Appendix 1

Hypothetical numerical example to illustrate use of three main equations: SPINA BIFIDA AMONG HISPANICS

Equation 1

PDCMF = estimated percentage decrease in the prevalence of the NTD observed after CMF fortification

PDECGP = percentage decrease in the prevalence of the NTD observed after ECGP fortification

IMECGP = increase in the median usual daily FA intake observed after ECGP fortification

IMCMF = estimated increase in the median usual daily FA intake with FA fortification of CMF

Equation 1: Solving for PDCMF

$$PD\_{CMF}= \left(^{PD\_{ECGP}}/\_{IM\_{ECGP}}\right) \* IM\_{CMF}$$

PDECGP, IMECGP, and IMCMF were each assigned uncertainty distributions from which values were selected in the Monte Carlo simulation. Values were selected based on the probability distribution assigned for each parameter, which was a Normal distribution with mean equal to the published estimate and standard errors based off of the published standard errors. For purposes of this illustration, we will use the published estimates themselves, to illustrate how these equations were used.

From Table 1:

Prevalence of spina bifida per 10,000 live births before mandatory folic acid fortification of ECGP: 6.49

Prevalence of spina bifida per 10,000 live births after mandatory folic acid fortification of ECGP: 4.18

**PDECGP** = (6.49-4.18)/6.49 = **35.6%** reduction in spina bifida prevalence among Hispanics

**IMECGP** = **156µg**

**IMCMF** = **41µg**

PDCMF = (0.356/156)\*41 = 0.094 🡪 *9.4% decrease in prevalence of spina bifida among Hispanics after CMF fortification*

Equation 2

NTDpostECGP = number of pregnancies affected by each NTD among mothers in each racial/ethnic group with FA intake at or below the sampled threshold level (T)

pNTD = current (post-ECGP fortification) racial/ethnic-specific prevalence of the NTD

lb = number of live births in the racial/ethnic group in 2009

propT = proportion of women of childbearing age in the racial/ethnic group with daily usual FA intake at or below the sampled threshold level

Equation 2: Solving for NTDpostECGP

$$NTD\_{TpostECGP}= \left( p\_{NTD} \*lb \* prop\_{T} \right)$$

From Table 1:

PNTD = Prevalence of spina bifida per 10,000 live births after mandatory folic acid fortification of ECGP: 4.18

lb = 1,041,239

From supplemental table: Suppose sampled value of T = 280µg; based on the data presented in the supplementary table 70.44% of Mexican American women of childbearing age have daily usual total folic acid intake below 280µg

NTDTpostECGP = ((4.18/10000) \* 1041239 \* 0.7044) = *306 pregnancies affected by spina bifida among Hispanics with daily usual total folic acid intake below 280µg (rounding down)*

Equation 3

NTDTpostECGP = number of pregnancies affected by each NTD among mothers in each racial/ethnic group with FA intake at or below the sampled threshold level (T)

PDCMF = estimated percentage decrease in the prevalence of the NTD observed after CMF fortification

Equation 3 solving for the number of NTDs that could be prevented by CMF fortification:

$$Number of NTDs prevented= NTD\_{TpostECGP}\* PD\_{CMF}$$

NTDTpostECGP = 306 (from Equation 2)

PDCMF = 9.4% (from Equation 1)

*Number of cases of spina bifida potential prevented by CMF fortification among Hispanics = (306)\*(0.094) = 28 (rounding down)*