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## Supplementary information

All-cause and cause-specific mortality associated with daylight saving time transition in the United States: A nationwide time series study based on weekly data

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## 114 S1 Data and variables

### 115 S1.1 Mortality data

116 We retrieved state-specific weekly death counts from the National Center for Health Statistics  
117 (HCHS) database of the Centers for Disease Control and Prevention (CDC) of the US (website link:  
118 <https://data.cdc.gov/>) [1]. We obtained the weekly death counts in the period from the start of 2015 to  
119 the end of 2019 containing aggregated death counts of all US jurisdictions based on death certificates  
120 for US residents. The state-specific mortality data were stratified according to different  
121 epidemiological weeks, states in the US, age, and ethnicity groups. The underlying causes of death  
122 were identified according to the International Statistical Classification of Diseases and Related Health  
123 Problems, the tenth revision (ICD-10) [2]. We excluded the data in 2020 or after, so that the impacts  
124 of COVID-19 pandemic could be neglected in this study.

125 The mortality data were the outcome variable in this study.

### 126 S1.2 Population data

127 The state-specific population data for each year between 2014 to 2020 were obtained via the  
128 US Census Bureau (website link: <https://data.census.gov/>) [3]. The state-specific population data were  
129 stratified according to different age, and ethnicity groups. To match with the same temporal resolution  
130 of weekly mortality data, linear interpolation was employed to calculate the mid-epidemiological-  
131 week population size for each state, and each subgroup of population. We remarked that since there  
132 was no dramatic change observed in population size between and within years, the imprecision from  
133 linear interpolation may have little influenced the results.

134 The data of population size were used as an offset to estimate mortality rate in regression  
135 models.

### 136 S1.3 Meteorological and pollution data

137 The state-specific daily meteorological and pollution data were obtained from US  
138 Environmental Protection Agency's (EPA) Air Quality System (AQS) [4]. The variables including  
139 daily mean temperature (degree Celsius), relative humidity (%), and wind speed (meter per second)  
140 for meteorological data, and fine suspended particulates (i.e., particles with an aerodynamic diameter  
141 of  $\leq 2.5 \mu\text{m}$ , PM<sub>2.5</sub>,  $\mu\text{g}$  per cubic meter), and ozone concentration for pollution data. All these daily  
142 data were used to calculate the weekly average value to match the same temporal resolution of weekly  
143 mortality data.

144 The meteorological and pollution data were considered as confounding variables that needed  
145 to be adjusted in regression models.

### 146 S1.4 Daylight saving time (DST) in the US

147 The Daylight saving time (DST) was the variable of interests in this study.

148 DST in the US was implemented in 48 states and the District of Columbia (DC) except for  
149 Arizona and Hawaii states. The starting dates of spring or fall DST were the second Sunday of March  
150 and the first Sunday of November, respectively, which varied from 2015 to 2019 as follows.

- 151 • In 2015,
  - 152 ○ spring DST started on March 8 (Sunday of the 10-th epidemiological week), and
  - 153 ○ fall DST started on November 1 (Sunday of the 44-th epidemiological week).
- 154 • In 2016,
  - 155 ○ spring DST started on March 13 (Sunday of the 11-th epidemiological week), and
  - 156 ○ fall DST started on November 6 (Sunday of the 45-th epidemiological week).
- 157 • In 2017,
  - 158 ○ spring DST started on March 12 (Sunday of the 11-th epidemiological week), and
  - 159 ○ fall DST started on November 5 (Sunday of the 45-th epidemiological week).
- 160 • In 2018,
  - 161 ○ spring DST started on March 11 (Sunday of the 11-th epidemiological week), and
  - 162 ○ fall DST started on November 4 (Sunday of the 45-th epidemiological week).
- 163 • In 2019,

- 164           ○ spring DST started on March 10 (Sunday of the 11-th epidemiological week), and  
165           ○ fall DST started on November 3 (Sunday of the 45-th epidemiological week).  
166 Although DST was not applicable in the most of regions in Arizona state and Hawaii state, we still  
167 included these two states in the analysis for the completeness of the national-level data of the US.  
168

169 **S2 Technical details of statistical analyses**

170 All statistical analyses were carried out using **R** statistical software, version 4.2.1 (R  
171 Foundation, Vienna, Austria) [5].

172 *S2.1 Regression model and likelihood framework*

173 The analysis of counts data was usually performed by using Poisson, quasi-Poisson, or  
174 negative binomial (NB) regression models. Among them, quasi-Poisson and NB regression models  
175 were almost equivalent in their statistical performance of parameter estimating, and commonly  
176 adopted to account for the over-dispersion feature of counts data [6]. Besides, NB models  
177 outperformed for providing a full likelihood framework against the quasi-likelihood framework of  
178 quasi-Poisson models, which benefited the downstream model selection procedure relying on the  
179 likelihood profile.

180 As such, in this study, weekly death counts for a given epidemiological week  $t$ , region, cause  
181 of death, and subgroup of population, were analysed using NB log-linear regression model as follows.

182  $(y_t | \mathbf{X}_t^T) \sim \text{NB}(\text{mean} = \exp(\mathbf{X}_t^T \boldsymbol{\beta}) \times \text{population}_t, \text{dispersion} = k)$ ,

183 where

- 184 •  $y_t$  denoted the observed death counts in the  $t$ -th week;
- 185 •  $\mathbf{X}_t^T$  denoted the observed transpose (i.e., the superscript “T” here) of covariables’ vector in the  $t$ -th  
186 week;
- 187 •  $\boldsymbol{\beta}$  denoted the vector of regression coefficients to be estimated;
- 188 •  $k$  denoted the dispersion parameter of NB distribution used to govern the distribution of death  
189 counts, such that the variance of  $(y_t | \mathbf{X}_t^T)$  was  $\exp(\mathbf{X}_t^T \boldsymbol{\beta}) \cdot \left[1 + \frac{\exp(\mathbf{X}_t^T \boldsymbol{\beta})}{k}\right]$ , and specially, NB  
190 distribution would converge to Poisson distribution when  $k$  became extremely large [7];
- 191 •  $\text{population}_t$  denoted the observed (or interpolated) population size at the middle of the  $t$ -th week,  
192 which was included as an offset in the model to adjust for the population size, such that the  
193 regression coefficients may be treated as effects sizes regarding mortality rate (instead of death  
194 counts).

195 The NB distribution in the equation above was considered as the likelihood function that was used to  
196 measure the goodness-of-fit between the fitted and observed death counts.

197 For the composition of regressors (i.e.,  $\mathbf{X}_t$ ), we considered the long-term temporal trends,  
198 (within-year) seasonality, weeks following DST transitions (which is the variable of interests),  
199 meteorological variables, and pollutants as follows.

200  $\mathbf{X}_t^T \boldsymbol{\beta} = \alpha_1 t + \alpha_2 \text{ps}(t, \text{df} = 3) + \sum_{i=0}^7 \beta_i \text{DST}_{i,t}^{\text{spring}} + \sum_{i=0}^7 \gamma_i \text{DST}_{i,t}^{\text{fall}} + \alpha_3 \text{ns}(\text{temp}_t, \text{df} = 3) +$   
201  $\alpha_4 \text{ns}(\text{RH}_t, \text{df} = 3) + \alpha_5 \text{ns}(\text{wind}_t, \text{df} = 2) + \alpha_6 \text{PM}_t + \alpha_7 \text{ozone}_t + \alpha_8 \text{isHoliday}_t$ .

202 Here,

- 203 •  $t$  denoted the calendar date of the  $t$ -th week’s middle point, which was included in the model to  
204 account for the long-term temporal trends;
- 205 •  $\text{ps}()$  denoted the periodic spline function used to govern the seasonality, where “df” was the  
206 degree of freedom selected using AIC score (which will be introduced in the model selection  
207 section), and the periodicity is fixed to be 1 year;
- 208 •  $\text{DST}_{i,t}^{\text{spring}}$  denoted the dummy variable of the  $i$ -th weeks following spring DST transition, where a  
209 total of 8 weeks (i.e.,  $i$  ranged from 0 to 7) consecutive to DST transition dates were considered in  
210 this study;
- 211 •  $\text{DST}_{i,t}^{\text{fall}}$  denoted the dummy variable of the  $i$ -th weeks following fall DST transition;
- 212 •  $\text{temp}_t$  denoted the weekly average mean temperature (degree Celsius) in the  $t$ -th week, and  $\text{ns}()$   
213 denoted the natural spline function used to capture the nonlinear associations;
- 214 •  $\text{RH}_t$  denoted the weekly average relative humidity (%) in the  $t$ -th week;
- 215 •  $\text{wind}_t$  denoted the weekly average wind speed (metre per second) in the  $t$ -th week;
- 216 •  $\text{PM}_t$  denoted the weekly fine suspended particulates concentration (i.e., PM2.5) in the  $t$ -th week;

- 217 • ozone<sub>t</sub> denoted the weekly ozone concentration in the *t*-th week;  
 218 • isHoliday<sub>t</sub> denoted the variable that took a value between 0 and 1 for the proportion of public  
 219 holidays in the *t*-th weeks;  
 220 • all regression coefficients were denoted by either  $\alpha$ ,  $\beta$ , or  $\gamma$ .

### 221 S2.2 Model selection, fitting procedure, and parameter estimation

222 Using the pre-defined NB-distributed likelihood framework, Akaike information criterion  
 223 (AIC) score was calculated, and considered as a measure of the trade-off between goodness-of-fit and  
 224 model complexity, which was used as a criterion for model selection regarding different values of  
 225 degrees of freedom (df) in the NB regression models. As such, the optimal value of df across a wide  
 226 range from 1 to 12 was selected according to the smallest value of AIC score. After the AIC-based  
 227 model selection procedure, we reported that for all-cause mortality data of the whole population in the  
 228 US, the optimal choice of df was df = 3 for the seasonality term, df = 2 for the nonlinear effect of  
 229 temperature, df = 3 for the nonlinear effect of relative humidity, and df = 2 for the nonlinear effect of  
 230 wind speed, which were already shown in the aforementioned regression equation.

231 Although the optimal combination of the df above was selected for all-cause mortality data of  
 232 the whole population in the US, we consistently use the same setting for different US regions and  
 233 subgroups of population. We noted that the selected degree of freedom (df) here merely fixed the  
 234 number of free parameters (that were to be estimated) to capture the seasonality patterns and nonlinear  
 235 associations, rather than to represent the exact shape of seasonality or nonlinear associations  
 236 themselves, which means different values of parameters were estimated for different US regions and  
 237 subgroups of population. Thus, different (or separated) NB regression models were fitted for different  
 238 US regions and subgroups of population.

239 The association between the weeks following DST transitions was measured by mortality rate  
 240 ratio (RR), which was calculated as the exponent of regression coefficients of DST terms (i.e.,  
 241  $\exp(\beta)$ , and  $\exp(\gamma)$ ). We estimated both crude and adjusted RR (i.e., cRR and aRR) by using the  
 242 crude model and full (or fully adjusted) model, respectively. Here, the crude model was the full  
 243 regression model without any meteorological variable or pollutant (i.e., exclude terms from  $\alpha_3$  to  $\alpha_7$ ),  
 244 which was formulated as below.

$$245 \mathbf{X}_t^T \boldsymbol{\beta} = \alpha_1 t + \alpha_2 ps(t, df = 3) + \sum_{i=0}^7 \beta_i DST_{i,t}^{\text{spring}} + \sum_{i=0}^7 \gamma_i DST_{i,t}^{\text{fall}} + \alpha_8 \text{isHoliday}_t.$$

246 For the estimation of regression parameters, denoted as vector  $\boldsymbol{\beta}$ , we considered the  
 247 maximum likelihood estimator (MLE)  $\hat{\boldsymbol{\beta}} \sim \text{MultivariateNormal}(\text{mean vector} =$   
 248  $\boldsymbol{\beta}, \text{covariance matrix} = \boldsymbol{\Sigma})$ . Here,  $\hat{\boldsymbol{\beta}}$  was an asymptotically normal statistical estimator of the true  
 249 regression parameters' vector  $\boldsymbol{\beta}$ . The  $\boldsymbol{\Sigma}$  denoted the covariance matrix of all regression parameters,  
 250 which was estimated by the Delta method with first-order Taylor's approximation [8], and used for  
 251 constructing the 95% CIs. To assess the statistical uncertainty of parameter estimates, the 95%  
 252 confidence interval (CI) was constructed by mean estimate  $\pm 1.96$  standard error (SE), where SE was  
 253 directly calculated from the covariance matrix  $\boldsymbol{\Sigma}$ . The adjusted *p*-value was calculated from the two-  
 254 tailed Wald's test [9], with the adjustment of Benjamini-Hochberg (BH) procedure for controlling the  
 255 false discovery rate (FDR) [10]. Statistical significance was claimed when the adjusted *p*-value was  
 256 less than 0.05.

#### 257 S2.2.1 Pooled effect size of DST transition

258 Besides summary the rate ratio (RR) for each week after DST transition (i.e., from 0 to 7  
 259 weeks), we pooled all 8 week-specific RR estimates as an average RR for the average effect size of 0-  
 260 7 weeks after DST transition. By using spring DST as an example, the pooled RR was calculated as

$$261 \bar{\beta} = \frac{\sum_{i=0}^7 \hat{\beta}_i}{8} \text{ with SE of } \sqrt{\frac{\sum_{i=1}^8 \sum_{j=1}^8 \Sigma_{i,j}^{(\beta)}}{8}} \text{ [11], where } \Sigma_{i,j}^{(\beta)} \text{ denoted the item of } i\text{-th row and } j\text{-th column of}$$

262 the calculated covariance matrix ( $\boldsymbol{\Sigma}^{(\beta)}$ ) for all 8 regression coefficient of spring DST terms (i.e.,  $\beta_i$  for  
 263 *i* ranging from 0 to 7). Note that  $\boldsymbol{\Sigma}^{(\beta)}$  was a submatrix of the overall covariance matrix  $\boldsymbol{\Sigma}$ , and thus

264 could be directly extracted from  $\Sigma$  without extra calculation. Similarly, we could also define the

265 pooled RR  $\bar{y} = \frac{\sum_{i=0}^7 \hat{y}_i}{8}$ , and  $\sqrt{\frac{\sum_{i=1}^8 \sum_{j=1}^8 \Sigma_{i,j}^{(y)}}{8}}$  for fall DST.

266 We interpreted the pooled RR as an aggregated (or average) weekly association between DST  
267 and mortality risk during the period from 0 to 7 weeks after DST transition.

### 268 S2.3 Calculation of absolute excess risk

269 The absolute excess risk of mortality associated with DST transitions was defined as the  
270 difference between the observed death rate and the expected (or baseline) death rate estimated from  
271 the regression model. Here, the expected death rate (baseline) was estimated as a “counterfactual”  
272 death rate by assuming no impacts of spring or fall DST transitions in each year. Thus, we used

- 273 •  $\frac{y_t}{\text{population}_t} \cdot \left[ 1 - \exp\left(-\hat{\beta}_i \cdot \text{DST}_{i,t}^{\text{spring}}\right) \right]$  to calculate the absolute excess mortality rate associated  
274 with the  $i$ -th week after spring DST transition, and
- 275 •  $\frac{y_t}{\text{population}_t} \cdot \left[ 1 - \exp\left(-\hat{\gamma}_i \cdot \text{DST}_{i,t}^{\text{fall}}\right) \right]$  to calculate the absolute excess mortality rate associated  
276 with the  $i$ -th week after fall DST transition.

277 Here,

- 278 • the term  $\frac{y_t}{\text{population}_t}$  was the observed death rate calculated using the observed death counts ( $y_t$ ) in  
279 the  $t$ -th week divided by the population size ( $\text{population}_t$ ) at the  $t$ -th week’s middle point;
- 280 • the term  $\exp\left(-\hat{\beta}_i \cdot \text{DST}_{i,t}^{\text{spring}}\right)$  was a multiplicative factor accounting for the impacts of the  
281 “absence” of spring DST transition in the  $t$ -th week, where the dummy variable  $\text{DST}_{i,t}^{\text{spring}}$  could  
282 “silence” the effect of  $\hat{\beta}_i$ , if the  $t$ -th week was not the  $i$ -th weeks following spring DST transition;
- 283 • similarly, the term  $\exp\left(-\hat{\gamma}_i \cdot \text{DST}_{i,t}^{\text{fall}}\right)$  was a multiplicative factor accounting for the impacts of  
284 the “absence” of fall DST transition in the  $t$ -th week, where the dummy variable  $\text{DST}_{i,t}^{\text{fall}}$   
285 “silenced” the effect of  $\hat{\gamma}_i$  if the  $t$ -th week was not the  $i$ -th weeks following fall DST transition;
- 286 •  $\hat{\beta}_i$  and  $\hat{\gamma}_i$  denoted the MLE of the regression coefficient of the  $i$ -th weeks following spring and fall  
287 DST transitions, respectively.

288 We calculated the absolute excess mortality rate in unit of weekly death counts per 100 000  
289 population, or equivalently, death counts per 100 000 person-week. For interpretation, we noted that

- 290 • when absolute excess mortality rate was less than 0, the DST transitions was associated with a  
291 decreasing effect on the mortality risk; and
- 292 • when absolute excess mortality rate was larger than 0, the DST transitions was associated with an  
293 increasing effect on the mortality risk.

#### 294 S2.3.1 Adjustment for the change in length of day on DST shifting dates

295 On the two DST shifting dates, the lengths of day change from 24 hours to 23 hours in spring,  
296 and change from 24 hours to 25 hours in fall. Such changes in the length of day needed to be  
297 accounted for when calculating the mortality rates on the week of DST transition (i.e.,  $i = 0$  for  
298  $\text{DST}_{i,t}^{\text{spring}}$  or  $\text{DST}_{i,t}^{\text{fall}}$ ).

299 We made the following adjustment for the absolute excess mortality rate. When  $i = 0$  for  
300  $\text{DST}_{i,t}^{\text{spring}}$  or  $\text{DST}_{i,t}^{\text{fall}}$ , the absolute excess mortality rate was calculated using

- 301 •  $\frac{24 \times 7}{(24-1)+24 \times 6} \cdot \frac{y_t}{\text{population}_t} \cdot \left[ 1 - \exp\left(-\hat{\beta}_0 \cdot \text{DST}_{0,t}^{\text{spring}}\right) \right]$  for the week of spring DST transition, and
- 302 •  $\frac{24 \times 7}{(24+1)+24 \times 6} \cdot \frac{y_t}{\text{population}_t} \cdot \left[ 1 - \exp\left(-\hat{\gamma}_0 \cdot \text{DST}_{0,t}^{\text{fall}}\right) \right]$  for the week of fall DST transition.

303 We noted that this adjustment was only applicable for the week involving the DST shifting dates, and  
304 thus no need for this adjustment regarding the 7 weeks after the DST transition weeks (i.e., for  $i$   
305 ranging from 1 to 7).

306



### 307 **S3 Subgroup analyses and sensitivity analyses**

#### 308 *S3.1 Subgroup analyses*

309 To explore the spatial heterogeneity, and demographic disparities of DST transition's effect  
310 on mortality risks with different causes, we performed several subgroup analyses for different causes  
311 of death, time zones, age, and ethnicity strata according to the data stratification below. We explored  
312 the patterns and mortality risks associated with daylight saving time (DST) for each stratum of the  
313 cause of death, time zone in the US, age, and ethnicity.

##### 314 S3.1.1 Stratification by underlying causes of death

315 We stratified the mortality data in the US by 5 different major categories of the underlying  
316 causes of death with ICD-10 codes. The detailed categorization was as follows.

- 317 • Alzheimer disease (ICD-10: G30)
- 318 • Dementia (ICD-10: F00-F03)
- 319 • Circulatory diseases (ICD-10: I00-I09, I11, I13, I20-I51, I60-I69)
  - 320 ○ Diseases of heart (ICD-10: I00-I09, I11, I13, I20-I51)
  - 321 ○ Cerebrovascular diseases (ICD-10: I60-I69)
- 322 • Malignant neoplasms (ICD-10: C00-C97)
- 323 • Respiratory diseases (ICD-10: J00-J06, J10-J18, J30-J39, J40-J47, J67, J70-J98)
  - 324 ○ Influenza and pneumonia (ICD-10: J10-J18)
  - 325 ○ Chronic lower respiratory diseases (ICD-10: J40-J47)
  - 326 ○ Other diseases of the respiratory system (ICD-10: J00-J06, J30-J39, J67, J70-J98)

##### 327 S3.1.2 Stratification by time zones

328 We aggregated the mortality data in different states (i.e., 50 states and DC) of the US into 6  
329 different categories of the time zones. For those states across more than 1 time zone, we classified  
330 them by the place of their state capital cities. Although DST was not applicable in the most of regions  
331 in Arizona state and Hawaii state, we still included these two states in the analysis for the  
332 completeness of the national-level data of the US. The detailed categorization was as follows.

- 333 • Eastern time (ET) zone:
  - 334 ○ categorized by the place of whole state: Connecticut, Delaware, the District of Columbia
  - 335 (DC), Georgia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New
  - 336 York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Vermont,
  - 337 Virginia, West Virginia; and
  - 338 ○ categorized by the place of state capital city: Florida, Indiana, Kentucky, Michigan,
  - 339 Tennessee.
- 340 • Central time (CT) zone:
  - 341 ○ categorized by the place of whole state: Alabama, Arkansas, Illinois, Iowa, Louisiana,
  - 342 Minnesota, Mississippi, Missouri, Oklahoma, Wisconsin; and
  - 343 ○ categorized by the place of state capital city: Kansas, Nebraska, North Dakota, South
  - 344 Dakota, Texas.
- 345 • Mountain time (MT) zone:
  - 346 ○ categorized by the place of whole state: Arizona, Colorado, Montana, New Mexico, Utah,
  - 347 Wyoming; and
  - 348 ○ categorized by the place of state capital city: none.
- 349 • Pacific time (PT) zone:
  - 350 ○ categorized by the place of whole state: California, Washington; and
  - 351 ○ categorized by the place of state capital city: Idaho, Nevada, Oregon.
- 352 • Alaska time (AT) zone:
  - 353 ○ categorized by the place of whole state: Alaska; and
  - 354 ○ categorized by the place of state capital city: none.
- 355 • Hawaii time (HT) zone:
  - 356 ○ categorized by the place of whole state: Hawaii; and
  - 357 ○ categorized by the place of state capital city: none.

358 DST was not applicable in all US dependencies including American Samoa, Guam, Northern Mariana  
359 Islands, Puerto Rico, US Minor Outlying Islands, and US Virgin Islands, and thus these places were  
360 excluded from this study.

### 361 S3.1.3 Stratification by age groups

362 According to the age stratifying scheme in the original mortality dataset, we considered the  
363 following age groups including age

- 364 • under 25 years,
- 365 • 25-44 years,
- 366 • 45-64 years,
- 367 • 65-74 years,
- 368 • 75-84 years, and
- 369 • 85 years and older.

### 370 S3.1.4 Stratification by ethnicity groups

371 According to the ethnicity categories in the original mortality dataset, we considered the  
372 following ethnicity groups including

- 373 • Hispanic,
- 374 • non-Hispanic Asian,
- 375 • non-Hispanic black,
- 376 • non-Hispanic white, and
- 377 • other ethnicities (including American Indian, Alaska native, native Hawaiian, and other Pacific  
378 islander).

379 For the last item here, all these ethnic minorities were grouped and labelled as “other ethnicities” in  
380 the original dataset.

### 381 *S3.2 Sensitivity analyses*

382 Multiple strategies for sensitivity analysis were conducted for evaluating the sensitivity of  
383 model estimates. We demonstrated the results of sensitivity analyses using the data of nationwide all-  
384 cause mortality in the US.

- 385 • First, we used the periodic spline,  $ps()$ , with degrees of freedom (df) at 4 and 5 according to the  
386 second and third smallest values of AIC score, whereas a df at 3 was used in the main analysis, to  
387 test the robustness of seasonal effect.
- 388 • Second, we used the natural cubic spline with degrees of freedom (df) at 3 and 5 according to the  
389 second and third smallest values of AIC score, whereas a df at 1 (equivalent to a linear effect) was  
390 used in the main analysis, to test the robustness of long-term temporal trend effect.
- 391 • Third, we set the effects of meteorological variables in mortality risk as a linear form, whereas  
392 natural spline was used in the main analysis for nonlinear associations, to test the robustness of  
393 confounder adjustment.
- 394 • Fourth, to check the duration of the change in mortality after DST transitions, we extended  
395 analysis to explore the change in mortality associated with DST shifting up to 0-8 weeks, whereas  
396 0-7 weeks after DST were used in the main analysis, to test the robustness of the duration of  
397 effects of DST on mortality risks.
- 398 • Fifth, to check the sensitivity of the expected mortality estimates, we trained the regression model  
399 with the partial dataset excluding the observations in 0-7 weeks after spring and fall DST  
400 transitions, i.e., data in these 16 weeks were excluded for each year between 2015 and 2019. The  
401 expected mortality rate estimates were visualized in the same style as Fig 1 in the main text for  
402 comparison.
- 403 • Sixth, we considered that the periodic spline function,  $ps()$ , might be less restricted at the  
404 boundary sides of seasonal variables. Thus, we trained the regression model with seasonality  
405 indexed in May or September of each year, whereas the seasonality was indexed in January in the  
406 main analysis. The expected mortality rate estimates were visualized in the same style as Fig 1 in  
407 the main text for comparison.

- 408 • Seventh, similar to the concerns about our modelling adjustment of seasonality in the sixth point  
409 above, we used harmonic function (i.e., sine and cosine functions) to validate our results, where  
410 the periodicity of harmonic function is fixed at 1 year. The expected mortality rate estimates were  
411 visualized in the same style as Fig 1 in the main text for comparison.
- 412 • Eighth, we observed that the mortality rates during the first few weeks (i.e., in January) of each  
413 year were higher than the majority of other weeks, and thus we check the sensitivity of estimates  
414 by excluding the first 3 weeks in January from 2015 to 2019 from model fitting, whereas these  
415 data were included in the main analysis. The expected mortality rate estimates were visualized in  
416 the same style as Fig 1 in the main text for comparison.
- 417 • Ninth, since DST was not implemented in the most regions in Arizona state, and Hawaii state, we  
418 check the model estimates for Arizona state. The expected mortality rate estimates were  
419 visualized in the same style as Fig 1 in the main text for comparison. For Hawaii state, the results  
420 of model estimates could be found in Table S13.
- 421

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443

444

445 **S4 Supplementary results**446 *S4.1 Supplementary results of subgroup analysis by different underlying causes of death*447 Table S1. Summary of observed and estimated **all-cause** mortality rate, and week-specific aRR after  
448 DST.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>All-cause</b>						
week number after <i>Spring</i> DST						
0	17.43	17.42	0.011 (-0.266, 0.284)	1.001 (0.983, 1.018)	1.003 (0.987, 1.019)	0.834
1	17.32	17.28	0.033 (-0.242, 0.305)	1.002 (0.985, 1.019)	1.002 (0.986, 1.018)	0.851
2	17.09	17.14	-0.058 (-0.327, 0.208)	0.997 (0.979, 1.014)	1.002 (0.986, 1.018)	0.834
3	17.05	17.00	0.050 (-0.209, 0.306)	1.003 (0.986, 1.020)	1.009 (0.992, 1.025)	0.452
4	16.93	16.86	0.065 (-0.182, 0.308)	1.004 (0.986, 1.021)	1.006 (0.989, 1.022)	0.680
5	16.58	16.72	-0.146 (-0.378, 0.083)	0.991 (0.974, 1.009)	1.004 (0.987, 1.021)	0.751
6	16.38	16.59	-0.205 (-0.422, 0.009)	0.988 (0.971, 1.005)	0.996 (0.979, 1.012)	0.723
7	16.39	16.45	-0.067 (-0.269, 0.133)	0.996 (0.979, 1.013)	1.006 (0.990, 1.022)	0.667
week number after <i>Fall</i> DST						
0	16.48	16.70	-0.218 (-0.441, 0.001)	0.987 (0.970, 1.004)	0.977 (0.962, 0.993)	0.009
1	16.72	16.89	-0.170 (-0.396, 0.054)	0.990 (0.973, 1.007)	0.976 (0.960, 0.992)	0.007
2	16.73	17.09	-0.362 (-0.596, -0.131)	0.979 (0.962, 0.996)	0.970 (0.954, 0.986)	0.001
3	16.86	17.31	-0.446 (-0.696, -0.199)	0.974 (0.957, 0.991)	0.972 (0.957, 0.988)	0.001
4	17.22	17.54	-0.319 (-0.599, -0.044)	0.982 (0.965, 0.999)	0.979 (0.964, 0.995)	0.018
5	17.34	17.79	-0.451 (-0.779, -0.129)	0.975 (0.957, 0.992)	0.972 (0.956, 0.988)	0.002
6	17.57	18.05	-0.487 (-0.884, -0.098)	0.973 (0.955, 0.991)	0.974 (0.958, 0.990)	0.005
7	17.71	18.33	-0.621 (-1.110, -0.145)	0.966 (0.947, 0.985)	0.971 (0.952, 0.990)	0.007

449 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
450 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

451

452 Table S2. Summary of observed and estimated mortality rate of **Alzheimer disease**, and week-  
 453 specific aRR after DST.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Alzheimer disease</b>						
week number after <i>Spring</i> DST						
0	0.74	0.74	0.006 (-0.019, 0.031)	1.008 (0.971, 1.047)	1.008 (0.971, 1.046)	0.716
1	0.73	0.73	0.003 (-0.022, 0.027)	1.004 (0.966, 1.043)	0.999 (0.962, 1.037)	0.972
2	0.73	0.72	0.011 (-0.014, 0.034)	1.015 (0.976, 1.054)	1.018 (0.980, 1.057)	0.477
3	0.72	0.71	0.011 (-0.013, 0.033)	1.015 (0.977, 1.054)	1.019 (0.981, 1.058)	0.477
4	0.69	0.70	-0.008 (-0.030, 0.014)	0.988 (0.951, 1.027)	0.983 (0.945, 1.022)	0.508
5	0.70	0.69	0.009 (-0.012, 0.029)	1.012 (0.974, 1.051)	1.025 (0.985, 1.067)	0.379
6	0.68	0.68	0.004 (-0.015, 0.023)	1.006 (0.968, 1.045)	1.013 (0.975, 1.053)	0.559
7	0.67	0.67	-0.006 (-0.024, 0.012)	0.991 (0.953, 1.030)	1.003 (0.964, 1.042)	0.928
week number after <i>Fall</i> DST						
0	0.72	0.73	-0.016 (-0.038, 0.004)	0.978 (0.941, 1.015)	0.966 (0.930, 1.002)	0.156
1	0.74	0.74	-0.009 (-0.031, 0.012)	0.987 (0.951, 1.025)	0.974 (0.938, 1.011)	0.325
2	0.74	0.76	-0.021 (-0.043, 0.001)	0.973 (0.937, 1.009)	0.965 (0.930, 1.002)	0.156
3	0.74	0.77	-0.030 (-0.054, -0.007)	0.961 (0.926, 0.997)	0.962 (0.927, 0.997)	0.097
4	0.76	0.78	-0.023 (-0.049, 0.002)	0.970 (0.935, 1.007)	0.973 (0.938, 1.009)	0.292
5	0.78	0.80	-0.020 (-0.051, 0.009)	0.974 (0.938, 1.012)	0.976 (0.940, 1.012)	0.343
6	0.80	0.81	-0.013 (-0.050, 0.022)	0.984 (0.946, 1.022)	0.986 (0.950, 1.024)	0.549
7	0.78	0.83	-0.047 (-0.093, -0.004)	0.943 (0.905, 0.983)	0.953 (0.912, 0.996)	0.097

454 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 455 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

456

457 Table S3. Summary of observed and estimated mortality rate of **dementia**, and week-specific aRR  
 458 after DST.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Dementia</b>						
week number after <i>Spring</i> DST						
0	0.88	0.89	-0.008 (-0.043, 0.025)	0.990 (0.948, 1.033)	0.999 (0.961, 1.039)	0.972
1	0.89	0.87	0.018 (-0.016, 0.051)	1.020 (0.977, 1.064)	1.022 (0.983, 1.062)	0.299
2	0.87	0.86	0.010 (-0.023, 0.042)	1.011 (0.968, 1.055)	1.028 (0.989, 1.069)	0.189
3	0.86	0.85	0.014 (-0.018, 0.044)	1.016 (0.973, 1.060)	1.031 (0.991, 1.073)	0.154
4	0.86	0.84	0.022 (-0.008, 0.051)	1.026 (0.983, 1.071)	1.041 (0.999, 1.083)	0.074
5	0.84	0.82	0.012 (-0.016, 0.039)	1.013 (0.970, 1.058)	1.050 (1.007, 1.095)	0.034
6	0.81	0.81	-0.007 (-0.033, 0.018)	0.991 (0.948, 1.034)	1.012 (0.972, 1.053)	0.604
7	0.81	0.80	0.012 (-0.013, 0.035)	1.014 (0.971, 1.058)	1.038 (0.997, 1.080)	0.090
week number after <i>Fall</i> DST						
0	0.86	0.87	-0.014 (-0.044, 0.014)	0.983 (0.942, 1.026)	0.956 (0.919, 0.994)	0.036
1	0.88	0.89	-0.004 (-0.033, 0.025)	0.995 (0.954, 1.038)	0.954 (0.917, 0.992)	0.033
2	0.87	0.90	-0.037 (-0.067, -0.007)	0.959 (0.919, 1.001)	0.931 (0.896, 0.968)	0.002
3	0.89	0.92	-0.031 (-0.063, 0.000)	0.966 (0.926, 1.007)	0.958 (0.922, 0.994)	0.036
4	0.91	0.94	-0.035 (-0.071, -0.001)	0.962 (0.922, 1.003)	0.952 (0.916, 0.989)	0.022
5	0.92	0.96	-0.038 (-0.080, 0.002)	0.960 (0.920, 1.002)	0.950 (0.914, 0.987)	0.020
6	0.93	0.98	-0.056 (-0.106, -0.008)	0.943 (0.902, 0.985)	0.950 (0.913, 0.989)	0.022
7	0.92	1.00	-0.087 (-0.149, -0.028)	0.914 (0.872, 0.957)	0.925 (0.883, 0.969)	0.004

459 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 460 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

461

462 Table S4. Summary of observed and estimated mortality rate of **circulatory diseases**, and week-  
 463 specific aRR after DST.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Circulatory diseases</b>						
week number after <i>Spring</i> DST						
0	5.41	5.40	0.010 (-0.082, 0.100)	1.002 (0.983, 1.020)	1.004 (0.988, 1.020)	0.711
1	5.35	5.35	0.004 (-0.088, 0.093)	1.001 (0.982, 1.019)	0.999 (0.983, 1.016)	0.912
2	5.29	5.30	-0.012 (-0.101, 0.076)	0.998 (0.979, 1.016)	1.005 (0.988, 1.021)	0.684
3	5.25	5.25	0.002 (-0.084, 0.086)	1.000 (0.982, 1.019)	1.005 (0.989, 1.022)	0.647
4	5.22	5.20	0.021 (-0.061, 0.101)	1.004 (0.985, 1.023)	1.008 (0.990, 1.025)	0.552
5	5.12	5.15	-0.029 (-0.105, 0.046)	0.994 (0.976, 1.013)	1.007 (0.990, 1.025)	0.558
6	5.05	5.10	-0.046 (-0.117, 0.025)	0.991 (0.973, 1.009)	0.998 (0.982, 1.015)	0.893
7	5.03	5.05	-0.021 (-0.088, 0.045)	0.996 (0.977, 1.014)	1.006 (0.989, 1.023)	0.647
week number after <i>Fall</i> DST						
0	5.04	5.10	-0.055 (-0.129, 0.017)	0.989 (0.971, 1.008)	0.975 (0.959, 0.992)	0.009
1	5.16	5.16	-0.004 (-0.079, 0.069)	0.999 (0.981, 1.018)	0.979 (0.962, 0.995)	0.027
2	5.20	5.24	-0.036 (-0.113, 0.039)	0.993 (0.975, 1.012)	0.978 (0.962, 0.995)	0.022
3	5.26	5.32	-0.058 (-0.140, 0.022)	0.989 (0.971, 1.007)	0.985 (0.969, 1.001)	0.102
4	5.35	5.41	-0.053 (-0.144, 0.037)	0.990 (0.972, 1.009)	0.985 (0.969, 1.001)	0.102
5	5.39	5.50	-0.117 (-0.223, -0.012)	0.979 (0.960, 0.998)	0.973 (0.957, 0.990)	0.005
6	5.47	5.61	-0.139 (-0.269, -0.013)	0.975 (0.956, 0.994)	0.978 (0.961, 0.995)	0.022
7	5.59	5.72	-0.124 (-0.283, 0.032)	0.978 (0.958, 0.999)	0.987 (0.968, 1.007)	0.293

464 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 465 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

466



467 Table S5. Summary of observed and estimated mortality rate of **malignant neoplasms**, and week-  
 468 specific aRR after DST.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observatio n	baselin e	difference	crude	adjusted	
<b>Malignant neoplasms</b>						
week number after <i>Spring</i> DST						
0	3.59	3.58	0.017 (-0.021, 0.055)	1.005 (0.993, 1.017)	1.006 (0.995, 1.018)	0.370
1	3.61	3.57	0.039 (0.001, 0.077)	1.011 (0.999, 1.023)	1.012 (1.001, 1.024)	0.047
2	3.54	3.56	-0.014 (-0.051, 0.023)	0.996 (0.984, 1.008)	0.999 (0.987, 1.010)	0.868
3	3.56	3.55	0.005 (-0.032, 0.041)	1.001 (0.990, 1.013)	1.005 (0.993, 1.016)	0.553
4	3.58	3.54	0.034 (-0.000, 0.069)	1.010 (0.998, 1.021)	1.012 (1.000, 1.024)	0.073
5	3.52	3.54	-0.019 (-0.052, 0.014)	0.995 (0.983, 1.006)	1.002 (0.989, 1.014)	0.868
6	3.53	3.53	-0.001 (-0.032, 0.029)	1.000 (0.988, 1.011)	1.004 (0.993, 1.016)	0.563
7	3.55	3.52	0.022 (-0.007, 0.050)	1.006 (0.995, 1.018)	1.011 (0.999, 1.023)	0.088
week number after <i>Fall</i> DST						
0	3.59	3.62	-0.031 (-0.063, -0.000)	0.991 (0.980, 1.003)	0.989 (0.977, 1.000)	0.073
1	3.60	3.63	-0.029 (-0.061, 0.003)	0.992 (0.981, 1.003)	0.987 (0.976, 0.999)	0.066
2	3.57	3.64	-0.069 (-0.101, -0.036)	0.981 (0.970, 0.993)	0.979 (0.968, 0.990)	0.003
3	3.53	3.65	-0.119 (-0.154, -0.085)	0.967 (0.956, 0.979)	0.967 (0.956, 0.978)	<0.001
4	3.59	3.66	-0.066 (-0.104, -0.029)	0.982 (0.970, 0.993)	0.981 (0.970, 0.993)	0.006
5	3.62	3.67	-0.050 (-0.093, -0.007)	0.986 (0.975, 0.998)	0.986 (0.975, 0.998)	0.042
6	3.63	3.68	-0.052 (-0.104, -0.001)	0.986 (0.974, 0.998)	0.987 (0.975, 0.999)	0.067
7	3.54	3.69	-0.142 (-0.205, -0.081)	0.961 (0.949, 0.974)	0.966 (0.952, 0.980)	<0.001

469 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 470 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

471

472 Table S6. Summary of observed and estimated mortality rate of **respiratory diseases**, and week-  
 473 specific aRR after DST.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Respiratory diseases</b>						
week number after <i>Spring</i> DST						
0	1.94	1.92	0.020 (-0.058, 0.095)	1.011 (0.967, 1.055)	1.016 (0.975, 1.059)	0.571
1	1.90	1.89	0.014 (-0.062, 0.088)	1.008 (0.964, 1.053)	1.010 (0.968, 1.053)	0.698
2	1.86	1.85	0.013 (-0.061, 0.085)	1.007 (0.964, 1.052)	1.017 (0.975, 1.061)	0.571
3	1.83	1.81	0.017 (-0.054, 0.085)	1.009 (0.965, 1.055)	1.019 (0.976, 1.064)	0.548
4	1.79	1.78	0.018 (-0.048, 0.082)	1.010 (0.966, 1.056)	1.011 (0.967, 1.057)	0.698
5	1.72	1.74	-0.020 (-0.082, 0.040)	0.988 (0.945, 1.033)	1.012 (0.967, 1.060)	0.698
6	1.67	1.70	-0.034 (-0.092, 0.022)	0.980 (0.936, 1.025)	0.997 (0.953, 1.041)	0.906
7	1.63	1.67	-0.037 (-0.091, 0.015)	0.978 (0.934, 1.023)	0.997 (0.953, 1.043)	0.906
week number after <i>Fall</i> DST						
0	1.49	1.56	-0.067 (-0.125, -0.011)	0.957 (0.912, 1.004)	0.943 (0.900, 0.988)	0.030
1	1.52	1.60	-0.077 (-0.137, -0.020)	0.952 (0.908, 0.998)	0.929 (0.886, 0.974)	0.008
2	1.54	1.65	-0.112 (-0.173, -0.052)	0.932 (0.889, 0.977)	0.924 (0.882, 0.968)	0.004
3	1.6	1.70	-0.106 (-0.172, -0.043)	0.938 (0.895, 0.982)	0.938 (0.896, 0.980)	0.013
4	1.66	1.76	-0.102 (-0.176, -0.031)	0.942 (0.899, 0.986)	0.941 (0.899, 0.983)	0.019
5	1.69	1.82	-0.137 (-0.225, -0.054)	0.925 (0.882, 0.969)	0.922 (0.881, 0.964)	0.002
6	1.74	1.90	-0.155 (-0.263, -0.053)	0.918 (0.875, 0.964)	0.919 (0.877, 0.962)	0.002
7	1.86	1.98	-0.112 (-0.248, 0.015)	0.943 (0.897, 0.992)	0.958 (0.909, 1.009)	0.178

474 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 475 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

476

477 *S4.2 Supplementary results of subgroup analysis by different time zones*

478 Table S7. Summary of observed and estimated all-cause mortality rate, and aRR pooled for 0-7 weeks  
 479 after DST, stratified by time zones.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		p-value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Eastern time (ET) zone</b>						
0-7 weeks after Spring DST	17.52	17.53	-0.012 (-0.315, 0.286)	0.999 (0.979, 1.020)	1.008 (0.989, 1.028)	0.345
0-7 weeks after Fall DST	17.62	18.09	-0.468 (-0.835, -0.108)	0.974 (0.954, 0.995)	0.970 (0.951, 0.989)	0.005
0-7 weeks after either DST	17.57	17.81	-0.240 (-0.575, 0.089)	0.987 (0.966, 1.007)	0.989 (0.970, 1.008)	0.039
<b>Central time (CT) zone</b>						
0-7 weeks after Spring DST	16.76	16.83	-0.077 (-0.370, 0.212)	0.995 (0.975, 1.016)	0.997 (0.978, 1.016)	0.724
0-7 weeks after Fall DST	17.17	17.42	-0.255 (-0.618, 0.101)	0.986 (0.965, 1.007)	0.982 (0.962, 1.001)	0.114
0-7 weeks after either DST	16.96	17.13	-0.166 (-0.494, 0.156)	0.990 (0.970, 1.011)	0.989 (0.970, 1.009)	0.287
<b>Mountain time (MT) zone</b>						
0-7 weeks after Spring DST	15.28	15.18	0.109 (-0.219, 0.429)	1.007 (0.981, 1.033)	1.008 (0.982, 1.033)	0.459
0-7 weeks after Fall DST	15.08	15.38	-0.298 (-0.690, 0.083)	0.981 (0.955, 1.007)	0.980 (0.955, 1.007)	0.199
0-7 weeks after either DST	15.18	15.28	-0.095 (-0.454, 0.256)	0.994 (0.968, 1.020)	0.994 (0.969, 1.020)	0.302
<b>Pacific time (PT) zone</b>						
0-7 weeks after Spring DST	14.08	14.13	-0.053 (-0.325, 0.215)	0.996 (0.974, 1.019)	0.995 (0.973, 1.017)	0.558
0-7 weeks after Fall DST	14.24	14.58	-0.337 (-0.674, -0.008)	0.973 (0.951, 0.997)	0.975 (0.952, 0.998)	0.079
0-7 weeks after either DST	14.16	14.36	-0.195 (-0.500, 0.103)	0.985 (0.962, 1.008)	0.985 (0.962, 1.008)	0.209
<b>Alaska time zone</b>						
0-7 weeks after Spring DST	11.01	10.87	0.140 (-0.948, 1.128)	1.012 (0.901, 1.133)	1.018 (0.893, 1.156)	0.865
0-7 weeks after Fall DST	11.79	11.68	0.109 (-1.199, 1.279)	1.009 (0.899, 1.128)	1.005 (0.891, 1.130)	0.865
0-7 weeks after either DST	11.40	11.28	0.124 (-1.074, 1.203)	1.010 (0.900, 1.131)	1.011 (0.892, 1.143)	0.865
<b>Hawaii time zone</b>						
0-7 weeks after Spring DST	15.35	15.59	-0.247 (-1.187, 0.640)	0.983 (0.915, 1.055)	0.987 (0.918, 1.061)	0.545
0-7 weeks after Fall DST	15.35	15.85	-0.503 (-1.591, 0.512)	0.968 (0.899, 1.040)	0.966 (0.896, 1.040)	0.600
0-7 weeks after either DST	15.35	15.72	-0.375 (-1.389, 0.576)	0.975 (0.907, 1.048)	0.976 (0.907, 1.050)	0.572

480 Note: The “ $p$ -value for aRR” in the last column was calculated from two-tailed Wald’s test with  
481 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).  
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483

484 Table S8. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 485 DST in the **Eastern time (ET) zone**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		p-value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Eastern time (ET) zone</b>						
week number after <i>Spring</i> DST						
0	17.95	18.06	-0.106 (-0.446, 0.227)	0.994 (0.974, 1.015)	0.997 (0.978, 1.016)	0.789
1	17.94	17.91	0.032 (-0.305, 0.364)	1.002 (0.981, 1.022)	1.001 (0.983, 1.020)	0.886
2	17.85	17.76	0.089 (-0.242, 0.413)	1.005 (0.984, 1.026)	1.017 (0.998, 1.037)	0.110
3	17.72	17.61	0.111 (-0.206, 0.423)	1.006 (0.986, 1.027)	1.017 (0.998, 1.037)	0.113
4	17.60	17.46	0.141 (-0.161, 0.438)	1.008 (0.988, 1.029)	1.016 (0.996, 1.036)	0.137
5	17.21	17.31	-0.096 (-0.380, 0.183)	0.994 (0.974, 1.015)	1.009 (0.990, 1.029)	0.418
6	16.96	17.16	-0.201 (-0.467, 0.060)	0.988 (0.968, 1.009)	1.002 (0.983, 1.021)	0.854
7	16.95	17.01	-0.066 (-0.314, 0.178)	0.996 (0.976, 1.016)	1.008 (0.989, 1.027)	0.469
week number after <i>Fall</i> DST						
0	16.99	17.33	-0.340 (-0.613, -0.072)	0.980 (0.960, 1.001)	0.972 (0.953, 0.990)	0.006
1	17.32	17.52	-0.195 (-0.472, 0.077)	0.989 (0.969, 1.009)	0.974 (0.956, 0.993)	0.013
2	17.32	17.72	-0.406 (-0.692, -0.126)	0.977 (0.957, 0.997)	0.965 (0.947, 0.984)	0.001
3	17.48	17.94	-0.456 (-0.760, -0.158)	0.975 (0.955, 0.995)	0.969 (0.952, 0.988)	0.003
4	17.81	18.17	-0.359 (-0.697, -0.026)	0.980 (0.960, 1.001)	0.972 (0.954, 0.991)	0.007
5	17.92	18.42	-0.494 (-0.889, -0.107)	0.973 (0.953, 0.994)	0.972 (0.953, 0.991)	0.007
6	18.03	18.67	-0.640 (-1.117, -0.174)	0.966 (0.945, 0.987)	0.968 (0.949, 0.987)	0.004
7	18.09	18.95	-0.851 (-1.439, -0.281)	0.955 (0.933, 0.977)	0.965 (0.945, 0.986)	0.003

486 *Note:* The “p-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 487 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

488

489 Table S9. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 490 DST in the **Central time (CT) zone**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Central time (CT) zone</b>						
week number after <i>Spring</i> DST						
0	17.30	17.29	0.008 (-0.321, 0.330)	1.000 (0.980, 1.021)	1.002 (0.983, 1.021)	0.925
1	17.23	17.16	0.063 (-0.263, 0.384)	1.004 (0.983, 1.025)	1.001 (0.982, 1.020)	0.933
2	16.87	17.03	-0.160 (-0.480, 0.153)	0.990 (0.970, 1.011)	0.996 (0.977, 1.016)	0.829
3	16.85	16.90	-0.047 (-0.355, 0.255)	0.997 (0.977, 1.018)	0.994 (0.975, 1.014)	0.700
4	16.75	16.77	-0.015 (-0.308, 0.272)	0.999 (0.978, 1.020)	0.999 (0.980, 1.019)	0.933
5	16.38	16.64	-0.253 (-0.529, 0.018)	0.985 (0.964, 1.005)	0.992 (0.973, 1.012)	0.560
6	16.31	16.51	-0.199 (-0.457, 0.054)	0.988 (0.968, 1.008)	0.988 (0.969, 1.007)	0.349
7	16.38	16.38	-0.008 (-0.248, 0.229)	0.999 (0.979, 1.020)	1.003 (0.984, 1.023)	0.829
week number after <i>Fall</i> DST						
0	16.63	16.73	-0.106 (-0.371, 0.155)	0.994 (0.974, 1.014)	0.983 (0.965, 1.002)	0.152
1	16.85	16.91	-0.059 (-0.329, 0.207)	0.997 (0.976, 1.017)	0.990 (0.971, 1.009)	0.410
2	16.86	17.09	-0.225 (-0.505, 0.050)	0.987 (0.967, 1.007)	0.978 (0.959, 0.997)	0.063
3	16.84	17.29	-0.449 (-0.748, -0.154)	0.974 (0.954, 0.994)	0.972 (0.953, 0.990)	0.012
4	17.19	17.49	-0.304 (-0.640, 0.026)	0.983 (0.962, 1.003)	0.982 (0.963, 1.001)	0.116
5	17.44	17.71	-0.270 (-0.664, 0.115)	0.985 (0.964, 1.006)	0.980 (0.961, 0.999)	0.093
6	17.75	17.95	-0.194 (-0.670, 0.269)	0.989 (0.968, 1.011)	0.988 (0.968, 1.009)	0.361
7	17.76	18.19	-0.430 (-1.015, 0.137)	0.976 (0.954, 0.999)	0.981 (0.959, 1.003)	0.152

491 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 492 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

493

494 Table S10. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 495 DST in the **Mountain time (MT) zone**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Mountain time (MT) zone</b>						
week number after <i>Spring</i> DST						
0	15.90	15.55	0.351 (-0.015, 0.708)	1.022 (0.997, 1.049)	1.022 (0.997, 1.048)	0.245
1	15.76	15.45	0.313 (-0.051, 0.669)	1.020 (0.994, 1.046)	1.019 (0.994, 1.045)	0.324
2	15.25	15.34	-0.087 (-0.444, 0.261)	0.994 (0.969, 1.020)	0.994 (0.969, 1.019)	0.748
3	15.39	15.23	0.159 (-0.184, 0.495)	1.010 (0.985, 1.036)	1.008 (0.983, 1.033)	0.744
4	15.47	15.12	0.348 (0.021, 0.667)	1.023 (0.997, 1.049)	1.026 (1.000, 1.053)	0.141
5	15.13	15.01	0.120 (-0.187, 0.422)	1.008 (0.982, 1.033)	1.008 (0.983, 1.034)	0.738
6	14.64	14.91	-0.262 (-0.550, 0.020)	0.982 (0.958, 1.008)	0.987 (0.962, 1.012)	0.472
7	14.73	14.80	-0.072 (-0.341, 0.192)	0.995 (0.970, 1.020)	0.997 (0.973, 1.023)	0.912
week number after <i>Fall</i> DST						
0	14.70	14.64	0.059 (-0.230, 0.343)	1.004 (0.979, 1.030)	1.002 (0.977, 1.028)	0.915
1	14.77	14.81	-0.033 (-0.326, 0.254)	0.998 (0.973, 1.023)	0.994 (0.969, 1.020)	0.756
2	14.76	14.99	-0.232 (-0.534, 0.064)	0.985 (0.960, 1.010)	0.983 (0.958, 1.008)	0.364
3	14.94	15.20	-0.262 (-0.584, 0.053)	0.983 (0.958, 1.008)	0.985 (0.960, 1.010)	0.397
4	15.24	15.44	-0.202 (-0.562, 0.150)	0.986 (0.961, 1.012)	0.987 (0.962, 1.012)	0.472
5	15.02	15.69	-0.675 (-1.097, -0.264)	0.957 (0.932, 0.982)	0.957 (0.932, 0.982)	0.006
6	15.46	15.98	-0.519 (-1.030, -0.023)	0.968 (0.942, 0.994)	0.969 (0.943, 0.996)	0.093
7	15.77	16.29	-0.521 (-1.154, 0.088)	0.968 (0.941, 0.996)	0.967 (0.939, 0.996)	0.093

496 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 497 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

498

499 Table S11. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 500 DST in the **Pacific time (PT) zone**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Pacific time (PT) zone</b>						
week number after <i>Spring</i> DST						
0	14.78	14.54	0.240 (-0.066, 0.539)	1.017 (0.994, 1.040)	1.014 (0.992, 1.037)	0.375
1	14.40	14.42	-0.021 (-0.325, 0.277)	0.999 (0.976, 1.022)	0.998 (0.976, 1.020)	0.919
2	14.06	14.30	-0.241 (-0.538, 0.050)	0.983 (0.961, 1.006)	0.986 (0.964, 1.008)	0.375
3	14.23	14.19	0.046 (-0.240, 0.326)	1.003 (0.981, 1.027)	1.000 (0.978, 1.022)	0.999
4	13.94	14.07	-0.127 (-0.399, 0.140)	0.991 (0.968, 1.014)	0.990 (0.968, 1.013)	0.506
5	13.84	13.96	-0.115 (-0.370, 0.137)	0.992 (0.969, 1.015)	0.989 (0.967, 1.011)	0.468
6	13.73	13.85	-0.119 (-0.358, 0.116)	0.991 (0.969, 1.014)	0.993 (0.970, 1.015)	0.608
7	13.65	13.74	-0.084 (-0.308, 0.136)	0.994 (0.971, 1.016)	0.990 (0.969, 1.012)	0.506
week number after <i>Fall</i> DST						
0	13.66	13.76	-0.095 (-0.338, 0.144)	0.993 (0.971, 1.016)	0.993 (0.971, 1.016)	0.614
1	13.67	13.94	-0.277 (-0.525, -0.033)	0.980 (0.958, 1.003)	0.979 (0.957, 1.001)	0.144
2	13.77	14.15	-0.379 (-0.636, -0.127)	0.973 (0.951, 0.996)	0.974 (0.952, 0.996)	0.070
3	13.91	14.38	-0.474 (-0.749, -0.204)	0.967 (0.945, 0.989)	0.969 (0.947, 0.991)	0.025
4	14.44	14.64	-0.207 (-0.517, 0.096)	0.986 (0.963, 1.008)	0.984 (0.962, 1.007)	0.331
5	14.43	14.93	-0.501 (-0.866, -0.145)	0.966 (0.944, 0.989)	0.972 (0.949, 0.995)	0.063
6	14.77	15.24	-0.476 (-0.920, -0.044)	0.969 (0.945, 0.992)	0.972 (0.949, 0.996)	0.070
7	15.30	15.59	-0.288 (-0.839, 0.245)	0.954 (0.928, 0.981)	0.955 (0.929, 0.982)	0.006

501 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 502 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

503



504 Table S12. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 505 DST in the **Alaska time (AT) zone**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Alaska time zone</b>						
week number after <i>Spring</i> DST						
0	10.83	10.95	-0.126 (-1.331, 0.960)	0.988 (0.878, 1.109)	1.011 (0.887, 1.149)	0.865
1	10.85	10.92	-0.062 (-1.263, 1.020)	0.994 (0.883, 1.115)	0.978 (0.856, 1.112)	0.865
2	11.34	10.89	0.455 (-0.722, 1.518)	1.041 (0.928, 1.166)	1.035 (0.909, 1.173)	0.865
3	11.07	10.86	0.205 (-0.932, 1.235)	1.019 (0.907, 1.141)	1.040 (0.912, 1.182)	0.865
4	11.56	10.85	0.711 (-0.374, 1.698)	1.065 (0.951, 1.190)	1.074 (0.945, 1.216)	0.865
5	10.50	10.84	-0.335 (-1.361, 0.602)	0.969 (0.861, 1.086)	0.985 (0.863, 1.120)	0.865
6	10.80	10.83	-0.029 (-0.993, 0.857)	0.997 (0.888, 1.115)	0.980 (0.858, 1.113)	0.865
7	11.12	10.82	0.299 (-0.605, 1.134)	1.027 (0.917, 1.147)	1.045 (0.919, 1.183)	0.865
week number after <i>Fall</i> DST						
0	11.69	11.39	0.297 (-0.717, 1.228)	1.026 (0.918, 1.143)	1.041 (0.926, 1.165)	0.865
1	11.28	11.46	-0.177 (-1.196, 0.759)	0.984 (0.879, 1.099)	0.985 (0.876, 1.105)	0.865
2	11.39	11.53	-0.143 (-1.181, 0.809)	0.987 (0.882, 1.102)	0.984 (0.875, 1.103)	0.865
3	12.23	11.62	0.613 (-0.475, 1.608)	1.053 (0.943, 1.171)	1.046 (0.935, 1.168)	0.865
4	11.50	11.71	-0.211 (-1.407, 0.874)	0.982 (0.876, 1.097)	0.970 (0.863, 1.087)	0.865
5	12.36	11.81	0.557 (-0.826, 1.795)	1.047 (0.935, 1.169)	1.047 (0.928, 1.178)	0.865
6	12.12	11.92	0.203 (-1.464, 1.665)	1.017 (0.904, 1.141)	1.013 (0.892, 1.148)	0.865
7	11.77	12.04	-0.269 (-2.329, 1.490)	0.977 (0.862, 1.106)	0.956 (0.835, 1.091)	0.865

506 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 507 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

508

509 Table S13. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 510 DST in the **Hawaii time (HT) zone**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Hawaii time zone</b>						
week number after <i>Spring</i> DST						
0	16.66	15.79	0.872 (-0.174, 1.852)	1.055 (0.983, 1.131)	1.063 (0.990, 1.141)	0.408
1	15.43	15.72	-0.293 (-1.334, 0.683)	0.981 (0.912, 1.054)	0.989 (0.918, 1.063)	0.788
2	16.03	15.67	0.369 (-0.651, 1.326)	1.024 (0.953, 1.098)	1.028 (0.956, 1.103)	0.762
3	15.53	15.61	-0.086 (-1.069, 0.840)	0.994 (0.925, 1.067)	1.000 (0.929, 1.074)	0.998
4	15.23	15.56	-0.330 (-1.268, 0.555)	0.979 (0.910, 1.051)	0.987 (0.917, 1.062)	0.788
5	14.00	15.51	-1.509 (-2.395, -0.672)	0.903 (0.838, 0.971)	0.906 (0.841, 0.976)	0.094
6	14.75	15.47	-0.718 (-1.549, 0.072)	0.953 (0.887, 1.024)	0.955 (0.888, 1.026)	0.568
7	15.15	15.42	-0.276 (-1.056, 0.466)	0.982 (0.914, 1.053)	0.976 (0.909, 1.048)	0.762
week number after <i>Fall</i> DST						
0	14.85	15.09	-0.238 (-1.075, 0.555)	0.984 (0.916, 1.057)	0.985 (0.915, 1.058)	0.788
1	14.11	15.24	-1.128 (-1.971, -0.329)	0.926 (0.860, 0.996)	0.927 (0.860, 0.998)	0.266
2	14.71	15.42	-0.717 (-1.577, 0.097)	0.953 (0.887, 1.024)	0.951 (0.882, 1.023)	0.547
3	15.95	15.64	0.307 (-0.596, 1.160)	1.020 (0.950, 1.093)	1.017 (0.946, 1.092)	0.788
4	15.66	15.89	-0.224 (-1.216, 0.710)	0.986 (0.918, 1.058)	0.983 (0.914, 1.056)	0.788
5	15.48	16.17	-0.691 (-1.841, 0.382)	0.957 (0.889, 1.029)	0.949 (0.880, 1.022)	0.547
6	15.73	16.50	-0.764 (-2.156, 0.520)	0.954 (0.884, 1.027)	0.954 (0.882, 1.030)	0.568
7	16.30	16.86	-0.568 (-2.299, 1.002)	0.966 (0.894, 1.044)	0.962 (0.888, 1.042)	0.762

511 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 512 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

513

514 *S4.3 Supplementary results of subgroup analysis by different age groups*

515 Table S14. Summary of observed and estimated all-cause mortality rate, and aRR pooled for 0-7

516 weeks after DST, stratified by age groups.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Age under 25 years</b>						
0-7 weeks after Spring DST	1.05	1.06	-0.007 (-0.041, 0.026)	0.993 (0.955, 1.031)	0.990 (0.953, 1.029)	0.642
0-7 weeks after Fall DST	1.03	1.02	0.011 (-0.027, 0.046)	1.010 (0.971, 1.050)	1.014 (0.976, 1.054)	0.619
0-7 weeks after either DST	1.04	1.04	0.002 (-0.034, 0.036)	1.001 (0.963, 1.040)	1.002 (0.965, 1.041)	0.630
<b>Age 25-44 years</b>						
0-7 weeks after Spring DST	3.19	3.21	-0.013 (-0.107, 0.078)	0.995 (0.961, 1.030)	0.995 (0.961, 1.030)	0.673
0-7 weeks after Fall DST	3.26	3.30	-0.044 (-0.152, 0.061)	0.986 (0.952, 1.021)	0.990 (0.956, 1.024)	0.756
0-7 weeks after either DST	3.22	3.25	-0.029 (-0.130, 0.069)	0.991 (0.956, 1.026)	0.992 (0.959, 1.027)	0.713
<b>Age 45-64 years</b>						
0-7 weeks after Spring DST	13.74	13.84	-0.093 (-0.293, 0.105)	0.993 (0.976, 1.010)	0.995 (0.979, 1.012)	0.259
0-7 weeks after Fall DST	13.81	13.96	-0.157 (-0.394, 0.076)	0.989 (0.972, 1.006)	0.987 (0.970, 1.003)	0.177
0-7 weeks after either DST	13.77	13.90	-0.125 (-0.343, 0.090)	0.991 (0.974, 1.008)	0.991 (0.975, 1.007)	0.214
<b>Age 65-74 years</b>						
0-7 weeks after Spring DST	33.74	33.77	-0.021 (-0.523, 0.472)	0.999 (0.981, 1.016)	1.003 (0.986, 1.021)	0.597
0-7 weeks after Fall DST	34.40	34.94	-0.547 (-1.155, 0.051)	0.984 (0.967, 1.002)	0.981 (0.964, 0.998)	0.058
0-7 weeks after either DST	34.07	34.35	-0.284 (-0.839, 0.261)	0.991 (0.974, 1.009)	0.992 (0.975, 1.009)	0.185
<b>Age 75-84 years</b>						
0-7 weeks after Spring DST	87.24	87.43	-0.196 (-1.675, 1.259)	0.997 (0.978, 1.018)	1.004 (0.985, 1.024)	0.645
0-7 weeks after Fall DST	88.58	90.87	-2.297 (-4.126, -0.506)	0.975 (0.955, 0.995)	0.968 (0.950, 0.987)	0.003
0-7 weeks after either DST	87.91	89.15	-1.246 (-2.901, 0.377)	0.986 (0.966, 1.006)	0.986 (0.967, 1.005)	0.041
<b>Age 85 years and older</b>						
0-7 weeks after Spring DST	315.43	315.74	-0.308 (-7.279, 6.511)	0.999 (0.973, 1.025)	1.009 (0.984, 1.034)	0.541
0-7 weeks after Fall DST	317.97	327.70	-9.730 (-18.512, -1.194)	0.971 (0.945, 0.997)	0.965 (0.941, 0.990)	0.015
0-7 weeks after either DST	316.70	321.72	-5.019 (-12.896, 2.659)	0.985 (0.959, 1.011)	0.987 (0.962, 1.012)	0.090

517 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with

518 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

519

520

521 Table S15. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 522 DST among the population with **age under 25 years**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Age under 25 years</b>						
week number after <i>Spring</i> DST						
0	1.04	1.04	-0.003 (-0.040, 0.033)	0.996 (0.958, 1.036)	0.990 (0.953, 1.028)	0.721
1	1.08	1.05	0.032 (-0.005, 0.068)	1.030 (0.991, 1.070)	1.025 (0.987, 1.064)	0.516
2	1.04	1.05	-0.011 (-0.048, 0.025)	0.989 (0.951, 1.028)	0.986 (0.949, 1.024)	0.696
3	1.03	1.06	-0.022 (-0.058, 0.012)	0.979 (0.941, 1.017)	0.977 (0.940, 1.015)	0.516
4	1.05	1.06	-0.014 (-0.048, 0.020)	0.987 (0.949, 1.025)	0.978 (0.941, 1.017)	0.565
5	1.05	1.06	-0.016 (-0.048, 0.016)	0.985 (0.948, 1.023)	0.984 (0.946, 1.024)	0.689
6	1.05	1.07	-0.020 (-0.050, 0.010)	0.981 (0.944, 1.018)	0.982 (0.945, 1.019)	0.607
7	1.07	1.07	-0.004 (-0.033, 0.024)	0.996 (0.960, 1.033)	1.002 (0.965, 1.040)	0.909
week number after <i>Fall</i> DST						
0	1.02	1.02	-0.006 (-0.036, 0.022)	0.993 (0.956, 1.032)	0.993 (0.956, 1.031)	0.816
1	1.04	1.02	0.021 (-0.009, 0.049)	1.020 (0.982, 1.059)	1.032 (0.993, 1.072)	0.406
2	1.04	1.02	0.018 (-0.012, 0.047)	1.017 (0.979, 1.056)	1.024 (0.986, 1.063)	0.516
3	1.03	1.02	0.014 (-0.018, 0.044)	1.013 (0.974, 1.052)	1.017 (0.979, 1.055)	0.653
4	1.02	1.02	0.002 (-0.032, 0.035)	1.001 (0.963, 1.041)	1.010 (0.972, 1.049)	0.721
5	1.03	1.02	0.014 (-0.025, 0.052)	1.013 (0.974, 1.054)	1.020 (0.982, 1.060)	0.582
6	1.04	1.02	0.027 (-0.020, 0.072)	1.026 (0.985, 1.068)	1.025 (0.985, 1.066)	0.516
7	1.02	1.02	-0.005 (-0.062, 0.049)	0.995 (0.952, 1.039)	0.996 (0.954, 1.039)	0.890

523 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 524 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

525

526 Table S16. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 527 DST among the population with age 25-44 years.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Age 25-44 years</b>						
week number after <i>Spring</i> DST						
0	3.22	3.18	0.033 (-0.070, 0.133)	1.010 (0.975, 1.046)	1.004 (0.970, 1.039)	0.830
1	3.16	3.19	-0.028 (-0.131, 0.072)	0.991 (0.956, 1.026)	0.987 (0.954, 1.022)	0.705
2	3.17	3.19	-0.025 (-0.127, 0.073)	0.992 (0.957, 1.027)	0.989 (0.955, 1.023)	0.705
3	3.23	3.20	0.033 (-0.065, 0.129)	1.010 (0.975, 1.046)	1.014 (0.980, 1.049)	0.705
4	3.25	3.21	0.043 (-0.051, 0.134)	1.013 (0.978, 1.048)	1.005 (0.970, 1.040)	0.830
5	3.16	3.22	-0.059 (-0.148, 0.028)	0.981 (0.948, 1.016)	0.986 (0.951, 1.022)	0.705
6	3.11	3.23	-0.114 (-0.198, -0.032)	0.964 (0.931, 0.998)	0.969 (0.936, 1.002)	0.319
7	3.25	3.24	0.009 (-0.070, 0.086)	1.002 (0.969, 1.037)	1.009 (0.975, 1.043)	0.771
week number after <i>Fall</i> DST						
0	3.25	3.26	-0.009 (-0.094, 0.073)	0.997 (0.963, 1.031)	1.001 (0.968, 1.035)	0.960
1	3.21	3.27	-0.061 (-0.146, 0.022)	0.981 (0.948, 1.015)	0.985 (0.951, 1.019)	0.705
2	3.22	3.28	-0.059 (-0.146, 0.025)	0.982 (0.948, 1.016)	0.986 (0.953, 1.020)	0.705
3	3.22	3.29	-0.062 (-0.153, 0.027)	0.981 (0.947, 1.015)	0.986 (0.954, 1.019)	0.705
4	3.29	3.30	-0.004 (-0.104, 0.093)	0.998 (0.964, 1.033)	1.006 (0.973, 1.040)	0.830
5	3.23	3.31	-0.087 (-0.202, 0.024)	0.973 (0.939, 1.008)	0.979 (0.946, 1.013)	0.701
6	3.29	3.33	-0.043 (-0.181, 0.089)	0.987 (0.951, 1.023)	0.984 (0.950, 1.019)	0.705
7	3.33	3.35	-0.026 (-0.194, 0.134)	0.992 (0.954, 1.030)	0.991 (0.954, 1.029)	0.771

528 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 529 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

530

531 Table S17. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 532 DST among the population with age 45-64 years.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Age 45-64 years</b>						
week number after <i>Spring</i> DST						
0	14.21	14.06	0.149 (-0.073, 0.367)	1.011 (0.993, 1.028)	1.011 (0.995, 1.028)	0.267
1	13.91	14.00	-0.084 (-0.305, 0.134)	0.994 (0.977, 1.011)	0.992 (0.976, 1.008)	0.388
2	13.79	13.93	-0.146 (-0.363, 0.068)	0.989 (0.972, 1.007)	0.992 (0.976, 1.008)	0.370
3	14.00	13.87	0.131 (-0.079, 0.337)	1.009 (0.992, 1.027)	1.013 (0.997, 1.030)	0.210
4	13.73	13.80	-0.072 (-0.271, 0.125)	0.995 (0.978, 1.012)	0.991 (0.975, 1.008)	0.370
5	13.48	13.74	-0.255 (-0.444, -0.069)	0.981 (0.965, 0.998)	0.989 (0.972, 1.006)	0.280
6	13.32	13.68	-0.355 (-0.532, -0.181)	0.974 (0.957, 0.991)	0.978 (0.963, 0.994)	0.030
7	13.51	13.62	-0.108 (-0.273, 0.055)	0.992 (0.975, 1.009)	0.998 (0.982, 1.014)	0.809
week number after <i>Fall</i> DST						
0	13.56	13.53	0.031 (-0.146, 0.205)	1.002 (0.985, 1.019)	0.997 (0.981, 1.013)	0.734
1	13.57	13.63	-0.051 (-0.231, 0.125)	0.996 (0.979, 1.013)	0.985 (0.968, 1.001)	0.148
2	13.50	13.74	-0.233 (-0.418, -0.051)	0.983 (0.966, 1.000)	0.978 (0.962, 0.994)	0.030
3	13.66	13.86	-0.202 (-0.399, -0.009)	0.985 (0.968, 1.002)	0.986 (0.971, 1.002)	0.180
4	13.92	14.00	-0.074 (-0.293, 0.141)	0.995 (0.978, 1.012)	0.995 (0.979, 1.011)	0.598
5	13.99	14.15	-0.153 (-0.408, 0.098)	0.989 (0.972, 1.007)	0.989 (0.973, 1.005)	0.267
6	14.05	14.31	-0.259 (-0.567, 0.043)	0.982 (0.964, 1.000)	0.982 (0.966, 0.999)	0.101
7	14.18	14.49	-0.315 (-0.693, 0.054)	0.978 (0.959, 0.997)	0.981 (0.963, 0.999)	0.101

533 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 534 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

535

536 Table S18. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 537 DST among the population with **age 65-74 years**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Age 65-74 years</b>						
week number after <i>Spring</i> DST						
0	34.76	34.60	0.162 (-0.398, 0.713)	1.004 (0.987, 1.022)	1.006 (0.989, 1.023)	0.594
1	34.19	34.37	-0.179 (-0.737, 0.369)	0.994 (0.977, 1.012)	0.994 (0.977, 1.011)	0.586
2	34.07	34.13	-0.059 (-0.604, 0.478)	0.998 (0.980, 1.015)	1.002 (0.985, 1.019)	0.821
3	34.13	33.89	0.237 (-0.289, 0.754)	1.006 (0.989, 1.024)	1.010 (0.993, 1.028)	0.357
4	33.81	33.65	0.161 (-0.339, 0.653)	1.004 (0.987, 1.022)	1.007 (0.989, 1.024)	0.586
5	33.18	33.40	-0.222 (-0.693, 0.242)	0.993 (0.975, 1.010)	1.003 (0.985, 1.021)	0.802
6	32.85	33.17	-0.314 (-0.754, 0.121)	0.990 (0.973, 1.007)	0.996 (0.979, 1.014)	0.764
7	32.97	32.93	0.043 (-0.368, 0.449)	1.001 (0.983, 1.018)	1.009 (0.992, 1.026)	0.440
week number after <i>Fall</i> DST						
0	33.30	33.58	-0.280 (-0.731, 0.165)	0.991 (0.974, 1.009)	0.983 (0.966, 0.999)	0.084
1	33.70	33.92	-0.219 (-0.677, 0.232)	0.993 (0.976, 1.010)	0.981 (0.965, 0.999)	0.073
2	33.78	34.28	-0.499 (-0.970, -0.033)	0.985 (0.968, 1.002)	0.977 (0.961, 0.994)	0.023
3	34.07	34.67	-0.601 (-1.104, -0.106)	0.982 (0.965, 0.999)	0.980 (0.964, 0.997)	0.049
4	34.77	35.09	-0.318 (-0.879, 0.234)	0.990 (0.973, 1.008)	0.988 (0.972, 1.005)	0.268
5	34.70	35.53	-0.827 (-1.482, -0.183)	0.976 (0.959, 0.994)	0.974 (0.957, 0.991)	0.010
6	35.23	35.99	-0.762 (-1.554, 0.013)	0.978 (0.960, 0.997)	0.980 (0.963, 0.998)	0.060
7	35.62	36.49	-0.867 (-1.841, 0.082)	0.976 (0.957, 0.995)	0.982 (0.964, 1.001)	0.111

538 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 539 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

540

541 Table S19. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 542 DST among the population with age 75-84 years.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Age 75-84 years</b>						
week number after <i>Spring</i> DST						
0	89.98	90.39	-0.407 (-2.071, 1.226)	0.995 (0.975, 1.015)	0.999 (0.980, 1.017)	0.893
1	89.19	89.56	-0.372 (-2.024, 1.251)	0.996 (0.976, 1.016)	0.996 (0.978, 1.015)	0.780
2	88.41	88.72	-0.301 (-1.914, 1.284)	0.996 (0.976, 1.017)	1.004 (0.985, 1.023)	0.780
3	88.14	87.86	0.281 (-1.271, 1.805)	1.003 (0.983, 1.023)	1.008 (0.989, 1.027)	0.543
4	87.68	87.00	0.685 (-0.788, 2.133)	1.008 (0.988, 1.028)	1.014 (0.994, 1.033)	0.243
5	85.30	86.14	-0.841 (-2.226, 0.521)	0.990 (0.970, 1.010)	1.003 (0.984, 1.023)	0.798
6	84.98	85.30	-0.322 (-1.615, 0.952)	0.996 (0.976, 1.016)	1.004 (0.986, 1.024)	0.780
7	84.19	84.48	-0.289 (-1.496, 0.901)	0.996 (0.976, 1.016)	1.006 (0.987, 1.025)	0.671
week number after <i>Fall</i> DST						
0	84.81	86.48	-1.669 (-3.008, -0.350)	0.981 (0.961, 1.000)	0.968 (0.950, 0.986)	0.002
1	86.53	87.58	-1.053 (-2.415, 0.288)	0.988 (0.968, 1.008)	0.969 (0.950, 0.988)	0.003
2	86.57	88.76	-2.186 (-3.595, -0.798)	0.975 (0.956, 0.995)	0.963 (0.944, 0.981)	0.001
3	87.21	90.01	-2.806 (-4.313, -1.323)	0.969 (0.949, 0.988)	0.964 (0.947, 0.982)	0.001
4	89.26	91.34	-2.081 (-3.769, -0.424)	0.977 (0.958, 0.997)	0.971 (0.953, 0.989)	0.005
5	90.03	92.75	-2.721 (-4.699, -0.785)	0.971 (0.951, 0.991)	0.965 (0.946, 0.983)	0.001
6	91.78	94.25	-2.465 (-4.862, -0.128)	0.974 (0.953, 0.995)	0.976 (0.957, 0.995)	0.020
7	92.43	95.82	-3.394 (-6.349, -0.527)	0.965 (0.943, 0.987)	0.972 (0.952, 0.993)	0.014

543 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 544 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

545



546 Table S20. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 547 DST among the population with **age 85 years and older**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Age 85 years and older</b>						
week number after <i>Spring</i> DST						
0	327.48	329.60	-2.120 (-10.003, 5.578)	0.994 (0.968, 1.020)	0.998 (0.974, 1.023)	0.908
1	330.35	325.73	4.623 (-3.200, 12.262)	1.014 (0.988, 1.041)	1.016 (0.992, 1.041)	0.287
2	321.76	321.75	0.009 (-7.616, 7.458)	1.000 (0.974, 1.026)	1.009 (0.984, 1.034)	0.585
3	316.40	317.73	-1.334 (-8.652, 5.819)	0.996 (0.970, 1.022)	1.006 (0.981, 1.031)	0.709
4	315.27	313.70	1.567 (-5.364, 8.348)	1.005 (0.979, 1.031)	1.009 (0.984, 1.035)	0.585
5	309.07	309.70	-0.627 (-7.125, 5.738)	0.998 (0.972, 1.024)	1.019 (0.992, 1.045)	0.248
6	303.18	305.77	-2.590 (-8.645, 3.348)	0.991 (0.966, 1.018)	1.004 (0.979, 1.030)	0.800
7	299.96	301.95	-1.994 (-7.629, 3.537)	0.993 (0.968, 1.019)	1.009 (0.984, 1.034)	0.585
week number after <i>Fall</i> DST						
0	302.69	309.35	-6.658 (-12.930, -0.511)	0.979 (0.953, 1.004)	0.966 (0.942, 0.991)	0.016
1	309.88	314.00	-4.117 (-10.525, 2.164)	0.987 (0.962, 1.013)	0.970 (0.945, 0.995)	0.031
2	310.51	318.95	-8.432 (-15.099, -1.901)	0.974 (0.949, 0.999)	0.962 (0.938, 0.986)	0.008
3	313.14	324.19	-11.046 (-18.228, -4.019)	0.966 (0.941, 0.991)	0.963 (0.939, 0.986)	0.008
4	320.27	329.73	-9.461 (-17.565, -1.553)	0.971 (0.946, 0.997)	0.968 (0.944, 0.992)	0.019
5	325.39	335.56	-10.172 (-19.733, -0.876)	0.970 (0.944, 0.996)	0.966 (0.941, 0.990)	0.016
6	329.29	341.69	-12.401 (-24.046, -1.139)	0.964 (0.937, 0.991)	0.964 (0.939, 0.989)	0.015
7	332.56	348.12	-15.556 (-29.969, -1.715)	0.955 (0.927, 0.984)	0.962 (0.935, 0.989)	0.016

548 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 549 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

550

551 *S4.4 Supplementary results of subgroup analysis by different ethnicity groups*

552 Table S21. Summary of observed and estimated all-cause mortality rate, and aRR pooled for 0-7

553 weeks after DST, stratified by ethnicity groups.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Hispanic population</b>						
0-7 weeks after Spring DST	6.59	6.65	-0.059 (-0.183, 0.062)	0.990 (0.968, 1.012)	0.991 (0.969, 1.012)	0.340
0-7 weeks after Fall DST	6.87	7.00	-0.135 (-0.287, 0.014)	0.980 (0.958, 1.002)	0.977 (0.956, 0.998)	0.068
0-7 weeks after either DST	6.73	6.83	-0.097 (-0.235, 0.038)	0.985 (0.963, 1.007)	0.984 (0.962, 1.005)	0.152
<b>Non-Hispanic Asian population</b>						
0-7 weeks after Spring DST	7.40	7.40	-0.000 (-0.217, 0.210)	0.998 (0.964, 1.033)	1.005 (0.970, 1.041)	0.864
0-7 weeks after Fall DST	7.70	7.80	-0.099 (-0.367, 0.159)	0.986 (0.952, 1.021)	0.981 (0.947, 1.017)	0.569
0-7 weeks after either DST	7.55	7.60	-0.050 (-0.292, 0.185)	0.992 (0.958, 1.027)	0.993 (0.958, 1.029)	0.701
<b>Non-Hispanic Black population</b>						
0-7 weeks after Spring DST	16.14	16.27	-0.126 (-0.398, 0.141)	0.992 (0.972, 1.012)	0.999 (0.980, 1.018)	0.620
0-7 weeks after Fall DST	16.69	16.79	-0.101 (-0.434, 0.226)	0.994 (0.974, 1.014)	0.989 (0.971, 1.008)	0.432
0-7 weeks after either DST	16.42	16.53	-0.114 (-0.416, 0.183)	0.993 (0.973, 1.013)	0.994 (0.975, 1.013)	0.517
<b>Non-Hispanic White population</b>						
0-7 weeks after Spring DST	21.47	21.45	0.022 (-0.317, 0.356)	1.001 (0.982, 1.020)	1.007 (0.989, 1.025)	0.511
0-7 weeks after Fall DST	21.54	22.14	-0.599 (-1.016, -0.191)	0.973 (0.955, 0.992)	0.969 (0.952, 0.987)	0.002
0-7 weeks after either DST	21.51	21.79	-0.288 (-0.666, 0.083)	0.987 (0.968, 1.006)	0.988 (0.970, 1.006)	0.029
<b>Other population</b>						
0-7 weeks after Spring DST	7.36	7.33	0.025 (-0.222, 0.264)	1.003 (0.964, 1.044)	1.005 (0.964, 1.046)	0.768
0-7 weeks after Fall DST	7.38	7.48	-0.092 (-0.383, 0.188)	0.983 (0.943, 1.024)	0.982 (0.942, 1.024)	0.426
0-7 weeks after either DST	7.37	7.40	-0.033 (-0.302, 0.226)	0.993 (0.954, 1.034)	0.993 (0.953, 1.035)	0.572

554 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
555 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

556

557

558 Table S22. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
559 DST among the **Hispanic population**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		p-value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Hispanic population</b>						
week number after <i>Spring</i> DST						
0	6.83	6.78	0.045 (-0.092, 0.180)	1.005 (0.983, 1.028)	1.005 (0.983, 1.026)	0.705
1	6.69	6.74	-0.053 (-0.189, 0.082)	0.991 (0.969, 1.013)	0.987 (0.966, 1.008)	0.311
2	6.54	6.71	-0.161 (-0.296, -0.030)	0.975 (0.953, 0.997)	0.976 (0.955, 0.997)	0.065
3	6.61	6.67	-0.063 (-0.192, 0.064)	0.989 (0.968, 1.011)	0.991 (0.970, 1.012)	0.523
4	6.70	6.63	0.067 (-0.056, 0.188)	1.009 (0.987, 1.031)	1.005 (0.983, 1.027)	0.705
5	6.44	6.60	-0.155 (-0.272, -0.041)	0.975 (0.954, 0.997)	0.980 (0.958, 1.003)	0.156
6	6.47	6.56	-0.100 (-0.208, 0.008)	0.983 (0.962, 1.005)	0.987 (0.966, 1.008)	0.311
7	6.48	6.53	-0.055 (-0.157, 0.045)	0.990 (0.969, 1.012)	0.995 (0.974, 1.017)	0.705
week number after <i>Fall</i> DST						
0	6.62	6.65	-0.032 (-0.144, 0.077)	0.994 (0.973, 1.016)	0.987 (0.966, 1.008)	0.311
1	6.70	6.73	-0.029 (-0.142, 0.082)	0.995 (0.973, 1.016)	0.981 (0.960, 1.003)	0.156
2	6.69	6.82	-0.126 (-0.243, -0.011)	0.980 (0.959, 1.002)	0.974 (0.953, 0.994)	0.044
3	6.72	6.92	-0.199 (-0.324, -0.076)	0.970 (0.949, 0.991)	0.970 (0.950, 0.991)	0.019
4	6.87	7.03	-0.153 (-0.293, -0.016)	0.977 (0.956, 0.999)	0.977 (0.956, 0.997)	0.065
5	7.01	7.15	-0.140 (-0.304, 0.020)	0.979 (0.958, 1.001)	0.978 (0.957, 0.999)	0.084
6	7.05	7.28	-0.237 (-0.437, -0.043)	0.966 (0.944, 0.989)	0.967 (0.945, 0.988)	0.013
7	7.27	7.43	-0.162 (-0.409, 0.078)	0.977 (0.954, 1.001)	0.980 (0.957, 1.003)	0.156

560 *Note:* The “p-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
561 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

562

563 Table S23. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 564 DST among the **non-Hispanic Asian population**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Non-Hispanic Asian population</b>						
week number after <i>Spring</i> DST						
0	7.71	7.61	0.100 (-0.143, 0.335)	1.012 (0.977, 1.047)	1.015 (0.981, 1.051)	0.688
1	7.61	7.55	0.057 (-0.184, 0.291)	1.006 (0.972, 1.041)	1.007 (0.972, 1.042)	0.898
2	7.40	7.49	-0.088 (-0.324, 0.140)	0.987 (0.953, 1.022)	0.993 (0.958, 1.028)	0.898
3	7.47	7.43	0.044 (-0.183, 0.264)	1.005 (0.970, 1.040)	1.011 (0.976, 1.047)	0.755
4	7.35	7.37	-0.017 (-0.233, 0.192)	0.996 (0.962, 1.031)	1.001 (0.965, 1.038)	0.955
5	7.25	7.31	-0.061 (-0.264, 0.137)	0.990 (0.956, 1.025)	1.003 (0.966, 1.041)	0.921
6	7.24	7.25	-0.008 (-0.198, 0.177)	0.997 (0.963, 1.032)	1.004 (0.970, 1.040)	0.921
7	7.17	7.20	-0.028 (-0.205, 0.145)	0.995 (0.961, 1.029)	1.003 (0.968, 1.039)	0.921
week number after <i>Fall</i> DST						
0	7.48	7.37	0.109 (-0.087, 0.300)	1.014 (0.980, 1.048)	1.004 (0.970, 1.039)	0.921
1	7.45	7.47	-0.022 (-0.222, 0.172)	0.996 (0.962, 1.030)	0.981 (0.947, 1.017)	0.681
2	7.41	7.58	-0.169 (-0.375, 0.032)	0.977 (0.944, 1.011)	0.966 (0.932, 1.000)	0.243
3	7.56	7.70	-0.143 (-0.363, 0.070)	0.980 (0.947, 1.014)	0.977 (0.944, 1.010)	0.599
4	7.72	7.84	-0.119 (-0.366, 0.119)	0.984 (0.951, 1.018)	0.980 (0.947, 1.014)	0.618
5	7.79	7.98	-0.190 (-0.479, 0.089)	0.975 (0.941, 1.010)	0.971 (0.937, 1.005)	0.375
6	8.02	8.14	-0.117 (-0.469, 0.220)	0.984 (0.950, 1.021)	0.986 (0.951, 1.022)	0.688
7	8.16	8.31	-0.142 (-0.579, 0.272)	0.982 (0.945, 1.020)	0.987 (0.950, 1.026)	0.755

565 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 566 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

567

568 Table S24. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 569 DST among the **non-Hispanic black population**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Non-Hispanic Black population</b>						
week number after <i>Spring</i> DST						
0	16.55	16.62	-0.071 (-0.374, 0.227)	0.995 (0.976, 1.015)	0.996 (0.978, 1.015)	0.755
1	16.37	16.52	-0.150 (-0.452, 0.146)	0.991 (0.971, 1.010)	0.991 (0.972, 1.009)	0.578
2	16.43	16.42	0.012 (-0.284, 0.302)	1.000 (0.981, 1.020)	1.007 (0.988, 1.026)	0.612
3	16.30	16.32	-0.022 (-0.307, 0.259)	0.998 (0.979, 1.018)	1.005 (0.987, 1.024)	0.675
4	16.03	16.22	-0.188 (-0.460, 0.079)	0.988 (0.969, 1.008)	0.993 (0.974, 1.013)	0.612
5	15.93	16.12	-0.192 (-0.448, 0.060)	0.988 (0.968, 1.007)	1.003 (0.983, 1.023)	0.815
6	15.67	16.02	-0.345 (-0.584, -0.109)	0.978 (0.959, 0.998)	0.988 (0.969, 1.007)	0.396
7	15.87	15.92	-0.055 (-0.279, 0.165)	0.996 (0.977, 1.016)	1.008 (0.989, 1.027)	0.612
week number after <i>Fall</i> DST						
0	16.23	16.21	0.022 (-0.223, 0.263)	1.001 (0.982, 1.021)	0.991 (0.973, 1.010)	0.578
1	16.34	16.36	-0.017 (-0.265, 0.228)	0.999 (0.979, 1.018)	0.984 (0.965, 1.003)	0.235
2	16.50	16.51	-0.011 (-0.268, 0.242)	0.999 (0.980, 1.019)	0.988 (0.970, 1.006)	0.396
3	16.67	16.68	-0.010 (-0.285, 0.261)	0.999 (0.980, 1.019)	0.996 (0.978, 1.014)	0.735
4	16.81	16.86	-0.041 (-0.349, 0.262)	0.997 (0.978, 1.017)	0.993 (0.975, 1.012)	0.612
5	16.83	17.04	-0.214 (-0.575, 0.139)	0.987 (0.967, 1.007)	0.983 (0.965, 1.002)	0.224
6	16.99	17.24	-0.255 (-0.691, 0.170)	0.985 (0.964, 1.006)	0.986 (0.967, 1.005)	0.363
7	17.18	17.45	-0.279 (-0.815, 0.241)	0.984 (0.962, 1.006)	0.992 (0.971, 1.013)	0.612

570 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 571 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

572

573 Table S25. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 574 DST among the **non-Hispanic white population**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Non-Hispanic White population</b>						
week number after <i>Spring</i> DST						
0	22.14	22.10	0.039 (-0.341, 0.414)	1.002 (0.983, 1.021)	1.004 (0.987, 1.022)	0.697
1	22.04	21.91	0.130 (-0.248, 0.502)	1.006 (0.987, 1.025)	1.006 (0.988, 1.023)	0.610
2	21.71	21.73	-0.011 (-0.380, 0.353)	0.999 (0.981, 1.018)	1.005 (0.988, 1.023)	0.636
3	21.69	21.54	0.152 (-0.204, 0.502)	1.007 (0.988, 1.026)	1.013 (0.995, 1.031)	0.232
4	21.53	21.35	0.183 (-0.155, 0.516)	1.008 (0.990, 1.028)	1.010 (0.992, 1.029)	0.386
5	21.07	21.16	-0.094 (-0.412, 0.219)	0.995 (0.977, 1.014)	1.009 (0.990, 1.028)	0.442
6	20.80	20.98	-0.180 (-0.477, 0.113)	0.991 (0.973, 1.010)	1.000 (0.982, 1.018)	0.986
7	20.76	20.80	-0.041 (-0.318, 0.233)	0.998 (0.979, 1.017)	1.009 (0.991, 1.027)	0.442
week number after <i>Fall</i> DST						
0	20.77	21.13	-0.367 (-0.673, -0.066)	0.983 (0.964, 1.001)	0.973 (0.956, 0.990)	0.005
1	21.10	21.38	-0.282 (-0.593, 0.025)	0.987 (0.969, 1.005)	0.973 (0.955, 0.990)	0.005
2	21.09	21.65	-0.553 (-0.875, -0.236)	0.975 (0.956, 0.993)	0.966 (0.949, 0.983)	0.001
3	21.26	21.93	-0.672 (-1.016, -0.334)	0.969 (0.951, 0.988)	0.967 (0.951, 0.984)	0.001
4	21.75	22.24	-0.493 (-0.878, -0.115)	0.978 (0.959, 0.996)	0.976 (0.959, 0.993)	0.010
5	21.86	22.57	-0.707 (-1.157, -0.265)	0.969 (0.950, 0.988)	0.966 (0.949, 0.983)	0.001
6	22.17	22.92	-0.755 (-1.300, -0.222)	0.967 (0.948, 0.987)	0.968 (0.950, 0.986)	0.001
7	22.34	23.30	-0.963 (-1.635, -0.310)	0.959 (0.939, 0.979)	0.965 (0.946, 0.984)	0.001

575 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 576 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

577

578 Table S26. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 579 DST among the **population of other ethnicities**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>Population of other ethnicities</b>						
week number after <i>Spring</i> DST						
0	7.62	7.47	0.146 (-0.130, 0.412)	1.020 (0.980, 1.061)	1.024 (0.984, 1.066)	0.586
1	7.57	7.43	0.135 (-0.140, 0.400)	1.018 (0.978, 1.059)	1.019 (0.979, 1.060)	0.708
2	7.56	7.39	0.164 (-0.104, 0.424)	1.022 (0.982, 1.063)	1.022 (0.982, 1.064)	0.598
3	7.31	7.35	-0.042 (-0.301, 0.208)	0.994 (0.955, 1.035)	0.998 (0.958, 1.040)	0.951
4	7.34	7.31	0.027 (-0.220, 0.265)	1.004 (0.965, 1.044)	0.997 (0.956, 1.039)	0.951
5	7.21	7.27	-0.064 (-0.296, 0.162)	0.991 (0.952, 1.031)	0.996 (0.955, 1.039)	0.951
6	7.06	7.23	-0.174 (-0.391, 0.038)	0.976 (0.938, 1.015)	0.978 (0.939, 1.019)	0.598
7	7.20	7.19	0.008 (-0.195, 0.206)	1.001 (0.963, 1.041)	1.002 (0.962, 1.043)	0.951
week number after <i>Fall</i> DST						
0	7.37	7.27	0.097 (-0.125, 0.311)	1.013 (0.974, 1.053)	1.014 (0.975, 1.055)	0.816
1	7.04	7.32	-0.282 (-0.505, -0.065)	0.961 (0.924, 1.000)	0.951 (0.912, 0.991)	0.083
2	7.01	7.38	-0.373 (-0.602, -0.151)	0.949 (0.912, 0.988)	0.950 (0.912, 0.990)	0.083
3	7.38	7.44	-0.060 (-0.302, 0.174)	0.992 (0.953, 1.031)	0.996 (0.957, 1.035)	0.951
4	7.43	7.50	-0.071 (-0.339, 0.188)	0.990 (0.952, 1.030)	0.993 (0.954, 1.033)	0.951
5	7.57	7.56	0.012 (-0.299, 0.311)	1.002 (0.962, 1.043)	1.002 (0.962, 1.043)	0.951
6	7.65	7.63	0.020 (-0.355, 0.377)	1.003 (0.962, 1.046)	1.001 (0.960, 1.044)	0.951
7	7.63	7.70	-0.076 (-0.535, 0.358)	0.955 (0.910, 1.002)	0.954 (0.908, 1.002)	0.239

580 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 581 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

582

583 *S4.5 Supplementary results of sensitivity analysis by different model settings*584 Table S27. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
585 DST, using **degree of freedom (df) for seasonality at 4**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>All-cause, df for seasonality at 4</b>						
week number after <i>Spring</i> DST						
0	17.43	17.42	0.011 (-0.250, 0.269)	1.001 (0.984, 1.018)	1.003 (0.988, 1.019)	0.735
1	17.32	17.26	0.056 (-0.201, 0.310)	1.003 (0.986, 1.020)	1.003 (0.987, 1.019)	0.784
2	17.09	17.10	-0.011 (-0.264, 0.238)	0.999 (0.982, 1.016)	1.004 (0.988, 1.020)	0.735
3	17.05	16.94	0.118 (-0.132, 0.365)	1.007 (0.990, 1.024)	1.010 (0.994, 1.027)	0.320
4	16.93	16.78	0.152 (-0.099, 0.398)	1.009 (0.992, 1.026)	1.008 (0.991, 1.025)	0.463
5	16.58	16.62	-0.044 (-0.295, 0.204)	0.997 (0.980, 1.015)	1.006 (0.989, 1.024)	0.569
6	16.38	16.47	-0.093 (-0.345, 0.155)	0.994 (0.977, 1.012)	0.998 (0.982, 1.015)	0.841
7	16.39	16.34	0.049 (-0.202, 0.295)	1.003 (0.985, 1.021)	1.009 (0.992, 1.026)	0.420
week number after <i>Fall</i> DST						
0	16.48	16.60	-0.115 (-0.451, 0.214)	0.993 (0.975, 1.011)	0.979 (0.962, 0.996)	0.029
1	16.72	16.77	-0.051 (-0.411, 0.301)	0.997 (0.979, 1.016)	0.978 (0.960, 0.996)	0.029
2	16.73	16.96	-0.230 (-0.609, 0.140)	0.986 (0.968, 1.005)	0.972 (0.954, 0.990)	0.007
3	16.86	17.17	-0.304 (-0.698, 0.081)	0.982 (0.964, 1.001)	0.974 (0.957, 0.992)	0.012
4	17.22	17.39	-0.169 (-0.578, 0.231)	0.990 (0.972, 1.009)	0.982 (0.964, 0.999)	0.070
5	17.34	17.63	-0.296 (-0.727, 0.125)	0.983 (0.965, 1.002)	0.974 (0.957, 0.992)	0.012
6	17.57	17.90	-0.331 (-0.801, 0.126)	0.981 (0.963, 1.001)	0.977 (0.959, 0.994)	0.021
7	17.71	18.18	-0.470 (-1.009, 0.052)	0.974 (0.955, 0.994)	0.973 (0.954, 0.993)	0.020

586 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
587 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

588



589 Table S28. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 590 DST, using **degree of freedom (df) for seasonality at 5**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>All-cause, df for seasonality at 5</b>						
week number after <i>Spring</i> DST						
0	17.43	17.34	0.096 (-0.231, 0.417)	1.005 (0.988, 1.023)	1.003 (0.986, 1.020)	0.796
1	17.32	17.16	0.158 (-0.208, 0.517)	1.009 (0.991, 1.028)	1.002 (0.985, 1.019)	0.837
2	17.09	16.99	0.100 (-0.300, 0.490)	1.006 (0.987, 1.025)	1.003 (0.985, 1.020)	0.796
3	17.05	16.82	0.230 (-0.189, 0.638)	1.014 (0.994, 1.033)	1.009 (0.991, 1.027)	0.471
4	16.93	16.67	0.254 (-0.166, 0.664)	1.015 (0.996, 1.035)	1.007 (0.988, 1.025)	0.626
5	16.58	16.53	0.044 (-0.363, 0.441)	1.003 (0.983, 1.022)	1.005 (0.987, 1.023)	0.738
6	16.38	16.41	-0.024 (-0.405, 0.349)	0.998 (0.980, 1.018)	0.996 (0.979, 1.014)	0.776
7	16.39	16.29	0.099 (-0.247, 0.438)	1.006 (0.987, 1.025)	1.007 (0.990, 1.025)	0.590
week number after <i>Fall</i> DST						
0	16.48	16.64	-0.159 (-0.617, 0.286)	0.990 (0.971, 1.011)	0.980 (0.962, 0.999)	0.075
1	16.72	16.82	-0.101 (-0.622, 0.403)	0.994 (0.973, 1.015)	0.980 (0.960, 1.000)	0.089
2	16.73	17.01	-0.282 (-0.846, 0.265)	0.984 (0.963, 1.005)	0.974 (0.954, 0.994)	0.035
3	16.86	17.21	-0.351 (-0.934, 0.213)	0.980 (0.959, 1.001)	0.976 (0.957, 0.996)	0.049
4	17.22	17.42	-0.204 (-0.780, 0.353)	0.988 (0.967, 1.010)	0.984 (0.964, 1.003)	0.170
5	17.34	17.65	-0.311 (-0.859, 0.220)	0.982 (0.962, 1.003)	0.976 (0.957, 0.995)	0.035
6	17.57	17.88	-0.315 (-0.845, 0.201)	0.982 (0.963, 1.003)	0.977 (0.959, 0.996)	0.044
7	17.71	18.12	-0.410 (-1.001, 0.162)	0.977 (0.957, 0.998)	0.973 (0.953, 0.993)	0.034

591 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 592 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

593

594 Table S29. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 595 DST, using **degree of freedom (df) for long-term trend at 3**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>All-cause, df for long-term trend at 3</b>						
week number after <i>Spring</i> DST						
0	17.43	17.39	0.045 (-0.260, 0.344)	1.001 (0.983, 1.018)	1.003 (0.987, 1.019)	0.804
1	17.32	17.25	0.065 (-0.237, 0.361)	1.002 (0.985, 1.019)	1.002 (0.986, 1.018)	0.844
2	17.09	17.12	-0.028 (-0.323, 0.261)	0.997 (0.979, 1.014)	1.002 (0.986, 1.018)	0.815
3	17.05	16.98	0.078 (-0.207, 0.357)	1.003 (0.986, 1.021)	1.009 (0.992, 1.025)	0.428
4	16.93	16.84	0.090 (-0.181, 0.357)	1.004 (0.987, 1.021)	1.006 (0.989, 1.023)	0.647
5	16.58	16.70	-0.123 (-0.380, 0.130)	0.991 (0.974, 1.009)	1.004 (0.987, 1.022)	0.712
6	16.38	16.57	-0.184 (-0.426, 0.054)	0.988 (0.971, 1.005)	0.996 (0.980, 1.012)	0.712
7	16.39	16.43	-0.048 (-0.276, 0.177)	0.996 (0.979, 1.013)	1.006 (0.990, 1.023)	0.631
week number after <i>Fall</i> DST						
0	16.48	16.74	-0.251 (-0.506, 0.001)	0.987 (0.970, 1.004)	0.977 (0.961, 0.993)	0.009
1	16.72	16.92	-0.203 (-0.462, 0.053)	0.990 (0.973, 1.007)	0.975 (0.959, 0.992)	0.007
2	16.73	17.12	-0.395 (-0.662, -0.132)	0.979 (0.963, 0.996)	0.969 (0.954, 0.985)	0.001
3	16.86	17.34	-0.480 (-0.762, -0.202)	0.975 (0.958, 0.992)	0.972 (0.956, 0.987)	0.001
4	17.22	17.57	-0.353 (-0.662, -0.048)	0.983 (0.966, 1.000)	0.979 (0.963, 0.995)	0.016
5	17.34	17.82	-0.484 (-0.838, -0.137)	0.976 (0.958, 0.993)	0.971 (0.955, 0.987)	0.002
6	17.57	18.08	-0.519 (-0.938, -0.110)	0.974 (0.956, 0.992)	0.974 (0.957, 0.990)	0.005
7	17.71	18.37	-0.652 (-1.159, -0.160)	0.967 (0.949, 0.987)	0.971 (0.952, 0.991)	0.007

596 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 597 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

598

599 Table S30. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 600 DST, using **degree of freedom (df) for long-term trend at 5**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>All-cause, df for long-term trend at 5</b>						
week number after <i>Spring</i> DST						
0	17.43	17.59	-0.162 (-0.438, 0.110)	1.001 (0.987, 1.016)	1.002 (0.989, 1.016)	0.849
1	17.32	17.46	-0.143 (-0.416, 0.126)	1.003 (0.988, 1.017)	1.002 (0.989, 1.016)	0.849
2	17.09	17.32	-0.237 (-0.505, 0.026)	0.997 (0.983, 1.012)	1.001 (0.988, 1.015)	0.891
3	17.05	17.19	-0.132 (-0.391, 0.122)	1.004 (0.989, 1.018)	1.008 (0.994, 1.022)	0.393
4	16.93	17.05	-0.121 (-0.369, 0.123)	1.005 (0.990, 1.019)	1.005 (0.991, 1.020)	0.612
5	16.58	16.91	-0.334 (-0.571, -0.101)	0.992 (0.978, 1.006)	1.001 (0.987, 1.016)	0.891
6	16.38	16.78	-0.396 (-0.620, -0.175)	0.988 (0.974, 1.003)	0.994 (0.980, 1.008)	0.569
7	16.39	16.65	-0.260 (-0.473, -0.050)	0.997 (0.982, 1.011)	1.004 (0.990, 1.018)	0.765
week number after <i>Fall</i> DST						
0	16.48	16.84	-0.350 (-0.595, -0.109)	0.988 (0.974, 1.002)	0.981 (0.967, 0.994)	0.010
1	16.72	17.01	-0.295 (-0.546, -0.047)	0.991 (0.977, 1.005)	0.978 (0.965, 0.992)	0.006
2	16.73	17.21	-0.479 (-0.741, -0.222)	0.980 (0.966, 0.994)	0.973 (0.959, 0.986)	<0.001
3	16.86	17.42	-0.557 (-0.834, -0.283)	0.975 (0.961, 0.989)	0.974 (0.960, 0.987)	<0.001
4	17.22	17.64	-0.422 (-0.725, -0.124)	0.983 (0.969, 0.997)	0.980 (0.967, 0.994)	0.010
5	17.34	17.88	-0.546 (-0.887, -0.210)	0.976 (0.961, 0.990)	0.973 (0.959, 0.987)	0.001
6	17.57	18.14	-0.573 (-0.970, -0.185)	0.974 (0.959, 0.989)	0.974 (0.960, 0.988)	0.001
7	17.71	18.41	-0.698 (-1.168, -0.240)	0.968 (0.952, 0.984)	0.973 (0.957, 0.990)	0.004

601 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 602 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

603

604 Table S31. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 605 DST, using **linear effects for all meteorological variables**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>All-cause, linear effects for all meteorological variables</b>						
week number after <i>Spring</i> DST						
0	17.43	17.42	0.011 (-0.266, 0.284)	1.001 (0.983, 1.018)	1.002 (0.986, 1.018)	0.935
1	17.32	17.28	0.033 (-0.242, 0.305)	1.002 (0.985, 1.019)	1.001 (0.985, 1.017)	0.973
2	17.09	17.14	-0.058 (-0.327, 0.208)	0.997 (0.979, 1.014)	1.001 (0.985, 1.017)	0.973
3	17.05	17.00	0.050 (-0.209, 0.306)	1.003 (0.986, 1.020)	1.006 (0.990, 1.023)	0.624
4	16.93	16.86	0.065 (-0.182, 0.308)	1.004 (0.986, 1.021)	1.004 (0.987, 1.020)	0.822
5	16.58	16.72	-0.146 (-0.378, 0.083)	0.991 (0.974, 1.009)	1.001 (0.984, 1.017)	0.973
6	16.38	16.59	-0.205 (-0.422, 0.009)	0.988 (0.971, 1.005)	0.994 (0.978, 1.010)	0.624
7	16.39	16.45	-0.067 (-0.269, 0.133)	0.996 (0.979, 1.013)	1.004 (0.988, 1.020)	0.822
week number after <i>Fall</i> DST						
0	16.48	16.70	-0.218 (-0.441, 0.001)	0.987 (0.970, 1.004)	0.979 (0.963, 0.995)	0.017
1	16.72	16.89	-0.170 (-0.396, 0.054)	0.990 (0.973, 1.007)	0.975 (0.959, 0.991)	0.005
2	16.73	17.09	-0.362 (-0.596, -0.131)	0.979 (0.962, 0.996)	0.972 (0.956, 0.987)	0.002
3	16.86	17.31	-0.446 (-0.696, -0.199)	0.974 (0.957, 0.991)	0.973 (0.958, 0.989)	0.002
4	17.22	17.54	-0.319 (-0.599, -0.044)	0.982 (0.965, 0.999)	0.979 (0.964, 0.995)	0.019
5	17.34	17.79	-0.451 (-0.779, -0.129)	0.975 (0.957, 0.992)	0.972 (0.956, 0.988)	0.002
6	17.57	18.05	-0.487 (-0.884, -0.098)	0.973 (0.955, 0.991)	0.974 (0.957, 0.990)	0.005
7	17.71	18.33	-0.621 (-1.110, -0.145)	0.966 (0.947, 0.985)	0.970 (0.951, 0.989)	0.005

606 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 607 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

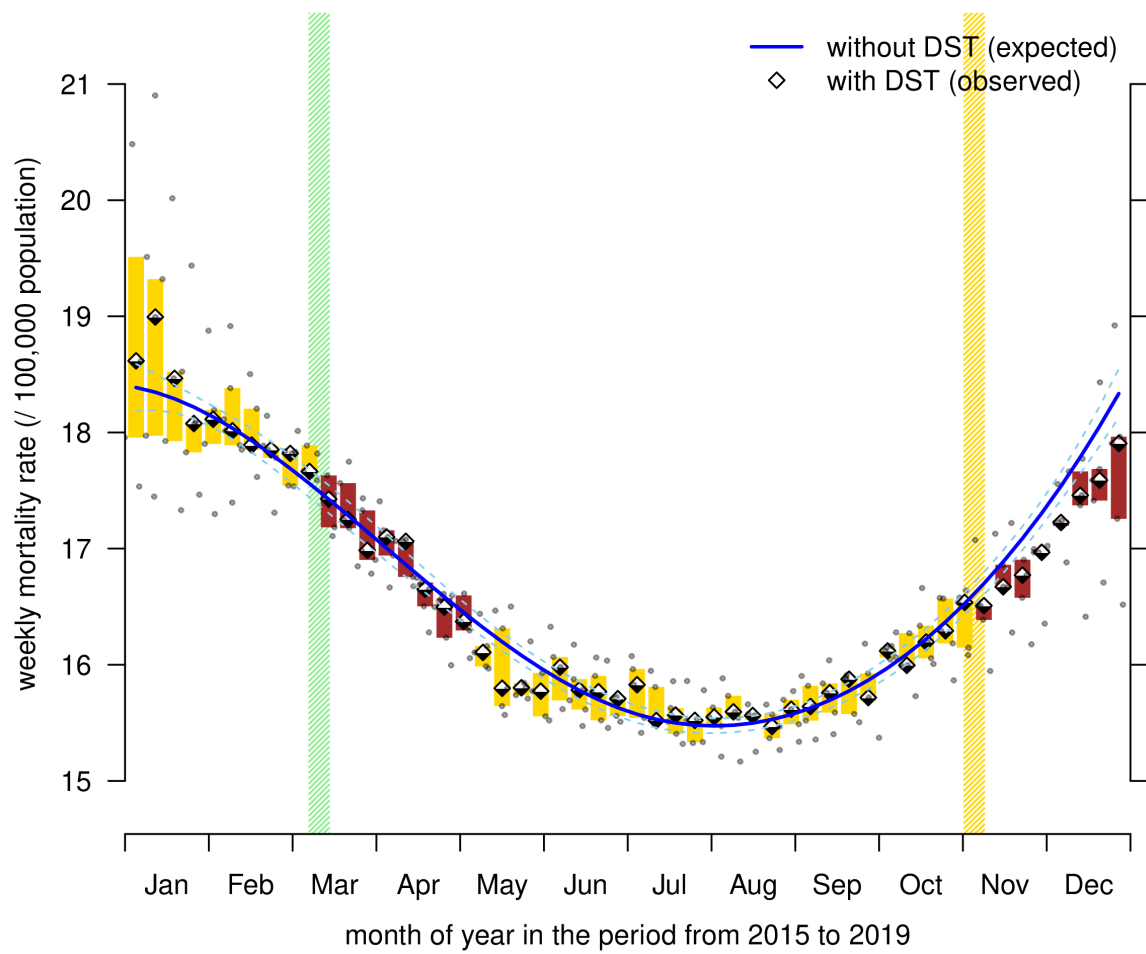
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609 Table S32. Summary of observed and estimated all-cause mortality rate, and week-specific aRR after  
 610 DST, detecting the effects for **0-8 weeks after DST**.

	weekly mortality rate, / 100 000			rate ratio (95% CI)		<i>p</i> -value for aRR
	observation	baseline	difference	crude	adjusted	
<b>All-cause, 0-8 weeks after DST</b>						
week number after <i>Spring</i> DST						
0	17.43	17.47	-0.040 (-0.303, 0.218)	0.998 (0.980, 1.015)	1.000 (0.984, 1.016)	0.982
1	17.32	17.34	-0.022 (-0.281, 0.233)	0.999 (0.981, 1.016)	0.999 (0.983, 1.015)	0.982
2	17.09	17.20	-0.114 (-0.365, 0.133)	0.993 (0.976, 1.011)	1.000 (0.984, 1.016)	0.982
3	17.05	17.06	-0.005 (-0.245, 0.232)	1.000 (0.982, 1.017)	1.006 (0.990, 1.023)	0.683
4	16.93	16.91	0.013 (-0.215, 0.238)	1.001 (0.983, 1.018)	1.004 (0.987, 1.021)	0.830
5	16.58	16.77	-0.193 (-0.408, 0.019)	0.988 (0.971, 1.006)	1.003 (0.986, 1.020)	0.910
6	16.38	16.63	-0.246 (-0.448, -0.047)	0.985 (0.968, 1.002)	0.995 (0.978, 1.011)	0.751
7	16.39	16.45	-0.067 (-0.269, 0.133)	0.996 (0.979, 1.013)	1.006 (0.990, 1.022)	0.667
8	16.21	16.29	-0.084 (-0.286, 0.116)	0.989 (0.972, 1.006)	0.995 (0.979, 1.012)	0.724
week number after <i>Fall</i> DST						
0	16.48	16.68	-0.193 (-0.417, 0.027)	0.988 (0.971, 1.006)	0.980 (0.963, 0.996)	0.035
1	16.72	16.85	-0.130 (-0.353, 0.090)	0.992 (0.975, 1.010)	0.979 (0.962, 0.996)	0.030
2	16.73	17.03	-0.304 (-0.526, -0.084)	0.982 (0.965, 1.000)	0.974 (0.957, 0.990)	0.006
3	16.86	17.23	-0.366 (-0.593, -0.142)	0.979 (0.962, 0.996)	0.976 (0.961, 0.992)	0.010
4	17.22	17.54	-0.319 (-0.599, -0.044)	0.982 (0.965, 0.999)	0.979 (0.964, 0.995)	0.018
5	17.34	17.63	-0.296 (-0.727, 0.125)	0.983 (0.965, 1.002)	0.974 (0.957, 0.992)	0.012
6	17.57	17.90	-0.331 (-0.801, 0.126)	0.981 (0.963, 1.001)	0.977 (0.959, 0.994)	0.021
7	17.71	18.37	-0.652 (-1.159, -0.160)	0.966 (0.949, 0.987)	0.971 (0.952, 0.991)	0.007
8	18.21	18.70	-0.496 (-0.984, -0.031)	0.972 (0.948, 0.995)	0.979 (0.957, 1.004)	0.188

611 *Note:* The “*p*-value for aRR” in the last column was calculated from two-tailed Wald’s test with  
 612 adjustment using Benjamini-Hochberg (BH) procedure for controlling false discovery rate (FDR).

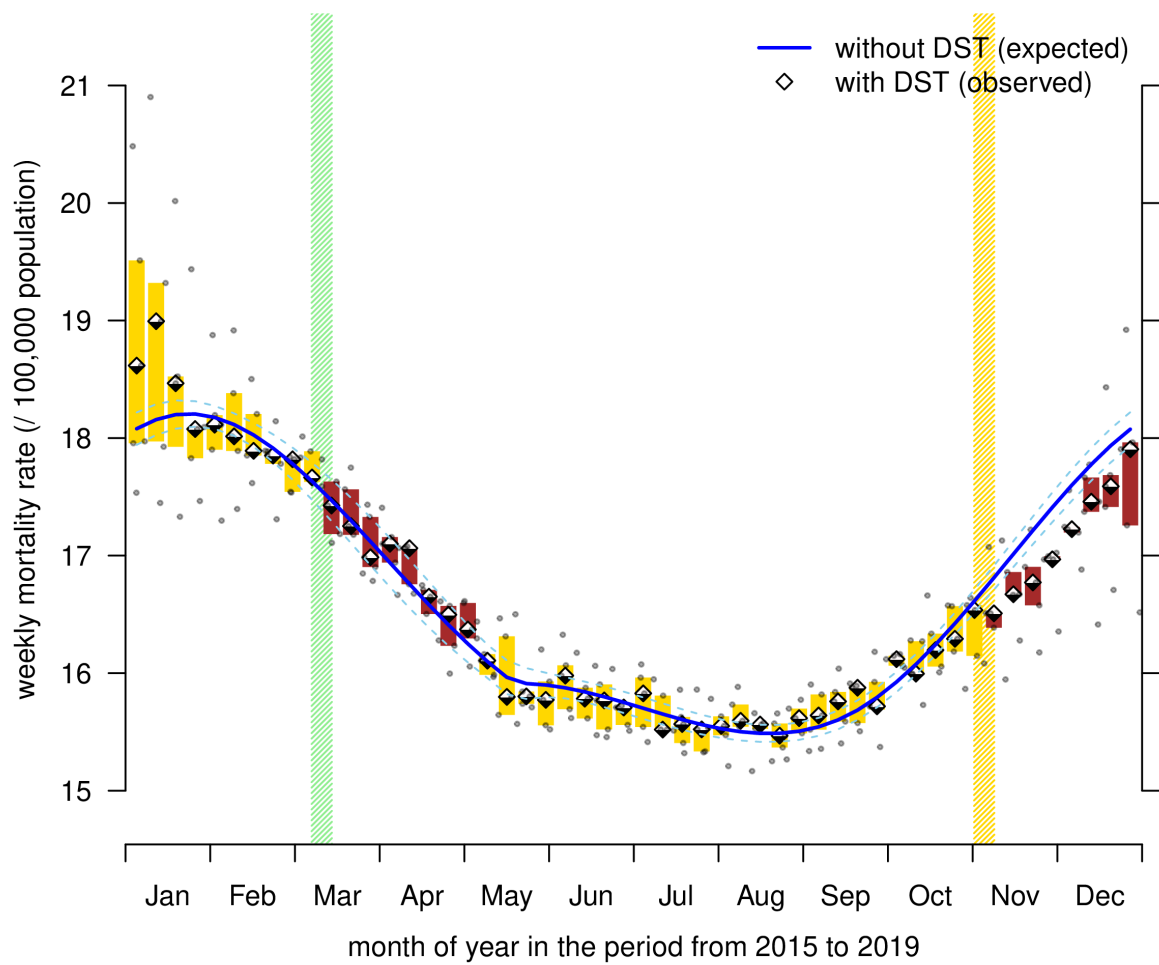
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614

615 Figure S1. The observed and expected weekly all-cause mortality rates in the US, using regression  
616 model trained by partial dataset **excluding 0-7 weeks after DST**.

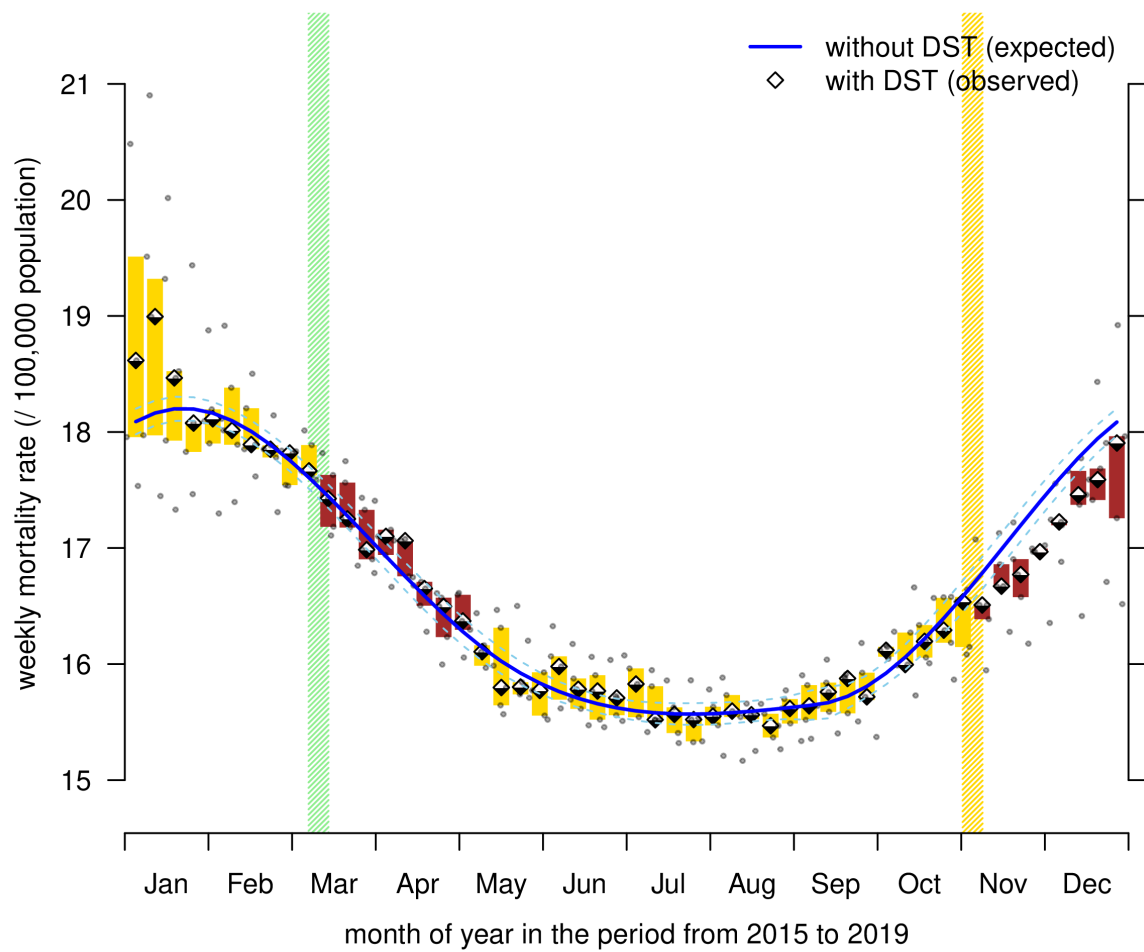
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618

619 Figure S2. The observed and expected weekly all-cause mortality rates in the US, with **seasonality**620 **function indexed in May** of each year.

621

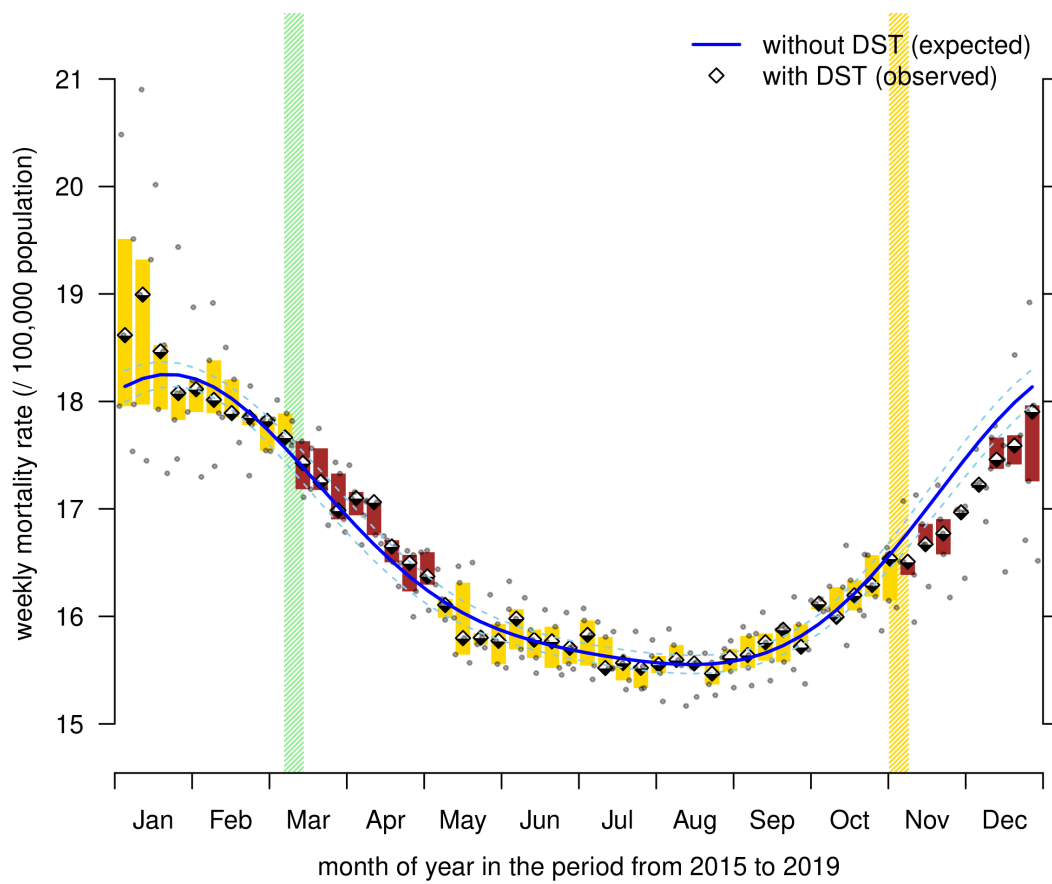


622

623 Figure S3. The observed and expected weekly all-cause mortality rates in the US, with **seasonality**  
624 **function indexed in September** of each year.

625

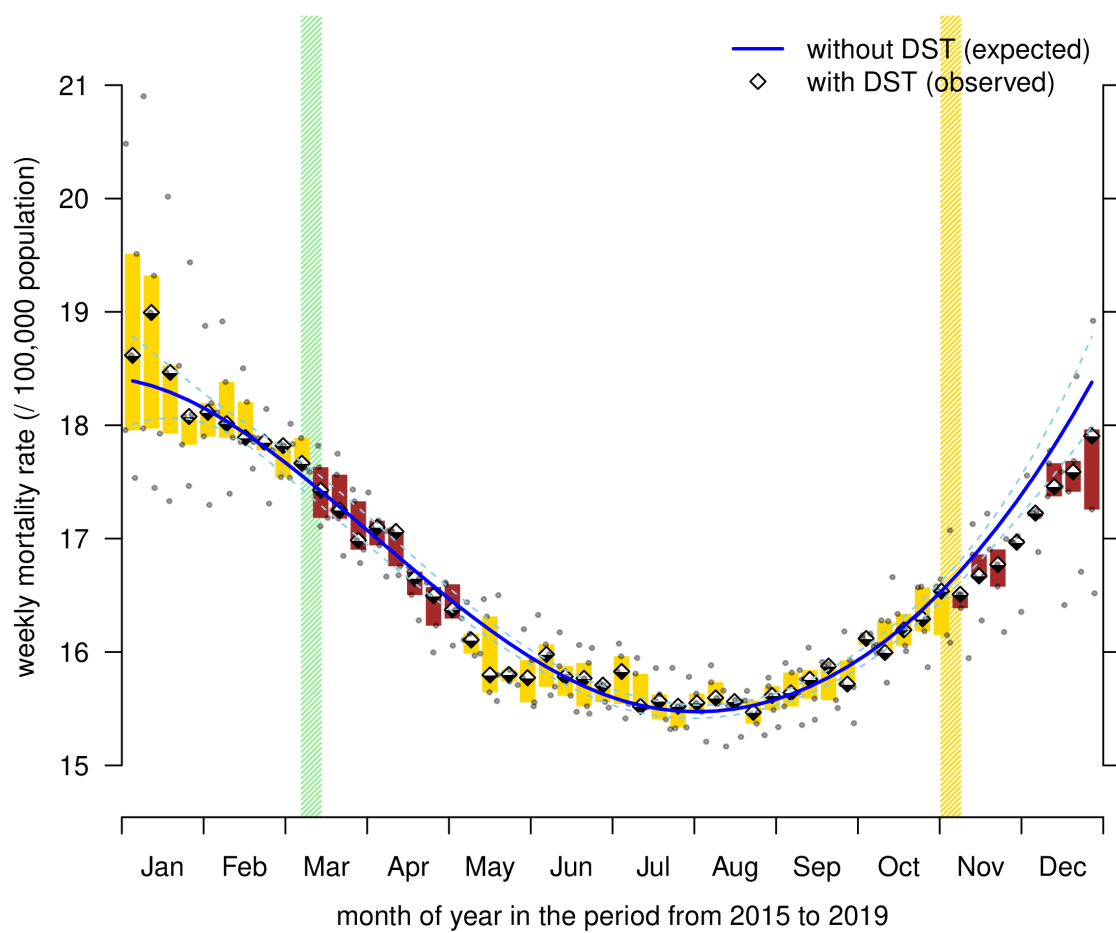




626

627 Figure S4. The observed and expected weekly all-cause mortality rates in the US, with **seasonality**  
628 **function adjusted by harmonic functions.**

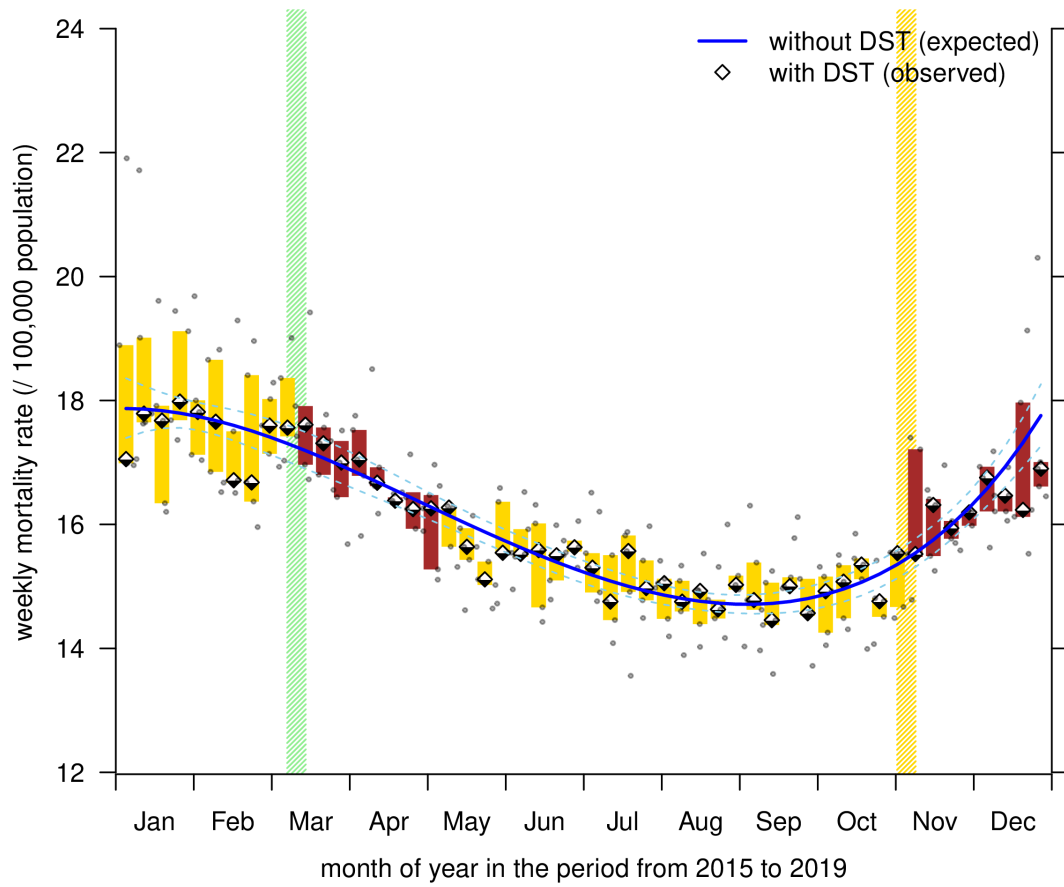
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630

631 Figure S5. The observed and expected weekly all-cause mortality rates in the US, using regression  
632 model trained by partial dataset **excluding January** of each year.

633



634

635 Figure S6. The observed and expected weekly all-cause mortality rates in **Arizona** state.

636

637