# Fact Sheet — Hawaii

## INTRODUCTION

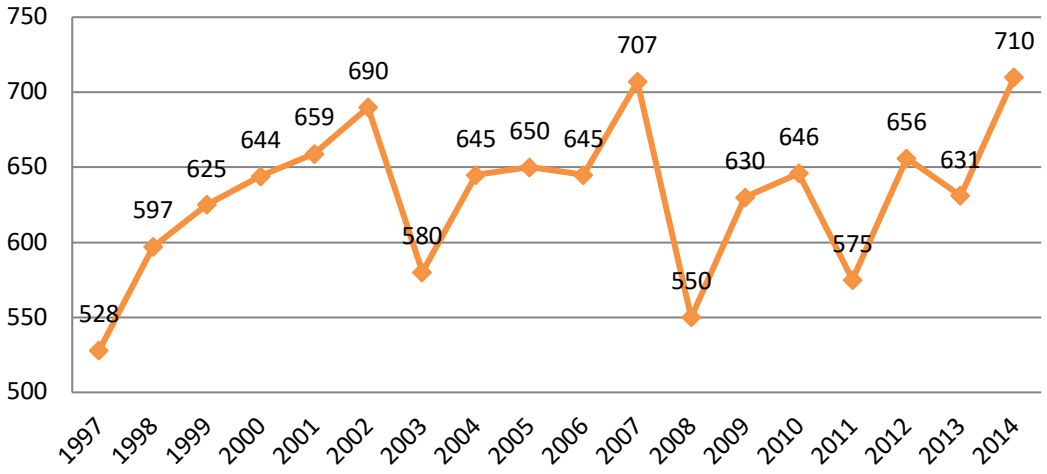
Currently, 1.9 million people are living with limb loss in the United States, with an average of 507 people continuing to lose a limb every day. This results in an estimated 185,000 amputations per year (1), and this number is expected to double by the year 2050 due to increasing rates of diabetes and 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 710 amputations were performed in Hawaii 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 Hawaii.

## 1. AMPUTATION TRENDS OVER TIME

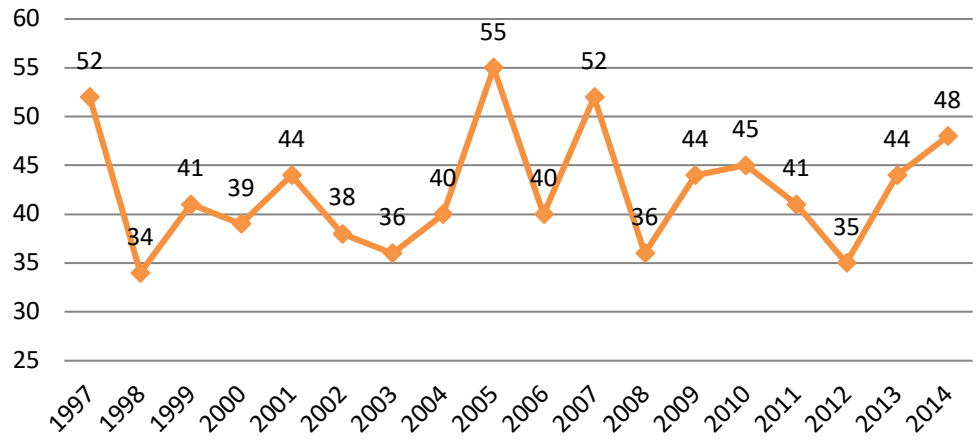
*According to hospital discharge data, the number of total amputations performed in Hawaii was at a low in 1997 (528) and a high in 2014 (710). This overall time period represents a 34.47% increase. A total of 11,368 amputations were performed in this time period. (See Graph 1.1)*

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




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

**1.2: Upper-Extremity Amputation Trends, Hawaii (1997-2014)**

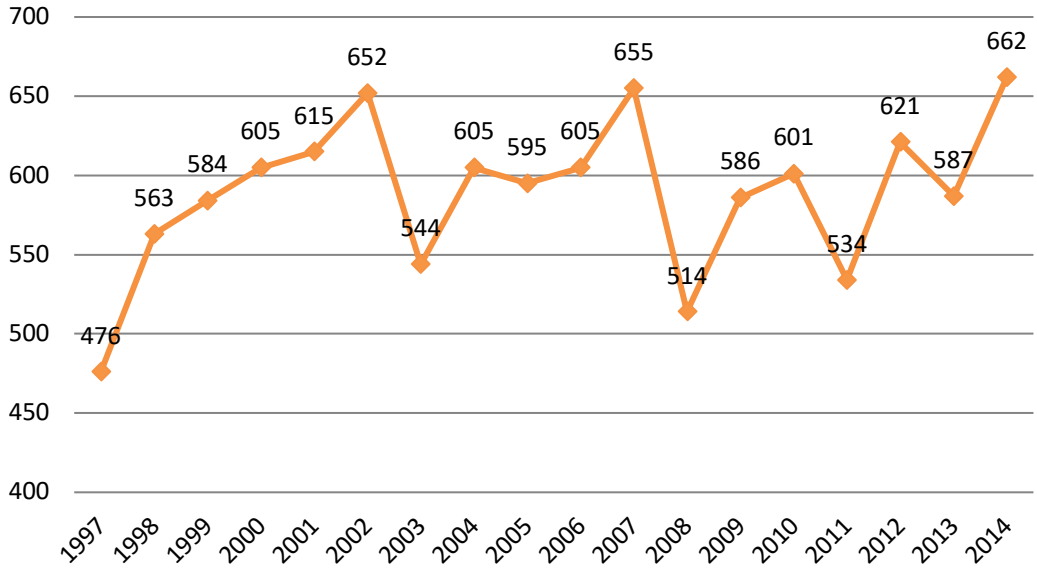



**Source: Healthcare Cost and Utilization Project HCUPnet database http://hcupnet.ahrq.gov/**

*In Hawaii, the total number of upper-extremity amputations performed from 1997 to 2014 was 764. The year 2005 saw the most of these amputations (55), while the lowest incidence (34) occurred in 1998. This time period represents a 7.69% decease. (See Graph 1.2)*

**1.3: Lower-Extremity Amputation Trends, Hawaii (1997-2014)**

*A total of 10,604 of lower-extremity amputations were performed from 1997 to 2014. The incidences of these amputations were at their highest in 2014 (662) and their lowest in 1997 (476). This represents a, 39.08% increase in the number of lower-extremity amputations from 1997 to 2014. (See Graph 1.3)*

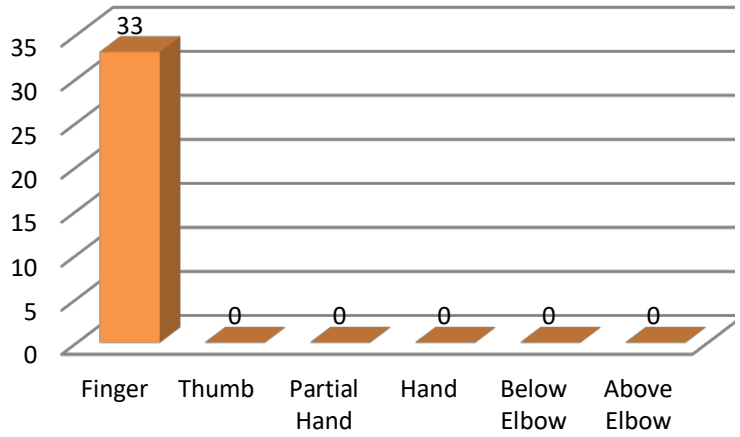



**Source: Healthcare Cost and Utilization Project HCUPnet database http://hcupnet.ahrq.gov/**

## 2. TYPES OF AMPUTATIONS PERFORMED

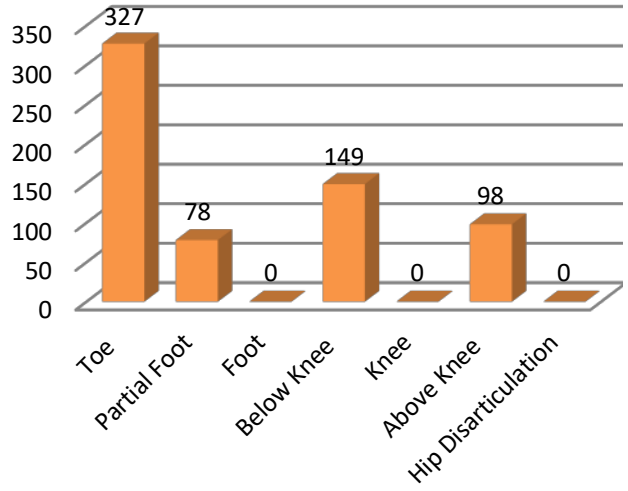
*33 upper-extremity amputations were reported in 2014. The most common minor upper-extremity amputation was of the fingers (33) and no major upper-limb amputation procedures were reported (See Graph 2.1)*

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




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

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



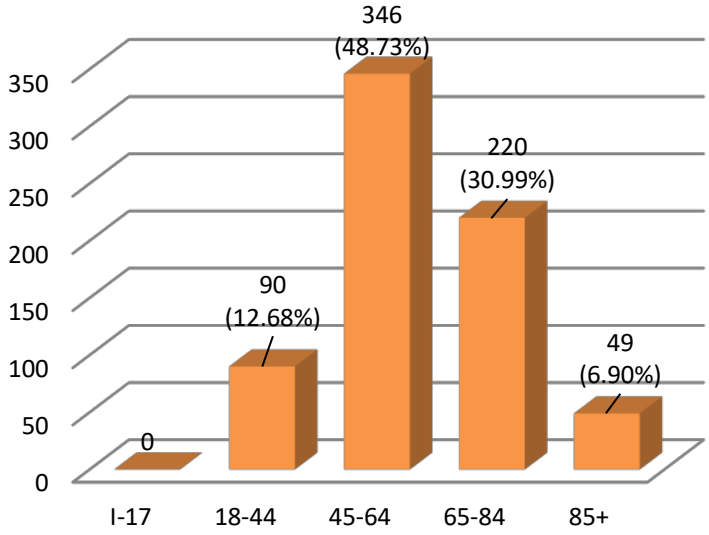

**Source: Healthcare Cost and Utilization Project HCUPnet database http://hcupnet.ahrq.gov/**

*652 lower-extremity amputations were performed in 2014. In terms of minor lower-extremity amputations, toes (327) were amputated more often than part of the foot (78). For major lower-extremity amputations, below-knee (149) amputation was the most common procedure, followed by above-knee (98) procedures. (See Graph 2.2)*

## 3. WHO LOSES A LIMB?

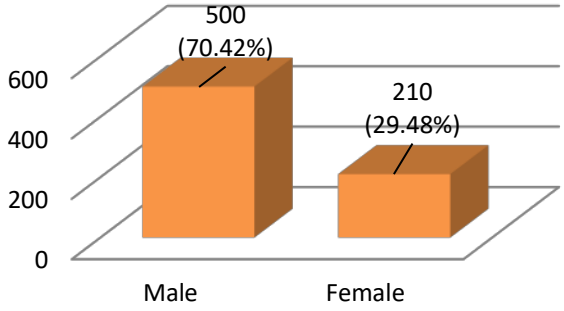
*In 2014, most amputations were performed on individuals aged 45-64 years old, closely followed by the age group of 65-84 year olds (See Graph 3.1).*

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




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

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

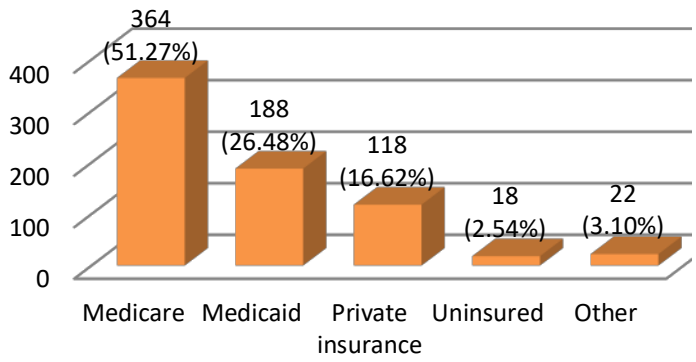



**Source: Healthcare Cost and Utilization Project HCUPnet database http://hcupnet.ahrq.gov/**

*There were nearly 2.5 times more amputations performed on male patients in Hawaii than on female patients (See Graph 3.2).*

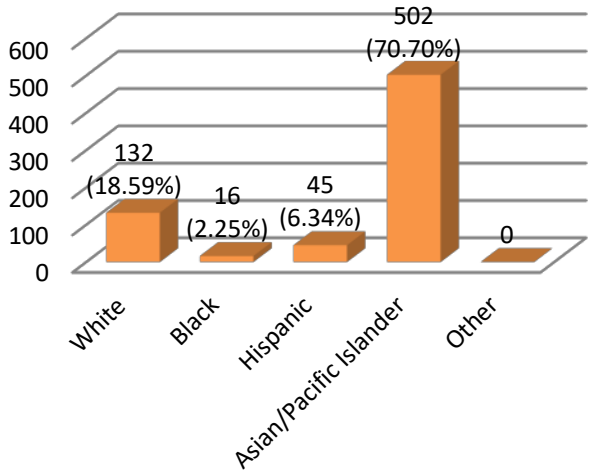
*Medicare recipients ranked as the most common group to have an amputation procedure, followed by Medicaid. (See Graph 3.3).*

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




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

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




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

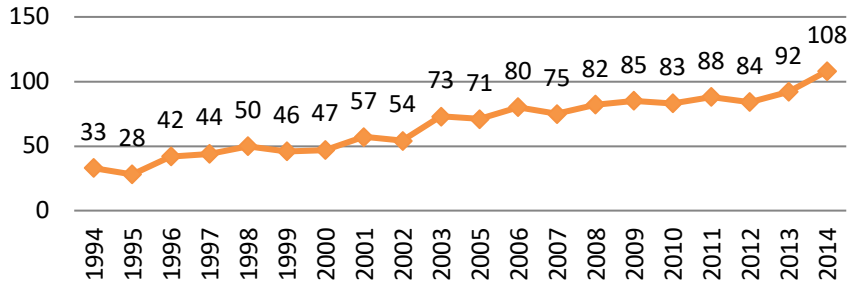
*We can see that the African American population of Hawaii bears the heaviest burden of amputation (0.059% of the African American population underwent amputations). This is evident when compared with the percentage of the white population that underwent amputations (0.037%) and amputations in the state's population as a whole (0.05%). Because Hawaii's Asian and Pacific Islander population was calculated together, percentages are unavailable for these groups. (See Graph 3.4)*

* According to Census Bureau estimation data (http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF), the population of Hawaii in 2014 was about 1,392,704 and was made up of about 350,634 white residents, 26,913 African American residents, and 138,735 Pacific Islander residents.

## 4. DIABETES TRENDS

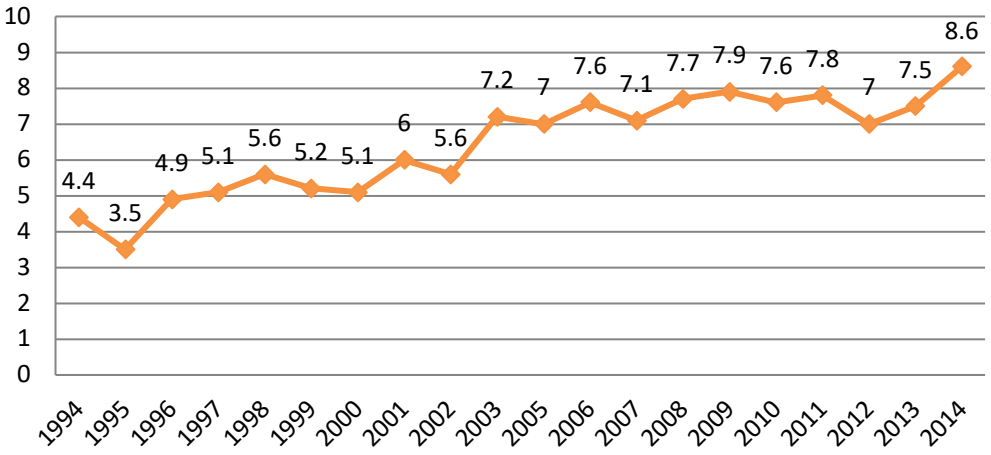
*In 2014, a total of 108,365 Hawaii residents indicated that they had been diagnosed with diabetes at some point in their lives. The prevalence of diabetes in the adult population of Hawaii increased 227.3% from 1994 to 2014. Data from 2004 in unavailable. (See Graph 4.1)*

**4.1: Diabetes Trends (in thousands, 18+), Hawaii (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+), Hawaii (1994-2014)**




*The annual rate of existing cases of diabetes among adults in Hawaii decreased 95.45% from 1994 to 2014. Data from 2004 is unavailable. (See Graph 4.2)*

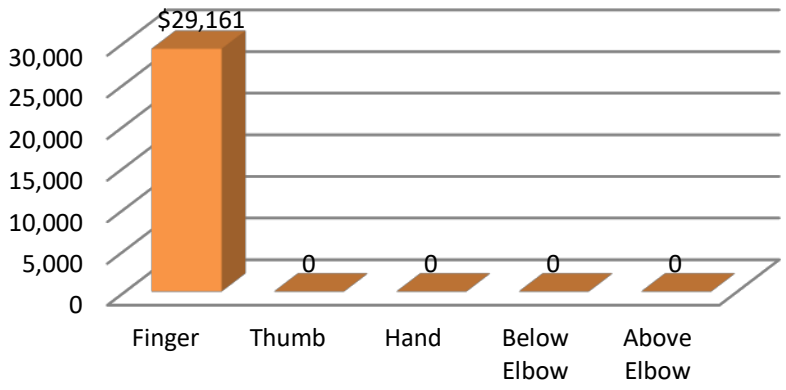
**Source: CDC Behavioral Risk Factor Surveillance System https://gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html**

## 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.*

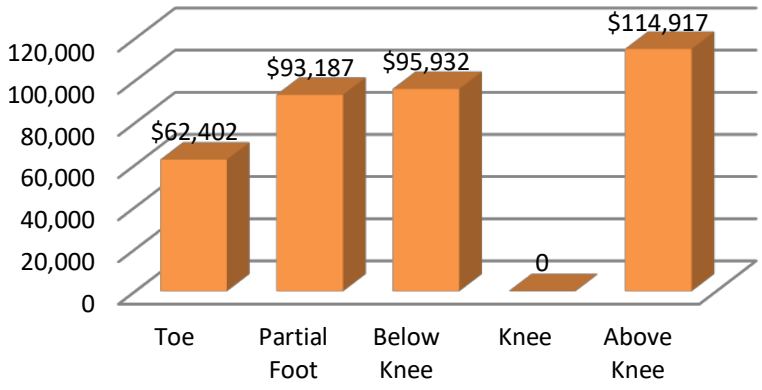
*Charges represent what the hospital billed for the case, and may not represent all discharges for amputations. (See graph 5.1)*

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




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

**5.2: Overall Hospital Charges for Lower-Extremity Amputations, Hawaii (2014)**




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

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

## 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 Rehabilitation2008;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 Rehabilitation2001;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 Care2012;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.