

## Game Console Failure Rates:

Wii 9 times more reliable than Xbox 360, 4 times more than PS3

**Synopsis:** SquareTrade analyzed failure rates for over 16,000 new game consoles covered by SquareTrade Care Plans and found that the Wii experienced one-fourth of the common failures that the other systems have.

### Highlights of the study include:

- Looking at the first 2 years of ownership, 2.7% of Wii owners reported a system failure to SquareTrade, compared with 10.0% of PlayStation 3 owners, and 23.7% for Xbox 360 owners.
- Excluding "Red Ring of Death" failures, which are covered by Microsoft's 3-year warranty, 11.7% of Xbox 360 owners reported a failure.
- While the RROD problem continued to be the major issue for Xbox 360s purchased through 2008, early indications point to the problem abating in 2009.
- The most common types of problems seen with the PS3 and Xbox 360 were disc read errors and output issues. The Wii had more power and remote control issues than the other 2 systems.

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## Introduction: Comparing the Wii, Xbox 360 and PS3

SquareTrade first examined and reported on failure rate data for the Microsoft Xbox 360 back in February 2008. Since then, SquareTrade has collected significant additional data on both Xbox 360s as well as the other two popular 7th generation game consoles, the Nintendo Wii and Sony PlayStation 3.

In this study, we explore their failure rates relative to one another and the common problems associated with each of these systems.

This analysis examines customer reported failure data on over 16,000 game consoles purchased by SquareTrade customers over the past two years (see Appendix for details on sample). We only include malfunctions from normal usage (“malfunctions”), and exclude any claims for damage caused by accidents (such as dropping the unit).

Looking at the first 2 years of use, we found that Wii consoles had a reported failure rate of 2.7%, significantly lower than both the Xbox 360 and PS3 consoles. When including the infamous “Red Ring of Death” (RROD) problem that has plagued Xbox 360 systems, the Xbox 360 had a reported failure rate of 23.7%, nearly 9 times that of the Wii. PS3 consoles ranked in the middle of our study, with a reported failure rate of 10.0% over the course of 2 years.

Beyond the aggregate Xbox 360 failure rate, we also looked at new Xbox 360 hardware variants to determine if the RROD issue had been fixed. Finally, we compared common failures seen with all systems, including disc read errors, display problems, and power issues.

Now let’s delve into the data and take a look at the numbers.

**Figure 1. The Red Ring of Death**



## “Wii are the champions, my friends”

To determine failure rates, we included all malfunctions reported in the first 24 months after the system was purchased. We further examined Xbox 360 RROD failures separately from all other failures, as Microsoft has guaranteed to replace or repair any Xbox 360s experiencing the RROD failure for 3 years.

Figure 2. Console failure rates after 2 years of ownership

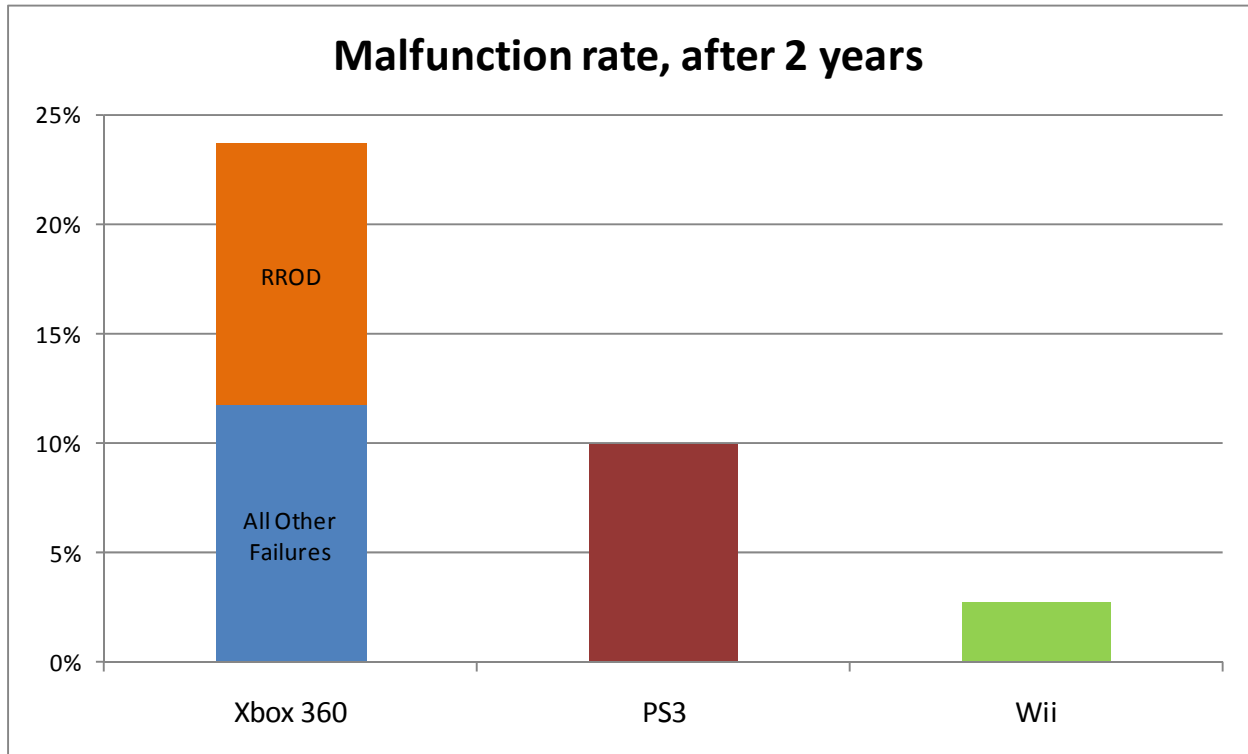


Figure 2 shows the relative failure rates of the 3 game systems. The Wii emerged as the reliability champion, exhibiting only a 2.7% failure rate over the course of the first 2 years of ownership. The PS3 had a 10% reported failure rate, nearly 4 times the Wii's, and the Xbox 360 saw a 23.7% failure rate, nearly 9 times the Wii's. At 2.7%, the Wii's failure rate is better than most consumer electronics products, not just game consoles.

With nearly 1 in 4 systems experiencing a reported failure over 24 months, we found the Xbox 360 to be historically the least reliable of the 3 game systems. Just over half of these failures were a result of the widely reported RROD issue. However, given Microsoft's extension of their manufacturer's warranty as stated above, we note two consequences for the analysis.

First, it's worthwhile considering that Xbox 360's failure rate drops to 11.7% when you exclude RROD, which then puts it on par with the PS3. If the RROD issue were resolved, we would anticipate future Xbox 360's to be only slightly less reliable than the PS3.

Second, Microsoft’s policy may result in an underreporting of failures by Xbox 360 owners to SquareTrade, relative to the other two consoles. Because the RROD problem is so widely known to be covered by Microsoft’s warranty, we believe that more customers bypass SquareTrade and reported failures directly to the Microsoft. In a survey of SquareTrade customers with Xbox 360s conducted by email, SquareTrade found that over half of our customers who experienced a RROD error reported their problem directly to Microsoft without contacting SquareTrade. Email survey respondents tend to be a self-selecting group, so the data should be used directionally rather than definitively, particularly because we did not survey PS3 and Wii owners with the same question. With that caveat in mind, applying the survey data to the analysis shows that the Xbox 360 failure rate could be as high as 35%.

While Microsoft initially claimed in February 2007<sup>i</sup> that the “return” rate on Xbox 360s did not exceed 3-5%, they later published an open apology on July 5<sup>th</sup>, 2007 and announced a \$1.15 billion fund to be set aside for Xbox 360 repair and replacement.<sup>ii</sup> The money would fund repairs for up to 2.5 million consoles, and thus they implicitly anticipated a far higher rate of failure than their stated 3-5%.

### Usage is a factor – but the Wii is still more reliable

SquareTrade also examined the factor of usage in our analysis of game consoles. The Xbox 360 and PS3 are widely regarded as the consoles of choice for hardcore gamers, and the Wii skews towards a more casual, family-based demographic. It is therefore worthwhile analyzing the data relative to console usage, and not just in absolute terms.

According to a report by Nielsen published in April 2009, the average Wii user uses their console roughly half as frequently as Xbox 360 and PS3 users.<sup>iii</sup> Nielsen provided three separate pieces of information about the amount of time each console is used:

- 1) Average Session Minutes: The number of minutes the console is used during a session
- 2) Average Usage Days: The number of days out of the month that the console is used
- 3) Sessions per day: The number of times the console is turned on during days it is used

By multiplying these 3 numbers, we got the number of minutes used per month:

**Figure 3. Console Usage**

System	Avg Session Minutes	Avg Usage Days / mo	Sessions per day	Mins used per month
Xbox 360	78	7.1	2.15	<b>1191</b>
PS3	64	6.8	2.42	<b>1053</b>
Wii	58	5.0	1.78	<b>516</b>

Source: The Nielsen Company – GamePlay Metrics

We converted this *minutes per month* usage metric to *days used in 24 months*. When we divide the 24 month failure rate by the 24 month usage, we get the failure rate per 24 hours of use:

**Figure 4. Console failure rates after 24 months of ownership – usage adjusted**

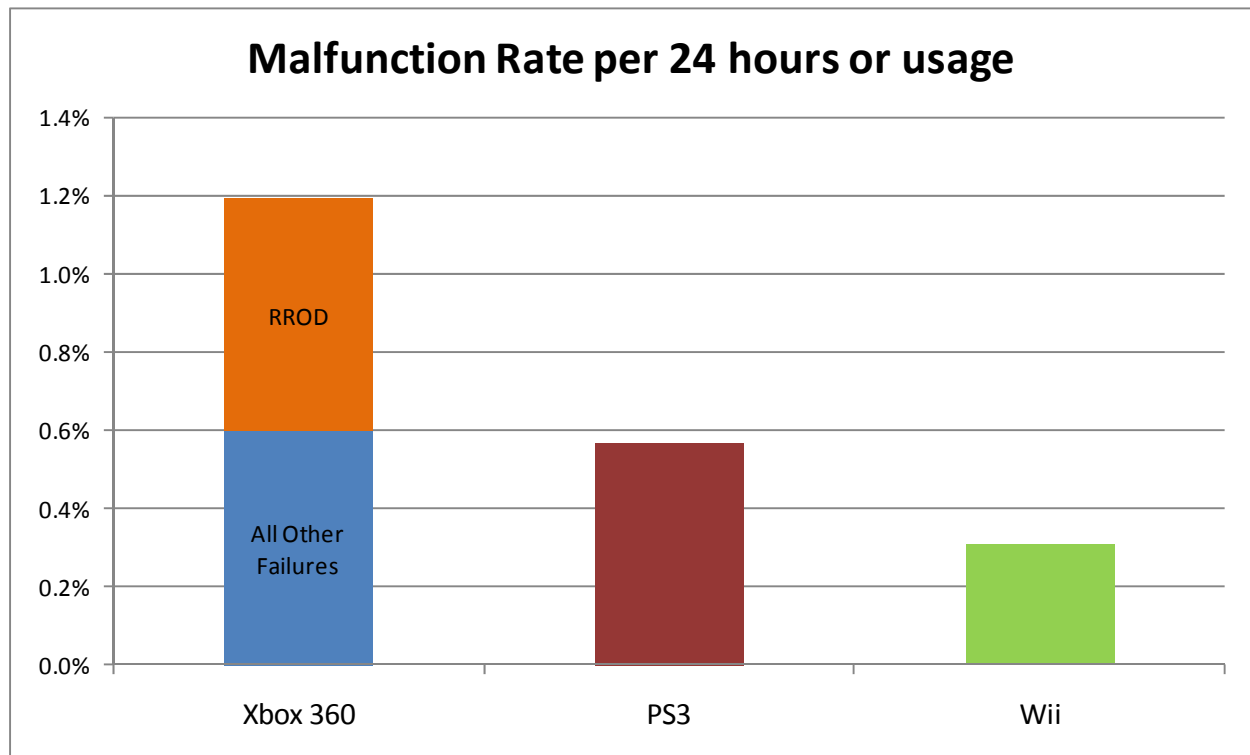
System	Days used in 24 mo	24 mo failure rate	Failure rate / 24 hours	Without RROD
Xbox 360	19.9	23.7%	<b>1.19%</b>	<b>0.59%</b>
PS3	17.6	10.0%	<b>0.57%</b>	
Wii	8.6	2.7%	<b>0.31%</b>	

So even after accounting for usage, the Wii still ranked as the least likely to fail, with a 0.31% failure rate per day of use. Put another way, roughly 1 in every 300 Wiis failed every 24 hours of use.

After adjusting for usage, both the PS3 and Xbox 360 without RROD compared less unfavorably with the Wii, “only” failing roughly 80% more frequently. When RROD is factored in, the Xbox 360 still failed almost 4 times as often as the Wii.

Even accounting for the Wii’s lower frequency and intensity of use, our conclusion remains the same: the Wii is the most reliable of the three 7th generation consoles, as seen in Figure 5.

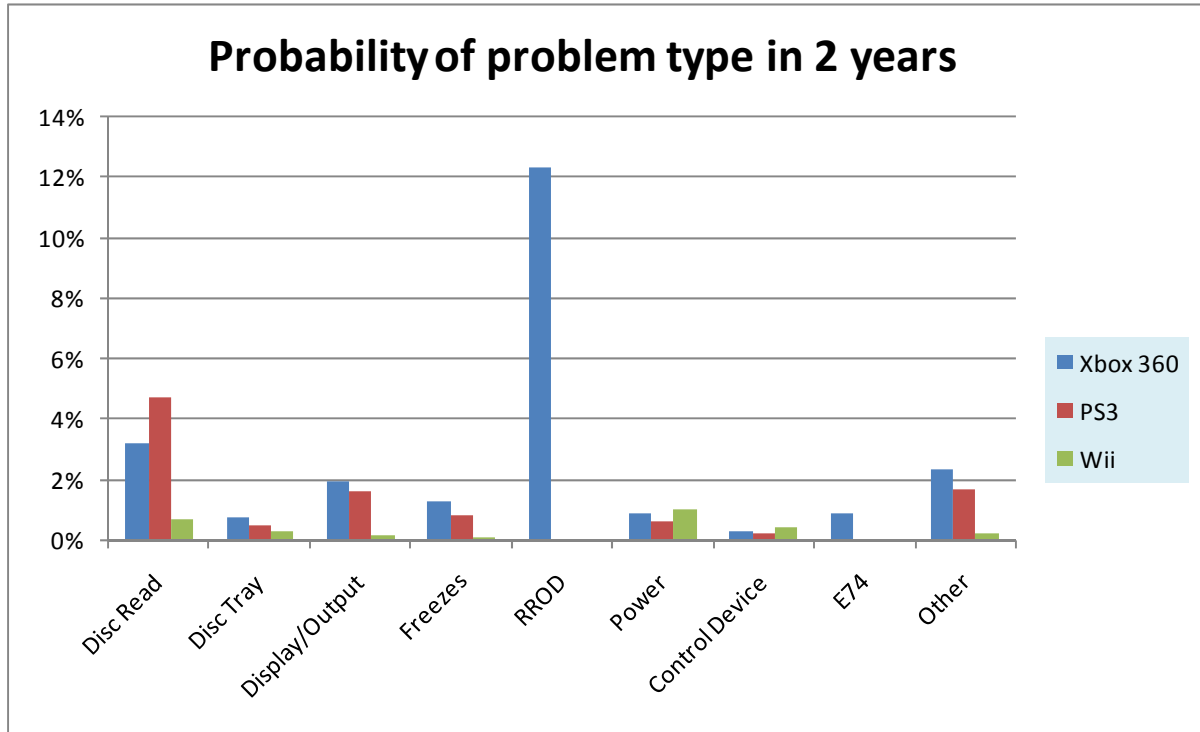
**Figure 5. Probability of console failing during every day of use**



## Understanding the incidence of Red Ring of Death

We next turn our attention to look at the RROD issue in a little more detail. As shown in figure 6, RROD dwarfs all other Xbox 360 problem types.

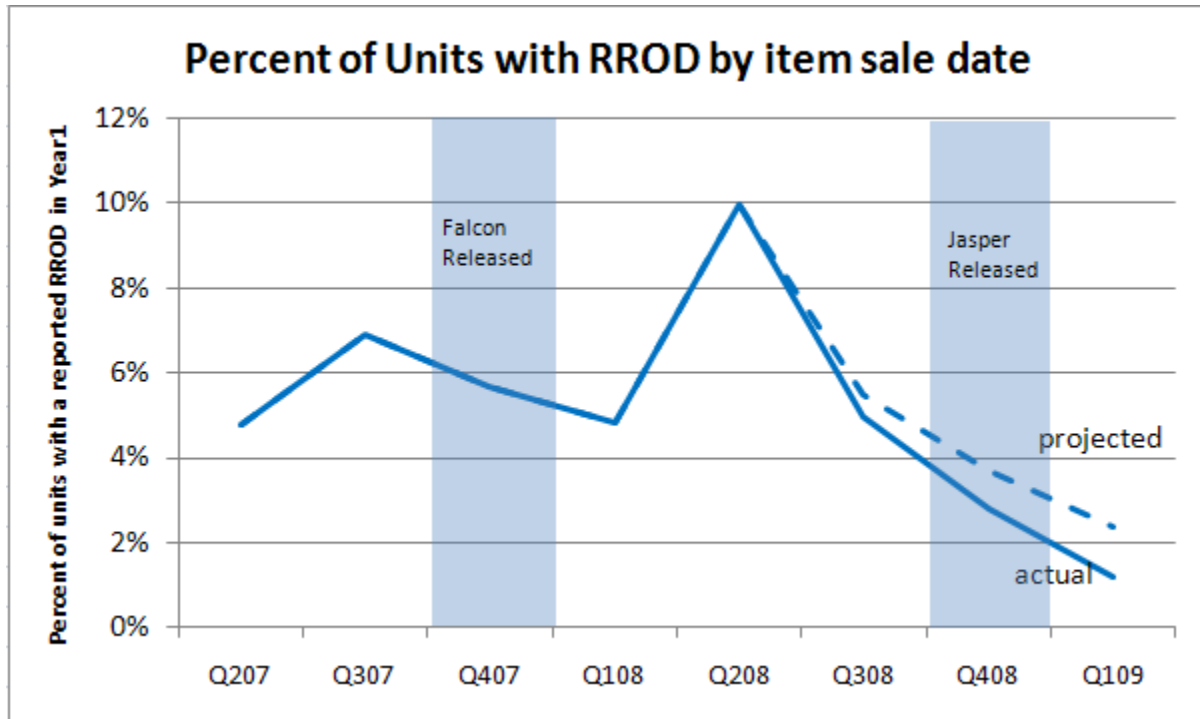
Figure 6. Probability of a unit failing, by problem type



But is RROD really that bad a problem anymore? Ever since Microsoft publicly acknowledged the RROD in 2007, online speculation has been rampant about when and how Microsoft would be able to fix the issue. In September 2007, Microsoft began shipping Xbox 360 systems containing the 2nd generation “Falcon” chipset. This chipset utilized a CPU manufactured with a 65nm process instead of the original 90nm process. With the smaller process, the Falcon CPU in theory produced less heat during operation and presumably fewer heat-related RROD failures. However, Falcon’s GPU was still manufactured using the old 90nm process, and it wasn’t until the 3rd generation “Jasper” chipset that the Xbox 360 contained both a CPU and GPU manufactured on the 65nm process., Xbox 360 watchers initially expected Jasper for delivery in August 2008, though reports of Jaspers in consumer hands only started appearing in November 2008.

In order to evaluate the effect of these two chipset releases on the frequency of RROD failures, we split our Xbox 360 warranty data into quarterly buckets based on purchase date. For example, if a warranty was bought for an Xbox 360 purchased between Oct. 1, 2007 and Dec. 31, 2007, then the item would be in the “Q407” bucket. In Figure 7 we show what percent of units in each bucket failed over the next 12 months after the item was purchased.

Figure 7. Number of reported RRODs (in year 1) divided by total units covered by SquareTrade – by item purchase quarter.



As a full 12 months has not yet passed for consoles purchased in Q308 and later, we have projected the failure rates based on incidents reported in the time elapsed.

We believe consumers purchasing Xbox 360s in Q4 2007 bought a mix of Falcons and original models, due to retailers selling off their old inventory first. From then until Q3 2008, we believe that the majority of units arriving in customer hands were Xbox 360 Falcons. Looking at the pre- and post-Falcon data, there is no discernable drop in RROD frequency. If anything, the data shows a sharp spike in reported failures for units purchased in Q2 2008.

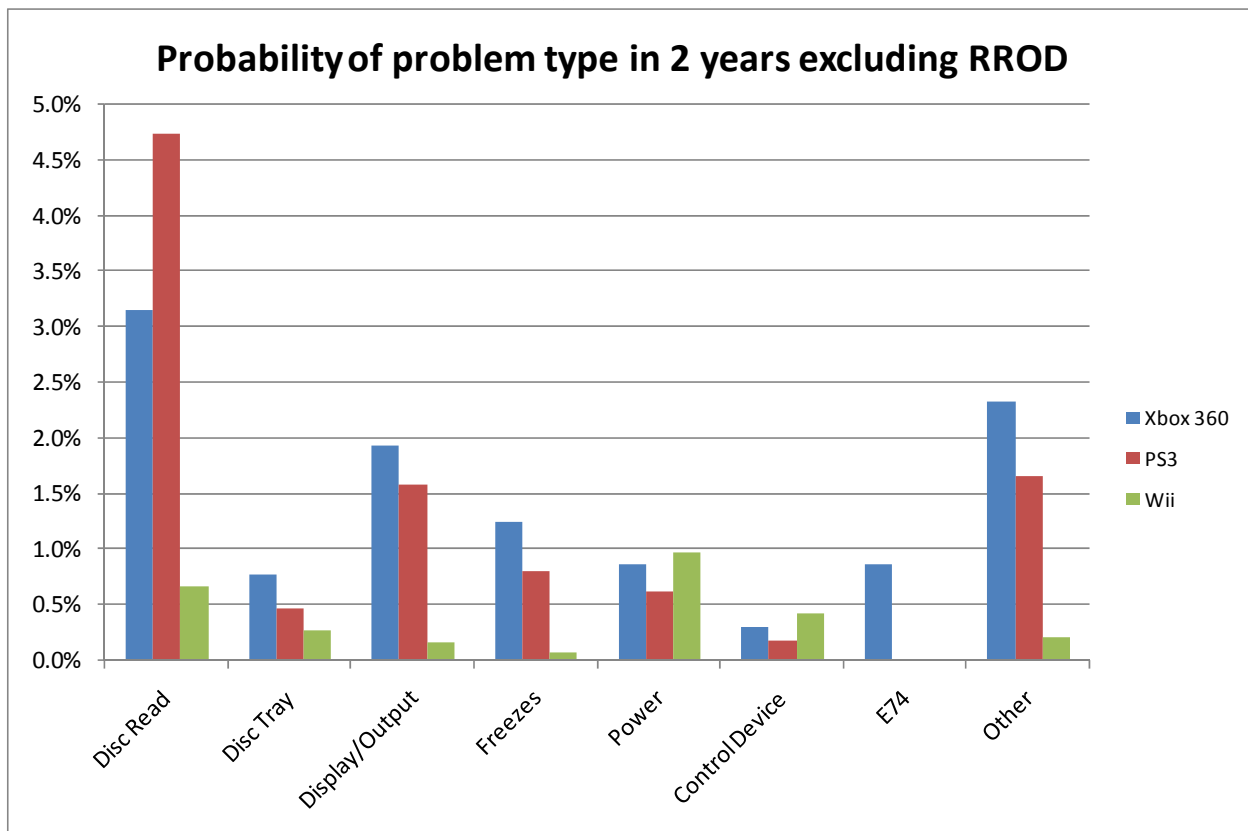
In Q4 2008, Jasper units started arriving, although we believe units purchased during this period continued to be a mix of Falcon and Jasper models. Even with this mix, we projected the 1-year failure rate to drop below 4%. Furthermore, when looking at over 500 units purchased in 2009, fewer than 1% of customers have reported a RROD error as of Aug 2009. It is still too early to definitively assert that Jasper has given RROD a knockout punch, but such an argument may be pronounceable in the coming months.

## Other common problems:

Finally, we turned our attention to describe some of the common problems associated with all game consoles. We bucketed reported malfunctions into the following problem categories:

- **Disc Read.** Unable to recognize discs, or data only being partially read off of the disc.
- **Disc Tray.** Disc trays unable to open or close, or broken disc motors.
- **Display / Output.** No A/V output, Garbled/Fuzzy display
- **Freezes.** Game/DVD plays normally at first, then crashes during play.
- **Power.** Unable to power on or off, unable to stay on.
- **Control Device.** Problems with the device's game controllers. Accessories such as guitars or drums are included with "Other"
- **E74.** A recently publicized Xbox 360 specific issue, first reported to SquareTrade in March 2008. Microsoft subsequently acknowledged this problem in April 2009 and noted that this error would be covered by their 3-year warranty extension designed to cover RROD.<sup>iv</sup>
- **Other.** Other miscellaneous issues, including overheating, hard drive, and accessory failures.

Figure 8. Probability of a unit failing, by problem type, excluding RROD

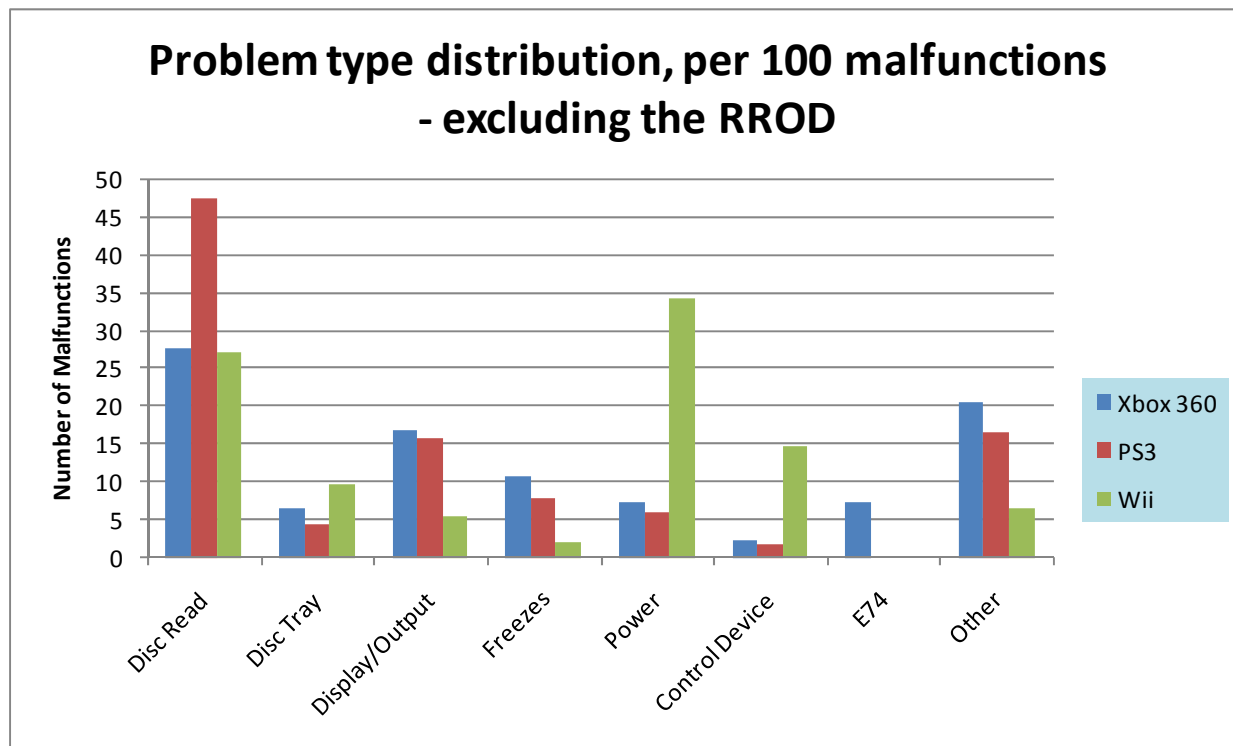




Not surprisingly, the Wii performed better than the Xbox 360 along nearly every dimension. It has fewer disc read errors, hardly any problems with audio and video output, and very few problems with freeze ups during game play. The Wii also experienced fewer errors with its hard drive, overheating, or other miscellaneous issues. The only areas where the Wii had problem rates comparable to the other two systems were with power and game controller issues. As the most advanced control device, the Wiimote's slightly higher failure rate is not surprising.

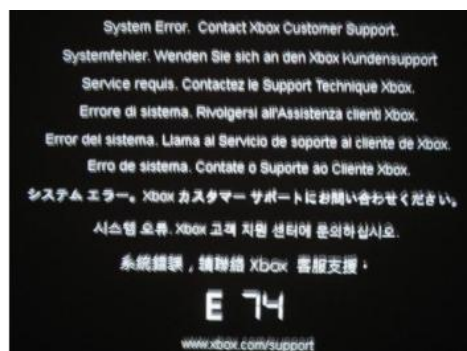
In Figure 9, we highlight the relative frequency of each failure type.

**Figure 9. Probability of problem type per malfunction**



Excluding RROD malfunctions the most frequent problem type for Xbox 360s are disc read errors. This was also the case for the PS3, with disc read issues accounting for nearly half of all PS3 failures. For the Wii, power issues were the most commonly reported malfunction.

**Figure 10. The E74 Error**



## Conclusions:

Of the three major 7th generation game consoles, we can safely say that the Wii is the most reliable system on the market, with just one-fourth the malfunctions of the PS3 and Xbox 360. Even when adjusted for the lower rate of usage, the Wii leads the pack by a comfortable margin.

Our study also found the Xbox 360 to have the highest rate of failure by far, largely due to the Red Ring of Death. While our data indicates that RROD continued to persist as a major problem through 2008, it showed signs of finally abating with the introduction of the latest “Jasper” chipset in late 2008. SquareTrade will continue to monitor the progress and publish an update on the incidence of RROD in 2010.

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## Appendix: Notes about the Data and Methodology Used

SquareTrade randomly selected over 16,000 units for analysis. We included only items that were purchased brand new (i.e. not refurbished or used).

The following disclaimers apply to our data and analysis:

- Only malfunctions reported directly to SquareTrade are included in the data. Other malfunctions, including software issues handled directly by the retailer, problems associated with product recalls, and those fixed by software/firmware updates, may not be represented in this data.
- We did not take into consideration purchase location

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## References

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<sup>i</sup> “Microsoft responds to Watchdog” Gamesindustry.biz. February 14, 2007.  
<http://www.gamesindustry.biz/articles/microsoft-responds-to-watchdog>

<sup>ii</sup> “Microsoft to Incur Xbox Cost of Up to \$1.15 Billion (Update 3)” Bloomberg. July 5, 2007.  
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<sup>iv</sup> “Microsoft extends warranty to cover E74” Gamezine UK. April 14, 2009  
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