

## Introduction

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This book tells the story of a survey. Not just any survey, but a very big survey, called the National Survey on Drug Use and Health (NSDUH).<sup>1</sup> It is one of the largest ongoing surveys conducted by the US federal government, and is the nation's principal source of data on illicit drug use among the US population. The survey has a long and interesting history, involving scientific controversy, arguments over the design and funding of the survey, political grandstanding, important research findings, and occasional embarrassing mistakes. The survey started nearly fifty years ago as a small research study collecting data from just over 3,000 randomly selected respondents, at a cost of \$211,500. Since then, the survey has expanded in size, scope, and utility, reaching an annual cost of nearly \$50 million and interviewing almost 70,000 Americans each year. You may have seen news accounts reporting the results of the survey over the past four decades. Here are some of the headlines:

### 1980

"Reports show dramatic increase in use of marijuana and cocaine"<sup>2</sup>

### 1990

"Bush Hails Drug Use Decline in a Survey Some See as Flawed"<sup>3</sup>

"Senator: Survey 'wildly off the mark'"<sup>4</sup>

### 2000

"Colorado leads U.S. in marijuana use"<sup>5</sup>

"Massachusetts worst in drug use, survey finds"<sup>6</sup>

"Delaware leads U.S. in teen drug use"<sup>7</sup>

### 2009 and 2010

"New National Survey Reveals Significant Decline in the Misuse of Prescription Drugs"<sup>8</sup>

"National survey reveals increases in substance use from 2008 to 2009; Marijuana use rises; prescription drug abuse and ecstasy use also up"<sup>9</sup>

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**2014 and 2015**

“More Americans are using marijuana”<sup>10</sup>

“Teen drug and alcohol use continues to fall, new federal data show”<sup>11</sup>

“Heroin use surges, addicting more women and middle-class”<sup>12</sup>

“Teen pot use holds steady in first year of legal weed, new federal data show”<sup>13</sup>

The headlines illustrate how government leaders and the media understood and communicated the findings from the survey. Of course, headlines don't give the whole story, but these brief snippets are telling. They exhibit disagreements on the interpretation of results, self-serving statements, and contradictory findings, as well as actual shifting patterns of drug use. The headlines trigger a host of questions. How does the government come up with these numbers? How is the survey conducted, and do the survey managers really believe private citizens willingly tell the government about their illegal drug use? Who decides what kinds of data the survey collects, and from whom? How can survey participants be sure that the information on their illegal activities and other personal information is not shared with law enforcement, employers, or others? Do government officials report the data objectively, or do they “spin” it to promote their own political agendas or preferred policies? Does the government actually use these data to develop policies and programs? These fundamental questions have been raised by government leaders, researchers, reporters, and the public for decades. One goal of this book is to provide answers to these questions, in the context of specific events that occurred throughout the history of the survey.

The book tracks the changes in the design of the survey and the way the results were reported, explaining how these changes were influenced by cultural, political, personal, and statistical concerns. External events that influenced the survey include the Vietnam War, overdose deaths of famous athletes, and states passing legislation legalizing medical and recreational marijuana use. The goals and content of the survey shifted when different divisions or agencies gained control over the project. Frequently, but perhaps less prominently, the survey was affected by technical, scientific concerns and associated attempts to improve the survey methods.

A principal focus of the book is the important role of science in the success of surveys. Science in this context specifically refers to the established principles of the field of survey research and statistics. Following these principles leads to statistical integrity, which refers to the respect and trust people have for the survey staff and the data they produce. The evolution of NSDUH from a small periodic research study to a multimillion-dollar ongoing survey that became the nation's leading barometer of trends and patterns of substance abuse in the population is

largely attributable to the recognition of and adherence to these principles. But the path has not always been smooth. Throughout NSDUH's history, there have been many examples of conflicts, decisions, successes, and failures associated with efforts to produce high quality, useful data while maintaining statistical integrity.

Statistical integrity involves exhibiting a strong commitment to statistical rigor, transparency, and unbiased reporting of results. In Chapter 10 the book discusses our efforts to objectively report the survey's results by retaining maximum control over the timing, content, and interpretation of new data releases. A full report on the results and methods, including limitations and caveats associated with the data, was released each year at the regularly scheduled kickoff event for Recovery Month. The report was prepared by the NSDUH staff, with no substantive review and revision by political leaders.

An aspect of unbiased reporting is resisting and speaking out against inappropriate uses of data and poor survey methodologies. Of course, politicians cannot always be trusted to objectively report the survey results. Chapters 3 through 6 describe politically motivated interpretations by drug czars, despite the straightforward, objective publications the survey team produced. The survey team has shown resistance to these types of distortions, starting with the first drug survey, in 1971. Chapter 1 explains President Nixon's urging to have the report containing the 1971 survey results emphasize problems caused by marijuana use. Nevertheless, when the report was released it highlighted findings that marijuana did not pose a major public health threat, and the public perceptions about the dangers of marijuana were unfounded. In another case, described in Chapter 8, President Clinton used NSDUH data to claim that a decline in drug use in Miami was evidence of the success of prevention efforts, despite a NSDUH report in progress (and published after his Miami announcement) that concluded the decrease was likely an artifact of the effects of Hurricane Andrew on the sample.

Effective communication is critical for the success of a survey, as demonstrated by numerous examples in the book. Statisticians must be able to explain to data users some of the technical aspects of the survey, such as how the sample was selected, how data were collected, procedures for making estimates, and the caveats associated with results. This requires special skill in translating complex statistical concepts into descriptions that are understandable to non-statisticians. Communication failures can result if survey staff are not sensitive to the areas of expertise of the people they are communicating with. Chapter 5 describes a situation in which the National Institute on Drug Abuse (NIDA) was criticized for taking three months to inform the White House Office of

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National Drug Control Policy (ONDCP) about an error discovered in previously published, politically sensitive estimates of heavy cocaine users. The delay was due to our difficulties in explaining statistical aspects of the error to NIDA's director. Chapter 4 describes the planning for a methodological study that went awry because of a simple misunderstanding of the term "nonresponse bias" by staff at ONDCP. Delays and wasted effort could have been avoided by having an initial meeting between statisticians and ONDCP to discuss the goals of the study.

Effective survey management must include appropriate communication and coordination within the project staff, across the different groups responsible for aspects of the survey, such as sampling, data collection, processing, and reporting results. Important quality control processes and discoveries resulted from the establishment of links between experts within the NSDUH team. Report writers worked with data processing statisticians to create a system to flag estimates unduly affected by editing and imputation. Analysts working with field managers were able to detect that the experience level of interviewers affected respondent reporting of drug use. Major redesigns of the survey described in Chapters 9 and 12 were developed in coordination with staff responsible for each project component.

An ongoing program of methodological studies to evaluate data and make improvements to survey processes should be an integral part of any large survey program, as it has been for NSDUH. Results of these studies have identified data problems, verified survey findings, and guided the development and implementation of survey design improvements. The Clinton administration's decision to expand the NSDUH in 1999 to provide data for every state, discussed in Chapter 9, was influenced by our 1996 methodological study that showed the feasibility of a small area estimation model that could produce state estimates without the need for a large sample in every state.

Throughout the survey's history, outside consultants have frequently been asked to participate in planning and decision-making on the project. The contributions of these highly regarded experts in survey design, substance use research and policy, and other NSDUH-relevant areas are mentioned in most chapters of the book. Soliciting advice from outside experts and data users is critical to the success of a large scale survey. Besides simply giving us their helpful ideas, their endorsements of our proposed plans facilitated approvals of those plans by agency heads and other decision-makers.

But there are limits to how much a survey program can rely on external consultants for directing a project. Outside experts generally will not have in-depth knowledge of the survey, and may have particular points

of view or self-interests that don't line up with the agency goals for the survey. Ultimately, it is the survey staff that is responsible for the day-to-day operation of the survey. It's essential that this staff have the background and expertise in various areas relevant for the project, such as sample design, questionnaire design, data collection methods, and statistical analysis. It's also important for staff to have knowledge of the subject matter of the survey and the policy and research questions that data from the survey should address. While most of the manpower on a project might be contractor staff, it is still critical to have sufficient in-house staff who are experts in these fields to manage a large project like NSDUH. This has always been a challenge. Chapter 6 describes the negotiations surrounding the transfer of the survey from the National Institute on Drug Abuse (NIDA) to the Substance Abuse and Mental Health Services Administration (SAMHSA) in 1992. NIDA initially proposed that SAMHSA would need only one person to manage the project, but increased it to three during negotiations. Although SAMHSA added staff for NSDUH over time, reductions and reorganizations beginning in 2005, discussed in Chapter 11, had detrimental effects on the survey and staff morale.

A survey cannot be considered a success without a strong record of producing relevant, informative results. Besides summarizing the annual reports of the NSDUH results, this book describes studies that focused on specific substance use issues of interest. These include studies estimating heroin use and addiction, including links to misuse of prescription pain relievers; studies estimating how many people need treatment for substance use problems; studies to predict future substance abuse treatment need; studies of recent trends in drug abuse among aging baby boomers; and an analysis of drug use among women prior to pregnancy, during pregnancy, and after childbirth. The book also describes efforts to make the NSDUH microdata files available to researchers outside the survey team, resulting in hundreds of studies published in professional journals.

The story of the survey is told chronologically. Each chapter covers a broad era of the survey's and the nation's history, as they are deeply intertwined. The specific events, debates, and decisions that occurred during each phase of the survey's history are described in the first twelve chapters. Brief discussion narratives that focus on recurring themes of the book are inserted, following Chapters 2, 5, 8, 10, and 12. A final chapter includes conclusions and discusses future considerations. The Appendix contains tables that give a concise overview of the history of the survey, including contractors, sample design, and response rates.

### **Other Histories of Government Surveys**

This book adds to the considerable literature documenting the development of the US federal statistical system. A broad overview of the early history of the entire system, was published in 1978.<sup>14</sup> It covers many of the same themes as this book, such as probability sampling, the impact of technical developments such as computerization, political and legislative events impacting surveys, organization and coordination of data programs across agencies, statistical integrity, confidentiality, and the use of advisory committees. Other relevant works include histories of the Bureau of Labor Statistics,<sup>15</sup> the Decennial Census,<sup>16</sup> and the Current Population Survey.<sup>17</sup> Some studies have focused on the development of important official measures such as poverty,<sup>18</sup> unemployment,<sup>19</sup> and race,<sup>20</sup> and how these measures have evolved over time. This book briefly touches on difficulties and decisions regarding different measures associated with substance abuse, such as the overall level of drug use, heroin use, treatment need, recovery, and drug consumption.

### **Who Should Read this Book**

Although a basic knowledge of statistics and survey research will be helpful to readers of the book, it is not a requirement. My goal was to make this story accessible and interesting to a wide range of readers, including survey statisticians, other researchers, policymakers, leaders of government and private organizations that conduct surveys, journalists, and the general public with an interest in drug abuse policy and history. Where possible I have included simple explanations of key terms and processes associated with statistical methods and survey research. This approach is consistent with a recurring theme of the story, one reason that I wrote the book: There is a need for better understanding and communications between the statisticians who conduct surveys and the program managers and policymakers who ask for surveys and use the data. This book should also be useful to students of statistics and survey design, providing descriptions of real-life experiences in the development of survey designs, management of surveys, and analytic approaches. The focus is on a large, ongoing government survey, but most of the examples and lessons discussed are relevant for any survey, regardless of size or sponsor. The book will help students understand the factors that must be considered in survey research, beyond the material covered in standard textbooks.<sup>21</sup>

**Notes**

- 1 The survey was given this name in 2002. Prior to 2002, the survey names had been National Household Survey on Drug Abuse (NHSDA) from 1985 to 2001, National Survey on Drug Abuse (NSDA) from 1977 to 1982, and informally the National Survey or the Household Survey. All of these names are used throughout the book.
- 2 HHS News, June 20, 1980
- 3 Treaster, Joseph, *New York Times*, December 20, 1990, B14.
- 4 Kelly, Jack, *USA Today*, December 20, 1990.
- 5 Guy, Andrew, *Denver Post*, September 1, 2000, A1.
- 6 Donnelly, John, *Boston Globe*, September 1, 2000, A1.
- 7 Church, Steven, *News Journal*, Wilmington, DE, September 2, 2000, A1.
- 8 SAMHSA press release, September 10, 2009.
- 9 SAMHSA press release, September 16, 2010.
- 10 *USA Today*, September 5, 2014.
- 11 *Washington Post*, Wonkblog, Sept. 16, 2014.
- 12 Szabo, Liz, *USA Today*, July 7, 2015.
- 13 *Washington Post*, Wonkblog, September 10, 2015.
- 14 Duncan and Shelton, *Revolution in United States*.
- 15 Goldberg and Moye, *The First Hundred Years*.
- 16 Anderson, *The American Census*.
- 17 Bregger, "The Current Population Survey."
- 18 Ruggles, *Drawing the Line*.
- 19 Card, *Origins of the Unemployment Rate*.
- 20 Prewitt, *What is Your Race*.
- 21 Fowler, *Survey Research Methods*; Groves et al., *Survey Methodology*.

## 1 President Nixon Launches the War on Drugs

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Historians have pointed out the significance of the events of 1968. The Vietnam War was raging. The Tet Offensive launched by the North Vietnamese forces in January and February gave warning to Americans that victory would not be certain or soon.<sup>1</sup> Public opinion turned against the war. According to the Gallup Poll in February of that year, 35 percent of Americans approved of President Lyndon Johnson's handling of the war, while 50 percent disapproved, with 15 percent having no opinion.<sup>2</sup> In March, anti-war candidate Eugene McCarthy surprisingly won 42 percent of the vote in the New Hampshire Democratic primary election for president, nearly defeating the incumbent president. A few days later, Johnson announced that he would not run for reelection in November. The assassination of civil rights leader Martin Luther King on April 4 triggered riots across American cities. Then on June 4, Democratic presidential candidate Robert Kennedy was assassinated. In August there were anti-war demonstrations and clashes between protesters and police at the Democratic National Convention in Chicago. In November, Republican Richard Nixon, promising to bring the war to an end and emphasizing law and order, was elected president, narrowly defeating Democrat Hubert Humphrey, Johnson's vice president.

The summer of 1969 was also an eventful time in America. Nixon had just been inaugurated in January. Anti-war demonstrations subsided in anticipation of a peace agreement. But a peace plan proposed by the North Vietnamese in May 1969 was rejected by the Nixon administration. Anti-war demonstrations resumed. By May 1969, the number of American troops in Vietnam had swollen to over 500,000. Most were under age 25. More than 40,000 had been killed, including nearly 17,000 in 1968 alone.<sup>3</sup> Then on June 8, 1969, President Nixon announced that 25,000 US troops were being withdrawn from Vietnam. This was the beginning of the new "Vietnamization" policy. South Vietnamese troops would assume increasing responsibility for the fighting as the United States gradually reduced its troop levels. While not an overt admission of defeat, it was a turning point in the war effort. American casualties had



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increased each year up to 1968 (the peak year) and then declined in 1969 and each year afterward, until a peace settlement was finally reached on January 23, 1973.

During the summer of 1969 there was a more positive historic event that demonstrated the technological prowess of the United States. On July 20, Apollo 11 landed on the moon, and Neil Armstrong became the first person to set foot on it. Millions of Americans watched that first moonwalk on their televisions at home that evening, with a sense of awe and pride in their country. I watched it with my parents in our living room.

As all this was happening, the Nixon administration was preparing to launch a new war. On July 14, just a month after troop withdrawals in Vietnam began and a week before the moon landing, the president announced a “war on drugs.”<sup>4</sup> It was in response to the proliferation of illicit drug use by young people across the country, especially college students, and soldiers in Vietnam. A month after the announcement of the war on drugs, the Woodstock Music and Art Festival drew an estimated 500,000 mostly young people to a field in Bethel, New York, seventy miles northwest of New York City, for a weekend of fun and music (August 17–20, 1969). My brother John was there. *Time* magazine reported that most attendees used marihuana<sup>5</sup> at the festival.<sup>6</sup> Widely covered in the media, “Woodstock” became a symbolic event for a generation of young people rebelling against societal norms. Most of them opposed the Vietnam War. Many used drugs. Rock and roll was their shared music, and long hair was their trademark. “Make love not war” was a popular slogan, and the peace sign was a common greeting. Many in the Woodstock crowd probably were not even aware that the government had launched a war on drugs. But in hindsight, the stark contrast between Woodstock and Nixon’s July 14 announcement made it seem like, in the war on drugs, battle lines were being drawn.

### Drug Use Prior to the 1960s

It may have seemed to many Americans during the 1960s that widespread use of psychoactive drugs for recreational purposes was a new phenomenon in the country. The fact is that the United States has a long history of drug use. Opiate use was prevalent throughout the 1800s. Opium import data tracked by the federal government showed that as early as 1840, there was enough to supply a daily dose to roughly 100,000 users, or an occasional dose to millions.<sup>7</sup> Most of the opium was used for medical purposes. But the rate of per capita consumption doubled between 1870 and 1895,<sup>8</sup> with much of it suspected to be for nonmedical

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use.<sup>9</sup> Although some of that increase has been attributed to addiction stemming from widespread use of morphine on injured soldiers during the Civil War, another potential factor was the influence of the temperance movement, which began in the 1870s and advocated abstinence from alcohol. This may have created a demand for other substances among the population who felt a need for some kind of intoxicant. Increases in opiate use coincided with decreases in alcohol use. Studies showed that most opiate users in the late 1800s were female, and the typical user was in her thirties, middle and upper class, and received her first dose from a doctor.<sup>10</sup> Cocaine use also became prevalent in the late 1800s. By 1900, morphine, heroin, and cocaine were all legal and available,<sup>11</sup> and used recreationally by many Americans. These drugs were even marketed as ingredients in popular consumer products like soft drinks and cough medicines. However, the addiction and other problems caused by these drugs were becoming apparent, and laws were passed to restrict their availability. Between 1900 and 1940, their use declined dramatically. Marihuana smoking, first introduced in the United States during the 1920s, was popular among certain segments of the population but did not become widespread until the surge in the early 1960s.<sup>12</sup> Although there is a lack of data to accurately measure the prevalence of illicit drug use prior to the 1960s, it is clear that the levels of marihuana use reached by the late 1960s were unprecedented in American history.

### **Links between the Vietnam War and the War on Drugs**

Without a doubt, there were links between the Vietnam War, the explosion of illicit drug use in the 1960s, the war on drugs, and consequently the birth of a national survey on drug use. Heroin became a concern when it first became cheap and widely available in Vietnam in 1969.<sup>13</sup> There were reports that narcotic use was common among soldiers.<sup>14</sup> Some officials were concerned that the returning soldiers would bring their narcotic habit back home with them, creating a surge in the need for treatment and rehabilitation.<sup>15</sup> The concern was so great that the federal government set up a urine testing program in 1971 to identify heroin users among servicemen leaving Vietnam, and enroll them in detox before they could return home. Later, in a study assessing the scope of the problem, data were collected from a representative sample of veterans who had returned to the United States during September 1971. The study found that nearly half had used narcotics while in Vietnam, including about 20 percent who had become addicted at some point. Of those who had ever been addicted, about half had tried narcotics again after returning home, but only 6 percent became addicted again.<sup>16</sup> These data