

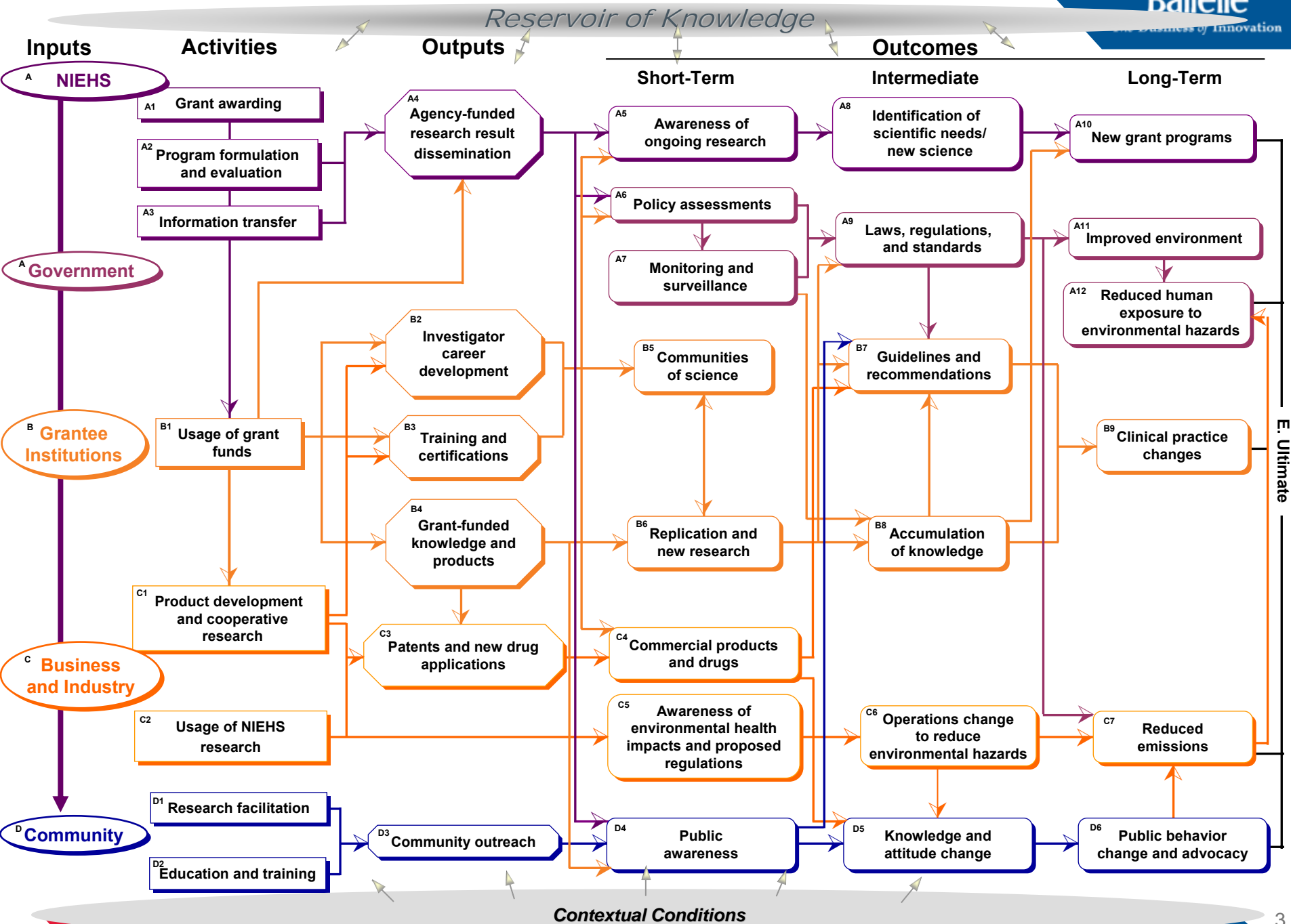
Scientific and Public Health Impacts of the NIEHS Extramural Asthma Research Program from New Primary Data

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Evaluation

Primary Data Collection

- Survey of **asthma researchers** funded by NIEHS and other Federal entities 1975-2005
- Interviews with “**end users**” of asthma research



Survey of Asthma Researchers

Survey Audience and Response

- Survey of all **researchers with asthma funding** 1975-2005 identified in federal research funding database (IMPAC II and EPA database)
- Eligible sample 1,155
- Survey administered via web with paper backup
- **Total response rate of 63%**
 - 76% if ever received NIEHS funding
 - 67% if received recent funding (any source 2000 or later)

Respondent Demographics

- Professional Degree
 - 57% PhD, ScD, or DSc
 - 48% MD
- Age
 - 67% 50 years of age or older
- Type of Research
 - 61% Basic Science
 - 62% Applied Science

Investigator Funding – NIH Dominant

Funding Source	Ever received funding (%)	Primary source in last 10 years (%)
NIEHS	31	12
NHLBI	65	42
NIAID	40	20
NICHD	4	1
Other NIH	15	2
CDC	13	4
AHRQ	8	3
EPA	18	4
Foundations	50	0
Industry	41	0
University discretionary/ start-up funds	46	4
Local, state or regional government	23	3
Other agency (e.g., NSF, HUD, FDA)	15	2

Funding Type – Research Dominant

Type of Funding	% of Investigators
Research (e.g., R01, R03, R21)	74
Program/Center (e.g., M, P, and U awards)	33
Career Development Individual (e.g., K awards; R23, R29)	21
Fellowships (e.g., F awards)	9
Institutional Training (e.g., T32)	12
Technology Development (e.g., SBIR, STTR; R41-44, N43-44, U43-44)	6
Other	11

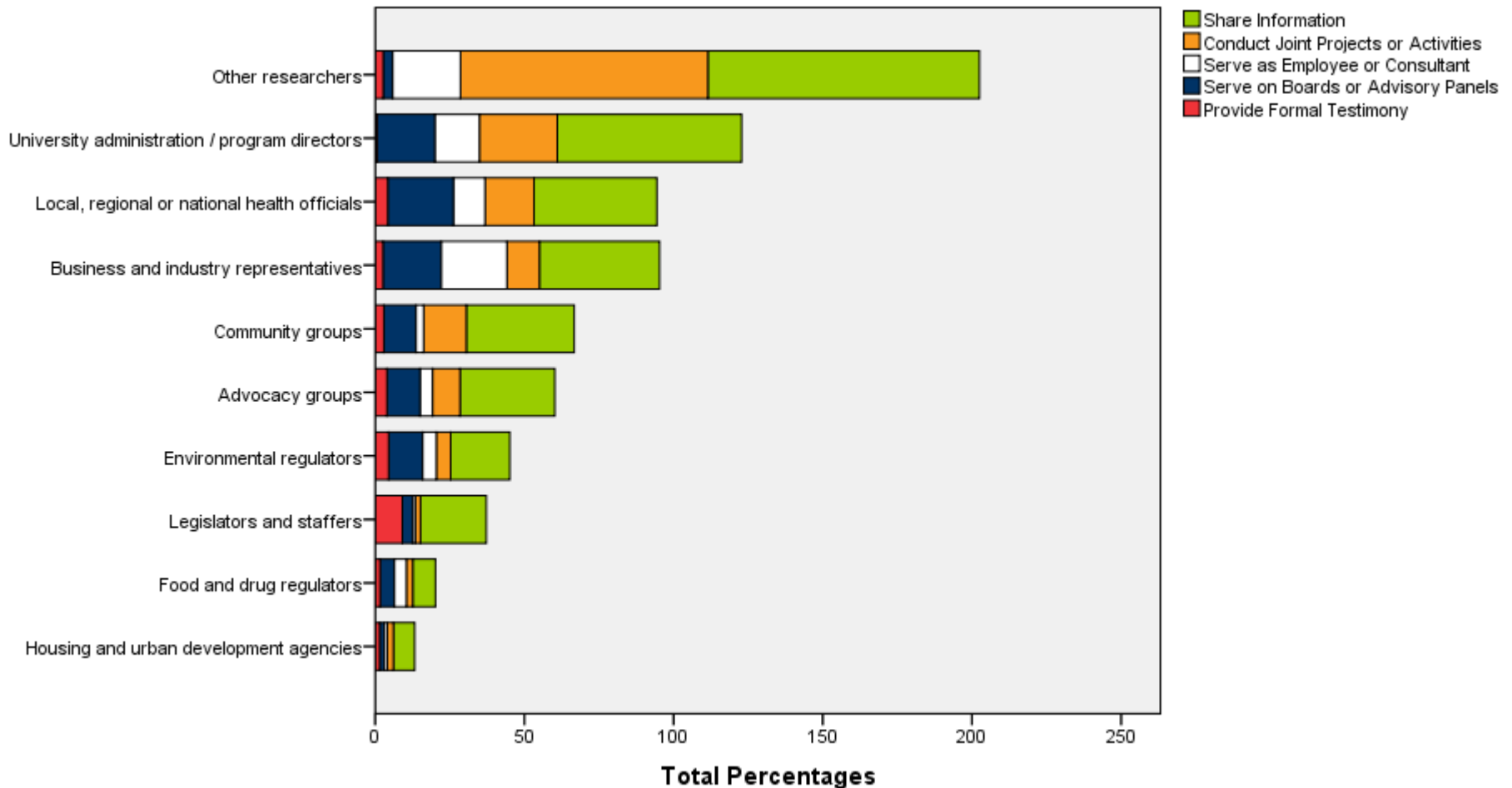
Outputs

- Research result dissemination (including investigator engagement with various sectors)
- Products
- Patents and new drug applications

Outputs - Dissemination

Dissemination mechanism	%
Published in peer-reviewed journals	95
Presented at scientific conferences	94
Participated in grantee meetings	52
Participated in workshops or trainings disseminating your research	47
Provided information for press releases	31
Developed and disseminated research tools and methods	29
Presented research in community forums	27
Developed and disseminated curricula	26
Developed and disseminated interventions	16
Developed fact sheets and pamphlets	15
Developed and published websites	13
Participated in the development of clinical guidelines for the treatment of asthma	12
Provided scientific testimony and briefings to legislators	10

Outputs - Investigator Engagement



Outputs – Products and Patents

- Changes in curriculum for K-12 or families (10%)
- Changes in curriculum for clinical/public health students (17%)
- Patent holders
 - 86 (12%) →

<i>Nature of patent</i>	<i># Respondents</i>
<i>New drug</i>	33
<i>New use of drug</i>	31
<i>Medical product or device</i>	11
<i>Environmental controls and services</i>	1
<i>New process or procedure</i>	25
<i>New research method</i>	18
<i>New gene</i>	16
<i>Other</i>	8

Short-term Outcomes

- **Monitoring and surveillance**
 - 20% - improved environmental measurement techniques
- **Replication and new research**
 - 41% - increased evidence regarding effective interventions
- **Commercial products and drugs**
 - 4% have started a spinoff or new company
 - 19% of patent holders have commercialized their patent
 - 38% of patent holders have licensed their patent

Intermediate Outcomes

- **Laws, regulations, and standards**
 - 8% - changes in environmental standards or regulations for indoor air
 - 11% - changes in environmental standards or regulations for outdoor air
- **Guidelines and recommendations**
 - 19% - changes in clinical guidelines for asthma
- **Accumulation of knowledge**
 - 61% - greater understanding of asthma disease mechanisms
 - 53% - greater understanding of individual, social, and environmental factors and asthma
- **Operations change to reduce environmental hazards**
 - 8% - changes in business practices regarding indoor air; 9% outdoor air
- **Public knowledge and attitudes**
 - 33% - changes in public knowledge and practices related to asthma prevention and control

Long-term Outcomes

- **Clinical practice changes**
 - 27% - changes in clinical practice relevant to asthma
- **Public advocacy**
 - 26% - increased public advocacy for asthma prevention and control

Method Strengths and Challenges

- Survey of researchers good at
 - Assessing wider range of outputs than simply publication
 - Looking at dissemination pathways
 - Examining commercialization opportunities
 - Looking at community engagement
 - Assessing perception of research impacts
- Challenges using the survey method
 - Attributing outcomes to specific research activities
 - Understanding how research pathways function
 - Standard limitations associated with self-reported data

Interviews with End Users of Asthma Research

Methodology

Telephone interviews with small sample of representatives for different pathways in research use:

- 5 regulators (3 with the EPA, 2 with the FDA)
- 4 education and advocacy representatives
- 4 clinicians (2 involved in development of asthma guidelines)
- 3 representatives of business and industry (2 pharmaceutical, 1 medical device company)

Pathways to Health Impacts Elucidated

- More asthma-related NIH RFAs \Rightarrow increased understanding of asthma:
 - Chronic disease, not episodic
 - Concept of inflammation and ways to measure it (spirometry)
- New drug development + devices for ease of use \Rightarrow asthma guidelines \Rightarrow fewer ER visits, lower death rates
- Research on ozone, particulate matter \Rightarrow National Ambient Air Quality Standards \Rightarrow lower air pollution, lower lead exposure

Long-term Outcomes

Outcomes	Respondent Types			
	Regulators	Clinicians	Business & Industry	Education & Advocacy
New grant programs	(√)			
Improved environment	√	√	√	√
Reduced human exposure to environmental hazards	√	√	√	√
Clinical practice changes		√	√	√
Reduced emissions	√			
Public behavior change and advocacy		√	√	√

Intermediate Outcomes

Outcomes	Respondent Types			
	Regulators	Clinicians	Business & Industry	Education & Advocacy
Identification of scientific needs/new science	√	√	√	√
Laws, regulations, and standards	√	√	√	√
Guidelines and recommendations	√	√	√	√
Accumulation of knowledge	√	√	√	√
Operations change to reduce environmental hazards	√			
Knowledge and attitude change	√	√	√	√

Short-Term Outcomes

Outcomes	Respondent Types			
	Regulators	Clinicians	Business & Industry	Education & Advocacy
Awareness of ongoing research	√	√	√	√
Policy assessments	√			√
Monitoring and surveillance	√		√	√
Communities of science	√	√	√	√
Replication and new research	√	√	√	
Commercial products and drugs	√	√	√	√
Awareness of environmental health impacts and proposed regulations	√	√	√	√
Public awareness	√	√	√	√

Recommendations to Enhance Visibility

- Enhancing linkages and communication between researchers and end users
- Directing research to encourage a translational (use-oriented) perspective
- Practice-oriented reporting (abbreviated, organized)



ACTIVITIES component of model

Respondent suggestions to enhance research USE

Recommendations to Promote Use

- Include end users up front in setting research agenda
- Participate in guideline development process
- Encourage translational (use-oriented) perspective
- Foster practice-oriented reporting

Method Challenges and Strengths

Challenges

- Not always easy to identify appropriate respondents
- Difficult to attribute outcomes to research from particular agencies

Strengths

- Difficult to obtain this information through other means
- Allowed respondents to discuss unanticipated pathways
- Interview itself a “visibility” intervention