2016).

people who use a language at work that they reported not knowing well enough to conduct a conversation were more concentrated in occupations that require lower literacy skills.

Without further analysis, these various findings should not be interpreted too quickly as indicating a cause–effect relationship between the language characteristics of occupations and the languages used at work. First, other factors may come into play, such as variations in the language characteristics of workers in different occupations (knowledge of languages, preference for one language or another, etc.), or the tendency of occupations to be concentrated in specific industry sectors.[20] The interactions between the language characteristics of workers, the language dynamics of different industry sectors and the language-related characteristics of occupations would merit further investigation.

Furthermore, since many of the descriptors of the language-related characteristics of work are correlated with one another, it can be difficult to identify which ones are actually related to languages of work. For example, the fact that English is used more frequently in Montréal in occupations that require high levels of communication with coworkers does not mean that English is used in these communications specifically. As mentioned above, reducing the information provided by OaSIS to some broad dimensions would help better frame the interpretation of data and avoid certain errors.

In short, despite their limitations, OaSIS data offer information that has the potential to improve our understanding of language dynamics at work.

20. It is known that the use of languages at work varies by the language characteristics of workers and by industry sectors. See Houle, Corbeil and Charron (2012).

Appendix 1: Correlations between descriptors of literacy skills

Table 5
Correlation matrix between descriptors of literacy-related skills from OaSIS

	Oral comprehension	Oral expression	Reading comprehension	Writing	General level of literacy skills
Oral comprehension	1.000	0.929	0.901	0.884	0.956
Oral expression	0.929	1.000	0.897	0.882	0.951
Reading comprehension	0.901	0.897	1.000	0.887	0.935
Writing	0.884	0.882	0.887	1.000	0.919
General level of literacy skills	0.956	0.951	0.935	0.919	1.000

Note: Correlation coefficients are measured between occupations, not between individual workers.
Source: Adapted from the Occupational and Skills Information System (OaSIS).

Appendix 2: The relationships between OaSIS descriptors and NOC TEER categories

As of the 2021 version of the National Occupational Classification (NOC), occupations can be combined by TEER (training, education, experience and responsibilities) category. "The six TEER categories stand for the Training, Education, Experience and Responsibilities required for occupations. A TEER category is defined by the amount and type of training and education required to enter and perform the duties of an occupation. It also takes into consideration the experience required and the complexity of responsibilities involved in the work. Each TEER category reflects commonly accepted paths to employment in an occupation." [21] The TEER categories replace the "skill levels" in previous versions of the NOC. They are largely related to the level of education required for an occupation.

The TEER categories are sometimes highly correlated with OaSIS descriptors of the language-related characteristics of occupations (Table 6). This is particularly true for the descriptors of the literacy skills typically required for an occupation. The level of communication with coworkers is also strongly correlated with TEER categories.

Table 6
Correlation between TEER categories and selected descriptors of the language-related characteristics of occupations from OaSIS

Descriptors	Correlation coefficient
Skills	
General level of literacy skills	0.827
Oral expression	0.822
Oral comprehension	0.819
Writing	0.810
Reading comprehension	0.809
Work activities	
Communicating with coworkers	0.802
Communicating with persons outside organization	0.658
Performing for or working directly with the public	0.298
Work contexts	
Electronic mail (frequency)	0.682
Coordinating or leading others (importance)	0.628
Written communications (frequency)	0.586
Telephone (frequency)	0.574
Public speaking (frequency)	0.445
Dealing with external customers (importance)	0.393
Face-to-face discussions (frequency)	0.354
Work with work group or team (frequency)	0.320
Contact with others (frequency)	0.207

Note: A positive correlation means that higher values for an OaSIS descriptor (e.g., higher level of communication with coworkers) tend to be associated with TEER categories that typically require more training, education, experience or responsibilities (e.g., managerial or professional-level occupations).
Source: Adapted from the Occupational and Skills Information System (OaSIS).

In contrast, some descriptors are only weakly correlated with TEER categories: performing for or working directly with the public, contact with others, or work in work teams or groups. That said, all descriptors are positively correlated with TEER categories.

21. Taken from the Introduction to the National Occupational Classification (NOC) 2021 Version 1.0, which also provides more details on each TEER category.

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