

On Your Bike, Watch Out for the Air

On weekdays, Darby Jack bicycles the 15 miles from his home in Clinton Hill, Brooklyn, to his office at Columbia University's School of Public Health in Washington Heights. Unlike most people who bike to work, the 42-year-old assistant professor of environmental health wears sensors that monitor how much air he breathes in during the trip along



with air pollution levels along his route. This is part of a five-year study that aims to find out at what point the harm done by pollution to cyclists might outweigh the health benefits from the exercise.

The strapped-on sensors measure levels of PM 2.5, the fine particulate matter that is about one-thirtieth the diameter of a human hair and thought to be particularly harmful to health. The tiny particles penetrate deep into the lungs and bloodstream and may lead to the development of respiratory illnesses like asthma and lung cancer. Even relatively short-term exposures can increase the likelihood of strokes and heart attacks. "Our hope is that the city will employ our data as one of many inputs in designing better bicycling paths to minimize these risks," said Dr. Jack. The findings could lead to safer ways to engage in all kinds of exercise outdoors, especially on days when pollution levels are particularly high.

A 2014 report issued by the New York City Health Department said that particulates in the air cause more than 2,000 deaths and 6,000 emergency room visits and hospitalizations each year. And while the city has rapidly expanded its bike lanes and other bike-friendly infrastructure during the past decade, most of the planning to date has focused on traffic safety concerns, not pollution.

So far, two years into the study, 40 cyclists have been recruited through announcements on public radio station WNYC. The researchers are looking to recruit 150 more. The information collected will be used to create a street-level pollution map of New York and an app that will help bicyclists choose less polluted routes. Participants' blood pressure and heart rates are also monitored to assess the impact of riding on the city's streets on the cardiovascular system. "Our preliminary data shows that many bicyclists are getting a bit over half of their daily air pollution dose in only 6 to 8 percent of their day during their daily commutes," said

Steven Chillrud, a geochemist at the Lamont-Doherty Earth Observatory at Columbia, who is conducting the study with Dr. Jack.

Early results indicate that bicyclists in lanes that are separated from active traffic by a row of parked cars breathe in a lot less pollution than those who use bike lanes near the traffic. The researchers are also finding pollution hot spots, like the approach to the Manhattan Bridge that Dr. Jack encounters on his daily ride. “The highways on all sides cause the bad air” he says. “I’m riding uphill, breathing hard, it’s a perfect storm of negative factors.”

Bridges, where traffic bottlenecks are common, and the interior of Manhattan also have higher pollution levels. The city’s roads are generally more polluted during the morning rush hour than during the evening rush hour, when winds tend to be greater.

But just as important as the level of pollution in an area is the effort exerted by a bicyclist to pedal through it. “We know that just walking we are breathing in two to three times the air as we are when we are sitting,” Dr. Chillrud explained. Cycling and other strenuous activities like jogging and playing basketball boost the volume of air — and therefore the particulates — that we are inhaling. Dr. Jack, for example, breathes in roughly eight liters of air per minute when he is resting; when he cycles that volume soars to 70 liters. Biking hard, uphill or fast increases one’s pollution intake still further.

Another consideration is that the impact of air pollution varies a lot from person to person. “If you have a lung disease like asthma, cardiovascular problems or diabetes, or if you are a young child, a teen or elderly, you will likely be more susceptible to harm,” says Janice Nolen, the assistant vice president for national policy at the American Lung Association. “There is also evidence that women — whose lungs are slightly smaller than men’s — are more affected by pollution.”

Ms. Nolen said the Columbia study will provide much-needed information but cautions that people who participate in such research tend to be young, healthy and male, so the results may not accurately represent the population at large. “The good news is we’re getting cleaner vehicles and less pollution,” Ms. Nolen said.

Quelle: Schiffmanjuly, Richard (2017) On Your Bike, Watch Out for the Air. The New York Times.

Prüfungsteil Englisch Aufgaben

Aufgabe 1

Schreiben Sie ein Gespräch von einem Journalisten (journalist) mit Darby Jack oder Dr. Jack. In dem Interview stellt der Journalist Fragen zur Person, Fragen zu dem Forschungsprojekt, möglichen Ergebnissen und Konsequenzen.

In der Aufgabe 1 sollen Sie Informationen aus dem Text für das Interview verwenden und zeigen, dass Sie den Text verstanden haben.

Aufgabe 2

Schreiben Sie einen Text zum Thema: "Verkehr in großen Städten". Erläutern Sie ein weiteres Verkehrsproblem, das in großen Städten anzutreffen ist, und zeigen Sie mögliche Lösungen.

Bei der Aufgabe 2 wird nicht Ihre Position bewertet, sondern die Fähigkeit, Argumente zu präsentieren. Beurteilt wird die Englischkompetenz.

Anmerkungen

Wörterbücher sind nicht zugelassen. Unbekannte Wörter im Text können Sie erfragen, wenn Sie merken, dass das gesamte Verständnis davon abhängt.