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Background...

Layout



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Transition...

Deliverables



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Problem Statement

- Work with the National Studies on Air Pollution and Health (NSAP) research group, with the Harvard T.H. Chan School of Public Health (HSPH) to:
 - Improve existing data imputation procedures
 - Enhance machine learning models of $PM_{2.5}$ air pollution values across the United States

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Background

- HSPH aims to significantly improve pollution interpretation models in order to better understand how pollution impacts public health across the U.S.
- Even at levels below the current EPA standard, there is evidence that an increase of 10 μg per cubic meter in $PM_{2.5}$ is associated with a 13.6% increase in the risk of death.

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Background - $PM_{2.5}$

- $PM_{2.5}$ (a.k.a. Fine Particulate Matter)
 - Airborne particulate matter is classified as $PM_{2.5}$ if it has a diameter of 2.5 micrometers or less
 - Originates from natural sources (volcanoes, forest fires, fields) and manmade sources (factories, industrial chemicals)

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Background - $PM_{2.5}$

- $PM_{2.5}$ (a.k.a. Fine Particulate Matter)
 - Evidence suggests $PM_{2.5}$ levels are positively correlated with multiple diseases and conditions affecting the heart and lungs, with negative effects on health and quality of life

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Data

- Data from 3,152 $PM_{2.5}$ monitors and 15 other variables across the US every day over the course of 16 years (2000 - 2016) for a total of 13,386,760 observations.
- Covariates include information on various weather, topographic, and satellite data.

