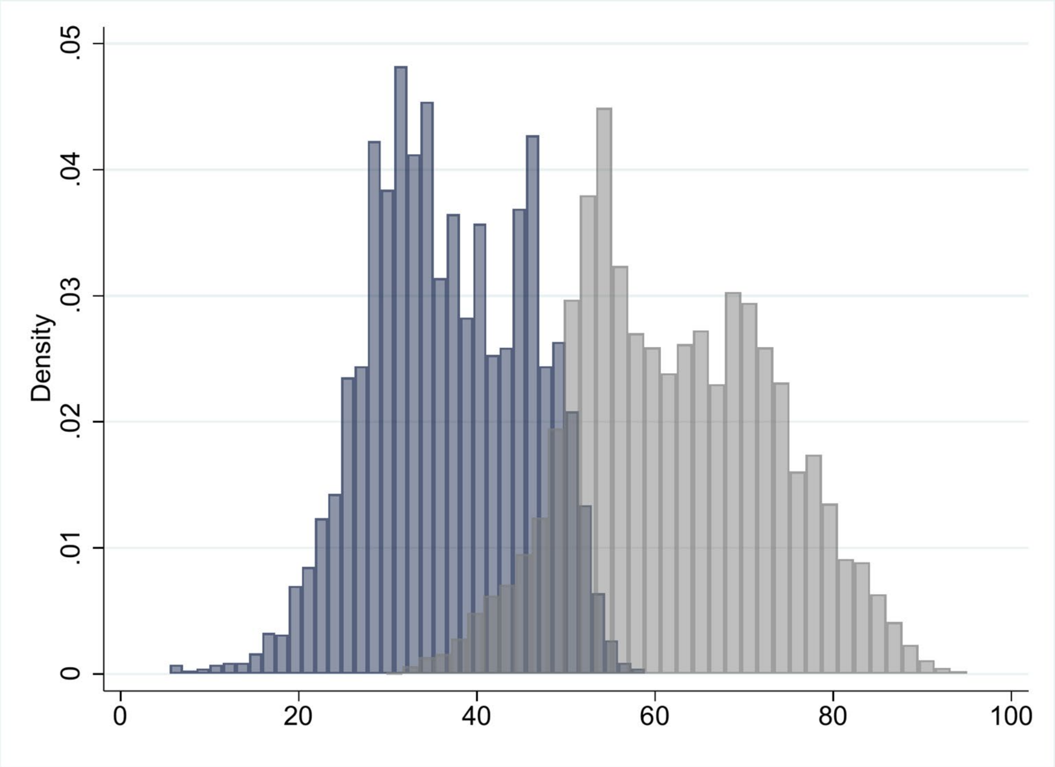
Online Appendix to:
"Temperature, Disease, and Death in London:
Analyzing Weekly Data for the Century from 1866-1965"

A.1 Additional data description

Figure A.1: Distributions of weekly minimum and maximum temperatures

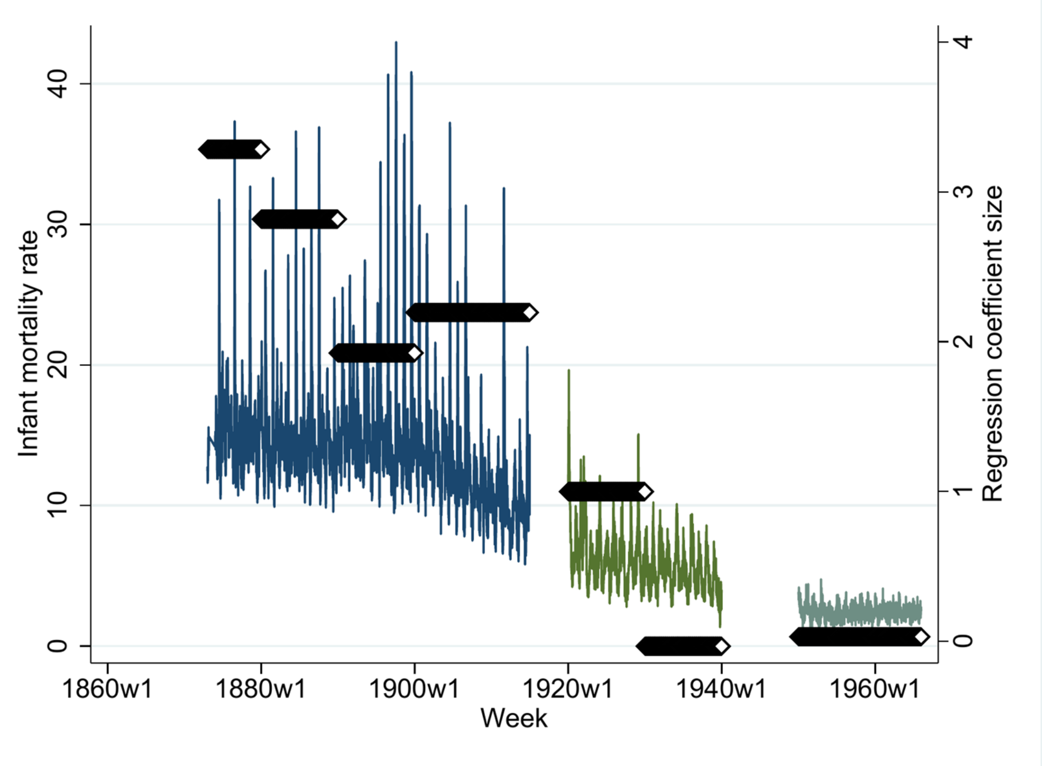


Notes: This figure shows the distributions of weekly and maximum temperatures during our sample period.

A.2 Supplement to the main analysis results

Figure A.2 shows the development of the infant mortality *rate* and how this variable was influenced by warm weeks by different periods. This supports the evidence presented in Figure 1 by showing that our results are not driven by any scale effects coming from fertility declines.

Figure A.2: Infant mortality rate and warm-week effect by period

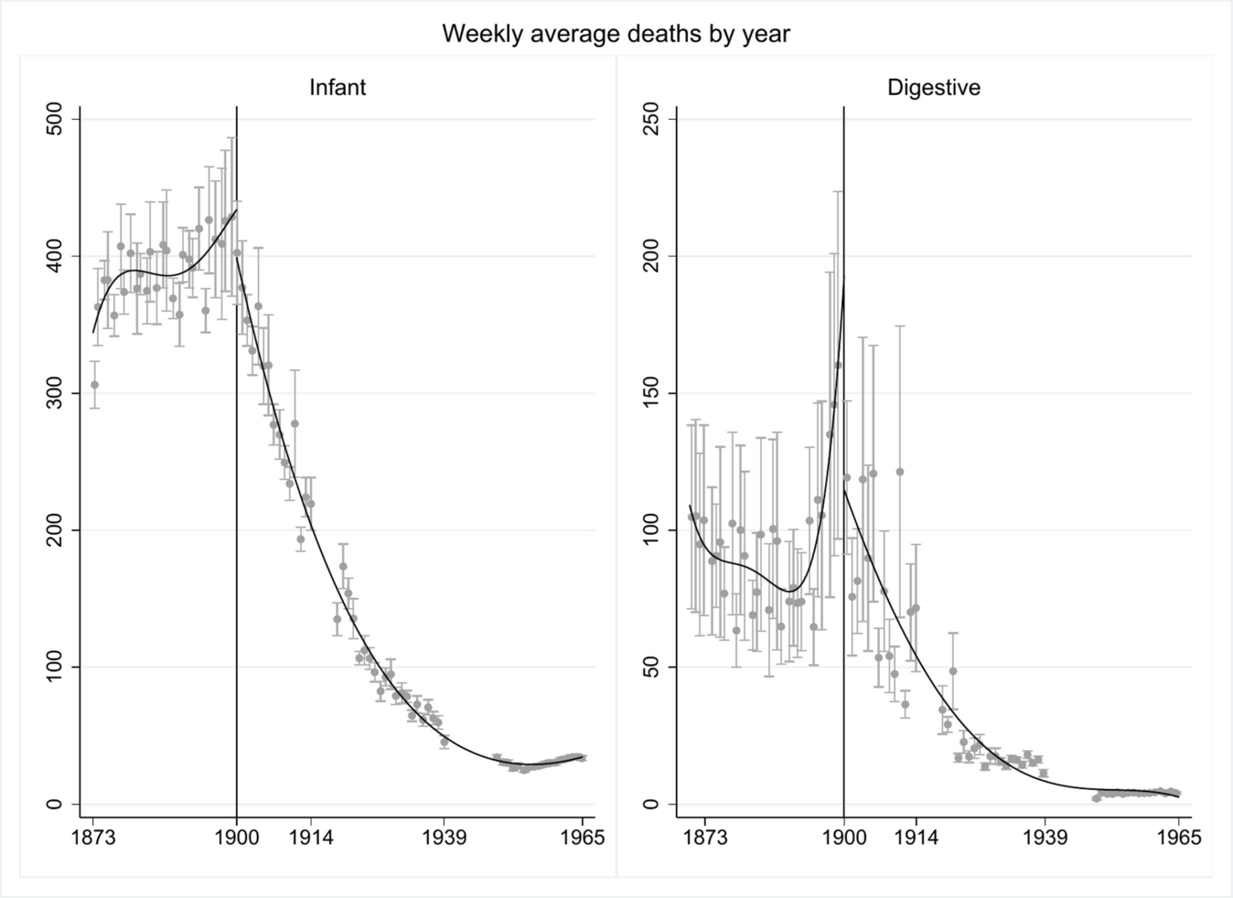


Notes: This figure shows the development of the infant mortality rate, which is calculated as the number of infant deaths during a particular week and scaled with the average number of births over the past 52 weeks (x100). The thick horizontal grey lines show warm-week estimates for different periods (1874-1879, 1880-1889, 1890-1899, 1900-1914, 1919-1929, 1930-1939, and 1949-1965). The regressions use the average of the contemporary effect and seven lags and control for week-the-year fixed effects, year fixed effects, weekly rainfall, and weekly fog events.

A.2.1 Timing of the decline in infant digestive disease deaths

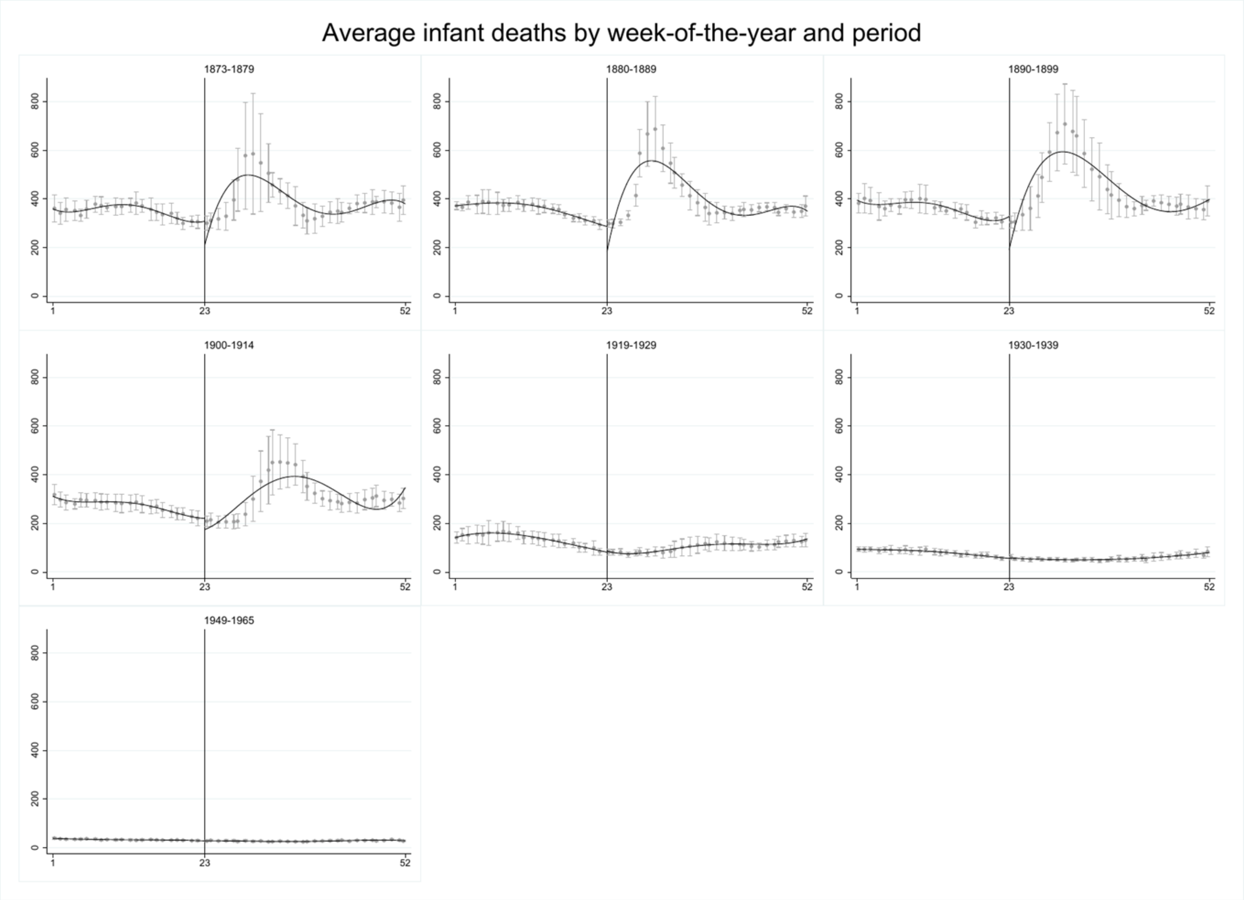
Here we present some additional evidence on the timing of the decline in infant digestive deaths. First, Figure A.3 presents results plotting out the pattern of infant and digestive disease deaths by year. Second, Figures A.4-A.5 describes the changing distribution of infant and digestive mortality across weeks of the year by different periods.

Figure A.3: Timing of infant and digestive disease mortality declines



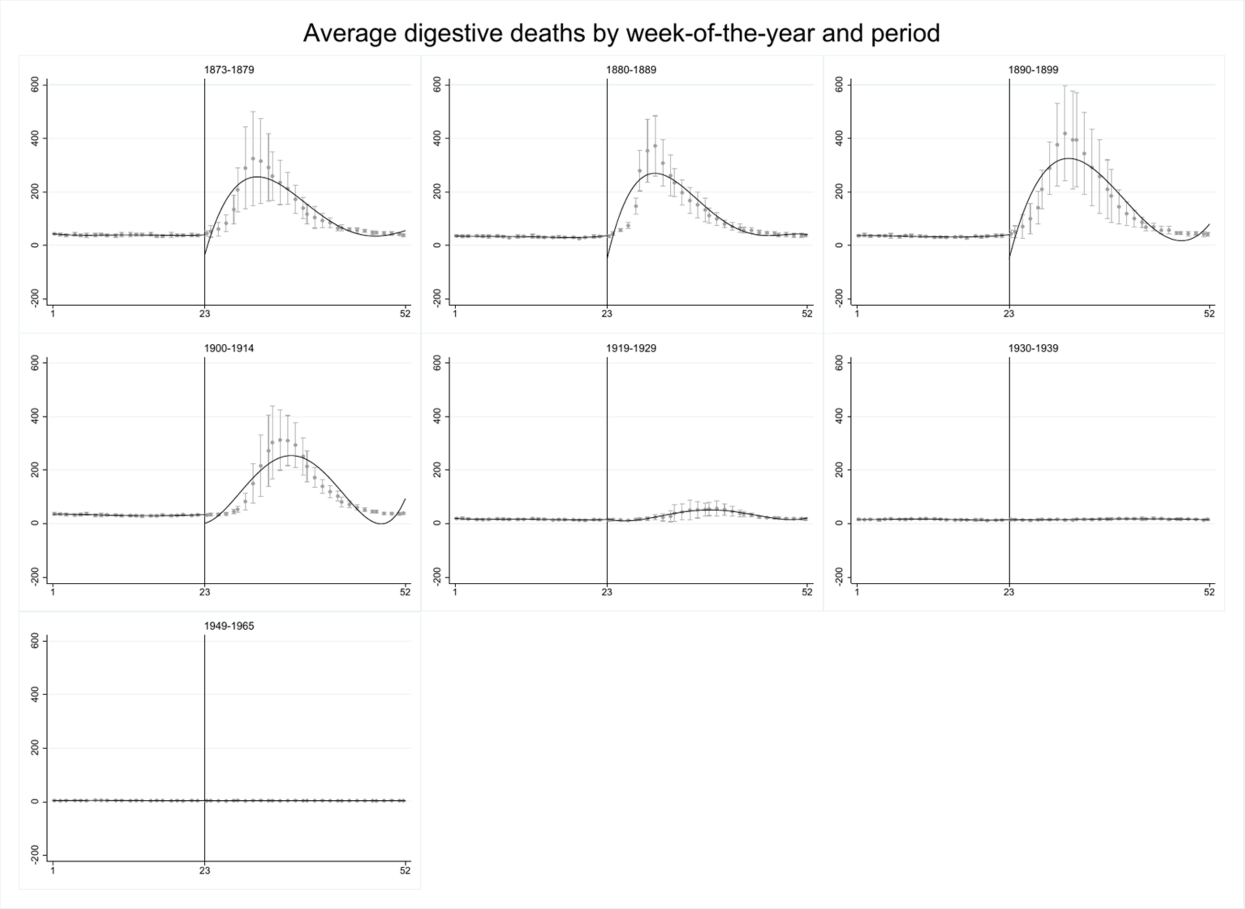
Notes: This figure shows the weekly average number of infant and digestive deaths by year (1873-1965), including 95 percent confidence bands, calculated for each year. The smooth black solid lines are fourth order polynomial fits for before/after the years 1900. The vertical lines are placed at year 1900.

Figure A.4: Distribution of infant deaths across weeks, by period



Notes: This figure shows the average number of infant deaths by week of the year, where 1 is the first week of January and 52 is the last week of December, for the periods: 1873-1879, 1880-1889, 1890-1899, 1900-1914, 1919-1929-1939, and 1949-1965 (averages and 95 confidence bands are based on these periods). The vertical lines are placed at week 23, which is typically around the first week of June.

Figure A.5: Distribution of digestive deaths across weeks, by period

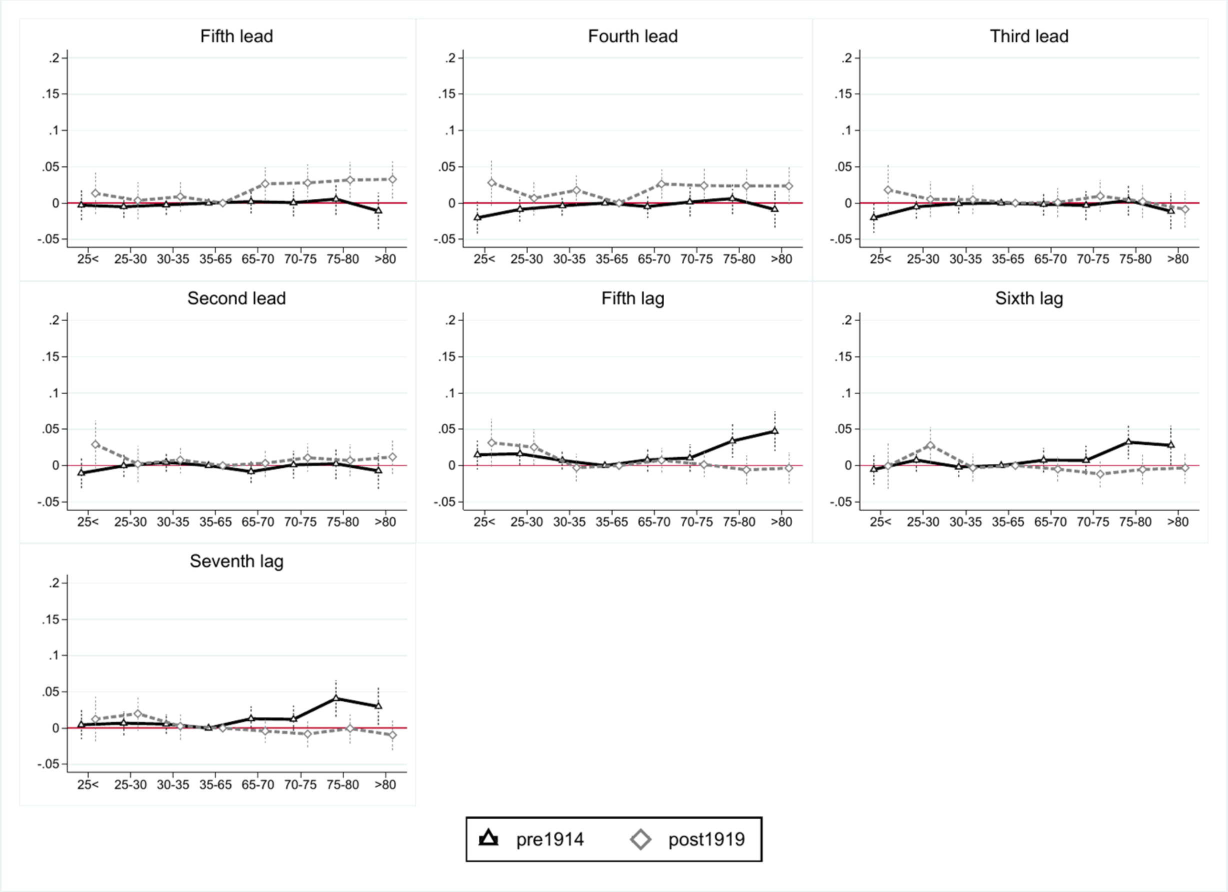


Notes: This figure shows the average number of digestive deaths by week of the year, where 1 is the first week of January and 52 is the last week of December, for the periods: 1873-1879, 1880-1889, 1890-1899, 1900-1914, 1919-1929-1939, and 1949-1965 (averages and 95 confidence bands are based on these periods). The vertical lines are placed at week 23, which is typically around the first week of June.

A.2.2. Additional total mortality results

Figure A.6 reports additional leads from our main total mortality regression results. Specifically, the figures plot the results for weeks 2-5 weeks before the week in which a particular temperature event is observed. These come from our main regression specification and are estimated at the same time as the remaining leads and lags presented in Figure 2. The main purpose here is to provide some additional evidence on the estimated pre-trends in weeks before a weather event is observed. The essentially flat and generally statistically insignificant estimates show that, as we would expect, weather events in a week are not systematically correlated with mortality in previous weeks.

Figure A.6: Additional leads and lags for total mortality regressions

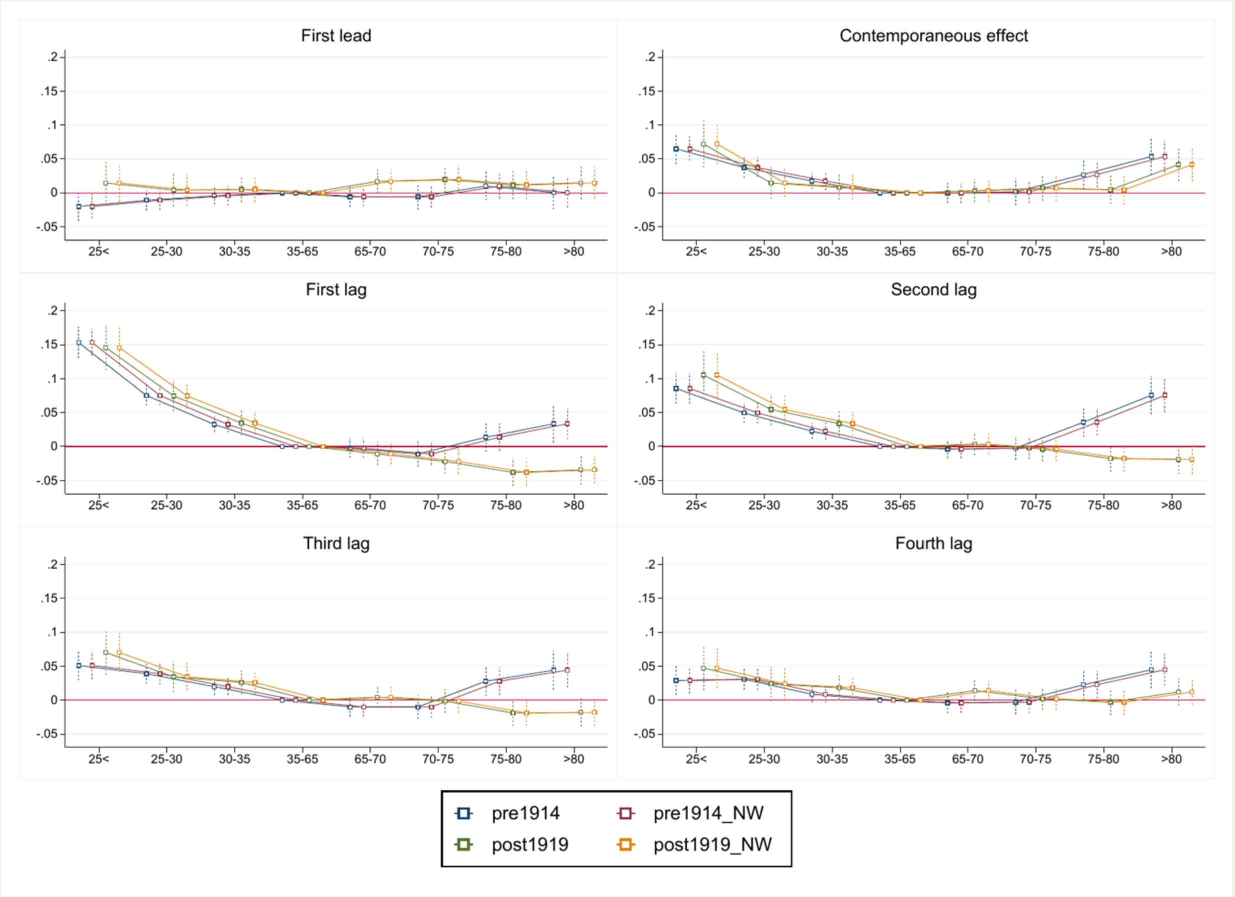


Notes: This figure shows the non-parametric relationship between temperature and log total mortality for leads 2-5 and lags 5-7 which were not reported in Figure 2. The pre-WWI sample is from 1866 to 1914 and the post-WWI sample is from 1919-1939 and 1949 to 1965. The reference weeks have minimum temperature above 35F and maximum temperature below 65F.

One potential concern in our analysis is that there may be serial correlation in the data, which are structured as a time series. A standard way to address serial correlation concerns is to allow correlation across temporally adjacent weeks using Newey-West standard errors.

In Figure A.7 we estimate results allowing correlation across time periods within seven weeks of each other and compare these to the results obtained from the robust standard errors presented in the main text. These results show that allowing for serial correlation typically leads to smaller confidence intervals, indicating that there may be mild negative serial correlation in the data. This should not be surprising given that we are studying mortality, because a high number of deaths in one week will reduce the population at risk of dying in the following week.

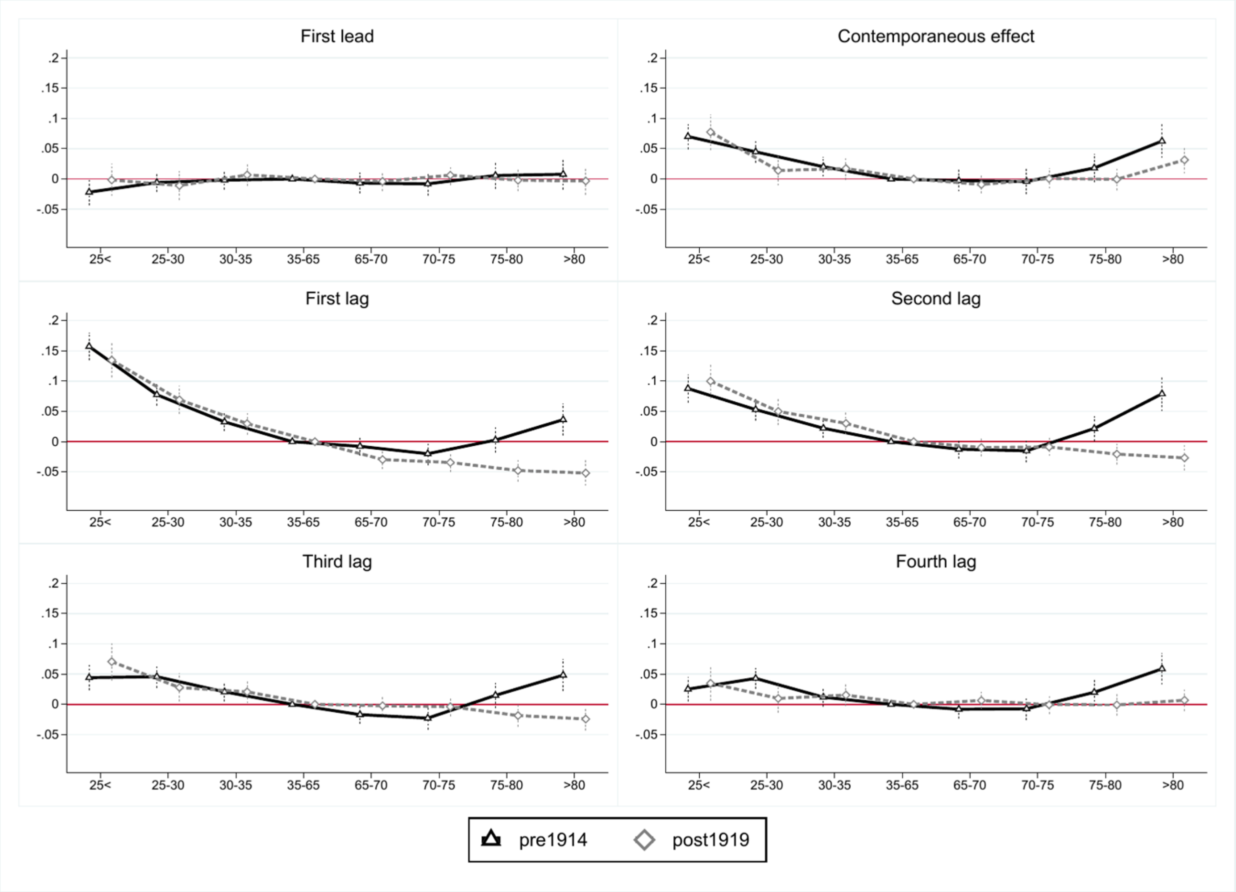
Figure A.7: Temperature and total mortality with Newey-West standard errors



Notes: This figure shows the non-parametric relationship between temperature and log total mortality for the first lead, the current effect, and four lags with robust Newey-West SEs allowing correlated errors across seven weeks. The length of the lag allowed in the Newey-West standard errors is based on the standard rule-of-thumb $T^{1/4}$ where T is the number of time periods in the analysis. We use the T from the longest sub-period that we analyze, the pre-WWI sample, which implies a lag length of seven. For consistency we apply this length to all of the time periods we study. The pre-WWI sample is from 1866-1914 and the post-WWI sample is from 1919-1939 and 1949-1965. The reference weeks have minimum temperature above 35F and maximum temperature below 65F.

It is also interesting to study results where we include month-by-year effects. Including such a rich set of fixed effects is possible due to the high-frequency nature of our data, though we do not use this as our main specification because it is likely to be over-controlling in a way that biases our results toward zero. It is worth noting that this specification allows us to control for time effects as flexibly as is possible in existing studies using monthly panel data, such as Barreca et al. (2016). In fact, because our study contains only one location, this specification is actually more flexible, since it is equivalent to including month-by-year-by-location effects in a panel data study, though that level of flexibility is impossible in panel data studies using monthly data at the location level. The results, in Figure A.8, show that even with this very flexible set of time effects we still obtain results that are similar to those presented in the main text, though the reduction in degrees of freedom means that we now have slightly larger standard errors. In summary, these results illustrate that we can control as flexibly for time effects as any existing panel data study that is reliant on monthly data.

Figure A.8: Temperature and total mortality with month-by-year fixed effects

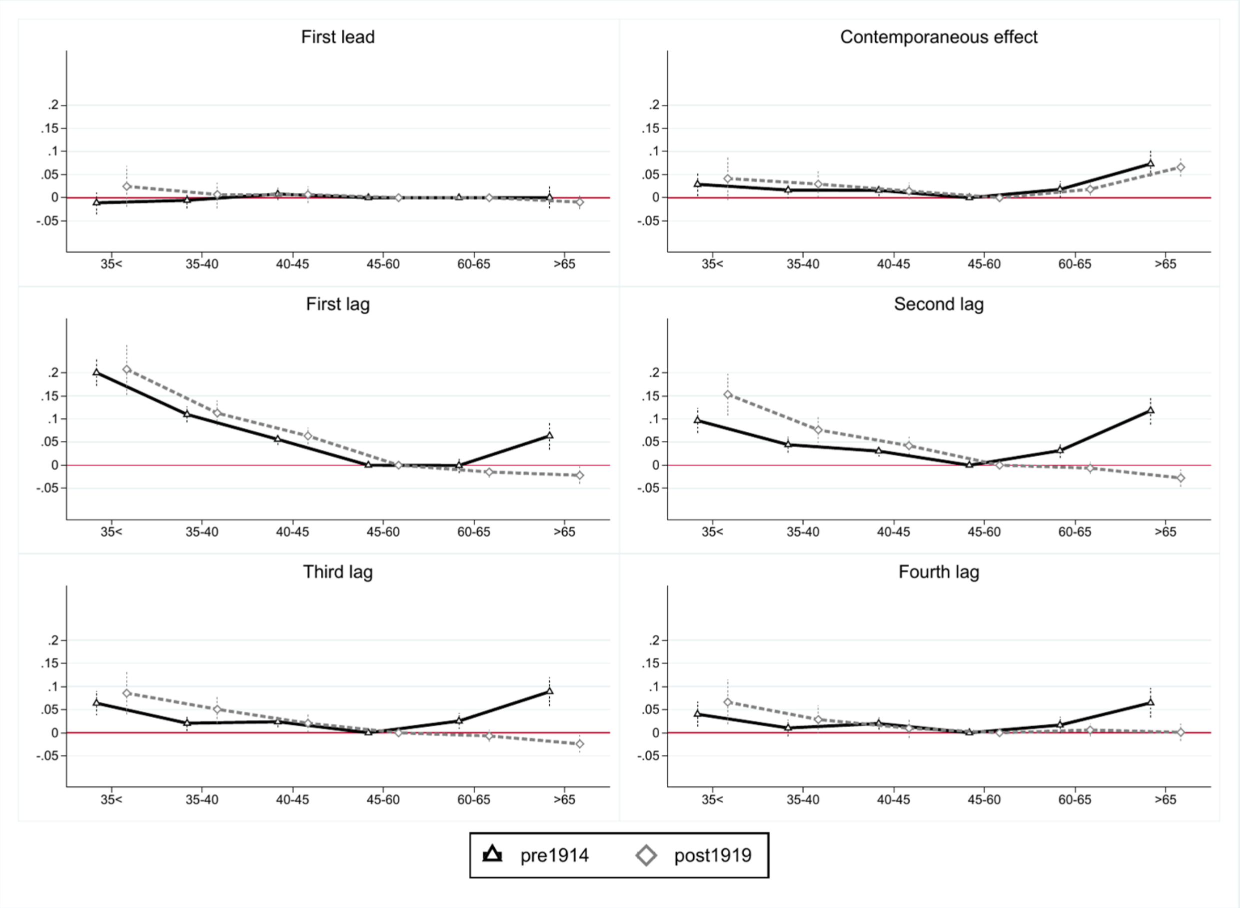


Notes: This figure shows the non-parametric relationship between temperature and log total mortality as in Figure 2, but also controlling for month-by-year fixed effects.

In the main analysis, we use temperature measures from Oxford rather than those available from London. In the next set of results, we show that the findings obtained from the Oxford data are essentially unchanged if we instead use temperature data from London. Note, however, that the London temperature comes from two different locations, Greenwich before WWII and Kew Gardens after. Also, only mean temperature is available, rather than average high and low temperatures for the week. This means that we have to work with different temperature bins in these results. The bins that we use are: under 35F (q1), 35-40 (q2), 40-45 (q3), 45-60 (q4, the reference bin), 60-65 (q5), and above 65 (q6). Note that, because we have to change our bin definitions, the coefficients will not be directly comparable to those shown in the main text.

Figure A.9 presents the estimated coefficients obtained when using the mean weekly temperature from London locations. Overall, the patterns shown in this figure are similar to those obtained from our preferred Oxford temperature data. We see no evidence of pre-trends in the topleft panel. In the top right-panel, we see that both warm and cold weeks exhibit increased mortality, with the hot effects being stronger. The remaining panels show that the warm week effect persists strongly in the period before WWI but is essentially absent after WWI, while the effect of cold weather is similar in both periods and, if anything, somewhat stronger in the post-WWI period. Overall, these results confirm the patterns identified in our main specifications.

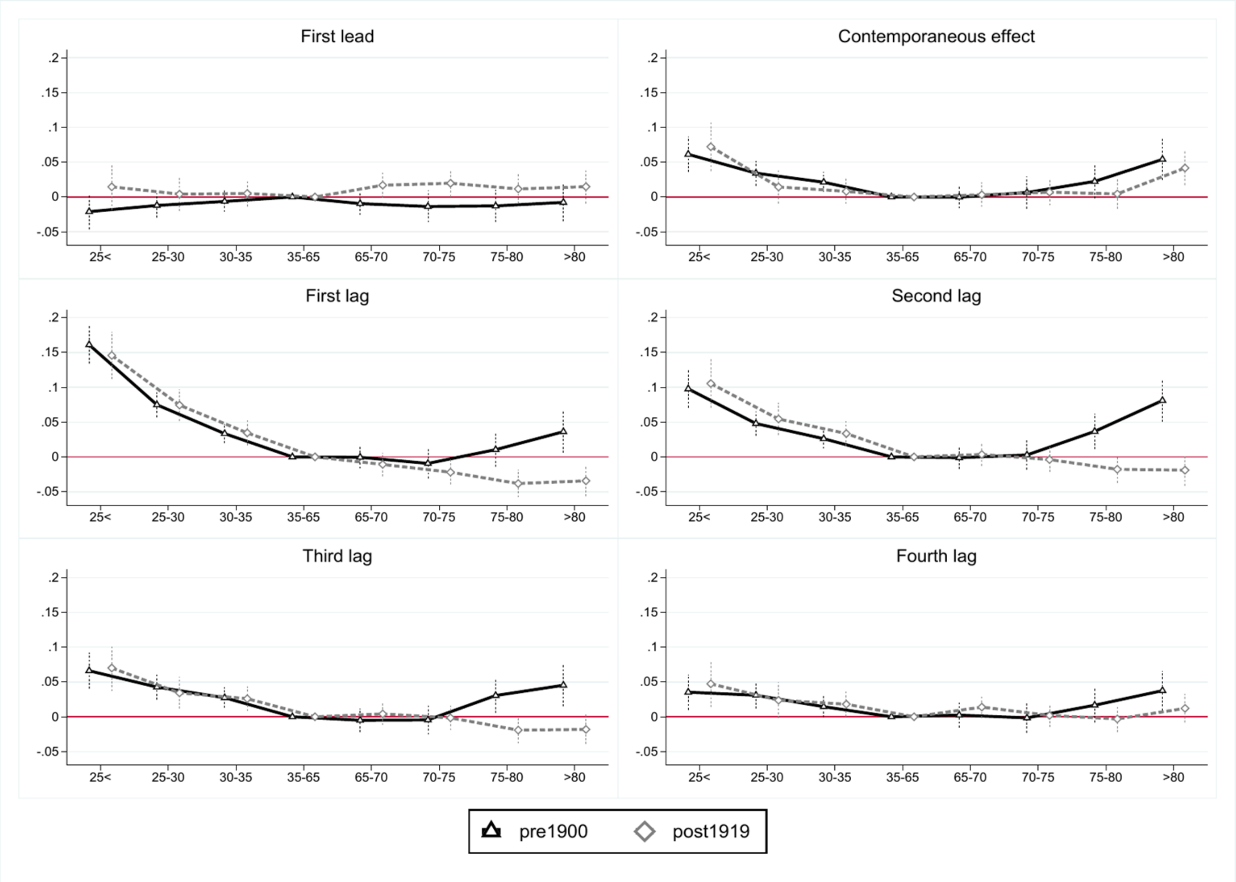
Figure A.9: Total mortality results using temperature measured in London



Notes: This figure shows the non-parametric relationship between temperature and log total mortality for the first lead, the current effect, and four lags. The temperature bins are based on mean weekly temperature measured in Greenwich Observatory before WWII and Kew Gardens after WWII. The pre-WWI sample is from 1866-1914 and the post-WWI sample is from 1919-1939 and 1949-1965. The omitted reference weeks have mean temperature from 45-60F.

In the main analysis, we have included the period from 1901-1914 as part of our early period. However, as shown in Figures A.3-A.5, this is perhaps better thought of as a transition period from a high infant and digestive mortality regime of the late 19th century to the lower mortality regime the existed after WWI. Thus, we may be worried that the inclusion of 1900-1914 in our early period is influencing those results. As a check on this, in Figure A.10, we present results in which we excluded 1900-1914 from the early sample (those years are dropped from the analysis, not included in the later sample period). Overall, we can see that this has little impact on our results.

Figure A.10: Total mortality results with the early period ending in 1900

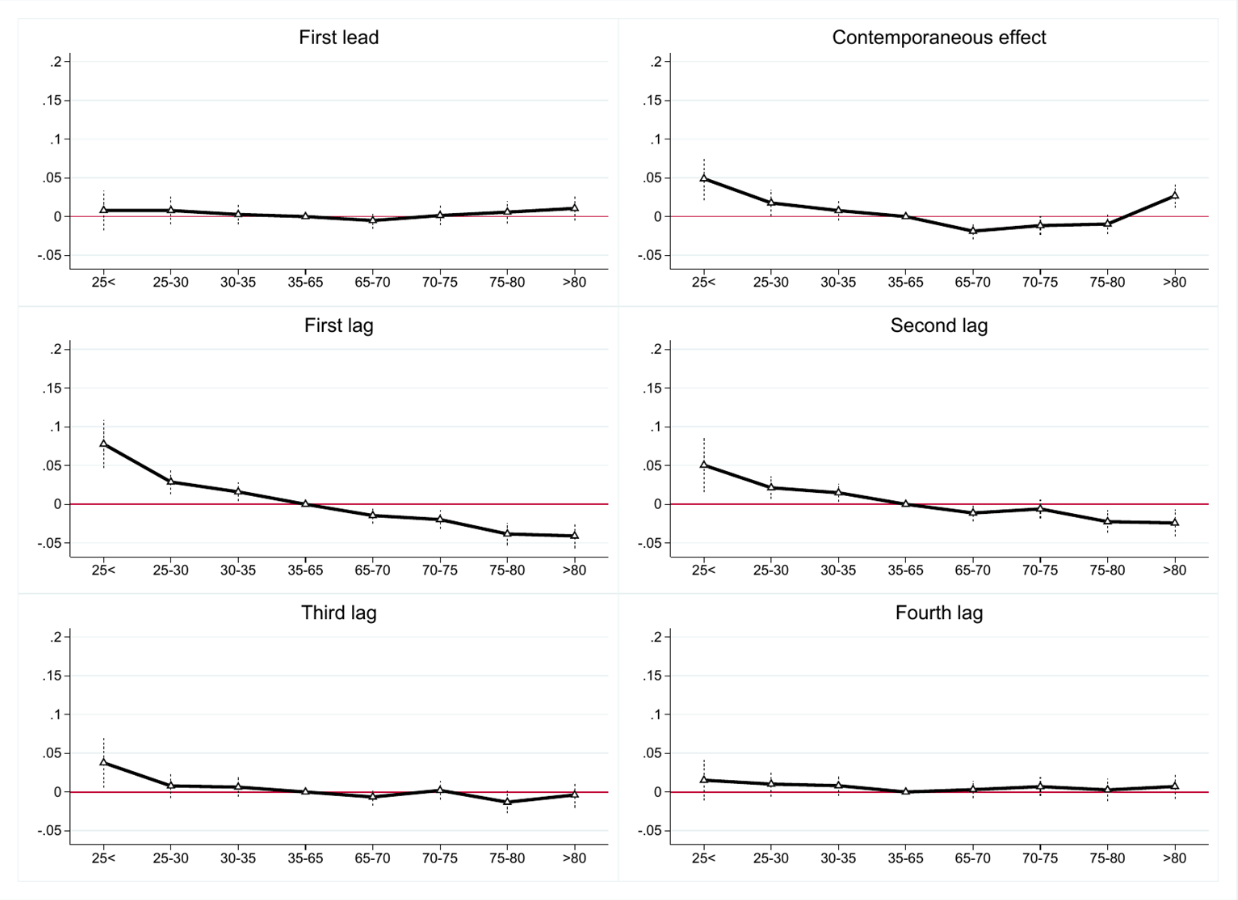


Notes: This figure shows the non-parametric relationship between temperature and log total mortality for the first lead, the current effect, and four lags. The pre-WWI sample is from 1866-1900 and the post-WWI sample is from 1919-1939 and 1949-1965. The omitted reference weeks have minimum temperature above 35F and maximum temperature below 65F.

In the next set of results, we study the temperature-mortality relationship in more recent data stretching from 1981-2006. These estimates, in Figure A.11, are very similar to what we observe in the period from 1919-1965. As in that period, we see an uptick in mortality in the week in which there is an unusually warm temperature event, followed by reduced mortality for the next couple of weeks. The effect of unusually cold weeks remains positive, though the magnitude is smaller than what we observed in the 1919-1965 period.

It is worth noting that these results may be influenced by changes in the age profile of London across this period. Unfortunately, we cannot explore this possibility further because the U.K. Office of National Statistics has been unwilling to provide weekly mortality data by age group for London during this period and the data do not appear in printed records such as those produced for the years before 1970.

Figure A.11: Total mortality results for the modern period (1981-2006)

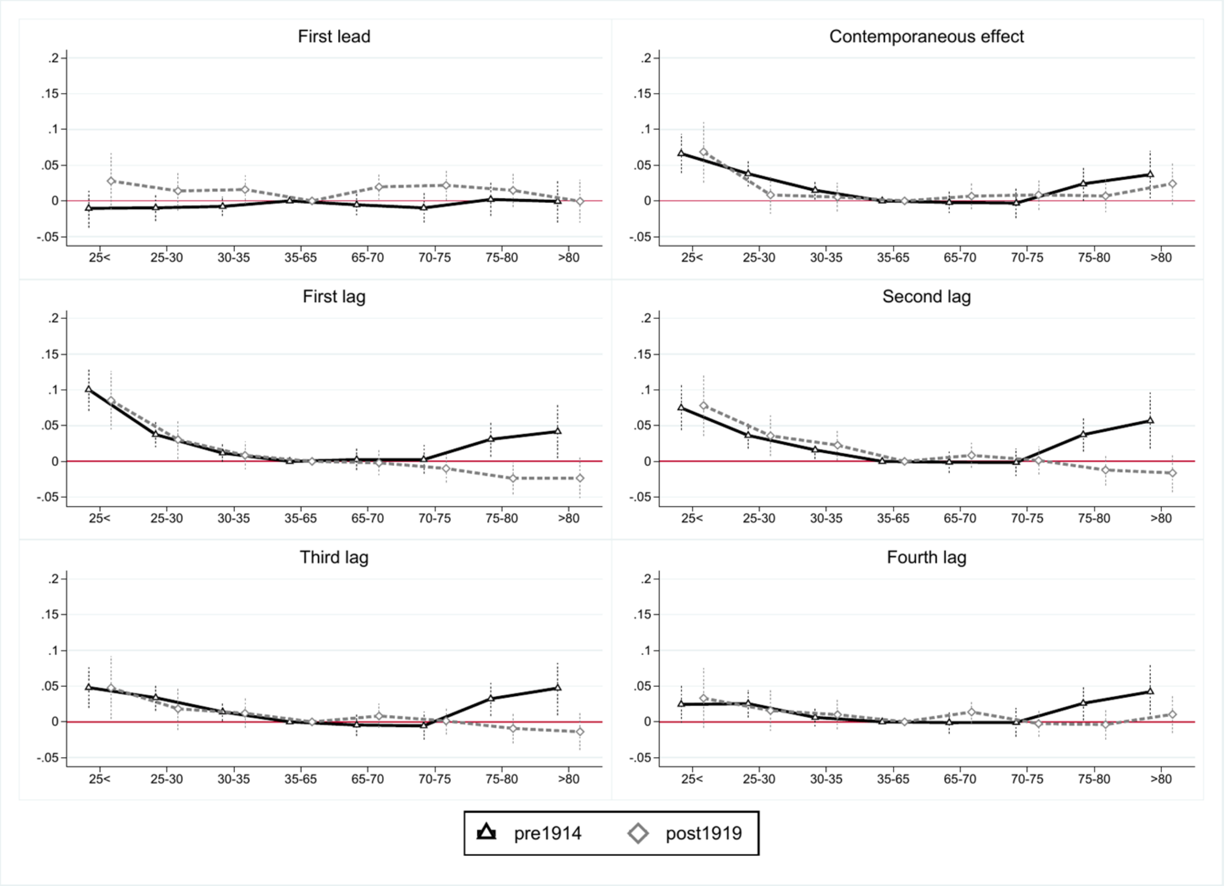


Notes: This figure shows the non-parametric relationship between temperature and log total mortality for one lead, the current effect, and four lags, using data from 1981 to 2006. The reference weeks have minimum temperature above 35F and maximum temperature below 65F.

In the next set of results, we consider the possibility that variation in humidity may be influencing our estimates of the temperature-mortality relationship. Existing work by Barreca (2012) suggests that humidity can impact mortality in addition to just temperature, and that there may be an interaction between temperature and humidity. Thus, this is an important possibility to consider.

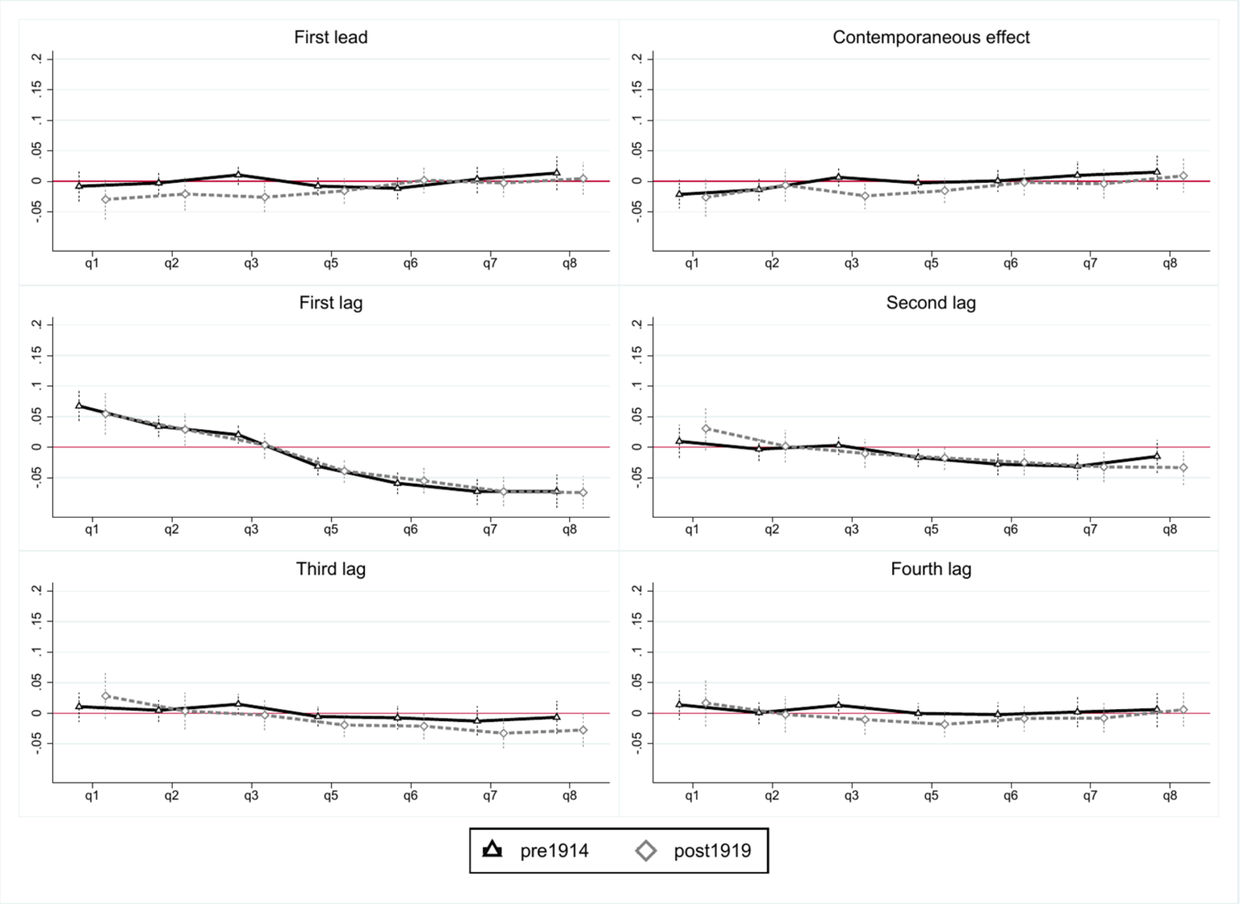
As a first step in assessing this issue, we use the relative humidity, temperature and pressure to calculate absolute humidity in each week. We then divide weeks into eight equally-sized bins based on average humidity level and construct a full set of five leads and seven lags for each of these absolute humidity bins (leaving out the middle bin as the reference). Figure A.12 presents regression results describing the relationship between temperature and total mortality obtained from a specification that includes the full set of binned absolute humidity variables (including leads and lags). These results are notably similar to those obtained in our main analysis specification, which suggests that controlling for humidity does not have a major impact on the estimated temperature mortality relationship. Figure A..13 reports the estimated humidity effects from the same regression. The pattern of elevated mortality at low humidity levels matches existing results from Barreca (2012).

Figure A.12: Total mortality results controlling for a full set of leads and lags of absolute humidity



Notes: This figure shows the non-parametric relationship between temperature and log total mortality for the first lead, the current effect, and four lags as in Figure 2, but also controlling for the non-parametric relationship between mortality and absolute humidity for a set of five leads, the contemporary effect, and seven lags, as well as the interaction between the highest temperature bin and the highest humidity bin. The main humidity estimates are reported in Figure A.13. The pre-WWI sample is from 1866-1914 and the post-WWI sample is from 1919-1939 and 1949-1965. The reference weeks have minimum temperature above 35F and maximum temperature below 65F.

Figure A.13: Humidity and total mortality before and after WWI controlling for a full set of leads/lags of temperature

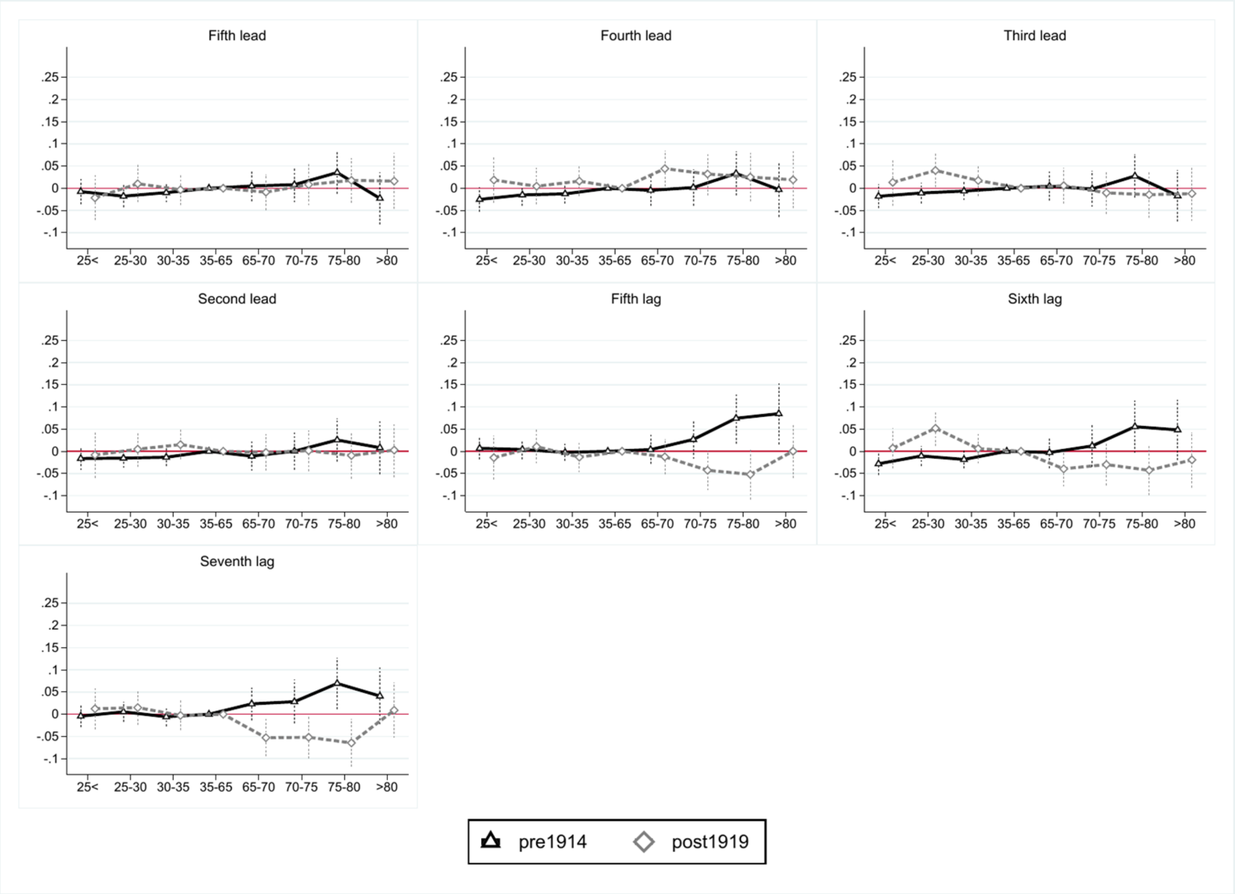


Notes: This figure shows the non-parametric relationship between absolute humidity and log total mortality for the first lead, the current effect, and four lags from the same regression as in Figure A.12. The pre-WWI sample is from 1866-1914 and the post-WWI sample is from 1919-1939 and 1949-1965.

A.2.3 Additional infant mortality results

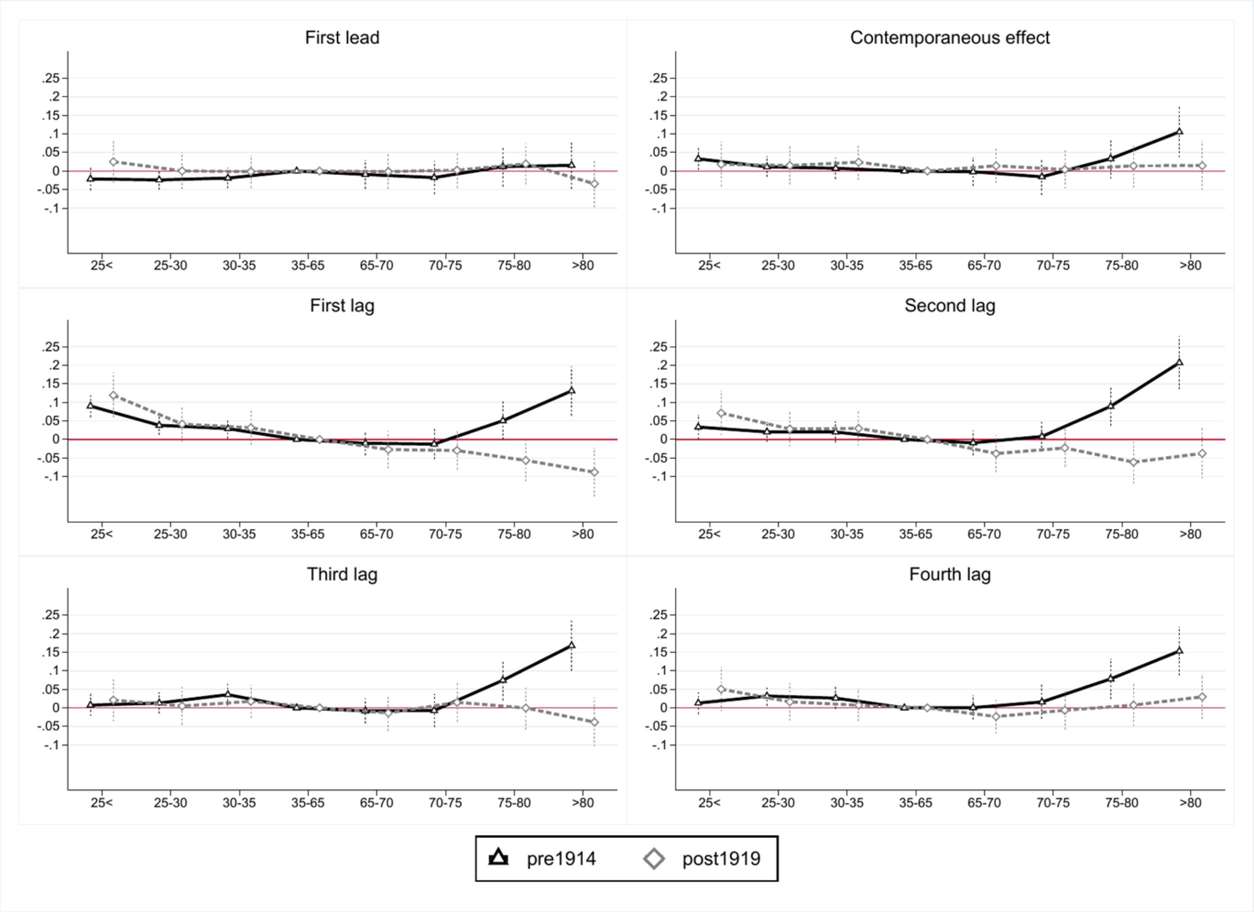
Next, we present additional infant mortality results. Figure A.14 reports leads 2-5 and lags 5-7 for log infant mortality, showing that there is no evidence of pre-trends in this specification, for example. Figure A.15 shows that our infant mortality results are largely unchanged if we include month-by-year fixed effects in the specification. Figure A.16 presents results using temperature data from London rather than Oxford. Figure A.17 presents estimates where the early period ends in 1910 rather than 1914. Figure A.18 shows that our infant results are robust to controlling for humidity as was also the case for total mortality, and Figure A.19 reports the humidity estimates from this specification. The patterns of the humidity estimates are similar to the results for total mortality, but somewhat weaker in numerical magnitude for the first lag. As our final robustness check for infant mortality, Figure A.20 shows that our results are not driven by any scale effects coming from the ongoing fertility transition during this period, as was also the main message coming from Figure A.2.

Figure A.14: Additional leads and lags from the infant mortality regressions



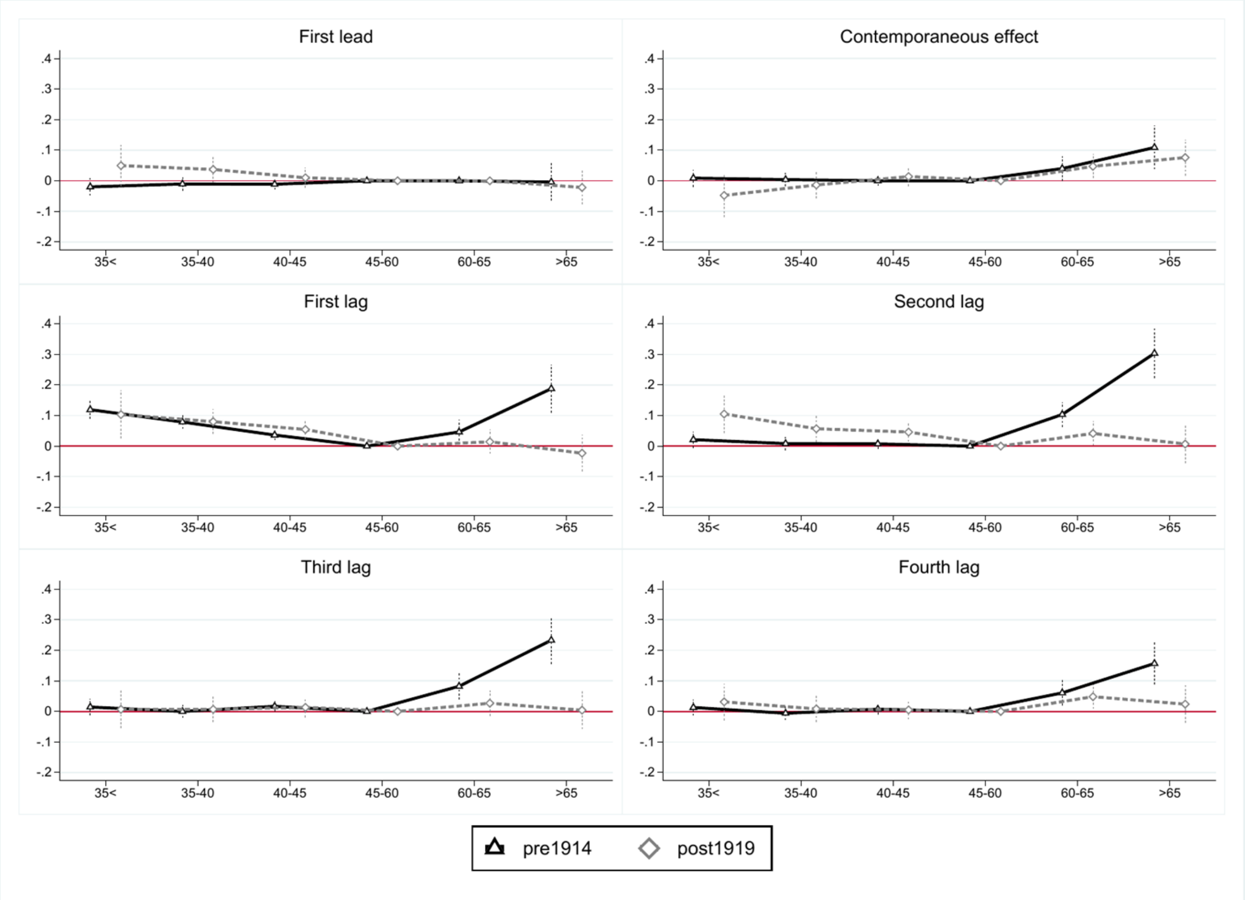
Notes: This figure shows the non-parametric relationship between temperature and log infant mortality for leads 2-5 and lags 5-7 which were not reported in Figure 3. The pre-WWI sample is from 1874 to 1914 and the post-WWI sample is from 1919-1939 and 1949-1965. The omitted reference temperature bin is $q = 4$ or $35F - 65F$.

Figure A.15: Temperature and infant mortality before and after WWI, controlling for month- by-year fixed effects



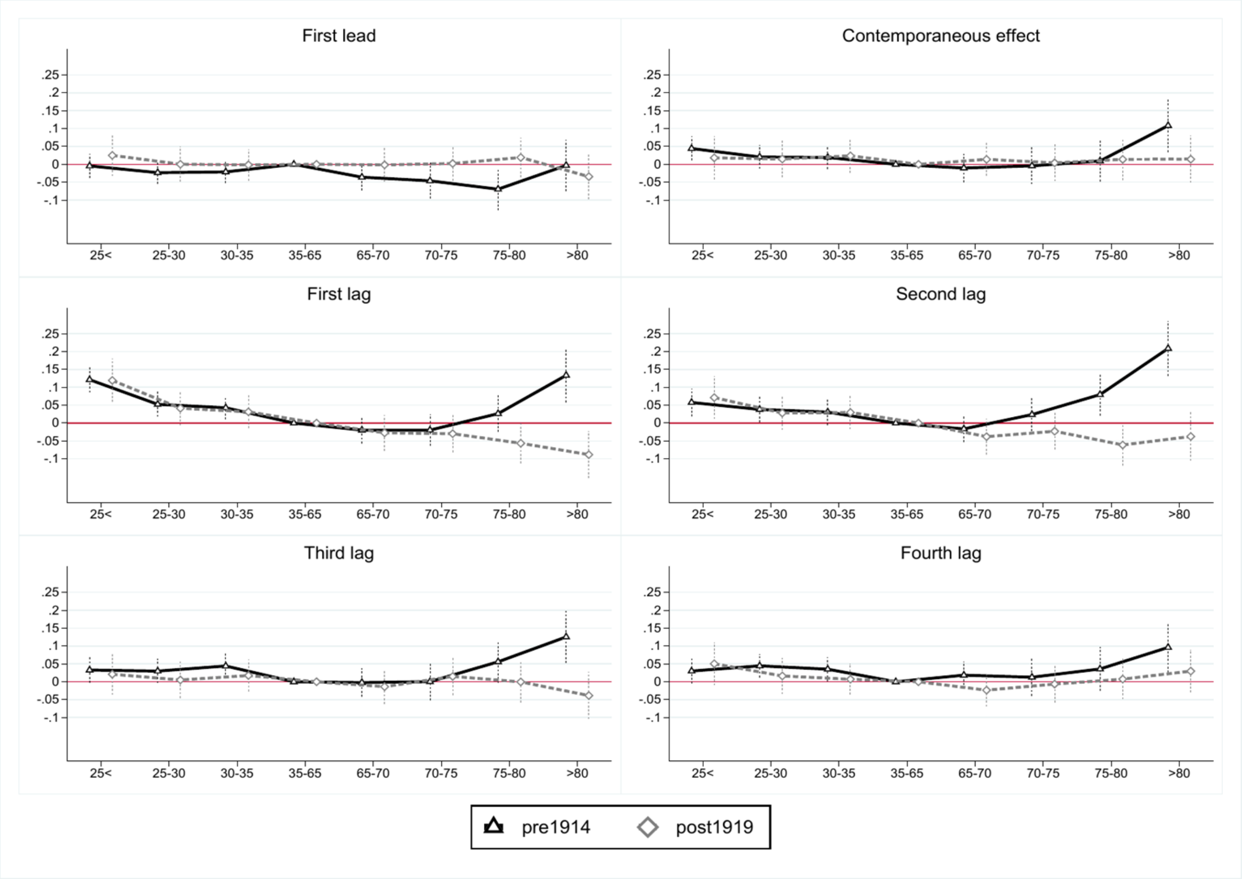
Notes: This figure shows the non-parametric relationship between temperature and log infant mortality as in Figure 3, but also controlling for month-by-year fixed effects.

Figure A.16: Infant mortality results using mean weekly temperature measured in London



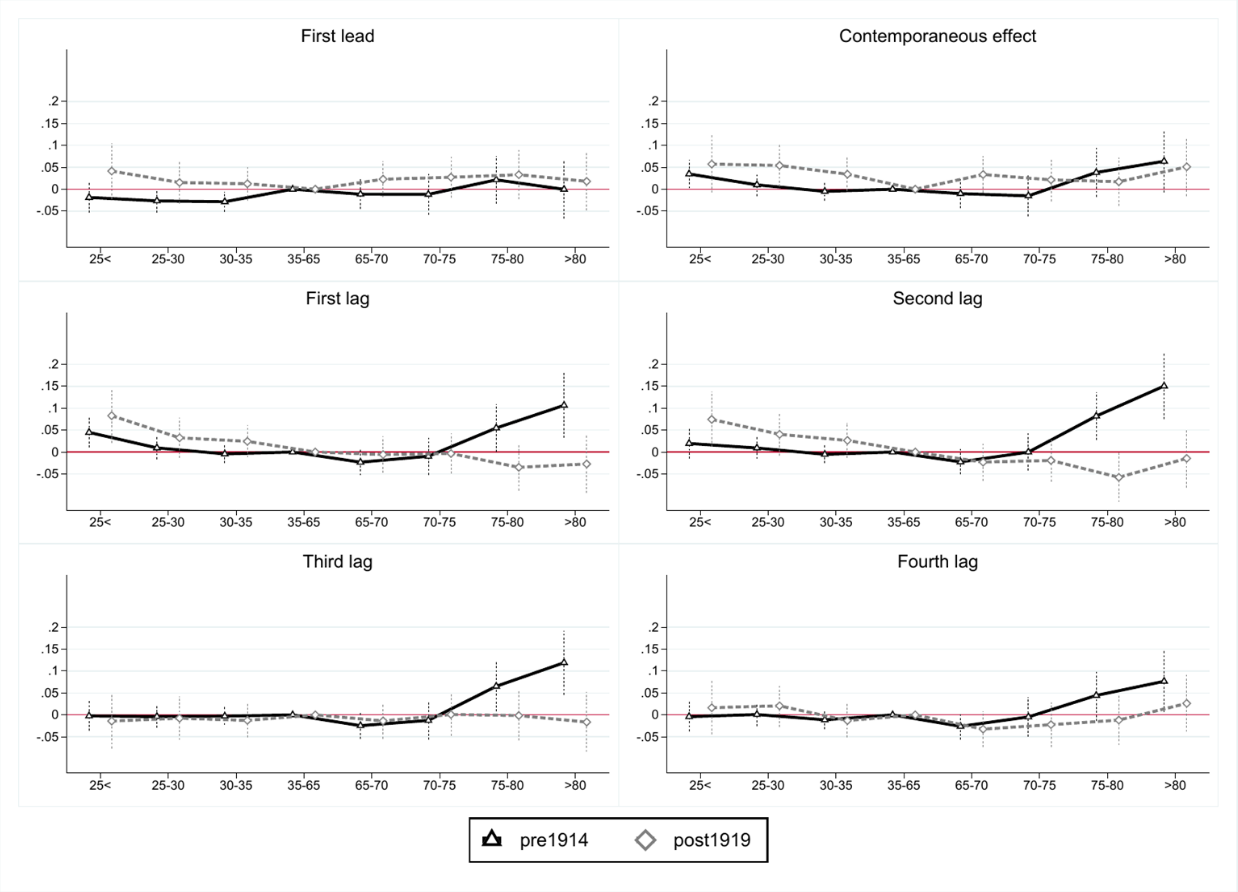
Notes: This figure shows the non-parametric relationship between temperature and log infant mortality for the first lead, the current effect, and four lags. The temperature bins are based on mean weekly temperature measured in Greenwich Observatory before WWII and Kew Gardens after WWII. The pre-WWI sample is from 1866-1914 and the post-WWI sample is from 1919-1939 and 1949-1965. The omitted reference weeks have mean temperature from 45-60F.

Figure A.17: Temperature and infant mortality excluding data from 1900-1914



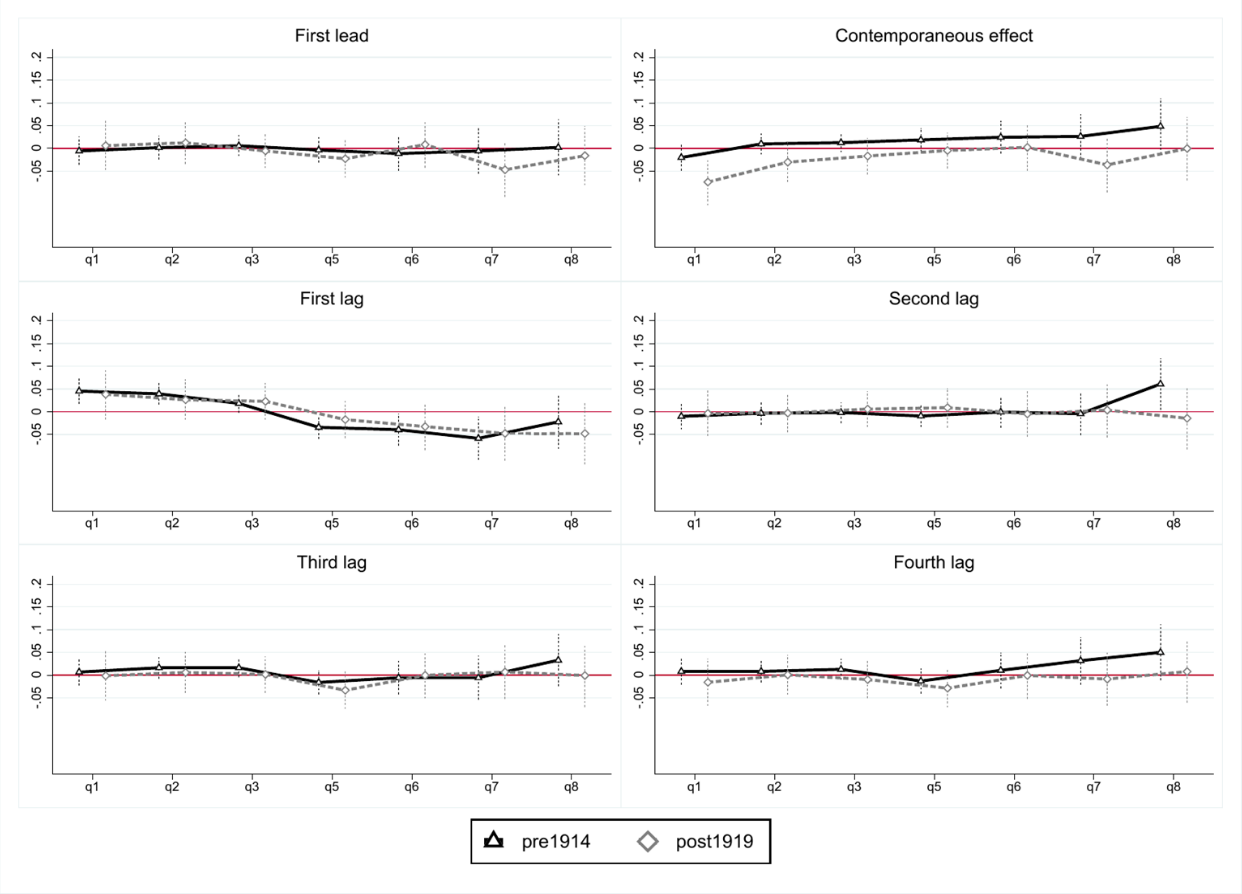
Notes: This figure shows the non-parametric relationship between temperature and log infant mortality for the first lead, the current effect, and four lags. The pre-WWI sample is from 1866-1900 and the post-WWI sample is from 1919-1939 and 1949-1965. The omitted reference weeks have minimum temperature above 35F and maximum temperature below 65F.

Figure A.18: Temperature and infant mortality controlling for a full set of leads and lags of absolute humidity



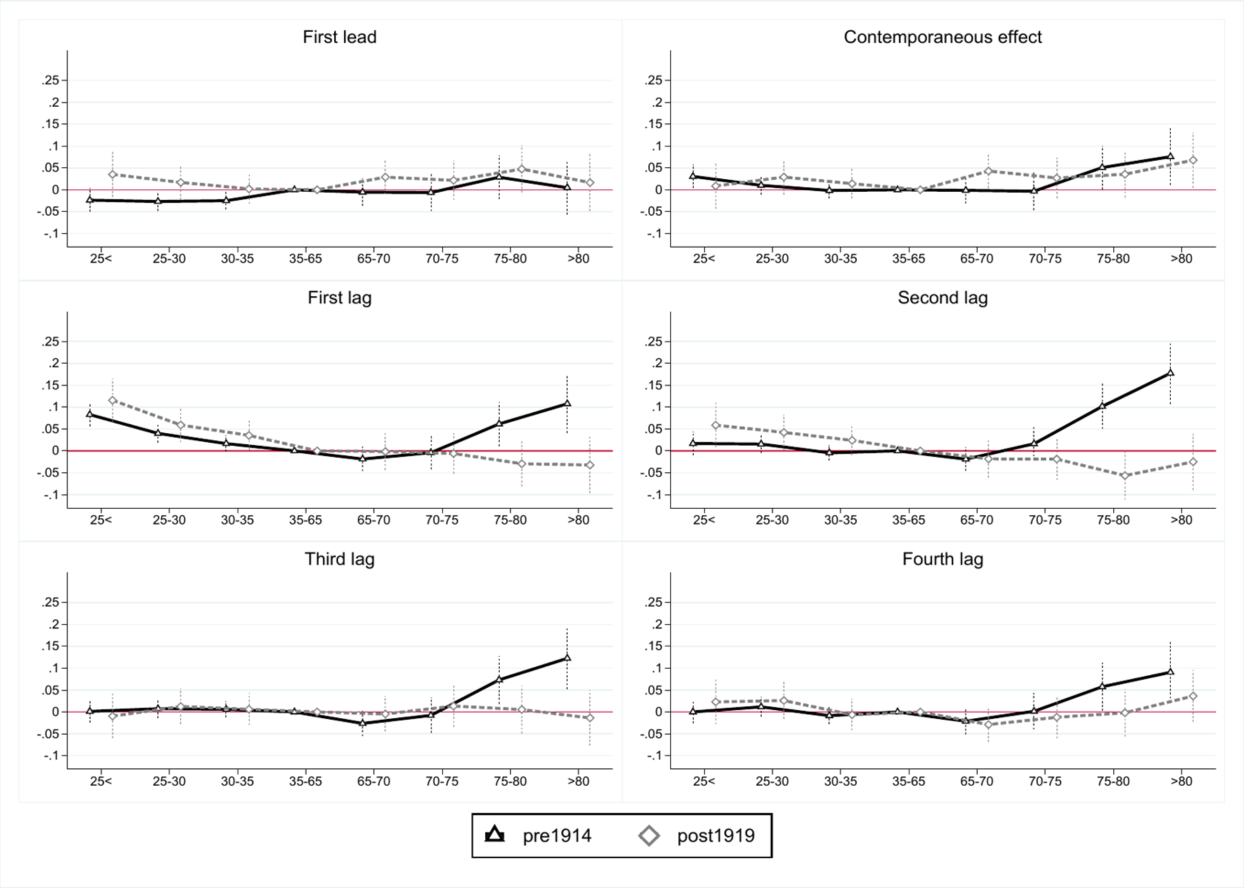
Notes: This figure shows the non-parametric relationship between temperature and log infant mortality for the first lead, the current effect, and four lags as in Figure 3, but also controlling for the non-parametric relationship between mortality and absolute humidity for a set of five leads, the contemporary effect, and seven lags. The main humidity estimates are reported in Figure A.19. The pre-WWI sample is from 1874-1914 and the post-WWI sample is from 1919-1939 and 1949-1965. The omitted reference temperature bin is $q = 4$ or $35F - 65F$.

Figure A.19: Humidity and infant mortality before and after WWI controlling for full set of leads/lags of temperatures



Notes: This figure shows the non-parametric relationship between humidity and log total mortality for the first lead, the current effect, and four lags from the same regression as in Figure 18A. The pre-WWI sample is from 1866-1914 and the post-WWI sample is from 1919-1939 and 1949-1965. The omitted reference humidity bin is $q = 4$ or $35F - 65F$.

Figure A.20: Temperature and the infant mortality rate before and after WWI



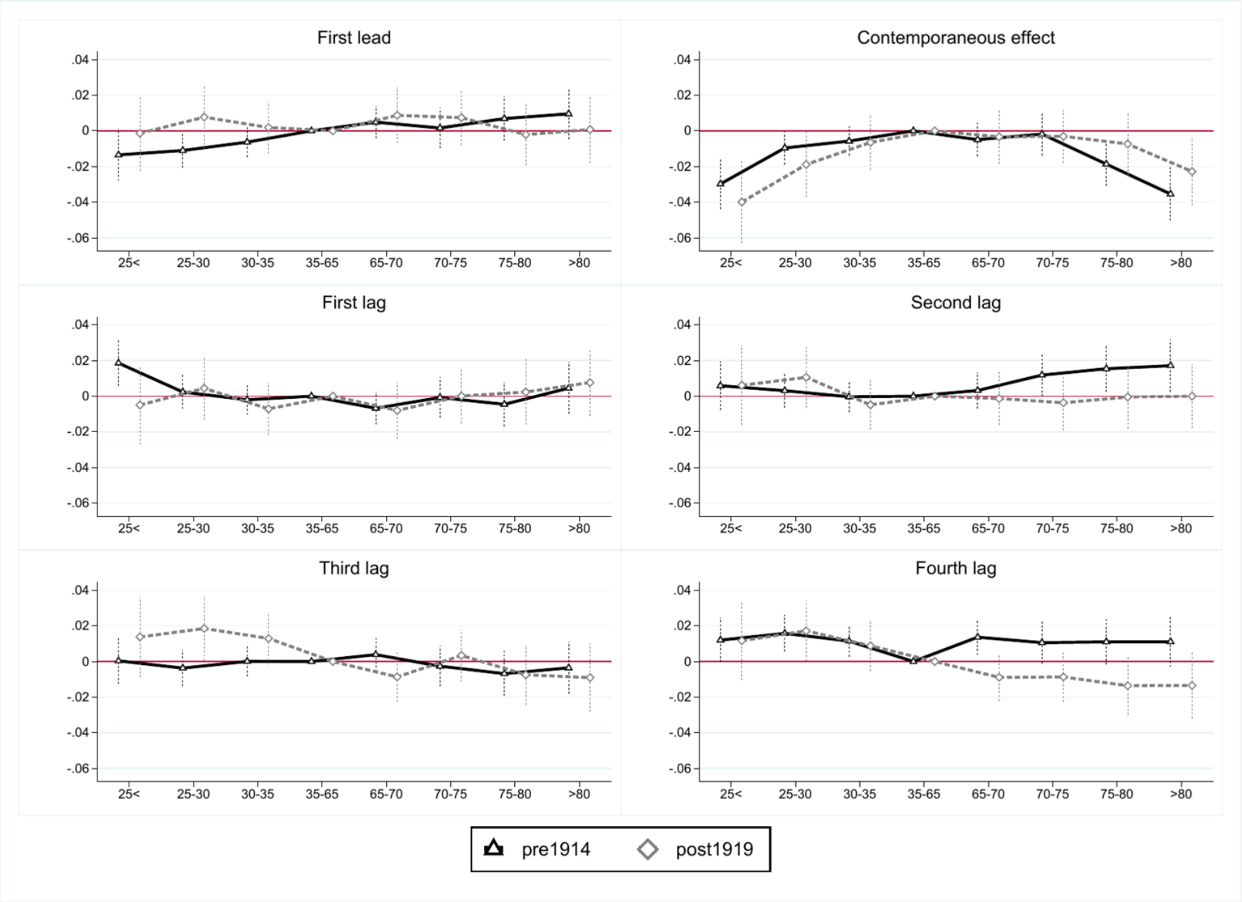
Notes: This figure shows the non-parametric relationship between temperature and the log infant mortality rate for the first lead, the current effect, and four lags. The denominator of the infant mortality rate uses the number of births the past 52 weeks. The pre-WWI sample is from 1874-1914 and the post-WWI sample is from 1919-1939 and 1949-1965. The omitted reference temperature bin is $q = 4$ or $35F - 65F$.

A.3 Analysis of temperature and births

Figure A.21 reports the relationship between live births and temperature before and after WWI. The most notable feature from this graph is that the number of live births are lower during weeks with cold and warm temperatures, but this relationship appears to have been stable over our study period. This finding is consistent with literature from modern developed countries showing that exposure to temperature extremes is associated with an increased risk of stillbirth (Strand, Barnett, and Tong, 2011; Auger et al., 2017). While existing work focuses primarily on hot temperatures, our findings provide some indirect evidence that low temperatures may also be associated with an increase in stillbirths.

The results in Figure A.21 relate to a relatively small literature looking at the relationship between ambient temperature and contemporaneous births. One recent paper in this area is Auger et al. (2014). That study, which uses data from Montreal, CA covering 1981-2010, looks at the relationship between the number of births in a week and temperature in the previous week. The authors find evidence that temperatures above 32 C in the past week are associated with an increase in births at term of around 4%, with no impact on pre- term births. It is somewhat difficult to compare these results with our findings, since we study a broader set of contemporaneous and lagged effects, rather than just a single one-week lag. However, we do find some evidence of a weak lagged increase in births, which seems consistent with their results, though this effect is strongest two weeks after a high temperature event. Similar patterns are observed in other studies, such as Ha et al. (2016). Note that this literature differs from work, such as Barreca (2017) and Barreca, Deschênes, and Guldi(2018), which focuses mainly on the impact of temperature on conception.

Figure A.21: Temperature and live births before and after WWI

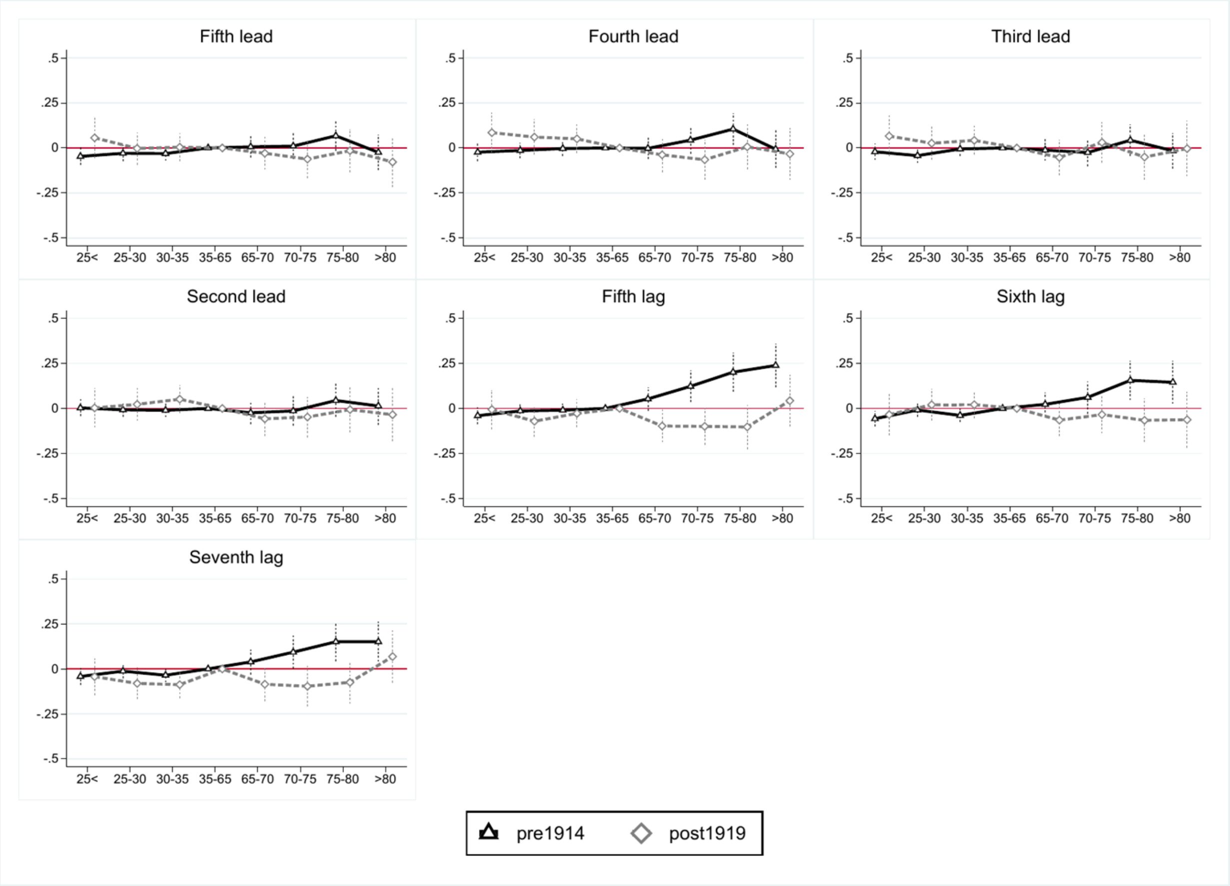


Notes: This figure shows the non-parametric relationship between temperature and log live births for the first lead, the current effect and four lags. The pre-WWI sample is from 1866 to 1914 and the post-WWI sample is from 1919-1939 and 1949-1965. The omitted reference temperature bin is $q = 4$ or $35F - 65F$.

A.4 Additional analysis of causes of death

This section presents additional results looking at digestive disease mortality data. First, Figure A.22 reports the remaining leads, not reported in the paper, for digestive mortality.

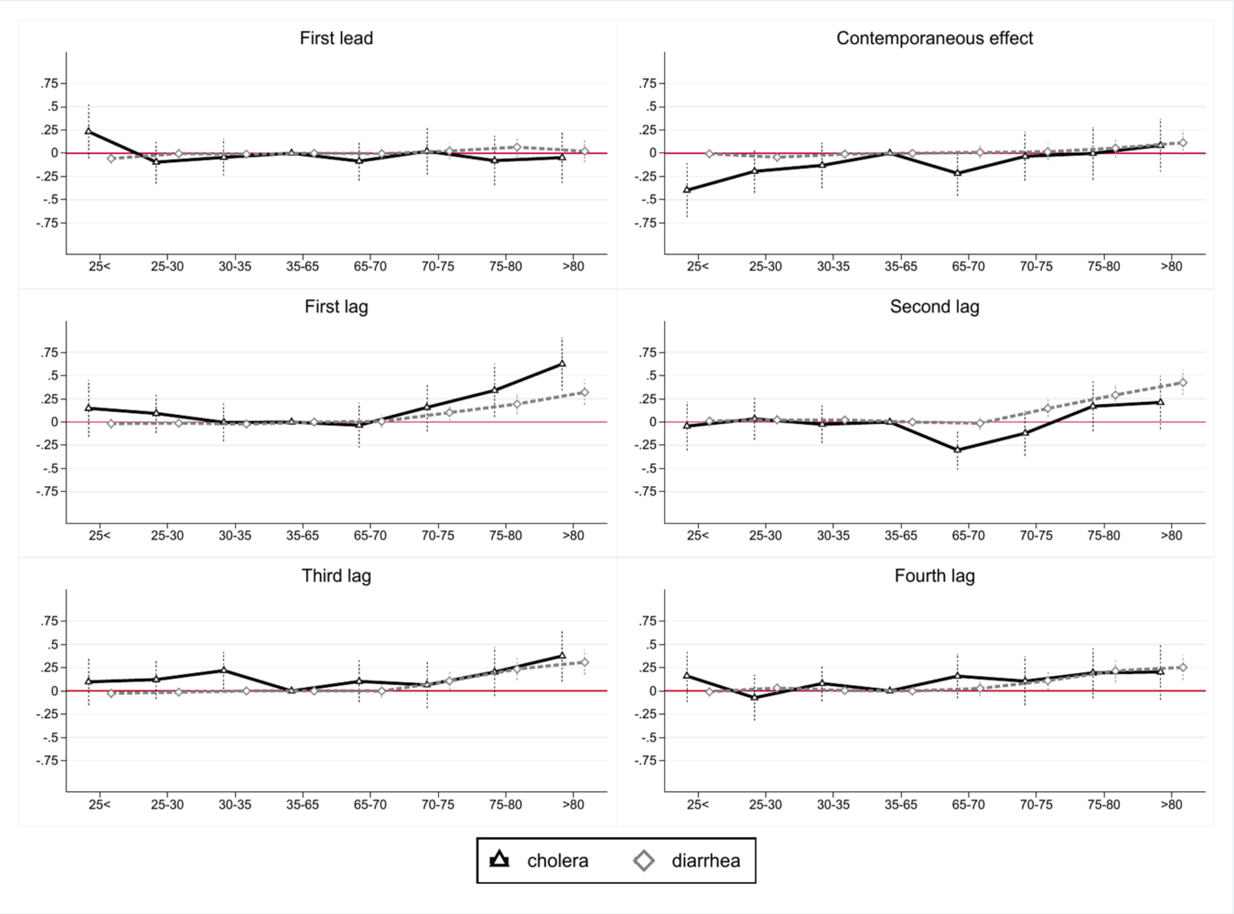
Figure A.22: Additional leads and lags for the digestive disease mortality regressions



Notes: This figure shows the non-parametric relationship between temperature and log digestive mortality for four additional leads and three additional lags which were not reported in Figure 5. The pre-WWI sample is from 1870 to 1914 and the post-WWI sample is from 1919-1939 and 1949-1965. The omitted reference temperature bin is $q = 4$ or $35F - 65F$.

Next, Figures A.23 and A.24 present additional results breaking down digestive disease deaths into subcategories. These results focus on data prior to 1911, both because this allows us to construct more consistent series and because some of these categories, such as cholera, had effectively disappeared by the end of that period. The results in Figure A.23 show that both cholera and the (much larger) diarrhea and dysentery cause of death groupings exhibited increased mortality associated with hot weather. The estimates for the heat effect on cholera deaths are large, but recall that this was applied on a much lower baseline level of cholera deaths.

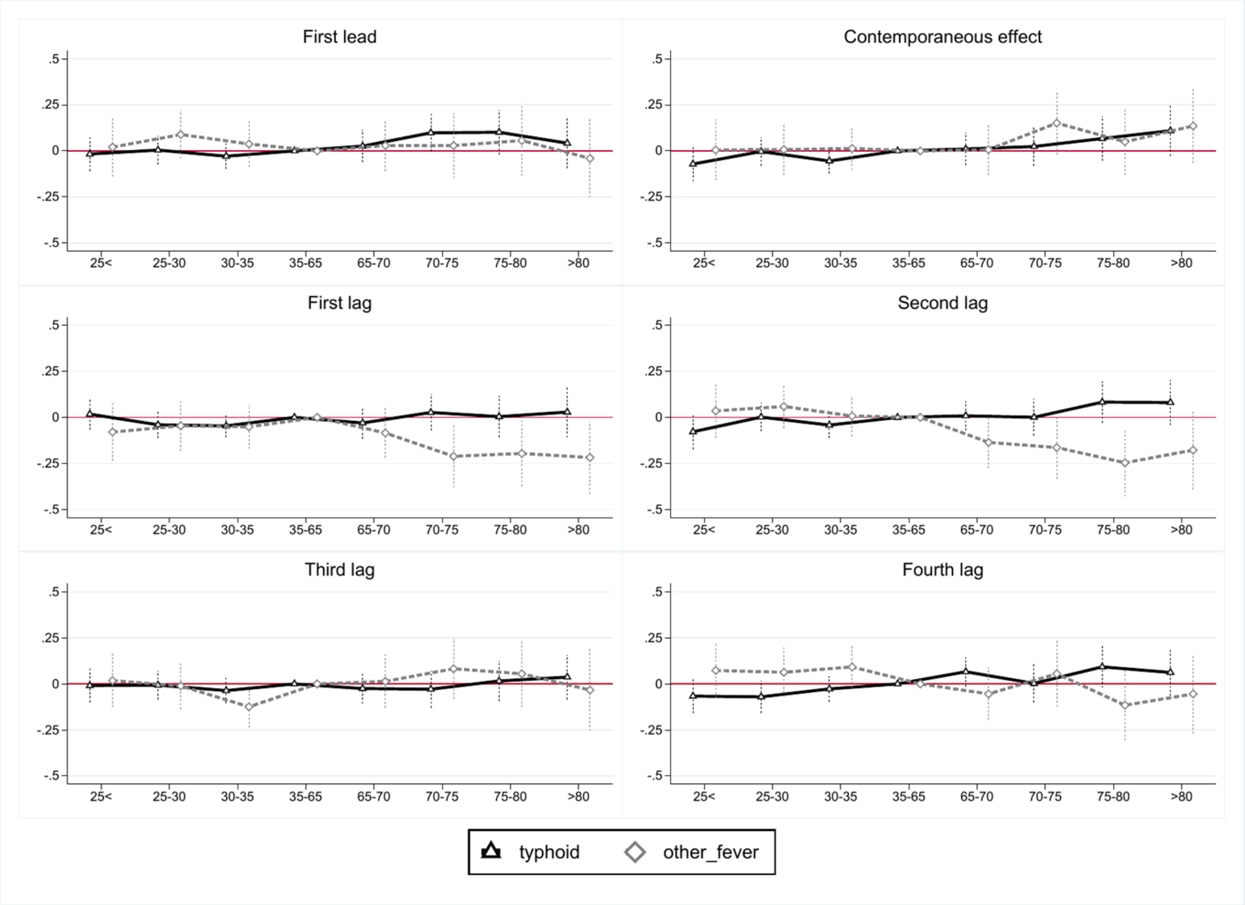
Figure A.23: Results for cholera and the diarrhea & dysentery categories, 1870-1910



Notes: This figure shows the non-parametric relationship between temperature and log cholera mortality or log mortality from diarrhea (which includes dysentery, enteritis and gastritis) for the first lead, the current effect and four lags. The pre-WWI sample is from 1866 to 1914 and the post-WWI sample is from 1919-1939 and 1949-1965. The omitted reference temperature bin is $q = 4$ or $35F - 65F$.

In the next set of results, Figure A.24, we present estimates for deaths due to typhoid fever and, for comparison, results from other fevers (which are not included in the digestive disease category). These results show that typhoid deaths were not strongly associated with warmer temperature. Only in the contemporaneous week do we see evidence (not statistically significant) of an increase in typhoid deaths. Typhoid appears to make no contribution to the lagged impact of temperature on mortality, which formed the bulk of the impact of high temperature on mortality in Figure 5. Deaths due to other fevers also show no increase during periods of high temperature, and there is evidence of negative lagged effects which probably operate through competing risk effects.

Figure A.24: Temperature and deaths due to typhoid or other fevers, 1870-1910



Notes: This figure shows the non-parametric relationship between temperature and log typhoid fever mortality or log mortality due to other fevers (including simple continued fever and remittent fever) for the first lead, the current effect and four lags. The pre-WWI sample is from 1866 to 1914 and the post-WWI sample is from 1919-1939 and 1949-1965. The omitted reference temperature bin is $q = 4$ or $35F - 65F$.

A.5 Effect of cumulative weeks of high or low temperature

In this appendix, we explore the additional impact of having multiple weeks of hot or cold temperature in a row. While the results in our main analysis allow lagged temperature effects, they do not explicitly incorporate the possibility that having several weeks of unusually cold or warm weather may have cumulative effects. To capture these cumulative effects, we construct additional variables reflecting whether a particular warm or cold week has been preceded by one, two or three similar weeks. In constructing these variables, we consider a hot week any week falling into the top two temperature bins and a cold week any week falling into the bottom two bins. We then add these variables into our standard regressions, so that the resulting coefficients reflect the additional effect of having multiple weeks of high or low temperatures in a row, beyond the direct effect of having high or low temperature in a week or in a previous week captured by our standard temperature variables.

The results for total mortality are presented in Table A.1. The results in Columns 2 and 4 look at the impact of having two hot or two cold weeks in a row in, respectively, the pre-WWI and post-WWI periods. Columns 2 and 5 look across three week windows while Columns 3 and 6 look across four-week windows. These results provide evidence that in the pre-WWI period, multiple weeks of high temperature resulted in additional deaths, beyond the direct effect of temperature in a week measured previously. This effect appears most strongly when we have two or three weeks of high temperature in a row. No similar pattern of cumulative effects appears for low temperatures, or for high temperatures in the post-WWI period. Table A.2 presents similar results for infant mortality. Here we see similar patterns with even stronger cumulative effects of high temperatures in the pre-WWI period.

Table A.1: Estimates of the cumulative effect of multiple hot or cold weeks in a row on total mortality

	DV: Log total mortality					
	Pre-WWI			Post-WWI		
	(1)	(2)	(3)	(4)	(5)	(6)
High temp for two weeks	0.0196 (0.0162)			-0.0172 (0.0125)		
Low temp for two weeks	-0.0120 (0.0126)			0.0144 (0.0198)		
High temp for three weeks		0.0344** (0.0171)			0.00644 (0.0116)	
Low temp for three weeks		-0.00536 (0.0130)			0.0136 (0.0206)	
High temp for four weeks			0.0520** (0.0203)			0.0200 (0.0135)
Low temp for four weeks			0.00429 (0.0152)			0.0342 (0.0233)
Observations	2,498	2,498	2,498	1,889	1,889	1,889
R-squared	0.716	0.717	0.717	0.848	0.848	0.849

Notes: Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Regressions also include a full set of temperature bin indicator variables for five leads, the current period, and seven lags, as well as weekly controls for rainfall and fog events.

Table A.2: Estimates of the cumulative effect of multiple hot or cold weeks in a row on infant mortality

	DV: Log infant mortality					
		Pre-WWI			Post-WWI	
	(1)	(2)	(3)	(4)	(5)	(6)
High temp for two weeks	0.0591 (0.0417)			-0.0954*** (0.0360)		
Low temp for two weeks	0.00291 (0.0154)			-0.0283 (0.0295)		
High temp for three weeks		0.123** (0.0478)			-0.0521 (0.0341)	
Low temp for three weeks		-0.00920 (0.0151)			-0.0208 (0.0309)	
High temp for four weeks			0.176*** (0.0535)			0.00814 (0.0388)
Low temp for four weeks			-0.00208 (0.0166)			0.00969 (0.0346)
Observations	2,101	2,101	2,101	1,889	1,889	1,889
R-squared	0.727	0.730	0.732	0.908	0.908	0.908

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Regressions also include a full set of temperature bin indicator variables for five leads, the current period, and seven lags, as well as weekly controls for rainfall and fog events.

A.6 Summary effects across eight-week periods

In this appendix, we present estimates of summary effects of a hot or cold temperature event across the week in which it occurs and the following seven weeks. These provide a useful summary of the magnitude of the effects that we observe averaged across an eight-week period, starting with the week in which exposure occurred. The estimating equation for this exercise is,

$$\ln(y_{wt}) = \sum_{q=1,q\neq 4}^{8} \beta_q TEMP_{wt}^{q} + \delta_w + \delta_t + X_{wt}\eta + \varepsilon_{wt}$$

where $TEMP_{wt}^{q}$ is an indicator that takes a value of one if the temperature in any week between *wt* and *wt-7* fell into the q'th temperature bin and zero otherwise. Thus, the coefficient β_1 reflects the impact of having temperature fall into the lowest temperature bin in a week, averaged across that week and the next seven weeks. Similarly, β_8 reflects the impact of having temperature fall into the highest temperature bin in a week, averaged across that week and the next seven weeks. These provide a useful way to summarize the contemporaneous and lagged effects (out to seven weeks) of high or low temperature events. This approach is similar to computing simple averages of the estimated coefficients from the baseline full lag model (i.e., with one contemporaneous coefficient and the seven lagged coefficients).

The results obtained when applying this approach to total mortality, infant mortality, and digestive disease mortality are presented in Table A.3, focusing only on the highest and lowest temperature bins. Columns 1 and 2 present, respectively, results for total mortality before and after WWI. In both periods, cold weeks increase total mortality by about 7 percent. Warm weeks raise total mortality by about 4 percent in the earlier period, but have essentially no effect after WWI. Columns 3-4 focus on infant deaths. These show that warm weeks increased mortality by about 10 percent in the pre-1914 period, but that this decreased to a statistically insignificant 2.3 percent after 1919. We observe only mild evidence of an increase in infant mortality associated with cold weeks. We estimate similar patterns when focusing on the infant mortality rate (i.e., infant mortality relative to births in the past 52 weeks) in Columns 5-8. Finally, in Columns 9-10 we look at the impact of temperature on deaths due just to digestive diseases. These jump by 23 percent after warm weeks in the period before 1914. In the later period we observe a much smaller increase of around 7.7 percent. For cold weeks, we observe no meaningful effect on digestive disease deaths.

Table A.3: Estimated effects across eight-week windows

DV:	**Log total deaths**		**Log infant deaths**		**Log infant mort. Rate**		**Infant mort. Rate**		**Log digestive deaths**	
Lowest temp bin	0.0707***	0.0770***	0.0141	0.0239	0.0121	0.0248	0.241	0.164*	-0.0348*	0.0282
	(0.00772)	(0.0102)	(0.0118)	(0.0147)	(0.0118)	(0.0154)	(0.185)	(0.0925)	(0.0195)	(0.0338)
Highest temp bin	0.0424***	-0.00660	0.102***	0.0227	0.102***	0.0239	1.740***	0.148	0.282***	0.132***
	(0.00766)	(0.00816)	(0.0168)	(0.0181)	(0.0167)	(0.0184)	(0.288)	(0.0960)	(0.0337)	(0.0422)
Observations	2,498	1,900	2,101	1,900	2,101	1,808	2,101	1,808	2,289	1,876
R-squared	0.608	0.804	0.662	0.903	0.595	0.849	0.544	0.762	0.819	0.755

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

References

Auger, Nathalie, William D. Fraser, Audrey Smargiassi, Marianne Bilodeau-Bertrand, and Tom Kosatsky. "Elevated Outdoor Temperatures and Risk of Stillbirth." *International Journal of Epidemiology* 46*,* no. 1 (2017):, 200–208.

Auger, Nathalie, Ashley I. Naimi, Audrey Smargiassi, Ernset Lo, and Tom Kosatsky. "Extreme Heat and Risk of Early Delivery Among Preterm and Term Pregnancies." *Epidemiology* 25*,* no. 3 (2014): 344–350.

Barreca, Alan. "Does Hot Weather Affect Human Fertility?". *IZA World of Labor* 375, (2017): DOI: 10.15185/izawol

Barreca, Alan, Karen Clay, Olivier Deschênes, Michael Greenstone, and Joseph S. Shapiro. "Adapting to Climate Change: The Remarkable Decline in the U.S. Temperature-Mortality Relationship over the 20th Century." *Journal of Political Economy* 124*,* no. 1 (2016):105–159.

Barreca, Alan, Olivier Deschênes, and M. Guldi. "Maybe Next Month? Temperature Shocks and Dynamic Adjustments in Birth Rates." *Demography* 55*,* no. 4 (2018): 1269–1293.

Barreca, Alan. "Climate Change, Humidity, and Mortality in the United States." *Journal of Environmental Economics and Management* 63, no. 1 (2012): 19–34.

Ha, Sandie, Danping Liu, Yeyi Zhu, Sung Soo Kim, Seth Sherman, and Pauline Mendola. "Ambient Temperature and Early Delivery of Singleton Pregnancies." *Environmental Health Perspectives* 125, no. 3 (2016): 453–459.

Strand, Linn B., Adrian G. Barnett, and Shilu Tong. "Maternal Exposure to Ambient Temperature and the Risks of Preterm Birth and Stillbirth in Brisbane, Australia." *American Journal of Epidemiology* 175, no.2 (2011): 99–107.