

Analysis claims statistical proof of the COVID-19 seafood market hypothesis is false

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The well-known [study](#) by Worobey et al (2022) claims that the Huanan Seafood Wholesale Market in the Chinese city of Wuhan is the only possible place of origin of the COVID-19 pandemic.

A careful analysis of the evidence has now revealed that the statistical part of the Worobey study is blatantly wrong. This is shown in a new [study](#) published in the *Journal of the Royal Statistical Society Series A: Statistics in Society* on 16 January 2024. The authors are Professor Dietrich Stoyan from TU Bergakademie Freiberg and Professor Sung Nok Chiu from Hong Kong Baptist University.

Where did the coronavirus first emerge to infect the entire globe as a pandemic? A study by 17 authors led by Canadian scientist Michael Worobey came up with a clear answer in 2022: It was the Huanan Seafood Wholesale Market in the Chinese city of Wuhan, which is the only possible place of origin of the COVID-19 pandemic. This study was published in the journal *Science*. And much like the coronavirus, this thesis traveled around the world, not only through the [scientific community](#) but also through the [mass media](#).

Dietrich Stoyan from TU Bergakademie Freiberg and his Chinese colleague Sung Nok Chiu from Hong Kong Baptist University analyzed the work of Worobey and colleagues with regard to the statistical method used. Their verdict is clear: The statistics do not prove that the [market](#) in Wuhan was the early epicenter of the COVID-19 pandemic. The main statistical test used is nonsensical, according to Stoyan, and there are other flaws in the statistical reasoning.

Stoyan and Chiu used the same geostatistical data as Worobey and colleagues. These are the residential addresses of the first 155 coronavirus cases. These addresses were entered as points on a map. In the *Science* article, this dot pattern is compared with dot patterns generated by simulation, finding significant differences. However, since these artificial dot patterns are incorrectly chosen, the test used must always reject the hypothesis that a location other than the market is the epicenter.

In other words, Worobey and colleagues have excluded locations other than the Huanan Seafood Wholesale Market from the outset. However, other locations in the vicinity of the market could also be possible candidates: A large railway station and a huge shopping complex with hotels and restaurants. "Worobey's study has not proven where the epicenter of the global coronavirus [pandemic](#) was located. Research on this question is still in its infancy," explains Stoyan.

More information: Dietrich Stoyan et al, Statistics did not prove that the Huanan Seafood Wholesale Market was the early epicentre of the COVID-19 pandemic, *Journal of the Royal Statistical Society Series A: Statistics in Society* (2024). [DOI: 10.1093/jrssa/qnad139](https://doi.org/10.1093/jrssa/qnad139)

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