The Predictive Validity of Static-99R for Sexual Offenders in California:

2016 Update

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Summary:

➢ Static-99R is an official risk assessment tool for sexual offenders in California.

➢ The purpose of this study is to update the predictive validity of Static-99R in California with 1,626 sex offenders from parole and probation systems.

➢ Overall, Static-99R works well in discriminating between recidivists and non-recidivists, but slightly lower recidivism rates than the norms, especially in parolee sample.

➢ The predictive accuracy of Static-99R across different ethnic groups (e.g., White, Black, and Hispanic) is generally all good.

➢ These results support the continued use of Static-99R in California.

The Predictive Validity of Static-99R for Sexual Offenders in California:

2016 Update

In 2007, in California, Static-99[1] (updated to use Static-99R[1,2] in 2008) was adopted as the official risk assessment tool in accordance with California Penal Code, §290.03 (evidence-based sex offender risk assessment instruments). Since then, Static-99/R has played significant roles for decision-making process in various settings (e.g., probation, parole) and stages (e.g., presentencing, release from incarceration) with different purposes (e.g., treatment or supervision intensity, registry, community notification, GPS).

As of August 2015, more than 70,000 registered sex offenders are living in the community in California. Given the significant influence of Static-99R on the sex offender management in California, it is important to evaluate the predictive accuracy of Static-99R for this specific jurisdiction. Although Static-99/R is the most widely used risk assessment tool[3,4] and considerable research demonstrates good predictive accuracy (AUC = .70, $n = 8,106$, $k = 23$),[5] it is an empirically derived instrument that needs to be periodically revised as new research becomes available.

In practice, the field studies conducted in the different jurisdictions have generally supported the use of Static-99/R, but the results have not been completely consistent.[7-9] In particular, previous research has identified meaningful variation in recidivism base rates across setting and samples[5], which might lead to under or overestimation of the likelihood of reoffending.

Given that Static-99/R was developed with mainly Caucasian sexual offenders, it is worth considering how well it works for diverse ethnic groups. Only a small number of studies have examined the performance of Static-99R with different minority ethnic sexual

offender groups (e.g., Asian, Hispanic, Indigenous people), and the result has so far been inconclusive.[6,10-13]

In 2014, predictive validity of Static-99/R for sex offenders in California was examined with parolees ($N = 475$).[11] The results indicated overall good discrimination across ethnic groups (AUCs of .75 to .86; White, Black, Hispanic) as well as good calibration when compared with the norms for Static-99R. Given the small number of sample and recidivists, especially in subgroup analyses across ethnicities, further study with a larger sample was suggested for stronger conclusions of the predictive validity for Static-99R in California, composed of diverse ethnic populations.

The current study has three parts. Part 1 was examining the predictive validity of Static-99R in a new sample of adult male sex offenders in California ($N = 1,626$; 1,198 of parolees and 428 of probationers, respectively) released in 2009-2010 and followed for 5 years. The primary research questions were the following: 1) Does Static-99R scale predict sexual recidivism for this new cohort of California and 2) Does the expected sexual recidivism rates by the norms correspond to the observed sexual recidivism rates in this specific sample.

Part 2 of this study focused on evaluating the predictive validity of Static-99R across different ethnic groups (e.g., White, Black, Hispanic) with a combined sample ($N = 2,101$) of Part 1 ($n = 1,626$) and the previous study.[11] The main research questions were the following: 1) Do the minority ethnic groups (e.g., Black and Hispanic) score higher on Static-99R than White sexual offender groups, 2) Does Static-99R predict sexual recidivism with different ethnic groups (e.g., White, Black, Hispanic) and 2) Are there any significant differences of sexual recidivism rates (i.e., base rates) within ethnic groups and from the norms.

In Part 3, we described the distribution of Static-99R scores in the combined California sample ($N = 2,101$) to be compared with the norms ($N = 2,011$).[14] Research question was that the distribution of Static-99R scores in California significantly differ from the norms (i.e., is there a need for a California specific percentile?).

Method

Sample

Part 1. This study included adult male sexual offenders released from the California Department of Corrections and Rehabilitation (CDCR; i.e., parolees) as well as those on probation (i.e., probationers). All sex offenders in both groups had been convicted of a sexually-motivated offense against an identifiable victim (Category A offenses).[15] We eliminated 29 cases, whose follow-up period was less than 5 years (lost 1 sexual recidivist) because we used fixed 5-year follow-up period for the entire analyses in this study.

Of the remaining 1,626 offenders, 73.7% ($n = 1,198$) were parolees and 26.3% ($n = 428$) were probationers. On average, the offenders were 43.2 years at release ($SD = 11.8$; range of 19.6 to 85). The average age of probationers ($M = 41.8$, $SD = 13.3$) was significantly younger than parolees ($M = 43.6$, $SD = 11.2$; $t (659.14) = 2.50$, $p < .05$).

The most common index offense convictions were for lewd and lascivious acts against child under 14 (44.8%; Cal. Pen. Code § 288) followed by rape (13.5%; § 261), sexual battery (9.5%, § 243.4), and exhibitionism (9%, § 314).

Part 2. We combined the sample of Part 1 ($n = 1,626$) and the previous study sample ($n = 475$)[12] in order to increase statistical power for ethnic subgroup analyses (e.g., White, Black, and Hispanic). Of the overall 2,101 offenders, 37.6 % ($n = 789$) were White, 22.2 % ($n = 466$) were Black, 34.2 % ($n = 719$) were Hispanic and 6% ($n = 127$) were Others/Unknown.

On average, the offenders were 42.9 years at release (SD = 11.6; range of 19.6 to 86.6). Hispanic sex offenders (M = 40.5, SD = 12.0) were significantly younger than White (M = 45.2, SD = 13.3) and Black sex offenders (M = 43.1, SD = 10.49); the age difference between Black and White sex offenders was also statistically significant.

Part 3. We used the combined California sample (N = 2,101; 2014 and 2016) for the distribution of Static-99R scores and compare with the norm distribution (N = 2,011; Hanson et al., 2012[14]).

Measures

Static-99R.[1,2] Static-99R is a 10-item empirical actuarial risk tools designed to predict sexual recidivism among adult male offenders. Static-99R is identical to Static-99 with the exception of revised age weights. The total score (ranging from -3 to 12) is calculated by summing all item points and can be used to place offenders in one of four risk categories: Low (-3 to 1), Low-Moderate (2, 3), Moderate-High (4, 5), High (6+). Static-99R scores in this study was later computed from Static-99 scores by using the offender's date of birth to calculate the updated age item.

Rater Reliability. Although rater reliability of the Static-99R was not directly assessed in this study, previous study[11] found overall good interrater reliability (ICC = .78, [.64, .90]) in a sample of 55 California parole and probation officers (ICC = .81, n = 30; ICC = .77, n = 25, respectively).

Recidivism. We examined three different recidivism outcomes, defined with arrests after released on community supervision as either parolees or probationers. 1) Sexual recidivism included any offense that was considered sexually motivated (contact and non-contact sex offenses). 2) Violent recidivism included all crimes that involved direct

confrontation with the victim. This category included contact sexual offences, but excluded non-contact sex offences. 3) Any recidivism included all crimes (sexual, violent, non-violent), as well as all technical offenses (e.g., breach of conditional release), regardless of whether they were sexually motivated.

Procedure

Offenders were scored on Static-99/R by CDCR or probation staff as part of routine practice. During 2006-2008, CDCR and probation policy required that all released sexual offenders were scored on Static-99/R. Recidivism information was provided by the California Department of Justice as of October, 2015. Recidivism was defined as an arrest for a sexual, violent, and any offense.

Plan of Analysis

In order for more complete understanding of the predictive accuracy of a risk scale, it is beneficial to consider calibration (correspondence between expected and observed recidivism rates) as well as discrimination (how different are recidivists from non-recidivists?). For discrimination, we used two statistical methods: 1) the area under the curve (AUC) from receiver operating characteristic (ROC) analysis[16] and 2) odds ratios from logistic regression.[17]

For calibration, we used: 1) *E/O* index (the ratio of expected number of recidivists divided by observed number of recidivists) and 2) fixed-effect meta-analysis of logistic regression parameters.

Area Under the Curve (AUC). AUC values indicate the probability that a randomly selected recidivist would have a more deviant score than a randomly selected non-recidivist. AUC can vary between 0 and 1, with .50 indicating the level of prediction that would be

expected by chance. According to Rice and Harris,[18] AUCs of .56 would be considered small, .64 would be moderate and .71 would be large. AUC values are expected to be smaller in prognostic studies than in diagnostic studies because the outcome of interest in prognostic studies does not exist at the time of assessment, and may never happen.[19] It has an advantage of insensitivity to base rates and robustness to outliers.[20]

Odds ratios. Odds ratios indicate the change in relative risk associated with one unit change in Static-99/R scores. For example, Static-99R scores are associated with a consistent relative risk increase of approximately 1.45,[21] which means the rate of recidivism increases 1.45 times as Static each -99R score increases. The primary advantage is that it is less affected by a restriction of range compared to AUCs.[22]

E/O **index.** The *E/O* index is the expected number of recidivists divided by observed number of recidivists. Perfect calibration is indicated by an *E/O* index of 1.0. Following Rockhill, Byrne, Rosner, Louie, and Colditz (2003),[23] the 95% confidence intervals for the *E/O* indices were computed as follows:

$$95\% \, \text{CI}(E/O) = (E/O)\exp\left(\pm\,1.96\sqrt{1/O}\right)$$

The expected number of recidivists was based on the 5-year sexual recidivism rates for routine/complete samples reported by Hanson, Thornton, Helmus, & Babchishin (2016).[21]

Comparing Logistic regression parameters. A second method of testing calibration was to examine the extent to which logistic regression parameters, such as intercept values (centered on Static-99R scores of 2) differed from the logistic regression parameters for the norms (Table 7: $B0_2 = -2.827$, $SE = 0.079$; $B1 = 0.368$, $SE = 0.025$).[21] Specifically, the $B0_2$ represents the expected recidivism rate for a Static-99R score of 2 (p_2) in logit units ($\ln[p_2/\{1-$

p_2}]). Differences between the parameters in the current sample and those of the norms were tested using fixed-effect meta-analysis.[24,25]

Results

Part 1

Overall, 45.1% (734/1,626) of offenders were arrested with any offense; 3.7% (60/1,626) were arrested with a violent offense; 4.8% (78/1,626) were arrested with a sexual offense during the fixed 5-year follow-up period. When comparing sexual recidivism rates between probationers and paroles, probationers had higher recidivism rates within 5 years than Parolees (4.3% vs. 6.1%; Table 1).

About 19.2% (5/26) of sexual re-offenses in the probationers and that 32.7% (17/52) of sexual re-offenses in the parolees were committed by offenders who were registered as transients at the time of re-arrest, whereas only about 6% (6,316/103,737) of registered sex offenders in the community are transient.[26] Collectively, transient status seems to be associated with higher sexual recidivism rates (overall odds ratio = 6.06 [3.70, 9.93]).

Discrimination

The average Static-99R score was 2.26 (Median = 2, SD = 2.37, range = -3 to 10). On average, parolees scored significantly higher than probationers (2.34 vs. 2.05; t (1,624) = 2.16, $p < .05$; Table 1). Using fixed 5-year follow-up, the overall AUCs were .756 [.701, .811] for sexual recidivism, .646 [.582, .710] for violent recidivism, and .686 [.660, .711] for any recidivism. Specifically, Static-99R had good discrimination ability for both groups, but it worked better for parolees (.779 vs. .720; Table 1 and Figure 1).

Table1. The AUC value of parole sample is greater than for probation sample

Groups	Sexual Recidivism Rates (%)	Number of recidivists/total	Static-99R M (SD)	AUC	95% CI Lower	95%CI Upper
Parole	4.34	52/1,198	2.34 (2.37)	.779	.721	.847
Probation	6.07	26/428	2.05 (2.37)	.720	.628	.812
Total	4.80	78/1,626	2.26 (2.37)	.756	.701	.811

Note. Based on fixed 5-year sexual recidivism analysis

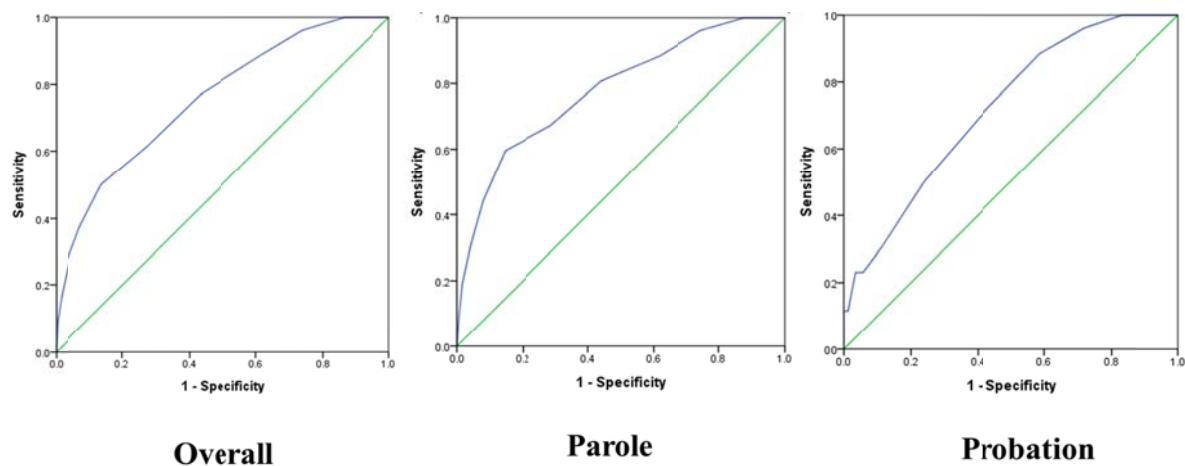**Overall**   **Parole**   **Probation**

Figure 1. ROC curves for parolees and probationers.

The relationship between Static-99R scores (centered on a score of 2) and sexual recidivism acceptably fit a logistic distribution (Hosmer-Lemeshow test was not significant: χ^2 = 5.50, df = 6, p = .482; $B0_2$ = -3.575, SE = .170; $B1$ = .430, SE = .050; *Figure 2*).

The 5-year sexual recidivism rate at score of 2 for parolees (2.1%) was significantly lower than that of probationers (4.3%; $Q_{between}$ = 4.47, df = 1, p = .03). Consistent with the results of AUC analysis, the discrimination (change in relative risk) for parolees was higher than for probationers (odds ratios = 1.60 vs. 1.45), but the difference was not significant ($Q_{between}$ = 0.83, df = 1, p = .36; Table 2).

Table 2. Parole sample has lower base rate, but higher relative risk rate than probation sample.

Groups	$B0_2$ (Base rate)	B1 (Relative risk)	Static-99R Odds Ratio	95% CI Lower	95% CI Upper
Parole	- 3.82 (2.1%)	0.47	**1.60**	1.41	1.80
Probation	- 3.10 (4.3%)	0.37	**1.45**	1.23	1.72
Average (fixed-effect)	- 3.52 (2.9%)	0.44	**1.55**	1.40	1.71
$Q_{between}$	$4.47, p = .03$	$.83, p = .36$			
I^2	.78	.00			

Calibration

The overall resulting logistic equation indicated a relative risk increase of 1.54 for each increase in Static-99R score ($e^{.430} = 1.54$), and an adjusted 5-year sexual recidivism rate of 2.7% for a Static-99R score of 2 ($[1/\{1+e^{-(3.575)}\}] = .0273$. When compared to the norms (from Hanson, et al., 2016), the adjusted (score of 2) base rate was significantly lower ($B0_2$ of -3.58 vs. -2.83; $Q_{between} = 15.93$, $df = 1$, $p < .001$), and the discrimination was larger, but not significantly ($B1 = .430$ vs. .368; $Q_{between} = 1.19$, $df = 1$, $p = .274$).

Table 3. Overall lower base rates in current sample than the norms

Static-99R	Norms (Hanson et al., 2016)	Overall	Parole	Probation
Base rate				
$B0_2$ (SD)	-2.83 (.079) (5.6%)	-3.58 (.170) (2.7%)	-3.82 (.223) (2.1%)	-3.10 (.261) (4.3%)
$Q_{between}$		**15.93*****	**17.68*****	.98
Relative risk				
B1	.368 (.025)	.430 (.050)	.469 (.063)	.372 (.086)
$Q_{between}$		1.19	2.23	.00

Note. *** $p < .001$, **$P < .01$, *$p < .05$.

For the parole sample, the pattern was very similar with what the overall sample showed compared to the norms: significantly lower base rate at score of 2 and slightly lager discrimination ($B0_2$ of -3.82 vs. -2.83; $B1$ = .469 vs. .368). For the probationer samples, however, the adjusted (score of 2) base rate and discrimination were very similar to the norms ($B0_2$ of -3.10 vs. -2.83; $B1$ = .372 vs. .368; Table 3).

Table 4. Recidivism rates in overall sample lower than expected.

Category	Sample size	Sexual Recidivists		E/O index	95% C.I.	
		Observed	Expected		Lower	Upper
Low	610	9	17.1	1.90	.99	3.64
Low-Moderate	543	21	36.2	**1.72**	1.12	2.64
Moderate-High	330	19	40.9	**2.15**	1.37	3.38
High	143	29	39.2	1.35	.94	1.95
Total	1,626	78	133.4	**1.71**	1.37	2.13

In comparison to norms for routine samples, the observed 5-year overall recidivism rate in the current sample was lower (4.8% vs. 8.2%; *E/O* index = 1.71, 95% C.I. = 1.37 – 2.13; Table 4). *Figure* 2 provides a plot of the observed recidivism rates per Static-99R risk score, the rates based on the smoothed logistic curve fitted to this data, and the recidivism rate norms for routine samples (Hanson, et al., 2016). As can be seen in *Figure* 2, the general pattern is that the recidivism rates in the current sample were lower than expected, specifically in Low-Moderate and Moderate-High (scores between 2 to 5; *E/O* index = 1.72 [1.12, 2.64] and 2.15 [1.37, 3.38].
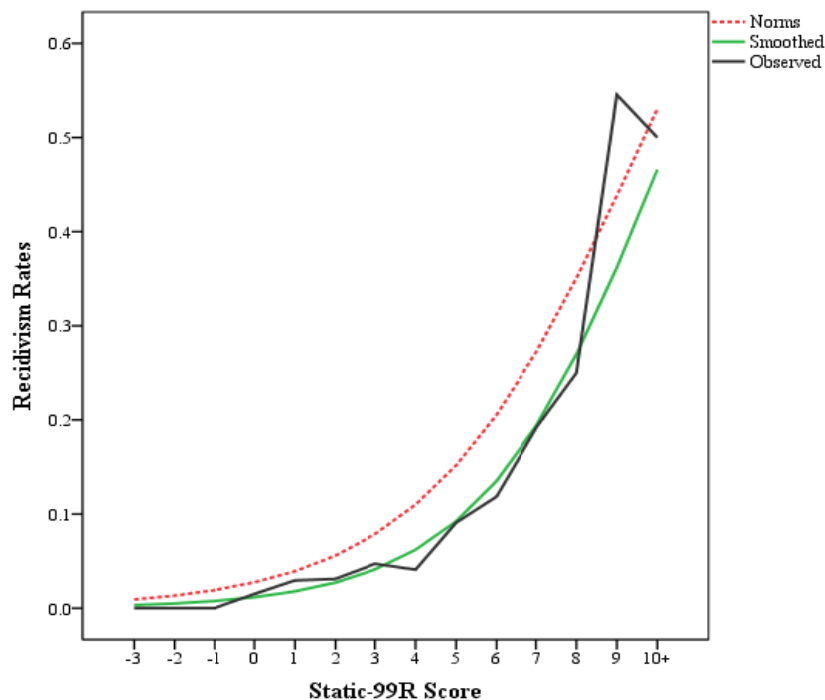
Figure 2. Logistic curve for overall sample with the norms.

For parole sample, the observed 5-year overall recidivism rate was lower than

expected rate (4.3% vs. 8.4%; *E/O* index = 1.96 [1.47, 2.54]; Table 5 and *Figure* 3).

Table 5. Parolees had lower recidivism rates than expected.

Category	Sample size	Sexual Recidivists		E/O index	95% C.I.	
		Observed	Expected		Lower	Upper
Low	441	6	12.49	2.08	.93	4.63
Low-Moderate	393	11	26.17	**2.38**	1.32	4.30
Moderate-High	250	12	31.06	**2.59**	1.47	4.56
High	114	23	30.93	1.34	.89	2.02
Total	1,198	52	100.65	**1.96**	1.47	2.54

For the probation sample, however, the observed 5-year overall recidivism rate in the

current sample was very similar to the expected rate (6.1% vs. 7.6%; *E/O* index = 1.26 [.86,

1.85]; Table 6 and Figure 3).

Table 6. Probationers had a recidivism rate similar to norms.

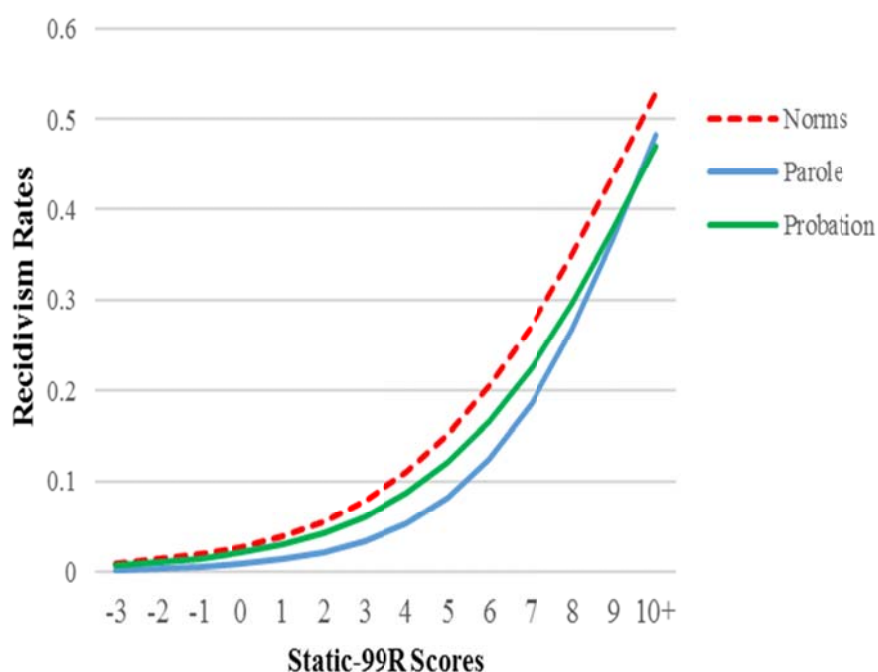| Category	Sample size	Sexual Recidivists		E/O index	95% C.I.	
		Observed	Expected		Lower	Upper
Low	169	3	4.58	1.53	.49	4.73
Low-Moderate	150	10	10.01	1.00	.54	1.86
Moderate-High	80	7	9.85	1.41	.67	2.95
High	29	6	8.27	1.38	.62	3.10
Total	428	26	32.71	1.26	.86	1.85

Figure 3. Logistic curves for each subsample with the norms.

Part 2

In combined sample (2014 and 2016), 45.4% (951/2,101) of offenders were arrested with any offense; 4.0% (85/2,101) were arrested with a violent offense; 4.8% (101/2,101) were arrested with a sexual offense during the fixed 5-year follow-up period. Black sex offenders had the highest sexual recidivism rates (6.4%), and Hispanic and Other/Unknown

groups had relatively lower sexual recidivism rates than other groups (3.1% and 2.4%, respectively; Table 7).

Discrimination

Across ethnic groups, there were significant differences in the average Static-99R scores, F (3, 2,097) = 25.56, p < .001. As can be seen in Table 7, Black sex offenders (M = 3.06) scored significantly higher than White, Hispanic, and Other/Unknown groups, all of which had very similar average scores (mean range of 1.97 to 2.04).

Table 7. Overall good discrimination for all ethnic groups.

Groups	Sexual Recidivism Rates (%)	Number of recidivists/total	Static-99R M (SD)	AUC	95% CI Lower	95% CI Upper
White	5.83	46/789	2.04 (2.44)	.817	.756	.877
Black	6.44	30/466	3.06 (2.32)	.738	.638	.839
Hispanic	3.06	22/719	1.97 (2.17)	.702	.589	.814
Other/Unknown	2.36	3/127	1.97 (2.15)	.727	.317	1.000
Total	4.81	101/2,101	2.24(2.35)	.771	.723	.819

Note. Based on fixed 5-year sexual recidivism analysis

Using fixed 5-year follow-up, Static-99R was able to discriminate recidivists from non-recidivists for all ethnic groups although AUC value of Other/Unknown group was not significant due to low sample size. White group had the highest AUC value of .817 [.756, .877] and Hispanic had the lowest AUC value of .702 [.638, .839] (Table 7 and *Figure* 4).
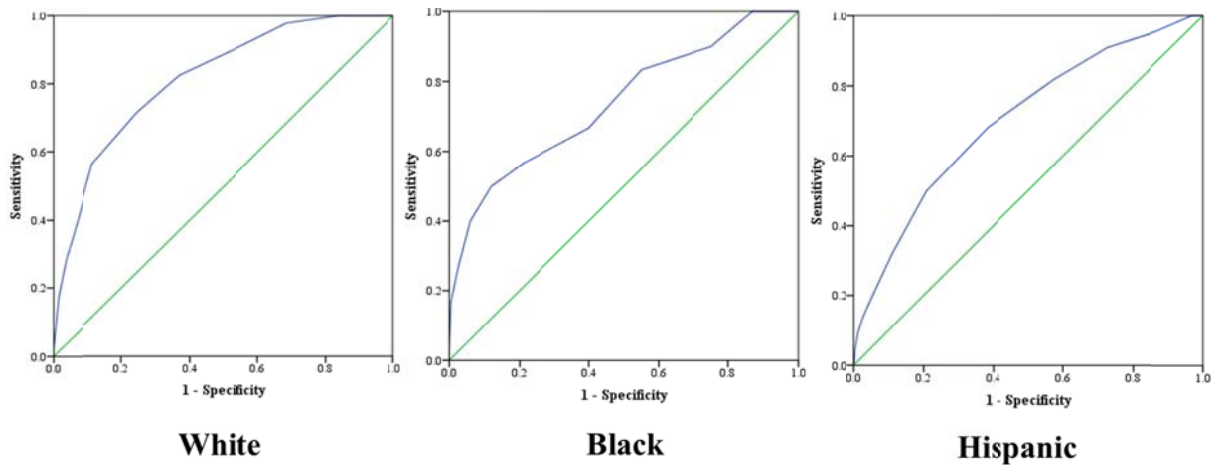
Figure 4. ROC curves across ethnic groups.

In this combined sample, the relationship between Static-99R scores (centered on a score of 2) and sexual recidivism also acceptably fit a logistic distribution (i.e., Hosmer-Lemeshow test was not significant: $\chi^2 = 3.65$, $df = 5$, $p = .600$; $B0_2 = -3.619$, $SE = .152$; $B1 = .456$, $SE = .044$; *Figure* 5).

Table 8. Similar base rates and relative risk rates across different ethnic groups.

Groups	$B0_2$ (Base rate)	B1 (Relative risk)	Static-99R Odds Ratio	95% CI Lower	95% CI Upper
White	-3.47 (3.0%)	.50	**1.65**	1.45	1.89
Black	-3.63 (2.6%)	.45	**1.58**	1.33	1.87
Hispanic	-3.70 (2.4%)	.33	**1.39**	1.16	1.67
Average (fixed-effect)	-3.58 (2.7%)	.45	**1.56**	1.43	1.71
Q ($df = 2$)	.47, $p = .792$	2.29, $p = .318$			
I^2	.00	.13			

The 5-year sexual recidivism rates at score of 2 across all ethnic groups were very similar (2.4% to 3.0%; $Q_{between} = .47$, $df = 2$, $p = .792$). The discrimination (change in relative risk) was highest for White offenders (odds ratios = 1.39 to 1.65), but the differences between racial groups were not statistically significant ($Q_{between} = 2.29$, $df = 2$, $p = .318$; Table 8).

Calibration

The overall resulting logistic equation indicated a relative risk increase of 1.58 for each increase in Static-99R score ($e^{.456}$ = 1.58, and an adjusted 5-year sexual recidivism rate of 2.6% for a Static-99R score of 2 ($[1/\{1+e^{-(3.619)}\}]$ = .0261. When compared to the norms (from Hanson, et al., 2016), the adjusted (score of 2) base rate was significantly lower ($B0_2$ of -3.62 vs. -2.83; $Q_{between}$ = 21.33, df = 1, p < .001), and the discrimination was larger, but not significantly ($B1$ = .456 vs. .368; $Q_{between}$ = 2.94, df = 1, p = .086).

Overall, adjusted base rates ($B0_2$) of each ethnic group were significantly lower than the norms (2.4% to 3.0% vs. 5.6%; all p-values < .05). Relative risk rates did not significantly differ from one another and the norm, but discriminations of White and Black were larger than the norms (Table 9).

Table 9. Lower base rates and larger relative risk rates of current sample than the norms.

Static-99R	Norms	Overall	White	Black	Hispanic
Base rate					
$B0_2$ (SD)	- 2.83 (.079) (5.6%)	-3.62 (.170) (2.6%)	-3.47 (.235) (3.0%)	-3.63 (.330) (2.6%)	-3.70 (.260) (2.4%)
$Q_{between}$		**21.33*****	**6.66****	**5.59***	**10.29****
Relative risk					
B1	.368 (.025)	.456 (.044)	.503 (.068)	.454 (.087)	.331 (.092)
$Q_{between}$		2.94	3.45	.89	.16

Note. *** p < .001, **P < .01, *p < .05

In comparison to norms for routine samples, the observed 5-year overall recidivism rate in this combined sample was lower (4.8% vs. 8.1%; *E/O* index = 1.68, 95% C.I. = 1.39 – 2.04; Table 10). *Figure* 5 provides a plot of the observed recidivism rates per Static-99R risk score, the rates based on the smoothed logistic curve fitted to this data, and the recidivism rate

norms for routine samples (Hanson, et al., 2016). As can be seen in *Figure* 5, the general

pattern is that the recidivism rates in the current sample were lower than expected, except for

High risk category.

Table 10. Overall recidivism rates were lower than expected.

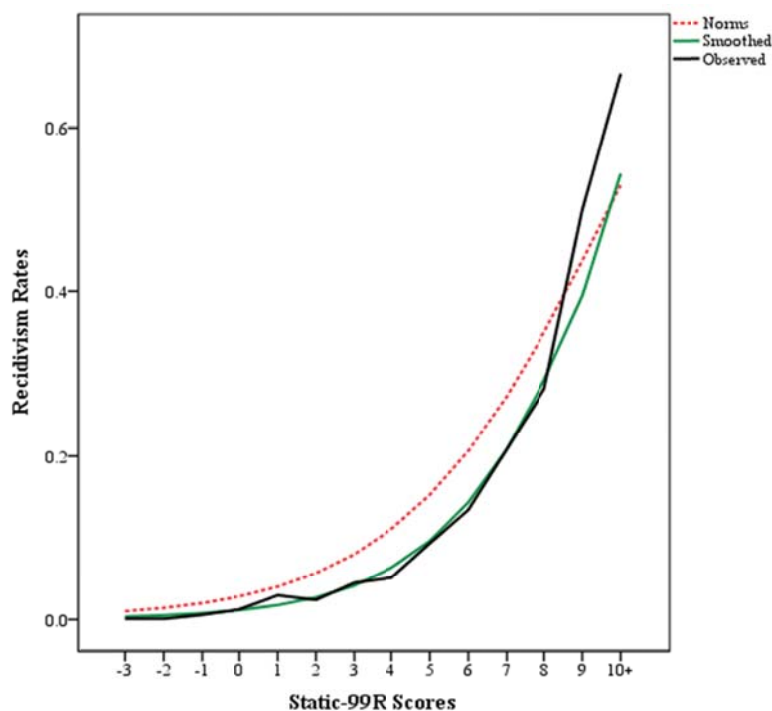| Category	Sample size	Sexual Recidivists		E/O index	95% C.I.	
		Observed	Expected		Lower	Upper
Low	799	12	22.61	**1.88**	1.07	3.32
Low-Moderate	706	23	46.74	**2.03**	1.35	3.06
Moderate-High	419	27	52.00	**1.93**	1.32	2.81
High	177	39	48.78	1.25	.91	1.71
Total	2,101	101	170.13	**1.68**	1.39	2.04

Figure 5. Logistic curve for overall sample with the norms.

For White sexual offenders, the observed 5-year overall recidivism rate was slightly

lower than expected rate (5.8% vs. 7.8%; *E/O* index = 1.34 [1.00, 1.79]; Table 11 and *Figure*

6).

Table 11. Recidivism rate for Whites were slightly lower than norms.

Category	Sample size	Sexual Recidivists		E/O index	95% C.I.	
		Observed	Expected		Lower	Upper
Low	335	4	9.15	2.29	.86	6.09
Low-Moderate	238	9	15.53	1.73	.90	3.32
Moderate-High	148	15	18.08	1.21	.73	2.00
High	68	18	18.75	1.04	.66	1.65
Total	789	46	61.51	**1.34**	1.00	1.79

For Black sex offenders, the observed 5-year overall recidivism rate was also lower than the expected rate (6.4% vs. 10.4%; *E/O* index = 1.61 [1.12, 2.30]), but significantly only in Moderate-High risk category (scores of 4 and 5; *E/O* index = 3.15 [1.31, 7.56]; Table 12 and *Figure* 6).

Table 12. Recidivism rates for Blacks were lower than norms.

Category	Sample size	Sexual Recidivists		E/O index	95% C.I.	
		Observed	Expected		Lower	Upper
Low	111	3	3.41	1.14	.37	3.53
Low-Moderate	161	7	10.63	1.52	.72	3.18
Moderate-High	127	5	15.73	**3.15**	1.31	7.56
High	67	15	18.50	1.23	.74	2.05
Total	466	30	48.27	**1.61**	1.12	2.30

For Hispanic sample, the observed 5-year overall recidivism rate was lower than the expected rate (3.1% vs. 7.1%; *E/O* index = 2.33 [1.54, 3.55]), specifically in Low-Moderate and Moderate-High (scores of 2 to 5; *E/O* index = 2.51 [1.20, 5.26] and 2.17 [1.03, 4.55]; Table 13 and *Figure* 6).

Table 13. Recidivism rates for Hispanics were lower than norms.

| Category | Sample size | Sexual Recidivists | | E/O index | 95% C.I. | |
		Observed	Expected		Lower	Upper
Low	301	4	8.61	2.15	.81	5.74
Low-Moderate	262	7	17.56	**2.51**	1.20	5.26
Moderate-High	120	7	15.17	**2.17**	1.03	4.55
High	36	4	10.02	2.51	.94	6.68
Total	719	22	51.37	**2.33**	1.54	3.55
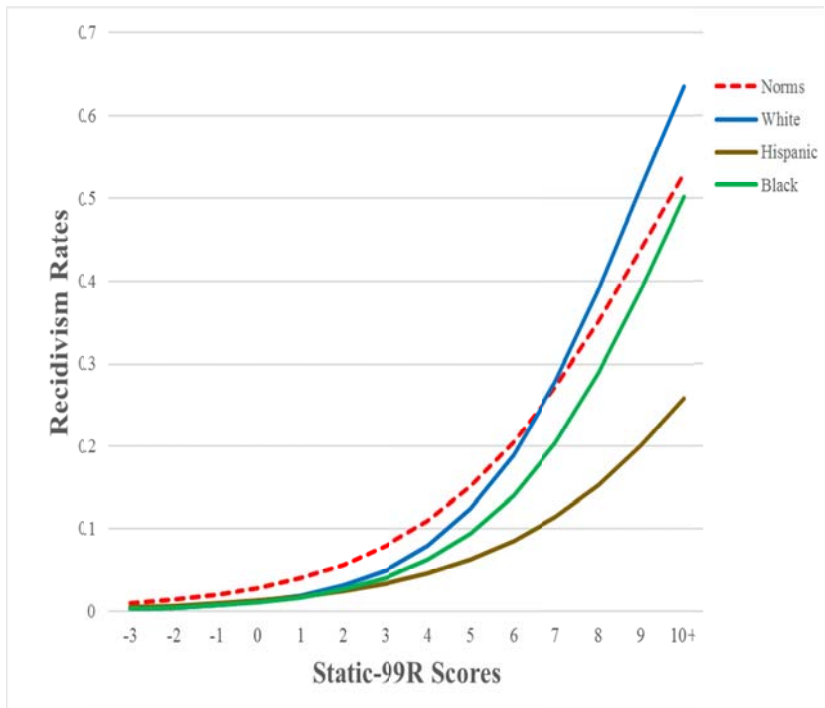
Figure 6. Logistic curves for each ethnic group with the norms.

Part 3

As can be seen in *Figure 7*, the distribution of Static-99R scores of the California

sample was substantially similar with the norm distribution. This result supports the use of the
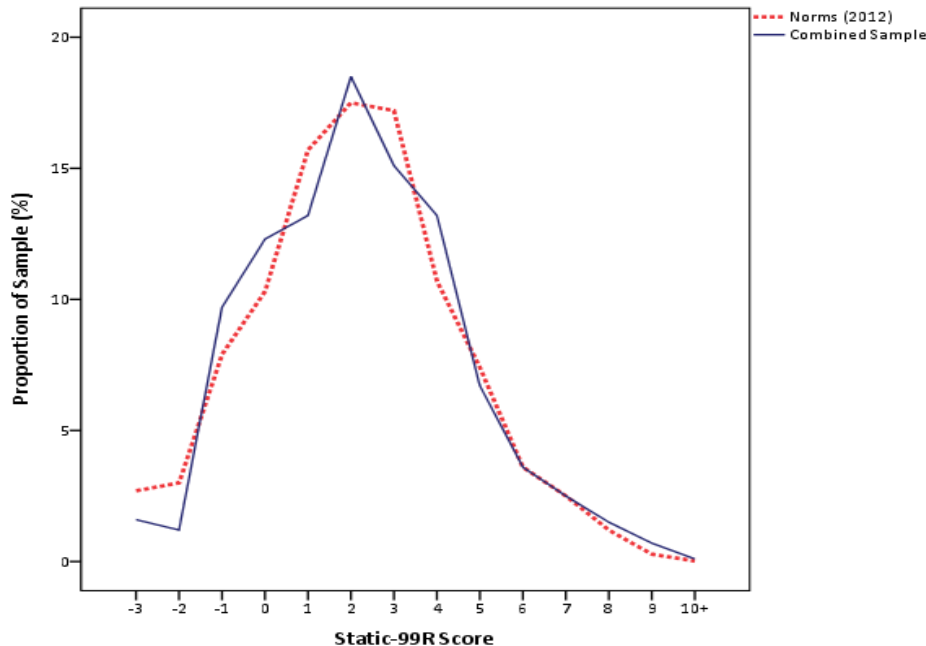
norm percentile ranks for California sex offenders

Figure 7. Similar distributions of Static-99R scores between California sample and the norms.

Discussion

This prospective study with a new cohort found overall good predictive accuracy among sex offenders across two settings (parole and probation). The overall sexual recidivism base rate was significantly lower than the norms (4.8% after 5 years), specifically in the moderate risk categories (Static-99R scores of 2 to 5). The reasons for the lower than expected rates are not fully known, but may be related to the research method used (e.g., accuracy of records), the effectiveness of practices for managing sexual offenders in California, or other factors not fully understood.

In subgroup analyses, Static-99R worked better for the parolee sample to discriminate recidivists and non-recidivists than for the probation sample and the norms, but the difference was not statistically significant. As expected, the average Static-99R score of parolees was significantly higher than probationers; however, the sexual recidivism rate of parolees was unexpectedly lower than that of probationers and the norms. Further studies are necessary to

examine factors that may contribute to this low recidivism rate of the parole sample (e.g., sexual offender treatment, GPS).

Consistent with the findings from previous studies, Black sex offenders had the highest Static-99R score and sexual recidivism rates, while Hispanic had relatively lower Staic-99R score and sexual recidivism rates. The discrimination of Static-99R across ethnic groups (White, Black, and Hispanic) were generally all good, with the largest value for White and the lowest for Hispanic. Base rates (at score of 2) across ethnic groups were very similar, but were significantly lower than norms. In ethnic subgroup analyses, the overall sexual recidivism rate of Hispanic sex offenders was substantially lower than the norms (i.e., poorer calibration) as compared to other groups.

Limitations

Although the overall sample was large (101 recidivists), the sub-analyses with each ethnic group had relative lower statistical power (e.g., 22 Hispanic recidivists). Additional research with a large number of each ethnic groups is recommended for more confident conclusion in minority ethnic sex offenders.

Recidivism information for this study was provided solely by the California Department of Justice. This limited recidivism information (without nationwide criminal records) would affect predictive accuracy, including the validity of the absolute recidivism estimates. This concern is particularly related with Hispanic sex offenders whose reoffending may be less likely to be detected (e.g., if they frequently leave the U.S).

We did not have item-level data and could not examine if the predictive accuracy of each item or propensities (i.e., sexual deviance, or general criminality) varied across ethnic groups. Although Hispanic and Black populations constitute a large proportion of the

California population, there are still other minority ethnicities (e.g., Asians, Native

Americans) for which we have very limited information.

Conclusions

The current study demonstrates that Static-99R works well to predict the likelihood of

sexual recidivism in California across different settings and ethnic groups. Although the

overall magnitudes of AUC value are lower than in the 2014 California study, it is still above

average compared to other jurisdictions. The current findings support the continued use of

Static-99R in California.

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