Framework to Conduct a Return on Investment Analysis

Prepared for Minnesota Independence College and Community (MICC)

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Contents

Figures

Introduction

Minnesota Independence College and Community (MICC) is a nonprofit which seeks to promote community integration, competitive employment, and person-centered planning for adults diagnosed with autism spectrum disorder (ASD) and other learning differences. The undergraduate program (UG) does this by placing young adults with ASD and learning differences in an alternative college setting designed to teach students independent living skills over the course of three years. The Community Living Program (CLP) is a life-long program that provides graduates and their families with regular communication, structured supports, and future planning guidance. Upon graduation, participants may continue receiving a host of baseline services and may obtain additional as-needed support. Services include transition guidance, apartment-living coaching, career support, and structured social activities with a familiar community of peers. CLP participants pay a monthly fee to receive baseline services around health and safety and can choose additional services as their needs require. Vocational rehabilitation (VR) support services are embedded in the undergraduate program and included among the baseline services received by CLP participants with additional training and job placement supports available to CLP participants as needed.

In this report, we put MICC's activities in a cost-benefit framework for defensibly measuring the return on investment (ROI) and to assess its evaluative potential. The ROI framework is the first step in the process of measuring MICC's ROI. We start the analysis with MICC's logic model: a graphic representation of how MICC uses available resources to achieve its goals. The logic model summarizes the costs, activities, outputs, and outcomes of MICC programs. We use this information to develop the general methods for comparing the benefits and costs of MICC's activities. We also identify the data needed to demonstrate the economic returns of investments made in MICC programs and propose several alternative research approaches.

This framework provides MICC's leadership additional information about the economic consequences of its operations. It also facilitates future decisions about how this economic impact can be measured and portrayed to stakeholders and the broader community.

Logic model

A logic model is a graphic description of how MICC's program activities result in changes for participants. The logic model describes the general functions and goals of MICC (Figure 1). Its main focus is on the aspects of the program that are relevant for conducting the ROI. We use dollar signs to denote the inputs and outcomes with direct application in the ROI.

The model starts with inputs used by MICC to provide its services. These inputs include: direct operational resources and indirect costs. Direct costs include staff, office space, and utility expenses. There are also indirect costs such as pro-bono services, donations, and/or volunteer work. The monetary value of indirect costs and inputs needs to be estimated using a mix of program data, economic reasoning, and computational assumptions.

MICC uses these resources to perform program activities (shown in column 2 in Figure 1). These activities are part of MICC's integrated approach to help young adults diagnosed with ASD achieve the program's desired outcomes (shown in the fourth column). Outputs are measurable dimensions of the organization's activities, such as the number of participants and the amount of services provided. Outcomes are a measure of the impact of the organization on the population it serves and society. They are a measure of how productive the organization is.

1. MICC's logic model

Costs	Activities	Outputs	Outcomes	Data sources/notes
Staff ($) UG staff CLP staff VR staff Admin staff	Independent life and social skills instruction and accompanying administrative supports	# of UG students recruited, enrolled, and retained # of CLP participants recruited, enrolled, and retained # of hours of in-class, community, workplace, and workplace-simulated instruction supporting development of the six core competencies # of hours of core CLP supports provided	Increased awareness of MICC Increased referrals to MICC (Participant outcomes are listed on the next page with participant costs)	Annual financial statements and budgets MICC's records Participant survey
Office space and utility expenses ($) Classrooms Vocational training labs UG student accommodations CLP participant accommodations Admin staff offices	Provide a campus featuring an apartment-living setting located in a vibrant urban community allowing for 24-hour teaching and access to competitive employment, public transportation, and social opportunities	# of student living accommodations # of classroom seats # of admin offices # of competitive employment opportunities within 1 mi. # of public transportation stops within 1 mi. # of accessible community amenities within 1 mi.	Maintain capacity to provide in-class, apartment, community, workplace, and workplace-simulated instruction Increased comprehensive and integrated supports Personal care assistance cost savings ($)	Annual financial statements and budget Minnesota Department of Health (MDH)
State and foundational grants and individual contributions ($)	Supply financial supports including waivers, deferments, and scholarships	Contributions Per student By program	Reduced financial barrier to UG enrollment and CLP membership Cost of attendance underwriting ($)	Annual financial statements and budget Participant survey
Volunteer time ($)	In-kind donations, mentorships, exclusive internships, transportation	# of volunteer hours Value in dollars of goods and services	Increased community engagement	Participant survey Volunteer survey

1. MICC's logic model (continued)

Costs	Activities	Outputs	Outcomes	Data sources/notes
UG Tuition ($)	Real Skills for Real Life™ curriculum (3 yrs)	# of UG student completions # of UG students employed FT PT (reason PT) # of UG students transitioning to CLP	**Activities for daily living** Personal care assistance cost savings ($) **Medication management** Emergency room visits, hospitalizations, and mental health admissions costs avoided ($) Personal care assistance cost savings ($) **Healthy living** Health care costs savings ($) **Personal support** Expense of providing higher needs support ($) **Work readiness & employment** Earnings ($) Spending ($) Investments ($)	Annual financial statements and budget Participant survey Minnesota Department of Health (DHS) Centers for Medicare & Medicaid Services (CMS) Centers for Disease Control (CDC) Rehabilitation Service Administration (RSA-911) Employer survey Current literature
UG Room & Board ($)	Apartment-living setting, access to competitive employment, public transportation, groceries, and utilities	# of UG students adequately supported, engaged, and integrated in MICC campus community	**Community** Peer supports ($)	Annual financial statements and budget Participant survey
Cell phone ($)	Students are required to have a cell phone while enrolled in the program in order to maintain communication with program staff at all times	# of UGs with a working cell phone	Increased competency in independence with **personal supports**	Annual financial statements and budget Participant survey
UG College-related expenses ($)	Spending money for weekend activities, buying laundry detergent, toothpaste, etc.	# of UGs with adequate cash-on-hand for misc. spending	Increased competency in independence with **activities in daily living**	Annual financial statements and budget Participant survey

1. MICC's logic model (continued)

Costs	Activities	Outputs	Outcomes	Data sources/notes
CLP membership fee ($)	Transition guidance, apartment-living coaching, career support, and structured social activities	# of CLP participants enrolled	Increased competency in independence with **activities in daily living** Increased competency in independence with **work readiness & employment** Increased competency in independence with **personal supports** Increased competency in independence with **healthy living** Increased competency in independence living in **community**	Annual financial statements and budget Participant survey
Fee-for-service ($) CLP specialist Social engagement Career supports Independent living Travel	As-needed meetings with participants and their families to adjust services, review long-term goals and progress, and advise families on future planning options Support receiving county services, personal scheduling, job search, retention, and skill development Meal planning, nutrition and cooking coaching, apartment cleaning, transportation assistance	# of CLP participants receiving fee-for-service supports	Increased competency in independence with **activities in daily living** Increased competency in independence with **work readiness & employment** Increased competency in independence with **personal supports** Increased competency in independence with **healthy living** Increased competency in independence living in **community**	Annual financial statements and budget Participant survey
Health Insurance ($)	Requisite indemnification against adverse health outcomes	# of CLP participants with adequate health insurance	Increased competency in independence with **healthy living** Increased competency in independence **medication management**	Minnesota Department of Health (DHS) Centers for Medicare & Medicaid Services (CMS)

ROI framework

To defensibly measure the return on investment (ROI) for MICC programs, we place the outcomes generated by program activities in a cost-benefit framework. We consider the costs and benefits from the perspective of participants, taxpayers, and society as a whole. In this framework, we identify the methods and data required to compute the net present value of a stream of benefits and costs that occur over time associated with the provision of MICC's programs.

Benefits and costs are then compared and a return on investment ratio is calculated (i.e., benefits divided by the cost). The ROI ratio is expressed as the dollar amount that stakeholders get in return for every dollar invested in the program. The potential costs and benefits that could be included in this ROI are:

Costs

- Operational costs
- Program participation costs: UG and CLP membership
- Cost of volunteer services

Benefits

- Increased labor productivity for participants and staff
- Reduced expense of higher needs care
- Reduced health care costs
- Avoided costs from incidence response (e.g., emergency room visits, hospitalizations, mental health admissions due to social isolation or maladaptive behaviors)
- Economic value of having independent, self-sufficient adults diagnosed with ASD and other learning differences living whole, productive lives

Proposed methods and empirical strategy

The general model used to compute the ROI consists of comparing the benefits and costs associated with MICC's programs. Most of these benefits occur over time as participants experience improvements in the expected outcomes. Similarly, the work and investment required to produce these benefits extends over months and, sometimes, years. Therefore, the ROI computation needs to account for monetary gains and disbursements occurring over time. To achieve this, we express future costs and benefits as if they were valued today by discounting future streams of benefits and costs using a discount rate (usually between 2 to 4 percent). We also account for changes in prices due to inflation by expressing all monetary values in constant dollars of a representative year. The general model is summarized as:

$$ROI = \frac{Sum\ of\ net\ present\ value\ of\ all\ benefits}{Sum\ of\ net\ present\ value\ of\ all\ costs}$$

Each of the economic benefits identified in the logic model requires a specific computational procedure. We include economic outcomes in the ROI framework that we can reasonably attribute to the actions of the program, ruling out other causes such as chance, demographics, self-selection, etc. In other words, to show the program is effective, we follow standard scientific methods that vary depending on the availability of data and resources to conduct the research. In this report, we propose general research methods based on the information provided by MICC about the type and quality of data collected on participants, as well as potential external sources of information that could be used. As the research takes place, and we are able to verify the form and quality of the available data, we will refine the research methods used.

Another aspect to be addressed is the monetization of non-monetary outcomes. Some outcomes are already defined and expressed in monetary values, for example, the earnings of participants from postsecondary employment. For these outcomes, we focus on estimating the change in the amount of dollars associated with participation in the program. However, outcomes such as savings in health care costs are derived from changes in the number of visits to the emergency room or to the doctor's office, or the number of hospitalizations. These are intermediate outcomes for which we need to find a monetary value. For instance, what is the average cost of a visit to the emergency room for a typical MICC participant? Note that we will also need the average cost of visits of comparable individuals to compute the net difference attributable to the program. This logic is followed for all outcomes for which indirect monetary values are required.

The following table summarizes the general procedures and data sources for all outcomes identified in the logic model that are candidates to be included in the final ROI.

2. ROI framework summary by outcomes

Direct impact outcome	Indirect impact outcome	Indicators	Potential data sources	Tentative methodology
Activities for daily living	**Personal care assistance cost savings ($)** **Increased staff productivity to support higher care needs ($)**	Number of hours of personal care support services used by participants per month Average monthly payment for personal care assistance services	Participant survey MICC's records Secondary data from: - Minnesota Department of Human Services (DHS) - Centers for Medicare & Medicaid Services (CMS)	We will compute the expected cost of obtaining personal care assistance by combining (multiplying) the number of hours of personal care support per month by the average monthly payment for personal care assistance services
Healthy living	**Expected savings from reduced health care costs ($)** **Increased staff productivity to support higher care needs ($)**	# of outpatient visits for: - Primary care - Mental health - Laboratory services # of hospitalizations for: - Ambulatory care sensitive diagnoses	Participant survey Secondary data from: - Minnesota Department of Health (DHS) - Centers for Medicare & Medicaid Services (CMS) - Centers for Disease Control (CDC) - Rehabilitation Service Administration (RSA-911) - Current literature	We will compute the expected savings in health care cost per participant by combining (multiplying) the estimated change in health care costs associated with adults with ASD, the estimated effect of ASD diagnosis on health of chronic disease patients, and the cost of care of chronic disease, and the number of outpatient visits and hospitalizations per participant in a representative year. We will include other adjustment factors such as inflation, discount rate, and a potential baseline value (e.g., population characteristics).

2. ROI framework summary by outcomes (continued)

Direct impact outcome	Indirect impact outcome	Indicators	Potential data sources	Tentative methodology
Medication management	**Expected value of one avoided emergency room visit, hospitalization, or mental health admission ($)** **Personal care assistance cost savings ($)** **Increased staff productivity to support higher care needs ($)**	Average cost of emergency room visit for adults with ASD Number of hours of personal care assistance used by participants per month Average monthly payment for personal care assistance services	MICC's records Participant survey Secondary data from: - Minnesota Department of Human Services (DHS) - Centers for Medicare & Medicaid Services (CMS) - Current literature	We compute or take from the literature the expected value of one avoided emergency room visit, hospitalization, or mental health admission by combining (multiplying) the estimated costs of emergency room visits, hospitalization, and/or mental health admissions for adults with ASD by the number of emergency room visits, hospitalizations, and/or mental health admissions by participants in a representative year. We will compute the expected cost of obtaining personal care assistance by combining (multiplying) the number of hours of personal care support per month by the average monthly payment for personal care assistance services
Personal support	**Reduced expense of providing higher needs care ($)** **Increased staff productivity to support higher care needs ($)**	Value in dollars of goods and services: - Certified financial planner - Professional guardian or conservator - Special needs trust attorney - Trustee - Nurse	Participant survey MICC's records Secondary data from: - Public records data - Current literature	We compute or take from the literature the reduced expense of providing higher needs care by combining (multiplying) the value in dollars of certified financial planning, professional guardianship or conservatorship services, retaining a special needs trust attorney, obtaining a special needs trustee, and hiring a nurse by the number of participants requiring total assistance with money management, personal disability awareness, advocating for and accessing supports, maintaining personal relationships, and a personal network of qualified professionals to meet unmet needs.

2. ROI framework summary by outcomes (continued)

Direct impact outcome	Indirect impact outcome	Indicators	Potential data sources	Tentative methodology
Community	**Economic value of activities ($)**	Value of time devoted to productive activity: - Volunteer hours - Peer support hours	Participant survey MICC's records	We would compute this outcome using data from a client survey (additional study costs)
Work readiness & employment	**Spending ($)** - Public transportation - Groceries - Utilities - Cell phone - Weekend activities - Travel **Investments ($)** - Savings	Average weekly wages Value in dollars of goods and services	Participant survey Survey of employers MICC's records Secondary data from: Current literature	We would compute this outcome using data from a client survey (additional study costs)

3. ROI framework summary by cost

Costs	Indicators	Potential data sources	Tentative methodology
Operational costs All operational expenses incurred in the specified period of analysis (usually a representative year)	Total program revenue and expenses (dollars)	MICC's annual budget or financial statements	Program costs are presented in total and per participant terms. The per participant costs are compared to per participant benefits. Per participant costs are computed by dividing total costs (Operational costs + other costs) by the adjusted number of participants. The adjusted number of participants refers to individuals who received a substantial amount of support from MICC during the period of study.
Cost of volunteer services The value of hours of volunteer work during the period of study. Usually not captured in the annual budget	Number of hours	MICC's records	Hourly rate times the number of hours of services provided. Hourly rate refers to average or median wage rate for the type of work performed.
Cost of other intangible resources For durable assets, we use a prorated annual value adjusted by depreciation and inflation	Value in dollars of goods and services	MICC's records	Calculated by applying an applicable dollar value to the resource. Indirect methods are used since there may not be a direct price to value this type of resource. Standard financial methods used to compute depreciations and inflation adjustments.

Figure 4 contains a summary of the initial literature review of expected outcomes and parameters. The information from this review will be combined with other secondary data and program data to compute economic benefits of identified outcomes. The final list of outcomes included in the ROI estimation will be determined by the availability of information and parameters. As we progress in the research, more data and articles will be collected and more benefits could be added to the ROI.

4. Summary of outcomes from literature

Author	Intervention/ Independent variable	Outcome	Effect size[a]
(Taylor, Smith, & Mailick, 2014)	Activities for daily living	Independence in activities of daily living	21 (on a scale from 0 to 34)
(Tyler, Schramm, Karafa, Tang, & Jain, 2011)	Chronic disease risk prevalence	Obesity	34.9%
		Hyperlipidemia	31.5%
		Hypertension	19.4%
(Vohra, Madhavan, & Sambamoorthi, 2017)	Health care utilization costs	Average annual outpatient office visits	$4,375
		Emergency room	$15,929
		Prescription drug use	$6,067
		Total health care expenditures	$13,700
(Ganz, 2007)	Incremental societal costs of autism (present value)	Lifetime per capita incremental societal costs	$3.2 million
(Eaves & Ho, 2008)	Parental satisfaction	Quality of life (ASD child's)	5.2 (on a scale from 1 to 10)
(Cimera, Wehman, West, & Burgess, 2012)	Sheltered workshop for supported employment (adults with ASD vs adults with ASD)	Rate of employment	45.6%
		Average weekly wages	$129
		Hours worked per week	23.5
		Cost of service (for those who achieved employment)	$8,364

[a] The first five studies compare outcomes of adults with ASD to outcomes of the general population rather than evaluate the impact of an intervention. By contrast, Cimera *et. al.* show effect sizes resulting from a comparison of outcomes between two groups of adults with ASD following participation in a programmatic intervention.

Perspective

The perspective of the ROI refers to who is incurring the costs and who is receiving the benefits associated with the outcomes of the intervention. Figure 5 contains the recipients of costs (–) and benefits (+) for each outcome.

5. Costs and benefits recipients

Outcome	Society	Participants	Taxpayers	Other stakeholders/ agent
Activities for daily living	+	+	+	+/–
Personal care assistance cost savings In general, fewer personal care assistance services saves money for participants and taxpayers (for the portion paid by public insurance). Some providers will experience a reduction in revenues, while society is likely to accrue a net gain.				
Increased staff productivity Participants' caregivers receive the net benefit from increased income, taxpayers from increased tax receipts as a result of the increased income, and employers (other agents in society) accrue benefits from increased productivity.	+		+	+
Healthy living	+	+	+	
Expected savings from reduced health care costs Health care costs are shared by participants and taxpayers.				
Medication management	+	+	+	+/–
Expected value of avoided emergency room visit, hospitalization, or mental health admission cost In general, fewer emergency room visits, hospitalizations, and mental health admissions saves money for participants and taxpayers (for the portion paid by public insurance). Some providers will experience a reduction in revenues, while society is likely to accrue a net gain.				
Personal support	+	+	+	
Reduced expense of providing higher needs care In general, nursing home and other higher needs care costs are shared by participants and taxpayers.				

5. Costs and benefits recipients (continued)

Outcome	Society	Participants	Taxpayers	Other stakeholders/ agent
Work readiness & employment	+	+/–		–
Average weekly wages				
Spending In general, we consider the economic impacts of consumer spending by participants a benefit to society for two reasons; 1) because participants could save (not spend) their money, and 2) because every dollar of spending will in turn become a dollar of income for workers in the sectors where participant spending occurs. (e.g., bus fares → public transit revenues → driver wages)				
Investment In general, we consider the economic impacts of investing (saving) by participants a benefit to society for two reasons; 1) because a non-trivial proportion of every dollar of savings (invested) becomes available to potential borrowers, and 2) because participants could have spent their money consuming goods and services.				
Community	–			–
Cost of volunteer services In general, we consider volunteer work as a cost to society since these individuals could have used their time to produce other goods or services or to simply enjoy their time elsewhere. We do not consider the satisfaction that volunteers receive when providing their time. Also, we value volunteers' time by the type of work they do for MICC and not by the value of their time assessed at their level of training or experience (e.g., we do not value an hour of a bank manager's time helping with grocery shopping at a bank manager's wage rate).				
Operational costs These include resources from public and private funders.	–		–	–
Other resources	–			–

Research designs, alternatives, and considerations

Option 1: ROI from existing program data

Design

- An ROI will be computed using outcomes that can be measured using existing data from MICC's records as they currently exist (e.g., electronic and physical records). The ROI will include benefits from avoided long-term personal care assistance and higher needs care costs (e.g., personal care assistant, certified financial planner, special needs trust attorney, professional guardian or conservator, nurse and/or nursing home).
- Some prospective benefits may be added if sufficient evidence is found after a literature review is completed. For example, savings from improved health associated with greater social initiation and participation and other benefits associated with maintaining independent, self-sufficient, whole lives.
- Program costs will be computed from financial records and other program data as described in Figure 2.

Deliverables

- Full report (business style)
- One-page summary or infographic
- One presentation (Twin Cities area)

Time frame

- 4-6 months from contract start and contingent on receiving data from MICC

Estimate

- $15,000

Option 2: ROI from program and survey data

Design

- An ROI will be computed using outcomes that can be measured using existing data from MICC's records as they currently exist (as in Option 1).
- In addition, we will work with MICC to develop a data collection strategy to collect additional information or improve the existing data on outcomes. The improved data collection strategy may include surveys, designed intake and follow-up forms, and consistent data records.
- This is a medium to long-term project since it will require time to design and collect new data.

Deliverables

- Full report (business style)
- One-page summary or infographic
- One presentation (Twin Cities area)
- Survey design
- Survey implementation (at an additional fee)
- Data collection consultation

Time frame

- 6 months to 2 years from contract start depending on research design and contingent on receiving data from MICC

Estimate

- $25,000 - $35,000

Option 3: ROI from existing program data, survey data, and public records data

Design

- An ROI will be computed using outcomes that can be measured using existing data from MICC's records as they currently exist (as in Option 1).
- In addition, we will purchase individual records data from government agencies on payments related to Medicaid/Medicare claims, public assistance, financial aids, and other claims. To obtain these records, Wilder Research and MICC will be required to follow a formal process to comply with the state's privacy and confidentiality regulations. Survey data may also be required.
- This option will allow us to compute the actual changes in health care costs and the savings associated with participating in MICC programs.

Deliverables

- Full report (business style)
- One-page summary or infographic
- One presentation (Twin Cities area)
- Data purchase consultation
- Purchased individual records data storage and analysis

Time frame

- 9-18 months from contract start and contingent on receiving data from MICC and government agencies.

Estimate

- $35,000 + data acquisition costs

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