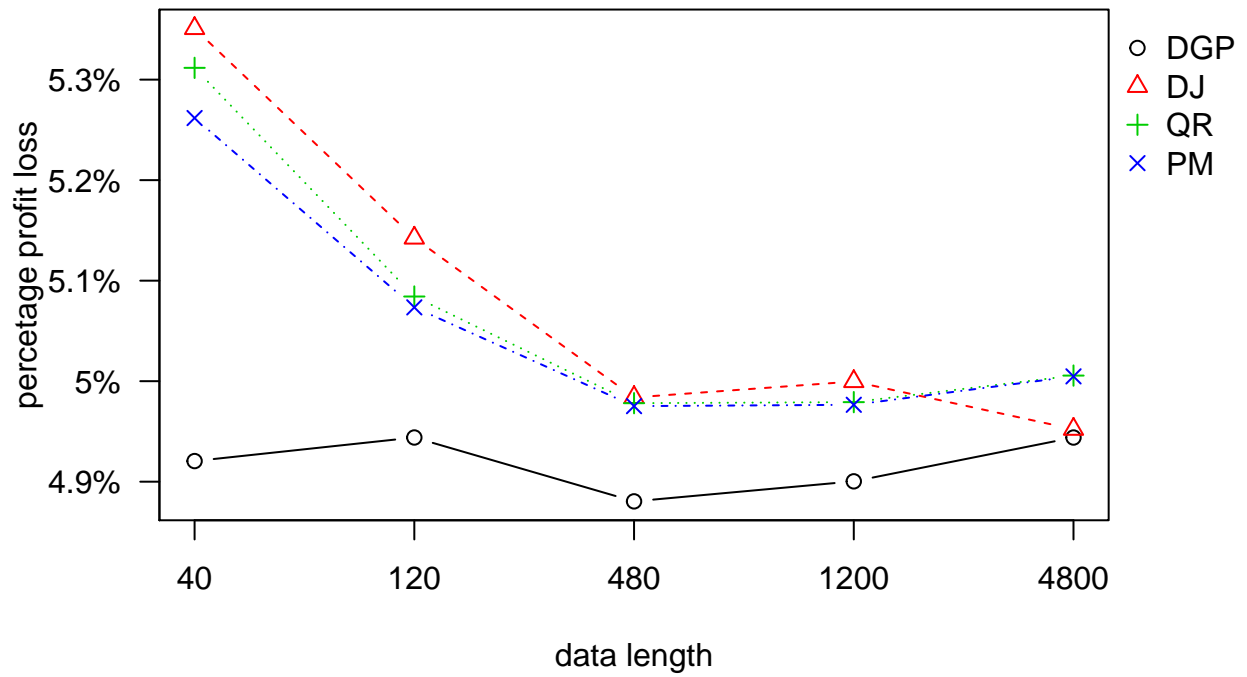


linear norm plot

Joshua

15/05/2020



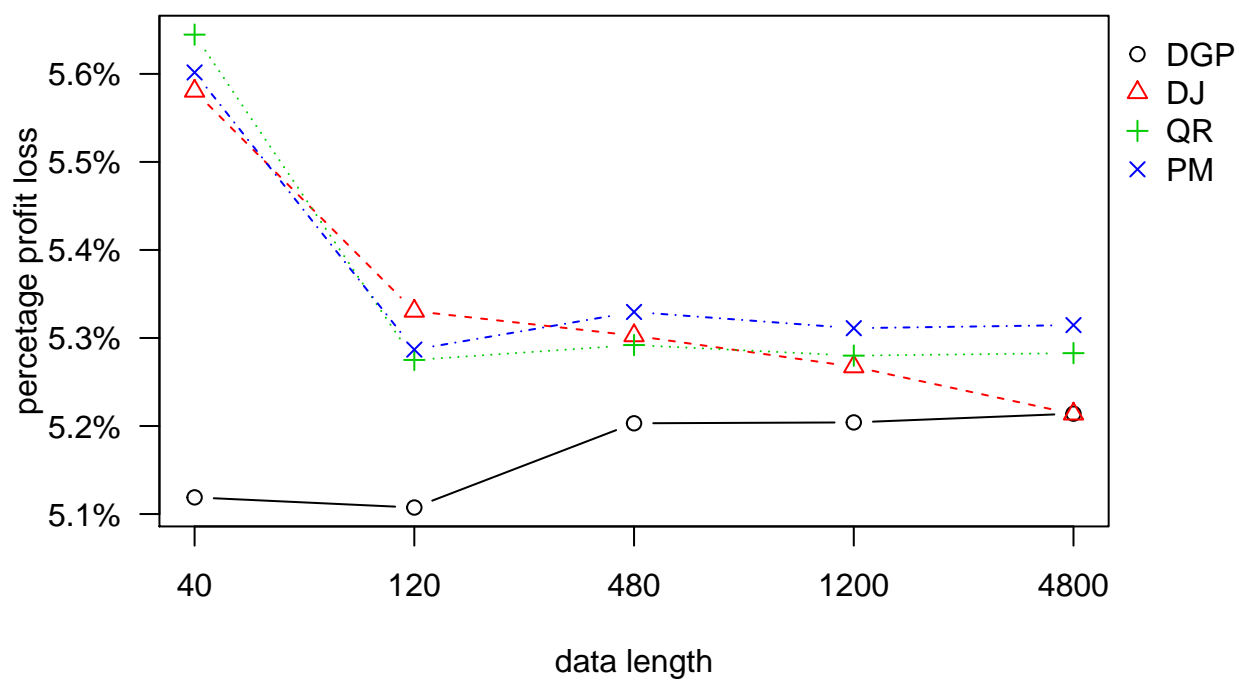
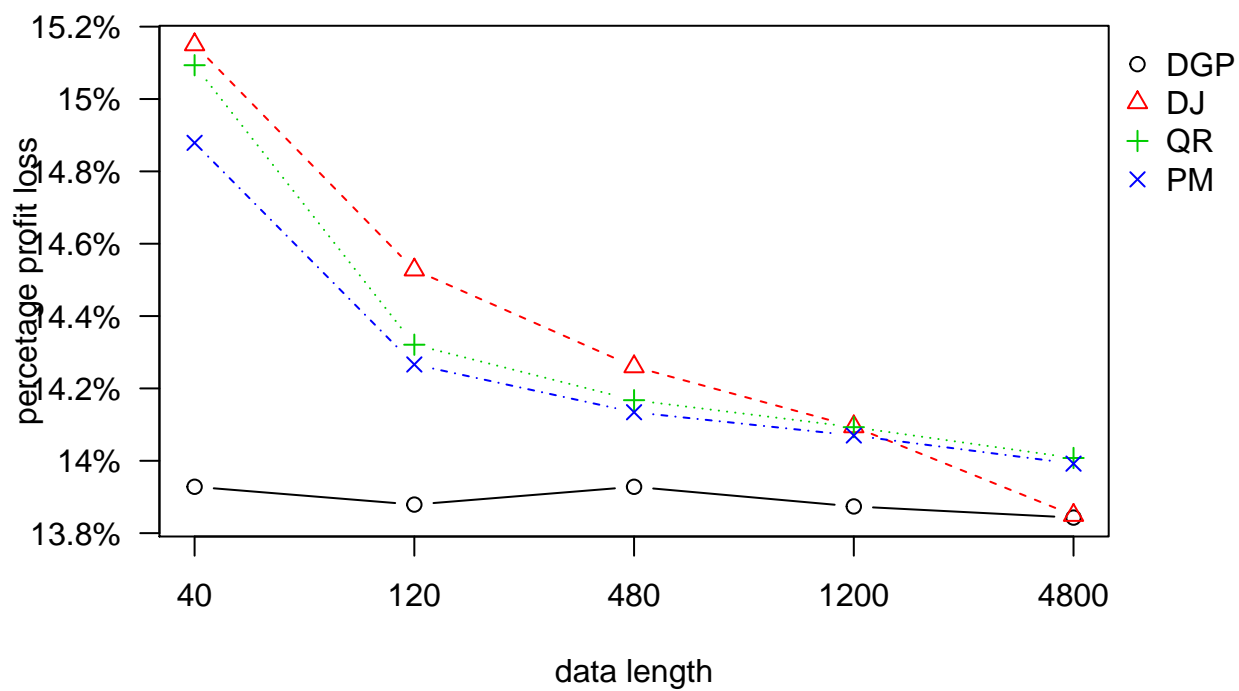
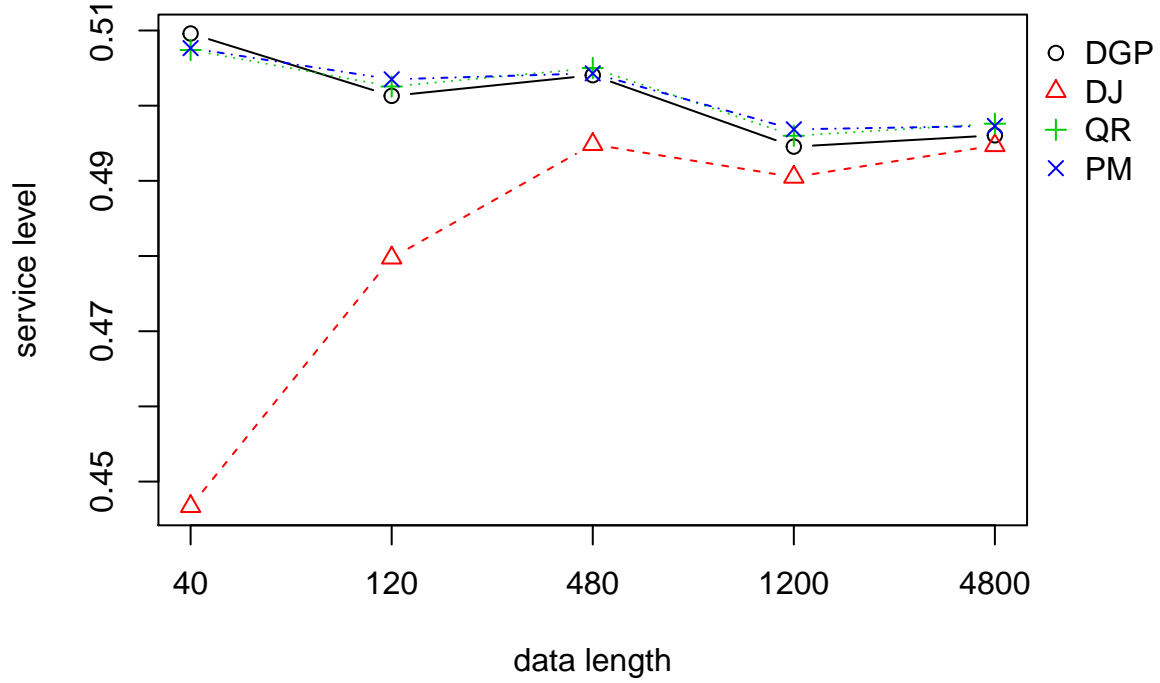
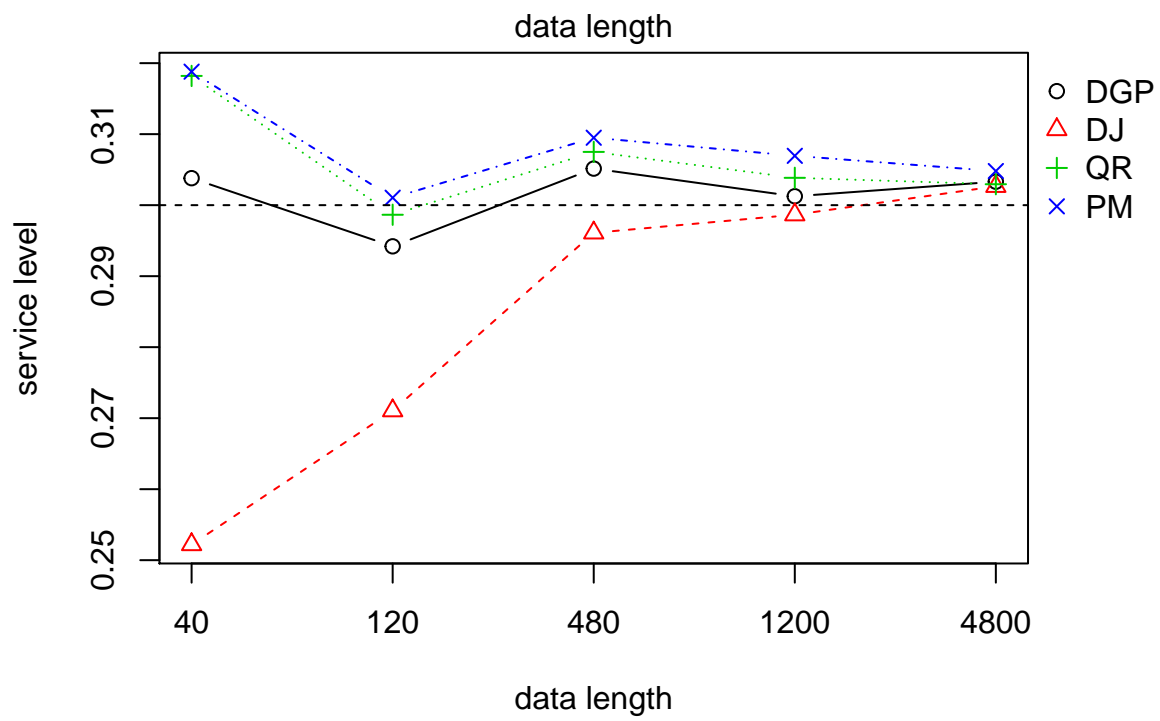
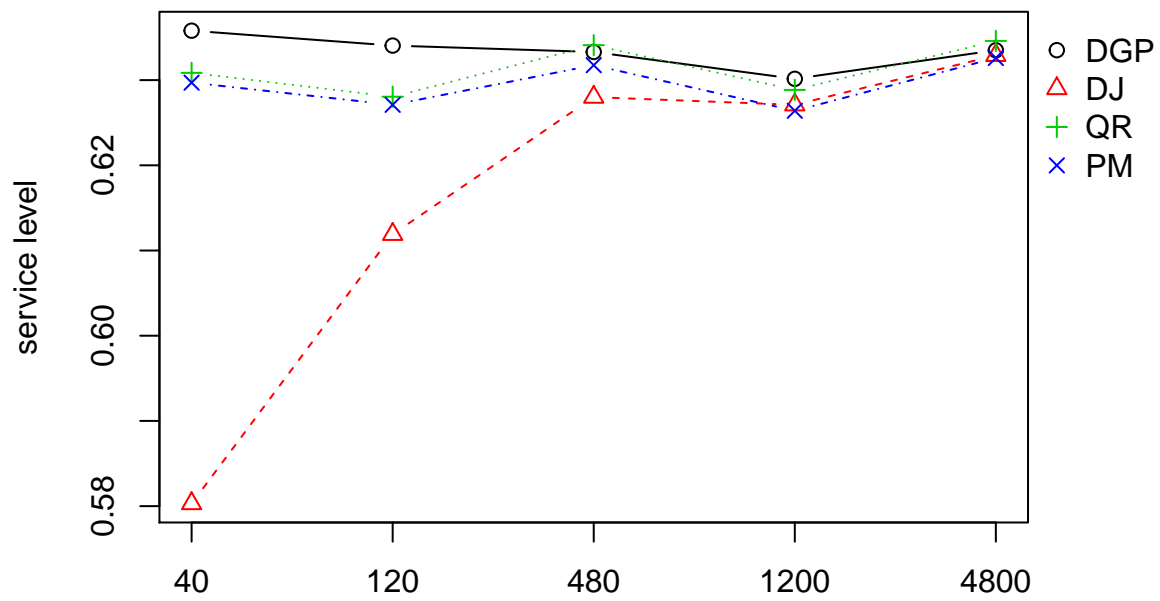


Table 1: Inventory Error

| Data size | Target service level=0.5 | | | | Target service level=0.63 | | | | Target service level=0.8 | | | |
|-----------|--------------------------|-------------------|-------------------|-------------------|---------------------------|--------------------|--------------------|--------------------|--------------------------|--------------------|--------------------|--------------------|
| | DGP | disjoint | quantile | proposed | DGP | disjoint | quantile | proposed | DGP | disjoint | quantile | proposed |
| 40 | -1.94 (200) | 29.62 (221.78) | -1.58 (217.24) | -1.73 (214.91) | -70.03 (199.58) | -46.72 (221.15) | -69.68 (217.92) | -66.76 (215.23) | 101.77 (198.78) | 145.41 (220.78) | 102.66 (219.04) | 100.94 (216.5) |
| 120 | -0.34 (200.52) | 11.59 (211.2) | -0.67 (206.81) | -0.62 (206.19) | -69 (199.38) | -61.58 (211.22) | -69.06 (206.08) | -67.86 (205.6) | 107.02 (199.18) | 126.82 (210.04) | 107.01 (205.79) | 105.56 (205.69) |
| 480 | -2.1 (198.66) | 1.22 (203.8) | -2.42 (202.26) | -2.5 (202.1) | -68.79 (200.69) | -68.04 (206.48) | -69.25 (203.97) | -68.03 (203.93) | 104.64 (202.16) | 111.59 (207.19) | 105.75 (205.67) | 104.14 (206.1) |
| 1200 | 3.65 (201.06) | 5.61 (205.72) | 3.22 (203.95) | 3.25 (203.89) | -67 (200.2) | -67 (204.34) | -67.54 (203.07) | -66.4 (203.15) | 103.87 (201.06) | 107.71 (204.27) | 104.55 (203.78) | 103.06 (204.21) |
| 4800 | 0.41 (201.92) | 0.81 (202.29) | 0.84 (204.22) | 0.86 (204.22) | -68.34 (199.51) | -68.09 (199.72) | -69.22 (201.86) | -68.08 (202.05) | 102.76 (200.71) | 103.43 (200.97) | 104.18 (203.34) | 102.76 (203.85) |





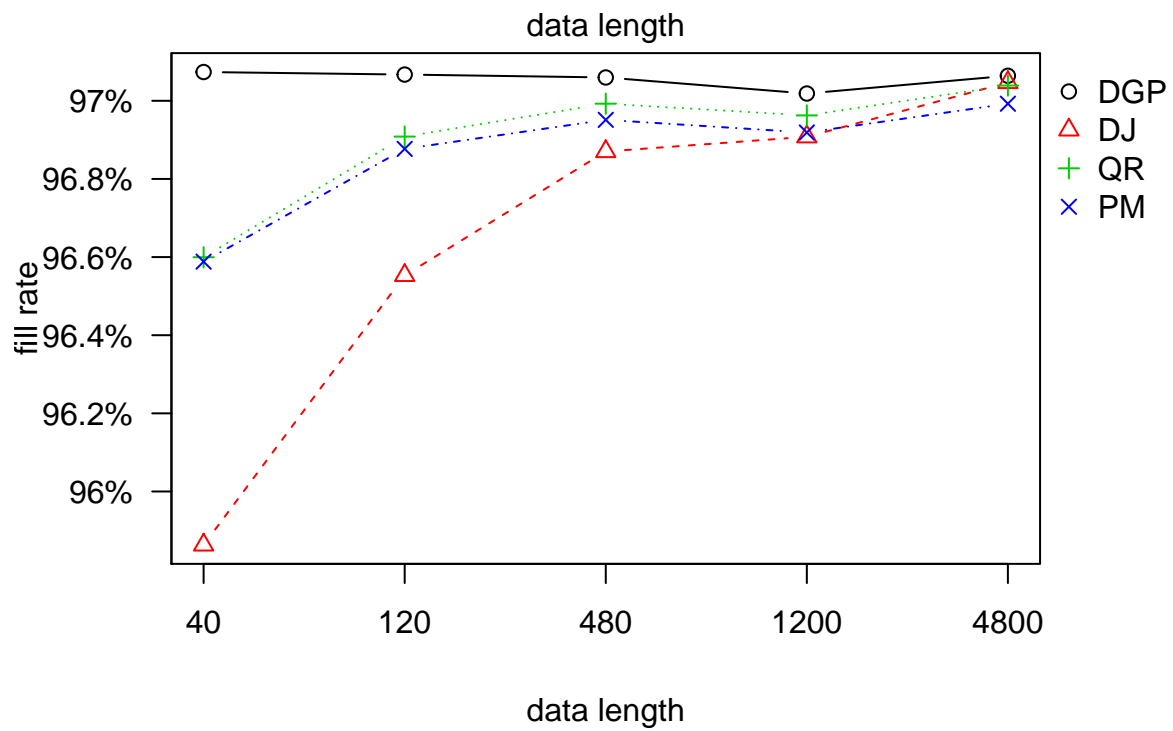
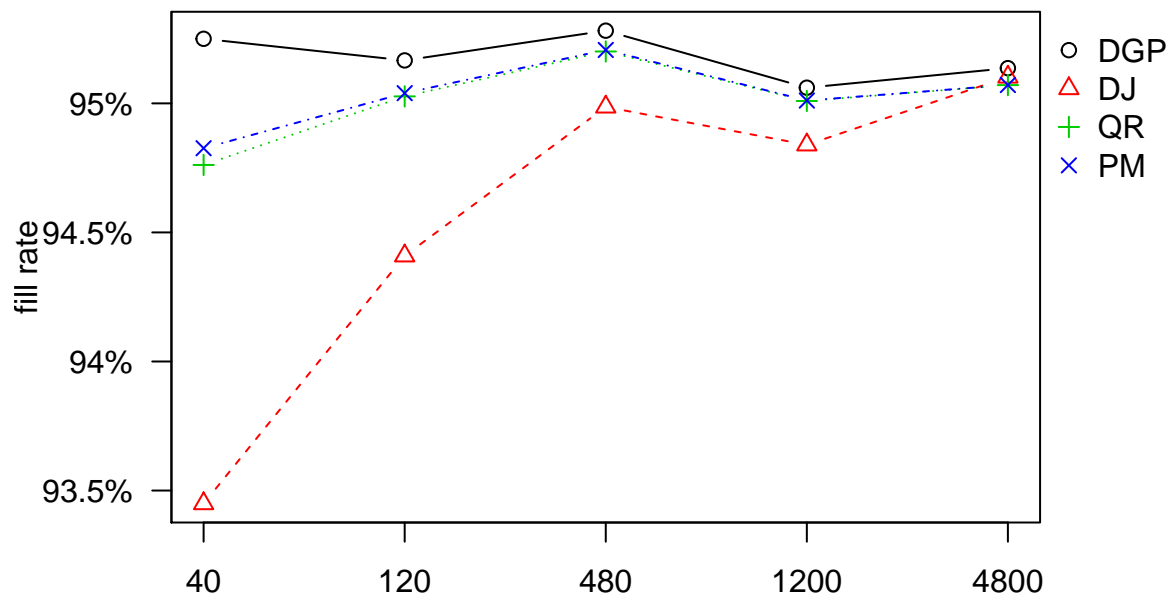
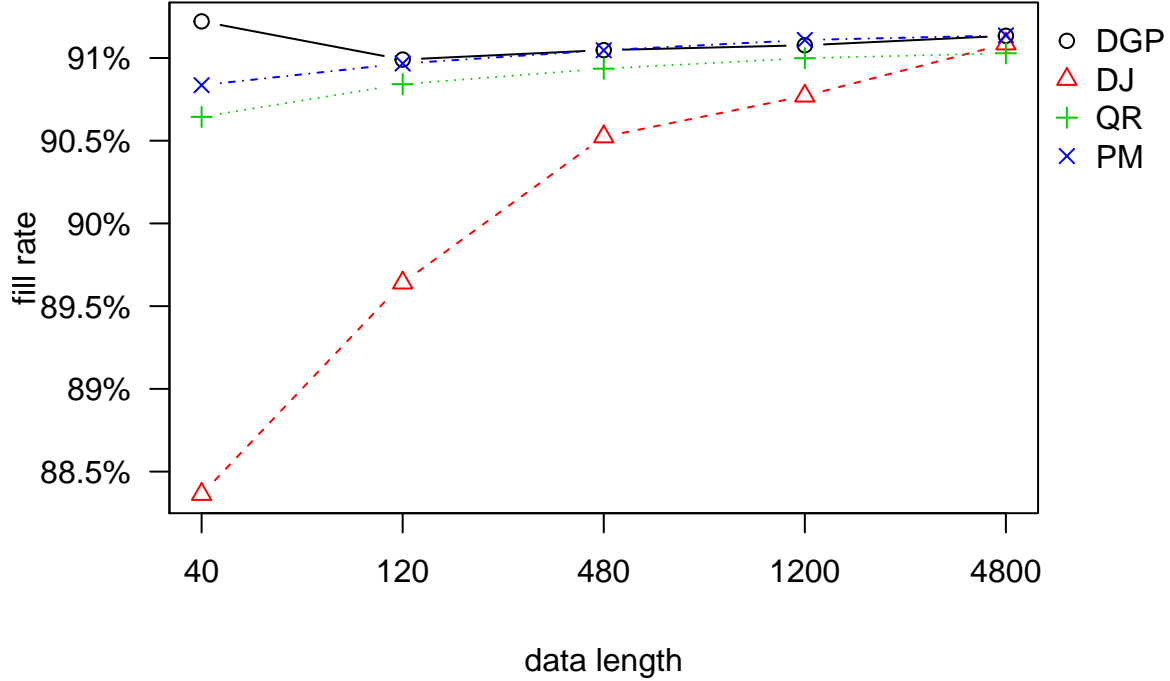


Table 2: p-value of Wilcoxon Test between data size 1200 and 4800

| Target service level | DGP | disjoint | quantile | proposed |
|----------------------|-----------|-----------|-----------|-----------|
| 0.5 | 0.7641703 | 0.4008630 | 0.7489668 | 0.9282873 |
| 0.63 | 0.4873273 | 0.2296351 | 0.2332227 | 0.1992153 |
| 0.3 | 0.6553228 | 0.3830332 | 0.8447936 | 0.6407884 |



\begin{table}

\caption{Size effect (q=30\%)}

| Data size | Percentage profit loss | | | | Service level | | | | Fill rate | | | |
|-----------|------------------------|----------|----------|----------|---------------|----------|----------|----------|-----------|----------|----------|----------|
| | DGP | disjoint | quantile | proposed | DGP | disjoint | quantile | proposed | DGP | disjoint | quantile | proposed |
| 40 | 5.1% | 5.6% | 5.6% | 5.6% | 0.30 | 0.25 | 0.32 | 0.32 | 91.2% | 88.4% | 90.6% | 90.8% |
| 120 | 5.1% | 5.3% | 5.3% | 5.3% | 0.29 | 0.27 | 0.30 | 0.30 | 91.0% | 89.6% | 90.8% | 91.0% |
| 480 | 5.2% | 5.3% | 5.3% | 5.3% | 0.31 | 0.30 | 0.31 | 0.31 | 91.0% | 90.5% | 90.9% | 91.0% |
| 1200 | 5.2% | 5.3% | 5.3% | 5.3% | 0.30 | 0.30 | 0.30 | 0.31 | 91.1% | 90.8% | 91.0% | 91.1% |
| 4800 | 5.2% | 5.2% | 5.3% | 5.3% | 0.30 | 0.30 | 0.30 | 0.30 | 91.1% | 91.1% | 91.0% | 91.1% |

\end{table}

| Target service level | Percentage profit loss | | | | Service level | | | | Fill rate | | | |
|----------------------|------------------------|----------|----------|----------|---------------|----------|----------|----------|-----------|----------|----------|----------|
| | DGP | disjoint | quantile | proposed | DGP | disjoint | quantile | proposed | DGP | disjoint | quantile | proposed |
| 0.5 | 4.9% | 5.4% | 5.3% | 5.3% | 0.51 | 0.45 | 0.51 | 0.51 | 95.3% | 93.4% | 94.8% | 94.8% |
| 0.63 | 13.9% | 15.2% | 15.1% | 14.9% | 0.64 | 0.58 | 0.63 | 0.63 | 97.1% | 95.9% | 96.6% | 96.6% |
| 0.3 | 5.1% | 5.6% | 5.6% | 5.6% | 0.30 | 0.25 | 0.32 | 0.32 | 91.2% | 88.4% | 90.6% | 90.8% |

| Target service level | Percentage profit loss | | | | Service level | | | | Fill rate | | | |
|----------------------|------------------------|----------|----------|----------|---------------|----------|----------|----------|-----------|----------|----------|----------|
| | DGP | disjoint | quantile | proposed | DGP | disjoint | quantile | proposed | DGP | disjoint | quantile | proposed |
| 0.5 | 4.9% | 5.0% | 5.0% | 5.0% | 0.50 | 0.49 | 0.50 | 0.50 | 95.1% | 95.1% | 95.1% | 95.1% |
| 0.63 | 13.8% | 13.8% | 14.0% | 14.0% | 0.63 | 0.63 | 0.63 | 0.63 | 97.1% | 97.0% | 97.0% | 97.0% |
| 0.3 | 5.2% | 5.2% | 5.3% | 5.3% | 0.30 | 0.30 | 0.30 | 0.30 | 91.1% | 91.1% | 91.0% | 91.1% |

Table 3: Target service level effect (n=480)

| Target service level | Percentage profit loss | | | | Service level | | | |
|----------------------|------------------------|----------|----------|----------|---------------|----------|----------|----------|
| | DGP | disjoint | quantile | proposed | DGP | disjoint | quantile | proposed |
| 0.5 | 4.9% | 5.0% | 5.0% | 5.0% | 0.50 | 0.49 | 0.50 | 0.50 |
| 0.63 | 13.9% | 14.3% | 14.2% | 14.1% | 0.63 | 0.63 | 0.63 | 0.63 |
| 0.3 | 5.2% | 5.3% | 5.3% | 5.3% | 0.31 | 0.30 | 0.31 | 0.31 |