Can we use Reliability Indices to estimate the impact of Undergrounding?

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Background

Undergrounding is often suggested as one of the ways to build a more resilient electrical infrastructure and thereby improve reliability.

It's Time for Utilities to Reconsider Undergrounding Power Lines – T&D World 2019

Converting existing overhead lines to underground, by nearly all measures, is prohibitively expensive and generates modest benefits, at best, in reliability and system longevity. – North American Wood Pole Council 2017

Cost of undergrounding power lines is no excuse – San Francisco Chronicle 2019

Undergrounding is not new, many utilities with various % underground.
• Can the effect of undergrounding be seen in the Reliability data?
• How large might the Reliability Benefit be?
SAIFI
the average number of interruptions that a customer would experience

SAIDI
the average outage duration for each customer served

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A set of outages which occurred during a specific time and location and which combined, exceeds historically expected outage duration (SAIDI) for at least one day (as defined in IEEE 1366-2012)
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The increase in undergrounding can be correlated with lower Reliability Indices.

Correlates with both SAIFI and SAIDI.

System wide it could be modest.

Likely significant in strategic areas.