





# Leveraging Micronutrient Data to Catalyze Change

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## SUMMARY

Micronutrient deficiencies remain a public health problem in Guatemala: 17% of non-pregnant women have low iron levels and nearly 19% have insufficient vitamin B12. However, leaders at both the regional and national levels are dedicated to addressing this issue by developing robust micronutrient data systems to inform nutrition policies and programs. The data collected has effectively guided nutrition policies and programs, leading to decisions to extend and update food fortification and supplementation policies. While improving data quality and expanding data access remains a challenge, Guatemala's commitment to data-driven policies to reduce micronutrient deficiencies is a valuable example other countries can learn from.

# CONTEXT

Guatemala, the most populated country in Central America, faces significant nutrition challenges. Two-thirds of its 17.1 million people live on less than \$2 USD a day. Stunting among children remains a concern, with a prevalence of more than 40%.<sup>1,2</sup> Iron deficiency is also a public health problem, affecting 15% of children under 5 years and about 17% of nonpregnant women.<sup>3</sup> However, due to investments in micronutrient data and a robust surveillance system, food fortification initiatives have been successful, resulting in low levels of iodine, folate, and vitamin A deficiencies. Guatemala has become a global leader in fortification since the initiation of salt iodization in the 1950s, and mandatory fortification has now been extended to other foods. For example, sugar fortification with vitamin A is the main source of this vitamin for the Guatemalan population.



Source: Palmieri M, Flores-Ayala R, Mesarina K, et al. Experiences and lessons learned in developing and implementing a population-based Nutrition and health surveillance system in Guatemala 2011–2021. Curr Dev Nutr. 2022;6(4)

# SUCCESS FACTORS

Guatemala's investment and dedication to micronutrient data has informed and improved nutrition outcomes within the country. The collaboration of numerous stakeholders has ensured that the full data lifecycle is supported, from data collection and analysis to interpretation and dissemination, ultimately informing the next round of data collection.

**Routine Data Collection**— In an effort to address gaps in available micronutrient data, Guatemala's leaders collaborated with the Institute of Nutrition of Central America and Panama (INCAP) to launch the Epidemiological Health and Nutrition Surveillance System (SIVESNU) in 2011.<sup>3,4</sup> The national pilot surveillance system, supported by USAID and the Centers for Disease Control and Prevention (CDC)'s International Micronutrient Malnutrition Prevent and Control (IMMPaCt) team, collects data on adult women and men, children under the age of five, and school-aged children 6-14 years old. SIVESNU has already completed four successful cycles of data collection (2011, 2013, 2017/2018 and 2018/ 2019), providing valuable information on anthropometric indicators, micronutrient status of vulnerable



populations, and coverage of large-scale nutrition-specific interventions. SIVESNU's data has contributed to important policy changes, such as the recommendation to include vitamin B12 in maize flour fortification, which was made by INCAP based on SIVESNU's data. Overall, SIVESNU's data is a critical tool for evidence-based policy making.<sup>3</sup>

**Timely and Agile information**—Over the last 10 years, the Epidemiological Health and Nutrition Surveillance System (SIVESNU), has consistently collected data every 1-2 years providing high-quality information at a low cost (approximately \$350,000 per cycle).<sup>3</sup> The system's design is highly flexible, with revisions made each cycle to allow changes to questionnaires, biomarkers, and population groups. The adaptive model for data collection also enables decision makers to explore new questions and assess the impact of programmatic changes. For instance, the plan for the 2022/23 cycle is to increase the sample size of young children and continue to assess not only indicators of undernutrition, but also indicators of diet-related non-communicable diseases.

SIVESNU results are published in the form of modules that reflect the start and end of data collection, ensuring that the data is up-to-date and accessible to researchers and policymakers. Any results that depend on laboratory analysis are updated to the modules once the analysis is completed, minimizing delays in data release, and ensuring comprehensive and timely information for all users.<sup>3</sup>

#### POLICIES & PROGRAMS DRIVEN BY DATA

The breadth of micronutrient and intervention coverage data in Guatemala has effectively guided the country's nutrition policies and programs, including Guatemala's multisectoral nutrition framework, which is established by the Law of the National System for Food and Nutrition Security (SINASAN).<sup>5</sup> Through this law, the Secretariate of Food and Nutrition (SESAN), carries out the directives and guidelines set forth by the National Council for Food and Nutrition Security (CONASAN), the institution responsible for food and nutrition policy decisions.<sup>5</sup>

Guatemalan decision makers and key stakeholders have used available micronutrient data to inform food fortification and supplementation policies to ensure evidence-based regulations. For example, they joined other Central American countries in increasing the folic acid content in fortified wheat flour from 0.35 – 0.45mg/ kg to 1.8mg/kg in 2002.<sup>6</sup> The use of micronutrient data has also led to decisions to extend food fortification to industrially produce nixtamalized maize flour (vitamin B1, vitamin B2, vitamin B12, niacin, folic acid, iron, and zinc), in addition to ongoing fortification programs for wheat flour (vitamins B1, B2, niacin, folic acid, and iron), salt (both iodine and fluoride), and sugar (vitamin A).<sup>6,7</sup>

Furthermore, the National Commission for Food Fortification, Enrichment, and/or Equivalence (CONAFOR) unites various stakeholders leading the coordination

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DR. OMAR DARY, Senior Nutrition Science Specialist, USAID and supervision of largescale food fortification in Guatemala. Within the 2017-2019 Plan of Action, CONAFOR reported changes to legislations around the fortification of sugar with vitamin A.<sup>8</sup> Dr. Omar Dary, Senior Nutrition Science Specialist of USAID, confirms that "The country has used food fortification

as one of the main interventions to prevent micronutrient deficiencies and that is not by standard or regulations, but by law."

Dr. Dary also shares that, "In addition to the SIVESNU, there are other studies that have demonstrated that there is no deficiency in vitamin A and so the program of vitamin A supplementation of preschool age children was reduced from 6-59 months to 6-24 months." Now, the biannual high-dose vitamin A supplementation has been limited to children 6-11 months old based on the recommendations from INCAP.<sup>3,9</sup>

Commitment to improving micronutrient data and policies at a local and national level is also supported by academic and research institutions, including the Universidad del Valle, Universidad de San Carlos de Guatemala, and Center for Studies of Sensory Impairment, Aging and Metabolism (CeSSIAM). Research findings from the Universidad del Valle revealed a significant correlation between iodine levels and reading performance among rural children. This finding was then used to inform the status of iodine in the USAID-funded Food and Nutrition Technical Assistance (FANTA) Project 2016 report on key micronutrients, policies, and programs in Guatemala.<sup>6</sup>

#### **Lessons Learned**

- Guatemala has invested in and dedicated resources to micronutrient data surveillance and analysis, which has led to improved nutrition outcomes and informed policy development.
- Collaboration among national and regional stakeholders has been key for the success of the nutrition surveillance system. Institutionalizing the system within the government will help ensure continuous surveillance and monitoring of micronutrient initiatives.
- Expanding both the availability and utilization of data is crucial. Governments and technical assistance providers require timely access to micronutrient data to unlock its full value, enabling them to make evidence-informed decisions and better understand the real impact of programs.

# PATH FORWARD

Guatemala has made impressive progress in collecting micronutrient data to improve nutrition outcomes. However, to enhance data quality and overcome barriers to interpretation and communication, it is important to make these data more widely available, especially to those outside the nutrition sector. Experts also agree that the current age of the data is a major obstacle when making informed policy decisions. Stakeholders have identified a need for centralized and accessible data, and institutionalization of SIVESNU within the Guatemalan government to ensure improvements to the surveillance system continue. "We have been talking about a mixed or combined form of SIVESNU by which [SESAN] would be in charge of data use and dissemination and INCAP will still carry out the very important tasks of training, data collection, data processing, and the necessary outputs for decision making," said Mireya Palmieri, Director of SIVESNU, INCAP. Despite these challenges, Guatemala's progress highlights the positive impact that data can have on nutrition outcomes and serves as an example for others to follow.

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MIREYA PALMIERI, Director of SIVESNU, INCAP



**The Micronutrient Data Innovation Alliance (DInA)** is an alliance of diverse members collaborating to improve the availability, quality, accessibility, and use of data to support national-level decision-makers to better design, implement, evaluate, and optimize programs and policies.

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