

A Causal Analysis of Human Mobility on Colonization of Disease-Carrying Tiger Mosquitoes in Spain

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Poster #20



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Presenter

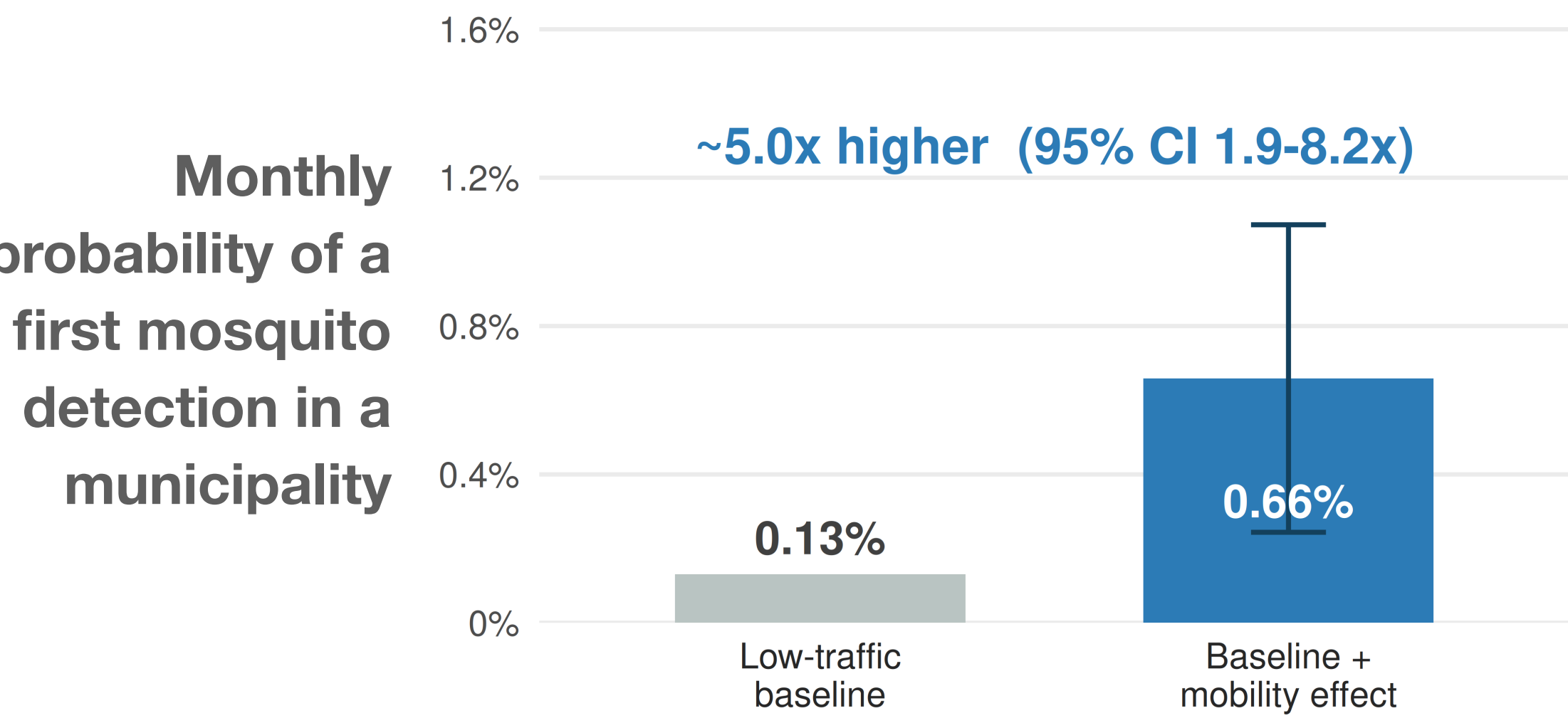


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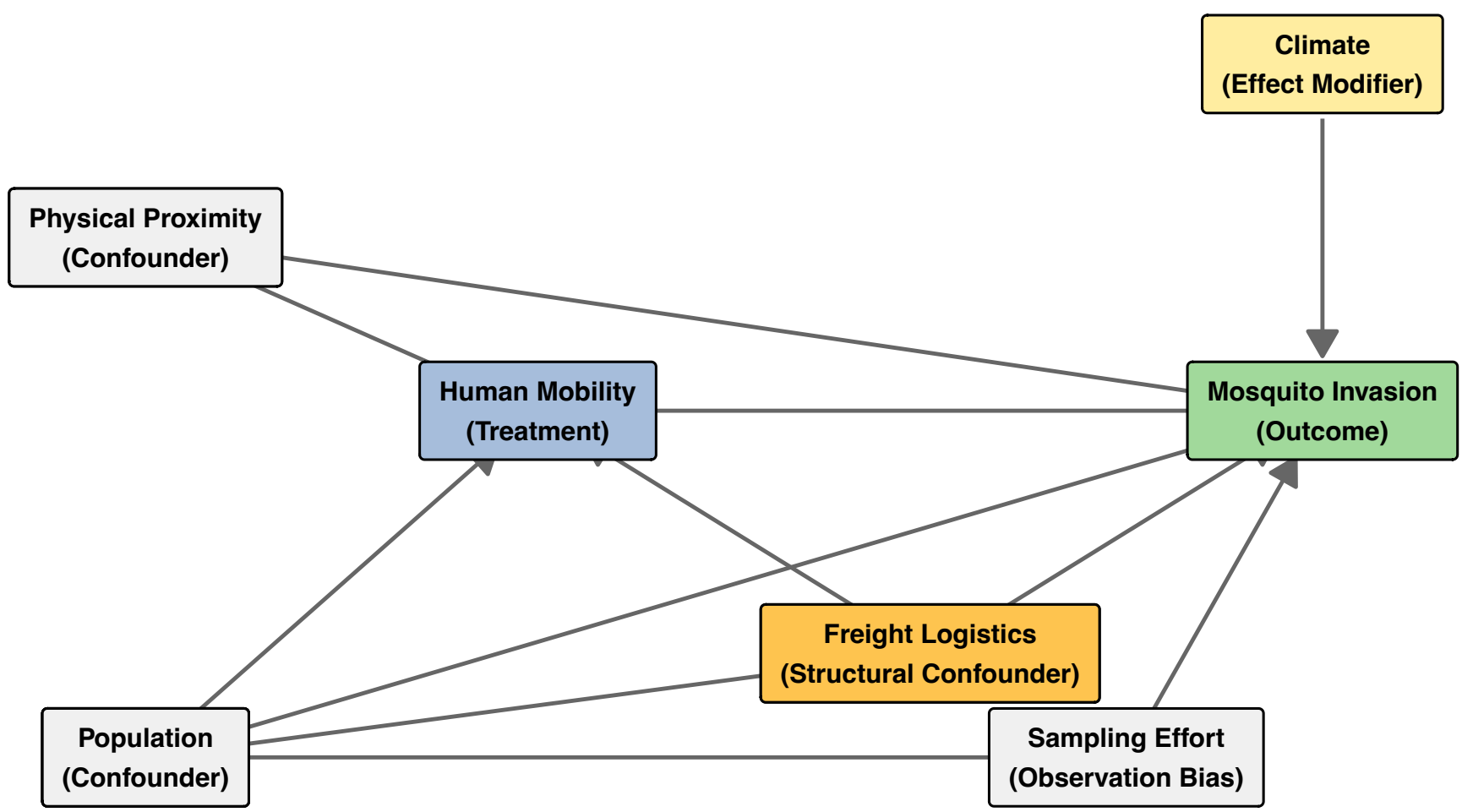
RESULTS

Mosquito colonization risk is multiplied by 5x on active human mobility routes

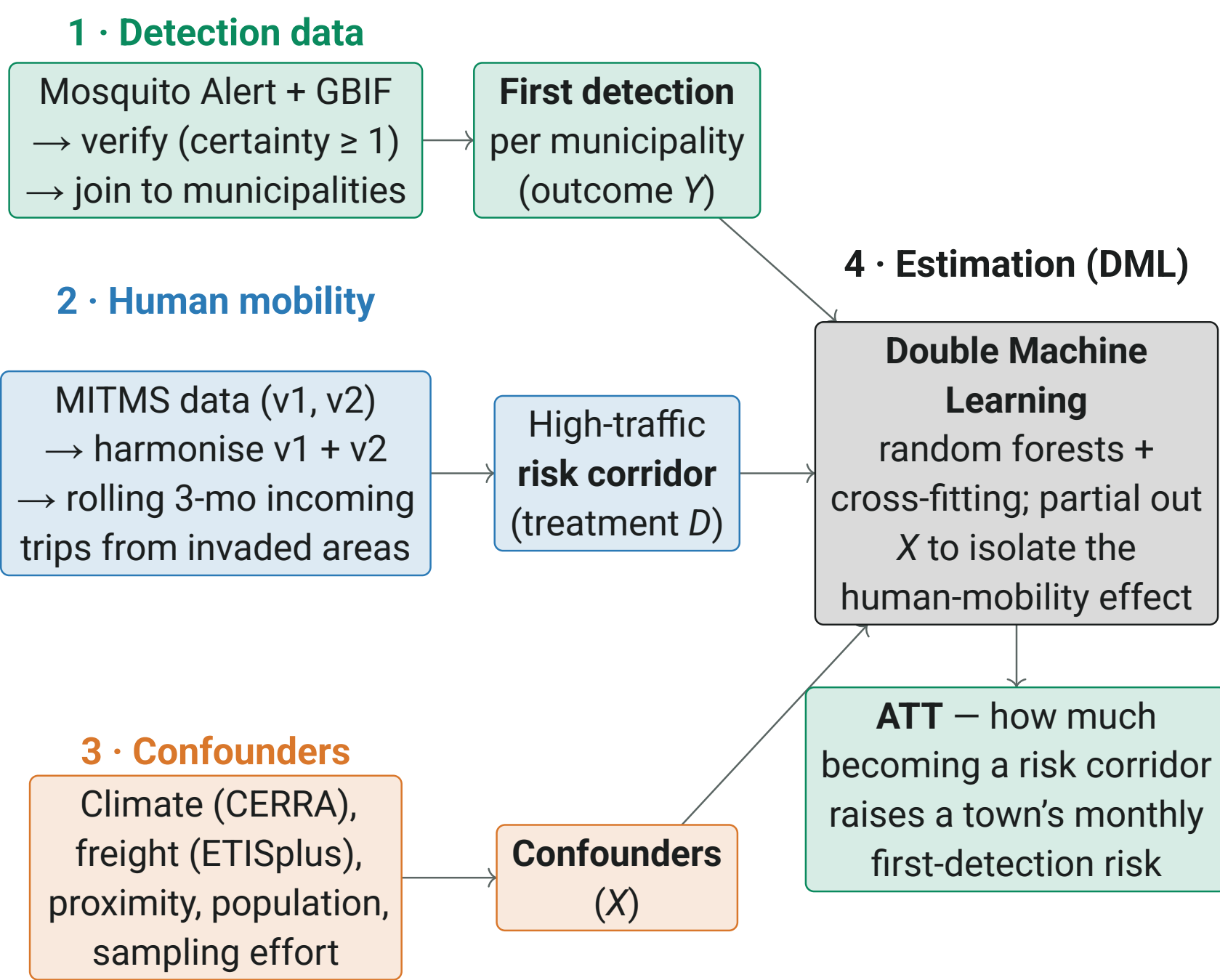


METHODS

Causal Directed Acyclic Graph



Processing and Modelling Pipeline

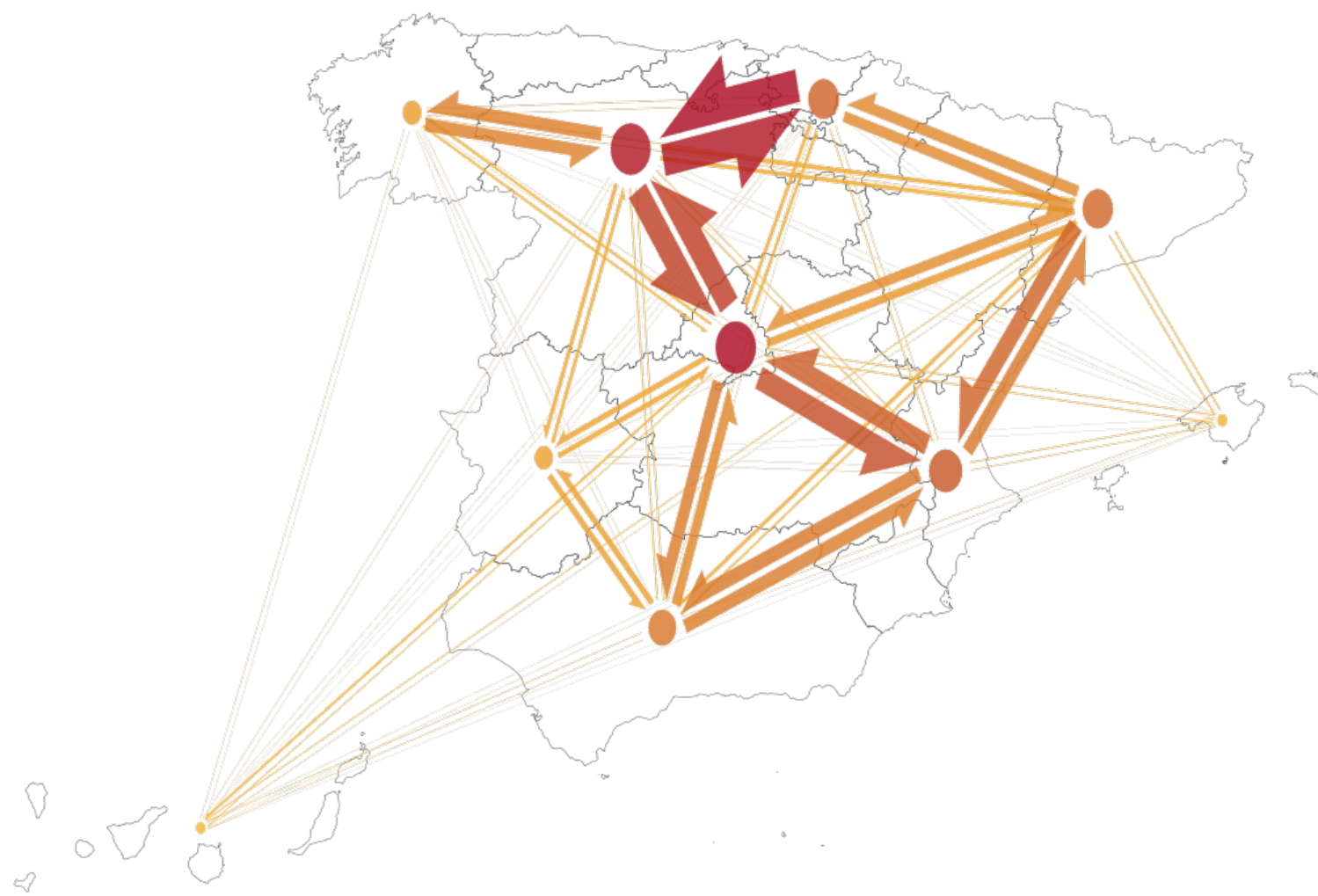
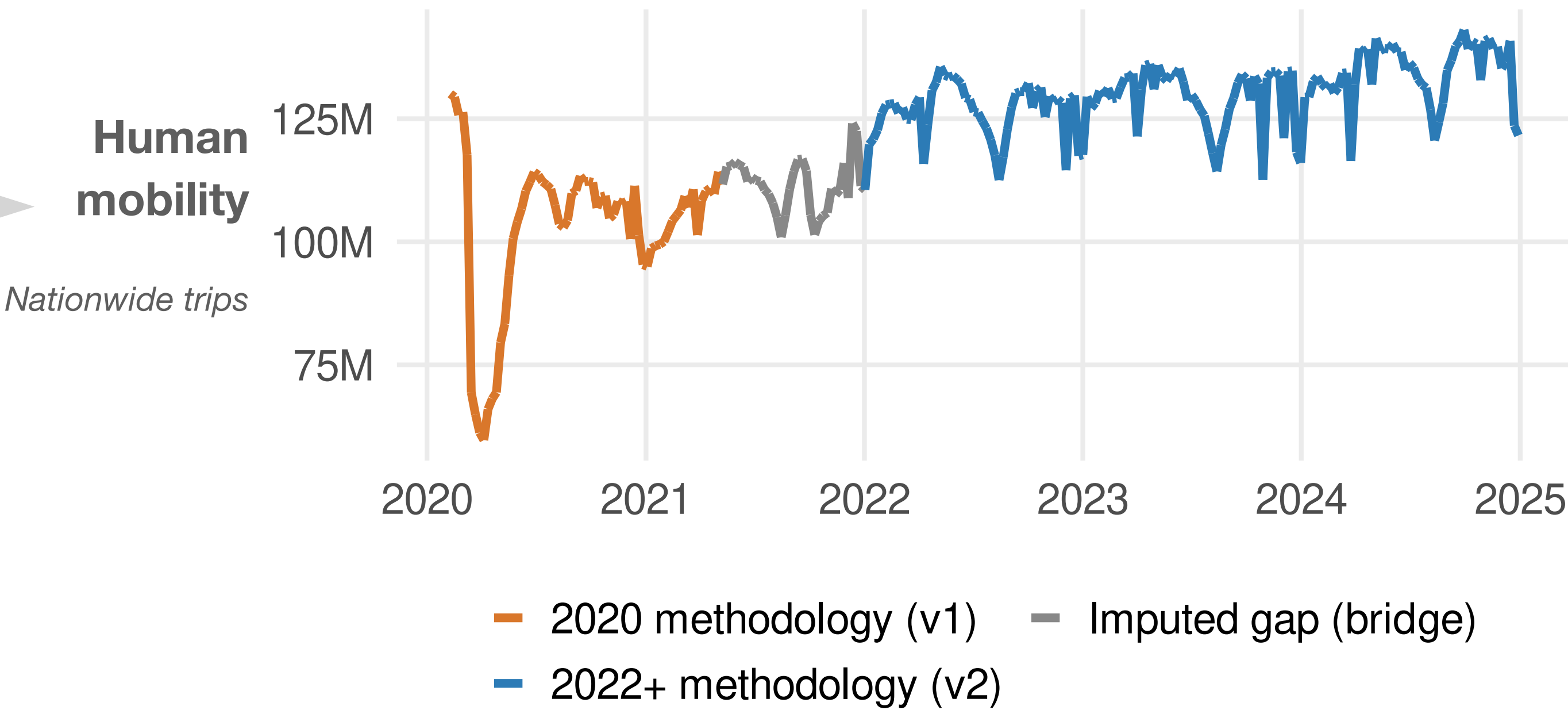


DATA

spanishoddata

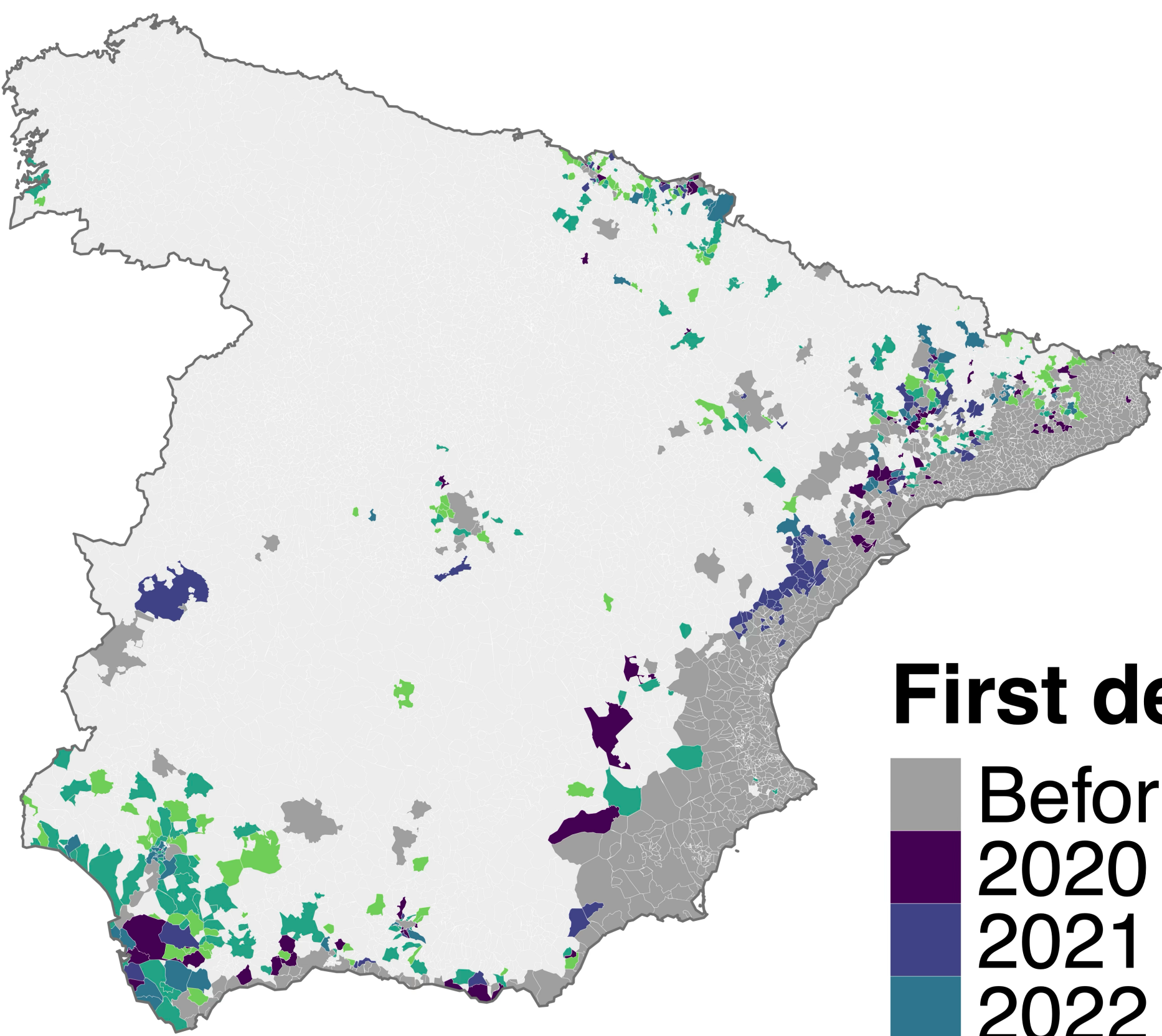
R package to access national high-quality and open-access datasets on movement patterns derived from mobile telephone datasets (Kotov et al., 2026). <https://ropenspain.github.io/spanishoddata/>

Human mobility between 2600+ municipalities in Spain based on mobile phones activity of Orange (~14 million customers). Hourly origin-destination matrices for almost 5 years.



2014-2024

User submitted (via Android and iOS mobile applications) and expert verified reports and photographs of Tiger Mosquitoes containing date, time and geographic coordinates.



We use human mobility because mosquitoes can be transported by cars (Eritja et al., 2017).

We use Mosquito Alert reports as they are as reliable as mosquito traps (Palmer et al., 2017) and give infinite time resolution, whereas nation wide trap reports are only accurate to a year.

References

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Palmer, J.R.B., Oltra, A., Collantes, F., Delgado, J.A., Lucientes, J., Delacour, S., Bengoa, M., Eritja, R., Bartumeus, F., 2017. Citizen science provides a reliable and scalable tool to track disease-carrying mosquitoes. *Nat Commun* 8, 916. DOI:10.1038/s41467-017-00914-9

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Agusti Escobar Rubies, & Mosquito Alert. (2026). MosquitoAlert/Data. Zenodo. DOI:10.5281/zenodo.597466

Image Sources
<https://www.mosquitoalert.com/en/>
<https://www.transportes.gob.es/>