

## **Epidemiology Analysis of COVID-19 Cases To Date**

**Montville Township**

**December 11, 2020**

**Aimee Puluso, Health Officer**

### **Introduction:**

Generally, information on cases are considered among a municipality as a whole. However, in response to the Board's question of whether or not there were any "hotspots" or "clusters" of cases within the Township, a breakdown of case information by zip code was included on COVID-19 summary reports provided to the Board of Health during their regular meetings.

An analysis of epidemiology data gathered during contact tracing was requested by the Montville Township Board of Health during their meeting on September 14, 2020 to attempt to explain the trend of slight differences in representation of cases within the three main zip codes within the Township: Montville, Towaco, and Pine Brook.

It is important to note that the information gathered and presented in this analysis represents only those persons who sought testing, and received positive results from that test. It is not possible to know how many other additional people there are who were also positive for COVID-19 (both symptomatic, and asymptomatic) and who also did not get tested, or to know how the data from those persons would affect the information presented in this analysis.

### **Population by Zip Code:**

As per [www.census.gov](http://www.census.gov) (2019 estimates), the population of Montville Township is 21,058.

This includes 20,915 in the three main zip codes (Montville 07045, Towaco 07082, Pine Brook 07058).

The population for the Montville zip code is 10,655, which equals 50.6% of the total population.

The population for the Towaco zip code is 5,192, which equals 24.7% of the total population.

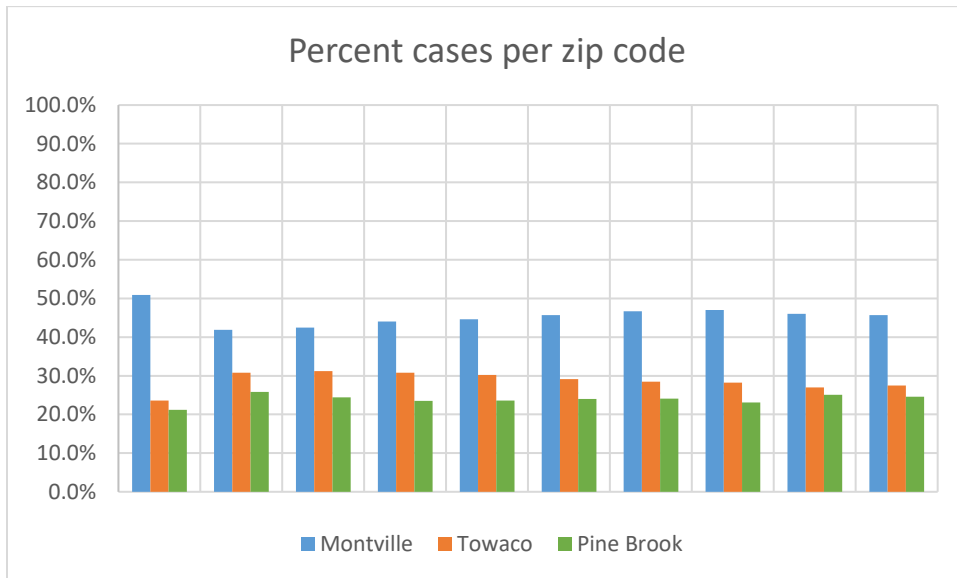
The population for the Pine Brook zip code is 5,068, which equals 27.2% of the total population.

There are also 143 additional persons living in the Kinnelon and Boonton zip codes. Information on the very small amount of cases in these zip codes are not included in this analysis.

**Results and discussion:**

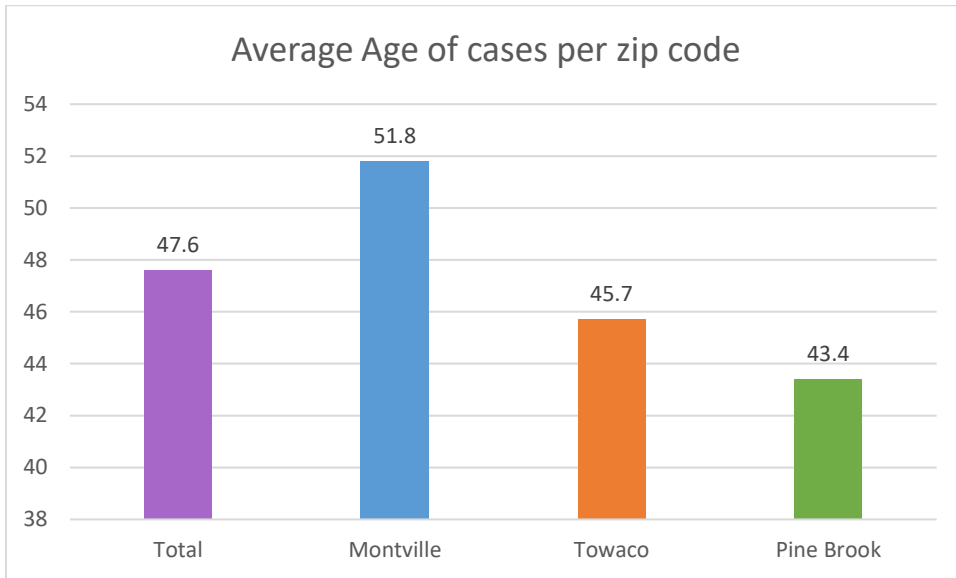
**Percent population vs. percent of cases per zip code:** In the month of April, there was a significant increase in the percentage of cases that occurred among residents in the Towaco zip code, a lesser increase in the cases in the Pine Brook zip code, and a significant decrease in the percentage of cases that occurred among residents in the Montville zip code. Since that time, the percentage of cases in the Towaco zip code has decreased, the percentage of cases in the Pine Brook zip code has decreased slightly, and the percentage of cases in the Montville zip code has increased.

Percent population		50.6%	24.7%	27.2%
Month	Total cases	Montville	Towaco	Pine Brook
March 31, 2020	55	50.9%	23.6%	21.2%
April 30, 2020	198	41.9%	30.8%	25.8%
May 31, 2020	221	42.5%	31.2%	24.4%
June 30, 2020	234	44.0%	30.8%	23.5%
July 31, 2020	242	44.6%	30.2%	23.6%
August 31, 2020	258	45.7%	29.1%	24.0%
September 30, 2020	274	46.7%	28.5%	24.1%
October 31, 2020	351	47.0%	28.2%	23.1%
November 30, 2020	474	46.0%	27.0%	25.1%
December 11, 2020	564	45.7%	27.5%	24.6%



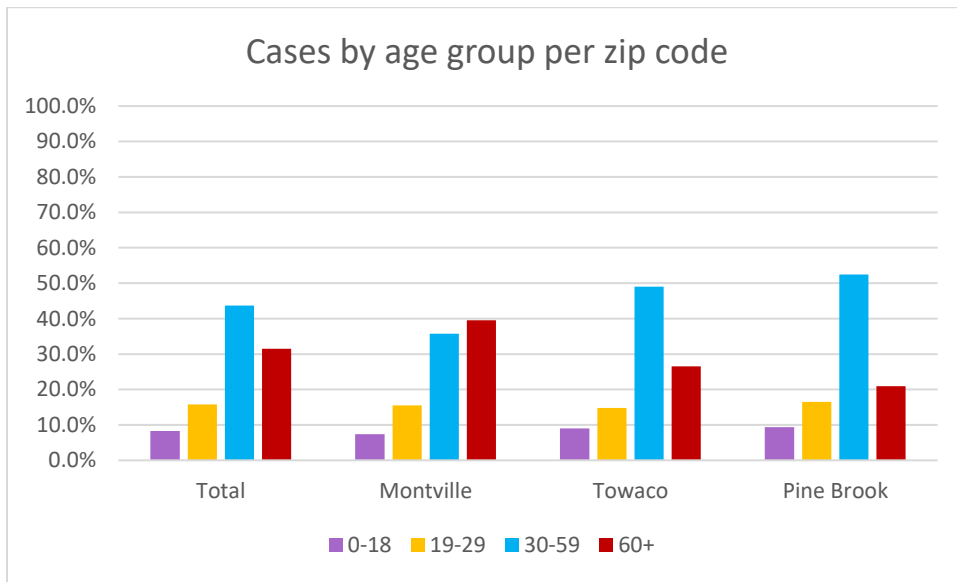
**Average age of cases per zip code:** Compared to the total case average, the average age of cases in the Montville zip code is slightly higher, and the average age of cases in the Towaco and Pine Brook zip codes is slightly lower.

Month	Average Age
Total	47.6
Montville	51.8
Towaco	45.7
Pine Brook	43.4



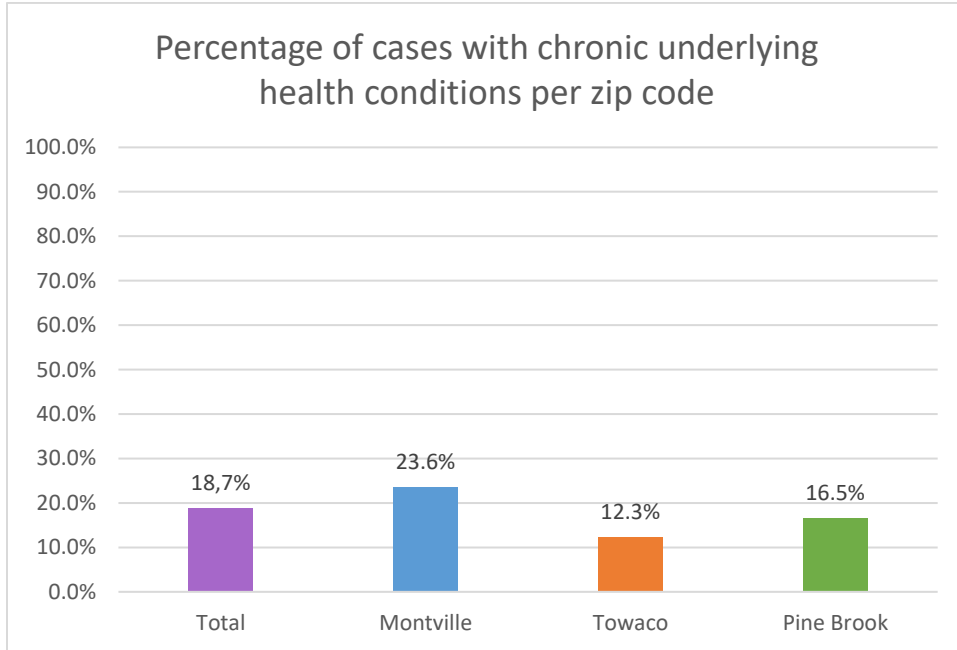
**Cases by age group per zip code:** The percentage of cases age 0 to 18 and age 19 to 29 for all three zip codes are very similar to each other, and also in comparison with the total case percentages. For the percentage of cases age 30-59: compared to total case percentage, the percentage in the Towaco and Pine Brook zip codes is higher, and the percentage in the Montville zip code is lower. For the percentage of cases age 60+: compared to the total case percentage, the percentage in the Montville zip code is higher, and the percentage in the Towaco and Pine Brook zip codes are lower.

Zip Code	0-18	19-29	30-59	60+
Total	8.3%	15.8%	43.7%	31.5%
Montville	7.4%	15.5%	35.7%	39.5%
Towaco	9.0%	14.8%	49.0%	26.5%
Pine Brook	9.4%	16.5%	52.5%	20.9%



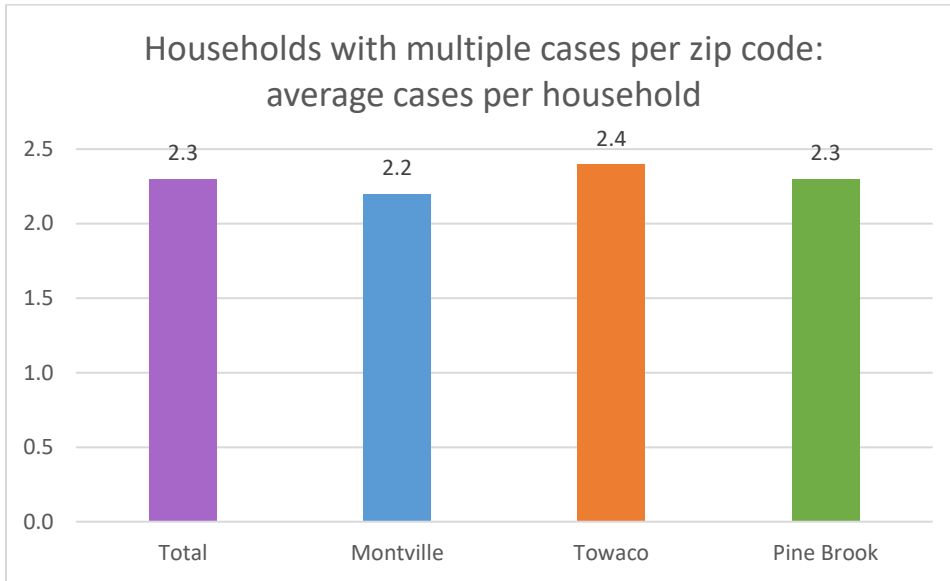
**Cases with chronic underlying health conditions per zip code:** Compared with the total case percentage, the percentage of cases with underlying chronic health conditions in the Montville zip code are higher, and the percentage of cases with underlying chronic health conditions in the Towaco and Pine Brook zip codes are lower.

Zip Code	Total Cases	Cases with underlying chronic health conditions	Percentage
Total	552	103	18.7%
Montville	258	61	23.6%
Towaco	155	19	12.3%
Pine Brook	139	23	16.5%



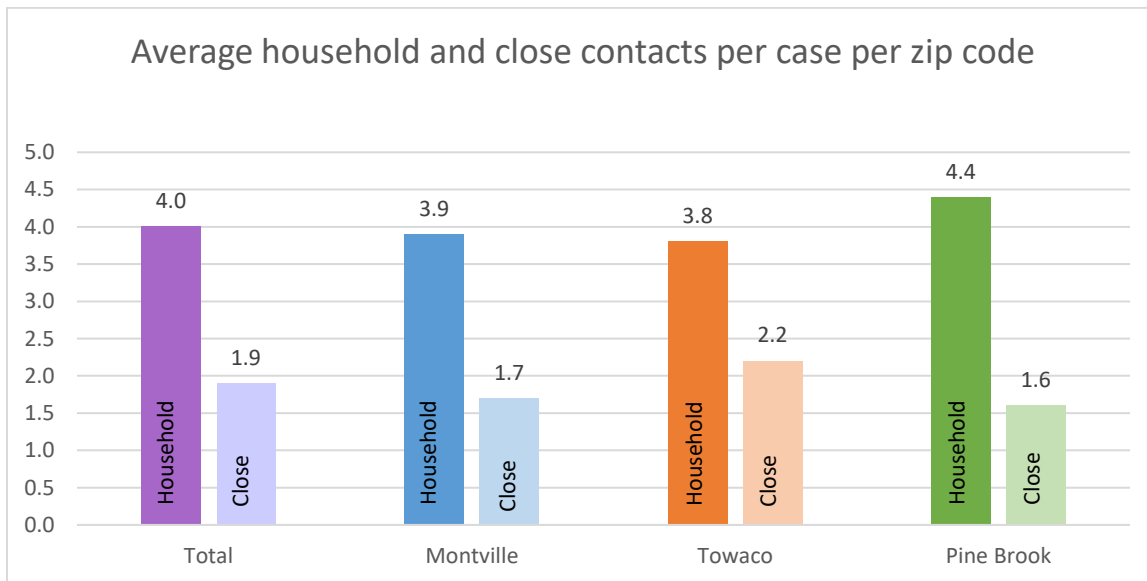
**Households with multiple cases per zip code:** There did not appear to be any significant differences between the average cases per household in any of the three zip codes compared to the total average.

Zip Code	Total Cases	Total Households	Average cases per household
Total	203	89	2.3
Montville	86	39	2.2
Towaco	72	30	2.4
Pine Brook	45	20	2.3



**Reported household and close contacts per case by zip code:** Please note that this chart includes the relatively small percentage of cases that were either unreachable or refused to speak with contact tracers, and thus, there was no household or close contacts reported. Additionally, it is also possible that in some instances, the number of contacts may have been under-reported by cases. There did not appear to be any significant differences between the average number of household contacts per case and average number of close contacts per case among cases in the three zip codes as compare to the total averages.

Zip Code	Total Cases	Household contacts	Average per case	Close contacts	Average per case
Total	203	812	4.0	379	1.9
Montville	86	336	3.9	146	1.7
Towaco	72	277	3.8	160	2.2
Pine Brook	45	199	4.4	73	1.6

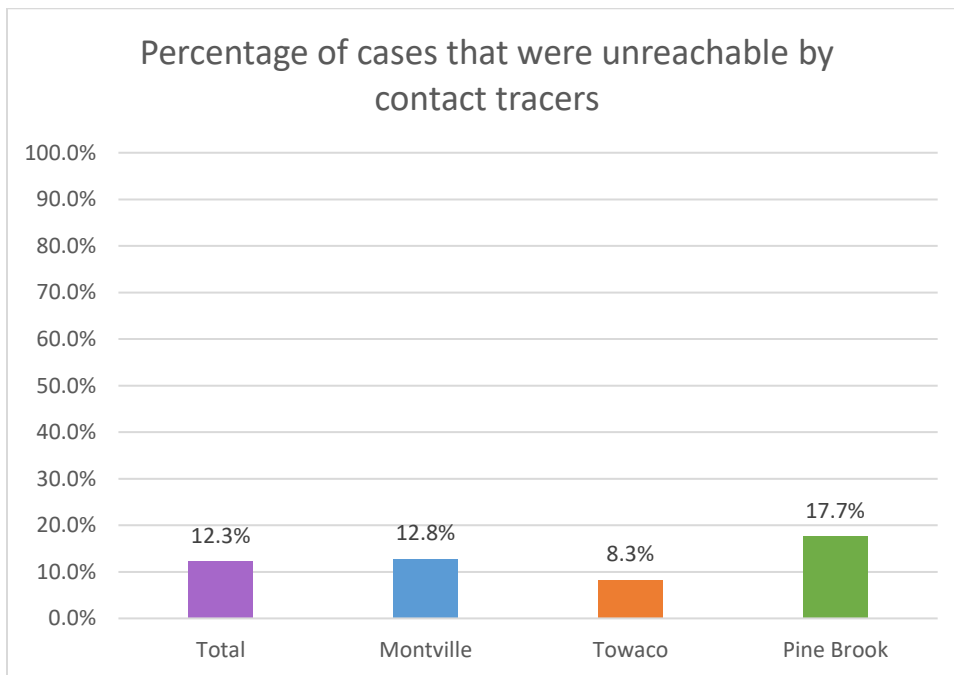


**Cases that were unreachable by contact tracers (after 2 days of phone attempts plus letter) per zip code:** Montville Township has a much lower rate of non-cooperation with contact tracers than the state average (74% according to a statement made by Governor Phil Murphy on December 7, 2020, as reported by NJ.com at <https://www.northjersey.com/story/news/coronavirus/2020/12/07/nj-covid-contact-tracing-patients-fail-cooperate/3861337001/>).

Our much higher rate of cooperation appears to be directly attributable to the combined efforts of many of our staff. Each day, our nurses and contact tracers develop a list of cases that we were not able to reach by phone, prepare form letters stating that the health department is trying to reach them regarding an important matter, seal them in envelopes, and give them to our Dial-A-Ride coordinator, who then distributes them to our Dial-A-Ride drivers the next morning, who deliver them while on their morning routes transporting our seniors. We have directly observed that upon receipt of a letter from our department, we most times do get a call back from the person we are trying to reach.

Despite our efforts, we do still have a number of cases that either do not answer their phone or return our calls after we leave them messages. Compared to the total case percentage, the percentage of cases in the Towaco zip code that we are unable to reach is lower, and the percentage of cases in the Pine Brook zip code is higher.

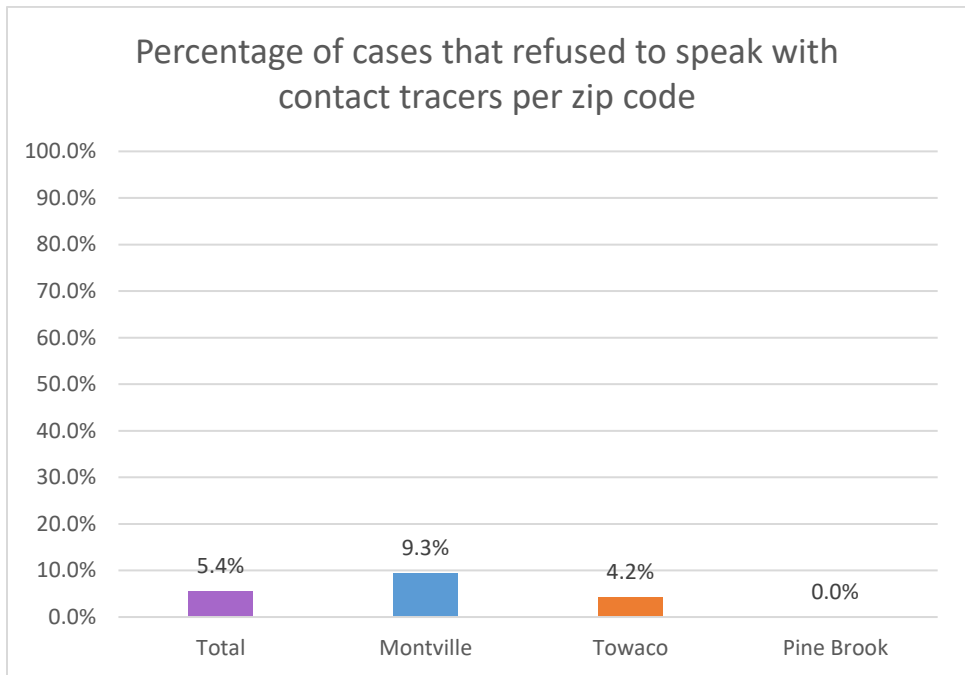
Zip Code	Total Cases	Unreachable by contact tracers	Percentage
Total	203	25	12.3%
Montville	86	11	12.8%
Towaco	72	6	8.3%
Pine Brook	45	8	17.7%





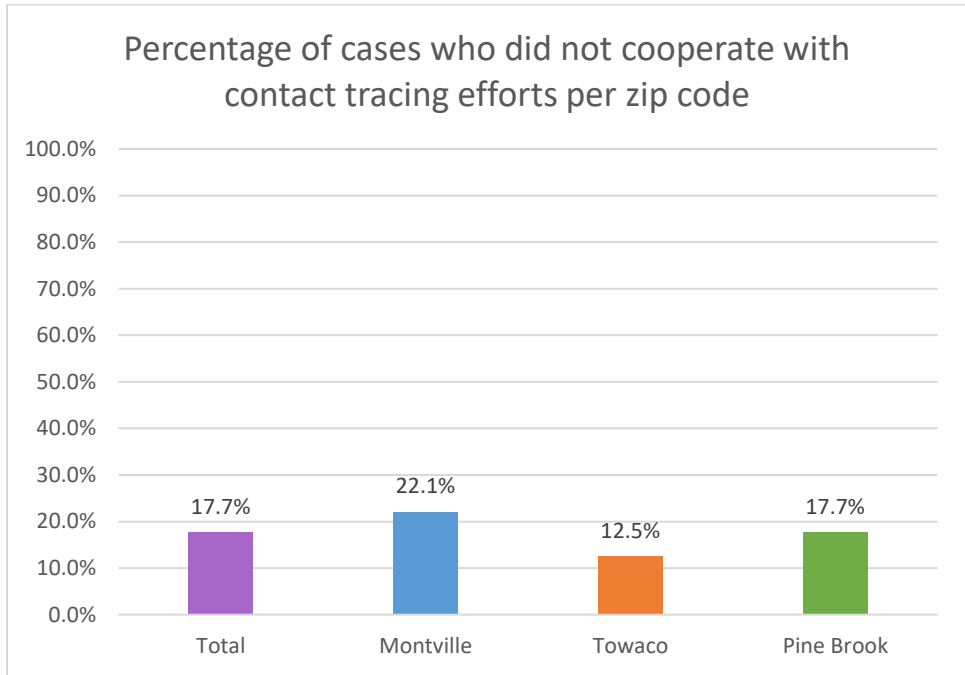
**Cases that refused to speak to contact tracers when contacted per zip code:** Compared to the total case percentage, the percentage of cases who refused to speak to contact tracers was much higher among cases in the Montville zip code (almost double), the percentage of cases in the Towaco zip code was comparable, and there were no cases in the Pine Brook zip code.

Zip Code	Total Cases	Refused to speak to contact tracer	Percentage
Total	203	11	5.4%
Montville	86	8	9.3%
Towaco	72	3	4.2%
Pine Brook	45	0	0.0%



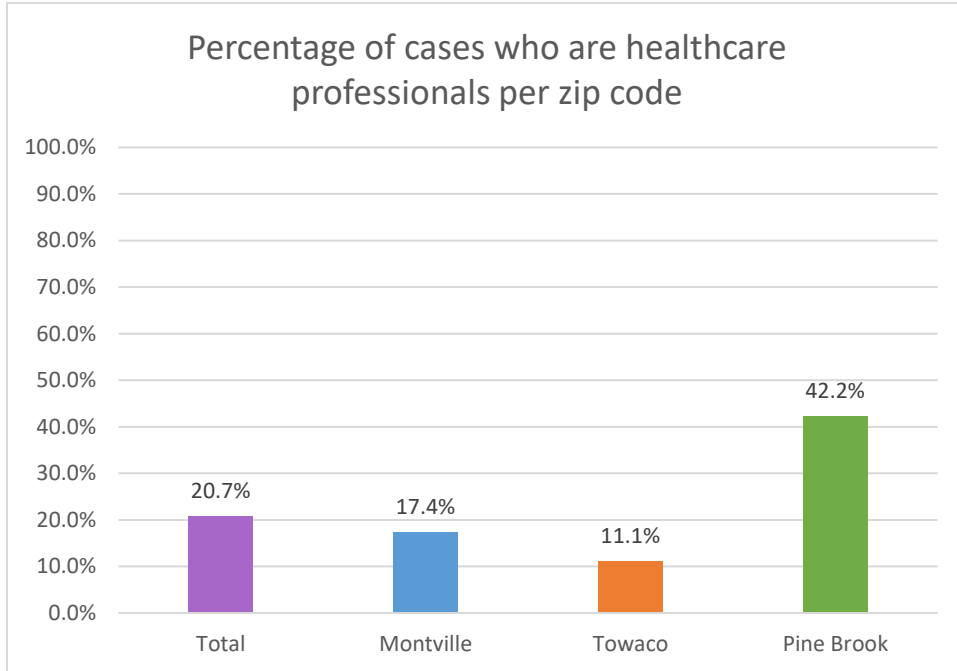
**Cases who did not cooperate with contact tracing efforts (either unreachable or refused to speak to contact tracers) per zip code:** Data from the previous two charts is combined in this chart. Compared to the total case percentage, the percentage of cases that did not cooperate with contact tracing efforts was slightly higher in the Montville zip code, lower in the Towaco zip code, and comparable in the Pine Brook zip code.

Zip Code	Total Cases	Unreachable	Refused to speak to contact tracer	Total	Percentage
Total	203	25	11	36	17.7%
Montville	86	11	8	19	22.1%
Towaco	72	6	3	9	12.5%
Pine Brook	45	8	0	8	17.7%



**Cases who are healthcare professionals per zip code:** Compared to the total case percentage, the percentage of cases who stated they were healthcare professionals was slightly lower in the Montville zip code, significantly lower in the Towaco zip code (roughly half), and much higher in the Pine Brook zip code (just over double).

Zip Code	Total Cases	Healthcare profession	Percentage
Total	203	42	20.7%
Montville	86	15	17.4%
Towaco	72	8	11.1%
Pine Brook	45	19	42.2%



**Conclusions:** Although there are slight differences in the distribution of cases compared to population among the three main zip codes within the Township, it appears that since May, these differences are decreasing. The data gathered during contact tracing and presented in this analysis does not appear to provide a definitive explanation for these differences.

As has been stated previously in a question and answer document presented during the September 14, 2020 Board of Health meeting, there are many possible reasons that may contribute to these differences in the percentage of cases in one zip code in the Township over another. To reiterate: it is possible that residents in the different zip codes have varying levels of compliance with recommended health and safety precautions to reduce the risk of COVID-19 transmission, including wearing masks, social distancing, and avoiding in-person gatherings.

It is also possible that residents in the different zip codes are more or less likely to seek testing (perhaps due to being health-conscious, or having better access to healthcare if they test positive, or less worries about being excluded from work if they test positive). It's also possible that there other factors, such as zip code population density, household population density, lifestyle choices such as participating in high-contact sports, the age distribution within zip codes, and variations in profession (such as regularly using mass transit systems, or travelling regularly into areas of high population density such as Paterson, Newark, or New York for work).

There may also be other factors that are as of yet unknown at this time that these slight difference can be attributed to, or it could be due to natural variation, or it could have been an anomaly at the beginning of the pandemic that has gradually been self-correcting as more cases occur throughout the pandemic. It's also possible that multiple factors may be responsible in varying degrees. A much more detailed analysis of cases would be required to attempt a further explanation, which would be beyond the scope of a local health department to produce. A consultant would have to be engaged to design a study, gather and analyze the information, and produce a report for the Board. The expense for a detailed study and analysis would have to be approved by the Township Committee and budgeted for the following year.