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Criminality among Norwegian immigrant populations

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Abstract
A previous study found that criminality among immigrant groups in Denmark was highly predictable by their countries of origin's prevalence of Muslims, IQ, GDP and height. This study replicates the study for Norway with similar results.

Keywords: Crime, national IQ, group differences, country of origin

1 Introduction

Recently I analyzed crime and fertility among immigrant groups in Denmark by their country of origin[1]. I found that these rates could be predicted with a high degree of accuracy by three variables from their nation of origin: prevalence of Muslims, average height and either national IQ or GDP (multiple R about .85). Other predictors, such as murder rates in the home country, were not useful as predictors (r's from .058 to .242).

I found two relevant datasets for Norway. The first dataset is from the official statistics agency (Statistisk Sentralbyrå). The second dataset is from a 2011 report *Criminality and punishment among immigrants and the rest of the population* (Kriminalitet og straff blant innvandrere og øvrig befolkning)[2], also by the official statistics agency.

2 Methods for study 1

First, I found data for all the available years for the crime variable[3], which concerns persons charged with a crime and their citizenship. I chose to focus on the categories "all crime" (alle lovbrudsgrupper) and "violent crime" (voldskriminalitet). Second, I found the population size for each citizenship[4] for specific years, then calculated the per capita crime rate for each group. This was done for each year, and a grand average was taken.

I then found the national IQs from Lynn and Vanhanen's 2012 book[5], GDP per capita from The International Monetary Fund via Wikipedia[6, 7], prevalence of Muslims by country from Pew Research via Wikipedia[8, 9], the average height from Wikipedia[10] and the murder rate from United Nations Office on Drugs and Crime via Wikipedia[11, 12].

From there I used SPSS 22 to calculate the correlation matrix between all variables: all crime, violent crime, IQs, GDP, prevalence of Muslims, height, and murder rate.

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Pearson's r over diagonal. Spearman's rho under.		Crime rate	Violent crime rate	Crime rate log10	Violent crime rate log10	National IQ	National GDP	National Muslim prevalence	National height	National murder rate
Crime rate		1	.799	.870	.711	-.192	-.253	.257	-.168	-.047
	Sig. (2-tailed)		.000	.000	.000	.161	.063	.059	.334	.732
	N	56	56	56	56	55	55	55	35	55
Violent crime rate		.656	1	.645	.811	-.287	-.291	.474	-.525	-.004
	Sig. (2-tailed)	.000		.000	.000	.033	.031	.000	.001	.979
	N	56	56	56	56	55	55	55	35	55
Crime rate log10		1.000	.656	1	.732	-.291	-.380	.339	-.135	-.008
	Sig. (2-tailed)		.000		.000	.031	.004	.011	.439	.957
	N	56	56	56	56	55	55	55	35	55
Violent crime rate log10		.656	1.000		1	-.561	-.602	.627	-.530	.176
	Sig. (2-tailed)	.000				.000	.000	.000	.001	.199
	N	56	56		56	55	55	55	35	55
National IQ		-.419	-.701			1	.695	-.595	.614	-.566
	Sig. (2-tailed)	.001	.000				.000	.000	.000	.000
	N	55	55			56	56	56	36	56
National GDP		-.329	-.638			.811	1	-.494	.714	-.413
	Sig. (2-tailed)	.014	.000			.000		.000	.000	.002
	N	55	55			56	56	56	36	56
National Muslim prevalence		.224	.496			-.626	-.552	1	-.402	.080
	Sig. (2-tailed)	.100	.000			.000	.000		.015	.556
	N	55	55			56	56	56	36	56
National height		-.138	-.503			.614	.756	-.413	1	-.400
	Sig. (2-tailed)	.428	.002			.000	.000	.012		.016
	N	35	35			36	36	36	36	36
National murder rate		.255	.378			-.530	-.544	.185	-.595	1
	Sig. (2-tailed)	.061	.004			.000	.000	.173	.000	
	N	55	55			56	56	56	36	56

Table 1: Correlation matrix for study 1.

3 Results and analyses for study 1

Initial results showed that the data for Mongolia indicated it was an extreme outlier, and it was therefore removed from consideration, as the possibility of data error in this particular case seemed high (its crime variable was more about 75 times higher than the second highest country).

Pearson correlations with predictors were very low (r's from .047 to .257), as shown in Table 1 (above diagonal). Since this might be due to the crime data having low reliability (high randomness), I calculated their yearly intercorrelations and performed a principle components analysis. All the years correlated highly with each other (r's about .7 to .8) and with the grand average (r's around .9, results not shown). Similarly, the first principle component loaded strongly on all the yearly variables and explained 82% of the variance; see Table 2 (PC2 is clearly a time factor).

Component Matrix		
	Component	
	1	2
All_crime2002	.935	-.280
All_crime2003	.946	-.132
All_crime2004	.923	-.290
All_crime2005	.923	-.321
All_crime2006	.923	-.362
All_crime2007	.846	-.244
All_crime2008	.899	.067
All_crime2009	.950	.266
All_crime2010	.893	.429
All_crime2011	.845	.507
All_crime2012	.888	.412
Variance%	82.3	10.5

Table 2: Principle components analysis of the yearly crime data.

A multiple regression analysis showed similar results. There were no predictors significant at the .05 level and multiple R was .44. Results are shown in Table 3.

Dependent Variable: Crime rate

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.44	.194	.055	.06237

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.335	.186		1.795	.083
	National IQ	-.003	.002	-.461	-1.367	.182
	National GDP	-6.580E-07	.000	-.156	-.579	.567
	National Muslim prevalence	.000	.000	.098	.467	.644
	National height	.015	.016	.227	.913	.369
	National murder rate	-.001	.003	-.122	-.484	.632

Table 3: Multiple regression with the full model.

Puzzled by the results, I checked the distribution of the crime data, which was very skewed to the left. I normalized the data by taking the log-10 and reran the correlations (results in 1, columns 3-4). Correlations were somewhat higher with this, but still not at the level of the results from Denmark.

Alternatively, one could use a non-parametric analysis. Table 1 (below diagonal) shows the results using Spearman's ρ instead. This made the correlations stronger, especially for the violent crime rate.

Another possibility was that the crime category chosen was somehow deficient. I reran the analysis with a category of more serious crime, but results were more or less the same (using the category "forbrytelser" instead, results not shown).

4 Discussion and conclusion for study 1

There are a number of reasons to believe the dataset to have some systematic error that reduces all the correlations with predictors.

First, not just a single predictor but all the predictors from before were not very useful in predicting crime, as expected from systematic error. If a single predictor had failed, this might indicate that, contrary to the results in the Danish study, it is not a very good predictor.

Second, IQ, GDP, prevalence of Muslims and height showed the same direction as in the previous study, although with smaller r's. Murder rate was reversed, but both correlations are very small (r's -.047 and .058 in the previous study). This too is as expected with systematic error.

Third, calculating the correlations between the predictors (IQ, GDP, prevalence of Muslims) and crime rates for the individual years shows that all 11 correlations are negative for r (IQ x crime), all 11 are negative for r (GDP x crime) and 10 of 11 are positive for r (prevalence of Muslims x crime). These results are very unlikely if crime rates were not predictable, but expected if correlations are systematically reduced.

Fourth, the extreme differences between immigrant groups are not believable. The most criminal group is Georgia with a rate of 79 charges per 100 persons (!). The least criminal is Thailand with a rate of a mere 1.1. It is hard to believe that any difference would be so large as a factor 71. Countries similar to Norway such as Denmark and Sweden have rates +180% to +240%. This does not seem plausible. In comparison, the difference between the most and least criminal country in the Danish study was a factor 9.25 between Jordan and Japan. Even this difference is somewhat unbelievable. In the Danish study, the Scandinavian rates were similar. The 'ethnic' Danes had crime rates +28% and Swedish immigrants +4% of the Norwegian immigrants in Denmark.

5 Methods for study 2

The report *Criminality and punishment among immigrants and the rest of the population* contains a large number of tables with crime information about countries and groups of countries. In deciding which variables to use, I opted for the one that is closest to the variable used by the previous study from Denmark, which is the number of punished persons per capita by country of origin. Table 4.2 in the report is precisely about this, just for Norway. Additionally, it is useful to compare with a slightly different measurement of criminality. I picked Table 4.12 which concerns number of persons per capita punished for at least one crime in the period 2005-2008. Additionally, the report's appendix (Table C3) contained data about the percentage of the working age (defined as from age 15 to "elder") who were currently in employment. A previous study had reported that national IQs predict self-employment rate, so I expected a correlation to be found here as well[13].

For each country in the dataset (N=21), I found the national IQ, GDP, prevalence of Muslims, height, and murder rate just as described in study 1.

I contacted the author of the report to find out if there was more information available, especially for a larger country sample set. He told me that this was not the case and that one needs to request specific data from the statistics agency to acquire the data. If it is like in Denmark, this can be quite costly.

6 Results and further analyses for study 2

The correlation matrix is shown in 4 (Pearson's above, Spearman's below diagonal). The two crime variables correlated strongly as expected (r=.852). Prevalence of Muslims was

the best predictor and this held for both crime variables (r's .695 and .805). IQ was also a good predictor (both r's -.62), with GDP following closely behind (r's -449 and -.512). Height was a weak to moderate negative predictor (r's -.287 and -.300), while murder rate in the home country was not a useful predictor (r's .059 and .101). Spearman's correlations were generally similar.

Correlations

Pearson's over diagonal. Spearman's under diagonal.		Crime rate	Guilty of at least one crime	Crime rate in Denmark	Employment rate	General socioeconomic trait	National IQ	National GDP	National prevalence of Muslims	National murder rate	National height
Crime rate		1	.852	.736	-.676	.916	-.620	-.449	.695	.101	-.287
	Sig. (2-tailed)		.000	.000	.001	.000	.004	.041	.000	.673	.300
	N	21	21	20	21	21	20	21	21	20	15
Guilty of at least one crime		.865	1	.764	-.789	.958	-.620	-.512	.805	.059	-.300
	Sig. (2-tailed)	.000		.000	.000	.000	.004	.018	.000	.805	.277
	N	21	21	20	21	21	20	21	21	20	15
Crime rate in Denmark		.782	.842	1	-.508	.716	-.460	-.313	.869	.083	.019
	Sig. (2-tailed)	.000	.000		.022	.000	.041	.179	.000	.729	.945
	N	20	20	20	20	20	20	20	20	20	15
Employment rate		-.618	-.771	-.541	1	-.889	.507	.598	-.764	-.196	.289
	Sig. (2-tailed)	.003	.000	.014		.000	.023	.004	.000	.407	.296
	N	21	21	20	21	21	20	21	21	20	15
General socioeconomic trait		.900	.966	.788	-.854	1	-.623	-.563	.819	.126	-.318
	Sig. (2-tailed)	.000	.000	.000	.000		.003	.008	.000	.596	.248
	N	21	21	20	21	21	20	21	21	20	15
National IQ		-.603	-.577	-.534	.414	-.585	1	.695	-.617	-.093	.658
	Sig. (2-tailed)	.005	.008	.015	.070	.007		.001	.004	.697	.008
	N	20	20	20	20	20	20	20	20	20	15
National GDP		-.426	-.423	-.325	.543	-.490	.764	1	-.445	-.229	.858
	Sig. (2-tailed)	.054	.056	.162	.011	.024	.000		.043	.331	.000
	N	21	21	20	21	21	20	21	21	20	15
National prevalence of Muslims		.628	.665	.631	-.686	.715	-.678	-.472	1	.032	-.029
	Sig. (2-tailed)	.002	.001	.003	.001	.000	.001	.031		.894	.919
	N	21	21	20	21	21	20	21	21	20	15
National murder rate		.232	.267	.182	-.354	.366	-.344	-.306	.227	1	-.510
	Sig. (2-tailed)	.324	.255	.442	.125	.113	.138	.190	.336		.052
	N	20	20	20	20	20	20	20	20	20	15
National height		-.250	-.257	.036	.248	-.318	.600	.879	-.100	-.608	1
	Sig. (2-tailed)	.368	.355	.899	.372	.248	.018	.000	.723	.016	
	N	15	15	15	15	15	15	15	15	15	15

Table 4: Correlation matrix for study 2.

The predictors for the percentage of the populations who were in employment were similar to those for crime. It's probable that if one had information about all the major socially important variables (crime, income, educational level, use of social benefits, etc.), they would form a cluster and load strongly on a single factor. This factor could be interpreted as a general socio-economic benefit factor of the populations, where the populations with the highest scores contribute the most to society (e.g. through taxes) and have the lowest social costs associated with them (e.g. costs to the justice system). It is not certain that the best predictors of this hypothesized factor have the ranking they do for crime alone. I performed a principle components analysis of the two crime variables and the labor variable. They do load strongly on one factor (all loadings $> |.889|$). This factor should also produce higher correlations with predictors due to the averaging out of sample error. This was confirmed as the correlations with the latent variable and the predictors are larger than the predictors correlations with either of the three manifest variables except for one case. It should be noted, however, that the factor extracted here is oversampling crime because it includes two crime variables and only one for labor.

Most of the immigrant groups in the Norwegian dataset 2 are also in the Danish dataset. Coming from a common cultural and structural background, these two countries are very similar. For this reason, one might expect that group patterns for criminality

in Denmark would be similar to those of Norway. The two crime variables from Norway correlated .736-.764 with that in Denmark, so this expectation was confirmed.

Next up was a replication of the regression analyses in the Danish study. I used the usual set of predictors and used the crime rate as the dependent variable. Results from regression analyses are shown in 5.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Height, Muslims, IQ, GDP, murder rate	0.792	.627	.420	10.66105
Height, Muslims, IQ, GDP	0.775	.600	.440	10.47194
Muslims, IQ, GDP	0.758	.574	.494	9.87353
Muslims, IQ	0.757	.573	.522	9.59195
Muslims, GDP	0.713	.508	.453	10.02862
IQ, GDP	0.621	.386	.314	11.49561
Muslims	0.695	.483	.456	10.00092

Table 5: Summary of regression results.

Results show that height and murder rate are not useful in multiple regression (adj. R^2 increases when they are removed meaning that the increase in R is probably due to capitalizing on chance variation). The overall best model with respect to adj. R^2 was IQ+Muslims which again shows that crime rates are very predictable from a small number of predictors.

7 General discussion and conclusion

Both studies validated the general conclusion from the Danish study, namely that crime rates among immigrant groups are predictable from information about their countries of origin. The first study however appears to be based on bad data, and although the results were in the expected directions, the Pearson correlations were very low. The second study found results very similar to the Danish study. It serves as a very close replication.

7.1 Limitations

The dataset used for study 1 was damaged by an unknown error source, making it mostly useless. The dataset for study 2 appears to be good but is very small at N=21. This makes the use of significance testing problematic as that is a function of sample size.

8 Acknowledgments

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9 Detailed methods and data

Detailed methods and data can be found in the supplementary material.

References

[1] Emil O. W. Kirkegaard. Criminality and fertility among danish immigrant populations. *Open Differential Psychology*, 2014.

[2] Lotte R. Thorsen Torbjørn Skardhamar and Kristin Henriksen. *Kriminalitet og straff blant innvandrere og oevrig befolkning*. Statistics Norway, 2011.

[3] Statistisk Sentralbyraa. Tabell: 09421: Siktede personer, etter hovedlovbruddskategori, hovedlovbruddsgruppe og statsborgerskap. absolutte tall, 2014. URL `https://www.ssb.no/statistikkbanken/SelectVarVal/Define.asp?subjectcode=03&ProductId=03.05&MainTable=Eforsk50&SubTable=4&PLanguage=0&nvl=True&Qid=0&gruppe1=Hele&gruppe2=Hele&gruppe3=Hele&VS1=LovGrKrimEZ&VS2=LandKrimL&VS3=&mt=0&checked=true`.

[4] Statistisk Sentralbyraa. Tabell: 05328: Folkemengde, etter kjoenn, sivilstand og statsborgerskap, 2014. URL `https://www.ssb.no/statistikkbanken/selectvarval/Define.asp?subjectcode=&ProductId=&MainTable=FolkSivilStat2&nvl=&PLanguage=0&nyTmpVar=true&CMSSubjectArea=befolkning&KortNavnWeb=folkemengde&StatVariant=&checked=true`.

[5] Richard Lynn and Tatu Vanhanen. *Intelligence: A unifying construct for the social sciences*. Ulster Institute for Social Research, 2012.

[6] International Monetary Fund. Report for selected countries and subjects, 2013.

[7] Wikipedia. List of countries by gdp (nominal), 2014. URL `https://en.wikipedia.org/wiki/List_of_countries_by_GDP_%28nominal%29`.

[8] Pew Research. The future of the global muslim population, 2011. URL `http://features.pewforum.org/muslim-population/`.

[9] Wikipedia. Islam by country, 2014. URL `https://en.wikipedia.org/wiki/Islam_by_country`.

[10] Wikipedia. Human height, 2013. URL `https://en.wikipedia.org/wiki/Human_height`.

[11] Wikipedia. List of countries by intentional homicide rate, 2014. URL `https://en.wikipedia.org/wiki/List_of_countries_by_intentional_homicide_rate`.

[12] United Nations Office on Drugs and Crime. Intentional homicide, count and rate per 100,000 population (1995 - 2011), 2014.

[13] Evgueni Vinogradov and Lars Kolvereid. Home country national intelligence and self-employment rates among immigrants in norway. *Intelligence*, 38(1):151--159, 2010.