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Large-Scale Food Fortification in Honduras is Working Well Despite Lack of Constant Inspection—Results from a Social Audit Exercise



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Large-Scale Food Fortification in Honduras is Working Well Despite Lack of Constant Inspection— Results from a Social Audit Exercise

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Photo Credit: Carlos Flores, JSI

Legislative Framework for LSFF in Honduras

- From the 1960s to the 1970s: Government of Honduras (GOH) issued decrees to fortify—
 - salt with iodine
 - sugar with vitamin A
 - wheat flour with iron and B vitamins.
- 2010: GOH passed a general law on mandatory and voluntary fortification



Photo Credit: Cristian Cruz, JSI



GOH Enforcement: Inspection and Auditing

- Food Control Authorities include **Sanitary Regulation Agency (Agencia de Regulación Sanitaria [ARSA])** for regulation and monitoring
 - Due to lack of training, financial resources, and laboratory capacity, ARSA has not been checking factories and importation sites for fortification compliance.
 - Generally, monitoring of markets and retail stores does not take place on a regular basis.



Photo Credit:: Miguel Tabora, JSI



Objectives of the Study

- Analyze the micronutrient contents of foods in retail shops in Honduras that are under—
 - mandatory fortification—sugar, salt (and bouillon cubes/consommé powders where salt is the main ingredient), wheat flour
 - voluntary fortification—maize flour, milk
- Recommend ways to strengthen the fortification program in Honduras



Photo Credit: Marianne Herrera, JSI

Study Methods: Foods and Micronutrients Evaluated

Selected Food	Fortification Type	Micronutrients Analyzed	Testing Method
Sugar	Mandatory	Vitamin A	Institute of Nutrition of Central America and Panama (INCAP)—Spectrophotometric analysis
Salt (and salt containing bouillon cubes and consommé powders)	Mandatory	Iodine	INCAP—Kinetic spectrophotometric analysis (to determine iodine from both iodide and iodate)
Wheat flour	Mandatory	Iron and folic acid	Spectrophotometric/AOAC Microbiological testing
Maize flour	Voluntary	Iron and folic acid	Spectrophotometric/AOAC Microbiological testing
Long-lasting fluid milk	Voluntary	Iron and folic acid	Microwave plasma atomic emission spectrometry (MP—AES)/AOAC Microbiological testing
Powdered milk	Voluntary	Iron and folic acid	Spectrophotometric/AOAC Microbiological testing



Study Methods: Sampling and Team Training

- Selected food samples from six regions in Honduras.
- Randomly selected 14 departments, distributed in the six regions, and one municipality in each one of these departments.
- Number of samples per region:
 - Sugar, salt, and bouillon cubes/consommé powders: 12 each
 - Wheat flour, maize flour, milk: 6 each
- Trained 10 enumerators (personnel) in sample collection

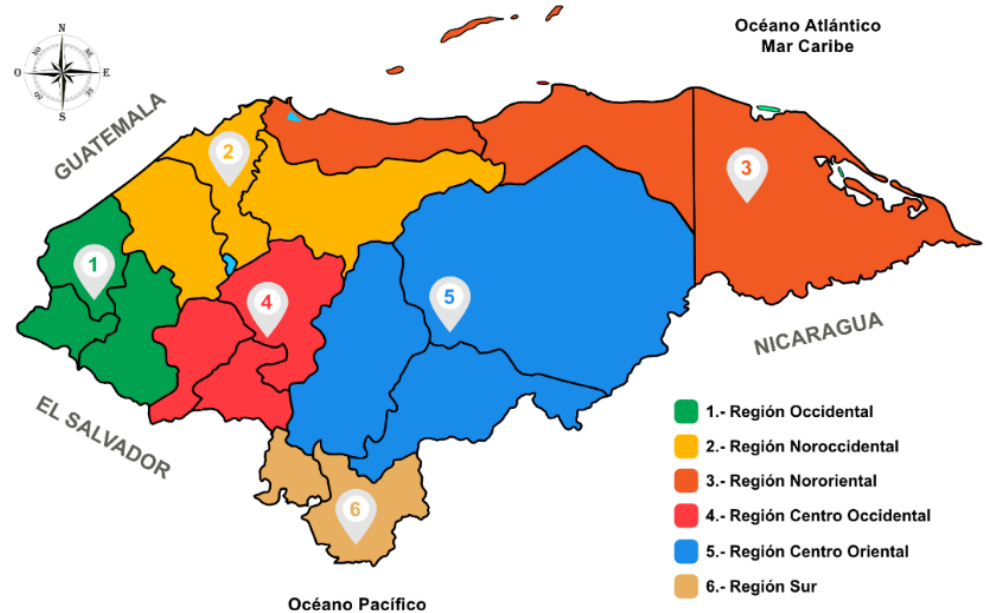


Photo Credit: Red Honduras. Regiones Geográficas de Honduras. <https://redhonduras.com/geografia/regiones-geograficas-de-honduras/>.



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Results: Micronutrient Content in Samples from Retail Outlets—Honduras



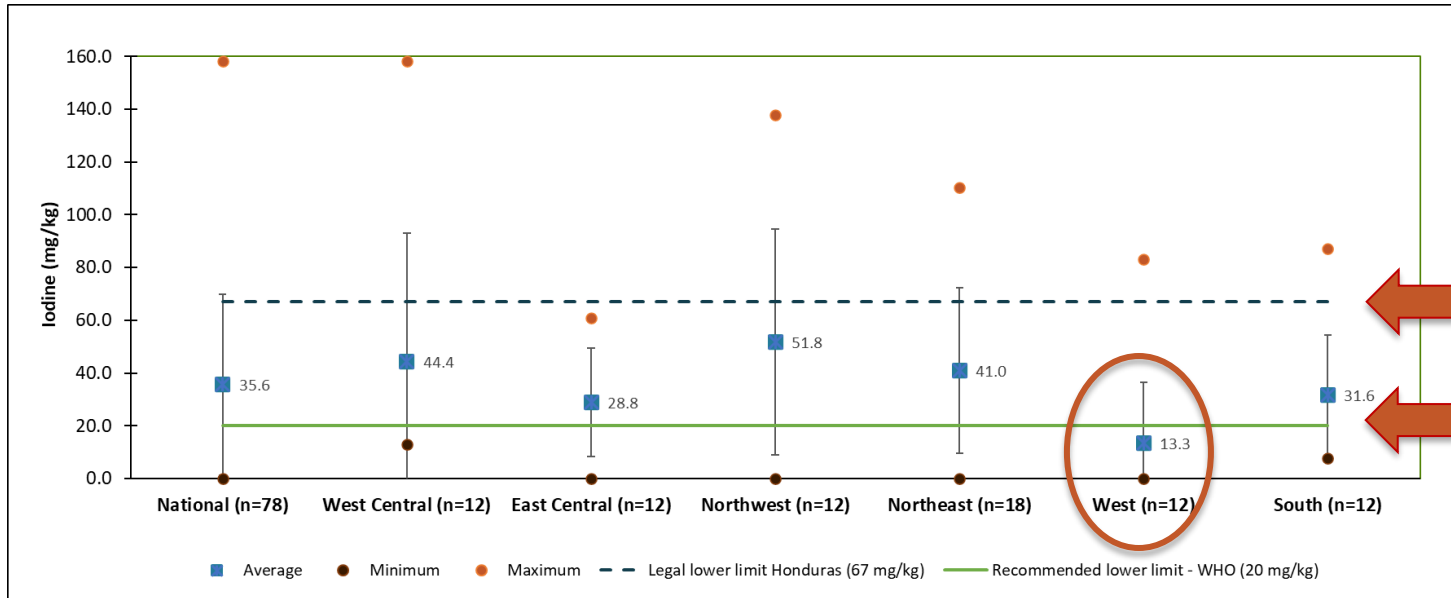
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Iodine in Salt

- 21 percent of samples comply with current standard (67–100 parts per million [ppm]) for salt iodization.
- But all regions, except one, showed iodine content above ~30 ppm

Conclusion:
Honduran standards need updating, and inspection improved to reduce number of samples without iodine.

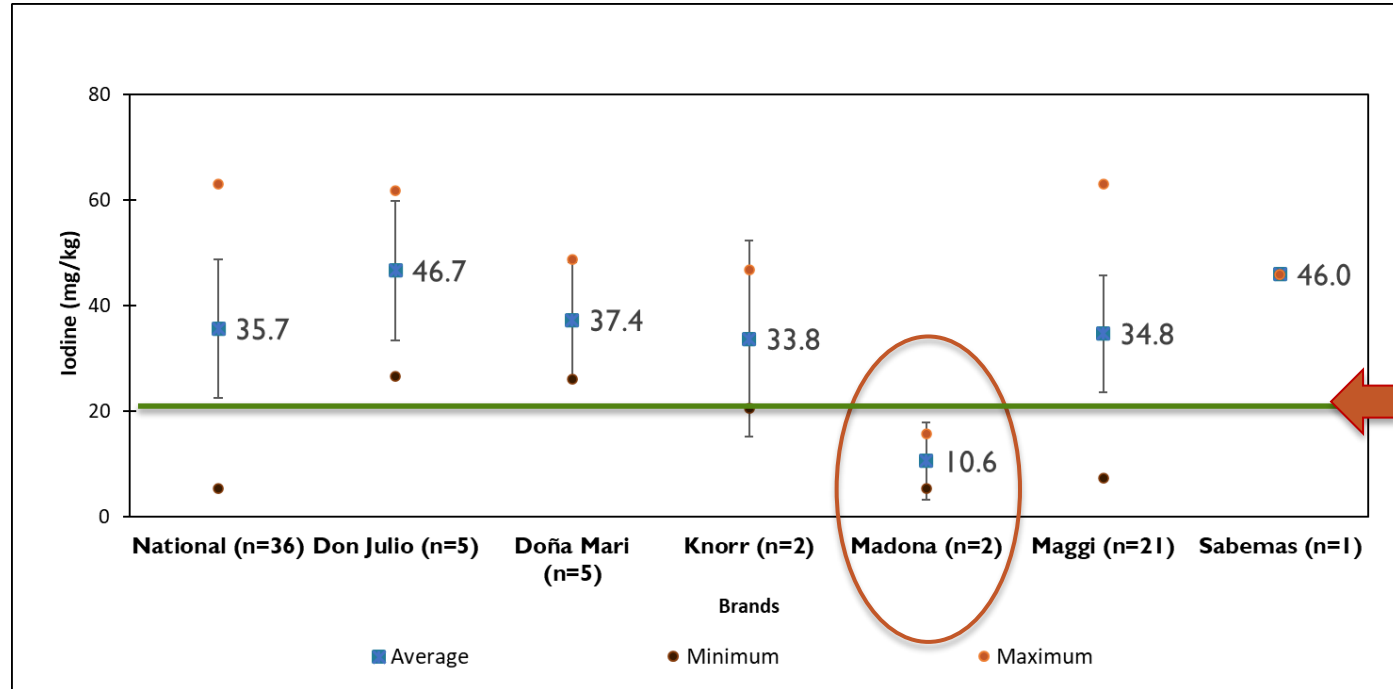




Iodine in Bouillon Cubes/ Consommé Powders

Almost all brands except “Madona” used well iodized salt.

Conclusion: Bouillon and consommés are an important source of iodine as they are manufactured with iodized salt; standards and regulations should be established to ensure use of iodized salt in these products.

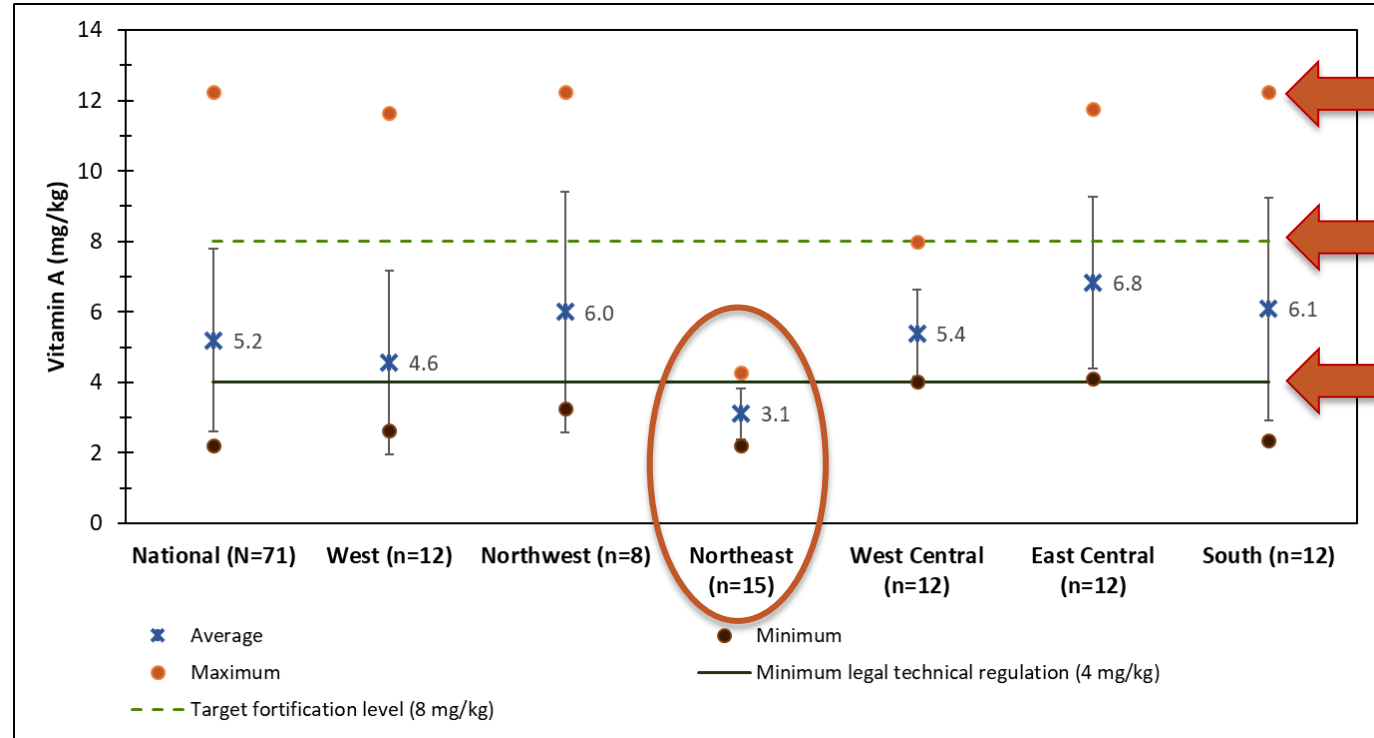




Vitamin A in Sugar

- 63 percent of samples comply with current standard (4–12 ppm) for vitamin A fortification
- Industry is using the minimum of the standard range as the target/mean for fortification

Conclusion: The sugar industry in Honduras is complying with fortification but needs to use the middle of the range (8 mg/kg) as the target.

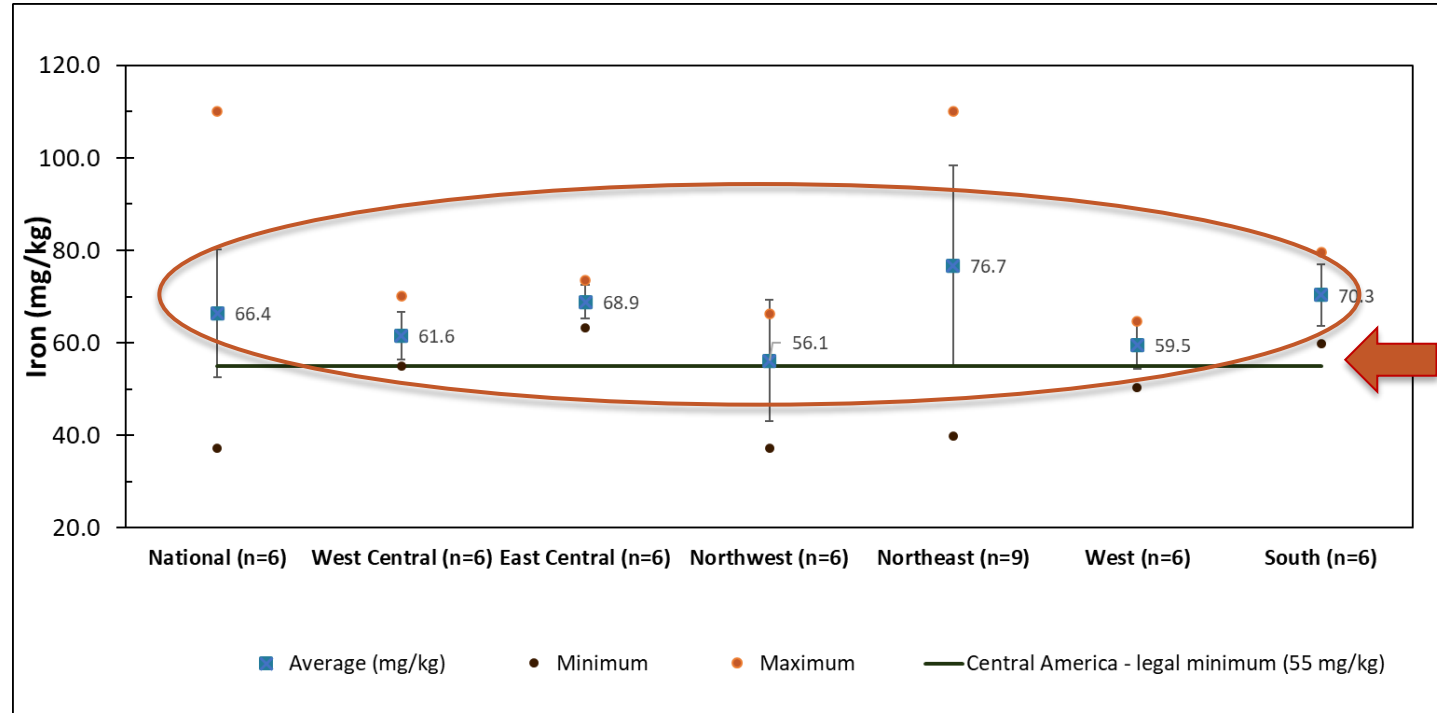




Iron and Folic Acid in Wheat Flour

- 87 percent of samples comply with the standard for iron (no less than 55 mg/kg).
- Folic acid content was good (1.2 ± 0.4 mg/kg).

Conclusion: Wheat flour fortification program is functioning well, despite lack of government inspection.

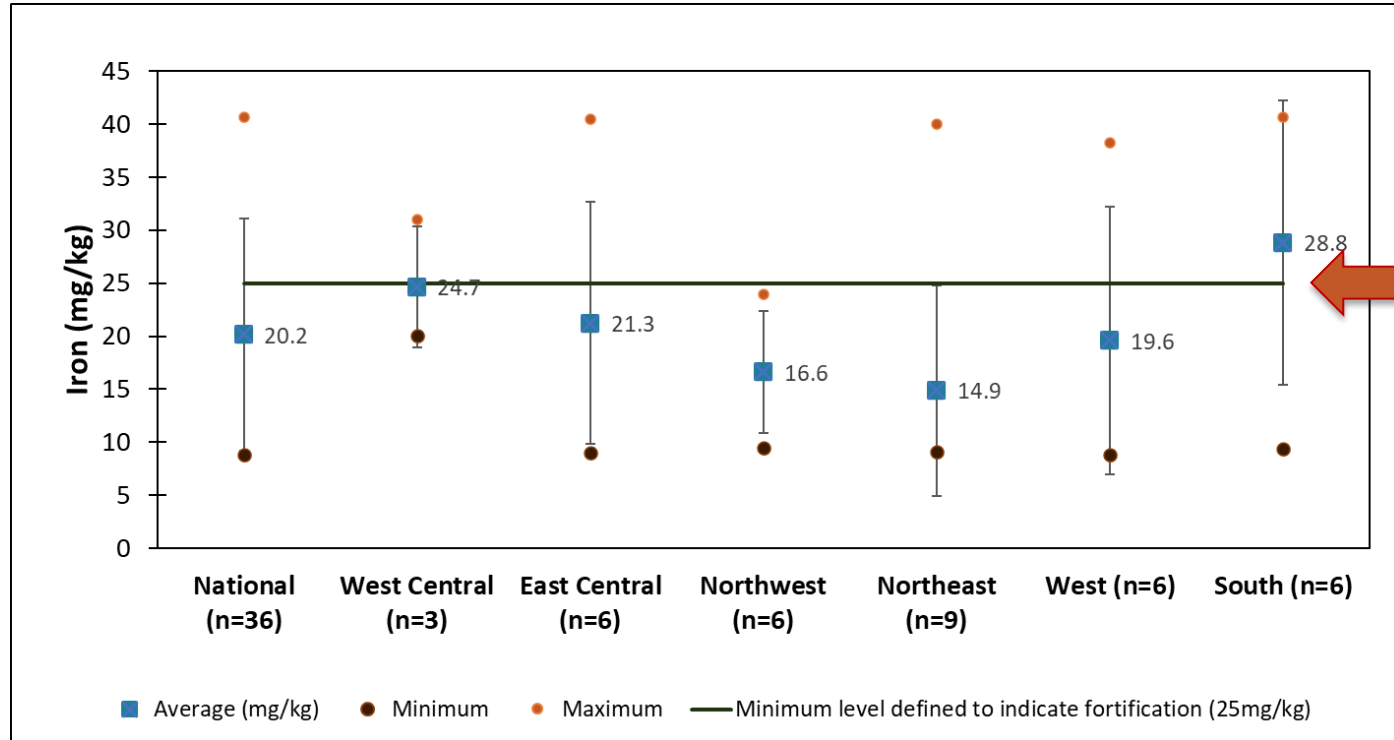




Iron and Folic Acid in Maize Flour

- Although maize flour fortification is voluntary, 28 percent of commercial samples were fortified
- Industrial production of maize flour is high in Honduras, ~70–75 percent

Conclusion: GOH should consider mandatory maize flour fortification for the product processed in large mills.



Iron in Milk

- 86 percent of fluid milk samples were fortified with iron.
- 67 percent of powdered milk samples were fortified with iron.

Conclusion: Most milk brands collected in Honduras were fortified with iron (including one of the national producers).



Photo Credit: Stefy Gutovska



Conclusions

- Sugar and wheat flour fortifications are working acceptably well despite lack of constant inspection.
- Bouillon cubes and consommé powders use well iodized salt.
- Maize fortification has potential to benefit the population given high use of industrially processed flour (> 70 percent).
- Although most salt contains iodine, some samples were found without fortification. The current standard must be reviewed as the required content is too high.
- Despite the success of LSFF in Honduras, attention is needed to—
 - Improve and document enforcement.
 - Review the salt standard.
 - Consider compulsory fortification of maize and dairy products.



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Thank you so very much!



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