SUPPLEMENTARY INFORMATION ON STATISTICAL METHODS

The statistical analysis for each transition used parametric accelerated failure time (AFT) models for the cumulative incidence function, as described in Jeong and Fine (2007), which model the transition probability as a function of $\beta_0 + \beta_1$AGE + β_2RACE + β_3MARITAL_STATUS, where age, race and marital status are the covariates, and β_1, β_2 and β_3 are the parameters of interest. Coding the data as in Hudgens *et al.*, (2014), these models may be fitted separately for each transition with all of the commonly used parametric distributions that are available in PROC LIFEREG in SAS (the Weibull, the exponential, the log-logistic, the log-normal, the generalized gamma, the normal and the logistic distribution). Based on the lowest value of the fitting indices, the Akaike's information criterion (AIC) and the Bayesian Information Criterion (BIC), one model was selected for each transition type. As shown in Supplementary Table SVII, the log-normal distribution provided the best fit for all of the transitions, except for the low to high tryer transition (exponential), the moderate to low transition (log logistic), the moderate to pregnant transition (log logistic) and the high tryer to pregnant transition (GAMMA).

Supplementary Table SVII

Initial status	Transition status	Criterion	Weibull	Expo	GAMMA	LLOG	LNORM	LOG	NORM
Low	Moderate	AIC	9234.12	9737.66	9188.60	9199.05	**9187.57**	9581.41	9416.39
		BIC	9303.24	9799.87	9264.64	9268.18	**9256.69**	9650.54	9485.51
	High non-tryer	AIC	1217.64	1225.82	1220.29	1217.02	**1212.05**	1363.18	1345.83
		BIC	1286.76	1288.03	1296.33	1286.15	**1281.17**	1432.30	1414.95
	High tryer	AIC	1139.24	**1139.05**	1141.23	1139.16	1141.74	1227.51	1221.28
		BIC	1208.36	**1201.26**	1217.27	1208.28	1210.86	1296.63	1290.40
	Pregnant	AIC	1471.10	1473.50	1469.09	1470.68	**1466.97**	1590.70	1575.70
		BIC	1540.22	1535.71	1545.12	1539.80	**1536.10**[a]	1659.82	1644.82
Moderate	Low	AIC	7433.52	8036.33	7424.90	**7380.45**	7461.15	7566.59	7553.78
		BIC	7496.10	8092.64	7493.73	**7443.02**	7523.72	7629.16	7616.36
	High non-tryer	AIC	1720.45	1741.22	1712.72	1719.24	**1712.80**[b]	1973.36	1945.97
		BIC	1783.03	1797.53	1781.55	1781.81	**1775.37**	2035.93	2008.54
	High tryer	AIC	1670.50	1676.73	1669.73	1669.79	**1667.76**	1879.58	1854.76
		BIC	1733.08	1733.05	1738.56	1732.36	**1730.34**	1942.15	1917.33
	Pregnant	AIC	1479.27	1485.84	1480.53	**1478.73**	1480.04	1660.52	1648.87
		BIC	1541.84	1542.16	1549.36	**1541.31**	1542.61	1723.10	1711.45
High non-tryer	Pregnant	AIC	718.75	742.62	722.16	717.45	**711.45**	861.25	848.06
		BIC	763.45	782.35	771.83	762.15	**756.16**	905.95	892.76
High tryer	Pregnant	AIC	786.02	819.89	**756.85**	778.56	769.41	1015.37	994.93
		BIC	826.66	856.47	**801.55**	819.20	810.05	1056.01	1035.57

AIC, Akaike's information criterion; BIC, Bayesian Information Criterion; bolded values are best distributions for the given transition based on AIC or BIC.
[a]The log-normal distribution is selected based on the AIC value, while the BIC value is a little higher than the Exponential distribution.
[b]The log-normal distribution is selected based on the BIC value, while the AIC value is a little higher than the GAMMA distribution.

Goodness of fit of the selected models was further evaluated by reviewing probability plots. The LIFEREG procedure uses an iterative algorithm developed by Turnbull (1976) to compute a non-parametric maximum likelihood estimate of the cumulative distribution function (CDF) for the data and uses an inverse distribution scale to plot CDF as a straight line. The CDF estimated from the data plots is compared with the straight line to evaluate the deviation to the assumed distribution. We took out the effect of the covariates and created the probability plots for the residuals. The probability plots showed that the selected distribution for most transition types fits the data well, while the models for the transition from low to moderate and from moderate to low have a moderate deviation from the selected model. As a sensitivity analysis for the violation of the distribution assumption, we implemented a semi-parametric model—the Cause-Specific Subdistribution Hazards (CSSH) model from Fine and Gray (1999) and compared the parameter estimates for the transition from low to moderate (Supplementary Table SVIII) and from moderate to low (Supplementary Table SIX). As this model can only work with right censored data, the midpoint of the time interval is used for the cases with observed transitions. The parameter estimates between the CSSH model and the AFT model with log-normal distribution are mostly consistent in terms of the significant covariates and the direction of the parameter estimates. This provides evidence of robustness to the model distribution assumption.

Supplementary Table SVIII Comparison of parameter estimates between the AFT model and the CSSH model for the transition from low to moderate.

	AFT	CSSH	Direction of signs
≥25, <30 years			
≥30, <35 years	Significant	Significant	Consistent
≥35 years	Significant	Significant	Consistent
Currently not married			
Hispanic	Significant	Significant	Consistent
Black, Non-Hispanic	Significant	Significant	Consistent
Asian, Non-Hispanic	Significant	Consistent	
Other	Significant		Consistent

ATF, accelerated failure time; CSSH, Cause-Specific Subdistribution Hazards.