

## B. Colon and Rectum Cancer

### Incidence (New Cases)

Cancer of the colon or rectum is often referred to as colorectal cancer. There were 2,549 new cases of colorectal cancer diagnosed among Maryland residents in 2002. The age-adjusted colorectal cancer incidence rate in Maryland for 2002 is 48.9 per 100,000 population (47.1-50.9, 95% C.I.) which is statistically significantly less than the 2002 U.S. SEER age-adjusted colorectal cancer incidence rate of 51.9 per 100,000 population.

### Mortality (Deaths)

A total of 1,078 persons died of colorectal cancer in 2002 in Maryland. Colorectal cancer accounts for 10.4% of all cancer deaths and is the second leading cause of cancer deaths in Maryland. The age-adjusted colorectal cancer mortality rate in Maryland is 21.0 per 100,000 population (19.7-22.3, 95% C.I.). This rate is statistically significantly higher than the 2002 U.S. SEER colorectal cancer mortality rate of 19.6 per 100,000 population. Maryland has the 12<sup>th</sup> highest colorectal cancer mortality rate among the states and the District of Columbia for the period 1998-2002.

**Table 20.**  
**Colorectal Cancer Incidence and Mortality Rates**  
**by Gender and Race, Maryland and the United States, 2002**

<i>Incidence 2002</i>	<i>Total</i>	<i>Males</i>	<i>Females</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
New Cases (#)	2,549	1,258	1,291	1,877	594	78
Incidence Rate*	48.9	55.8	43.4	47.9	54.2	42.9
U.S. SEER Rate*	51.9	59.9	45.6	50.9	61.6	NA
<i>Mortality 2002</i>	<i>Total</i>	<i>Males</i>	<i>Females</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
MD Deaths (#)	1,078	539	539	789	277	12
MD Mortality Rate*	21.0	25.0	17.7	20.0	27.2	9.1
U.S. Mortality Rate*	19.6	23.8	16.5	19.1	26.9	NA

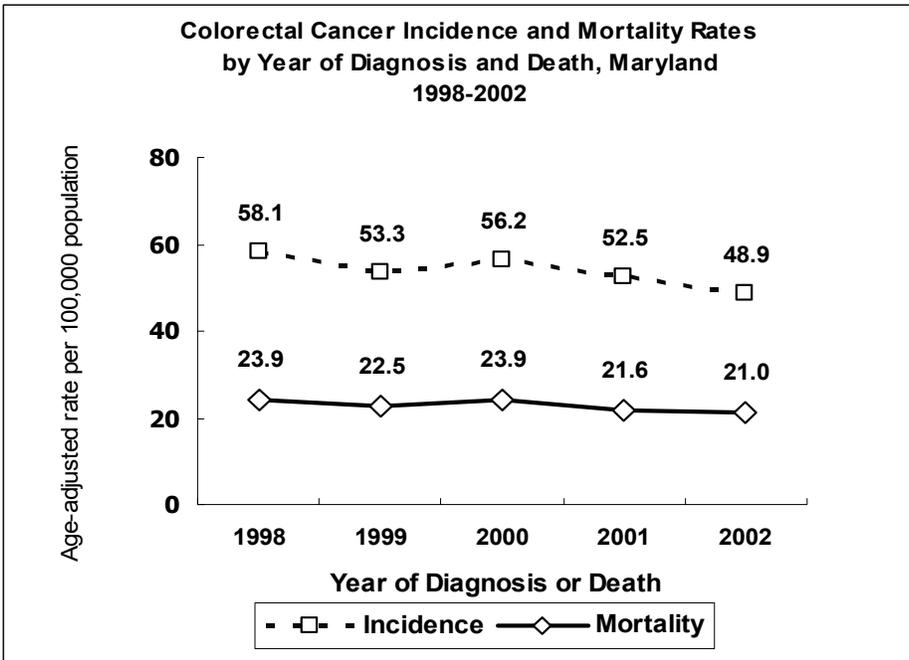
\* Rates are per 100,000 and are age-adjusted to 2000 U.S. standard population

NA: Data were not available

Source: Maryland Cancer Registry, 2002

CDC WONDER, 2002

SEER, National Cancer Institute, 2002

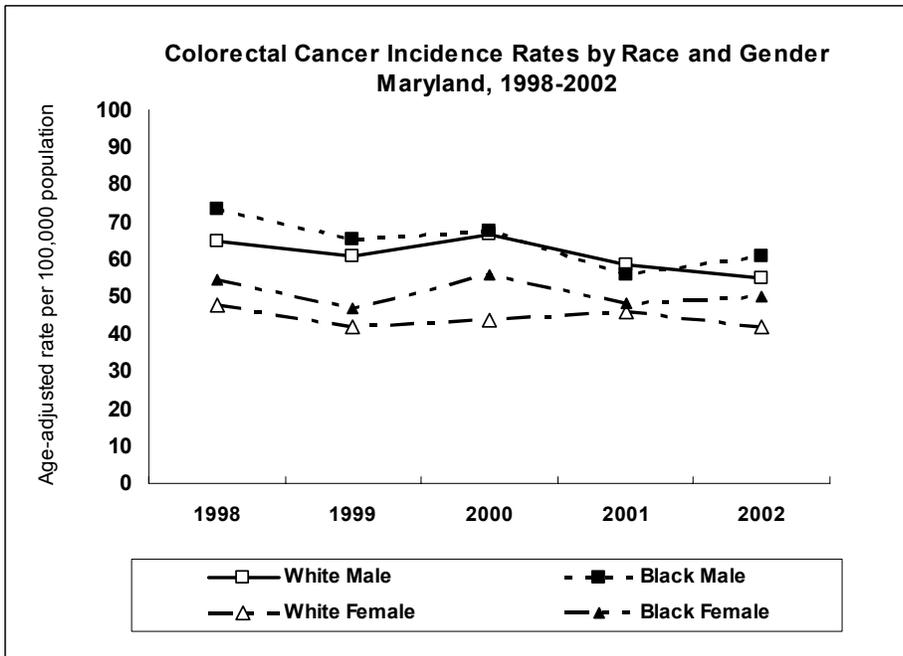


Rates are age-adjusted to 2000 U.S. standard population  
 Maryland Cancer Registry, 1998-2002  
 Maryland Division of Health Statistics, 1998-2001  
 CDC WONDER, 2002

**Incidence and Mortality Trends**

Both incidence and mortality rates for colorectal cancer have been declining. Incidence rates dropped an average of 3.5% per year from 1998 to 2002, and mortality rates dropped an average of 3.0% per year.

See Appendix I, Tables 1 and 2.



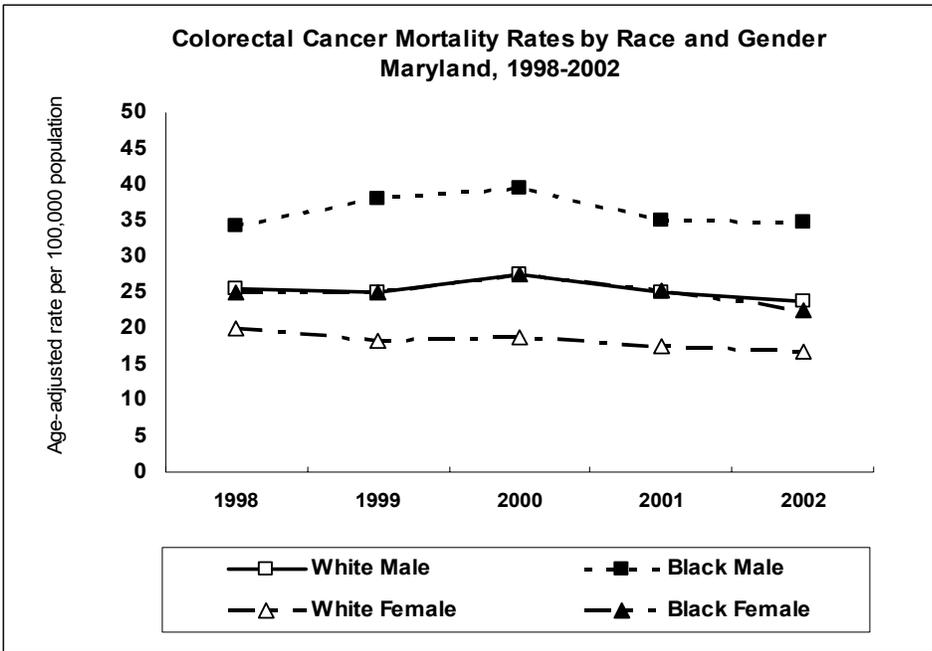
Rates are age-adjusted to 2000 U.S. standard population  
 Maryland Cancer Registry, 1998-2002

**Race and Gender Incidence Trends**

All groups depicted in the graph show a drop in incidence rates over time. Overall, males had higher rates than females.

The largest drop occurred with an average annual decline of 5.1% for black males from 1998 to 2002.

See Appendix I, Table 7.



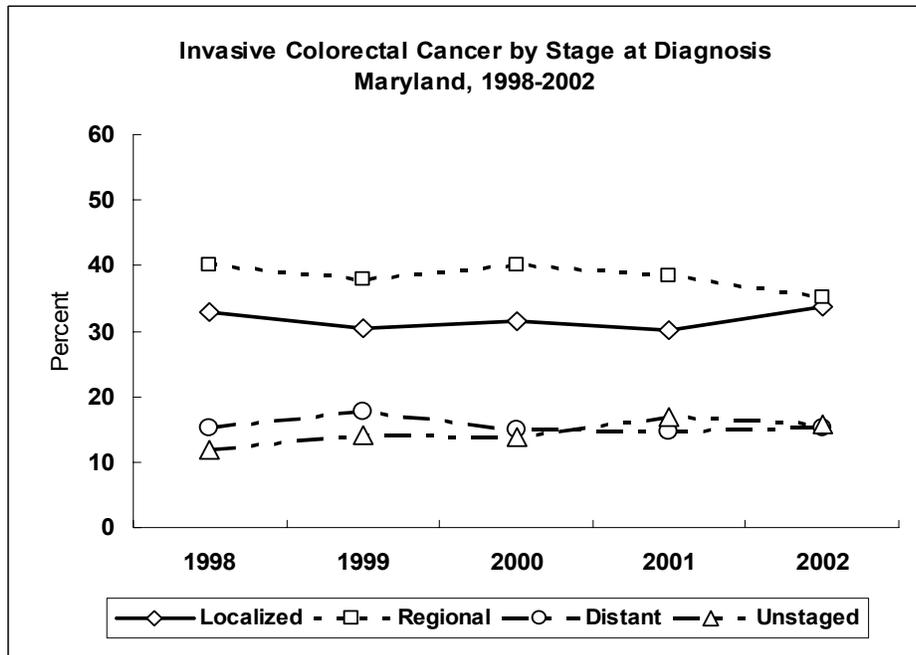
Rates are age-adjusted to 2000 U.S. standard population  
 Maryland Division of Health Statistics, 1998-2001  
 CDC WONDER, 2002

**Race and Gender Mortality Trends**

Mortality rates for black males were highest; white females were lowest. In addition, mortality rates for white males and black females followed a very similar pattern and were about equal.

Mortality rates for all four categories have been decreasing with the largest decline occurring for white females, having an average annual drop of 3.7% from 1998 to 2002.

See Appendix I, Table 8.



Maryland Cancer Registry, 1998-2002

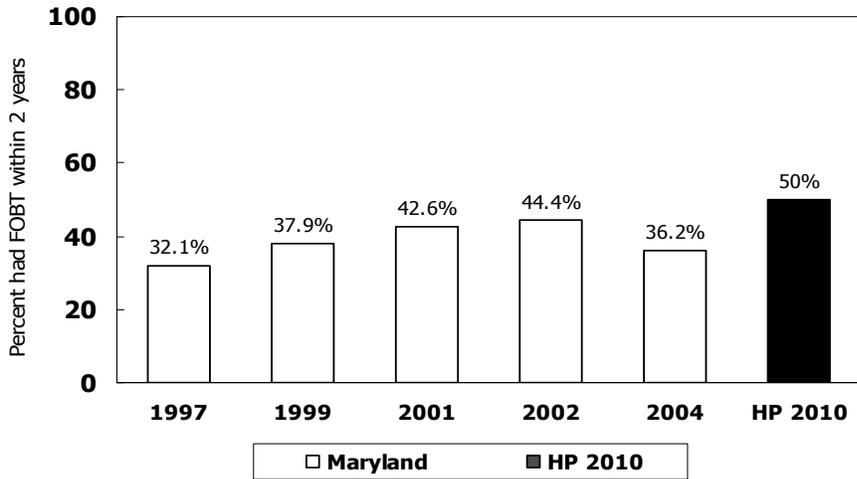
**Stage at Diagnosis**

In 2002, 33.9% of colorectal cancers were diagnosed at the localized (early) stage in Maryland, compared with 32.8% in 1998.

The percentage of unstaged colorectal cancer has increased from 11.8% in 1998 to 15.9% in 2002.

See Appendix J, Table 3.

**Maryland Fecal Occult Blood Test Screening\*  
1997, 1999, 2001, 2002, 2004  
Compared to Healthy People 2010 Objective**



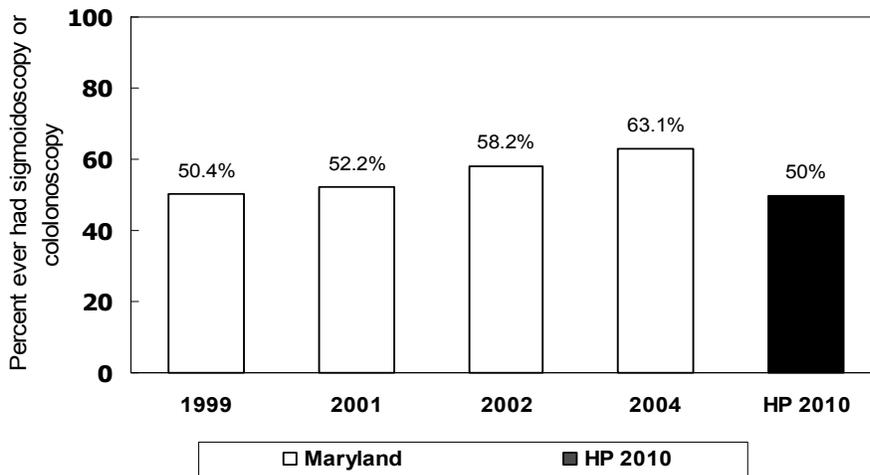
\* Adults age 50 years and older having FOBT within the preceding 2 years  
BRFSS, Maryland DHMH Center for Preventive Health Services, 1997, 1999, 2001  
Maryland Cancer Survey, DHMH Center for Cancer Surveillance and Control, 2002, 2004  
Healthy People 2010, U.S. Department of Health and Human Services, 2000

**Healthy People 2010 Objectives**

One Healthy People 2010 objective for colorectal cancer is to increase to 50% the proportion of adults age 50 years and older who received a fecal occult blood test (FOBT) in the preceding 2 years.

After a steady increase from 1997 to 2002, FOBT testing declined to 36.2% in 2004 from 44.4% in 2002. This may be due to the use of alternate screening methods, such as colonoscopy.

**Maryland Sigmoidoscopy and Colonoscopy Screening\*  
1999, 2001, 2002, 2004  
Compared to Healthy People 2010 Objective**



\* Adults age 50 years and older ever having had sigmoidoscopy or colonoscopy  
BRFSS, Maryland DHMH Center for Preventive Health Services, 1999, 2001  
Maryland Cancer Survey, DHMH Center for Cancer Surveillance and Control, 2002, 2004

**Healthy People 2010 Objectives**

The second Healthy People 2010 objective for colorectal cancer is to increase to 50% the proportion of adults age 50 years and older who ever received a sigmoidoscopy or colonoscopy.

In 2004, 63.1% of Maryland adults age 50 years and older reported having ever had a sigmoidoscopy or colonoscopy, again surpassing the Healthy People objective.

**Public Health Evidence (quoted from NCI, PDQ, 5/22/2006 and 7/21/2006 and USPSTF, 7/2002)**

**Screening**

Screening for colorectal cancer reduces colorectal cancer mortality. The United States Preventive Services Task Force (USPSTF) strongly recommends that clinicians screen men and women 50 years of age and older for colorectal cancer. The USPSTF found fair to good evidence that several screening methods (e.g., fecal occult blood testing [FOBT], sigmoidoscopy, colonoscopy, double contrast barium enema [DCBE]) are effective in reducing mortality from colorectal cancer. Proven methods of FOBT screening use guaiac-based test cards prepared at home by patients from three consecutive stool samples and forwarded to the clinician. They concluded that the benefits from screening substantially outweigh potential harms, but the quality of evidence, magnitude of benefit and potential harms vary with each method. They found that there were insufficient data to determine which strategy is best in terms of the balance of benefits and potential harms or cost-effectiveness. The USPSTF found insufficient evidence that newer technologies, such as computer tomographic colography (“virtual colonoscopy”), are effective in improving health outcomes.

**Prevention**

Colonoscopy with removal of adenomas reduces the risk of colorectal cancer. Harms of polyp removal include infrequent perforation of the colon during the procedure, bleeding, and infection following the procedure. Although far from clear-cut, the available evidence suggests colorectal cancer risk is possibly associated with some interaction of dietary fat and protein and caloric intake. Epidemiological, experimental (animal), and clinical studies suggest that diets low in calcium and folate are associated with an increased incidence of colorectal cancer. There is inadequate evidence to suggest that a diet low in fat and high in fiber, fruits, and vegetables decreases the risk of colorectal cancer; however, there are no known harms from dietary modification, including reduction of fatty acids and increase in intake of fiber, fruits, and vegetables. Obesity is associated with a two-fold risk increase in colorectal cancer in premenopausal women. Cigarette smoking is associated with an increased tendency to form adenomas and to develop colorectal cancer.

**Chemoprevention**

Nonsteroidal anti-inflammatory drugs (NSAIDs) including proxicam, sulindac, and aspirin may prevent adenoma formation or cause adenomatous polyps to regress in individuals with prior colorectal cancer or adenomatous polyps and in the setting of familial adenomatous polyposis. However, harms of NSAID use include upper gastrointestinal bleeding and serious cardiovascular events such as heart attack, heart failure, and hemorrhagic stroke.

**Public Health Intervention for Colorectal Cancer (DHMH Colorectal Cancer Medical Advisory Committee, 2005)**

Early detection of colorectal cancer:

- For those at average risk, screen with colonoscopy or with FOBT and flexible sigmoidoscopy.
- For those unable or unwilling to undergo colonoscopy or sigmoidoscopy, FOBT is an alternative initial screening method.
- Reserve DCBE or other emerging technologies as an alternative for situations where the patient and the provider discuss and determine that DCBE or other test is dedicated for the individual.

**Table 21.**  
**Number of Colorectal Cancer Cases**  
**by Jurisdiction, Gender and Race, Maryland, 2002**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	2,549	1,258	1,291	1,877	594	78
Allegany	52	26	26	52	0	0
Anne Arundel	236	116	120	189	40	7
Baltimore City	386	173	213	166	214	6
Baltimore County	520	259	261	426	82	12
Calvert	38	18	20	32	<6	<6
Caroline	20	14	6	s	<6	0
Carroll	74	36	38	s	<6	0
Cecil	41	25	16	s	<6	0
Charles	39	25	14	29	s	<6
Dorchester	27	16	11	s	<6	0
Frederick	106	50	56	101	<6	<6
Garrett	18	8	10	18	0	0
Harford	77	47	30	68	s	<6
Howard	103	51	52	86	11	6
Kent	17	7	10	s	<6	0
Montgomery	292	144	148	229	35	28
Prince George's	244	123	121	96	139	9
Queen Anne's	24	10	14	s	<6	0
Saint Mary's	38	20	18	35	<6	<6
Somerset	12	s	<6	6	6	0
Talbot	33	14	19	29	<6	<6
Washington	70	35	35	s	<6	0
Wicomico	45	19	26	34	s	<6
Worcester	35	14	21	28	s	<6
Unknown	<6	<6	<6	<6	0	0

s=Number was suppressed to ensure confidentiality of cell in other column

Cells with 5 or fewer non-zero cases are not presented per DHMH/MCR Data Use Policy

Source: Maryland Cancer Registry, 2002

**Table 22.**  
**Colorectal Cancer Age-Adjusted Incidence Rates\***  
**by Jurisdiction, Gender and Race, Maryland, 2002**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	48.9	55.8	43.4	47.9	54.2	42.9
Allegany	53.6	64.6	44.5	54.8	0.0	0.0
Anne Arundel	53.4	56.8	49.3	49.1	90.3	**
Baltimore City	59.4	67.5	54.2	61.3	57.8	**
Baltimore County	59.6	70.3	51.5	56.3	83.1	**
Calvert	55.4	**	**	54.2	**	**
Caroline	**	**	**	**	**	0.0
Carroll	50.4	58.0	44.7	50.3	**	0.0
Cecil	49.5	**	**	50.8	**	0.0
Charles	38.2	**	**	36.5	**	**
Dorchester	67.8	**	**	**	**	0.0
Frederick	59.7	63.2	56.2	60.5	**	**
Garrett	**	**	**	**	0.0	0.0
Harford	35.7	46.8	26.3	34.1	**	**
Howard	51.1	54.5	46.1	53.4	**	**
Kent	**	**	**	**	**	0.0
Montgomery	33.0	38.1	28.8	32.4	42.9	33.9
Prince George's	37.9	44.3	33.0	35.9	40.6	**
Queen Anne's	**	**	**	**	**	0.0
Saint Mary's	50.9	**	**	55.3	**	**
Somerset	**	**	**	**	**	0.0
Talbot	59.8	**	**	58.2	**	**
Washington	47.6	54.4	43.2	45.8	**	0.0
Wicomico	51.2	**	51.0	48.2	**	**
Worcester	50.3	**	**	46.8	**	**

\* Rates are per 100,000 and are age-adjusted to 2000 U.S. standard population

\*\* Rates based on cells with 25 or fewer non-zero cases are not presented per DHMH/MCR Data Use Policy

Source: Maryland Cancer Registry, 2002

**Table 23.**  
**Number of Colorectal Cancer Deaths**  
**by Jurisdiction, Gender and Race, Maryland, 2002**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	1,078	539	539	789	277	12
Allegany	19	10	9	18	<6	0
Anne Arundel	89	46	43	74	15	0
Baltimore City	200	103	97	89	110	1
Baltimore County	201	91	110	171	28	2
Calvert	14	9	<6	12	<6	0
Caroline	9	<6	<6	<6	<6	0
Carroll	33	21	12	31	2	0
Cecil	19	12	7	18	<6	0
Charles	22	12	10	18	3	1
Dorchester	11	10	<6	9	<6	0
Frederick	36	24	12	33	2	1
Garrett	8	<6	<6	8	0	0
Harford	35	16	19	27	8	0
Howard	33	21	12	24	8	1
Kent	<6	<6	<6	<6	0	0
Montgomery	111	47	64	92	14	5
Prince George's	124	55	69	61	62	1
Queen Anne's	8	<6	6	7	<6	0
Saint Mary's	22	11	11	21	<6	0
Somerset	<6	<6	0	<6	0	0
Talbot	12	<6	7	9	<6	0
Washington	32	15	17	32	0	0
Wicomico	24	14	10	17	7	0
Worcester	10	<6	6	7	<6	0

Cells with 5 or fewer non-zero cases where county population is less than 100,000  
are not presented per CDC WONDER Data Use Restrictions

Source: CDC WONDER, 2002

**Table 24.**  
**Colorectal Cancer Age-Adjusted Mortality Rates\***  
**by Jurisdiction, Gender and Race, Maryland, 2002**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Others
Maryland	21.0	25.0	17.7	20.0	27.2	9.1
Allegany	18.3	26.3	14.6	17.7	**	0.0
Anne Arundel	20.4	24.3	17.5	19.0	38.7	0.0
Baltimore City	30.7	40.9	23.7	32.1	30.6	13.4
Baltimore County	22.6	24.8	20.5	21.9	32.7	20.2
Calvert	21.7	29.3	**	21.0	**	0.0
Caroline	27.7	**	**	**	**	0.0
Carroll	22.3	37.0	14.1	21.8	44.9	0.0
Cecil	22.0	30.0	15.4	21.6	**	0.0
Charles	23.7	23.9	20.1	25.7	9.8	110.8
Dorchester	26.0	59.1	**	27.3	**	0.0
Frederick	20.2	29.4	11.7	19.6	28.8	36.1
Garrett	23.5	**	**	23.6	0.0	0.0
Harford	18.8	20.1	17.7	15.8	67.9	0.0
Howard	17.0	26.0	11.5	14.9	34.9	11.8
Kent	**	**	**	**	0.0	0.0
Montgomery	12.8	13.0	12.2	13.0	16.7	6.3
Prince George's	21.4	23.5	19.9	22.8	21.4	5.5
Queen Anne's	19.0	**	24.5	19.6	**	0.0
Saint Mary's	30.8	35.7	28.9	34.6	**	0.0
Somerset	**	**	0.0	**	0.0	0.0
Talbot	20.7	**	18.6	17.3	**	0.0
Washington	21.3	24.7	19.1	21.9	0.0	0.0
Wicomico	27.2	36.5	17.8	24.0	43.9	0.0
Worcester	15.0	**	14.6	11.5	**	0.0

\* Rates are per 100,000 and age-adjusted to 2000 U.S. standard population

\*\* Rates based on cells with 5 or fewer non-zero cases where county population is less than 100,000 are not presented per CDC WONDER Data Use Restrictions

Source: CDC WONDER, 2002

**Table 25.**  
**Number of Colorectal Cancer Cases**  
**by Jurisdiction, Gender and Race, Maryland, 1998-2002**

Jurisdiction	Total	Gender		Race			
		Males	Females	Whites	Blacks	Other	Unknown
Maryland	13,267	6,594	6,670	9,803	2,862	404	198
Allegany	299	138	161	294	<6	0	<6
Anne Arundel	1,132	574	558	943	143	21	25
Baltimore City	1,902	861	1,040	885	984	21	12
Baltimore County	2,488	1,215	1,273	2,095	318	44	31
Calvert	171	86	84	142	24	<6	<6
Caroline	111	65	46	95	16	0	0
Carroll	369	180	189	355	10	<6	<6
Cecil	213	114	99	204	s	<6	<6
Charles	224	118	106	162	51	<6	s
Dorchester	135	72	63	110	s	0	<6
Frederick	501	269	232	456	28	8	9
Garrett	92	46	46	92	0	0	0
Harford	493	267	226	432	52	<6	<6
Howard	453	219	234	347	70	28	8
Kent	74	30	44	63	11	0	0
Montgomery	1,667	845	822	1,260	188	183	36
Prince George's	1,477	736	740	649	745	54	29
Queen Anne's	128	60	68	106	s	0	<6
Saint Mary's	227	122	105	186	36	<6	<6
Somerset	76	51	25	58	s	<6	0
Talbot	164	90	74	133	s	<6	<6
Washington	408	202	206	392	s	<6	0
Wicomico	218	92	126	175	s	<6	0
Worcester	198	112	86	149	31	s	<6
Unknown	47	30	17	20	<6	<6	20

s=Number was suppressed to ensure confidentiality of cell in other column

Cells with 5 or fewer non-zero cases are not presented per DHMH/MCR Data Use Policy

Source: Maryland Cancer Registry, 1998-2002

**Table 26.**  
**Colorectal Cancer Age-Adjusted Incidence Rates\***  
**by Jurisdiction, Gender and Race, Maryland, 1998-2002**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	53.3	62.6	46.4	51.5	56.2	49.7
Allegany	60.7	67.5	56.1	61.0	**	0.0
Anne Arundel	53.1	61.3	47.3	50.5	66.0	**
Baltimore City	57.6	66.9	52.0	61.4	54.0	**
Baltimore County	58.1	68.3	50.4	55.5	72.7	57.8
Calvert	56.9	63.5	50.7	55.2	**	**
Caroline	70.2	93.8	51.2	70.0	**	0.0
Carroll	53.5	63.3	46.6	53.0	**	**
Cecil	54.8	61.9	47.4	54.9	**	**
Charles	51.1	58.7	44.0	47.3	58.2	**
Dorchester	67.3	84.6	55.2	69.4	**	0.0
Frederick	60.9	75.0	50.2	59.3	77.5	**
Garrett	53.4	60.5	47.5	53.7	0.0	0.0
Harford	51.8	65.3	42.4	49.3	84.1	**
Howard	50.5	55.3	45.9	47.8	64.6	47.0
Kent	51.6	48.3	54.3	51.4	**	0.0
Montgomery	39.8	48.1	33.8	37.2	46.9	46.7
Prince George's	50.9	60.6	44.1	49.1	50.7	46.4
Queen Anne's	61.7	65.0	60.0	58.4	**	0.0
Saint Mary's	66.6	77.0	58.2	64.2	78.0	**
Somerset	57.5	87.1	**	58.2	**	**
Talbot	63.7	80.3	51.3	58.1	97.0	**
Washington	56.2	64.1	49.1	55.6	**	**
Wicomico	51.2	49.6	49.9	51.1	50.9	**
Worcester	58.7	72.5	46.7	51.0	73.9	**

\* Rates are per 100,000 and are age-adjusted to 2000 U.S. standard population

\*\* Rates based on cells with 25 or fewer non-zero cases are not presented per DHMH/MCR Data Use Policy

Source: Maryland Cancer Registry, 1998-2002

**Table 27.**  
**Number of Colorectal Cancer Deaths**  
**by Jurisdiction, Gender and Race, Maryland, 1999-2002**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	4,456	2,188	2,268	3,222	1,151	83
Allegany	99	49	50	96	3	0
Anne Arundel	331	174	157	280	47	4
Baltimore City	766	362	404	315	447	4
Baltimore County	822	388	434	708	103	11
Calvert	58	33	25	47	10	1
Caroline	40	22	18	32	8	0
Carroll	130	62	68	124	6	0
Cecil	76	42	34	71	5	0
Charles	92	51	41	71	19	2
Dorchester	50	36	14	39	11	0
Frederick	151	84	67	136	13	2
Garrett	37	19	18	37	0	0
Harford	155	74	81	134	21	0
Howard	117	61	56	93	21	3
Kent	19	8	11	14	5	0
Montgomery	480	214	266	384	55	41
Prince George's	572	280	292	254	304	14
Queen Anne's	38	12	26	29	9	0
Saint Mary's	72	41	31	62	9	1
Somerset	22	15	7	15	7	0
Talbot	48	23	25	31	17	0
Washington	134	67	67	132	2	0
Wicomico	86	38	48	67	19	0
Worcester	61	33	28	51	10	0

Source: CDC WONDER, 1999-2002

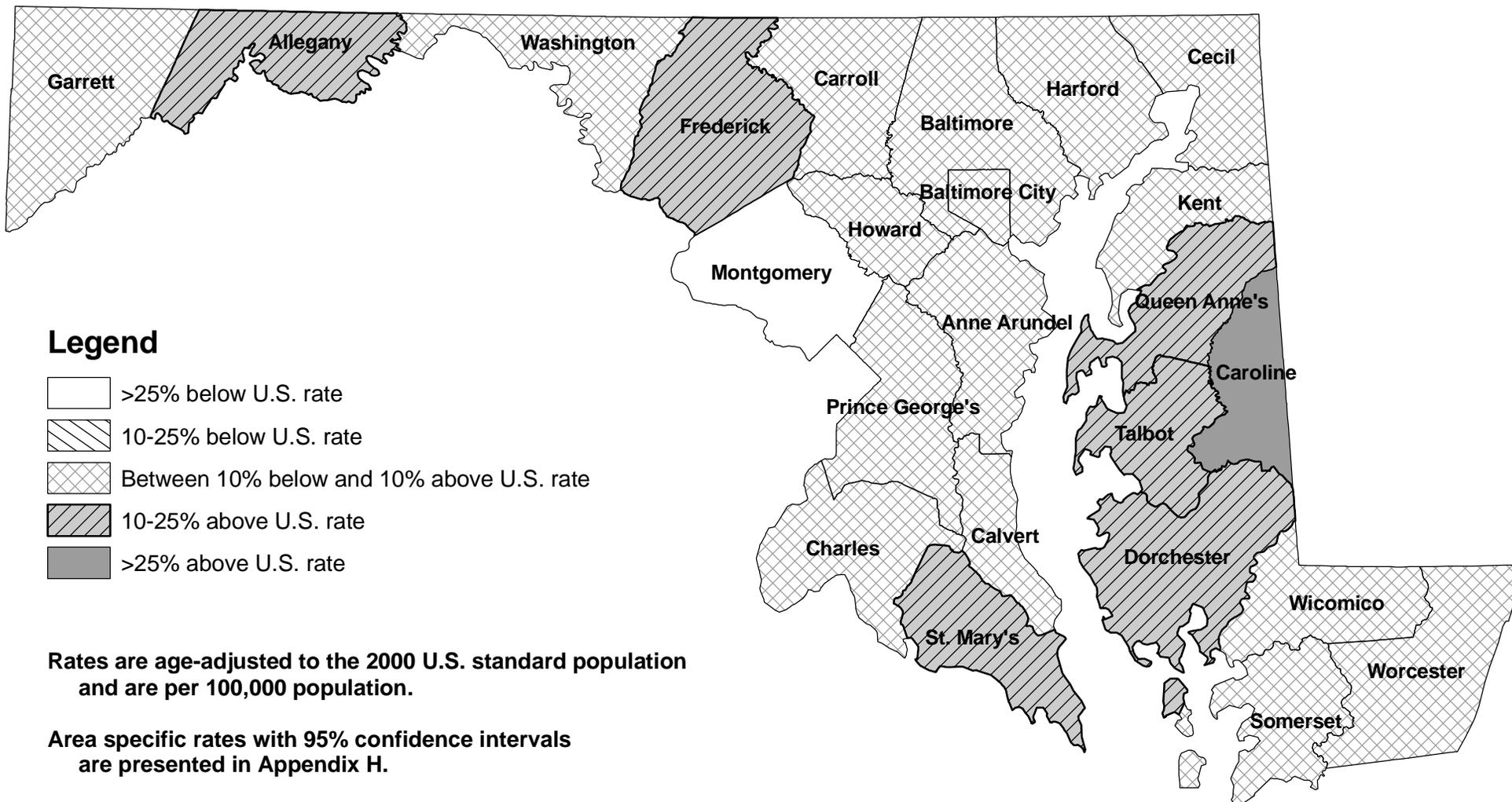
**Table 28.**  
**Colorectal Cancer Age-Adjusted Mortality Rates\***  
**by Jurisdiction, Gender and Race, Maryland, 1999-2002**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	22.5	27.0	19.3	21.1	29.4	14.9
Allegany	24.1	30.9	19.7	23.8	60.7	0.0
Anne Arundel	20.0	24.4	16.7	19.1	29.6	18.2
Baltimore City	29.1	35.8	24.8	27.0	31.4	12.3
Baltimore County	23.6	27.9	20.6	23.0	33.2	19.1
Calvert	25.3	36.0	18.3	23.8	32.2	51.2
Caroline	31.4	38.7	24.8	29.5	45.8	0.0
Carroll	23.2	29.0	20.5	22.8	44.5	0.0
Cecil	24.8	30.0	20.2	24.1	48.8	0.0
Charles	27.0	30.8	21.7	27.2	24.6	47.4
Dorchester	30.1	53.7	14.6	30.4	30.7	0.0
Frederick	23.2	31.0	17.8	22.1	44.0	21.7
Garrett	26.9	30.9	22.9	27.0	0.0	0.0
Harford	21.5	25.0	19.4	20.3	44.9	0.0
Howard	17.4	21.2	14.6	17.0	23.2	13.1
Kent	16.9	15.4	18.3	14.9	31.8	0.0
Montgomery	14.4	15.8	13.2	13.9	16.8	14.9
Prince George's	25.8	30.8	22.4	24.3	27.7	14.1
Queen Anne's	23.7	16.5	28.5	20.9	45.9	0.0
Saint Mary's	26.5	33.4	21.2	27.3	22.5	20.6
Somerset	20.5	35.6	10.4	18.5	27.1	0.0
Talbot	22.6	24.5	21.0	16.3	67.8	0.0
Washington	22.8	28.0	19.1	23.1	9.9	0.0
Wicomico	25.3	25.9	23.0	24.4	31.1	0.0
Worcester	23.0	28.9	17.6	21.8	30.0	0.0

\* Rates are per 100,000 and are age-adjusted to 2000 U.S. standard population

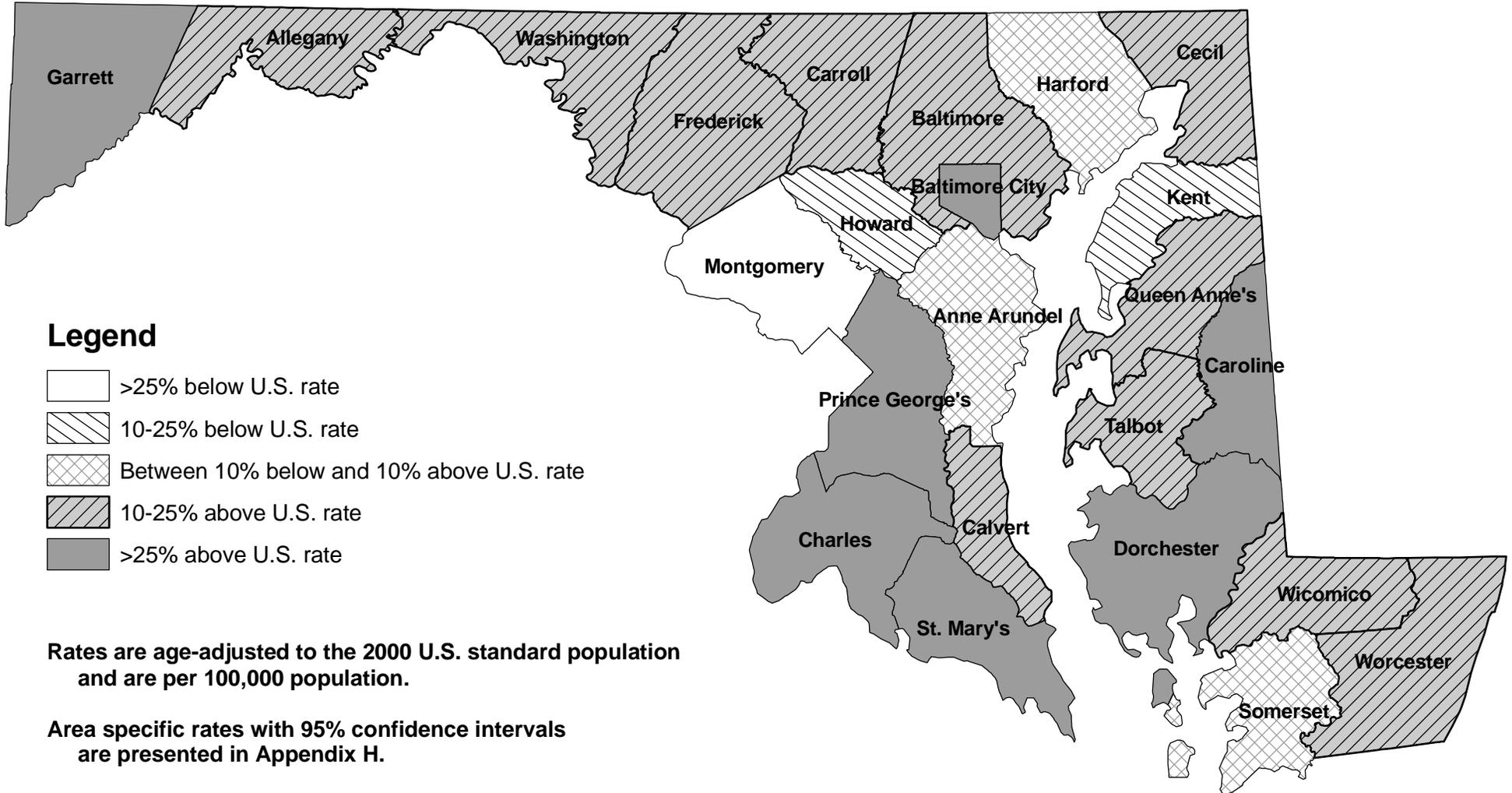
Source: CDC WONDER, 1999-2002

# Maryland Colorectal Cancer Incidence Rates (1998-2002) by Geographical Area: Comparison to U.S. Rate (1998-2002)



Source: Maryland Cancer Registry, 1998-2002

# Maryland Colorectal Cancer Mortality Rates (1999-2002) by Geographical Area: Comparison to U.S. Rate (1998-2002)



Source: CDC WONDER, 1999-2002

