

### S3 Table

Spatial lags	AR(1,1)		AR(2,1)	
	$Q(K)$	$p$ -value	$Q(K)$	$p$ -value
$K = 1$	329.873	$p < 0.001$	265.814	$p < 0.001$
$K = 2$	547.247	$p < 0.001$	417.563	$p < 0.001$
$K = 3$	596.428	$p < 0.001$	440.301	$p < 0.001$
$K = 4$	599.586	$p < 0.001$	440.482	$p < 0.001$
$K = 5$	604.305	$p < 0.001$	450.905	$p < 0.001$
$K = 6$	608.769	$p < 0.001$	461.925	$p < 0.001$

**S3 Table. Obtained  $p$ -values for spatial-temporal independence.** Obtained  $p$ -values for error terms of the spatial-temporal AR( $p$ ,1) model ( $n = 434$ ).