



THIRTY YEARS OF TRAUMA: THE EVOLUTION OF THE TRAUMA PATIENT IN THE SAN DIEGO COUNTY TRAUMA SYSTEM

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The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose

BRIEF HISTORY OF THE SAN DIEGO COUNTY TRAUMA SYSTEM



Date	Trauma System Related Activity
1983	Trauma Advisory Task Force – San Diego County Board of Supervisors
August 1, 1984	Major trauma victims in San Diego County began bypassing community hospitals in favor of designated trauma centers.
1993	Trauma System treated its 50,000 th patient
1999	Trauma System treated its 100,000 th patient
2002	Comprehensive review of the trauma system: Single Registry
2006	First Hospital makes the switch to the current registry
2009	Trauma System treated its 200,000 th patient
2010	Last Hospital makes the switch to the current registry
2014	Trauma System turns 30 years old, treating its 250,000 th patient



Five Adult Trauma Centers

1. University of California, San Diego Medical Center (Level 1)
2. Scripps Mercy Hospital (Level 1)
3. Scripps Memorial Hospital (Level 2)
4. Palomar Medical Center (Level 2)
5. Sharp Memorial Hospital (Level 2)

One Pediatric Trauma Center (ages 14 and younger)

1. Rady Children's Hospital (Level 1)



With five adult trauma centers and one pediatric trauma center, how are trauma patients delivered to the most appropriate hospital?

- All pediatric trauma patients 14 and younger: Rady Children's Hospital
 - May involve helicopter transport or inter-facility transport from another hospital
- Adult trauma patients: Trauma Catchment System
 - Based on population distribution and transport times
 - Trauma patients may not request destination as other EMS patients are allowed
 - Trauma patients are not necessarily taken to nearest Trauma Center
 - Healthcare Insurance does not play an role in trauma transport

Trauma Catchment Areas

PALOMAR



SCRIPPS
LA JOLLA



SHARP
MEMORIAL

CHILDRENS

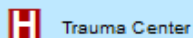


UCSD
MEDICAL
CENTER

SCRIPPS
MERCY

Pacific
Ocean

San Diego County





What changes have we seen in...

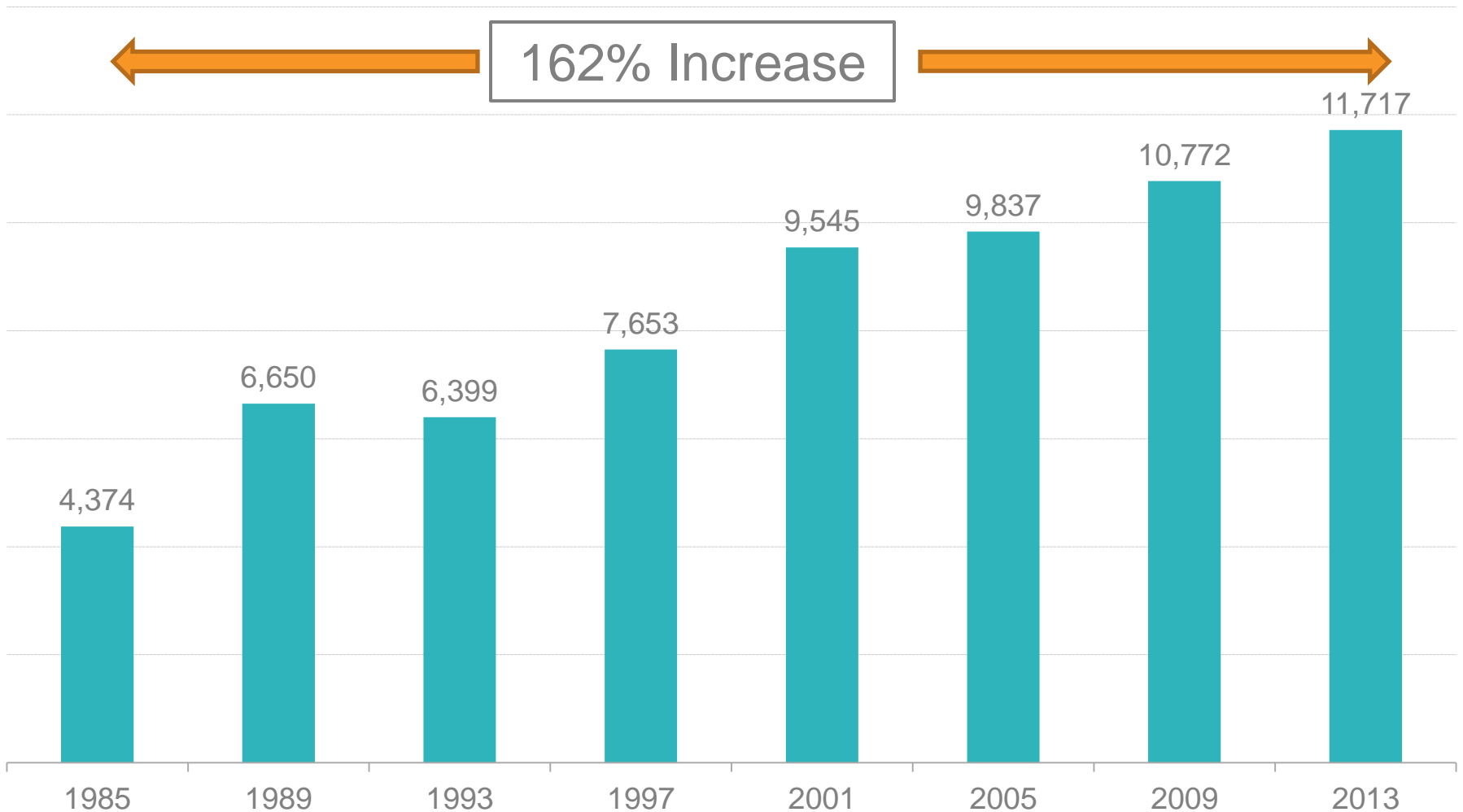
- Trauma Volume?
- Cause of Injury?
- Trauma Outcome?



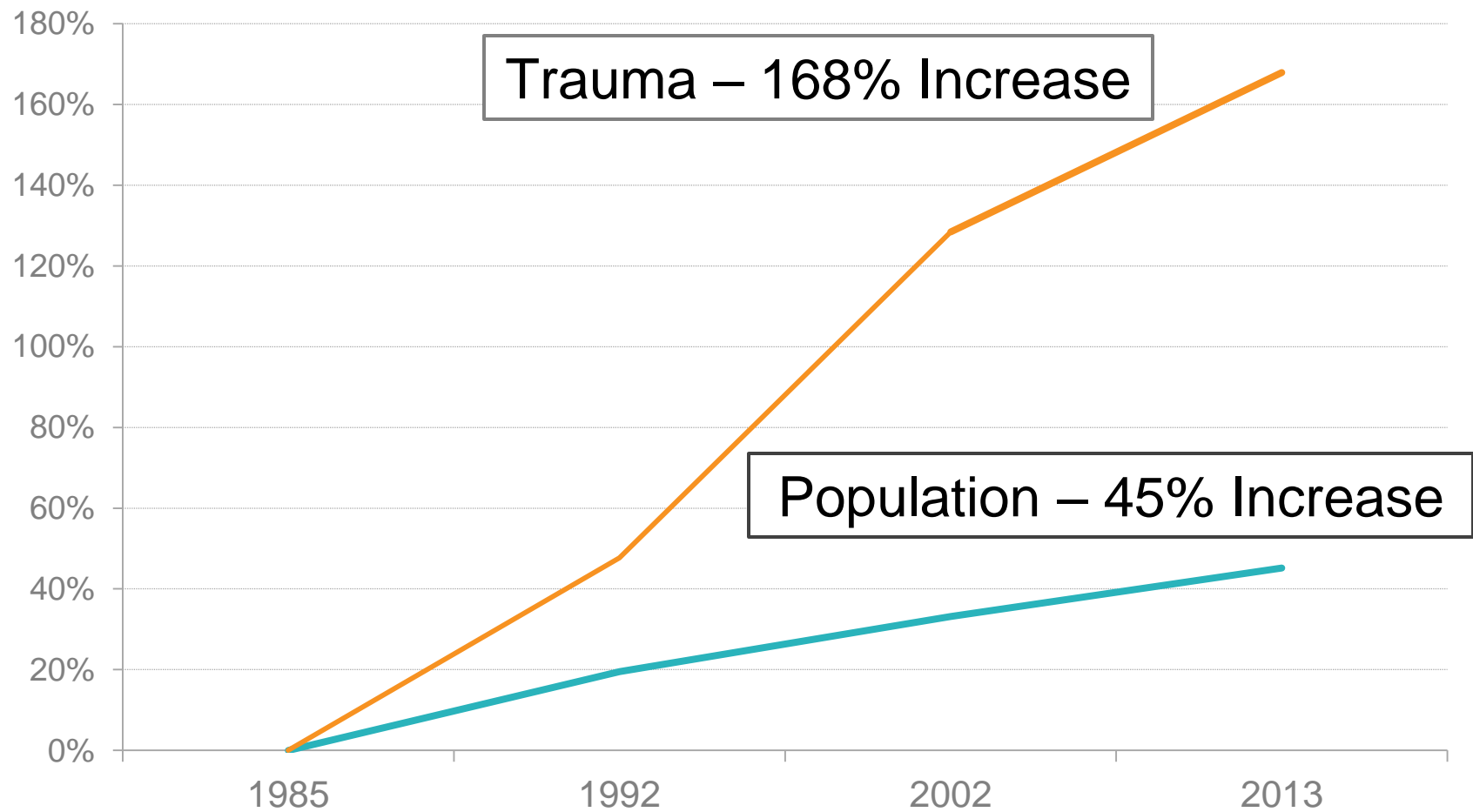
What are the potential external factors affecting Trauma Volume?

1. Increasing population
2. Higher percent of injuries diverted to trauma centers
 - Injured patients do better when they are sent to a trauma center
(This may be considered an internal factor).

TOTAL PATIENTS TREATED OVER THE YEARS



TRAUMA PATIENTS VS. GENERAL POPULATION





How can an increase in *trauma volume* (potentially) affect the system?

1. Increased burden on the system
2. Increased need for staffing
3. Increased need for ambulance/EMS
4. Increased bypass
5. *Poorer outcomes?*



What are the potential external factors affecting cause of injury?

- Trauma-related legislation
 - Laws
 - Safety improvements
 - Technology

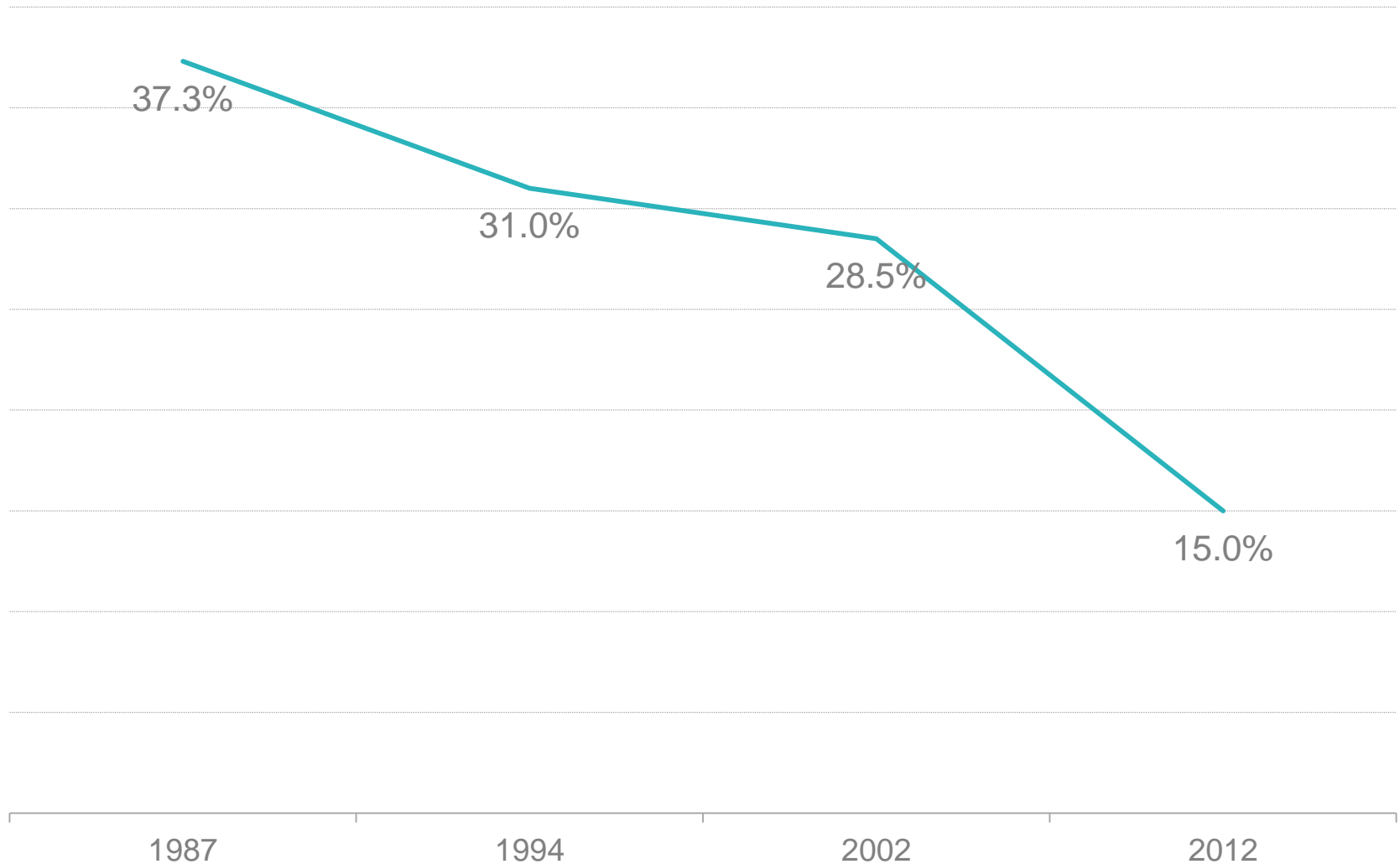
- Aging population

MOTOR VEHICLE SAFETY

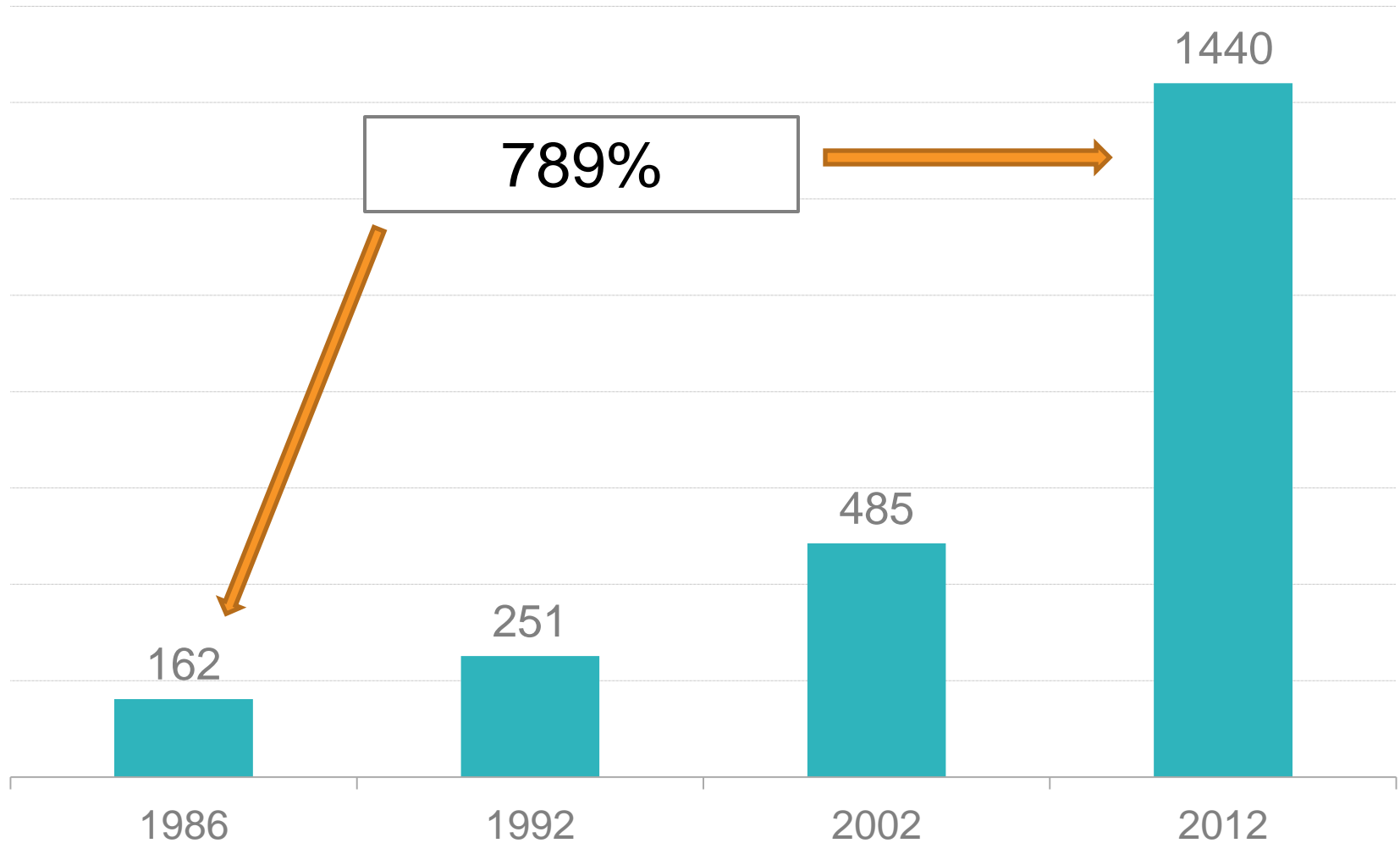


- Seatbelts
- Airbags
- Laminated windshields
- Crumple zones
- Anti-lock braking systems
- Tire pressure monitoring
- Traction control systems
- Driving under influence of alcohol laws
- Child car seats and safety restraints

PERCENT OF TOTAL TRAUMA – MOTOR VEHICLE ACCIDENTS

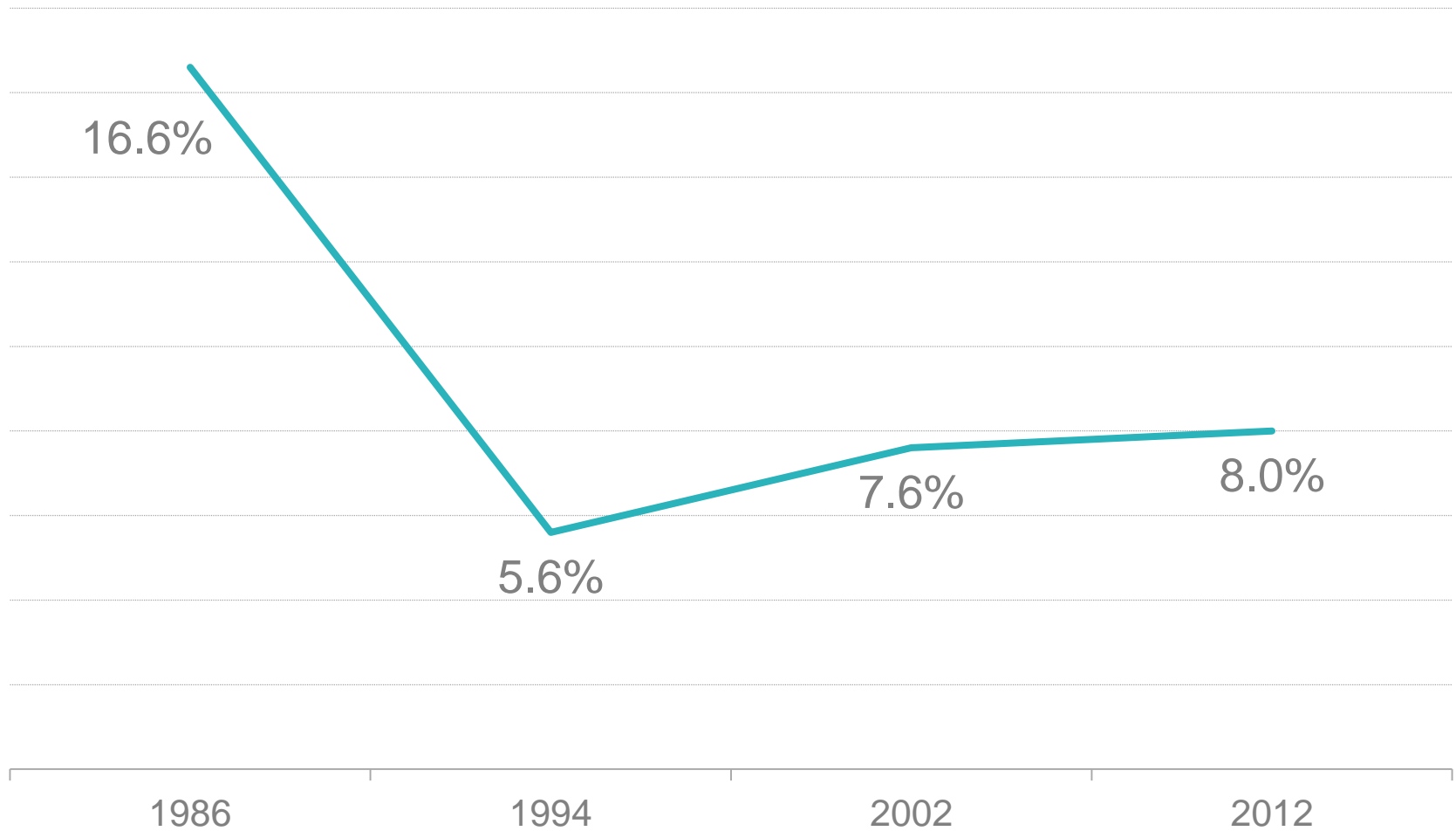


TOTAL FALL-RELATED TRAUMA ADMISSIONS



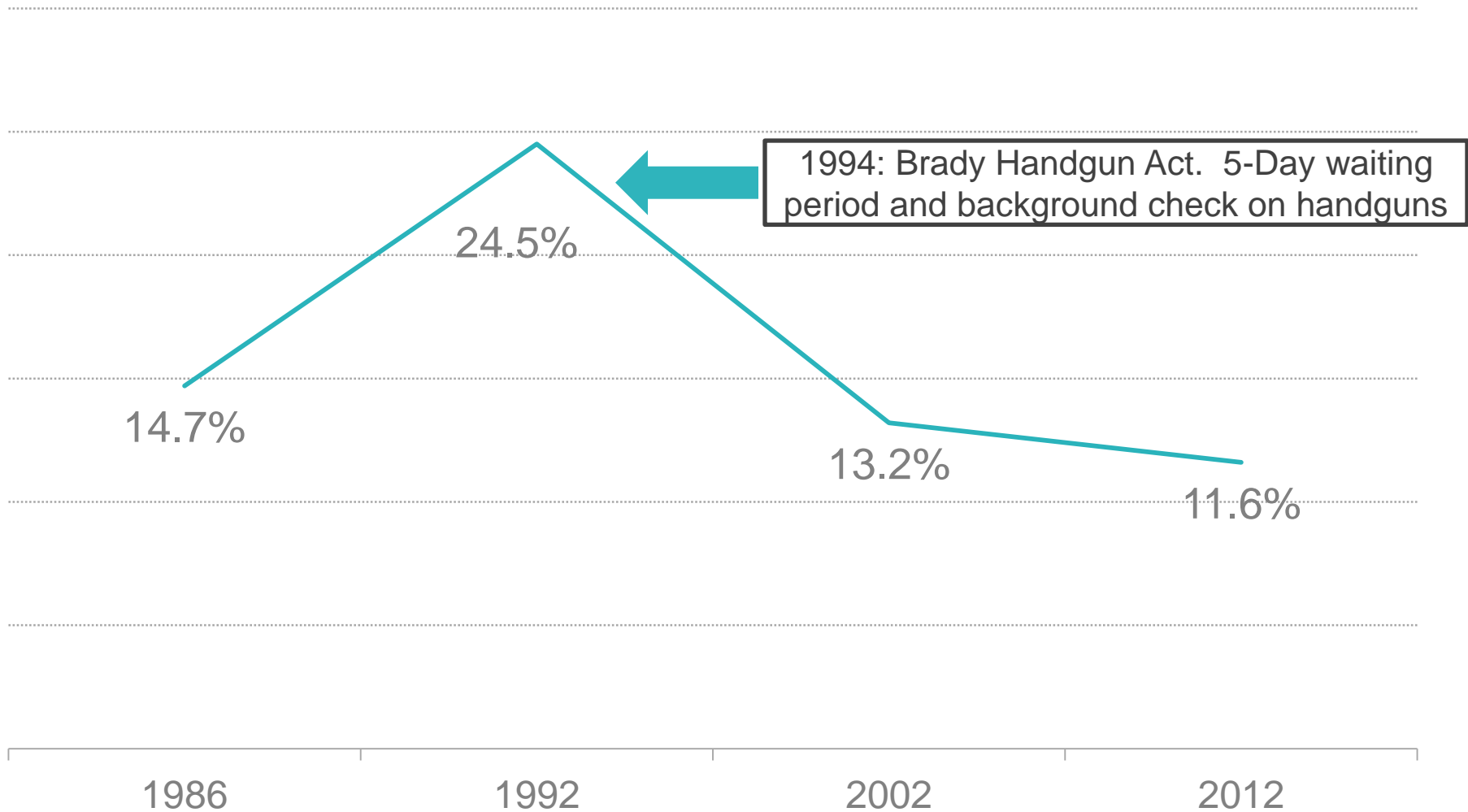
Source: County of San Diego, Health and Human Services Agency, Emergency Medical Services, Trauma Registry, 1984 - 2012

PERCENT OF TOTAL TRAUMA - MOTORCYCLES

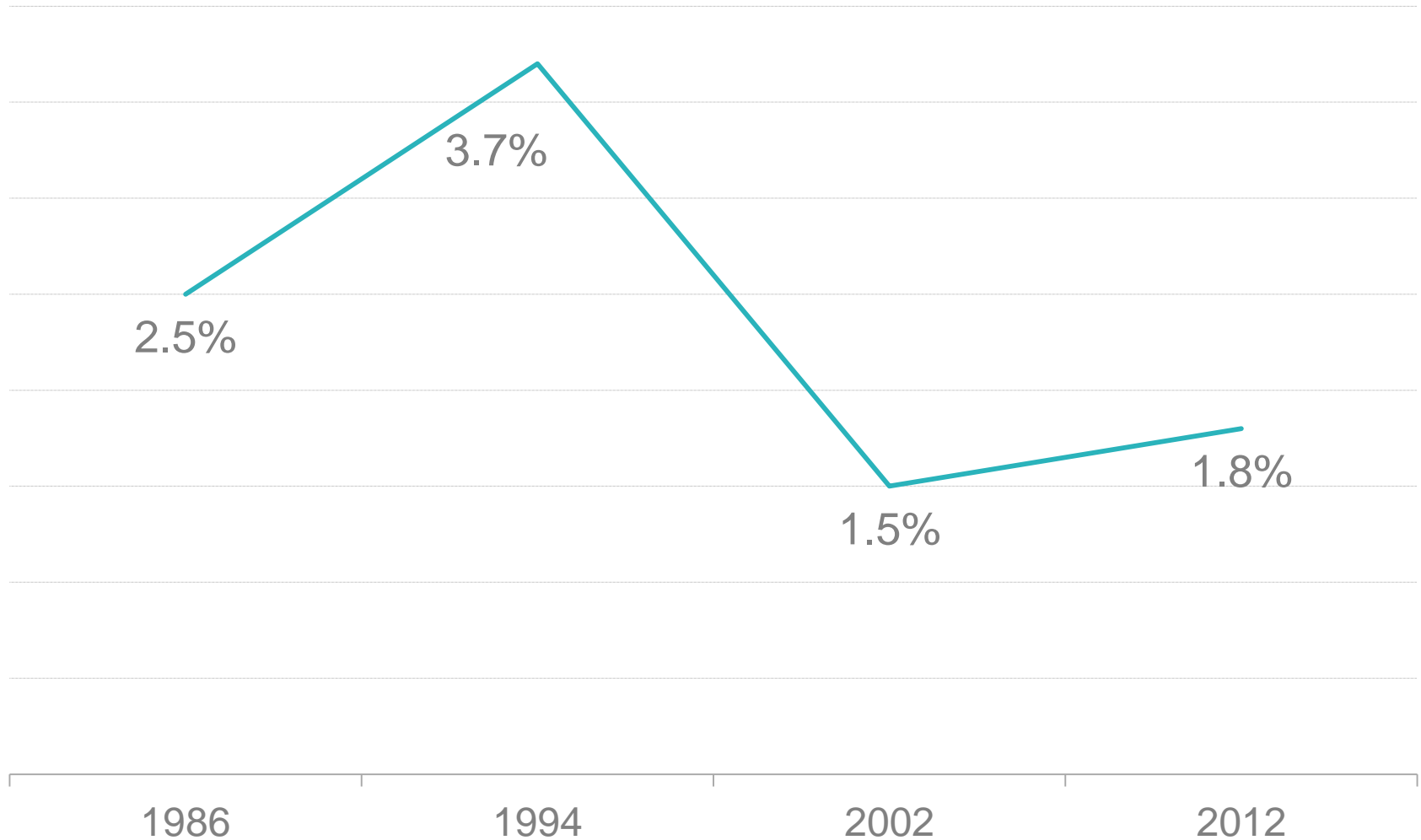


Source: County of San Diego, Health and Human Services Agency,
Emergency Medical Services, Trauma Registry, 1984 - 2013

PERCENT OF TOTAL TRAUMA - ASSAULTS

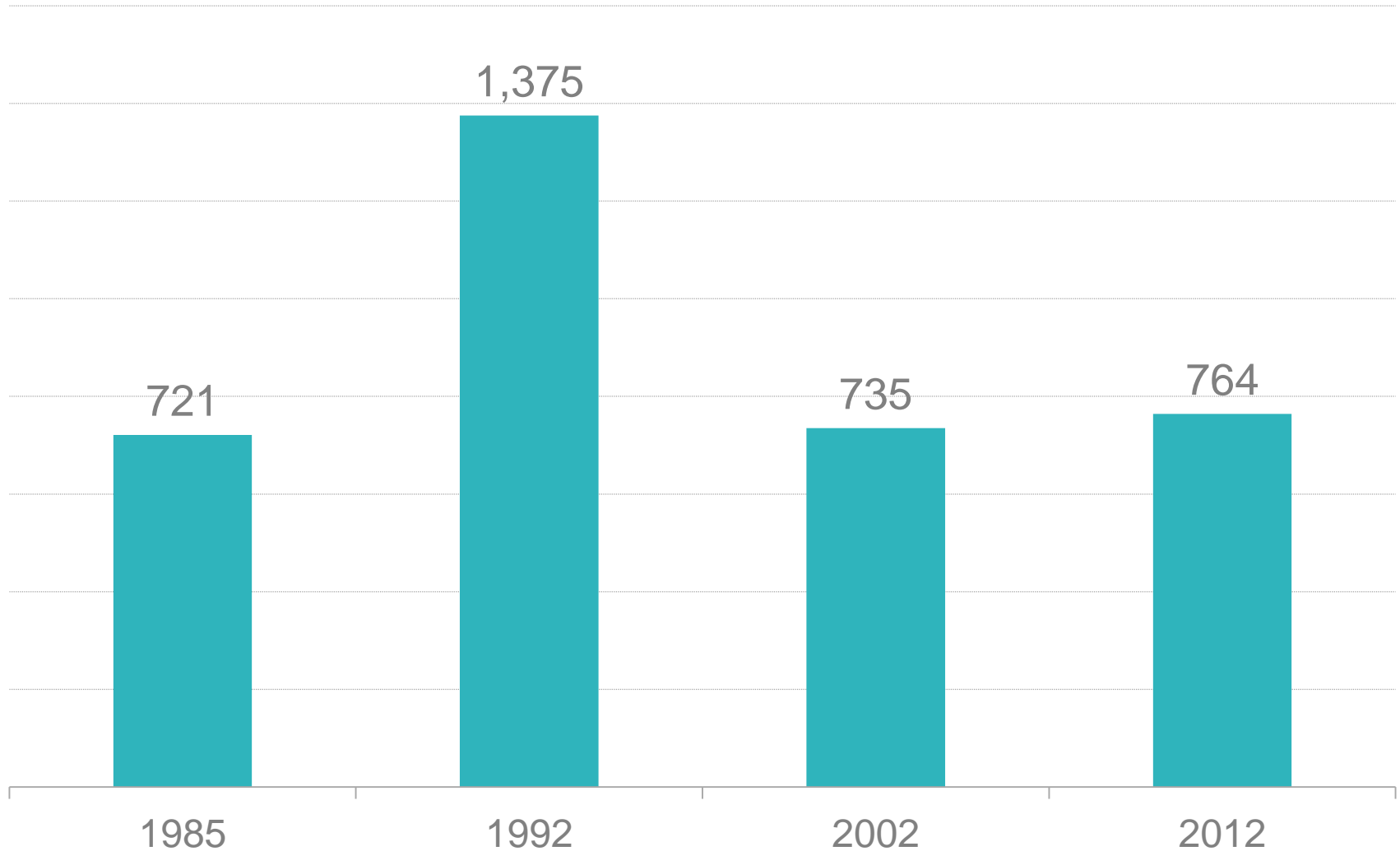


PERCENT OF TOTAL TRAUMA – SELF-INFLICTED INJURIES



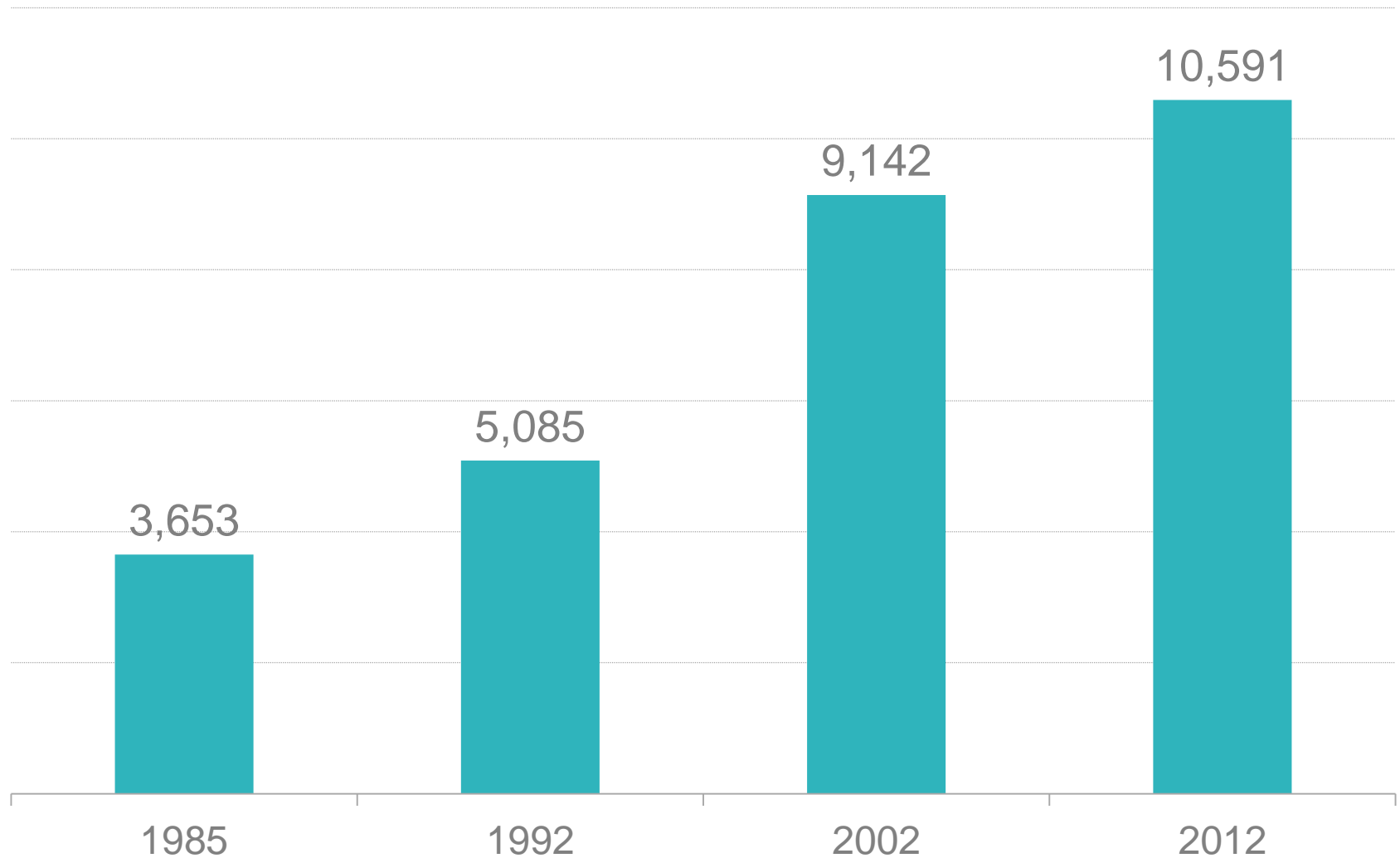
Source: County of San Diego, Health and Human Services Agency,
Emergency Medical Services, Trauma Registry, 1984 - 2012

PENETRATING INJURIES



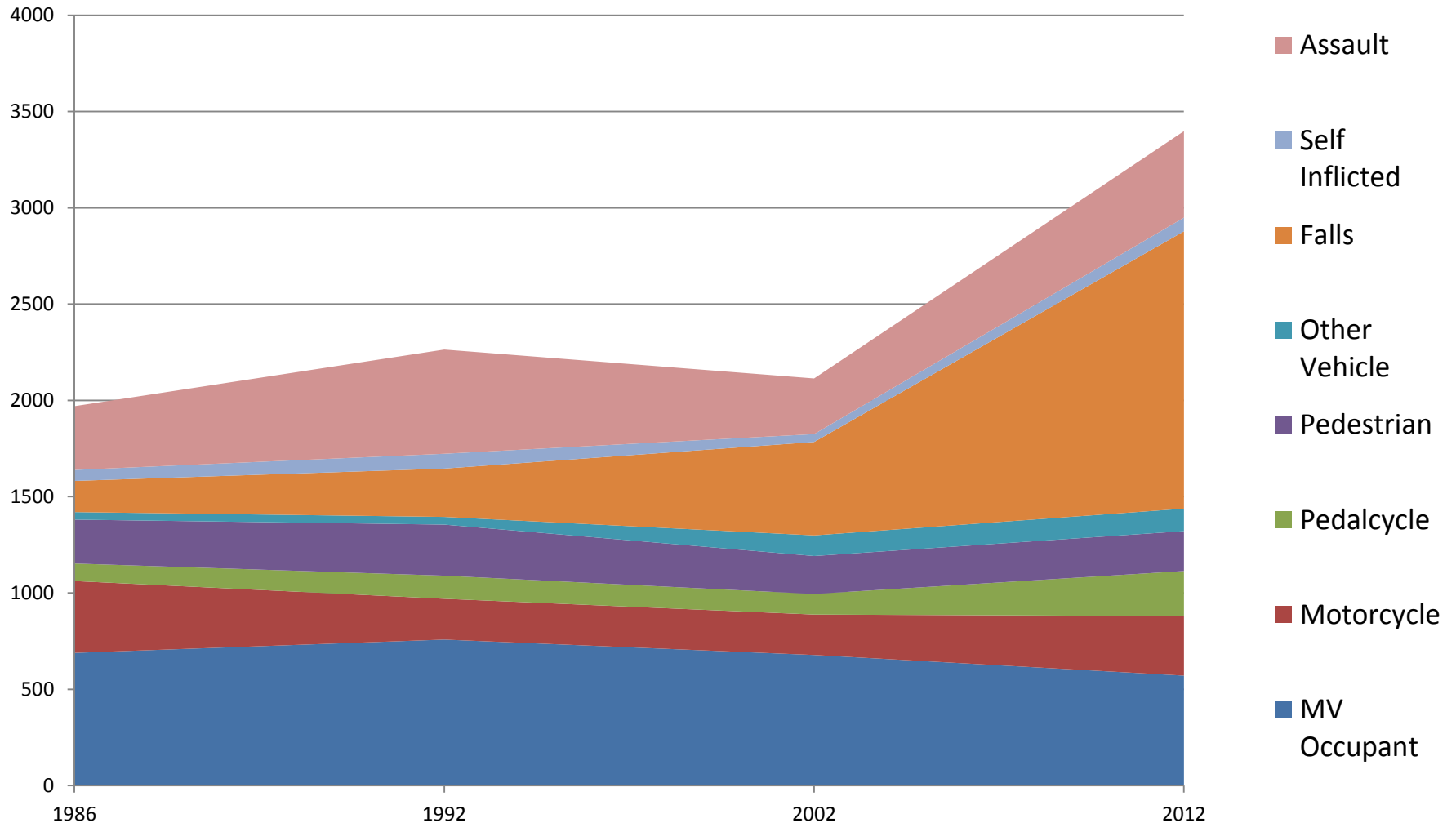
Source: County of San Diego, Health and Human Services Agency, Emergency Medical Services, Trauma Registry, 1984 - 2012

BLUNT INJURIES

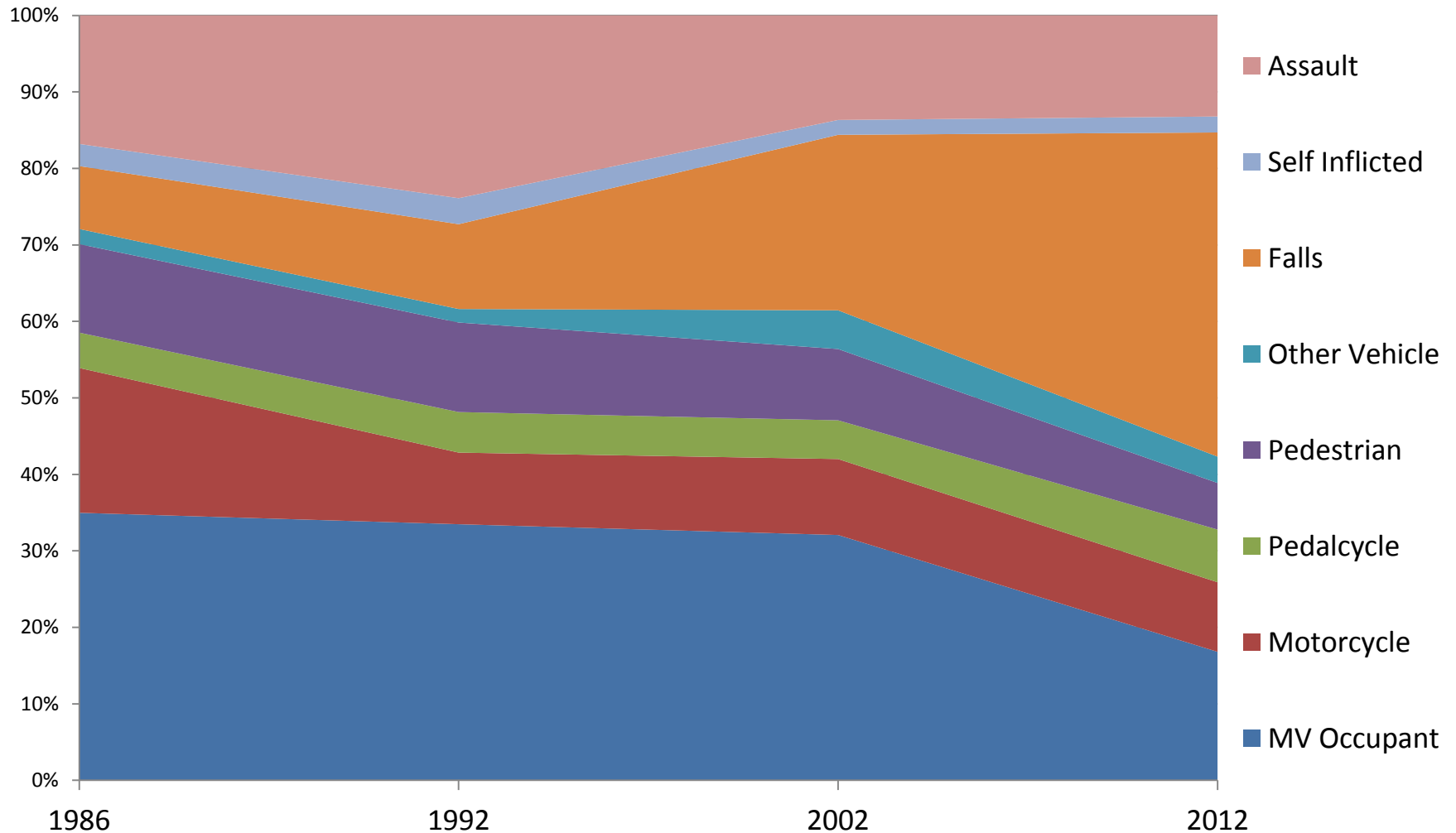


Source: County of San Diego, Health and Human Services Agency, Emergency Medical Services, Trauma Registry, 1984 - 2012

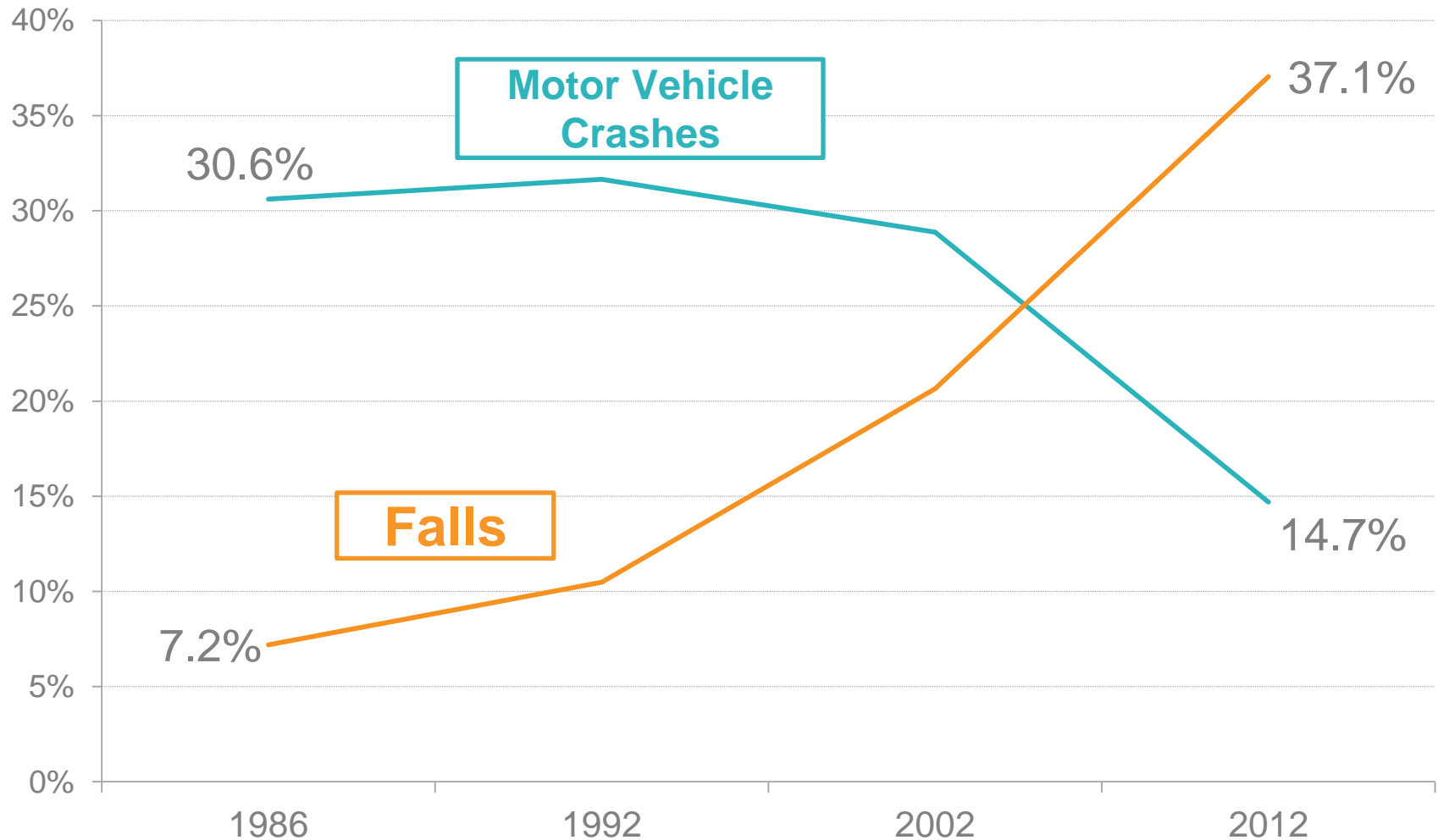
TRAUMA VOLUME BY CAUSE OF INJURY (ISS > 14)



CAUSES OF INJURY, PERCENT OF TOTAL (ISS > 14)



MAJOR CHANGES IN CAUSE OF INJURY

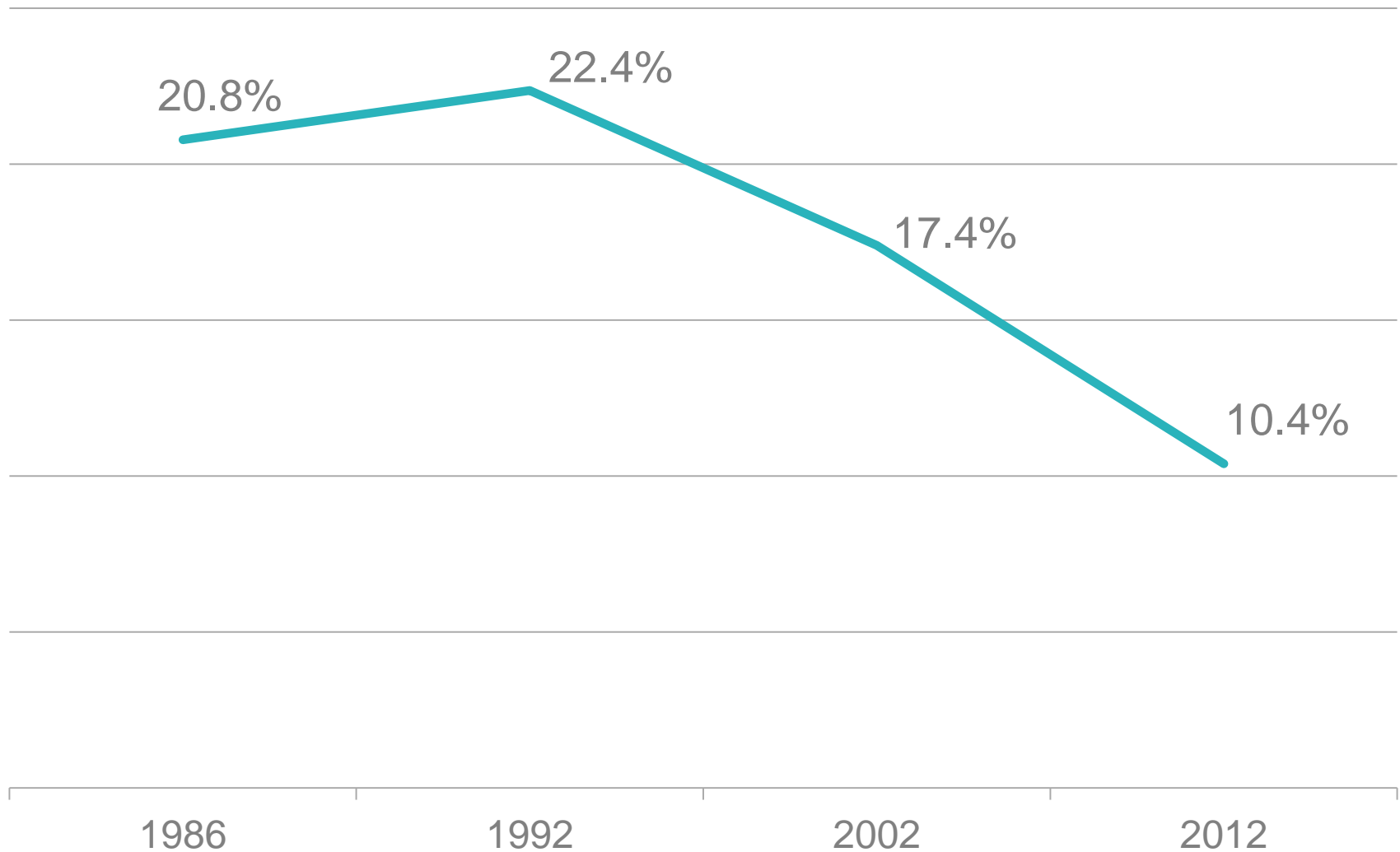




What are the potential factors affecting trauma patient outcome?

- Improved trauma care
- Improved Emergency Medical Services
- Trauma-related regulations and laws?
- Changing causes of injury?
 - Limitation to this study: Too many databases!

MORTALITY RATE – INJURY SEVERITY SCORE 15 OR GREATER



Source: County of San Diego, Health and Human Services Agency, Emergency Medical Services, Trauma Registry, 1984 - 2012



- Trauma volume has continually increased and we can expect this to continue
- Motor vehicle safety laws and an aging population have shifted the majority of trauma victims from car crashes to falls
- Penetrating injuries and assaults peaked in the early 90's but have steadily decreased since then

Most importantly...

- **The mortality rate for the most severely injured trauma patients has been cut in half over the life of the San Diego County Trauma System**



THANK YOU

