Combined analysis, Germany

The mediation analysis examined how total food losses relate to two important nutrition outcomes in Germany: adult obesity prevalence and average dietary energy supply adequacy (3-year average). Regarding dietary adequacy, the direct effect of food losses was statistically insignificant (p = 0.420), indicating no meaningful standalone relationship. However, the indirect effect, where food losses influence adequacy via total food supply (kcal/capita/day), approached statistical significance (p = 0.052), suggesting that higher food losses may be associated with greater overall food availability, which could modestly contribute to improved energy adequacy at the population level. The total effect on dietary adequacy (combining direct and indirect paths) remained statistically insignificant (p = 0.155), reinforcing the conclusion that the influence of food losses on dietary energy supply adequacy is limited.

In contrast, the mediation analysis for adult obesity revealed a different pattern. While the direct effect of food losses on obesity was negligible and statistically insignificant, two indirect effects through total food supply and animal-based food supply, were statistically significant. The stronger of the two was a negative effect through total food supply, suggesting that increased food losses associated with greater overall food availability were linked to a slight reduction in obesity (–0.021 percentage points per 1,000 tons lost). Meanwhile, a positive indirect effect via increased animal product availability was also significant, though smaller in magnitude (+0.0148 percentage points), reflecting potential weight gain associated with energy-dense animal products. The total effect of food losses on obesity, combining both pathways, was positive but modest, indicating that composition and type of available food, rather than just quantity, plays a role in shaping public health outcomes.

Due to lack in variance in the available data (for the whole period the share of the population that was chronically undernourished in Germany was below 2.5%) it was not possible to conduct a mediation analysis how food waste relates to this particular target nutrition indicator.