IMPUTATION DETAILS

1. Combine NHANES and BRFSS data
2. Estimate propensity of being in survey 1–NHANES for each subject i using model:

$$logit\ (\Pr(R_i = 1|\boldsymbol{X}_i)) = \boldsymbol{X_i\alpha}$$

$\boldsymbol{X_i} - Vector\ of\ covariates: Age, Race, Sex, Hypertension\ and\ Diabetes$

$R_i - 1\ if\ in\ survey\ 1$

3. Form 5 strata based on quintiles of propensity score - $P_i = \Pr(R_i = 1|\boldsymbol{X}_i)$
4. Estimate propensity of self-reporting CKD–Q_i, in each strata g using model:

$$logit\ (\Pr(SR_i = 1|\boldsymbol{X_i}, g = j)) = \boldsymbol{X_i\beta_j},$$

$where\ j \in \{1,..,5\} - Propensity\ score\ strata$

$\boldsymbol{X_i} - Vector\ of\ covariates: Age, Race, Sex, Hypertension\ and\ Diabetes\ staus$

5. Multiply Impute clinical CKD status for each subject i in each strata g using model:

$$logit\ (\Pr(CKD_i = 1|g = j, SR_i, P_i, Q_i))$$
$$= \gamma_{0g} + \gamma_{1g}P_i + \gamma_{2g}Q_i + \gamma_{3g}SR_i + \gamma_{4g}SR_i * P_i + \gamma_{5g}SR_i * Q_i + \gamma_{6g}Q_i$$
$$* P_i + \boldsymbol{\delta_g X_i}$$

$P_i - (\Pr(R_i = 1|X_i))\,, \qquad Q_i - (\Pr(SR_i = 1|X_i, g = j))$

$g - subgroup\ based\ on\ \Pr(R_i = 1|X_i))$ quintiles

Appendix Table 1. Patient Characteristics Distribution and Prevalence of Self-reported Kidney Disease,[a] Comparing Total NHANES and BRFSS Samples

Characteristics	Distribution of patient characteristics (% and 95% CI)		Self-reported kidney disease prevalence (% and 95% CI)	
	NHANES 2005-12 (n=20,831)	BRFSS 2011 (n=506,467)	NHANES 2005-12 (n=20,831)	BRFSS 2011 (n=506,467)
Overall	--	--	1.9 [1.7–2.2]	2.5 [2.4–2.6]
Race/Ethnicity[b]				
Non-Hispanic white	69.5 [66.1-72.9]	66.4 [66.1-66.7]	1.9 [1.5-2.2]	2.5 [2.4-2.6]
Non-Hispanic black	10.8 [9.0-12.6]	11.2 [11.0-11.4]	2.4 [1.8-2.9]	2.6 [2.4-2.9]
Hispanic	13.3 [11.0-15.5]	15.2 [14.9-15.4]	2.1 [1.7-2.5]	2.4 [2.2-2.7]
Age (years)				
Less than 65	83.4 [82.4-84.4]	82.4 [82.3-82.6]	1.5 [1.2-1.7]	1.9 [1.8-2.0]
65 and older	16.6 [15.6-17.6]	17.6 [17.4-17.7]	4.3 [3.3-5.2]	5.2 [5.0-5.4]
Hypertension				
Yes	29.8 [28.5-31.0]	32.4 [32.1-32.6]	3.9 [3.4-4.4]	9.5 [1.2-17.7]
No	70.2 [69.0-71.5]	67.6 [67.3-67.8]	1.1 [0.8-1.3]	0.7 [0.6-0.8]
Diabetes				
Yes	9.9 [9.2-10.5]	10.7 [10.6-10.9]	6.3 [5.1-7.4]	7.7 [7.3-8.1]
No	90.1 [89.5-90.8]	87.9 [87.8-88.1]	1.4 [1.2-1.7]	1.9 [1.8-2.0]
Sex				
Male	49.4 [48.8-50.1]	48.7 [48.4-49.0]	1.6 [1.3-1.9]	2.3 [2.2-2.4]
Female	50.6 [49.9-51.2]	51.3 [51.0-51.6]	2.2 [1.9-2.6]	2.7 [2.6-2.8]

[a]Appropriate survey weights were used in all calculations to account for complex sample design features in each survey

CKD, chronic kidney disease; NHANES, National Health and Nutrition Examination Survey; BRFSS, Behavioral Risk Factor Surveillance System; GFR, Glomerular filtration rate; MDRD, modification of diet in renal disease study equation; CKD-EPI, chronic kidney disease epidemiology collaboration equation