[**Tunnel failures and collapses: learning from mistakes.**](https://www.linkedin.com/pulse/tunnel-failures-collapses-learning-from-mistakes-spyridis/) **[[1]](#footnote-1)**

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### Reflections from the World Tunnel Congress 2016.

It was good to see tunneling professionals gathering their interest around the especially dedicated session on Risk management, in the World Tunnel Congress 2016 which recently took place in San Francisco. There were very insightful presentations from renowned professionals in the field, from various viewpoints such as contracting practices, numerical and probability-based evaluations, management programmers and high-profile case studies. I was also glad to co-author [**a paper with meta-analysis stats on failures of tunnels**](http://www.rulerconsult.com/wp-content/uploads/2016/05/WTC2016-Poster-v1-3.pdf) under construction and in operation, and with a focus on insurance impacts.

This comes to add-on to a small family of studies already existing in literature, where tunnel failure trends are presented. These deliver characterization of failures by construction method, ground/soil conditions, types of failure, or even with regard to work culture and experience of the ones involved. I am listing some of these very interesting studies below. With an overview of these studies, including ours, one can easily discern the reasonable correlations of as for example shallow/soft ground tunneling and daylight collapses, excessive convergences in high-stress rock tunneling, or tunneling in regions where the local workforce lack previous tunneling experience or safety ethics. Besides, one can identify cases with very high impact - very low likelihood effects (referred to as ‘black swan event’), which hold an unfortunately large portion of losses in terms of casualties and money; these are due to hazards that are unforeseen or even unforeseeable.

It is also worth mentioning some incidents in operating tunnels, which result from faults in design, specification, and construction, incubating since the beginning of the tunnels operation, and occurring unexpectedly at some point throughout the life time of the structure (as for instance the collapses in the Boston I-90 or the Tokyo Sasago tunnel). These are likely to have been avoided, were the tunnels’ inspection and maintenance plans are more educated and vigorous.

With this opportunity, it’s worth highlighting, that details from post-failure reports and forensics investigations should be circulated with the public as much as possible. The experiences (and the mistakes) of others are significant lessons for ourselves – and vice versa. Thankfully we see dedicated [**databases**](http://www.structural-safety.org/) and well-visited forensics engineering conferences . We also see the words “lessons learnt” increasingly being used instead of “success story” in project presentations.

Statistics of failures are very useful to understand where our industry suffers. And then it is a duty of our industry to honestly and openly share information from failures, in order to increase awareness and knowledge with our fellow professionals and to minimize risk for our society.

1. <https://www.linkedin.com/pulse/tunnel-failures-collapses-learning-from-mistakes-spyridis/> [↑](#footnote-ref-1)