Table 1a. The forecasting performance of the candidate models regarding various forecasting horizons and error measures based on a fixed forecasting origin

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Forecast horizon= 1 | | | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank | AvgRelMAE | Rank |
| Base-times-lift | 39.60% | 7 | 37.58% | 10 | 0.396 | 7 | 1.000 | 6 |
| ADL-own | 42.24% | 10 | 36.65% | 9 | 0.422 | 10 | 1.077 | 9 |
| ADL | 38.74% | 6 | 33.48% | 3 | 0.387 | 6 | 0.953 | 2 |
| ADL-own-EWC | 41.17% | 9 | 36.00% | 8 | 0.412 | 9 | 1.096 | 10 |
| ADL-own-IC | 39.69% | 8 | 34.62% | 7 | 0.397 | 8 | 1.069 | 8 |
| ADL-IC | 37.48% | 5 | 32.63% | 2 | 0.375 | 5 | 0.999 | 5 |
| ADL-EWC | 37.41% | 4 | 32.58% | 1 | 0.374 | 4 | 0.906 | 1 |
| ADL-DI | 36.97% | 3 | 34.53% | 6 | 0.370 | 3 | 1.025 | 7 |
| ADL-DI-IC | 35.98% | 2 | 33.53% | 4 | 0.360 | 2 | 0.961 | 3 |
| ADL-DI-EWC | 35.82% | 1 | 33.63% | 5 | 0.358 | 1 | 0.986 | 4 |
| Forecast horizon= 4 | | | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank | AvgRelMAE | Rank |
| Base-times-lift | 41.12% | 10 | 37.98% | 10 | 0.776 | 10 | 1.000 | 10 |
| ADL-own | 36.97% | 6 | 34.42% | 6 | 0.692 | 6 | 0.906 | 6 |
| ADL | 36.17% | 4 | 33.88% | 4 | 0.674 | 4 | 0.895 | 4 |
| ADL-own-EWC | 36.35% | 5 | 34.39% | 5 | 0.690 | 5 | 0.902 | 5 |
| ADL-own-IC | 35.66% | 3 | 33.28% | 1 | 0.673 | 3 | 0.877 | 2 |
| ADL-IC | 35.64% | 2 | 33.36% | 2 | 0.667 | 1 | 0.883 | 3 |
| ADL-EWC | 35.49% | 1 | 33.71% | 3 | 0.669 | 2 | 0.876 | 1 |
| ADL-DI | 38.21% | 8 | 35.48% | 8 | 0.755 | 8 | 0.925 | 8 |
| ADL-DI-IC | 37.55% | 7 | 35.00% | 7 | 0.744 | 7 | 0.922 | 7 |
| ADL-DI-EWC | 38.31% | 9 | 35.60% | 9 | 0.766 | 9 | 0.931 | 9 |
| Forecast horizon= 12 | | | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank | AvgRelMAE | Rank |
| Base-times-lift | 44.72% | 10 | 40.94% | 10 | 0.846 | 10 | 1.000 | 10 |
| ADL-own | 37.87% | 6 | 35.48% | 6 | 0.762 | 5 | 0.903 | 6 |
| ADL | 36.40% | 3 | 34.43% | 3 | 0.725 | 2 | 0.864 | 3 |
| ADL-own-EWC | 37.10% | 5 | 35.45% | 5 | 0.769 | 6 | 0.897 | 5 |
| ADL-own-IC | 36.47% | 4 | 34.35% | 2 | 0.744 | 4 | 0.870 | 4 |
| ADL-IC | 35.99% | 2 | 34.08% | 1 | 0.721 | 1 | 0.860 | 1 |
| ADL-EWC | 35.86% | 1 | 34.49% | 4 | 0.731 | 3 | 0.860 | 2 |
| ADL-DI | 38.72% | 9 | 36.47% | 8 | 0.782 | 8 | 0.915 | 9 |
| ADL-DI-IC | 38.19% | 8 | 35.91% | 7 | 0.772 | 7 | 0.907 | 7 |
| ADL-DI-EWC | 38.08% | 7 | 36.49% | 9 | 0.791 | 9 | 0.912 | 8 |

Table 1b. The forecasting performance of the candidate models regarding various forecasting horizons and error measures based on rolling forecasting origins

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Forecast horizon= 1 | | | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank | AvgRelMAE | Rank |
| Base-times-lift | 42.80% | 10 | 38.55% | 10 | 0.799 | 10 | 1.000 | 10 |
| ADL-own | 34.34% | 9 | 30.57% | 8 | 0.669 | 8 | 0.898 | 9 |
| ADL | 30.88% | 2 | 29.33% | 3 | 0.649 | 4 | 0.855 | 4 |
| ADL-own-EWC | 34.23% | 8 | 30.66% | 9 | 0.674 | 9 | 0.893 | 8 |
| ADL-own-IC | 33.45% | 7 | 29.82% | 7 | 0.654 | 6 | 0.866 | 6 |
| ADL-IC | 30.07% | 1 | 28.78% | 1 | 0.642 | 2 | 0.833 | 1 |
| ADL-EWC | 30.95% | 3 | 29.55% | 4 | 0.661 | 7 | 0.868 | 7 |
| ADL-DI | 31.94% | 5 | 29.62% | 5 | 0.644 | 3 | 0.858 | 5 |
| ADL-DI-IC | 31.58% | 4 | 29.30% | 2 | 0.636 | 1 | 0.848 | 2 |
| ADL-DI-EWC | 32.47% | 6 | 29.73% | 6 | 0.654 | 5 | 0.852 | 3 |
| Forecast horizon= 4 | | | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank | AvgRelMAE | Rank |
| Base-times-lift | 43.61% | 10 | 39.36% | 10 | 0.800 | 10 | 1.000 | 10 |
| ADL-own | 34.37% | 9 | 31.66% | 9 | 0.676 | 8 | 0.842 | 9 |
| ADL | 31.86% | 6 | 30.19% | 5 | 0.657 | 6 | 0.802 | 5 |
| ADL-own-EWC | 33.94% | 8 | 31.63% | 8 | 0.681 | 9 | 0.838 | 8 |
| ADL-own-IC | 32.78% | 7 | 30.34% | 7 | 0.652 | 5 | 0.804 | 6 |
| ADL-IC | 30.42% | 1 | 29.15% | 1 | 0.643 | 3 | 0.772 | 3 |
| ADL-EWC | 31.61% | 5 | 30.24% | 6 | 0.663 | 7 | 0.804 | 7 |
| ADL-DI | 30.85% | 3 | 29.91% | 3 | 0.637 | 2 | 0.773 | 4 |
| ADL-DI-IC | 30.44% | 2 | 29.45% | 2 | 0.628 | 1 | 0.760 | 1 |
| ADL-DI-EWC | 30.95% | 4 | 29.94% | 4 | 0.644 | 4 | 0.772 | 2 |
| Forecast horizon= 12 | | | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank | AvgRelMAE | Rank |
| Base-times-lift | 48.82% | 10 | 41.38% | 10 | 0.851 | 10 | 1.000 | 10 |
| ADL-own | 37.17% | 9 | 33.21% | 9 | 0.725 | 9 | 0.815 | 9 |
| ADL | 33.85% | 6 | 31.40% | 6 | 0.696 | 6 | 0.771 | 5 |
| ADL-own-EWC | 36.48% | 8 | 33.03% | 8 | 0.721 | 8 | 0.813 | 8 |
| ADL-own-IC | 35.40% | 7 | 31.54% | 7 | 0.693 | 5 | 0.776 | 7 |
| ADL-IC | 32.23% | 2 | 30.15% | 1 | 0.680 | 4 | 0.744 | 4 |
| ADL-EWC | 33.55% | 5 | 31.39% | 5 | 0.700 | 7 | 0.773 | 6 |
| ADL-DI | 32.27% | 3 | 31.02% | 3 | 0.664 | 2 | 0.737 | 3 |
| ADL-DI-IC | 31.96% | 1 | 30.58% | 2 | 0.655 | 1 | 0.724 | 1 |
| ADL-DI-EWC | 32.30% | 4 | 31.06% | 4 | 0.668 | 3 | 0.737 | 2 |

Table 2a. The results of the Wilcoxon Sign Rank test for the rolling forecasting performance (forecasting horizon =1)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Forecast horizon= 1 | MAPE | | | SMAPE | | | MASE | | |
| ADL-own | ADL-own-IC | ADL-own-EWC | ADL-own | ADL-own-IC | ADL-own-EWC | ADL-own | ADL-own-IC | ADL-own-EWC |
| ADL-own | 1.000 |  |  | 1.000 |  |  | 1.000 |  |  |
| ADL-own-IC | 0.015 | 1.000 |  | 0.133 | 1.000 |  | 0.273 | 1.000 |  |
| ADL-own-EWC | 0.949 | 0.004 | 1.000 | 0.246 | 0.009 | 1.000 | 0.114 |  | 1.000 |
|  | ADL | ADL-IC | ADL-EWC | ADL | ADL-IC | ADL-EWC | ADL | ADL-IC | ADL-EWC |
| ADL | 1.000 |  |  | 1.000 |  |  | 1.000 |  |  |
| ADL-IC | 0.046 | 1.000 |  | 0.201 | 1.000 |  | 0.398 | 1.000 |  |
| ADL-EWC | 0.277 | 0.004 | 1.000 | 0.041 | 0.000 | 1.000 | 0.009 | 0.007 | 1.000 |
|  | ADL-DI | ADL-DI-IC | ADL-DI-EWC | ADL-DI | ADL-DI-IC | ADL-DI-EWC | ADL-DI | ADL-DI-IC | ADL-DI-EWC |
| ADL-DI | 1.000 |  |  | 1.000 |  |  | 1.000 |  |  |
| ADL-DI-IC | 0.081 | 1.000 |  | 0.530 | 1.000 |  | 0.287 | 1.000 |  |
| ADL-DI-EWC | 0.452 | 0.060 | 1.000 | 0.408 | 0.027 | 1.000 | 0.158 | 0.005 | 1.000 |

Table 2b. The results of the Wilcoxon Sign Rank test for the rolling forecasting performance (forecasting horizon =4)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Forecast horizon= 4 | MAPE | | | SMAPE | | | MASE | | |
| ADL-own | ADL-own-IC | ADL-own-EWC | ADL-own | ADL-own-IC | ADL-own-EWC | ADL-own | ADL-own-IC | ADL-own-EWC |
| ADL-own | 1.000 |  |  | 1.000 |  |  | 1.000 |  |  |
| ADL-own-IC | 0.000 | 1.000 |  | 0.019 | 1.000 |  | 0.079 | 1.000 |  |
| ADL-own-EWC | 0.494 | 0.000 | 1.000 | 0.680 | 0.000 | 1.000 | 0.498 | 0.002 | 1.000 |
|  | ADL | ADL-IC | ADL-EWC | ADL | ADL-IC | ADL-EWC | ADL | ADL-IC | ADL-EWC |
| ADL | 1.000 |  |  | 1.000 |  |  | 1.000 |  |  |
| ADL-IC | 0.000 | 1.000 |  | 0.021 | 1.000 |  | 0.136 | 1.000 |  |
| ADL-EWC | 0.743 | 0.000 | 1.000 | 0.436 | 0.000 | 1.000 | 0.227 | 0.003 | 1.000 |
|  | ADL-DI | ADL-DI-IC | ADL-DI-EWC | ADL-DI | ADL-DI-IC | ADL-DI-EWC | ADL-DI | ADL-DI-IC | ADL-DI-EWC |
| ADL-DI | 1.000 |  |  | 1.000 |  |  | 1.000 |  |  |
| ADL-DI-IC | 0.060 | 1.000 |  | 0.333 | 1.000 |  | 0.243 | 1.000 |  |
| ADL-DI-EWC | 0.942 | 0.024 | 1.000 | 0.922 | 0.039 | 1.000 | 0.662 | 0.031 | 1.000 |

Table 2c. The results of the Wilcoxon Sign Rank test for the rolling forecasting performance (forecasting horizon =12)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Forecast horizon= 12 | MAPE | | | SMAPE | | | MASE | | |
| ADL-own | ADL-own-IC | ADL-own-EWC | ADL-own | ADL-own-IC | ADL-own-EWC | ADL-own | ADL-own-IC | ADL-own-EWC |
| ADL-own | 1.000 |  |  | 1.000 |  |  | 1.000 |  |  |
| ADL-own-IC | 0.001 | 1.000 |  | 0.001 | 1.000 |  | 0.003 | 1.000 |  |
| ADL-own-EWC | 0.365 | 0.001 | 1.000 | 0.392 | 0.000 | 1.000 | 0.579 | 0.001 | 1.000 |
|  | ADL | ADL-IC | ADL-EWC | ADL | ADL-IC | ADL-EWC | ADL | ADL-IC | ADL-EWC |
| ADL | 1.000 |  |  | 1.000 |  |  | 1.000 |  |  |
| ADL-IC | 0.017 | 1.000 |  | 0.025 | 1.000 |  | 0.078 | 1.000 |  |
| ADL-EWC | 0.914 | 0.001 | 1.000 | 0.608 | 0.000 | 1.000 | 0.652 | 0.003 | 1.000 |
|  | ADL-DI | ADL-DI-IC | ADL-DI-EWC | ADL-DI | ADL-DI-IC | ADL-DI-EWC | ADL-DI | ADL-DI-IC | ADL-DI-EWC |
| ADL-DI | 1.000 |  |  | 1.000 |  |  | 1.000 |  |  |
| ADL-DI-IC | 0.147 | 1.000 |  | 0.303 | 1.000 |  | 0.192 | 1.000 |  |
| ADL-DI-EWC | 0.594 | 0.093 | 1.000 | 0.911 | 0.046 | 1.000 | 0.718 | 0.016 | 1.000 |

Table 3a. The forecasting performance of the candidate models regarding various forecasting horizons and error measures based on a fixed forecasting origin, for the non-promoted period.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Rolling origins, the non-promoted period, Forecast horizon= 1 | | | | | | |
| Models | MAPE | Rank | SMAPE | Rank | MASE | Rank |
| Base-times-lift | 33.93% | 1 | 25.22% | 1 | 0.483 | 1 |
| ADL-own | 42.72% | 10 | 34.81% | 10 | 0.594 | 9 |
| ADL | 38.37% | 7 | 30.95% | 4 | 0.552 | 4 |
| ADL-own-ewc | 41.44% | 9 | 34.05% | 9 | 0.574 | 7 |
| ADL-own-IC | 39.73% | 8 | 32.51% | 7 | 0.559 | 5 |
| ADL-IC | 36.84% | 5 | 30.00% | 2 | 0.537 | 3 |
| ADL-EWC | 36.92% | 6 | 30.03% | 3 | 0.535 | 2 |
| ADL-DI | 36.76% | 4 | 32.64% | 8 | 0.599 | 10 |
| ADL-DI-IC | 35.68% | 3 | 31.66% | 6 | 0.575 | 8 |
| ADL-DI-EWC | 35.35% | 2 | 31.61% | 5 | 0.573 | 6 |
| Rolling origins, the non-promoted period, Forecast horizon= 4 | | | | | | |
| Models | MAPE | Rank | SMAPE | Rank | MASE | Rank |
| Base-times-lift | 42.34% | 10 | 31.89% | 1 | 0.549 | 2 |
| ADL-own | 39.32% | 9 | 35.09% | 10 | 0.572 | 7 |
| ADL | 37.29% | 5 | 33.34% | 4 | 0.556 | 5 |
| ADL-own-ewc | 38.12% | 8 | 34.72% | 7 | 0.571 | 6 |
| ADL-own-IC | 37.56% | 7 | 33.59% | 5 | 0.553 | 3 |
| ADL-IC | 36.50% | 3 | 32.71% | 2 | 0.549 | 1 |
| ADL-EWC | 36.40% | 1 | 33.01% | 3 | 0.553 | 4 |
| ADL-DI | 37.31% | 6 | 34.85% | 9 | 0.600 | 10 |
| ADL-DI-IC | 36.76% | 4 | 34.29% | 6 | 0.593 | 8 |
| ADL-DI-EWC | 36.44% | 2 | 34.75% | 8 | 0.599 | 9 |
| Rolling origins, the non-promoted period, Forecast horizon= 12 | | | | | | |
| Models | MAPE | Rank | SMAPE | Rank | MASE | Rank |
| Base-times-lift | 46.84% | 10 | 34.32% | 2 | 0.606 | 3 |
| ADL-own | 39.56% | 9 | 36.20% | 8 | 0.641 | 7 |
| ADL | 37.70% | 3 | 34.53% | 3 | 0.609 | 4 |
| ADL-own-ewc | 38.30% | 6 | 35.88% | 7 | 0.636 | 6 |
| ADL-own-IC | 37.90% | 4 | 34.81% | 5 | 0.620 | 5 |
| ADL-IC | 37.07% | 1 | 34.04% | 1 | 0.602 | 1 |
| ADL-EWC | 37.14% | 2 | 34.54% | 4 | 0.605 | 2 |
| ADL-DI | 39.10% | 8 | 36.34% | 10 | 0.648 | 10 |
| ADL-DI-IC | 38.61% | 7 | 35.76% | 6 | 0.642 | 8 |
| ADL-DI-EWC | 38.26% | 5 | 36.30% | 9 | 0.645 | 9 |

Table 3b. The forecasting performance of the candidate models regarding various forecasting horizons and error measures based on rolling forecasting origins, for non-promoted period.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Forecast horizon= 1 | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank |
| Base-times-lift | 41.81% | 10 | 31.66% | 10 | 0.547 | 10 |
| ADL-own | 38.28% | 8 | 30.67% | 8 | 0.546 | 8 |
| ADL | 31.61% | 3 | 29.67% | 4 | 0.532 | 6 |
| ADL-own-ewc | 38.64% | 9 | 30.71% | 9 | 0.546 | 9 |
| ADL-own-IC | 36.50% | 6 | 29.73% | 6 | 0.527 | 4 |
| ADL-IC | 30.74% | 1 | 29.06% | 1 | 0.523 | 2 |
| ADL-EWC | 31.55% | 2 | 29.78% | 7 | 0.537 | 7 |
| ADL-DI | 36.36% | 5 | 29.60% | 3 | 0.525 | 3 |
| ADL-DI-IC | 35.54% | 4 | 29.24% | 2 | 0.516 | 1 |
| ADL-DI-EWC | 37.85% | 7 | 29.72% | 5 | 0.529 | 5 |
| Forecast horizon= 4 | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank |
| Base-times-lift | 45.46% | 10 | 32.51% | 10 | 0.568 | 8 |
| ADL-own | 35.29% | 9 | 31.87% | 9 | 0.577 | 10 |
| ADL | 32.39% | 6 | 30.52% | 7 | 0.559 | 6 |
| ADL-own-ewc | 34.96% | 8 | 31.72% | 8 | 0.576 | 9 |
| ADL-own-IC | 33.08% | 7 | 30.32% | 5 | 0.550 | 5 |
| ADL-IC | 30.75% | 1 | 29.33% | 2 | 0.543 | 3 |
| ADL-EWC | 32.01% | 4 | 30.44% | 6 | 0.561 | 7 |
| ADL-DI | 31.74% | 3 | 29.86% | 3 | 0.543 | 2 |
| ADL-DI-IC | 31.10% | 2 | 29.32% | 1 | 0.532 | 1 |
| ADL-DI-EWC | 32.05% | 5 | 29.86% | 4 | 0.546 | 4 |
| Forecast horizon= 12 | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank |
| Base-times-lift | 57.45% | 10 | 35.18% | 10 | 0.621 | 10 |
| ADL-own | 36.90% | 9 | 33.31% | 9 | 0.613 | 9 |
| ADL | 34.13% | 6 | 31.46% | 7 | 0.591 | 6 |
| ADL-own-ewc | 36.32% | 8 | 33.07% | 8 | 0.607 | 8 |
| ADL-own-IC | 34.44% | 7 | 31.45% | 6 | 0.579 | 4 |
| ADL-IC | 32.24% | 1 | 29.99% | 1 | 0.572 | 2 |
| ADL-EWC | 33.70% | 5 | 31.37% | 3 | 0.594 | 7 |
| ADL-DI | 32.70% | 3 | 31.38% | 4 | 0.576 | 3 |
| ADL-DI-IC | 32.27% | 2 | 30.87% | 2 | 0.567 | 1 |
| ADL-DI-EWC | 32.79% | 4 | 31.44% | 5 | 0.580 | 5 |

Table 4a. The forecasting performance of the candidate models regarding various forecasting horizons and error measures based on a fixed forecasting origin, for the promoted period.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Forecast horizon= 1 | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank |
| Base-times-lift | 85.76% | 10 | 138.15% | 10 | 4.961 | 10 |
| ADL-own | 38.38% | 1 | 51.67% | 4 | 2.642 | 4 |
| ADL | 41.78% | 8 | 54.13% | 9 | 2.758 | 9 |
| ADL-own-ewc | 39.01% | 4 | 51.88% | 6 | 2.666 | 5 |
| ADL-own-IC | 39.34% | 5 | 51.87% | 5 | 2.672 | 6 |
| ADL-IC | 42.67% | 9 | 54.09% | 8 | 2.751 | 8 |
| ADL-EWC | 41.40% | 7 | 53.29% | 7 | 2.719 | 7 |
| ADL-DI | 38.61% | 3 | 49.93% | 2 | 2.504 | 2 |
| ADL-DI-IC | 38.42% | 2 | 48.78% | 1 | 2.486 | 1 |
| ADL-DI-EWC | 39.65% | 6 | 50.10% | 3 | 2.548 | 3 |
| Forecast horizon= 4 | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank |
| Base-times-lift | 68.43% | 7 | 107.50% | 10 | 2.381 | 10 |
| ADL-own | 44.64% | 3 | 44.82% | 3 | 1.335 | 6 |
| ADL | 47.12% | 5 | 46.05% | 6 | 1.297 | 3 |
| ADL-own-ewc | 44.13% | 2 | 44.63% | 2 | 1.308 | 4 |
| ADL-own-IC | 43.80% | 1 | 43.81% | 1 | 1.312 | 5 |
| ADL-IC | 48.52% | 6 | 46.05% | 5 | 1.297 | 2 |
| ADL-EWC | 45.99% | 4 | 45.41% | 4 | 1.254 | 1 |
| ADL-DI | 77.54% | 9 | 49.80% | 7 | 1.915 | 8 |
| ADL-DI-IC | 75.17% | 8 | 50.37% | 8 | 1.859 | 7 |
| ADL-DI-EWC | 85.17% | 10 | 50.55% | 9 | 2.045 | 9 |
| Forecast horizon= 12 | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank |
| Base-times-lift | 65.75% | 7 | 99.55% | 10 | 2.468 | 10 |
| ADL-own | 46.35% | 4 | 42.92% | 3 | 1.393 | 2 |
| ADL | 45.02% | 1 | 42.05% | 1 | 1.370 | 1 |
| ADL-own-ewc | 47.15% | 6 | 44.60% | 6 | 1.509 | 6 |
| ADL-own-IC | 45.82% | 3 | 42.41% | 2 | 1.394 | 3 |
| ADL-IC | 46.40% | 5 | 43.05% | 4 | 1.404 | 4 |
| ADL-EWC | 45.40% | 2 | 43.79% | 5 | 1.493 | 5 |
| ADL-DI | 69.35% | 9 | 47.31% | 8 | 1.792 | 8 |
| ADL-DI-IC | 66.99% | 8 | 46.72% | 7 | 1.719 | 7 |
| ADL-DI-EWC | 73.12% | 10 | 48.61% | 9 | 1.969 | 9 |

Table 4b. The forecasting performance of the candidate models regarding various forecasting horizons and error measures based on rolling forecasting origins, for the non-promoted period.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Forecast horizon= 1 | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank |
| Base-times-lift | 65.27% | 10 | 98.27% | 10 | 3.235 | 10 |
| ADL-own | 39.35% | 8 | 37.38% | 7 | 2.025 | 4 |
| ADL | 34.65% | 1 | 35.65% | 1 | 1.997 | 3 |
| ADL-own-ewc | 39.01% | 7 | 38.33% | 9 | 2.101 | 9 |
| ADL-own-IC | 42.83% | 9 | 38.29% | 8 | 2.056 | 7 |
| ADL-IC | 35.67% | 5 | 36.42% | 2 | 2.032 | 5 |
| ADL-EWC | 35.73% | 6 | 37.03% | 6 | 2.088 | 8 |
| ADL-DI | 34.80% | 2 | 37.02% | 5 | 1.983 | 2 |
| ADL-DI-IC | 35.17% | 4 | 36.66% | 3 | 1.964 | 1 |
| ADL-DI-EWC | 35.04% | 3 | 36.89% | 4 | 2.033 | 6 |
| Forecast horizon= 4 | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank |
| Base-times-lift | 67.03% | 10 | 98.45% | 10 | 2.896 | 10 |
| ADL-own | 38.23% | 8 | 36.34% | 6 | 1.624 | 4 |
| ADL | 34.60% | 4 | 35.55% | 2 | 1.672 | 6 |
| ADL-own-ewc | 37.37% | 7 | 37.03% | 9 | 1.689 | 7 |
| ADL-own-IC | 40.39% | 9 | 36.66% | 8 | 1.648 | 5 |
| ADL-IC | 34.89% | 5 | 35.82% | 5 | 1.700 | 8 |
| ADL-EWC | 34.99% | 6 | 36.51% | 7 | 1.727 | 9 |
| ADL-DI | 33.56% | 2 | 35.65% | 4 | 1.564 | 2 |
| ADL-DI-IC | 34.12% | 3 | 35.61% | 3 | 1.562 | 1 |
| ADL-DI-EWC | 33.42% | 1 | 35.38% | 1 | 1.599 | 3 |
| Forecast horizon= 12 | | | | | | |
|  | MAPE | Rank | SMAPE | Rank | MASE | Rank |
| Base-times-lift | 62.96% | 10 | 91.14% | 10 | 2.732 | 10 |
| ADL-own | 45.80% | 8 | 37.22% | 7 | 1.865 | 8 |
| ADL | 36.55% | 3 | 35.28% | 2 | 1.680 | 5 |
| ADL-own-ewc | 43.88% | 7 | 37.13% | 6 | 1.874 | 9 |
| ADL-own-IC | 47.38% | 9 | 36.51% | 4 | 1.852 | 7 |
| ADL-IC | 36.12% | 1 | 34.93% | 1 | 1.670 | 4 |
| ADL-EWC | 36.80% | 6 | 35.77% | 3 | 1.693 | 6 |
| ADL-DI | 36.64% | 4 | 37.40% | 9 | 1.506 | 2 |
| ADL-DI-IC | 36.49% | 2 | 37.00% | 5 | 1.487 | 1 |
| ADL-DI-EWC | 36.76% | 5 | 37.25% | 8 | 1.509 | 3 |

Table 5a. The forecasting performance of the ADL-own model, the ADL-own-EWC model, and the ADL-own-IC model regarding various forecasting horizons and error measures based on a fixed forecasting origin, for each of the product categories

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Forecast horizon=1 | MAPE | | | SMAPE | | | MASE | | |
| **Category** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** |
| Beer | 24.92% | 24.99% | 26.59% | 20.81% | 20.75% | 22.28% | 0.585 | 0.593 | 0.617 |
| Carbonated beverages | 46.57% | 44.87% | 42.39% | 62.85% | 60.12% | 55.89% | 2.531 | 2.503 | 2.531 |
| Coffee | 32.34% | 31.63% | 30.95% | 38.26% | 38.21% | 36.78% | 0.893 | 0.895 | 0.902 |
| Frozen pizza | 34.36% | 31.31% | 33.29% | 39.48% | 35.61% | 38.16% | 0.665 | 0.596 | 0.624 |
| Household cleaner | 24.28% | 24.39% | 23.99% | 25.33% | 25.06% | 24.54% | 0.911 | 0.894 | 0.906 |
| Hotdog | 37.43% | 39.24% | 35.18% | 40.09% | 42.72% | 35.86% | 0.340 | 0.351 | 0.302 |
| Laundry detergent | 108.10% | 104.66% | 93.13% | 55.06% | 54.48% | 50.17% | 0.297 | 0.315 | 0.232 |
| Margarine/Butter | 111.90% | 106.89% | 111.18% | 33.41% | 32.98% | 31.97% | 0.448 | 0.433 | 0.394 |
| Mayonnaise | 23.19% | 20.74% | 20.16% | 19.74% | 17.87% | 17.71% | 0.691 | 0.622 | 0.674 |
| Mustard & ketchup | 24.94% | 23.06% | 22.06% | 27.38% | 25.82% | 24.86% | 0.830 | 0.754 | 0.702 |
| Peanut butter | 16.48% | 16.13% | 14.83% | 15.05% | 14.79% | 13.82% | 0.372 | 0.369 | 0.353 |
| Salty snacks | 27.33% | 29.01% | 22.53% | 25.48% | 26.53% | 23.28% | 0.469 | 0.467 | 0.397 |
| Soup | 31.33% | 31.44% | 31.28% | 38.79% | 39.23% | 39.66% | 1.210 | 1.245 | 1.254 |
| Sugar substitutes | 39.13% | 39.29% | 36.02% | 50.54% | 50.42% | 47.08% | 1.356 | 1.358 | 1.273 |
| Toothpaste | 42.67% | 41.35% | 43.09% | 57.97% | 55.59% | 57.36% | 0.788 | 0.750 | 0.765 |
| Forecast horizon=4 | MAPE | | | SMAPE | | | MASE | | |
| **Category** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** |
| Beer | 26.06% | 26.17% | 27.38% | 23.10% | 23.15% | 24.30% | 0.674 | 0.678 | 0.695 |
| Carbonated beverages | 53.34% | 51.89% | 51.64% | 53.74% | 52.97% | 49.35% | 1.264 | 1.258 | 1.253 |
| Coffee | 31.89% | 31.87% | 31.18% | 34.41% | 35.19% | 33.80% | 0.641 | 0.642 | 0.635 |
| Frozen pizza | 26.98% | 26.96% | 25.72% | 29.41% | 29.01% | 27.44% | 0.544 | 0.531 | 0.530 |
| Household cleaner | 30.90% | 31.07% | 31.43% | 27.93% | 27.72% | 27.91% | 0.873 | 0.873 | 0.889 |
| Hotdog | 34.79% | 37.38% | 34.76% | 40.67% | 44.10% | 38.58% | 0.364 | 0.421 | 0.331 |
| Laundry detergent | 57.62% | 53.39% | 51.19% | 38.64% | 37.03% | 36.85% | 0.393 | 0.419 | 0.409 |
| Margarine/Butter | 49.85% | 47.88% | 49.05% | 28.33% | 27.59% | 27.11% | 0.518 | 0.502 | 0.485 |
| Mayonnaise | 25.76% | 24.35% | 22.89% | 21.01% | 20.12% | 19.33% | 0.748 | 0.711 | 0.689 |
| Mustard & ketchup | 30.62% | 29.98% | 28.11% | 34.52% | 34.03% | 32.78% | 1.032 | 1.008 | 0.967 |
| Peanut butter | 28.63% | 27.79% | 26.49% | 25.97% | 25.31% | 24.69% | 0.689 | 0.677 | 0.657 |
| Salty snacks | 26.51% | 26.21% | 23.17% | 24.35% | 25.44% | 23.65% | 0.476 | 0.464 | 0.429 |
| Soup | 36.38% | 35.64% | 35.30% | 35.67% | 35.53% | 35.84% | 0.709 | 0.720 | 0.720 |
| Sugar substitutes | 35.01% | 35.01% | 32.06% | 40.92% | 40.80% | 37.54% | 0.994 | 0.994 | 0.928 |
| Toothpaste | 56.17% | 55.87% | 59.48% | 58.30% | 58.32% | 59.69% | 0.620 | 0.609 | 0.610 |
| Forecast horizon=12 | MAPE | | | SMAPE | | | MASE | | |
| **Category** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** |
| Beer | 23.11% | 23.95% | 24.20% | 20.67% | 21.22% | 21.65% | 0.633 | 0.652 | 0.654 |
| Carbonated beverages | 38.28% | 37.52% | 36.11% | 44.00% | 42.99% | 39.63% | 0.890 | 0.897 | 0.884 |
| Coffee | 33.17% | 32.59% | 32.33% | 34.81% | 34.79% | 34.15% | 0.795 | 0.786 | 0.782 |
| Frozen pizza | 32.50% | 31.84% | 30.95% | 37.41% | 36.60% | 35.26% | 0.665 | 0.647 | 0.629 |
| Household cleaner | 29.25% | 29.42% | 30.37% | 26.99% | 26.51% | 27.21% | 0.845 | 0.829 | 0.852 |
| Hotdog | 63.48% | 62.02% | 61.89% | 57.06% | 61.34% | 54.35% | 0.852 | 1.015 | 0.817 |
| Laundry detergent | 50.45% | 47.44% | 44.38% | 38.56% | 37.63% | 36.71% | 0.448 | 0.465 | 0.434 |
| Margarine/Butter | 38.14% | 36.53% | 36.75% | 29.86% | 28.86% | 28.13% | 0.603 | 0.576 | 0.566 |
| Mayonnaise | 29.07% | 28.94% | 26.91% | 23.41% | 23.43% | 22.42% | 0.880 | 0.889 | 0.853 |
| Mustard & ketchup | 40.82% | 39.31% | 36.76% | 41.42% | 40.44% | 39.10% | 1.297 | 1.260 | 1.208 |
| Peanut butter | 29.95% | 29.73% | 28.35% | 28.37% | 28.25% | 27.59% | 0.784 | 0.783 | 0.757 |
| Salty snacks | 34.44% | 30.27% | 29.43% | 27.76% | 26.35% | 26.21% | 0.579 | 0.526 | 0.529 |
| Soup | 36.19% | 36.44% | 35.25% | 34.97% | 34.98% | 35.30% | 0.739 | 0.744 | 0.746 |
| Sugar substitutes | 36.30% | 36.77% | 35.18% | 38.96% | 39.17% | 37.29% | 1.009 | 1.019 | 0.971 |
| Toothpaste | 51.52% | 52.79% | 56.24% | 49.91% | 50.92% | 51.58% | 0.599 | 0.624 | 0.647 |

Table 5b. The forecasting performance of the ADL-own model, the ADL-own-EWC model, and the ADL-own-IC model regarding various forecasting horizons and error measures based on rolling forecasting origins, for each of the product categories

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Forecast horizon=1 | MAPE | | | SMAPE | | | MASE | | |
| **Category** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** |
| Beer | 22.16% | 22.49% | 21.30% | 22.46% | 22.81% | 21.65% | 0.788 | 0.800 | 0.759 |
| Carbonated beverages | 64.50% | 65.85% | 67.07% | 35.86% | 35.97% | 33.20% | 0.520 | 0.530 | 0.527 |
| Coffee | 30.56% | 30.49% | 29.36% | 29.78% | 30.20% | 29.26% | 0.603 | 0.606 | 0.588 |
| Frozen pizza | 27.16% | 26.81% | 26.56% | 29.65% | 29.42% | 28.56% | 1.038 | 1.033 | 1.028 |
| Household cleaner | 22.46% | 22.22% | 22.23% | 23.30% | 23.03% | 22.09% | 0.896 | 0.886 | 0.850 |
| Hotdog | 46.73% | 46.44% | 49.86% | 46.10% | 47.07% | 45.73% | 0.777 | 0.797 | 0.773 |
| Laundry detergent | 49.92% | 48.30% | 42.79% | 41.06% | 40.61% | 39.32% | 0.621 | 0.629 | 0.618 |
| Margarine/Butter | 20.79% | 19.98% | 20.01% | 21.39% | 20.57% | 20.21% | 0.513 | 0.498 | 0.477 |
| Mayonnaise | 22.76% | 22.63% | 22.55% | 20.52% | 20.46% | 20.99% | 0.769 | 0.770 | 0.793 |
| Mustard & ketchup | 31.82% | 32.35% | 29.48% | 27.34% | 27.97% | 26.19% | 0.582 | 0.590 | 0.533 |
| Peanut butter | 28.58% | 29.52% | 27.17% | 24.34% | 25.27% | 24.14% | 0.639 | 0.664 | 0.618 |
| Salty snacks | 31.84% | 30.27% | 27.90% | 26.58% | 26.03% | 25.85% | 0.666 | 0.700 | 0.639 |
| Soup | 28.36% | 29.61% | 27.50% | 25.52% | 26.16% | 25.70% | 0.329 | 0.335 | 0.330 |
| Sugar substitutes | 42.34% | 41.84% | 41.96% | 38.74% | 38.44% | 38.41% | 0.971 | 0.963 | 0.963 |
| Toothpaste | 45.81% | 45.43% | 46.55% | 47.12% | 47.17% | 47.31% | 0.436 | 0.432 | 0.428 |
| Forecast horizon=4 | MAPE | | | SMAPE | | | MASE | | |
| **Category** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** |
| Beer | 22.47% | 22.46% | 21.45% | 22.88% | 22.89% | 21.92% | 0.813 | 0.813 | 0.783 |
| Carbonated beverages | 44.84% | 43.87% | 48.04% | 37.23% | 36.82% | 34.61% | 0.541 | 0.545 | 0.544 |
| Coffee | 30.67% | 30.55% | 29.61% | 30.38% | 30.85% | 29.92% | 0.632 | 0.631 | 0.614 |
| Frozen pizza | 28.30% | 28.14% | 27.89% | 30.62% | 30.51% | 29.75% | 0.665 | 0.666 | 0.656 |
| Household cleaner | 23.68% | 23.29% | 23.04% | 24.65% | 24.15% | 23.07% | 0.936 | 0.917 | 0.878 |
| Hotdog | 43.96% | 43.52% | 46.33% | 45.16% | 46.09% | 44.76% | 0.780 | 0.796 | 0.776 |
| Laundry detergent | 53.08% | 50.29% | 44.44% | 43.27% | 42.47% | 40.49% | 0.626 | 0.629 | 0.619 |
| Margarine/Butter | 20.74% | 20.24% | 19.51% | 22.05% | 21.52% | 20.34% | 0.546 | 0.538 | 0.496 |
| Mayonnaise | 25.59% | 25.62% | 24.78% | 22.34% | 22.42% | 22.32% | 0.851 | 0.862 | 0.860 |
| Mustard & ketchup | 38.02% | 38.93% | 33.88% | 30.57% | 31.55% | 27.88% | 0.679 | 0.693 | 0.581 |
| Peanut butter | 33.05% | 33.88% | 29.95% | 27.11% | 27.59% | 25.64% | 0.740 | 0.761 | 0.675 |
| Salty snacks | 33.89% | 31.41% | 28.71% | 27.02% | 26.12% | 25.39% | 0.663 | 0.689 | 0.630 |
| Soup | 30.32% | 31.88% | 28.98% | 26.71% | 27.26% | 26.59% | 0.343 | 0.348 | 0.345 |
| Sugar substitutes | 42.93% | 42.74% | 42.81% | 39.37% | 39.25% | 39.07% | 0.997 | 0.995 | 0.993 |
| Toothpaste | 46.80% | 45.65% | 45.01% | 47.30% | 46.94% | 45.18% | 0.444 | 0.442 | 0.431 |
| Forecast horizon=12 | MAPE | | | SMAPE | | | MASE | | |
| **Category** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** | **ADL-own** | **ADL-own-EWC** | **ADL-own-IC** |
| Beer | 21.63% | 21.59% | 20.58% | 22.28% | 22.18% | 21.26% | 0.784 | 0.781 | 0.757 |
| Carbonated beverages | 50.23% | 46.62% | 55.14% | 41.56% | 40.78% | 38.41% | 0.625 | 0.617 | 0.625 |
| Coffee | 31.28% | 31.00% | 30.10% | 31.59% | 31.94% | 31.05% | 0.707 | 0.703 | 0.683 |
| Frozen pizza | 32.09% | 31.84% | 31.10% | 31.91% | 31.64% | 30.43% | 0.816 | 0.813 | 0.798 |
| Household cleaner | 32.83% | 32.37% | 32.80% | 27.02% | 26.19% | 25.36% | 0.974 | 0.945 | 0.916 |
| Hotdog | 42.46% | 42.84% | 44.59% | 45.04% | 46.15% | 44.66% | 0.768 | 0.784 | 0.764 |
| Laundry detergent | 54.30% | 50.57% | 45.40% | 44.10% | 43.28% | 41.45% | 0.592 | 0.589 | 0.587 |
| Margarine/Butter | 22.29% | 22.07% | 20.90% | 22.68% | 22.43% | 20.77% | 0.537 | 0.531 | 0.483 |
| Mayonnaise | 27.32% | 27.38% | 25.61% | 23.49% | 23.57% | 22.70% | 0.905 | 0.913 | 0.882 |
| Mustard & ketchup | 40.49% | 42.76% | 35.96% | 31.95% | 33.28% | 28.90% | 0.758 | 0.792 | 0.635 |
| Peanut butter | 42.00% | 42.70% | 38.06% | 31.96% | 32.20% | 30.13% | 0.924 | 0.946 | 0.834 |
| Salty snacks | 35.76% | 31.62% | 29.32% | 28.21% | 26.35% | 25.31% | 0.752 | 0.680 | 0.697 |
| Soup | 35.69% | 37.22% | 33.97% | 29.94% | 30.48% | 29.74% | 0.432 | 0.439 | 0.432 |
| Sugar substitutes | 42.05% | 41.84% | 42.49% | 38.90% | 38.68% | 38.66% | 0.955 | 0.950 | 0.952 |
| Toothpaste | 49.51% | 48.10% | 47.22% | 48.86% | 48.06% | 45.77% | 0.463 | 0.459 | 0.448 |

Table 6a. The forecasting performance of the ADL model, the ADL-EWC model, and the ADL-IC model regarding various forecasting horizons and error measures based on a fixed forecasting origin, for each of the product categories

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Forecast horizon=1 | MAPE | | | SMAPE | | | MASE | | |
| **Category** | **ADL** | **ADL-EWC** | **ADL-IC** | **ADL** | **ADL-EWC** | **ADL-IC** | **ADL** | **ADL-EWC** | **ADL-IC** |
| Beer | 26.34% | 25.90% | 26.47% | 21.42% | 20.95% | 21.32% | 0.626 | 0.622 | 0.621 |
| Carbonated beverages | 33.39% | 34.03% | 34.76% | 39.41% | 39.67% | 39.75% | 2.397 | 2.398 | 2.409 |
| Coffee | 27.13% | 26.81% | 27.57% | 31.24% | 31.14% | 31.73% | 0.854 | 0.858 | 0.878 |
| Frozen pizza | 28.12% | 25.87% | 27.12% | 31.05% | 28.63% | 30.16% | 0.466 | 0.424 | 0.430 |
| Household cleaner | 24.54% | 24.55% | 24.42% | 25.85% | 25.46% | 25.30% | 0.930 | 0.909 | 0.934 |
| Hotdog | 34.65% | 37.90% | 32.59% | 36.16% | 39.63% | 32.24% | 0.331 | 0.357 | 0.295 |
| Laundry detergent | 84.66% | 79.11% | 74.68% | 49.18% | 48.30% | 46.00% | 0.316 | 0.337 | 0.266 |
| Margarine/Butter | 108.39% | 103.14% | 110.13% | 29.46% | 28.79% | 30.81% | 0.333 | 0.297 | 0.347 |
| Mayonnaise | 17.19% | 14.97% | 14.85% | 15.08% | 13.35% | 13.35% | 0.437 | 0.397 | 0.404 |
| Mustard & ketchup | 27.71% | 26.88% | 27.83% | 29.12% | 28.54% | 29.70% | 0.903 | 0.869 | 0.895 |
| Peanut butter | 15.31% | 13.55% | 15.34% | 14.07% | 12.67% | 14.39% | 0.340 | 0.310 | 0.359 |
| Salty snacks | 29.42% | 29.13% | 26.07% | 28.67% | 27.94% | 27.28% | 0.434 | 0.399 | 0.433 |
| Soup | 32.18% | 31.18% | 31.50% | 41.33% | 39.66% | 41.02% | 1.488 | 1.433 | 1.456 |
| Sugar substitutes | 39.10% | 39.27% | 36.00% | 50.51% | 50.39% | 47.06% | 1.356 | 1.358 | 1.273 |
| Toothpaste | 46.84% | 43.22% | 46.64% | 62.00% | 55.89% | 61.26% | 0.813 | 0.760 | 0.795 |
| Forecast horizon=4 | MAPE | | | SMAPE | | | MASE | | |
| **Category** | **ADL** | **ADL-EWC** | **ADL-IC** | **ADL** | **ADL-EWC** | **ADL-IC** | **ADL** | **ADL-EWC** | **ADL-IC** |
| Beer | 26.96% | 27.09% | 27.46% | 23.56% | 23.68% | 23.89% | 0.698 | 0.704 | 0.700 |
| Carbonated beverages | 60.16% | 59.28% | 60.46% | 51.59% | 52.25% | 50.47% | 1.225 | 1.227 | 1.224 |
| Coffee | 29.45% | 29.49% | 29.71% | 31.36% | 31.88% | 31.61% | 0.616 | 0.615 | 0.617 |
| Frozen pizza | 23.57% | 21.89% | 22.73% | 25.81% | 24.05% | 24.58% | 0.437 | 0.413 | 0.434 |
| Household cleaner | 30.99% | 31.21% | 31.43% | 28.18% | 27.97% | 28.17% | 0.881 | 0.881 | 0.897 |
| Hotdog | 46.48% | 49.03% | 47.32% | 49.08% | 51.74% | 46.95% | 0.447 | 0.503 | 0.420 |
| Laundry detergent | 50.19% | 46.92% | 46.43% | 38.35% | 37.01% | 37.41% | 0.392 | 0.399 | 0.408 |
| Margarine/Butter | 53.25% | 50.96% | 53.41% | 29.00% | 28.36% | 29.03% | 0.590 | 0.563 | 0.587 |
| Mayonnaise | 23.32% | 21.84% | 21.44% | 20.33% | 19.22% | 19.06% | 0.765 | 0.720 | 0.712 |
| Mustard & ketchup | 26.45% | 26.67% | 26.67% | 29.50% | 29.85% | 30.27% | 0.898 | 0.901 | 0.911 |
| Peanut butter | 21.91% | 21.44% | 21.61% | 22.21% | 22.20% | 22.40% | 0.575 | 0.570 | 0.576 |
| Salty snacks | 26.44% | 26.46% | 24.48% | 26.84% | 27.45% | 26.89% | 0.417 | 0.419 | 0.415 |
| Soup | 33.59% | 32.39% | 33.46% | 34.31% | 33.28% | 34.71% | 0.750 | 0.733 | 0.751 |
| Sugar substitutes | 35.01% | 35.01% | 32.05% | 40.90% | 40.78% | 37.51% | 0.993 | 0.994 | 0.928 |
| Toothpaste | 49.19% | 47.45% | 49.83% | 56.42% | 55.00% | 55.96% | 0.540 | 0.515 | 0.537 |
| Forecast horizon=12 | MAPE | | | SMAPE | | | MASE | | |
| **Category** | **ADL** | **ADL-EWC** | **ADL-IC** | **ADL** | **ADL-EWC** | **ADL-IC** | **ADL** | **ADL-EWC** | **ADL-IC** |
| Beer | 24.61% | 25.44% | 25.02% | 21.61% | 22.17% | 21.95% | 0.667 | 0.686 | 0.672 |
| Carbonated beverages | 40.71% | 40.10% | 42.11% | 38.90% | 38.77% | 38.99% | 0.815 | 0.801 | 0.819 |
| Coffee | 32.25% | 31.87% | 32.02% | 33.29% | 33.33% | 33.24% | 0.784 | 0.778 | 0.779 |
| Frozen pizza | 31.40% | 30.74% | 30.53% | 36.40% | 35.48% | 35.02% | 0.630 | 0.613 | 0.612 |
| Household cleaner | 29.37% | 29.55% | 30.47% | 27.27% | 26.77% | 27.52% | 0.854 | 0.838 | 0.863 |
| Hotdog | 69.83% | 68.39% | 69.06% | 61.51% | 64.90% | 59.16% | 0.912 | 1.068 | 0.883 |
| Laundry detergent | 46.81% | 44.34% | 42.85% | 39.23% | 38.64% | 38.16% | 0.432 | 0.442 | 0.437 |
| Margarine/Butter | 38.19% | 36.35% | 37.38% | 28.51% | 27.42% | 27.65% | 0.598 | 0.567 | 0.579 |
| Mayonnaise | 25.37% | 24.51% | 23.78% | 21.38% | 20.92% | 20.68% | 0.803 | 0.785 | 0.770 |
| Mustard & ketchup | 33.62% | 33.86% | 33.35% | 35.25% | 35.64% | 35.79% | 1.102 | 1.110 | 1.109 |
| Peanut butter | 24.86% | 24.02% | 24.54% | 24.62% | 24.19% | 24.78% | 0.673 | 0.660 | 0.673 |
| Salty snacks | 28.46% | 27.51% | 26.09% | 26.14% | 26.20% | 25.96% | 0.479 | 0.475 | 0.482 |
| Soup | 32.72% | 32.57% | 32.86% | 33.87% | 33.76% | 34.53% | 0.746 | 0.741 | 0.754 |
| Sugar substitutes | 36.27% | 36.73% | 35.14% | 38.90% | 39.10% | 37.22% | 1.007 | 1.017 | 0.969 |
| Toothpaste | 48.98% | 49.88% | 51.92% | 50.36% | 50.85% | 51.09% | 0.533 | 0.552 | 0.570 |

Table 6b. The forecasting performance of the ADL model, the ADL-EWC model, and the ADL-IC model regarding various forecasting horizons and error measures based on rolling forecasting origins, for each of the product categories

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Forecast horizon=1 | MAPE | | | SMAPE | | | MASE | | |
| **Category** | **ADL** | **ADL-EWC** | **ADL-IC** | **ADL** | **ADL-EWC** | **ADL-IC** | **ADL** | **ADL-EWC** | **ADL-IC** |
| Beer | 21.78% | 21.85% | 21.20% | 21.60% | 21.79% | 21.20% | 0.752 | 0.758 | 0.739 |
| Carbonated beverages | 27.68% | 28.36% | 28.49% | 26.92% | 27.43% | 25.93% | 0.467 | 0.488 | 0.481 |
| Coffee | 30.07% | 30.72% | 29.53% | 29.87% | 30.91% | 29.46% | 0.599 | 0.610 | 0.585 |
| Frozen pizza | 26.43% | 26.01% | 25.58% | 28.64% | 28.24% | 27.38% | 1.015 | 1.009 | 1.006 |
| Household cleaner | 22.30% | 21.97% | 22.02% | 23.01% | 22.68% | 21.71% | 0.888 | 0.875 | 0.839 |
| Hotdog | 44.96% | 45.01% | 47.80% | 44.52% | 45.80% | 44.00% | 0.764 | 0.801 | 0.762 |
| Laundry detergent | 46.86% | 46.14% | 39.83% | 39.93% | 39.84% | 37.36% | 0.567 | 0.586 | 0.565 |
| Margarine/Butter | 20.60% | 19.98% | 20.27% | 20.97% | 20.39% | 20.49% | 0.499 | 0.490 | 0.488 |
| Mayonnaise | 23.99% | 24.24% | 23.56% | 21.53% | 21.84% | 21.77% | 0.806 | 0.825 | 0.823 |
| Mustard & ketchup | 30.21% | 30.57% | 29.14% | 26.32% | 26.59% | 26.52% | 0.554 | 0.563 | 0.549 |
| Peanut butter | 26.37% | 26.41% | 25.60% | 22.76% | 23.07% | 23.12% | 0.592 | 0.604 | 0.582 |
| Salty snacks | 28.41% | 28.38% | 25.06% | 24.87% | 25.15% | 23.85% | 0.581 | 0.651 | 0.566 |
| Soup | 27.57% | 28.04% | 26.56% | 25.42% | 25.84% | 25.38% | 0.335 | 0.336 | 0.335 |
| Sugar substitutes | 42.39% | 41.94% | 41.98% | 38.81% | 38.57% | 38.44% | 0.972 | 0.965 | 0.963 |
| Toothpaste | 46.31% | 47.18% | 47.26% | 46.48% | 46.53% | 47.00% | 0.467 | 0.466 | 0.466 |
| Forecast horizon=4 | MAPE | | | SMAPE | | | MASE | | |
| **Category** | **ADL** | **ADL-EWC** | **ADL-IC** | **ADL** | **ADL-EWC** | **ADL-IC** | **ADL** | **ADL-EWC** | **ADL-IC** |
| Beer | 21.86% | 21.58% | 21.24% | 21.92% | 21.77% | 21.44% | 0.775 | 0.772 | 0.762 |
| Carbonated beverages | 26.10% | 26.51% | 27.14% | 26.93% | 27.09% | 26.16% | 0.495 | 0.504 | 0.513 |
| Coffee | 30.22% | 30.83% | 29.88% | 30.44% | 31.49% | 30.16% | 0.628 | 0.635 | 0.614 |
| Frozen pizza | 26.93% | 26.56% | 26.36% | 28.68% | 28.30% | 27.69% | 0.629 | 0.628 | 0.624 |
| Household cleaner | 23.46% | 22.97% | 22.86% | 24.31% | 23.75% | 22.72% | 0.927 | 0.906 | 0.869 |
| Hotdog | 42.32% | 42.37% | 43.96% | 43.70% | 45.19% | 42.80% | 0.769 | 0.798 | 0.767 |
| Laundry detergent | 50.73% | 48.36% | 41.81% | 42.62% | 41.46% | 38.74% | 0.597 | 0.602 | 0.583 |
| Margarine/Butter | 20.72% | 20.35% | 19.94% | 21.75% | 21.46% | 20.79% | 0.536 | 0.532 | 0.510 |
| Mayonnaise | 26.59% | 26.81% | 25.70% | 22.92% | 23.29% | 22.86% | 0.880 | 0.896 | 0.887 |
| Mustard & ketchup | 33.86% | 33.80% | 31.95% | 27.89% | 27.73% | 27.37% | 0.586 | 0.589 | 0.569 |
| Peanut butter | 28.51% | 28.41% | 26.72% | 24.32% | 24.49% | 23.87% | 0.664 | 0.675 | 0.619 |
| Salty snacks | 30.49% | 30.11% | 26.10% | 25.87% | 26.14% | 24.15% | 0.628 | 0.674 | 0.605 |
| Soup | 29.07% | 29.31% | 27.59% | 26.73% | 26.96% | 26.36% | 0.364 | 0.363 | 0.364 |
| Sugar substitutes | 42.98% | 42.82% | 42.86% | 39.44% | 39.35% | 39.13% | 0.998 | 0.996 | 0.993 |
| Toothpaste | 47.32% | 46.62% | 45.77% | 47.09% | 46.70% | 45.18% | 0.473 | 0.469 | 0.459 |
| Forecast horizon=12 | MAPE | | | SMAPE | | | MASE | | |
| **Category** | **ADL** | **ADL-EWC** | **ADL-IC** | **ADL** | **ADL-EWC** | **ADL-IC** | **ADL** | **ADL-EWC** | **ADL-IC** |
| Beer | 20.72% | 20.31% | 20.20% | 21.12% | 20.77% | 20.73% | 0.742 | 0.732 | 0.735 |
| Carbonated beverages | 29.55% | 29.58% | 30.42% | 28.69% | 28.60% | 27.43% | 0.678 | 0.700 | 0.704 |
| Coffee | 30.90% | 31.22% | 30.32% | 31.39% | 32.18% | 30.99% | 0.701 | 0.702 | 0.682 |
| Frozen pizza | 30.17% | 29.87% | 29.02% | 30.32% | 29.95% | 28.77% | 0.674 | 0.672 | 0.663 |
| Household cleaner | 32.59% | 32.14% | 32.53% | 26.71% | 25.91% | 24.94% | 0.966 | 0.937 | 0.905 |
| Hotdog | 41.16% | 41.75% | 42.72% | 43.72% | 45.35% | 42.97% | 0.760 | 0.781 | 0.762 |
| Laundry detergent | 52.39% | 49.03% | 42.73% | 43.84% | 42.65% | 39.81% | 0.577 | 0.575 | 0.557 |
| Margarine/Butter | 22.01% | 21.91% | 21.33% | 22.08% | 22.03% | 21.16% | 0.517 | 0.515 | 0.493 |
| Mayonnaise | 27.83% | 28.17% | 26.42% | 23.47% | 23.91% | 22.89% | 0.910 | 0.929 | 0.898 |
| Mustard & ketchup | 35.44% | 36.05% | 33.39% | 29.19% | 29.37% | 28.51% | 0.638 | 0.648 | 0.616 |
| Peanut butter | 33.09% | 33.36% | 31.16% | 27.54% | 27.85% | 27.18% | 0.791 | 0.809 | 0.737 |
| Salty snacks | 32.13% | 31.28% | 27.30% | 28.06% | 27.95% | 25.82% | 0.724 | 0.745 | 0.699 |
| Soup | 31.15% | 31.62% | 29.58% | 28.42% | 28.85% | 28.14% | 0.428 | 0.430 | 0.428 |
| Sugar substitutes | 42.10% | 41.88% | 42.55% | 38.95% | 38.74% | 38.70% | 0.955 | 0.951 | 0.953 |
| Toothpaste | 49.08% | 48.05% | 47.08% | 48.91% | 48.23% | 46.19% | 0.462 | 0.458 | 0.444 |
|  |  |  |  |  |  |  |  |  |  |