

Targeting what matters in health promotion evaluation

Using the RE-AIM approach to identify success in real-world settings

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This article¹ examines the RE-AIM evaluation framework, first expounded by Glasgow, Vogt and Boles (1999) as an approach that can establish the public health impact of a health promotion program. The article presents the practical application of RE-AIM in evaluation of multi-project, multi-setting health promotion programs, illustrated by the evaluation of three statewide programs: a three-year older adult health promotion program, a three-year diabetes prevention program, and a one-year health promotion program in public sector aged care, all set in Victoria, funded by the Department of Human Services. It considers how the RE-AIM approach can be employed to provide insights into real-world program domains of interest to funders, policymakers and health promotion practitioners that are frequently overlooked in conventional impact evaluations. The article concludes that RE-AIM is an adaptable, easy-to-use evaluation approach suited to multi-project program evaluations that can be used in a range of settings and sectors.

Introduction

Health promotion has an increasingly prominent role in Australian public health. Governments at state and federal level have adopted health promotion principles and frameworks to guide programs in a range of public health domains, such as healthy ageing, physical activity, sound nutrition and positive mental health, to nominate just a few important areas (DHAC 2000; NHMRC 1997; NHMRC

2004; Garrard et al. 2004; VicHealth 1999). Health promotion is also increasingly located in a population health perspective. From such a perspective, changes are sought in the health status of at-risk groups, and there is an acknowledgement that the way services are organised and delivered can have a significant effect on the success of programs aimed at improving health (Rogers, Veale & Weller 1999). However, health promotion can have a lengthy causal pathway and long-term changes in health status may be difficult to attribute to a specific intervention. In a policy and funding environment where 'evidence-based' public health interventions are highly valued, this poses challenges for both health promotion practitioners and funders in demonstrating the value of a particular program, especially in the typical funding cycle of 1–3 years (Nutbeam 2003).

Quite justifiably, funders want to know not only what difference a program has made, but how those effects were achieved, why they occurred, and whether they can be maintained over time. For an evaluator, the challenge is to develop an evaluation that can examine effectiveness or impact within the limits of the time frame but also provide other information about aspects of the program that may be crucial to decision-making about its future. For instance, funders may want to know how feasible it is to implement a program in a particular setting or they may wish to know if all subgroups (particularly those most in need in a target group) have participated. They may also be interested in changes at an organisational level or across organisations, and they will undoubtedly be interested in the capacity of the program and its benefits to be maintained over time. In an attempt to respond to these challenges, the Centre for Health Policy, Programs and Economics (CHPPE) in the School of Population Health at the University of Melbourne adopted the RE-AIM evaluation framework, developed by Glasgow, Vogt and Boles (1999).²

This article explores the utility of RE-AIM for the evaluation of multi-project, multi-setting health promotion programs, illustrated by the evaluation of three statewide programs in Victoria between 2001 and 2005: a three-year older persons health promotion program, a three-year diabetes prevention program, and a one-year health promotion program in public sector aged care, each funded by the Victorian Department of Human Services.

RE-AIM: where does it come from?

The RE-AIM framework has its origins in concerns about the 'efficacy paradigm' of much modern science (Glasgow, Vogt & Boles 1999, p. 1323). Glasgow, Vogt and Boles argue that in the quest to demonstrate robust efficacy of health interventions, resultant evidence-based interventions (of proven efficacy) are nonetheless untested for their effectiveness in the busy, sometimes underfunded and less certain real world of modern public health. Trials

and experimental investigations of interventions (including those concerning cancer prevention, the effects of increased physical activity, or improved diabetes management that are undertaken in controlled environments with motivated participants and dedicated research funds) may well demonstrate significant individual health benefits—but what happens when that efficacious intervention is translated in the real world, with hard-to-reach target groups, even whole populations, in diverse health care and community settings?

Fundamentally, the RE-AIM authors argue that while a controlled test of an intervention may have high internal validity, this cannot guarantee external validity when the intervention is transferred to other uncontrolled settings (Glasgow et al. 2002). This is an especially important criticism of the efficacy paradigm from a population health perspective. In the real world, programs frequently aim to influence not simply individual behaviour, but seek changes in populations and subpopulations, as well as in services and systems to maximise consumer exposure to interventions as well as maintain practitioner involvement in the intervention. RE-AIM is premised on the assertion that individual, organisational and setting-level results make up the public health impact of an intervention collectively. The primary motivation for the development of RE-AIM, therefore, was to provide a framework that could examine the effects of evidence-based health promotion interventions (i.e. derived from research) in a range of dimensions of importance in real settings.

The framework can be used in several ways. First, it can be used as an assessment framework for research findings in order to interrogate various aspects of the research that may be crucial to those who wish to apply the findings as an intervention or program in a health care or community setting (see, for example, Dzewaltowski et al. 2004). Second, and more commonly, it can be used as an evaluation framework to assess the effects of a new, ongoing or concluding program. In the first instance, for example, trials of smoking cessation could be examined in a RE-AIM framework to determine: the characteristics and representativeness of the trial participants; the specific service provider characteristics of those who delivered the intervention; service systems that supported recruitment and follow-up of participants; and maintenance of participant behaviour changes. In the second instance, RE-AIM can be used by health promotion or health program staff, or evaluators, to monitor and assess the effects of a real program. It is for this latter purpose that RE-AIM has been used by the authors of this article to undertake health promotion program evaluations. A third function of the framework, potentially, is as a planning tool that can identify necessary inputs and supports that may be required to achieve optimal performance in each dimension of the program.

FIGURE 1: THE RE-AIM FRAMEWORK

- **Reach**—participation and representativeness of the target population for the intervention (an individual level measure)
- **Effectiveness**—the effects or impacts of the program, both positive and negative (both individual and organisational level measure)
- **Adoption**—uptake of the intervention in agencies and settings (an organisational-level measure)
- **Implementation**—the extent to which the intervention is implemented as intended in the real world (both individual and organisational-level measure)
- **Maintenance**—the extent to which a program and/or the benefits it generates is sustained over time (both individual and organisational-level measure).

What is RE-AIM?

RE-AIM is a model that represents five dimensions of program quality that collectively interact to constitute its public health impact (Glasgow, Vogt & Boles 1999). The dimensions are REACH, EFFECTIVENESS, ADOPTION, IMPLEMENTATION and MAINTENANCE and each is defined in Figure 1.

Using RE-AIM

Our experience of RE-AIM is based on the evaluation of the three programs described below. Each program was based on health promotion principles and each sought to achieve organisational- and service-level changes, as well as individual change.

Well for Life (WFL)

The Well for Life (WFL) Initiative (2004–2005) aimed to improve nutrition and physical activity for the frail elderly by focusing on change in policies and practices in community-based support providers of Planned Activity Groups (PAGs) and residential care agencies for the frail elderly. The initiative brought together health promotion and evidence-based approaches, and encouraged partnership between aged care and other parts of the primary care sector.

The aim of the WFL evaluation was to provide both quantitative and qualitative information regarding the success and challenges of the initiative in a range of community and residential settings, with the aim of informing extensions to the program in the future.

Local Diabetes Service Development (LDSD) Program (2002–2005)

The Local Diabetes Service Development (LDSD) Program focused on service enhancement and development in order to support improved diabetes management, detection and prevention within selected Primary Care Partnership (PCP) catchments. Participating projects implemented individual strategies such as lifestyle programs and self-management as well as service system developments to improve management of existing diabetes and to promote early detection and prevention for at-risk individuals and groups.

The aims of the evaluation of the LDSD were to optimise the evaluation of funded projects and to conduct a robust, final evaluation that would contribute to the evidence base for diabetes prevention and management programs.

Older Persons Health Promotion Funding Program (OPHPFP) (2001–2004)

The aims of the Older Persons Health Promotion Funding Program (OPHPFP) were to assist older people to lead healthy and independent lives and to support positive ageing. This included a focus on improving knowledge, skills, participation and health-promoting behaviours, as well as sustainable enhancement of structures and partnerships that would support health promotion for older people.

The evaluation aims of the OPHPFP were similar to those of the LDSD Program evaluation, that is, to optimise project evaluations and provide a comprehensive program-level evaluation that would contribute to the evidence base about health promotion for older people.

An evaluation methodology based on RE-AIM

The chosen evaluation methodology was broadly similar in each case. Program logic was initially used to clarify the program and ensure a shared understanding of the program's intended outcomes among stakeholders (Funnell 1997). RE-AIM was employed as the evaluation framework, and data was gathered by six-monthly or annual self-assessment tools, supplemented by key informant interviews and a Health Promotion Sustainability checklist (Hawe et al. 2000). For each dimension of the RE-AIM framework, indicators for measurement and assessment were developed, data sources identified and data collection methods established. Then a matrix was constructed that matched key evaluation questions for each dimension of RE-AIM with selected indicators and measures. Figures 2–6 present evaluation questions and indicators for each dimension of RE-AIM that were essentially common across the three program evaluations, and the significance of each dimension in assessing public health impact is discussed.

Reach

Key evaluation questions and indicators used to assess program reach in relation to WFL, LDS and OPHFP are presented in Figure 2.

Why is 'reach' important?

In the three evaluations, it was clear that reach was a highly important aspect of program performance. Successful engagement and adequate ongoing participation by the targeted population groups proved to be essential for the realisation of project objectives, upon which other aspects of the program quality depended. Putting effort into reach pays dividends in relation to program implementation, effectiveness and some aspects of maintenance. Furthermore, by identifying successful reach strategies, project staff and agencies can add value to other projects. Similarly, identifying barriers to reach—and working out strategies to overcome them—can be very useful for the agency and funders. It can also make a useful contribution to the evidence base for health promotion. By delineating reach as an important component of the evaluation and project monitoring, project staff are encouraged to focus on maximising participation and to recognise its contribution to other elements of project quality and performance. The originators of RE-AIM also note that being able to determine the representativeness of participation in a program has significant implications for the robustness of outcome or effectiveness findings (Glasgow, Vogt & Boles 1999).

Effectiveness

Key evaluation questions about effectiveness were guided by the objectives of the specific program. A selection of key evaluation questions for each program is presented in Figure 3.

Why is 'effectiveness' important?

Effectiveness—that is, an assessment of the outcomes of a program and identification of what difference the program made—is a common focus of commissioned evaluations such as the three examples presented here. Sometimes it is the only dimension explored in a conventional outcome or impact evaluation. In RE-AIM, effectiveness is considered alongside other dimensions that may influence outcomes, such as reach, adoption and implementation, and therefore effectiveness is placed in the context of other influential factors. RE-AIM helps to establish not only what occurred, but how and why it occurred and can help to explain lack of impact or limited effectiveness. In our experience this has been a particularly powerful use of the framework. A diabetes prevention project that produced little effect was nonetheless an important learning experience as the RE-AIM framework generated valuable knowledge about the environmental factors (drought followed by fire) and regional health sector relationships that impeded consumer participation and limited collaboration between health professionals. In short, the RE-AIM framework can help us learn about failure as well as success by the rich contextual information it provides at individual, group and organisational levels. Such learnings are invaluable for improving health promotion planning and future implementation in similar settings.

Adoption

Key evaluation questions and indicators relating to the uptake of resources and services offered by the three programs and to representativeness of adoption are outlined in Figure 4.

FIGURE 2: ASSESSING 'REACH'

Evaluation questions	Indicators
What strategies were used to identify and engage target groups? How many clients/carers/staff have participated in the projects? What were the characteristics of participants in projects? Which groups or subgroups did not participate in projects? What were the characteristics of non-participants? How representative of the target group(s) is project participation? What were the barriers and drivers to project reach?	<ul style="list-style-type: none"> ■ Engagement strategies identified, used and documented ■ Numbers of targeted clients, carers and staff participating ■ Proportion of targeted clients, carers and staff participating ■ Characteristics of participating target group members ■ Characteristics of target group members not participating ■ Comparison of participants' profile with population data on target groups ■ Documented barriers to reach ■ Documented reach-enhancing factors

FIGURE 3: ASSESSING ‘EFFECTIVENESS’

Evaluation questions	Indicators
<p>OPHPFP How are individuals, organisations and communities using the information, resources and services produced? What impact has the information, resources and services developed had on health promotion capacity of individuals, organisations and communities?</p>	<ul style="list-style-type: none"> ■ Patterns of use of information, resources and services across projects at the level of consumers, organisations and community ■ Improved health literacy among target groups ■ Supportive organisational environments for older adults’ health promotion demonstrated by mission/policy statements, commitment of staff or resources, and development of related health promotion initiatives
<p>LDSB To what extent and how have the LDSB projects improved management of diabetes for participating clients?</p>	<p><i>Clinical</i></p> <ul style="list-style-type: none"> ■ Glycaemic control (HbA1c) ■ Lipids ■ Blood pressure ■ Body Mass Index or waist circumference ■ Smoking status ■ Number of people screened for foot problems ■ Physical activity participation <p><i>Psycho-social</i></p> <ul style="list-style-type: none"> ■ Quality of life ■ Self-efficacy ■ Health literacy
<p>WFL To what extent have staff knowledge, skills of nutrition and physical activity promotion improved? To what extent are new activities planned or under way for clients and carers? To what extent have benefits resulted for clients and carers from involvement in WFL? To what extent have the nutritional and physical activity behaviours of participating frail older people improved?</p>	<ul style="list-style-type: none"> ■ Improved staff health literacy on nutrition and physical activity ■ New health-promoting activities introduced for clients and carers ■ Improved nutritional and physical activity behaviours among clients and carers ■ Supportive organisational environments for older persons’ health promotion demonstrated by mission/policy statements, commitment of staff or resources and provision of WFL initiatives

Why is ‘adoption’ important?

Adoption is important because it tells us about the nature and level of involvement by agencies, stakeholders and settings. Without an explicit emphasis on organisational-level participation, it is easy to focus only on individual reach and effects, and overlook important contributions to program success at the organisation or settings level. Increasingly, funders and policymakers are expecting programs to build cross-agency collaboration and partnerships and to extend effects beyond the immediate scope of the funded agency. The adoption

dimension allows us to investigate organisational-level involvement and also look at uptake of program resources and services beyond the lead agency. Representativeness of adoption can also be assessed. Like individual reach, adoption by targeted agencies and uptake in particular settings can be vital to the overall effectiveness of a program.³

Implementation

Questions and indicators relating to assessment of the implementation of the three programs are listed in Figure 5.

FIGURE 4: ASSESSING 'ADOPTION'

Evaluation questions	Indicators
<p>How many and which organisational and community stakeholders have participated in, or supported, the projects?</p> <p>How representative is the adoption by stakeholders?</p> <p>What proportion of stakeholders has adopted the services, strategies and resources of the project?</p> <p>What new partnerships have been formed?</p> <p>Have training packages been adopted?</p> <p>Has the project, its services or results been disseminated beyond the initial project scope?</p>	<ul style="list-style-type: none"> ■ Number of targeted agencies/stakeholders participating ■ Proportion of targeted agencies participating ■ Level of demand for information, resources and services from stakeholder groups ■ Evidence of organisational collaboration and partnerships ■ Number of agencies that have adopted health promotion training packages ■ Conference presentations, publications, transfer of the model to new settings or locations

Why is 'implementation' important?

A focus on implementation enables an assessment of the quality and appropriateness of program activities and strategies. Like reach, data on implementation can provide insights into the robustness of outcome data. Knowledge of implementation processes can allow us to make more confident assessments about the reliability and validity of outcome data. Importantly, implementation findings can also tell us a great deal about what strategies can be practically and successfully implemented in a given setting and, therefore, have implications for transferability of selected strategies or a whole intervention to other settings.

Maintenance

Evaluation questions and indicators relating to program maintenance, which apply to the three programs, are presented in Figure 6.

Why is 'maintenance' important?

Sustainability or maintenance is a very important consideration in health promotion programs. There is an understandable reluctance on the part of funders to invest in programs that do not produce enduring changes in individuals, organisations or communities beyond the life of the funding. Evaluators are accordingly asked to assess the sustainability or maintenance of the program. Sustainability or maintenance can be considered at the level of individual benefits, organisational changes, community changes, or even in relation to whether the health promotion focus of the original program has been maintained.

Glasgow, Vogt and Boles (1999) caution that maintenance shouldn't be measured before two years of program operation, to ensure that there is relative program stability. The Centre for Health Policy, Programs and Economics decided to examine prospects for sustainability in the WFL evaluation, at the request of the funder, after only one year of program implementation. Using a checklist on factors associated with program maintenance (Hawe et al. 2000), it was found that most projects

were able to comment on aspects of the program that were likely to be continued, such as a focus on physical activity and nutrition in activity and recreation programs and the allocation of internal funds for ongoing health promotion.

Building a picture of the public health impact of programs

While we have not attempted to develop a numerical multiplicative score of public health impact, which the RE-AIM authors suggest can be done (Glasgow, Vogt & Boles 1999), we have found that RE-AIM provides a comprehensive profile of what a program achieved, how it was achieved and why it was achieved. Furthermore, identifying deficiencies in any of the domains allows the evaluators (and program staff) to have a much better understanding of what is needed for program improvement and can also contribute vital evidence if transfer to other settings, or dissemination of program strategies or resources is considered.

It is important to note that RE-AIM is not a rigid framework. Our evaluation team broadened its understanding of the RE-AIM dimensions over time and felt comfortable in adding new measures for specific dimensions, such as maintenance or organisational adoption because of our understanding of RE-AIM's intent and potential uses. The RE-AIM creators and website encourage development of the model based on utilisation and learning.

Limitations of RE-AIM

The original architects acknowledge that they cannot identify the precise relationship between the various dimensions or how exactly they interact together. There is no proven mathematical formula to capture the interactions of dimensions or even each dimension's relative importance in relation to total public health impact. It is not clear, for example, at what point reach and implementation begin to influence effectiveness separately or together. Moreover, it is not always easy to

FIGURE 5: ASSESSING ‘IMPLEMENTATION’

Evaluation questions	Indicators
To what extent have project strategies been implemented as intended?	■ Extent of consistency between project work plans and project activities
What factors, internal and external, have impacted on the implementation of the project strategies?	■ Documentation of challenges, internal and external, and solutions developed by projects
What solutions did projects develop in response to problems or challenges?	■ Identification of positive factors, internal and external, affecting project implementation
Are project strategies acceptable to stakeholders and target groups?	■ Stakeholder satisfaction with project strategies

FIGURE 6: ASSESSING ‘MAINTENANCE’

Evaluation questions	Indicators
In what ways has the program been incorporated in the core business of agencies?	■ Demonstration of ongoing or planned commitment of time (individuals), resources, staff or other organisational support to the program
What new structures and processes have emerged to enable ongoing health promotion activity?	■ Presence of program and organisational factors known to be associated with program sustainability
What funding or other inputs have been sought or secured from other sources to the program to continue?	■ Funding applications submitted or approved (internal and external)
What demand for the program is there in the community?	■ Evidence of community demand for the program
What transferable learnings, policy implications and further research opportunities have been identified?	■ Documentation of learnings, research opportunities and evaluation findings

combine the results in different dimensions to gain a total perspective on public health impact. High performance or success in one domain does not necessarily guarantee high performance in others. For example, a low-reach program may still yield positive effects for those participating and may be maintained over time. However, low-reach may mean that the program will continue to have fairly minimal public health impact, despite the benefits for some.

Does RE-AIM give us a picture of overall impact or a series of profiles around the dimensions? Generally, the answer is yes, a total perspective of quality and impact is gained, but as with the use of any evaluation framework, the evaluator may need to make a judgement based on all the information available, or negotiate the relative importance of findings across the dimensions with stakeholders or the funder.

A minor point on terminology—the term ‘adoption’ can also be confusing for program staff or stakeholders. Its use in the RE-AIM framework as a dimension of organisational or settings participation is not wholly consistent with its everyday use of uptake of a particular behaviour, belief or product. Nonetheless, the term fits very nicely within the RE-AIM acronym and its definition in this context can be carefully explained.

One other factor that can be perceived as a limitation is, paradoxically, the comprehensiveness of the RE-AIM framework. Staff collecting data for an evaluation sometimes find that collection of data across each of the five dimensions is a somewhat arduous task—although, as evaluators, we believe the comprehensiveness of the information collected outweighs the time required to collect, analyse and report on all dimensions of RE-AIM.

A final weakness in the eyes of some is the failure of the framework to address program costs explicitly. However, our team has on occasion included cost questions in relation to both implementation and sustainability and we can see no reason why data on effects could not be analysed further for cost-effectiveness, assuming that accurate information could be made available regarding costs.

Summary reflections on the RE-AIM framework

- RE-AIM provides a rich and comprehensive body of information to assess public health impacts of a program.
- Reach is fundamental to program success and a high investment in reach is likely to contribute to a high impact.

- Effectiveness is the most difficult dimension of the framework from which to gather robust data in real-world settings, but is strengthened by the contextual information provided by other dimensions, particularly in relation to implementation.
- Adoption provides a valuable and explicit focus on organisational development and settings which, in turn, underpins maintenance or sustainability.
- An implementation focus is useful for monitoring quality, stimulating project improvement and staff learning, and can be used for planning the next stage of a project.
- Maintenance is difficult to demonstrate in an implementation time frame of two or even three years, but can be usefully investigated to identify prospects for, and factors associated with, sustainability that can then be nurtured specifically.

Conclusions

RE-AIM is a logical and comprehensive evaluation framework that provides insights into real-world program domains of interest to funders, policymakers and health promotion practitioners that are frequently overlooked in conventional impact evaluations. Importantly, it allows the evaluators to examine program effects in relation to a range of contextual considerations that can influence transferability and learning. Its domains are generally readily understood by funders, stakeholders and program staff, and funders appreciate the breadth of program information RE-AIM provides.

Overall, we recommend RE-AIM as an adaptable easy-to-use evaluation approach suited to multi-project program evaluations that can be used in a range of settings and sectors.

Notes

- 1 This article was first presented as a paper at the 2005 AES International Conference, 10–12 October 2005, Brisbane.
- 2 See <<http://www.re-aim.org>> for details, resources, publications and links about the RE-AIM evaluation framework. This website is operated by the Workgroup to Evaluate and Enhance the Reach and Dissemination of Health Promotion Interventions.
- 3 It is recognised, however, that some health promotion programs and interventions are not adopted in their entirety. They can be adapted and reshaped according to the context, the stakeholders, skills of staff, etc.

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