

Table 1: Scenario A: Linear temporal feature. Reported values are the median (IQR) of the time-dependent AUC for 1000 simulations of training and testing samples of N=500 each.

	$J$	Method	$\sigma_\epsilon^2 = .1$	$\sigma_\epsilon^2 = 1$	$\sigma_\epsilon^2 = 10$	$\sigma_\epsilon^2 = 20$	$\sigma_\epsilon^2 = 40$
$\sigma_1^2 = .5$	4	True	0.868 (0.054)	0.867 (0.055)	0.874 (0.057)	0.876 (0.052)	0.877 (0.052)
		Naive	0.732 (0.069)	0.73 (0.068)	0.716 (0.069)	0.712 (0.068)	0.699 (0.067)
		Fixed-Effects	0.832 (0.066)	0.775 (0.074)	0.731 (0.075)	0.72 (0.069)	0.703 (0.074)
		Random Effects	0.834 (0.064)	0.778 (0.07)	0.722 (0.073)	0.712 (0.072)	0.693 (0.084)
		Last	0.775 (0.071)	0.76 (0.07)	0.714 (0.077)	0.705 (0.079)	0.695 (0.084)
	8	True	0.87 (0.054)	0.868 (0.058)	0.874 (0.056)	0.876 (0.057)	0.877 (0.052)
		Naive	0.734 (0.071)	0.735 (0.069)	0.721 (0.073)	0.714 (0.072)	0.696 (0.068)
		Fixed Effects	0.858 (0.053)	0.83 (0.066)	0.769 (0.071)	0.75 (0.073)	0.727 (0.073)
		Random Effects	0.858 (0.055)	0.831 (0.066)	0.78 (0.075)	0.765 (0.071)	0.742 (0.075)
		Last	0.8 (0.062)	0.793 (0.073)	0.762 (0.078)	0.739 (0.068)	0.713 (0.08)
	12	True	0.869 (0.058)	0.871 (0.06)	0.872 (0.053)	0.873 (0.051)	0.877 (0.05)
		Naive	0.734 (0.071)	0.732 (0.072)	0.719 (0.07)	0.712 (0.066)	0.702 (0.071)
		Fixed Effects	0.863 (0.06)	0.847 (0.062)	0.805 (0.069)	0.779 (0.071)	0.757 (0.074)
		Random Effects	0.862 (0.06)	0.848 (0.062)	0.814 (0.064)	0.799 (0.063)	0.785 (0.064)
		Last	0.812 (0.067)	0.811 (0.07)	0.792 (0.072)	0.774 (0.074)	0.748 (0.078)
$\sigma_1^2 = 2$	4	True	0.876 (0.049)	0.878 (0.05)	0.879 (0.052)	0.88 (0.051)	0.883 (0.05)
		Naive	0.762 (0.063)	0.762 (0.066)	0.747 (0.071)	0.732 (0.058)	0.72 (0.071)
		Fixed Effects	0.86 (0.057)	0.828 (0.062)	0.783 (0.069)	0.76 (0.065)	0.738 (0.073)
		Random Effects	0.861 (0.057)	0.831 (0.062)	0.783 (0.068)	0.766 (0.073)	0.742 (0.072)
		Last	0.811 (0.063)	0.809 (0.065)	0.777 (0.072)	0.753 (0.069)	0.73 (0.075)
	8	True	0.879 (0.051)	0.876 (0.057)	0.88 (0.048)	0.881 (0.055)	0.885 (0.05)
		Naive	0.768 (0.062)	0.762 (0.067)	0.744 (0.065)	0.731 (0.071)	0.717 (0.064)
		Fixed Effects	0.873 (0.053)	0.856 (0.057)	0.819 (0.062)	0.802 (0.065)	0.78 (0.069)
		Random Effects	0.872 (0.053)	0.857 (0.053)	0.833 (0.062)	0.816 (0.067)	0.808 (0.067)
		Last	0.836 (0.065)	0.834 (0.065)	0.819 (0.066)	0.802 (0.065)	0.782 (0.069)
	12	True	0.874 (0.054)	0.881 (0.053)	0.879 (0.048)	0.882 (0.052)	0.883 (0.05)
		Naive	0.769 (0.063)	0.765 (0.066)	0.745 (0.065)	0.732 (0.069)	0.717 (0.065)
		Fixed Effects	0.873 (0.052)	0.871 (0.053)	0.844 (0.057)	0.829 (0.061)	0.813 (0.061)
		Random Effects	0.873 (0.052)	0.873 (0.056)	0.852 (0.055)	0.842 (0.058)	0.832 (0.058)
		Last	0.848 (0.058)	0.851 (0.063)	0.837 (0.061)	0.828 (0.064)	0.811 (0.058)

Table 2: Scenario B: Linear and quadratic temporal features. Reported values are the median (IQR) of the time-dependent AUC for 1000 simulations of training and testing samples of N=500 each.

	$J$	Method	$\sigma_\epsilon^2 = .1$	$\sigma_\epsilon^2 = 1$	$\sigma_\epsilon^2 = 10$	$\sigma_\epsilon^2 = 20$	$\sigma_\epsilon^2 = 40$
$\sigma_1^2 = .01$	8	True	0.756 (0.083)	0.758 (0.078)	0.761 (0.075)	0.77 (0.074)	0.793 (0.072)
		Naive	0.587 (0.123)	0.572 (0.121)	0.502 (0.095)	0.5 (0.084)	0.5 (0.061)
		Fixed Effects	0.746 (0.083)	0.717 (0.092)	0.637 (0.097)	0.592 (0.091)	0.55 (0.097)
		Random Effects	0.746 (0.084)	0.719 (0.09)	0.635 (0.094)	0.594 (0.089)	0.556 (0.096)
		Last	0.66 (0.096)	0.641 (0.099)	0.599 (0.093)	0.577 (0.097)	0.554 (0.098)
	12	True	0.759 (0.082)	0.761 (0.081)	0.76 (0.084)	0.757 (0.077)	0.772 (0.076)
		Naive	0.599 (0.105)	0.599 (0.113)	0.561 (0.12)	0.532 (0.105)	0.5 (0.069)
		Fixed Effects	0.755 (0.085)	0.737 (0.087)	0.686 (0.092)	0.658 (0.091)	0.623 (0.093)
		Random Effects	0.755 (0.085)	0.737 (0.088)	0.69 (0.093)	0.656 (0.092)	0.623 (0.093)
		Last	0.668 (0.095)	0.67 (0.096)	0.628 (0.098)	0.617 (0.091)	0.584 (0.092)
$\sigma_1^2 = .5$	8	True	0.826 (0.069)	0.828 (0.072)	0.834 (0.068)	0.838 (0.067)	0.85 (0.059)
		Naive	0.617 (0.166)	0.616 (0.166)	0.622 (0.145)	0.628 (0.14)	0.635 (0.115)
		Fixed Effects	0.815 (0.069)	0.783 (0.078)	0.698 (0.086)	0.66 (0.087)	0.632 (0.087)
		Random Effects	0.815 (0.07)	0.783 (0.077)	0.701 (0.081)	0.663 (0.08)	0.639 (0.077)
		Last	0.694 (0.079)	0.693 (0.084)	0.668 (0.078)	0.646 (0.076)	0.627 (0.078)
	12	True	0.864 (0.05)	0.864 (0.05)	0.863 (0.055)	0.864 (0.054)	0.863 (0.049)
		Naive	0.686 (0.068)	0.685 (0.07)	0.681 (0.074)	0.684 (0.071)	0.679 (0.072)
		Fixed Effects	0.858 (0.053)	0.839 (0.053)	0.787 (0.068)	0.76 (0.067)	0.729 (0.073)
		Random Effects	0.858 (0.053)	0.839 (0.054)	0.791 (0.067)	0.763 (0.068)	0.728 (0.075)
		Last	0.719 (0.066)	0.716 (0.069)	0.706 (0.073)	0.698 (0.067)	0.688 (0.066)