

The Madagascar 2022 World Bank Enterprise Survey Implementation Report

I. Introduction

This document provides information on the World Bank Enterprise Surveys (WBES) implemented in Madagascar between March and December 2022. 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 currently cover over 180,000 firms in 154 countries with a total of 306 surveys since 2006. 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.¹

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.² 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 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).³ For regional coverage within a country, the WBES has national coverage.

¹ A "panel interview" refers to an interview with a business that was also interviewed in the previous WBES.

² The Sampling Note is available at:

https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/Sampling_Note-Consolidated-2-16-22.pdf. For further methodological background see, Richard L. Scheaffer; Mendenhall, W.; Lyman, R., "Elementary Survey Sampling", Fifth Edition.

³ The WBES universe includes: all manufacturing (ISIC 4.0 codes 10-32), services (ISIC 4.0 codes 33, 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 Stratification Categories

The Madagascar 2022 WBES uses the following stratification categories:

- **Industry: 6 categories:**
 - Within manufacturing: Food, Garments, and Other Manufacturing
 - Within services: Wholesale, Retail, and Other Services
- **Size: 3 categories:** Small (5 to 19 employees), Medium (20 to 99 employees), and Large (100 or more employees).
- **Region: 8 categories:** Analamanga; Anosy; Atsimo Andrefana; Atsinanana; Boeni; Diana; Sava; and Vakinankaratra

Industry strata for the manufacturing sector were selected by their contribution to total value added using UNIDO INSTAT 4, available as of summer 2021. The manufacturing sectors stratified separately represent 16% of total value added with the rest of sectors grouped into a residual, "Other Manufacturing", stratum. By number of establishments, the manufacturing sectors represent 19% of the whole ES universe.

The strata for the services sector were selected by contribution to total number of establishments, using the Economic Census from INSTAT. The sectors stratified separately represent 46% of the total number of establishments in the services sector, and 37% of the whole ES universe.

Region strata of the Madagascar 2022 WBES were selected based on administrative divisions.

II.2 Universe

The universe of inference includes all formal (i.e., registered) private sector businesses (with at least 1% private ownership) and with at least five employees. In terms of sectoral criteria, all manufacturing businesses (ISIC Rev 3.1. codes 15-37) are eligible; for services businesses, those corresponding to the ISIC Rev 3.1 codes 45, 50-52, 55, 60-64, and 72 are included in the Enterprise Surveys. Cooperatives and collectives are excluded from the Enterprise Surveys. All eligible establishments must be registered with the registration agency. In the case of Madagascar, the definition of registration with INSTAT or EDBM was used. 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 Madagascar 2022 WBES, the universe table, shown in Table 1 below, was obtained from INSTAT.

The frame obtained from INSTAT is the complete count of all establishments located within the geographical boundaries of the country. The sub-set corresponding to the standard ES universe was used.

II.3 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 Madagascar 2022 WBES was constructed from the following sources (see Table 2). There was no Panel Sampling Frame. The Fresh Sampling Frame, i.e., list of establishments that are in the WBES universe, (ISIC 3.1 codes 15-37, 45, 50-52, 55, 60-64, and 72), was obtained from INSTAT.

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 weights are computed the sampling frame that is also the universe). Table 4 reports response outcomes.

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.⁴ 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*.⁵ The original survey design for the Madagascar 2022 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 Madagascar 2022 WBES were conducted between March and December 2022. The interviews were conducted in the following languages: English, Malagasy, and French. For monetary variables, the currency was Malagasy Ariary.

⁴ Additional constraints are also considered in the design stage. These are generally practical and include, for example, having a sufficient number of available contacts in the sample.

⁵ The *Enterprise Surveys Manual and Guide* is available at:

<https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/Enterprise-Surveys-Manual-and-Guide.pdf>

III.1 Questionnaire

The standard WBES questionnaire covers several topics regarding the business environment and business performance. These topics include general firm characteristics, infrastructure, sales and supplies, 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*.

The questionnaire implemented in the Madagascar 2022 WBES included additional questions covering management practices, worker skills, and technology adoption. These questions were selected in collaboration with the members of the WB local country team.

III.2 Contractor

The fieldwork for the Madagascar 2022 WBES was implemented by Dahlberg Research. 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 can be assumed to be eligible for the WBES with the total number of contacted establishments in the frame. In other words:

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

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 Madagascar 2022 WBES and across its stratification levels.

III.5 Achieved Sample

Tables 6 provide count of the WBES interviews collected for each stratification cell, i.e., broken down by industry, establishment size, and region.

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 firm 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 Madagascar 2022 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 7-9 report estimated universe based on the respective assumption.

Assumption	Eligibility codes for inclusion in the WBES universe
Strict	1,2,3,4,16
Median	1,2,3,4,16,10,11,13
Weak	1,2,3,4,16,10,11,13,91,92,93,94,12

For descriptions of each eligibility code, see Table 4.

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.⁶ 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:

⁶ The WBES questionnaire is organized so that there is always some entry in the database when the question was posed. An empty entry means that the question was not asked to the corresponding respondent, typically, due to skip patterns, or lack of applicability of that question in general.

- 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 10 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. The variables that are country or region specific are generally named using a prefix in capital letters. These country-specific variables are generally not available beyond the specific country or region where they were implemented. For the Madagascar 2022 WBES, these variables use prefixes MG. 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.

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, there are no panel establishments in Madagascar 2022. 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).

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. In cases when the question was posed, some entry is provided, including don't know, which is an example of item non-response.

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
- 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/methodology/current-projects>
- The list of all WBES databases and detailed information about each is available here:
<https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/DataDetails.xls>
- The description of the WBES indicators is available at:
<https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/Indicator-Description.pdf>

References

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- Deaton, Angus, The Analysis of Household Surveys, Baltimore, Maryland: Johns Hopkins University Press, 1998.
- Levy, Paul S. and Stanley Lemeshow, Sampling of Populations: Methods and Applications, New York, New York: John Wiley & Sons, 1999.
- Lohr, Sharon L. Sampling: Design and Techniques, Boston, Massachusetts: Brooks/Cole, 1999.
- Scheaffer, Richard L.; Mendenhall, W.; Lyman, R., Elementary Survey Sampling, Fifth Edition, 1996.

Fact Sheet

Source of Universe Table	INSTAT
Source of Sampling Frame	INSTAT
Stratification sectors	Manufacturing of: Food, Garments, Other Manufacturing; Wholesale, Retail, and Other Services;
Stratification sizes	Small (5 to 19 employees), Medium (20 to 99 employees), Large (100 or more), and Unknown
Stratification regions	Analamanga; Anosy; Atsimo Andrefana; Atsinanana; Boeni; Diana; Sava; and Vakinankaratra
Contractor	Dahlberg Research
Fieldwork dates	March – December 2022
Interview languages	English, Malagasy, and French
Survey software	Survey Solution
Currency for nominal variables	Malagasy Ariary
Reference fiscal year	2021 and 2022
Sample Size	Total: Fresh: Panel:
Survey response rates	Yield: Response rate: Frame quality:
Item response rates	d2: n2a: 11: all TFP variables:
Additional topics covered in the questionnaire	Management practices, workers skills, and technology adoption
Additional surveys available (if any)	Micro Enterprise Survey, covering nine cities

Tables

Table 1: Madagascar 2022 WBES Universe

		Food	Garments	Other Manufacturing	Retail	Wholesale	Other Services	Grand Total
Analamanga	Small (5-19)	50	100	223	596	635	1,505	4,160
Analamanga	Medium (20-99)	30	23	139	86	195	373	
Analamanga	Large (100 or more)	14	43	43	7	42	57	
Anosy	Small (5-19)	1	0	7	22	7	46	98
Anosy	Medium (20-99)	1	0	3	4	2	2	
Anosy	Large (100 or more)	0	0	0	0	3	0	
Atsimo Andrefana	Small (5-19)	8	1	9	36	6	68	158
Atsimo Andrefana	Medium (20-99)	0	0	9	7	10	5	
Atsimo Andrefana	Large (100 or more)	0	0	0	0	0	0	
Atsinanana	Small (5-19)	25	9	28	103	251	405	905
Atsinanana	Medium (20-99)	1	0	14	4	21	27	
Atsinanana	Large (100 or more)	0	0	4	4	5	3	
Boeni	Small (5-19)	12	5	30	99	107	251	582
Boeni	Medium (20-99)	5	0	10	5	8	44	
Boeni	Large (100 or more)	2	1	2	0	1	0	
Diana	Small (5-19)	2	1	14	30	7	130	233
Diana	Medium (20-99)	2	0	2	7	0	30	
Diana	Large (100 or more)	2	0	1	4	0	1	
Sava	Small (5-19)	0	0	3	2	3	22	33
Sava	Medium (20-99)	0	0	0	1	2	0	
Sava	Large (100 or more)	0	0	0	0	0	0	
Vakinankaratra	Small (5-19)	29	6	89	44	52	177	439
Vakinankaratra	Medium (20-99)	1	0	12	2	5	13	
Vakinankaratra	Large (100 or more)	4	0	2	0	0	2	
		188	188	646	1063	1361	3163	6608

Source: *INSTAT*.

Table 2: Madagascar 2022 WBES Sample Frame (Fresh and Panel Combined)

		Food	Garments	Other Manufacturing	Retail	Wholesale	Other Services	Grand Total
Analamanga	Small (5-19)	47	55	186	286	507	797	2,642
Analamanga	Medium (20-99)	27	19	126	40	169	201	
Analamanga	Large (100 or more)	14	37	42	7	37	45	
Anosy	Small (5-19)	1	0	7	22	7	38	85
Anosy	Medium (20-99)	1	0	1	1	2	2	
Anosy	Large (100 or more)	0	0	0	0	3	0	
Atsimo Andrefana	Small (5-19)	8	1	2	21	6	47	99
Atsimo Andrefana	Medium (20-99)	0	0	2	4	5	3	
Atsinanana	Small (5-19)	25	9	28	89	252	384	867
Atsinanana	Medium (20-99)	1	0	14	4	21	27	
Atsinanana	Large (100 or more)	0	0	4	1	5	3	
Boeni	Small (5-19)	12	3	29	54	95	220	467
Boeni	Medium (20-99)	3	0	9	5	8	23	
Boeni	Large (100 or more)	2	1	2	0	1	0	
Diana	Small (5-19)	1	1	14	19	7	64	130
Diana	Medium (20-99)	1	0	2	2	0	15	
Diana	Large (100 or more)	1	0	1	1	0	1	
Sava	Small (5-19)	0	0	3	2	3	11	23
Sava	Medium (20-99)	0	0	0	1	3	0	
Vakinakaratra	Small (5-19)	29	6	84	44	51	174	424
Vakinakaratra	Medium (20-99)	1	0	7	2	5	13	
Vakinakaratra	Large (100 or more)	4	0	2	0	0	2	
		178	132	565	605	1,187	2,070	4,737

Source: *INSTAT*

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

		Food	Garments	Other Manufacturing	Retail	Wholesale	Other Services	Grand Total
Analamanga	Small (5-19)	5	21	7	4	6	4	167
Analamanga	Medium (20-99)	5	7	12	11	19	13	
Analamanga	Large (100 or more)	10	22	7	2	7	5	
Anosy	Small (5-19)	1	0	2	2	2	4	18
Anosy	Medium (20-99)	1	0	1	1	1	1	
Anosy	Large (100 or more)	0	0	0	0	2	0	
Atsimo Andrefana	Small (5-19)	6	1	2	6	2	11	39
Atsimo Andrefana	Medium (20-99)	0	0	2	3	4	2	
Atsimo Andrefana	Large (100 or more)	0	0	0	0	0	0	
Atsinanana	Small (5-19)	2	2	2	5	4	7	53
Atsinanana	Medium (20-99)	1	0	9	2	7	2	
Atsinanana	Large (100 or more)	0	0	3	1	4	2	
Boeni	Small (5-19)	2	2	3	11	12	9	74
Boeni	Medium (20-99)	2	0	7	4	6	12	
Boeni	Large (100 or more)	1	1	1	0	1	0	
Diana	Small (5-19)	1	1	4	5	3	20	54
Diana	Medium (20-99)	1	0	2	2	0	11	
Diana	Large (100 or more)	1	0	1	1	0	1	
Sava	Small (5-19)	0	0	2	1	2	4	13
Sava	Medium (20-99)	0	0	0	1	3	0	
Sava	Large (100 or more)	0	0	0	0	0	0	
Vakinakaratra	Small (5-19)	2	2	3	2	3	3	35
Vakinakaratra	Medium (20-99)	1	0	5	1	4	4	
Vakinakaratra	Large (100 or more)	3	0	1	0	0	1	
		45	59	76	65	92	116	453

Table 4: Response Outcomes

- Modified table, to include eligibility codes, counts and shares

		Totals	Rates relative to total contacted
Overall	Contacts available in frame	4,737	
	Issued	1,814	
	Contacted	1,517	
Screening phase	Eligibles	987	65.1%
	Assumed eligibles	1,038	68.4%
	Screeners refusals	41	2.7%
	Ineligible + out of target	115	7.6%
	Unobtainables	359	23.7%
Interview phase (only if eligible)	Interview refusals	255	16.8%
	Complete interviews	402	26.5%

Table 5: Survey Yield Rates

Stratification	Yield	Survey response rate	Frame quality
Fresh	26.8%	38.7%	69.1%
Small (5-19)	28.6%	44.5%	64.3%
Medium (20-99)	23.4%	32.0%	73.2%
Large (100+)	30.6%	42.0%	72.7%
Analamanga	22.9%	31.7%	72.4%
Anosy	8.7%	63.6%	13.8%
Atsimo Andrefana	46.0%	53.7%	85.7%
Atsinanana	27.5%	29.2%	94.0%
Boeni	28.7%	64.1%	44.8%
Diana	45.2%	67.1%	67.3%
Sava	31.8%	70.0%	45.5%
Vakinankaratra	38.6%	52.5%	73.5%
Food	27.8%	41.1%	67.7%
Garments	32.0%	49.4%	64.8%
Other Manufacturing	25.4%	34.8%	73.1%
Retail	29.2%	52.4%	55.7%
Overall	26.8%	38.7%	69.1%

Notes: the rates are calculated as follows. Yield is 26.8%. Survey response rate is 38.7%. Frame quality is measured by 69.1%. By definition of these measures, yield is the product of survey response rate and frame quality.

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

		Food	Garments	Other Manufacturing	Retail	Wholesale	Other Services	Grand Total
Analamanga	Small (5-19)	5	23	9	4	9	6	189
Analamanga	Medium (20-99)	7	2	17	16	21	19	
Analamanga	Large (100 or more)	4	8	15	2	9	13	
Anosy	Small (5-19)	0	0	2	1	0	3	7
Anosy	Medium (20-99)	0	0	0	1	0	0	
Atsimo Andrefana	Small (5-19)	4	1	2	6	2	9	29
Atsimo Andrefana	Medium (20-99)	0	0	1	0	2	2	
Atsinanana	Small (5-19)	3	3	2	3	5	7	50
Atsinanana	Medium (20-99)	0	0	7	1	7	6	
Atsinanana	Large (100 or more)	0	0	0	1	3	2	
Boeni	Small (5-19)	2	1	2	8	9	7	41
Boeni	Medium (20-99)	2	0	1	0	2	5	
Boeni	Large (100 or more)	0	0	1	0	1	0	
Diana	Small (5-19)	1	0	3	6	2	21	47
Diana	Medium (20-99)	1	0	2	2	0	6	
Diana	Large (100 or more)	1	0	0	1	0	1	
Sava	Small (5-19)	0	0	0	0	0	5	7
Sava	Medium (20-99)	0	0	0	0	2	0	
Vakinakaratra	Small (5-19)	4	3	3	2	2	3	32
Vakinakaratra	Medium (20-99)	1	0	4	0	2	4	
Vakinakaratra	Large (100 or more)	2	0	0	0	0	2	
		37	41	71	54	78	121	402

Table 7: Weak Universe Estimates

		Food	Garments	Other Manufacturing	Retail	Wholesale	Other Services	Food and Other Manufacturing	Garments and Other Mfg	Retail and Wholesale	Wholesale and Other Services	Grand Total
Analamanga	Small (5-19)	56	111	301	415	824	1041	0	0	0	0	3745
Analamanga	Medium (20-99)	41	22	109	63	240	276	0	0	0	0	
Analamanga	Large (100 or more)	12	37	38	6	45	47	0	0	0	0	
Analamanga	Medium and Large (20+)	0	0	61	0	0	0	0	0	0	0	
Anosy	Small (5-19)	0	0	0	20	0	8	0	0	0	0	97
Anosy	Medium (20-99)	0	0	0	3	0	0	0	0	0	0	
Anosy	Small and Medium (5-99)	0	0	0	0	0	0	9	0	0	0	
Anosy	Small, Medium, and Large (5+)	0	0	0	0	0	0	0	0	0	57	
Atsimo Andrefana	Small (5-19)	5	1	4	0	0	23	0	0	0	0	127
Atsimo Andrefana	Medium (20-99)	0	0	0	0	18	2	0	0	0	0	
Atsimo Andrefana	Small and Medium (5-99)	0	0	0	26	4	44	0	0	0	0	
Atsinanana	Small (5-19)	0	7	27	86	253	381	0	0	0	0	863
Atsinanana	Medium (20-99)	0	0	0	4	26	28	0	0	0	0	
Atsinanana	Large (100 or more)	0	0	0	2	5	3	0	0	0	0	
Atsinanana	Small and Medium (5-99)	22	0	0	0	0	0	0	0	0	0	
Atsinanana	Medium and Large (20+)	0	0	19	0	0	0	0	0	0	0	
Boeni	Small (5-19)	8	0	0	11	98	168	0	23	0	0	386
Boeni	Medium (20-99)	0	0	6	0	6	22	6	0	0	0	
Boeni	Large (100 or more)	0	0	0	0	1	0	0	2	0	0	
Boeni	Small and Medium (5-99)	0	0	0	31	0	0	0	0	0	0	
Boeni	Medium and Large (20+)	3	0	0	0	0	0	0	0	0	0	
Diana	Small (5-19)	4	0	16	23	10	90	0	0	0	0	191
Diana	Medium (20-99)	5	0	6	6	0	22	0	0	0	0	
Diana	Large (100 or more)	4	0	0	2	0	1	0	0	0	0	
Diana	Medium and Large (20+)	0	0	2	0	0	0	0	0	0	0	
Sava	Small (5-19)	0	0	0	0	0	12	0	0	0	0	32
Sava	Medium (20-99)	0	0	0	0	13	0	0	0	0	0	
Sava	Small and Medium (5-99)	0	0	0	0	0	0	0	0	7	0	
Vakinankaratra	Small (5-19)	26	5	80	0	47	169	0	0	0	3	405
Vakinankaratra	Medium (20-99)	1	0	0	0	5	14	0	0	0	0	
Vakinankaratra	Large (100 or more)	4	0	0	0	0	2	0	0	0	0	
Vakinankaratra	Small and Medium (5-99)	0	0	1	40	0	0	0	0	0	0	
Vakinankaratra	Medium and Large (20+)	0	0	8	0	0	0	0	0	0	0	
Atsimo Andrefana and Anosy	Medium (20-99)	0	0	8	0	0	0	0	0	0	0	8
Diana and Sava	Small (5-19)	0	0	0	0	0	0	0	13	0	0	13
		191	183	686	739	1596	2351	15	37	7	60	5867

Table 8: Median Universe Estimates

		Food	Garments	Other Manufacturing	Retail	Wholesale	Other Services	Food and Other Manufacturing	Garments and Other Mfg	Retail and Wholesale	Wholesale and Other Services	Grand Total
Analamanga	Small (5-19)	46	104	269	323	679	930	0	0	0	0	3241
Analamanga	Medium (20-99)	38	18	91	51	194	260	0	0	0	0	
Analamanga	Large (100 or more)	11	33	37	4	39	49	0	0	0	0	
Analamanga	Medium and Large (20+)	0	0	63	0	0	0	0	0	0	0	
Anosy	Small (5-19)	0	0	0	1	0	8	0	0	0	0	15
Anosy	Medium (20-99)	0	0	0	3	0	0	0	0	0	0	
Anosy	Small and Medium (5-99)	0	0	0	0	0	0	2	0	0	0	
Anosy	Small, Medium, and Large (5+)	0	0	0	0	0	0	0	0	0	1	
Atsimo Andrefana	Small (5-19)	5	1	4	0	0	26	0	0	0	0	124
Atsimo Andrefana	Medium (20-99)	0	0	0	0	17	2	0	0	0	0	
Atsimo Andrefana	Small and Medium (5-99)	0	0	0	22	4	43	0	0	0	0	
Atsinanana	Small (5-19)	0	7	28	57	216	420	0	0	0	0	853
Atsinanana	Medium (20-99)	0	0	0	3	25	35	0	0	0	0	
Atsinanana	Large (100 or more)	0	0	0	2	5	4	0	0	0	0	
Atsinanana	Small and Medium (5-99)	23	0	0	0	0	0	0	0	0	0	
Atsinanana	Medium and Large (20+)	0	0	27	0	0	0	0	0	0	0	
Boeni	Small (5-19)	4	0	0	10	60	99	0	9	0	0	226
Boeni	Medium (20-99)	0	0	4	0	3	17	6	0	0	0	
Boeni	Large (100 or more)	0	0	0	0	1	0	0	1	0	0	
Boeni	Small and Medium (5-99)	0	0	0	10	0	0	0	0	0	0	
Boeni	Medium and Large (20+)	2	0	0	0	0	0	0	0	0	0	
Diana	Small (5-19)	4	0	15	15	8	75	0	0	0	0	159
Diana	Medium (20-99)	4	0	5	5	0	19	0	0	0	0	
Diana	Large (100 or more)	4	0	0	2	0	1	0	0	0	0	
Diana	Medium and Large (20+)	0	0	2	0	0	0	0	0	0	0	
Sava	Small (5-19)	0	0	0	0	0	8	0	0	0	0	22
Sava	Medium (20-99)	0	0	0	0	13	0	0	0	0	0	
Sava	Small and Medium (5-99)	0	0	0	0	0	0	0	0	1	0	
Vakinankaratra	Small (5-19)	20	3	65	0	31	145	0	0	0	3	323
Vakinankaratra	Medium (20-99)	1	0	0	0	4	13	0	0	0	0	
Vakinankaratra	Large (100 or more)	4	0	0	0	0	2	0	0	0	0	
Vakinankaratra	Small and Medium (5-99)	0	0	1	20	0	0	0	0	0	0	
Vakinankaratra	Medium and Large (20+)	0	0	9	0	0	0	0	0	0	0	
Atsimo Andrefana and Anosy	Medium (20-99)	0	0	8	0	0	0	0	0	0	0	8
Diana and Sava	Small (5-19)	0	0	0	0	0	0	0	3	0	0	3
		167	166	631	528	1300	2156	8	13	1	4	4973

Table 9: Strict Universe Estimates

		Food	Garments	Other Manufacturing	Retail	Wholesale	Other Services	Food and Other Manufacturing	Garments and Other Mfg	Retail and Wholesale	Wholesale and Other Services	Grand Total
Analamanga	Small (5-19)	44	101	266	322	666	896	0	0	0	0	3178
Analamanga	Medium (20-99)	37	17	93	51	193	257	0	0	0	0	
Analamanga	Large (100 or more)	11	31	38	4	38	48	0	0	0	0	
Analamanga	Medium and Large (20+)	0	0	65	0	0	0	0	0	0	0	
Anosy	Small (5-19)	0	0	0	1	0	8	0	0	0	0	15
Anosy	Medium (20-99)	0	0	0	3	0	0	0	0	0	0	
Anosy	Small and Medium (5-99)	0	0	0	0	0	0	2	0	0	0	
Anosy	Small, Medium, and Large (5+)	0	0	0	0	0	0	0	0	0	1	
Atsimo Andrefana	Small (5-19)	4	1	4	0	0	24	0	0	0	0	122
Atsimo Andrefana	Medium (20-99)	0	0	0	0	17	2	0	0	0	0	
Atsimo Andrefana	Small and Medium (5-99)	0	0	0	22	3	44	0	0	0	0	
Atsinanana	Small (5-19)	0	6	27	53	203	391	0	0	0	0	801
Atsinanana	Medium (20-99)	0	0	0	3	25	36	0	0	0	0	
Atsinanana	Large (100 or more)	0	0	0	2	6	4	0	0	0	0	
Atsinanana	Small and Medium (5-99)	22	0	0	0	0	0	0	0	0	0	
Atsinanana	Medium and Large (20+)	0	0	23	0	0	0	0	0	0	0	
Boeni	Small (5-19)	3	0	0	9	52	80	0	6	0	0	185
Boeni	Medium (20-99)	0	0	3	0	3	14	3	0	0	0	
Boeni	Large (100 or more)	0	0	0	0	1	0	0	1	0	0	
Boeni	Small and Medium (5-99)	0	0	0	8	0	0	0	0	0	0	
Boeni	Medium and Large (20+)	1	0	0	0	0	0	0	0	0	0	
Diana	Small (5-19)	4	0	16	13	7	67	0	0	0	0	148
Diana	Medium (20-99)	4	0	5	5	0	17	0	0	0	0	
Diana	Large (100 or more)	4	0	0	2	0	1	0	0	0	0	
Diana	Medium and Large (20+)	0	0	1	0	0	0	0	0	0	0	
Sava	Small (5-19)	0	0	0	0	0	7	0	0	0	0	18
Sava	Medium (20-99)	0	0	0	0	10	0	0	0	0	0	
Sava	Small and Medium (5-99)	0	0	0	0	0	0	0	0	1	0	
Vakinankaratra	Small (5-19)	16	3	51	0	24	112	0	0	0	3	253
Vakinankaratra	Medium (20-99)	1	0	0	0	3	11	0	0	0	0	
Vakinankaratra	Large (100 or more)	3	0	0	0	0	2	0	0	0	0	
Vakinankaratra	Small and Medium (5-99)	0	0	1	16	0	0	0	0	0	0	
Vakinankaratra	Medium and Large (20+)	0	0	7	0	0	0	0	0	0	0	
Atsimo Andrefana and Anosy	Medium (20-99)	0	0	8	0	0	0	0	0	0	0	8
Diana and Sava	Small (5-19)	0	0	0	0	0	0	0	2	0	0	2
		156	159	609	514	1251	2021	5	9	1	4	4729

Table 10: Item Response Rates

Stratification	d2	l1	n2a	all TFP variables
Fresh	85.3%	100.0%	83.3%	33.9%
Small (5-19)	90.8%	100.0%	88.2%	39.7%
Medium (20-99)	75.0%	100.0%	78.6%	28.1%
Large (100+)	75.0%	100.0%	67.9%	26.9%
Analamanga	87.8%	100.0%	83.1%	43.4%
Anosy	100.0%	100.0%	100.0%	0.0%
Atsimo Andrefana	100.0%	100.0%	100.0%	0.0%
Atsinanana	68.0%	100.0%	72.0%	50.0%
Boeni	85.4%	100.0%	78.0%	18.2%
Diana	91.5%	100.0%	87.2%	0.0%
Sava	100.0%	100.0%	100.0%	0.0%
Vakinankaratra	68.8%	100.0%	81.3%	0.0%
Food	63.0%	100.0%	74.1%	28.0%
Garments	84.2%	100.0%	78.9%	42.1%
Other Manufacturing	83.7%	100.0%	78.8%	34.7%
Retail	85.4%	100.0%	83.1%	N/A
Wholesale	85.1%	100.0%	89.4%	N/A
Other Services	90.7%	100.0%	86.4%	N/A
Overall	85.3%	100.0%	83.3%	33.9%

Notes: the rates are calculated as follows. The number of responses with codes "-9" (don't know) or "-8" (refusal) in the respective variable (or combination of variables in the case of TFP) is divided by total number of respondents of the survey.