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PATTERNS OF DEATH IN A METHADONE-MAINTAINED VETERANS POPULATION

by

REUBEN L. NORMAN, Jr.

A Dissertation submitted to the Graduate Faculty in Sociology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

1994

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Date

Chair of Examining Committee

May 23 1994.
Date

Executive Officer

William Kornblum

Charles H. Winick

Supervisory Committee

The City University of New York

Abstract

PATTERNS OF DEATH IN A METHADONE-MAINTAINED VETERANS POPULATION

by

Reuben Lamar Norman, Jr.

Adviser: Bogdan Denitch

In the period 1981 through 1982, Thomas M. Smith studied a group of military veterans who were patients in a methadone maintenance clinic for heroin addicts in a large metropolitan area. The purpose of the study was to examine multiple drug use characteristics of persons who remained in long term treatment for a period of two years. However, by mid-1992 thirty-four of the original ninety-one subjects had died: an astonishingly high rate of mortality, even for heroin addicts. Among the dead were thirteen who had died from reasons of health, ten of AIDS, seven from alcoholism and four from various forms of violence.

Using the original data collected by Smith, and adding subsequent records for reasons of death, a secondary analysis on this longitudinal dataset was run in order to reveal the factors associated with mortality. Cluster analysis revealed strong three types based upon narcotic use, pill use or low use of most drugs. Overall, almost half of the high heroin and cocaine users, one third of the high pill users and a quarter of the low users were dead by mid-1992.

While it has been known for several years that AIDS is spread by IV drug use, it has not been known who among IV drug using population is most at risk. Logistic regression revealed that those users who had relapsed in their use of methadone were more likely to have died, especially of AIDS. The negative methadone presence was an indicator that the patient had been engaged in narcotic use again.

Almost half of the sixty percent of the veterans with health problems were dead. Mortality was greatest for blacks, followed by hispanics then whites. Over half of the twenty-one alcoholics were dead. Those who started heroin use at an older age were more likely to have died than those who started younger. Heavy pill usage was as associated with AIDS deaths as was frequent narcotic use.

Acknowledgements

To Dorothy Jean Barksdale and Reuben Lamar Norman, Sr.
my parents

A dissertation usually represents an accumulation of debts. Usually the debts go largely unpaid with simple acknowledgement of the debts being the only form of repayment.

My earliest interest in sociological research was formed during my four years at Valdosta State College in south Georgia between 1972 and 1976. Louie Brown helped me to see the steps required in handling a long term project. Emory Warrick, Sr. gave a world view larger than that with which I had started college.

At CUNY Graduate Center, several people helped me during the early 1980s, especially the late Emil Oestereicher in terms of Marxist theory and the late David Caplovitz in terms of the old Columbia style of tabular analysis. Jack Hammond gave CUNY students a good perspective on the inner workings of advanced statistics. Bill Kornblum gave good advice on the structure of the thesis. Paul Attewell contributed to the interpretation of the statistics. Very useful criticism of the proposal was provided by Barbara Katz Rothman and Rolf Meyerson. Manfred Kuechler suggested a well thought out alternative statistical methodology.

Part of the analysis was done during my time at New York University. Bert Holland was a major source for statistics as well as a constant reminder that if I did not write the thesis, no one else would. The late Ivor V. Smith and John Lee taught me a lot about the mainframe system, without which I could not have continued my work or the analysis. Lisa Barnett often provided useful comments and assistance as well.

Help was also provided by friends and colleagues at the New York State Office of Alcohol and Substance Abuse (OASAS). Ken Robertson helped frequently by understanding that I was completing a dissertation as I worked. He also helped me get started with PC-based statistics. Jagruti Shah and Gladys Walinski often helped as well. Rob Smith provided help in relating the raw numbers back to the life-style realities of the drug users. Herman Joseph provided many

sources for the review of literature. Greg Rainone made suggestions on the proposal. Charles Winick provided the link between CUNY and the field of drug abuse research. Near the end of the research, Dr. Winick also reviewed the whole thesis.

Tom Smith was my original collaborator and gave me a first hand view on the realities of methadone treatment. The conversion of the whole document into Turabian style was done by Anne Goldstein. No doubt I have lost track of some who helped along the way. For those I will simply issue a collective thanks. As always, no one else but the author is responsible for the final result.

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CHAPTER 1

INTRODUCTION

Patterns of Death in a Methadone-Maintained Veterans Population

Intravenous injection of illegal drugs has for years carried with it an annual mortality rate of about 1 percent. The life style associated with acquiring the drugs is often unhealthy and the persons with whom one deals in this subculture are often dangerous and unhealthy themselves. Regular eating and sleeping patterns are difficult to maintain under the conditions of regular use of illegal drugs. Other drug use is frequently associated with IV drug use, especially alcohol. Some researchers believe that the method of ingestion is itself the primary risk factor. Since the mid 1980s, AIDS has entered into the equation as another risk factor .

Acquired immunodeficiency syndrome (AIDS) has been an IV drug user health problem in the United States since the early 1980's, although it was not recognized as such at that time. The first recognized victims came largely from within the male homosexual population. Frequent, unprotected, random sexual activity was the vector of disease transmission. AIDS soon vectored into the IV drug using population. The second group was more male than female, but

the spouses and woman friends of the IV users have increasingly become infected with AIDS from unprotected sexual relations. A third infected group has consisted of persons using AIDS-contaminated blood products. This third group breaks down into roughly two sub-populations, persons who have received blood during a medical procedure, and the hemophiliac children and young adults of America. A fourth group has recently developed, the children born of HIV infected mothers.

Gay males have become increasingly educated as to the necessity of safe sex practices such as using condoms during sexual activity. Rates of human immunodeficiency virus (HIV) infection, while high within this population, have largely stabilized. The blood supply has become much safer since the mid 1980s, and the incidence of AIDS contaminated blood products is now quite low, although diseases such as hepatitis are still rampant. And it is still possible for IV users to sell their potentially infected blood at donor centers. Yet the one population where large increases in HIV positive rates are still possible is the IV drug-using population.

A race and class analysis could be applied to the AIDS situation and suggest that the better off, white proportion of the population has been able to stabilize its AIDS problem, while the poor, largely black and population has been left to fend for itself. Such a perspective does not

fully explain the problem, but fits within the general health parameters of the American population. In general, better-off people obtain better health care than do the poor and white people obtain better health care than non-white people. However certain factors, especially widespread intravenous consumption of drugs within the black and Hispanic population, compound the situation.

This research focused upon a segment of the IV drug-using population: military veterans at a methadone maintenance center in a large metropolitan area. The data were originally gathered during the early 1980s for research concerning multiple drug abuse among methadone maintained addicts.[1] Towards the end of the study, it was noted that an inordinate number of persons were dead, 13 of the original 91 subjects. Reasons for the deaths included four persons of alcohol or cocaine abuse, three of health related reasons, two of violence and four of AIDS. By 1990, twenty-seven of the patients had died. Almost 40 percent of the veterans had died by 1992, an extraordinary rate for heroin users. The purpose of the research was to compare the drug

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[1]Thomas M. Smith, Patterns of Multiple Drug Abuse in Methadone-Maintained Heroin Addicts (Doctoral Dissertation, Rutgers University, New Brunswick, 1986). Dissertation Information Service, 1983. (University Microfilms International No. 8612137.)

use patterns between the dead and the survivors to attempt to explain the extra mortality.

CHAPTER 2

Background of the Problem

Introduction

Capitalism has been the social foundation for Europe and the United States for most of the last two hundred years and the dominant system for the globe for most of this century. Underdeveloped areas and to a lesser degree the areas under Lenin-Marxist systems have staved off capitalism during this much of the time, but for the present and perhaps the foreseeable future, capitalism is the dominant world system.

Capitalism can be seen as a process for amassing or accumulating ever increasing profits, derived by the few from the labor of the many. Future profits require investment in new technology to create more production with less labor and hopefully at a lower cost per unit of labor. This ongoing drive to cut the socially necessary labor time, is the engine for accumulation. Vast distortions are created in society as capital accumulates. Over a century ago Karl Marx first described capitalism this way and termed these distortions as contradictions. More academically oriented positivist writers of that era developed less

confrontational terms, such as gemeinschaft-gesellschaft to describe the same phenomenon.[1]

The primary distortion is that in the aggregate, the working and middle classes are paid less than the total value of their aggregate production. Central governments in advanced industrial societies spend a great deal of time trying to shift the effects of this distortion, either back into the working and middle classes at home or to some other countries' middle and working classes. For the main way of dealing with this primary distortion, is to cut employment, either at home or abroad. Secondary effects of this distortion upon the middle and working classes are disastrous. Incredible stresses tear at whatever ongoing social arrangements may exist, from the national level all the way down to the family and to the individual identities of the members of society. From these stresses a great many other social problems often require intervention from the central government.

Yet, although myriad social problems may occur within sectors of society which have been financially harmed by capitalist growth, the same or other social problems may occur in those sectors where the accumulation process has resulted in economic gains. Durkheim first noted this tendency in French suicide rates in the 1800s. Suicide

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[1]Ferdinand Tonnies, cited in Don Martindale, The Nature and Types of Sociological Theory (Boston: Houghton Mifflin Company, 1960), 82-85.

varied according to the degree of economic change, not usually with the direction. Winick later applied a version of this theory to drug use patterns.[2]

In early stages of development, the agricultural sector is usually modernized first, sending large numbers of displaced small farmers, tenants and sometimes ex-slaves to the urban areas, where hopefully they are then pulled into what is euphemistically know as the 'free-labor' market. The People's Republic of China in its current modernization drive is presently facing this very problem. They have over 1 billion people, and between 50 million and 100 million people presently live on small, inefficient farms. In order for China to fully develop its food capacity, these farms need to be consolidated. A question then arises of what to do with this excess population, even if many are willing to leave the land of their ancestors for the huge cities of China.

The last time a large country attempted such a transfer, the results were not good. The Soviet Union never really recovered its agricultural capacity after the collectivization of the early Stalin years. The battle over international trade and General Area Tarrif and Trade (GATT) this past year was fought largely upon the desire of the

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[2]Emile Durkheim, Suicide: A study in Sociology (New York: The Free Press, 1954). Winick notes Durkheim as confronting a similar problem in suicide as he was confronting with trying to explain drug dependence.

conservative French government not to antagonize its remaining farmers and perhaps threaten the existence of the government.[3] The Japanese government is also fighting to preserve its family farms, especially rice farms, for roughly the same reasons as that of the French. Only in America have successive governments for most of this century been willing to continually shrink the farm population as a part of federal policy. This American policy is in fact the reason that we as a country are fighting with some of our most important 'allies' over the issue of food production and exports.

America has essentially emptied its rural farming areas and has built up a vast food production industry. This system is very efficient and produces huge quantities of food which cannot be purchased by America consumers.[4] The full extent of this overproduction was not felt until the early Reagan years, when in combination with a disastrous interest rate policy, American exports of food were all but destroyed. This in turn forced the Reagan administration to

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[3]The surviving French farmers are not willing to leave the land. French national culture is tied to an idea of family farming. French food is itself tied to the quality of raw food produced internally. More importantly, exporting food overproduction to Europe has been the role of France for most of the period since World War II. The French apparently see no compelling reason to give this role to the U.S. and increase their own unemployment.

[4]It has also displaced millions of people since World War I, many of whom with their descendents now live a precarious existence in the inner cities of America.

absorb this overproduction through increased federal mandated subsidies to American food producers to the tune of almost $25 billion annually during the early 1980's. Even subsidies of such an unprecedented level were insufficient to save many farmers, and a wave of bankruptcies swept through the farm belt, forcing consolidations not seen since the Great Depression. The surviving farmers now are larger than ever, are deeper in debt than ever and are in the main more efficient than ever. The stage has been set for even greater economic distortions, which the central government will have to address later during the next overproduction crisis.

History and Theory of Drug Use

Tertiary Deviance: Heroin to Methadone

The criminalization and decriminalization of various substances in the U.S. has provided grist for countless doctors, preachers, sociologists, historians, psychologists, etc., for over one hundred years. The legality of the consumption of various substances has often varied with the political power of the ethnic group most likely to use the substance. The criminalization of a given substance has often led to the creation of an underground market to support the tastes and habits of those individuals wishing to continue the consumption of the substance. Governmental attempts to suppress these markets have generally met with

limited success at best, often with gross distortions within the larger society. Regarding the use of methadone in dealing with the heroin prohibition, Miller created the term 'tertiary deviance' to describe American society's attempt to reconcile these contradictions.[5] More will be said about tertiary deviance later.

Yet for all the bickering between the various professions over the control of various substances used by the various ethnicities and classes, these fights have not usually directly threatened the lives of large numbers of citizens, the fierce rhetoric surrounding the prevailing prohibition notwithstanding. As the AIDS virus swept through the male homosexual population of America during the early 1980s, then vectored into the intravenous drug-using population, this situation was fundamentally changed. Questions about the safety of the blood supply as well as to the likelihood of heterosexual transmission. Those questions remain today.

The Harrison Act of 1914 was interpreted in such a fashion as to shift control of morphine and cocaine from the medical profession to that of law enforcement, where it has largely remained.[6] The Eighteenth Amendment and the Volstead Act similarly attempted to place alcohol under the control of the police as well. Eventually, because of the

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[5]Ibid., 180-182.

[6]Ibid., 171.

patent failure of the attempt to outlaw alcohol, alcohol prohibition was repealed in 1933, but opiate prohibition remained.

What had been a medical problem prior to the 1914 Harrison Act, subsequently became a criminal justice problem.[7] Fifty years of opiate prohibition haveled to the creation of a strong deviant subculture of heroin users- primarily self-injecting minority black and Hispanic males. The simultaneous rapid rise in both the heroin addiction and crime rates in the late 1960s, combined with the feared return of thousands of addicted Vietnam veterans eased the federal government's acceptance of a synthetic heroin equivalent, methadone. During the early 1960s, Vincent P. Dole and Marie Nyswander had created a system of substituting methadone for heroin, while blocking the user's withdrawal symptoms- what soon became known as methadone maintenance. [8]

The failure of government intervention against morphine consumption prior to methadone, was largely ignored by the general American population until the 1960s.[9] Simultaneous with the increase in heroin arrests was an increase in crime in Washington, D.C. The two events were associated with each

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[7]Ibid., 182.

[8]Ibid., 179.

[9]Ibid., 173.

other, became politicized and their hoped-for decrease became a public issue during the late 1960s.

As the Vietnam War continued, large numbers of soldiers began using drugs, especially heroin.[10] The morphine distribution capital of the world at that time was Southeast Asia, especially the area between Vietnam, Thailand and Burma known as the Golden Triangle. The well-documented complicity of American intelligence with the local feudal drug lords permitted a veritable deluge of cheap, powerful heroin to flood the American military presence in Vietnam.[11] As public awareness of this problem grew, so did the fear that many of these soldiers would return home seeking heroin and further escalating the crime rate.[12] This drug epidemic was an integral part of the general, world-wide

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[10]Norman E. Zinberg, "Rehabilitation of Heroin Users in Vietnam," Contemporary Drug Problems, Spring 1972, 263-294.

[11]Alfred McCoy, 1991.

[12]The intelligence term used to describe such unfortunate secondary consequences at home from foreign intervention is blowback. A blowback situation is developing over the Islamic terrorists who attempted to destroy the World Trade Center in Manhattan last year. Apparently some of the training for the bombers came from American sources while the terrorists were battling the Soviet Union in Afghanistan during the Reagan years. Currently one of the world's major sources for heroin poppy is the fields of Afghanistan, where a well laid trail still exists from the Afghan intervention, for transporting the drug back into the United States. An earlier version of this problem was described by Simpson. Christopher Simpson, Blowback: America's Recruitment of Nazis and Its Effects on the Cold War (New York: Weidenfeld and Nicolson, 1988).

breakdown in morale and discipline throughout the American military.[13] The military soon instituted drug testing of all soldiers returning from Vietnam. This in turn forced most drug-using soldiers to cease drug use prior to leaving Vietnam, an event looked forward to by most soldiers. In retrospect, most research suggests that relatively few American soldiers first introduced to heroin in Southeast Asia continued their habit after returning home.

By the early 1970s drug policy had come almost 360 degrees from the beginning of the century. As the failure of a punitive technique towards drug abuse became obvious during the late 1960s and as the public became scared of Vietnam-associated drug problems, the medical model of controlled withdrawal and/or medium to long term maintenance became more palatable to the public and hence politically acceptable. Heroin maintenance which had been attempted by some doctors after the Harrison Act of 1914, gave way to forced abstention during the 1920s, which ultimately gave way to a partial remedicalization under methadone maintenance during the early 1970s.[14] Essentially the Harrison Act was reinterpreted yet again, to permit the medical establishment to wrest more control from the

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[13]Haynes Johnson and George C. Wilson. Army in Anguish (New York: Pocket Books, 1972).

[14]Miller, 182-183.

criminal justice system over the non-medical consumption of opiates.

Miller described the outcome of this battle as tertiary deviance.[15] Howard S. Becker had previously defined the bounds of primary and secondary deviance. Primary deviance denoted the performing of a deviant act, with secondary deviance resulting in the development of a deviant social role and subculture. The secondary deviance came about as a defense mechanism by the newly defined deviants against the societal assault upon their behavior.

Miller carried the logic a step further and defined tertiary deviance as:

> . . . the societal solution to social problems which takes the form of concentrating upon eliminating or minimizing the negative effects of secondary deviance as opposed to prior efforts to eliminate primary deviance.[16]

Tertiary deviance became a halfway means of dealing with the resulting deviant behavior. In the case of heroin use, society was forced to accept the semi-legitimation of opiate addiction, albeit with a synthetic alternative, in this instance methadone. The reasons included the rapid rise in addiction, the associated rise in crime and the feared return of thousands of addicted Vietnam veterans.

Medicalization to Criminalization

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[15]Miller, 180-182.

[16]Ibid., 180.

David Courtwright presented an alternative interpretation of this same history, by focusing upon the changing demographics of the opiate using population:

> Greatly simplified, my argument is that opiate addiction increased throughout the nineteenth century, peaked in the 1890's and thereafter began a sustained decline. The major reason for the rise, as well as the fall, in the rate of opiate addiction was the prevailing medical practice of the day.[17]

Courtwright believed that the nineteenth century doctors 'liberally' dispensed both opium and morphine to their patients. Many of these patients were female and often became addicted. Concurrently, both Chinese and members of the white underworld used opium for smoking. During the twentieth century these patterns diverged, as the addiction to opiates ceased to be primarily a white, middle to upper class female phenomenon and became more concentrated in lower class urban males. Reasons for the decline in the number of these doctor-addicted or iatrogenic opiate users included a 'wider range of effective therapies, improved sanitation and improved medical education.'[18] Courtwright was unsure of the precise date when the nonmedical use of opiates became the dominant model, but suggested that 1929 became the 'national tipping point'.[19]

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[17]David T.Courtwright, Dark Paradise, Opiate Addiction in America Before 1940 (Cambridge: Harvard University Press, 1982), 2.

[18]Ibid., 3.

[19]Ibid., 125.

Courtwright did not see the Harrison Act of 1914 as a simple linear function of the demographic changes in the addict population but rather as paralleling other influences:

> Yet there is a sense in which the transformation can be viewed as a necessary condition for the emerging hard-line approach: it certainly would have been more difficult to deny drugs and mete out sentences if, in the 1920s and 1930s, the addict population still had been largely composed of ailing ladies and crippled warveterans.[20]

One of the main results of this transformation was that the nonmedical addict became seen as having a defective or psychopathic personality by a growing number of physicians and by the public officials who created and administered the opiate laws. This official attitude dominated the 1928 congressional hearings which ultimately led to the creation of two 'quarantining' hospitals.[21] Representative Stephen G. Porter of Pennsylvania, the sponsor of the 1928 hospital legislation, saw fit to sponsor legislation in 1930 to divest control over narcotics from within the Treasury Department Prohibition Unit to a separate Bureau of Narcotics. Why?

> "We are all convinced of the wisdom of separating narcotics from [alcohol] prohibition," explained Porter, "for the simple reason that there is absolutely no relation between the two. The latter is highly

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[20]Ibid., 4.

[21]Ibid., 141-142.

> controversial and the former is not" (U.S. House, Bureau of Narcotics: Hearings [my emphasis].[22]

Thus in a single sentence, the reason for which alcohol would soon be legalized, while naturally occurring narcotics would remain criminalized until the present.

A case can be made that a combination of Miller and Courtwright is accurate in interpreting current methadone practice, remedicalization was the form that tertiary deviance took with regard to heroin use.

Role Strain and Drug Use

Winick's theory on the incidence of drug use suggested that drug dependence should be high in groups where there were:

1. easy access to dependence-producing substances
2. disengagement from negative proscriptions about their use
3. role strain and/or role deprivation.[23]

Winick used a fairly general definition of drug of dependence, including all psychoactive drugs. Role was defined in straight forward-sociological terms. Even though Winick was clear to note that he was describing how drug use began, not how it continued, long term methadone maintenance can be seen as one more form of drug dependence, meeting the

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[22]Ibid., 144.

[23]Charles Winick, "A Sociological Theory of the Genesis of Drug Dependence," in Sociological Aspects of Drug Dependence, ed. Charles Wiinick (Cleveland: CRC Press, 1974), 4.

first two criteria, but avoiding the last.[24] The original role strain which led to the heroin dependence may have continued to exist for members of a particular group, but at a decreased level through the effects of a powerful psychoactive drug--methadone. Many critics of long term methadone maintenance can be seen as rejecting the first two criteria, while ignoring the role strain. Further into the paper, he suggested that the theory might also be helpful in explaining how users ceased being drug dependent. If I have a question with in Winick's theory, it is that he does not attempt to create a hierarchy of importance of the three criteria, at least not in this paper. I believe that the role problems are the most critical. If the role strain is sufficiently strong for certain groups, the resulting problems for that group may well lead at least some of its members to search for relief through drugs, irrespective of the legal availability and irrespective of the social prohibition on their use.

Drug Treatment Practice

The present study reflected the intersection and overlap of four major areas. First the history of drug

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[24]Tertiary deviance is a major theory in this research. It will be taken up in depth in the next section. The last criteria was finessed in methadone maintenance to some degree through the idea of tertiary deviance. In fact, tertiary deviance can be seen as accepting the first two criteria, while attempting to ignore the continuing role problems in society.

treatment was considered. The relationship between heroin use and methadone was then viewed. Next the overlap between U. S. military veterans and intravenous heroin use was taken into account. Within this intersection, some veterans have sought treatment at methadone clinics. Of these, a number have died of various causes, including an increasing number from AIDS. The balance of the literature review is presented in four general sections concerning:

1. Drug Treatment History

2. Methadone
   - 2.1 Methadone and Heroin
   - 2.2 Methadone and Alcohol
   - 2.3 Methadone and Multiple Drug Use

3. Drug Use in the Military During the Vietnam War

4. Mortality
   - 4.1 Methadone and Mortality
   - 4.2 Military Service and Mortality
   - 4.3 Methadone, AIDS and Mortality

Drug Treatment History: DARP and TOPS

The three major types of modalities of drug treatment are methadone maintenance, therapeutic communities and drug-free counseling. During the 1960s, public concern with heroin led to methadone maintenance and the therapeutic communities. Around the same time, drug-free counseling grew as it became clear that other non-opioids could lead to

dependency and problems. The major differences and similarities are shown in the accompanying chart.[25]

In order to determine the effectiveness of community-based treatment, two studies were started after the late 1960s. First the Drug Abuse Reporting Program (DARP) looked at clients who entered treatment between 1969 and 1974 and who were followed for up to twelve years after treatment. The second, the Treatment Outcome Prospective Study (TOPS), looked at a national sample of patients who entered treatment between 1979 and 1981. The follow-up was for up to five years. TOPS was the basis for the Hubbard, Marsden and Rachal book.[26]

The DARP study claimed equal effectiveness for all three treatment modalities. Effectiveness was largely a function of time spent in treatment. Three months was the minimum necessary to produce positive changes.[27] The TOPS study built upon the DARP results. Success for drug use treatment was again claimed for the three major modalities. Whether or not the modalities were roughly equivalent in

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[25]Source: Robert L. Hubbard, Mary Ellen Marsden, J. Valley Rachal et al., Drug Abuse Treatment: A National Study of Effectiveness (Chapel Hill: The University of North Carolina Press, 1989), 4.

[26]Ibid., 6.

[27]Ibid., 7.

Major Aspects of Drug Treatment Programs-TOPS

Major Aspects	Type of Program: Methadone Maintenance (N = 4184)	Therapeutic Community (N = 2891)	Drug-Free Program (N = 1914)[a]
Location	outpatient	residential	outpatient
Dependencies treated	opiate	opiate, non-opiate	opiate, non-opiate
Method	chemical stabilization with services and therapy	structured long-term behavior modification	counseling, therapy
Staff	medical personnel and counselors	ex-users and counselors	psychologists and social workers
Annual costs	$1945	$6135	$2000[b]
Age: Under 21	2.1%	19.1%	27.3%
Over 30	40.5%	25.2%	21.2%[c]
Regular Heroin use: 1 year prior	63.5%	30.9%	8.6%[d]
3-5 year follow up	17.5%	11.8%	4.6%
Regular Cocaine use: 1 year prior	26.4%	27.6%	12.8%
3-5 year follow up	16.5%	9.6%	5.6%
Regular other[e] use: 1 year prior	30.3%	49.9%	35.7%
3-5 year follow up	10.2%	9.3%	4.4%

Source: Hubbard et al., 4, 5.

[a]Ibid. N of cases from p. 73.

[b]Ibid. Costs are per client annually and from p. 69.

[c]Ibid. Age data from p. 73.

[d]Ibid. All drug percentages from p. 181.

[e]Ibid. Other means nonmedical psychotherapeutic use, not alcohol or marijuana.

lessening drug use, comparisons across modalities was difficult because each modality had very different client populations.[28] Methadone programs tended to attract disproportionately older, black and daily opioid users while younger and apparently white, more pill-oriented clients gravitated towards drug-free programs.[29]

Whites accounted for 40 percent of the methadone patients, 53 percent of the residential patients, and 80 percent of the drug-free patients. Blacks accounted for 37 percent of the methadone patients, 40 percent of the residential patients, and 10 percent of the drug-free patients. Hispanics accounted for 21 percent of the methadone patients, 6.8 percent of the residential patients, and 8.4 percent of the drug-free patients. Because of the very different client populations, a series of logistic regressions were run on several outcome variables.[30]

A major difference in the three programs was client age. The average age for the methadone patients was 37 years, with 27 for the residential or therapeutic patients

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[28]For instance, drug-free programs had a statistically significant reduction in drug use only for nonmedical psychotherapeutics, not for heroin or cocaine. Hubbard et al., 165.

[29]Hubbard et al., 92, 93.

[30]In the analysis of the current data, I too ran many, many regressions. It finally occurred to me to try cluster analysis to classify the veterans into drug user types. At least in this work, I have found that one poor cluster analysis is worth several good regression runs.

and 25 for the drug-free patients. The reason that age is important is that it is possible that a great many heroin addicts may simply 'mature out.' This hypothesis was first suggested by Winick back in the early 1960s. He felt that the addict might reach at stage in his late twenties or early thirties where the stresses which originally contributed to his drug use were no longer as influential. At that point, drug use ceased more or less on its own. Winick also suggested that addiction itself might have a life cycle independent of the drug user's stage in life. Either alternative cycle accounted for about two thirds of the drug users in his sample.[31] Kaplan reported that some researchers had questioned Winick's interpretation of the data, but had accepted the general validity of the hypothesis.[32]

If we reconsider the relative ages of the clients in the three modalities in light of the 'maturing out' hypothesis, questions arise as to how much the three modalities and especially regular methadone maintenance actually accounted for the decrease in heroin use. Alternatively, it may be that those clients using opiates in their thirties and still looking for a way to stop, represent the one third of Winick's sample who failed to

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[31]Charles Winick, United Nations Bulletin on Narcotics 14, no. 1 (January-March 1962): 1-7.

[32]John Kaplan, The Hardest Drug: Heroin and Public Policy (Chicago: The University of Chicago Press, 1983), 36.

mature out. At the very least, the possibility of a 'maturing out' could have been dealt with in a more sophisticated way in the TOPS statistical analysis. An even more troubling question for the moment is whether or not methadone is itself interfering with what could be a natural process of opiate-use cessation.

Methadone

Methadone and heroin. One of the first studies on the outcome of methadone maintenance was done in 1980 by the New York State Division of Substance Abuse Services (DSAS).[33] The paper's authors were not mentioned, but the data were originally gathered by Vincent Dole and Herman Joseph under a National Institute on Drug Abuse grant. The introduction of the paper noted that methadone treatment was originally developed as a form of maintenance for persons deeply addicted to heroin and who had continued in narcotic use despite previous interventions as jailing, civil commitment, and other forms of treatment. The operant word here is 'maintenance.' The text of the first three paragraphs is a as clear a statement of the medical model of narcotic use as I have ever seen in print:

> . . . methadone is viewed by proponents as analogous to other maintenance chemotherapies for

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[33] Drug Use Before, During and After Discharge From Methadone Maintenance Treatment: A Follow Up Study (Outcome Study Report No. 11; New York State Division Of Substance Abuse Services, (DSAS), Bureau of Cost Effectiveness and Research, June 1980).

> medically dangerous or life-threatening conditions, e.g., l-dopamine for Parkinson's disease, lithium for manic- depressive disorder, insulin for diabetes mellitus.

In juxtaposition to this orthodox view of medical maintenance, an alternative view of methadone was that of providing a temporary buffer against the use of illegal drugs until the user has made sufficient progress to begin gradual withdrawal. In this alternative model, methadone was a 'time-limited phase of rehabilitation rather than an open-ended or indefinite treatment.' The paper noted this new view was becoming popular, apparently within the New York State legislature. In retrospect, the 1980 attack against long term maintenance can be seen as part of the conservative counterattack against the perceived permissiveness and weakness of the 1960s. This DSAS paper can be seen as a response to this challenge to the orthodox model. The ascendance of the western states' radical conservative leader, Ronald Wilson Reagan, in the next presidential election further hardened government views on drug use.

This DSAS study included 962 patients located between 1975 and 1976 of 1545 patients who entered treatment in 1966, 1967 or 1972. Of the 962 located, 449 had remained in continuous treatment and 513 had been discharged at least once. Before admission, 96 percent had used illegal narcotics daily; during treatment only 2 percent used daily, and 15 percent used less often than daily. After discharge,

daily use jumped back up to 54 percent and occasional use moved up to 18 percent. The pre- and post-daily use of narcotics showed a substantial drop, roughly 50 percent, but both numbers were considerably higher than the 2 percent daily use while in treatment. Pre-treatment non-narcotic drug use dropped from 28 percent to 13 percent in treatment, then moved up slightly to 16 percent after discharge.[34] Pre-treatment alcohol use remained stable during treatment at about 20 percent, but almost doubled after discharge to 37 percent. Roughly 75 percent of the sample resumed narcotic use after discharge.

Another study of drug abuse treatment was done by DSAS almost ten years later.[35] This report was a summary of results for the four major treatment methods from the previous fifteen years:

1.	residential drug-free	RDF
2.	methadone maintenance	MM
3.	detoxification	DX
4.	outpatient drug-free	OPDF

Two major studies were cited, the Drug Abuse Report Program (DARP) project and the Treatment Outcome Prospective

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[34]Non-narcotic drugs included tranquilizers, barbiturates, amphetamines, cocaine but not marijuana.

[35]Phil Appel and Alan Kott. A Review of Basic Findings Concerning the Effectiveness of Drug Abuse Treatment, Treatment Issue Report No. 72 (New York State Division of Substance Abuse Services, Bureau of Research and Evaluation, January, 1990).

Study (TOPS).[36] Also Ball and others considered methadone maintenance before and during treatment.[37] Each of these studies focused primarily upon narcotic drug use and to a lesser degree upon non-opiate drug use. The basic findings were similar from prior to admission to one to three years after discharge:

1. significant declines in drug use
2. declines in self-reported criminal activity and arrests
3. increases in employment and other socially productive activities

The MM, RDF and OPDF methods were not directly comparable since they had different philosophies, goals, treatment methods, and frequently, different types of clients. Despite the differences, serious improvements occurred within three months of admission and often within the first few weeks.

The different approaches of the four methods in some ways seemed to parallel the ongoing battle between the medical and criminal justice views of drug use. The exponents of RDF or therapeutic communities see alienation, anomie or some psychosocial weakness as the primary reason for drug use.[38] RDF seeks to use various forms of therapy

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[36]These two studies have already been discussed in this chapter.

[37]John C. Ball et al., "The Reduction of Intravenous Heroin Use, Non-Opiate Abuse and Crime During Methadone Maintenance Treatment--Further Findings," paper presented at the 49th Annual Meeting of the Committee on Problems of Drug Dependency, Philadelphia, Pa., June 14-19, 1987, cited in Appel and Kott, 20.

[38]Appel and Kott, 3.

to rebuild the individual drug user's approach to life. Therapy in some instances approaches mind control or political reeducation as practiced in certain totalitarian societies. After discharge, the graduate is presumably able to return drug-free and productive back into society, without further intervention. The in vogue practice of placing young drug offenders in 'boot camps' is the most recent manifestation of this approach.

Methadone maintenance can be seen as a medical response to individuals with a chronic addiction tendency and quite possibly a 'metabolic deficit.'[39] The operant term here again is methadone maintenance not methadone withdrawal. The strong implication is that the complete reversal of the medical condition is unlikely. Methadone maintenance is most often in an outpatient setting, requiring few beds or residential type staffing. In New York State, certain methadone patients are encouraged to undergo a phased withdrawal or 'detoxification,' especially long term stable clients and those with fairly short lengths of addiction, but this is not the primary focus.

Residential drug-free programs have a wider range of drug use patterns than methadone patients, who are by definition opiate addicts. Outpatient drug-free programs represent a wide range of programs targeted to different treatment views and patient needs. Detoxification programs

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[39]Ibid., 3.

usually are planned withdrawal programs of a few weeks to a few months in duration, with support in a residential or medical location.[40] What was not made clear in the 1990 DSAS review, was the relative proportions of drug users being treated by the four methods. The report stated that methadone maintenance was still the most cost effective means for dealing with the majority of narcotic users in New York City.[41]

The battle between the medical and the criminal justice view of methadone use continues and may in fact not be resolvable. In hearings before the Select Committee on Narcotics Abuse and Control, the Deputy Assistant Administrator of the DEA Office of Diversion Control:

> I believe that what has been missing in this talk of relaxing standards for take-home dosages is a recognition of the true purpose of treatment programs. They were intended to provide medical support and counseling to narcotic addicted individuals with the ultimate goal of making these individuals drug free.[42]

Ignoring for the moment that the official was in some ways protecting the bureaucratic turf of the DEA in dispensing methadone, he apparently did not know the views of the scientists who had developed methadone treatment. Making the

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[40]Ibid., 4-5.

[41]Ibid., 10.

[42]Gene R. Haislip, Statement on Methadone Diversion from Narcotic Treatment Programs before the House Select Committee on Narcotics Abuse and Control, House of Representatives, 2 August 1989, 4.

methadone patients drug-free was not the original purpose. Haislip had nothing but disdain for those who simply believed in the legal distribution of narcotics as a preferred social policy.

Methadone and alcohol. One of the more important issues concerning methadone maintenance has been the question of the interaction between methadone and concurrent use of other drugs, especially alcohol. Mary Jeanne Kreek in a 1978 paper noted how alcohol use had been a problem for heroin users and had been documented for the first methadone patients in the middle 1960s.[43] She cited reports from Chicago, New York, Washington, D.C. and New Mexico which claimed from 25-71 percent of methadone related deaths were related to alcohol abuse alone. Kreek concluded her 1978 paper by noting that methadone had not shown itself to be toxic or to have serious adverse side effects in long-term treatment. Most medical complications were due to pre-existing conditions, while the single most serious medical problems related to methadone treatment was alcohol abuse.[44]

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[43]Mary Jeanne Kreek, "Medical Complications in Methadone Patients," Annals of the New York Academy of Sciences 311 (29 September 1978): 112.

[44]Ibid., 119, 127, 128.

One of the first DSAS studies reported the problems related to alcohol abuse and methadone.[45] Alcohol was noted as a cheap 'high' for patients who wished to get intoxicated. DSAS issued another report in 1985 which further documented the problems of alcohol abuse in methadone patients.[46] Alcoholism was the leading cause of death in treatment and second leading cause of death following treatment. In fact, deaths from alcohol were almost equal to deaths from narcotics.

A 1986 study done by Narcotics and Drug Research Inc., and DSAS again looked at whether alcohol use increased while methadone patients were in treatment.[47] The sample came from the Tri-State Ethnographic Project (TRISEP), a study of four methadone clinics in the Northeast. One theory cited by Hunt and others at the time suggested that methadone patients consciously substituted alcohol for heroin, in order to obtain the euphoria which methadone alone could not

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[45]Herman Joseph and Phil Appel, Excessive Alcohol Use Among Methadone Patients, Outcome Study Report Number 5 (New York State Division of Substance Abuse Services, Cost Effectiveness and Research, January 1979), 5-6.

[46]Herman Joseph and Phil Appel, "Alcoholism and Methadone Treatment: Consequences for the Patient and Program," The American Journal of Drug and Alcohol Abuse 11, nos. 1, 2 (1985): 37, 50.

[47]Dana E. Hunt, David L. Strug, Douglas S. Goldsmith, Douglas S. Lipton, Kenneth Robertson, and Linda Truitt, "Alcohol Use and Abuse: Heavy Drinking among Methadone Clients," The American Journal of Drug and Alcohol Abuse 12, nos. 1, 2 (1986): 147-164.

give.[48] Hunt also cited Preble and Miller who claimed that methadone actually encouraged alcohol consumption by creating a more lethargic life style than that usually associated with street heroin use.[49] Irrespective of whether alcohol use increased for addicts in methadone treatment, patients are under a much higher risk of medical problems if they drink heavily while in methadone treatment. When a secondary addiction to alcohol is present, methadone patients face a tenfold increase in mortality. Many intravenous drug users have general hepatic dysfunction prior to methadone treatment. This condition is compounded by the interactive effects of alcohol and methadone, since methadone is metabolized in the hepatic system.[50] The TRICEP data showed no difference in alcohol consumption between narcotic users not in treatment and methadone patients. The data also showed that the heavy drinkers were not substituting alcohol for heroin, but were in fact using heroin also on a fairly regular basis.[51]

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[48]G. E. Vaillant, "Twelve Year Dollow-up of New York Narcotic Addicts: Some Characteristics and Seterminants of Abstinence," American Journal of Psychiatry, no. 123 (1966): 563-585.

[49]Edward Preble and T. Miller, "Methadone, Wine and Welfare, in Street Ethnography, ed. R. Weppner (Beverly Hills: Sage Press, 1979).

[50]Hunt et al., 149-150.

[51]Ibid., 152, 160, 162.

A 1990 study looked at alcohol use by Anglo and Chicano narcotic addicts.[52] The sample included addicts from both a drug-free program, California Civil Addict Program--CAP, and from the Southern California Methadone Maintenance programs. In a 1989 study cited by these authors, it was claimed that heroin and alcohol consumption were inversely related throughout the addiction careers of their sample, irrespective of treatment method, ethnicity, or stage of career. Methadone was not found to increase alcohol use; instead, alcohol use increased whenever heroin use decreased.[53] This finding, if supported by additional research, would mitigate strongly against the idea that chronic alcohol use might be caused by long-term methadone maintenance, whatever other problems might occur. The death rate within the CAP drug-free sample approached 1 percent per year, with alcohol-related deaths at 17.5 percent during the study period.[54] Whatever the drive for continued or increased alcohol consumption, heavy alcohol consumption seems to carry a very heavy penalty in terms of general health as well as mortality for methadone clients.

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[52]Yih-Ing Hser, M. Douglas Anglin, and Kieko Powers, "Longitudinal Patterns of Alcohol Abuse by Narcotic Addicts," Recent Developments in Alcoholism 4 (1986): 145-171.

[53]M. D. Anglin, I. J. Almog, D. G. Fisher, and K. R. Peters, "Alcohol Use by Heroin Addicts: Evidence for an Inverse Relationship," American Journal of Drug and Alcohol Abuse 15, no. 2 (1989): 191-207.

[54]Hser et al., 168.

Methadone and multiple drug use. Many clients in methadone maintenance frequently use other drugs. Since methadone is only useful as a substitute for opiods, this is not surprising. The concomitant use of non-opiate drugs and of heroin itself while in treatment has been noted by many studies since the early days of methadone maintenance. One of the first DSAS studies claimed that such multiple drug use actually went down during and after treatment, but stated that the decrease probably was more due to the services provided by the clinic than to the use of methadone.[55]

One study from 1986 looked at the non-narcotic drug use patterns of black and white users in the Baltimore area.[56] Using a convoluted combination of factor analysis and cluster analysis, they eventually showed that blacks and whites factored and clustered differently, with respect to whether or not they were using heroin.[57] They concluded the

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[55]See DSAS Outcome Study Report no. 11, June 1980.

[56]John W. Shaffer, David N. Nurco, John C. Ball, and Timothy W. Kinlock, "Patterns of Non-Narcotic Drug Use Among Male Narcotics Addicts," The Journal of Drug Issues 16, no. 3 (1986): 435-442.

[57]I say that they clustered differently, but the tabular presentation was so poor that interpretation was difficult. The paper showed the factor loadings for the various combinations, but failed to present even a simple cluster table showing the mean drug consumption for any of the combinations. The current research includes not only such tables, but also a three dimensional graph of the results of the cluster analysis.

paper by stating that they had no theoretical explanation for the results.

Testimony before Congressman Charles Rangel's House Select Committee in 1989 noted that methadone clinics were 'more recently' being confronted with multiple drug use in patients.[58] Without suggesting disingenuousness, for the speaker to have stated that multiple drug use was a new problem in 1989 was sort of like the police chief played by Claude Raines in the movie "Casablaca" who was 'Shocked, shocked to hear of gambling. . . .' The testimony had been prepared by the Government Accounting Office, normally a fairly reliable source of nonpartisan information. The thrust of the speaker was to criticize the interim maintenance program of distributing methadone to certain patients before they had actually entered the program. Interim maintenance was being proposed as a means of slowing the spread of HIV among heroin users. Still the testimony mentioned the vast extent of multiple drug use in the clinics studied. It noted also the shortage of services at most of the clinics as well.

Drug Use in the Military During the Vietnam War

This section deals primarily with the Vietnam era because it was only during the Vietnam era that heroin use

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[58]Janet L. Shikles. "Preliminary Findings: A Survey of Methadone Maintenance Programs," Statement before the House Select Committee on Narcotics Abuse and Control, House of Representatives, August 2, 1989.

became a serious problem for the military while at war. Also methadone maintenance became national policy at least partially due to the American public's perception of the potential of large numbers of soldiers returning home with heroin habits. Previous wars in this century have frequently produced more alcohol problems than other forms of substance abuse.[59]

One of the major studies on the question of opiate use in America by returning Vietnam veterans was done by Lee N. Robins during the early 1970s.[60] Another part of her analysis was published in 1975.[61] In September 1971, she obtained a random sample of 943 men, split roughly in half between a 'general' sample of all returning enlistees and a 'drug-positive' group whose urine samples had shown the presence of opiates at the time of departure. Prior to Vietnam, less than 1 percent had ever been addicted to narcotics. In Vietnam, almost half of the general sample tried narcotics and twenty percent reported opiate addiction. While narcotics were usually smoked in Vietnam,

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[59]Keith A. Druley, and Steven Pashko, "Posttraumatic Stress Disorder in World War II and Korean Combat Veterans with Alcohol Dependency," Recent Developments in Alcoholism 6 (1988): 89-101.

[60]Lee N. Robins, The Vietnam Drug User Returns, special action office monograph, series A., no. 2. (Washington, D.C.: US Government Printing Office, 1974).

[61]Lee N.Robins, John E. Helzer, and Darlene H. Davis, "Narcotic Use in Southeast Asia and Afterward: An Interview Study of 898 Vietnam Returnees," Archives of General Psychiatry 32, no 8. (August 1975): 955-961.

injection increased with prolonged use. Narcotics in Vietnam were powerful, cheap and easily available, facilitating their consumption by smoking. Narcotics included both heroin and opium. Narcotic users in Vietnam used them regularly over long periods of time. Both amphetamines and barbiturates were used by about one fourth of the sample and multiple drug use including narcotics was common. Drug use started fairly early in the tour, generally prior to seeing combat. The drugs seemed to allow the users to adapt to Army life in Vietnam. Robins found no demographic criteria for predicting who the heavy users would be or who would become addicted.

Within twelve months of coming home, the use of most drugs returned to near pre-Vietnam levels and the choice of drug returned as well, generally to amphetamines and barbiturates. Remission rates from opiate addiction approached 95 percent upon return to the United States. Only about 7 percent of users after returning became addicted again, compared with almost half while in Vietnam.[62] Among the smaller group of heavy users, post-Vietnam usage of did not return to pre-Vietnam levels. Also, the method of consumption ceased to be smoking and returned to injection.

Given that relapse rates for opiate addiction are frequently over 70 percent, the reported rate of about 7

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[62]Robins et al., 958.

percent is fairly unique. In the closing paragraphs, something close to Winick's theory of drug use comes out:

> In Vietnam, they were exposed to inexpensive sources of relatively pure narcotics in a situation devoid of direct influence of a disapproving family. . . . All were in Vietnam, a locale atypical in many respects, especially with regard to the presence of physical danger and death . . . [my emphasis].[63]

In other words, the Vietnam soldiers had easy access to narcotic drugs, devoid of structures capable of exerting disapproving influence upon their behavior, in a role straining environment. More importantly, once out of the role straining environment, in the presence of structures capable of exerting pressure and in the absence of cheap drugs, drug use fell dramatically.[64] Winick noted that these dramatic reductions in drug use were not completely applicable to other drug use situations, since the method of consumption in Vietnam was usually smoking, while injection was frequent in the U.S. Also the length of addiction while in Vietnam could seldom have exceeded one year, the length of a tour of duty.

Mortality

Methadone and mortality. A one-year study of alcohol and narcotic abuse among adults who died violently in New York City noted that a number of putative narcotic

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[63]Robins et al., 961. See Winick, p. 4, for almost identical wording.

[64]Winick, 6-7.

'overdose' deaths were not necessarily due to the pharmacological effects of heroin.[65] Alternative explanations included multiple drug use involving alcohol, acute reaction to a diluent of heroin and the unsterile manner in which drugs were taken.[66] The substances used to dilute heroin are often 95 percent of the 'heroin' packet. Quinine, an agent frequently used to dilute heroin, has been known to cause pulmonary edema, similar to heroin.[67] Heroin used in combination with alcohol and other depressants has a potentially fatal additive or interactive effect. Methadone alone or in combination with other drugs and/or alcohol was implicated in a number of deaths. Deaths from methadone itself were frequently true pharmacological overdoses, due to persons swallowing a high maintenance dose before their bodies have had a chance to develop enough tolerance to absorb such high doses of the narcotic.

For the narcotics abusers, half had both narcotics as well as other mood altering substances present. Methadone was present in almost twice as many deaths as morphine,

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[65]The study included 1954 deaths from August 20, 1974 through August 19, 1975. Toxicological reports were developed for 1429 persons. Paul W. Haberman and Michael M. Baden, Alcohol, Other Drugs and Violent Death (New York: Oxford University Press, 1978), 1, 5, 47, 48.

[66]Ibid., 47, 48.

[67]E. M. Brecher and eds.,"The 'Heroin Overdose' Mystery and Other Occupational Hazards of Addiction," in The Consumer's Union Report: Licit and Illicit Drugs (Boston: Little, Brown, 1972), 101-114, cited in Haberman and Baden, 48.

alone and in combinations with other substances. Sixteen percent apparently had both methadone and heroin just prior to death.[68] The level of cross use of methadone and heroin by methadone patients and regular street using non-patients was astounding. Thirty-one percent of the cases reported to be in methadone maintenance and 33 percent of the non-patients had evidence of morphine. Methadone was present in 43 percent of the non-patients and 54 percent of the patients. Such high levels of heroin present in methadone patients and high instances of methadone present in non-patients if replicated today, could well call into question the system of methadone distribution, if not the whole program itself. Nothing unusual with regard to Vietnam veterans was found.[69]

In a 1981 study of 1545 patients from 1966 through 1976, DSAS found 176 patients had died from all causes.[70] Slightly more than ten percent of the patients had died in the approximately ten years under study, roughly 1 percent per year. All deaths which occurred while in treatment were accounted for. However given the number of life threatening conditions which the street user encounters, this death

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[68]Ibid., 6, 7.

[69]Ibid., 7, 8.

[70]Herman Joseph, Phil Appel, and James Schmidler, Deaths During and After Discharge from Methadone Maintenance Treatment, Outcome Study Report Number 18 (New York State Division of Substance Abuse Services, Bureau of Cost Control and Research, June 1981), 3, 4.

total could well be a conservative estimate. The first finding was that post discharge deaths were more than double the death rate while in treatment. Post-discharge drug-related deaths were four times higher than treatment deaths. Post-maintenance opiate-related deaths were 51 times larger than such deaths while in maintenance. Alcohol-related deaths accounted for 84 percent of the drug-related deaths in treatment and 57 percent after treatment. For whites and Hispanics, the post-discharge alcohol-related deaths declined, while black alcohol-related deaths nearly quadrupled from the in-treatment level. Put more simply, 69 of the total 176 reported deaths were alcohol-related, roughly 40 percent.[71]

Interpreting these death rates required having a baseline of death rates from the general population living in similar areas. Death rates for the patients were higher than for the general population. The age range with the largest difference was between 25 and 44, where the death rate was nearly five times that of the general population. The majority of patients were in this age range. Yet that differential jumped to twelve times the general population for the post-treatment group. One interpretation of these numbers is that the post-treatment sample had a death rate twelve times that of the general population and that

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[71]Ibid., 8, 5.

methadone maintenance cut that rate down by more than half.[72]

Military service and mortality. Military service itself could have an effect upon post-service mortality rates. A 1986 article in The New England Journal of Medicine suggested exactly that. The main finding was that suicide and motor vehicle accidents were significantly higher for the draft-eligible pool of young men than for the draft-exempt pool between 1970 and 1972 in California and Pennsylvania. The authors did a separate analysis which compared veterans with non-veterans and found similar results.[73] These findings were hotly disputed in later correspondence by medical representatives of the military and the Veterans Administration.[74] Deaths from other health-related causes and narcoticism were not significantly higher.

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[72]Ibid., 6.

[73]Norman Hearst, Thomas B. Newman and Stephen B. Hulley, "Delayed Effects of the Military Draft on Mortality: A Randomized Natural Experiment," The New England Journal of Medicine 314, no. 10 (March 1986): 620-624.

[74]Gerald Charles, "Correspondence: Delayed Effects of the Military Draft on Mortality: A Randomized Natural Experiment," The New England Journal of Medicine 315, no. 7 (August 1986): 453; Han K. Kang and Patricia P. Breslin, "Correspondence: Delayed Effects of the Military Draft on Mortality: A Randomized Natural Experiment," The New England Journal of Medicine 315, no. 7 (August 1986): 454; and Norman Hearst, Thomas B. Newman, and Stephen B. Hulley, "Correspondence: Delayed Effects of the Military Draft on Mortality: A Randomized Natural Experiment," The New England Journal of Medicine 315, no. 7 (August 1986): 454.

A 1987 comparison of Australian draftees who had served in Vietnam with those who remained within Australia found that both groups had statistically significant lower death rates than males of the same age. This finding was consistent with the careful health screening of the Australian Army. Yet there was also a significantly greater number of deaths in the Vietnam service group than with the group who remained in Australia. Further analysis revealed that the excess of deaths was concentrated among one corps, The Royal Australian Engineers. There was no clear reason for this pattern.[75]

Interpretations of the effect of military service upon post-service mortality are difficult. Men from the lower socioeconomic rungs of society may not be able to avoid service and thus may be overrepresented in the military and their higher general mortality rates may bias the overall post-service death rates. Conversely, since the military usually attempts to select only healthy people for service, the post-service bias may shift in the opposite direction.[76] One way of trying to square the circle on this

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[75]Michael J. Fett, Michael A. Adena, Dierdre M. Cobbin, and Margaret Dunn, "Mortality among Australian Conscripts of the Vietnam Conflict Era. I. Death from all Causes," American Journal of Epidemiology 125, no. 5 (1987): 869-877.

[76]C. C. Seltzer and S. Jablon, "Effects of Selection on Mortality," American Journal of Epidemiology 100 (1974): 367-372, quoted in Norman Hearst, Thomas B. Newman, and Stephen B. Hulley, "Delayed Effects of the Military Draft on Mortality: A Randomized Natural Experiment," The New England

issue is to suggest that although the military procedures select for the healthier inductees, military training naturally inculcates an attitude conducive towards risk taking behavior. How else can normal men be induced into risking their lives later on in combat?

Methadone, AIDS, and mortality. By the middle 1980s, HIV and AIDS had become an additional risk factor for intravenous drug users.[77] The ideological war over drug use which had been going since the turn of the century resumed over the issue of methadone and HIV risk. It would be putting it mildly to say that there was not universal agreement over whether methadone maintenance was slowing down the tide of HIV infection among the intravenous drug-using population. From what could be loosely called the criminal justice, drug-free corner came forth the perspective that methadone was in fact a contributor to further spread of HIV, because some users were selling their methadone on the street to obtain funds to purchase cocaine or other drugs. By this logic, methadone programs were simply funding the illegal drug habits of street users, further assisting them to obtain drugs. Since cocaine was still injected by a large number of users, anything which

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Journal of Medicine 314, no. 10 (March 1986): 623.

[77]Don C. Des Jarlais and Samuel R. Friedman, "HIV Infection among Persons who Inject Illicit Drugs: Problems and Prospects," Journal of Acquired Immune Deficiency Syndromes 1, no. 3 (1988).

encouraged cocaine consumption could also contribute to HIV infection.[78]

From the methadone maintenance corner, came studies which showed that long term methadone users had lower HIV rates than the patients who entered later.[79] More importantly, the claim was made that heroin users had come to regard methadone maintenance as the treatment of choice, even those who already had AIDS or ARC.[80] This latter claim made possible the hope that if enough of the HIV positive intravenous users should go into methadone maintenance, there would be fewer users on the street shooting up with uninfected users. This latter was no small consideration, for in it lay one of the few ways to influence the behavior of HIV-infected users who felt the need or the desire to self-medicate themselves with opiates. Further, the belief that methadone did not damage the immune system itself made it about the only game in town for this purpose.[81] Having said all of this, Joseph and Springer then noted that AIDS was rapidly overtaking alcohol as the most serious cause of

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[78]Gene R. Haislip, Statement on Methadone Diversion from Narcotic Treatment Programs before the House Select Committee on Narcotics Abuse and Control, House of Representatives, 2 August 1989, 3-5.

[79]Herman Joseph and Edith Springer, Methadone Maintenance Treatment and the AIDS Epidemic, Proceedings of the Dutch-American Conference on Drugs and AIDS, Trenton, New Jersey College of Medicine, September 1987, 263.

[80]Ibid., 261.

[81]Ibid., 262, 263.

death in methadone maintenance. Also they predicted that the combination of HIV infection and alcohol problems could have even more negative effects than either problem might have alone.

CHAPTER 3

METHODS AND HYPOTHESES

Introduction

The methodology consists of six sections, population and sample, design, instrumentation, statistics, data work, and hypotheses. Each section will start with a brief description of how the original research was done. Then procedures and modifications appropriate to the secondary analysis will be given.

Population and Sample

The original sample consisted of 91 male veterans being treated with methadone at a U.S. Veterans Administration outpatient clinic in a large metropolitan area, between January 1, 1981 and December 31, 1982. There were 22 Hispanics, 28 whites and 41 blacks, with an average age of 38.4 years and an average daily methadone dose of 42.8 milligrams. A total of 542 veterans had been admitted to the program as of the start of the study. Of these 161 were still in the program in 1981, but only 91 met the primary criterion of 23 consecutive months of treatment by December 31, 1982, with a stable methadone dose during the study period.[1] A comparison of the entire 161 potential subjects

[1]Smith, 30-32.

found no significant differences between the 91 included subjects and the 70 excluded patients with respect to ethnicity, age and average methadone dose.[2]

Between December 1982 and August 1986, thirteen of the 91 veterans died. Between August 1986 and May 1990, another fourteen died. In all 27 subjects died between January 1983 and May 1990. Almost 30 percent of the sample had died in less than eight years. Another seven had died by 1992.

Design

The original design was an ex post facto field study concerned with discovering levels and patterns of multiple drug use n a sample of methadone-maintained veterans.[3] The current design will consider rates of death and drug use patterns in the sample (see chart on following page).

Instrumentation

The original study had two instruments.[4] First, the dependent variable was drug presence or absence per week for fifteen different drugs for 104 weeks. The drug reports were created from urine samples submitted weekly by the patients as they obtained their methadone. These records were kept by the clinic. A form was developed to summarize these weekly

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[2]Ibid., 40.

[3]Ibid., 30.

[4]Ibid., 41-42.

Design

Mean Drug Consumption for All Drugs by Mortality Group

	Mortality Group		
Drug	Alive	Dead	Total
Morphine			
Quinine			
Cocaine			
Darvon			
Elavil			
Benzodiazepine			
Amphetamine			
Barbiturate			
Vistaril			
Negative Methadone			
Benadryl			
Codeine			
Placidyl			
Phenothaizine			
Sinequan			
Total			

reports for each veteran. In essence, urinalysis showed whether or not a patient was continuing to use street drugs while in treatment. Other independent variables were obtained from patient charts, others were obtained from the veterans at various meetings with the staff and technicians at the methadone clinic.

The major dependent variable for the current research was mortality. The data on mortality were obtained from the clinic's full-time physician's official's records.

Statistics

Multiple regression, analysis of variance, analysis of covariance and factor analysis were the primary techniques used in the original analysis. The previous research had depended heavily upon factor analysis. This factor analysis was performed using the six drugs used three or more times on average (see Appendix E). These six drugs were morphine, quinine, cocaine, benzodiazepine, Elavil, and Darvon. Quinine was highly correlated with both heroin and cocaine, it had to be dropped from the factor analysis. Once it was dropped, a very clear factoring of the drugs resulted, that of pill versus powder consumption (see Appendix F).[5] The results indicated that drug consumption generally followed along racial and ethnic lines: blacks used more heroin and

[5]Ibid., 51-52.

cocaine, while whites used more pills of various sorts. Hispanics fluctuated between the two groups.

The general hypothesis of this research was that the pattern of drug consumption, specifically that of heroin and cocaine, was an indicator of early mortality. Cluster analysis of drug presence was a major technique in the present research, as was logistic regression. Various clusterings of the drug users were used to create typologies. These typologies were then used in further analyses both of the demographic variables as well as mortality.

The initial frequency distribution was badly skewed into roughly an L-shape for most of the weekly drug presence variables (see Appendix C for histograms on Pill and Powder Factors). This shape resulted because many individuals showed no drug use during the entire survey period. In order to apply advanced statistical methods, a transformation was used. A simple log transformation was not possible since the log of zero is minus infinity and thus incalculable. Therefore a very small number (.5) was added to each person's consumption total for each drug variable, and the log transformation then applied.[6] This method did not alter the relationship between the patient's drug totals and was

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[6]Ibid., 59.

used only for advanced statistics (see Appendix D for the transformed histograms on Pill and Powder Factors).[7]

Given that this technique transformed the data from its original shape, the findings for each clustering were cross checked with the individuals found within said clusters. That is, the actual mean consumption of each cluster and/or cluster group was presented in Table C3.1. Too often sophisticated 'data fitting' and 'normalizing' techniques have been applied to data in order for certain statistics to work, thus producing results potentially based as much upon the transformation techniques as upon the reality underlying the data.

Cluster Analysis

Some clustering techniques suggest the inclusion of demographic criteria and/or other independent variables as well as dependent measures within the clustering. The use of both dependent and independent measures within the cluster analysis is similar to techniques used in factor analysis. Yet for the current research, it seemed more appropriate to run the cluster analysis first with only the drug variables, then to crosstab the resulting cluster groups against the major demographic variables and mortality in order to accept or reject the hypotheses.

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[7]Ibid., 99.

Data

The original raw data file was constructed with data from a group of 91 military veterans in a methadone maintenance clinic in New York City. The file had weekly presence-absence information on 15 drugs for each subject for the two years 1980 and 1981, along with various demographic data. The original data were punched and defined in such a fashion that the unit of analysis was the subject. However the file was constructed so that the week of drug use could be redefined as the unit of analysis. This latter capability would come in handy later for cross checking purposes. Numerous SPSSX control files were constructed to read this data file and hundreds of transformations were performed within the control files during the original analysis of the data.

In order to create ways of cross checking certain totals and transformations, the layout of the original data set needed to be changed from three weeks of drug results per line of data to one week per line of data. The spaces which would have been the 105th week of data were left blank. A copy of this original data set had the demographic data stripped out. Then using the Wylbur text editor on the New York University IBM OS/MVS mainframe, the data set was appended to itself twice, tripling the length of the drug data from 3154 to 9464 lines and creating a new file with three sections. The last two thirds of each data line were

deleted from the first section of the extended file. Then the first and last thirds of each data line were deleted from the second section of the extended file. Next, the first two thirds of data were deleted from each line of the last section of the extended file. The blank spaces on each line were squeezed from the extended file. Finally the three sections of the extended file were sorted by the subject ID and Week variables, creating a data set with 104 records of drug occurrence data per person, for a total of 9464 lines of data. This data set was named Sort130, shorthand for a sorted data set with a logical record length of 30 characters. A second advantage of this version of the raw data was it could be defined within SPSSX to change the unit of analysis from the person to the week of drug occurrence, facilitating the creation of various individual drug totals and other ways of cross checking the numerous transformations used in the original and subsequent analyses.

A third data Dopedemo was created by sorting the demographic data to the bottom of each subjects' 104 lines of data. Previously, the long line of demographic data had been converted into two shorter lines, in order to space on the DASD disk drives of the computer.

Most of the analysis done thus far has been based upon the total drug occurrence for the two years. SPSSX Compute statements generated these drug totals. Other ways of

viewing the data were tried. Most of these analyses were attempts to obtain a better look at the drug clustering. One such attempt involved defining the fifteen different drug variables for each week as a single variable. Since the drug variables were contiguous, this change in the SPSSX input format statement was possible. It should be recalled that Fortran statements do not usually allow for blank spaces within numeric fields. This technique yielded clumsy output, since SPSSX Frequencies permitted less that 15 columns of output per variable category for numeric variables.

Alphabetic representations of the fifteen separate drug variables were then created using the SPSSX Recode Into procedure. These additional alphabetic representations were permanently saved on a new raw data file named Rawalpha, with an SPSSX control file Sxalpha. Output from this new file was still difficult to interpret. A second SPSSX control file Sxaldrug was created which permitted better output.

The data file Rawalpha was modified and another file was created, Zeroalph. The main change in Zeroalph was that all of the extra spaces within the alphabetic portion of the data were squeezed out using the Wylbur text editor. The resulting frequencies were clearer than any previous output.

In another modification of the alphabetic portion of the raw data, each of the 15 alphabetic codes were transformed to one of the four categories, using the Wylbur text editor:

1. Q: Quinine
2. W: Morphine, Cocaine
3. M: Morphine negative
4. I: All other drugs, primarily pills

The resulting raw data file was called Dichalph.

Hundreds of hours were put into these and other transformations, in attempts to get a better grasp on the data. Each of these transformations has provided additional insight or at the least, may have provided a useful way to check subsequent transformations.

The original data set was designed to fit readily on mainframe with limited, expensive hard disk space. The instrumentation was designed to maximize the storage capabilities of the mainframe. In the beginning, had I simply ignored space considerations and used one week of drug occurrence per record, at least part of the transformations might have been avoided. The data set construction and analysis started within a mainframe environment and its associated ways of thinking. The analysis continued as mainframe space became more plentiful and cheaper, and as the statistical packages migrated towards LAN-based environments, which have fewer problems with space considerations and logical record lengths.

Hypotheses

We are examining the null hypothesis, which posits no relation between the outcome variable(s) and the predictor variables:

HO. There will be no relationship between health problems, ethnicity, alcoholism, age of first continuous heroin use or their drug use pattern and rates or types of death.

The failure to prove the null hypothesis permits the researcher to pursue alternative hypotheses. From the review of literature, these alternative hypotheses are suggested:

H1. Those persons with health problems are more likely to be dead than those without health problems.

H2. Blacks are more likely to be dead than are whites or Hispanics.

H3. Alcoholics are more likely to be dead than non-alcoholics.

H4. The younger the person started continuous heroin use, the more likely he is to be dead.

H5. Heavy heroin-cocaine users are more likely to be dead than heavy pill users.

H6. Heavy heroin-cocaine users are more likely than heavy pill users to have died of AIDS.

CHAPTER 4

RESULTS

In the long run, we are all dead.
-John Maynard Keynes

Introduction

This chapter has a set of introductory tables and one or more tables for each of the hypotheses. The body of the results section is broken down along the same lines. A set of tables (Tables G1 to G8) has been included at the end to try to further understand the results.

Although age was not mentioned in any specific hypothesis, aging and mortality are obviously related. In order to forestall questions on what effect simple aging had upon the death rates, I have included two crosstab tables and an extra logistic table as well at the end of each of the first four hypotheses. The aging tables are labeled as following:

1. HxC1.1
2. HxC1.2
3. HxL1.2

The right hand column totals in Table D1.1 illustrate the way in which the 34 veterans died. The eleven specific death types were recoded into four more general types for purposes of the analysis. Most tables include the survivors, while some do not or separate the survivors from the dead.

Generally this is clearly noted by the table title, but if in doubt, the number of survivors is 57 and the number of dead is 34. Also, if only the four death categories are shown in a given table this means that only the 34 dead veterans were so included. These numbers may vary by one or two, on the occasions where data are missing on one of the table variables. There is however, very little missing information in this dataset.

Table D1.2 shows how similar the dead are to the survivors both in overall drug use and in the specific drugs. In fact, with only the marker noted Negative Methadone was there a statistically significant difference. It should be recalled that the numbers in this and all drug consumption tables represent the mean number of weeks in which the drug (or its absence in the case of methadone) was detected during the 104 weeks of the study. While the absolute values in the Negative Methadone indicator were quite small the relative differences showed to be fairly important later.

Drug consumption was checked for the 34 dead veterans in Table D1.3 and again no significant differences were found. While total drug use was considerably lower within the veterans who died from reasons of health, the wide standard deviations (not shown) among all groups washed out any significance.

Table D1.1

Crosstab of Mortality by Type of Mortality

N=91

	Types of Mortality					
Reason for Mortality	AIDS	Alcoholism	Health	Other	Survivor	Total
AIDS	10	-	-	-	-	10
Alcoholism	-	7	-	-	-	7
Heart attack	-	-	5	-	-	5
Infirmities of Old age	-	-	1	-	-	1
Stab	-	-	-	1	-	1
Cancer	-	-	4	-	-	4
Overdose	-	-	-	1	-	1
Suicide	-	-	-	2	-	2
Crohn's disease	-	-	1	-	-	1
Hemorrhage	-	-	1	-	-	1
Seizure	-	-	1	-	-	1
Survivor	-	-	-	-	57	57
Total	10	7	13	4	57	91

Table D1.2

Mean Drug Consumption for All Drugs by Mortality with Analysis of Variance

	Mortality				
Drug	Dead	Alive	Total	F Test	Significance
Morphine	7.24	5.96	6.44	0.241	0.62
Quinine	17.21	12.86	14.46	0.836	0.36
Cocaine	6.06	5.60	5.77	0.004	0.83
Darvon	3.38	3.49	3.45	0.007	0.93
Elavil	7.79	11.07	9.85	0.556	0.46
Benzodiazepine	24.41	26.68	25.84	0.162	0.69
Amphetamine	0.06	0.02	0.03	1.127	0.39
Barbiturate	1.41	0.89	1.09	0.886	0.35
Negative Methadone	2.88	1.30	1.89	7.169	0.01
Benadryl	0.32	0.09	0.18	1.882	0.17
Codeine	0.52	1.56	1.18	0.860	0.36
Placidyl	0.18	1.02	0.70	2.447	0.12
Phenothiazine	0.82	0.47	0.60	0.476	0.49
Sinquan	0.59	0.11	0.29	1.350	0.25
Total	73.76	61.79	72.52	0.030	0.86

Table D1.3

Mean Drug Consumption for All Drugs by Type of Mortality with Analysis of Variance

	Mortality					
Drug	AIDS	Alcoholism	Health	Other	F Test	Significance
Morphine	9.60	12.00	4.69	1.25	1.064	0.38
Quinine	16.50	22.71	16.85	10.50	0.255	0.86
Cocaine	8.50	3.14	7.15	1.50	0.983	0.86
Darvon	3.80	2.71	1.62	9.25	3.313	0.33
Elavil	10.10	5.86	3.92	18.00	1.072	0.38
Benzodiazepine	25.80	28.29	16.00	41.50	1.594	0.21
Amphetamine	0.00	0.14	0.00	0.25	1.712	0.19
Barbiturate	1.20	2.71	1.08	0.75	0.625	0.60
Vistaril	1.20	0.71	0.38	1.75	1.814	0.17
Negative Methadone	3.80	2.43	3.00	1.00	0.551	0.65
Benadryl	0.80	0.43	0.00	0.00	0.912	0.45
Codeine	0.50	0.43	0.46	1.00	0.226	0.88
Placidyl	0.00	0.00	0.08	1.25	2.678	0.06
Phenothiazine	1.40	0.43	0.62	0.75	0.317	0.813
Sinequan	0.00	2.86	0.00	0.00	1.688	0.191
Total	83.20	84.86	55.85	88.75	1.563	0.219

Table L1.1 is the logistic regression with all drugs run against death. The -2 log likelihood was barely insignificant, which in SPSS terminology means that the model was significant.[1] The only significant drug indicator was Negative Methadone. The classification table showed that the model predicted the survivors quite well at almost ninety percent, but predicted death at only fifty-fifty. This was a pattern which continued more or less throughout the study.

As Mark Twain noted so many years ago, only two things are sure, death and taxes. Advancing years seems to bring a stronger likelihood of death, although this is not a straight line relationship. Logistic Table L1.2 was included to show how much of a factor age was in predicting death. The -2 log likelihood was also significant, as SPSS shows it. Negative Methadone, Vistarils and age all had significant Wald statistics. With age included in the run, the predicted death accuracy went from 50 percent to over 60 percent.

It was puzzling that the initial analysis, especially in Table D1.1 and Table D1.2 showed very little difference in drug use between the survivors and the dead or the types of death. One of Smith's major findings in the initial study

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[1]In SPSS Logistic Regression, a nonsignificant coefficient at the top of the table signifies a significant result.

Table L1.1

Logistic Regression of Mortality with All Drugs

	Chi Square	df	Significance
2 log likelihood	95.942	75	0.0520
Model chi square	24.335	15	0.0596
Improvement	24.335	15	0.0596
Goodness of fit	89.550	75	0.1205

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	0.0409	0.0594	.4725	0.4918	0.0	1.0417
Quinine	-0.0340	0.0328	1.0791	0.2989	0.0	0.9666
Cocaine	0.0130	0.0302	0.1861	0.6662	0.0	1.0131
Darvon	0.0030	0.0620	0.0024	0.9609	0.0	1.0030
Elavil	0.0082	0.0142	0.3295	0.5695	0.0	1.0082
Benzodiazepine	0.0101	0.0142	0.5032	0.4781	0.0	1.0101
Amphetamine	-1.5477	1.4479	1.1427	0.2851	0.0	0.2127
Barbiturate	-0.3138	0.1661	3.5682	0.0589	-0.1142	0.7306
Vistaril	-0.5269	-0.2988	3.1100	0.0778	-0.0961	0.5904
Negative Methodone	-0.2377	0.1074	4.8964	0.0269	-0.1552	0.7884
Benadryl	-0.6137	0.7453	0.6780	0.4103	0.0	0.5414
Codeine	0.3234	0.2647	1.4926	0.2218	0.0	1.3819
Placidyl	0.2760	0.2213	1.5552	0.2124	0.0	1.3179
Phenothiazine	-0.0736	0.1087	0.4594	0.4979	0.0	0.9290
Sinquan	-0.1532	0.1508	1.0829	0.3095	0.0	0.8579
Constant	1.4233	0.5202	7.4766	0.0062	-	-

Classification Table

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	17	17	50.00%
Survivor	7	50	76.72%
		Overall	73.63%

Table L1.2

Logistic Regression of Mortality with All Drugs and Age in 1981

	Chi Square	df	Significance
2 log likelihood	87.355	74	0.1374
Model chi square	32.921	16	0.0076
Improvement	32.921	16	0.0076
Goodness of fit	92.777	74	0.0690

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	-0.0034	0.0665	0.0027	0.9587	0.0	0.9966
Quinine	-0.0139	0.0358	0.1513	0.6973	0.0	0.9862
Cocaine	0.0225	0.0311	0.5252	0.4687	0.0	1.0228
Darvon	-0.0122	0.0630	0.0376	0.8463	0.0	0.9879
Elavil	0.0097	0.0153	0.4066	0.5237	0.0	1.0098
Benzodiazepine	0.0125	0.0154	0.6541	0.4187	0.0	1.0126
Amphetamine	-2.4407	1.5676	2.4243	0.1195	-0.0594	0.0871
Barbiturate	-0.2223	0.1757	1.5999	0.2059	0.0	0.8007
Vistaril	-0.6470	0.3221	1.0350	0.0446	-0.1301	0.5236
Negative Methadone	-0.2272	0.1158	3.8526	0.0497	-0.1241	0.7967
Benadryl	-0.6659	0.6916	0.9272	0.3356	0.0	0.5138
Codeine	0.2580	0.2489	1.0746	0.2999	0.0	1.2944
Placidyl	0.1946	0.2162	0.8104	0.3680	0.0	1.2148
Phenothiazine	-0.0572	0.0994	0.3316	0.5647	0.0	0.9444
Sinequan	-0.1837	0.1716	0.1462	0.2843	0.0	0.8322
Age	-0.0861	0.0319	7.2684	0.0070	-0.1093	0.9175
Constant	4.7498	1.3732	11.9639	0.0005	-	-

Classification Table

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	21	13	61.76%
Survivor	6	51	89.47%
		Overall	79.12%

was a very clear factor loading differentiating narcotic use from pill use. In order to explore this finding further, a series of cluster analyses were run in late 1989 and into 1991.

The clearest drug use typology was found using a three cluster forced technique in SPSS. Total drug presence was similar between the narcotic and pill users at close to 100 weeks, with the low users at 34 occurrences. The results of this clustering can be seen in Table C3.1. All of the major drug variables have significant differences between the three clusters:

1. High heroin,quinine and cocaine
2. Low users for all drugs
3. High elavil, benzodiazepine and other pill drugs

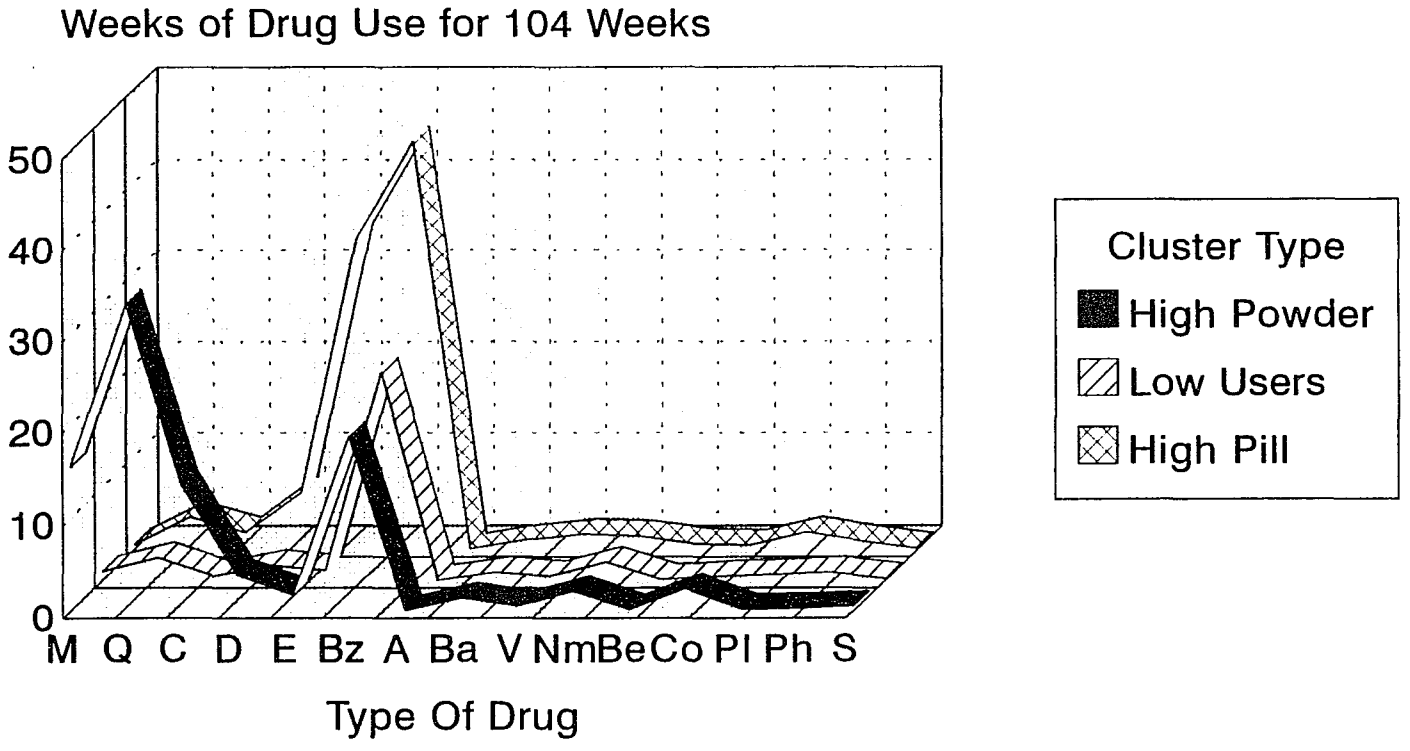
The above descriptions of the drug clusters are not perfect. In fact, the second group is using more benzodiazepine than the narcotic group, but far less than group three- the high pill users. The abbreviated header labels for the three types used in this and subsequent tables are subject to argument as to nomenclature, but the clearly differentiated drug use patterns are not. On the page following Table C3.1 is a chart constructed with Harvard Graphics, which show even more clearly the highly defined drug use typology. It was after this typology was discovered that other aspects of the analysis came more into focus. This typology was used throughout the analysis. On occasion, the terms powder users

Table C3.1

Mean Drug Consumption for All Drugs by Group for Three-Group Cluster Analysis with Analysis of Variance

	Cluster Group				
Drug	1 High Heroin, Quinine, and Cocaine	2 Low Users for All Drugs	3 High Elavil, Benzodiazepine and Others	*F* test	Significance
Morphine	15.46	0.97	0.50	25.14	0.00
Quinine	33.20	2.42	3.45	37.63	0.00
Cocaine	13.51	0.44	1.80	26.60	0.00
Darvon	3.89	1.58	6.05	4.06	0.00
Elavil	1.71	1.06	39.90	74.48	0.00
Benzodiazepine	18.71	22.44	44.40	7.77	0.00
Amphetamine	0.06	0.00	0.05	1.02	0.37
Barbiturate	1.40	0.83	1.00	0.45	0.64
Vistaril	0.54	0.44	1.60	11.42	0.00
Negative Methadone	2.14	1.92	1.40	0.44	0.65
Benadryl	0.09	0.06	0.55	2.96	0.57
Codeine	2.40	0.42	0.40	1.64	0.20
Placidyl	0.17	0.61	1.80	2.85	0.06
Phenothiazine	0.23	0.83	0.85	0.73	0.48
Sinequan	0.54	0.17	0.05	0.52	0.59
Total	94.06	34.19	103.80	27.55	0.00

Chart 1
Mean Drug Consumption for Three-Group Cluster Analysis



Drug used are in this order:
Morphine, Quinine, Cocaine, Darvon, Elavil, Benzodiazepine, Amphetamine, Barbiturate
Vistaril, Negative Methadone, Benadryl, Codeine, Placidyl, Phenothiazine, Sinequan

will be substituted for the heroin and cocaine cluster and pill users for the elavil, benzodiazepine, etc., cluster.

One example of this is found in Table C3.2, where the three cluster typology was crosstabbed against death. Almost half of the narcotic users were dead, as opposed slightly over one quarter of the low users. In the bottom of the table, the types of death are also dependent upon the typology. One anomaly was that Aids deaths were almost as high in the pill group as in the narcotic group. The six hypotheses have been included here as a reference:

H1. Those persons with health problems are more likely to have died than those without health problems.

H2. Blacks are more likely to have died than whites or Hispanics.

H3. Alcoholics are more likely to have died than non-alcoholics.

H4. The younger the person started continuous heroin use, the more likely he is to have died.

H5. Heavy heroin-cocaine users are more likely to have died than heavy pill users.

H6. Heavy heroin-cocaine users are more likely than heavy pill users to have died of AIDS.

Health Problems and Death--Hypothesis 1

Health problems were found more frequently in the drug user population than in the general population and were often worse in severity. Health problems as used in this analysis meant real chronic problems of long standing and duration as defined by a clinic physician. It should be recalled that these veterans presumably had pretty good

Table C3.2

Mortality and Type of Mortality by Group for Three-Group Cluster Analysis

	Cluster Group			
	1 High Heroin, Quinine, and Cocaine	2 Low Losers for All Drugs	3 High Elavil, Benzodiazepine and Others	Total
Mortality				
Dead	48.6%	27.8%	35.0%	37.4% (34)
Alive	51.4%	72.2%	65.0%	62.6% (57)
Total	38.5% (35)	39.6% (36)	22.0% (20)	100.0% (91)
Type of Mortality				
AIDS	17.1%	2.8%	15.0%	11.0% (10)
Alcoholism	11.4%	5.6%	5.0%	7.7% (7)
Health	17.1%	19.4%	0.0%	14.3% (13)
Other	2.9%	0.0%	15.0%	4.4% (4)
Survivor	51.4%	72.2%	65.0%	62.6% (57)
Total	38.5% (35)	39.6% (36)	22.0% (20)	100.0% (91)

health before they got into the military and had medical benefits after they left. Still almost two thirds of the sample had health problems by the conclusion of the data collection in 1982.

There were no significant differences between health status and individual drug use (Table H1.1), yet almost half of those with health problems were dead, while less than one fourth of those in good health as of 1982 were dead (Table H1.2). Looking at the types of death, those with problems were more likely to have died of each major death type than the healthy group (Table H1.2). The logistic model was significant (Table H1L1.1), and health status had a significant Wald statistic. The model correctly predicted deaths almost 60 percent of the time and survivors almost 90 percent of the time.

A majority of each cluster group had health problems (Table H1C1.1), but the narcotic group had the highest percentage. In 1981 those with problems were about five years older than the healthier group, while the healthier members in the low drug use group were about nine years younger. For the pill users age differential was reversed, with the healthier group about two years older than those with problems.

In the top of Table H1C1.2, the age differentials were wider for the first two groups, considerably wider for the low user group. For the surviving part of the sample, the

Table H1.1

Mean Drug Consumption for All Drugs by Health Problems with Analysis of Variance

Drug	Health Problems		F test	Significance
	Yes	No		
Morphine	7.09	5.47	0.376	0.54
Quinine	16.34	11.47	1.012	0.32
Cocaine	6.40	4.78	0.524	0.47
Darvon	3.69	2.56	0.788	0.38
Elavil	11.00	8.03	0.437	0.51
Benzodiazepine	25.71	25.44	0.002	0.96
Amphetamine	0.03	0.03	0.007	0.94
Barbiturate	1.36	0.63	1.745	0.19
Vistaril	0.84	0.56	1.581	0.21
Negative methadone	2.03	1.56	0.571	0.45
Benadryl	0.21	0.13	0.214	0.65
Codeine	1.66	0.34	1.337	0.25
Placidyl	0.41	1.25	2.315	0.13
Phenothiazine	0.83	0.22	1.096	0.24
Sinquan	0.10	0.63	1.510	0.22
Total	77.71	63.09	1.715	0.19

Table H1.2

Mortality and Type of Mortality by Health Problems

	Health Problems		
	Yes	No	Total
Mortality			
Dead	46.6%	21.9%	37.8% (34)
Alive	53.4%	78.1%	62.2% (56)
Total	64.4% (56)	35.6% (32)	100.0% (90)
Type of Mortality			
AIDS	12.1%	9.4%	11.1% (10)
Alcoholism	8.6%	6.3%	7.8% (7)
Health	19.0%	6.3%	14.4% (13)
Other	6.9%	0.0%	4.4% (4)
Survivor	53.4%	78.1%	62.2% (56)
Total	64.4% (58)	35.6% (32)	100.0% (90)

Table H1L1.1

Logistic Regression of Mortality with All Drugs and Health Problems

	Chi Square	df	Significance
2 log likelihood	90.396	73	0.0818
Model chi square	28.938	16	0.0244
Improvement	28.938	16	0.0244
Goodness of fit	91.581	73	0.0697

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	0.0243	0.0631	0.1479	0.7006	0.0	1.0246
Quinine	-0.0246	0.0345	0.5100	0.4751	0.0	0.9757
Cocaine	0.0174	0.0313	0.3078	0.5790	0.0	1.0175
Darvon	-0.0232	0.0642	0.1308	0.7179	0.0	0.9771
Elavil	0.0167	0.0154	1.1859	0.2762	0.0	1.0169
Benzodiazepine	0.0061	0.0145	0.1753	0.6755	0.0	1.006
Amphetamine	-1.6920	1.5389	1.2089	0.2716	0.0	0.1841
Barbiturate	-0.2856	0.1727	2.7337	0.0982	-0.0784	0.7515
Vistaril	-0.4310	0.3143	1.882	0.1703	0.0	0.6499
Negative methadone	-0.2641	0.1222	4.6695	0.0307	-0.1496	0.7679
Benadryl	-0.6395	0.8059	0.6296	0.4275	0.0	0.5276
Codeine	0.4489	0.2825	2.5243	0.1121	0.663	1.5665
Placidyl	0.2359	0.2045	1.3311	0.2486	0.0	1.2661
Phenothiazine	-0.0207	0.1089	0.0362	0.8492	0.0	0.9795
Sinequan	-0.2121	0.1593	1.7716	0.1832	0.0	0.8089
Health Problems	1.2865	0.6177	4.3378	0.0373	0.1400	3.6206
Constant	-0.3856	0.9653	0.1596	0.6896	-	-

Classification Table

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	20	14	58.82%
Survivor	6	50	89.29%
		Overall	77.78%

Table H1L1.2

Logistic Regression with All Drugs, Age in 1981, and Health Problems

	Chi Square	df	Significance
2 log likelihood	83.823	72	0.1609
Model chi square	35.511	17	0.0053
Improvement	35.511	17	0.0053
Goodness of fit	106.902	72	0.0048

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	-0.0156	0.0679	0.0527	0.8185	0.0	0.9845
Quinine	-0.0087	0.0362	0.0576	0.8103	0.0	0.9913
Cocaine	0.0301	0.0328	0.8400	0.3594	0.0	1.0305
Darvon	-0.2850	0.0649	0.1932	0.6602	0.0	0.9719
Elavil	0.0177	0.0165	1.1532	0.2829	0.0	1.0179
Benzodiazepine	0.0083	0.0155	0.2881	0.5914	0.0	1.0084
Amphetamine	-2.6146	1.6500	2.5111	0.1130	-0.0654	0.0732
Barbiturate	-0.2065	0.1820	1.2880	0.2564	0.0	0.8134
Vistaril	-0.5752	0.3264	3.1057	0.0780	-0.0963	0.5626
Negative methadone	-0.2606	0.1297	4.0398	0.0444	-0.1307	0.7706
Benadryl	-0.7091	0.712	0.8227	0.3644	0.0	0.4921
Codeine	0.3795	0.2850	1.7736	0.1829	0.0	1.4616
Placidy	10.1635	0.2063	0.6286	0.4279	0.0	1.1777
Phenothiazine	-0.0148	0.1023	0.0208	0.8853	0.0	0.9853
Sinequan	-0.2377	0.1802	1.7397	0.1872	0.0	0.7885
Health problem	1.1511	0.6616	3.0273	0.0819	0.0928	3.1618
Age	-0.0797	0.334	5.6776	0.0172	-0.1755	0.9234
Constant	2.9368	1.6692	3.0956	0.0785	--	--

Classification Table

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	22	12	64.71%
Survivor	6	50	89.29%
		Overall	80.00%

Table H1C1.1

Three-Group Cluster Analysis by Health Problems and Age in 1981

	Cluster Group			
	1 High Heroin, Quinine, and Cocaine	2 Low Losers for All Drugs	3 High Elavil, Benzodiazepine and Others	Total
Health Problems				
Yes	71.4%	57.1%	65.0%	65.4% (58)
No	28.6%	42.9%	35.0%	35.6% (32)
Total	38.9% (35)	38.9% (35)	22.2% (20)	100.0%
Mean Age in Years in 1981-- Health Problems				
Yes	42.0 (25)	41.0 (20)	36.5 (13)	40.4 (58)
No	7.5 (10)	32.1 (15)	38.1 (7)	38.5 (32)
Total	40.7 (35)	37.2 (35)	37.1 (20)	38.5 (90)

Table H1C1.2

Three-Group Cluster Analysis by Health Problems with Age at Death and Age in 1992 for Survivors

	Cluster Group			
	1 High Heroin, Quinine, and Cocaine	2 Low Losers for All Drugs	3 High Elavil, Benzodiazepine and Others	Total
Mean Age in Years at Death for Dead Group				
Health Problems				
Yes	51.6 (13)	55.7 (7)	41.3 (7)	50.0 (27)
No	45.5 (4)	38.7 (3)	0.0 (0)	42.6 (7)
Total	50.2 (17)	50.6 (10)	41.3 (7)	48.5 (34)
Mean Age in Years in 1992 for Survivors				
Health Problems				
Yes	50.0 (12)	47.1 (13)	46.7 (6)	58.1 (31)
No	47.2 (6)	43.8 (12)	49.1 (7)	46.1 (25
Total	49.1 (18)	45.5 (25)	48.0 (13)	47.2 (56)

age differentials were about three years for each type and the pill type had the old veterans in the healthy group.

Ethnicity and Death--Hypothesis 2

There were substantial individual drug use differences between the ethnic groups (Table H2.1), while total drug use was all but identical, clustering around a mean of 70 positive weeks. The blacks and Hispanics had significantly more quinine positives and used more morphine and cocaine as well. The whites had significantly more benzodiazepine use. The black group had the highest percent dead with over 40 percent (top of Table H2.2), followed by the Hispanic group, then the whites.[2] The types of death also varied by ethnicity, with almost one fourth of the total Hispanic group dead and almost ten percent of the blacks dead from AIDS alone. Alcoholism and health related problems killed equal numbers of the black group, while health problems were the major cause of death among the whites.

In the logistic tables (H2L1.1), ethnicity was included singly in three separate runs. It contributed little to understanding mortality. The high heroin, quinine and cocaine cluster was basically black and Hispanic, with the whites the majority in the other two clusters (Table H2C1.1).

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[2]This finding is similar to Des Jarlais and Friedman, 269.

Table H2.1

Mean Drug Consumption for All Drugs by Ethnicity with Analysis of Variance

	Ethnicity				
Drug	White	Black	Hispanic	F Test	Significance
Morphine	1.96	8.71	7.91	3.026	0.05
Quinine	2.86	20.71	17.68	6.541	0.00
Cocaine	1.96	8.27	5.95	3.446	0.36
Darvon	3.86	3.76	2.36	0.484	0.62
Elavil	12.32	7.56	10.95	0.498	0.61
Benzodiazepine	40.18	18.15	21.91	7.216	0.00
Amphetamine	0.00	0.05	0.05	0.679	0.51
Barbiturate	1.75	1.07	0.27	2.151	0.12
Vistaril	1.11	0.59	0.55	2.790	0.07
Negative Methadone	1.64	2.05	1.91	0.170	0.84
Benadryl	0.04	0.10	0.50	2.533	0.09
Codeine	2.11	0.88	0.55	0.601	0.50
Placidyl	1.54	0.10	0.77	2.877	0.06
Phenothiazine	0.57	0.15	1.50	2.495	0.09
Sinequan	0.00	0.51	0.23	0.599	0.55
Total	71.89	72.63	73.09	0.004	0.99

Table H2.2

Mortality and Type of Mortality by Ethnicity

	Ethnicity			
	White	Black	Hispanic	Total
Mortality				
Dead	32.1%	41.5%	36.4%	37.4% (34)
Alive	67.9%	58.5%	63.6%	62.6% (57)
Total	30.8% (28)	45.1% (41)	24.2% (22)	100.0% (91)
Type of Mortality				
AIDS	3.6%	9.8%	22.7%	11.0% (10)
Alcoholism	3.6%	14.6%	0.0%	7.7% (7)
Health	17.9%	14.6%	9.1%	14.3% (13)
Other	7.1%	2.4%	4.5%	4.4% (4)
Survivor	67.9%	58.5%	63.6%	62.6% (57)
Total	30.8% (28)	45.1% (41)	24.2% (23)	100.0% (91)

Table H2L1.1

Logistic Regression of Mortality with
All Drugs and Ethnicity

A. White

	Chi Square	df	Significance
2 log likelihood	95.672	74	0.0459
Model chi square	24.605	16	0.0771
Improvement	24.605	16	0.0771
Goodneses of fit	89.275	74	0.1089

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	0.0441	0.0596	0.5459	0.4600	0.0	1.0450
Quinine	-0.0378	0.0335	1.2762	0.2586	0.0	0.9629
Cocaine	0.0199	0.0302	0.1539	0.6948	0.0	1.0119
Darvon	0.0001	0.0627	0.0	0.9985	0.0	1.0001
Eelavil	0.0078	0.0144	0.2933	0.5881	0.0	1.0078
Benzodiazepine	0.0121	0.0148	0.6702	0.4130	0.0	1.0122
Amphetamine	-1.6175	1.4668	1.2161	0.2701	0.0	0.1984
Barbiturate	-0.3147	0.1638	3.6904	0.0547	-0.1186	0.7300
Vistaril	-0.5258	0.2989	3.0947	0.0785	-0.0954	0.5911
Negative methadone	-0.2321	0.1064	4.7596	0.0291	-0.1515	0.7928
Benadryl	-0.7119	0.8217	0.7507	0.3863	0.0	0.4907
Codeine	0.3278	0.2628	1.5567	0.2122	0.0	1.3880
Placidyl	0.3060	0.2316	1.7461	0.1864	0.0	1.3580
Phenothiazine	-0.0763	0.1094	0.4859	0.4858	0.0	0.9266
Sinequan	-0.1550	0.1526	1.0321	0.3097	0.0	0.8564
White	-0.3477	0.6688	0.2703	0.6031	0.0	0.7063
Constant	1.5254	0.5631	7.3399	0.0067	-	-

Classification Table

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	17	17	50.00%
Survivor	6	51	89.47%
		Overall	74.73%

Table H2L1.1 (Continued)

B. Black

	Chi Square	df	Significance
2 log likelihood	95.902	74	0.0444
Model chi square	24.374	16	0.0816
Improvement	24.374	16	0.0816
Goodness of fit	90.001	74	0.0994

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	0.0422	0.0596	0.5001	0.4795	0.0	1.0431
Quinine	-0.0351	0.0331	1.1223	0.2894	0.0	0.9655
Cocaine	0.0126	0.0303	0.1720	0.6783	0.0	1.0127
Darvon	0.0014	0.0627	0.0005	0.9819	0.0	1.0014
Elavil	0.0082	0.0143	0.3244	0.5690	0.0	1.0082
Benzodiazepine	0.0107	0.0145	0.5400	0.4624	0.0	1.0107
Amphetamine	-1.5479	1.4480	1.1428	0.2851	0.0	0.2127
Barbiturate	-0.3170	0.1662	3.6354	0.0566	-0.1166	0.7284
Vistaril	-0.5289	0.2994	3.1205	0.0773	-0.0965	0.5892
Negative methadone	-0.2361	0.1067	4.8654	0.0269	-0.1552	0.7897
Benadryl	-0.6149	0.7493	0.6734	0.4119	0.0	0.5407
Codeine	0.3243	0.2643	0.5059	0.2198	0.0	1.3830
Placidyl	0.2949	0.2273	1.5704	0.2101	0.0	1.3295
Phenothiazine	-0.0700	0.1100	0.4046	0.5247	0.0	0.9324
Sinequan	-0.1567	0.1518	0.0396	0.8424	0.0	1.1175
Black	0.1111	0.5586	0.0396	0.8424	0.0	1.1175
Constant	1.3721	0.5798	5.6007	0.0180	-	-

Classification Table

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	17	17	50.00%
Survivor	6	51	89.47%
		Overall	74.73%

Table H2L1.1 (Continued)

C. Hispanic

	Chi Square	df	Significance
2 log likelihood	95.873	74	0.0446
Model chi square	24.403	16	0.0811
Improvement	24.403	16	0.0811
Goodness of fit	88.681	74	0.1172

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	0.0404	0.0597	0.4577	0.4987	0.0	1.0412
Quinine	-0.0342	0.0328	1.0873	0.2971	0.0	0.9664
Cocaine	0.0132	0.0302	0.1902	0.6628	0.0	1.0133
Darvon	0.0040	0.0620	0.0041	0.9491	0.0	1.0040
Elavil	0.0081	0.0142	0.3211	0.5710	0.0	1.0081
Benzodiazepine	0.0102	0.0143	0.5102	0.4750	0.0	1.0102
Amphetamine	-1.5807	1.4606	1.1711	0.2792	0.0	0.2058
Barbiturate	-0.3093	0.1668	3.4394	0.0637	-0.1094	0.7340
Vistaril	-0.5233	0.2984	3.0754	0.0795	-0.0946	0.5925
Negative methodone	-0.2373	0.1081	4.8158	0.0282	-0.1530	0.7888
Benadryl	-0.6555	0.7811	0.7043	0.4013	0.0	0.5192
Codeine	0.3243	0.2645	1.5028	0.2202	0.0	1.3892
Placidyl	0.2770	0.2204	1.5804	0.2087	0.0	1.3192
Phenothiazine	-0.0804	0.1123	0.5122	0.4742	0.0	0.9228
Sinequan	-0.1491	0.1524	0.9571	0.3279	0.0	0.8615
Hispanic	0.1628	0.6267	0.0675	0.7950	0.0	1.1768
Constant	1.3829	0.5417	6.5185	0.1007	-	-

Classification Table

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	16	18	47.06%
Survivor	7	50	87.72%
		Overall	72.53%

Table H2L1.2

Logistic Regression of Mortality with All Drugs, Age in 1981, and Ethnicity

A. White

	Chi Square	df	Significance
2 log likelihood	87.284	73	0.1216
Model chi square	32.992	17	0.0113
Improvement	32.992	17	0.0113
Goodness of fit	92.614	73	0.0604

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	-0.0018	0.0666	0.0007	0.9782	0.0	0.9982
Quinine	-0.0159	0.0365	0.1905	0.6625	0.0	0.9842
Cocaine	0.0218	0.0311	0.4895	0.4842	0.0	1.0220
Darvon	-0.0153	0.0639	0.0569	0.8115	0.0	0.9849
Elavil	0.0095	0.0154	0.3820	0.5365	0.0	1.0095
Benzodiazepine	0.0137	0.0162	0.7191	0.3964	0.0	1.0136
Amphetamine	-2.4738	1.5759	2.4643	0.1165	-0.0621	0.0843
Barbiturate	-0.2213	0.1740	1.6185	0.2033	0.0	0.8015
Vistaril	-0.6420	0.3213	3.9933	0.0457	-0.1287	0.5262
Negative methadone	-0.2218	0.1163	3.6364	0.0565	-0.1166	0.8010
Benadryl	-0.7120	0.7391	0.9280	0.3354	0.0	0.4907
Codeine	0.2595	0.2486	1.0897	0.2965	0.0	1.2963
Placidyl	0.2109	0.2266	0.8667	0.3510	0.0	1.2348
Phenothiazine	-0.0593	0.1000	0.3513	0.5534	0.0	0.9424
Sinequan	-0.1845	0.1724	1.1448	0.2846	0.0	0.8315
White	-0.1955	0.7329	0.0712	0.7896	0.0	0.8224
Age	-0.0855	0.0321	7.0911	0.0077	-0.2057	0.9180
Constant	4.7794	1.3820	11.9607	0.0005	-	-

Classification Table

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	21	13	61.76%
Survivor	6	51	89.47%
		Overall	79.12%

Table H2L1.2 (Continued)

B. Black

	Chi Square	df	Significance
2 log likelihood	86.966	73	0.1264
Model chi square	33.310	17	0.0103
Improvement	33.310	17	0.0103
Goodness of fit	96.158	73	0.0360

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	0.0002	0.0666	0.0	0.9974	0.0	1.0020
Quinine	-0.0166	0.0362	0.2109	0.6460	0.0	0.9835
Cocaine	0.0195	0.0311	0.3963	0.5290	0.0	1.0197
Darvon	-0.0198	0.0644	0.0946	0.7585	0.0	0.9804
Elavil	0.0096	0.0156	0.3830	0.5360	0.0	1.0097
Benzodiazepine	0.0147	0.0159	0.8470	0.3574	0.0	1.0148
Amphetamine	-2.4429	1.5753	2.4049	0.1210	-0.0580	0.0869
Barbiturate	-0.2279	0.1737	1.7207	0.1896	0.0	0.7962
Vistaril	-0.6480	0.3221	4.0480	0.0442	-0.1305	0.5231
Negative methadone	-0.2185	0.1136	3.7019	0.0544	-0.1190	0.8037
Benadryl	-0.6665	0.6981	0.9114	0.3398	0.0	0.5135
Codeine	0.2554	0.2466	1.0722	0.3004	0.0	1.2909
Placidyl	0.2210	0.2255	0.9607	0.3270	0.0	1.2909
Phenothiazine	-0.0449	0.1012	0.1965	0.3270	0.0	1.2473
Sinequan	-0.1953	0.1731	1.2728	0.2592	0.0	0.8226
Black	0.3870	0.6236	0.3852	0.5348	0.0	1.4726
Age	-0.0890	0.0327	7.4267	0.0064	-0.2124	0.9148
Constant	4.6756	1.3753	11.5576	0.0007	-	-

Classification Table

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	21	13	61.76%
Survivor	6	51	89.47%
		Overall	79.12%

Table H2L1.2 (Continued)

C. Hispanic

	Chi Square	df	Significance
2 log likelihood	87.151	73	0.1236
Model chi square	33.125	17	0.0109
Improvement	33.125	17	0.0109
Goodness of fit	95.669	73	0.0388

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	-0.0032	0.0667	0.0023	0.9619	0.0	0.9968
Quinine	-0.0129	0.0362	0.1264	0.7222	0.0	0.9872
Cocaine	0.0213	0.0309	0.4721	0.4920	0.0	1.0215
Darvon	-0.0135	0.0633	0.0457	0.8307	0.0	0.9866
Elavil	0.0100	0.0154	0.6353	0.4254	0.0	1.0124
Benzodiazepine	0.0123	0.0154	0.6353	0.4254	0.0	1.0124
Amphetamine	-2.3920	1.2700	2.3213	0.1276	-0.0517	0.0914
Barbiturate	-0.2288	0.1774	1.6637	0.1971	0.0	0.7955
Vistaril	-0.6566	0.3254	4.0724	0.0436	-0.1313	0.5186
Negative methadone	-0.2285	0.1153	3.9294	0.0474	-0.1267	0.7958
Benadryl	-0.5955	0.6745	0.7794	0.3773	0.0	0.5513
Codeine	0.2530	0.2475	1.0450	0.3067	0.0	1.2878
Placidyl	0.1900	0.2177	0.7620	0.3827	0.0	1.2093
Phenothiazine	-0.0439	0.1031	0.1815	0.6701	0.0	0.9570
Sinequan	-0.1916	0.1714	1.2485	0.2638	0.0	0.8257
Hispanic	-0.3151	0.6944	0.2059	0.6500	0.0	0.7297
Age	-0.0983	0.0328	7.4242	0.0064	-0.2124	0.9146
Constant	4.9559	1.4564	11.5800	0.0007	-	-

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	21	13	61.76%
Survivor	6	51	89.47%
		Overall	79.12%

Table H2C1.1

Three-Group Cluster Analysis by Ethnicity and Age in 1981

	Cluster Group			
	1 High Heroin, Quinine, and Cocaine	2 Low Users for All Drugs	3 High Elavil, Benzodiazepine and Others	Total
Ethnicity				
White	5.7%	47.2%	45.0%	30.8% (28)
Black	71.4%	30.6%	25.0%	45.1% (41)
Hispanic	22.9%	22.2%	30.0%	24.2%
Total	38.5% (35)	39.6% (36)	22.0% (20)	100.0% (91)
	Mean Age in Years in 1981			
Ethnicity				
White	40.5 (2)	37.9 (17)	37.3 (9)	37.9 (28)
Black	41.8 (25)	39.5 (11)	40.6 (5)	41.0 (41)
Hispanic	37.5 (8)	31.3 (8)	33.7 (6)	34.2 (22)
Total	40.7 (35)	36.9 (36)	37.1 (20)	38.4 (91)

Table H2C1.2

Three-Group Cluster Analysis by Ethnicity with Age at Death and Age in 1992 for Survivors

	Cluster Group			
	1 High Heroin, Quinine, and Cocaine	2 Low Users for All Drugs	3 High Elavil, Benzodiazepine and Others	Total
Mean Age in Years at Death for Dead Group				
Ethnicity				
White	0.0 (0)	51.2 (6)	40.0 (3)	47.4 (9)
Black	51.1 (13)	54.0 (3)	50.0 (1)	51.6 (17)
Hispanic	47.3 (4)	36.0 (1)	39.6 (3)	43.0 (8)
Total	50.2 (17)	50.6 (10)	41.3 (7)	48.5 (34)
Mean Age in Years in 1992 for Survivors				
Ethnicity				
White	51.5 (2)	45.0 (11)	49.2 (6)	47.0 (19)
Black	50.4 (12)	47.8 (8)	50.0 (4)	49.5 (24)
Hispanic	43.8 (4)	42.6 (7)	43.0 (3)	43.0 (14)
Total	49.0 (18)	45.2 (26)	48.0 (13)	47.1 (57)

Alcoholism and Death--Hypothesis 3

Of the individual drugs, only elavil use was significantly higher for the alcoholic group (Table H3.1). Total drug use was slightly higher, but not significantly so. Alcoholics were more likely to be dead than non-alcoholics (Table H3.2). In the types of death, they were more likely to have died of alcoholism, not surprisingly. At least one person who had not previously been diagnosed died of alcoholism. The clinic assigned the diagnosis of alcoholism only to known hard core alcoholics. AIDS deaths were slightly elevated among the alcoholics as well. The logistic regression model was significant but alcoholism contributed little (Table H3L1.1).

The high pill users were most likely to be diagnosed as alcoholics (Table H3C1.1). The question of how aging itself contributed to the deaths was answered or perhaps somewhat muddled by Table H3C1.2. The top column marginals of 48.2 years and 48.2 years for the dead group compares with 50.2 years and 46.4 years for the surviving group in the bottom of the table. More to the point, the dead alcoholics died about 1/2 year earlier that the current age of the surviving alcoholics.[3] On the face of matters, it does not appear that aging was a major factor in understanding death patterns. At most, aging was a contributing factor.

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[3] 48.7 years at death versus 50.2 years for survivors.

Table H3.1

Mean Drug Consumption for All Drugs by Alcoholism with Analysis of Variance

	Alcoholism				
Drug	Yes	No	Total	F Test	Significance
Morphine	5.95	6.68	6.51	0.006	0.82
Quinine	14.39	14.70	14.62	0.003	0.95
Cocaine	5.62	5.90	5.83	0.001	0.91
Darvon	5.38	2.91	3.49	2.823	0.10
Elavil	17.71	7.52	9.90	4.188	0.04
Benzodiazepine	26.19	25.62	25.76	0.008	0.93
Amphetamine	0.05	0.03	0.03	0.170	0.68
Barbiturate	1.29	1.00	1.07	0.202	0.65
Vistaril	1.00	0.67	0.74	1.724	0.19
Negative methadone	1.71	1.88	1.84	0.006	0.81
Benadryl	0.14	0.19	0.18	0.005	0.82
Codeine	0.95	1.25	1.18	0.005	0.82
Placidyl	0.43	0.80	0.71	0.343	0.56
Phenothiazine	0.95	0.51	0.61	0.577	0.45
Sinequan	0.14	0.33	0.29	0.155	0.69
Total	81.90	69.99	72.77	0.885	0.35

Table H3.2

Mortality and Type of Mortality by Alcoholism

	Alcoholism		
	Yes	No	Total
Mortality			
Dead	52.4%	31.9%	36.7% (33)
Alive	47.6%	68.1%	63.3% (57)
Total	23.3% (21)	76.7% (69)	100.0% (90)
Type of Mortality			
AIDS	14.3%	10.1%	11.1% (10)
Alcoholism	23.8%	2.9%	7.8% (7)
Health	9.5%	14.5%	13.3% (12)
Other	4.8%	4.3%	4.4% (4)
Survivor	47.6%	68.1%	63.6% (57)
Total	23.3% (21)	76.7% (69)	100.0% (90)

Table H3L1.1

Logistic Regression of Mortality with All Drugs and Alcoholism

	Chi Square	df	Significance
2 log likelihood	92.466	73	0.0617
Model chi square	25.823	16	0.0566
Improvement	25.823	16	0.0566
Goodness of fit	87.665	73	0.1160

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	0.0346	0.0597	0.3370	0.5616	0.0	1.0352
Quinine	-0.0344	0.0328	1.1021	0.2938	0.0	0.9662
Cocaine	0.0179	0.0317	0.3197	0.5718	0.0	1.0181
Darvon	-0.0036	0.0624	0.0033	0.9543	0.0	0.9964
Elavil	0.0148	0.0158	0.8730	0.3501	0.0	1.0149
Benzodiazepine	0.0108	0.0151	0.5136	0.4736	0.0	1.0109
Amphetamine	-1.8116	0.5205	1.4194	0.2335	0.0	0.1634
Barbiturate	-0.2935	0.1693	3.0048	0.0830	-0.0922	0.7456
Vistaril	-0.5284	0.3150	2.8134	0.0935	-0.0829	0.5895
Negative methadone	-0.2253	0.1037	4.7151	0.0299	-0.1515	0.7983
Benadryl	-0.6435	0.7551	0.7263	0.3941	0.0	0.5254
Codeine	0.2759	0.2568	1.1540	0.2827	0.0	1.3177
Placidyl	0.2276	0.2162	1.1086	0.2924	0.0	1.2556
Phenothiazine	-0.0610	0.1033	0.3489	0.5547	0.0	0.9408
Sinequan	-0.1698	0.1543	1.211	0.2711	0.0	0.8438
Alcohol	0.9844	0.6602	2.2232	0.1360	0.0434	2.6763
Constant	-0.3257	1.2643	0.0664	0.7967	-	-

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	18	15	54.55%
Survivor	6	51	89.47%
		Overall	76.67%

Table H3L1.2

Logistic Regression of Mortality with All Drugs, Age in 1981, and Alcoholism

	Chi Square	df	Significance
2 log likelihood	84.234	72	0.1535
Model chi square	34.054	17	0.0083
Improvement	34.054	17	0.0083
Goodness of fit	94.639	72	0.0381

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	-0.0143	0.0673	0.0451	0.8318	0.0	0.9858
Quinine	-0.0130	0.0357	0.1329	0.7155	0.0	0.9871
Cocaine	0.0286	0.0328	0.7598	0.3834	0.0	1.0290
Darvon	-0.0210	0.0646	0.0969	0.7556	0.0	0.9801
Elavil	-0.0168	0.0172	0.9578	0.3277	0.0	1.0170
Benzodiazepine	0.0141	0.0164	0.7427	0.3888	0.0	1.0142
Amphetamine	-2.8340	1.6388	2.9906	0.0837	-0.0915	0.0588
Barbiturate	-0.2163	0.1762	1.5062	0.2197	0.0	0.8055
Vistaril	-0.6654	0.3348	3.9487	0.0469	-0.1284	0.5141
Negative methadone	-0.2154	0.1130	3.6292	0.0568	-0.1174	0.8062
Benadryl	-0.7285	0.7126	1.0452	0.3066	0.0	0.4826
Codeine	0.2476	0.2194	1.2740	0.2590	0.0	1.2809
Placidyl	0.1524	0.2130	0.5115	0.4745	0.0	1.1645
Phenothiazine	-0.0507	0.0997	0.2582	0.6113	0.0	0.9506
Sinequan	-0.2046	0.1790	1.3066	0.2530	0.0	0.8150
Alcohol	09620	0.6953	1.9143	0.1665	0.0	2.6169
Age	-0.0853	0.0320	7.1177	0.0076	-0.2080	0.9182
Constant	3.0333	1.7993	2.8452	0.0916	-	-

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	22	11	66.67%
Survivor	5	52	91.23%
		Overall	82.22%

Table H3C1.1

Three-Group Cluster Analysis by Alcoholism with Age in 1981

	Cluster Group			
	1 High Heroin, Quinine, and Cocaine	2 Low Users for All Drugs	3 High Elavil, Benzodiazepine and Others	Total
Alcoholism				
Yes	25.7%	14.3%	35.0%	23.3% (21)
No	74.3%	85.7%	65.0%	76.7% (69)
Total	38.9% (35)	38.9% (35)	22.2% (20)	100.0% (90)
	Mean Age in Years in 1981			
Alcoholism				
Yes	43.0 (8)	38.2 (5)	40.6 (7)	41.1 (21)
No	40.0 (26)	36.5 (30)	35.2 (13)	37.5 (69)
Total	40.7 (35)	36.7 (35)	37.1 (20)	38.4 (90)

Table H3C1.2

Three-Group Cluster Analysis by Alcoholism with Age at Death and Age in 1992 for Survivors

	Cluster Group			
	1 High Heroin, Quinine, and Cocaine	2 Low Users for All Drugs	3 High Elavil, Benzodiazepine and Others	Total
Mean Age in Years at Death for Dead Group				
Alcoholism				
Yes	48.6 (5)	53.0 (2)	46.8 (4)	48.7 (11)
No	50.8 (12)	49.9 (7)	34.0 (3)	48.2 (22)
Total	50.2 (17)	50.6 (9)	41.3 (7)	48.4 (33)
Mean Age in Years in 1992 for Survivors				
Alcoholism				
Yes	54.5 (4)	46.0 (3)	48.7 (3)	50.2 (10)
No	47.5 (14)	45.1 (23)	47.8 (10)	46.4 (47)
Total	49.1 (18)	45.2 (26)	48.0 (13)	47.1 (57)

Age of First Continuous Heroin Use and Death-- Hypothesis 4

Age of first continuous use was dichotomized into a high age of 21 years or greater and a low age of 20 years or less. Morphine use by the older group was double that of the younger (Table H4.1), but not quite statistically significant. Elavil usage was higher among the younger group, bur far from significantly so. Table H4.2 shows a trend in the data which has appeared sporadically through out the analysis. Those who started heroin use at 21 years or older in this sample were more likely to have died than those who started continuous heroin use prior to age 21. Given the relatively young age at which they have died, this indicates a relatively short drug use career for the old cohort. Almost 43 percent of those who started continuous heroin use at an older age are dead, versus only 31 percent of the younger group. Looking at the types of death in the bottom of Table H4.2, AIDS has claimed twice as many veterans in the older group as in the younger group. The logistic run (Table H4L1.1) does not indicate a relationship between mortality and age of first continuous use. Almost two thirds of the narcotic group (Table H4C1.1), started heroin use at age 21 or older, versus less than forty percent for the pill users.

Table H4.1

Mean Drug Consumption for All Drugs by Age of First Continuous Heroin Use with Analysis of Variance

Drug	Age of First Continuous Heroin Use: Low (LT 21)	Age of First Continuous Heroin Use: High (GE 21)	F Test	Significance
Morphine	4.14	8.41	2.973	0.09
Quinine	11.79	16.80	1.184	0.28
Cocaine	5.74	5.80	0.007	0.98
Darvon	3.55	3.37	0.002	0.89
Elavil	12.17	7.86	1.026	0.31
Benzodiazepine	26.50	25.27	0.005	0.82
Amphetamine	0.05	0.02	0.517	0.47
Barbiturate	0.98	1.18	0.150	0.70
Vistaril	0.81	0.67	0.400	0.53
Negative methadone	1.88	1.90	0.008	0.98
Benadryl	0.29	0.08	1.490	0.23
Codeine	0.48	1.78	1.456	0.23
Placidyl	1.21	0.27	3.340	0.07
Phenothiazine	0.71	0.51	0.172	0.68
Sinequan	0.17	0.39	0.297	0.59
Total	70.45	74.29	0.129	0.72

Table H4.2

Mortality and Type of Mortality by Age of First Continuous Heroin Use

	Age of First Continuous Heroin Use		
	Low (LT 21)	High (GE 21)	Total
Mortality			
Dead	31.0%	42.9%	37.4% (34)
Alive	69.0%	57.1%	62.6% (57)
Total	46.2% (42)	53.8% (49)	100.0% (91)
Type of Mortality			
AIDS	7.1%	14.3%	11.0% (10)
Alcohol	7.1%	8.2%	7.7% (7)
Health	11.9%	16.3%	14.3% (13)
Other	4.8%	4.1%	4.4% (4)
Survivor	69.0%	57.1%	62.6% (57)
Total	46.2% (42)	53.8% (49)	100.0% (91)

Table H4L1.1

Logistic Regression of Mortality with All Drugs and Age of First Continuous Heroin Use

	Chi Square	df	Significance
2 log likelihood	92.748	74	0.0693
Model chi square	27.528	16	0.0360
Improvement	27.528	16	0.0360
Goodness of fit	100.942	74	0.0204

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	0.0632	0.0639	0.9789	0.3225	0.0	1.0652
Quinine	-0.0440	0.0344	1.6296	0.2018	0.0	0.9570
Cocaine	0.0089	0.0303	0.0861	0.7692	0.0	1.0089
Darvon	0.0034	0.0671	0.0026	0.9596	0.0	1.0034
Elavil	0.0078	0.0146	0.2857	0.5930	0.0	1.0078
Benzodiazepine	0.0130	0.0151	0.7501	0.3864	0.0	1.0131
Amphetamine	-2.0623	1.5458	1.7798	0.1822	0.0	0.1272
Barbiturate	-0.3287	0.1621	4.1111	0.0426	-0.1325	0.7199
Vistaril	-0.5996	0.3122	3.6880	0.0548	-0.1185	0.5490
Negative methadone	-0.2573	0.1119	5.2836	0.0215	-0.1652	0.7732
Benadryl	-0.8107	0.8587	0.8913	0.3451	0.0	0.4445
Codeine	0.3569	0.2663	1.7961	0.1802	0.0	10.4289
Pladicyl	0.2317	0.2185	1.1144	0.2911	0.0	1.2607
Phenothiazine	-0.0778	0.1031	0.5685	0.4508	0.0	0.9252
Sinequan	-0.1383	0.1649	0.7030	0.4018	0.0	0.8708
Continuous heroin use	-0.9885	0.5731	2.9748	0.0846	-0.0900	0.3721
Constant	3.0640	1.1282	7.3764	0.0066	-	-

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	18	16	52.94%
Survivor	6	51	89.47%
		Overall	75.82%

Table H4L1.2

Logistic Regression of Mortality with All Drugs, Age in 1981, and Age of First Continuous Heroin Use

	Chi Square	df	Significance
2 log likelihood	89.979	73	0.1262
Model chi square	33.298	17	0.0103
Improvement	33.298	17	0.0103
Goodness of fit	99.061	73	0.0029

Drug	B	S.E.	WALD	Sig	R	EXP
Morphine	0.0090	0.0704	0.0162	0.8989	0.0	1.0090
Quinine	-0.0196	0.0373	0.2753	0.5998	0.0	0.9806
Cocaine	0.0204	0.0314	0.4234	0.5152	0.0	1.0206
Darvon	-0.0122	0.0643	0.0359	0.8497	0.0	0.9879
Elavil	0.0094	0.0153	0.3760	0.5397	0.0	1.0094
Benzodiazepine	0.0135	0.0157	0.7358	0.3910	0.0	1.0136
Amphetamine	-2.5658	2.5941	2.5906	0.1075	-0.0701	0.0769
Barbiturate	-0.2314	0.1726	1.7979	0.1800	0.0	0.7934
Vistaril	-0.6621	0.3246	4.1595	0.014	-0.1316	0.7879
Negative methadone	-0.2384	0.1180	4.0815	0.0434	-0.1316	0.7879
Benadryl	-0.7350	0.7461	0.9704	0.3246	0.0	0.4795
Codeine	0.2767	0.2556	0.1719	0.2790	0.0	1.3187
Placidyl	0.1829	0.2166	0.7135	0.3983	0.0	1.2007
Phenothiazine	-0.0610	0.0996	0.3750	0.5403	0.0	0.9408
Sinequan	-0.1761	0.1771	0.9896	0.3198	0.0	0.8385
Continuous heroin usage	-0.3876	0.6343	0.3733	0.5412	0.0	0.6787
Age	-0.0779	0.0344	5.1244	0.0236	-0.1612	0.9250
Constant	5.0182	1.5001	11.4731	0.0007	-	-

	Predicted		
Observed	Death	Survivor	Percent Correct
Death	21	13	61.76%
Survivor	7	50	87.72%
		Overall	78.02%

Table H4C1.1

Three-Group Cluster Analysis by Age of First Continuous Heroin Use with Age in 1981

	Cluster Group			
	1 High Heroin, Quinine, and Cocaine	2 Low Users for All Drugs	3 High Elavil, Benzodiazepine and Others	Total
Age of First Continuous Heroin Use				
Low (LT 21)	37.1%	47.2%	60.0%	46.2% (42)
High (GE 21)	62.9%	52.8%	40.0%	53.8% (49)
Total	38.5% (35)	39.6% (36)	22.0% (20)	100.0% (91)
	Mean Age in Years in 1981			
Age of First Continuous Heroin Use				
Low (LT 21)	37.4 (10)	33.4 (17)	33.7 (12)	34.7 (42)
High (GE 21)	42.7 (22)	40.1 (19)	42.1 (8)	41.6 (49)
Total	40.7 (36)	36.9 (36)	37.1 (20)	38.4 (91)

Table H4C1.2

Three-Group Cluster Analysis by Age of First Continuous Heroin Use with Age at Death and Age in 1992 for Survivors

	Cluster Group			
	1 High Heroin, Quinine, and Cocaine	2 Low Users for All Drugs	3 High Elavil, Benzodiazepine and Others	Total
Mean Age in Years at Death for Dead Group				
Age of First Continuous Heroin Use				
Low (LT 21)	46.8 (4)	47.4 (5)	38.0 (4)	44.3 (13)
High (GE 21)	51.2 (13)	53.8 (5)	45.7 (3)	51.0 (21)
Total	50.2 (17)	50.6 (10)	41.3 (7)	48.5 (34)
Mean Age in Years in 1992 for Survivors				
Age of First Continuous Heroin Use				
Low (LT 21)	46.9 (9)	42.4 (12)	44.0 (8)	44.2 (29)
High (GE 21)	51.2 (9)	47.6 (14)	54.4 (5)	50.0 (28)
Total	49.1 (18)	45.2 (26)	48.0 (13)	47.1 (57)

Heavy Heroin-Cocaine Use and Death-- Hypothesis 5

The data for this hypothesis have been presented earlier, but are repeated here for clarity (Table H5.1). High heroin and cocaine use was in fact more associated with death than other drug use pattern, with almost half of those users dead. Only alcoholism showed as simple a relationship to death (see Table H3.2).

Table H5.1

Mortality by Three-Group Cluster Analysis

	Cluster Group			
Mortality	1 High Heroin, Quinine, and Cocaine	2 Low Users for All Drugs	3 High Elavil, Benzodiazepine and Others	Total
Dead	48.6%	27.8%	35.0%	37.4% (34)
Alive	51.4%	72.2%	65.0%	62.6% (57)
Total	38.5% (35)	39.6% (36)	22.0% (20)	100.0% (91)

Heavy Heroin-Cocaine Use and Type of Death-- Hypothesis 6

The data in this table (Table H6.1) have also be presented in a prior table. Contrary to expectations, death from AIDS was almost as associated with high pill use as with high narcotic use.

Table H6.1

Type of Mortality by Three-Group Cluster Analysis

Type of Mortality	Cluster Group 1 High Heroin, Quinine, and Cocaine	2 Low Users for All Drugs	3 High Elavil, Benzodiazepine and Others	Total
AIDS	17.1%	2.8%	15.0%	11.0% (10)
Alcohol	11.4%	5.6%	5.0%	7.7% (7)
Health	17.1%	19.4%	0.0%	14.3% (13)
Other	2.9%	0.0%	15.0%	4.4% (4)
Survivor	51.4%	72.2%	65.0%	62.6% (57)
Total	38.5% (35)	39.6% (36)	22.0% (20)	100.0% (91)

Drug Use Career Tables

A number of tabulations were run in order to clarify the drug use careers of the sample.[4] The first use of heroin was about twenty years in this sample. Within a couple of years, they had their first addiction. About ten years later, they had their first methadone treatment. Roughly thirty years passed from their first heroin use until either 1992 or their death.

Table G1 breaks down these differences according to mortality. The dead group first used heroin at twenty, about the same age as the survivors, but took significantly longer to become addicted. The dead were also significantly older, 34 years versus 28 years, than the survivors at their first methadone treatment. They also took significantly longer to get into methadone treatment, about four years. There was not a significant difference between the survivors and the dead in the number of years between first heroin use and 1992 or death.

Table G2 breaks down these variables by type of mortality. The first obvious difference is that the AIDS portion of the sample was younger than both the alcoholic and health death groups at age of first methadone treatment, although this difference was not quite significant. The same pattern was found in the number of years from first

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[4]Rob Smith, of the New York State Office of Alcohol and Substance Abuse Services was helpful in conceptualizing the tables in this section.

Table G1

Sample's Age Progression from First Heroin Use to Heroin Addiction to Methadone Treatment to Mortality with Months in Jail Prior to Methadone Treatment by Mortality with ANOVA

Demographic Variable	Mortality				
	Dead	Alive	Total	*F* Test	Significance
Age in years first heroin use	20	19	20	2.326	0.1308
Age in years first heroin addiction	23	21	21	4.238	0.0424
Age in years first methadone treatment	34	28	31	11.46	0.0011
Years from first use to addiction	2.15	1.58	1.79	0.913	0.3420
Years from first addiction to methadone RX	11.82	7.58	9.16	7.892	0.0061
Years from first heroin use to death or 1992	28.00	27.88	27.92	0.0045	0.9457
Months in jail pre-methadone treatment	20	10	13	2.393	0.1254
Number of detox from heroin to admission	6	4	5	1.650	0.2023

Table G2

Sample's Age Progression from First Heroin Use to Heroin Addiction to Methadone Treatment to Mortality with Months in Jail Prior to Methadone Treatment by Type of Mortality with ANOVA

Demographic Variable	Type of Mortality					
	AIDS	Alcohol	Health	Other	F Test	Significance
Age in years first heroin use	22	20	20	16	1.213	0.3221
Age in years first heroin addiction	25	22	23	20	1.240	0.3127
Age in years first methadone treatment	30	37	39	26	2.600	0.0705
Years from first use to addiction	2.30	1.57	2.54	1.50	0.139	0.9356
Years from addiction to methadone RX	6.0	14.86	16.38	3.25	3.954	0.0173
Years from first heroin use to death	20.6	31.43	33.77	21.75	5.329	0.0046
Months in jail pre-methadone treatment	20	16	28	1	0.519	0.6726
Number detox from heroin to admission	6	6	7	2	0.8883	0.4584

addiction to first methadone treatment, six years versus about fifteen years. The same pattern was also found in the number of years from first heroin use to death, about twenty years versusabout thirty years. Both of the later findings were significant.

Table G3 looks at these variables by ethnicity. The black group started methadone treatment later than either the whites or Hispanics, but the difference was not quite significant. The same pattern was found with regard to the number of years between first heroin use and death or 1992. The blacks had far more time in jail prior to methadone treatment. These later two findings were both significant.

Table G4 looks at the differences according to the cluster groups. Both the age at first heroin use and first addiction age were significantly higher in the powder drug users. The only other major difference was in the number of detoxifications from first addiction to admission into the Veterans methadone program, where the low users had three and both other groups had six such experiences.

Methadone Negative Patterns of Death

Thirty-four of the ninety-one subjects showed methadone positive for the entire two years (see bottom of Table G6). Another thirty-seven showed at most one or two methadone negatives. Thirty-two subjects had three or more methadone negatives. Seventy percent of the dead had one or more weeks

Table G3

Sample Age's Progression from First Heroin Use to Heroin Addiction to Methadone Treatment to Mortality with Months in Jail Prior to Methadone Treatment by Ethnicity with ANOVA

Demographic Variable	Ethnicity					
	White	Black	Hispanic	Total	F Test	Significance
Age in years first heroin use	20	20	19	20	1.265	0.2873
Age in years first heroin addiction	22	22	20	21	1.620	0.2037
Age in years first methadone treatment	30	33	27	31	2.895	0.0606
Years from first use to addiction	2.04	1.76	1.55	1.79	0.1993	0.8197
Years from first addiction to methadone treatment	7.96	10.95	7.36	9.16	2.389	0.0977
Years from first heroin use to death or 1992	27.18	30.27	24.50	27.92	3.901	0.0238
Months in jail pre-methadone treatment	3	21	12	13	3.232	0.0442
Number of detox from heroin addiction to admission	4	6	5	5	1.456	0.2387

Table G4

Sample's Age Progression from First Heroin Use to Heroin Addiction to Methadone Treatment to Mortality with Months in Jail Prior to Methadone Treatment by Three-Group Cluster Analysis with ANOVA

Demographic Variable	Cluster Group 1 High Heroin, Quinine, and Cocaine	2 Low Users for All Drugs	3 High Elavil, Benzodiazepine and Others	F Test	Significance
Age in years first heroin use	21	19	18	5.199	0.0073
Age in years first heroin addiction	23	21	20	3.115	0.0493
Age in years first methadone treatment	33	29	28	2.395	0.0971
Years from first use to addiction	1.54	1.97	1.90	0.234	0.7922
Years from first addiction to methadone RX	10.29	8.64	8.15	0.707	0.4957
Years from first heroin use to death or 1992	28.34	27.86	27.30	0.101	0.9038
Months in jail pre-methodone treatment	18	9	14	0.685	0.5085
Number of detox from heroin to admission	6	3	6	3.802	0.0261

of methadone negatives, while less than 60 percent of the survivors had any methadone negatives (see Table G5). Eighty percent of the AIDS deaths had one or more methadone negatives.

Both the pill users and the powder users reported 65 percent one or more methadone negatives (Table G6), slightly more than the low users. This similarity between the powder and pill users might account for the similar patterns in AIDS deaths.

Table G5

Methadone Negative by Mortality and Type of Mortality

Methadone Negative	Mortality		Total
	Dead	Alive	
0 negatives	29.4%	42.1%	37.4% (34)
1 through 14 negatives	70.6%	57.9%	62.6% (57)
Total	100.0% (34)	100.0% (57)	100.0% (91)

Methadone Negative	Types of Mortality					Total
	AIDS	Alcoholism	Health	Other	Survivor	
0 negatives	20.0%	42.9%	23.1%	50.0%	42.1%	37.4% (34)
1 through 14 negatives	80.0%	57.1%	76.9%	50.0%	57.9%	62.6% (57)
Total	100.0% (10)	100.0% (7)	100.0% (13)	100.0% 94)	100.0% (57)	100.0% (91)

Table G6

Methadone Negative by Three-Group Cluster Analysis

Methadone Negative	Cluster Group 1 High Heroin, Quinine, and Cocaine	2 Low Users for All Drugs	3 High Elavil, Benzodiazepine and Others	Total
0 negatives	34.3%	41.7%	35.0%	37.4% (34)
1 through 14 negatives	65.7%	58.3%	65.0%	62.6% (57)
Total	38.5% (35)	39.6% (36)	22.0% (20)	100.0% (91)

Methadone Negative	Cluster Group 1 High Heroin, Quinine, and Cocaine	2 Low Users for All Drugs	3 High Elavil, Benzodiazepine and Others	Total
0 negatives	34.5%	41.7%	35.0%	37.4% (34)
1 negative	27.7%	25.0%	35.0%	27.5% (25)
2 through 14 negatives	40.0%	33.3%	30.0%	35.2% (32)
Total	38.5% (35)	39.6% (36)	22.0% (20)	100.0% (91)

CHAPTER 5

DISCUSSION AND CONCLUSIONS

Preliminary Conclusions

The preliminary conclusions for each hypothesis are presented here.

H1. Those persons with health problems are more likely to have died than those without health problems.

Almost two thirds of the sample had physical problems. Veterans included in this category were so defined by the clinic physician at the V.A.[1] Veterans with health problems were more likely to have died than those without them. Almost half of those with health problems had died, as compared to less than a quarter of those in better health. This was true for every type of death as well as overall death (Table H1.2). Concerning the individual drug markers (Table H1.1), there were no statistically significant differences between the two health statuses. However the narcotic group in the cluster typology had the highest percentage of veterans with health problems at 71.4 percent (Table H1C1.1).

H2. Blacks are more likely to have died than whites or Hispanics.

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[1]Smith, 42.

The black group had the highest population dead (top of Table H2.2), followed by the Hispanic group then the whites. The types of death also varied by ethnicity, with almost one fourth of the total Hispanic group dead and almost ten percent of the blacks dead from Aids alone. Alcoholism and health related problems killed equal numbers of the black group, while health problems were the major cause of death among the whites. While total drug use was all but identical at approximately 70 positives (Table H2.1), there were substantial individual drug use differences between the ethnic groups. The black and Hispanics had significantly more quinine positives and used more morphine and cocaine as well. The whites had significantly more benzodiazepine use.

H3. Alcoholics are more likely to have died than non-alcoholics.

Alcoholics were more likely to be dead than non-alcoholics (Table H3.2) and, not surprisingly especially of alcoholism. AIDS deaths were slightly elevated among the alcoholics as well. At least one person died of alcoholism who had not previously been diagnosed. It should be recalled that the physical classification of alcoholism was very stringent at the clinic. Of all the drugs, only elavil use was significantly higher for the alcoholic group (Table H3.1). Total drug use was slightly higher in the alcoholics, but not significantly so.

H4. The younger the person started continuous heroin use, the more likely he is to have died.

The exact opposite of the predicted direction was found. Those who started heroin use at an older age in this sample were more likely to have died (Table H4.2), 43 percent versus 31 percent. This direction was found in terms of AIDS, health related and alcohol related deaths (Table H4.2). AIDS has claimed twice as many veterans in the older group as in the younger group. Given the relatively young age at which they have died, this indicates a relatively short drug use career. Again, almost 43 percent of those who started heroin use at an older age are dead, versus only 31 percent of the younger group. Morphine use by the older group was double that of the younger, but not quite statistically significant (Table H4.1). Elavil usage was higher among the younger group, but far from significantly so.

H5. Heavy heroin-cocaine users are more likely to have died than heavy pill users.

High heroin and cocaine use were more associated with death than other drug use patterns (Table H5.1). Almost half of the members of the narcotic group of the cluster typology were dead, as opposed to 35 percent of the pill users and 28 percent of the low drug users.

H6. Heavy heroin-cocaine users are more likely than heavy pill users to have died of AIDS.

Ten of the 34 deaths in the sample were from AIDS (Table H6.1). Contrary to the hypothesis, deaths from AIDS

were as associated with high pill use as with high narcotic use.

Some Methodological Considerations and Limitations

The original rationale for the analysis was the large number of methadone patients dying in the sample. Simultaneously an increasing number of IV drug users were becoming infected with HIV and dying from AIDS.[2] It was not conceptualized as simply an epidemiological study, but was formulated within a sociological theory, tertiary deviance, as it applied to this problem.[3] By 1992, almost forty percent of veterans had died, an astounding number when it is recalled that these men, unlike many lower class, poorly educated males, have had access to essentially the only socialized medicine in the country, save that for the very rich- the federal Veterans hospital system.[4]

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[2]The first thinking on this project was in late 1985 when patients began dying at a faster rate than usual in the Smith study.

[3]It is arguable whether or not this research meets the criteria laid out by Robert Merton for the middle-range. Robert Merton, Social Theory and Social Structure (New York: The Free Press, 1968), 39-48. I tend to see Miller's theory of tertiary deviance as beyond middle-range. Although Miller formulated the theory in response to a particular social problem, the theory can easily be applied cross culturally or to other problems within our society. Miller's theory is more derivative from critical thinking than Merton's theory. He may not have quoted Max Horkheimer or Theodor Adorno, but the use of history to develop a theory within an overall political view is a reasonable criterion for work within critical theory.

[4]Specifically, between 1982 and 1992 thirty-four of ninety-one subjects or 37 percent died.

The most recent available estimates of reported AIDS deaths in New York State methadone programs was about 0.5 percent annually (one half of 1 percent).[5] Two researchers have suggested that a working estimate of actual AIDS deaths is about twice AIDS-surveillance deaths. This would put the New York State number at about one percent annually. In this study ten, AIDS deaths were reported, about one percent annually.[6] A 1981 study claimed that about eighty-five percent of drug-related deaths in methadone treatment were alcohol-related.[7] With seven deaths directly from alcohol, the rate in this study was considerably less, about twenty percent. However, the 1981 numbers were calculated prior to

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[5]The study reported 5.13 deaths per thousand patients in mid-1987, an increase of 59 percent from the previous year. Herman Joseph and Edith Springer, "Methadone Maintenance Treatment and the AIDS Epidemic," in The Effectiveness of Drug Abuse Treatment: Dutch and American Perspectives (Malabar, Florida: Robert E. Krieger), chap. 23, 268. Herman Joseph believes that the above numbers are the most recent and that a new study of deaths in New York state methadone programs is to start next month (personal communication).

[6]A 1988 analysis suggests that a working estimate of the actual number of fatal outcomes of HIV infection among IV drug users is roughly twice the number of deaths from surveillance-definition AIDS. Don C. Des Jarlais and Samuel R. Friedman, "HIV Infection Among Persons Who Inject Illicit Drugs: Problems and Prospects," Journal of Acquired Immune Deficiency Syndromes 1 (1988): 271. With the working estimate number just mentioned, the actual percentage of AIDS deaths in this sample could be doubled to 2 percent or twenty of the thirty-four deaths, lessening the problem of interpretation.

[7]Herman Joseph, Phil Appel, and James Schmiedler, "Deaths During and After Discharge From Methadone Maintenance Treatment" (New York State Division of Substance Abuse Services, June, 1981), 1.

the AIDS epidemic. Also some of the health related deaths could have been alcohol-related.[8]

Only ten of the decedents were reported to have had died of AIDS. It cannot be ruled out that some who died from causes other than AIDS, were carrying the HIV virus as well and died from AIDS or ARC. Nor can it be determined whether the immune systems were already impaired by the presence of the HIV virus of those twenty-four who died of causes other than AIDS.

The current research cannot hope to answer all such questions. It cannot be claimed that this is the perfect or even the best data set for such purposes. It is unlikely that such a data set can be constructed for any amount of money and time.[9] The main problem is that AIDS has such a long incubation period from the invasion of the virus. The significance of AIDS for the IV-drug using population was not recognized at the beginning of the epidemic. The

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[8]Especially some of the 5 heart attacks and/or the seizure and the hemorrhage.

[9]It has long been one of the great liberal and left conceits that the enemy of the perfect was the good, according to Bogdan Denitch. Thus over twenty years ago, Richard Nixon tried to create the first federally guaranteed annual income. It was to be expected that conservatives would scream loudly object. Yet the margin by which the Family Assistance Plan failed lay with some of the liberal critics in Congress. They complained bitterly that Nixon had not offered enough money in the first bill. They were probably accurate in their statistical analysis, but utterly wrong in their political response. No Republican, nor in fact any Democrat either, has since dared to arouse the good liberals with such an insulting offer.

research world is left with fragments and pieces of research conducted for other purposes. Thus much analysis of AIDS' origins must rest upon recycling data gathered for different reasons during the late 1970s and early 1980s. In this respect, this data set is no different from other data sets being used today in studying AIDS.

An excellent example of such recycling is the work done by Ann F. Brunswick at Columbia University. Her study started out over twenty years ago with a random sample of Harlem households.[10] She has tracked these households at roughly five year intervals. This last follow-up included blood samples. It showed that approximately ten percent of the locatable, surviving members were HIV positive.[11] Her data set is not a perfect data set for understanding all aspects of AIDS in her sample, but it gives an absolutely crucial historical baseline for understanding the progression of AIDS in an urban inner city. As she does other follow up studies, she will continue to provide perhaps the only accurate baseline for this group, for the simple reason that she had a random sample drawn in the original study.

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[10]The Longitudinal Study of Harlem Health, 1967, cited in Jewelle Taylor Gibbs et al., Young, Black, and Male In America: An Endangered Species (New York: Auburn House, 1988), xxxi.

[11]I arrived late for her meeting at CUNY Graduate Center and did not receive a copy of her paper. These comments were made from memory and notes I took.

The current data set is strong for several reasons. First I saw it being constructed and I have confidence in its accuracy. This may sound like a small matter, but after having constructed hundreds of data bases over the last twenty years, I have become some what leery of other people's data. I am not opposed to secondary analysis, but I am particular about the source of the data. Secondly, this data set covers the weekly activity of the sample for a full two year period.[12] This guaranteed that a clear picture of each member's drug use patterns could be constructed.[13] These veterans were probably more stable in their lifestyle than the overall IV drug-using population. This allowed the acceptance of the cluster analysis typology with a high degree of confidence. Much research into drug use, both prior and since, has relied either upon fewer or more sporadic tests or upon a shorter length of testing. In fact a lot of drug research relies upon the selective memories of drug users in questionnaire or interview formats. Thirdly, I was at the clinic often enough to know something about the facilities. Fourthly, the actual drug tests were very sophisticated, expensive laboratory tests.

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[12]In fact, the presence of two full years of drug testing was a requirement for the original research.

[13] With the possible exception of cocaine, which metabolizes out of the body quite rapidly, we have a pretty good picture of what these 91 veterans were using weekly during a full two year period.

This is a unique data set with over 150,000 data points, which can show some important things about IV drug use and mortality. The data may not be generalizable to all IV drug-using populations, but it can scarcely be denied that it is a fairly accurate portrayal of one such sample's background, just as AIDS was becoming a problem in the intravenous drug using population in the early 1980s.

Would a null finding between mortality and drug use negate the whole research? Given the prevalence of the HIV virus among street level opiate users and the multiple social problems associated with AIDS, such a null finding would in fact have been very unusual. It would have called into question either the accuracy of the data or the mode of transmission of the virus among the IV drug using population.[14] In fact some fairly distinct patterns of drug use and mortality have appeared.

A further question suggested that drug users have multiple problems, any one of which could have caused early mortality. This problem of trying to determine the effects of contributing causes of death was noted by Haberman and Baden in a study of 1954 unnatural deaths by the New York City medical examiner's office. In order to more accurately

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[14]In a recent article, the relationship between HIV and AIDS was questioned by a researcher at the University of California at Berkeley, Peter Duesberg. I don't know much about Duesberg or his research, but it is certainly true that negative findings in the absence of expected correlations can be important. Tom Bethell, "Could Duesberg Be Right?," National Review, 17 August 1992, 22-23.

classify these contributing causes of death beyond autopsies and toxicological findings, interviews were conducted among family members and friends of the deceased. The basic target of the Haberman-Baden study was to present a view of the role of alcohol and other drugs in violent death in New York City. The sample included approximately 50 percent of such deaths during that period.[15] The costs of obtaining all these additional tests and interview data were not mentioned in the book, but they could easily have reached $250,000 in 1978 dollars [16]. Few unfunded Ph.D. candidates are able to locate that kind of money in order to do a dissertation.

The present study helps us to understand the practice of street-level drug use by minorities and how it is shortening life expectancy.[17] It is impossible to understand street-level drug use and its associated violence without understanding how legal drugs used by white middle

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[15]Paul W. Haberman and Michael Baden, Alcohol, Other Drugs and Violent Death (New York: Oxford University Press, 1978), 26-27, 24. The dates for inclusion were from August 20, 1974 to August 19, 1975.

[16]In the current data set, each subject had 104 weeks of tests for a total of 9464 tests. Each test cost the federal government about $15 for a total of about $140,000.

[17]We refer to the vast enlargement and further immiseration of what Marx termed the lumpen proletariat. Jewelle Taylor Gibbs et al., Young, Black, and Male In America: An Endangered Species (New York: Auburn House, 1988).

class women one hundred years ago have become the illegal drugs of choice among lower class minorities today.[18]

The issue of how the sexual orientation of the veterans might have effected death rates was not directly dealt with in the analysis. The clinic did not keep records of this variable because there has been little reason for homosexuals to declare their status in this country, and even less within the military. The key to military success has seldom been to openly declare homosexuality. Indeed, the key to survival has often been the opposite. In any case, given the Kinsey estimate that perhaps ten percent of the population was homosexual, at most nine of the ninety-one could have been gay. The probability that the military would have had the same distribution of homosexual males as the general population is very low, even considering the draft. For purposes of argument, we could easily cut the Kinsey number in half, leaving five possible homosexuals in the sample. Assuming the same rough percentage of HIV infected homosexual deaths from AIDS as is generally reported, perhaps fifty percent of the five could have died from AIDS on that basis.[19] It does not appear that the absence of

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[18]Thus the perennial sociological hydra of race and class rears its head another time, in the form of tertiary deviance.

[19]Recent speculations on the percentage of homosexuals in the general population have been as low as one percent. Such numbers if accurate, would largely render the question of sexual orientation irrelevant in this sample.

knowledge of the sexual orientation of the veterans was a serious weakness in interpreting the research.[20]

Today, medical researchers are attempting to clone an equivalent to methadone for cocaine.[21] They are having a very hard time trying to do so, given the very different ways in which cocaine and heroin work within the body. This research is in fact is another example of tertiary deviance in practice. That is the relationship between sociological theory and the current data set. In 1982 these veterans were a walking example of tertiary deviance on the street. In 1994, they remain part of the indictment of drug policy in the United States.

Discussion

Drug policy is as much in crisis today as it ever has been.[22] This is true especially in the area of the heroin

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[20]Whatever else is true, it is highly improbable that all ten of the AIDS deaths were primarily from homosexual behavior and that the use of hard drugs was simply a random influence, like the positions of the stars and signs of the moon. The combination of male homosexuals and IV drug-use is also low in terms of AIDS. AIDS Surveillance Quarterly Update: For Cases Reported Through December 1992 (Bureau of Communicable Disease Control, New York State Department of Health), 12-13.

[21]A recent article in Science, suggests a major break through in this area. Warren E. Leary, "Scientists Create an Enzyme That May Curb Addiction to Cocaine," The New York Times, 26 March 1993, A-18.

[22]Two particularly good reviews of books on the failure of current drug policy can be found in The New York Review of Books. Michael Massing, "Desperate Over Drugs," The New York Review of Books 36, no. 5 (1989): 22-26; and Micheal

(continued...)

and cocaine use. Although recreational use of the two drugs has been dropping for most of the last three or four years, hard core use remains dangerously high and the inner city hospital emergency rooms hold the casualties of the current bankrupt policies.[23]

Regular methadone use by heroin users seems to be an indicator of survival in this particular analysis. For a heroin addict in methadone to skip using the methadone may lead to a relapse back into intravenous drug use and the risk of HIV infection. Yet, long term use of methadone itself may also be damaging to the health of its users in treatment or maintenance--depending upon how methadone practice in this country is viewed. Again, it should be noted that methadone scholar Herman Joseph disputes this idea. He believes that the route of ingestion is the more damaging health aspect of IV drug use, rather than the characteristics of the drug itself. The puncturing of the skin invades the body's immune system at each injection. Even clean needles and sterile injection conditions may not

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[22](...continued)
Massing, "What Ever Happened to the 'War on Drugs,'" The New York Review of Books 39, no. 11 (1992): 42-46.

[23]The articles in this area appear almost daily in any newspaper in the country. Joseph B.Treater, "Emergency Hospital Visits Rise Among Drug Abusers," The New York Times, 24 April 1993, 8; and Philip Shenon, "Senate Report Warns of Surging Cocaine Use," The New York Times, 11 May 1990, A-18.

be sufficient to overcome the long term use of IV drugs. One obvious health advantage of methadone is that it is consumed orally and not injected. Joseph also cites numerous studies which support the idea that long term methadone maintenance lowers the risk of HIV infection.[24]

The most common means used to verify regular methadone use, urine testing, is repellent to civilized society and an invasion of privacy not seen elsewhere in the United States during this century. Jeremy Bentham's panopticon has moved from the mere external surveillance of individuals to the control of their very bodily functions, without the benefit of a search warrant or a criminal conviction.[25]

Further complicating the problem is that cocaine use is also highly associated with HIV infection and AIDS. As mentioned in the last section, research is ongoing to develop a synthetic cocaine, for dispensing to cocaine addicts. Even if such a synthetic cocaine could be developed, the political decision to remedicalize cocaine addiction would bring out all the previous arguments used against methadone. Yet given the close relationship between cocaine use and HIV infection, a synthetic cocaine might be

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[24]Herman Joseph and Edith Springer, "Methadone Maintenance Treatment and the AIDS Epidemic," in The Effectiveness of Drug Abuse Treatment: Dutch and American Perspectives (Malabar, Florida: Robert E. Krieger), chap. 23, 263. Yet the idea that daily consumption of a powerful narcotic over a period of years does not in some way impair bodily health is difficult to accept.

[25]Michel Foucault, 200.

valuable, assuming that the occasional heart attacks associated with even sporadic cocaine use could be eliminated. The dispensing of synthetic cocaine could only lower the extreme violence associated with the distribution of illegal cocaine and could possibly lower future HIV infection rates.

Implications for Further Research

The number associated with 'normal' street level drug user deaths which I have seen most often is about one percent annually during the pre-AIDS era. The numbers in this study approached four percent annually.[26] At the old reported rate, nine men could have died from all causes in the ten year interval. Reported AIDS alone accounted for ten deaths. Since thirty-four veterans actually died, a ready explanation cannot be found for the fifteen deaths beyond the AIDS toll and the conventional attrition rate. Taken at face value, this means either that non-AIDS related street level drug user death rates have more than doubled since the late 1970s [27] or possibly that HIV is so rampant that the overall health status has been lowered within the IV drug using population, leaving them prey to a host of other

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[26] 3.7 percent.

[27] assuming that the 1 percent rate is accurate.

health related problems and alcoholism.[28] Further research should focus upon the health status of non-HIV drug users in order to determine whether or not the last implication of health deterioration is accurate.

The HIV status of the surviving sample was not known. A rate of 34 percent seropositive was found among 7,706 serum specimens taken from clients undergoing routine medical evaluation in New York City methadone maintenance programs between 1988 and 1992. AIDS surveillance alone includes cases infected over several years and should not be confused with the HIV seropositives alone.[29]

The current data are important as historical indicators of how mortality has increased in a methadone-maintained population. The average age of the survivors is over forty. This sample of drug users included veterans from as far back as the late 1940s and had representatives from both the Korean War as well as Vietnam. An analysis by era of service

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[28]Even more serious would be the question of whether this health deterioration has itself settled or is in fact accelerating.

[29]This study was run with blinded seroprevalence tests. These tests provide 'an estimate of the prevalence of HIV infection within the population being studied at a specific point in time.' AIDS Surveillance Quarterly Update: For Cases Reported Through June 1992 (Bureau of Communicable Disease Control, New York State Department of Health, June 1992), 4-5. Herman Joseph and Edith Springer listed such prevalence as varying from 21 percent to about 60 percent. They also noted that patients who entered methadone programs after 1983 had higher rates than those who 'entered during earlier years and remained continuously enrolled in treatment' (op. cited, 263).

was not performed. Theoretically such an analysis could be attempted.[30] Given their relatively advanced age for hard drug users, it is not possible to say precisely how well these men compare with the current young drug users. Further research might attempt to create a combined database of older career users and younger users for such a comparison.

Conclusions

The larger theoretical problem raised in this research is whether methadone maintenance is saving the lives of the IV-drug users during the age of AIDS. A first consideration is the ongoing problem of alcohol use. Even though AIDS may have overtaken alcohol as the primary health problem within methadone patients, alcohol was responsible for over 20 percent of the deaths in this sample. Obviously some means have to be employed to try to lower the alcohol usage for long term methadone patients.

Although the major studies on drug treatment do not satisfactorily compare the drug treatment modalities and thus cannot be the final word on how to stop the spread of AIDS in the IV drug-using population; on balance, the

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[30]I started such an analysis in 1990, by creating basically two cohorts, pre-Vietnam and Vietnam, based upon when the subject turned nineteen years old. This technique conflated all the men in the sample who turned nineteen before the Vietnam War started into the pre-Vietnam pool and the others into the Vietnam era pool. How similar the pre-Vietnam members were to the Vietnam members is difficult to say. Age of first continuous opiate use could be compared with cohort and age of first opiate use.

evidence suggests that methadone maintenance probably is slowing down HIV infection rates. Undeniably, methadone maintenance slows down the use of heroin and for whatever set of reasons, a large number of opiate users are attracted to methadone maintenance. To the extent that methadone decreases the use of street level drug injection, it probably decreases the spread of the HIV virus from the infected to the uninfected and undoubtedly saves lives.[31]

What would appear to be most urgently needed is the application of tertiary deviance to cocaine use. For those so blinded by their anti-drug ideology and their distaste for those whom they perceive as drug pushers, the medicalization of yet another street drug will no doubt be evidence of more liberal meddling. Yet as HIV slowly spreads within the intravenous drug using population and as the trauma centers of the inner city hospitals overflow with the casualties of the insane drug wars on the streets of our cities, and as the political climate turns ever harsher towards the populations most involved in heroin and cocaine, some solution must be found. The model of tertiary deviance begins to look ever better, for it allows a safety outlet

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[31]Yet it could also be argued that methadone is just another, possibly more addictive drug than the one for which it is being substituted. Possibly methadone is damaging to the immune system by itself or in combination with the effects of alcoholism and/or HIV infection; thus leaving the long term users weaker and more susceptible to any disease or infection; thus shortening the lives of its users. Further research could focus upon these interactions.

for the current extreme role strain in American society of certain population groupings, without completely abandoning the overall proscription against using addictive drugs and turning these communities into massive zones of medicated zombies.

This study has not attempted to answer the large philosophical questions with regard to drug use and social policy. It has attempted to identify the patterns actually occurring in the lives and deaths of the population of the former heroin users.

Appendix A

Dependent Variables

APPENDIX A

DEPENDENT VARIABLES

INSTRUMENT:

ID #			WEEK #				DRUGS				
1	2	3	4	5	6	7	8	9	10	11	12

DRUGS											
13	14	15	16	17	18	19	20	21	22	23	24

LEGEND:

FIELDS 1-3: PATIENT ID NUMBER
FIELDS 4-6: WEEK NUMBER
FIELD 7: HEURISTIC CODE FOR WEEKS POSSIBLY MISSING DATA
FIELD 8: MORPHINE
FIELD 9: QUININE
FIELD 10: AMPHETAMINE
FIELD 11: BARBITURATE
FIELD 12: COCAINE
FIELD 13: DARVON
FIELD 14: ELAVIL
FIELD 15: BENZODIAZEPINE
FIELD 16: VISTARIL
FIELD 17: NEGATIVE METHADONE
FIELD 18: BENADRYL
FIELD 19: CODEINE
FIELD 20: PLACIDYL
FIELD 21: PHENOTHIAZINE
FIELD 22: SINEQUAN
FIELD 23: EXPLANATORY CODE (ALWAYS 1)
FIELD 24: EXPLANATORY CODE (WHEN DATA WAS PRESENT INDICATING ABUSE OF DRUGS, THIS WAS 1; WHEN THERE WAS NO INDICATION OF DRUG ABUSE, THIS WAS 2.)

Appendix B

Independent Variables

INDEPENDENT VARIABLES

INSTRUMENT:

D1			D2		D3	D4			D5			D6		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

D7			D8			D9	D10	D11		D12		D13		
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

D14		D15		D16		D17		D18		D19		D20	
31	32	33	34	35	36	37	38	39	40	41	42	43	44

D21		D22		D23		D24		D25	D26	D27	D28	D29	D30
45	46	47	48	49	50	51	52	53	54	55	56	57	58

LEGEND:

D1: IDENTIFICATION NUMBER
D2: AVERAGE METHADONE DOSE
D3: ETHNICITY (1=WHITE, 2=BLACK, 3=HISPANIC)
D4: AGE IN YEARS AS OF 1/1/81
D5: TREATMENT TIME TOTAL (MONTHS ON METHADONE AS OF 1/1/81)
D6: TOTAL MONTHS INCARCERATION FROM AGE 18 TO 1/1/81
D7: TOTAL MONTHS INCARCERATION FROM AGE 18 TO DATE OF FIRST METHADONE TREATMENT
D8: TOTAL MONTHS INCARCERATION FROM FIRST METHADONE TREATMENT TO 1/1/81
D9: AGE IN YEARS AT FIRST METHADONE TREATMENT
D10: FIRST DRUG EVER USED:
1=MARIJUANA
2=GLUE
3=ALCOHOL
4=BARBITURATE
5=COUGH SYRUP
6=HEROIN
7=AMPHETAMINE
8=HYPNOTIC
9=OTHER
D11: AGE IN YEARS WHEN FIRST USED ANY DRUG
D12: AGE IN YEARS AT FIRST HEROIN USE.

D13: AGE IN YEARS AT WHICH CONTINUOUS HEROIN USE BEGAN
D14: NUMBER OF ARRESTS ON ADMISSION TO THIS METHADONE TREATMENT PROGRAM
D15: NUMBER OF CONVICTIONS ON ADMISSION TO THIS METHADONE TREATMENT PROGRAM
D16: NUMBER OF INSTITUTIONAL DETOXIFICATIONS FROM HEROIN ON ADMISSION
D17: CALENDAR YEAR AT FIRST HOSPITAL DETOXIFICATION
D18: CALDENDAR YEAR OF SECOND HOSPITAL DETOXIFICATION
D19: CALENDAR YEAR OF THIRD DETOXIFICATION
D20: TOTAL NUMBER OF HOSPITAL DETOXIFICATIONS
D21: CALENDAR YEAR OF FIRST JAIL DETOXIFICATION
D22: CALENDAR YEAR OF SECOND JAIL DETOXIFICATION
D23: CALENDAR YEAR OF THIRD JAIL DETOXIFICATION
D24: TOTAL NUMBER OF JAIL DETOXIFICATIONS
D25: PATIENT WAS DIAGNOSED AS ALCOHOLIC BY PHYSICIAN PRIOR TO 1/1/81:
1=YES, 2=NO
D26: PATIENT HAD CHRONIC DISCRETE PHYSICAL HEALTH PROBLEMS PRIOR TO 1/1/81:
1=YES, 2=NO
D27: PATIENT HAD CHRONIC DISCRETE PHYSICAL HEALTH PROBLEMS BEGINNING AFTER 1/1/81:
1=YES, 2=NO
D28: PATIENT HAD ACUTE OR CHRONIC PSYCHO-EMOTIONAL COMPLAINT AND TREATMENT PRIOR TO 1/1/81:
1=YES, 2=NO
D29: PATIENT HAD CHRONIC OR ACUTE PSYCHO-EMOTIONAL COMPLAINT AND TREATMENT AFTER 1/1/81:
1=YES, 2=NO
D30: HIGHEST EDUCATIONAL LEVEL ATTAINED:
1=LESS THAN HIGH SCHOOL
2=G.E.D. HIGH SCHOOL FINISHER
3=FINISHED HIGH SCHOOL
4=SOME COLLEGE
5=FINISHED COLLEGE
6=GRADUATE CREDITS

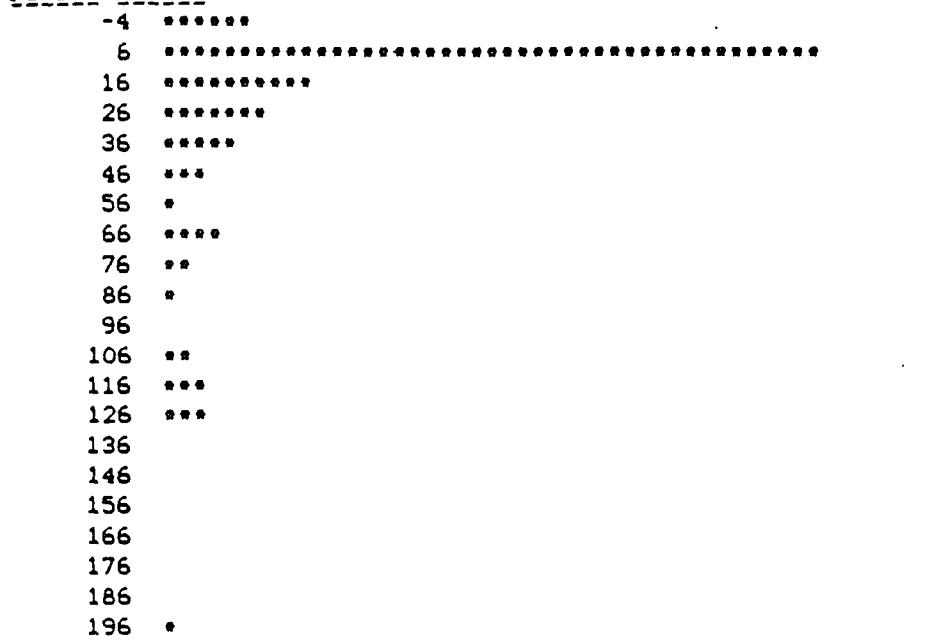
Appendix C

Histogram Distributions of Powder Factor and Pill Factor in Raw Form

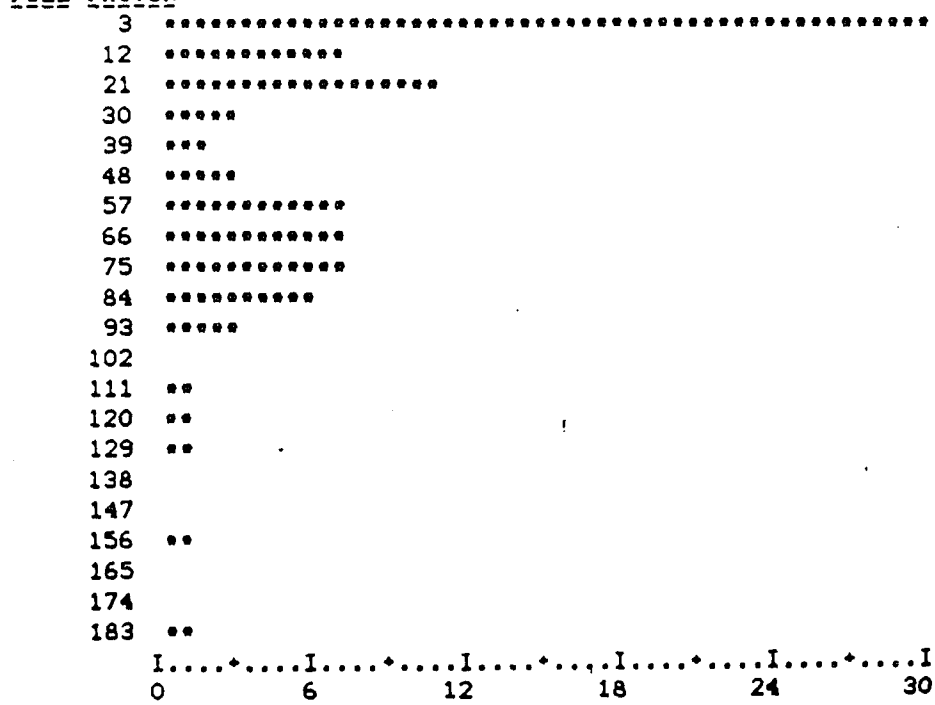
APPENDIX C

HISTOGRAM DISTIBUTIONS OF POWDER FACTOR AND PILL FACTOR IN RAW FORM

POWDER FACTOR



PILL FACTOR



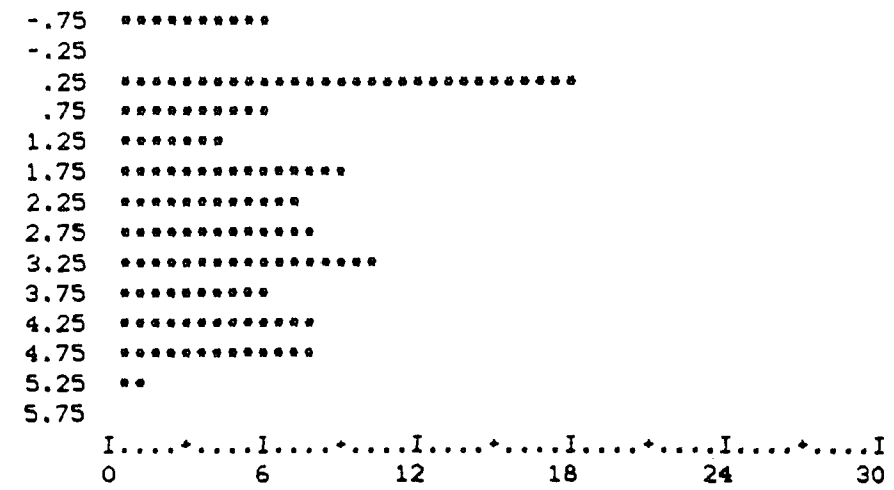
Appendix D

Histogram Distributions of Powder Factor and Pill Factor Displayed Transformed by Natural Logarithm

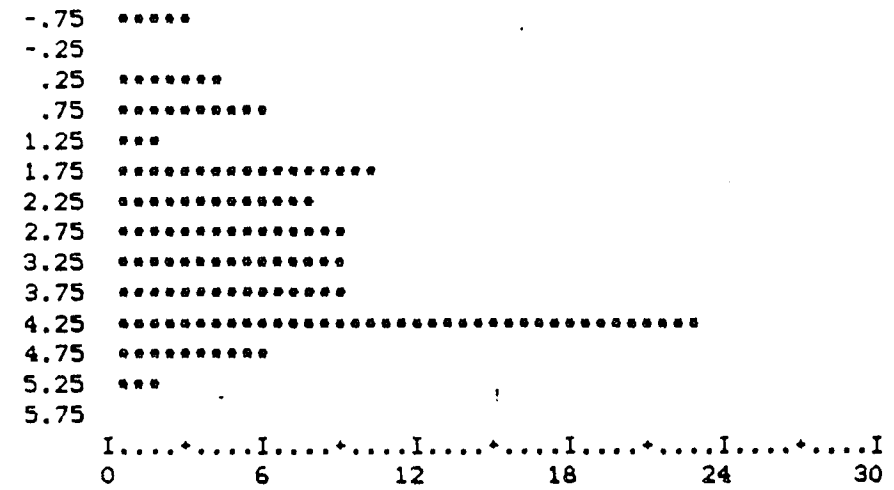
APPENDIX D

HISTOGRAM DISTRIBUTIONS OF POWDER FACTOR AND PILL FACTOR DISPLAYED TRANFORMED BY NATURAL LOGARITHM (.5 + DATA)

POWDER FACTOR



PILL FACTOR



Appendix E

Means of Drugs Abused for Entire Study Period (104 Weeks), by Ethnicity, with *F* Significance

TABLE 7

Means of Drugs Abused for Entire Study Period (104 Weeks), By Ethnicity, With F Significance

	DATA				
Drug	Overall Mean	White	Black	Hispanic	F Significance
Morphine	6.5	2.1	8.7	7.9	0.06
Quinine	14.5	2.9	20.8	17.7	0.002
Cocaine	5.9	1.9	8.5	5.9	0.03
Darvon	3.5	3.9	3.9	2.4	0.57
Elavil	9.9	12.3	7.6	10.9	0.61
Benzo-diazepine	25.8	40.2	18.2	21.9	0.001
Amphetamine	0.9	0.0	0.2	0.1	0.42
Barbiturate	1.1	1.8	1.1	0.3	0.12
Vistaril	0.8	1.1	0.6	0.5	0.10
Negative Methadone	1.9	1.6	2.1	1.9	0.84
Benadryl	0.3	0.3	0.1	0.5	0.36
Codeine	1.3	2.4	0.9	0.6	0.38
Placidyl	0.7	1.5	0.1	0.8	0.06
Phenothiazine	0.6	0.6	0.2	1.5	0.09
Sinequan	0.3	0.0	0.5	0.2	0.55
Mean Totals For Entire 104 Weeks	73.01	72.57	73.27	73.09	

Appendix F

Principle Component Factor Analysis (Varimax Rotation) of the Major Drugs of Abuse and Analysis of Variance of the Frequency of Occurrence of Pill Factor and Powder Factor by Ethnicity

TABLE 8

Principle Component Factor Analysis (Varimax Rotation) of the Major Drugs of Abuse

Factor Analysis

	Factor 1	Factor 2
Darvon	.68724	-.04237
Benzodiazepine	.68277	-.13688
Elavil	.28518	-.25775
Morphine	-.08859	.72644
Cocaine	-.10072	.61089

Table 9

Analysis of Variance of the Frequency of Occurrence of Pill Factor and Powder Factor by Ethnicity

	Total Mean	White	Black	Hispanic	F Significance
Pill Factor	39.2	56.4	29.7	35.2	.02
Powder Factor	26.6	6.9	38.0	31.5	.01

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