Attachment Five (5)

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Contents: Recidivism in Nevada White Paper

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Recidivism in Nevada: A Closer Look at Trends in Domestic Violence

David Speights | PhD, Chief Data Scientist, Appriss
Daniel Downs | PhD, Senior Statistical Criminologist, Appriss
Adi Raz | DBA, Senior Director, Data Sciences, Appriss
Jose Chavez | B.S., Data Analyst, Appriss
Nicole O'Banion | Ombudsman for Domestic Violence, Sexual Assault and Human Trafficking, State of Nevada Office of the Attorney General

About the Authors

David B. Speights, Ph.D.
David Speights is Chief Data Scientist at Appriss Inc., an industry-leading data and analytics firm that provides proprietary solutions that address risk, fraud, security, safety, and compliance issues. He has 20 years of experience developing and deploying analytical solutions for some of the world's largest companies and government agencies. He holds a Ph.D. in Biostatistics from the University of California, Los Angeles, and has several patents.

Daniel M. Downs, Ph.D.
Daniel Downs is the Senior Statistical Criminologist at Appriss. He is an author, presenter, and researcher with over 10 years of modeling and analytical experience in loss prevention and criminology. He received his Ph.D. in Criminology from the University of Illinois and his M.A. in Experimental Psychology from California State University, San Bernardino.

Adi Raz, Doctor of Business Administration
Adi Raz is the Senior Director of Data Sciences and Modeling at Appriss. Dr. Raz has over 15 years of experience developing analytics solutions for the retail, financial services, healthcare, public safety, fundraising, and insurance industries. She received her B.S. in Economics and Statistics from James Madison University, her MBA from Pepperdine University, and her doctorate in Business Administration from Walden University.

Jose Chavez
Jose Chavez is a Data Analyst on Appriss' Data Science Team where he is responsible for extracting, transforming, loading, and analyzing data. He received his B.S in Mathematics from the University of California, Los Angeles.

Nicole O'Banion
Nicole O'Banion is the Office of the Nevada Attorney General's liaison for issues related to domestic and intimate partner violence, sexual assault and exploitation, and human trafficking. She acts as a state-level coordinator of the Nevada Committee on Domestic Violence and of system-wide improvements in the education, prevention, and intervention of these crimes, and works to increase accountability for perpetrators. Her experience in areas of trauma, abuse intervention, child advocacy, domestic violence, sexual assault, human trafficking, and the legal field informs her work in this role and helps her more fully serve the needs of communities statewide.

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Executive Summary and Key Findings

Criminal justice reform is an issue at the forefront of public opinion and policy change, as correctional facilities focus on rehabilitating individuals in an attempt to curb recidivism in their communities. Recidivism, reengaging, or relapse into prior criminal habits after receiving a sanction, punishment, or intervention (Blumstein & Larson, 1971; Elderbroon & King, 2014) is a key indicator in understanding the effectiveness of rehabilitation. However, measuring recidivism is a complicated and multifaceted issue.

This study is focused on recidivism as it pertains to domestic violence (DV). According to the United States Department of Justice, domestic violence is defined as a pattern of abusive behavior in a relationship perpetrated by one partner to gain or maintain control over another. Domestic violence is a significant societal problem affecting the mental, emotional, and physical well-being of millions of Americans each year. In addition to the impact on victims, the Center for Disease Control (CDC) estimates that costs associated with domestic violence-related incidents exceed $5.8 billion annually, with $4.1 billion associated with medical and mental health care costs (Gerberding, Binder, Hammond & Arias, 2003). Despite the many rehabilitative programs in the U.S., the rate of recidivism for domestic violence offenders remains high. With such rates of domestic violence-related recidivism and a lack of domestic violence-related recidivism studies, more research is warranted and, more effective intervention tactics are necessary to provide victims with the protection they need.

This study was conducted by Appriss' Data Science Team, in collaboration with The Nevada Attorney General's Office, and represents the foundation for an in-depth assessment of domestic violence-related recidivism in Nevada. The purpose of this study was to closely examine domestic violence-related recidivism, in order to improve rehabilitation tactics, reduce crime, and strengthen overall public safety. The study includes analyses of domestic violence-related recidivism by geographic concentration, by the recidivist's criminal history, the recidivist's time-to-re-incarceration, an investigation into the characteristics of domestic violence, and the percent of transient domestic violence recidivists.
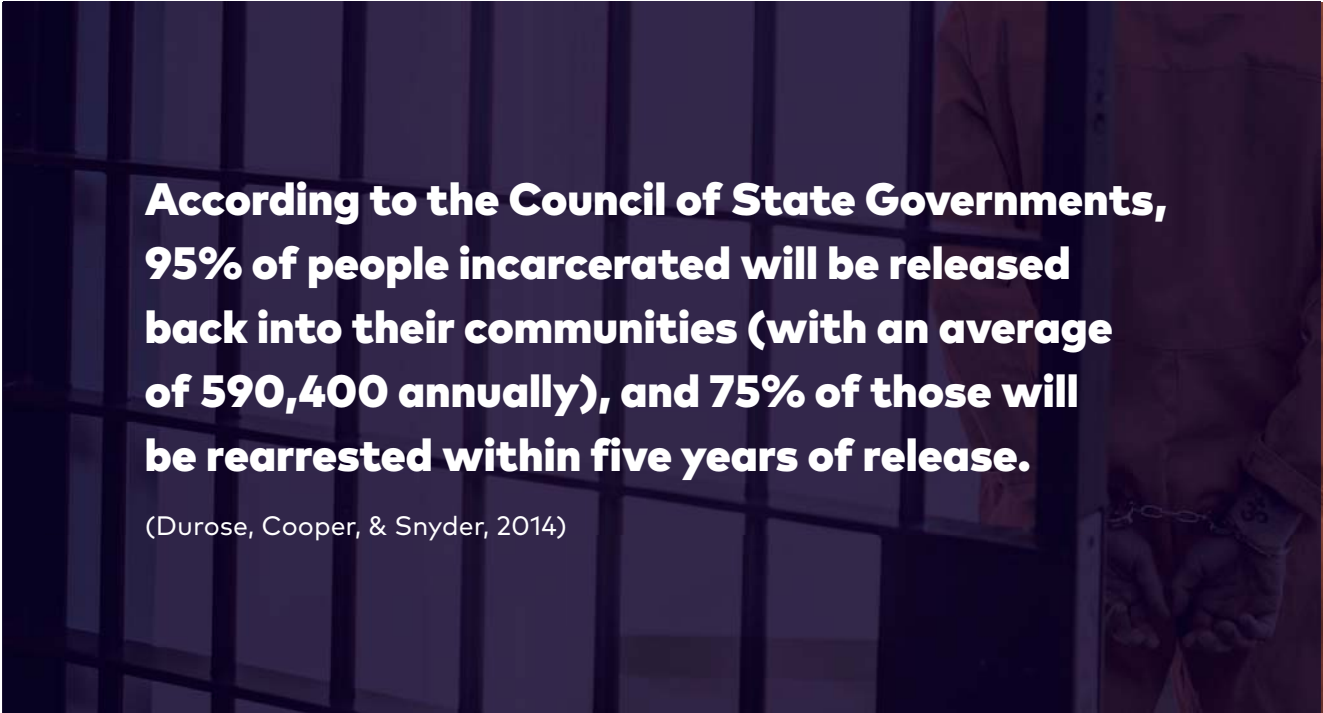
Key findings of the analyses include:

- The overall three-year domestic violence-related recidivism rate was 23%

- Three-year domestic violence-related recidivism rates from 2010 - 2018 showed little variation

- Domestic violence recidivists, on average, were younger and male. Additionally, African Americans recidivated at a higher rate than other races

- Of those repeat domestic violence offenders, about half (48%) are re-incarcerated within six months and 71% are re-incarcerated within one year

- Prior to an individual's first domestic violence charge, possession / use of a controlled substance (history of drug use) had the highest rates of offenses for both males and females

- After an initial domestic violence charge, the percent of subsequent violent offenses, by gender, is comparable

- When compared to rural counties, urban counties illustrate a higher rate of domestic violence-related recidivism

Introduction

Understanding recidivism is imperative for policy makers, but measuring recidivism is a complex issue for justice administrators and researchers. There are a variety of ways that recidivism figures can be generated, but the specific methods used are often not well-defined. In addition, a variety of factors can affect recidivism rates, making comparisons of recidivism rates inconsistent between locations or over time. It is also difficult to assess shifts in recidivism if recidivism is measured in various ways. Thus, using well-defined, rigorous, and systematic methods are imperative in the utility of recidivism statistics as valid indicators of rehabilitation.

Domestic violence is a concerning issue as it pertains to recidivism. In the past, efforts to curtail domestic violence-related recidivism by a previously convicted offender have involved providing adequate care, shelter, and resources for victims of domestic violence (Modi, Palmer & Armstrong, 2014). Initially, such programs saw positive effects on domestic violence rates; however, domestic violence rates again stagnated soon thereafter. Furthermore, pressure on the justice system to be tougher on crime has conflicted with efforts to rehabilitate offenders (Bobbitt, Campbell & Tate, 2006).

According to the Council of State Governments, 95% of people incarcerated will be released back into their communities (with an average of 590,400 annually), and 75% of those will be rearrested within five years of release (Durose, Cooper, & Snyder, 2014). Given that most domestic violence offenders are released relatively quickly, the State of Nevada, through its Department of Public and Behavioral Health (DPBH), implemented a domestic violence treatment program that attempts to reduce domestic violence recidivism through the counseling of offenders.

According to the Council of State Governments, 95% of people incarcerated will be released back into their communities (with an average of 590,400 annually), and 75% of those will be rearrested within five years of release.

(Durose, Cooper, & Snyder, 2014)

Nevada Domestic Violence Rehabilitation Program Overview

Since 1997, Nevada's Committee on Domestic Violence, and more recently the DPBH, mandates that individuals convicted of domestic violence go through weekly counseling via state-certified treatment programs. The purpose of the programs are to ensure the safety of victims while counseling offenders, in order to reduce domestic violence-related recidivism. This two-pronged approach is an attempt by the state to secure communities and lower the societal costs associated with domestic violence. According to the DPBH, "the treatment of domestic violence offenders employs a variety of theories, modalities and techniques. Domestic violence perpetrators are a separate category of violent offenders requiring a specialized approach. The goal is victim safety through cessation of violence."

Nevada law requires that if a person is convicted of a battery (which constitutes domestic violence pursuant to statute NRS 33.018), the court shall, for the first offense within seven years, require the person to participate in weekly, in-person counseling sessions of not less than 1.5 hours per week for 6-12 months, at his or her expense, in a program for the treatment of those who commit domestic violence.

According to Nevada statute code NRS 33.018:
Domestic violence occurs when a person commits one of the following acts against or upon the person's spouse or former spouse, any other person to whom the person is related by blood or marriage, any other person with whom the person is or was actually residing, any other person with whom the person has had or is having a dating relationship, any other person with whom the person has a child in common, the minor child of any of those persons, the person's minor child or any other person who has been appointed the custodian or legal guardian for the person's minor child: (a) a battery; (b) an assault; (c) compelling the other person by force or threat of force to perform an act from which the other person has the right to refrain or to refrain from an act which the other person has the right to perform; (d) a sexual assault; (e) a knowing, purposeful or reckless course of conduct intended to harass the other person. Such conduct may include, but is not limited to: (1) stalking, (2) arson, (3) trespassing, (4) larceny, (5) destruction of private property, (6) carrying a concealed weapon without a permit, or (7) injuring or killing an animal; (f) a false imprisonment, or (g) unlawful entry of the other person's residence, or forcible entry against the other person's will if there is a reasonably foreseeable risk of harm to the other person from the entry.

Recently, treatment programs were found to be deficient in rural parts of the state, suggesting offenders' proximity to the program's location was key for treatment efficacy (Laxalt, 2015). The state recognized that onsite treatment programs may be difficult for rural offenders to attend. In 2018, a memorandum was employed that allowed offenders to participate in an online treatment program. The DPBH adopted regulations which authorize an offender who resides more than 70 miles from the nearest program to attend the rehabilitation treatment program online.

Studying factors associated with domestic violence and understanding key characteristics of domestic violence offenders may provide necessary tools for treatment efficacy and the reduction of recidivism. To date, domestic violence-related recidivism had not been studied in the State of Nevada. This study presents domestic violence-related recidivism statistics for offenders released from the custody of the Nevada Department of Corrections.

Goals of the Study

This study uses Appriss' existing incarceration data, collected in association with its proprietary victim notification system, VINE (Victim Information and Notification Everyday). Through VINE, Appriss collects incarceration information from over 2,900 jail and Department of Correction (DOC) facilities nationwide. The goals of this study were to get a clear and comprehensive assessment of domestic violence-related recidivism, compare offence characteristics, criminal history, and the recidivism rates of offenders who have been previously convicted of a domestic violence-related offense in the State of Nevada.

This study includes the following analyses:

- Domestic violence-related recidivism over time

- Differences in domestic violence-related recidivism by rural and urban counties

- Identifiable differences in the characteristics of domestic violence recidivists

- Percent of chronic domestic violence offenders

- Percent of domestic violence offenders who commit violent offenses

- Time-to-recidivate for domestic violence offenders

- Offenses related domestic violence

Methodology

Appriss utilizes proprietary consolidation and linking technology to tie together various identifiers (e.g., name, driver license, address, FBI number, offender ID, phone number, social security number, and date of birth) to determine the bookings associated with a particular offender. This enables a more comprehensive view of recidivism and a stronger assessment of the offender's movements across state counties. This study focuses on assessing the occurrence of post-release recidivism events, and, as a result, includes a comprehensive understanding of recidivism over time. Therefore, some offenders may be included more than once if they were incarcerated and released more than once, and if they were released in more than one of the years studied.

Recidivism has been measured in multiple ways, but most commonly, recidivism is defined as whether a person has returned to prison within a specific time period since their last release.

Recidivism measures require three characteristics:

- A starting event, such as a release from prison

- An observation or follow-up period that generally extends from the date of the starting event to a pre-defined end date (e.g., three years)

- A measure of failure following the starting event, such as reincarceration

The follow-up period defined by most recidivism literature (including this study) is three years, and recidivism is defined as a return to incarceration within three years of the offender's last release. For the purposes of this study, the authors examined Nevada booking data from 2005-2018; the data included 3.2 million bookings from 21 sites in 16 counties.

Prior to analyses, data was cleaned and bookings for weekenders, overutilizers, and those with inconsistent dates were removed (see Appendix A for details and term definitions). Other measures of recidivism include rearrest and re-arraignment, but do not apply in this study as they do not indicate the individual was found guilty of a new crime.

The analyses are divided into sections:

- Recidivism rates by county

- Recidivism rates over time, using data from 2010-2018

- Recidivism rates by demographic using data from 2010-2018

As an ancillary analysis, Appriss constructed a scoring model which generated a predicted probability score for each domestic violence offender using a machine learning approach. The score can be applied to offenders to understand their future risk of re-offending. Applying predictive modeling provides an additional tool for understanding recidivism and its prevention.

Results of Study

Domestic Violence Offenders and Prior Offenses (by gender)

This study found that DV offenders are mostly men (72%), with only 28% being women (see Figure 1). This is consistent with prior criminological research positing that domestic violence is gendered in nature (Henning & Feder, 2004; Melton & Belknap, 2003).
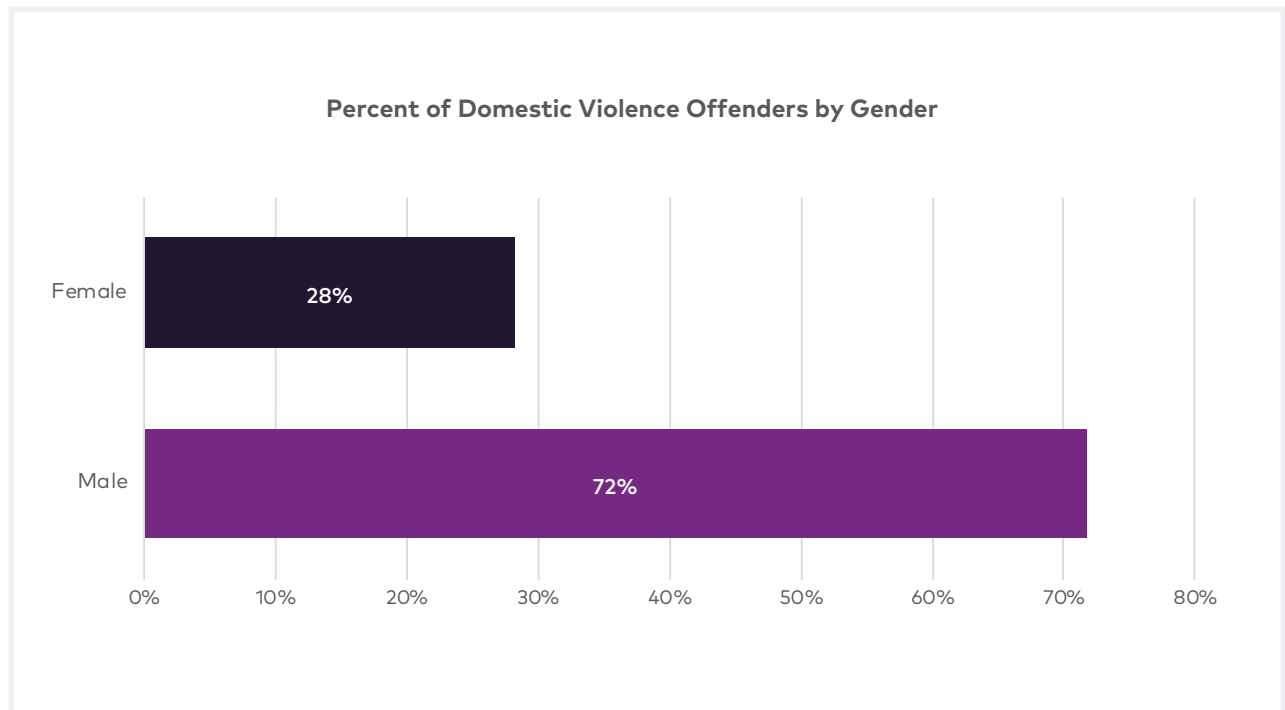
Percent of Domestic Violence Offenders by Gender

Female — 28%
Male — 72%

(Horizontal axis: 0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%)

Figure 1: Domestic Violence Offenders by Gender

Figure 2 shows the top prior offenses for domestic violence offenders. In Figure 2, drug-related charges are the top historical offenses for DV offenders, along with Driving under the Influence (DUI). Combining the rates associated with drug possession/distribution and DUIs equates to roughly 20% of prior offenses relating to substance use. These findings support the multifaceted approach to domestic violence treatment—substance abuse treatment combined with DV treatment may help to improve efficacy in reducing DV-related recidivism.
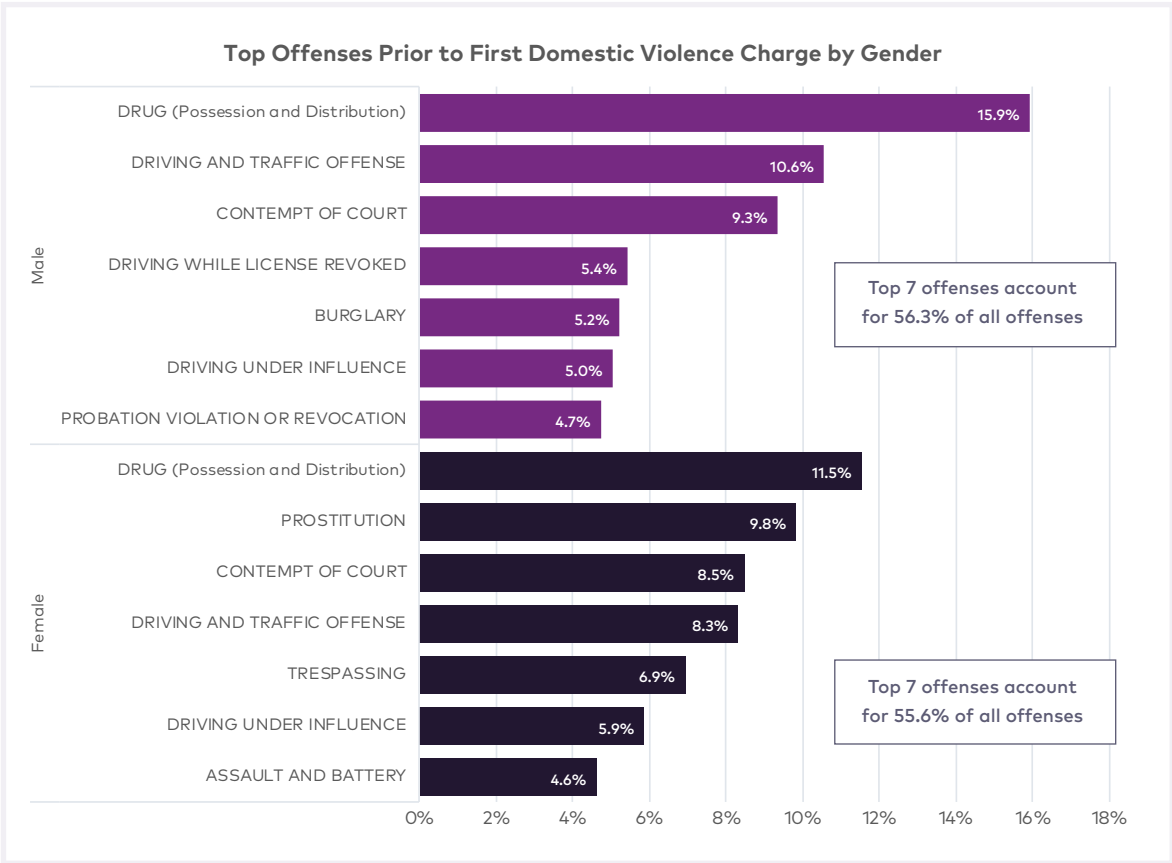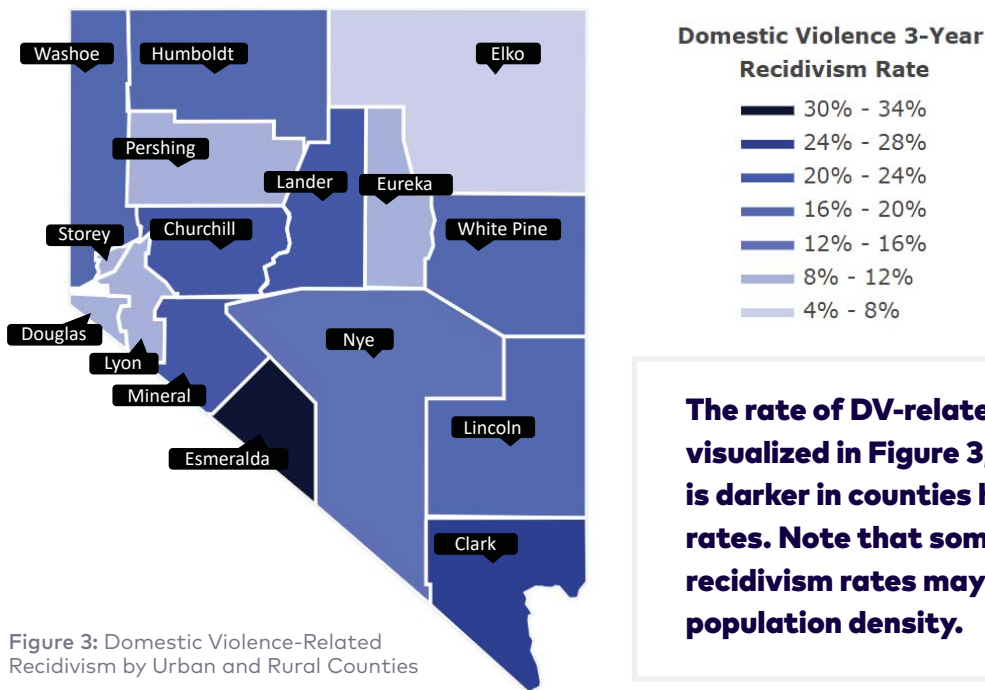
Top Offenses Prior to First Domestic Violence Charge by Gender

Gender	Offense	Percentage
Male	DRUG (Possession and Distribution)	15.9%
Male	DRIVING AND TRAFFIC OFFENSE	10.6%
Male	CONTEMPT OF COURT	9.3%
Male	DRIVING WHILE LICENSE REVOKED	5.4%
Male	BURGLARY	5.2%
Male	DRIVING UNDER INFLUENCE	5.0%
Male	PROBATION VIOLATION OR REVOCATION	4.7%
Female	DRUG (Possession and Distribution)	11.5%
Female	PROSTITUTION	9.8%
Female	CONTEMPT OF COURT	8.5%
Female	DRIVING AND TRAFFIC OFFENSE	8.3%
Female	TRESPASSING	6.9%
Female	DRIVING UNDER INFLUENCE	5.9%
Female	ASSAULT AND BATTERY	4.6%

Top 7 offenses account for 56.3% of all offenses (Male)

Top 7 offenses account for 55.6% of all offenses (Female)

Figure 2: Types of Offenses Prior to a Domestic Violence Offense

Domestic Violence Recidivism (by locale)

Table 1 shows Nevada's recidivism rates by county. The three-year DV-related recidivism rate is 23.2%, meaning roughly 1 in 4 of those who had been incarcerated for a domestic violence-related offense and later released, will be reincarcerated for a domestic violence-related offence within three years.

COUNTY	% OF TOTAL OFFENSES	% OF TOTAL DV OFFENSES	% OF DV OFFENDERS	% OF DV RECIDIVISTS	3-YEAR DV RECIDIVISM RATE
Churchill	0.6%	0.6%	10.2%	3.7%	21.3%
Clark	72.6%	83.7%	15.0%	8.3%	24.7%
Douglas	1.2%	1.1%	10.0%	2.1%	8.5%
Elko	1.6%	0.3%	2.8%	0.4%	6.3%
Esmeralda	0.1%	0.0%	1.0%	1.1%	31.3%
Eureka	0.0%	0.1%	11.9%	3.3%	10.5%
Humboldt	0.5%	0.6%	13.5%	5.3%	17.4%
Lander	0.2%	0.3%	13.2%	7.5%	21.7%
Lincoln	0.3%	0.1%	2.0%	0.7%	17.8%
Lyon	0.8%	0.3%	5.0%	0.8%	8.7%
Mineral	0.1%	0.0%	3.0%	1.6%	21.6%
Nye	1.0%	0.5%	5.3%	1.8%	12.5%
Pershing	0.2%	0.2%	13.9%	4.7%	8.6%
Storey	0.1%	0.1%	8.0%	2.7%	9.7%
Washoe	20.2%	11.9%	8.1%	3.5%	16.9%
White Pine	0.3%	0.3%	9.8%	4.7%	17.6%
TOTAL	**100%**	**100%**	**12.8%**	**6.7%**	**23.2%**

Table 1: Recidivism Rates by County

Figure 3: Domestic Violence-Related Recidivism by Urban and Rural Counties

Domestic Violence 3-Year Recidivism Rate

- 30% - 34%
- 24% - 28%
- 20% - 24%
- 16% - 20%
- 12% - 16%
- 8% - 12%
- 4% - 8%

The rate of DV-related recidivism by county is visualized in Figure 3, where a choropleth map is darker in counties having higher recidivism rates. Note that some rural counties' high recidivism rates may be the result of low population density.

Domestic Violence Recidivism - Rural vs. Urban Counties

Counties were categorized as either rural or urban based on information provided by Nevada's Office of the Attorney General. Nevada's urban counties include Clark and Washoe counties. Nevada's rural counties include Carson, Churchill, Douglas, Elko, Storey, Esmeralda, Eureka, Humboldt, Lander, Lincoln, Lyon, Mineral, Nye, Pershing, and White Pine. Surprisingly, as shown in Figure 4, the three-year recidivism rates are higher in urban counties than in rural counties.

3-Year Domestic Violence Recidivism Rates by Rural vs Urban Counties

Urban	23.7%
Rural	13.5%

0% 5% 10% 15% 20% 25%
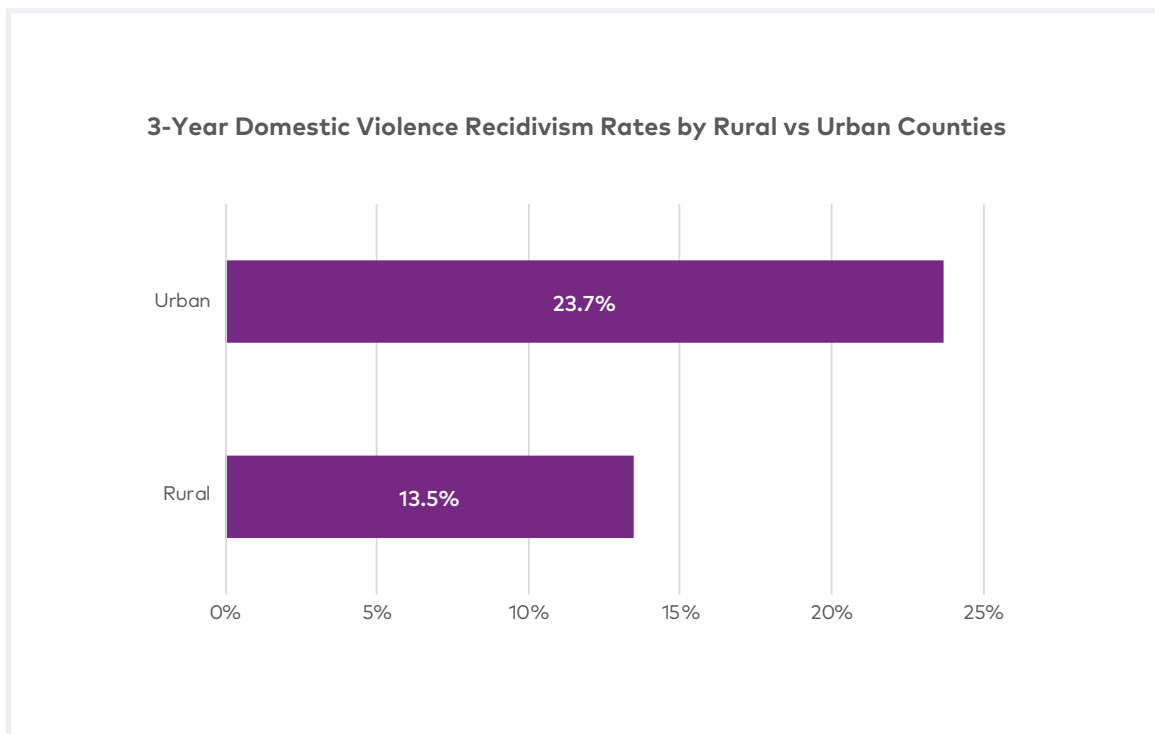
Figure 4: Map of Recidivism Rates by County Classification

Movement of Offenders

This analysis assessed the movement of DV offenders throughout the state. The key was to recognize when an offender committed their crime across multiple county lines. Appriss' proprietary linking technology aided in the tracking of offenders across agencies and counties. Offenders were examined who, within a three-year period, were incarcerated for a DV-related offence and released in one county, but later recidivated in a different county. The results showed that the rural counties of Lincoln, Lyon, and Esmeralda had the highest rates of transience regarding DV-related offenses (see Figure 5).
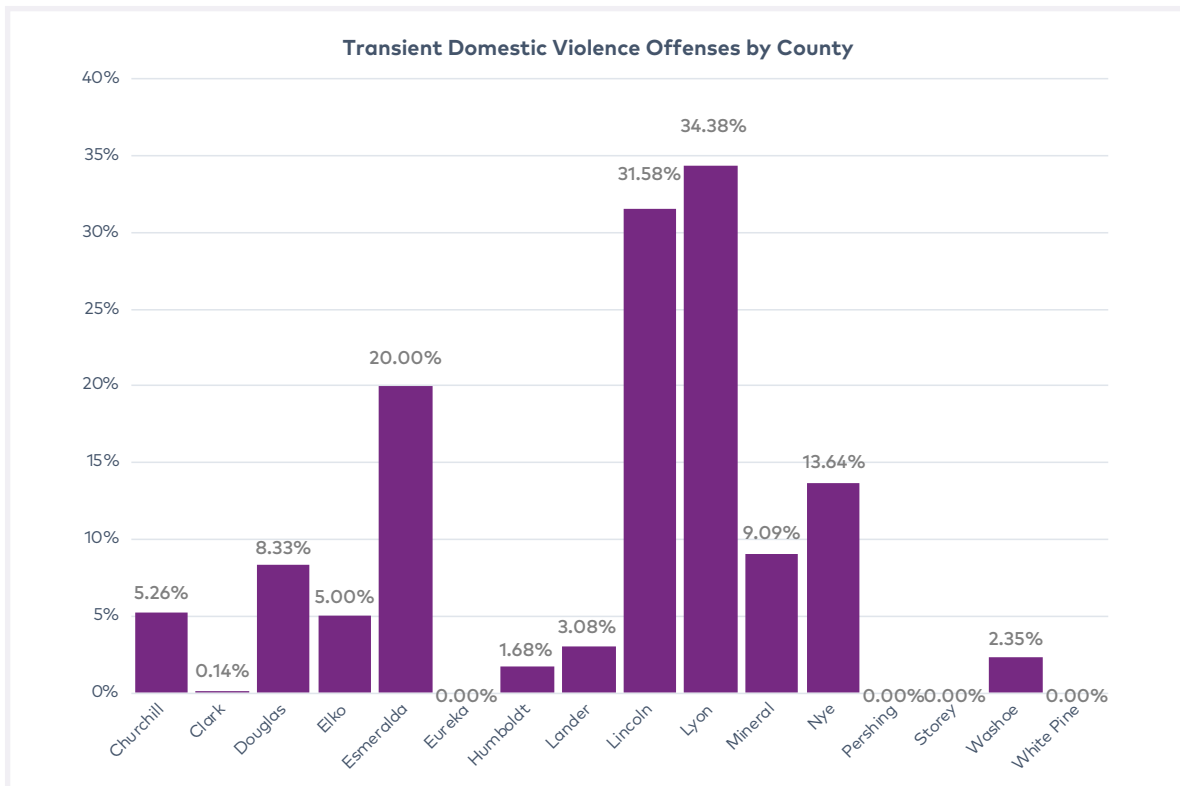
Figure 5: Domestic Violence-Related Recidivism by County for Transient Offenders

Number of Domestic Violence-Related Recidivating Offenses

Figure 6 shows the number of offenses over time for domestic violence offenders. The results show that 36% of domestic violence re-offenders commit three or more domestic violence-related offenses within three years of their last release.
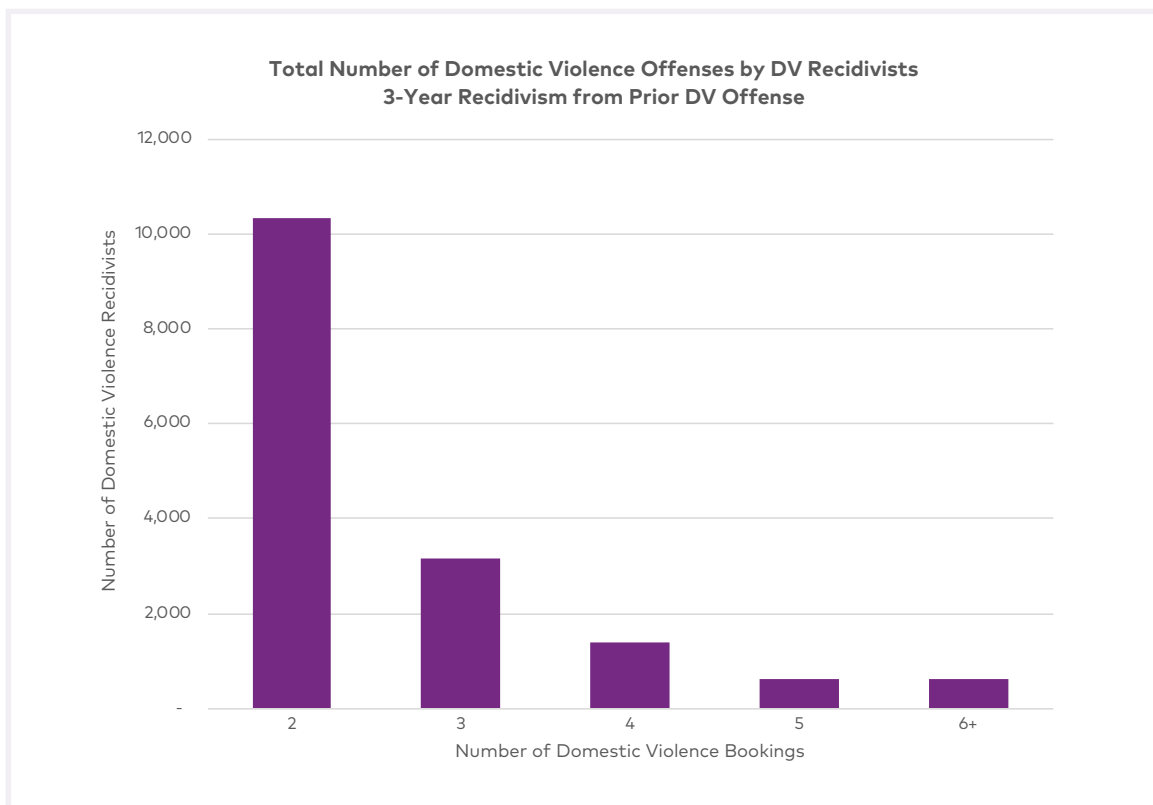
Total Number of Domestic Violence Offenses by DV Recidivists
3-Year Recidivism from Prior DV Offense

Figure 6: Number of Domestic Violence-Related Offenses by DV Recidivists

Recidivism Rates over Time and Time-to-Reincarceration

Using a three-year follow-up from release, Figure 7 illustrates recidivism rates from 2010-2018. DV-related recidivism rates have remained steady, around 23%. As illustrated in Figure 8, 48% of those who recidivate do so within the first six months of release and 71% recidivate within a year. Holland and Pointon (2007) noted similar results with 40% of individuals returning to prison within six months of release, and close to 70% within 12 months. Results indicate that effective treatment may require early intervention.
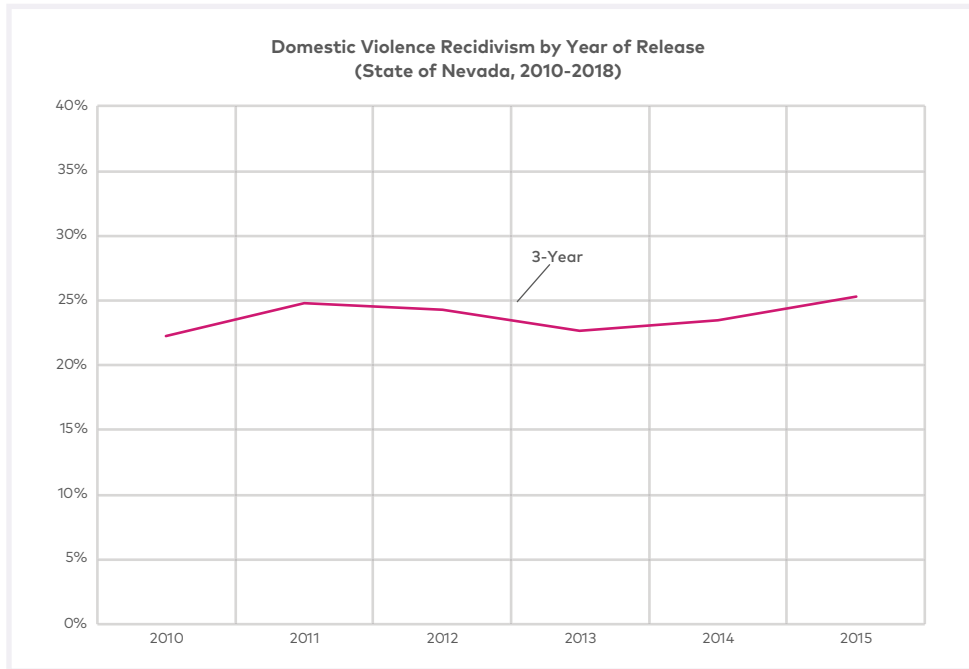
Domestic Violence Recidivism by Year of Release
(State of Nevada, 2010-2018)

Figure 7: Domestic Violence Recidivism over Time

3-Year Domestic Violence Recidivism Rates
(State of Nevada, 2010 to 2018)

48% return within 6 months

71% return within 1 year

82% return within 1.5 years
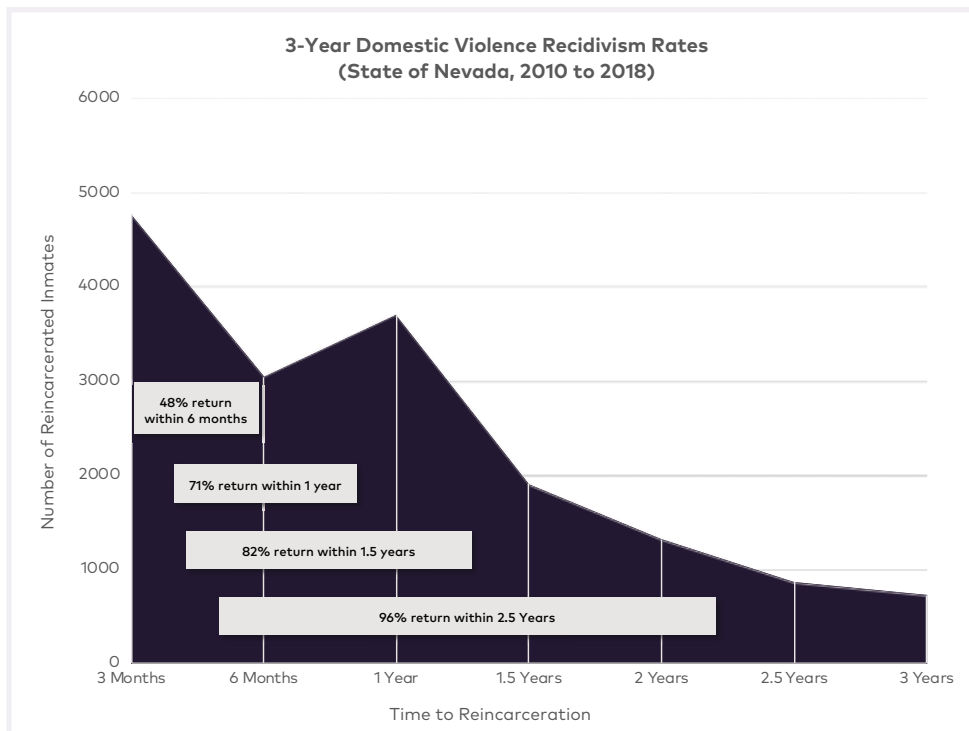
96% return within 2.5 Years

Figure 8: Domestic Violence Recidivism and Time-to-Reincarceration

Domestic Violence-Related Recidivism | Subject and Offense Group Summaries

To gain a better profile of domestic violence recidivists, this section is specific to domestic violence offender characteristics.

Domestic Violence-Related Recidivism by Gender

Women were 69% less likely to recidivate for domestic violence compared to men. Results show three-year recidivism rates for men were 27%, versus 16% for women (see Figure 9). These findings are consistent with literature that found, using a five-year follow up, that women were 60% less likely to recidivate than men (Menard et al., 2009).
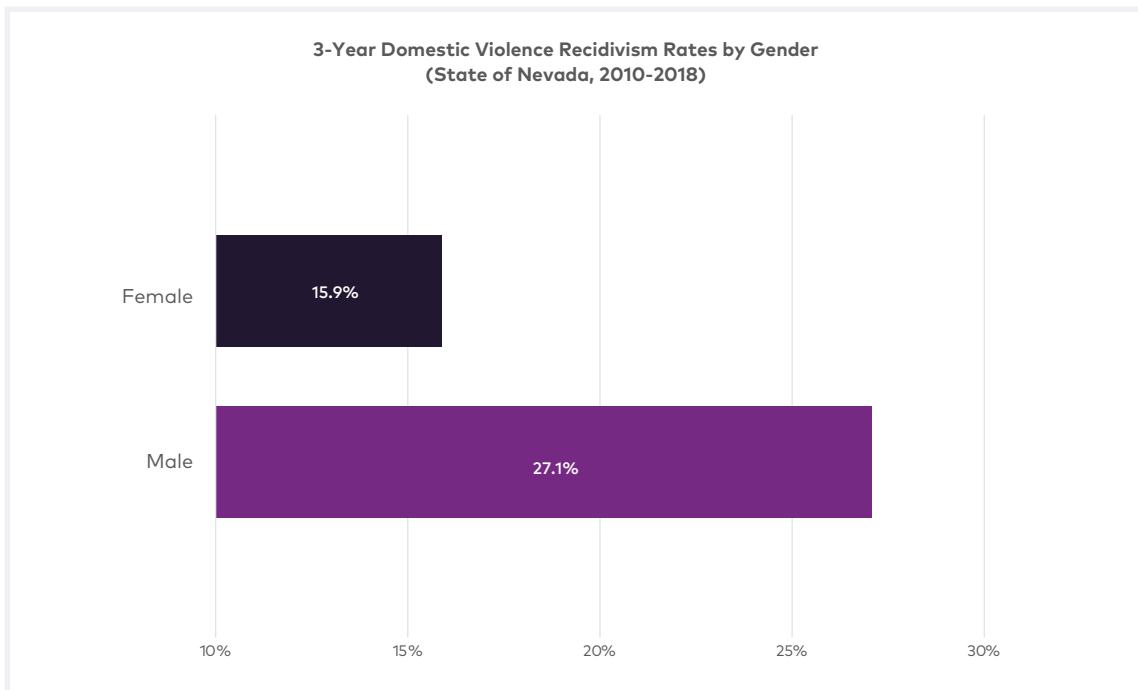
3-Year Domestic Violence Recidivism Rates by Gender
(State of Nevada, 2010-2018)

Gender	Rate
Female	15.9%
Male	27.1%

Figure 9: Domestic Violence-Related Recidivism by Gender

Domestic Violence-Related Recidivism by Recidivating Offense Type

Individuals who committed a DV-related offense were assessed based on the type of any subsequent recidivating offenses. This analysis was based on DV offenders who were later reincarcerated for other types of offenses.

Offense definitions:

- **Violent offenses** include homicide, rape or sexual assault, robbery, assault, home invasion, arson, and other miscellaneous violent offenses

- **Property offenses** include burglary, fraud or forgery, larceny, motor vehicle theft, and other miscellaneous property offenses

- **Drug offenses** include possession, distribution, trafficking, and miscellaneous drug offenses

- **Public order offenses** include violations of the peace, interference with a governmental authority, and violation of civil rights or liberties. Also included are driving infractions, DUI, probation/parole violation, obstruction of justice, disorderly conduct, and other miscellaneous offenses

The most prevalent recidivating offense for DV offenders were public order violations. These account for 50% of all recidivating offenses (see Figure 10). Drug-related offenses continue to exist in the lifecycle of a domestic violence offender. As many as 17% of recidivating offenses involve substance use.
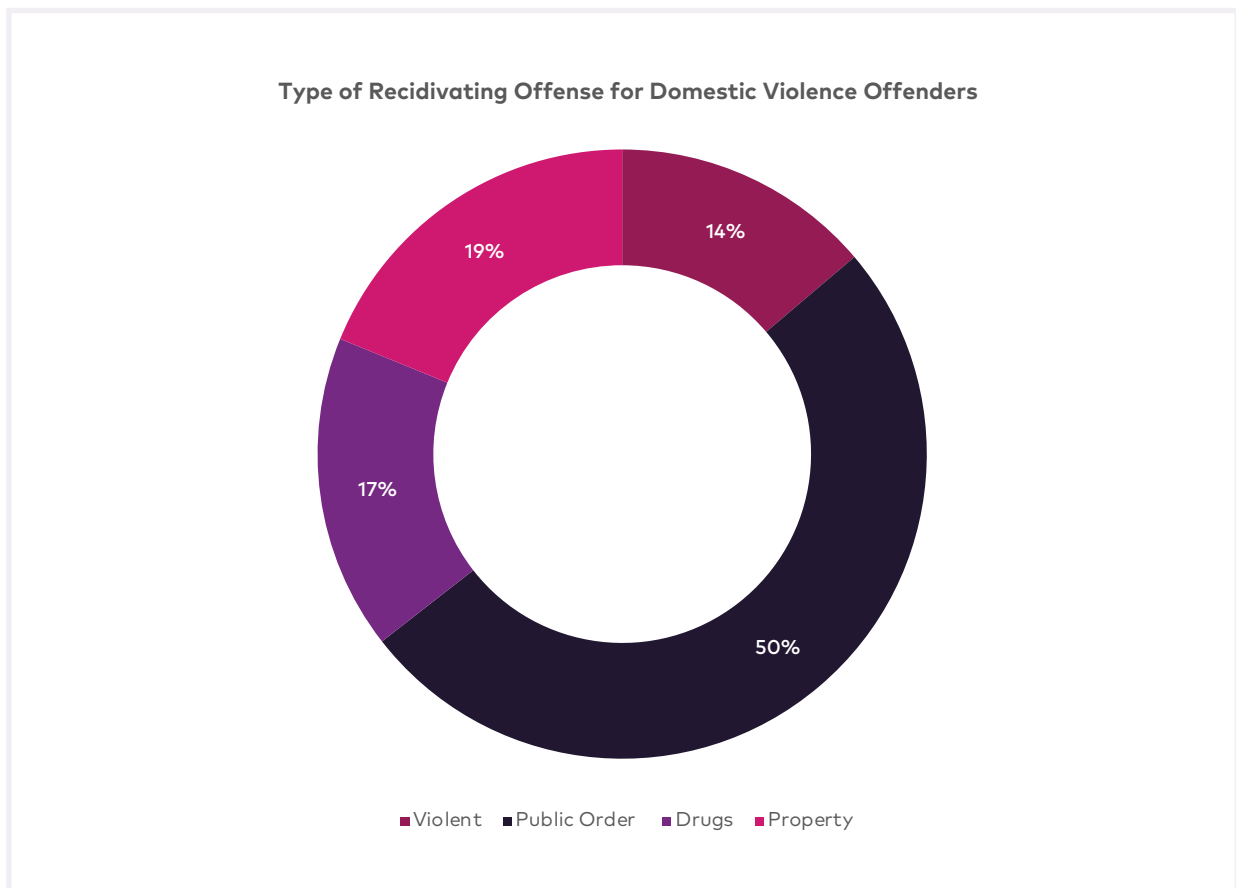
Type of Recidivating Offense for Domestic Violence Offenders

Figure 10: Likelihood of Offenses after a Domestic Violence Offense

Domestic Violence-Related Recidivism by Future Violent Offenses and Gender

The results surprisingly found that women and men similarly commit acts of violence when they have been previously charged with domestic violence (Figure 11). The results suggest that although domestic violence is perpetrated predominantly by men, such offenders may have a proclivity to violence in general. Furthermore, treatment for domestic violence may warrant impulse control and anger management.
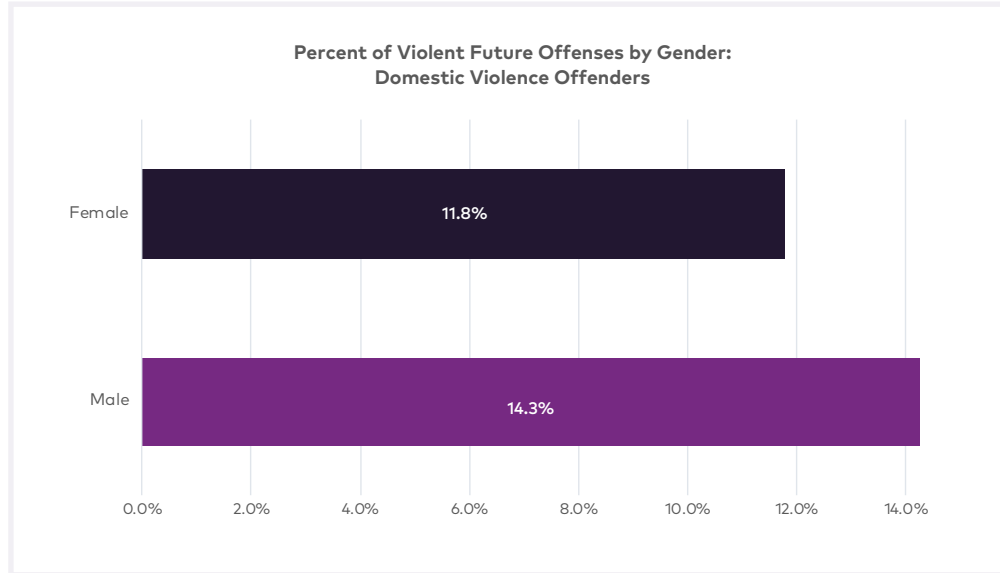
**Percent of Violent Future Offenses by Gender:
Domestic Violence Offenders**

Female — 11.8%

Male — 14.3%

0.0% 2.0% 4.0% 6.0% 8.0% 10.0% 12.0% 14.0%

Figure 11: Tendency to Commit Violent Crime after Release from Domestic Violence Offense

Domestic Violence-Related Recidivism by Race / Ethnicity

The data in Figure 12 shows that when separating domestic violence-related recidivism rates by race, African Americans have the highest recidivism rate, followed by Caucasians, Hispanics, and Asians.
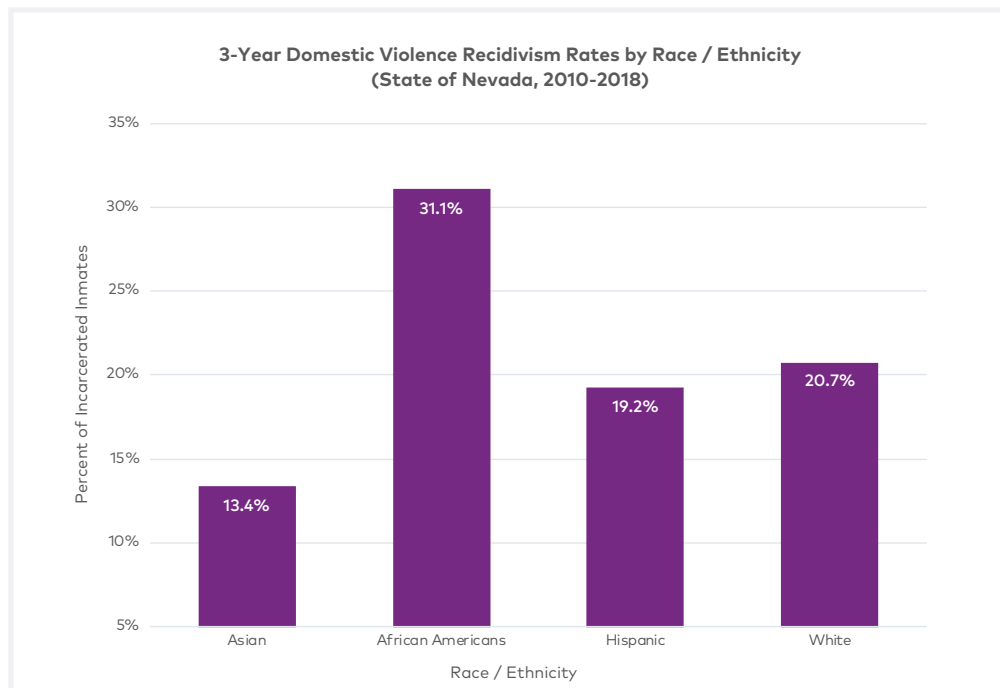
**3-Year Domestic Violence Recidivism Rates by Race / Ethnicity
(State of Nevada, 2010-2018)**

Percent of Incarcerated Inmates

Asian: 13.4%
African Americans: 31.1%
Hispanic: 19.2%
White: 20.7%

Race / Ethnicity

Figure 12: Domestic Violence Recidivism by Race

Domestic Violence-Related Recidivism by Age

The age distribution indicates that people between the ages of 25 and 34 are most likely to recidivate for domestic violence (Figure 13).
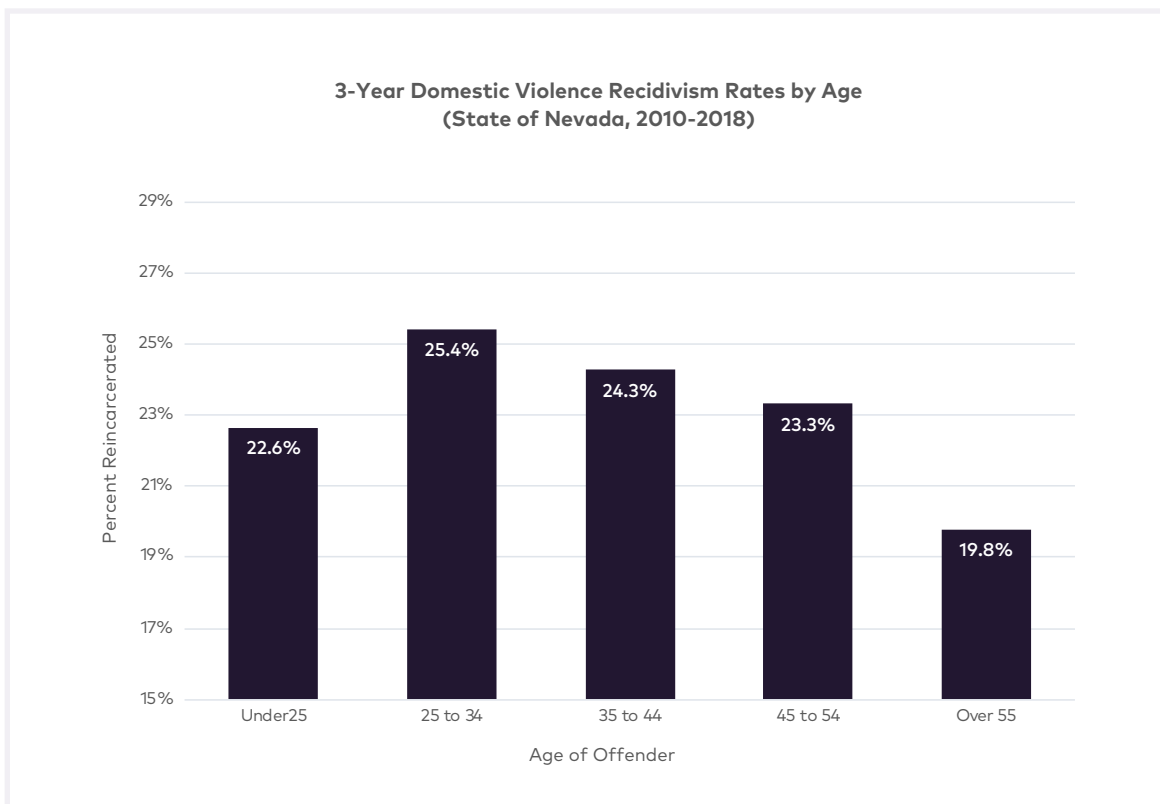
3-Year Domestic Violence Recidivism Rates by Age
(State of Nevada, 2010-2018)

Age of Offender	Percent Reincarcerated
Under25	22.6%
25 to 34	25.4%
35 to 44	24.3%
45 to 54	23.3%
Over 55	19.8%

Figure 13: Domestic Violence-Related Recidivism by Age

Domestic Violence-Related Recidivism Scoring Model

As a supplemental analysis, Appriss built a predictive model to assess offenders' risk for domestic violence-related recidivism. The goal was to accurately predict who was likely to commit a future domestic violence-related offense. Model development began by creating relevant variables, cleansing the data, and mapping the unique charges to 89 standard composite charges. Some composite crime categories were combined; for example, 'Driving Offenses' include 'Unauthorized Use of Vehicle,' 'Driving and Traffic Offense,' 'Driving while License Revoked,' and 'Hit and Run.' The modeling process began with over 100 variables, including repeated bookings, length of incarceration, multiple agencies, repeated bookings of the target offense, days released, and age at first offense.

The model development process is iterative and includes many processes designed to ensure the selection of only statistically significant variables and that the model is not overfit. Scoring alternate data is the best way to determine if a model performs as expected. To validate the model, a holdout group was used which held individuals that had not been included in the development of the model. During testing, the model was trained on 70% of the data and then validated on the remaining 30%; the holdout group was scored using the generated model parameters from the training data. Figure 14 is a diagram of the model, with some of the final model variables (significant at $p<.001$).
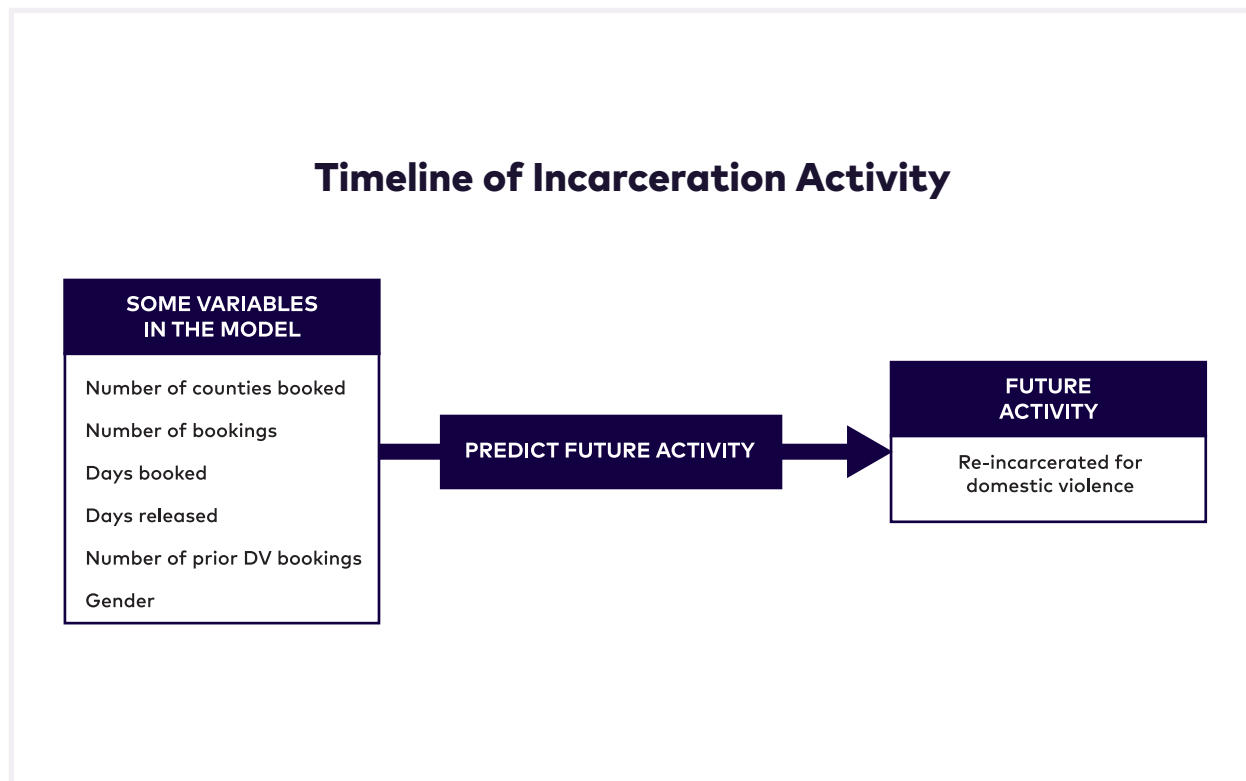

Timeline of Incarceration Activity

SOME VARIABLES IN THE MODEL

Number of counties booked

Number of bookings

Days booked

Days released

Number of prior DV bookings

Gender

PREDICT FUTURE ACTIVITY

FUTURE ACTIVITY

Re-incarcerated for domestic violence

Figure 14: Domestic Violence-Related Recidivism Model

The machine learning model produces a future incarceration (FI) score (between 0-1,000) that measures the likelihood that an individual will recidivate with a domestic violence-related offense in the future. Odds ratios (see Table 2) are calculated to compare the probability of an event (recidivism) happening at different modeling scores. DV offenders who received a score of 900-1,000 are 29 times more likely to recidivate for domestic violence than individuals assigned a score between 0-100.

FI SCORE	TOTAL	NON-DV RECIDIVISTS	DV RECIDIVISTS	FRACTION	ODDS RATIO
0-100	26,333	22,995	3,338	12.7%	1
100-200	16,434	13,733	2,701	16.4%	1.4
200-300	9,700	7,062	2,638	27.2%	2.6
300-400	5,716	3,713	2,003	35.0%	3.7
400-500	3,721	2,243	1,478	39.7%	4.5
500-600	2,128	1,160	968	45.5%	5.7
600-700	1,099	511	588	53.5%	7.9
700-800	450	182	268	59.6%	10.1
800-900	176	57	119	67.6%	14.4
900-1000	78	15	63	80.8%	28.9

Table 2: Odds Ratios for Domestic Violence Recidivism Model Scores

The model accuracy for predictive purposes was assessed by the area under the ROC (Receiver Operating Characteristic) curve (or, the "AUC"), which is a reflection of the discriminatory power of the model (see Figure 15). The AUC is an indicator of a model's ability to correctly classify cases with a condition versus cases without a condition (i.e., recidivism vs. non-recidivism). The AUC ranges from .5 to 1, where .5 is randomly selecting individuals without a model. The AUC for the recidivism scoring model was .72, indicating a good model. Accuracy was also assessed by the Kolmogorov-Smirnov (KS) statistic, which measures the maximum difference between the cumulative percentage of two populations by score. The null hypothesis states that the two samples (recidivists vs. non-recidivists) are drawn from populations with the same distribution. The KS score is the maximum difference between the two cumulative distribution functions. The KS for the model was 34.2 (p<.001), also indicating a sound predictive model.
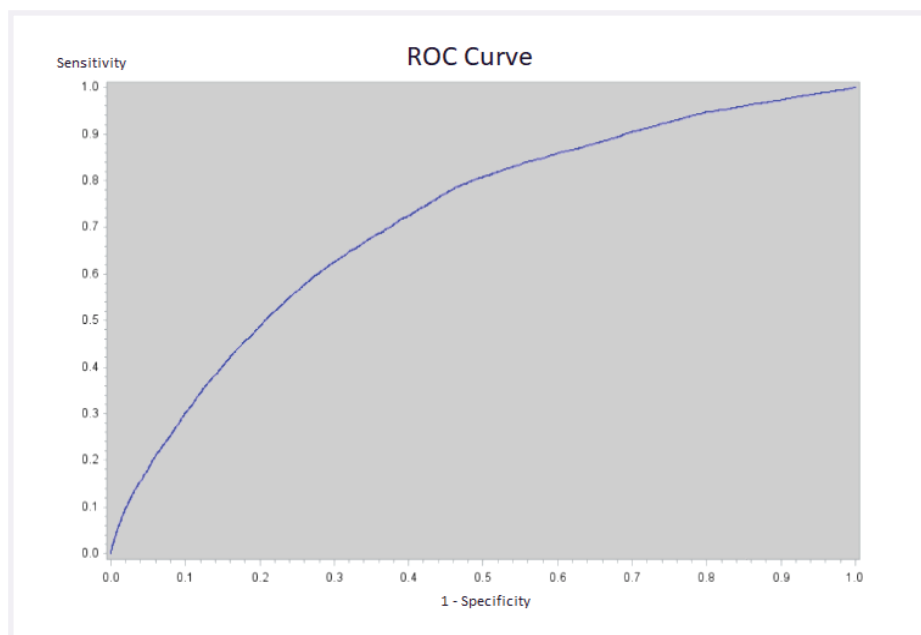

Figure 15: ROC for Scoring Model

An offender who has the characteristics of someone who recidivated in the past for domestic violence might have a likelihood score above 800; an offender who resembles someone who did not recidivate might have a score below 200. By applying risk scores, specific treatment plans can be provided based on the level of offender risk. Specifically, more attention and follow-up can be used to prevent recidivism for those who are at most risk for recidivism.

Conclusion

The role the criminal justice system plays in addressing societal crimes does not end at an offender's incarceration. As the formerly incarcerated transition back into the community, it is important to maximize effective reentry practices and opportunities to support returning citizens, while protecting victims from future harm. In the past, efforts to curb recidivism with regard to domestic violence would involve providing the victim resources to avoid future harm. However, those efforts only made so much progress in curtailing domestic violence. To more effectively combat recidivism, key factors associated with domestic violence should be applied to offender treatment plans.

This study examined patterns of recidivism for domestic violence. Why do domestic abusers commit abuse or recidivate? This answer may be complicated; however, several key findings emerge from this study that have implications for a broader understanding of domestic violence-related recidivism.

The research presented in this paper informs the following conclusions:

- Recidivism rates for domestic violence have remained relatively stable

- Urban counties have a higher rate of recidivists

- Domestic violence offenders have a history of substance abuse

- Recidivism is most likely to occur within the first year post-release

- Men are more likely than women to commit domestic violence

- Men are more likely to recidivate; however, men and women are equally as likely to commit any violent crime after being charged with domestic violence (lending credence for the need to include women in violence-reducing rehabilitation efforts)

The findings of this study also suggest that rehabilitation programs should include substance abuse treatment. Furthermore, findings suggest that rehabilitation treatments should be employed quite soon after release.

Unfortunately, many treatment programs for domestic violence are marred by a lack of proper funding and research into their effectiveness (Bobbitt et al, 2005). However, the findings from this study may be leveraged to help design more effective rehabilitation tactics for domestic violence offenders. Additionally, assessing the potential risk for re-offense via predictive modeling provides another safety measure to the benefit of victims and facilitates appropriate action plans for offender treatment. The assessed risk by a specific individual for future recidivism is measured on a continuum of relatively low to extremely high, based on an offender's particular profile. It is important to note that risk of recidivism is not static and should be continually re-assessed to provide victims the most optimum level of safety.

A limitation to this study was the inability to measure whether domestic violence offenders attended the state rehabilitation treatment program. This data would be important to directly assess recidivism for those offenders who have received treatment and the effectiveness of the program. However, the results show the rate of recidivism has been relatively stable in recent years. Additionally, results revealed that recidivism is higher in urban areas compared to rural areas, which is contrary to what one would expect since many offenders in rural areas could not attend treatment due to distance. Though in 2018, offenders in rural areas

were given the option to attend an online treatment program. These results suggest that there may be some additional aspects associated with domestic violence that are not effectively addressed in treatment programs.

Policy implications from this study suggest that understanding the profile and behavior pattern of a domestic violence offender may help to identify those who pose the greatest risk of future violence, and consequently, how their cases should be managed to reduce future violence. Developing specialized interventions to accommodate high risk offenders may be an efficacious rehabilitation option.

A comprehensive approach to targeting domestic violence recidivists will be instrumental in rehabilitation. The results from these analyses illustrate that rehabilitation may be challenging. A one-size-fits-all approach may not be a successful tactic. Different strategies may be instrumental in improving one's chances of rehabilitation and reintegration into society. For example, restorative justice intervention, such as victim offender mediation, may be an effective component of rehabilitation. Other treatment options may include conflict resolution, stress management, improving problem solving skills, behavioral therapy, and anger control. Additionally, targeting individuals at most risk using scoring models may have a significant impact on reducing recidivism. Based on the findings of this study, drug treatment may be beneficial to program efficacy, and evidence-based techniques should be applied to assess program impact. Furthermore, future research may benefit from assessing offender employment and its impact on rates of recidivism.
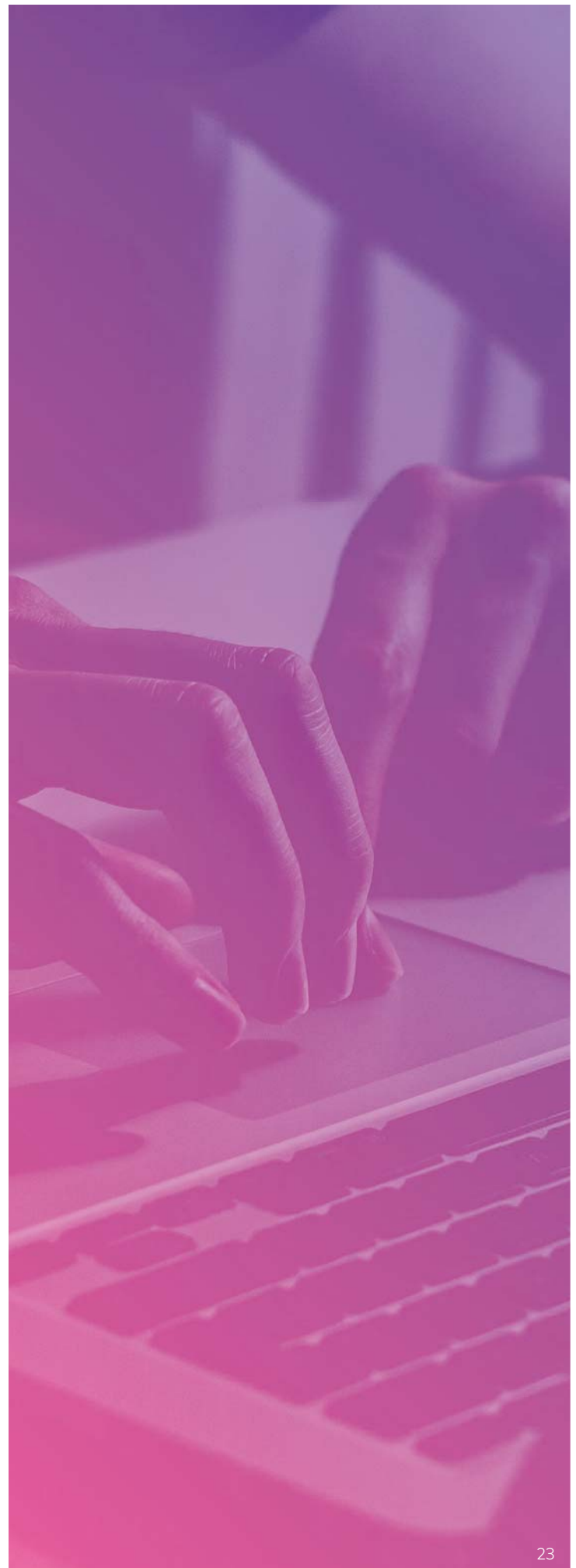
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Appendix: Definition of Terms

Data Cleaning: Data cleaning consisted of assessing and removing duplicate bookings, standardizing variables (e.g., ethnicity, gender, and charge descriptions), checking data ranges for variables (e.g., age and length of incarceration), and assessing for weekenders, overutilizers, and inconsistent dates.

Domestic violence (DV): Appriss' Data Science Team worked closely with Nevada's Attorney General's Office to identify charge codes that indicated a domestic violence offense (e.g., NRS 200.485, NRS 200.481 and NRS 33.018).

Domestic violence transient recidivists: The percent of DV recidivists that commit a new DV offense in a different county than where they were previously booked within three years of release. The recidivism rate is applied towards the county where they were released.

Overall three-year domestic violence recidivism: The proportion of DV offenders that return to prison within 36 months of release. This includes booking data for domestic violence-related offenses from 2005-2018.

$$\text{Recidivism Rate} = \frac{\text{Recidivists}}{(\text{Recidivists} + \text{Non-recidivists})} * 100\%$$

Overutilizers: An inmate that frequently cycles through the criminal justice system—often incarcerated for low-level offenses. Overutilizers often recidivate as a result of mental health and substance abuse. Because overutilizers can have more than 20 incarcerations per year and do not represent normal offending behavior, they can skew recidivism statistics.

Inconsistent dates: Inconsistent dates are arrest, booking, and release dates that are inconsistent or illogical. For example, a release date may be prior to a booking date, or a release date may be missing but an offender has been rebooked. Inconsistent dates can negatively impact recidivism statistics and are often due to data entry error.

Weekenders: An inmate who has been sentenced in court to serve active time in jail and are considered low risk. A judge will order the sentence to be served out on weekends or specific days of the week that are suitable for the inmate. By definition, a weekender is someone who reports to jail on their own, is released after an agreed-upon number of days, and repeats this cycle until their time is served. Due to the nature of their sentence, weekenders are removed from recidivism studies, as they would inflate recidivism statistics. Weekenders will follow a weekly pattern (e.g., 1 or 2 days on the weekend or 1 or 2 days during the week). An algorithm was used to detect and remove the various patterns.