CANCER CLUSTER INVESTIGATION

When exposure to environmental contaminants is suspected.

Florida HEALTH

FOREWORD

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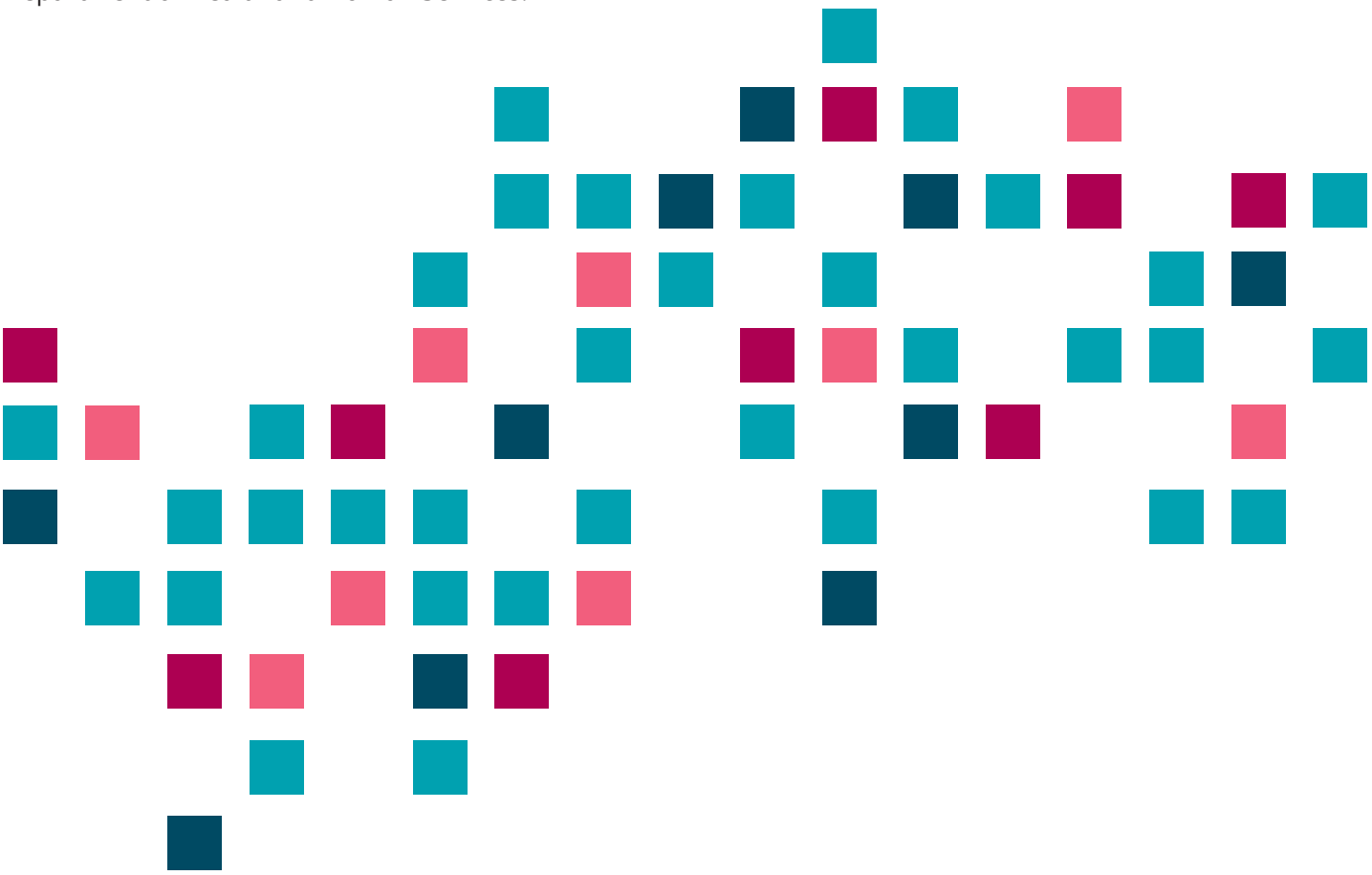

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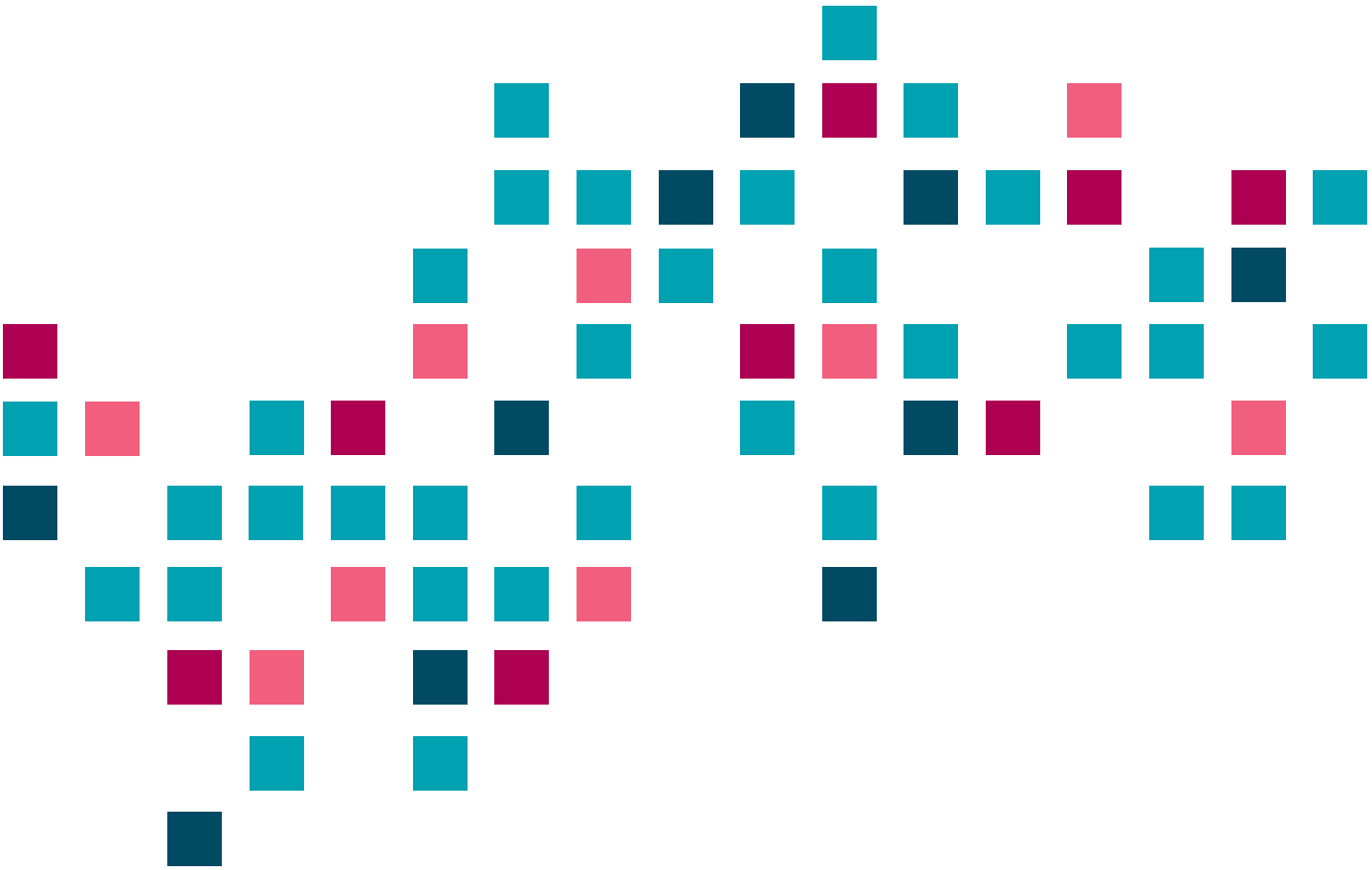
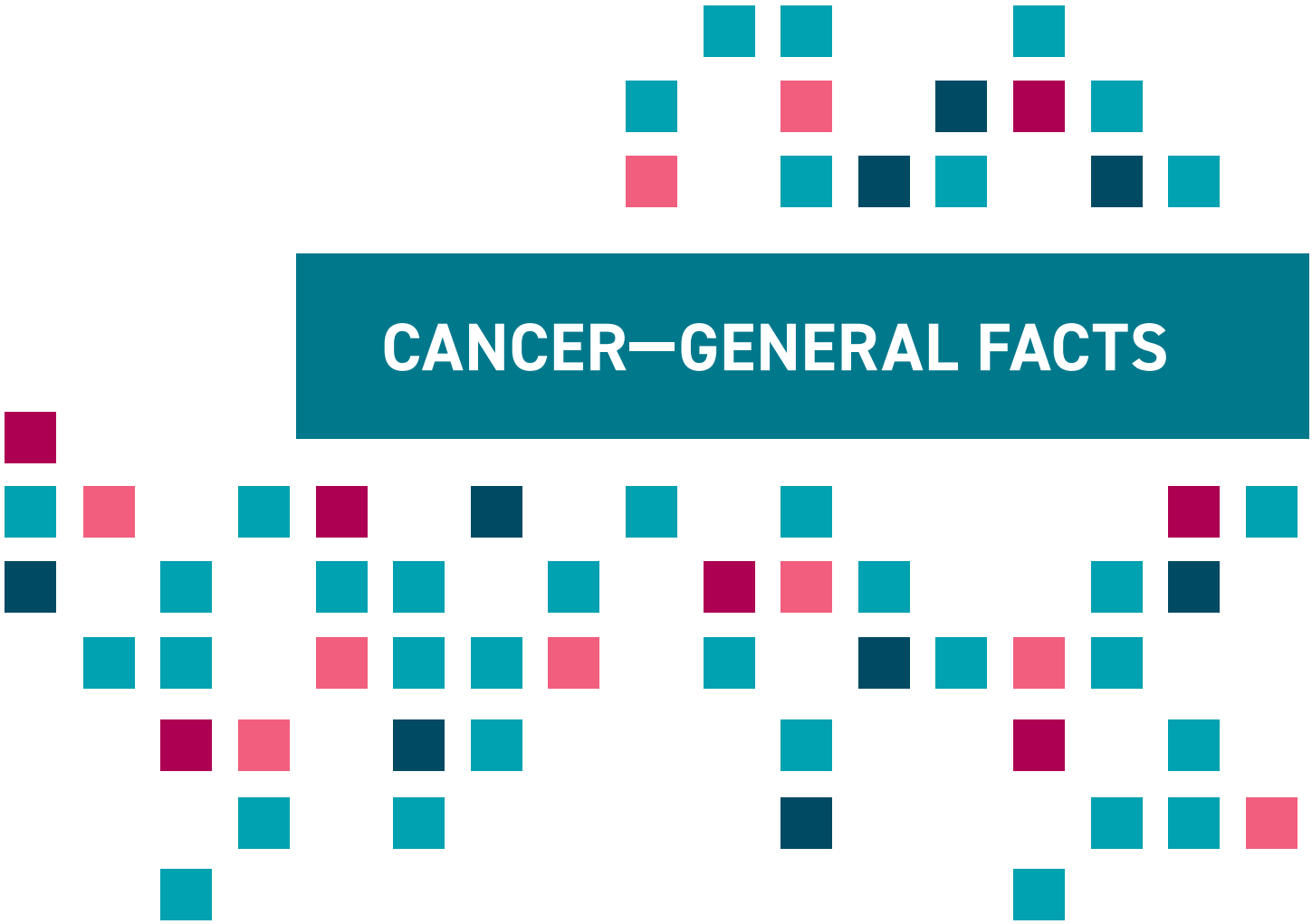




CANCER—GENERAL FACTS

What is cancer?

Cancer is a term used for diseases in which abnormal cells divide without control.

These cells are then able to invade other tissues. Some may spread to other parts of the body. Cancer is not a single disease. There are over 200 types of cancer. Although they attack the body in a similar way, all cancers are not the same, nor are their causes. Certain risk factors add to the chance of getting cancer. Many relate to health habits, such as:

- Whether or not someone smokes or otherwise uses tobacco.
- Whether or not someone drinks alcohol.
- Whether or not someone eats a healthy diet.
- Whether or not someone gets enough exercise.

The federal Agency for Toxic Substances and Disease Registry (ATSDR) suggests that if we could stop the use of tobacco, we could prevent one-third of all cancer deaths in the nation.

Distinct risk factors play a role in cancers that occur in different parts of the body. Asbestos is a known risk factor for lung cancer. Contact with radiation or benzene is a risk factor for certain types of blood cancer (leukemia). Your diet and exercise habits affect your risk for colon cancer. Too much sun exposure may raise your risk for skin cancer.

More than one factor can cause most types of cancer. For instance, as we age our body's ability to repair damage goes down. Therefore, most types of cancer are far more common in older people.

With many types of cancer, the chances of a successful treatment and cure are higher when you catch it early. These include breast, cervix and colon cancer. Making sure you get the right kind of screening at the right time could help you get early treatment. The earlier a cancer patient gets treatment, the better the treatment outcomes. Once cancer spreads, it is much harder to stop.

Some cancers start in one place in the body (the primary site) but then spread to another place. This is called metastasis. The most common places/organs for cancer to spread include bone, lung, liver and brain. Cancer registries record cancers based on where in the body they started, not where they spread. This is also how medical experts analyze cancer cases.

CANCER IS A VERY COMMON DISEASE!

It is not as rare as most people tend to think. According to the American Cancer Society, 1 in 2 men and 1 in 3 women are at risk of developing some form of invasive cancer during their lifetimes. Also, 1 in 4 men and 1 in 5 women will die from it.

Cancer is the second leading cause of death in this country.

Adults are more prone to get cancers such as:

- **Lung**
- **Breast**
- **Colon or rectal (colorectal)**
- **Prostate**
- **Skin (melanoma)**

In children, the most common types of cancer are cancers of the:

- **Blood (leukemia)**
- **Brain and other nervous system tumor**
- **Lymphnode**
- **Bone**
- **Soft tissue (sarcomas)**
- **Kidney**
- **Eye**

Certain vaccines also help decrease the risk for some cancers. The human papillomavirus (HPV) vaccine helps women avoid most cancers of the cervix, vagina and vulva. The hepatitis B vaccine can decrease the risk of liver cancer.

Educating people about their cancer risks, explaining the value of screening and helping them find the services they need can reduce cancer rates. It can also decrease cancer deaths.

How do children get cancer?

Each year, close to 1 in 450 children learn they have cancer before they turn 15.

The most common childhood cancers are leukemia, brain tumors and lymphomas. Many childhood cancers occur very early in life and are hard to find. Some types run in families, but for most kinds, the cause is unknown. Radiation exposure also promotes certain types of childhood cancers. Other factors in childhood cancers may include:

- Infections
- Prenatal conditions
- Certain medicines

Unlike most cancers in adults, we cannot link childhood cancers to lifestyle risk factors. Many organ systems in children grow at a rapid rate in the first years of life. During this time, they can be at special risk of harm. The types of cancer that children get vary greatly from those seen in adults.

Note: *The information on children and cancer was cited from "Cancer in Children" published by the American Cancer Society (2020) and can be found at: cancer.org/cancer/cancer-in-children*

What cancers are most common in Florida?

In 2017, there were 125,464 new cases of cancer diagnosed among Floridians. The table in the box shows the rates of the five most common types of cancer in Florida by sex. These rates are adjusted for age to allow for comparisons between communities with different age structures. In 2017, Florida males had a higher rate of occurrence of all cancers combined, excluding non-melanoma skin cancers, compared to Florida females. For every 100,000 males, there were approximately 477 new cancers diagnosed compared to 420 new cancers diagnosed for every 100,000 females.

Florida has the second highest cancer burden in the nation with over 100,000 new cancers reported each year to the state cancer registry, the Florida Cancer Data System (FCDS). As of 2019, it was the second leading cause of death for Floridians with over 45,000 cancer deaths per year.

The FCDS has been collecting cancer incidence data from hospitals since 1981 and from non-hospital sources (i.e., ambulatory surgical centers, radiation therapy centers, pathology laboratories and private physician offices) since 1997. The main goal of the FCDS is to gather complete, accurate and timely data to assist policy makers and researchers in developing policy and programs to reduce death and illness due to cancer by better understanding cancer trends and possible causes of cancer. To learn more about this database, please visit:

floridahealth.gov/diseases-and-conditions/cancer/cancer-registry/index.html

The 5 Most Common Types of Cancer in Florida

(Age-adjusted Incidence Rates per 100,000 Population for Select Cancer Sites by Sex in 2017)

FEMALES

All Cancer	420.4
Breast	117.8
Lung & Bronchus	50.4
Colorectal	30.6
Uterine	24.3
Non-Hodgkin's Lymphoma	17.7

MALES

All Cancer	476.8
Prostate	88.6
Lung & Bronchus	64.2
Colorectal	40.2
Bladder	30.1
Non-Hodgkin's Lymphoma	25.8

*Excludes non-melanoma skin cancers
Data Source: Florida Cancer Data System (FCDS)

What are the early signs of cancer?

Everyone should learn to watch for the early signs of cancer.

There is usually no pain in the early stages.
This may lead to a delay in finding and treating it. Early symptoms can include:

- Weight loss with no effort to diet.
- Strange bleeding or discharge.
- A persistent upset stomach with no known cause.
- The presence of white patches inside the mouth or white spots on the tongue.

If you notice these symptoms, you should report them to your doctor right away. One of the most important things you can do if you think you might have cancer is to go to your doctor as soon as you can to share your concerns with them. Keep in mind that some of these signs could be due to a cause other than cancer.

How can people increase their chance of surviving cancer?

Finding cancer early for prompt treatment improves the chances of successful treatment and surviving cancer. Tools to find cancer include:

- Self-exams
- Biopsy (taking out tissue to view under a microscope).
- Ultrasound (which uses reflected high-frequency sound waves to help decide if tissue is healthy or not).
- Computed tomography (also known as CT or CAT scan, which uses x-rays to show what the inside of parts of the body look like).
- Magnetic resonance imaging (MRI, which uses magnetic fields and radio waves to show changes in soft tissues without x-rays).

What are some ways to promote health and avoid cancer?

- Cut down on or avoid exposure to known or suspected carcinogens (things known to cause cancer like cigarettes or sun exposure).
- Eat a balanced diet of vegetables, fresh fruit, whole grains and enough fiber.
- Cut down on eating harmful types of fat, like trans fats.
- Cut down on eating food with chemicals used to preserve food (like smoked or salt-cured meats).
- Get exercise on a routine basis.
- Get enough sleep (at least eight hours per night).
- Cut down on stress or learn how to better cope with it.
- Get a physical check-up each year.
- Take time to relax and have fun.
- Learn to do self-exams (breast and testicular).

Getting a cancer from a chemical depends on the following:

- The kind of chemical you come into contact with (exposure).
- How much of the chemical you were in contact with.
- How long the contact lasted.
- How often you were exposed.
- How it entered your body (eating, drinking, breathing, touching).
- Your health at the time of contact.

What role do chemicals play in causing cancer?

Many people believe chemicals cause most cancers.

However, research shows that the role they play is small and unclear. We actually do not know very much about how contact with most chemicals may or may not cause cancer.

Some of the few common chemicals with known links to cancer include:

- Arsenic
- Asbestos
- Benzene
- Trichloroethene (TCE)
- Vinyl chloride
- Radon

Just because a chemical is near where you live or work does not mean that it has entered your body or will cause cancer.

There must be a way for it to come into contact with your body. It also depends on if it is the kind of chemical known to cause cancer or not. You also must have contacted enough of it for a long enough period of time for it to affect your health.

Remember that not all chemicals are harmful.

There are some chemicals that might cause cancer.

They include:

- Chloroform
- DDT
- Formaldehyde
- Polychlorinated biphenyls (PCBs)

A list of other chemicals that are known to or might cause cancer can be found in the U.S. Environmental Protection Agency (EPA) Integrated Risk Information System (IRIS) here:

cfpub.epa.gov/ncea/iris/search/index.cfm
[Search for Cancer, add filter by Cancer]

EXPOSURE

The amount frequency with which a substance comes into contact with a person or the environment.

What role does chemical exposure have in cancer clusters?

For many chemicals, scientists can predict the average cancer risk to large groups of people from exposures.

However, scientists cannot predict the precise risk of cancer for a single person from exposure to a chemical. Studies that measure such risks include testing for chemicals in the air, soil and water. These studies also test for chemicals in human blood or urine. We call such tests biomonitoring since they measure the levels of toxic chemicals in the body. This type of study may take many years until scientists can make any conclusions or findings, so they remain rare.

To learn more about biomonitoring, visit:
cdc.gov/biomonitoring

What do we mean by the word *environmental* when it comes to cancer?

For most people, the term *environmental* means chemicals found in an area's air, soil, or water

Nevertheless, when scientists talk about cancer having an *environmental cause* they often mean the cause is *something other than heredity*. That means they cannot link the cancer to genetics. *Environmental causes* relates to lifestyle choices such as diet, exercise, smoking and alcohol use, as well as access to proper health care. Some 5 to 10 percent of all cancers run in families. We call these types of cancers *inherited*, which means passed down from a parent.

What about diseases with names that get confused with cancer?

People sometimes think someone has cancer when they do not.

It is common that people may report that they see too many cases of cancer in an area when some of the observed diseases are non-cancer illness with unusual names. Some of these include Lou Gehrig's disease, cystic fibrosis, ulcerative colitis and pernicious anemia.

How have changes in diagnosis and treatment affected cancer rates as a whole?

The incidence of cancer increases with age.

The U.S. now has more older adults in most states than ever before. The aging of the U.S. has increased the rates of cancer in the nation. It is important to note that in the past, most people died from getting sick with something other than cancer or from simply getting hurt, as well as from heart disease, which is still the leading cause of death. However, as our nation has made gains against these other types of health problems, more people are living longer so they have an increased chance of getting cancer.

How does the way society views cancer differ from in the past?

Much of the stigma that cancer once had has now gone away. These days, cancer patients are more likely to talk about it than they were years ago. In addition, the media plays a role in putting a spotlight on cancer; we hear about cancer more often now than in the past.

Radon is the second leading cause of lung cancer in the U.S.

To learn more about radon, visit:

floridahealth.gov/environmental-health/radon/

What role do animal studies play in cancer research?

For many chemicals, no human health data exist to assess if it is toxic. This is most notably true when first making or using a new chemical. Therefore, to gauge such risks, researchers often rely on animal studies.

These studies give them control over testing to see if human health effects are likely from contact with a certain chemical. They also allow them to precisely measure the amount of chemical given to a test animal. We call this the *dose*, like a medicine you take when ill. A dose that affects a test animal helps better predict if chemicals may cause cancer or otherwise make people sick.

The short lifetimes of small mammals also can result in getting an answer far more quickly than human studies would. While animal studies avoid the ethical questions that arise in chemical tests on humans, some people still have concerns about animal testing.

What is the Florida Department of Health (FDOH) doing to combat cancer?

FDOH has a plan to help control cancer.

This includes programs designed to address:

- Prevention
- Diagnosis
- Treatment
- Access to cancer care
- Cancer survivorship

The Centers for Disease Control and Prevention (CDC) provides funding to cancer programs in Florida to address breast, cervical and colorectal cancer. FDOH's website has designated pages specifically for these cancer types where men and women can learn about:

- Screening guidelines and resources
- Risk factors
- Benefit programs
- Help with medications
- Educational materials
- Support agencies

Other information on the website includes:

- Symptoms
- Prevention
- Cancer burden

Learn more

FDOH's effort to combat cancer
floridahealth.gov/diseases-and-conditions/cancer/cancer-control-florida.html

Breast Cancer
floridahealth.gov/diseases-and-conditions/cancer/breast-cancer

Cervical Cancer
floridahealth.gov/diseases-and-conditions/cancer/cervical-cancer

Colon Cancer
floridahealth.gov/diseases-and-conditions/cancer/colon-cancer/index.html

Florida Environmental Health Public Tracking
floridatracking.com

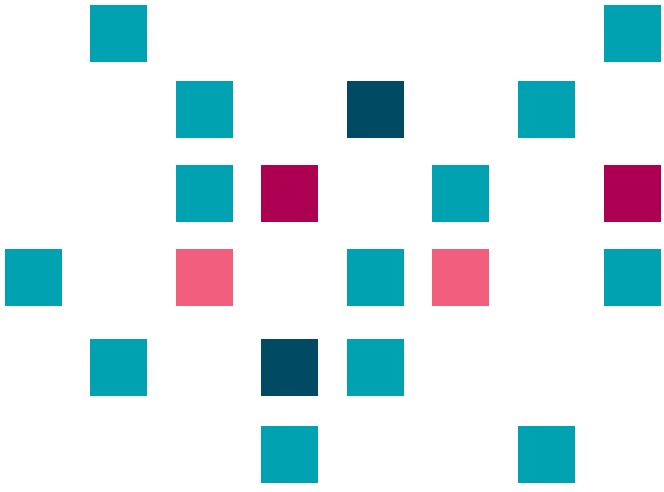
In addition, **FDOH's Breast and Cervical Cancer Early Detection Program (BCCEDP)** makes it easy to get the screenings doctors suggest. They are free or low cost if you qualify. To find out more, call your county health department or call the American Cancer Society (ACS) National Hotline at 1-800-227-2345 to get details on the program. There are many BCCEDP sites throughout the state.

FDOH's **Florida Environmental Public Health Tracking (EPHT)** program partners with the CDC to track diseases that might relate to environmental exposures. The EPHT website provides data sets on hazards in the environment. The EPHT looks for associations between those hazards and health outcomes. These efforts serve to inform people about disease trends and provide guidance on methods to improve community health.

One feature of the EPHT website is access to county-level cancer data and information such as air and drinking water quality in the state. Users can view the cancer incidence rate for 18 different types of cancer at the county or state level for the years 1999 through the most recent year available from the FCDS. A national EPHT workgroup chose the cancer types because they may have a link to the environment. These cancer types include:

- Breast
- Lung and bronchus
- Bladder
- Brain and other parts of the nervous system.
- Thyroid (a gland at the base of the neck just below the Adam's apple that helps control how the body uses food).
- Non-Hodgkin's lymphoma (a type of cancer that affects the white blood cells).
- Four kinds of leukemia (cancer of the blood).
- Pharynx (throat)
- Larynx (voice box)
- Esophagus (the long, hollow tube that runs from your throat to your stomach that takes food you swallow to your stomach for digestion).
- Pancreas (an organ that secretes enzymes that aid digestion as well as hormones that help control the breakdown of sugars).
- Mesothelioma (a type of lung cancer with known links to breathing in asbestos fibers).
- Melanoma (the most serious kind of skin cancer that forms in the cells that contain pigment).
- Liver and intrahepatic bile duct (the latter of which begins in the smaller duct branches of the liver and is linked to some types of chemical exposure).
- Kidney and renal pelvis (the latter of which is the top part of the ureter, a long tube that connects the kidney to the bladder).

Users can adjust their search to find the rate of a specific type of cancer at the state or county level and can select the cancer rate for all age groups or get an age-adjusted rate. They can also pick a certain gender, race or ethnicity. Users can also query the data to produce multiple outputs: graph, table or dynamic map.



CANCER CLUSTER INVESTIGATION

What is a cancer cluster?

The CDC defines a cancer cluster as a greater than expected number of cancer cases that occur within a group of people in a geographic area over a defined period of time (CDC, 2019). For more information, visit: **cdc.gov/nceh/clusters.**

This definition can be broken down as follows:

A GREATER THAN EXPECTED NUMBER

When the observed number of cases is higher than one would typically observe in a similar setting (a group of people with similar age, gender, race, etc.).

OF CANCER CASES

All of the cases involve the same type of cancer or different types of cancer that science has proven to have the same cause.

THAT OCCUR WITHIN A GROUP OF PEOPLE

The cancers are occuring in a carefully defined population. This may include factors such as race, ethnicity, age or gender.

IN A GEOGRAPHIC AREA

The boundaries for the area of study are carefully defined.

OVER A PERIOD OF TIME

The time period over which the number of cases occurred.

Why do community concerns often focus on cancer clusters?

People may suspect an excess of cancer if it occurs in a group where it is not likely to occur.

For instance, we would not expect to find many cancer cases among children in a small town or neighborhood. We also would not expect to find large numbers of rare cancers in a neighborhood. Another example is when people learn that quite a few friends, family members or neighbors have cancer, they may suspect a cancer cluster. This is also true when they hear about cancers in people who work at the same place. Many people today believe that there is something in the air, soil or water that causes cancer, even though there is not a proven link.

What are some of the notable cancer clusters?

A few studies have linked cancer cases to high amounts of chemicals in the workplace.

No studies done in the U.S. have ever proven that a chemical in the air, water or soil in a community was responsible for a cancer cluster. Therefore, most studies regarding the causes of cancer now focus on personal choices and lifestyle factors, not exposure to chemicals.

Some of the very few documented clusters with links to chemical exposures involve high doses of an unusual chemical over a long period.

The dates of work-related cancer clusters connected to high doses of exposures that are not common in daily life include:

- **1775** Cancer of the scrotum in chimney sweeps exposed to soot from coal.
- **1929** Cancer of the jawbone in watch dial painters exposed to radium.
- **1965** Mesothelioma and lung cancer in asbestos workers.
- **1974** Liver cancer in chemical workers exposed to vinyl chloride.

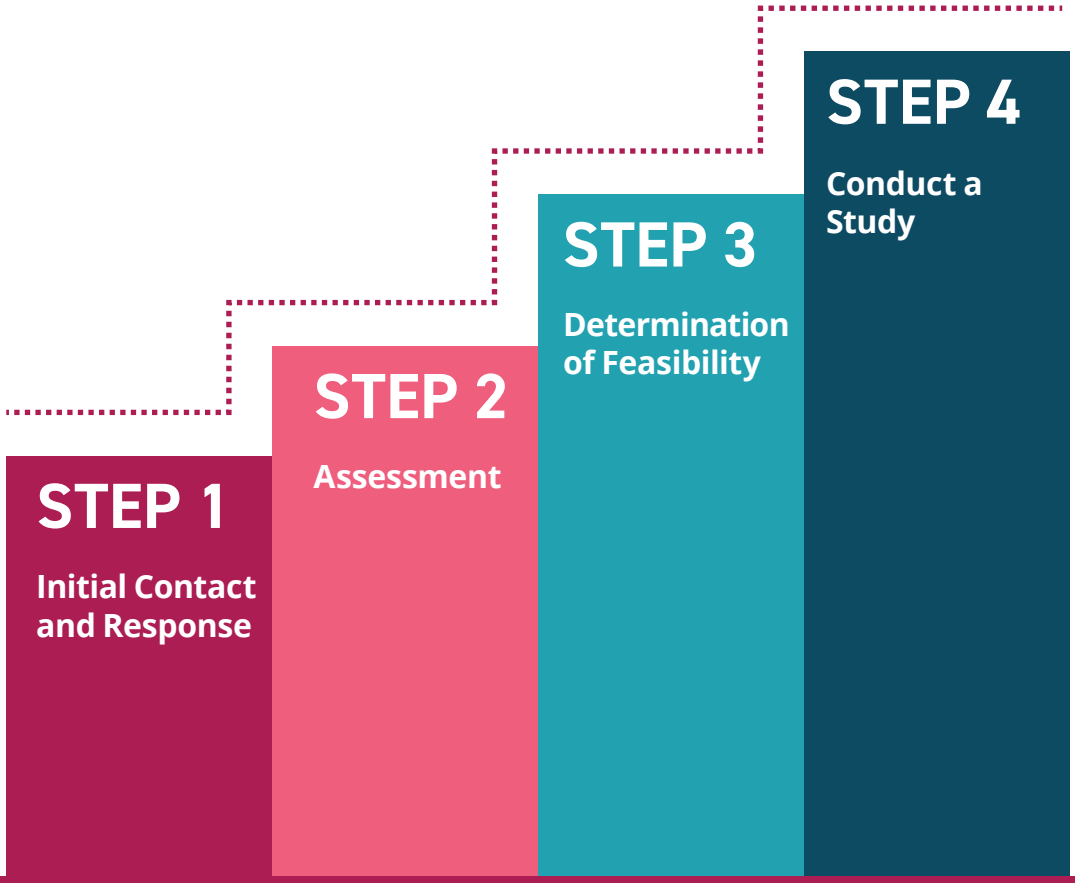
Two cancer clusters unrelated to workplaces include:

- **1971** Vaginal clear cell carcinoma in daughters exposed before birth to DES (a drug given to pregnant women in the mistaken belief it would cut down on the risk of problems or miscarriages).
- **1981** Kaposi sarcoma in homosexual men with AIDS exposed to the human herpes virus B.

Workplaces are now required to take steps for workers' health and safety. In industry, many workers must wear special protective gear made to reduce contact with substances, especially those known to cause cancer. These can include special clothing, gloves and breathing devices. These items serve to protect workers from exposures to hazardous chemicals at much higher levels than most people would be in contact with (such as drinking water).

What is a cancer cluster investigation?

There are many steps needed to investigate a possible cancer cluster.
Each of these steps takes some time and can be costly. The steps include:



STEP 1 Initial Contact and Reponse

The purpose of this step is to collect facts to decide if they suggest a need for more study. Data to collect include:

- The types of cancer
- Number of reports of cancer
- Age of people with cancer
- Geographic area of concern
- Time period of concern

STEP 2 Assessment

The purpose of this step is to decide if the statistics of the suspected cancer cluster are higher than expected for a community of its size and make-up. This step uses data that already exists.

It calls for deciding what group of people to study (the study population), choosing which type(s) of cancer to study, finding a similar group of people to compare the study group to, as well as deciding what kind of statistical methods to use in the study.

STEP 3 Determination of Feasibility

The purpose of this step is to gather more data to see if it is likely that the data will show if the cases relate to a common cause (also known as an etiological or causative risk factor).

If possible, the outcome of this step should include what type of study design might do the best job if further work occurs.

STEP 4 Conduct a Study

The purpose of this step is to find out if it is likely that contact with a certain risk factor or chemical in the environment might relate to the suspected cancer cluster.

To learn more about the detailed plan (called a protocol) the FDOH uses, see the 2013 Cancer Cluster Guidelines from the CDC found at:
cdc.gov/mmwr/preview/mmwrhtml/rr6208a1.htm?s_cid=rr6208a1_w

To study a suspected cancer cluster, we must ask questions like:

- Do people have a common exposure that might cause cancer? This might include exposure to chemicals in the air, soil and water, but may also include health habits, like using tobacco, or health conditions, like being obese.
- Is contact with the chemicals or behaviors found in that area a known risk factor for the types of cancer seen there?
- What are the ages of the people in an area?
- What is the size of the group of people there?

The FDOH begins a cancer cluster investigation when:

- There are many cases of a rare type of cancer.
- There are larger than expected numbers of a more common type of cancer, or
- The cancer is a type not often seen in a certain group of people (such as when children have a type of cancer more common in adults).

Before an investigation can start, a doctor must decide if each case is actually cancer. A review of medical records in most cases can give proof of cancer diagnosis.

Who investigates possible cancer clusters?

The team who investigate a suspected cancer cluster may include:

- People who are trained to study diseases (**epidemiologists**).
- People who can compute the rate of cancer cases (**data analysts**).
- People who can assess known risk factors found in air, soil or water (**health assessors**).
- People who study the toxic effects of chemicals on human health (**toxicologists**).
- Medical doctors

Agencies in the state or county other than the FDOH might also help, including:

- The county environmental agency
- The Florida Department of Environmental Protection
- The U.S. Environmental Protection Agency (EPA)
- The federal Agency for Toxic Substances and Disease Registry

What are the data sources the FDOH uses in a cancer cluster investigations?

In Florida, the main source of data used in an investigation is the Florida Cancer Data System (FCDS).

The FCDS is a state database of reports of cancer among people who live in Florida. The state began tracking cancer in 1981. The FCDS records cancers diagnosed since that time. FCDS does not contain records prior to 1981.

During an investigation, FDOH checks medical records to confirm reports of cancer. FDOH also use other sources of data, such as the health habits of people who live in the area of study. In some cases, they may also check other records. These include pathology reports or death certificates. FDOH makes sure to keep people's health records private.

It is important to note that medical records of cancer cases that occurred among the deceased may not help link it to any hazard. This is because it is unlikely FDOH can learn much about the types of exposure the deceased person experienced. FDOH cannot know what sorts of risk factors they had, like their health habits and the medical records do not contain enough detail on risk factors of the deceased.

Cancer can take many years to progress from the time someone first contacts a chemical or other cause until the diagnosis of a case. We call this latency.

We need to consider how long a community has been in place and how long people have lived there (residence history). We also need to keep in mind the time period that contamination has been around. In the case of more recent exposures, not enough time has passed for a disease like cancer to occur. Also, people move in and out of neighborhoods. Some cancer cases will have moved in with the cancer already developing.

For general information about cancer, please visit:

atsdr.cdc.gov

cancer.org

cdc.gov/cancer

cancer.gov

Different types of cancer have different causes.

If the types of reported cancers vary, it likely means that it is not a cluster. Also, some cancers are common. Having a lot of cases of a common type of cancer in one community may not mean a cluster exists.

What can a cancer cluster investigation tell you?

The main question in a cancer cluster investigation is: "Does a community have a higher number of cancer cases than what is expected?"

No community is disease-free. We can expect a certain number of cancer cases in any place where people live. To answer this question, a study needs to be conducted including a large number of people. Health studies that do not include enough people cannot find a significant relationship, even if one exists. In these cases, it may lack *study power* which makes it harder to find out if any contrasts/relationships seen are due simply to chance. *Statistical significance* is a measure of confidence in whether the differences are real.

For these reasons, research of very large groups of people followed over a long time leads to learning more about the causes of cancer and possible relationships. The study of a large group of people allows scientists to best see possible patterns in cancer rates, causes and effects.

What we can learn from community cancer cluster investigations is limited.

Sometimes we simply cannot perform an investigation if a community is too small. Another challenge is that we may find chemicals in the air, soil or water, yet there is no known link to cancer. Or we may have very few tests and data available regarding the area's air, soil or water. In some cases, contamination occurred long ago. This may mean that there was no testing back when it first got into the air, soil or water. Other times, the amounts of a chemical found are too low to cause cancer.

What role does chance have in cancer clusters?

A cancer cluster may be due to chance alone, like the clustering of balls on a pool table. Sometimes, a cluster may be due to certain types of behaviors. These include drug abuse, alcohol or tobacco use. Finding an exact cause is very hard to do. Follow-up studies may take years to complete. They often take a great deal of research and money with no cause ever pinpointed.

What other information does the FDOH need to confirm cancer cases in a cancer cluster investigation?

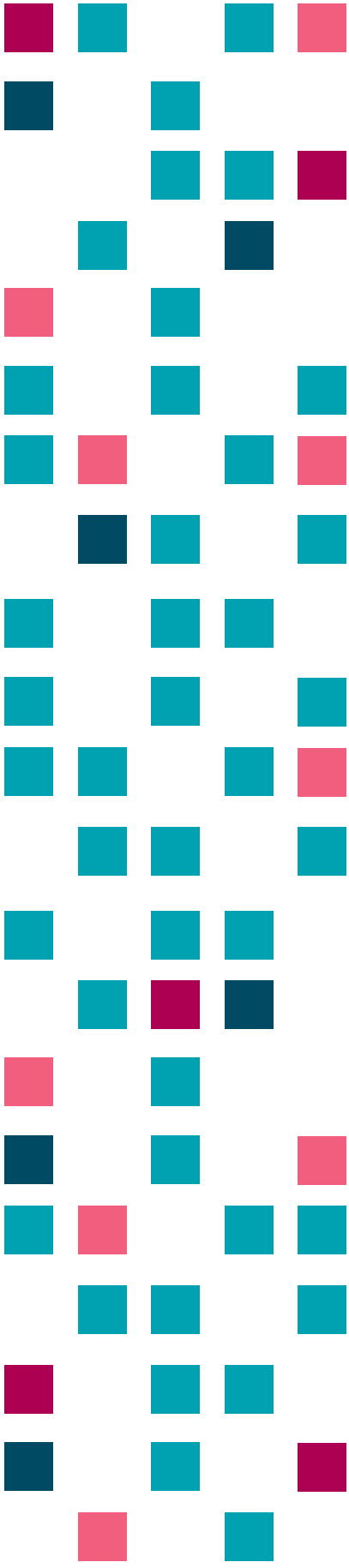
As part of an investigation, we must know the details of each case such as:

- What is the age of onset (or how old were they when a doctor found out they had cancer)?
- What is the person's race?
- What is their gender?
- What type of cancer is it?
- Where did they live?
- How long did they live there?

How is the rate of cancer analyzed in a cancer cluster investigation?

In an investigation, the rate of disease is the number of new cases in a group of people in a given area that occur in a certain period of time.

We express the amount of cancer as a rate by dividing the number of new cancer cases by the number of people at risk. As a rule, the FCDS and the National Cancer Institute both report rates per 100,000 persons.



What is an *average rate* or a *higher than average rate* of cancer?

Every year, groups of people report more than a thousand potential cancer clusters to public health agencies across the nation. Of those numbers, most do not meet the guidelines for study as a cancer cluster. Of those that do, 5 to 15 percent of studies may confirm that the number of cases of a certain cancer exceeds what is expected. Even then, in most cases, science cannot pinpoint a cause.

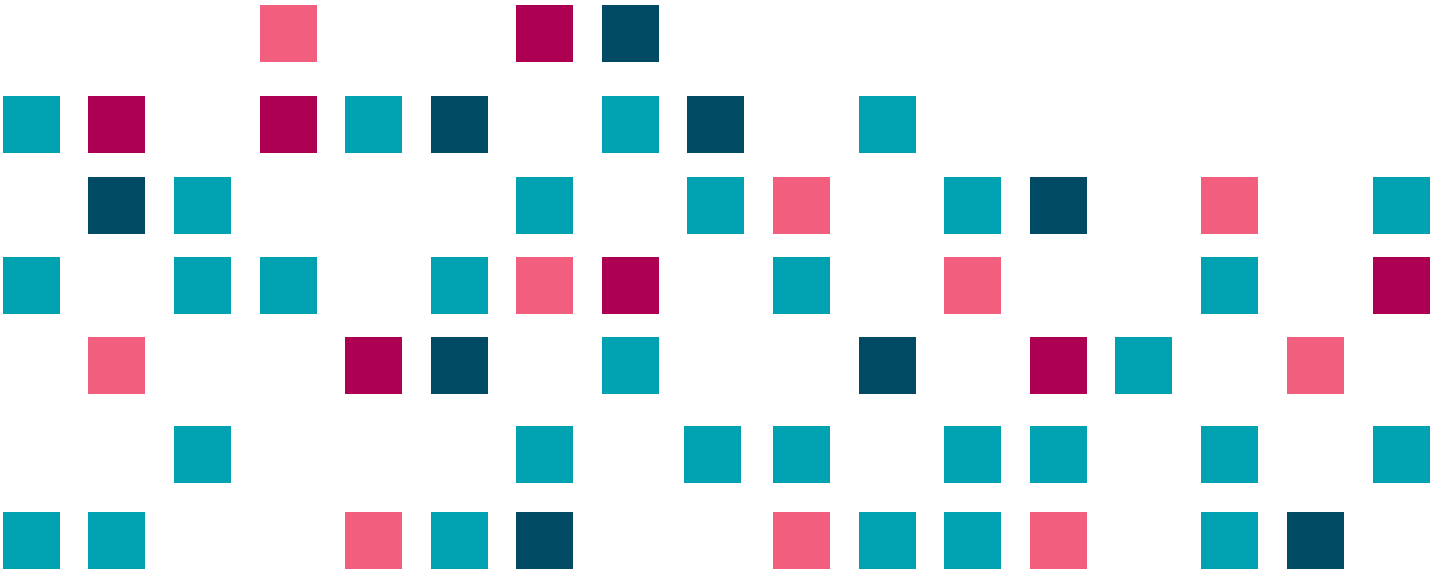
Here are some things to keep in mind about *average* or *higher than average* rates of cancer:

average	As a rule, we base an *average* cancer rate on some large group of people, such as a state.
higher than average	Means higher than the average for that large group. For instance, a town with many retired people may have a prostate cancer rate that is higher than the state's average rate. This is because it is a type of cancer that occurs more often in older men. A town with mostly college students has fewer older adults. That may result in a prostate cancer rate that is lower than the state's average rate. Each group of people in any given area is unique. Therefore, their cancer risk factors may vary widely. This can affect cancer rates.
average rate	Changes in the number of people in a core study group can change the *average rate* because as people move in and out of an area, it can change a group's traits or size.
statewide rates	In most groups, few if any, will match a statewide rate of cancer since the rates turn out either higher or lower than that found at the state level.
higher than expected	If an investigation shows a higher-than-expected cancer rate, it does not mean we can prove that something specific like a chemical is causing the cancer.
lower than expected	If a cancer cluster investigation shows a lower-than-expected rate, it does not mean that something is protecting a study group's members from cancer.

Science has made a great deal of progress in recent years to know more about, as well as treat, cancer.

However, it remains a very concerning illness because it is still not conquered. Also, cancer remains linked to a great deal of pain and loss for its victims and their friends and family.

Notes



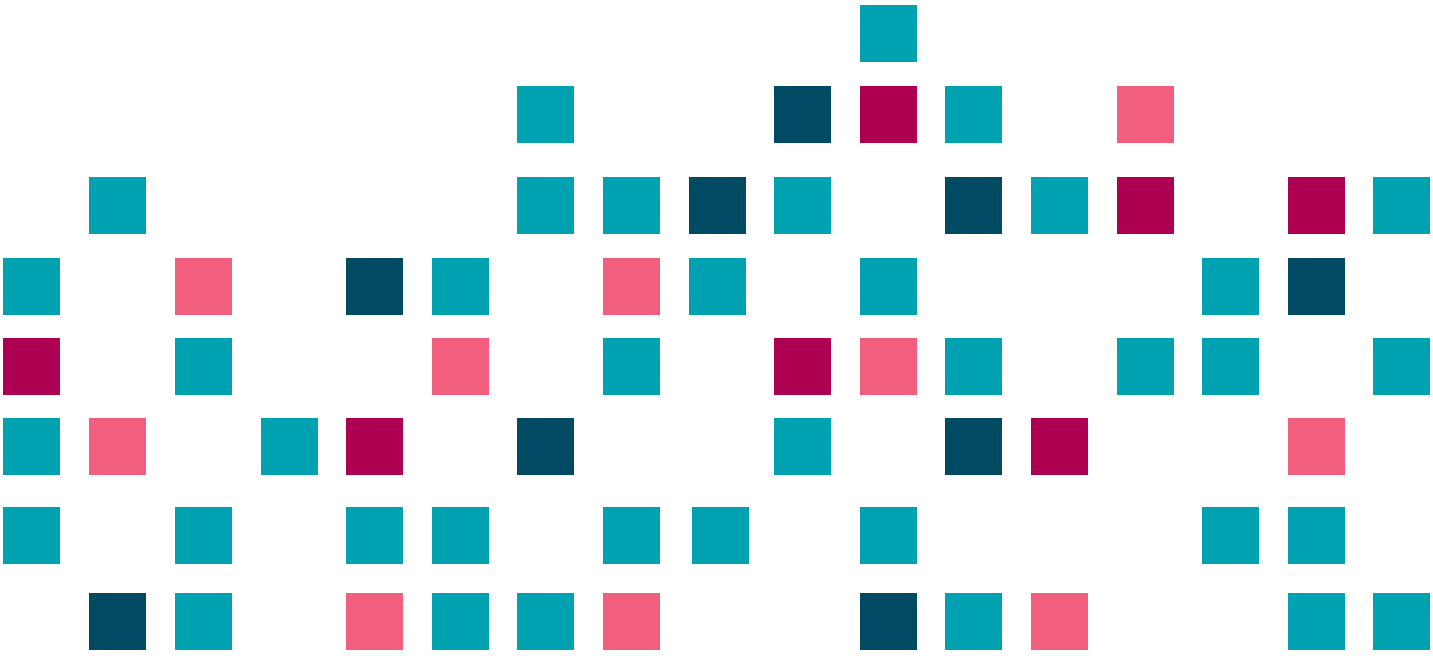
For more information on cancer rates, please visit:

National Cancer Institute:
cancer.gov/statistics

Florida Cancer Data System:
fcds.med.miami.edu/inc/welcome.shtml

Centers for Disease Control and Prevention:
cdc.gov/nceh/clusters

To learn more about Florida Environmental Health Public Tracking, visit:
FloridaTracking.com



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