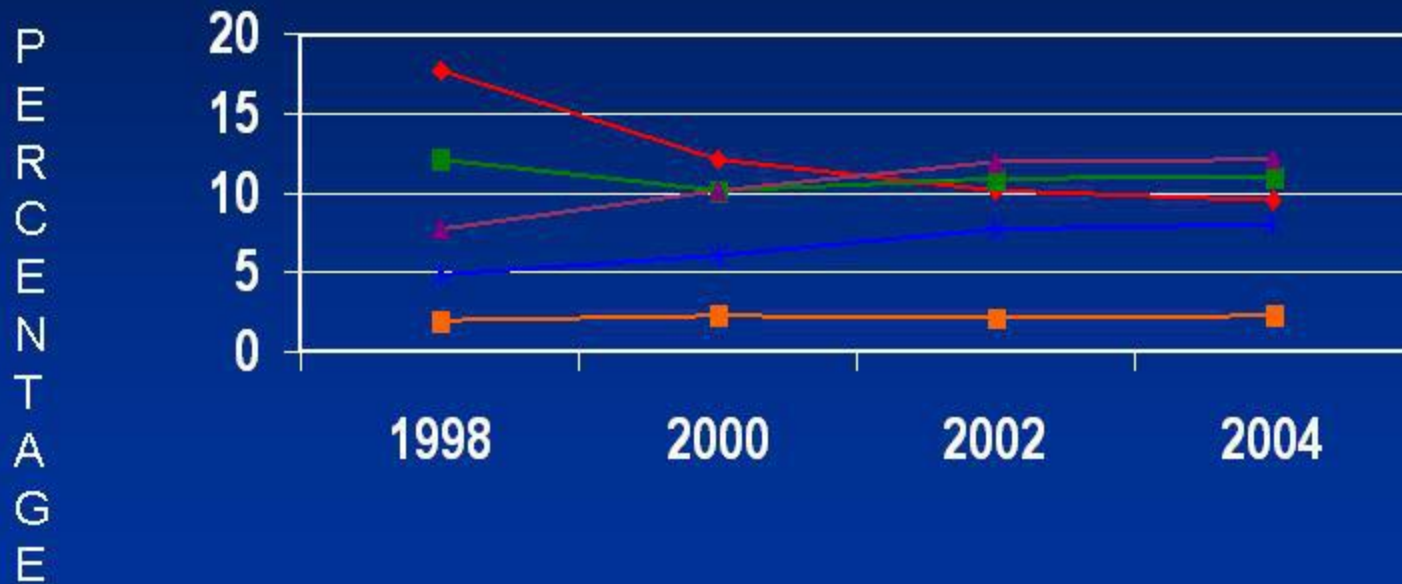


Trauma Prevention in South Africa: The Ultimate Challenge

Elmin Steyn
Director, Trauma Surgery,
Christiaan Barnard Memorial & Vincent Pallotti Hospitals
Cape Town, South Africa



Trends by cause of death



SA National Death Register

UNNATURAL

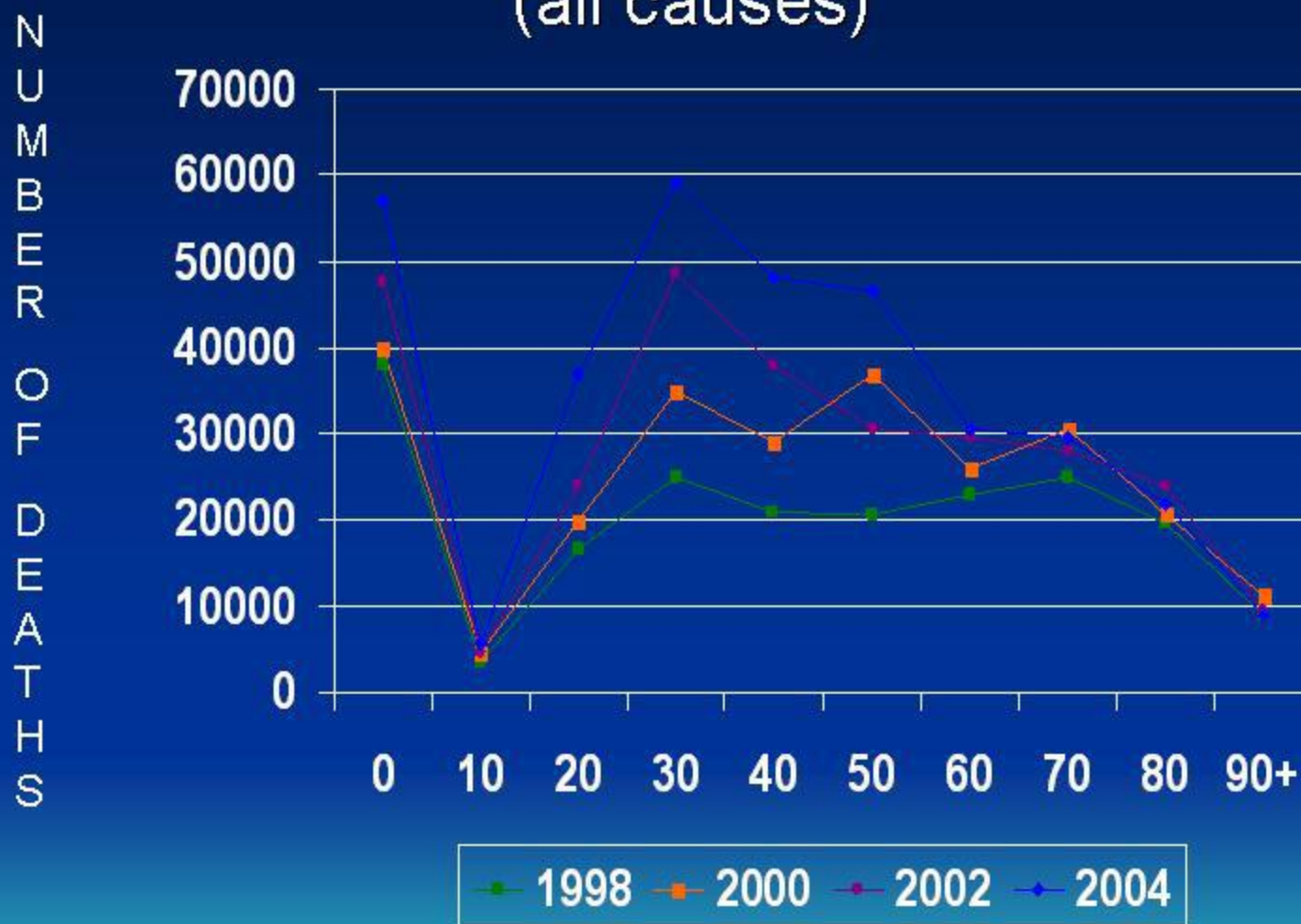
ILL-DEFINED CAUSES

TUBERCULOSIS

HIV-RELATED DISEASE

INFLUENZA & PNEUMONIA

Distribution of deaths by age (all causes)



SA National Death Register

Interpersonal violence

- Alcohol / drugs in 76%
- 56,8% of homicide victims: positive blood alcohol level
- >50% homicides due to gunshots, 33% stabs
- For every homicide, 20-40 non fatal injuries
- SA has 6x higher per capita assault rate than USA



Interpersonal violence

- Serious abdominal gunshot injuries cost USD 1,467 each to treat
- Estimated USD 2,5mil/yr
- 13-fold more than the annual per capita government expenditure on health

– Allard, Burch, SA Med J, 2005
Aug:95(8):5991-4



“... South Africans do not appear to be particularly violent, unless inebriated”

Johan van der Spuy
Trauma epidemiologist

Contributory factors

- Poverty & urbanization
 - Gangster culture
 - International crime syndicates:
 - drugs for abalone
 - Mafia style management of business competitors:
 - taxi wars
 - Legacy of political struggle years
 - Culture of entitlement
 - Tribal / political feuds
- 

Injuries due to vehicular accidents

- SA road death toll:
8x > that of UK and USA
- National daily toll: 30 deaths
100 major injuries
50 lesser injuries
- Alcohol and lawlessness plays a major role
- 60 000 Minibus accidents kill > 900 people per year



Alcohol and Vehicle Accidents

- The 7% of drivers with illegal BAC account for 29% of non-fatal and 47% of fatal driver injuries
- Pedestrians account for 68% of traffic deaths in Cape Metropole
- 72% of pedestrian mortalities have BAC of $> 0,08\text{g/dl}$
- 58% of such mortalities have BAC of $> 0,2\text{g/dl}$

BAC = blood alcohol count

Preventable causes of Injury

- Falls from height: Construction sites
- > 50% of polytrauma cases at city hospital
- Injury on duty: massive cost implications
- Injury on duty: 5% alcohol related (esp mines)
- Recreational and domestic mishaps, machines, animal bites
- Adult drowning: 64% have taken alcohol
- Circumcision at initiation rituals



Injuries due to Abuse

- Rape and domestic violence are rife in SA
- 30-50% of SA women experience some form of abuse
- SA has highest rate of intimate femicide in the world
- Child rape & sexual abuse: 47/100 000 reported in 1998.
- Child & elder abuse: True prevalence?



Childhood Injury

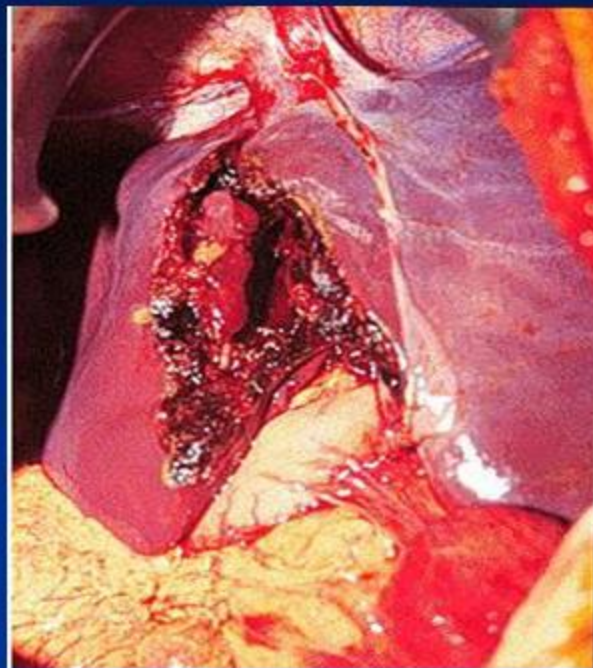
Paediatric deaths in rural Transkei
(1993-99):

64% due to trauma

41% due to intentional injury,

59% unintentional (MVA)

Meel, Am J For Med & Path



Major causes of unnatural death in children:

- Age < 5 yrs: Burns
- Age 5-15 yrs: Pedestrian-vehicle accidents
- Age > 15 yrs: Firearm injuries

“The twentieth century will be remembered as a century marked by violence. It burdens us with its legacy of mass destruction, of violence never seen and never possible before in human history...”

Nelson Mandela



The Impact of Trauma in SA

- Cost est. at R80 mil/day
- Manpower losses
- Tourism: significant loss
- Burden to health care
- Burden to law enforcement and justice system
- Burden to social systems & family structure



Injuries in Police Officers

- 70% of injuries are gunshot wounds (incl. suicide attempts and negligent discharge)
- 30% MVA, falls, stabs, PVA
- 35% of gunshot victims wore personal protection

– Plani et al, SA Med J 2003 Nov;93(11): 851-3

- PTSD a significant problem



Spectrum of injury control

- Surveillance
- Prevention
 - Environment
 - Vector
 - Human behaviour
- Treatment
 - Pre-hospital
 - In-hospital
 - Rehabilitation
 - Mock, Quansah, Kobusingye et al, African Journal Of Trauma 2:56 2004
- Injury related deaths in US and Europe have steadily dropped



Surveillance

- Good surveillance systems should include
 - Data collection: nature and extent of problem
 - Targeted interventions with assessment of impact
- US: Fatality Analysis Reporting System – does both
- Surveillance of morbidity data is required for design and evaluation of injury prevention interventions
 - Kobusingye et al. J Trauma: Injury Infection Critical Care 2000; 48 (3):498
- Good quality mortality data are fundamental to the allocation of health resources
 - Declich et al. Bulletin of WHO 1994; 72:285
- SA Violence and Injury Surveillance Consortium (MRC, UNISA, CSIR):
 - National Non-Natural Mortality Surveillance System
 - Substance abuse and injury monitoring system
 - SA National Non-Fatal injury surveillance system



Prevention

- Understand extent and characteristics of problem
- Identify risk factors
- Target risk factors with specific (scientifically proven) projects
 - Road design
 - Vehicle safety
 - Public transport
 - Graduated licensing for young drivers
 - Urban planning
 - Anti drunk driving campaigns
 - Law enforcement
- Evaluate results
 - World report on Road Traffic Injury Prevention
 - World report on Violence and Health

www.who.int/violence_injury_prevention/en/



Governmental injury prevention strategies

...awaiting outcomes of Injury Surveillance System, and will then implement strategies.....

- Dept Health
- Dept Safety and Security
- Dept Arts Culture, Science and Technology
- Presidential Initiative on Crime Prevention

Infrastructure development

- Expanded Public Works Campaign: 360 000 jobs in 2

Firearms Control Act

Arrive Alive Campaign



Community-based crime and injury prevention projects

- Proudly Manenberg Campaign

Business Against Crime South Africa

UKUVUKA

Burn prevention & education



Trauma
Society of
South Africa



Testing of Flame stoves

Elbie Van der Merwe MD

Ina Steenkamp MA, SW

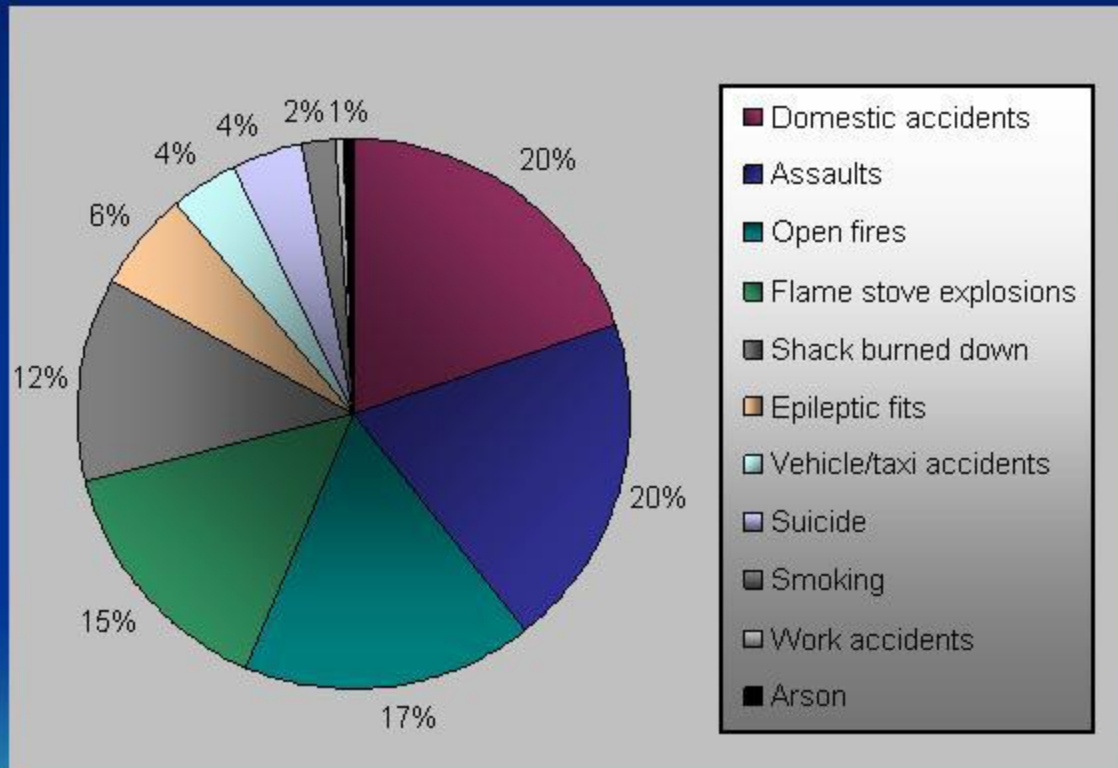
Tygerberg Hosp Burn Unit, Univ of Stellenbosch

Cape Town

Requested by: Paraffin
Safety Association of
South Africa

PASASA

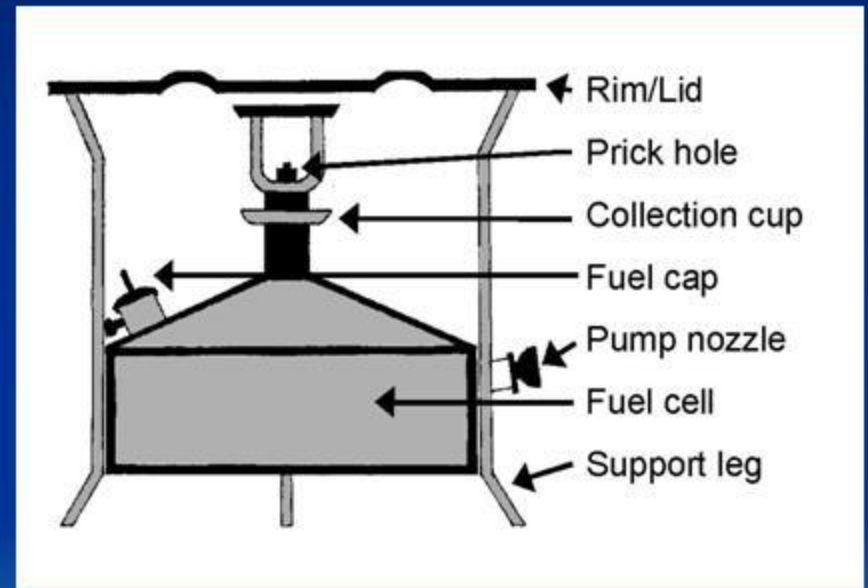
Causes of Burns



Dr A E van der Merwe
Tygerberg Hospital Burns Unit

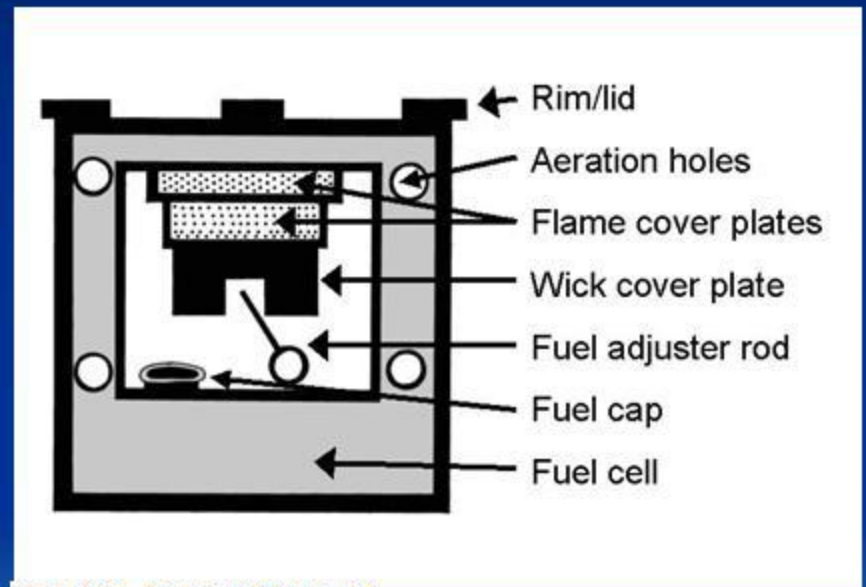
Primus Stove

- Requires pressure to function
- Pressure is generated by pumping action



Flame Stove

- Cotton wick is dipped into fuel cell
- Fuel cell is filled with paraffin or other flammable liquid




Causes 15% of serious burns admissions
Young, unemployed women
25-30% mortality

The Global Burden of Injury

- Injury related deaths per 100 000 pop /yr
 - high income countries: 51
 - low & middle income countries: 89
 - Austr: 48
 - NZ: 36 (4000 major traumas /yr, 56 000 admissions /yr = 18/100 000)
- In age group 15 – 44 yrs, road traffic deaths are second only to HIV-AIDS as cause of death, in most countries
 - Mock et al, Lancet 363:2172 2004



Challenges

- Crime control
 - 62% of crime occurs in 3 of 9 provinces, certain localities
 - Associated with substance abuse, unemployment, urbanization, illegal immigrants
 - Social crimes:
 - 82% murders, 90% assaults, 76% rapes
 - Paradigm shift in values and behavior of society
 - Economic growth
 - Currently 4% /year last 3 years
 - Job creation
 - Currently 500 000 new jobs created per year
 - We need 740 000 new jobs per year to halve the official unemployment rate by 2014
- 

“..Violence-related injuries are the main cause of admission for emergency services”

- Health Minister Manto Tsabalala-Msimang, on receiving the W.H.O. World Report on Violence and Health, 09-12-2002
- Health risk warnings on alcoholic beverages announced



Conclusions

- Trauma is a costly national epidemic
- Trauma ultimately affects all layers of society, including health care providers and non injured patients
- Violent crime, interpersonal violence, alcohol abuse and reckless driving are major factors, requiring law enforcement and good social and economic governance
- Trauma, although mostly treatable, is ultimately preventable



Trauma in SA

- SA population = 45 million
- Estimated 4 – 4.5 mil injured treated annually (all facilities)
- Rate of 66 per 1000 population
 - Matzopoulos et al, MRC, UNISA, WHO. In press
- Endemic proportions are now acknowledged
- Poor and disadvantaged particularly affected
- Violence related injuries are more than half of the total injuries
- 127000 firearm injury victims
- Main focus of care providers has been treatment and training:
 - DSTC and ATLS®

HOWEVER

- Trauma is a preventable disease!



Fatal Injuries

- 60 000 fatal injuries annually
 - Butchard, Peden, Matzopoulos et al, SA Med J 2007 in press
 - 15000 deaths due to firearms
 - 10% of all SA deaths due to trauma (5,2% globally)
 - Homicide rate 41 /100 000 pop (US: 6 /100 000)
 - Traffic deaths 26,5 /100 000 pop (US :15, UK: 3,6, Austr: 9, N Z: 13, Sweden: 8)
 - Main focus of care providers has been treatment and training:
 - DSTC and ATLS®
- HOWEVER
- Trauma is a preventable disease!

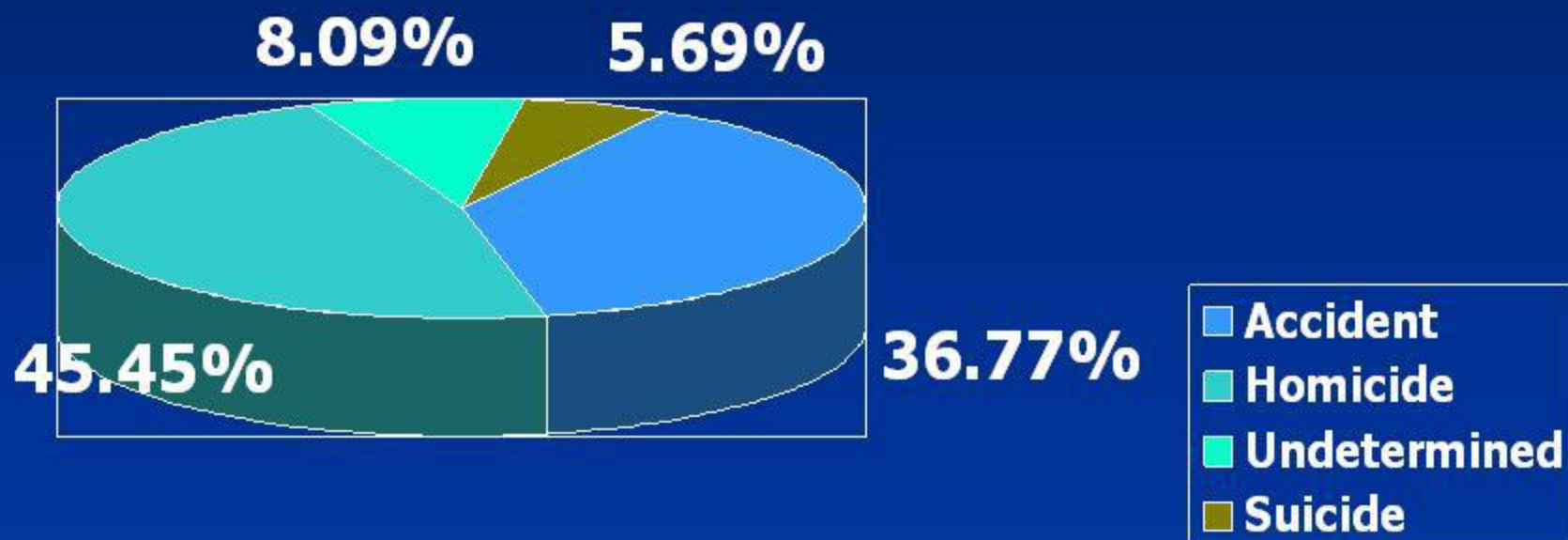


Unnatural deaths per 100 000 population

	Australia 48	New Z'land 36
Transport	8.6	13
falls	14	4
suicide	10	11
Poisoning	4	6.3
homicide	1.1	2.1 (+firearm)

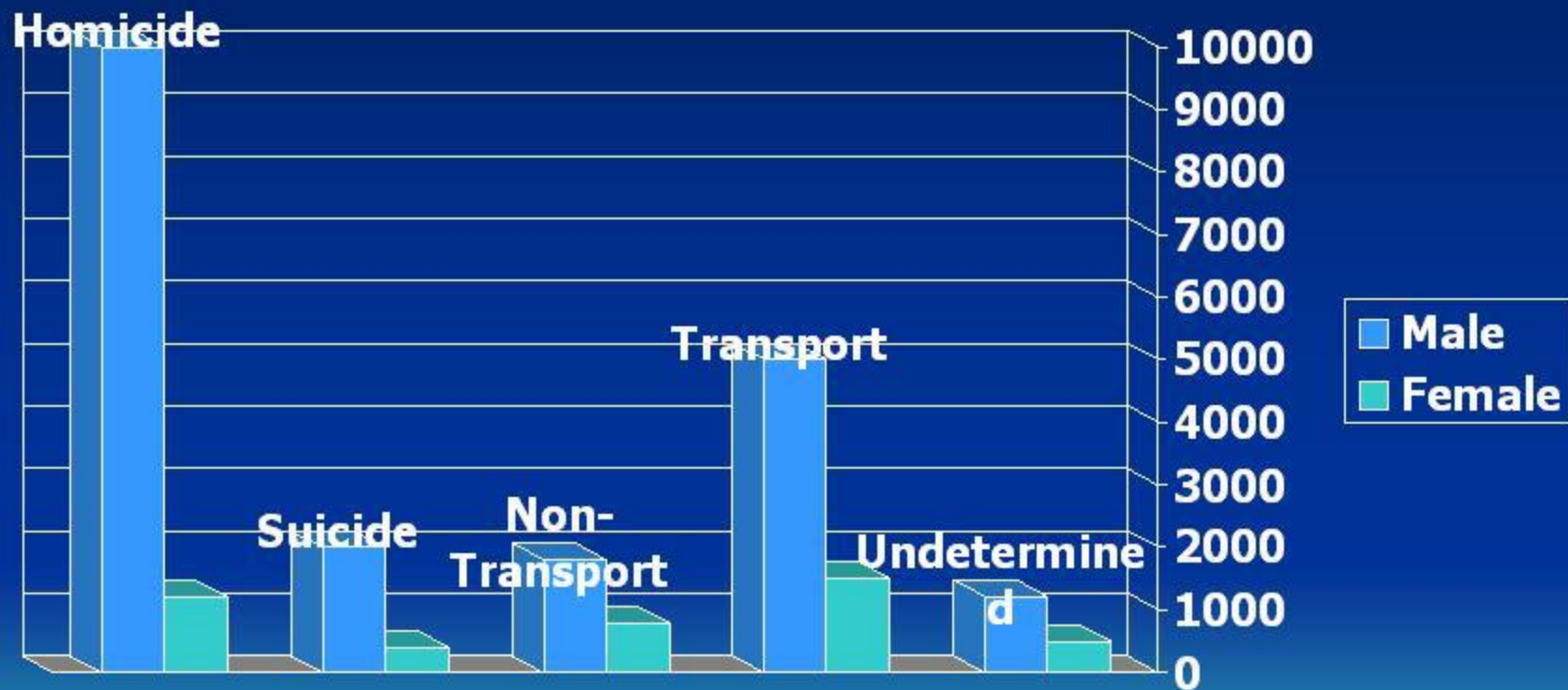
Overall cause of unnatural death

N=25494



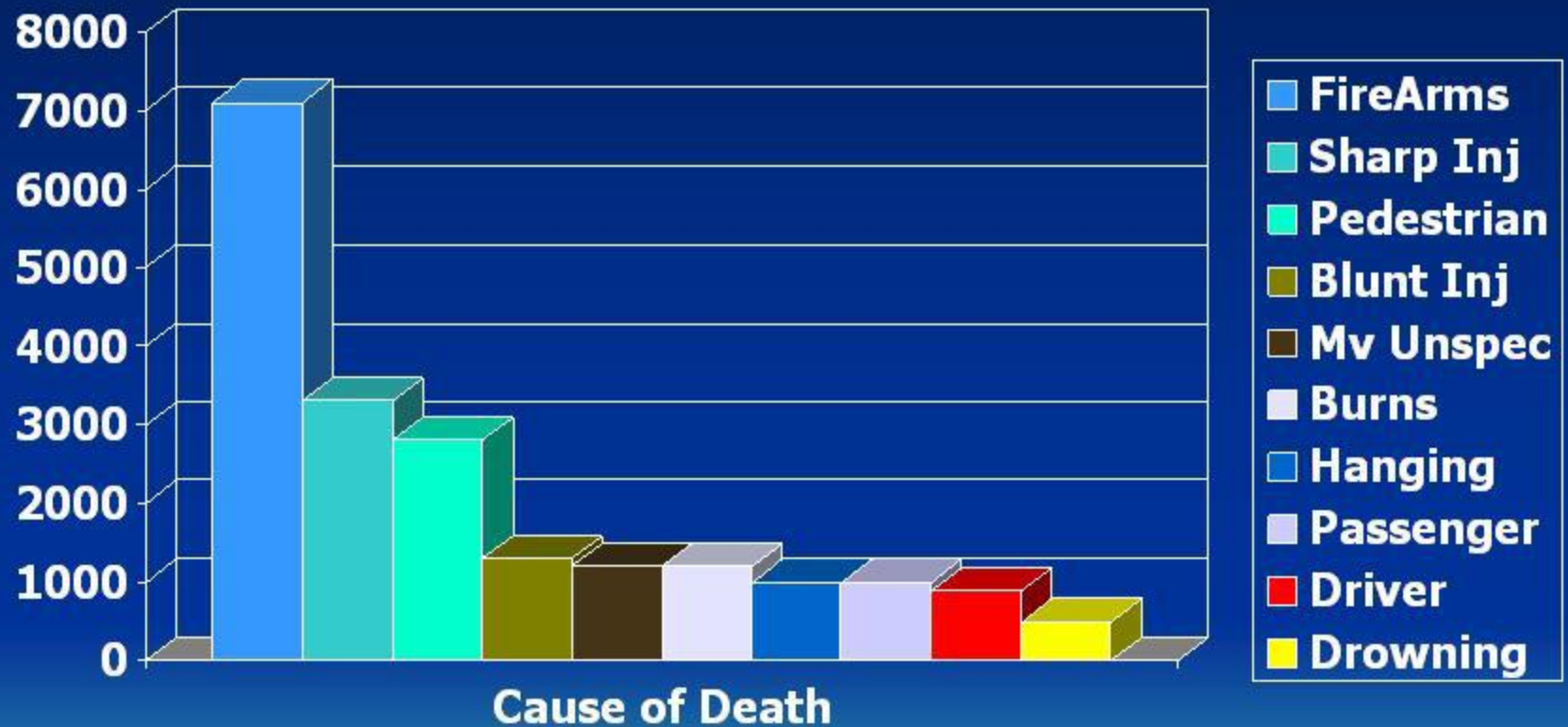
Fourth Annual report of the National Injury Mortality Surveillance System 2002,
UNISA, Medical Research Council

Manner of unnatural death by gender (N=25178)



Fourth Annual report of the National Injury Mortality Surveillance System 2002,
UNISA, Medical Research Council

Top 10 External Causes of Death (N=21438)



Fourth Annual report of the National Injury Mortality Surveillance System 2002,
UNISA, Medical Research Council