

 **#NatlCancerForum**

Applying Big Data to Address the Social Determinants of Health in Oncology: A Workshop

October 28 - 29, 2019



NATIONAL
CANCER POLICY
FORUM

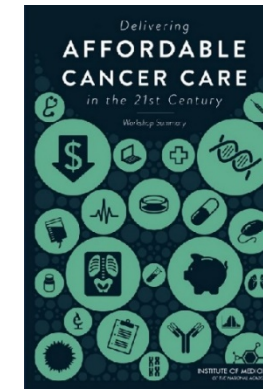
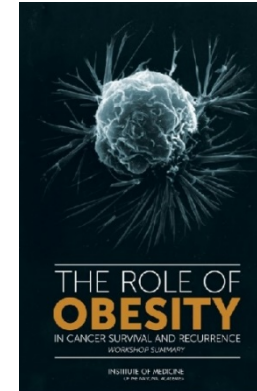
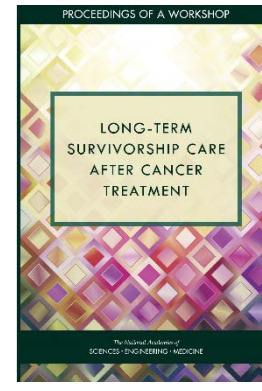
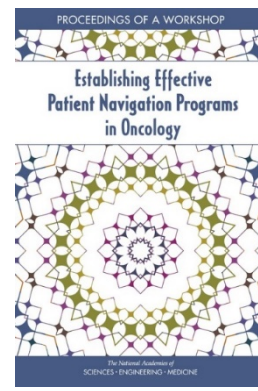
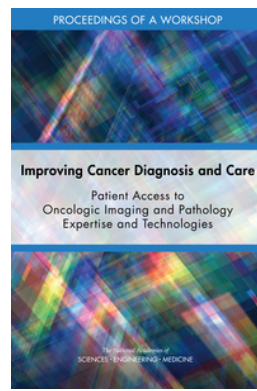
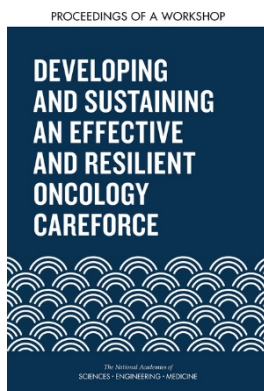
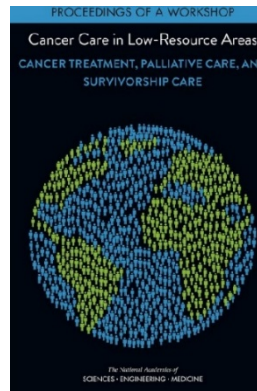
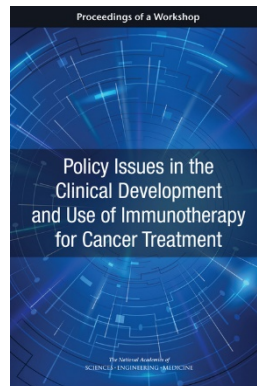
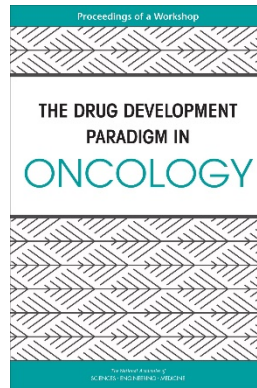
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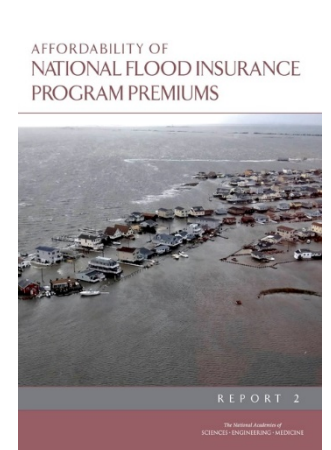
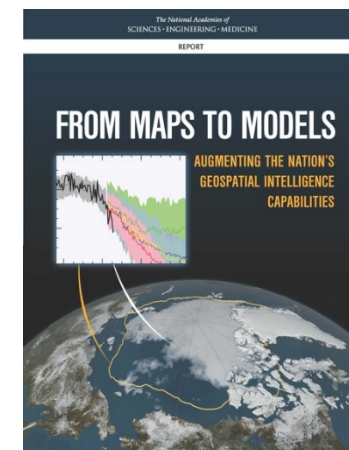
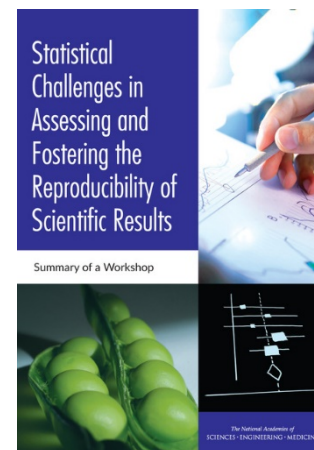
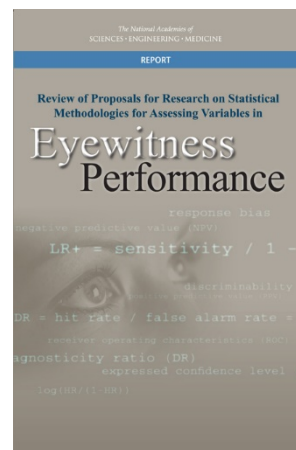
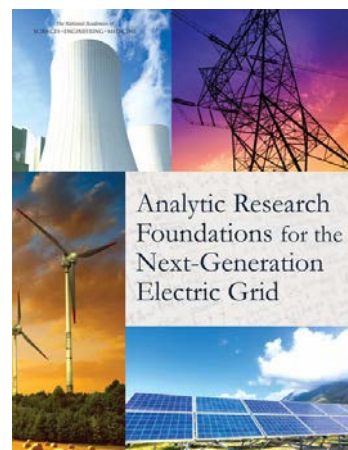
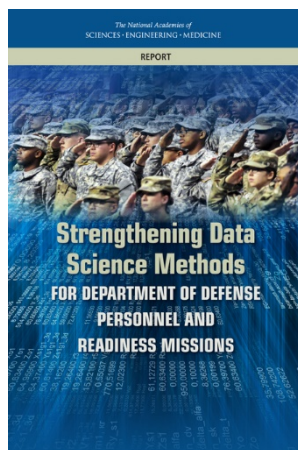
THE NATIONAL CANCER POLICY FORUM

The Forum provides a continual focus within the National Academies on **cancer**, addressing issues in **science, clinical medicine, public health, and public policy** that are relevant to the goal of reducing the cancer burden



THE COMMITTEE ON APPLIED AND THEORETICAL STATISTICS

The Committee promotes the statistical sciences, education, applications, and related issues affecting the statistics community. Its current focus is on improving the visibility and practice of statistics within government agencies, increasing attention to statistical issues in big data and data science, and helping agencies identify bottlenecks impairing their analysis capabilities.



WORKSHOP GOALS

- **Examine how the social determinants of health affect cancer risk and outcomes**
- **Explore novel big data sources & methodologies to assess the social determinants of health**
- **Consider ethical dimensions of big data research and opportunities to promote health equity**
- **Examine opportunities for collaboration and data sharing**
- **Discuss policy and research priorities to advance progress on improving health equity and reducing disparities in cancer**



BIG DATA & OMICS (That Matter)

GENOMICS

- ✓ Somatic Tumor DNA
- Germline DNA
- cfDNA
- RNA Seq
- Epigenetics

PHENOMICS

- Tumor type
- Histology
- Demographics
- Vital status
- Medications
- Treatment Outcomes

COMMUNITYOMICS

- Context
- Built Environment
- Obesogenic Env
- Structural Stress
- Violence

INTEGRATED

Data to Drive Discoveries

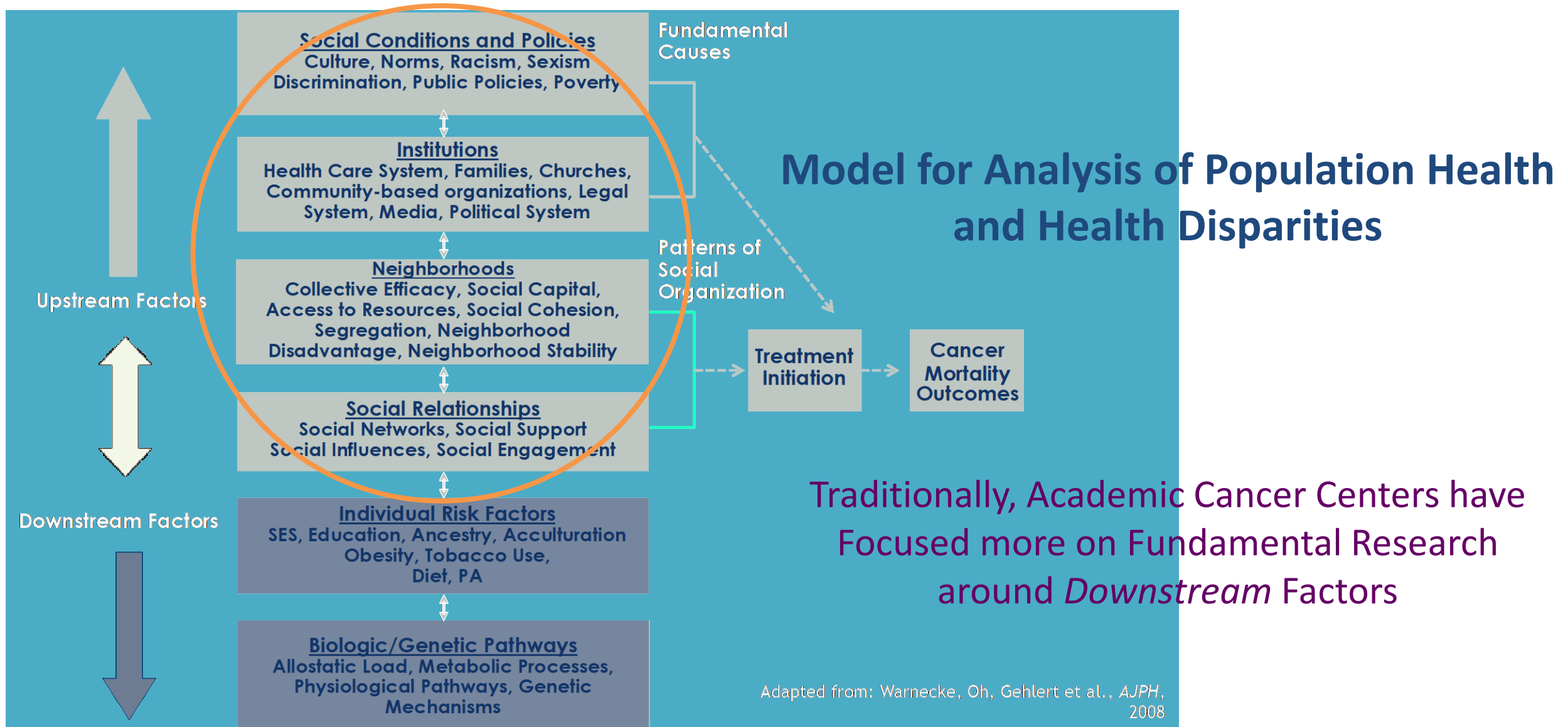
Potentials for Cancer Prevention

Cause	% cancer caused	Deaths in United States [‡]	Magnitude of possible reduction (%)	Period of time (years)	Evidence example
Smoking	33%	188,744	75%	10–20	Utah vs Kentucky
Overweight/obesity	20%	114,390	50%	2–20	Bariatric surgery
Hereditary factors (*)	16%	91,520	50%	2–10	Oophorectomy; MRI: Tamoxifen; Colonoscopy
Diet	5%	28,600	50%	5–20	Folate , colorectal cancer
Lack of exercise	5%	28,600	85%	5–20	Adolescent activity
Occupation	5%	28,600	50%	20–40	Asbestos
Viruses	5%	28,600	100%	20–40	Liver cancer, HPV vaccine
Alcohol	3%	17,200	50%	5–20	Regulation
UV and ionizing radiation	2%	11,400	50%	5–40	Medical exposures
Prescription drugs	1%	5,720	50%	2–10	Hormone therapy
Reproductive factors	3%	17,200	0	N/A	N/A
Pollution	2%	11,400	0	N/A	N/A

We could reduce cancer deaths 60% by paying attention to known risk factors

“Poverty as a carcinogen”, Samuel Broder, Dir NCI 1989

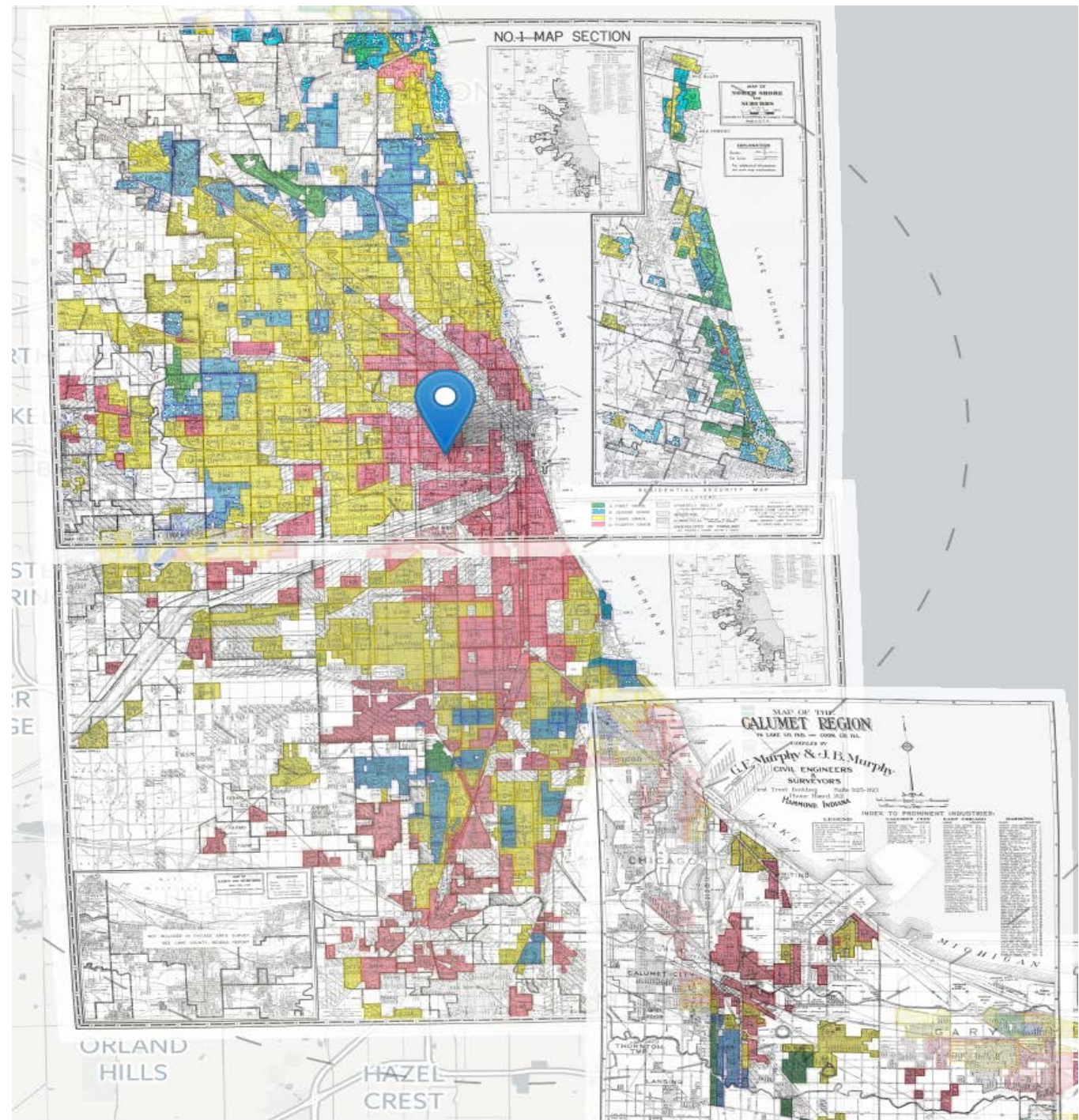
Social Determinants of Health



RED-LINING (Restrictive Covenant)

Home Owner's Loan Corporation
(1933-1935)

- 4 - Tiered assessment
- Measured sale and rental demand, % ownership, social status of population, utilities, schools, churches, business, transportation
- GRADES
 - A – Green “hot spots”
 - B – Blue “developed”
 - C – Yellow “aged”
 - D – Red “undesirable population”



A More Precise Look At Disparities



Chicago's Lifespan Gap: Streeterville Residents Live to 90. Englewood Residents Die at 60. Study Finds it's the Largest Divide in the U.S.

Chicago Tribune, *by Lisa Schencker, June 6, 2019*



WORKSHOP AGENDA: OCTOBER 28

SESSION 1

Workshop Overview

SESSION 2

Highlighting Novel Data Sources and Methodologies

SESSION 3

Data Policy and Ethical Considerations

SESSION 4

Priorities and Opportunities for Collaboration and Data Sharing to Promote Health Equity



WORKSHOP AGENDA: OCTOBER 29

SESSION 5

Identifying Research Gaps and Setting a Research Agenda

SESSION 6

Panel Discussion: Participant Recommendations for the Path Forward

We encourage you to suggest policy and research opportunities to effectively leverage big data to improve health equity and reduce disparities in oncology

Please state your name and affiliation prior to asking questions at the microphone.



WORKSHOP PLANNING COMMITTEE

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