

INTRODUCTION

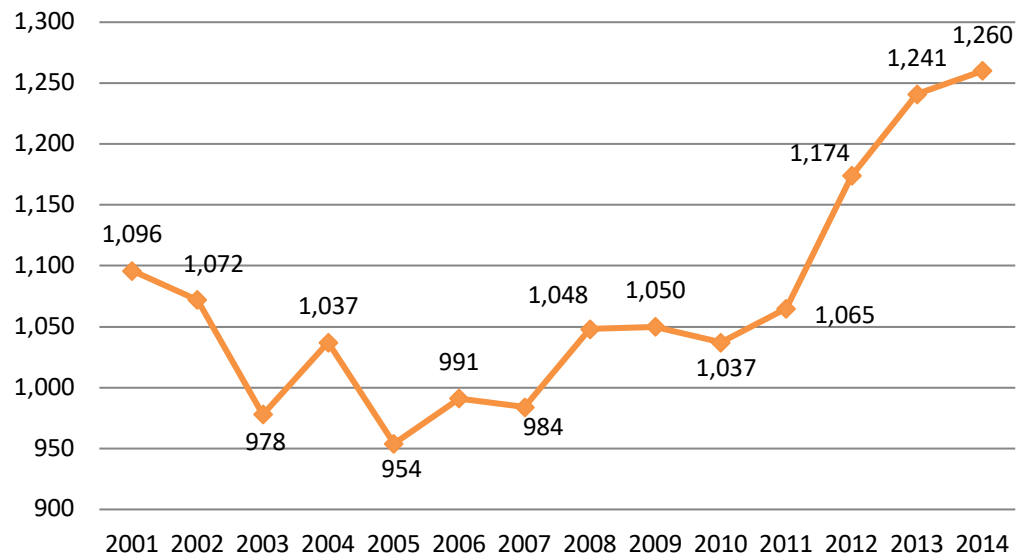
Currently, 1.9 million people are living with limb loss in the United States, and an average of 507 people continue to lose a limb every day. This results in an estimated 185,000 amputations per year (1), and this number is expected to double by the year 2050 due to increasing rates of diabetes and vascular disease (1). Among those living with limb loss, the major causes of their amputations are vascular disease (54%) – including diabetes and peripheral arterial disease – trauma (45%) and cancer (less than 2%) (2). The most common causes of pediatric amputations, however, are lawn mower accidents (3). Non-whites comprise about 42% of the limb loss population in the U.S. (1). In 2008, the diabetes related amputation rate among African Americans was nearly four times that of whites (4).

A total of 1,260 amputations were performed in West Virginia hospitals in 2014. These amputations were performed for a variety of reasons, including diabetes and peripheral arterial disease complications. The following information details the trends and most current rates of amputation and diabetes in West Virginia.

1. AMPUTATION TRENDS OVER TIME

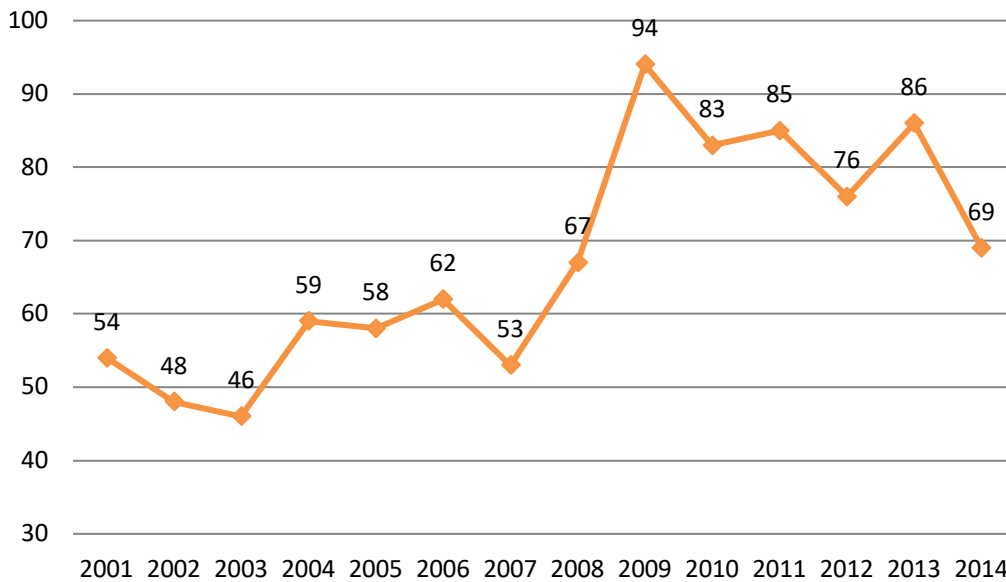
**1.1: Amputation Trends,
West Virginia (2001-2014)**

The number of total amputations performed in West Virginia increased 14.96% from 2001 to 2014 according to hospital discharge data. A total of 14,987 procedures were performed in this time period. There was a low of 954 in 2005, and a high of 1,260 in 2014. (See Graph 1.1)



Source: Healthcare Cost and Utilization Project HCUPnet database <http://hcupnet.ahrq.gov/>

1.2: Upper-Extremity Amputations, West Virginia (2001-2014)

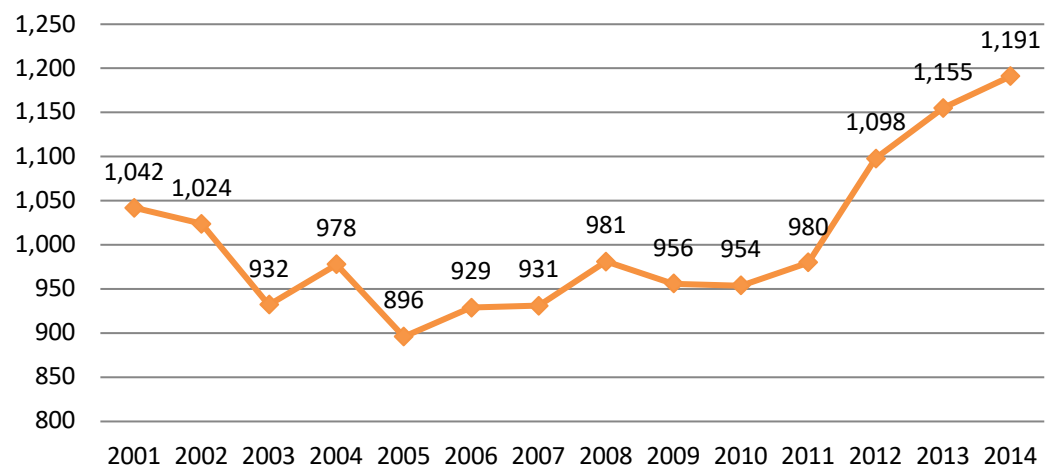


The number of upper-extremity amputations performed each year ultimately increased 27.78% from 2001 to 2014. A total of 940 of these procedures were performed in this time period. The lowest incidence of these amputations (46) occurred in 2003 while 2009 saw the most upper-extremity amputations (94) in this time period. (Graph 1.2)

Source: Healthcare Cost and Utilization Project HCUPnet database <http://hcupnet.ahrq.gov/>

From 2001 to 2014, a total of 14,047 lower-extremity amputations were performed in West Virginia. The numbers reached their lowest at 896 in 2005. The numbers of amputations were at their highest at 1,191 in 2014. This is a 14.3% increase from the number of lower-extremity amputations performed (See Graph 1.3)

1.3: Lower-Extremity Amputations, West Virginia (2001-2014)

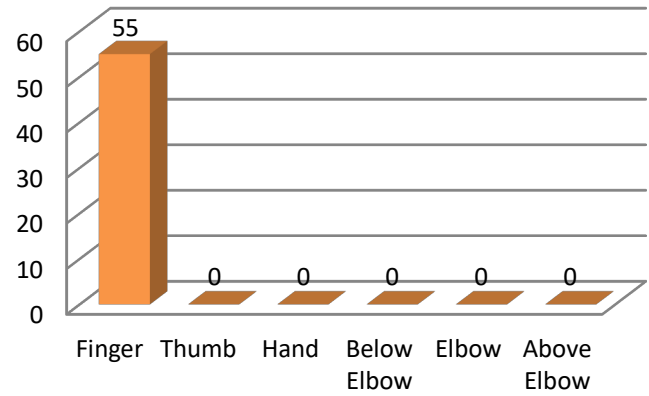


Source: Healthcare Cost and Utilization Project HCUPnet database <http://hcupnet.ahrq.gov/>

2. TYPES OF AMPUTATIONS PERFORMED

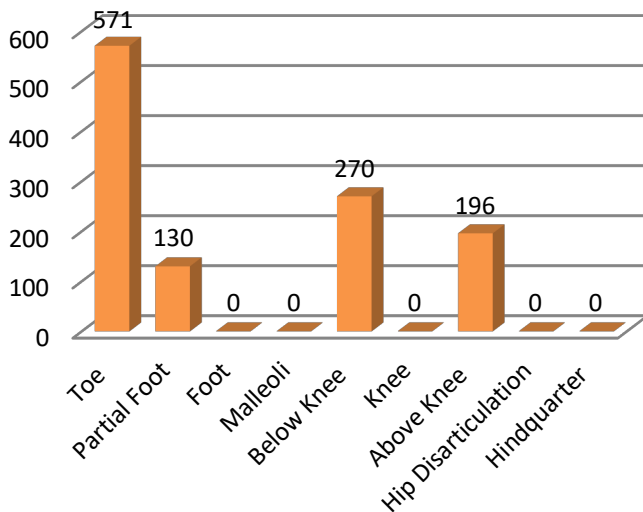
551 upper-extremity finger amputations were performed in 2014. No major upper-extremity amputations were performed. (See Graph 2.1)

2.1: Upper-Extremity Amputations, West Virginia (2014)



Source: Healthcare Cost and Utilization Project HCUPnet database
<http://hcupnet.ahrq.gov/>

2.2: Lower-Extremity Amputations, West Virginia (2014)



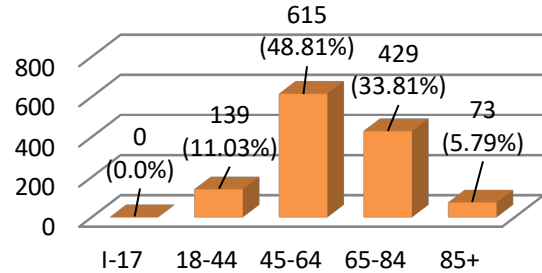
1,167 lower-extremity amputations were performed in 2014. In terms of minor lower-extremity amputations, toes (571) were amputated more often than part of the foot (130). For major lower-extremity amputations, below-knee (270) amputation was the most common procedure. (See Graph 2.2)

Source: Healthcare Cost and Utilization Project HCUPnet database
<http://hcupnet.ahrq.gov/>

3. WHO LOSES A LIMB?

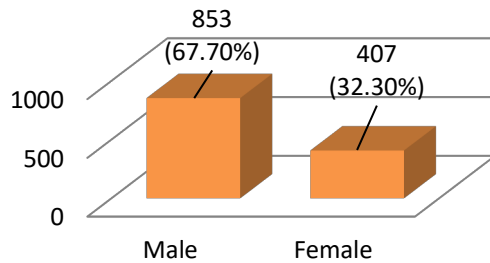
In 2014, most amputations were performed on individuals aged 45-64 years old, followed by the age group of 65-84 year olds (See Graph 3.1).

3.1: Amputations by Age Group, West Virginia (2014)



Source: Healthcare Cost and Utilization Project HCUPnet database
<http://hcupnet.ahrq.gov/>

3.2: Amputations by Sex, West Virginia (2014)

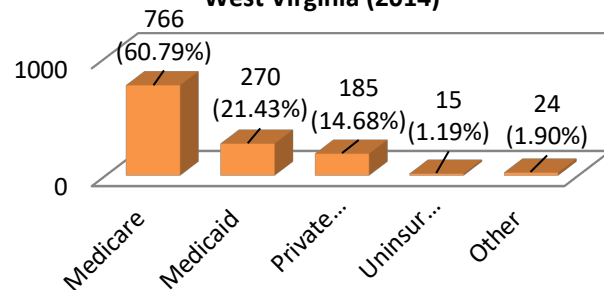


There were more than 2 times more amputations performed on male patients in West Virginia than on female patients (See Graph 3.2).

Source: Healthcare Cost and Utilization Project HCUPnet database
<http://hcupnet.ahrq.gov/>

Medicare recipients ranked as the most common group to have an amputation procedure, followed by Medicaid. (See Graph 3.3)

3.3: Amputations by Payer Type, West Virginia (2014)

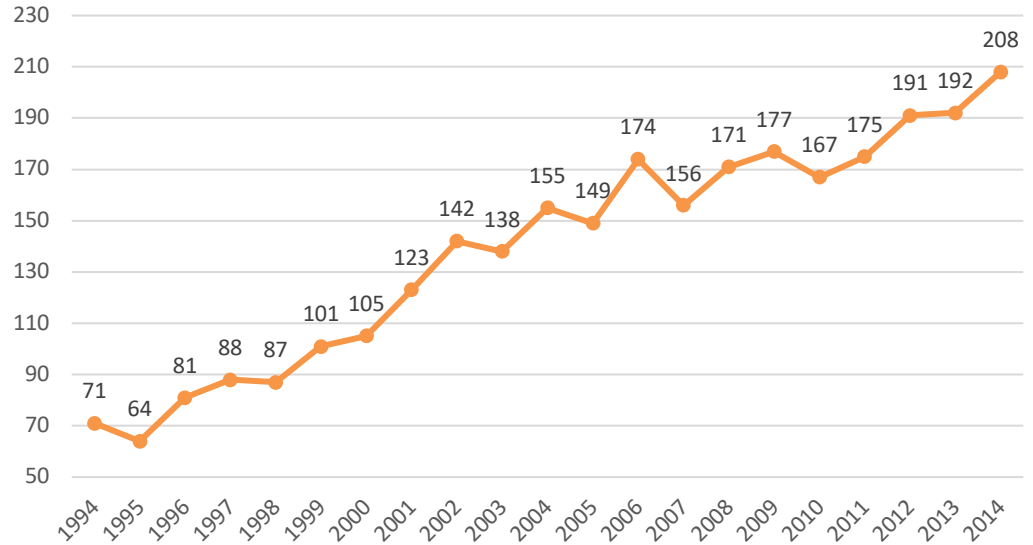


Source: Healthcare Cost and Utilization Project HCUPnet database
<http://hcupnet.ahrq.gov/>

4. DIABETES TRENDS

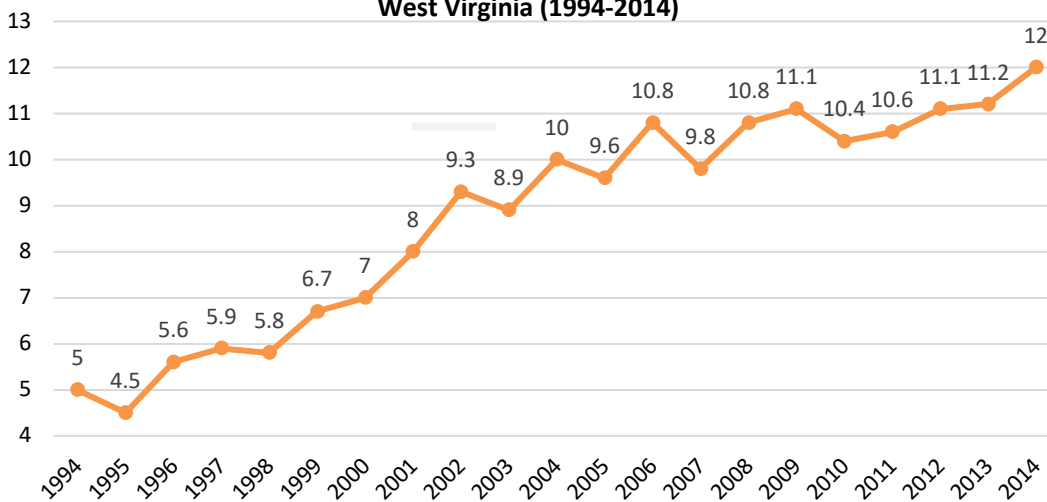
In 2014, a total of 207,695 West Virginia residents indicated that they had been diagnosed with diabetes at some point in their lives. The prevalence of diabetes in the adult population of West Virginia increased 193.0% from 1994 to 2014. (See Graph 4.1)

4.1: Diabetes Cases (in thousands; 18+), West Virginia (1994-2014)



Source: CDC Behavioral Risk Factor Surveillance System <https://gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html>

4.2: Existing Diabetes Cases per 100 Adults (18+), West Virginia (1994-2014)



The annual rate of existing cases of diabetes among adults in West Virginia increased 140% from 1994 to 2014. (See Graph 4.2)

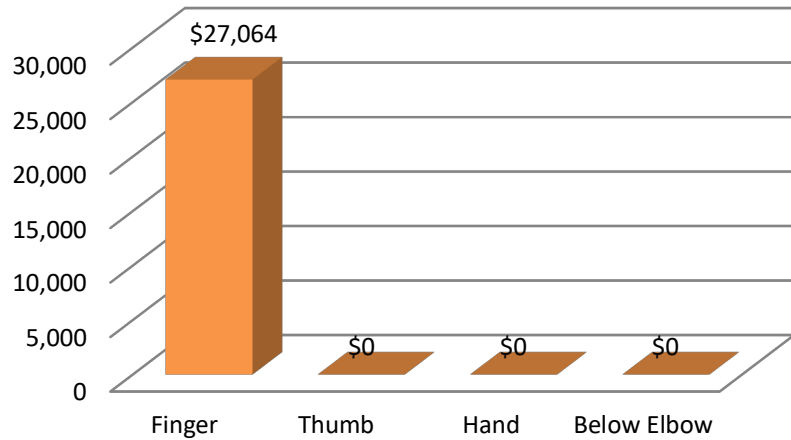
Source: CDC Behavioral Risk Factor Surveillance System <https://gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html>

5. HEALTHCARE COSTS

For persons with a unilateral lower-extremity amputation, the two year healthcare costs, including initial hospitalization, inpatient rehabilitation, outpatient physical therapy, and purchase and maintenance of a prosthetic device, is estimated to be \$91,106. The lifetime healthcare cost for persons with a unilateral lower extremity amputation is estimated to be more than \$500,000 (5). It is anticipated that these healthcare costs would be higher for a person with a proximal amputation level and bilateral amputation status, due to higher prosthetic costs.

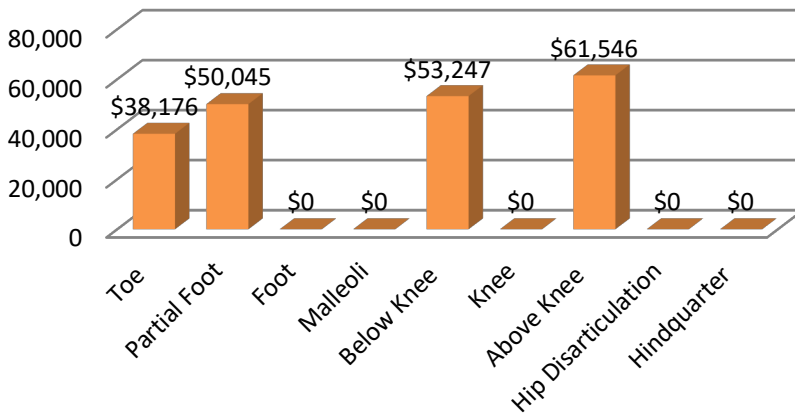
Charges represent what the hospital billed for the case, and may not represent all discharges for amputations. (See graph 5.1)

5.1: Overall Hospital Charges for Upper-Extremity Amputations, West Virginia (2014)



Source: Healthcare Cost and Utilization Project HCUPnet database <http://hcupnet.ahrq.gov/>

5.2: Overall Hospital Charges for Lower-Extremity Amputations, West Virginia (2014)



Charges represent what the hospital billed for the case, and may not represent all discharges for amputations. (See graph 5.2)

Source: Healthcare Cost and Utilization Project HCUPnet database <http://hcupnet.ahrq.gov/>

6. REFERENCES

1. Ziegler-Graham K, MacKenzie EJ, Ephraim PL, Travison TG, Brookmeyer R. Estimating the Prevalence of Limb Loss in the United States: 2005 to 2050. *Archives of Physical Medicine and Rehabilitation* 2008;89(3):422-9.
2. Coalition LLTFA. Recommendations from the 2012 Limb Loss Task Force: Roadmap for Preventing Limb Loss in America. [White Paper]. 2012 February 9-12.
3. Bryant PR, Pandian G. Acquired limb deficiencies. 1. Acquired limb deficiencies in children and young adults. *Archives of Physical Medicine and Rehabilitation* 2001;82(3B):00s3-s8.
4. Li Y, Burrows NR, Gregg EW, Albright A, Geiss LS. Declining Rates of Hospitalization for Nontraumatic Lower-Extremity Amputation in the Diabetic Population Aged 40 Years or Older: U.S., 1988-2008. *Diabetes Care* 2012;35(2):273-7.
5. MacKenzie EJ. Health-Care Costs Associated with Amputation or Reconstruction of a Limb-Threatening Injury. *The Journal of Bone and Joint Surgery (American)* 2007;89(8):1685.