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Exploring the unintended consequences of implementing electronic monitoring on sentencing in Norway

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ABSTRACT

Electronic monitoring (EM) allows for the tracking of individuals under correctional supervision as they reside in the community. In Norway, EM was implemented as a ‘front-end’ diversionary pilot programme in 2008. As in Sweden and Denmark, EM was a programme managed by the correctional service, not as a sanction delivered by the courts. Quasi-experimental evaluations of the intervention suggest that EM led to meaningful reductions in recidivism and costs in Norway. However, the extent to which the availability of a new, non-custodial correctional programme had unintended consequences for judicial sentencing practices is less apparent. We employ the Focal Concerns theoretical framework to examine why the exercise of judicial discretion may have changed after the implementation of the EM programme. We find evidence of an increase in the number of qualifying sentences to prison at the expense of fewer non-custodial sentencing decisions, suggesting that judges modified their sentencing practices to facilitate EM participation. Results show that as many as 750 people might have been incarcerated rather than being given a non-custodial sentence because of the availability of the EM programme. Considering this increased scope of impact for correctional programming, implications for individual offenders and future reform are explored.

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1. Introduction

The Scandinavian correctional systems are widely regarded as embodying some of the most effective approaches to punishment (Pratt, 2008). These arguments most often rest on two foundational ideas. Firstly, that Scandinavian penal ideologies explicitly focus on reintegration and on limiting the punitive impact of incarceration (Høidal, 2018; Pratt, 2008). Secondly, that low levels of national-level recidivism in Scandinavia are caused by highly effective penal systems. In support of this, two-year reconviction rates as low as 20%, as reported by Graunbøl et al. (2010) for Norway, are commonly cited within the international literature.¹

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While these arguments are relevant, a myopic focus on only certain aspects of punishment and corrections overlooks the range of sanctioning decisions that comprise the Scandinavian correctional landscape. For instance, and perhaps more prominently in the localized debate within Scandinavia, Norway (the country with the lowest recidivism rate in Graunbøl et al. (2010)) incarcerates offenders convicted of traffic and other low-risk offences to a greater extent than other countries in the region. This is a practice that may be seen as both disproportionately punitive and as underlying these comparably low rates of post-incarceration recidivism (Kristoffesen, 2013). To reduce the incarceration of low-risk offenders, and as a response to most Norwegian prisons consistently operating at almost their full capacity, Norway has developed a range of sentencing and diversionary programming options over the past decades, many of which have been omitted from the global debate on penal effectiveness. Electronic monitoring (EM), supervision characterized by following offenders in the community using location-tracking technologies, is one such example.

EM was first implemented in Norway in 2008 and was based on practices already in place in Sweden and Denmark. In all of these countries, EM is managed by the prison and probation service and operates as an alternative to serving a relatively short unconditional prison sentence. In the Norwegian context, EM has been credited with alleviating strain on overall prison capacity (Øster & Rokkan, 2018; Rasmussen et al., 2016) and research has suggested that front-end EM reduced post-sentence recidivism (Andersen & Telle, 2019). What is less well-understood, however, is how the availability of the EM programme may have influenced other punishment practices.

The Scandinavian approach to EM is fairly unique. The Norwegian legislative intent was to impact only the actions of the Norwegian Correctional Service (NCS), as it was implemented through changing The Execution of Sentences Act (Lovdata, 2020) rather than by reforming the Penal Code. However, as the EM eligibility criteria are based on both sentence type and length, judges may have *indirectly* influenced who ended up on EM by adjusting individual sentences to mirror the criteria for EM eligibility. Such an unintended consequence of the EM reform may have meaningful implications both for the offenders affected and for the broader Norwegian judicial and correctional context. The goal of this paper is, therefore, to examine how judges may have exercised their discretion during criminal sentencing to capitalize on the newly differing levels of punitiveness when EM became available. This effort provides a rare opportunity both to explore the broader implications of EM and other non-custodial sentencing options on sentencing behaviour, and to empirically test the relevance of the *practical concerns and constraints* component of Focal Concerns Theory (Steffensmeier et al., 1998) – a theoretical framework in criminology that may be used to explain disparities in sentencing outcomes (Lynch, 2019) – in the Scandinavian context.

We begin by providing a brief overview of the literature surrounding EM, before turning our focus to the Norwegian policy and its implementation, which supports the quasi-experimental design we use to explore changes in judicial behaviour. We then examine the Focal Concerns theoretical framework. Next, the details of the current study, including data material and empirical strategy, are specified. We then present our results and conclude with a discussion of the policy and theoretical implications of this research.

2. Electronic monitoring in Scandinavia and beyond

Electronic monitoring supervision policies encompass a broad range of technologically-oriented options that allow for the real-time monitoring of an individual's location in the community. EM, therefore, typically provides an intermediate punishment option that is less punitive than prison but more restrictive than a community or conditional/suspended sentence, during which there may be minimal active correctional supervision (Petersilia & Deschenes, 1994). Practically, a device on an ankle band affixed to the individual uses either radio frequencies (RF) or Global Positioning System (GPS) signals to track his or her location. The EM system can then alert correctional authorities when the subject is at home (RF) or advise what their exact location is (GPS) at any given time.² This allows for a near-constant digital observation that can ensure that the supervised individual adheres to a pre-approved schedule or other requirements (e.g. staying away from restricted places or individuals, attending school or work, being at home at certain hours). Generally speaking, and supported by a growing quasi-experimental literature, EM is regarded as both a successful and cost-effective alternative to both custodial and non-custodial sentencing options (cf. Aos et al., 2006; Mainprize, 1992; Rasmussen et al., 2016).

EM programmes have been implemented in several different ways across Europe (Aebi & Hashimoto, 2018), with the Scandinavian nations adopting the most 'creative use[s] of [EM] in the context of their conditional prison sentences, to augment existing support and rehabilitation services for offenders' (Nellis, 2014, p. 489). In the Scandinavian context, EM has been employed as both a 'front-door' prison diversionary programme and a 'back-door' mechanism to release individuals from prison to the community during the terminal period of their sentence. Rather uniquely, EM in Scandinavia was implemented through changes in the legislation that pertains to the execution of sentences (which governs the correctional system), not by reforming the penal code (which informs judicial sentencing options). This means that EM became a programmatic option only for the correctional services, rather than the courts.

2.1. EM in the Norwegian context

Electronic monitoring has been used in Scandinavia for some time, with Sweden being the region's forerunner (see e.g. Andersen & Andersen, 2014; Nellis, 2014, for relevant overviews of policy and research). In Norway, an EM pilot project began in 2008, when six (out of a total of 19) counties were allotted approximately 20 RF ankle bands each. In 2010, the programme's capacity was subsequently increased in two of these counties, before four more counties were enrolled in 2011 and one more county was added in 2012. A full scale, national roll-out began in 2014. Although the county-level capacity was between 20 and 30 ankle bands throughout the pilot period, the number of bands in use varied substantially both between locations and over time (cf. Andersen & Telle, 2019; Rasmussen et al., 2016).

The target population for the Norwegian EM pilot was offenders who were newly sentenced to no more than 4 months in prison ('front-door' EM), or were already incarcerated and had less than four months left of a longer prison sentence ('back-door' EM). The initial focus was on the 'front-door' elements; over 95% of all EM participants during the pilot period were 'front-door' cases (Øster & Rokkan, 2012). This reflects the desire to

use the EM policy to eliminate the ‘prison queue’, a waiting list to begin an unconditional sentence of incarceration, and to emphasize community reintegration (Rokkan, 2012a). Given this practical reality, as well as the fact that judges can only impact ‘front door’ eligibility, this aspect of EM is also the focus of our empirical and theoretical inquiries.

While on EM, individuals in the Norwegian system are permitted to live in their homes. They are required to adhere to a schedule, set in coordination with the supervising officer, for work, appointments and, where appropriate, schooling or treatment (see Rokkan, 2012b for more details). This provides individuals on EM with the ability to reintegrate into their community and engage in prosocial activities, while, at the same time, setting out rules and restrictions for their movement – as well as ensuring there will be consequences for non-compliance. The focus on encouraging rehabilitative activities though formal social control is extensive during EM supervision.

2.1.1. The role of the judge in EM

In Norway, judges have a range of sentencing options. These include, but are not limited to, fines, community service, conditional prison (a suspended prison sentence that will be waived if requirements are met), unconditional prison (a sentence served in prison), and specialized sanctions such as preventive detention and mandatory psychological treatment. In the period considered here (2002–2012), unconditional prison was the most common sanction levied by the criminal courts, followed by conditional prison, community service, fines and, finally, specialized sanctions (Statistics Norway, 2019b). A relatively unique feature of the Norwegian judicial system is the use of lay judges in criminal trial courts. A lay judge is an individual without legal training who serves as a judge in penal cases. All criminal matters are decided by a panel of two lay judges and a single professional judge. Lay judges are involved in deciding the question of guilt and the nature of the sentence, and each judge – lay or otherwise – has an equal say in both matters. Judicial decisions, therefore, represent the majority opinion of all judges hearing a case.

It is in this context that criminal sentencing, but not assignment to EM, takes place. According to Norwegian legislation, eligibility for EM can be determined only after the defendant has been sentenced and remanded to the custody of the NCS. The main eligibility criteria for ‘front-door’ EM are that the offender has been sentenced to no more than 4 months (i.e. 120 days) of unconditional prison and, since the beginning of the pilot period, had lived in a county where EM had been implemented.³ If a person met these requirements, they then had to proactively apply to the NCS for admission to the EM programme. Successful applicants had to pass a personal aptitude assessment screening performed by NCS staff before being allowed to serve their sentence at home instead of in prison.⁴ This setup, where admission to EM is regulated by the NCS and not the court, distinguishes the Norwegian approach to EM from those taken in many other European countries, where the decisions regarding diversionary release under EM supervision are made at the time of the criminal sentencing. In France, for example, although only defendants meeting a series of strict eligibility criteria qualify for EM, the determination is made in the criminal court (see Henneguelle et al., 2016).

In Norway, where sentencing decisions are made by a panel of three individuals with variable training and experience, it is important to understand the context in which EM was implemented, especially in courtrooms. In particular, it should be considered if judges, or attorneys advocating on behalf of defendants, were aware of the availability

and nature of the EM pilot programme and, accordingly, that this information could have, overtly or unconsciously, influenced sentencing behaviours. One factor that makes this assumption plausible is the conversation about the 'prison queue', which was vociferously taking place in highly visible professional and public debates in Norway during the pilot (Rokkan, 2012a). Moreover, the proposal to implement EM as an alternative to traditional incarceration was first put forward in 1998 and received significant attention around the time of implementation and expansion of the pilot (Rokkan, 2012a). For example, local newspapers wrote articles providing detailed information about which offenders were able to participate in EM and on which counties had not yet utilized their full capacity (see e.g. Bjørkly & Monsen, 2013; Møllen, 2013). It is therefore highly plausible that lay and professional judges knew about the EM programme and the eligibility criteria.

3. Judicial decision-making: Focal Concerns Theory

Norwegian judges enjoy high levels of discretion in sentencing; this autonomy is the hallmark of an independent judiciary. This discretion ideally allows criminal sanctions to be tailored to the individual defendant (c.f. Miceli, 2008). It is unsurprising that judges have differential preferences regarding the usage of both incarceration and intermediate sanctions (see Lim, 2013). Evidence from Argentina, for example, suggests that subjective processes may inform the allocation of EM supervision, as only one-third of judges employed the programme when eligible cases were randomly assigned to their caseloads (Di Tella & Schargrotsky, 2013). In Norway, Bhuller et al. (2020) have similarly found systematic differences between judges in their likelihood of sentencing otherwise identical offenders to unconditional prison terms.

It is often unclear exactly why a sentence is handed down in a criminal case. Several theoretical frameworks have been developed to shed light on sentencing and the factors that may drive judicial behaviours. Focal Concerns Theory, the framework applied in the current analysis, is a prominent theoretical framework in criminology for explaining the proportion of disparities in sentencing outcomes that are attributable to the complex interaction of subjective and pragmatic factors at play in the courtroom (Lynch, 2019). Focal Concerns Theory thus seeks to 'understand the nature of cultural forces impinging on the acting individual as they are perceived by the actor [them]self' (Miller, 1958, p. 5). Within a criminal sentencing context, this suggests that there are both practical and philosophical factors that are, either overtly or indirectly, considered to be relevant by a judge and which may, in turn, influence the nature of individualized penal sanctions. Steffensmeier (1980) first applied the Focal Concerns framework to judicial decision-making in an analysis where gender was identified as an influential proxy for several traits, including relative culpability and the impact that incarceration might have on dependents. By examining the associations between sentencing outcomes and these proxies, the priorities and processes that inform criminal sentencing can be better understood.

Steffensmeier et al. (1998) theorized three broad and categorical focal concerns which were believed to substantially influence the nature of judicial sentencing decisions: *blameworthiness*, *protection of the community*, and *practical constraints and consequences* (1998, 766–768). The *blameworthiness* category encompasses factors related to an offender's culpability and those related to the seriousness of the underlying

offence distinct from the legal elements. The influential elements under the *protection of the community* are those that inform a judge's perception of the defendant's future dangerousness. The *practical constraints* concern was suggested to include resource- and capacity-driven factors reflecting defendant needs, courtroom management, and other organizational factors. Relevantly for our examination, this latter area was also conceptualized to encompass a judge's perceptions of the 'offender's "ability to do time," health condition[s], [and] special needs' (Steffensmeier et al., 1998). Taken together, these categories reflect myriad factors that may influence which offenders received certain sentences.

Within the literature on Focal Concerns, the influence of factors relating to both blameworthiness and community protection on sentencing has been empirically examined (c.f., Steffensmeier et al., 1998; Johnson, 2005; Steffensmeier & Britt, 2001; D. Steffensmeier et al., 1993). However, factors relating to the third area, *practical constraints and consequences*, have remained less well-specified within empirical research, at both a conceptual and practical level. Steffensmeier et al. (1998), in their foundational work, did not directly include or examine any relevant variables for this concern. They did recognize, however, that judges are a part of a broader correctional ecosystem and they may be aware of the costs of punishment and the need to ensure an efficient judicial system. Subsequently, the scope of the *practical constraints* concerns was expanded to include variables relating to correctional efficiency and systematic productivity in times of limited resources, as well as extra-legal factors, including broader organizational context. In the Norwegian setting, the 'prison queue' provides a particularly salient – and unique – example.

Theoretically relevant *practical constraints* have been framed as both individual- and system-focused. Despite this, few have been explicitly included in the models developed to assess the robustness of Focal Concerns Theory in explaining the exercise of judicial direction. There may be multiple reasons for this omission, including a lack of available data or contemporaneous emphases on understanding sentencing disparities (e.g. the effects of race, class, and gender on overincarceration of certain minority groups). This does not mean that these factors are unimportant; understanding the full scope of influential concerns is a prerequisite for assessing the utility of the theory, as well as for providing actionable guidance in the face of sentencing and correctional programme reforms.

In this study, we expand on the current literature on both EM and judicial decision-making by leveraging the interaction between the Norwegian EM programme and the contemporaneous exercise of judicial discretion. During the EM pilot, judges may have shifted offenders on the margin of various sentencing lengths and/or types to move them in to (or out of) the EM target group. Practically, this could happen in two ways. First, and for offenders whose offence mandated at least some time in prison, sentence lengths could be adjusted from just under 4 months to just over 4 months in cases where the judge sought to ensure that diversion to EM could *not* take place and, inversely, from just over to just under 4 months where they wanted to ensure that the EM eligibility criteria were met. Alternatively, and for offenders on the margin between custodial and non-custodial sentencing options, the judge could either choose a short unconditional prison sentence for individuals who would otherwise have been sentenced to a community-based sanction (and so were ineligible for EM) or

alternatively, to deliver a community sanction in cases where they believed EM to be inappropriate. As changing sentences on this first margin (i.e. 120 day cut-off) would likely also be strongly influenced by the *protection of the community* concern, we focus this analysis on changes in the relative distribution between non-custodial and (short) custodial sentences, reflection of the *practical constraints* dimension. It is important to note that, an exploration of the changes around the 120-day cut-off, as suggested by the former element of the theory, returned no statistically significant effects at that margin (see Panel D of [Table 2](#)).

Empirical support for a change in judicial decision-making following the EM implementation would have a meaningful impact in two primary ways. First, this would directly test an underexplored element of Focal Concerns Theory, thereby increasing the range of empirically assessed variables under *practical constraints*. This would increase the explanatory power of the evaluative models and provide new insight into how and why judges exercise their discretion. Additionally, the unique framework of the intervention provides an opportunity to examine the potentially unanticipated ripple effect of correctional reform throughout the adjudication and punishment processes. As sentencing research often focuses on the immediate and intended impact of policy changes, if judicial behaviour is shown to be responsive to post-sentencing correctional policy shifts, it would expand the range of outcomes relevant policymakers should consider when implementing new reforms.

4. The current study

The current study relies on data on all Norwegian criminal sanctions handed down between 2002 and 2012 (Statistics Norway, 2019a). These population-wide data provide insight into whether sentencing behaviour changed around the main implementation date in 2008, as well as the regional extensions/implementations in 2010, 2011, and 2012. At least 6 years of pre-implementation data are also included to account for time trends. As we focus on judicial behaviour, we include court convictions only, excluding on-the-spot fines (the majority of sanctions in these data) and other sanctions administrated by the police and prosecutorial authorities. We also exclude non-penal, specialized sentences (e.g. forced psychiatric treatment), as these pertain to offenders with unique characteristics who are treated differently within the Norwegian justice system.

The dataset for this analysis initially included a total of 205,598 sentences to either unconditional prison, conditional prison, and/or community service (with or without an additional fine). As we focus on unconditional sentences of no more than four months/120 days,⁵ we exclude unconditional sentences of more than 120 days of incarceration from the main dataset. This results in a total of 179,795 sanctions, of which nearly 43% include an unconditional sentence of between 1 and 120 days in prison (see the first row of [Table 1](#)).

The first panels of [Table 1](#) describe the various sanction types and differences between counties that implemented EM ('treated') and those that did not ('not treated'). Given that unconditional prison sentences of more than 120 days are excluded, conditional (i.e. suspended) sanctions are the most common (42%), followed by unconditional prison (33%) and community service (15%). We also see that 'combination sanctions', which include conditional and unconditional prison terms, are the least common (9%). There are

Table 1. Descriptive statistics for sanction types, in total and by treatment status 2002–2012. Frequencies and percentages. N = 179,795.

	Total		Counties not treated		Counties treated	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Any unconditional prison	77,204	42.94	27,382	42.30	49,822	43.30
Sanction types						
Unconditional prison (only)	60,060	33.40	21,712	33.54	38,348	33.33
Conditional prison (only)	76,313	42.44	27,811	42.96	48,502	42.15
Community service (only)	26,269	14.61	9,537	14.73	16,732	14.54
Unconditional and community	1,279	0.71	503	0.78	776	0.67
Community and conditional	9	0.01	1	0.00	8	0.01
Unconditional and conditional	15,865	8.82	5,167	7.98	10,698	9.30
Type of offence						
Economic offences	9,864	5.49	3,257	5.03	6,607	5.74
Other offences for profit	41,107	22.86	14,222	21.97	26,885	23.37
Offences of violence	29,017	16.14	10,182	15.73	18,835	16.37
Sexual offences	2,686	1.49	1,079	1.67	1,607	1.40
Offences of narcotics	29,896	16.63	10,111	15.62	19,785	17.19
Damage to property	1,635	0.91	569	0.88	1,066	0.93
Environment offences	81	0.05	29	0.04	52	0.05
Work environment offences	10	0.01	6	0.01	4	0.00
Traffic offences	56,800	31.59	22,336	34.51	34,464	29.95
Other offences	8,699	4.84	2,940	4.54	5,759	5.01
Year						
2002	16,381	9.11	5,538	8.56	10,843	9.42
2003	15,519	8.63	5,377	8.31	10,142	8.81
2004	16,885	9.39	5,743	8.87	11,142	9.68
2005	18,190	10.12	6,624	10.23	11,566	10.05
2006	18,030	10.03	6,586	10.17	11,444	9.95
2007	17,359	9.65	6,370	9.84	10,989	9.55
2008	16,891	9.39	6,197	9.57	10,694	9.29
2009	15,578	8.66	5,672	8.76	9,906	8.61
2010	15,532	8.64	5,825	9.00	9,707	8.44
2011	15,098	8.40	5,538	8.56	9,560	8.31
2012	14,332	7.97	5,261	8.13	9,071	7.88
treatXpost	27,914	15.53	0	0.00	27,914	24.26
Gender						
Male	156,136	86.84	56,298	86.97	99,838	86.77
Female	23,659	13.16	8,433	13.03	15,266	13.23
Mean age (st.d)	32.36 (12.12)		32.22 (12.22)		32.42 (12.07)	
N	179,795		64,731		115,064	

only minor differences between the sentencing practices of treatment and comparison counties. The same applies to other offence characteristics (type of offence and year of conviction), as well as individual-level information of gender and the age at conviction (see remaining panels of Table 1).

4.1. Empirical strategy

Our empirical strategy is based on a difference-in-differences approach (DD) (Angrist & Pischke, 2009), here operationalized as the proportion of all non-custodial and custodial sentences (of 1–120 days), from before to after the EM implementation (the first difference) and between the pilot and non-pilot counties (the second difference). This approach estimates the intention to treat (ITT) effect of the EM implementation on the likelihood of being sentenced to a sentence of 1–120 days in prison vs. a non-custodial sanction. The trend in the outcome variable is explored in more detail in Figure 1, below.

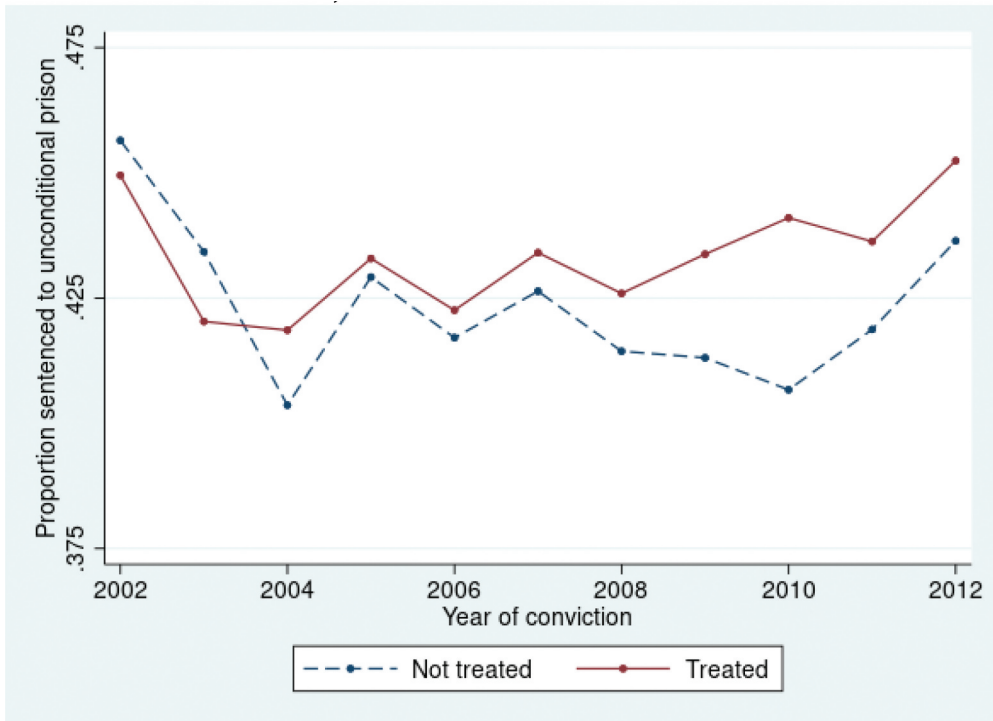


Figure 1. Proportion of sentences that include 1–120 days of unconditional prison, by year and treatment status. $N = 179,795$.

Given the gradual roll-out of the pilot and the availability of rich register data, we expand upon the basic DD approach and include dummies for all counties as well as for month and year of conviction, as well as their interaction (in essence creating a total of 130 dummies for time).⁶

The outcome variable of our main analyses (y_i) (see Table 2, Panel A and D) is a dummy set to 1 if an offender is sentenced to 1–120 days of unconditional prison and 0 otherwise. This variable can be used to test whether the EM implementation affected the likelihood of being sentenced to short, unconditional prison sentences (presumably under the judicial assumption of EM admission) instead of community service and/or a conditional sentence. Additional analyses (see Table 2, Panels B and C) define (y_i) as a dummy set to 1 if an offender is sentenced to a) community service, and b) a conditional prison sentence. The parameter of interest is λ , which captures the average effect on the likelihood of being sentenced to prison resulting from a county offering EM. The variable $treat \times post_{i,t}$ is thus set to 1 for offenders who lived in a pilot county and who were sentenced after the county had started offering EM (and 0 otherwise).

In addition to this main specification, and to add robustness, we explore two additional extensions of the DD approach. The first exploits the gradual extension of the EM pilot by including the variable $capacity_{i,t}$, which denotes the total number of bands available to the custodial services of a given county at the time of conviction.⁷ Additionally, and because the actual availability in EM bands varied substantially over both time and place (see Andersen & Telle, 2019 (Appendix); cf. Rasmussen et al., 2016), we estimate a model

using $availability_{i,t}$ as our treatment variable.⁸ This variable denotes the proportion of bands available at the time of conviction, calculated as the number of non-occupied bands divided by the number of individuals in each county waiting to serve an unconditional sentence of 120 days or less. This variable is constructed using data from the statistics on criminal sanctions and records on the completion of EM sentences from the NCS' data systems (Norwegian Correctional Service, 2008).

Other parameters in our three specifications are identical and include assignment and timing variables as well as two controls to increase precision. As described above, we allow for more flexibility than a traditional DD approach by including one dummy for each of the counties of residence of the offender ($county_i$), as registered in the National Population Register as of January 1 in the year of the conviction.⁹ We also flexibly control for time trends, both over years and by season, by including dummies for the year (2002–2012) and month (1–12) of the conviction, as well as their interaction ($time_t$). To improve precision, we also control for the exogenous variables sex (male = 0; female = 1) and age (at the date of conviction). These variables were also retrieved from the population registers. The latter variable is introduced as sets of dummies to avoid imposing restrictive functional forms. The error term $\varepsilon_{i,t}$ is assumed to have a conditional mean of zero and is clustered by county and year.¹⁰

4.1.1. Identifying assumptions

The main identifying assumption of the DD approach is that trends in sentencing behaviour would have been the same in the pilot- and non-pilot counties in the absence of the EM implementation. This is explored visually in [Figure 1](#), below (see also, [Appendix Figures A1](#) and [A2](#)). This assumption would have been violated if there were unique features of the EM counties that made them preferred jurisdictions for the EM pilot, or if any contemporaneous correctional policy changes occurred unequally. As detailed in [Andersen and Telle \(2019\)](#), there were few systematic or institutional changes around the time of programme implementation. One notable exception was the opening of Halden Prison on 1 March 2010. This meant that the prison capacity in Norway increased by approximately 250 beds on that day,¹¹ and, in line with the theoretical argument of *practical constraints*, this change in capacity might have affected judicial behaviour in a similar way as the EM implementation. It is unlikely that this and related changes in prison capacity would not have been captured by our rigorous time controls, but we nonetheless test whether adding a dummy indicating whether the offender was sentenced before (0) or after (1) Halden prison opened to all three model specifications affects our results. As can be seen in Panel B of [Appendix Table A1](#), the estimate for *Halden* is not statistically significant ($p > 0.5$), and the DD estimates from our main results remain unchanged.

5. Results

Our empirical inquiry explores whether the implementation of EM led to a shift in judicial decision-making which may have increased or decreased the likelihood that an offender was sentenced to a short (≤ 120 days) unconditional prison sentence instead of a non-custodial sentence. [Figure 1](#) shows the proportion of all non-custodial and short custodial sentences passed each year between 2002 and 2012 that included 1–120 days of unconditional prison, reported by the treatment status of each county. The solid line shows the

trend for the treatment/pilot counties (i.e. counties that eventually implemented EM), and the dashed line shows the same for the comparison counties that did not implement EM in our time window.

The overall trend is relatively stable around the means from [Table 1](#) (approximately 43%), and the pre-implementation trends are, with some exceptions in the early 2000s, relatively similar until the lines diverge around the EM implementation threshold in 2008. In 2009 and 2010, the likelihood of getting a short, custodial sentence increases in the treatment counties at the same time as it goes down in the comparison counties, indicating that living in a county that had implemented EM increased the likelihood of receiving a short unconditional prison sentence relative to what was expected if the trends had continued in parallel. In 2011 and 2012, the increases continue in the treatment counties but are accompanied by corresponding increases in the comparison counties such that the magnitude of the differences between the groups decreases. It thus seems that judges immediately responded to the initial availability of EM, as well to the larger increases in capacity in Oslo and Rogaland counties in 2010.¹² This interpretation is supported by the relative time trends in sentencing behaviour observed around each implementation/extension stage (see [Figure A1](#)). Notably, there is an increase in the number of short, unconditional prison sentences the year *before* the 2011 implementation, a pattern that is particularly pronounced in Hordaland and Agder counties (results not shown). A plausible explanation for this pattern is that judges in these counties knew about the EM programme, likely from the judges who were directly affected by the first implementation, and, therefore, adjusted their behaviour in anticipation of their own upcoming reform. The fact that we see no clear response in Akershus county might be because Akershus borders the Oslo municipality (which was part of the 2008 implementation) and was incorporated into the Oslo EM programme in 2011 rather than being treated as a unique jurisdiction.

Finally, exploring differences in the calendar time trends in [Figure 1](#) by crime type (see [Figure A2](#)), some changes are visible around the implementation within all main offence types, but is most pronounced for traffic offences (where the pre-implementation trends are also the most consistent). As the eligibility criteria for EM (Lovdata, 2013) implicitly target traffic offenders for EM due to their relatively short recommended sentences and low-risk profile (Kristoffesen, 2013), this supports the argument that there was an intentional judicial response to the implementation of EM.

The empirical approach taken in [Figure 1](#) does not sufficiently account for the fact that EM was implemented gradually. Counties which were not a part of the initial 2008 implementation still contribute to the upper, solid line in the period before EM was implemented locally (essentially, sentences from before EM was made available are classified as part of the treatment group). To better capture this implementation, as well as to provide a picture of the average effect of the EM implementation after controlling for time trends, we move to the ITT estimates. Panel A of [Table 2](#) includes the ITT estimates of the likelihood of being sentenced to at least one day of unconditional time in prison (vs. a non-custodial sentence), both with and without controls for age and gender.¹³ Each line denotes the treatment variables defined in [Section 4.1](#).

Table 2. DD estimates of the effect of the EM implementation on various sentencing outcomes. With and without covariates.

	Without covariates		With covariates	
	Estimate	S. E.	Estimate	S. E.
A: Short prison sentence vs. any non-custodial sentence				
treatXpost	0.0121*	0.0056	0.0130*	0.0054
Capacity, per 10 bands	0.0048*	0.0019	0.0050*	0.0194
Available bands, time = 0	0.0125	0.0064	0.0145*	0.0059
B: Community service vs. short prison sentence				
treatXpost	-0.0101	0.0071	-0.0119	0.0068
Capacity, per 10 bands	-0.0041	0.0023	-0.0046*	0.0022
Available bands, time = 0	-0.0078	0.0078	-0.0116	0.0078
C: Conditional sentence vs. short prison sentence				
treatXpost	-0.0123*	0.0060	-0.0130*	0.0058
Capacity, per 10 bands	-0.0047*	0.0021	-0.0049*	0.0020
Available bands, time = 0	-0.0142*	0.0064	-0.0153*	0.0064
D: Short vs. long prison sentence				
treatXpost	-0.0045	0.0054	-0.0085	0.0055
Capacity, per 10 bands	-0.0013	0.0018	-0.0012	0.0018
Available bands, time = 0	-0.0061	0.0057	-0.0059	0.0057

Note: *: $p < 0.05$

There is a statically significant increase of 1.2 percentage points in the likelihood of being sentenced to a short unconditional prison sentence after implementation. Taking statistical imprecision into account, this translates to a relative effect of between 0.6 and 5.5% (95% CI) (see Appendix Table A1, Panel A). The capacity estimate shows that probability of being sentenced to prison increases by approximately 0.5 percentage points per 10 unit increase in the number of ankle bands in the county. The effect sizes are somewhat larger when we use information on the actual availability of bands; here we also see that the availability of bands at the time of sentencing has a positive, and statistically significant estimate ($p < .05$ in models with covariates).

Looking at years and counties separately (results not shown) means that we lose a meaningful amount of the precision in the main model. Generally speaking, however, all estimates are either in line with the results presented in Table 2, or the differences are not statistically significant from zero. In line with the patterns in Figure A1, the estimates for both Agder and Hordaland counties remain negative, but neither estimates reach statistical significance. Estimated for Oslo and Rogaland counties, however, are positive and statistically significant at the 5% level in all models.

Another relevant question is whether the positive estimates in Panel A of Table 2 are driven by a corresponding shift away from community service, conditional prison, or both. In Panels B and C of Table 2, we explore how the implementation of EM impacted the likelihood of being sentenced to only a community sentence vs. unconditional prison (Panel B) and only to conditional prison vs. unconditional prison (Panel C). Estimates from these models are negative for both sanctions, suggesting that the increase in unconditional prison in Panel A is due to offenders being shifted away from both non-custodial sentencing options. However, estimates are somewhat larger and more precise for conditional prison sentences. This may be driven by the larger sample size, but another plausible explanation is that conditional prison is a more common sanction type for traffic offenders, a targeted population for the intervention (see also Figure A2(d)).

The final panel (D) of Table 2 reports the ITT estimates for the effect of the EM implementation on the likelihood of being sentenced to a shorter (≤ 120 days) rather than a longer (> 120 days) unconditional prison sentence. As suggested by the theoretical framework, we find no effect of the EM implementation on this margin.¹⁴

Taken together the results from these analyses suggest that the implementation of the EM programme impacted judicial behaviour, and that the likelihood of being sentenced to prison increased as a result.¹⁵ Our main specification estimates this change to be between 0.6 and 5.5%, which translates to an increase in the number of individuals sentenced to unconditional prison of between 68 and 660.¹⁶ Our other models return approximate estimates of between 50 and 750 individuals.

6. Discussion

The current paper explores whether the implementation of electronic monitoring as a front-end, diversionary correctional programme had unintended consequences for judicial decision-making in Norway. We rely on Focal Concerns Theory to propose that the institutional context in which EM was implemented, where prisons were generally at full capacity and the public discourse supported non-custodial sentencing options, makes it plausible that judges exercised their discretion to increase the likelihood that offenders were assigned to EM. In our analysis, we find a responsive increase in the use of short, unconditional sentences. This new finding offers insight into judicial decision-making, new theoretical support for underexplored areas of the Focal Concerns framework, as well as guidance for future analyses into the scope and impact of correctional policy reform.

6.1. Judicial preferences for sentencing options

The changes in sentencing patterns observed in this study are driven by a shift from community service and conditional sentences towards sentences of incarceration, a determination that lies well within the discretion of the sentencing judge. This change was particularly pronounced for traffic offenders, a group typically characterized by relatively short sentences and low recidivism rates (Kristoffesen, 2013). This suggests that, at least for certain offenders who perceivably fell 'on the margin' of custodial and non-custodial sentencing options, judges believed that community supervision under EM was the 'best fit' and so modified their sentences to make these individuals eligible for EM. This meant that a sentence to prison (which is a prerequisite to enrolment into EM) became necessary when it would otherwise not have been.

This result provides perspective on how Norwegian judges view the relative severity of criminal sanctions. It can be generally assumed that the perceived severity of a sanction varies along a continuum, with prison and general community supervision positioned at each pole (Petersilia & Deschenes, 1994) – although judges and offenders do not always agree on relative severity (Moore et al., 2008; Petersilia & Deschenes, 1994). In this case, it is unlikely that there was a concerted judicial 'punitive turn' surrounding the EM implementation. Rather, judges presumably sought to tailor punishments to meet their perceived need for the defendant. This inference is supported by the observations that there was no change in the length of unconditional prison sentences following the reform. Taken together, these results suggest that judges viewed EM as a more severe and/or

rehabilitative punishment option than traditional, non-custodial sentences. This provides empirical support from the Norwegian context for the foundational assumptions that underlie the emergence of intermediate sanctions, in that EM has a punishment severity that falls between imprisonment and community supervision (Spelman, 1995; Tonry & Lynch, 1996). Importantly, individuals serving sentences on EM in Norway echo this perspective and describe serving a sentence on EM as both challenging and a clear restriction of their liberty – but, at the same time, one that is preferable to serving a sentence in prison (Rasmussen et al., 2016).

It is important to stress that it remains unclear precisely what the judiciary intended to accomplish in response to the availability of EM. For example, these data cannot provide insight into if this desired change in sentencing was focused on the perceived severity of the punishment, the objective amount of control and tracking only available under EM, or the rehabilitative opportunities in the programme. Similarly, judicial perceptions surrounding the relative trade-offs between EM, fines, community supervision and incarceration can only be inferred from these data; further explorations are warranted.

6.2. EM and focal concerns

The Focal Concerns approach to unpacking the myriad influences on judicial decision-making suggests that judges consider a wide range of factors when sentencing criminal defendants. Some of these factors are overt and permissible, others may be subconscious or reflect the broader context in which discretion is exercised (see e.g. Steffensmeier et al., 1998). We find support for the underexplored *practical constraints* dimension within these data. In previous research, this category was intended to capture the impact of practical considerations, including those related to organizational capacity, correctional resources, and available space (see e.g. Steffensmeier et al., 1993).

In this study, the influence of the *practical constraints* concerns is reflected in the changes in judicial behaviour after the EM programme was made available to the NCS. Judges responded to this policy shift, even though enrolment in the pilot was out of their control and, as such, should not have fallen within the factors they traditionally relied upon at sentencing. As a policy, EM was intended to directly impact prison capacity by providing an opportunity to decrease the ‘prison queue’ (front-end) and encouraging the early release of certain incarcerated individuals (back-end). Due to the nature of the programme, the actual net increase in community supervision (and correspondingly in the prison system) is readily quantifiable by the number of EM bands available in each of the pilot counties at a given time (see Andersen & Telle, 2019 (Appendix)). More relevantly, however, is the fact that systemic correctional capacity shifted at discrete and measurable points in time beginning in 2008, and that this change was unrelated to the factors associated with judicial decision-making at the individual level.

Previous scholarship has connected the theoretical conceptualization of the *practical constraints* to include general non-case-related factors that the judge may have been aware of and that could influence their decision to sentence a particular defendant. For example, a well publicized issue with prison overcrowding or poor conditions of confinement may encourage judges to sentence certain defendants to diversionary programmes. Similarly, differential court or organizational cultures can influence sentencing (Kramer & Ulmer, 2002). These factors are, however, challenging to operationalize, making this

aspect of the theory difficult to observe in administrative data and, subsequently, to examine within many of the previously employed research designs. The results of this analysis illustrate that, in the aggregate, Norwegian judges modified their sentencing decisions in response to changes in the *practical constraints* landscape associated with the emergence of EM. Importantly, this difference in capacity was largely unrelated to the other domains of Focal Concerns Theory; *blameworthiness* (criminal history, offence seriousness) and – as suggested by a lack of a discontinuity around the 120-day cut-off (see Table 2, Panel D) – *protection of the community* (incapacitation and recidivism). Here, and as reflected in the descriptive data and subsequent models, both of these latter domains were unaffected by the EM rollout and/or were controlled for within these analyses. We can conclude, therefore, that the observed changes were due to the increased net capacity of the correctional system generally, and among the newly created intermediate sanctioning option specifically.

Overall, these findings provide rare empirical evidence that judges are responsive to contextual, *practical constraints* that fall outside of the defendant-specific factors most often recognized as influential at sentencing. In addition to offering support for an element of the Focal Concerns framework that has previously been omitted from empirical tests of the theory, these results demonstrate that judicial decision-making is not, it appears, isolated from the broader correctional and justice context in which it takes place (c.f. Salzberger, 1993).

6.3. The scope of penal reform

The unforeseen nexus between the EM programme and subsequent sentencing behaviours illustrates the complex nature of correctional policy reform. In this case, an exogenous legislative change focused on the correctional system had an indirect, but practically meaningful, impact on the operation of the independent judicial system.

The EM reform was developed, presented, and implemented as a correctional intervention under the authority of the NCS. An impact on sentencing was not envisioned or expected. This might explain, in part, why previous Scandinavian EM evaluations have focused exclusively on correctional outcomes at the system- (e.g. costs, capacity) or individual-level (e.g. recidivism, employment) (see, Andersen & Telle, 2019; Andersen & Andersen, 2014). However, this unforeseen impact had real consequences. While judges presumably intended to sentence defendants to unconditional prison terms to facilitate their near-immediate release to the community under EM, it is not necessarily the case that everyone in the target group was eventually admitted to the program. It, therefore, remains plausible that some individuals diverted to unconditional sentences remained in prison for the duration of that sentence. This was, in many ways, the opposite of the public justifications for the pilot, as well as the intended outcomes that drove initial the development of the EM legislation.

It is challenging to determine whether the observed effects of the EM implementation on sentencing behaviour should be deemed small or large, negligible or unacceptable. The estimates themselves are rather small both in absolute and relative terms, and statistical uncertainty must also be taken into consideration. This results in large variations in the estimated range of individuals incarcerated as a response to the availability of EM: On one hand, as few as 50 individuals might have been shifted from a non-custodial sanctioning option to unconditional prison as a result of the reform; on the other, the

reform might have impacted as many as 750 people, most of whom were from Oslo and Rogaland and who were convicted between 2008 and 2010. This is a tangible and real consequence. Given that there is no guarantee that all these individuals were admitted to EM, and that even short spells of incarceration may affect myriad factors (e.g. employment opportunities and family circumstances) (c.f., Aaltonen et al., 2017; Fallesen & Andersen, 2017; Wakefield et al., 2016; but see also Grogger, 1995), the reform might have impacted the lives of a meaningful number of people over a relatively short period of time. While the judicial response to the later stages of the pilot were admittedly more mixed, it is important to stress that this study does not include data on the national implementation of EM. By 2018 the total EM capacity in Norway had increased to 500 ankle bands and the number of unconditional sentences served on front-door EM had increased to just shy of 2,800 cases (Norwegian Correctional Service, 2019, p. 5). If judges responded to the capacity increase resulting from the national implementation in a similar manner as those in the pilot programme, the resulting effects would translate to a high number of individuals being directly and negatively impacted.

Finally, it is important to note that the finding that the EM implementation had unexpected effects on sentencing outcomes is in no way unique; rather, the criminological literature is full of evaluations of programmes that failed to return their expected results or, in rare cases, backfired. The research on the Cambridge-Somerville Youth study, where the iatrogenic influences of a mentoring programme did not become apparent for decades, is a commonly referenced example. In that case, however, the reversal of the signs within the results emerged in the initial primary dependent variable (Zane et al., 2016). As illustrated here, unintended consequences of policy reforms can also be contemporaneously observed in distinct, but practically and theoretically linked, outcomes. For instance, Ichino et al. (2003) find that local labour market conditions influence court decisions regarding employee termination even though only the nature of the employee's misconduct should have been relevant. Similar patterns of influence have been found in other institutional settings; Bohn et al. (2015) find that, despite being fundamentally exogenous policies, changes in immigration enforcement practices in the United States had a measurable impact on county-level arrest and prosecution rates. They note that, by failing to account for the system-wide responses to policy reform, evaluations may be too narrow in their scope to identify diffuse impacts or estimates may be confounded by changes in institutional behaviour that is both unexpected and unobserved. They furthermore note that this variability is particularly noteworthy in criminal justice research, as police officers (like judges) have high levels of autonomy. This might suggest that the unanticipated responsiveness observed in this study is similarly partially driven by judicial discretion. While we do not suggest that these findings support limiting judicial autonomy, they nonetheless underscore the importance of fully exploring the potential 'ripple effects' of policy reforms. This is especially true when examining costs, benefits, and impacts within interconnected elements of the justice system. While such inquiries should be guided by practical considerations, theoretically supported relationships, and best practices in research, taking a broader view of impact evaluation will provide for research with a higher degree of utility in encouraging reform and developing an evidence-based understanding of how justice systems function.

7. Conclusion

Electronic monitoring was introduced to Norway to promote rehabilitation and alleviate pressures on the correctional system by diverting certain incarcerated individuals away from prison and back into their communities, albeit under the surveillance of an RF bracelet. Importantly, the pilot programme was overseen by the correctional service, preventing judges from directly sentencing individuals to EM. We nonetheless find increases in the overall proportion of defendants sentenced by judges to short prison terms that would qualify them for EM following the pilot implementation. This provides empirical support for elements of the Focal Concerns framework, as this is a demonstrable influence of the capacity of the correctional system on sentencing behaviours. Additionally, these results illustrate the wide-ranging and difficult to anticipate effects of even well-intentioned correctional reform. Both factors, as they fall outside the scope of commonly recognized influences on sentencing reform, should be considered in future policy analyses if the full implications of reforms are to be accounted for. Notably, we strongly encourage parallel analysis in Sweden and Denmark, where EM was implemented and is managed in much the same way as in Norway.

Notes

1. More recent work suggests that reconviction rates around 30% may more appropriate, but this still remains at the low end of global trends (cf. Andersen & Skardhamar, 2017; Yukhnenko et al., 2019).
2. See Renzema and Mayo-Wilson (2005) for an overview of current EM technologies and other relevant policy developments.
3. Note that eligibility was determined by the place of residence, not where the location offence took place.
4. Øster and Rokkan (2012) show that nearly 80% of the target group applies, and that just over half of the applicants are accepted (c.f. Rasmussen et al., 2016).
5. Note that the legislative change defines the eligibility criterion for EM in *months* (see Lovdata, 2020), whereas the data report sentence length in *days* (see Statistics Norway, 2019a). In the context of sentencing, one month is standardized as 30 days, and four months/120 days are therefore used interchangeably throughout the remainder of the article.
6. This results in the following main DD equation: $y_i = \alpha + \beta \text{county}_i + \tau \text{time}_t + \lambda \text{treatXpost}_{i,t} + \mu X_i + \varepsilon_{i,t}$
7. $y_i = \alpha + \beta \text{county}_i + \tau \text{time}_t + \lambda \text{capacity}_{i,t} + \mu X_i + \varepsilon_{i,t}$
8. $y_i = \alpha + \beta \text{county}_i + \tau \text{time}_t + \lambda \text{availability}_{i,t} + \mu X_i + \varepsilon_{i,t}$
9. We have also used the year prior to sentencing to test for self-selection and observed virtually identical results.
10. The large number of dummy variables (e.g. 142 for time alone) makes it impractical to include covariate estimates in the main manuscript. Estimates for all control variables (excluding the interaction between year and month) for our main results (see Table 2) can be found in Appendix B, Table B2.
11. The opening of Halden prison represented an increase of about 7% over a previous, system-wide capacity of approximately 3,600 (as of 31 December 2009) (Norwegian Correctional Service, 2010). It is worth noting that the potential impact of the prison's opening is driven by this change in capacity, not the characteristics of the facility.
12. Regression estimates for this figure (results available upon request) show neither of the *treatXyear* dummies are statistically significant on their own.
13. Due to space limitations, the estimates for allocation and control variables are not included in the table; these are available from the corresponding author upon request.

14. Trend plots and other supporting material for this analysis are available from the corresponding author upon request.
15. Note that all or none of these individuals might end up serving their sentence EM, depending on their decision to apply, as well as the outcome of the discretionary aptitude assessment carried out by the NCS.
16. 27,914 individuals were sentenced to unconditional prison in treatment counties *after* EM was implemented. Based on the underlying assumption of the DD approach and the *pre-implementation* mean (0.4298), we expect that 11,997 of them would have been sentenced to unconditional prison in the absence of EM. With an increase in unconditional prison by between 0.0024 and 0.0236 percentage points (i.e. the 95% CI), the number of people increases to between 12,065 and 12,657 – i.e. between 68 and 660 individuals.

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Appendix

Table A1. Relative effects of main results (Panel A), and sensitivity results of main results with inclusion of estimate for being convicted after the opening of Halden prison (Panel B). With all other covariates. N = 179,795.

	A: Main results, relative effect			B: Main results w. control for Halden	
	Estimate	S. E.	Relative effect, 95% CI	Estimate	S. E.
treatXpost	0.0130*	0.0054	0.56%; 5.50%	0.0130*	0.0054
Halden				-0.0468	0.0374
Capacity , per 10 bands	0.0050*	0.0194	0.26%; 2.04%	0.0050*	0.0194
Halden				-0.0469	0.0374
Available bands , time = 0	0.0145*	0.0006	0.62%; 6.14%	0.0145*	0.0006
Halden				-0.0469	0.0374
N	179,795			179,795	

Note: *: p < 0.05

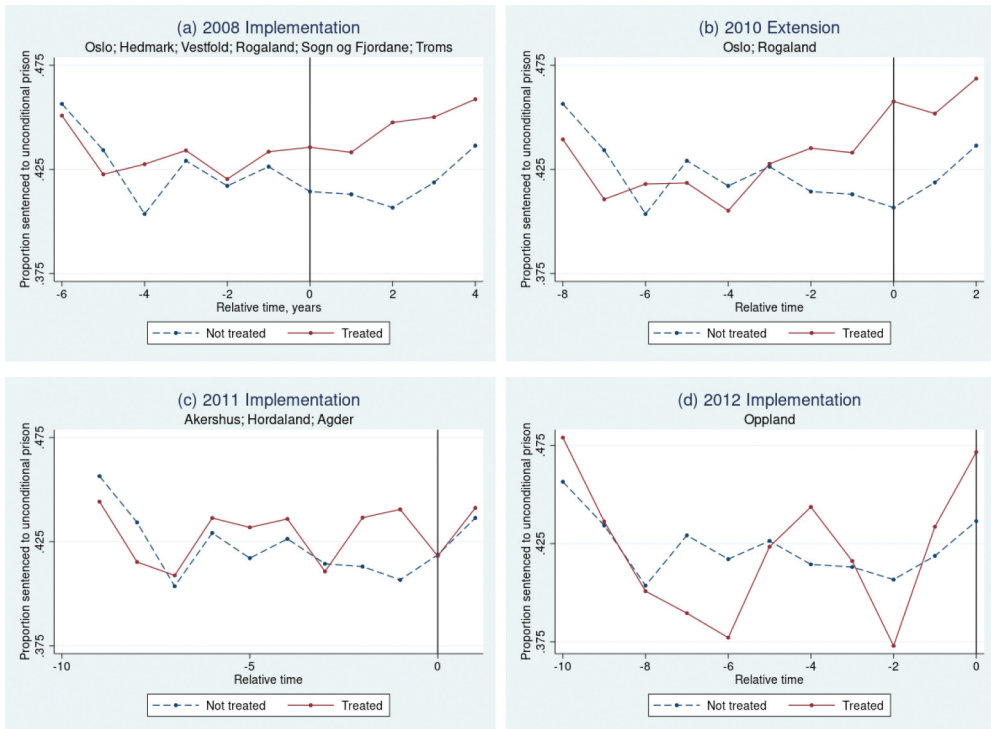


Figure A1. Proportion of sentences that include 1–120 days of unconditional prison, by year, treatment status and implementation stage.

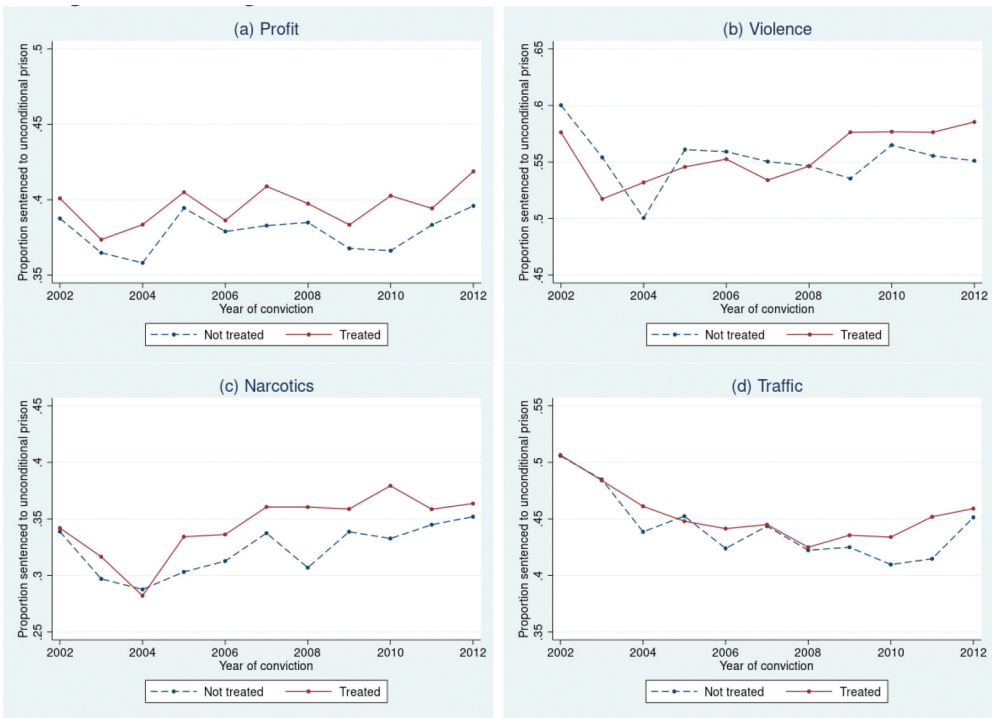


Figure A2. Proportion of sentences that include 1–120 days of unconditional prison, by year, treatment status and crime type. Note that y-axis range differs between figures.