

**THE FUTURE OF CANCER DATA:** UNLOCKING INSIGHTS WITH PATHOLOGY REPORTING



## Pathology Report to Public Health and Back: Supporting Cancer Research and Discoveries

Alison Van Dyke, MD, PhD

OCTOBER 6 | 3:00–3:45 PM CT



COLLEGE of AMERICAN  
PATHOLOGISTS

Laboratory Quality Solutions

CAP23 | CHICAGO

#PATHDATA





TURNING CANCER DATA  
INTO DISCOVERY

# Pathology Report to Public Health and Back: Supporting Cancer Research and Discoveries

Alison Van Dyke, MD, PhD, FCAP

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October 6, 2023

# Conflicts of Interest & Support

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I have no conflicts of interest or other financial disclosures to declare.

The work described in this presentation and the NCI/SEER and CDC/NPCR cancer registry systems are funded and operated by the U.S. Federal Government.

I am employed by the National Cancer Institute of the National Institutes of Health.

# Objectives

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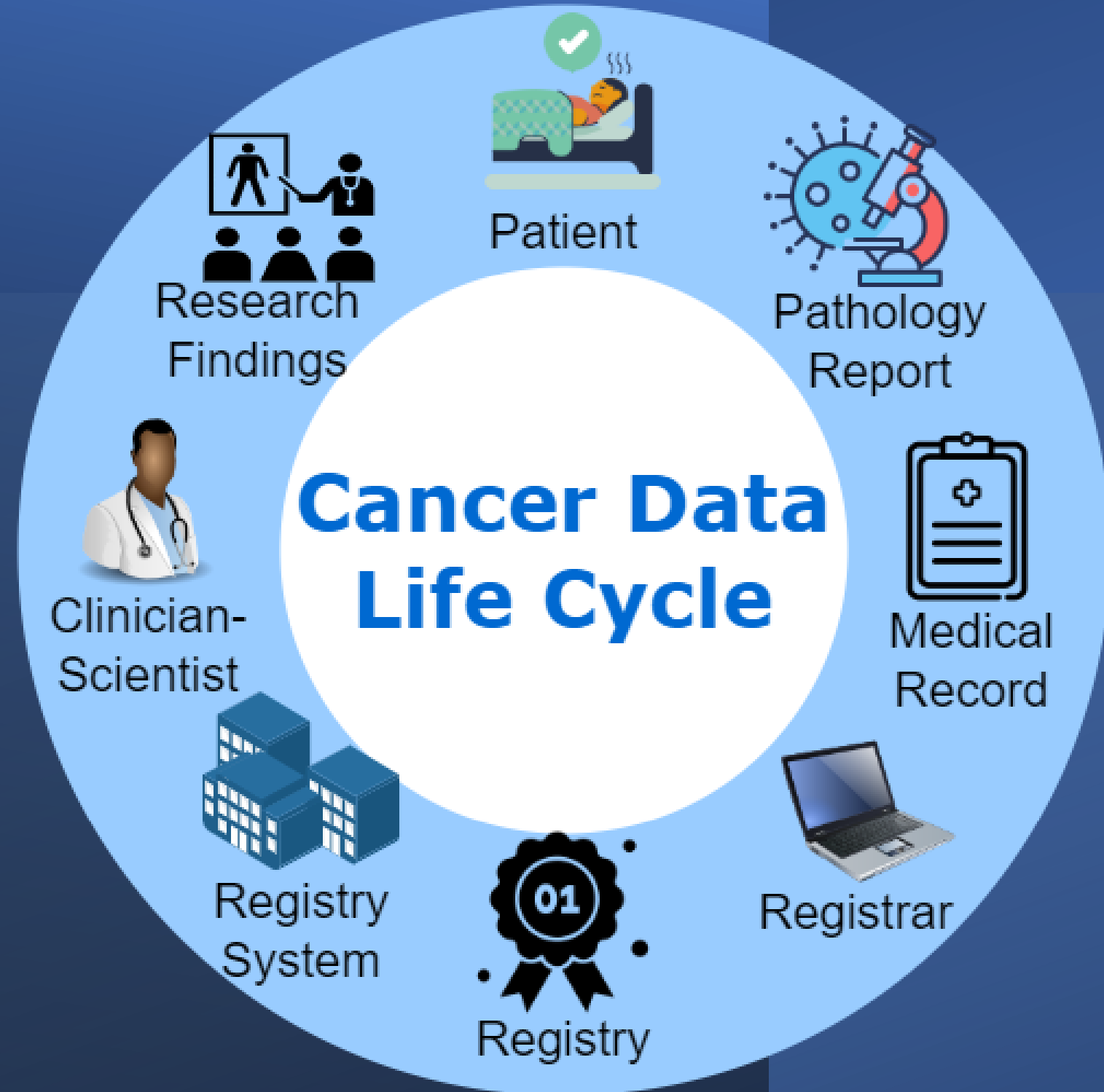


Understand the life cycle of pathology report data in cancer surveillance and how it can lead to advances in cancer care

Understand how variability of terminology used in pathology reports and outdated standards lead to inconsistencies and inaccuracies in data captured

Know about a cancer surveillance initiative with CAP to facilitate accurate cancer registry data collection and how to gain access to population-based cancer data for research

# Cancer Surveillance & Pathologists: Data Quality Partners

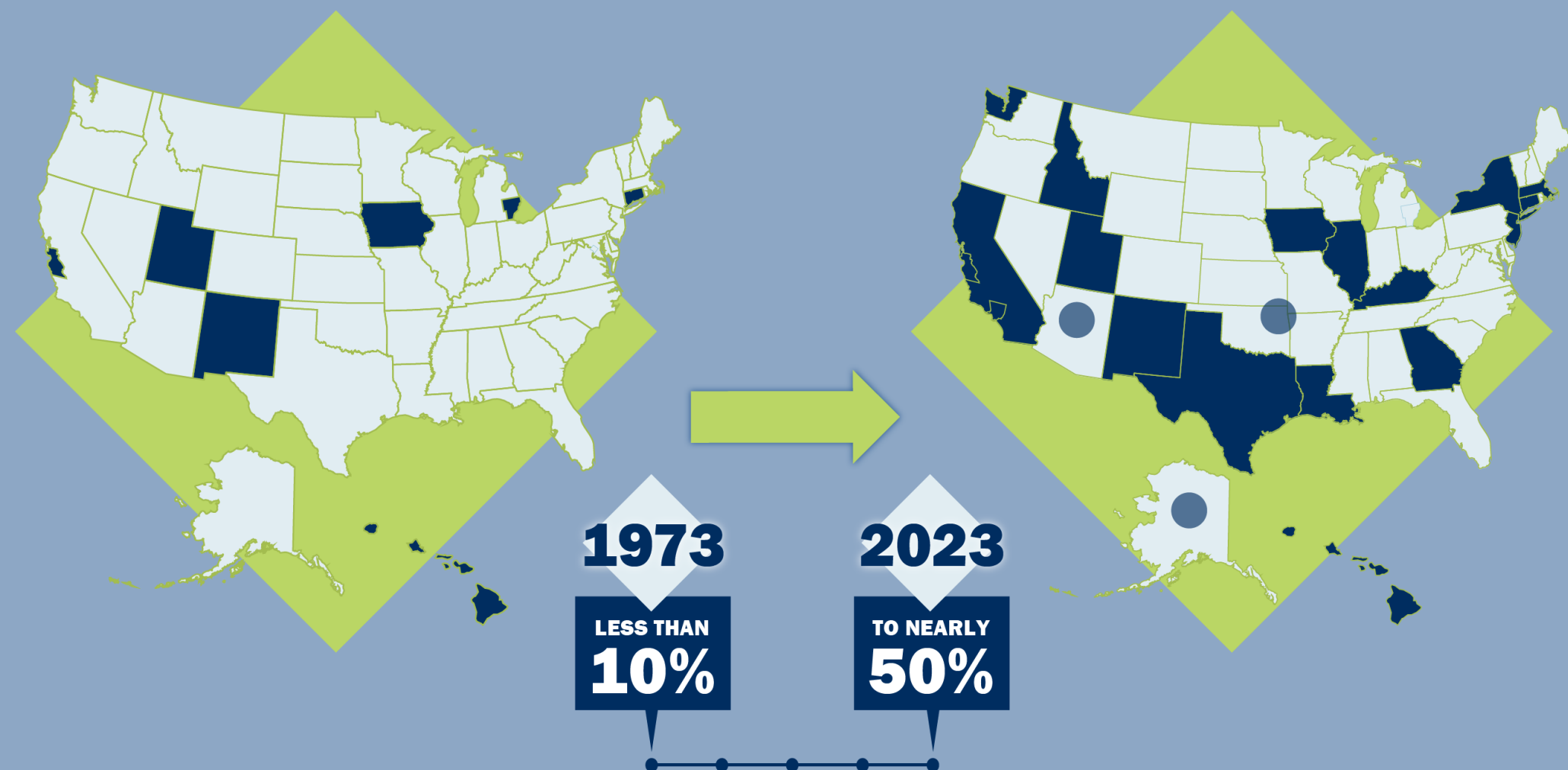




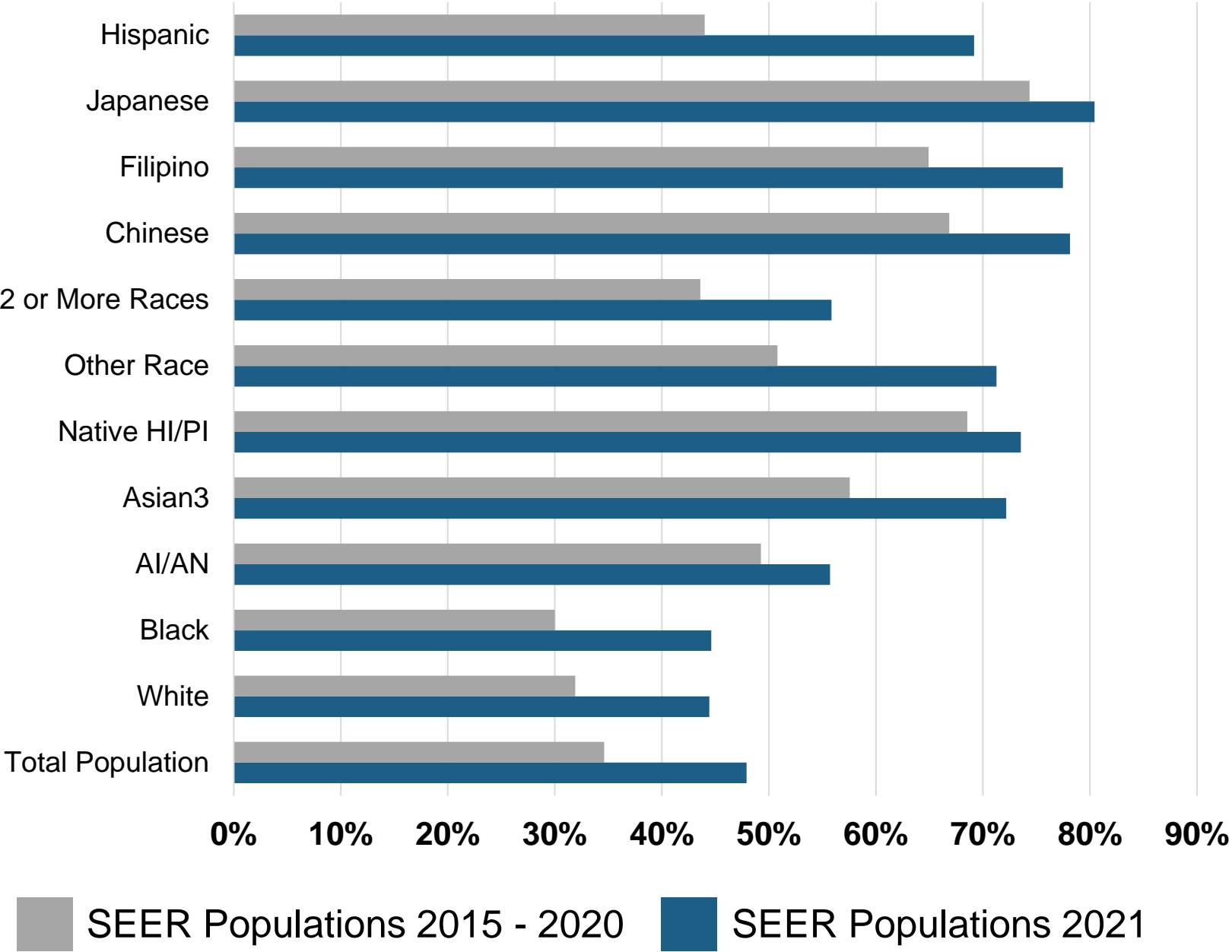


TURNING CANCER DATA  
INTO DISCOVERY

- >850,000 cases/year
- Rare cancers
- Cases with rare outcomes
- Additional cancers
- Understudied populations

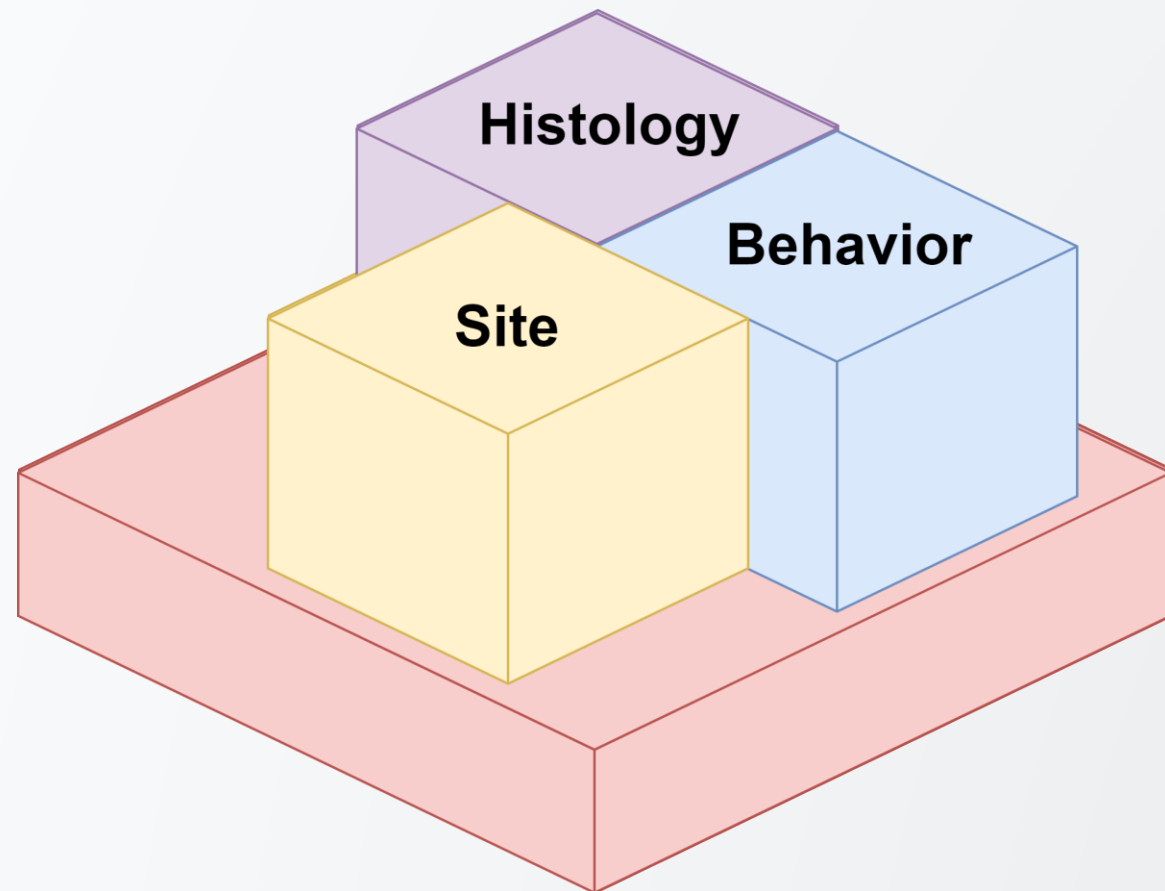


# Increase in Representation of Population Subgroups with SEER Expansion



Percent Increase for US Population Subgroups with SEER Expansion 2021	
Total Population	13.3
White	12.5
Black	14.6
American Indian/Alaska Native	6.5
Asian	14.6
Native Hawaiian/Pacific Islander	5.0
2 or more races	12.3
Chinese	11.3
Filipino	12.5
Japanese	6.1
Hispanic	25.2

# Foundation of Cancer Surveillance Data Capture



## Site Specific Data Items (SSDIs) – ex: Breast

- ER, PR, HER2
- Axillary nodal involvement
- Oncotype DX
- Multigene Signature

## Statistics Reported for

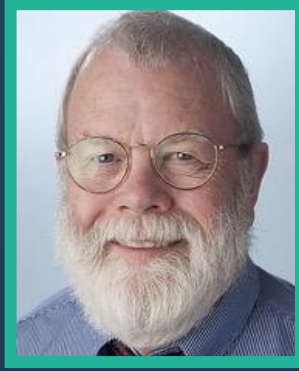
- Incidence
- Outcomes
- Trends
- Additional Cancers



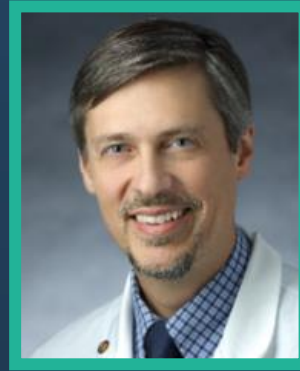
# SEER\*ClinCORE Pathologists



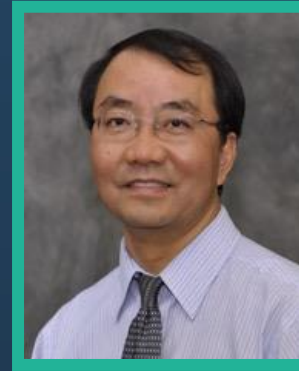
**Aaron Auerbach**  
Hematopathology



**James Connolly**  
Breast Pathology



**Brent Harris**  
Neuropathology



**Pei Hui**  
GYN Pathology



**Peter Humphrey**  
Male Genital/Urinary  
Pathology



**Jim Lewis Jr.**  
Head/Neck  
Pathology & HPV



**Ricardo Lloyd**  
Endocrine  
Pathology



**Jessica Davis**  
Bone/Soft Tissue &  
Pediatric Pathology



**Kay Washington**  
GI Pathology



**Priya Nagarajan**  
Dermatopathology

# CAP-NCI Problem Solving – Site-Morphology Combinations, Terminology & Coding



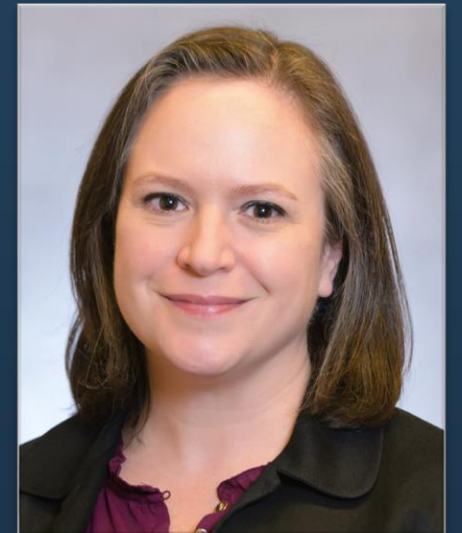
Richard Moldwin  
CAP



Keren Hulkower  
CAP



Serban Negoita  
NCI



Alison Van Dyke  
NCI

- ❖ Different terminology used across standard-setters & stakeholders
- ❖ Variation in terminology & coding over time
- ❖ ~24-month timeline for implementing new histology standards in cancer surveillance
- ❖ Cancer surveillance standards overdue for major overhaul

# Cancer PathCHART Acronym



Cancer

---

Pathology

---

Coding

---

Histology

---

And

---

Registration Terminology



# Collaborating Organizations

International Agency  
for Research on Cancer



Statistics  
Canada

Statistique  
Canada



AJCC  
American Joint Committee on Cancer



100+years



# Cancer PathCHART



Cancer  
Surveillance  
Standards

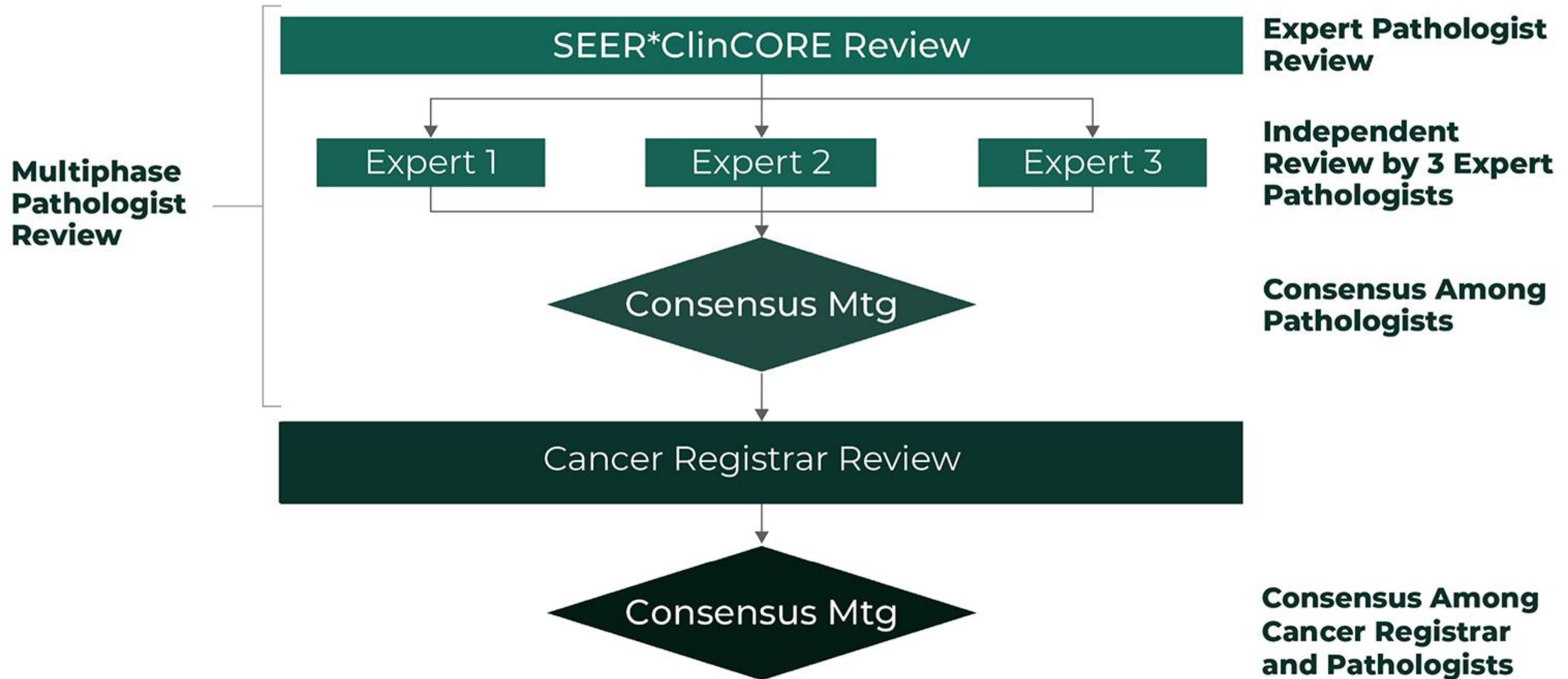
Language in  
Pathology  
Reports

## Picture Link

Modified from: U.S.  
Department of  
Transportation, Federal  
Highway Administration.  
Accessed April 28, 2023

# Cancer Registrar

# Interdisciplinary Review Process





# Pathologist Reviewer Decisions

## Biologically Valid

No further review needed

*Example*

Adenocarcinoma of the colon & rectum

## Biologically Unlikely

Histology is unlikely in this site/organ system and may be an error

*Example*

Squamous cell carcinoma in situ of the rectum (more likely of the anal canal)

## Biologically Impossible

Cancer registrars cannot record this combination in the cancer registry database

*Example*

Hepatocellular carcinoma of the prostate

## Send for Consensus

Determination to be made via consensus among multiple pathologists and CTRs

# Previously Valid Ovarian Histologies Deemed Impossible - examples

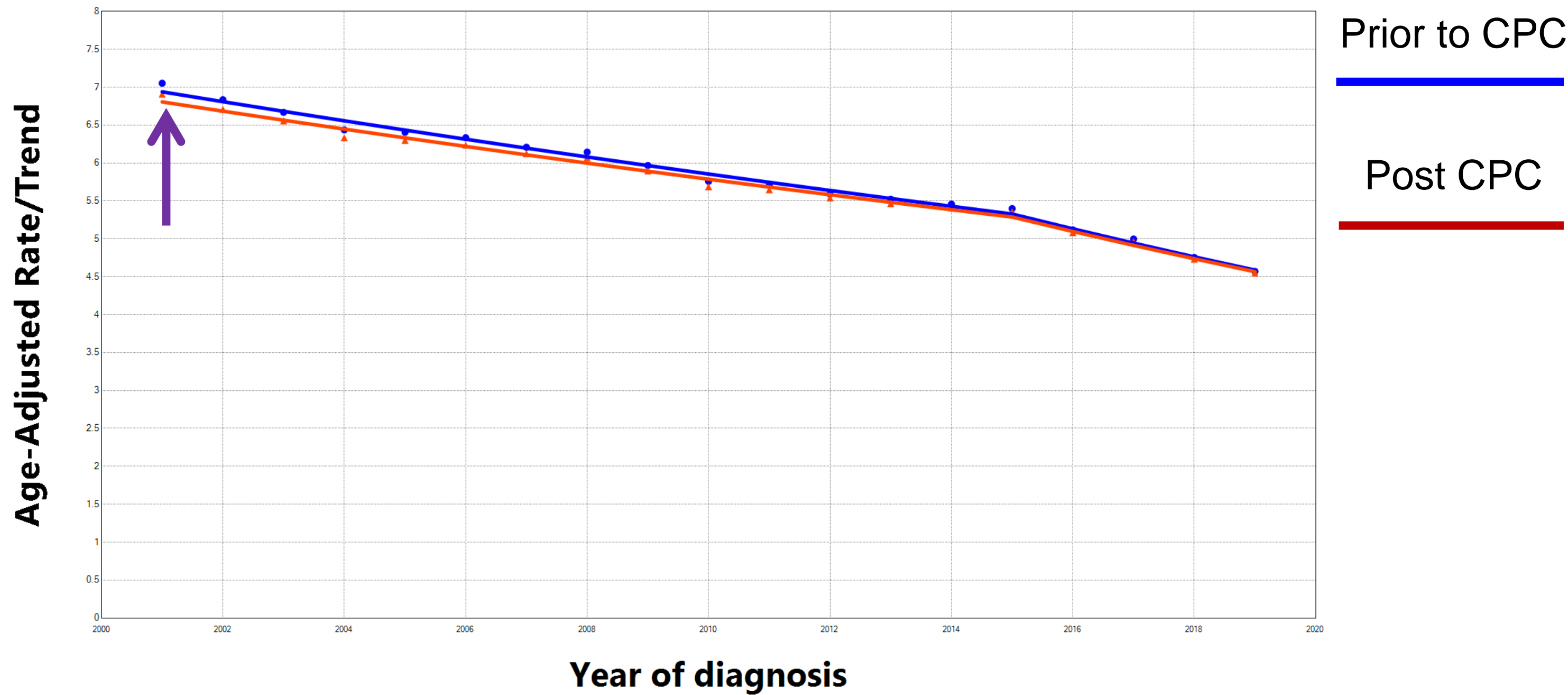
Morphology	ICD-O-3.2 Term	Count
8051/3	Verrucous carcinoma, NOS	0
8052/2	Papillary squamous cell carcinoma, non-invasive	0
8070/2	Squamous cell carcinoma in situ, NOS	41
8230/2	Ductal carcinoma in situ, solid type	0
8261/2	Adenocarcinoma in situ in villous adenoma	0
8261/3	Adenocarcinoma in villous adenoma	0
8262/3	Villous adenocarcinoma	4
8263/2	Adenocarcinoma in situ in tubulovillous adenoma	0
8263/3	Adenocarcinoma in tubulovillous adenoma	21
8510/3	Medullary carcinoma, NOS	2

# Ovarian Cases: Impact estimate of CPC changes

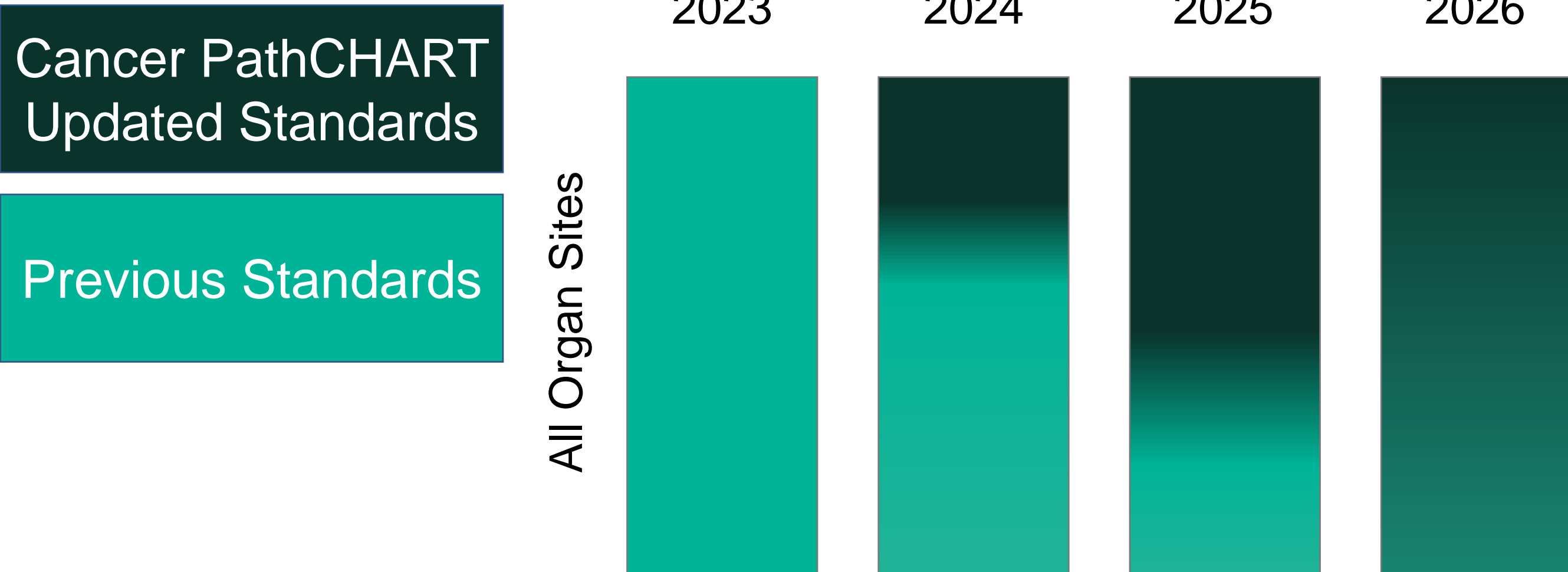
Before Review	# of Histologies	2019 Case Count	% of Total Cases	Expert Review Designation	# of Histologies	2019 Case Count	% of Total Cases
SEER Site/Type Validation List	107	17,932	99.0	Valid	64	17,806	98.7
				Unlikely	3	9	<0.1
				Impossible	40	117	0.6
Manual Review/Override	228	110	1.0	Valid	5	4	<0.1
				Unlikely	40	33	0.2
				Impossible	183	73	0.4
Impossible	3	0	0	Valid	0	0	0
				Unlikely	0	0	0
				Impossible	3	0	0
New WHO Code/Term	7	0	0	Valid	0	0	0
				Unlikely	0	0	0
				Impossible	7	0	0
Total	345	18,042	100	Total	345	18,042	100



# Valid or Override Histologies of the Ovary



# Implementation Timeline



# Pathologist Reviewers-completed

## Bone & Soft Tissue

John SA Chrisinger, MD  
Jessica Davis, MD  
Karen Fritchie, MD  
Paari Murugan, MD

## Breast

Veerle Bossuyt, MD  
James Leo Connolly, MD  
Mary Elizabeth Edgerton, MD, PhD  
Patrick L. Fitzgibbons, MD

## Central Nervous System

Brent Harris, MD, PhD  
David Louis, MD  
Arie Perry, MD

## Digestive System

Volkan Adsay, MD  
Olca Basturk, MD  
Norman Carr, MB, BS, FRCPath  
Jessica Davis, MD  
Dhanpat Jain, MD  
Sanjay Kakar, MD  
Gregory Lauwers, MD  
Robert Odze, MD  
Asif Rashid, MBBS, PhD  
Romil Saxena, MD  
Chan Juan Shi, MD, PhD  
Aatur Singhi, MD, PhD  
Mike Torbenson, MD  
Kay Washington, MD, PhD  
Tsung-The Wu, MD, PhD



# Pathologist Reviewers-completed

## Female Genital System

Elizabeth Euscher, MD

Ian Hagemann, MD, PhD

Pei Hui, MD, PhD

Martin Kobel, MD

Uma Krishnamurti, MD, MBBS, PhD

Mohammad Ruhul Quddus, MD

Brian Rous, MD

Jian-Jun Wei, MD

## Male Genital System

Michael Eden, MBBS, FRCPath

Jonathan Epstein, MD

Peter Humphrey, MD, PhD

Gladell P. Paner, MD

Joseph Sirintrapun, MD

John Robert Srigley, MD, FRCPath

## Urinary System

Jonathan Epstein, MD

Lara Rabih Harik, MD

Peter Humphrey, MD, PhD

# For More Information

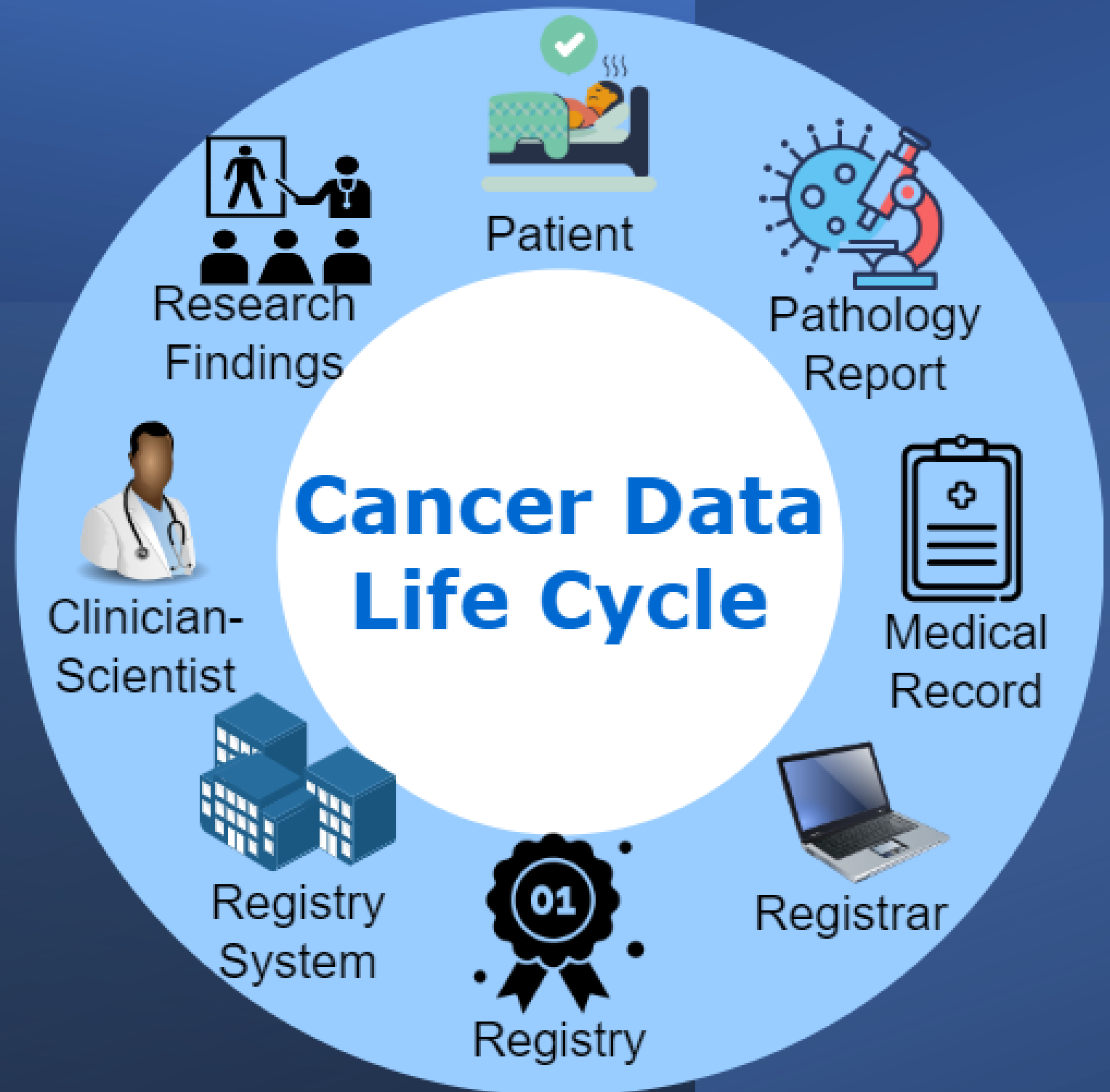
Visit the Cancer PathCHART website today!

<https://seer.cancer.gov/cancerpathchart/>

Contact Us at [NCICancerPathCHART@mail.nih.gov](mailto:NCICancerPathCHART@mail.nih.gov)

***Search tool of 2024 standards in development***

# RWE Data Examples





# Real World Evidence: Example #1



## Characterization of PLCIS on a Population Scale

Time Period	LCIS	PLCIS
2017	8520/2	8520/2
2018 forward	8520/2	8519/2

Addressed using US Cancer Statistics (USCS)

316 PLCIS cases diagnosed in US (2018 to 2020)

Analysis of

- differences in demographic & tumor characteristics by cancer type
- risk of subsequent breast cancers after PLCIS vs. DCIS or LCIS
- differences between location & laterality of initial primary & second primary

Characteristic	PLCIS N=316	LCIS N=13,179	DCIS N=104,834	Invasive N=609,143	P-value (PLCIS vs LCIS)	P-value (PLCIS vs DCIS)	P-value (PLCIS vs. Invasive)
<i>Age (years) - Median (IQR)</i>	61 (52, 68)	53 (47, 62)	61 (51, 69)	62 (52, 71)	<0.0001	0.99	0.08
<i>Race/Ethnicity - N (%)</i>							
Non-Hispanic White	227 (75)	9,168 (73)	69,383 (69)	425,553 (72)	0.09	0.009	0.07
Non-Hispanic Black	24 (8)	1,323 (11)	14,272 (14)	71,749 (12)			
Hispanic	28 (9)	1,466 (12)	9,977 (10)	58,828 (10)			
Other	23 (8)	663 (5)	7,648 (8)	34,032 (6)			
<i>Location-initial – N (%)</i>							
Nipple – C50.0	0 (0)	35 (0.3)	506 (0.5)	2,327 (0.4)	0.006	0.15	0.01
Central - C50.1	13 (4)	725 (6)	6,659 (6)	27,512 (5)			
UIQ - C50.2	21 (7)	1,048 (8)	9,826 (9)	77,257 (13)			
LIO - C50.3	17 (5)	443 (3)	6,802 (7)	33,383 (6)			
UOQ - C50.4	115 (36)	4,441 (34)	34,227 (33)	214,118 (35)			
LOQ - C50.5	27 (8)	808 (6)	8,244 (8)	46,934 (8)			
Axillary Tail - C50.6	0 (0)	25 (0.2)	95 (0.1)	2,396 (0.4)			
Overlapping - C50.8	80 (25)	2,913 (22)	25,459 (24)	140,231 (23)			
Breast, NOS - C50.9	43 (14)	2,741 (21)	13,016 (12)	64,985 (11)			

# PLCIS Cases: Morphology of Subsequent Primary



Morphology	N (%)
<i>Any second breast primary (/2 or /3)</i>	<b>N=19</b>
Invasive Breast Cancer (/3)	8 (42)
DCIS (8500/2)	8 (42)
PLCIS (8519/2)	2 (11)
LCIS (8520/2)	1 (5)
<i>Invasive second breast primary (/3)</i>	<b>N=8</b>
Infiltrating duct carcinoma, NOS (8500)	3 (38)
Invasive lobular carcinoma (8520)	4 (50)
Infiltrating duct & lobular carcinoma (8522)	1 (12)



# Initial Comparisons & Future Analysis



## **PLCIS with vs. without subsequent breast primary**

- No differences in age, race/ethnicity, or location of the initial cancer

## **With additional follow up time & diagnosis years**

- Repeat analysis of demographic characteristics
- Risk of subsequent breast cancers comparing patients with
  - PLCIS and DCIS
  - PLCIS and LCIS
- Location of initial vs. subsequent primary among PLCIS vs. DCIS patients

# Acknowledgements – Breast PLCIS Analysis

## NCI/SEER

Lois Dickie

Serban Negoita

Annie Noone

Alison Van Dyke

## CDC/NPCR

Trevor Thompson

Manxia Wu

## Breast Pathologists

Mary Edgerton

Uma Krishnamurti

Kate Serdy

## Breast Oncologist

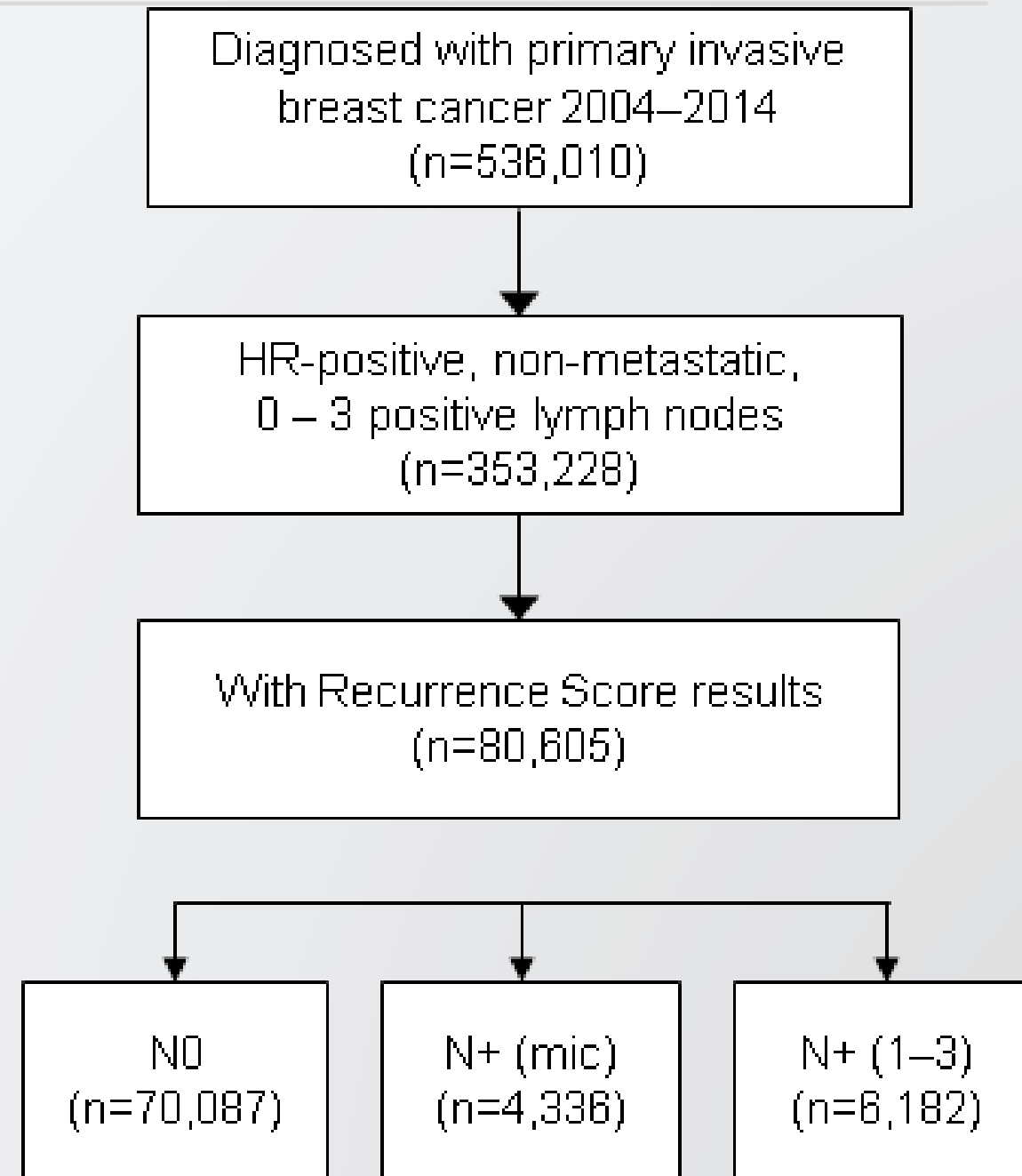
Allison Kurian

# Real World Evidence: Example #2

Chemotherapy benefit in  
Oncotype DX Breast  
Recurrence Score® (RS)-  
tested patients w/ N0 disease

Prognosis in RS-tested  
patients w/ N0, N1mic, & N1  
disease treated without  
adjuvant chemotherapy

Hortobagyi et al. San Antonio Breast Cancer  
Symposium (December 2018) Abstract P3-11-02



Valentina  
Petkov,  
MD, MPH



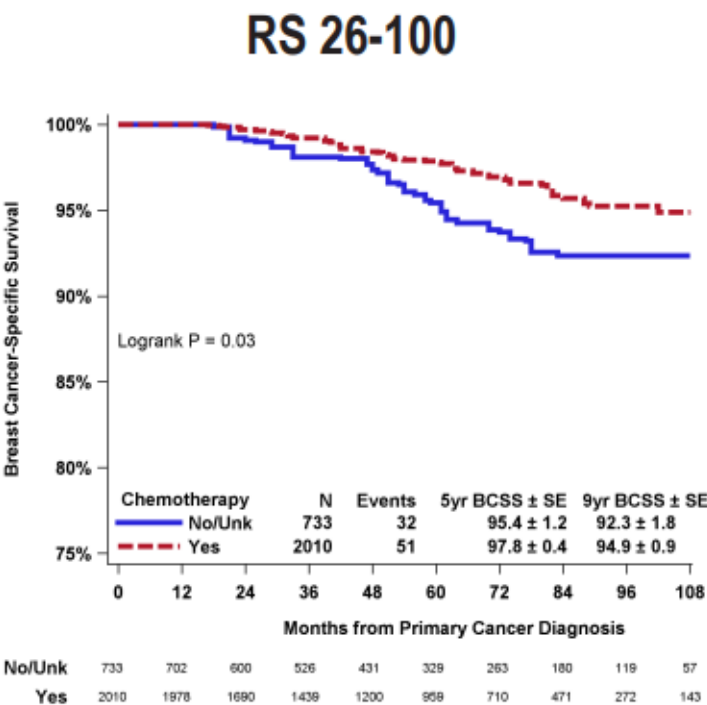
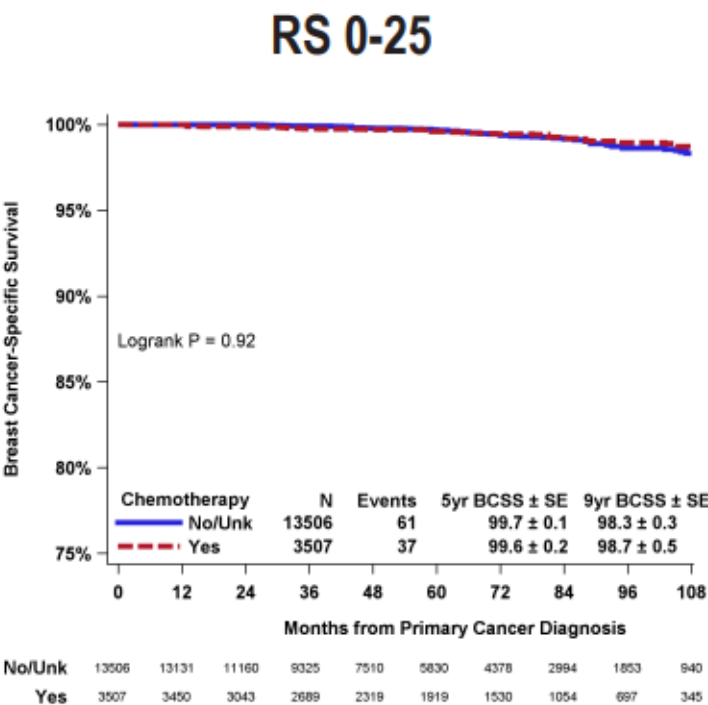
Gabriel  
Hortobagyi,  
MD



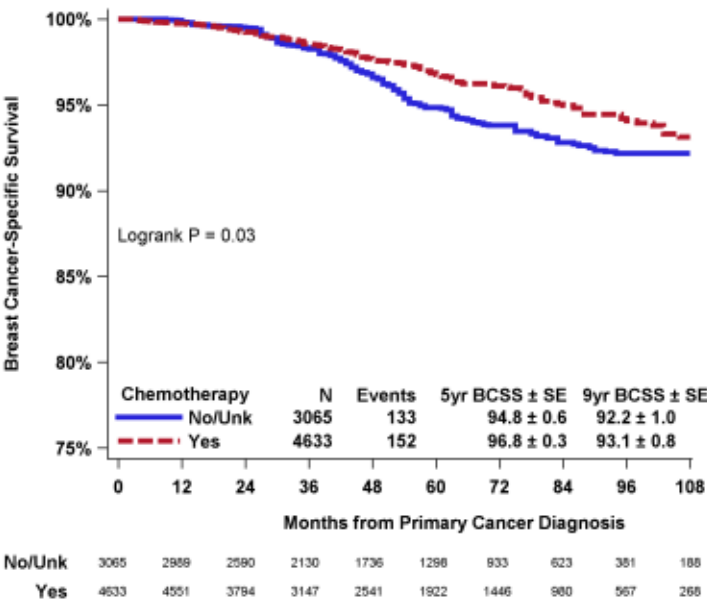
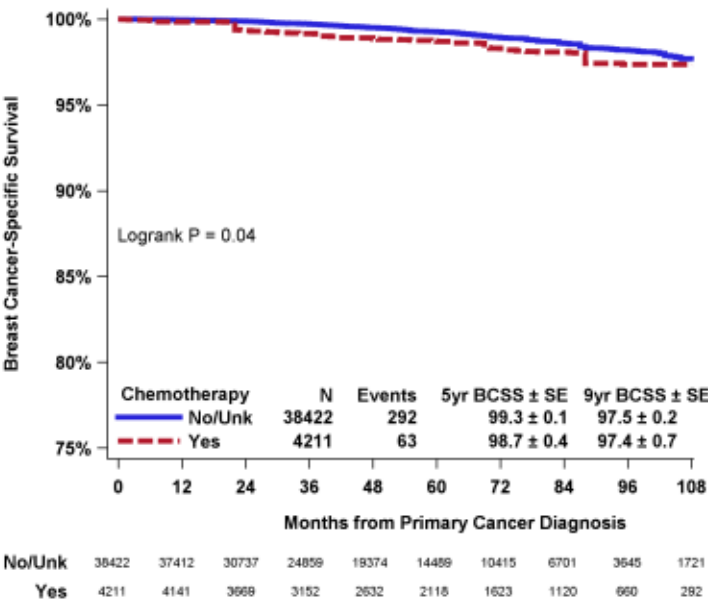
# SEER-Genomic Population-Based Findings



Age ≤50 y



Age >50 y



Valentina Petkov, MD, MPH



Gabriel Hortobagyi, MD

Hortobagyi et al. San Antonio Breast Cancer Symposium (December 2018) Abstract P3-11-02

# SEER-Genomic Population-Based Findings

- RS predictive of chemotherapy benefit in patients with HR+ N0 disease & RS 26-100, supporting the cutoff at RS 26 for chemotherapy benefit
- 9-year BCSS >97% without chemotherapy in patients w/ RS <18 regardless of nodal status
- Insufficient events at analysis to estimate chemotherapy benefit among women with LN-positive disease

**Hortobagyi et al. San Antonio Breast Cancer Symposium (December 2018)**  
**Abstract P3-11-02**



TURNING CANCER DATA  
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Valentina  
Petkov,  
MD, MPH



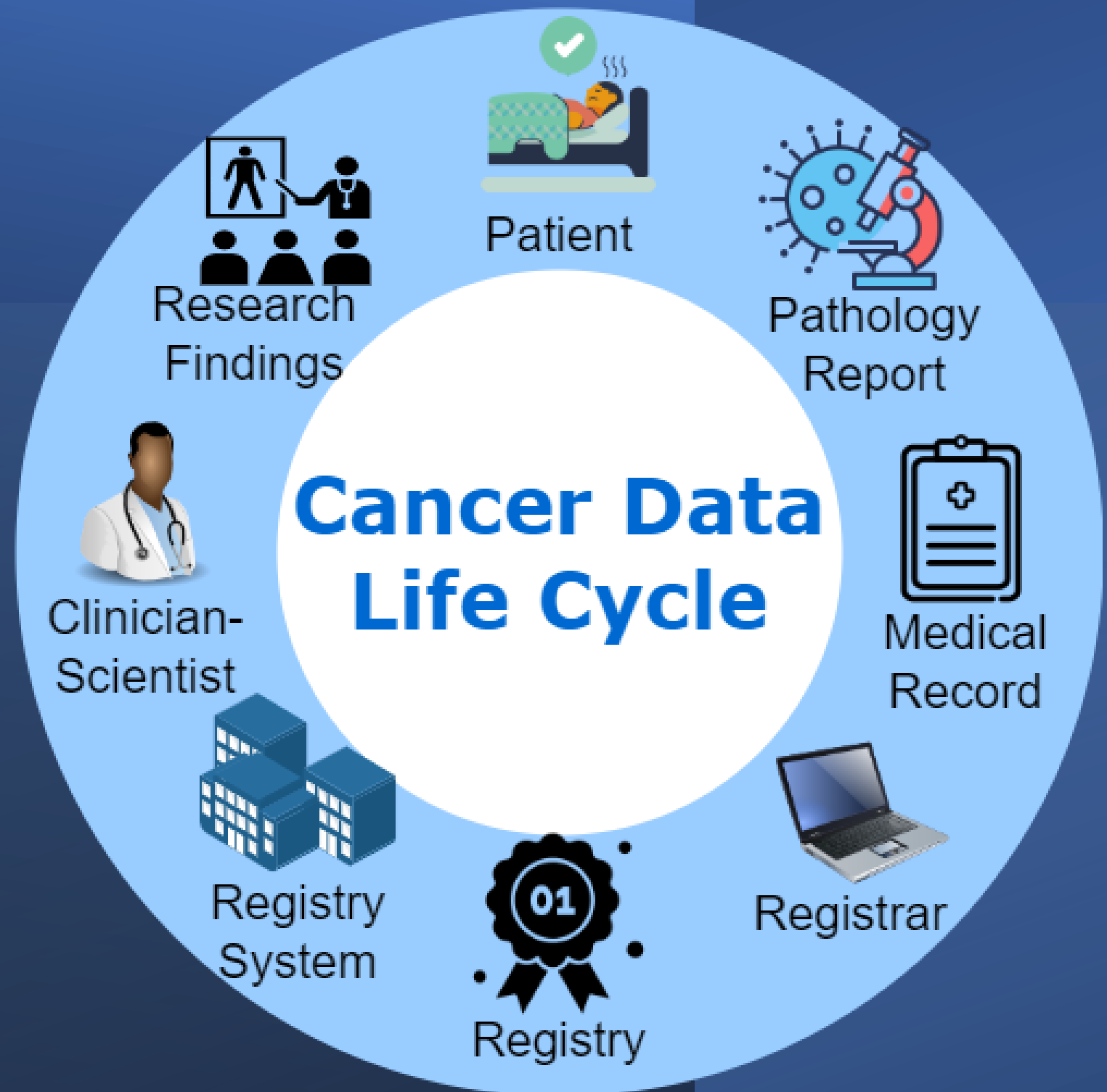
Gabriel  
Hortobagyi,  
MD

## Reference for RWE Example #2

Hortobagyi, G. N. et al. “Breast cancer-specific mortality (BCSM) in patients (pts) with node-negative (N0) and node-positive (N plus) breast cancer (BC) guided by the 21-gene assay: A SEER-genomic population-based study.” *Cancer Research* 2019;79(4S): Meeting Abstract P3-11-02.



# New & Future Data Resources



# Data Linkages



## Why link to genomic/germline testing data?

- More *efficient* way for *data collection* by centralizing data acquisition the Honest Broker b/n SEER registries and industry
- *Difficulties* in training registrars *in coding* genomic/genetic data due to complicated, rapidly changing clinical practice
- *Assure completeness and quality* of data
- *Case finding* source, especially for cancer patients diagnosed and treated at community specialty practices

# Exact Sciences Linkage

## Oncotype DX Genomic Prostate Score (GPS)

- Recommended in guidelines for treatment decisions & prediction of adverse pathology, on market since 2013
- 1<sup>st</sup> time linkage with this test



- Case finding study (~20% of tested cases with no matching in SEER)

## Oncotype DX IBC

- 4<sup>th</sup> linkage: 2004-2017
- Linkage methodological improvements

## Oncotype DX DCIS

**Establishing data release process for specialized database**

# Virtual Pooled Registry Cancer Linkage System VPR-CLS

NCI/SEER-funded & NAACCR-managed

Launched in February 2022

Linkages between research studies & U.S. registries

- Single linkage software & standard matching criteria
- Aggregate match counts to inform selection of registries for requests

Minimize burden & cost to researchers, registries, & IRBs; Increase ease of access and timely use of registry data



# Virtual Pooled Registry Cancer Linkage System

## VPR-CLS

45 participating registries (95% of U.S. population)

22 study linkages with 6 initial pilot test studies

1.1M matches among over 13.5M cohort members

Fact sheets and webinars regarding the Common Rule changes & secondary data sharing: <https://www.naaccr.org/vpr-fact-sheets/>

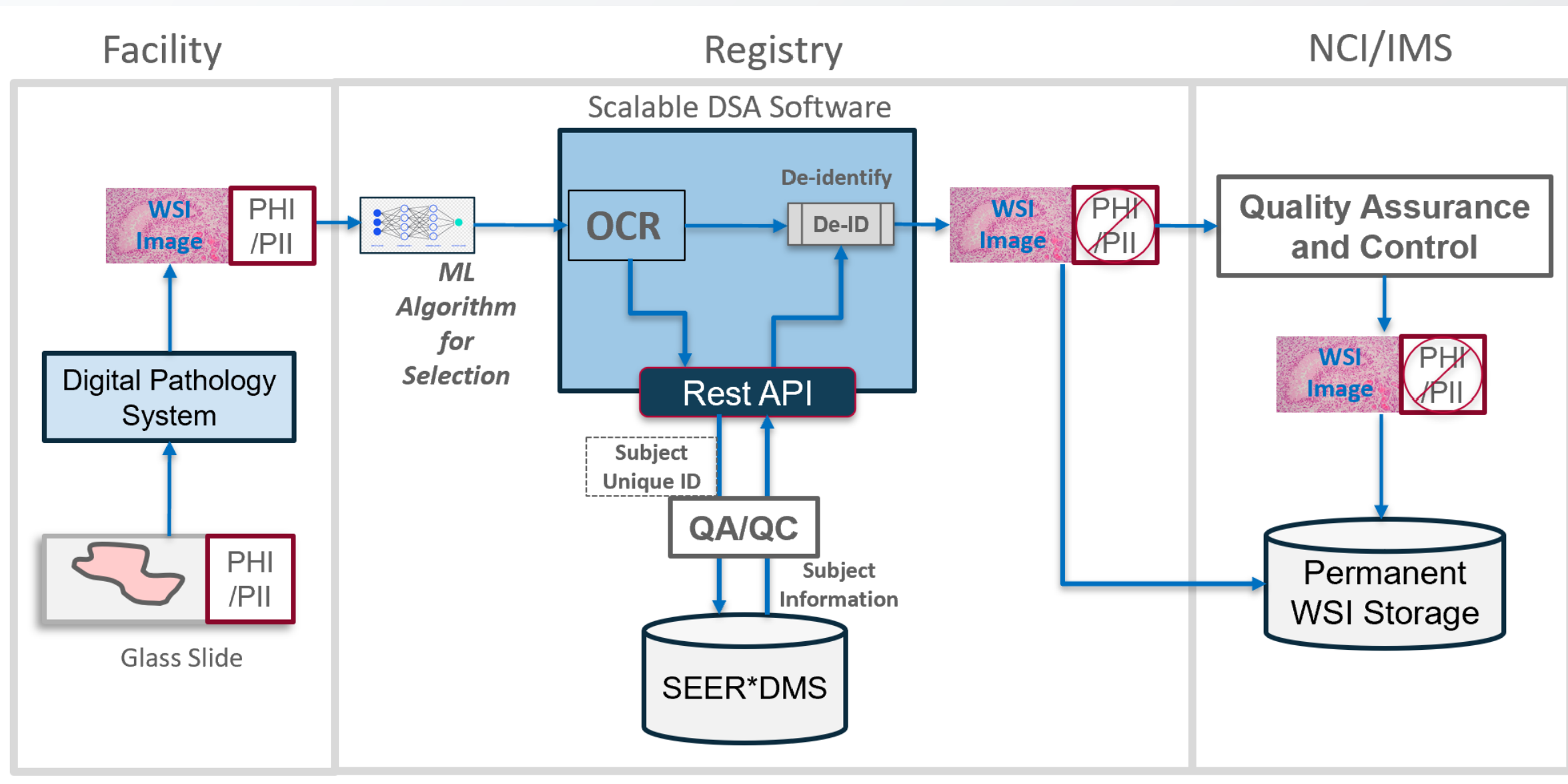
VPR Program Manager: Castine Clerkin, [cclerkin@naaccr.org](mailto:cclerkin@naaccr.org)

# Data Linkages in NCCR Data Platform at 2024 Launch

- Registry-abstracted data
- Social Determinants of Health
- Results of data linkages
  - Children's Oncology Group (COG)
  - Pediatric Proton/Photon Consortium Registry (PPCR)
  - Virtual Pooled Registry (VPR)
  - Medical and Pharmacy claims from multiple data sources

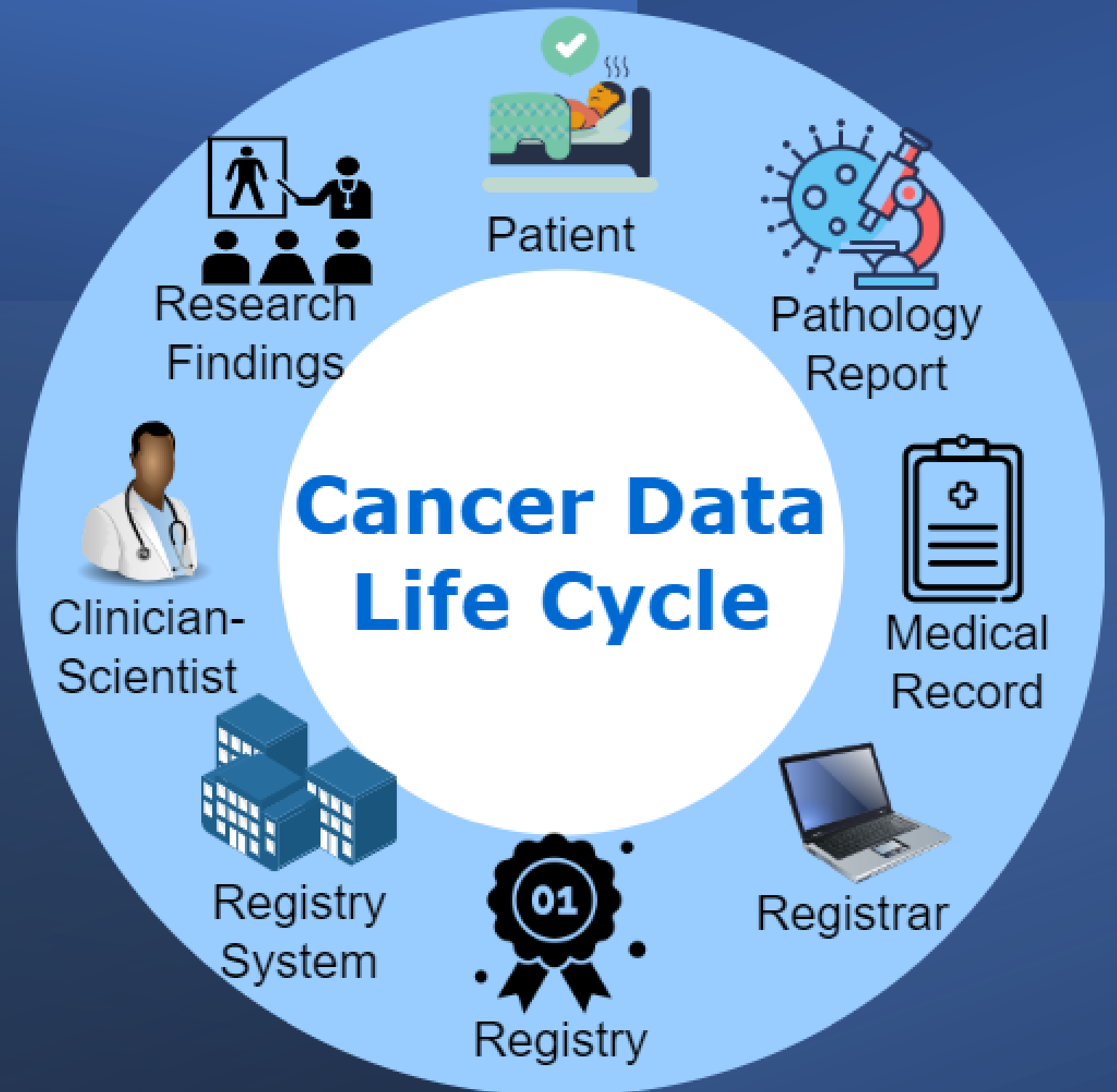


# Deidentified WSIs Linked to Data in Future



<https://digitalslidearchive.github.io/DSA-WSI-DeID/>

# Cancer Surveillance Data Access





# Welcome to the Cancer Statistics Explorer Network

Find the cancer statistics tool best suited to your needs.

01

## SEER\*Explorer

Surveillance, Epidemiology, and End Results Program

Cancer statistics from SEER data by race, age, gender, stage, and cancer subtypes, covering 48% of the U.S. population.

[Go to SEER\\*Explorer](#)

02

## NCCR\*Explorer

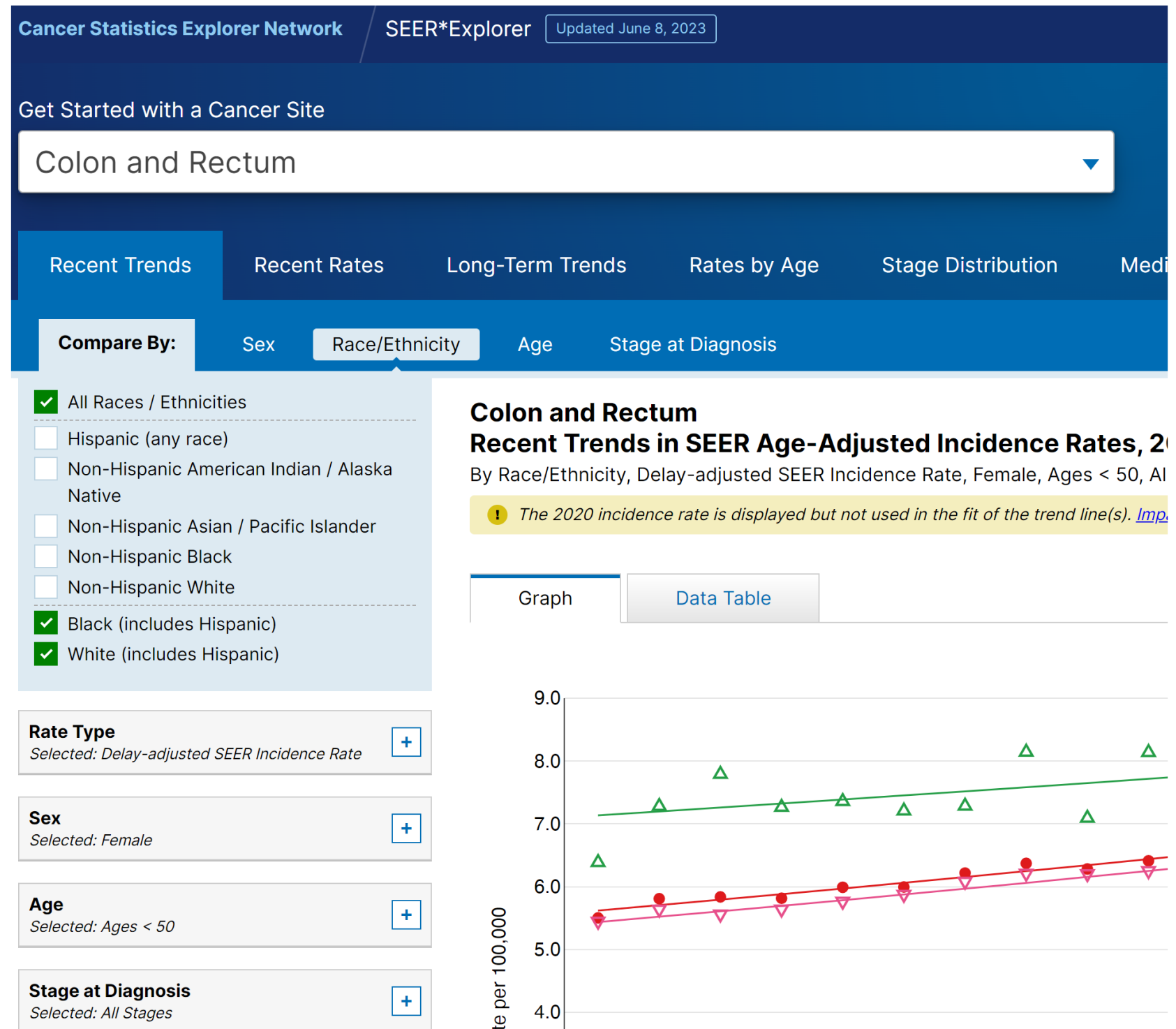
National Childhood Cancer Registry (NCCR)

Childhood, adolescent and young adult cancer statistics from NCCR data, ages 0-39, covering 70% of the U.S. population, and using International Classification of Childhood Cancer (ICCC).

[Go to NCCR\\*Explorer](#)

<https://seer.cancer.gov/statistics-network/>

# SEER\*Explorer



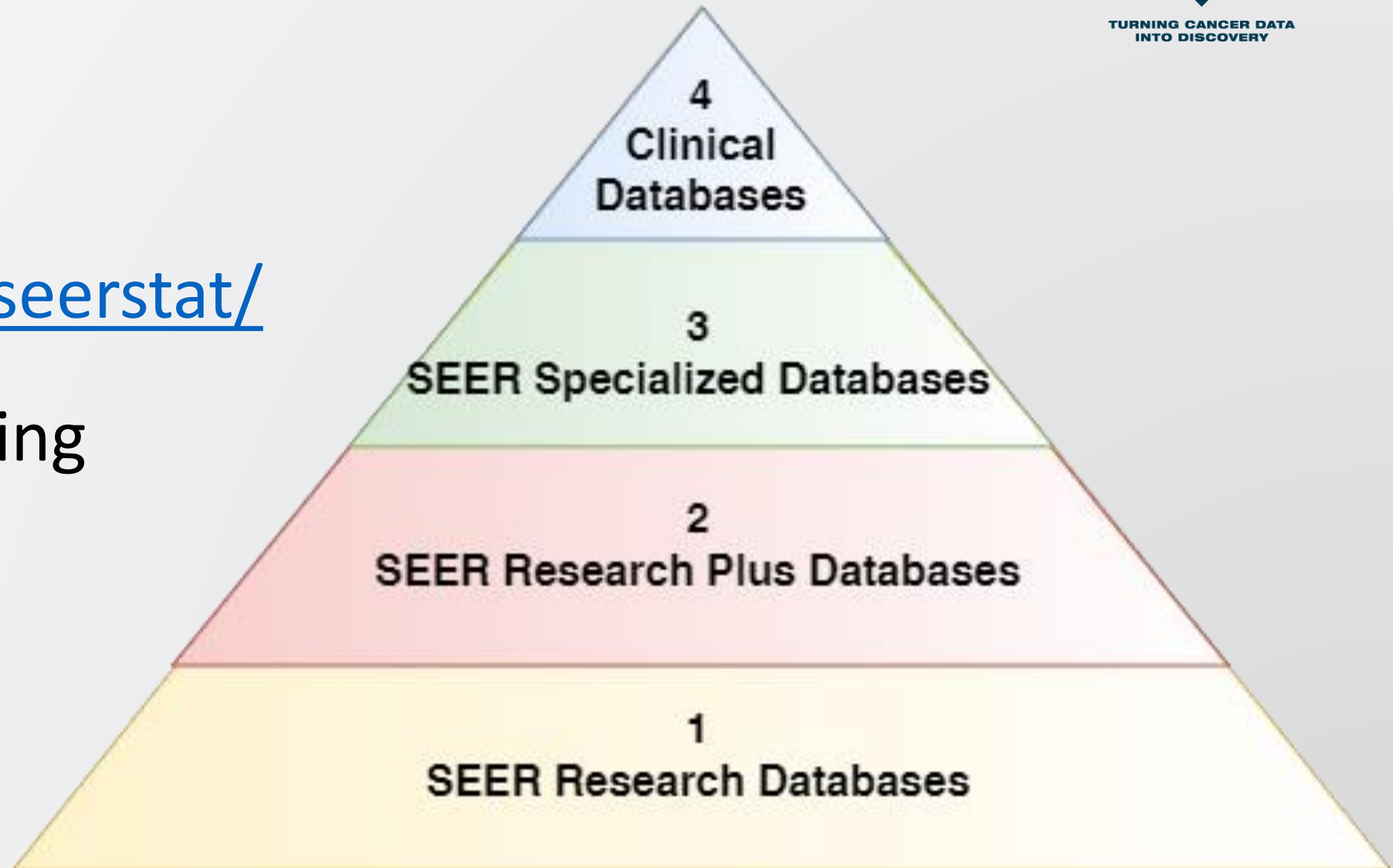
# SEER Tiered Data Release



- Current data release via SEER\*Stat

<https://seer.cancer.gov/seerstat/>

- Tier 4 data resources being developed
- Future plans for data aggregation & access



# Information about NCCR Data Products



**Open Data Access**  
NCCR\*Explorer



**Registered Data Access**  
NCCR data in SEER\*Stat



**Registered & Controlled Data Access**  
NCCR Data Platform



The screenshot shows the NIH logo and the text "NATIONAL CANCER INSTITUTE Childhood Cancer Data Initiative National Childhood Cancer Registry Explorer". Below this is a purple banner with the text "Statistics for cancers in children, adolescents, and young adults". A dark navigation bar contains the links "HOME", "ABOUT NCCR", "NCCR\*EXPLORER", and "DATA PRODUCTS". The main content area is titled "NCCR Data Products" and contains the following text: "Data from the NCCR are made available through several sources allowing researchers, patients, and advocates to access open and controlled data and promote wider use of childhood cancer data. Read the options below to understand which option best suits your needs." This is followed by the section header "Childhood Cancer Statistics Available from NCCR Aggregated Data" and the text "Data from central cancer registries participating in the NCCR are available at an aggregated level through this website's interactive web application, [NCCR\\*Explorer](#)." Below this, it says "It provides:" followed by a bulleted list: "• A publicly available, open access web application.", "• Comprehensive and frequently requested incidence and survival statistics based on International Classification of Childhood Cancer.", "• Age groupings specific for children, adolescents, and young adults ages 0-39.", "• Access to precalculated graphs and tables to visualize rates, trends, rates by age, and relative survival by sex, race/ethnicity, age, and by cancer site and subtypes.", and "• Direct comparison of cancer sites."

<https://nccrexplorer.ccdi.cancer.gov/data-products.html>



# Official Federal Cancer Statistics

U.S. Cancer Statistics



### United States Cancer Statistics (USCS)

CDC > Cancer Home

# USCS

## U.S. Cancer Statistics

The Official Federal Cancer Statistics

Providing the latest cancer data on the United States population.

[Learn more](#)

Data Visualizations Tool

Public Use Databases

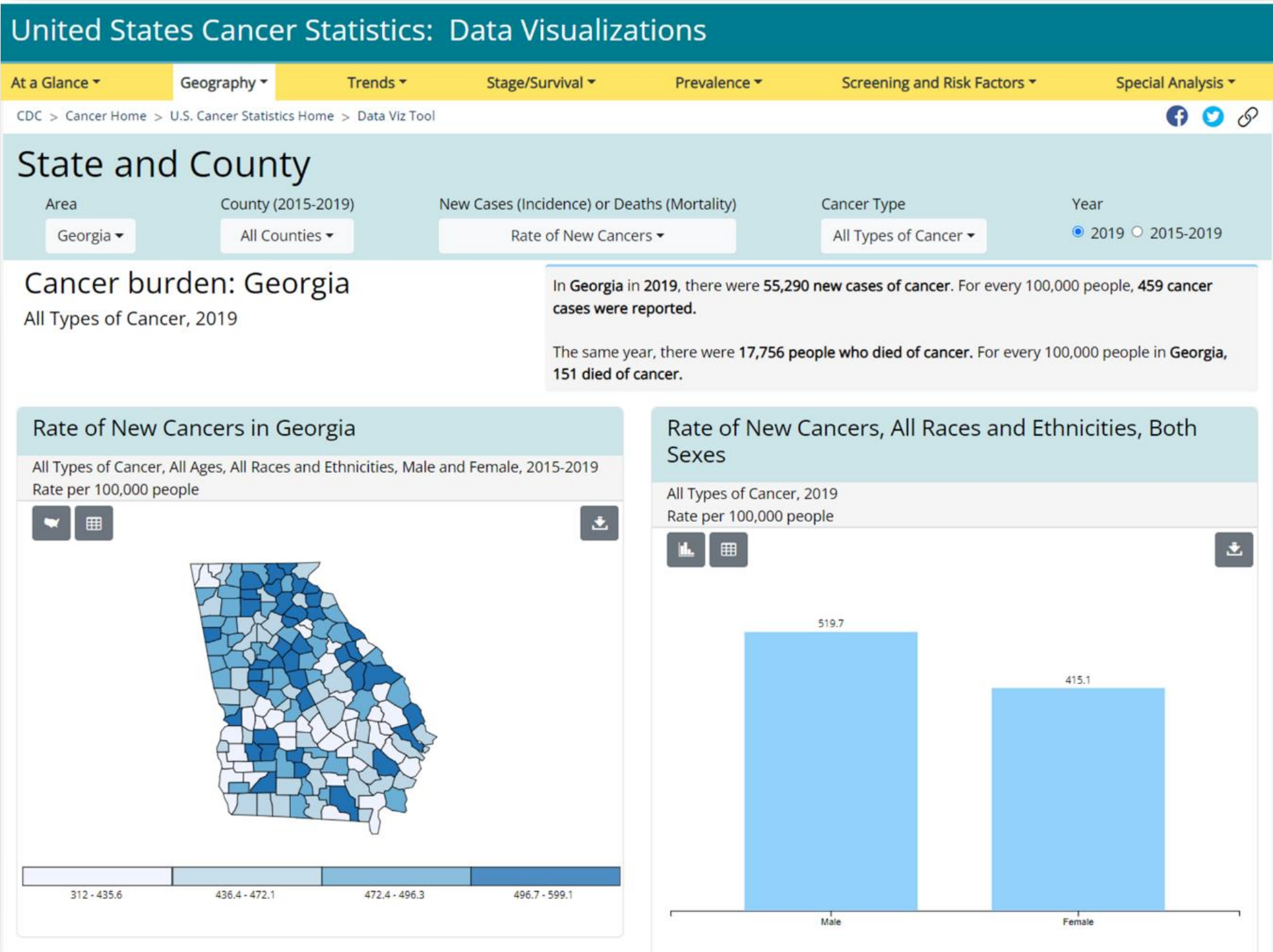
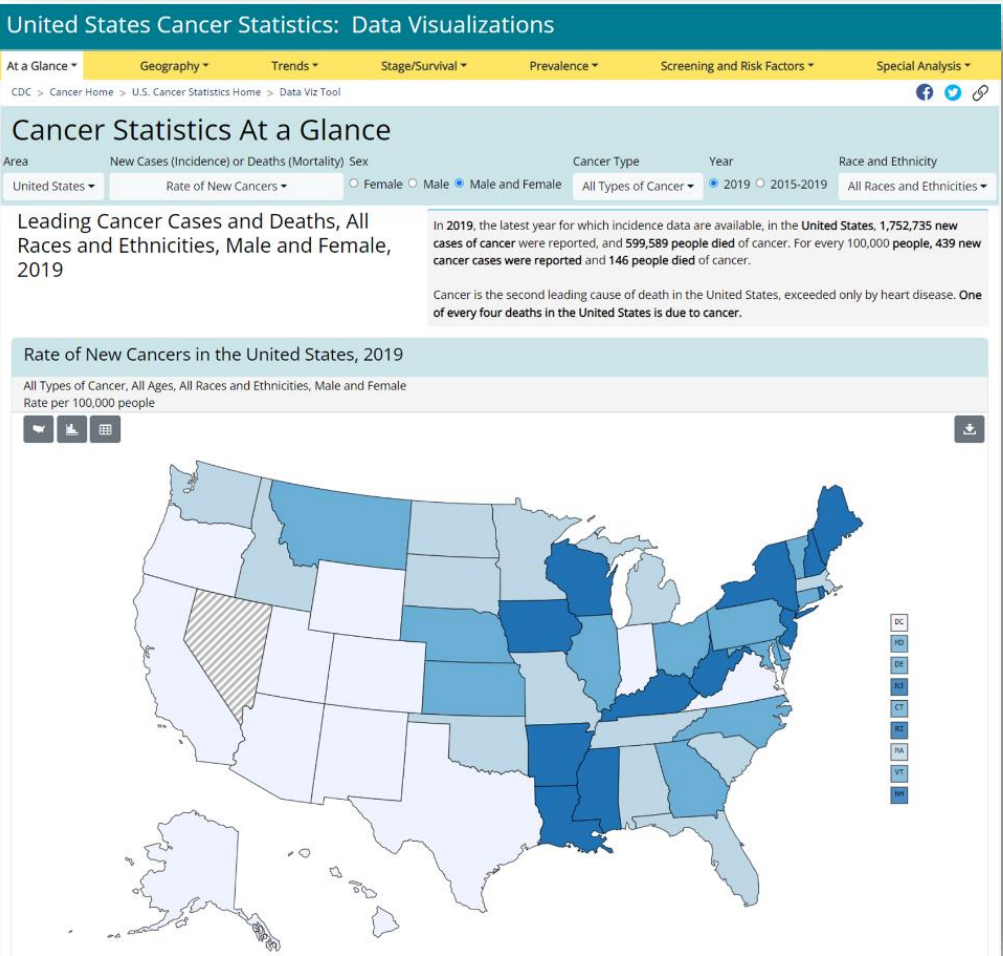
Other Tools

Publications

[www.cdc.gov/uscs](http://www.cdc.gov/uscs)

# Data Visualizations Tool

## U.S. Cancer Statistics



[www.cdc.gov/uscs/dataviz](http://www.cdc.gov/uscs/dataviz)



# Public Use Databases

## U.S. Cancer Statistics

- Demographics data
  - age, sex, race, ethnicity, state
- Tumor identification
  - primary site, histology, grade, behavior, stage



[www.cdc.gov/uscs/public-use](http://www.cdc.gov/uscs/public-use)

# NAACCR Online CiNA+ Interactive Tools

<https://apps.naaccr.org/explorer/>



North American Association of Central Cancer Registries


CiNA Explorer

Application

Revision History

## Explore Our Statistics




CiNA Explorer is an interactive tool that provides easy access to a wide range of NAACCR cancer statistics. Detailed statistics are available for a NAACCR region or registry by cancer site, gender, race, calendar year, age, and stage.

**Get Started** 

### Important Note

The COVID-19 pandemic disrupted access to medical care. This resulted in a drop in cancer diagnoses for the year 2020, particularly for cancers diagnosed before symptoms develop, such as *in situ* female breast cancer. This drop reflects changes in medical care for 2020 and *should not be interpreted as a reduction in the underlying cancer burden.*

### With CiNA Explorer, you can...

-  Create custom graphs and tables
-  Download data and images
-  Share links to results



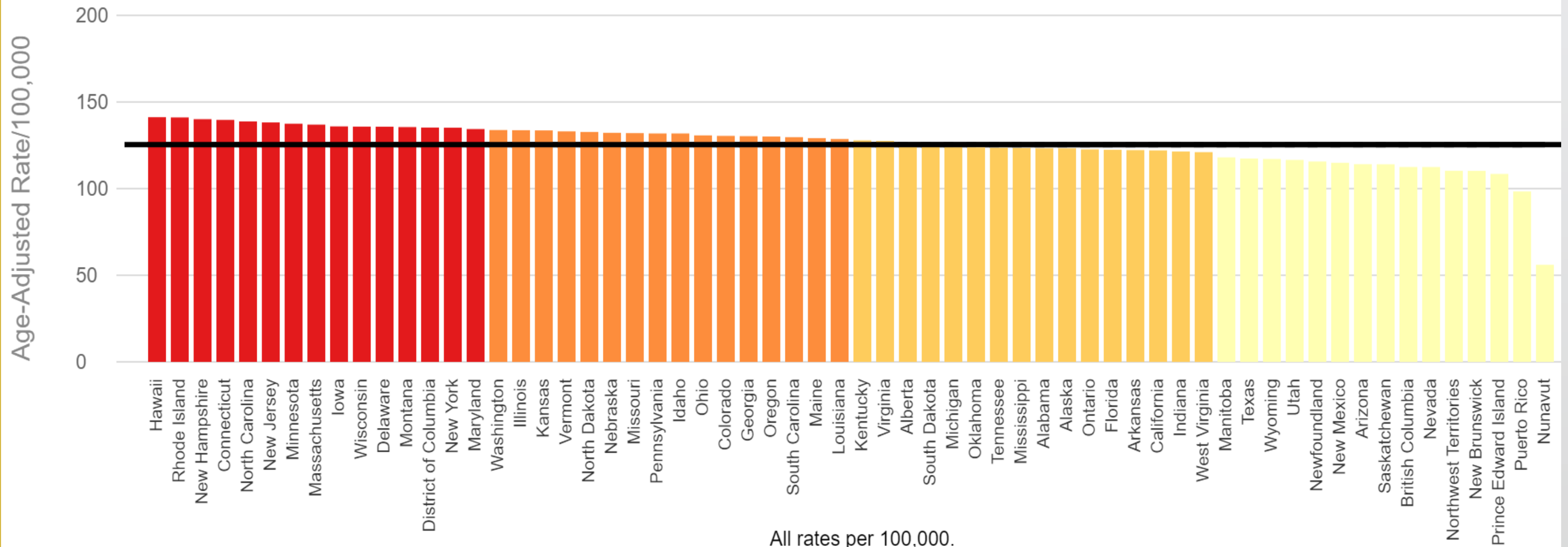
# Age-Adjusted Invasive Cancer Incidence Rates in North America

Breast, Female, 2016 - 2020

By State/Province

Age-Adjusted to the 2000 U.S. Standard Population

North America Rate: 125.92 / per 100,000



Data accessed September 24, 2023. Data released June 2023. Based on the December 2022 Call For Data Submission.

© 2023 CINA+ Online<br>Cancer in North America.

# NAACCR Data Access

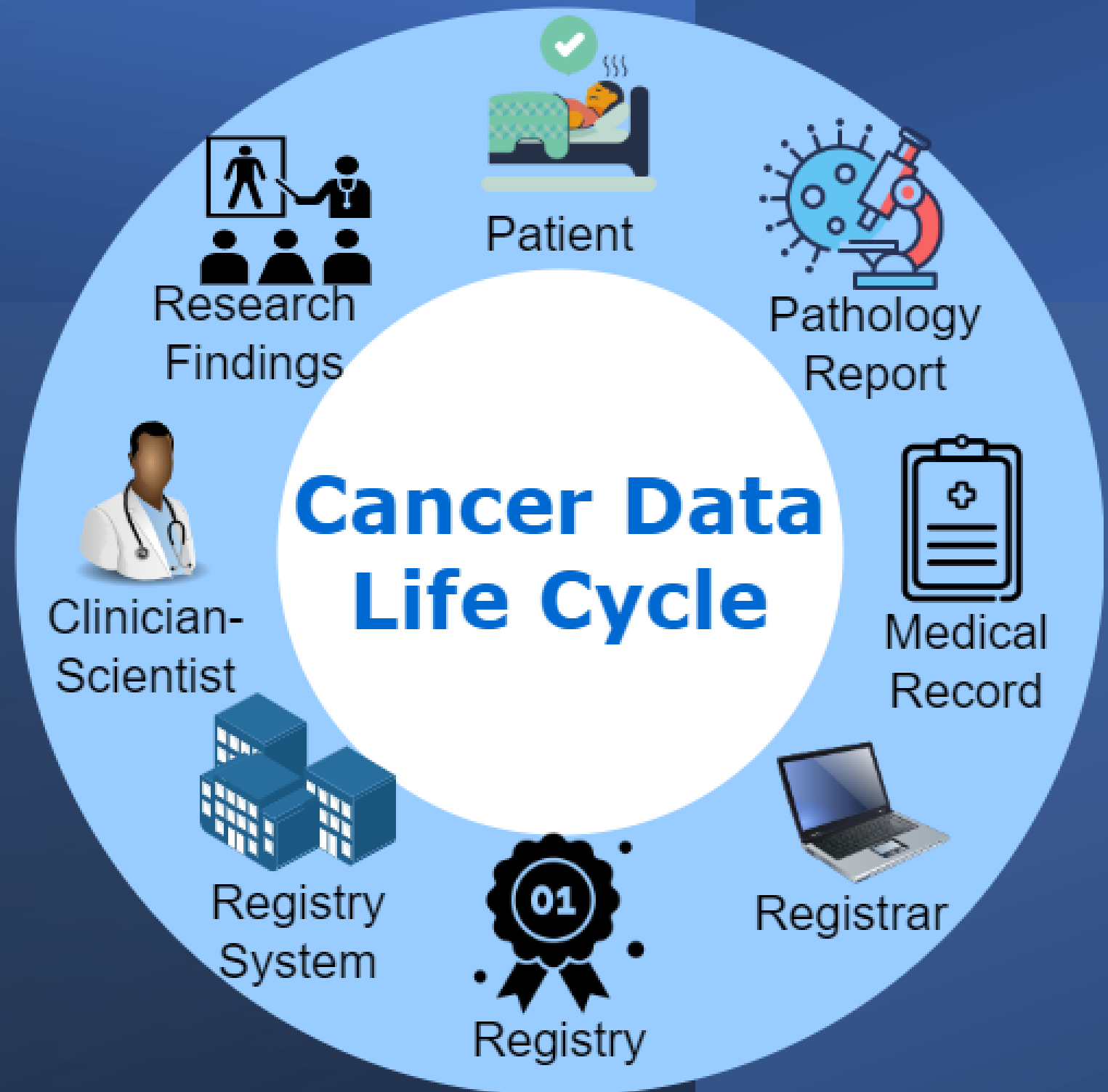
NAACCR Data Product	Requirements	For More Information
CiNA Public Use Dataset	Signed DUA	<a href="https://www.naaccr.org/cina-public-use-data-set/">https://www.naaccr.org/cina-public-use-data-set/</a>
CiNA Research Dataset	NAACCR member as PI/Co-PI	<a href="https://www.naaccr.org/cina-research/">https://www.naaccr.org/cina-research/</a>
CiNA Survival & Prevalence Data		<a href="https://www.naaccr.org/cina-survival/">https://www.naaccr.org/cina-survival/</a>
CiNA Special Dataset Request		Contact NAACCR Program Manager of Data Use & Research ( <a href="mailto:rsherman@naaccr.org">rsherman@naaccr.org</a> )

- Released via SEER\*Stat: <https://seer.cancer.gov/seerstat/>
- Need collaborator who has experience working in SEER\*Stat

## Accessing U.S. Population-Based Cancer Registry Data

WHO	NCI - SEER	CDC & NCI - USCS	NAACCR
WHAT	NCI - SEER data	CDC-NPCR & NCI-SEER data	U.S. & Canadian registry data
WHERE	<a href="https://seer.cancer.gov/data-software/">seer.cancer.gov/data-software/</a>	<a href="https://cdc.gov/uscs">cdc.gov/uscs</a>	<a href="https://apps.naaccr.org/dart/">apps.naaccr.org/dart/</a>
EXPLORE	<a href="https://seer.cancer.gov/statistics/interactive.html">seer.cancer.gov/statistics/interactive.html</a>	<a href="https://cdc.gov/cancer/dataviz">cdc.gov/cancer/dataviz</a>	<a href="https://apps.naaccr.org/explorer/">apps.naaccr.org/explorer/</a>
HOW	<a href="https://seer.cancer.gov/data/product-comparison.html">seer.cancer.gov/data/product-comparison.html</a>  <b>Research Data</b> For those without eRA Commons or HHS accounts  <b>Research Plus and NCCR</b> <ol style="list-style-type: none"><li>1. Access Data Request System (eRA commons or HHS account) &amp; complete app</li><li>2. Acknowledge SEER DUA, SEER Treatment Data Limitations, Best Practices Assurance, &amp; NCCR DUA</li><li>3. Gain SEER*Stat access</li></ol>	<a href="https://cdc.gov/cancer/public-use">cdc.gov/cancer/public-use</a>  <b>Public Use Databases</b> <ol style="list-style-type: none"><li>1. Gain access to SEER Research Plus data</li><li>2. Sign USCS Research Data Agreement</li><li>3. Email to <a href="mailto:uscsdata@imsweb.com">uscsdata@imsweb.com</a></li></ol>	<a href="https://naaccr.org/cina-data-products-overview/">naaccr.org/cina-data-products-overview/</a>  <b>CiNA Public Use Data</b> (counts, rates, & trends) <ol style="list-style-type: none"><li>1. Request via DaRT</li><li>2. Sign Data Assurance Agreement</li></ol> <b>CiNA Research Datasets</b> (counts, rates, trends, & prevalence) <ol style="list-style-type: none"><li>1. Identify NAACCR member as PI or Co-PI</li><li>2. Request via DaRT</li></ol>
	Currently accessible via SEER*Stat <a href="https://seer.cancer.gov/seerstat/">seer.cancer.gov/seerstat/</a>		

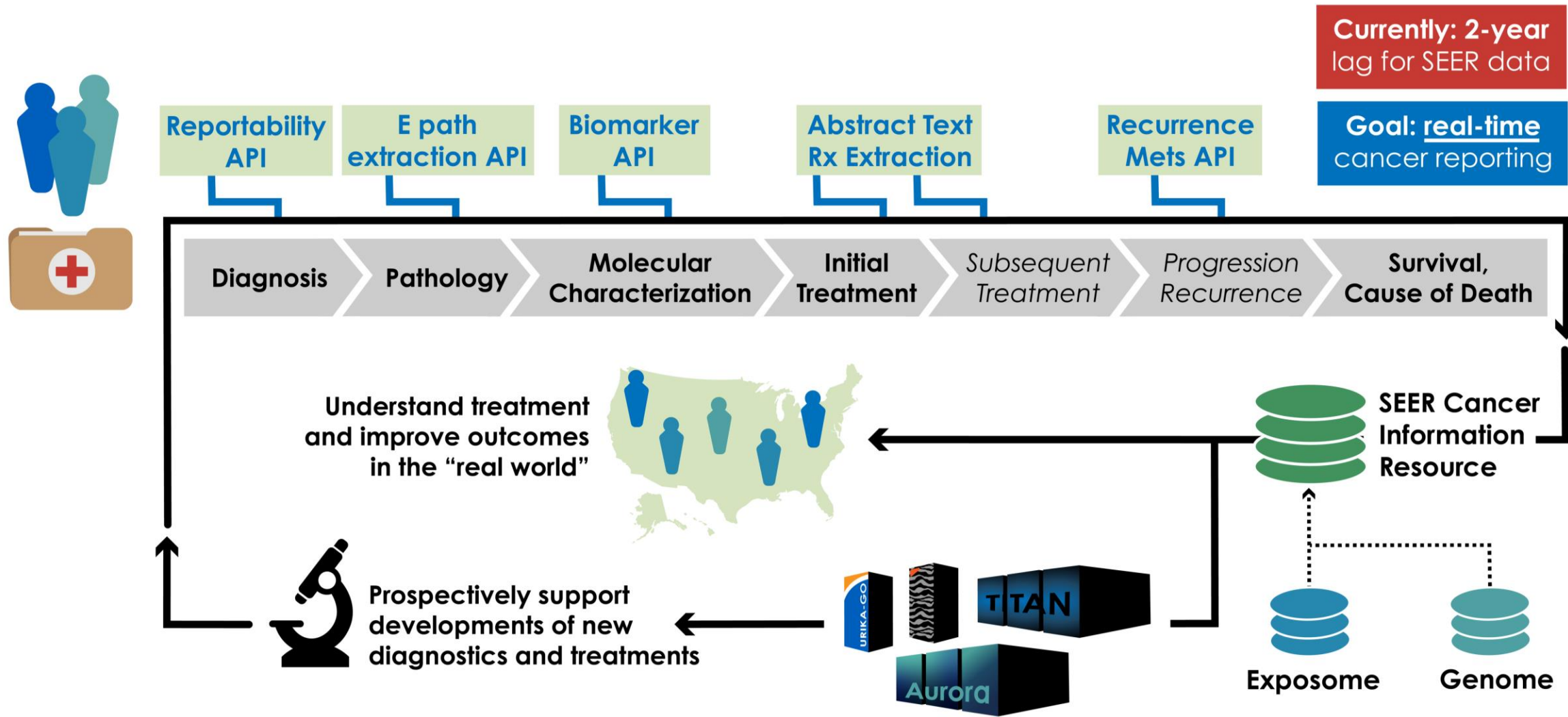
# AI Tools in Cancer Surveillance





# The MOSSAIC Challenge

# Translational AI for better cancer surveillance & ultimately better cancer care.



# Automating Common Data Models

## Deep Learning for Health Surveillance

### Auto-Extraction from Pathology Reports

Accuracy: **23-27% of path reports** with >98 accuracy across all data elements.

Auto-coding **performance can be easily tuned**

**Efficiency:** saves ~14,000 person-hours/year

#### Gross Description:

Part #1 is labeled "left breast [biopsy](#)" and is received fresh after [frozen section](#) preparation. It consists of a single very firm nodularity measuring 3 cm in circular [diameter](#) and 1.5 cm in thickness, surrounded by adherent fibrofatty [tissue](#). On section a pale [gray](#), slightly mottled appearance is revealed. Numerous sections are submitted for permanent processing.

Part #2 is labeled "apical left [axillary](#) tissue" and is received fresh. It consists of two amorphous fibrofatty tissue masses without grossly discernible [lymph](#) nodes therein. Both pieces are rendered into numerous sections and submitted in their entirety for [histology](#).

Part #3 is labeled "contents of left radical mastectomy" and is received fresh. It consists of a large ellipse of skin overlying breast tissue, the ellipse measuring 20 cm in length and 14 cm in height. A freshly sutured [incision](#) extends 3 cm directly [lateral](#) from the [areola](#), corresponding to the [closure](#) for removal of part #1. Abundant amounts of fibrofatty [connective tissue](#) surround the entire breast, and the [deep](#) aspect includes an 8 cm length of [pectoralis minor](#) and a generous mass of overlying [pectoralis major muscle](#). Incision from the deepest aspect of the specimen beneath the [tumor](#) mass reveals tumor [extension](#) grossly to within 0.5 cm of [muscle](#). Sections are submitted according to the following [code](#): DE - deep [surgical resection](#) margins; SU, LA, INF, ME - full thickness radial respectively; NI - [nipple](#) and subjacent tissue. Lymph nodes dissected free from axillary fibrofatty tissue from levels I, II, and III will be labeled accordingly.

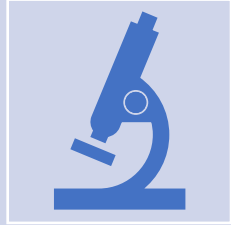
#### Microscopic:

Sections of part #1 confirm frozen section diagnosis of infiltrating [duct](#) carcinoma. It is to be noted that the tumor cells show considerable [pleomorphism](#), and mitotic figures are frequent (as many as 4 per high power [field](#)). Many foci of [calcification](#) are present within the tumor.

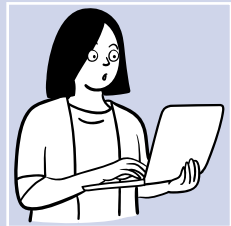
SEER\*Data Management System  
Standard Coding of Records

Site	Subsite	Histology	Laterality	Behavior
C50	C501	8500	1	3

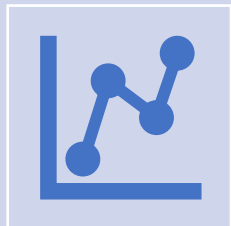
# Take Home Messages



Pathologists & registrars as partners to ensure data quality



AI as an aid for pathologists & registrars instead of a replacement



Population-based data lead to more accurate answers to questions



TURNING CANCER DATA  
INTO DISCOVERY

[NCICancerPathCHART@mail.nih.gov](mailto:NCICancerPathCHART@mail.nih.gov)  
<https://seer.cancer.gov/cancerpathchart/>





**The Future of Cancer Data:  
Unlocking Insights With Pathology Reporting Summit**  
October 6, 2023