

The Battle Over Free Play

When marketers, accountants, vice presidents and general managers ask exactly how much free play costs

By Eliot Jacobson, Ph.D.



After I gave a talk on the mathematics of promotions at a recent Raving Consulting conference, I expected at least a few questions related to my talk. What happened instead is that person after person came up asking me to settle an internal dispute about the cost of free play. At the time, I had no idea that a war was

being waged, and suddenly I was in the middle of the battlefield, being recruited by both sides.

Free play is usually given as a marketing incentive with the purpose of generating an extra visit to a casino. Its use is exactly as it sounds – the player is given a certain amount of funny money that must be played through a slot or video poker game at least once before it can be redeemed. Ordinarily, the amount of free play a player is given depends on things like the player's average daily theoretical and demographics. Unlike other marketing costs, however, the cost of free play has never been fully quantified.

On one side of the battle, they explained, the answer was that the cost of free play was just the free play minus the hold on that free play. So, \$100 in free play on a 5% hold slot costs \$95. And I agreed; that was absolutely the cost for a hit-and-run player. For the other side, free play is free – after all, the casino eventually gets all of the money back. To them, \$100 of free play costs nothing. And I agreed; they play long enough and you always get their money.

After the conference ended, I started thinking carefully about the question. After about three hours of contem-

plation, I decided to write an article. I even had a title for that article, "The Real Cost of Free Play." What a great title! The problem was that after the first few introductory paragraphs, I ran out of things to say and gave up. It was a much tougher problem than I had originally thought.

A few weeks later, when my January 2011 issue of *Casino Enterprise Management* Magazine arrived, I was surprised and delighted to find the article, "The Real Cost of Free Play" (RCFP) by Dr. Bernard Malamud and Jeff Jordan. Hey, that's my title! I read the article once, then again. I devoured it. It was the real deal. It covered everything.

The next time I was asked about the cost of free play, I had the RCFP data and results in mind. I quoted numbers, facts, trends, and reasons. Then I pointed the questioner to the article so that they could get more information. And that's what I said to the next person, and the next after that. But I got a nagging feeling that this wasn't enough. What marketers, accountants, vice presidents and general managers wanted to know was exactly how much free play costs. They wanted an answer they could use.



To get the real cost of free play, a lot of things matter. You need to know the machine the person is going to play. More than just the name of the machine, you need to know the math of the machine – the insider stuff, the house edge, its variance, the pays and their frequencies. You need the bankroll of the player and the amount of free play relative to their bankroll.

Finally you need to know what it will take for the player to stop playing.

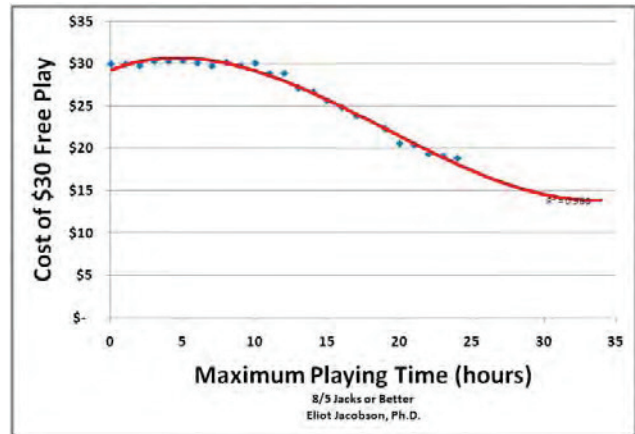
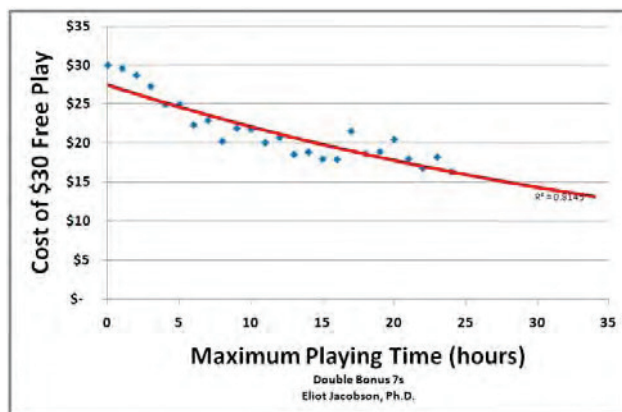
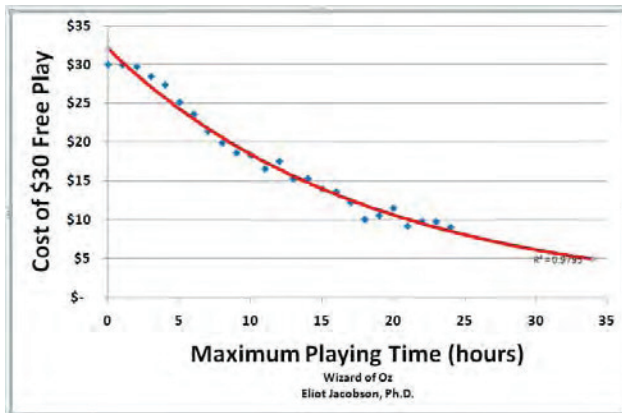
Honoring the call for specifics, I decided to consider three slot machines: "The Wizard of Oz" (WOO) by WMS Gaming, "Double Blazing 7's" (DB7) by Bally, and the ever popular "8/5 Jacks or Better" (JOB) video poker. Though player wagers vary, I assumed the player would play exactly \$1

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per spin. From there, I had to fix the player's profile. Staying true to RCFP, I assumed that:
 The player has \$500 as his bankroll.
 The player is given \$30 in free play.
 The player stops when either:
 The player goes broke.
 The player wins a total of \$5000 or more.
 The player runs out of allotted time to play.

A slot player walks up to either WOO, DB7 or JOB with a pocket full of cash (\$500) and a free play coupon (\$30). He plays \$1 per spin. He has a few hours to play, unless he goes broke or wins big. The only variable in all of this is the maximum amount of time the player has allotted himself to play.

I considered all sorts of time allotments, from a player playing hit and run (time = 0) up to a player who has up to a full 24 hours to play. I decided to extrapolate beyond 24 hours using curve fitting. That makes it simple – plot the value of the \$30 free play coupon against the total allotted time to play. Then I simulated millions of players for each of WOO, DB7 and JOB. After a few hours of number crunching, I got the data and drew the graphs.



So here they are – the pictures that tell the story: Note that in each of these, the more time the player has to play, the less the cost. But why does the chart for DB7 look so bumpy and seem to cost more for the free play? The answer is that DB7 has extremely high variance. Variance describes how often crazy things happen for the player – big wins and long losing streaks. The player stops if he has a big win and he stops if he has a long losing streak. The players who play DB7 are burning out more often, and leaving with a big win more often. In other words, they're not sticking around to generate the theoretical that would lower the cost.

Here are the important math numbers on each slot.

Machine Name	Return (RTP)	Hold %	Variance
Wizard of Oz	92.62%	7.38%	8.40
Double Blazing 7s	91.03%	8.97%	47.88
8/5 Jacks or Better VP	97.30%	2.70%	4.40

Note that even though DB7 has a higher Hold% than WOO, it still costs the casino more if a player plays his free play on DB7 than WOO. Variance is the key in this situation. Higher variance costs more. But Hold% also matters. The game JOB has the lowest Hold% of the three games studied. As the graphs show, free play costs the casino more on JOB than either WOO or DB7. Lower Hold% costs more.

The size of the player's bankroll also matters. The larger the bankroll the player has, the less likely he is to bust out. This reduces the cost of free play. It's all about generating theoretical – the longer players play, the more the house will win.

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Free play is not free, nor does it cost full value. It's somewhere in between. The conclusions I reached by generating these examples are the same as those in RCFP. Following are the factors that reduce the cost of free play:

- Higher Hold% reduces the cost of free play.**
- Longer maximum playing time reduces the cost of free play.**
- Larger bankroll reduces the cost of free play.**
- Lower variance reduces the cost of free play.**

This is not head in the clouds stuff – it has practical value. A player's bankroll is the greatest amount he has ever lost between two consecutive uses of a free play coupon. The maximum playing time is the most time he has ever played between two consecutive uses of a free play coupon. You can track the game he plays, the time he plays, the size of his bankroll, his average bet, and the amount of his free play. In very real terms, you can know the dollar value of each player's free play.

What's missing is recognition from the slot manufacturing industry that this type of marketing information is critical to casinos across the country and around the world. Each slot machine should come with the ability to track the value of free play for that machine. Each casino marketing department should be able to access information to gauge costs for its free play promotions. It's not tough math, but slot companies have to step forward, recognize the need and provide the answers. For now, the battle over free play can safely come to an end. The real cost of free play will simply be a known unknown. ■

[Citation. The Real Cost of Free Play, Dr. Bernard Malamud, R. Jeff Jordan, Casino Enterprise Management Magazine, January, 2011.]

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