Update on HEI's Core Scientific Program

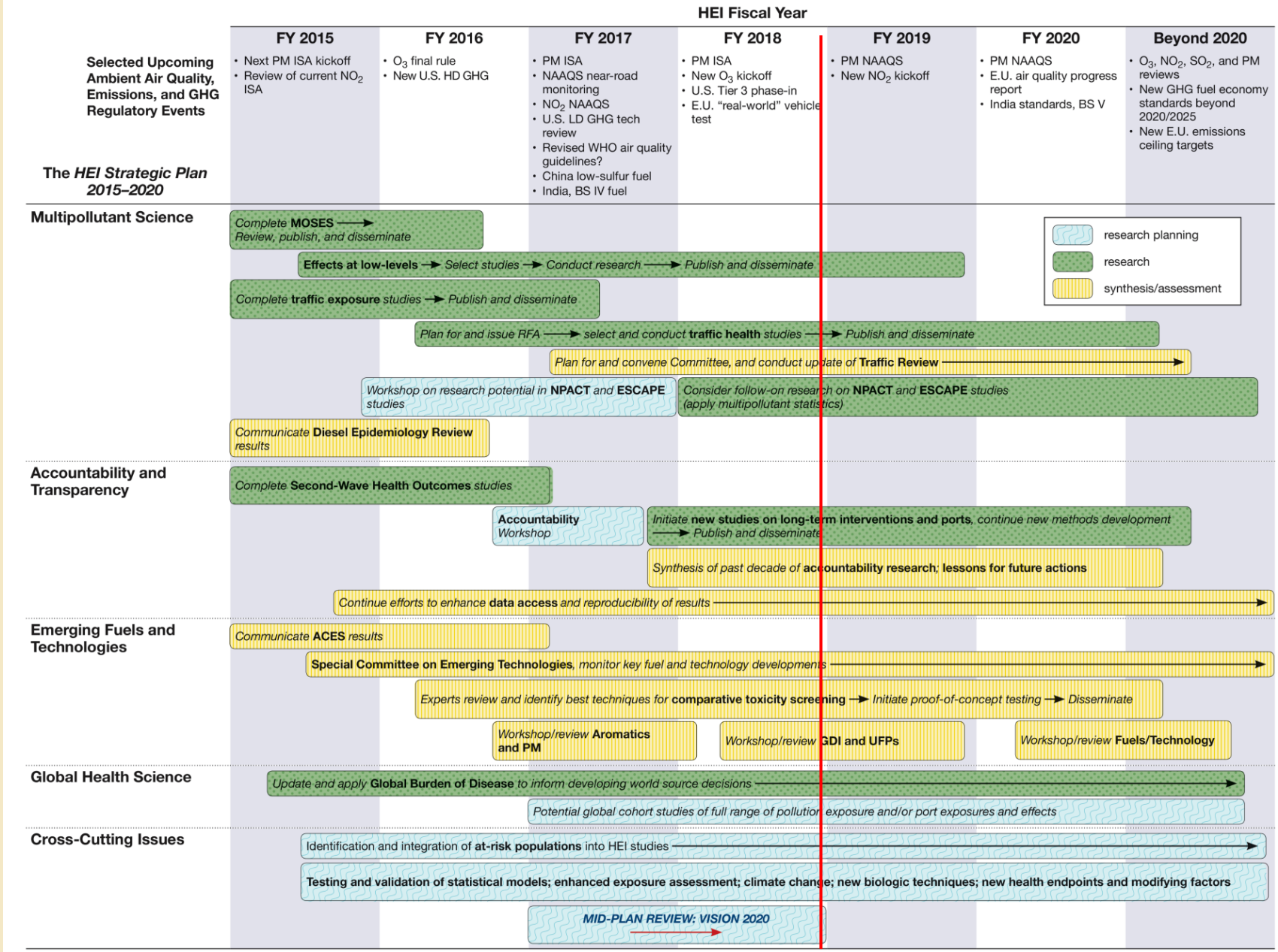
Rashid Shaikh
Director of Science, HEI

HEI Annual Conference
May 1, 2018

HEI's Strategic Plan 2015-2020

- Guides HEI's scientific research and review activities;
- Responds to the needs of HEI industry & government sponsors, and other interested parties;
- Anticipates future policy and technology events; and,
- Evolves over time to adapt to changing knowledge and events.
- Thank you for your ongoing feedback as we implement the Plan.

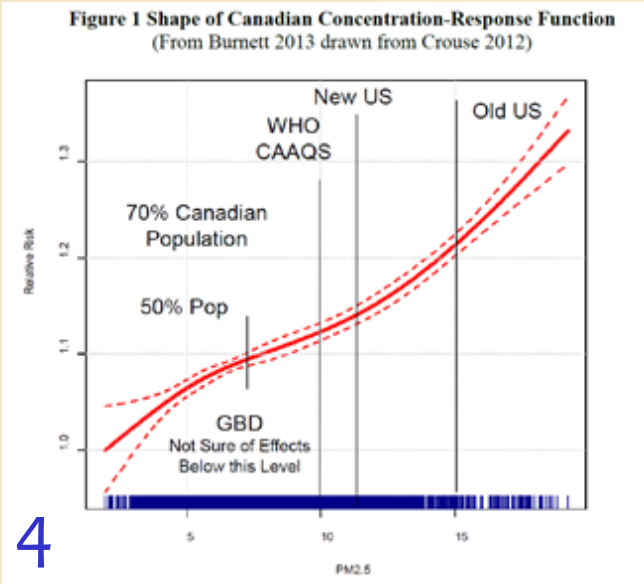
Implementation of the Strategic Plan 2015 – 2020



Addressing the Challenges of Multi-pollutant Science

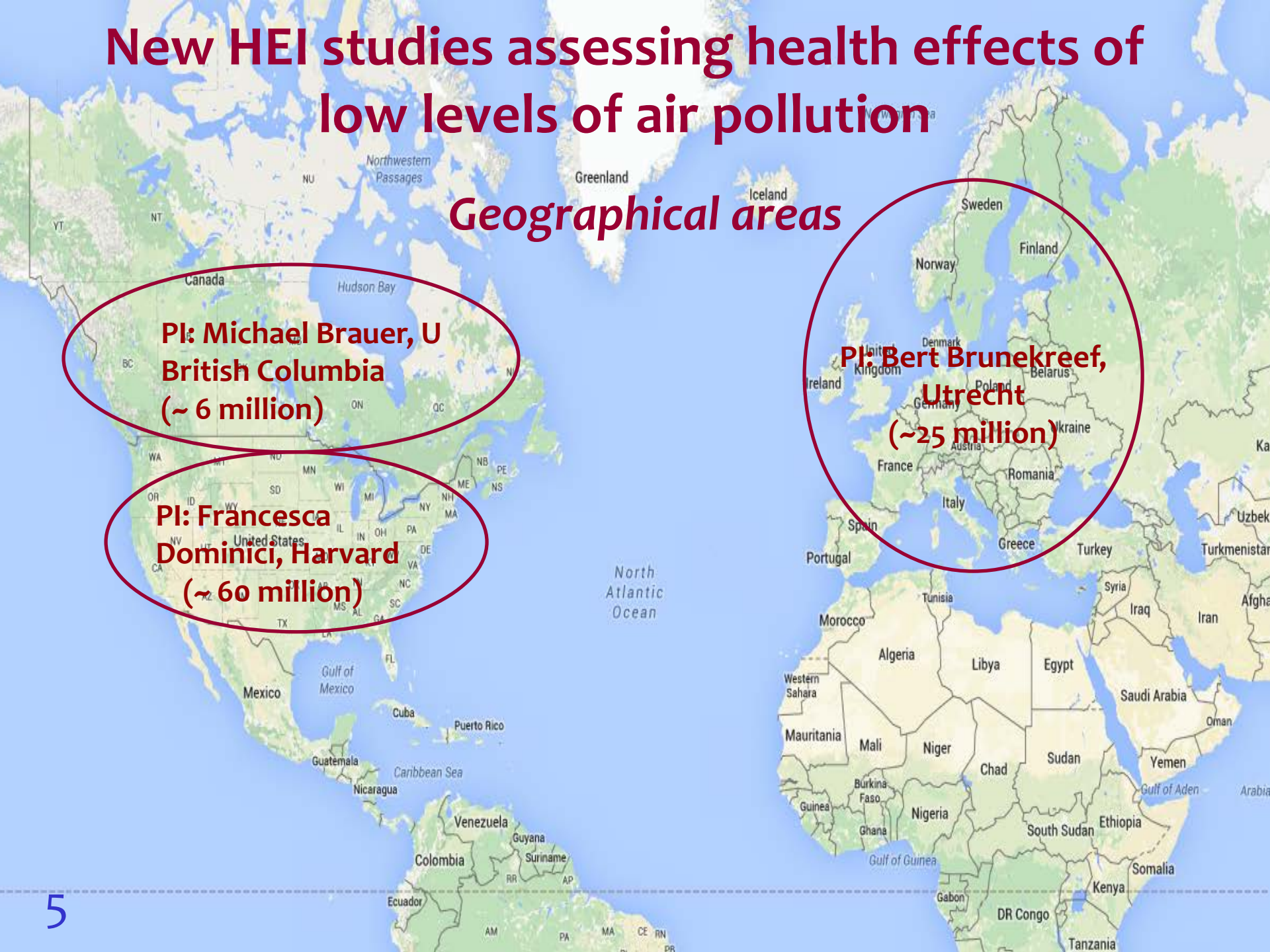
Estimating the Effects of Exposure to Low Levels of Air Pollution

- Three HEI studies, with key features:
  - Populations with millions in the US, Canada and Europe; administrative and traditional cohorts
  - Satellite data and ground level exposure measurements; high quality exposure assessment models at high spatial resolutions
  - Development and application of novel statistical methods
  - Investigator teams with prior experience of productive collaborations



New HEI studies assessing health effects of low levels of air pollution

Geographical areas



Ensuring the Highest Quality from the Low Exposure Studies

- Detailed and continuing HEI Oversight
  - Oversight Committee (webinars and annual meeting)
    - Progress reports every 5 months
    - Annual renewal requests
    - Substantive review at each stage
  - QA/QC audits
- Nine poster presentations at the Annual Conference: Monday, April 30, 2018
- Program Outputs
  - Investigators have begun to publish results of initial analyses from their studies; HEI has prepared Desk Statements as needed
  - Many additional analyses -- still to come
  - Oversight Committee reviewing initial results and providing feedback in annual contract renewals
  - ALL results will be subjected to HEI Review Committee scrutiny in time to inform key future National Ambient Air Quality Standard (NAAQS) decisions

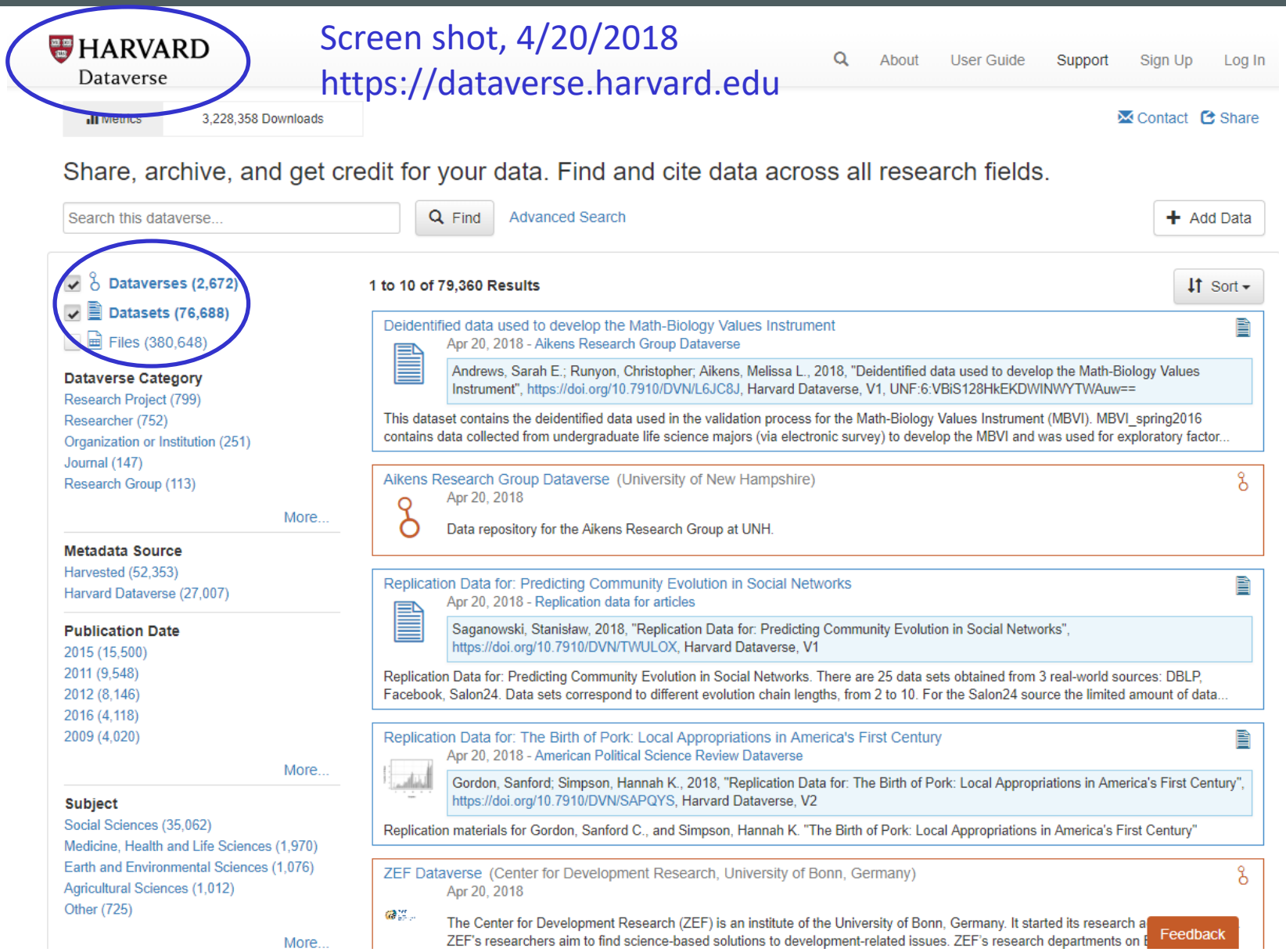
Effect of Ozone on the Cardiovascular System:

The MOSES Study

- HEI's Multicenter Ozone Study in oldEr Subjects
- HEI's detailed report, along with Commentary, published in June 2017
- Peer-reviewed papers:
  - Respiratory endpoints: American Journal of Respiratory and Critical Medicine (published)
  - Cardiovascular endpoints (submitted)
- Phase 2 analyses underway, report to be submitted this summer and to be published early in 2019
- MOSES data and materials

MOSES: Data Access Plans

- The data and associated files may be accessed by anyone, without restrictions, starting on May 15
- Access to the database: a log-in step, a brief questionnaire, and terms and conditions for publications resulting from the research
- The MOSES 1 database will reside on a public repository, the Harvard Dataverse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2015 (15,500)
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2009 (4,020)
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Subject
Social Sciences (35,062)
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1 to 10 of 79,360 Results
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Deidentified data used to develop the Math-Biology Values Instrument
Apr 20, 2018 - Aikens Research Group Dataverse
Andrews, Sarah E.; Runyon, Christopher; Aikens, Melissa L., 2018, "Deidentified data used to develop the Math-Biology Values Instrument", https://doi.org/10.7910/DVN/L6JC8J, Harvard Dataverse, V1, UNF:6:VBiS128HkEKDWINWYTWAuw==
This dataset contains the deidentified data used in the validation process for the Math-Biology Values Instrument (MBVI). MBVI_spring2016 contains data collected from undergraduate life science majors (via electronic survey) to develop the MBVI and was used for exploratory factor...
Aikens Research Group Dataverse (University of New Hampshire)
Apr 20, 2018
Data repository for the Aikens Research Group at UNH.
Replication Data for: Predicting Community Evolution in Social Networks
Apr 20, 2018 - Replication data for articles
Saganowski, Stanisław, 2018, "Replication Data for: Predicting Community Evolution in Social Networks", https://doi.org/10.7910/DVN/TWULOX, Harvard Dataverse, V1
Replication Data for: Predicting Community Evolution in Social Networks. There are 25 data sets obtained from 3 real-world sources: DBLP, Facebook, Salon24. Data sets correspond to different evolution chain lengths, from 2 to 10. For the Salon24 source the limited amount of data...
Replication Data for: The Birth of Pork: Local Appropriations in America's First Century
Apr 20, 2018 - American Political Science Review Dataverse
Gordon, Sanford; Simpson, Hannah K., 2018, "Replication Data for: The Birth of Pork: Local Appropriations in America's First Century", https://doi.org/10.7910/DVN/SAPQYS, Harvard Dataverse, V2
Replication materials for Gordon, Sanford C., and Simpson, Hannah K. "The Birth of Pork: Local Appropriations in America's First Century"
ZEF Dataverse (Center for Development Research, University of Bonn, Germany)
Apr 20, 2018
The Center for Development Research (ZEF) is an institute of the University of Bonn, Germany. It started its research a
ZEF's researchers aim to find science-based solutions to development-related issues. ZEF's research departments on
Feedback

Search term: Zigler

1 to 10 of 29 Results

Sort

Files for reproducing data set

Jun 30, 2016 - Case Study 1: PM10 Nonattainment Dataverse

Zigler, Cory, 2016, "Files for reproducing data set", doi:10.7910/DVN/5YB7KD, Harvard Dataverse, V1, UNF:6:7PKbjGlxLFJMSQ2UUl8rA==

These files reproduce the analysis data set used for the PM10 Nonattainment analysis.
Author Name: **Zigler**, Cory
Depositor: **Zigler**, Cory
Contact Name: **Zigler**, Cory

Analysis Files

Jun 30, 2016 - Case Study 1: PM10 Nonattainment Dataverse

Zigler, Cory, 2016, "Analysis Files", doi:10.7910/DVN/BPIXRS, Harvard Dataverse, V1

Files for reproducing the analysis for the PM10 Nonattainment analysis. Note that some numbers using direct calculations of Medicare data will not reproduce what appears in the report because fake simulated Medicare data are included with this distribution.
Author Name: **Zigler**, Cory
Depositor: **Zigler**, Cory
Contact Name: **Zigler**, Cory

R Package: HEIfunctions

Jun 30, 2016 - Case Study 1: PM10 Nonattainment Dataverse

Zigler, Cory, 2016, "R Package: HEIfunctions", doi:10.7910/DVN/EJSXMK, Harvard Dataverse, V1, UNF:6:gz/FFBtlef6ZyZIRY/Ejzg==

Source files for R package containing functions to conduct the analysis of the PM10 Nonattainment designations
Author Name: **Zigler**, Cory
Depositor: **Zigler**, Cory
Contact Name: **Zigler**, Cory

Files for Reconstructing the Data Set

Jun 30, 2016 - Case Study 2: Power Plant Scrubbers Dataverse

Zigler, Cory, 2016, "Files for Reconstructing the Data Set", doi:10.7910/DVN/0UDCQC, Harvard Dataverse, V1, UNF:6:fFrIlei/9ilP5vXF6XlLbQ==

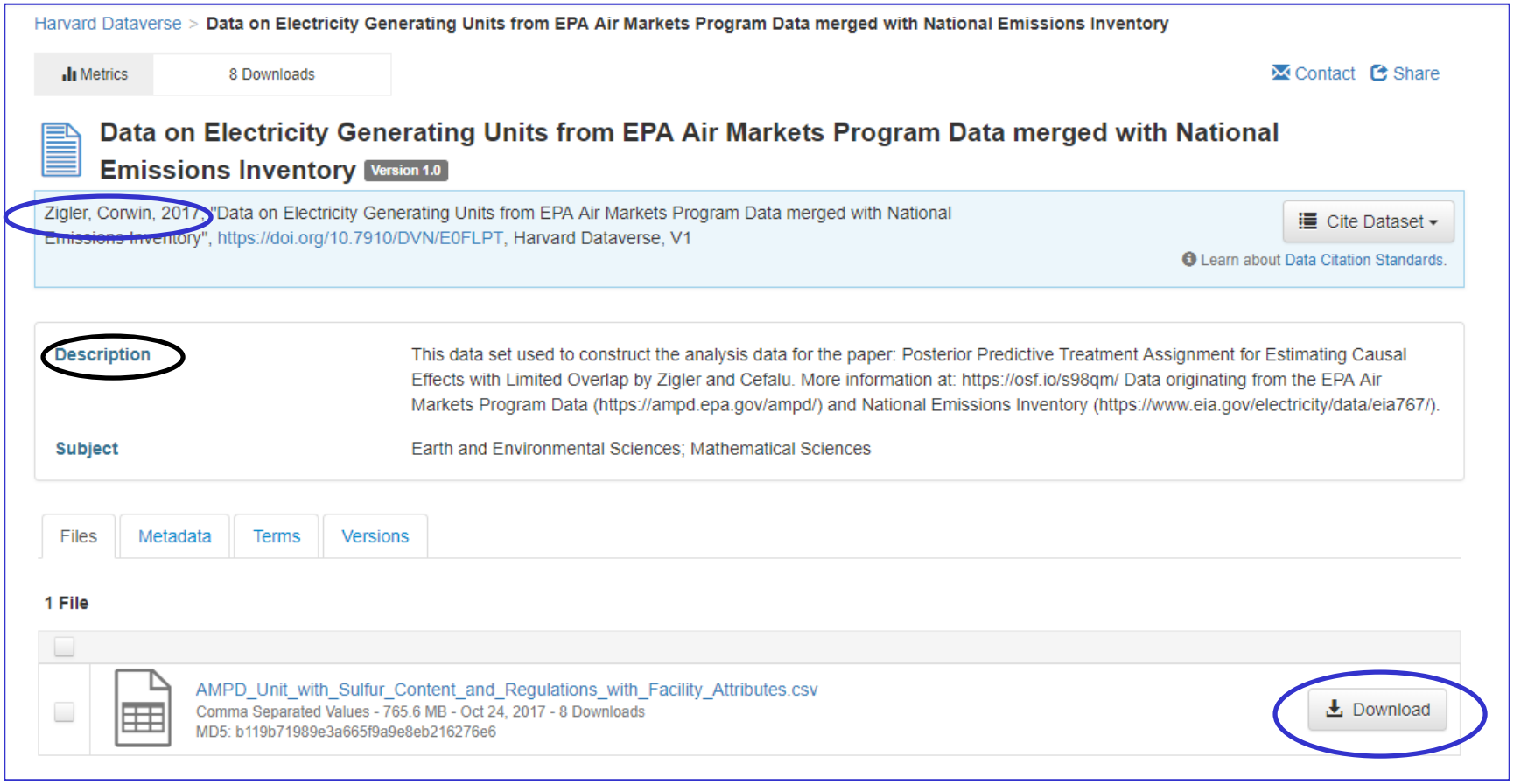
These files will create the analysis data set.
Author Name: **Zigler**, Cory
Depositor: **Zigler**, Cory
Contact Name: **Zigler**, Cory

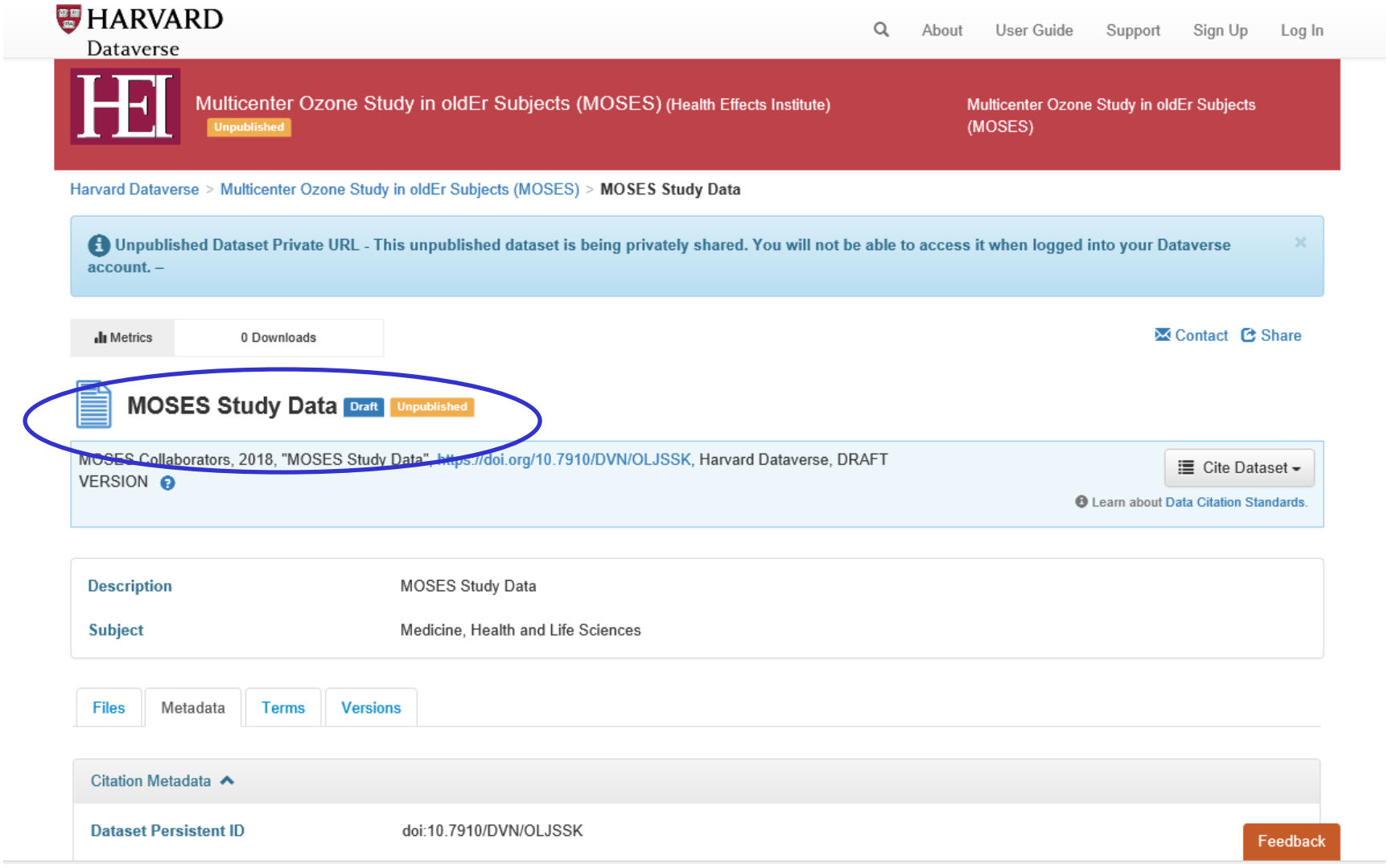
Files for Implementing the Analysis

Jun 30, 2016 - Case Study 2: Power Plant Scrubbers Dataverse

Feedback

Click on one of the search results

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MOSES Collaborators, 2018, "MOSES Study Data", https://doi.org/10.7910/DVN/OLJSSK, Harvard Dataverse, DRAFT VERSION
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doi:10.7910/DVN/OLJSSK
Feedback

MOSES: Material Sharing Plan

- Limited amounts of MOSES material (blood and sputum)
- Any researcher from a not-for-profit US research center, interested in doing specific analyses, can request the samples
- Interested researchers will need to submit a short Material Request Form and sign a Material Transfer Agreement
- The Request Form will include:
  - the rationale and aim of the research project;
  - a description of what the research project will add to scientific knowledge;
  - experimental methods
- Requests for material will start to be reviewed on July 1, 2018

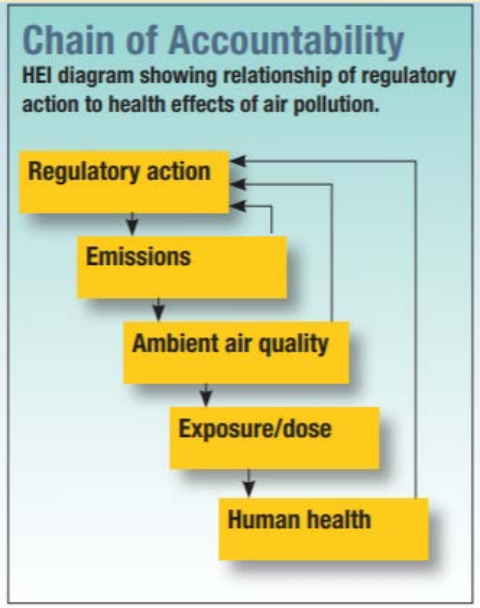
MOSES: Data and Materials

- Announcements at HEI website
- For More Information:
  - Contact Maria Costantini or Annemoon van Erp
  - Also, the MOSES investigators, Phil Bromberg, John Balmes, and Mark Frampton

Accountability Research

Effectiveness of Environmental Regulations

- HEI has a long-term track-record of comprehensive research and reviews
- Under a 2011 RFA, HEI funded four studies on large-scale, multi-year regulatory programs
  - Zigler: Statistical methods for causal inference (*published: 5/'16*)
    - Gilliland: Evaluating changes in air pollution and children's health in Southern California (*published: 1/'17*)
    - Russell: Impacts of Regulations on Air Quality and Emergency Department Visits in Atlanta (Just published: 4/'18)
    - Meng: Goods movement regulations in California and health impact (phase 1 completed; phase 2 in progress)



Accountability Research

Future Plans

- Session at the Annual Conference in May 2017
- Plans underway to publish an RFA late this year
- *Your ideas most welcome*

Health Effects of Traffic-Related Air Pollution

- A high-priority area for HEI; strong emphasis during strategic planning
- Several studies in review and publications:
  - Exposures of students living in dorms in the vicinity of roads in Atlanta (Sarnat – Just published)
  - Traffic tunnels in Hong Kong and Baltimore (Wang)
  - Enhanced statistical modeling (Batterman)
  - Spatial and temporal variance of near road exposures (Frey)
- Tire and brake wear –
  --Koutrakis *(in progress)*
  -- *Franklin (new study)*

HEI Fort McHenry Tunnel Study
….of a tunnel studied before

The Next Phase of Traffic Research

- 2017 RFA: *Assessing Adverse Health Effects of Exposure to Traffic-Related Air Pollution, Noise, and Their Interactions With Socio-Economic Status*
- Three new studies funded:
  - Traffic-related air pollution and birth weight (Dadvand and Sunyer, ISGlobal)
  - Non-tailpipe emissions and noise on traffic and children's health (Franklin, University of Southern California)
  - Air pollution components, noise and socio-economic status (Raaschou-Nielsen, Copenhagen University)
  - Studies funded through other mechanisms (For example Apte)
- More on these studies later in the conference and at the poster sessions

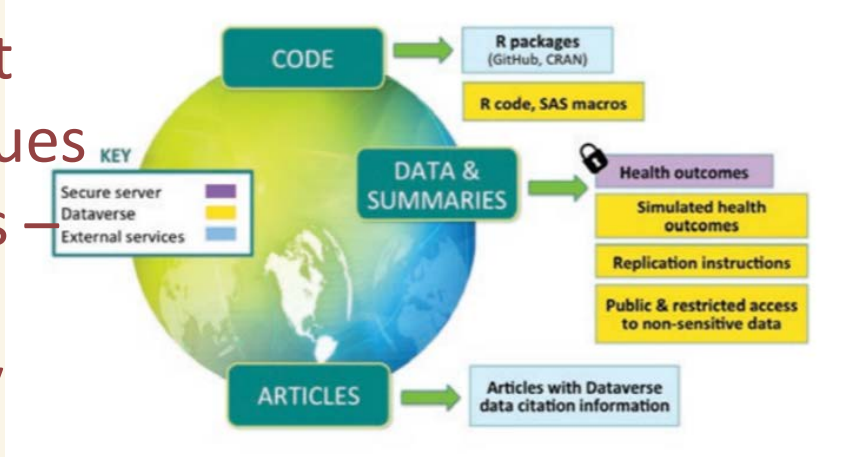
Review of the Traffic Literature

- HEI published a comprehensive review in 2010
- Strong interest in an update of the review from sponsors → 2015-2020 Strategic Plan
- HEI has appointed a new panel to *systematically review*, new epidemiologic studies: health endpoints, exposures, effects of noise, SES, green space.
- Also, trends in mobile source pollution, as regulations and technologies have advanced, and their potential implications
- Target publication in 2020
- More during the conference

Transparency

- Data Access: Key to scientific credibility and transparency
- Longstanding HEI policy on data sharing
- Recent Examples:
  - RIOPA study – indoor, outdoor and personal exposures in three US cities → 40+ papers
  - Data from MOSES – available mid-May 2018
  - Dominici and other low exposure studies – built in component
- Balancing Act:
  - Complexity, effort and cost
  - Privacy and intellectual issues
  - Legal and regulatory issues – national and international
- Session on reproducibility

From: Francesca Dominici, Harvard Chan School of Public Health



Moving Forward

- HEI continues to be a success model for developing quality and impartial science
- Detailed report in *HEI Annual Update 2018*
- The *HEI Strategic Plan* is moving at a brisk pace
  - With many projects coming to fruition this year
  - And a number of important new ones underway
- We look forward to hearing your ideas on where we can and should focus going forward!

Transition…

Maria Costantini

Leaving after 25+
years of working at HEI

Wish her all the best

Note book for your messages

Thank You!