



Return on Investment

Mental Health Promotion and Mental Illness Prevention



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To help improve Canada's health system and the well-being of Canadians by being a leading source of unbiased, credible and comparable information that will enable health leaders to make better-informed decisions.

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Mental Health Promotion and Mental Illness Prevention

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The views expressed in this report are those of the authors and do not necessarily represent the views of the Canadian Institute for Health Information.

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Key Messages

- The evidence suggests that there is a return on investment (ROI) for some mental health promotion/illness prevention interventions.
- There are a number of high-quality systematic reviews and meta-analyses on the topics of ROI for mental health promotion and mental illness prevention; however, the number of randomized trials is low and there is an overall lack of evidence in Canada.
- There is more evidence for illness prevention activities, and most studies were found at the individual/organizational levels.
- The weakest evidence was from the workplace sector, due to a lack of high-quality research studies.
- The strongest ROI evidence was for children/adolescents in the areas of reducing conduct disorders and depression, parenting and anti-bullying/-stigma programs, suicide awareness and prevention, health promotion in schools and primary health care screening for depression and alcohol misuse.
- There is a lack of standard definitions in the areas of mental health, mental health promotion, mental illness prevention and economic analysis. A common lexicon that crosses sectors is required.
- Expenditure information on mental health is research-based and likely understated. There is a lack of expenditure information on mental health promotion/mental illness prevention.
- Returns from mental health promotion/illness prevention typically show up in a different sector from the one in which the investments are made—a “mental health–in–all–policies” approach should be considered.
- By 2030, mental health issues will be the leading cause of disability in Canada, but Canada appears to be a low spender on mental health.
- There is mounting evidence that the growing cost to society of mental illness is not sustainable—the total cost to society could be greater than the entire cost of the health care system in Canada.
- The solution lies in promoting mental health and preventing mental illness—we need to prevent more people from breaking down—and a long-range view is required.

Executive Summary

In 2007–2008, Canada spent an estimated \$14.3 billion in public expenditures for mental health services and supports.¹ According to a 2009 report by the Mood Disorders Society of Canada, costs for disability due to depression are fastest-growing disability costs for Canadian employers.² The Centre for Mental Health in the Workplace claims that the economic cost of mental illnesses is equivalent to 20% of corporate profits.³ Furthermore, evidence suggests that, by 2030, mental illness will be the leading cause of disability in high-income countries;⁴ however, according to a 2010 Institute of Health Economics report, Canadian governments spend less than most developed countries on mental health.¹

Recognizing the critical importance of mental health, the Canadian Population Health Initiative (CPHI), a division of the Canadian Institute for Health Information (CIHI), published *Exploring Positive Mental Health* in 2009. By doing so, CPHI took an important step in defining, measuring and promoting mental health. As a follow-up, the present study, funded by CPHI, reviews the body of evidence associated with the return on investment (ROI)ⁱ of mental health promotion and mental illness prevention.ⁱⁱ The specific research question being addressed is as follows:

“What are the extent, range and nature of research activity in the area of economic analysis of mental health promotion and mental illness prevention?”

Both peer-reviewed (2001 to 2011) and grey literature sources were explored. For peer-reviewed articles, the primary search engines were Medline, PsycInfo, Econlit, Web of Science, ProQuest Research Library, Google, Google Scholar, NHS EED, Cochrane Library, Campbell Collaboration and ERIC. Grey literature sources focused on reports and studies from Canadian, American, Australian and United Kingdom organizations. A snowball survey and electronic survey provided a basis for the initial direction and approach to the grey literature. It should be noted that this was not a systematic review.

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- i. Return on investment is the benefit of an intervention in relation to its costs (typically net benefits divided by net costs multiplied by 100%). A glossary of terms can be found at the end of this document.
 - ii. For the purpose of this report, we distinguish between promoting positive mental health and preventing mental illness. This is similar to the approach described by Keyes,⁵ who argued that measures of mental illness and mental health are two distinct but correlated continuums in a population.

The review shows that several systematic reviews and/or meta-analyses make the case for investing in mental health promotion and mental illness prevention, although the number of randomized controlled trials in each area is low. This report shows evidence of this finding for the health, education and workplace sectors and, to a lesser extent, the criminal justice and social services sectors, recognizing that there are considerable overlaps among these categories and studies.

Twelve higher-quality economic analyses of mental health promotion/illness prevention are presented in table format for the health sector in such areas as postnatal depression, depression, early psychosis, suicide awareness and alcohol misuse. Another 12 studies are presented in a similar format for the education sector, ranging from parenting programs and school-based interventions for conduct disorders, anti-stigma campaigns and universal mental health promotion to anti-bullying programs, alcohol misuse and suicide. An additional six studies on the workplace sector are presented, and a summary of what was found in the criminal justice and social services sectors is provided.

Five themes emerged from the research:

- **Existing evidence:** The current research evidence is suggestive of ROI for some interventions. There are a number of high-quality systematic reviews and meta-analyses, although the number of randomized trials in each area was low and there is an overall lack of evidence for Canada. More evidence appears for illness prevention activities, and most studies were found at the individual/organizational level. Due to the difficulties associated with economic analysis, it was challenging to make clear comparisons across studies and samples. The weakest evidence for ROI in mental health promotion/illness prevention came from the workplace or private sector due to a general lack of high-quality research studies.
- **Areas with potential:** The strongest evidence for ROI is for children and adolescents in terms of reducing conduct disorders and depression, parenting and anti-bullying/-stigma programs, suicide awareness and prevention, health promotion in schools and primary health care screening for depression and alcohol misuse.
- **Definitions and data measurement challenges:** There is a lack of standard definitions in the areas of mental health, mental health promotion/illness prevention and ROI/economic analysis. A common lexicon that crosses sectors (health, education, criminal justice, social services and workplace) is vital when working in the area of mental health promotion/illness prevention. As well, data and measurement issues are not easily resolved. No expenditure information on investments in mental health promotion/mental illness prevention in Canada could be uncovered at this time, and the data on mental health expenditures is research-based. Data that crosses sectors is often difficult to integrate and compare.

- **“Mental health–in-all-policies” approach:** The review demonstrates that one of the unique challenges with ROI studies in mental health promotion/illness prevention is that, to a large extent, the returns (economic or otherwise) typically show up in a sector other than the one in which the initial investments are made. Until policies/incentives and accounting/data systems are developed and then linked horizontally across sectors, progress in the area of mental health promotion/illness prevention will depend on the goodwill of sectors to cooperate and communicate. Policy development might be improved through a “mental health–in-all-policies” approach that consistently and systematically crosses sectors, similar to that being implemented in the U.K.⁶
- **Sustainability:** If the estimates in Ireland and Wales hold true in Canada, the current cost of mental illness is approximately \$192 billion—the amount spent on the entire health care system in Canada.⁷ Current cost estimates for mental illness in Canada lack a full-cost accounting approach and are likely understated. There is mounting evidence that the growing cost to society of mental illness is not sustainable. One solution lies in promoting mental health and preventing mental illness.

A significant amount of work is emerging on the effectiveness and economics of mental health promotion and mental illness prevention interventions, especially in improving quality of life. The findings show that a long-range view is required—one that weaves through, among and across the various sectors.

Introduction

“Mental health is a state of well-being in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully and is able to make a contribution to his or her community.”⁸

Mental health (especially depression) is one of six major chronic diseases in Canada, with an estimated economic burden of \$51 billion in 2003.⁹ One-third of hospital stays in Canada are due to mental disorders.¹⁰ Evidence suggests that by 2030, mental illness will be the leading cause of disability in high-income countries.⁴ However, according to a 2010 Institute of Health Economics report, Canada spends less than most developed countries in terms of government funding for mental health, at 7.2% (compared with 6.4% in Australia and 11.0% in Sweden and New Zealand).¹

Disability claims are high for mental disorders; the most recent figures show that 79% of long-term disability claims and 75% of short-term disability claims are for mental health.¹⁰ Figures show that the private sector spends somewhere between \$180 billion and \$300 billion on short-term disability benefits for mental illness and \$135 billion for long-term disability.¹ According to a 2009 report by the Mood Disorders Society of Canada, disability costs for depression are the fastest-growing disability costs for Canadian employers.² The Centre for Mental Health in the Workplace claims that the economic cost of mental illnesses is equivalent to 20% of corporate profits.³ The Global Business and Economic Roundtable on Addiction and Mental Health believes that 10% of general drug plan costs are for mental health drugs and more than 21% of all drug claims are for the treatment of mental illnesses.¹¹

The Canadian Population Health Initiative (CPHI), a division of the Canadian Institute for Health Information (CIHI), recognizes these facts and, through its *Improving the Health of Canadians 2007 to 2009* report series on mental health,ⁱⁱⁱ embarked on an important initiative to summarize evidence about what works at a policy and program level to reduce inequities and improve the health of individuals and communities. At this time, CPHI requires a summary of research into the return on investment (ROI) of mental health promotion and mental illness prevention.^{iv}

iii. The series includes the 2009 report *Exploring Positive Mental Health*.

iv. While this study focuses on economic analysis, it is important to note that economics, while a driver of mental health, cannot replace important interpersonal relationships.

Mental health promotion interventions aim to achieve good mental health and wellness by reducing barriers through an emphasis on the positive aspects and determinants of mental health.¹² Promotion interventions focus on persistently healthy and resilient mood¹³ and often create supportive environments or develop personal skills; examples include parenting programs, anti-bullying programs for children and workplace stress initiatives. On the other hand, **mental illness prevention** interventions occur before the onset of a clinical episode of a disorder; an example is postpartum depression screening for women.¹³ Both of these terms are often used interchangeably, but they are distinctive with some overlap.⁵ Friedli and Parsonage noted that “making the case for promoting positive mental health involves demonstrating that these outcomes are not just the result of the absence of mental illness, but are due, wholly or in some degree, to aspects of positive mental health.”¹⁴

ROI helps identify interventions or programs that have the greatest potential to improve mental health and wellness in relation to their costs. Closely aligned with this concept is cost–benefit analysis, where benefits and costs are translated into dollar values; when the benefits are subtracted from the costs, the result is the ROI, which provides one overall outcome of the particular program or intervention being analyzed.¹⁵ For example, employee assistance programs, some of which have a focus on health promotion, have shown ROIs of \$2 to \$4 in savings for each dollar invested.¹⁶ In 2005, Goetzel et al. looked at health promotion programs for chronic diseases and found an ROI range of \$0.71 for diabetes to \$2.78 for congestive heart failure; however, Goetzel also found that depression programs cost more than the dollars saved in medical expenses (although dollars are saved when productivity outcomes are considered).¹⁷ ROI can be a powerful tool for measuring the benefits and costs of an intervention. Accumulated economic evidence helps build the business case^v for investing in a particular mental health intervention.

v. A business case is a tool that provides detailed information about a project’s mandate or reasoning, as well as its implications and effects on processes, resources and outcomes. The benefits and costs of various decisions and changes are outlined in a business case, allowing better decisions to be made.

Methodology

To organize the thinking for this scoping review,^{18, vi} on ROI for mental health promotion and mental illness prevention, a logic model^{vii} was applied as a framework for analysis, using a basic input–output approach. A matrix (see Figure 1 for the three dimensions of the analysis: by sector, by intervention level and by inputs/outputs/outcomes of a logic model) was created to predict the effect of change in one part of a system on another part of the system. The data requirements of using this type of approach are enormous, and this review represents an initial step in capturing what currently exists in some of these dimensions, as outlined below.

This project focuses on mental wellness promotion and illness prevention services where activities promote, protect and improve mental health and recovery. But mental health promotion and prevention interventions can be targeted at various levels, from the population/community down to the individual, and they can take place in a variety of sectors, including health, education, criminal justice, social services and the workplace. These sectors can be further broken down into areas such as the following:

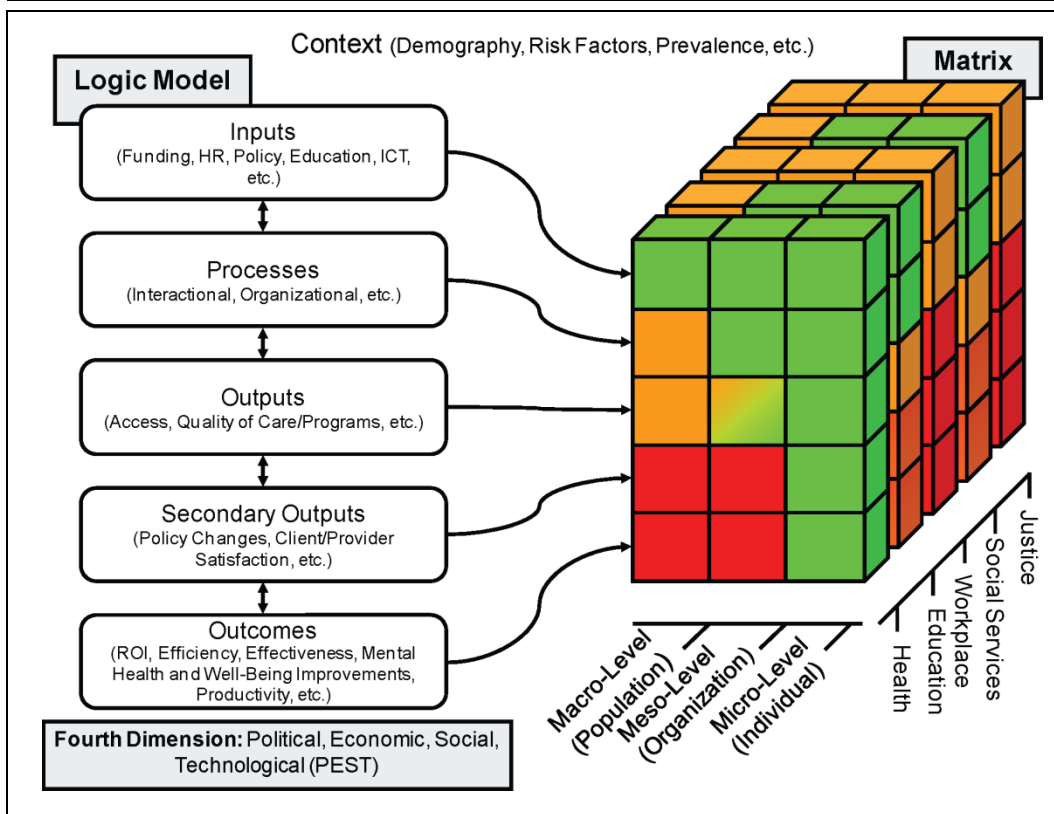
- **Education**—primary, secondary, post-secondary and continuing education.
- **Workplace**—employee assistance programs, disability, supervisory/administrative system variables, return-to-work programs, bullying/abuse and education.
- **Social services**—social support networks, disability payments, unemployment, housing and welfare.
- **Justice**—police, courts/review boards and corrections.

vi. Scoping reviews produce a profile of the existing literature in a topic area and identify areas where existing research is sparse. Unlike systematic reviews, which are driven by tightly focused questions and exclude studies on the basis of methodological and quality criteria, scoping reviews are more exploratory and aim to map the extent, range and nature of research activity in a field. In-depth assessment of the literature is beyond the aims of a scoping review.

vii. Logic models are commonly used evaluative techniques that provide a graphic representation of the “theory of action”—what is invested, what is done and what the outcomes are.

A fourth dimension also exists around the macro-environment in which the mental health system exists.^{viii} Some of the aspects of the political, economic, social and technological (PEST) analysis are considered within the logic model, although the focus of this review is the economic area. As well, there is the context in which mental health and well-being (including protective factors, such as belonging and self-efficacy) and, in this case, mental health promotion and prevention are delivered at a population level. This can be influenced by demography, risk factors, prevalence of mental disorders and social determinants. The data needs of this approach are substantial; however, this review will be narrowed by a sector analysis.

Figure 1: Cube/Logic Model for Return on Investment in Mental Health



viii. Recognizing that there is a debate in Canada on whether or not we have a mental health “system.”

As a preliminary step, the research team, in conjunction with its research advisory committee and CPHI, identified and approved a search protocol. Following this, the team conducted a quick-hit snowball survey^{ix} of 50 key experts from around the world to help refine and define the search, especially of the grey literature. As well, to further expand sources, an electronic survey of more than 200 mental health (and related-area) leaders was initiated. Two questions were asked: what are the best research articles into ROI for mental health promotion/mental illness prevention; and what organizations are best known for their work in this area?

By accessing both peer-reviewed and grey literature, studies were sought that were of higher-quality ranking and design, specifically randomized controlled studies (RCTs).^x Other studies (quasi-experimental studies, pre–post studies, etc.) were also included where reasonable conclusions could be drawn, due to the limited literature available in this area. Other health economic evaluations, beyond ROI (such as cost-effectiveness and cost-utility), were included as well. Where possible, systematic reviews and/or meta-analyses were used to better synthesize findings.

Search Protocol

The research question being reviewed is the following:

“What are the extent, range and nature of research activity in the area of economic analysis of mental health promotion and mental illness prevention?”

To answer this research question, multiple databases were searched to identify publications from 2001 to 2011, inclusive. All identified documents were examined; however, only those relevant for inclusion in the review are noted. Reference lists were hand-searched to identify additional sources.

For peer-reviewed articles, the primary search engines were Medline, PsycInfo, Econlit, Web of Science, ProQuest Research Library, Google, Google Scholar, NHS EED, Cochrane Library, Campbell Collaboration and ERIC. Research registers and selected journals were also hand-searched for additional pertinent articles, publications or studies. Given the breadth of the issue, as indicated in the methodology, it was proposed that the primary focus be the health, education and workplace sectors. However, a section on the criminal justice and social services sectors has been included as well, given the economic impact of mental health promotion and mental illness prevention activities in these areas.

ix. A snowball survey is typically done as a series of telephone interviews. Interviewees are found via referrals from the initial interviews that are done to gather initial information on the subject. However, to widen the number of experts, both telephone and email were used.

x. It should be noted that it is difficult to conduct RCTs at a systems level.

Keywords for the search, with synonyms and variations in spelling considered, were a combination of the following: “mental health” (“disorder,” “wellness” and “illness”), “promotion” (“health”), “healthy public policy,” “prevention,” “population health,” “recovery,” “support,” “workplace,” “occupational health,” “education,” “economic burden,” “cost/benefit,” “return on investment,” “social return on investment,” “cost analysis,” “opportunity cost,” “monetization,” “economic impact,” “cost of illness,” “effectiveness,” “utility,” “efficacy” and “evaluation.”

Given the large number of keywords for the search, thousands of abstracts arose; only those of most relevance for this endeavour were included (however, the bibliography lists other articles not discussed). Results for each database and search terms used are documented (Appendix A). It should be noted that this was not a systematic literature review.^{xi} In some cases, additional words were added to further break down terms such as “mental health” (to include conditions such as stress and depression, as well as positive states such as belonging, coping, resilience, thriving, optimism, emotional intelligence and well-being) or “workplace” (to include employment, sick time, productivity, employee satisfaction, etc.). Many articles provided an overview of the effectiveness of specific interventions for mental health promotion and mental illness prevention but did not contain any ROI (or other economic) data.

Grey literature sources focused on reports and studies from Canadian, American, Australian and United Kingdom organizations. The initial snowball survey and electronic survey also provided a basis for direction and approach for the grey literature search.

xi. According to the Cochrane Collaboration, a systematic review identifies, appraises, selects and synthesizes all high-quality research evidence that is relevant to a research question. It is typically of high-quality RCTs. In this case, other studies were included that were not RCTs. The researchers did not conduct an independent assessment of the methodologies used in each of the studies considered.

Results

The rationale for undertaking interventions that promote positive mental health and prevent mental illness seems to be intrinsically obvious, and an evidence base is accumulating on the positive effects of these programs, from improving mental health to reducing risks of mental disorders.^{19,20} Yet there remains minimal economic evidence to make the case that these interventions are of high value and to demonstrate where policy efforts should be focused. By better demonstrating the economic impacts of these programs through ROI analyses and other economic evaluation methods, the case can be made for investment and allow choices to be made among alternate interventions. This review is focused on ROI; however, other economic evaluation studies, such as on cost-effectiveness and cost-utility, are included to provide more, if indirect, evidence.

Friedli and Parsonage outlined the many constraints present when undertaking cost-effectiveness studies for mental health promotion (which could also be applied to prevention and, generally, to mental health economic studies), including the following:²¹

- The definition of mental health is very broad.
- Benefits may not be seen until the longer term, making costs much easier to evaluate than benefits.
- Indirect benefits are hard to measure.
- There are other influences and confounding factors on mental health, such as socio-economics and chronic disease.

In evaluating costs for interventions, there is also considerable variation in the focus of studies, ranging from impact on health and social services, the economy and production to impact on the individual (such as health-related quality of life).

The literature review and e-survey showed that there are several systematic reviews and/or meta-analyses that make the case for investing in mental health promotion and mental illness prevention. A 2008 systematic review of mental health promotion and mental disorder prevention uncovered 14 economic evaluation studies that dealt with mental well-being or a mental disorder as an outcome and that targeted outcomes for common risk factors that are known to predict a future mental disorder, such as early intervention programs for children and youth.²² A 2009 report outlined an economic case for Wales to invest in mental health promotion and prevention and recommended the following as having the best value for money (best buys), based on given evidence:¹⁴

- Parenting and early years programs;
- Life-long learning programs, such as health promotion in schools and continuing education;
- Workplace interventions;

- Positive mental health programs, such as lifestyle and social support change; and
- Community interventions, from environmental improvements to bridge safety.

However, Friedli and Parsonage noted that for some of these interventions there was still a lack of substantial evidence.

Economic simulation modelling provides new insights into ROI, although it cannot replace the need for RCTs. In January 2011, Knapp, McDaid and Parsonage—using this type of approach—released comprehensive work on ROI in mental health promotion and mental illness prevention in commissioned work for the U.K.’s National Health Service (NHS).²³ Researchers used an economic modelling approach to provide evidence on ROI for 15 intervention areas for mental health promotion and prevention that ranged from health visiting for postnatal depression to debt service advice (see Table 1). These interventions were chosen because of the existence of stronger evidence of their effectiveness, and some potential interventions that were originally chosen were dropped because of lack of substantial data. The premise for this endeavour was that the NHS wanted to build a business case demonstrating the economic returns for specific interventions. Estimates for total ROI (short, medium and longer term across the NHS, other public sector and the non-public sector) for each of these interventions were modelled.^{xii} Higher total ROIs for all years were noted for school-based interventions to prevent conduct disorders, early detection and intervention for mental health problems, and suicide awareness programs for general practitioners (GPs).^{xiii} Higher positive rates of return, providing a better bang for the buck, were seen for interventions that have a broader range of impact, and the authors noted that many of the interventions are inexpensive to implement and can provide substantial economic payoffs in the long term. This work fed into the February 2011 U.K. NHS document *No Health Without Mental Health*, which outlines a new strategy for mental health that is cross-governmental and addresses people of all ages.⁶

xii. When looking at medium- to long-term ROI or cost-benefit analysis, results can be quite sensitive to assumptions made around discount rates.

xiii. Costs and economic pay-offs were measured in 2009 prices, and economic impacts arising in future years were converted to present values using a public-sector discount rate of 3.5% per year.

Table 1: Simulation Model Results for Total Returns on Investments for All Years: Economic Pay-Offs

Intervention	Total (£)
Prevention of conduct disorder through social and emotional learning programs	83.73
Suicide prevention through bridge safety barriers	54.45
Suicide training courses provided to all GPs	43.99
Early intervention in psychosis	17.97
School-based interventions to reduce bullying	14.35
Screening for alcohol misuse	11.75
Early detection of psychosis	10.27
Workplace health promotion programs	9.69
Early intervention for conduct disorder	7.89
Early diagnosis and treatment of depression at work	5.03
Debt advice services	3.55
Early intervention for medically unexplained symptoms	1.75
Health visitor interventions to reduce postnatal depression	0.80
Befriending for older adults	0.44
Early intervention for depression in diabetes	0.33

Note

The researchers believe that this data is conservative in estimating the economic benefits of improved mental health and that there were sometimes difficulties with assigning economic values to evidence-based impacts. ROI data is based on 2009 prices. Total payoff includes the NHS, other public sector and the non-public sector.

Source

M. Knapp, D. McDaid and M. Parsonage, eds., *Mental Health Promotion and Prevention: The Economic Case* (London, U.K.: Personal Social Services Research Unit, London School of Economics and Political Science, 2011): p. 39.

Further findings on ROI for mental health promotion and mental illness prevention are discussed below by sector, and evidence is provided by type of intervention. As stated earlier, given the different ways in which outcomes or outputs are measured and the various methodologies employed for economic analysis, it is difficult to undertake both inter- and intra-sector comparisons. When appropriate, non-monetary evidence is included to provide some insight into the impact on quality of life; however, the costs considered in the economic analysis are not provided. Systematic reviews and/or meta-analyses are referred to where possible.

Health

Interventions to improve mental health and well-being are being more extensively evaluated; however, evaluation tends to be at the organizational and individual levels of analysis, typically aimed at identified risk groups. For example, a 2007 Cochrane review of nine psychosocial and psychological interventions for postpartum depression showed that these interventions were effective in reducing symptoms; however, it also noted that the long-term benefits were unknown and that larger trials are still needed to demonstrate clearer evidence of intervention benefits.²⁴ Overall, there is a large body of evidence for the effectiveness of mental health promotion and mental illness prevention interventions for depression. Researchers are showing that the economic costs associated with minor depression are close to those of major depression.²⁵

A 2008 report from Ireland focused on making the economic case for the promotion of mental well-being and the prevention of mental health problems. These researchers conducted a systematic review of economic evaluations of mental health promotion and prevention interventions that addressed either mental well-being or mental disorders as an outcome; they uncovered a large amount of evidence on mental illness prevention, but not on promotion.²⁶ They surmised that this could be due to both a lack of tools to measure well-being and the focus of the health system on illness prevention rather than health promotion. In recent years, this trend has started to change, with studies showing that positive mental wellness can affect life expectancy and chronic disease; however, again, there is very little data on interventions that address well-being.²² The authors noted that there is mounting interest in better measuring well-being and that in the long term this will “help to clarify the relative contribution of social, economic and environmental determinants of mental health and better inform decisions about interventions.”¹⁴

Another earlier study by the same authors on mental health promotion supported the existence of minimal economic evidence in this area. It also noted the difficulties around measuring outcomes, as outcomes for mental health promotion are seen not just in terms of mental illness, but also in promoting positive mental health, such as improvements in self-esteem, hopefulness and social integration.²¹ These researchers noted some potential biases that may be occurring in economic evaluations, especially for types of interventions that are easier to evaluate.

Table 2 provides an overview of the economic evaluations that arose for the health sector. In addition to the studies discussed above, some work at a population level is emerging (although it is yet to be published); for example, in the Netherlands, ROI for e-health technologies for alcohol use disorders was modelled.²⁷ The effect of nutrition and exercise on positive mental health and chronic diseases has been shown to be linked; however, there is little economic evidence, especially on ROI.²⁸ This is changing, with organizations such as the

U.K.'s National Institute for Health and Clinical Excellence advocating for including the effectiveness of ongoing exercise referral schemes to promote physical activity in new research trials. Several researchers are undertaking RCTs on exercise schemes (such as the Welsh National Exercise Referral Scheme²⁹ and the Birmingham Exercise on Prescription Scheme³⁰). Results are pending on both the cost-effectiveness of these schemes and their impact on outcome measures such as anxiety and depression.

Table 2: Economic Studies for Mental Health Promotion and Mental Illness Prevention in the Health Sector

Source	Intervention	Impact
Bauer, Knapp and McDaid (2011) ²³	Health visiting and postnatal depression —Health visitors provided preventive screening and early interventions during a postnatal visit using a standardized tool.	Simulation model showed a total ROI of 0.80 for all years. The first year showed no cost savings due to costs associated with training staff and providing the intervention. When researchers assumed that depression remained after one year cost savings occurred, as treatment costs and productivity losses decreased. Their model found a significant improvement in quality of life for mothers, giving an overall positive net benefit and incremental cost-effectiveness ratio of £4,500 (CA\$7,090) per quality-adjusted life year (QALY).
Petrou et al. (2006) ³¹	Home visiting therapist for postnatal depression —Primary prevention for women identified as high risk was provided (women were randomly selected to receive routine care or the preventive intervention).	U.K. RCT found that women in the preventive intervention group were depressed for 2.21 months, whereas women in routine care were depressed for 2.70 months. Mean health and social costs were £2,397 (CA\$3,757) per mother in the preventive intervention group and £2,278 (CA\$3,575) per mother in the routine primary care group. Showed a 70% probability of cost-effectiveness if willingness to pay per depressive month avoided is \$1,800 or less.
Morrel et al. (2009) ³²	Home visits for postnatal depression —Health visitors provided preventive screening and early interventions in two groups: at-risk mothers and a control group.	U.K. RCT cost-effectiveness study found this psychological intervention to be cost-effective for the at-risk group. Found QALY values of £20,000 (CA\$32,000) to £30,000 (CA\$48,000), and the probability of being cost-effective was just more than 70%.
Wiggins et al. (2004) ³³	Preventive counselling for postnatal depression —Two alternative forms of postnatal support for mothers living in disadvantaged inner-city areas were offered.	U.K. RCT found little effectiveness for either intervention for the main outcomes of the study and no cost savings.

Table 2: Economic Studies for Mental Health Promotion and Mental Illness Prevention in the Health Sector (cont'd)

Source	Intervention	Impact
Romeo et al. (2011) ³⁴	Depression treatment in older people following hip surgery —Nurse-led intervention evaluated the cost-effectiveness of a psychological treatment for preventing depression versus a cognitive behavioural therapy (CBT) approach.	RCT showed a nurse-led intervention may be more cost-effective for the treatment of depression and that CBT does not seem to be a cost-effective option for preventing depression in the elderly. Over six weeks of prevention, there were no statistically significant differences between CBT and usual care in both costs and benefits. The incremental cost per unit of improvement was £1,800 (CA\$2,800).
van't Veer-Tazelaar et al. (2010) ³⁵	Intervention to prevent anxiety and depression for older people —Stepped-care intervention for depression and anxiety versus regular care was examined.	RCT showed a 50% decrease in 12-month incidence of depression and anxiety at €563 (CA\$765) per patient and €4,396 (CA\$5,934) per disorder-free year gained. Researchers undertook earlier work, including a 2009 meta-analysis of depression, showing that directing prevention to selected high-risk groups reduces incidence and is a more cost-effective approach. ^{36–39}
Smit et al. (2006) ⁴⁰	Preventing depression in primary care patients —Patients with sub-threshold depression had minimal-contact psychotherapy plus usual care, compared with a usual care-only group.	Netherlands RCT reduced the risk of major depression from 18% to 12%. Intervention found to have a 70% probability of being more cost-effective than usual care only. Showed 80% cost-effectiveness if willingness to pay was less than \$23,000.
Mihalopoulos et al. (2010) ⁴¹	Preventive interventions for depression —Two interventions were compared following screening for depression: brief psychological treatment based on bibliotherapy and more comprehensive group-based therapy.	Both Australian-based interventions offered value for money. The brief intervention had an incremental cost-effectiveness ratio (ICER) of AU\$8,600 (CA\$8,451) per disability-adjusted life year (DALY), and the group-based one had an ICER of AU\$20,000 (CA\$19,655) per DALY.
Lynch et al. (2005) ⁴²	CBT for preventing depression in teens —Usual care versus usual care plus 15 weeks of group CBT was provided.	U.S. RCT estimated incremental cost per depression-free day in the base-case analysis at \$10, or \$9,275 per QALY. Found this intervention to be cost-effective compared with other ones covered by insurance schemes.
Valenstein et al. (2001) ⁴³	Screening for depression in primary care —Self-administered questionnaire and provider assessment group were provided, compared with no screening.	U.S. meta-analysis of RCTs; cost-utility ratio showed costs of \$50,000 per QALY for annual screening, making it unfavourable compared with no screening. However, the study did indicate that one-time screening is cost-effective.

Table 2: Economic Studies for Mental Health Promotion and Mental Illness Prevention in the Health Sector (cont'd)

Source	Intervention	Impact
Valmaggia et al. (2009) ⁴⁴	Early intervention for people at risk of psychosis —Looked at cost-effectiveness of the Outreach and Support in South London program compared with usual care.	U.K. study showed that in the first year costs of the intervention were higher; however, after two years it became cost-effective, at £961 (CA\$1,520) less than the usual treatment.
McCrone, Park and Knapp (2011) ²³	Early detection for psychosis —Early specialist services that might include CBT, psychotropic medication and contact with psychiatrists versus usual treatment of GP and counsellor contacts were provided.	Simulation model assumed a success rate of 15 percentage points' improvement (35% to 20%). Total ROI of 10.27 for all years. Used many of the assumptions undertaken by Valmaggia et al. outlined above. ⁴⁴ Authors felt that further evidence was needed on other similar initiatives to build the case.
McDaid, Park and Bonin (2011) ²³	Suicide awareness training and intervention —Suicide prevention education for GPs was offered.	Simulation model assumed a total ROI of 44 for all years, but even after the first year a smaller cost savings was found. Intervention modelled seems to be very cost-effective. Suicide prevention was included, although suicide is not always the result of a mental disorder. Based on work done by Platt et al. ⁴⁵ on the Scottish national suicide prevention program, although the evaluation of the program was unable to identify value for money, as evidence of the effectiveness of individual interventions could not be determined at the time of the evaluation.
Smit (2011) ²⁷	Alcohol prevention program —Population-level approach for e-health technologies in alcohol use disorders is being applied in the Netherlands health system.	Netherlands study showed the use of this technology to be cost-effective, with an ROI of €1. ⁶² (CA\$2.20) in health-related value for every euro spent.
Aslam et al. (2011) ²³	Screening and brief intervention in primary care for alcohol misuse —Universal screening was done by GPs (Alcohol Use Disorders Identification Test) on all patients, accompanied by a five-minute advice session for those who screened positive.	Simulation model showed total ROI of 11.75 for all years. Used national prevalence data with a unit cost for the intervention of £17. ⁴¹ (CA\$27.32). Considered data from a Cochrane review that undertook a meta-analysis of 22 RCTs, which showed that patients receiving a brief intervention had lower alcohol consumption than the control group after one year. ⁴⁶

Education

Estimates imply that at least 70% of mental health problems and illnesses begin during childhood or adolescence.⁴⁷ As evidenced by numerous studies, mental health promotion and illness prevention aimed at children and adolescents can provide huge and long-term impacts.^{48–54} Early interventions such as parenting programs^{55–57} and anti-bullying programs in schools²³ have a substantial effect on individuals as well as on costs to society. These effects can be amplified even further when aimed at the population or community level.

The U.K., U.S. and Australia seem to have undertaken more extensive economic evaluations of childhood and youth interventions. For example, in 2010, the RAND Corporation's literature review of proven early childhood interventions found ROIs from \$1.80 to \$17.07 for every dollar spent on programming.⁵⁸ Positive economic returns were found for interventions aimed at early childhood education, as well as for home visiting or parent education interventions and those that combined both approaches. Some of the largest net benefits were for programs that undertook long-term follow-up so measurement of the impact on other sectors, such as criminal justice and employment benefits, could occur.⁵⁸ The author also outlined the need for a set of standards in conducting cost–benefit analyses of early childhood interventions.

In 2007, McCabe undertook another systematic review and concluded that there were no cost-effectiveness analyses for universal mental health promotion interventions in primary schools.⁵⁹ Notably, in 2007, Andrews and the Tolkien II team recommended five ways to improve mental health services in Australia, one of which was through school-based programs.⁶⁰ In 2008, McDaid et al. looked at the evidence on early childhood interventions to reduce behavioural and emotional problems and found a fair bit of supportive evidence.²⁶ Two years later, Kilian et al. updated the literature on the cost-effectiveness of child and youth mental health problems and uncovered 2 studies on prevention and 19 on psychiatric interventions.⁶¹ Simulation modelling is also providing more evidence for childhood interventions (especially in pre-school) by demonstrating higher economic benefits with very low costs for programming.¹⁴ The London School of Economics and Political Science has shown that early intervention in psychosis services can save £40 million a year (CA\$63 million).⁶²

For simplicity's sake, a few interventions such as parenting programs are included in this section on the education sector; however, they may be more appropriately classified in the social services sector, depending on the source of the intervention. As seen in Table 3, most of the evidence on mental health promotion/illness prevention ROI (as well as other economic studies) comes from child and youth studies. As there is diversity in both outcomes and effects that result in childhood intervention studies, there can be considerable variation in the results of economic analyses, making comparisons sometimes difficult among interventions (for example, country differences in systems and standardization techniques may affect outcomes).

Table 3: Economic Studies for Mental Health Promotion and Mental Illness Prevention in the Education Sector (cont'd)

Source	Intervention	Impact
Friedli and Parsonage (2009) ¹⁴	Preventing conduct disorders through parenting skills training —The program was aimed at more disturbed children.	U.K. estimates showed savings of £150,000 (CA\$237,000) per case in lifetime costs. Data from studies such as Scott et al. showed that anti-social behaviour in childhood can lead to life-long social exclusion; costs for public services for this behaviour were 10 times greater. ⁶³ Edwards et al.'s study on the U.K. Incredible Year parenting program was also found to be cost-effective. ⁶⁴
Dretzke et al. (2005) ⁶⁵	Parent training and education programs for conduct disorders —Evidence from 37 RCTs was examined.	U.K. researchers found that cost per family for parent training or education programs varied from £629 (CA\$994) to £3,899 (CA\$6,179) but were not able to make estimates of utility gain. Assumed a cost per quality of life gain of 0.1, giving a cost per QALY of £38,393 (CA\$60,711) to £6,288 (CA\$9,965).
Bonin et al. (2011) ²³	Parenting interventions for the prevention of persistent conduct disorders —Based on an 8- to 12-week group-based parenting program and individual interventions.	Simulation model showed total ROI of 0.80 for all years. The program showed a total gross cost savings of £9,288 per child (CA\$14,696), given modelling assumptions. Researchers noted that parenting programs have longer-term benefits outside of health, especially in the justice sector. Earlier work fed into these findings that parenting interventions were cost-effective and provided value for money. ⁶⁴
Karoly (2010) ⁵⁸	Early childhood intervention studies —Synthesis of cost-benefit analyses was done based on a literature review of effective programs that had a strong evidence base.	Fifteen studies of parent education and family support, such as home visits, early childhood education or interventions that combine both approaches were grouped by U.S. RAND Corporation. Although programs were not directly aimed at mental health promotion and prevention, better outcomes were found for mental health conditions such as depression and anxiety. ROIs to society were \$1.80 to \$17.07.

Table 3: Economic Studies for Mental Health Promotion and Mental Illness Prevention in the Education Sector (cont'd)

Source	Intervention	Impact
Roche et al. (2008) ⁶⁶	Better Beginnings, Better Futures— Prevention program was aimed at all children in a community from junior kindergarten to Grade 2. Aim is to reduce emotional and behavioural problems in children.	Canadian cost–benefit analysis of students in Grade 9 after receiving the intervention in earlier childhood. Costs were tracked for 12 publicly funded agencies in health care, education, social services, legal and enforcement. The overall cost per child for these 12 services was \$3,902 less for the Better Beginnings group than it was for youths from the comparison sites. The cost per child for the program was \$2,964; therefore, there was a savings of \$938 per child.
Beecham et al. (2011) ²³	School-based social and emotional learning programs to prevent conduct problems in childhood— Modelling assumed that the program would be aimed at 10 year olds who have conduct problems that are classified as none, mild or severe.	Simulation model showed total ROI for all years of 83.73 with given model assumptions. Cost savings were found after the first year, and educational costs were recovered in five years. The biggest driver of savings was crime-related impacts. Results showed a strong case for this type of intervention.
Aos et al. (2004) ⁶⁷	Children and youth prevention programs— Reviewed total costs and benefits for a range of interventions using a common set of methods.	U.S. study uncovered that effective programs for juvenile offenders have the highest net benefit, ranging from \$1,900 to \$31,200 per youth. Some effective home visiting programs aimed at high-risk and/or low-income mothers and children showed net benefit of \$6,000 to \$17,200 per youth. Some early childhood education for low-income people had net benefit up to \$9,000.
Foster (2006) ⁶⁸	Fast-track intervention— Violence prevention program in young children was targeted at preventing aggression in young children at the preschool level.	U.S. RCT showed an ICER estimated at \$3,482 for the total group for preventing one case of conduct disorder and \$736,000 for preventing a criminal act. Note: There is some discussion about what the threshold level should be to demonstrate cost-effectiveness of an intervention.
Mihalopoulos and Sanders (2007) ⁶⁹	Triple P—Positive Parenting Program— Parenting program was implemented on a population basis.	Australian study used assumption that reducing prevalence of conduct disorder by 4% would result in a cost savings of \$6 million.
McCrone et al. (2010) ⁷⁰	Anti-stigma campaign— Costs were modelled on potential economic impact of a national campaign in Scotland.	U.K. model showed that a 10% change in attitude is estimated to cost £35 (CA\$55) per one less person who felt that individuals with mental health issues were dangerous.

Table 3: Economic Studies for Mental Health Promotion and Mental Illness Prevention in the Education Sector (cont'd)

Source	Intervention	Impact
McCabe (2007) ⁵⁹	Universal mental health promotion interventions in primary school— Estimated the cost-effectiveness of a combined parent- and classroom-based intervention.	U.K. author found an ICER for this exploratory within-school analysis of £10,000 (CA\$15,823) per QALY and would justify the implementation of such a program (although other caveats are listed).
Beecham et al. (2011) ²³	School-based interventions to reduce bullying— Whole-school program with a range of components was examined rather than a curriculum-based program.	Simulation model used prevalence of bullying of 24% from the National Child Development Study and a research study that showed being bullied influences future wages. ⁷¹ Assumed a reduction in bullying to 15%. Determined that anti-bullying interventions provide benefits of £1,080 (CA\$1,708) per student, with a cost of £15.50 per student per year.
DePanfilis et al. (2008) ⁷²	Child neglect prevention program— Children in a poor urban neighbourhood who met criteria for child neglect were assigned to one of the intervention programs (either three or nine months).	U.S. RCT showed positive cost-effectiveness for both the three- and nine-month intervention programs. The three-month one was more cost-effective, at \$337 per unit change on the child behaviour checklist, versus \$276 for the nine-month group.
Zaloshnja et al. (2003) ⁷³	Aboriginal suicide prevention program— Crisis support using lay people training was provided.	U.S. observational trial resulted in benefit cost ratio of 47:1 and incremental cost-effectiveness ratio of \$460 per QALY gained.
Sari et al. (2007) ⁷⁴	Suicide prevention program— General suicide awareness program versus peer support program was examined.	U.S. simulation model, if implemented in all universities in Florida, would achieve a net benefit of \$21 billion to \$32 billion.

Workplace

Businesses are highlighting the importance of mental wellness in the workplace, especially through initiatives such as the Global Business and Economic Roundtable on Addiction and Mental Health, whose work is beginning to build the business case for mental wellness and highlights the lack of measurement that exists on the costs of mental health in companies.¹¹ In 2007, the Sainsbury Centre for Mental Health in the U.K. estimated the cost of mental illness to be £35 billion (CA\$55 billion) a year to the economy and found that employees take an average of seven sick days per year, with 40% of these being related to mental health issues; this translates to £8.4 billion (CA\$13.2 billion) a year in sickness absence.⁷⁵ Other studies corroborate the effects of mental health and wellness on profits, productivity, absenteeism, presenteeism, benefit costs and customer relations.^{76–81}

In Canada, the Canadian Nurses Association demonstrated that reducing absenteeism levels by 50% over three years would put the equivalent of an additional 7,000 full-time registered nurses into the workforce to provide care and service and would save \$500 million in salaries.⁸² As well, mental well-being has been shown to predict good job performance.⁸³

Noteworthy evidence is beginning to accumulate on effective mental health promotion and mental illness prevention interventions in the workplace,^{84–89} although there is a lack of RCTs or other quasi-experimental studies, and often the literature is for company-specific endeavours. In 2005, Chapman undertook a meta-evaluation of 56 peer-reviewed articles that contained some analysis of economic return on general worksite health promotion. He confirmed the lack of standardization found in the methodologies used in economic analyses for workplace health promotion. In most studies, health care utilization and/or absenteeism were used as the economic variables; fewer studies included workers' compensation and/or disability management costs.⁷⁷ In the same year, Dietz suggested that workplace programs such as substance abuse prevention may result in higher health care costs and utilization in the short term but in savings through reduced drug and alcohol use in the long term.⁹⁰

In 2005, the British Occupational Health Research Foundation undertook a systematic review of workplace interventions for people with common mental health conditions; it uncovered a range of effective interventions and noted that individual rather than organizational approaches for employees deemed to be at risk were more effective.⁹¹ Only a handful of studies included any economic analysis. In 2009, the Institute of Health Economics in Canada looked at stress in the workplace and corroborated this finding of limited evidence for the effectiveness of one type of organizational-level intervention over another, although some benefits were seen in workplace indicators.⁹² In fact, the U.K. Whitehall Study II of the workplace and stress showed that employee involvement in decision-making and greater employee control of the office and work design can benefit employee health and work conditions.⁹³

Table 4 outlines the economic studies on mental health promotion and mental illness prevention in the workplace sector. Very few workplace studies focus on ROI, although some do show effects on other workplace indicators, such as absenteeism, presenteeism and sick days, either individually or combined on cost.⁹⁴ Most of the work in workplace mental health promotion and mental illness prevention seems to be in the U.S. and the U.K. In 2001–2002, the now-defunct Canadian Labour and Business Centre undertook a series of case studies on the use of a positive mental health approach in the workplace; it noted improved outcomes for absences, injuries and payments to workers' compensation boards.⁹⁵ U.S. businesses have a particular incentive to pursue economic analysis, given the large health insurance premiums that they pay for their employees.⁹⁶

In Canada, the Mental Health Commission of Canada, in conjunction with researchers at Simon Fraser University, is embarking on a project to examine mental health promotion and prevention in the workplace; its findings will be published shortly.⁹⁷ The Conference Board of Canada is looking at poor mental health and productivity in the workplace. These two projects, combined with other initiatives,⁹⁸ may help make the case for additional research in this area.

Table 4: Economic Studies for Mental Health Promotion and Mental Illness Prevention in the Workplace Sector

Source	Intervention	Impact
McDaid, King and Parsonage (2011) ²³	Workplace screening for depression and anxiety —Employees completed a screening questionnaire, accompanied by case management for those identified. Employees identified were offered six sessions of CBT over 12 weeks.	Simulation model showed a cost savings in a 500-employee business of £19,700 (CA\$31,155), mostly due to reduced presenteeism and absenteeism.
McDaid et al. (2011) ²³	Promoting well-being in the workplace —Multi-component health promotion intervention was comprised of information and advice, a health risk appraisal questionnaire, a web portal, wellness literature, and seminars and workshops.	Simulation model compared these interventions to no action and found an ROI of 9 to 1 in year one for a 500-employee organization.
National Institute for Health and Clinical Excellence (2009) ⁹⁹	Mental well-being in the workplace —Looked at stress and mental disorders.	U.K. study found that improving the management of mental health in the workplace, including prevention and early identification of problems, could produce annual savings of £250,607 (CA\$392,055). Early action to combat stress could decrease losses to productivity by 30% for employers.
Anderson (2010) ¹⁰⁰	Alcohol prevention in the workplace —A systematic review of interventions was conducted.	European study found a lack of rigorous studies that show the impact of workplace policies to reduce harm done by alcohol to the economy. Did show that alcohol policy can improve lost productivity costs. Webb et al. identified 10 intervention studies for workplace interventions for alcohol-related problems but determined that few studies contained any economic data. ¹⁰¹

Table 4: Economic Studies for Mental Health Promotion and Mental Illness Prevention in the Workplace Sector (cont'd)

Source	Intervention	Impact
Bergerman et al. (2009) ⁹²	Prevention of workplace stress —Meta-analysis of six systematic reviews of the effectiveness of organizational interventions was conducted.	Canadian researchers showed that seven workplace interventions reduced absenteeism, four decreased employee turnover and none measured presenteeism. Authors drew no conclusions on the effectiveness of one type of intervention over another.
Mills, Kessler and Cooper (2007) ¹⁰²	Impact of employee health promotion program —Quasi-experimental design looked at a multi-dimensional health promotion program that included mental health.	Compared with the control group, U.S. results showed significant decreases in absenteeism (0.36 monthly absenteeism days) and health risk scores (0.45). Employees also had significant increases in work performance (0.79 on the work performance scale). A limitation to this study is that data is based on self-reporting.
Hilton (2005) ¹⁰³	Psychological distress and work productivity —More than 60,000 employees completed the Health and Work Performance Questionnaire on treatment-seeking behaviour for depression, anxiety or other mental disorders. Analysis also included employee productivity measures.	Although not a specific mental health promotion or mental illness prevention strategy, the questionnaire showed that employee productivity for those not in psychological distress was 20%, whereas productivity for an employee who had been successfully treated for a mental disorder was 17%. These Australian results demonstrated that by treating a mental health disorder, resulting in more normalized functioning, employees can have almost the same productivity as those who have no history of mental disorders.
Wang et al. (2008) ⁸¹	Depression care investment by businesses —Looked at the National Institute of Mental Health–sponsored Work Outcomes Research and Cost-Effectiveness Study. Compared the depression intervention of telephone outreach, care management and optional psychotherapy to usual care.	U.S. RCT provided reasons why businesses should enhance their investment in depression care. Researchers determined that after one year the intervention had positive benefits on depression outcomes, work retention and hours worked.

Social Services and Criminal Justice

The primary focus of this literature review was the health, education and workplace sectors, where more studies exist around the effectiveness of interventions. However, given the significant impact seen in the literature of mental health promotion and mental illness prevention interventions on the social services and criminal justice sectors—especially in terms of longer-term outcomes and savings that might result—some discussion of these sectors is included here. Friedli and Parsonage argue that nearly 90% of the costs associated with mental health are incurred in sectors outside of health and social care.¹⁴ Other experts suggest that at least 70% of mental health problems and illnesses begin during childhood or adolescence;⁴⁷ therefore, interventions aimed at this population are probably the most worthwhile in terms of longer-term impacts/benefits on costs to society, especially those for early detection of psychosis and early childhood parenting programs for conduct disorders.

Criminalization is often the result of inadequate intervention and prevention. Foster and Jones undertook an RCT on violence prevention in young children and showed positive ICERs for the prevention of conduct disorders and criminal acts later in life.⁶⁸ The authors believed that “even expensive interventions still may be cost-effective, but the intervention must target a population that is particularly costly to society when left untreated.”⁶⁸ As well, a 2008 community-based cost-effectiveness RCT of a child neglect prevention program (called Family Connections) showed positive results.⁷² In 2008, researchers at Pennsylvania State University undertook an ROI analysis for seven intervention programs aimed at youth to prevent community crime and delinquency. The incentives for this endeavour were the rising costs being seen in the criminal justice system, especially among youth, and the increased need for more prisons. These prevention programs were chosen because evidence indicated positive benefits in terms of drug and mental health treatment, corrections and social services costs, and improved employment. Although not strictly focused on mental health promotion and mental illness prevention, the interventions showed ROIs of \$1 to \$25 per dollar invested.¹⁰⁴

Prevention and promotion interventions aimed at the individual, community or population level can have long-term and substantial positive effects on sectors outside of the workplace, education and health care. The costs to the economy in terms of reduced output, lower productivity, more crime, higher chronic disease and more informal caregiving could be even more substantial than realized; but without studies and data to demonstrate this, the picture remains unclear.

Discussion

Mental health—described as the “orphan child” of Canada’s health care system—cost Canada’s economy an estimated \$51 billion in 2003.⁹ In that year, total spending on mental illness was \$6.6 billion, representing 4.8% of total health spending.^{xiv} Approximately 83% of mental health financing comes from public sources.^{105, xv} In 2003, an estimated 1.9 million adults in Canada had a mental health disorder and 1.6 million reported symptoms but were not treated.¹⁰⁶

Recent reports from Ireland and Wales that used different assessment/accounting approaches indicate that the total cost of mental health problems in these countries is larger than their *entire* investments in their respective health systems. These studies also suggest that spending on mental health promotion and illness prevention is less than 1% of the total mental health budget. This is despite the fact that mental well-being increases life expectancy by 7.5 years—as much influence on life expectancy as smoking has on heart disease.¹⁰⁷

Moreover, the problem is growing. The World Health Organization has predicted that by 2030, depression will be the leading cause of disability in high-income countries.⁴ Keyes and Lopes have pointed out that “science has produced effective treatments for more broken down people but remains ineffective at preventing more people from breaking down.”⁵ So what can Canadian society do to reduce the growing burden associated with mental illness? The answer may lie in promoting mental health and preventing mental illness.^{xvi}

The focus of this report is the prevention of mental illness and the promotion of mental health—more specifically, their return on investment. For discussion purposes, findings have been grouped under five broad headings: existing evidence, areas with potential, definitions and data measurement challenges, a “mental health–in-all-policies” approach and sustainability. Discussion is highlighted below.

xiv. This is a little below the minimum acceptable amount (5%) stated by the European Mental Health Economics Network.

xv. A follow-up study by Jacobs et al.¹ suggests that in 2007–2008, Canada spent \$14.3 billion in public expenditures on mental health; this was 7.2% of total government health expenditures. International comparisons range from 6% in the U.S. to 11% in New Zealand and Sweden.

xvi. For the purpose of this report, we distinguish between promoting positive mental health and preventing mental illness. This is similar to the approach described by Keyes,⁵ who argued that measures of mental illness and mental health are two distinct but correlated continuums in a population.

1. **Existing evidence:** The current research evidence suggests ROI for some interventions. There are a number of high-quality systematic reviews and meta-analyses, although the number of randomized trials was low and there is an overall lack of evidence for Canada. More evidence appears for illness prevention activities, although there may be measurement issues related to assessing mental health promotion interventions. As better measures of mental well-being become validated across populations and become more commonplace, this may change.

There appears to be greater emphasis in the literature on effectiveness interventions than on economic evaluations. This may be because of the difficulties related to economic analysis, including a lack of standard definitions, time lags from inputs to outcomes, accruals typically needed for cross-sector analysis and the many confounding factors and variables to consider. As a result of these difficulties, it is challenging to make clear comparisons across studies and samples.

Most studies found were at the individual or organizational level, likely due to researchers' need to reduce the difficulties in undertaking studies at a systems level, especially around confounding factors. The weakest evidence for ROI in mental health promotion/illness prevention was in the workplace sector, due to a general lack of high-quality research studies and data availability.^{xvii}

New research is emerging on ROI for protective factors, such as physical activity and nutrition programs. The use of modelling ROI by the London School of Economics is a new approach that is worth considering in the Canadian context.

2. **Areas with potential:** The strongest evidence for ROI, described by Friedli and Parsonage as “best buys,” is seen in work with children and adolescents.¹⁴ For example, the prevention of conduct disorders in children shows a return of \$239,000 per case, and the promotion of mental health in children with moderate mental health is \$120,000 per case. Strong evidence for ROI was also seen with parenting and anti-bullying/-stigma programs, suicide awareness and prevention, health promotion in schools and primary health care screening for depression and alcohol misuse.

xvii. A research voucher or mentorship program may be needed.

3. **Definition and data measurement challenges:** There is a lack of standard definitions in the areas of mental health, promotion/prevention and ROI/economics. For example, the research uses the term “mental illness” to describe a number of conditions, such as schizophrenia, substance use/abuse and anxiety/depression, in spite of their unique characteristics and etiologies. As well, there is inconsistency in terminology, as some researchers use the International Classification of Diseases and Related Health Problems, 10th Revision (ICD-10) and others the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) categorization as the basis for their analysis. Mental health promotion, mental illness prevention and ROI/economic analysis are complex ideas that are used inconsistently and lack standardization.^{58, xviii} Furthermore, a common lexicon that crosses sectors (health, education, criminal justice, social services and the workplace) is vital for those working in the area of mental health promotion/illness prevention. Terms like “flourishing/languishing,” “hopefulness,” “recovery,” “stigma” and “well-being,” for example, will have different meanings to workers depending on the sector they work in, their level of experience in mental health and the context in which the term is used.

Data and measurement issues are not easily resolved. No expenditure information on investments in mental health promotion/mental illness prevention in Canada could be uncovered at this time. Even the data on mental health expenditures is research-based and lacks consistency due to differing assessment and accounting practices. Data that crosses sectors is often difficult to integrate and compare. Collection and standardization of this data will be paramount for future progress. Statistics Canada’s Canadian Community Health Survey (CCHS)—Mental Health will be collecting data in 2012.

4. **“Mental health—in-all-policies” approach:** The literature review demonstrates that one of the unique challenges with ROI studies in mental health promotion/illness prevention is that, to a large extent, the returns (economic or otherwise) typically show up in a sector other than the one in which the initial investment is made. For example, costs for intervention studies to prevent conduct disorders may be borne by the education system, but the benefits would likely be seen in areas such as the criminal justice system. This point is made clear with Friedli’s assertion that nearly 90% of the costs associated with mental health fall somewhere other than on the health and social care systems.¹⁴ Until policies/incentives and accounting systems are developed which are joined up (or horizontal), progress in the area of mental health promotion/illness prevention will be based on goodwill between sectors to cooperate and communicate. A markedly better way

xviii. Karoly⁵⁸ argues that there is a need for agreement on discount rates, age standardization and a set of valuations for key outcomes.

forward would be to demonstrate strong leadership and to promote a “mental health–in–all–policies” approach that consistently and systematically crosses sectors. There is movement on this front in the U.K.;⁶ the same can be done in Canada, but it will require the support of institutions.

5. **Sustainability:** If the estimates in Ireland and Wales hold true in Canada, the cost of mental illness is approximately \$192 billion, the amount spent on the entire health care system in Canada. Current estimates in Canada lack a full-cost accounting approach and are likely to be understated. Recognizing the full cost of mental health will only add to the incentive for large-scale transformational change resulting from the Mental Health Commission of Canada, provincial/territorial government actions and the need to renew the 2004 health accord. The likely solution to the sustainability challenge lies in promoting mental health and preventing mental illness. Research has demonstrated that promoting positive mental health can¹⁰⁸
- Reduce lifetime mortality rates;
 - Increase life expectancy by 7.5 years;
 - Improve overall health;
 - Reduce stroke incidence and improve survival rates;
 - Reduce heart disease; and
 - Lower the number of chronic diseases overall.

A significant amount of work is emerging on the effectiveness of mental health promotion and illness prevention interventions, especially in the area of improving the quality of life. Unfortunately, less is known about the economic returns on these investments. A long-range view that spans sectors and that asserts *there is no health without mental health*¹⁰ is the way forward to prevent people from breaking down.

Conclusion

As the impact of poor mental health and wellness becomes better known, it is apparent that solutions must become more prevalent in the policy mandates of various sectors. A significant amount of work is emerging on the effectiveness of mental health promotion and prevention interventions, especially in the area of improving the quality of life—but less is known about the ROI. Important issues remain around the lack of standards and tools for economic analysis, especially pertaining to definitions and the use of tools to measure well-being. As well, greater use of RCTs and controls on potential bias are needed. Researchers are now demonstrating through simulation modelling that evidence-based interventions that improve mental health and wellness can show positive ROIs.

Efforts to prove the mental health promotion/illness prevention business case must demonstrate value for money (evidence shows that even lower-cost interventions can be effective), but they must also continue to measure patient/client outcomes, not just outputs. As well, the impact of broader social determinants of health will need to be considered. Positive economic returns are being seen for interventions such as those involving children and adolescents in terms of reducing conduct disorders and depression, parenting and anti-bullying/-stigma programs, suicide awareness and prevention, health promotion in school activities and primary health care screening for depression and alcohol misuse. However, much of this evidence is from outside Canada.

For decision-makers, these findings show that a mounting body of evidence demonstrates the potential economic returns (based on both direct and indirect evidence of ROI) of effective interventions; this will allow them to make the business case and take on perhaps a more strategic approach in investing in targeted mental health promotion and prevention strategies. In the short term, a substantial investment of resources to get these programs running may be required in one sector (like education or social services), knowing full well that the payoffs (significant cost savings and better overall outcomes) will be realized largely in other sectors (such as criminal justice and health). The NHS's new mental health strategy in the U.K. seems to be moving in this direction of a more cross-sectoral approach.⁶

The bottom line is that a broader view of mental health and well-being is required, one that asserts that “there is no health without mental health.”¹⁰⁹

Appendix A: Search Strategy Results

Search Strategy for Peer-Reviewed Literature

“mental health” OR “mental disorder” OR “mental illness” OR “mental wellness”
OR “mental well being”

Other words considered: “behavioural health” OR “belonging” OR “resilience”
OR “mood disorder” OR “emotional intelligence” OR “stress” OR “depression”
OR “coping” OR “mental crisis” OR “anxiety”

AND

“promotion” OR “prevention” OR “primary mental health prevention” OR
“mental health promotion”

Other words considered: “intervention” OR “healthy public policy” OR
“population health”

AND

“economic burden” OR “cost benefit” OR “return on investment” OR “social return
on investment” OR “cost analysis” OR “economic impact” OR “cost of illness” OR
“cost effectiveness” OR “cost utility”

Other words considered: “evaluation” OR “efficacy” OR “monetization” OR
“opportunity cost” OR “consequence”

Results

The results are from peer-reviewed journals published from 2001 to 2011 only. This is not a systematic review.

Databases Searched	Further Restrictions	Results
Medline	Key words. Humans and English. From 2008 to 2011 (as systematic reviews for years before that).	1,857
PsycInfo	DE headings. Journal articles only. English and Human boxes were checked. From 2008 to 2011 (as systematic reviews for years before that).	1,709
Econlit	DE headings. Journal articles only. English boxes were checked. Did not use word “depression,” as the Great Depression came up rather than the mental condition.	208
Web of Science	Topic search.	76
ProQuest Research Library	Citation and abstract text. Interdisciplinary Research Library.	92
ERIC	DE headings. Journal articles only. English boxes were checked.	3,379
Goggle Scholar	Scanned only first 500 articles/reports.	500
NHS EED		210
Cochrane Library		124
Campbell Collaboration	All-text mental health.	72

Manually Searched Peer-Reviewed Journals

Manually Searched Peer-Reviewed Journals
<i>American Journal of Health Promotion</i>
<i>Journal of Public Mental Health</i>
<i>Journal of Mental Health Promotion</i>
<i>International Journal of Mental Health Promotion</i>

Search Strategy for Grey Literature

Manually Searched Websites of Relevant Organizations

Institute of Health Economics
Centre for Health Economics and Policy Analysis
Psychological associations
Canadian Mental Health Association
The Conference Board of Canada
Canadian Institutes of Health Research
Centre for the Study of Living Standards
Institute for Clinical Evaluative Sciences
London School of Economics
Sainsbury Centre for Mental Health
Hollander Analytical Services Ltd.
Karolinska Institute
Ludwig Boltzmann Institute for Health Technology Assessment
IMHPA (European network for mental health promotion and mental illness prevention)
Netherlands Institute of Mental Health and Addiction (TRIMBOS Institute)
Access Economics
World Health Organisation
European College of Neuropsychopharmacology
European Brain Council
Brain and Mind Research Institute (University of Sydney)
Max Planck Institute of Psychiatry
The King's Fund
The Nuffield Trust
Corporate wellness companies

Total saved from all sources (with meta-analyses and systematic reviews predominately used): 225

Appendix B: Glossary of Health Economic Terms^{15, 110, 111}

cost–benefit analysis: When benefits and costs of an intervention are expressed as units of currency. The benefits of an intervention less the costs provide the overall outcome of the intervention as a monetary value. This term is also sometimes referred to as “return on investment.”

cost-effectiveness analysis: When costs are compared for two or more interventions that achieved common outcomes or effectiveness.

cost-utility analysis: Another measure used to assess a health intervention. It is the ratio of the cost of an intervention to the benefit it produces in terms of the number of years lived. Often used interchangeably with cost-effectiveness analysis but is expressed as dollars per quality-adjusted life year (QALY) gained or incremental cost-effectiveness ratio (ICER). Typically used in health economics to compare interventions with different health benefits without having to assign a dollar value to the different health states.

DALY: Disability-adjusted life year is the measure of the burden of disease. It is the sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability.

ICER: Incremental cost-effectiveness ratio is used in economic evaluations of a health intervention and used in cost-utility analysis (cost per QALY). It is the difference in cost between two treatment interventions over the change in effects or benefits of the interventions. Threshold ICERs are sometimes used as a decision point in funding an intervention as a value that society attaches to a health intervention.

QALY: Quality-adjusted life year (has not been validated for children younger than age 15) is a measure of the burden of disease or the change in effect on an intervention. It is a year of life adjusted for its quality of value. A year of perfect health is 1.0 QALY. It allows different interventions to be compared.

ROI: Return on investment is the benefits of an intervention in relation to its costs (typically net benefits / net costs x 100%).

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