RAND HEALTH

Accelerating Progress in Obesity Prevention: Moving Towards Cost-Effective Approaches

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Outline of Talk

- **Economic versus public health view**
  - **integrating both perspectives will strengthen political acceptability and accelerate progress in obesity prevention**
- **Asking the right question for CEA**
- **What do we know so far?**
- **Conclusion and Recommendation**

Economic Vs Public Health View

- **Both play an important role in policy process**
- **Often seemingly at loggerheads**
- **Interventions supported by both perspectives most likely to be effective and politically acceptable**
- **Without understanding the economic perspective, public health professionals will have limited influence**

The Public Health View

- **Intervene if health could be improved**
- **Expert opinion to evaluate desirable outcomes**

Limitations of Public Health View

- **No explicit role for individual preferences**
- **No explicit consideration of other trade-offs**
- **Often out-of-touch with majority opinion – making industry lobbyists seem the more "reasonable" party**


YOU
ARE TOO
STUPID
...to make your own food choices. At least according to the food police and government bureaucrats who have proposed "fat taxes" on foods they don't want you to eat. Now the trial lawyers are threatening class-action lawsuits against restaurants for serving America's favorite foods and drinks.
We think they're going too far.
It's your food. It's your drink. It's your freedom.
Find out more about attacks on your favorite foods and drinks at:
ConsumerFreedom.com

The Economic View

- Health only one of many competing goals
- Explicit consideration of trade-offs
- Consumer sovereignty over outcomes
  - Central feature of the US institutional framework

- Only intervene if market failure
  - Externalities
  - Underprovision of public goods/services
  - Information problems

Guidelines For Federal Regulation

- **Clinton EO 12866: "… identify the problem that [regulation] intends to address (including, where applicable the failures of private markets or public institutions that warrant new agency action)…"**
- **Obama, EO 13563 (Jan 2011): "[Regulation] must take into account benefits and costs, both quantitative and qualitative"**
- **"..use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible."**

Summary

- Economics concerned with distribution of costs/benefits (there is more to it than cost-effectiveness), important complement to public health view
- Federal agencies need to consider costs and benefits of regulations
- Market failures good justification for interventions
- Interventions may be most successful and politically sustainable when public health and economic perspectives coincide

Outline of Talk

- Economic versus public health view
- Asking the right question for CEA
  - bad arguments: "cost savings"
  - consider social perspective, distribution of costs/benefits
- What do we know so far?
- Conclusion and Recommendation

The Challenge: Making the case for obesity prevention – when it costs money

- **Need to develop strong evidence in the absence of RCTs (it isn't there)**
- **Need to make a complete argument (fairness and distribution of costs and benefits)**
- **Need to respond to intuition - expected benefits should somehow match stimulus**

The Worst Argument: "Save (Medical) Costs"

- Financial ROI analyses are not unreasonable for business decisions, but make no sense here
  - Only financial, doesn't even look at health benefits
- Empirically almost certainly wrong for obesity intervention: Very few prevention interventions reduce total costs
- Getting rid of hospitals and doctors or health insurance surely would reduce medical costs - nobody suggests that
- More smoking would reduce costs for social security, pensions, Medicare - "savings" of about $0.32 per pack of cigarettes smoked

Make Argument Based on Health Benefits

- **Fatal flaw of cost-offset argument is conceptual**
  - **The goal of prevention (or medical care) is to IMPROVE HEALTH**
- **But resources are constrained and maximizing health benefits means finding the most cost-effective interventions**

Cost-Effectiveness and Cost-Utility Analysis (CEA/CUA)

- Requires quantified health outcomes
- Outcomes
  - CEA – Natural units
    - Cases of obesity/disease prevented
    - Life-years saved
  - CUA – Preference-based measure of health
    - Combination of mortality and morbidity
    - QALYs/DALYs
- Include all costs
- Social perspective

"Forgetting" to account for all costs undermines credibility

- **Likely to polarize the debate even more, the opposite of building broad support**
- **Example: Sacks et al. Int J Obes, 2011**
  - **Modelled comparison of cost-effectivess of tax and traffic light labeling**
  - **"taxes on unhealthy foods are likely to offer excellent value for money"**
  - **Why? Well, taxes don't cost anything in the model other than enforcing collection……**
  - **Taxpayers will disagree with that**

Cost-Benefit Analysis (CBA)

- Health outcomes are converted to dollars
  - Costs and benefits in same units of measure → can calculate net benefit to society
  - Can compare to non-health policies and outcomes
- Valuing health gains in dollars too controversial to be useful here
- CBA used often in regulatory policy analyses, but usually when valuation of benefits is less problematic than in health

Summary: Cost Saving ≠ Cost Effective

- **Cost-effective means good value for the resources used compared to alternative interventions/policies**
  - **That is the best we can hope for**
- **"(health care) Cost-saving" is unlikely to exist for a real obesity intervention that provides health benefits**
  - **So a hurdle that is far too high to set for obesity interventions**
  - **And why should prevention be held to a higher standard than medical care?**

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- Asking the right question for CEA
- What do we know so far?
  - evidence shakier than appreciated
  - strongest effects/best CE ratios tend to come from weakest studies
- Conclusion and Recommendation

Economic Analysis of Physical Activity Interventions

- **Systematic review of PA interventions identified 91 interventions with evidence of effectiveness and cost information**
- **Not limited to children (except school interventions)**
- **CER as $ per MET-hour (not enough information to translate either to obesity or broader health outcomes)**
- **Range from $0.001 to $60**
- **Low CER is better (more cost-effective)**

Wu et al., Am J Prev Medicine, 2011, 40(2), 149-158

Results for Physical Activity Interventions

- **Most cost-effective group: point-of-decision prompts (0.07$ per MET-hour), but absolute effects tiny**
- **School-based interventions (median 0.40$) below median CER of all interventions**
- **Least cost-effective groups: “social support”, “individually adapted behavior change”**
- **Unclear: creating/improving access for physical activity, community-wide health campaigns**
  - **Few interventions**
  - **CER for similar interventions vary in order of magnitude**

Cost-Effectiveness in Obesity: Modeling Approach/Simulation

- No single study provides enough information for CEA for many of the most relevant policy suggestions (food taxes, advertising bans, fast food ban, supermarkets)
- For the foreseeable future, somewhat weaker modeling/simulation approaches are needed (Levy et al., 2011)
- But even that is only beginning, mainly for Australia (ACE-obesity)
- Best work so far, but too many limitations:
  - Speculative health outcome link (DALY)
  - Requires more reliable estimates on effectiveness
  - Omits some central costs/consequences

Results from ACE-obesity

- **Traffic-light nutrition labeling and junk food tax "dominant"** (Sacks et al.,, 2011)
- **Problematic assumptions, e.g.**
  - **labeling leads to a 3 pound weight loss in the population?**
  - **No welfare losses from taxes?**

- **Removing television advertising to Australian children also very cost-effective** (Magnus et al., Int J. Obes, 2009)

- **Not cost-effective according to ACE-obesity:**
  - **Active After School Communities (A$82,000/DALY)**
  - **Active transport for primary school children (A$760,000/DALY)** Moodie et al, 2009, 2010
- **More modeling results in the pipeline, but they trickle out one CER at the time.**

CEA for Built Environment and Obesity

- **Evidence on associations between BE and obesity need to be strengthened before modeling makes sense**
- **Systematic review on built environment and obesity:**
  - **"Great heterogeneity across studies limits what can be learned from this body of evidence" (Feng et al., 2010).**
- **Detail of interventions too vague for costing ("increase number of supermarkets")**
- **Current numbers used in debate are cherry-picked and likely to dramatically overstate possible outcomes**
  - **WH Task force cites one cross-sectional result to support recommendation for supermarkets.**

Are Published Research Findings Credible?

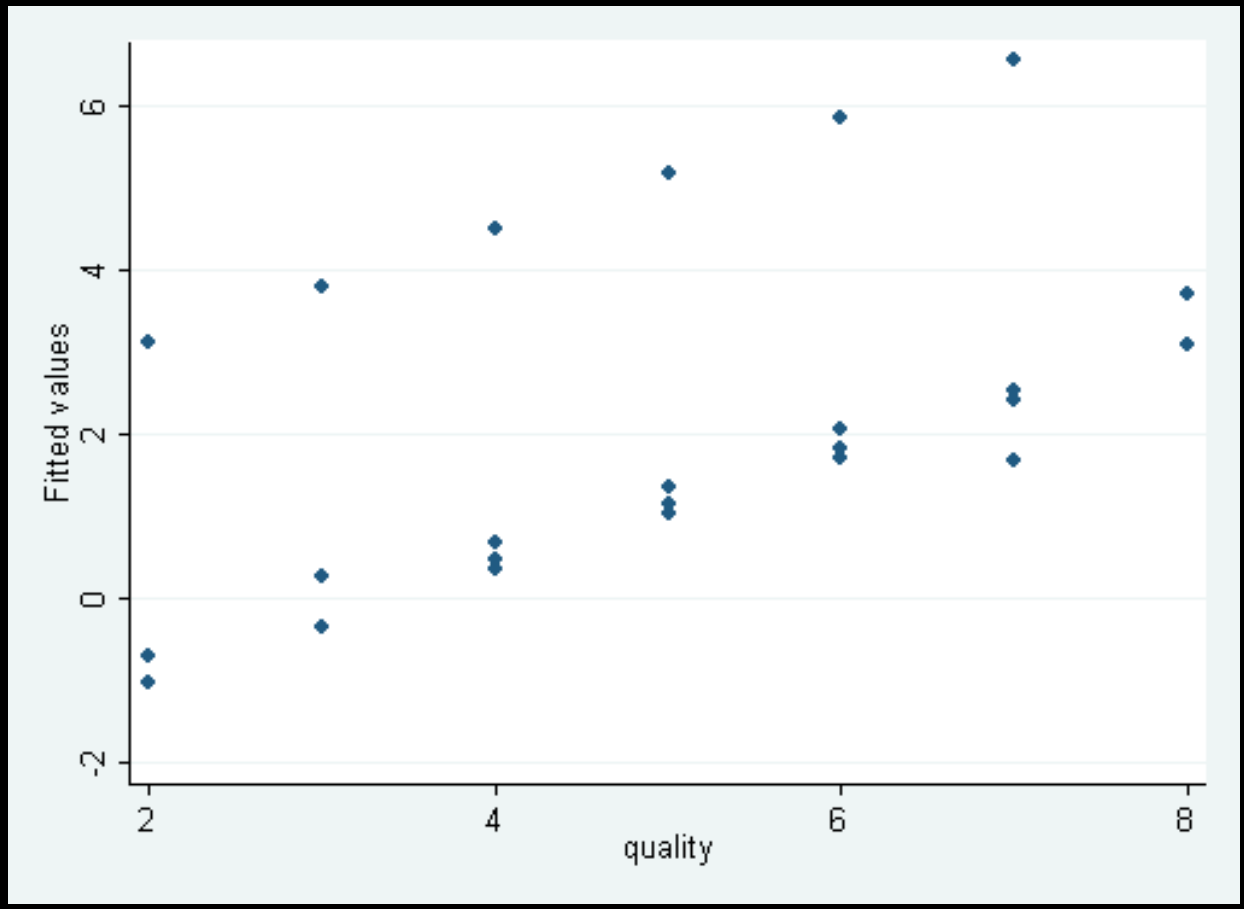
- **Published results are not as reliable as nominal statistical tests suggest**
  - **combination of publication bias, low statistical power in individual studies, and selection biases**
- **Rate of false published results high in new and competitive research topics, e.g.**
  - **Initial explosion of findings on genetic markers of obesity and diabetes that could not be replicated (Redden and Allison, J Nutr 2003)**

Study Quality and Estimated Effects

- Use the 136 CER of physical activity interventions in Appendix A (Wu et al., 2011)
- Delete the highest and lowest value (too good/bad to be true?)
- Quality is scored 0-9 (control group, objective measurement, randomization, representativeness, etc.) - higher is better
- Regress CER (lower is better) on study quality and and intervention type
- Or use ln(CER) because it is a ratio and the change from .1 to 1 is as big as from 1 to 10

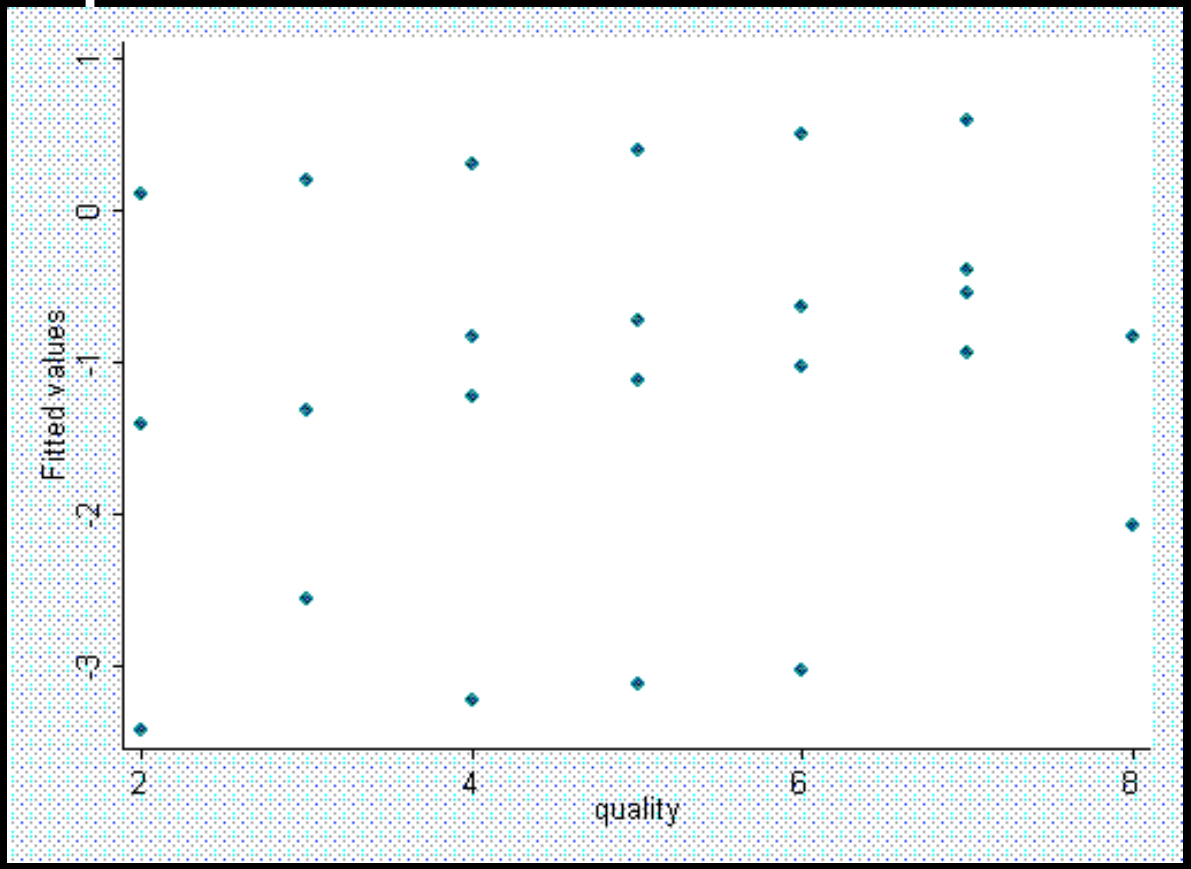
Best Results Come From the Weakest Studies

- Fitted values for linear model shown
- p-value for quality measure=0.02



Sensitivity Analysis: Regression of Ln(CER)

- **Fitted values show, but ln values harder to interpret.**



Biases May Be Amplified in Policy Process

- **Is the best available evidence used or the most convenient one for advocacy?**
- **"It may be politically more expedient to promote an increase in consumption of healthy items rather than a decrease in consumption of unhealthy items, but it may be far less effective" (Cohen et al. Public Health Reports, 2010)**

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1. Integrate Economic and Public Health Perspectives

- **Would accelerate progress in obesity prevention through**
  - **Avoiding ideological battles**
  - **Broader support base**
  - **Explicit attention to trade-offs and efficiency will encourage more efficient use of scarce prevention resources**

2. Avoid "Cost-Saving", Cost-Offset Claims

- Not very credible
- Conceptually flawed
- Likely to be counterproductive

3. CE Estimates Need Development

- **Very limited ability to inform decision at this point**
- **At best (and even that is questionable), we can use CE to identify broad classes that are more or less cost-effective.**
- **Almost no CE studies out there and very difficult to create CE comparisons from existing data.**
- **Modeling/simulation will be main approach for a while, but even that is at a very early stage.**

4. Avoid Exaggerating Results from Early Research

- **Best available evidence does not mean "best looking" estimates, "most significant" coefficients, or "largest" numbers**
- **High rates of false positives and overestimates are common in emerging areas of investigation**
- **Early results are rarely replicated and estimated effect sizes tend to become smaller**
- **We noticed that the best cost-effectiveness ratios of physical activity intervention tend to come from lower quality studies**

4b. And Do Pay Attention to New Evidence

- **Higher quality follow-up studies with more qualified results may have lower visibility, but could be the better ones to use**
- **WH Task Force food desert description and Obama's $400 supermarket initiative seem at odds with conclusions of USDA report for Congress (transportation is the issue).**

5. Replication is Needed

- **In contrast to basic research, publications on associations between obesity and the environment have an immediate and sizeable impact on policy.**
- **We believe that accelerating this "shake down" period through systematic replication would be a good strategy.**

6. In the meantime, keep a diversified portfolio

- **“Big ticket” items may squeeze out less ambitious, but more promising alternatives**

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