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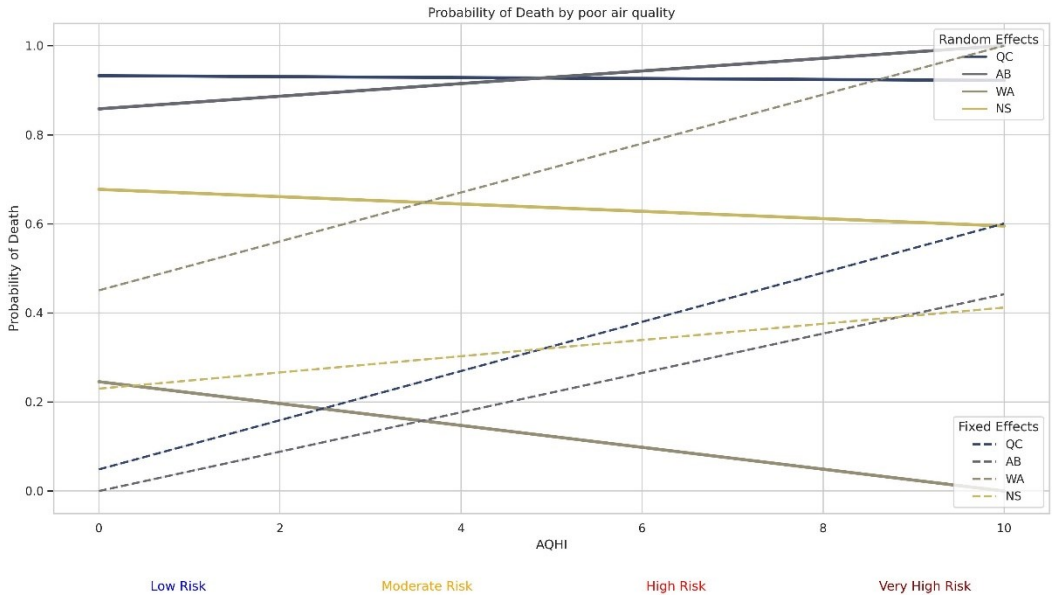
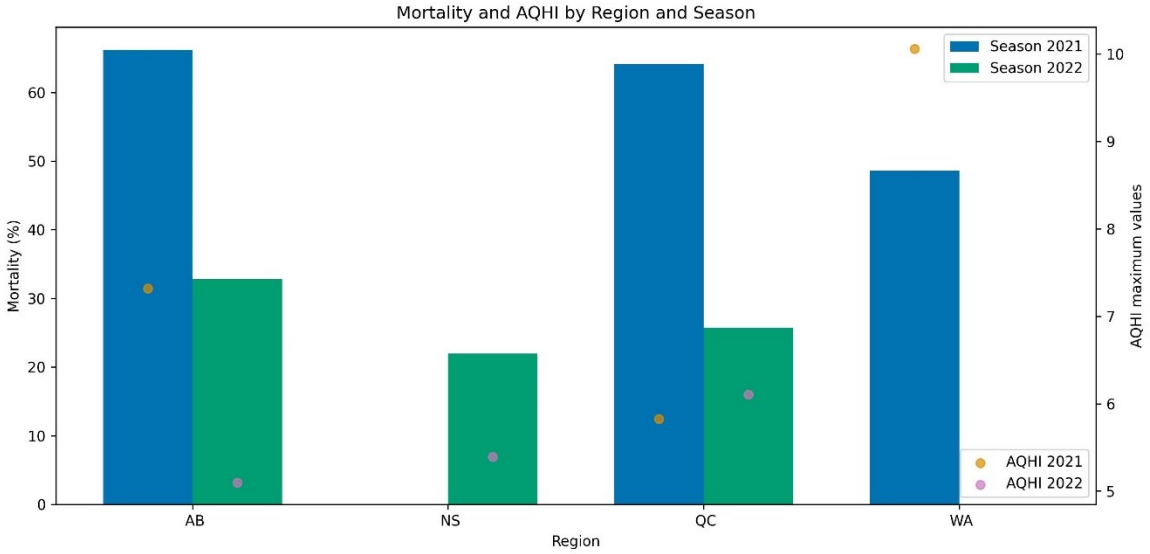
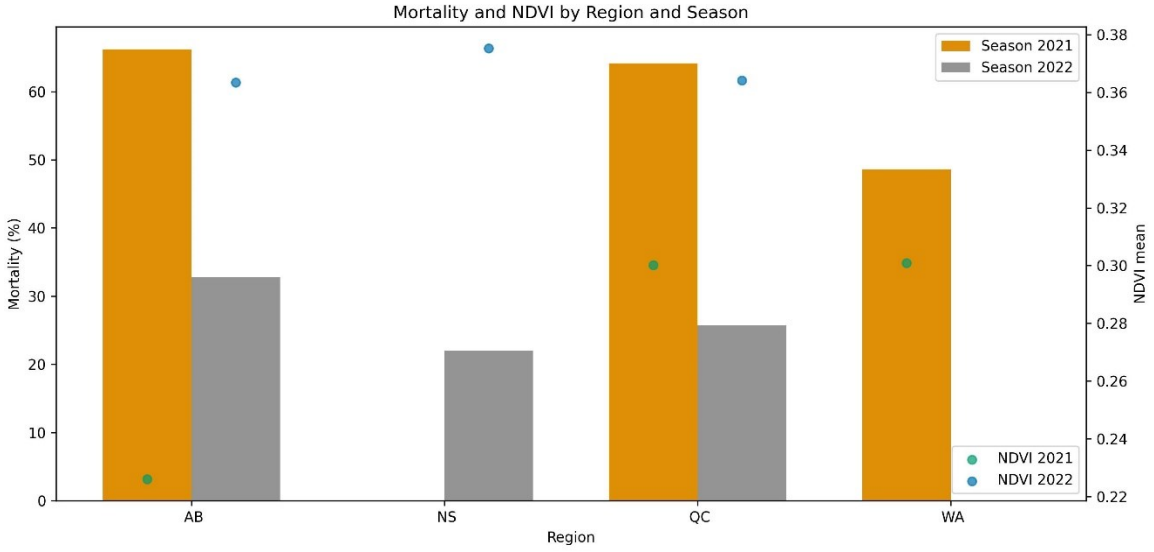
563 **Extended Data Fig. 1 | Map of the observations data.** The dataset of the operations
564 was retrieved from a subset of anonymised data of the Nectar company.



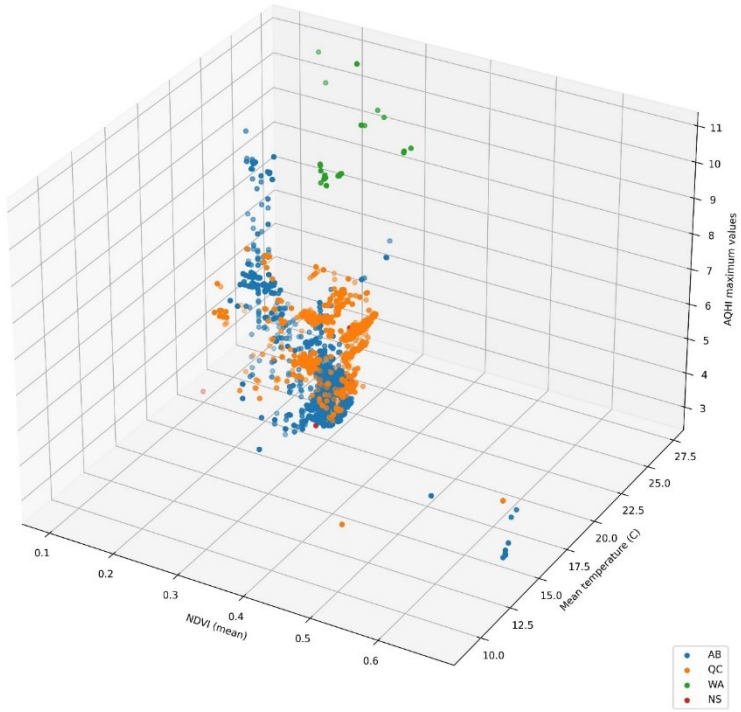
Extended Data Fig. 2 | Reaction norm for each region. As we allow the intercept and slope to vary in function of the region, we check here the mixed effect of the model, showing a different pattern for each region.



Extended Data Fig. 3 | Honey bee hives mortality, air quality index showed by region and season. The regions analysed were Alberta; AB, Nova Scotia; NS, Québec; QC, and Washington; WA.

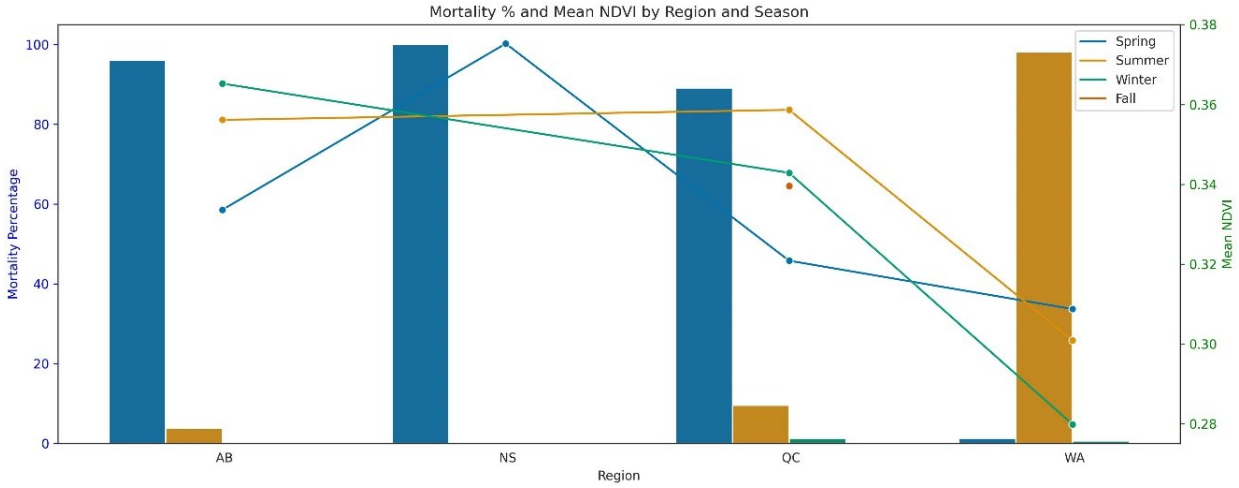


Extended Data Fig. 4 | The mortality of Honey bee hives and vegetation index showed by region and season. The regions analysed were Alberta; AB, Nova Scotia; NS, Québec; QC, and Washington; WA.



Extended Data Fig. 5 | Honey bee hive mortality is shown by the relationship between the vegetation, air quality index, and the mean temperature in the regions. The regions analysed were Alberta; AB, Nova Scotia; NS, Québec; QC, and Washington; WA.

Extended Data Fig. 6 | AUC for prediction model applied to the honey bee hives dataset.



Extended Data Fig. 7 | Analysis of mortality by region considering the seasonality and the available resources. The regions analysed were Alberta; AB, Nova Scotia; NS, Québec; QC, and Washington; WA.

Extended Data Table 1 | Linear Mixed Models comparison

Model	AIC	Convergence	Model	AIC	Convergence
1	41285.987	Yes	19	37494.264	No
2	40122.505	Yes	20	38295.424	No
3	40234.904	No	21	38525.971	Yes
4	40122.505	Yes	22	38397.437	No
5	39848.31	No	23	38872.01	Yes
6	39840.602	Yes	24	38650.075	No
7	40240.803	No	25	38775.158	Yes
8	39960.754	Yes	26	38855.786	Yes
9	40024.883	No	27	38473.078	Yes
10	39985.941	No	28	38474.123	Yes
11	39828.806	No	29	38587.796	Yes
12	38612.395	Yes	30	38553.031	Yes
13	39868.089	Yes	31	38438.567	Yes
14	39855.92	Yes	32	38434.13	No
15	40126.958	Yes	33	***38394.665***	Yes
16	39785.363	No	34	39828.806	No

17	38549.145	Yes	35	38330.505	No
18	38603.699	Yes			

Results from the linear mixed models using the seasonal data 2021-2022 for the provinces of Quebec, Alberta, Nova Scotia, and the state of Washington. Number of observations: 318282. Note that we finally used model 33 because it was the model with the lowest AIC, and we were interested in understanding the effect of each environmental variable on the beehive mortality, including the random effects that the air quality can have over the different beehive locations.

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