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HOPE

Health Outcomes and Psychedelic Economics

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The Price of Despair

The Economic and Human Burden of Mental Illness and Addiction

Healthcare Costs

People with mental health disorders require approximately **three times more spending on medical care** per capita.

Lives Lost

Over 100,000 lives are lost to overdose each year. Nearly ⅓ of adults in the US has a substance use disorder or mental illness.

Economic Costs

Estimated to reach $1 billion in direct healthcare expenses, lost productivity, and criminal justice costs.

Efficacy Gap

Current treatment paradigms have been around for half a century and aren't providing relief for 30-50% of patients.

Psychedelic-Assisted Therapies (PAT)

Offering Hope with Breakthrough Therapies

The FDA has **assigned breakthrough therapy designation** to five drug developers (Lykos, Compass, Usona, Mindmed, Cybin), signaling strong support from the regulatory agency.

67% PTSD

MDMA-assisted therapy shows a **67% remission rate** for patients with treatment-resistant PTSD in Phase 3 clinical trials.

42% Depression

Psilocybin-assisted therapy has shown a **42% sustained depressive symptom response rate** in patients with 'treatment-resistant' depression.

80% Smoking Cessation

A small trial of psilocybin therapy finds that six months after the study, **80% of participants were smoking free** (67% at the 30-month follow-up).

The Costs and Health Benefits of Expanded Access to MDMA-assisted Therapy for Chronic and Severe PTSD in the USA: A Modeling Study

Is Improving Lives also Cost Effective?

MDMA-AT can be as impactful as, or better than, other major public health interventions.
MDMA-AT is cost-saving under all scenarios compared to Standard of Care (SoC).

Expanding access to MDMA-Assisted Therapy (MDMA-AT) to 25–75% of eligible patients with chronic and severe PTSD over 10 years:

- **Saves Lives:** Prevents 43,000–106,000 deaths.
- **Improves Health:** Gains 3.3–8.2 million QALYs (Quality-Adjusted Life Years).
- **Reduces Costs:** Achieves $109–$266 billion in healthcare savings.

Deaths prevented by MDMA-AT exceed those prevented by fluoxetine (Prozac) for depression (~33,600).

QALYs gained by MDMA-AT (8.2M) surpass:

- Antiretroviral therapy in the early HIV/AIDS epidemic (2.95M).
- National HIV testing/treatment targets over 20 years (2.14M).

An estimate of the number of people with clinical depression eligible for psilocybin-assisted therapy in the United States

Is Improving Lives also Cost Effective?

Significant demand exists for Psilocybin-Assisted Therapy for Major Depressive Disorder (MDD) and Treatment-Resistant Depression (TRD).

14.8 million
patients with depression

9 million
patients seeking treatment

6.6 million
maximum patients eligible

24–62% of treated patients could be eligible based on real-world clinical settings.

Eligibility translates to 2.2M–5.6M patients with MDD and 0.6M–1.7M patients with TRD.

Our Research Approach

Rigorous Analysis for Policy Impact

HOPE aims to provide concrete evidence of PAT's cost-effectiveness and demonstrate its potential to significantly reduce healthcare expenditures.

A Data-Driven Approach

In contrast to earlier academic studies, HOPE uses real-world healthcare data from multiple sources.

- Medicare & Medicaid
- Private Insurance (Optum-United)
- Veterans Affairs

Modeling Techniques

HOPE employs sophisticated health economic modeling techniques to project the long-term costs and benefits of PAT.

- Clinical trial data
- Healthcare utilization patterns
- Quality of life improvements

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Project Timeline and Deliverables

12 Publications, Policy Briefs, & Implementation Guides

Foundation & Initial Analysis (Months 1-6)

- Platform Development & Data Acquisition
- Initial MDMA/PTSD Analysis
- Concurrent Model Development

Multi-Dataset Analysis & Model Expansion (Months 7-12)

- MDMA/PTSD Extended Analysis
- Parallel Intervention Analysis

Analysis Across Interventions (Months 13-18)

- Multiple Intervention Tracks
- Publications in Top-Tier Academic Journals

Synthesis and Integration (Months 19-24)

- Cross-Intervention Synthesis
- Final Products
- Dissemination and Engagement

Meet the Team

Core Research Team ↓

Dr. Elliot Marseille
Director, CEP at UCSF/Berkeley
Project Research Lead

Dr. James 'Jim' G. Kahn
Emeritus Professor, UCSF
Health Policy & Economics

Dr. Stefano Bertozzi
Professor, Health Policy & Management, UC Berkeley
Healthcare Systems

Project Management ↓

Lia Mix, LMFT, CPTR
CEO, Delphi
Strategic Guidance & Project Management

Floris Wolswijk, MSc
Senior Project Manager, Delphi
Project Coordination

Lauren Tannhauser
Fundraising, Delphi
Fundraising & Support

Academic Partnerships ↓

Dr. Julian Urrutia Ripoll
Yale University
Health Economics Specialist

Dr. Michael Darden
Johns Hopkins University
Substance Use Disorder

Dr. Michael Bogenschutz
New York University
Alcohol Use Disorder Research

Dr. Matthew Johnson
Johns Hopkins University
Smoking Cessation Research

Dr. Anton Avanceña
University of Texas at Austin
Health Policy Research

Technical Implementation ↓

Desislava Prodanova, M.A.
President, MSIDE
Healthcare Systems Engineer

Dr. Sylvestre Quevedo
Vice-President, MSIDE
Healthcare Data Analyst

Breakdown of Project Expenditures

This 24-month project will cost $1.850 million and produce 12 academic papers and presentations for policymakers. The research will help government officials, insurance companies, and healthcare systems decide if and how to include these treatments in standard medical care.

Economic Analysis & Modeling ↓

MDMA / PTSD
$193,000

Psilocybin / AUD
$339,250

Psilocybin / MDD
$240,450

Ibogaine / OUD
$339,250

Psilocybin / TUD
$240,450

Data Access & Analysis ↓

Data Access
$95,000

Data Analysis
$160,000

Project Management ↓

Project Coordination
$114,400

PR & Stakeholder Engagement
$125,600

Who needs this information?

Data-driven Decisions Lead to Better Outcomes

Government Decision-Makers

Pharmaceutical Industry

Academic Researchers

Centers for Medicare and Medicaid

Healthcare Systems

Commercial Health Plan Payers

Financial Institutions and Decision-makers

Be a Champion for Mental Health Innovation

Join us in transforming mental healthcare through groundbreaking research

Your support of the HOPE initiative will advance critical research on psychedelic therapies, bringing evidence-based, cost-effective solutions to those who need them most.

- Champion innovative solutions to the global mental health and addiction crisis
- Help ensure these breakthrough treatments reach underserved communities
- Drive systemic change in how we approach mental healthcare

Ready to make an impact? Contact lia.mix@delphi-circle.com to learn how you can champion this vital research

APPENDICES

Health Outcomes and Psychedelic Economics

Intervention Protocols and Analytical Frameworks 1/2

Overview of Analyzed Interventions

- MDMA for PTSD: Treating post-traumatic stress disorder with MDMA-assisted therapy, focusing on cost-effectiveness and long-term savings.
- Psilocybin for Major Depression: Examining cost utility in general and treatment-resistant depression.
- Psilocybin for Smoking Cessation: Highlighting high abstinence rates and healthcare cost offsets.
- Psilocybin for Alcohol Use Disorder: Reducing heavy drinking days and societal costs.
- Ibogaine for Opioid Use Disorder: Addressing opioid withdrawal with potential emergency care reductions.

Methodology Highlights

- Cost-Effectiveness Models:
  Using Markov and decision-analytic models to simulate chronic conditions and estimate quality-adjusted life years (QALYs).
  - Perspectives: Societal (healthcare and productivity) and Payer-specific (public/private insurance).
  - Sensitivity Analysis: Evaluating treatment efficacy, costs, and scale-up scenarios.
- Real-World Data Sources:
  - CMS (Medicaid/Medicare): Costs and utilization in public insurance populations.
  - Optum-United: Commercial claims analysis for broader demographic insights.
  - VA Data: Targeted analysis for veteran-specific PTSD outcomes.

Intervention Protocols and Analytical Frameworks 2/2

Key Supporting Findings and Impact

- MDMA for PTSD:
  - Potential $132.9M savings for 1,000 patients over 30 years.
  - Scaled implementation (10%, 25%, 50% eligible patients) shows significant QALY gains and cost offsets.
- Psilocybin for Depression:
  - Improves long-term healthcare savings, particularly for treatment-resistant cases.
  - Projects reduced disability claims and increased productivity.
- Psilocybin for Smoking Cessation:
  - 60% abstinence rates at 12 months, vastly outperforming standard treatments (10–20%).
  - Reduces costs from smoking-related illnesses.
- Psilocybin for Alcohol Use Disorder:
  - Early data suggests decreased emergency visits and societal harm from alcohol-related incidents.
  - Increased abstinence rates lead to improved societal and familial outcomes.
- Ibogaine for OUD:
  - Models predict substantial reductions in overdose deaths and emergency care costs.
  - Addresses critical gaps in withdrawal management protocols.

Research Products

- Planned Deliverables:
  - 12 peer-reviewed manuscripts.
  - Comparative and cross-database analyses for broad implementation insights.
  - Implementation guidance tailored for policymakers and insurers.
- Stakeholder Communication:
  - Policy briefs for Medicaid and VA systems.
  - Presentation at healthcare and addiction conferences.
  - Accessible materials for broader public engagement.

Technical Details of Models & Data Sources 1/2

Economic Modeling Framework

- Model Types:
  - Markov Cost-Effectiveness Models: Simulate chronic conditions (e.g., PTSD, addiction) with transitions between health states over time (remission, relapse, severity stages).
  - Decision-Analytic Models: Evaluate treatment pathways, resource use, and outcomes.
  - Agent-Based Modeling (ABM): Simulate individual trajectories, capturing variability in treatment adherence and response rates.
- Model Perspectives:
  - Societal Perspective: Includes direct medical costs, productivity losses, and caregiver burden.
  - Healthcare Payer Perspective: Focuses on costs relevant to public (Medicaid/Medicare) and private insurance.
- Sensitivity Analyses:
  - One-Way Sensitivity: Key cost-effectiveness drivers.
  - Probabilistic Analysis: Cost-effectiveness acceptability curves.
  - Scenario & Break-Even Analysis: Impact of varying assumptions on treatment costs and uptake.

Data Sources

- Claims Data (Key Datasets):
  - CMS (Medicare & Medicaid): Public insurance costs, focusing on PTSD, depression, addiction.
  - Optum-United Healthcare: Commercial claims database for diverse populations.
  - Veterans Administration (VA): Veteran-specific PTSD care and costs.
- Clinical Efficacy Data:
  - Published trial results from leading institutions (e.g., Johns Hopkins, NYU).
  - Real-world evidence updates (as therapies gain FDA approval).
- Supplementary Inputs:
  - Epidemiological data (e.g., incidence/mortality rates).
  - Published literature for baseline healthcare costs.

Technical Details of Models & Data Sources 2/2

Key Data Management Strategies

- Cleaning and Harmonization:
  - Standardizing ICD-10, CPT codes, and payer-specific data fields.
  - Imputation for missing data.
- Stratification:
  - By demographics (age, gender), condition severity, and comorbidities.
- Security & Compliance:
  - HIPAA-compliant environments.
  - De-identified data to ensure patient privacy.

Innovations in Modeling

- Transition to advanced software platforms (e.g., TreeAge, R) to:
  - Simulate long-term treatment impacts.
  - Incorporate stochastic effects for probabilistic outcomes.
  - Enable cross-database comparisons for robustness.

Practical Applications

- Cost-Effectiveness Metrics:
  - Incremental cost-effectiveness ratio (ICER) per QALY gained.
- Implementation Scenarios:
  - Scale-up models for 10%, 25%, and 50% patient adoption rates.
- Policy Guidance:
  - Projected cost savings by payer (e.g., Medicaid, VA) and societal benefits.

Expanded Team Introduction 1/5

Core Research Team

Dr. Elliot Marseille

- *Director, CEP at UCSF/Berkeley | Project Research Lead*
- Dr. Marseille leads the economic modeling and analysis for the project, leveraging decades of experience in health policy and cost-effectiveness research. As the Director of the Center for the Economics of Psychedelics (CEP), he has pioneered groundbreaking studies on healthcare interventions and is recognized for his work on economic evaluations that influence policy and healthcare strategies globally.

Dr. James 'Jim' G. Kahn

- *Emeritus Professor, UCSF | Health Policy & Economics Expert*
- Dr. Kahn is a highly respected figure in health economics and policy, with a career spanning decades of research on cost-effectiveness and resource allocation in healthcare. His expertise is critical to developing robust analytical frameworks for assessing the societal and economic impacts of psychedelic therapies.

Dr. Stefano Bertozzi

- *Professor, Health Policy & Management, UC Berkeley | Healthcare Systems Expert*
- Dr. Bertozzi brings significant expertise in healthcare systems and implementation science. His work focuses on developing sustainable healthcare strategies, making him a key contributor to the integration of psychedelic therapies into existing systems. He is a renowned leader in both academia and healthcare implementation.

Expanded Team Introduction 2/5

Academic Partnerships

Dr. Julian Urrutia Ripoll

- *Yale University | Health Economics Specialist*
- Dr. Urrutia Ripoll provides critical expertise in health economics, focusing on the cost-effectiveness of psychedelic therapies. His collaboration ensures the integration of cutting-edge economic analysis methods into the project.

Dr. Michael Darden

- *Johns Hopkins University | Substance Use Disorder Researcher*
- Dr. Darden contributes his deep understanding of substance use disorders, particularly their economic implications. His research informs the models used to evaluate the cost savings and health impacts of psychedelic treatments for addiction.

Dr. Michael Bogenschutz

- *New York University | Alcohol Use Disorder Researcher*
- Dr. Bogenschutz specializes in clinical research on alcohol use disorder (AUD). His insights into patient outcomes and treatment efficacy ensure the project's economic models are grounded in real-world clinical realities.

Dr. Matthew Johnson

- *Johns Hopkins University | Smoking Cessation Researcher*
- Dr. Johnson is a leader in clinical research on smoking cessation using psychedelics. His groundbreaking work on psilocybin-assisted therapies forms a cornerstone of the project's analysis of smoking-related health impacts and economic benefits.

Dr. Anton Avanceña

- *University of Texas at Austin | Health Policy Researcher*
- Dr. Avanceña is a decision scientist and health policy researcher who aims to improve value and equity in health globally. He has worked on several papers on the costs and health benefits of psychedelic therapies.

Expanded Team Introduction 3/5

Technical Implementation

Desislava Prodanova, M.A.

- *President, MSIDE | Healthcare Systems Engineer*
- Desislava brings expertise in healthcare software solutions and data analytics, playing a critical role in managing complex healthcare data. Her work ensures the integrity and precision of the data underlying the economic models.

Dr. Sylvestre Quevedo

- *Vice-President, MSIDE | Healthcare Data Analyst*
- Dr. Kahn is a highly respected figure in health economics and policy, with a career spanning decades of research on cost-effectiveness and resource allocation in healthcare. His expertise is critical to developing robust analytical frameworks for assessing the societal and economic impacts of psychedelic therapies.

Expanded Team Introduction 4/5

Advisors and External Collaborators

Dr. Bob Jesse

- *Advisor | Psychedelic Research and Policy Expert*
- Dr. Jesse is a respected figure in psychedelic research, offering strategic advice on navigating regulatory landscapes and fostering impactful collaborations. His expertise bridges the gap between research findings and policy implementation.

Melissa Lavasani

- *Founder and CEO, Psychedelic Medicine Coalition | Chairwoman, Decriminalize Nature DC | Policy Advocate*
- Melissa is a pioneering leader in the psychedelic policy landscape, known for her instrumental role in advancing legislative change. As the founder and CEO of the Psychedelic Medicine Coalition and President of the Psychedelic Medicine PAC, she drives advocacy efforts at the national level. Melissa also led the historic Initiative 81, a groundbreaking ballot measure that decriminalized entheogenic plants and fungi in Washington, D.C., setting a precedent for policy reform nationwide. Her leadership and strategic vision ensure the project aligns with the evolving regulatory environment for psychedelic therapies.

Dr. Cameron Wolf

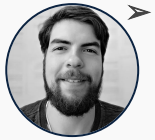
- *Senior Advisor for the Department of Health & Human Services / SAMHSA Office for Prevention Innovation*
- Cameron brings extensive expertise in designing, managing, and scaling innovative public health programs, with a focus on vulnerable and marginalized populations. A leader in HIV/AIDS prevention and care, Cameron has shaped impactful interventions through data-driven strategies, behavioral science, and cross-sector collaboration. With a Ph.D. in Health Policy & Management from Johns Hopkins and a track record of driving resiliency and equity in healthcare, Cameron's consultative leadership bridges global health priorities and emerging solutions, including the expanding role of psychedelics in public health innovation.

Expanded Team Introduction 5/5

Project Management

Lia Mix, LMFT, CPTR

- *CEO, Delphi | Strategic Guidance & Project Management*
- Lia oversees strategic direction and ensures seamless coordination across all aspects of the project. With extensive experience in managing complex healthcare initiatives, she specializes in psychedelic healthcare implementation and engagement with federal agencies. Her leadership ensures alignment between research objectives and stakeholder needs.



Floris Wolswijk, MSc

- *Senior Project Manager, Delphi | Project Coordination*
- Floris manages day-to-day operations and ensures timely delivery of research milestones. With a strong background in project management and psychedelic research, he plays a pivotal role in coordinating diverse teams and fostering collaboration among research and implementation partners.

Lauren Tannhauser

- *Fundraising, Delphi | Fundraising & Support*
- Lauren focuses on securing the financial resources necessary for project success. Her expertise in stakeholder engagement and development ensures that the project maintains momentum and access to critical resources.

Published Research

The Center for the Economics of Psychedelics (CEP) and its collaborators have established themselves as pioneers in the economic analysis of psychedelic-assisted therapies.

Led by Dr. Elliot Marseille, the team has published several groundbreaking papers examining the cost-effectiveness and broader economic implications of these novel treatments. Their 2022 paper in PLOS ONE provided a comprehensive cost-effectiveness analysis of MDMA-assisted therapy for PTSD, demonstrating potential healthcare cost savings of $132.9 million over 30 years per 1,000 patients treated. This work has since become a cornerstone reference for healthcare systems considering the implementation of psychedelic therapies.

Building on this foundation, Dr. Marseille and colleagues have published additional analyses examining various aspects of psychedelic therapy economics. Their work spans both healthcare system and societal perspectives, incorporating sophisticated modeling of long-term outcomes and broader economic impacts. These publications demonstrate the team's expertise in handling complex economic evaluations of novel therapeutic approaches, particularly in mental health and substance use disorders.

- Marseille, E., Kahn, J. G., Yazar-Klosinski, B., & Doblin, R. (2020). The cost-effectiveness of MDMA-assisted psychotherapy for the treatment of chronic, treatment-resistant PTSD. PLOS ONE, 15(10), e0239997. https://doi.org/10.1371/journal.pone.0239997
- Marseille, E., Mitchell, J. M., & Kahn, J. G. (2022). Updated cost-effectiveness of MDMA-assisted therapy for the treatment of posttraumatic stress disorder in the United States: findings from a phase 3 trial. PLOS ONE, 17(2), e0263252. https://doi.org/10.1371/journal.pone.0263252
- Avanceña, A. L., Kahn, J. G., & Marseille, E. (2022). The costs and health benefits of expanded access to MDMA-assisted therapy for chronic and severe PTSD in the USA: a modeling study. Clinical Drug Investigation, 42(3), 243-252. https://doi.org/10.1007/s40261-022-01122-0
- Marseille, E., Bertozzi, S., & Kahn, J. G. (2022). The economics of psychedelic-assisted therapies: A research agenda. Frontiers in Psychiatry, 13, 1025726. https://doi.org/10.3389/fpsyt.2022.1025726
- Marseille, E., Stauffer, C. S., & Agrawal, M. (2023). Group psychedelic therapy: empirical estimates of cost-savings and improved access. Frontiers in Psychiatry, 14, 1293243. https://doi.org/10.3389/fpsyt.2023.1293243
- Rab, S. F., Raison, C. L., & Marseille, E. An estimate of the number of people with clinical depression eligible for psilocybin-assisted therapy in the United States. Psychedelics. https://doi.org/10.61373/pp024r.0025