

Carbon dioxide Compensation & Local Tree Populations in Bushwick, Brooklyn

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ABSTRACT

Carbon sinks are limited within urban areas. In Brooklyn trees may be considered one of the top sinks of carbon. Compared to nearby rural and suburban areas the difference in numbers of trees to human population is visibly different particularly in underprivileged neighborhoods. Students investigated one square mile surrounding their high school campus to quantify the carbon uptake of local trees in comparison to populations. Results show that the current number of trees is sufficient to compensate for the population but given new plantings are a rare occurrence suggests this balance will not be maintained in the future.

METHODS

Students worked in teams to collect data on the locality, circumference, and height of trees within a square mile surrounding their campus in Bushwick, Brooklyn. The following calculations were then used to calculate volume, weight and carbon compensation.

$$A = c^2$$

$$V = h * A$$

$$W = V * d$$

Assuming the density of the tree to be 700kg/m^3

Carbon Footprint of the Tree

$$0.264 * W / 0.18 = 1.5 * W$$

Assuming a 2000 calorie diet with an intake of 0.52kg/day with an output of 0.7kg/day

Students then utilized census data on local populations to determine the whether the trees were compensating for basic human carbon output. According to the 2000 census data (2010 census data unavailable at time of creation of poster) the population density for New York City was 26,403 per sq/mile.

RESULTS

According to our calculations, which were limited to carbon dioxide contributions per person and did not incorporate vehicle and additional sources of carbon dioxide, the number of trees within the square mile surrounding the Bushwick Campus are enough to sustain current populations. Should there be a decrease in the number of large trees or an increase in population this balance will not be sustainable. There is a need for additional planting of trees within the Bushwick neighborhood to combat imminent population and transportation output needs.

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