The devastation of Hurricane Sandy provided a unique opportunity for identifying areas of improvement in the care of the medically vulnerable population, especially for trauma patients upon discharge. By overlaying geospatial population distributions with evacuation zones, we were able to evaluate the trends in healthcare utilization post-Hurricane Sandy. Our data provides compelling evidence that there should be considerations of where a trauma patient is being discharged to, especially those with risk factors for identified complications. The work done on our study identified several significant post-disaster complications and how they correlated to the different disaster zones. Some critical findings included increases in the “incidence of drug-resistant infections” and “homelessness”. These findings were seen in the patients exposed to the evacuation zones suffering the greatest storm impact.

Clinically, upon discharge of a patient there should be special forethought of their risk factors for complications and the location they are being discharged too; the area of re-location is especially important to consider if it is an area with risk for experiencing the impact of a disaster. If reverse triage is indicated, a careful evaluation of trauma patients should be taken upon disposition to the community to reduce their exposure for acquiring post-discharge complications. The trauma patient population is recognized as one of the many medically vulnerable groups in the context of large-scale disasters; the table above supports that our care of medically vulnerable populations has room for improvement especially in the area of post-discharge complications. Overall ED utilization decreased in all but zone 1 (most affected) of the disaster. Significant increases in ICD-9 secondary diagnoses are shown above. Note that many of these diagnoses are not related to the trauma from the disaster itself, but are instead the result of a delay in or interruption to medical care of chronic pathologies. These interruptions range from lack of access such as an inability to obtain medication refills, or mechanical failures such as a broken refrigerator, therefore leading to an inability to store items like insulin. While mobility limited individuals are finding challenges in accessing care and medications, the mobile complement of the effected population is distributing themselves unequally across available hospitals leading to an unbalanced distribution of resource utilization; this places a great stress on these hospitals and the surrounding areas; public hospitals face greater patient burdens than private institutions, especially in areas with indicators for low SES population concentrations (qualified by insurance type).

The data shows that the outliers of the public hospital users, who were redistributed Bellevue emergency room patients, supports that populations utilizing public hospitals pre-disaster may choose to travel greater distances in order to receive care at public institutions; a greater number of these patients were Medicare/Medicaid insured. While there are many factors in this decision, it may sub-optimally skew the increase of patient loads among already overburdened post-disaster public hospitals.

As we improve disaster response models, data supports that special care be given to better preparing our patients with chronic pathologies upon discharge in order to reduce the post-disaster complications and associated care; this will in turn ultimately reduce hospital burden and resource utilization during and after disasters. Increases in illness shows that we must improve support and preparation of medically vulnerable populations before and
during disasters. This research has highlighted a promising opportunity for implementation of community paramedicine programs to bolster disaster preparedness, in-hospital disaster programs that consider patient condition and geographical disposition and medical surge capacities as a method to better serve our vulnerable communities.

References: