殺率控制

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**殺率控制概念**

把全體開獎號碼在各商戶裡面對應該號的殺率分成：

1. 高於目標殺率
2. 低於目標殺率 (但高於0%)
3. 低於0%

(note: A,B,C皆可能為空集合)

1. 當目前殺率盈虧低於目標殺率，找高於目標殺率的群體。
2. 當目前殺率盈虧高於目標殺率，找低於目標殺率的群體 (但仍然選擇殺率大於零的)。

啟動條件：

當日投注總次數>N條(待定) 或 總投注量>M(待定)。

各商戶目標殺率(Target Profit Margin, TPM)從後台輸入。

各商戶目前殺率(Current Profit Margin, CPM)計算方式：

TF: 當日到該期計算點時的總投注(total flow til this moment)

TB: 當日到該期計算點時的總派彩(total bonus til this moment)

TR: 當日到該期計算點時的總返利(total rebate til the moment)

用當日開盤以來到計算點時的總投注(TF)、總派彩(TB)、總返利(TR)，計算目前殺率(TPM)。

殺率啟動條件(對各別商戶)：

當日投注總次數>100條 或 總投注量>10,000

各商戶目標殺率從後台輸入。

各商戶目前殺率計算方式：

用當日開盤以來到計算點時的總投注、總派彩、總返利，計算目前殺率。

平台目前殺率計算方式：

區間分類

|  |
| --- |
| 商戶群的總目前殺率 (Group Profit Margin, GPM)： =  平台全體目前殺率 (Platform Profit Margin, PPM)：  GPM中 群體商戶目前總投注 🡪 平台商戶目前總投注 |

商戶排序方式：

1. 設為特定群組(0~n)的商戶群 > 未設為特定群組的商戶群
2. 各群組內商戶規模(以等價累計總投注量排序) (與3可互換)
3. 目前殺率與目標殺率的偏移大小 (Or 前五最大差距的)
4. Set N交集數最大 (未定) (taking intersection + order by deviation could reach the same effect)

操作順序一：

1. 找尋所有商戶各自區間的交集
2. 找不到交集就增加最後一個商戶的區間範圍 *(Not applicable to ISWP)*
3. 找不到交集就放棄排序最後一個商戶從剩下商戶再跑一次

如果某一商戶運氣不佳，總是被捨棄，可以手動添加到特別群組，使其排序優先於其他商戶。特別群組的數量可大於一(0~total)。

操作順序二(optional)：

1. 找尋所有商戶各自區間的交集
2. 找不到交集就增加最後一個商戶的區間範圍 *(Not applicable to ISWP)*
3. 找不到交集就增加倒數第二個商戶的區間範圍，從新交集再選一次。依次類推。
4. 直到排序最前面的商戶都選取到第二區間為止。
5. 進入操作順序一

針對開獎號碼少的彩種 (快三系列)：

每次拉入做殺率控制的商戶最大數量(N=5)，可設為特殊群組的商戶數量(0~N)。

**殺率控制機制設計**

超弱拉回(super weak pulling-back, ISWP)

計算各別商戶目前殺率與群組目前殺率(特選群組、非特選群組與平台整體)

if 商戶的目前殺率<商戶的目標殺率:

Region (A+B) for this Particular Client.

If 商戶群的目前殺率>商戶的目標殺率+ PO% (PO%預設成5%):

Region (B+ top 50% of C) for this Particular Client.

//C 區只考慮比較小的50%(比較接近0% 的那50%號碼組，並且取floor, 只有1個號碼，比較小的50%=0, 只有3個號碼，比較小的50%=1)

finding intersection of top choices, get Set 1

if Set 1!= ψ:

Random(Set 1)

If Set1==ψ, drop the last one, finding intersection of all remaining ones, get Set 2:

if Set 2!= ψ:

random(Set2)

If Set2==ψ, drop the last one, finding intersection of all remaining ones, get set 3:

if Set3!= ψ:

random(Set3)

If Set3==ψ, drop the last one, finding intersection of all remaining ones, get set 4:

And so on…

If all of the above==ψ

計算特選群組的群組總殺率跟目前殺率，判斷要選取的對應選取區間，get Set S.

Random(Set S)

if Set S==ψ:

random(all)

選取原則摘要：

1. 找對應群組的交集，隨機選交集內元素。
2. 若前為空，就找N-1個商戶。以此類推。
3. 若前為空，就以特選群體為單位，選取區間。
4. 對全域隨機選

Dumped:

if Set 1!= ψ:

random(Set1)

檢查獲得的開獎號碼，是否使本期各玩法超過理論上下界，步驟參考「觸碰邊界時的處理方式」。

If Set1==ψ, adding drop the last one, finding intersection of all remaining ones, get set2:

if Set2!= ψ:

random(Set2)

檢查獲得的開獎號碼，是否使本期各玩法超過理論上下界，步驟參考「觸碰邊界時的處理方式」。

If Set2==ψ, drop the last one, finding intersection of all remaining ones, get set3:

if Set3!= ψ:

random(Set3)

檢查獲得的開獎號碼，是否使本期各玩法超過理論上下界，步驟參考「觸碰邊界時的處理方式」。

If Set3==ψ, drop the last one, finding intersection of all remaining ones, get set4:

And so on…

If all of the above==ψ

Search A for special selection group(all selected customers combined)，get Set S.

Random(top 50% of Set S)

if Set S==ψ:

random(top 50% of ALL)

弱拉回(weak pulling-back, WP)

計算各別商戶目前殺率與群組目前殺率 (特選群組、非特選群組與平台整體)

if 商戶的目前殺率<商戶的目標殺率：

Top Choice: Region (A) for this Particular Client.

2nd Choice: Region (B) for this Particular Client.

If 商戶群的總目前殺率>商戶群的總目標殺率+ PO%(PO%預設成5%)：

Top Choice: Region (B) for this Particular Client.

2nd Choice: (lowest 50% of C) for this Particular Client.

Finding intersection of top choices forming Set 1

if Set 1!= ψ:

Random(Set 1)

If Set1==ψ, adding 2nd choice to the last one, finding intersection, get set 1-1:

if Set1-1!= ψ:

random(Set1-1)

If Set 1-1==ψ, drop the last one, finding intersection of all remaining ones, get Set 2:

if Set 2!= ψ:

random(Set2)

If Set2==ψ, adding 2nd choice to the last one, finding intersection, get set 2-1:

if Set 2-1!= ψ:

random(Set2-1)

If Set2-1==ψ, drop the last one, finding intersection of all remaining ones, get set 3:

if Set3!= ψ:

random(Set3)

If Set3==ψ, drop the last one, finding intersection of all remaining ones, get set 3-1:

And so on…

If all of the above==ψ

計算特選群組的群組總殺率跟目前殺率，判斷要選取的對應選取區間，get Set S.

Random(Set S)

if Set S==ψ:

random(all)

選取原則摘要：

1. 找對應群組的交集，隨機選交集內元素。
2. 找不到交集就增加最後一個商戶的區間範圍。
3. 找不到就放棄最後一個商戶的區間範圍，改為找N-1個商戶。
4. 若前皆為空，就以特選群體為單位，選取區間。
5. 對全域隨機選

商戶處理順序(for IWP)：

Step 1 (set 1)

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 2 (set 1-1)

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 3(set 2)

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 4(Set 2-1)

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| Order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 5 (Set 3)

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 6 (Set 3-1)

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 7 (Set 4)

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 8 (Set 4-1)

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 8.1(Set S’) --- not applied right now

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

step 9 (Set S)

random(color region)

|  |
| --- |
| full |
| Region for selection group |
| all region |

step 10 (final)

random(color region)

|  |
| --- |
| full |
| Region for selection group |
| all region |

商戶處理順序二(for WP)(optional)：

Step 1 (set 1)

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 2 (set 1-1)

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 3(set 2)

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 4(Set 2-1)

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| Order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 5 (Set 3)

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

🡪進入商戶操作順序一

例子：

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 商戶 | C1 | C2 | C3 | C4 | C5 | C6 |
| 目前殺率 | 11% | 12% | 13% | 0% | 3% | 7% |
| 目標殺率 | 10% | 15% | 7% | 3% | 6% | 8% |

特選商戶：C4, C5

殺率拉回商戶群：C2, C4, C5, C6

殺率吐回商戶群：C3

不拉入商戶：C1

商戶規模排序：{C4>C5}>{C1>C2>C3>C6}

找尋Set1 交集：(A4∩A5∩A2∩B3∩A6)

if Set 1!= ψ:

random(Set1)

If Set1==ψ, adding 2nd choice to the last one, finding intersection. Get set1-1:

Set1-1={A4∩A5∩A2∩B3∩(A6+B6)}

if Set1-1!= ψ:

random(Set1-1)

If Set1-1==ψ, drop the last one, finding intersection of all remaining ones. Get set2:

Set2={A4∩A5∩A2∩B3}

if Set2!= ψ:

random(Set2)

If Set2==ψ, adding 2nd choice to the last one, finding intersection. Get set2-1:

Set2-1={A4∩A5∩A2∩(B3+top 50%of C3)}

if Set2-1!= ψ:

random(Set2-1)

If Set2-1==ψ, drop the last one, finding intersection of all remaining ones, get set3:

Set3={A4∩A5∩A2}

if Set3!= ψ:

random(Set3)

If Set3==ψ, adding 2nd choice to the last one, finding intersection. Get set 3-1:

Set 3-1={A4∩A5∩(A2+B2)}

And so on…

If all of the above==ψ

Search A for special selection group(all selected customers combined)，get Set S.

Random(top 50% of Set S)

if Set S==ψ:

random(ALL) (redundant step)

Remark: 前50%的包含50%，意思是如果A裡面只有一個元素滿足條件，那個元素算成是前50%。🡪 Ceil(num/2)

強拉回(strong pulling-back, SP)

計算各別商戶目前殺率與群組目前殺率(特選群組、非特選群組與平台整體)

if 商戶的目前殺率<商戶的目標殺率：

Top Choice: Region (A) for this Particular Client.

2nd Choice: Region (B) for this Particular Client.

If 商戶的目前殺率>商戶的目標殺率+ PO%(PO%預設成5%)：

Top Choice: region (B) for this Particular Client.

2nd Choice: (top 50% of C) for this Particular Client.

finding intersection of top choices forming Set1

if Set 1!= ψ:

Random(top 50% of Set 1)

If Set1==ψ, adding 2nd choice to the last one, finding intersection, get set 1-1:

if Set1-1!= ψ:

random(top 50% of Set1-1)

If Set 1-1==ψ, drop the last one, finding intersection of all remaining ones, get Set 2:

if Set 2!= ψ:

random(top 50% of Set2)

If Set2==ψ, adding 2nd choice to the last one, finding intersection, get set 2-1:

if Set 2-1!= ψ:

random(top 50% of Set2-1)

If Set2-1==ψ, drop the last one, finding intersection of all remaining ones, get set 3:

if Set3!= ψ:

random(top 50% of Set3)

If Set3==ψ, drop the last one, finding intersection of all remaining ones, get set 3-1:

And so on…

If all of the above==ψ

計算特選群組的群組總殺率跟目前殺率，判斷要選取的對應選取區間，get Set S.

Random (top 50% of Set S)

if Set S==ψ:

random(all)

選取原則摘要：

1. 找對應群組的交集，隨機選交集內元素前50%。
2. 找不到交集就增加最後一個商戶的區間範圍。
3. 找不到就放棄最後一個商戶的區間範圍，改為找N-1個商戶。
4. 若前皆為空，就以特選群體為單位，選取區間前50%。
5. 對全域隨機選

商戶處理順序(for SP)：

Step 1 (set 1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 2 (set 1-1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 3(set 2)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 4(Set 2-1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 5 (Set 3)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 6 (Set 3-1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 7 (Set 4)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 8 (Set 4-1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 8.1(Set S’)--- not applied right now

random(color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

step 9 (Set S)

random(top 50% of color region)

|  |
| --- |
| full |
| Region for selection group |
| all region |

step 10 (final)

random(color region)

|  |
| --- |
| full |
| Region for selection group |
| all region |

弱均勻拉回(weak uniform pulling-back, WUP)

計算各別商戶目前殺率(特選群組, 前五大規模商戶, 前五大殺率差距大的商戶)

if 商戶的目前殺率<商戶的目標殺率：

Top Choice: Region (A) for this Particular Client.

2nd Choice: Region (B) for this Particular Client.

If 商戶的目前殺率>商戶的目標殺率+ PO%(PO%預設成5%)：

Top Choice: region (B) for this Particular Client.

2nd Choice: (top 50% of C) for this Particular Client.

特選群組的拉回邏輯同前面幾種(超弱、弱、強拉回)，唯忽略剩餘商戶，只針對剩餘商戶的 處理。

在所有選取到的交集的號碼中，選擇deviation 最小的50%。

同樣總偏移的號碼中，每個商戶都距離目標殺率較近的SQ of Deviation 比較小

|  |  |  |  |
| --- | --- | --- | --- |
|  | 非特選商戶一 | 非特選商戶二 | 非特選商戶三 |
| 目前 | 12% | 3% | 9% |
| 目標 | 5% | 12% | 2% |
| 差距 | 7% | -9% | 7% |

Total absolute deviation= 23%, square of deviation=1.79%

|  |  |  |  |
| --- | --- | --- | --- |
|  | 非特選商戶一 | 非特選商戶二 | 非特選商戶三 |
| 目前 | 5.5% | -10% | 2.5% |
| 目標 | 5% | 12% | 2% |
| 差距 | 0.5% | -22% | 0.5% |

Total absolute deviation=23%, square of deviation=4.845%

So the first one is more likely to be chosen than the 2nd one in smallest 50% filter.

商戶處理順序(for WUP)：

Step 1 (set 1)

random(color region combined)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| in selection-order1 | in selection-order2 | in selection-order3 | in selection-order4 | nonorder client | nonorder client | nonorder client | nonorder client |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 | With Smallest 50% of  M={selected group} | | | |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 1-1 (set 1-1)

random(color region combined)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| in selection-order1 | in selection-order2 | in selection-order3 | in selection-order4 | nonorder client | nonorder client | nonorder client | nonorder client |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 | With Smallest 50% of  M={selected group} | | | |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 2 (set 2)

random(color region combined)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| in selection-order1 | in selection-order2 | in selection-order3 | nonorder client | nonorder client | nonorder client | nonorder client | nonorder client |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | With Smallest 50% of  M={selected group} | | | | |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 |

Step 3 (set 3)

random(color region combined)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| in selection-order1 | in selection-order2 | nonorder client | nonorder client | nonorder client | nonorder client | nonorder client | nonorder client |
| Top Choice Region, A1 | Top Choice Region, A2 | With Smallest 50% of  M={selected group} | | | | | |
| 2nd choice region, B1 | 2nd choice region, B2 |

Step 4 (set 4)

random(color region combined)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| in selection-order1 | nonorder client | nonorder client | nonorder client | nonorder client | nonorder client | nonorder client | nonorder client |
| Top Choice Region, A1 | With Smallest 50% of  M={selected group} | | | | | | |
| 2nd choice region, B1 |

均勻拉回(uniform pulling-back, UP)

計算某一開獎號碼在各商戶目前殺率與目標殺率的偏移量的平方並加總：

將商戶規模考慮進去則上式：

排序所有 (對快三而言，有56種結果) 或

Random (top 30% of)

商戶處理順序(for UP)：

Step 1 (set 1)

random(color region combined)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| nonorder client | nonorder client | nonorder client | nonorder client | nonorder client | nonorder client | nonorder client | nonorder client |
| With Smallest 30% of  M={selected group} | | | | | | | |

對選定玩家進行殺率控制(control over particular players, COPP)

將玩家當成一商戶，排序在所有商戶最後，計算其本期(1)

(控制殺率，待後台設定，預設0%~100%)

where q: 當日玩家到計算點時候的總派彩, p: 當日該玩家到計算點時候的總投注。對應的所有號碼組，設為Region K。

(選取方式)

General method(考慮所有商戶排序): 將一連串商戶與玩家群取交集，取不到就放棄最後一個商戶，玩家群依然跟隨剩下的商戶群，當只剩下最後一個商戶，仍然取不到交集，就放棄玩家群，只處理最後一個商戶。

商戶處理順序1(e.g. SP+COPP 強拉回+殺玩家)：

Step 1 (set 1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

Step 2 (set 1-1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

Step 3(set 2)

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 4(Set 2-1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

Step 5 (Set 3)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

Step 6 (Set 3-1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

Step 7 (Set 4)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

Step 8 (Set 4-1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

Step 8 (Set 4-1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

step 9 (Set S)

random(top 50% of color region)

|  |
| --- |
| full |
| Region for selection group |
| all region |

step 10 (final)

random(color region)

|  |
| --- |
| full |
| Region for selection group |
| all region |

method of protecting selective clients(保護特選商戶): 將一連串商戶與玩家取交集，取不到就放棄最後一個商戶，但是玩家群依然跟隨剩下的商戶群，當只剩下特選商戶群，仍然取不到就放棄玩家群，只處理特選商戶群。

商戶處理順序2(e.g. SP+COPP 強拉回+殺玩家)：

Step 1 (set 1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

Step 2 (set 1-1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

Step 3(set 2)

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 4(Set 2-1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

Step 5 (Set 3)

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

Step 6 (Set 3-1)

random(top 50% of color region)

|  |  |  |  |
| --- | --- | --- | --- |
| order1 | order2 | order3 | order4 |
| Top Choice Region, A1 | Top Choice Region, A2 | Top Choice Region, A3 | Top Choice Region, B4 |
| 2nd choice region, B1 | 2nd choice region, B2 | 2nd choice region, B3 | 2nd choice region, Top 50% of C4 |

|  |  |  |
| --- | --- | --- |
| player1 | player2 | player3 |
| K1 | K2 | K3 |

跟特選群組選不到交集就放棄玩家群，只管特選群組

Step 7 (Set 4)

random(top 50% of color region)

|  |  |
| --- | --- |
| order1 | order2 |
| Top Choice Region, A1 | Top Choice Region, A2 |
| 2nd choice region, B1 | 2nd choice region, B2 |

Step 8 (Set 4-1)

random(top 50% of color region)

|  |  |
| --- | --- |
| order1 | order2 |
| Top Choice Region, A1 | Top Choice Region, A2 |
| 2nd choice region, B1 | 2nd choice region, B2 |

Step 8 (Set 5)

random(top 50% of color region)

|  |  |
| --- | --- |
| order1 | order2 |
| Top Choice Region, A1 | Top Choice Region, A2 |
| 2nd choice region, B1 | 2nd choice region, B2 |

Step 8 (Set 5-1)

random(top 50% of color region)

|  |  |
| --- | --- |
| order1 | order2 |
| Top Choice Region, A1 | Top Choice Region, A2 |
| 2nd choice region, B1 | 2nd choice region, B2 |

觸碰邊界時的處理方式

|  |
| --- |
| 觸碰邊界時的處理方式(開號驗證機制)：  觸發時機：  每次選取號碼，驗證發現號碼超過理論邊界。(暫時設定只要驗證大小單雙其中一個)  選擇方式：  排除此號碼組，在剩下的號碼組裡面隨機選。如果避開動作次數超過3次，驗證後仍然超過理論上下界，選取手上拿到的該號碼組，若強迫選取次數在本期內發生超過上限(此數值會累計，意即避開過一次，會算到下次的quota裡面)，此時再碰到需要強迫選取🡪跳到下一階段。  排除號碼組之後使得選取集合變成空集合🡪 跳到下一階段。  強迫取代上限次數：ceiling[歸零周期內開獎總次數/100]。 |

以分分快為例，本次避開動作超過3次，若此時選取號碼仍然超過理論上下界，選取該號碼組。若此歸零周期內已經有強迫選取過到達ceiling[1440/100]=15次，則跳到該殺率控制流程的下一階段。

以安徽快三為例，本次避開動作3次，若此次選取號碼仍然超過理論上限，選取該號碼組。若此歸零周期內已經有強迫選取到達ceiling[78/100]=1次，則跳到殺率控制流程的下一階段。

以時時彩為例，本次避開動作1次，若此次選取號碼仍然超過理論上限，排除該號碼組在集合內重新選取。若避開動作已經3次，此號碼仍然超過理論上限，並且在此歸零周期內已經有強迫選取到達ceiling[228/100]=3次，則跳到殺率控制流程的下一階段。

商戶規模排序方式：

E.g. order by magnitude

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Client1 | Client2 | Client3 | Client4 | Client5 | Client6 |
| magnitude | 547221.2 | 554938.7 | 134769.8 | 68037 | 613752.1 | 310131.6 |
| order | 3 | 2 | 5 | 6 | 1 | 4 |

商戶等價規模計算方式

對所有注數進行統計，計算出平均每注投注額(ave)，將每注分成大注(B)跟小注(S)。大注的判定方式：

B>10\*ave

當條件滿足，可能的候選條件： (大注投注額總和 > 小注投注額總和)、(大注投注額總和>全體51%)、 (大注投注額總和>全體20%)

大注佔據絕對優勢，將大注的投注量rescale 到平均投注量，以此計算該商戶的總投注量。

E.g. order by equivalent magnitude

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Client1 | Client2 | Client3 | Client4 | Client5 | Client6 |
| magnitude | 47221, | 54938, | 34769, | 68037, | 13752, | 10131 |
| equivalent magnitude | 23610.5, | 30215.9, | 20861.4, | 44224.05, | 9626.4, | 7598.25 |
| order | 4 | 3 | 2 | 1 | 5 | 6 |

目標殺率與目前殺率差距排序方式

E.g. Order by difference (given 目前殺率>目標殺率+5%啟動)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Client1 | Client2 | Client3 | Client4 | Client5 | Client6 |
| target | 8.354 | 2.259 | 25.858 | 0.671 | 26.746 | 14.391 |
| current | 26.714 | 28.29 | 28.325 | 0.812 | 12.319 | 6.76 |
| differences | 18.360 | 26.030 | 2.467 | 0.140 | -14.427 | -7.631 |
| order | 2 | 1 | not in | not in | 3 | 4 |

**避免殺率控制機制被過度引導的處理方式**

狀況：

1. 人數少 < 數量N ( n 可設為3, or 5 待定)
2. 場內有(相對其他玩家投注額x10 以上的) 巨型玩家 數量C
3. 多人同步行為 (同步化行為) 數量  (全體玩家N) (i同步化的群組個數，每個群組內部多個玩家本局派彩金額相同)

Quick Method:

每期殺率開啟取得號碼之後，用(下拉選單) 25%, 50%, 75%, 100% 機率採用，(對應下拉選單不顯示的數值) 75%, 50%, 25%, 0% 機率不採用殺率控制機制的獎號(放給隨機開號)。

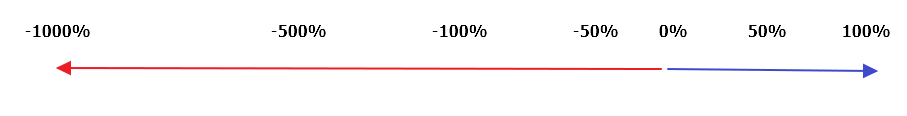
Complex Method:

For condition 1 使用殺率的機率：

For condition 2 使用殺率的機率：

For condition 3 使用殺率的機率：

**避免過度吐回採用的判斷機制**



當拿到一選擇後的號碼

對於任一殺率控制內需要吐的商戶(有在此期殺率控制區域內被選到的)：

1. 開出號碼對應派彩>目前盈餘=(該商戶目前殺率-該商戶目標殺率)\*該商戶今日累計到目前為止總投注量  
   1. 再要一次號碼，第二次仍滿足1，回歸自然機率

對於所有殺率控制內的商戶(有在此期殺率控制區域內被選到的)：

1. 開出號碼對應派彩<目前盈餘=(該商戶目前殺率-該商戶目標殺率)\*該商戶今日累計到目前為止總投注量

2.1 開出該號碼

【有在此期殺率控制區域內被選到的商戶】

此期殺率開啟的商戶：C1, C2, C3, C4, C5

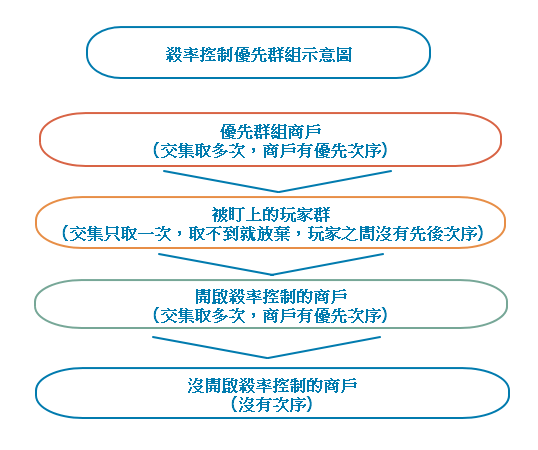
殺率控制開啟後，找到號碼在計算上所包含的商戶：C1(吐), C2(吐), C3(殺)

吐的商戶中當C1, C2 任一商戶

開出號碼滿足1，就從pool裡面再叫一次號碼，仍然滿足1，就自然機率開獎

當C1, C2全體商戶都滿足2，就使用該號碼。

**殺率控制優先次序圖**



**殺率控制流程圖**

