

PAPER : Monte Carlo estimation in RCPS with Weighting Adjustment
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The paper aimed to illustrate the effect of weight adjustment on estimates that we generate from a nation wide survey, the Rice and Corn Production Survey (RCPS). The purpose of doing the simulation exercise, to illustrate the effects on the properties of the estimates, reinforced what most survey statisticians would say about non-response. Most of the textbooks in sampling techniques would also state the same, that is, non-adjustment of the weights due to non-response would indeed lead to underestimation.

Such concept can be illustrated in the following table:

PROVINCE	PROD'N * 'x1 (1)	n ₁ (2)	n ₁ ' (3)	W _{1i} (4)	W _{2i} (2)(3) (5)	W _i (4)*(5) (6)	W _{1i} X ₁ (4)*(1) (7)	W _i X _i (6)*(1) (8)
Province A	975.00	300	264	3	1.14	3.42	2,926.80	3,336.55
Province B	762.50	770	693	6	1.11	6.66	4,575.00	5,078.25
Province C	121.70	95	71	2	1.34	2.68	243.40	326.16
TOTAL	1,858.00	1,165	1,028				7,745.20	8,740.96

*in thousand metric tons; more so, the values are fictitious

Without the weights, the total production of the 3 provinces identified in the table is 1.8 million metric tons. Incorporating the sampling weights, the estimated total production is 7.7 million metric tons. Hence, the value without the weights is way below the estimate with weights. Adjusting the weighted estimates due to non-response will lead to an estimate of 8.7 million metric tons for the total production. And with this estimate, 7.7 million metric tons underestimated the true total production.

With this illustration, the effect of non-adjustment of the weights due to non-response is clearly seen even without the simulation exercise. Hence, adjusting the weights accordingly due to non-response is a must in survey data analysis.