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Introduction

There is only one legal way to win at a roulette in a casino in the long term - to detect a biased-wheel roulette by analyzing of recorded spins and to play at it.

The Statistical Roulette Analyzer (SRA) is a professional program that can detect a biased roulette wheel (European or American), calculates near optimal bet at the wheel and its results. The program can do more: at any given moment a user can place his own bet at the wheel, the program calculates its results according to its current knowledge of the wheel.

The program is supported by the author’s big practical experience (over 10 years) and works of known persons of science: Dirichlet, de Moivre, Bayes, Pearson, Taylor, Schlesinger, Kelly, Klotz.

If a wheel is biased, for chosen conditions of spins (point 2 "IMPORTANT"), the program automatically proposes 2 ways of betting (for American and European roulette):
- “simple bet” - bets are the same for some or all winning numbers of the biased wheel (if such a bet exists)
- “suggested bet” - near optimal bets on the numbers of the biased wheel

“Suggested bet” is more effective than “simple bet”, but playing “simple bet” is simpler and faster. The third option is "your bet". It is discussed in detail in point 3 (MESSAGES).

For detection of a biased wheel a test is used with 0.995 confidence level.

Author of the program has been using the program about 10 years.

1. Comparison of a card counting blackjack game and a biased-wheel roulette game.

The most popular game in the world where a player can beat a casino is blackjack. Thanks to card counting (shoe game) a typical player’s advantage is in the range of 1% - 3% (TBA - total bet advantage). TBA of a biased-wheel roulette is in the range of 5% - 15%. But TBA is not a good parameter for the comparison of the value of different games. The product of SCORE (explained in point 3) and game speed (usually the number of games per one hour) provides an absolute comparison of the value of different games.

A very good value of SCORE for a card counting blackjack is 150. A typical value of SCORE for a biased-wheel roulette is 3000. As the game speed of blackjack is about 5 times higher than the game speed of roulette, the result of the comparison is clear: a biased-wheel roulette game is valuable than a card counting blackjack game by 400% (4 times). In practice it means this: you can win 4 times more money with the same bankroll, the same risk of ruin and during the same time.
Calculations are valid for not separated two directions of rotation of a rotor of a roulette wheel.

A BIASED-WHEEL ROULETTE GAME IS THE MOST PROFITABLE GAME YOU CAN EVER MEET IN CASINOS.

2. The selection of wheels and recording the spin results.

I am sure you know what a biased roulette wheel is, there is so much information about it on the Internet. Therefore I only want to advise you on how to choose wheels pragmatically and how to easily record their spin results and inputting them into the program, at home.

Generally speaking, there are no ideal wheels, every one of them has some defects, but it’s important to find a wheel having the defects that allow winning. The best wheels are those used for many years that are a bit worn on the outside and have ball impact tracks on the inside. One can also select a wheel that has been used for at least 4 – 5 years. More attractive are wheels with the lowest betting limits because they are used most often. It concerns automatic roulettes as well.

Try to record the spin results in a manner as unsuspicious as possible, for example, playing at the wheel with lowest limits, betting on corner or six line bets. Because your recording of spins on a wheel (or several wheels) may take a month or more I want to show you a very useful way to do it. In all casinos you can find sheets of paper with a roulette wheel drawing laying on the roulette table.

![Picture 1](image)

Picture 1

Picture 1 shows how to use the drawing to record the spin results. The dots distributed radially away from the numbers mean how many times the ball has run into the corresponding pocket on the wheel for chosen conditions of spins (point 2 "IMPORTANT"). It allows inputting the spin results directly into the program, at home.

Most casinos use two kinds of balls: small and big ones.
IMPORTANT: 1. RECORD THE SPIN RESULTS SEPARATELY FOR A SMALL AND BIG BALL OR ONLY FOR A SMALL ONE. A SMALL BALL CAN DETECT A BIASED WHEEL MORE EFFECTIVE.
2. IF YOU WANT, YOU CAN RECORD THE SPIN RESULTS SEPARATELY FOR DIRECTIONS OF THE ROTOR ROTATION AND ANALYSE THEM SEPARATELY AND AS THE SUM.
3. IF SPEED ROTATION OF THE ROTOR IS UNTYPICAL HIGH DO NOT RECORD THE SPIN RESULTS AND DO NOT PLAY WHEN THE WHEEL IS BIASED.
4. NOTE CHARACTERISTIC SIGNS OF THE WHEELS TO RECOGNIZE THEM ALWAYS.

3. Explanation of the terms and messages.

TERMS
Total bet advantage (TBA):

A part of total bets placed winning, on average, in one spin.

SCORE:
The SCORE (Standardized Comparison of Risk and Expectation) was defined for the first time for blackjack purposes by Don Schlesinger in his book “Blackjack Attack II”. SCORE is equal to square TBA divided by variance and multiplied by 1 million. It is the most important parameter of a game. The product of SCORE and game speed provides a comparison of the value of different games (see point 1). More practically: SCORE says how much money you can win on average in 100 games with a 10 000 bankroll and placing a total bet using the Kelly criterion.
The author of the program has deduced and applied a correct expression for the Kelly criterion (in place variance) for a biased roulette wheel.

Risk of ruin (ror):

\[
ror = \exp \left( \frac{-2 \ast (TBA) \ast BR}{\text{corr.express.} \ast \text{total bet}} \right)
\]

Never surpass 2% value of the risk of ruin for "your bet". A roulette wheel is not such a perfect device for playing as, e.g. cards. The game results are influenced by air humidity, temperature and pressure, therefore the maximum bet in the program is 0.5 Kelly criterion (asymptotic) for "simple bet" and "suggested bet". Bets proposed in the program are effective and save.

Average win per 100 spins:

Product of TBA, total bet and 100.
Average standard deviation per 1 spin:

Product of the square root of variance and total bet.

Average standard deviation per 100 spins:

10 times average standard deviation per 1 spin

Total bet:

The sum of all bets on the roulette numbers.

Bankroll (BR):

Money for playing.

MESSAGES

“Too small number of spins”

Total number of recorded spins is smaller than 200 for chosen conditions of spins (point 2 "IMPORTANT"), the program can not test the wheel. The wheel is unknown. Each "your bet" option assumes equal probability and an equal non-zero variance for all numbers of the wheel (Dirichlet distribution).

“The wheel is not biased”

Total number of recorded spins is higher than 200 for chosen conditions of spins (point 2 "IMPORTANT"). The test does not show sufficient damage of the wheel. There is some knowledge of the wheel. Each "your bet" option assumes, for simplification, equal probability and zero variance for all numbers of the wheel.

“The wheel is biased”

The test indicates sufficient damage to the wheel for chosen conditions of spins (point 2 "IMPORTANT"). Some "simple bet" and “suggested bet” options appear and their results. Input your own “your bet”, calculate its proper results, go to the casino, play and win (see point 3 - TERMS, point 4 and 5).

“The wheel is not biased, further recording of spins is pointless, but you can do it if you want”

Number of recorded spins is more than 6000 for chosen conditions of spins (point 2 "IMPORTANT"), the probability of the wheel being sufficiently biased is small.
“Statistical error of TBA is too big”

Applies to “your bet” when "The wheel is biased". If the statistical error of TBA is too big in this bet, its results, for simplification, are calculated in the same way as in the case of "The wheel is not biased".

4. Instruction manual of the program

**IMPORTANT:** The program can be used only when the pendrive containing it is plugged into the computer. The program starts analyzing the wheel when the sum of recorded spins exceeds 200 for chosen conditions of spins (point 2 "IMPORTANT").

The program has two pages("gallery"). There are roulette wheels on which the spin results are recorded on the first page, along with their description and chosen conditions of spins (point 2 "IMPORTANT"). There are two types of roulettes: European and American.

It is possible to select a language in the program, as well as use the "help" option. After clicking the right mouse button on this page, three options appear: create new wheel, cancel selected wheel or go to the other page of the program, the selected wheel page("gallery"). In the upper part of the page messages appear related to the state of knowledge about the wheel (described in point 3: MESSAGES). The bankroll is described in point 3: TERMS. Input of the "bankroll" value is the condition for calculation of any primary statistics. “Suggested bet” and “simple bet” options are described in Introduction and their primary statistics in point 3. The meaning of the remaining terms is included in "Information":

- "Summary" - it is the sum of all recorded spins and, in the same row, the sum of spins recorded on all the wheel's numbers for chosen conditions of spins (point 2 "IMPORTANT")
- "Wheel" - numbers of the roulette wheel (European or American) in their wheel sequence

The basic task of the program user is inputting into the program the spin results of wheels recorded in a casino for chosen conditions of spins (point 2 "IMPORTANT"). The "History" tab on the wheel page is meant for this purpose. Click the right mouse button in this place and select the "new data series" option. A new bar appears in the "History" tab containing the current number of data series and date. Write down the data from the new series of spins under the corresponding numbers of the roulette wheel. After inputting the new data confirm with Enter and click "recount" with the left mouse button. The program adds the new data series to the data on the "Summary" bar, analyzes the wheel and displays a proper message. If the wheel is biased, the program displays the suggested and simple bet and their primary statistics.

Your bet option is described in point 3 (MESSAGES). Execution of the “your bet” option consists in entering proper values into "your bet" bar under wheel numbers and clicking “recount”. The program then displays the primary statistics for this bet.

Using the "your bet" option is possible at any time of using the program.
5. The game at the biased-wheel roulette.

If the wheel is biased for chosen conditions of spins (point 2 "IMPORTANT") the program calculates "simple bet" and "suggested bet". A user can project his own bet - "your bet" (point 4). Risk of ruin of this bet should not be bigger than 2% (point 3 - TERMS). Because the computer with the program must be out of casinos, a user has to write down or remember the chosen bet. Before the game a user makes sure the wheel is not exchange and the dealer uses the same size of ball as during recording the spin results.

**THE GAME AT THE BIASED - WHEEL ROULETTE RELIES ON, IN EACH SPIN OF CHOSEN CONDITIONS ( point 2 "IMPORTANT"), APPLICATION BET CHOSEN IN THE PROGRAM, AT HOME.**

Maximum number of spins during one stay (one session) played should not be bigger than 20% of sum of recorded spins of chosen conditions till the moment beginning of the game. For example: if sum of recorded spins with a small ball and clockwise rotation of rotor equal 1635 ("Summary") maximum number of spins should not be bigger than nearly 330 during one session.

During the game at the biased-wheel roulette do not break record the spin results and input them into the program, at home. More recorded spins - more information about the wheel.

IMPORTANT: Computer with the program is always out of casinos.

DO NOT WIN TOO MUCH IN ONE SESSION BECAUSE THE CASINO CAN EXCHANGE THE BIASED - WHEEL QUICKLY.

Played through can happen (standard deviation), but balance must be positive in a longer time.

6. Instruction: program installation

- put the pendrive containing the program into the USB socket
- doubleclick "my computer" with the left mouse button
- doubleclick "removable disk" with the left mouse button
- click "menu" with the right mouse button
- click "copy" in "menu" with the right button
- click any place of the desktop with the right mouse button to open "menu"
- click "paste" with the left button
- doubleclick the copied file with the left button - a folder will appear with the program ready for use