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# Study on the Health and Productivity of the Automotive Industry in the State of Guanajuato

**October 2016**

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# I. Introduction

*“Health isn’t everything, but without it everything else is nothing”, Schopenhauer.*

- The **correlation** between health and productivity is obvious. The *High Level Economic Dialogue* has already included the topic as part of its agenda. This is why the Mexican Association of Pharmaceutical Research Industries (AMIIF, for its acronym in Spanish) fostered this study.
- The study seeks to present a diagnosis, analyzing the repercussions of the medical care currently offered vis-à-vis the labor productivity of employees in the automotive industry, **due to absenteeism and presenteeism among workers.**
- The study estimates the **potential gap between supply and demand in healthcare services** in the automotive industry of the state of Guanajuato.
- Likewise, as a second part of the study, we estimate that the lost added value of the automotive industry, associated with absenteeism and presenteeism, **amounts to 7.31% of the total added value, which is equivalent to 1.6 billion MXN.**

# Study Objective

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## Why the automotive industry from Guanajuato?

Because of the growth it has had in the past years and its impact on the country's economic growth.

- During the 2010-2015 period, sales of the automotive sector increased on average 12% in real terms. The production of cars in Guanajuato represents 17% of national production.
- According to data shared by AMIA (acronym in Spanish for Mexican Association of the Automotive Industry), estimates indicate that local production will grow at an average annual growth rate of 10% during the next 4 years.

## Why Guanajuato?

The state of Guanajuato is host to an automotive cluster that has triggered growth in the state, in real terms reaching an average annual growth rate of 5.5% during the 2009-2014 period.

# Data Used

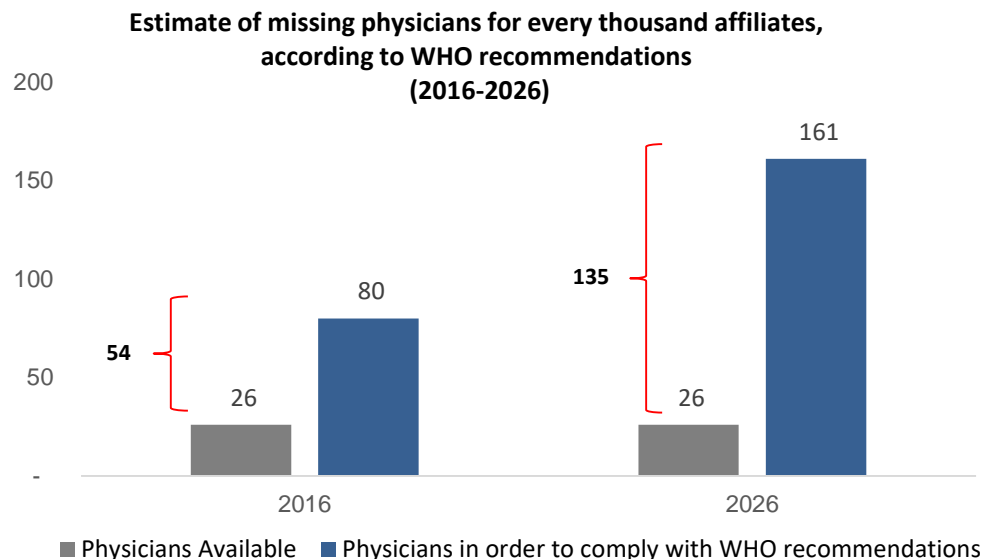
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- Given that the study's objective focuses on the private sector, we used public/ open data provided by IMSS (acronym in Spanish for Mexican Social Security Institute).
- Specifically, we used the **2015 IMSS data for infrastructure and human resources** available in those places where companies from the automotive sector established themselves and we compared them with the **industry's population of beneficiaries/ affiliates**, bringing in its epidemiological profile as of 2015.
- This was then complemented with **data from INEGI (2014 ENIGH (National Survey on Household Income and Expenditure) and the 2014 Economic Census)**, as well as from the **National Health Survey from 2015**.

## **II. Context: Gap between Supply and Demand**



- In the IMSS delegation in Guanajuato there are only **1,882 physicians** available (i.e. 0.7 physicians for every 1,000 affiliates); this figure is below the national average.
- It is estimated that **the automotive industry** from Guanajuato currently holds, on average, **26 physicians (this means there are 0.64 physicians for every 1,000 affiliates)**. The WHO recommends **for there to be from 2 to 3 physicians for every 1,000 affiliates**. Consequently, the industry would currently require **54 physicians** to meet the standards established by the WHO.



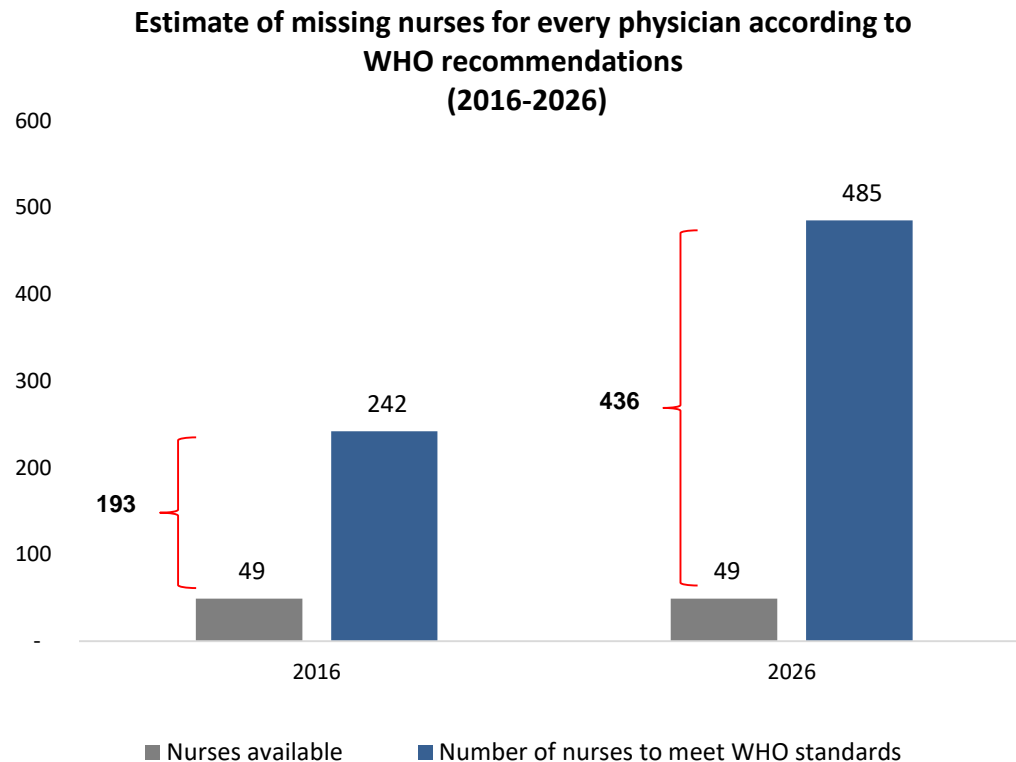
*If we estimate that employees from the automotive industry in Guanajuato will grow on average 7%\* during the next 10 years, in 2026 the gap will increase by little over 100% (i.e. twofold).*

Source: In-house production with information from IMSS and the 2014 Economic Census

\* From 2016 to 2021 estimates point to a 10% growth rate of the population working in the automotive sector from Guanajuato, in line with the projections granted by the AMIA. Given the macroeconomic setting, we estimate a 5% growth from 2021 to 2026, considering a moderate growth scenario.



- It is estimated that **the automotive industry** from Guanajuato currently holds, on average, **49 nurses (this represents 1.9 nurses for every physician)**. The WHO recommends **for there to be 3 nurses for every physician**. Consequently, the industry would currently require **193 additional nurses** in order to meet the standards established by the WHO.



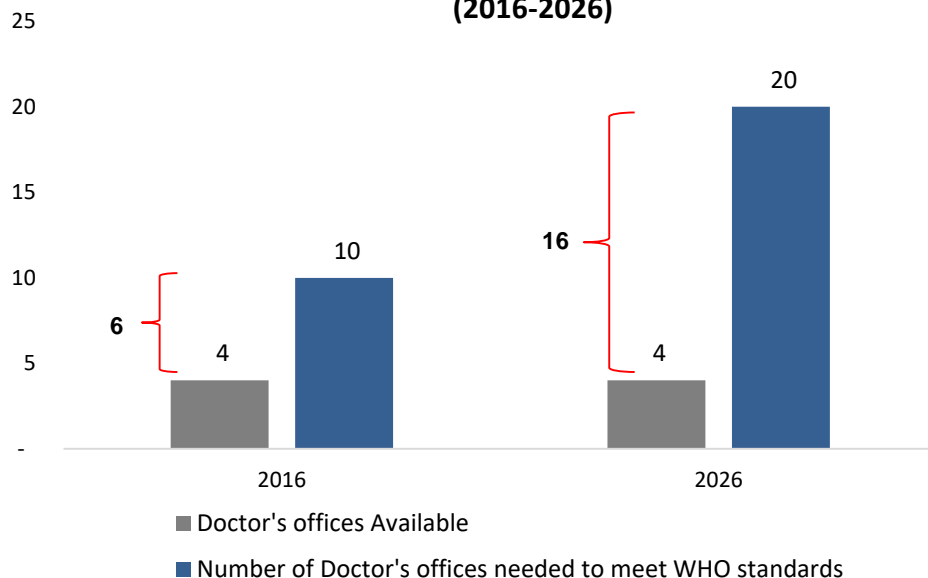
Source: In-house production with information from IMSS and the 2014 Economic Census





- In Guanajuato there is **a total of 277 doctor's offices** available in the IMSS family medicine units for the total population of affiliates. If we were to apply the ratio of 1 doctor's office for every 4,000 affiliates **based on the WHO criteria, the state would need right now almost three times (i.e. 200% more) the number of additional doctor's offices vs. the existing ones.**
- According to the share of the population working in **the automotive industry, it is estimated that this group of affiliates has on average only 4 doctor's offices** for their primary healthcare services. As of today, **they would require roughly 6 additional doctor's offices to care for the population of affiliates pertaining to the industry (without creating an overflow).**

Estimate of missing primary healthcare doctor's offices  
(2016-2026)



*If we consider an average growth of 7% of the population working in the automotive industry in Guanajuato, by 2026, roughly 16 doctor's offices will be required in addition to the ones that already exist.*

Source: In-house production with information from the Physical Inventory of Units, IFU 2015 and the 2014 Economic Census.

- In the IMSS Delegation in Guanajuato, **there are 0.4 hospital beds accounted for in the census** for every 1,000 affiliates. The WHO recommends **foreseeing from 2.5 to 4 hospital beds for every 1,000 affiliates**.

Proportionately, for the automotive industry there are **16 hospital beds on average, i.e. 0.4 hospital beds accounted for in the census for every 1,000 affiliates**.



Which is why as of now **85 additional hospital beds would be needed, which amounts to a HGZ (acronym in Spanish for General Hospital in the Area)**.

*If we take into account an average growth of 7% of the population working in the automotive industry in Guanajuato, by 2026 185 additional hospital beds will be required; i.e. close to 2 HGZ's would need to be built.*



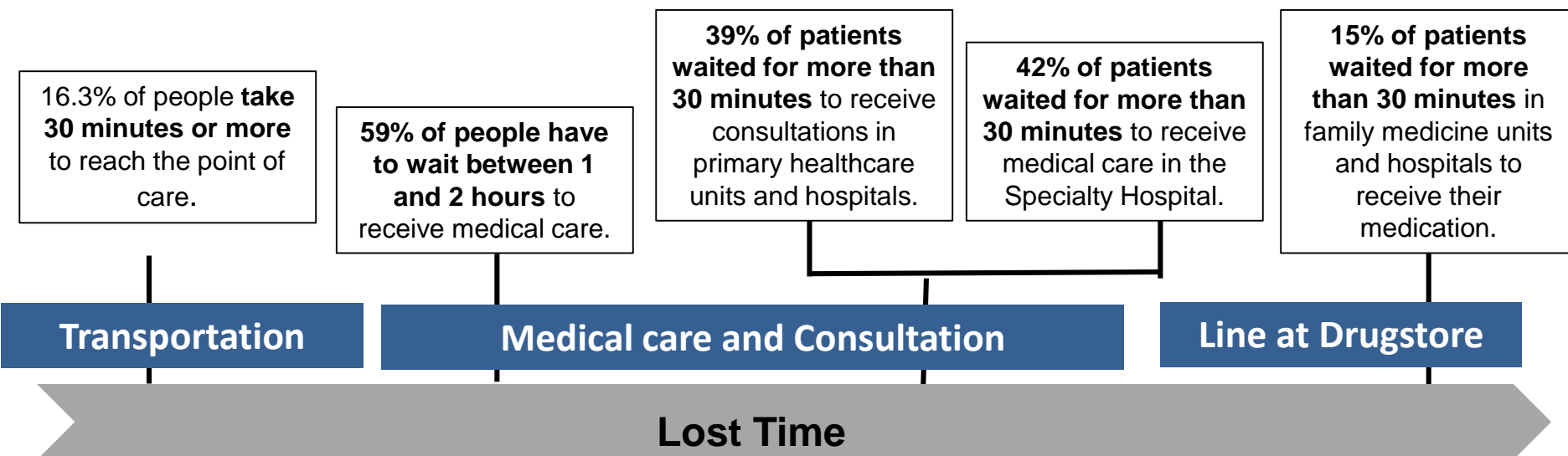
- 81% of hospital admissions have to do with emergencies, whereas the remaining 19% is carried out in a planned manner.
- As a reference from other healthcare systems, hospital admissions caused by Emergencies are estimated at roughly 60%, whereas programmed hospital admissions represent 40%\*.

Hospital Admissions		
Concept	Number of Admissions	% from Total
<b>Total</b>	<b>92,228</b>	<b>100%</b>
Due to Emergencies	74,428	81%
Programmed	17,800	19%

Source: In-house production with information from the 2013 IMSS statistical report (Last information available).

- The previous results suggest that the unsolved issues in the primary healthcare sector might lead to a higher demand of services in hospital ER's.

\*Source: Quality Agency of the Spanish National Healthcare System. Hospital Indicators

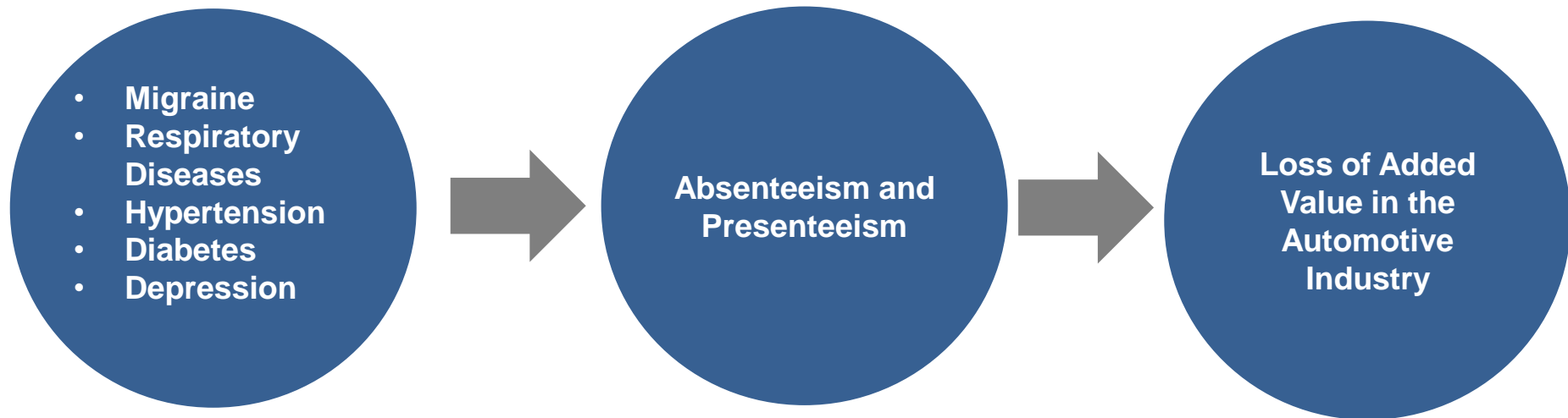


*We are able to estimate that on average a person would take close to 3 hours for the whole process, from the moment they start moving there to the moment they receive their medication.*

### **III. Methodology used to Estimate the Loss of Added Value**

# Methodology of the Study

- In order to measure the effects caused by absenteeism and presenteeism on the productivity of people working in the automotive industry of Guanajuato, we developed the following scenario in this study.



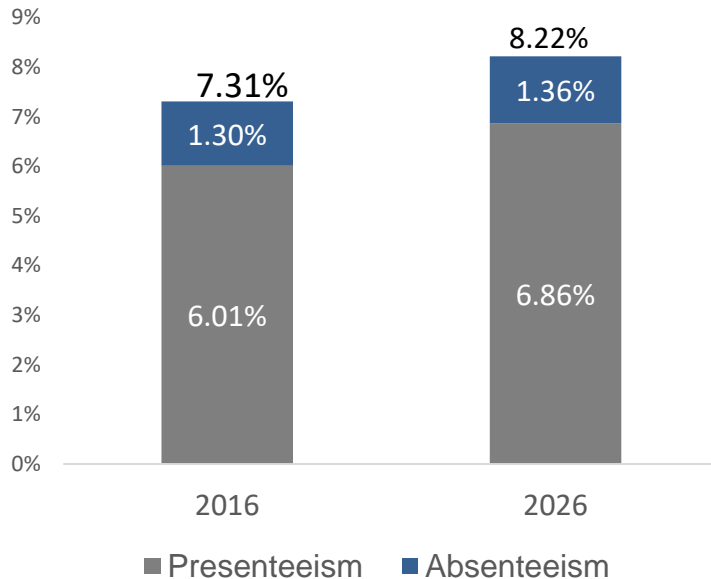
- The study takes into account the findings of the study conducted by Murray et al. (2015), Salomon et al. (2012), and Goetzel et al. (2004), on the estimate of loss of productivity due to absenteeism and presenteeism caused by specific diseases.
- This research focuses on the analysis of **five diseases**, those with the highest incidence and impact on productivity.
- It is worthwhile mentioning that the difference with the study presented by the **U.S. Chamber of Commerce** is that we did not take into account the effect of early retirement and of disability due to lack of data.
- Lost productivity is measured in terms of added value lost due to absenteeism and presenteeism.

## IV. Main Results of the Study

# Loss in Terms of Added Value of the Automotive industry

- Aggregated, the loss of added value reaches up to 7.31% of the total for the automotive industry if we consider the most relevant diseases in terms of morbidity and importance in the loss of productivity.

Estimate of the percentage of added value lost due to absenteeism and presenteeism in the automotive industry in the state of Guanajuato  
(2016 and 2026)



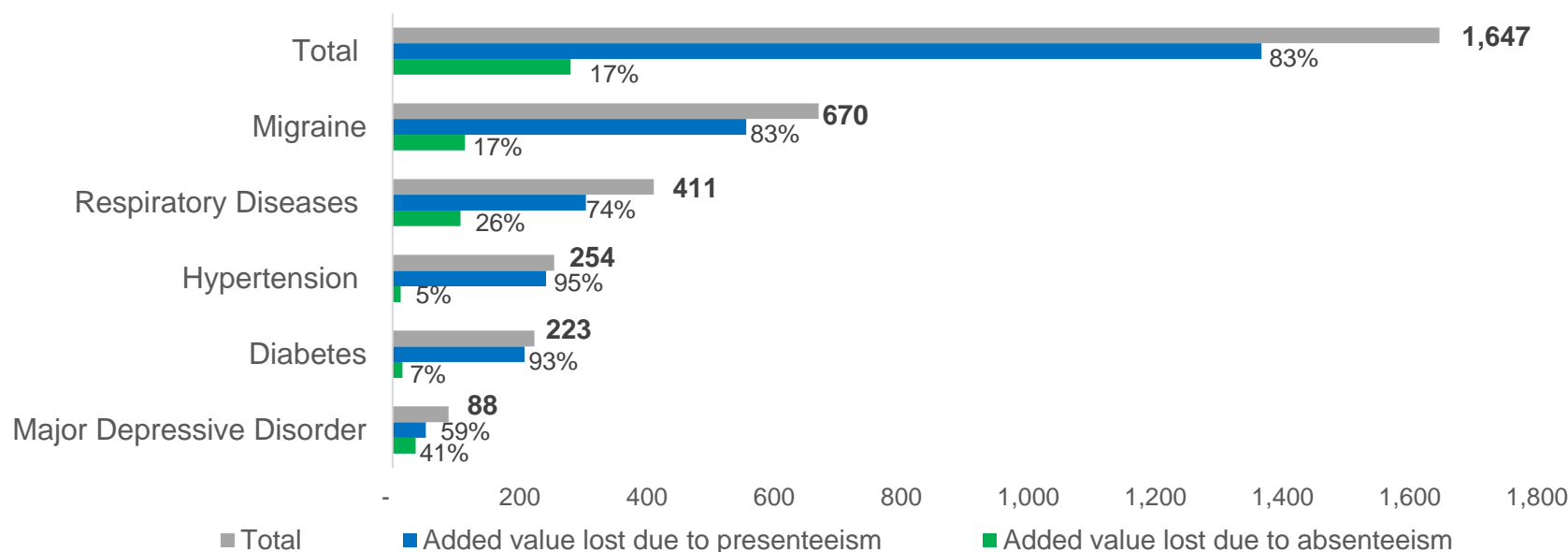
*In terms of payroll (personnel), the estimated annual loss amounts to 46% of the automotive sector's workforce in Guanajuato.*



# Loss in Terms of Added Value of the Automotive industry

*The loss of added value amounts to 1.6 billion MXN, which in 2016 represents 59% of FASSA's budget (acronym in Spanish for Fund for Healthcare Services, Federal fund specifically assigned for this purpose and mainly corresponding to payroll) for the state of Guanajuato, and 16% of the total budget for the healthcare sector of Guanajuato.*

Estimate of added value lost every year to absenteeism and presenteeism due to specific diseases in the automotive industry in the state of Guanajuato  
(millions of MXN,%)



## V. Messages

Same as with the study of the US Chamber of Commerce, the results prove that **presenteeism causes 4.5 times more loss of productivity than absenteeism** (6.01% vs. 1.30%, respectively).

The medical conditions causing **more than 50% of the problems in presenteeism are migraines and respiratory diseases**, which should be treated in a relatively swift manner with primary healthcare services.

**Hypertension and diabetes** make up roughly 30% of the estimated total cost in lost productivity (477 million MXN), mainly due to **presenteeism**.

**Disorders of a psychological or psychiatric nature have a lower impact on the numbers of the target population**, due to the insufficient supply of healthcare services for their treatment and follow-up.

Thanks to the data provided by the Ministry of Health of the State of Guanajuato, we are able to observe that there are duplicities detected among patients that already have social security.

### *Absenteeism*



### *Presenteeism*



## VI. Conclusions

- The country's productivity, specifically that of the automotive sector in the state of Guanajuato has **decreased due to the insufficiency of healthcare services** provided to affiliates.
- **The impact is important** (7.31% of added value) and **can swell** if the appropriate actions are not taken and if there is no continuity given to the efforts of strengthening healthcare services.
- What is needed is to **focus efforts and resources** on meeting the needs of the population. Some adjustments are of an operational nature, others represent investment choices, and some are purely administrative.
- In an environment of budgetary austerity, it is important to **find—the business community, civil society and government agencies hand in hand - the policies that can generate greater impact, in the shortest time possible and in the most cost-efficient manner.**
- **The aforementioned diagnosis stresses the need to prioritize healthcare and to view it as a paramount variable to boost productivity and the country's economic growth.**