

The New Zealand 2023 World Bank Enterprise Survey Implementation Report

I. Introduction

This document provides information on the World Bank Enterprise Surveys (WBES) implemented in New Zealand between May and November 2023. 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, 1996.

³ 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 Stratification Categories

The New Zealand 2023 WBES uses the following stratification categories:

- **Industry: 5 categories:**
 - Within manufacturing: Food, Other manufacturing
 - Within services: Retail, Hotels, and Other Services
- **Size: 3 categories:** Small (5 to 19 employees), Medium (20 to 99 employees), Large (100 or more employees)
- **Region: 3 categories:** Auckland; Rest of North Island; South Island

Industry strata for the manufacturing sector were selected by their contribution to total value added, to employment and to total number of establishments, using UNIDO INSTAT 4, available as of spring 2023. The food manufacturing represents 29%, 35% and 15% of total value added, employment, and number of establishments, respectively, with the rest of sectors grouped into a residual, "Other Manufacturing", stratum.

The strata for the services sector were selected by contribution to total number of employment, using information from the Statistics New Zealand (Stats NZ), available as of spring 2023. The Retail Trade stratified separately represent 23% of the total number of employees in the services sector, and 18% of the whole ES universe.

Region strata of the New Zealand 2023 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.

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 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 registration agency. 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 New Zealand 2023 WBES, the universe table, shown in Table 1 below, was obtained from the Stats NZ in March 2023, with some cells being slightly adjusted by the numbers of enterprises available in the sampling frame which is supplemented by a business database (Martins) in August 2023.

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 New Zealand 2023 WBES was constructed from the following sources (see counts of establishments in the frame in Table 2). The Sampling Frame was obtained primarily from Stats NZ. A random sample of approximately 8% of the ES universe (total 4,630 businesses) were drawn for each stratified sector at the request of the World Bank team. After all the contacts were exhausted, Research First Ltd., the selected vendor for survey implementation, purchased additional 12,194 business contacts from a business database supplier (Martins) on behalf of the World Bank team to supplement the frame by Stats NZ.

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 New Zealand 2023 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 New Zealand 2023 WBES were conducted between May and November 2023. The interviews were conducted in the following languages: English. For monetary variables, the currency was New Zealand dollar (NZD).

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 New Zealand 2023 WBES included additional questions tailored for the Business Ready Report covering infrastructure, trade, government regulations, finance, labor, and other topics.

III.2 Contractor

The fieldwork for the New Zealand 2023 WBES was implemented by Research First Limited. 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 New Zealand 2023 WBES and across its stratification levels.

III.5 Achieved Sample

Tables 6 and 7 provide count 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 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*.

For the New Zealand 2023 WBES, the following strata were combined due to lack of completed interviews in the corresponding subset of strata: medium and large firms were combined in: (i) Auckland, Food; (ii) Auckland, Retail; (iii) Auckland, Hotels; (iv) South Island, Retail; (v) South Island, Hotels. In addition, small, medium, and large firms were combined in: Rest of North Island, Hotels.

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 New Zealand 2023 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
Weak	1,2,3,4,10,11,13,91,92,93,94,12

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:

- 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.⁷

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 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.

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.

⁷ 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.

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>

Fact Sheet

Source of Universe Table	Stats NZ
Source of Sampling Frame	Stats NZ, Martins
Stratification sectors	Manufacturing of: Food, Other manufacturing; Retail, Hotels, and Other Services
Stratification sizes	Small (5 to 19 employees), Medium (20 to 99 employees) , and Large (100+)
Stratification regions	Auckland; Rest of North Island; South Island
Contractor	Research First Limited
Fieldwork dates	May – November 2023
Interview languages	English
Survey software	Survey Solutions
Currency for nominal variables	New Zealand dollar (NZD)
Reference fiscal year	2022 (24 obs.) and 2023 (334 obs.)
Sample Size	Total: 358 Fresh: 358
Survey response rates	Yield: 2.2% Response rate: 4.8% Frame quality: 47.9%
Item response rates	d2: 90.2% n2a: 76.5% 11: 99.7% all TFP vars.: 48.4%
Additional topics covered in the questionnaire	Questions related to the Business Ready report

Tables

Table 1: New Zealand 2023 WBES Universe

		Food	Other Manufacturing	Retail	Hotels	Other Services	Grand Total
Auckland	Small (5-19)	300	1422	2892	138	10914	20,619
Auckland	Medium (20-99)	123	648	576	57	2940	
Auckland	Large (100 or more)	33	78	111	6	381	
Rest of North Island	Small (5-19)	399	1836	3363	513	12324	23,283
Rest of North Island	Medium (20-99)	150	657	573	132	2805	
Rest of North Island	Large (100 or more)	69	84	147	6	225	
South Island	Small (5-19)	237	1194	2124	420	7827	14,967
South Island	Medium (20-99)	114	417	375	123	1797	
South Island	Large (100 or more)	54	45	96	6	138	
		1,479	6,381	10,257	1,401	39,351	58,869

Source: Stats NZ

Table 2: New Zealand 2023 WBES Sample Frame (Fresh and Panel Combined)

		Food	Other Manufacturing	Retail	Hotels	Other Services	Grand Total
Auckland	Small (5-19)	312	375	874	136	2035	6088
Auckland	Medium (20-99)	123	543	231	56	984	
Auckland	Large (100 or more)	34	79	109	7	190	
Rest of North Island	Small (5-19)	310	964	1135	445	1469	6007
Rest of North Island	Medium (20-99)	148	433	171	128	334	
Rest of North Island	Large (100 or more)	71	85	145	6	163	
South Island	Small (5-19)	243	1116	703	507	568	4729
South Island	Medium (20-99)	113	358	146	122	504	
South Island	Large (100 or more)	54	44	97	4	150	
		1,408	3,997	3,611	1,411	6,397	16,824

Source: Stats NZ

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

		Food	Other Manufacturing	Retail	Hotels	Other Services	Grand Total
Auckland	Small (5-19)	10	11	14	17	19	200
Auckland	Medium (20-99)	23	18	6	11	5	
Auckland	Large (100 or more)	7	16	22	2	19	
Rest of North Island	Small (5-19)	4	9	13	14	24	200
Rest of North Island	Medium (20-99)	17	12	3	25	5	
Rest of North Island	Large (100 or more)	14	17	29	2	12	
South Island	Small (5-19)	11	10	8	22	14	200
South Island	Medium (20-99)	23	18	6	25	3	
South Island	Large (100 or more)	11	9	19	2	19	
		120	120	120	120	120	600

Table 4: Response Outcomes

		Totals	Rates relative to total contacted
Overall	Contacts available in frame	16,824	
	Issued	16,520	
	Contacted	16,520	
Screening phase	Eligibles	790	4.8%
	Screeners refusals	6,801	41.2%
	Assumed eligibles	7,909	47.9%
	Ineligible + out of target	1,949	11.8%
	Unobtainables	6,980	42.3%
Interview phase	Interview refusals	432	2.6%
(only if eligible)	Complete interviews	358	2.2%

Table 5: Survey Yield Rates

		Yield	Survey response rate	Frame quality
Panel	Fresh	2.2%	4.6%	47.9%
Size	Small (5-19)	1.8%	3.5%	52.2%
	Medium (20-99)	3.0%	6.9%	43.9%
	Large (100+)	2.4%	10.0%	24.2%
Region	Auckland	2.1%	4.8%	43.2%
	Rest of North Island	2.2%	4.1%	53.7%
	South Island	2.3%	4.9%	46.4%
Sector	Food	2.4%	6.8%	35.6%
	Other Manufacturing	2.7%	4.6%	59.1%
	Retail	1.4%	3.0%	46.6%
	Hotels	1.5%	4.4%	34.0%
	Other Services	2.4%	5.1%	47.9%
Overall	New Zealand 2023	2.2%	4.6%	47.9%

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

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

		Food	Other Manufacturing	Retail	Hotels	Other Services	Grand Total
Auckland	Small (5-19)	7	13	9	5	39	125
Auckland	Medium (20-99)	2	24	4	1	17	
Auckland	Large (100 or more)	0	3	0	0	1	
Rest of North Island	Small (5-19)	2	11	10	8	42	133
Rest of North Island	Medium (20-99)	7	20	4	0	10	
Rest of North Island	Large (100 or more)	3	8	7	0	1	
South Island	Small (5-19)	5	12	11	5	17	100
South Island	Medium (20-99)	6	8	4	2	23	
South Island	Large (100 or more)	2	1	0	0	4	
		34	100	49	21	154	358

Table 7: Weak Universe Estimates

		Food	Other Manufacturing	Retail	Hotels	Other Services	Grand Total
Auckland	Small (5-19)	273	1346	2473	111	10175	18983
Auckland	Medium (20-99)	0	643	0	0	2874	
Auckland	Large (100 or more)	0	67	0	0	318	
Auckland	Medium and Large (20+)	124	0	531	47	0	
Rest of North Island	Small (5-19)	339	1687	2791	0	11151	20768
Rest of North Island	Medium (20-99)	134	633	499	0	2661	
Rest of North Island	Large (100 or more)	54	70	109	0	182	
Rest of North Island	All size (5+)	0	0	0	459	0	
South Island	Small (5-19)	206	1096	1761	397	7075	13386
South Island	Medium (20-99)	101	401	0	0	1703	
South Island	Large (100 or more)	41	37	0	0	121	
South Island	Medium and Large (20+)	0	0	354	91	0	
		1273	5980	8519	1105	36260	53137

Table 8: Median Universe Estimates

		Food	Other Manufacturing	Retail	Hotels	Other Services	Grand Total
Auckland	Small (5-19)	110	831	1333	46	5163	9408
Auckland	Medium (20-99)	0	345	0	0	1267	
Auckland	Large (100 or more)	0	21	0	0	83	
Auckland	Medium and Large (20+)	29	0	168	11	0	
Rest of North Island	Small (5-19)	174	1335	1926	0	7248	13322
Rest of North Island	Medium (20-99)	60	435	299	0	1503	
Rest of North Island	Large (100 or more)	14	28	39	0	61	
Rest of North Island	All size (5+)	0	0	0	199	0	
South Island	Small (5-19)	92	750	1051	183	3977	7368
South Island	Medium (20-99)	39	239	0	0	832	
South Island	Large (100 or more)	9	13	0	0	35	
South Island	Medium and Large (20+)	0	0	124	25	0	
		528	3997	4939	465	20169	30098

Table 9: Strict Universe Estimates

		Food	Other Manufacturing	Retail	Hotels	Other Services	Grand Total
Auckland	Small (5-19)	15	51	61	5	370	773
Auckland	Medium (20-99)	0	40	0	0	171	
Auckland	Large (100 or more)	0	5	0	0	23	
Auckland	Medium and Large (20+)	10	0	20	3	0	
Rest of North Island	Small (5-19)	23	81	88	0	517	1069
Rest of North Island	Medium (20-99)	15	50	26	0	202	
Rest of North Island	Large (100 or more)	7	8	7	0	17	
Rest of North Island	All size (5+)	0	0	0	27	0	
South Island	Small (5-19)	16	60	64	25	375	788
South Island	Medium (20-99)	13	36	0	0	148	
South Island	Large (100 or more)	6	4	0	0	13	
South Island	Medium and Large (20+)	0	0	19	9	0	
		105	335	285	69	1836	2630

Table 10: Item Response Rates

	Screener/Interview	d2	l1	n2a	all TFP variables
Panel	Fresh	90.2%	99.7%	76.5%	48.4%
Size	Small (5-19)	89.9%	100.0%	78.4%	48.5%
	Medium (20-99)	90.2%	99.2%	72.4%	46.5%
	Large (100+)	91.7%	100.0%	80.6%	52.6%
Region	Auckland	86.4%	99.2%	76.0%	43.6%
	Rest of North Island	91.7%	100.0%	78.9%	54.1%
	South Island	93.0%	100.0%	74.0%	47.4%
Sector	Food	85.7%	100.0%	85.7%	52.4%
	Other Manufacturing	90.5%	98.6%	75.7%	47.3%
	Retail	87.0%	100.0%	71.7%	N/A
	Hotels	95.2%	100.0%	66.7%	N/A
	Other Services	90.8%	100.0%	78.1%	N/A
Overall	New Zealand 2023	90.2%	99.7%	76.5%	48.4%

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).