To: File

From: Charles Komanoff

Date: December 12, 2014

Re: Carriage Horses versus Motor Vehicles: Comparison of Crash Frequency

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This memorandum reports my preliminary calculation comparing the frequency of crashes/incidents involving horse-drawn carriages with same for motor vehicles.

I compared crash data for carriage horses on midtown streets excluding Central Park with crash data for vehicles for the NYPD's 18th PCT ("Midtown North"). Since motor vehicle miles vastly outnumber carriage-horse miles, I normalized both sets of data by miles traveled.

I find that carriage horses travel an average of 20,300 miles on city streets between reported "incidents," whereas motor vehicles in midtown travel 16,800 miles between reported collisions. That is, carriage horses travel 21% more miles between incidents than do midtown drivers. Equivalently, carriage horses are involved in 17% fewer traffic incidents than motorists for the same distance covered.

These figures rely on a number of assumptions which are detailed below, some of which could be subject to revision. They nevertheless suggest that, per mile traveled, *carriage horses are at least as safe to their patrons, handlers and other road users as are motor vehicles*.

Carriage Horses

Figures here pertain to the carriage horses' travels on NYC streets outside of Central Park (for comparability with motor vehicle figures further below).

There are 68 licensed carriage horses in New York City. Earlier this year I estimated that on an average day these horses traverse a total of 340 miles on city streets. This figure is based on estimated average travel per carriage horse of 5 miles per day between stables and "posts" on Central Park South. That average in turn takes into account the estimated number of shifts per carriage horse per day, days lost to inclement weather, etc. These figures exclude carriage horse travel in the park itself.

New York City officials do not compile traffic incidents specifically for carriage horses. I therefore turned to a database compiled by New Yorkers for Clean, Livable and Safe Streets (NYCLASS), an animal rights advocacy group. The database consists of a two-page file (RecordsSummary.pdf) that is available via this link. The file shows 31 incidents, with the first occurring on 10/21/2009 and the last on 04/23/2014. The NYPD provided these data in response to a Freedom of Information Law request proffered by the Animal Legal Defense Fund. As compiled by NYCLASS, each incident is represented by its date, time, location, and brief description provided by NYCLASS (e.g., "Driver of car stated that horse carriage hit his car and broke back window, carriage driver then left scene.")

One incident involving a carriage horse occurred within Central Park, leaving 30 that took place on the adjacent streets in the northern part of the Manhattan Central Business District. The period covered

appears to have been 59 months, based on an apparent start date of June 1, 2009 and end date of May 1, 2014 for ALDF's FOIL request.

Over that period of nearly 5 years, then, the carriage-horse sector accumulated an estimated 610,000 miles (340 miles per day x 365 days per year x 59/12 years; recall that the 340 miles/day figure is an average that takes seasonal variations and inclement weather into account). Dividing that figure by 30 incidents recorded during the same period and rounding yields an average of 20,300 miles traveled between incidents involving carriage horses on midtown Manhattan streets (excluding Central Park).

Motor Vehicles in Midtown

The 18th Precinct, known colloquially as Midtown North, extends from Central Park South to 45th Street and runs from Lexington Avenue to the Hudson River (west of 9th Avenue the precinct's southern boundary is 43rd Street). Its location is nicely coterminous with the part of the street grid traversed by the carriage horses to and from their stations at Central Park South.

The NYPD has been posting traffic-crash data on a citywide basis, by borough and by precinct, since late 2011. These data are available only monthly, to my knowledge, i.e., annual totals are not posted by precinct, making it tedious to extract the data. To keep the process manageable, I downloaded only the 12 monthly crash datasets for the year 2012, which is a rough midpoint for the NYCLASS data used for horse-drawn carriages.

Following are crash data for the 18th Precinct for one such month, December, 2012.

Vehicle Type	Number of Vehicles
AMBULANCE	2
BICYCLE	14
BUS	29
FIRE TRUCK	1
LARGE COM VEH(6 OR MORE TIRES)	19
LIVERY VEHICLE	13
MOTORCYCLE	1
PASSENGER VEHICLE	312
PEDICAB	2
PICK-UP TRUCK	20
SMALL COM VEH(4 TIRES)	19
SPORT UTILITY / STATION WAGON	131
TAXI VEHICLE	154
VAN	53
OTHER	21
UNKNOWN	26

(These figures are available through the link: http://nypd.openscrape.com/#/2012/12/cityacc.xlsx. Parallel figures for January through November 2012 may be obtained by substituting the numbers 01 through 11 for "12" in the URL shown.)

The total number of vehicles in recorded crashes was 817. Excluding bicycles, pedicabs and "other" leaves a total of 780 presumed motor vehicles involved in crashes in Midtown North for that sample month. Analogous calculations for the other eleven months of 2012 (excluding scooters as well, which appear as a very small category in one or two months) yields a total of 7,941 motor vehicles involved in traffic crashes in Midtown North for all of 2012.

To estimate the distance covered by motor traffic in Midtown North in that year, I turned to my Balanced Transportation Analyzer spreadsheet, or BTA. (The spreadsheet is an Excel file that may be downloaded via this link.) In the BTA I present data indicating that the entire Central Business District (Manhattan south of 60th Street) experiences 3,385,000 vehicle-miles of travel on a typical weekday, and 3,170,000 vehicle-miles on a typical weekend day or holiday. (These figures appear in Cell N168 in the "Motor Vs" and "Motor Vs Weekends" worksheet tabs.)

Weighting weekdays and weekends by their frequencies and summing over 365 days of the year, it can be calculated that each year motor vehicles travel 1.21 billion miles on CBD streets (including West Street and the FDR Drive). The CBD is covered by ten police precincts, but because of its notoriously high traffic density it is safe to assume that the Midtown North precinct accounts for slightly more than one-tenth of this travel. I used a figure of 11%, which yields 133 million miles per year when applied to the 1.21 billion CBD total. Dividing that figure by the 7,941 motor vehicles involved in crashes in the same precinct in 2012 and rounding yields an estimated 16,800 miles traveled between traffic crashes involving a motor vehicle.

Comparison

The mean distance between carriage-horse incidents, 20,300 miles, is 21% greater than the mean distance between motor vehicle crashes, 16,800 miles. That is, *the carriage horses travel 21% further between incidents than do midtown drivers*.

If the ratio is flipped upside down (i.e., taken as 16,800/20,300 rather than 20,300/16,800), we see that *the carriage horses are involved in 17% fewer incidents per mile on midtown streets than motor vehicle drivers*. (This statement is mathematically equivalent to the first; the percents are different because it is the arithmetic nature of percentages to differ between percent up and percent down.)

A Note about the Comprehensiveness of the Data

In a telephone conversation on Dec. 4, a representative of NYCLASS stated that there were more incidents involving carriage horses than the 31 recorded in their data file drawn from the ALDF's FOIL request. That is almost certainly true, just as it is almost certainly true that the number of collisions involving motor vehicles in the Midtown North precinct almost certainly exceeded the figure reported in the NYPD database used here for comparison purposes; motor vehicles may "jostle" or even strike pedestrians, cyclists and other motor vehicles without necessarily being recorded. In the absence of specific information, we have no way to adjust our calculations to reflect the arguably missing records.