

# Population Labour Market Status

## - New register-based labour market statistics in Sweden

Fredrik W. Andersson and Lukas Gamerov

Statistics Sweden

### Introduction

In 2022, Statistics Sweden (SCB) introduced a new statistical product in the labour market area, the Population's labour market status (LMS).<sup>1</sup> The product is mainly administrative-based and contains more variables. It has a higher reporting frequency than the previous register statistics in the labour market area (Labour statistics based on administrative sources)<sup>2</sup> and starting from January 2020.<sup>3</sup> The conditions for this register arose when the Swedish Tax Agency began in January 2019 to demand PAYE.<sup>4</sup> Thanks to the unique identity numbers (both individual and firms/organisations) and together with Statistics Sweden's possibility of obtaining data from the Swedish Tax Agency, Statistics Sweden

---

<sup>1</sup> Befolkningens arbetsmarknadsstatus (BAS) in Swedish.

<sup>2</sup> Registerbaserad arbetsmarknadsstatistik (RAMS) in Swedish. Which was on a yearly basis.

<sup>3</sup> The introduction of BAS is based on the development work, Subject Design Labour Market (ÅDB), which aimed to develop an overall direction for how Statistics Sweden's part of the official labour market statistics should be modernised and future-proofed<sup>3</sup>.

<sup>4</sup> In 2019, Statistics Sweden received monthly employer declarations at the individual level, PAYE – Pay As You Earn – tax returns per employee (AGI) from the Swedish Tax Agency. The information is an important part of the production and implementation of LMS. The PAYE data contain, among other things, information on all persons who have received a wage income in Sweden and are essential in the transition to a modern and future-proof statistical production.

is now able to produce a comprehensive register of all Swedish residents between 15 and 74 years of age.

In Sweden, the Labour Force Surveys (LFS) and LMS are statistics products often used to: monitor, assess and evaluate the current situation and development of the labour market and the economic activity. Demands on the labour market statistics, as well as the prerequisites to produce statistics, have changed dramatically over time. The non-response rate for the LSF is now 57,7 percent (February 2024) and the conditions for using sample surveys get harsher. Meanwhile, users demand more and faster information, both in terms of content and timeliness. Statistics Sweden is also obliged to consider the burden of reporting for firms/organisations and use existing register data as much as possible.

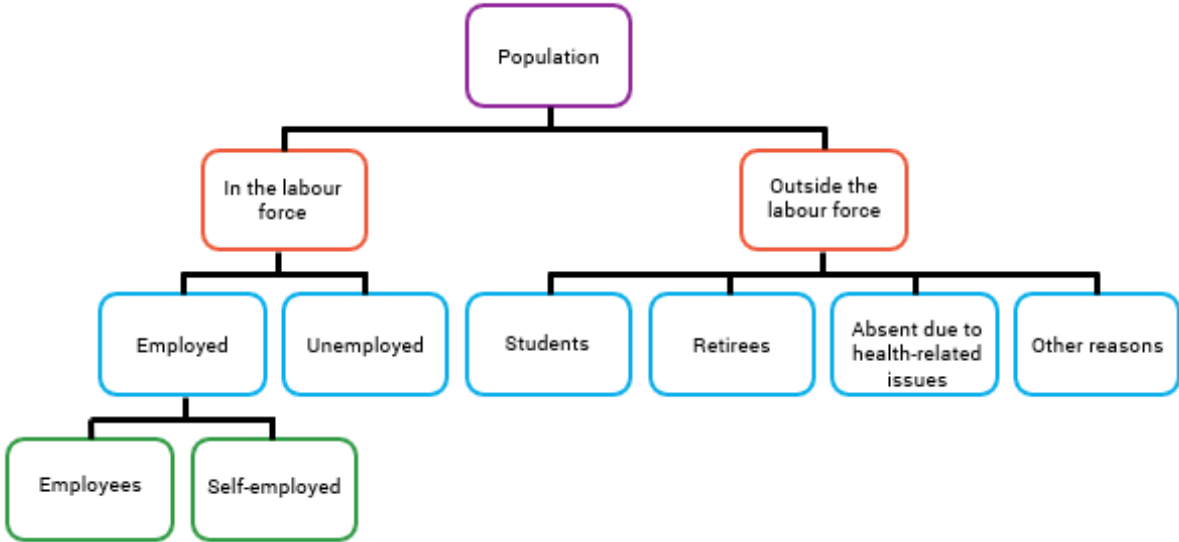
The purpose of the statistics is to provide information on the labour supply in Sweden on a monthly, quarterly and annual basis for the entire Swedish population of individuals. LMS provides statistics on the Swedish population divided into six labour market statuses. LMS is used as a basis for analysis, investigations, research and policy decisions on the labour market area. The statistics describe the labour supply and aim to show the current situation of the labour market and its development over time. At the national level, the statistics are used by, government ministries, the Swedish central bank, the National Institute of Economic Research and financial institutions. The statistics are also used at a lower regional level and are used by users at the municipalities and regions.

This is a possibility thanks to Sweden's system, whereby all persons are assigned a unique identification number, making it possible to link registry data from various sources. LMS uses administrative registers from: the Swedish Public Employment Service, the Swedish Companies Registration Office, the Swedish Board of Student Finance, the Swedish Social Insurance Agency, the Swedish Pensions Agency and the National Board of Health and Welfare and are used together with Statistics Sweden's basic register of the Total Population Register (TPR) and the Statistical Business Register (SBR).

## Content of the statistics

The main target variable in LMS is the labour market status for the population between the age of 15 to 74. LMS classifies the population into six categories: *i*) employed, *ii*) unemployed, *iii*) students, *iv*) retired, *v*) sick (absent due to health-related issues) and *vi*) other. The LMS may of course also produce proportions, such as employment rate and relative labour force participation rate. One strength of LMS is the possibility to further disaggregate labour market outcomes at a detailed level, such as by background variables and other relevant population and regional breakdowns.

### *The main target variables in LMS*



Note: Blue boxes represent the six statuses of labour markets.

The statistics are based on administrative registers from several authorities. In some cases, the data are used as they are and in others, the material is processed. It is mainly benefit payments and tax income information, form declarations, that are used to classify individuals' status, but also information on activities and initiatives in which people have participated.

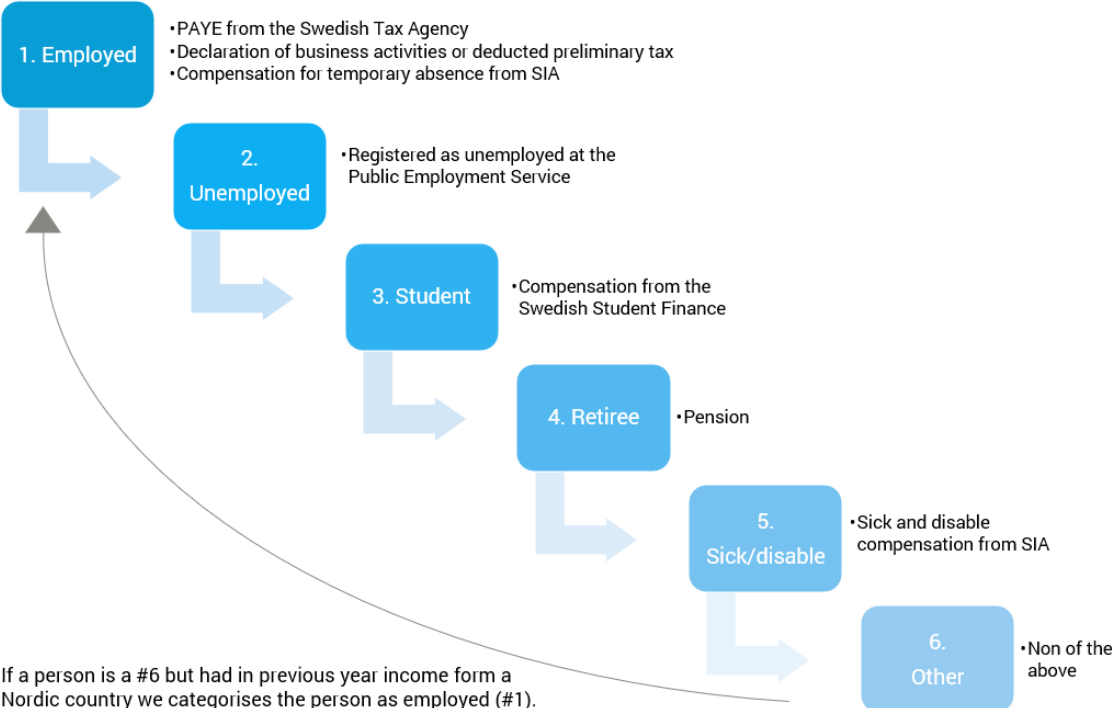
The definition of the classification in LSM is inspired by the recommendations of the International Labour Organisation (ILO). However, there are some differences. The differences are partly due to the fact that the administrative material is not primarily produced for statistical purposes. Although, the material is considered to be of high quality and can in many cases be used as a complement to direct data collection.

The LMS are available in a preliminary and a final version. The preliminary version is published continuously every month. The timeliness is rather fast, only two months after the end of the month

are we able to report register-based information. The preliminary data also present averages on both quarter and annual bases. The statistics are up-to-date and mainly provide information for users with a short-term perspective. The final version is also available by month, quarter and year. Differences between the versions are that the final statistics have a longer time lag and are published once a year. With a longer time lag it is possible to use more updated input data sources. This means that there are differences between preliminary and final statistics. The most important differences are that Statistics Sweden uses certain annual declarations in compiling the final statistics and that information on the period to which a benefit relates can be used instead of the time when a benefit was received. In terms of level, the final version of LMS has about 100 000 more individuals employed than the preliminary statistics. When comparing the trend figures, the versions are very consistent.

The LMS classifies each person into one of the six categories every month. The classification of labour market status is hierarchical, which means that a person is classified in only one status even if he or she meets the conditions for more than one status during the month. The decision to choose a status is based on a hierarchical decision-making system where the order is prioritised according to the categories: employed, unemployed, student, retired, sick/disabled and other. This means, for example, that an unemployed person has not been defined as employed and that a person classified as employed could also meet the requirements for the student category. PAYE is the main data source for the classification of employed persons. The employed is also the labour market status with the highest priority in the hierarchical decision-making process.

*Hierarchical decision order in LMS and the main data sources for each status*



## **Employed**

An employed person is either an employee or an entrepreneur. Entrepreneurs are further subdivided into the categories of self-employed or owner of limited companies. The chosen status of employment (employee, self-employed, owner of limited company) that each person is categorised as is determined by where the person has received the highest wage income.

### *Employee*

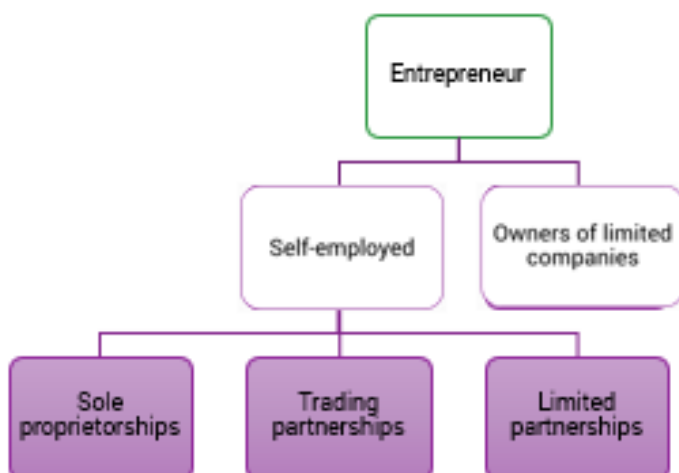
Employees are mainly defined as employed if the person has received a payment for work according (PAYE) during the reference period. If persons during the reference period are temporarily absent from work (due to, e.g., illness or parental leave) but were previously (not more than 11 months) where employed they will now also be employed, which is also an ILO recommendation. If persons are neither employed nor can be linked to any other labour market status (unemployed, student, retiree or sick) during the month, but had labour income from a Nordic country in the previous year, we classify the person as employed.

### *Entrepreneur*

Entrepreneurs are a subset of all employed people and are divided into two types of entrepreneurs. Entrepreneurs are classified as employed if the person has sufficiently strong indications linked to entrepreneurship to be considered an active entrepreneur.

The definition of entrepreneur includes both self-employed and owner of limited company. The assessment of a person's status as an entrepreneur differs depending on whether the person is self-employed or an entrepreneur in a limited liability company.

### *Entrepreneur according to LMS*



#### *Self-employed - A hierarchical decision order*

Self-employed persons are classified as employed to run a business as a sole proprietor, trading or limited partnership through an algorithm using information from: *i)* preliminary statistics on preliminary income tax returns, *ii)* monthly preliminary F-tax<sup>5</sup> debits from the Swedish Tax Agency, *iii)* the status of VAT reporting in addition of *iv)* the status in Statistics Sweden's Business Register. The information from these sources is hence ranked and evaluated according to a decision hierarchy that determines whether the person and the connection to a company are sufficiently strong to be considered an active entrepreneur.

In the final statistics, the same method is used to identify the self-employed. The method is also supplemented by data on annual declarations of business activity.<sup>6</sup>

#### *Owner of a limited company (Ltd.)*

In the preliminary statistics, the owner of a limited company assumes that the person needs to be active as an entrepreneur in a limited company. To be an entrepreneur in a limited company, a person needs to have received a paid wage income during the reference period (as in the definition of an employee) and at the same time be registered with the Swedish Companies Registration Office as the beneficial owner of the same company.

In the final statistics, the corresponding method is used, except that a person can also have a received PAYE and at the same time declare qualifying shares from the same company, or the person has received a PAYE in the same month in which the person is also a member, manager or chairman and where the address of the company is the same as the private address of the person. Persons who do not have labour market status and who are classified as "other" in the given month may also become owners of a limited company if the person *i)* has declared on an annual basis for qualifying shares or is the beneficial owner of a company during the given reference period and *ii)* the company has reported a turnover during the year and is active in Statistics Sweden's Business Register and *iii)* if the person is a board member, managing director or chairman of the company during the given reference period.

---

<sup>5</sup> A monthly preliminary F-tax debit is the most obvious indication that a person is self-employed and also the most common indication why a person being classified as self-employed. Even if the person has no monthly debit, the person can become self-employed according to the decision order.

<sup>6</sup> In cases where annual declarations are used to classify entrepreneurs, it is also required that the enterprise had a turnover during the year or that there was no turnover but the enterprise was newly started. As these data refer to years, dates and VAT status are used to verify, as far as possible, whether the enterprise was active for only part of the year.

### **Unemployed**

Unemployed persons are defined as persons who were registered as unemployed at the Public Employment Service at any time during the month.<sup>7</sup> Given the hierarchical decision method individuals may be, e.g., in several labour status at the same time. This means that we have individuals who have a PAYE in the same month as they are registered as unemployed at the Public Employment Service. However, given the hierarchical decision method, they will be assessed as employed. This is also information that is available for users who find this combination important to know.

### **Students**

In Sweden, education is free and mainly all students receive some kind of payments. Students are mainly defined as persons who have received a payment from the Swedish National Board of Student Finance for studies or persons aged 15 and 16 in the reference month. During the summer months when they are on summer leave and the payments are paused, they will be classified to the residual group (others), given that they did not work and received payments. If they work, they will hence be employed.

### **Pensioner**

Persons classified as pensioners have received pension benefits during the reference month.

### **Sick - Absent due to health-related issues**

Persons classified as sick received sickness and disability compensation or other benefits related to the sickness category during the reference month.

### **Other**

A person classified as other has not been classified to any of the labour market statuses employed, unemployed, student, retired or sick. The status Other may be seen as a residual. This group of individuals is very heterogeneous. The group consist of people who lives merely on capital gains or capital dividends, .e.g., housewives and individuals who are no longer in the country.

## **Supplementary measurements**

Over time, the aim is to extend the register with useful and requested information from our users. Two examples of new variables that are currently available are source of income and the level of labour-related income.

---

<sup>7</sup> There is also an age restriction of unemployment. The Public Employment Service use an upper limit of 64 years of unemployment.

### *Main source of income*

The main source of income can be used to provide a more detailed picture of a person's labour market status. The main source of income is divided into eight categories (Compensation from work, Unemployment compensation, Study compensation, Pension, Long-term disability compensation, Sickness compensation, Parental leave compensation, Financial support, No compensation) and indicates in which category a person has received the highest income and transfers. This variable can be used, for example, to examine the proportion of employed persons with the highest compensation from study.

### *Work-related income level*

The work-related income level is used to estimate the extent to which a person can be considered as established in the labour market. It is a categorical variable that classifies each person into a category. The category is based on the amount of the person's income and work-related compensation in relation to a level determined by the current income base amount. The variable is provided both an initial level based on current monthly income and for a longer period, the reference period and 11 months back.

### *Other examples*

Many variables are created in the registry of LMS and can be used in different ways. By using several monthly registers, it is possible to create flow tables, provide information on people who change jobs, distribute people who are newly employed, temporarily absent, number of years as an employee, if the person is also categorised in several statuses, etc. In addition to variables relating to individuals, it is also possible to provide statistics on the enterprises in which the population works. For example, sector, location, size class, etc. Even if not all variables are included in the register, it is possible to link the identities in the LMS register (personal number, organisation number, establishment number) with other registers where interesting information is available.

## **Comparability with other statistics**

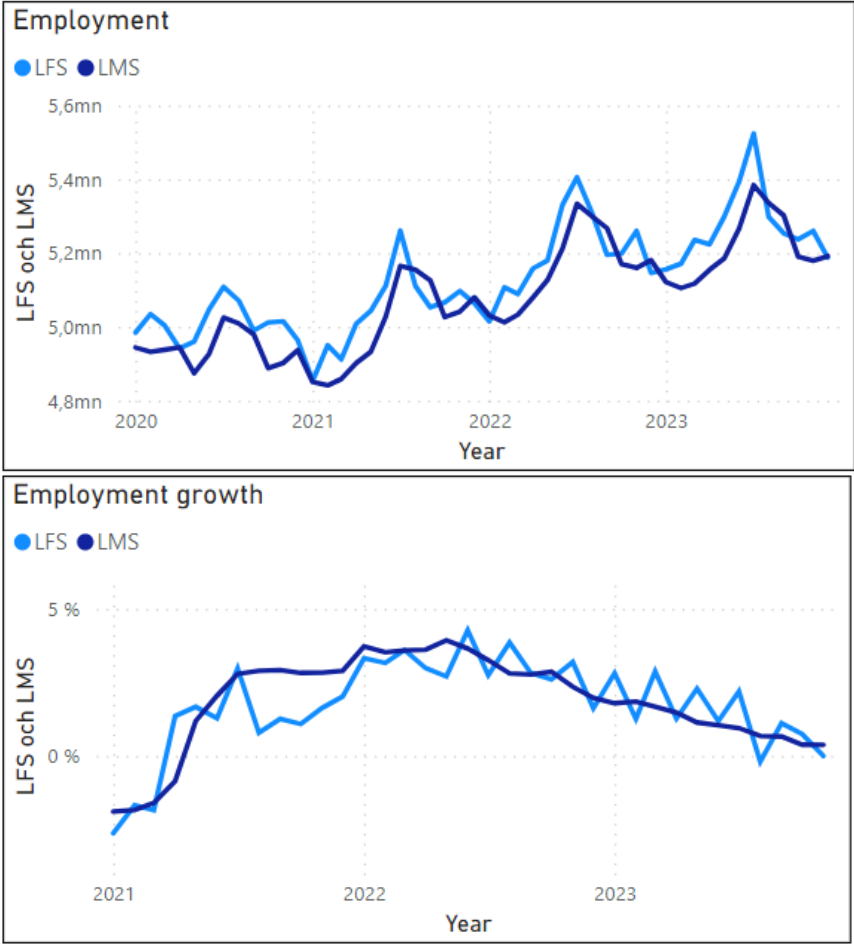
The use of register data in the production of statistics has many advantages. In particular, it is economical to use existing registers, but the benefits are also significant from the point of view of the respondent. The disadvantages of using administrative registers are often that the administrative registers are not designed to produce statistics. The ability to adapt the statistics to the needs of the users is limited. The possibility of reporting both register statistics and sample statistics on the labour market is therefore positive in several respects. In many cases the statistics can be used for quality assessment and better understanding. An important aspect of the development of LMS is therefore to carry out analyses and comparisons with labour market sample surveys, in particular the Labour Force

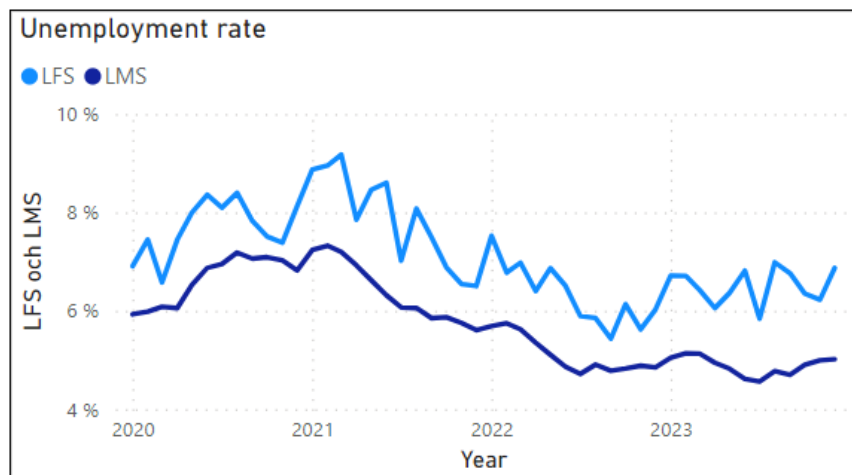


Survey (LFS). The LFS is currently a very useful source of statistics that meets the needs of many users.

LMS and LFS usually show the same trends and should be seen as complementary. In some cases, the levels differ and this can be explained by differences in definition. In the first figure, we may see some indication of lagging employment in LMS compared to LFS, due to we are measuring the month of payment instead of the actually reference period of working. The statistical products have different strengths, which is why they are used in different contexts. None of the products is considered to be the main source of labour market statistics. The use of each product should depend on the labour market phenomenon that should be analysed.

Comparison between LFS and LMS





## Pros and cons

Administrative registers are rarely kept for statistical purposes. This means that it can be difficult to make changes to the data set and assumptions have to be made when producing statistics. An example in LMS is the main input source PAYE. The data in PAYE are primarily collected for tax purposes and refer to paid income from work performed. The information refers to the amount received by each person in a given month. A drawback is that the data do not provide any information on the period to which the compensation relates. In LMS, people are classified as employed in the month in which they received the wage income. Another limitation of LMS is the lack of information on, for example, hours worked, the working period to which the income payment relates and the type of employment.

## The situation of the Swedish labour market

We now turn to look at a glance how the Swedish labour market looks like. With a population of 7,6 (10,5) million inhabitants between 15 and 74, 72.6 percent of the population is in the labour force in January 2024, which means 27.4 percent were not in the labour force. For those who were in the labour force, 69.4 percent were employed and out of them 89.7 percent were employees. Since LMS uses a stricter definition of unemployment compared to LFS, it results in a lower unemployment rate for LMS.

Earlier, in the discussion, of a categorical variable as employed through income payments of 1 SEK we nuance the status of employment and try to define if individuals can be considered as established in the labour market via an income threshold. Out of all employed individuals, 91.1 percent have labour income as their main source of income, and 84.3 percent of the employed are assessed to be strongly attached to the labour market.

Current situation of the Swedish labour market, January 2024



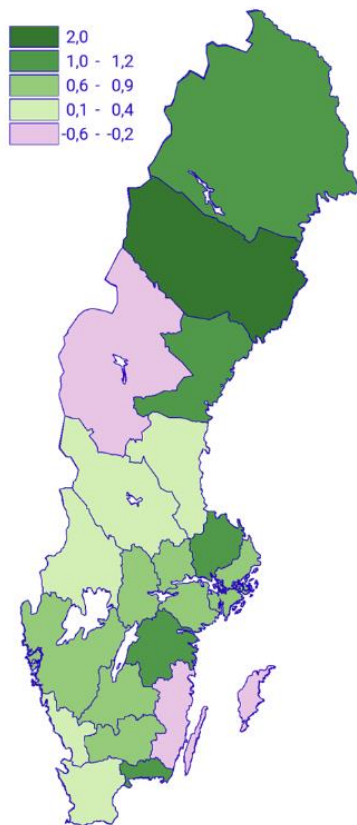
Note: \*Absent due to health-related issues

Examples of regional statistics

Since LMS uses administrative data, granular analyses are possible to conduct. For example, we are able to illustrate the growth of employment on a regional level. The highest level of growth is seen in the region of Västerbotten (north of Sweden) and is mostly concentrated in and around the municipality of Skellefteå. Three out of the 21 regions had a negative employment growth.

With the green transition taking place in the world, including the investment in a new battery factory in Skellefteå, many new employees are needed to meet the needs of the labour market. The media usually talks about 100 000 people needing to move to northern Sweden.

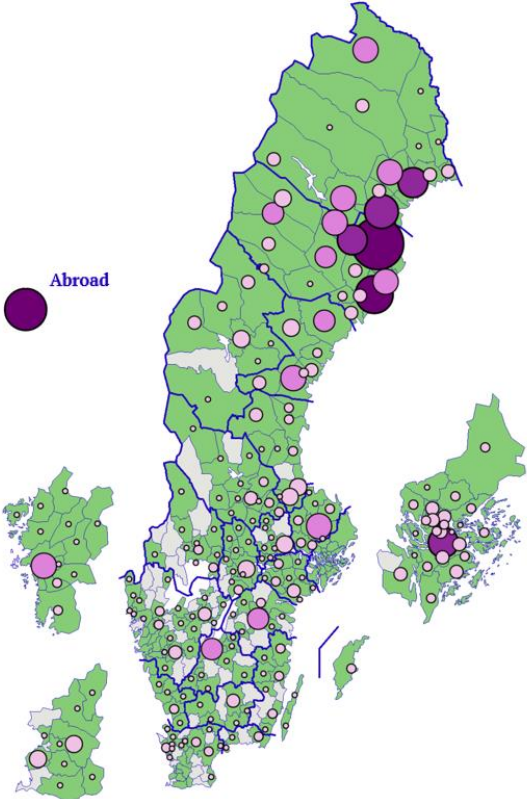
*Regional employment growth, September 2023, y/y, percent*



But, where do employers in Skellefteå get their labour from? It is therefore interesting to look at how employers within Skellefteå municipality have found their new labour force. Skellefteå has just over 39,000 employed individuals and an employment growth of 13 percent since 2020 (top three municipalities).

The map shows where Skellefteå's new labour force lived earlier. It shows the residential municipality in 2020 among those who did not work in Skellefteå in 2020 but did in 2023. The picture says that "All of Sweden meets in Skellefteå". The size of the bubbles shows how many employees come from each specific municipality. In principle, the neighbourhood and dense regions provide the most people. In addition, just over 920 people were not previously resident in Sweden.

Where do employers in Skellefteå get their labour from?



# ”All of Sweden meets in Skellefteå”

Where does the labour force working in Skellefteå come from?

