**Supplementary Methods and Materials**

Model 1: $P_{ijkcs}(y_{ijkcs}^{1} = 1) = \text{logit}^{-1}(\alpha_i + \beta_j + \gamma_k + x'_c\eta + \mu_c + \nu_s + e_{ijkcs})$

$y_{ijkcs}^{1}$ is the self-reported smoking status (1=ever smoker, 0=never smoker) and each of the coefficients corresponds to an individual, defined before, in the entire smoking population, and

Model 2: $P_{ijkcs}(y_{ijkcs}^{2} = 1 \,/\, y_{ijkcs}^{1} = 1) = \text{logit}^{-1}(\alpha_i' + \beta_j' + \gamma_k' + x_c''\eta' + \mu_c' + \nu_s' + e_{ijkcs}')$

Where $y_{ijkcs}^{2}$ is the self-reported smoking status (1=current smoker, 0=former smoker) and each of the coefficients corresponds to an individual, defined above, in the ever smoker population, and

Model 3: $P_{ijkcs}(y_{ijkcs}^{3} = 1 \,/\, y_{ijkcs}^{2} = 1) = \text{logit}^{-1}(\alpha_i'' + \beta_j'' + \gamma_k'' + x_c'''\eta'' + \mu_c'' + \nu_s'' + e_{ijkcs}'')$

Where $y_{ijkcs}^{3}$ is the self-reported smoking status (1=every day smoker, 0=someday smoker) and each of the coefficients corresponds to an individual, defined above, in the current smoking population.

Each simulation program generated a sample of 1,000 SAEs for each county-level smoking status by age, sex and race/ethnicity. The results of these simulations, which we refer to as our model-based multilevel SAE, were used for calculating the prevalence of the six categories of smoking status. These included never smoker, ever smoker (former and current), former smoker, current smoker, current every day smoker and current some days smoker.

We further used the respective results from the generated samples of 1000 SAEs to summarize the prevalence estimates for each smoking level by county, by state and for the entire United States, each stratified by gender, and we generated predicted mean values, their 95% confidence intervals and standard errors. The prevalence calculation are described below:

Let $P^{A1}{}_{cs}$ be the county-level prevalence of being ever smoker in county c within state s, $P^{A1}{}_{ijkcs}$ be the individual probability of being ever smoker in age group i, sex group j, and race/ethnicity group k, in county c and state s, $Pop_{ijkcs}$ be the respective population count, and $Pop_{cs}$ the total population count in county c within state s,

Then $P^{A1}{}_{cs} = \sum_i \sum_j \sum_k (P^{A1}{}_{ijkcs} \text{ x } Pop_{ijkcs}) \,/\, \sum_i \sum_j \sum_k (Pop_{ijkcs})$

$= \sum_i \sum_j \sum_k (P^{A1}{}_{ijkcs} \text{ x } Pop_{ijkcs}) \,/\, Pop_{cs}$

Similarly, let $P^{A2}{}_{cs}$ be the county-level prevalence of being never smoker in county c within state s,

Then $P^{A2}{}_{cs} = \sum_i \sum_j \sum_k ((1-P^{A1}{}_{ijkcs}) \text{ x } Pop_{ijkcs}) \,/\, Pop_{cs}$

The above prevalence calculations utilize the county population counts from the census as weights.

To simplify the notations of the prevalence in the remaining smoking levels we defined the following:

Let A be the total population in county c within state s, B the population of smokers (current and former) in county c, within state s, and C the population of current smokers (every day and someday) in county c within state s.

Let $P^{A1}$ be the probability of an individual being ever smoker in population A and $P^{B1}$ the probability of an individual being a current smoker in population B in age group i, sex group j and race/ethnicity group k respectively, and $P^{(B/A)1}{}_{cs,}$ and $P^{(B/A)2}{}_{cs}$ be the prevalence of being a current or former smoker respectively in county c within state s,

Then, $P^{(B=current\ smoker/A=ever\ smoker)1}{}_{cs} = \sum_i \sum_j \sum_k ((P^{A1}) \times (P^{B1}) \times Pop_{ijkcs}) / Pop_{cs}$

and $P^{(B=former\ smoker/A=ever\ smoker)2}{}_{cs} = \sum_i \sum_j \sum_k ((P^{A1}) \times (1-P^{B1}) \times Pop_{ijkcs}) / Pop_{cs}$

Similarly, we defined $P^{C1}$ to be the individual probability of being every day smoker and $P^{C2}$ the individual probability of being some days smoker in population C, and $P^{(C=\ every\ day\ smoker/current\ smoker)1}{}_{cs}$ and

$P^{(C=somedays\ smoker\ /B=current\ smoker)2}{}_{cs}$ the prevalence of being every day smoker and some days smoker respectively in county c within state s.

Then, $P^{(C=every\ day\ smoker\ /B=\ current\ smoker)1}{}_{cs} = \sum_i \sum_j \sum_k ((P^{A1}) \times (P^{B1}) \times (P^{C1}) \times Pop_{ijkcs}) / Pop_{cs}$

and $P^{(C=someday\ smoker/B=\ current\ smoker)2}{}_{cs} = \sum_i \sum_j \sum_k ((P^{A1}) \times (P^{B1}) \times (1-P^{C1}) \times Pop_{ijkcs}) / Pop_{cs}$