Establishment Survey in the Food and Beverage Sector in El Salvador

Full Report

Lucy Cutting and Lauren Robertson

April 2022

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Exhibits

Recognitions

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We also want to thank the United States Department of Labor Bureau of International Labor Affairs and our local partner, the Central American University José Simeón Cañas (*Universidad Centroamericana José Simeón Cañas*) (UCA).

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Disclaimer: This material does not necessarily reflect the views or policies of the United States Department of Labor, nor does mention of trade names, commercial products, or organizations imply endorsement by the United States government. One hundred percent of the costs of the project in the three countries of El Salvador, Guatemala, and Honduras have been financed with federal funds, for a total of $4,345,000 US Dollars.

Introduction

The American Institutes for Research (AIR),[1] funded by the US Department of Labor Bureau of International Labor Affairs, is implementing the project *Labor Market Supply and Demand in El Salvador, Guatemala, and Honduras: Leveraging Data to Build an Efficient Labor Market*. The objective of this project is to provide technical assistance to El Salvador, Guatemala, and Honduras to improve labor market efficiency and performance by assisting these countries to develop labor market information (LMI) systems that publish reliable, comprehensive, and current LMI in user-friendly formats. It also seeks to create local capacities in the use of LMI. One of the main components of this project is to facilitate the creation of a pilot establishment (see Appendix E.I for definition) survey for each country that captures labor demand data in a high-growth economic sector.

In collaboration with the Central American University José Simeón Cañas (*Universidad Centroamericana José Simeón Cañas*) (UCA), the AIR team conducted a pilot telephone survey[2] of establishments between September and December 2021 in the food and beverage manufacturing (Appendix E.II) sector. This report disseminates the pilot survey findings from El Salvador.

What is an Establishment Survey?

An establishment survey collects data to generate and disseminate LMI related to employment characteristics that are in demand in a country's chosen sector.

The AIR team implemented standardized methodologies and international best practices to collect information that:

Characterizes the labor demand of the primary positions in the chosen sector (e.g., educational training, requirements, competencies);

Determines the number of current hires as well as the future demand for jobs in the chosen sector; and

Identifies the current and medium-term training needs of the chosen sector.

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1. IMPAQ International LLC, the implementing entity on past LMI establishments surveys, was acquired by AIR in May 2020, formerly operated as a wholly owned subsidiary of AIR in 2021, and as of January 1, 2022, is now AIR.
2. The survey title was the Food and Beverage Sector Survey in El Salvador 2021 (*la Encuesta de Establecimientos en el Sector de Alimentos y Bebidas (ENESAB) en* El Salvador *2021).*

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Nationally representative demand-side LMI could provide potential employees as well as universities and technical and vocational education and training institutions with crucial labor market demand information such as required qualifications, job positions that are in high demand, and remuneration across jobs. This information is a resource for potential employees' decision-making about education, training, and career goals as well as for educational institutions, providing critical information to update their curricula in response to current labor market needs.

Implementation of the Establishment Survey in the Food and Beverage Sector in El Salvador 2021

Geographic Reach

The AIR team successfully implemented the pilot survey in the departments of El Salvador that pertain to the registries sourced by local institutions, including the Ministry of Economy's Directorate of Statistics and Censuses, the Salvadoran Association of Industrialists, and the Export and Investment Promotion Agency in El Salvador (see the Target Population and Survey Objective sub-section). Exhibit 1 illustrates the geographic distribution of the surveyed establishments[3] by department.[4]

Exhibit 1. Geographic Reach of the Establishment Survey, by Department

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3. The term surveyed establishments refers to the 133 establishments that completed the survey.
4. Survey respondents spanned 13 of the 14 departments of El Salvador. The one department that is not present is Usulután.

Coverage by Size

During the data collection and data cleaning process, the AIR team decided to exclude establishments with fewer than two workers, which represents one of the eligibility criteria[5] for the pilot establishment survey. This criterion reflects concerns that workers in very small establishments, namely establishments with less than two employees, typically execute a wide variety of tasks that correspond to more than one job position, making it difficult to classify their job position.

Unit of Analysis and Key Informants

The unit of analysis is the establishment, compensated employees, and job positions for filled and future demand. In most cases, the informant was the establishment's owner, manager, administrator, or human resources manager.

Target Population and Survey Objective

The population of interest for the pilot survey was private sector establishments that were operational with two or more employees between August 2020 and August 2021 and whose principal or secondary economic activity during that time included at least one of the following activities in the manufacturing sector: Manufacture of Food Products (Appendix E.III) and/or Manufacture of Beverages (Appendix E.IV).

Due to the lack of updated, nationally representative administrative records on establishments in the sector of interest, the AIR team identified establishments for this pilot survey with available data. More specifically, the AIR team compiled a list of potentially eligible establishments with three sources: (1) the 2019 business directorate of the Ministry of Economy's Directorate of Statistics and Censuses (*Dirección General de Estadística y Censos*) (DIGESTYC); (2) the directory of associates of the Salvadoran Association of Industrialists (*Asociación Salvadoreña de Industriales*) (ASI), which we accessed and cleaned in August 2021; and (3) the Directory of Exporting Companies of the Export and Investment Promotion Agency in El Salvador (*Organismo Promotor de Exportaciones e Inversiones en El Salvador*) (PROESA).[6] In total, the establishment list for the pilot survey consisted of 298 establishments with economic activities or products that pertain to the food and beverage manufacturing sector. For further details on the establishment list construction, please refer to Appendix A.

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5. Other eligibility criteria included establishments with economic activities and/or products relevant to the food and beverage manufacturing sector.

6. By source, the compiled pilot survey establishment list included 228 establishments from the DIGESTYC directorate, 18 from the ASI directory, and 52 from the PROESA directory. After accounting for duplicates among these sources, we attempted to include all potentially eligible establishments (i.e., with economic activities and/or products relevant to the food and beverage manufacturing sector) from these sources with, at minimum, valid telephone numbers.

In considering the available data, the objective of the pilot survey was to take a census of local registries of establishments operating in the sector of interest. However, due to constraints in constructing the compiled establishment list and field challenges with telephone data collection (e.g., did not answer, refusals) (Appendix A), the pilot survey did not yield a census of these aforementioned directories. Of the 298 establishments we attempted to contact for the pilot survey, 133 establishments in the sector of interest responded to the survey, which represents a 53 percent response rate (Appendix A).

Results

In this section, we present general information about the surveyed establishments as well as demographic data about their employees. We also highlight the characteristics of the key occupations that the surveyed establishments identified, including their educational requirements, core competencies, current employment levels, and future staff demands. We conclude this section with information regarding personnel training tendencies among surveyed establishments as well as information that specifically pertains to the state of these establishments in the context of the COVID-19 pandemic. All results reflect the situation of the establishments at the time of data collection, which occurred amid the COVID-19 pandemic, and are rounded to the nearest whole number.[7]

For general establishment-level information, we disaggregate the results by establishment size and by region where possible. We define establishment size in terms of number of employees, which includes four categories: (1) micro (1 to 10 employees)[8]; (2) small (11 to 50 employees); (3) medium (51 to 100 employees); and (4) large (more than 100 employees) (see Appendix E.V). By region, we disaggregate results into three regions: (1) the Central and Paracentral Region, (2) the Western Region, and (3) the Eastern Region.[9]

For occupation-level information, we disaggregate results by the job positions that surveyed establishments most frequently reported as their most numerous in terms of recruitment volume. These results depict the characteristics of the job positions, not of the workers who occupy these positions.

Due to the presence of outliers in the demographic data on establishment workers, we trimmed outliers at the upper bound of the 95th percentile for the total number of full- and part-time employees, which serves as the determinant for associated statistics on workers by establishment size (Exhibit 4), gender (Exhibit 5), age range (Exhibit 6), job position (Exhibit 7), and training module (Exhibit 15). See Appendix C for robustness checks (i.e., Winsorization).

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7. Since we round results to the nearest whole number, some results expressed in percentages may total to more or less than 100 percent though they indicate the total. Instances in which this occurs in the Results Section is due to rounding error.

8. As previously mentioned in the Introduction Section, AIR only surveyed micro establishments that had a minimum of two employees for the pilot survey.

9. Due to the low number of respondents by department, we disaggregate results by region rather than department. We sourced the list of Salvadoran regions and their corresponding departments from local project partners at DIGESYTC, who use the same distinction of regions and departments. This list specifies four regions: (1) the Central Region, (2) the Paracentral Region (adjacent to the Central Region), (3) the Western Region, (4) and the Eastern. For illustrative purposes, we combined the Central (n = 94) and Paracentral (n = 5) regions into the Central and Paracentral Region; results for this combined region predominantly portray establishments in the Central rather than Paracentral region. For a list of departments by region, please refer to Appendix B.

Number of Establishments

Of the 133 establishments in the food and beverage manufacturing sector that responded to the pilot survey, 32 percent (n = 42) are micro establishments, 36 percent (n = 48) are small establishments, 11 percent (n = 14) are medium establishments, and 22 percent (n = 29) are large establishments (Exhibit 2).

Exhibit 2. Number of Surveyed Establishments, by Establishment Size
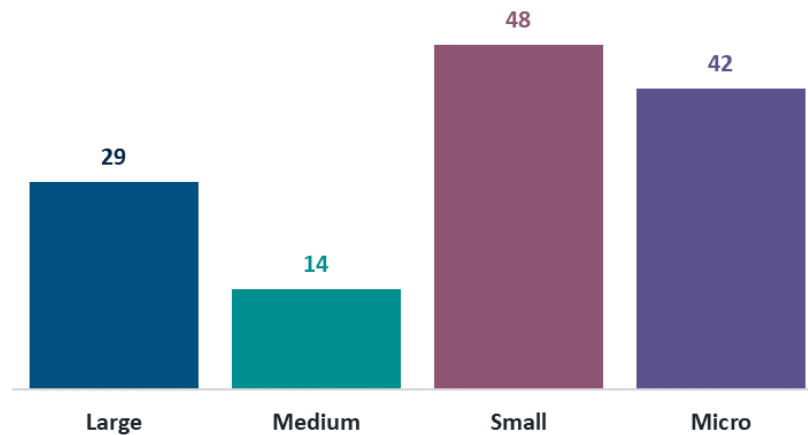
As shown in Exhibit 3, the surveyed establishments are predominantly located in the Central and Paracentral Regions (74 percent), which contains the departments of San Salvador, La Libertad, Chalatenango, Cuscatlán, La Paz, Cabañas, and San Vicente. This is consistent among establishment size. Compared to large and small establishments, a greater share of medium establishments (86 percent) are in the Central and Paracentral Region, and a larger proportion of small establishments (29 percent) are in the Western Region. No surveyed small establishments, which comprises over a third of all surveyed establishments, are in the Eastern Region, and no surveyed medium establishments are in the Western Region.

Exhibit 3. Regional Distribution of Establishments, by Establishment Size and Region
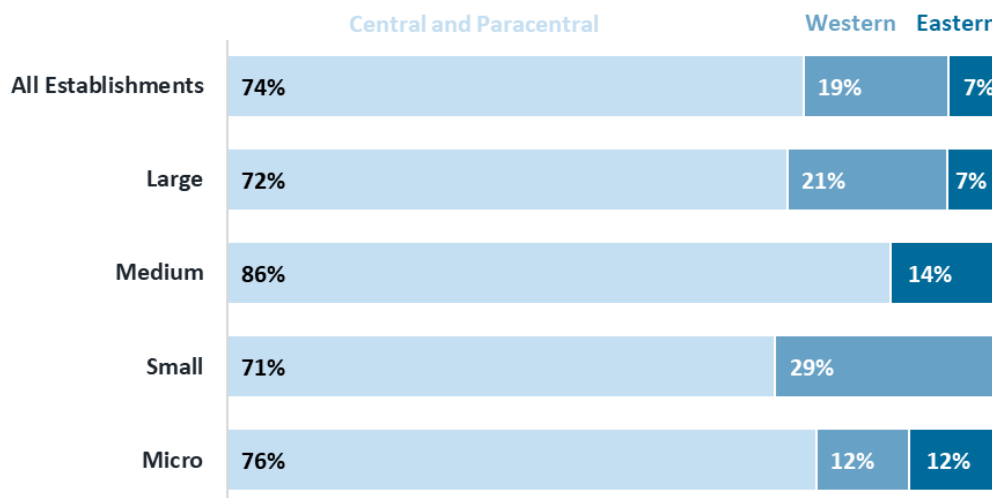
General Findings about Employees

The surveyed establishments reported a total of 7,139 full- and part-time employees in 2021.[10] By establishment size, large establishments reported a total of 4,744 employees, which is equivalent to an average of 206 employees per establishment (Exhibit 4). Medium establishments reported 984 employees, representing an average of 70 employees per establishment. Small and micro establishments reported 1,174 and 237 employees, respectively, with an average of 24 and 6 employees, respectively, per establishment.

Exhibit 4. Average Number of Employees per Establishment in 2021, by Establishment Size
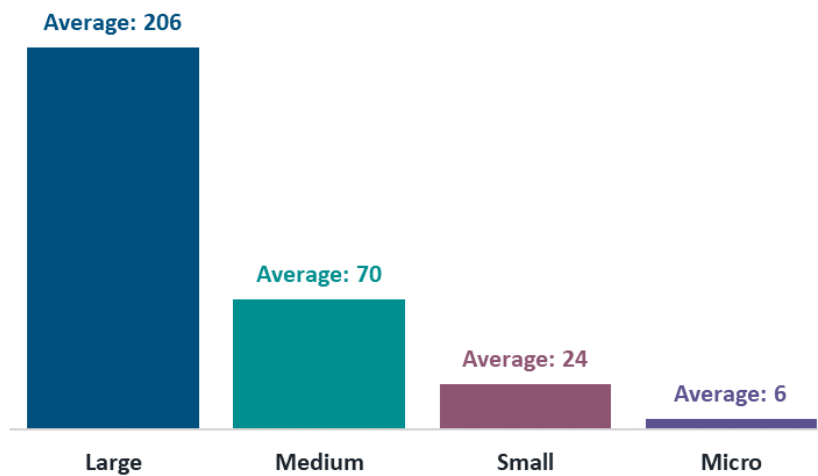
Of the surveyed establishments, females represent 42 percent of employees, on average (Exhibit 5). There is little variation in the female labor force participation rate among the establishment sizes, except for medium establishments, which report the lowest average share of female employees (32 percent) compared to the other three establishment sizes.

Exhibit 5. Average Female Labor Force Participation Rate, by Establishment Size

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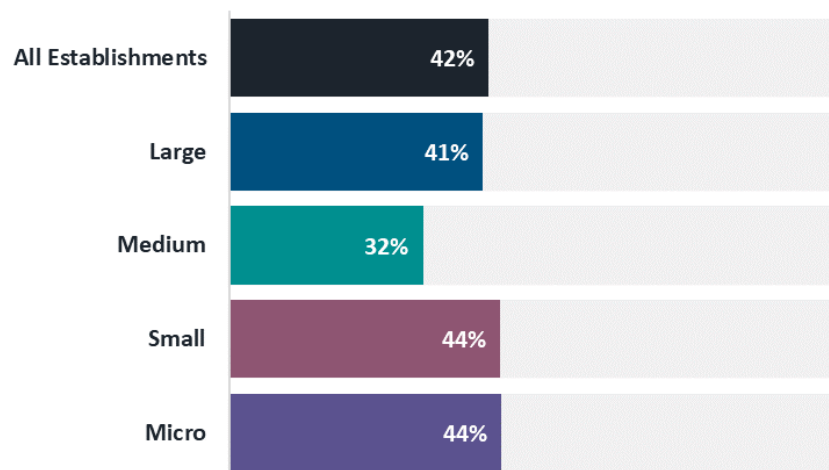
10. The total number of employees in 2021 corresponds to the pilot survey's reference period for this specific survey question, which asked establishments to report the number of full- and part-time employees they had within the last three months.

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Among their employees, surveyed establishments reported that most, on average, are 21 to 30 years old (39 percent), followed by employees 31 to 40 years old (34 percent). While a little more than a fifth (21 percent) of their employees are over 40 years old, only six percent are under 21 years of age, on average (Exhibit 6). There is little variation by establishment size between large, medium, and small establishments, with the exception that large and medium have slightly more representation of workers 20 years old or younger. Comparatively, micro establishments report a higher proportion of employees ages 41 or older (27 percent) and a larger share of workers in the 31 to 40 age range (43 percent) relative to the other establishment sizes.

Exhibit 6. Worker Age Distribution, by Establishment Size
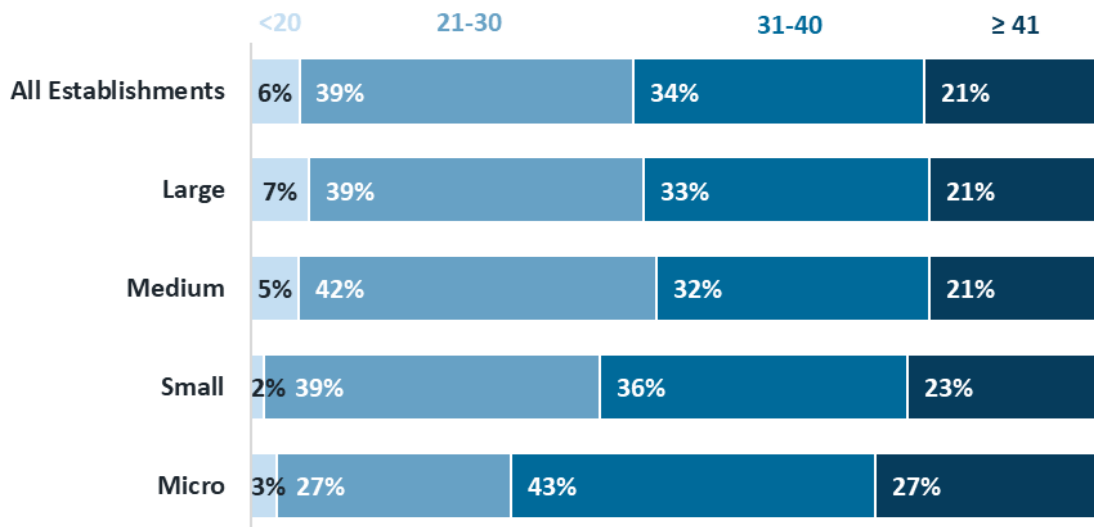
Note 1. Among survey respondents, six values are missing due to outlier trimming; therefore, this exhibit represents results for 127 of the 133 surveyed establishments.

Note 2. Given the outlier detection and treatment method (Appendix C), five large establishments report influential values for specific age ranges. Results for this exhibit are particularly sensitive to the outlier treatment method. Please refer to Appendix C for further details.

Key Occupations in the Food and Beverage Sector

In this section, we present information on the characteristics of key job positions in the food and beverage manufacturing sector. Prior to conducting the pilot survey, the AIR team consulted local experts on the sector to identify (1) the most important job positions and (2) the positions with the highest recruitment volume. Through these consultations, AIR narrowed a broad list of job positions in the food and beverage manufacturing sector to 19 key ones. Of these 19 positions, the AIR team asked respondents to indicate up to six positions that they consider the largest in terms of recruitment volume for their establishment.[11] In the following section, we disseminate

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11. While establishments were able to select up to six positions for the pilot survey, some reported as few as one job. The 19 key positions on the list were processing operators; machine operators; hand packers; cleaners and assistants; accountants;

the pilot survey results for these job positions, specifically reporting on those most frequently cited across the surveyed establishments.

Most Common Positions

Exhibit 7 displays the job positions with the highest recruitment volume, showing the percent of surveyed establishments that identified those positions among their most highly recruited as well as the number of employees for each respective position. Most establishments (93 percent) reported production operators (Appendix E.VI) as a highly recruited position, reporting a total of 3,092 employees (Appendix E.VII) for this position. Following this position, the most frequently cited positions across surveyed establishments were sales positions[12] (20 percent), hand packers (14 percent), customer service workers (12 percent), and machine operators (nine percent). By position, these establishments employ a total of 676 as sales workers; 286 as hand packers; 353 customer service workers; and 210 as machine operators.

Exhibit 7. Highly Recruited Job Positions among Surveyed Establishments and Number of Employees
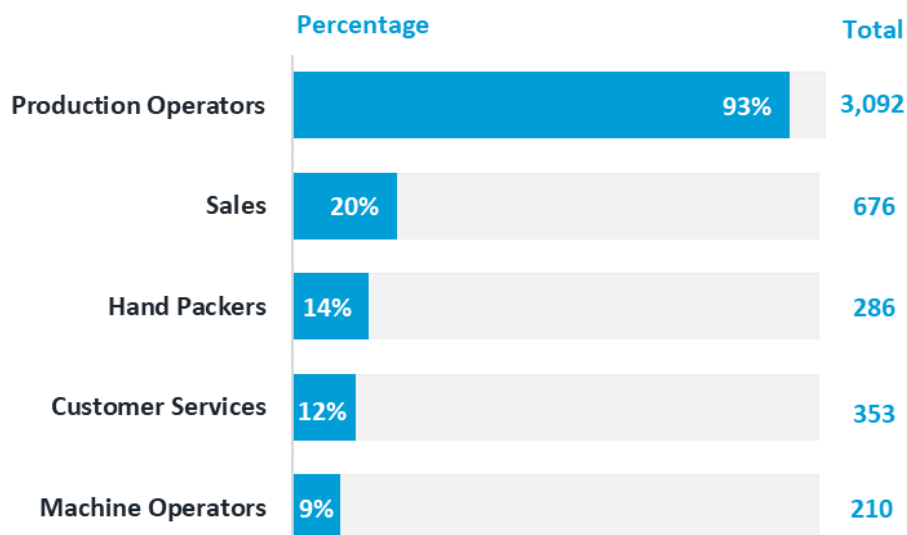
Note. The total number of employees by job position solely represents the establishments that identified the position among their top six most highly recruited. By job position, the total number of observations: production operators (124), sales workers (26), hand packers (19), customer service workers (16), and machine operators (12).

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packaging, bottling and labeling machine operators; vehicle drivers and mobile heavy equipment operators; commercial agents and brokers; food and beverage tasters and classifiers; transport and storage workers; clerks; customer information services employees; employees in charge of the registration of materials and transportation; manufacturing industry supervisors; occupational, environmental and related health inspectors; mechanics and machine repairers; administrative and commercial directors; production and operations directors; and chemical engineers (i.e., food and beverage technologists). Respondents could also select "other" to specify job positions that were not in the aforementioned list.

12. The sales position is shorthand for commercial agents and brokers. We use this shorthand within the report for illustrative purposes.

Food and Beverage Sector Remuneration

Among their most highly recruited job positions, survey respondents reported average monthly remuneration rates[13] for each resp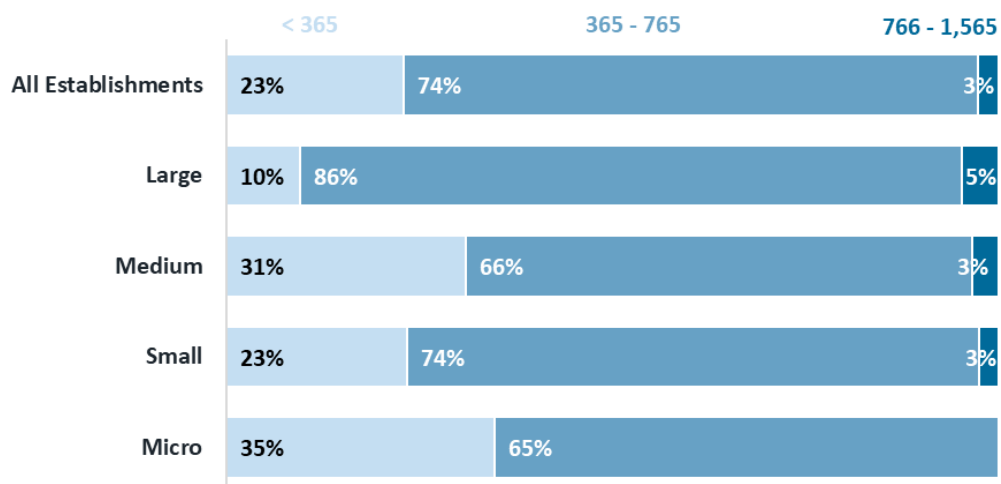ective position (Exhibit 8).[14] The monthly remuneration rate range that surveyed establishments most frequently (74 percent) reported was between 365 and 756 dollars (USD) per month across all jobs.

For their most highly recruited job positions, across all establishment sizes, more than half reported offering a salary in that range (i.e., 365 and 765 USD) but to varying degrees: compared to the other establishment sizes, a greater proportion of large establishments reported offering a salary in that range (86 percent), followed by small establishments (74 percent). Approximately the same percentage of medium and micro establishments reported offering a salary in that range. Roughly a third of medium and micro establishments report offering an average salary less than 365 USD while only 10 percent of large establishments do so. For each of the following establishment sizes, less than six percent of large, medium, and small establishments, and no micro establishments, offer a salary more than 765 USD.

Exhibit 8. Monthly Salary Range (in USD), by Establishment Size

	< 365	365 - 765	766 - 1,565
All Establishments	23%	74%	3%
Large	10%	86%	5%
Medium	31%	66%	3%
Small	23%	74%	3%
Micro	35%	65%	

Note. The values reflect all job positions reported as most numerous by establishments (n = 218) which varies by establishment. Responses to the question about salary ranges depend on the positions that each establishment chose as one of the six most numerous.

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13. The remuneration rates reflect base salary, overtime, benefits, in-kind remuneration, and other types of remuneration. The categories for the renumeration rates, which we validated for the sector of interest with local partners from the Ministry of Labor and Social Welfare (*Ministerio de Trabajo y Previsión Social*), is anchored to the minimum wage for the manufacturing sector (i.e., 365 USD) that the National Minimum Wage Council (*Consejo Nacional del Salario* Mínimo) increased in August 2021. The average monthly earnings in El Salvador in 2019 was 347 USD (ILOSTAT, 2019). In the ISIC-Rev.4: C. Manufacturing sector, the average 2019 salary was 319 USD (ILOSTAT Explorer, 2019). The gross national income per capita, PPP (current international $ for El Salvador in 2019 was 8,690, which equates to an average of 724 per month (World Bank Data).
14. The third (766 to 1,165 USD) and fourth (1,166 to 1,565 USD) salary range options were combined into one category due to low frequencies. The fifth salary range choice (i.e., equal to or greater than 1,566 USD) is not shown in the exhibit as no surveyed establishments reported offering a salary within that range for any of their most highly recruited job positions.

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By job position, production operators are paid less on average than the other four highly recruited occupations: most establishments[15] reported paying production operators (31 percent) less than 365 USD per month (Exhibit 9). A larger proportion (12 percent) of surveyed establishments reported offering sales workers the highest salary range compared to the other four positions. None of the surveyed establishments reported paying machine operators, hand packers, and customer service workers a salary range between 766 and 1,565 USD, and only one percent of production operators for the same salary range. For an estimation of average salary by job position, please refer to Appendix D.

Exhibit 9. Monthly Salary Range (in USD), by Job Position
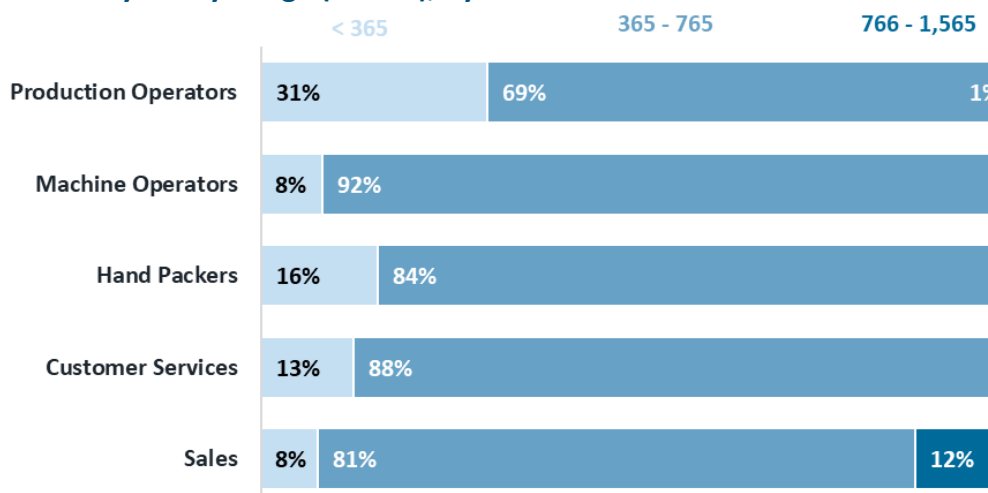
Note. The percentage of monthly salary range by job position solely represents the establishments that identified the position among their top six most highly recruited. By job position, the total number of observations (denominator): production operators (124), sales workers (26), hand packers (19), customer service workers (16), and machine operators (12).

Academic Training, Competencies, and other Requirements

Minimum education requirements are generally high across all positions. According to survey respondents, customer service workers have noticeably higher minimum education requirements than the other four job positions (Exhibit 10). All surveyed establishments require some education for customer service workers and sales workers, and the majority require post-secondary education for those positions (63 and 54 percent, respectively). For production operators and machine operators, most establishments (52 and 50 percent, respectively) require a minimum of secondary education, and less than nine percent (for each of the following positions) reported they do not require any schooling for machine operators, production operators, and hand packers. No surveyed establishments require a minimum of university education for these five job positions.

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15. As previously stated, only establishments that reported these jobs among their most highly recruited provided this job-specific information on remuneration rate ranges (n=197). For example, 124 establishments provided this information for production operators.

Exhibit 10. Minimum Required Academic Training, by Job Position
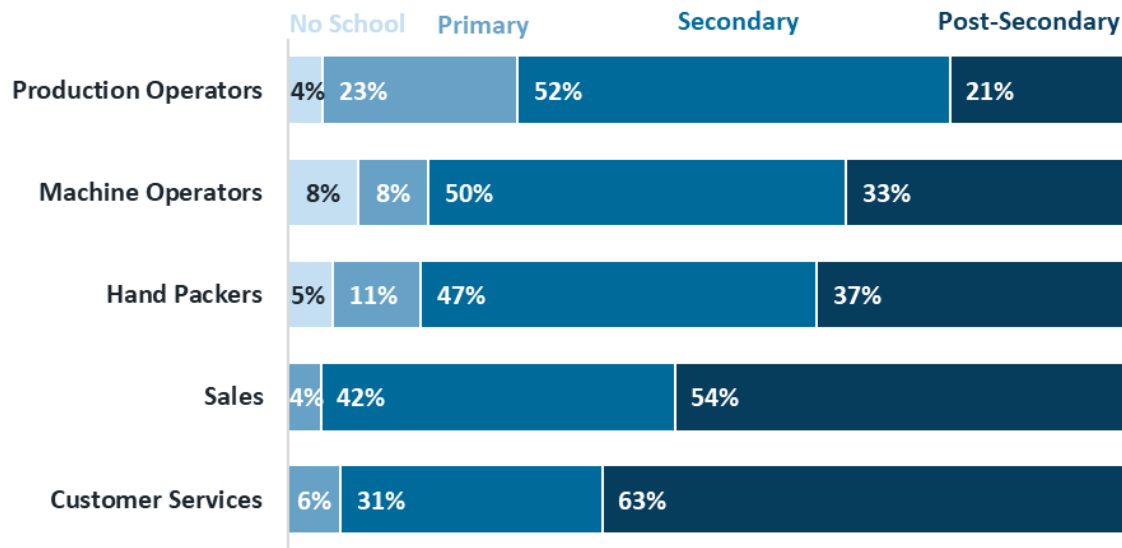
Note 1. The category post-secondary refers to technical and vocational training, technical university, and incomplete university education.

Note 2. The percentage of minimum required academic training by job position solely represents the establishments that identified the position among their top six most highly recruited. By job position, the total number of observations (denominator) is production operators (124), sales workers (26), hand packers (19), customer service workers (16), and machine operators (12).

Half of all establishments require secondary education. By establishment size, over half of large and micro establishments (56 and 51 percent, respectively) require a minimum of secondary education, and nearly half of both medium and small establishments (45 percent each) require a minimum of secondary education for their most highly recruited positions (Exhibit 11).[16] There is a notable jump between micro and small establishments that require a minimum of post-secondary education, and between medium and large establishments that require a minimum of primary and secondary education.

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16. Values reflect positions other than the five positions that establishments most frequently cited (i.e., production operators, machine operators, hand packers, and sales workers), as establishments had the option to list up to six job positions among their most numerous in terms of recruitment volume.

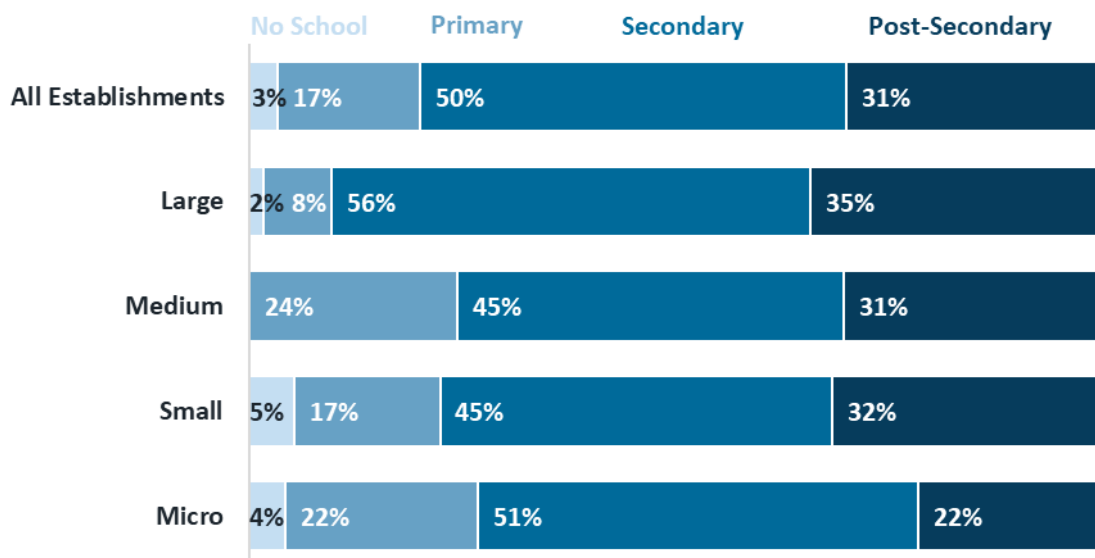**Exhibit 11. Minimum Required Academic Training, by Establishment Size**

Note 1. The category post-secondary refers to technical and vocational training, technical university, and incomplete university education.

Note 2. The values reflect all job positions reported as most numerous by establishments (n = 218), which varies by establishment. Responses to the question about minimum required academic training depend on the positions that each establishment chose as one of the six most numerous.

AIR asked respondents to identify the most important skills for their most highly recruited job positions.[17] For production operators, machine operators, and hand packers, *teamwork* was the most reported skill. For both sales and customer service workers, *effective and clear written and spoken communication* was the most reported skill. The second and third most frequently reported skills for all job positions was *attention to detail* and *being proactive and willing to work under pressure*, except for sales workers, which establishments reported *capacity to generate solutions and offer good services to customers* as the second most required skill. Another important skill for these five positions was *effective and clear written and spoken communication* and *knowledge about topics that improve job performance* (Exhibit 12).

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17. Establishments had the option to select up to five required skills per job position that they identified as most numerous. The survey listed 11 key job skills: (1) knowledge about topics that improve job performance, (2) effective and clear written and spoken communication, (3) knowledge and information dissemination abilities, (4) proactive and willingness to work under pressure, (5) innovation abilities, (6) leadership abilities, (7) time management, (8) capacity to generate solutions and offer good service to customers, (9) attention to detail, (10) teamwork, and (11) management in times of crisis. Respondents could also report other skills that were not in this list.

Exhibit 12. Required Skills in Order of Importance, by Job Position

		01	02	03	04
Production Operators		Teamwork	Proactive and willing to work under pressure	Attention to Detail	Effective and clear written and spoken communication
Sales		Effective and clear written and spoken communication	Capacity to generate solutions and offer good service to customers	Proactive and willing to work under pressure	Attention to detail
Machine Operators		Teamwork	Attention to detail	Proactive and willing to work under pressure	Knowledge about topics that improve job performance
Hand Packers		Teamwork	Attention to detail	Proactive and willing to work under pressure	Effective and clear written and spoken communication
Customer Services		Effective and clear written and spoken communication	Attention to detail	Proactive and willing to work under pressure	Capacity to generate solutions and offer good service to customers

Note. For machine operators, *teamwork* and *attention to detail* were tied as the most important required skill.

For each of their most highly recruited job positions, establishments reported job requirements, by order of importance (Exhibit 13). The most important requirement surveyed establishments reported varied among the five most common job positions.[18] *Having a health certificate* was listed as the most important requirement for production operators, *ability to work on repetitive tasks* was most important for hand packers, *possession of a driver's license* was most important for sales workers, and *product knowledge* and *availability of schedule* were the most important requirement for customer service workers. For machine operators, *availability of schedule* was the top reported job requirement and was the second most reported requirement for production operators, hand packers, and customer service workers. Other important job requirements included *living in the area*, *lack of criminal and police records*, *basic machine handling* (only reported for machine operators), and *ability to work overtime*.

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18. Establishments had the option to select up to five job requirements per job position that they identified as most numerous. The 14 key job requirements listed in the survey included (1) live in the area, (2) ability to work overtime, (3) basic machinery handling skills, (4) have a health certificate, (5) ability to use specialized tools, (6) job-related certifications, (7) letters of recommendation, (8) membership in a professional association, (9) availability of schedule, (10) ability to work on repetitive tasks, (11) possession of a driver's license, (12) lack of criminal and police records, (13) product knowledge, and (14) knowledge of safety in food production. Respondents also had the option to report other requirements.

Exhibit 13. Job Requirements in Order of Importance, by Position

		01	02	03	04
Production Operators		Have health certificate	Availability of schedule	Live in the area	Ability to work on repetitive tasks
Sales		Possession of a driver's license	Lack of criminal and police records	Product knowledge	Availability of schedule
Machine Operators		Availability of schedule	Ability to work overtime	Basic machine handling	Ability to work on repetitive tasks
Hand Packers		Ability to work on repetitive tasks	Availability of schedule	Ability to work overtime	Have health certificate
Customer Services		Product Knowledge	Availability of schedule	Have health certificate	Ability to work overtime

Note. For customer service workers, *product knowledge* and *availability of schedule* were tied as the most important job requirement. For machine operators, *basic machine handling* and *ability to work on repetitive tasks* were tied as the third most important job requirement.

Personnel Training

The following section describes trends in personnel training among surveyed establishments, including trainings they conducted within the past 12 months as well as future needs for training.

Trainings Provided, Training Plan and Training Budget

Most surveyed establishments have a training plan for their personnel (74 percent) and held trainings for their personnel in the past 12 months (76 percent); however, only 47 percent reportedly have a budget for personnel training (Exhibit 14). Among surveyed establishments, a majority of large, medium, and small establishments (93, 86, and 77 percent, respectively) have a training plan, followed by micro establishments (55 percent, respectively). Most large, medium, and small establishments have a training budget (76, 50, and 58 percent, respectively), while only 12 percent of micro establishments do.

By region, most surveyed establishments in the Western and Eastern Regions have a training plan (80 and 89 percent, respectively), as well as in the Central and Paracentral Region (72 percent). However, less than half of all establishments in all regions reported having a training budget. In terms of trainings held, 80 percent of establishments in the Central and Paracentral Region held trainings, followed by the Eastern region (67 percent) and Western Region (64 percent).

Most surveyed establishments (76 percent) conducted trainings for their personnel within the last 12 months. This trend was consistent across establishment sizes, though a larger share of large and medium establishments (both 100 percent) conducted these trainings relative to small (75 percent) and micro (52 percent) establishments.

The establishments that did not conduct any trainings (n = 32) in the past 12 months indicated that they did not do so because (1) there was no time available for training (n = 7), (2) they did not prioritize or perceive such trainings as necessary (n = 7), or (3) they cited other reasons such as the COVID-19 pandemic (n = 7).

Exhibit 14. Proportion of Establishments with a Personnel Training Plan, Training Budget, and that Held Personnel Training in the Past 12 Months, by Establishment Size and Region

	Training Plan	Training Budget	Training Held
All Establishments	74%	47%	76%
Large	93%	76%	100%
Medium	86%	50%	100%
Small	77%	58%	75%
Micro	55%	12%	52%
Central and Paracentral Region	72%	48%	80%
Western Region	80%	44%	64%
Eastern Region	89%	33%	67%
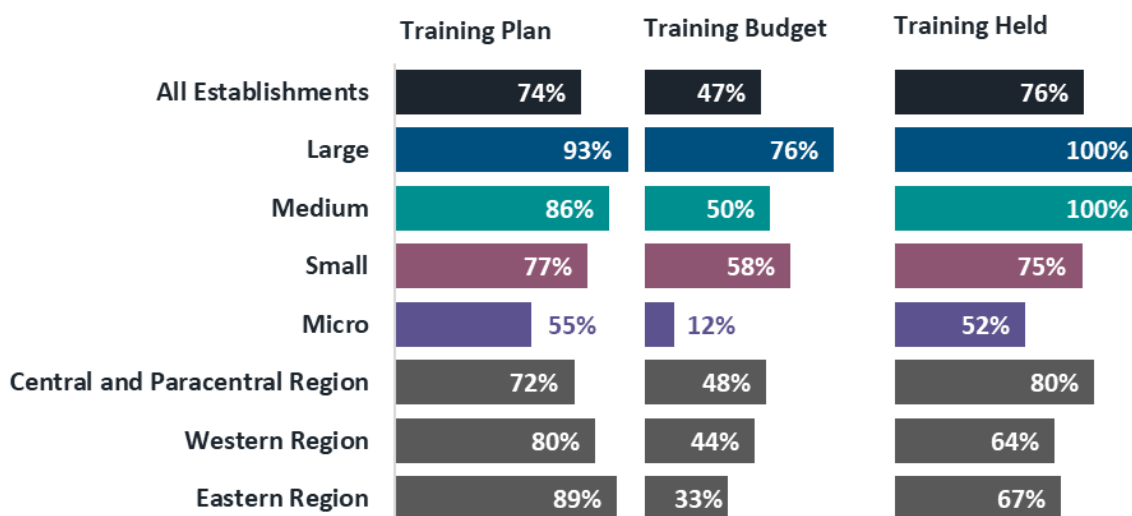
Characteristics of the Personnel Trainings

Within the last 12 months, establishments that held trainings (n = 101) most often convened trainings on the following topics:

- Food Handling
- Biosecurity Protocols for COVID-19[19]
- Good Production Practices
- Customer Service
- Marketing and Sales
- Administration and Finance
- Professional Development and Human Resources

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19. In general, Biosecurity Protocols for COVID-19 training included measures to mitigate the spread of COVID-19, such as use of face masks in public and common areas. Required measures varied by establishment.

Among those topics, training on biosecurity protocols for COVID-19 reached the largest number of employees on average, followed by food handling. Additionally, average training duration by topic generally varied between eight and 13 hours (Exhibit 15). The exception was administration and finance (29 hours), which also had the least number of employees on average.

Exhibit 15. Frequency of Training Topics and Average Personnel Trained and Average Hours, by Training Topic

Course Name	Frequency	Average Personnel	Average Hours
Food Handling	52	50	10
Biosecurity Protocols for COVID-19	31	74	8
Good Production Practices	15	26	11
Customer Service	14	27	10
Marketing and Sales	13	28	11
Administration and Finance	13	3	29
Professional Development and Human Resources	12	11	13

Of the establishments that held trainings (n = 101), most indicated that the Salvadoran Institute of Technical Training (*Instituto Salvadoreño de Formación Profesional*) (INSAFORP) or other organizations (e.g., Ministry of Health) facilitated these trainings or that they facilitated these trainings internally. In addition, most establishments (75 percent) only conducted their personnel trainings during standard working hours[20] whereas 20 percent only did so outside of normal working hours, and only five percent conducted trainings both during and outside normal working hours (see Exhibit 16).

Exhibit 16. Trainings Schedule
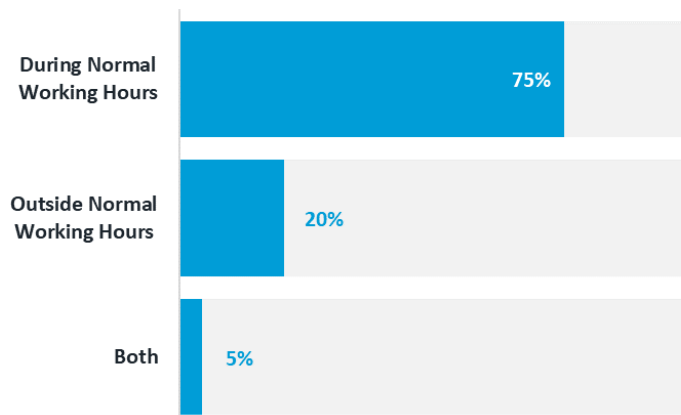
Note. The denominator for all establishments is 176 since it only reflects establishments that held personnel trainings in the past 12 months.

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20. Standard working hours may vary from establishment to establishment.

Establishment Survey in the Food and Beverage Sector in El Salvador

Training Needs

Among surveyed establishments, 87 percent reported having training needs within the 12 months following their survey date. By establishment size, all large (100 percent) and nearly all medium establishments (97 percent) reported training needs whereas a comparatively smaller share of small (92 percent) and micro (71 percent) establishments reported as such (see Exhibit 17). By region, 100 percent of establishments in the Eastern Region reported training needs, and slightly more establishments in the Central and Paracentral Region (87 percent) reported training needs than those in the Western Region (84 percent).

Exhibit 17. Proportion of Establishments with Training Needs, by Size and Region

Category	Percentage
All Establishments	87%
Large	97%
Medium	100%
Small	92%
Micro	71%
Central and Paracentral Region	87%
Western Region	84%
Eastern Region	100%
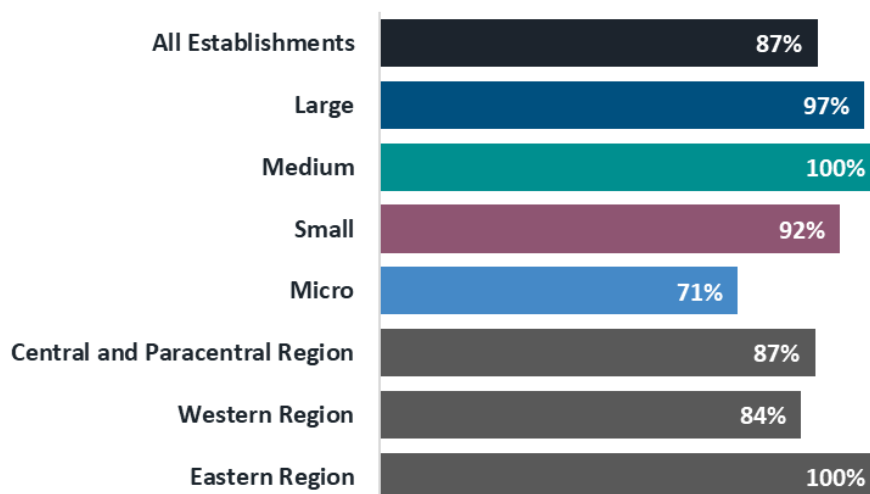
Note. Among the establishments with training needs (n = 116), the most frequently mentioned training topics include (1) food handling, (2) biosecurity protocols for COVID-19, (3) customer service, (4) sales and marketing, and (5) professional development and human resources.

The State of the Food and Beverage Sector Amid the COVID-19 Pandemic

Given that data collection for this survey occurred during the COVID-19 pandemic, the results partially reflect pandemic-related changes among the surveyed establishments. Despite the challenges associated with the COVID-19 pandemic, however, all surveyed establishments reported they were open and operational when contacted for the survey (Exhibit 18).[21] By establishment size, roughly the same percentage of large and small establishments (66 and 67 percent, respectively) and medium and micro establishments (50 and 52 percent, respectively) reported being open with almost the same capacity relative to a pre-pandemic year. Twenty-nine percent of medium and 17 percent of large establishments reported greater capacity. The majority of micro establishments reported being open but with slightly less or much less capacity relative to a normal year (38 and 10 percent, respectively).

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21. Surveyed establishments were asked to report whether they were currently open and, if so, at what capacity relative to a "normal" year (i.e., "before the COVID-19 pandemic").

Exhibit 18. Operational Capacity Relative to a Pre-Pandemic Year, by Establishment Size

	Nearly the Same	Slightly Less	Significantly Less	Greater
All Establishments	60%	26%	5%	9%
Large	66%	17%		17%
Medium	50%	21%		29%
Small	67%	21%	6%	6%
Micro	52%	38%		10%
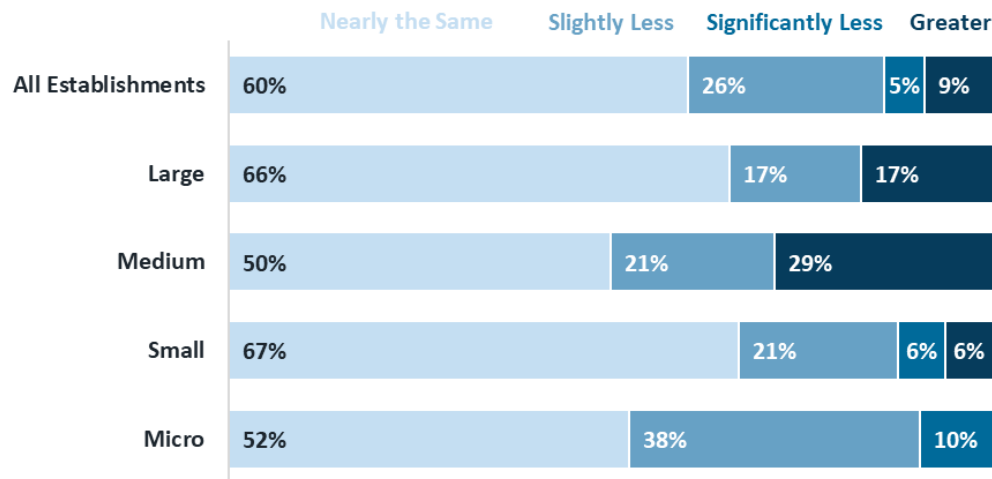
The establishments that were open when surveyed (n = 133) undertook various measures to remain open and reduce their pandemic-related economic losses. With respect to personnel and operational expenses, the most common measures were the reduction of hours and/or employee work schedules (44 percent) and layoffs (15 percent); nevertheless, more than a quarter of these establishments reported that they did not take any measures (26 percent). With respect to production expenses, the most frequent measure was partially reducing production, stocks, or inventories (65 percent). However, 29 percent reported that they did not take any production-related measures to reduce pandemic-related economic losses.

Changes in Personnel Demand

Most surveyed establishments (53 percent) indicated that they would require more staff in the next 12 months (Exhibit 19). When analyzing the projected increase in labor demand by establishment size, 55 percent of large, 57 percent of medium, 58 percent of small, and 43 percent of micro establishments expect increased demand for staff in the following 12 months. By job position, establishments that require

Exhibit 19. Proportion of Establishments that Project Increased Staff Demand, by Establishment Size

All Establishments	53%
Large	55%
Medium	57%
Small	58%
Micro	43%

additional staff (n = 70) expected greatest demand for production operators (81 percent) in the next 12 months, followed by sales positions (20 percent) and hand packers (16 percent).
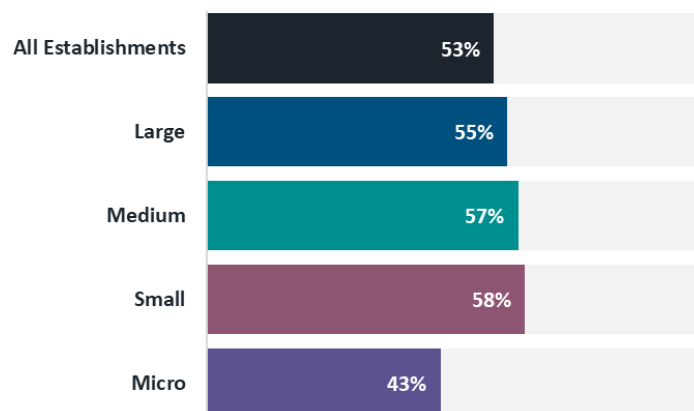
Final Reflections

In this report, we present results from the pilot establishment survey for the food and beverage manufacturing sector in El Salvador, focusing on variation by establishment size with respect to labor demand, personnel dynamics, and training needs. While the pilot survey results do not represent sector trends due to the sample design and size, they underscore the potential insights establishment surveys could yield on labor market dynamics, such as future labor demand, within the food and beverage manufacturing sector.

In our presentation of establishment-level information, three demographic trends stand out: (1) while small establishments comprise most of the survey respondents (48 out of 133 establishments), zero were located in the Eastern Region of the country, (2) the most representative age group among employees is 21 to 40 years, which accounts for 73 percent of reported workers, and (3) female labor participation accounts for less than half (42 percent) of the reported workforce. In terms of personnel age, the results show a marginal trend that as establishment size increases the higher the representation of younger workers, with large establishments holding a higher representation of workers under 20 and micro establishments holding a higher representation of workers older than 41. Female representation varies little between establishment sizes, except for medium establishments, which have 10 percent less female representation compared to the other three sizes.

In addition to these demographic trends among respondents' personnel, it appears that the key job position across respondents is production operators, which greatly outpaced the other highly recruited job positions (i.e., sales workers, machine operators, hand packers, and customer service workers) for their establishments. While production operators are the most highly recruited, they also appear to earn lower monthly remuneration relative to the other four job positions according to pilot survey respondents. Further, minimum education requirements were highest among sales and customer service workers, with more than 50 percent of establishments requiring post-secondary education for those positions. However, a greater proportion of establishments did not require any education for machine operators, compared to the other four positions. More than 50 percent of large, medium, and small establishments anticipate needing more staff in the next 12 months, compared to 43 percent for micro establishments. Among these establishments, respondents expect an increase in staff demand for production operators (81%), sales workers (20%), and hand packers (16%) in the next 12 months. While machine operators were among the currently highly recruited positions across establishments, establishments that indicated need for future personnel seldom indicated intent to hire for those positions in the future.

Lastly, while all surveyed establishments reported being open and operational when contacted for the survey, the consequences of the COVID-19 pandemic affected the operational capacity between the different establishment sizes. The vast majority of micro establishments reported having less capacity to receive clients compared to a pre-pandemic year whereas the majority of large, medium, and small establishments reported having nearly the same capacity. Additionally, compared to the other establishments, a higher proportion of medium establishments reported they had greater capacity to receive clients relative to a normal year.

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Appendix A. Establishment List Construction and Response Rate

Since El Salvador does not have an updated, nationally representative registry of establishments in the food and beverage manufacturing sector, AIR compiled a list of potentially eligible establishments for the pilot survey with available data. As noted in the Introduction Section, the AIR team constructed this establishment list with three sources: (1) the 2019 business directorate of the Ministry of Economy's Directorate of Statistics and Censuses (*Dirección General de Estadística y Censos*) (DIGESTYC); (2) the directory of associates of the Salvadoran Association of Industrialists (*Asociación Salvadoreña de Industriales*) (ASI), which we accessed and cleaned in August 2021; and (3) the Directory of Exporting Companies of the Export and Investment Promotion Agency in El Salvador (*Organismo Promotor de Exportaciones e Inversiones en El Salvador*) (PROESA). In total, the establishment list for the pilot survey consisted of 298 establishments with economic activities or products that pertain to the food and beverage manufacturing sector.

The objective of the pilot survey was to take a census of local registries, offering information regarding their specific target populations. Given AIR's collaboration with DIGESTYC for this project, AIR prioritized their business directorate, taking it as the basis for the compiled establishment list. With 347 unique businesses in this directorate, AIR sought to augment the establishment list by including the ASI and PROESA directories, which had less establishments in the sector of interest (n = 66 and 105, respectively[22]). Among these local data sources, only four businesses in the DIGESTYC directorate did not have a phone number.

Prior to survey data collection activities, AIR attempted to (1) complete missing contact information for the establishments and (2) verify the existence of establishments, using their available contact information from the three data sources. For the former, AIR conducted systematic online searches through Google and social media platforms (i.e., Facebook, Instagram, Twitter, LinkedIn) to locate missing establishment contact information, namely emails.

We conducted initial screening calls with all three data sources prior to survey data collection activities due to concerns regarding potentially outdated and missing information. In these screening calls, we endeavored to verify the existence of each establishment with the available contact information; we also attempted to verify the accuracy of their existing contact information as well as complete missing contact information (e.g., telephone numbers, emails)

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22. Of the 66 ASI establishments and the 105 PROESA establishments in the sector of interest, 44 were duplicates (21 and 23, respectively) with reference to the DIGESTYC business directorate, which served as the basis of the compiled establishment list.

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when applicable. If we were unable to verify the establishment through these initial screening calls, we eliminated them from the establishment list for the survey.

See Exhibit A1 for the final survey response rates, which we predominantly calculated with formulas from the American Association for Public Opinion Research (AAPOR) *Standard Definitions* (2016). We specify our response rate formulas below.

Exhibit A1. AAPOR Response Rates

AAPOR Response Rates	Survey Screener	Survey Part 1	Survey Part 2	Consolidated
Eligibility Rate (E)	83%	100%	100%	**83%**
Response Rate (RR1)	53%	100%	100%	**53%**
Contact Rate (CONT1)	76%	100%	100%	**76%**
Rejection Rate (REF1)	22%	0%	0%	**22%**
Cooperation Rate (COOP1)	70%	100%	100%	**70%**

AAPOR's **Response Rate RR1** includes Complete Interviews (I) in the numerator. The denominator includes Eligible (Complete Interview [I], Partial Interview [P], Refusal [R], Non-Contact [NC], Other cases of Non-Response [O]) and Unknown Eligibility (Unknown [UH], Other cases of Unknown [UO]) cases. The denominator excludes Not Eligible (NE) cases. The formula for calculating the Response Rate RR1:

$$RR1 = 100 * \frac{I}{(I + P) + (R + NC + O) + (UH + UO)}$$

AAPOR's **Cooperation Rate COOP1** includes Complete Interviews (I) in the numerator and eligible, contacted cases (I, P, R, O) in the denominator. The denominator excludes Not Contacted (NC) cases; Unknown Eligibility (UH, UO) cases; and Not Eligible (NE) cases. The formula for calculating the Cooperation Rate COOP1:

$$COOP1 = 100 * \frac{I}{(I + P) + R + O}$$

AAPOR's **Contact Rate CONT1** includes cases in the numerator where it was possible to contact someone on the phone and invite them to participate in the study. These cases correspond to Complete (I) and Partial (P) Interviews, Rejections (R), and Other Cases of Non-Response (O). The denominator includes Eligible (I, P, R, NC, O) and Unknown Eligibility (UH, UO) cases. The denominator excludes Not Eligible (NE) cases. The formula for calculating the Contact Rate CONT1:

$$CONT1 = 100 * \frac{(I + P) + R + O}{(I + P) + (R + NC + O) + (UH + UO)}$$

AAPOR's **Rejection Rate REF1** includes Rejections (R) in the numerator and Eligible (I, P, R, NC, O) and Unknown Eligibility (UH, UO) cases in the denominator. The denominator excludes Not Eligible (NE) cases. The formula for calculating the Rejection Rate REF1:

$$REF1 = 100 * \frac{R}{(I + P) + (R + NC + O) + (UH + UO)}$$

The AAPOR does not propose a formula to calculate the **Eligibility Rate (E)**[23] for surveys but rather suggests that each study should use the most appropriate formula to estimate the percentage of cases in the sample that could have been eligible for the study. The AAPOR (2016) refers to the manuscript by Smith (2009), which presents and discusses different calculation formulas for eligibility rates as well as the assumptions associated with each of them. For this pilot survey, we used one of the formulas from Smith (2009) to calculate the Eligibility Rate, where the Eligible cases (I, P, R, NC, O) are in the numerator, and the Eligible (I, P, R, NC, O) and the Not Eligible (NE) cases are in the denominator. The denominator excludes Unknown Eligibility (UH, UO) cases. The formula for calculating the Eligibility Rate E:

$$E = 100 * \frac{(I + P) + (R + NC + O)}{(I + P) + (R + NC + O) + (NE)}$$

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23. The Anglo-Saxon literature refers to the Out-of-Sample Rate, which is the complement of the Eligibility Rate (E) and is calculated as (100%-E).

Appendix B. Regional Definition

Exhibit B1 below shows the correspondence between the four Salvadoran regions, which local partners at the Ministry of Economy's Directorate of Statistics and Censuses provided, and the consolidated regions we used for illustrative purposes in the Results Section. The exhibit also shows these regions' corresponding departments.

Exhibit B1. El Salvador Regions and Departments

Official Salvadoran Regions	Consolidated Regions	Corresponding Departments
Central	**Central and Paracentral**	*San Salvador, La Libertad, Chalatenango, Cuscatlán*
Paracentral		*La Paz, Cabañas, San Vicente*
Western		*Ahuachapán, Santa Ana, Sonsonate*
Eastern		*La Unión, Morazán, San Miguel, Usulután**

Note. *The Usulután department was not included in the analysis as no establishments in this department completed the survey.

Appendix C. Robustness Checks

As previously mentioned in the Introduction Section, we trimmed outliers for demographic data on establishment workers at the upper bound of the 95th percentile for the total number of full- and part-time employees as well as for associated statistics on workers by establishment size (Exhibit 4), gender (Exhibit 5), age range (Exhibit 6), job position (Exhibit 7), and training module (Exhibit 15).

To demonstrate the sensitivity of these aforementioned results by outlier treatment method, we document illustrative robustness checks below.[24] More specifically, we winsorized the demographic data on establishment workers with the 95th percentile of each variable, anchoring our outlier detection for these variables to the total number of full- and part-time employees. This method of outlier detection,[25] which we also implemented for the trimmed mean, is consistent with the survey design insofar as it places an upper-bound constraint on demographic variables for establishment workers. This constraint is conditioned on the total number of full- and part-time employees the respondent reported.

Comparative Statistics: Measures of Central Tendency

In considering the centrality of the total number of full- and part-time employees in our outlier treatment method, we first present several measures of central tendency, namely the median, winsorized mean, and trimmed mean,[26] of this variable (Exhibit C1).

Exhibit C1. Full- and Part-Time Employees, by Measure of Central Tendency and Establishment Size

Measure of Central Tendency	All Establishments	Large	Medium	Small	Micro
Median	23	200	72	23	6
Winsorized Mean	72	246	70	24	6
Trimmed Mean	56	206	70	24	6

In a similar fashion to Exhibit C1, we present three key worker demographic variables by outlier treatment method. These variables are particularly salient in the purview of this report and thus serve as illustrative robustness checks.

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24. With a larger sample, we recommend those replicating the establishment survey conduct more intensive robustness checks and consider additional outlier detection and treatment (e.g., imputing the median) methods. Given the limited number of pilot survey respondents, their non-random composition, and the scope of this pilot survey, our sensitivity analysis is purely illustrative.
25. For related practices with firm-level data, please refer to Aguinis et al. (2013) and Ishikawa et al. (2010), among others.
26. The trimmed mean calculations are in the Results Section. We include them in the appendix tables to facilitate comparison between outlier treatment methods.

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Exhibit C2. Proportion of Female Employees, by Outlier Treatment Method and Establishment Size

Outlier Treatment Method	All Establishments	Large	Medium	Small	Micro
Winsorized	44%	46%	31%	45%	43%
Trimmed	42%	41%	32%	44%	44%

Exhibit C3. Proportion of Employees, by Age Range (Winsorized) and Establishment Size

	≤ 20	21 - 30	31 - 40	≥ 41
All Establishments	6%	38%	34%	22%
Large	7%	37%	34%	22%
Medium	5%	42%	32%	21%
Small	2%	39%	36%	23%
Micro	3%	27%	43%	27%

Note. Given the outlier detection and treatment method, five large establishments report influential values for specific age ranges. While these influential values potentially reflect lumpy, multimodal distributions of employees by age range, which may be consistent with ex ante expectations, it also skews the share of workers by age range in this exhibit. Therefore, results for this exhibit are particularly sensitive to the outlier treatment method.

Exhibit C4. Number Employees, by Outlier Treatment Method and Job Position

Outlier Treatment Method	Production Operators	Machine Operators	Hand Packers	Sales Workers	Customer Services
Winsorized	3,770	336	484	1,216	893
Trimmed	3,092	210	286	676	353

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Appendix D. Estimated Average Salary by Job Position

The average salary is an estimate based on the salary ranges the surveyed establishments reported for each of their highly recruited job positions (Exhibit D1). The estimate uses the midpoint of each salary range, rounded to an even number, and defines the lower bound as 100 USD less than the minimum salary (365 USD) and the upper bound as 100 USD greater than the maximum salary (1,566 USD). For example, for the 366 to 765 USD salary range, we use 566 USD as the midpoint.

Exhibit D1. Average Salary (USD), by Job Position

	Production Operators	Machine Operators	Hand Packers	Sales Workers	Customer Services
Average Salary (USD)	477	541	518	604	528

Note. The number of establishments that reported the average salary for the following positions: production operators (n = 124), machine operators (n = 12), hand packers (n = 19), sales workers (n = 26), and customer service workers (n = 16).

Appendix E. Definitions

I. Establishment: a part of a business with less decision-making autonomy that depends upon the business for administrative matters.

II. In the context of this report, the term manufacturing alludes to Section C, Manufacturing, of the International Standard Industrial Classification of All Economic Activities (ISIC), Revision 4 (2009). This ISIC, Revision 4 section encompasses one of the eligibility criteria for the pilot survey's target population. The term alludes to the distinction between food and beverage *manufacturing* economic activities and other food and beverage economic activities within the ISIC, Revision 4 such as wholesale and retail trade or accommodation and food service activities.

III. This sector corresponds to Division 10 of the International Standard Industrial Classification of All Economic Activities (ISIC), Revision 4 (2009). At the four-digit level, this includes the following classes: processing and preserving of meat (1010); processing and preserving of fish, crustaceans and mollusks (1020); processing and preserving of fruit and vegetables (1030); manufacture of vegetable and animal oils and fats (1040); manufacture of dairy products (1050); manufacture of grain mill products (1061); manufacture of starches and starch products (1062); manufacture of bakery products (1071); manufacture of sugar (1072); manufacture of cocoa, chocolate and sugar confectionery (1073); manufacture of macaroni, noodles, couscous and similar farinaceous products (1074); manufacture of prepared meals and dishes (1075); manufacture of other food products not elsewhere classified (1079); and manufacture of prepared animal feeds (1080).

IV. This sector corresponds to Division 11 of the ISIC, Revision 4. At the four-digit level, this includes the following classes: distilling, rectifying and blending of spirits (1101); manufacture of wines (1102); manufacture of malt liquors and malt (1103); and manufacture of soft drinks, production of mineral waters and other bottled waters (1104).

V. The employee ranges for the establishment size categories correspond to specifications of the Law for the Promotion, Protection, and Development of Micro and Small Businesses (*Ley de Fomento, Protección y Desarrollo de Micro y Pequeña Empresa*), which we verified with local affiliates from DIGESTYC as well as through official documentation (Ministry of Economy, 2014).

VI. This job position corresponds to the International Standard Classification of Occupations (ISCO) (2008) Minor Group 751, Food Processing and Related Trades Workers apart from Unit Group 7516, Tobacco Preparers and Tobacco Products Makers (ILO, 2012). Other Unit Groups in this Minor Group include butchers, fishmongers and related food preparers (7511); bakers, pastry-cooks and confectionery makers (7512); dairy products makers (7513); fruit, vegetable

and related preservers (7514); and food and beverage tasters and graders (7515). For the Spanish translation of this job position, we used the equivalent term in the Honduran National Occupational Classifier, Revision 2018 (*Clasificador Nacional de Ocupaciones de Honduras, Revisión 2018*) (INE, 2019).

VII. For the pilot survey, respondents reported the number of employees by position based on their high and low seasons of production, if applicable. The survey required that respondents report these two values only if (1) they reported seasonal variation in production volume (78 percent) *and* (2) if they hired more personnel during their high season (43 percent). Otherwise, the survey only required that respondents report one value for their number of employees by position. To aggregate the number of employees by position, we created a single, weighted value among the surveyed establishments that hire more employees during their high season. To construct this weighted average, we used the number of months in each establishments' respective high and low seasons as the weights. In short, the total employees by position within this report represent this weighed average combined with the number of employees by position reported by establishments (1) that did not have a high season or (2) that did not hire more employees during their high season.

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