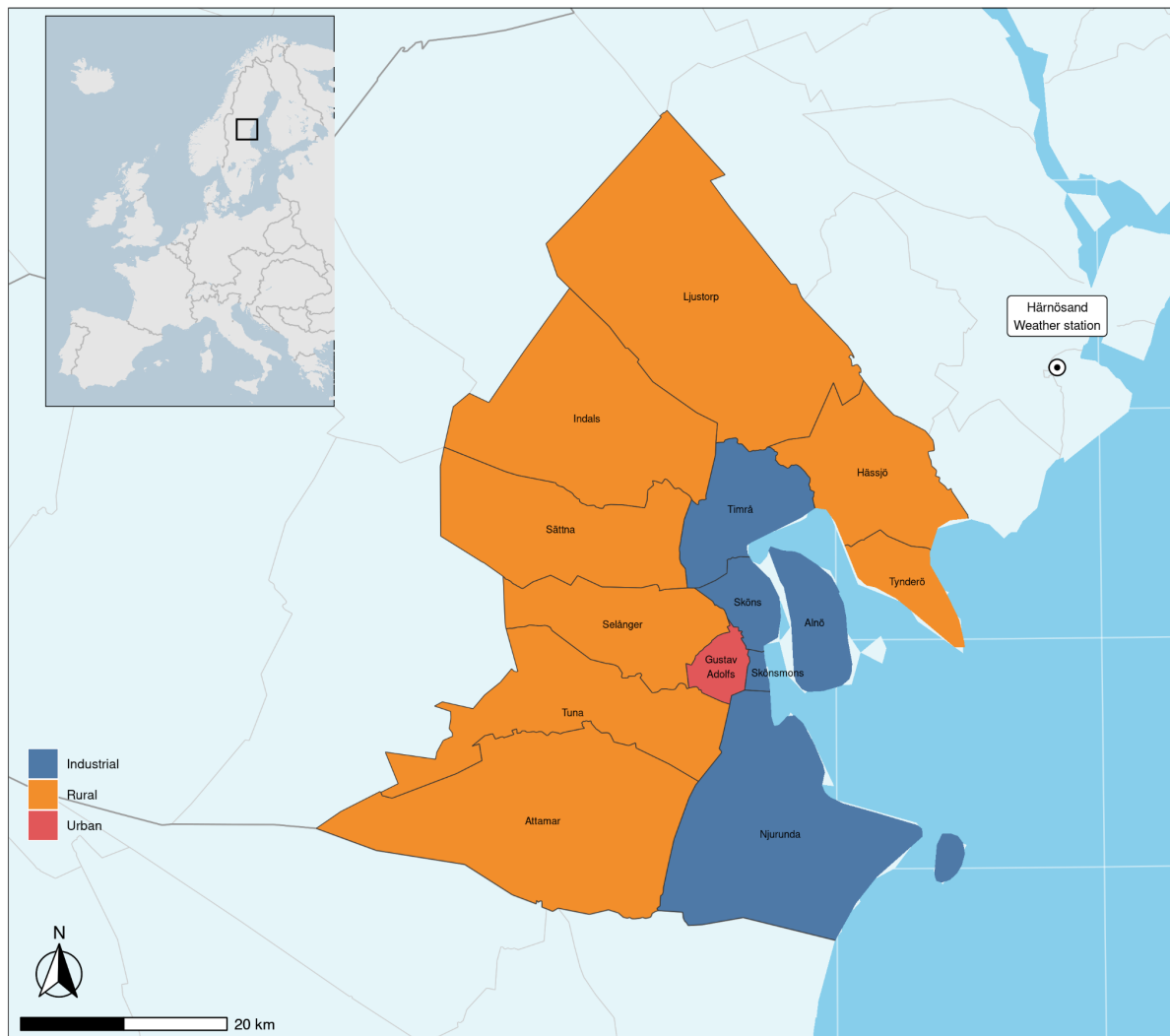


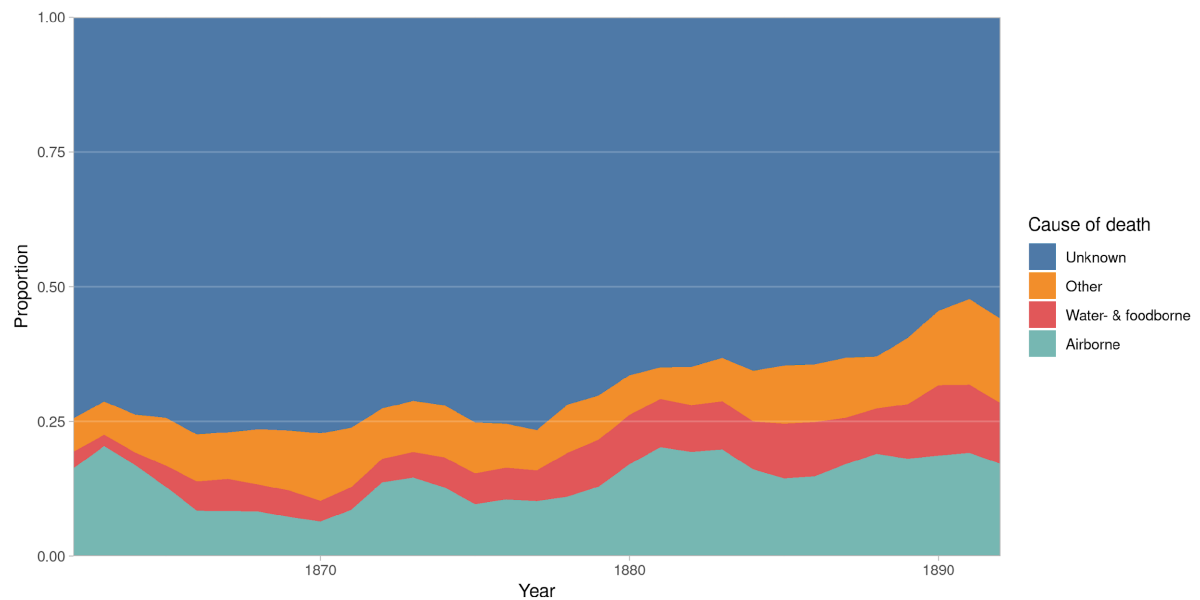
## Supplementary material

**Supplement to:** Junkka, J. and Hiltunen, M. (2024). Temperature- and Seasonality-Related Infectious Disease Mortality Among Infants: A Retrospective Time-Series Study of Sweden, 1868-1892. *Vienna Yearbook of Population Research*, 22. <https://doi.org/10.1553/p-33g4-pgab>

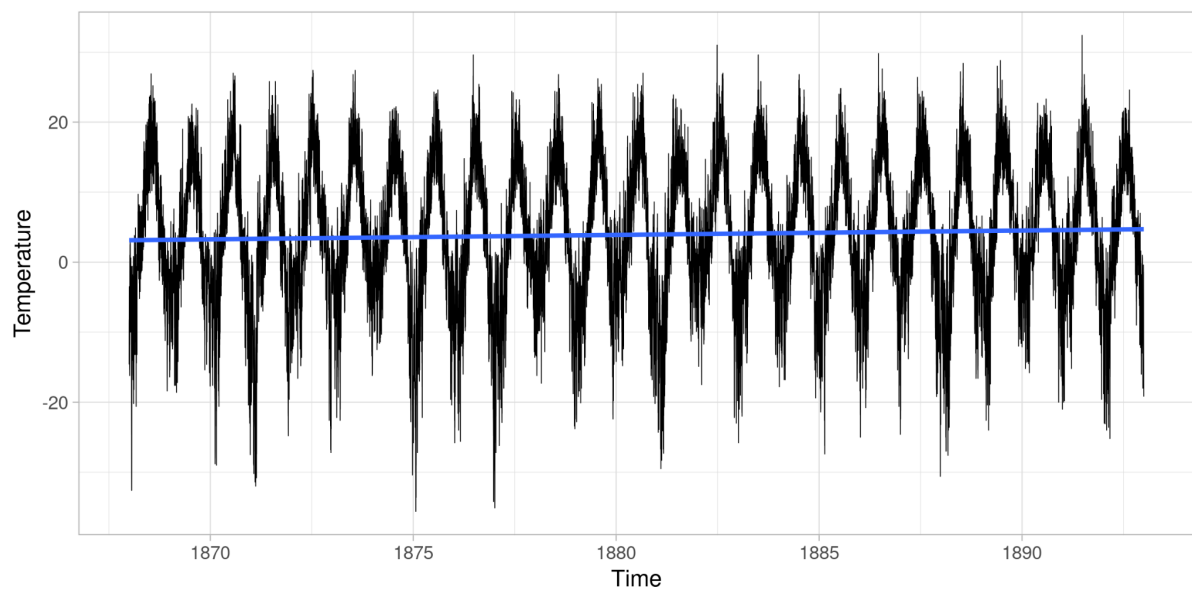
**Figure S.1** Map of study area and weather station in 1890



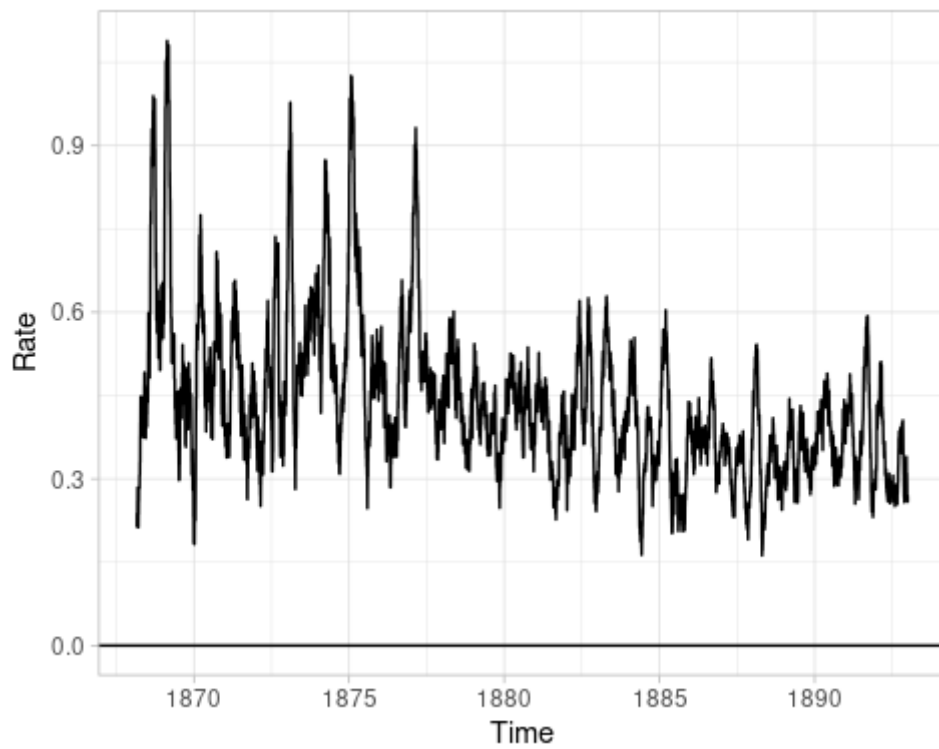
**Figure S.2** Distribution of cause of infant deaths by year, 1860-1892



**Figure S.3** Thrice daily temperature at 7:00, 13:00 and 20:00 at Härnösand weather station, 1868-1892



**Figure S.4** Daily infant mortality rate (per 1000) 1866-1896, averaged over the past 60 days



**Table S.1** Incidence rate ratios (IRR) with 95% confidence intervals (CI) for infant death by 14 days average temperature exposure at percentiles, compared to minimum mortality temperature (AID = +7 °C, WFID = +7 °C, Other = +1 °C). Corresponding to Figure 3.

Cause	Percentile	Temperature	IRR	CI low	CI high
AID	1th	-17	0.923	0.516	1.650
	10th	-8	0.951	0.661	1.368
	25th	-4	0.964	0.738	1.258
	50th	+1	0.980	0.847	1.133
	75th	+9	0.932	0.860	1.009
	90th	+14	0.780	0.590	1.031
	99th	+18	0.677	0.437	1.049
WFID	1th	-12	1.111	0.469	2.635
	10th	-5	1.069	0.620	1.844
	25th	+1	1.034	0.787	1.358
	50th	+11	1.690	1.419	2.013
	75th	+15	2.856	2.013	4.051
	90th	+17	3.712	2.398	5.747
	99th	+20	5.502	3.117	9.712
Other	1th	-17	1.264	1.007	1.586
	10th	-8	1.117	1.003	1.244
	25th	-3	1.050	1.001	1.102
	50th	+2	1.019	1.006	1.032
	75th	+12	1.227	1.062	1.416
	90th	+15	1.297	1.080	1.557
	99th	+19	1.397	1.104	1.767

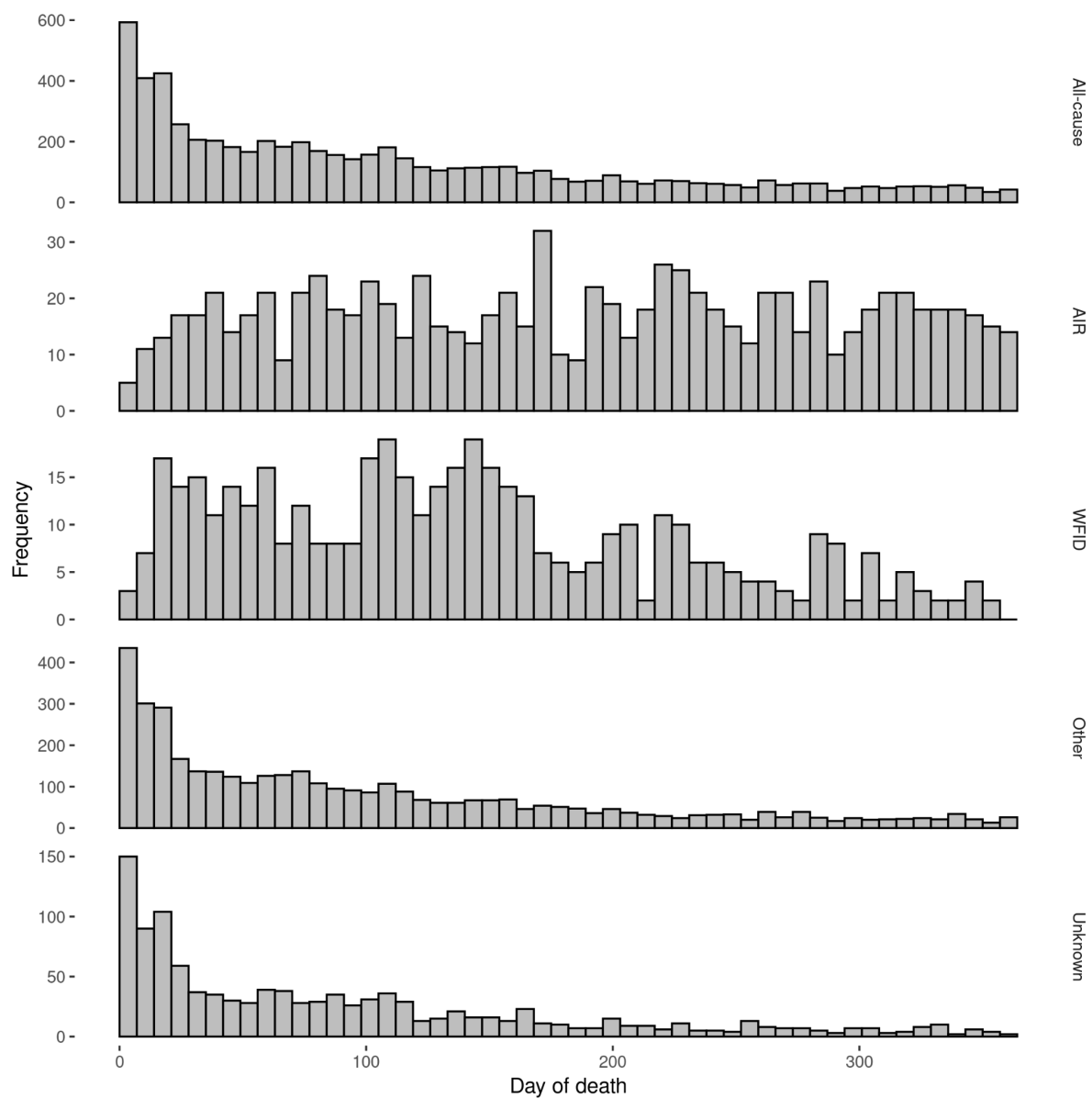
**Table S.2** Incidence rate ratios (IRR) with 95% confidence intervals (CI) for infant death by lag in days at +20 and -20 °C (the 1st and 99th daily temperature exposures), compared to minimum mortality temperature (AID = +7 °C, WFID = +7 °C, Other = +1 °C). Corresponding to Figure 4.

Tempera.	Lag	Other		AID		WFID	
		IRR	CI	IRR	CI	IRR	CI
-20	0	0.972	0.835–1.132	1.253	0.849–1.850	1.352	0.646–2.828
	1	1.031	0.967–1.099	1.149	0.976–1.353	1.107	0.813–1.509
	2	1.071	0.997–1.151	1.072	0.888–1.296	0.967	0.674–1.386
	3	1.074	0.990–1.165	1.034	0.835–1.280	0.946	0.629–1.422
	4	1.048	0.988–1.113	1.021	0.873–1.193	1.005	0.746–1.353
	5	1.018	0.974–1.064	1.015	0.903–1.140	1.080	0.865–1.348
	6	0.998	0.950–1.049	1.004	0.882–1.144	1.122	0.876–1.437
	7	0.988	0.936–1.043	0.989	0.857–1.141	1.127	0.859–1.479
	8	0.985	0.936–1.038	0.970	0.845–1.112	1.100	0.849–1.425
	9	0.990	0.947–1.034	0.947	0.844–1.063	1.047	0.843–1.301
	10	0.999	0.964–1.036	0.922	0.838–1.015	0.978	0.817–1.170
	11	1.013	0.972–1.057	0.896	0.802–1.001	0.900	0.727–1.114
	12	1.030	0.967–1.097	0.869	0.735–1.028	0.820	0.592–1.135
	13	1.049	0.957–1.149	0.843	0.660–1.076	0.744	0.463–1.194
20	0	0.944	0.745–1.195	0.935	0.552–1.585	1.555	0.913–2.648
	1	1.056	0.962–1.158	1.042	0.850–1.278	1.198	0.975–1.472
	2	1.134	1.011–1.271	1.123	0.870–1.451	0.990	0.767–1.278
	3	1.131	0.991–1.291	1.139	0.848–1.530	0.929	0.690–1.250
	4	1.071	0.974–1.178	1.103	0.892–1.363	0.960	0.775–1.190
	5	1.006	0.939–1.077	1.050	0.901–1.224	1.026	0.882–1.193
	6	0.965	0.893–1.043	1.004	0.842–1.197	1.083	0.916–1.281
	7	0.947	0.869–1.033	0.966	0.795–1.174	1.126	0.935–1.358
	8	0.948	0.873–1.029	0.934	0.775–1.125	1.157	0.967–1.384
	9	0.963	0.899–1.031	0.907	0.778–1.057	1.176	1.014–1.364
	10	0.991	0.939–1.046	0.883	0.784–0.995	1.185	1.055–1.332
	11	1.029	0.967–1.096	0.863	0.751–0.992	1.187	1.039–1.357
	12	1.076	0.975–1.188	0.844	0.676–1.054	1.184	0.960–1.462
	13	1.129	0.975–1.306	0.827	0.593–1.152	1.179	0.861–1.614

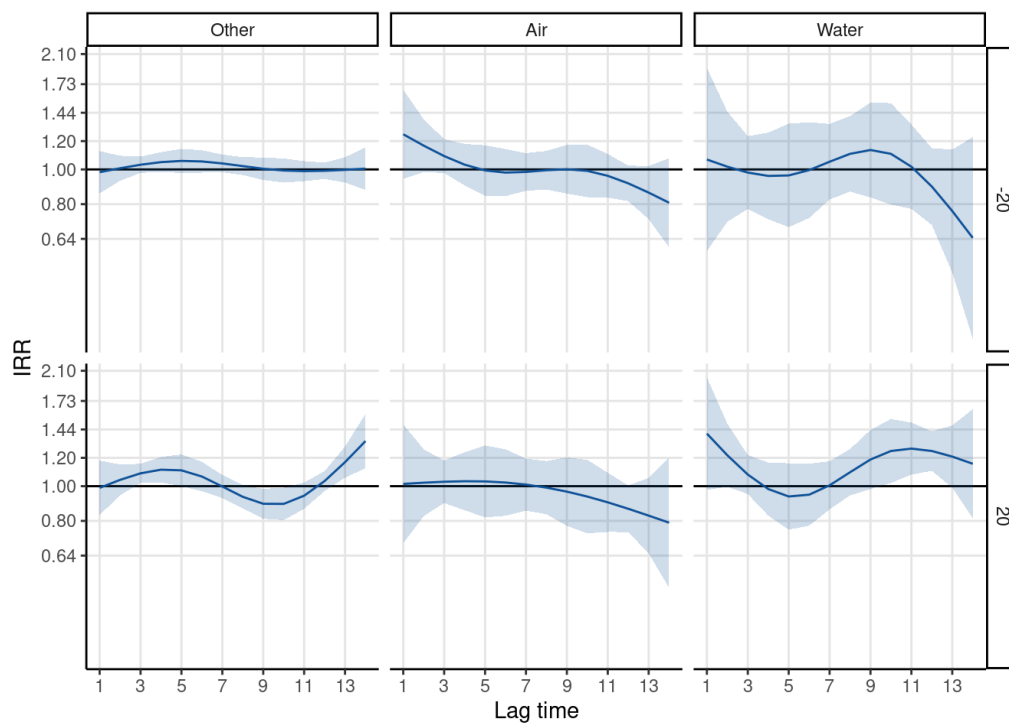
**Table S.3** Incidence rate ratios (IRR) with 95% confidence intervals (CI) for infant death by month (first day in month) compared to the minimum mortality day (AID = July 8th, WFID = Jan 1th, Other = June 26th). Adjusted for seasonality and timetrend. Corresponding to Figure 6.

Month	AID		WFID		Other	
	IRR	CI	IRR	CI	IRR	CI
Feb	2.985	1.299–6.862	1.000	1.000–1.000	1.797	1.255–2.574
Mar	2.502	1.134–5.518	1.626	0.958–2.762	1.760	1.254–2.470
Apr	2.261	1.054–4.852	2.014	0.836–4.853	1.645	1.189–2.276
May	2.334	1.199–4.546	1.511	0.589–3.878	1.432	1.091–1.880
Jun	2.143	1.274–3.604	1.206	0.421–3.455	1.203	0.980–1.477
Jul	1.443	1.149–1.813	1.786	0.559–5.710	1.049	0.963–1.143
Aug	1.016	0.981–1.051	3.027	0.888–10.324	1.002	0.993–1.011
Sep	1.138	0.894–1.450	3.097	0.982–9.765	1.093	0.979–1.221
Oct	1.580	0.880–2.837	2.424	0.879–6.685	1.261	0.990–1.607
Nov	1.992	0.974–4.077	2.058	0.904–4.685	1.432	1.064–1.927
Dec	2.265	1.037–4.946	1.876	0.850–4.137	1.608	1.153–2.241
Jan	2.540	1.143–5.643	1.651	0.767–3.556	1.850	1.315–2.603

**Figure S.5** Distribution of day of death by Cause-of-death

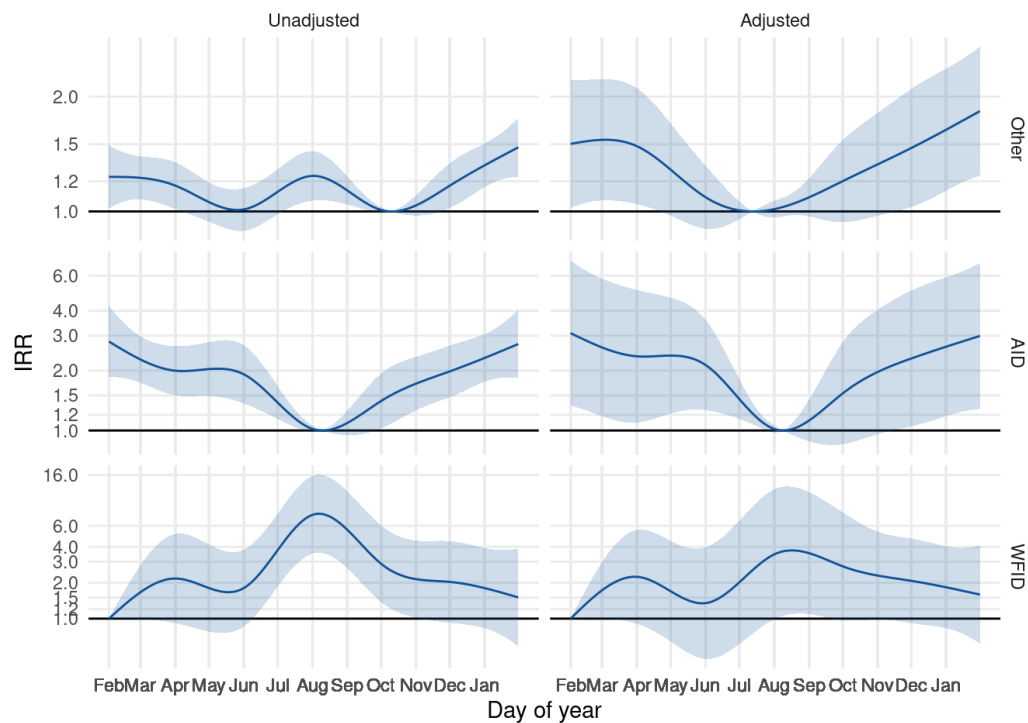


**Figure S.6** Incidence rate ratios (IRR) with 95 percent confidence intervals for cause-specific post-neonatal mortality (deaths occurring between 28 days and 1 year of age) by past 14 days ambient temperature exposures. IRR on a log scale.

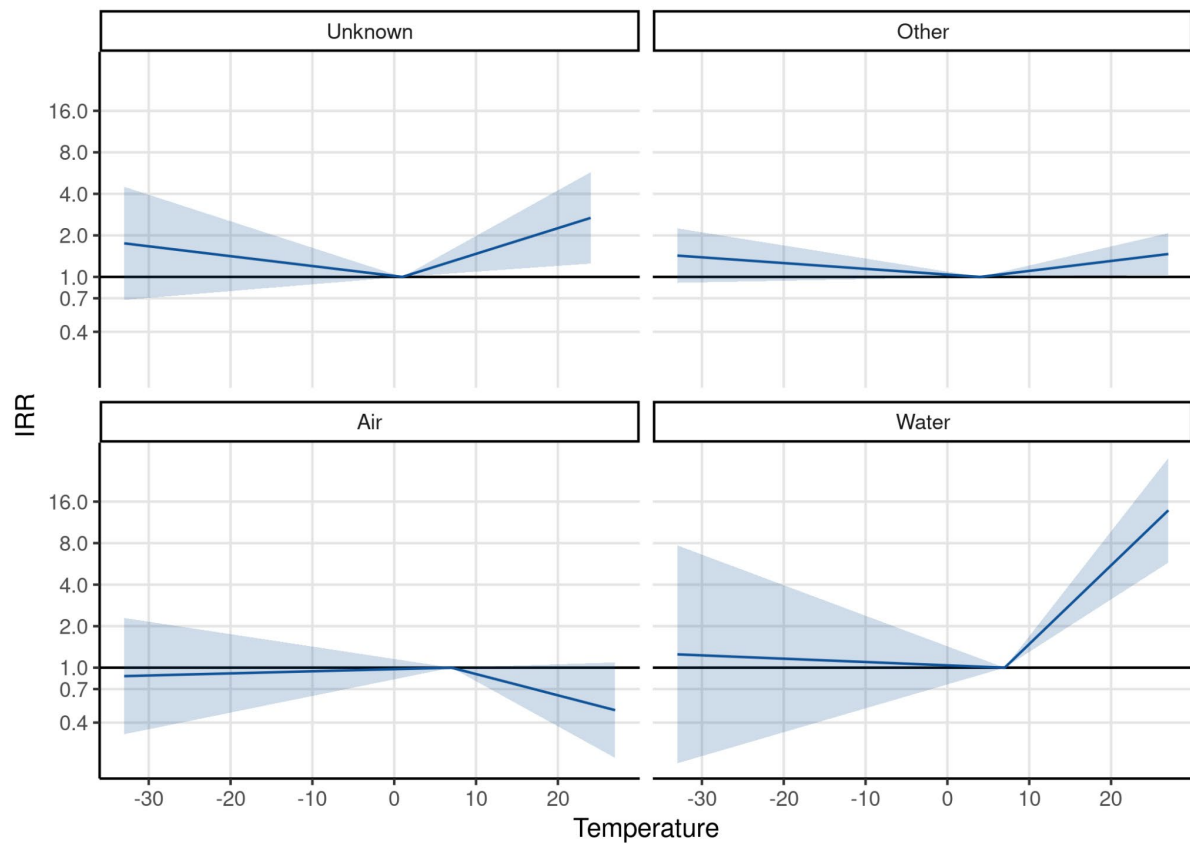




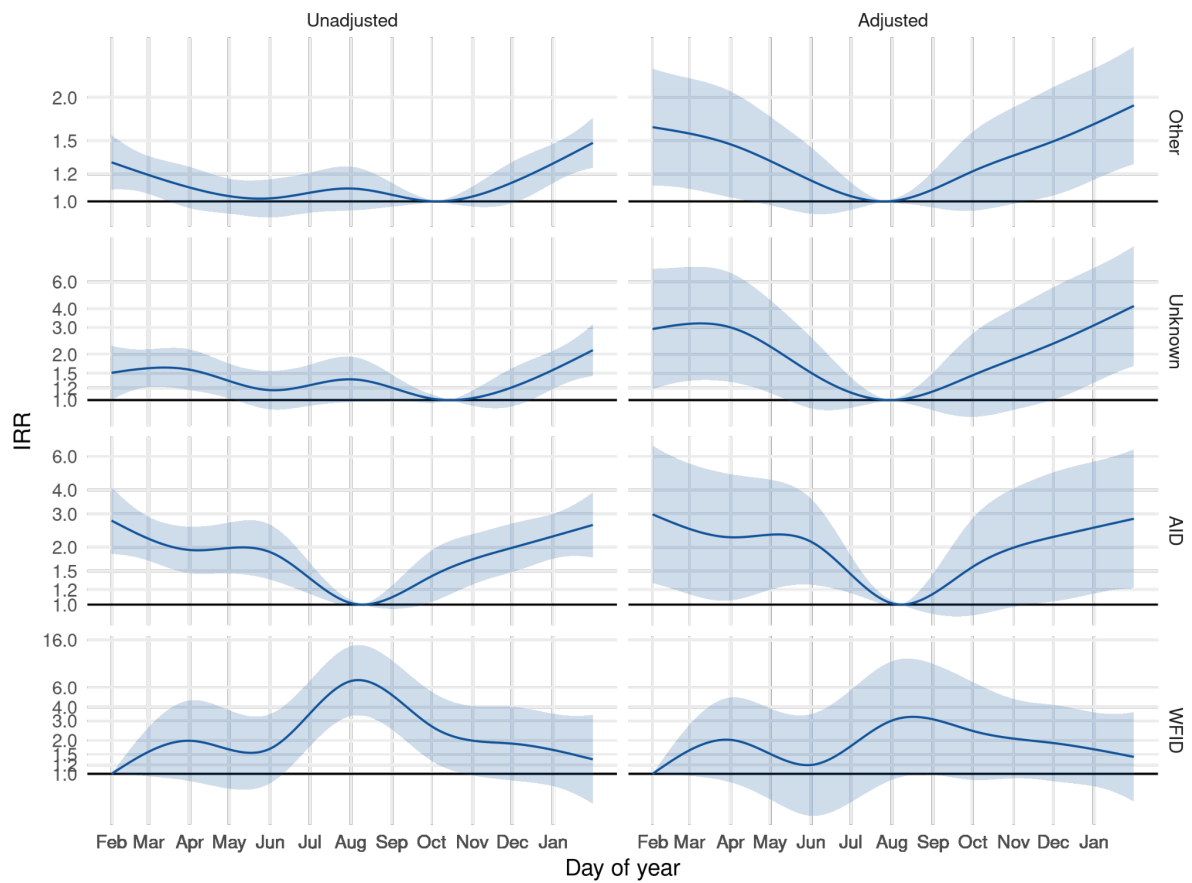
**Figure S.7** Incidence rate ratios (IRR) with 95 percent confidence intervals for cause-specific post-neonatal mortality (deaths occurring between 28 days and 1 year of age) by day of year from February 1st to January 31st. IRR on a log scale. Reference day set at day of year with minimum mortality. Adjusted for year and temperature.



**Figure S.8** Incidence rate ratios (IRR) with 95 percent confidence intervals for cause-specific infant mortality by past 14 days ambient temperature exposures, including Unknown causes of death. IRR on a log scale



**Figure S.9** Incidence rate ratios (IRR) with 95 percent confidence intervals for cause-specific infant mortality by day of year from February 1st to January 31st. IRR on a log scale. Reference day set at day of year with minimum mortality, including Unknown causes of death. Adjusted for year and temperature



**Figure S.10** Placebo test. Incidence rate ratios (IRR) with 95 percent confidence intervals for cause-specific infant mortality by the 14 days ambient temperature exposures at  $t + 60$ . IRR on a log scale

