

### INTRODUCTION

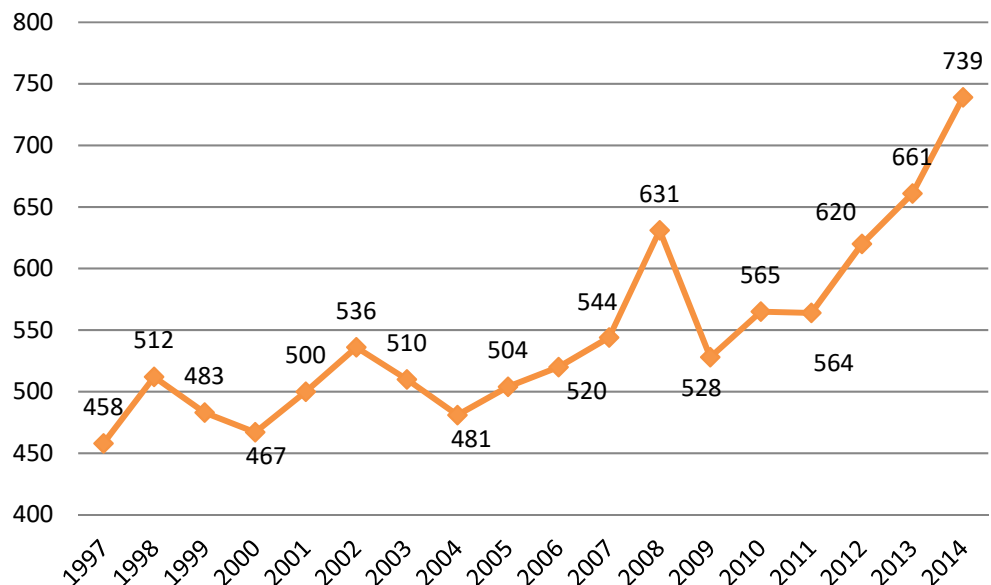
Currently, 1.9 million people are living with limb loss in the United States, and an average of 507 people continue to lose a limb every day. This results in an estimated 185,000 amputations per year (1), and this number is expected to double by the year 2050 due to increasing rates of diabetes and vascular 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 739 amputations were performed in Utah 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 Utah.

### 1. AMPUTATION TRENDS OVER TIME

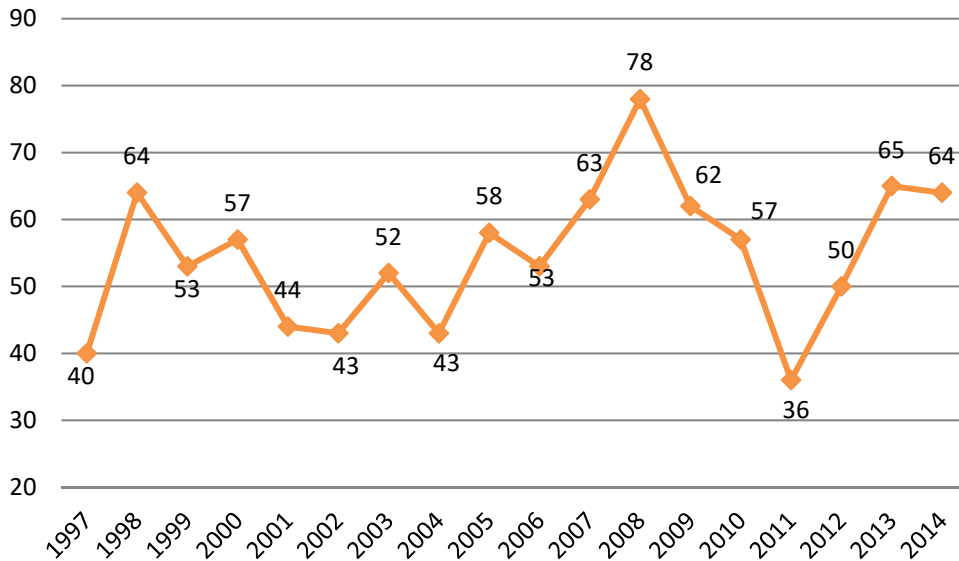
**1.1: Amputation Trends,  
Utah (1997-2014)**

*The number of total amputations performed in Utah increased 61.35% from 1997 to 2014 according to hospital discharge data. A total of 9,823 procedures were performed in this time period. After a low of 458 in 1997, the number of amputation gradually rose to 739 in 2014. (See Graph 1.1)*



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

**1.2: Upper-Extremity Amputations, Utah (1997-2014)**

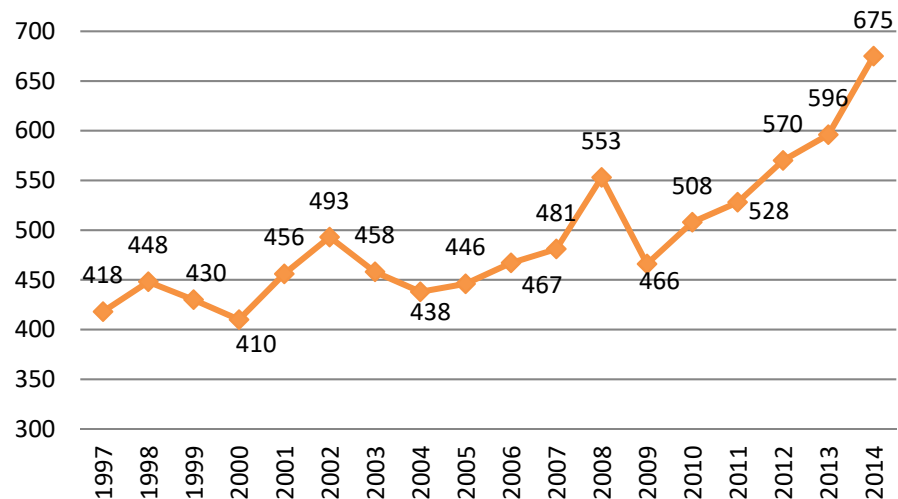


The number of upper-extremity amputations performed each year ultimately increased 60% from 1997 to 2014. A total of 982 of these procedures were performed in this time period. The lowest incidence of these amputations (36) occurred in 2011, while 2008 saw the most upper-extremity amputations (78) in this time period. (Graph 1.2)

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

From 1997 to 2014, a total of 8,841 lower-extremity amputations were performed in Utah. The numbers reached their lowest at 410 in 2000. The number of amputations were at their highest at 675 in 2014. This is a 61.48% increase from the number of lower-extremity amputations performed (See Graph 1.3)

**1.3: Lower-Extremity Amputations, Utah (1997-2014)**

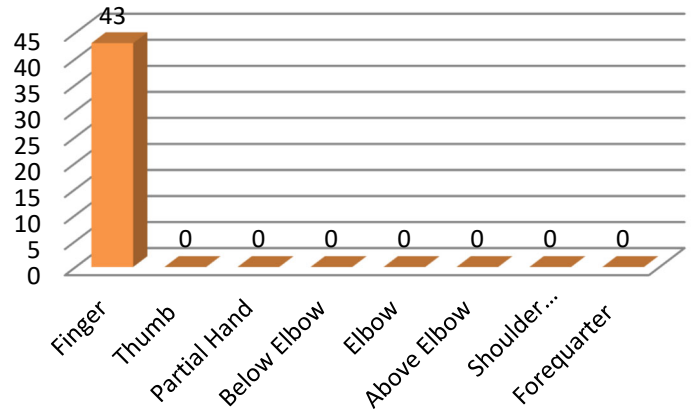


Source: Healthcare Cost and Utilization Project HCUPnet database <http://hcupnet.ahrq.gov/>

## 2. TYPES OF AMPUTATIONS PERFORMED

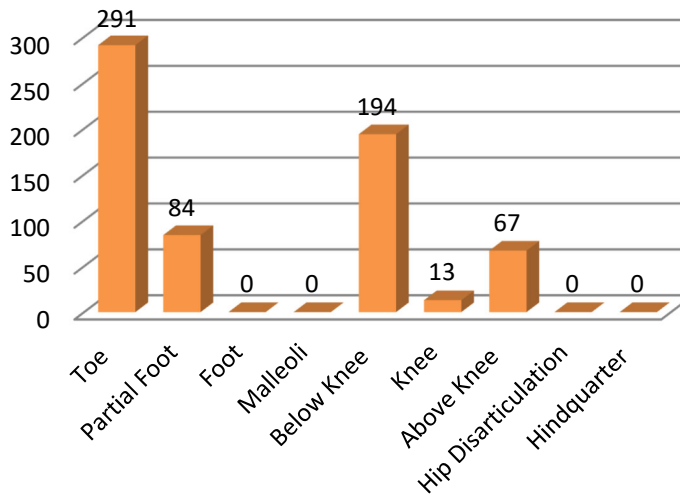
43 upper-extremity amputations were performed in 2014. The most common minor upper-extremity amputations were of the fingers (43) and there were no major upper extremity amputations reported. (See Graph 2.1)

**2.1: Upper-Extremity Amputations, Utah (2014)**



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

**2.2: Lower-Extremity Amputations, Utah (2014)**



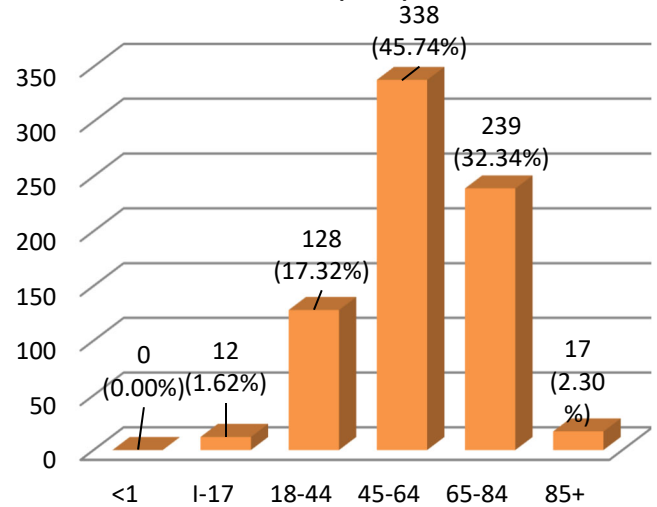
649 lower-extremity amputations were performed in 2014. In terms of minor lower-extremity amputations, toes (291) were amputated more often than part of the foot (84). For major lower-extremity amputations, below-knee (194) amputation was the most common procedure. (See Graph 2.2)

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

## 3. WHO LOSES A LIMB?

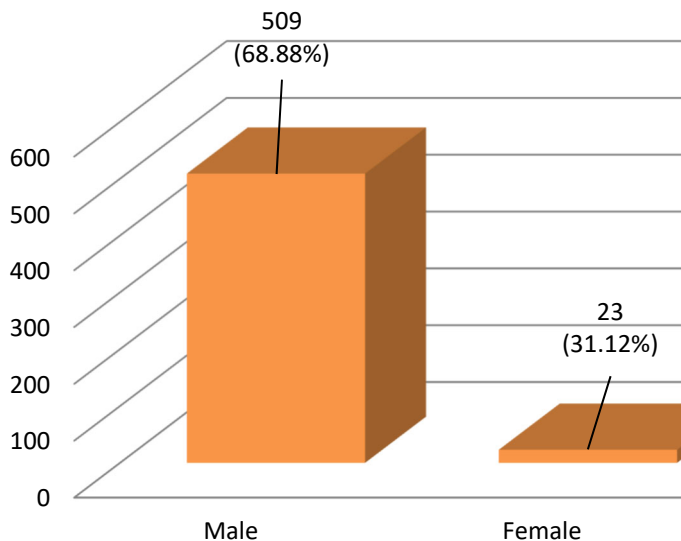
In 2014, most amputations were performed on individuals aged 45-64 years old, followed by the age group of 65-84 year olds (See Graph 3.1).

**3.1: Amputations by Age Group, Utah (2014)**



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

**3.2: Amputations by Sex, Utah (2014)**

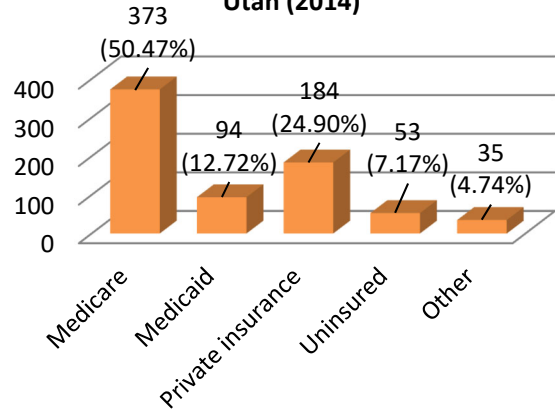


There were more than 2 times more amputations performed on male patients in Utah than on female patients (See Graph 3.2).

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

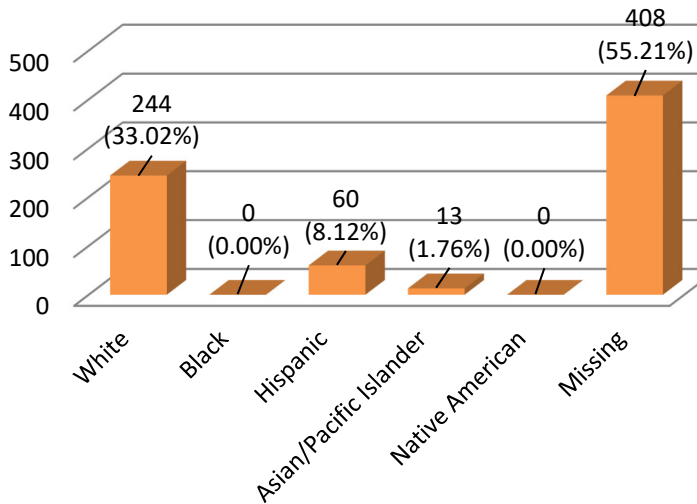
Medicare recipients ranked as the most common group to have an amputation procedure, followed by private insurance (See Graph 3.3)

**3.3: Amputations by Payer Type, Utah (2014)**



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

**3.4: Amputations by Race/Ethnicity, Utah (2014)**



Most data concerning race/ethnicity in this state is missing in reported data. (See Graph 3.4)

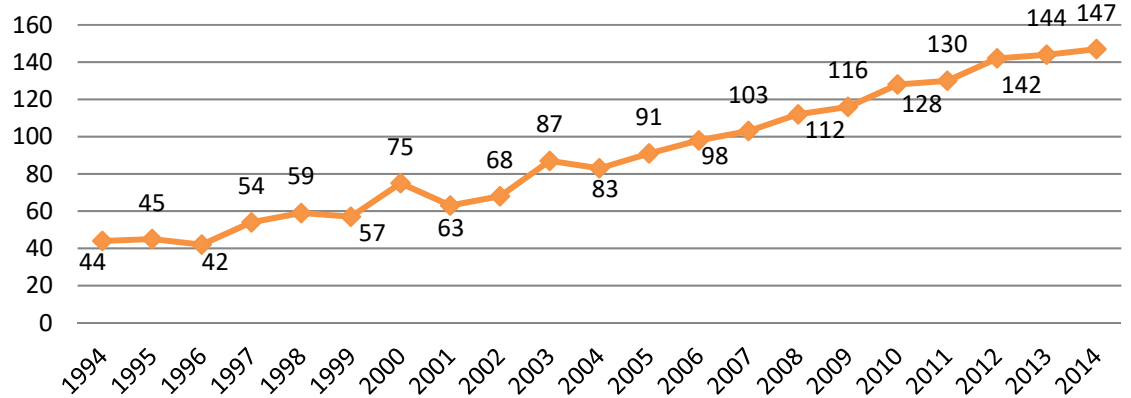
Source: Healthcare Cost and Utilization Project HCUPnet database  
<http://hcupnet.ahrq.gov/>

\* According to Census Bureau estimation data ([http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?sr\\_c=CF](http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?sr_c=CF)) the population of Utah in 2014 was about 4,858,111 and was made up of 2,515,352 white residents and 31,163 African American residents.

## 4. DIABETES TRENDS

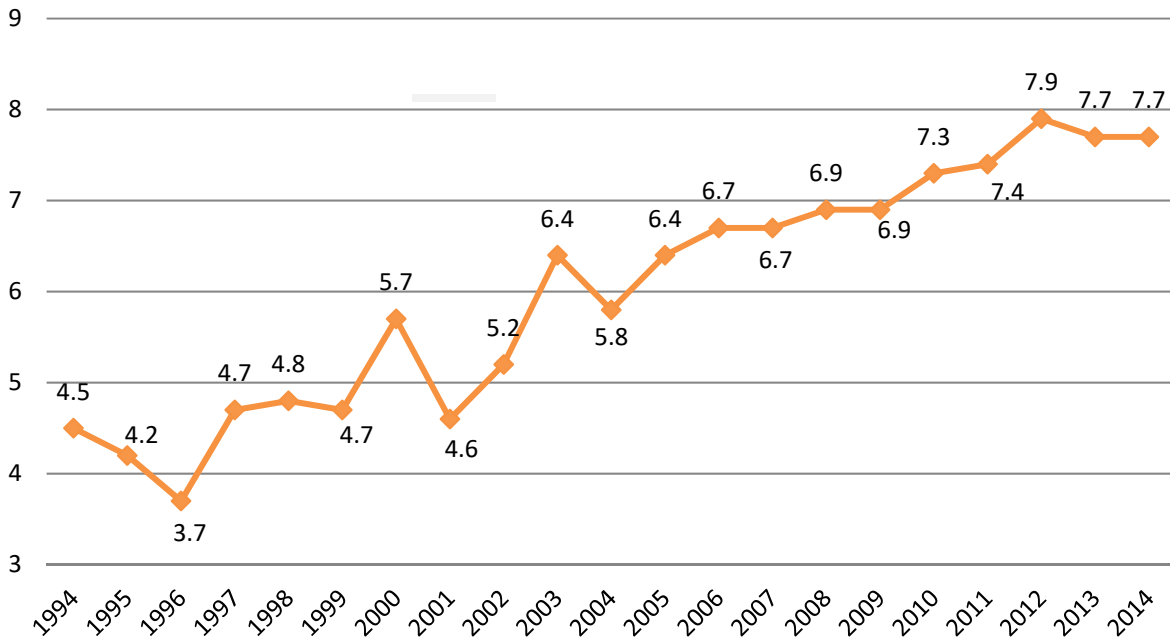
In 2014, a total of 147,025 Utah residents indicated that they had been diagnosed with diabetes at some point in their lives. The prevalence of diabetes in the adult population of Utah increased 234.1% from 1994 to 2014. (See Graph 4.1)

**4.1: Diabetes Cases (in thousands; 18+), Utah (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+), Utah (1994-2014)**



The annual rate of existing cases of diabetes among adults in Utah increased 71.11% from 1994 to 2014. (See Graph 4.2)

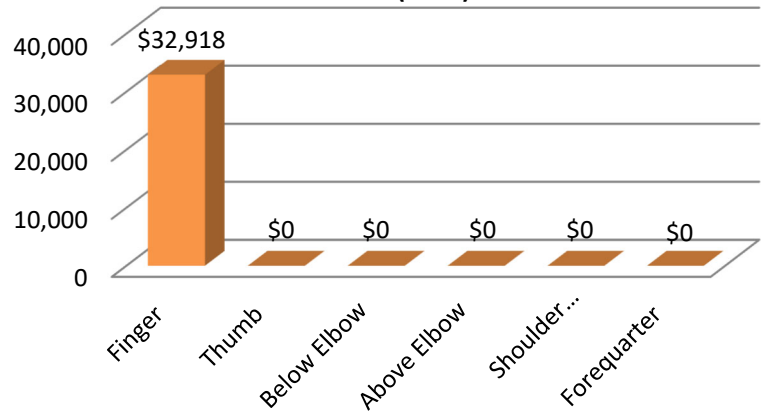
Source: CDC Behavioral Risk Factor Surveillance System <https://gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html>

## 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.

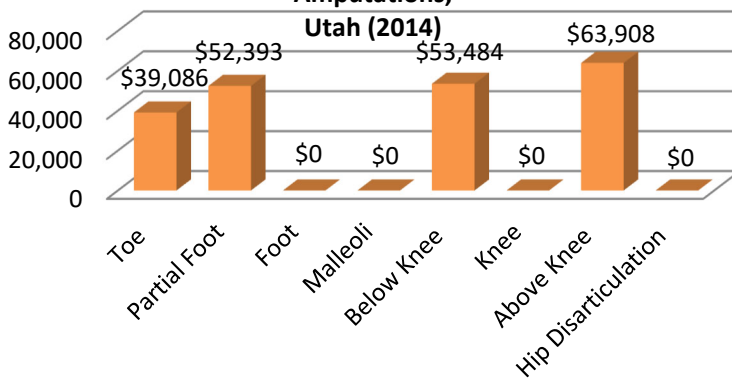
Charges represent what the hospital billed for the case, and may not represent all discharges for amputations. (See graph 5.1)

**5.1: Overall Hospital Charges for Upper-Extremity Amputations, Utah (2014)**



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

**5.2: Overall Hospital Charges for Lower-Extremity Amputations, Utah (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.