Criminality and fertility among Danish immigrant populations

Emil O. W. Kirkegaard

March 8, 2014

Abstract Criminality rates and fertility varies wildly among Danish immigrant populations by their country of origin. Correlational and regression analyses show that these are very predictable at the group level with national IQ, Islam belief, GDP and height as predictors.

1 Introduction

The immigrant population in Denmark is composed of peoeple from about 235 different countries in the world[1]. The official Danish statistics bureau (DST) tracks the country of origin for every citizen and makes some of this information freely avaiable to the public. I have previously shown that one can use this information to succesfully predict the mean immigrant IQ of conscription recruits to a high degree of certainty: the predicted IQ was 86.3 and the IQ estimated from an army study from 2005 was 86.7 – a mere 0.4 IQ points off[2].

Given the previous success and the fact that social outcomes are known to be predictable from IQ's within populations[3, 4] and between countries[5], I wanted to find out if these were also predictable between the Danish immigrant groups.

2 Data acquisition

I examined DST's databases to see if there were useful information. For a database to be useful, it must include statisticaly reliable data for at least 15 countries of origin or so. This search yieled one useful database, STRAFNA1[6], which concerns number of people found to be guilty of a crime per year. The database includes data from 71 countries of origin, sufficient for a statistical analysis.

Recently, I read a report by DST on immigration in Denmark[7]. In the report, fertility rates for a small numbers of countries is shown (p. 23, Table 6). From that I reasoned that they must have the data for the rest of them as well. I therefore contacted DST to inquire whether they would share the data with me. Luckily, they would.

3 Methods

The crime data in STRAFNA1 are in absolute numbers. Since the immigrant groups are not of the same size, one must calculate the relative crime rate, for instance, per 100 persons. DST provides a database with the population sizes of the immigrants groups as well and data from it were used[1]. To increase the sample size, data were averaged for all the years data were avaiable (2000, 2002, 2004-2012).

Data on three different crime categories were gathered: 1) all crimes (alle strafferetslige), 2) violent crimes (voldsforbrydelser), 3) property crimes (ejendomsforbrydelser).

Since the immigrant groups were heteregenous with respect to age, and it is known that most crime is committed by people in their second and third decades of life[8, p. 19], two separate datasets were created for age groups 15-19 and 20-29. Due to small samples, this was only done for the all crimes category.

After the relative crime rates per 100 persons per immigrant group were calculated, predictors were sought. Various predictors were tried: Lynn and Vanhanen[5]'s national IQs, percentage of the population in the home country who were adherents of Islam, mean height, murder rate, GDP per capita and penis length.

The rationale for Islam% in home countries is that much public debate concerns whether belief in Islam has a causal relationhip to crime rates, perhaps by creating distrust towards the local government, the judiciary system and the non-muslims. The data are from a 2011 international Pew Research survey as listed by Wikipedia[9, 10].

The rationale for mean height and penis length was based on the pattern that east Asians have very low crime rates and are known to be low in both criteria. Greater height might cause crime due to it being less risky for larger persons to use physical violence than for smaller persons. Penis length might be a proxy for testosterone[11, 12], a known correlate of crime[8, p. 208]. Mean height data are from Wikipedia, using the newest and best source by the authors non-systematic opinion[13]. Penis length were gathered from a recent study by Richard Lynn[14].

The rationale for GDP was that sociologists and criminologists have long discussed social economic status and family wealth/income as a cause of crime (but see [15]). Since children tend to be alike their parents in these properties (for both genetic and environmental reasons[16]), it was conceivable that the poverty of their countries of origin had an enduring effect. GDP data were from International Monetary Fund 2012 as given by Wikipedia[17, 18].

Murder rates were from United Nations Office on Drugs and Crime using the most recent year as listed by Wikipedia[19, 20].

Initial data calculations were done in Google Spreadsheets. Correlations and multiple regressions were performed in SPSS 22.

3.1 Fertility

The fertility rates (total fertility*1000) given by DST were based on averages of the years 2008-2012. The trouble with using these data is that due to the rarity of births and heteregenouus age groups of the immigrant populations, the resulting fertility rates are heavily influenced by sampling error.

To check the effect of sampling error on the correlation, the countries were first sorted according to the number of births. Then correlations were calculated for every incremental set of countries until an N of 93 was reached, which corresponded to having ¿=10 or more births per year. If simpling error was a factor, the correlations should decrease as sample size increases and smaller and smaller groups are added to the analysis.

Furthermore, data about fertility rates were added to the correlation matrix for the 71 countries in the main analysis. Fertility rates in home countries for all 71 countries were also gathered. This can be used to find out how much fertility among immigrant groups is predictable from their home fertility rates. Data are from CIA's World Fact Book via Wikipedia[21, 22]. Data from approximately 2013.

All calculations were done in Google Spreadsheets.

4 Results and further analysis

The correlation matrix for all variables correlates is shown in Table 1. As expected, correlates were found between national IQ's and crime rates (r's=-.467 to -.653) and fertility (r=-.514). Fertility and crime rates also correlated with each other (r's=.520 to .663). Surprisingly Islam was the best predict of crime (r's .593 to .787). GDP was also a moderately good predictor, slightly worse than IQs (r's=-.371 to -.479). Also surprisingly, murder rate did not predict crime very well (r's=.058 to .242). Penis length predicted slightly worse than GDP (r's=.269 to .418). Height did not predict at all.

Based on inspecting the corralation matrix, various multiple regression analyses were carried out. First a full model was tried with most of the predictors from before. Results are shown in Table 2. Multiple R was very high R=.883 but several predictors were non-significant.

In Model 2 the least significant predictor from Model 1 was dropped (home fertility). Results are shown in Table 3. Multiple R remained virtually the same R=.882 indicating that the dropped predictor was not important. Penis length and fertility were non-significant.

In Model 3 the penis length was dropped from Model 2. Multiple R remained very high R=.874. Results are shown in Table 4. Fertility was the least significant predictor.

In Model 4 fertility was dropped. R remained very high at R=.867. Murder rate was borderline significant. Results in 5.

In model 5 murder rate was dropped. R remained very high, R=.858. Results in 6.

Correlations

		All_crime	Violent_crime	Property_crime	All_crime_age_15_19	All_crime_age_20_29	IQ	Islam	Height	Murder_rate	GDP	penis_length	Fertility	Fertility_home
All_crime	Pearson Correlation	1	.876**	.870**	.854**	.926**	-.487**	.725**	-.093	.058	-.411**	.418**	.581**	.339**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.509	.642	.000	.003	.000	.005
	N	71	71	71	71	71	71	68	53	67	71	48	71	68
Violent_crime	Pearson Correlation	.876**	1	.858**	.859**	.925**	-.653**	.708**	-.218	.242*	-.449**	.372**	.651**	.577**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.116	.048	.000	.009	.000	.000
	N	71	71	71	71	71	71	68	53	67	71	48	71	68
Property_crime	Pearson Correlation	.870**	.858**	1	.833**	.850**	-.467**	.593**	-.095	.141	-.417**	.269	.520**	.324**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.497	.255	.000	.064	.000	.007
	N	71	71	71	71	71	71	68	53	67	71	48	71	68
All_crime_age_15_19	Pearson Correlation	.854**	.859**	.833**	1	.883**	-.468**	.681**	-.036	.061	-.371**	.356*	.611**	.403**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.800	.625	.001	.013	.000	.001
	N	71	71	71	71	71	71	68	53	67	71	48	71	68
All_crime_age_20_29	Pearson Correlation	.926**	.925**	.850**	.883**	1	-.529**	.787**	-.194	.063	-.479**	.360*	.663**	.411**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.165	.611	.000	.012	.000	.001
	N	71	71	71	71	71	71	68	53	67	71	48	71	68
IQ	Pearson Correlation	-.487**	-.653**	-.467**	-.468**	-.529**	1	-.473**	.511**	-.624**	.667**	-.112	-.514**	-.779**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000	.000	.000	.448	.000	.000
	N	71	71	71	71	71	71	68	53	67	71	48	71	68
Islam	Pearson Correlation	.725**	.708**	.593**	.681**	.787**	-.473**	1	-.421**	-.090	-.416**	.204	.671**	.433**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.002	.470	.000	.163	.000	.000
	N	68	68	68	68	68	68	68	53	67	68	48	68	68
Height	Pearson Correlation	-.093	-.218	-.095	-.036	-.194	.511**	-.421**	1	-.226	.636**	.585**	-.181	-.424**
	Sig. (2-tailed)	.509	.116	.497	.800	.165	.000	.002		.106	.000	.000	.195	.002
	N	53	53	53	53	53	53	53	53	52	53	39	53	53
Murder_rate	Pearson Correlation	.058	.242*	.141	.061	.063	-.624**	-.090	-.226	1	-.429**	.116	.060	.535**
	Sig. (2-tailed)	.642	.048	.255	.625	.611	.000	.470	.106		.000	.439	.632	.000
	N	67	67	67	67	67	67	67	52	67	67	47	67	67
GDP	Pearson Correlation	-.411**	-.449**	-.417**	-.371**	-.479**	.667**	-.416**	.636**	-.429**	1	.162	-.354**	-.501**
	Sig. (2-tailed)	.000	.000	.000	.001	.000	.000	.000	.000	.000		.273	.002	.000
	N	71	71	71	71	71	71	68	53	67	71	48	71	68
penis_length	Pearson Correlation	.418**	.372**	.269	.356*	.360*	-.112	.204	.585**	.116	.162	1	.374**	.012
	Sig. (2-tailed)	.003	.009	.064	.013	.012	.448	.163	.000	.439	.273		.009	.935
	N	48	48	48	48	48	48	48	39	47	48	48	48	48
Fertility	Pearson Correlation	.581**	.651**	.520**	.611**	.663**	-.514**	.671**	-.181	.060	-.354**	.374**	1	.504**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.195	.632	.002	.009		.000
	N	71	71	71	71	71	71	68	53	67	71	48	71	68
Fertility_home	Pearson Correlation	.339**	.577**	.324**	.403**	.411**	-.779**	.433**	-.424**	.535**	-.501**	.012	.504**	1
	Sig. (2-tailed)	.005	.000	.007	.001	.001	.000	.000	.002	.000	.000	.935	.000	
	N	68	68	68	68	68	68	68	53	67	68	48	68	68

**. Correlation is significant at the 0.01 level (2-tailed).

Table 1: Correlation matrix for all variables.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.890	3.072		2.894	.007
	IQ	-.074	.026	-.496	-2.898	.007
	GDP	-3.877E-5	.000	-.486	-3.351	.002
	Islam	.013	.005	.308	2.411	.022
	Height	.620	.214	.540	2.891	.007
	penis_length	.085	.102	.119	.833	.412
	Fertility	.000	.000	.168	1.199	.240
	Murder_rate	-.061	.023	-.310	-2.660	.013
	Fertility_home	-.103	.257	-.057	-.400	.692

a. Dependent Variable: All_crime

Table 2: Full model.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.625	2.958		2.916	.007
	IQ	-.071	.024	-.475	-2.955	.006
	GDP	-3.981E-5	.000	-.499	-3.582	.001
	Islam	.013	.005	.315	2.526	.017
	Height	.656	.191	.572	3.438	.002
	penis_length	.079	.099	.110	.791	.435
	Fertility	.000	.000	.143	1.157	.256
	Murder_rate	-.061	.023	-.306	-2.675	.012

a. Dependent Variable: All_crime

Table 3: Model 1 without home fertility.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.919	2.370		3.764	.000
	IQ	-.065	.024	-.424	-2.723	.009
	GDP	-3.903E-5	.000	-.403	-3.133	.003
	Islam	.024	.005	.510	4.935	.000
	Height	.838	.156	.553	5.370	.000
	Fertility	.000	.000	.141	1.464	.150
	Murder_rate	-.039	.022	-.217	-1.795	.079

a. Dependent Variable: All_crime

Table 4: Model 2 without penis length.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	10.466	2.147		4.874	.000
	IQ	-.075	.023	-.487	-3.213	.002
	GDP	-3.870E-5	.000	-.399	-3.069	.004
	Islam	.027	.004	.583	6.387	.000
	Height	.885	.155	.585	5.726	.000
	Murder_rate	-.041	.022	-.229	-1.872	.068

a. Dependent Variable: All_crime

Table 5: Model 3 without fertility.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.396	1.450		5.099	.000
	IQ	-.044	.017	-.282	-2.507	.016
	GDP	-3.926E-5	.000	-.401	-3.179	.003
	Islam	.030	.004	.643	7.630	.000
	Height	.871	.149	.578	5.855	.000

a. Dependent Variable: All_crime

Table 6: Model 4 without murder rate.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.819	.272		14.046	.000
	GDP	-5.854E-5	.000	-.599	-5.756	.000
	Islam	.031	.004	.656	7.413	.000
	Height	.851	.156	.565	5.444	.000

a. Dependent Variable: All_crime

Table 7: Model 5 without IQ.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.670	1.374		7.038	.000
	Islam	.032	.004	.680	7.483	.000
	Height	.681	.148	.452	4.591	.000
	IQ	-.078	.015	-.505	-5.266	.000

a. Dependent Variable: All_crime

Table 8: Model 5 without GDP.

IQ has lowest beta and highest p-value and so was a candidate to be dropped. But from previous studies it is known that IQ correlates strongly with GDP[5], and therefore an alternate model with GDP dropped were also tried. Results are shown in 7 and 8.

Both models still had very high R's at R=.837 and R=.824 without IQ and GDP respectively.

Further analyses showed that dropping either of the remaining three predictors led to markedly lower R's all in the .6-.75 range (results not shown).

4.1 Fertility

Although fertility did show the expected correlation with IQ, it is heavily attenuated due to sampling error. The results of the analysis described earlier is shown in Figure 1. A logarithmic curve fit the data best (r^2=.619). It is clear that the correlation decreases as sample number increases as predicted from the deteriorating quality of the added samples. It appears however that there is a flooring out after about K=35 such that while new and smaller samples are added, it isn't enough to throw the correlation off.

As expected, there was a correlation (r=.504) between home country ferility

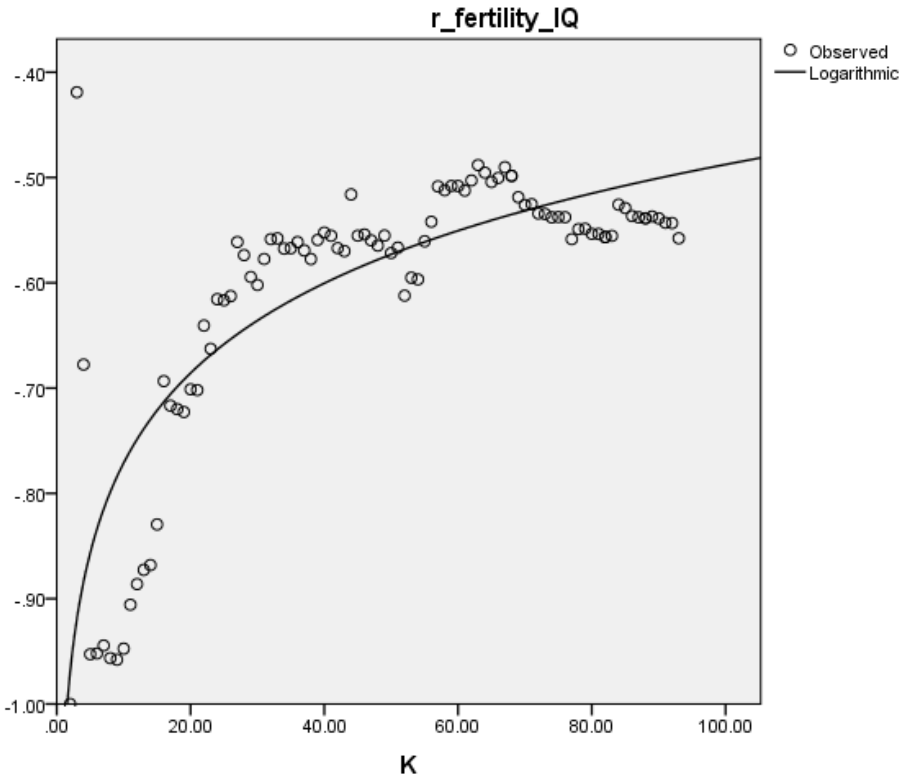

Figure 1:

and fertility in Denmark. This correlation is also attenuated.

5 Discussion and conclusion

As far as I know, this is the paper first to analaze criminality at the level of specific countries of origin rather than groups of countries in Denmark. In all other analyses of the Danish immigration that I have found, all of them involved dividng the countries of origin into either developed/developing, or western vs. nonwestern (see a selection here[23]). This is not a good idea as countries in the non-western group do not have much in common. Why group countries as different as Peru, China, and South Africa?

I have shown that criminality is surprisingly predictable at the group level using only three variables: belief in Islam in home country, height, and either IQ or GDP. The fact that criminality is very predictable at the group level makes it possible to implement group level policies to reduce crime. Although such group level policies will necessarily target many individuals who would not have

become criminals but rather productive citizens.

A previous study by Nyborg[24] attempted to model the future population structure of Denmark based on current immigration, emigration and ferility rates. In his study, Nyborg used birth rates from the UN for the home countries to model the immigrants fertility in Denmark. He has been heavily criticized for this. The purpose of Nyborg's study was to show how this differential fertility rate by by IQ groups in Denmark would be expected to lower the average IQ in the future. Assuming that immigrant groups in Denmark score similar to their home country as is the most plausible interpretation of my earlier study[2] (not necessarily for solely genetic reasons), then this study has shown Nyborg's general claim to be correct, namely that there is a negative correlation between subgroup IQ and ferility. Consequently, the average IQ of Denmark will decrease if nothing else changes.

Height turned out to be a useful predictor for crime, but only in multiple regression. This is mainly or only due to the low crime rates among Asian immigrant groups. A very large Swedish study recently studied the relationship between height and crime and found it to be negative[25], not positive (except in their full model, and here it was very slightly positive), it seems very unlikely that the relative low height of Asians is the cause of their lower crime rates. Likely, height is an unrelated factor that just happens to be lower in Asians. Penis size was attempted as a proxy for testosterone but it failed as a predictor. The question is thus still open: What causes the low Asian crime rate? Of the bottom 5 countries of origin for crime rates, 4 of them are Asian. It must be a strong force. Consider Indonesia with a crime rate of 1.19. It has an IQ of 85.8 (similar to Algeria, crime rate 5.16), a GDP of 4923.00$ (similar to Marocco, crime rate 5.7), and an Islam% of 88.1% (similar to Egypt, crime rate 5.57) and still immigrants from Indonesia have about half the crime rate of Danish citizens (2.45). Whatever cause it is, it is counteracting these other forces and overpowering them.

5.1 Future studies

This study only analyzed fertility and crime rates because no further evidence is available. However, I have contacted DST and asked if they can release data for immigrant groups by country of origin for other known correlates of IQ, namely educational attainment, income, and being on social benefits. For policy makers, the outcome of future studies examining the predictability of these variables is highly relevant.

Other studies should replicate this study in other countries to confirm findings. Optimal countries are the other Nordic countries and in general other western countries with large immigrant populations from a diverse set of countries.

Selective immigration policies based on nonperfect group level correlations necesarily cause collatoral damage in that they restrict access for people who would have become good citizens and fails to restrict others that will later become bad citizens. For this reason it is better to focus on individuals and future

studies should use individual variables (IQ, educational attainment, other scientific tests) to try and predict socially important variables like crime, fertility, income, educational attainment, and use of social benefits.

6 Detailed methods and data

Detailed methods and data can be found at:

- Main dataset: http://goo.gl/94YKtO
- Criminality age 15-19: http://goo.gl/dANzMy
- Criminality age 20-29: http://goo.gl/ovdTJ5
- Fertility data and calculations: http://goo.gl/kjiXj5
- SPSS dataset: http://goo.gl/GSyeHK

References

[1] Danmarks Statistik. Folk2, 2014. URL `http://www.statistikbanken.dk/statbank5a/SelectVarVal/Define.asp?MainTable=FOLK2&PLanguage=0&PXSId=0&wsid=cftree`.

[2] Emil O. W. Kirkegaard. Predicting immigrant iq from their countries of origin, and lynn's national iqs: A case study from denmark. *The mankind quarterly*, Winter, 2013.

[3] Linda S Gottfredson. Why g matters: The complexity of everyday life. *Intelligence*, 24(1):79–132, 1997.

[4] Arthur Robert Jensen. *The g factor: The science of mental ability*. Praeger Westport, CT, 1998.

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

[6] Danmarks Statistik. Strafna1, 2014. URL `http://www.statistikbanken.dk/statbank5a/SelectVarVal/Define.asp?MainTable=STRAFNA1&PLanguage=0&PXSId=0&wsid=cftree`.

[7] Danmarks Statistik. *Indvandrere i Danmark 2013*. Danmarks Statistik, 2013.

[8] Lee Ellis, Kevin M Beaver, and John Wright. *Handbook of crime correlates*. Academic Press, 2009.

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

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

[11] Bassam Bin-Abbas, Felix A Conte, Melvin M Grumbach, and Selna L Kaplan. Congenital hypogonadotropic hypogonadism and micropenis: effect of testosterone treatment on adult penile size?why sex reversal is not indicated. *The Journal of pediatrics*, 134(5):579–583, 1999.

[12] Malene Boas, Kirsten A Boisen, Helena E Virtanen, Marko Kaleva, Anne-Maarit Suomi, Ida M Schmidt, Ida N Damgaard, Claudia M Kai, Marla Chellakooty, Niels E Skakkebæk, et al. Postnatal penile length and growth rate correlate to serum testosterone levels: a longitudinal study of 1962 normal boys. *European Journal of Endocrinology*, 154(1):125–129, 2006.

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

[14] Richard Lynn. Rushton?s¡ i¿ r¡/i¿–¡ i¿ k¡/i¿ life history theory of race differences in penis length and circumference examined in 113 populations. *Personality and Individual Differences*, 55(3):261–266, 2013.

[15] Charles R Tittle, Wayne J Villemez, and Douglas A Smith. The myth of social class and criminality: An empirical assessment of the empirical evidence. *American sociological review*, pages 643–656, 1978.

[16] David C Rowe, Wendy J Vesterdal, and Joseph L Rodgers. Herrnstein's syllogism: Genetic and shared environmental influences on iq, education, and income. *Intelligence*, 26(4):405–423, 1998.

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

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

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

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

[21] Central Intelligence Agency. Country comparison :: Total fertility rate, 2014. URL https://www.cia.gov/library/publications/the-world-factbook/rankorder/2127rank.html.

[22] Wikipedia. List of sovereign states and dependent territories by fertility rate, 2014. URL https://en.wikipedia.org/wiki/List_of_sovereign_states_and_dependent_territories_by_fertility_rate.

[23] Emil O. W. Kirkegaard. Indvandringspolitik, 2014. URL `http://www.internetpartiet.nu/indvandringspolitik`.

[24] Helmuth Nyborg. The decay of western civilization: Double relaxed darwinian selection. *Personality and Individual Differences*, 53(2):118–125, 2012.

[25] Amber L Beckley, Ralf Kuja-Halkola, Lena Lundholm, Niklas Långström, and Thomas Frisell. Association of height and violent criminality: results from a swedish total population study. *International journal of epidemiology*, page dyt274, 2014.