Methods, assumptions and data sources applied in analysis underpinning the estimate of 290,000 hours being cut as part of the Community Orders (Coronavirus) (Scotland) Regulations 2021

Method and Assumptions

The estimate of 290,000 hours that would be removed by the policy was derived from analysis and modelling work completed between November 2020 and January 2021.

Data collected from Local Authorities in May 2020, September 2020, and November 2020 provided national level estimates of hours and orders outstanding at these points in time. The May 2020 return provided additional detail of how these were distributed between Level 1 (100 hours or less) and Level 2 (over 100 to 300 hours) orders.

Due to the extreme uncertainty in how restrictions in response to the pandemic over the months from November 2020 to March 2021 would differentially impact on a) the capacity to call, conclude and dispose cases in court; b) Justice Social Work capacity to deliver unpaid work hours, it was deemed infeasible to provide a meaningful forecast of how outstanding orders would change in the months between November 2020 and March 2021, when the policy was to be enacted. Instead a simplification had to be made to assume that the orders outstanding in March 2021 would be as at November 2020.

To estimate hours that would be removed from the policy required four main steps. These are set out below, with all underlying data tables provided.

1. Estimating Level 1 and Level 2 orders outstanding in November 2020

November total orders outstanding with unpaid work were estimated from data returns provided by a sample of Local Authorities in September and November 2020 (Data Tables 2 and 3). May 2020 data (Data Table 1) provided additional information on the proportion of outstanding orders that were Level 1 or Level 2 orders. This was assumed to hold for November 2020, giving an estimate of the number of Level 1 and Level 2 orders outstanding across Scotland in November 2020.

Outstanding orders specifically for Sexual Crimes and Domestic Abuse were estimated by using historic data on the split of orders by crime and aggravation type (Data Table 4)

2. Estimating hours imposed from data on current orders and average hours imposed on orders

Estimates of Level 1 and Level 2 orders outstanding were multiplied by published statistics of average lengths of Level 1 and Level 2 orders. This provided an estimated number of hours that would have been imposed for these outstanding orders (as the policy applied to hours imposed and not hours outstanding).

For CPOs imposed as a result of sexual crimes or domestic abuse, the average length of order was adjusted from the published average by considering the breakdown of orders and hours for different offences. For example, sexual offence cases comprise a larger percentage of all hours (3.6%) than of all orders (2.7%), showing that these orders have typically more hours than the average case.

3. Correcting for orders that were estimated to have fewer than 35% of their hours remaining

If the 35% reduction were applied to the estimated imposed hours from Step 2, this would overestimate the hours that would be removed by the policy. The reason for this is that some orders would in fact be close to completion and have fewer than 35% of their hours remaining, so could not have the full 35% reduction applied.

Best assumptions were made on the underlying distributions of hours remaining across current orders. An initial assumption was made that orders were uniformly distributed in their completion. However, by estimating hours imposed for Level 1 and Level 2 orders outstanding in May 2020 (in the same way as Step 2), this suggested that on average Level 1 Orders were 38% complete and Level 2 Orders 44% complete, at that time (Data Table 1). The uniform distribution assumption was then adjusted in the simplest way possible, which was to introduce a modelling simplification that some proportion of orders had meaningfully commenced and begun working through hours (which were uniformly distributed in terms of their completion), while others had been imposed but had not yet been commenced (i.e., still had 100% of their hours remaining). This was a pragmatic modelling simplification and not intended to perfectly represent the reality of how unpaid work processes are delivered in practice, and it is likely that this simplification introduced some degree of error in the final estimate.

Using these model simplifications, a "near completion modifier" for hours removed was constructed, with a different modifier for Level 1 and Level 2 according to the equation below:

$$Near\ Completion\ Modifier = 1 - \left(F_{commenced} * 35\% * \frac{1}{2} \right)$$

$F_{commenced}$ is the number of cases which were estimated to have been commenced already (as per the modelling simplification above). This is multiplied by 35% to assume that cases which have already commenced are evenly distributed in terms of completion. This is multiplied by a half to assume that on average, cases that are more than 65% complete will have half the possible reduction applied (so on average they are 82.5% complete).

The fraction of cases was estimated by working backwards from the 'uniform completion percentage' assumption:
1. The estimated hours imposed is calculated by multiplying the number of cases outstanding in May 2020 (Data Table 1) by their average length in 2018-19 (Data Table 5)

2. The hours outstanding is divided by the estimated hours imposed to estimate the average % completed.
3. Using the uniform completion percentage assumption, if all orders were commenced one would expect the average % completed to be 50%. The percentage commenced can therefore be estimated by dividing % completed by 50%.

Applying the "near completion modifier" to the uncorrected hours above yielded the final, corrected estimates for reductions in hours estimated for different crime / aggravator types[1].

4. Considering only orders without Sexual Offences or Domestic Abuse

The final estimate of hours to be removed by the policy excluded orders for Sexual Offences or Domestic Abuse offences, yielding a final figure of 290,000 (rounded to the nearest 10,000 due to the considerable uncertainty in the estimate). This figure of 290,000 was presented in the Policy Note as noted above.

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[1] It should be noted that the analysis considered a further but minor adjustment to the $F_{commenced}$ parameter, to attempt to adjust this to the November 2020 position. However, this had minimal impact on the $F_{commenced}$ value, and therefore no impact on the estimate of 290,000 hours being removed.

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Data and Sources

Data Table 1: Outstanding orders with current unpaid work or other activity requirements - May 2020

Local authority	Total number of current unpaid work or other activity requirements Level 1	Total number of current unpaid work or other activity requirements Level 2	Total outstanding hours for current open unpaid work or other activity requirements (excluding breaches) – Level 1	Total outstanding hours for current open unpaid work or other activity requirements excluding breaches) – Level 2
Aberdeen	245	307	11338	33084
Aberdeenshire	252	253	10079	24487
Angus	84	145	3166	15030
Argyll & Bute	18	86	966	10754
Clackmannanshire	51	64	2605	7803
Dumfries & Galloway	172	169	8728	19868
East Dunbartonshire	11	46	633	4828
East Lothian	11	51	195	3813
Edinburgh	158	277	4246	23268
Fife	178	337	9571	34641
Glasgow	481	905	17188	69427
Highland	194	209	8307	22361
Inverclyde	47	95	2420	11490
Midlothian	57	90	2503	10319
Moray	64	105	3483	12216
Na h-Eileanan Siar	4	9	268	725
North Ayrshire	79	113	3517	11922
North Lanarkshire	243	561	10673	52156
Orkney	8	8	312	660
Perth & Kinross	42	112	2152	11432
Renfrewshire	82	216	5207	26548
Scottish Borders	65	62	3679	8640
Shetland	6	5	237	676
South Ayrshire	64	145	4158	19736
South Lanarkshire	182	227	7103	22870
Stirling	47	67	1661	6262
West Dunbartonshire	72	138	4180	18190
West Lothian	85	156	3867	15676
Total for 28 authorities who had returned at time of initial model building	3002	4958	132441	498882

Source: Local Authority Returns on Outstanding Requirements and Hours for Community Payback Order Unpaid Work or Other Activity Requirements, May 2020. Sample of 28 Local Authorities.

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Data Table 2: Outstanding orders with current unpaid work or other activity requirements - Estimate of national level in September 2020	
Local Authority	Total Number of current unpaid work or other activity requirements
Aberdeen	532
Aberdeenshire	443
Angus	203
Argyll & Bute	96
Clackmannanshire	122
Dumfries & Galloway	363
Dundee	272
East Dunbartonshire	75
East Lothian	66
East Renfrewshire	47
Edinburgh	459
Fife	521
Glasgow	1354
Highland	365
Inverclyde	144
Midlothian	142
Moray	205
Na h'Eileanan Siar	12
North Ayrshire	173
North Lanarkshire	830
Orkney	25
Perth & Kinross	142
Renfrewshire	210
Scottish Borders	140
Shetland	18
South Ayrshire	257
South Lanarkshire	420
Stirling	91
West Dunbartonshire	210
West Lothian	257
Estimate for East Ayrshire and Falkirk	493
Scotland	**8,687**
Source: Local Authority Returns on Outstanding Requirements and Hours for Community Payback Order Unpaid Work or Other Activity Requirements, September 2020. Sample of 31 Local Authorities.	

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Data Table 3: Outstanding orders with current unpaid work or other activity requirements - Sample of 26 Local Authority data returns in September and November 2020

Local Authority	Nov-20 Total Number of current unpaid work or other activity requirements	Sep-20 Total Number of current unpaid work or other activity requirements
Aberdeen	556	532
Aberdeenshire	482	443
Angus	200	203
Clackmannanshire	133	122
Dumfries & Galloway	412	363
Dundee	264	272
East Lothian	73	66
East Renfrewshire	45	47
Edinburgh	447	459
Fife	546	521
Glasgow	1324	1354
Highland	406	365
Inverclyde	140	144
Midlothian	159	142
Moray	200	205
North Ayrshire	177	173
North Lanarkshire	685	830
Orkney	25	25
Perth & Kinross	165	142
Renfrewshire	224	210
Scottish Borders	160	140
Shetland	23	18
South Ayrshire	224	257
South Lanarkshire	496	420
West Dunbartonshire	251	210
West Lothian	260	257
Authorities who had submitted for both September and November at time of initial model building	**8,077**	**7,920**
Estimated change in orders between September 2020 and November 2020	**1.02**	

Source: Local Authority Returns on Outstanding Requirements and Hours for Community Payback Order Unpaid Work or Other Activity Requirements, September 2020. Sample of 26 Local Authorities that had returned both September and November data at time of initial model building.

Data Table 4: Data on breakdown of orders and hours by crime type

Main crime type	Percentage of total CPOs with unpaid work	Percentage of total hours given as part of CPOs with unpaid work
Sexual crimes	2.7%	3.6%
Domestic abuse (included across various crime types)	18.3%	17.7%

Source: Criminal justice social work data from local authorities and criminal proceedings data.

Data Table 5: Community payback orders commenced

	2018-19
Orders with unpaid work/other activity requirement	**12,043**
Level 1: 100 hours or less	5,803
Level 2: Over 100 - 300 hours	6,240
Average length (hours)	**126.7**
Level 1	71.0
Level 2	178.5

Source: Criminal justice social work statistics in Scotland: 2018-2019