**Executive Summary**

August 9, 2016

**Problem Statement**

The prevalence of anencephaly and spina bifida, the two most common neural tube birth defects, is consistently higher among Hispanic American women than that among other races (Williams, et al., 2015). Within the state of Georgia and nationally, Hispanic-American women experience lower serum folate levels (Yang, et al., 2007) and consequently, are more likely to have pregnancies affected by neural tube defects (Williams, et al., 2015). The most effective and established way to combat the occurrence neural tube defects is through folic acid (Williams, Rasmussen, Flores, Kirby, & Edmonds, 2005), which has been shown to reduce the occurrence of spina bifida and anencephaly by 50-70% (Boulet, et al., 2008). Folic acid, a synthetic form of folate, therefore is one of the most researched and publicized prevention behaviors associated with neural tube defects.

The mandatory fortification of enriched grain products with folic acid occurred in the United States in 1998 with 140 *μ*g of folic acid per 100 g. Immediately after, the birth prevalence of neural tube defect cases declined, with an overall 28% reduction in anencephaly and spina bifida (Willimas, et al., 2015). Since fortification, the number of births occurring annually without neural tube defects that would otherwise have been affected is approximately 1,300 (Willliams, et al., 2015). Within the Hispanic community, this effect has been less robust, possibly because corn masa flour, a pantry staple in Hispanic communities, was not included in the initial mandate.

**Proposition**

Due to its known benefits, folic acid supplementation through enriched grain products remains a public health intervention endorsed by the CDC and FDA. As a diet staple, many Hispanic Americans rely on and use corn masa flour, in contrast to the use of wheat flours among other races. The expansion of mandatory folic acid fortification to corn masa flour, therefore, has the potential to improve health outcomes in the Hispanic community. Using extrapolated data, it has been projected that corn flour fortification could prevent approximately 40 cases of neural tube defects, annually; 10 from anencephaly and 30 from spina bifida. Additionally, the widespread consumption of folic acid enriched foods will lead to an increase in serum folate levels of childbearing women, equating to the sustained reduction in the incidence of neural tube defects into the future. Moreover, mandatory fortification has the potential to save in excess of $16M annually in healthcare spending (Tinker, et al., 2015).

**Conclusion**

The mandatory fortification of corn masa flour has the potential to both reduce the incidence of neural tube defects in the Hispanic American population while simultaneously reducing the disparities seen between Hispanics and women of other races with affected pregnancies. Overall, neural tube defect births prevented by corn masa flour fortification will not approach the numbers achieved with the fortification of wheat flour, however, for this population the impact would be significant.

**Recommendation**

Mandatory fortification of grain products has been a tremendous public health success. Fortification has been proven to be both safe and efficacious in masa flour- without significant alteration to the final product. It is my recommendation to expand folic acid fortification practices to include corn masa flour. Voluntary adoption of this practice is simply not enough to enact widespread change.

References

Boulet, S. L., Yang, Q., Mai, C., Kirby, R. S., Collins, J. S., Robbins, J. M., ... & Mulinare, J. (2008). Trends in the postfortification prevalence of spina bifida and anencephaly in the United States. *Birth Defects Research Part A: Clinical and Molecular Teratology*, *82*(7), 527-532.

Tinker, S. C., Devine, O., Mai, C., Hamner, H. C., Reefhuis, J., Gilboa, S. M., ... & Honein, M. A. (2013). Estimate of the potential impact of folic acid fortification of corn masa flour on the prevention of neural tube defects. Birth Defects Research Part A: Clinical and Molecular Teratology, 97(10), 649-657.

Williams, J., Mai, C. T., Mulinare, J., Isenburg, J., Flood, T. J., Ethen, M., ... & Kirby, R. S. (2015). Updated estimates of neural tube defects prevented by mandatory folic Acid fortification-United States, 1995–2011. MMWR Morb Mortal Wkly Rep, 64(1), 1-5.

Williams, L. J., Rasmussen, S. A., Flores, A., Kirby, R. S., & Edmonds, L. D. (2005). Decline in the prevalence of spina bifida and anencephaly by race/ethnicity: 1995–2002. Pediatrics, 116(3), 580-586.

Yang, Q. H., Carter, H. K., Mulinare, J., Berry, R. J., Friedman, J. M., & Erickson, J. D. (2007). Race-ethnicity differences in folic acid intake in women of childbearing age in the United States after folic acid fortification: findings from the National Health and Nutrition Examination Survey, 2001–2002. The American journal of clinical nutrition, 85(5), 1409-1416.