# Supporting Materials

# Text S1. Survey methods and fish consumption calculations

# Recruitment

Participants were selected from a “KnowledgePanel” maintained by GfK Knowledge Networks (GfK), a professional survey research organization specializing in online panels (<http://www.knowledgenetworks.com/ganp/>). KnowledgePanel (KN) is a statistically representative sample of the U.S. population based on Census data. Recruitment is based on a national address-based sample (ABS) to account for cell-phone only households. ABS involves probability-based sampling of addresses from the U.S. Postal Service’s Delivery Sequence File. Randomly sampled addresses are invited to join KnowledgePanel through a series of mailings in both English and Spanish, and in some cases by telephone when a telephone number can be matched to the sampled address. Persons in selected households are then invited to participate in KN's Web enabled panel. Those who agree to participate, but are not already on the Internet, are sent a laptop computer and receive an Internet service connection provided and paid by Knowledge Networks. People who already have computers and Internet service are permitted to participate using their own equipment. The selection methodology has been used since 2000 and assures that GfK panel samples closely track the U.S. population. Research articles, books and presentations based on GfK panel can be found here <http://www.knowledgenetworks.com/ganp/docs/KN-Bibliography.pdf>.

By definition our survey included only a small percentage of the KnowledgePanel (e.g., those respondents consuming three or more fish meals per week). Consequently, surveys of this kind with small or rare populations often require a blending of probability-based sampling with non-probability based sampling by specifically targeting respondents likely to meet the screening criteria. In this case, our results include ~7% of KnowledgePanel participants (76% of all survey participants) screened in with the remainder of the respondents identified through Internet-based solicitation of subpopulations likely to consume fish (e.g., fishing licensees, participants at fishing derbies, supermarket-purchasers, and so on). The results of the non-probability based respondents are combined with the KnowledgePanel results using established calibration techniques (Kott, 2006; Rueda et al., 2007). Specific details on the calibration approach are provided in prior studies (DiSogra and Cobb, 2012; DiSogra et al., 2012; Ghosh-Dastidar et al., 2009).

# Details of the survey instrument and self-reported seafood consumption

The survey instrument was administered online by GfK and included one-month and three-month consumption recall periods. Survey participants were asked to recall their overall seafood meal consumption frequency, types of fish and shellfish consumed, preparation methods and meal sizes prompted by visual cues. Recall was aided by a list of 33 commonly consumed fish species based on data reported in Mahaffey et al. (2011) and information was collected on where fish were obtained (self-caught, commercial market, restaurants). Space was provided for names of specific recreationally caught fish and “other” fish consumed. We excluded data on one-month recall for 62 individuals and three-month recall for 45 individuals due to missing species-specific consumption information.

The survey included choices for overall fish consumption of: 3-4 meals per week, 5-6 meals per week, once per day, and more than once per day (a specific number was requested). We converted these responses into meal frequencies of 14, 22, and 30 times per month for the first three categories and the number specified for the fourth category. For species-specific consumption, individuals reported fish meal frequency as: less than once a month, once a month, once a week, three times a week, and once or more a day converted to 0.5, 1, 4, 12, and 30 times per month, respectively. Prior work shows that survey participants overestimate their species-specific consumption (Harris et al., 2009; Lincoln et al., 2011) and we therefore scaled these results to match each individual’s overall meal frequency. On average, participants in this study overestimated their species-specific consumption by a factor of 2.2, which is very similar to the mean value (2.5) derived by Lincoln et al. (2011)

Finfish meal sizes were grouped into five categories: ≤4 ounces (114 g), 4 to ≤6 ounces (170 g), 6 to ≤8 ounces (227 g), 8 to ≤12 ounces (340 g), and more than one pound (454 g). Each participant specified shellfish meal sizes with options of shell-on or off. We assumed shellfish contained edible tissue equivalent to 100% of their shell-off weight and 40% of their shell-on weight (Barker, 1968). We use weights for each meal size that correspond to visual cues for serving sizes.

The overall consumption rate for each individual (g/day) is based on the summed product of scaled meal frequency for each seafood item and meal size. We used self-reported body weights to calculate weight-normalized daily intakes (g/kg-day). We did not find a statistically significant difference (Kruskal–Wallis test, p>0.05) between total seafood consumption rates across seasons or between one and three-month recall periods. These results imply that inter-individual variability in fish consumption rates is greater than seasonal variability. Hereon we report results from consolidated one-month recalls for consistency with NHANES data.

**Reference**

Barker C. 1968. Consumption Trials and Edible Fractions of Various Commercially Important Species of Fish and Shellfish. *Journal du Conseil* **32**(1): 117-122.

DiSogra CA, Cobb C. 2012. Technique to Blend Probability and Non-probability Internet Samples. GfK-Knowledge Networks Webinar Series, March 1.

DiSogra CA, Cobb C, Chan E. 2012. Using probability-based online samples to calibrate non-probability opt-in samples. Annual Conference of the American Association for Public Opinion Research. Available at <http://www.knowledgenetworks.com/ganp/reviewer-info.html>.

Ghosh-Dastidar B, Elliott MN, Haviland AM, Karoly LA. 2009. Composite Estimates from Incomplete and Complete Frames for Minimum-Mse Estimation in a Rare Population An Application to Families with Young Children. *Public opinion quarterly* **73**(4): 761-784.

Harris SA, Urton A, Turf E, Monti MM. 2009. Fish and shellfish consumption estimates and perceptions of risk in a cohort of occupational and recreational fishers of the Chesapeake Bay. *Environ Res* **109**(1): 108-115.

Kott PS. 2006. Using calibration weighting to adjust for nonresponse and coverage errors. *Survey Methodology* **32**(2): 133.

Lincoln RA, Shine JP, Chesney EJ, Vorhees DJ, Grandjean P, et al. 2011. Fish consumption and mercury exposure among Louisiana recreational anglers. *Environ Health Perspect* **119**(2): 245.

Mahaffey KR, Sunderland EM, Chan HM, Choi AL, Grandjean P, et al. 2011. Balancing the benefits of n-3 polyunsaturated fatty acids and the risks of methylmercury exposure from fish consumption. *Nutr Rev* **69**(9): 493-508. doi:10.1111/j.1753-4887.2011.00415.x.

Rueda M, Martínez S, Martínez H, Arcos A. 2007. Estimation of the distribution function with calibration methods. *Journal of statistical planning and inference* **137**(2): 435-448.