

Supplementary Material - Appendix SA1

Evaluation Results for the 80 Percent Threshold Classification Method

Table 1. Accuracy Metrics for the 80 Percent Threshold Classification Method

Method	Race/ Ethnicity	Total Applications in Group		%	False Negative Rate ² (%)	False Positive Rate ³ (%)
		Based on Self-Reporting	Estimated by Proxy Method			
BIFSG	Hispanic	24,794	23,125	8.8	6.9	8.9
BISG	Hispanic	24,794	21,795	13.5	7.8	9.3
BIFSG	NH Black	13,941	7,862	36.4	21.6	11.6
BISG	NH Black	13,941	6,751	43.5	23.8	11.2
BIFSG	NH White	159,960	146,439	9.3	2.0	3.0
BISG	NH White	159,960	139,314	13.9	2.1	3.1
BIFSG	NH API	12,700	10,841	14.1	9.5	9.0
BISG	NH API	12,700	10,770	15.7	8.8	9.4

Note 1: % Unclassified represents the number of applicants that self-report belonging to a particular group but cannot be classified by the proxy method, as percent of the total population that self-reports belonging to that group.

Note 2: False negatives in a particular group are applicants who self-report belonging to that group, but whom the proxy method categorizes into another group. The false negative rate is the ratio of the number of false negatives in that group to the total population that self-reports belonging to that group.

Note 3: False positives in a particular group are applicants whom the proxy method assigns to that group, when in fact they belong to another group. The false positive rate is computed as the ratio of the number of false positives categorized in that group to the total population that the proxy classifies in that group.

Table 2. Comparison of Race/Ethnicity Effects in Pricing and Underwriting: Self-Report vs Proxies

A. Adjusted Race/Ethnicity Effects on APR¹

Method	N obs ³	Hispanic			NH Black			NH API		
		Coef. (bps)	Bias (bps)	Bias Difference (bps)	Coef. (bps)	Bias (bps)	Bias Difference (bps)	Coef. (bps)	Bias (bps)	Bias Difference (bps)
self-report	122,836	5.4			5.5			-12.0		
BIFSG - prob \geq 0.8	109,681	5.7	0.3	-1.2	5.9	0.3	-0.9	-13.9	-1.9	0.8
BISG - prob \geq 0.8	104,099	6.9	1.5		6.7	1.2		-13.1	-1.0	

B. Adjusted Race/Ethnicity Effects on Denial Odds²

Method	N obs ³	Hispanic			NH Black			NH API		
		Odds Ratio	Bias	Bias Difference	Odds Ratio	Bias	Bias Difference	Odds Ratio	Bias	Bias Difference
self-report	173,899	1.501			1.495			1.355		
BIFSG - prob \geq 0.8	154,399	1.533	0.032	0.009	1.655	0.160	-0.072	1.394	0.040	0.024
BISG - prob \geq 0.8	146,433	1.524	0.023		1.727	0.232		1.371	0.016	

NOTE: The omitted race category is NH Whites. All effects are statistically significant at the 1 percent level. The bias is computed as the difference in the relevant coefficient or odds ratio between the proxy method and the self-report method. The bias difference is computed as the difference between the absolute value of the BIFSG bias and the absolute value of the BISG bias. Thus, a negative difference means that the magnitude of the BIFSG bias is smaller than that of the BISG bias.

Note 1: The adjusted race/ethnicity effects on APR are obtained from OLS regressions of APR on race/ethnicity indicators or probabilities, and controls for mortgage pricing factors.

Note 2: The adjusted race/ethnicity effects on denial odds are obtained from logistic regressions of the denied/approved indicator on race/ethnicity indicators or probabilities and controls for mortgage underwriting factors.

Note 3: When evaluating biases for the 80 percent threshold classification scheme, the regressions for the self-report method are estimated on the samples for which the continuous proxy probabilities can be computed, whereas the regressions for the proxy method are run on the smaller samples of applications that can be classified. This approach ensures that I measure the full bias associated with the proxy classifier, which may be partly due to misclassification and partly due to incomplete coverage.