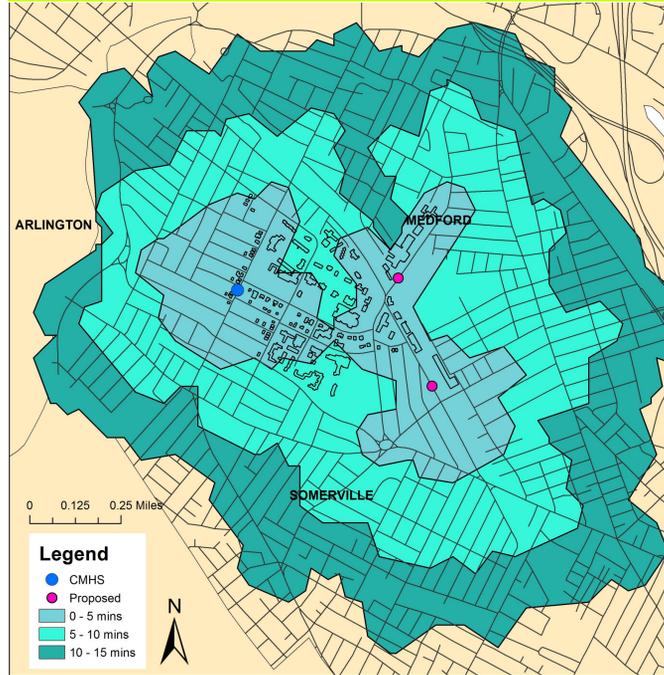


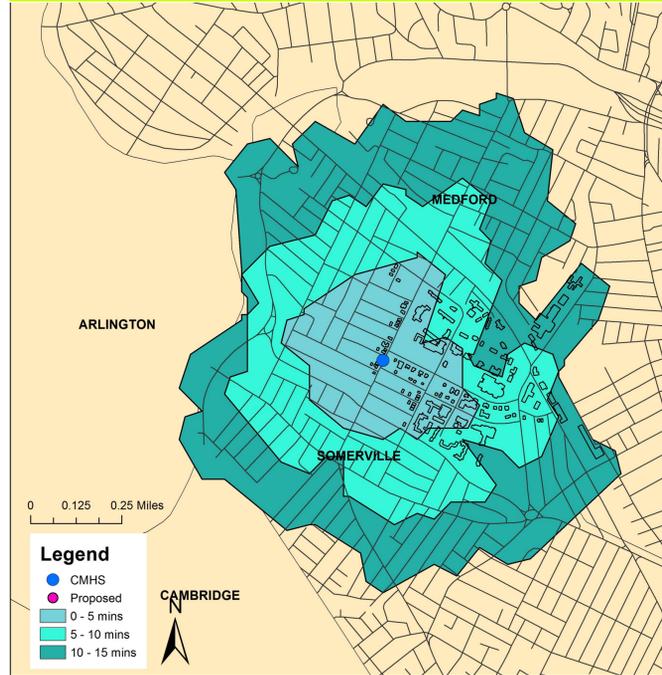
# One Step Closer:

## Envisioning Broader Mental Health Care at Tufts University

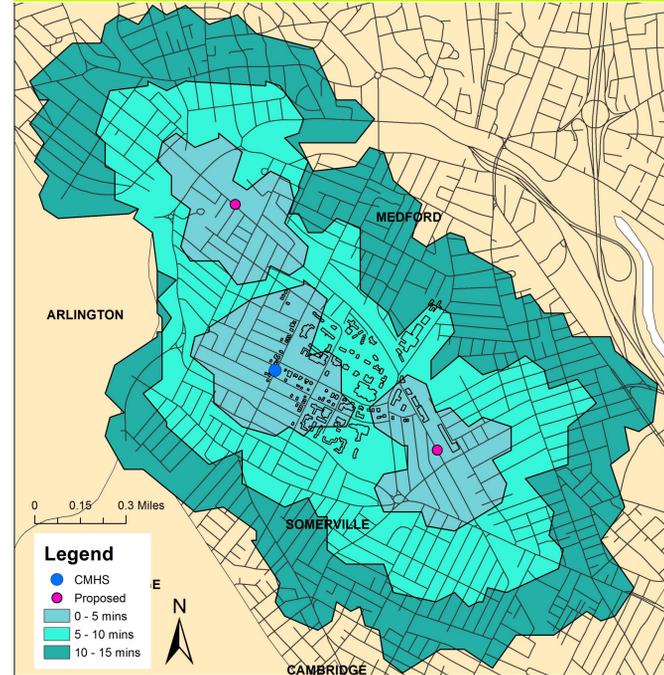
**Proposal 1:**  
574 Boston Avenue and 161 College Avenue



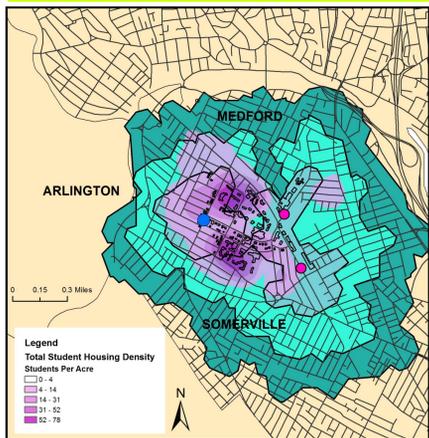
**Current Clinical Care:**  
120 Curtis Street



**Proposal 2:**  
574 Boston Avenue and 200 Boston Avenue



**P1: Total Housing Density**



### Introduction

Nationwide, the demand for mental health care on college campuses has skyrocketed. On the Tufts campus, Counseling and Mental Health Services (CMHS) has seen a 61% increase in routine intakes between the fall of 2015 and 2017. In 2016, Health Minds data indicated that 37% of students had a clinical diagnoses for depression, anxiety, or an eating disorder.

This project is in conjunction with the work of the Mental Health Task Force hosted by the Tufts Office of the President. In response to growing needs, the Task Force is exploring alternative models of care to better meet the demand on the Medford/Somerville campus in Boston, Massachusetts. For this project, I have proposed two options for new satellite locations to ease the demand on the current location at 120 Curtis Street. These locations are proposed in response to student residency density and student concerns collected by the task force.

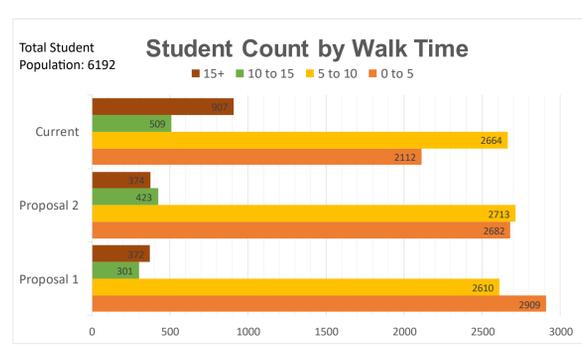
- Spatial Questions**
- What portion of the student body is currently within an accessible range of the counseling services?
  - Where are resources available at 4:00am (after Tisch late night closes), 12pm (open block), and 6pm (when the workday ends)?
  - What hours should Tufts be investing in more resources?

**Literature Review**

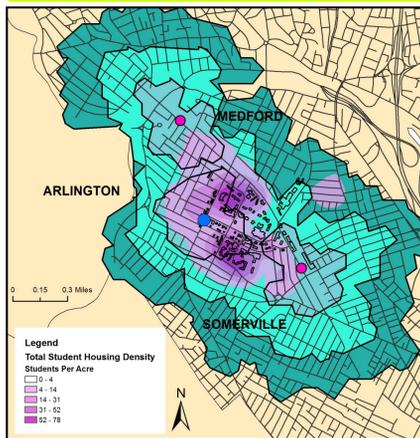
Juarez, D., Robinson, L., & Matthews-Juarez, P. (2002). 100% Access, Zero Health Disparities, and GIS. *Journal of Health & Social Policy*, 16(1-2), 155-167.

Pearce J, Witten K, Bartie P. *Neighbourhoods and health: a GIS approach to measuring community resource accessibility*. *Journal of Epidemiology & Community Health* 2006;60:389-395.

Sungduck Lee & Emily Talen (2014) *Measuring Walkability: A Note on Auditing Methods*. *Journal of Urban Design*, 19:3, 368-388. DOI: 10.1080/13574809.2014.890040



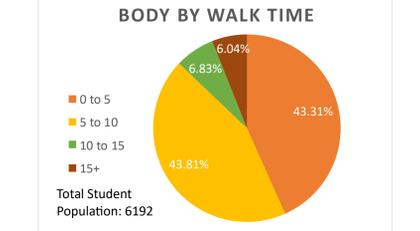
**P2: Total Housing Density**



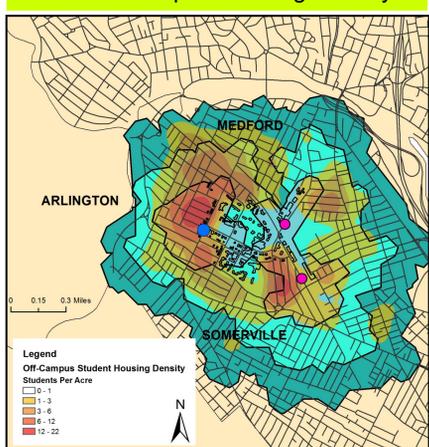
### Analysis

The total student density raster shows the highest concentrations at the uphill and downhill dorms. However, they also indicate some clustering of off-campus housing near the gym and along the residential roads to Powderhouse circle. When the on-campus housing is removed, the map displays other clusters of housing which represent primarily upper-class undergraduates and graduate students. Based on the student density mapping, I proposed one satellite location at 574 Boston Avenue to support on the East/Southeastern edge of campus. I then analyze two options for a second satellite site: 161 College Avenue, the Tisch Fitness Center, or at 200 Boston Avenue. A visual analysis of the maps show that a location at the Fitness Center offers the most concentrated layout of care. More of the student density raster falls into the zero-to-five and five-to-ten minute range. Under this layout, about 89% of the student body has at most a 10 minute walk time. However, about 6% of students are over 15 minutes' walk away.

**PROPOSAL 2: BREAK DOWN OF STUDENT BODY BY WALK TIME**



**P1: Off-Campus Housing Density**



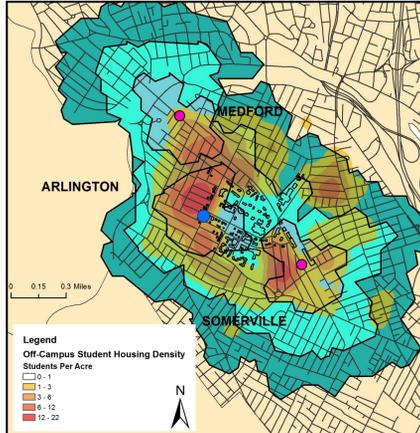
### Methods and Data

Tufts Mental Health Resources (Tabular): *Mental Health Task Force*  
 Tufts On-Campus Housing (Tabular): *Tufts Fact Book*  
 Tufts Off-Campus Housing (Tabular): *Tufts Community Relations*  
 Tufts Building Outlines (Vector Polygons): *Tufts Data Lab*  
 National Streets Layer (Vector Lines): *MassGIS*  
 Massachusetts Towns Layer (Vector Polygons): *MassGIS*

I took the street data and assigning a walk time to each street segment based on a 4.95 ft/sec walk time. Then, ran a service area network analysis using Tufts Counseling and Mental Health Services (CMHS) as the Facility. Then I added other proposed facilities and ran further service area network analyses. Next, I geocoded on- and off-campus housing data and ran a Kernel Density analysis to generate a total student density heat map. I repeated this process for off-campus only. I conducted a spatial join with the original points to determine percentage of students within certain walkable distances from CMHS. Lastly, I composed a dataset of the hours of operation for certain resources of interest to the Task Force and used Time Slider in ArcMap create a time lapse video of resources.

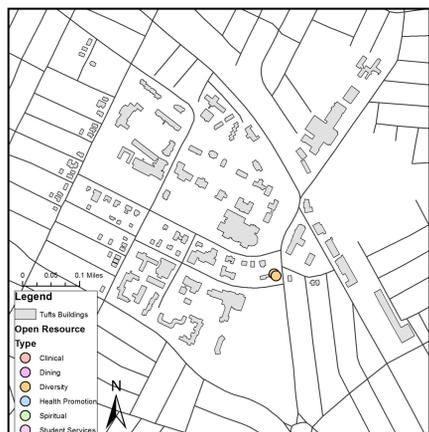
With the second satellite location at 200 Boston, the student density rasters are still within the new walk range of clinical services. However, in the break down, now only 87.13% of students are within 10 minutes' walk time and 6.04% of students are still over 15 minutes away. However, one source of error in this project is the use of residences rather than academic buildings, where students are more likely located during the day. For the 200 Boston Ave location, I am proposing it be designated a graduate-student specific satellite location for the many graduates that work hours in the labs in this building.

**P2: Off-Campus Housing Density**

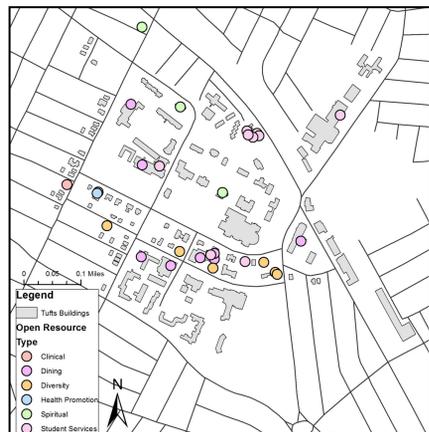


### Availability of Clinical and Non-Clinical Resources

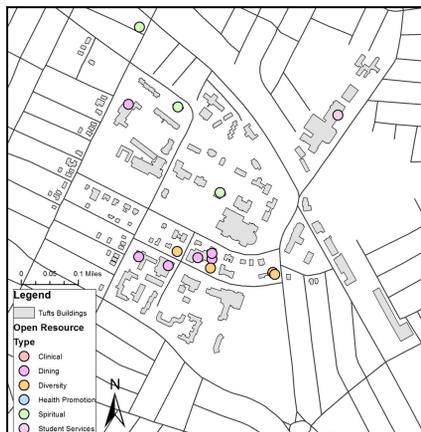
**4:00AM**



**12:00PM**



**6:00PM**



### Conclusion

This data is timely and will be utilized immediately. Following the completion of these maps, they will be provided to the Mental Health Task Force, the Dean of Student Affairs Office, the Office of the President, and Tufts Community Relations. The maps here suggest that Tufts is currently underperforming in its' provision of mental health services while the demand for this care is growing exponentially. These findings will have implications for what recommendations the Task Force will be proposing this summer. By expanding the hours of existing resources and establishing new services in strategic areas, Tufts can vastly increase the current scope of their care on the Medford/Somerville Campus.

Projected Coordinate System: (NAD 1983) Massachusetts State Plane  
 Projection: Lambert Conformal Conic

Makaylah Respicio-Evans  
 GIS 102: Advanced GIS, Tufts University  
 May 8th 2018