



## Supplementary Materials

# The Effect of Seasonal Floods on Health: Analysis of Six Years of National Health Data and Flood Maps

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**Table S1.** Incidence rate ratios and 95% confidence intervals for diarrhea, acute respiratory infections, vector-borne diseases, skin infections, noncommunicable diseases and injuries by district, corresponding to a ten square kilometer increase in flood water, controlled for season and year.

Diarrhea								
	Non-imputed data				Imputed data			
	Lag 0	Lag 1	Lag 2	Lag 3	Lag 0	Lag 1	Lag 2	Lag 3
<i>Prey Veng</i>								
Kamchay Mear	0.82 (0.49–1.35)	0.90 (0.51–1.57)	0.73 (0.52–1.01)	0.95 (0.52–1.72)				
Kampong Trabek	0.93 (0.84–1.03)	0.88 (0.82–0.94)	0.87 (0.80–0.95)	1.17 (1.05–1.29)				
Mesang	0.99 (0.78–1.25)	0.95 (0.69–1.30)	0.81 (0.67–0.99)	1.04 (0.81–1.33)				
Peam Ror	1.03 (0.99–1.07)	0.94 (0.90–0.99)	1.00 (0.96–1.05)	1.06 (1.02–1.11)				
Peareaing	0.99 (0.95–1.04)	0.98 (0.95–1.02)	0.98 (0.95–1.02)	1.04 (0.99–1.08)	0.99 (0.95–1.03)	0.97 (0.94–1.01)	0.99 (0.95–1.03)	1.04 (0.99–1.08)
Preah Sdach	1.05 (1.00–1.09)	0.99 (0.94–1.04)	0.98 (0.92–1.05)	1.04 (0.98–1.10)				
Svay Antor	1.04 (0.95–1.13)	0.96 (0.86–1.06)	0.86 (0.73–1.03)	1.14 (1.02–1.27)	1.00 (0.94–1.07)	0.92 (0.85–0.99)	0.95 (0.87–1.03)	1.09 (1.01–1.16)
<i>Kampot</i>								
Angkor Chey	0.03 (0.00–31.52)	0.83 (0.00–104.51)	0.00 (0.00–3.29)	4.01 (0.03–535.26)	2.14 (0.27–16.80)	2.75 (0.55–13.74)	0.22 (0.01–5.05)	22.54 (4.49–113.21)
Chhouk	0.00 (0.00–0.67)	2.2e+9 (0.00–1.6e+24)	0.00 (0.00–2.8e+7)	214.10 (0.00–5.6e+15)	0.00 (0.00–19.05)	297.45 (0.00–3.7e+12)	0.03 (0.00–3.5e+9)	163179.1 (0.00–5.3e+15)
Kampong Trach	1.68 (1.40–2.00)	0.76 (0.65–0.90)	0.74 (0.56–0.97)	1.16 (0.87–1.54)	1.55 (1.33–1.80)	0.79 (0.71–0.89)	0.85 (0.72–1.00)	1.23 (1.00–1.50)
Kampot	1.62 (0.22–11.66)	0.43 (0.08–2.21)	9.62 (0.80–115.87)	1.30 (0.40–4.25)	0.49 (0.11–2.04)	0.96 (0.31–2.97)	1.48 (0.50–4.42)	1.32 (0.46–3.79)
Acute respiratory infections								
	Non-imputed data				Imputed data			
	Lag 0	Lag 1	Lag 2	Lag 3	Lag 0	Lag 1	Lag 2	Lag 3
<i>Prey Veng</i>								
Kamchay Mear	0.61 (0.34–1.09)	0.74 (0.48–1.14)	0.98 (0.69–1.40)	1.21 (0.92–1.59)				
Kampong Trabek	1.01 (0.90–1.12)	1.02 (0.93–1.13)	0.97 (0.87–1.07)	1.08 (0.98–1.20)				
Mesang	0.97 (0.80–1.19)	1.03 (0.79–1.34)	0.88 (0.75–1.02)	1.08 (0.91–1.28)				

Peam Ror	1.02 (0.98–1.06)	0.94 (0.90–0.99)	1.05 (1.01–1.10)	1.03 (0.99–1.07)				
Peareaing	1.05 (1.02–1.08)	1.01 (0.99–1.03)	0.99 (0.96–1.02)	1.03 (1.00–1.05)	1.04 (1.01–1.07)	1.00 (0.99–1.02)	0.99 (0.97–1.02)	1.03 (1.01–1.05)
Preah Sdach	1.04 (0.99–1.08)	0.99 (0.95–1.04)	1.01 (0.95–1.07)	1.02 (0.96–1.08)				
Svay Antor	1.07 (0.98–1.07)	0.96 (0.87–1.07)	0.94 (0.82–1.08)	1.11 (1.02–1.22)	1.04 (0.98–1.12)	0.94 (0.86–1.02)	1.00 (0.93–1.08)	1.08 (1.01–1.16)
<i>Kampot</i>								
Angkor Chey	2.98 (0.32–28.15)	8.02 (2.18–29.46)	0.49 (0.00–248.27)	1.72 (0.02–168.71)				
Chhouk	11167.12 (0.00–1.8e+12)	48187.75 (0.00–2.2e+13)	0.00 (0.00–1069161)	0.00 (0.00–290249.7)				
Kampong Trach	1.44 (1.28–1.62)	0.92 (0.83–1.01)	0.89 (0.76–1.03)	1.20 (1.05–1.38)				
<i>Kampot</i>	0.84 (0.30–2.33)	0.85 (0.30–2.39)	1.10 (0.37–3.32)	0.40 (0.16–0.96)				
Vector-borne diseases								
	<i>Non-imputed data</i>				<i>Imputed data</i>			
	Lag 0	Lag 1	Lag 2	Lag 3	Lag 0	Lag 1	Lag 2	Lag 3
<i>Prey Veng</i>								
Kamchay Mear	0.36 (0.02–5.81)	0.24 (0.01–8.78)	0.47 (0.03–7.91)	1.68 (0.04–70.87)				
Kampong Trabek	1.28 (0.75–2.16)	0.96 (0.53–1.74)	0.60 (0.25–1.43)	0.63 (0.25–1.56)				
Mesang	1.56 (0.29–8.27)	2.31 (0.25–21.07)	2.72 (0.39–19.01)	1.46 (0.23–9.43)				
Peam Ror	1.25 (0.92–1.70)	0.99 (0.67–1.48)	0.64 (0.29–1.41)	1.30 (0.60–2.81)				
Peareaing	0.77 (0.60–0.99)	0.75 (0.58–0.97)	1.02 (0.71–1.47)	1.03 (0.77–1.37)				
Preah Sdach	0.99 (0.74–1.33)	0.96 (0.67–1.38)	1.05 (0.76–1.45)	1.00 (0.74–1.37)				
Svay Antor	2.07 (1.39–3.10)	0.75 (0.46–1.21)	0.79 (0.46–1.34)	0.96 (0.60–1.55)				
<i>Kampot</i>								
Angkor Chey	0.00 (0.00–94.71)	0.00 (0.00–3.65)	0.00 (0.00–0.37)	0.00 (0.00–2.24)	0.01 (0.00–142.57)	0.02 (0.00–2.37)	0.00 (0.00–1.25)	0.00 (0.00–1.62)
Chhouk	7.8e+23 (3.0e+8–2.0e+39)	12.87 (0.00–9.1e+15)	6.9e+40 (2.3e+15–2.0e+66)	0.00 (0.00–0.00)	2.0e+9 (0.12–3.5e+18)	582.59 (0.00–1.2e+14)	0.02 (0.00–1.0e+12)	0.00 (0.00–50.79)
Kampong Trach	0.83 (0.28–2.47)	0.27 (0.09–0.85)	2.26 (0.95–5.42)	0.92 (0.45–1.86)	0.48 (0.26–0.88)	0.30 (0.14–0.61)	2.35 (1.28–4.34)	0.91 (0.56–1.47)
<i>Kampot</i>	0.35 (0.09–1.41)	0.98 (0.17–5.71)	0.23 (0.04–1.20)	0.74 (0.18–3.01)	0.29 (0.07–1.29)	0.90 (0.15–5.35)	0.18 (0.04–0.96)	1.20 (0.40–3.65)
Skin infections								
	<i>Non-imputed data</i>				<i>Imputed data</i>			
	Lag 0	Lag 1	Lag 2	Lag 3	Lag 0	Lag 1	Lag 2	Lag 3
<i>Prey Veng</i>								
Kamchay Mear	0.81 (0.53–1.23)	0.91 (0.54–1.55)	0.85 (0.55–1.30)	0.81 (0.51–1.29)				
Kampong Trabek	0.98 (0.89–1.07)	0.99 (0.90–1.09)	0.97 (0.86–1.08)	1.04 (0.90–1.19)				
Mesang	1.17 (0.94–1.46)	0.92 (0.75–1.13)	0.98 (0.80–1.19)	1.11 (0.85–1.45)				
Peam Ror	1.14 (0.96–1.35)	0.87 (0.73–1.04)	0.98 (0.90–1.06)	1.10 (1.01–1.20)	1.01 (0.96–1.07)	0.98 (0.92–1.06)	0.99 (0.92–1.05)	1.04 (1.00–1.09)
Peareaing	1.06 (1.02–1.10)	0.98 (0.95–1.02)	0.98 (0.94–1.01)	1.05 (1.02–1.09)	1.05 (1.02–1.08)	0.97 (0.94–1.01)	0.98 (0.95–1.02)	1.05 (1.02–1.09)
Preah Sdach	1.09 (1.02–1.16)	0.94 (0.88–1.01)	1.02 (0.95–1.09)	1.05 (0.99–1.12)				

Svay Antor Kampot	1.14 (1.02–1.28)	0.81 (0.69–0.94)	0.91 (0.76–1.08)	1.35 (1.18–1.54)	1.09 (0.99–1.20)	0.77 (0.67–0.89)	1.00 (0.89–1.13)	1.28 (1.14–1.44)
Angkor Chey	1.33 (0.22–7.99)	0.81 (0.04–15.46)	0.04 (0.00–16.41)	0.14 (0.00–58.17)				
Chhouk	1.14 (0.00–1.7e+9)	1926.42 (0.00–2.3e+13)	9.4e+10 (0.00–6.9e+23)	0.00 (0.00–6.9e+8)				
Kampong Trach	3.86 (2.40–6.21)	1.04 (0.91–1.19)	0.44 (0.17–1.14)	0.94 (0.45–1.96)	2.82 (2.41–3.29)	1.07 (0.98–1.17)	0.74 (0.48–1.15)	1.22 (0.81–1.85)
Kampot	0.48 (0.16–1.41)	0.94 (0.38–2.30)	1.75 (0.50–6.15)	0.79 (0.31–1.99)				

Noncommunicable diseases

	<i>Non-imputed data</i>				<i>Imputed data</i>			
	Lag 0	Lag 1	Lag 2	Lag 3	Lag 0	Lag 1	Lag 2	Lag 3
<i>Prey Veng</i>								
Kamchay Mear	0.00 (0.00–13.62)	5.97 (0.00–111891.5)	13.61 (0.02–11675.79)	0.00 (0.00–143726.6)				
Kampong Trabek	0.69 (0.05–9.10)	0.45 (0.00–23.06)	2.65 (0.53–13.17)	0.32 (0.05–2.13)				
Mesang	0.11 (0.01–0.98)	2.08 (0.12–36.93)	0.66 (0.06–6.97)	0.30 (0.04–2.04)				
Peam Ror	0.74 (0.38–1.46)	1.10 (0.59–2.04)	1.36 (0.57–3.28)	0.80 (0.46–1.37)				
Peareaing	1.02 (0.83–1.26)	1.13 (0.87–1.48)	1.00 (0.76–1.32)	1.57 (1.21–2.03)	1.02 (0.92–1.13)	1.03 (0.86–1.22)	1.05 (0.93–1.18)	0.94 (0.82–1.08)
Preah Sdach	1.89 (0.30–11.87)	0.06 (0.00–51410.43)	0.00 (0.00– 307.59)	4.0e+12 (0.00–1.9e+34)				
Svay Antor Kampot	1.05 (0.66–1.67)	0.62 (0.33–1.18)	0.90 (0.50–1.62)	1.40 (0.97–2.03)				
Angkor Chey	0.00 (0.00–1869.58)	0.73 (0.00– 1165.72)	15469.45 (0.04–5.5e+10)	7.07 (0.00–45910.69)				
Chhouk	0.00 (0.00–0.00)	5.0e+122 (2.1e+96– 1.1e+150)	1.0e+60 (0.00–2.5e+125)	0.00 (0.00–0.00)	0.00 (0.00–9.3e+44)	1.9e+35 (1.0e+10– 3.6e+78)	4.0e+16 (0.00–2.7e+79)	0.00 (0.00–3.9e+13)
Kampong Trach	3.5e+50 (1.0e+50– 1.2e+51)	0.00 (0.00–0.00)	2.0e+94 (2.7e+92– 1.6e+94)	0.00 (0.00–0.00)				
Kampot	0.16 (0.00–24.31)	14.04 (0.02–9471.05)	0.00 (0.00–46.35)	572.7 (0.28–1171946)	0.12 (0.01–1.80)	0.27 (0.01–5.48)	3.65 (0.04– 326.34)	0.86 (0.03–21.89)

Injuries

	<i>Non-imputed data</i>				<i>Imputed data</i>			
	Lag 0	Lag 1	Lag 2	Lag 3	Lag 0	Lag 1	Lag 2	Lag 3
<i>Prey Veng</i>								
Kamchay Mear	0.48 (0.09–2.46)							
Kampong Trabek	0.88 (0.70–1.10)							
Mesang	1.44 (0.85–2.46)							
Peam Ror	0.94 (0.90–0.98)							
Peareaing	0.98 (0.95–1.02)							

Preah Sdach	1.01 (0.97–1.05)	
Svay Antor	1.09 (0.96–1.24)	
<i>Kampot</i>		
Angkor Chey	9.06 (2.18–37.62)	
Chhouk	0.00 (0.00–2.29)	
Kampong Trach	1.17 (1.09–1.62)	1.17 (1.03–1.34)
Kampot	0.91 (0.51–1.61)	

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Rate ratios and confidence intervals written in bold, red text are statistically significant. Estimates are rounded to two digits.