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### **Supplemental Material**

#### **Health Impacts of Citywide and Localized Power Outages in New York City**

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#### **Table of Contents**

**Table S1.** Associations (with 95% CI) of all-cause and non-external cause mortality with each individual outage at each lag period.

**Table S2.** Total and mean daily counts of deaths and hospitalizations for specific causes during the 2003 outage study period in NYC.

**Table S3.** Associations (with 95% CI) of specific-cause mortality with the 2003 citywide outage at each lag period.

**Table S4.** Associations (with 95% CI) of hospitalizations with each individual outage at each lag period.

**Table S5.** Associations (with 95% CI) of specific hospitalizations with the 2003 citywide outage at each lag period.

**Table S6.** Pooled estimates for warm-weather (May-Sept.) outages and health outcomes (with 95% CI) after removing temperature from the models and changing definition of outages.

**Table S7.** Pooled estimates for cold-season (Oct.-April) outages and health outcomes (with 95% CI) after removing temperature from the models and changing definition of outages.

**Figure S1.** Network estimates and pooled estimate for warm-weather outages and all-cause mortality. Cumulative relative risks (CRR) and confidence intervals (CI) are shown for all lags. Regression models adjusted for temperature effects, day of week, holiday, year, and within-season temporal trends. Aug. 14-15, 2003 (citywide outage) was excluded. This methodology allows estimation of overall mortality effects; however, it is difficult to compare individual networks with each other due to differences in network size, extent and duration of outages, and underlying population characteristics in each network.

**Figure S2.** Network estimates and pooled estimate for cold-season outages and all-cause mortality. Cumulative relative risks (CRR) and confidence intervals (CI) are shown for all lags. Regression models adjusted for temperature effects, day of week, holiday, year, and within-season temporal trends. Oct. 2012–April 2013 season (time period affected by Superstorm Sandy) was excluded. This methodology allows estimation of overall mortality effects; however, it is difficult to compare individual networks with each other due to differences in network size, extent and duration of outages, and underlying population characteristics in each network.

**Table S1.** Associations (with 95% CI) of all-cause and non-external cause mortality with each individual outage at each lag period.

	<b>1999 WH</b>	<b>2003 Citywide</b>	<b>2006 LIC</b>
<b>Model 1<sup>a</sup></b>			
<b>Outcome &amp; Lag</b>	<b>CRR (CI)<sup>b</sup></b>	<b>CRR (CI)<sup>b</sup></b>	<b>CRR (CI)<sup>c</sup></b>
Mortality, All-cause			
Lag <sub>0</sub>	1.49 (0.73, 3.07)	1.31 (1.18, 1.47)	1.36 (0.89, 2.08)
Lag <sub>01</sub>	1.92 (0.78, 4.75)	1.41 (1.24, 1.60)	1.42 (0.92, 2.18)
Lag <sub>02</sub>	1.61 (0.49, 5.30)	1.30 (1.10, 1.55)	1.41 (0.90, 2.20)
Lag <sub>03</sub>	2.40 (0.69, 8.36)	1.36 (1.12, 1.64)	1.25 (0.77, 2.02)
Mortality, Non-external			
Lag <sub>0</sub>	1.52 (0.75, 3.10)	1.27 (1.13, 1.42)	1.41 (0.91, 2.18)
Lag <sub>01</sub>	2.01 (0.83, 4.88)	1.35 (1.18, 1.54)	1.47 (0.94, 2.30)
Lag <sub>02</sub>	1.82 (0.56, 5.90)	1.27 (1.06, 1.51)	1.46 (0.92, 2.33)
Lag <sub>03</sub>	2.77 (0.81, 9.45)	1.33 (1.09, 1.62)	1.33 (0.81, 2.20)
<b>Model 2<sup>d</sup></b>			
<b>Outcome &amp; Lag</b>	<b>CRR (CI)<sup>b</sup></b>	<b>CRR (CI)<sup>b</sup></b>	<b>CRR (CI)<sup>c</sup></b>
Mortality, All-cause			
Lag <sub>0</sub>	1.65 (0.87, 3.11)	1.34 (1.19, 1.50)	1.38 (0.90, 2.10)
Lag <sub>01</sub>	1.65 (0.77, 3.54)	1.44 (1.27, 1.64)	1.43 (0.93, 2.21)
Lag <sub>02</sub>	1.64 (0.57, 4.69)	1.39 (1.16, 1.65)	1.43 (0.91, 2.24)
Lag <sub>03</sub>	2.37 (0.78, 7.16)	1.40 (1.15, 1.70)	1.25 (0.77, 2.04)
Mortality, Non-external			
Lag <sub>0</sub>	1.70 (0.91, 3.16)	1.29 (1.15, 1.45)	1.42 (0.92, 2.20)
Lag <sub>01</sub>	1.73 (0.83, 3.64)	1.39 (1.21, 1.59)	1.48 (0.95, 2.32)
Lag <sub>02</sub>	1.78 (0.64, 4.97)	1.35 (1.13, 1.62)	1.48 (0.93, 2.35)
Lag <sub>03</sub>	2.65 (0.90, 7.78)	1.37 (1.12, 1.68)	1.34 (0.81, 2.21)

Abbreviations: WH, Washington Heights; LIC, Long Island City; CRR, cumulative relative risk; CI, confidence interval.

<sup>a</sup> Regression models adjusted for temperature effects, day of the week, holiday, year, and within-season temporal trends.

<sup>b</sup> Regression models additionally included an indicator term for Sept. 11, 2001.

<sup>c</sup> Aug. 14–15, 2003 (citywide outage) was excluded from analyses.

<sup>d</sup> Temperature was removed from models.

**Table S2.** Total and mean daily counts of deaths and hospitalizations for specific causes during the 2003 outage study period in NYC

	<b>2003 (May-Sep, 2001-2005) n (mean±sd)<sup>a</sup></b>
<b>Mortality</b>	
<b>CVD</b>	47516 (62.2±9.2)
<b>Hypertensive</b>	2646 (3.5±2.0)
<b>Myocardial Infarction</b>	7318 (9.6±3.5)
<b>Ischemic Heart Disease</b>	28784 (38.7±6.8)
<b>Heart Failure</b>	1221 (1.6±1.3)
<b>Stroke</b>	3197 (4.2±2.1)
<b>Respiratory</b>	2359 (3.1±1.7)
<b>External</b>	4378 (5.7±2.5)
<b>Hospitalizations</b>	
<b>Hypertensive</b>	2731 (3.6±2.1)
<b>Myocardial Infarction</b>	18429 (24.1±5.2)
<b>Ischemic Heart Disease</b>	23265 (30.5±8.8)
<b>Heart Failure</b>	41753 (54.7±12.5)
<b>Stroke</b>	32383 (42.4±7.4)
<b>Chronic Airway Obstruction</b>	1509 (2.0±2.1)
<b>Asthma</b>	33339 (43.6±15.7)
<b>Bronchitis</b>	12234 (16.0±6.1)
<b>Medical Device Failure</b>	5099 (6.7±4.3)

Abbreviations: SD, standard deviation.

<sup>a</sup>The total and mean daily counts were obtained from all 66 networks.

**Table S3.** Associations (with 95% CI) of specific-cause mortality with the 2003 citywide outage at each lag period.

	<b>Model 1<sup>a</sup></b>	<b>Model 2<sup>b</sup></b>
<b>Outcome &amp; Lag</b>	<b>CRR (CI)</b>	<b>CRR (CI)</b>
Mortality, External		
Lag <sub>0</sub>	2.12 (1.39, 3.24)	2.20 (1.46, 3.33)
Lag <sub>01</sub>	2.39 (1.46, 3.93)	2.44 (1.50, 3.96)
Lag <sub>02</sub>	1.33 (0.56, 3.15)	1.43 (0.61, 3.35)
Lag <sub>03</sub>	1.20 (0.44, 3.28)	1.27 (0.47, 3.44)
Mortality, All CVD		
Lag <sub>0</sub>	1.27 (1.08, 1.50)	1.32 (1.11, 1.57)
Lag <sub>01</sub>	1.41 (1.17, 1.71)	1.50 (1.23, 1.82)
Lag <sub>02</sub>	1.36 (1.06, 1.75)	1.54 (1.18, 2.00)
Lag <sub>03</sub>	1.47 (1.11, 1.95)	1.60 (1.19, 2.14)
Mortality, Heart Failure		
Lag <sub>0</sub>	3.16 (1.63, 6.13)	3.27 (1.70, 6.26)
Lag <sub>01</sub>	2.13 (0.82, 5.57)	2.29 (0.89, 5.89)
Lag <sub>02</sub>	3.12 (0.83, 11.68)	3.44 (0.92, 12.81)
Lag <sub>03</sub>	3.79 (0.89, 16.13)	3.81 (0.91, 15.88)
Mortality, Ischemic Heart Disease		
Lag <sub>0</sub>	1.10 (0.87, 1.39)	1.14 (0.90, 1.46)
Lag <sub>01</sub>	1.31 (1.01, 1.69)	1.40 (1.07, 1.82)
Lag <sub>02</sub>	1.25 (0.89, 1.74)	1.46 (1.03, 2.06)
Lag <sub>03</sub>	1.45 (1.01, 2.09)	1.63 (1.12, 2.38)
Mortality, Myocardial Infarction		
Lag <sub>0</sub>	1.79 (1.23, 2.62)	1.82 (1.25, 2.65)
Lag <sub>01</sub>	1.91 (1.21, 3.01)	1.93 (1.24, 3.02)
Lag <sub>02</sub>	2.01 (1.07, 3.76)	2.04 (1.10, 3.79)
Lag <sub>03</sub>	1.65 (0.79, 3.47)	1.60 (0.77, 3.32)
Mortality, Stroke		
Lag <sub>0</sub>	1.74 (0.95, 3.19)	1.73 (0.95, 3.12)
Lag <sub>01</sub>	1.62 (0.76, 3.46)	1.60 (0.76, 3.39)
Lag <sub>02</sub>	1.05 (0.30, 3.62)	1.01 (0.30, 3.44)
Lag <sub>03</sub>	1.53 (0.42, 5.60)	1.41 (0.39, 5.08)
Mortality, Hypertensive Heart Disease		
Lag <sub>0</sub>	0.97 (0.45, 2.09)	1.05 (0.48, 2.27)
Lag <sub>01</sub>	1.18 (0.51, 2.73)	1.33 (0.58, 3.06)
Lag <sub>02</sub>	0.72 (0.20, 2.62)	0.87 (0.24, 3.20)
Lag <sub>03</sub>	0.60 (0.13, 2.67)	0.71 (0.16, 3.16)
Mortality, All Respiratory		
Lag <sub>0</sub>	1.03 (0.46, 2.28)	1.09 (0.49, 2.39)
Lag <sub>01</sub>	1.33 (0.55, 3.22)	1.37 (0.58, 3.26)
Lag <sub>02</sub>	1.79 (0.62, 5.11)	2.12 (0.75, 6.01)
Lag <sub>03</sub>	1.36 (0.38, 4.93)	1.49 (0.41, 5.34)

Abbreviations: CRR, cumulative relative risk; CI, confidence interval; CVD, cardiovascular disease.

<sup>a</sup> Regression models adjusted for temperature effects, day of the week, holiday, year, within-season temporal trends, and Sept. 11, 2001.

<sup>b</sup> Temperature was removed from models.

**Table S4.** Associations (with 95% CI) of hospitalizations with each individual outage at each lag period.

	<b>2003 Citywide (Hospitalizations)</b>	<b>2006 LIC (Hospitalizations)</b>
<b>Model 1<sup>a</sup></b>		
<b>Outcome &amp; Lag</b>	<b>CRR (CI)<sup>b</sup></b>	<b>CRR (CI)<sup>c</sup></b>
Respiratory Disease		
Lag <sub>0</sub>	3.51 (3.08, 3.99)	2.11 (1.06, 4.19)
Lag <sub>01</sub>	3.49 (2.96, 4.12)	2.25 (1.11, 4.54)
Lag <sub>02</sub>	5.26 (4.13, 6.70)	2.26 (1.08, 4.74)
Lag <sub>03</sub>	5.09 (3.86, 6.71)	1.77 (0.76, 4.14)
CVD		
Lag <sub>0</sub>	1.08 (0.98, 1.20)	1.01 (0.71, 1.45)
Lag <sub>01</sub>	1.12 (0.99, 1.26)	0.93 (0.63, 1.37)
Lag <sub>02</sub>	1.17 (1.00, 1.37)	0.90 (0.60, 1.35)
Lag <sub>03</sub>	1.11 (0.93, 1.32)	0.88 (0.58, 1.35)
Renal Disease		
Lag <sub>0</sub>	0.96 (0.80, 1.16)	0.96 (0.50, 1.84)
Lag <sub>1</sub>	0.93 (0.76, 1.13)	0.85 (0.43, 1.69)
Lag <sub>2</sub>	1.15 (0.96, 1.39)	0.76 (0.37, 1.56)
Lag <sub>3</sub>	1.28 (1.07, 1.52)	0.80 (0.39, 1.64)
<b>Model 2<sup>d</sup></b>		
<b>Outcome &amp; Lag</b>	<b>CRR (CI)<sup>b</sup></b>	<b>CRR (CI)<sup>c</sup></b>
Respiratory Disease		
Lag <sub>0</sub>	3.63 (3.19, 4.13)	2.17 (1.10, 4.30)
Lag <sub>01</sub>	3.61 (3.06, 4.25)	2.34 (1.16, 4.72)
Lag <sub>02</sub>	5.66 (4.45, 7.19)	2.31 (1.10, 4.84)
Lag <sub>03</sub>	5.38 (4.10, 7.08)	1.77 (0.76, 4.13)
CVD		
Lag <sub>0</sub>	1.07 (0.97, 1.19)	1.03 (0.72, 1.47)
Lag <sub>01</sub>	1.10 (0.98, 1.25)	0.94 (0.64, 1.38)
Lag <sub>02</sub>	1.13 (0.96, 1.32)	0.90 (0.60, 1.35)
Lag <sub>03</sub>	1.06 (0.89, 1.27)	0.88 (0.58, 1.34)
Renal Disease		
Lag <sub>0</sub>	1.00 (0.83, 1.21)	0.98 (0.51, 1.88)
Lag <sub>1</sub>	0.96 (0.79, 1.17)	0.86 (0.43, 1.69)
Lag <sub>2</sub>	1.19 (0.98, 1.44)	0.77 (0.38, 1.58)
Lag <sub>3</sub>	1.27 (1.06, 1.51)	0.81 (0.39, 1.64)

Abbreviations: LIC, Long Island City; CRR, cumulative relative risk; CI, confidence interval; CVD, cardiovascular disease.

<sup>a</sup> Regression models adjusted for temperature effects, day of the week, holiday, year, and within-season temporal trends.

<sup>b</sup> Regression models additionally included an indicator term for Sept. 11, 2001.

<sup>c</sup> Aug. 14–15, 2003 (citywide outage) was excluded from analyses.

<sup>d</sup> Temperature was removed from models.

**Table S5.** Associations (with 95% CI) of specific hospitalizations with the 2003 citywide outage at each lag period.

<b>Outcome &amp; Lag</b>	<b>Model 1<sup>a</sup></b>	<b>Model 2<sup>b</sup></b>
	<b>CRR (CI)</b>	<b>CRR (CI)</b>
Hospitalizations, Heart Failure		
Lag <sub>0</sub>	1.29 (1.06, 1.56)	1.29 (1.06, 1.57)
Lag <sub>01</sub>	1.42 (1.13, 1.78)	1.39 (1.11, 1.75)
Lag <sub>02</sub>	1.44 (1.06, 1.97)	1.36 (1.00, 1.86)
Lag <sub>03</sub>	1.24 (0.87, 1.76)	1.17 (0.82, 1.66)
Hospitalizations, Myocardial Infarction		
Lag <sub>0</sub>	1.20 (0.92, 1.57)	1.17 (0.89, 1.53)
Lag <sub>01</sub>	1.35 (1.00, 1.83)	1.32 (0.97, 1.78)
Lag <sub>02</sub>	1.36 (0.91, 2.04)	1.28 (0.86, 1.91)
Lag <sub>03</sub>	1.25 (0.79, 1.97)	1.18 (0.75, 1.85)
Hospitalizations, Ischemic Heart Disease		
Lag <sub>0</sub>	0.91 (0.66, 1.24)	0.88 (0.65, 1.21)
Lag <sub>01</sub>	0.80 (0.54, 1.19)	0.78 (0.52, 1.16)
Lag <sub>02</sub>	0.77 (0.47, 1.29)	0.74 (0.45, 1.23)
Lag <sub>03</sub>	0.83 (0.48, 1.43)	0.77 (0.45, 1.31)
Hospitalizations, Hypertensive Heart Disease		
Lag <sub>0</sub>	0.70 (0.25, 1.94)	0.64 (0.23, 1.77)
Lag <sub>01</sub>	0.74 (0.24, 2.33)	0.68 (0.22, 2.16)
Lag <sub>02</sub>	0.91 (0.23, 3.55)	0.75 (0.19, 2.90)
Lag <sub>03</sub>	1.20 (0.29, 5.03)	0.99 (0.24, 4.11)
Hospitalizations, Stroke		
Lag <sub>0</sub>	1.02 (0.83, 1.25)	1.04 (0.84, 1.28)
Lag <sub>01</sub>	0.93 (0.72, 1.20)	0.96 (0.75, 1.24)
Lag <sub>02</sub>	0.97 (0.71, 1.33)	0.99 (0.72, 1.36)
Lag <sub>03</sub>	0.95 (0.67, 1.34)	0.97 (0.69, 1.38)
Hospitalizations, Chronic Airway Obstruction		
Lag <sub>0</sub>	14.84 (9.79, 22.51)	15.35 (10.26, 22.97)
Lag <sub>01</sub>	10.75 (6.03, 19.20)	11.89 (6.75, 20.92)
Lag <sub>02</sub>	5.68 (0.72, 44.64)	5.70 (0.72, 45.27)
Lag <sub>03</sub>	4.99 (0.53, 46.98)	5.24 (0.58, 47.65)
Hospitalizations, Asthma		
Lag <sub>0</sub>	2.28 (1.89, 2.76)	2.33 (1.93, 2.82)
Lag <sub>01</sub>	2.57 (2.05, 3.21)	2.66 (2.13, 3.32)
Lag <sub>02</sub>	3.89 (2.88, 5.25)	4.17 (3.10, 5.62)
Lag <sub>03</sub>	4.07 (2.90, 5.72)	4.29 (3.06, 6.00)
Hospitalizations, Chronic Bronchitis		
Lag <sub>0</sub>	5.71 (4.78, 6.82)	6.09 (5.12, 7.25)



	Lag <sub>01</sub>	4.94 (3.87, 6.30)	5.17 (4.08, 6.57)
	Lag <sub>02</sub>	7.31 (4.78, 11.19)	7.91 (5.19, 12.04)
	Lag <sub>03</sub>	6.42 (3.95, 10.43)	6.89 (4.25, 11.17)
Hospitalizations, Medical Device Failure			
	Lag <sub>0</sub>	8.53 (6.78, 10.73)	8.72 (6.99, 10.88)
	Lag <sub>01</sub>	6.63 (4.82, 9.13)	6.95 (5.10, 9.46)
	Lag <sub>02</sub>	12.15 (6.84, 21.58)	12.61 (7.16, 22.20)
	Lag <sub>03</sub>	9.92 (5.00, 19.70)	10.22 (5.21, 20.04)

Abbreviations: CRR, cumulative relative risk; CI, confidence interval.

<sup>a</sup> Regression models adjusted for temperature effects, day of the week, holiday, year, within-season temporal trends, and Sept. 11, 2001.

<sup>b</sup> Temperature was removed from models.

**Table S6.** Pooled estimates for warm-weather (May-Sept.) outages and health outcomes (with 95% CI) after removing temperature from the models and changing definition of outages.

	<b>Model 1<sup>a,b</sup></b>	<b>Model 2<sup>a,c</sup></b>
<b>Outcome &amp; Lag</b>	<b>Pooled RR (CI)</b>	<b>Pooled RR (CI)</b>
Mortality, All-cause		
Lag <sub>0</sub>	1.04 (0.92, 1.17)	1.03 (0.94, 1.11)
Lag <sub>01</sub>	1.00 (0.88, 1.14)	0.99 (0.90, 1.08)
Lag <sub>02</sub>	1.02 (0.89, 1.17)	0.99 (0.91, 1.09)
Lag <sub>03</sub>	1.03 (0.88, 1.21)	1.00 (0.89, 1.12)
Mortality, Non-external		
Lag <sub>0</sub>	1.04 (0.92, 1.17)	1.02 (0.94, 1.11)
Lag <sub>01</sub>	1.00 (0.88, 1.13)	0.97 (0.88, 1.07)
Lag <sub>02</sub>	1.01 (0.89, 1.15)	0.98 (0.89, 1.07)
Lag <sub>03</sub>	1.02 (0.88, 1.18)	0.98 (0.88, 1.10)
Hospitalizations, Respiratory Disease		
Lag <sub>0</sub>	0.91 (0.78, 1.07)	0.98 (0.88, 1.10)
Lag <sub>01</sub>	0.95 (0.79, 1.15)	1.02 (0.89, 1.16)
Lag <sub>02</sub>	0.88 (0.70, 1.09)	0.96 (0.82, 1.12)
Lag <sub>03</sub>	0.89 (0.70, 1.13)	0.96 (0.81, 1.14)
Hospitalizations, CVD		
Lag <sub>0</sub>	0.95 (0.88, 1.02)	0.99 (0.93, 1.04)
Lag <sub>01</sub>	0.94 (0.86, 1.02)	0.96 (0.90, 1.02)
Lag <sub>02</sub>	0.93 (0.85, 1.03)	0.95 (0.89, 1.02)
Lag <sub>03</sub>	0.92 (0.80, 1.05)	0.95 (0.85, 1.06)
Hospitalizations, Renal Disease		
Lag <sub>0</sub>	0.98 (0.86, 1.12)	1.00 (0.91, 1.10)
Lag <sub>1</sub>	1.11 (0.98, 1.26)	1.05 (0.96, 1.15)
Lag <sub>2</sub>	1.20 (1.07, 1.36)	1.07 (0.95, 1.21)
Lag <sub>3</sub>	1.16 (1.01, 1.34)	1.14 (1.03, 1.25)

Abbreviations: RR, relative risk; CI, confidence interval; CVD, cardiovascular disease.

<sup>a</sup> Aug. 14–15, 2003 (citywide outage) and the Long Island City network (2006 LIC outage) were excluded from analyses.

<sup>b</sup> Regression models excluded temperature.

<sup>c</sup> An alternative daily cut-off of  $\geq 150$  customers without power in each network was specified for warm outages.

**Table S7.** Pooled estimates for cold-season (Oct.-April) outages and health outcomes (with 95% CI) after removing temperature from the models and changing definition of outages.

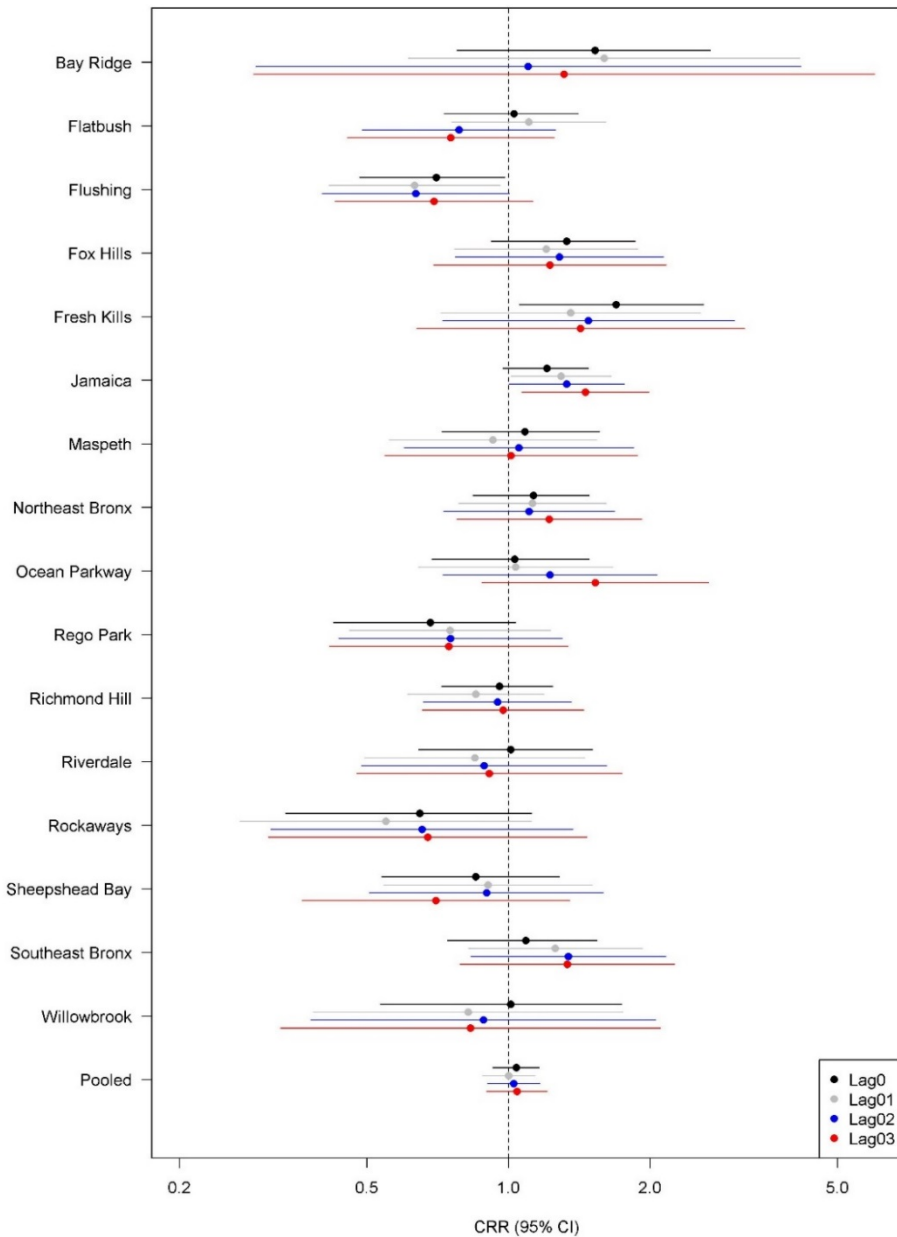
	<b>Model 1<sup>a,b</sup></b>	<b>Model 2<sup>a,c</sup></b>
<b>Outcome &amp; Lag</b>	<b>Pooled RR (CI)</b>	<b>Pooled RR (CI)</b>
Mortality, All-cause		
Lag <sub>0</sub>	1.05 (1.01, 1.10)	1.02 (0.96, 1.08)
Lag <sub>01</sub>	1.07 (1.02, 1.13)	1.04 (0.97, 1.13)
Lag <sub>02</sub>	1.08 (1.01, 1.14)	1.03 (0.94, 1.13)
Lag <sub>03</sub>	1.04 (0.97, 1.11)	1.00 (0.89, 1.10)
Mortality, Non-external		
Lag <sub>0</sub>	1.05 (1.01, 1.107)	1.03 (0.97, 1.09)
Lag <sub>01</sub>	1.07 (1.02, 1.13)	1.06 (0.98, 1.14)
Lag <sub>02</sub>	1.08 (1.01, 1.15)	1.05 (0.96, 1.15)
Lag <sub>03</sub>	1.04 (0.97, 1.12)	1.02 (0.91, 1.13)
Hospitalizations, Respiratory Disease		
Lag <sub>0</sub>	0.96 (0.83, 1.10)	0.89 (0.73, 1.09)
Lag <sub>01</sub>	0.87 (0.73, 1.04)	0.86 (0.67, 1.11)
Lag <sub>02</sub>	0.90 (0.73, 1.10)	0.90 (0.68, 1.21)
Lag <sub>03</sub>	0.80 (0.63, 1.01)	0.77 (0.55, 1.09)
Hospitalizations, CVD		
Lag <sub>0</sub>	1.13 (1.04, 1.24)	1.19 (1.08, 1.32)
Lag <sub>01</sub>	1.15 (1.03, 1.27)	1.23 (1.08, 1.39)
Lag <sub>02</sub>	1.09 (0.96, 1.25)	1.19 (0.99, 1.44)
Lag <sub>03</sub>	1.08 (0.95, 1.22)	1.11 (0.91, 1.36)
Hospitalizations, Renal Disease		
Lag <sub>0</sub>	1.07 (0.92, 1.25)	0.94 (0.74, 1.18)
Lag <sub>01</sub>	1.08 (0.89, 1.31)	0.91 (0.69, 1.21)
Lag <sub>02</sub>	1.10 (0.88, 1.38)	0.98 (0.71, 1.35)
Lag <sub>03</sub>	1.04 (0.81, 1.35)	0.98 (0.71, 1.35)

Abbreviations: RR, relative risk; CI, confidence interval; CVD, cardiovascular disease.

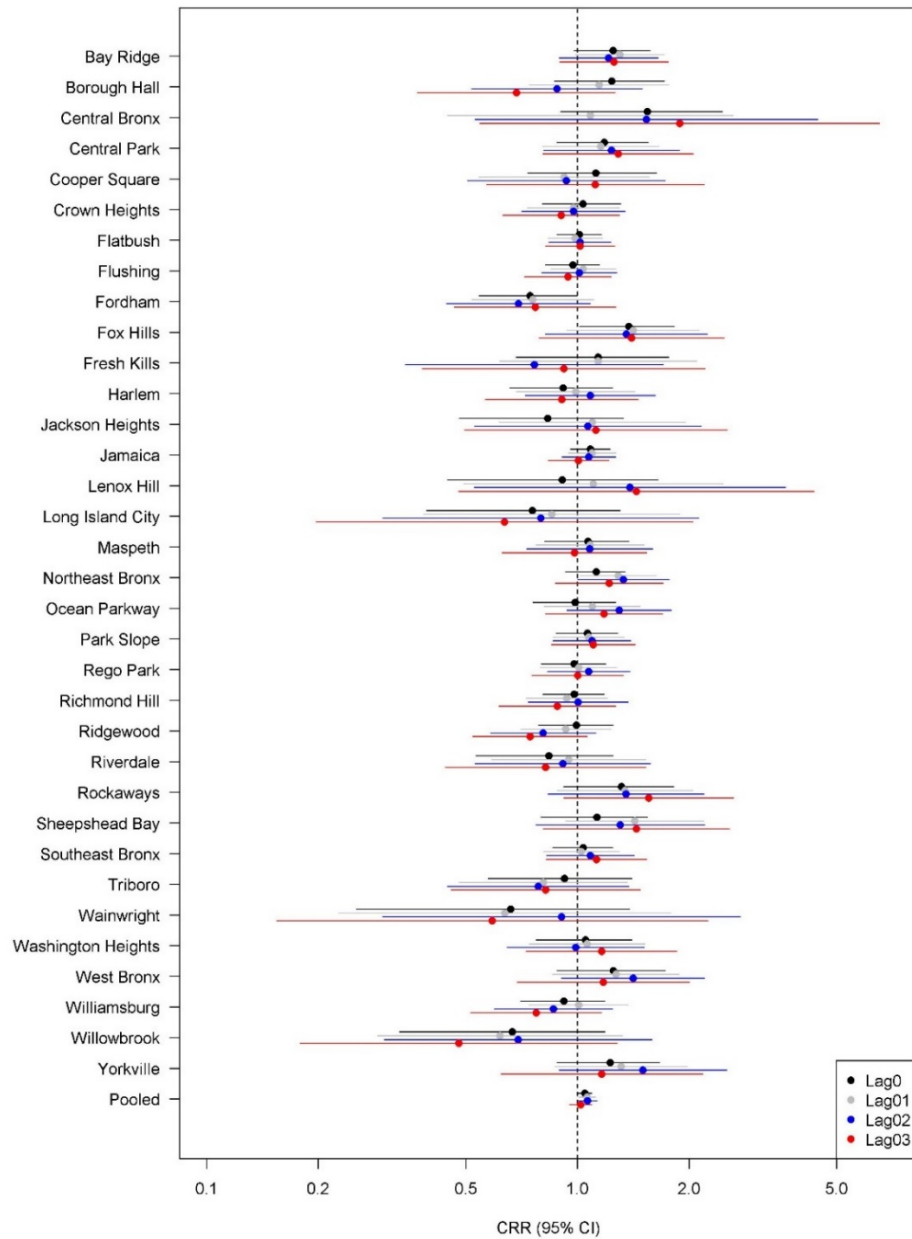
<sup>a</sup> Oct. 2012–April 2013 was excluded from analyses.

<sup>b</sup> Regression models excluded temperature.

<sup>c</sup> An alternative daily cut-off of  $\geq 150$  customers without power in each network was specified for both warm and cold outages.



**Figure S1.** Network estimates and pooled estimate for warm-weather outages and all-cause mortality. Cumulative relative risks (CRR) and confidence intervals (CI) are shown for all lags. Regression models adjusted for temperature effects, day of week, holiday, year, and within-season temporal trends. Aug. 14-15, 2003 (citywide outage) was excluded. This methodology allows estimation of overall mortality effects; however, it is difficult to compare individual networks with each other due to differences in network size, extent and duration of outages, and underlying population characteristics in each network.



**Figure S2.** Network estimates and pooled estimate for cold-season outages and all-cause mortality. Cumulative relative risks (CRR) and confidence intervals (CI) are shown for all lags. Regression models adjusted for temperature effects, day of week, holiday, year, and within-season temporal trends. Oct. 2012–April 2013 season (time period affected by Superstorm Sandy) was excluded. This methodology allows estimation of overall mortality effects; however, it is difficult to compare individual networks with each other due to differences in network size, extent and duration of outages, and underlying population characteristics in each network.