ANNEX 3.

Forecast of incarcerated persons released from prison per month, 2020–2024

To forecast the number of incarcerated persons due to be released from prisons in El Salvador over 48 months from January 2020 to December 2024, we tested autoregressive integrated moving average (ARIMA) models and exponential smoothing state space (ETS) models, drawing on monthly data on releases from July 2011 to December 2019. Firstly, we compared the goodness of fit coefficients of the best models of each class, namely ARIMA(0,1,1)(2,0,0)[12] and ETS(A,N,A), reported in Table 1. Secondly, we assessed the forecast accuracy using seven different measures, reported in Table 2, and including two benchmark models, the naive and seasonal naive. The best fitting model was ETS (A,N,A)—that is, exponential smoothing with additive errors, no trends, and additive seasonality—, which was used in Figure 5.

Table 1. Forecast model goodness of fit coefficients

Goodness of fit coefficient	ETS(A,N,A)	ARIMA(0,1,1)(2,0,0)[12]
Sigma squared	6,762	8,292
Logarithmic likelihood	-598	-678
Akaike's information criterion	1,205	1,386
Akaike's information criterion corrected	1,205	1,392
Bayesian information criterion	1,215	1,426

Table 2. Forecast model accuracy measures

Accuracy measure	ETS(A,N,A)	ARIMA(0,1,1)(2,0,0)[12]	Naive	Seasonal naive
Mean error	5.5	2.6	0.4	31.1
Root mean squared error	76.4	89.3	113.8	138.2
Mean absolute error	61.1	69.6	86.9	112.6
Mean percentage error	-0.4	-1.5	-1.8	2.0
Mean absolute percentage error	10.4	12.1	15.2	19.0
Mean absolute scaled error	0.5	0.6	0.8	1.0
Autocorrelation of errors at first lag	0.05	0.06	-0.38	0.39