Hubway – Rush Hour Opportunities

While living in Cambridge, I'd often see men and women riding bikes on my way into work. I've long envied their ability to ride free of the T's "moderate delays" and sweat-infused over crowdedness. Having never tried, I've always asked myself, "I wonder if they save time?" As you might guess, my entry into the Hubway Data Challenge is an attempt to satisfy this curiosity. As a marketer, I am fluent in Microsoft Excel—the tool I used in my analysis. Sifting through 2016's over-1.2 million Hubway rides, however, tested the limits of this program.

First, I had to define my data set. Through research and logical deduction, I honed in on weekday rides, between the hours of 7–10 a.m. and 4–7 p.m. The data was further limited to morning rides going into the city and evening rides coming out of the city. The "city," for my purposes, was limited to 24 stations north of I-90 and east of Arlington street, where I presume most people are employed. The remaining 157 stations were classified as outside the "city," although many are technically within Boston's limits. Out of the initial 1.2 million columns of data, only 71,000, or 6%, remained. This clued me into believing that Hubway might have some opportunities among Boston commuters.

Next, I built a pivot table, identifying the most used and underutilized Hubway Stations outside the "city," during rush hour. For instance, "Charlestown – Warren St at Chelsea St" was the busiest station, at 3,200 rides, while "Franklin Park – Seaver Street at Humbolt Ave," "Grove Hall Library" and "18 Dorrance Warehouse" tied for last, at 0 rides. While this information is interesting, I had yet to decipher whether Hubway riders were better off than T riders, like myself.

For this, I needed to compare Hubway commute times, represented in an "average duration" column on my spreadsheet, to T commute times. In this pursuit, I was forced to put my trust in the Google gods. To save myself time and ensure consistency, I chose South Station as the "city" test point and searched only for inbound commute durations starting at 7:30 a.m.: South Station, because it is the most popular station within my redrawn "city" limits; and 7:30 a.m., because I quickly realized that inbound commutes were shorter than outbound—doubling inbound commute duration was the most conservative route. Each Google search was performed twice, on separate occasions, and the lowest T commute duration was reported. By the end, I was left with a beautiful new column that represented my best educated guess at how much time Hubway riders would've spent, on average, taking the T, instead. Also reported: the T Station nearest each Hubway station (not necessarily the other way around).

Revisiting my question, I subtracting Hubway commute duration from T commute duration. I found that, while some Hubway stations saved riders plenty of time, others did not. For instance, riders from “JFK Crossing at Harvard St. / Thorndike St.” saved, on average, 17 minutes over T riders boarding at Coolidge Corner. Inversely, T-riders from Harvard Station achieved their destination 13 minutes before Hubway-ers from “Harvard Square at Mass Ave/ Dunster.” Most impressively, multiplying “time saved per ride” by “number of rides,” and netting the resulting column, unveiled a staggering statistic that, at last, answered my initial question; Hubway saved Bostonians a collective total of 7.8 months during rush hour last year!

Unquestionably, this is a welcomed find, but where are Hubway’s greatest opportunities? This second question is further addressed in my submission, which I hope will prove “most insightful” to this year’s judges.