**Table 1**: Comparison of LASSO-BN with VS-MSPC and Causation-based T2 method on the diagnostic accuracy of out-of-control variables

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | LASSO-BN | | | | VS-MSPC | | | | Causation  Based  T2 |
|  | | | |  | | | |
| 1 | 2 | 5 | 10 | 1 | 2 | 5 | 10 |
| 30 | 0.1 | 0.45 | 0.54 | 0.41 | 0.44 | 0.55 | 0.49 | 0.51 | 0.52 | 0.48 |
| 0.3 | 0.55 | 0.70 | 0.74 | 0.76 | 0.49 | 0.55 | 0.58 | 0.58 | 0.48 |
| 0.5 | 0.96 | 0.96 | 0.99 | 1.00 | 0.64 | 0.61 | 0.65 | 0.66 | 0.46 |
| 0.7 | 0.98 | 0.99 | 1.00 | 1.00 | 0.64 | 0.68 | 0.70 | 0.72 | 0.51 |
| 1 | 1.00 | 1.00 | 1.00 | 1.00 | 0.74 | 0.79 | 0.80 | 0.83 | 0.56 |
| 1.5 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 0.80 | 0.83 | 0.84 | 0.58 |
| 50 | 0.1 | 0.40 | 0.33 | 0.33 | 0.41 | 0.53 | 0.54 | 0.56 | 0.56 | 0.33 |
| 0.3 | 0.68 | 0.63 | 0.66 | 0.72 | 0.43 | 0.52 | 0.57 | 0.60 | 0.45 |
| 0.5 | 0.90 | 1.00 | 1.00 | 1.00 | 0.66 | 0.68 | 0.64 | 0.69 | 0.38 |
| 0.7 | 0.90 | 0.99 | 1.00 | 1.00 | 0.69 | 0.70 | 0.67 | 0.75 | 0.48 |
| 1 | 1.00 | 1.00 | 1.00 | 1.00 | 0.78 | 0.80 | 0.83 | 0.86 | 0.52 |
| 1.5 | 1.00 | 1.00 | 1.00 | 1.00 | 0.74 | 0.77 | 0.87 | 0.89 | 0.55 |
| 100 | 0.1 | 0.55 | 0.46 | 0.51 | 0.60 | 0.33 | 0.43 | 0.48 | 0.51 | 0.41 |
| 0.3 | 0.62 | 0.69 | 0.79 | 0.82 | 0.54 | 0.63 | 0.70 | 0.72 | 0.38 |
| 0.5 | 0.69 | 0.91 | 1.00 | 1.00 | 0.58 | 0.70 | 0.81 | 0.85 | 0.39 |
| 0.7 | 0.97 | 0.99 | 1.00 | 1.00 | 0.56 | 0.74 | 0.83 | 0.88 | 0.46 |
| 1 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.94 | 0.98 | 1.00 | 0.45 |
| 1.5 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | 0.98 | 0.99 | 1.00 | 0.51 |

**Table 3**: Comparison of LASSO-BN with VS-MSPC and Causation-based T2 method on the diagnostic accuracy of out-of-control variables for the TEP case

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | LASSO-BN | | | | VS-MSPC | | | | Causation  Based  T2 |
|  | | | |  | | | |
| 1 | 2 | 5 | 10 | 1 | 2 | 5 | 10 |
| 1 | 0.1 | 0.50 | 0.50 | 0.62 | 0.64 | 0.52 | 0.45 | 0.50 | 0.67 | 0.51 |
| 0.3 | 0.64 | 0.86 | 1.00 | 1.00 | 0.55 | 0.50 | 0.71 | 0.73 | 0.55 |
| 0.5 | 0.93 | 1.00 | 1.00 | 1.00 | 0.74 | 0.76 | 0.81 | 0.76 | 0.56 |
| 0.7 | 1.00 | 1.00 | 1.00 | 1.00 | 0.81 | 0.76 | 0.86 | 0.86 | 0.55 |
| 1 | 1.00 | 1.00 | 1.00 | 1.00 | 0.81 | 0.81 | 0.86 | 0.91 | 0.57 |
| 1.5 | 1.00 | 1.00 | 1.00 | 1.00 | 0.83 | 0.81 | 0.86 | 0.91 | 0.61 |
| 3 | 0.1 | 0.49 | 0.56 | 0.60 | 0.62 | 0.48 | 0.62 | 0.57 | 0.55 | 0.48 |
| 0.3 | 0.73 | 0.80 | 0.82 | 1.00 | 0.74 | 0.71 | 0.77 | 0.71 | 0.53 |
| 0.5 | 0.98 | 0.95 | 1.00 | 1.00 | 0.74 | 0.67 | 0.76 | 0.74 | 0.58 |
| 0.7 | 1.00 | 1.00 | 1.00 | 1.00 | 0.76 | 0.76 | 0.76 | 0.76 | 0.54 |
| 1 | 1.00 | 1.00 | 1.00 | 1.00 | 0.76 | 0.81 | 0.81 | 0.81 | 0.62 |
| 1.5 | 1.00 | 1.00 | 1.00 | 1.00 | 0.79 | 0.81 | 0.86 | 0.86 | 0.63 |
| 5 | 0.1 | 0.41 | 0.46 | 0.50 | 0.55 | 0.41 | 0.54 | 0.59 | 0.59 | 0.54 |
| 0.3 | 0.67 | 0.95 | 1.00 | 1.00 | 0.62 | 0.64 | 0.60 | 0.61 | 0.58 |
| 0.5 | 0.95 | 1.00 | 1.00 | 1.00 | 0.71 | 0.74 | 0.71 | 0.74 | 0.59 |
| 0.7 | 0.98 | 1.00 | 1.00 | 1.00 | 0.71 | 0.71 | 0.74 | 0.72 | 0.64 |
| 1 | 1.00 | 1.00 | 1.00 | 1.00 | 0.76 | 0.76 | 0.76 | 0.76 | 0.65 |
| 1.5 | 1.00 | 1.00 | 1.00 | 1.00 | 0.81 | 0.81 | 0.86 | 0.88 | 0.68 |