

Title: Estimating the Proportion of Vitamin A deficiency Among Children Aged 6 Months to 5 Years

Author: Allan A. Gulles

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Abstract:

Vitamin A deficiency (VAD) is the leading cause of preventable blindness among children and increases the risk of disease and death from severe infections according to the World Health Organization. In this study, estimates of the proportion of vitamin A deficiency among children aged 6 months to 5 years at the provincial level were obtained using direct and indirect estimation techniques, using the 6<sup>th</sup> national Nutrition Survey (NNS) data. The direct estimates were found to be unreliable since estimates in only 5 provinces have a coefficient of variation of at most 10%. Indirect estimation techniques were used to improve the reliability of the estimates. The indirect estimation techniques, specifically the empirical best linear unbiased prediction (EBLUP) with regression synthetic estimates as the model-based estimates were used. The regression synthetic estimation models evaluated are: Ordinary Least Squares (OLS) regression, Principal Component regression (PCR), Poisson Regression, and Mixed Model with province as random effect. The regression technique using mixed model with province as random effect component obtained estimates that are all reliable since the coefficient of variation is at most 2.56% for all the provinces. The EBLUP procedure, **are** generally producing more reliable estimates than the direct and regression synthetic technique.