



DEFENSE CENTERS  
OF EXCELLENCE

For Psychological Health  
& Traumatic Brain Injury

# Analyzing Program Evaluation Data: Business Case and Cost Analyses

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June 16, 2015



# Webinar Details

- This webinar presentation has been pre-recorded
- A live question-and-answer session will be held at the conclusion of the presentation
- Questions may be submitted anonymously at any time via the “Question” pod
- Audio for this presentation will be provided through Adobe Connect; there is no separate dial-in
- Live closed captioning is available in the “Closed Captioning” pod through Federal Relay Conference Captioning

# Materials for Download

- Materials from this series and other program evaluation resources are available in the “Files” pod and at:

[http://www.dcoe.mil/About\\_DCoE/Program\\_Evaluation.aspx](http://www.dcoe.mil/About_DCoE/Program_Evaluation.aspx)

- For information on other DCoE webinar and training series, visit:

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# Continuing Education Details

- This continuing education activity is provided through collaboration between DCoE and Professional Education Services Group (PESG).
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- The authority for training of contractors is at the discretion of the chief contracting official. Currently, only those contractors with scope of work or with commensurate contract language are permitted in this training.

# Continuing Education Details (continued)

- If you preregistered for the webinar and want to obtain CE certificates or a certificate of attendance, you must complete the online CE evaluation.
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- The CE evaluation will be open through June 30th, 2015.

# Presenter

## **Capt. Armen Thoumaian, Ph.D., USPHS** **Deputy Chief of the Office of Integrated Services, DCoE**

Capt. Armen Thoumaian is a scientist director in the Commissioned Corps of the U.S. Public Health Service (USPHS) with more than 30 years experience in health and mental health program design and evaluation.

In January 2012, Capt. Thoumaian joined the staff at the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE) to help design and implement program evaluation and improvement efforts in the Defense Department.

He holds a B.A. in psychology and sociology, an M.A. in general experimental psychology, and a Ph.D. in social welfare and social work, and has completed a National Institute of Mental Health fellowship in Community Mental Health.



USPHS Capt. Armen Thoumaian, Ph.D.

# Presenters

## **Carter Frank, M.A., M.S.**

### **Research Scientist, Contract Support for DCoE**

Mr. Carter Frank has over 15 years of experience in program development and management at local, regional and national levels. The breadth of his 33-year career includes 11 years of military service, spans military and civilian environments, clinical and non-clinical mental health operations, training, human resource management, business development and government contracting. Mr. Frank holds a B.S. in mathematical sciences, a M.A. in counseling, and a M.S. in management information systems. He is a licensed clinical professional counselor.



Mr. Carter Frank

## **Ihab Marcus, M.B.A.**

### **Research Scientist, Contract Support for DCoE**

Mr. Marcus has over 20 years of experience in project management in psychological health settings for both government and private clinical treatment centers. Mr. Marcus has worked with corporate clients on project management and software integration and has provided services to the Department of Veterans Affairs. In addition, Mr. Marcus teaches courses on project management at the college level. Mr. Marcus holds a Master's degree from Marymount University and Project Management Professional (PMP) certification.



Mr. Ihab Marcus

# Moderator

## **Carmina Aguirre, M.A.**

### **Research Scientist, Contract Support for DCoE**

Ms. Carmina Aguirre has over 14 years of experience within the Defense Department. Her background includes executive leadership, psychological health, sexual assault prevention and response, and public affairs. In addition to supporting DCoE, she serves as Chief of Public Affairs in the Florida Air National Guard. Ms. Aguirre holds a B.A. in psychology and a M.A. in human services with a specialization in executive leadership.



Ms. Carmina Aguirre

# Overview and Objectives

This training presentation will provide guidance on ways programs can initiate a business case analysis process. In addition, it will discuss different ways a program can assess program costs and at a minimum determine cost per participant.

At the conclusion of this webinar, participants will be able to:

- Demonstrate knowledge of key concepts relevant to the use of business case and cost analyses in program evaluation
- Explain general strategies used to conduct business case analysis
- Initiate calculation of total program costs and costs per participant
- Select and implement strategies to address common challenges that programs face when analyzing cost information

# Agenda

- Introduction to Business Case and Cost Analyses
- Business Case Analysis
- Analyzing Program Costs
- Common Challenges
- Conclusion
- Resources
- Feedback and Q&A Session

# Introduction to Business Case and Cost Analyses



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# Cost Effective Mission Support

While accomplishing the mission remains the #1 priority, cost considerations have become the #2 priority:

- Memo Sec Def Memo, 27 Dec 2010 – Consideration of Costs in DoD Decision-Making
  - *“every new proposal or initiative will come with a cost estimate”*
  
- Memo Dept of the Army, 7 Jan 2011 – Implementation of Cost Management to Strengthen Financial Management
  - *“use Cost-Benefit Analysis (CBA) or similar analytical approaches/tools to support resource-informed decision making”*

# Evaluation Criteria for Funding Programs

Government and military financial management groups base funding for PH and TBI programs on criteria such as:

- Improvements to quality of care and access to care
- Support for mission priorities
- Return on investment
- Availability of measurable performance data
- Elimination of service gaps and redundancies
- Size and scope of impact

(Brock & Irwin, 2011)

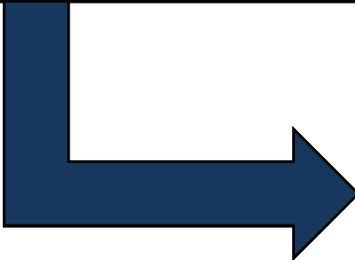
# Use Cost Analyses to Guide More Effective Use of Resources

## Core questions:

- Which is the most effective intervention to fund?
- How are program funds being spent?

## Other questions of interest:

- What types of analyses use cost measures?
- How are costs quantified?
- What are the average cost values per participant?



**How can resources be used more effectively?**

# Why Analyze Program Costs?

- Resources are scarce and stakeholders have to choose among viable alternatives. Analyzing program costs helps programs provide objective measures for stakeholders to use in making better informed decisions about funding
- Often the “best” choice is not obvious because interventions differ on many dimensions (e.g., services delivered, population addressed, outcomes metrics used)
- Performing cost analyses produces a strong value proposition – a clear statement comparing benefits with the costs and risks
- Cost evaluations help program administrators track how budgets are allocated across activities, and how well the program is functioning relative to its target goals and operating budget



# Alternative Comparison Decision Matrix

Cost Comparison – All Alternatives	Benefits Comparison – All Alternatives	Selection Criteria
Equal	Unequal	Choose the alternative that provides the greatest benefits for given level of costs
	Equal	Choose an alternative based on other factors and/or analyses (e.g., ease of use, availability, etc.)
Unequal	Unequal	Choose the top alternative based on ranked order of benefit/costs ratios
	Equal	Choose the alternative that is the least costly

# Business Case Analysis



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# What is a Business Case Analysis?

Business Case Analysis (BCA) is a decision support and planning tool that forecasts the likely financial results and other economic consequences of a course of action.

BCA asks:



*What happens if we take this or that course of action?*

# Benefits of Using a Business Case Analysis

## A Business Case Analysis...

- Examines the overall value of a future course of action
- Supports DoD's stated objectives to be cost-conscious and perform cost-related analyses where applicable
- Documents the reasons for a course of action, examines the available options, and describes the value of the action
- Allows a variety of factors or inputs to be considered equally

# Sample Outline for a Business Case Analysis

## I. Introduction & Overview

- A. Summary of the project
- B. Purpose of the BCA
- C. Threats and constraints that may impact the course of action



## II. Assumptions and Methods

## III. Conclusions and Recommendations

- A. Tangible economic benefits and intangible benefits
- B. Concrete, practical guidance on how to maximize results and minimize uncertainty for recommended courses of action(s)

# Begin Business Case Analysis with a Subject and a Purpose

- Subject: Most BCAs revolve around
  - A proposed course of action or decision
  - Meeting objectives addressed by the course of action
- Purpose: Answers the questions
  - Why is the case being built?
  - Who will use it?
  - For what purpose?
  - What information is needed in order to meet that purpose?



# Use Existing Program Documents

Useful information that may be available to your program could include, but is not limited to:

- Previously written BCAs (on a similar subject)
- Lessons learned from prior BCAs
- Financial objectives
- Budget/resource planning documents
- Business plans/proposals
- Official financial policies and procedures
- Assumptions and constraints
- Risks and potential changes in assumptions

# Business Case Analysis Scenarios

When conducting a BCA, prove or show that one course of action--or another--is the best choice by comparing carefully designed scenarios:

- A scenario is a story that describes what happens under one course of action
- In a BCA, the “what happens” is presented in a framework that will aid decision-makers and planners

# Analysis Methods for a Business Case Analysis

A variety of tools and techniques are typically used to analyze information for a BCA:

- Return on Investment (ROI)
- Cost-Benefit analysis
- Make vs. Buy analysis



# Return on Investment (ROI)

Return on Investment (ROI) gives insight to the following questions:

- What is received for what is spent?
- Do calculated returns outweigh the costs?
  - Positive ROI
- Do costs outweigh the calculated returns?
  - Negative ROI
- What time period is being considered?

# Cost-Benefit Analysis

A Cost-Benefit analysis includes and compares the benefits (objective or subjective) of a course of action with associated costs (e.g., expenses, time, etc.).

## Example *Objective* Benefits

- Cost reductions
- Changes in cycle time
- Return to duty rates

## Example *Subjective* Benefits

- Satisfaction levels
- Morale
- Quality of service

When conducting a Cost-Benefit analysis, identify whether these factors are positive or negative. After weighing these with the objective and subjective factors, determine the best course of action.



# Case Example

Consider sample program “Sierra” which faces the question of whether to hire a new psychiatrist:

Positive Factors	Negative Factors
<ul style="list-style-type: none"> <li>Lighter case load for other psychiatrists on staff</li> </ul>	<ul style="list-style-type: none"> <li>Increased salary expense</li> </ul>
<ul style="list-style-type: none"> <li>Increased access to care for participants</li> </ul>	<ul style="list-style-type: none"> <li>Additional office equipment (desk, computer, furniture) that will need to be purchased</li> </ul>
Objective Factors:	
<ul style="list-style-type: none"> <li>The additional provider will alleviate other provider workload by 15 program participants per week</li> </ul>	<ul style="list-style-type: none"> <li>\$150,000 per year in additional salary expense</li> </ul>
<ul style="list-style-type: none"> <li>An additional 20 program participants per week can be seen</li> </ul>	<ul style="list-style-type: none"> <li>Program Sierra has to pay \$4,500 in office equipment expenses</li> </ul>
Non-Economic Benefits	
<ul style="list-style-type: none"> <li>Increased participant satisfaction</li> </ul>	<ul style="list-style-type: none"> <li>Increased professional experience for staff members</li> </ul>
<ul style="list-style-type: none"> <li>Improve return-to-duty time</li> </ul>	<ul style="list-style-type: none"> <li>Higher program team morale</li> </ul>

# Make vs. Buy Analysis

When faced with a decision to either purchase a product/service or create that product/service in-house, it is a good practice to conduct a Make vs. Buy analysis.

The two most important factors to consider in a Make vs. Buy decision are:

- Cost
- Ability to produce the product/service

*Some programs may find that a “hybrid,” or combination of the two is a viable option.*



# Make vs. Buy Analysis (continued)

Two formulas are used in Make vs. Buy analyses. They are “Cost to Buy” and “Cost to Make”:

- Cost to Buy = volume x per-unit cost when buying
- Cost to Make = fixed costs + (per-unit direct cost x volume)

When conducting a Make vs. Buy analysis, be aware of:

- Volume
- Fixed costs
- Per-unit direct costs of making
- Per-unit costs of buying



# Make vs. Buy Analysis Example

Program Sierra is contemplating a new scheduling software product for 50 sites. Program Sierra can either:

- Purchase the software commercially off-the-shelf or
- Develop the software using a contractor

Cost to Buy and Cost to Make formulas:

- Cost to Buy = Volume x Per-unit cost when buying
  - 50 sites x \$2,000 per unit cost = \$100,000 cost to buy
- Cost to Make = Fixed costs + (Per-unit direct cost x volume)
  - \$35,000 fixed costs + (\$1,100 per unit x 50 sites) = \$90,000 cost to make

# Analyzing Program Costs



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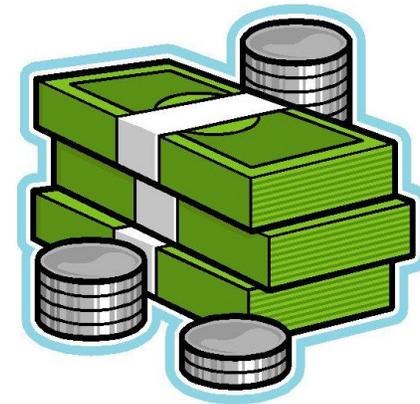
# What Does “Cost” Mean?

- Cost refers to the value of resources used to deliver services
- Relevant resource categories include:
  - Labor
  - Contracted services
  - Building and facilities
  - Materials and supplies
  - Donated resources
- For contracted resources, quantify costs using actual expenditures rather than budget line items because budgets may not reflect the amount of monies actually spent
- For donated resources, costs can be quantified as the expenditure that would have been incurred had the resource not been donated



# Different Ways of Looking at Costs

- Military economic climate
  - Reducing and/or streamlining costs
  - Maximizing value
- Cost analysis techniques
  - Cost-Effectiveness analysis
  - Cost-Benefit analysis



# Summary: Cost Analysis Techniques

Analysis Technique	Cost Measure	Outcome Measure
Cost-Effectiveness Analysis	Costs of operating program in dollars	Nonmonetary outcome units (e.g., life years gained, increased resilience, reduced depression, increased learning)
Cost-Benefit Analysis	Costs of operating program in dollars	Nonmonetary outcome units <b><u>converted into dollar amounts</u></b> (e.g., dollar value for depression based on costs of missed days of work and reduced productivity)

# Cost-Effectiveness Analysis

- An economic evaluation technique that examines the costs and outcomes of alternative intervention strategies
- Cost-Effectiveness analysis summarizes the value of a program into a single measure that reports cost per unit of health benefit

$$\frac{\text{Cost}_{\text{ALTERNATIVE}} - \text{Cost}_{\text{INTERVENTION}}}{\text{Outcome}_{\text{ALTERNATIVE}} - \text{Outcome}_{\text{INTERVENTION}}}$$

# Cost-Benefit Analysis

- A technique that expresses the program's costs and benefits entirely in dollar terms
- Cost-Benefit Analysis is more complicated to apply to mental health care than Cost-Effectiveness Analysis because it requires attaching dollar values to outcomes that are not directly measured in dollars (e.g., sense of community, depression)

$$\frac{\text{\$ Value of Benefits/Outcomes}}{\text{\$ Cost}} = \text{Cost-Benefit Ratio}$$

Compare ratios to determine the highest dollar value of Benefits/Outcomes for every \$1 in costs

# Determine Program Costs

Collecting accurate cost data is at the heart of every useful cost analysis

Steps to quantify program cost information:

- List the main activities the program performs
- List the resource categories used to support each program activity
- Assess the data available from existing sources such as time sheets, payroll accounts, bills and contracts
- Collect and document the activity costs on a worksheet
- Compute average cost values

Knowing the cost of each activity helps answer questions about the total cost of the program and the costs of specific activities

# Sample Cost Worksheet

## Total Program Costs

Example Program: Sierra Reintegration Training  
 Begin Date: 10/01/2013  
 End Date: 9/30/2014

COST COMPONENT	SCREENING	EDUCATION	INTERVENTION	OVERSIGHT/ ADMINISTRATION	TOTAL COST
Labor	\$12,175	\$17,350	\$59,870	\$80,360	<b>\$169,755</b>
Contracted Services	\$1,500	\$52,570	\$12,750	\$4,250	<b>\$71,070</b>
Materials and Supplies	\$1,250	\$15,980	\$4,950	\$23,090	<b>\$45,270</b>
Building and Facility	\$8,325	\$27,000	\$30,000	\$70,000	<b>\$135,325</b>
Donated Resources	\$2,500	\$20,000	\$16,030	\$18,290	<b>\$56,820</b>
<b>TOTAL COSTS</b>	<b>\$25,750</b>	<b>\$132,900</b>	<b>\$123,600</b>	<b>\$195,990</b>	<b>\$478,240</b>

# Cost Per Participant

## Average Program Costs

Example Program: Sierra Reintegration Training  
Begin Date: 10/01/2013  
End Date: 09/30/2014  
Number of Participants: 1,000

	SCREENING	EDUCATION	INTERVENTION	OVERSIGHT/ ADMINISTRATION	TOTAL
TOTAL COST	\$25,750	\$132,900	\$123,600	\$195,990	\$478,240
PARTICIPANTS	1,000	1,000	1,000	1,000	1,000
COST PER PARTICIPANT	\$25.75	\$132.90	\$123.60	\$195.99	\$478.24

Once cost values have been recorded, it is a straightforward exercise to compute average values by participant for each key activity and overall

# Common Challenges



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# Common Challenges FAQ

- How do I translate Business Case Analysis terms and concepts for stakeholders in military settings?
- What should I do if I am unable to obtain information about all of the financial aspects of my program?
- How do I work with hard-to-quantify benefits?

# How do I Translate Business Case Analysis Terms and Concepts for Stakeholders in Military Settings?

- Private industry term translations
  - “Investments” become “Costs”
  - “Profits” become “Savings”
  - “Returns” become “Cost-Effective Benefits”
- Business Case Analysis concepts support cost-analysis efforts in determining the best course of action
- Business Case Analysis practices are useful when a project or program considers changes in their operational and organizational processes

# What Should I Do if I Am Unable to Obtain Information About All of the Financial Aspects of My Program?

- Collecting accurate, highly detailed information can be burdensome:
  - Seek to collect the most accurate and precise data needed to answer evaluation questions (e.g., daily)
  - However, favor precision over accuracy in collecting cost data to ensure that the results can be reproduced (e.g., weekly)
- Donated resources (e.g., labor provided by military members and civilian employees) not reflected in a program's budget or expenditures may be estimated using salary averages derived from published pay scales



# How Do I Work with Hard-to-Quantify Benefits?

- Tangible Benefits
  - Improvements in cycle time
  - Positive impacts on readiness
  
- Intangible Benefits
  - Improved service member satisfaction
  - Improved service member morale
  - Improved mission capacity
  - Improved quality of healthcare delivery

# Conclusion



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# Key Takeaways

- ★ BCA and cost analyses support program leadership efforts in achieving DoD requirements for cost-effective mission support
- ★ Programs can use BCA strategies to provide evidence of a program's effectiveness
- ★ Analyses of program costs can inform program improvement decisions



*Photo by: Stewart Leiwakabessy*

# References and Resources



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# References and Resources (continued)

Agency for Healthcare Research and Quality: <http://www.qualitymeasures.ahrq.gov>

American Evaluation Association: <http://www.eval.org/>

Centers for Disease Control and Prevention, Program Performance and Evaluation Office: <http://www.cdc.gov/program/>

Center for Quality Assessment and Improvement in Mental Health: <http://www.cqaimh.org/NIMHQM.htm>

DCoE Program Evaluation: [http://www.dcoe.mil/About\\_DCoE/Program\\_Evaluation/Resources\\_and\\_Training.aspx](http://www.dcoe.mil/About_DCoE/Program_Evaluation/Resources_and_Training.aspx)

Defense and Veterans Brain Injury Center: <http://dvbic.dcoe.mil/>

Deployment Health Clinical Center: <http://www.pdhealth.mil/>

Medicine Sans Frontiers (Doctors Without Borders):

<http://fieldresearch.msf.org/msf/bitstream/10144/84230/1/Qualitative%20research%20methodology.pdf>

Minnesota Department of Health, Quality Improvement Toolbox: <http://www.health.state.mn.us/divs/opi/qi/toolbox/>

National Center for PTSD: <http://www.ptsd.va.gov/professional/assessment/overview/index.asp>

National Institutes of Health Toolbox: <http://www.nihtoolbox.org/>

National Quality Forum: [www.qualityforum.org/Measures\\_Reports\\_Tools.aspx](http://www.qualityforum.org/Measures_Reports_Tools.aspx)

Qual Page, University of Georgia: <http://www.qualitativeresearch.uga.edu/QualPage/index.html>

# References and Resources (continued)

Substance Abuse and Mental Health Services Administration, National Behavioral Health Quality Framework:

<http://www.samhsa.gov/data/national-behavioral-health-quality-framework>

University of Kansas, Community Toolbox: <http://ctb.ku.edu/en>

University of Wisconsin-Extension: [www.uwex.edu/ces/pdande](http://www.uwex.edu/ces/pdande)

U.S. Army Public Health Command, Behavioral and Social Health Outcomes Program (BSHOP):

<http://phc.amedd.army.mil/topics/healthsurv/bhe/Pages/BehavioralandSocialHealthOutcomesProgram%28BSHOP%29Services.aspx>

U.S. Department of Veterans Affairs, Health Services Research & Development: <http://www.hsrd.research.va.gov/>

# Feedback and Question-and-Answer Session



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# Feedback and Question-and-Answer Session

- We are now open for a live question-and-answer session. Please submit your questions anonymously via the Question box located in the center of your screen.
- Your feedback is important!
  - After the Q&A, please follow the displayed link to complete the Interactive Customer Evaluation (ICE) card
  - Or, you may immediately access the ICE card via the Chat box
- Additional questions and comments may be directed to

Capt. Armen Thoumaian

[armen.h.thoumaian.mil@mail.mil](mailto:armen.h.thoumaian.mil@mail.mil)

# Save the Date

The next webinar in the DCoE PEI Webinar Series will be on July 21, 2015 from 1–2:00 p.m. ET

**Reporting Program  
Evaluation Findings: How to  
Demonstrate Effectiveness  
to Stakeholders**

July						
S	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
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