

Impact of Changing Climate on Social Inequality and Crime Rates

There is broad agreement of a relationship between social inequality and crime across the social sciences, but the nature and theoretical underpinning of this relationship is contested. The relationship differs based on the type of crime committed (Kelly, 2000), as well as the measure used for inequality.

There are various theories to explain the link between inequality and crime:

- Runciman's theory of relative deprivation states that income inequality increases feelings of dispossession and unfairness, which the poorer individuals reduce this perceived economic injustice through crime.
- Ehrlich: economic inequality is an incentive to commit crime, so crime is higher in communities with higher income inequality
- Social disorganisation theory: the location of a person e.g. their residential neighbourhood is more important than demographic characteristics when predicting crime - social impact of crime

Income Inequality and Crime: A Review and Explanation of the Time-series Evidence

Hector Gutierrez Rufrancos, Madeleine Power, Kate E Pickett and Richard Wilkinson (2013)

- Literature review analysing the relationship between changing income inequality on crime for various countries and types of crime
- Found property crime increased over a period of rising inequality, in addition to specific measures of violent crime e.g. homicide and robbery
- Variation between the studies is explained by covariates, but conclusion is that a decrease in inequality over time is associated with a sizeable reduction in crime
- (I've copied over the review of the 17 papers they reviewed at the end of the document, not necessarily to be included but in case there's something in there that's useful for what you find tomorrow!)

Dynamic linkages between poverty, inequality, crime, and social expenditures in a panel of 16 countries: two- step GMM estimates

Muhammad Khalid Anser , Zahid Yousaf , Abdelmohsen A. Nassani , Saad M. Alotaibi, Ahmad Kabbani and Khalid Zaman (2020)

- Evaluation of UN SDGs including reduced inequalities against pro-poor growth and crime rates
- Use of GIP triangle (Growth-Inequality-Poverty) triangle
- Found that there is no relationship between per-capita income and crime rate, but income inequality and unemployment rate both increase the crime rate

Inequality and Crime

Morgan Kelly (2000)

- Explores the relationship between inequality and different forms of crime e.g. property crime and violent crime
- Inequality has no impact on property crime, but a strong impact on violent crime

- In contrast, poverty rates have a significant effect on property crime, but little effect on violent crime
- Explains this difference due to the underlying mechanisms behind different types of crime - economic theory for poverty and social disorganisation/strain for violent crime

Extreme Levels of Poverty and Inequality May Lead to Equally High Levels of Social Conflict and Crime

Rukelt Dalberis (2015)

- Analysis of crime, inequality and poverty in Latin American countries
- Found that income inequality did not have an association with crime rate in Colombia, Brazil, Salvador and Uruguay, but poverty is a strong predictor of crime in Brazil, Salvador and Uruguay.

Clustering of health, crime and social-welfare inequality in 4 million citizens from two nations

Leah S. Richmond-Rakerd et al. (2020)

- Looked at Gini coefficients for health, crime and income and found that a small proportion of the population accounted for use-events of services (e.g. health, justice, welfare etc)
- Income inequality is compounded by health inequality and 'crime inequality' - higher propensity to commit or be a victim of crimes
- Across New Zealand and Denmark

Poverty, Income Inequality, and Violent Crime: A Meta-Analysis of Recent Aggregate Data Studies

Ching-Chi Hseih and M. D. Pugh (1993)

- Meta-analysis of 34 data studies of violent crime, poverty and income inequality
- Over these studies and 76 coefficients produced (for all measures of violent crime with poverty/income inequality), 97% (all but 2) were positive and 80% of these were of moderate strength
- Concluded that poverty and inequality are both associated with violent crime, but there is variation in the size of the relationship and differs by type of crime - homicide and assault more closely related to income inequality than rape and robbery

Does income inequality lead to more crime? A comparison of cross-sectional and time-series analyses of United States counties

Jesse Brush (2007)

- Used both cross-sectional and time series analyses to explore relationship between income inequality and crime at a regional level in US
- Found significant positive relationship between Gini coefficient for inequality and reported crime rates, when controlling for other variables
- Also found positive relationship between % high income and crime rate, but poverty measure did not exhibit significant positive relationship with crime rate

Reference	Outcome	Country	Sample	Analysis Level	Inequality Measure	Covariates	Estimator	Results	Other Tests	Findings
Brush [18]	Serious Crime	USA	1990-2000	Regional	Gini	Poverty; High Income; Median Income; Population; Population Density; Young; Unemployed; Black; Native American; Asian; Hispanic	OLS	$\beta_{ineq} = -2854$; $p < 0.01$	Cross Sectional Regression for year 2000	No sig. assoc.
Choe [19]	Burglary	USA	1995-2004	Regional	Gini	Lagged Crime; Income; Unemployment; Education; Age; Black; Urbanisation; Poverty	GMM	$\beta_{ineq} = -2.01$; $p < 0.01$	GMM; Stepwise GMM	Sig +ve assoc.
Dahlberg and Gustavsson [20]	Total Crime	Sweden	1974-2000	Regional	Permanent Income inequality	Clear-up rate; Transitory inequality; Unemployment; Men (15-24 years); Foreigners; Divorced; Mean Income	FEM	$\beta_{ineq} = 1.661$; $p < 0.01$	FEM using Gini	Sig +ve assoc.
	Shoplifting							$\beta_{ineq} = 2.363$; $p < 0.05$		Sig +ve assoc.
	Auto Theft							$\beta_{ineq} = 1.798$; $p < 0.05$		Sig +ve assoc.
	Burglary							$\beta_{ineq} = 1.1$; $p < 0.05$		Sig +ve assoc.
Daly et al. [21]	Homicide	Canada	1981-1996	Regional	Gini	Time Effects; Median Income	FEM	$\beta_{ineq} = 0.165$; $p < 0.01$	Correlations; Plots; Comparisons with USA	Sig +ve assoc.
Doyle et al. [22]	Violent crime	USA	1984-1993	Regional	Gini	Wage; Young Men; Probability of Arrest; Police numbers; Unemployment	FEM	$\beta_{ineq} = .167$; $p > 0.1$	GMM and Robustness of Skewness of distribution (Income/Median Income)	Sig -ve assoc.
	Property Crime						$\beta_{ineq} = -0.056$; $p > 0.1$		Sig -ve assoc.	
Entorf and Spengler [23]	Robbery	West Germany	1975-1996	Regional	Y_t	Clear-up rate; Foreign; GDP; Unemployment; Men 15-24	FEM and ARDL	$\beta_{ineq} = -1.12$; $p < 0.05$	Panel for unified Germany, and other crime measures	No sig. assoc.
	Murder							$\beta_{ineq} = 0.08$; $p > 0.1$		Sig -ve assoc.
Fajnzylber et al. [24]	Homicide	39 Countries	1965-1994	International	Gini	Lagged Crime; GDP Growth; GDP pc; Urbanisation; Education	GMM	$\beta_{ineq} = 0.0155$; $p < 0.01$	Correlations; Conditional Correlations; OLS; System GMM; Alternate measures of inequality	Sig +ve assoc.
	Robbery	37 Countries	1970-1994					$\beta_{ineq} = 0.0307$; $p < 0.01$	Sig +ve assoc.	
Glaeser et al. [25]	Murder	USA	1980-2000	Regional	Gini	Population; Median Family Income; High School Diploma; University; JanTemp	OLS	$\beta_{ineq} = -55.38$; $p < 0.01$	—	Sig +ve assoc.
Messner et al. [14]	Homicide	36 Countries	1975-1994	International	Gini	Development Index; Population density; Population; Sex ratio; GDP growth	OLS	$\beta_{ineq} = 0.0129$; $p > 0.1$	OLS on 10 year cross section. Supports link P90/10	Sig -ve assoc.
Neumayer [26]	Robbery	50 Countries	1980-1997	International	Gini	Lagged Crime; ln(GDP pc); ln(GDP pc) ² ; GDP growth; Unemployment; Urban; Female Labour Force Participation; Democracy; Human Rights Violations	FEM and RE	$\beta_{ineq} = 0.012$; $p > 0.1$	With extended sample yields rejection of link. GMM is also used.	Sig -ve assoc.
Nilsson [27]	Overall Crime	Sweden	1973-2000	Regional	Relative Poverty	Income of 90th percentile; Interaction footnote; Interaction of 90th percentile income x Relative Poverty incomes for region; Unemployment; Males 15-24; Foreign; Divorced	FEM	$\beta_{ineq} = 2.898$; $p < 0.01$	Alternate specification with slightly less sensitive relative poverty measures	Sig +ve assoc.

	Burglary							$\beta_{ineq}=5.893$; $p<0.01$	Sig +veassoc	
	Auto Theft							$\beta_{ineq}=22.140$; $p<0.01$	Sig +veassoc	
	Robbery							$\beta_{ineq}=9.140$; $p<0.01$	Sig +veassoc	
	Assault							$\beta_{ineq}=0.115$; $p>0.1$		Sig -ve assoc.
Portnov and Rattner [28]	Property crime	Israel	1990-1999	Spatial	Index of Relative Income Inequality	Population; Income; Ethnic Makeup (Arabs); Ethnic Makeup (E. Europe Jews; N.African Jews; Children; Home ownership; Car ownership/labour force; unskilled labour; air conditioners	OLS	$\beta_{ineq}=-2.38$; $p<0.01$	Robustness check without measure for inequality	Sig +veassoc
	Violent crime							$\beta_{ineq}=-0.45$; $p<0.1$		Sig -ve assoc.
Portnov and Rattner [29]	Property Crime	Israel	1990-1999	Spatial	IRI	Population; Income; Ethnic Makeup I & II; Unskilled workers	OLS	$\beta_{ineq}=-3.36$; $p<0.01$	Alternate Specifications	Sig +veassoc
							SAR	$\beta_{ineq}=-3.14$; $p<0.01$		Sig +veassoc
							CAR	$\beta_{ineq}=-4.59$; $p<0.01$		Sig +veassoc
Reilly and Witt [30]	Burglary	England & Wales	1976-2005	Regional	Gini	Unemployment, Ratio of audiovisual retail index to all goods	ARDL	$\beta_{ineq}=10.63$; $p<0.01$	Unit root tests; Pesaran and Pesaran Cointegration Test	Sig +veassoc
Saridakis [31]	Violent crime	USA	1960-2000	Regional	Gini	Lagged Crime ; Prison Population pc; Alcohol Consumption in 16-64 year old population; Female employment; Duration of employment; Young Black Men; Law Dummy	ARDL	$\beta_{ineq}=0.35$; $p>0.1$	Cointegration Test, VEC rank, ADF	Sig -ve assoc.
	Murder							$\beta_{ineq}=1.01$; $p<0.01$		Sig +ve assoc.
	Rape							$\beta_{ineq}=0.067$; $p>0.1$		Sig -ve assoc.
	Assault							$\beta_{ineq}=0.36$; $p>0.1$		Sig -ve assoc.
Wilson and Daly [3]	Homicide	Chicago	1988-1993	Neighbourhood	Robin Hood Index	Life expectancy of males; life expectancy of females; median household income	OLS	$\beta_{ineq}=0.19$; $p<0.01$	Correlations and Plots	Sig +ve assoc.
Witt et al. [32]	Burglary	England & Wales	1979-1993	Regional	90/10 wage ratio	Unemployment; Population Density; Police; Age10-14; Age15-19; Age20-24	OLS	$\beta_{ineq}=0.693$; $p<0.05$	—	Sig +ve assoc.
	Auto Theft							$\beta_{ineq}=0.889$; $p<0.05$	Sig -ve assoc.	
	Other Theft							$\beta_{ineq}=0.406$; $p<0.1$		Sig +ve assoc.
	Shoplifting							$\beta_{ineq}=0.351$; $p>0.1$		Sig -ve assoc.
	Robbery							$\beta_{ineq}=0.677$; $p<0.1$		Sig +ve assoc.

Notes: Choe [19] utilises a log-log transformation, this yields an elasticity; thus whilst seemingly implying a negative relation it in fact suggests the opposite.
 Nilsson [27] Measure of relative poverty is the proportion of people below 10%; 20% and 40% of median income. This table reports results for 10% below median income.
 Saridakis [31] Finds no co-integration, as such all relationships refer to the short-run.
 Wilson and Daly [3]. The Robin Hood Index is given as the geometric distance between the most skewed point of the Lorenz curve and the line of perfect equality.

$$Portnov \text{ and } Rattner (2003,2004) \text{ Index of Relative income inequality is given as: } IRI_i = \frac{\sum_{j=1}^n I_j P_j}{\sum_{j=1}^n P_j I_j}$$

Table 1: Summary of studies of income inequality and crime.

not affect the mean, should change inequality. (2) Income scale independence states that inequality should remain invariant if the income of the whole distribution increases equi-proportionally. (3) Symmetry (or anonymity) ensures that no other characteristics besides income have any bearing upon the inequality measure. (4) The principle

of population [40], states that merging two identical distributions should not affect inequality.

There are multiple complexities associated with comparing income inequality measurements, as highlighted by Atkinson and Brandolini [41]. The treatment of the income distribution, affected through