GPS Recidivism Report:

An analysis of FY 2005 thru FY 2006 GPS discharges

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Introduction

This report examines the effect of GPS supervision on the post-release survival rate of Oklahoma Department of Corrections (ODOC) offenders. The study population for this sample included all offenders who participated in and released from this program during July 1, 2004 and June 30, 2006 (FY05 thru FY06). To provide a background for the type of offenders included in this study, the report begins with a discussion of those in the sample as well as introduces the statistical model used to conduct this analysis. Following is a discussion of the survival analysis findings as they specifically relate to those who successfully completed the GPS program. The results are stratified by LSI risk score and then release to location. For this study, all offenders were followed post-release for 36 months.

Methods

Sample

The data used for this analysis come from the Offender Management System (OMS). During Fiscal Year 2005 and Fiscal Year 2006, 751 offenders were assigned to GPS supervision. By the end of the study period only 694 offenders had been removed from the device and, therefore, were eligible to be included in the study. As the outcome of interest is reincarceration after release from GPS, only offenders who had discharged 36 months prior to the end of the study period were included to allow all an equal time frame in which to be reincarcerated.

Of those that were removed, 667 (96%) successfully completed their GPS term. The remaining 27 (4%) offenders did not successfully complete their GPS term evidenced by their placement at a higher level of security. For the purpose of assessing the effectiveness of GPS supervision on recidivism, and due to sample size limitations, the survival analysis discussed later in the report solely focuses on those offenders who successfully completed their GPS term. However, due to the analysis stratifying the results by LSI risk score, 9% of the offenders could not be included due to having no LSI assessment at prison admission and thereby lowering the final sample size (N=606).

Several variables requiring a definition will be addressed throughout the report. These are: recidivism, LSI risk score, and release to location. Recidivism is defined as an offender returning to prison once he/she has been released from GPS supervision. LSI risk score is an assessment score indicating the offender's risk of recidivism. For this study, the risk score assessed at the time of prison admission is used. The release to location is a categorical variable that indicates the location to where an offender was released once he/she was discharged from GPS supervision. This study focuses on release to Probation/Parole or discharge from the custody of the ODOC. All terms related to the actual statistical model used in this study will be discussed below in the "Analysis" section.

Analysis

The data for this study were first analyzed using descriptive statistics. This includes both an analysis of those that completed GPS as well as those who failed GPS. Next, a survival analysis was conducted to examine the rate at which offenders return to prison over time. Survival analysis is a statistical method used to analyze event history data. Event history data are data that represent the duration in time until an event occurs. Specifically, this report uses the Kaplan-Meier model to estimate the survival probability of offenders who completed GPS supervision. This specific model is used for exploratory analysis and does not account for other variables' impact (e.g., number of prior incarcerations) on the occurrence of an event (i.e., reincarceration). Only time from release to an occurrence of the event is considered. If an offender does not experience the event during the study period, then he/she is considered to have "survived."

The survival rate represents the probability that a case will experience an event at any given time, and in this analysis, the event is reincarceration after GPS release. The output of interest is a survival distribution that depicts the proportion of the sample population that survived up to a specific point in time. To determine the survival rate, both the duration in time from when an offender was released from GPS and the number of offenders exposed to risk at a given time are considered. Survival analyses allow for the inclusion of censored data (cases that have not yet experienced the event by the end of the study period) and thereby more accurately estimate the survival rate.

As indicated above, the survival analysis will only be conducted on the successful GPS completers. The primary reason for this is that the sample size of the offenders who did not successfully complete their GPS term, but ultimately released from prison, is too small from

which to draw conclusions. The survival distribution of the GPS completers is first stratified by LSI risk score assessed at the time the offender entered into prison. Also, the study analyzed the survival rate of GPS completers grouped by LSI risk score and then stratified by the location to where the offender was released after completing GPS (i.e., probation/parole, discharge from ODOC custody).

Results

The data for this study were first analyzed using descriptive analyses in order to provide information regarding the type of offenders who discharged from GPS. Table 1 shows the results of an analysis of sex, age, days on GPS, and other variables for GPS discharges, both the completers and failures.

Table 1. Descriptive Statistics of GPS discharges: Completers (N=667), Failures (N=27)

		Frequency (N)		*Percent/Mean*	
Variable	*Coding*	*Completers*	*Failures*	*Completers*	*Failures*
Sex	Male	443	20	66.4%	74.1%
	Female	224	7	33.6%	25.9%
Race	African American	96	6	14.4%	22.2%
	Asian	2	-----	0.3%	-----
	Caucasian	500	19	75.0%	70.4%
	Hispanic	13	-----	1.9%	-----
	Native American	56	2	8.4%	7.4%
Age (in years)	-----	-----	-----	37.9	34.2
Cont. Offense (Top 5)	Distributing CDS	193	7	28.9%	25.9%
	Poss./Obtain. CDS	175	5	26.2%	18.5%
	Larceny	72	5	10.8%	18.5%
	DUI	61	2	9.1%	7.4%
	Forgery	42	2	6.3%	7.4%
	All Other Offenses	124	6	18.6%	22.2%
Release to Location	Probation/Parole	362	9	54.3%	33.3%
	Discharged	305	18	45.7%	66.7%
Days on GPS	-----	-----	-----	122.7	100.7
LSI Risk Score	Low	184	3	27.6%	11.1%
	Moderate	339	15	50.8%	55.6%
	High	83	6	12.4%	22.2%
	Missing Value	61	3	9.1%	11.1%

The survival analysis model was used to examine the findings as they pertained to different stratifications of the data. In Analysis 1, the survival rate of all successful GPS completers was analyzed when stratified by LSI risk score. The results are listed below.

Analysis 1: The survival rate of the Low Risk GPS Completers at the end of 36 months was 89%; the Moderate Risk GPS Completers at the end of 36 months was 88%; the High Risk GPS Completers at the end of 36 months was 86%. This difference between these groups is not statistically significant at the $p < .05$ level. The results of this analysis are depicted in Figure 1 (please see attachment).

In Analysis 2, the survival rate of all successful GPS completers assessed as High Risk, Moderate Risk, and Low Risk was stratified by the location to where the offenders were released post-GPS – Probation/Parole or discharge from the custody of ODOC. The results are listed below.

Analysis 2A: The survival rate of the Low Risk GPS Completers who were released to Probation/Parole at the end of 36 months was 92%; the Low Risk GPS Completers who were discharged from ODOC at the end of 36 months was 85%. This difference between the groups is not statistically significant at the $p < .05$ level. The results are presented in Figure 2 (please see attachment).

Analysis 2B: The survival rate of the Moderate Risk GPS Completers who were released to Probation/Parole at the end of 36 months was 86%; the Low Risk GPS Completers who were discharged from ODOC at the end of 36 months was 91%. This difference between the groups is not statistically significant at the $p < .05$ level. The results are presented in Figure 3 (please see attachment).

Analysis 2C: The survival rate of the High Risk GPS Completers who were released to Probation/Parole at the end of 36 months was 87%; the High Risk GPS Completers who were discharged from ODOC at the end of 36 months was 84%. This difference between the groups is not statistically significant at the $p < .05$ level. The results are presented in Figure 4 (please see attachment).

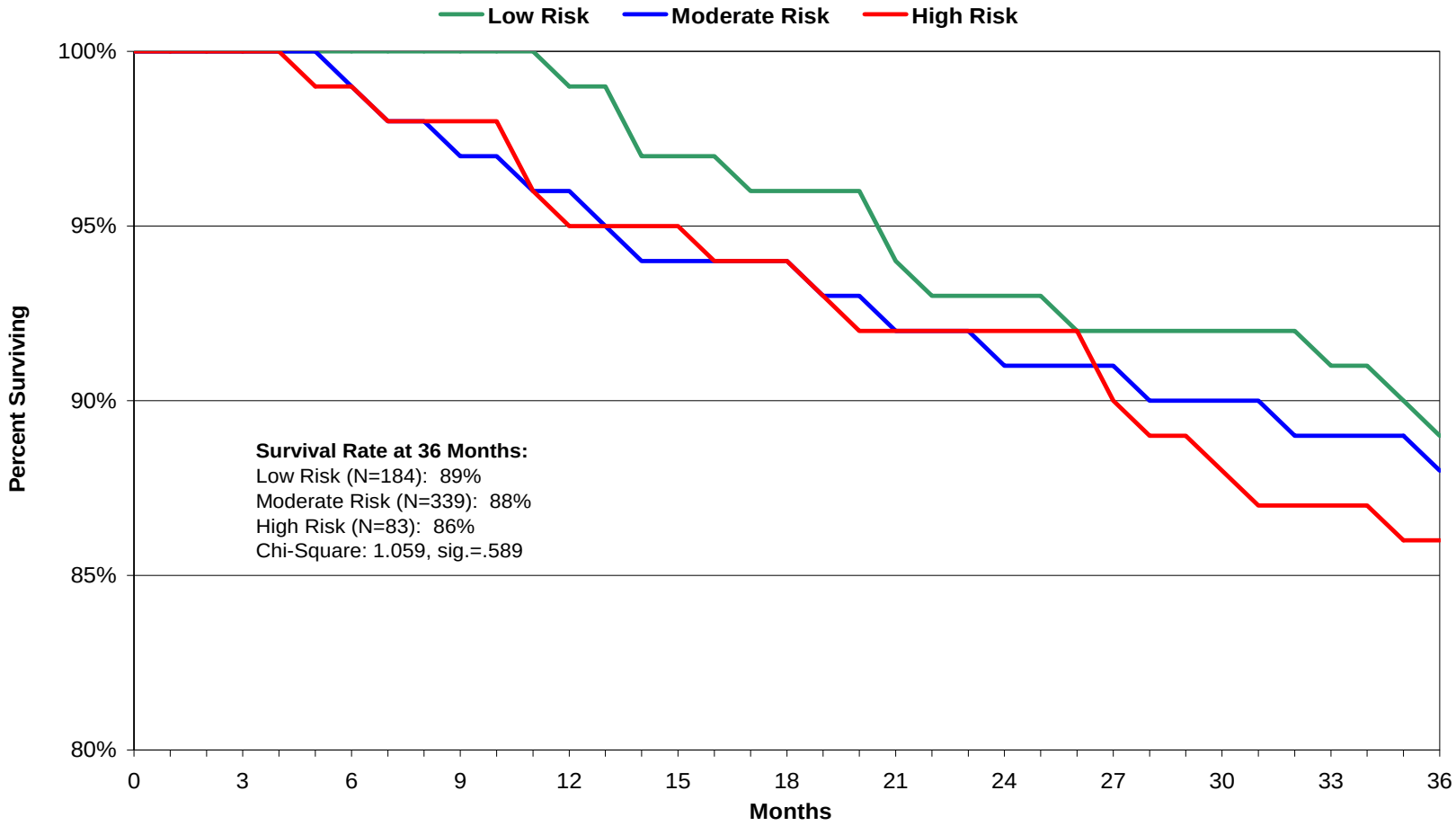
Conclusion

When analyzing the recidivism rate of FY05 thru FY06 GPS completers, the findings indicate that those who were assessed as Low risk have the highest survival rate at the end of 36 months (89%), while the High risk offenders return to prison more quickly with a 36 month survival rate of 86%. Regarding survival rates of GPS completers grouped by risk score and stratified by release to location, there are interesting findings. The Low risk offenders fared better if they were released to Probation and Parole instead of immediately discharging from the custody of ODOC with a 92% survival rate versus 85% survival rate, respectively. The High risk offenders yielded similar findings at the end of the 36 months follow-up period with an 87% survival rate versus an 84% survival rate, respectively. However, the offenders assessed with a Moderate risk score appear to return to prison less quickly if released from the custody of ODOC (91%) instead of being placed under Probation and Parole supervision (86%). Please note, however, that these differences in all survival rates are not statistically significant.

Limitations

As indicated above, the Kaplan-Meier model used to assess the survival distribution of the GPS completers should be used for exploratory purposes only. It does not consider the effect of other variables on the survival rate. If other variables are included then the survival rate may alter.

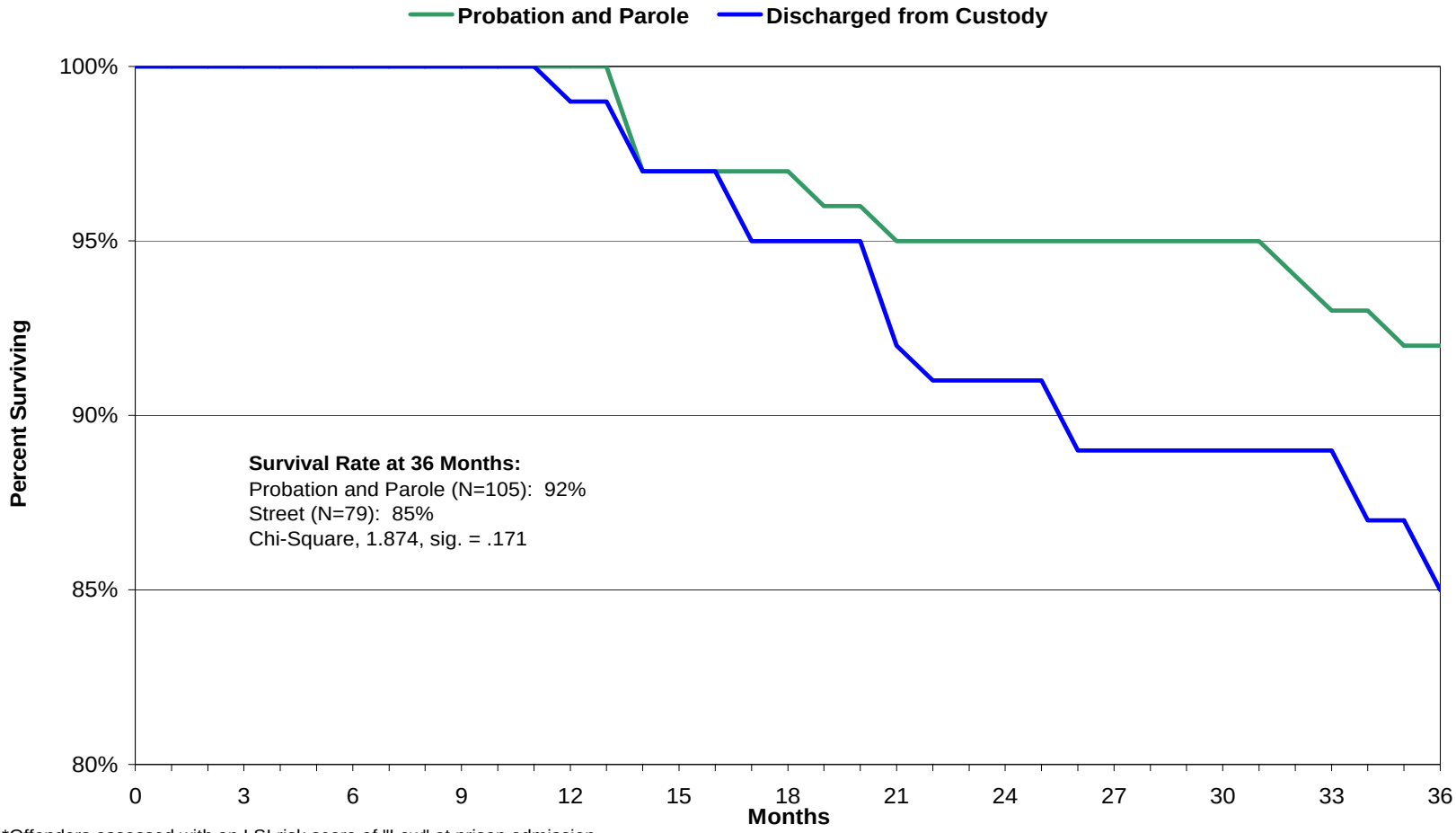
Figure 1. Survival Analysis of FY05 thru FY06 GPS Completers* Stratified by LSI Risk Score**



*Offenders recorded in the Offender Management System as having been removed from GPS and not returning to a higher level of security.

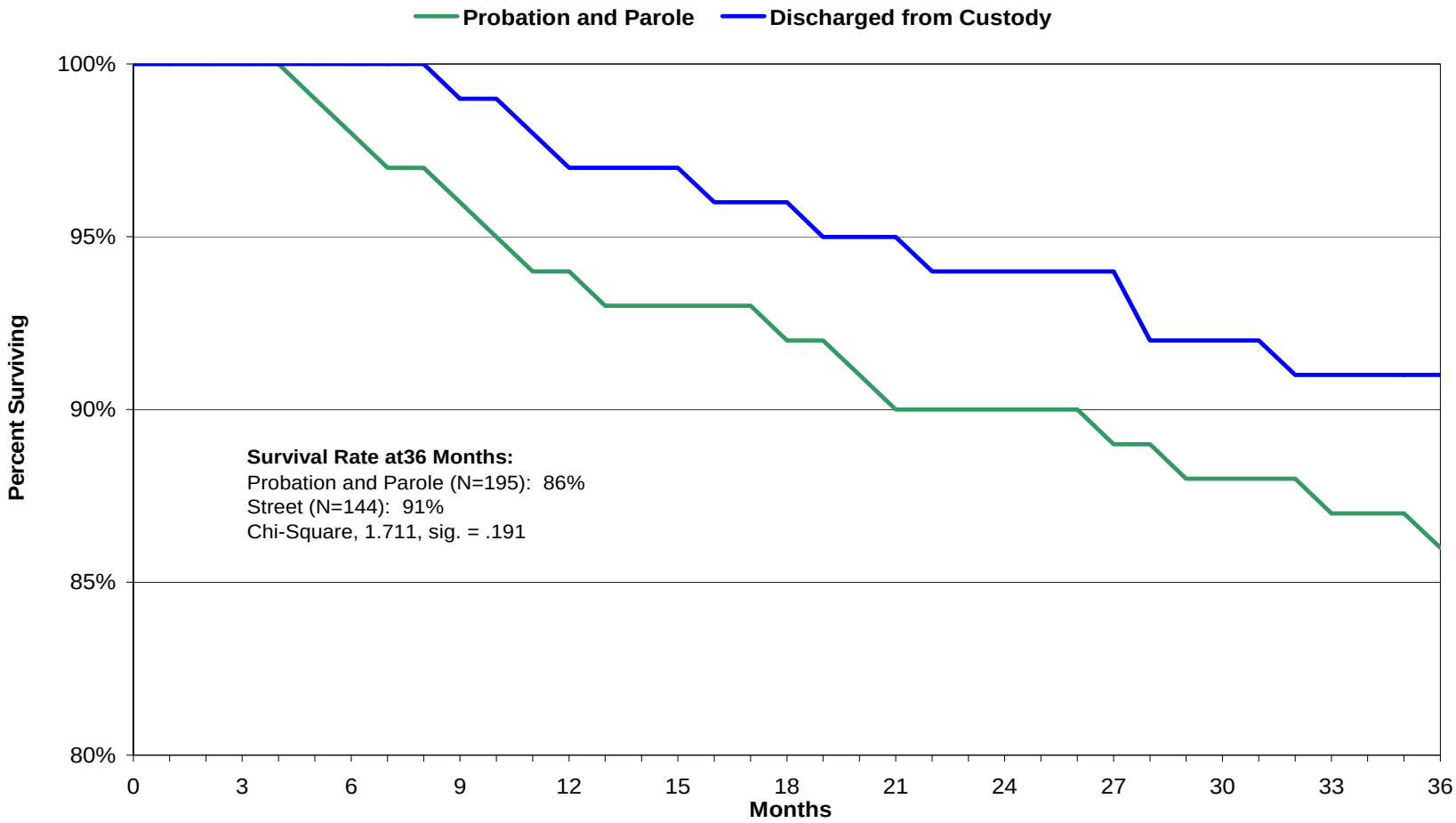
**LSI risk score assessed at prison admission.

Figure 2. Survival Analysis of Low Risk* FY05 thru FY06 GPS Completers Stratified by Release To Location**



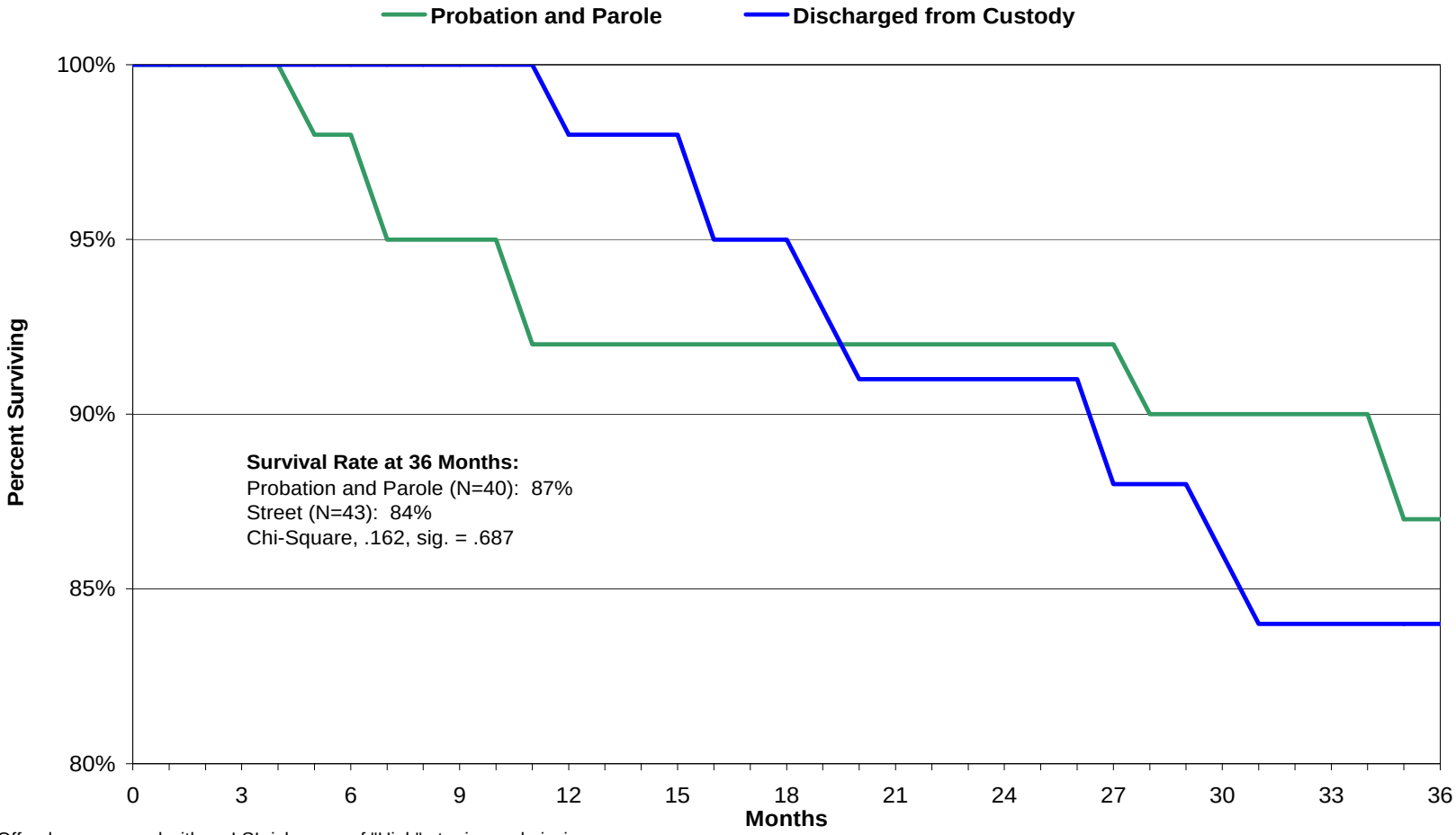
*Offenders assessed with an LSI risk score of "Low" at prison admission.
**Offenders recorded in the Offender Management System as having been removed from GPS and not returning to a higher level of security.

Figure 3. Survival Analysis of Moderate Risk* FY05 thru FY06 GPS Completers Stratified by Release To Location**



*Offenders assessed with an LSI risk score of "Moderate" at prison admission.
**Offenders recorded in the Offender Management System as having been removed from GPS and not returning to a higher level of security.

Figure 4. Survival Analysis of High Risk* FY05 thru FY06 GPS Completers Stratified by Release To Location**



*Offenders assessed with an LSI risk score of "High" at prison admission.

**Offenders recorded in the Offender Management System as having been removed from GPS and not returning to a higher level of security.