To Increase Productivity, UPS Monitors Drivers' Every Move

By Jacob Goldstein, <http://www.npr.org/blogs/money/2014/04/17/303770907/to-increase-productivity-ups-monitors-drivers-every-move>

The American workforce might want to pay attention to all those brown trucks full of cardboard boxes. UPS is using technology in ways that may soon be common throughout the economy. On the surface, UPS trucks look the same as they did more than 20 years ago, when Bill Earle started driving for the company in rural Pennsylvania. But underneath the surface, Earle says, the job has changed a lot.

The thing you sign your name on when the UPS guy gives you a package used to be a piece of paper. Now it's a computer that tells Earle everything he needs to know. The computer doesn't just give advice. It gathers data all day long. Earle's truck is also full of sensors that record to the second when he opens or closes the door behind him, buckles his seat belt and when he starts the truck.

Technology means that no matter what kind of job you have — even if you're alone in a truck on an empty road — your company can now measure everything you do. In Earle's case, those measurements go into a little black box in the back of his truck. At the end of the day, the data get sent to Paramus, N.J., where computers crunch through the data from UPS trucks across the country.

"The data are about as important as the package for us," says Jack Levis, who's in charge of the UPS data. It's his job to think about small amounts of time and large amounts of money.

"Just one minute per driver per day over the course of a year adds up to $14.5 million," Levis says.

His team figured out that **opening a door with a key was slowing their drivers down**. So drivers were given a push-button key fob that attaches to a belt loop. The team figured out how to use sensors in the truck to predict when a part is about to break.

And UPS solved a problem that Bill Earle and other drivers used to have: At the end of the day, there would be a package in the back of the truck that should have been delivered hours before. "You want to cry 'cause you have to go back," Earle says. A computer now figures out the best way to load the truck in the morning, and the best way to deliver packages all day.

Earle says a typical day for him used to be around 90 deliveries — now it's about 120. When you hear people talk about technology increasing workers' productivity, this is what they're talking about: same guy, same truck — lots more deliveries.

In the long run, as workers have gotten more productive, their pay has gone up. UPS drivers today make about twice what they made in the mid '90s when you add up their wages, health care and pensions, according to the head of their union.

But Earle says there is another side of driving around a truck full of sensors: "You know, it does feel like big brother." Take, for example, backing up. For safety reasons, UPS doesn't like it when their drivers back up too much. "**They know exactly how many times you're backing up**," Earle says, "**where you're backing up, and they also know the distance and the speed that you're backing at.**" Every day, Earle says, the company lets drivers know if they are backing up too much.

"You can't let it feel like it's an attack on your own personal, the way you've been doing the job," Earle says. "You can't look at it that way 'cause you'll get so frustrated that you won't even want to do it anymore."

Jack Levis, the UPS data guy, says the data are just a new way to figure out how to do things better, and faster. And, he says, the drivers benefit from that along with the company.

"They're the highest paid in the business, which is why my job is to keep them productive so they remain the highest paid in the industry."

Still, issues over the data the company collects have become part of the bargaining process between the drivers' union and the company. Under the drivers' contract, the company cannot discipline drivers based solely on data, and can't collect data without telling them. This kind of back and forth — about what kind of data companies can collect, and what they can do with it — isn't limited to UPS. It's going to start popping up for more and more workers and more and more companies.

**Individual Worksheet Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Using the lecture notes and the data table, answer each of the following questions.   
   1. What is the population of interest in this study? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* 1. What is the sample in this study? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* 1. How many individuals does the entire data set consist of? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  2. Identify who or what the individuals are in this study? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  3. How many variables does the data set consist of? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  4. How many observations does the first variable have? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  5. Do we have the same number of observations for each individual? Explain. \_\_\_\_\_\_\_

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* 1. For each variable list whether it is categorical or numerical (i.e., identify the variable type):

Name variable 1: variable type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name variable 2: variable type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name variable 3: variable type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name variable 4: variable type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name variable 5: variable type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name variable 6: variable type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name variable 7: variable type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name variable 8: variable type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Consider the output below. The average time to open the door for all 38 instances is 8.3168 seconds. Because this information is based on a sample of data we call the sample average a **statistic** (see pages 6-7 of Module 1 Notes). What do we call the counterpart to a statistic for the population from which the sample was taken?

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1. In the context of the UPS data, what does the counterpart to the statistic represent?

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1. One fundamental idea in statistics is to use the sample statistic as an estimate for the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. How confident are you that the sample mean of 8.3168
   1. corresponds to the true average time to open the door for all UPS drivers? \_\_\_\_\_\_\_\_
   2. is close to the true average time to open the door for all UPS drivers? \_\_\_\_\_\_\_\_

Explain your choice for a and b.



