

Budget Impact Analysis

A worked example

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Objectives

- Review basic concepts of budget impact analysis
- Review the BIA for a counseling program
- Discuss policy implications

Overview

- Evaluates a scenario rather than a single action
- Includes comparison to the *status quo*
- Includes sensitivity analysis

Overview

- For budgeting/forecasting
- To estimate feasibility/affordability
- Takes the buyer/provider/payer's perspective.

Overview

- Short horizon – usually 1-3 years at most.
- Long-term modeling is unnecessary.
- Costs are not discounted
- Savings in far future cannot offset initial/start-up or investment costs.

Overview

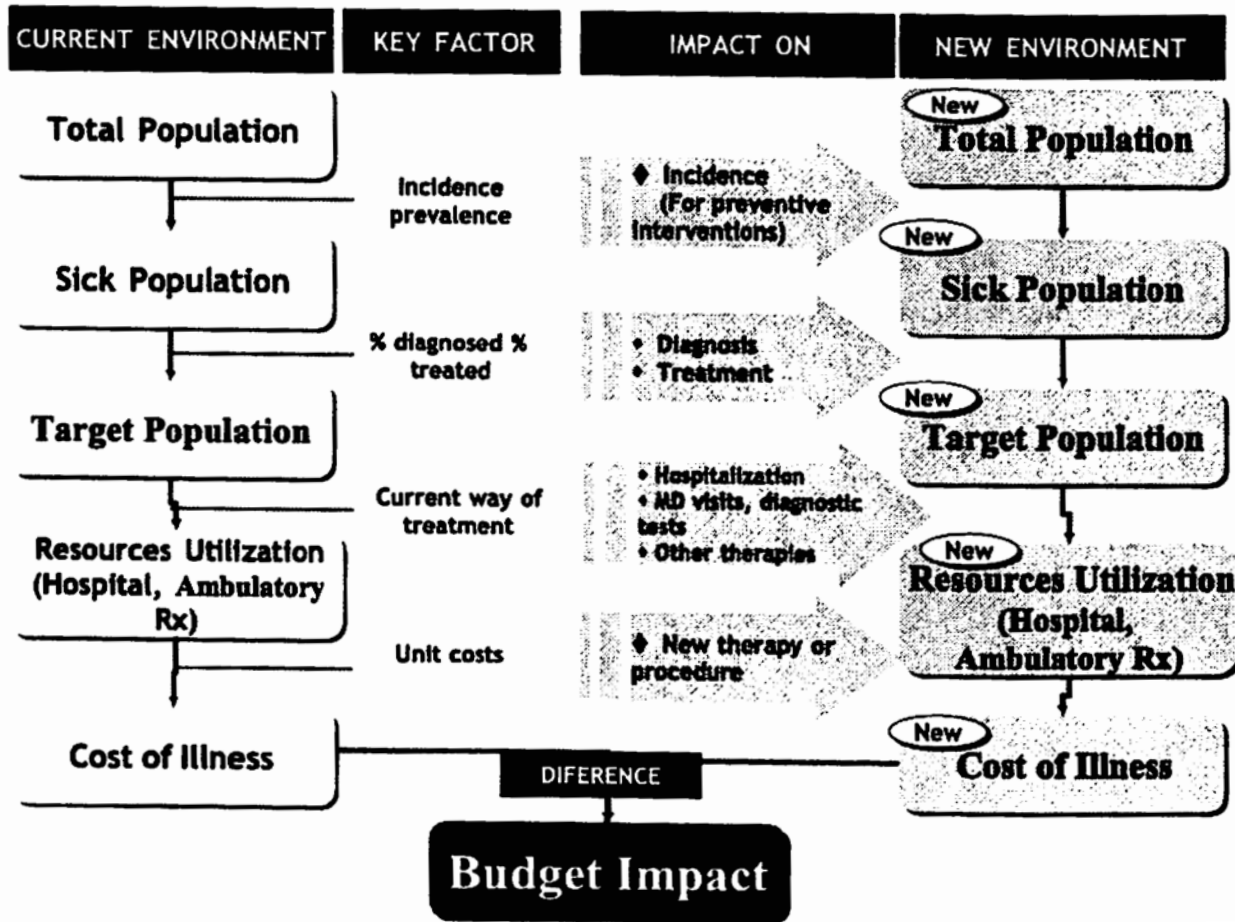
- BIA does not measure utility.
- No need to survey patients.
- No calculation of QALYs.

Framework

■ Estimates






- The cost of the intervention
- Changes in staffing, schedules and use of technology
- Changes in pt. access/throughput/demand for healthcare
- Potential Savings
- Cost to operate

Conceptual Diagram



Source: Mauskopf et al. (2007)

Diagram redux

Current Environment	Key Factors	Budget impact analysis	Impacts	New Environment
Total Population	Incidence and prevalence		Incidence and prevalence	New Total Population
Sick population	% diagnosed and % treated		Diagnosis and treatment	New Sick population
Target Population	Current treatment regimen		New therapy or procedure	New Target Population
Resource Utilization	Unit cost		Unit costs	New Resource Utilization
Cost of Illness				New Cost of Illness

Comparison scenario

- How will the adoption change:
 - Demand for care (number of patients seeking care)
 - Future need for care, within BIA horizon
 - Copayments collected, VERA payments received

Costing the intervention

- Personnel costs
 - Clinician time
 - Support staff
- Supplies/DME
- IT
 - Equipt
 - Software
 - Maintenance
- Other?



Labor costs

- Summarize the time
- Value the time
 - VA labor estimates
 - http://www.herc.research.va.gov/resources/faq_c02.asp
 - Local salary data
 - BLS
 - Other?

Cost Data Sources: Supplies, Machines, DME

- National Prosthetics Patient Database (NPPD)
- Your local A&MMS purchasing officer

Healthcare utilization

Cost Data Sources: Encounters

- Decision Support System (DSS) National Data Extracts (NDEs)
 - Inpatient files
 - discharge (one record per stay)
 - bedsection (one record per bedsection segment of the stay)
 - Outpatient files
 - Encounters: one record per person-clinic-day
 - Pharmacy: one record per prescription

Cost Data Sources: Encounters

- HERC Average Cost data
 - Inpatient files
 - discharge: can be linked to PTF discharge files
 - med/surg discharges and non-med/surg discharges: can be linked to PTF bedsection files
 - Outpatient files
 - encounters: can be linked to OPC
 - pharmacy: none except when delivered in clinic (use DSS or PBM pharmacy data)

Cost of the implementation

Implementation design

- Clinician training
 - Support training/admin staff training
- Leadership engagement
- Support personnel
- Technical experts

Data collection tools

- Diaries
- CPRS
- Recall surveys
- Observations
- Web trends
- Other

Will these costs change over time?

- Intervention
- Implementation
- Utilization
- Ongoing support
- Maintenance
- Spread?

An example

Cost of the intervention

- Direct measurement of a counselor's time to provide a one-on-one intervention
 - Each patient
 - Every visit/phone call/email

Template: SCI VOCATIONAL INTEGRATION PROGRAM

ZZZZAZZU,TEST (000-00-5897) is participating in a research study titled, "A Spinal Cord Injury Vocational Integration Program (SCI-VIP): Implementation and Outcomes" (IRB# 04-094).

As part of the clinical services provided through study participation, the Vocational Rehabilitation Counselor (VRC) had contact with

Veteran
 Employer
 State Vocational Rehabilitation
 Vocational Rehabilitation and Employment
 Other:

The contact was by phone by email face-to-face, occurred on _____, and lasted _____ minutes.

The following Procedures were conducted:
Click all that apply

THE TOTAL OF ALL MINUTES ENTERED FOR THE ACTIVITIES BELOW MUST EQUAL THE TOTAL SESSION MINUTES ENTERED ABOVE.

<input type="checkbox"/> Orientation/CWT Intake	*	<input type="text"/>	Minutes
<input type="checkbox"/> Focused Interview Assessment	*	<input type="text"/>	Minutes
<input type="checkbox"/> Treatment Plan Development	*	<input type="text"/>	Minutes
<input type="checkbox"/> Referrals for Collateral Services	*	<input type="text"/>	Minutes
<input type="checkbox"/> Job Readiness Training	*	<input type="text"/>	Minutes
<input type="checkbox"/> Job Development	*	<input type="text"/>	Minutes
<input type="checkbox"/> Vocational Counseling	*	<input type="text"/>	Minutes
<input type="checkbox"/> Worksite Accommodation	*	<input type="text"/>	Minutes
<input type="checkbox"/> Job Placement	*	<input type="text"/>	Minutes
<input type="checkbox"/> Vocational Case Management	*	<input type="text"/>	Minutes
<input type="checkbox"/> Employment Supports and Job Coaching	*	<input type="text"/>	Minutes
<input type="checkbox"/> Treatment Plan Review & Revision	*	<input type="text"/>	Minutes
<input type="checkbox"/> Employment Follow-up	*	<input type="text"/>	Minutes
<input type="checkbox"/> Other: (specify) _____	*	<input type="text"/>	Minutes

Clinical activity(ies) were provided in an individual treatment setting.

Inbox - Microsoft Outlook
 RE: VRC Template Chan...
 CPRS - Patient Chart
 8:23 AM

Template: SCI VOCATIONAL INTEGRATION PROGRAM

<input type="checkbox"/>	Treatment Plan Development	*	<input type="text"/>	Minutes
<input type="checkbox"/>	Referrals for Collateral Services	*	<input type="text"/>	Minutes
<input type="checkbox"/>	Job Readiness Training	*	<input type="text"/>	Minutes
<input type="checkbox"/>	Job Development	*	<input type="text"/>	Minutes
<input type="checkbox"/>	Vocational Counseling	*	<input type="text"/>	Minutes
<input type="checkbox"/>	Worksite Accommodation	*	<input type="text"/>	Minutes
<input type="checkbox"/>	Job Placement	*	<input type="text"/>	Minutes
<input type="checkbox"/>	Vocational Case Management	*	<input type="text"/>	Minutes
<input type="checkbox"/>	Employment Supports and Job Coaching	*	<input type="text"/>	Minutes
<input type="checkbox"/>	Treatment Plan Review & Revision	*	<input type="text"/>	Minutes
<input type="checkbox"/>	Employment Follow-up	*	<input type="text"/>	Minutes
<input type="checkbox"/>	Other: (specify) <input type="text"/>	*	<input type="text"/>	Minutes

Clinical activity(ies) were provided in an individual treatment setting.

Clinical activity(ies) were provided in a group treatment setting, with a total of patients.

<-- Click here to continue

Narrative:

All None * Indicates a Required Field Preview OK Cancel

Start | Inbox - Microsoft Out... | Coding Questions - Me... | WRC Documentation M... | CM Call 060906 - Micro... | CPRS - Patient Chart | 11:44 AM



TODAY'S DATE	___ / ___ / ___	STAFF INITIALS	___
	m m / d d / y y y y		
SUBJECT ID#	___ - ___	MONTH/DAY	___ / ___
		B DAY	m m / d d

FORM 14 WEEKLY VRC TEMPLATE REVIEW

1. Progress Note # _____
 2. Appointment Date: ___ / ___ / _____
 3. Appointment Time: ___ : ___ AM / PM
 4. Appointment Total Length: _____ Minutes
 5. The appointment was: _____ Attended _____ No-Showed* _____ Cancelled*
- * If appointment was no-showed or cancelled, enter data for items 1 through 7 only.

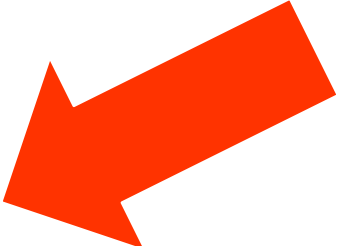
Clinical Activity	Check if provided	If provided, record minutes
8. Orientation / CWT Intake		
9. Focused Interview Assessment		
10. Treatment Plan Development		
11. Referrals for Collateral Services		
12. Job Readiness Training		
13. Job Development		
14. Vocational Counseling		
15. Worksite Accommodation		
16. Job Placement		
17. Vocational Case Management		
18. Employment Supports & Job Coaching		
19. Treatment Plan Review & Revision		
20. Employment Follow-Up		
21. Other:		

22. Treatment Setting: ___ individual ___ group (#pts ___)

6. Contact Type: (Check ONE)
 - ___ a. Face-to-Face
 - ___ b. Phone
 - ___ c. Email
7. VRC Met with: (Check all that apply)
 - ___ a. Veteran
 - ___ b. Employer
 - ___ c. State VR
 - ___ d. VR&E
 - ___ e. Other:

23. List Procedure Codes

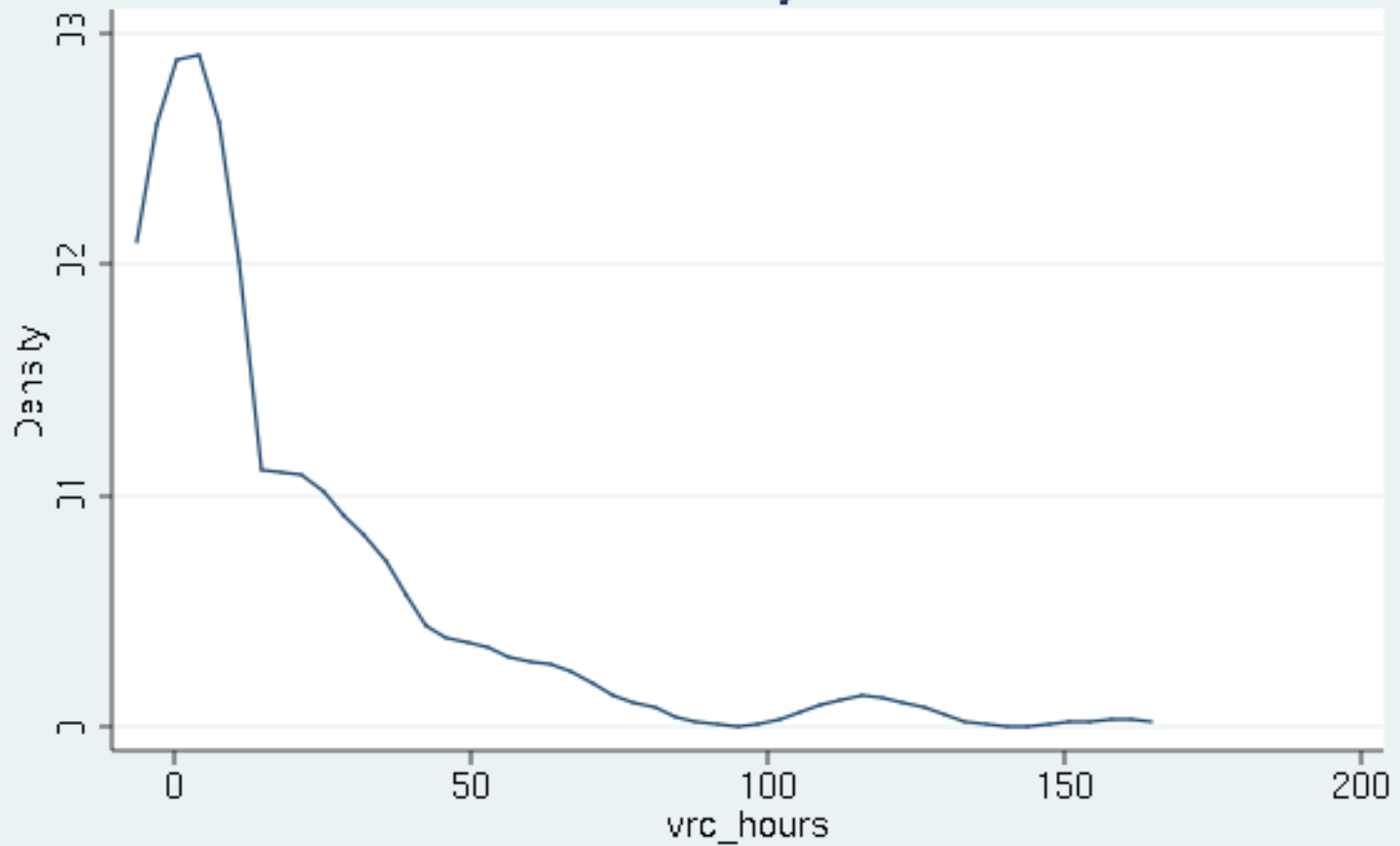
- 23a. _____
- 23b. _____
- 23c. _____
- 23d. _____
- 23e. _____
- 23f. _____
- 23g. _____



Cost of the intervention

- Total minutes for each subject in 12mo.
- Times average hourly salary for counselor in VA (\$51.35 - includes benefits)

Kernel density estimate

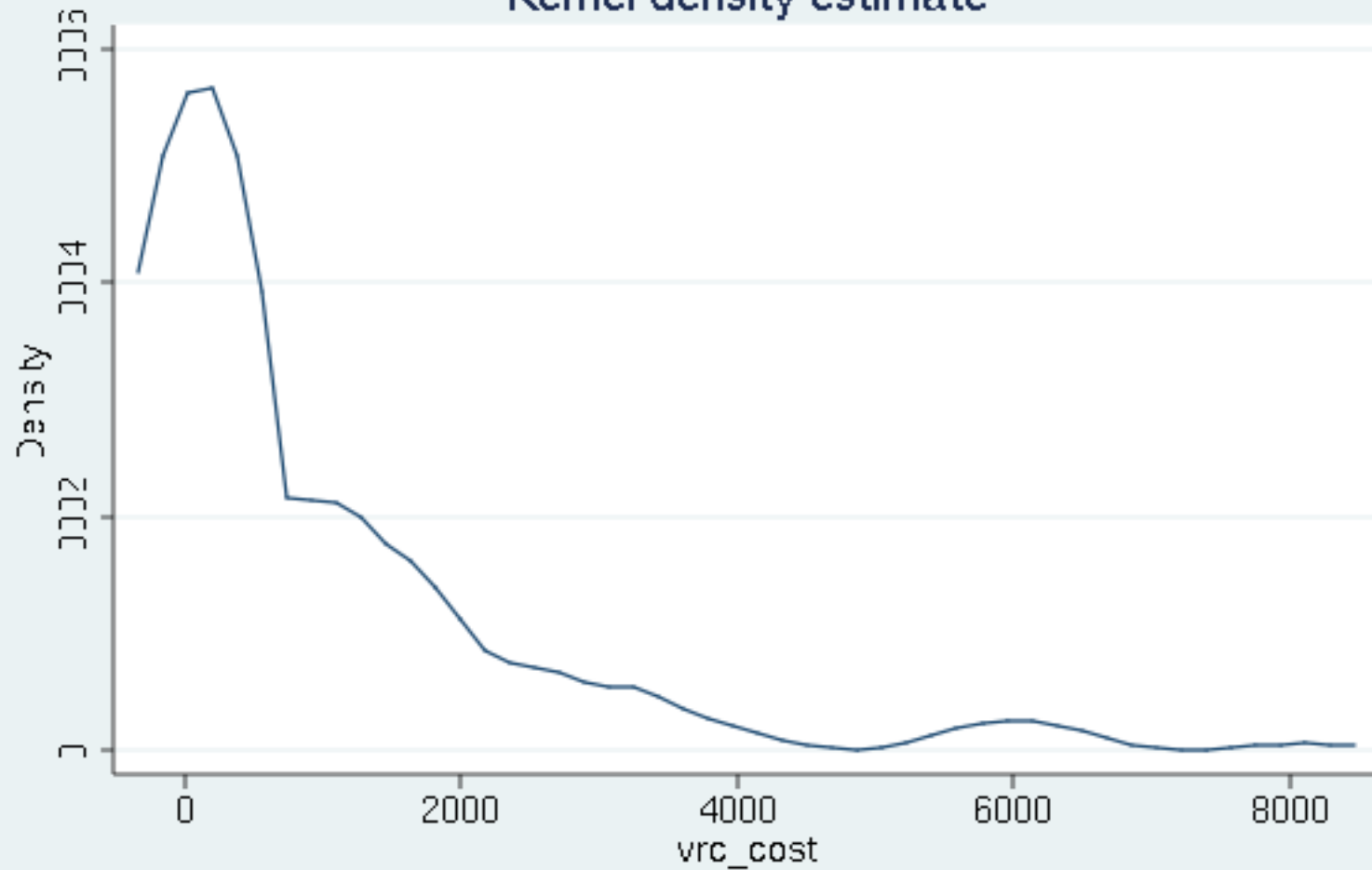


kernel = epanechnikov, bandwidth = 6.5526

Cost of the intervention

- Participants received an average of 35.5 hours of counseling (31.4 SD)
- Average cost per participant = \$1821 (\$1614 SD) (35.5 x \$51.35/hour)
- One participant received 158.3 hours of counseling

Kernel density estimate



kernel = epanechnikov, bandwidth = 336.4766

Intervention Costs

Variable	Mean	Std. Dev.	Min	Max
Provider Hours	35.5	31.4	1.0	158.3
Provider Cost	\$1,821	\$1,614	\$51	\$8,127

N=81

The cost of VA utilization

- VA PTF and NPCD
- Merged with DSS
- Total costs of VA care
- 12 months from date of enrollment

VA Healthcare costs

Cost type	Intervention (95% CI)	Usual Care (95%CI)	Difference	P-value
Inpatient costs	\$7,370	\$12,406	\$5,035	0.313
	(\$536-\$14,205)	(\$5,350-\$19,461)		
VA Outpt ED costs	\$112	\$110	\$2	0.956
	(\$51-\$173)	(\$47 - \$172)		
VA Outpt clinic costs	\$8,679	\$8,641	\$37	0.975
	(\$7,070-\$10,288)	(\$6,980-\$10,303)		
Total VA Utilization Costs	\$19,774	\$24,691	\$4,917	0.365
	(\$12,338-\$27,209)	(\$17,014-\$32,368)		

NB

- Five participants in the usual care group reported receiving non-VA counseling services
- One of these reported 35.8 hours of counseling services.
- Included in the total cost estimation for the UC group

Implementation costs

- 2 FTE coaches/trainer/fidelity monitors
- Counselor time in training and fidelity monitoring (est. at 30% time)
 - Average Annual salary + benefits = \$107,219
 - Number of FTE counselors in study = 6

Implementation costs

	N	Salary base	Percent time	Total cost	Cost per subject
Counselors	6	\$107,219	30	\$192,994	\$2,383
Trainer/coaches	2	\$150,000	100	\$300,000	\$3,704
Total implementation cost per subject*					\$6,087
* N=81					

Total costs

Cost type	Intervention (95% CI)	Usual Care (95%CI)	Diff.	P-value
Intervention	\$1821 (\$1567-\$2076)			
Total VA Utilization	\$19,774 (\$12,338-\$27,209)	\$24,691 (\$17,014-\$32,368)	\$4,917	0.365
Implem. costs	\$6,087			
Total costs	\$27,682 (\$20,240 - \$35,125)	\$24,691 (\$17,008-\$32,374)	\$2,991	0.581

Budget Impact Results

- Non-significant difference in costs
 - \$2991 ($p=0.581$) (*including counselor time and implementation costs*)
- Intervention total is more expensive but difference is not significant
- Suggests implementation of intervention will be cost neutral to VA

What if.....?

- The difference were significant:

Diagram redux

Current Environment	Key Factors	Budget impact analysis	Impacts	New Environment
Total Population	42,000	➡	No change	New Total Population
% diagnosed and % treated	0	➡	50% (21,000)	New Sick population
Current treatment regimen	0	➡	New therapy or procedure difference =	New Target Population
Resource Utilization	\$0	➡	\$ 2991.	New Resource Utilization
Cost of Illness	0	➡	\$62,811,000	New Cost of Illness

Questions

Reading

- Liu CF, Rubenstein LV, Kirchner JE, et al. Organizational cost of quality improvement for depression care. *Health Serv Res.* Feb 2009;44(1):225-244.
- Wagner TH, Engelstad LP, McPhee SJ, Pasick RJ. The costs of an outreach intervention for low-income women with abnormal Pap smears. *Prev Chronic Dis.* Jan 2007;4(1):A11.
- Wagner TH, Goldstein MK. Behavioral interventions and cost-effectiveness analysis. *Prev Med.* Dec 2004;39(6):1208-1214.

Reading (con't)

- Fortney JC, Maciejewski ML, Tripathi SP, Deen TL, Pyne JM. A budget impact analysis of telemedicine-based collaborative care for depression. *Med Care*. Sep 2011;49(9):872-880.
- Mauskopf JA, Sullivan SD, Annemans L, et al. Principles of good practice for budget impact analysis: report of the ISPOR Task Force on good research practices--budget impact analysis. *Value Health*. Sep-Oct 2007;10(5):336-347.