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Session 6 New data sources: Opportunity and challenges

First approach to gender and trade statistics in Mexico: The Profile of Export Manufacturing Enterprises by sex

Abstract

This document describes the statistics of the Profile of Export Manufacturing Enterprises (PEME) disaggregated by sex, which represents an initial approach for integrating trade and gender statistics in Mexico. PEME is elaborated as result of linking the Statistical Business Register of Mexico (SBR), Custom declarations and other Structural Business Statistics as the Economic Census and the Annual Survey of Manufacturing.

PEME aims to generate information on the flows of foreign trade of manufacturing enterprises, contributing to the measurement of Mexican international trade, and identifying its impact on employment and production levels. Additionally, it provides information regarding the characteristics of manufacturing enterprises engaged in exports and imports. The methodology for linking business and trade statistics is presented, considering the identification of data sources, enterprises consolidation, selection of variables, linkage of the enterprises from the universe of enterprises, and validation of the outcomes. The main results on the employees disaggregated by sex are displayed by trade status of the enterprises, size, and NAICS subsector (3-digit level) annually for the period 2018-2021.

I. Introduction

Recently, there have been some efforts to encourage National Statistical Offices to incorporate a gender perspective into their statistics, to address the demand for this kind of data and indicators to support the development of policies and programs for reducing the disadvantages faced by women (UN, 2016). To address this need, the United Nations Conference on Trade and Development developed a conceptual framework for assessing the gender impacts of trade agreements, this framework allows for the identification of data gaps related to gender and trade. Furthermore, it promotes the implementation of microdata linking pilots as an additional action to develop more comprehensive gender-related trade data (UNCTAD, 2018). Likewise, the 54th session of the UN Statistical Commission agreed upon the development of guidance on the integration of gender aspects into relevant business and trade statistics (UN, 2022).

This effort is part of the results on the increasing global interest for generating to work internationally on the generation of statistics that reflect the phenomenon of globalization and the interrelation of the countries that participate in international trade, such as the dissemination of Trade by Enterprise Characteristics (TEC) statistics (UN, 2011). For instance, the Organization for Economic Cooperation and Development (OECD) has promoted among its members the linking of business statistics with information on international trade flows, to obtain data with a broader perspective related to international trade and enterprises characteristics (OECD, 2017); also, there have been other efforts from several countries on this matter such as the work done by Italy (Istat, 2015).

In the case of the economic statistical programs prepared by the National Institute of Statistics and Geography of Mexico (INEGI), data is presented by sex, which is a first approach to measuring gender aspects in business and trade statistics. Disaggregation by sex represents an individual-level characteristic commonly recorded in the economic census, surveys, and administrative records.

In consequence, in 2022 INEGI includes the number of employees by sex in the Profile of Export Manufacturing Enterprises (PEME by its acronym in Spanish). The time series starts from 2018 and these data show the participation of women and men in the production of manufactured goods in international merchandise trade.

In this sense, this document presents a general overview on the methodological process for producing The Profile of Export Manufacturing Enterprises by sex, which is based on linking business and trade statistics. For this aim, Microdata Linking (MDL) serves as an important tool to integrate business and trade statistics, by providing additional features on the enterprises engaged in foreign trade in goods, as well as to develop statistics and indicators related to enterprises engaged in international trade, without increasing the response burden to the informant.

Finally, this paper is divided in four sections: after this introduction, it is presented a section which describes the methodological aspects; then, it is covered the dissemination and main results of PEME by sex; and finally, it is described the main conclusions and next steps on this statistical product.

II. Methodological aspects

The Profile of Export Manufacturing Enterprises by sex was developed in 2022, which provides information on exports and imports value (by enterprise size and economic activity) of the trading manufacturing enterprises, distinguishing the sex of the employees.

The objective of PEME by sex is to provide statistics regarding foreign trade flows with the most representative economic variables of manufacturing enterprises, contributing to the measurement of international trade, as well as to the analysis and influence on production and the level of employment, particularly the participation of women and men in trade.

In this section, it will be detailed the main methodological features for carrying out the process of integrating sex data into business and trade in goods statistics. The concepts and definitions used along this section are based on the Methodological Document of the Profile of Export Manufacturing Enterprises (PEME) which is available on the website of INEGI.

Observation unit

The observation unit is the enterprise defined as the organization, owned by a single legal entity that carries out one or more economic activities, with its own autonomy in marketing, financing, and investment decisions. This unit has the authority and responsibility to distribute resources in accordance with a plan or strategy to produce goods and services and may be located or operated in one or more addresses sharing the same enterprise name.

The enterprises are classified as it follows:

- Uni-establishment enterprises: those enterprises with a single establishment.
- Multi-establishment enterprises: enterprises constituted by more than one establishment.

The assignment of the enterprises' economic activity considers products and services developed by the establishment, as well as its production processes. This assignment is carried out according to the identification of the activities established in the North America Industrial Classification System (NAICS, 2018).

The generation of information is focused on manufacturing industry due to the rich detail available in data sources on manufacturing firms allowed to have a robust enterprise population data set on this activity. Also, manufacturing exports were 88.1% of total exports in Mexico during 2021 (INEGI,2021). Additionally, in 2018 the manufacturing industry accounted 23.9% of the total employee by private sector and public enterprises in Mexico (INEGI,2020).

The economic units that are considered in the PEME are those that are dedicated to the production of manufactured goods, where at least one of its establishments provides information for the National Economic Surveys and/or in the statistics of the Manufacturing, Maquila and Export Service Industry (IMMEX by its acronym in Spanish) belonging to the manufacturing sector. In this way, the production and number of employees in non-census periods of those establishments that register foreign trade operations of merchandise with the customs authority are monitored. It should be noted that there are economic units that produce products for the foreign market, but also for the national market.

For the disaggregation by sex, the pre-established information variables are used from the structural statistics questionnaires that number of employees are defined as follows:

Includes employees hired by the enterprises, whether unionized or not, and outsourced at the establishment, covering at least one-third of the working day related to production, marketing, administration, accounting, and other tasks.

Data sources

PEME uses the Statistical Business Register of Mexico, SBR (RENEM by its acronym in Spanish) as the backbone for integrating information available on the enterprises and their economic activity from different data sources particularly:

- SBR: It is a structured database that contains current and historical basic information of all the economic units of the country such as: identification data, location (physical address and geographic coordinates), industry classification, and other economic variables such as number of employees and employment and income.

- Customs records from the International Merchandise Trade of Mexico allows knowing the evolution and composition of exports and imports of merchandise that Mexico carry out with the rest of the world. This project is based on the statistical use of customs records and includes all transactions that comply with the established regulations.

- Structural Business Statistics:

  - Economic Censuses: it has basic statistics on all establishments that produce goods, merchandise traders and service providers, at a high level of geographic, sectoral, and thematic detail (on a quinquennial basis)

  - Business Surveys:

    - Surveys of the Manufacturing Industry (annual and monthly): provide statistical information regarding the situation, evolution, and structural changes of this industry. Both surveys have the same statistical design and collect information from the most representative establishments of the manufacturing sector.

    - Manufacturing, Maquila and Export Service Industry (IMMEX): offers monthly information on the main characteristics and evolution of all active establishments, which have authorization from the Ministry of Economy to carry out foreign trade operations in the context of the IMMEX Program.

MDL and the production process

Microdata Linking (MDL) allows the production of more detailed statistical information by linking several data sources, such as international trade statistics, structural business statistics, and other available data linked to the Statistical Business Register through a unique identifier.

Based on the revision of the previously mentioned data sources, the production process followed for the MDL is described in the following steps:

During the first stage, the databases are standardized so that all economic units share the same observation unit: enterprise.

Subsequently, data of the corresponding programs is presented in an annual basis. In the case of records at the establishment level, they are linked through the SBR Statistical Business Code (CLEE for its acronym in Spanish), as well as the enterprise consolidation. This linking process allows to keep updated the information on the identification of the enterprises and the establishments that belong to the enterprises. Additionally, changes in the consolidation of the enterprises, location, enterprise name and economic activity, as well as registrations of economic units are incorporated in the generation of results.

The information on number of employees and income is aggregated at the enterprise level, considering only the establishments that carry out manufacturing activities. In the aggregation process, it is necessary to impute the values of establishments that are part of multi-establishment enterprises but are not identified into Economic Surveys or IMMEX Program Statistics, so there are no regular reports of the production value and number of employees.

Once the previous steps are developed already, the economic activity of the enterprises is assigned according to the NAICS sector 2018 (31-33) based on the SBR. From this point it is possible to identify the enterprises with foreign orientation and select the ones that report data on the following variables:

- Sales abroad (exports)
- Purchase of raw materials from the foreign market (imports)
- Income from maquila, submaquila or remanufacturing in the foreign market.

Additionally, the enterprises that belongs to IMMEX Program are included, regardless of the data reported on the indicated variables.

The group of foreign-oriented enterprises is classified as follows:

• exporters or importers

• enterprise size by the number of employees

• production value

• value of imports and exports

• Geographical areas and countries selected based on the identification of the main destination country for exports or main origin country for imports

• Number of countries of destination and origin of the goods traded

Regarding the classification of number of employees by size of enterprise, the following table is considered:

Enterprise size	Number of employees
Micro	1 - 10
Small	11 - 50
Medium	51 - 250
Large	251 - 500
Macro	501 or more

For the disaggregation by sex, the pre-established variables in the structural statistics questionnaires are used.

Data validation:

The information is validated in two stages:

1. Enterprise level

• Verify that all the establishments of a multi-establishment enterprise share the same enterprise name.

• Review the production and employment values, as well as their historical behavior.

• Monitor and analysis of data sources and population statistics of generation of the PEME.

2. Aggregated information level

• Analysis of the trends of the enterprises by enterprise size, total number of employees, output level and by NAICS subsectors.

• Comparison with information from different data sources, such as the employment reported in the administrative records generated by the Mexican Institute of Social Security (IMSS) and with the next INEGI's programs:

- Economic Censuses
- National Economic surveys
- IMMEX
- Export Value Added of Global Manufacturing – National Accounts

Once the validation process is completed, a database is integrated with the results to be disseminated.

III. Dissemination

PEME is annually published (currently, it is available a 2007-2021 period) and it covers information on exports and imports of the manufacturing enterprises, while data of PEME distinguishing the sex of the employees is available from 2018 to 2021, and considers the following breakdowns:

- Total number of employees by sex, exporting enterprise size, and NAICS Sector/Subsector
- Total number of employees by sex, exporting and/or importing enterprise size, and NAICS Sector/Subsector
- Total number of employees by sex, importing enterprise size, and NAICS Sector/Subsector
- Average of employees by sex, exporting enterprise size, and NAICS Sector/Subsector
- Average of employees by sex, importing enterprise size, and NAICS Sector/Subsector
- Average of export by employees, exporting enterprise size, and NAICS Sector/Subsector

Moreover, the following features are released and available in the INEGI website:

- Methodological document
- Metadata (annual)
- Tabular data (annual)
- Tools (massive downloading, dynamic figures, etc.)
- Microdata laboratory

<u>Main outcomes</u>

- In overall, during the period 2018 to 2021 there is a stable participation of women and men in the manufacturing traders, where one of each three employees were women

- Slightly more than one half of the total employees were women in the following manufacturing activities: Apparel, Miscellaneous, and computer and electronics

- On the other hand, more than 80 percent of the total employees were men in the manufacturing of Beverage and tobacco, Primary metal, and Nonmetallic Mineral

- The average participation by subsector of women is 213 people at the national level. Above the average are 5 subsectors, the most important being 334 Computer and electronic with 573 women, while below the national average are 16 subsectors, the lowest average being the subsector 321 wood product with 33 people

- The average participation per subsector for men is 363 people at the national level. Above the average are 9 subsectors, the most important being 324 Petroleum and coal, while below the national average are 12 subsectors, the lowest average being subsector 321 wood product with 125 people

- On average at the national level, the participation of men is higher than women

IV. Conclusions

The integration of different data sources through MDL, allowed to analyze the participation of women and men in trading manufacturing enterprises from 2018 to 2021. This analysis distinguishes the NAICS subsector, size class, as well as the exports and imports values.

PEME by sex may provide useful elements for designing, monitoring, and evaluating public policies aimed at reducing the disadvantages faced by women. It also might serve as a data source for analysis in the public, private, and academic sectors on topics related to economic globalization, such as the impact of Global Value Chains through international trade of goods on national production, investment, and employment disaggregated by sex.

As part of the upcoming steps, INEGI plans to disseminate this statistical product on an annual basis and expand the statistical series of PEME by sex from the year 2013 onwards. Besides, there it is envisaged to investigate additional characteristics of enterprises and employment, enriching the statistical information resulting from the linkage of business and trade microdata.

The information available from structural statistics allow us to start to work on new projects for the analysis of Small and Medium Enterprises in the GVCs.

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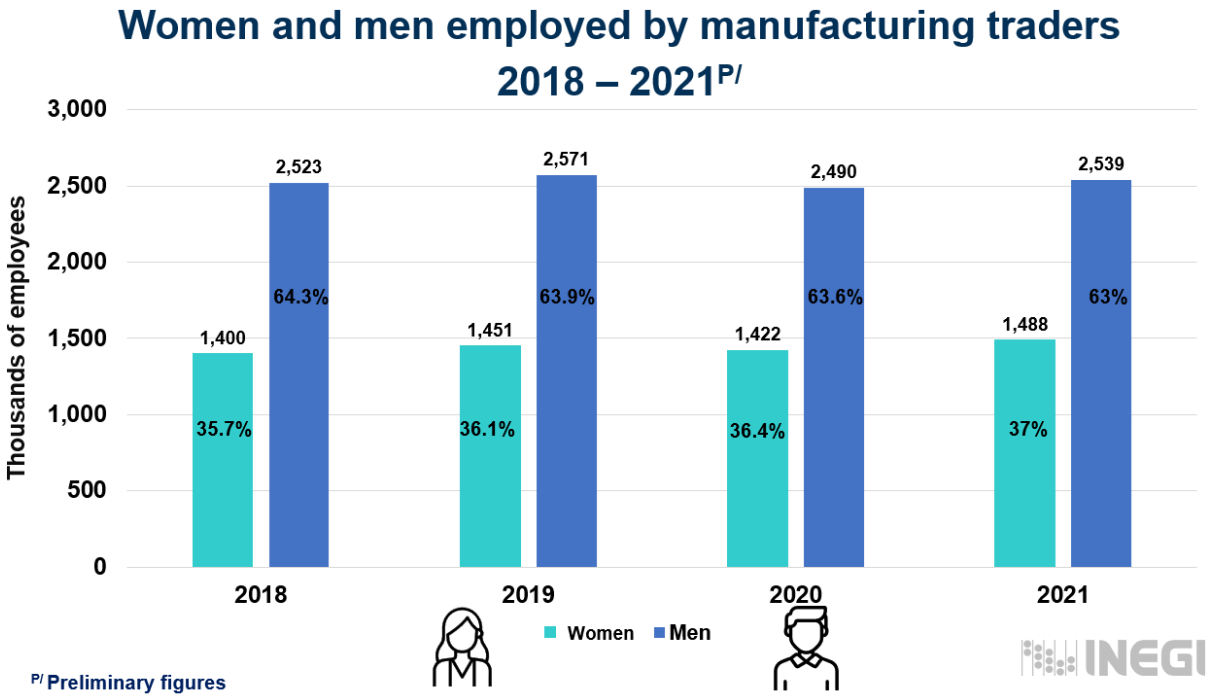
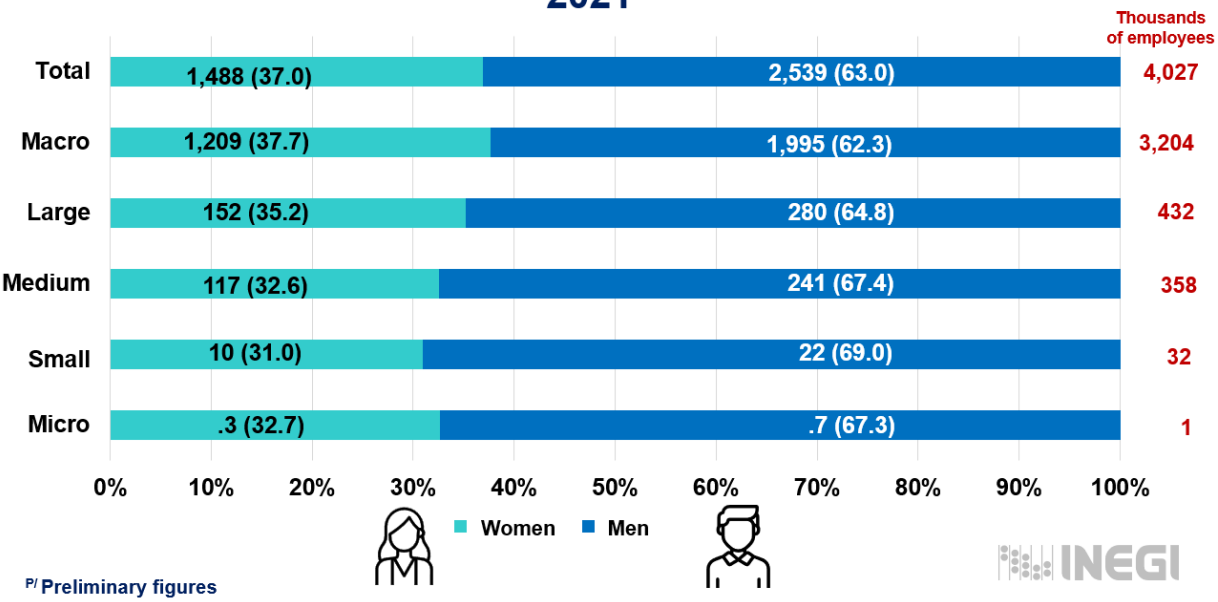
Annex – Main Outcomes.

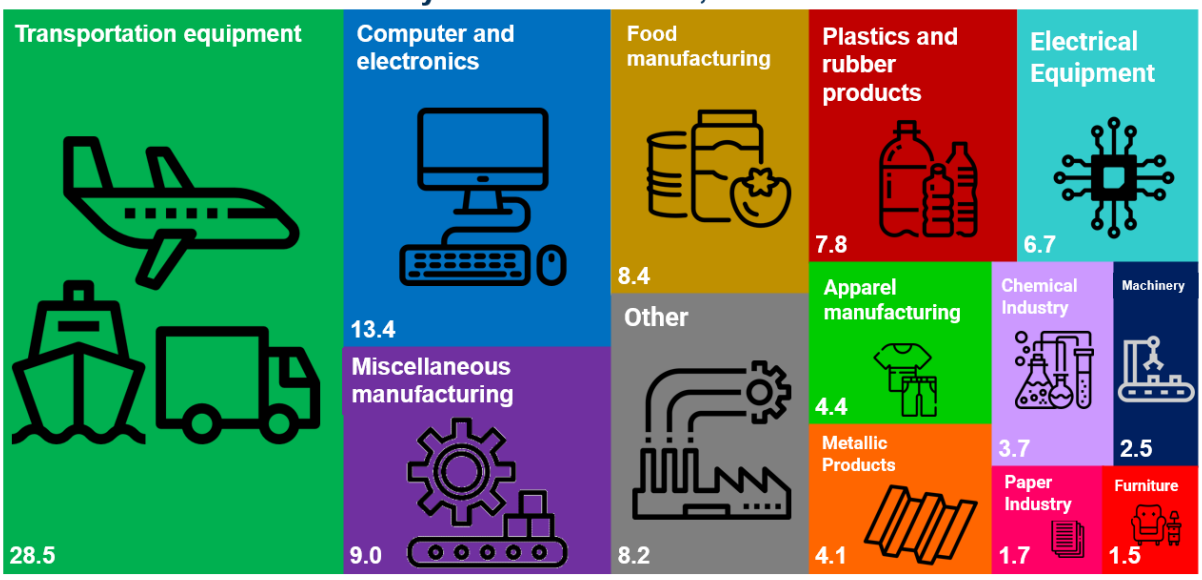


Participation rate in manufacturing traders by sex and size 2021P/



P/ Preliminary figures

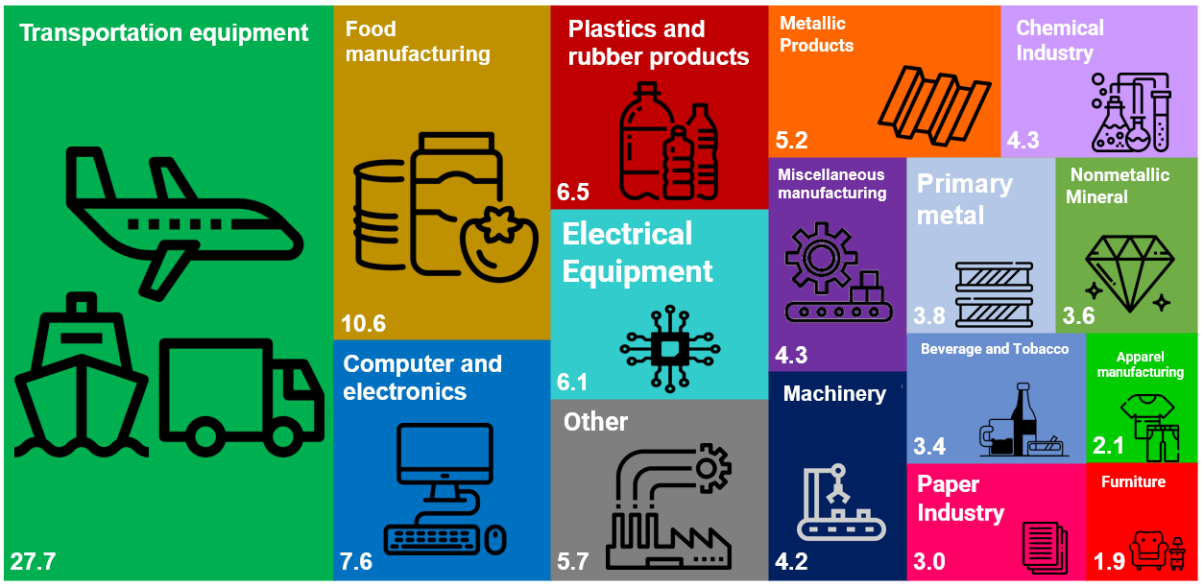
Distribution of women employed in manufacturing traders by NAICS subsector, 2021P/



Women (Total) = 1,488 Thousands of employees

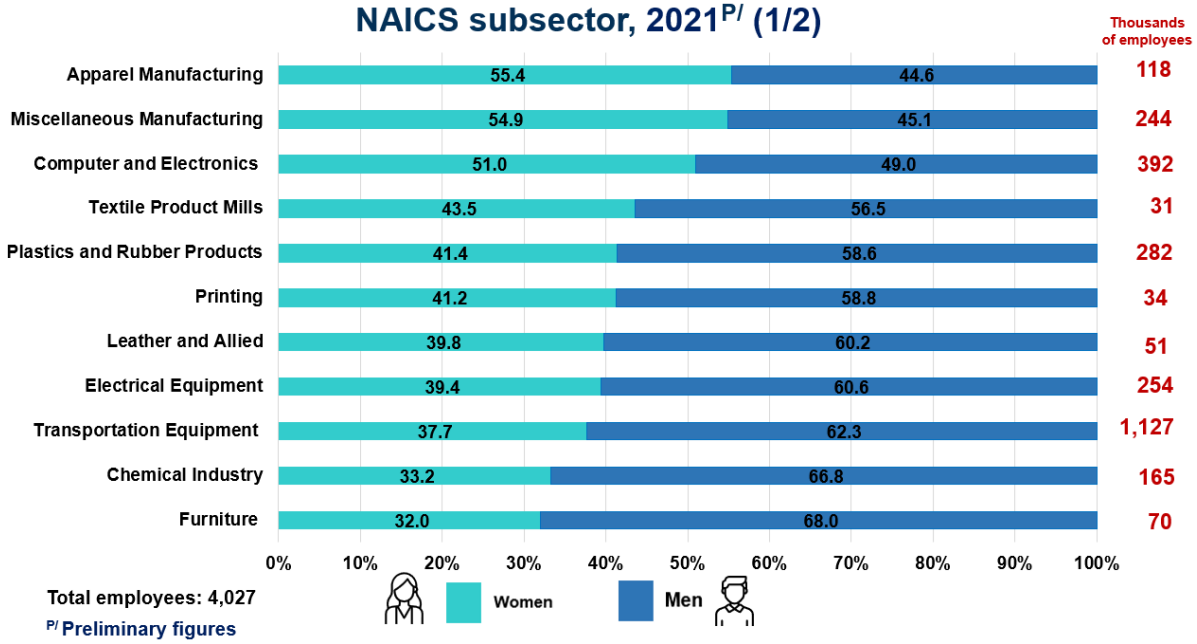
P/ Preliminary figures

Distribution of men employed in manufacturing traders by NAICS subsector, 2021P/



Men (Total) = 2,539 Thousands of employees P/ Preliminary figures

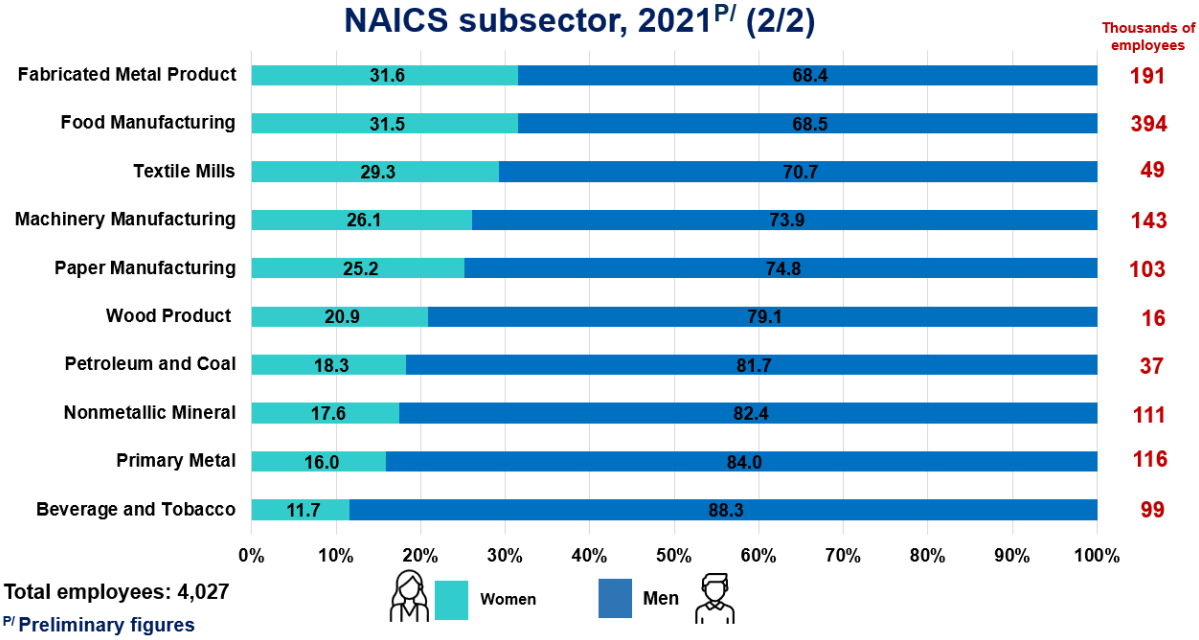
Participation rate in manufacturing traders by sex and NAICS subsector, 2021P/ (1/2)



Total employees: 4,027

P/ Preliminary figures

Participation rate in manufacturing traders by sex and NAICS subsector, 2021P/ (2/2)



Total employees: 4,027

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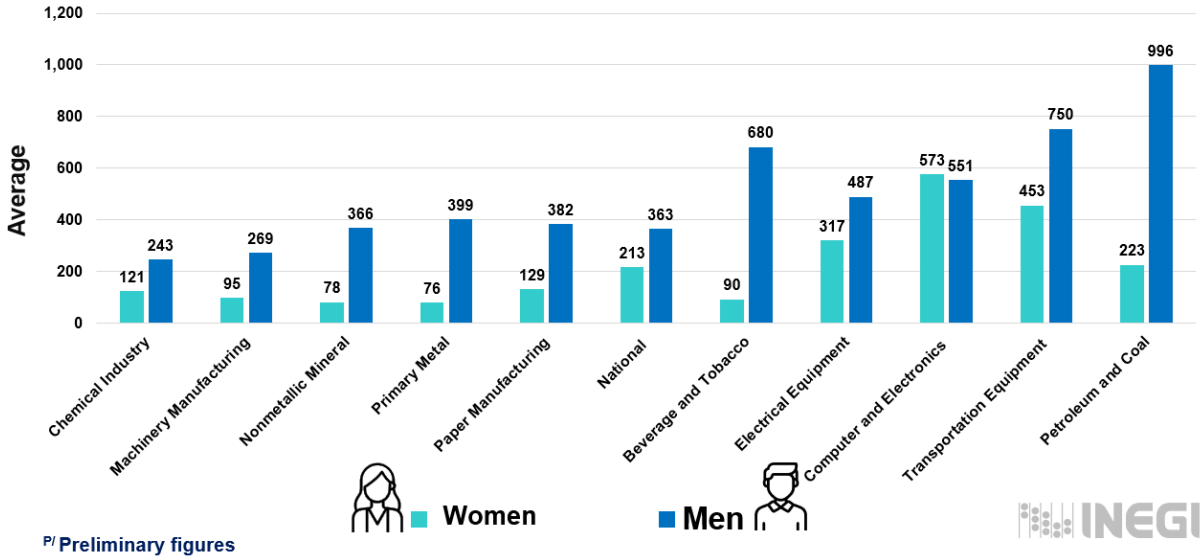
Average of employees in manufacturing traders by selected NAICS subsector in 2021P/



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