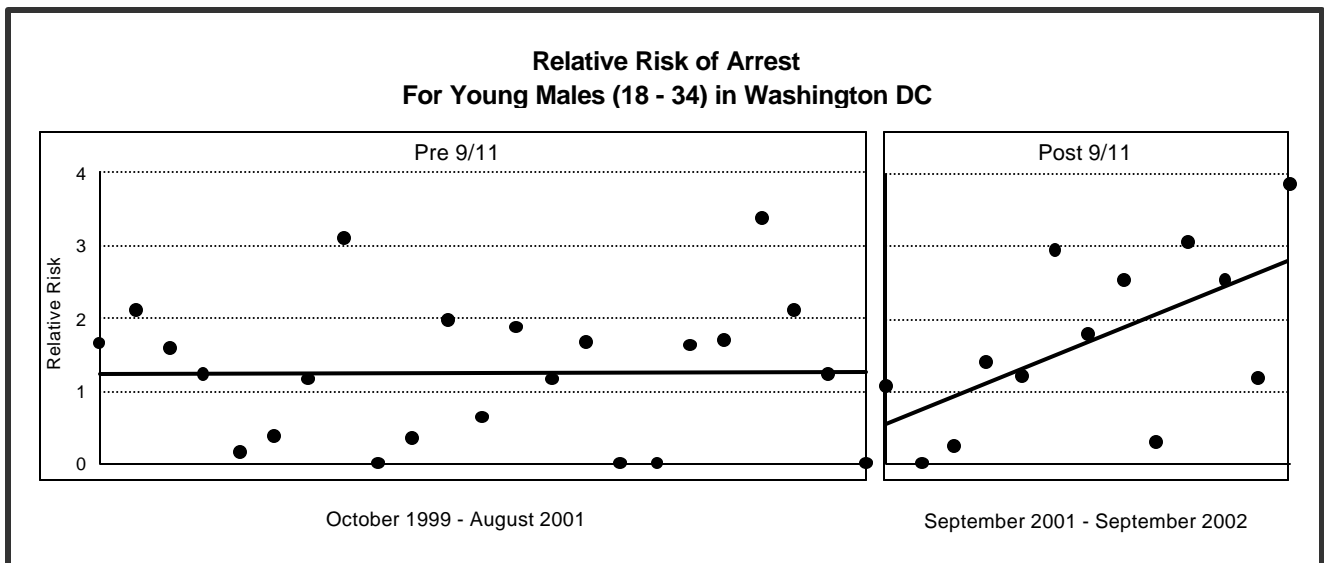


The Impact of September 11, 2001 on Criminal Justice Involvement for Recipients of Publicly Funded Mental Health Services in Washington D.C.



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NARRATIVE

BACKGROUND

Mental health services research tends to focus on the impact of clinical interventions and client characteristics on treatment outcomes. Mental health services research rarely explores the impact of larger social and cultural changes. This project examines the impact of one major social/cultural event on levels of criminal justice involvement for adults who received publicly funded mental health treatment services in Washington D.C. The major socio-cultural event is the terrorist attacks on the Pentagon and the World Trade Center on September 11, 2001.

Shortly after September 11, it was recognized that these events had a significant potential to disrupt the lives of people with mental illness. The Virginia Terrorism-Related Mental Health Needs Assessment expressed concern that these events had "triggered psychotic behavior in vulnerable populations, including adults with serious mental illnesses" (VA DMHMRSAS, 2001). The Washington D.C. Terrorism-related Mental Health Needs Assessment Project found increased levels of fear and anxiety among mental health consumers after September 11, 2001 (Resource Development Groups, 2001). New York's Institute for Applied Psychiatry (2001) identified "psychologically vulnerable persons (people already having a psychiatric diagnosis)" as among those with an elevated need for mental health services resulting from terrorism.

Despite this early concern, public discussions of the impact of the events of September 11, 2001 have focused almost entirely on the general population of the United States. These discussions included concern regarding the impact of terror (past and anticipated) on the mental health of the general population and concerns about the impact of government responses to terror (Susser, Herman, & Aaron, 2002). Little attention has been devoted to the impact of terror on people with serious mental illness. (Pandiani and Banks, 2002)

This report presents the results of a rigorous study of the impact of September 11 on recipients of publicly funded mental health services in the District of Columbia. The study replicates an earlier study of the impact of September 11 on levels of criminal justice involvement in Vermont. This earlier study found that there was a substantial increase in the relative risk of arrest for young adults receiving services for serious mental illness during September 2001. During the 24 months before September 11, service recipients were between 3 and 4 times as likely as other young adults to be arrested. During the weeks after September 11, service recipients were six times as likely to be arrested. This increased relative risk had declined somewhat by the end of September 2002, but still remained greater than pre-September 11 rates (Pandiani and Simon, 2002). The subjects of the current study are all adults (aged 18–64) served by public mental health programs in Washington D.C. during October 1999 through September 2002.

Findings

Results indicate that mental health service recipients in nine of our twelve age/gender and age/race categories experienced statistically significant changes in relative risk of arrest during the period of this study. Eight of these groups experienced

changes in relative risk of arrest that were associated with September 11, 2001. These included changes in relative risk of arrest at the time of the terrorist attacks and changes in relative risk of arrest during the months that followed the terrorist attacks (See tables 1 and 2, and Figures 1 through 9 for more detail).

Relative risk of arrest for recipients of public mental health services is a comparison of the arrest rate for service recipients to the arrest for members of the general population in similar demographic category. In this context, relative risk measures the degree to which the arrest rates for mental health service recipients are different from the arrest rates of other residents of the District of Columbia. (A more detailed description of the methodology used in the study is provided in the following section.)

The most substantial changes in relative risk of arrest associated with September 11 were evident for young adult service recipients (aged 18-34). Relative risk of arrest for young male service recipients increased at an annualized rate of 380% during the thirteen months after September 11. Relative risk of arrest for young non-white service recipients increased by more than 150% per year during this same time period. (See Appendix Two for more detail.)

Change in relative risk of arrest in the 35–49 age group was less substantial. For women in this age group experienced a greater than 50% increase in relative risk of arrest at the time of September 11 that was followed by a nearly 50% per year decrease during the months after September 11. Men and non-white adults in this age group both experienced a greater than 50% per year decrease in relative risk of during the months after September 11, after both experienced insignificant increases at the time of September 11.

Change in relative risk of arrest in the 50–64 age group was more likely to involve all three time periods. In the 50-64 year age group, male service recipients experienced a greater than 100% increase in relative risk at the time of September 11. This increase was preceded and followed by a period of no significant change. Women in this age group experienced a greater than 50% per year decrease in relative risk of arrest after September 11 that followed a nearly 150% per year increase during the months before September 11 and no change at the time of September 11. Finally, relative risk of arrest for whites in this age group increased from a rate that was lower than the general population to a rate that was much higher than the general population at the time September 11. This increase was followed by a return to previous levels by the end of the study period.

Discussion

The findings of this study raise important questions about the relationship between terrorism, domestic security, and levels of criminal justice involvement for people with mental health problems. These questions suggest the need for further research that relates to the psychological and/or social processes that underlie the observed patterns, the duration and geographical distribution of these relationships, and the possibility that similar patterns may be associated with other social/cultural trauma.

Special attention should be given to the underlying causes of the elevated risk that was observed here. Arrest is a result of the interaction of a citizen and a police

officer. Elevated risk of arrest after September 11 could be the result of stress-induced acting-out by service recipients. Elevated risk of arrest after September 11 could also be the result of less police tolerance of unusual behavior. Similar issues in the interpretation of variation of elevated risk of criminal justice involvement among populations of mental health recipients have been discussed elsewhere (Pandiani, Banks, Clements, & Schacht, 2000). The relative contribution of citizen behavior and police response is an important issue for future research. It is also important to consider that elevated risk is a function of two arrest rates: arrest rates for the general population and arrest rates for mentally ill adults. Research in this area should be sensitive to changes in arrest rates for both recipients of mental health services and members of the general population.

Future research should be designed to determine if similar changes in elevated risk of arrest occurred in other parts of the United States at the time of September 11, 2001. If similar patterns are found, were they related to physical proximity to the attacks? Was the impact greater in New York City and the District of Columbia than in other regions of the United States? Was the impact greater in urban areas, regardless of region of the country, or was it felt equally in urban and rural areas? Were similar patterns evident in other parts of the world?

Finally, future research should explore the possibility that other events that may induce social/cultural trauma are associated with similar consequences. Events such as the more recent "DC Sniper" episode, the Oklahoma City bombing, and the Columbine shootings provide obvious tests of the generalizability of the patterns found here.

Fortunately, the methodology used in this study allows for such studies to be conducted without invading the privacy of the individuals and communities involved, and the data that provides for the replication of this study with regard to criminal justice and other consequences are widely available.

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Appendix One: Methodology

Subjects

The subjects of this study include adult recipients of both inpatient and outpatient services provided by the District of Columbia Department of Mental Health during October 1999 through September 2002. The majority of these individuals had a severe mental illness and were covered by Medicaid. Men and women were served in about equal numbers throughout the period. The caseload was predominately non-white, with non-white adult service recipients accounting for about 90% of all service recipients throughout the period. About one-fifth of the service recipients were aged 18-34, just over half were in the 35-49 year age group, and more than one-quarter were in the 50-64 year age group.

During the period of this study, the number of individuals served during a 3-month "current client" window decreased fairly steadily from more than 5,500 during October through December 1999 to less than 4,900 during September of 2002. This decline in the overall caseload was most evident in the youngest age group (-20%) and least evident in the oldest age group (-4%).

The total number of individuals arrested was much less consistent from month to month than the number of individuals who received mental health services. Arrests tended to follow an annual cycle with the greatest number of people arrested in August and the smallest number in December. Considered on a month to month basis, however, there was a clear downward trend in the number of people arrested during the period of this study. Many more men were arrested than women throughout this time period (81% male), and many more non-white adults were arrested than white adults (84% non-white). The number of people arrested each month decreased with increasing age. Of those arrested, 58% were young adults in the 18-34 year age group, 35% were in the 35-49 age group, and 7% were in the 50-64 year age group.

Data

This study was conducted exclusively using anonymous extract from existing databases. No special purpose data collection was required. The data used in this analysis were drawn from three sources: the Department of Mental Health, the Metropolitan Police Department, and the United States Census.

Information about people served by publicly funded mental health programs was extracted from District of Columbia Department of Mental Health databases. Data sets, which contained basic demographic and clinical information for each person served, were provided for each month in the study period (October 1999 through September 2002). The information provided included the date of birth, gender, and race of each person served. These data sets also included codes that indicated if the person was recognized as having a severe mental illness, a substance abuse problem, and/or a serious emotional disturbance.

Information about people arrested in the District of Columbia during the study period was obtained from the Research and Resource Development Unit of the

Metropolitan Police Department of the District of Columbia. The data files that were provided to this project included one record for each arrest during the study period. These arrest records, included the date of birth, gender, race, and ethnicity of each person arrested, the date and time of the arrest, and the criminal charge associated with the arrest.

Finally, information on the size of the population of the District of Columbia as a whole, including age, gender, and race specific population numbers were obtained from the 2000 United States Census. This information was used, in conjunction with the arrest files described above, to derive general population arrest rates for comparison to arrest rates for mental health service recipients.

Statistical Analysis

In order to determine the impact of the events of September 11, 2001 on criminal justice involvement, relative risk of criminal justice involvement for mental health service recipients was measured for each month during the study period (October 1999 through September 2002). For purposes of analysis, arrest rates for each month were calculated for “current” mental health clients. Current mental health clients were defined to include all people who had received at least one mental health service during the target month or during the previous two months. Relative risk of criminal justice involvement is based on a comparison of the arrest rate for service recipients with the arrest rates for members of the general population in the same demographic category. Relative risk is calculated by dividing the arrest rate for service recipients by the arrest rate for the general population. A relative risk of “1” would mean there is no difference between the two arrest rates. A relative risk of “2” would mean that service recipients were twice as likely as other residents to be arrested. A relative risk of “0.5” would mean that service recipients were half as likely as other residents to be arrested.

Interrupted time series analysis was used to measure change in the likelihood of criminal justice involvement associated with the events of September 11. Interrupted time series analysis is sensitive to long-term trends in the data as well as to changes that occur at the time of the intervention (Lewis-Beck, 1986). This procedure provided information on the direction and the statistical significance of changes in the time series that occurred before the attacks (October 1999 through August 2001), at the time of the attacks, and after the attacks (September 2001 through September 2002). Interrupted time series analysis is sensitive to long-term trends in the data as well as to changes that occur at the time of the intervention. This sensitivity is particularly important when the data describe a relatively long period of time as was the case here.

Because the mental health and arrest data sets do not share unique person identifiers, Probabilistic Population Estimation was used to determine the number of people represented in each mental health data set who were also represented in the corresponding criminal justice data sets. Probabilistic Population Estimation is a statistical procedure that provides valid and reliable measures of the size and overlap of data sets that do not include unique person identifiers. These estimates are based on a comparison of the distribution of dates of birth in the data sets to the known distribution of dates of birth in the general population (Banks and Pandiani, 2001). This approach is particularly useful where concerns about the confidentiality of medical records limit the use of personally identifying information (Pandiani, Banks, and Schacht, 1998). A brief

technical description of the procedure is provided below. For more details, visit The Bristol Observatory (2003) web site.

Probabilistic Population Estimation provided unduplicated counts of people on the mental health caseload each month, and the number of these people who had criminal justice involvement each month, overall and for age and gender groups. These were combined to provide rates of criminal justice involvement for service recipients. This analysis also provided the total number of people who were arrested in the District of Columbia each month. In conjunction with population estimates, these provided rates of criminal justice involvement for the general population. The elevated risk of arrest, obtained by combining the arrest rates for service recipients with the arrest rate for the general population for each month during the study period, was entered into a longitudinal database for further analysis.

Probabilistic Population Estimation of Population Size

Probabilistic Population Estimation is a statistical procedure that determines the number of people (with known confidence intervals) who are represented in data sets that do not contain unique person identifiers. Probabilistic Population Estimation uses information on the distribution of birth dates in a data set to determine the number of people represented in the data set. The number of people necessary to produce the number of birthdays observed in a single birth year cohort, for instance, would be calculated using the following formula:

$$P_j(l_j) = \sum_{i=1}^l \frac{365}{365-i}$$

where “P_j” is the number of people and “l” is the number of birth dates observed. Similar logic is used to determine the number of people who appear in more than one data set. The table below provides illustrative results of Probabilistic Population Estimation for populations of specified size.

Population Estimates for Specified Numbers of Birth Dates Within a Year

Birth Dates	Number of People	Birth Dates	Number of People
1	1.003 ± .103	180	249 ± 20
10	10.15 ± .776	250	423 ± 38
20	20.6 ± 1.54	300	632 ± 64
50	54. ± 4	330	860 ± 101
100	117. ± 9	360	1603 ± 325

Population Overlap

In order to probabilistically determine the number of people shared across data sets that do not include a common person identifier, the sizes of three populations are determined and the results are compared. The number of people in each of the original data sets is the first two populations. The number of people in a data set that is formed by combining the two original data sets is the third data set.

The number of people who are shared by the two data sets is the difference between the sum of the numbers of people represented in the two original data sets and the number of people represented in the combined data set. This occurs because the sum of the number of people represented in the two original data sets includes a double count of every person who is represented in both data sets. The number of people represented in the combined data set does not include this duplication. The difference between these two numbers is the size of the duplication between the two original data sets, the size of the caseload overlap. In terms of mathematical set theory, the intersection of two sets is the difference between the sum of the sizes of the two sets ($A+B$) and the union of the two sets ($A\cup B$):

$$(A \cap B) = (A + B) - (A \cup B).$$

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Appendix Two: Tables and Graphs

Table 1

Change in Relative Risk of Arrest For Mental Health Service Recipients Before, at The Time of, and After September 11, 2001 Washington, DC

	Before ¹ 9/11		At the time of 9/11		After ² 9/11	
	Change ³	Sig	Change	Sig	Change ³	Sig
Ages 18-34						
Male	○	○	○	○	+380%	p<0.026
Female	○	○	○	○	○	○
White	-37%	p<0.052	○	○	○	○
Non-White	○	○	○	○	+173%	p<0.078
Ages 35-49						
Male	○	○	○	○	-73%	p<0.045
Female	○	○	+69%	p<0.076	-42%	p<0.066
White	○	○	○	○	○	○
Non-White	○	○	○	○	-64%	p<0.032
Ages 50-64						
Male	○	○	+132%	p<0.082	○	○
Female	+147%	p<.005	○	○	-53%	p<0.097
White	○	○	+>1,000%	p<0.003	-90%	p<0.056
Non-White	○	○	○	○	○	○

¹Oct 1999 - Aug 2001

²Sept 2001 - Sept 2002

³Change = Annualized percent change Sig = Statistical significance ○ = No significant change

Based on analysis of data sets provided by D.C. Dept. of Mental Health and Metropolitan Police Dept.
Analysis conducted by: The Bristol Observatory (bristob@together.net)

Table 2
Change in Relative Risk of Arrest
For Mental Health Service Recipients
Before, at The Time of, and After September 11, 2001
Washington, DC

	<u>Before¹</u> <u>9/11</u>	<u>At the time</u> <u>of 9/11</u>	<u>After²</u> <u>9/11</u>
Ages 18-34			
Male	○	○	↗**
Female	○	○	○
White	↘*	○	○
Non-White	○	○	↗*
Ages 35-49			
Male	○	○	↘**
Female	○	↗*	↘*
White	○	○	○
Non-White	○	○	↘**
Ages 50-64			
Male	○	↗*	○
Female	↗***	○	↘*
White	○	↗***	↘*
Non-White	○	○	○

¹Oct 1999 - Aug 2001

²Sept 2001 - Sept 2002

* p<.10

**p<.05

***p<.01

↗ Increase LT 50%

↗ Increase 50% - 100%

↗ Increase GT 100%

↘ Decrease LT 50%

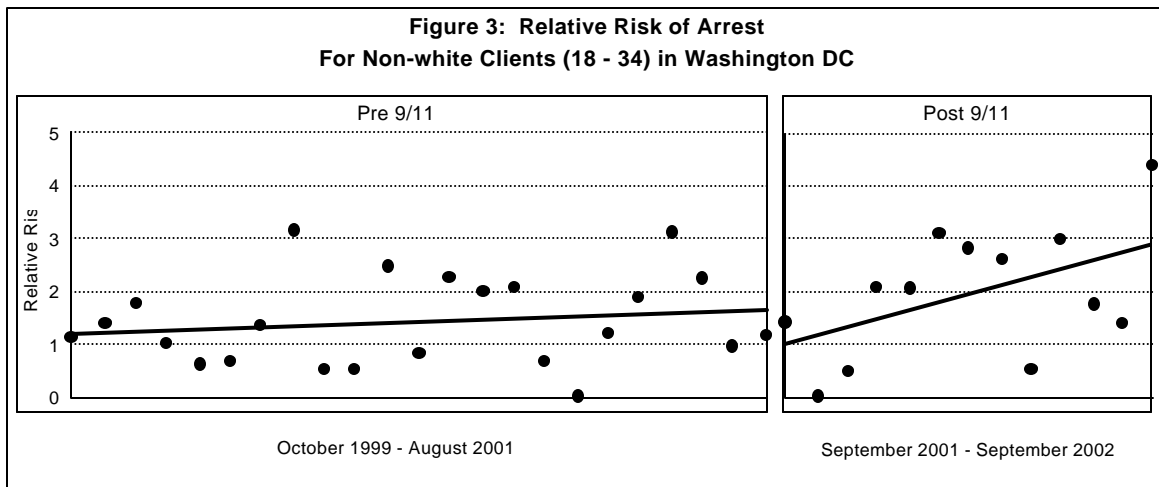
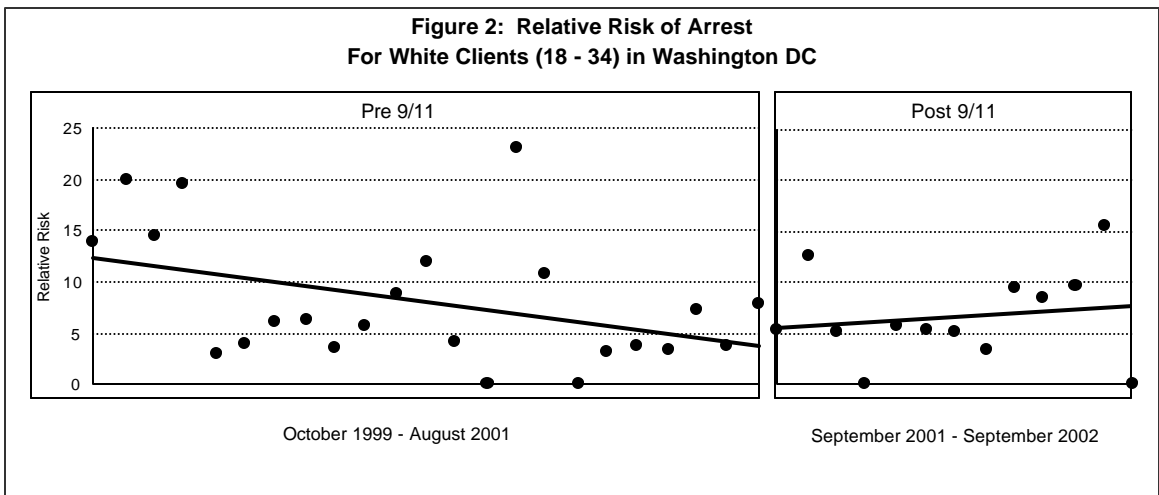
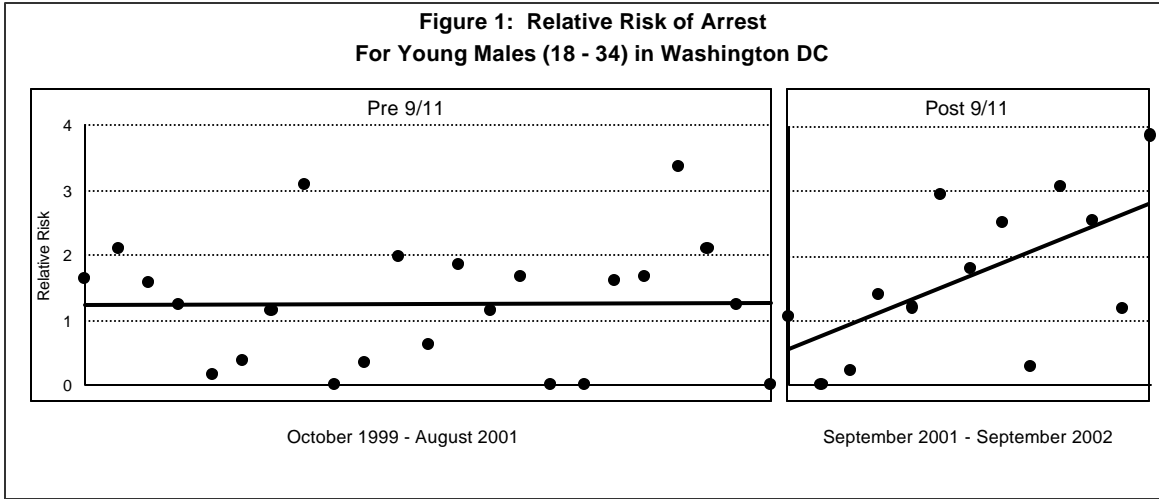
↘ Decrease 50% - 100%

↘ Decrease GT 100%

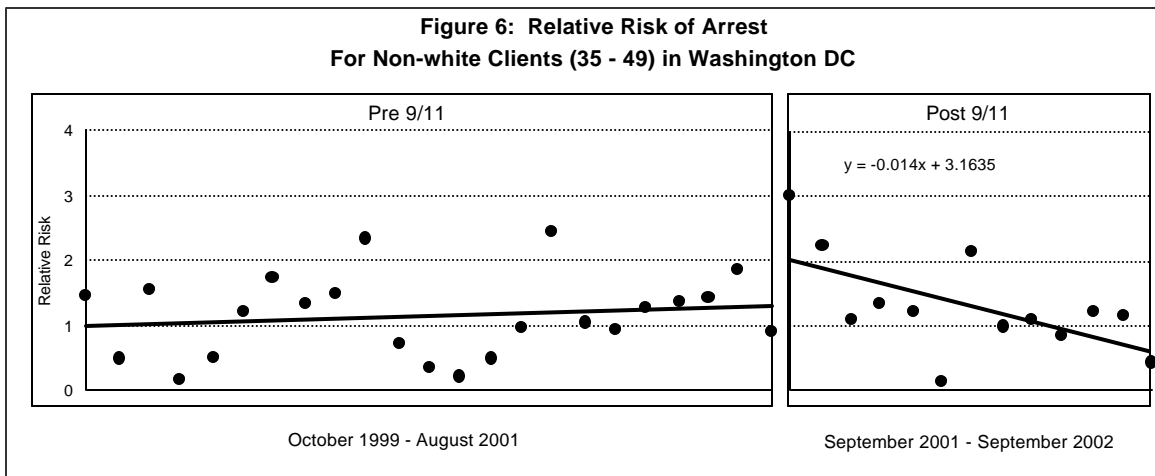
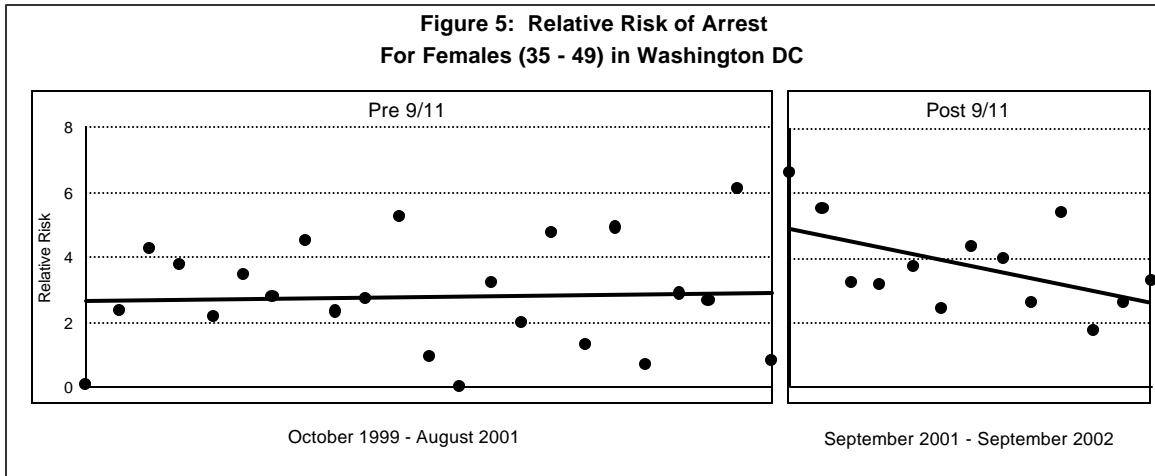
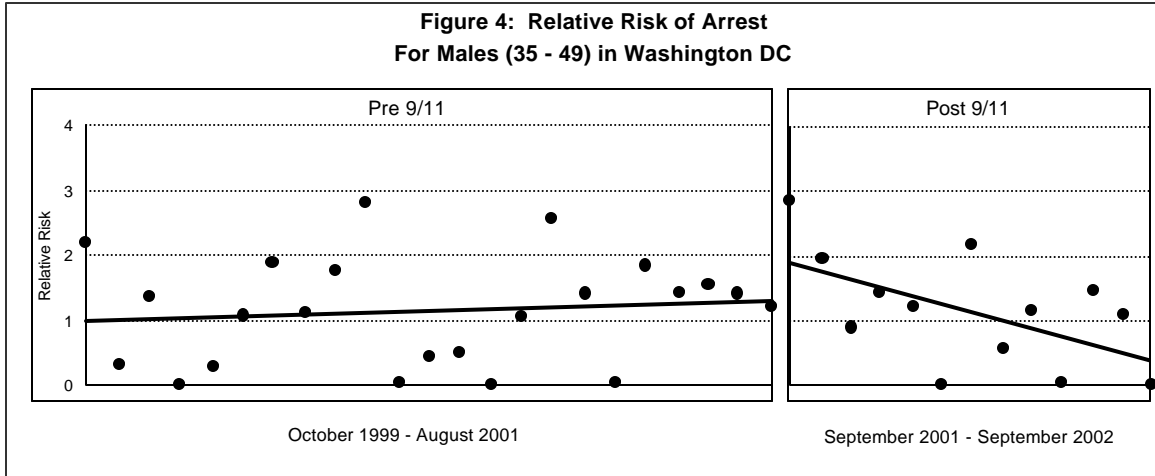
○ No change

Based on analysis of data sets provided by D.C. Dept. of Mental Health and Metropolitan Police Dept.
 Analysis conducted by: The Bristol Observatory (bristob@together.net)

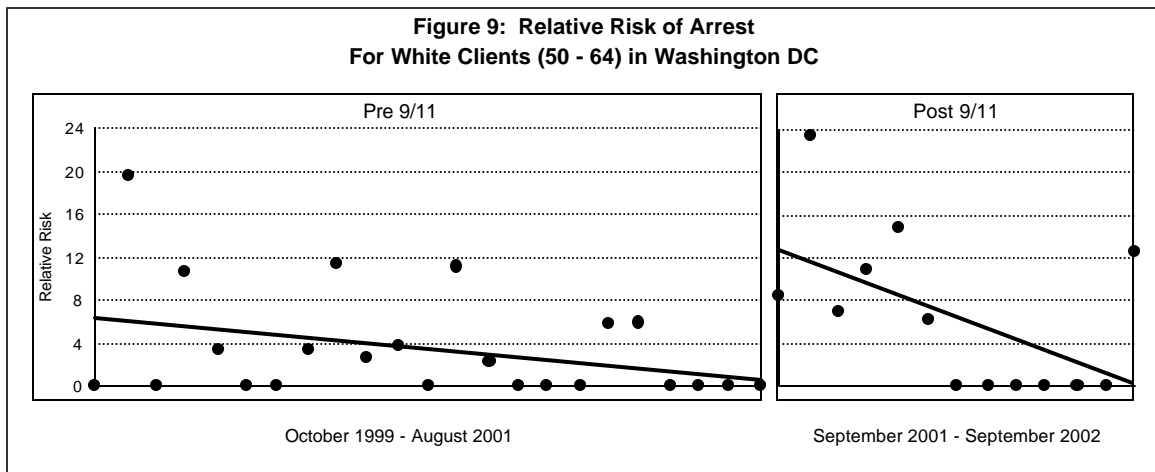
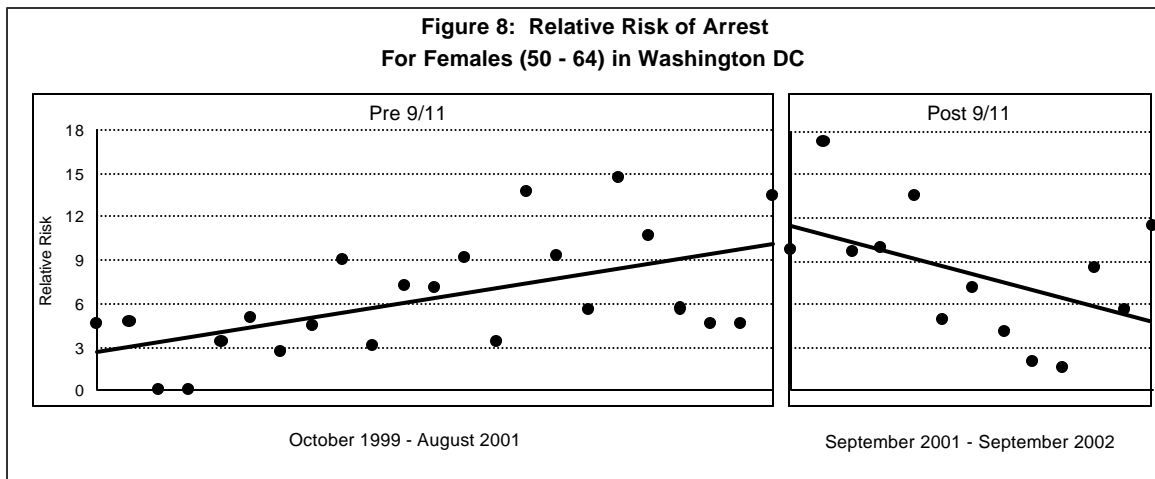
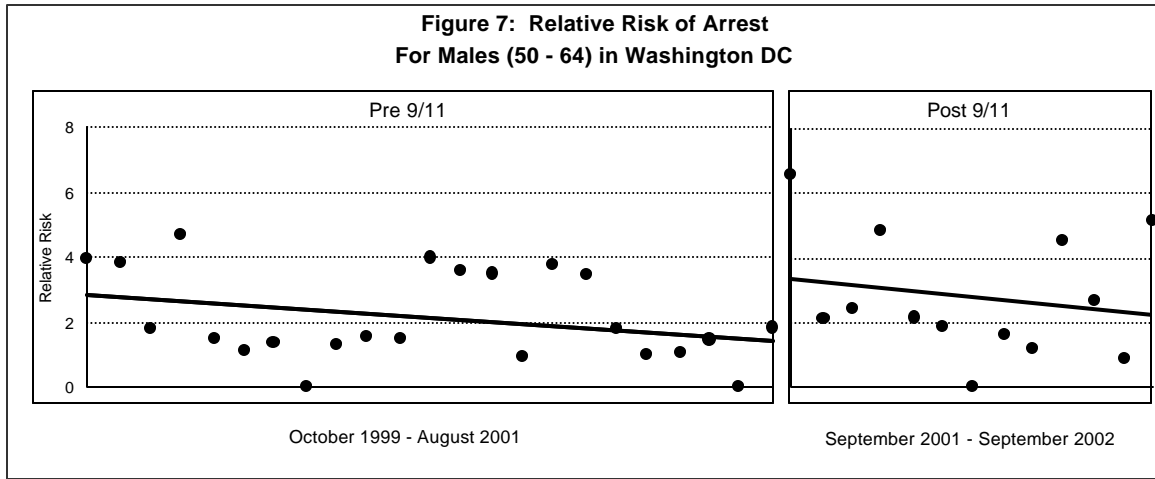
Change in Relative Risk of Arrest for Age 18 - 34



Change in Relative Risk of Arrest for Age 35 - 49



Change in Relative Risk of Arrest for Age 50 - 64



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Probabilistic Population Estimation

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