

## Health & Physiology

# What can science tell us about mortality and survival in Game of Thrones?

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### ABSTRACT

*Fatal injuries caused by assault and operations of war are commonplace in the lands of Westeros and Essos. Switching allegiances is a key factor to increasing chances of survival.*



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Does it all come down to a roll of the dice, or are there important underlying factors that determine who wins and who dies when they play the game of thrones?

*Game of Thrones* is a popular HBO television series that has captured the imagination of more than 100 million viewers worldwide. The fantasy drama is renowned for its violent plot lines and graphic portrayal of the deaths of its characters.

Fans of *Game of Thrones* have learnt not to get overly attached to their favorite characters, because, sooner or later, chances are they will end up dead. It would seem that no one is safe, no matter how

popular or seemingly integral to the plot line the character may be. But perhaps science can help us understand why some characters are more likely to die?

In anticipation of the final season of *Game of Thrones*, we decided to take a scientific look at the first seven seasons to see what we could learn about mortality and survival in the series. We set out to determine exactly how long a character survived in the series and to identify characteristics and attributes that were important for survival.

In addition, we also described the causes and circumstances of deaths using classification codes

from the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM).

The main findings from our analyses were published in the journal [Injury Epidemiology](#). We found that more than half of 330 important characters (56%) had died by the end of the seventh season. The survival time of individual characters varied widely, ranging from 11 seconds to over 57 hours. The probability of dying within the first hour after first appearing in the series was about 14%.

We found that the most common cause of death was injury (74%), in particular, wounds of the head and neck, including 13 decapitations. Only two deaths from natural causes occurred during the seven seasons. The remainder of deaths were from burns (12%) or poisonings (5%). The most common circumstances of deaths were assault (63%) and operations of war (25%).

While these findings may not be surprising for regular viewers of *Game of Thrones*, we have also identified several factors that are associated with better or worse survival, which may help us to speculate about who will prevail in the final season. Characters are more likely to survive if they are female and highborn (i.e. belong to the aristocracy). But the most important survival factor is having switched allegiances during the series. According to our analysis, characters like Sansa, Arya, and Brienne have the best chances of surviving, while things are looking grimmer for Cersei and Daenerys.

Most people probably do not think twice about high rates of violent deaths in a fantasy drama television series, but it is worth noting that high rates of violence are not without precedent in human history. In his book [The Better Angels of Our Nature: Why Violence Has Declined](#), Steven Pinker adeptly summarizes the available data on violence in human history, illustrates the precipitous decline over time, and identifies the main historical forces that have contributed to this decline.

We would argue that the ubiquity of violent deaths in the world of *Game of Thrones* may be in large part attributable to factors like the ones highlighted by Pinker. For instance, the rulers' *raison d'être* being conquest rather than commerce, an absence of stable democratic government structures, a lack of resilient public institutions that can deliver public goods (e.g. schools and hospitals), and no implementation of evidence-based violence prevention policies.

Television series like *Game of Thrones* may help us reflect on our current situation. We are privileged to be living in relative safety and enjoying the benefits of the tremendous progress that have been made over millennia, centuries, and decades – in particular in terms of violence reduction. At the same time, we are also reminded that none of this should be taken for granted. We need to be vigilant and continue to protect and invest in the institutions, systems, and structures that contribute to this progress.