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Environment International 158 (2022) 106897

Available online 30 September 2021

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Publicly available low-cost sensor measurements for PM<sub>2.5</sub> exposure modeling: Guidance for monitor deployment and data selection

## 5. Conclusions

This study is among the first to evaluate the benefits of incorporating low-cost PM<sub>2.5</sub> measurements - including publicly available consumer-deployed devices - for PM<sub>2.5</sub> exposure prediction at cohort residential locations. This study also proposes a novel practical guidance tool for monitor deployment and/or data selection in monitoring campaigns using a PCA-based similarity metric. The increasing availability of consumer-deployed sensors such as PurpleAir represents a valuable opportunity for improving exposure models when applied in a rigorous framework. While our observations were made in a well-monitored region, we observed improvements in estimation by incorporating these data. More availability of spatially dense low-cost monitoring data, especially if deployed in resource-restricted environments with insufficient regulatory air quality stations, holds promise for improved PM<sub>2.5</sub> exposure assessment and epidemiological analyses.