

# ROI Assessment

## The Economic Impact of Chronic Disease Self-Management Education (CDSME) Programs

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# The Growing Challenge of Chronic Diseases

**75%**

## Healthcare Expenditures

Percentage attributed to treatment of chronic conditions

**20%**

## Aging Population

Projected percentage of Americans aged 65+ by 2030

**60-75%**

## Multiple Conditions

Percentage of older adults living with multiple chronic conditions

Chronic diseases represent a growing public health crisis, especially among older adults, resulting in diminished quality of life, loss of independence, and escalating healthcare costs.

# CDSME Programs: A Scalable Solution

Chronic Disease Self-Management Education (CDSME) programs are structured, evidence-based interventions designed to help individuals with chronic conditions gain confidence and skills to manage their symptoms and improve overall well-being.

These six-week workshops empower participants through skill-building in medication adherence, nutrition, physical activity, goal setting, and effective communication with healthcare providers.



## **Peer-Led Format**

Programs are facilitated by trained peers who understand the challenges of living with chronic conditions



## **Community-Based**

Delivered in accessible community settings.



## **Adaptable Delivery**

Available in both in-person and online formats to maximize accessibility

# Key CDSME Program Variants



## Diabetes Self-Management Program

Equips adults with type 2 diabetes with tools for nutrition, physical activity, medication adherence, and blood sugar monitoring.



## Chronic Pain Self-Management

Focuses on non-pharmacological pain management techniques, medication safety, and mental health support.

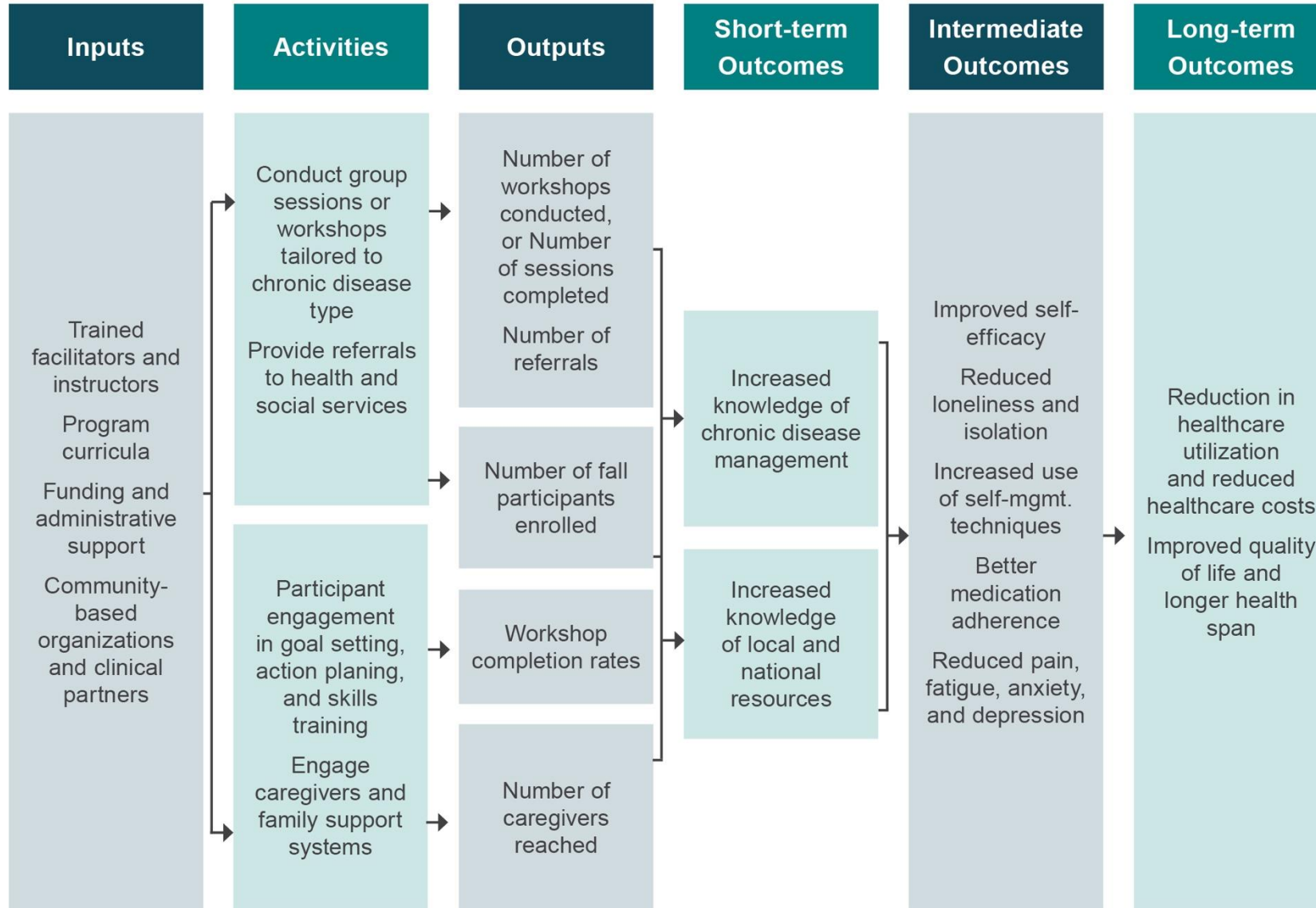


## Chronic Disease Self-Management

Core program covering goal setting, problem-solving, healthy eating, physical activity, and communication strategies.

Additional specialized programs include Cancer: Thriving and Surviving, Positive Self-Management Program for HIV, and Building Better Caregivers.

# CDSME Program Logic Model



# Study Methodology

## 1 Survey Design and Data Collection

Standardized pre-post surveys administered to CDSME participants

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## 2 Data Cleaning and Transformation

Preparation of HAPID data for statistical analysis

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## 3 Statistical Estimation of Program Effects

Multivariate regression modeling to isolate program impacts

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## 4 Cost Valuation of Outcomes

Assigning dollar values to health improvements based on literature

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## 5 ROI Calculation

Computing net benefits and return on investment ratios

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## 6 Reporting and Sensitivity Analysis

Documenting findings with confidence intervals and alternative scenarios



# Detailed Methodology: Statistical Analysis

## Regression Models

- Fixed effects and random effects regression models for key outcomes

## Key Outcome Measures

- Self-rated health (ordinal scale, 1-5)
- Self-efficacy (scale 1-10)
- Loneliness and isolation (ordinal scales, 1-5)

Models controlled for covariates including age, sex, education, number of disabilities, and number of chronic conditions to minimize confounding.



# Detailed Methodology: Economic Valuation



## Outcome Improvement Calculation

Estimated difference between pre/post measures to determine avoided incidents per participant (general health, self efficacy, loneliness)



## Cost Estimation

Applied standardized cost values from literature for each type of avoided healthcare utilization, adjusted to 2024 USD



## Total Savings Calculation

Multiplied avoided incidents by associated costs across all 532,503 participants



## ROI Determination

$ROI = (Total\ Savings - Program\ Costs) / Program\ Costs$

# Participant Demographics

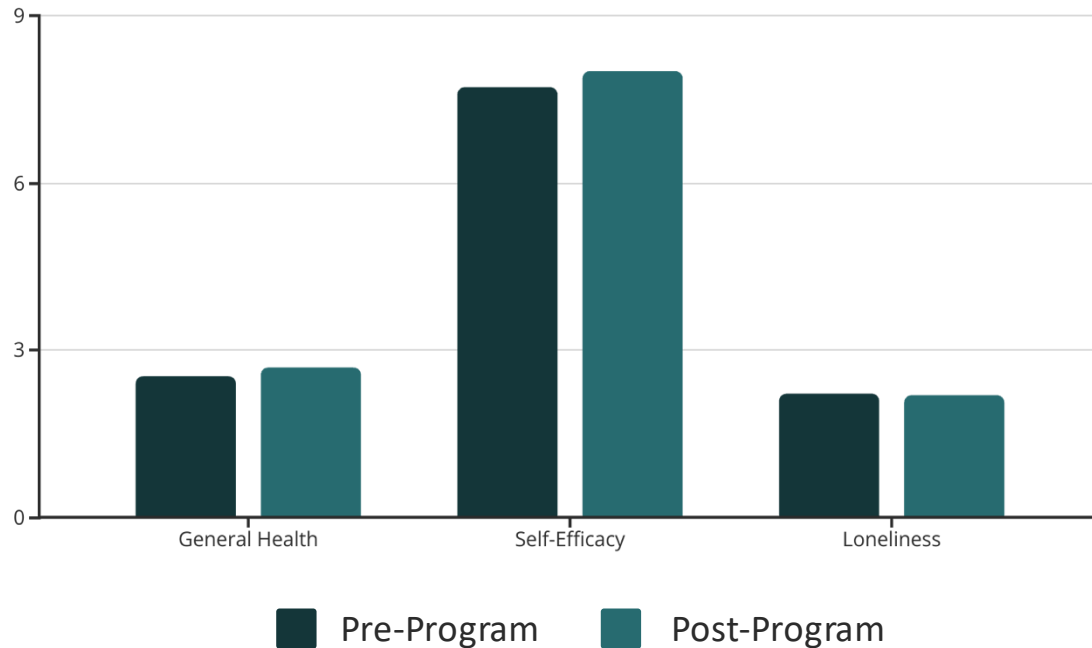


## Key Demographics

- Average age: 65.9 years
- Female participants: 65.8%
- Average chronic conditions: 2.2
- Race: 53% White, 16.5% Black/African American, 12.7% Hispanic/Latino
- Education: 12.9% College education or higher

Data from 532,503 participants in Healthy Aging Programs Integrated Database (HAPID) database (2010-2025)

# Key Findings: Health Outcomes



## Statistically Significant Improvements

Participants showed meaningful improvements in:

- Self-rated general health (+0.15 points)
- Self-efficacy in managing conditions (+0.28 points)
- Reduced loneliness (-0.04 points)

These improvements remained significant even after controlling for demographic factors, chronic conditions, and disability status.

# Key Outcome Improvements



## General Health

Improved from 2.53 to 2.69 ( $p < 0.001$ )

The proportion reporting "Excellent" health increased from 5% to 7%, while those reporting "Fair" decreased from 34% to 31%.



## Self-Efficacy

Increased from 7.72 to 8.00 ( $p < 0.001$ )

Participants selecting high scores (8-10) increased, while those selecting low scores (1-4) decreased, indicating greater confidence in managing conditions.



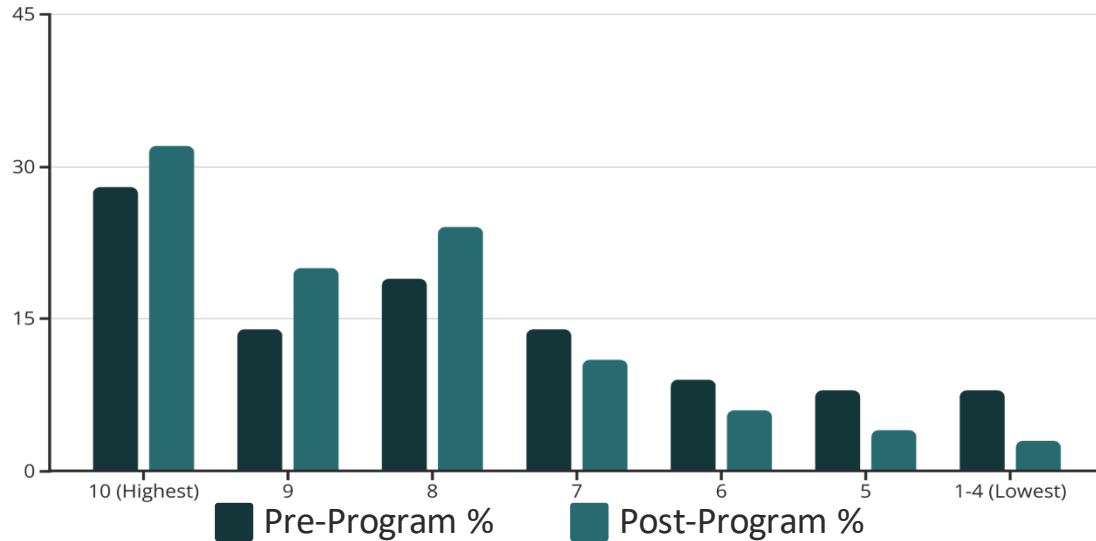
## Loneliness

Decreased from 2.22 to 2.19 ( $p < 0.001$ )

Participants reporting feeling lonely "often" declined from 7% to 5%, and those reporting "always" dropped from 3% to 2%.

All improvements were statistically significant and consistent with the intended impact of CDSME programs, showing meaningful changes in participants' health perceptions and psychosocial well-being.

# Self-Efficacy Distribution



## Key Findings on Self-Efficacy

- Significant shift toward higher confidence levels after program completion
- Percentage of participants with highest confidence (scores 8-10) increased from 61% to 76%
- Participants with low confidence (scores 1-4) decreased from 8% to 3%
- Self-efficacy improvements were consistent across demographic groups
- Higher self-efficacy correlates with better health outcomes and reduced healthcare utilization

Self-efficacy is a key mechanism through which CDSME promotes long-term health improvement, empowering individuals to take control of their health behaviors.

# Detailed Regression Results

## Factors Affecting General Health

- Program participation: +0.166 points ( $p < 0.001$ )
- Age: +0.005 points per year ( $p < 0.001$ )
- Education: +0.084 points per level ( $p < 0.001$ )
- Female: +0.043 points vs. male ( $p < 0.001$ )
- Disability count: -0.132 points per disability ( $p < 0.001$ )
- Chronic conditions: -0.087 points per condition ( $p < 0.001$ )

## Factors Affecting Self-Efficacy

- Program participation: +0.214 points ( $p < 0.001$ )
- Age: +0.006 points per year ( $p < 0.001$ )
- Education: +0.098 points per level ( $p < 0.001$ )
- Female: +0.080 points vs. male ( $p < 0.01$ )
- Disability count: -0.507 points per disability ( $p < 0.001$ )
- Chronic conditions: -0.102 points per condition ( $p < 0.001$ )

Multivariate regression models showed that program participation significantly improved outcomes even after controlling for demographic and health factors. In-person delivery formats showed better outcomes than virtual formats, and participants with more disabilities or chronic conditions showed lower baseline scores but still benefited from the program.

# ROI Calculation Methodology



## Quantify Improvements

Measure statistically significant changes in health outcomes (loneliness reduction of 0.04 points per participant)



## Apply Cost Values

Multiply improvements by literature-based healthcare cost estimates across three scenarios (low, medium, high)



## Calculate Net Benefit

Subtract total program costs (\$50.7M) from estimated healthcare savings to determine net economic benefit

This conservative approach focuses solely on mental health cost offsets related to loneliness reduction, likely understating the full economic value of CDSME programs.

# Program Costs Analysis

**\$50.7M**

## Total Funding

Federal grants awarded between  
2017-2024

**198K**

## Participants

Total individuals served by fall  
prevention programs

**\$254**

## Cost Per Participant

Average program cost per  
participant

The per-participant cost of \$254 aligns with previous implementation studies and represents a relatively modest investment compared to potential healthcare savings.



# Healthcare Cost Valuation

## Annual Mental Health Treatment Costs (2024 USD)

Lowest Estimate	\$2,797/year
Mean Estimate	\$5,681/year
Highest Estimate	\$7,445/year

Cost estimates derived from peer-reviewed literature on mental health treatment expenses, adjusted to 2024 dollars using GDP Price Index.



These cost benchmarks provide the foundation for translating CDSME health improvements into economic value, particularly for reductions in loneliness which is strongly linked to mental health service utilization.

# Economic Return on Investment

**\$254**

## Cost Per Participant

Based on \$50.7 million in federal grants serving 199,749 participants

**\$227**

## Average Savings

Per participant in annual mental healthcare costs (based on moderate scenario)

**\$121M**

## Total Estimated Savings

Across all participants (532,503) under moderate cost scenario

Scenario	Total Savings	Program Cost	Net Benefit
Conservative	\$59.6 million	\$50.7 million	\$8.9 million
Moderate	\$121.0 million	\$50.7 million	\$70.3 million
High	\$158.6 million	\$50.7 million	\$107.9 million

Note: These estimates likely understate the full economic value as they only account for mental health-related cost offsets (adjusted to 2024 USD).

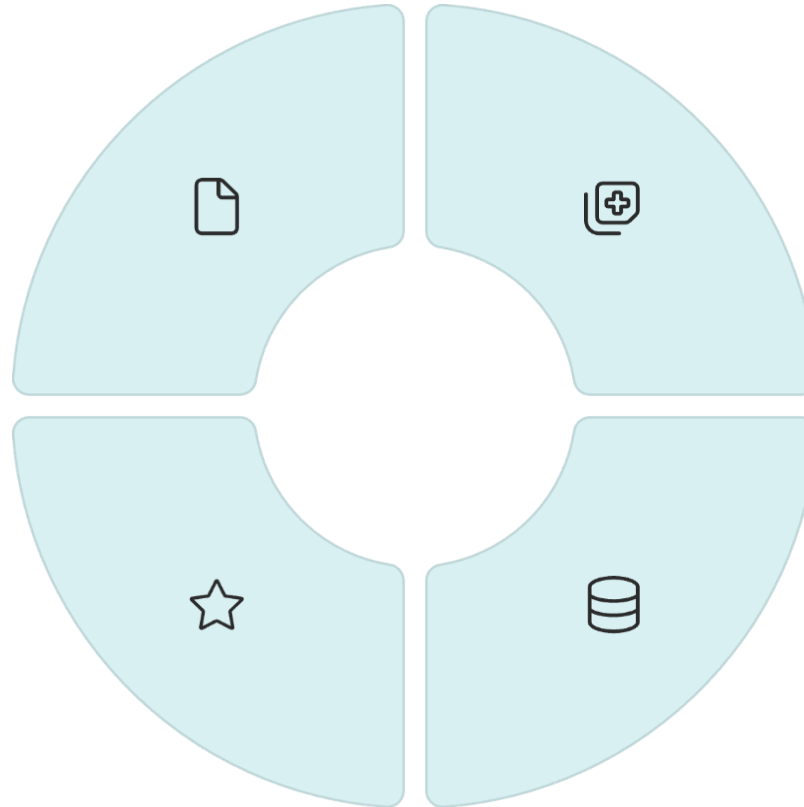
# Policy Implications

## Sustain Federal Funding

Expand support for CDSME programs under ACL's Evidence-Based Programs portfolio to improve health outcomes and curb preventable healthcare spending.

## Address Barriers

Expand access to in-person formats and address delivery barriers to enhance outcomes across vulnerable populations.



## Integrate with Healthcare

Include CDSME as a reimbursable intervention under Medicaid waivers, D-SNP models, and Medicare Advantage supplemental benefits.

## Strengthen Data Infrastructure

Enhance HAPID to capture healthcare utilization indicators and program costs for more comprehensive economic analyses.

# Limitations of ROI Analysis

## Incomplete Healthcare Utilization Data

HAPID database lacks direct measures of emergency room visits, hospitalizations, and other healthcare utilization outcomes that would provide a more comprehensive ROI picture

## Limited Cost Data

Analysis relied on aggregate federal funding allocations rather than detailed program-level expenditure data from grantees

## Conservative Approach

ROI calculations focused only on mental health cost offsets related to loneliness reduction, excluding potential savings from improved self-efficacy and general health

Despite these limitations, findings represent a conservative estimate of CDSME's value, understating the full economic and clinical impact of the program

# Conclusion: A Smart Investment in Healthy Aging

Evidence-based CDSME programs deliver meaningful health improvements and substantial economic returns. Participants experienced significant improvements in

- General health
- Self-efficacy
- Loneliness

CDSME programs represent a high-value, low-cost public health intervention with demonstrable benefits for individuals, communities, and federal health systems. As the U.S. population ages and chronic disease burden intensifies, investing in programs that build self-efficacy, improve health, and reduce costs is essential.



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