Table 1: Test for variance among families and populations

Model: Monarch\_Quantity\_Observed ~ Block + (1 | Population) + (1 | Population:Fam\_uniq)

| Variable | Group | Variance | PVE | Ï‡2 | df | p |
| --- | --- | --- | --- | --- | --- | --- |
| Monarch butterfly: 2020 | Family | 0.025 | 1.686 | 0.981 | 1 | 0.161 |
| Population | 0.060 | 3.908 | 0.257 | 1 | 0.306 |

Table 2: Assess how much variance is explained by urbanization

Urbanization = Distance to the City Center

Model: Monarch\_Quantity\_Observed ~ Block + (1 | Population) + (1 | Population:Fam\_uniq) + City\_dist

| Variable | Group | Variance | PVE | Ï‡2 | df | p |
| --- | --- | --- | --- | --- | --- | --- |
| Monarch butterfly: 2020 | Family | 0.024 | 1.616 | 0.986 | 1 | 0.1605 |
| Population | 0.059 | 3.851 | 0.216 | 1 | 0.321 |

Table 3: Quantify variance explained by urbanization

| Variable | Predictor | Ï‡2 | p |
| --- | --- | --- | --- |
| Monarch butterfly: 2020 | Block | 13.840 | **0.003\*\*** |
| Distance to City Center | 0.306 | 0.58 |

Table 4: Assess how much variance is explained by urbanization

Urbanization = Urbanization Score

Model: Monarch\_Quantity\_Observed ~ Block + (1 | Population) + (1 | Population:Fam\_uniq) + Urb\_score

| Variable | Group | Variance | PVE | Ï‡2 | df | p |
| --- | --- | --- | --- | --- | --- | --- |
| Monarch butterfly: 2020 | Family | 0.023 | 1.539 | 0.990 | 1 | 0.16 |
| Population | 0.058 | 3.776 | 0.176 | 1 | 0.3375 |

Table 5: Quantify variance explained by urbanization

| Variable | Predictor | Ï‡2 | p |
| --- | --- | --- | --- |
| Monarch butterfly: 2020 | Block | 13.809 | **0.003\*\*** |
| Urbanization Score | 0.652 | 0.419 |