"I'M SURPRISED. WITH SUCH EXTENSIVE EXPERIENCE IN PREDICTIVE ANALYTICS YOU SHOULD HAVE KNOWN THAT WE WOULDN'T HIRE YOU."

# The privacy pickle

## Hewlett-Packard's prediction of employee behavior.

BY ERIC SIEGEL

**H**ewlett-Packard (HP) knows there are two sides to every coin. The company has achieved new power by predicting employee behavior, a profitable practice that may raise eyebrows among some of its staff. HP tags its more than 330,000 workers with a so-called Flight Risk score.

This simple number foretells whether each individual is likely to leave his or her job.

With the advent of predictive analytics, organizations gain power by predicting potent yet – in some cases – sensitive insights about individuals. These predictions are derived from existing data, almost as if creating new information out

of thin air. Examples include HP inferring an employee's intent to resign, retailer Target deducing a customer's pregnancy, and law enforcement in Oregon and Pennsylvania foretelling a convict's future repeat offense.

By predicting which of its staff are likely to leave, HP can focus its efforts on retaining them, thereby reducing the high cost associated with finding and training replacements. Managers "drive decisions with the support of the [predictive] report and the story it tells for each of their employees," says Gitali Halder, who leads this prediction project's team at HP and holds a master's in economics from the University of Delhi.

HP credits its capacity to predict with helping decrease its workforce turnover rate for a specialized team that provides support for calculating and managing the compensation of salespeople globally. The roughly 300-member team's turnover rates, which were a relatively high 20 percent in some regions, have decreased to 15 percent and continue to trend downward.

## FLIGHT RISK PROMISES BIG SAVINGS

Beyond this early success, HP's Flight Risk prediction capability promises $300 million in estimated potential savings with respect to staff replacement and productivity loss globally. The Flight

Risk scores adeptly inform managers where risk lurks: the 40 percent of HP employees assigned highest scores includes 75 percent of those who will quit (almost twice that of guessing).

HP, which literally started in the proverbial garage, came in as the 27th largest employer of 2011; $127 billion in revenue places it among the top few technology companies globally.

Halder and her teammate Anindya Dey first broke this ground in 2011, mathematically scrutinizing the loyalty of each one of their 330,000 colleagues. The two crackerjack scientists, members of HP's group of 1,700 analytics workers in Bangalore, built this prognostic capability with predictive analytics, technology that learns from the experience encoded in big data to form predictive scores for individual workers, customers, patients or voters.

To prepare learning material, they pulled together two years of employee data such as salaries, raises, job ratings and job rotations. Then they tacked on, for each employee record, whether the person had quit. Compiled in this form, the data served to train a Flight Risk detector that recognizes combinations of factors characteristic to likely HP defectors.

The results surprised Halder and Dey, revealing that promotions are not always a good thing. While promotions decrease Flight Risk across HP as a whole, the effect

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## NEWFOUND POWER, THREATS

The analysis confirmed that Flight Risk also depends on things one might expect. Employees with higher salaries, more raises and increased performance ratings are less prone to quit. Job rotations also keep employees on board by introducing change, given the rote, transactional nature of some compensation staff activities.

HP's newfound power brings with it a newfound threat in the eyes of some employees. A novel element is emerging within staff records: speculative data. Beyond standard personal and financial data about employees, this introduces an estimation of future behavior, and so speaks to the heart, mind and intentions of the employee. The concerned ask: What if your Flight Risk score is wrong, unfairly labeling you as disloyal and blemishing your reputation?
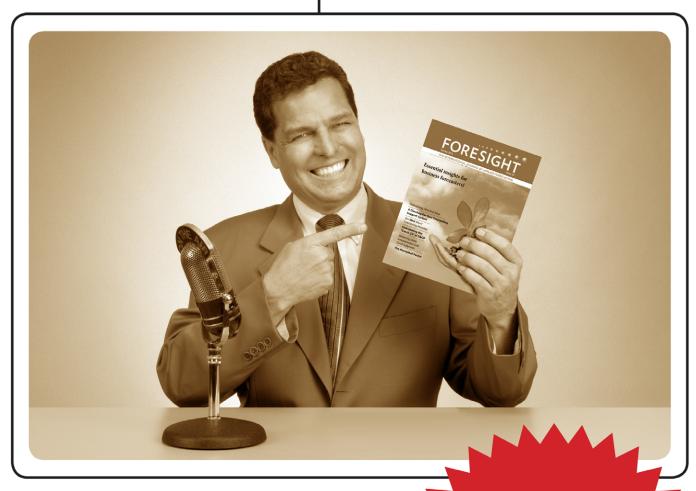
Most at HP don't know they are being predicted. "The employees are not aware of this model," Halder says. "[It] is not designed to penalize the employees but to make necessary adjustments that would result in lower probabilities of them leaving us."

HP deploys this newly synthesized, sensitive isotope with care. The Flight Risk scores are securely delivered to only a select few high-level managers. "We are keeping this data very much confidential," assures Halder.

Despite concerns, predictive analytics does not itself invade privacy. Although sometimes referred to with the broader term data mining, its core process doesn't "drill

down" to inspect individuals' data. Instead, this analytical learning process "rolls up," discovering broadly-applicable patterns by way of number crunching across multitudes of individual records.

However, after this analysis, the application of what's been learned to render predictions may divulge unvolunteered truths about an individual. Here workers and consumers fear prediction "snoops" into their private future. It's not about misusing or leaking data. Rather, it's the corporate deduction of private information. It's technology that speculates, sometimes against the wishes of those speculated.

Like many technologies, predictive analytics can enact both good and evil – like a knife. Outlawing it is not viable, and would be akin to forbidding deduction. Predicting human behavior truly helps the world. Less paper is expended when direct mail is predictively targeted and consumers receive fewer "junk mail" items. Patients receive improved healthcare. Police patrol more effectively by predicting crime, and fraud is similarly detected. Nonprofits boost fundraising and more adeptly select the

beneficiaries of their services. Movie and music recommendations improve.

## CIVIL LIBERTIES AN ISSUE

But embracing predictive analytics challenges the world with an unprecedented dilemma: How do we safely harness a predictive machine that foresees job resignation, pregnancy (as predicted by retailer Target) and crime without putting civil liberties at risk?

In light of Target's prediction of customer pregnancy, activists point out that divulging pregnancy can wreak havoc. Per one online pundit, imagine a pregnant woman's "job is shaky, and your state disability isn't set up right yet and ... to have disclosure could risk the retail cost of a birth ($20,000), disability payments during time off ($10,000 to $50,000), and even her job."

As crime-predicting computers emerge in the law enforcement world, the risk comes not when prediction is right but when it's wrong; a convict's future now rests in nonhuman hands. Granted power as the trusted advisor to judges determining sentences and parole boards deciding

on criminals' release, the computer can commit an error previously reserved for humans: injustice. This is often compared to the prognostic law enforcement in the dystopic science fiction movie "Minority Report." If you prevent a crime by incarcerating the would-be offender, how can you verify it was ever going to happen?

Predictive analytics promises yet forebodes. Spider-Man's wise uncle paraphrased the Bible and Voltaire when he said, "With great power comes great responsibility." The agreement we collectively come to for predictive analytics' position in the world is central to the massive cultural shifts we face as we fully enter the information age. ∎

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