

## 背景

研究表明，空氣污染物加劇了新冠肺炎的傳播率<sup>1</sup>和死亡率<sup>2</sup>。新冠肺炎和嚴重污染的空氣都會對人體的呼吸系統造成致命性的影響。由於居民生活在美國污染最嚴重地區之一，新冠肺炎對洛杉磯的居民的影響也更加嚴重了。

## 不成比例的影響

根據美國肺臟協會，洛杉磯市區是全美空氣質量最差的地區之一。洛杉磯在每年的細顆粒物(particulate matter)暴露量中排名第4，在24小時細顆粒物暴露量中排名第6<sup>3</sup>。洛杉磯並且是過去幾十年裏臭氧污染最嚴重的城市<sup>4</sup>。高等級的空氣污染會延長新冠肺炎病毒在空氣中的距離和停留時間，並加快病毒的傳播和加劇新冠肺炎的死亡率。

## 細顆粒物是如何影响新冠肺炎的



細顆粒物的每立方米<sup>3</sup>與新冠肺炎的死亡率增加8%有關<sup>5</sup>



短時期接觸高濃度的細顆粒物2.5、細顆粒物10和臭氧會增加感染新冠肺炎的風險<sup>6</sup>



高水平的細顆粒物10會加速新冠肺炎的感染<sup>7</sup>



當空氣污染濃度增加20%時，新冠肺炎的確診病例幾乎翻了兩倍<sup>8</sup>

1. Wu, X., Nethery, R., Sabath, B., Braun, D., & Dominici, F. (2020, January 01). Exposure to air pollution and COVID-19 mortality in the United States: A nationwide cross-sectional study (<https://www.medrxiv.org/content/10.1101/2020.04.05.20054502v1>) \*此文章並未經同行評審

2. Zhu, Y., Xie, J., Huang, F., & Cao, L. (2020, July 20). Association between short-term exposure to air pollution and COVID-19 infection: Evidence from China. (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7159846/>) \*同行評審

3. State of the Air, 2020. American Lung Association, pg. 5. (<http://www.stateoftheair.org/assets/SOTA-2020.pdf>)

4. Ibid.

5. Wu, X., Nethery, R., Sabath, B., Braun, D., & Dominici, F. (2020, January 01). Exposure to air pollution and COVID-19 mortality in the United States: A nationwide cross-sectional study (<https://www.medrxiv.org/content/10.1101/2020.04.05.20054502v1>) \*此文章並未經同行評審

6. Zhu, Y., Xie, J., Huang, F., & Cao, L. (2020, July 20). Association between short-term exposure to air pollution and COVID-19 infection: Evidence from China. (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7159846/>) \*同行評審

7. Setti, L., De Gennaro, G., Barbieri, P., Perrone Grazia, M., Piazzalunga, A., Borelli, M., Di Gilio, A., Piscitelli, P., Miami, A. (2020, April 17). The Potential Role of Particulate Matter in the Spreading of COVID-19 in Northern Italy: First Evidence-based Research Hypotheses (<https://www.medrxiv.org/content/10.1101/2020.04.11.20061713v1.full.pdf>) \*此文章並未經同行評審

8. André, Bo Pieter. (2020, May 03). Incidence of COVID-19 and Connections with Air Pollution Exposure: Evidence from the Netherlands (<https://www.medrxiv.org/content/medrxiv/early/2020/05/03/2020.04.27.20081562.full.pdf>) \*此文章並未經同行評審