1969

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Recommended Citation

G. N. G. Rose, Artificial Delinquent Generation, 59 J. Crim. L. Criminology & Police Sci. 370 (1968)

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THE ARTIFICIAL DELINQUENT GENERATION

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As the result of several previous studies of trends in criminal statistics, the existence of Delinquent Generations has been hypothesised in at least four countries. This paper questions the validity of the statistical techniques which have been used in these previous studies, and concludes that there is at present no evidence of Delinquent Generations.

In 1960 much interest was aroused by the report *Delinquent Generations* in which Leslie T. Wilkins produced statistical evidence showing that British persons who had passed through their fourth or fifth year of life during some part of the Second World War were more likely than others to be convicted of a criminal offense. These persons were the British "delinquent generation". Later Walters (1963) made it clear that the statistics on which the analysis had been based were open to other interpretations, although Wilkins (1964a) then produced further evidence and referred to the results of a similar analysis carried out in Denmark (Christiansen, 1964). Since then two further analyses, one of Polish Statistics (Jasinski, 1966), and one of New Zealand statistics (Slater *et al.*, 1966) have also shown results similar to those found by Wilkins.

Both Wilkins' original and modified analyses were based on the annual figures of young persons aged 8-20 found guilty of criminal offenses. Figures for later years are now available and a further assessment of the situation has therefore become possible. In this paper such an assessment will be made for young males found guilty in England and Wales. It will be shown that the factual basis for the existence of a delinquent generation among these males has completely disappeared, and that the statistical technique devised by Wilkins is in general inappropriate for the analysis of time series data of this type. The implications of these findings in relation to other studies on delinquent generations will be considered, and some alternative interpretations of the trends in crime for young males in England and Wales will be suggested.

TRENDS IN CRIME FOR YOUNG MALES IN ENGLAND AND WALES

1. Statistics:

The statistic analysed by Wilkins was the rate "number of persons found guilty of indictable offences per 100,000 population at risk." Analysis in this section will also be confined to this statistic as it applies to males; the statistic will be referred to as "rate found guilty" and is tabulated for single ages for the complete period 1946-1965 in Table I. (A comparison of the trends for four selected ages is given in more detail in Figure G.)

Walters (1963) picked out two predominant trends in these rates for the period 1946-57. These were (a) a marked decline in the rates found guilty for young males (*i.e.* 8-11 year olds) from 1951 to 1957; and (b) a rise in the rates found guilty for young men (*i.e.* 17-20 year olds) in the years 1956 and 1957. Although these are but two of the many trends apparent, most of the other trends lend weight to Walters' assertion that for the 1946-57 period Table I seems to be generally arranged in the form of Figure A.

FIGURE A

In general, therefore, the tendency had been for the rates for the young age groups to decline and

TABLE I

RATES (PER 100,000 OF THE POPULATION AT RISK) FOR MALES AGED 8-20 YEARS FOUND GUILTY OF INDICTABLE OFFENCES IN THE YEARS 1946-1965, ENGLAND AND WALES

Year	Age												
	8	9	10	11	12	13	14	15	16	17	18	19	20
1946	426	829	1182	1408	1562	1709	1486	1716	1708	1534	1135	1093	824
1947	435	808	1096	1296	1541	1729	1463	1516	1562	1404	1030	1096	822
1948	517	990	1341	1669	1941	2184	2322	1809	1597	1412	1108	1135	983
1949	487	949	1284	1560	1803	1986	2160	1543	1417	1162	1002	934	810
1950	488	987	1399	1667	1872	2101	2303	1540	1415	1292	933	958	923
1951	479	962	1410	1734	2102	2422	2699	1831	1582	1509	1123	1063	965
1952	377	810	1201	1679	1908	2270	2505	1778	1640	1517	1178	1086	937
1953	368	694	1012	1314	1654	1926	2115	1474	1392	1294	1033	923	839
1954	291	599	954	1090	1411	1794	1975	1404	1271	1179	982	949	778
1955	228	575	888	1098	1383	1713	2068	1451	1324	1239	1043	1040	841
1956	246	487	859	1148	1458	1846	2188	1631	1509	1434	1218	1207	1261
1957	290	586	840	1275	1620	2029	2438	1844	1835	1780	1617	1451	1339
1958	293	632	962	1161	1793	2314	2671	2014	2096	2331	2102	1834	1617
1959	270	635	967	1257	1539	2236	2855	2025	2048	2163	2214	1988	1752
1960	308	650	978	1358	1753	2112	2946	2246	2114	2266	2183	2313	1983
1961	299	702	1118	1566	2107	2495	2781	2395	2357	2291	2331	2243	2221
1962	294	633	1073	1500	2107	2700	3139	2254	2448	2673	2492	2397	2230
1963	205	529	942	1429	2056	2839	3376	2668	2336	2898	2649	2352	2191
1964	Not Applicable		669	1280	2002	2789	3439	2877	2471	2503	2653	2448	2211
1965			671	1247	2050	2752	3536	3079	2654	2817	2732	2684	2391

rates for the older age-groups to rise. Walters held that these were *independent* trends, and not, as Wilkins had asserted, both dependent on a generation of above average delinquency.

From a consideration of Table I it is clear that the trends have continued after 1957, and the general form illustrated in Figure A also holds good for the whole of the 1946-65 period. However, the majority of the delinquent generation identified by Wilkins, born between 1935 and 1942, were by 1960 too old to appear in the statistics, and by 1963 they had *all* reached the age of 21 and were therefore totally absent. Yet the trends of the Figure A type were still continuing, and in particular, the rates found guilty for young men (i.e., 17-20 year olds) continued to rise steeply, despite the fact that the very generation which Wilkins asserted was the cause of the phenomenon could no longer contribute.¹ Clearly

¹ Williams (1962) states that his paper was "prompted by the increasing discrepancy between the experience of recent years and the expectations generated by . . . 'Delinquent Generations.'" In particular he observed that the rate of theft for the latter part of the period 1946-1961, for 'boys', (i.e., males aged 14-16 years) "had risen steadily to levels unprecedented in the post-war years. The Delinquent Generations

the case for the existence of a delinquent generation is in need of re-examination

2. Analysis:

The method of analysis which will be employed in this section is identical to that used by Wilkins and is fully explained in his Appendix II (Wilkins, 1960). An "expected" value for rate found guilty for each single age for each year is first calculated from the average for that year and the average for that age.² This expected value is then com-

explanation is also invalidated, for it was as the special group passed out of the category of 'boys' that the steep climb began." McClintock (1963) observed that "the wider social changes accompanied by shifts in moral attitudes which have taken place in recent years may be affecting all age groups and, if this is so, then they are most probably having their greatest impact upon the younger generation . . . the problem of the younger generations who get involved in crime cannot be simply formulated in terms of dealing with the results of a social malaise which started during the Second World War".

² The "average rate for that age" is calculated from the time-period considered in the analysis, i.e. for Wilkins' original analysis for 1946-57, (and not therefore over the whole of the period covered by Table I). The method of calculating expected values is identical to that used in contingency tables for applying a χ^2 test of significance.

TABLE II
PERCENTAGE BY WHICH THE OBSERVED RATE OF MALES FOUND GUILTY WAS GREATER OR LESS
THAN THE EXPECTED RATE. SHOWN FOR EACH AGE AND FOR EACH YEAR OF THE
PERIOD 1946-1957

Year	Age												
	8	9	10	11	12	13	14	15	16	17	18	19	20
1946	+13.9	+10.8	+9.7	+3.1	-4.3	-10.6	-28.4	+8.9	+16.0	+13.5	+5.0	+4.8	-9.0
1947	+22.5	+13.6	+7.0	-0.2	-0.8	-4.9	-25.8	+1.2	+11.6	+9.3	+0.2	+10.5	-4.5
1948	+21.1	+15.7	+8.8	+6.8	+3.9	-0.2	-2.2	+0.3	-5.2	-8.7	-10.4	-4.9	-5.1
1949	+26.8	+23.2	+15.8	+11.0	+7.3	+0.9	+1.2	-4.9	-6.5	-16.5	-9.9	-13.0	-13.0
1950	+22.0	+23.2	+21.3	+14.0	+7.1	+2.7	+3.7	-8.7	-10.2	-10.7	-19.4	-14.2	-15.1
1951	+7.2	+7.5	+9.4	+6.1	+7.5	+5.9	+8.7	-2.9	-10.2	-6.7	-13.1	-14.8	-10.9
1952	-11.3	-4.7	-2.0	+8.1	+2.7	+4.4	+6.2	-0.7	-2.0	-1.2	-4.1	-8.4	-8.9
1953	+1.9	-3.9	-2.7	-0.4	+4.9	+4.3	+5.6	-3.1	-2.0	-0.8	-1.0	-8.3	-4.0
1954	-11.3	-8.7	-9.6	-9.1	-1.5	+6.9	+8.5	+1.5	-1.6	-0.6	+3.6	+3.7	-2.0
1955	-31.9	-14.2	-8.0	-10.3	-5.5	-0.1	+11.2	+2.8	+0.4	+2.3	+7.6	+11.2	+3.7
1956	-33.7	-34.5	-19.6	-15.3	-10.1	-2.7	+6.3	+4.3	+3.3	+6.9	+13.5	+16.5	+40.4
1957	-31.9	-31.3	-32.4	-18.1	-13.0	-6.9	+3.1	+2.7	+9.4	+15.6	+31.3	+22.0	+29.9

FIGURE B

FIGURE C

pared with the actual or "observed" rate and a percentage deviation, which may be either positive or negative, is calculated. The patterns formed by these percentage deviations are then analyzed in relation to the date of birth of the persons found guilty.

Wilkins applied this method of analysis to the period 1946-57, and the results are reproduced from the original in Table II. It can be noted that the pattern of the rectangular array of percentage deviations in Table II is predominantly in the form of Figure B. These deviations were then re-arranged by "birth-groups"³

³ It is not possible to be completely sure of the age of an offender who, for example, was found guilty in 1953 and was, at the time, 12 years old. It is only

and a modification of this re-arrangement is shown in Table III. This modified table makes it clear that the re-arrangement can be visualized as a "stretching" of the rectangular array of Figure B into the parallelogram form of Figure C. The direction of stretching is indicated by arrows on both figures. The two negative corners of Table II therefore appear at the extreme left and right of Table III, and the centre of Table III is predominantly positive, as it is a mixture of positive and mixed deviations, a pattern which is made more clear by Figure C. The average deviations by birth groups appear at the foot of Table III, and the highest average positive deviations are seen to be associated with the birth-groups 1935/36 and 1941/42. Wilkins, therefore, identified these groups as a delinquent generation.

At this stage it is important to observe that the array represented by Figure B (and hence the array of Figure C which is merely a re-arrangement) is a necessary consequence of the array represented by Figure A. In fact Figures A, B, and C merely represent three focal points of the analysis which can be represented.

Table of Rates → Table of Per- → Re-arrange-
Found Guilty centage De- ment or
or Fig. A viation or Fig. C.
Fig. B.

The full implications of this statement will be

possible to conclude that he was born within the two-year period 1940/41.

TABLE III
PERCENTAGE BY WHICH THE OBSERVED RATE OF MALES FOUND GUILTY WAS GREATER OR LESS THAN THE EXPECTED RATE, SHOWN FOR EACH YEAR AND FOR EACH BIRTH-GROUP, PERIOD 1946-1957

Year	Males born in the Years																								
	1948/ 49	1947/ 48	1946/ 47	1945/ 46	1944/ 45	1943/ 44	1942/ 43	1941/ 42	1940/ 41	1939/ 40	1938/ 39	1937/ 38	1936/ 37	1935/ 36	1934/ 35	1933/ 34	1932/ 33	1931/ 32	1930/ 31	1929/ 30	1928/ 29	1927/ 28	1926/ 27	1925/ 26	
1946												+13.9	+10.8	+9.7	+3.1	-4.3	-10.6	-23.4	+8.9	+16.0	+13.5	+5.0	+4.8	-9.0	
1947											+22.5	+13.6	+7.0	-0.2	-0.8	-4.9	-25.8	+1.2	+11.6	+9.3	+0.2	+10.5	-4.5		
1948										+21.1	+15.7	+8.8	+6.8	+3.9	-0.2	-2.2	+0.3	-5.2	-8.7	-10.4	-4.9	-5.1			
1949									+26.8	+23.2	+15.8	+11.0	+0.9	+1.2	-4.9	-6.5	-16.5	-9.9	-13.0	-13.0					
1950								+22.0	+23.2	+21.3	+14.0	+7.1	+2.7	+3.7	-8.7	-10.2	-10.7	-19.4	-14.2	-15.1					
1951								+7.2	+7.5	+9.4	+7.5	+5.9	+8.7	-2.9	-10.2	-6.7	-13.1	-14.8	-10.9						
1952								-11.3	-4.7	-2.0	+8.1	+2.7	+4.4	+6.2	-0.7	-2.0	-1.2	-4.1	-8.4	-8.9					
1953								+1.9	-3.9	-2.7	-0.4	+4.9	+4.3	+5.6	-3.1	-2.0	-0.8	-1.0	-8.3	-4.0					
1954								-8.7	-9.6	-9.1	-1.5	+6.9	+8.5	+1.5	-1.6	-0.6	+3.6	+3.7	-2.0						
1955								-11.3	-14.2	-8.0	-10.3	-5.5	-0.1	+11.2	+2.8	+0.4	+2.3	+7.6	+11.2	+3.7					
1956								-31.9	-34.5	-19.6	-15.3	-10.1	-2.7	+6.3	+4.3	+3.3	+6.9	+13.5	+16.5	+40.4					
1957								-33.7	-32.4	-18.1	-13.0	-6.9	+3.1	+2.7	+9.4	+15.6	+31.3	+22.0	+29.9						
Av.	-31.9	-32.5	-32.9	-15.8	-8.6	-8.7	-2.1	+4.3	+11.6	+10.9	+11.4	+8.3	+7.8	+6.0	-1.0	-5.3	-9.9	-13.1	-3.9	-2.6	-1.1	+3.5	+0.2	-9.0	

TABLE V

PERCENTAGE BY WHICH THE OBSERVED RATE OF MALES FOUND GUILTY WAS GREATER THAN OR LESS THAN THE EXPECTED RATE, SHOWN FOR EACH YEAR AND FOR EACH BIRTH-GROUP, PERIOD 1951-1961.

Year	Males Born in the Years																						
	1952/ 53	1951/ 52	1950/ 51	1949/ 50	1948/ 49	1947/ 48	1946/ 47	1945/ 46	1944/ 45	1943/ 44	1942/ 43	1941/ 42	1940/ 41	1939/ 40	1938/ 39	1937/ 38	1936/ 37	1935/ 36	1934/ 35	1933/ 34	1932/ 33	1931/ 32	1930/ 31
1951											+47.8	+39.4	+35.4	+25.7	+19.4	+11.4	+5.5	-3.0	-12.2	-15.5	-29.8	-29.7	-29.3
1952										+22.4	+23.7	+21.4	+28.1	+14.1	+9.9	+3.0	-0.9	-4.2	-10.6	-22.5	-24.4	-27.8	
1953									+40.5	+24.6	+20.5	+18.1	+16.5	+9.7	+2.4	-3.3	-4.3	-10.2	-20.0	-24.3	-23.9		
1954								+22.3	+18.4	+11.9	+7.8	+9.4	+12.5	+5.3	+1.4	-3.8	-9.9	-16.3	-14.4	-22.3			
1955								-6.2	+11.4	+13.8	+6.3	+4.9	+5.2	+7.9	+2.6	-1.9	-7.3	-12.9	-8.1	-17.7			
1956						-8.6	-14.9	-0.6	+0.3	-0.2	+2.3	+3.1	+4.1	+0.9	-3.2	-8.2	-3.8	+11.3					
1957						-6.1	-10.8	-15.3	-3.0	-2.1	0	+2.5	+6.9	+4.6	+6.1	+0.7	+2.9						
1958						-17.7	-16.5	-15.8	-23.3	-7.1	-3.0	-4.8	-2.8	+6.0	+18.9	+19.8	+10.5	+7.9					
1959						-24.6	-16.6	-15.9	-17.5	-20.8	-1.1	-2.9	+3.0	+9.7	+25.4	+19.1	+16.3						
1960		-18.5	-19.3	-19.6	-15.7	-14.7	-16.8	-1.3	+1.9	+0.5	+8.7	+16.9	+31.0	+24.4									
1961	-26.5	-18.7	-14.3	-9.4	-4.4	-8.4	-13.2	+1.2	+7.2	+2.4	+18.4	+29.8											
Av.	-26.5	-18.6	-19.4	-15.8	-11.7	-12.6	-15.8	+2.0	+8.5	+5.8	+12.0	+13.6	+19.7	+12.6	+6.8	0.0	-3.3	-5.1	-15.0	-21.2	-26.0	-23.8	-29.3

examined in Section 3; at present it will be sufficient to reiterate that trends of the Figure A type are continuously present over the whole of Table I, i.e., the whole of the post-war period. This implies that any set of consecutive base-years from the period 1946-65 could be selected for analysis and the array of type Figure A would still be apparent in the table of rates found guilty; so that, in the arrays of percentage deviations in such an analysis, Figure B and Figure C would also hold good as a model, and the birth-groups with the highest positive average deviations would necessarily be sited in the middle of Figure C. These implications will now be stated as a formal hypothesis which will then be tested.

Hypothesis: For young males in England and Wales within the post-war period, whatever the time-period chosen for analysis, the generations identified by Wilkins' technique as having the highest average positive deviations will, in general, lie in the middle range of the set of birth-groups which are under consideration.

The hypothesis was first tested by applying Wilkins' technique over the time-period 1956-65;⁴ it was necessary to exclude 8 and 9 year olds because of the change in the age of criminal responsibility in 1964. It was found that the rectangular array of percentage deviations closely followed the pattern of Figure B. Table IV shows the re-arrangement by birth-groups, which closely follows the pattern of Figure C. From the average deviations at the foot of Table IV it can be seen that the birth-groups 1935/6-1941/2 are by no means those with the largest such deviations; on the contrary, four of these seven groups fall below expectation (i.e., zero). With the exception of 1946/47, the highest groups seem to be 1944/45 to 1950/51, which agrees reasonably well with the hypothesis.

As a further test of the hypothesis, another analysis was carried out for an intermediate period, 1951-1961. Table V shows the results of this analysis, and again the average deviation for the birth-groups 1935/6-1941/2 are not all above expectation. Two of the seven groups are negative, one is zero, and the remaining four are

positive. The highest groups are 1938/9 to 1945/6 inclusive, and although there are birth-groups common to this period and to the period 1935/6-1941/2 this is in agreement with our hypothesis, because in *both* the original analysis and the present one the groups 1938/9 to 1941/2 appear near the middle of Figure C.

3. Results:

Three analyses relating to three different time periods have been carried out. The results of these analyses are at variance with one another but agree with the hypothesis of Section 2. This will now be demonstrated in more detail.

Figure D clearly illustrates the salient features of the analysis of Section 2, and three observations will be made:

a) The tendency for positive values to cluster in the middle of the set of birth-groups is evident, especially as the values in the first and fourth quartiles are in each case predominantly negative and those in the second and third quartiles are predominantly positive. More particularly, there appears to be a graduation in the value of the average deviation from the highest positive values near the middle of the set of birth-groups to the lowest negative values for the earliest and latest of such groups analysed. The hypothesis of section 2 is therefore upheld and strengthened.

b) The seven birth-groups 1935/6-1941/2 are no exceptions to the hypothesis, and follow the pattern laid down in terms of quartiles very closely i.e. in general, when a birth-group appears in the first or fourth quartile of an analysis it has a negative average deviation, and when it appears in the second or third quartile it has a positive average deviation. As there are seven birth-groups under consideration and three analyses, there are 21 cases in which this rule can be tested, and in only three of these 21 is there a discrepancy; these three cases are marked with asterisks in Figure D and are certainly not of a frequency or of a magnitude to cause the hypothesis to be doubted.

c) For each of the birth-groups for which two or more average deviations may be compared there are considerable differences. Moreover these differences are systematic, as the smallest values have in all cases been generated by that analysis in which the birth-group appears nearest the end of the array, and the highest values are generated by that analysis for which the birth group appears nearest to the middle of the array.

⁴ 1956 was the first year in which statistics on the number of persons cautioned were available in as much detail as those for persons found guilty; 1965 is the most recent year. 1956-65 was therefore chosen so that a further analysis could be carried out including cautioning statistics, if this were found to be appropriate.

Birth Group	Time Period 1946-1957 %	Time Period 1951-1961 %	Time Period 1956-1965 %	
1925/26	-9.0			The first and fourth quartiles of each set of birth-groups are separated from the second and third quartiles by underscoring.
1926/27	+0.2			
1927/28	+3.5			
1928/29	-1.1			
1929/30	-2.6			
1930/31	-3.9	-29.3		
1931/32	-13.1	-28.8		Birth-groups 1935/6-1941/2 originally identified as Delinquent Generations
1932/33	-9.9	-26.0		
1933/34	-5.3	-21.2		
1934/35	-1.0	-15.0		
1935/36	+6.0	-5.1	-6.4	
1936/37	+7.8	-3.3*	-15.6	
1937/38	+8.3	0*	-15.0	
1938/39	+11.4	+6.8	-7.4	
1939/40	+10.9	+12.6	+0.3*	
1940/41	+11.6	+19.7	+6.7	
1941/42	+4.3	+13.6	+1.8	
1942/43	-2.1	+12.0	+0.8	
1943/44	-8.7	+5.8	-0.2	
1944/45	-8.6	+8.5	+5.6	
1945/46	-15.8	+2.0	+8.1	
1946/47	-32.9	-15.8	-4.8	
1947/48	-32.5	-12.6	+1.0	
1948/49	-31.9	-11.7	+5.4	
1949/50		-15.8	+7.0	
1950/51		-19.4	+3.7	
1951/52		-18.6	-1.8	
1952/53		-26.5	-10.0	
1953/54			-27.5	
1954/55			-37.6	

FIGURE D

COMPARISON OF THE AVERAGE PERCENTAGE DEVIATION BY BIRTH-GROUPS IN EACH OF THE THREE ANALYSES

For example, birth-group 1945/6 has a deviation of -32.9% for the first analysis, where it is nearest the end of the array; the deviation is +2.0% for the second analysis and has grown still further to +8.1% for the third analysis, where the birth-group is nearest the middle of the array. Moreover, it is not possible to explain these differences in relative terms;⁵ for example, the average deviation

for the two birth-groups 1935/6 and 1942/3 in the first analysis are +6.0% and -2.1%, whereas in the second analysis the comparable figures are -5.1% and +12.0%; a relative difference of +8.1% has changed to one of -17.1%.

It is clear that Wilkins' technique generates average percentage deviations which are dominated to such an extent by the choice of time-period

⁵ Jasinski (1966) remarked that "the differences calculated by his method are not absolute, but depend on the number of years and generations of juveniles

and young adults taken into account", but failed to realise the full implications of this statement.

Years of birth	Time Period 1946-1957 %	Time Period 1951-1961 %	Time Period 1956-1965 %
1925/6 to 31/2	-3.7		
1926/7 to 32/3	-3.8		
1927/8 to 33/4	-4.6		
1928/9 to 34/5	-5.3		
1929/30 to 35/6	-4.3		
1930/1 to 36/7	-2.8	-18.4	
1931/2 to 37/8	-1.0	-14.2	
1932/3 to 38/9	+2.5	-9.1	
1933/4 to 39/40	+5.4	-3.6	
1934/5 to 40/1	+7.9	+2.2	
1935/6 to 41/2	+8.6	+6.3	-5.1
1936/7 to 42/3	+7.5	+8.8	-4.1
1937/8 to 43/4	+5.1	+10.1	-1.9
1938/9 to 44/5	+2.7	+11.2	+1.1
1939/40 to 45/6	-1.2	+10.6	+3.3
1940/1 to 46/7	-7.5	+6.5	+2.6
1941/2 to 47/8	-13.7	+1.9	+1.8
1942/3 to 48/9	-18.9	-1.7	+2.3
1943/4 to 49/50		-5.7	+3.2
1944/5 to 50/1		-9.3	+3.7
1945/6 to 51/2		-13.1	+2.7
1946/7 to 52/3		-17.2	0.0
1947/8 to 53/4			-3.2
1948/9 to 54/5			-8.7

← Birth group originally identified as Delinquent Generation.

FIGURE E
COMPARISON OF SEVEN-YEAR MOVING AVERAGES IN EACH OF THE THREE ANALYSES

for the analysis that they cannot be regarded as reliable. We now follow the technique further, and "smooth" these average deviations by calculating seven-year moving averages⁶ for each of the three analyses. Figure E shows that this does nothing to improve the reliability, and with a few minor modifications the remarks a), b), and c) above apply equally well.

The method of analysis is therefore clearly unacceptable as a technique for distinguishing between the relative delinquency of generations, because it gives results which are not independent of the sample chosen (i.e. the time-period).⁷ The existence of a delinquent generation of males

born in the period 1935/42 must therefore be rejected upon the statistical evidence brought forward in this paper.

4. Implications:

The above analysis is confined to the statistics for males found guilty in England and Wales during the post-war period, and Wilkins' technique has been shown to be inappropriate for use on this data. It is now necessary to consider on what data, if any, the technique can be of use. In order to do this it is first instructive to investigate further *why* the method has failed to give reliable results in this particular case.

We have seen that the rectangular array of "rates found guilty" represented by Figure A always gives rise to a certain general pattern of percentage deviations. Certainly, therefore, this is one circumstance when the technique is inappropriate. But the major feature of Figure A is that, if the time-trends in rates found guilty are compared for each age (i.e. each column) it

⁶ Wilkins (1960), §26 "Comparison of General Solution".

⁷ It is interesting to note that the results are also not independent of the sample of single ages used in the analysis. A re-analysis of the statistics for the 1946-57 period was carried out by Stott (1962), who analysed the 8-13 year olds separately from the 14-20 year olds. The average percentage deviations he obtained from the two analyses were completely at variance with one another, and were also at variance with the original findings of Wilkins.

can be seen that there are marked differences. These differences are apparent over the *whole* period 1946-65 and not merely over those parts of the array where any hypothesized delinquent generation could play a part in temporarily increasing the rates found guilty. Such differences in time-trends between individual age-groups will be termed "identifiable differences".

The reason for the failure of Wilkins' technique can now be clearly stated. It is that the technique corrects for a time-trend *as if it were homogeneous over all ages*, and, of course when identifiable differences in time-trends are present the technique is therefore invalidated. Jasinski (1966) recognised this point when he identified the first of three weaknesses in the technique as follows "The method does not eliminate all external factors influencing the level of delinquency rates in individual years; it eliminates only those which affect equally all the generations under consideration."

It is only necessary to consider later work by Wilkins himself (1964b) to confirm that such homogeneity is not present in the England and Wales statistics, and that the time-trends for each are exceedingly diverse. Wilkins calculated the product moment correlation coefficients for each pair of ages from the "rate found guilty" and arranged them in a correlation matrix; the coefficients can be seen to vary from a maximum of +0.97 (8 year-olds correlated with 9 year-olds) to -0.95 (12 year-olds correlated with 19 year-olds). Wilkins used these results to illustrate that there is sufficient heterogeneity in time-trends for an overall trend for the whole group to be misleading; in particular he observed that even the age-groups which are at present used in the annual *Criminal Statistics* give misleading time-trends because of the heterogeneity within each group, and suggested some improved groupings based on his correlation analysis.

Even in the case of a homogeneous time trend, it is not suggested that these correlations should be at, or near, the "ideal" level of +1.00, as, if there were a delinquent generation, the time-trends would certainly be disturbed by its presence sufficiently to reduce the correlations considerably. In this case, however, the correlation matrix contains some strongly negative correlations, which indicate that certain of the time trends are in completely opposite directions. A selection from Wilkins' matrix, for ages 10, 14, 17, and 20, is

	Age 14	Age 17	Age 20
Age 10	+ .25	- .68	- .37
Age 14		.22	.44
Age 17			.72

FIGURE F

CORRELATIONS BETWEEN TRENDS IN "RATES FOUND GUILTY": AGES 10, 14, 17 AND 20 (BASED ON THE YEARS 1945-1962)

given in Figure F, and in Figure G the rates found guilty which gave rise to these correlations have been plotted.⁸ It can be readily seen from Figure G that the low and negative correlations in Figure F are due to differences in the four time-trends over the *whole* of the period, and not just to any temporary disturbances.

The above work has therefore clearly shown that the technique should not be applied when the time-trends for individual ages are identifiably different.⁹ Indeed, in these circumstances, although it may still be possible to distinguish the influence of birth-year from the influence of the many time-trends, there is no technique yet suggested which will effectively accomplish this separation.¹⁰ We therefore conclude that the technique can only be useful in circumstances where the time-trends are homogeneous over all ages, and we may add that such circumstances are very seldom likely to occur, whether in England and Wales or elsewhere.

⁸ The correlations were based on the years 1945-1962, but as the figures for 1945 are not available in the published statistics, Fig. G is based on the years 1946 onwards. The figures for the years 1963-1965 have been included on the graph, and are shown by dotted lines. All the rates found guilty have been reduced to a standardised base 1946 = 100.

⁹ It is, of course, usual in statistical analysis to formulate the mathematical model on which the analysis is based. Such a procedure inevitably leads the statistician, through his model, to a full consideration of the assumptions which he is making for the purposes of the analysis. In this case it is felt that this process may have been neglected, resulting in a method which *appears* to be sensible, attractive and simple, but which in fact only achieves these desirable qualities at the expense of an unwarranted assumption, i.e. that the time-trend for each age-group is the same.

¹⁰ In Slater *et al.* (1967) it is stated that "an independent method of analysis, based on normalisation of variables with large means, leads to the same conclusion," but the methodology has not at present been sufficiently well documented to be sure of what assumptions this new technique makes.

FIGURE G
TREND IN RATES FOUND GUILTY, AGES 10, 14, 17, AND 20

OTHER STUDIES OF DELINQUENT GENERATIONS

Wilkins carried out his original analysis not only for males in England and Wales but also for females, and for Scottish males. It is evident from Wilkins' Appendix 1 that the time-trends were certainly arranged in a form similar to that of Figure A for the Scottish males. Although the figures for females in England and Wales were not offered, there is little doubt that they follow the same pattern. Detailed re-assessments will not be carried out but from the available statistics it is evident that the time-trends are not homogeneous with respect to age, and that the results are invalid.

A comparison with Jasinski (1966) is of more interest because the heterogeneity of time-trends in the Polish statistics is less obvious. Nevertheless, heterogeneity is present, and is by no means compensated for by Jasinski's modification,¹¹ which involves applying the technique separately on two groups, namely 10-16 year olds and 17-20 year olds. But *within* these groups heterogeneity is still very much present [for example, if we compare the time-trends for 10 and 16 year

olds we find a correlation coefficient of 0.03] Also, the delinquency of his "delinquent generation" was only shown to be approximately 2% above expectation.

Christiansen's analysis of Danish statistics (1964) will be dealt with in rather more detail, as it reveals particularly interesting differences in the pattern of percentage deviations. In fact the pattern of the whole analysis is almost exactly the opposite to that of Wilkins, but this is primarily because the Danish statistics are for older males, the ages 15-24 being included. The ages for which an increase in rate found guilty was experienced over the period under consideration (1952-1958) were 15, 16, and 17 year olds. These appeared on the left-hand side of the array of rates found guilty, shown in Christiansen's Table 3; by contrast the rates for 18-24 year olds experienced a decrease. This array (shown in Figure H (1)) is, therefore, of a form directly *opposite* to that of Figure A.

Christiansen applied Wilkins' technique to these data. The percentage deviations which Christiansen calculated and set out in his Table 4 were, consequently, of a form (shown in Figure H (2)) directly opposite to that of Figure B.

¹¹ This is analogous to the procedure adopted by Stott (1962) and already discussed above.

FIGURE H (1)

FIGURE H (2)

Christensen's Table 5 showed the rearrangement by birth-groups and the pattern (shown in Figure H (3)) was directly opposite to that of Figure C.

Christiansen found, therefore, two generations with rates guilty above expectation, at the extremes of his Table 5. The generation at the left of the table had the higher average percentage deviations, was identified as the delinquent generation, and the birth-groups involved coincided reasonably well with those identified by Wilkins. No further analysis of the Danish Statistics will be carried out here, but, especially if the trends of his Table 3 have continued since 1958, it is almost certain that there are identifiable differences in the time-trends, and that the Danish delinquent generation is also artificial.

A full appraisal of the work carried out by Slater *et al.* (1966) is unfortunately not possible as the original statistics on which the analysis is based have not been published. However, from the results of the analysis it would appear that post-war trends in the statistics of juvenile crime in New Zealand have followed much the same pattern as in England and Wales, i.e., exhibit an array of a type similar to Figure A.

From the data which are available, it appears that all of the analyses considered in this section have been based on statistics which include identifiably different time-trends. As homogeneity of time-trends is essential to the reliability of Wilkins' technique, we consider that no con-

FIGURE H (3)

vincing case for a delinquent generation has yet been made in any country. We do not, of course, rule out the possibility that generations may differ in their incidence of criminality, but we consider that no sufficiently sensitive mechanism for detecting these differences has yet been devised.

ENGLAND AND WALES—ALTERNATIVE INTERPRETATIONS¹²

1. The Time-Trends Reconsidered:

The analyses carried out have been based entirely on "rates found guilty" for young offenders, and it has been implicitly assumed that this rate is a reliable measure of the incidence of crime. There is no need to repeat the many comments which have been made recently about the bias inherent in criminal statistics,¹³ but it is worthwhile to make some observations which concern time-trends in particular.

There would seem to be no good reason why the impact of rapidly changing post-war social conditions on young males in such a wide age-span as 8-20 years should be assumed to be even approximately similar for each age within the span. It is, in fact, highly likely that the impact will vary considerably for each age, and should therefore be reflected in the *Criminal Statistics*. We should, therefore, expect to find that the time-trends in "rates found guilty" are heterogeneous when single ages are compared.

However, these time trends can also be very much affected by other factors. Legislative changes, public opinion, and police recording practice all play their part, and it is not inconceivable that the statistics for different ages may be affected in quite different ways.¹⁴ In the presence of such

¹² For a detailed and up-to-date survey of post-war trends in crime see McClintock and Avison (1968). Chapters VI and VII contain a discussion of "cautioning" by the police which is of particular relevance.

¹³ See, for example, Radzinowicz (1964).

¹⁴ For example, consideration of Table I shows that in England and Wales, after the 1964 change in the age of criminal responsibility the statistics of 10 and 11 year-olds found guilty dropped sharply, although they

Year	Age 8-13 years		Age 14-16 years		Age 17-20 years	
	Rate found guilty	Rate cautioned	Rate found guilty	Rate cautioned	Rate found guilty	Rate cautioned
1954	965	273	1548	169	975	45
1956	958	376	1783	262	1285	56
1960	1254	532	2436	406	2189	125
1963	1351	600	2764	448	2525	155
1965	Not Applicable		3076	558	2667	162

FIGURE I

MALES AGED 8-20. RATE FOUND GUILTY AND RATE CAUTIONED, FIVE SELECTED YEARS, 1954-1965

limitations the analyst must try to make the best use of the available information, and to use a measure of the incidence of crime which is as little affected by bias as is possible. We consider that one important factor affects the assessment of the incidence of crime among young persons to a marked degree. This factor is the use of "cautioning" by the police, and if this practice is ignored the statistics of "rates found guilty" are to a large extent distorted. A study of cautioning statistics reveals a great deal of further useful information about the differences between the time-trends in rates found guilty.

2. The Importance of Cautioning:

Once an indictable offense is solved and an offender (or offenders) become known, the police decide whether these offender(s) should be prosecuted or cautioned. It is only in the former case that the statistics "rates found guilty" can be affected; in the latter case only the statistics of "rates cautioned"¹⁵ are affected. Clearly, as the police have a great deal of discretion in this decision, in order to measure the delinquency of a group of persons accurately, it is necessary to take account of this latter class of "known offenders", unless the numbers cautioned are so few that they can be ignored in relation to the numbers prosecuted.¹⁶ Unfortunately, statistics on

the practice of cautioning are not available for the full post-war period. Police returns were first collected by the Home Office in 1954 and a table employing age-groups was published in the *Criminal Statistics* for that year. It was not until the 1956 volume, however, that statistics on the number of cautions by single ages was offered.¹⁷

Comparisons of trends in "rates found guilty" and "rates cautioned" are made in Figure I for the three age-groups conventionally used in the annual *Criminal Statistics* covering the age-span 8-20 years.

The statistics in Figure J make a similar comparison for 1963 and 1965 for the age-group 10-13 year-olds, so that the trend over these years may be studied without the 1964 change in the age of criminal responsibility clouding the issue.

It is evident from the foregoing two tables that cautioning is being increasingly widely used; moreover the "rate cautioned" as a proportion of the total (i.e. rate of all known offenders) has increased steadily over the period for each of the age-groups, as can be seen from Figure K.

In view of the high proportion of the youngest group cautioned throughout the period it is of interest to make a more detailed assessment in terms of the single ages which compose this group. As figures for 1954 are, of course, not available, only the rates for the subsequent four selected years could be used, and the percentage cautioned is shown in Figure L.

were unaffected by the legislation as such. Possibly, as they were "only just" of criminally responsible age they were treated more leniently or at least in different ways. This point is dealt with in relation to cautioning statistics below.

¹⁵ The "rate cautioned per 100,000 at risk" is referred to briefly as "rate cautioned" and is analogous to "rate found guilty".

¹⁶ Walters (1963) remarked that, for the 8-11 year olds, "rates found guilty", part "of the decline is due to the police not pressing cases which would have been pressed in earlier years," and mentioned the increase in the number of Juvenile Liaison schemes. Wilkins

(1964) replied "such schemes are in operation only in a small number of cases, and some of them have been working for a considerable time." However, argument about these schemes is irrelevant because cautioning can be used in *all* police areas, whether or not a Juvenile Liaison scheme is in operation.

¹⁷ For Wilkins (1960) original analysis, comparable statistics on cautioning were therefore only available for the last two years of the period under consideration.

Year	Age 10-13 Years	
	Rate found guilty	Rate cautioned
1963	1833	672
1965	1680	768

FIGURE J

MALES AGED 10-13. RATE FOUND GUILTY AND RATE CAUTIONED, 1963 AND 1965

Year	Age 8-13	Age 10-13	Age 14-16	Age 17-20
1954	22%	—	10%	4.4%
1956	28%	—	13%	4.2%
1960	30%	—	14%	5.4%
1963	31%	25%	14%	5.8%
1965	—	31%	15%	5.7%

FIGURE K

PERCENTAGE OF ALL MALE KNOWN OFFENDERS WHO WERE CAUTIONED: FIVE SELECTED YEARS, 1954-1965

These statistics show that the proportion of known offenders who have been cautioned is by no means the same for all ages within the age-span 8-20 years, and is particularly high for very young offenders. For 8, 9 and 10 year olds it has finally risen to the 50% level or above. It is, therefore, most unwise to neglect statistics of cautioning in any analysis of delinquency, as an analysis based only on rates found guilty would be likely to lead to a distorted picture, especially for very young offenders. The extent of cautioning in the post-war period prior to 1954 cannot be ascertained, but it would seem likely from these analyses that this was also a period of steady increase in the use of cautioning.¹⁸ Indeed, awareness of such an increase might well have been the reason for the Home Office decision to ask for police returns for the year 1954. No doubt this would have affected the "rates found guilty" for 8-11 year-olds considerably, and the downward trend in this statistic might indicate changes in police practice as much as changes in delinquency.¹⁹

¹⁸ Mannheim (1940) devoted a section to "The system of cautioning and its influence upon the statistics of prosecutions" from which it is evident that the practice of cautioning juveniles for indictable offences was by no means negligible before the second world war.

¹⁹ In fact the analysis carried out by Walters (1963) assumes that if we were to take account of such changes in police practice, the trend would become static.

Year	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13
1956	52%	41%	32%	26%	23%	19%
1960	57%	44%	37%	29%	25%	21%
1963	65%	50%	39%	31%	26%	21%
1965	—	—	49%	37%	29%	24%

FIGURE L

PERCENTAGE OF ALL MALE KNOWN OFFENDERS WHO WERE CAUTIONED: SINGLE AGES, FOUR SELECTED YEARS, AGE GROUP 8-13

The effect of including rates cautioned in an analysis of time-trends has been studied for the longest period for which full cautioning statistics are available, 1956-1965. A comparison of the statistics of "rates found guilty" with those of "rates of known offenders" shows that, although the heterogeneity of time-trends is reduced slightly by using the latter rate, the reduction is not sufficient to make the time-trends even approximately homogeneous. Figure M shows the time-trends compared for four selected age-groups, and it can be seen that, although the "rates of known offenders" cluster together slightly closer than the "rates found guilty", the trends are still identifiably different.²⁰ Quite clearly, therefore, Wilkins' technique is not appropriate even if "rates of known offenders" were to be used as the basic statistic.

Nevertheless, if an effective technique for detecting differences in the delinquency of generations does become available, we suggest that, as far as measures of the incidence of crime in England and Wales are concerned, "rates of known offenders" should be used as a basic statistic in preference to "rates found guilty". Moreover, this work emphasises that the choice of a basic statistic to be used in an analysis of this type is of extreme importance.

CONCLUSIONS

1. It has been possible to test the method of analysis used by Leslie T. Wilkins in the report *Delinquent Generations* (1960), largely because statistics on a further period of time have become available. The tests have shown that the method is inappropriate for analysing time-series data when

²⁰ It is also noticeable from Fig. M that the drop in "rate found guilty" for ten-year olds in 1964 and 1965 was to a large extent compensated by an increase in "rate cautioned". This had the effect of making the drop in "rate of known offenders" comparatively small.

FIGURE M

TREND IN RATES FOUND GUILTY COMPARED WITH TREND IN RATES OF KNOWN OFFENDERS, AGES 10, 14, 17 AND 20

the age-groups involved exhibit time-trends which are identifiably different. In statistical terminology the method is not "robust" in these circumstances because it generates completely different results when different samples (i.e. time-periods) are analysed.

2. Although the method is inappropriate, it is possible to identify certain regularities in the results of the analysis. The British "Delinquent Generation" identified by Wilkins was tested against these regularities and no evidence was found to suggest that this generation was any more or less delinquent than the other generations considered in the analysis.

3. A comparison with other studies of delinquent generations has shown that in no case, and in no country, were the time-trends which were analysed sufficiently homogeneous to allow a delinquent generation to be reliably identified by Wilkins' method.

4. The practice of cautioning offenders (rather than prosecuting them) has increased over the post-war period in England and Wales and is most widely used for very young offenders. It has only been possible to test the effect of cautioning fully

over the period 1956-65, but it appears that variations in the practice have had a considerable effect on the statistics of "rates found guilty". It is therefore important to include data on cautioning in any analyses of delinquency in England and Wales, but even when this factor is taken into account the identifiable differences in time trends remain and the "robustness" of the method of analysis does not therefore increase sufficiently for the results to be reliable.

5. It is beyond the bounds of this paper to make proposals for an alternative and valid method of distinguishing between the delinquency of generations. However, such an alternative would certainly have to be sufficiently sophisticated to take into account the differences in time-trends.

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