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| **Table S1. Principal components factor analysis of household environment variables, Coatepeque and Génova, Guatemala, 2017 (n=508)** | |
| Characteristic | Factor pattern |
| Electricity | 0.31 |
| Running water | 0.71 |
| Television | 0.43 |
| Landline telephone | 0.35 |
| No pit latrine | 0.41 |
| Cable television | 0.65 |
| Garbage service | 0.72 |
| No water well | 0.60 |
| Sewer system | 0.72 |
| Number of rooms in house | 0.43 |
| *Eigenvalue* | 3.16 |

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| **Table S2. Full model outputa of adjustedb associations between geographical distances to paved roads and immature mosquito abundance, Poisson regression, Coatepeque and Génova, Guatemala, 2017.** | | | | | | | | | |
|  | Total number of larvae per household | | | Total number of pupae per household | | | Number of positive containers per household | | |
| Variable | β | SE | P-value | β | SE | P-value | β | SE | P-value |
| Distance from nearest paved road (10-m increase) | -0.04 | 0.01 | <0.01 | -0.07 | 0.03 | <0.01 | -0.04 | 0.01 | <0.01 |
| Environmental capital (ref: middle) |  |  | 0.50 |  |  | 0.82 |  |  | 0.25 |
| Low | -0.03 | 0.11 |  | -0.10 | 0.24 |  | -0.06 | 0.11 |  |
| High | -0.13 | 0.11 |  | -0.14 | 0.34 |  | -0.18 | 0.11 |  |
| Survey period (ref: February-March) | 0.40 | 0.15 | 0.06 | 0.37 | 0.21 | 0.08 | 0.42 | 0.18 | 0.06 |
| Urban residence (ref: rural) | 0.18 | 0.11 | 0.11 | 0.01 | 0.24 | 0.99 | 0.24 | 0.11 | 0.03 |
| Number of people / household | -0.01 | 0.02 | 0.81 | 0.04 | 0.03 | 0.26 | -0.01 | 0.02 | 0.36 |
| Cleaned containers (ref: no) | -0.09 | 0.09 | 0.34 | 0.01 | 0.21 | 0.99 | -0.07 | 0.08 | 0.43 |
| Fumigation (ref: no) | -0.10 | 0.11 | 0.39 | -0.40 | 0.28 | 0.16 | -0.18 | 0.10 | 0.07 |
| Total number of containers | 0.13 | 0.02 | <0.01 | 0.23 | 0.04 | <0.01 | 0.22 | 0.02 | <0.01 |
| aThese estimates should be interpreted with caution, because the relationships between the covariates and outcomes are not adjusted for confounders. Westreich D, Greenland S. The table 2 fallacy: presenting and interpreting confounder and modifier coefficients. American Journal of Epidemiology. 2013;177(4):292-8.  bAdjusted for the other variables listed in the model. Environmental capital was derived from principal components factor analysis and included: number of rooms in the household; presence of electricity, running water, a television, a landline telephone, cable, trash disposal, and sewer system; and absence of a water well and pit latrine. | | | | | | | | | |

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| **Table S3. Full model outputa of adjustedb associations between geographical distances to highways and immature mosquito abundance, Poisson regression, Coatepeque and Génova, Guatemala, 2017.** | | | | | | | | | |
|  | Total number of larvae per household | | | Total number of pupae per household | | | Number of positive containers per household | | |
| Variable | β | SE | P-value | β | SE | P-value | β | SE | P-value |
| Distance from nearest highway(100-m increase) | 0.01 | 0.01 | 0.55 | 0.01 | 0.01 | 0.35 | 0.01 | 0.01 | 0.47 |
| Environmental capital (ref: middle) |  |  | 0.38 |  |  | 0.12 |  |  | 0.32 |
| Low | -0.17 | 0.18 |  | -0.05 | 0.19 |  | -0.19 | 0.16 |  |
| High | -0.12 | 0.10 |  | -0.12 | 0.09 |  | -0.17 | 0.17 |  |
| Survey period (ref: February-March) | 0.28 | 0.12 | 0.10 | 0.23 | 0.10 | 0.17 | 0.25 | 0.15 | 0.20 |
| Urban residence (ref: rural) | 0.17 | 0.02 | <0.01 | -0.02 | 0.04 | 0.67 | -0.02 | 0.04 | 0.67 |
| Number of people / household | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.30 | 0.02 | 0.02 | 0.18 |
| Cleaned containers (ref: no) | -0.07 | 0.06 | 0.22 | 0.03 | 0.03 | 0.41 | 0.03 | 0.03 | 0.41 |
| Fumigation (ref: no) | -0.08 | 0.06 | 0.18 | -0.28 | 0.11 | 0.15 | -0.22 | 0.09 | 0.06 |
| Total number of containers | 0.13 | 0.02 | <0.01 | 0.20 | 0.03 | <0.01 | 0.18 | 0.03 | <0.01 |
| aThese estimates should be interpreted with caution, because the relationships between the covariates and outcomes are not adjusted for confounders. Westreich D, Greenland S. The table 2 fallacy: presenting and interpreting confounder and modifier coefficients. American Journal of Epidemiology. 2013;177(4):292-8.  bAdjusted for the other variables listed in the model. Environmental capital was derived from principal components factor analysis and included: number of rooms in the household; presence of electricity, running water, a television, a landline telephone, cable, trash disposal, and sewer system; and absence of a water well and pit latrine. | | | | | | | | | |

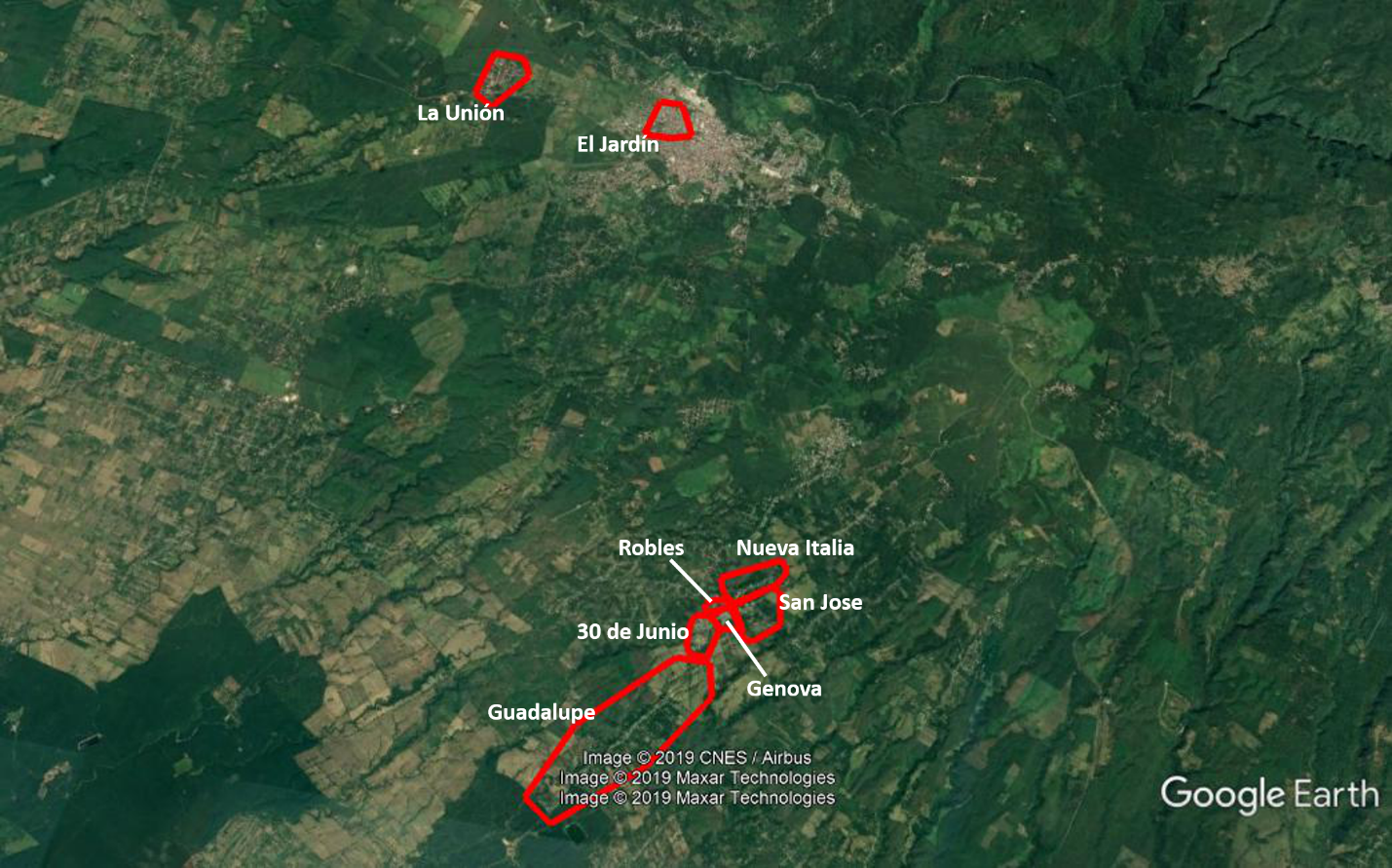
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| **Table S4. Full model outputa of adjustedb associations between geographical distances to houses or structures and immature mosquito abundance, Poisson regression, Coatepeque and Génova, Guatemala, 2017.** | | | | | | | | | |
|  | Total number of larvae per household | | | Total number of pupae per household | | | Number of positive containers per household | | |
| Variable | β | SE | P-value | β | SE | P-value | β | SE | P-value |
| Distance from nearest structure (1-m increase) | -0.03 | 0.01 | <0.01 | -0.05 | 0.02 | 0.02 | -0.03 | 0.01 | <0.01 |
| Environmental capital (ref: middle) |  |  | 0.50 |  |  | 0.83 |  |  | 0.25 |
| Low | -0.07 | 0.12 |  | -0.11 | 0.25 |  | -0.09 | 0.12 |  |
| High | -0.13 | 0.11 |  | -0.13 | 0.35 |  | -0.18 | 0.11 |  |
| Survey period (ref: February-March) | 0.41 | 0.12 | 0.06 | 0.34 | 0.22 | 0.09 | 0.38 | 0.20 | 0.08 |
| Urban residence (ref: rural) | 0.15 | 0.11 | 0.18 | -0.03 | 0.25 | 0.90 | 0.22 | 0.11 | 0.06 |
| Number of people / household | -0.01 | 0.02 | 0.68 | 0.03 | 0.03 | 0.33 | -0.02 | 0.02 | 0.29 |
| Cleaned containers (ref: no) | -0.07 | 0.09 | 0.49 | 0.04 | 0.22 | 0.87 | -0.05 | 0.08 | 0.59 |
| Fumigation (ref: no) | -0.09 | 0.11 | 0.42 | -0.39 | 0.28 | 0.17 | -0.18 | 0.10 | 0.08 |
| Total number of containers | 0.14 | 0.02 | <0.01 | 0.24 | 0.03 | <0.01 | 0.23 | 0.02 | <0.01 |
| aThese estimates should be interpreted with caution, because the relationships between the covariates and outcomes are not adjusted for confounders. Westreich D, Greenland S. The table 2 fallacy: presenting and interpreting confounder and modifier coefficients. American Journal of Epidemiology. 2013;177(4):292-8.  bAdjusted for the other variables listed in the model. Environmental capital was derived from principal components factor analysis and included: number of rooms in the household; presence of electricity, running water, a television, a landline telephone, cable, trash disposal, and sewer system; and absence of a water well and pit latrine. | | | | | | | | | |

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| **Table S5. Associations between geographical distances to roads/structures and immature mosquito abundance, negative binomial regression, Coatepeque and Génova, Guatemala, 2017.** | | | | | | | | | |
|  | Total number of larvae per household | | | Total number of pupae per household | | | Number of positive containers per household | | |
| Variable | β | SE | P-value | β | SE | P-value | β | SE | P-value |
| Distance from nearest paved road (10-m increase) |  |  |  |  |  |  |  |  |  |
| Unadjusted | -0.04 | 0.01 | <0.01 | -0.06 | 0.02 | <0.01 | -0.04 | 0.01 | <0.01 |
| Adjusteda | -0.04 | 0.01 | <0.01 | -0.08 | 0.02 | <0.01 | -0.04 | 0.01 | <0.01 |
| Distance from nearest highway(100-m increase) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.01 | 0.01 | 0.49 | 0.01 | 0.02 | 0.27 | 0.02 | 0.01 | 0.41 |
| Adjusteda | -0.01 | 0.01 | 0.73 | 0.02 | 0.02 | 0.64 | 0.01 | 0.01 | 0.78 |
| Distance from nearest structure (1-m increase) |  |  |  |  |  |  |  |  |  |
| Unadjusted | -0.02 | 0.01 | <0.01 | -0.06 | 0.01 | <0.01 | -0.04 | 0.01 | <0.01 |
| Adjusteda | -0.02 | 0.01 | <0.01 | -0.06 | 0.02 | <0.01 | -0.03 | 0.01 | <0.01 |
| aAdjusted for environmental capital, survey period, urban/rural residence, the number of people in a household, cleaned containers, fumigated inside or outside the house, and the total number of containers. Environmental capital was derived from principal components factor analysis and included: number of rooms in the household; presence of electricity, running water, a television, a landline telephone, cable, trash disposal, and sewer system; and absence of a water well and pit latrine. | | | | | | | | | |

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| **Table S6. Mediation of distances to roads/structures and mosquito prevention measures on the association between environmental capital and the number of containers with any mosquito larvae or pupae per household, Coatepeque and Génova, Guatemala, 2017** | | | | | | | | | | |
|  | Controlled direct effect | | Natural indirect effect | | | Total effect | | |  | |
| Characteristic | Estimate | 95% CI | | Estimate | 95% CI | | Estimate | 95% CI | | Proportion mediated | |
| Fumigated house | 0.08\* | 0.05, 0.11 | | -0.01 | -0.02, 0.01 | | 0.08\* | 0.04, 0.11 | | -0.08 | |
| Cleaned containers | 0.08\* | 0.05, 0.11 | | -0.01 | -0.02, 0.01 | | 0.07\* | 0.04, 0.11 | | -0.04 | |
| Distance to paved road (m) | 0.01 | -0.02, 0.04 | | 0.22\* | 0.16, 0.29 | | 0.24\* | 0.18, 0.28 | | 0.94 | |
| Distance to highway (m) | 0.08\* | 0.04, 0.10 | | -0.01 | -0.03, 0.01 | | 0.07\* | 0.04, 0.10 | | -0.02 | |
| Distance to nearest structure (m) | 0.03 | 0.03, -0.01 | | 0.12\* | 0.06, 0.18 | | 0.15\* | 0.10, 0.19 | | 0.80 | |
| \*p-value<0.05 | | | | | | | | | | |

**Figure S1. Aerial view of communities in Coatepeque and Génova, Guatemala, 2017.** The study sites are enclosed in red. Source: Quetzaltenango department location map; by user Edouno; licensed under CC BY 3.0 via Wikimedia Commons, https://commons.wikimedia.org/wiki/File:Quetzaltenango\_department\_location\_map.svg.





**Figure S2. Directed acyclic graphs of associations between geographical distances to roads and houses/structures and immature mosquito abundance.** Panel A: distance to paved roads; Panel B: distance to highways; Panel C: distance to nearest house.

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| Panel A | Panel B |
| Panel C | |

**Figure S3. Cubic splines of associations between environmental capital and the number of containers with any mosquito larvae or pupae per household, Coatepeque and Génova, Guatemala, 2017**. Panel A shows results from the first survey in February-March, 2017. Panel B shows results from the second survey in November-December, 2017. The bands represent 95% confidence intervals.

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| Panel A  Plot of smoothing component SPLINE(Environmental_capital) for positive_containers with 95% confidence band. | Panel B  Plot of smoothing component SPLINE(Environmental_capital) for positive_containers with 95% confidence band. |