Part I: The NGRI Registry: Initial Analyses of Data Collected on Connecticut Insanity Acquittees

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The NGRI Registry is a comprehensive census database collected by the Law and Psychiatry Division of the Department of Psychiatry at the Yale University School of Medicine. This longitudinal database was compiled following a systematic search of all available docket books from the superior courts and mental health records from the state hospitals in Connecticut beginning in January 1970. Detailed life span information is available for 364 insanity acquittees identified during the search. Comparative analyses with four other locales suggested that there were regional differences in diagnoses of and crimes committed by the acquittees. These initial analyses demonstrate the promise of this registry becoming one tool for collaborative research on issues relevant to law and mental health.

The intersection between the legal and mental health systems represents a key area for study by researchers working in a variety of disciplines—and not just limited to those in law, psychiatry, or psychology. Other social scientists, policy analysts, and adjunct health personnel, to identify a few groups, have contributed important insights and analyses to this field. However, Shah's observation[1] concerning lawyers and mental health professionals in particular is germane to characterizing the interaction among all of these colleagues. He noted that discussions have tended to become "obstructed by differing philosophical and value orientations, governing paradigms, and professional ideologies." Not always, but frequently, a synthesis of these disparate disciplines has produced controversy with the different affiliates becoming almost adversarial in supporting one side or another of an issue.

Obviously, cooperation among these professions represents a far more fruitful approach to answering research questions. By establishing the Law and Psychiatry Division within the Department of Psychiatry, the Yale University School of Medicine, has provided a forum for interdisciplinary exchanges among university faculty, researchers, and state forensic specialists on topics of

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mutual interest. The initial research efforts of the Division have been focused primarily on: the insanity defense, competency evaluations, dangerousness, and homicide; and, policy analyses of legal and ethical issues surrounding confidentiality and acquired immunodeficiency syndrome (AIDS). The former topic, which is addressed in this and the accompanying second article, provides the framework to more fully describe our program.

The insanity defense, a product of Anglo-American law, stipulates that certain conditions establish a defendant as not criminally responsible and therefore excuse the defendant for criminal acts. It is said that a "guilty act requires a guilty mind" and certain classes of perpetrators are held to be free of a guilty mind, that is, criminal intent. These mitigating conditions include: duress or compulsion, immaturity, and insanity.

The current statutes for many jurisdictions (at least 20 of the 50 states[2]) regarding the insanity defense resemble the American Law Institute's Model Penal Code, which implies that a person is not responsible for criminal conduct if at the time of such conduct as a result of mental disease or defect he lacks substantial capacity either to appreciate the criminality of his conduct or to conform his conduct to the requirements of law.

If a defendant is acquitted under this rule in Connecticut, for example, he is committed* to the Department of Mental Health (DMH) for 45 days (formerly 90 days) for purposes of assessment and psychiatric evaluation. This is followed by a postevaluation commitment hearing. At this hearing the defendant may be either released or committed to a state hospital for a period not to exceed the maximum term he would have received had he been found guilty.

Research during the past dozen years on the insanity defense[3–5] has been characterized by descriptive investigations of persons found not guilty by reason of insanity and limited evaluations and assessments of some of the conventional wisdom associated with insanity acquittals.

Shah[6] enumerated some of these issues in his discussion of criminal responsibility. One recurring theme that appears in public discussions of the insanity defense is that it is too often used and too often successful. The evidence that has accumulated to date to answer such assertions is sparse; deriving from a handful of studies in only a few jurisdictions. Steadman,[5] for example, estimated two insanity pleas per thousand felonies in New York State.

Rates of success (proportion of successful acquittals compared to number of pleas entered in a jurisdiction) appear to vary widely:† less than one percent during the three-year period 1970–1972 in Wyoming[7,8]; ranging from five to 8.4 percent during the time period 1976–1982 in Michigan[9]; and, on average, 25

* Prior to July 1, 1985, a person could be dismissed from trial as not being a danger to himself or others, obviating a DMH evaluation.

† It is difficult to evaluate and compare these figures because insanity pleas can be entered at several points in the legal process. Those insanity pleas that reach the trial stage represent only a proportion of considered pleas.

percent in Erie County, New York, for the time period 1970–1980.[10]

In contrast, Pasewark and colleagues[7,8] found that the public's perception of the rate of insanity pleas overestimated the true rate by a factor of 43 among community residents. Professionals in related fields (e.g., attorneys, state legislators, and mental hospital staff) also overestimated the true rate of NGRI pleas.

Another recurring theme is that the insanity defense allows violent criminals to escape prosecution. Although it is true that cases of violent crime are disproportionately represented among insanity defenses, far from all persons found not guilty by reason of insanity (NGRI) are tried for homicide or assault. Again, the rates vary by jurisdiction and time frame: on average, 50 percent or more of cases involved persons charged with murder in New York from 1965 through 1978[11] and Michigan from 1967–1972.[12] However, a subsequent Michigan study surveying the time period 1975–1979 showed an average of under 30 percent of insanity defenses were for *both* murder and manslaughter.[13] Similar smaller percentages were obtained in a study of one county in New Jersey in 1977,[14] and in Connecticut (for homicides from 1970–1972[15]). Two additional locations reported figures under 10 percent for homicides among insanity acquittees: Missouri in 1978[16] and Oregon from 1978–1980,[17] where insanity pleas for misdemeanors were common.

A third recurring theme is that the insanity defense is used as a legal loophole. It is claimed that the wealthy use it to avoid criminal prosecution, but the evidence does not support this contention. The occupational and educational levels of persons entering insanity pleas are substantially lower than the general population.[3] However, two groups that may be overrepresented in NGRI samples are police officers who have killed or mothers who have murdered their children.[4,18]

A fourth assertion is that acquittees are released after only short periods of confinement. Two studies comparing insanity acquittees to convicted and incarcerated felons did show that insanity acquittees spent less time institutionalized than did felons for comparable crimes.[15,19] However, an earlier New York study covering the time period 1965–1971 showed no difference between NGRI and felony groups for time in institution.[20] The researchers were cautious in their interpretation of these differences, but suggested that changes in detention patterns might have occurred following a modification in standards for the insanity defense and a provision of a greater role for the Department of Mental Hygiene in the acquittees' hospitalizations.[20]

A study by Braff and colleagues[21] compared successful insanity acquittees to those who entered an unsuccessful plea and were found guilty. Terms of confinement for all institutionalized persons from both groups did not significantly differ. Moreover, several unsuccessful defendants were able to avoid any confinement at all.

A final assertion is that posttreatment recidivism rates, that is, the rate of new

crimes, is high among insanity acquittees. The same three studies cited above compared insanity acquittees with convicted and incarcerated felons and showed no appreciable difference between groups in crimes committed after release.[15,19,20]

In summary, this brief survey of the literature shows that what is generally believed about insanity acquittals is mostly based on preconceived notions and misconceptions. The evidence that does exist refutes most of the conventional wisdom. However, in most cases the evidence is incomplete or inconclusive.

The Connecticut NGRI Registry

We have been particularly interested in the two issues related to confinement and recidivism and have begun systematically assembling data on NGRI acquittees in Connecticut from 1970 to the present to examine these topics further. The intent is to determine whether these assertions are true at least for Connecticut (perhaps with some generalizability to other jurisdictions), and to the extent that they are true, to determine which factors (if any) might explain these results.

To begin to answer these questions, the following research has been undertaken. The initial project is a census of persons found NGRI in Connecticut in the years 1970 to the present. The last attempt at this type of analysis was reported in 1980[15] and involved persons hospitalized during the time frame 1970–1972. Phillips and Pasewark identified 25 NGRIs in their search of mental hospital admission logs. The present search netted 14 additional NGRIs for this time period alone.

The census of insanity acquittees was begun 36 months before as an outgrowth of interest by the senior investigator in assaying the prevalence of the insanity defense in Connecticut. The Multistate Information Service (MSIS)—a data compilation service to which the Connecticut Department of Mental Health regularly reports—was asked to list all insanity admissions for the period 1970–1980. The initial MSIS report contained 481 "potential" insanity acquittees.

When these admissions were verified against the records of the four state mental hospitals, it became clear that the designation "insanity acquittee" was being applied somewhat indiscriminately to individuals transferred from the Connecticut courts: the legal status of NGRIs and persons being evaluated for or restored to competency to stand trial were often confused.

This insight into bureaucratic record-keeping and the need to identify those NGRIs not committed for posttrial evaluation redirected attention to the use of docket books (i.e., the detailed daily record of the courts) as a means of identifying insanity acquittees. However, it was apparent that these court dockets would need to be systematically searched (read case-by-case) to identify cases of persons found NGRI.

Fortunately, beginning with July 1, 1985, all NGRIs are evaluated at the state forensic hospital and most are identified to the Psychiatric Security Review

Board (PSRB).‡ However, before July 1985 no records were kept by Connecticut courts to specifically identify NGRIs. A search of docket books for the 12 judicial districts (JDs) was feasible, and indeed proved an efficient way to identify acquittees.

An enumeration of persons appearing before the geographic area (GA) courts represented a different type of detection challenge. These persons are generally charged with class "D" felonies or misdemeanors. There was some concern that a full accounting of individuals who essentially went home from the courtroom and never presented to a mental health facility for evaluation or treatment might not be obtained.

However, there were more than 2.25 million hearings before the 21 GA courts between January 1970 and July 1985. To assure that a majority of NGRIs were identified without undertaking a full review of each hearing in each court, the following strategy was adopted. First, interviews with the state's attorney, public defender, personnel from within a public defender's office (e.g., psychiatric social workers), chief clerk of the court for each GA court, and administrative personnel from the PSRB were undertaken. These persons were asked to estimate how many NGRI acquittals had come before each court during the 15.5-year time period (from January 1970 to the institution of the PSRB in July 1985). Following this tabulation, comparisons were made between estimates provided by these professionals and the results of the initial searches of hospital and JD court records performed by the Division. This comparison showed that most (two-thirds) of the pairs of estimates concurred.

For the seven courts where there were discrepancies between persons interviewed, or between the average provided by these persons and data taken from the NGRI Registry, court docket books were searched using a systematic sampling scheme. All hearings on approximately 7 percent of court dates for the time period January 1970 through June 1985 were screened. Using the first court date in the month of January 1970, all hearings were reviewed for this date and every 14th court date following it, for a total of 270 court dates for each of the seven courts.

At the conclusion of this search, the average number of misdemeanants per calendar year (1970–1985) that were identified through interview and sampling was the same as the average number reported to the PSRB during calendar years 1986–1988. This provided added confidence that nearly all of GA court NGRI cases have been identified.

Each case identified by any of these techniques as an NGRI acquittee was confirmed by a review of records from the state hospitals and the state's attorneys' offices. Supplemental information on each case was obtained using the following four sources.

1. Records from the four state hospitals in Connecticut to which NGRIs may be committed;
2. Files from the offices of the State's

‡ PSRBs, established in Oregon in 1978[22] and in Connecticut in 1985,[23] have sole responsibility for supervising the posttrial treatment of insanity acquittees.

attorneys (including, when available, judicial orders related to forensic evaluations or treatment);

3. Arrest records provided by the Connecticut State Police Bureau of Identification; and

4. Docket books from the 41 state courts in Connecticut.

Detailed information was collected on the acquittees including demographics, early psychosocial history, psychiatric history, adult psychosocial history, arrest data, facility transfer records, nature of NGRI crime, course of treatment during hospitalization, discharge information, recidivism information, PSRB reports, assessment of dangerousness, and records from any competency exams.

These efforts have resulted in the identification of 313 cases found not guilty by reason of insanity in Connecticut between January 1970 through December 1985 (pre-PSRB).§ Describing the characteristics of this sample will provide the focus for the remainder of this article. The second paper details some interesting comparisons between matched samples of female and male NGRIs.

Results and Discussion of Initial Analyses

The trend in the number of insanity acquittals over time is shown in Figure 1. There is a tendency for the number of acquittals to increase over the 15-year time frame. However, there is considerable variability from year to year.

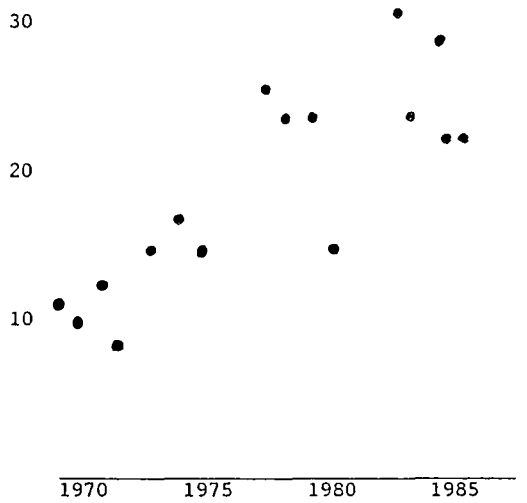

Figure 1. Trends in insanity acquittees (1970–1985).

Table 1 shows the sex and race distributions of the acquittees.

Males are clearly overrepresented in this population as the state sex ratio is approximately 1:1 (gender ratio has remained stable over time [$S^* = .216$, $p < .41$]. The sex ratio among new admissions to the state mental health system is 2.5:1, and the sex ratio among persons arrested is 4.5:1. Neither of these approaches the almost 10-fold difference observed among insanity acquittees. Blacks appear to be overrepresented as well. They are about six percent of the Connecticut population. However, the increased proportion among insanity acquittees (25.5%) does not match their proportion in persons arrested, where they constitute half of all those arrested for serious crimes.

Diagnoses The primary diagnoses‖ of insanity acquittees are shown in Table 2. Psychoses, the majority of which are schizophrenia, account for over 63 per-

§ The PSRB came into existence on July 1, 1985. However, we added six months to this date to account for delays that occurred in implementing the system and to facilitate using calendar year as a unit of analysis. An additional 51 NGRIs have been identified from January 1986 to the present by the PSRB and are included in the registry.

‖ These diagnoses are the post-NGRI evaluation diagnoses taken from hospital records.

Table 1
Characteristics of NGRI Acquittees (Gender and Race, 1970–1985)

	Male		Female		Total	
	n	%	n	%	n	%
White	196	69.0	18	62.1	214	68.4
Black	71	25.0	9	31.0	80	25.5
Hispanic	17	6.0	2	6.9	19	6.1
Total	284	100.0	29	100.0	313	100.0

Table 2
Primary Diagnosis of Insanity Acquittees (Connecticut, 1970–1985)

	Male		Female		Total	
	n	%	n	%	n	%
Psychosis	5	1.8	0	0.0	5	1.6
Schizophrenia	135	47.5	17	58.6	152	48.6
Affective psychosis	20	7.0	4	13.8	24	7.7
Organic psychosis	17	6.0	1	3.4	18	5.8
Neurosis	11	3.9	2	6.9	13	4.2
Personality disorders	56	19.7	3	10.4	59	18.8
Substance abuse	23	8.1	1	3.4	24	7.7
Mental retardation	5	1.8	1	3.4	6	1.9
Miscellaneous diagnoses	8	2.8	0	0.0	8	2.5
No mental illness	2	0.7	0	0.0	2	0.6
Diagnosis unknown	2	0.7	0	0.0	2	0.6
Total	284	100.0	29	99.9	313	100.0

cent of the diagnoses. Personality disorders¶ account for almost 19 percent.

This is an interesting figure because a substantial number of these persons have been diagnosed as antisocial personality, a diagnosis that may confound criminality with mental illness. (The proportion of NGRIs diagnosed as having a personality disorder has decreased during the time frame under study [$S^* = 2.42$, $p < .008$]. This is related to changes in statutory language related to the insanity defense. This decrease is countered by an increase over time in the proportion of NGRIs diagnosed with affective disorder [$S^* = 2.46$, $p < .007$]). The remainder are neuroses, mental retardation, and substance abuse (which combine to account for around 14% of diagnoses). For the remaining four percent of the sample, diagnoses included miscellaneous mental illnesses (eight persons), persons who were found after evaluation to be not mentally ill (two persons), or persons whose diagnosis was unknown (two persons).

There is a tendency for men to fall in the personality disorder and substance abuse categories more often than women. This is counterbalanced by a higher proportion of women in the affective disorder category.#

There are significant differences in the distribution of diagnoses among insanity

¶ Personality disorders include both Axis I (n = 15) and Axis II (n = 44) diagnostic categories.

Confidence intervals for the difference between proportion of males and females in each of the identified diagnostic categories (personality disorder, substance abuse, and affective disorder) were calculated. None of these differences were found to be significant.

Table 3
Diagnostic Comparison Connecticut NGRIs and New Admissions to the Department of Mental Health, 1981–1985

	Subjects in NGRI Registry		New Admissions to Connecticut Department of Mental Health	
	n	%	n	%
Psychosis and schizophrenia	50	43.1	4,482	19.8
Affective disorders	17	14.7	2,154	9.5
Personality disorders	20	17.2	316	1.4
Substance abuse/organic illness due to alcohol and drug abuse	14	12.1	12,772	56.5
Other organic disorders	4	3.4	536	2.3
Other	11	9.5	2,341	10.4
Total	116	100.0	22,601	99.9

acquittees compared to that of new admissions to the facilities of the Connecticut Department of Mental Health (using available data from 1981–1985 for both groups [Table 3]). The incidence of psychoses and (especially) personality disorders is higher among insanity acquittees, whereas substance abuse and associated organic disorders are clearly underrepresented among NGRIs (overall $x^2 = 270.93$, $df = 5$, $p < .001$).

A review of the literature revealed that similar published data related to diagnosis existed for several other jurisdictions, for example, New York,[24] Oregon,[25] Wyoming,[26] Illinois,[27] Hawaii,[28]

Table 4
Regional Differences in Diagnoses

	Connecticut				New York				Oregon				Illinois			
			Total				Total				Total				Total	
	M	F	n	%	M	F	n	%	M	F	n	%	M	F	n	%
Psychosis	5	0	5	1.6	7	3	10	4.4	174	23	197	68.9	7	2	9	6.6
Schizophrenia	135	17	152	48.6	110	18	128	56.9	—	—	—	—	80	12	92	67.2
Affective psychosis	20	4	24	7.7	5	0	5	2.2	—	—	—	—	11	6	17	12.4
Organic psychosis	17	1	18	5.8	11	1	12	5.3	9	1	10	3.5	3	1	4	2.9
Subtotal psychoses			199	63.7			155	68.8			207	72.4			122	89.1
Personality disorders	56	3	59	18.8	20	4	24	10.7	53	4	57	19.9	5	2	7	5.1
Neurosis	11	2	13	4.2	6	1	7	3.1	5	1	6	2.1	—	—	—	—
Substance abuse	23	1	24	7.7	6	0	6	2.7	—	—	—	—	3	1	4	2.9
Misc. mental disorders	8	0	8	2.5	4	1	5	2.2	—	—	—	—	1	0	1	0.7
Other: mental retardation	5	1	6	1.9	5	0	5	2.2	14	2	16	5.6	1	1	2	1.5
No mental illness	2	0	2	0.6	8	1	9	4.0	—	—	—	—	1	0	1	0.7
Unknown	2	0	2	0.6	14	0	14	6.2	—	—	—	—	—	—	—	—
Total	284	29	313	100.0	196	29	225	99.9	255	31	286	100.0	112	25	137	100.0

and Ontario, Canada,[29] covering varying time frames between the years 1961–1988. For these analyses comparisons are made between those states following ALI-type statutes during the research period (similar to the law operating in Connecticut) and those sites for which detailed evaluation diagnoses were available (viz. New York, Oregon, and Illinois).

Table 4 compares general categories of diagnoses across the four jurisdictions. The regional differences appear to be such that the Illinois sample is heavily weighted with psychotics, and the Connecticut and Oregon samples have a large proportion of NGRIs diagnosed with personality disorders.

Such statistical differences may reflect real differences in practices and procedures applied in the courts and by forensic psychiatrists in various jurisdictions. This is an area that until now has received little research attention. The uncertainty regarding the comparability of jurisdictions has hindered the generalizability of results in this field. Additional cross state comparisons are presented below.

Crimes The crimes with which acquittees were accused are shown in Table 5. Homicide, either murder or manslaughter (all nonnegligent), accounts for almost one-quarter of all crimes. Other crimes against persons comprise another 55 percent for a total of more than three-quarters against persons. The remainder are against property or are against the administration of justice, e.g., escape, resisting, and assorted other crimes. One finding to note: women are more frequently charged with manslaughter in homicide crimes than men (confidence intervals for the difference in proportions = $.298 \pm .179$, $p < .05$).

In comparing crimes committed by insanity acquittees with the distributions of arrests in the state (aggregated into categories to conform with the state Uniform Crime Reports [Table 6]), the data show that all violent crimes and especially crimes against persons are overre-

Table 5
Index Crimes Committed by Insanity Acquittees (Connecticut, 1970–1985)

	Male		Female		Total	
	n	%	n	%	n	%
Murder	38	13.4	0	0.0	38	12.1
Manslaughter	23	8.1	11	37.9	34	10.9
Attempted murder	14	4.9	0	0.0	14	4.5
Assault	79	27.8	11	37.9	90	28.8
Sexual assault	31	10.9	0	0.0	31	9.9
Kidnapping	7	2.5	0	0.0	7	2.2
Robbery	30	10.6	0	0.0	30	9.6
Arson	24	8.5	2	6.9	26	8.3
Burglary	11	3.9	0	0.0	11	3.5
Larceny	14	4.9	2	6.9	16	5.1
Escape	6	2.1	2	6.9	8	2.6
Other	7	2.5	1	3.4	8	2.6
Total	284	100.1	29	99.9	313	100.0

Table 6
Index Crimes by Insanity Acquittees and Arrestees (1979–1985)

	Insanity Acquittees		Arrestees	
	n	%	n	%
Homicide	27	17.0	1,102	0.1
Assault	57	35.8	85,464	9.5
Sexual assault	16	10.1	9,345	1.0
Robbery	13	8.2	13,801	1.5
Arson	17	10.7	2,017	0.2
Burglary	7	4.4	49,383	5.5
Larceny	10	6.2	154,608	17.1
Other	12	7.5	588,607	65.1
Total	159	99.9	904,327	100.0

Table 7
Regional Differences in Crime

	Connecticut				New York				Oregon				Hawaii				Illinois			
			Total				Total				Total				Total				Total	
	M	F	n	%	M	F	n	%	M	F	n	%	M	F	n	%	M	F	n	%
Homicide	61	11	72	23.0	107	26	133	59.1	11	5	16	5.2	21	3	24	21.8	29	8	37	27.0
Other person	161	11	172	54.9	64	1	65	28.9	117	12	129	41.6	31	1	32	29.1	54	9	63	45.0
Property and other	62	7	69	22.0	25	2	27	12.0	154	11	165	53.2	51	3	54	49.1	29	8	37	27.0
Total	284	29	313	99.9	196	29	225	99.9	282	28	286	100.0	103	7	110	100.0	112	25	137	100.0

presented among the insanity acquittees ($x^2 = 4712.06$, $df = 7$, $p < .0001$). Other researchers have commented on this particular finding.[15,19] One difficulty in comparing NGRIs to convicted jail or prison samples is that the charges for these latter groups often have been plea-bargained to lesser crimes. For less serious crimes, which appear to be overrepresented in the criminal sample, a determinant period of confinement in a correction facility may be more appealing compared to the indeterminant commitment in a mental health facility associated with an insanity acquittal. This might make it less likely for persons charged with less serious offenses to pursue an NGRI defense.

Table 7 compares three major categories of index crimes across all four jurisdictions used in the interstate comparisons above, with data from Hawaii included as well. New York and Connecticut apparently reserve the insanity defense for the most serious crimes, whereas in Oregon and Hawaii, the insanity defense is often used for minor felonies as well as misdemeanors. Such differences may reflect real differences in the practices and procedures applied in the courts and by forensic psychiatrists in the various jurisdictions. This is

an area that also has received little research attention.

To summarize, insanity acquittals in Connecticut have increased over the last decade and a half, but at a rate that parallels the increase in the adult population. Insanity acquittees are more likely to be male and minorities in proportions beyond their numbers in the population. Most acquittees are schizophrenic, but a substantial number have a primary evaluation diagnosis of personality disorder or substance abuse. The insanity acquittal is most often obtained in cases of crimes against persons, a quarter of which are homicides.

Another focus of our interest has been the delineation of gender differences among insanity acquittees. Two approaches were adopted to pursue this research. The first is to distinguish men and women NGRIs on psychiatric diagnosis and index crime and to compare the results for Connecticut with other states for which similar data are in existence. Initial analyses of this type were presented above as Tables 4 and 7.** Further analyses collapsing diagnosis into two general categories, psychotic and nonpsychotic disorders,†† were performed. Table 8 shows the results of a log-linear analysis, a procedure somewhat analogous to multiple regression analysis (appropriate for use with categorical data) with the interpretation that the "independent" variables affect the odds on the "dependent" variable (when the dependent variable is a dichotomy, this technique is equivalent to the more familiar logistic regression technique). In this case the dependent variable is the distribution of diagnosis, and the independent variables are jurisdiction and the gender of the individual. Table 8 shows four models that, without prior knowledge of associations among the variables, might be reasonably fitted to these data.‡‡ Each model accepts a relationship between the independent variables, designated by R*S, and indicative of a differing sex ratio across jurisdictions. Otherwise, the models specify the following relationships: Model 1—an isolated effect of jurisdiction on diagnosis; Model 2—an isolated effect of gender on diagnosis; Model 3—joint independent effects of jurisdiction and gender on diagnosis; and, Model 4—an

Table 8
Log-Linear Model Analysis Diagnosis, Region and Sex

Model	LRx^2	*df*	*p*
1 (D*S)(R*S)	38.43	6	.0001
2 (D*R)(R*S)	3.58	4	.4664
3 (D*R)(R*S)(S*D)	2.26	3	.5196
4 (D*R*S)	0.00	0	1.0000

** The second approach is a matched comparison study between the group of females and a group of men matched for year of commitment and is presented in the second article.

†† Each study used a distinct diagnostic classification scheme. The time period under study also saw a change from DSM-II to the DSM-III classification system. It was often difficult to determine under which general category a more specific diagnosis would be classified. The broad dichotomy we propose, was our solution to this dilemma. But, see Reynolds[30] for a discussion on the pitfalls associated with collapsing variables and Jacob[31] for a discussion on analysis of published data.

‡‡ There are actually 18 possible models ranging in complexity from one showing no effects and those having only a row, column, or layer effect to the saturated model. In applied social research settings, one seldom encounters variables with equally probable classes. Therefore, the practical value of proposing and analyzing models of the former type or with a single main effect is limited.

Table 9
Log-Linear Model Analysis Crime, Region, and Sex

Model	LRx^2	*df*	*p*
1 (C*S)(R*S)	278.64	16	.0001
2 (C*R)(R*S)	32.16	10	.0004
3 (C*R)(C*S)(R*S)	10.69	8	.2199
4 (C*R*S)	0.00	0	1.0000

interaction between jurisdiction and gender in predicting diagnosis. Each model generates a set of fitted or predicted frequencies for the 3 variable classification that are compared to the observed frequencies assembled from the published papers (see Tables 4 and 7, above) and similar data taken from the NGRI Registry.

The best model is chosen by two criteria: one is how well the fitted frequencies agree with the observed data, this is reflected in the likelihood ratio (LR) chi-square statistic. The other criteria is parsimony of the model, that is, a model with fewer parameters is preferred.

Table 8 shows the results of evaluating these models. Model 1 generates expected frequencies that do not fit the observed table very well as reflected in the large LRx^2 value (relative to degrees of freedom) and a low *p* value ($LRx^2 = 38.43$, $df = 6$, $p < .001$). Model 4, conversely, fits the observed data perfectly. However, as indicated by their small LRx^2, Models 2 ($LRx^2 = 3.58$, $df = 4$, $p < .46$) and 3 ($LRx^2 = 2.26$, df = 3, p = 0.51) fit the observed data as well as Model 4 does. However, Model 2 is more parsimonious in that it has fewer model elements. In addition, it can be shown that the difference in fit of the data between Models 2 and 3 is trivial ($x^2 = 1.32$, $df = 1$, $p < .25$).

Model 2 shows that the distributions of diagnoses vary from state to state. The model further suggests no direct relationship between diagnosis and gender. However, the two variables will be spuriously related because they are both associated with region.

Similar models for crime data for the four jurisdictions used in the diagnosis analyses and Hawaii are shown in Table 9. Four models (those which included the significant R*S term) were examined for this part of the research. At the end of the model building and fitting procedures, Model 3 with no three-way interaction term fit the data best. Model 3 includes all pairwise interactions: the association between region and gender, region and crime, and crime and gender. Every variable is associated with every other variable. Unlike the relationship shown in Model 2 (above, for diagnosis), controlling for one variable would *not* eliminate the relationship between the other two variables.

These models are simple, examining only three variable cross-classifications. They are further limited because of the reliance on data from secondary sources. However, with these caveats, comparing distributions of diagnoses and crimes for male and female NGRIs from Connecticut to similar distributions from four other locales produced results that suggest there are:

1. jurisdictional differences in both diagnosis of NGRIs and crimes committed by NGRIs;
2. gender differences in crime; and

3. differences in the gender of NGRIs across regions.

These differences may limit attempts to generalize from single-site studies to other jurisdictions and may hamper exploration of relationships between other variables (e.g., length of stay that is related to both diagnosis and crime) on a national basis unless appropriate controls are introduced into the analyses.

Steadman[5] noted similar differences in comparing New York statistics to those from Oregon. Our research also supports his conclusion of an association between gender and crime. Other reviewers as well[4,32] have noted these regional differences.

Especially intriguing regarding these results is that as one control, only jurisdictions that followed similar legal statutes (ALI) were used in the analyses. This suggests that the statutory language of the plea may not be applied uniformly across states and may not be the determining factor in whether an individual is acquitted.

Other potentially significant factors that might account for these differences are more related to the legal process: the proportion of judge versus jury trials for NGRI proceedings; standards of proof; the exact wording of the statute (e.g., New York used a modified ALI standard during the reporting period examined for this research); variations in forensic expertise of clinical experts and witnesses; and/or prevailing beliefs concerning the insanity defense.

Comprehensive, collaborative assessment of the effects such procedural factors might exert on the outcome of NGRI cases is a necessary next step in research on the insanity defense. We believe that these initial analyses from our Division demonstrate the promise of our registry as one means of proceeding with this type of work.

Two other projects currently underway are comparative analyses of matched samples of involuntary mental patients, convicted felons, and mentally ill felons; and more recently, an evaluation of the Connecticut Psychiatric Security Review Board. Establishment of the PSRB concomitantly with the beginning of these research initiatives of the Law and Psychiatry Division in the area of the insanity defense places our Division in the unique position to perform a prospective evaluation of the PSRB bolstered by a 15-year series of "pretest" data.

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