

Louisiana Cancer Facts & Figures

Female Breast Cancer

2008-2012

Louisiana Tumor Registry
February 2016

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Introduction to the Louisiana Tumor Registry

Mission

The mission of the Louisiana Tumor Registry (LTR) is to describe the burden of cancer in Louisiana by collecting complete and high-quality cancer data and by compiling timely statistics so that data-driven cancer prevention and control programs can be implemented in the state to reduce cancer morbidity and mortality.

History

Cancer registration in Louisiana (LTR) began in 1947 at the Charity Hospital Tumor Registry in New Orleans. In 1974, as part of its Surveillance, Epidemiology and End Results (SEER) Program, the National Cancer Institute provided funds for a population-based cancer incidence and survival registry covering Jefferson, Orleans, and St. Bernard parishes.

Five years later, the Louisiana Tumor Registry (LTR) was transferred to the state Office of Public Health, which expanded the LTR catchment area in 1983 to include all 35 parishes of South Louisiana (Regions I-V). In 1988, when the 29 parishes of North Louisiana (Regions VI-VIII) were added, statewide coverage was achieved.

Milestones in the history of the LTR include:

- 1974: The LTR became one of the original participants in the National Program of Cancer Registries, funded by the National Cancer Institute (NCI).
- 1995: The LTR was transferred from the Office of Public Health to the LSU Board of Supervisors. Since then, the LSU Health Sciences Center in New Orleans has been responsible for the cancer registry program, providing the state funding.
- 2001: The Louisiana Tumor Registry was selected as one of four new expansion registries to join the prestigious SEER Program after a rigorous competitive application process.

Statewide cancer incidence data are available for the years 1988 and after.

Visit the LTR website for more information: <http://louisianatumorregistry.lsuhs.edu>

Basic Definitions

Throughout this publication, we will use some basic epidemiological/health-related terms, which are defined here:

- **Cancer incidence:** Newly diagnosed cancer cases.
 - Generally, this includes newly diagnosed cases of any cancers in a specified area/population during a designated time period. Cancer registries abstract the primary, or the first recorded, cancer. Secondary (metastatic, or distant) cancers are not counted as incident cases.
- **Cancer mortality:** Deaths where cancer is listed as the underlying cause of death on a death certificate.
 - For example, if a person who was treated for cancer dies of a heart attack, this would not count as a cancer death.
- **Age Adjustment:** A mathematical process that weights the data to make it possible to compare two different populations by making them more similar in population age structure. This is necessary because cancer incidence correlates strongly with age.
 - Louisiana incidence and mortality rates are adjusted to the 2000 U.S. standard population.
- **Relative Survival:** A comparison of the overall survival of cancer patients during a specified period with survival in a population similar in age, race, and sex that does not have cancer. Since members of both groups may die of non-cancer related causes during that period, the difference in mortality can be attributed to cancer.
- **Average Annual Percent Change:** This quantifies trends of change in incidence or mortality during a specified period. Because it is an average, it assumes that the change is constant from one year to the next during some period of time, even though in fact the changes will fluctuate annually.
- **Surveillance, Epidemiology, End Results (SEER):** The SEER program is a division of the National Cancer Institute (NCI) that began in 1973 and now collects and publishes cancer incidence and survival data from 18 population-based cancer registries in the United States (about a fourth of the US population). More information about SEER can be found on its website:

<http://seer.cancer.gov/about/overview.html>.

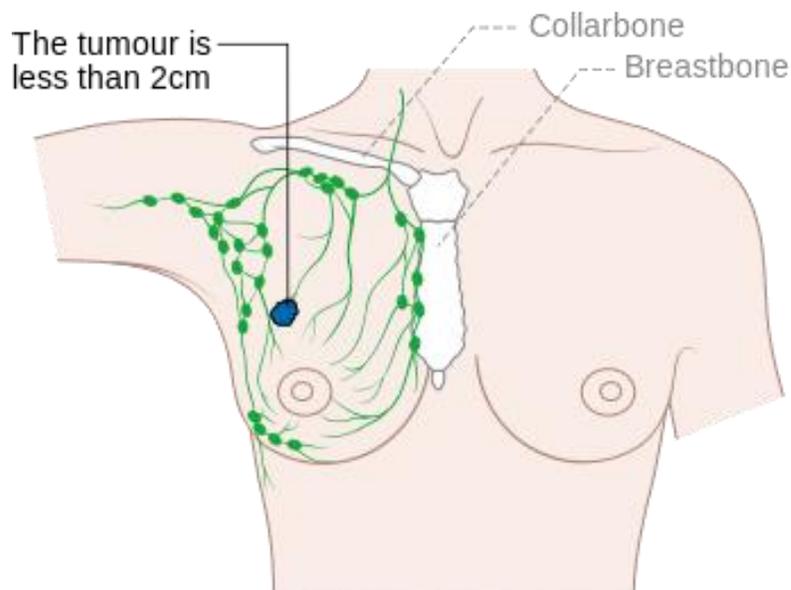
Breast Cancer Overview

Breast cancer begins when a buildup of excess cells forms a lump-like mass, called a tumor, which originates usually in the lining of the breast ducts.

Tumors can be malignant (cancer) or benign (not cancer), and those that are malignant can spread to other locations in the body.

Commonly, they first spread to the lymph nodes under the arm, then above the collarbone and/or behind the breast, but they can spread elsewhere through blood or lymph vessels as well.

Given that breast cancer occurs most commonly in women, female breast cancer is what we will address through the remainder of this document. However, the American Cancer Society states that in 2015, 2,350 men will be diagnosed with breast cancer and 440 men will die of breast cancer.¹



¹ American Cancer Society. *Breast Cancer Facts & Figures 2015*. Atlanta: American Cancer Society, Inc. 2015.

Image source: "Diagram showing stage 1A breast cancer CRUK 199" by Cancer Research UK - Original email from CRUK. Licensed under CC BY-SA 4.0 via Wikimedia Commons.

Breast Cancer Overview

In general, there are two types of breast cancer: in situ- and invasive breast cancer. Both are outlined below.

Early-stage/carcinoma in situ (CIS)

Early-stage breast cancer is called *carcinoma in situ (CIS)*. This cancer has not yet infiltrated any other body tissues besides where the cancer initially formed. “Carcinoma” refers to cancer that begins in the cells of tissues that line any inner or outer portion of the body, and “in situ” means “in the original place” in Latin.

There are 2 main types of early-stage breast cancer:

- Ductal carcinoma in situ (DCIS)
- Lobular carcinoma in situ (LCIS)

Ductal carcinoma in situ occurs in the cells that line the milk ducts, which bring milk from the glands to the nipple. About 1 in 5 newly diagnosed cases of breast cancer will be DCIS.² DCIS is considered a pre-cancer and may or may not lead to invasive cancer. Active research is currently being conducted to figure out which types of DCIS are more likely to lead to invasive cancers.³

Lobular carcinoma in situ occurs in the glands, or lobules, of the breast where milk is produced. It is far rarer than DCIS, and accounted for only 12% of the CIS breast cancer cases diagnosed from 2006 to 2010.⁴ It is not considered a true pre-cancer, but is instead considered an indicator of a much higher risk of getting invasive breast cancer. Women with LCIS are considered to be 7 to 12 times more likely other women to develop invasive breast cancer.⁵

Invasive Breast Cancer

Unfortunately, most diagnosed cases of breast cancer are invasive. Stage of the disease is key in being able to make a statement about the prognosis. About 61% of breast cancer cases are diagnosed at the localized stage, 32% are regional and have spread to nearby tissue or lymph nodes, 5% are distant and have metastasized elsewhere in the body, and 2% are diagnosed at an unknown stage. The 5-year relative survival rates, or the chance of a person surviving five years after a diagnosis vary by stage, with the earlier stage being associated with a better prognosis. Diagnosed in localized stage, a person has a 98.5% 5-year relative survival rate. With a regional diagnosis, the 5-year relative survival rate is 84.9%. At distant stage, it suffers a severe drop, falling to 25.9%.⁶

² <http://www.cancer.org/cancer/breastcancer/detailedguide/breast-cancer-breast-cancer-types>

³ Solin LJ, Gray R, Baehner FL, et al. A multigene expression assay to predict local recurrence risk for ductal carcinoma in situ of the breast. *J Natl Cancer Inst.* May 15 2013;105(10):701-10.

⁴ American Cancer Society. *Breast Cancer Facts & Figures 2013-2014*. Atlanta: American Cancer Society, Inc. 2013.

⁵ Kilbride KE, Newman LA. Chapter 25: Lobular carcinoma in situ: Clinical management. In: Harris JR, Lippman ME, Morrow M, Osborne CK, eds. *Diseases of the Breast*. 4th ed: Lippincott Williams & Wilkins; 2010.

⁶ <http://seer.cancer.gov/statfacts/html/breast.html>

Breast Cancer Symptoms

Signs and symptoms for breast cancer can vary greatly. Some people may have no signs or symptoms at all.

Possible symptoms can include:

- New lump in the breast or underarm area
- Thickening or swelling of part or all of the breast, even if no lump is felt
- Irritation or dimpling of breast skin
- Redness, flaky skin, scaliness, or thickening in the nipple area or the breast skin
- Nipple retraction, or the pulling inward of the nipple
- Nipple discharge other than breast milk, including blood
- Any change in the size or the shape of the breast
- Pain in any area of the breast
- Skin irritation or dimpling⁷

If the breast cancer has spread to the lymph nodes in the underarm area or behind the collar bone, there may be significant swelling in those regions, despite a lack of signs or symptoms in the breast area.

Any of these symptoms can also be caused by conditions that are not breast cancer, but are also serious, so if a person is experiencing any of them, they should report them to a doctor as soon as possible.

⁷ List from http://www.cdc.gov/cancer/breast/basic_info/symptoms.htm and <http://www.cancer.org/cancer/breastcancer/detailedguide/breast-cancer-signs-symptoms>

Breast Cancer Risk Factors

A *risk factor* is anything that affects the chances of developing a disease. Different cancers have different risk factors. The presence or absence of risk factors doesn't always indicate whether an individual will or will not get the disease.

In general, there are two types of risk factors: modifiable and non-modifiable. The modifiable group comprises risk factors or lifestyle choices that can be changed, usually to reduce the risk of cancers and other chronic diseases. Non-modifiable risk factors are those that cannot be changed, and usually include genetic conditions.

Modifiable Risk Factors:

- **Pregnancy-related factors:** In general, a pregnancy is thought to decrease breast cancer risk due both to lower exposure to the hormones associated with menstruation and to the effects of pregnancy on breast cells, such as the differentiation required so the cells can produce milk.⁸ Paradoxically, pregnancy can also increase the risk for breast cancer:
 - **Pregnancy factors related to lower risk of breast cancer:**
 - **Earlier age at first full-term pregnancy:** Though risk reduction is limited to hormone-receptor positive (ER+/PR+) cancers,⁹ women whose first full-term pregnancy occurs before age 20 have half the risk of breast cancer as a woman whose first full-term pregnancy occurs at age 20-29.¹⁰
 - **Increased number of births:** Generally, the risk of breast cancer declines with number of children a woman has.
 - **Longer duration of breastfeeding:** Breastfeeding for at least a year has been shown to lead to decreased risk of breast cancer.¹¹

Continued on next page

⁸ <http://www.cancer.gov/cancertopics/causes-prevention/risk/hormones/reproductive-history-fact-sheet#r15>

⁹ Lord SJ, Bernstein L, Johnson KA, et al. Breast cancer risk and hormone receptor status in older women by parity, age of first birth, and breastfeeding: a case-control study. *Cancer Epidemiology, Biomarkers, and Prevention* 2008; 17(7):1723–1730., Ma H, Bernstein L, Pike MC, Ursin G. Reproductive factors and breast cancer risk according to joint estrogen and progesterone receptor status: a meta-analysis of epidemiological studies. *Breast Cancer Research* 2006; 8(4):R43.

¹⁰ Bernstein L. Epidemiology of endocrine-related risk factors for breast cancer. *Journal of Mammary Gland Biology and Neoplasia* 2002; 7(1):3–15.

¹¹ Ma H, Bernstein L, Pike MC, Ursin G. Reproductive factors and breast cancer risk according to joint estrogen and progesterone receptor status: a meta-analysis of epidemiological studies. *Breast Cancer Research* 2006; 8(4):R43., Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50,302 women with breast cancer and 96,973 women without the disease. *The Lancet* 2002; 360(9328):187–195.

Breast Cancer Risk Factors

Modifiable Risk Factors, continued:

- *Pregnancy factors related to higher risk of breast cancer:*
 - **Older age at first childbirth:** Risk increases with older age at first childbirth, and women who are at least 30 at first childbirth have a higher risk of breast cancer than women who have never given birth.¹²
 - **Recent childbirth:** Immediately after childbirth, breast cancer risk increases and then declines after 10 years. The reason behind this increase in risk is still being studied, but is hypothesized to relate to the increase in hormones and their effect on small cancers, or to the rapid growth of breast cells during a pregnancy.¹³
- *Alcohol consumption:* Alcohol consumption has been linked to risk that increases with the amount consumed: Women who consume one alcoholic drink a day have only a small increase in risk over non-drinkers, whereas those who consume 2 to 5 drinks a day have 1.5 times the risk of non-drinkers.
- *Obesity:* The relationship between breast cancer and obesity is somewhat complicated, as it depends a person's stage in life or when they become obese:
 - *Pre-menopause:* There is no consistent evidence indicating obesity is a risk factor in pre-menopausal women.¹⁴
 - *Post-menopause:* Obesity is associated with an increased risk of breast cancer among post-menopausal women, possibly because fat cells are the primary source of estrogen after menopause.¹⁵
- *Lack of physical activity:* It is thought that anywhere from 1.25 to 2.5 hours per week of brisk walking can reduce a woman's breast cancer risk by 18%,¹⁶ and other forms of physical activity can also reduce breast cancer risk.
- *Oral contraceptive use:* Though use of oral contraceptives has been shown to lower the risk of endometrial or ovarian cancer, it has been linked to a slightly higher risk of breast cancer, which disappears 10 years after discontinuing oral contraceptive use.¹⁷

¹² Kelsey JL, Gammon MD, John EM. Reproductive factors and breast cancer. *Epidemiologic Reviews* 1993; 15(1):36–47.

¹³ Dickson RB, Pestell RG, Lippman ME. Cancer of the breast. In: DeVita VT Jr., Hellman S, Rosenberg SA, editors. *Cancer: Principles and Practice of Oncology*. Vol. 1 and 2. 7th ed. Philadelphia: Lippincott Williams and Wilkins, 2004.

¹⁴ American Cancer Society. *Breast Cancer Facts & Figures 2013-2014*. Atlanta: American Cancer Society, Inc. 2013.

¹⁵ Alcohol, obesity source: <http://www.cancer.org/cancer/breastcancer/detailedguide/breast-cancer-risk-factors>

¹⁶ From <http://www.cancer.org/cancer/breastcancer/detailedguide/breast-cancer-risk-factors>.

¹⁷ Burkman R, Schlesselman JJ, Ziemann M. Safety concerns and health benefits associated with oral contraception. *American Journal of Obstetrics and Gynecology* 2004; 190(4 Suppl):S5–22.

Breast Cancer Risk Factors

Non-modifiable Risk Factors¹⁸:

- **Sex:** Though males can develop breast cancer, rates for females are 100 times higher than males’.
- **Older age/Aging:** As you age, risk of breast cancer increases. Only 1 out of every 8 cases of invasive breast cancer is found in women younger than 45, whereas 2 out of every 3 cases of invasive breast cancer are found in women older than 55.
- **Genetics (including BRCA1 and BRCA2):** Only about 5%-10% of cases of breast cancer are thought to result from inherited gene mutations/defects.
 - **BRCA1 and BRCA2 mutations:** The average lifetime risk of breast cancer for those with an inherited *BRCA1* mutation is 55%-65%, while the risk for a *BRCA2* mutation is 45%. The cancers associated with these mutations usually occur more often in younger women, and the mutations are most common in, but not limited to, those of Ashkenazi Jewish descent.
- **Personal history of breast cancer:** Having cancer in one breast increases the risk of getting new cancer in the other breast or in a different area of the same breast 3- to 4-fold.
- **Family history of breast cancer:** Having one first-degree relative with breast cancer doubles the risk of breast cancer, and having two such relatives triples the risk. (Nonetheless, fewer than 15% of women with breast cancer have a family member who has or has had the disease, making family history a important, but not huge, risk factor).
- **Dense breast tissue:** Denser breast tissue increases the risk of breast cancer 1.2 to 2 times, and it also reduces the efficacy of mammograms.¹⁹
- **History of lobular carcinoma in situ:** While LCIS rarely develops directly into invasive cancer, women with LCIS are 7 to 12 times more likely to develop invasive cancer than those with no history of LCIS.²⁰
- **Menstruation before age 12 and/or Menopause after age 55:** This is thought to be a risk factor because it means an individual experiences more menstrual periods, and therefore a higher lifetime exposure to estrogen and progesterone.
- **Previous chest radiation:** Women who had radiation treatment to their chests for another cancer as children or young adults have a significantly increased risk of breast cancer that varies depending on the age the radiation was given. Risk is highest if the radiation was given while the breasts were still developing.

Continued on next page

¹⁸ Section source: <http://www.cancer.org/cancer/breastcancer/detailedguide/breast-cancer-risk-factors>

¹⁹ for more information see: <http://www.cancer.org/acs/groups/content/@editorial/documents/document/acspc-039989.pdf>

²⁰ Additional information from Kilbride KE, Newman LA. Chapter 25: Lobular carcinoma in situ: Clinical management. In: Harris JR, Lippman ME, Morrow M, Osborne CK, eds. *Diseases of the Breast*. 4th ed: Lippincott Williams & Wilkins; 2010.

Breast Cancer Risk Factors

Things that are NOT Risk Factors:

As with other cancers, many myths exist about what can lead to increased breast cancer risk. A few things that do *not* cause breast cancer include:

- *Antiperspirant use*: Despite the thought that cancer-causing agents in antiperspirants may be absorbed into the body through any small cuts sustained in underarm shaving, a 2002 study found no link between breast cancer risk, antiperspirant or deodorant use, and underarm shaving.²¹
- *Bras*: The report that bra wearing reduces lymph circulation and increases the risk of breast cancer has been disproven. A 2004 case-control study of post-menopausal women determined no significant link between bra wearing and breast cancer, including change in bra habits, use of underwire bras, days bras worn, hours of the day bras worn, etc.²²
- *Induced or spontaneous abortion*: Though contrary claims frequently can be heard, neither induced nor spontaneous abortion (miscarriage) has been proven to be a risk factor for breast cancer. Most studies that have investigated any possible link have not found one, and the National Cancer Institute (NCI) declared in 2003 that neither has any link to increased risk of breast cancer.²³
- *Breast augmentation and implants*: No significant link has been found between breast implants and breast cancer, with most studies showing no association.²⁴ Breast implants can introduce scar tissue to the breasts, making mammograms more difficult to read. In that case, a doctor can elect to also use other modalities to screen for breast cancer.
- *Hair dyes and/or hair relaxers*: A 2005 study found no link between hair dye use and breast cancer.²⁵ A 2007 study of black women also found no link between use of hair relaxers and breast cancer risk.²⁶

²¹ Additional information from: <http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/antiperspirants-and-breast-cancer-risk>

²² Additional information from: Chen Lu, Malone Kathleen E., Li Christopher I. Bra Wearing Not Associated with Breast Cancer Risk: A Population-Based Case-Control Study. *Cancer Epidemiology, Biomarkers & Prevention*. Published OnlineFirst September 5, 2014; DOI: 10.1158/1055-9965.EPI-14-0414.

²³ Additional information from: <http://www.cancer.org/cancer/breastcancer/moreinformation/is-abortion-linked-to-breast-cancer>

²⁴ Institute of Medicine (US) Committee on the Safety of Silicone Breast Implants; Bondurant S, Ernster V, Herdman R, editors. *Safety of Silicone Breast Implants*. Washington (DC): National Academies Press (US); 1999. 9, Silicone Breast Implants and Cancer.

²⁵ Takkouche B, Etminan M, Montes-Martinez A. Personal Use of Hair Dyes and Risk of Cancer: A Meta-analysis. *JAMA*. 2005;293(20):2516-2525. doi:10.1001/jama.293.20.2516.

²⁶ Rosenberg L, Boggs DA, Adams-Campbell LL, Palmer, JR. Hair Relaxers Not Associated with Breast Cancer Risk: Evidence from the Black Women's Health Study. doi: 10.1158/1055-9965.EPI-06-0946 *Cancer Epidemiol Biomarkers Prev* May 2007 16; 1035.

Breast Cancer Screening Overview

Cancer screening is intended to catch cancers before they start to cause symptoms. Once breast cancer begins to display symptoms, it is likely larger and at a more advanced stage, complicating treatment and leading to lower relative survival.

Test	How often?
Screening Mammogram	For women of average risk, every year beginning at age 45 until age 55, then biennially after that while they continues to be in good health and has a life expectance of ten years or longer

Screening recommendations issued by the American Cancer Society recommend for women of average risk, possibly starting between ages 40 to 44 but definitely not later than age 45 get *screening mammograms* every year, then can transition to every two years after age 55.²⁷

One study showed that regular mammograms (performed every 1 to 2 years) for women 40 and up could reduce breast cancer mortality by 20-25%.²⁸

More information on the various tests follows in the next two pages.

²⁷ Oeffinger, et al. Breast Cancer Screening for Women at Average Rihs 2015 Guideline Update from the American Cancer Society. *JAMA* 314(15): 1599.1615. 2015.

²⁸ <http://www.cdc.gov/nccdphp/publications/factsheets/Prevention/pdf/cancer.pdf>

Breast Cancer Screening Tests

Mammograms

- Mammograms are essentially an x-ray of the breasts, taken by compressing the breasts for a few seconds between two plates to flatten them and spread out the tissue, allowing for a clear image.
- *Screening mammograms* are performed on women with no signs or symptoms. (See previous page for more details.)
- If symptoms are present, or a screening mammogram returns an abnormal result, a *diagnostic mammogram* will be performed to examine tissue in the area of possible concern.

In the cases of women with dense breasts or a high risk of breast cancer, breast ultrasound or breast MRI may be performed in addition to mammograms.

Biopsy

If mammograms and/or other imaging tests or a physical exam finds an abnormality or a change that may be cancer, a biopsy needs to be performed. Biopsy is a sure way to tell if cancer is truly present.

The common types of biopsies include:

- *Fine needle aspiration (FNA) biopsy:*
 - A physician inserts a thin, hollow needle attached to a syringe into a suspicious area of the breast, guided by either feeling the area or using ultrasound.
 - Fluid is drawn out of the area and examined. Clear fluid usually means a benign cyst, and bloody or cloudy fluid can sometimes mean cancer.
 - If a lump is solid, a tissue fragment will be withdrawn for examination by a pathologist.
 - This is easiest type of biopsy.
 - The disadvantages are: (1) if the needle is not placed directly where the cancer cells are, the cancer is sometimes missed; (2) even if cells are found, is not always possible to determine if they are invasive; (3) The sample may be too small to permit lab tests.
 - If no clear diagnosis is obtained through an FNA biopsy, a second or different type of biopsy may be performed.

Breast Cancer Screening Tests

- *Core needle biopsy:*
 - A larger needle is used to remove a small cylinder of tissue from a breast abnormality, using local anesthesia in an outpatient clinic.
 - This is more likely than an FNA biopsy to provide a clear diagnosis, but can still miss some cancers.
- *Surgical biopsy:*
 - The procedure is also called *open biopsy*.
 - It is rarely used.
 - When it is necessary, surgery is performed to remove all or part of a lump for examination.
 - Called an *excisional biopsy* if the entire mass plus some surrounding healthy tissue is removed.
 - Called an *incisional biopsy* if only part of the mass is removed.
 - It can lead to breast changes afterward.

All biopsies can cause bleeding and swelling, which can makes the breast lump seem large. This is normal and should go down fairly quickly.

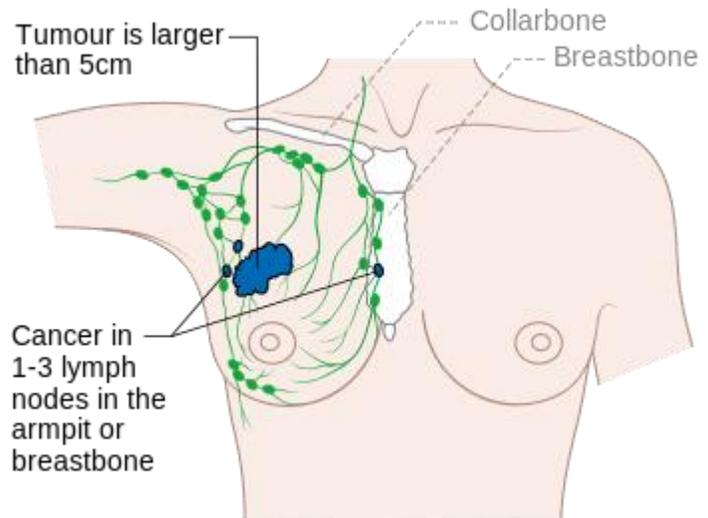
Clinical Breast Exams (CBE) & Breast Self-Exam (BSE)²⁹

As of the 2015 American Cancer Society recommendations, clinical breast examinations as a cancer screening tool are no longer recommended for women of any age.

²⁹ Oeffinger, et al. Breast Cancer Screening for Women at Average Risks 2015 Guideline Update from the American Cancer Society. *JAMA* 314(15): 1599.1615. 2015.

Breast Cancer Staging

Staging for breast cancer will be performed after a diagnosis is confirmed. Physicians use the TNM staging system, where extent of spread in breast (T), extent of spread into nearby lymph nodes (N), and extent of spread to other organs of the body (M) are ascertained through various tests including a sentinel lymph node biopsy, chest x-ray, CT scan, MRI, bone scan, or PET scan. A stage of 0 through IV is assigned, along with different A, B, or C to differentiate size and spread.³⁰



The TNM system is outlined on the following page, and is adapted from the Breastcancer.org descriptions of the stages.³¹

³⁰ Image source: "Diagram 3 of 3 showing stage 3A breast cancer CRUK 016" by Cancer Research UK - Original email from CRUK. Licensed under CC BY-SA 4.0 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:Diagram_3_of_3_showing_stage_3A_breast_cancer_CRUK_016.svg#/media/File:Diagram_3_of_3_showing_stage_3A_breast_cancer_CRUK_016.svg

³¹ <http://www.breastcancer.org/symptoms/diagnosis/staging>

Breast Cancer Staging

Stage	Tumor Size	AND	Spread?
0	Carcinoma in situ (CIS), n/a		n/a
IA	Tumor is less than ¾ of an inch (2 cm) across	And	cancer has not spread to the lymph nodes
IB	Tumor is less than ¾ of an inch (2 cm) across	And	cancer cells present in the underarm lymph nodes
IIA	Tumor is about ¾ inch (2 cm) across -----OR----- -- tumor is between ¾ and 2 inches (2 and 5 cm) across	And ----- and	cancer has spread to the underarm lymph nodes -----OR----- cancer hasn't spread to underarm lymph nodes
IIB	Tumor is between ¾ and 2 inches (2 and 5 cm) across -----OR----- -- tumor is larger than 2 inches (5 cm) across	And ----- and	cancer has spread to underarm lymph nodes -----OR----- cancer hasn't spread to underarm lymph nodes
IIIA	Tumor is no more than 2 inches (5cm) across -----OR----- -- tumor is more than 2 inches (5 cm) across	And ----- and	cancer has spread to underarm lymph nodes or nearby tissue, or the lymph nodes behind the breastbone -----OR----- Cancer has spread to underarm lymph nodes or nearby tissue, or to lymph nodes behind the breastbone but not underarm lymph nodes.
IIIB	Tumor can be any size	and	Tumor has grown into the chest wall or skin or the breast. plus Cancer may have spread to underarm lymph nodes, nearby tissue, or lymph nodes behind the breastbone.
IIIC	Tumor can be any size	and	Cancer has spread to lymph nodes behind the breastbone and under the arm, or has spread to lymph nodes above or below the collarbone.
IV	Tumor can be any size	And	cancer cells have spread to other parts of the body, commonly the lungs, but also the liver, bones, brain, etc.

Breast Cancer Treatment

Treatment for breast cancer can include surgery, radiation, chemotherapy, hormone therapy, targeted therapies, or some combination of these depending on the cancer's stage, hormone receptor status, size of tumor, menopausal status, and other factors, to be discussed with a physician.³²

Surgery:

Surgery is the most common treatment for breast cancer. Depending on factors including the size, location, and stage of the tumor, the size of a woman's breast, and her feelings about breast changes, either breast-conserving surgery (BCS) or a full mastectomy will be performed. In the case of a full mastectomy, women may elect to have a breast reconstruction afterwards, though this is entirely optional.

Some types of surgery used to treat breast cancer include:

- *Breast conserving surgery:*
 - Also called partial mastectomy, quadrantectomy, lumpectomy
 - Only cancerous tissue plus a small extra margin of normal tissue are removed
- *Simple/Total mastectomy:*
 - Removal of the entire breast
- *Modified radical mastectomy:*
 - Removal of entire breast and lymph nodes under the arm
- *Radical mastectomy:*
 - Removal of entire breast, lymph nodes under the arm, and underlying chest wall muscle
 - Rarely used, as in most cases it is unnecessary to remove the underlying chest wall muscle in order to remove all of the cancer.

³² Two great sources of this information include: National Cancer Institute (2012). What You Need to Know About Breast Cancer. National Cancer Institute Booklet. Available online: <http://www.cancer.gov/publications/patient-education/wyntk-breast-cancer>.; American Cancer Society. *Breast Cancer Facts & Figures 2013-2014*. Atlanta: American Cancer Society, Inc. 2013.

Breast Cancer Treatment

Radiation:

The two main types of radiation therapy are:

- *External radiation therapy:*
 - The most common type of radiation therapy used for breast cancer.
 - A machine outside the body administers radiation to the area affected by the cancer, usually once a day, 5 days a week, for 3 to 6 weeks, for a few minutes at a time.
- *Brachytherapy:*
 - A doctor will make an incision in the breast and insert a tube directly into or near the tumor site. A radioactive substance will be loaded into the tube for a few minutes, then removed, every day for a week.
 - Once it is removed, no radioactivity will remain in the body.

Radiation therapy often follows breast-conserving surgery to kill any remaining cancer cells in the breast and surrounding lymph nodes and chest wall muscle, to help prevent recurrence. It is occasionally needed following mastectomies where the original tumor was 2 inches (5 cm) or larger.

Systemic treatments:

Chemotherapy, hormone therapies, and targeted therapies are all considered systemic treatments because they are administered intravenously or by pill and affect all parts of the body, not just the cancer cells. When given before surgery, they are referred to as *neoadjuvant therapy* and are used to shrink the tumor enough to make surgery possible or to reduce the extent of needed surgery. When given after treatment, they are referred to as *adjuvant therapy* and are used to kill any undetectable tumor cells that were left behind or have traveled to other parts of the body.

Full descriptions of the types of systemic treatments listed follow:

Breast Cancer Treatment

Chemotherapy:

- Uses intravenous drugs (or pills) to kill cancer cells.
- Used for stage I through IV breast cancer, both before and after surgery.
- Because it is designed to affect the cells that divide rapidly, it can also affect cells in blood cells, hair roots, and the lining the digestive tract, causing undesirable side effects.
- Research has shown that usually a combination of chemotherapy drugs is more effective than any one given on its own.
- Depending on the combination given, chemotherapy is usually administered for 3 to 6 months.

Hormone therapy:

Hormone therapy is used to treat breast cancers that have hormone receptors. It keeps the cancer cells from either accessing or using the estrogen or progesterone that they need to proliferate.

The type of hormone therapy used will depend on menopause status.

For *pre-menopausal* cases, options include:

- Tamoxifen, which blocks estrogen activity in the body
- Surgery to remove the ovaries, which make estrogen
- LR-RH agonist, which reduces the amount of estrogen made by the ovaries.

After menopause, options include:

- Aromatase inhibitors, which prevent the body from making estrogen
- Tamoxifen.

Targeted therapies:

When a breast cancer is shown to have too much of the HER2 protein, targeted therapies may be used to block the action of the HER2 protein and slow cancer cell growth. These therapies can be given intravenously or as a pill. Since they can have side effects, a doctor will need to monitor women for heart and lung problems throughout treatment.

Clinical Trials:

Another possible option that can be used in place of or in conjunction with these treatments is to enroll in a clinical trial. For a current list of clinical trials for breast cancer—and other cancers—visit <http://www.cancer.gov/clinicaltrials>

What You Can Do

Know your family history of the disease and risk. If you fall in the 2% of women recommended to get screened for the BRCA1 or BRCA2 mutations, do so as soon as you can.

If you detect any changes in your breasts or see any of the listed signs or symptoms, make an appointment with a doctor immediately.

Try to eat a balanced diet and stay active.

Be conscientious and know your body as well as you can.

Follow the recommended guidelines for mammograms.

Louisiana Breast & Cervical Health Program (LBCHP)

If you are under-insured or have no health insurance, you may qualify for the Louisiana Breast and Cervical Health Program's (LBCHP) free breast cancer screenings, provided at eight different locations across the state.



Visit <http://lbchp.org/> or dial 888-599-1073 for more information on the program, locations of screenings, and eligibility.

Breast Cancer in Louisiana

- In the period 2008-2012, Louisiana had the 32nd highest incidence rate for breast cancer, but the highest mortality rate of any state in the nation.³³

<i>Breast Cancer</i>	<i>Incidence (cases per 100,000)</i>	<i>Mortality (cases per 100,000)</i>
Louisiana	121.9	25.0
U.S.	123.0	21.9

- Breast cancer is the most common cancer and the second leading cause of cancer death for women in Louisiana.
- About 3,400 new breast cancers are expected to be diagnosed and about 630 women are expected to die of breast cancers in Louisiana in 2015.³⁴

³³ All statistics from <http://statecancerprofiles.cancer.gov>; this includes all races and ages, but excludes in situ cases of breast cancer.

³⁴ American Cancer Society, Cancer Facts & Figures 2016, which can be accessed at <https://cancerstatisticscenter.cancer.org/>

Figure 1: Incidence and Mortality Rates Female Breast Cancer Louisiana vs. US. 2008-2012

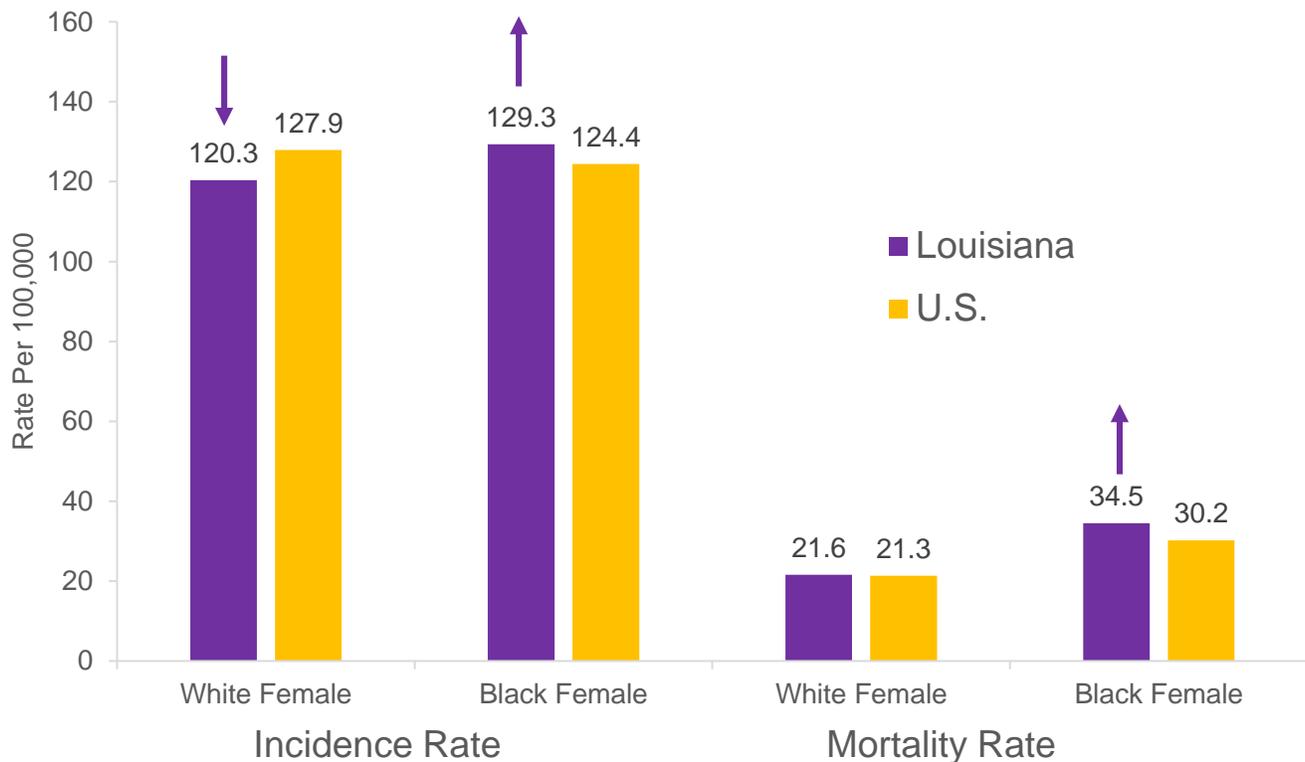


Figure 1 displays the annual incidence and mortality rates of newly diagnosed female breast cancer cases in both Louisiana and the United States, per 100,000 population, averaged over the years from 2008 to 2012.³⁵ The arrows indicate the difference is statistically significant ($p < 0.05$).

- Black females have a higher incidence and mortality rate than white females in Louisiana.
- In Louisiana, the incidence rate for white females is significantly lower than that of the United States, while that for black females is significantly higher. The mortality rates of black females is also significantly higher than that of the U.S.
- The average annual number of new breast cancer cases for all of Louisiana during 2008-2012 was 3131 cases.³⁶

³⁵ All information is age-adjusted to the 2000 US standard population.

Source for US incidence data: 18 SEER registries. Mortality data source was National Center of Health Statistics (NCHS).

³⁶ <http://statecancerprofiles.cancer.gov>

Figure 2: Age-Specific Incidence Rates Female Breast Cancer Louisiana, 2008-2012

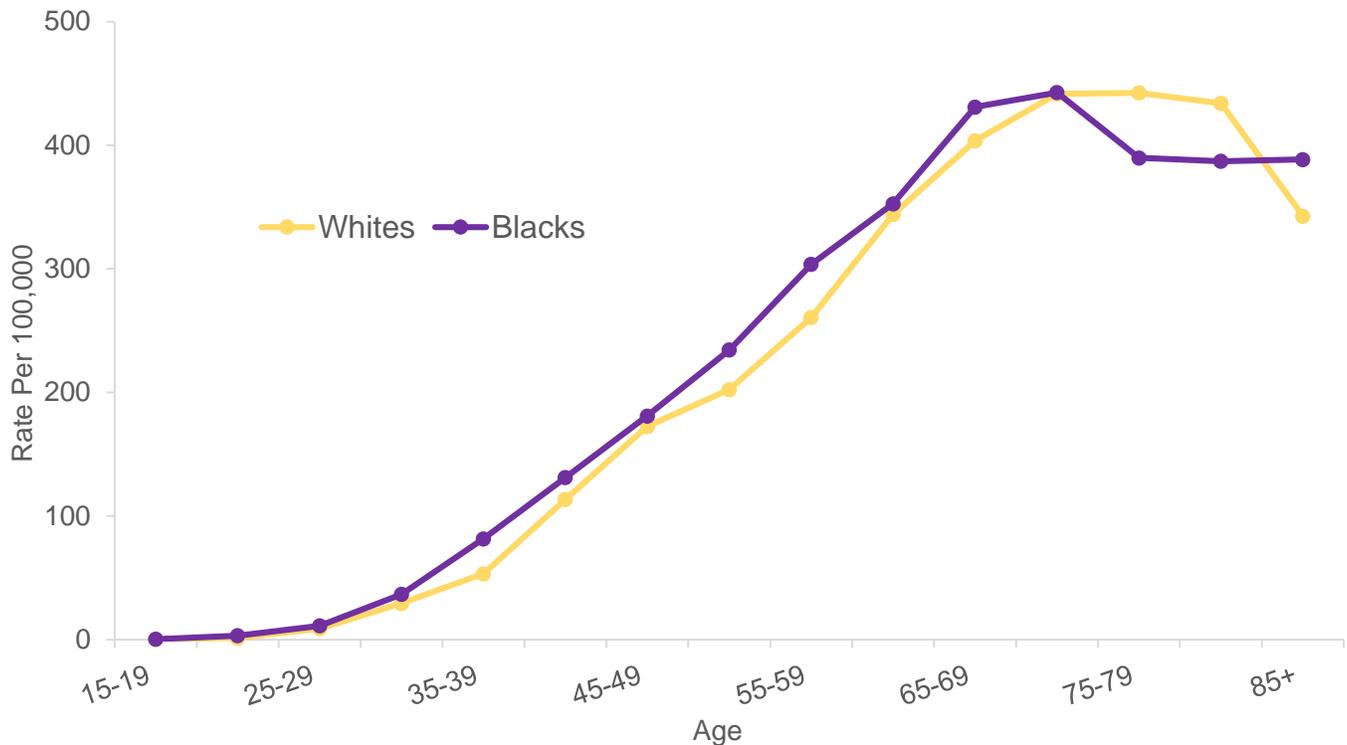


Figure 2 displays the incidence rate of newly diagnosed invasive breast cancer (incidence) per 100,000 Louisiana residents, given by age at diagnosis and stratified by race.³⁷

- For both racial groups, diagnosis sees an uptick beginning before the 40s.
- The jump in diagnoses between the 30s and the 40s emphasizes the need to discuss regular screening mammograms with a physician beginning at age 40.
- The median age of diagnosis for breast cancer in the United States is 61.³⁸

³⁷ Age-adjusted to the 2000 US standard population.

³⁸ <http://seer.cancer.gov/statfacts/html/breast.html>

Figure 3: Trends of Cancer Incidence Female Breast Cancer Whites and Blacks, LA vs. U.S., 1988-2012

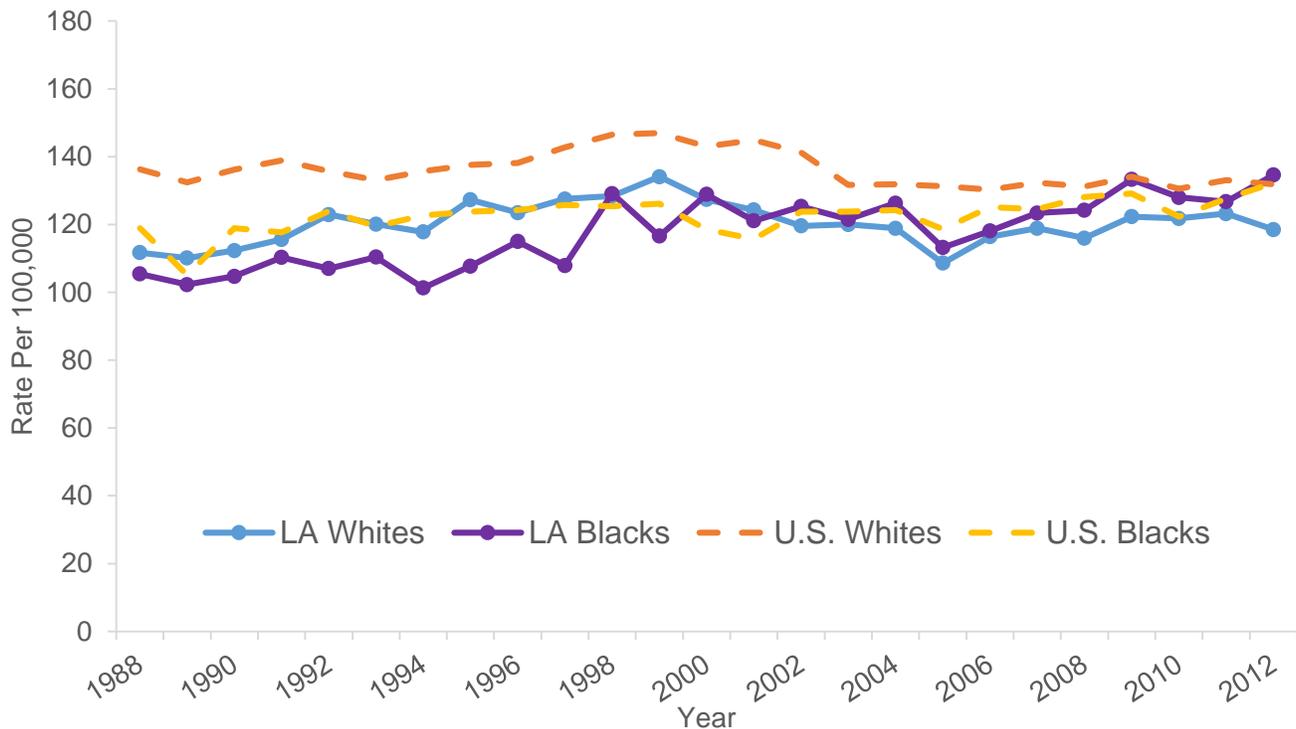


Figure 3 displays the trends of incidence rates for newly diagnosed invasive breast cancer cases per 100,000 individuals, from 1988 to 2012 for both whites and blacks in Louisiana and the United States.³⁹

- There is a slight increase in the Louisiana incidence rates for both race groups, while the U.S. has a slight decrease in incidence rates for both race groups across this time period.

³⁹ Information is age-adjusted to the 2000 US standard population.
US incidence data source: SEER 9 registries

Figure 4: Trends of Cancer Mortality Female Breast Cancer Whites and Blacks, LA vs. U.S. 1988-2012

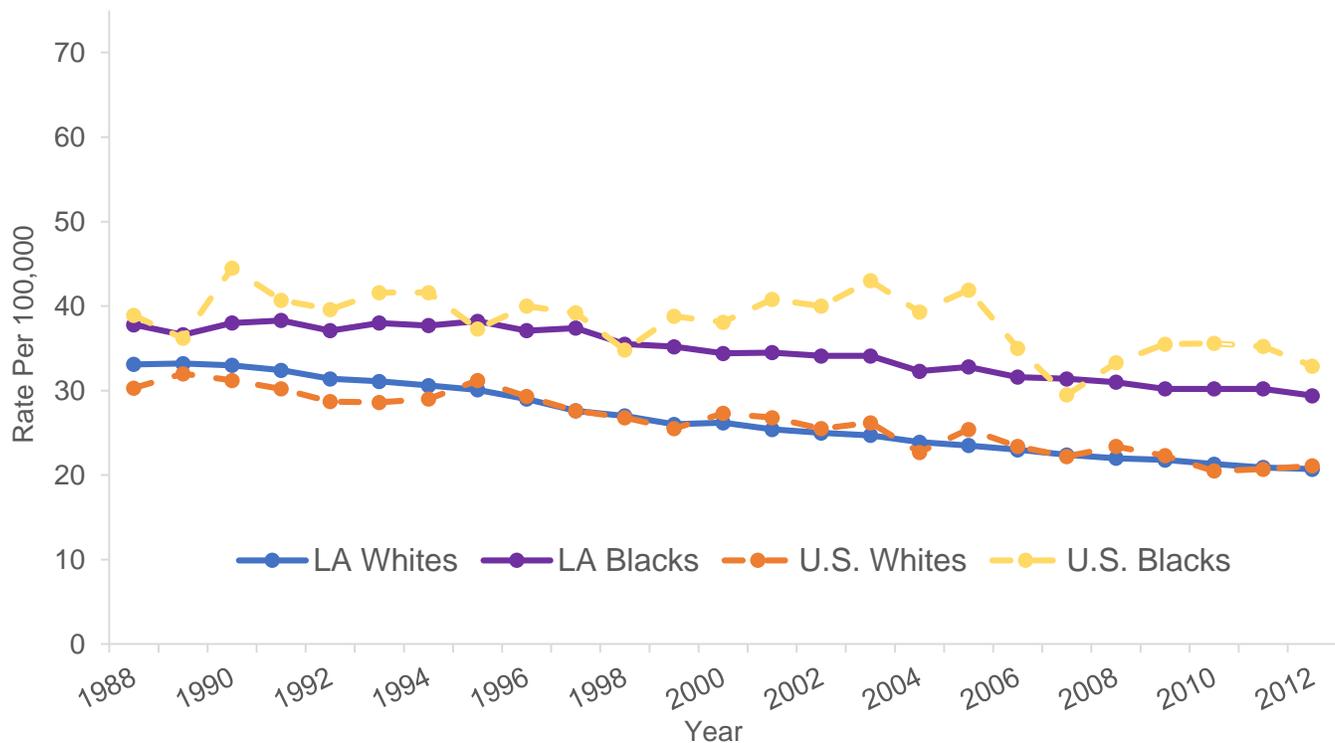


Figure 4 displays the trends of mortality rates per 100,000 individuals, for the years 1988 to 2012 for both whites and blacks in Louisiana and the United States.⁴⁰

- Overall breast cancer mortality rates have declined an average of 2.0% per year for all women in the United States.⁴¹
- The mortality rate is significantly higher for Louisiana black women than for black women in the United States as a whole.

⁴⁰ Information is age-adjusted to the 2000 US standard population.
US Mortality data source was National Center of Health Statistics (NHCS).

⁴¹ Kohler, BA, Sherman RL, Howlander N, Jemal, A, Ryerson AB, Henry KA, Boscoe, FP, Cronin KA, Lake A, Noone, A-M, Henley, SJ, Ehemann, CR, Anderson, RN, Penberthy, L. [Annual report to the nation on the status of cancer, 1975–2011, featuring incidence of breast cancer subtypes by race/ethnicity, poverty, and state.](#) *Journal of the National Cancer Institute* 2015;107(6):djv048.

Figure 5: Female Breast Cancer Incidence and Mortality Rates Louisiana Trends, 2000-2012

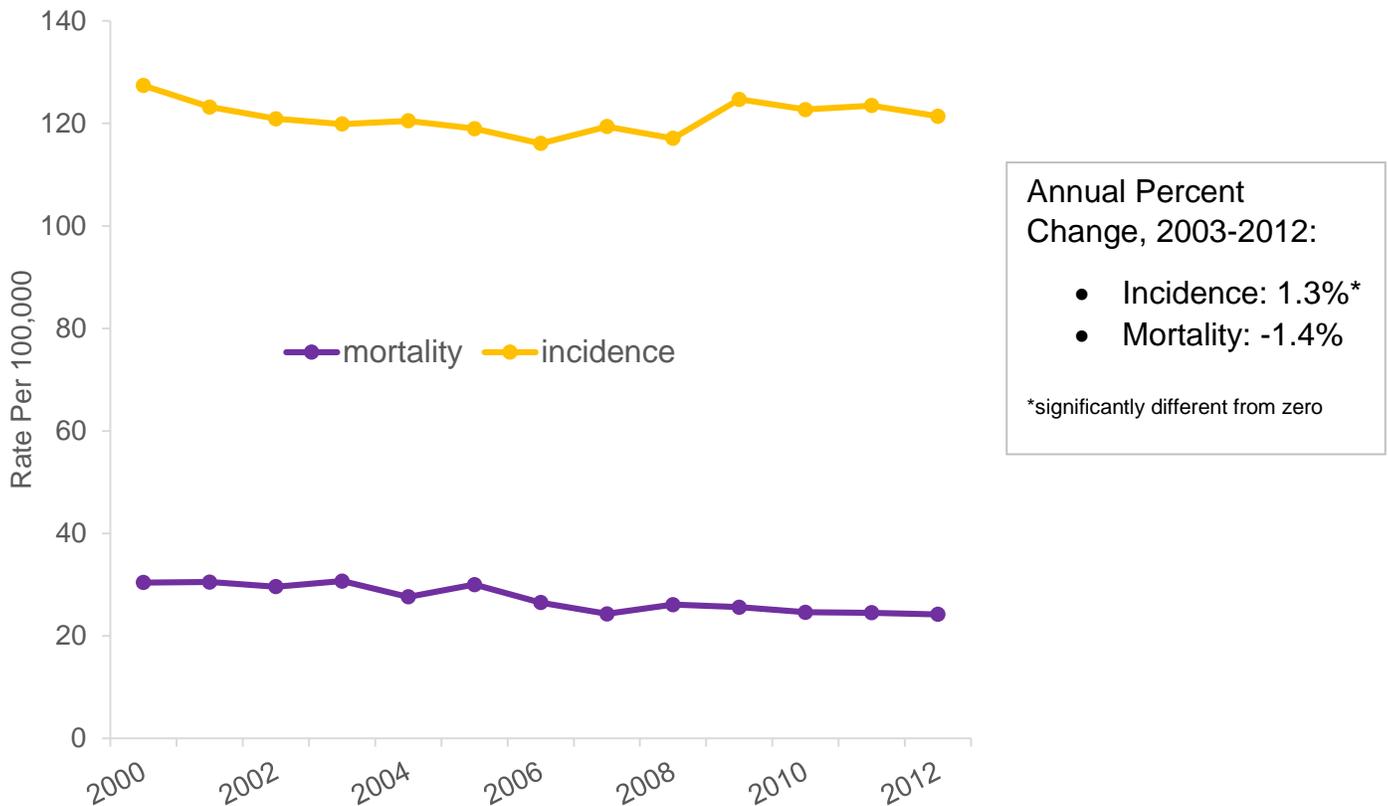


Figure 5 displays two different statistics:

- The graphs on the left show age-adjusted rate trends of newly diagnosed cases (incidence) and cancer deaths (mortality) per 100,000 Louisiana females, from 2000 to 2012.
 - The steady decline in mortality rate is attributed to both early detection and more effective treatment.
- The graphs on the right display Annual Percent Change (APC) of age-adjusted incidence and mortality trends for Louisiana, 2003-2012.
 - Incidence has risen by 1.3% per year on average since 2003, and this figure is statistically significant from zero.
 - Mortality has fallen by 1.4% per year, on average, since 2003. This is a statistically significant figure.

Figure 6: 5-Year Relative Survival by Stage Female Breast Cancer Louisiana, 2008-2012

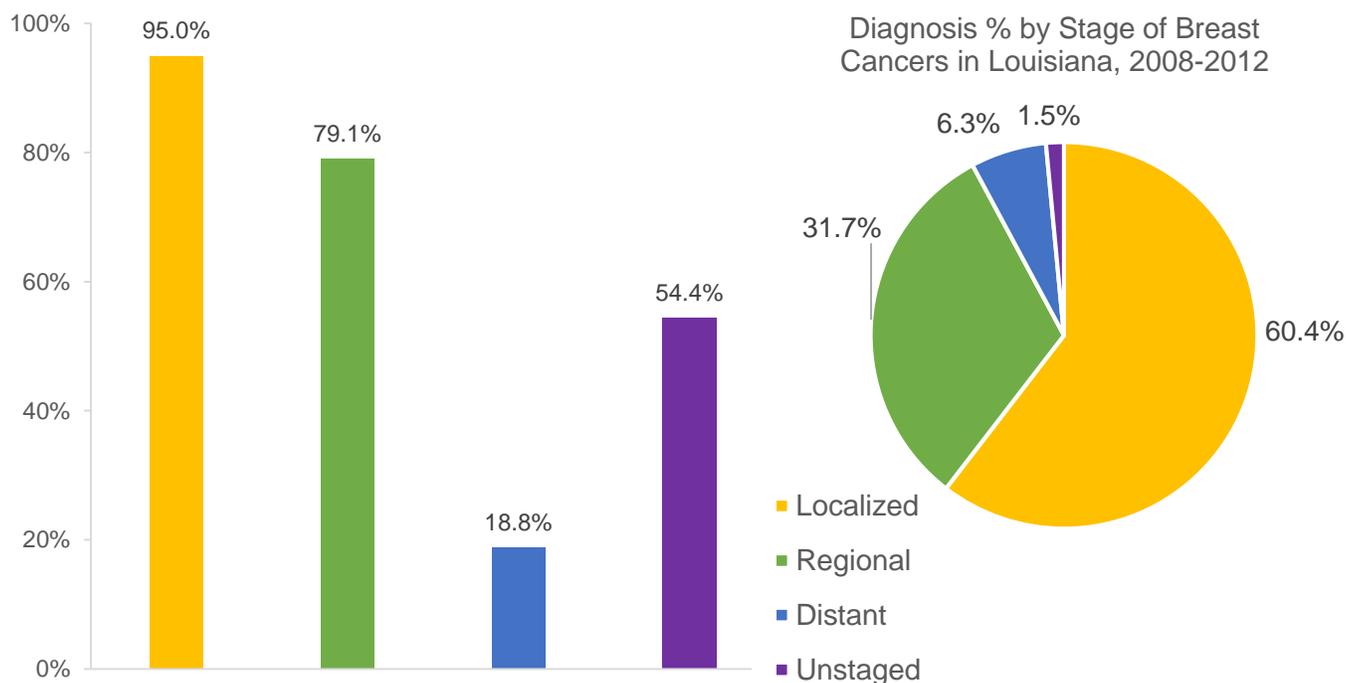


Figure 6 displays, on the left, the 5-year relative survival by stage of invasive breast cancer at diagnosis for Louisiana females, and, on the right, the percentages for cases diagnosed by stage of breast cancers in Louisiana females, and the breakout text box shows 5-year relative survival percentages, all cases combined, by race.⁴²

5-year relative survival

- All races: 82.8%
- Whites: 86.1%
- Blacks: 80.1%

- Relative survival is survival in absence of all other causes of death, and shows the percentage of women with breast cancer who did not die from breast cancer within five years of diagnosis.
- “Unstaged” indicates that data on cancer stage at diagnosis was missing or never obtained.
- 60.4% of breast cancers diagnosed in this rate period are *localized* at time of diagnosis. This stage has the second greatest 5-year relative survival rate, at about 95%.
- 31.7% of breast cancers were *regional* stage at time of diagnosis, which is the second most commonly diagnosed, and has a 5-year relative survival rate of about 79%.
- *Distant* diagnoses reduce the prognosis of survival greatly, with a 5-year relative survival rate of about 19%. At time of diagnosis, 6.3% of breast cancers in this period were distant.

⁴² Here, breast cancer includes first primary only (sequence number 0 or 1). The stage distribution is based on Summary Stage 2000.

Figure 7: Late Stage Diagnoses by Place of Diagnosis, Female Breast Cancer, 2008-2012

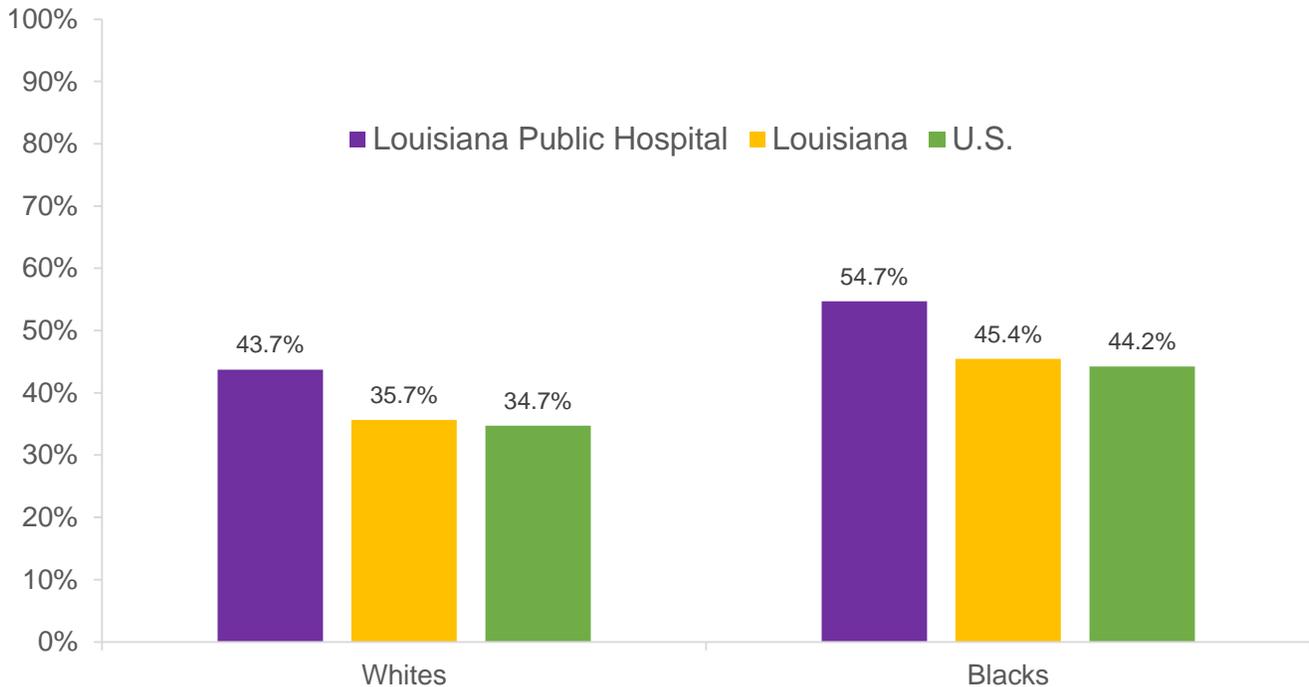


Figure 7 displays the percentage of cases diagnosed at late stage (regional, distant) in Louisiana public hospitals, Louisiana as a whole, and the U.S. for white and black females.

- Breast cancer cases from public hospitals are more likely to be late stage at the time of diagnosis.
- Like most cancers, stage at diagnosis is critical for breast cancer patients. Those who are diagnosed sooner have fewer complications and a higher rate of survival than those diagnosed later. One key factor in breast cancer stage at diagnosis is health care access, which is influenced by many financial, sociocultural, and geographic barriers.⁴³

⁴³ Wang, Fahui et al. "Late-Stage Breast Cancer Diagnosis and Health Care Access in Illinois." *The Professional geographer: the journal of the Association of American Geographers* 60.1 (2008): 54–69. PMC. Web. 27 Apr. 2015.

**Here, late stage includes Regional & Distant stages. Female breast cancer include in situ, localized, regional and distant cases.

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