

SquareTrade Research: One-Third of iPhones Fail Over 2 Years, Mostly From Accidents

An analysis of reported iPhone failures from normal use and accidental damage.

Synopsis: *SquareTrade analyzed iPhone failure rates for over 10,000 iPhones covered by SquareTrade Care Plans, and found over 30% of the handsets fail in the first two years of ownership. Only one-third of these failures were malfunctions from normal use; accidental damage caused the other two-thirds of failures.*

Highlights of the study include:

- *In the first 22 months of use, the iPhone had a malfunction rate of 10%, compared to 15% for the Blackberry and 20% for the Palm Treo.*
- *Over 20% of all iPhone owners reported a failure due to accidental damage in the first 22 months.*
- *iPhone drops resulting in a broken screen accounted for 65% of all accidents reported. Water damage accounted for over 25% of accidents reported.*
- *The iPhone 3G's malfunction rate is 40% lower than the iPhone Edge model, after the first 9 months of data for the 3G.*

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Introduction: Comparing the iPhone 3G with its peers

In November 2008, SquareTrade published a report on the reliability rates of the Apple iPhone, RIM Blackberry and Palm Treo handsets. We found the iPhone to experience the fewest hardware malfunctions of the 3 handsets, and projected a 9-11% failure rate over a 24 month period.ⁱ As the iPhone 3G had only been out for a few months at that time, we promised an update once we collected more data on the iPhone, and we now present our findings.

In this follow-up report, we extend our previous analysis with an additional 7 months of collected data, and find the conclusions of that report to be largely maintained – the iPhone is still significantly more reliable than the Treo and Blackberry.

In addition to looking at failures from normal use, we also examine the iPhone failure rate from accidental damage, as well as a comparison between the iPhone Edge and 3G models.

Our iPhone analysis examines customer reported data on over 10,000 iPhones purchased in the past 22 months.ⁱⁱ We tracked failures due to accidental damage (“accidents”) separately from malfunctions through normal usage (“malfunctions”).

iPhones vs. BlackBerry and Treo, redux.

With 22 months of data since the iPhone launched, we now have a definitive sense of the malfunction rates of the iPhone, BlackBerry and Treo stack up over the course of the typical 2-year cell phone contract required between upgrades.

Figure 1. Handset failure rates in the first 2 years of ownership.

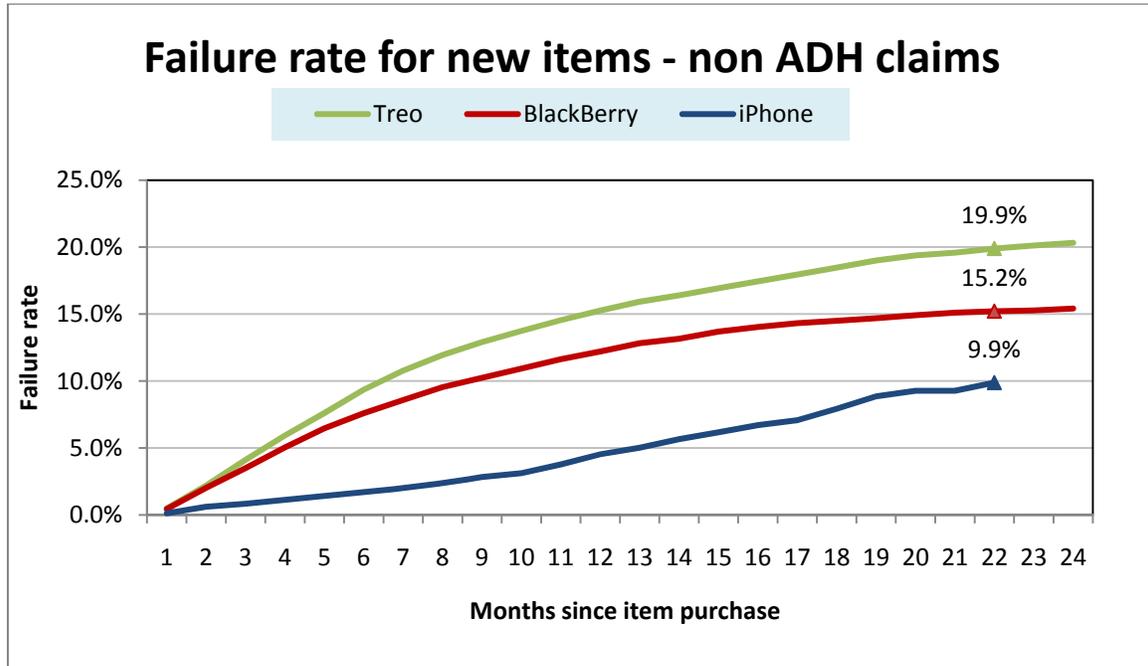


Figure 1 shows the cumulative percent of handset owners that reported a malfunction in a given month after their phone purchase. iPhones are still the least likely to malfunction, with 9.9% of handsets reporting a malfunction within the first 22 months. Over the same time period, 15.3% of BlackBerry owners and 19.9% of Treo owners reported a malfunction.

With over one-fifth of all Treos experiencing a malfunction in the first 2 years, the device is the least reliable of the phones examined. However, Palm may have finally gotten past the decline of the Treo with the launch of the Palm Pre in June 2009. Palm seems to have produced a device that is popular among both critics and users, having won CNET's "Best in Show" prize at the CES 2009 convention and setting a record for the most phones sold for any Sprint phone launch.ⁱⁱⁱ

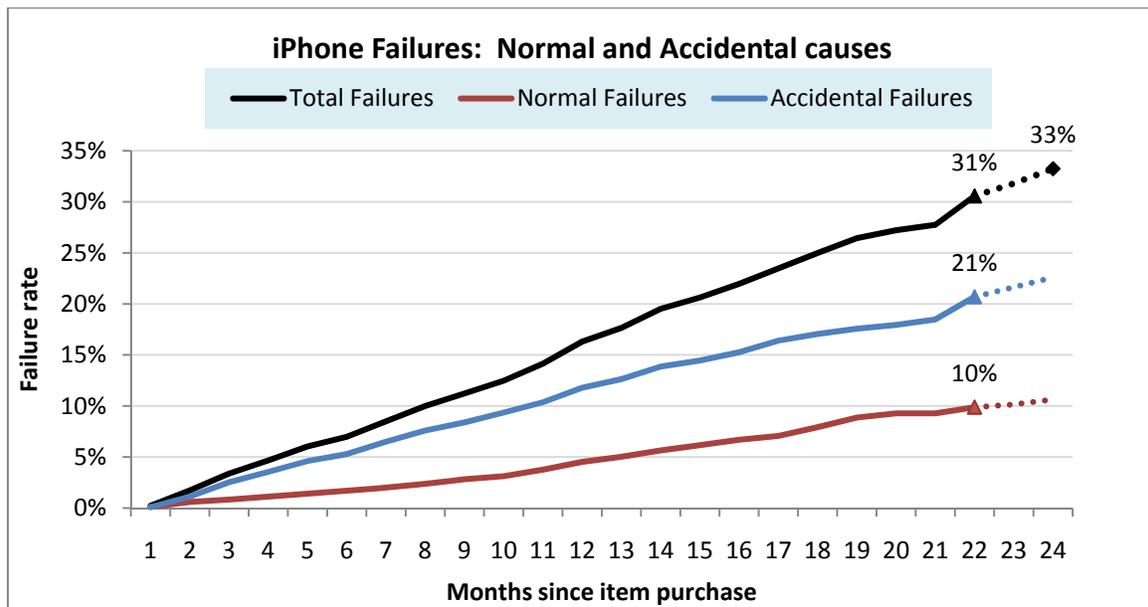
It remains to be seen if Palm's new device will have a better reliability record than Palm's previous flagship smartphone model. We will keep a close eye on the Palm Pre over the coming months to see if the malfunction rates are trending as poorly as the Treo, or if they've managed to create a more reliable product.

Accidental Damage – the real iPhone killer.

We next turn our attention to iPhone failures caused by accidental damage. While the iPhone hardware experienced relatively few malfunctions, the real problem with iPhones is its susceptibility to failures from accidents.

Over 20% of all iPhone owners reported an accident to SquareTrade in the first 22 months, which means that iPhones are twice as likely to experience a failure from an accident than from a normal malfunction. Taken together, as shown in Figure 2, an iPhone owner has a projected 33% chance of having their iPhone die in the first two years of ownership:

Figure 2. Total iPhone failures, including accidental failures.



As the vast majority of American iPhone owners are locked into a 2 year contract with AT&T at time of phone purchase, this failure rate adds a hidden cost to the overall cost of ownership. Even discounting the 5% of normal failures that occur within the 12 months of manufacturer warranty coverage, over one-fourth of iPhone owners will experience a failure before their contract expires. This percentage is even higher when one factors in lost and stolen phones, which are not reported to SquareTrade.

For owners wanting to replace their iPhone, they face a dilemma. While the cost of replacing an iPhone after their contract expires is just \$99 to \$299 (based on model, ranging from 8gb to 32gb), the cost to replace the iPhone prior to the contract's expiration is at least an additional \$200 for a new phone, with AT&T's early upgrade option.^{iv} If early upgrade is not available, the cost is an additional \$400 – as much as \$699 for a 32gb model. Users with a dead iPhone may end up paying twice, or in some cases three times as much to replace their iPhone as their original purchase price.

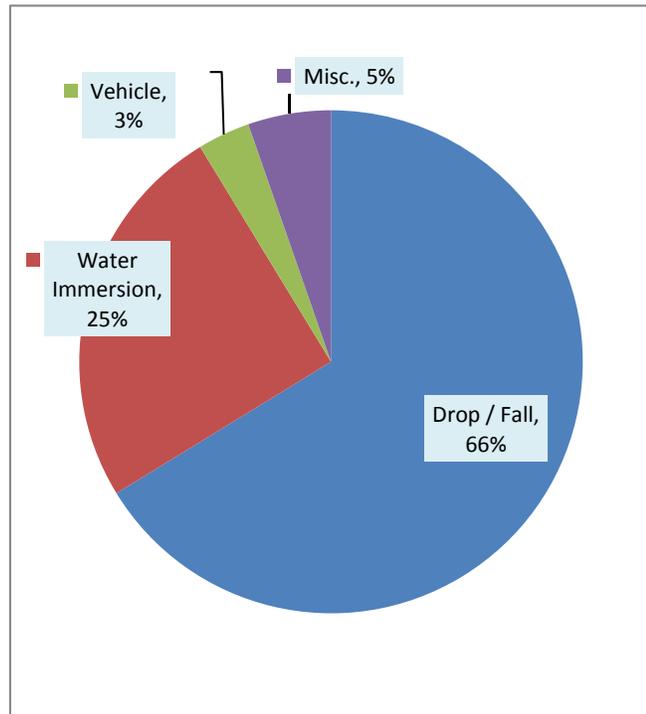
Causes of Accidental Damage

We next look at the causes of accidental failures, with an eye to helping iPhone owners avoid the demise of their phones.

Nearly two-thirds of these failures were the result of a drop or fall, mostly resulting in cracked, unusable screens. The most common reported drops were from fumbled phones and phones falling out of pockets and purses. However, a notable number of failures occurred from devices that experienced a fall when the vibrate setting caused the iPhone to vibrate right off the edge of a table or counter.

iPhone protective cases are widely available in metal, hard plastic and silicone, and may help prevent some of these failures. As most of the failures involve the shock of the impact causing the screen to fracture, we recommend cases that are designed to absorb the impact of such falls.

Figure 3. Primary causes of failure from accidental damage.



Water damage was the next most frequent source of failure, accounting for over a quarter of reported accidents. In the majority of these cases, the iPhone was dropped and immersed in water or other liquids. Reports ranged widely from fishing trips gone awry to users getting pushed into swimming pools, but the most common incidents were iPhones dropped in drinks, sinks and toilets. Spills, ambient humidity, and weather were also notable causes.

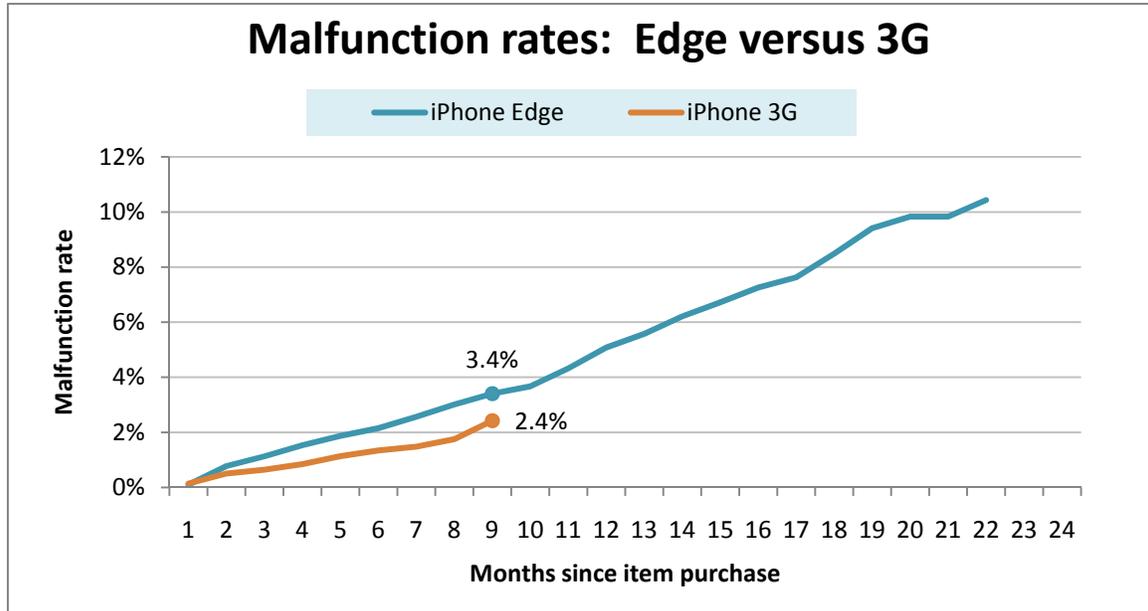
iPhones damaged by vehicles (cars, bikes, riding mowers) accounted for a small percentage of accidents, and fire, pets, and other assorted issues accounted for the rest.

iPhone 3G vs. Edge

Finally, we also compared the malfunction data for the iPhone 3G and Edge models. In the initial months after the iPhone 3G's launch, users plagued by hardware and software issues flooded online forums and blogs with complaints. At the time of our last report, we didn't have enough data on the 3G to make a definitive statement about the 3G's reliability relative to the Edge, but we believed that they malfunctioned at roughly equivalent rates.

Now that we have 9 months of data on the 3G, we can see a trend begin to emerge:

Figure 4. iPhone Malfunctions: 3G versus Edge models



The iPhone 3G appears to be significantly more reliable, with 2.4% of 3G users reporting a malfunction in the first 9 months compared to 3.4% of Edge users. If current trends continue, the malfunction rate of the iPhone 3G would have a malfunction rate well under 10% at the 2 year mark, thus comparing even more favorably against the other smartphones than the Edge did. Given that the newly released iPhone 3G S model shares much of the same hardware as the 3G, we anticipate it to show a similar failure rate as the 3G, although it is impossible to predict with any degree of certainty.

Conclusions

With nearly 2 years of data, it is now quite evident that Apple has created a device marred by relatively few hardware defects in their first foray in the mobile phone market. Furthermore, the first 9 months of the 3G data shows the first hardware revision to experience even fewer malfunctions.

However reliable iPhones are in their construction, they are still quite prone to accidental damage. They were especially susceptible to dying from drops, whether on hard surfaces or into liquids. As the cost to replace iPhones is high, prospective iPhone owners should consider this potentially hidden cost before they buy, or seek other ways to alleviate the cost of replacement, such as buying an extended warranty that covers drops and water immersion.

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Appendix A: Notes About the Data and Methodology Used

SquareTrade randomly selected over 11,000 iPhone, over 7,000 Treo, and over 9,000 BlackBerry handsets covered by SquareTrade Care Plans between October 2006 and April 2009 for this study. We included all handsets marketed under the iPhone, Treo, and BlackBerry names and 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, network purchased for, or if the phone was unlocked at the time of purchase. Other reports have shown that these factors can contribute substantially to the incidence of problems, especially with call quality issues.

SquareTrade has made efforts to ensure that the data we present is correct. SquareTrade makes no warranty, express or implied, about the accuracy of the data. SquareTrade is an independent third party, and has no affiliation with any of the handset manufacturers cited in this study. Users of the information in this document acknowledge that SquareTrade cannot be held liable for any damages whatsoever to any individual, organization, company, industry group or representative arising from the use of this data.

ⁱ SquareTrade report: [http://www.squaretrade.com/htm/pdf/SquareTrade iPhone Study 1108.pdf](http://www.squaretrade.com/htm/pdf/SquareTrade_iPhone_Study_1108.pdf).

ⁱⁱ The data used for this study comes from customer-reported handset failures from customers who have purchased SquareTrade Care Plans on new cell phones. The reported failures include both warranty claims and other malfunctions reported to SquareTrade. Some failures, particularly software, are dealt with directly by the retailer and/or manufacturer and may not be reflected in SquareTrade's data.

ⁱⁱⁱ http://en.wikipedia.org/wiki/Palm_Pre, cited Jun 17, 2009.

^{iv} The cost for a refurbished iPhone replacement through AT&T is less, though availability may be limited.