



Cancer is NOT Our Destiny

The People's Cancer Incidence Screening Tool (PCIST)

A Citizens' Project in Support of Dignity-Based Epidemiology in Pennsylvania

Community Cancer Incidence Report for Brookhaven, PA

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People's Cancer Incidence Screening Tool (PCIST)

1

We calculate the average annual crude incidence of 23 different types of cancer over a 20-year (2002-2021) period in a PA town, borough or municipality

2

We compare the local cancer incidence numbers to the national, state and county numbers to identify significant "cancer signals" with elevated rates

3

We take the median age of onset of each type of cancer and compare it with the median age of the town, county, PA and US populations to assess the effect of differences in population age on the cancer rates

4

We investigate and address probable causes of elevated "cancer signals", including heavily polluting industries; infections associated with cancer development; and predatory marketing of addictive toxins to vulnerable EJ communities

Cancer	U.S. Median Age of Onset
Brain and Nervous	61
Breast (F only)	62
Cervical	50
Colon and rectal	66
Esophageal	68
Hodgkin's Lymphoma	39 (bimodal, 20 and 55+)
Kidney and renal	65
Laryngeal	66
Leukemia	65-74, varies by type
Liver and bile	62 (liver) and 70 (bile)
Lung and bronchial	71
Melanoma (skin)	(skin, 66)
Myeloma	60
Non-Hodgkin's lymphoma	67
Oral and pharyngeal	64
Ovarian	63
Pancreatic	70
Prostate	66
Stomach	68
Testicular	33
Thyroid	51
Uterine	60
Urinary and bladder	73

Cancer Rates Vary By Age

The U.S. national, PA state, PA county, and municipal/township/borough cancer incidence rates used in PCIST are crude rates. We derive these by taking the total number of invasive cancer cases that occurred in a specific population (<20 yrs, <30 yrs, adults 20+, and All ages — total, females & males) in relation to the total number of people in that specific segment of the population. This produces a value that represents the amount of cancer in a community relative to its relevant population size. These values are then compared to generate incidence ratios. In our community reports, we flag municipal “cancer signals” with a percentage rate equal to or more than 10% higher than the US, PA and County numbers.

It is important to note that most cancer rates increase with age. To help interpret the effect of a population's age distribution on its crude incidence rates, the following is provided:

- 1) A reference table (at left) with the median age of onset of each type of cancer in the U.S. as per the American Cancer Society
- 2) The relevant median population age for each municipality/ township/borough, the county, PA state, and the US nation
- 3) A chart that shows the precise population age distribution in 5-year increments, derived from the 2010 US Census figures that are used in PCIST's 20-year calculations

When analyzing cancer signals, it is important to note that (with the exception of Hodgkin's lymphoma and testicular cancer) a younger population's crude cancer incidence rates will be under-represented when compared with an older population.

PCIST uses publicly available data sources from the American Cancer Society; the PA Cancer Registry via the PA Department of Health; the CDC SEER and WONDER databases; and the U.S. Census' American Community Survey. None of these providing institutions are responsible for PCIST calculations, interpretations and reports.

Please visit www.pcist.net or contact PCIST@pm.me for a detailed explanation of the PCIST project and more information about the People's Cancer Incidence Screening Tool.

MORE Air & Water Pollution: OUR CONTEXT for RISING CANCER

In the community of Brookhaven along the Delaware River, residents have faced **elevated cancer rates for at least the past 20 years.**

WHY? CUMULATIVE IMPACTS

Brookhaven is a sprawling commercial hub that surrounds the heavily trafficked Edgemont Ave and other roadways. It is an area of heavy suburban pesticide use. PFAS and industrial “forever chemicals” have been found in drinking water sources. The town is also near to many heavily polluting facilities along the Delaware river, including a large oil and petro-chemical tank farm in Aston; Energy Transfer’s natural gas liquids refinery and Braskem petrochemicals in Marcus Hook; Delta Airlines’ oil refinery in Trainer; and the largest trash incinerator in the U.S. (ReWorld), Delco’s sewage treatment plant, Evonik and PQ Chemical plants, and Kimberly-Clark’s paper factory in Chester. More petrochemical facilities and refineries to the north in Philly and across the Delaware river in NJ also contribute to air and water pollution. **The heavy pollution from all these industries compounds and travels,** affecting residents in this community.

Additionally, Brookhaven residents need medical screenings and treatments for **infections** that can contribute to cancer, such as **HPV** (cervical cancer), **EBV** (Hodgkin’s lymphoma), **Hepatitis B and C** (liver cancer), **H. pylori** (stomach cancer), and **HIV** (many cancers). Companies also target its residents to sell addictive products that contain carcinogenic substances, such as **tobacco** and **alcohol**.

2010 Median Population Age:

Brookhaven’s total population (43.1) is **older than** the US (36.9), PA (39.8) & Delco (38.5)

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TOTAL CANCER IN BROOKHAVEN

During **2002-2021 (20 years)**, the average annual crude cancer incidence rate among all ages of the population of **Brookhaven** is greater than the corresponding rate for the **US; PA; & Delaware Co by:**

All Age Cancer in Brookhaven	> US	> PA	> Delco
Urinary and bladder	89%	39%	51%
Lung and bronchial	75%	45%	48%
Non-Hodgkin’s lymphoma	64%	36%	52%
Brain and nervous	59%	38%	50%
Pancreatic	59%	29%	39%
Colon and rectal	51%	23%	22%
Esophageal	51%	18%	33%
Kidney and renal	40%	25%	29%
Thyroid	33%	-6%	3%
Laryngeal	25%	4%	8%
Oral and pharyngeal	19%	9%	19%

FEMALE CANCER IN BROOKHAVEN

During **2002-2021 (20 years)**, the average annual crude cancer incidence rate among females of all ages in **Brookhaven** is greater than the corresponding rate for the **US; PA; & Delaware Co by:**

All Age Female Cancer in Brookhaven	> US	> PA	> Delco
Ovarian	128%	93%	93%
Esophageal	106%	63%	46%
Urinary and bladder	105%	48%	47%
Lung and bronchial	84%	52%	47%
Colon and rectal	74%	40%	40%
Brain and nervous	72%	48%	66%
Pancreatic	72%	39%	52%
Uterine	65%	20%	25%
Breast	47%	31%	29%
Non-Hodgkin's lymphoma	48%	21%	36%
Melanoma (skin)	25%	15%	6%
Thyroid	22%	-13%	-3%
Liver and bile	16%	12%	13%
Kidney and renal	15%	2%	12%

2010 Median Female Age: The total female Brookhaven population (44.6) is **older than** the US (38.1), PA (41.2) & Delco (40.0)

MALE CANCER IN BROOKHAVEN

During **2002-2021 (20 years)**, the average annual crude cancer incidence rate among males of all ages in **Brookhaven** is greater than the corresponding rate for the **US; PA; & Delaware Co by:**

All Age Male Cancer in Brookhaven	> US	> PA	> Delco
Urinary and bladder	89%	40%	54%
Non-Hodgkin's lymphoma	80%	51%	67%
Lung and bronchial	68%	39%	48%
Kidney and renal	60%	42%	40%
Thyroid	56%	11%	18%
Brain and nervous	50%	30%	37%
Pancreatic	45%	18%	26%
Laryngeal	43%	21%	21%
Esophageal	39%	9%	29%
Oral and pharyngeal	34%	25%	30%
Colon and rectal	27%	6%	4%
Stomach	16%	-1%	1%

2010 Median Male Age: The total male Brookhaven population (42.2) is **older than** the US (35.6); PA (38.3) & Delco (36.7)

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CANCER IN BROOKHAVEN

PEDIATRIC CANCER

During **2002-2021 (20 years)**, the average annual crude cancer incidence rate among **children aged 0-19 years** in **Brookhaven** is greater than the corresponding rate for the **US; PA; & Delaware County** by:

Pediatric Cancer in Brookhaven 0-19 years of age	> US	> PA	>Delco
Oral and pharyngeal	1557%	1005%	1007%
Liver and bile	1005%	1005%	1560%
Melanoma (skin)	729%	563%	612%
Kidney and renal	374%	374%	374%
Brain and nervous	314%	240%	256%
Leukemia	47%	54%	66%

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YOUTH CANCER

During **2002-2021 (20 years)**, the average annual crude cancer incidence rate among **youth aged 0-29 years** in **Brookhaven** is greater than the corresponding rate for the **US; PA; & Delaware County** by:

Youth Cancer in Brookhaven 0-29 years of age	> US	> PA	> Delco
Liver and bile	563%	563%	886%
Kidney and renal	397%	397%	295%
Oral and pharyngeal	397%	298%	241%
Melanoma (skin)	319%	262%	251%
Brain and nervous	232%	184%	202%
Thyroid	201%	116%	176%
Breast	83%	75%	59%
Testicular	81%	73%	128%

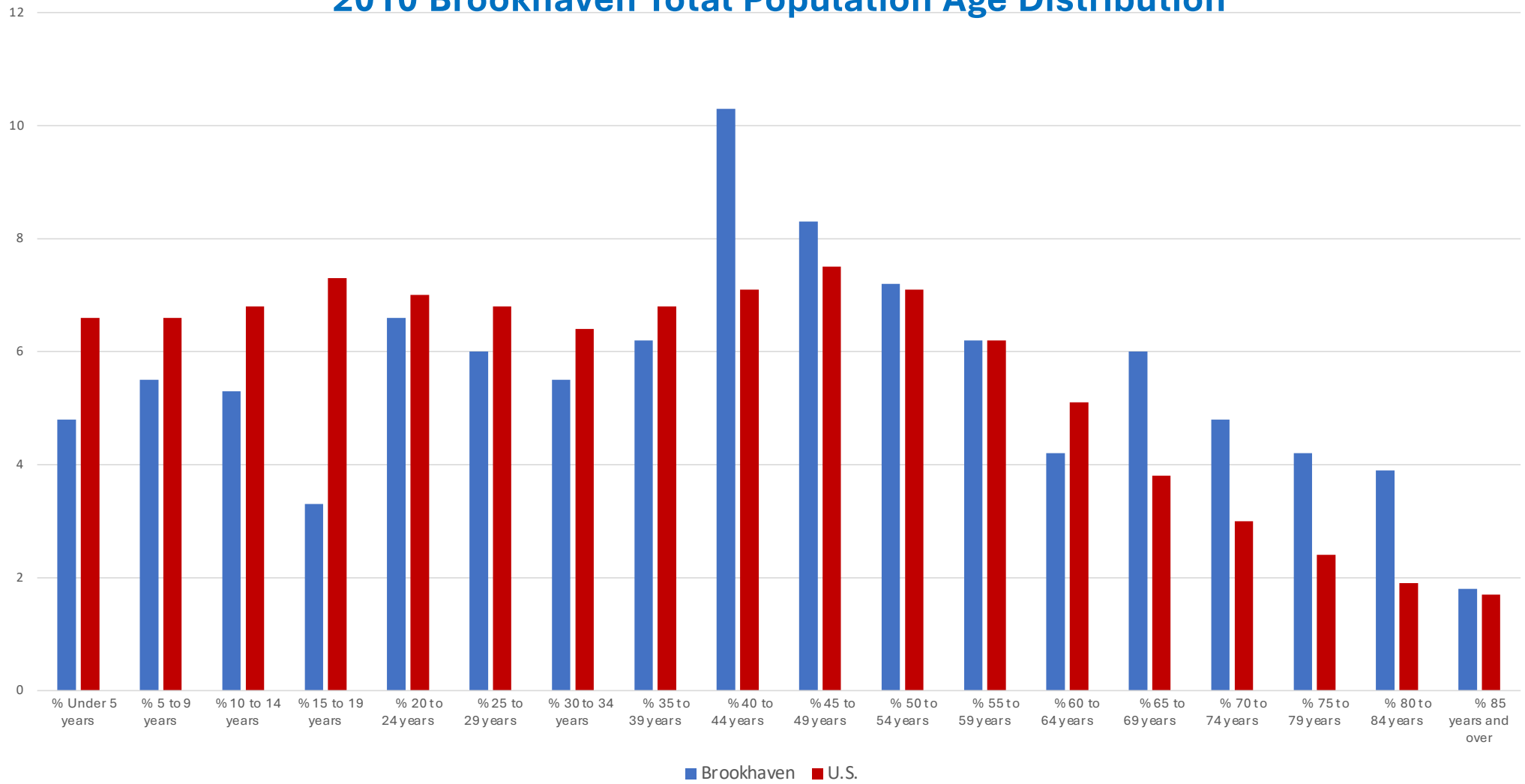
◆ Brookhaven sees heavy traffic and adjoins the Southeastern Delaware County environmental justice region that consists of Tinicum, Eddystone, Chester city, Trainer and Marcus Hook – a heavily industrialized and polluted residential area along the Delaware river.

ADULT CANCER

During **2002-2021 (20 years)**, the average annual crude cancer incidence rate among **adults aged 20+** in **Brookhaven** is greater than the corresponding rate for the **US; PA; & Delaware County** by:

Adult Cancer in Brookhaven 20+ years of age	> US	>PA	> Delco
Ovarian	186%	146%	137%
Urinary and bladder	71%	29%	35%
Lung and bronchial	59%	35%	33%
Uterine	56%	13%	16%
Non-Hodgkin's lymphoma	51%	29%	38%
Pancreatic	44%	19%	25%
Colon and rectal	37%	14%	10%
Esophageal	37%	9%	19%
Breast	36%	22%	17%
Brain and nervous	27%	14%	-2%
Kidney and renal	26%	15%	14%
Thyroid	23%	-11%	-6%
Laryngeal	14%	-4%	-4%

2010 Brookhaven Total Population Age Distribution



PCIST's TIPS to Help Protect Our Families

1. RUN AIR PURIFIERS IN OUR HOMES. These machines [remove toxic particles](#) so that we don't inhale them into our lungs. This helps to prevent both cancer and asthma. The best ones have an [activated carbon filter](#) that also removes VOCs (volatile organic compounds). An air purifier handles a set amount of space, so we may need more than one (or to move the one we have when we go to bed). Found on Amazon and Walmart, Lowes, and Home Depot.

DID YOU KNOW? We can inexpensively build our own air purifier with a box fan and furnace filters. Google "How to make a Corsi-Rosenthal box" for directions. Try to use MERV activated carbon filters, which are available on Amazon and at Lowes and Home Depot.

2. REPLACE GAS STOVES WITH ELECTRIC ONES. Natural gas and propane stoves release invisible, odorless and toxic gases (including radon, benzene, nitrogen dioxide and methane) into our homes. These gases affect air quality throughout our homes, including in the bedrooms, and are known to cause asthma and cancer. It is much safer to cook with an electric stove.

3. USE A WATER FILTER, ESPECIALLY IN THE KITCHEN. These filters [remove harmful particles and toxic chemicals from our drinking and cooking water](#). Some come as a pitcher that we fill with water from the tap, while others attach directly to the faucet. The [best filters also remove PFAS/PFOS – forever chemicals](#) – that are known to be in Delaware County's water supply. Found on Amazon and in a wide range of department and home supply stores.

4. AVOID ADDITIONAL FACTORS that put addictive toxins in our bodies and increase cancer risk, such as [smoking](#); breathing [second-hand smoke](#); and [drinking alcohol](#). Some [infections also contribute to causing cancer](#) such as [HPV](#) (cervical cancer), [EBV](#) (Hodgkin's lymphoma), [Hepatitis B and C](#) (liver cancer), [H. pylori](#) (stomach cancer), and [HIV](#) (many cancers). If you were exposed or have symptoms, ask a doctor for [testing and proper treatment](#). All girls and women can also [get vaccinated against HPV](#) between the ages of 9 and 45.

5. FIND AND JOIN ENVIRONMENTAL JUSTICE GROUPS IN YOUR COMMUNITY TO LEARN HOW TO FIGHT BACK against the polluters that are killing us with asthma and cancer, among other diseases. Take a few minutes to [call local political leaders](#) and tell them that we [need clean air and clean water](#). Use your voice to speak up – together we are very strong and loud!

See links on www.pcist.net for suggested environmental health organizations that you can join [to get connected and learn more](#).