**Module 8: Portfolio Milestone**

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**Introduction**

Drug abuse and dependency have far-reaching and debilitating repercussions. Assessing the mental harm and anguish imposed on the adolescents of parents who are addicted to substances is impossible. According to case studies compiled by the National Association for Children of Alcoholics, there are over 20 million children of addicts in the United States, approximately 11 million of whom are below the age of 18, with one out of every four children growing up in an alcohol dependent household. This number is multiplied by the numerous individuals who are harmed by parents who are impacted by other intoxicants. These kids have significant social, cognitive, academic, clinical, and potential socioeconomic challenges. Kids in dependent families are more likely to acquire addictive behavior. To ensure these kids future health, autonomy, and identity, the cures and treatments must involve extensive therapy and initiatives aimed towards recovering from these traumatic occurrences. If they are not assisted, these youngsters frequently carry their unhappiness and anxieties into maturity.

**Background**

The National Institute on Drug Abuse (NIDA) is a federally funded nonprofit group in Rockville, MD and Baltimore, MD with about 201 to 500 employees with their revenue at a little over one billion dollars. The National Institute on Drug Abuse's aim is to "seek innovation on the causes and effects of drug addiction, and to apply that data to enhance public health." For this case, NIDA focuses on its most significant and essential issues and critical concerns regarding controlled substance misuse, spanning from appropriately responding to rising opiate addiction patterns to discovering how drugs affect the central nervous system to developing and implementing novel diagnostic and therapeutic methods. NIDA actively funds research training, leadership training, school funding, community partnerships, and research publication.

Throughout its Collegiate Development Program, NIDA involves facilitating throughout the following fields, along with funds and partnerships to researchers at major universities all around the U.S. and abroad:

* Determine the anatomical, social, cognitive, and sociological factors that contribute to drug and alcohol abuse throughout the span.
* Improve measures for preventing drug use and its effects.
* Create novel and better therapies to assist persons with drug use disorders in achieving and maintaining meaningful and long-term recovery.
* Increase the effect of NIDA research and initiatives on public health.
* In accordance with all of these goals, NIDA intends to discuss the key linked themes across agency projects and strategies:
* Advancing fundamental neuroscience and biology studies
* Using technology to drive innovation; improving intellectual validity and reliability; and building a strong, varied, interdisciplinary diverse community; fostering cooperation and knowledge and users transfer (data harmonization).
* Promoting population health through improving the applicability of studies in the real world.

**Important Events in NIDA History**

1935 — A test facility is created in Lexington, Kentucky as a result of a US Public Health Service (USPHS) hospital. It became the Addiction Research Center in 1948.

The Special Action Office for Drug Abuse Prevention launches the Drug Abuse Warning Network and the National Household Survey on Drug Abuse in 1972. The National Institute on Drug Misuse (NIDA) was established in 1974 as the government's centerpiece for drug abuse investigation, rehabilitation, preventive, education, assistance, and information gathering.

The National Drug and Alcohol Treatment Unit Survey is a preliminary step in establishing the existence, scope, and features of state and federal substance prevention strategies.

1975 — The Monitoring the Future Survey (U.S. Department of Health and Human Services, 2018), commonly known as the High School Senior Survey (et. al. 2018), is launched in order to assess the frequency as well as developments in non-medical substance abuse, as well as associated attitudes among seniors in high school and adolescents.

The NIDA "Research Monograph Series" gets underway. Each book comprises scholarly papers on a broad variety of subjects, including substance abuse treatment and preventive studies.

1979 — The clinical research program relocates from Lexington, Kentucky, to the Francis Scott Key Medical Center (later Johns Hopkins Bayview Medical Center) campus in Baltimore, Maryland. In 1985, the fundamental science curriculum begins.

NIDA releases the inaugural edition of NIDA Notes, its biweekly newsletter, in 1985.

1986 — Congress and the Administration acknowledge the combined epidemics of drug addiction and HIV/AIDS, consequently increasing NIDA government funding on both critical illnesses.

NIDA launches the National AIDS Demonstration Research Program in 1987 to investigate and modify the elevated habits of injectable substance abusers that are not in rehabilitation services, as well as their significant partners (U.S. Department of Health and Human Services, 2018).

1990 — The National Institute on Drug Abuse (NIDA) launches the Drugs Study Program, which focuses on the discovery of novel therapies for the management of substance abuse.

1991 — The Monitoring the Future Survey expands to incorporate students in the eighth and tenth grades.

The NIDA starts collecting data for the Drug Abuse Treatment Outcome Study, which will evaluate treatment efficacy in preventing substance abuse and uncover determinants of drug rehabilitation effectiveness.

NIDA becomes a part of the National Institutes of Health in 1992. (NIH).

1993 — The Center receives FDA clearance for levomethadyl acetate (LAAM), the very first opioid addiction therapy medication approved in a decade. Although FDA approval was a significant step forward in pharmaceutical development, later research found more efficient drug addiction therapies, leading to a conclusion suggesting that LAAM use will be terminated.

In 1995, NIDA investigators duplicated the dopamine receptor, the primary site of activity of cocaine inside the brain.

In Arlington, VA, the Institute hosts the inaugural "National Conference on Marijuana Use: Prevention, Treatment, and Research."

NIDA dedicates the Regional Brain Imaging Center at the Institute's intramural research center in Baltimore in 1996.

1997 — The National Institute on Drug Misuse publishes Preventing Drug Use Among Children and Adolescents: A Research-Based Guide, that presents its most effective approaches for minimizing substance abuse amongst children and adolescents (U.S. Department of Health and Human Services, 2018).

In Washington, DC, the Institute hosts "Heroin Use and Addiction: A National Conference on Prevention, Treatment, and Research."

NIDA starts the "NIDA Goes to School" project in 1998 to offer factual information on how drugs influence the brain to middle school students. As part of this effort, over 18,000 school districts throughout the nation got a collection of instructional resources.

1999 — NIDA establishes the Transdisciplinary Tobacco Use Research Centers in conjunction with the National Cancer Institute (NCI) and the Robert Wood Johnson Foundation to investigate nicotine usage and novel strategies to fight it and its repercussions.

NIDA establishes the National Drug Abuse Treatment Clinical Trials Network to assess the efficacy of psychological and cognitive therapies in actual care environments in a timely and efficient manner.

The National Institute on Drug Abuse (NIDA) also released Principles of Drug Addiction Treatment: A Research-Based Guide, which is intended to be used in community settings. The book discusses the most effective approaches to treating those who are addicted to drugs or alcohol.

This list is composed of just a few of NIDA’s extensive important historical events.

**Why?**

I chose NIDA because of the experience a close family member of mine has had with working with adults of all ages using narcotics. I saw how much it took to help these individuals get in the right headspace to get them back on their feet. It interests me to get a look into the population of individuals that are abusing drugs of all types.

The dataset I choose to use is from the National Survey on Drug Use and Health which presents the estimated total number of individuals on a wide range of substances like marijuana and cocaine per state. the information from the data set will prove very helpful in discovering the estimated number of individuals are any illegal substance by state. This data can hopefully help the National Institute of Drug Abuse to enlist substance abuse counselors, drug therapy, as well as create more substance abuse clinics in these areas to help those individuals get back into society and off these substances which in turn, will open more jobs up for people in this profession.

**Objectives**

The primary goal of this study is to observe the surveyed statistics of individuals from age 12 to over 26. This study, in particular, will assess adolescents aged 12-18 and adults from 18 and up to make the judgement of whether there is an increased amount of any group that utilizes substances to rule out or accept the alternative hypothesis.

**Overview Of Study**

Adolescence is the most critical stage of growing up, this age group is the most prone to developing habits from negative influences. The statistics that will be evaluated in this research project will promote further adolescent-focused research and clinical treatment. Adolescent drug and alcohol use habits are being identified as major predictors of future substance use activity and chronic issues. Forecasts from overall trends in the United States, like the National Survey on Drug Use and Health (NSDUH), the National Health and Nutrition Examination Surveys (NHANES), and the Monitoring the Future survey, show that the majority of youth approximately around the age of 17 (59 percent to 71 percent) have drank alcohol, 31 percent to 44 percent had started using cannabis, and 4 percent to 6 percent have used narcotics (Weinberger, et. al., 2017).

Adolescents take such drugs for a variety of purposes, such as an interest in new activities, an effort to address issues or do better academically, and simply societal pressure. Adolescents are “biologically programmed” to explore new experiences, take chances, and create their own character. Using narcotics may satisfy all of these natural developmental needs, but in a destructive manner that can have significant long-term repercussions.

Several variables impact whether a teenager attempts drugs, such as the access to drugs in the individual's neighborhood, community, and school, as well as if the teenager's peers use them. It is equally crucial to consider the home life: Violence, physical or emotional abuse, mental disorder, or substance abuse in the home all enhance an adolescent's probability of using drugs.

**Research Hypothesis**

The questions that can be answered in result of this research study is what drugs are abused? And who abuses drugs?

The Ha of this study is that there are more teenagers and young adults from the age of 12 to 17 that use and/or are dependent on alcohol and illicit drugs.

The Ho is that there are less 12 to 17 years old that are addicted to illicit substances and alcohol.

**Literature Review**

**Prevalence of Drug Abuse in the US**

Over thirty-one million Americans aged 12 and above are now using illicit drugs. Dependency, whether to alcohol, opioids, cocaine, or other drugs, kills thousands of civilians each year and affects countless lives. Addiction is a serious illness in which someone feels compelled to take drugs or participate in actions despite the fact that they have negative effects. Substance misuse ruin relationships, friendships, and professions, as well as endangering a person's fundamental health & wellbeing. In 2014, 2.5 million individuals aged 18 and above sought treatment for alcohol or substance abuse at a specialized institution. This equates to 1.0 percent of the overall adult population, or 7.5 percent of individuals with a substance use disorder in the previous year, undergoing drug use therapy in the previous year (SAMHSA, 2017).

**Effects of Drug Abuse**

Currently, over 7 million individuals are afflicted by a substance abuse addiction, and illicit drug use is accountable for one out of every four fatalities. An individual can receive drugs in a variety of methods, including injection, inhalation, and consumption. The impact of drugs on the brain might vary depending on how it is administered. For example, drug administration into the bloodstream has a direct outcome, although consumption has a lingering reaction. Regardless, all drugs that are abused are very impactful on the brain. They saturate the brain with dopamine, a chemical that assists in controlling our impulses, concentration, and sensations of joy, resulting in a "high." Drugs can ultimately alter how the brain works and inhibits a person's ability to make choices, resulting to severe urges and persistent drug use (Gateway, 2020). This habit may evolve into a drug reliance, or drug dependency, over time.

**Victims of Drug Abuse**

Victims of substance abuse may involve family members and friends, as well as individuals suffering from the disease. There are numerous effective treatments for drug addiction; nevertheless, positive outcomes are not always promised. A variety of factors impact the chance of successful treatment. The majority of these characteristics are associated with patients' adherence and dedication, as well as their extenuating factors and social connections. In 2017, an estimated 167,000 people died as a result of illegal drug intoxication, with 59 percent of those killed being under the age of 50. (Ritchie, 2018Drug overdoses have killed approximately 70,000 individuals in 2019. (Bustamante, 2021). According to the data, there has been a considerable drop in the number of deaths caused by illegal drug overdoses. According to research, the presence of alcohol and other substances in family contexts increases the probability of child maltreatment. A substantial number of substance-abusing women engaged in child maltreatment cases claim childhood trauma (Belle, 1999). **Research Design**

The research will be done from a nationwide survey conducted by NIDA to quantify the amount of drug abusers in the nation and region to employ and/or extend additional resources to further assist these individuals. The research will be split into two groups, 12 to 17 and 18 to 25, to compare the number of users within each substance type, state, and region.

The quantifiable methods that will be used is collecting, cleansing, and analyzing the data in Excel to upload to SAS which will allow for the creation of predictive, descriptive and summary statistics. Qualitative methods will be used as well by using Tableau which will allow for the creation of infographics such as proportional symbol maps and/or choropleth maps to visualize the prevalent areas of substance abuse.

The NSDUH represents people aged 12 and up in the general nonintegrated American inhabitants, as well as in every jurisdiction and the District of Columbia (D.C.). Occupants of homes, people in primary care group areas, and people residing on army facilities are all covered by the study. People suffering destitution who may not utilize shelters, current military members, and inmates of governmental communal facilities like prisons, convalescent home, psychiatric hospital, and assisted living facility are all omitted from the poll.

**Methodology**

SAS will be used to present some statistical analysis like factor analysis and descriptive analysis, on the dataset that will be in use during this research project. Factor analysis aids in determining the existence of a connection among a collection of variables This procedure exposes additional aspects of the situation that characterize the trends in the interaction between the dependent data. Factor Analysis advances into practical gathering and cross validation.

Tableau utilizes both qualitative and quantitative statistics to employ great informational visuals by separating the variables by dimension and measure which will help in the analysis. A proportional symbol map of the United States that presents quantitative data for certain regions can pinpoint the most prevalent regions in the US for drug abuse.

**Methods**

The steps that will be followed for the study consists of data collecting, data cleansing, data visualization, and data evaluation. The tools that will be used to analyze this dataset is Excel, SAS and Tableau. Excel will help in understanding the complicated task of presenting relevant information by providing a snapshot of tables and graphs, which aids in gathering and analyzing data. Excel offers comprehensive business analysis capabilities that help in building skills such as computerized link discovery, the construction of DAX measurements, and temporal classification. Tableau Public links to every dataset, whether it being an organizational Database System, Microsoft Excel, or internet data, and generates graphical analysis, charts, infographics, and so on, with authentic changes shown online.

The Excel sheet containing the data set will be analyzed. The first step will be to cleanse the data by omitting columns of data that do not have pertinence to the analysis. Next, the use of data filtering and grouping will be used to group different age groups to have an idea on whether the hypothesis can be accepted or rejected. Filtering will also help in focusing on pertinent numbers, type of drug, and region within the United States. After concluding the analysis in Excel, the data will be uploaded to Tableau. to read and analyze. The use of pie charts, bar charts, a line chart and possibly a heat map of the states with the most prevalent drug and alcohol addictions will be applied. In SAS, predictive visuals and analytics will aid in observing the possibility of a trend in adolescence and young adults for substance abuse as they get older.

**Tools and Techniques**

Two tools were used in this research study to analyze the dataset: Excel and Tableau. In Excel, quantitative analysis was applied to the data by filtering on all fifty states in the United States, creating unique IDs for the columns that was used, duplicates were identified and removed, the two age groups were totaled to present whether any of the age groups had a higher number of usage than the other, and a new clean table was created afterwards. based on the tested age groups to have an idea on whether the hypothesis can be accepted or rejected. Filtering helped in focusing on pertinent numbers, type of drug, and region within the United States. After concluding the analysis in Excel, the data was uploaded to Tableau to conduct the quantitative analysis. A proportional symbol map and a point distribution was executed with the dataset to show visual clusters of drug abuse users for individual locations.

**Limitations**

There are numerous legal implications in substance use studies regarding the capacity of those who use illegal substances to offer valid consent. Respondent understanding and facilitating conditions are required for proper explicit consent. Studies typically challenge drug users' capacity to provide ethical approval since the dynamics of dependency has been that prospective respondents may be inebriated or suffering abstinence throughout the consultation process, which may impair cognition and strategic thinking. Although, these fears may be over exaggerated.

**Counterfeit Data**

The creation of false information is among the most serious privacy concerns confronting data analytics present. One could use the best data analysis methods and apply a number of security measures, but when the inability to recognize false data that has been stored in one's shared database, substantial risks that limit the capacity to secure customer data will be faced.

Incorrect data is a serious data security threat since it impairs the capacity to detect potential problems. False flags from misleading information, for example, might render detecting deception harder. False positives may also lead in needless measures that diminish productivity or other critical elements of operating an organization.

**Ethical Considerations**

Adolescence has the cognitive capacity to make necessary changes, but they may not possess the intellectual capacity to do so. The government frequently deals with this by defining capacity rather subjectively using certain ages. However, it is typically better to incorporate experts in difficult issues. Ethical conduct norms are useful, but they are not the final word in any moral examination. They are just methods for keeping a low profile. In seeking the optimal acceptable path of action, the moral clinician will strive to go above them. Addressing a few of the moral quandaries is best appreciated as part of the strategy of working in this field. The attractiveness of working in this field may include knowledge and qualifications in detecting and managing moral quandaries.

**Privacy Concerns**

According to research, teenagers are for challenging circumstances if they fear their parents will be notified. Many teenagers are uncertain that they have the option to personal care for specific treatments, and many claim never discussing anonymity with a medical professional. Many teenagers want to include their parents in critical health-care choices. Many of those who do not engage parents have suffered familial retribution, and they are afraid of provoking conflict if they attempt.

When counseling teenagers, clinicians should address privacy with the patient and parents at the initial session. Privacy restrictions should be disclosed. Parents and patients must realize that if the teenager endangers himself or herself or others, anonymity may be violated.

**Results**

After compiling, grouping, and then analyzing illicit, marijuana, and alcohol abuse in Excel, there were noticeable consistencies with the data between the two age groups. The data shows that there are approximately 70% more illicit drug users, approximately 80% marijuana users, and close to 90% alcohol abuse in the 18 to 25 group which is significantly more than the 12 to 17 age group. So, with this information, the null hypothesis that there are less 12 to 17 years old that are addicted to illicit substances and alcohol, is accepted.

**Data Outcomes**

Map

Description automatically generated

Graphical user interface, application, table, Excel

Description automatically generated

Map

Description automatically generated

Chart, bar chart

Description automatically generated

Chart, bar chart

Description automatically generated

A picture containing chart

Description automatically generated

**References**

Belle, A. S. (1999, November 30). *NVAA Text 2000 - Chapter 7 Substance Abuse and Victimization*. NCJRS. <https://www.ncjrs.gov/ovc_archives/nvaa2000/G-7-SUB.htm>

Bustamante, J. (2021, March 28). *Substance abuse and Addiction Statistics [2021]*. NCDAS. <https://drugabusestatistics.org/>.

Gateway. (2020, July 14). *The Physical & Mental Effects of Drug Abuse | Gateway Foundation*. <https://www.gatewayfoundation.org/faqs/effects-of-drug-abuse/>

*2018-2019 NSDUH Estimated Totals by State | CBHSQ Data*. (2020, December 15). SAMHSA. https://www.samhsa.gov/data/report/2018-2019-nsduh-estimated-totals-state

O'Leary, Z. (2021). *The essential guide to doing your research project*. SAGE Publishing.

Ritchie, H. (2018, March 16). *Opioids, cocaine, cannabis and illicit drugs*. Our World in Data. https://ourworldindata.org/illicit-drug-use?country=#citation

*Trends in Substance Use Disorders Among Adults Aged 18 or Older. (2017, June 29). SAMHSA.* [*https://www.samhsa.gov/data/sites/default/files/report\_2790/ShortReport-2790.html*](https://www.samhsa.gov/data/sites/default/files/report_2790/ShortReport-2790.html)

Weinberger, A. H., Gbedemah, M., Wall, M. M., Hasin, D. S., Zvolensky, M. J., & Goodwin, R. D. (2017). Cigarette use is increasing among people with illicit substance use disorders in the United STATES, 2002-14: Emerging disparities in vulnerable populations. *Addiction*, *113*(4), 719–728. <https://doi.org/10.1111/add.14082>