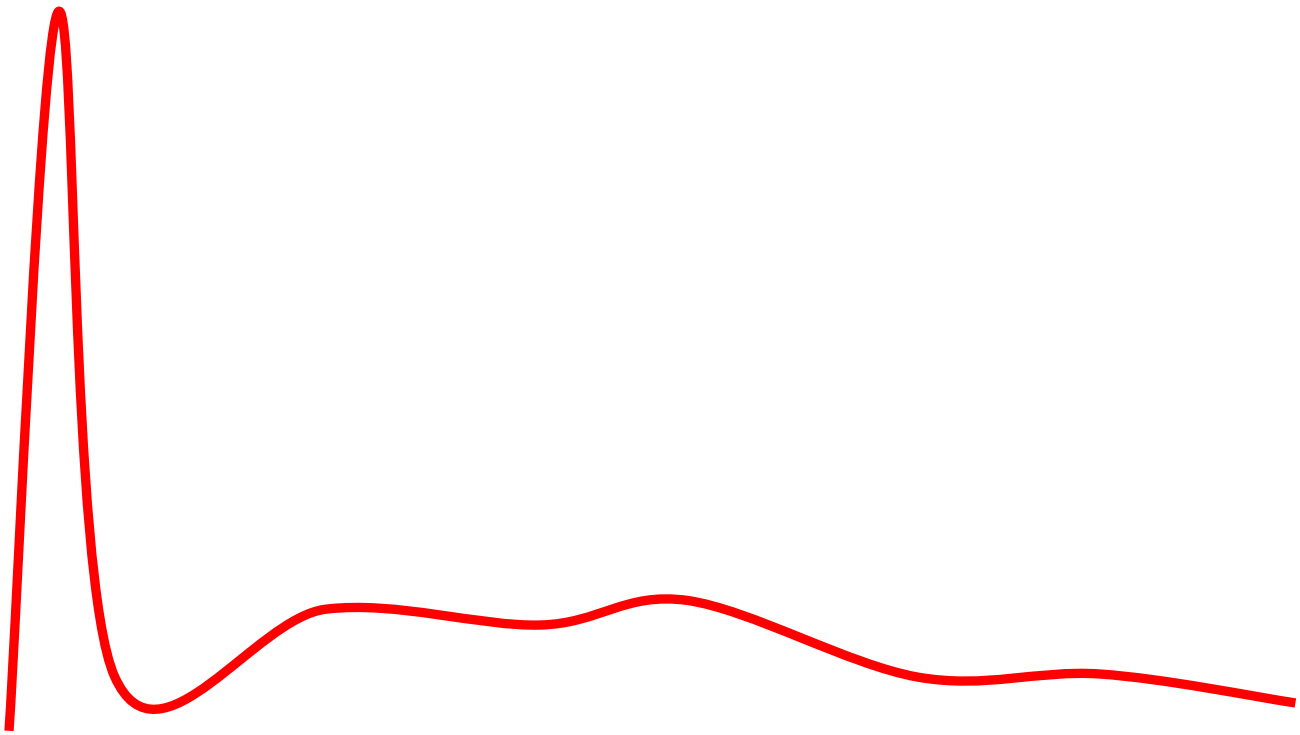
National Burn Repository

2005 Report
Dataset Version 2.0



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National Burn Repository
2005 Report

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Acknowledgments

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Lastly, we owe a debt of gratitude to the work of our predecessors – most notably Dr. Jeffrey Saffle and Ms. Grace McDonald Smith – who diligently and often without due recognition have supported the NBR initiative and remain committed to the cause; we sincerely thank you.

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Preface

This year's National Burn Repository (NBR) Report contains the largest number of records of burn patient care every collected. Following the Fall 2005 Call for Data, the NBR now contains records of over 187,000 patients from seventy burn centers in the United States and Canada and represents an increase of 133,000 from the 2002 NBR. The data presented in this report represent the most recent 10-year submissions (1995 – 2005).

The release of this report is just one of many new NBR and TRACS-related initiatives supported by the American Burn Association. In October 2005, the Board of Trustees, under the leadership of Dr Gary F. Purdue, ABA President, reconstituted the NBR Committee. That Committee held a key meeting in January 2006 (in conjunction with the ABA National Leadership Conference in Washington, DC), during which the goals and objectives of the NBR were reviewed, working groups were established and analysis of the NBR version 2 began in earnest. The newly-created TRACS Users Group, Chaired by Dr. Richard J. Kagan also held its first meeting in Washington, DC; we are hopeful that work from that Committee will lead to continued improvements in our software and expansion of our burn database.

We believe the publication of this report will stimulate quality improvement programs in burn care, as burn centers compare their performance with the national data and as research is expanded using the NBR.

I would like to extend my thanks to all the hospitals that contributed to the NBR and to the members of the NBR Advisory Committee for their work in the analysis and preparation of this report. I look forward to our next Call for Data and the 2006 Report.

Sidney F. Miller, MD, FACS

The graphic on the cover is a stylized version of the age distribution of records in the National Burn Repository. Burn injury uniquely affects very young children and adults in their working years and persists even into old age.

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National Burn Repository

Summary of the Findings
1995 - 2005

This report of the National Burn Repository reviews the combined data set of *acute burn admissions* for the period 1995 – 2005. Key findings include the following:

1. Seventy hospitals from 30 states plus the District of Columbia contributed to this report, totaling 126,642 records. Fifty-nine hospitals contributed more than 500 cases. Data are not dominated by any single center and appear to represent a reasonable cross section of US hospitals.

2. Nearly 70% of the burn patients were men. Mean age for all cases was 33 years old. Infants accounted for 10% of the cases while patients age 60 or older represented 14% of the cases.

3. Sixty-two percent of the reported total burn sizes were less than 10% TBSA. Sixty-eight percent of the full thickness burns (third degree) were under 10%. Inhalation injury was present in 7% of the total reported cases, but played an important role in increasing hospital length of stay and risk of death.

4. The two most common reported etiologies were flame burns and scalds, accounting for almost 8 out of 10 cases. Hot liquids and vapors or boiling tap water represented a major portion of the top 10 reported e-codes; about 30% of injuries. There were 6,283 scald injuries in the under 2 years old age group, making up 28% of all scald injuries and 70% of all reported injuries to the under 2 population.

5. Forty-three percent of the burn injuries were reported to have occurred in the home.

6. Where transfer information was reported, 61% of patients were transferred or referred from another acute care facility prior to arrival at the reporting hospital.

7. Ninety-five percent of patients survived hospitalization. The cause of death for those who died was recorded in 51% of the cases. The leading cause of death was multiple organ failure.

8. Deaths from burn injury increased with advancing age and burn size, and presence of inhalation injury.

9. Hospital length of stay increased significantly with total burn size and presence of inhalation injury.

10. During the ten year period 1995 – 2005, average length of stay declined from 13 days to 8 days; the mortality rate decreased from 6.2 in 1995 to 4.7 in 2005.

All cases received from contributing hospitals (TRACS burnware and non-TRACS burnware users) that met the data structure requirements were initially accepted into the NBR. This report includes only cases with an admit year of 1995 – 2005, inclusive. Records were excluded from the analysis for this report if the “Admit Type” or “Admit Status” was:

- Readmission

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- Admission for reconstruction/rehabilitation
- Outpatient encounter
- Same patient
- Scheduled/elective admission
- Acute admission, not burn injury related.

In addition, records were excluded from the analysis of this report if they contained missing values for the following items:

- Gender
- LOS < ICU days

Lastly, the records received from our Canadian contributors are not included in the body of the analysis, but are presented separately in Appendix B.

Introduction and Overview

The development of a nationwide computerized burn patient registry reflects the recognition that health care registry implementation is both widespread and of proven benefit. Registries have proven valuable in epidemiology, treatment, prevention, and the design of health care systems. Such registries are useful in addressing the increasing emphasis from accrediting institutions, payers, and patient advocacy groups for accountability, cost-effectiveness, and quality. Burn centers must now also participate in the ABA National Burn Repository, as a requirement for burn center verification.

Efforts as early as 1964 to collect data on burn patients were somewhat successful, but ultimately not sustainable. In 1990, a large conference of ABA members (and representatives from other interested groups) met to discuss database design, patient identification, definitions of terminology, and administration of the database. A DOS/Fox Pro-based collection tool with a limited data set of 46 fields was derived from the consensus conference; it was the humble beginnings of our current collection tool. This program was tested during 1991 and 1992, with subsequent distribution to burn centers.

It soon became apparent that the necessary resources for sequential upgrades and maintenance were beyond internal Association resources. A merger with the recently developed trauma registry of the American College of Surgeons, NTRACS, resulted. The resulting TRACS/ABA Burn Registry represented a significant upgrade. Additional substantial upgrades occurred again in 2001, and included migration to a Microsoft Windows environment.

The ABA has issued three calls for TRACS/ABA Burn Registry data: 1994, 2002, and 2005. In 1994, 28 burn centers contributed data on over 6,400 patients treated during the period 1991-1993. The ABA announced its second call for data in 2001, and distributed the published results at the 2002 Annual Meeting. The third call for data was issued in the Fall of 2005. The results for this call are presented herein.

Effective July 1, 2005, the American College of Surgeons and the American Burn Association contracted out the responsibility for software support and development of the National Trauma Data Bank (NTDB) and the National Burn Registry (NBR) to Digital Innovation, Inc.. One major benefit of contracting with a specialist database vendor is the freed-up energy to tackle issues which can only be addressed by practicing burn team members. At the end of 2005, the ABA Board of Trustees created two new committees to spur evolution of the National Burn Repository to the next logical plateau:

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- The TRACS User/Software Committee will focus on the collection tool by working closely with actual ABA member-users of the software and Digital Innovation, Inc.
- The National Burn Repository Committee will focus on expanding, updating, and implementing the goals of the National Burn Repository.

Both committees will work closely with and be supported by the ABA Central Office.

The committees have been making rapid progress. The TRACS User/Software Committee is solidly into the process of creating NTRACS Burn Version 4.0. The release of this initial Digital Innovation product is scheduled for November 2006 and should prove to be a substantial upgrade. The National Burn Repository Committee has drafted a new mission statement & roadmap (see Appendix C), with work underway to implement its four major components – and most notably, NBR Report 2005, version 2.0.

Patient Sample

All cases received from contributing hospitals (TRACS burnware and non-TRACS burnware users) that met the data structure requirements were initially accepted into the NBR. This report includes only cases with an admit year of 1995 – 2005, inclusive. Records were excluded from the analysis for this report if the "Admit Type" or "Admit Status" was readmission; admission for reconstruction/rehabilitation; outpatient encounter; same patient; scheduled/elective admission; or acute admission, not burn injury related. Records were also excluded from the analysis of this report if they contained missing values for gender or if hospital LOS < ICU days. Lastly, the records received from Canadian contributors are not included in the body of the analysis, but are presently separately in Appendix B.

The National Burn Repository 2002 included 40,597 records from 1995 through 2001. The 2005 Call for Data added an additional 16,432 records for these same years and 99,945 records from 2002 through 2005 (Figure 3). The National Burn Repository now contains 156,969 records from 1995 through 2005. Of these, 126,642 represent acute burn admissions within US burn centers.

There has been an impressive improvement in total submissions since 2001, with 24,550 cases reported in 2002, 26,789 in 2003, and 32,630 in 2004. The 2005 submission tally (with 16,162 cases) is likely only partially collected as there is some delay in reporting to the National Burn Repository.

Patient Characteristics

Demographic analysis reveals that 70% of all patients were men (Figure 4). Designations for race and ethnicity showed that 62% of the patients were reported as "Caucasian," 18% reported as "African-American," and 12% were Hispanic (Figure 5). Only minor variations exist from the 2002 report.

Infants under 2 years of age accounted for 10% of the total cases and patients 70 years of age or older accounted for 8.5% of the cases. About 32% of admissions were in those less than 20 years old, which is somewhat less than the 37% reported in 2002. Approximately 60% of patients were between the ages of 5 and 50. The less than 2 age group unfortunately remains a high risk population for sustaining a burn injury.

Burn size and the presence of inhalation injury remain significant predictors of mortality. Burn size has been analyzed with regard to total body surface area (TBSA) burned, and TBSA sustaining full-thickness or partial-thickness burn. Total burn size is shown in Figure 7. A full 62% of patients had total burn size

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less than 10% TBSA, 21% had burn size between 10% and 19.9% TBSA, and 7% had burn size between 20% and 29.9% TBSA. Only 10% of patients had burn size of 30% or greater TBSA.

The number of cases of full thickness or partial thickness burns by TBSA is shown in Figures 8 and 9. Both of these figures show predominance for burns less than 10% TBSA. Figure 10 shows the number of cases by partial thickness, full thickness, and total TBSA as compared to burn size. Mortality outcomes by burn size and age are shown in Table 11.

Inhalation injury was reported in 6.5% of patients (Figure 11). This is somewhat less than the 10.3% reported in 2002. The presence of inhalation injury had a dramatic impact on mortality as shown in Tables 9 and 10.

Injury Event

Flame burns and scalds account for over 78% of the total cases in this report (Figure 12). Skin diseases represent about 1.4% of reported cases. The top 10 list of External Cause of Injury Codes (E Codes) is shown in Figure 13. The E924 series of codes for scald injuries (hot liquids related to cooking/eating or hot tap water (bath/shower/sink)) accounted for almost 40 % of the top 10 E-codes and nearly 20% of all burn mechanisms. Figures 12B and 12C depict injury etiology or mechanism by age group. The table lists the number of records for each age group and mechanism, and below that is the percentage of all cases in that age group and the percentage of cases of that particular mechanism. For example, there were 1,147 flame burns in children 2-4.9 years of age. Those 1,147 cases made up 18% of all burn mechanisms in the 2-4.9 age group and 4% of all flame injuries.

Most injuries (43%) occurred in the home as indicated by the E849 place of occurrence category (Figures 14 and 15). Eight percent of cases were reported as having occurred in an industrial / at work setting.

The circumstances of injury are depicted in Figures 16 and 17. Approximately 90% of the injuries were accidental. Work related injuries comprised 17% of all cases. Suspected intentional injuries (self-inflicted or assault) accounted for 5% of the cases.

Approximately two-thirds of records contained information about transfer or referral from another acute care facility prior to arrival at the reporting hospital. Of these cases, 61% were transferred or referred from another facility (Figure 18).

Outcome

115,133 patients (94.4% (vs. 94.5% in 2002 report)) survived hospitalization. 6,797 patients succumbed to their injury (5.6%). The outcome of care (lived or died) is shown in Figure 23.

The cause of death was reported for 3,488 patients in the database. Figure 20 shows that the leading cause of death in the burn patients remained multiple organ failure. About 14% of the recorded causes of death were attributed to “treatment withheld”, a fairly sizeable increase from the 10% reported with the 2002 data call. The outcome of care (lived or died) for the risk factors of age (Figure 23), burn size (Figure 24), and presence of inhalation injury (Figure 11) are reported in separate analyses as well.

It is important to note that 44,614 patients reported had burn wounds involving less than 10% TBSA and comprise 62% of the total cases. Deaths from burn injury increased with age and burn size. Of

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the 7,926 patients designated as having suffered inhalation injury, 2,087 died, a mortality rate of 26.3% (vs. 28.8% in 2002 report). In contrast, only 4,710 of the 114,004 patients without inhalation injury died (4.1% [vs. 2.9% in 2002 report]).

Resource Utilization

The top 10 procedures performed on the burn patients are shown in Table 12. Excision of wounds and skin grafting accounted for almost 90,000 procedures, almost one third of the total. 301,227 procedures were listed, but many of these, such as arterial and venous catherizations and insertion of endotracheal tubes, were procedures performed in the management of the patients, usually outside of the operating room.

As shown in Table 13, 18,634 (10%) of patients had at least one complication.

The average length of stay was nine days; average ICU stay 3 days and average ventilator days was two. The ranges for all of these data, however, are quite wide as shown in Table 14 and Figure 22. There is a decreased mean length of stay over the 10 year period reported.

Tables 17-21 review the financial data provided for the new 126,000 acute burn admissions with these records. Thirty-one percent of patients were uninsured, underinsured or private/self-pay and 25% were insured by government programs. Forty-five percent of reported cases contained valid charge data with an average charge per patient of $52,000.

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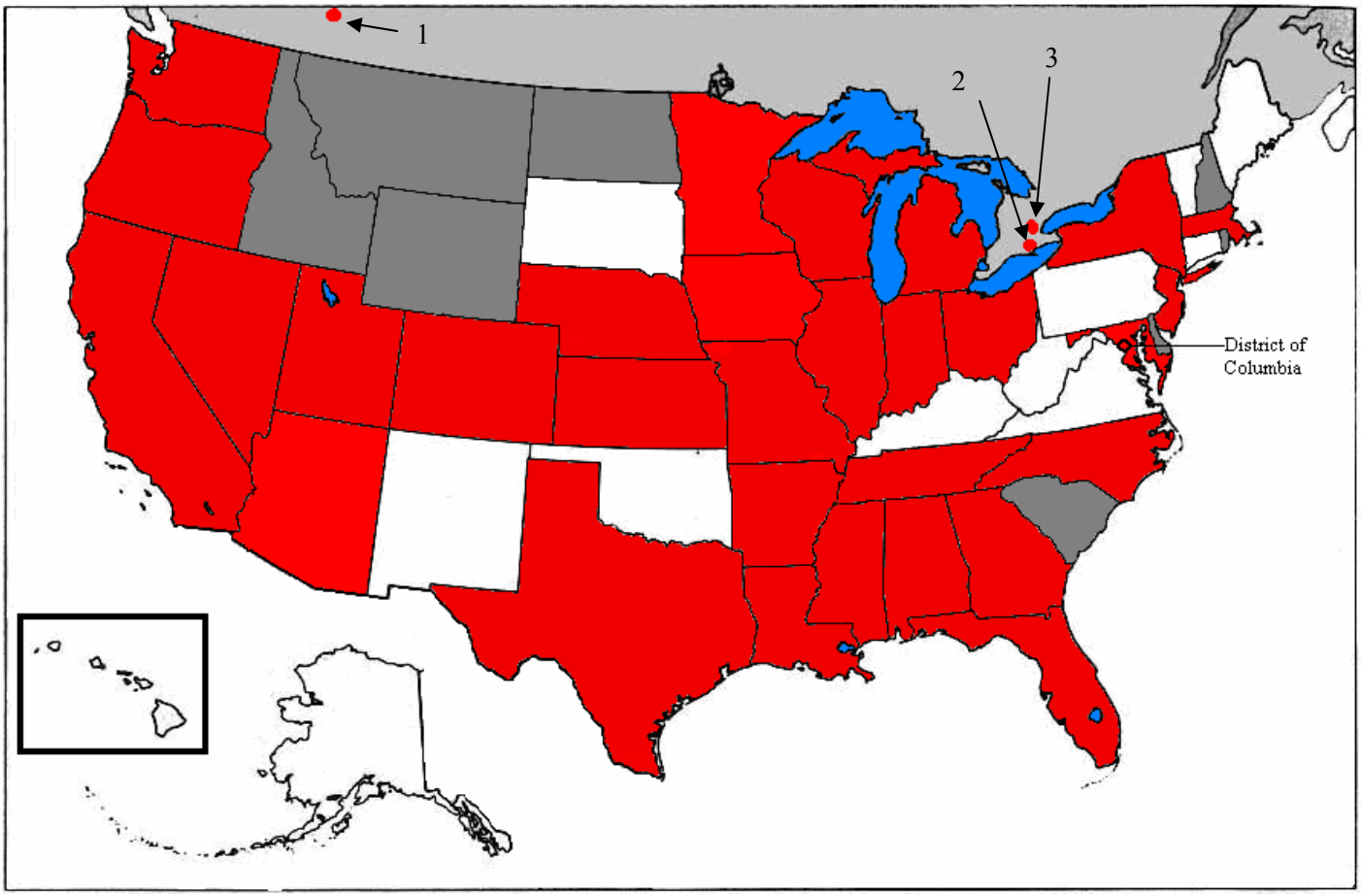
National Burn Repository

Figures

Figure 1. States That Have Submitted to the NBR, 1995 to 2005



Legend:
States in red have burn centers which have contributed data to the NBR between 1995 to 2005.
States in white have burn centers that have not contributed data to the NBR.
States in grey do not have burn centers.

Canadian contributing burn centers are noted above and are:
(1) Edmonton, Alberta; (2) Hamilton, Ontario; and (3) Toronto, Ontario.

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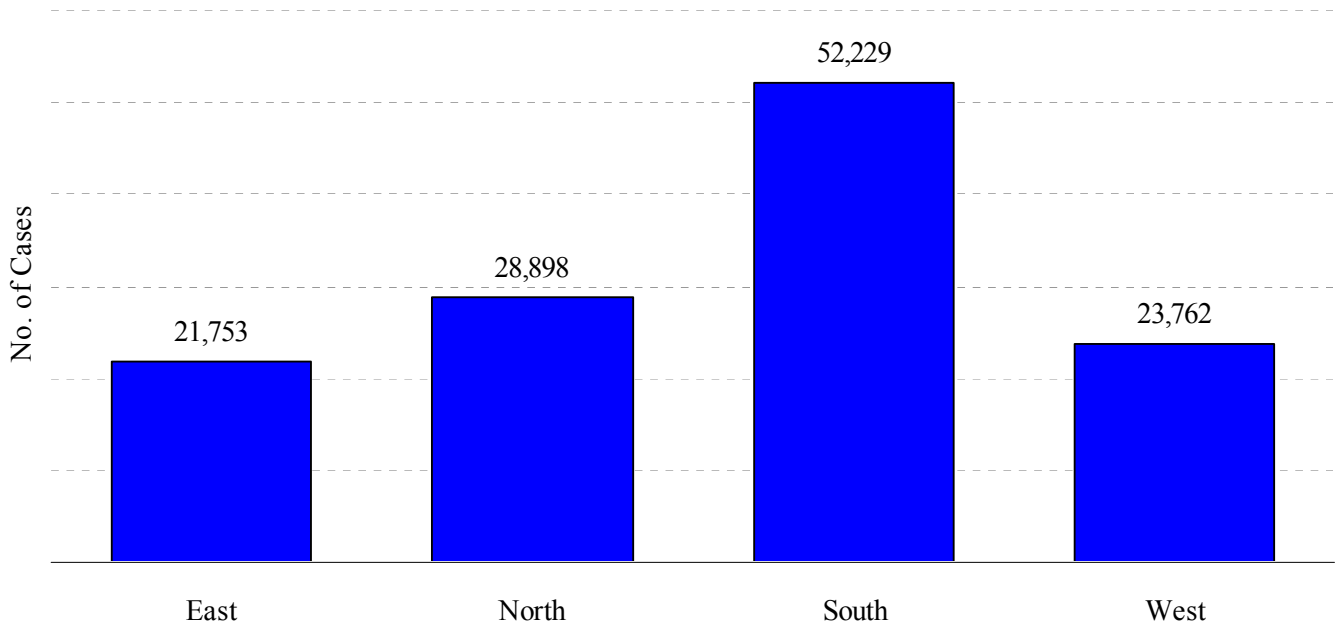
Figure 2. Contributing U.S. Hospitals by Geographical Region



North – Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **South** – Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Tennessee, and Texas. **East** –District of Columbia, Maryland, Massachusetts, New Jersey, and New York. **West** –Arizona, California, Colorado, Nevada, Oregon, Utah, and Washington.

Figure 3. Arrival/Admission Year, All Cases

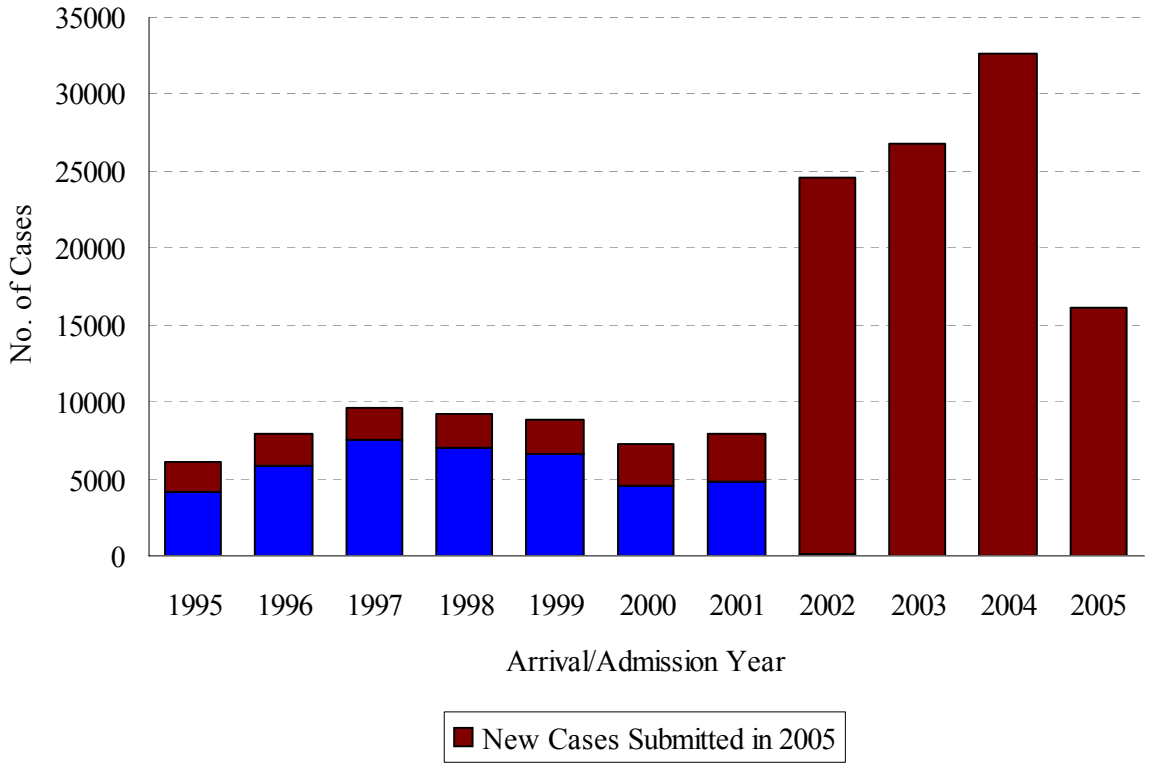


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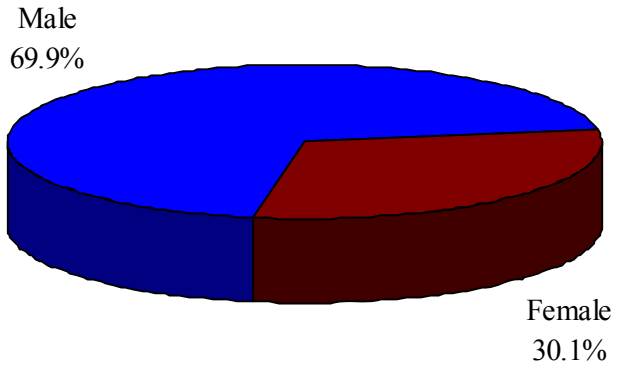
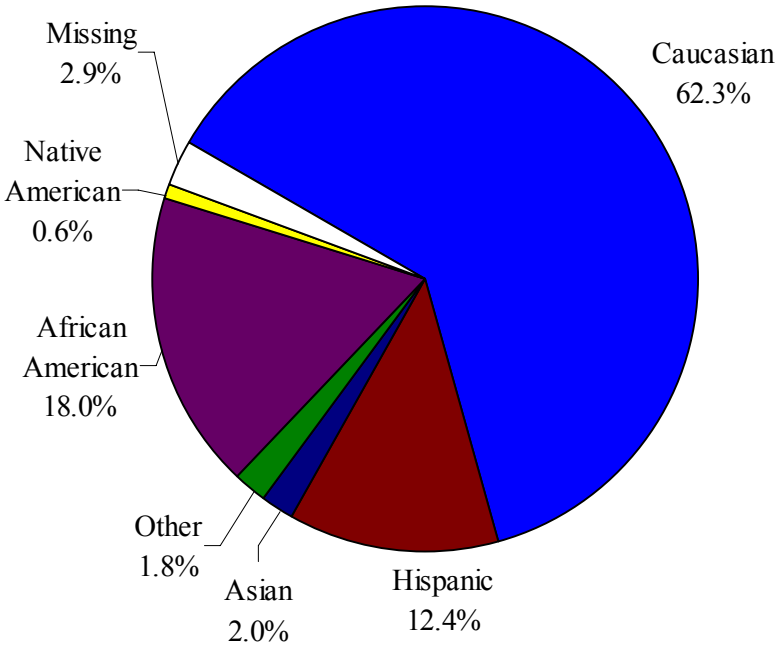
Figure 4. Gender*



*Total N=126,642

Figure 5. Race/Ethnicity*



*Total N=126,642

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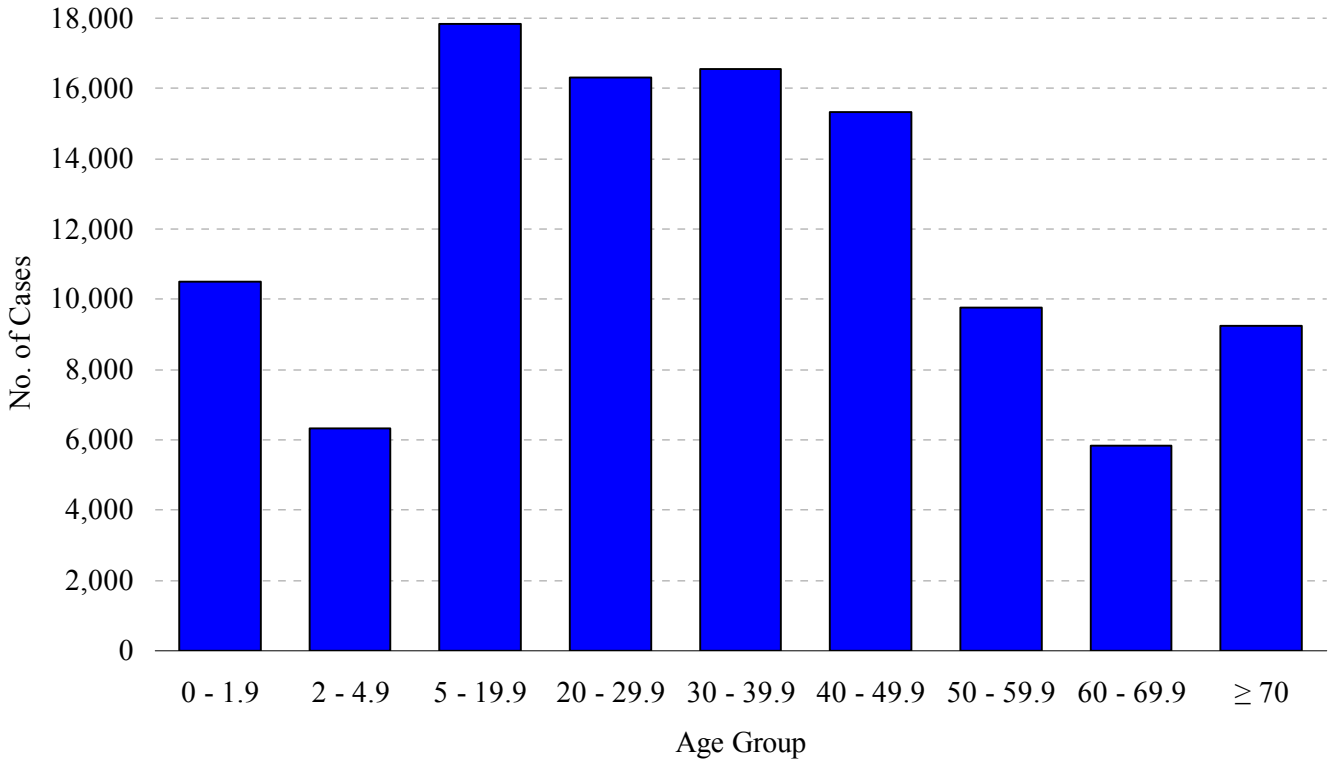
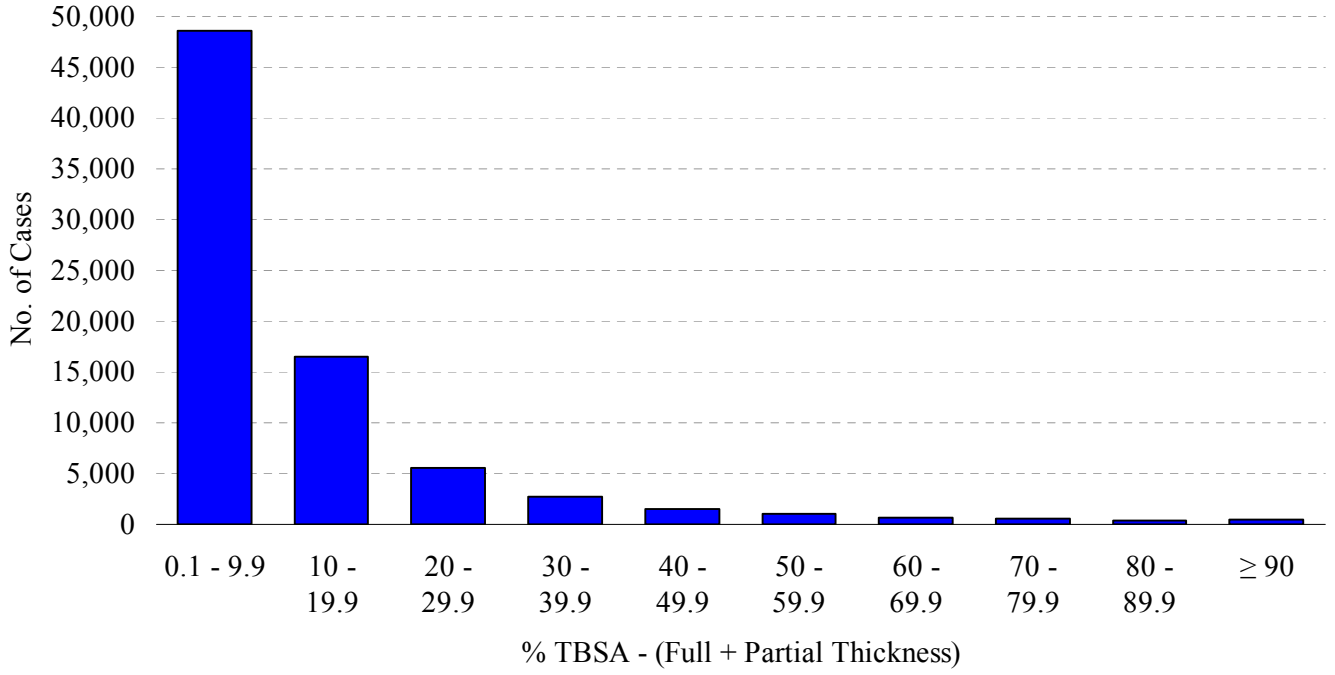
Figure 6. Age Group*



*Total N=107,685 (Excludes Unknown/Missing)

Figure 7. Burn Size Group (% TBSA)*



*Total N=78,121 (Excludes Unknown/Missing)

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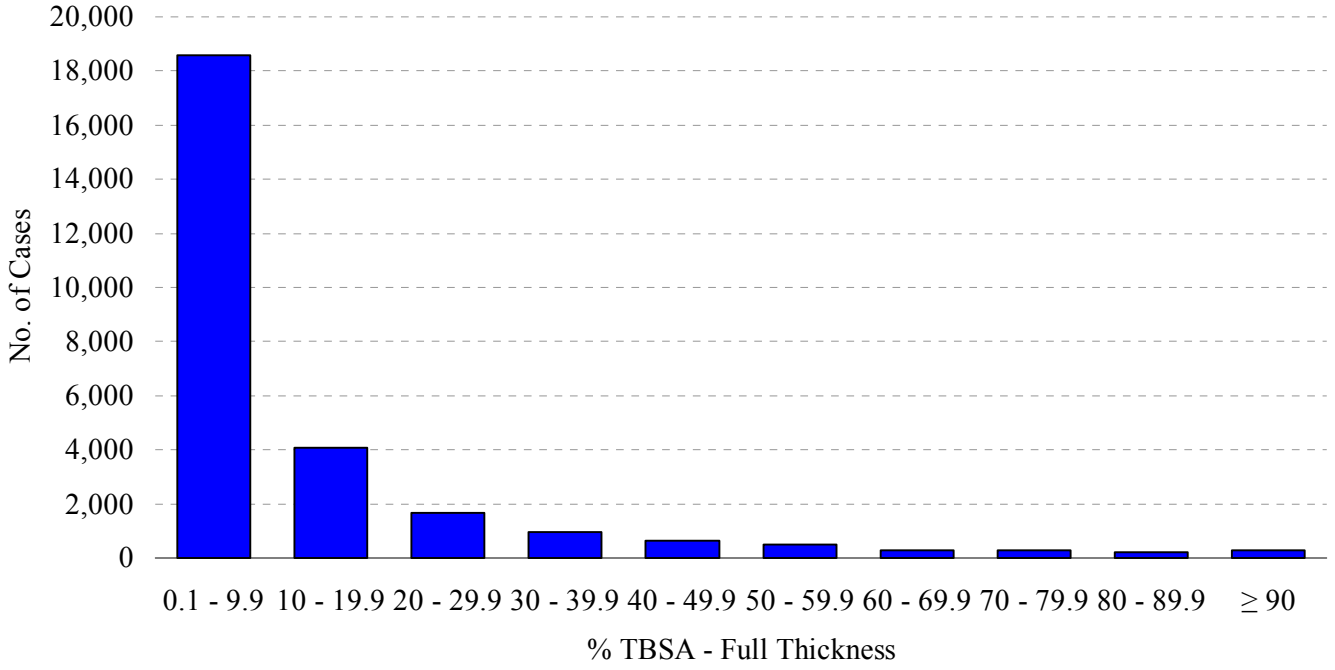
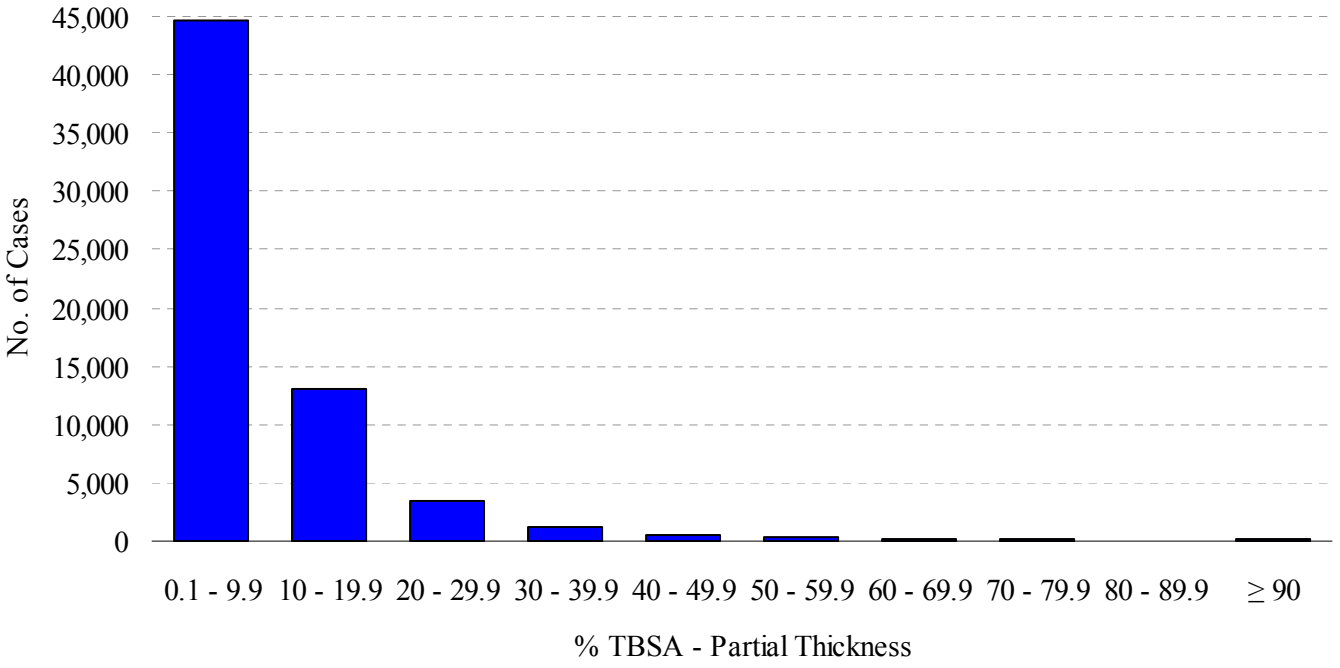
Figure 8. Burn Size Group (% TBSA) – Full Thickness Burns*



*Total N=27,445 (Excludes Unknown/Missing)

Figure 9. Burn Size Group (% TBSA) – Partial Thickness Burns*



*Total N=63,752 (Excludes Unknown/Missing)

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Figure 10. Burn Size Group (% TBSA) – Total, Full Thickness, Partial Thickness

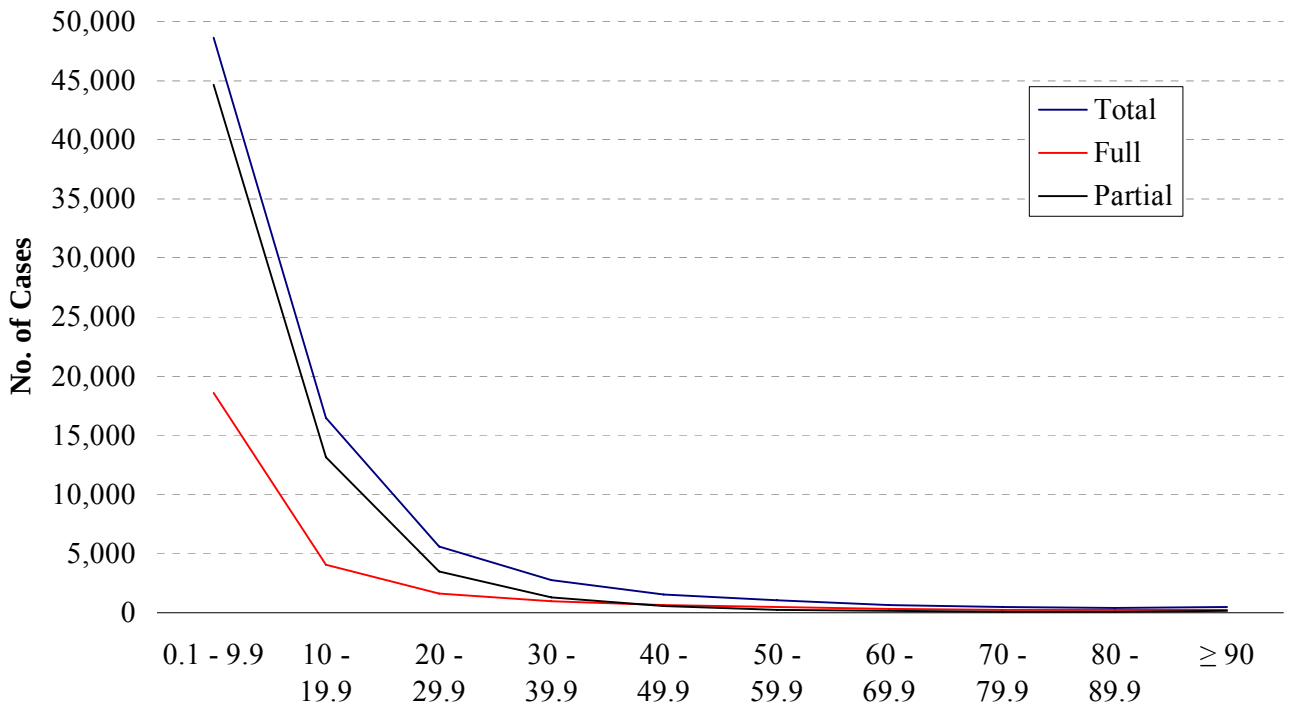
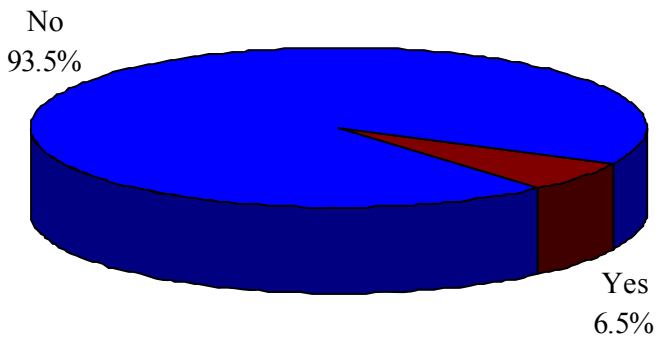


Figure 11. Inhalation Injury*



*Total N=121,930 (Excludes Unknown/Missing)

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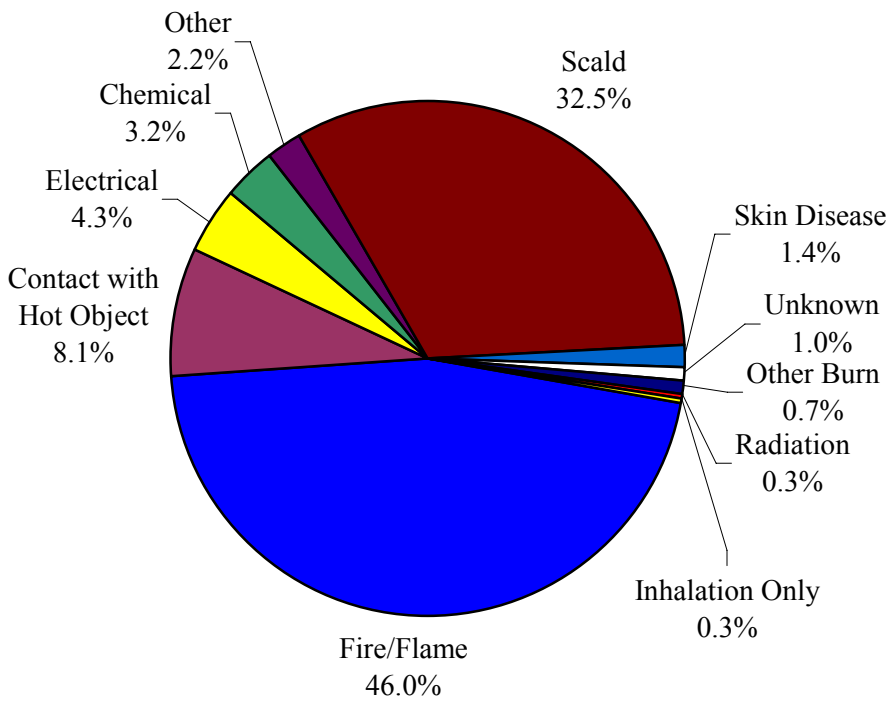
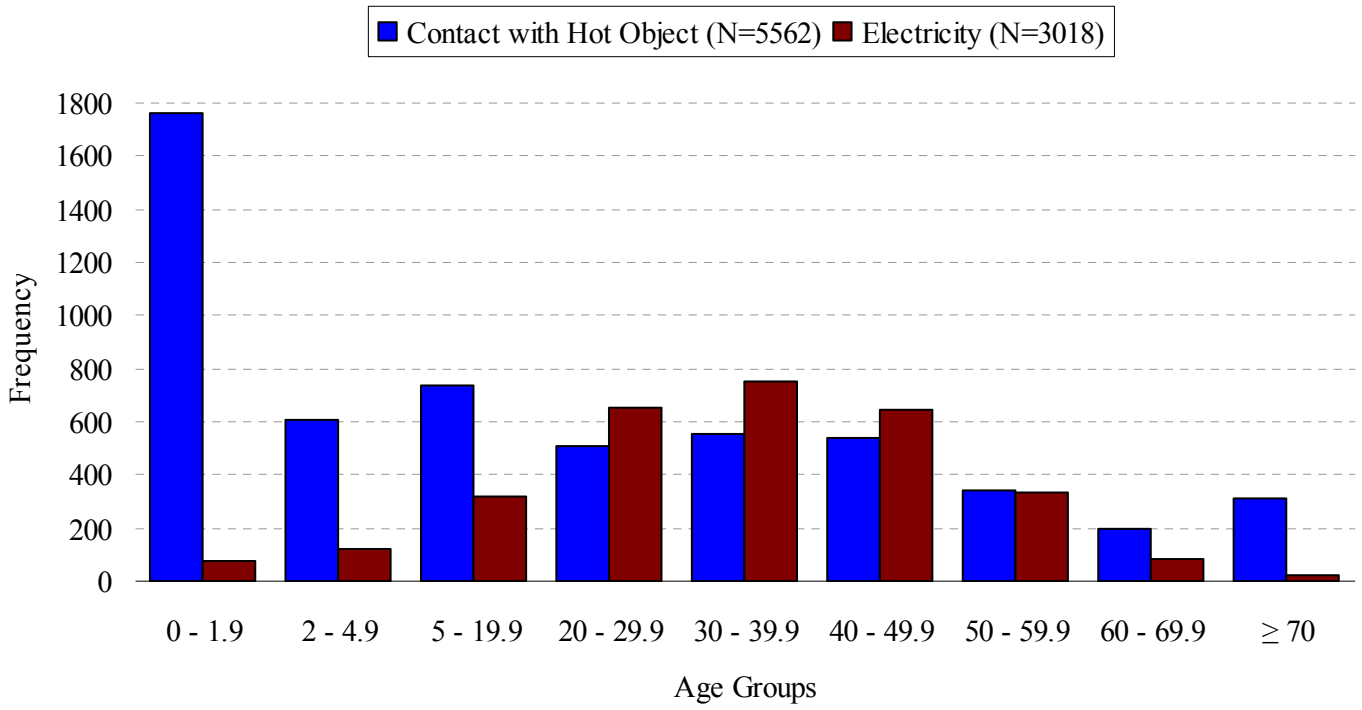
Figure 12. Etiology*



*Total N=76,659 (Cases Where Etiology Was Included)

Figure 12B. Frequency of Contact with Hot Object and Electricity by Age Group*



*Total N=8,580

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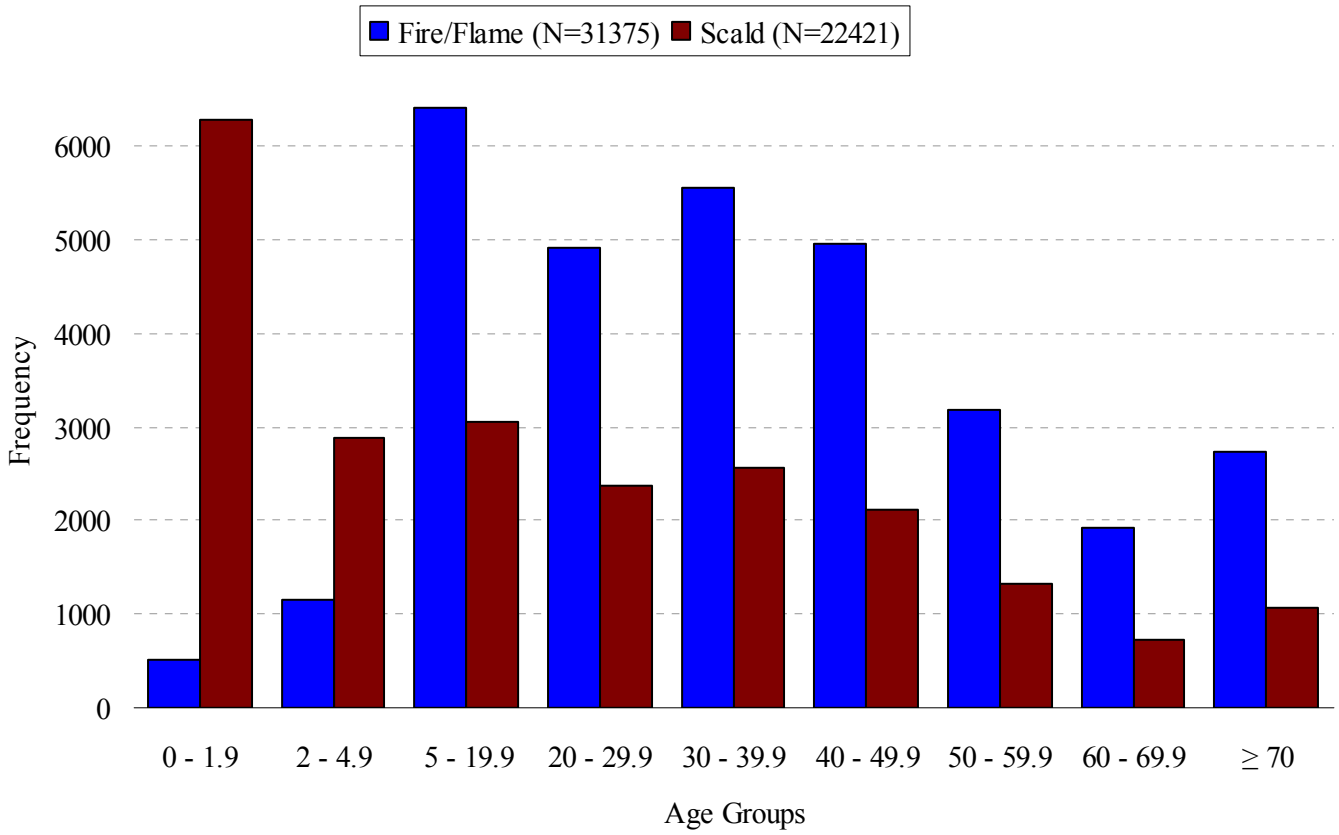
Figure 12C. Frequency of Fire/Flame by Age Group*



*

Total N=53,796

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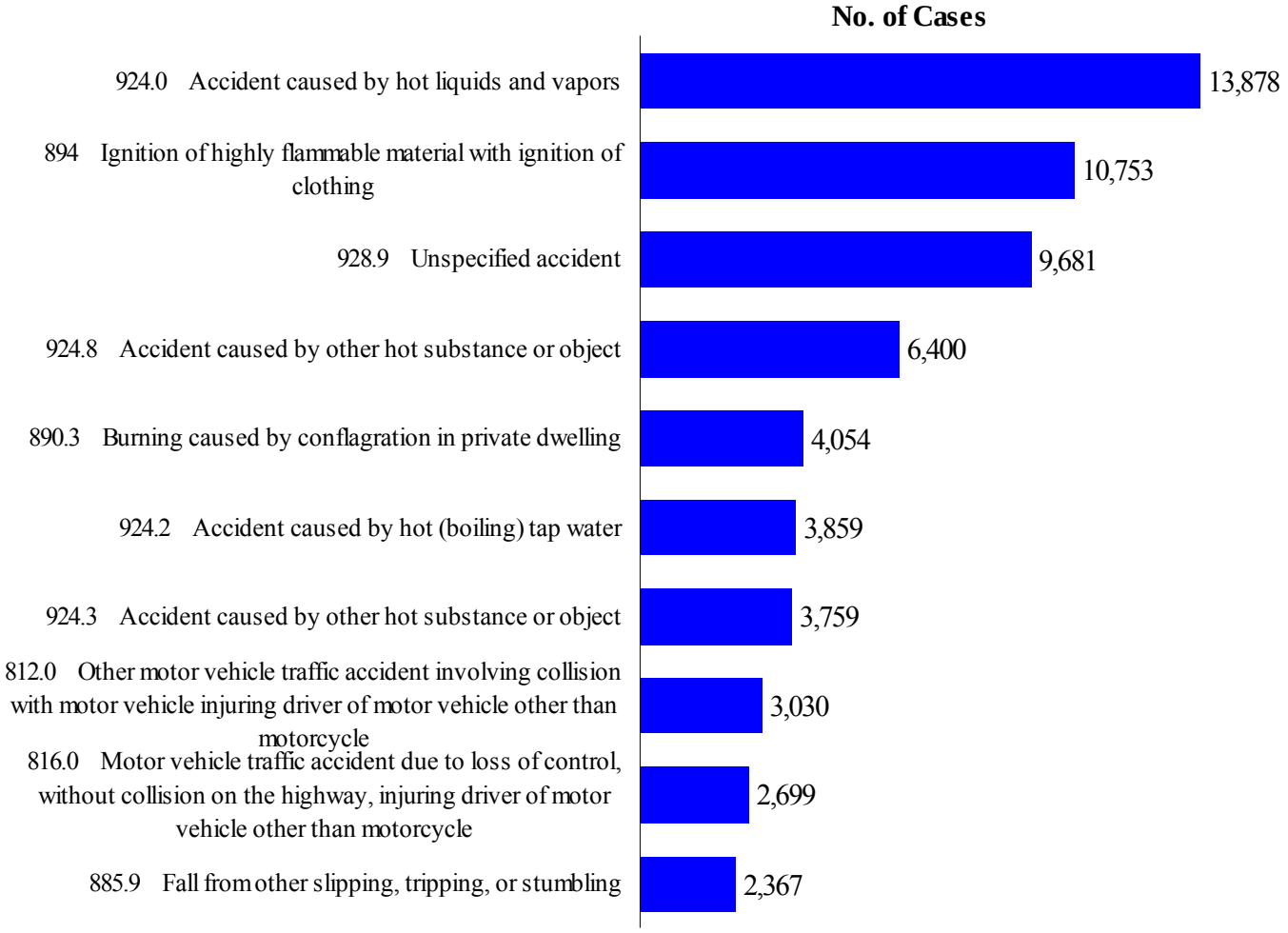
Figure 13. Top Ten E-Codes*



* Total N=60,480 (Excludes Unknown/Missing)

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Figure 14. Place of Occurrence – E849 Code

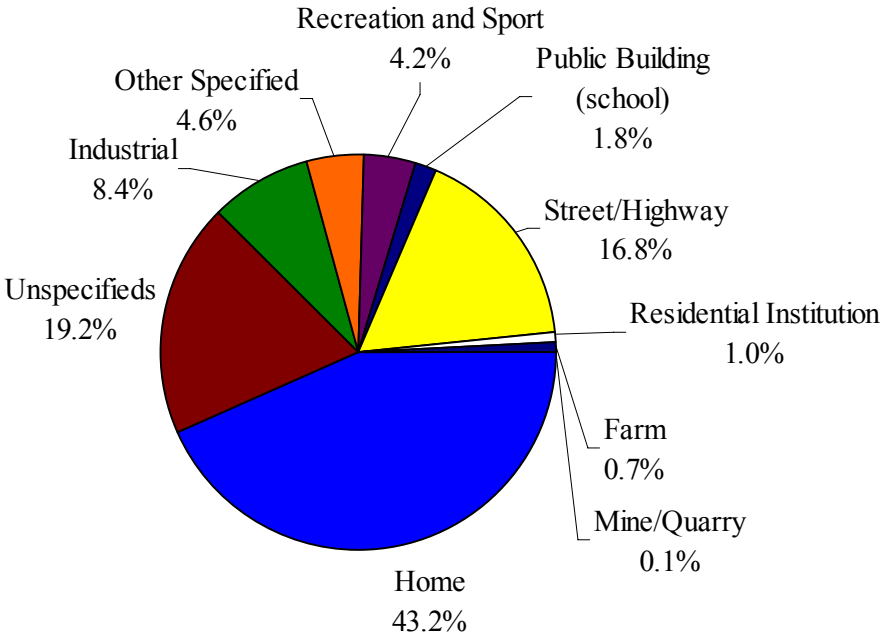

Figure 15. Place of Occurrence – E849 Code

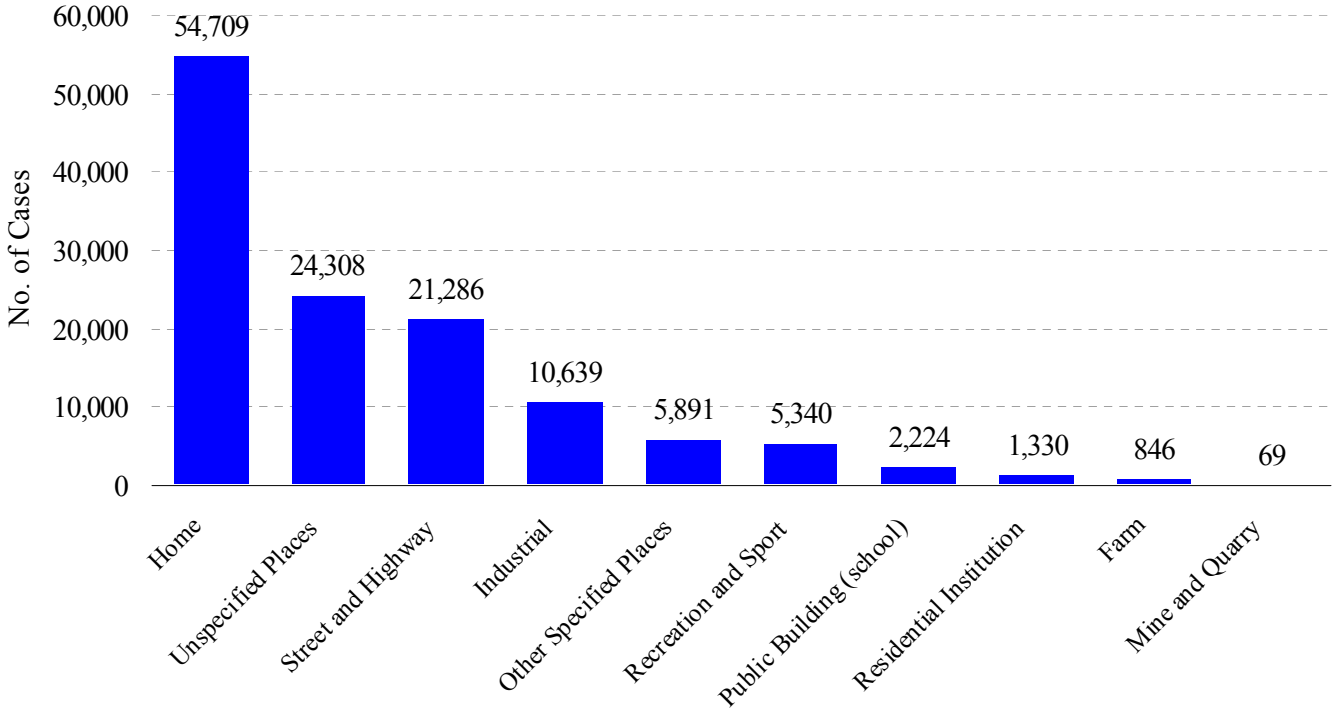

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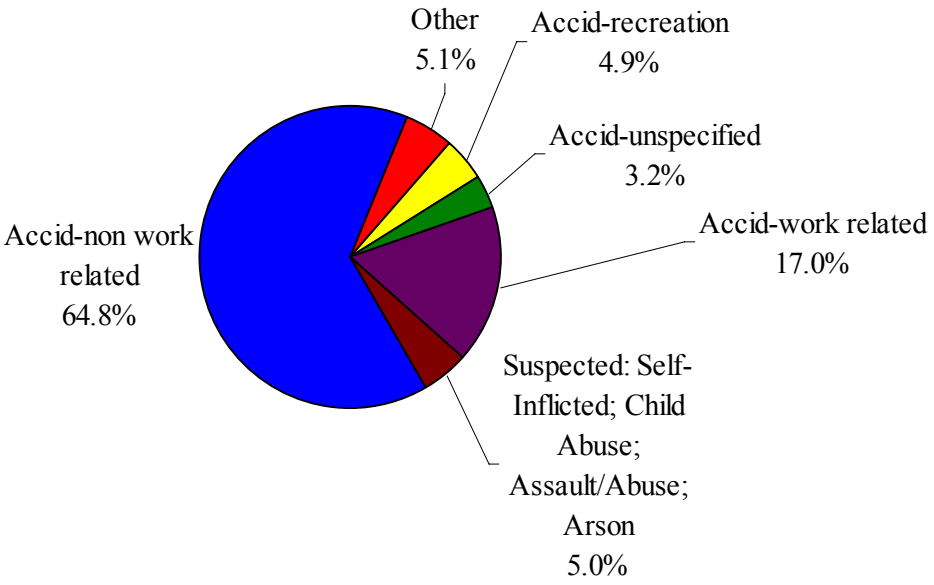
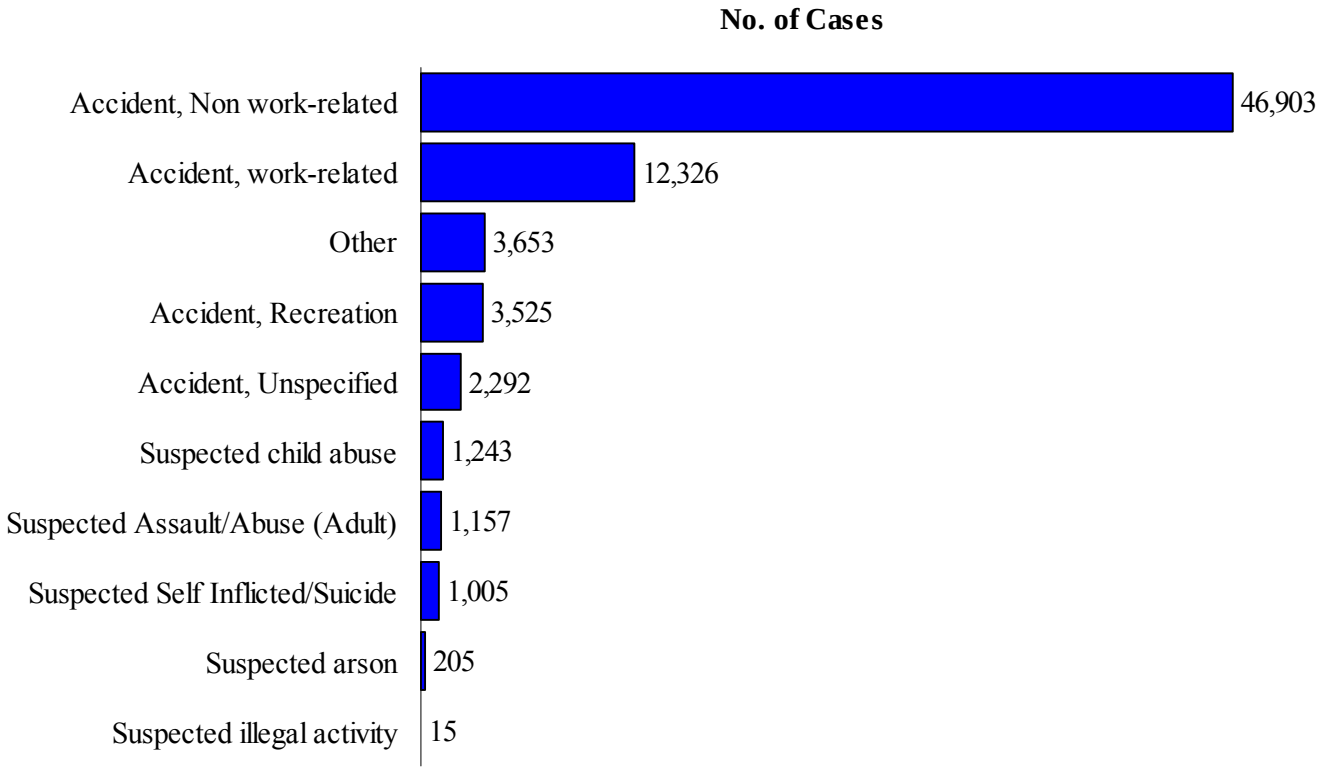
Figure 16. Circumstances of Injury*



*Total N=72,324 (Excludes Unknown/Missing)

Figure 17. Circumstances of Injury*



*Total N=72,324 (Excludes Unknown/Missing)

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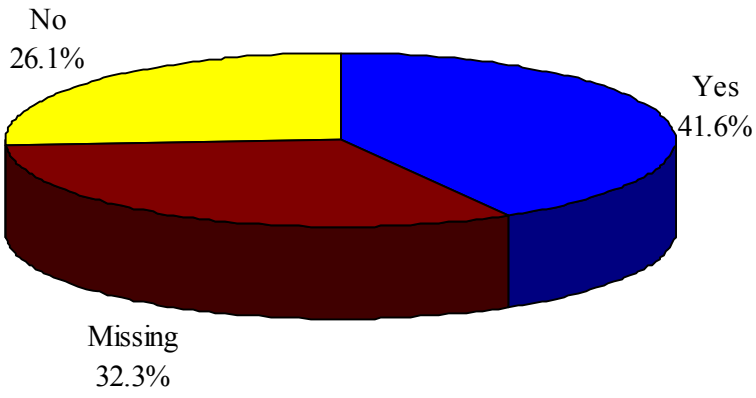
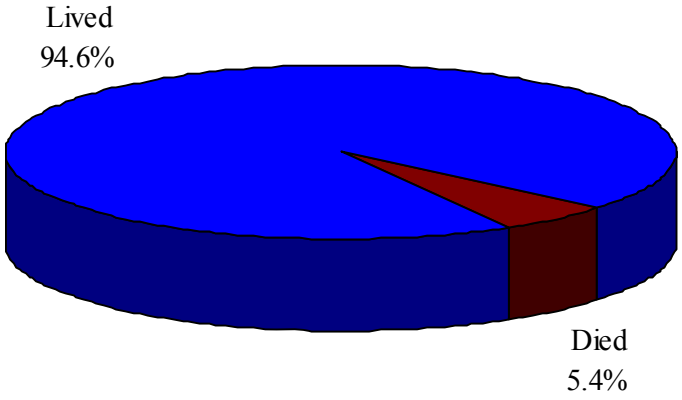
Figure 18. Hospital Transfer*



*Total N=126,645

Figure 19. Hospital Disposition



*Total N=126,645

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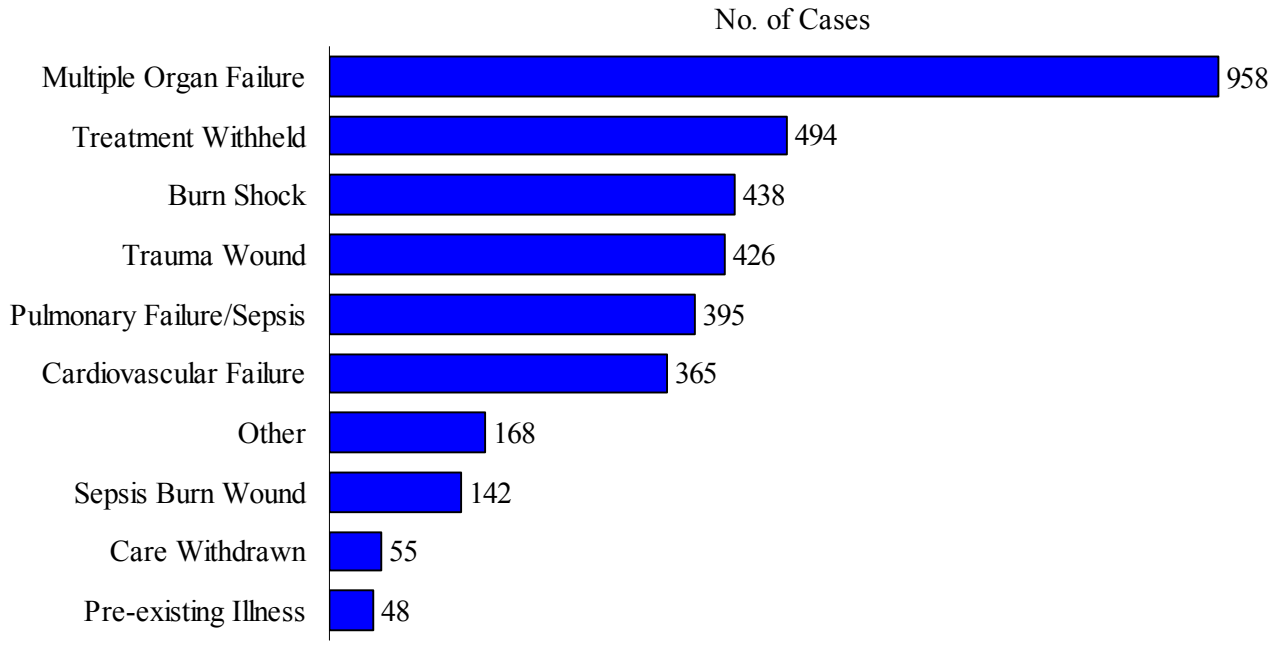
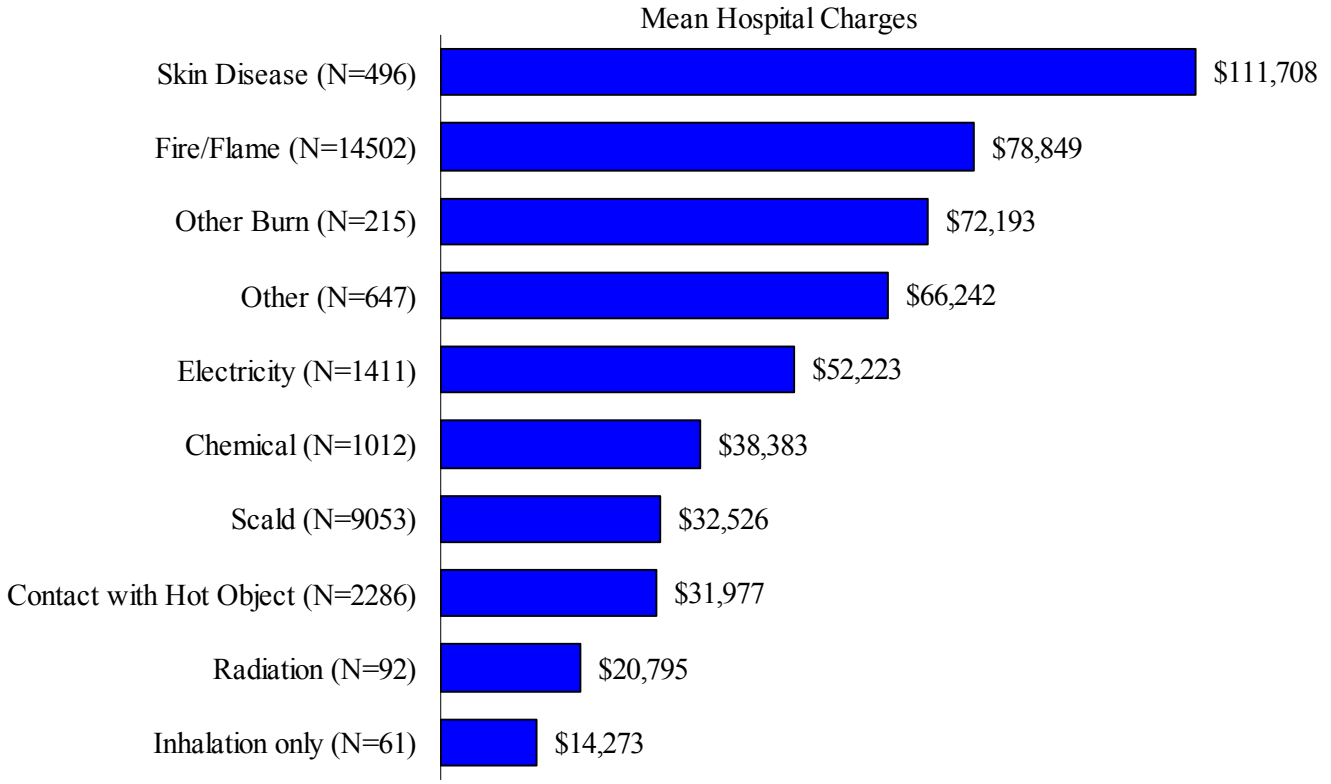
Figure 20. Cause of Death*



* In 3,488 deaths where the cause of death was specified

Figure 21. Hospital Charges by Etiology*



* In 29,775 cases where both etiology and charges were specified

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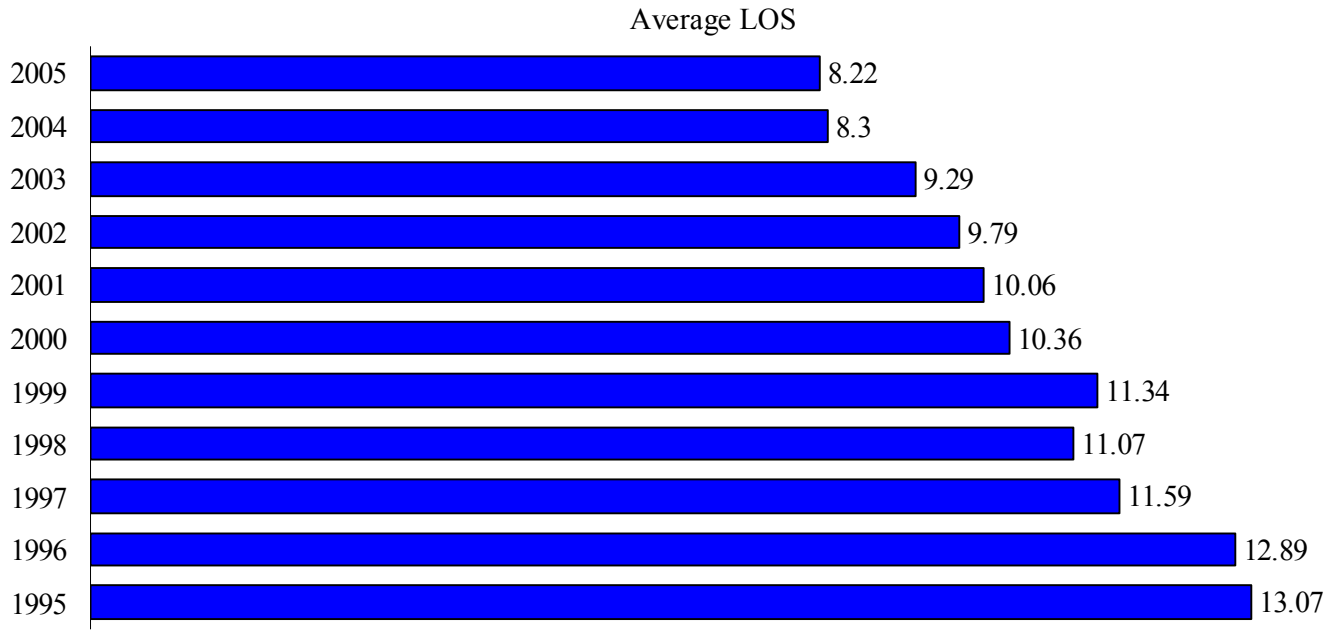
Figure 22. Average Hospital LOS, 1995 - 2005*



*Total N=126,642

Figure 23. Mortality Rates, 1995 - 2005

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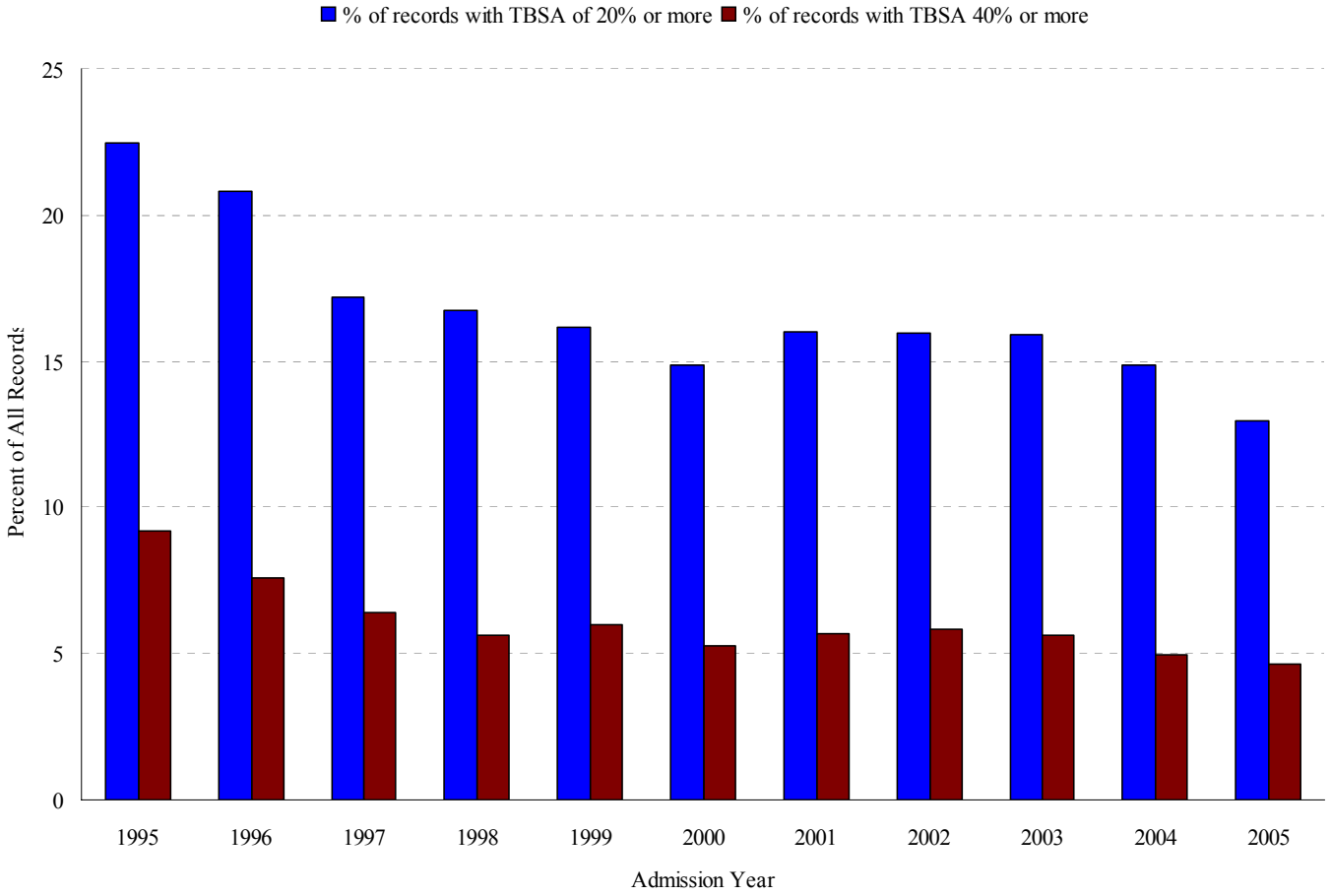
Figure 24. Percent of Records in the 20% and Above TBSA Category and 40% and Above TBSA Category, by Year*



*Total N=78,121

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National Burn Repository

Tables

Table 1. Arrival/Admission Year, Acute Burn Admissions Only

Year	Previously Submitted	No. of Cases Submitted in 2005	Total No. of Cases
1995	4,172	1,450	5,622
1996	5,873	1,569	7,442
1997	7,390	1,607	8,997
1998	6,946	1,723	8,669
1999	6,481	1,750	8,231
2000	4,311	1,860	6,171
2001	4,613	2,478	7,091
2002	172	18,570	18,742
2003		19,606	19,606
2004		24,389	24,389
2005		11,682	11,682
TOTAL			**126,642**

Table 2. Age Group

Age Group	No. of Cases	Valid Pct.
0 - 1.9	10,503	9.8
2 - 4.9	6,330	5.9
5 - 19.9	17,830	16.6
20 - 29.9	16,312	15.2
30 - 39.9	16,541	15.4
40 - 49.9	15,330	14.3
50 - 59.9	9,771	9.1
60 - 69.9	5,834	5.4
≥ 70	9,234	8.6
Subtotal	**107,685**	**100.0**
Missing	18,957	
TOTAL	**126,684**	

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Table 3. Etiology

Etiology	No. of Cases	Valid Pct.
Fire/Flame	35,252	46.0
Scald	24,940	32.5
Contact with Hot Object	6,209	8.1
Electrical	3,273	4.3
Chemical	2,458	3.2
Other Nonburn	1,696	2.2
Skin Disease	1,067	1.4
Unknown	794	1.0
Other Burn	516	0.7
Radiation	242	0.3
Inhalation Only	212	0.3
TOTAL	**76,659**	**100.0**

Table 4. Top Ten E-Codes

E-Code and Description		No. of Cases	Pct.	Valid Pct.
924.0	Accident caused by hot liquids and vapors	13,878	11.0	23.0
894	Ignition of highly flammable material with ignition of clothing	10,753	8.5	17.8
928.9	Unspecified accident	9,681	7.6	16.0
924.8	Accident caused by other hot substance or object	6,400	5.1	10.6
890.3	Burning caused by conflagration in private dwelling	4,054	3.2	6.7
924.2	Accident caused by hot (boiling) tap water	3,859	3.1	6.4
924.3	Accident caused by other hot substance or object	3,759	3.0	6.2
812.0	Other motor vehicle traffic accident involving collision with motor vehicle injuring driver of motor vehicle other than motorcycle	3,030	2.4	5.0
816.0	Motor vehicle traffic accident due to loss of control, without collision on the highway, injuring driver of motor vehicle other than motorcycle	2,699	2.1	4.5
885.9	Fall from other slipping, tripping, or stumbling	2,367	1.9	3.9
Top Ten Total		**60,480**	**47.8**	**100.0**

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Table 5. Cause of Injury by Age Group*

	Etiology												
Age Group	Missing	Chem-ical	Contact	Elec-trical	Fire	Inhal Only	Other Burn	Other Nonburn	Radi-ation	Scald	Skin Disease	Unkn.	Total
birth-1.9	**1,547**	**109**	**1,759**	**77**	**510**	**9**	**19**	**45**	**14**	**6,283**	**26**	**105**	**10,503**
Pct row	15%	1%	17%	1%	5%	0%	0%	0%	0%	60%	0%	1%	100%
Pct col	4%	5%	32%	3%	2%	4%	4%	3%	6%	28%	3%	14%	10%
2-4.9	**1,276**	**50**	**609**	**121**	**1,147**	**22**	**28**	**71**	**6**	**2,897**	**37**	**66**	**6,330**
Pct row	*20%*	*1%*	*10%*	*2%*	*18%*	*0%*	*0%*	*1%*	*0%*	*46%*	*1%*	*1%*	***100%***
Pct col	*3%*	*2%*	*11%*	*4%*	*4%*	*10%*	*7%*	*4%*	*3%*	*13%*	*4%*	*9%*	***6%***
5-19.9	**6,505**	**159**	**733**	**322**	**6,422**	**20**	**80**	**242**	**43**	**3,058**	**106**	**140**	**17,830**
Pct row	*36%*	*1%*	*4%*	*2%*	*36%*	*0%*	*0%*	*1%*	*0%*	*17%*	*1%*	*1%*	***100%***
Pct col	*17%*	*7%*	*13%*	*11%*	*20%*	*9%*	*19%*	*15%*	*19%*	*14%*	*10%*	*19%*	***17%***
20-29.9	**6,817**	**487**	**511**	**654**	**4,918**	**24**	**73**	**233**	**44**	**2,370**	**92**	**89**	**16,312**
Pct row	*42%*	*3%*	*3%*	*4%*	*30%*	*0%*	*0%*	*1%*	*0%*	*15%*	*1%*	*1%*	***100%***
Pct col	*18%*	*22%*	*9%*	*22%*	*16%*	*11%*	*17%*	*14%*	*19%*	*11%*	*9%*	*12%*	***15%***
30-39.9	**5,977**	**519**	**555**	**755**	**5,553**	**30**	**72**	**249**	**39**	**2,574**	**117**	**101**	**16,541**
Pct row	*36%*	*3%*	*3%*	*5%*	*34%*	*0%*	*0%*	*2%*	*0%*	*16%*	*1%*	*1%*	***100%***
Pct col	*15%*	*24%*	*10%*	*25%*	*18%*	*14%*	*17%*	*15%*	*17%*	*11%*	*11%*	*13%*	***15%***
40-49.9	**5,932**	**474**	**541**	**649**	**4,960**	**46**	**65**	**237**	**36**	**2,116**	**163**	**111**	**15,330**
Pct row	*39%*	*3%*	*4%*	*4%*	*32%*	*0%*	*0%*	*2%*	*0%*	*14%*	*1%*	*1%*	***100%***
Pct col	*15%*	*22%*	*10%*	*22%*	*16%*	*22%*	*15%*	*14%*	*16%*	*9%*	*16%*	*15%*	***14%***
50-59.9	**3,861**	**209**	**345**	**335**	**3,193**	**20**	**35**	**220**	**20**	**1,331**	**146**	**56**	**9,771**
Pct row	*40%*	*2%*	*4%*	*3%*	*33%*	*0%*	*0%*	*2%*	*0%*	*14%*	*1%*	*1%*	***100%***
Pct col	*10%*	*10%*	*6%*	*11%*	*10%*	*9%*	*8%*	*13%*	*9%*	*6%*	*14%*	*7%*	***9%***
60-69.9	**2,378**	**126**	**201**	**80**	**1,934**	**20**	**16**	**159**	**13**	**731**	**143**	**33**	**5,834**
Pct row	*41%*	*2%*	*3%*	*1%*	*33%*	*0%*	*0%*	*3%*	*0%*	*13%*	*2%*	*1%*	***100%***
Pct col	*6%*	*6%*	*4%*	*3%*	*6%*	*9%*	*4%*	*10%*	*6%*	*3%*	*14%*	*4%*	***5%***
≥70	**4,505**	**58**	**308**	**25**	**2,738**	**21**	**36**	**211**	**17**	**1,061**	**202**	**52**	**9,234**
Pct row	*49%*	*1%*	*3%*	*0%*	*30%*	*0%*	*0%*	*2%*	*0%*	*11%*	*2%*	*1%*	***100%***
Pct col	*12%*	*3%*	*6%*	*1%*	*9%*	*10%*	*8%*	*13%*	*7%*	*5%*	*20%*	*7%*	***9%***
TOTAL	**38,798**	**2,191**	**5,562**	**3,018**	**31,375**	**212**	**424**	**1,667**	**232**	**22,421**	**1,032**	**753**	**107,685**
Pct row	*36%*	*2%*	*5%*	*3%*	*29%*	*0%*	*0%*	*2%*	*0%*	*21%*	*1%*	*1%*	*100%*
Pct col	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*

*Total N= 107,685 (Excludes cases where age was not indicated)

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Table 6. Lived/Died by Age Group

	Lived			Died		
Age Group	**No. of Cases**	**Pct.**	**Valid Pct.**	**No. of Cases**	**Pct.**	**Valid Pct.**
Birth - 1.9	10,415	8.7	10.2	88	1.3	1.5
2 - 4.9	6,223	5.2	6.1	107	1.6	1.9
5 - 19.9	17,448	14.6	17.1	382	5.5	6.7
20 - 29.9	15,764	13.2	15.5	548	7.9	9.7
30 - 39.9	15,941	13.3	15.6	600	8.7	10.6
40 - 49.9	14,605	12.2	14.3	725	10.5	12.8
50 - 59.9	9,073	7.6	8.9	698	10.1	12.3
60 - 69.9	5,192	4.3	5.1	642	9.3	11.3
≥ 70	7,346	6.1	7.2	1,888	27.4	33.3
Subtotal Valid Cases	**102,007**	**85.2**	**100.0**	**5,678**	**82.3**	**100.0**
Missing	17,738	14.8		1,219	17.7	
TOTAL	**119,745**	**100.0**		**6,897**	**100.0**	

Table 7. Lived/Died by Burn Group Size (% TBSA)

	Lived			Died		
%TBSA	**No. of Cases**	**Pct.**	**Valid Pct.**	**No. of Cases**	**Pct.**	**Valid Pct.**
0.1 – 9.9	48,247	40.3	65.0	358	5.2	9.1
10 – 19.9	16,005	13.4	21.6	495	7.2	12.6
20 – 29.9	5,095	4.3	6.9	500	7.2	12.7
30 – 39.9	2,261	1.9	3.0	461	6.7	11.7
40 – 49.9	1,131	0.9	1.5	409	5.9	10.4
50 – 59.9	651	0.5	0.9	399	5.8	10.1
60 – 69.9	353	0.3	0.5	320	4.6	8.1
70 – 79.9	213	0.2	0.3	306	4.4	7.8
80 – 89.9	122	0.1	0.2	283	4.1	7.2
≥90	104	0.1	0.1	408	5.9	10.4
Subtotal Valid Cases	**74,182**	**61.9**	**100.0**	**3,939**	**57.1**	**100.0**
Missing	45,563	38.1		2,958	42.9	
TOTAL	**119,745**	**100.0**		**6,897**	**100.0**	

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Table 8.
Mean % TBSA: Lived/Died by % TBSA Thickness Category (Total, Full, Partial)

	Lived			Died		
%TBSA Category	No. of Cases	Mean	+/- SEM	No. of Cases	Mean	+/- SEM
% TBSA, Total	74,183	10.11	0.04	3,939	46.22	0.45
% TBSA, Full Thickness	24,539	8.55	0.08	2,906	40.81	0.54
% TBSA, Partial Thickness	61,274	8.15	0.04	2,479	21.28	0.47

Table 9. Lived/Died Distribution for Inhalation Injury

	Lived		Died	
Inhalation Injury	No. of Cases	Pct.	No. of Cases	Pct.
Total Valid Cases (% row)	115,133	94.40	6,797	5.57
Inhalation injury cases (% col)	5,839	5.07	2,087	30.70

Table 10. Lived/Died by Inhalation Injury

	Lived			Died		
Inhalation Injury	No. of Cases	Pct.	Valid Pct.	No. of Cases	Pct.	Valid Pct.
No	109,294	91.3	94.9	4,710	68.3	69.3
Yes	5,839	4.9	5.1	2,087	30.3	30.7
Subtotal	**115,133**	**96.1**	**100.0**	**6,797**	**98.6**	**100.0**
Missing	4,612	3.9		100	1.4	
Total	**119,745**	**100.0**		**6,897**	**100.0**	

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Table 11. Mortality Rate by Age Group and Burn Size*
(expressed as the number of deaths over the total number of patients in that group)

	Burn Size (% TBSA)										
Age Group	**0.1-9.9**	**10-19.9**	**20-29.9**	**30-39.9**	**40-49.9**	**50-59.9**	**60-69.9**	**70-79.9**	**80-89.9**	**≥90**	**Total**
birth - 1.9	**0.0%**	**0.2%**	**2.1%**	**4.5%**	**6.6%**	**10.9%**	**50.0%**	**42.1%**	**73.3%**	**60.0%**	**0.7%**
Died/Total	1/6655	3/1926	8/389	7/157	5/76	5/46	12/24	8/19	11/15	3/5	63/9312
2 - 4.9	**0.2%**	**0.1%**	**3.2%**	**5.7%**	**7.9%**	**12.5%**	**22.6%**	**31.3%**	**54.5%**	**76.2%**	**1.6%**
Died/Total	7/3449	1/1086	11/341	9/159	6/76	6/48	7/31	10/32	12/22	16/21	85/5265
5 - 19.9	**0.1%**	**0.2%**	**1.2%**	**3.3%**	**9.3%**	**9.9%**	**18.3%**	**30.9%**	**39.3%**	**55.9%**	**1.5%**
Died/Total	11/7346	4/2441	10/838	13/400	20/216	15/151	19/104	21/68	24/61	38/68	175/11693
20 - 29.9	**0.2%**	**0.8%**	**2.2%**	**3.7%**	**11.3%**	**17.0%**	**31.5%**	**42.3%**	**62.7%**	**77.6%**	**2.4%**
Died/Total	11/5998	16/2065	16/720	12/324	24/212	23/135	28/89	22/52	32/51	52/67	236/9713
30 - 39.9	**0.3%**	**0.7%**	**4.3%**	**7.7%**	**14.2%**	**26.5%**	**37.9%**	**52.7%**	**66.7%**	**82.9%**	**3.4%**
Died/Total	18/6346	15/2287	35/811	33/426	33/233	41/155	36/95	49/93	46/69	58/70	364/10585
40 - 49.9	**0.6%**	**1.4%**	**5.6%**	**14.9%**	**27.4%**	**36.6%**	**42.9%**	**58.8%**	**76.5%**	**85.5%**	**4.9%**
Died/Total	31/5635	28/1957	41/738	55/368	61/223	53/145	45/105	40/68	39/51	65/76	458/9366
50 - 59.9	**1.1%**	**3.0%**	**9.8%**	**22.7%**	**38.7%**	**56.3%**	**69.6%**	**81.6%**	**78.0%**	**84.4%**	**8.0%**
Died/Total	36/3378	36/1198	50/510	58/255	55/142	63/112	39/56	40/49	32/41	54/64	463/5805
60 - 69.9	**2.5%**	**8.6%**	**17.5%**	**36.0%**	**65.9%**	**72.4%**	**71.0%**	**88.6%**	**87.5%**	**76.1%**	**12.8%**
Died/Total	45/1835	67/776	64/366	50/139	56/85	42/58	22/31	31/35	21/24	35/46	433/3395
≥70	**7.2%**	**25.5%**	**52.7%**	**69.6%**	**80.1%**	**95.6%**	**94.6%**	**87.1%**	**91.9%**	**91.5%**	**27.6%**
Died/Total	170/2348	281/1101	207/393	179/257	109/136	109/114	70/74	61/70	34/37	43/47	1263/4577
Total	**0.8%**	**3.0%**	**8.7%**	**16.7%**	**26.4%**	**37.0%**	**45.6%**	**58.0%**	**67.7%**	**78.4%**	**5.1%**
Died/Total	330/42990	451/14837	442/5106	416/2485	369/1399	357/964	278/609	282/486	251/371	364/464	3540/69711

*Total N=69,664 (Excludes cases where both a valid burn size and a valid burn age were not included)

Table 12. Procedures: Total and Top Ten

Procedures		**No. of Cases**
Total patient cases		126,642
Total no. of procedure records		**301,227**
No. of patients with at least 1 procedure		69,641
Top Ten Procedure Codes		
86.22	Excixional Debridement of Wound, Infection, or burn	47,984
86.69	Other Skin Graft to Other Sites	31,022
93.57	Application of Other Wound Dressing	11,033
38.93	Venous Catheterization, not elsewhere classified	10,764
86.28	Nonexcisional Debridement of Wound, Infection, or Burn	9,887
86.66	Homograft to Skin	9,491
86.59	Suture of Skin and Subcutaneous Tissue of Other Sites	6,369
96.04	Insertion of Endotracheal Tube	6,779
38.91	Arterial Catheterization	6,079
86.65	Heterograft to Skin	6,012
TOTAL		**145,420**

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Table 13. Complications: Total and Top Ten

Complications		No. of Cases
Total no. of patient cases		126,642
Total no. of complications records		41,223
No. of patients with at least 1 complication		18,634
Top Ten Complications/Condition Codes		
3008	Pneumonia	3,127
9001	Delay In Disposition	2,843
2001	No Ems Form	2,051
5501	Cellulitis/Traumatic Injury	2,011
5509	Wound Infection	1,952
3015	Respiratory Failure	1,720
8599	Other Miscellaneous	1,605
5507	Septicemia	1,554
5599	Other Infection	1,247
6001	Renal Failure	854
TOTAL		**18,964**

Table 14. Comparison of Hospital Days, ICU Days, and Days on Ventilator Support

Days Category	No. of Cases	Range	Median	Mean	+/- SEM	Missing Cases
Hospital Days	126,641	0-632	4	9	0.05	1
ICU Days	115,269	0-450	0	3	0.03	11,373
Ventilator Support Days	99,194	0-630	0	2	0.03	27,448

Table 15. Hospital Days: Lived/Died by Inhalation Injury

	Total			Lived			Died		
Inhalation Injury	No. of Cases	Mean	+/- SEM	No. of Cases	Mean	+/- SEM	No. of Cases	Mean	+/- SEM
No	114,003	8.46	0.04	109,293	8.34	0.04	4,710	11.22	0.32
Yes	7,926	24.30	0.39	5,839	27.89	0.46	2,087	14.25	0.64
Subtotal	**121,929**			**115,132**			**6,797**		
Missing	4,712	6.34	0.13	4,612	6.41	0.13	100	2.85	0.50
TOTAL	**126,641**			**119,744**			**6,897**		

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Table 16. Hospital Days: Lived/Died by Burn Size Group (% TBSA)

	Total			Lived			Died		
%TBSA	No. of Cases	Mean	+/- SEM	No. of Cases	Mean	+/- SEM	No. of Cases	Mean	+/- SEM
0.1 - 9.9	48,604	5.77	0.04	48,246	5.71	0.04	358	14.17	0.88
10 - 19.9	16,500	11.78	0.10	16,005	11.46	0.10	495	22.12	1.21
20 - 29.9	5,595	21.15	0.28	5,095	21.18	0.27	500	20.92	1.49
30 - 39.9	2,722	29.01	0.49	2,261	31.21	0.54	461	18.22	1.14
40 - 49.9	1,540	34.92	0.84	1,131	41.94	1.01	409	15.50	1.02
50 - 59.9	1,050	36.83	1.24	651	50.05	1.53	399	15.27	1.62
60 - 69.9	673	37.86	1.66	353	58.63	2.40	320	14.94	1.44
70 - 79.9	519	35.49	2.16	213	68.91	3.80	306	12.22	1.44
80 - 89.9	405	38.43	3.62	122	94.68	7.97	283	14.18	2.85
≥ 90	512	18.39	2.30	104	64.10	9.25	408	6.74	1.08
Subtotal	**78,120**	**10.67**	**0.07**	**74,181**	**10.39**	**0.06**	**3,939**	**15.89**	**0.45**
Missing	48,521	7.29	0.06	45,563	7.32	0.06	2,958	6.85	0.30
TOTAL	**126,641**			**119,744**			**6,897**		

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Table 17. Primary Insurance Payor

Insurance	No. of Cases	Pct.
Government-Medicaid	19,017	
Government-Medicare	11,276	
Government-Military/Indian Health	1,752	
Subtotal	**32,034**	**25.3**
Private-Employer	2,658	
Private-Foundation/Charity	2,166	
Subtotal	**4,824**	**3.8**
Other Insurance-Not Named	12,203	
Other Named Insurance Plan	1,028	
Subtotal	**13,231**	**10.4**
Worker's Compensation	11,299	8.9
Managed Care	13,837	10.9
No Insurance Information	20,950	
Self Pay	14,634	
Uninsured	2,885	
Private Pay	1,274	
Subtotal	**39,743**	**31.4**
Auto	5,146	4.1
Unidentified Insurance Labels	6,517	5.2
TOTAL	**126,642**	**100.0**

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Table 18. DRG Codes: Top 15

DRG Code and Description		No. of Cases	Pct.	Valid Pct.
511	Non-extensive burns w/o cc or significant trauma	14,269	11.3	13.6
460	*No longer valid*	*13,515*	*10.7*	*12.8*
458	*No longer valid*	*11,288*	*8.9*	*10.7*
507	Full thickness burn with skin graft or inhalation injury w/o cc or sig trauma	4,111	3.3	3.9
510	Non-extensive burns with cc or significant trauma	3,249	2.6	3.1
506	Full thickness burn with skin graft or inhalation inj with cc or sig trauma	3,159	2.5	3.0
472	Extensive burns with O.R. procedure	2,432	1.9	2.3
483	*No longer valid*	*2,330*	*1.8*	*2.2*
504	Extensive 3rd degree burns with skin grafts	2,106	1.7	2.0
486	Other O.R. Procedures for multiple sig trauma	2,043	1.6	1.9
459	Non-extensive burns with wound debridement or other O.R. proc	1,660	1.3	1.6
487	Other multiple significant trauma	1,561	1.2	1.5
509	Full thickness burn w/o skin graft or inh inj w/o cc or sig trauma	1,239	1.0	1.2
219	Lower extreme & humer proc except hip, foot, femur age > 17 w/o cc	951	0.8	0.9
457	Extensive burns w/o O.R. procedure	803	0.6	0.8
Subtotal Top 15		**64,716**	**51.2**	**61.5**
Other DRGs		**21,415**	**16.8**	**38.5**
Missing		40,511	32.0	
TOTAL		**126,642**	**100.0**	

Table 19. Hospital Charges

Statistic	Hospital Charges	Pct.
Missing Cases	69,465	54.9
No. of Valid Cases	**57,177**	45.1
Mean	$52,363.00	
+/- SEM	$577.86	
Median	$17,898.00	
Minimum	$1	
Maximum	$5,765,605.00	

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Table 20. Hospital Charges: Lived/Died by Burn Size Group (% TBSA)

	Total			Lived			Died		
% TBSA Group	No. of Cases	Mean	+/- SEM	No. of Cases	Mean	+/- SEM	No. of Cases	Mean	+/- SEM
0.1 - 9.9	16,880	$22,481	$437	16,748	$21,985	$431	132	$85,451	$10,183
10 - 19.9	6,205	$60,844	$2,186	6,020	$57,542	$2,168	185	$168,304	$18,339
20 - 29.9	2,222	$120,864	$3,501	2,021	$113,892	$3,290	201	$190,965	$19,453
30 - 39.9	996	$201,362	$7,662	829	$207,283	$8,356	167	$171,969	$19,073
40 - 49.9	526	$267,901	$12,904	382	295,203	$14,999	144	$195,475	$24,336
50 - 59.9	344	$299,662	$20,657	211	$396,255	$29,128	133	$146,421	$20,891
60 - 69.9	240	$357,926	$24,862	125	$514,311	$36,169	115	$187,942	$25,908
70 - 79.9	174	$385,608	$56,902	58	$857,345	$141,228	116	$149,740	$30,198
80 - 89.9	139	$313,759	$50,691	34	$765,410	$165,548	105	$167,510	$29,276
≥ 90	166	$137,221	$34,762	37	$279,910	$79,824	129	$ 96,295	$37,838
Subtotal	**27,892**	**$60,574**	**$1,022**	**26,465**	**$55,295**	**$988**	**1,427**	**$158,469**	**$7,490**
Missing	29,285	$44,543	$567	27,514	$42,248	$554	1,771	$ 80,192	$3,607
TOTAL	**57,177**			**53,979**			**3,198**		

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Table 21. Charges: Lived/Died by Top 15 DRGs

	Total			Lived			Died		
Top 15 DRG Codes – All Records	**No. of Cases**	**Mean**	**+/- SEM**	**No. of Cases**	**Mean**	**+/- SEM**	**No. of Cases**	**Mean**	**+/- SEM**
511 Non-extensive burns w/o cc or significant trauma	6,860	$14,738	$811	6,837	$14,448	$791	23	$101,037	$55,323
460 No longer valid	*5,657*	*$11,408*	*$437*	*5,598*	*$11,183*	*$434*	*59*	*$32,727*	*$6,900*
458 No longer valid	*4,531*	*$55,318*	*$1,887*	*4,442*	*$53,784*	*$1,905*	*89*	*$131,914*	*$11,334*
510 Full thickness burn with skin graft or inhalation injury w/o cc or sig trauma	1,928	$46,531	$1,994	1,860	$43,306	$1,835	68	$134,734	$23,844
507 Non-extensive burns with cc or significant trauma	1,927	$63,938	$4,084	1,918	$63,458	$4,071	9	$166,116	$109,978
506 Full thickness burn with skin graft or inhalation inj with cc or sig trauma	1,865	$111,156	$3,565	1,752	$108,993	$3,626	113	$144,696	$17,087
483 Extensive burns with O.R. procedure	1,361	$358,602	$9,055	1,109	$351,314	$9,654	252	$390,675	$24,163
472 No longer valid	*1,000*	*$194,192*	*$7,425*	*779*	*$196,871*	*$8,607*	*221*	*$184,747*	*$14,447*
504 Extensive 3rd degree burns with skin grafts	949	$225,871	$12,124	793	$214,945	$12,553	156	$281,409	$36,776
486 Other O.R. Procedures for multiple sig trauma	924	$90,557	$3,296	782	$92,680	$3,484	142	$78,867	$9,555
509 Non-extensive burns with wound debridement or other O.R. proc	715	$15,523	$859	707	$15,605	$868	8	$8,306	$1,001
219 Other multiple significant trauma	650	$26,317	$656	649	$26,333	$657	1	$15,827	
487 Full thickness burn w/o skin graft or inh inj w/o cc or sig trauma	588	$34,904	$1,011	507	$33,960	$1,092	81	$40,807	$2,603
459 Lower extreme & humer proc except hip, foot, femur age > 17 w/o cc	416	$30,191	$2,864	401	$28,898	$2,873	15	$64,772	$18,723
457 Extensive burns w/o O.R. procedure	388	$46,803	$4,083	172	$64,192	$7,742	216	$32,957	$3,732
Subtotal	**29,759**	**$63,720**	**$942**	**28,306**	**$58,199**	**$903**	**1,453**	**$171,272**	**$7,383**
Other Valid DRG Codes	12,221	$48,573	$1,187	11,402	$46,442	$1,205	819	$78,244	$5,599
Missing	15,197	$33,172	$609	14,271	$31,455	$585	926	$59,626	$4,218
TOTAL	**57,177**			**53,979**			**3,198**		

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Table 22. Days per % TBSA and Charges per Day by Age Group and Survival
(mean and +/- standard error of the mean)

	No. of Cases		Days		Days / %TBSA		Hospital Charges ($)		Hospital Charges / Days ($)	
Age Groups	**Lived**	**Died**	**Lived**	**Died**	**Lived**	**Died**	**Lived**	**Died**	**Lived**	**Died**
birth - 1.9	**2638**	**17**	**6.48**	**9.47**	**1.26**	**0.35**	**27041**	**105,261**	**3,582**	**15,813**
+/- SEM			*0.18*	*3.49*	*0.05*	*0.13*	*2172*	*31,755*	*189*	*3,876*
2 - 4.9	**1550**	**14**	**8.27**	**7.93**	**1.34**	**0.25**	**34184**	**101,149**	**3,316**	**11,832**
+/- SEM			*0.28*	*4.14*	*0.07*	*0.14*	*2072*	*61,340*	*89*	*1,711*
5 - 19.9	**3925**	**48**	**9.21**	**10.23**	**1.23**	**0.29**	**43003**	**134,487**	**3,561**	**14,055**
+/- SEM			*0.24*	*2.32*	*0.03*	*0.10*	*2182*	*28,205*	*45*	*1,077*
20 - 29.9	**4134**	**107**	**10.02**	**14.94**	**1.46**	**0.31**	**55339**	**207,319**	**4,054**	**13,975**
+/- SEM			*0.27*	*2.65*	*0.04*	*0.05*	*2593*	*47,385*	*139*	*992*
30 - 39.9	**4411**	**136**	**10.66**	**13.87**	**1.62**	**0.59**	**57381**	**186,490**	**4,136**	**15,175**
+/- SEM			*0.25*	*1.69*	*0.05*	*0.11*	*2602*	*25,753*	*105*	*873*
40 - 49.9	**3952**	**183**	**12.54**	**18.80**	**1.70**	**0.55**	**72184**	**232,512**	**4,627**	**14,151**
+/- SEM			*0.30*	*1.97*	*0.04*	*0.07*	*3413*	*29,281*	*206*	*1,205*
50 - 59.9	**2272**	**199**	**13.65**	**17.02**	**2.16**	**0.74**	**69818**	**173,160**	**4,391**	**13,118**
+/- SEM			*0.39*	*2.33*	*0.08*	*0.12*	*3407*	*19,417*	*253*	*863*
60 - 69.9	**1236**	**188**	**15.27**	**20.07**	**2.54**	**1.28**	**74761**	**184,991**	**4,436**	**9,629**
+/- SEM			*0.59*	*1.90*	*0.17*	*0.21*	*3904*	*19,004*	*240*	*452*
≥70	**1372**	**503**	**17.05**	**13.33**	**3.13**	**1.12**	**88531**	**105,581**	**4,772**	**8,940**
+/- SEM			*0.52*	*0.80*	*0.21*	*0.17*	*4687*	*7368*	*276*	*486*
TOTAL	**25490**	**1395**	**10.88**	**15.45**	**1.66**	**0.85**	**56,208**	**159,212**	**4,074**	**11,595**
+/- SEM			*0.11*	*0.64*	*0.02*	*0.07*	*1,020*	*7,632*	*57*	*309*

Note: Causes were selected if they had valid data for each category: hospital days, %TBSA, and hospital charges. This ratio (days/%TBSA) has been used previously to indicate the efficiency of burn care; a ratio below 1.0 has been quoted as a goal for burn treatment.

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Appendix A

The following is a list of hospitals that have contributed to the NBR in any given year. We extend our thanks for their contribution and ongoing support of this endeavor.

Alabama
UAB Burn Center
University of South Alabama Regional Burn and Wound Center

Arizona
Arizona Burn Center at Maricopa Medical Center

Arkansas
Arkansas Children's Hospital Burn Center

California
Bothin Burn Center, St. Francis Memorial Hospital
Community Regional Burn Center
Inland Counties Regional Burn Center
Santa Clara Valley Medical Center Regional Burn Center
Shriners Hospital for Children, Northern California
The Grossman Burn Center
Torrance Memorial Burn Center
UC Davis Regional Burn Center
UCI Regional Burn Center
USCD Regional Burn Center

Colorado
University of Colorado Hospital Burn Center
Western States Burn Center, North Colorado Medical Center

District of Columbia
The Burn Center at Washington Hospital Center

Florida
Orlando Regional Medical Center
Shands Burn Center at the University of Florida
Tampa Bay Regional Burn Center
University of Miami Jackson Memorial Burn Center

Georiga
The Joseph M. Still Burn Center

Illinois
Loyola University Medical Center
Sumner L. Koch Burn Center, Stroger Hospital
University of Chicago Burn Center

Indiana
St. Joseph's Burn Center
Wishard Health Services

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Iowa
University of Iowa Burn Center

Kansas
Burnett Burn Center, Kansas University Hospital
Via Christi Regional Medical Center

Louisiana
Louisiana State University Health Sciences Center-Shreveport

Maryland
Johns Hopkins Bayview Medical Center, Baltimore Regional Burn Center

Massachusetts
Massachusetts General Hospital
Shriners Hospital for Children, Boston

Michigan
Children's Hospital of Michigan
Detroit Receiving Hospital Burn Center
Spectrum Health Regional Burn Center
University of Michigan Health Systems

Minnesota
Miller Dwan Burn Center
Regions Hospital Burn Center

Mississippi
Delta Regional Medical Center

Missouri
George David Peak Memorial Burn Care Center

Nebraska
Nebraska Medical Center
St Elizabeth Regional Burn Center

Nevada
Lion's Burn Center, University Medical Center

New Jersey
Saint Barnabas Burn Center

New York
Nassau University Medical Center
Strong Regional Burn Center
Westchester Medical Center Burn Center
William R. Hearst Burn Center, New York Presbyterian Hospital, Weill Cornell Medical Center

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North Carolina
North Carolina Jaycee Burn Center, University of North Carolina Hospitals
Wake Forest University Baptist Medical Center Burn Center

Ohio
Children's Hospital Medical Center of Akron
MetroHealth Medical Center
Shriners Hospital for Children, Cincinnati
The University Hospital Burn Center, Cincinnati

Oregon
Oregon Burn Center

Tennessee
Erlanger Health Systems Burn Center
Vanderbilt University Burn Center

Texas
Parkland Memorial Hospital Regional Burn Center
Shriners Hospital for Children, Galveston
Timothy J. Harnar Burn Center
University of Texas Medical Branch Blocker Burn Center
U.S. Army Institute of Surgical Research

Utah
University of Utah Hospital Burn Center

Washington
University of Washington Burn Center, Harborview Medical Center

Wisconsin
University of Wisconsin Hospitals and Clinics

Canada
Firefighter's Burn Treatment Unit, Edmonton, Alberta
Hamilton Firefighters Burn Unit Hamilton Health Sciences, Hamilton, Ontario
Hospital for Sick Children, Toronto, Ontario

The following 12 states have self-designated burn centers (as indicated in the ABA *Burn Care Resources in North America publication)* but have not yet contributed to the NBR:

Alaska
Connecticut
Hawaii
Kentucky
Maine
New Mexico
Oklahoma
Pennsylvania
South Dakota
Vermont
Virginia
West Virginia

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Appendix B

Figure 1. Canadian Cases by Gender, Age, and Hospital Days

Category	Valid Cases	Missing Cases	Male	Female
Gender	386		259	127

Category	Valid Cases	Missing Cases	Mean	Median	Range
Age	385	1	18.6	8.95	0 - 90.6
Hospital Days	375	11	12.7	8	0 - 266

Figure 2. Canadian Cases by Etiology

E Code and Description	No. of Cases	Pct.	Valid Pct.
Scald	185	47.9	48.7
Fire/flame	123	31.9	32.4
Contact With Hot Object	22	5.7	5.8
Other Burn	13	3.4	3.4
Chemical	12	3.1	3.2
Other	12	3.1	3.2
Electrical	10	2.6	2.6
Missing	6	1.6	1.6
Skin Disease	3	0.8	0.8
Total	**386**	**100.0**	**101.6**

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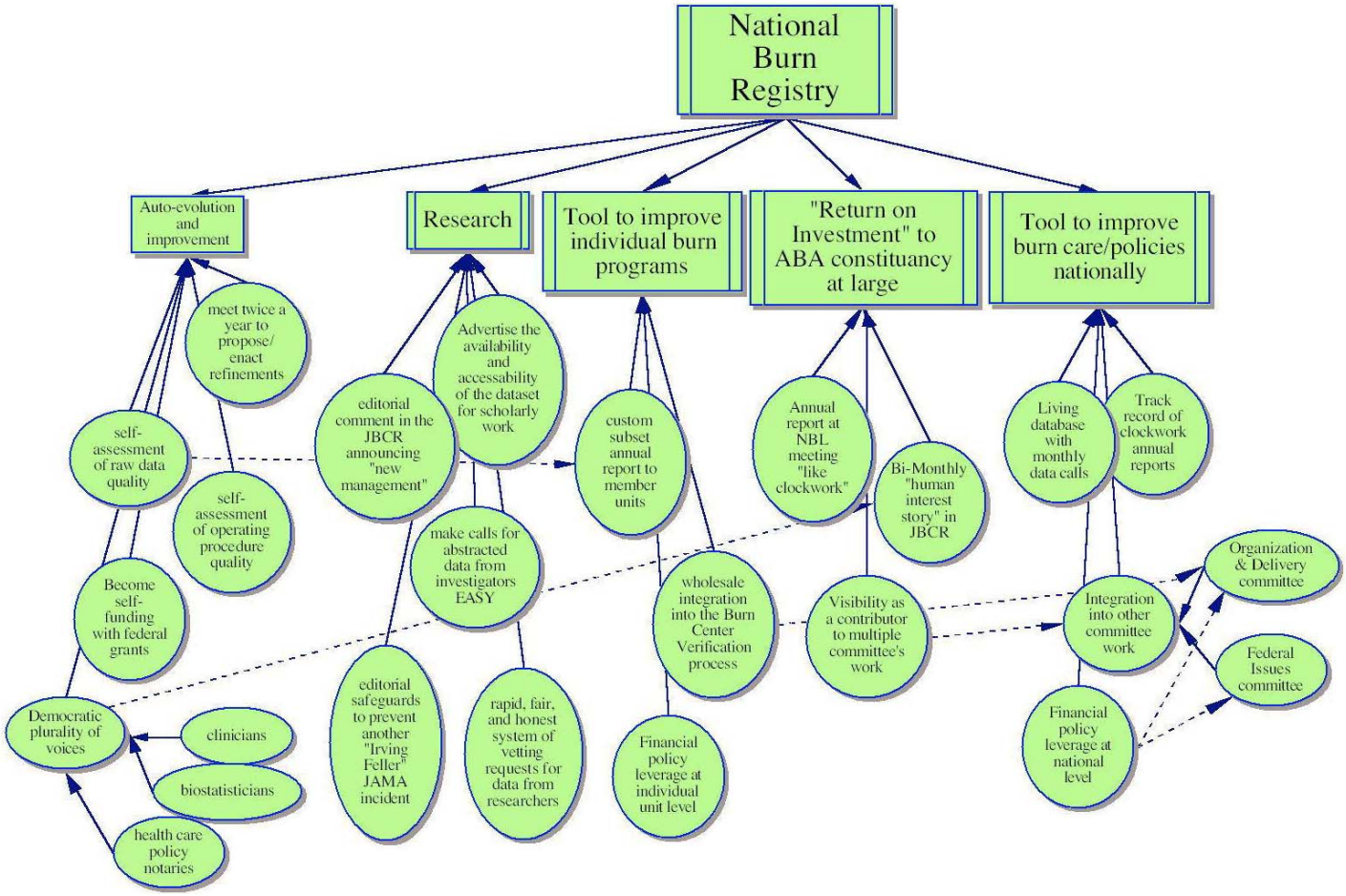
Appendix C

NBR Roadmap



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