

# Prevention, Treatment, and Rehabilitation; a Three-pronged Approach to Optimizing Visual Health

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Presented at: ARVO, Session #143, Economic  
Evaluation of the Impact of Visual Impairment  
and Interventions for Low Vision -  
Minisymposium ,

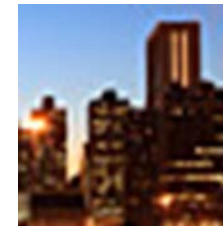
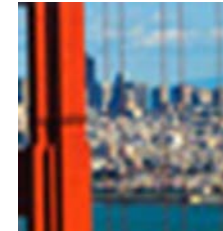
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NORC

at the UNIVERSITY of CHICAGO

# Presentation Overview

- General Types of Economic Studies
- Uses of Economic Information to Guide Health Policy and Research
- Economic Burden of Visual Health
- Research Compared to Burden
- Summary
- So What? How can economics help prioritize visual health policy?



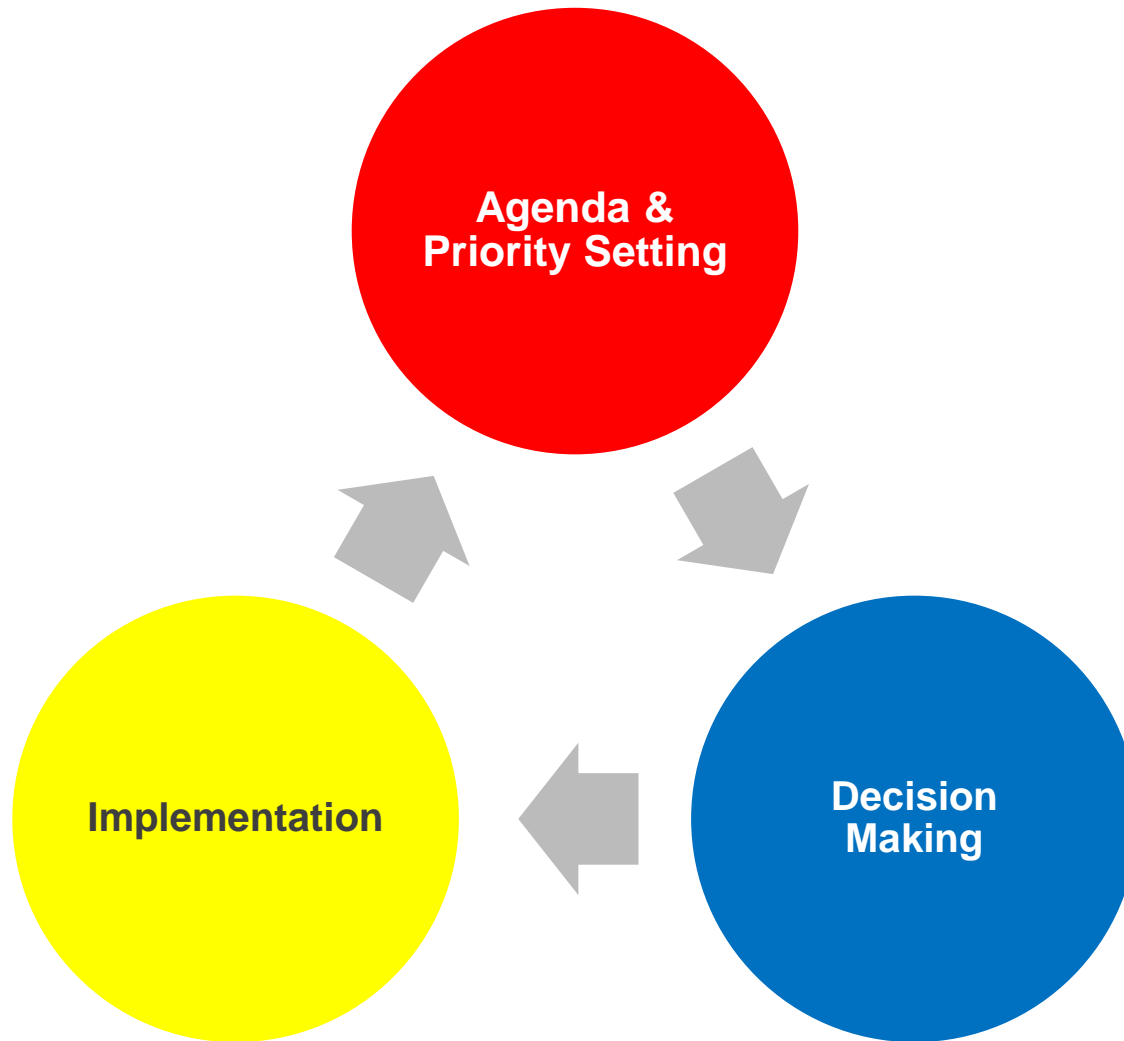
# Types of Economic Studies

Name of Study	Type of Question	Variations Across Studies
Cost Estimation	What is the cost of achieving a specific outcome?	<ul style="list-style-type: none"> <li>- Included costs</li> <li>- Measurement</li> </ul>
Burden of Disease	What does a condition cost?	<ul style="list-style-type: none"> <li>- Inclusion/Exclusion</li> <li>- Perspectives</li> <li>- Estimation methods</li> </ul>
Value of Information	What is the possible benefit of new information?	<ul style="list-style-type: none"> <li>- Assumptions</li> <li>- Level of rigor</li> <li>- Data inputs</li> </ul>
Utility Valuation	What is the human impact of morbidity?	<ul style="list-style-type: none"> <li>- Measurement</li> <li>- Respondents</li> <li>- Impacts considered</li> </ul>
Actuarial	What are the budgetary and financing impacts of a condition or policy?	<ul style="list-style-type: none"> <li>- Time Horizon</li> <li>- Perspective</li> </ul>
CEA, CBA, ROI	Does a policy or intervention provide good value?	<ul style="list-style-type: none"> <li>- Time horizon</li> <li>- Assumptions</li> <li>- Comparator</li> </ul>
Resource Allocation	How should resources be allocated across competing alternatives?	<ul style="list-style-type: none"> <li>- All the above</li> </ul>

# Conceptualizing Study by Policy Stage

Policy Stage	Purpose	Types of Knowledge Gaps	Types of Health Economic Studies
Formative	Agenda and	Size of problem	Burden of Disease
	Priority Setting	Patient health impacts	Health Utility Assessment
		Modifiable burden	Value of Information
Deliberative	Decision making	Value of Interventions	Cost-utility, Cost-benefit
		Financing Implications	Actuarial
		Trade-offs and optimization	Resource allocation
Action	Implementation	Financial benefit per payer	Return on Investment
		Resource requirements	Costs, costs per outcome

# Cyclical Nature of Research



- What is the purpose of burden studies?
  - Which burdens
    - Financial
    - Morbidity
    - Longevity of benefit
  - Total burden or modifiable burden?
  - How important is methods standardization?
- Should we pursuing more utility valuation studies
  - Why?
- Should we use value of information instead?
  - How?

# Economic Questions: Deliberative

- Health value versus health financing
  - cost-effectiveness versus actuarial impact
- From whose perspective
- Benchmarks for cost-effectiveness and actuarial impact
- Budget for health improvement
- Degree of explicitness and transparency
  - Possible, desirable?
- Expediency versus precision

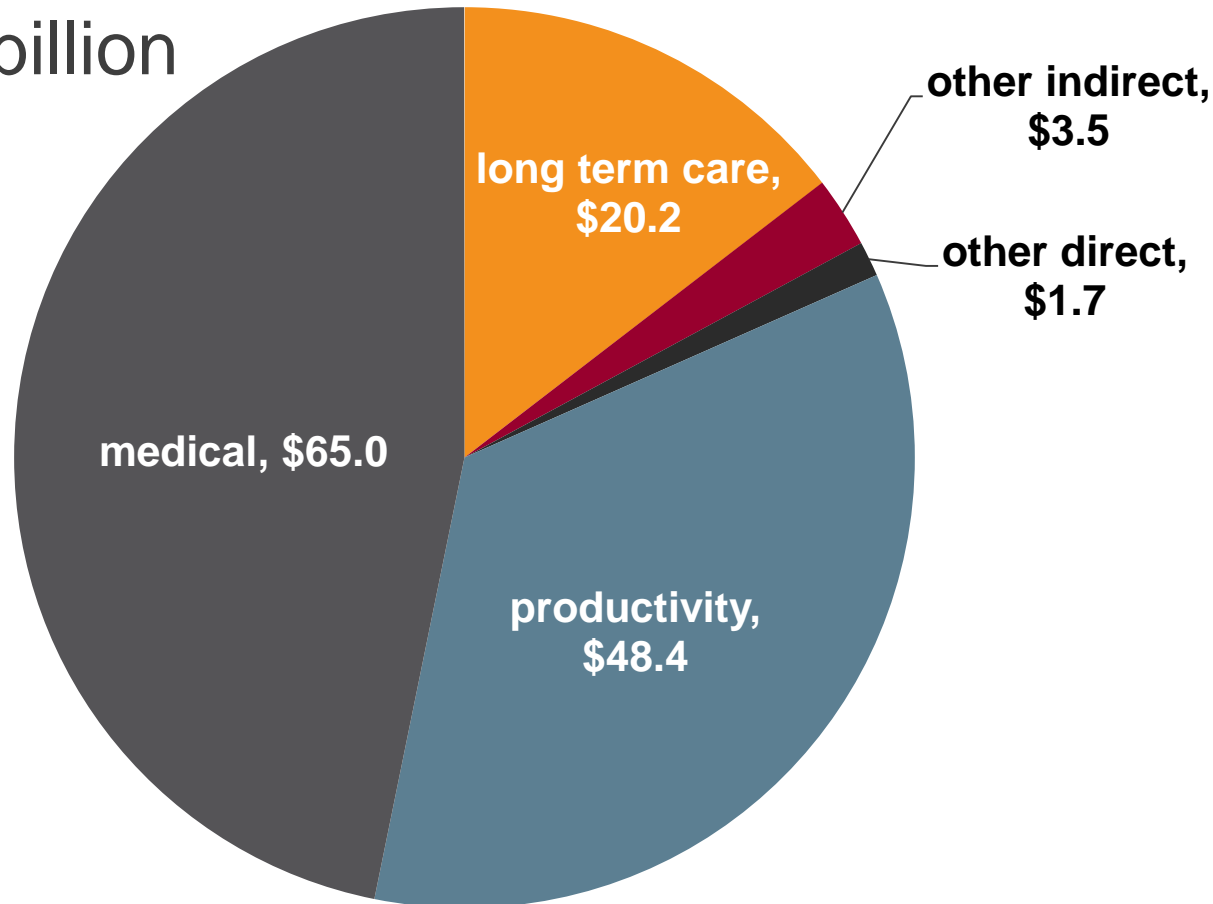
- Implementation
  - What is the research role in implementation?
  - How can research funding help the dissemination of new policies?
  - How can we research funding be used to determine best practices and return on investment?



- To determine what represents the largest components of morbidity and costs
  - By area of burden
  - By age
  - By condition
- Focus on new Prevent Blindness America Study
  - Wittenborn & Rein
  - <http://costofvision.preventblindness.org/>

# 2013 Burden of Visual Disorders – By Cost Category

- \$139 billion



Source: Wittenborn JS, Rein DB. Cost of vision problems: the economic burden of vision loss and eye disorders in the United States. NORC at the University of Chicago. Prepared for Prevent Blindness America, Chicago, IL, 2013. Available at: <http://costofvision.preventblindness.org>.

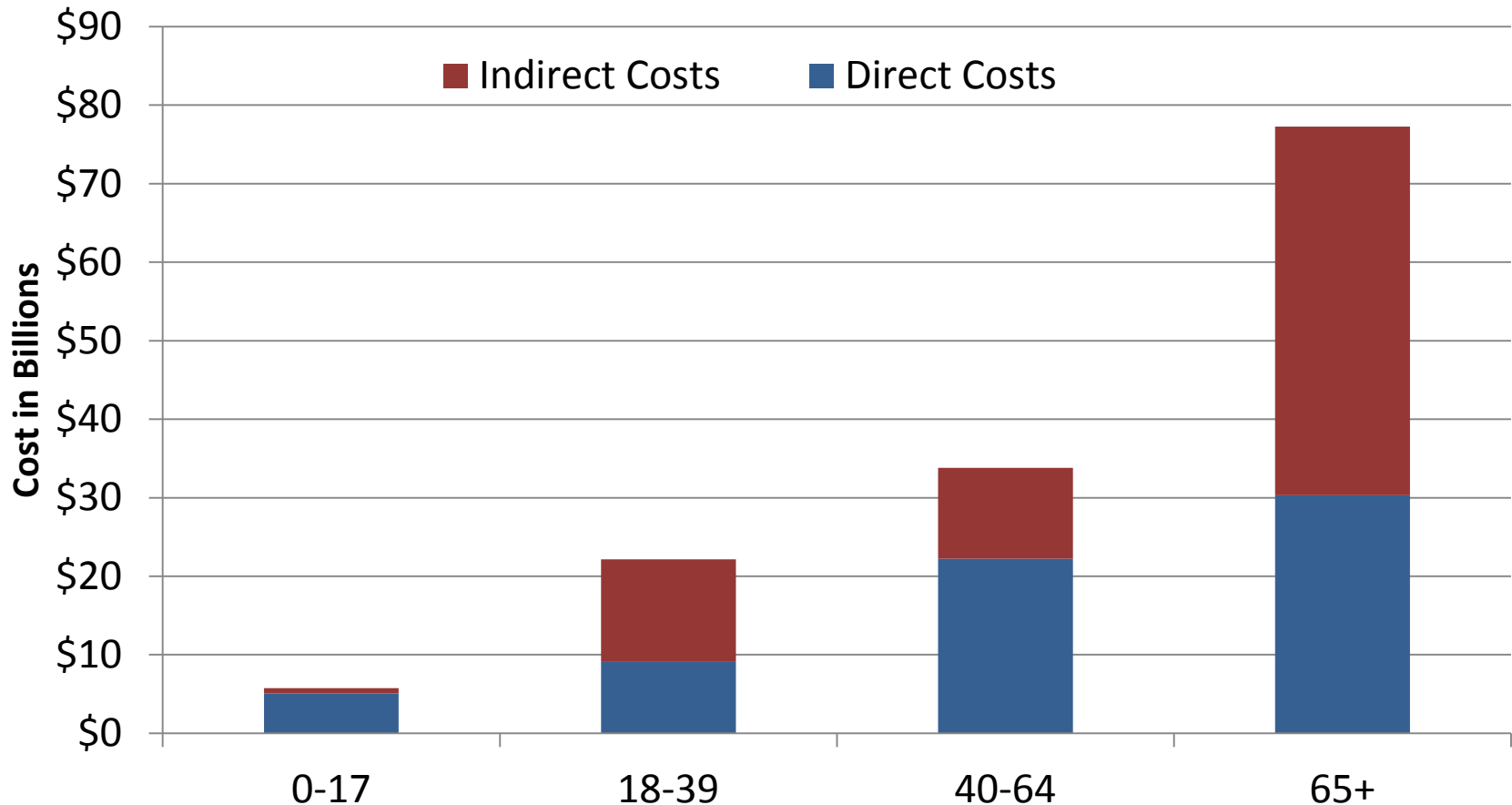
# Compared to Other Conditions

## Direct Medical Costs Only

Condition	Direct Medical Cost
Heart Conditions	85.4
Visual Disorders	65.0
Cancer	61.0
Mental Disorders	59.9
Pulmonary Conditions	58.0
Hypertension	46.1
Diabetes	35.7
Stroke	20.7

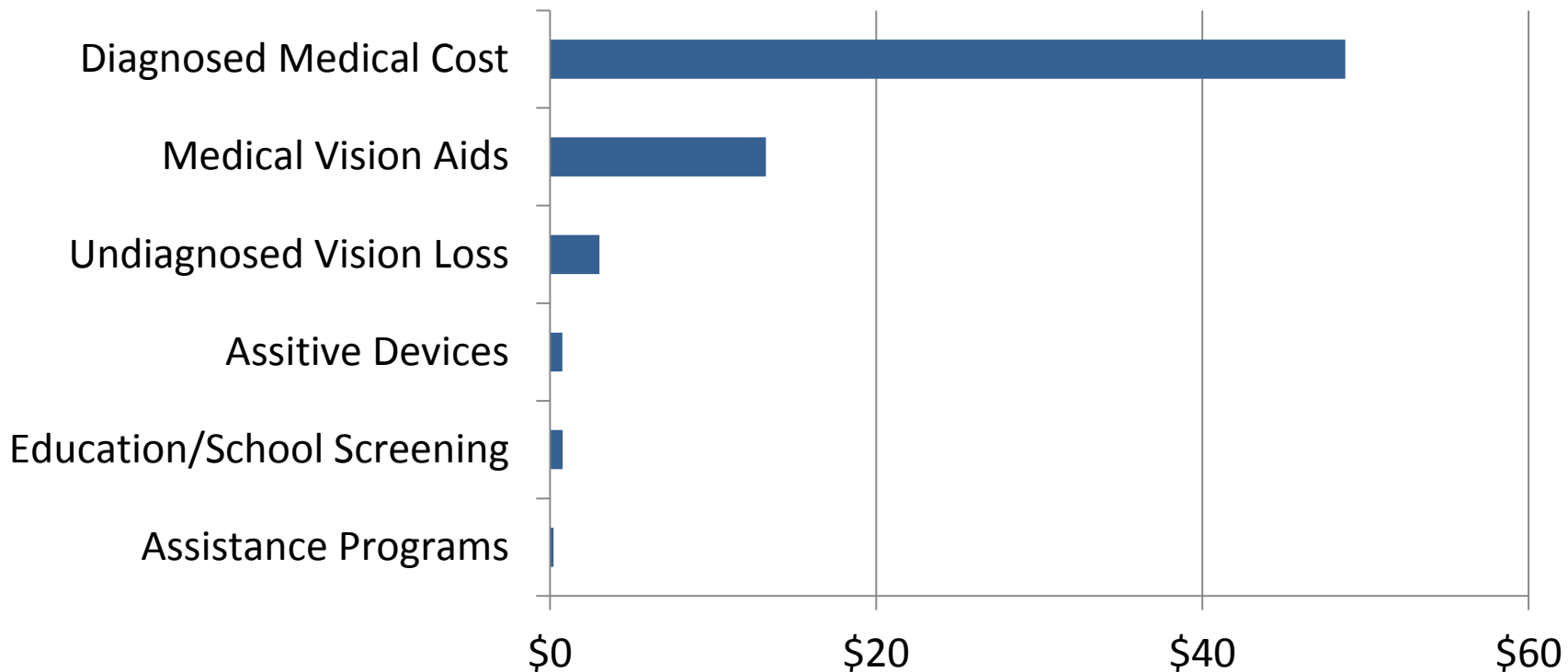
Source of other condition costs: Agency for Healthcare Research and Quality. Total expenses for conditions by site of service: United States, 2003. Medical Expenditure Panel Survey Component Data.

# 2013 Burden By Age Group



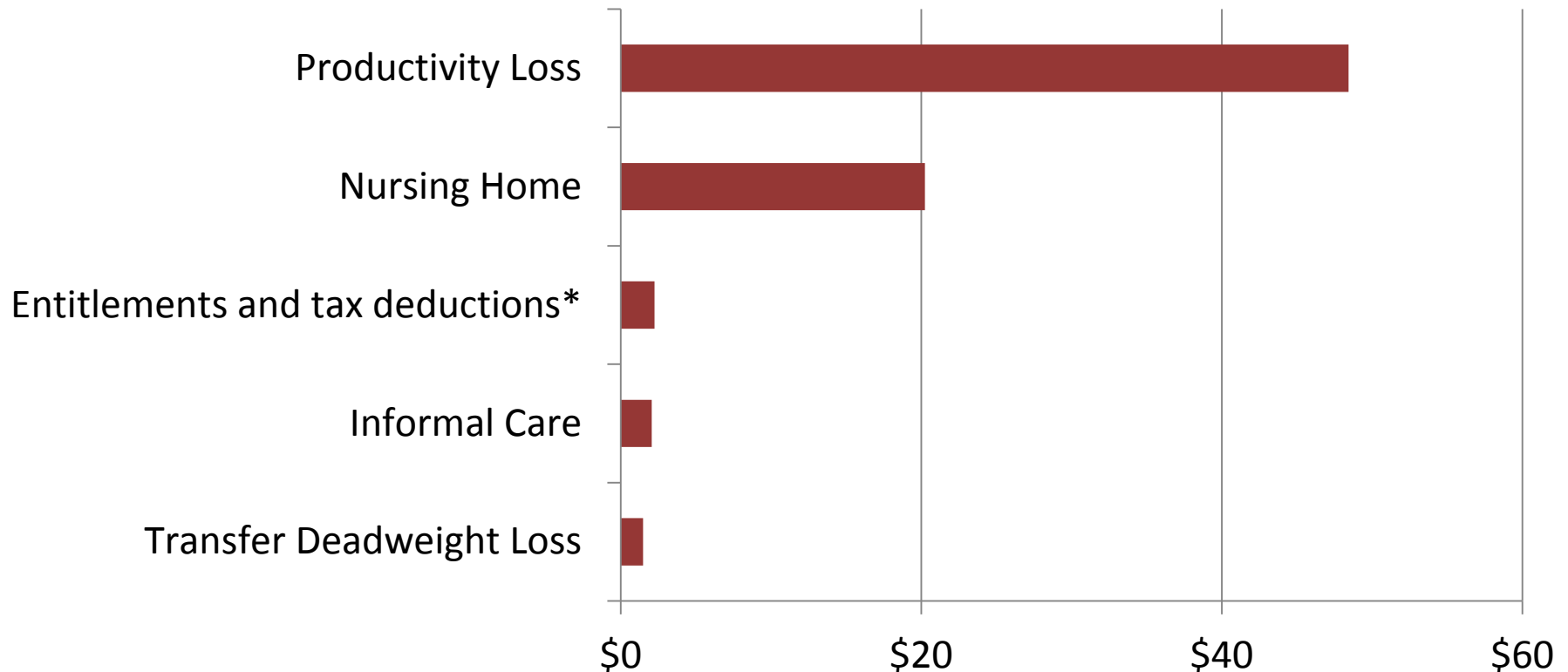
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# 2013 Burden by Category: Direct Costs



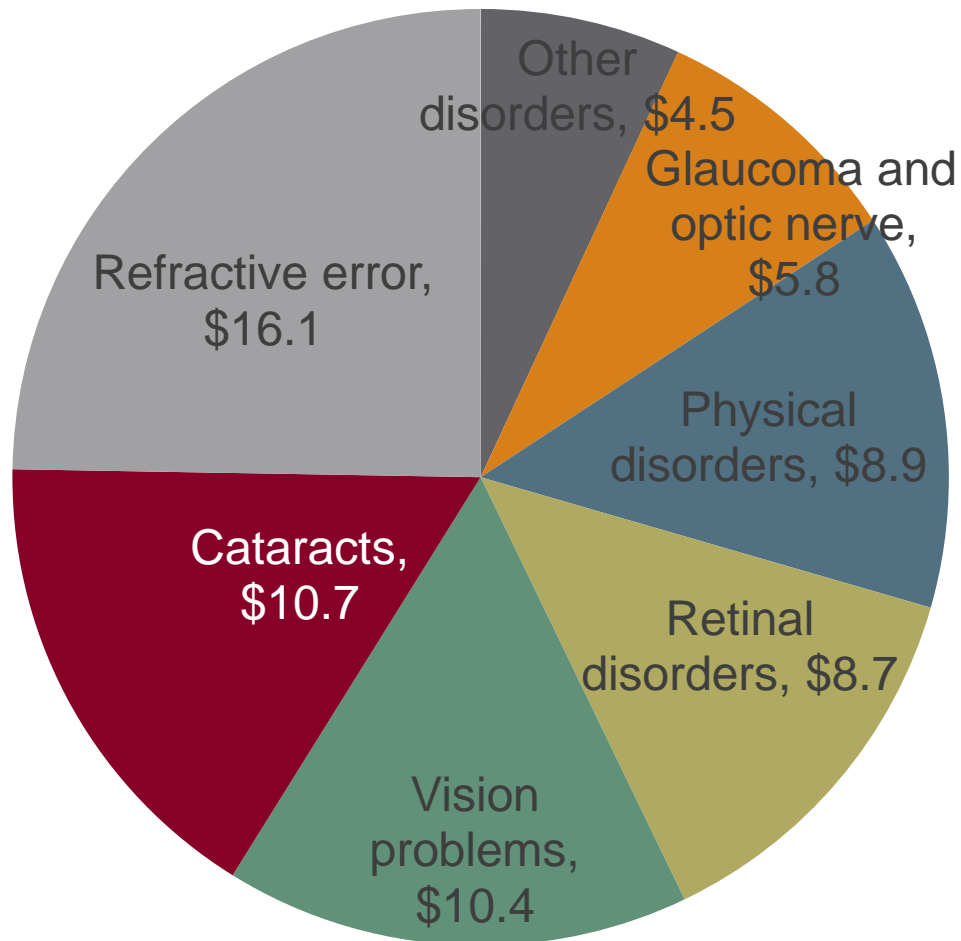
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# 2013 Burden by Category: Indirect Costs



Source: Wittenborn JS, Rein DB. Cost of vision problems: the economic burden of vision loss and eye disorders in the United States. NORC at the University of Chicago. Prepared for Prevent Blindness America, Chicago, IL, 2013. Available at: <http://costofvision.preventblindness.org>.

# 2013 Burden by Condition



Source: Wittenborn JS, Rein DB. Cost of vision problems: the economic burden of vision loss and eye disorders in the United States. NORC at the University of Chicago. Prepared for Prevent Blindness America, Chicago, IL, 2013. Available at: <http://costofvision.preventblindness.org>.

# Does Economic Research Match The Burden?

- Research over the last five years?
- Compared by condition to aggregate direct medical costs?
- Searched pubmed for search terms related to burden by condition
  - Full universe of search terms
  - Restricted searches within that set



# Universe of Search Terms

- Refractive Error
- Cataracts
- Visual impairment
- Blindness
- Age Related Macular Degeneration
- Diabetic Retinopathy
- Retinal Disorders
- Ocular Trauma
- Glaucoma
- Optic Nerve
- Visual Field
- Vision

# Mention to Burden Ratio

Search Terms	Percent of Direct Med \$65.1 bn	Number of Articles	Percent of Total Articles Mentioned	Mention to Burden Ratio
All	100	81,088	100%	1.0
Refractive Error	24.7	5,640	7.0	0.3
Cataract	16.4	9,315	11.5	0.7
Visual Impairment or blindness	16.0	19,106	23.6	1.5
Ocular Trauma	13.7	1,723	2.1	0.2
AMD or DR or Retinal Disorder	13.4	23,012	28.4	2.1
Glaucoma or Optic Nerve or Visual Field	8.9	23,722	29.2	3.3
Vision and not above	6.9	13,279	16.4	2.4

# Health Economic Studies

Search Term	Number of Articles	Percent of Total
Economics + Prior Terms	1,190	100.0%
Cost-effectiveness or Cost-benefit	259	21.8%
Insurance or Actuarial	229	19.2%
Utilization	123	10.3%
Burden	90	7.6%
Long Term Care	64	5.4%
Implementation	62	5.2%
Utility	55	4.6%
Productivity	41	3.4%
Resource Allocation	22	1.8%
Value of Information	11	0.9%
Return on Investment	1	0.1%

- Different types of economic studies for different needs
- Burden studies indicate that the costs of visual problems are among the highest of any condition
  - High prevalence of low cost conditions
  - High consequences of low vision and blindness
    - Productivity losses
    - Long term care placement
    - Complications of low vision (i.e. depression, injury)

# Summary (2)

- Evidence of inconsistencies between medical and scientific emphasis and need
- Clinical research tends to follow the interest rather than the money
  - Not wrong, but some conditions and aspects of the problem may require incentives to spur research
- Economic research tends to concentrate on
  - Counting
  - Demonstrating service gaps
  - Justifying specific Tx or Rx

# So What?

- How can health economics be of help?
  - Resource allocation
    - Where will our efforts have the biggest impact?
  - Value of information
    - Where is a lack of information the biggest problem?
  - Portfolio management of research
    - How can we assure both incremental and transformative progress of our research and policy efforts?

- Resource allocation models
  - Best allocation to improve patient outcomes
- Focus on outcomes as opposed to processes or conditions.
  - Functionality as opposed to impairment?
- Implications regarding economic studies
  - Multi-condition models
  - Multi-functionality models
  - Multi-service domain models
- Identification and programmatic response to ‘low hanging fruit’

- Value of information
  - Use of decision models to determine how uncertainty around specific pieces of information could affect policy decisions.
- Will the information that we're acquiring change a policy decision, and is that decision important?
  - Size or burden of the problem
  - Amount of that burden that is modifiable
  - Uncertainty of effect of intervention, treatment, or implementation



# Health Economics with an Impact (3)

- Allocation research resources by
  - Impact on quality and quantity of vision
  - Impact on medical costs
  - Transformational scientific potential
  - Need for research
  - Innovation
- No need to abandon basic science research
  - Mixture of incremental (blue-chip) and innovative (start-up) research projects

# Two Important Questions

- How can we maximize the quality and quantity of visual perception?
- How can we minimize the personal and family impact of impairment among those affected?

# Acknowledgements and Resources

- John Wittenborn, NORC
  - Developed the revised burden estimates
- Prevent Blindness America
  - Funders
- <http://costofvision.preventblindness.org/>

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Thank You!



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