

Minnesota Manufacturing Business Conditions Survey Methodology – Winter 2002

The Minnesota Directory of Manufacturers provided the population of 9,973 manufacturing businesses for the survey. Businesses were categorized by size (i.e., small with less than 50 employees, medium with 50 to 249 employees and large with 250 or more employees). These categories created three groups of manufacturers where independent, random samples were taken.

Since 80 percent of all manufacturing businesses are small (less than 50 employees), it is very likely that a simple random sample would draw mostly small businesses and very few large businesses. Yet, 52 percent of manufacturing jobs are provided by the few large businesses, compared to only 17 percent of jobs provided by all small businesses. Hence, stratified random sampling was utilized by drawing independent samples from each of the three groups. Each group consisted of 330 randomly chosen businesses for a total sample of 990 businesses.

Two mailings of a post card survey were sent to each of the selected businesses. The first mailing was on February 5th and the second mailing went out to businesses that had not responded by March 8th. The cutoff for survey responses was March 19th. A total of 288 usable surveys were received, for a response rate of 29 percent. Response rates for the different sample groups ranged from 23 percent to 31 percent. Of the usable surveys, 32 were from respondents indicating that their specific location had no manufacturing on site. An additional 25 surveys were returned as undeliverable or were unusable.

Survey results were tabulated for all manufacturers and for the three groups of manufacturers which reflect business size. The two sets of results reflect: 1) Results representative of manufacturing businesses, where each business in the population was considered equally; and 2) Results representative of employment at Minnesota's manufacturing businesses. Weighting for the first set of results simply re-balanced the results to account for the stratified sampling. These results are reflective of Minnesota's manufacturing businesses, with each business being considered as an equal to all others.

Weighting for the second set of results was based on employment at the respondent's site. Small, medium and large businesses were weighted according to their size group's representation of employment among Minnesota's manufacturers. For example, while large businesses accounted for a total of only four percent of the weight in the first set of results (i.e., business weights), they account for 52 percent of the weight in the second set of results (i.e., employment weights). These results are more reflective of Minnesota's overall manufacturing business conditions.

Confidence intervals for sampling error were calculated for results presented in each of the eight tables, and were rounded to the nearest whole percent. The 95 percent confidence interval for the table of results for all manufacturers is plus or minus 3 percentage points. Confidence intervals for results in all other tables are greater, since they are based on sub-groups of the 256 total respondents and smaller sample groups are subject to greater sampling error. Results are also subject to errors introduced by other factors such as the wording of questions and differences between survey respondents and non-respondents.