



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 Charleroi Borough, Washington County, 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 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 in the PCIST report
- 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 Charleroi, residents have faced **elevated cancer rates for 20 years.**

WHY? CUMULATIVE IMPACTS

Charleroi is located in the most heavily fracked county in PA, which is itself part of a large and growing **environmental justice zone** above the Marcellus Shale. Since 2004, thousands of oil and gas wells have been **hydraulically fractured**. Many residents now live within a few miles of dozens of active wells and multiple compressor stations. Energy companies often abandon unplugged oil and gas wells and contaminate drinking water sources with **fracking wastewater** – a toxic slurry of “industry secret” chemicals, radioactive particulate matter such as radium, and PFAS. Near Charleroi, fracking waste containing radium was discharged into the Monongahela river, impacting the local water supply.

Residents also face significant legacy and contemporary pollution due to the long history of bituminous **coal mining** in southwestern Pennsylvania. Intensive agriculture with **chemical pesticides and herbicides** widely contaminates residents’ soil and water supplies. A network of state and inter-state highways, including the I-70 and I-79, brings a steady flow of trucks and **diesel emissions** into Washington County. Charleroi also has a **large landfill**. The heavy pollution from all of these activities compounds and travels, producing **significant cumulative impacts** on residents’ health.

Additionally, Charleroi’s residents require adequate 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). In pursuit of profit, companies also sell already vulnerable residents addictive products that contain carcinogenic substances, such as **tobacco** and **alcohol**.

TOTAL CANCER IN CHARLEROI

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

All Age Cancer in Charleroi	> US	> PA	> Wash
Liver and bile	165%	143%	131%
Laryngeal	136%	96%	63%
Lung and bronchial	101%	66%	38%
Testicular	99%	85%	84%
Oral and pharyngeal	96%	80%	40%
Esophageal	96%	54%	33%
Stomach	90%	70%	50%
Leukemia	84%	59%	44%
Colon and rectal	69%	38%	16%
Brain and nervous	66%	44%	35%
Kidney and renal	54%	37%	20%
Urinary and bladder	54%	14%	-4%
Hodgkin’s lymphoma	26%	7%	-7%
Cervical	10%	13%	33%
Non-Hodgkin’s lymphoma	10%	-9%	-17%

2010 Median All Population Age: The total Charleroi population (42) is **comparable to** the US (36.9), PA (39.8) & Washington County (43)

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FEMALE CANCER IN CHARLEROI

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

All Age Female Cancer in Charleroi	> US	> PA	> Wash
Laryngeal	275%	200%	132%
Urinary and bladder	154%	84%	58%
Oral and pharyngeal	137%	109%	53%
Liver and bile	135%	126%	86%
Lung and bronchial	95%	62%	36%
Stomach	78%	67%	42%
Esophageal	74%	38%	23%
Leukemia	72%	49%	33%
Hodgkin's lymphoma	67%	38%	17%
Brain and nervous	61%	39%	26%
Kidney and renal	49%	32%	9%
Cervical	48%	50%	33%
Colon and rectal	31%	5%	-10%
Uterine	19%	-13%	-22%
Breast	19%	6%	-3%
Non-Hodgkin's lymphoma	14%	-7%	-18%

MALE CANCER IN CHARLEROI

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

All Age Male Cancer in Charleroi	> US	> PA	> Wash
Liver and bile	211%	181%	183%
Testicular	161%	135%	84%
Esophageal	133%	82%	55%
Colon and rectal	122%	84%	51%
Laryngeal	121%	86%	56%
Stomach	118%	88%	67%
Lung and bronchial	112%	75%	44%
Leukemia	106%	78%	63%
Oral and pharyngeal	97%	85%	45%
Brain and nervous	79%	56%	50%
Kidney and renal	72%	53%	38%
Urinary and bladder	30%	-4%	-19%

2010 Median Female Age: The total female Charleroi population (40.9) is **comparable to** the US (38.1), PA (41.2) & Washington County (44.4)

2010 Median Male Age: The total male Charleroi population (42.4) is **comparable to** the US (35.6); PA (38.3) & Washington County (41.7)

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CANCER IN CHARLEROI

PEDIATRIC CANCER

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

Pediatric Cancer in Charleroi 0-19 years of age	> US	> PA	> Wash
Thyroid	1063%	772%	763%
Brain and nervous	391%	303%	331%
Leukemia	133%	143%	120%

◆ Charleroi borough is in a region of long-standing hydraulic fracking within the expanding Marcellus shale fracking environmental justice region in Pennsylvania.

YOUTH CANCER

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

Youth Cancer in Charleroi 0-29 years of age	> US	> PA	> Wash
Kidney and renal	300%	300%	282%
Brain and nervous	220%	174%	212%
Thyroid	191%	109%	118%
Hodgkin's lymphoma	178%	129%	91%
Leukemia	64%	68%	41%
Testicular	58%	52%	36%

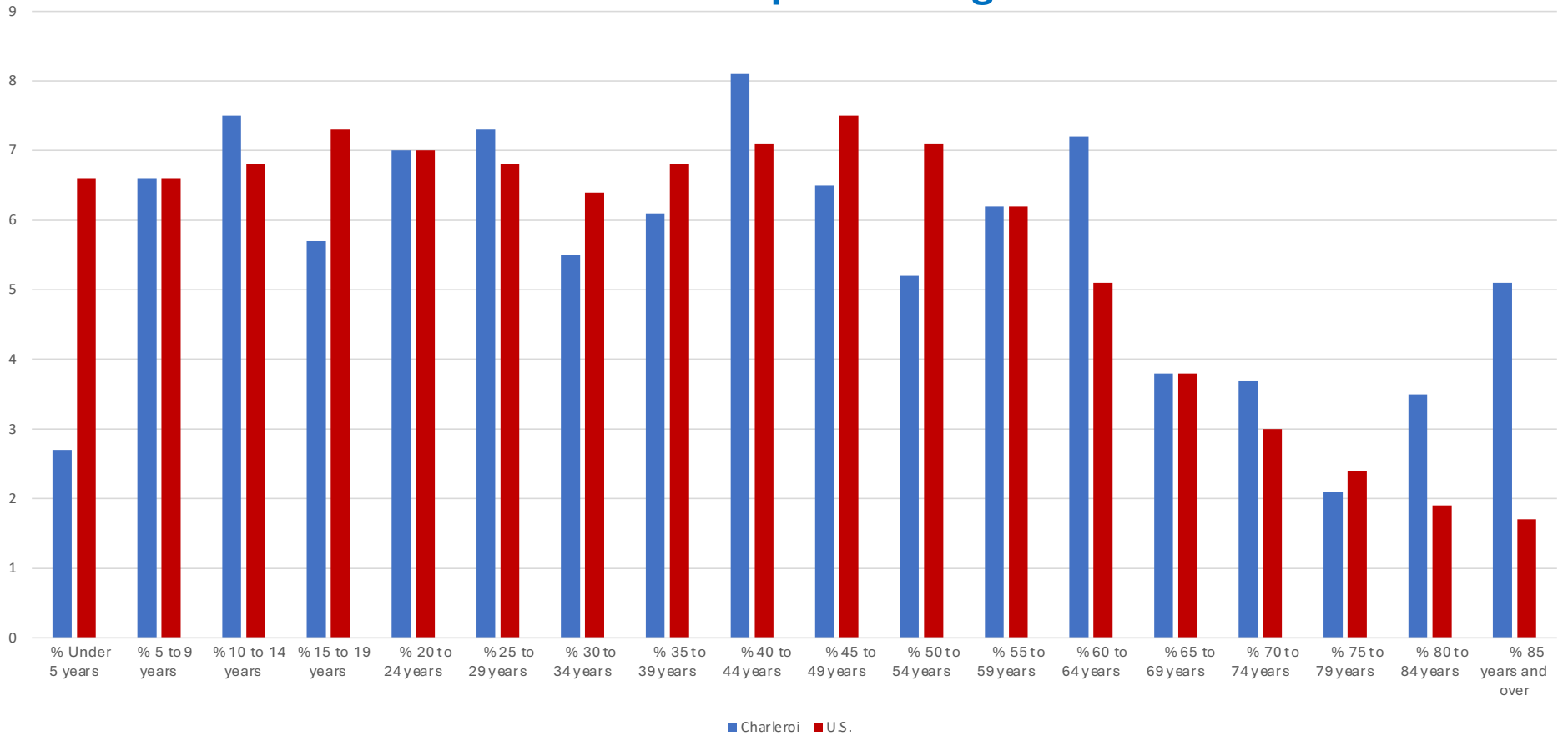
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ADULT CANCER

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

Adult Cancer in Charleroi 20+ years of age	> US	> PA	> Wash
Testicular	156%	137%	89%
Liver and bile	154%	141%	130%
Laryngeal	126%	90%	60%
Lung and bronchial	91%	61%	36%
Oral and pharyngeal	88%	76%	38%
Esophageal	88%	49%	32%
Stomach	83%	65%	48%
Leukemia	73%	65%	38%
Colon and rectal	61%	34%	15%
Kidney and renal	49%	36%	19%
Urinary and bladder	46%	11%	-5%
Cervical	42%	45%	33%
Hodgkin's lymphoma	39%	17%	1%
Brain and nervous	25%	12%	4%
Breast	14%	3%	-3%
Uterine	14%	-17%	-22%

2010 Charleroi 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 YOUR GAS STOVE WITH AN ELECTRIC ONE. 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](#).