

Evaluating the performance of infectious disease forecasts: A comparison of climate-driven and seasonal dengue forecasts for Mexico

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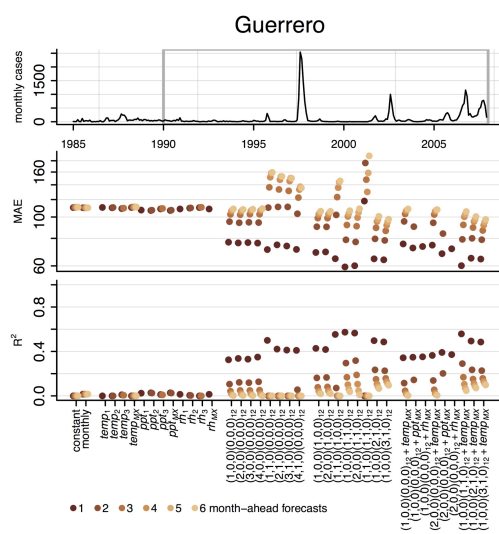
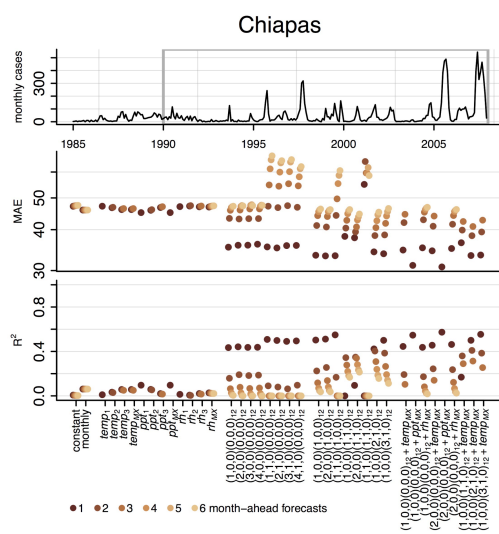
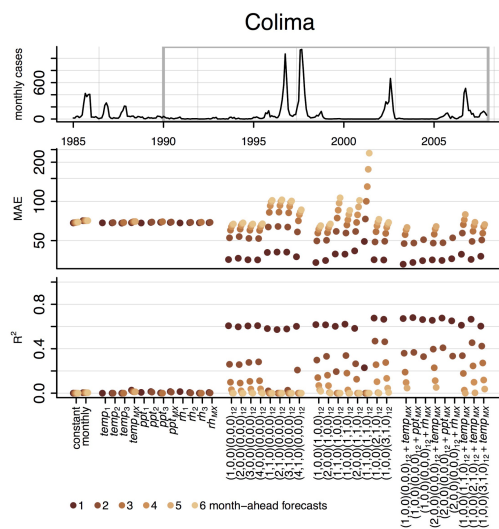
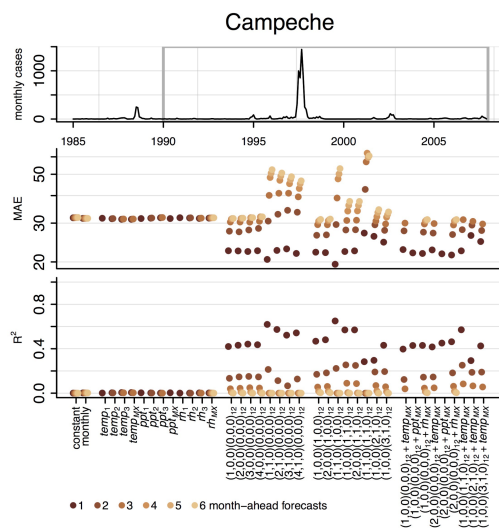
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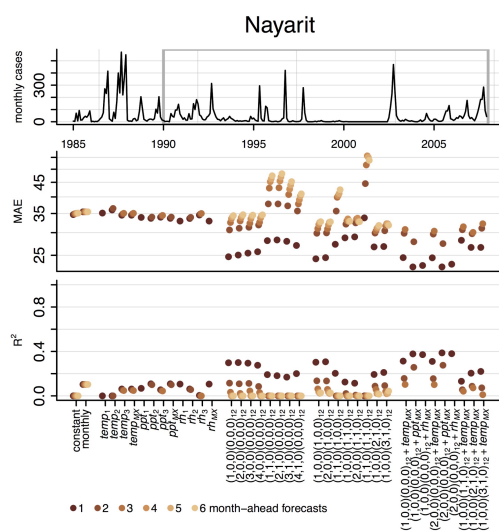
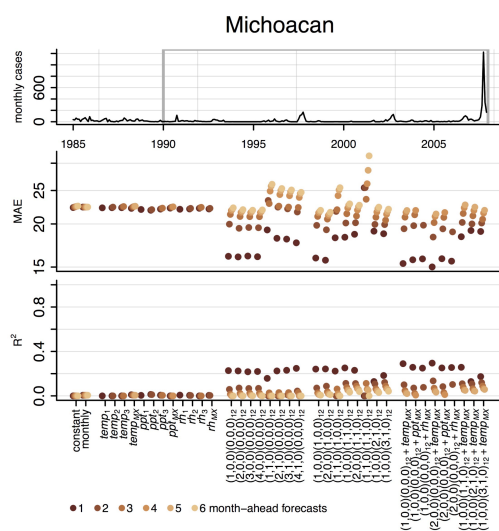
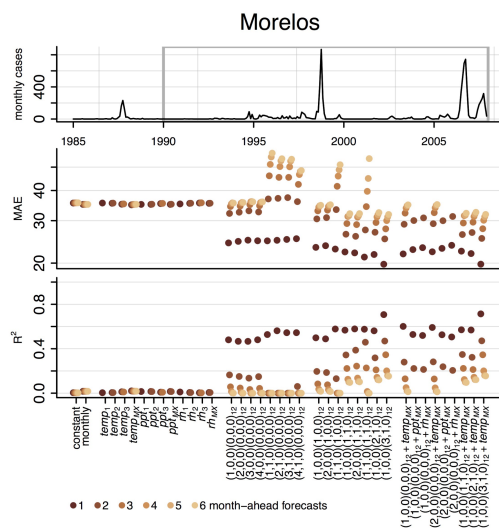
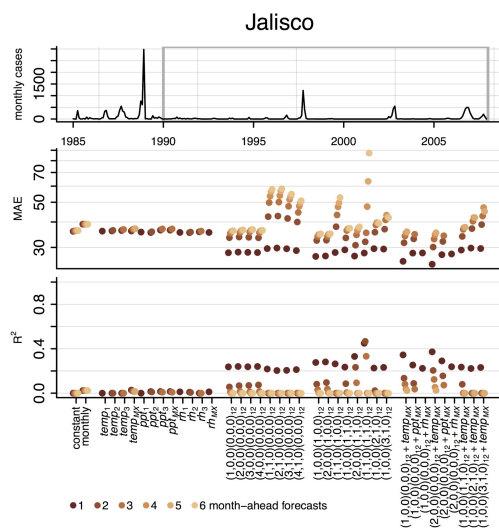
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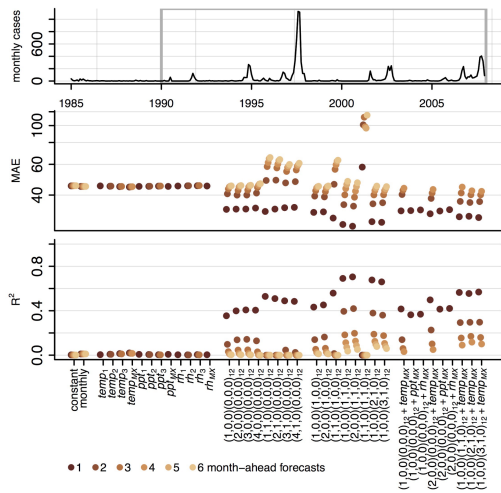
SUPPLEMENTARY FILES

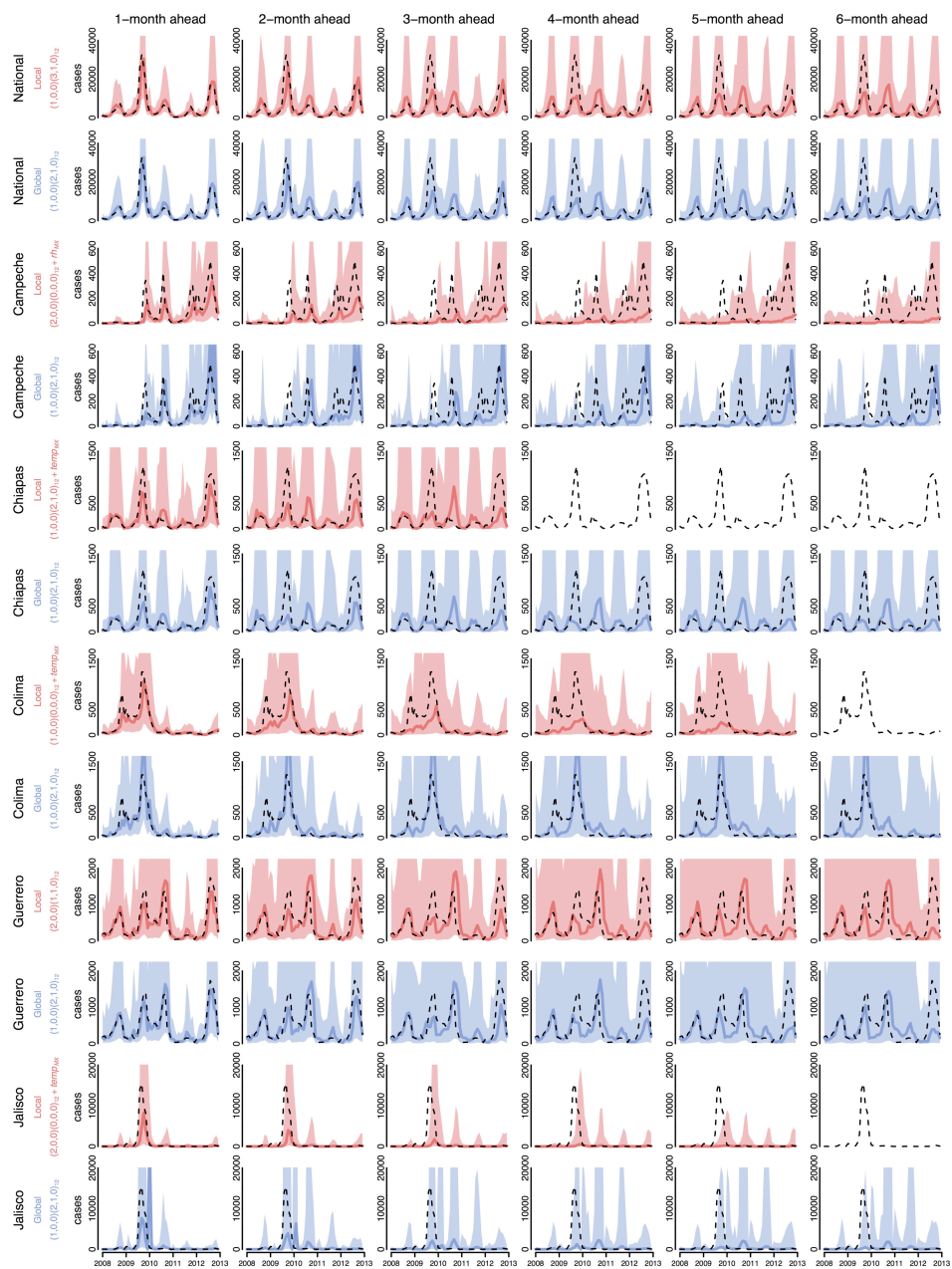
Supplementary Figure 1. State-level forecast metrics. In each panel, state-level incidence is shown during the training period (1985–1989) and evaluation period (1990–2007) (A). For each of 39 models considered, the MAE (B) and R^2 (C) values for prospective forecasts over the entire evaluation period are shown for each prediction horizon (dark red to yellow, corresponds to 1 to 6 months). For models including lagged weather covariates, forecasts were not possible at prediction horizons beyond the lag and are not shown.

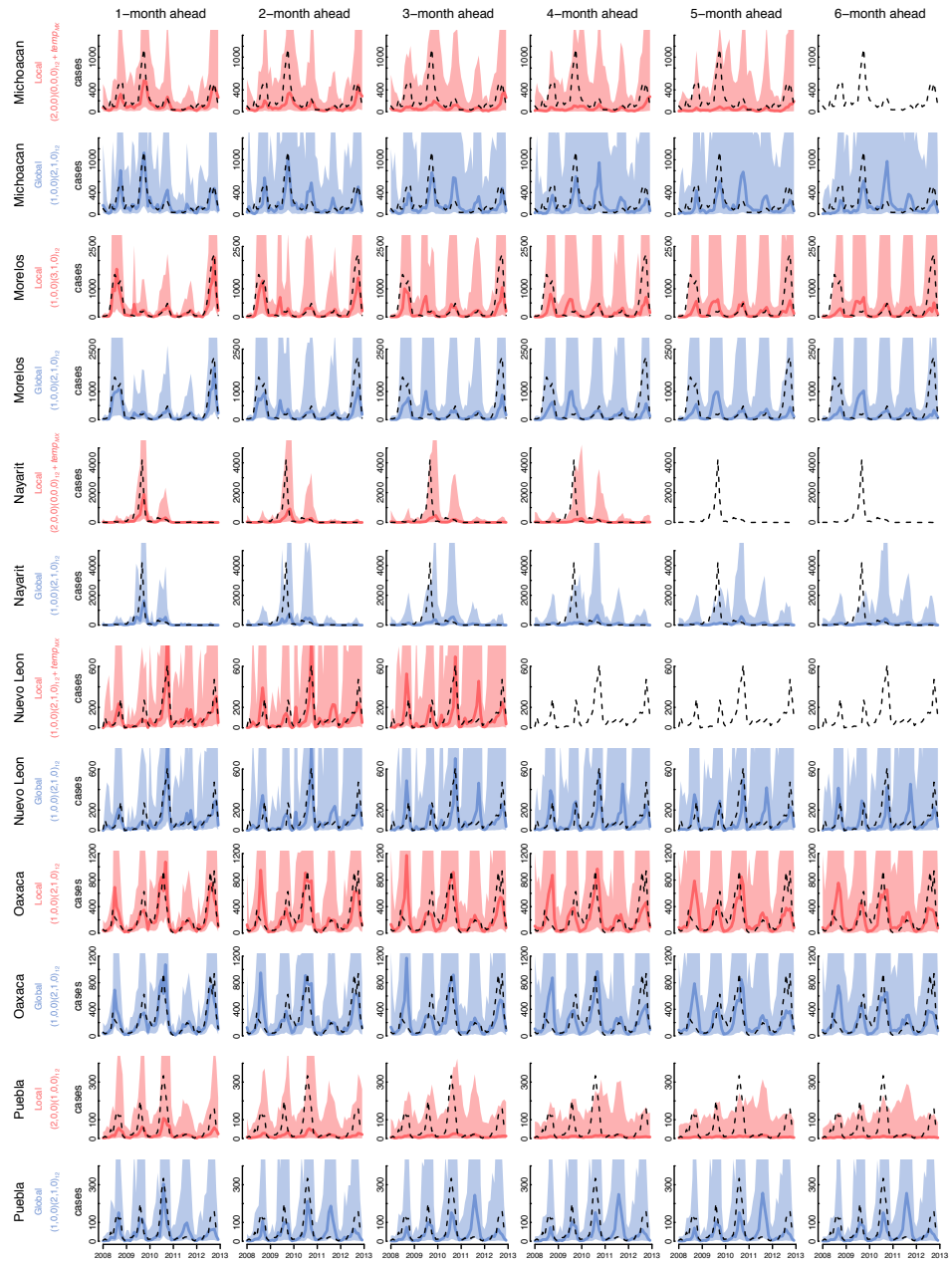


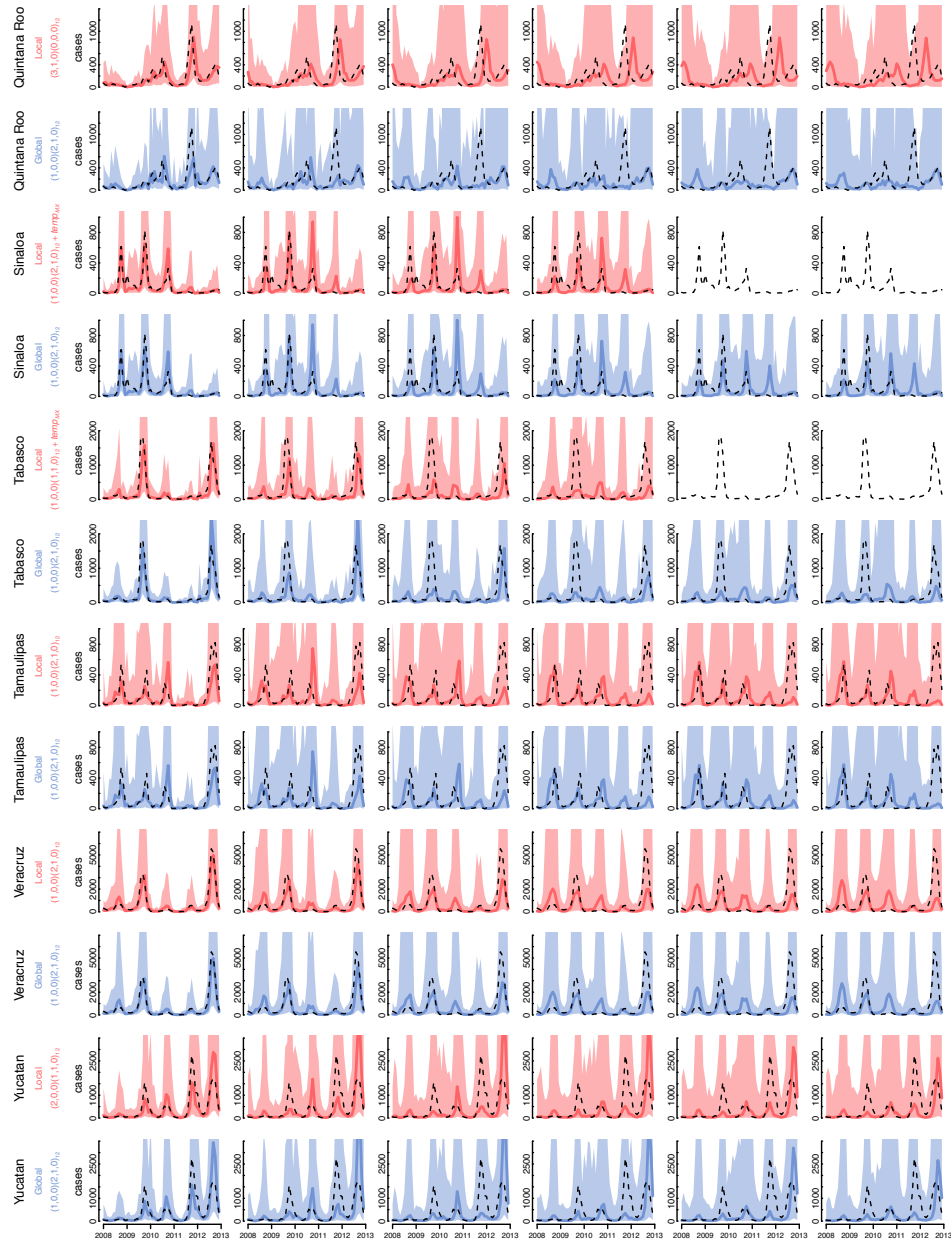


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Supplementary Table. Model coefficients. For each location, this table reports the coefficients, corresponding confidence intervals, partial log likelihood (pll), and number of estimated parameters (k) for the common model (optimal model for across all locations and horizons) and location-specific local models (optimal model for local 1-3 month ahead forecasts). The α and φ coefficients correspond to the short-term and seasonal

autoregressive coefficients in equation 1. $\mathbf{B}_0$ is the intercept for non-differenced local models including covariates and β_1 is the coefficient for the covariate, when present. Lagged covariates included relative humidity for Campeche and average temperature for Chiapas, Colima, Jalisco, Michoacán, Nayarit, Nuevo Leon, Sinaloa, and Tabasco.

		α_1		α_2		α_3		ϕ_1		ϕ_2		ϕ_3		β_0		β_1			
		est.	95% CI	est.	95% CI	est.	95% CI	est.	95% CI	est.	95% CI	est.	95% CI	est.	95% CI	est.	95% CI	pII	k
National	common	0.850	(0.791, 0.908)	-	-	-	-	-0.583	(-0.688, -0.477)	-0.225	(-0.329, -0.121)	-	-	-	-	-	-	-273.5	3
	local	0.876	(0.823, 0.929)	-	-	-	-	-0.666	(-0.770, -0.562)	-0.387	(-0.502, -0.271)	-0.251	(-0.351, -0.151)	-	-	-	-	-257.9	4
Campeche	common	0.852	(0.795, 0.909)	-	-	-	-	-0.637	(-0.743, -0.531)	-0.228	(-0.330, -0.126)	-	-	-	-	-	-	-440.9	3
	local	0.793	(0.686, 0.901)	0.074	(-0.034, 0.182)	-	-	-	-	-	-	-	-	-0.252	(-1.712, 1.208)	0.029	(0.011, 0.047)	-429.9	4
Chiapas	common	0.704	(0.626, 0.783)	-	-	-	-	-0.475	(-0.577, -0.373)	-0.286	(-0.384, -0.188)	-	-	-	-	-	-	-442.9	3
	local	0.702	(0.624, 0.781)	-	-	-	-	-0.473	(-0.577, -0.370)	-0.283	(-0.383, -0.183)	-	-	-	-	0.037	(-0.045, 0.119)	-426.1	4
Colima	common	0.909	(0.864, 0.955)	-	-	-	-	-0.565	(-0.667, -0.463)	-0.390	(-0.490, -0.290)	-	-	-	-	-	-	-404.5	3
	local	0.913	(0.870, 0.956)	-	-	-	-	-	-	-	-	-	-	-	-	0.079	(-1.43, 1.588)	-381.3	3
Guerrero	common	0.843	(0.784, 0.902)	-	-	-	-	-0.495	(-0.595, -0.395)	-0.221	(-0.311, -0.131)	-	-	-	-	-	-	-400.0	3
	local	0.706	(0.598, 0.814)	0.143	(0.036, 0.251)	-	-	-0.411	(-0.501, -0.321)	-	-	-	-	-	-	-	-	-422.8	3
Jalisco	common	0.725	(0.650, 0.799)	-	-	-	-	-0.511	(-0.613, -0.409)	-0.233	(-0.329, -0.137)	-	-	-	-	-	-	-557.5	3
	local	0.621	(0.517, 0.725)	0.206	(0.103, 0.310)	-	-	-	-	-	-	-	-	-	-	0.196	(0.145, 0.247)	-556.7	4
Michoacan	common	0.782	(0.714, 0.851)	-	-	-	-	-0.516	(-0.618, -0.414)	-0.212	(-0.306, -0.118)	-	-	-	-	-	-	-447.2	3
	local	0.634	(0.530, 0.737)	0.250	(0.146, 0.354)	-	-	-	-	-	-	-	-	-0.535	(-1.783, 0.714)	0.132	(0.093, 0.171)	-452.1	4
Morelos	common	0.783	(0.715, 0.852)	-	-	-	-	-0.539	(-0.641, -0.437)	-0.283	(-0.385, -0.181)	-	-	-	-	-	-	-433.9	3
	local	0.835	(0.772, 0.898)	-	-	-	-	-0.595	(-0.697, -0.493)	-0.475	(-0.585, -0.365)	-0.323	(-0.419, -0.227)	-	-	-	-	-405.6	4
Nayarit	common	0.792	(0.725, 0.858)	-	-	-	-	-0.567	(-0.671, -0.463)	-0.307	(-0.405, -0.209)	-	-	-	-	-	-	-468.7	3
	local	0.772	(0.664, 0.880)	0.064	(-0.044, 0.171)	-	-	-	-	-	-	-	-	0.404	(-0.874, 1.682)	0.101	(0.052, 0.150)	-478.9	4
Nuevo Leon	common	0.743	(0.668, 0.817)	-	-	-	-	-0.524	(-0.626, -0.422)	-0.187	(-0.285, -0.089)	-	-	-	-	-	-	-488.2	3
	local	0.747	(0.672, 0.821)	-	-	-	-	-0.512	(-0.617, -0.406)	-0.178	(-0.28, -0.076)	-	-	-	-	-0.069	(-0.146, 0.007)	-468.6	4
Oaxaca	common	0.834	(0.773, 0.895)	-	-	-	-	-0.649	(-0.747, -0.551)	-0.286	(-0.372, -0.200)	-	-	-	-	-	-	-358.8	3
	local	0.834	(0.773, 0.895)	-	-	-	-	-0.649	(-0.747, -0.551)	-0.286	(-0.372, -0.200)	-	-	-	-	-	-	-358.8	3
Puebla	common	0.502	(0.406, 0.598)	-	-	-	-	-0.418	(-0.520, -0.316)	-0.207	(-0.305, -0.109)	-	-	-	-	-	-	-495.6	3
	local	0.554	(0.445, 0.664)	0.144	(0.038, 0.250)	-	-	0.280	(0.171, 0.390)	-	-	-	-	1.756	(1.215, 2.297)	-	-	-507.9	4
Quintana Roo	common	0.823	(0.760, 0.885)	-	-	-	-	-0.619	(-0.719, -0.519)	-0.340	(-0.438, -0.242)	-	-	-	-	-	-	-434.8	3
	local	-0.198	(-0.304, -0.092)	-0.097	(-0.205, 0.011)	-0.128	(-0.234, -0.022)	-	-	-	-	-	-	-	-	-	-	-421.4	3
Sinaloa	common	0.749	(0.674, 0.823)	-	-	-	-	-0.584	(-0.686, -0.482)	-0.298	(-0.396, -0.200)	-	-	-	-	-	-	-460.8	3
	local	0.748	(0.672, 0.824)	-	-	-	-	-0.584	(-0.688, -0.480)	-0.299	(-0.399, -0.199)	-	-	-	-	-0.007	(-0.101, 0.088)	-443.7	4
Tabasco	common	0.857	(0.800, 0.914)	-	-	-	-	-0.597	(-0.699, -0.495)	-0.318	(-0.414, -0.222)	-	-	-	-	-	-	-424.8	3
	local	0.810	(0.743, 0.877)	-	-	-	-	-0.398	(-0.496, -0.300)	-	-	-	-	-	-	0.120	(0.042, 0.198)	-428.0	3
Tamaulipas	common	0.802	(0.735, 0.869)	-	-	-	-	-0.511	(-0.612, -0.409)	-0.308	(-0.406, -0.210)	-	-	-	-	-	-	-511.9	3
	local	0.802	(0.735, 0.869)	-	-	-	-	-0.511	(-0.612, -0.409)	-0.308	(-0.406, -0.210)	-	-	-	-	-	-	-511.9	3
Veracruz	common	0.777	(0.708, 0.845)	-	-	-	-	-0.603	(-0.701, -0.505)	-0.398	(-0.496, -0.300)	-	-	-	-	-	-	-434.9	3
	local	0.777	(0.708, 0.845)	-	-	-	-	-0.603	(-0.701, -0.505)	-0.398	(-0.496, -0.300)	-	-	-	-	-	-	-434.9	3
Yucatan	common	0.801	(0.736, 0.865)	-	-	-	-	-0.541	(-0.643, -0.439)	-0.311	(-0.409, -0.213)	-	-	-	-	-	-	-478.2	3
	local	0.736	(0.627, 0.846)	0.059	(-0.051, 0.169)	-	-	-0.404	(-0.500, -0.308)	-	-	-	-	-	-	-	-	-496.9	3