

## **The Panama 2025 World Bank Enterprise Survey Implementation Report**

### **I. Introduction**

This document provides information on the World Bank Enterprise Surveys (WBES) implemented in Panama between September 2024 and May 2026. The WBES collect both objective data based on firms' day-to-day experiences, and perceptions of enterprises regarding the business environment in which they operate. The WBES has global coverage. The WBES are also used to build a panel of enterprise data that will make it possible to track changes in the business environment over time.<sup>1</sup>

This report describes the sampling design of the survey, the data set structure as well as additional information that may be useful when using the data, such as information on survey non-response and the appropriate use of the sampling weights.

### **II. Sampling Structure**

The WBES use stratified random sampling, where the population of establishments is first separated into non-overlapping groups, called strata, and then respondents are selected through simple random sampling from each stratum. The detailed methodology is provided in the Sampling Note.<sup>2</sup> Stratified random sampling has several advantages over simple random sampling. In particular, it:

- produces unbiased estimates of the whole population or universe of inference, as well as at the levels of stratification
- ensures representativeness by including observations in all of those categories
- produces more precise estimates than simple random sampling for a given sample size or budget allocation, and
- may reduce implementation costs by splitting the population into convenient subdivisions.

The WBES typically use three levels of stratification: industry classification, establishment size, and subnational region (used in combination). Starting in 2022, the WBES bases the industry classification on ISIC Rev. 4 (with earlier surveys using ISIC Rev. 3.1).<sup>3</sup> For regional coverage within a country, the WBES has national coverage.

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<sup>1</sup> A “panel interview” refers to an interview with a business that was also interviewed in the previous WBES.

<sup>2</sup> The Sampling Note is available at:

[https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/Sampling\\_Note-Consolidated-2-16-22.pdf](https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/Sampling_Note-Consolidated-2-16-22.pdf).

<sup>3</sup> The WBES universe includes: all manufacturing (ISIC 4.0 codes 10-33), services (ISIC 4.0 codes 41-43, 45-47, 49-56, 58, 61, 62, 69-75, 79, 95). Details on sectoral coverage and the WBES universe of inference can be found in the *Enterprise Surveys Manual and Guide* (p. 4).

## II.1 Universe

The universe of inference includes all formal (i.e., registered) private sector establishments<sup>4</sup> (with at least 1% private ownership) and with at least five employees. In terms of sectoral criteria, all manufacturing businesses (ISIC Rev 4. codes 10-33) are eligible; for services businesses, those corresponding to the ISIC Rev 4 codes 41-43, 45-47, 49-53, 55-56, 58, 61-62, 69-75, 79, and 95 are included in the Enterprise Surveys. Cooperatives and collectives are excluded from the Enterprise Surveys. All eligible establishments must be registered with the Dirección General de Registro Público. The universe table is the total number of eligible establishments, and the table is partitioned by the stratification groups (industry classification, establishment size, and subnational region) in a country.

For the Panama 2025 WBES, the universe table, shown in Table 1 below, was obtained from the National Institute of Census and Statistics INEC.

## II.2 Sampling Frame

The WBES requires the most complete and up-to-date Sampling Frame, the list of eligible establishments with information on industry classification, size, address and other contact information that will be used to randomly select the sample. In countries where a previous round of the WBES exists, the Sampling Frame also includes the Panel Sampling Frame, which provides information about all the establishments that participated in the previous round of the WBES in the country.

The Sampling Frame for the Panama 2025 WBES was constructed from the following sources (see counts of establishments in the frame in Table 2). The Panel Sampling Frame was constructed using information on all the establishments that participated in the Panama 2010 WBES. The Fresh Sampling Frame, i.e., list of establishments that are in the WBES universe and that have not participated in the Panama 2010 WBES was obtained mainly from the National Institute of Census and Statistics INEC.

For every WBES, necessary measures are taken to ensure the quality of the frame; however, the sample frames are not immune to the typical problems found in establishment surveys: positive rates of non-eligibility, repetition, non-existent units, etc. Given the impact that non-eligible units included in the sample universe may have on the results, eligibility adjustments may be needed when computing the appropriate sampling weights for individual observations if and only if the universe equals the sampling frame (that is the weights project to universe totals by cell, coming from the sampling frame). Table 4 reports response outcomes.

## II.3 Stratification Categories

The Panama 2025 WBES uses the following stratification categories:

- **Industry:**

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<sup>4</sup> The unit of analysis of every WBES is the establishment defined as a business entity associated with a physical location with its own set of financial statements, including Balance Sheet and Income Statement. However, in many economies official statistics are provided at the firm level, where a firm may be composed of several establishments, the so called multi-establishment firms.

1. Manufacturing (ISIC Rev 4.0 codes 10-33)
  2. Retail (ISIC Rev 4 code 47)
  3. Services (ISIC Rev 4 codes 41-43, 45-46, 49-53, 55-56, 58, 61-62, 69-75, 79, 95)
- **Size:**
    1. Small (5 to 19 employees),
    2. Medium (20 to 99 employees),
    3. Large (100 or more employees)
  - **Region:**
    1. Panama
    2. Colon
    3. West

Industry strata for the manufacturing sector were selected by their contribution to total number of establishments, according to the WBES Universe. The manufacturing sector covers 11% of the whole WBES universe in terms of number of establishments. For the services sector, the strata were divided into the retail sector with 24% in terms of number of establishments, and the rest of services cover 65% of the whole WBES universe.

Region strata of the Panama 2025 WBES were selected based on administrative divisions, with some territories grouped together to achieve minimum required precision of estimates at the level of each stratification region. The survey was implemented in the following regions: Panama City, Colon and Rest of the Country.

## II.4 Sample Design

The WBES sample design, i.e., target number of interviews in each combination of stratification categories (cells), is generated using the two primary criteria: 1) minimize the difference from the purely proportional sample within each cell; and 2) achieve a sufficient sample size by stratification category to allow for estimates of a given level of precision. Additional information on the criteria for determining the sample size by stratification category is given in the *Sampling Note*, and additional information on the sample design is given in the *Enterprise Surveys Manual and Guide*.<sup>5</sup> The original survey design for the Panama 2025 WBES is given in Table 3.

## III. Data Collection

The detailed information on the WBES methodology and data collection is provided in the Enterprise Surveys Manual and Guide. The interviews for the Panama 2025 WBES were

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<sup>5</sup> The *Enterprise Surveys Manual and Guide* is available at:  
<https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/Enterprise-Surveys-Manual-and-Guide.pdf>

conducted between September 2024 and January 2026. The interviews were conducted in the Spanish. For monetary variables, the currency was US Dollar.

Apart from the participation and call-back challenges that are typical of firm-level surveys, the Panama 2025 WBES faced additional complexities in securing interviews. These challenges were more pronounced in the Panamanian context, where firms often require additional reassurance regarding the credibility, purpose, and confidentiality of the study before agreeing to participate. Consequently, the data collection process required sustained follow-up efforts and a high degree of flexibility in scheduling to accommodate respondents' availability. Fieldwork was completed with 282 complete interviews.

### **III.1 Questionnaire**

The standard WBES questionnaire covers several topics regarding the business environment and business performance. These topics include general establishment characteristics, infrastructure, sales and supplies, trade, management practices, competition, innovation, capacity, land and permits, finance, business-government relations, exposure to bribery, labor, and performance. Information about the general structure of the questionnaire is available in the *Enterprise Surveys Manual and Guide*.

### **III.2 Contractor**

The fieldwork for the Panama 2025 WBES was implemented by two different companies: Mercaplan and Gallup de Panama. The selection for the implementing agency followed the standard World Bank procurement practices that are described in more detail in the *Enterprise Surveys Manual and Guide*.

### **III.3 Sampling and screening**

Samples are drawn by the Enterprise Surveys team in batches, following the stratification and sample design. The contractor conducted a thorough screening process before scheduling the ES interviews. Results of the screening are provided using the eligibility and status codes as listed in Table 4. In cases of unit non-response (either a refusal or an inability to obtain an interview after exhaustive attempts), the contractor proceeded with the contact that appeared next in the list drawn in the respective cell. The process of sampling and screening is described in more detail in the *Enterprise Surveys Manual and Guide*.

### **III.4 Survey response**

In all surveys, including the WBES, some respondents choose not to participate. The Enterprise Analysis team and the contractor take all necessary measures to boost participation, through various methods of recruitment. The proper management of the screening process and sample replacement ensures that the resulting sample remains random.

The main measure of survey participation is the yield, which is the ratio of the total number of achieved interviews to the total number of contacted establishments. There are two main

elements that boost yields. First is the survey participation rate, measured as the share of establishments that participated among those that can be assumed to have been eligible. The second element is the quality of frame. If only a small fraction of the contacted establishments is actually eligible to participate in the survey, then the sampling frame is far from ideal. This quality is measured by the ratio of the total number of establishments that are eligible for the WBES to the total number of contacted establishments in the frame. In other words:

$$\text{Yield} = \text{Survey response rate} * \text{Rate of quality of the frame}$$

which can be rewritten as follows:

$$\frac{\text{Total interviewed}}{\text{Total contacted}} = \frac{\text{Total interviewed}}{\text{Assumed eligible}} * \frac{\text{Assumed eligible}}{\text{Total contacted}}$$

Table 5 provides these measures for the Panama 2025 WBES and across its stratification levels.

### III.5 Achieved Sample

Tables 6 and 7 provide counts of the WBES interviews collected for each stratification cell, i.e., broken down by industry, establishment size, and region. Table 6 reports full sample, while Table 7 shows counts of only panel interviews.

### III.6 Sampling Weights

Since the WBES uses stratified random sampling, individual observations should be properly weighted when making inferences about the population, since unweighted estimates are biased unless sample sizes are proportional to the size of each stratum. For each WBES, special care is given to correctly compute sampling weights. Whenever the Universe is used to draw the sample (i.e., Sampling Frame is the same as the Universe) it is imperative to accurately adjust the universe within each stratum to account for the presence of ineligible establishments (e.g., the establishment discontinued businesses, or is deemed ineligible due to its business activity or having fewer than five employees). Proper treatment of panel establishments is also crucial. Details about how the WBES sampling weights are calculated are given in the *Sampling Note*.

Three versions of sampling weights are calculated, depending on the assumptions that determine eligibility of establishments to be counted towards the WBES universe. These assumptions are called weak, medium, and strong; and are defined as given in the table below. Prevalence of each of these outcomes for the Panama 2025 WBES is given in Table 4. All indicators and analysis conducted by the Enterprise Surveys team use the sampling weights based on the median assumption. Tables 8-10 report estimated universe based on the respective assumption.

| Assumption | Eligibility codes for inclusion in the WBES universe |
|------------|------------------------------------------------------|
| Strict     | 1, 2, 3, 4                                           |
| Median     | 1, 2, 3, 4, 10, 11, 13, 133                          |
| Weak       | 1, 2, 3, 4, 10, 11, 13, 133, 91, 92, 93, 94, 12      |

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For descriptions of each eligibility code, see Table 4 of the sampling note.

### III.7 Item response rates

Item response rate must be differentiated from survey response rates. The latter refers to participation in the survey itself (see Section III.4) whereas the former refers to the absence of responses to specific survey questions. The WBES, as any survey, suffer from item non-response; and different strategies are used by the data collection team to address this. In particular:

- For sensitive questions, such as on corruption or tax evasion, enumerators were instructed to collect the refusal to respond (-8) as a separate response category from don't know (-9).
- Establishments with incomplete information were re-contacted to fill gaps.

Table 11 provides item response rates for several key variables, broken down across the stratification levels.

### III.8 Database Structure

The WBES datafiles are organized in ways that reflect the corresponding questionnaire. The variables that are standard across countries have the first letter in their name correspond to the questionnaire section where the variable belongs in the questionnaire, i.e., *a1* denotes section *A*. All variables are numeric with the exception of those variables with an “x” at the end of their names. The suffix “x” denotes that the variable is alpha-numeric.

The WBES datafiles contain two establishment identifiers, *idstd* and *id*. The former is a global unique identifier of each establishment, while the latter is unique identifier within each survey. The variable *idstd* can be used to match the WBES establishment one-to-one across databases. The variables *wweak*, *wmedian*, and *wstrong* corresponding to sampling weights based on, respectively, weak, median, and strong assumptions about eligibility (see Section III.6). The variable *strata* corresponds to the stratum of each observation.<sup>6</sup>

Additionally, the WBES datafiles contain many standard variables. The variable *d1a2\_v4* denotes the main activity of the establishment, as obtained during the WBES interview, coded in the four-digit ISIC Rev. 4. Users should note that this activity may differ from the industry classification given in the Sampling Frame, *a4a*. Users are generally advised to use industry categories based on the realized information in *d1a2\_v4*. Additional sampling information is contained in variables *a2* (region) and *a6a* (size). The variable *panel* identifies panel establishments, i.e., those that participated in the Panama 2010 WBES. The combination of *a4a*, *a2*, *a6a*, and *panel* forms stratum of each establishment, which is contained in variable *strata*.

The last complete fiscal year for each establishment is contained in variables *a20m* (last month of last complete fiscal year) and *a20y* (last complete fiscal year).

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<sup>6</sup> Note that the sampling weights may vary within *strata* for panel establishments due to the procedure used for projecting the universe from the previous round of the survey.

Note that when an entry in the WBES database is empty, this means that the question was not asked to the corresponding respondent. This happens when the question is deemed inapplicable, due to skip patterns or other reasons.

#### IV. Useful Links

The users of the WBES data may find the following links useful:

- *Sampling Note* is available at:  
[https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/Sampling\\_Note-Consolidated-2-16-22.pdf](https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/Sampling_Note-Consolidated-2-16-22.pdf)
- The *Enterprise Surveys Manual and Guide* is available at:  
<https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/Enterprise-Surveys-Manual-and-Guide.pdf>
- The WBES global questionnaires are available at:  
<https://www.enterprisesurveys.org/en/methodology>
- The projects that are currently being implemented by the Enterprise Surveys team are available at: <https://www.enterprisesurveys.org/en/project-schedule>
- The list of all WBES databases and detailed information about each is available here:  
<https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/DataDetails.xls>
- The description of the WBES indicators is available at:  
<https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/Indicator-Description.pdf>

## Fact Sheet

|                                                |                                                                                                                                                                                                                         |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source of Universe Table                       | Instituto Nacional de Estadísticas y Censos INEC                                                                                                                                                                        |
| Source of Sampling Frame                       | Instituto Nacional de Estadísticas y Censos INEC                                                                                                                                                                        |
| Levels of Universe Table and Sampling Frame    | Universe Table: Establishment-level<br>Sampling Frame: Establishment-level                                                                                                                                              |
| Registration agency                            | Dirección General de Registro Publico                                                                                                                                                                                   |
| Stratification sectors                         | Manufacturing, Retail, and Other Services                                                                                                                                                                               |
| Stratification sizes                           | Small (5 to 19 employees), Medium (20 to 99 employees), and Large (100 or more employees)                                                                                                                               |
| Stratification regions                         | Panama, Colon, and West                                                                                                                                                                                                 |
| Contractor                                     | Mercaplan and Gallup de Panama                                                                                                                                                                                          |
| Fieldwork dates                                | September 2024 – May 2026                                                                                                                                                                                               |
| Interview languages                            | Spanish                                                                                                                                                                                                                 |
| Survey software                                | Survey Solutions                                                                                                                                                                                                        |
| Currency for nominal variables                 | US Dollar                                                                                                                                                                                                               |
| Reference fiscal year                          | 2023 (81 obs.), 2024 (179 obs.), 2025 (22 obs.)                                                                                                                                                                         |
| VAT Applicable                                 | YES                                                                                                                                                                                                                     |
| Additional definitions                         | “Consumption Tax” was referred to as IVA. “Occupancy Permit” was referred to as “Permiso de Ocupación”. For the capital city (a3b), Panama City was entered; for the main business city (a3c), Panama City was entered. |
| Sample Size                                    | Total: 282      Fresh: 254      Panel: 28                                                                                                                                                                               |
| Survey response rates                          | Yield: 7.9% Response rate: 37.9% Frame quality: 20.9%                                                                                                                                                                   |
| Item response rates                            | d2: 94.7% n2a: 95.7% 11: 99.6% all TFPvars <sup>7</sup> : 55.4%                                                                                                                                                         |
| Additional topics covered in the questionnaire |                                                                                                                                                                                                                         |
| Additional surveys available (if any)          |                                                                                                                                                                                                                         |

## Tables

<sup>7</sup> TFP stands for total factor productivity. TFP variables are d2 (annual sales), n2a (annual cost of labor), n2e (annual cost of intermediate goods) and n7e (replacement cost of capital). Response rate for TFP variables is calculated only for manufacturing establishments.

**Table 1: Panama 2025 WBES Universe**

|               |                 | <b>Manufacturing</b> | <b>Retail</b> | <b>Other Services</b> | <b>Grand Total</b> |
|---------------|-----------------|----------------------|---------------|-----------------------|--------------------|
| <b>Panama</b> | Small (5-19)    | 864                  | 2006          | 4948                  | <b>10,840</b>      |
| <b>Panama</b> | Medium (20-99)  | 280                  | 370           | 1825                  |                    |
| <b>Panama</b> | Large (100-199) | 79                   | 99            | 369                   |                    |
| <b>Colon</b>  | Small (5-19)    | 22                   | 110           | 794                   | <b>1,330</b>       |
| <b>Colon</b>  | Medium (20-99)  | 9                    | 14            | 331                   |                    |
| <b>Colon</b>  | Large (100-199) | 4                    | 1             | 45                    |                    |
| <b>West</b>   | Small (5-19)    | 400                  | 988           | 1641                  | <b>3,604</b>       |
| <b>West</b>   | Medium (20-99)  | 83                   | 113           | 294                   |                    |
| <b>West</b>   | Large (100-199) | 29                   | 19            | 37                    |                    |
|               |                 | <b>1,770</b>         | <b>3,720</b>  | <b>10,284</b>         | <b>15,774</b>      |

Source: (Establishment-level)

**Table 2: Panama 2025 WBES Sample Frame (Fresh and Panel Combined)**

|               |                     | <b>Manufacturing</b> | <b>Retail</b> | <b>Other Services</b> | <b>Grand Total</b> |
|---------------|---------------------|----------------------|---------------|-----------------------|--------------------|
| <b>Panama</b> | Small (5-19)        | 488                  | 1798          | 2848                  | <b>6953</b>        |
| <b>Panama</b> | Medium (20-99)      | 197                  | 299           | 890                   |                    |
| <b>Panama</b> | Large (100 or more) | 69                   | 98            | 266                   |                    |
| <b>Colon</b>  | Small (5-19)        | 29                   | 140           | 556                   | <b>999</b>         |
| <b>Colon</b>  | Medium (20-99)      | 9                    | 14            | 205                   |                    |
| <b>Colon</b>  | Large (100 or more) | 4                    | 3             | 39                    |                    |
| <b>West</b>   | Small (5-19)        | 352                  | 1041          | 1105                  | <b>2959</b>        |
| <b>West</b>   | Medium (20-99)      | 77                   | 93            | 202                   |                    |
| <b>West</b>   | Large (100 or more) | 29                   | 23            | 37                    |                    |
|               |                     | <b>1,254</b>         | <b>3,509</b>  | <b>6,148</b>          | <b>10,911</b>      |

Source: (Establishment-level)

**Table 3: Original Survey Design (Fresh and Panel Combined)**

|               |                 | <b>Manufacturing</b> | <b>Retail</b> | <b>Other Services</b> | <b>Grand Total</b> |
|---------------|-----------------|----------------------|---------------|-----------------------|--------------------|
| <b>Panama</b> | Small (5-19)    | 13                   | 20            | 20                    | <b>139</b>         |
| <b>Panama</b> | Medium (20-99)  | 14                   | 12            | 20                    |                    |
| <b>Panama</b> | Large (100-199) | 18                   | 15            | 7                     |                    |
| <b>Colon</b>  | Small (5-19)    | 15                   | 16            | 18                    | <b>105</b>         |

|              |                 |            |            |            |            |
|--------------|-----------------|------------|------------|------------|------------|
| <b>Colon</b> | Medium (20-99)  | 5          | 7          | 20         |            |
| <b>Colon</b> | Large (100-199) | 2          | 2          | 20         |            |
| <b>West</b>  | Small (5-19)    | 10         | 19         | 19         | <b>116</b> |
| <b>West</b>  | Medium (20-99)  | 17         | 14         | 4          |            |
| <b>West</b>  | Large (100-199) | 15         | 12         | 6          |            |
|              |                 | <b>109</b> | <b>117</b> | <b>134</b> | <b>360</b> |

**Table 4: Response Outcomes**

|                                       |                             | <b>Totals</b> | <b>Rates relative<br/>to total<br/>contacted</b> |
|---------------------------------------|-----------------------------|---------------|--------------------------------------------------|
| Overall                               | Contacts available in frame | 10,911        |                                                  |
|                                       | Issued                      | 4,337         |                                                  |
|                                       | Contacted                   | 3,554         |                                                  |
| Screening phase                       | Eligibles                   | 322           | 9.1%                                             |
|                                       | Screeners refusals          | 364           | 10.2%                                            |
|                                       | Assumed eligibles           | 744           | 20.9%                                            |
|                                       | Ineligible + out of target  | 104           | 2.9%                                             |
|                                       | Unobtainables               | 2,764         | 77.8%                                            |
| Interview phase<br>(only if eligible) | Interview refusals          | 5             | 0.1%                                             |
|                                       | Complete interviews         | 282           | 7.9%                                             |

**Table 5: Survey Yield Rates**

|       |              | <b>Yield</b> | <b>Survey<br/>response rate</b> | <b>Frame<br/>quality</b> |
|-------|--------------|--------------|---------------------------------|--------------------------|
| Panel | Fresh        | 7.9%         | 38.2%                           | 20.7%                    |
|       | Panel        | 8.1%         | 35.4%                           | 22.8%                    |
| Size  | Small (5-19) | 12.3%        | 34.6%                           | 35.6%                    |

|         |                |       |       |       |
|---------|----------------|-------|-------|-------|
|         | Medium (20-99) | 5.1%  | 42.2% | 12.1% |
|         | Large (100+)   | 6.1%  | 47.2% | 12.9% |
| Region  | Panama         | 6.0%  | 47.0% | 12.8% |
|         | Colon          | 8.2%  | 37.7% | 21.7% |
|         | West           | 13.7% | 30.0% | 45.7% |
| Sector  | Manufacturing  | 12.4% | 41.5% | 29.9% |
|         | Retail         | 9.9%  | 33.8% | 29.2% |
|         | Other Services | 5.4%  | 39.3% | 13.9% |
| Overall | Panama 2025    | 7.9%  | 37.9% | 20.9% |

Notes: the rates are calculated as defined in Section III.4.

**Table 6: Achieved Total Sample (Fresh and Panel Combined)**

|               |                     | Manufacturing | Retail    | Other<br>Services | Grand Total |
|---------------|---------------------|---------------|-----------|-------------------|-------------|
| <b>Panama</b> | Small (5-19)        | 16            | 21        | 19                | <b>133</b>  |
| <b>Panama</b> | Medium (20-99)      | 18            | 15        | 20                |             |
| <b>Panama</b> | Large (100 or more) | 7             | 7         | 10                |             |
| <b>Colon</b>  | Small (5-19)        | 12            | 16        | 16                | <b>52</b>   |
| <b>Colon</b>  | Medium (20-99)      | 1             | 3         | 3                 |             |
| <b>Colon</b>  | Large (100 or more) | 0             | 0         | 1                 |             |
| <b>West</b>   | Small (5-19)        | 15            | 22        | 25                | <b>97</b>   |
| <b>West</b>   | Medium (20-99)      | 14            | 5         | 7                 |             |
| <b>West</b>   | Large (100 or more) | 2             | 2         | 5                 |             |
|               |                     | <b>85</b>     | <b>91</b> | <b>106</b>        | <b>282</b>  |

**Table 7: Achieved Panel Sample**

|               |                     | Manufacturing | Retail | Other<br>Services | Grand Total |
|---------------|---------------------|---------------|--------|-------------------|-------------|
| <b>Panama</b> | Small (5-19)        | 4             | 5      | 2                 | <b>21</b>   |
| <b>Panama</b> | Medium (20-99)      | 2             | 2      | 2                 |             |
| <b>Panama</b> | Large (100 or more) | 1             | 0      | 3                 |             |
| <b>Colon</b>  | Small (5-19)        | 3             | 2      | 0                 | <b>6</b>    |

|              |                     |           |           |          |           |
|--------------|---------------------|-----------|-----------|----------|-----------|
| <b>Colon</b> | Large (100 or more) | 0         | 0         | 1        |           |
| <b>West</b>  | Small (5-19)        | 0         | 1         | 0        | <b>1</b>  |
|              |                     | <b>10</b> | <b>10</b> | <b>8</b> | <b>28</b> |

**Table 8: Weak Universe Estimates**

|               |                        | <b>Manufacturing</b> | <b>Retail</b> | <b>Other Seviles</b> | <b>Grand Total</b> |
|---------------|------------------------|----------------------|---------------|----------------------|--------------------|
| <b>Panama</b> | Small (5-19)           | 846                  | 1963          | 4905                 | <b>10733</b>       |
| <b>Panama</b> | Medium (20-99)         | 279                  | 368           | 1840                 |                    |
| <b>Panama</b> | Large (100 or more)    | 76                   | 95            | 360                  |                    |
| <b>Colon</b>  | Small (5-19)           | 21                   | 132           | 774                  | <b>1328</b>        |
| <b>Colon</b>  | Medium (20-99)         | 0                    | 0             | 328                  |                    |
| <b>Colon</b>  | Large (100 or more)    | 0                    | 0             | 44                   |                    |
| <b>Colon</b>  | Medium and Large (20+) | 13                   | 16            | 0                    |                    |
| <b>West</b>   | Small (5-19)           | 372                  | 958           | 1547                 | <b>3423</b>        |
| <b>West</b>   | Medium (20-99)         | 79                   | 107           | 282                  |                    |
| <b>West</b>   | Large (100 or more)    | 27                   | 17            | 34                   |                    |
|               |                        | <b>1686</b>          | <b>3640</b>   | <b>10079</b>         | <b>15484</b>       |

**Table 9: Median Universe Estimates**

|               |                     | <b>Manufacturing</b> | <b>Retail</b> | <b>Other Seviles</b> | <b>Grand Total</b> |
|---------------|---------------------|----------------------|---------------|----------------------|--------------------|
| <b>Panama</b> | Small (5-19)        | 269                  | 603           | 670                  | <b>1720</b>        |
| <b>Panama</b> | Medium (20-99)      | 28                   | 35            | 79                   |                    |
| <b>Panama</b> | Large (100 or more) | 9                    | 10            | 17                   |                    |
| <b>Colon</b>  | Small (5-19)        | 12                   | 71            | 184                  | <b>321</b>         |

|              |                        |            |             |             |             |
|--------------|------------------------|------------|-------------|-------------|-------------|
| <b>Colon</b> | Medium (20-99)         | 0          | 0           | 24          |             |
| <b>Colon</b> | Large (100 or more)    | 0          | 0           | 13          |             |
| <b>Colon</b> | Medium and Large (20+) | 7          | 9           | 0           |             |
| <b>West</b>  | Small (5-19)           | 484        | 1201        | 862         | <b>2696</b> |
| <b>West</b>  | Medium (20-99)         | 32         | 42          | 49          |             |
| <b>West</b>  | Large (100 or more)    | 12         | 8           | 7           |             |
|              |                        | <b>841</b> | <b>1970</b> | <b>1900</b> | <b>4738</b> |

**Table 10: Strict Universe Estimates**

|               |                        | <b>Manufacturing</b> | <b>Retail</b> | <b>Other Sevicees</b> | <b>Grand Total</b> |
|---------------|------------------------|----------------------|---------------|-----------------------|--------------------|
| <b>Panama</b> | Small (5-19)           | 134                  | 219           | 335                   | <b>801</b>         |
| <b>Panama</b> | Medium (20-99)         | 18                   | 17            | 50                    |                    |
| <b>Panama</b> | Large (100 or more)    | 7                    | 7             | 14                    |                    |
| <b>Colon</b>  | Small (5-19)           | 12                   | 26            | 94                    | <b>170</b>         |
| <b>Colon</b>  | Medium (20-99)         | 0                    | 0             | 16                    |                    |
| <b>Colon</b>  | Large (100 or more)    | 0                    | 0             | 5                     |                    |
| <b>Colon</b>  | Medium and Large (20+) | 10                   | 8             | 0                     |                    |
| <b>West</b>   | Small (5-19)           | 159                  | 288           | 285                   | <b>794</b>         |
| <b>West</b>   | Medium (20-99)         | 14                   | 13            | 20                    |                    |
| <b>West</b>   | Large (100 or more)    | 6                    | 3             | 5                     |                    |
|               |                        | <b>354</b>           | <b>578</b>    | <b>820</b>            | <b>1766</b>        |

**Table 11: Item Response Rates**

|       |       | <b>d2</b> | <b>l1</b> | <b>n2a</b> | <b>all TFP variables</b> |
|-------|-------|-----------|-----------|------------|--------------------------|
| Panel | Fresh | 94.9%     | 99.6%     | 95.7%      | 52.6%                    |
|       | Panel | 92.9%     | 100.0%    | 96.4%      | 75.0%                    |

|         |                |        |        |       |        |
|---------|----------------|--------|--------|-------|--------|
| Size    | Small (5-19)   | 97.3%  | 100.0% | 96.7% | 66.7%  |
|         | Medium (20-99) | 90.3%  | 98.6%  | 94.4% | 35.0%  |
|         | Large (100+)   | 89.3%  | 100.0% | 92.9% | 55.6%  |
| Region  | Panama         | 90.8%  | 100.0% | 96.2% | 60.7%  |
|         | Colon          | 100.0% | 100.0% | 98.1% | 100.0% |
|         | West           | 97.0%  | 99.0%  | 94.0% | 33.3%  |
| Sector  | Manufacturing  | 93.0%  | 98.6%  | 93.0% | 55.4%  |
|         | Retail         | 97.1%  | 100.0% | 97.1% | N/A    |
|         | Other Services | 94.4%  | 100.0% | 96.5% | N/A    |
| Overall | Panama 2025    | 94.7%  | 99.6%  | 95.7% | 55.4%  |

Notes: the rates are calculated as follows. The number of responses with informative content in the respective variable (or combination of variables in the case of TFP) is divided by the same number plus the number of responses that are "don't know" (code -9) or refusal (code -8)