

NIEHS Portfolio Coding Database Used to Compare “Grey-Zone” Applications to Funded Grants.

Jerry Phelps¹, Heather King, Ph.D.², Elizabeth Chan, Ph.D.², Christie Drew, Ph.D.¹, Patrick Mastin, Ph.D.³

¹National Institute of Environmental Health Sciences, DERT, Program Analysis Branch,

²MDB, Inc., ³National Institute of Environmental Health Sciences, DERT, Office of the Director

Abstract

The Division of Extramural Research and Training (DERT) at NIEHS in conjunction with MDB, Inc. has developed a portfolio coding database. Funded research grants are coded according to NIEHS Strategic Plan goal and sub-goal environmental exposure, health outcome, model organism, human cohort, experimental or mechanistic approach, and other areas of programmatic importance. The database has become an invaluable resource in tracking changes in the grant portfolio and for evaluation and analysis purposes.

The Program Analysis Branch within DERT developed a pilot project to code unsolicited R01 “grey-zone” applications (11th-20th percentile) from the May 2014 council period. The goal of this pilot was to take greater advantage of the extensive coding MDB has performed on the entire DERT grant portfolio, to provide additional data for the DERT Branches in making decisions on which applications to nominate for “Specials” funding (paying beyond the established pay-line), and prioritizing those applications. The effort was designed to assist the Division in deciding which applications to fund by providing information on how particular applications might fill gaps in the funded grant portfolio.

Applications were coded using the entire database coding schema and then compared to the funded portfolio yielding charts and graphs that highlight how these applications compare to the funded R01 grant portfolio based on the traits listed above.

Data are presented on how the grey-zone applications compare to the funded grant portfolio. Ideas for future directions of the pilot project are also presented.

Methods

CODING PROCESS

The Portfolio Coding Database employs an extensive list of keywords and terms to create a snapshot of every grant funded by NIEHS (Figure 1). This system was developed in FY2012 and required a large effort to manually code all funded grants at that time. MDB updates the coding of funded grants three times per year in conjunction with the Council funding cycles. The title, abstract, and specific aims are read and coded by Ph.D. level scientists with extensive knowledge of the environmental health sciences and the NIEHS. It takes a trained coder about 30 minutes per application or grant to read the title, abstract and specific aims and complete the coding in the database.

PILOT STUDY

For the Pilot, MDB staff coded 14 grant applications in the “grey zone” defined as unsolicited R01 applications with percentile rankings from the 11th to the 20th percentile. The coders used the same system as they do for funded grants and performed complete coding for the 14 applications.

Once the coding was complete, MDB staff created a series of visual displays showing how the grey-zone applications compared to the funded portfolio (Examples in Figures 2-5). For Strategic Plan Goal and Program Class Code, applications and grants were assigned to one goal and one science code. For Health Outcomes and Exposures, multiple assignments were possible.

The pilot results were presented at a DERT seminar and critical feedback about the coding process was provided by all DERT branches.

Conclusions

- Visual displays were seen as helpful to convey how funding certain applications would make incremental changes in the portfolio; however, visuals were too broad in scope to make tangible comparisons to specific funded grants.
- Value added was marginal; staff already consider Strategic Plan goal, health outcomes, and other aspects contained in the pilot when establishing priorities and recommendations for special funding.
- Staff wanted to see the ‘in zone’ applications as well on the graphs for reporting purposes.
- The small number of grey-zone applications for each Council period was seen as a limitation for using the pilot data in the decision-making process, but there was general enthusiasm for incorporating them in other reporting activities.

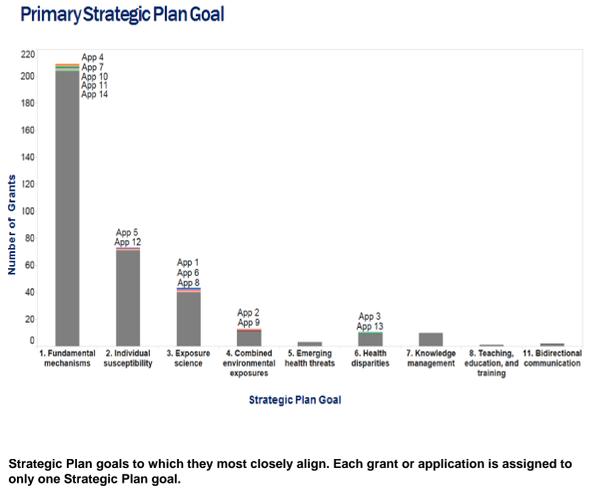
Figure 1 – Coding Sample

Application Title: Cluster Randomized Controlled Trial of an Advanced Stove to Reduce Risk of COPD

Key Study Information	
Focus	Human Health (Biomedical focus)
Science Type	Human Health (Biomedical), --Basic in vitro (e.g. cell culture, biochemistry), --Epidemiological / Clinical, Social Sciences
Environmental Exposure Agent	--Particulates, --CO / CO2, Air Pollutants, --PM 2.5 / fine Biomass smoke from cookstoves, black carbon, advanced stoves
Relevant Health Outcome/Disease Endpoint (COPD) --Airway inflammation / Hyperresponsiveness, Mechanistic Studies, --Carcinogenesis, --Oxidative Stress	Lung function, airway remodeling, airway injury
Research Subject	
Organism	Human (whole organism)
Gender	Female
Secondary subject(s)	SS: Not Relevant
Lifestage at Exposure	L.E. Not Relevant
Lifestage at Assessment	L.A. Not Relevant
Biological Route (passive or applied)	Inhalation
Biological Sample Collected/Tested	Blood, Saliva / buccal cells Sputum, exhaled NO monitoring, plethocytometry
Other Types of Collected Info and Measurements	CI: Other, Questionnaire / survey / interview, Specific diagnostics / physiological function (e.g. lung, heart) Respiratory questionnaire, kitchen biomass smoke exposure monitoring
Environmental Exposure	
Source of Environmental Exposure	Household, --cookstoves
Primary Contamination Carrier of Environmental	Air, --Indoor
Environmental Samples Collected/Tested	Air sample, --Indoor sample
Environmental Science	
Environmental Approach	EN: Not Relevant
Environmental Remediation	ER: Not Relevant
Study Specifics	
Biologically Relevant Genes Involved in Response	
Bioavailability	BV: Not Relevant
Dose	RD: Not Relevant
Experimental Approach	Epidemiological Cohort, --Longitudinal, Prevention/Intervention Studies, --Biological Sample Collected, Monitoring devices (environment), Monitoring devices (personal), Environmental sampling / detection, --Randomized Control Trial, Biomonitoring / Biomarkers (biological indicators), --biomarker of exposure, Biomarker Stage, --application, --New data from previous cohort, new subcohort
Broader applications of research	Translational - policy, Social/Behavioral
Program Specific: Epigenetic Marks	PS: Not Relevant
Key Program Information	
Site-specific Study	Outside US
Scientific Focus Group	Air Pollution SFG, Exposure Biology SFG, Inflammation (CCT), Global Environmental Health (CCT)
Suggested SFG	
Landmark Program	LP: Exposure Biology Research Program, LP: Global Environmental Health, MDS Applications
Knowledge Management	Data Sharing, --Other cohort (write in name)
Social Science Issues	Community-based Prevention / Interventions, Social Determinants of Health, Policy and Health, Vulnerable Populations / Health Disparities, --Gender Based
Builds on the Cooking and Pneumonia Study and the population from the Burden of Lung Disease (BOLD) study	
NIEHS Strategic Plan Themes	
RFA-based	
Primary Theme	4. Health Disparities and GEH
Secondary Theme	2. Exposure Research
Special Mention	Theme 3: Translational Science
NIEHS Strategic Plan Goals and Subgoals	
RFA-based:	
Primary:	6. Health disparities
Subgoal:	6c. Develop, implement interventions to r
Secondary:	3. Exposure science
Subgoal:	3a. Improve exposure assessment - pop
Special Mention:	6. Health disparities
Subgoal:	6a. Conduct community based, culturally

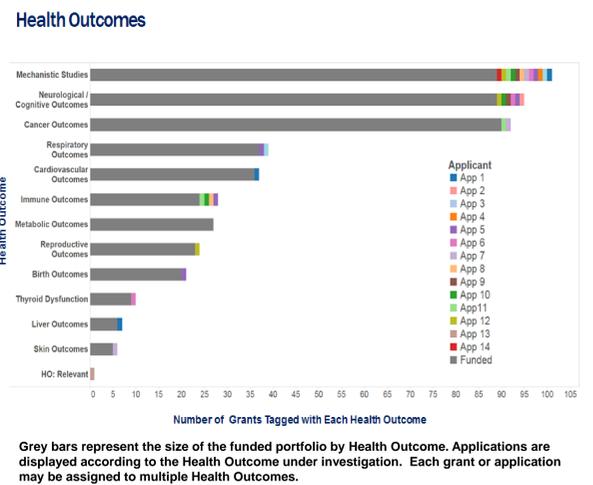
This coding sample shows the structured data (left side) and write-in comments (right side) that describe an application based on the review of its Abstract and Specific Aims. Information from the Exposure, Health Outcome, and Strategic Plan sections of the reports is also represented in the charts shown on this poster.

Figure 2 – Strategic Plan Goal



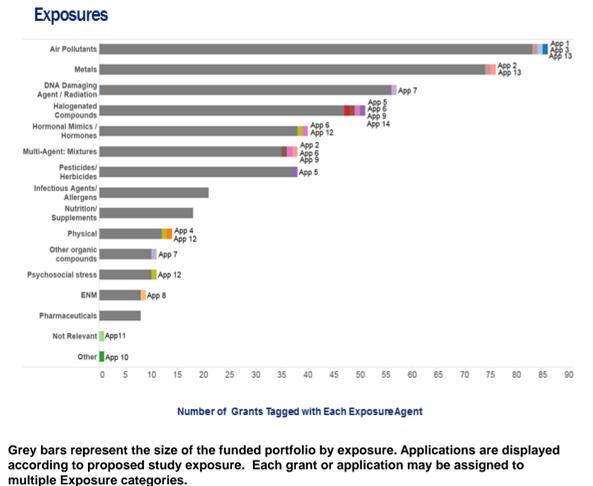
Strategic Plan goals to which they most closely align. Each grant or application is assigned to only one Strategic Plan goal.

Figure 3 – Health Outcomes



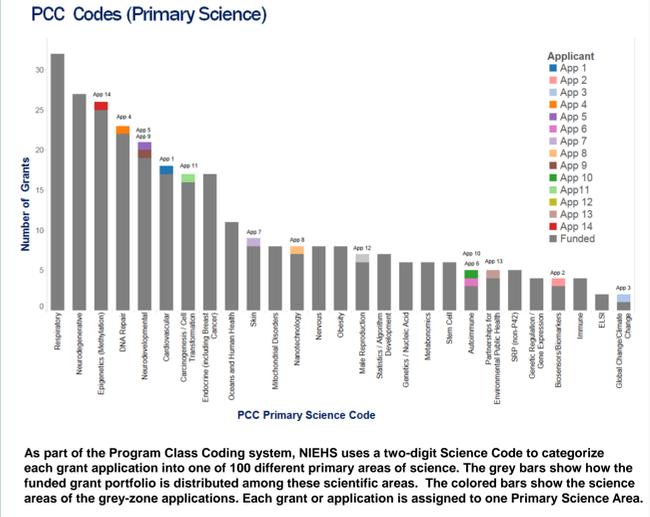
Grey bars represent the size of the funded portfolio by Health Outcome. Applications are displayed according to the Health Outcome under investigation. Each grant or application may be assigned to multiple Health Outcomes.

Figure 4 -- Exposures



Grey bars represent the size of the funded portfolio by exposure. Applications are displayed according to proposed study exposure. Each grant or application may be assigned to multiple Exposure categories.

Figure 5 – Program Class Code



As part of the Program Class Coding system, NIEHS uses a two-digit Science Code to categorize each grant application into one of 100 different primary areas of science. The grey bars show how the funded grant portfolio is distributed among these scientific areas. The colored bars show the science areas of the grey-zone applications. Each grant or application is assigned to one Primary Science Area.

Future Directions

DERT plans to employ the lessons learned from this pilot in reporting annual progress towards the goals of the Strategic Plan to the National Advisory Environmental Health Sciences Council and NIEHS leadership. The charts and graphs will be altered to include all funded grants, and to show how the portfolio has changed over the previous fiscal year using the same color coding scheme and stacked bars. These graphs will provide easily interpretable visuals on progress towards funding grants in under-represented areas of the Strategic Plan or areas of programmatic importance.

Data Sources

- Advancing Science, Improving Health: A Plan for Environmental Health Research, National Institute of Environmental Health Sciences Strategic Plan, 2012-2017. http://www.niehs.nih.gov/about/strategicplan/strategicplan2012_508.pdf
- NIH IMPAC II Database.
- NIEHS Portfolio Coding Database.

Acknowledgments

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