Software engineer Justin Graham of White Settlement hasn’t given up his day job, but in two years he has created several very competitive weather apps for the Apple iPhone.

Whenever disaster strikes in the form of a scary tornado, business seems to boom.

"I wouldn't say I prayed for that, but it increases sales," he said, referring to this year’s unusually high number of destructive storms. "The guiding goal of the app is to save lives."
After one particularly devastating day of weather-related havoc, 1,600 copies of his TornadoSpy and StormSpy were downloaded from Apple's App Store. One version is free; the purchased versions cost $1.99 to $4.99, of which Apple gets 30 percent. More than 1,000 have been sold on some days; the typical figure is 200 a day.

The Spy series uses tornado and hailstorm sightings from people who download the apps. Graham calls his 10,000-strong force of unpaid storm watchers his spies.

Their information is rapidly checked against National Weather Service data, then posted. It often beats storm warnings from federal meteorologists because no human intervention slows the process. Graham's results are better in populated areas, where more storm watchers live, he said; otherwise, the weather service wins out.

For example, Graham's apps recently told Massachusetts residents of an approaching tornado a solid 40 minutes before the weather service reported a sighting, Graham said.

Last year, Oklahomans got 20 minutes' warning thanks to what he calls his "accu-spy" algorithm, which allows almost instantaneous cross-checking.

The apps' success didn't happen overnight. There was even a hoax early on, Graham said. The false report two years ago of a "blue sky" tornado hurt his apps' credibility and prompted him to develop the weather service verification feature.

That, he believes, gives his titles a technological advantage. Also differentiating his products are the legions of spotter bees who apparently send updates for sheer enjoyment. Graham says he might come up with a recognition program or award system to give points for frequent tipsters.

What he has done is called crowdsourcing, said Jeff Howe, the writer who coined the term, which is now widely used in app development circles.

"It's worth noting that meteorology has long used crowdsourcing to gather data," Howe said by e-mail. "But new technologies allow professionals to harness amateur gathered data more quickly, and in greater numbers."

In Graham's venture, the paying customer is also the content provider -- a modern version of Mark Twain's Tom Sawyer outsourcing his fence-painting chore to friends after leading them to believe it would be great fun.

"User sightings by people who buy it actually make it work," Graham said. "They report it in their app. The code servers check the data to determine if it's a real sighting or fake -- automatically."

Graham lost an opportunity to report a tornado himself.

In late May, the weakest sort of twister, an F0, crossed his White Settlement property, knocking down fences and damaging the roof.

"But it was during the day, and I wasn't home," he said. "It was kind of embarrassing."

A crowded apps market

Graham, 30, earned computer engineering degrees from Texas A&M and the University of Texas at Arlington and works for a company in the area. He crafted the first app over a couple of weekends.

"Since I finished my master's in December, I've had more time," he said. He typically puts in an hour each night, constantly refining his digital wares to keep them competitive.

Some people have cashed in big on the app craze, but it's getting more challenging, says David Barnard, a San Marcos entrepreneur behind the popular Gas Cubby app, which tracks fuel and
And if the person with the clever idea can't do all the work, as Graham does, there are considerable costs -- $150 to $200 an hour for programmers, he said.

Barnard invested $30,000 in a health fitness app that earned $5,000 before he pulled the plug. His Gas Cubby and Trip Cubby apps generate gross revenues of about $200,000 annually including advertising, but he has considerable overhead and launched them by borrowing $20,000 from relatives and selling his wife's Honda, which still hasn't been replaced.

"The app market is getting more and more crowded, and it's increasingly difficult to make a splash," Barnard said in a telephone interview. "Newcomers are competing against many very mature apps. And there's just an expectation of a very high level of polish now."

Graham's motivation is not to become rich.

"I consider this a hobby with the aim of helping others out with lead times," he said.

Aside from giving the App Store 30 percent of revenue from sales, Graham must pay about $60 a month to keep his app up and running. Then, taking into account all the time he's invested, he figures he has earned a modest $14 an hour.

Still, it's something, and he said the profit from TornadoSpy will eventually go toward a useful purpose:

"I am saving for a tornado shelter."

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