

The Result of Bancor Protocol Analysis

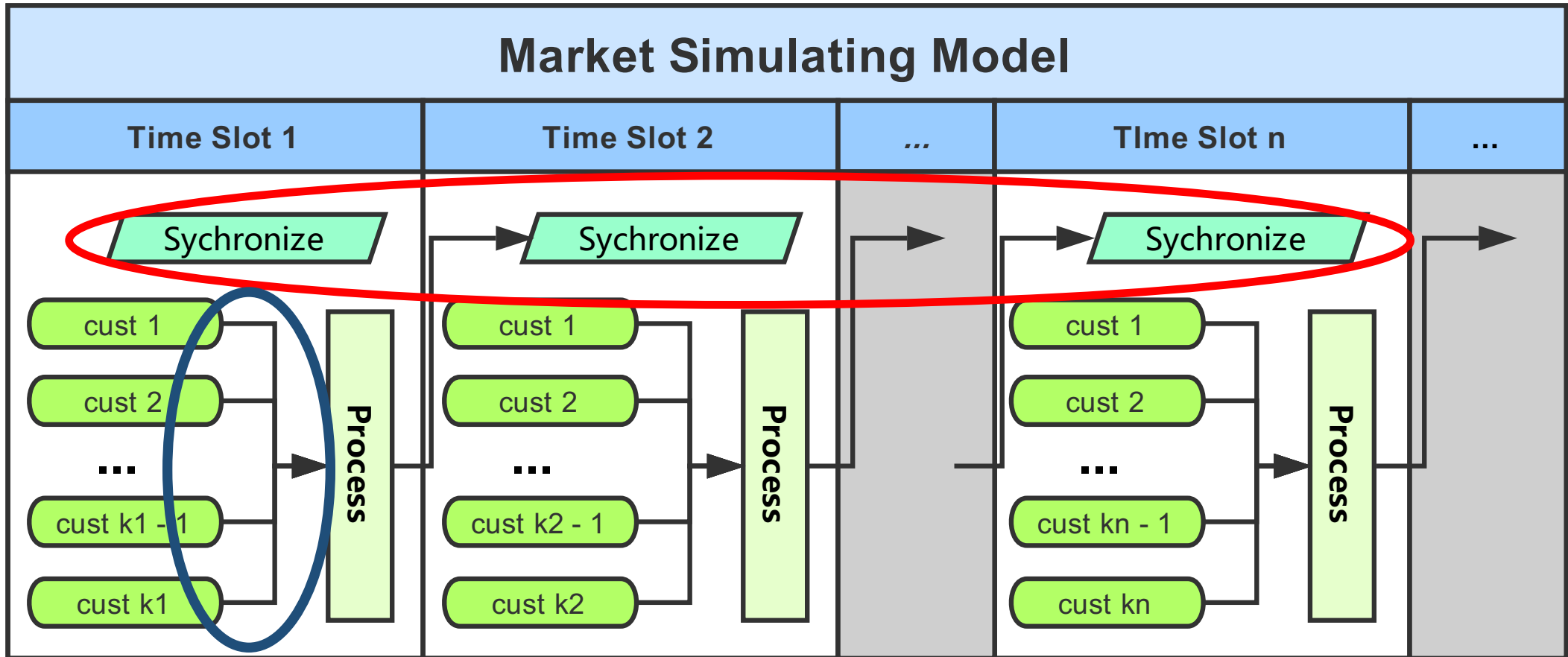
Kenny, Oct 5th

Bancor is flawed

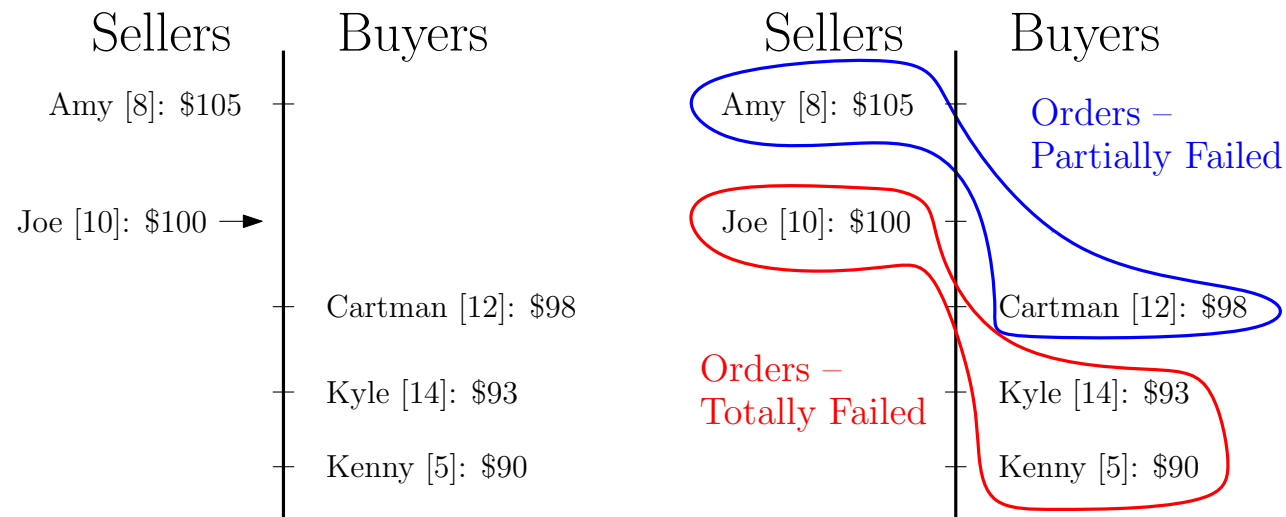
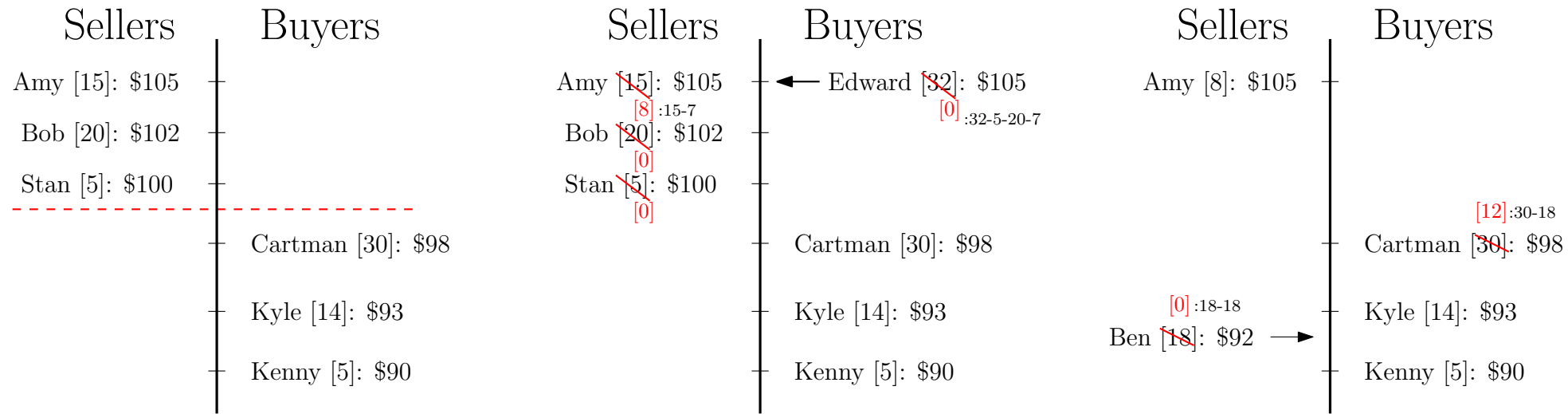
- (1) **The problem of “Double Coincidence of Wants” Bancor wants to solve might not exist in real world.** Even assuming this problem does exist, Bancor protocol fails to ensure its superiority compared with normal market.
- (2) **The price of smart token, i.e. currency in Bancor protocol could fluctuate significantly,** especially when customers generate close valuations of smart token, which might generate destructive effect on market.
- (3) **Bancor protocol cannot fully process multiple transaction orders that are launched simultaneously,** especially when the market size is small.

Flawed Design of Bancor Protocol

- (1) One thoughtlessness stems from **the frequent price fluctuation advocated by Bancor protocol**, which might obstruct transactions in the market.
- (2) The second flaw of Bancor protocol is **that it neglects the potential abnormal marketing behaviors of customers**, which might bleed market's reserve.
- (3) Bancor protocol aims to solve **“Double Coincidence of Wants” problem, which actually might not be a problem in real-world market** as no previous study evidence this problem's existence.

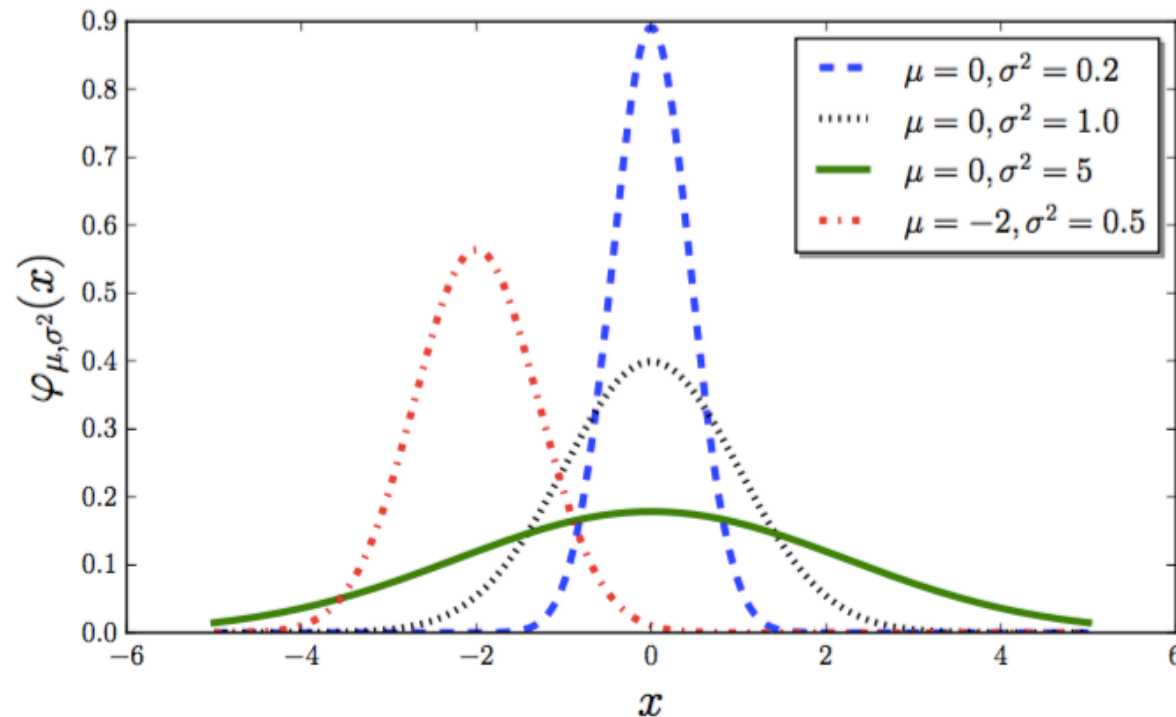


Classic Market Rules



Parameters for Simulating Experiments :

Parameters	Definations
N_c	Number of customers who make deals in market
T	Time interval between market crazes, measured by count of time slots
R	Valuation bouncing range parameter of market craze
σ_0	Variable in Gaussian function for generating customer number's distribution



The curve becomes smoother, i.e., has lower steepness with the growth of sigma; while in contrast, the peak of Gaussian curve is steeper when sigma being smaller.

New Analysis of Experimental Result

Indexes for Measuring Market Performance:

(1) Price-oriented Indexes: Under most circumstances, a healthy market is supposed to possess currency with considerably stable price.

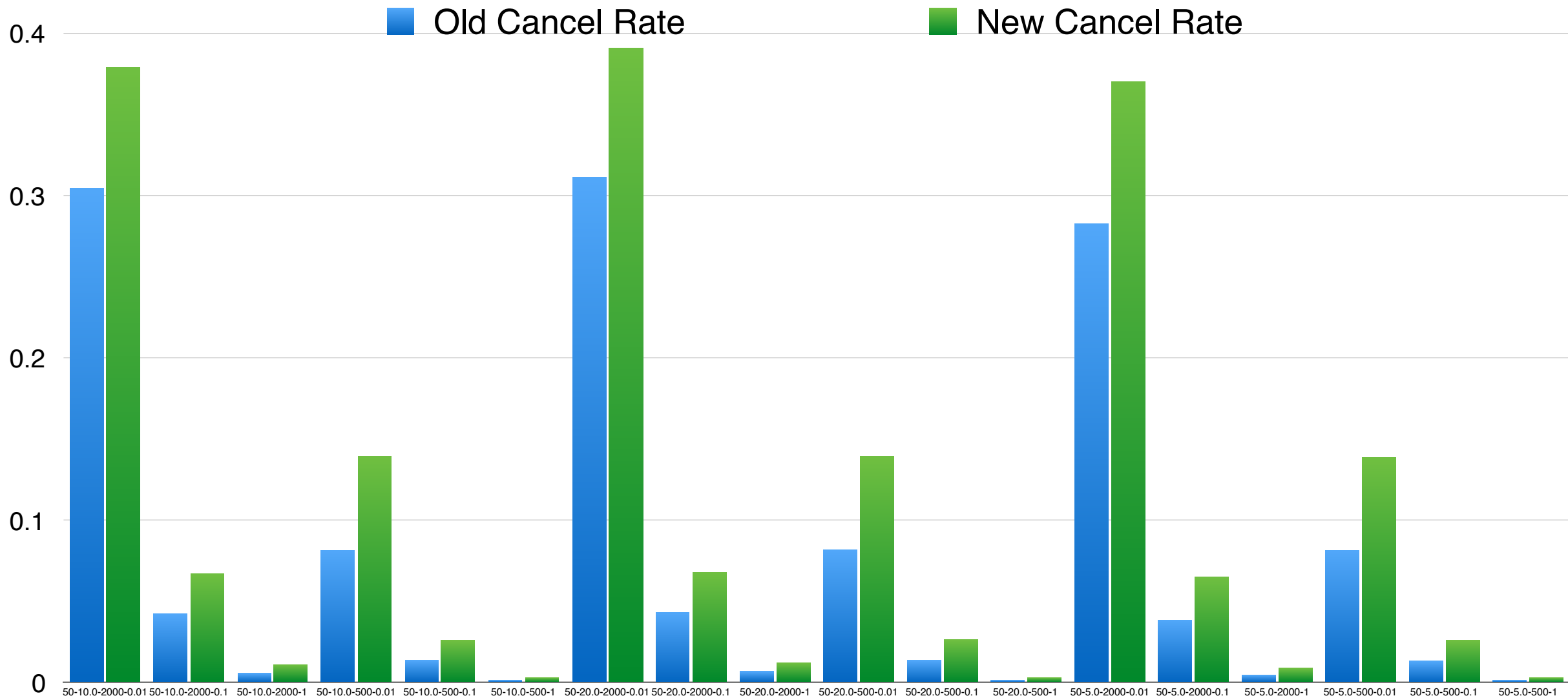
Price Slipping Ratio: The ratio of the number of time slots in which price drops at a certain rate to the number of all time slots.

(2) Transaction-oriented Indexes: To see whether Bancor protocol efficiently handle the problem of “Double Coincidence of Wants” and largely improve the market’s liquidity.

Total Transactions’ Number: Launched transactions’ Number in total.

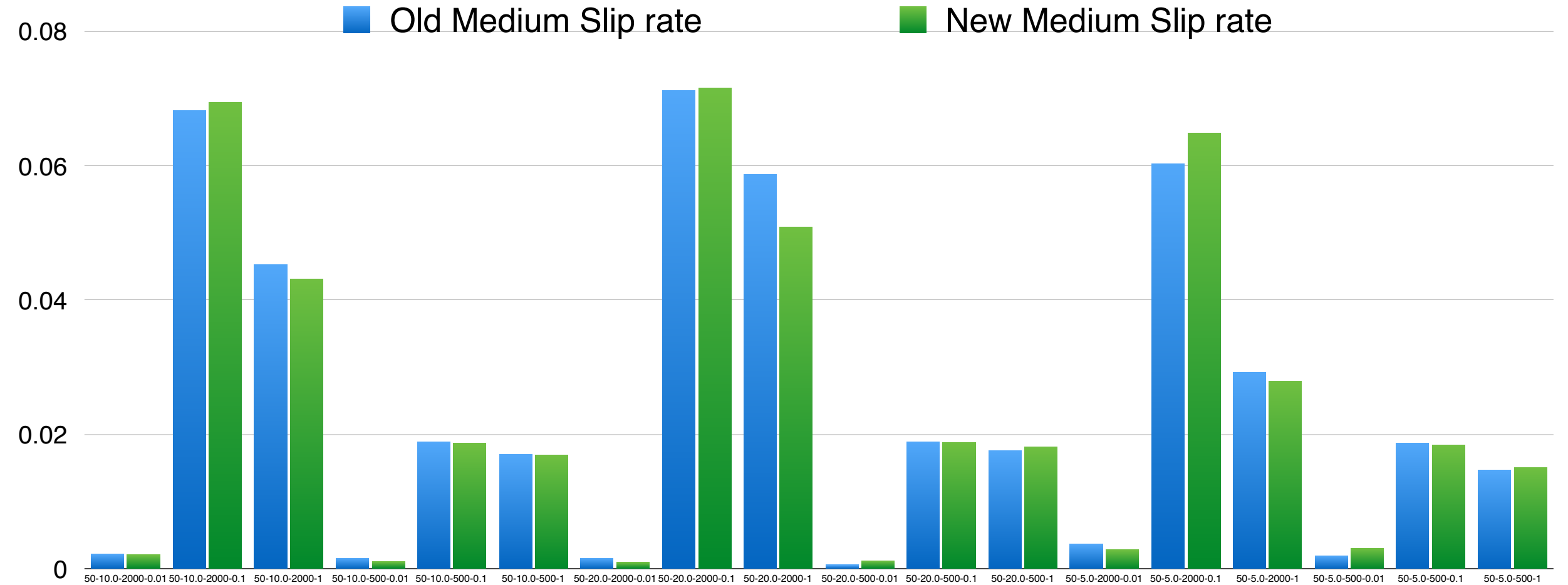
Transactions’ Cancel Ratio: Simulator requires that in every new time slot, the customer has to cancel the old transaction order if it has not been finished. Here we record the cancel ratio.

1. New Bancor Policy vs Old



Cancel Rates all increases, but not to 50%

medium slip: 5%



2. Something Wrong with the old Classic Market's Code

Old

```
Create a market;  
Initialize the SmartToken, Market Pools and Order Stack;  
For seed in [randomseeds]:  
    # simulate customers' coming  
    ...
```

New

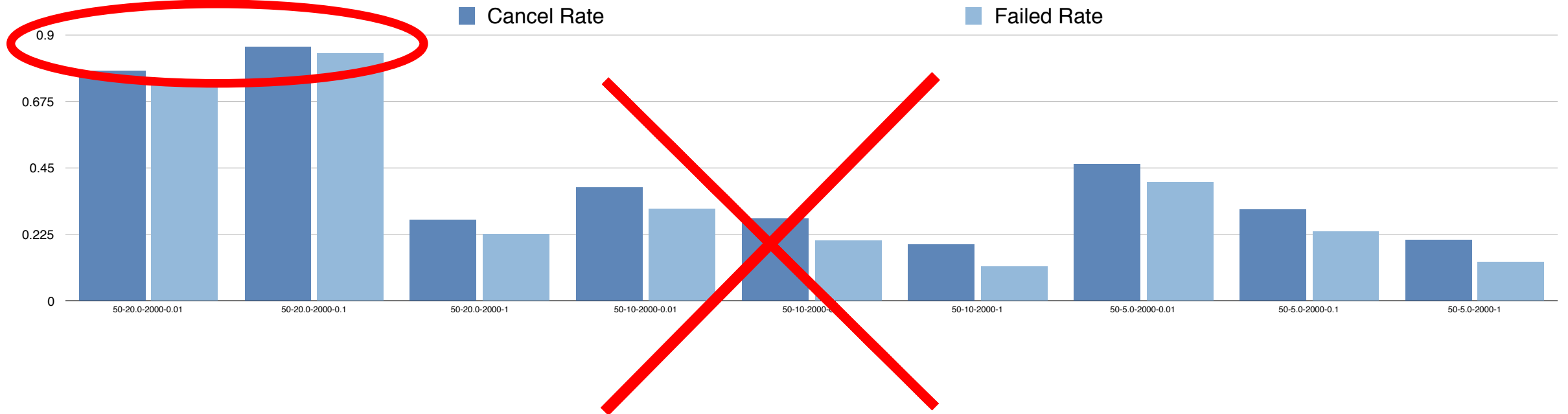
```
For seed in [randomseeds]:  
    Create a market;  
    Initialize the SmartToken, Market Pools and  
    Order Stack;  
    # simulate customers' coming  
    ...
```

The old one is wrong!!

As by old method, at every random seed's turn, the Market's Order Stack is not refreshed. Therefore, orders at the last time step in the Stack will be remained in the beginning of the next random seed's turn.

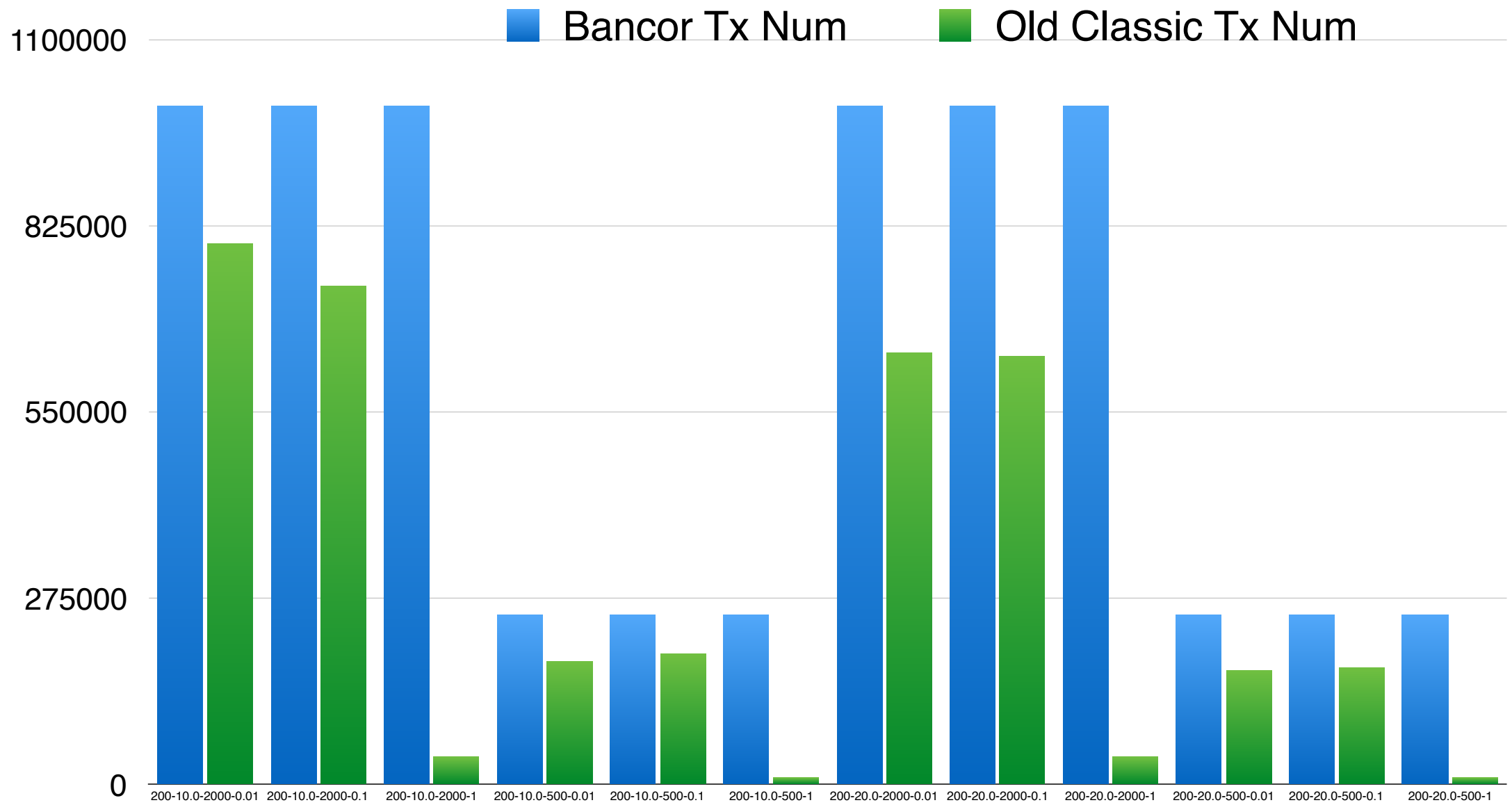
This makes the cancel rate is extremely high under all-in policy's case. As customers are easily to run out their money, there are many transactions unfinished in the market stack are inherited by the next random seed.

Wrong!!!



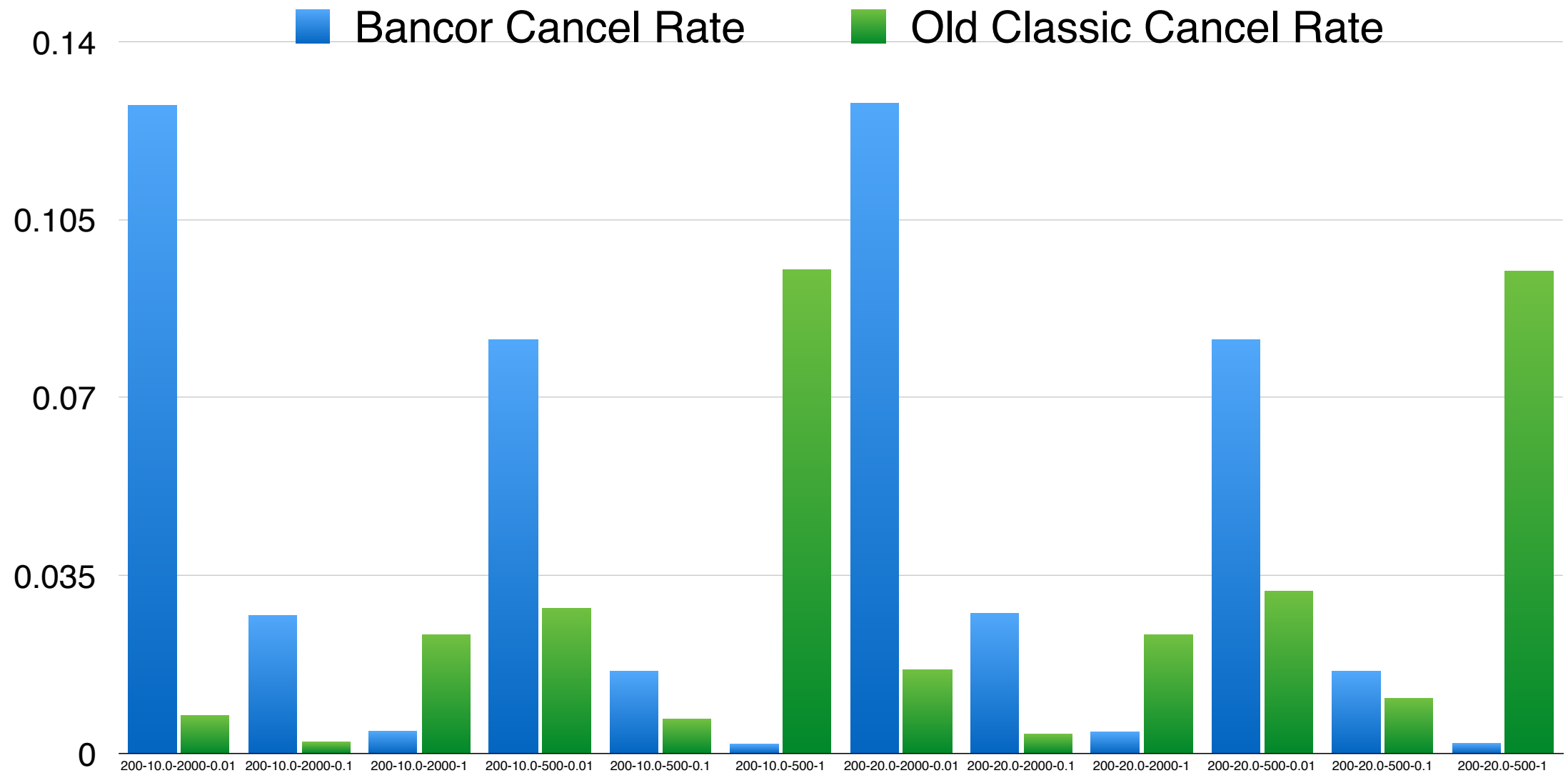
3. New Bancor vs Correct Old Classic

(Customers cancel their unfinished orders and launch new orders in every time step)



Transaction's Number decreases.

Reason: Some customers run out their money and cannot launch orders.



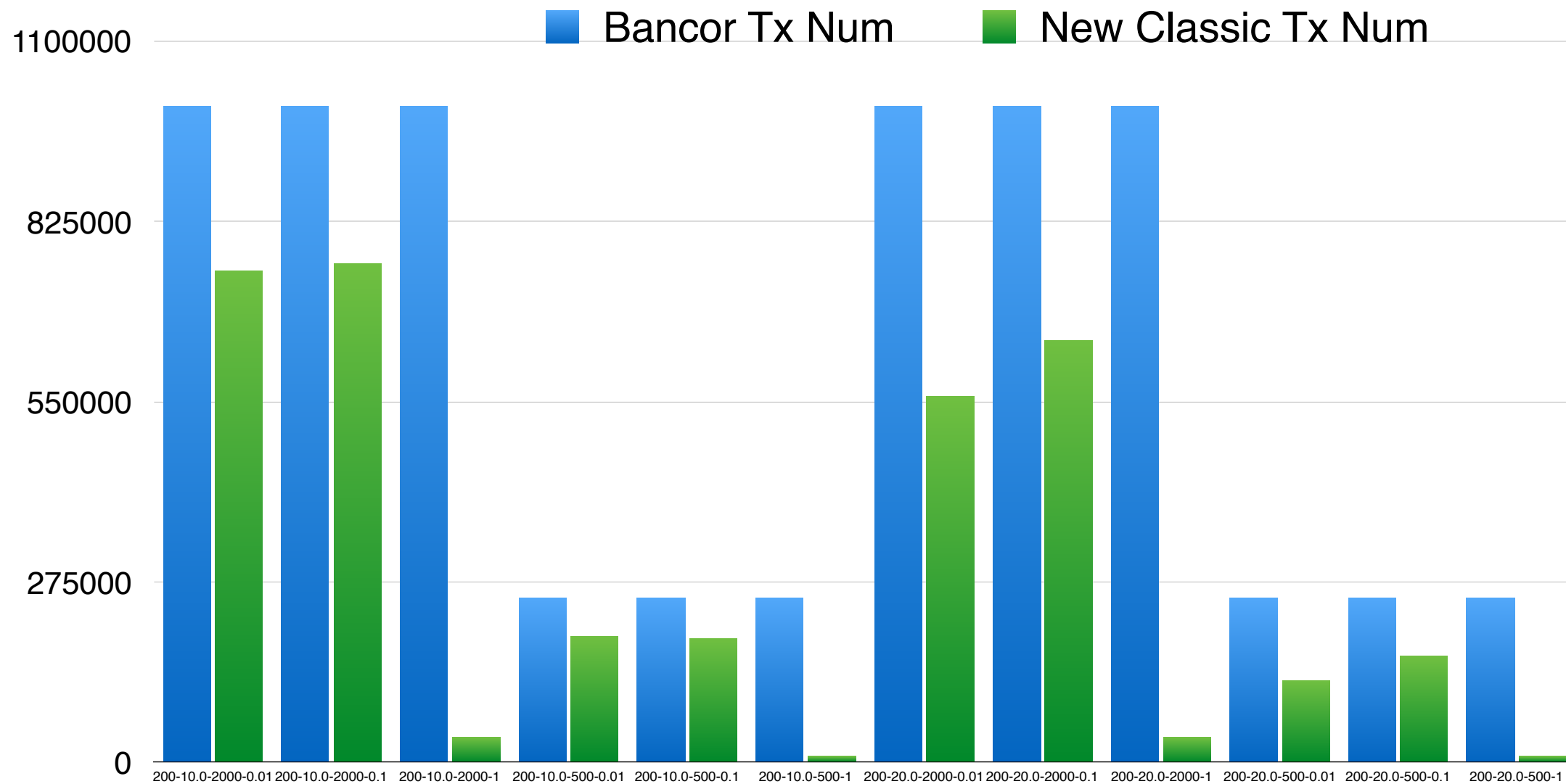
Bancor performs worse at most of the time. “Double coincidence...” might not exist nor be better solved by Bancor

12/18

The last one is the customer number is 500(small), sigma is 1(less closer valuation).

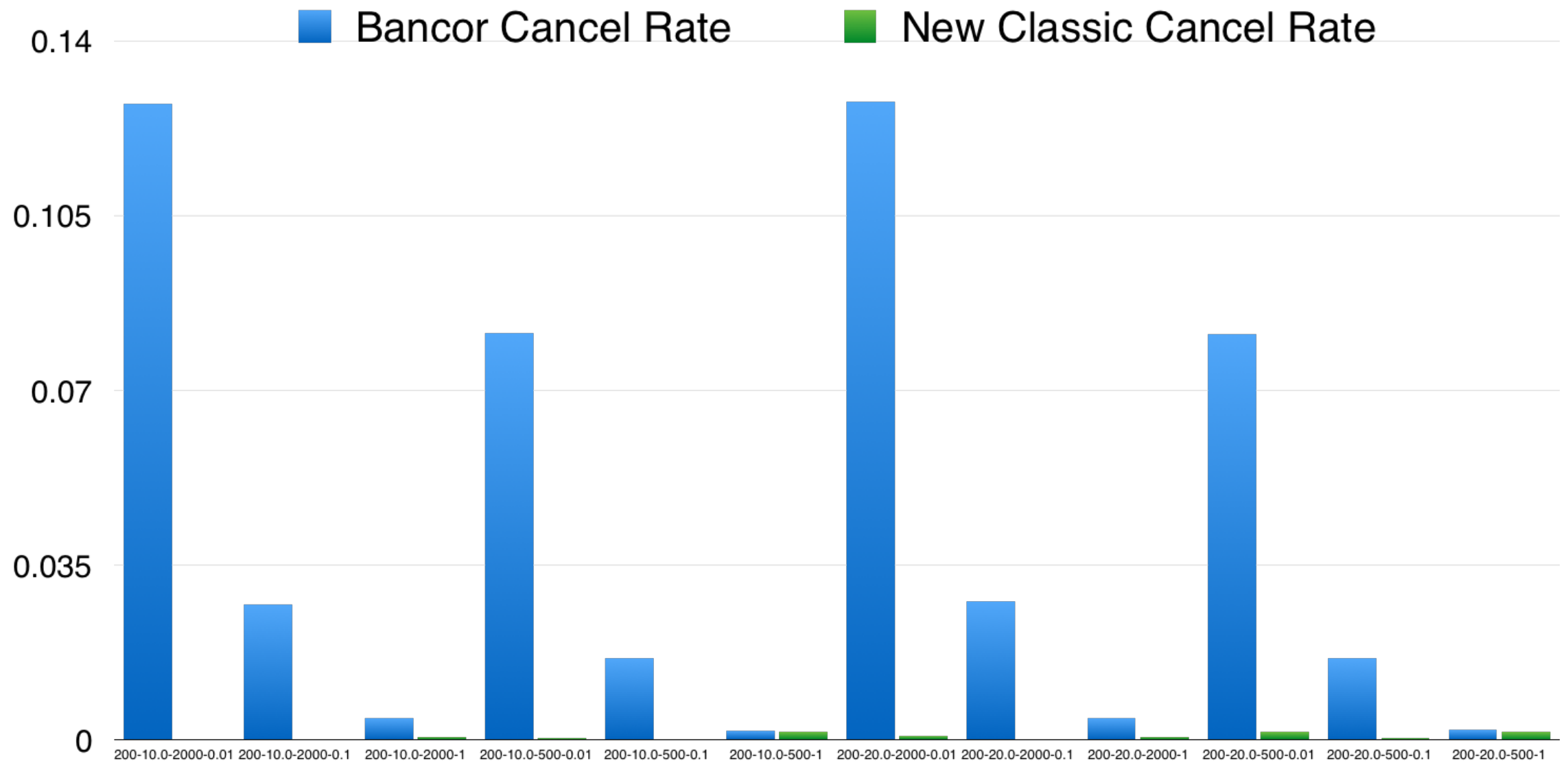
4. New Bancor vs New Classic

(Customers wait for their unfinished orders, even to the end)



Transaction's Number decreases.

Reason: Some customers run out their money and cannot launch orders.

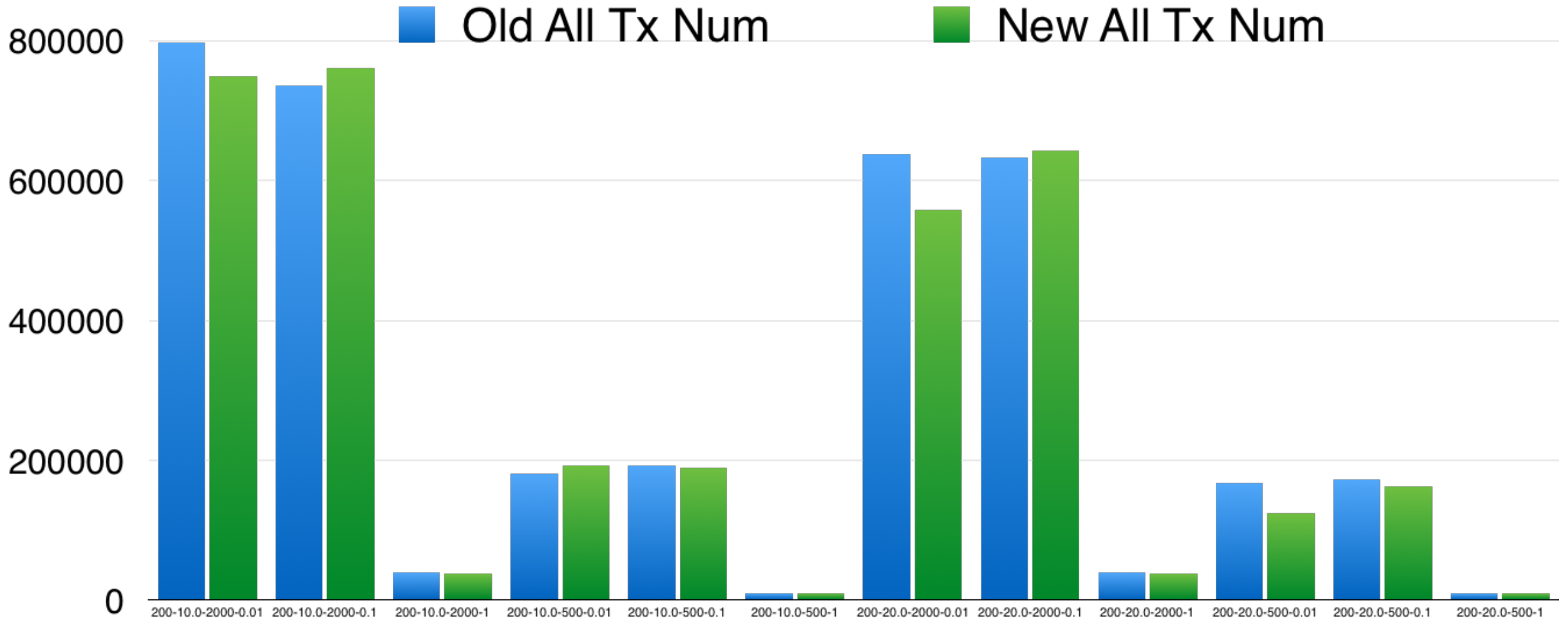


Bancor performs **much** worse all the time!

“Double coincidence...” might not exist nor be better solved by Bancor.

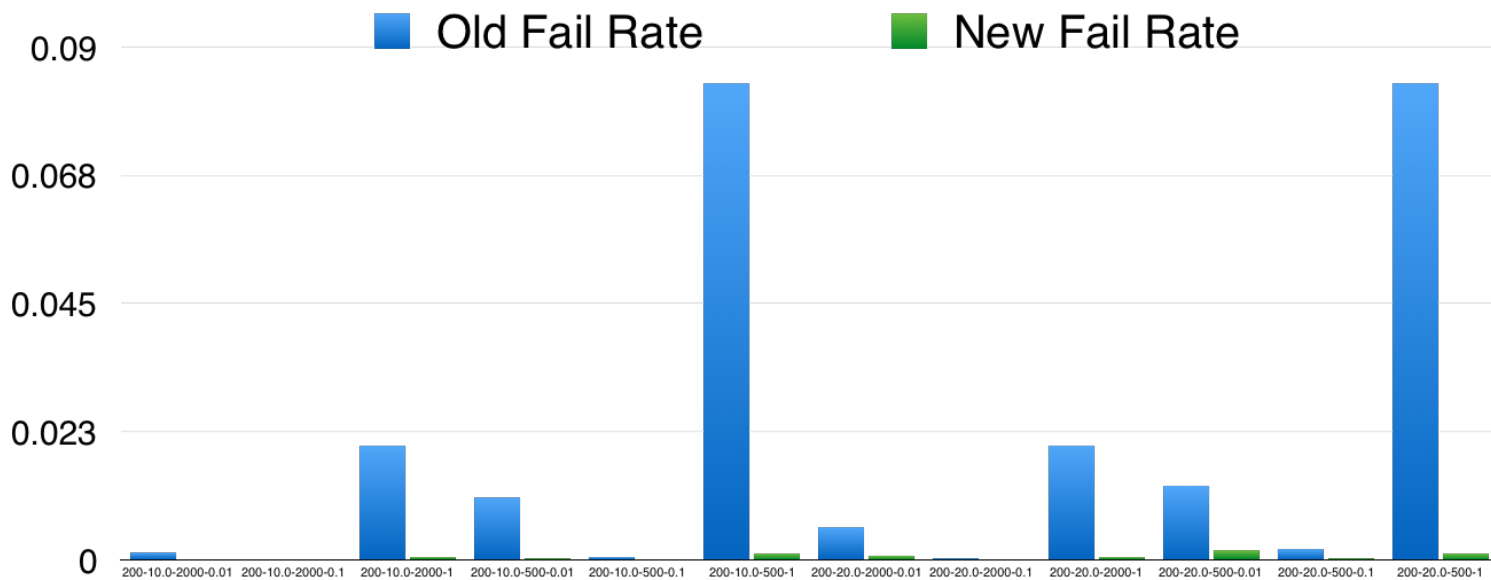
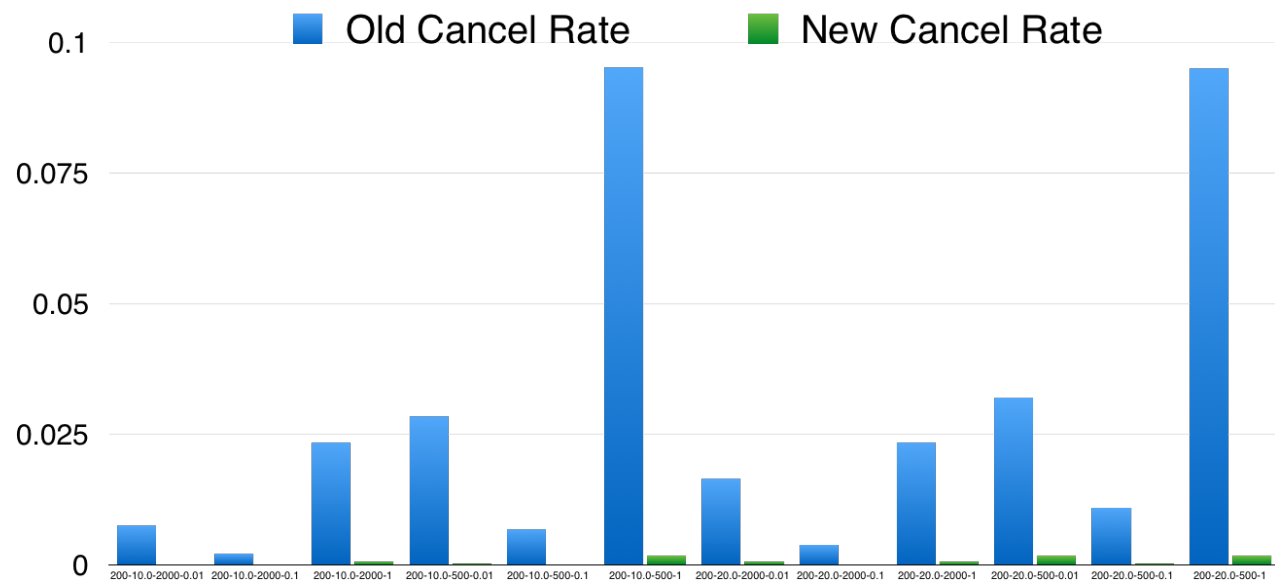
5. Old Classic vs New Classic

(Customers wait for their unfinished orders, even to the end)



We might worry about the decrease of transaction numbers as customers choose to wait.

But the result shows the total transaction number almost the same.



While new policy offers much smaller cancel rate and fail rate of orders.

Bancor is flawed

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Thanks!