**Early Warning Signals of Malaria Resurgence in Kericho, Kenya**

Mallory J. Harris, Simon I. Hay, and John M. Drake

Supplemental File 2: Sensitivity Analysis of Testing Parameters (Notional Month of Critical Transition, Bandwidth Size)

This supplement examines the sensitivity of the main result to two modeling choices: (1) the selection of the bandwidth, and (2) the notional start of the supercritical period. We performed a panel analysis of the rolling window method for all combinations of supercritical start months from April 1992 through April 1994 and all bandwidths from $b$=35 to $b$=45. Correlation coefficients and p-values were calculated as in the main text.

Variance exhibits regular decreases in the significance of the signal with a larger bandwidth size and later notional month of critical transition. The p-value for increases in this indicator remains low across a range of bandwidth size and notional month of critical transition, indicating that it is relatively robust to variation in these testing parameters.

The first difference of variance exhibits the least regular trend in significance across testing parameter values, likely due to its large oscillations over time. For most values of the testing parameters, the second difference of variance does not return a significant signal.

Autocovariance is robust to parameter choice, with a low p-value across all testing parameters.

The significance of the signal from lag-1 autocorrelation increases with a later notional month of critical transition and greater bandwidth size. Lag-1 autocorrelation shows variation in the significance of its signal across testing parameters, although it returns predominantly low p-values across bandwidth size when the notional month of the critical transition is March 1993.

Decay time displays similar trends across parameter values to lag-1 autocorrelation, returning lower p-values than lag-1 autocorrelation at each testing parameter combination.

The significance of the signal from mean is greatest at intermediate bandwidth (between 38 and 41) and at later notional month of critical transition. This indicator does not return a significant signal at any combination of testing parameters.

The significance of the signal from index of dispersion is greatest at smaller bandwidth size and later notional month of critical transition.

The significance of the signal from coefficient of variation is greatest at smaller bandwidth size and extreme (i.e., nonintermediate) notional critical transition month. This indicator generally does not return significant values.

Skewness and kurtosis both do not return a significant signal, regardless of testing parameter values.

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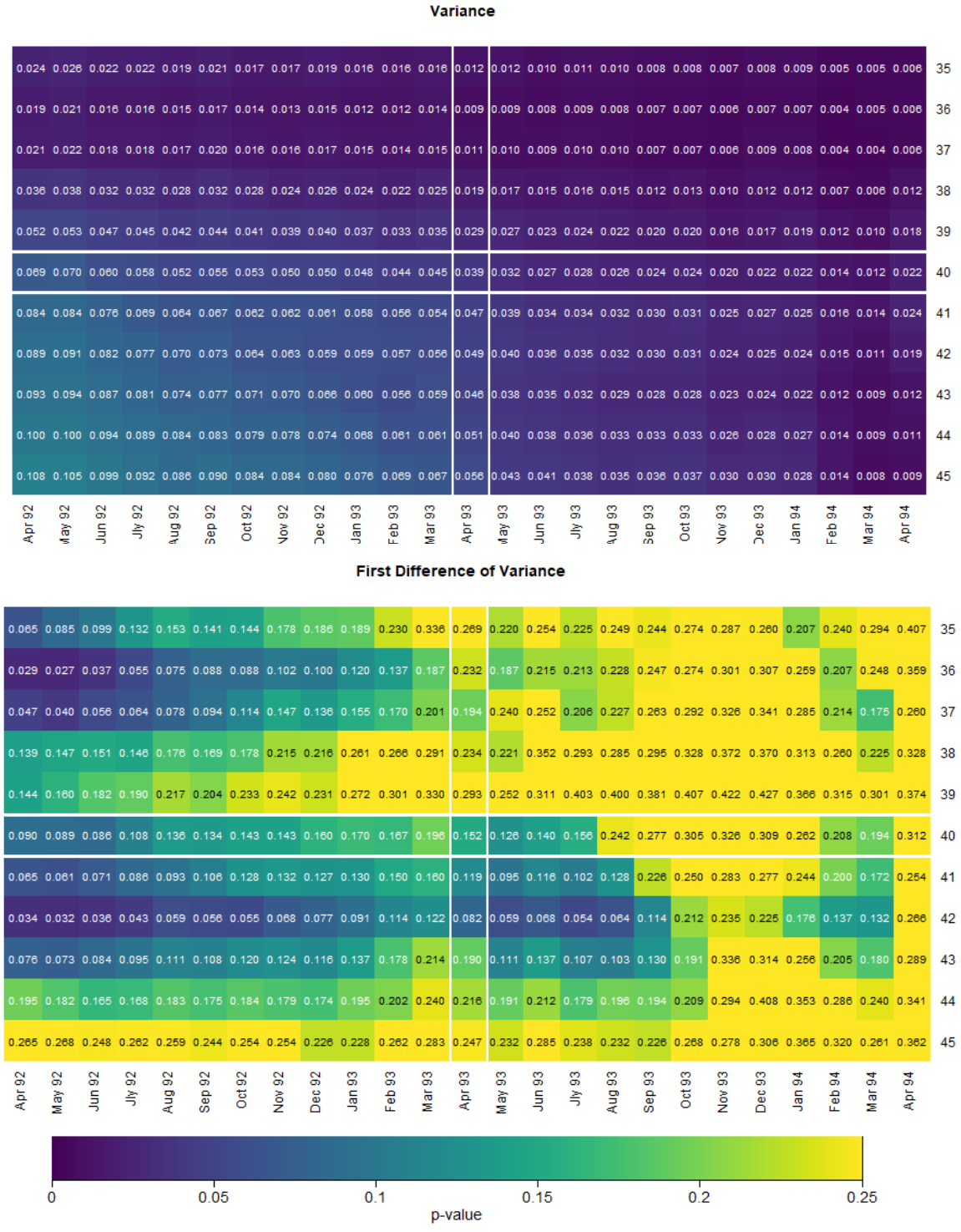


*Supplemental Figures 2.1-2.2: The effect of notional start date (x-axis) and bandwidth (y-axis) on the resulting p-value for indicators of critical slowing down. Each cell displays the p-value for a given set of parameters and is shaded accordingly. The highlighted row/column identifies the values used in the main analysis (b=40 for the bandwidth and April 1993 for the start of the supercritical period). The color key for p-values is displayed at the bottom of the plot and standardized across all indicators.*

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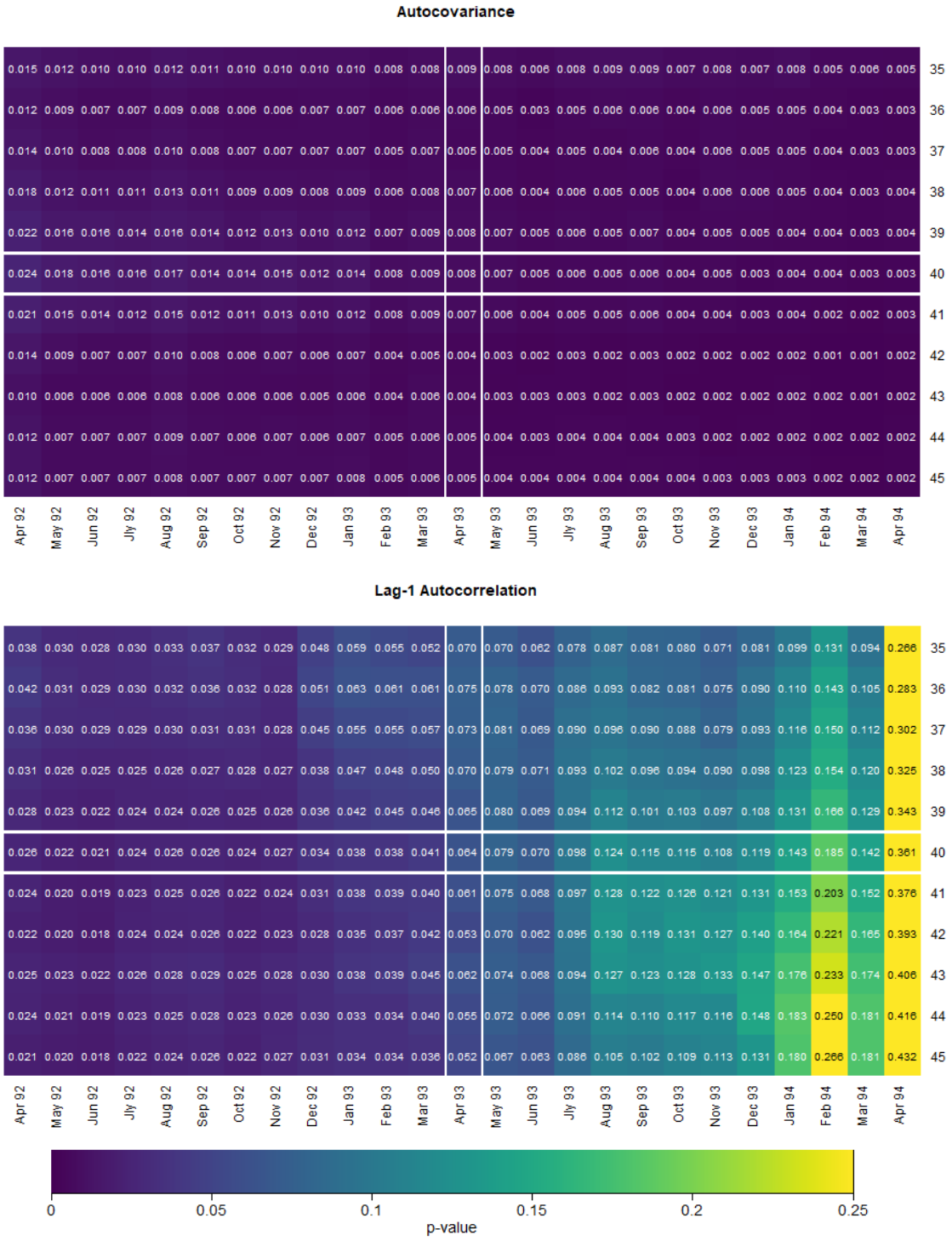


*Supplemental Figures 2.3-2.4: The effect of notional start date (x-axis) and bandwidth (y-axis) on the resulting p-value for indicators of critical slowing down. Each cell displays the p-value for a given set of parameters and is shaded accordingly. The highlighted row/column identifies the values used in the main analysis (b=40 for the bandwidth and April 1993 for the start of the supercritical period). The color key for p-values is displayed at the bottom of* the *plot and standardized across all indicators.*

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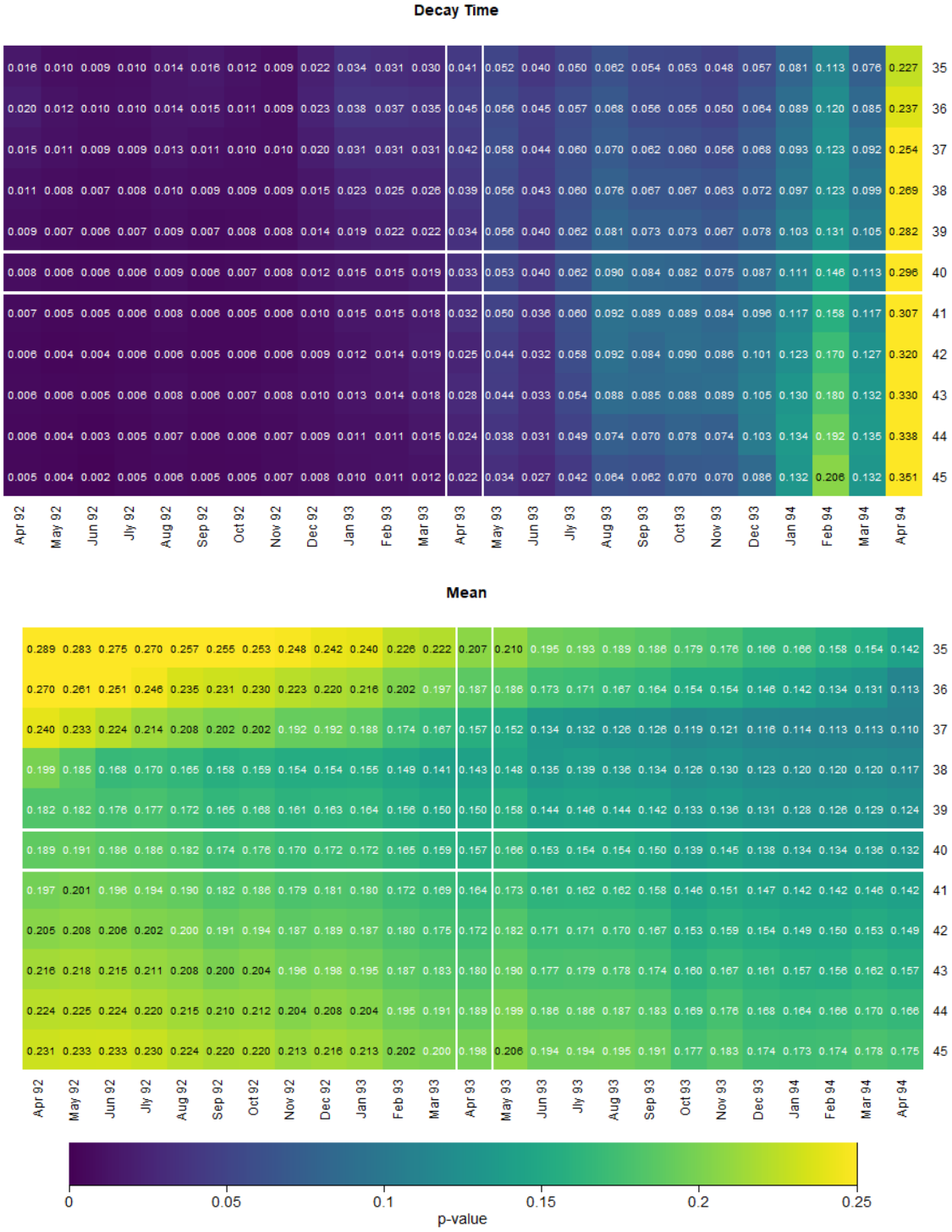


*Supplemental Figures 2.5-2.6: The effect of notional start date (x-axis) and bandwidth (y-axis) on the resulting p-value for indicators of critical slowing down. Each cell displays the p-value for a given set of parameters and is shaded accordingly. The highlighted row/column identifies the values used in the main analysis (b=40 for the bandwidth and April 1993 for the start of the supercritical period). The color key for p-values is displayed at the bottom of the plot and standardized across all indicators.*

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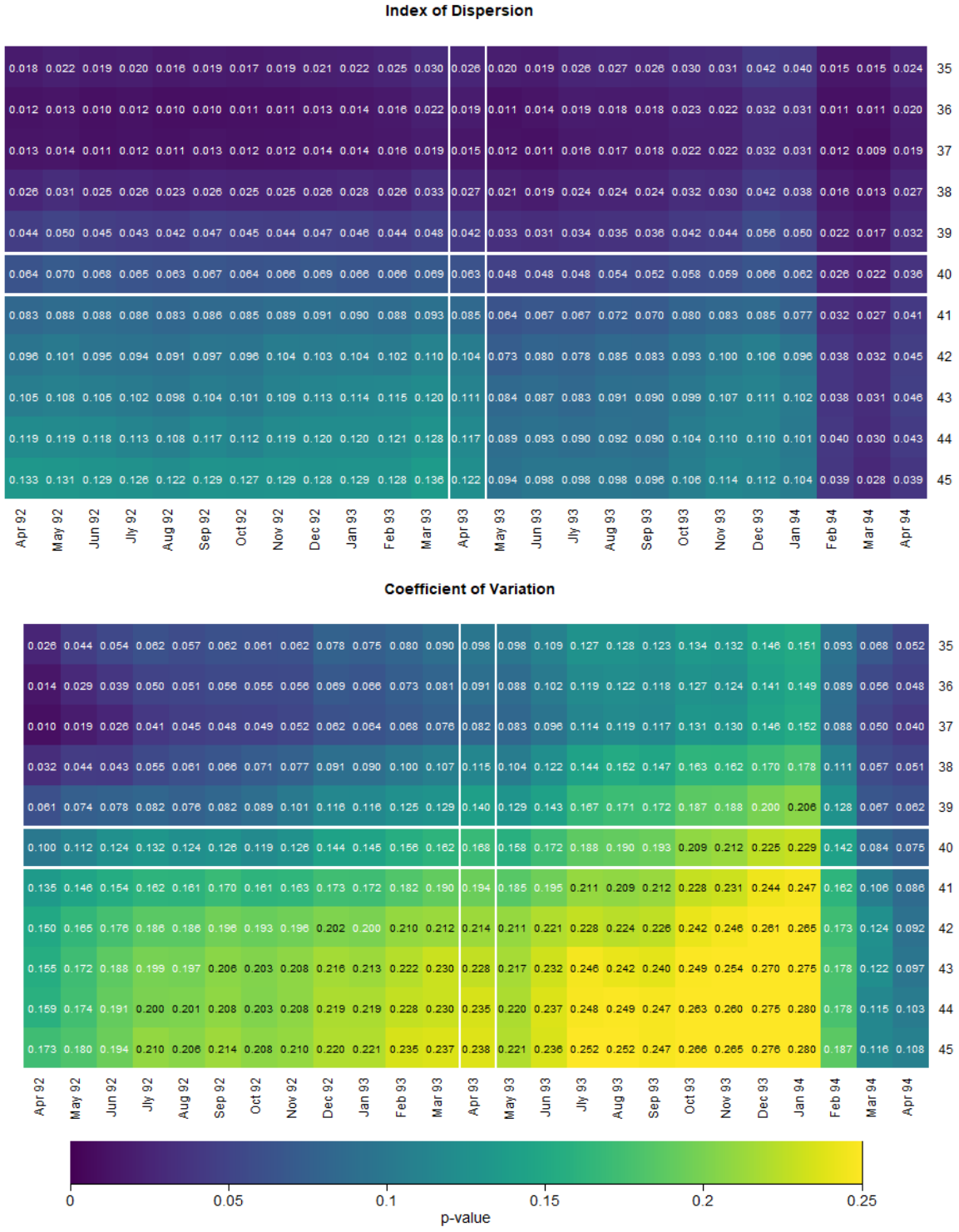


*Supplemental Figures 2.7-2.8: The effect of notional start date (x-axis) and bandwidth (y-axis) on the resulting p-value for indicators of critical slowing down. Each cell displays the p-value for a given set of parameters and is shaded accordingly. The highlighted row/column identifies the values used in the main analysis (b=40 for the bandwidth and April 1993 for the start of the supercritical period). The color key for p-values is displayed at the bottom of the plot and standardized across all indicators.*

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*Supplemental Figures 2.9-2.10: The effect of notional start date (x-axis) and bandwidth (y-axis) on the resulting p-value for indicators of critical slowing down. Each cell displays the p-value for a given set of parameters and is shaded accordingly. The highlighted row/column identifies the values used in the main analysis (b=40 for the bandwidth and April 1993 for the start of the supercritical period). The color key for p-values is displayed at the bottom of the plot and standardized across all indicators.*