Community Research and Population Statistics Summary

Leveraging our seven guiding principles for evaluating equitable access for all Minnesotans, we are called to look beyond the confines of the literature outlined in the scientific literature review section. While randomized controlled trials (RCTs) are the gold standard for drug approval by the U.S. Food and Drug Administration (FDA), they do not always reflect realities of how they will be delivered to the broader population. Furthermore, noted caveats in proper blinding have been an ongoing concern for evaluating unbiased efficacy of psychedelics in clinical trials. However, these psychedelic medicines have decades of data of use in the broader community dating back to the 1940s and have shown to be relatively safe and non-toxic for the majority of people who use them. Specifically regarding psilocybin, there have been thousands of years of ceremonial use by Indigenous cultures around the world.

Limitations Of Scientific Literature

Double-blind RCTs are considered the gold standard for the development of new medications and treatments. These types of studies are ultimately still scientific experiments, though, and have a number of known limitations. Participants in the trials often do not reflect the real-world population, since these studies frequently exclude individuals with certain conditions, both mental and physical, as well as limiting the use of certain other medications during the trial. Clinical trials also frequently do not include a diverse group of individuals.

These trials are designed to determine the efficacy of a treatment, which refers to how well it works in tightly controlled conditions. It is not until a medication is on the market and in use by the general public that measures of its effectiveness (how well it works in real-world situations) can be understood. That is, generalizability of the results of clinical trials to the wider public is often difficult. Clinical trials are often focused on a single outcome over a specific amount of time, and so any other effects of the treatment, including long-term effects, are often unable to be reported. Another limitation of clinical trials is that they are focused solely on the Western medical model, which excludes information from lived experiences, as well as other cultural interpretations.

Clinical trials of psychedelic drugs are faced with additional hurdles. One unique challenge of this class of drugs surrounds blinding (the process of keeping both participants and administrators unaware of the drug condition). Because the experiences elicited by psychedelic drugs are distinct, participants (and clinicians) are almost always able to correctly guess if they received the drug or the placebo; this is called functional unblinding. Another challenge with testing psychedelic drugs is the expectancy effect, which refers to how the participant's belief about the drug they may (or may not) receive can influence the outcome. This is a particular concern with the media attention surrounding psychedelic drugs, and the sometimes-expressed belief that these substances may act as panacea, or cure-all drugs. While the expectancy effect can influence outcomes positively (the placebo effect, or seeing an effect but not having received the drug of interest), it can also be associated with negative or dangerous outcomes. Participants who expect that they will feel better after receiving a treatment may be disappointed if this is not the case, sometimes leading to worsening symptoms; this is called the "nocebo" effect. While the placebo and nocebo effects can occur in standard clinical trials, given the often treatment-

resistant nature of the health conditions these psychedelic drugs are being investigated to treat, these effects are of particular concern here. Finally, psychedelic trials exclude Indigenous Ways of Knowing, despite thousands of years of experience with these types of substances. Because of the general limitations of clinical trials, and the specific limitations of those investigating psychedelic drugs, population-wide, community level, and other lived experiences are important sources of data.

Indigenous Ways of Knowing

Cultures around the world, and particularly cultures Indigenous to the Americas, have incorporated psychedelic plants and mushrooms into their practices for thousands of years. The experiences induced by these organisms is understood to be a way of connecting with the spirit and natural world, as well as connecting internally to gain insights and wisdom, including for healing. The use of psilocybin-containing mushrooms, and related psychedelic substances, is not taken lightly in these cultures; use occurs in rituals or ceremonies, overseen by those with experience, to ensure respect for the mushroom or plant and the powerful experiences they induce. Healing, both physical and spiritual, is a wholistic endeavor in Indigenous communities, and is reflected in the use of psilocybin-containing mushrooms. Practitioners of Indigenous healing urge the use of these beings as a whole, rather than through extraction and isolation of compounds[1].

The religious and spiritual use of psychedelics remains a vital part of many Indigenous traditions. In the current context of general prohibition, there has been a growing movement to reclaim these traditions. The Native American Church has successfully fought for legal protection of their religious practices involving peyote, and the Church of the Eagle and the Condor has recently secured its right to use ayahuasca[2]. It is important to note that before 1978, practicing, or even discussing, Indigenous religious ceremonies was entirely illegal under federal law, and only further amended in 1994[3]. Historically, the United States has used drug laws to selectively target specific communities[4-6]. The creation of the Controlled Substances Act following initiation of the "War on Drugs" resulted in psilocybin (ibogaine, mescaline, and peyote) being placed in Schedule I, the most tightly-controlled level, despite thousands of years of use in healing and spiritual contexts by Indigenous peoples.

In light of this, however, the growing Western interest in psychedelics raises concerns around cultural respect, appropriation, commercialization, and exploitation of Indigenous traditions that have historically been harmed by laws surrounding these substances[7]. In conversations regarding the present and future of psychedelics, Indigenous voices are mandatory, and adherence to responsible research--including practicing the six Rs of Indigenous research--is vital. These six Rs make up a conceptual framework of methodologies, and include: Respect, Relationship, Relevance, Reciprocity, Responsibility, and Representation[8].

Population Statistics

Population statistics are data aggregated from across a large group of individuals, and are important for understanding societal trends around, in our case, psychedelic drugs.

National General Use Statistics

The Monitoring the Future survey series produces an annual report on substance use among adults, including use of hallucinogens[9]. Hallucinogens include LSD, MDMA, magic mushrooms/psilocybin, mescaline, peyote, and

phencyclidine (PCP) as a group. In young adults (19-30 years), hallucinogen use has historically been stable year after year, until 2020 when reported use began to increase. Reported MDMA use has increased from 2012, but has remained stable over the past one and five years, while LSD use increased in since 2012 (Table 1). All other hallucinogens were grouped together, so reported use on psilocybin alone was not available. However, this lack of focus suggests that psilocybin use has not been significant enough to warrant individual investigation. Similarly, general statistics on substance use reported by the Centers for Disease Control (CDC) do not include psychedelics or hallucinogens as a category[10] again suggesting that use has not been prevalent enough to warrant an individual category.

Table 1 – Monitoring the Future, reported lifetime use, young adults (19-30), 2012 – 2022

Drug	2012	2022
MDMA	3.0%	8.0%
LSD	1.4%	3.0%

The annual National Survey on Drug Use & Health sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA) reports national estimates of substance use in the United States in individuals aged 12 and above[11,12]. In the general population, the estimated percentage of those with any lifetime use of MDMA increased slightly between 2018 and 2022. Estimated past year and past month use remained stable over this time period. The estimated percentage of individuals with any lifetime LSD use increased between 2018 and 2022. However, in those five years, past year and past month use remained stable. Estimates of any lifetime use of psilocybin have increased noticeably between 2018 and 2022, though past year and past month data on psilocybin use were not provided[11,12] (Table 2).

Table 2 - Percentage of estimated lifetime, past year, and past month use, ages 12+. n.d.; no data

Drug	Lifetime use 2018	Past year use (2018)	Past month use (2018)	Lifetime use (2022)	Past year use (2022)	Past month use (2022)
MDMA	7.3%	0.9%	0.3%	7.8%	0.8%	0.2%
LSD	10.0%	0.8%	0.2%	11.0%	0.8%	0.1%
Psilocybin	9.2%	n.d.	n.d.	11.3%	n.d.	n.d.

Youth Access

As of 2021, the National Center for Chronic Disease Prevention Youth Risk Behavior Survey[13] indicates that a low percentage (6.5%) of high school students have reported ever using hallucinogens (including LSD, mushrooms, PCP, mescaline), and even fewer (2.9%) have tried MDMA/ecstasy. The National Survey on Drug Use & Health also estimated lifetime use of MDMA, psilocybin, and LSD in adolescents aged 12-17[11,12]. In this age group, estimated lifetime use of MDMA decreased between 2018 and 2022. Similarly, estimated use of LSD by adolescents also dropped in the same time frame. Psilocybin use in this age group, however, was estimated to increase substantially between 2018 and 2022 (Table 3).

Table 3 - Percentage of estimated lifetime use, ages 12-17

Drug	2018	2022
MDMA	0.8%	0.5%
LSD	1.3%	1.1%
Psilocybin	0.8%	1.3%

Within the state of Minnesota, use of these psychedelic drugs by youth appears to be low. The Minnesota Student Survey includes a section on self-reported substance use[14]. In this survey, psilocybin and LSD are grouped together, along with PCP. MDMA is grouped with GHB and ketamine. Therefore, use of individual psychedelic drugs is not available, but rough trends can be gathered. The percentage of students who reported any past-year use of LSD, psilocybin, or PCP remained fairly stable for grade 11 between 2019 and 2022. There was a slight decrease in those who reported use in grade 9, and reports of past year use in grade 8 remained stable over the same time frame (Table 4). The percent of students reporting any past year use of MDMA, GHB, or ketamine remained similar between 2019 and 2022 in students in grade 11. Past year use of these substances dropped noticeably in grade 9, a trend repeated in grade 8 responders during this time as well (Table 5).

Table 4 – Self-reported LSD, psilocybin, & PCP use by grade, 2019 – 2022

Grade	2019	2022
Grade 11	3.0%	2.9%
Grade 9	1.7%	1.4%
Grade 8	1.2%	1.2%

Table 5 - Self-reported MDMA, GHB, & ketamine use by grade, 2019 --2022

Grade	2019	2022
Grade 11	1.3%	1.4%
Grade 9	1.1%	0.8%
Grade 8	1.0%	0.7%

Adult Health Data In Minnesota

For adults in Minnesota, statistics on the prevalence of diagnosed health conditions related to drug use have been compiled for the State[15]. Health Trends Across Communities uses summary reports from electronic health records on a range of chronic, behavioral, and mental health conditions, as well as conditions related to drug use. The information comes from 11 health systems that make up the Minnesota Electronic Health Record Consortium, and represents around 90% of healthcare for Minnesotans. The reported prevalence estimates include Minnesota residents who were seen at any participating health system within the last 3 years and received a diagnosis related to use of drugs of interest in the last 5 years.

Psilocybin and LSD are categorized as hallucinogens, along with peyote and PCP. Individual statistics for each drug are not available. The reported prevalence of health conditions related to use of these substances rose over the period between 2020 and 2023, from 1,860 reports to 2,180 reports statewide. This represents less than 1% of the total population. MDMA/ecstasy is grouped with psychostimulants, which includes methamphetamines. Therefore, diagnosed health conditions resulting from use of this drug specifically are difficult to parse out. While prevalence rose from 2020 to 2023, health conditions resulting from the use of any of these substances also represent less than 1% of the population[15].

Toxicity And Overdose Statistics

The National Center for Health Statistics includes data on drug overdose deaths, but does not include data regarding psychedelic drugs[16]. Similarly, the Minnesota Drug Overdose and Substance Use Surveillance Activity does not report data for overdose deaths attributed to psychedelic drugs[17]. These data, or lack thereof, suggest that use of these substances resulting in overdose is not occurring at a significant frequency in either the nation or the state. The US Drug Enforcement Agency (DEA) "Drug Fact Sheet on Hallucinogens" notes that deaths resulting from acute overdose of these substances on their own are extremely rare. If deaths do occur, these tend to occur as suicide, accidents, and/or dangerous behavior, or due to an individual inadvertently ingesting poisonous plant material[18]. Similarly, a data brief from the NCHS from 2022 did not include mention of psychedelics or hallucinogens, either[19]. This again suggests that, nationally, problematic use of psychedelic drugs is not currently a widespread issue.

Poison Control Data

However, that is not to say that there are no risks associated with any of these drugs. The American Association of Poison Control Centers reports calls to poison control centers across the nation and publishes an annual report. The Minnesota Regional Poison Center collects this type of data from calls throughout the state as well. In regards to data from poison control centers, it should be noted that reporting is voluntary, which may result in an underrepresentation of the true occurrence of exposures. Exposures are defined as actual or suspected contact with any substance, regardless of toxicity or clinical manifestation. There may be cases where an exposure involves multiple substances, as well as cases involving a single substance.

Data from the National Poison Data System indicate that since 2018 calls regarding a single exposure to hallucinogenic amphetamines (which includes MDMA) have dropped precipitously (Table 6). This includes both the total number of calls and call associated with individuals under 20 years of age. In this timeframe, the maximum number of calls occurred in 2018 (810) and the minimum number of calls occurred in 2022 (52)[20-24].

Table 6 - Reported calls regarding a single exposure to MDMA, nationwide, 2018 -- 2022

Year	Total calls	Total calls <20 years old	Major incidents	Deaths
2018	810	189	62	8
2019	438	143	42	3
2020	115	31	6	0
2021	60	17	2	0
2022	52	13	8	0

In Minnesota, between 2019 and 2023, calls related to the use of MDMA were the lowest of all three drugs investigated. Calls remained fairly stable in adolescents and have slightly decreased in adults in that same time period (Table 7)[25].

Table 7 – Reported calls regarding MDMA by age group, Minnesota, 2019 – 2022

Year	20 years old and younger	21 years old and above
2019	8	29
2020	13	25
2021	8	27
2022	6	19
2023	6	14

Mirroring general use patterns, data from the National Poison Data System indicate a change in psilocybin use over the past decade. From 2012 to 2019, calls remained low and largely unchanged between years (data not shown). Beginning in 2020, calls related to psilocybin nearly doubled, and continue to increase year after year (Table 8). Nationally, the number of psilocybin-related calls involving those under 20 years of age increased by more than double from 2019 to 2022[20-24].

Table 8 - Reported calls regarding a single exposure to psilocybin, nationwide, 2018 -- 2022

Year	Total calls	Total calls < 20 years old	Major incidents	Deaths
2018	304	108	9	0
2019	387	177	5	0
2020	620	251	23	3
2021	794	353	21	0
2022	996	447	37	0

This trend of increased calls was similar in Minnesota. Psilocybin-related calls involving those under 20 years of age increased by a factor of four between 2019 and 2023, and by a factor of five in those over 21 years of age (Table 9)[25]. This increase has been cited as "particularly alarming," because even where this substance is legal or decriminalized, use is typically prohibited for those under the age of 21[26]. Overall, the poison control data, both nationally and within the State of Minnesota, indicate that adolescents are gaining access to psilocybin as it becomes available for adults.

Table 9 - Reported calls regarding psilocybin by age group, Minnesota, 2019 -- 2023

Year	20 years old and younger	21 years old and above
2019	7	8
2020	17	22
2021	15	24
2022	17	35
2023	28	41

Finally, between 2012 and 2020, calls relating to a single exposure of LSD increased substantially before dropping noticeably; calls peaked in 2020 (885) and dropped by a factor of around three by 2022 (313). Calls associated with those under age 20 follow this trend (Table 10)[20-24].

Table 10 - Reported calls regarding a single exposure to LSD, nationwide, 2018 -- 2022

Year	Total calls	Total calls < 20 years old	Major incidents	Deaths
2018	470	289	21	0
2019	655	442	38	0
2020	885	602	55	0
2021	491	321	67	4
2022	313	194	14	0

This pattern of an increase, peak in 2020, and subsequent decrease in calls is also reflected in Minnesota, in both adults and adolescents. Calls associated with those 20 years old or younger also dropped by approximately a factor of three since 2020, and in adults the number of calls dropped by a factor of at least four (Table 11)[25].

Table 11 - Reported calls regarding LSD by age group, Minnesota, 2019 -- 2023

Year	20 years old and younger	21 years old and above
2019	25	26
2020	47	21
2021	21	19
2022	12	14
2023	17	<5

Public Safety Data

The 2024 annual National Drug Threat Assessment report published by the DEA only briefly mentions both MDMA and psilocybin (in terms of definitions), and does not mention LSD at all[27]. This suggests that trafficking and arrests surrounding these substances are low, are not a systemic problem, and are not a top priority. National data on drug-related emergency department visits in 2022, published by SAMHSA through the Drug Abuse Warning Network (DAWN) categorizes hallucinogens as MDMA, psilocybin, and LSD. These drugs were not in the top 10 drugs requiring emergency care[28]; in fact, specific data for these drugs was not included, again suggesting that the number of emergency room visits following use of these drugs is not large.

References

1) Yeomans, K. (2022, November 2). Cultural and Anthropological Review of Resources. Oregon Psilocybin Services; State of Oregon. https://www.oregon.gov/oha/PH/PREVENTIONWELLNESS/Documents/Cultural-Anthropological-Review-2022.pdf

2) Settlement. (2023) The Church of the Eagle and the Condor. Retrieved from https://www.churchofeagleandcondor.org/settlement.html

3) American Indian Religious Freedom Act Amendments of 1994 [AIRFA]. H.R. 4230, 103rd Congress. (1994). https://www.congress.gov/103/bills/hr4230/BILLS-103hr4230enr.pdf

4) Courtwright, D.T. (2008). [Review of the book The Opium Debate and Chinese Exclusion Laws in the Nineteenth Century American West]. Bulletin of the History of Medicine 82(2), 469-470. https://doi.org/10.1353/bhm.0.0004.

5) Baum, D. (2016, April). Legalize It All. Harper's Magazine. Retrieved from https://harpers.org/archive/2016/04/legalize-it-all/

6) Campos, I. (2018). Mexicans and the origins of marijuana prohibition in the United States: A reassessment. The Social History of Alcohol and Drugs, 32(1), 6-37.

7) George, J. R., Michaels, T. I., Sevelius, J., & Williams, M. T. (2020). The psychedelic renaissance and the limitations of a White-dominant medical framework: A call for indigenous and ethnic minority inclusion. Journal of Psychedelic Studies, 4(1), 4-15.

8) Tsosie, R. L., Grant, A. D., Harrington, J., Wu, K., Thomas, A., Chase, S., ... & Plenty Sweetgrass-She Kills, R. (2022). The six Rs of Indigenous research. Tribal college journal of American Indian higher education, 33(4).

9) Patrick, M. E., Miech, R. A., Johnston, L. D., & O'Malley, P. M. (2023). Monitoring the Future Panel Study Annual Report: National Data on Substance Use among Adults Ages 19 to 60, 1976-2022. Institute for Social Research.

10) National Center for Health Statistics [NCHS]. Health, United States. (2021): Table SubsUse. Hyattsville, MD. Available from: https://www.cdc.gov/nchs/hus/data-finder.htm.

11) U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality [SAMHSA]. (2018). National Survey on Drug Use and Health 2018. Retrieved from: https://www.samhsa.gov/data/report/2018-nsduh-detailed-tables

12) U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality [SAMHSA]. (2022). National Survey on Drug Use and Health 2022. Retrieved from: https://www.samhsa.gov/data/report/2022-nsduh-detailed-tables

13) Centers for Disease Control [CDC]. (2021). Youth Online: High School YRBS - United States 2021 Results | DASH | CDC. NCCD.CDC.gov. Retrieved from: https://nccd.cdc.gov/Youthonline/App/Results.aspx?TT=A&OUT=0&SID=HS&QID=QQ&LID=XX&YID=202

1&LID2=&YID2=&COL=S&ROW1=N&ROW2=N&HT=QQ&LCT=LL&FS=S1&FR=R1&FG=G1&FA=A1&FI=I1&FP=P1&FSL=S1&FRL=R1&FGL=G1&FAL=A1&FIL=I1&FPL=P1&PV=&TST=False&C1=&C2=&QP=G&DP=1&VA=CI&CS=Y&SYID=&EYID=&SC=DEFAULT&SO=ASC

14) Minnesota Department of Education [MDE]. Data Reports and Analytics. (2022). Public.education.mn.gov. https://public.education.mn.gov/MDEAnalytics/DataTopic.jsp?TOPICID=242

15) Minnesota Electronic Health Records Consortium [MNEHR]. (2024). Health Trends Across Communities in Minnesota Dashboard | Minnesota EHR Consortium. Retrieved from https://mnehrconsortium.org/health-trends-across-communities-minnesota-dashboard

16) Spencer MR, Garnett MF, Miniño AM. (2024). Drug Overdose Deaths in the United States, 2002–2022. NCHS Data Brief, no 491. Hyattsville, MD: National Center for Health Statistics. DOI: https://dx.doi.org/10.15620/cdc:135849

17) Minnesota Department of Health [MDH]. (2024). Data Projects - MNDOSA. Retrieved from: https://www.health.state.mn.us/communities/injury/data/mndosa.html

18) U.S. Drug Enforcement Agency [DEA]. (2020). What Are Hallucinogens? https://www.dea.gov/sites/default/files/2020-06/Hallucinogens-2020.pdf

19) Spencer, M., Miniño, A., & Warner, M. (2022). Drug Overdose Deaths in the United States, 2001-2021 Key findings Data from the National Vital Statistics System. https://www.cdc.gov/nchs/data/databriefs/db457.pdf

20) Gummin, D. D., Mowry, J. B., Spyker, D. A., Brooks, D. E., Beuhler, M. C., Rivers, L. J., ... & Ryan, M. L. (2019). 2018 Annual report of the American Association of Poison control centers' National Poison Data System (NPDS): 36th annual report. Clinical toxicology, 57(12), 1220-1413.

21) Gummin, D. D., Mowry, J. B., Beuhler, M. C., Spyker, D. A., Brooks, D. E., Dibert, K. W., ... & Ryan, M. L. (2020). 2019 annual report of the American association of poison control centers' national poison data system (NPDS): 37th annual report. Clinical toxicology, 58(12), 1360-1541.

22) Gummin, D. D., Mowry, J. B., Beuhler, M. C., Spyker, D. A., Bronstein, A. C., Rivers, L. J., ... & Weber, J. (2021). 2020 annual report of the American association of poison control centers' national poison data system (NPDS): 38th annual report. Clinical toxicology, 59(12), 1282-1501.

23) Gummin, D. D., Mowry, J. B., Beuhler, M. C., Spyker, D. A., Rivers, L. J., Feldman, R., ... & Weber, J. A. (2022). 2021 annual report of the National Poison Data System©(NPDS) from America's poison centers: 39th annual report. Clinical Toxicology, 60(12), 1381-1643.

24) Gummin, D. D., Mowry, J. B., Beuhler, M. C., Spyker, D. A., Rivers, L. J., Feldman, R., ... & DesLauriers, C. (2023). 2022 Annual report of the national poison data system®(NPDS) from America's Poison Centers®: 40th annual report. Clinical Toxicology, 61(10), 717-939.

25) Minnesota Regional Poison Center [MNRPC]. (2024). Annual Reports. Minnesota Regional Poison Center. https://mnpoison.org/about-the-poison-center/annual-reports/

26) Farah, R., Kerns, A. F., Murray, A. C., & Holstege, C. P. (2024). Psilocybin Exposures Reported to US Poison Centers: National Trends Over a Decade. Journal of Adolescent Health.

27) U.S. Drug Enforcement Agency [DEA]. (2024). National Drug Threat Assessment 2024 National Drug Threat Assessment 2024 Drug Enforcement Administration Drug Enforcement Administration. https://www.dea.gov/sites/default/files/2024-05/5.23.2024%20NDTA-updated.pdf

28) Substance Abuse and Mental Health Services Administration [SAMHSA] (2023). Drug Abuse Warning Network: Findings from Drug-Related Emergency Department Visits, 2022; Publication PEP23-07-03-001. Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data.