

Commuting to Work in the Barcelona Metropolitan Region

Executive Summary

October 2024


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Executive Summary

Why study commuting to work in the Barcelona Metropolitan Region?

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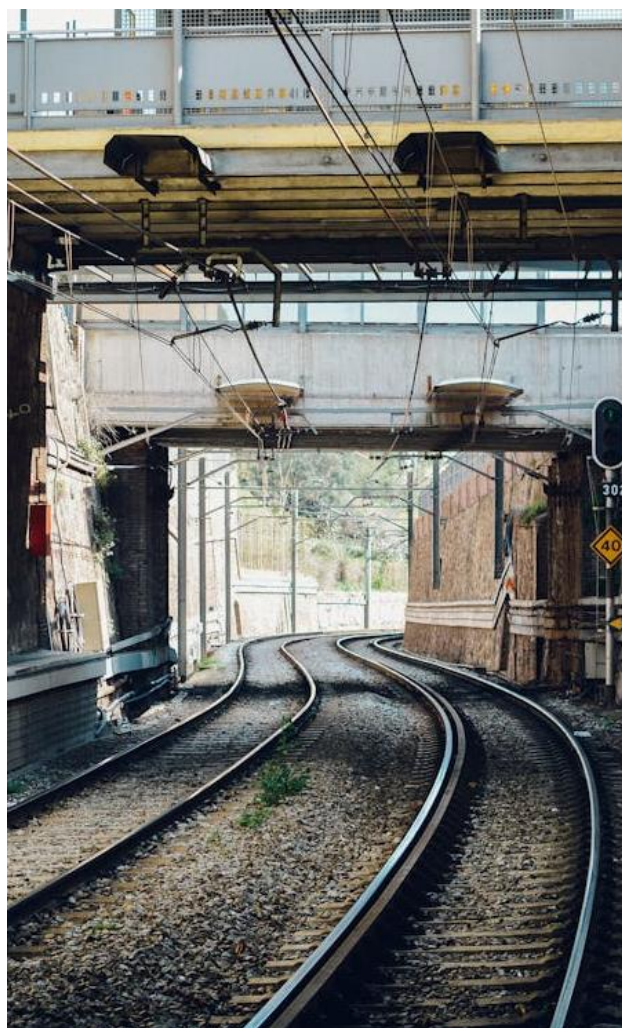
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The **Barcelona Metropolitan Region (RMB)** encompasses the sphere of influence of the **city of Barcelona**, in addition to the **Baix Llobregat, Barcelonès, Garraf, Maresme, Vallès Occidental and Vallès Oriental regions**, with a **total of 164 towns and cities**, as defined in the 1987 Metropolitan Regional Plan. These towns and cities account for approximately 91% of the population of the province of Barcelona and 67% of the total population of Catalonia.

This region is shaped by its **strong economic ties to Barcelona and this city's influence in several aspects of local life**, including the productive system, transport infrastructure, recreational and cultural opportunities and more.

Therefore, **studying commuting within the Barcelona Metropolitan Region offers valuable insight into mobility patterns** among the working population. As an economic and social hub, Barcelona has a large volume of traffic in and out of the city on a daily basis. **Understanding how people commute to work helps us improve urban planning and transport efficiency**, thus optimising public services and reducing traffic congestion.

Furthermore, **a clear picture of labour mobility patterns is essential for economic and business planning.**



Companies and policymakers can use this information to decide the location of new business areas or to set up workplaces that are more conveniently located for the working population, **promoting a more balanced labour market**. Similarly, studying this can help to improve sustainability and lower the carbon footprint, as **optimising the distribution of workplaces and encouraging remote work can help cut down on long commutes** and the emissions they produce.

While **previous studies have analysed mobility in the Barcelona area** (in the city itself, in the Barcelona Metropolitan Area, etc.), not many of them look at the geographic scope of the Metropolitan Region, and none of them focuses on commuting within this region. This study, therefore, seeks to fill in this gap in the literature. Its **main goals** are threefold:



1. To present an accurate picture of work commutes in the **Barcelona Metropolitan Region** using comprehensive, relevant data.
2. To conduct an in-depth study of **commuter profiles**, taking into account factors such as gender, age, employment, education and other socioeconomic considerations to understand these commuters' demographic and socioeconomic characteristics.
3. To identify and categorise the **economic activity sectors and/or professions** of Barcelona residents who commute out of the city for work.

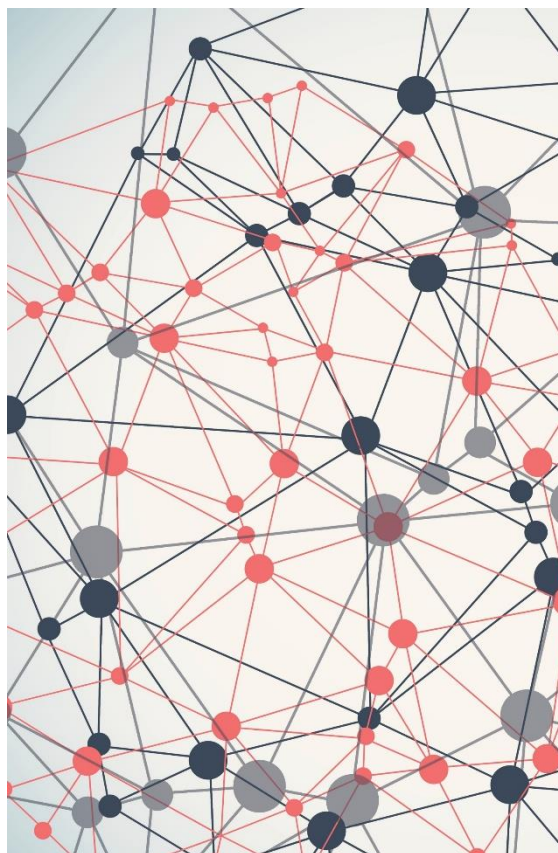
How was the study conducted?

To determine the best possible methodological approach, as well as to define the scope of the study, we analysed previous studies from various agencies and institutions that examined daily commutes within the Barcelona Metropolitan Region, the Barcelona Metropolitan Area, the Barcelona Transport Authority system and the city of Barcelona.

After considering the different alternatives, we decided to draw up the report using microdata from the National Statistics Institute's (INE) 2021 Population and Housing Census (the most recent data available), which allows for greater detail and disaggregation than other publicly available sources to help us see mobility patterns for each of the profiles and groups studied in greater detail.

In terms of profiles, we decided to analyse workers' commutes by segmenting the population according to five variables: gender, age, educational level, occupation and economic sector. In general, all the analyses in this study are segmented by these variables.

To facilitate the analysis, and given that the RMB is made up of over 160 towns and cities, nine sub-regions were defined for the study: Baix Llobregat Nord, Barcelona Ciutat, Barcelonès, Garraf-Penedès, L'Hospitalet and Baix Llobregat Sud, Maresme, Vallès Occidental Est, Vallès Occidental Oest and Vallès Oriental.



The working population in the Metropolitan Region

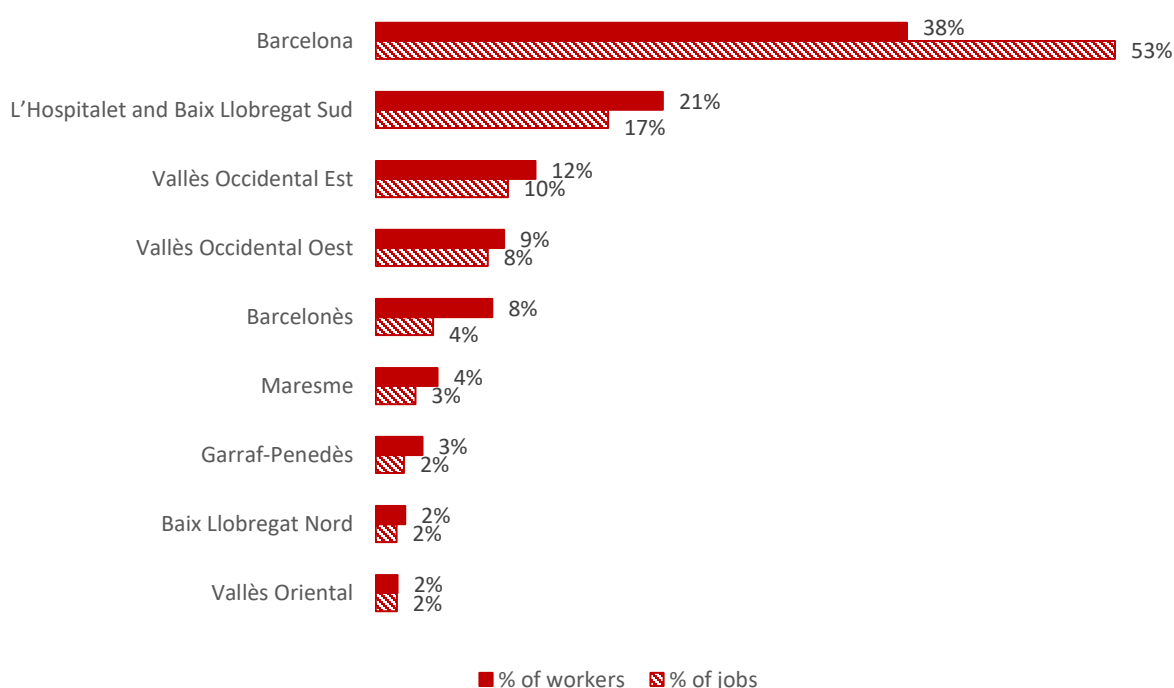
Before analysing workers' mobility, we should have a clear picture of this group's makeup and geographic distribution.

In aggregate terms, **most of the working population in the RMB is concentrated in Barcelona (38%) and L'Hospitalet de Llobregat and Baix Llobregat Sud (21%).** Conversely, Vallès Oriental (2%) and Baix Llobregat Nord (2%) are the RMB areas with the smallest working populations.

Meanwhile, most of the **jobs analysed¹ in the RMB are concentrated in the city of Barcelona (53%).**

This initial overview already gives us an idea of some of the commuting dynamics in the region. **The regional imbalance between the areas** where workers live and the areas where jobs are located **will lead to the mobility of at least enough people to cover the difference between the two figures.**

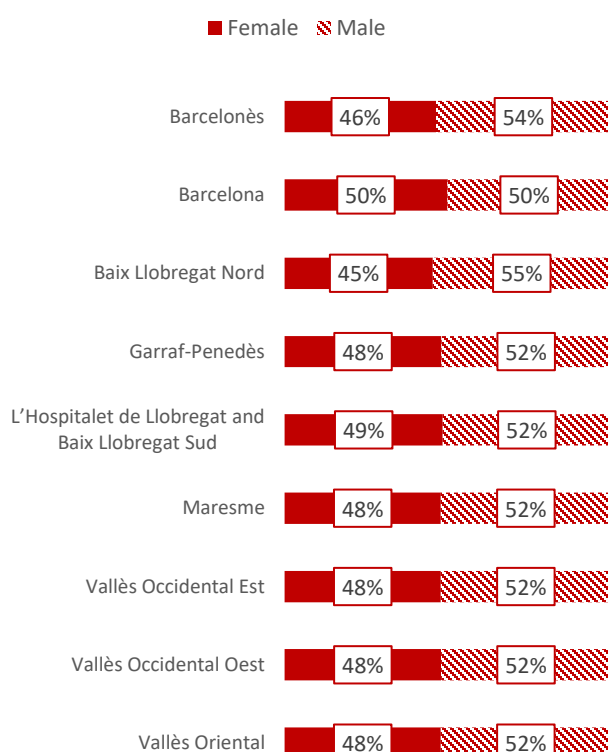
Total mobility will be higher because obviously **not everyone who lives in Barcelona, for example, works in the city,** even though there are more jobs than workers. However, **geographic imbalances are a key factor** in understanding commuting within the RMB.



¹ Due to statistical confidentiality restrictions for INE data, the analysis was limited to the 43 cities where the population is large enough that city data can be collected without infringing on statistical confidentiality. These cities together account for 84% of the RMB's population.

The working population in the RMB

If we compare the demographic characteristics of the working population in the different geographic areas of the RMB, we find that it **skews slightly male in all areas, except in the city of Barcelona**, where the two groups are practically identical.



There are no major age differences among the working population across the different geographic areas; rather, they follow the general patterns, with only a small proportion of workers under the age of 25 (~6%), **nearly half the workforce made up of individuals between the ages of 25 and 44 (~47%)**, and the second-largest group of workers aged between 45 and 54, who make up approximately 28% of the total. Individuals aged 55 to 64 account for approximately 17%.

Age bracket	% working population
16–19 years old	0.8%
20–24 years old	5.4%
25–44 years old	47.3%
45–54 years old	28.1%
55–64 years old	16.9%
65 or over	1.5%
Total	100%

Finally, only 1.5% of employed individuals in the Metropolitan Region are over the age of 65.

As for education, **most of the working population completed post-compulsory education programmes (~77%)**.

Within this group, the majority have a university education (39.5%), followed by individuals with non-compulsory secondary education (baccalaureate, intermediate vocational training) and those with advanced vocational training degrees (13.4%).

Most of the individuals without post-compulsory education completed secondary school (18.8% of the total), and only 3.9% have a lower educational level.

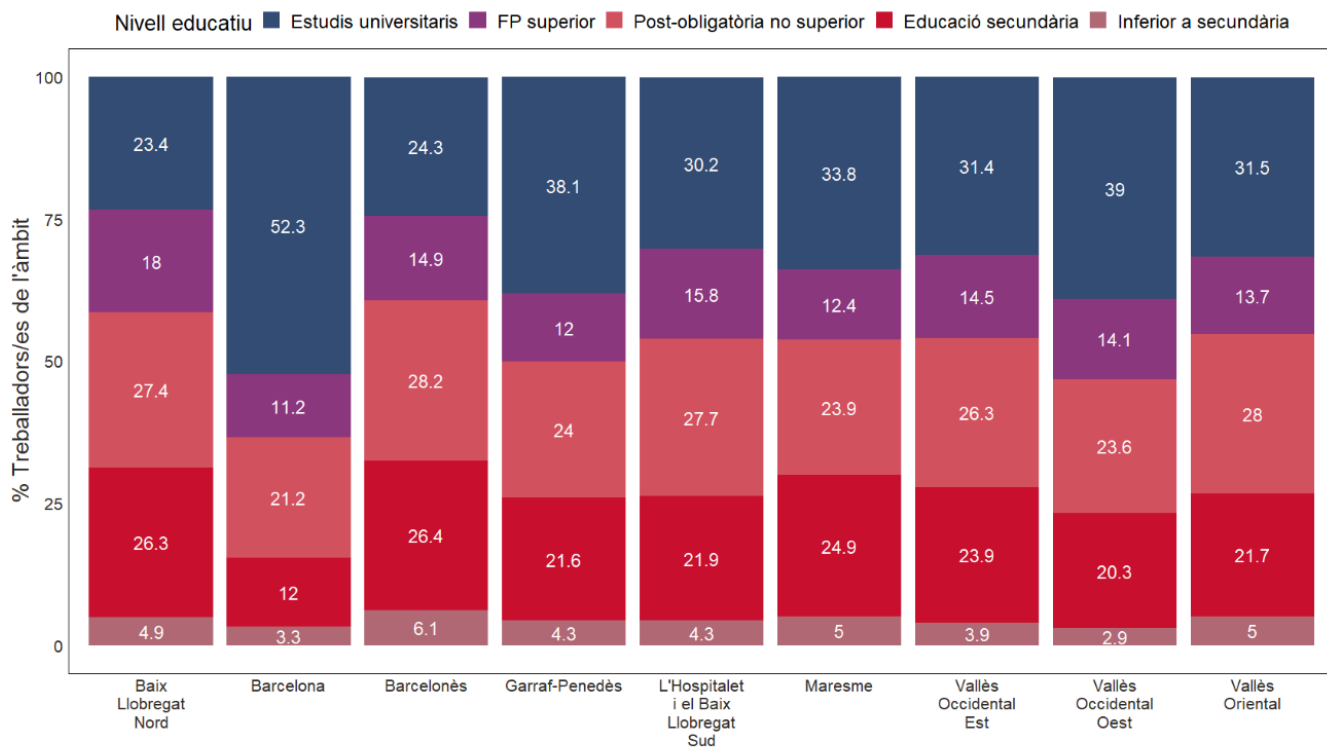
Educational level	% working population
Below secondary school	3.9%
Secondary school	18.8%
Non-compulsory secondary education	24.4%
Advanced vocational training	13.4%
University education	39.5%
	100%

In this case, there are indeed major differences across the geographic areas.

Specifically, we see a **large gap between the capital, Barcelona, and the other metropolitan areas. While over half of employed residents in the capital have a university education (52.3%), in other areas this figure ranges from 23-24%** in Baix Llobregat Nord and Barcelonès **to 38-39%** in Garraf-Penedès and Vallès Occidental Oest.

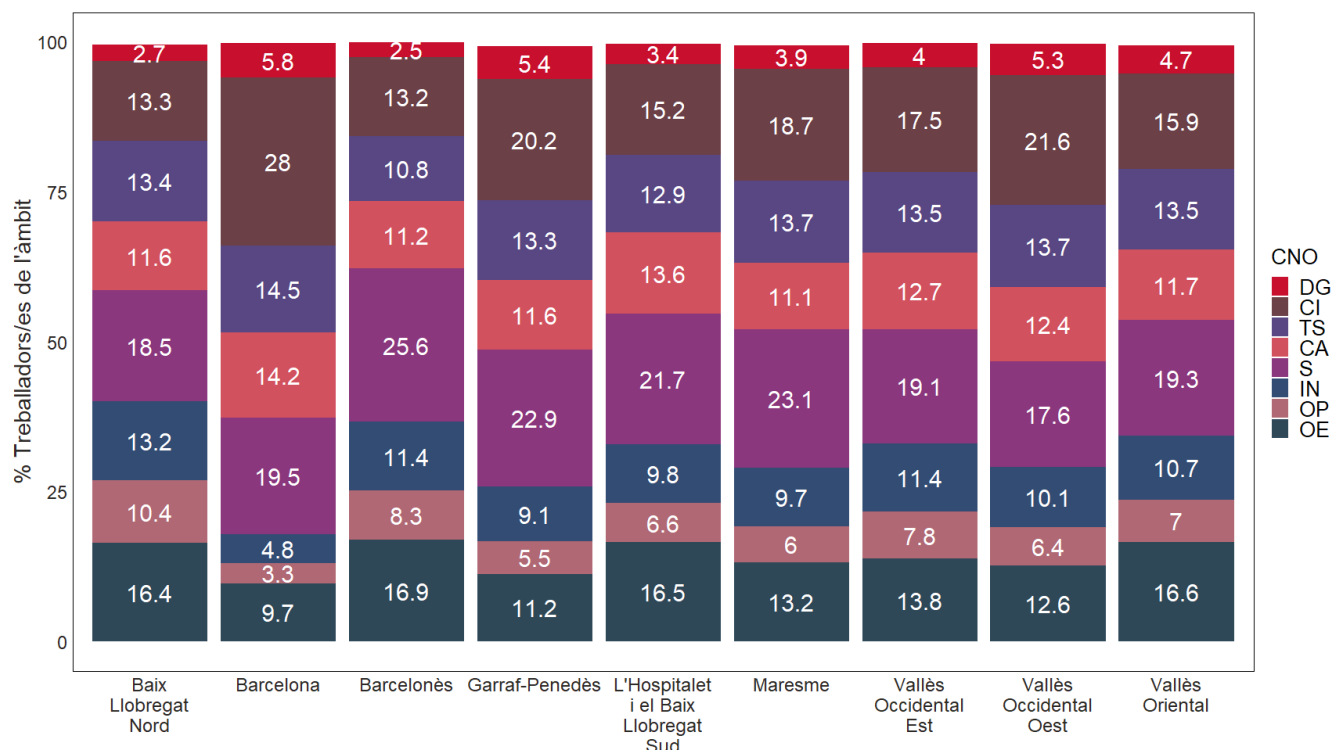
Outside Barcelona, we can also see other groupings from the other

metropolitan areas. First, there are areas where the majority do not have higher education (the sum of non-compulsory secondary education, secondary education and levels below secondary school). We find this in areas such as Barcelonès (60.7% without higher education), Baix Llobregat Nord (58.6%), Vallès Oriental (54.7%), Vallès Occidental Est (54.1%), L'Hospitalet de Llobregat and Baix Llobregat Sud (53.9%) and Maresme (53.8%).



Conversely, the percentage of individuals with only a secondary education drops from 20-27% in the rest of RMB areas to only 12% in Barcelona.

The areas where individuals with higher education are the majority are Barcelona (67.5% have a university education or have completed advanced vocational training), Vallès Occidental Oest (53.1%) and Garraf-Penedès (50.1%). The latter two have the highest proportion of university graduates outside Barcelona (39% and 38.1%, respectively).



Similar to what we see in the distribution of the population by educational level throughout the region, when we look at **professional profiles we find different breakdowns, especially between Barcelona and the rest of the Metropolitan Region.**

In the capital there are more managers (DG), many more scientists and intellectuals (CI), fewer people in elementary occupations (OE) and far fewer industrial and construction workers (IN) and plant and machine operators (OP) than in the other RMB areas.

However, there are no substantial differences in the percentages of support technicians (TS), accounting and administrative employees (CA) and food and other personal service workers (S) compared to the rest of the region.

Key	Category
DG	Directors and managers
CI	Scientific and intellectual technicians and professionals
TS	Technicians; support professionals
CA	Accounting, administrative and other office employees
S	Workers in food, personal, protective and retail services
IN	Craftspeople and skilled workers in manufacturing and construction (except for plant and machine operators)
OP	Plant and machine operators and assemblers
OE	Elementary occupations

Therefore, we see that intellectual workers are over-represented in Barcelona at the expense of manual workers, with the exception of intermediate and community-based jobs.

As for the distribution of the working population in the RMB by economic sector, the main categories are education, health and social services; retail; and industry. These three sectors account for over one-third of workers.

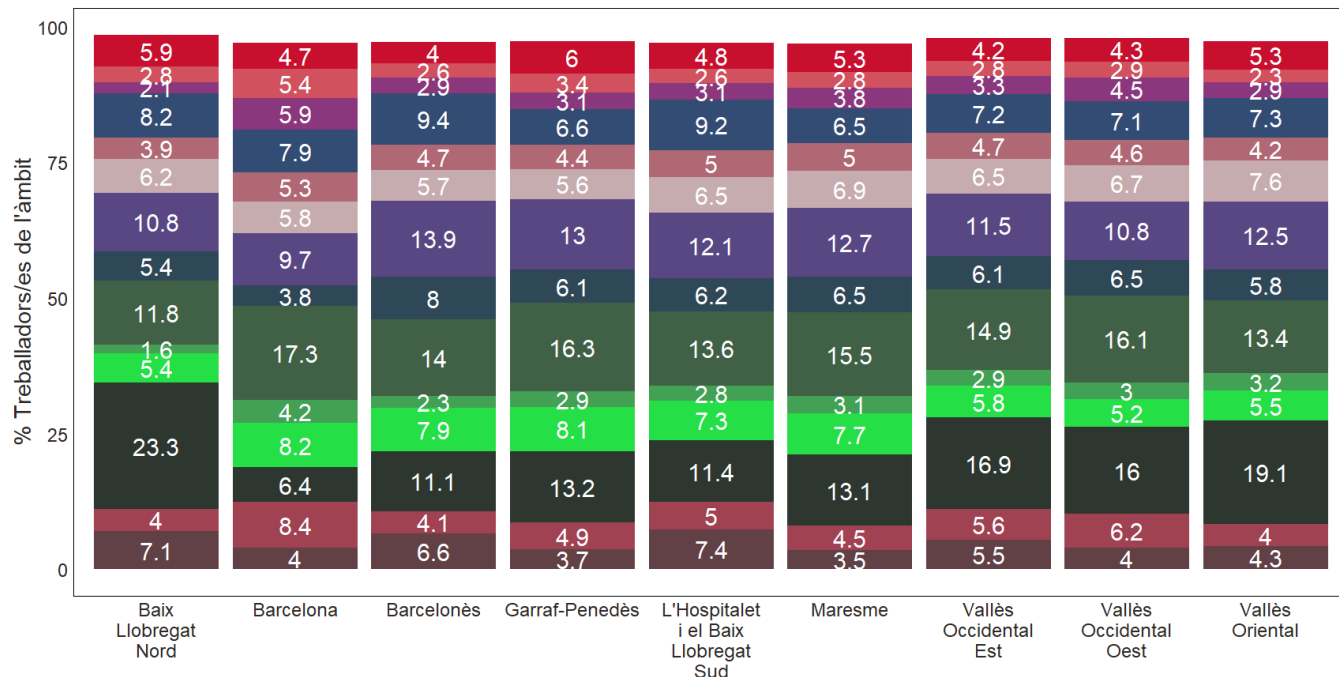
Administrative and support services, hospitality and tourism, information and communication technology (ICT) and scientific professions and wholesale are also well represented. Together, these seven sectors account for approximately two-thirds of the workforce.

However, the distribution is not uniform across geographic areas in terms of people or the productive system.

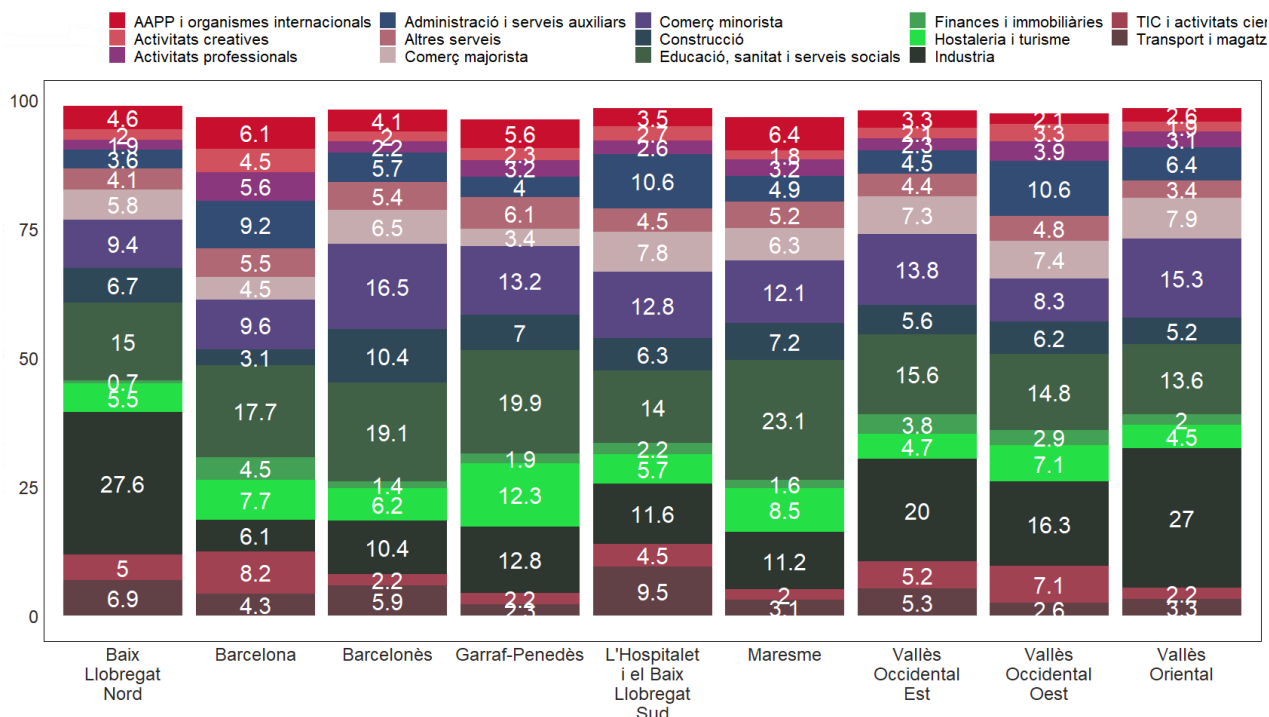
Sector	%RMB
Education, health and social services	15.6%
Retail	11.2%
Industry	11.0%
Administrative and support services	8.0%
Hospitality and tourism	7.3%
ICT and science	6.4%
Wholesale	6.2%
Construction	5.4%
Transportation and storage	5.1%
Other services	5.0%
Public institutions and international organisations	4.7%
Professional activities	4.3%
Creative work	3.8%
Finance and real estate	3.3%
Domestic workers	2.3%
Primary sector	0.3%
Other ²	0.1%
Total	100%

Sector econòmic

- AAPP i organismes internacionals
- Activitats creatives
- Activitats professionals
- Administració i serveis auxiliars
- Altres serveis
- Comerç majorista
- Comerç minorista
- Construcció
- Educació, sanitat i serveis socials
- Finances i immobiliàries
- Hostaleria i turisme
- Indústria
- TIC i activitats ciber
- Transport i magatz



² This category includes lines of work that are significantly under-represented in the RMB, specifically those that make up 0.02% or less of the RMB's workforce. As illustrated in the table, all of them together make up less than 0.1% of the RMB's total workforce.



In addition to studying how workers in each sector are distributed among the different areas, it is useful to **analyse the productive system** in each of them and their differences.

The largest sector in Barcelona is **education, health and social services** (17.7%), where it is slightly above the figure in the other geographic areas. It is **followed by retail**, which at 9.7% is below the average for the RMB and most of the other geographic areas. **Administrative and support services** (9.2%) come in third. **ICT and science also stand out by** employing 8.4% of Barcelona's workers. This is above the average for the region and is **between 15% more and quadruple the figure for the other geographic areas**, where this sector employs between 2% and 7.1% of the population.

Meanwhile, areas such as **Vallès Oriental, Baix Llobregat Nord** and, to a lesser degree, **Vallès Occidental Est**, have a high number of jobs in industry, making up between 27.6% and 20% of the total in these areas, whereas these jobs account for only 11% of the total in the RMB.

Other areas such as **Maresme** have a **strong education, health and social services sector (23.1%)**. The other areas are more balanced in their distribution.



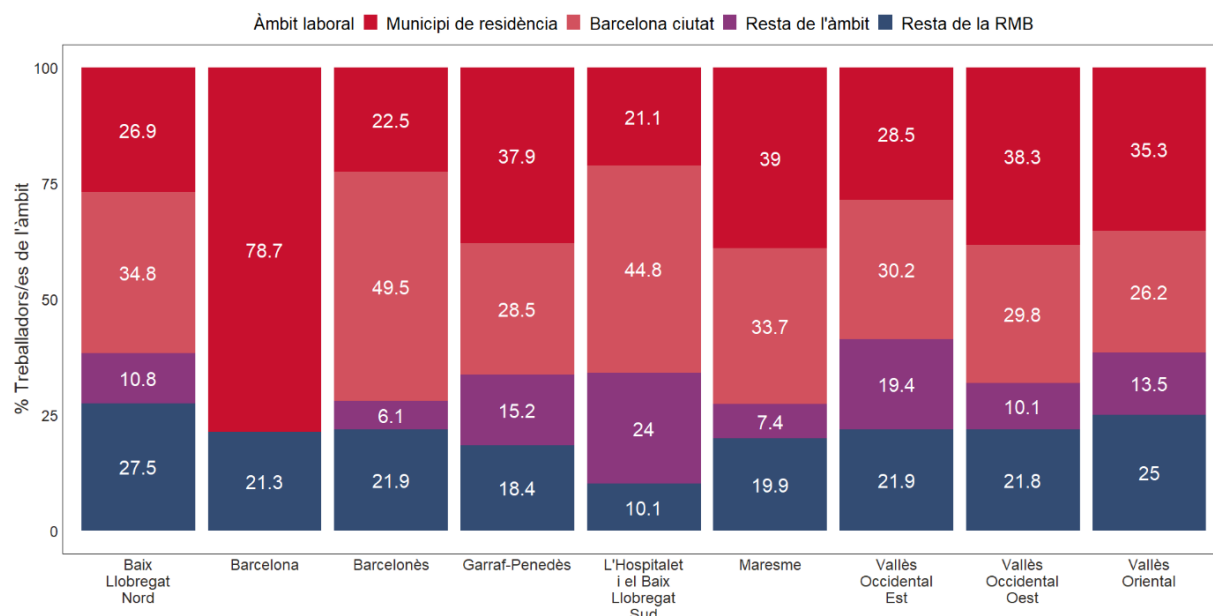
Commuting in the RMB: Many roads lead to Barcelona



The first takeaway is **Barcelona's key role within the metropolitan commuting system**. While it was already known and predictable that the capital city would play this dominant role, the study helps us grasp the scale of this phenomenon. **Between 26% and 45% of people in other RMB areas work in the city of Barcelona**. The patterns within the city, however, are the opposite of those found in the other geographic areas: it is the only area where **nearly 8 out of 10 workers do not leave their city of residence to go to work**.

Meanwhile, for the other areas, only between 21% and 39% of workers live and work in the same city, **meaning that the vast majority of people who live outside Barcelona have to commute to work**.

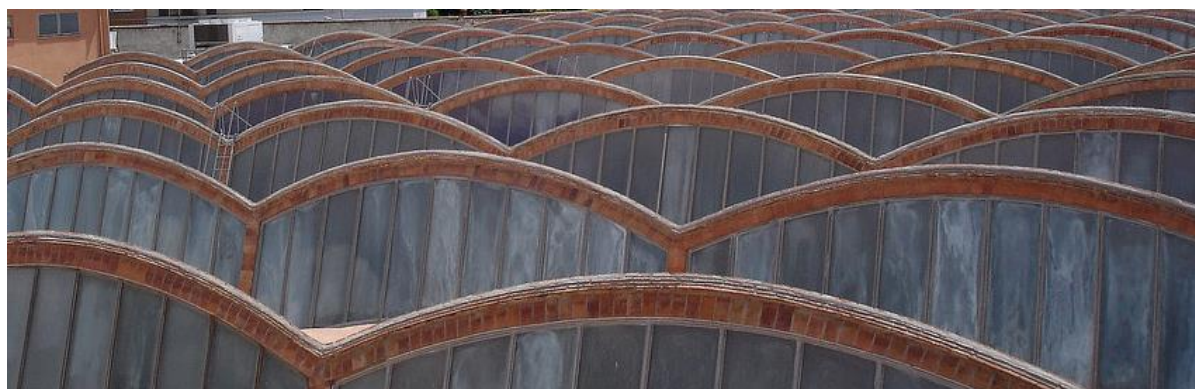
This is especially clear in the cities in the **Barcelonès** and **L'Hospitalet/Baix Llobregat Sud** areas, where **twice as many people work in Barcelona as in their city of residence**.



Sector	% of workers Barcelona	% of workers sector	% jobs Barcelona	% jobs sector
Public institutions and international organisations	4.7%	38.6%	6.1%	66.4%
Creative work	5.4%	55.1%	4.5%	67.4%
Professional activities	5.9%	52.5%	5.6%	69.8%
Administrative and support services	7.9%	37.8%	9.2%	57.2%
Other services	5.3%	41.0%	5.5%	57.5%
Wholesale	5.8%	36.1%	4.5%	41.9%
Retail	9.7%	33.3%	9.6%	46.9%
Construction	3.8%	26.9%	3.1%	35.2%
Education, health and social services	17.3%	42.7%	17.7%	56.3%
Finance and real estate	4.2%	48.6%	4.5%	67.6%
Hospitality and tourism	8.2%	43.1%	7.7%	58.8%
Industry	6.4%	22.3%	6.1%	31.7%
ICT and science	8.4%	50.8%	8.2%	67.3%
Transportation and storage	4%	29.9%	4.3%	44.7%

The data analysed show that the city of Barcelona accounts for approximately 40% of the jobs in the Barcelona Metropolitan Region. This number varies by sector, ranging from 31% for industry to nearly 70% of jobs in professional activities.

The sectors that are most heavily concentrated in the capital are **professional activities** (69.8%), **finance and real estate** (67.6%), **creative work** (67.4%), **ICT and science** (67.3%) and **public institutions and international organisations** (66.4%). For all of them, approximately two-thirds of the jobs in the RMB are concentrated in the city of Barcelona.



This high concentration of jobs leads to high numbers of people in the RMB commuting to Barcelona for work. In fact, **in all RMB geographic areas, at least one-fourth of the workforce works in the city of Barcelona.** The estimated commuting patterns and volumes are as follows:

- ❖ **Internal commuting within the city of Barcelona:** 443,748 people (30% of the total in the RMB)
- ❖ **Commuting into Barcelona from the rest of the RMB:** 344,130 people (23% of the total)
- ❖ **Commuting out of Barcelona to the rest of the RMB:** 122,400 people (8% of the total)
- ❖ **Workers in the rest of the RMB who commute within their geographic area of residence:** 403,620 (27% of the total)
- ❖ **Workers in the rest of the RMB who commute out of their geographic area of residence:** 159,660 (11% of the total)

Origin	Destination	Volume of commuters	% total
Barcelona	Barcelona	443,748	30%
Barcelona	Rest of the RMB	122,400	8%
Rest of the RMB	Barcelona	344,130	23%
Rest of the RMB	Same area	403,620	27%
Rest of the RMB	Rest of the RMB	159,660	11%
Total	100%	1,473,558	100%

These estimates paint an initial picture of commuting dynamics in the Metropolitan Region. Notably, **61% of commuters within the RMB go to or from Barcelona.** Only 39% commute between other cities in the RMB, and most of them (71.7% of commutes that do not involve the city of Barcelona) commute within their own area of residence.

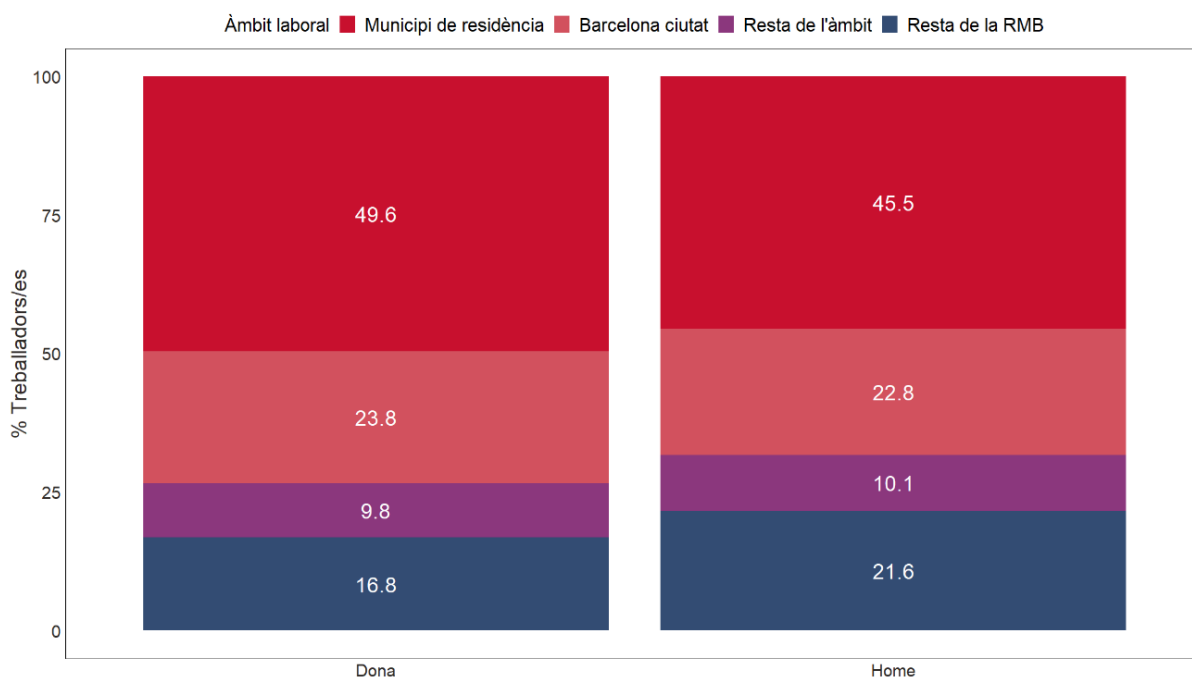
Therefore, **only 11% of commutes in the Metropolitan Region are between different geographic areas.**



Demographic mobility patterns

By taking a look at these commutes in terms of the variables chosen for the study, we can see trends and patterns that may be missed in the aggregate data. This section presents the highlights for each of them.

One possible explanation could be **persistent inequality in the distribution of caregiving work**, which leads to a larger number of women prioritising a job closer to home due to family responsibilities. Nonetheless, **it should be noted that the differences are minor**.

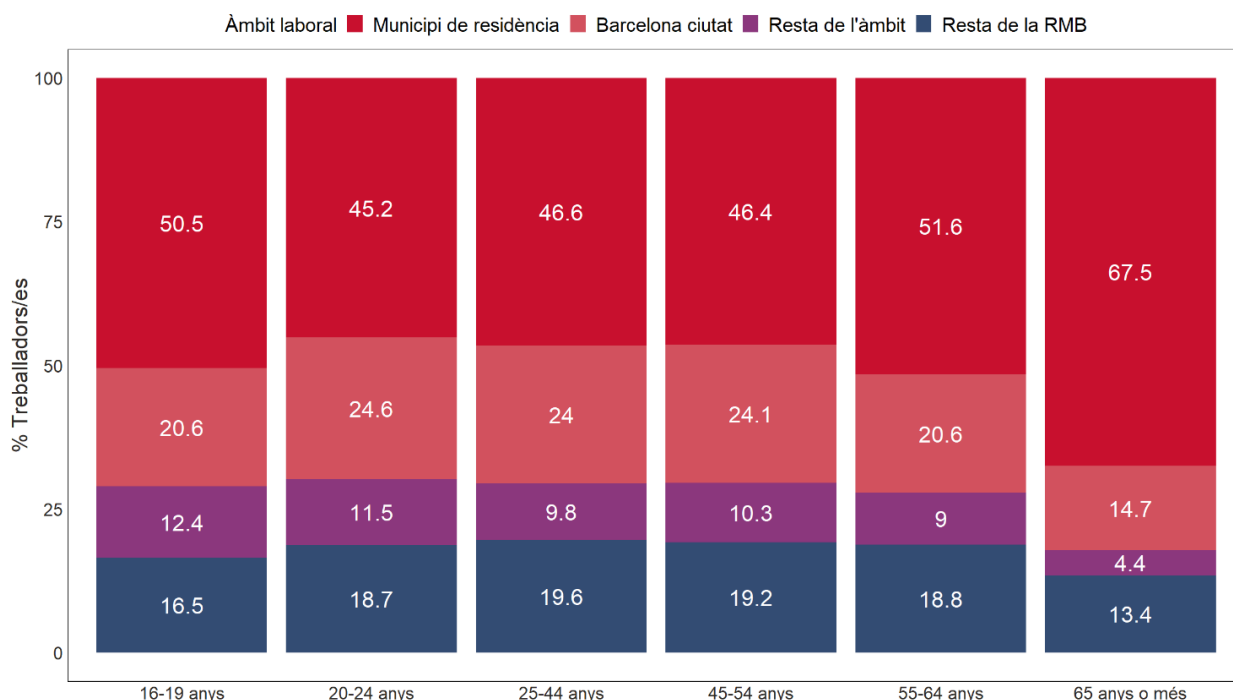


Commuting by gender

We find some differences in the commuting patterns of men and women. Specifically, **women are more likely to live and work in the same city, while men commute out of their area of residence more often**. We see similar patterns in relation to commuting within one's own area and commuting into the city of Barcelona.

Age differences

As for **patterns among different age groups**, we see that **the middle-age brackets**, that is, people between the ages of 20 and 54, **are more likely to commute out of their city of residence**. Conversely, most of those under the age of 20 and over the age of 54 live and work in the same city. **This is especially the case with over-65s, 67.5% of whom live and work in the same city**.



There are two possible explanations for this phenomenon: one that is generational and one that has to do with life cycles.

The generational explanation suggests that different cohorts have **different job opportunities or different preferences when it comes to choosing where to work**. As such, while those aged 55 and up may see it as more convenient or more of a priority to work near home, this may not be the case for those between the ages of 20 and 54, with a resurgence of these conditions or preferences among the youngest cohorts.

The life cycle or professional cycle explanation suggests that **at certain ages, workers prefer working closer to home**, while at others, they are more willing to commute.

An alternative explanation would be that **the job opportunities that emerge for the youngest and the oldest workers are in sectors where local considerations play a key role in the nature of the work** (retail, hospitality and tourism, etc.).



Educational level

Regarding commuting patterns by educational level, we find that people who did not complete secondary school and people with a university education are more likely to work and live in the same city than other groups; in fact, over half do so. Furthermore, if we remove Barcelona from the equation, in most geographic areas we see that higher educational levels are correlated with a lower likelihood of working and living the same city.

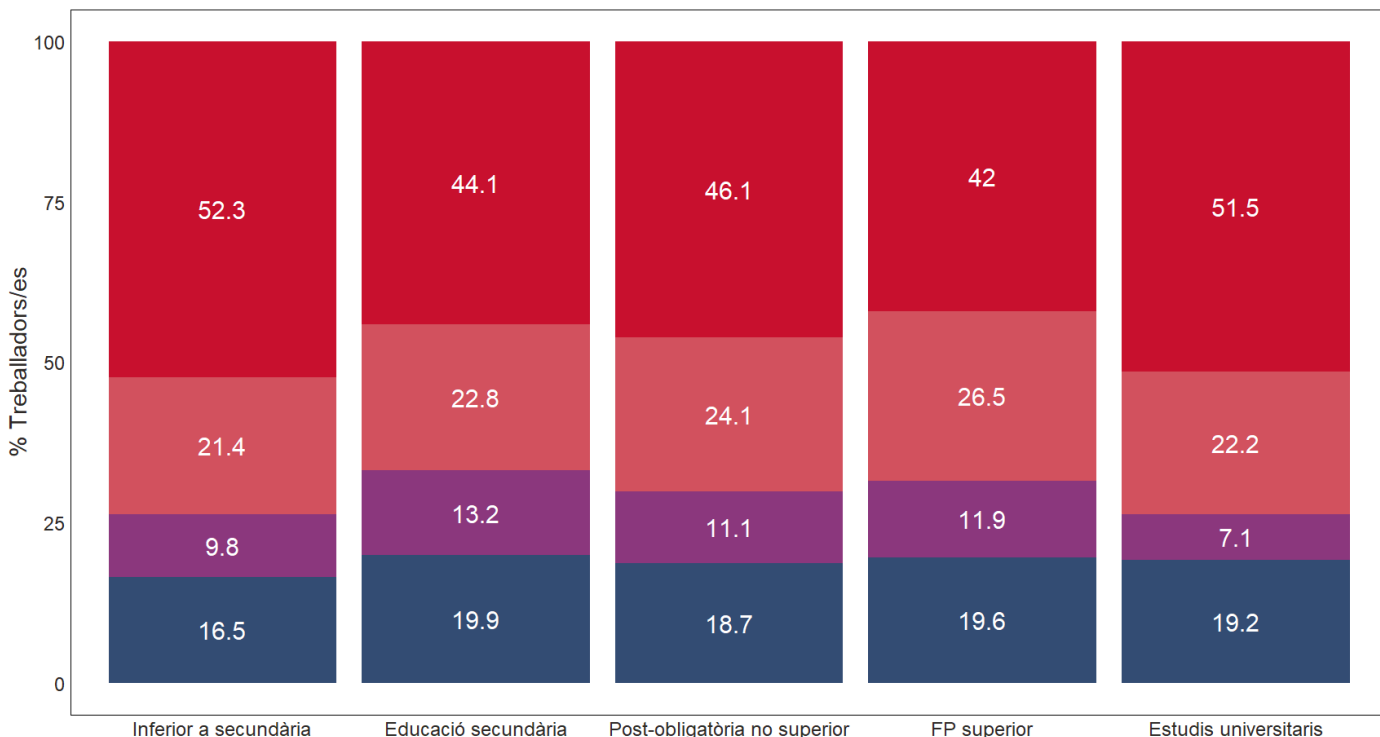
People with secondary education are the group most likely to commute within the same geographic area (13.2%), while people with university degrees do so the least (7.1%).

As for 'concentric' commutes among different areas in the



RMB other than Barcelona, the different groups have similar patterns, with nearly 19% having this kind of commute. The percentage is only lower among those who did not complete secondary school, 16.5% of whom have this kind of commute.

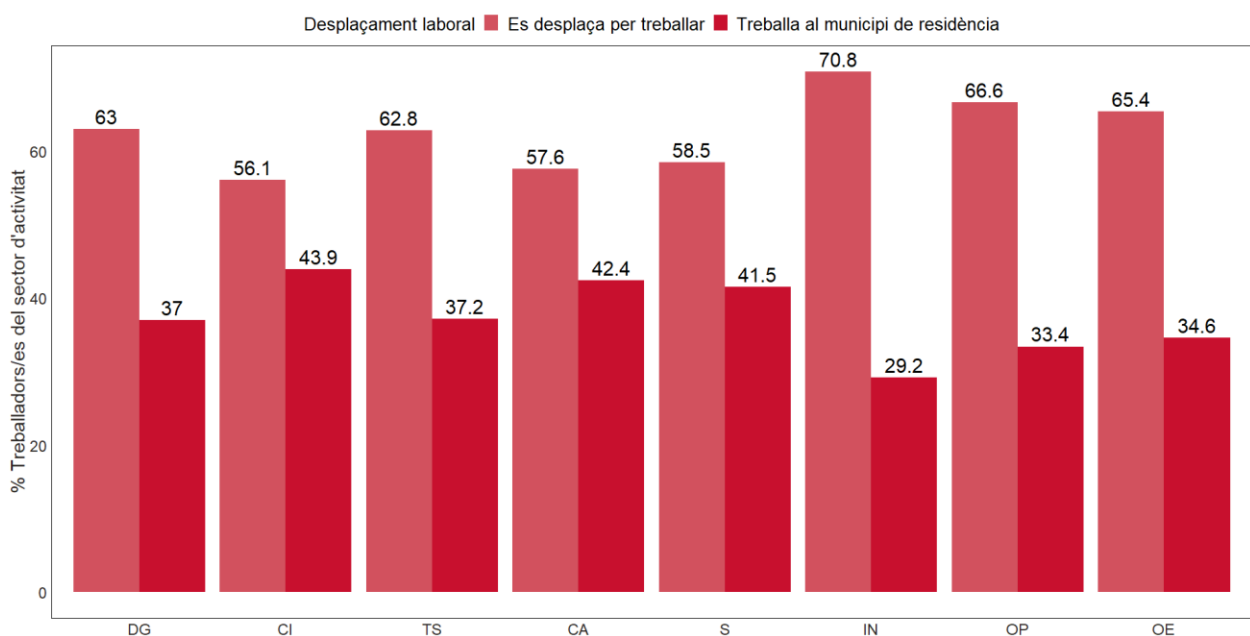
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Commuting and jobs

When analysing commuting patterns by professional profile using the National Classification of Occupations (CNO) provided by the census, we find that **people with blue-collar jobs are more likely to have to leave their city of residence**. This includes craftspeople and skilled workers in manufacturing and construction (IN), plant and machine operators and assemblers (OP) and people in elementary occupations (OE). Meanwhile, **white-collar jobs tend to require less travel out of people's cities of residence**, such as scientific and intellectual technicians and professionals (CI) and accounting, administrative and other office employees (CA).

Therefore, we are starting to see a **commuting pattern that is partially explained by the geographic concentration both of workers and jobs in certain productive sectors**.



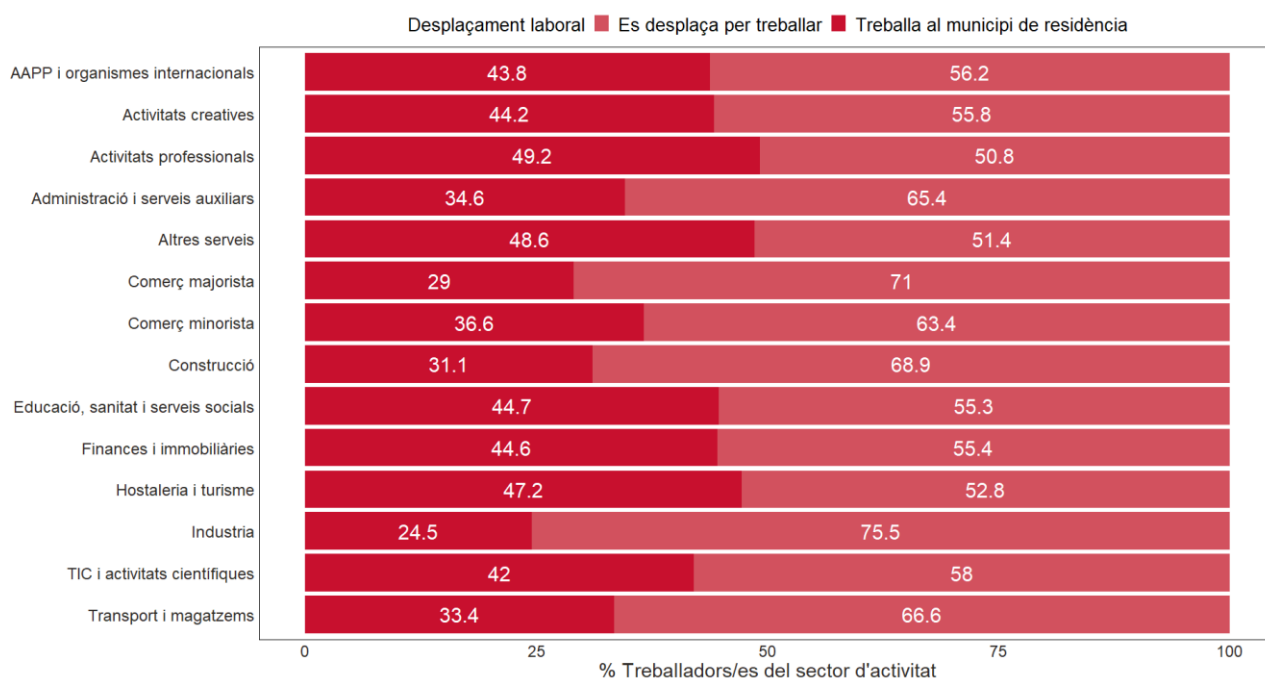
Economic sector

Therefore, one possible explanation is that **blue-collar jobs tend to require a larger concentration of workers** in a single workplace (such as factories, logistics centres or industrial estates), making it harder for them to find jobs in their own city compared to **white-collar workers, who have more options within their own city given that these occupations are less labour-intensive.**

In this regard, workers in food, personal, protective and retail services (S), despite being considered blue-collar workers, are also among the groups who commute the least. This would be consistent with the job availability hypothesis, as these kinds of jobs are more widely distributed throughout the region.

Finally, **commuting by economic activity sector** also points to the hypothesis of different commuting patterns between white-collar and blue-collar workers. If we divide the sectors based on whether they are in the high range for mobility (over 60% of workers commute out of their city) or not (fewer than 60% commute out of their city), we find the following results:

- ❖ **Above 60%:** industry (75.5% of workers commute out of their city of residence), wholesale (71%), construction (68.9%), transportation and storage (66.6%), administrative and support services (65.4%) and retail (63.4%).
- ❖ **Below 60%:** ICT and science (58%), public institutions and international organisations (56.2%), creative work (55.8%), finance and real estate (55.4%), and health and social services (55.3%).



(55.4%), education, health and social services (55.3%), hospitality and tourism (52.8%), other services (51.4%) and professional activities (50.8%).

As noted in relation to commutes by professional profile, **the sectors most closely associated with blue-collar workers and more manual or less skilled jobs are all in the high-mobility group, while all more intellectual or more skilled white-collar jobs are in the low-mobility group.**

Once again, the exception is the hospitality and tourism sector, which requires less commuting because it tends to be more local.

In summary, this study highlights different mobility patterns that help us to better understand work commutes in the Barcelona Metropolitan Region, a significant contribution to future research in this field.

Conclusions

Barcelona plays a prominent role in work commutes within the RMB:

- ❖ Nearly eight out of every ten workers in Barcelona do not need to commute out of the city to go to work.
- ❖ Between 26% and 45% of people in other RMB areas work in the city of Barcelona.
- ❖ Within the RMB, 61% of commuters go to or from Barcelona.
- ❖ Sectors such as professional activities (69.8%), finance and real estate (67.6%), creative work (67.4%), ICT and science (67.3%) and public institutions and international organisations (66.4%) are disproportionately concentrated within Barcelona.

There are minor differences in commuting patterns by demographic variables:

- ❖ Women are slightly more likely to live and work in the same city, while men are slightly more likely to commute out of their geographic area for work.
- ❖ Young people and those over the age of 55 work closer to home and commute out of their area less often, especially after the age of 65.
- ❖ Workers without a university education (except for those who did not complete secondary school) are more likely to work out of their city of residence.

We find different patterns between blue-collar and white-collar workers.

- ❖ **Blue-collar jobs** (such as industry workers, machine operators and elementary occupations) have the highest percentages of workers who commute out of their city of residence.
- ❖ Conversely, **those who work in ICT and science or have administrative/office jobs are the least likely to commute** out of their city of residence.

This tendency is also confirmed in sector-based analyses:

- ❖ In this regard, **the sectors that involve the highest levels of commuting are industry** (75.5% of workers commute out of their city of residence), **wholesale** (71%), **construction** (68.9%), **transportation and storage** (66.6%), **administrative and support services** (65.4%) and **retail** (63.4%).
- ❖ The sectors with the lowest average commuting levels include **ICT and science** (58%), **public institutions and international organisations** (56.2%), **creative work** (55.8%), **finance and real estate** (55.4%), **education, health and social services** (55.3%), **other services** (51.4%) and **professional activities** (50.8%).

These data suggest a **dual pattern in which professions traditionally associated with manual or less skilled work have higher commuting levels** than office or white-collar jobs.

- ❖ A notable exception is **hospitality and tourism workers** (52.8%), who have relatively low commuting levels even though this is predominantly manual work.

