Equine Injury and Death on New York Racetracks

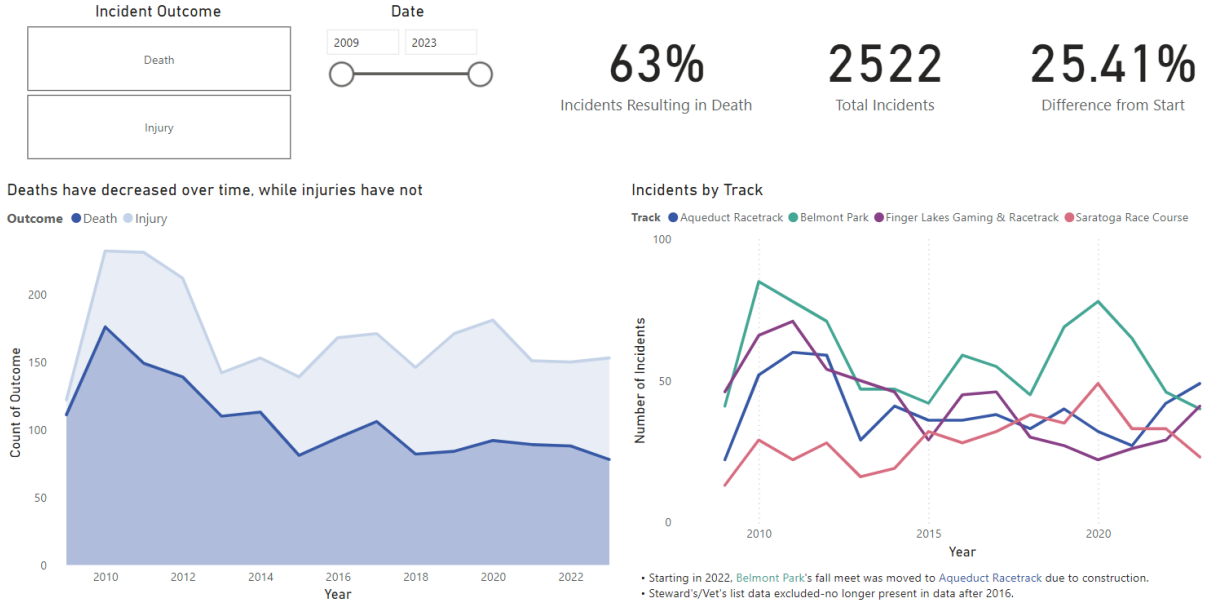
Introduction

The 2023 Kentucky Derby received extra media attention and public scrutiny due to an unusually high number of horses dying at the track – a total of seven in the week before the race, including two on Derby Day. Five more died before races were moved to another racetrack to investigate conditions at Churchill Downs. Following the investigation, which included necropsies of the horses and an investigation of the track conditions, the only link that could be found between the deaths was that all 12 horses had run more races than the average racehorse (Souza, 2023).

As the Derby rolled around this year, I decided to investigate racehorse deaths and injuries to discover if the sport has been improving over time, where these events occur, and how they occur.

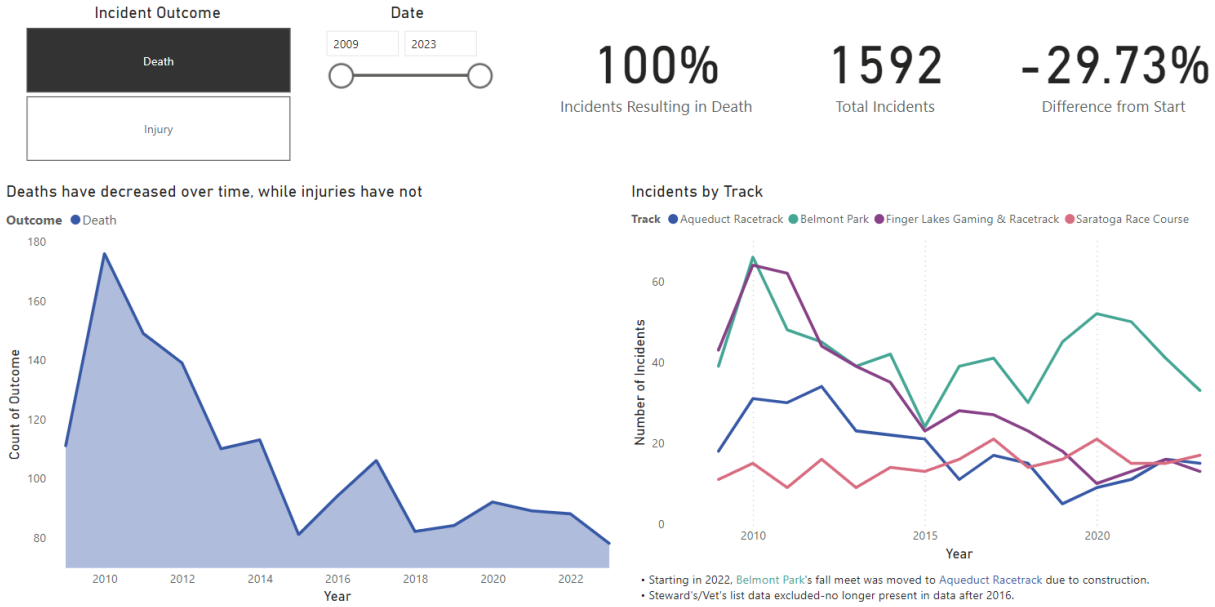
This is a report based on a Power BI dashboard using data from the New York State Gaming Commission (NYSGC), which includes details about incidents occurring at racetracks in New York state. For this report, incidents in the thoroughbred division where an injury or death occurred were analyzed, and Steward's/Vet's list reports were excluded since they were no longer reported after 2016. Data from 2009 through 2023 for incidents reported at Aqueduct Racetrack, Belmont Park, Finger Lakes Racetrack, and Saratoga Race Course is included.

Overall Trends



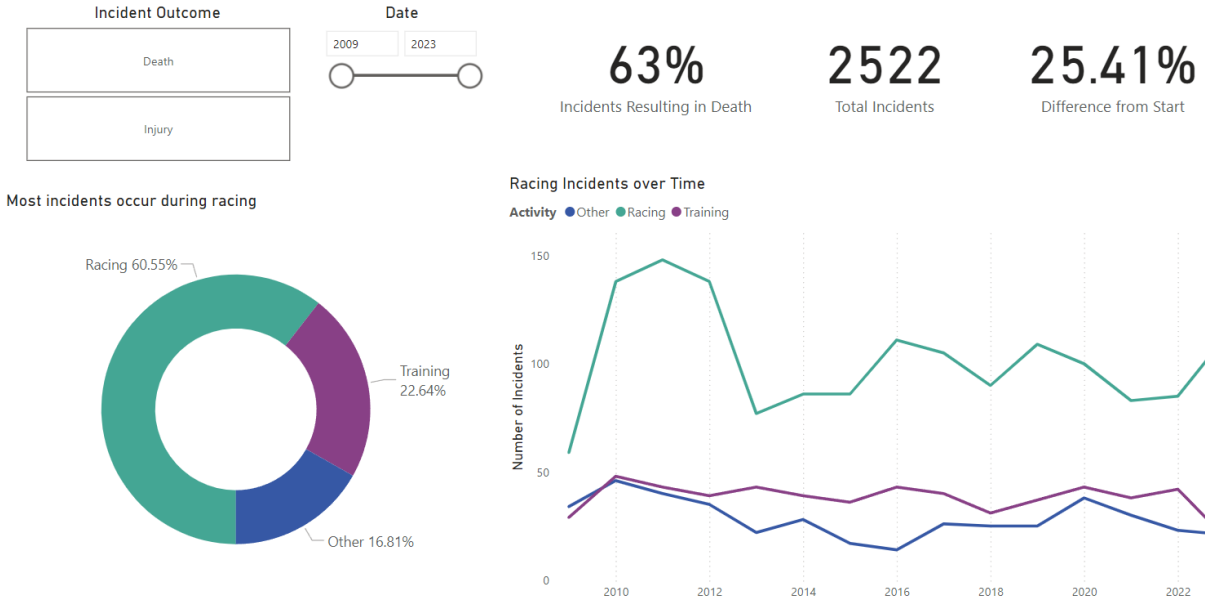
In 2008, the Jockey Club launched the Equine Injury Database (EID) to collect data on racing incidents. From 2009 through 2023, 2,522 incidents occurred and 63% of them resulted in death. The peak number of incidents occurred in 2010 and has declined since then, but as of 2023 the total number of reported incidents has increased by 25.4%.

It is important to note that these are raw numbers, not rates. This is particularly important when looking at the track data. A track that has a lot of horses going through it is likely going to have more incidents happen, simply because there are more opportunities. This is illustrated in 2022's data for Belmont Park and Aqueduct Racetrack. Due to renovations at Belmont Park starting in 2022, several races were moved to Aqueduct Racetrack. While the number of incidents at Aqueduct Racetrack increased from 2022 to 2023, the rate of incidents per racing start actually decreased.

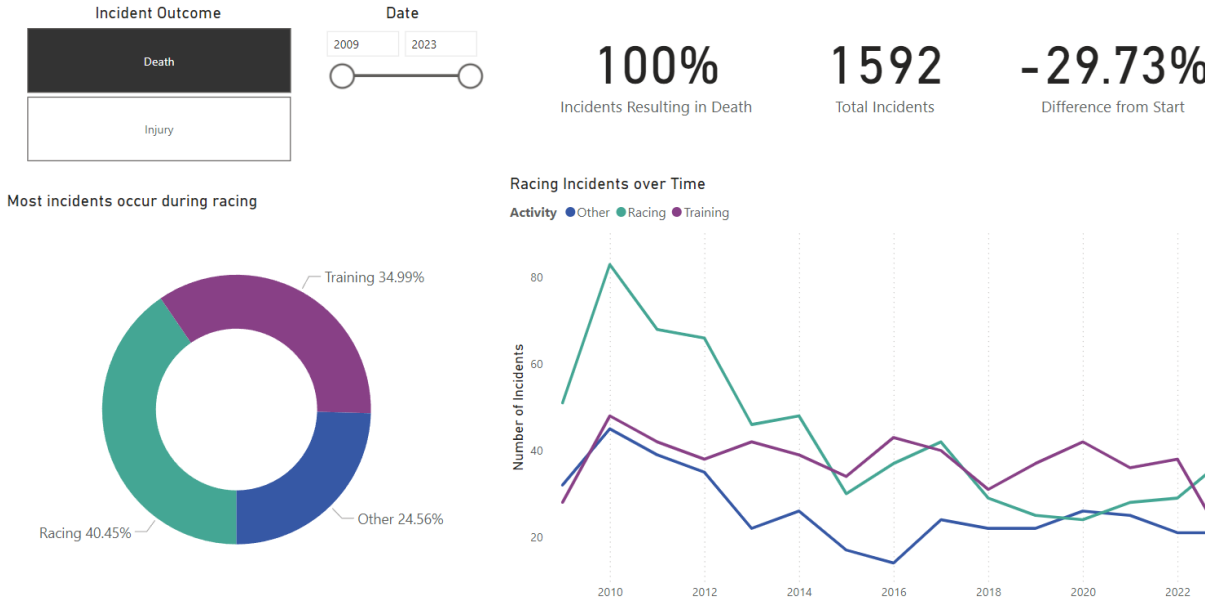


While the total number of incidents has not decreased compared to 2009, the number of deaths has decreased by 29.7%, and has been decreasing for three consecutive years. The remaining incidents are non-fatal injuries, which haven't seen a clear long-term trend.

Incident Locations



The NYSGC data categorizes incidents by whether it occurred as a result of racing, training, or "other". These "other" events occur in the stable or paddock and are mostly accidental injuries or illnesses. 60.5% of the incidents in the data set occurred from racing, but it is worth noting that not all training occurs on one of these racetracks – private training facilities exist, and their numbers are not reported.

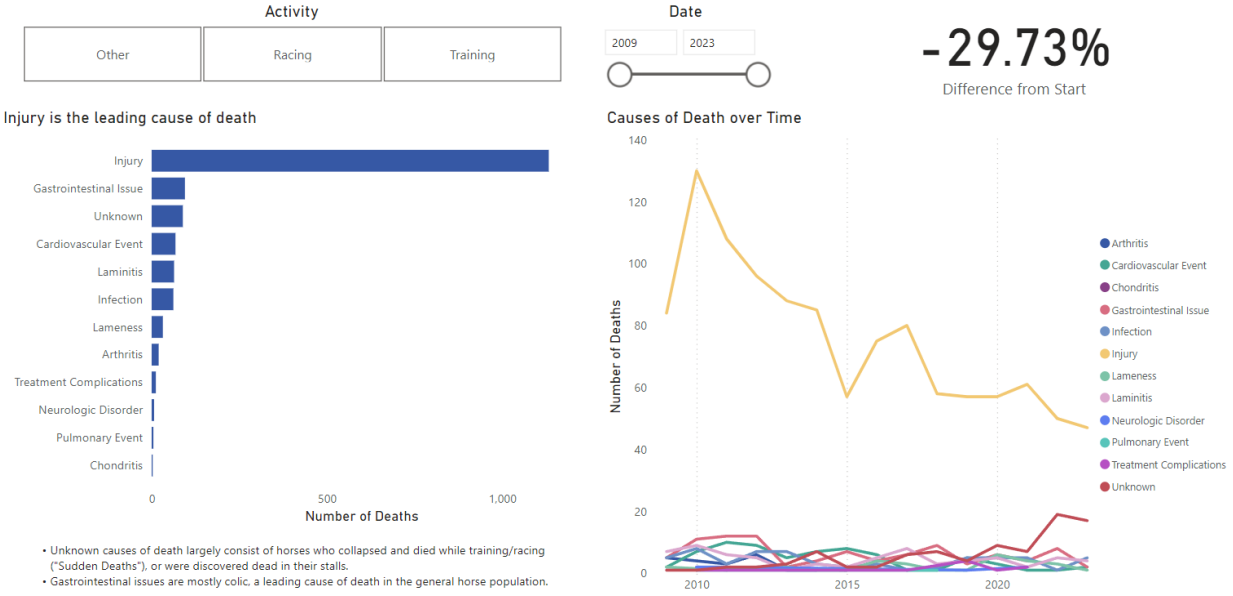


40.5% of fatalities were associated with racing, and these fatalities have decreased by 25.5% since 2009. Nearly 35% of fatal incidents resulted from training, and from 2018 to 2022, that is where the most fatalities occurred. Again, these are only numbers for horses who died during training on these tracks, not all horses who may have died training across the state. This is

somewhat concerning since there hasn't been much change in the numbers of training fatalities over time, but there was a 50% decrease from 2022 to 2023.

The majority of reported non-fatal injuries occur while racing, with only 14 total non-fatal training injuries reported. Considering the training-related fatalities, it may be reasonable to assume that these injuries are not reported.

Causes of Death

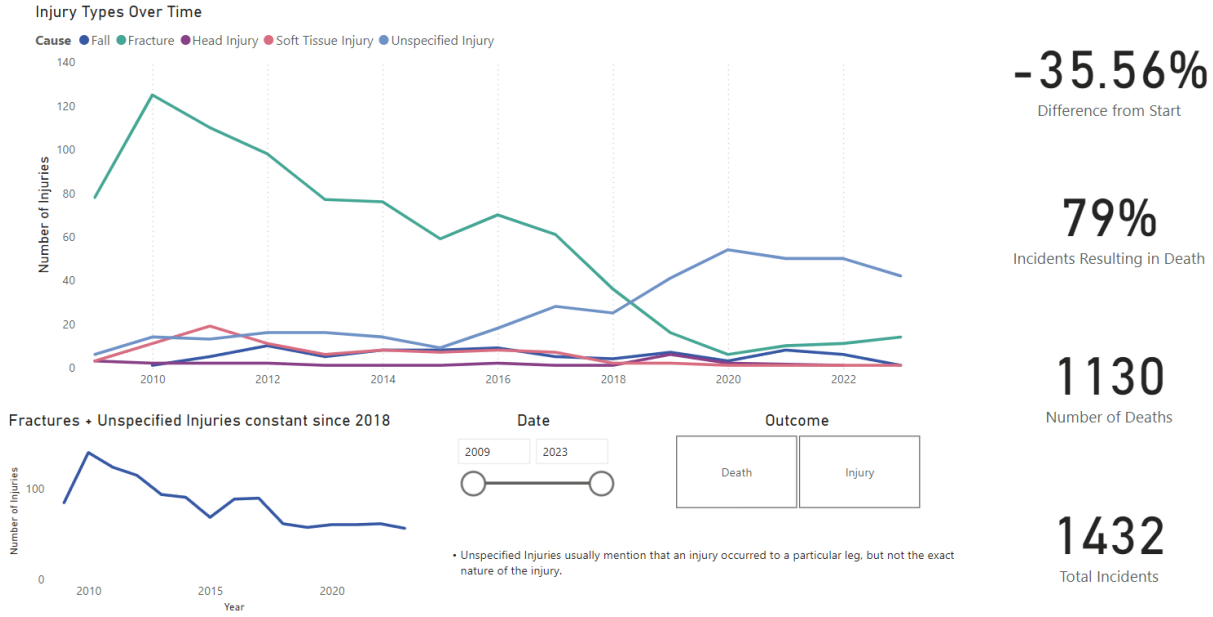


The data includes a short description of the incident, which was used to define some broad categories to describe cause of death. Injury is by far the most common cause of death in racehorses, but the number of incidents has declined by 44%, indicating that reducing fatal injury has driven the decrease in fatalities. There has been an uptick in "unknown" causes of death starting in 2022 for racing and training deaths.

For both racing and training, the top three causes of death are injury, cardiovascular events, and "unknown". For these horses, the "unknown" causes are sudden deaths- where the horse collapses and dies on the track or shortly after exercise. Causes associated with this type of death include pulmonary hemorrhage (bleeding from the lung), heart failure, and blood vessel ruptures (Lyle et al., 2011).

In the deaths that occurred at other times, injury still leads, but more of the other common causes of equine death are seen. Gastrointestinal issues, or colic, and laminitis are common causes of death in the general horse population. There are no clear trends with these causes of death over time – many of these are things that can happen to any horse, and the number of incidents for these is quite low compared to injury counts seen previously.

Injury Types



The most common injuries are fractures. The number of fractures starts to steeply decline in 2018, but at the same time the number of unspecified injuries increases. These unspecified injury descriptions tend to mention that a particular leg was injured but do not go into detail on the nature of the injury. If fractures and unspecified injuries are added together that sum stays constant from 2018 onwards. It seems reasonable that many of these injuries are in fact fractures.

The unspecified injuries since 2018 have a fatality rate of 85%. Fracture injuries have a fatality rate of 91%, compared to other injury types that range from 30-64%. Comparing these rates supports the hypothesis that many of these injuries are fractures. Unlike humans, dogs, or cats, horses cannot simply be put in a cast or have a leg amputated to deal with these injuries. Horses cannot do well with only three legs, as they are simply too heavy (Mather, 2023). Trying to distribute all their weight onto three legs instead of four makes those remaining feet prone to issues like laminitis that could ultimately lead to euthanasia anyway. Together, the fracture and unspecified injuries are down 33% compared to 2009, and the cases resulting in death are down 42.5%.

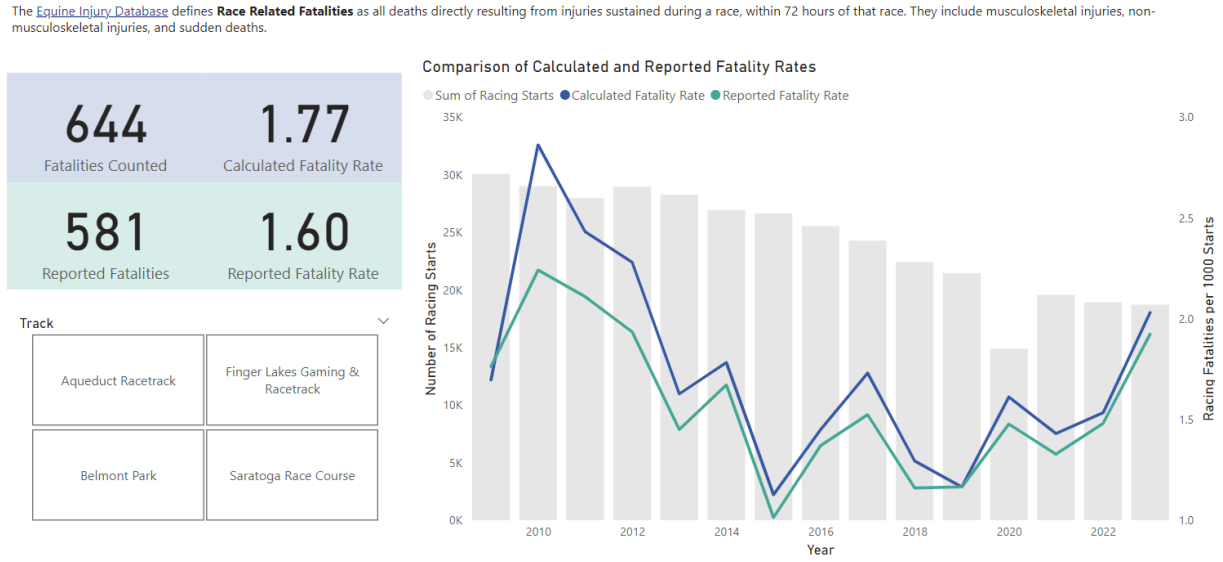
Conclusion

Overall, there has been progress made at the New York thoroughbred racing tracks since 2009. The number of fatal incidents has decreased for the past three years, with a 29.7% decrease in fatal incidents since 2009. This decrease in fatalities seems to be caused by a decrease in fatal injuries, mostly fractures. The number of fatal injuries caused by fractures and unspecified injuries suspected to be fractures has decreased by 42.5% since 2009. Measures taken to reduce racing fatalities appear to be working.

However, questions remain about training fatalities – the quantity of these hasn't changed much over time and these incidents make up 35% of the fatalities that have occurred. Training

injuries don't seem to be included in this data, and information about training starts to calculate rates may help put this data into better perspective.

Appendix – EID Data Comparison



The standard used by the Jockey Club to report racing fatalities is the number of fatalities per 1000 racing starts. Since the data I used contained incidents outside of racing, I opted against trying to use racing starts alone to normalize the data because that assumes racing starts are proportional to training starts and the number of horses otherwise at the track. Here, race-related fatalities counted in the data were compared to the numbers reported by the Jockey Club, using the number of racing starts provided by the EID to calculate the fatality rates. Since 2013, the number of fatalities found in the NYSGC data differs from the reported numbers by a maximum of five deaths. Since the EID classifies race-related deaths as those that occurred within 72 hours, the extra deaths may be horses that died beyond that time limit.

Sources

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