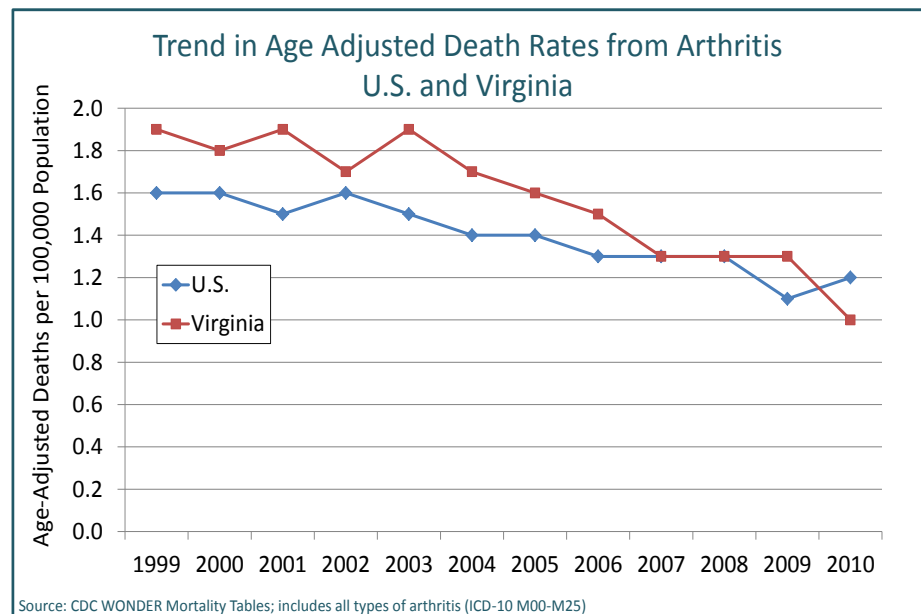


## Arthritis in Virginia

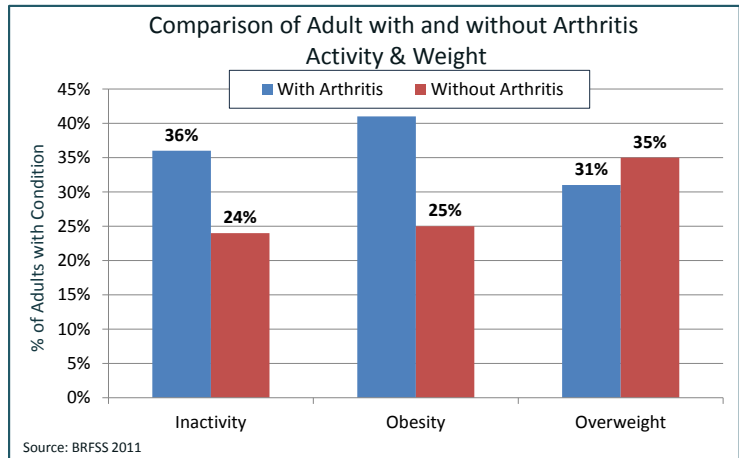
Arthritis is a chronic condition with a variety of causes and no known cure, resulting in a high disease burden throughout the U.S. and Virginia. While sometimes fatal, arthritis is the most prevalent of all chronic conditions, affecting over one quarter of the population, and resulting in significant levels of disability and the need for medical and supportive care. The lifetime risk of developing arthritis is high, with as many as 45% of the population expected to develop knee osteoarthritis during their lifetimes. While osteoarthritis is the predominant form of arthritis, there are over 100 other types of arthritis.

### Key Arthritis Facts:

- Over 25 percent of the Virginia population reported having been diagnosed with some form of arthritis in 2011, amounting to 1,576,468 Virginians living with arthritis; within the total Virginia population, 21% of men and 31% of women report having been diagnosed with arthritis.
- Limitations in activities due to arthritis or joint symptoms among adults was reported by 49% or 722,224 Virginians in 2011; among those with arthritis diagnosis of working age (18-64), 327,000 report having some work limitation due to arthritis; 20% (285,000) report social participation restriction and 29% (412,000) report severe joint pain; in all categories, women report higher rates compared with men.
- Among all Virginians, not just those with a reported diagnosis of arthritis, 12% of adults have limitations in activity, 7% report work-related limitations, 5% report social participation restriction and 7% report severe joint pain.
- The age-adjusted death rate per 100,000 population due to all types of arthritis declined from 1.9 to 1.0 in Virginia between 1999 and 2010; the U.S. death rate declined from 1.6 to 1.2 during the same time period, a slightly lower rate of decline.
- There were 79 deaths of individuals in Virginia in 2010 due to all types of arthritis, representing a 30% decline in the number of deaths since 1999, when there were 113 deaths; the number of deaths in the U.S. fell 10.1% during the same period.
- Arthritis is a barrier to physical activity, with almost 44% of adults reporting no leisure time physical activity due to pain, fear of pain, fear of injury and worsening of symptoms, and lack of information on how to exercise safely.



- Arthritis exacerbates many other chronic conditions as it is a contributing factor for obesity which is a risk factor for heart disease, stroke, diabetes and other acute and chronic diseases.
- A comparison of those adults with and without arthritis indicates that obesity level and inactivity are higher for those with an arthritis diagnosis compared with those without arthritis.
- The age-adjusted hospitalization rate for arthritis of all types in 2010 was 336.6 per 100,000 people.
- There were 26,184 hospitalizations of Virginia residents in Virginia hospitals in 2012 for all types of arthritis, with the majority in the 18 and over population; over 93% of these hospitalizations were for osteoarthritis and 9% for all other types of arthritis. Total inpatient Virginia hospital charges of over \$1.4 billion indicate the significant medical cost for patients, families and providers.
- The majority of inpatient hospitalizations, 87.6%, were for surgical procedures to replace the knee and hip joints; this amounted to 85.6% of total inpatient charges at Virginia hospitals for all types of arthritis, with an average of \$53,108 per discharge for joint replacement surgery.
- Virginia hospital discharges in 2012 with a primary diagnosis of arthritis were distributed among the various types of arthritis for ages under 18 and 65 and over:



2012 Virginia Hospital Inpatient Discharges of Patients Diagnosed with Arthritis			
Age Group & Type of Arthritis	Discharges	Total Charges	Average Charge per Discharge
<b>Age Under 18</b>			
Connective Tissue including Lupus	26	\$1,332,175	\$51,238
Osteoarthritis	1	\$35,034	\$35,034
Pyogenic (Infectious) Arthritis	57	\$2,477,709	\$43,469
Rheumatoid Arthritis	10	\$219,619	\$21,962
Unspecified Arthropathies	8	\$156,264	\$19,533
<b>Total Under Age 18</b>	<b>102</b>	<b>\$4,220,801</b>	<b>\$41,380</b>
<b>Age 65 and Over</b>			
Endocrine Arthropathies	1	\$50,420	\$50,420
Crystalline Arthropathies (incl gout)	2	\$41,222	\$20,611
Connective Tissue (including Lupus)	317	\$14,800,303	\$46,689
Osteoarthritis	24,462	\$1,329,419,361	\$54,346
Pyogenic (Infectious) Arthritis	562	\$23,857,608	\$42,451
Rheumatoid Arthritis	228	\$8,350,985	\$36,627
Unspecified Arthropathies	510	\$29,145,813	\$57,149
<b>Total Age 65+</b>	<b>26,082</b>	<b>\$1,405,665,714</b>	<b>\$53,894</b>
<b>Total All Ages</b>	<b>26,184</b>	<b>\$1,409,886,514</b>	<b>\$53,845</b>

Source: VHI via Intellimed; ICD-9 Diagnosis codes 710-716

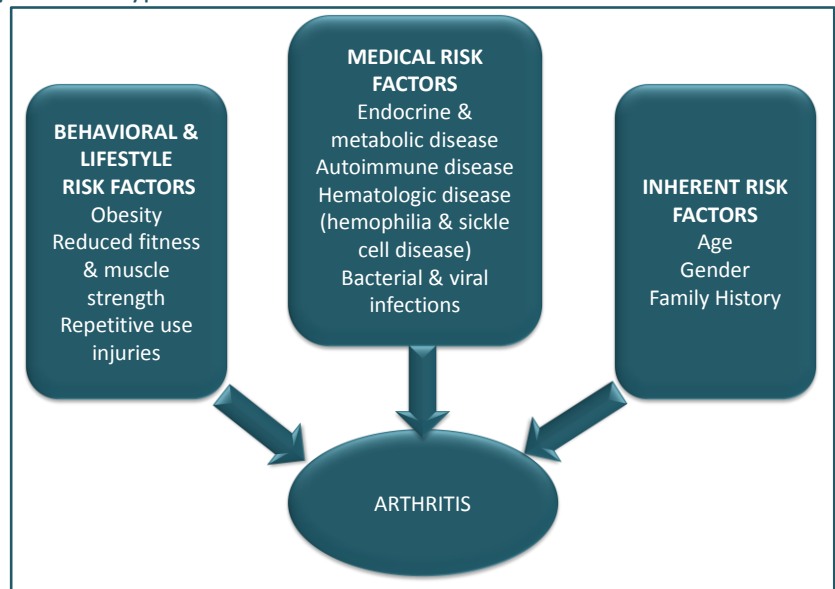
**Definitions:** Arthritis is a disease involving inflammation of the joints, the areas of the body where two bones meet. In addition to osteoarthritis, the most common type of arthritis, there are over 100 different types of arthritis, all affecting the joints in different ways with different causes. The types of arthritis, as well as other useful definitions include the following:

- **Cartilage:** the flexible connective tissue which is found in many areas of the body including within the joints between bones; more flexible than bone but less flexible than muscle, cartilage protects the ends of the bones from touching; when worn out, cartilage thins and no longer protects the bones from rubbing, resulting in osteoarthritis and resulting pain, swelling and lack of mobility.
- **Arthritis associated with other disorders:** includes endocrine, digestive, hematologic, dermatologic and other arthropathies which result in injury or disease of the joints.
- **Crystalline Arthropathies:** deposits of crystals within joints - may consist of uric acid crystals (resulting in gout) or calcium pyrophosphate.
- **Connective tissue:** any type of biologic tissue that supports, binds together, and protects organs. These tissues form a framework for the body, and are composed of two major structural protein molecules: collagen and elastin; connective tissue disease often involves abnormal immune system activity directed against one's own body tissues resulting in inflammation of those tissues.
- **Diffuse Disorders of the Connective Tissue:** diseases of the connective tissue including joints, muscle, ligaments and skin, often due to autoimmune disease.
- **Systemic Lupus Erythematosus (SLE or Lupus):** a systemic autoimmune connective tissue disease that can affect any part of the body; inflammation and tissue damage result from immune system attacking the body, including the joints, heart, lung, nervous system, blood vessels, liver, kidney, or other organs; SLE is treated with immune suppressants and other drugs.
- **Osteoarthritis:** the most common joint disorder, due to aging and wear-and-tear on joints; caused by the breakdown of the cartilage between joints, causing the bones to rub together; may also result in the growth of bony spurs or extra bone around the joint which can also result in damage to the surrounding tissue including ligaments and muscles, which then stiffen and weaken. While aging is the most frequent cause of osteoarthritis, the cause is often unknown.
- **Pyogenic or Infectious Arthritis:** arthritis associated with infection; includes gonococcal arthritis, a sexually transmitted disease (STD); also includes septic, bacterial or non-gonococcal arthritis, caused by bacteria or fungus, often after an injury or surgery on a joint part, particularly the knee or hip; may be acute or chronic, often with rapid onset of joint swelling and pain; long term, the damage may result in degenerative arthritis of the affected joint.
- **Rheumatoid Arthritis:** an autoimmune disease that results in chronic, systemic inflammatory disease that may affect many organs and tissues but mainly attacks many flexible (synovial) joints by causing pain, swelling, fusion of the joints and substantial loss of mobility and function if not treated adequately; RA affects juveniles between the ages of 6 months and 16 years (Juvenile Rheumatoid Arthritis, JRA) and adults.
- **Ankylosing spondylitis:** inflammation of the joints between the spinal bones and the joints between the spine and pelvis; the affected bones may fuse over time, resulting in low back pain followed by stiffness, fatigue; the cause is unknown and the disease often affects people ages 20-40, with men affected more often than women.

## Causes and Risk Factors

Breakdown of cartilage and inflammation of the joints can result from a variety of physical, mechanical or biologic causes, so that the risk factors vary for each type of arthritis. However there are some commonalities among the risk factors:

- **Inherent factors:** age and gender are among the leading causes of all forms of arthritis, with relative equality in early life and a tendency for women to suffer from arthritis later in life; arthritis tends to be familial in nature, based on genetics.
- **Behavioral and Lifestyle:** excess weight is an important risk factor in many types of arthritis, particularly osteoarthritis, due to the wear and tear on the joints particularly in the hip, knee, ankle and foot joints; lack of physical strength and fitness are risk factors; however excess use can also increase risk of arthritis related to overuse and injury of some joints.
- **Medical Causes:** previous fractures, gout, autoimmune disease, bleeding within joints, sometimes caused by hemophilia, can cause different types of arthritis; bacterial and viral infections can play a major role in the development of arthritis.



## Arthritis Warning Symptoms and Signs

The most common symptoms of arthritis include:

- Joint soreness after both overuse and inactivity
- Morning stiffness within 30 minutes of waking
- Worsening of pain during the day
- Deterioration of coordination and posture
- Pain in affected joints, particularly the weight-bearing joints of the hip, knees and lower back
- Pain in the fingers, the big toe and other joints
- Warmth and redness of the skin around the affected joint
- Reduced ability to move the affected joint

Signs and tests indicating the presence of arthritis may include fluid around the joint, warm, red tender joints and limited range of motion of the joint. Sometimes deformity of the joint may occur, particularly in rheumatoid arthritis. Blood tests, x-rays and lab examination of joint fluid are used to test for and diagnose the various forms of arthritis.

## Treatment for Arthritis

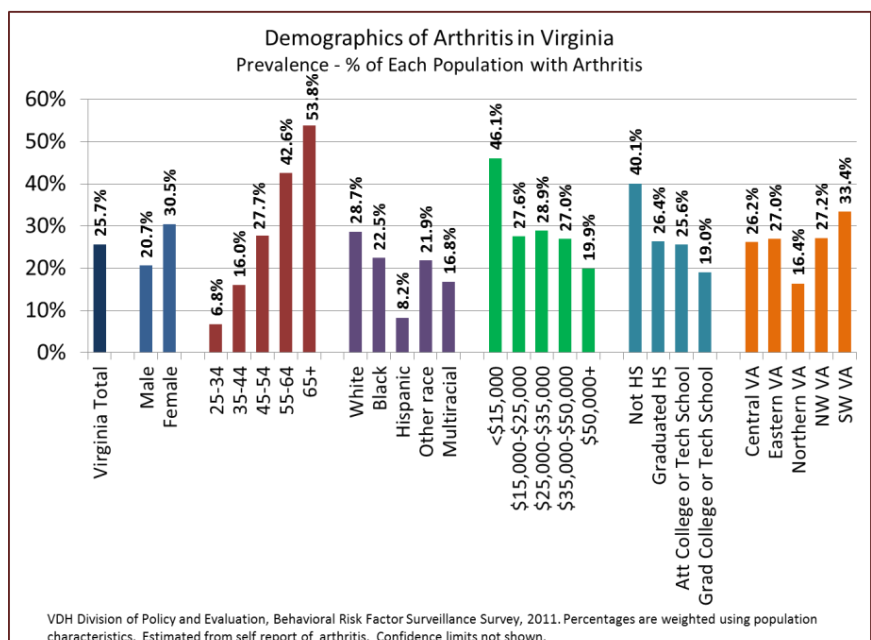
While most forms of arthritis are not curable, treatment can be successful in reducing the symptoms and improving the quality of life. The goal of treatment is to reduce pain, improve function and prevent further damage to the affected joints. Lifestyle changes are essential and include:

- **Exercise** – low impact aerobic or endurance exercise, enhancement of flexibility and range of motion through stretching and strengthening muscles are all useful in preventing deterioration due to arthritis, primarily osteoarthritis.
- **Physical Therapy** – heat or icing of joints, splints or orthotics to improve alignment (particularly for rheumatoid arthritis, water therapy and massage therapy are all useful approaches.
- **Other recommended lifestyle changes** – include sleep - important for recovery - as well as moving around frequently from sedentary positions, avoidance of stressful positions, home modifications to improve safety, healthful diet (particularly vitamin E and omega-3 fatty acids), use of capsaicin cream on painful joints, and weight loss to reduce stress on the joints of the legs and feet.
- **Medication**
  - Over-the-counter medications include acetaminophen, aspirin, ibuprofen; all must be taken with care because of potential side effects with extended use.
  - Prescription medications may include:
    - Biologics for autoimmune arthritis but may have serious side effects,
    - Corticosteroids to reduce inflammation either by mouth or injected,
    - Disease-modifying anti-rheumatic drugs to treat autoimmune arthritis, and
    - Immunosuppressants for treatment of rheumatoid arthritis, as a last resort.
- **Surgery and other procedures** – arthroplasty may be used to rebuild joints and joint replacement may be used to replace joints that are not functional, such as knees or hips.
- **Prevention** – family history is a predictor of arthritis; those with such history should be aware of symptoms and address them early rather than after damage to the joints has occurred; in addition, since repetitive motions can cause osteoarthritis and are inherent in some professions and leisure activities, they should be avoided or managed carefully.

### Socio-demographics of Arthritis in Virginia

Among the various socio-demographic populations in Virginia, reports of having been diagnosed with arthritis are as follows:

- **Gender:** more women than men report having been diagnosed with arthritis, at a ratio of 3:2.
- **Age:** aging is strongly associated with a diagnosis of arthritis, with the 65 and over population reporting rates almost 10 fold greater than those of the youngest adult age groups.
- **Race:** only Hispanics report lower arthritis prevalence compared with all other racial groups; Non-Hispanic Whites report the highest rates.

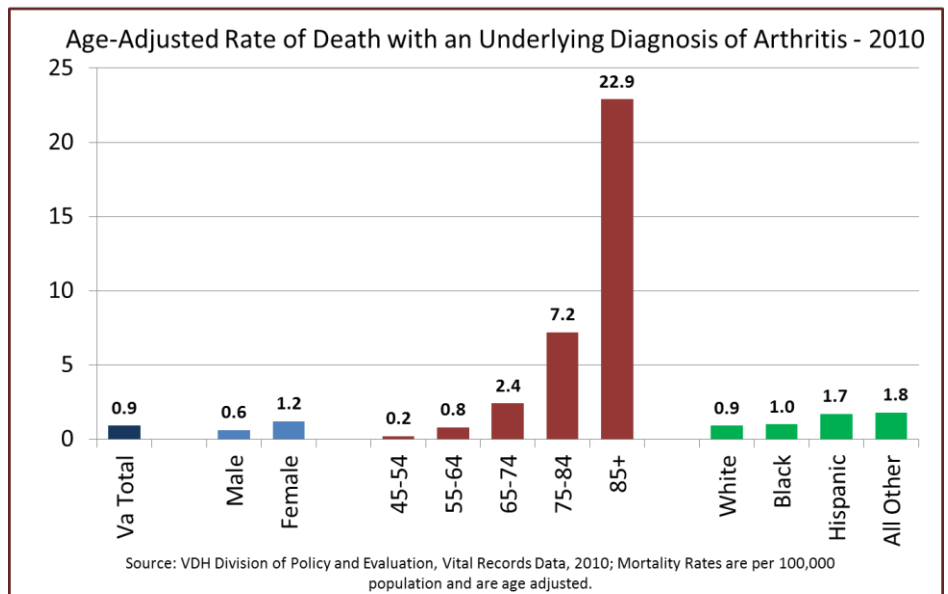
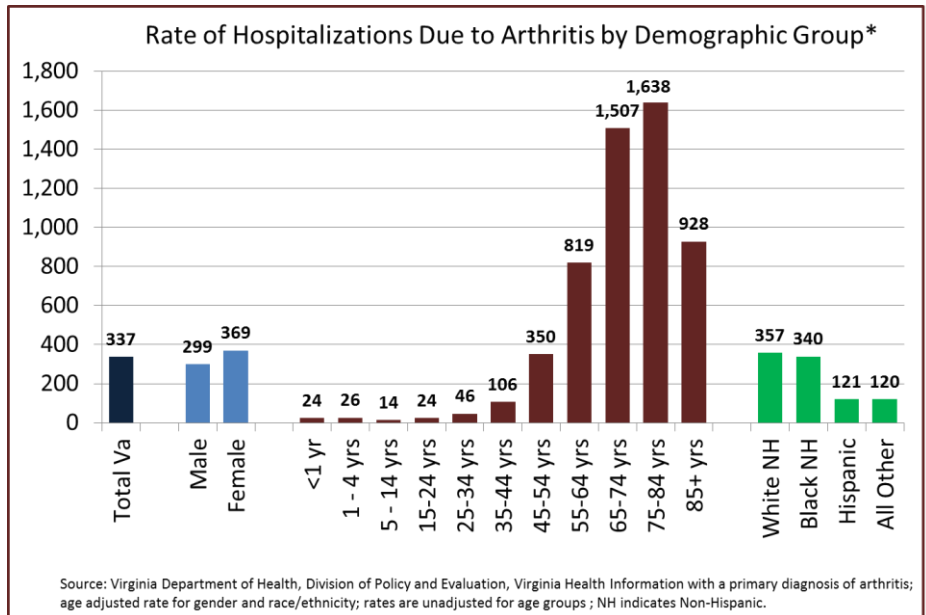


- **Income:** The under \$15,000 annual income population reports the highest arthritis rates, and the most wealthy population, earning over \$50,000, report the lowest rates.
- **Education level:** higher levels of education are associated with lower levels of having been diagnosed with arthritis, with significantly higher rates among those individuals who have not graduated from high school.
- **Location in Virginia:** residents of Southwestern Virginia report higher prevalence of arthritis compared with other areas of Virginia; Northern Virginia reports the lowest rates within the state.

**Morbidity and Mortality of Arthritis**

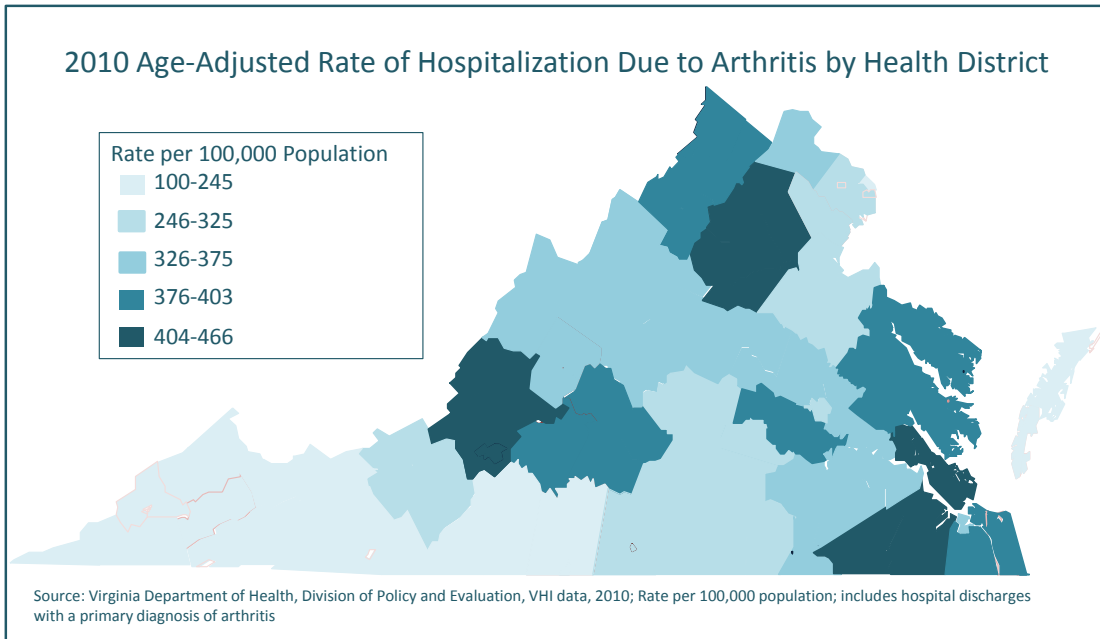
Rates of hospitalization and death from arthritis vary widely across different populations in Virginia:

- **Gender:** women are hospitalized and die from arthritis in greater numbers and rates compared with men in Virginia; women are hospitalized about 25% more frequently than men and die at about twice the rate.
- **Age:** age has a strong effect on both hospitalization and death rates; hospitalization rates are highest in the 75-84 year age group, and diminish in the 85 and over population; however the death rate among those 85 and over is triple the rate of the 75-84 population and 100 times higher than the 45-54 age group.
- **Race:** Non-Hispanic White and Black populations experience higher hospitalization rates compared with Hispanic and all other racial groups; in contrast, the Hispanic and all other racial groups have slightly higher death rates compared with Non-Hispanic Whites and Blacks.

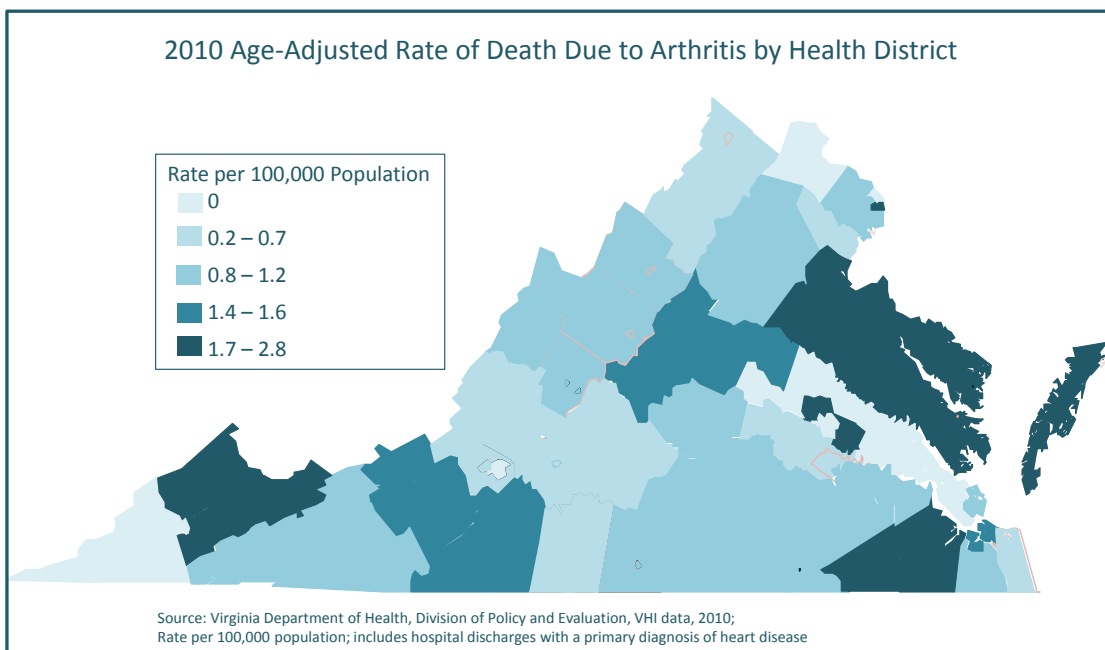


**Regionality of Arthritis in Virginia:** The distribution of arthritis varies widely across Virginia, with age-adjusted rates showing some differences but also showing some shared features:

- **Hospitalization Rates:** Eastern and Northwestern Virginia show the highest age-adjusted hospitalization rates in Virginia due to arthritis, with high rates also shown in the Loud Fairfax, Rapidan-Rappahannock, Allegheny and Central Virginia health districts.



**Mortality Rates:** age-adjusted mortality rates were elevated in the rural Eastern and western Cumberland districts as well as in Henrico and Alexandria.



**Data Sources:**

1. VDH Division of Policy and Evaluation, Behavioral Risk Factor Surveillance Survey, 2011
2. VDH Division of Policy and Evaluation, Virginia Health Information, 2010
3. VDH Vital Records data, 2010 (Table 13, Resident Deaths from Fourteen Leading Causes of Death with Age-Adjusted Rates per 100,000 Population by Planning District and City or County, 2010)
4. Behavioral Risk Factor Surveillance System 2011 Report; Adults Ages 18 or Older with Self Reported Doctor-Diagnosed Arthritis in Virginia.
5. PubMed Health; [www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001460/](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001460/) and [www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002223](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002223)
6. Arthritis Foundation; [www.arthritis.org](http://www.arthritis.org).
7. CDC WONDER; [www.cdc.gov/wonder](http://www.cdc.gov/wonder).
8. Virginia Health Information Inpatient Hospitalization file via Intellimed, courtesy of Virginia Commonwealth University Health System.