



## CAFEH SOMERVILLE NEWSLETTER

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### CAFEH: a traffic pollution study

By Aaron Marden

I remember having the following exchange with one of my friends shortly before beginning my employment with the Community Assessment on Freeway Exposure and Health (CAFEH) project in the summer of 2009:

**Me:** “I am going to start doing outreach for the CAFEH project this weekend”

**Friend:** “The *what* project? You mean the traffic pollution study”

**Me:** “Yeah, the *traffic pollution study*.”

At the time, I was not ready to fully explain how the CAFEH project was not just a traffic pollution study. If that were the case, it would be a lot simpler to write this article. In fact, if this were just a traffic pollution study, I would not even be writing this article.

Before I explain why it is more than the typical academic research effort, let me start with the basics. The CAFEH project is a rigorous and innovative scientific study.

CAFEH is a federally funded effort, and is one of the first studies to implement the synthesis of participant surveys, participant blood samples, and environmental monitoring in a near-highway study. With these combined techniques, CAFEH hopes to give one of the most accurate conclusions on the effects of near highway air pollution on the cardiovascular system. The data will also address secondary questions such as the effects of social factors and prescription medications on air pollution-related health conditions.

The amount of dedication and work put into the CAFEH study by field team members, investigators, academics, and students rivals any academic endeavor of which I have



Houses in Somerville overlooking Interstate 93

ever been a part. After spending time as an outreach worker and a data manager, I must admit the CAFEH project is not just an academic research study – but part of a community-wide commitment to understanding a local health problem.

If you were to attend one of CAFEH’s biweekly meetings you would see it being co-chaired by Doug Brugge,

the principle investigator for CAFEH and professor at Tufts Medical School, and Ellin Resiner, the President of Somerville Transportation Equity Partnership (STEP), which is one four community partners on this project. You would almost always find CAFEH project manager, Don Meglio (who resides in Somerville), going over recruitment numbers and determining and (continues on the last page)

### Meet the CAFEH Community Outreach Workers (some of them)



Kevin Stone

Kevin Stone is one of the most productive outreach workers for CAFEH. In his time with the project, he has recruited well over 100 participants from the study areas.



Consuelo Perez

Consuelo Perez is one of the Spanish-speaking outreach workers for the study. On top of recruiting participants for the study, she has helped work the clinic sessions where blood samples were collected



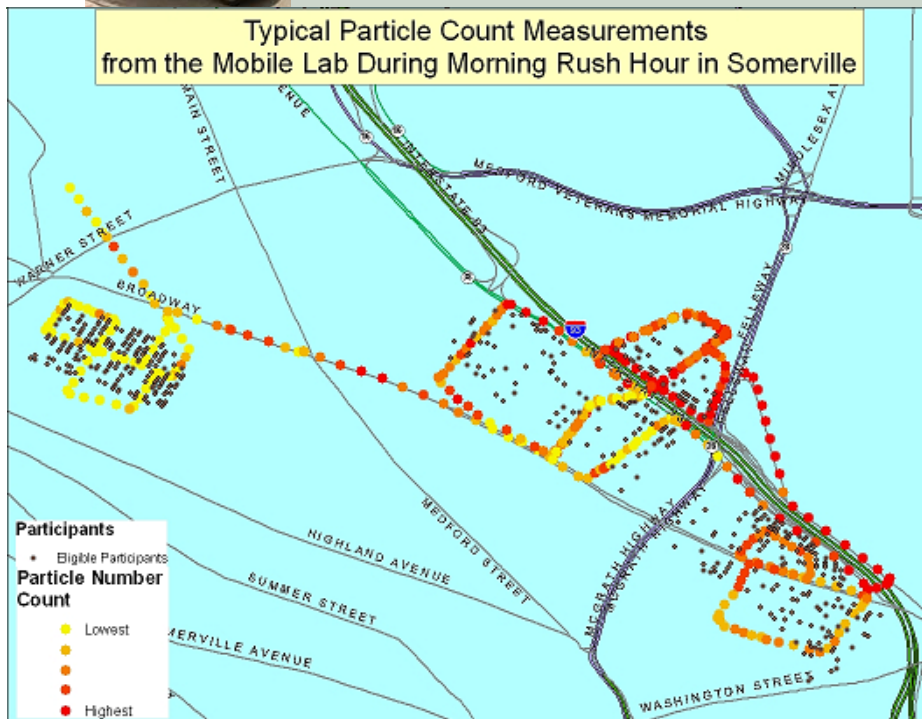
Marjorie Alexandre

Marjorie Alexandre is one of the Haitian-speaking outreach workers for the study. On top of recruiting participants for the study, she has helped work the clinic sessions where blood samples were collected

# Charts and Graphs



## The Mobile Lab Route: Pollution and Households Image by Allison St. Vincent



The map on the left is CAFEH's Somerville study area. All of the eligible Somerville participants are represented by small dots. The eligible participants mostly came from the Mystic Housing Area, Ten Hills, States Ave, and Ball square.

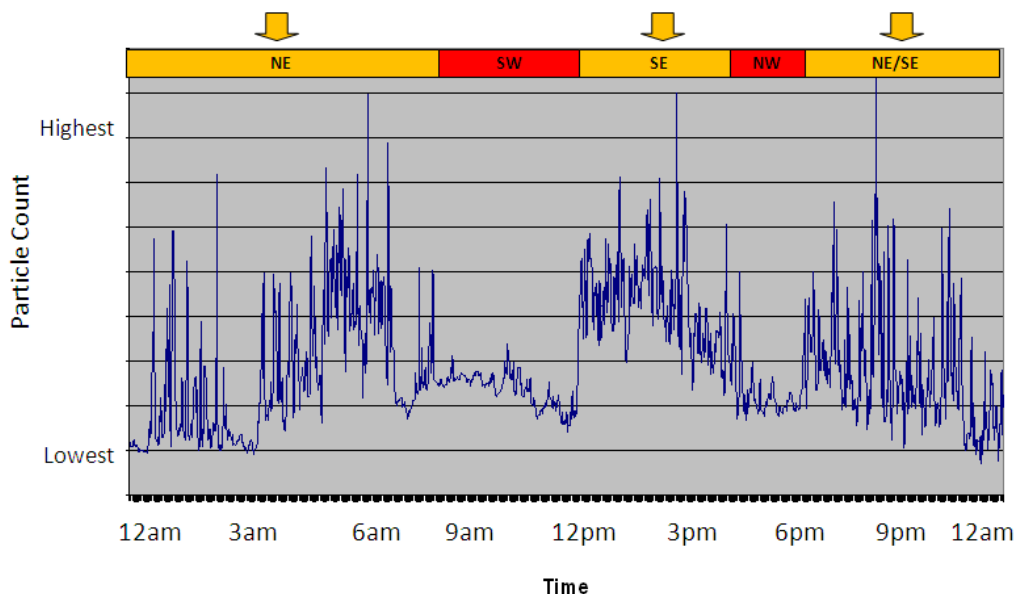
In addition to showing the eligible participants, this map contains information provided to us by the mobile lab that drove through the study areas every day during the period between July 2009 and June 2010. The mobile lab collected data from the air to measure different types of air pollution. This map shows the total number of particles monitored by the mobile lab during the morning rush hour on January 6, 2010.

As illustrated on the map, the particle number count is highest (darkest red) near the high-

ways. However, the particle number count is also high on some major roadways as can be seen by the orange and red dots along parts of Broadway. The farther one is from the highway and major roads during morning rush hour (such as the Ball Square area all the way to the left), the lower the particle number count in the air.

## Fixed Site Data: Air Monitoring Station Image by Christina Hemphill

Air Monitoring Site on the Mystic Activity Center for January 19th, 2010



The chart on the left presents one days worth of measurements on particle counts taken by CAFEH's air monitoring station on the Mystic Activity Center (MAC), which is located southwest of Interstate-93.

This chart shows the effects of wind direction on the concentration of particles in the air. All of the peaks on this graph, found below the yellow bar, occur during times when the wind is blowing towards the MAC. While the lowest particle counts, found below the red bar, occur during times when the wind is blowing away from the MAC.

Ultimately, charts like this help CAFEH researchers understand the importance of wind direction and how it affects air pollution levels. This chart indicates that wind direction must be taken into account when determining the exposure of residents to traffic pollution.



### CAFEH reaching out to Youth by Christine Rioux

On July 15, 2010, CAFEH was invited to participate in the summer program for middle school students interested in health careers at UMass Boston.

Seven CAFEH student scholars presented an interactive hands-on curriculum about CAFEH to twenty Boston Public middle and high school students enrolled in the Health Careers Opportunity Program, a collaboration between Tufts and UMass Boston. The curriculum, developed by Christine Rioux and the CAFEH student scholars, engaged the students using a skit, geo-positioning tools, the mobile laboratory, instruments used to measure blood pressure at the clinic, and an exercise using life savers, skittles, and gum as well as collecting and displaying data on graphs and charts.

The first part of the curriculum took place in the classroom and included 30 minutes of descriptions and question and answers.

Later, the middle school students went outside where the CAFEH student scholars presented on the following concepts (see below left photo):

- (1) The purpose and steps in an environmental health study
- (2) How and why we collect data going door-to-door from people who live in specific neighborhoods based on traffic levels
- (3) How to read and use maps to present information on the environment and health;
- (4) Why we use a mobile laboratory to measure air pollution levels that vary over place and time; and
- (5) The different skills needed and career paths they can pursue in environmental health.

The HCOP students voted the CAFEH day one of their favorite activities of the summer.



Marie Delnord, a Tufts student researcher (on the right) presenting information about CAFEH at the UMass of Boston summer Health Career Opportunities Program.



Christine Rioux, on stage, presenting information about air pollution at the Race Exhibit event during Martin Luther King Day.

### Museum of Science by Christine Rioux

On January 17, 2011, Christine Rioux, Assistant Professor at Tufts, led a team of eight student scholars from Tufts, Harvard, Boston University and Roxbury Community College, in organizing and presenting an interactive exhibit on traffic pollution and health at the Museum of Science as part of the larger exhibit "RACE: Are we that different?"

As part of its collaboration with Tufts Clinical Translation Science Institute (CTSI), the museum gave CAFEH the opportunity to present information on their project during a 20 minute presentation to around 200 young museum visitors (see the above right photo).

At this presentation, Rioux spoke about the geography of risk and who is most vulnerable to the health effects of traffic pollu-

tion. With the help of CAFEH student scholars, Dr. Rioux demonstrated to the audience the tiny size of the ultrafine traffic-related particulates, a 100 billionth of a meter or less. These tiny particles are believed to present some of the greatest risks to people living in close proximity to highways and busy roads.

Student scholars, conducted a real-time survey of museum visitors regarding pollution in their communities, presented maps of traffic pollution in the greater Boston area, oversaw an air pollution puzzle contest and made pinwheels with younger visitors to demonstrate the impacts to lung function associated with traffic pollution. In addition, museum visitors were given a tour of the mobile lab that is being used to collect environmental data from CAFEH's study neighborhoods.

**CAFEH's Website:**

<http://www.tufts.edu/med/phfm/CAFEH/CAFEH.html>

**Fifty things you can do to reduce pollution:**

<http://www.arb.ca.gov/html/brochure/50things.htm>

**Somerville Transportation Equity Partnerships Website:**

<http://www.somervillestep.org/>



Is a resource for teachers to incorporate CDC health, safety, and science topics into your classroom:

<http://www.bam.gov/>

**Our Partners**

**SOMERVILLE**  
TRANSPORTATION EQUITY  
**PARTNERSHIP**

**CPA** Chinese Progressive Association

**CRA**

Chinatown Residents Association

**FUNDED BY**

Grant #: S15462

**Somerville Mid- Project Report Back**

On Thursday May 19, at the Mystic Activity Center CAFEH will be hosting a mid-study report back to the Somerville Community from 9 am to 1 pm.

This session will include reports on both human and environmental data collected by the study in Somerville. In addition, CAFEH will briefly present some of the methods it has used to collect the data.

Finally, CAFEH will present its plans moving forward in terms of its analysis and how the project hopes to utilize the information to inform key policymakers.

If you plan to attend the report back please RSVP by email to Lindsay Kephart at [lindsay.kephart@tufts.edu](mailto:lindsay.kephart@tufts.edu) or call Don Meglio at 617-636-2110.

**Coming Up**

The CAFEH project is currently wrapping up its data collection efforts in Dorchester and will soon be starting to gather data in Chinatown. This will allow CAFEH to have access to more data so that it can produce stronger conclusions when the analysis is complete.

In addition, as CAFEH produces more concrete conclusions on the health effects of traffic pollution, it will be scheduling additional report backs in all of the study neighborhoods.

**CAFEH: "air pollution study" (continued from page 1)**

preparing outreach strategies to our study neighborhoods in Somerville, Dorchester, South Boston, Malden, and Chinatown. Finally, at any given meeting you would come across two to three community outreach workers who were hired from one of our three study areas.

As mentioned above, CAFEH finds community participation integral to the success of the study. Community partners are a part of each process. They also take part in the strategies and decisions of the CAFEH project and help steer the projects science discussion.

So, what is the point of all of this work?

There is not yet conclusive evidence of the health effects of near-highway air pollution on the cardiovascular system. In other words, does breathing in air pollution from the highway lead to heart attacks, strokes, and other forms of heart disease? This is one of the most critical questions that CAFEH is trying to address.

The CAFEH team is grateful for the information that was provided to the study by community residents, and while research team members will be hard at work publishing their findings in academic journals, they will also present back to the community. CAFEH is not satisfied with only providing a platform for community input into the study (whether through participating in biweekly meetings or providing data for the project), but would also like to provide the community with some output from the study starting with a mid-progress report back on May 19<sup>th</sup>.

Ultimately, the hope for this project is that a combination of academic and community efforts will help get the attention of policy makers and local community groups that can use CAFEH's findings to improve the environment of the study neighborhoods.

Working together on a five-year study to examine the effect of air pollution of traffic on the health of people living near major highways.



Chinatown



Somerville



South Boston