



RESEARCH NOTE

REVISED A systematic review of criminal recidivism rates worldwide: 3-year update [version 2; peer review: 2 approved, 1 approved with reservations]

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Abstract

Background: Comparing recidivism rates between countries may provide useful information about the relative effectiveness of different criminal justice policies. A previous 2015 review identified criminal recidivism data for 18 countries and found little consistency in outcome definitions and time periods. We aimed to update recidivism rates in prisoners internationally.

Methods: We conducted a systematic review of criminal recidivism rates in prisoners and followed PRISMA guidelines. Using five bibliographic indexes, we carried out non-country-specific and targeted searches for 50 countries with the largest total prison populations. We included reports and studies of released prisoners that reported re-arrest, reconviction and reincarceration rates. Meta-analysis was not possible due to multiple sources of heterogeneity.

Results: We identified criminal recidivism information for 23 countries. Of the 50 countries with the largest prison populations, 10 reported recidivism rates for prisoners. The most commonly reported outcome was the 2-year reconviction rate. We were able to examine reconviction between different time periods for 11 countries and found that most reported small changes in official recidivism rates. Overall, for 2-year follow-up period, reported re-arrest rates were between 26% and 60%, reconviction rates ranged from 20% to 63%, and reimprisonment rates varied from 14 to 45%.

Conclusions: Although some countries have made efforts to improve reporting, recidivism rates are not comparable between countries. Criminal justice agencies should consider using reporting guidelines described here to update their data.

Keywords

prison, prisoners, recidivism, repeat offending, re-arrest, reconviction, reimprisonment, systematic review

Open Peer Review

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REVISED Amendments from Version 1

The new version takes into account the reviewers' comments. We revised the search strategy, strengthened argumentation in the Introduction section, clarified ambiguous passages, and improved overall data presentation. Figure 1 was revised significantly. We also emphasised the importance of allowing additional time after the follow-up period for finalisation of court proceedings and added the corresponding Figure 2. New content was added to Table 2–Table 4. They were also revised cosmetically and minor errors were corrected. New references were added to the list

Any further responses from the reviewers can be found at the end of the article

Introduction

The number of prisoners and associated expenditure continue to increase worldwide (MacDonald, 2018; McLaughlin *et al.*, 2016; Penal Reform International, 2018; Sridhar *et al.*, 2018). Released prisoners are at higher risk of criminal recidivism than those serving non-custodial sentences (Ministry of Justice, 2018) with around one-fifth of all crimes in any year being committed by those released from custody (Petersilia, 2011). Although most of these recidivism events are non-violent (property crimes, violation of post-release conditions, etc.), released prisoners also have an elevated risk of violent recidivism, which are much more impactful because of high associated physical and psychological morbidity (Heeks *et al.*, 2018). In the USA, 20% of released prisoners commit a new violent offence in the three years after release (Alper *et al.*, 2018). In the UK, relative economic and social costs of reoffending in released prisoners are estimated to be double that of individuals receiving community sentences (Newton *et al.*, 2019). With the increasing recognition of the health burden of violence and crime (World Health Organisation, 2014), reducing recidivism can make a large contribution to public safety and public health.

Recidivism rates (or rates of repeat offending) are often used as a measure of effectiveness of prison systems and post-release offender management programmes (Ministry of Justice, 2017). The comparison of recidivism rates between countries and regions may provide useful information about relative effectiveness of different sentencing and rehabilitation policies. However, the operational definitions of recidivism may vary significantly between countries. In a previous systematic review, recidivism rates among prisoners worldwide, published before December 2014, were examined (Fazel & Wolf, 2015) and differences in outcome definitions, reporting practices and their comparability between countries were outlined. In addition, a proposed reporting guideline to facilitate international comparisons of recidivism statistics was published.

Here, we provide an update on recidivism rates in prisoners worldwide.

Methods

This review builds up on the methods of the previously published study by Fazel & Wolf (2015). We expanded the search to

other databases and modified the search strategy. We searched SAGE, MEDLINE, EMBASE, PsycINFO, PsycARTICLES for the last 10 years (from 01.01.2008 until 23.07.2019) with no language restrictions. The keywords included the names of the 50 countries with largest prison populations in absolute terms (World Prison Brief, 2018) and a list of commonly reported outcomes (Figure 1). Google Scholar and Google Web were used for subsequent targeted searches. In addition, we scanned reference lists of included documents. In case of multiple reports identified for the same country, we extracted the most recent data. Studies for geographical regions within the country were included if the national information were unavailable or dated.

We included cohorts where reconviction, re-arrest, and re-imprisonment rates in released prisoners were reported. We excluded studies of recidivism in individuals receiving non-custodial sentences or in heterogeneous samples of offenders without data for a subgroup of released prisoners. If no new data had been identified for a particular country, we reported the rates from the original review (Fazel & Wolf, 2015). Due to heterogeneity in outcome definition and time periods, meta-analysis was not conducted.

DY and SS conducted the search and independently extracted the data on country, sample selection, definitions of outcomes and rates. Uncertainties were checked with SF. The publications in languages other than English were translated with the assistance of native speakers, who were either employees or students at Oxford University.

Results

We identified 28 publications that reported recidivism rates in released prisoners from 25 countries (Table 1 and Table 2). One additional publication (Graunbøl *et al.*, 2010) with data on Finland and Norway was included from the previous review (Fazel & Wolf, 2015), as no new data were identified for these countries. Of the 50 countries with the largest prison populations, recidivism statistics were identified for 10 countries (Australia, Canada, Chile, France, Germany, Italy, South Korea, Spain, USA, UK: England and Wales). The data were published by governmental agencies apart from one published thesis (Yeoman, 2015). In addition, we identified several publications that reported cross-sectional data on recidivism (i.e. how many current prisoners had previous convictions; from Brunei, Finland, Ghana, India, Russia and Thailand) but these did not provide information on time at risk and were excluded.

All included reports were conducted on general populations except for the studies from Italy ($n = 479$) and Latvia ($n = 442$). For Italian and Latvian samples, we estimated 95% confidence intervals, assuming normal distribution (provided in parentheses).

For all reported outcomes, a two-year follow-up period was the most commonly used. As shown in Table 2, the two-year re-arrest rates ranged from 24% (Singapore) to 60% (USA), two-year reconviction rates ranged from 20% (Norway) to 63% (Denmark),

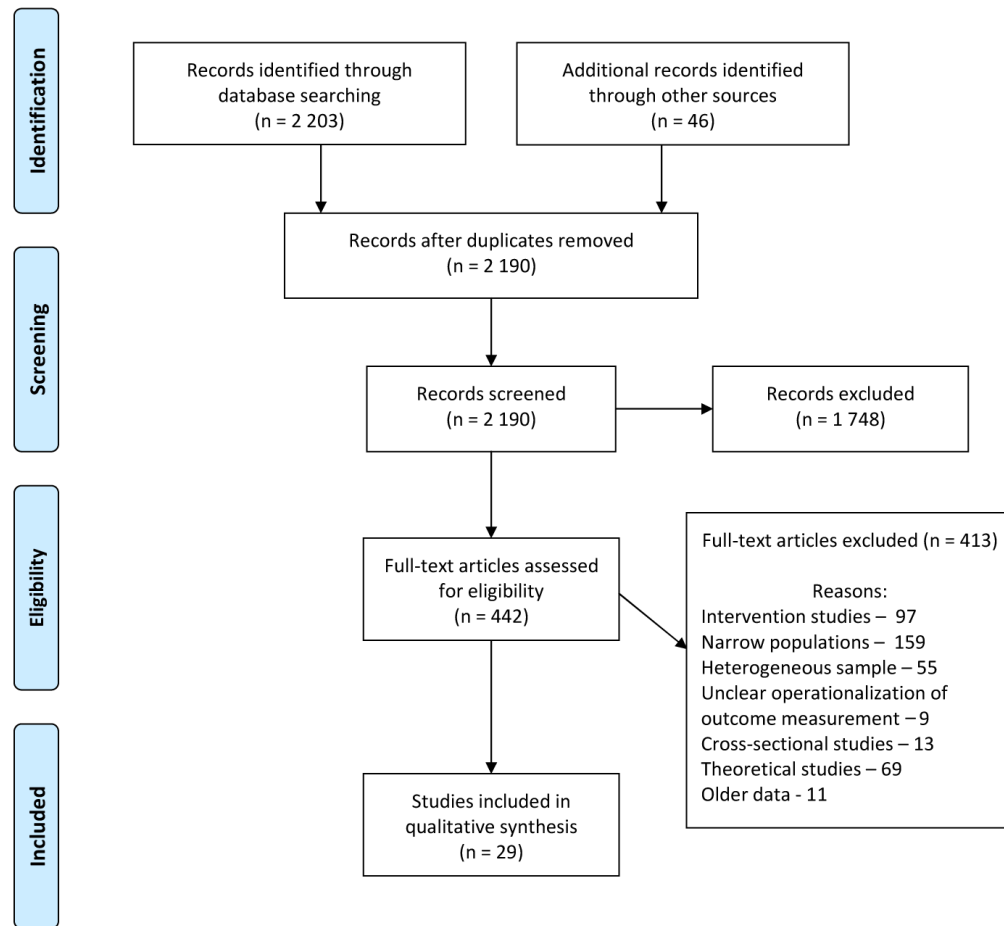


Figure 1. PRISMA flow diagram. Search on SAGE, Ovid MEDLINE, EMBASE, PsycArticles, PsycINFO from 01.01.2008 until 23.07.2019, with no language restrictions: prisoners AND (prevalence OR rates) AND (recidivism OR reoffending) AND (USA OR “United States” OR China OR Russia* OR Brazil OR India OR Thailand OR Indonesia OR Turkey OR Iran OR Mexico OR Philippines OR “South Africa” OR Vietnam OR Colombia OR Ethiopia OR Egypt OR Bangladesh OR Peru OR Pakistan OR “United Kingdom” OR Morocco OR Argentina OR Myanmar OR Burma OR Nigeria OR Poland OR France OR Taiwan OR Germany OR “Saudi Arabia” OR Rwanda OR Algeria OR Italy OR Spain OR Cuba OR Venezuela OR Malaysia OR “South Korea” OR Uganda OR Kenya OR Japan OR Iraq OR Uzbekistan OR Chile OR Australia OR Canada OR Salvador OR Ecuador OR Belarus OR Kazakhstan)

and two-year reimprisonment rates ranged from 14% (Oregon, USA) to 45% (Australia) (see Table 3 for two-year reconviction rates from included countries).

We additionally compared reconviction rates examined in the previous review (Fazel & Wolf, 2015) with updated information (Table 4). Such comparisons were possible for 11 countries (Denmark, France, Germany, Iceland, Singapore, Republic of Ireland, Sweden, Singapore, UK: England and Wales, UK: Northern Ireland, UK: Scotland).

Discussion

In this systematic review, we have presented worldwide prisoner recidivism rates and found that only 10 out of 50 countries with the largest prison populations reported recidivism statistics for cohorts of released prisoners. This finding suggests the lack of systematic and open approach towards recidivism research in many countries, despite its importance for public safety and health. In addition, Although some jurisdictions

have made efforts to increase comparability of recidivism statistics (e.g., Northern Ireland implemented the same reconviction criteria as England and Wales), overall recidivism rates remain difficult to compare between countries because of significant variations in outcome definitions and reporting practices. In particular, when reporting reconviction rates, certain jurisdictions with lower rates (e.g Norway and North Carolina) operationalise recidivism as both an offence and conviction that have to occur during a specified follow-up period. This definition of recidivism is thus contingent on the length of court proceedings, and reconviction rates are typically lower when compared to jurisdictions that allow additional time after the follow-up period for court proceedings (and convictions) to be finalised (see Figure 2). For two countries that were included in the original 2015 review, no new published data was identified (Finland and Norway).

Overall, for the countries with updated data available, any changes in recidivism rates over time were small where there

Table 1. Description of the extracted data.

Country	Publication	Description of outcomes	Follow-up	Notes and exclusions
Australia	Australian Government, 2018	Reconviction Return of an individual to Corrective Services during a follow-up period. Reimprisonment Return of an individual to prison.	2 years	Age range is unclear
Austria	Statistik Austria, 2018	Reconviction New criminal conviction during a follow-up period.	1, 2, 3, 4 years	
Canada – Ontario	Ontario Ministry of Community Safety and Correctional Services, 2017	Reconviction Return to a provincial correctional supervision after committing an offence during the time of follow-up	2 years	Includes individual receiving a sentence longer than 6 months. Excludes individuals sentenced to federal prisons
Canada – Quebec	Ministère de la Sécurité publique, 2015	Reconviction The new crime has to happen during a follow-up period and extra 2 years are allowed for finalisation of the sentence. Reimprisonment	2 years	Recidivism events resulting from breaches of parole or probation conditions are excluded
Chile	Gendarmería de Chile, 2013	Reconviction New criminal conviction during a follow-up period.	2 years	
Denmark	Statistics Denmark, 2018	Reconviction 3 years after follow-up ends, an individual can be sentenced for an offence committed during the follow-up period.	6 months, 1 year, 2 years	Cohort of people released from custody aged 20 years old and older.
Estonia	Ahven <i>et al.</i> , 2018	Re-arrest Being a suspect of a crime. Reconviction New criminal conviction during a follow-up period.	1, 2, 5 years	No precise data provided that would allow for estimation of the cohorts' sizes.
Finland*	Graunbøl <i>et al.</i> , 2010	Reconviction The offence and conviction both have to happen during a follow-up period	2 years	
France	Ministère de la Justice, 2013	Reconviction The offence and conviction both have to happen during a follow-up to be counted as recidivism.	1, 2, 3, 4, 5, 6 years	Follow-up period starts next calendar year from the year of initial conviction. Follow-up may overlap with time in prison.
Germany	Hans-Jörg & Jörg-Martin, 2014	Reconviction The offence and conviction both have to happen during a follow-up to be counted as recidivism.	3 years	
Iceland	Yeoman, 2015	Reconviction New criminal conviction during a follow-up period	2 years	Includes prisoners in Vernd ("halfway house", type of parole)
Ireland, Republic of	Central Statistics Office, 2016	Reconviction To be counted as a recidivism event, an offence has to occur within a follow-up period and a conviction has to happen within two years after the offence.	3 years	
Israel	Walk & Berman, 2015	Reimprisonment Receiving a new prison sentence during a follow-up period.	1, 2, 3, 4, 5 years	
Italy	Mastrobuoni & Terlizze, 2014	Re-arrest A new arrest during a follow-up period.	3 years	Selected sample. May not be fully representative.
Latvia	Kipēna <i>et al.</i> , 2013	Reconviction (or initiation of proceedings) A new criminal charge that did not result in acquittal or other technical dismissal during a follow-up period.	29 months	

Country	Publication	Description of outcomes	Follow-up	Notes and exclusions
Netherlands	Ministerie van Justice en Veiligheid, 2018	Reconviction (or initiation of proceedings) A new criminal charge that did not result in acquittal or other technical dismissal during a follow-up period	1, 2, 3 years	
New Zealand	Department of Corrections, 2017; Department of Corrections, 2018	Reconviction The crime and conviction should both happen during a follow-up to be counted as recidivism. Reimprisonment Receiving a new prison sentence during a follow-up period.	1, 2 years	
Norway*	Graunbøl <i>et al.</i> , 2010	Reconviction The offence and conviction both have to happen during a follow-up period Re-arrest Released individual detained or convicted and imprisoned again for any new offence during a follow-up period.	2 years	
Singapore	Singapore Prison Service, 2019	Reimprisonment Receiving a new prison sentence during a follow-up period.	2 years	Includes Drug Rehabilitation Centre inmates. No precise data provided that would allow for estimation of the cohort's size.
South Korea	Indicator, 2019	Reimprisonment Receiving a new prison sentence during a follow-up period.	3 years	
Spain – Catalonia	Area of Research and Social and Criminological Formation, 2015	Reimprisonment Receiving a new prison sentence during a follow-up period.	3.5 years	
Sweden	Swedish National Council for Crime Prevention, 2018	Reconviction The new crime has to happen during the follow-up period and extra 3 years are allowed for finalisation of the sentence	1, 2, 3 years	
UK: E&W	Ministry of Justice, 2018	Proven reoffending 6 months after observational period ends, an individual can be sentenced for an offence committed during this period.	1 year	
UK: N. Ireland	Department of Justice, 2017	Proven reoffending 6 months after observational period ends, an individual can be sentenced for an offence committed during this period.	1 year	
UK: Scotland	Scottish Government, 2018	Reconviction New criminal conviction during a follow-up period.	1 year	
USA (federal)	Alper <i>et al.</i> , 2018	Re-arrest An arrest should happen during a follow-up period anywhere in the US.	1, 2, 3, 4, 5, 6, 7, 8, 9 years	The same 2005 federal cohort as examined in Fazel & Wolf (2015) . Data for longer follow-up periods became available and the rates were recalculated.
USA (23 states)	Gelb & Velázquez, 2018	Reimprisonment Return to a prison in the same state during a follow-up period.	1, 2, 3 years	States included in the analysis: Arizona, California, Colorado, Florida, Georgia, Indiana, Kentucky, Minnesota, Mississippi, Missouri, Nebraska, New York, North Carolina, North Dakota, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Washington, Wisconsin.
USA – N. Carolina	Flinchum <i>et al.</i> , 2016	Re-arrest Reconviction Reimprisonment To be accounted for, a respective event (new arrest, conviction or reimprisonment) should happen during a follow-up period on the state territory.	1, 2 years	
USA – Oregon	State of Oregon Criminal Justice Commission, 2018	Re-arrest Reconviction Reimprisonment To be accounted for, a respective event (new arrest, conviction or reimprisonment) should happen during a follow-up period on the state territory.	1, 2, 3 years	Includes released prisoners on parole and post-release supervision.

* Recidivism rates from the original review ([Fazel & Wolf, 2015](#)) were reported since no new data had become available.

Table 2. Reconviction, re-arrest and reimprisonment rates in released prisoners by country and follow-up period length.

Country	Year	Cohort size	Follow-up	Re-arrest	Reconviction	Reimprisonment	Publication
Australia	2014–2015	n/a	2 years		53%	45%	Australian Government, 2018
Austria	2013	7,185	1 year		15%		Statistik Austria, 2018
			2 years		26%		
			3 years		32%		
			4 years		36%		
Canada – Ontario	2014–2015	2,610	2 years		35%		Ontario Ministry of Community Safety and Correctional Services, 2017
Canada – Quebec	2007–2008	9,483	2 years		55%	43%	Ministère de la Sécurité publique, 2015
Chile	2010	20,625	2 years		39%		Gendarmería de Chile, 2013
Denmark	2013	3,904	6 months		36%		Statistics Denmark, 2018
			1 year		51%		
			2 years		63%		
Estonia	2013–2014	n/a	1 year	37%	16%		Ahven <i>et al.</i>, 2018
			2 years	59%	35%		
	2011–2012	n/a	5 years	76%	58%		
Finland*	2005	4,507	2 years		36%		Graunbøl <i>et al.</i>, 2010
France	2004	78,580	1 year		26%		Ministère de la Justice, 2013
			2 years		40%		
			3 years		48%		
			4 years		54%		
			5 years		58%		
			6 years		61%		
Germany	2007	26,602	3 years		46%		Jehle, 2014
Iceland	2009–2011	322	2 years		27%		Yeoman, 2015
Ireland, Republic of	2010	9,339	3 years		45%		Central Statistics Office, 2016
Italy	2001–2009	479 (sample)	3 years	28% (24% - 32%)			Mastrobuoni & Terlizze, 2014
Israel	2008	6,724	1 year			18%	Walk & Berman, 2015
			2 years			28%	
			3 years			34%	
			4 years			38%	
			5 years			41%	
Latvia	2009	442 (sample)	29 months		50% (45% - 55%)		Ķipēna <i>et al.</i>, 2013
Netherlands	2013	31,168	1 year		35%		Ministerie van Justice en Veiligheid, 2018
			2 years		46%		
			3 years		51%		
New Zealand	2015–2016	n/a	1 year		46%	32%	Department of Corrections, 2017
			2 years		61%	43%	Department of Corrections, 2018
Norway*	2005	8,788	2 years		20%		Graunbøl <i>et al.</i>, 2010
Singapore	2015	n/a	2 years	24%			Singapore Prison Service, 2019
South Korea	2013	22,121	3 years			25%	Indicator, 2019
Spain – Catalonia	2010	3,414	3.5 years			30%	Area of Research and Social and Criminological Formation, 2015
Sweden	2011	7,738	1 year		51%		Swedish National Council for Crime Prevention, 2018
			2 years		61%		
			3 years		65%		
UK: E&W	2015–2016	61,410	1 year		48%		Ministry of Justice, 2018

Country	Year	Cohort size	Follow-up	Re-arrest	Reconviction	Reimprisonment	Publication
UK: N. Ireland	2014–2015	1,417	1 year		37%		Department of Justice, 2017
UK: Scotland	2015–2016	6,295	1 year		43%		Scottish Government, 2018
USA (federal)	2005	401,288	1 year	44%			Alper <i>et al.</i> , 2018
			2 years	60%			
			3 years	68%			
			4 years	74%			
			5 years	77%			
			6 year	80%			
			7 years	81%			
			8 years	82%			
			9 years	83%			
USA (23 states)	2012	392,130	1 year			23%	Gelb & Velázquez, 2018
			2 year			32%	
			3 year			37%	
USA – N. Carolina	2013	13,873	1 year	31%	11%	12%	Flinchum <i>et al.</i> , 2016
			2 years	48%	26%	21%	
USA – Oregon	2014	4,357	1 year	40%	23%	7%	State of Oregon Criminal Justice Commission, 2018
			2 years	51%	36%	14%	
			3 years	57%	43%	19%	

* recidivism rates from the original review (Fazel & Wolf, 2015) were reported since no new data had become available.

All included reports were conducted on general populations except for the studies from Italy ($n = 479$) and Latvia ($n = 442$). For Italian and Latvian samples, we estimated 95% confidence intervals, assuming normal distribution (provided in parentheses).

Table 3. Two-year reconviction rates in released prisoners.

Country	Year	Cohort size	Reconviction	Publication
Australia	2014–2015	n/a	53%	Australian Government, 2018
Austria	2013	7,185	26%	Statistik Austria, 2018
Canada – Ontario	2014–2015	2,610	35%	Ontario Ministry of Community Safety and Correctional Services, 2017
Canada – Quebec	2007–2008	9,483	55%	Ministère de la Sécurité publique, 2015
Chile	2010	20,625	39%	Gendarmería de Chile, 2013
Denmark	2013	3,904	63%	Statistics Denmark, 2018
Estonia	2013–2014	n/a	35%	Ahven <i>et al.</i> , 2018
Finland*	2005	4,507	36%	Graunbøl <i>et al.</i> , 2010
France	2004	78,580	40%	Ministère de la Justice, 2013
Iceland	2009–2011	322	27%	Yeoman, 2015
Netherlands	2013	31,168	46%	Ministerie van Justice en Veiligheid, 2018
New Zealand	2014–2015	n/a	60%	Department of Corrections, 2018
Norway*	2005	8,788	20%	Graunbøl <i>et al.</i> , 2010
Sweden	2011	7,738	61%	Swedish National Council for Crime Prevention, 2018
USA (federal)	2005	401,288	60%	Alper <i>et al.</i> , 2018
USA – N. Carolina	2013	13,873	26%	Flinchum <i>et al.</i> , 2016
USA – Oregon	2014	4,357	36%	State of Oregon Criminal Justice Commission, 2018

* reconviction rates from the original review (Fazel & Wolf, 2015) were reported since no new data had become available.

Table 4. The comparison of the reconviction rates in released prisoners reported in the previous review (Fazel & Wolf, 2015) with those reported in the present review.

Country	Previously reported rate (year)	New rate (year)	Notes
1-year reconviction			
UK: E&W	46% (2000) 45% (2012/2013)	48% (2015/2016)	Change in data source and cohort composition in 2015. Rates for 2012/2013 were recalculated as 49% in the newly published statistics. Significant difference between recalculated 2012/2013 rates and 2015/2016 rates ($\chi^2 = 15.6$, $df = 1$, $p = 0.0001$).
UK: N. Ireland	25% (2005)	37% (2014/2015)	Changes in the outcome definition. 1- and 2-year reconviction rates were used as outcomes in the older report. In the newer report, 'proven reconviction' is used, which is 1-year reconviction rate with an extra 6-month period to allow for the imposition of a court conviction. The management of individuals' data and the agencies responsible for it have also changed (outlined in the reports' methodology sections).
UK: Scotland	46% (2009/2010)	43% (2015/2016)	Rates for 2009/2010 were recalculated from 45.7% in the old publication to 46.3% in the newly published statistics. Significant difference between recalculated 2009/2010 rates and 2015/2016 rates ($\chi^2 = 11.4$, $df = 1$, $p = 0.0007$).
2-year reconviction			
Denmark	29% (2005)	63% (2013)	Changes in reporting practices and outcome operationalisation. The online recidivism calculator was introduced by Statistics Denmark, which allows to choose required composition of the cohort of interest. The new sample excludes individuals younger than 20 years old. The new outcome now includes an extra 1-year period to allow for the imposition of a court conviction (no such period was used in the calculation of the previous reconviction rate).
Sweden	43% (2005)	61% (2011)	Changes in the outcome operationalisation. The new outcome now includes an extra 3-year period to allow for the imposition of a court conviction (no such period was used in the calculation of the previous reconviction rate).
Iceland	27% (2005)	27% (2009/2011)	No significant difference ($\chi^2 = 0$, $df = 1$, $p = 0.9984$).
Netherlands	48% (2007)	46% (2013)	Rates for 2007 were recalculated as 49% in the newly published statistics. Significant difference between 2007 recalculated rates and 2013 rates ($\chi^2 = 94.2$, $df = 1$, $p = 0.0001$).
Singapore	27% (2011)	26% (2015)	No exact information about sample size available.
3-year reconviction			
Germany	48% (2004)	46% (2007)	Sample sizes estimation were taken from Hohmann-Fricke (2014). Significant difference ($\chi^2 = 18.4$, $df = 1$, $p = 0.0001$).
Ireland, Republic of	51% (2008)	45% (2010)	Significant difference ($\chi^2 = 48.1$, $df = 1$, $p = 0.0001$). Larger number of prisoners in the newer cohort.
5-year reconviction			
France	59% (2002)	58% (2004)	No significant difference ($\chi^2 = 2.6$, $df = 1$, $p = 0.1042$).

were no obvious revisions to reporting practices. This contrasts with reductions in self-reported crime in some surveys in high-income countries such as England and Wales (Office for National Statistics, 2018). Changes in rates were observed in those countries that changed the operationalisation of the outcome or the ways they collected and reported data. One exception

to this is the Republic of Ireland, where the reconviction rate decreased by 6% in 3 years in the absence of any obvious changes in reporting practices. During this period, the number of people in the released prisoners' cohort nearly doubled from 5,489 in 2008 (Central Statistics Office, 2013) to 9,339 in 2010 (Central Statistics Office, 2016).

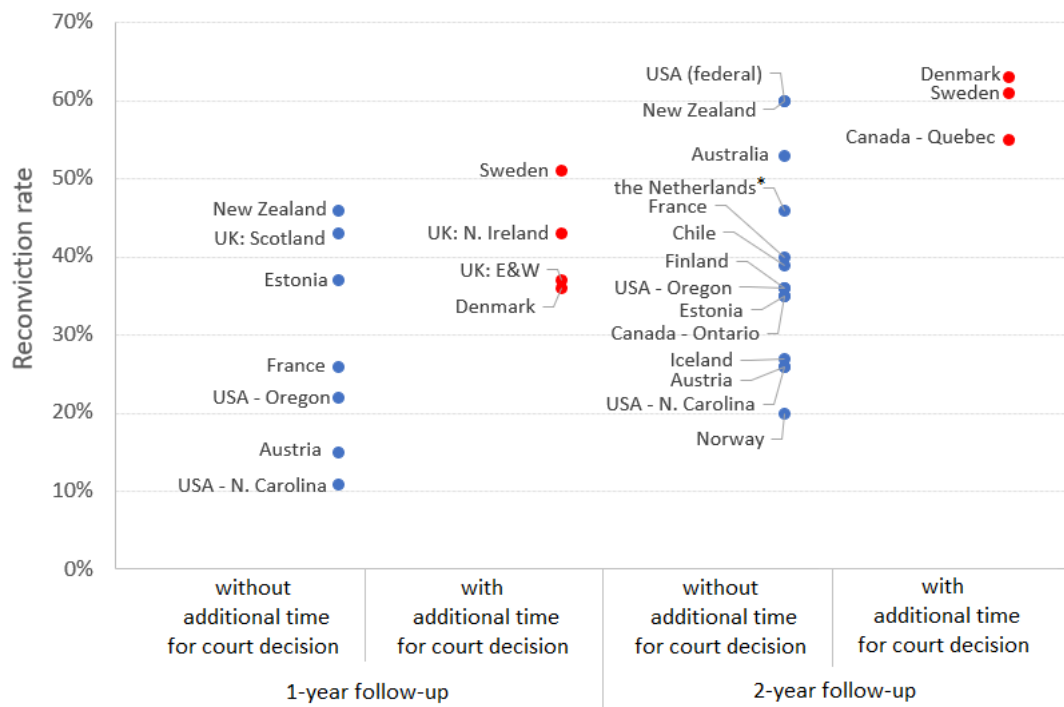


Figure 2. One- and two-year reconviction rates in released prisoners in different jurisdictions by usage of additional time after the follow-up period for finalization of court proceedings. Note: *the Netherlands used the initiation of court proceedings that did not result in acquittal or technical dismissal during the follow-up as an outcome.

We conclude that international comparisons between countries remain problematic, and the use of a checklist (Appendix 1; Fazel *et al.*, 2019a) may facilitate more consistent and transparent reporting of recidivism rates.

Data availability

Appendix 1, containing the recidivism reporting checklist, is available from OSF.

DOI: <https://doi.org/10.17605/OSF.IO/QVTFB> (Fazel *et al.*, 2019a).

License: CC0 1.0 Universal.

Reporting guidelines

A completed PRISMA checklist is available on OSF. DOI: <https://doi.org/10.17605/OSF.IO/7SZJC> (Yukhnenco *et al.*, 2019b)

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We are OK with the changes made by the authors and thank them for addressing each point diligently.

Competing Interests: No competing interests were disclosed.

We confirm that we have read this submission and believe that we have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Reviewer Report 11 September 2019

<https://doi.org/10.21956/wellcomeopenres.16329.r34843>

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Katherine M. Auty

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This systematic review examines the criminal recidivism rates of prisoners internationally, with the aspiration that 'the comparison of recidivism rates between countries and regions may provide useful information about relative effectiveness of different sentencing and rehabilitation policies' (p.3). This is indeed an important and timely research endeavour given that the Ministry of Justice in England and

Wales recently published the responses to a consultation on proposed changes to the proven reoffending rates it produces (see; Ministry of Justice, 2016¹ and 2017²) to 'align the existing reoffending measure with those measures necessary for assessing progress against the rehabilitation reforms' (Ministry of Justice, 2016¹, p.3). Furthermore, the production and use of data, such as recidivism rates that is often held by government departments is a major issue of democratic governance (Parsons, 2002³, p.145). This review updates findings from a previous one (Fazel & Wolf, 2015⁴), and expands the searches conducted from 20 to 50 countries with the largest prison populations.

Whilst recidivism rates do have the potential to be used as a standardised measure of prison performance and could be used to compare prisons nationally (and internationally), any choice of outcome should reflect the purpose of prisons, and this is likely to vary internationally. There are, however, several drawbacks to using recidivism rates in this context;

- Recidivism rates underestimate the true amount (and cost) of crime in society, as a significant (but unknown) amount of crime is unreported/unsolved.
- Recidivism rates do not tell us anything about whether the new offence committed was more or less serious than the previous one. Therefore, they are a fairly crude measure of effectiveness.
- Recidivism rates only capture instances of failure and do not take into account successes.
- Recidivism rates do not reflect what we know about desistance theory (i.e. pathways out of crime often involve sidesteps and missteps, see McNeill & Schinkel, 2016⁵).
- Recidivism rates often do not tell us if the person was returned to custody, and are therefore limited in terms of calculating the cost of crime to society.

Comparisons between prison regimes internationally are fraught with difficulties; especially given recent changes in prison populations, policy and reporting practices. Additionally, what constitutes a crime can vary from one country to the next.

Notwithstanding any concerns as to the appropriateness of these comparisons, one of the main findings of this updated review is that researchers are still some way off being able to perform these comparisons; only 10 of the 50 countries reported recidivism rates for prisoners, and due to the heterogeneity in the type of figures produced it was not possible for the authors to produce a meta-analysis. A recidivism reporting checklist is proposed as a means of standardising how countries produce this statistical information and its adoption should be recommended.

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Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Prisons research, Quantitative methodologies, Personality disorder, Evaluation.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Author Response 07 Oct 2019

Denis Yukhnenko, University of Oxford, Oxford, UK

Reviewer 3

1) Recidivism rates underestimate the true amount (and cost) of crime in society, as a significant (but unknown) amount of crime is unreported/unsolved.

Our response: We agree with this point, although it is not directly to the paper. We have explained the purpose of the paper in the introduction, which does not aim to estimate the amount and cost of all crime in society.

2) Recidivism rates do not tell us anything about whether the new offence committed was more or less serious than the previous one. Therefore, they are a fairly crude measure of effectiveness.

Our response: We agree. Some jurisdictions included in our review reported separate recidivism rates for different types of offences that provide some indication of recidivism severity. We have also included the recommendation to provide more crime categories in our reporting checklist.

3) Recidivism rates only capture instances of failure and do not take into account successes.

Our response: This is a valid point. Success measures could be especially helpful when reporting the outcomes of rehabilitation programmes, but beyond the scope of this paper.

4) Recidivism rates do not reflect what we know about desistance theory (i.e. pathways out of crime often involve sidesteps and missteps, see McNeill & Schinkel, 2016).

Our response: We agree, but again, this is outside the scope of this paper.

5) Recidivism rates often do not tell us if the person was returned to custody, and are therefore limited in terms of calculating the cost of crime to society.'

Our response: A helpful point. Using different recidivism outcomes (reconviction, reincarceration, re-arrest) and different sources of information (official crime and healthcare statistics, surveys) can address this limitation. We have revised our reporting checklist so that it includes information on reincarceration and re-arrest (in addition to reconviction), if possible.

Competing Interests: We declare no competing interests.

Reviewer Report 25 June 2019

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This Research Note presents an update of a systematic review of worldwide recidivism rates published 3-years ago (Fazel & Wolf, 2015). Although the manuscript does not significantly add to the literature, as a research note it provides up-to-date results. In 2015, the authors concluded that recidivism data was not valid for international comparisons. This update draws the same conclusions. Overall, this systematic review is methodologically sound and highlights the inherent difficulties in adopting a comparative approach to recidivism. However, the manuscript would benefit from clarifying the results section as well as expanding the rationale.

Introduction:

1. It would be helpful to expand on the rationale for the review. In the introduction, the authors argue that “recently released prisoners often constitute a high-risk group that commit the majority of violent crimes” and then emphasize the public health burden of violent crime. However, much of the literature shows that recidivism events among recently released prisoners commonly involve justice administration offences (e.g., failure to comply with conditions of release). This may weaken the ‘public health burden’ argument and should be the subject of discussion in the manuscript.

Methods:

1. A justification for the selection of the bibliographic database (MEDLINE) should be provided, given that MEDLINE is generally used for biomedical research.
2. The abstract states that “three bibliographic indexes” were used, but this is not mentioned nor expanded upon in the text.
3. “If no new data had been identified for a particular country, we reported the rates from the original review”: in what percentage of cases did this occur? How many new or updated estimates were included?
4. It is unclear from the author list who “PS” is.
5. As per the PRISMA guidelines, it would be helpful to describe the method of data extraction (e.g., independently, in duplicate).
6. According to the reference list, several reports were available in foreign languages only. How were they translated?

Results:

1. We agree with Reviewer 1 that results are difficult to follow along and that an effort should be made to match up the text with the figures and tables.
2. The rationale for Table 3 is unclear, given that it repeats information that is also provided in Table 2. Perhaps editing Table 2 or synthesizing the 2-year reconviction rates in the text would be more appropriate.
3. Table 4 often mentions that there was a change in reporting practices, which often results in considerable changes in rates (e.g., Denmark: 29% (2005), 63% (2013)). More details should be provided regarding the nature of the change in reporting practices.
4. It would be helpful to clarify if each study examines a population or a sample (for example, in the Notes section of Table 1).
5. If a study examines a sample rather than a population, it would be helpful to provide a confidence interval, if available.

Discussion:

- Given that it is not the objective of the current manuscript, it may be premature to extrapolate on the reasons for a change in rates in the Republic of Ireland.

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Forensic mental health, violence, criminality, psychology

We confirm that we have read this submission and believe that we have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however we have significant reservations, as outlined above.

Author Response 07 Oct 2019

Denis Yukhnenko, University of Oxford, Oxford, UK

Reviewer 2

Introduction:

1) It would be helpful to expand on the rationale for the review. In the introduction, the authors argue that “recently released prisoners often constitute a high-risk group that commit the majority of violent crimes” and then emphasize the public health burden of violent crime. However, much of the literature shows that recidivism events among recently released prisoners commonly involve justice administration offences (e.g., failure to comply with conditions of release). This may weaken the ‘public health burden’ argument and should be the subject of discussion in the manuscript.

Our response: Thank you for pointing this out. We have strengthened our argument by providing information about economic and social costs of reoffending in released prisoners when compared to individuals receiving non-custodial sentences. We additionally outlined the importance of taking the violent recidivism into account, even if the rates are low relative to other types of recidivism, due to high associated emotional costs [rows 2-15]. Also, we highlighted the fact that most recidivism events are non-violent transgressions and provided information on the exact percentage of violent crimes using the US data [rows 10-11]. **(the numbering of rows refers to the revised manuscript's .docx file)**

Rows 2-15 (old text is underlined): The number of prisoners and associated expenditure continue

to increase worldwide (MacDonald, 2018; McLaughlin et al., 2016; Penal Reform International, 2018; Sridhar et al., 2018). Released prisoners are at higher risk of criminal recidivism than those serving non-custodial sentences (Ministry of Justice, 2018) with around one-fifth of all crimes in any year being committed by those released from custody (Petersilia, 2011). Although most of these recidivism events are non-violent (property crimes, violation of post-release conditions, etc.), released prisoners also have an elevated risk of violent recidivism, which are much more impactful because of high associated physical and psychological morbidity (Heeks et al., 2018). In the USA, 20% of released prisoners commit a new violent offence in the three years after release (Alper et al., 2018). In the UK, relative economic and social costs of reoffending in released prisoners are estimated to be double that of individuals receiving community sentences (Newton et al., 2019). With the increasing recognition of the health burden of violence and crime (World Health Organisation, 2014), reducing recidivism can make a large contribution to public safety and public health.

Deleted this sentence: Recently released prisoners often constitute a high-risk group that commit the majority of violent crimes (Andersen & Skardhamar, 2014; Ministry of Justice, 2018) with around one-fifth of all crimes in any year being committed by those released from custody (Petersilia, 2011).

Methods:

1) A justification for the selection of the bibliographic database (MEDLINE) should be provided, given that MEDLINE is generally used for biomedical research.

Our response: This is a very useful comment. Although we followed the choice of database in our previous review, after consideration of this comment, we decided to add several other databases, including SAGE, since many criminological journals are indexed there, and redo the search. We also revised our search strategy to account for this [Figure 1, rows 31-34].

Rows 31-34: 'This review builds up on the methods of the previously published study by Fazel & Wolf (2015). We expanded the search to other databases and modified search strategy. We searched SAGE, MEDLINE, EMBASE, PsycINFO, PsycARTICLES for the last 10 years (from 01.01.2008 until 23.07.2019) with no language restrictions.'

2) The abstract states that "three bibliographic indexes" were used, but this is not mentioned nor expanded upon in the text.

Our response: Thank you for highlighting this. We have added details on the search strategy and revised the list of indexes [see above]. The abstract now states:

Old text is underlined): 'Using five bibliographic indexes, we carried out non-country-specific and targeted searches for 50 countries with the largest total prison populations.'

3) "If no new data had been identified for a particular country, we reported the rates from the original review": in what percentage of cases did this occur? How many new or updated estimates were included?

Our response: This was the case for only two countries. We have clarified this in the results section.

Rows 67-69: 'One additional publication (Graunbøl et al., 2010) with data on Finland and Norway was included from the previous review (Fazel & Wolf, 2015), as no new data were identified for these countries.'

4) It is unclear from the author list who "PS" is.

Our response: Added.

5) As per the PRISMA guidelines, it would be helpful to describe the method of data extraction (e.g., independently, in duplicate).

Our response: The data was instructed independently by two researchers. We added the clarification in the methods section.

Rows 60-61 (old text is underlined): 'DY and SS conducted the search and independently extracted the data on country, sample selection, definitions of outcomes and rates.'

6) According to the reference list, several reports were available in foreign languages only. How were they translated?

Our response: They were translated by the native speakers who were either students or employees of Oxford University. We clarified this in the methods section.

Rows 61-63: 'The publications in languages other than English were translated with the assistance of native speakers, who were either employees or students at Oxford University.'

Results:

1) We agree with Reviewer 1 that results are difficult to follow along and that an effort should be made to match up the text with the figures and tables.

Our response: Thank you for highlighting this. We have gone through the text and tables carefully to ensure consistency and increase clarity.

2) The rationale for Table 3 is unclear, given that it repeats information that is also provided in Table 2. Perhaps editing Table 2 or synthesizing the 2-year reconviction rates in the text would be more appropriate.

Our response: Thank you for the suggestion. We wanted to summarise 2-year reconviction rates as it is the most commonly reported outcome, and a separate table is more informative to the reader visually. Also, it follows the approach from the original review, which makes the findings

more easily comparable.

3) Table 4 often mentions that there was a change in reporting practices, which often results in considerable changes in rates (e.g., Denmark: 29% (2005), 63% (2013)). More details should be provided regarding the nature of the change in reporting practices.

Our response: We have added brief descriptions of changes in reporting practices to Table 4.

4) It would be helpful to clarify if each study examines a population or a sample (for example, in the Notes section of Table 1). If a study examines a sample rather than a population, it would be helpful to provide a confidence interval, if available.

Our response: Thank you for pointing this out. Only two studies of the included studies examine samples (from Latvia and Italy). We added this information to the Table 1 and provided the information about 95% confidence intervals.

Table 2: 'All included reports were conducted on general populations except for the studies from Italy (n = 479) and Latvia (n = 442). For Italian and Latvian samples, we estimated 95% confidence intervals, assuming normal distributions (provided in parentheses).'

Discussion:

1) Given that it is not the objective of the current manuscript, it may be premature to extrapolate on the reasons for a change in rates in the Republic of Ireland.

Our response: We agree that this is not the main aim of the review. We have shortened this part of the discussion.

Rows 127-133: 'One exception to this is the Republic of Ireland, where the reconviction rate has decreased by 6% in 3 years in the absence of any obvious changes in reporting practices. At the same time, the number of people in the released prisoners' cohort nearly doubled from 5,489 in 2008 (Central Statistics Office, 2013) to 9,339 in 2010 (Central Statistics Office, 2016).'

Competing Interests: We declare no competing interests.

Reviewer Report 06 March 2019

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This Research Note updates a 2015 systematic review (same senior author) of criminal recidivism rates across countries, including rates of reconviction, re-arrest, and reimprisonment. This is an interesting and important area. The review was carefully conducted, although the findings are modest. As in 2015, the authors conclude that a meta-analysis was not possible. Because recidivism rates are not reported in a comparable fashion across enough countries, they were unable to make many meaningful comparisons or draw conclusions about the association between criminal justice practices and criminal recidivism. The authors provided a summary of the range of recidivism rates for studies reporting 2 year follow-up period (unadjusted). A key message underscores the importance of comparable reporting across countries, and the authors advocate the use of a report checklist to accomplish this.

It would be very helpful if the authors made it easier to match up the text with the figures and tables. It was quite difficult to follow along, especially in the following areas:

1. The authors state: "We were able to examine recidivism over different time periods for 11 countries". The results section of the manuscript never refers to these 11 countries. Table 3 refers to 11 countries if one thinks to remove those with asterisks (those included in the original review) but this table only refers to two-year *reconviction* rates – not the more generally stated *recidivism* rates. Table 4 identifies a different 11 studies, but this table compares reconviction rates for studies that had updated data from the 2015 review, and these findings are barely referenced in the results section. In sum, it would be helpful to identify the 11 countries and how they were selected.
2. In the first line of the results section, the authors stated that they identified 27 publications (also reported in Figure 1) that reported recidivism rates for 23 countries; they refer the reader to Tables 1 and 2. However, Tables 1 and 2 list 29 "studies" (Table 1) or "Sources" (Table 2) by my count, for 23 countries.
3. The following sentence is highlighted in both the abstract and manuscript: "Of the 50 countries with the largest prison populations, 10 reported recidivism rates for prisoners." However, none of the figures or tables clearly depicts the list of 10 countries. Perhaps the authors could clarify the significance of the statement and identify the countries?
4. When reporting the key findings perhaps the authors could provide more help, such as: "*As shown in Table (?), the 2-year re-arrest rates ranged from 26% (list country) to 60% (list country), two-year reconviction rates ranged from 20% (list country) to 63% (list country), and two-year reimprisonment rates ranged from 14% (list country) to 43% (list country).*"
5. Small item: The authors state that "DY and PS" conducted the search. It is unclear who PS is in the list of authors.
6. Small item: In *Table 1: Austria (Statistik Austria, 2018): "Reconviction: The conviction should happen during a follow-up period."* The use of "should" is confusing.

Is the work clearly and accurately presented and does it cite the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Not applicable

Are all the source data underlying the results available to ensure full reproducibility?

No source data required

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: 1. Interface between criminal justice and mental health systems. Needs and outcomes of offenders.

We confirm that we have read this submission and believe that we have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however we have significant reservations, as outlined above.

Author Response 07 Oct 2019

Denis Yukhnenko, University of Oxford, Oxford, UK

Reviewer 1

1) The authors state: "We were able to examine recidivism over different time periods for 11 countries". The results section of the manuscript never refers to these 11 countries. Table 3 refers to 11 countries if one thinks to remove those with asterisks (those included in the original review) but this table only refers to two-year *reconviction* rates – not the more generally stated *recidivism* rates. Table 4 identifies a different 11 studies, but this table compares reconviction rates for studies that had updated data from the 2015 review, and these findings are barely referenced in the results section. In sum, it would be helpful to identify the 11 countries and how they were selected.

Our response: We agree that this needs clarification – these 11 countries are those where we are able to compare recidivism rates between the original review and the updated one.

The quoted line refers to the Table 4. We made changes to the abstract and the results section [rows 103-105] to clarify this. **(the numbering of rows refers to the revised manuscript .docx file)**

Abstract (old text is underlined): 'We were able to examine reconviction over different time periods for 11 countries and found that most reported small changes in official recidivism rates.'

Rows 103-105: 'Such comparisons were possible for 11 countries (Denmark, France, Germany, Iceland, Singapore, Republic of Ireland, Sweden, Singapore, UK: England and Wales, UK: Northern Ireland, UK: Scotland).'

2) In the first line of the results section, the authors stated that they identified 27 publications (also reported in Figure 1) that reported recidivism rates for 23 countries; they refer the reader to Tables 1 and 2. However, Tables 1 and 2 list 29 “studies” (Table 1) or “Sources” (Table 2) by my count, for 23 countries.

Our response: Thank you for highlighting this. We agree that this is not entirely clear. We identified 28 new studies, but included one other one from the previous review (as no new data were identified), so this makes the total 29 publications. These 29 publications report on 25 countries (which is slightly different now as we have treated parts of the UK as separate countries) [rows 66-69]. In addition, we have named all the columns with references to ‘Publication’ for the sake of consistency.

Rows 66-69 (old text is underlined): ‘We identified 28 publications that reported recidivism rates in released prisoners from 25 countries (Table 1 and Table 2). One additional publication with data on Finland and Norway was included from the previous review (Fazel & Wolf, 2015), as no new data were identified for these countries.’

3) The following sentence is highlighted in both the abstract and manuscript: “Of the 50 countries with the largest prison populations, 10 reported recidivism rates for prisoners.” However, none of the figures or tables clearly depicts the list of 10 countries. Perhaps the authors could clarify the significance of the statement and identify the countries?

Our response: A helpful comment. We have now listed these countries in the results section [rows 69-71]. In addition, we have noted the limited availability of data for these particular 10 countries in the discussion [112-116].

Rows 69-71 (old text is underlined): Of the 50 countries with the largest prison populations, recidivism statistics were identified for 10 countries (Australia, Canada, Chile, France, Germany, Italy, South Korea, Spain, USA, UK: England and Wales).

Rows 112-116 (old text is underlined): In this systematic review, we have reported prisoner recidivism rates around the world and found that only 10 out of 50 countries with the largest prison populations reported recidivism statistics for cohorts of released prisoners. This finding suggests the lack of systematic and open approach towards recidivism research in many countries, despite the apparent need for that.

4) When reporting the key findings perhaps the authors could provide more help, such as: “As shown in Table (?), the 2-year re-arrest rates ranged from 26% (list country) to 60% (list country), two-year reconviction rates ranged from 20% (list country) to 63% (list country), and two-year reimprisonment rates ranged from 14% (list country) to 43% (list country).”

Our response: Thank you for your suggestion with which we entirely agree and have revised the text accordingly.

Rows 91-95 (old text is underlined): ‘As shown in Table 2, the two-year re-arrest rates ranged from

24% (Singapore) to 60% (USA), two-year reconviction rates ranged from 20% (Norway) to 63% (Denmark), and two-year reimprisonment rates ranged from 14% (Oregon, USA) to 45% (Australia) (see Table 3 for 2-year rates from included countries).'

5) Small item: The authors state that “DY and PS” conducted the search. It is unclear who PS is in the list of authors.

Our response: Thank you for pointing this out. Corrected.

6) Small item: In *Table 1: Austria (Statistik Austria, 2018): “Reconviction: The conviction should happen during a follow-up period.”* The use of “should” is confusing.

Our response: A helpful comment. We have rephrased this.

Table 1: ‘New criminal conviction during a follow-up period’

Competing Interests: We declare no competing interests.
