



## Analysis of impacts generated by the COVID-19 pandemic on refrigeration processes and workers' routines: The case of a slaughterhouse in Cacoal-RO



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### ABSTRACT

This work analyzed the impacts generated by the Covid-19 pandemic on the slaughterhouse processes and on the routine of workers at a slaughterhouse in the city of Cacoal - RO. The research was descriptive and exploratory with a deductive method and a qualitative and quantitative approach. To analyze the impacts generated by the pandemic on the slaughterhouse processes, at first, a documentary analysis was carried out on the slaughterhouse documents to analyze the number of absences from work, as well as the impacts considering the number and average weight of cattle slaughters. In the second moment, to analyze the impacts generated in the workers' routine, a questionnaire was applied to the workers of the slaughterhouse studied. The main results obtained in relation to the impacts on the slaughterhouse processes were: the year 2017 had the highest number of cattle slaughters with 70630 head slaughtered, followed by the year 2020 with 70438 head slaughtered. Considering the average weight slaughtered, the year 2021 was the one with the highest

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average weight with 21.36 arrobas, followed by 2020 with 18.59 and 2022 with 18.06. Regarding the impacts on the lives of workers, the main results were that: 49% of the workers interviewed were removed from work more than once due to suspicion and those who were removed from work due to diagnosis through examination was 47%. Therefore, 43% of those confirmed with Covid-19 believe that the company provided all possible assistance. In addition, 78% of workers believe that the use of personal protective equipment and preventive actions by the company were important during the pandemic to reduce virus contamination inside the slaughterhouse. Also, 70% of the workers saw that the Covid-19 pandemic negatively interfered with the execution of tasks within the slaughterhouse. The percentage of employees who were afraid of losing their jobs at the peak of the pandemic (2020 and 2021) was 70% and after the peak of the pandemic (2022) it was 54%. In addition, 39% believe that they started to drink more alcoholic beverages due to the pandemic and the lack of family interaction (social isolation) was pointed out as one of the biggest difficulties faced. This study can be used as a basis for other studies involving slaughterhouses in Rondônia and Brazil.

**Keywords:** Cattle slaughter process, SARS-CoV-2, Slaughterhouse routine, Professional impacts.



## INTRODUCTION

The occurrence of the SARS-CoV-2 pandemic, a virus from the coronavirus family that, when infecting humans, causes a disease called Covid-19, caused the world to go through an unprecedented scenario, causing changes in the professional and personal routine of the world's population, including changes in the beef production chain and at the same time in the routine of meatpacking company workers (Lana et al. 2020; Lorenzon et al., 2022).

According to Schneider (2020) and Ruiz et al. (2022), the global need for food caused meatpacking activities to remain active in the midst of the pandemic, causing workers to be potentially more exposed compared to workers who were able to practice social isolation. As a result of this exposure to the virus, many workers in meatpacking companies were contaminated, making it difficult for the sector to continue its production normally.

Despite the economic and social difficulties, Brazil had to continue increasing its food production, especially commodities, due to its share of responsibility for global agribusiness, as it is one of the fastest growing sectors in the country even in the midst of the pandemic (Soendergaard et al., 2020).

On the other hand, in the personal aspect, the pandemic brought with it potential psychological and physical risks to the health of the worker, since the disease can potentiate the action of the virus in the body of those infected and, consequently, generate uncertainties on the part of the worker (Silva; Viana; Lima, 2020).

In this sense, the crisis caused by the Covid-19 pandemic affected the routine of workers and processes of large, medium, and small slaughterhouses in various ways, causing shutdowns in plants, as well as causing a reduction in meat consumption in the market (Pinatti, 2020; Lorenzon et al., 2022). In view of this, the problem arises: How did the impacts generated by the Covid-19 pandemic interfere in the slaughterhouse processes and in the routine of workers at a beef slaughterhouse in Cacoal/RO?

Thus, the present research has as its general objective: to analyze how the Covid-19 pandemic impacted the slaughterhouse processes and the professional routine of workers at a beef slaughterhouse in Cacoal/RO. In addition, the specific objectives of this work are: (i) To analyze the impacts of Covid-19 on the processes of a beef slaughterhouse in Cacoal/RO from the perspective of absenteeism and the number of cattle slaughtered; (ii) Identify the main impacts generated during the Covid-19 pandemic on the routine of workers at a beef slaughterhouse located in Cacoal – Rondônia; (iii) To analyze how these impacts may have altered the routine of the workers of the slaughterhouse studied.

This research sought to analyze the negative and positive impacts generated by the Covid-19 pandemic on the routine of meatpacking workers. Bringing it to the scientific study, this analysis was

important to understand what can affect the routine of employees of a meatpacking company when subjected to an atypical routine in a pandemic situation. In addition, the study of this analysis was important due to the great impact that Covid-19 caused in Brazilian agribusiness around its production, including in refrigeration processes, since several agribusiness sectors depend on people to perform important functions in production processes, including refrigeration processes (Schneider, 2020).

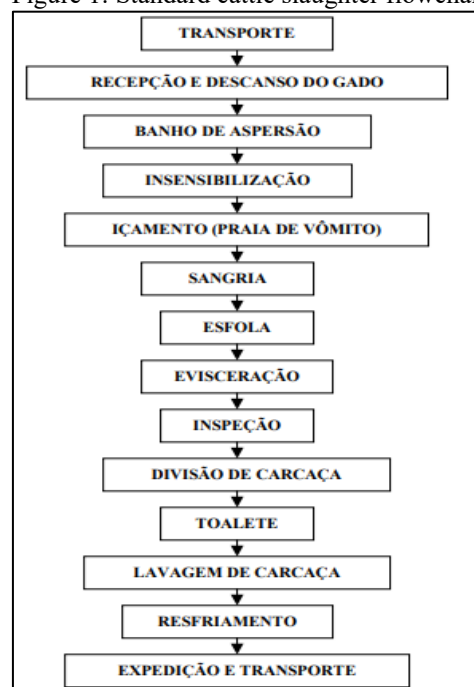
Thus, since the sector that continued to operate the most during the pandemic was the food sector to which slaughterhouses are a part, and because they are considered an essential service, it is the agribusiness sector that continued to grow the most in the pandemic period (Granada et al., 2021), this study was necessary. Thus, this study is delimited in the area of strategic management on the analysis of impacts generated by the Covid-19 pandemic on slaughterhouses and workers' routines, focusing on the case of a slaughterhouse located in Cacoal/RO.

## THEORETICAL FRAMEWORK

### REFRIGERATION PROCESSES

The processes of the meatpacking industry are highly complex and thus require people with working capacity to perform the required activities, because such processes are interconnected to various sectors of the company, as can be seen in the flowchart presented in Figure 1 in a simplified way (COSTA, 2018).

Figure 1: Standard cattle slaughter flowchart



Source: Santos and Taham (2009).

According to the figure expressed, the slaughter of cattle can be understood in fourteen main stages. In this way, it can be observed that the first stage of cattle slaughter corresponds to the transport process, which has the function of transporting the animals from the cattle ranching property to the slaughterhouse in the best possible way. Upon arriving at the slaughterhouse, the animal goes through the reception and rest procedure, which takes place in the corral. At the same time, a sprinkler bath takes place to remove dirt from the animal (Santos; Taham, 2009).

After the necessary rest time, the cattle go through the process of stunning, a process that occurs to make the animal not feel pain at the time of bleeding. Thus, after the animal is stunned, the lifting procedure takes place so that the remains of food that may exist in the animal's esophagus are removed. This stage occurs with the help of a trough (Santos; Tahan, 2009).

The sixth step of the slaughter process is the bleeding procedure, which should take a maximum of 60 seconds and aims to cause a death and rapid flow of bovine blood. Roça (1999), points out that the first six slaughter procedures are known as "humane slaughter" and correspond to the set of technical and scientific steps that aim to ensure the well-being of the animals, from the transport stage to the bleeding operation (Ribeiro Junior, 2020).

The removal of the animal's leather consists of the seventh stage of slaughter and is called the skinning procedure. Subsequently, the viscera is removed in the evisceration, a procedure to which it goes through the inspection stage in order to check for diseases in the animal. Finally, the carcass is divided into two parts, after which small contaminations are removed in a process called toileting. After these steps, the animal is weighed with the help of a scale and the carcasses are washed and placed in cold chambers, starting the process of cooling the carcasses. After cooling, the carcasses are sent to the shipping sector (Santos; Tahan, 2009; Ribeiro Junior, 2020).

Thus, in order for the processes within a slaughterhouse to be measured, there are several metrics, such as the quality of the slaughter, the number of slaughters carried out per period, the amount slaughtered by weight, etc. According to reports from rural producers linked to beef cattle production, one of the factors that most represent the productivity of cattle concerns the weight of the animal, since it is based on this factor that they will receive for the sale of cattle. In other words, the total weight of the slaughtered animal serves as a productivity metric not only for the slaughterhouse, but also for the producer (Ferreira, 2004).

### **Absenteeism and its causes**

Absenteeism corresponds to the absence or temporary absence of employees in the work process. Absenteeism can occur due to absence from work or delays, as well as due to lack of motivation or due to some major reason, such as illness, for example. In the same way as other sectors, in the meatpacking sector, it is used to determine the total absences of a worker in a period.



According to Cardoso (2013), in the industrial sector, the results of absenteeism can occasionally interfere with productive development, affecting the other employees who work because they are naturally obliged or induced to cover the absence of the partner and, as a result, cause a limitation in the quality of manufacturing.

There are several modes of absenteeism, the first of which is called justified absenteeism, also known or related to absenteeism due to illness, where in this case the absences are clarified, being likely to be structured by the organization's managers. They can be due to medical origin, a consultation, or treating a certain illness or even paying attention to it. Identically they can occur due to single or family crises, which need to be elucidated, such as helping an individual to the clinician, or signing a contract and even some occurrence that was filed for delay or absence. In addition, the explanation can be merely through trust to an immediate boss or, if the firm chooses, through a medical document. According to labor laws, absences and delays proven or sanctioned cannot be deducted from the payroll, nor can the operator afford any type of prohibition (Couto, 1982).

Absenteeism due to illness is considered by Couto (1982, p. 12) as "the most important of the various types of absenteeism that exist (legal absenteeism, voluntary absenteeism, absenteeism due to illness), due to the volume of absences it entails". On the other hand, there is wronged absenteeism, which, according to Couto (1982), is the absence of service for personal reasons. Therefore, it means unproven fault, without legal support and exclusively incumbent on the worker.

In addition, there is voluntary absenteeism, which, according to Mallada (2004), corresponds to planned absences, such as vacations and rest. On the other hand, involuntary absenteeism is pertinent to unscheduled absences, such as those resulting from health crises or personal problems. Therefore, absenteeism refers to the employee's voluntary absence from work, whether this absence is legitimate or non-legitimate.

Absenteeism can also be compulsory, which corresponds to absence from work by law, even if the agent does not want to. Examples of compulsory absenteeism are the embargoes imposed by the boss, imprisonment, etc. (Couto, 1982; Marras, 2000). That is, it can be seen as absence from work when the employee is embargoed, for legal reasons or another reason that makes it difficult for him to get to work (Onsafety, 2021).

Finally, there is also emotional absenteeism, pointed out as one of the most confusing types to point out, as it is not the worker's physical absence from work, but only emotional withdrawal. That is, the employee is assiduous in the firm, but not "emotional". Thus, it usually occurs when, for some emotional reason, the employee is unable to perform his role correctly (Onsafety, 2021).



## OVERVIEW OF THE FACTORS GENERATED BY THE COVID-19 PANDEMIC

For Granada (2020), as much as Covid-19 has not directly affected the commercial transactions of meat products, the agroindustry sector in turn had its processes hindered because of the pandemic, meatpacking companies, as they are considered as providers of essential services, did not have their workflow interrupted by legislative decisions to combat and prevent the virus.

But with this, the industry suffered from the lack of qualified labor, because with the flow of employees happening normally within the company, the people who were infected by Covid-19 infected the others who work together in the company's sectors, causing the work to be impaired with the lack of employees, in this way the meatpacking companies had expenses for the replacement of these employees contaminated with the virus and who were in quarantine (Granada et al., 2021).

In a general context about the factors caused by Covid-19, it is noted that the factors were not only in health, but economic, social, and environmental. However, although the damage caused by Covid-19 is evident, there are some relatively beneficial points, such as improved public health infrastructure and better public policies (Silva; Saints; Soares, 2020).

The factors of social distancing resulting from the Covid-19 pandemic caused many activities to be done remotely, such as schools and universities that already included technological materials to improve performance and communication in class, found themselves in a situation of having to accelerate this process to adapt and continue studying, even facing several technological and financial barriers (Nunes, 2021).

### **Public and workers' health of meatpackers**

With the obstacles in the pandemic, either due to imposed laws or difficulty in production processes due to lack of employees who had to stay in quarantine, the agribusiness sector had significant growth during the pandemic, as a result of exports to other countries, but due to the economic upheavals that occurred in the country as a result of the pandemic outbreak (Malafaia, 2020).

Of the numerous problems caused by the virus, psychological problems are the ones that have caused the greatest damage to the health of society, since the fear of getting sick or dying due to infection has caused countless people to change their personal and professional routine (Ornell et al., 2020).

For Oliveira et al. (2021), elderly people or those who lived with the elderly were the ones who most made changes in routine or sanitary habits. Thus, this series of alterations trigger mental problems such as anxiety, loneliness and phobias, thus generating direct and indirect factors in the professional routine of some workers.



The Covid-19 pandemic has brought concern to everyone, but especially to those people considered high risk, that is, people with a history of diseases that reduce immunity and weaken the human body, and the elderly who, in turn, due to their age and low immunity, are people predisposed to diseases such as diabetes, heart disease, pulmonary, psychological, among other diseases that make it difficult to fight the virus already installed in the body (Silva; Viana; Lima, 2020).

But of so many problems caused by the virus, psychological problems have caused greater damage to health than Covid-19 itself, because as a result of the fear of acquiring the infection, people have had psychological disorders, due to the fear of losing their own lives or those of loved ones who are considered high risk or even due to economic problems (Ornell et al., 2020).

Oliveira et al. (2021) state that older people, because they are more fragile due to diseases and the body's low defense due to old age, were more likely to acquire the virus infection, causing family members to acquire greater concern, causing these elderly people to be in a more severe confinement, which triggered mental problems such as intense anxiety, loneliness and phobias.

### **Social isolation generated by the Covid-19 pandemic**

Social isolation was a means taken by the health authorities, so that it could contain the advance of the disease in the country, this isolation caused people to develop psychological problems, such as phobia, depression and high anxiety (Silva; Viana; Lima, 2020).

The impact of social isolation on the elderly was more severe, not only because they were part of the people considered to be at higher risk of infection by the virus, but also because of the relatives themselves who, afraid that they would lose their lives, increased the harshness of isolation, which led to greater problems in the health of individuals such as the evolution of mental problems (Oliveira et al., 2021).

For the workers of the meatpacking companies, social isolation did not happen because the services were considered essential, causing them to continue going to work and relating to other employees, which increased contamination within the company, generating justified absences because of Covid-19 for those contaminated with the virus (Ruiz et al., 2022).

However, the fact that the government recognizes some services as essential, as in the case of meatpacking plants, showing a disregard for workers who put their lives at risk in favor of a demand for financial interests of companies, enhancing the proliferation of viruses by continuing to crowd in the company's sectors (Serra; Oliveira, 2020).

### **METHODOLOGY**

This research is descriptive and exploratory. Thus, the research is considered exploratory, as it aims to offer greater ease of understanding of the content described, providing greater mastery of the



researchers, and possible readers of the researched topic, better understanding the subject studied in the research (Costa, 2018).

The research is also considered descriptive, due to the observation around the study and its analysis, which seeks to identify aspects and concepts that are in the midst of existing procedures or factors, providing another view of the subject or theme of an already known research (Nunes; Birth; Luz, 2016).

In the research, the deductive method was used, and this methodology focuses on showing the potential of ideas, and whether the reasoning of the deduction is correct or wrong, the method applies the means of reaching the final considerations (Lakatos; Marconi, 2003). Thus, according to Gerhardt and Silveira (2009), the deductive method seeks to observe the data in a way that starts from the general to the particular, and can find structural conclusions in agreement with the coherence attributed in the work.

In this research, a qualitative and quantitative approach was also used. Thus, in qualitative research, it is sought to reach the awareness and convictions of the individuals involved in the intention of finding information about data that is not known much or the case of teams of individuals, seeking to treat the theme with more perspicacity (Mascarenhas, 2012). On the other hand, a quantitative approach concerns quantification (Pereira et al., 2018). Thus, after data collection through a structured questionnaire, statistical techniques were used to treat the information, i.e., the questions that were assigned aimed to facilitate data collection and verification and were measured according to their importance.

Initially, a bibliographic research was carried out. According to Gerhardt and Silveira (2009), bibliographic research can be understood as research done through documents of a scientific nature, that is, it aims to carry out a survey of theoretical references already analyzed, thus sharing information in the area that is being studied, with their bibliography being evidenced, the search to make references to studies with scientific origin that indicate the problem of the subject researched.

The bibliographic research was carried out in scientific articles, books, technical manuals and specific websites that address the theme. Books, articles, magazines, websites, ebooks, among other documents with scientific content are used for this type of research. With this support, it was possible to obtain relevant information about the impacts generated by the Covid-19 pandemic on the refrigeration processes and on the routine of workers, seeking to know the perception of employees about the quality of life after the Covid-19 virus pandemic.

In this way, in order to better understand the perception of the company's employees about the factors caused by Covid-19 within the company, an electronic form was sent to them, with questions that raised this information in an organized way for analysis of the data collected.



The method used in the multiple-choice questions was based on the Likert scale, to facilitate the approach to the company's employees, and to have to better measure the answers, in order to measure the degree of each answer, using scales from 1 to 5 or degree of acceptance or denial in the survey (Likert, 1932).

To meet the specific objective of analyzing the impacts of Covid-19 on the processes of a beef slaughterhouse in Cacoal/RO from the perspective of absenteeism and the number of cattle slaughtered, a documentary analysis was carried out, that is, the data collection technique is based on documents and information collected directly from the database of the slaughterhouse studied, This information can be complemented through data collection via interviews with decision makers. For Sá-Silva, Almeida and Guindani (2009), documentary research is based on documents that have not yet received an inductive or analytical treatment, as well as those that can be reformulated according to the research objective. In addition, there are two types of documents in document analysis or research, documents that have not received analytical treatment, called first-hand documents, such as contracts and official documents. The second type is those that have already been analyzed in some way, that is, called second-hand documents, such as company reports and research reports.

To meet the specific objective of identifying the main impacts generated during the Covid-19 pandemic on the routine of meatpacking workers, a structured form or questionnaire was used. Cervo and Bervian (2007) state that the questionnaire is a way to seek answers in an organized way, and questions can be asked in an open or closed way. For Lakatos and Marconi (2003), the information is analyzed to arrive at a better interpretation of the content, observing the details of the research. It is important to emphasize that data analysis encounters some barriers in research within organizational environments (Teixeira, 2003).

Thus, soon after the collection of data acquired in the research carried out in the company, these data were treated and organized information was generated for the purpose of analysis in order to reach a better understanding of the subject. Thus, as subjects of the research, we first have the slaughterhouse itself, since a documentary research was carried out through the collection of data from the slaughterhouse and related to the number of slaughters carried out and the number of absences (absenteeism) of employees. In addition, the employees of the slaughterhouse were also the target subjects of the research and they received a form to answer.

Regarding the ethical aspects of the research, all data were collected and treated responsibly and ethically. The free and informed consent form sought to protect any personal data of the employees of the meatpacking plant studied, since according to Araújo (2003) and Pereira et al. (2018), the ethical aspects of the research must be continuously present within a research. Thus, employee data will be guided by the General Data Protection Law (LGPD). In other words, personal

information was safeguarded so that no form of risk to life or moral hazard occurred (Menezes et al., 2019).

This research was carried out in a slaughterhouse located in the municipality of Cacoal, belonging to the state of Rondônia. The case of the slaughterhouse studied is in line with the arguments of Clemente Júnior (2012), who argues that cases like this one are configured as reconstructions of problematic management situations and can be described based on information from the context and historical background of the problem. Thus, the slaughterhouse has approximately 180 employees, considering all areas of the company. Of these 180 employees, 49 answered the questionnaire applied.

## **RESULTS AND DISCUSSIONS**

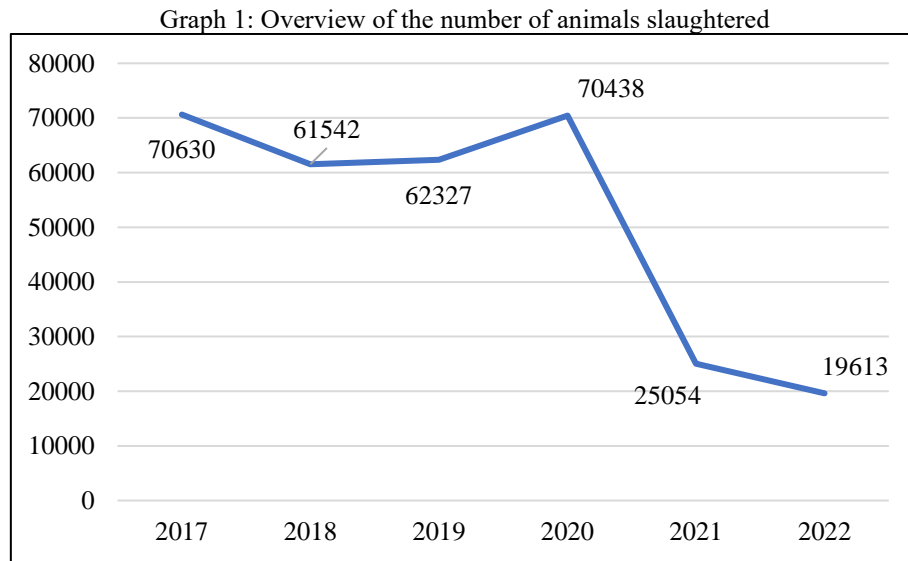
In this step, in section 4.1, the results regarding the information on the impacts generated in the processes within the studied slaughterhouse will be discussed. For this, a documentary analysis was carried out based on the documents made available by the slaughterhouse, that is, the information collected comes from the documents provided by the slaughterhouse itself. In section 4.2, the results and discussions from the data collection from the questionnaire applied to the slaughterhouse workers will be presented, that is, in this section the impacts generated by the pandemic directly or indirectly on the workers' routine are demonstrated.

### **ANALYSIS OF THE IMPACTS ON THE PROCESSES WITHIN THE SLAUGHTERHOUSE**

The impacts within a refrigeration process can be measured in several ways. In this research, it was decided to analyze the impacts from the perspective of the number of cattle slaughtered in the slaughterhouse, observing the current panorama against a panorama of the last five years. In addition, the potential impacts on the processes within the slaughterhouse were analyzed from the perspective of the number of absences or absences from work. It should be noted that this information was generated after a documentary analysis was carried out with the support of documents provided by the slaughterhouse itself. In addition, it should be noted that, when there were doubts regarding the documents provided by the company, it was contacted for the purpose of clarifying these doubts.

Thus, after analyzing documents from the slaughterhouse, it was possible to verify that there were 464 total absences (absenteeism) between 2017 and 2022. From 2020, the period that began the Covid-19 pandemic until 2022, there were 416 absences, 111 of which were due to a diagnosis of Covid-19, which represents a percentage of 26.68% of absences due to proven diagnosis, considering all workers at the slaughterhouse (180 workers in total). Regarding suspicions, that is, temporary leaves due to suspected symptoms related to Covid-19, in total there were 14 leaves, representing

3.68% of leaves. Regarding the number of animals slaughtered, the panorama identified was as shown in Graph 1:

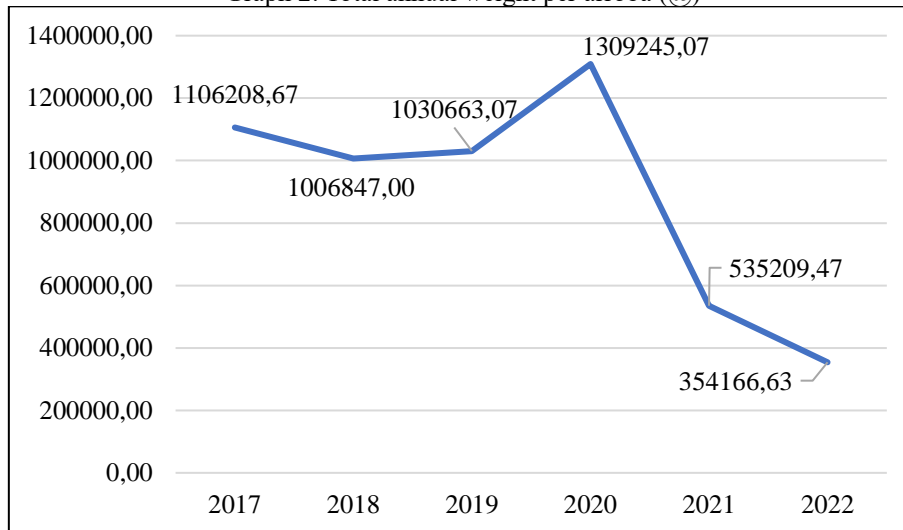


Source: This research (2023).

Through Graph 1, it was possible to observe that the number of cattle slaughtered was 70630 in 2017, 61542 in 2018, 62327 in 2019, 70438 in 2020, 25054 in 2021 and 19613 in 2022. Remembering that in 2022 the actual amount of slaughters up to November 2022 was considered plus the estimate of slaughters for the month of December 2022. It is important to note that in 2021 and 2022 the slaughterhouse was stopped for 5 months in each of these years due to market uncertainties caused by the pandemic.

Regarding the total weight of slaughters from 2017 to 2022, considering the arroba of the cattle, which the arroba corresponds to 15 kg, the following annual weight per arroba can be observed (Graph 2):

Graph 2: Total annual weight per arroba (@)

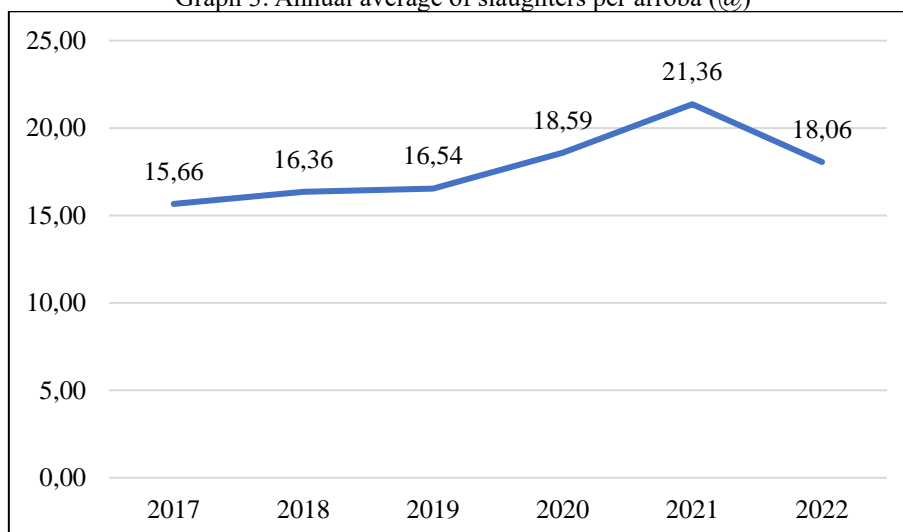


Source: This research (2023).

Therefore, the average weight was one million and one hundred and six thousand and two hundred and eight and sixty-seven arrobas in 2017, one million and six thousand and eight hundred and forty-seven arrobas in 2018, one million and thirty thousand and six hundred and sixty-three and seven arrobas in 2019, one million and three hundred and nine thousand and two hundred and forty-five and seven arrobas in 2020, five hundred and thirty-five thousand two hundred and nine and forty-seven arrobas in 2021 and three hundred and fifty-four thousand and one hundred and sixty-six reais and sixty-three arrobas in 2022.

Regarding the average weight per arroba of the cattle slaughtered in the slaughterhouse, it can be observed in Graph 3 that the annual average of slaughters was:

Graph 3: Annual average of slaughters per arroba (@)



Source: This research (2023).

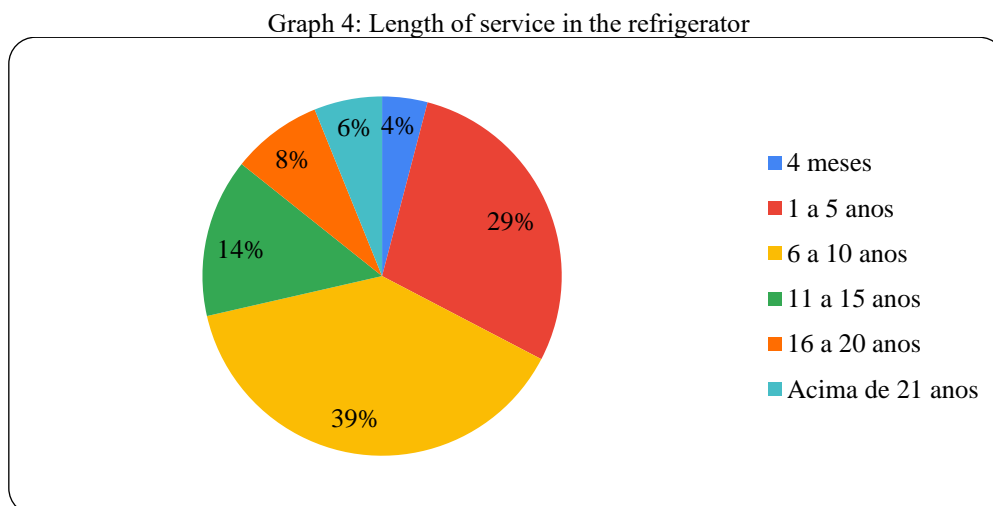
Thus, the average per arroba of slaughters was 15.66 arrobas in 2017, 16.36 arrobas in 2018, 16.54 arrobas in 2019, 18.59 arrobas in 2020, 21.36 arrobas in 2021 and 18.06 arrobas in 2022. From

the company's perspective, this occurred because the slaughterhouse slaughtered more feedlot cattle between 2021 and 2022, since the weight of feedlot cattle is higher than castrated cattle (capon), cows and heifers.

## ANALYSIS OF THE IMPACTS GENERATED IN THE ROUTINE OF THE SLAUGHTERHOUSE WORKERS

### Profile of slaughterhouse workers

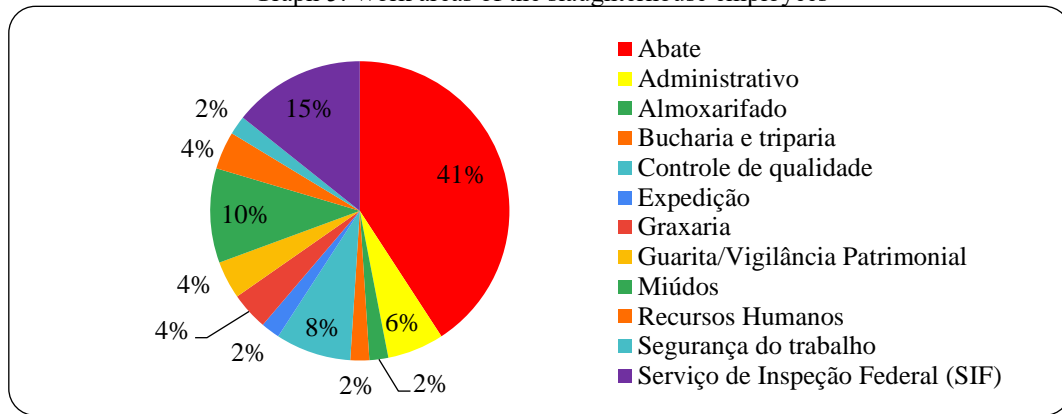
The questionnaire aimed at collecting information about the workers' routine was applied in a cattle slaughterhouse located in Cacoal/RO. Of the 180 employees present at the slaughterhouse, 49 agreed to answer this survey, which represents a total of 27.22% of the company's employees. Therefore, the impacts on the workers' routine are demonstrated here considering a sample of 49. Of these 49, 100% are residents of the city of Cacoal, 82% male and 18% female. Regarding the age group of the respondents, the age groups of 29 to 39 years (35%) and 40 to 50 (33%) are predominant in the slaughterhouse, followed by the age group of 18 to 28 years (20%), 51 to 60 years (10%) and finally, workers over 60 years of age correspond to 2%. In addition, the length of service in the slaughterhouse predominates in the range of 6 to 10 years (39%), as can be seen in Graph 4:



Source: This research (2023).

Thus, it can be observed that in addition to having workers from 6 to 10 years in the slaughterhouse, 28% of the workers have more than 10 years in the slaughterhouse and 33% have less than 5 years of experience in the slaughterhouse. The slaughterhouse workers who responded to the survey are workers in the following areas, as shown in graph 5:

Graph 5: Work areas of the slaughterhouse employees



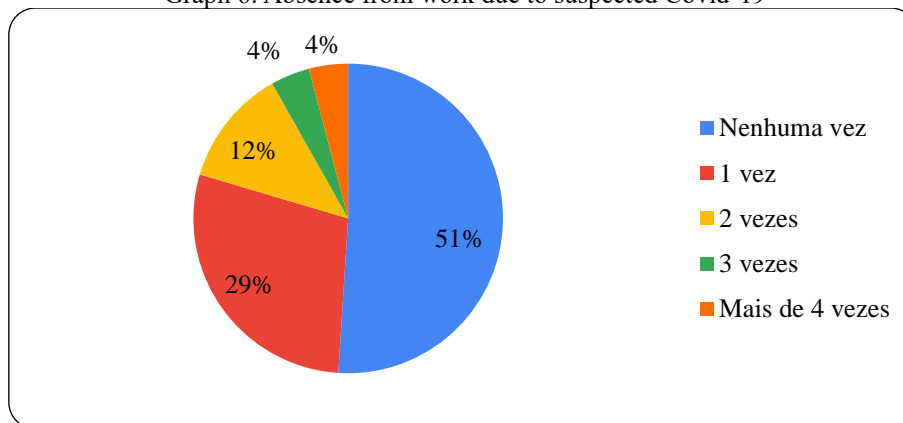
Source: This research (2023).

As can be seen in Graph 5, the four main work areas of the respondents are slaughter areas with 41%, SIF with 15%, giblets with 10% and Quality Control with 8%. The rest of the workers (26%) corresponded to the other areas of the slaughterhouse. Of these workers, it is noteworthy that 88% correspond to the production areas of the slaughterhouse.

### Analysis of the impacts on the working life of the slaughterhouse workers

Graph 6 shows the number of absences from work due to suspected Covid-19, from which the employee was removed as a safety measure.

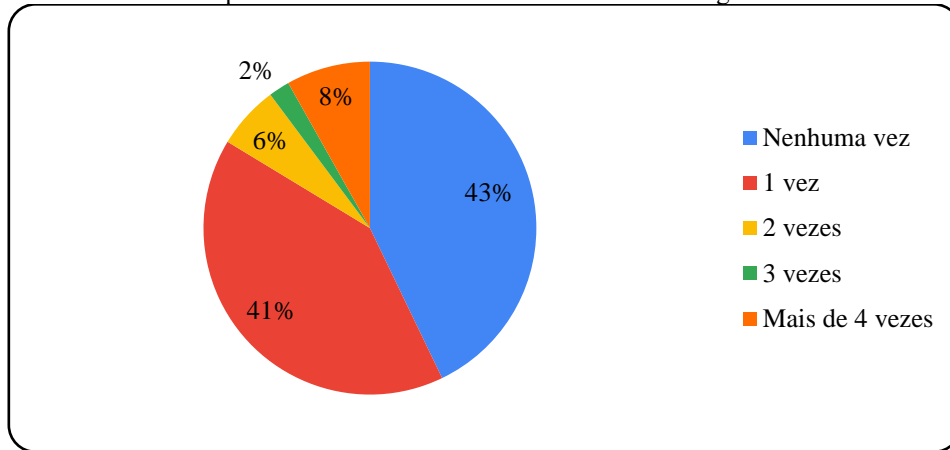
Graph 6: Absence from work due to suspected Covid-19



Source: This research (2023).

Workers who were absent from work due to suspected Covid-19 for more than 3 or 4 times correspond to 8%, for more than 2 times corresponds to 12%, for a single time corresponds to 29% and finally, workers who did not need to take time off work due to suspected Covid-19 corresponds to 51%, that is, the majority. It is important to note that suspected Covid-19 are symptoms related to the disease, such as flu, fever, headache and others. On the other hand, Graph 7 shows the percentage of workers who were diagnosed with Covid-19.

Graph 7: Absence from work due to Covid-19 diagnosis



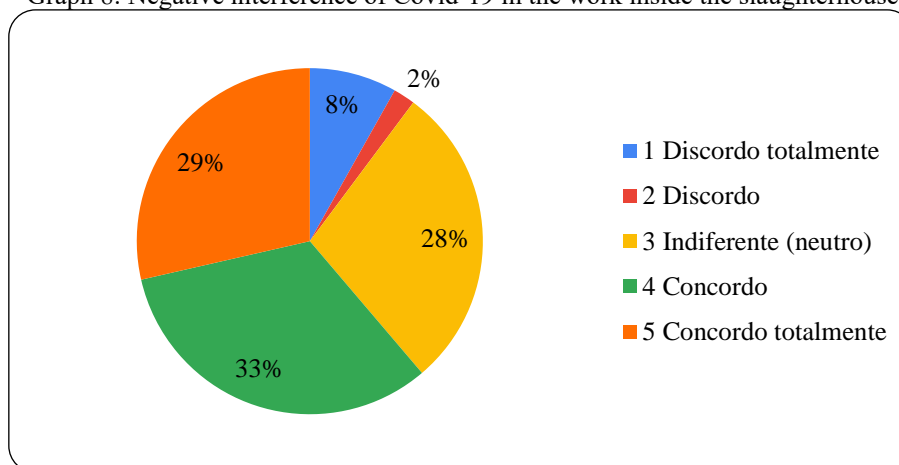
Source: This research (2023).

Most of the workers diagnosed with Covid-19 and who were away from work for a single time correspond to 41%. On the other hand, 43% have not been diagnosed with Covid-19. The rest had to be absent for two, three or more times.

In addition, workers were also asked if they were suspected of having symptoms of Covid-19 or when they were diagnosed (through tests) with Covid-19, after the slaughterhouse or direct supervisor was informed of the situation, if they were released from work and 47% answered yes, that they were released from work; 2% answered that they were not released from work; and 51% answered that they did not have any suspicions.

Thus, the workers of the slaughterhouse were also asked, from 1 to 5, how much they agreed that the Covid-19 pandemic had interfered or negatively impacted their work inside the slaughterhouse, with 1 for totally disagree, 2 for disagree, 3 for neutral (indifferent), 4 for agree and 5 for totally agree (Graph 8)

Graph 8: Negative interference of Covid-19 in the work inside the slaughterhouse



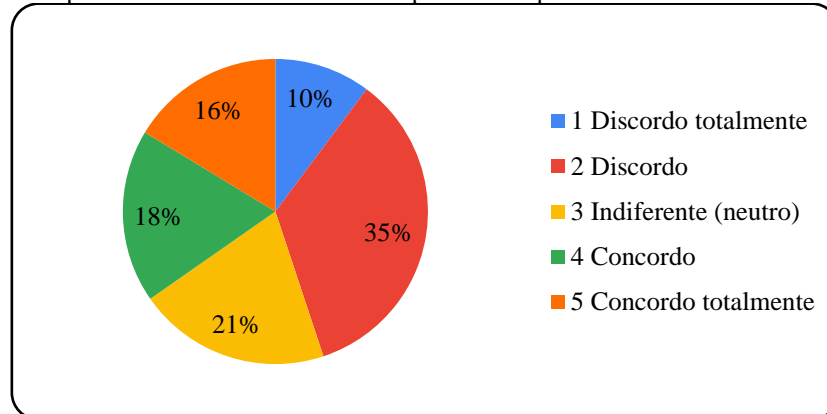
Source: This research (2023).

Thus, regarding the interference of Covid-19 in the work inside the slaughterhouse, 33% agree, 29% totally agree, 29% are indifferent (neutral), 8% totally disagree and 2% disagree.



In order to compare the peak years of the pandemic so far, 2020 and 2021, with 2022, the year in which most Brazilians already had one dose or more of vaccine (CNS, 2002), the workers were asked, from 1 to 5, how much the workers agreed that at the peak of the pandemic (2020 and 2021) the work inside the slaughterhouse increased and the following answers were obtained: as shown in Graph 9:

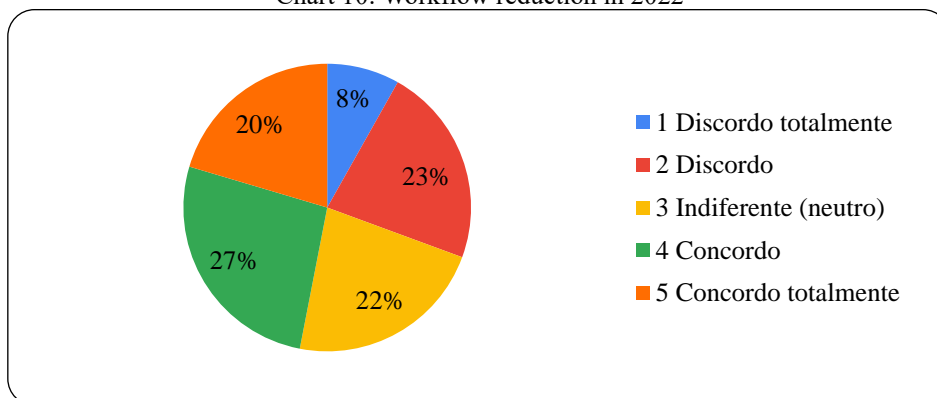
Graph 9: Increased workflow at the peak of the pandemic – 2020 and 2021



Source: This research (2023).

It can be observed that at the peak of the pandemic, between 2020 and 2021, 35% disagree, 20% are indifferent (neutral), 18% agree, 16% strongly agree, and 10% strongly disagree. On the other hand, in relation to 2022, the following answers were asked, from 1 to 5, how much the workers agreed that in 2022 the work inside the slaughterhouse decreased, and the following answers were obtained (Graph 10):

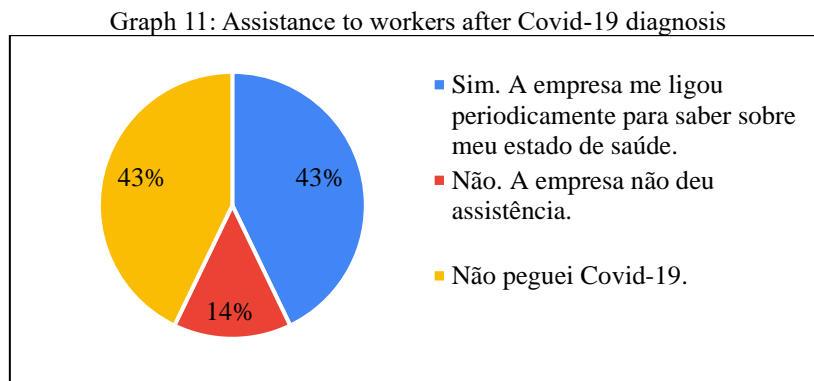
Chart 10: Workflow reduction in 2022



Source: This research (2023).

Therefore, in 2022, 20% totally agree that there has been a reduction in the workflow, 27% only agree, 22% think it is being indifferent, 22% disagree and 8% totally disagree that the workflow has decreased.

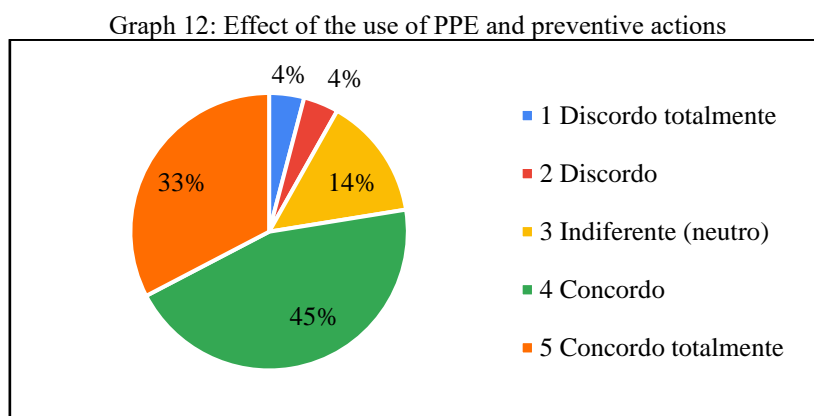
Seeking to find out the possible assistance that the slaughterhouse as a company offered to the worker, it was asked if if they had contracted Covid-19, if the company gave any type of assistance and the workers answered as follows (Graph 11):



Source: This research (2023).

Thus, it was found that in 43% of cases, the company called periodically to monitor how employees were doing in relation to their health. On the other hand, 14% reported that the company did not provide any assistance. The rest claimed that they did not catch Covid-19.

Regarding personal protective equipment (PPE), from 1 to 5, the workers agreed that Personal Protective Equipment (PPE) and actions used to inhibit the contamination of the Covid-19 virus within the work sector could help reduce contamination and the following answers were obtained (Graph 12):

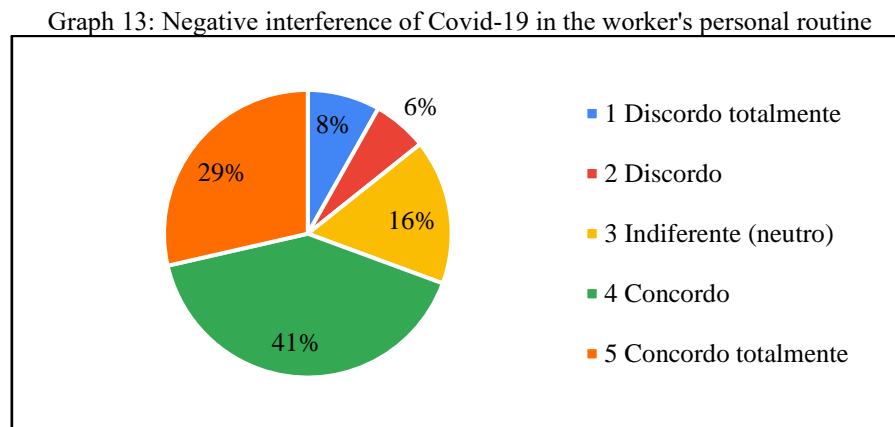


Source: This research (2023).

Therefore, 78% agree and totally agree that there was a significant reduction in contamination due to the use of PPE, then 14% found it indifferent and 8% equally disagree or totally disagree that safety devices had any importance.

## Analysis of the impacts on the personal lives of the slaughterhouse workers

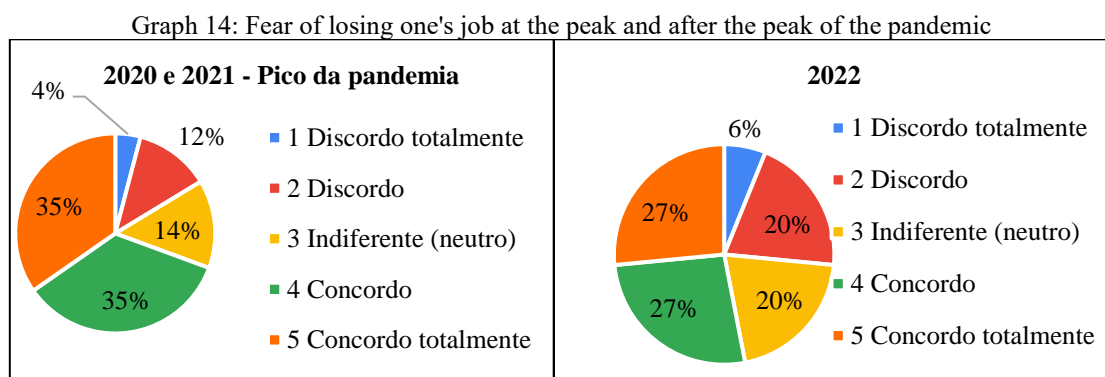
The impacts on a worker's professional life can also affect their personal life. And so, focusing on the impacts on personal life, the slaughterhouse workers were asked, from 1 to 5, how much they agreed that the Covid-19 pandemic had interfered or negatively impacted their personal routine (at home), with 1 for strongly disagree, 2 for disagree, 3 for neutral (indifferent), 4 for agree and 5 for totally agree. Graph 13 shows the main results:



Source: This research (2023).

Regarding the worker's personal routine, 41% agree that the pandemic impacted their routine, 29% totally agree, 16% were indifferent or neutral, 6% disagree and 8% totally disagree. In addition, workers were asked if they lost family members to Covid-19 and thus 88% answered that they did not and 12% answered yes.

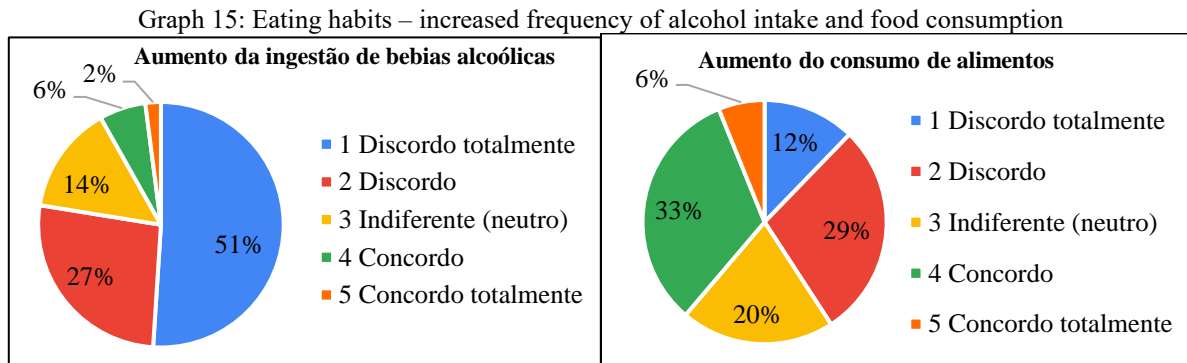
Seeking to compare the peak years of the pandemic so far, 2020 and 2021, with 2022, the following answers were asked, from 1 to 5, how much the workers agreed that they were afraid of losing their jobs and the following answers were obtained:



Source: This research (2023).

It can be seen that at the peak of the pandemic, between 2020 and 2021, 70% agreed that at the peak of the pandemic they were afraid of losing their job, while in 2022, after the peak of the pandemic passed, 54% continue to agree that they are still afraid of losing their job.

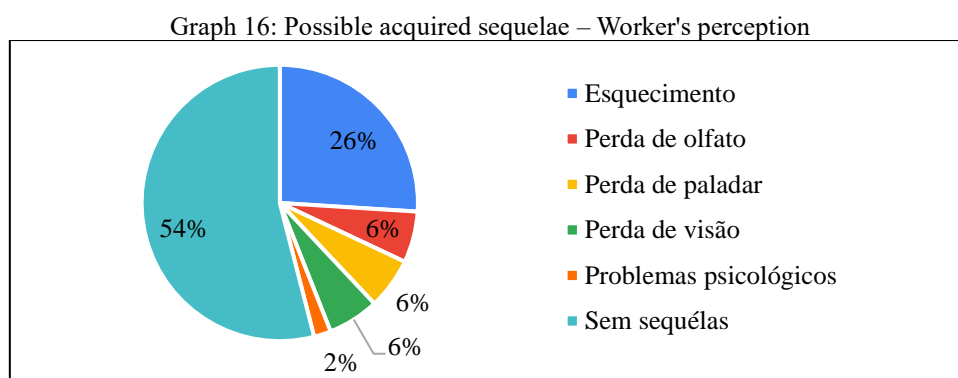
The survey also sought to investigate the social habits of the worker and thus, it was asked, from 1 to 5, how much they agreed that due to the Covid-19 pandemic they started to drink alcoholic beverages more frequently and increased their food consumption, obtaining the following answers (Graph 15):



Source: This research (2023).

Therefore, in relation to the increase in the frequency of alcohol intake, it was found that most of the workers in the slaughterhouse (51%) did not start drinking more alcoholic beverages due to the pandemic. On the other hand, 53% agree or strongly agree that they have changed their eating habits, starting to consume more food during the Covid-19 pandemic.

The research also sought to find out about the impacts of Covid-19 on workers' health, which impacts not only their professional life but also their personal life, and thus, due to the Covid-19 pandemic, it was asked, which sequelae they thought they had acquired (with or without a diagnosis) in order to obtain their perception of their own health, as can be seen in Graph 16:

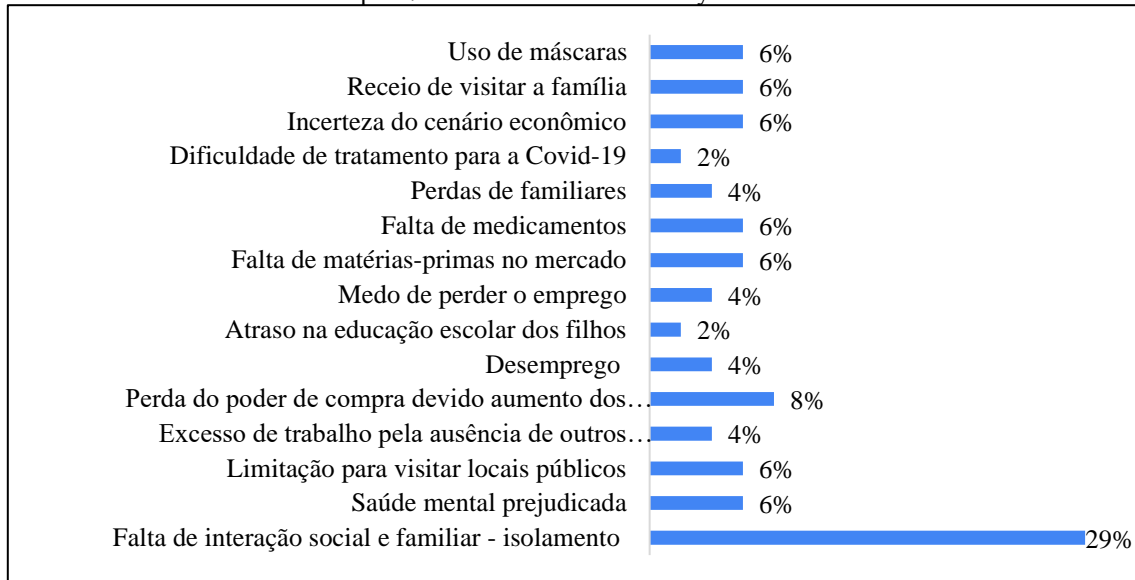


Source: This research (2023).

Thus, the possible acquired sequelae, in the perception of the worker, were: 26% forgetfulness, 20% divided equally loss of smell and loss of taste and psychological problems, as well as 54% had no sequelae.

Finally, in order to find out, in general, what are the main difficulties faced by the Covid-19 pandemic over the last two years by the meatpacking workers, and thus, they answered as follows (Graph 17):

Graph 17: Main difficulties faced by the worker



Source: This research (2023).

Thus, the main difficulties faced were: 29% lack of family interaction (isolation), 8% loss of purchasing power due to a significant increase in the prices of goods and services, 4% unemployment, 42% divided equally were use of masks, fear of visiting family, uncertainty of the economic scenario, lack of medicines, lack of raw materials in the market, limitation to visit public places and impaired mental health. Also, 16% were divided equally, with family losses, unemployment, overwork due to the absence of other co-workers and fear of losing their jobs. With 4%, the difficulty in treating Covid-19 and delay in their children's school education were equally divided.

## CONCLUSION

This work was divided into two parts. At first, a documentary analysis was carried out looking for evidence related to the possible impacts of the pandemic on the slaughterhouse's processes from the perspective of absences from work and production volume linked to the number of slaughters and the average weight of the cattle arroba. In the second moment, a questionnaire was applied, targeting the workers of the meatpacking plant, thus seeking to verify how much the Covid-19 pandemic may have directly or indirectly impacted the professional and personal routine of these employees.

Regarding the possible impacts generated in the processes within the slaughterhouse, it was possible to note that the year 2017 was the one with the highest number of cattle slaughters with



70630 head slaughtered, followed by the year 2020 with 70438 head slaughtered. On the other hand, due to the pandemic and market uncertainties, in 2021 only 25054 head were slaughtered and in 2022 19613 head.

On the other hand, considering the average volume slaughtered (total weight divided by quantity), the year 2021 was the one with the highest average weight per arroba of cattle slaughtered in the slaughterhouse, with 21.36 arrobas, followed by 2020 with 18.59 and 2022 with 18.06. In other words, although 2021 and 2022 were not the years with the highest number of slaughters, they were the years with the highest average weights. From the company's perspective, this occurred because the slaughterhouse slaughtered more feedlot cattle between 2021 and 2022, since the weight of feedlot cattle is higher than castrated cattle (capon), cows and heifers.

Through the study developed, considering the application of the questionnaire with the workers, in relation to the profiles of the workers of the slaughterhouse studied, it is concluded that the workers with the longest time in the slaughterhouse have been in the slaughterhouse for more than 6 years and the predominant age of the workers is over 29 years. In addition, most (over 50%) of the workers who responded to the survey correspond to people who develop their activities in the productive area of the slaughterhouse, such as the slaughterhouse, offal and SIF sectors.

With regard to the suspicion and diagnosis of Covid-19 within the slaughterhouse, the percentage of workers who were absent from the slaughterhouse due to suspicion due to one, two, three or more suspicions was similar (49%) to the percentage of workers who were absent from the slaughterhouse due to a proven diagnosis of Covid-19 (47%), with one, two, three or more absences from work due to the diagnosis. Thus, when the worker had to be absent from work, when there was a diagnosis of Covid-19, 43% believe that they received all the necessary assistance from the company. In addition, 78% of workers believe that the use of PPE and the company's preventive actions were important during the pandemic to reduce virus contamination inside the slaughterhouse.

When analyzing the interference of Covid-19 in the work inside the slaughterhouse, 70% of the workers believe that the Covid-19 pandemic negatively interfered in the execution of tasks inside the slaughterhouse. On the other hand, although there has been this negative interference in the way some activities are performed, 55% believe that at the peak of the pandemic (2020 and 2021) there was no increase in the workflow or were indifferent to this increase. Likewise, workers believe that in 2022 this workflow remained similar (53%). The percentage of employees who were afraid of losing their jobs at the peak of the pandemic (2020 and 2021) was 70% and after the peak of the pandemic (2022) it was 54%.

In addition, regarding the positive aspects, many workers believe that they have not changed their eating habits (78%). However, although not the majority, 39% believe that they started to drink more alcoholic beverages due to the pandemic.



In the perception of some employees of the slaughterhouse, some sequelae were acquired by having contracted Covid-19, such as forgetfulness, loss of smell, loss of taste and psychological problems. Therefore, in general, the workers of the meatpacking plant studied believe that they have experienced many difficulties due to the Covid-19 pandemic, with the lack of family interaction (social isolation) as the main one, followed by economic problems related to the loss of purchasing power due to a significant increase in the prices of goods and services, as well as the fear of unemployment. Other difficulties pointed out, to a lesser extent, were related to the need to wear masks, fear of visiting family, lack of medicines, lack of raw materials in the market, limitation to visit public places and impaired mental health. The difficulties in the treatment of Covid-19 and delay in the school education of their children were also factors pointed out by the workers of the slaughterhouse.

The main difficulties faced in developing research was to make workers answer the questionnaire and, at the same time, to demonstrate to the slaughterhouse studied the importance of providing information related to the processes. As a future work, this type of research can be carried out in other slaughterhouses in the state of Rondônia and Brazil.



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## APPENDIX

### Questionnaire:

The organization and processing of the collected data will follow the determinations of the General Data Protection Law (LGPD – Law 13.709/18). Therefore, researchers guarantee and commit to the secrecy and confidentiality of all information provided.

#### 1 - Do you agree to answer this survey?

Agree  
Disagree

#### 2 - What is your gender?

Female  
Male

#### 3 - What is your age group?

18 to 28 years old  
29 to 39 years old  
40 to 50 years old  
50 to 60 years old  
Over 60 years old

#### 4 - Which municipality do you live in?

#### 5 - How long have you been working in the meatpacking activity

1 to 5 years  
6 to 10 years  
11 to 15 years  
16 to 20 years old  
Over 20 years old

#### 6 - What is the area/sector you work in within the slaughterhouse?

Slaughter	Warehouse	Administrative	Bucharia and triparia
Quality Control	Occupational safety	Kitchen/Cafeteria	Boning
Expedition	Financial	Rendering	Guardhouse/Property Surveillance
Giblets	Maintenance	Cattle reception (Corral)	Human Resources (HR)
Federal Inspection Service (SIF)	Transport	Purchase of gado	

#### 7 - How many times have you stopped going to work due to suspicion (flu, fever, headache and other related symptoms) of Covid-19?

Not once  
1 time  
2 times  
3 times  
More than 3 times



**8 - How many times have you stopped going to work because you have been diagnosed with Covid-19?**

- Not once
- 1 time
- 2 times
- 3 times
- More than 3 times

**9 - When you are suspected/have symptoms of Covid-19 or when you are diagnosed (through tests) with Covid-19, after the slaughterhouse or direct supervisor is informed of the situation, were you released from your activities performed inside the slaughterhouse?**

- Yes
- No
- I did not show suspicion/symptoms of Covid-19

**10 - From 1 to 5, how much do you agree that the Covid-19 pandemic interfered or impacted your work inside the slaughterhouse?**

- I totally disagree
- Disagree
- It did not impact
- Agree
- I totally agree

**11 - From 1 to 5, how much do you agree that the Covid-19 pandemic interfered with your home routine (personal routine)?**

- I totally disagree
- Disagree
- It did not impact
- Agree
- I totally agree

**12 - From 1 to 5, how much do you agree that at the peak of the pandemic (2020 and 2021) the work inside the slaughterhouse increased?**

- I totally disagree
- Disagree
- It did not impact
- Agree
- I totally agree

**13 - From 1 to 5, how much do you agree that after the peak of the pandemic (2022) the work inside the slaughterhouse decreased?**

- I totally disagree
- Disagree
- It did not impact
- Agree
- I totally agree

**14 - From 1 to 5, how much do you agree that at the peak of the pandemic (2020 and 2021) you were afraid of being without a job?**

- I totally disagree
- Disagree
- It did not impact
- Agree



I totally agree

**15 - From 1 to 5, how much do you agree that after the peak of the pandemic (2022) you were afraid of being without a job?**

I totally disagree  
Disagree  
It did not impact  
Agree  
I totally agree

**16 - From 1 to 5, how much do you agree that due to the pandemic you were afraid/afraid of being contaminated at work and then transmitting the virus to a family member?**

I totally disagree  
Disagree  
It did not impact  
Agree  
I totally agree

**17 - From 1 to 5, how much do you agree that due to the Covid-19 pandemic you started to drink alcoholic beverages more frequently?**

I totally disagree  
Disagree  
It did not impact  
Agree  
I totally agree

**18 - From 1 to 5, how much do you agree that due to the Covid-19 pandemic you started to eat more (eat more food)?**

I totally disagree  
Disagree  
It did not impact  
Agree  
I totally agree

**19 - Due to the Covid-19 pandemic, which of these sequelae did you acquire?**

Oblivion  
Loss of smell  
Loss of taste  
Other  
I had no sequelae

**20 - Have you lost someone in your family to Covid-19?**

I didn't lose  
Yes, I lost someone in my family to Covid-19.

**21 - If you caught Covid-19, did the company provide any kind of assistance?**

He gave no assistance.  
Yes. The company provided financial assistance to pay for medicines.  
Yes. The company called me periodically to find out about my health condition.  
I didn't get Covid-19.



**22 - From 1 to 5, how much do you agree that the Personal Protective Equipment (PPE) and actions used to inhibit the contamination of the Covid-19 virus within the work sector helped?**

I totally disagree

Disagree

It did not impact

Agree

I totally agree

**23 – What are the main difficulties faced by the Covid-19 pandemic over the last two years?**

**24 – Do you want to make any additional comments on how the Covid-19 pandemic impacted your work (professional activities) within the slaughterhouse?**

**25 – Do you wish to make any additional comments on how the Covid-19 pandemic has impacted your personal activities directly or indirectly?**