Combined Analysis – Vietnam

The mediation analysis explored how total food losses relate to three key nutrition outcomes in Vietnam: adult obesity prevalence, average dietary energy supply adequacy, and prevalence of undernourishment.

For dietary energy supply adequacy, the direct effect of food losses was statistically insignificant (*p* = 0.082), indicating no meaningful standalone relationship. However, the indirect effect, where food losses increase total food supply, which in turn raises energy adequacy, was statistically significant (*p* = 0.001). The total effect (combining direct and indirect paths) was also statistically significant (*p* = 0.001), suggesting that higher food losses may be associated with increased overall food availability, ultimately contributing to improved dietary energy adequacy at the population level.

Similarly, in the case of prevalence of undernourishment, the direct effect of food losses was not statistically significant (*p* = 0.119). However, both the indirect and total effects were statistically significant (*p* < 0.001). These findings suggest that increased food losses are linked to higher food supply, which in turn is associated with a decrease in undernourishment. In other words, food losses, though undesirable, may reflect broader food system abundance, which contributes to reducing the share of the population that is chronically undernourished.

In contrast, the results for adult obesity followed a different pattern. The direct effect of food losses on obesity was statistically significant and negative (standardized estimate = –1.073; *p* = 0.024), indicating that greater food losses are associated with lower obesity rates. While this may seem counterintuitive, it could reflect broader inefficiencies in the food system that reduce caloric overconsumption or shift dietary patterns away from calorie-dense foods. By comparison, the indirect effects of food losses on obesity, via increased availability of animal-based foods and vegetal fat supply, were positive but not statistically significant (e.g., standardized estimate for the animal product path = 0.372; *p* > 0.05). This suggests that while higher availability of energy-dense foods could, in theory, contribute to obesity, this mechanism was not clearly supported by the data.

Taken together, the total effect of food losses on obesity represents a combination of opposing pathways. The negative direct effect indicates a potential protective influence, while the positive but non-significant indirect effects suggest a modest offset. These findings highlight the complexity of food system inefficiencies and their health implications—underscoring the importance of not only reducing food losses, but also understanding how they affect the availability, composition, and nutritional quality of the food supply.