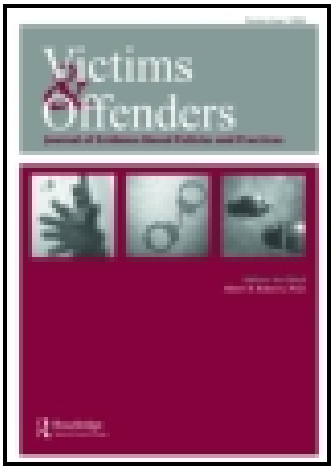

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The Impact of Prison for Women on the Edge: Paying the Price for Wrong Decisions

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The Impact of Prison for Women on the Edge: Paying the Price for Wrong Decisions

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Abstract: A small number of previous studies have investigated the impact of custody on reoffending by males and mixed sex groups, but this is the first to investigate the impact of prison exclusively on women. Propensity score matching (PSM) using information on over 3,000 women's current offense and criminal history was used to create a sample 320 women who had been sentenced to prison who were equivalent on all measured variables to 320 women who received a community sentence. Twelve months after release those from prison were found to have committed significantly more and more costly offenses and also to be more likely to be sent back to prison. The overall additional cost of prison in this sample was estimated to be £3.6 million, and this was a conservative estimate.

Keywords: recidivism, women as offenders, women in corrections

INTRODUCTION

Prison populations have grown considerably in most countries across the world in recent years (Walmsley, 2010). While men still make up the majority of prisoners, a concurrent and often steeper rise in the number of women being sentenced to custody has been observed in the United States (Kruttschnitt & Gartner, 2003), England and Wales (Hedderman, 2004, 2010), and other countries—including Australia, Cambodia, Costa Rica, Colombia, the Czech Republic, Finland, Germany, Greece, Hungary, the Netherlands, New Zealand, Poland, Scotland, and Spain (International Centre for Prison Studies, 2012; McIvor & Burman, 2011). For both men and women, this increased use of

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imprisonment is thought to reflect the widespread belief that imprisonment not only punishes but also prevents offending (Carlen, 2002; Tonry, 2009).

Prison as a tool for crime prevention among males has been widely studied both theoretically and empirically (for a review see Nagin, Cullen, & Jonson, 2009), but evidence about the impact of prison on women's offending has garnered very little research. This unfortunate research neglect has been replicated across much of correctional research, where "male is norm" (Tavris, 1992). In her Vollmer Award address entitled "On Behalf of Women," Patricia Van Voorhis (2012) suggested possible explanations for this lack of evidence, which included the failure of much scientific research to include truly representative samples. This means that the results of these studies produce results which cannot be generalized to females because they lack external validity. In addition Van Voorhis (2012) suggested that the current gold standard for evidence (meta-analysis) made the limited amount of research on females easy to ignore, and further had the impact of concealing interesting results about women's offending because these were not considered robust.

This paper aims to take a step toward redressing the balance by focusing only on females. In fact, this is the first study of which we are aware which focuses exclusively on the impact of prison on later reoffending for females only. The main research question addressed is: what is the impact of prison compared to a community sanction on the later prevalence, frequency, and types of reoffenses? In addition, taking into consideration possible differences in later measures of reoffending, what is the overall difference in the cost of these two sentencing options?

Background

Prison is said to reduce crime in one or more of the following ways: through general deterrence (the behavioral response to the threat of prison), through incapacitation (individuals cannot offend against wider society when in prison), through a specific deterrent impact (the experience of prison discourages reoffending), and through rehabilitation (work done with offenders while in prison changes their attitudes and improves their skills). While these concepts might provide a strong theoretical link between the use of prison and the prevention of offending, empirical evidence that these effects are experienced is hard to find (Apel & Nagin, 2011).

Determining the general deterrent effect of prison has been complicated by the relatively weak designs of early studies in this area (see Nagin, 1998, for a review), and the overarching methodological challenges that arise in attempting to link changes in incarceration rates with changes in crime rates. Because of the common ambiguous directionality of these measures it is often impossible to determine whether incarceration rates affect crime rates or whether crime rates impact upon incarceration rates (Durlauf & Nagin, 2010). In

addition to this problem of "simultaneity," it is impractical to attempt to evaluate the impact of the severity of a threatened sanction, such as prison on offending, without considering the certainty of that offending being detected and sanctioned (e.g., Helland & Tabarrok, 2007). Critically, however, recent evidence has suggested that increases in the severity of punishment simply do not yield sufficient deterrent effects to justify their social and economic costs (Apel & Nagin, 2011; Marsh, Fox, & Hedderman, 2009). In summary, the gradually improving evidence base suggests that the use of prison makes little contribution to preventing offending through general deterrence.

Prison clearly prevents offending, at least that directed toward the general public, while individuals are incarcerated. Much like research directed at general deterrence, however, the empirical research on the incapacitative effect of prison also tends to possess a number of methodological complications (Reuter & Bushway, 2007). For example, aggregate approaches to incapacitation, which compare crime rates with incarceration rates, possess the same issues in determining directionality (the simultaneity problem) as some general deterrence research (e.g., Moxon, 1998). However, the conclusions of methodologically strong studies such as those by Tarling (1993) suggest that incapacitation does little to reduce offending over the course of a criminal career. Another, more recent, British study based on official records documenting the criminal careers of four large cohorts of individuals (10,000+) followed up from age ten into late adulthood, sheds light on why this may be the case—concluding that "crimes are effectively saved-up rather than averted whilst an offender is in prison" (MacLeod, Grove, & Farrington, 2012, p. 1441).

Given the limited evidence available to suggest that prison prevents crime through general deterrence or incapacitation, its value as a crime reduction measure rests very heavily on how the experience of imprisonment might reduce the later reoffending of those who have been subjected to it. If an individual is incarcerated and finds the experience so unpleasant that it reduces their future offending behavior, this would be an example of successful specific deterrence. Reoffending in prison could also be reduced because of successful rehabilitation through drug or alcohol treatment or cognitive skills training (e.g., Lipsey, 1995). Alternatively, the experience of prison could fail to reduce reoffending because of a lack of specific deterrence (i.e., the experience of incarceration was not sufficiently unpleasant as to reduce later offending) or because of the structural impediments, such as the difficulty locating appropriate housing or employment, faced after release from prison (Chiricos, Barrick, Bales, & Bontranger, 2007; Nagin, Cullen, & Jonson, 2009). In addition, prison might sever prosocial bonds (e.g., loss of partner or loss of employment) and/or reinforce antisocial bonds (i.e., criminal associates, techniques, and definitions; Roxell, 2011; Sutherland, 1939). This could increase reoffending because of the resulting reduction in a "stake in conformity" (e.g., Sampson & Laub, 2003) or because an offending identity is reinforced (e.g., Lemert, 1967). There is also

the possibility that the positive and negative impacts of prison essentially cancel each other out, leading to no detectable impact of prison on later reoffending (but obviously a financial cost).

When examining the impact of prison compared to an alternative sanction (e.g., community order) there are obviously a number of methodological issues that need to be considered. For example, a simple comparison of reoffending by those sentenced to prison and those sentenced to a community order would be of limited value, as many of the factors which affect the likelihood of reoffending (e.g., type of offense, number of previous offenses) are taken into account by courts when considering the appropriate sentence (Copas & Marshall, 1998; Hedderman, 2007). Individuals considered more likely to reoffend are generally more likely to be sentenced to custody, and those who are thought to be less likely to reoffend are more likely to receive a community-based sentence. Therefore, any differences in later reoffending between these two groups could equally be attributed to the preexisting differences between them, rather than the impact of prison.

In theory, the impact of prison could be evaluated just as any other intervention used with offenders. The Maryland Methodological Scale (MMS; Sherman et al., 1997) is a useful tool when judging the level of internal validity of an evaluation, or the level of confidence that one can have that the intervention *caused* the outcome. According to the MMS a randomized controlled trial (RCT) provides the highest level of internal validity, as this method accounts for all measured and unmeasured extraneous variables (Farrington, 1983). There are, however, a number of practical and ethical challenges with RCTs, even when the intervention is presumed to be beneficial (e.g., Farrington & Jolliffe, 2002), and these issues would be exacerbated when the intervention is the removal of a person's liberty. In addition, those with the authority to make decisions about imprisonment are generally reluctant to leave the decision about prison to chance (e.g., Schneider, 1986). As a result there are very few studies which have used random allocation to determine the impact of prison (for an exception, see Killias, Gillieron, Villard, & Poglia, 2010).

Quasi-experimental approaches are the next highest quality evaluation method available in terms of being able to link an intervention with an outcome with a degree of confidence. These methods involve controlling for potential bias (such as preexisting differences between the groups) using statistical methods rather than controlling these through research design. One quasi-experimental method which has been used to evaluate the impact of custody is variable by variable or precision matching. This involves matching an individual who was sentenced to custody as closely as possible on all relevant variables (e.g., age, age at first offense, index offense type, etc.) to a person sentenced to a community sentence. For example, Petersilia, Turner, and Peterson (1986) matched 511 male probationers with 511 imprisoned offenders on year of sentence, gender, county of conviction, index offense (five categories), and a

summary score reflecting factors associated with prison/probation decisions in California. These factors included personal characteristics and aspects of the case (e.g., number of charges). They found that probationers were less likely to have received a new charge in the follow-up period than those released from prison. The main challenge posed by precision matching is that very large samples are needed to make even the most basic matches. For example, Petersilia et al. (1986) started with over 16,500 cases and had to match on a summary score (instead of specific variables) to achieve 511 matches.

Another quasi-experimental technique that can be used to address the potential differences between those sentenced to custody and those given a community order is propensity score matching (PSM). This technique uses relevant background information to develop a conditional probability that an individual will be in one condition rather than another (Luellen, Shadish, & Clark, 2005)—in this case those in prison versus those who received a community order. If correctly specified, individuals matched on this conditional probability will be equivalent on all measured covariates (Apel & Sweeten, 2010). This increases the likelihood that differences in reoffending between the two groups can be attributed to the main remaining difference between them: whether they were sentenced to prison.

Only a relatively small number of studies have used propensity score matching to evaluate the impact of prison on later reoffending for adults. For example, Bales and Piquero (2012) used official data on offenders in Florida to develop a propensity score to match offenders sentenced to prison with those given a community sentence. The propensity score included age, race, gender, index offense, and previous criminal history. Using various methods of matching on this score they found that those sentenced to prison were about 9% more likely to reoffend over the three-year follow-up period. Other studies which have employed PSM to evaluate the impact of custody compared to a noncustodial alternative have produced very similar results, suggesting that prison was associated with a small increase in reoffending (e.g., Ministry of Justice, 2010a; Weisburd, Waring, & Chayet, 1995; Wermink, Blokland, Nieuwbeerta, Nagin, & Tollenaar, 2010).

Table 1 shows those 11 studies that compare custody with a community alternative with a high level of internal validity (e.g., RCT and PSM). This table was derived from the two recent systematic reviews on the impact of prison on later reoffending (Nagin, Cullen, & Jonson, 2009; Villettaz, Killias, & Zoder, 2006), and additional studies conducted since their publication (e.g., Bales & Piquero, 2012; Jolliffe & Hedderman, 2012; Wermink et al., 2010). Of the 11 studies, 9 included women, but no study examined the results separately for women. Therefore, although commentators have concluded that prison appears to have a null or mildly criminogenic impact on later reoffending (e.g., Nagin, Cullen, & Jonson, 2009; Villettaz et al., 2006), the extent to which this finding applies to women is unknown.

Table 1: Randomized controlled trial and propensity score matching studies of the impact of incarceration on reoffending.

Authors	Sample	Method	Summary Result
Barton & Butts (1990)	511 male juvenile offenders	RCT	Nonsignificant increase in official charges, but slight decrease in self-reports associated with prison
Bergman (1976)	109 "mostly male" second felony offenders	RCT	Significant increase in reoffending associated with prison
Killias et al. (2010)	118 offenders (9% female)	RCT	Nonsignificant increase in reoffending associated with prison
Schneider (1986)	181 youths (5% female)	RCT	Significant increase in reoffending associated with prison
Van der Werff (1979)	1920 offenders (unknown % females)	Natural experiment	Significant increase in reoffending associated with prison for violent offenders; no difference for traffic or property offenders
Bales & Piquero (2012)	532 adult offenders (approx. 8% female)	PSM	Significant increase associated with prison
Jolliffe & Hedderman (2012)	2,342 Male adult offenders	PSM	Significant increase in reoffending associated with prison
Loughran et al. (2009)	921 juvenile offenders (14% females)	PSM	Slight increase in official offending, but no difference in self-reports associated with prison
Ministry of Justice (2010a)	24,978 adult offenders (unknown % females)	PSM	Slight increase in official offending
Weisburd et al. (1995)	742 offenders (unknown % females)	PSM	Slight increase in reoffending associated with prison
Wermink et al. (2010)	4,246 adult offenders (530 females)	PSM	Increase in reoffending associated with prison

The fact that men constitute the overwhelming majority of prisoners may partly explain, even if it does not justify, the general lack of research interest in the impact of imprisonment on women's subsequent offending (Carlen, 2002). However, it is important to address this gap for at least three reasons. First, prison is increasingly being used for women. In fact, the use of custody for women has risen particularly steeply over the last two decades in a number of countries including Australia, England and Wales, Finland, Germany, Greece, the Netherlands, New Zealand, Poland, Scotland, Spain, and the United States (McIvor & Burman, 2011). More recent figures show increases in the incarceration of women of between 20% and 30% in less than two years in the Czech Republic, Hungary, Costa Rica, Colombia, and Cambodia (International Centre for Prison Studies, 2012). Although the explanation varies from one country to another, there is widespread agreement that changes in responses to women's offending explain more of these increases than changes in offending behavior by women (e.g., Chesney-Lind, 2002; Gelsthorpe & Morris, 2002; Hedderman, 2004; Kruttschnitt & Gartner, 2003; McIvor & Burman, 2011).

A second important reason for considering the impact of incarceration on women's reoffending is because there is a growing body of evidence which suggests that the nature of women's offending is different from men's (Collins, 2010; Jolliffe, 2013). For example, the risk factors for men tend to be individual-level factors (e.g., impulsivity, low intelligence; Farrington, 1995), while women's offending tends to be associated with relationships (e.g., theft to support children, co-offending with criminal partner; Becker & McCorkell, 2011). Third, it is also well established that the "pains of imprisonment" are different, and arguably greater, for women (Kruttschnitt & Gartner, 2003). For example, a recent survey in England reported that women in prison have higher levels of mental health needs than men (26% versus 16%) and that women were nearly three times more likely (19% versus 7%) to attempt suicide or self-harm (Ministry of Justice, 2010b). Women in prison also "tend to be located further from their homes than male prisoners, to the detriment of maintaining family ties, receiving visits and resettlement back into the community" (Corston, 2007, p. 21).

With increasing numbers of women being incarcerated, but clearly different mechanisms operating for men and women in the causes of offending, and differing phenomenological accounts of the experience of prison, exploring the impact of prison on women's reoffending is clearly an important knowledge gap.

THE CURRENT STUDY

The current study of the impact of prison is based on a sample of 3,041 women offenders (aged 18–60) following either their release from prison

or commencing a supervised community order in ten probation areas in England between 2005 and 2009. Both groups were identified from probation records so, theoretically at least, could have been receiving similar levels of support from probation, the major distinction being one group was just released from prison and the other had not been to prison.

Each case was followed up using the Police National Computer, which contains details of past criminal activity (e.g., age at first offense, number of previous offenses, number of previous court appearances, number of previous custodial sentences); the current offense that led to this instance of prison or community order (e.g., offense and disposal type); and information about the number, type, and dates of reoffenses. A one-year follow-up was chosen because most officially recorded reoffending occurs within this period (Kershaw & Renshaw, 1997a, 1997b), although it is acknowledged that actual offending may occur over a much longer period.

The key dependent variables for this study were whether a woman was convicted of a reoffense (i.e., the prevalence of reoffending), the number of convictions in the one-year follow-up period (i.e., the number of reoffenses per reoffender), and the length of time between commencing their community order or being released from prison and committing their first reoffense.

Of the full sample of 3,041 women, 899 (29.6%) had committed a reoffense with 12 months of commencing their order or being released from prison, with an average of 3.2 reoffenses per reoffender (sd = 2.9) and an average time to reoffense of 128.1 days (sd = 99.1). There were, however, very considerable differences between those released from prison and those on community orders, with the former showing a significantly higher prevalence of reoffending (55.8% compared to 26%, chi squared 139.3, $p < .0001$). This was equivalent to a standardised mean difference (d) of .71 (approximately equivalent to a difference in proportions of 35%[1]). There was also a difference in the number of reoffenses per reoffender, with those released from custody averaging 4.6 compared to 2.7 offenses for those on community orders ($t = 8.5$, $p < .0001$; $d = .64$). Those released from prison were also significantly quicker to reoffend, averaging 109.5 days to their first reoffense compared to 134.2 days for those on community orders ($t = 3.2$, $p < .0001$; $d = .25$).

Several previous studies have found that those sent to prison have a different demographic and criminal history profile to those sentenced to community orders (e.g., Bales & Piquero, 2012; Spohn, 2007; Wermink et al., 2010). It follows that a simple comparison between these groups reveals little about the impact of custody on later reoffending. In the case of the current sample, those released from prison were significantly younger and were more likely to come from four of the ten areas (Areas 2, 5, 8, and 10[2]). No significant differences in ethnicity were identified, with less than 10% of those released from prison or on community orders classified as Black or Minority Ethnic (BME).

Table 2 provides the criminal history information for the two groups. Overall, and in line with most previous research on men alone and on mixed samples (e.g., Bales & Piquero, 2012; Spohn & Holleran, 2002), the women sentenced to prison were clearly at higher risk of reoffending in that they began offending at an earlier age, had a greater number of previous offenses, and more previous court appearances. They had also served a greater number of previous prison sentences. The Copas score is a measure of the speed with which someone has accrued criminal convictions over their criminal career[3]. This score has been demonstrated to be a strong predictor of reoffending (Ministry of Justice, 2010a) and is one component of the Offender Group Reconviction Score (OGRS), which is a static risk assessment device used to predict reoffending in England and Wales[4].

The bottom of Table 2 shows the proportion of the index offenses for each group. For example, of the 2,670 females who received a community order, 76 (or 2.8%) had an index offense for absconding or bail offenses compared to 15 out of 371 who received prison (chi squared = 1.6, n.s.). Overall, women who were sentenced to a community order committed less serious offenses such as drinking and driving offenses, fraud/forgery, public order offenses, and non-serious violence. Those released from prison were more likely to have been convicted of serious index offenses (burglary, drugs offenses, robbery, theft, and serious violence).

Developing the Propensity Score

The propensity score was developed using logistic regression to predict releasing from custody or sentencing to community order using the available demographic, criminal history, and offense characteristics. Table 3 shows the variables that were considered for inclusion in the model. The final model included all those that had p values of $p < .25$ or lower. This is in keeping with Rosenbaum's (2002) caution against using statistical significance to select predictors in PSM[5].

Table 3 shows that, similar to the propensity scores developed in previous research on mixed samples (e.g., Bales & Piquero, 2012; Wermink et al., 2010), many criminal history variables (e.g., number of previous convictions, number of previous custodial sentences) significantly predicted group membership. The Exp (B) can be interpreted the same as an odds ratio, so (controlling for all other measured variables) a previous custodial sentence increased the odds of being in the custody group by 1.4 times. Information about the independent impact of the index offense was assessed with violence as the reference category. This means, for example, that individuals who were convicted of drugs importation were seven times more likely to be sentenced to custody (Exp (B) = 7.4) compared to those convicted of violence. Also, those of Asian ethnicity

Table 2: Criminal history of sample.

	N	Community Order	N	Prison	T	p	*d*
Age at first offense	2669	24.3 (10.2)	371	19.5 (7.4)	8.5	0.0001	0.47
Number of previous offenses	2670	11.4 (21.9)	371	34.2 (39.3)	16.7	0.0001	−0.92
Number of previous court appearances	2670	5.5 (8.8)	371	14.3 (14.7)	16.5	0.0001	−0.91
Number of previous incarcerations	2670	0.6 (2.0)	371	3.5 (5.2)	20.1	0.0001	−1.1
Copas score	2670	(−1.53) (.80)	371	(−.72) (.85)	17.5	0.0001	0.98
OGRS one year	2670	29 (23)	371	52 (26)	18.2	0.0001	0.98
Type of Index Offense	**N**	**% (n)**	**N**	**% (n)**	**chi squared**	**p**	***d***
Absconding or bail offenses	2670	2.8 (76)	371	4.0 (15)	1.6	n.s.	0.2
Criminal/Malicious damage		2.6 (69)		1.6 (6)	1.3	n.s.	−0.27
Domestic burglary		0.9 (24)		1.6 (6)	1.7	n.s.	0.33
Other burglary		0.4 (10)		1.3 (5)	6.3	0.012	0.71
Drunk driving offenses		9.8 (262)		1.1 (4)	31.2	0.0001	−1.27
Drugs (import/export/prod)		0.9 (23)		3.8 (14)	22.9	0.0001	0.83
Drugs (possession/small scale supply)		3.1 (82)		5.4 (20)	5.37	0.021	0.32
Fraud/Forgery		11.9 (319)		8.3 (31)	4.2	0.04	−0.22
Handling		1.9 (50)		2.4 (9)	0.5	n.s.	0.14
Other		7.8 (209)		5.4 (20)	2.8	n.s.	−0.22
Other motoring offenses		3.1 (82)		1.6 (6)	2.5	n.s.	−0.36
Public order		4.7 (125)		2.4 (9)	4.0	0.05	−0.38
Robbery		0.3 (7)		4.6 (17)	77.5	0.0001	1.6
Taking and driving away		0.9 (23)		0.8 (3)	0.01	n.s.	0.03
Theft		24.4 (655)		41.8 (156)	50.7	0.0001	0.44
Violence		23.7 (635)		11.3 (42)	29.4	0.0001	−0.5
Serious violence		0.7 (19)		2.1 (8)	7.7	0.006	0.62

Table 3: Variables considered for inclusion in the model.

Criminal History Variable	**B**	**SE**	**p**	**Exp (B)**
Age	−0.036	0.062	0.567	0.965
Age (squared)	0.001	0.001	0.57	1.001
Age at first offense	−0.037	0.048	0.451	0.964
Age at first offense (squared)	0	0.001	0.607	1
Number of previous offenses	−0.008	0.011	0.444	0.992
Number of previous offenses (squared)	0	0	1	1
Number of previous court appearances	−0.075	0.034	0.025	0.927
Number of previous court appearances (squared)	0	0	0.108	1
Number of previous incarcerations	0.37	0.053	0.0001	1.447
Number of previous incarcerations (squared)	−0.008	0.002	0.0001	0.992
Copas rate	1.228	0.205	0.0001	3.415
Index Offense Type	**B**	**SE**	**p**	**Exp (B)**
Violence	*reference category*			
Absconding or bail offenses	0.652	0.35	0.062	1.92
Criminal/malicious damage	−0.144	0.513	0.778	0.865
Domestic burglary	0.516	0.608	0.397	1.675
Other burglary	0.97	0.671	0.148	2.673
Drunk driving offenses	−0.732	0.542	0.177	0.481
Drugs (import/export/prod)	2.005	0.426	0.0001	7.429
Drugs (possession/small scale supply)	0.91	0.325	0.005	2.485
Fraud/Forgery	1.1	2.79	0.0001	3.003
Handling	0.473	0.427	0.268	1.606
Other	0.536	0.331	0.105	1.71
Other motoring offenses	0.161	0.472	0.733	1.175
Public order	0.028	0.398	0.945	1.028
Robbery	2.527	0.533	0.0001	12.522
Taking and driving away	0.846	0.662	0.201	2.331
Theft	0.441	0.207	0.033	1.554
Serious violence	2.126	0.515	0.0001	8.385

(Continued)

Table 3: *(Continued).*

Ethnicity	**B**	**SE**	**p**	**Exp (B)**
White	*reference category*			
Black	0.014	0.273	0.958	1.014
Asian	0.946	0.414	0.022	2.577
Other	0.77	1.122	0.493	2.16
Area	**B**	**SE**	**p**	**Exp (B)**
Area 6	*reference category*			
Area 1	0.474	0.291	0.104	1.606
Area 2	0.353	0.294	0.231	1.423
Area 3	–0.084	0.438	0.849	0.92
Area 4	0.353	0.362	0.329	1.423
Area 5	0.177	0.286	0.535	1.194
Area 7	–0.078	0.402	0.847	0.925
Area 8	1.501	0.293	0.0001	4.487
Area 9	0.769	0.359	0.032	2.157
Area 10	0.871	0.228	0.0001	2.389
Year	**B**	**SE**	**p**	**Exp (B)**
2005	*reference category*			
2006	–0.001	0.283	0.997	0.999
2007	–0.411	0.293	0.161	0.663
2008	–0.573	0.308	0.063	0.564
2009	–0.943	0.402	0.019	0.39
Constant	0.499	0.892	0.576	1.647

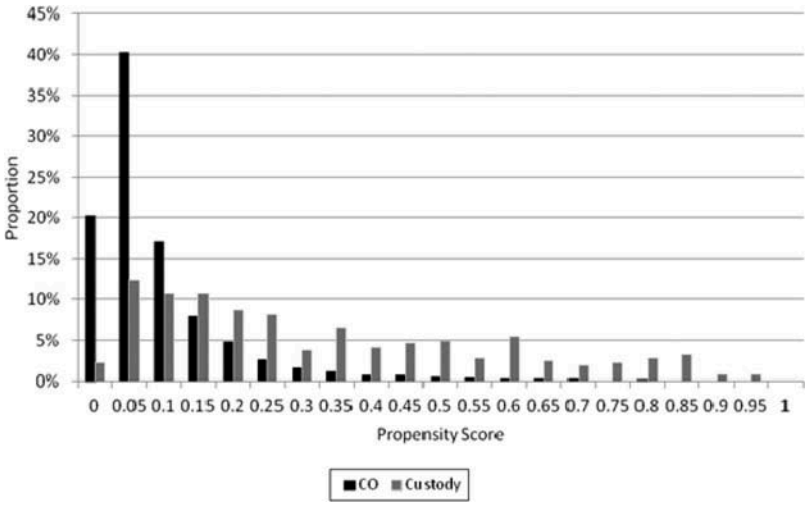

Figure 1: Distribution of propensity scores.

were over twice as likely to be released from prison compared to those of white ethnicity, controlling for all other variables.

Figure 1 shows the distribution of the propensity scores for both those released from custody (light) and those on community orders (dark). The distributions of the two groups were clearly different, with those receiving community orders generally less likely to be sentenced to prison (and therefore more prevalent toward the left of the distribution), and those sentenced to custody predominantly to the right of the distribution. It was also true, however, that some of the women who were actually sentenced to custody were predicted to be at low likelihood of receiving custody. The reverse was also true in that some women who were predicted to be likely to receive custody actually received a community order, but this was less common. Importantly for the purposes of the proposed matching, a degree of common support (or overlap) between the two groups existed as there were individuals from both groups who had similar propensity scores. This common support justifies the use of PSM in this instance.

Nearest neighbor one-to-one matching was used to match one offender from the custodial group to one offender in the community order group. This type of matching was selected to decrease potential bias, with knowledge that one-to-one matching increases variance (Apel & Sweeten, 2010). Overall, it was possible to obtain 320 matched pairs (total sample 640), one of whom had been sentenced to custody and one of whom had been sentenced to a community order, but similar in their predicted likelihood to receive either of these sanctions.

After completing the nearest neighbor one-to-one matching it was clear that this was successful at reducing the preexisting differences between the two groups on the background demographic features. That is, none of the comparisons on age at index offense, ethnicity, or area showed differences that were statistically significant. For example, those in the matched community order group were no longer significantly older than the custodial group (30.3 years [sd = 9.0] compared to 30.8 [sd = 8.9], n.s.). Also, the community and prison groups were equally represented within the ten areas of the region.

Table 4 shows that the process of matching also minimized the substantial preexisting differences in important offender and offense characteristics previously identified between those who received community orders and those who had been released from custody. There were no longer any statistically significant differences between the two groups, and importantly for the purposes of this research, the OGRS score—a validated measure for predicting future reoffending for women—was identical for both groups. These 320 matched pairs therefore represent 320 trials of two possible decisions (community order versus custody) that the court made about individuals who—on available demographic, criminal history, and offense characteristics—were essentially the same.

Reconviction Results following PSM Matching

Table 5 shows the reoffending of the community and prison groups after the preexisting differences were minimized through matching. Of the 320 women who received custodial sentences, 55.3% (N = 177) were convicted within 12 months of release, compared to 48.8% (N = 156) of those who received community orders. This difference was nonsignificant (chi square 2.8, $p < .05$), with the standardized mean difference of $d = .14$ suggesting a small (7%) increase in the prevalence of reoffending associated with prison.

The frequency of reoffending (or the number of reoffenses per reoffender) was adjusted to control for "time at risk" in the follow-up period. This was an attempt to account for the different "at risk" periods between those women who were subsequently incarcerated (or reincarcerated) and those who were not[6]. Those released from custody were found to have committed significantly more offenses (M = 5.5, sd = 4.4) compared to those in the community order group (M = 4.4, sd = 4.2, $p < .023$). The standardized mean effect of this difference was $d = .26$, or about a 13% increase in the number of reoffenses for those released from custody.

The bottom of Table 5 shows the breakdown of the proportion of different types of offenses that were committed by the custody and community order groups. Just over half of the further offenses committed by both groups of women involved theft; however, those released from prison committed

Table 4: Criminal history of matched sample.

	N 320	Community Order M (sd)	N 320	Prison M (sd)	t	p	*d*
Age at first offense		19.2 (7.3)		19.7 (7.6)	0.84	n.s.	.07
Number of previous offenses		31.3 (38.6)		31.5 (37.4)	0.06	n.s.	.00
Number of previous court appearances		13.6 (14.2)		13.6 (14.7)	0.03	n.s.	.00
Number of previous incarcerations		3.0 (4.7)		3.0 (4.8)	0.15	n.s.	.00
Copas score		(-.73) (.78)		(-.76) (.83)	0.5	n.s.	.04
OGRS one year		.52 (.24)		.52 (.25)	0.31	n.s.	.00

Type of Index Offense	N 320	%	N 320	%	chi squared	p	*d*
Absconding or bail offenses		6.6		4.4	1.5	n.s.	0.23
Criminal/Malicious damage		0.9		1.6	0.51	n.s.	0.28
Domestic burglary		1.3		1.3	0	n.s.	0
Other burglary		0.9		1.3	0.14	n.s.	0.16
Drunk driving offenses		1.6		1.3	0.11	n.s.	0.13
Drugs (import/export/prod)		3.8		3.4	0.05	n.s.	0.1
Drugs (possession/small scale supply)		5.9		5.6	0.03	n.s.	0.03
Fraud/Forgery		6.9		8.4	0.56	n.s.	0.12
Handling		2.5		2.8	0.06	n.s.	0.07
Other		6.3		5.6	0.11	n.s.	0.06
Other motoring offenses		1.6		1.6	0	n.s.	0.0
Public order		3.4		2.8	0.21	n.s.	−0.11
Robbery		1.6		2.2	0.34	n.s.	0.18
Taking and driving away		0.6		0.9	0.2	n.s.	0.23
Theft		42.2		43.1	0.06	n.s.	0.02
Violence		12.8		12.5	0.01	n.s.	0.01
Serious violence		1.3		1.3	0	n.s.	0

Table 5: Reoffending of the matched sample.

	N	Community Order %	N	Prison %	chi squared	p	d
% proven reoffending (up to 12 months)	320	48.8	320	55.3	2.8	.10	.14
% custodial sentence (up to 12 months)	156	29.5	177	72.3	61	0.0001	1.01
	N	M (sd)	N	M (sd)	t	p	d
No. offenses (12 months)	156	4.4 (4.2)	177	5.5 (4.4)	2.3	0.023	.26
Time to first reoffense (up to 12 months)	156	116.6 (94.0)	177	111.4 (91.7)	0.5	n.s.	0.06

Reoffense Type	Community Order %	Prison %	chi squared	p	d
Absconding or bail offenses	2.6	7.3	3.9	0.05	0.61
Criminal/Malicious damage	5.8	1.1	5.6	0.02	−0.93
Domestic burglary	0.6	2.3	1.5	n.s.	0.7
Drunk driving offenses	0.6	0.6	0	n.s.	0
Drugs (import/export/prod)	0.6	1.1	0.22	n.s.	0.32
Drugs (possession/small scale supply)	5.1	2.3	1.96	n.s.	−0.47
Fraud/Forgery	2.6	2.8	0.021	n.s.	0.06
Handling	0.6	1.7	0.776	n.s.	0.54
Other	4.5	4.5	0	n.s.	0
Other burglary	0	0.6	0.88	n.s.	0.07
Other motoring offenses	4.5	2.3	1.29	n.s.	−0.39
Public order	6.4	7.9	0.28	n.s.	0.13
Robbery	0	5	4.48	0.034	0.83
Soliciting/Prostitution	4.5	4.5	0	n.s.	0
Taking and driving away	1.9	0	3.4	n.s.	−0.69
Theft	51.9	51.4	0	n.s.	0
Theft from a vehicle	0	0.6	0.9	n.s.	0.07
Violence	7.7	5.6	0.56	n.s.	−0.18
Violence (serious)	0	0.6	0.9	n.s.	0.07
Total number of offenses to 12 months	606	801			

significantly more robbery and absconding and bail offenses, while those on community orders committed significantly more criminal damage.

In addition to whether the women had reoffended, and how many times, information about the sentence received for the first instance of reoffending was available. Of the 156 women from the community order group who reoffended, 46 (29.5%) were sentenced to prison compared to 128 out of the 177 (72.3%) who reoffended from the prison group. This difference in sentencing, which might be attributable to the increased frequency or seriousness of the offenses typically committed by the prison group, was statistically significant ($p < .0001$) with a $d = 1.01$; equivalent to a 50% increase in the likelihood of receiving another prison sentence.

Sensitivity Analysis

Unlike RCTs, propensity score matching can only equate individuals on measured covariates, and the data for the current study did not contain information about variables (e.g., drug or alcohol addiction, socioeconomic status, family relationships, etc.) which, had those from the custody and community order group been balanced, would have increased confidence in the results. In order to evaluate the potential impact of this hidden bias on the finding that prison was associated with increased offending, Rosenbaum's bound method (Γ) was employed (Keele, 2010). In an RCT, randomization ensures that $\Gamma = 1.0$, which is equivalent to no hidden bias. In a quasi-experimental study if $\Gamma = 2.0$, and two people were identical on the matched covariates, then one might actually be twice as likely as the other to receive the treatment (in this case custody) because of differences in unobserved covariates (Keele, 2010). While the actual value of Γ is unknown, the bounds method evaluates several estimates to determine at what magnitude the conclusions of the study would change.

The robustness of the finding that prison was associated with an increase in the prevalence of offending was not tested because this result was not statistically significant in a two-tailed test. However, when examining offending frequency at $\Gamma = 1.1$, which is equivalent to hidden bias that would increase the odds of one individual of the matched pair being 10% more likely to have received custody, the critical p value was found to be $p < .0002$. This suggested that the original results would be robust at this level. However, at $\Gamma = 1.5$ the critical p value was found to be $p < .08$. Therefore, an unmeasured covariate would have to independently increase the odds of one of the matched pair receiving custody by 50% before this called the robustness of the results of the current study into question. By way of comparison with the Exp (B) values in Table 2, the level of hidden bias would need to have an equivalent effect to the variable of an additional custodial sentence (Exp (B) = 1.5). This level of Γ is similar to that of another study which used official records to create a

propensity score (Wermink et al., 2010), and increases the confidence in the current results. Of course, this analysis was limited by the data available (see discussion).

Costs of Reoffending

An additional method of evaluating the impact of incarceration for women is a cost-benefit analysis. To examine the relative costs of the two sentencing options, a "bottom-up" approach was used (e.g., Raffan Gowar & Farrington, 2013) based on the costs of specific offenses published by the Home Office (Home Office, 2011). These costs take into consideration costs in anticipation of crime (such as security expenditure and insurance administration), costs as a consequence of a criminal event (such as property stolen or damaged, emotional and physical impacts and health costs), and costs of responding to crime (costs to the criminal justice system).

Table 6 shows the average costs of the 12 offense types that were available in the Home Office publication. "Other" crimes included absconding/bail offenses, drunk driving offenses, drug possession, handling, other motoring offenses, public order offenses, prostitution, and "other" offenses that could not be classified. The most expensive offense was serious violence (£25,747) followed by robbery (£8,810). In some instances the costs of the offense categories were derived from those provided by the Home Office in order to more accurately reflect the specific offense committed. For example, the category of

Table 6: The cost of different offense types.

Offense Type	(GB£)
Absconding or bail offenses	1,119
Criminal/Malicious damage	1,053
Domestic burglary	3,925
Drunk driving offenses	1,119
Drugs (import/export/prod)	2,917
Drugs (possession/small scale supply)	1,119
Fraud/Forgery	3,857
Handling	1,119
Other	1,119
Other burglary	4,608
Other motoring offenses	1,119
Public order	1,119
Robbery	8,810
Soliciting/Prostitution	1,119
Taking and driving away	5,021
Theft	1,005
Theft from a vehicle	1,248
Violence	1,880
Violence (serious)	25,747

Table 7: The costs of reoffenses for those on community orders and released from prison.

Reoffense Type	Community Order No.	Cost (GB £)	Custody No.	Cost (GB £)
Absconding or bail offenses	4	4,476	13	14,547
Criminal/Malicious damage	9	9,477	2	2,106
Domestic burglary	1	3,925	4	15,700
Drunk driving offenses	1	1,119	1	1,119
Drugs (import/export/prod)	1	2,917	2	5,834
Drugs (possession/small scale supply)	8	8,952	4	4,476
Fraud/Forgery	4	15,428	5	19,285
Handling	1	1,119	3	3,357
Other	7	7,833	8	8,952
Other burglary	0		1	4,608
Other motoring offenses	7	7,833	4	4,476
Public order	10	11,190	14	15,666
Robbery	0		5	44,050
Soliciting/Prostitution	7	7,833	8	8,952
Taking and driving away	3	5,021	0	
Theft	81	81,405	91	91,455
Theft from a vehicle	0		1	1,248
Violence	12	22,560	10	18,800
Violence (serious)	0		1	25,747
Total costs of reoffenses		**191,088**		**290,378**
Costs of imprisonment		–		**4,402,379**
Costs of community order		**898,164**		–
Total costs		**1,188,543**		**4,593,467**

violence contained both moderately serious violence (which was estimated to cost £9,790) and less serious violence (which was estimated to cost £1,750). Previous analyses (Hedderman & Jolliffe, 2010) showed that the violence category contained 75% (£1,750) less serious violence and 25% moderate violence (£9,790), giving a total (weighted) of £1,880.

The costs of the reoffenses for the 12-month follow-up period of those on community order and those released from custody were examined (Table 7). For example, those on community orders committed four absconding and bail offenses, each with an estimated cost of £1,119, for a total of £4,476. The most expensive offense category for both groups was theft (£81,405 for community order and £91,455 custody), followed by violence (£22,560) for the community order group and robbery (£44,050) for the custody group. Overall, the offenses committed by the custody group cost £290,378, compared to £191,088 for those committed by the community order group, which was a difference of £99,290.

In addition to the costs of the reoffenses of the two groups, it is also important to account for the different cost of the two sentencing options, prison and a community order. According to the Ministry of Justice (2012), the cost per

prison place for a woman was £56,415 per year (more expensive than that for a man, £39,719), and the cost of a community order was £2,800. In order to estimate the costs of incarceration for this group, the cost was scaled based on the length of incarceration. The average length of incarceration was 89 days (sd = 162.2) with a range from 14 days to 1,460 days. For example, if a woman served three months in prison this was allocated a cost of £18,805 (1/3 of £56,415), and if a women served four years this was allocated a cost of £225,660. In two cases information about the length of incarceration was not available, so these were allocated the minimum length observed (14 days). Using these estimates, the average cost of incarceration for those in the custody group was £13,764 (sd = £25,076). The maximum length of a community order in this sample was one year, but in order to provide a conservative estimate of the overall costs of a community order, the estimate of the cost was not scaled based on the length of the order; all individuals who received a community order were allocated a flat cost of £2,800.

The total cost of incarceration for those 320 women in the matched group who had received custody was £4,402,379, and the total cost of the community orders for the 320 allocated to community orders was £898,164 (bottom of Table 4). When the additional cost of incarceration compared to community orders (£3,504,215) is added to the additional cost of the reoffenses of the custody group (£99,290), the total additional estimated costs of incarceration over community sentences comes to £3,603,505. Overall the cost per woman for those sentenced to prison was £14,665, compared to £3,404 for those sentenced to community order. In other words, there was a saving of £4.31 for every £1 spent on community orders instead of prison.

DISCUSSION

Societies may choose to use prison for a number of reasons, but crime prevention is typically considered one of the most important (e.g., Sherman, 2011). There is, however, little firm evidence that prison contributes to crime prevention either through general deterrence or incapacitation (e.g., Apel & Nagin, 2011; MacLeod et al., 2012), and therefore the utility of prison as a crime prevention mechanism rests heavily on its ability to reduce the offending of those who go to prison. Unfortunately for those who advocate "getting tough" on crime through the more liberal use of prison, the evidence suggests that the experience of prison has a mildly criminogenic effect on men (Bales & Piquero, 2012; Jolliffe & Hedderman, 2012; Nagin et al., 2009), slightly increasing later reoffending.

As Nagin et al. (2009) note, this weight of evidence may not yet be sufficiently strong to support abolitionist policies, but the conclusion that prison slightly increases reoffending (for men) is based on several high quality

evaluations, making it increasingly difficult for policy makers to ignore. There is, however, very limited evidence on which to evaluate the impact of incarceration on women. Given the substantial difference between men and women in the risk factors for offending (e.g., Collins, 2010), and the potential variation in the experience and wider impact of incarceration (e.g., on dependent children), there is no a priori reason to believe that the impact of prison on further offending would be similar for men and women. The few studies which have examined this tend to do so by including women in their samples and including sex as a variable in the analysis (e.g., Ministry of Justice, 2010a). However, this approach often leads to very small numbers of women being included and results which are indicative rather than conclusive. As Van Voorhis (2012) notes, it is essential that decisions about the impact of interventions such as prison on the reoffending of women is based on evidence from studies of women.

Most of the women who were sentenced to community orders in the original sample of the current study (88%) differed significantly from those who were sentenced to custody on characteristics which are known to predict future offending. These factors include age at first offense, the nature of their current offense, and the extent of their previous offending. However, the majority of those who were sentenced to custody (86%) could be matched against comparable women in the community group. This suggests that in most of the cases in which a prison sentence was imposed, the courts faced a genuine choice about whether to use prison.

The results of the current study clearly demonstrated that in these comparable cases, choosing prison over a community order was associated with a slight (but nonsignificant) increase in the prevalence of offending, a significant increase in the frequency of reoffending, and a substantial increase in later (re)incarceration. This result is broadly similar to the results of studies on men in the United Kingdom (Jolliffe & Hedderman, 2012; Ministry of Justice, 2010a), the United States (Bales & Piquero, 2012), the Netherlands (Wermink et al., 2010), and Switzerland (Killias et al., 2010)—and suggests that prison does not prevent crime among women. While it may or may not actively increase the prevalence of reoffending, in this study at least, prison was associated with more frequent and serious reoffending. This may be because of unmeasured preexisting differences in those who reoffend and those who do not. However, it may also reflect the fact that the damage prison is known to inflict—in terms of losing accommodation, jobs, and family ties (Social Exclusion Unit, 2002)—is not evenly distributed.

The additional cost of sending 320 women to prison was conservatively estimated to be £3.6 million. This was a conservative estimate because the cost of the community orders was allocated to the maximum of a full year when the mean was actually lower at 11 months (sd = 5.3 months). Also, this estimate was based on offenses that led to conviction, which are known to be only the tip

of the iceberg when it comes to offending for men and women (e.g., Farrington et al., 2003). For example, in the Cambridge Study in Delinquent Development, Raffan Gowar and Farrington (2013) estimated that the cost of self-reported crimes was about 20 times the cost of crimes leading to convictions. If this multiplier reflected a true ratio of self-reported to official costs for women in the current study (and this is speculative), then the financial cost of prison for this very small sample could be even harder to justify.

It seems obvious that if other life outcomes had been measured (e.g., impact on employment, relationships, social welfare, health) the negative impact of prison would have been even more substantial. Incarcerating women also has negative impacts, and therefore costs, far beyond the individual women. It has been estimated that a third of women in prison in England and Wales are lone parents and 18,000 children see their mothers sent to prison each year. As only 5% of these children are able to stay in their own homes when their mothers are in prison, the harm done by imprisonment in these cases has the potential to be long term and serious in that, in these instances, these children are more likely to be unemployed and out of education (Corston, 2007). They are also more likely to become problem drug users and to become offenders later in life (e.g., Murray, Farrington, Sekol, & Olsen, 2009).

Of course, the results of any one study should be treated with caution, and replications using women-only samples are desperately needed. For example, it is possible that the apparently comparable women who received a prison sentence differed in some unmeasured way from those who received community sentences. In some cases potentially important unmeasured factors (e.g., long term drug use) are likely to be correlated with the decision to use prison and may therefore co-vary with the factors which it was possible to measure (e.g., number of previous offenses). However, there could be other factors (e.g., education) for which this was not the case. Quite simply, no quasi-experimental study based on official criminal records data can tell the full story, but hopefully this analysis contributes to the debate and will encourage others to conduct new studies in this much-neglected area.

CONCLUSION

In this analysis, a women's experience of prison was associated with a significant increase in the frequency of reoffending and a substantial and significant increase in reincarceration. So, far from "breaking the cycle of offending" (Ministry of Justice, 2010b) in this instance, the use of prison led the cycle to turn more quickly and with progressively worse results. Considering the relatively small size of the sample sent to prison (n = 320) the additional £3.6 million prison cost seems extraordinary, but this was a conservative estimate, especially considering the potentially wider range of negative impacts for the incarceration of women as opposed to men.

Much more research on the impact of incarceration on women is needed to replicate this result. Ideally this will not be limited to quasi-experiments with a relatively short follow-up in official records, but include RCTs with longer follow-up and personal interviews so that self-reports of offending and other life outcomes can be measured. Only then can the true cost of imprisoning be properly measured and considered.

NOTES

1. There are a number of methods of interpreting effect sizes, but a useful method of making the magnitude of the effect size practically meaningful is to convert it to a difference in proportions. In order to convert the effect size to a difference in proportions, the effect size (d) is divided in about half (see Lipsey & Wilson, 2001, pp. 199–202).

2. We attempted to investigate whether this was consistent with national figures on sentencing, but the area breakdowns available are by police force, not probation area.

3. Copas score = Ln ((previous number of conviction occasions + 1)/(criminal career length (days)/360) + 10)).

4. OGRS is commonly used to predict reoffending in England and Wales (Howard, Francis, Soothill, & Humphreys, 2009) using age, sex, and information about current and previous offending to calculate a score between 0 and 100 predicting the likelihood of reoffending up to one year after sentence. There is evidence to support the validity and accuracy of OGRS in predicting reoffending (Farrington, Jolliffe, & Johnstone, 2008).

5. Squared terms were included to account for nonlinear effects.

6. Those who were imprisoned in the follow-up time period, and therefore not at risk of committing offenses for the full 12 months, had their offenses scaled up. This scaling was based on an estimate of average time served in the follow-up period (70 days). Therefore the multiplier was 365/295 or 1.24 for each offense.

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