1/4/16 Cancer Unit: Faces of Cancer CH 8.3

Obj. TSW learn what cancer is, types of cancer and what influences the disease. P. 80 NB

1. What is Cancer?
2. Name 3 examples of Cancer.
3. What are some risk factors for Cancer?

Mutation Homework P. 81 NB

Cancer Statistics Introduction Activity p. 81 NB

1. We will be learning about a disease of cells and genes. Count off students 1-8.

2. Explain that the American public is often presented with statistics of the population; a good way to get a sense of the statistics is in terms of a ratio within a real group of people. To illustrate this, do the following:

a. #2, 3, 4, 5, 6, 7 stand up: % of US pop. that will have children

b. #3, 6, 8 stay standing: % of US pop. that will be involved in alcohol-related auto accident

c. #1, 4, 5 stand up: % of US pop. that will get cancer

d. #5 stay standing: these represent those who will die from cancer

•3. Invite students who are still standing to sit, then ask the class whether there is any way to know who will develop cancer and when.

•Write your impressions and statistic on page 81 of your NB.

Cancer Myths & Facts Activity P. 83 NB

- In groups of 2 – 4 students, using White Boards & Expo Markers students will make a Huge “T” . At the Top on the left title it “Myths” on the Top on the Right Title it “Facts” about Cancer.

- Students will place the 8 sentences individually under the Myths or Facts section of their “T” .

- Students will share out one of their sentences and their logic.

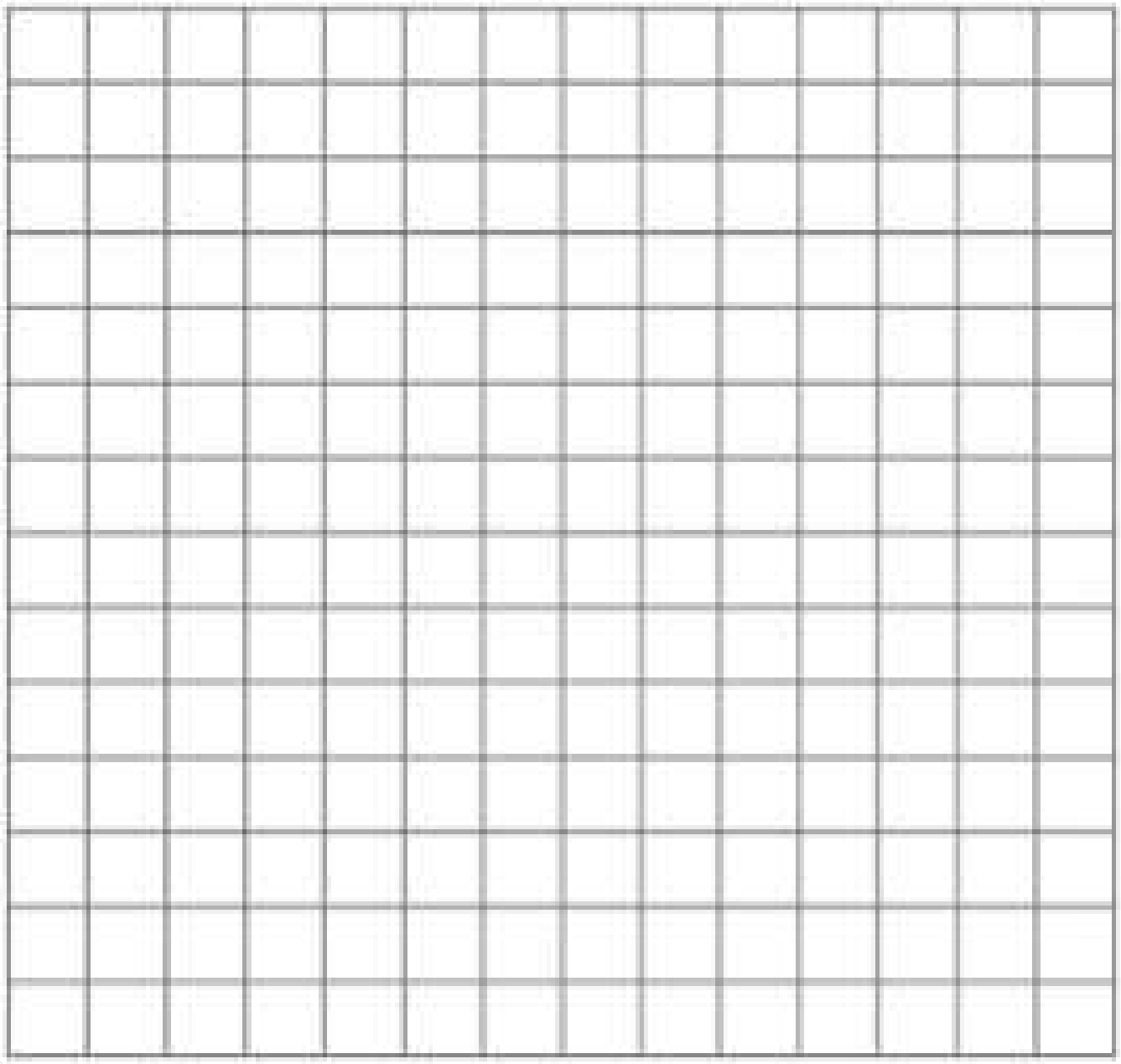
Jessica's Story Reflections on CancerP. 85 NB

- Ask them to write a brief response to the video on the back of their unit cover sheet. If it is not possible to show the video, start the day by telling students that today they will learn more about who develops cancer, when, and why, by assuming the identities of fictitious people who develop cancer and building a profile of some of the key events in these people's lives

- Haley's Story

Faces of Cancer Activity Directions (NIH Website)

- Students will be in teams based on the number they received yesterday.
- 4 students/ lab station; 1 envelope/ student.
- Students read the outside of the envelope out loud to the group and count how many had a family history to write on the Summary Profile. Section 1.
- Students will open the envelope and read to themselves the life history and individually fill out Sections 2 & 3 on the Summary Profile.
- After each group member is done, they will share their data and total the data.
- Next, students need to discuss and write the possible Risk Factors, Section 4.



Faces of Cancer

- Family History
- 16 Yes
- 14 No

Faces of Cancer

Period of Life

- 0 – 192
- 20 – 391
- 40 – 5911
- 60 - +17

Types of Cancer

- 4 Colon Cancer
- 4 Lung
- 3 Prostate
- 2 Ovarian
- 1 Throat
- 2 Skin
- Leukemia
- Other
- 6 Breast

Risk Factors for Cancer

- Hereditary
- Environmental
  - Excessive Drinking
  - Working in Mines
  - Smoking
  - Sunlight
- Poor Immune System
- Poor diet
- Defect in genes

Faces of Cancer Activity Directions

- As a class, the teacher will call one student who has all the data for their group to the board for a classroom total.
- Answer the 6 questions about “Drawing Conclusions from Faces of Cancer” Activity P. 85 NB
- Summary Profile of the Faces of Cancer P. 87 NB Answer Discussion Questions on the WS.
- Copy the final Class Data on the Summary Profile.
- Make sure all profiles are correctly placed back into the envelopes and returned to the teacher.

1/5/16 Mutations: Sources of Cancer CH 8.3

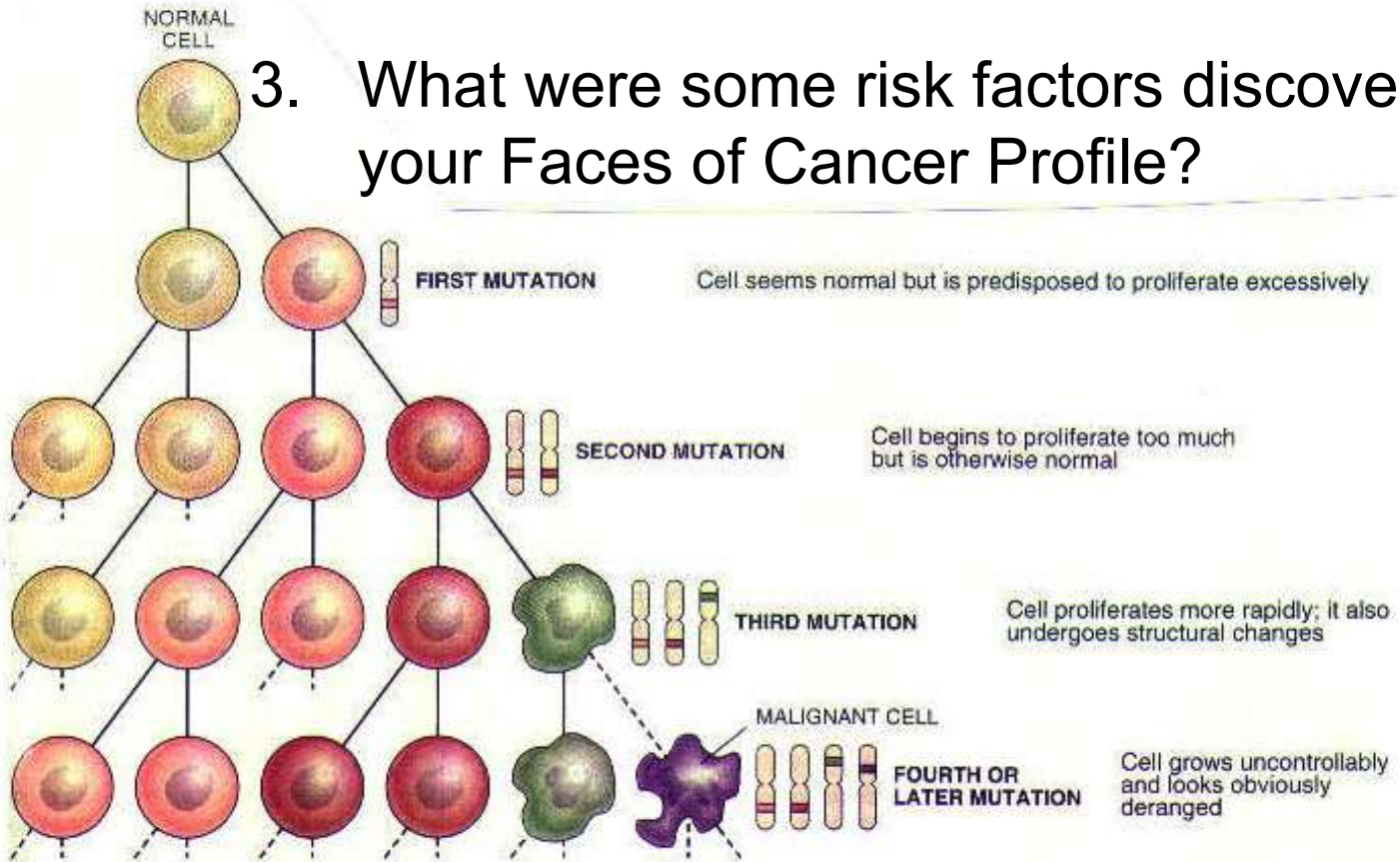
Obj. TSW learn about mutations and their role in cancer.

P. 82 NB

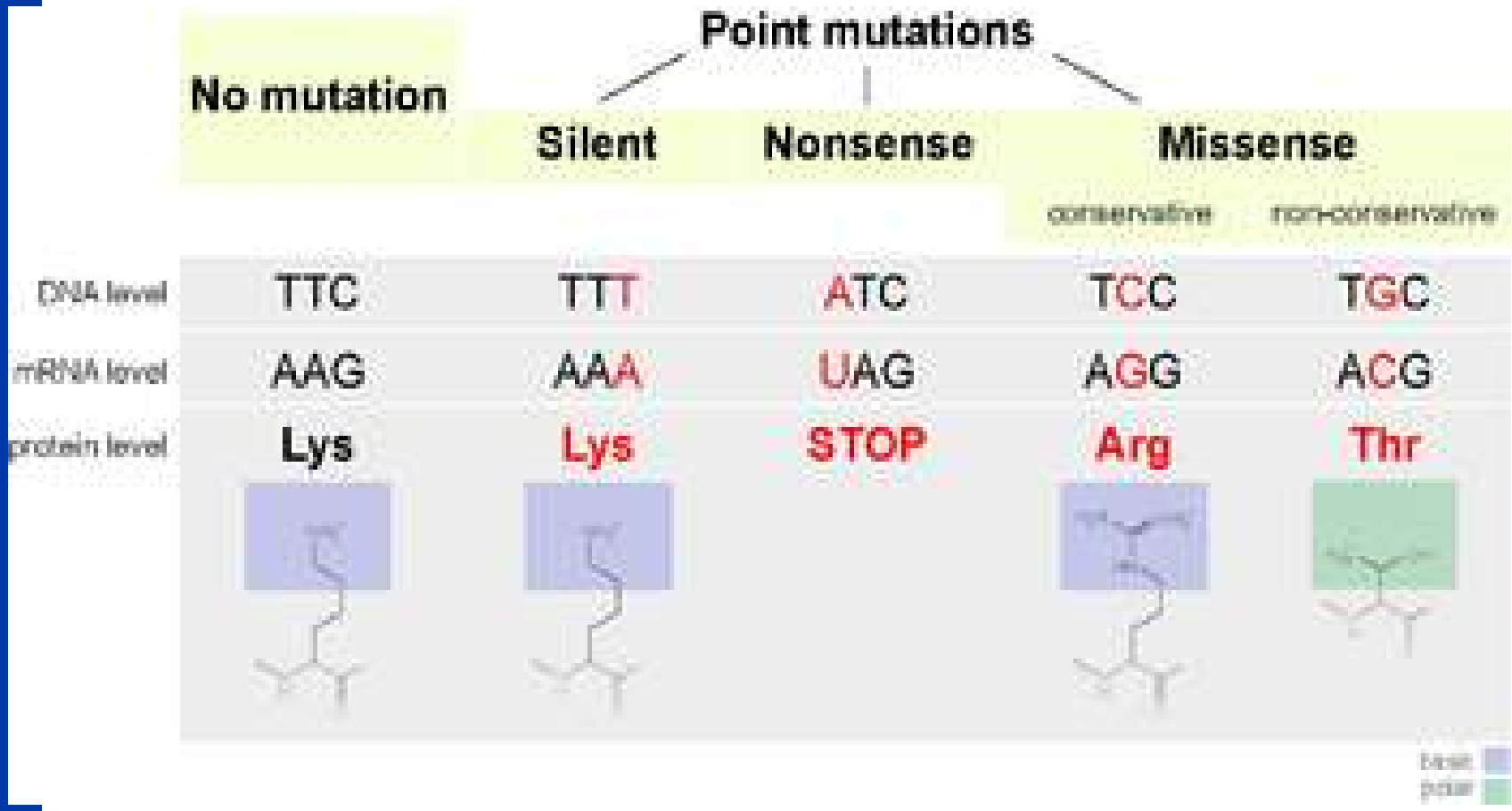
1. What is a mutation?

2. What are two types of mutations in the DNA?

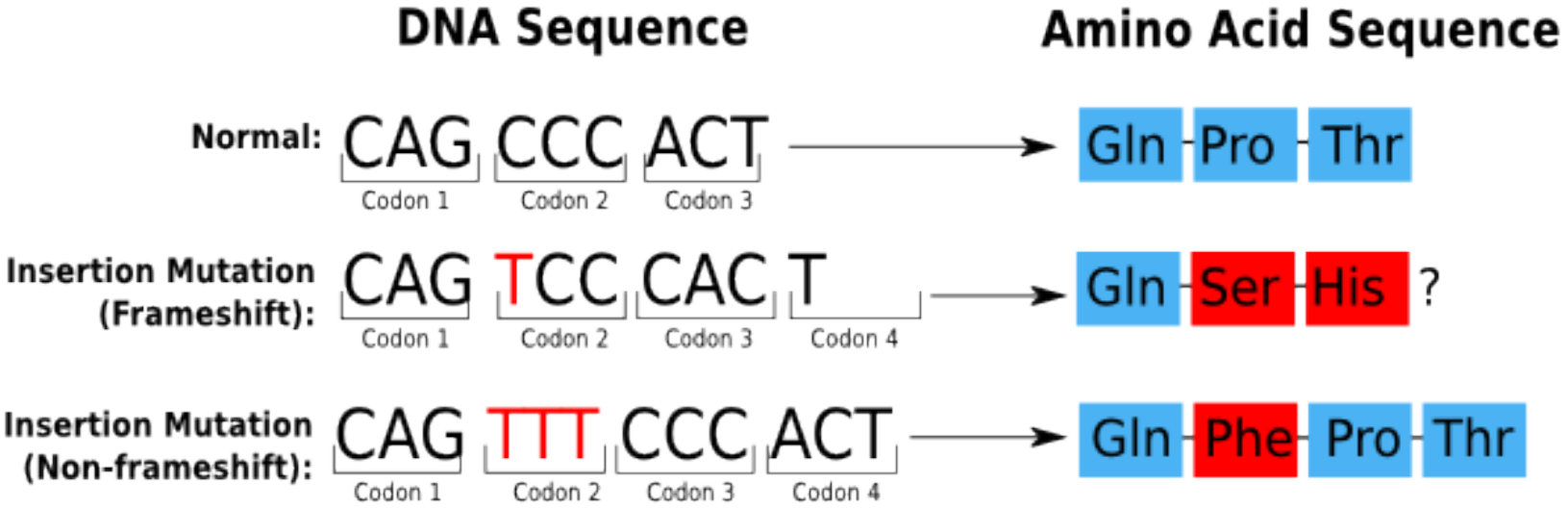
3. What were some risk factors discovered yesterday in your Faces of Cancer Profile?



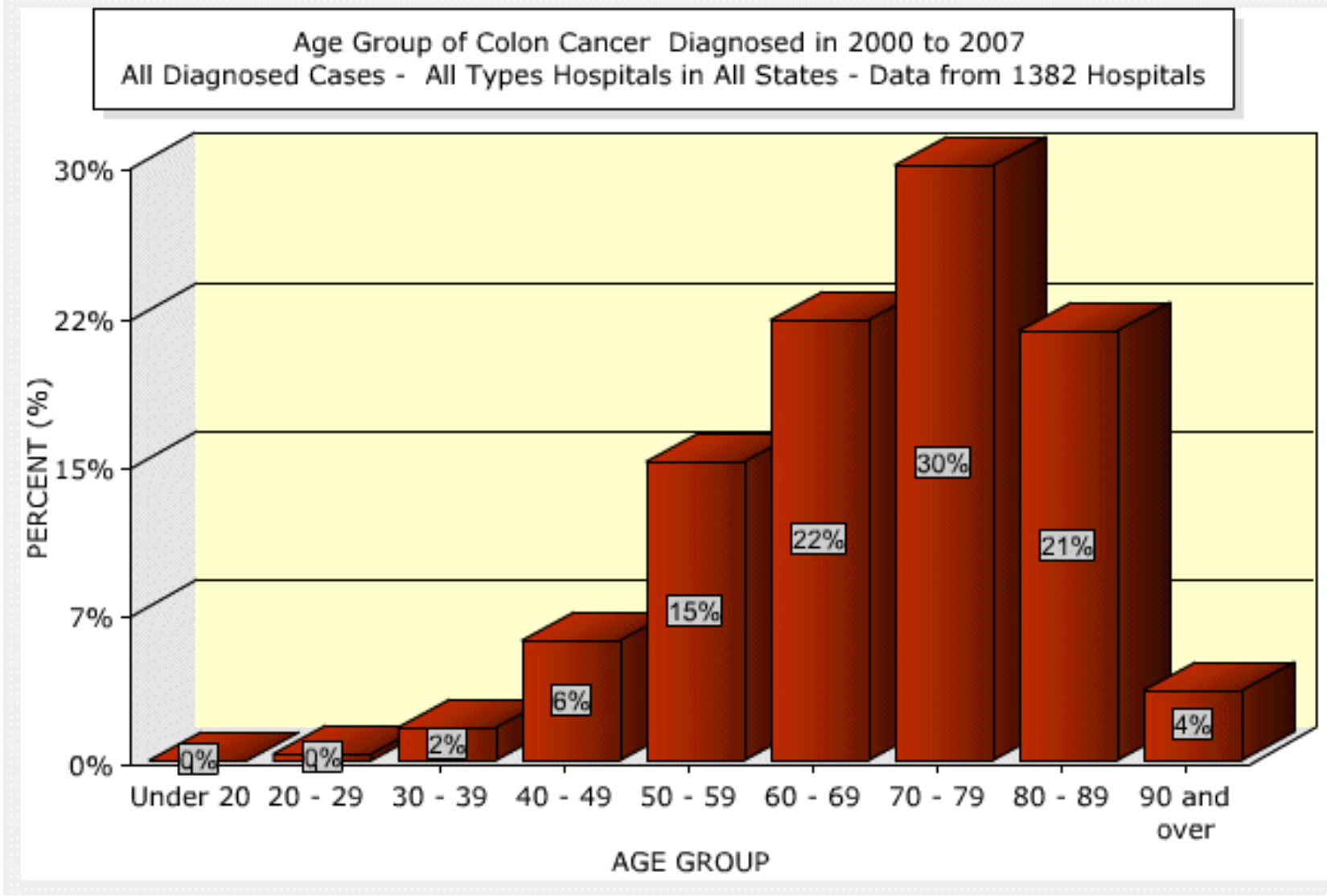
Point Mutation



Frameshift Mutation



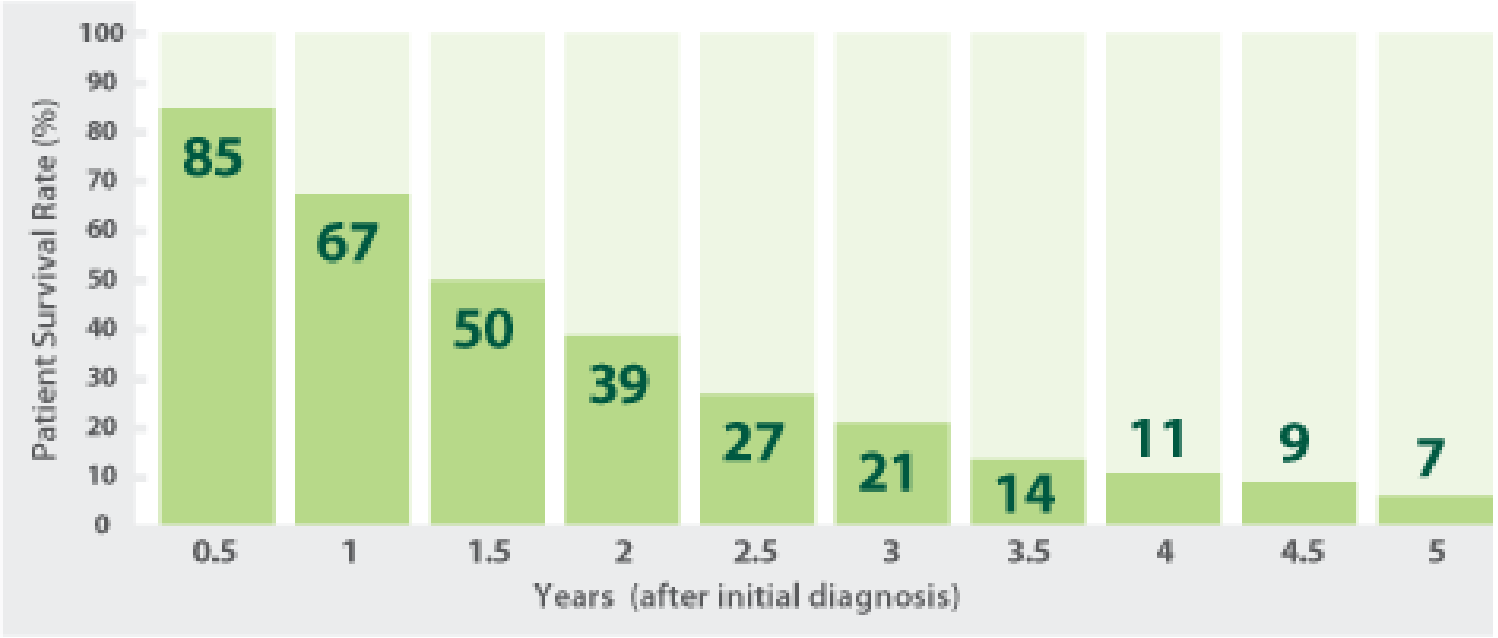
Colon Cancer Graph



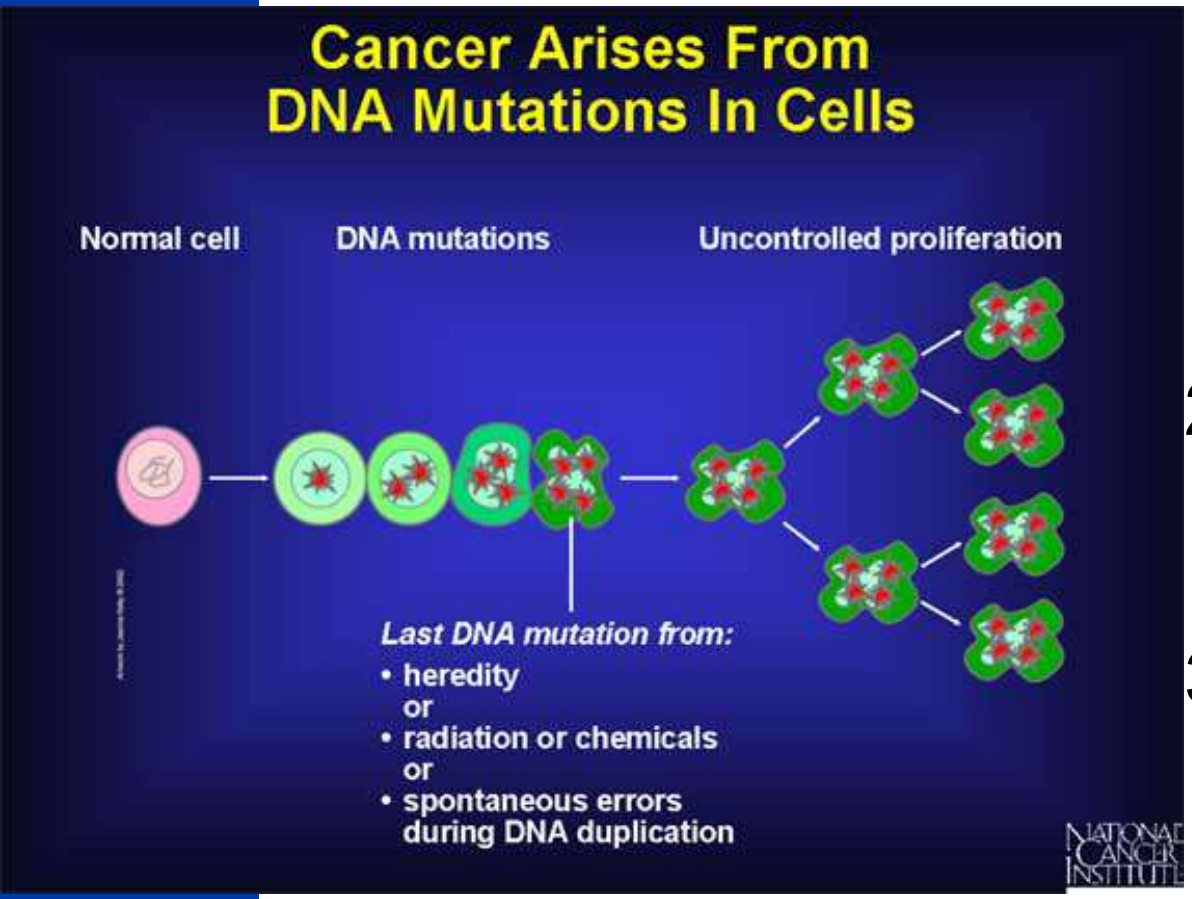
Colon Cancer Survival Rate

Patients Diagnosed with Distant (Metastatic) Cancer Between 2000-2011

Cancer Treatment Centers of America



1/6/16 Cancer Facts & Myths CH 8.3
Obj. TSW distinguish between a fact in a Myth concerning cancer. P. 84NB



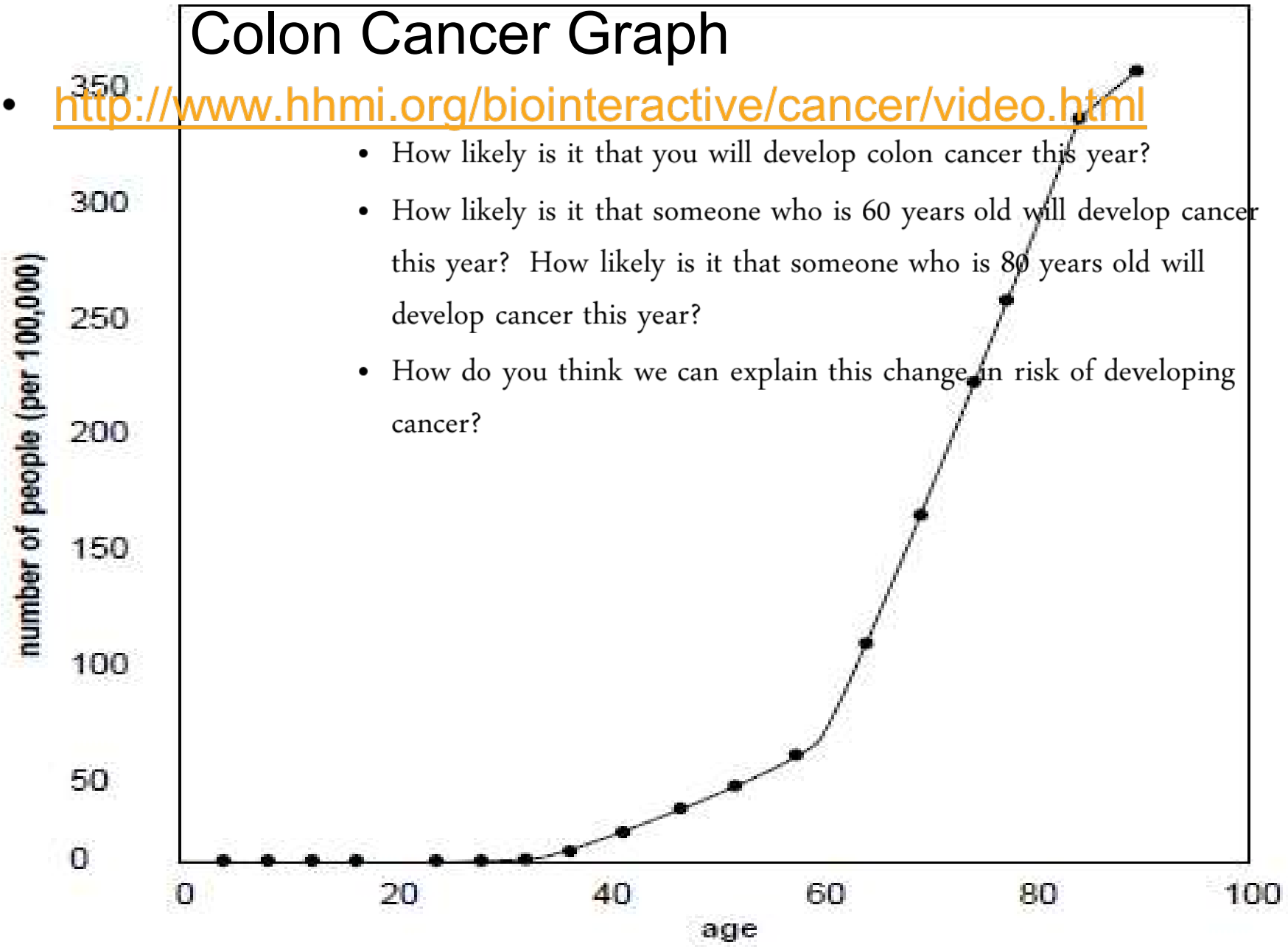
1. Write one Cancer Fact or Statistic.
2. Write one Cancer Myth.
3. What would you like people to know about Cancer?

Colon Cancer Article

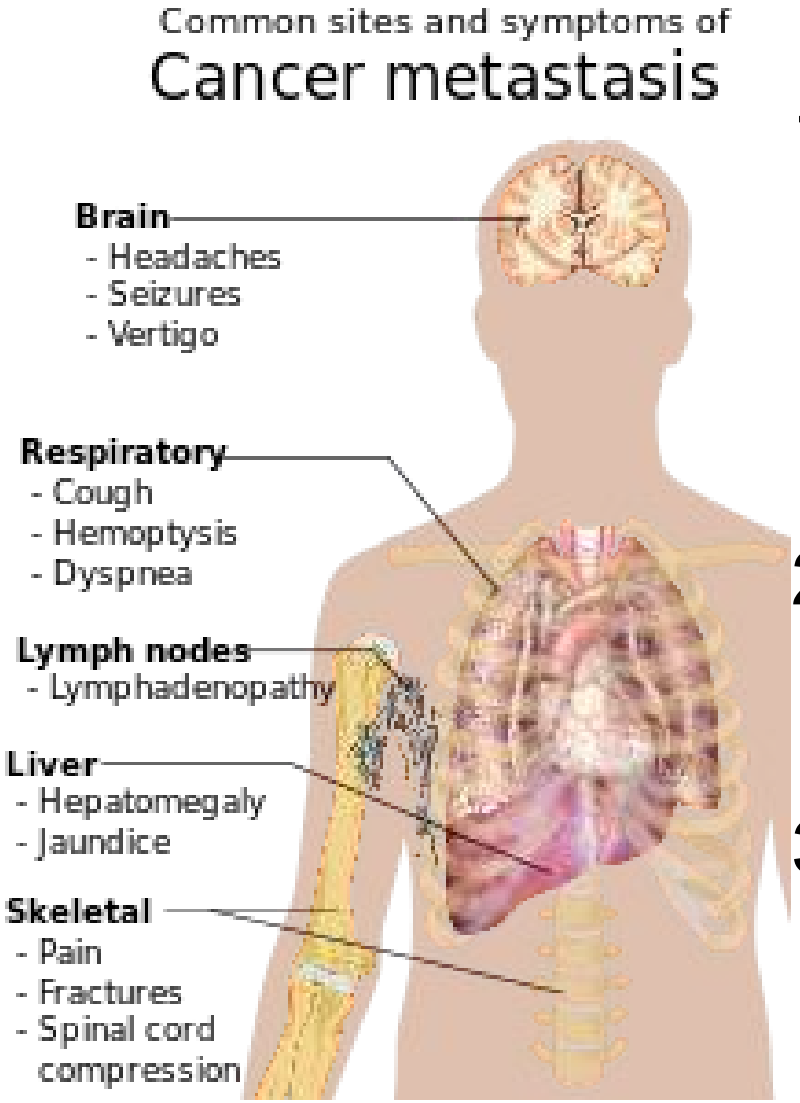
- The teacher will number you 1 – 9
- Write 3 questions about Colon Cancer.
- At your labs or desks read your section of the Article and take notes on page 89 NB.
- Be prepared to share 3 – 4 bits of information about your section of the article.
- Each students will record the information in their notebook page 89.

Colon Cancer Graph

- http://www.hhmi.org/biointeractive/cancer/video.html
  - How likely is it that you will develop colon cancer this year?
  - How likely is it that someone who is 60 years old will develop cancer this year? How likely is it that someone who is 80 years old will develop cancer this year?
  - How do you think we can explain this change in risk of developing cancer?



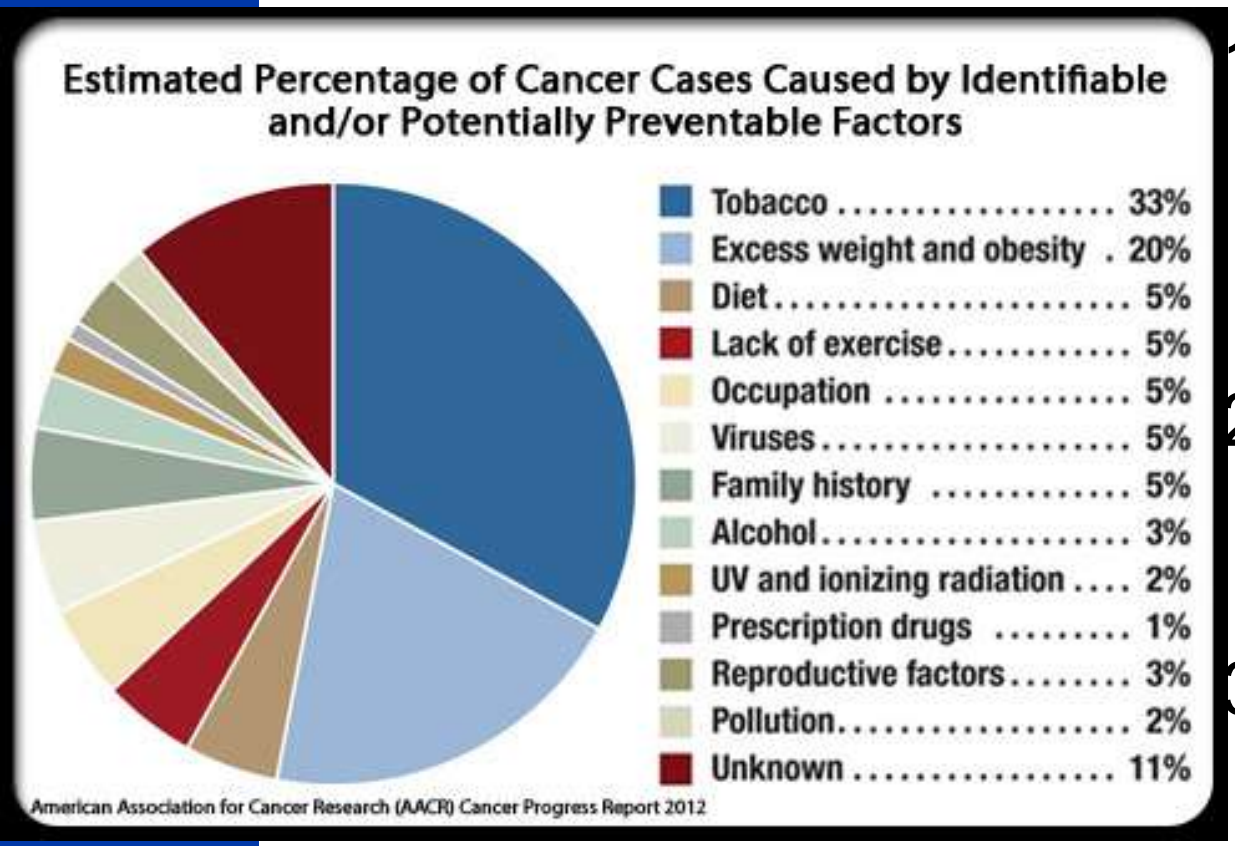
1/8/16 Drawing Conclusions about Cancer CH 8.3
Obj. TSW learn about the factors that influence the incidence of cancer. P. 86 NB



1. Name the 4 conclusions that can be drawn about cancer.
2. How many stages of Cancer are there?
3. What is the best and worst stages of Cancer?

1/8/16 Abnormal Genes CH 8.3

Obj. TSW learn the difference between Tumor Suppressors and Oncogenes and their relation to cancer.p.88NB



1. What is a Tumor suppressor gene?
2. What is an Oncogene?
3. What is Metastasis?

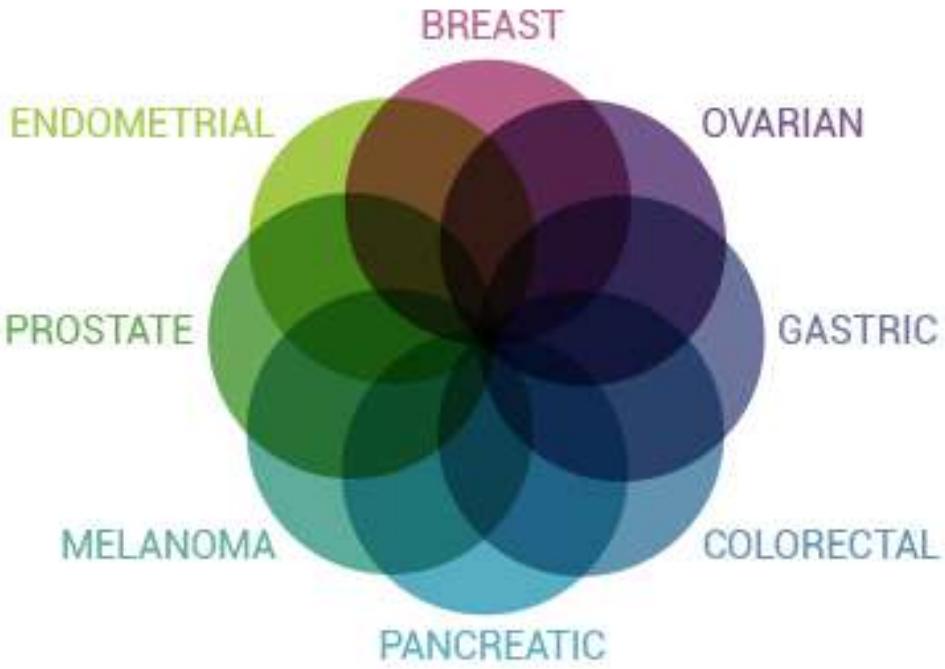
1/12/16 Cancer Treatment CH 8.3

Obj. TSW learn about different types of cancer treatment. P. 90NB

1. What does the word benign mean?
2. What is a tumor?
3. Once Cancer has Metastasized, why is it harder to treat?

11/13/16 Hereditary Cancers CH 8.3

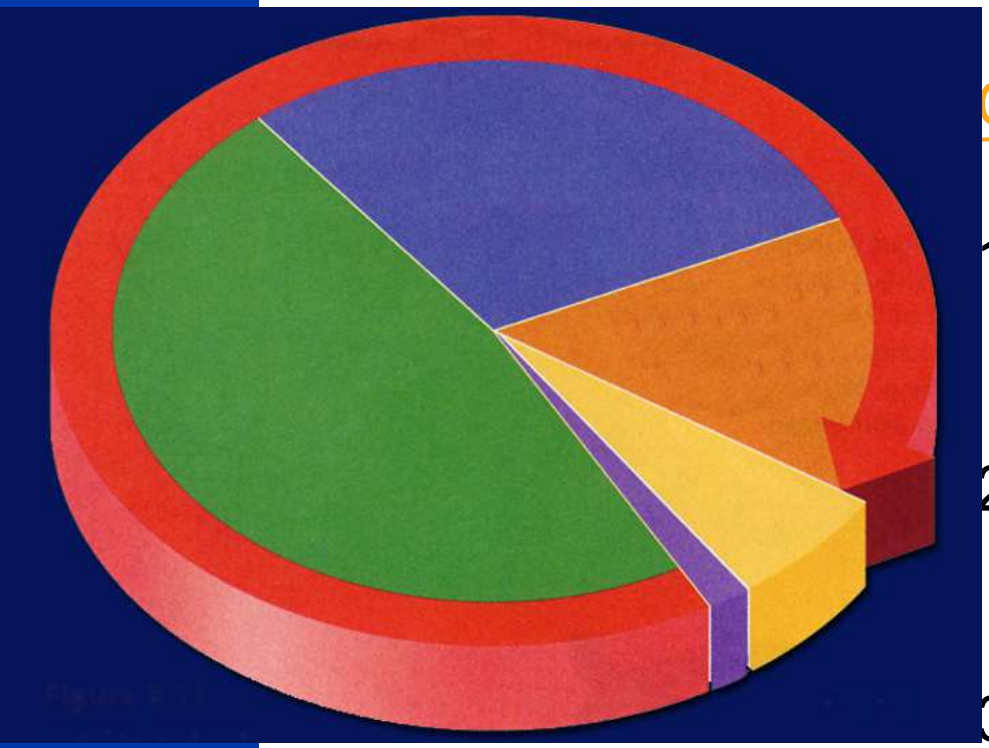
Obj. TSW learn about cancers that are hereditary. P. 92 NB



1. What is a carcinogen?
2. What are some carcinogens?
3. Name some Hereditary Cancers.

06/01 Cancer & the Cell Cycle 8.2

Obj. TSW explain the cell cycle and why it is important in the fight against cancer in their warm up, worksheet. 178 NB



http://www.stjude.org/interactive

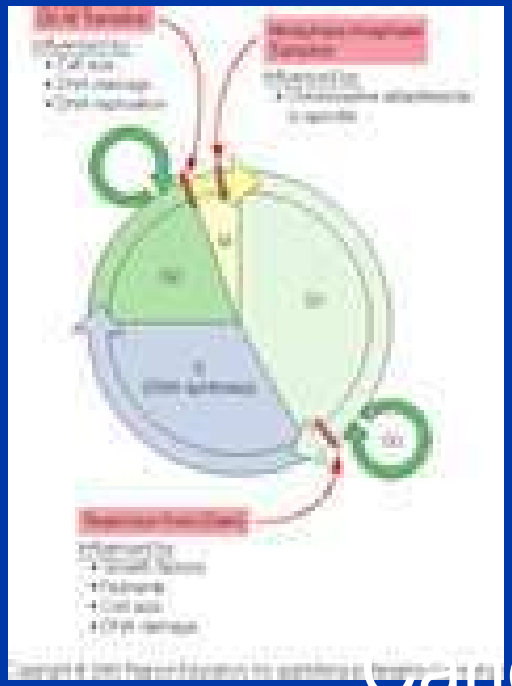
Glencoe.com

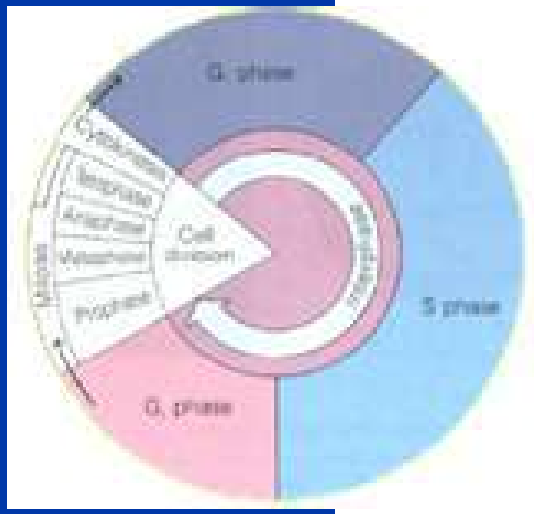
1. Draw & label the cell cycle.
2. What happens during Interphase?
3. Describe and draw the four stages of Mitosis.

Cancer and the Cell Cycle

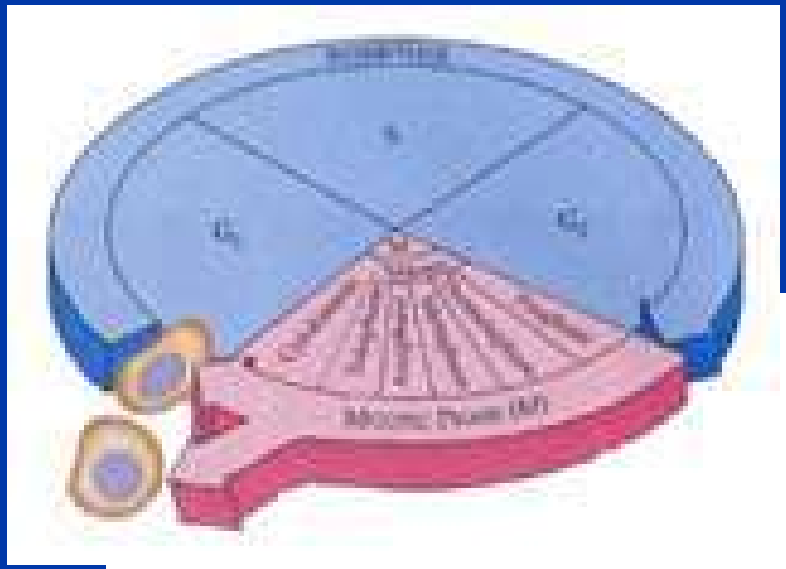
1. The weeds in this garden are spreading rapidly. What effect might this have on the flowers in the garden?

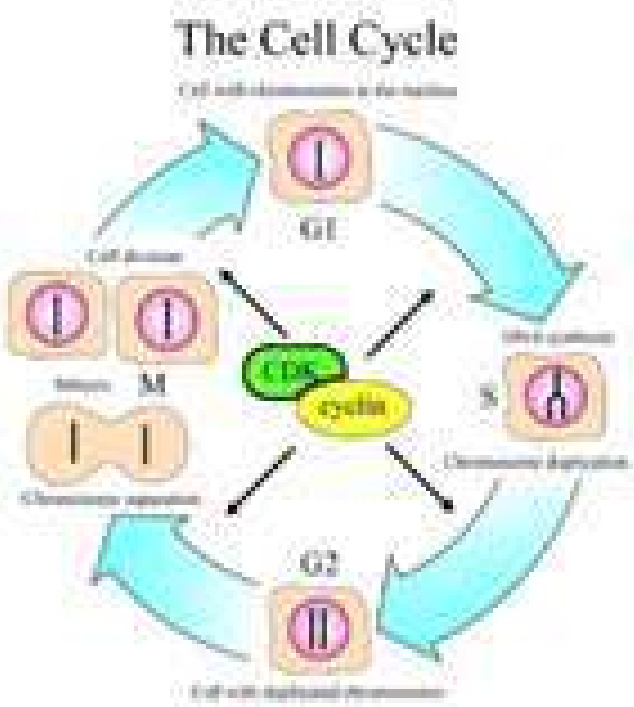
2. Suppose a change in a cell's genes causes the cell to reproduce very rapidly. How might this increased rate of reproduction affect surrounding cells?





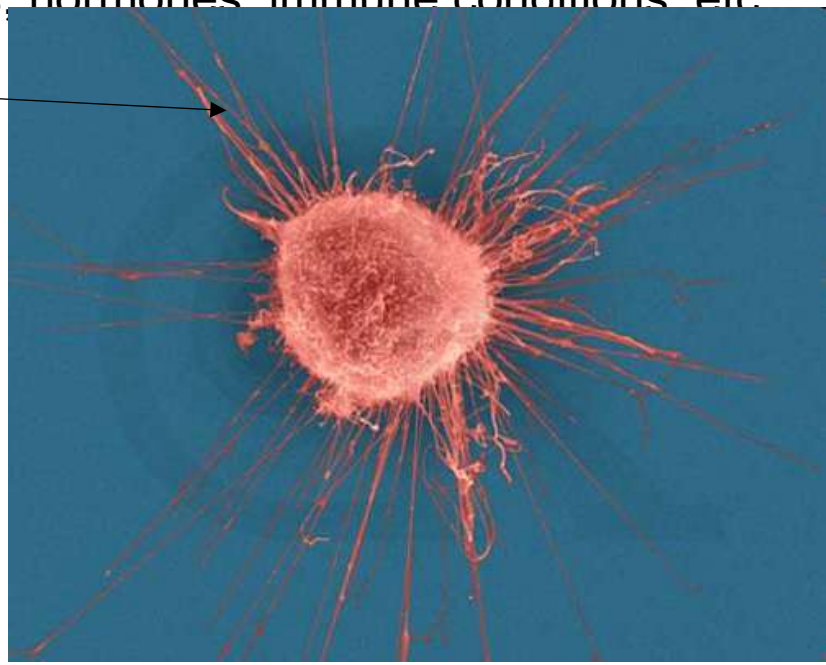
Cancer and the Cell C

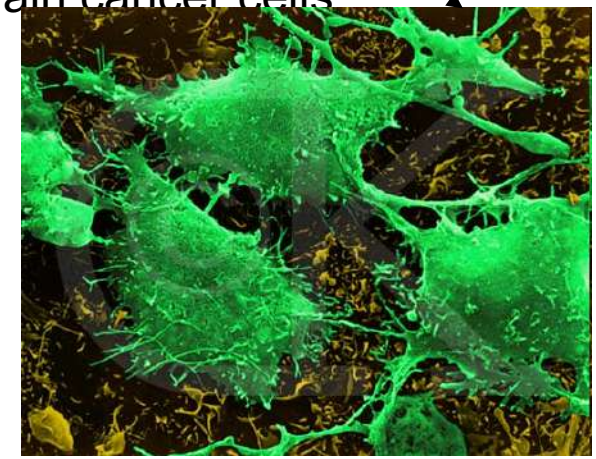




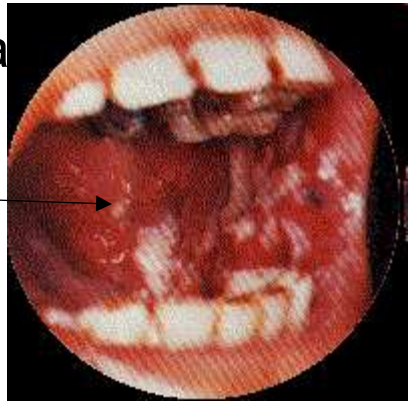
What is Cancer?

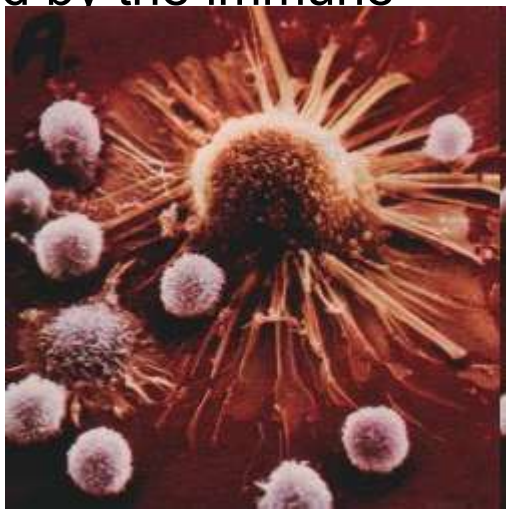
- *Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells
- Cancer is caused by both external and internal factors: What are some examples?
- *External factors: tobacco, infectious organisms, alcohol, drugs, etc
- *Internal factors: inherited mutations, hormones, immune conditions, etc
- Breast cancer cell
- Brain cancer cells





- *Ten or more years often passes between exposure to external factors and finding the resulting cancer
- *Cancer can be treated using: surgery, radia chemotherapy, etc.
- Oral cancer
- Cancer being attacked by the immune system
- Prostate cancer





CANCER and CELL BIOLOGY
Portfolio

Semester 2

June 1 – June 4, 2010

Name _____

Instructor _McAllister_____

Directions: Show how Cancer has affected you.
What did you learn from this cancer unit?
How can you show Cancer in an insightful/ inspirational way?

Statistics

#s: 2,3,4,5,6,7 stand up

This is the percent of the US population that will have children.

Statistics

- #3,6,8
- % of US pop. That will be involved in an alcohol –related auto accident

Statistics

#’s: 1,4,5 stand up

This is the percent of the US population that will get cancer

Statistics

- #5
- These people represent those who will die from cancer.

Fact or Fiction

•Draw a T Square on your Paper. Write each of these sentences under the fact or fiction after discussing which one you think it is with your partner and why.

1.Cancer is a contagious disease. It can be spread by exchanging blood or other body fluids.

2. Cancer is only a disease that old people get.

3. If you get cancer you will die from cancer.

4. There are only a few types of cancer.

5. If your parent has cancer that means they have passed on genes to you that will cause you to have cancer later in your life.

6. All cancers can be prevented.

7. Having cancer means you will feel sick and lose your hair.

8. People with naturally dark skin do not have to worry about getting skin cancer.

Reflections on Cancer

On this page you will be asked to respond to information about cancer throughout the unit. You will not be required to share your answers and there is no right or wrong answer.

Jessica's & Joel's Story: Was it a surprise to you to see such a young person afflicted with cancer?
Do you know anyone who has had cancer?
What was their experience like? What can we learn about life from listening to cancer survivors?

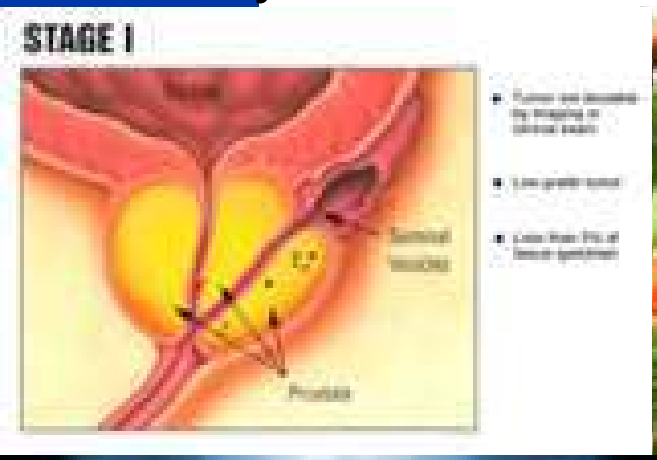
Colon Cancer Graph: How likely is it that you will develop colon cancer this year? How likely is it that someone who is 60 years old will develop cancer this year? How likely is it that someone who is 80 years old will develop cancer this year?
How do you think we can explain this change in risk of developing cancer?

Cancer Timeline: Cancer is a disease that develops over time, sometimes over months or even decades. If you knew you could prevent some cancers from happening to you or your loved ones, what measures would you be willing to take to do so?

Preventable or Non-Preventable: Some cancers, like lung cancer, are highly preventable. Others, however, are essentially non-preventable. Who is responsible for making sure that you and your loved have as much information as possible about preventable and non-preventable cancers?
What could you do to learn more about your risks?

06/02 Cancer: A Mistake in the Cell Cycle 8.3

Obj. TSW explain some possible risk factors that lead to cancer in an activity called The Faces of Cancer. P.180 NB

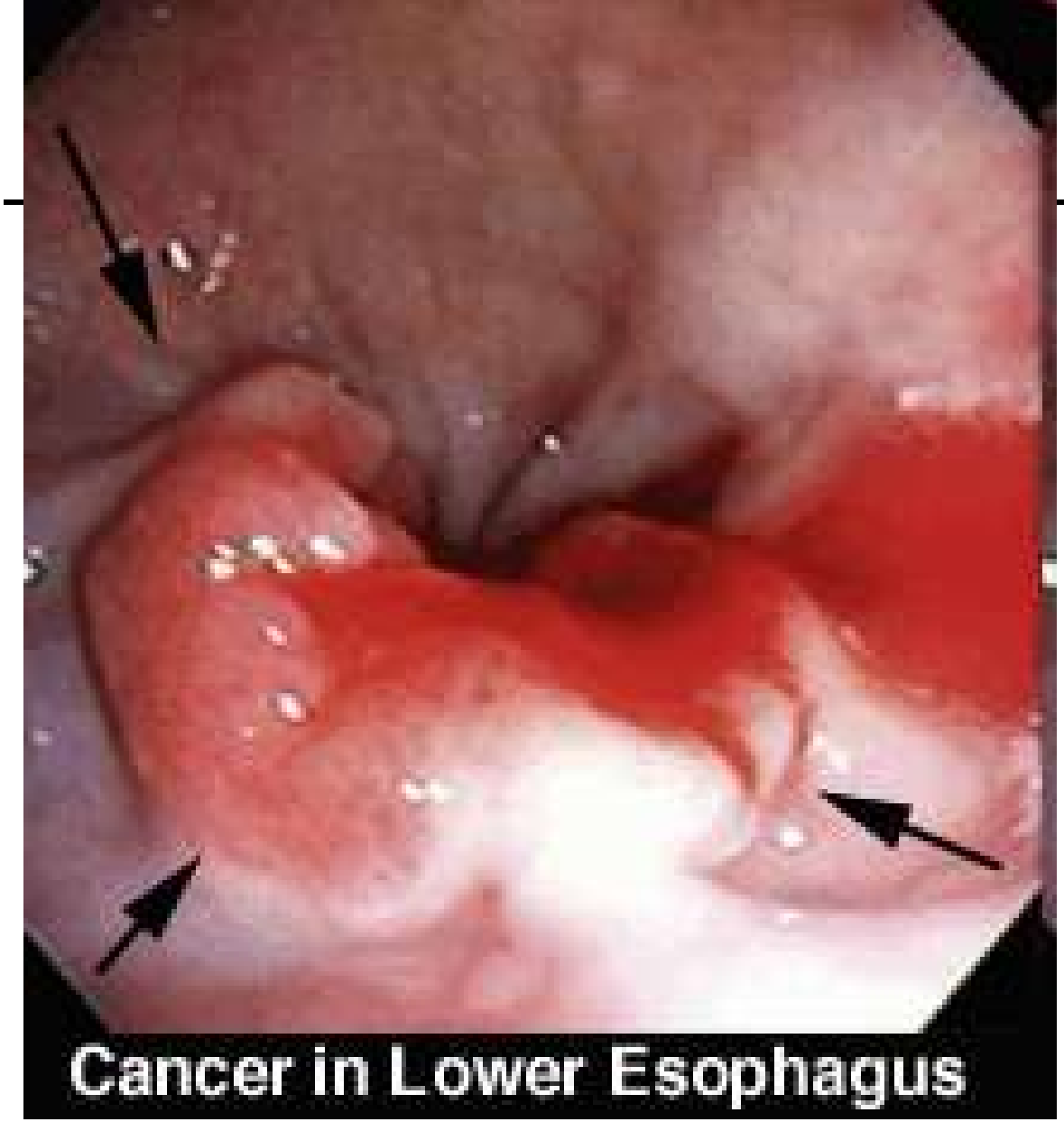


http://science-education.nih.gov/supplements/nih1/cancer/activities/activities_toc.htm

1. What is the difference between a tumor and the process of cancer called Metastasis?

2. What are the 1st and 2nd leading causes of death in the US?

3. Identify the types of cancers that mostly affect people.


Cancer in Lower Esophagus

Cancer in the Duodenum

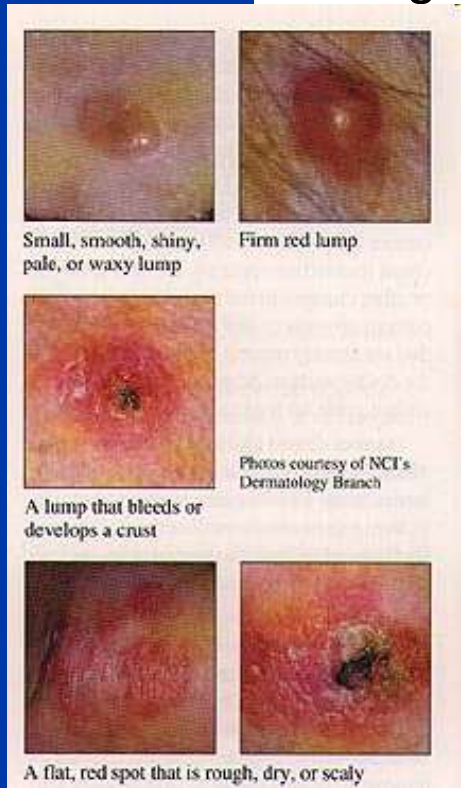
32 year old Chronic smoker: Tongue Cancer

Can cancer be prevented?

- ALL cancer caused by tobacco and alcohol use can be completely prevented.
- In 2009, 563,340 cancer deaths are expected to occur
- 169,000 deaths are expected to be caused by tobacco use.
- 187,446 deaths will be
  and poor nutrition.
- Together= 356,446 dea
  prevented or mostly prever

Can cancer be prevented?

- Of the 1,000,000 skin cancers that are expected to be diagnosed this year could have been avoided by protecting against the sun's rays and indoor tanning.
- Regular screenings and examinations from your doctor can help you healthy and catch cancer in its early stages



Who is at risk?

- *anyone can get cancer
- 77% of all cancer is diagnosed in persons 55 years or older.
- Men: have a 1:2 risk of developing cancer
- Women: have a 1:3 risk of developing cancer
- 5% of a ongly hereditary

How many new cases of cancer in 2009?

AN ESTIMATED

1,479,350

NEW CANCER CASES THIS YEAR!

How many people will die this year from cancer?

An estimated

563,340

will die this year from cancer

- Directions:

1. Take a look at the statistics sheets handed out.

2. On the back of the statistics sheet, write down five statistics that were the most surprising and explain why.

3. Conclusion: Write 5-7sentences about the importance of these statistics. What stood out the most? What was the most surprising to you? Explain

Summary Profile of the Faces of Cancer Period 1

Type of Information	Accumulated Class Data
Family history (write in the number of "yes" and "no" answers for all teams	YES ___10__ NO 18
Number of people diagnosed with cancer (Write in the total for all teams)	**Period of Life** 0 – 19 years: 2 20 – 39 years: 2 40 – 59 years: 8 60+ years: 18
Type of cancer (write in the number of each)	Bladder 3 Leukemia 1 Prostate 4 Brain 0 Lung 10 Retinoblastoma 1 Breast 4 Oral Cavity 0 Skin 1 Cervical 1 Ovarian 1 Uterine 0 Colon 5 Pancreatic 2 Other
Possible Risk Factors (list any possibly relevant factors)	Smoking, not seeing the Doctor, Unhealthy habits of eating, irregular check ups, 2nd hand smoke, Chewing tobacco, drinking, genetics, exposure to UV rays, unhealthy working conditions – coal miner, environmental factors- Dust, Pesticides, possible birth control, STRESS, Exercise decreases the risk

Drawing Conclusions from the Faces of Cancer

- Conclusion One: Family History –

- Just because a family member has cancer does not mean that you will have cancer. However, there are some cancers that are genetic such as: Breast Cancer, Colon Cancer, Ovarian Cancer. Other cancers like skin and lung cancer are caused by the environment.

- Conclusion Two: Relationships Between Cancer & Age –

- The older you are the more likely you are to have cancer. Young people can get cancer too. You are less likely to have cancer when you are younger.

- Conclusion Three: Types of Cancers-

- #1 Cancer Lung Cancer, Breast Cancer #2, Colon Cancer #3, Prostate Cancer #4.

- Conclusion Four: Possible Risk Factors –

- The risk factors are: STRESS, Smoking, Drinking, Not seeing the doctor, Genetics, Lifestyle. Jobs are also a risk factor. Asbestos and sun(UV/ nuclear) is another risk factor.

Discussion Questions

1. In this activity, all students in the class assumed the role of someone who developed cancer sometime in his or her lifetime. Is this an accurate representation of the risk of cancer among the American population? Explain your Answer.

A large population of people in US is accurate.

What explanation can you offer for the observation you made about the incidence of cancer compared with age?

2. The older the person is the more likely they are to have cancer, because their immune system is lower and the DNA Proof checker is not as accurate.

3. What is the most interesting or surprising thing you learned from this activity? Lung cancer is most common. What is the most important? Get check ups, see the doctor regularly. Why? To prevent being a cancer statistic.

Summary Profile of the Faces of Cancer Period 3

Type of Information	Accumulated Class Data
Family history (write in the number of "yes" and "no" answers for all teams	YES 10 NO 24
Number of people diagnosed with cancer (Write in the total for all teams)	**Period of Life** 0 – 19 years: 2 20 – 39 years: 5 40 – 59 years: 11 60+ years: 12
Type of cancer (write in the number of each)	Bladder 1 Brain 0 Breast 4 Cervical 2 Colon 5 Leukemia 1 Lung 11 Oral Cavity 1 Ovarian 1 Pancreatic 2 Prostate 4 Retinoblastoma 0 Skin 5 Uterine 0 Other:
Possible Risk Factors (list any possibly relevant factors)	Not going to the doctor, Smoking, UV Rays from the Sun, Mechanic – exposure to toxic chemicals, Not taking treatment, Travel (exposure), Poverty Can not afford medical), Drugs, Alcohol, Exposure to Radioactivity, Decreased immune System = STRESS, Unhealthy food, 2nd hand smoking.

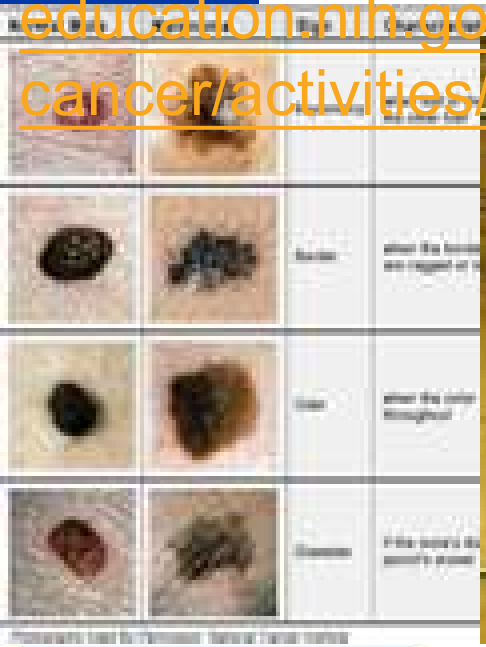
Summary Profile of the Faces of Cancer Period 4

Type of Information	Accumulated Class Data
Family history (write in the number of "yes" and "no" answers for all teams	YES 15 NO 12
Number of people diagnosed with cancer (Write in the total for all teams)	**Period of Life** 0 – 19 years: 1 20 – 39 years: 3 40 – 59 years: 9 60+ years: 11
Type of cancer (write in the number of each)	Bladder 0 Brain 0 Breast 4 Cervical 1 Colon 4 Leukemia 0 Lung 5 Oral Cavity 0 Ovarian 0 Pancreatic 2 Prostate 3 Retinoblastoma 1 Skin 3 Uterine 0 Other
Possible Risk Factors (list any possibly relevant factors)	Smoking, Not exercising, different colored eyes, Poor Diet, Alcoholism, Family History – Genetic, Drugs, Not using condoms, Environmental Factors – Coal Mine, Seen the Doctor on a regular basis, Living Condition,UV Radiation, Pesticides.

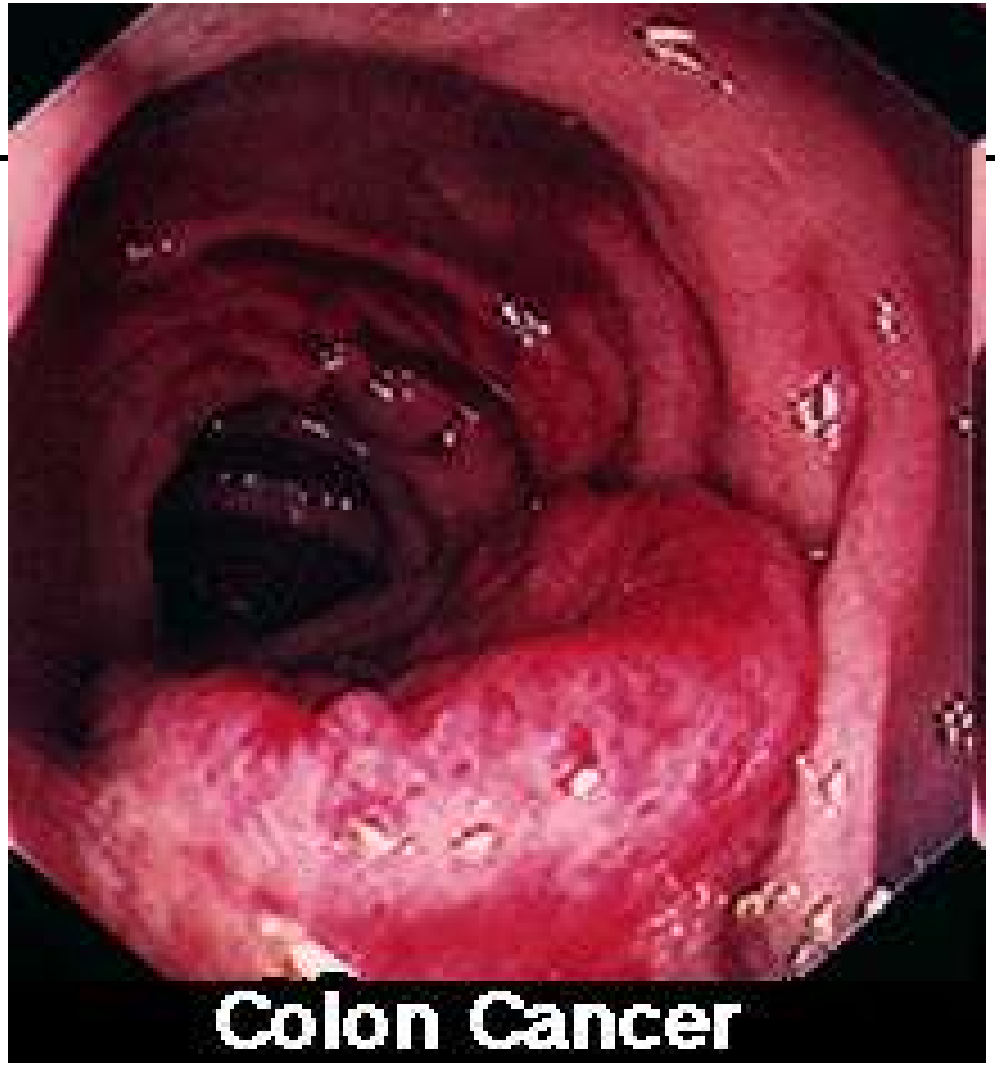
06/03 Faces of Cancer 8.3

Obj. TSW understand and explain risk factors associated with cancer by doing an Understanding Cancer Activity. P.182NB

http://science-education.nih.gov/supplements/nih1/cancer/activities/activities_toc.htm



1. What are some possible risk factors associated with the development of cancer?
2. What is the relationship between Cancer and Age?
3. Do some jobs put people more at risk of developing cancer? How?


Colon Cancer

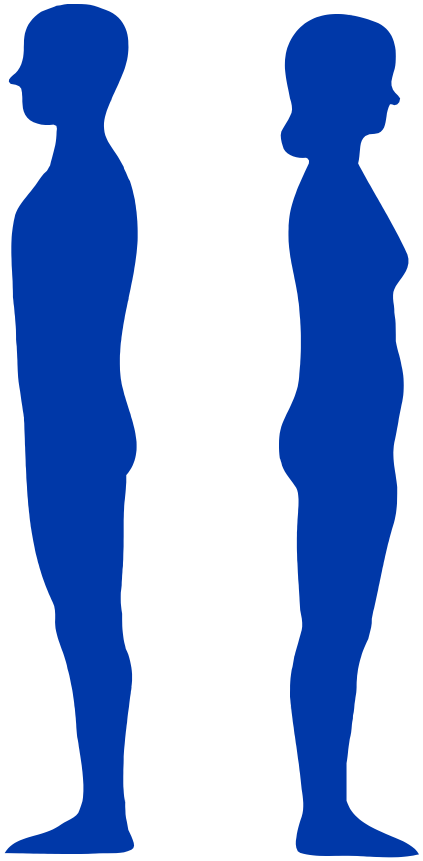
US Mortality, 2005

Rank	Cause of Death	No. of deaths	% of all deaths
1.	Heart Diseases	652,091	26.6
2.	**Cancer**	**559,312**	**22.8**
3.	Cerebrovascular diseases	143,579	5.9
4.	Chronic lower respiratory diseases	130,933	5.3
5.	Accidents (unintentional injuries)	117,809	4.8
6.	Diabetes mellitus	75,119	3.1
7.	Alzheimer disease	71,599	2.9
8.	Influenza & pneumonia	63,001	2.6
9.	Nephritis*	43,901	1.8
10.	Septicemia	34,136	1.4

***Includes nephrotic syndrome and nephrosis.**
Source: US Mortality Data 2005, National Center for Health Statistics, Centers for Disease Control and Prevention, 2008.

2008 Estimated US Cancer Deaths*

Men 294,120		Women 271,530	
Lung & bronchus	31%	26%	Lung & bronchus
Prostate	10%	15%	Breast
Colon & rectum	8%	9%	Colon & rectum
Pancreas	6%	6%	Pancreas
Liver & intrahepatic bile duct	4%	6%	Ovary
Leukemia	4%	3%	Non-Hodgkin lymphoma
Esophagus	4%	3%	Leukemia
Urinary bladder	3%	3%	Uterine corpus
Non-Hodgkin lymphoma	3%	2%	Liver & intrahepatic bile duct
Kidney & renal pelvis	3%	2%	Brain/ONS
All other sites	24%	25%	All other sites



ONS=Other nervous system.
Source: American Cancer Society, 2008.

Cancer Timeline

1. Cell division is a natural process that is needed for the growth, repair & replacement of cells in our body.

2. Cell division is a tightly controlled process, which is regulated by the DNA in our Cells.

3. As cells naturally divide, a person accumulates damage to their DNA throughout their lives.

4. Damage can accumulate by preventable causes, such as smoking, or unpreventable causes, such as inheritance.

Cancer Timeline

5. There needs to be a certain amount of damage to the DNA of a healthy cell to make it a cancer cell.

6. This is because the genes that repair DNA and the genes that cause faulty cells to self – destruct are damaged.

7. Cancer cells divide out of control to form a tumor. Unlike healthy cells, cancer cells are immortal and will keep on dividing.

8. When a tumor has reached a certain size, cancer cells can break off and spread through the blood to another part of the body. This is called metastasis.

9. Once a cancer has metastasized (spread throughout the body), it is harder to treat. So the chance of survival greatly increases with early detection and treatment.

06/04 Cancer is a Disease of the DNA

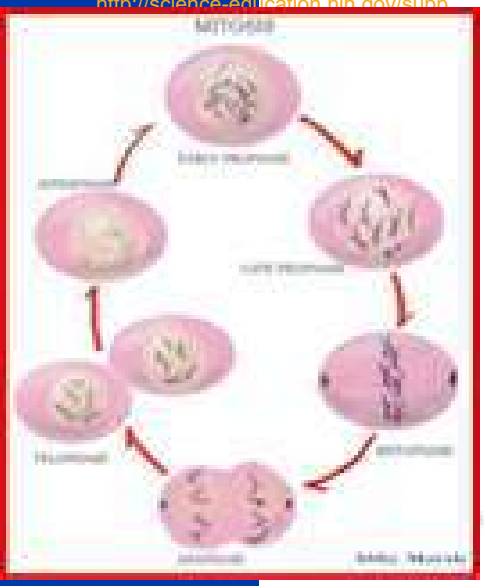
Obj. TSW demonstrate how mutations in genes involved in the cell cycle result in a loss of control and the disease cancer. P.184

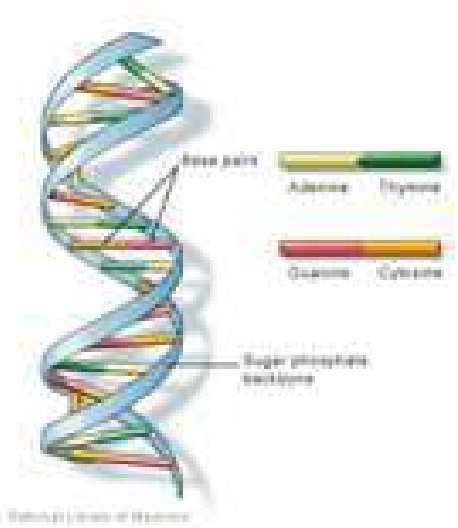
http://www.hhmi.org/biointeractive/media/mismatch_repair-lg.mov

http://science-education.nih.gov/supp

http://www.stjude.org/interactive

http://learn.genetics.utah.edu



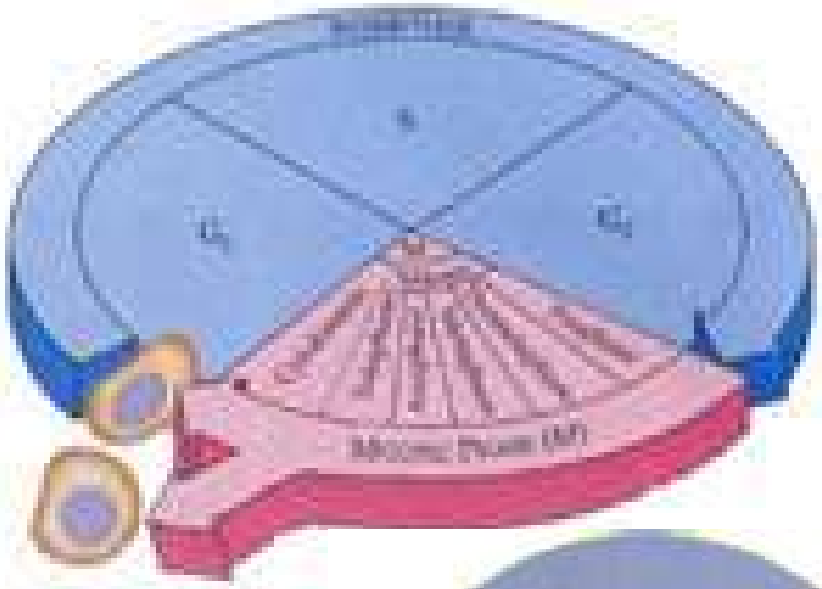


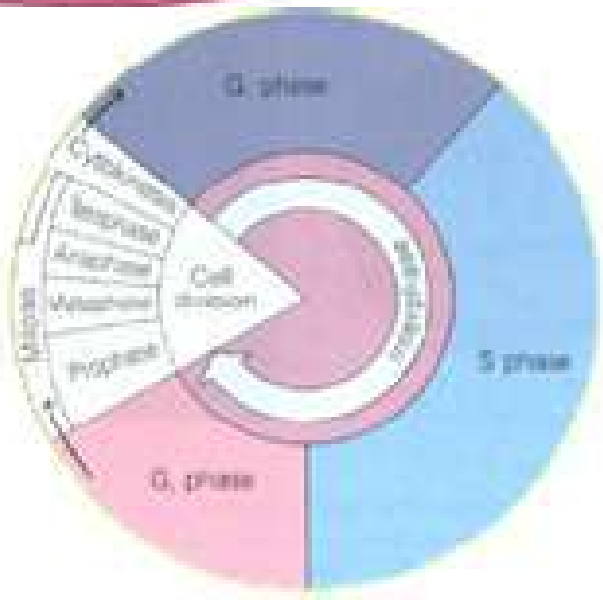
1. How can changes in the DNA lead to cancer?

2. What is the correct Nitrogen Base Pair for DNA? Adenine- _____ Guanine - _____

3. Compare and contrast proto oncogenes and tumor suppressors

Obj. TSW explain what controls the cell cycle from their warm up, and the Understanding Cancer Worksheet. P. 186NB





- 1. Write and explain the steps of the cell cycle.
- 2. What controls the cell cycle?

3. Without copying anything from the book or otherwise, from your understanding of Cancer, What is Cancer?

Cancer Brochure

- Name of the cancer, how it is defined.
- Pictures
- Statistics (Who & when-age, success rates) of the Cancer
- Causes of the Cancer, Risk Factors
- Treatments of the cancer
- Works Cited

Cancer Resources

- http://science-education.nih.gov/supplements/nih1/cancer/default.htm
- http://cancer.gov/
- http://cancernet.nci.nih.gov/
- http://cancer.org/
- http://cis.nci.nih.gov/
- http://www.oncolink.org
- http://learn.genetics.utah.edu
- http://cancerquest.org
- http://www.stjude.org/interactive
- http://www.hhmi.org/biointeractive/cancer/video.html
- http://science-education.nih.gov/supplements/nih1/cancer/activities/activities_toc.htm

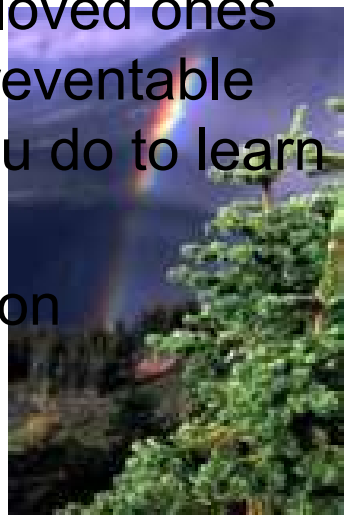
06/04 Cancer Timeline

Obj. TSW explain the importance of eliminating risk factors for cancer through their warm up and Cancer worksheets. P.184 NB

1. Cancer is a disease that develops over time, sometimes over months or even decades. If you knew you could prevent some cancers from happening to you or your loved one's, what measures would you take to do so?

2. Some cancers, lung cancer, are highly preventable. Others, however, are essentially non-preventable. Who is responsible for making sure that you and your loved ones have as much information as possible about preventable and non-preventable cancers? What could you do to learn more about your risks?

3. What have you learned from this unit on Cancer?

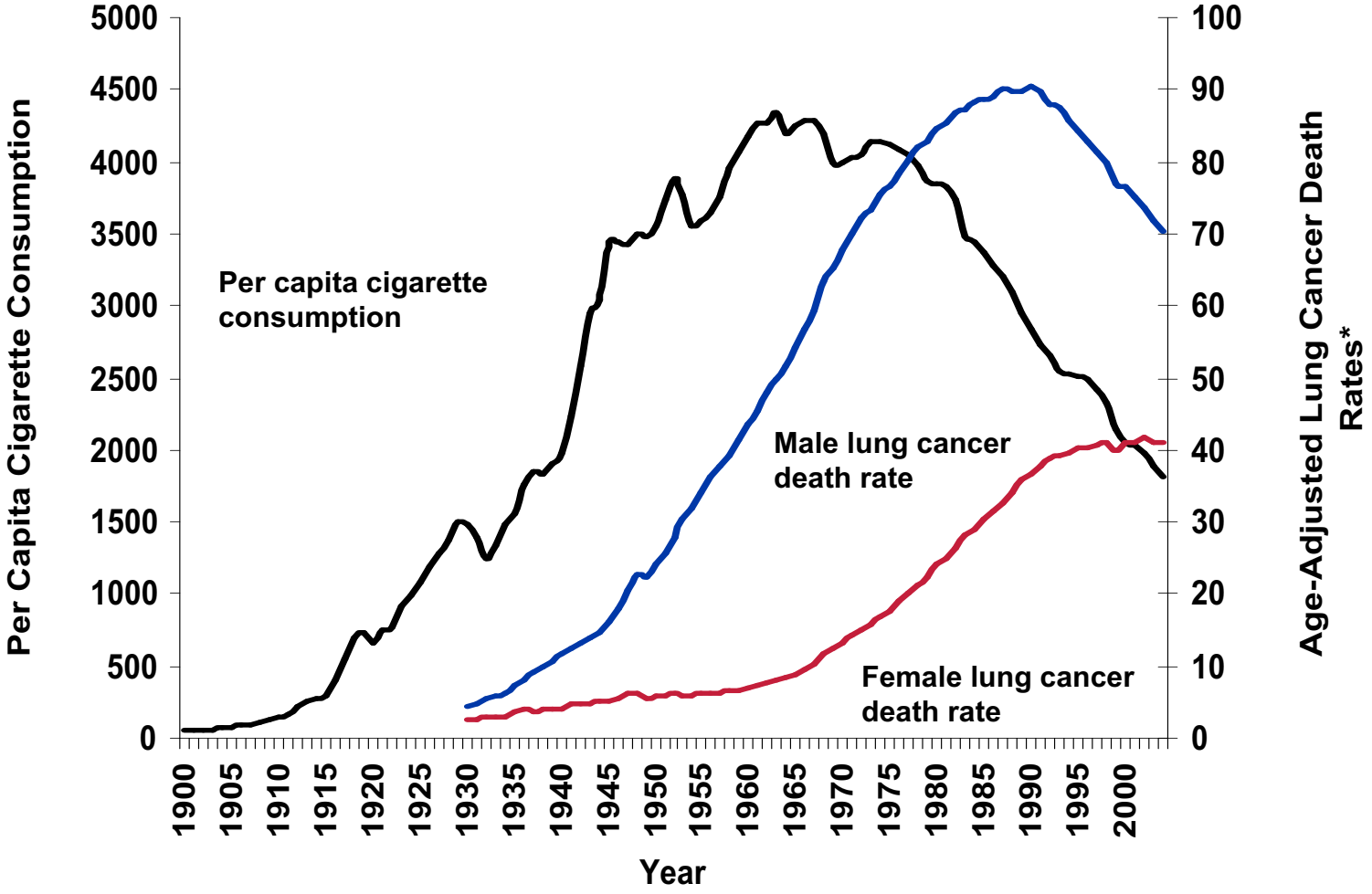


Portfolio Table of Contents

- Title Page : Cancer & Cell Biology Unit,
- Semester 1 , October 7th– October 14th, 2009 Name-(Yours)Instructor – (Mrs. McAllister)
- Written Paragraph on “What I know about Cancer”
- “T” Square – Fact or Fiction – (Notebook)
- Jessica’s Story – Typed.
- 5 Warm Ups – stamped – (Notebook)
- Cancer Timeline
- Cancer Brochure
- 3 Worksheets – Faces of Cancer Team Summary/ Drawing Conclusions; Understanding Cancer, Red Flags for Hereditary Cancers

- “Tobacco use is a major preventable cause of death, particularly from lung cancer. The year 2004 marks the anniversary of the release of the first Surgeon General’s report on Tobacco and Health, which initiated a decline in per capita cigarette consumption in the United States. As a result of the cigarette smoking epidemic, lung cancer death rates showed a steady increase through 1990, then began to decline among men. The lung cancer death rate among US women, who began regular cigarette smoking later than men, has begun to plateau after increasing for many decades.”

Tobacco Use in the US, 1900-2004



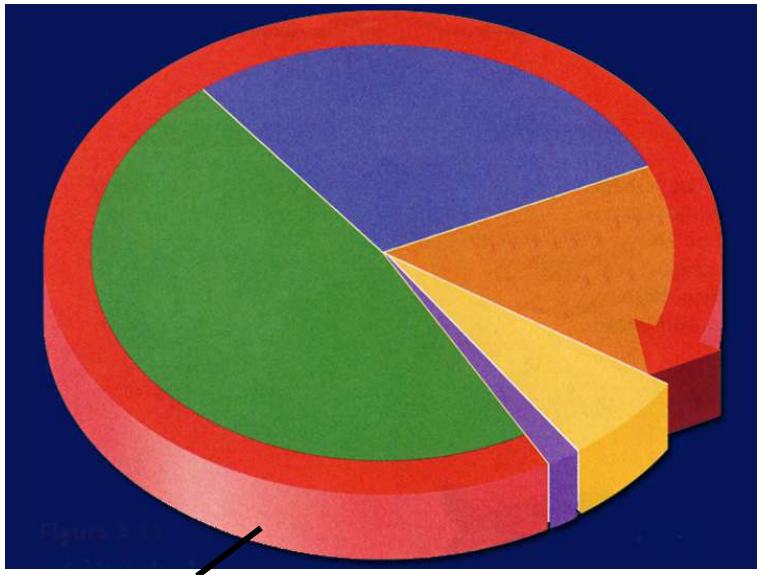
*Age-adjusted to 2000 US standard population.

Source: Death rates: US Mortality Data, 1960-2004, US Mortality Volumes, 1930-1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2006. Cigarette consumption: US Department of Agriculture, 1900-2004.

The Cell Cycle

The cell cycle is the sequence of growth and division of a cell.

The majority of a cell's life is spent in the growth period known as interphase.



Interphase

END OF SLIDE
PREVIOUS SLIDE
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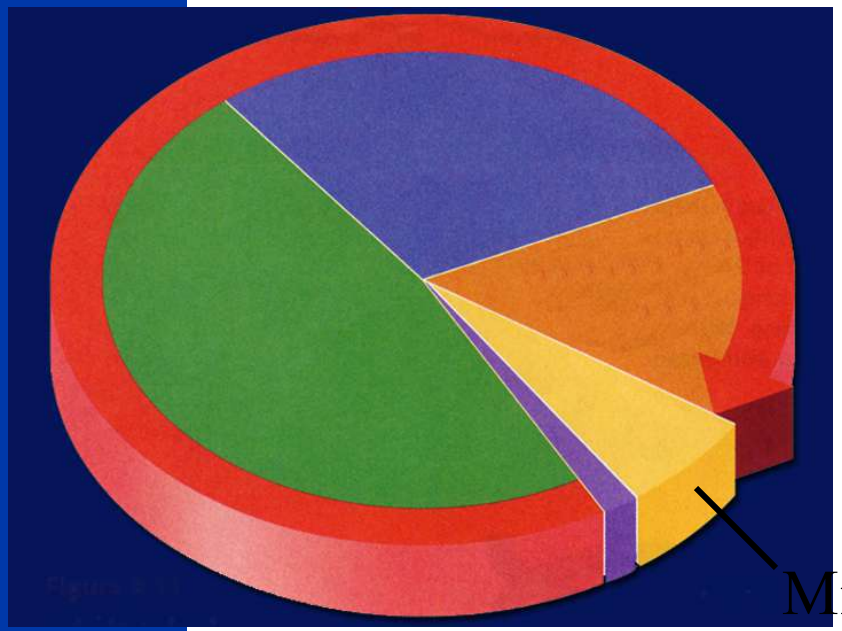
RESOURCES

The Cell Cycle

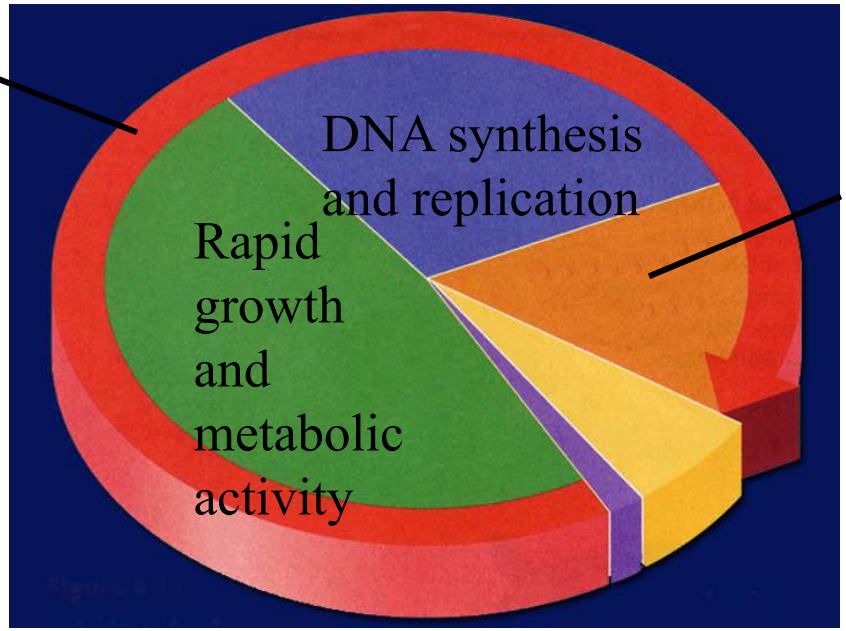
Following interphase, a cell enters its period of nuclear division called mitosis.



Following mitosis, the cytoplasm divides, separating the two daughter cells.

Interphase: A Busy Time

Interphase, the busiest phase of the cell cycle, is divided into three parts.



Cancer prevention

In addition to diet, other healthy choices such as daily exercise and not using tobacco also are known to reduce the risk of cancer.

Cancer Statistics 2008

A Presentation From the American Cancer Society

American Cancer Society®

2010 Estimated US Cancer Deaths*

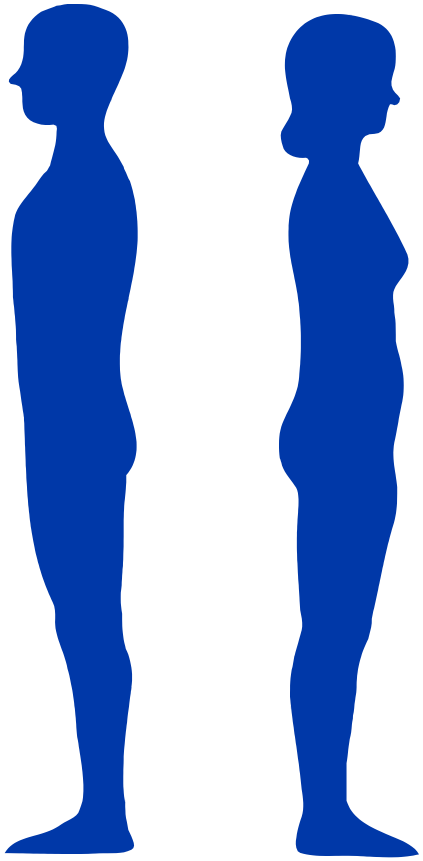
Men		Women	
Lung & bronchus	29%	Lung & bronchus	26%
Prostate	11%	Breast	15%
Colon & rectum	9%	Colon & rectum	9%
Pancreas	6%	Pancreas	7%
Liver & intrahepatic bile duct	4%	Ovary	5%
Leukemia	4%	Non-Hodgkin lymphoma	4%
Esophagus	4%	Leukemia	3%
Non-Hodgkin lymphoma	4%	Uterine corpus	3%
Urinary bladder	3%	Liver & intrahepatic bile duct	2%
Kidney & renal pelvis	3%	Brain/Other nervous system	2%
All other sites	23%	All other sites	24%

Source: American Cancer Society, 2010.

Source: American Cancer Society, 2010.

2008 Estimated US Cancer Deaths*

Men 294,120		Women 271,530	
Lung & bronchus	31%	26%	Lung & bronchus
Prostate	10%	15%	Breast
Colon & rectum	8%	9%	Colon & rectum
Pancreas	6%	6%	Pancreas
Liver & intrahepatic bile duct	4%	6%	Ovary
Leukemia	4%	3%	Non-Hodgkin lymphoma
Esophagus	4%	3%	Leukemia
Urinary bladder	3%	3%	Uterine corpus
Non-Hodgkin lymphoma	3%	2%	Liver & intrahepatic bile duct
Kidney & renal pelvis	3%	2%	Brain/ONS
All other sites	24%	25%	All other sites



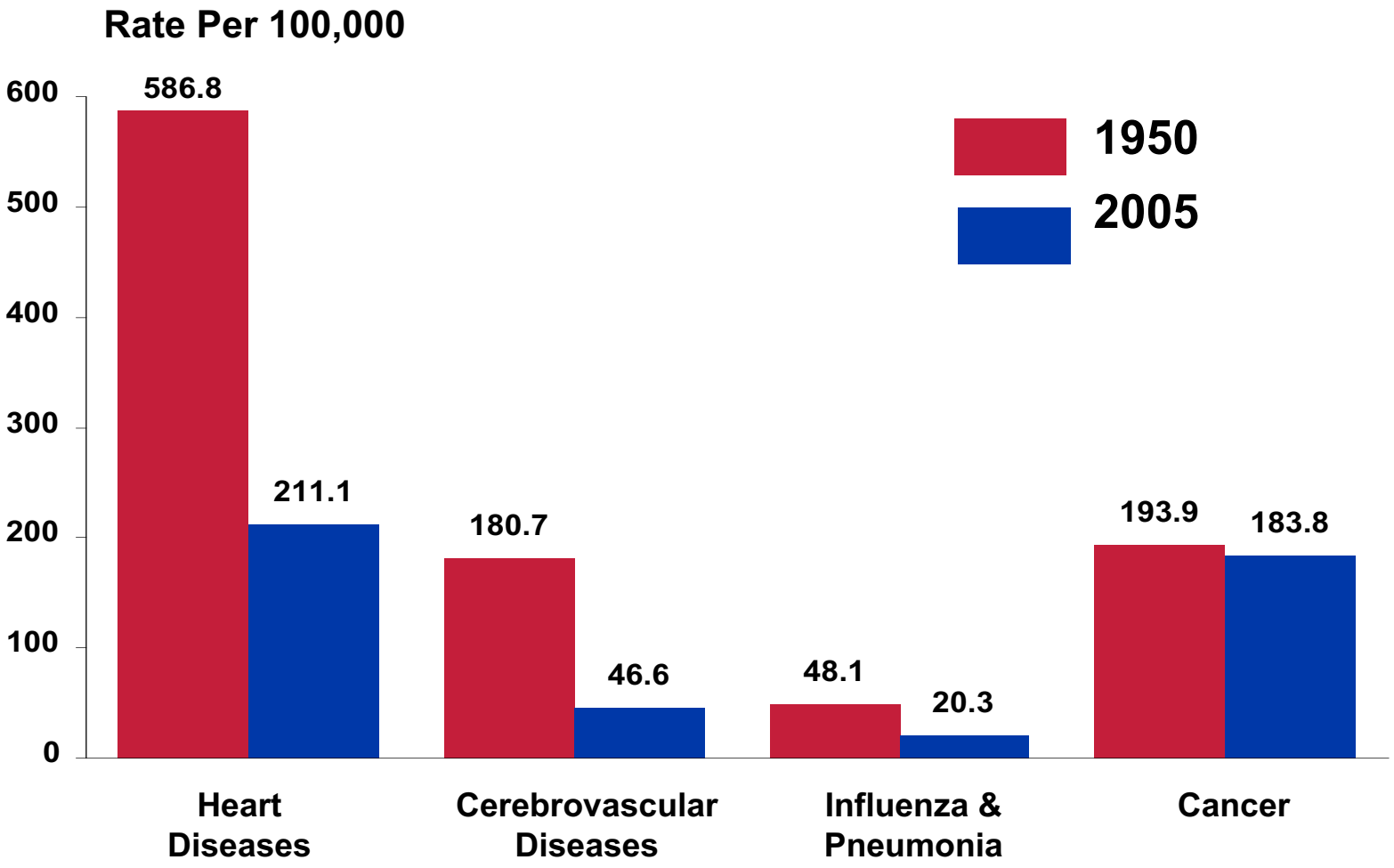
ONS=Other nervous system.
Source: American Cancer Society, 2008.

US Mortality, 2005

Rank	Cause of Death	No. of deaths	% of all deaths
1.	Heart Diseases	652,091	26.6
2.	**Cancer**	**559,312**	**22.8**
3.	Cerebrovascular diseases	143,579	5.9
4.	Chronic lower respiratory diseases	130,933	5.3
5.	Accidents (unintentional injuries)	117,809	4.8
6.	Diabetes mellitus	75,119	3.1
7.	Alzheimer disease	71,599	2.9
8.	Influenza & pneumonia	63,001	2.6
9.	Nephritis*	43,901	1.8
10.	Septicemia	34,136	1.4

***Includes nephrotic syndrome and nephrosis.**
Source: US Mortality Data 2005, National Center for Health Statistics, Centers for Disease Control and Prevention, 2008.

Change in the US Death Rates* by Cause, 1950 & 2005

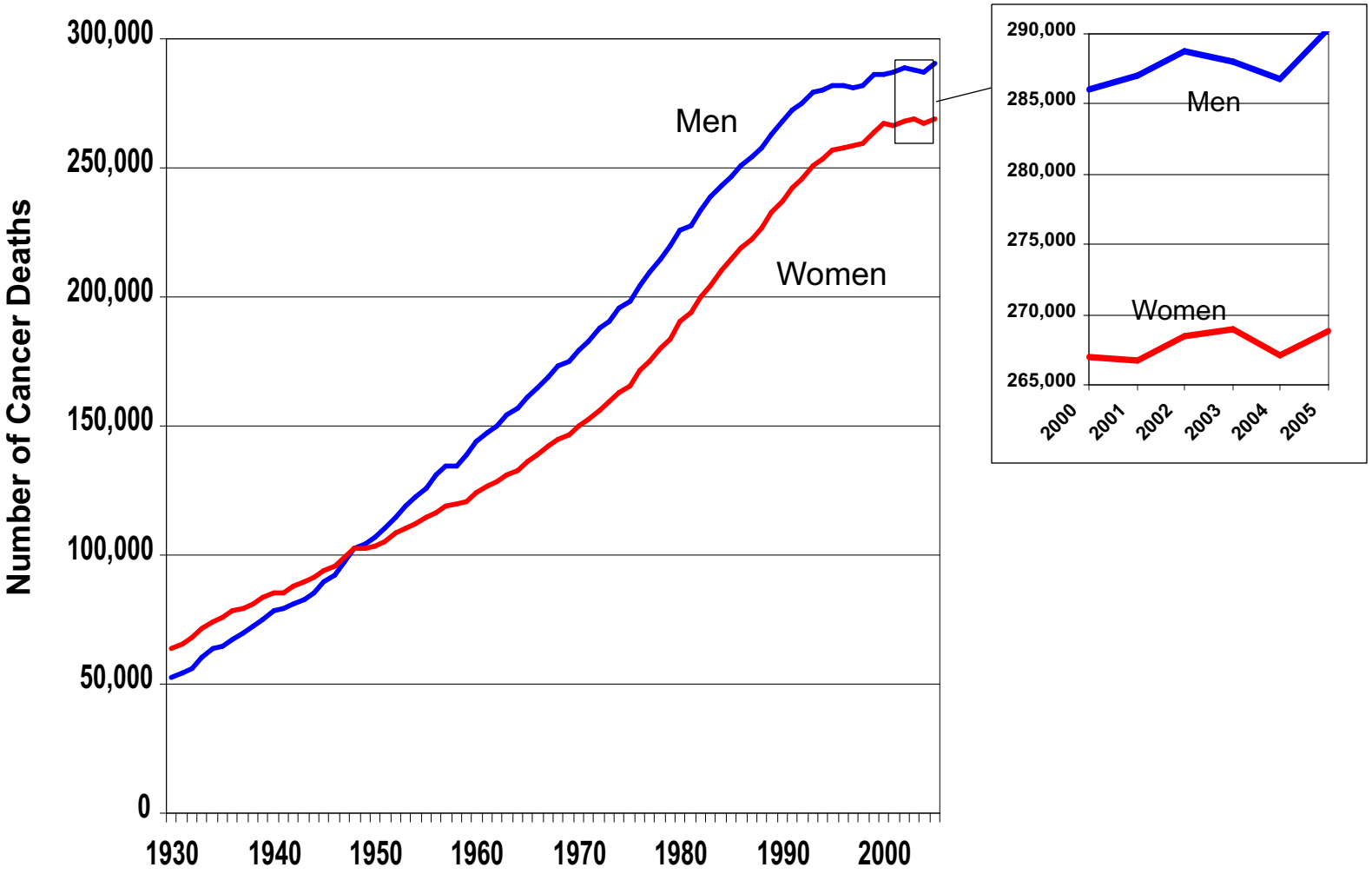


* Age-adjusted to 2000 US standard population.

Sources: 1950 Mortality Data - CDC/NCHS, NVSS, Mortality Revised.

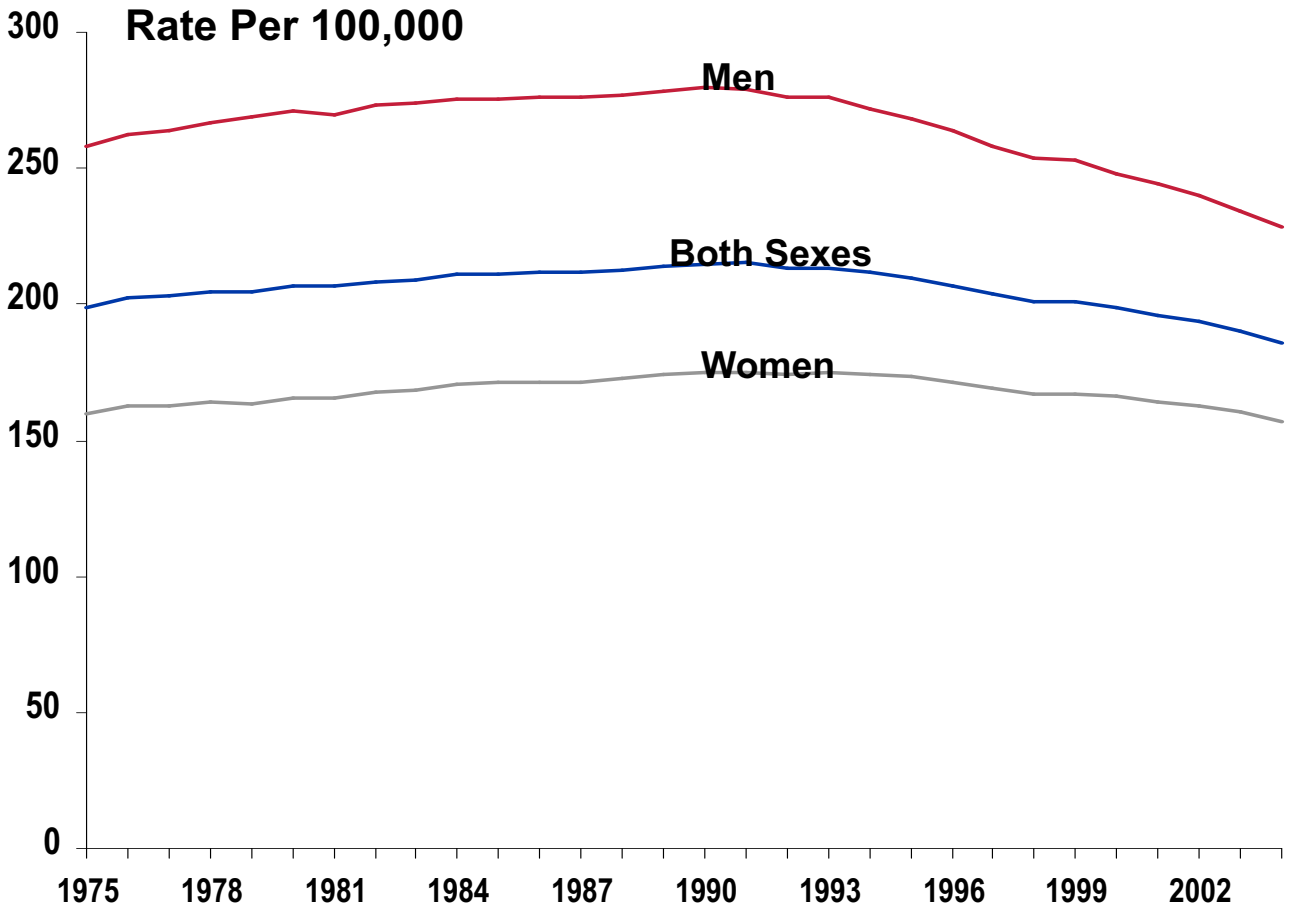
2005 Mortality Data: US Mortality Data 2005, NCHS, Centers for Disease Control and Prevention, 2008.

Trends in the Number of Cancer Deaths Among Men and Women, US, 1930-2005



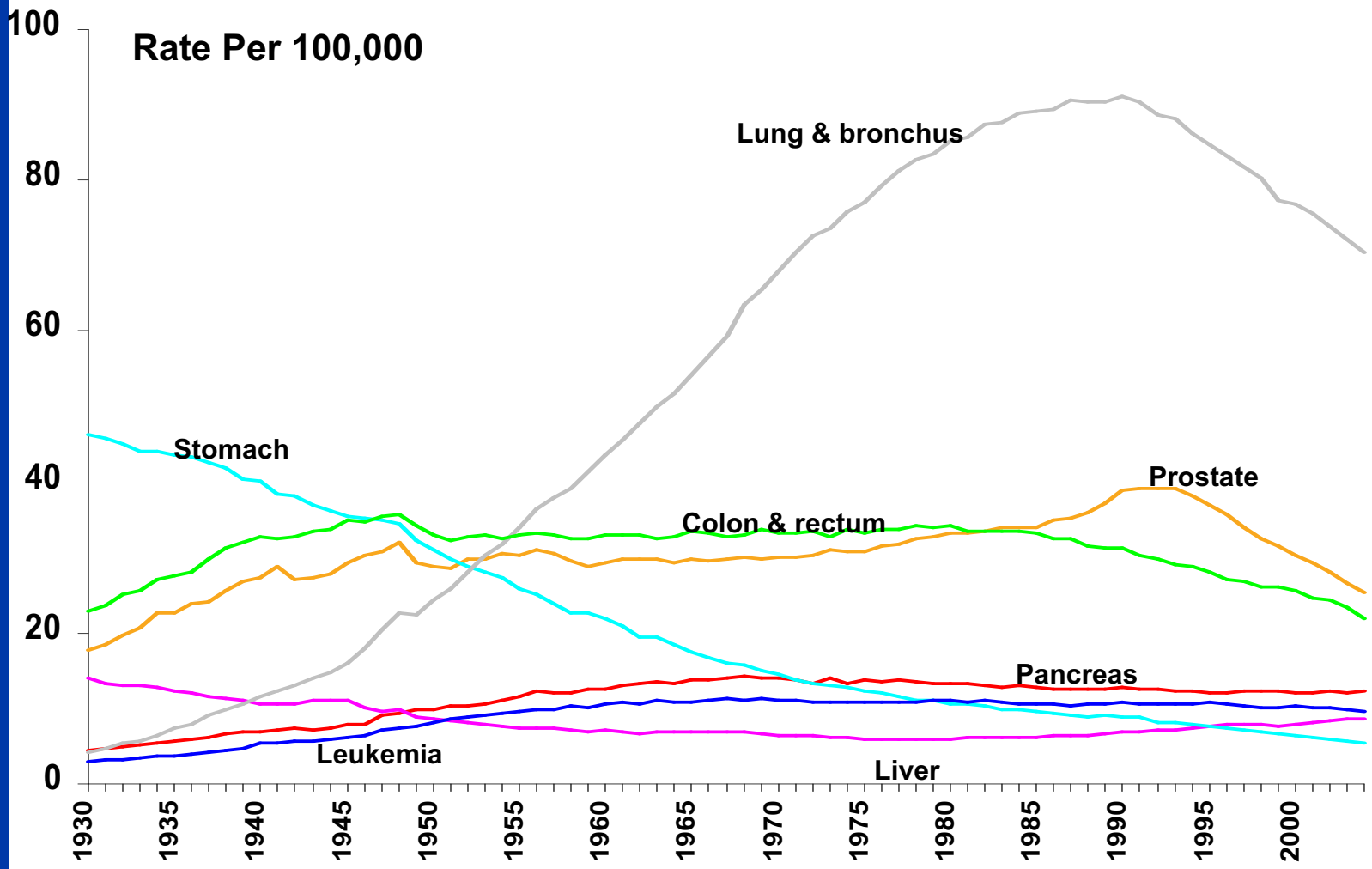
Source: US Mortality Data, 2005, National Center for Health Statistics, Centers for Disease Control and Prevention, 2008.

Cancer Death Rates* by Sex, US, 1975-2004



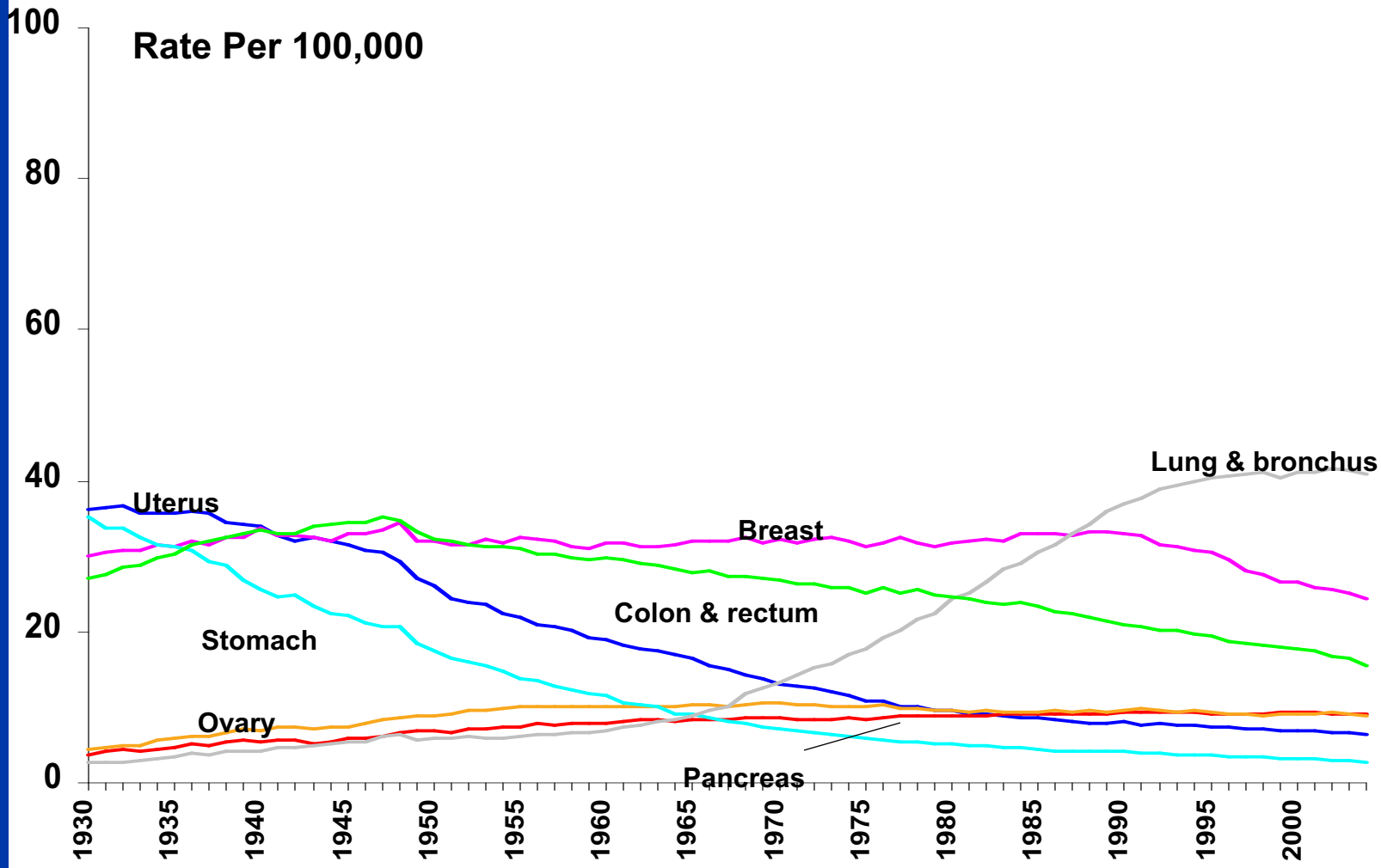
*Age-adjusted to the 2000 US standard population.
Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Mortality - All COD, Public-Use With State, Total U.S. (1969-2004), National Cancer Institute, DCCPS, Surveillance Research Program, Cancer Statistics Branch, released April 2007. Underlying mortality data provided by NCHS (www.cdc.gov/nchs).

Cancer Death Rates* Among Men, US,1930-2004



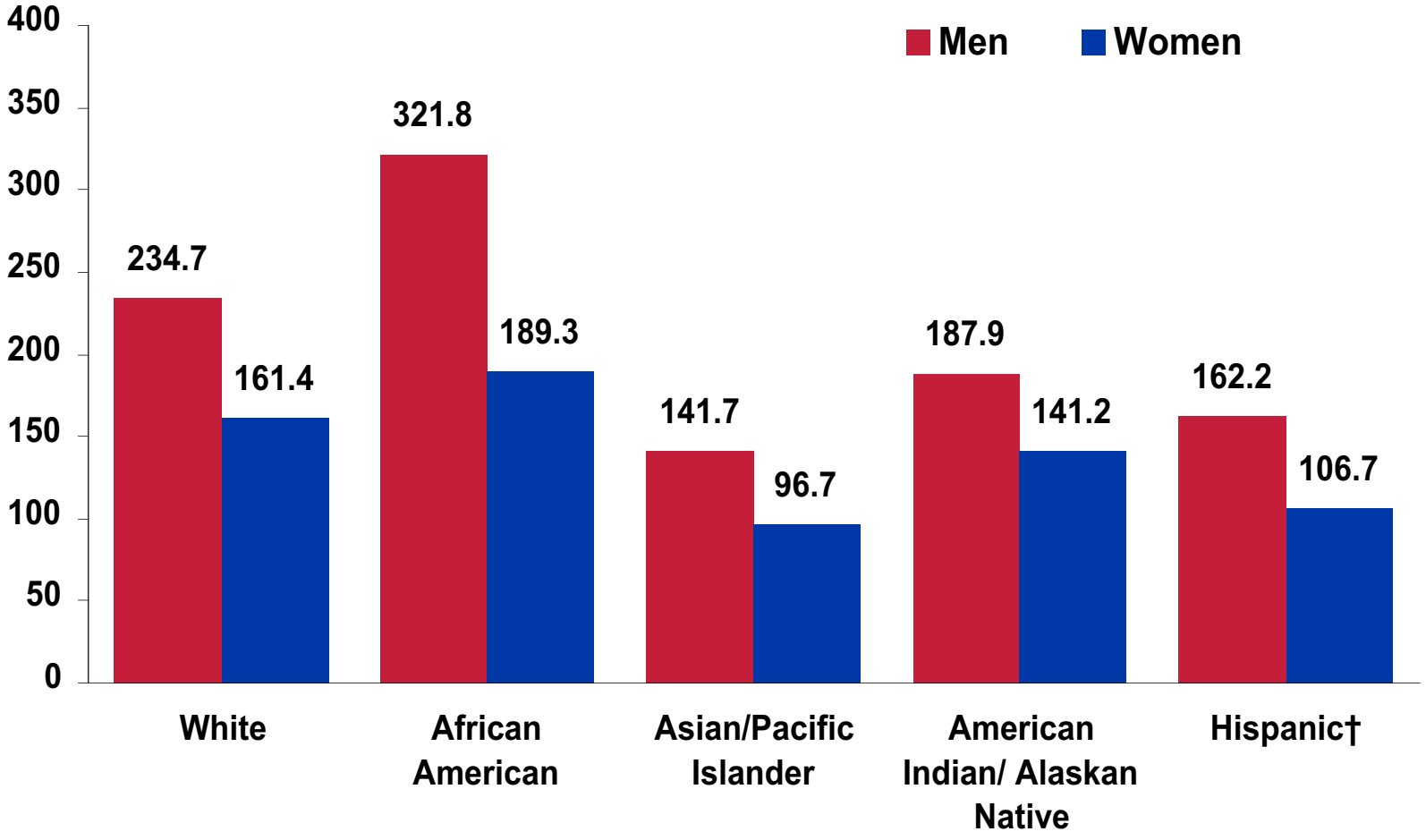
*Age-adjusted to the 2000 US standard population.
Source: US Mortality Data 1960-2004, US Mortality Volumes 1930-1959,
National Center for Health Statistics, Centers for Disease Control and Prevention, 2006.

Cancer Death Rates* Among Women, US,1930-2004



*Age-adjusted to the 2000 US standard population.
Source: US Mortality Data 1960-2004, US Mortality Volumes 1930-1959,
National Center for Health Statistics, Centers for Disease Control and Prevention, 2006.

Cancer Death Rates* by Race and Ethnicity, US, 2000-2004



*Per 100,000, age-adjusted to the 2000 US standard population.
† Persons of Hispanic origin may be of any race.
Source: Surveillance, Epidemiology, and End Results Program, 1975-2004, Division of Cancer Control and Population Sciences, National Cancer Institute, 2007.

Cancer Sites in Men for Which African American Death Rates* Exceed White Death Rates*, US, 2000-2004

Site	African American	White	Ratio of African American/White
All sites	321.8	234.7	1.4
Prostate	62.3	25.6	2.4
Larynx	5.0	2.2	2.3
Stomach	11.9	5.2	2.3
Myeloma	8.5	4.4	1.9
Oral cavity and pharynx	6.8	3.8	1.8
Small intestine	0.7	0.4	1.8
Liver and intrahepatic bile duct	10.0	6.5	1.5
Colon and rectum	32.7	22.9	1.4
Esophagus	10.2	7.7	1.3
Lung and bronchus	95.8	72.6	1.3
Pancreas	15.5	12.0	1.3

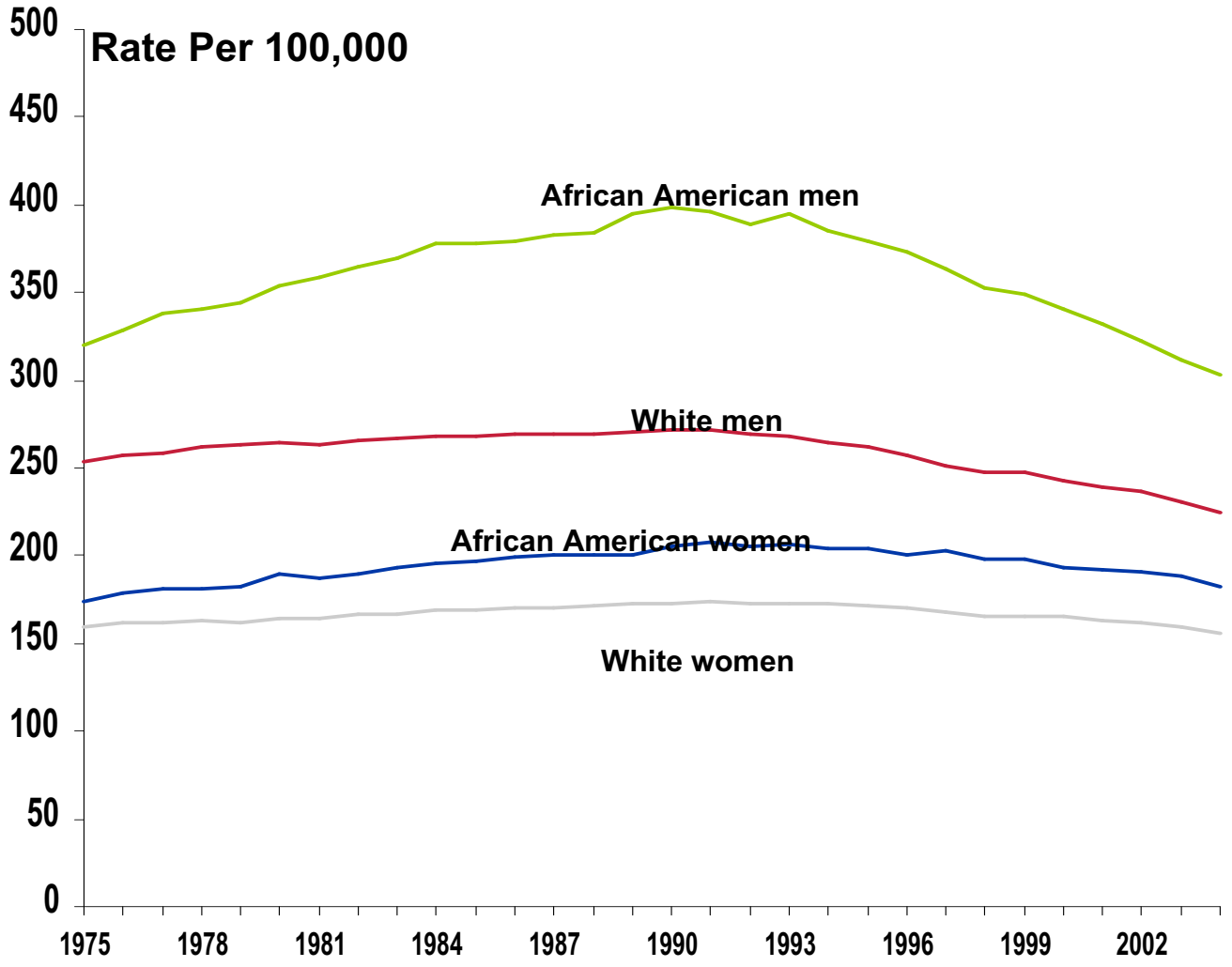
***Per 100,000, age-adjusted to the 2000 US standard population.**
Source: Surveillance, Epidemiology, and End Results Program, 1975-2004, Division of Cancer Control and Population Sciences, National Cancer Institute, 2007.

Cancer Sites in Women for Which African American Death Rates* Exceed White Death Rates*, US, 2000-2004

Site	African American	White	Ratio of African American/White
All sites	189.3	161.4	1.2
Myeloma	6.3	2.8	2.3
Stomach	5.8	2.6	2.2
Uterine cervix	4.9	2.3	2.1
Esophagus	3.0	1.7	1.8
Uterine corpus	7.1	3.9	1.8
Small intestine	0.5	0.3	1.7
Larynx	0.8	0.5	1.6
Pancreas	12.4	9.0	1.4
Colon and rectum	22.9	15.9	1.4
Liver and intrahepatic bile duct	3.9	2.8	1.4
Breast	33.8	25.0	1.4
Gallbladder	1.0	0.8	1.3
Urinary bladder	2.8	2.3	1.2
Oral cavity and pharynx	1.7	1.5	1.1

***Per 100,000, age-adjusted to the 2000 US standard population.**
Source: Surveillance, Epidemiology, and End Results Program, 1975-2004, Division of Cancer Control and Population Sciences, National Cancer Institute, 2007.

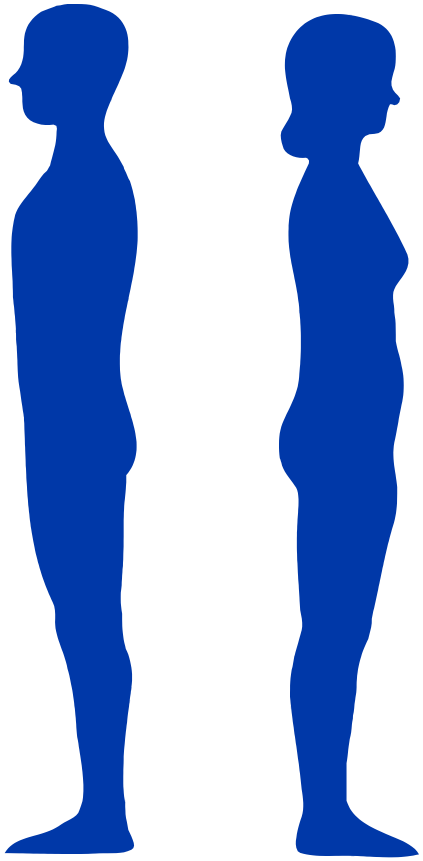
Cancer Death Rates* by Sex and Race, US, 1975-2004



*Age-adjusted to the 2000 US standard population.
Source: Surveillance, Epidemiology, and End Results Program, 1975-2004, Division of Cancer Control and Population Sciences, National Cancer Institute, 2007.

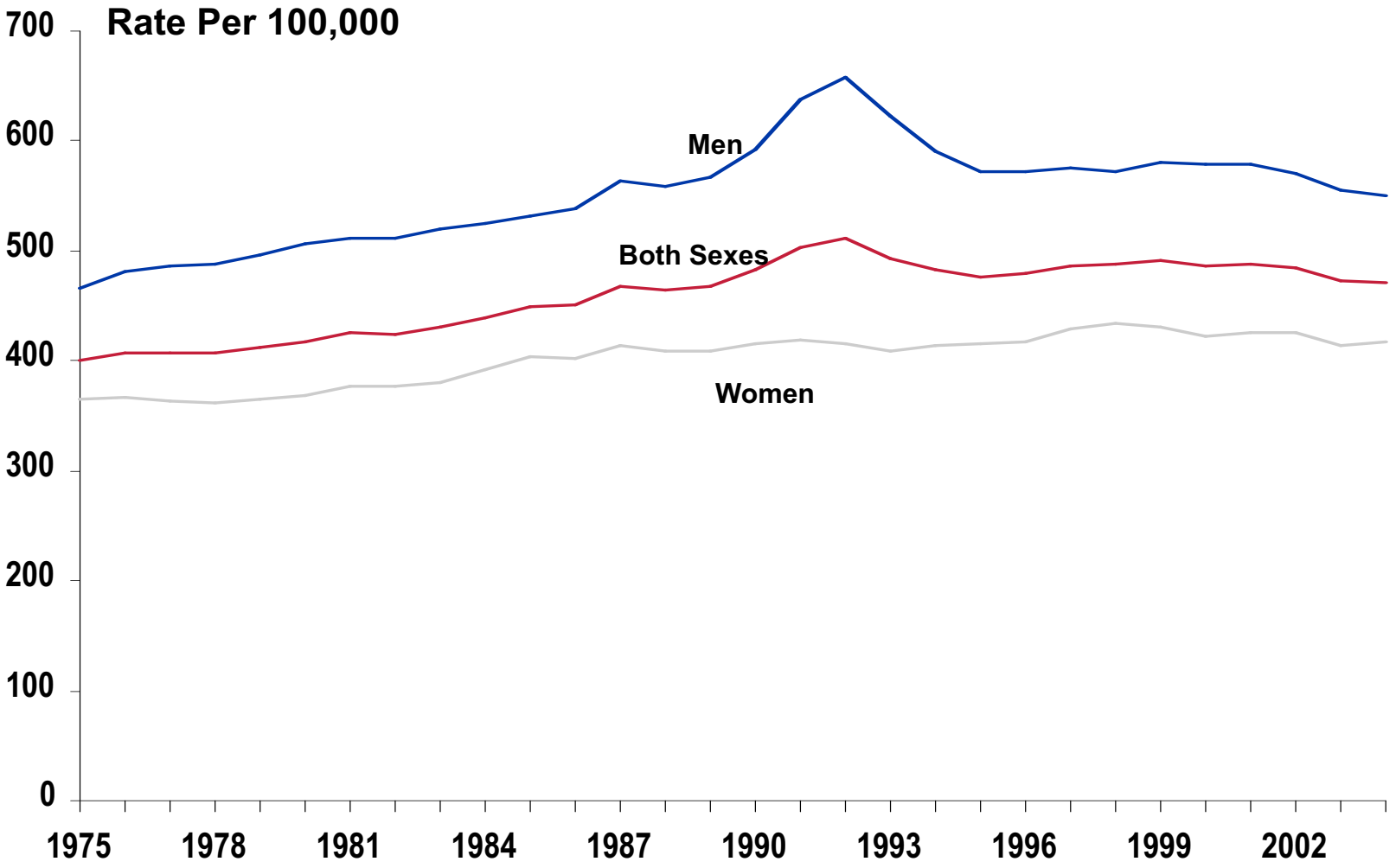
2008 Estimated US Cancer Cases*

Men 745,180		Women 692,000	
Prostate	25%	26%	Breast
Lung & bronchus	15%	14%	Lung & bronchus
Colon & rectum	10%	10%	Colon & rectum
Urinary bladder	7%	6%	Uterine corpus
Non-Hodgkin lymphoma	5%	4%	Non-Hodgkin lymphoma
Melanoma of skin	5%	4%	Thyroid
Kidney & renal pelvis	4%	4%	Melanoma of skin
Oral cavity	3%	3%	Ovary
Leukemia	3%	3%	Kidney & renal pelvis
Pancreas	3%	3%	Leukemia
All Other Sites	20%	23%	All Other Sites



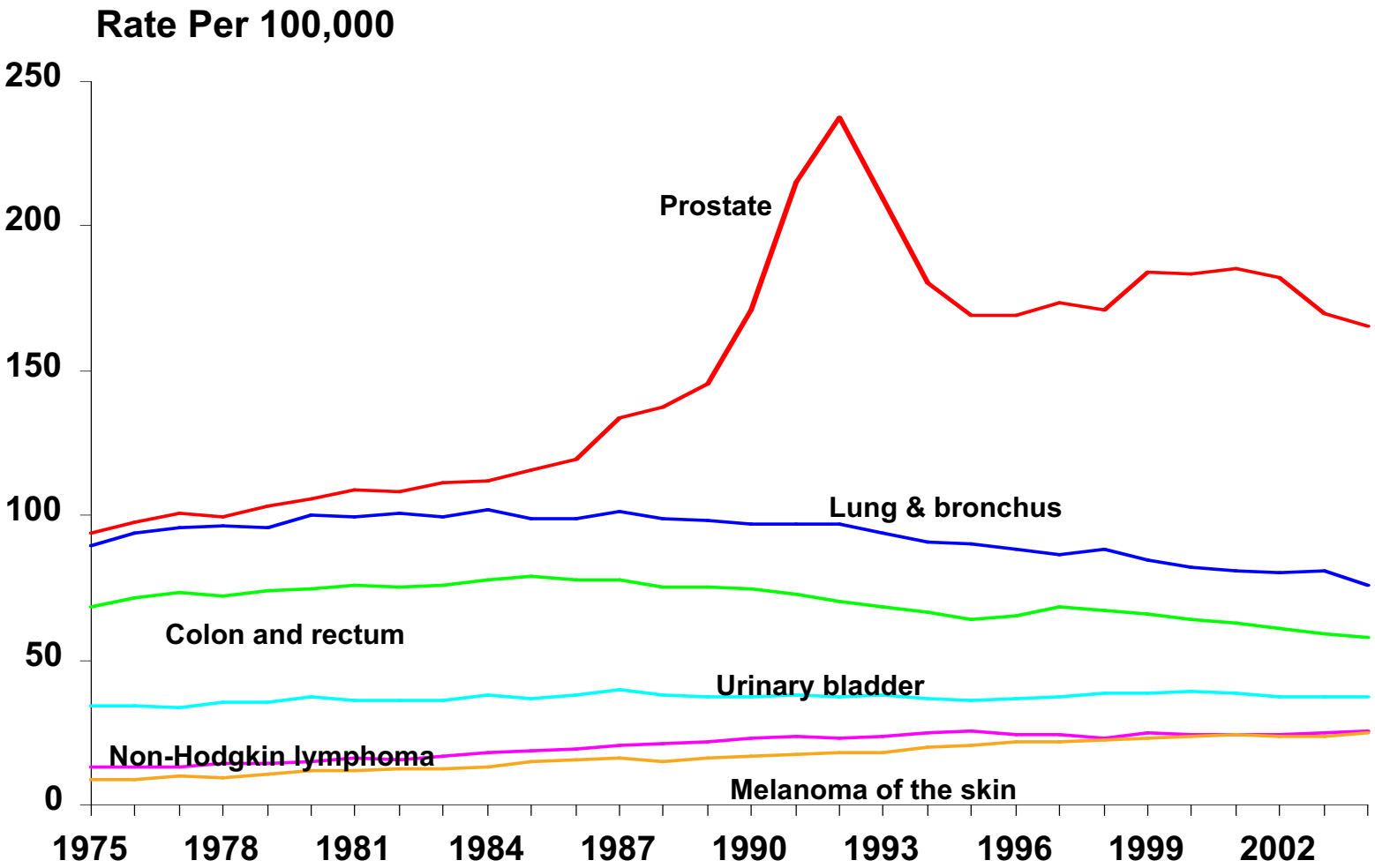
***Excludes basal and squamous cell skin cancers and in situ carcinomas except urinary bladder.**
Source: American Cancer Society, 2008.

Cancer Incidence Rates* by Sex, US, 1975-2004



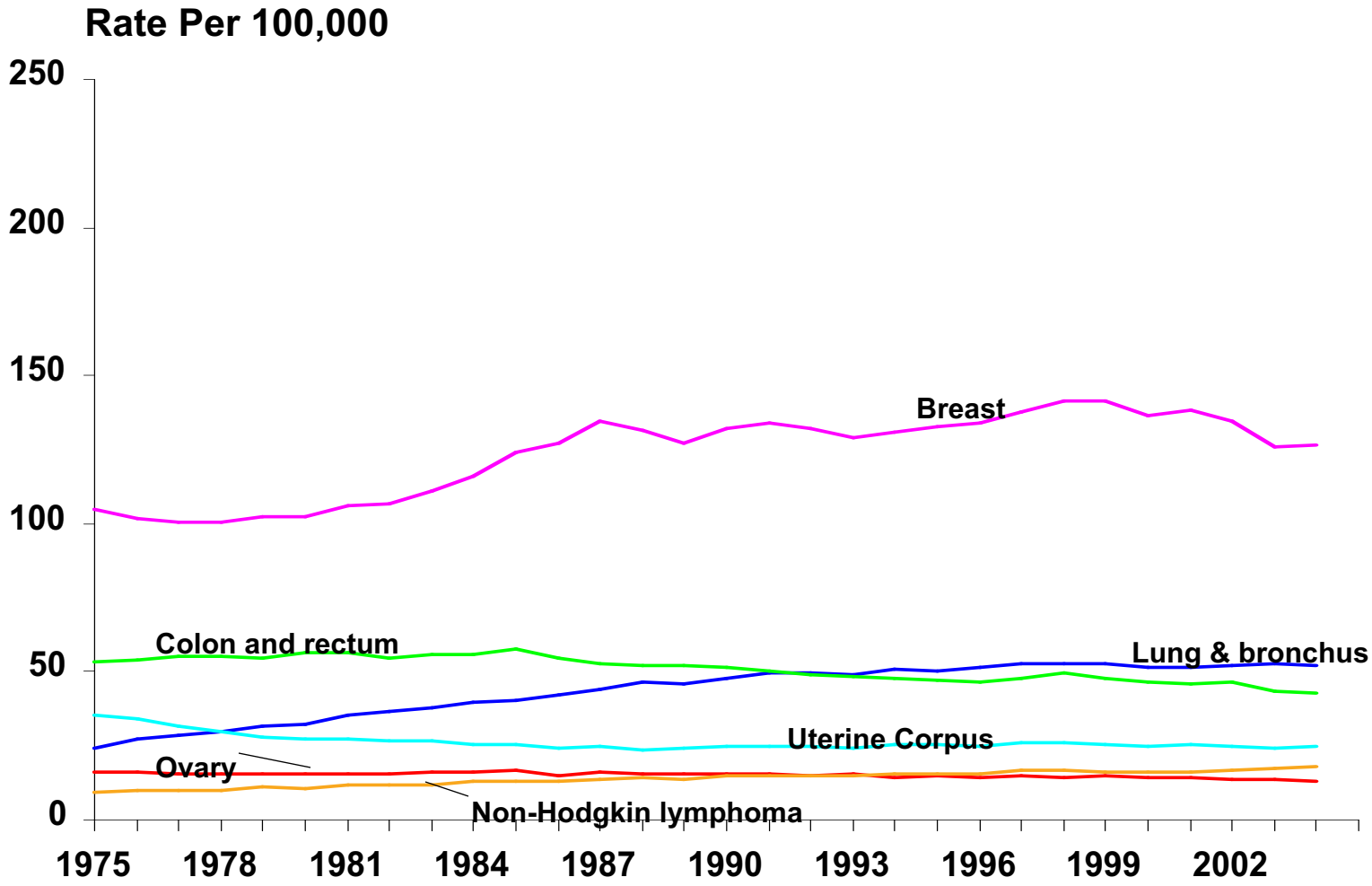
*Age-adjusted to the 2000 US standard population and adjusted for delays in reporting.
Source: Surveillance, Epidemiology, and End Results Program, Delay-adjusted Incidence database: SEER Incidence Delay-adjusted Rates, 9 Registries, 1975-2004, National Cancer Institute, 2007.

Cancer Incidence Rates* Among Men, US, 1975-2004



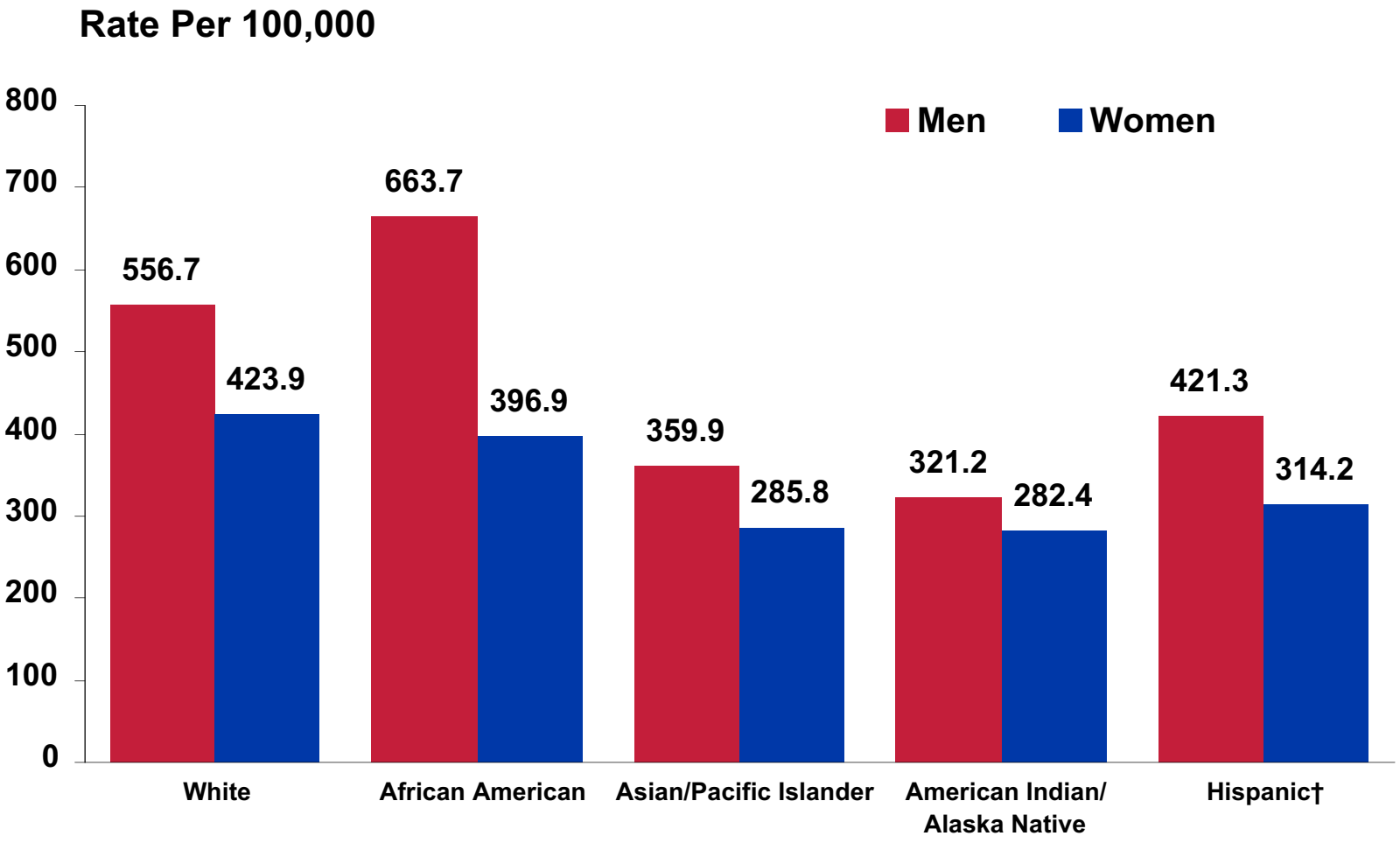
*Age-adjusted to the 2000 US standard population and adjusted for delays in reporting.
Source: Surveillance, Epidemiology, and End Results Program, Delay-adjusted Incidence database: SEER Incidence Delay-adjusted Rates, 9 Registries, 1975-2004, National Cancer Institute, 2007.

Cancer Incidence Rates* Among Women, US, 1975-2004



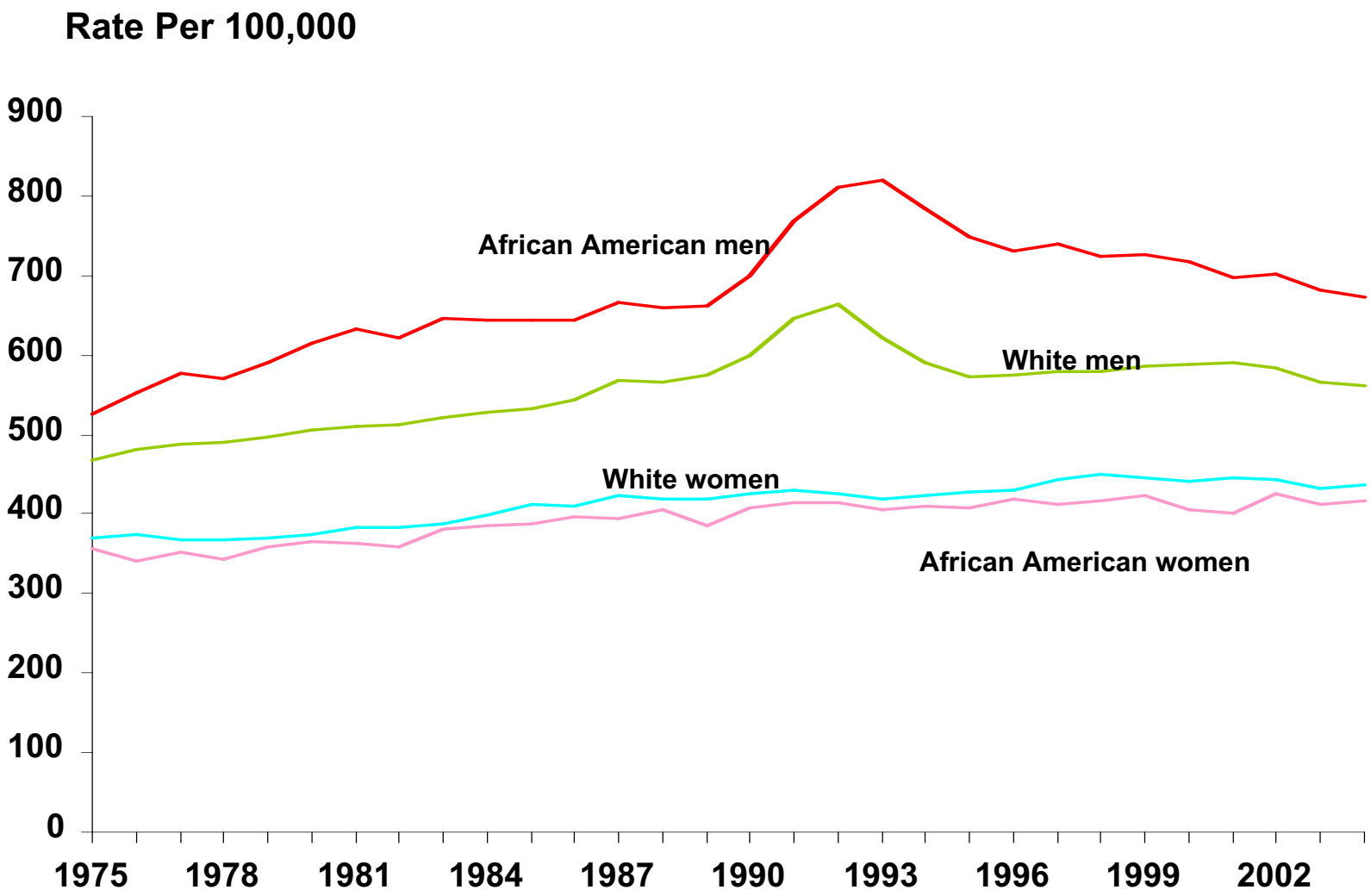
*Age-adjusted to the 2000 US standard population and adjusted for delays in reporting.
Source: Surveillance, Epidemiology, and End Results Program, Delay-adjusted Incidence database: SEER Incidence Delay-adjusted Rates, 9 Registries, 1975-2004, National Cancer Institute, 2007.

Cancer Incidence Rates* by Race and Ethnicity, 2000-2004



*Age-adjusted to the 2000 US standard population.
†Person of Hispanic origin may be of any race.
Source: Surveillance, Epidemiology, and End Results Program, 1975-2004, Division of Cancer Control and Population Sciences, National Cancer Institute, 2007.

Cancer Incidence Rates* by Sex and Race, US,1975-2004



*Age-adjusted to the 2000 US standard population.
Source: Surveillance, Epidemiology, and End Results Program, Delay-adjusted Incidence database: SEER Incidence Delay-adjusted Rates, 9 Registries, 1975-2004, National Cancer Institute, 2007.

Lifetime Probability of Developing Cancer, Men, 2002-2004*

Site	Risk
All sites†	1 in 2
Prostate	1 in 6
Lung and bronchus	1 in 13
Colon and rectum	1 in 18
Urinary bladder‡	1 in 27
Melanoma	1 in 41
Non-Hodgkin lymphoma	1 in 46
Kidney	1 in 59
Leukemia	1 in 67
Oral Cavity	1 in 71
Stomach	1 in 88

*** For those free of cancer at beginning of age interval.**

† All Sites exclude basal and squamous cell skin cancers and in situ cancers except urinary bladder.

‡ Includes invasive and in situ cancer cases

Source: DevCan: Probability of Developing or Dying of Cancer Software, Version 6.2.1 Statistical Research and Applications Branch, NCI, 2007. http://srab.cancer.gov/devcan

Lifetime Probability of Developing Cancer, Women, US, 2002-2004*

Site	Risk
All sites†	1 in 3
Breast	1 in 8
Lung & bronchus	1 in 16
Colon & rectum	1 in 19
Uterine corpus	1 in 41
Non-Hodgkin lymphoma	1 in 53
Melanoma	1 in 61
Ovary	1 in 71
Pancreas	1 in 76
Urinary bladder‡	1 in 85
Uterine cervix	1 in 142

*** For those free of cancer at beginning of age interval.**
† All Sites exclude basal and squamous cell skin cancers and in situ cancers except urinary bladder.
‡ Includes invasive and in situ cancer cases
Source: DevCan: Probability of Developing or Dying of Cancer Software, Version 6.2.1 Statistical Research and Applications Branch, NCI, 2007. http://srab.cancer.gov/devcan

Cancer Survival*(%) by Race,1996-2003

Site	White	African American	Absolute Difference
All Sites	67	57	10
Breast (female)	90	78	12
Colon	66	55	11
Esophagus	18	11	7
Leukemia	51	40	11
Non-Hodgkin lymphoma	65	56	9
Oral cavity	62	41	21
Prostate	99	95	4
Rectum	66	58	8
Urinary bladder	81	65	16
Uterine cervix	74	66	8
Uterine corpus	86	61	25

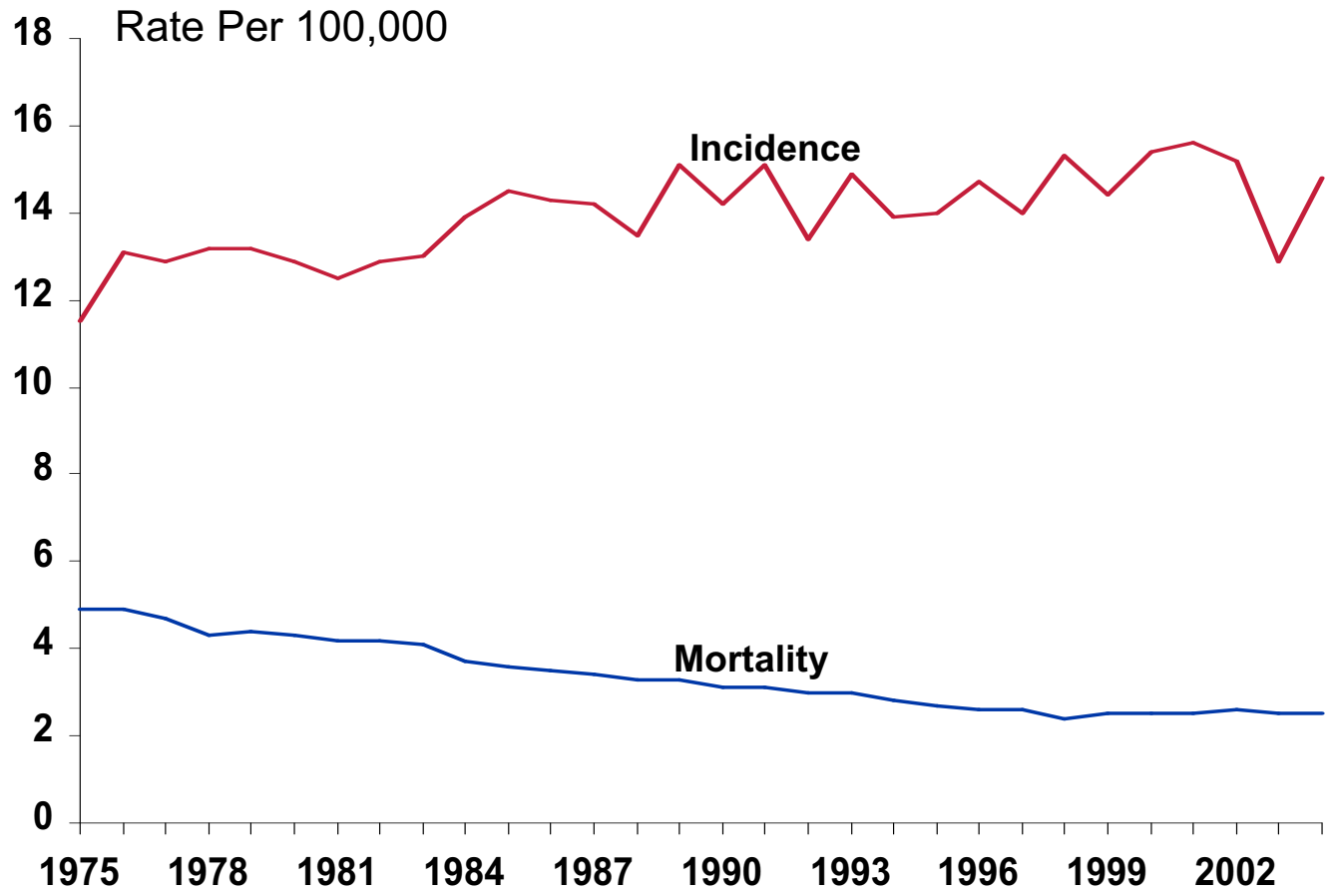
***5-year relative survival rates based on cancer patients diagnosed from 1996 to 2003 and followed through 2004. Source: Surveillance, Epidemiology, and End Results Program, 1975-2004, Division of Cancer Control and Population Sciences, National Cancer Institute, 2007.**

Trends in Five-year Relative Survival (%)* Rates, US, 1975-2003

Site	1975-1977	1984-1986	1996-2003
All sites	50	54	66
Breast (female)	75	79	89
Colon	51	59	65
Leukemia	35	42	50
Lung and bronchus	13	13	16
Melanoma	82	87	92
Non-Hodgkin lymphoma	48	53	64
Ovary	37	40	45
Pancreas	2	3	5
Prostate	69	76	99
Rectum	49	57	66
Urinary bladder	74	78	81

***5-year relative survival rates based on follow up of patients through 2004.**
Source: Surveillance, Epidemiology, and End Results Program, 1975-2004, Division of Cancer Control and Population Sciences, National Cancer Institute, 2007.

Cancer Incidence & Death Rates* in Children 0-14 Years, 1975-2004



***Age-adjusted to the 2000 Standard population.**
Source: Surveillance, Epidemiology, and End Results Program, 1975-2004, Division of Cancer Control and Population Sciences, National Cancer Institute, 2007.

Cancer Incidence Rates* in Children 0-14 Years by Sex, 2000-2004

Site	Male	Female	Total
All sites	15.8	14.0	14.9
Leukemia	5.3	4.5	4.9
Acute Lymphocytic	4.1	3.5	3.8
Brain/ONS	3.4	3.1	3.2
Soft tissue	1.0	1.0	1.0
Non-Hodgkin lymphoma	1.1	0.6	0.9
Kidney and renal pelvis	0.8	0.8	0.8
Bone and Joint	0.7	0.7	0.7
Hodgkin lymphoma	0.7	0.4	0.5

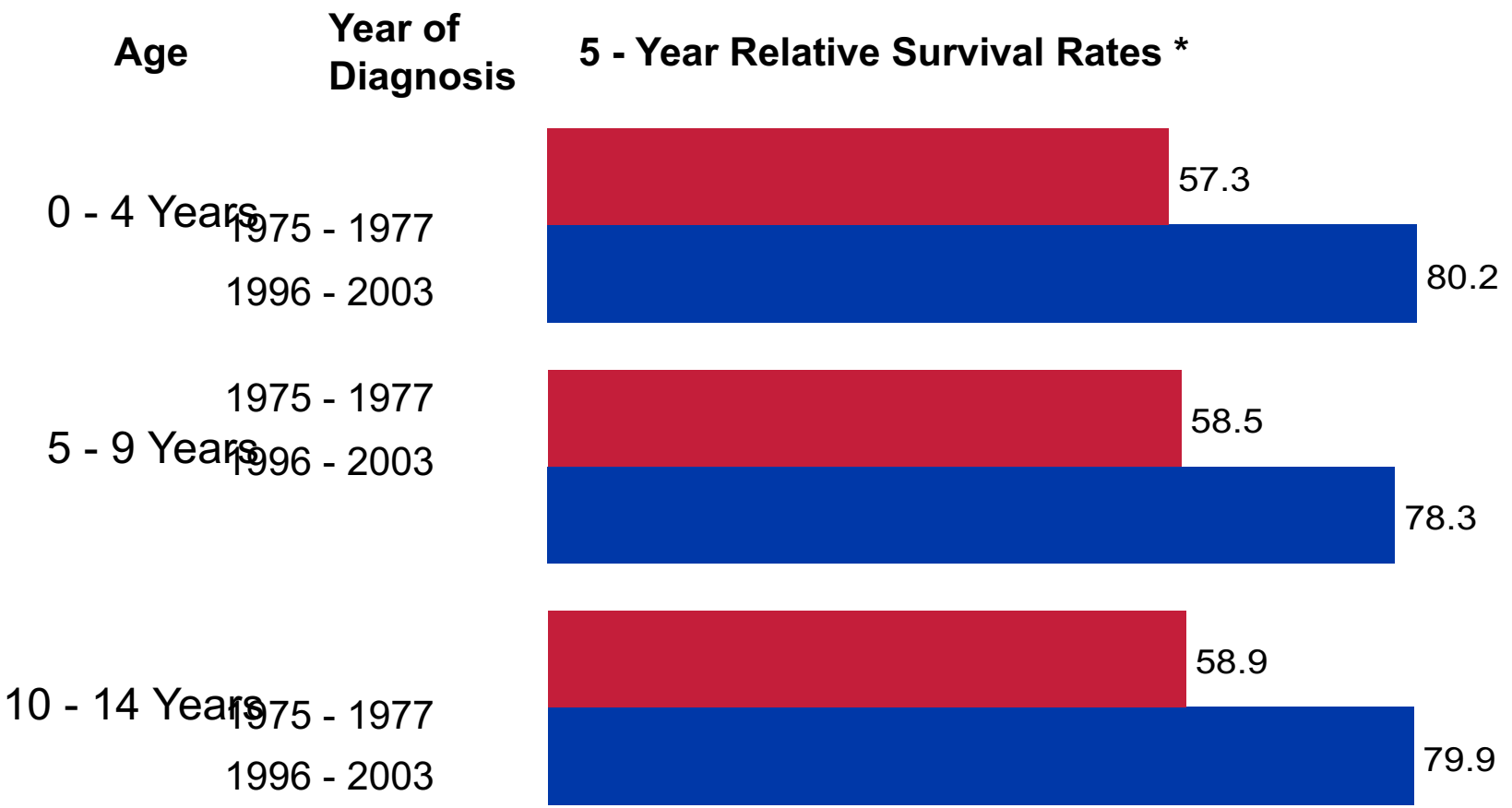
***Per 100,000, age-adjusted to the 2000 US standard population.**
ONS = Other nervous system
Source: Surveillance, Epidemiology, and End Results Program, 1975-2004, Division of Cancer Control and Population Sciences, National Cancer Institute, 2007.

Cancer Death Rates* in Children 0-14 Years by Sex, US, 2000-2004

Site	Male	Female	Total
All sites	2.7	2.3	2.5
Leukemia	0.9	0.7	0.8
Acute Lymphocytic	0.4	0.3	0.4
Brain/ONS	0.8	0.7	0.7
Non-Hodgkin lymphoma	0.1	0.1	0.1
Soft tissue	0.1	0.1	0.1
Bone and Joint	0.1	0.1	0.1
Kidney and Renal pelvis	0.1	0.1	0.1

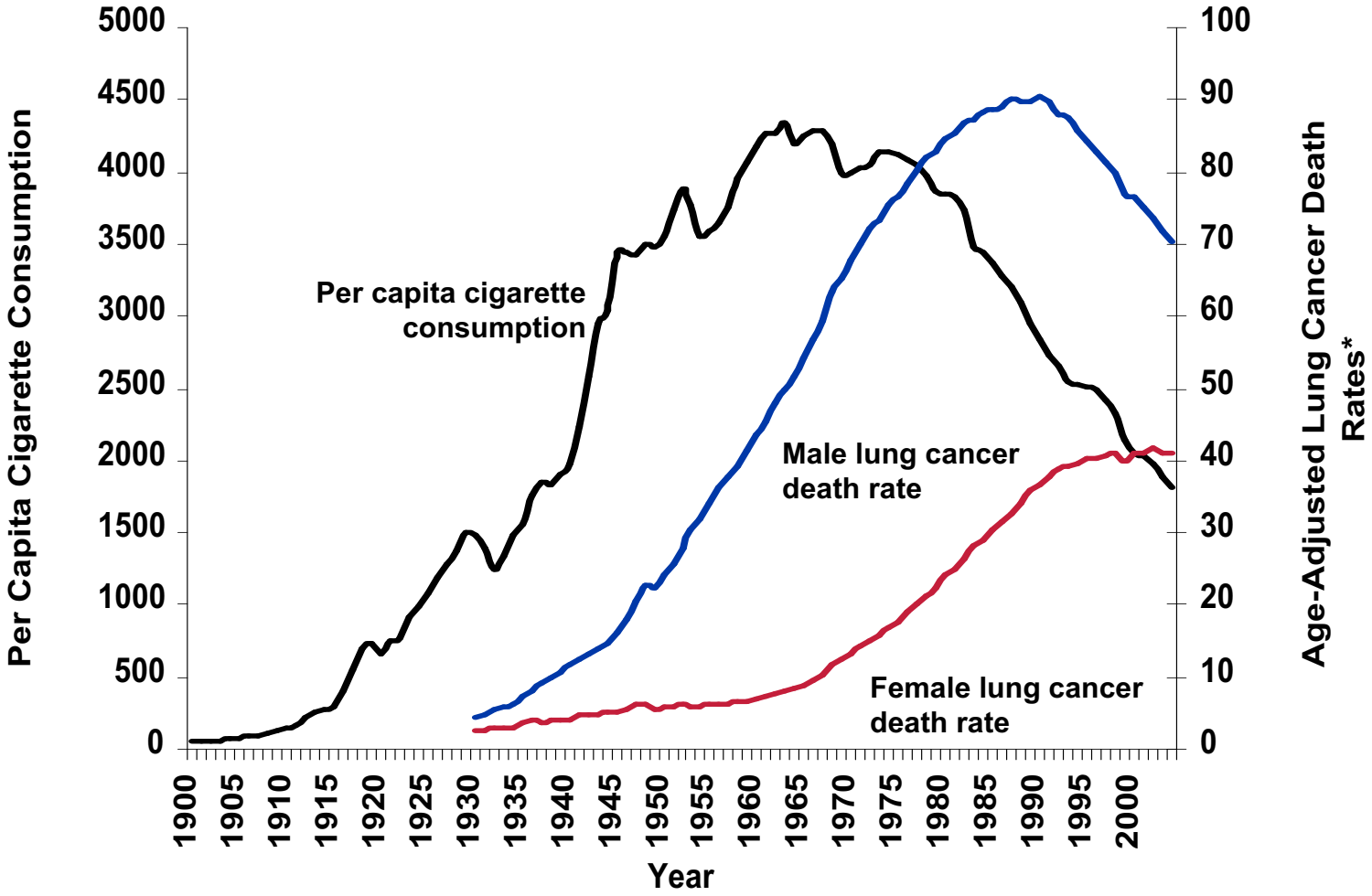
***Per 100,000, age-adjusted to the 2000 US standard population.**
ONS = Other nervous system
Source: Surveillance, Epidemiology, and End Results Program, 1975-2004, Division of Cancer Control and Population Sciences, National Cancer Institute, 2007.

Trends in Cancer Survival by Age Group, Children 0-14 Years,1975-2003



***5-year relative survival rates, based on follow up of patients through 2004.**
Source: Surveillance, Epidemiology, and End Results Program, 1975-2004, Division of Cancer Control and Population Sciences, National Cancer Institute, 2007.

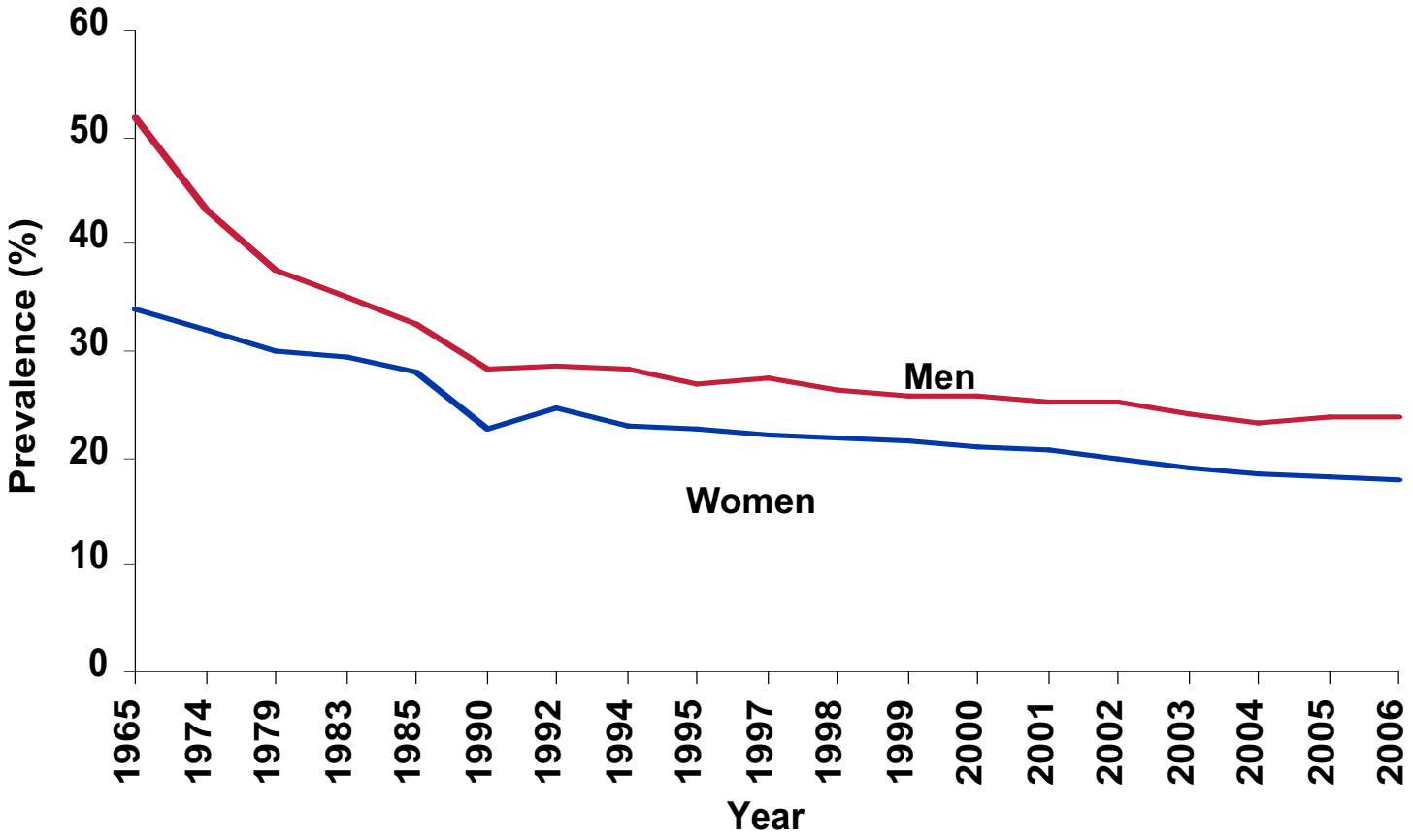
Tobacco Use in the US, 1900-2004



*Age-adjusted to 2000 US standard population.

Source: Death rates: US Mortality Data, 1960-2004, US Mortality Volumes, 1930-1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2006. Cigarette consumption: US Department of Agriculture, 1900-2004.

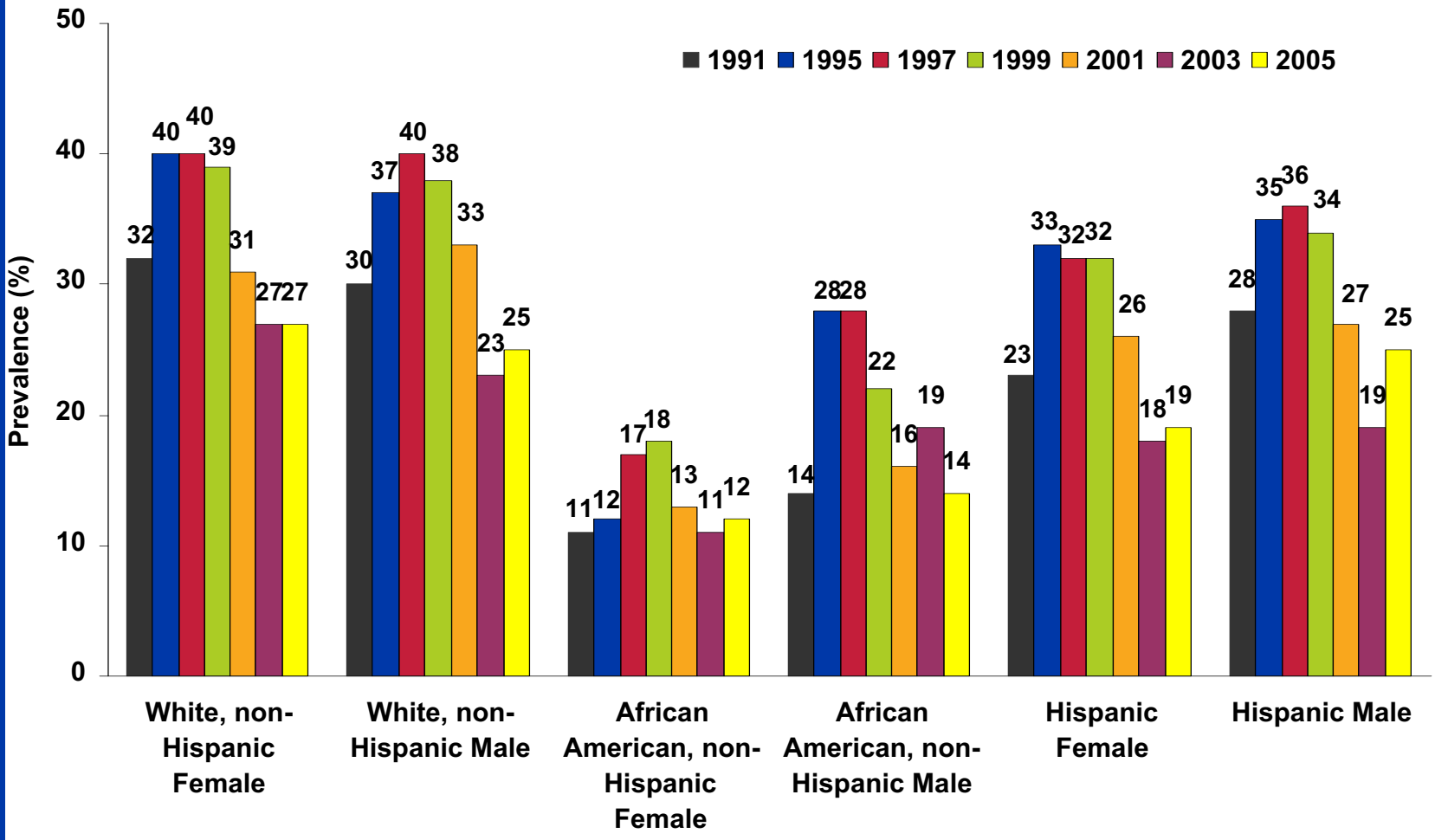
Trends in Cigarette Smoking Prevalence* (%), by Sex, Adults 18 and Older, US, 1965-2006



*Redesign of survey in 1997 may affect trends.

Source: National Health Interview Survey, 1965-2006, National Center for Health Statistics, Centers for Disease Control and Prevention, 2007.

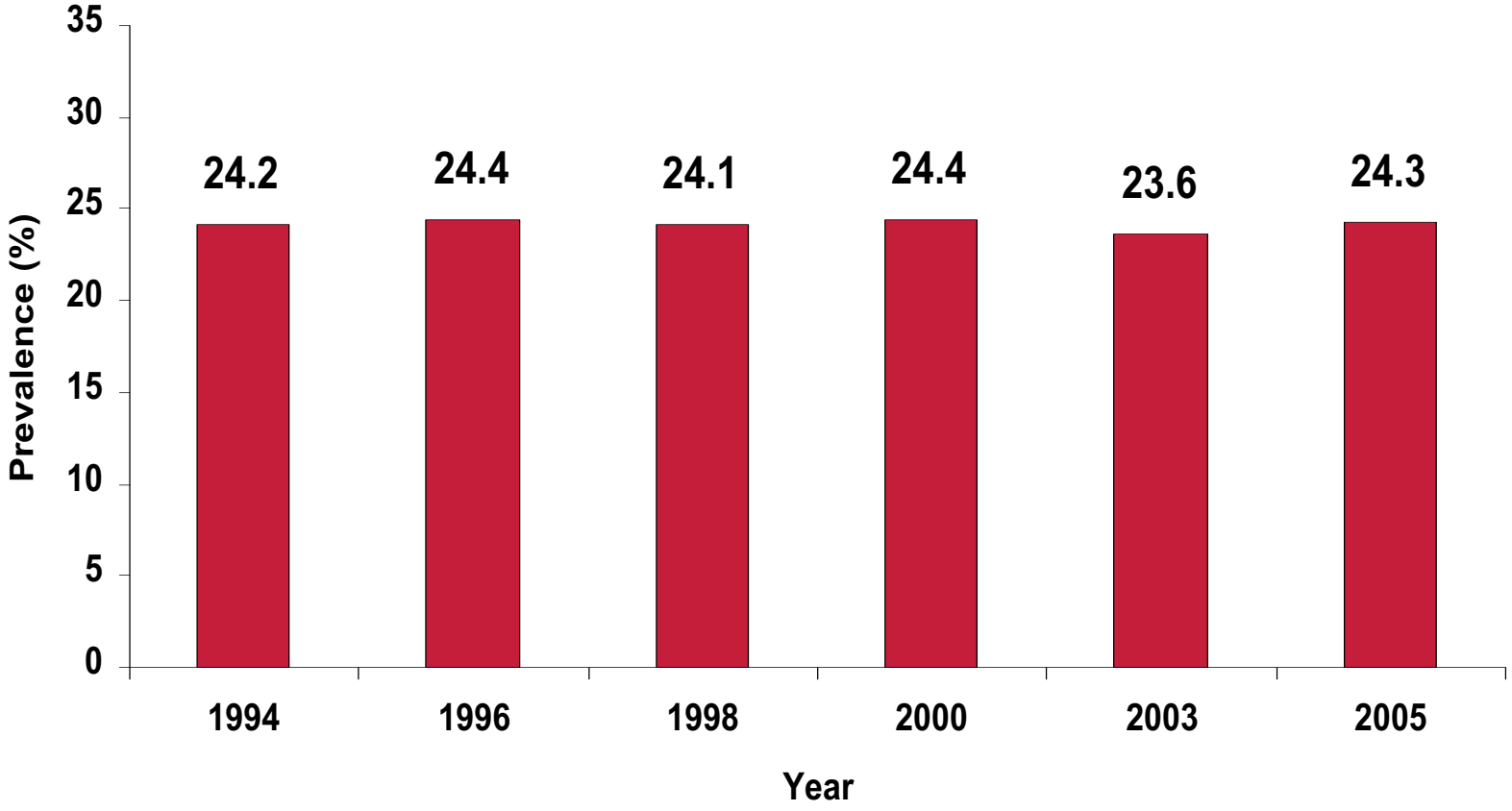
Current* Cigarette Smoking Prevalence (%) Among High School Students by Sex and Race/Ethnicity, US, 1991-2005



*Smoked cigarettes on one or more of the 30 days preceding the survey.

Source: Youth Risk Behavior Surveillance System, 1991, 1995, 1997, 1999, 2001, 2003, 2005 National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 2006.

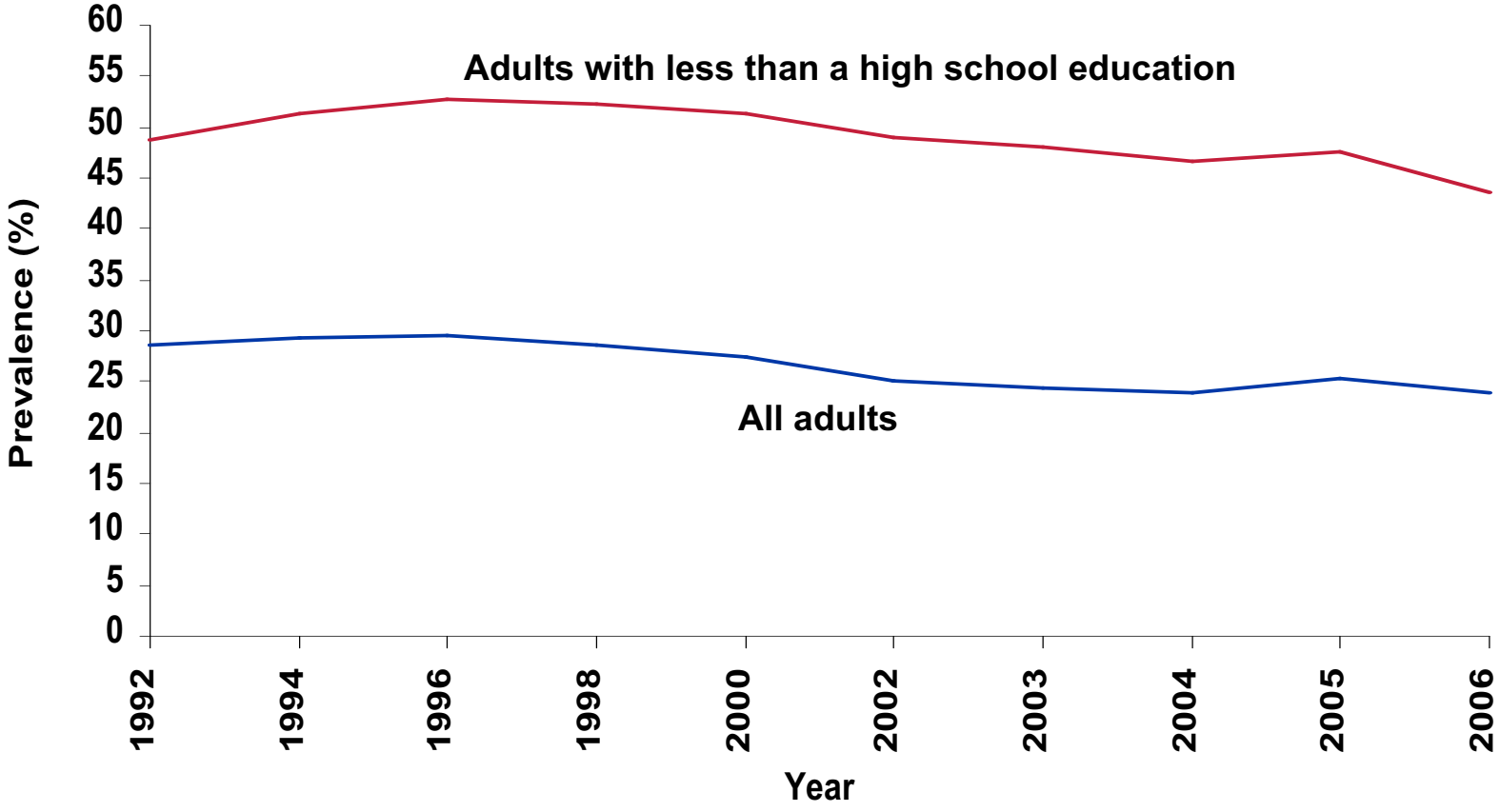
Trends in Consumption of Five or More Recommended Vegetable and Fruit Servings for Cancer Prevention, Adults 18 and Older, US 1994-2005



Note: Data from participating states and the District of Columbia were aggregated to represent the United States.

Source: Behavioral Risk Factor Surveillance System CD-ROM (1984-1995, 1996, 1998) and Public Use Data Tape (2000, 2003, 2005), National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 1997, 1999, 2000, 2001, 2004, 2006.

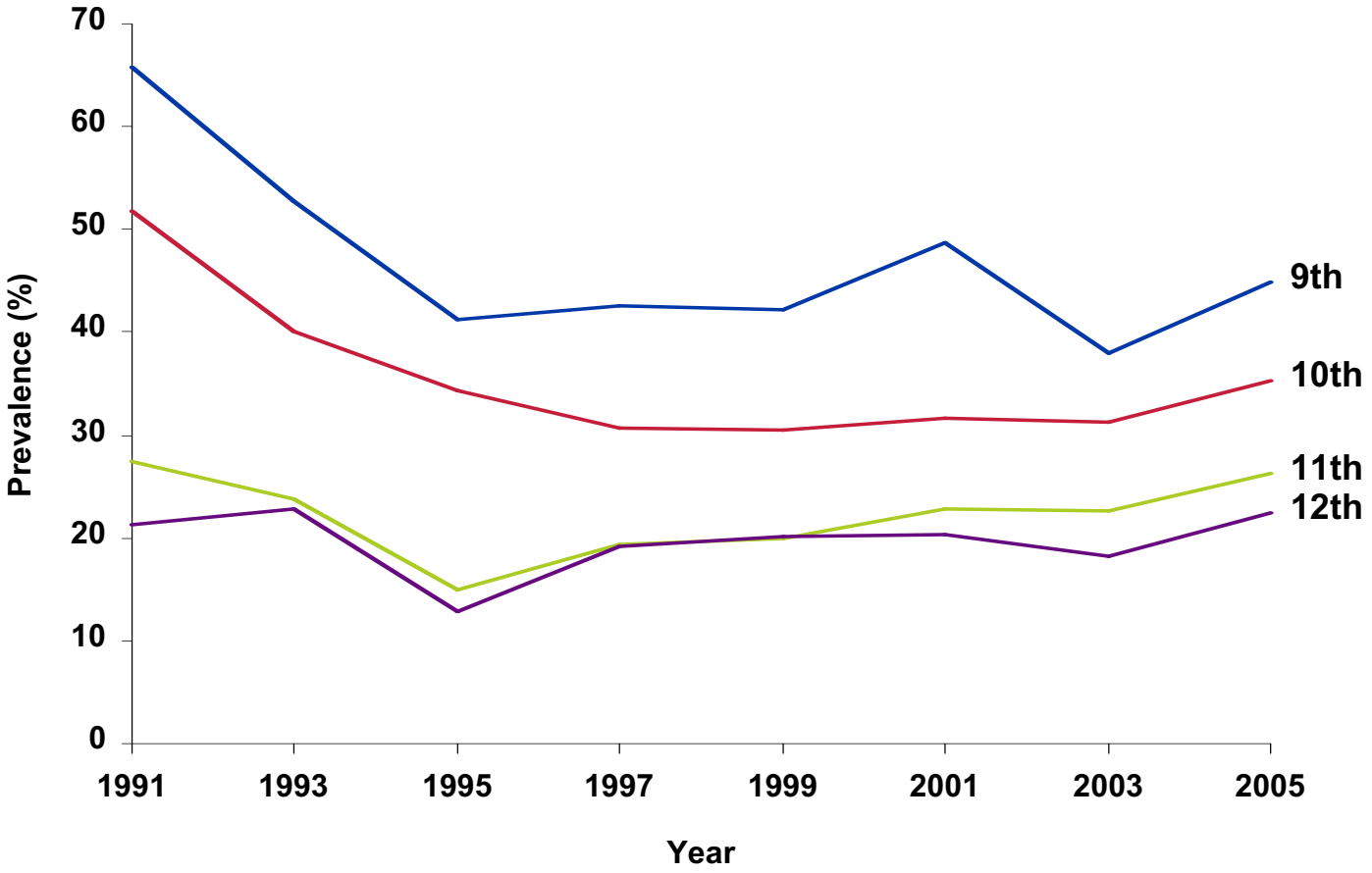
Trends in Prevalence (%) of No Leisure-Time Physical Activity, by Educational Attainment, Adults 18 and Older, US, 1992-2006



Note: Data from participating states and the District of Columbia were aggregated to represent the United States. Educational attainment is for adults 25 and older.

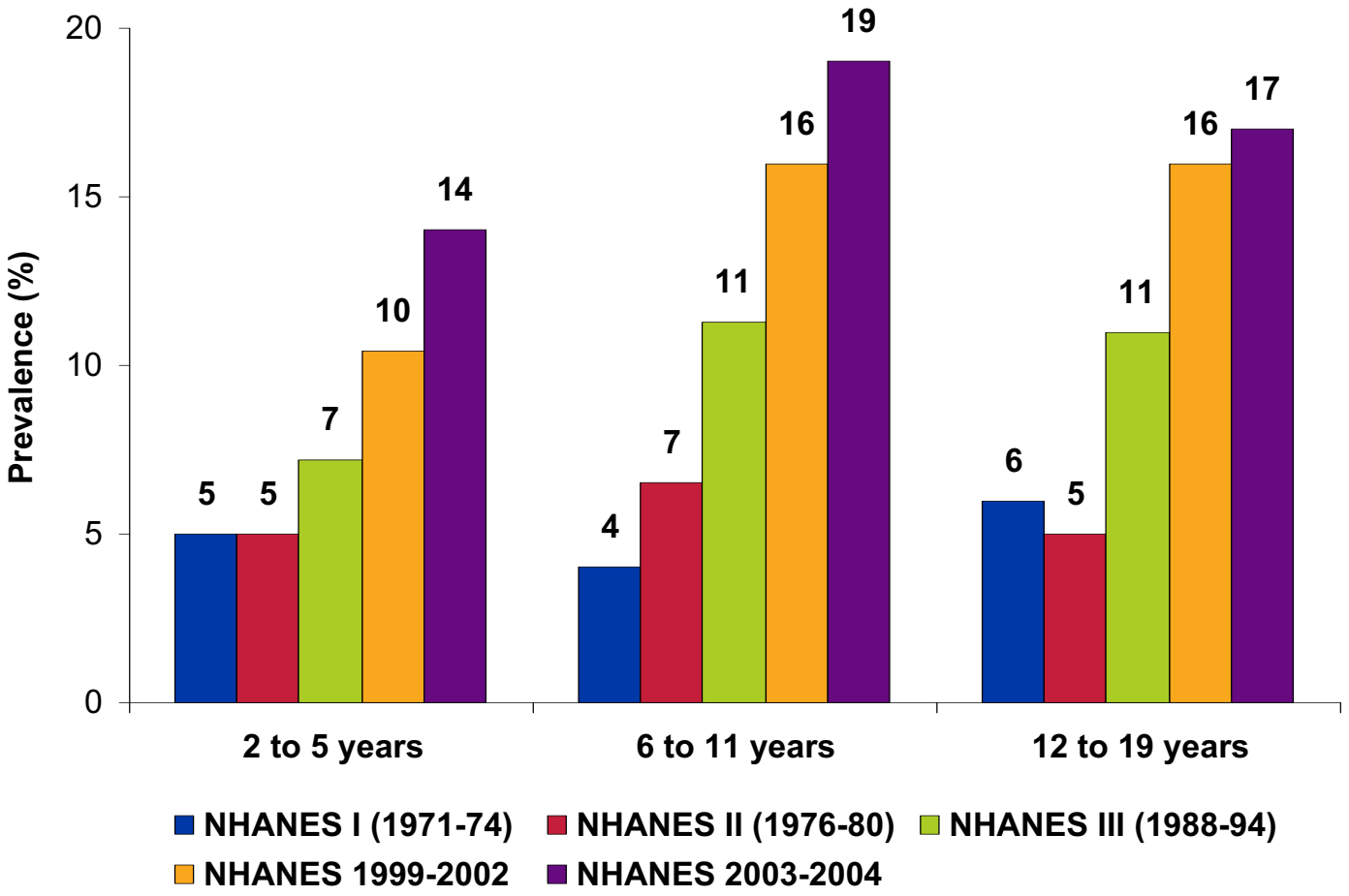
Source: Behavioral Risk Factor Surveillance System CD-ROM (1984-1995, 1996, 1998) and Public Use Data Tape (2000, 2002, 2004, 2005, 2006), National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 1997, 1999, 2000, 2001, 2003, 2005, 2006, 2007.

Trends in Prevalence (%) of High School Students Attending PE Class Daily, by Grade, US, 1991-2005



Source: Youth Risk Behavior Surveillance System, 1991-2003, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 2004. MMWR 2004;53(36):844-847. 2005: Youth Risk Behavior Surveillance System, 2005. MMWR Morb Mortal Wkly Rep. 2006;55(SS-5).

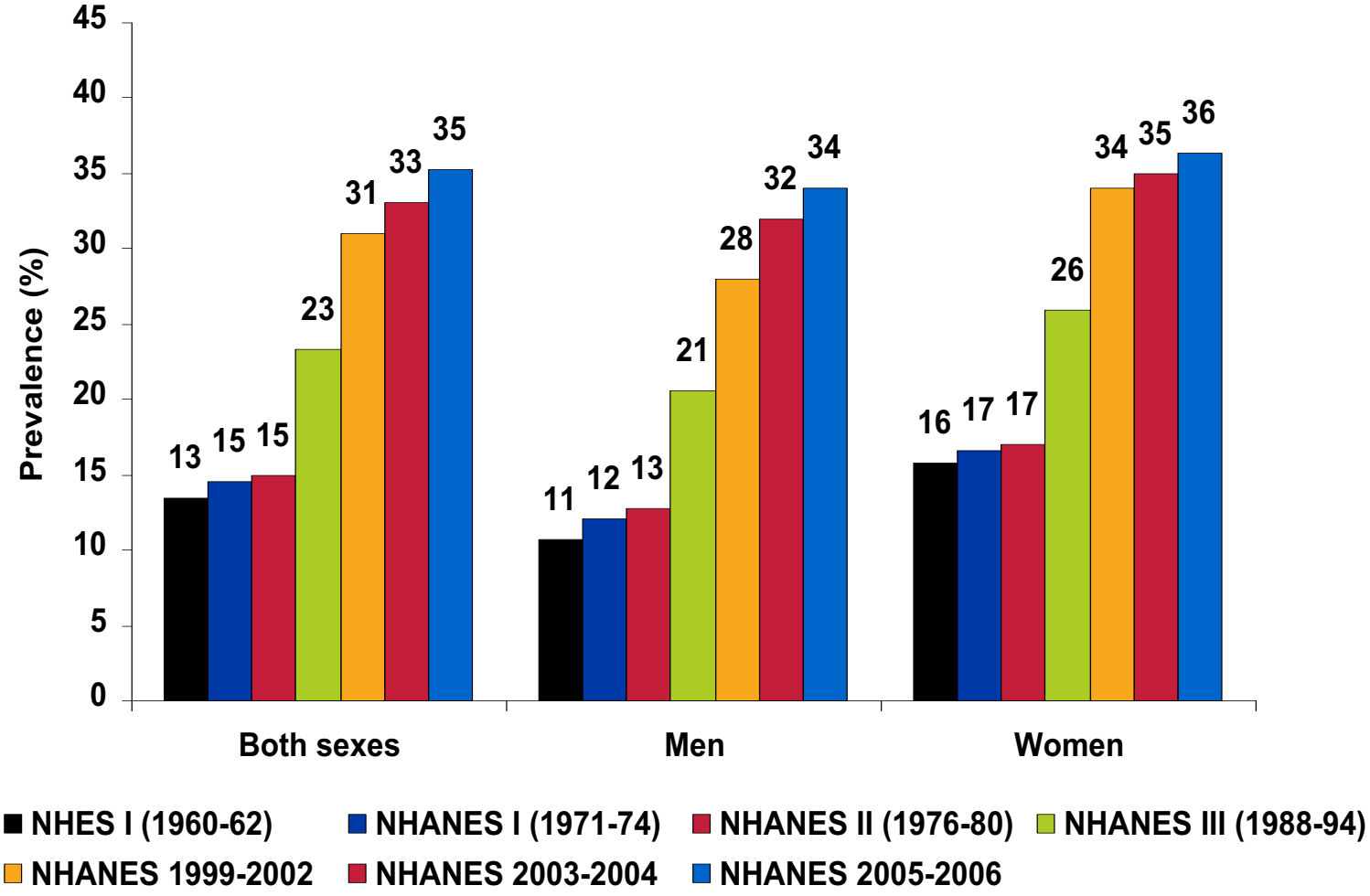
Trends in Overweight* Prevalence (%), Children and Adolescents, by Age Group, US, 1971-2004



*Overweight is defined as at or above the 95th percentile for body mass index by age and sex based on reference data.

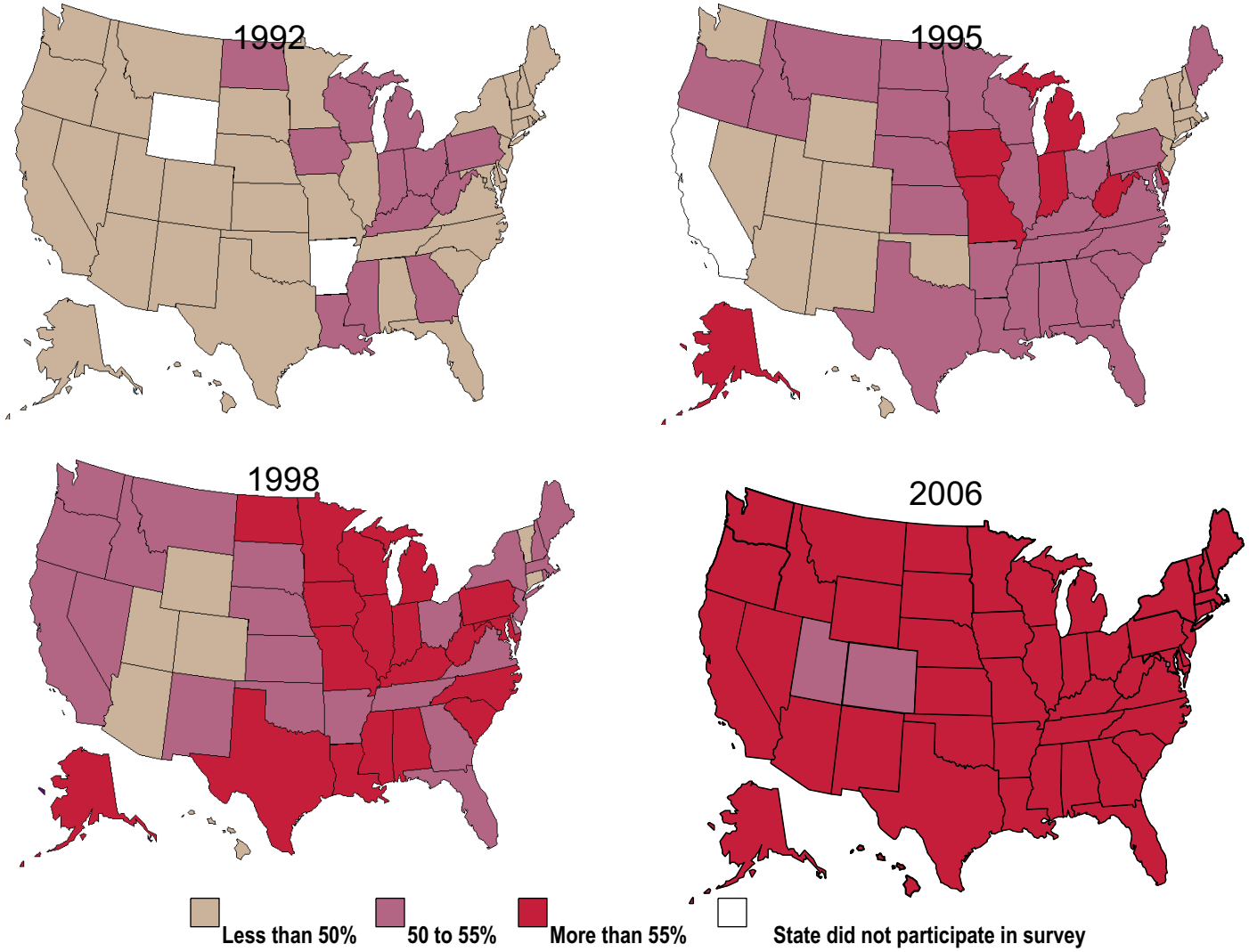
Source: National Health and Nutrition Examination Survey, 1971-1974, 1976-1980, 1988-1994, 1999-2002, National Center for Health Statistics, Centers for Disease Control and Prevention, 2002, 2004. 2003-2004: Ogden CL, et al. Prevalence of Overweight and Obesity in the United States, 1999-2004. JAMA 2006; 295 (13): 1549-55.

Trends in Obesity* Prevalence (%), By Gender, Adults Aged 20 to 74, US, 1960-2006†



*Obesity is defined as a body mass index of 30 kg/m^2 or greater. † Age adjusted to the 2000 US standard population. Source: National Health Examination Survey 1960-1962, National Health and Nutrition Examination Survey, 1971-1974, 1976-1980, 1988-1994, 1999-2002, National Center for Health Statistics, Centers for Disease Control and Prevention, 2002, 2004. 2003-2004, 2005-2006: National Health and Nutrition Examination Survey Public Use Data Files, 2003-2004, 2005-2006, National Center for Health Statistics, Centers for Disease Control and Prevention, 2006, 2007.

Trends in Overweight* Prevalence (%), Adults 18 and Older, US, 1992-2006



*Body mass index of 25.0 kg/m^{2}or greater. Source: Behavioral Risk Factor Surveillance System, CD-ROM (1984-1995, 1998) and Public Use Data Tape (2004, 2006), National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 1997, 2000, 2005, 2007.

Screening Guidelines for the Early Detection of Breast Cancer, American Cancer Society

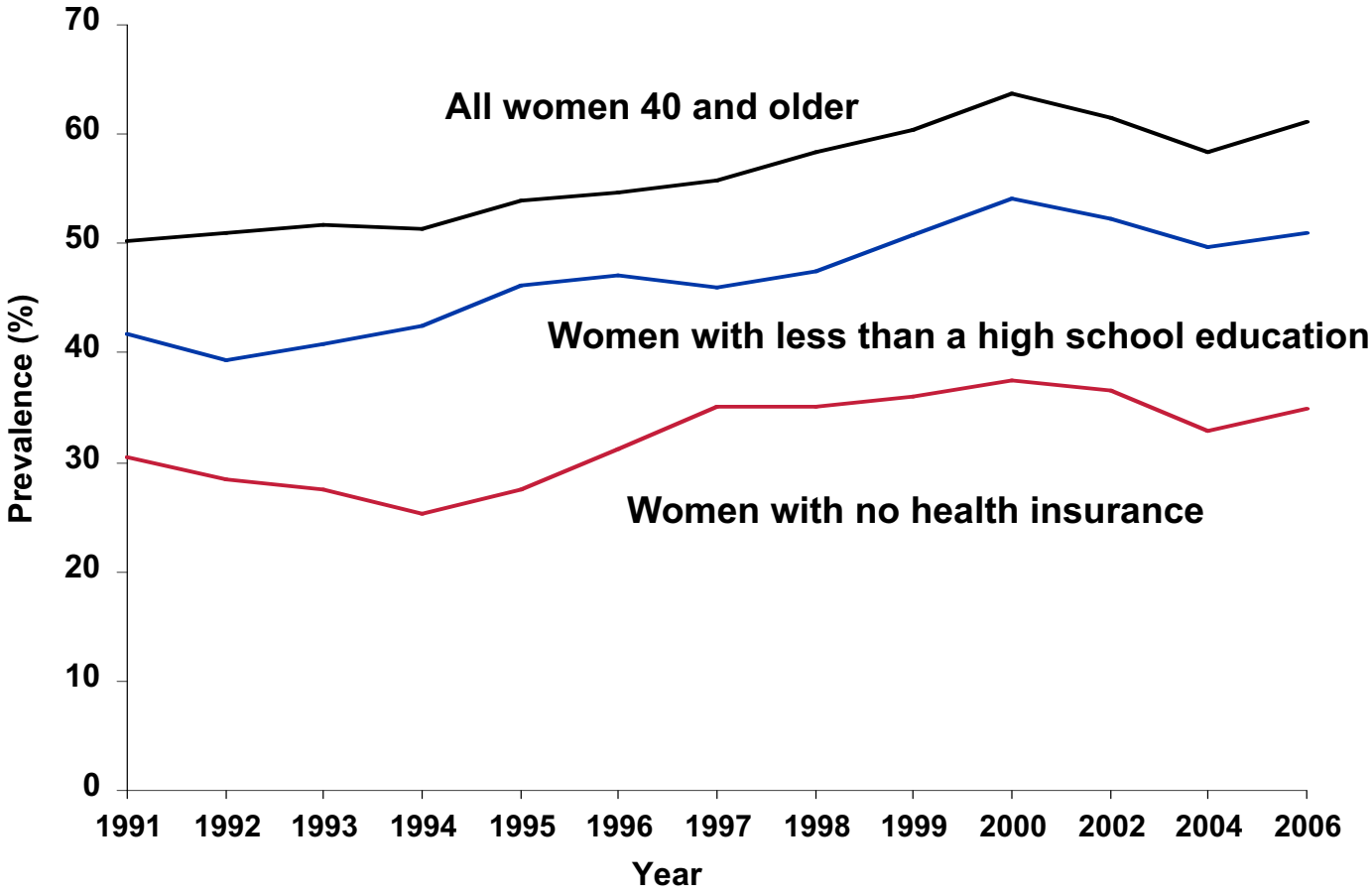
- Yearly mammograms are recommended starting at age 40.

- A clinical breast exam should be part of a periodic health exam, about every 3 years for women in their 20s and 30s, and every year for women 40 and older.

- Women should know how their breasts normally feel and report any breast changes promptly to their health care providers. Breast self-exam is an option for women starting in their 20s.

- Screening MRI is recommended for women with an approximately 20%-25% or greater lifetime risk of breast cancer, including women with a strong family history of breast or ovarian cancer and women who were treated for Hodgkin disease.

Mammogram Prevalence (%), by Educational Attainment and Health Insurance Status, Women 40 and Older, US, 1991-2006



*A mammogram within the past year. Note: Data from participating states and the District of Columbia were aggregated to represent the United States.
Source: Behavior Risk Factor Surveillance System CD-ROM (1984-1995, 1996-1997, 1998, 1999) and Public Use Data Tape (2000, 2002, 2004, 2006), National Centers for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 1997, 1999, 2000, 2000, 2001, 2003, 2005, 2007.

Screening Guidelines for the Early Detection of Cervical Cancer, American Cancer Society

- Screening should begin approximately three years after a women begins having vaginal intercourse, but no later than 21 years of age.

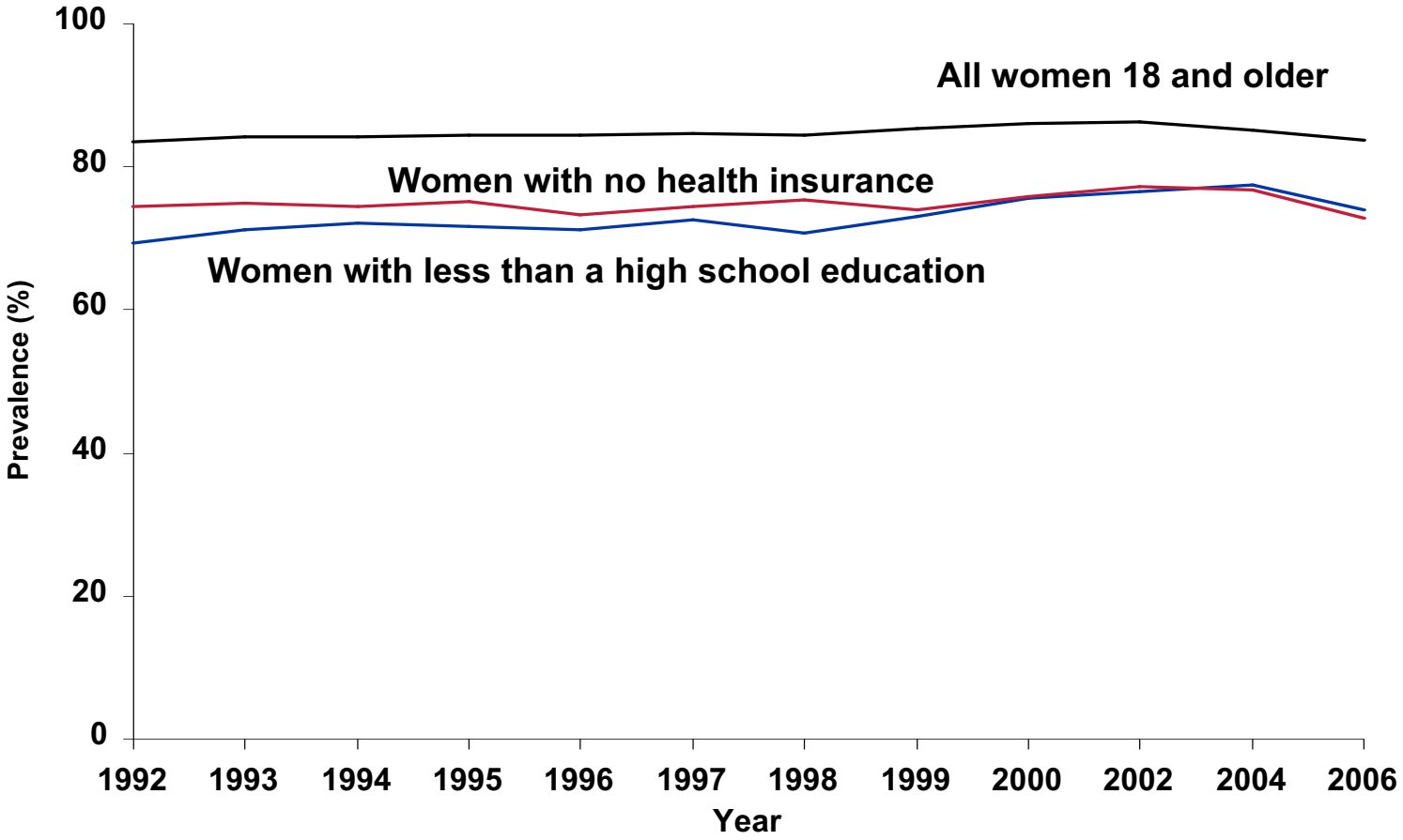
- Screening should be done every year with regular Pap tests or every two years using liquid-based tests.

- At or after age 30, women who have had three normal test results in a row may get screened every 2-3 years. However, doctors may suggest a woman get screened more frequently if she has certain risk factors, such as HIV infection or a weakened immune system.

- Women 70 and older who have had three or more consecutive Pap tests in the last ten years may choose to stop cervical cancer screening.

- Screening after a total hysterectomy (with removal of the cervix) is not necessary unless the surgery was done as a treatment for cervical cancer.

Trends in Recent* Pap Test Prevalence (%), by Educational Attainment and Health Insurance Status, Women 18 and Older, US, 1992-2006



*** A Pap test within the past three years. Note: Data from participating states and the District of Columbia were aggregated to represent the United States. Educational attainment is for women 25 and older. Source: Behavior Risk Factor Surveillance System CD-ROM (1984-1995, 1996-1997, 1998, 1999) and Public Use Data Tape (2000, 2002, 2004, 2006), National Center for Chronic Disease Prevention and Health Promotion, Center for Disease Control and Prevention, 1997, 1999, 2000, 2000, 2001, 2003, 2005, 2007.**

Screening Guidelines for the Early Detection of Colorectal Cancer and Adenomas, American Cancer Society 2008

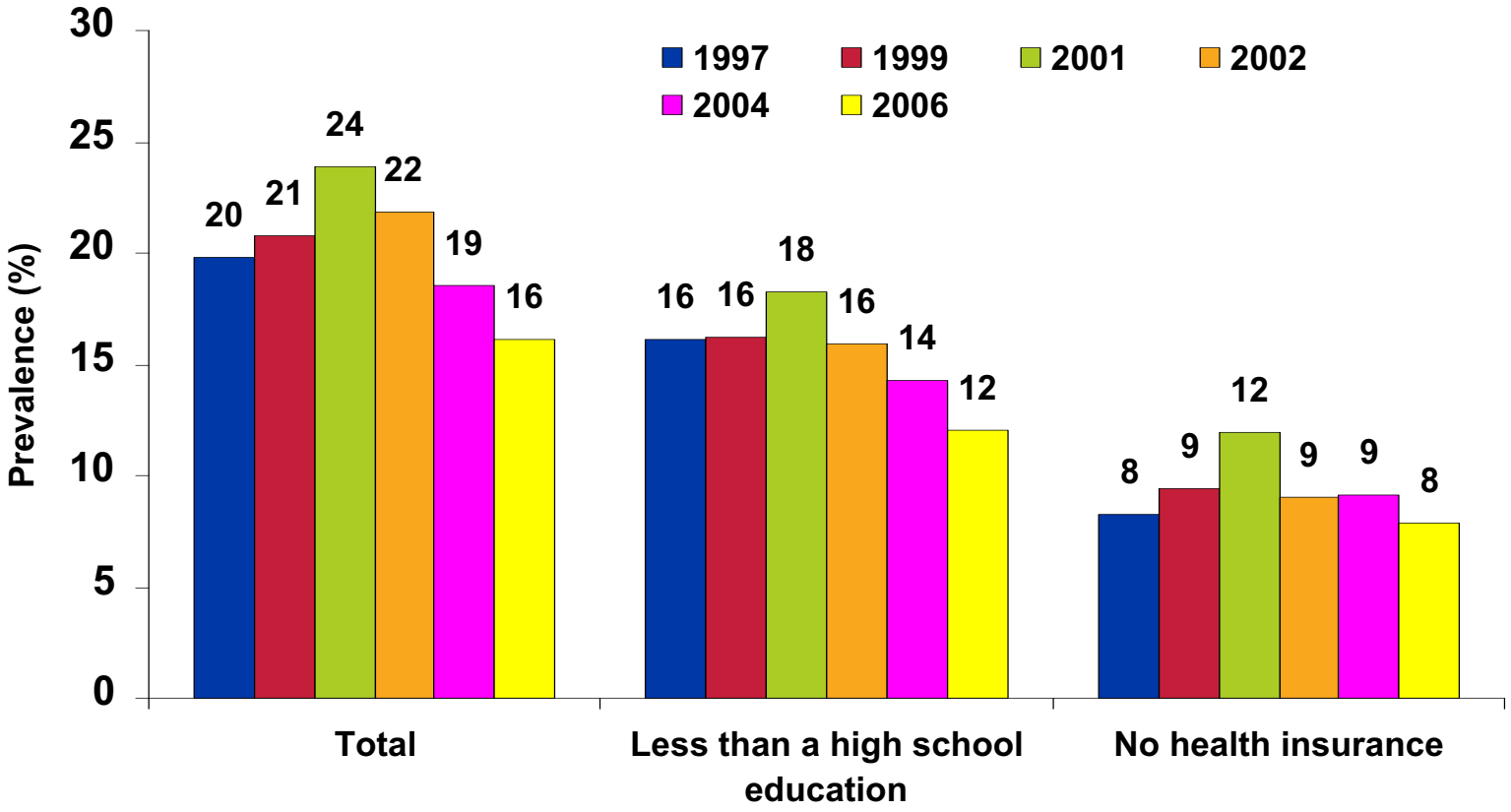
Beginning at age 50, men and women should follow one of the following examination schedules:

- A flexible sigmoidoscopy (FSIG) every five years
- A colonoscopy every ten years
- A double-contrast barium enema every five years
- A Computerized Tomographic (CT) colonography every five years
- A guaiac-based fecal occult blood test (FOBT) **or** a fecal immunochemical test (FIT) every year
- A stool DNA test (~~interval uncertain~~)

  - Tests that detect adenomatous polyps and cancer
  - Tests that primarily detect cancer

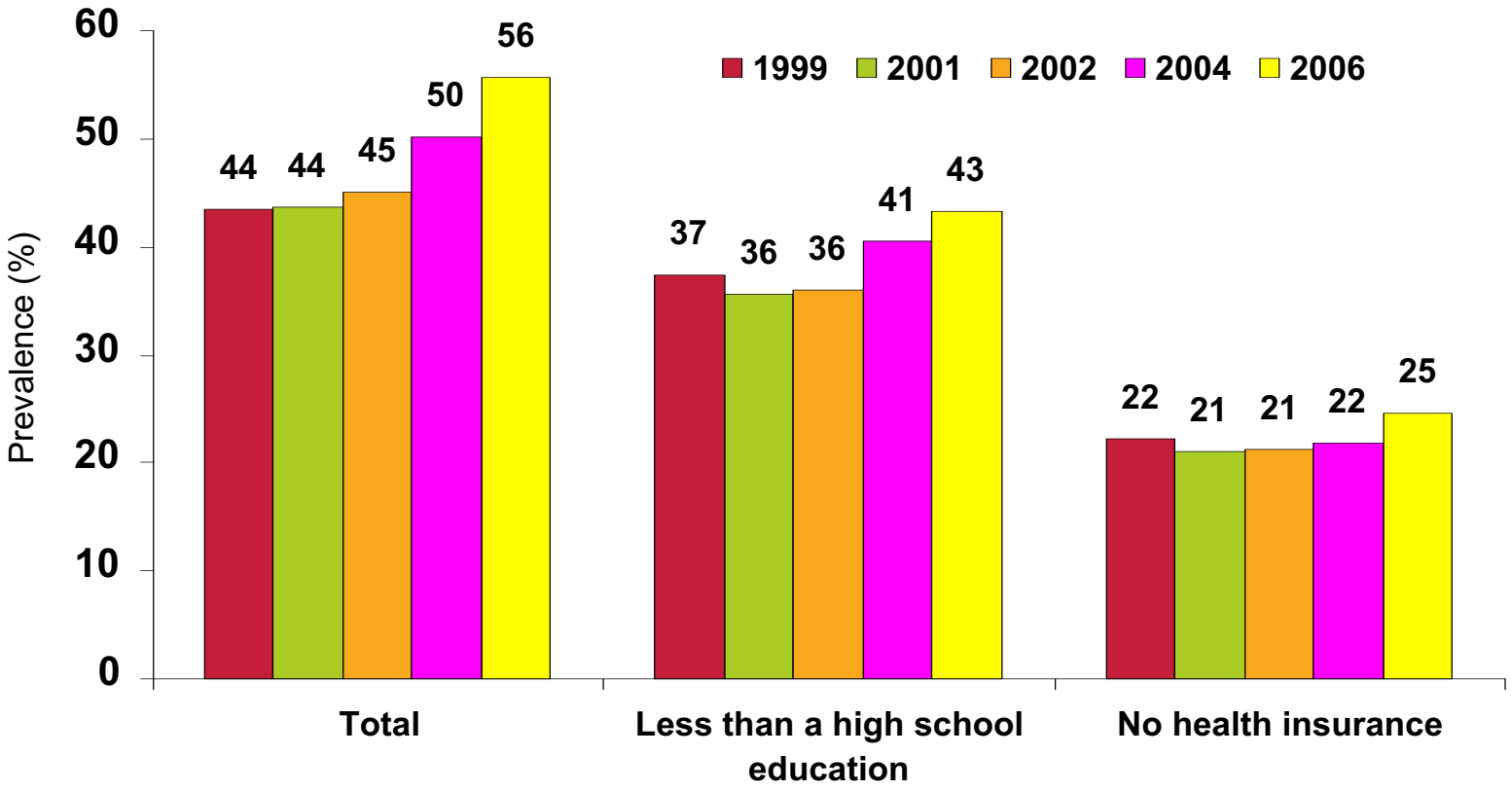
People who are at moderate or high risk for colorectal cancer should talk with a doctor about a different testing schedule

Trends in Recent* Fecal Occult Blood Test Prevalence (%), by Educational Attainment and Health Insurance Status, Adults 50 Years and Older, US, 1997-2006



*A fecal occult blood test within the past year. Note: Data from participating states and the District of Columbia were aggregated to represent the United States.
Source: Behavioral Risk Factor Surveillance System CD-ROM (1996-1997, 1999) and Public Use Data Tape (2001, 2002, 2004, 2006), National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Contro and Prevention and Prevention, 1999, 2000, 2002, 2003, 2005, 2007.

Trends in Recent* Flexible Sigmoidoscopy or Colonoscopy Prevalence (%), by Educational Attainment and Health Insurance Status, Adults 50 Years and Older, US, 1997-2006



*A flexible sigmoidoscopy or colonoscopy within the past ten years. Note: Data from participating states and the District of Columbia were aggregated to represent the United States.
Source: Behavioral Risk Factor Surveillance System CD-ROM (1996-1997, 1999) and Public Use Data Tape (2001, 2002, 2004, 2006), National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention and Prevention, 1999, 2000, 2002, 2003, 2005, 2007.

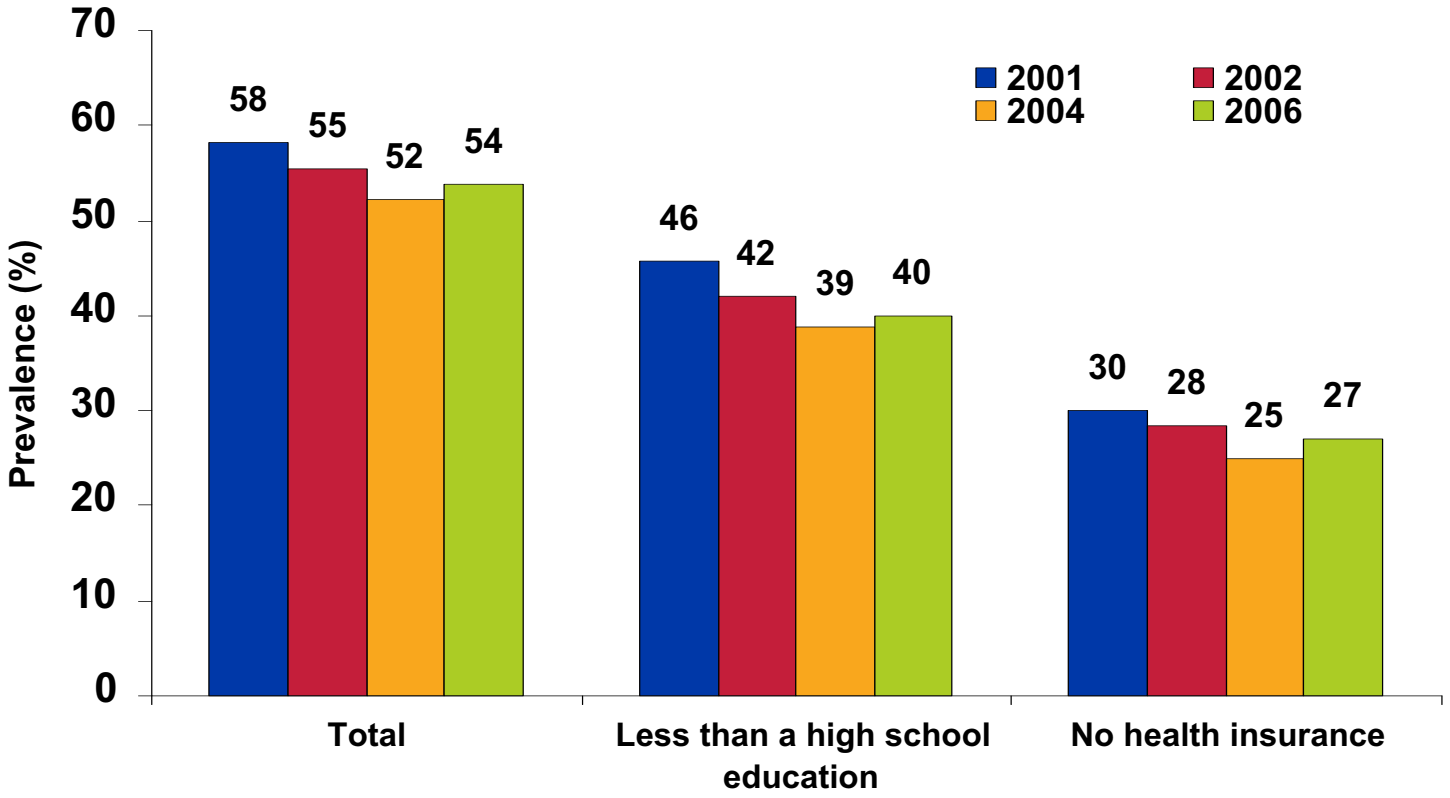
Screening Guidelines for the Early Detection of Prostate Cancer, American Cancer Society

The prostate-specific antigen (PSA) test and the digital rectal examination (DRE) should be offered annually, beginning at age 50, to men who have a life expectancy of at least 10 years.

Men at high risk (African-American men and men with a strong family history of one or more first-degree relatives diagnosed with prostate cancer at an early age) should begin testing at age 45.

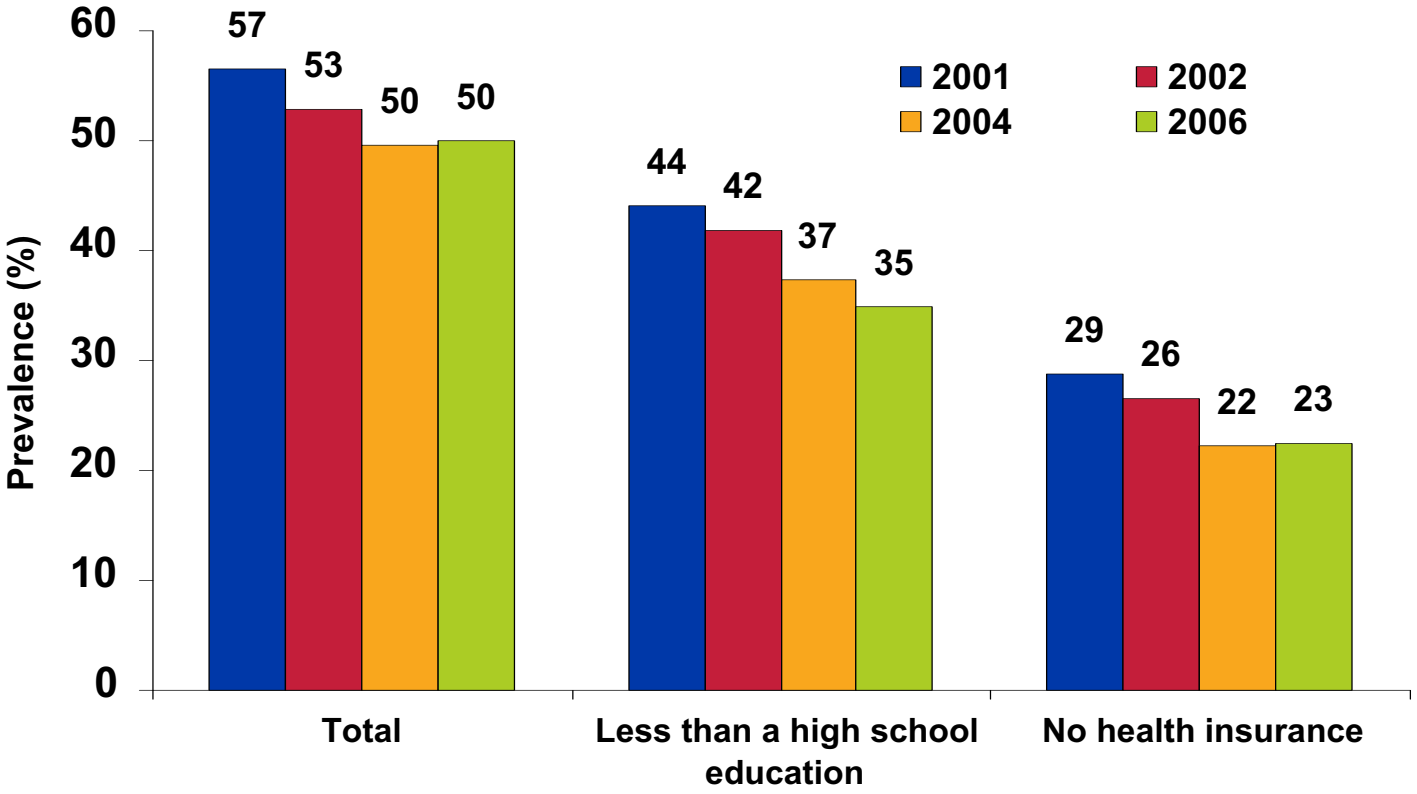
For men at average risk and high risk, information should be provided about what is known and what is uncertain about the benefits and limitations of early detection and treatment of prostate cancer so that they can make an informed decision about testing.

Recent* Prostate-Specific Antigen (PSA) Test Prevalence (%), by Educational Attainment and Health Insurance Status, Men 50 Years and Older, US, 2001-2006



*A prostate-specific antigen (PSA) test within the past year. Note: Data from participating states and the District of Columbia were aggregated to represent the United States.
Source: Behavioral Risk Factor Surveillance System Public Use Data Tape (2001, 2002, 2004, 2006), National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 2002, 2003, 2005, 2007.

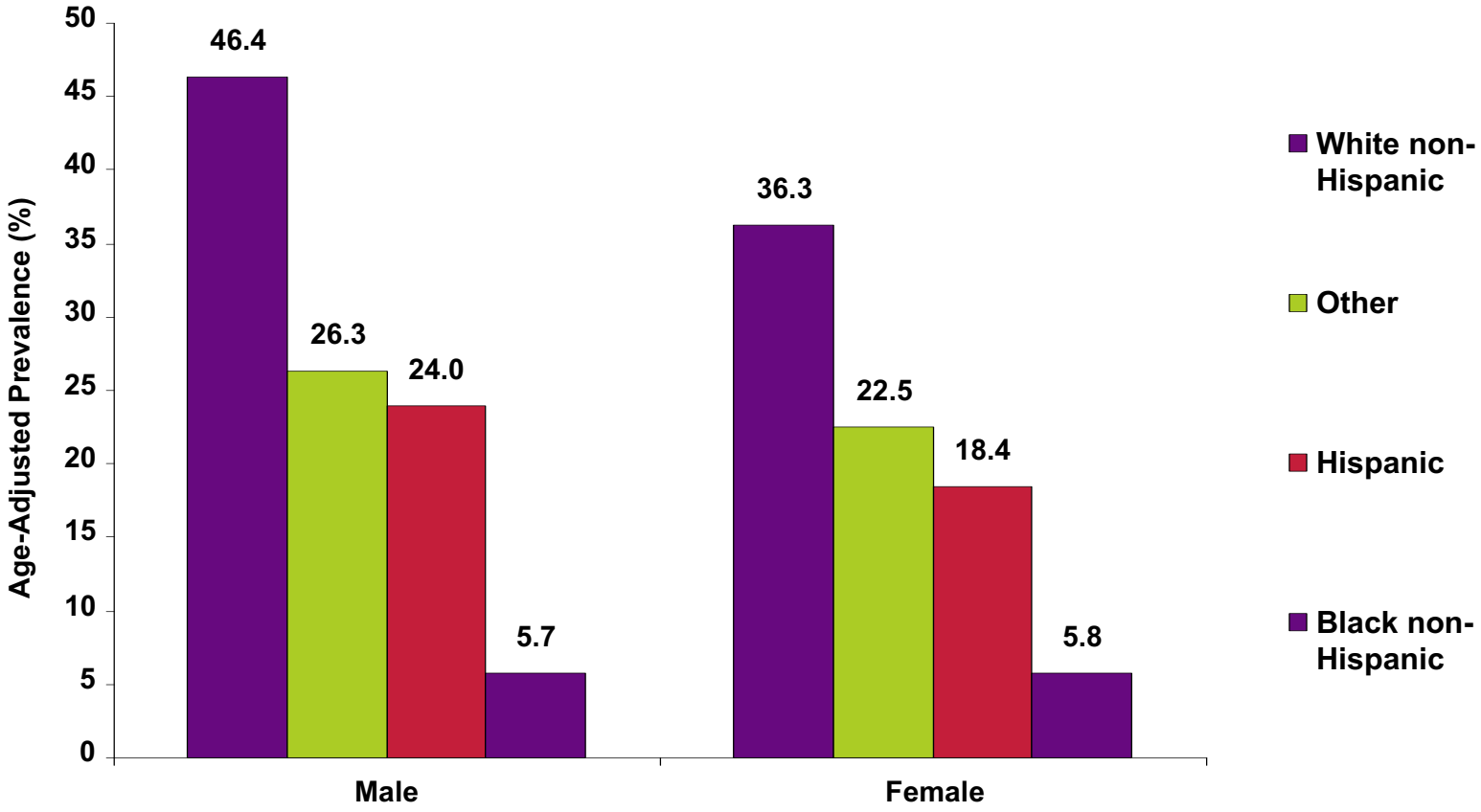
Recent* Digital Rectal Examination (DRE) Prevalence (%), by Educational Attainment and Health Insurance Status, Men 50 Years and Older, US, 2001-2006



*A digital rectal examination (DRE) within the past year. Note: Data from participating states and the District of Columbia were aggregated to represent the United States.

Source: Behavioral Risk Factor Surveillance System Public Use Data Tape (2001, 2002, 2004, 2006), National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 2002, 2003, 2005, 2007.

Sunburn* Prevalence (%) in the Past Year, Adults 18 and Older, US, 2004



*Reddening of any part of the skin for more than 12 hours. Note: The overall prevalence of sunburn among adult males is 46.4% and among females is 36.3%.

Source: Behavioral Risk Factor Surveillance System Public Use Data Tape , 2004. National Center for Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 2005.

Thank you