

Boston University Medical Campus: Climate Change Impacts and Mitigation Strategies

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Metropolitan College

DECISION SCIENCES RESEARCH LABORATORY



DSLab

1 | Problem Statement & Project Aim

Boston University Climate Action Plan



The Medical Campus, on the other hand, is extremely vulnerable to flooding and has many more essential research and academic resources in harm's way. A careful evaluation of the Medical Campus' existing and potential vulnerability should be done separately to quantitatively assess risk.

RECOMMENDATIONS OF THE CLIMATE ACTION TASK FORCE
FOR BOSTON UNIVERSITY'S CLIMATE ACTION PLAN

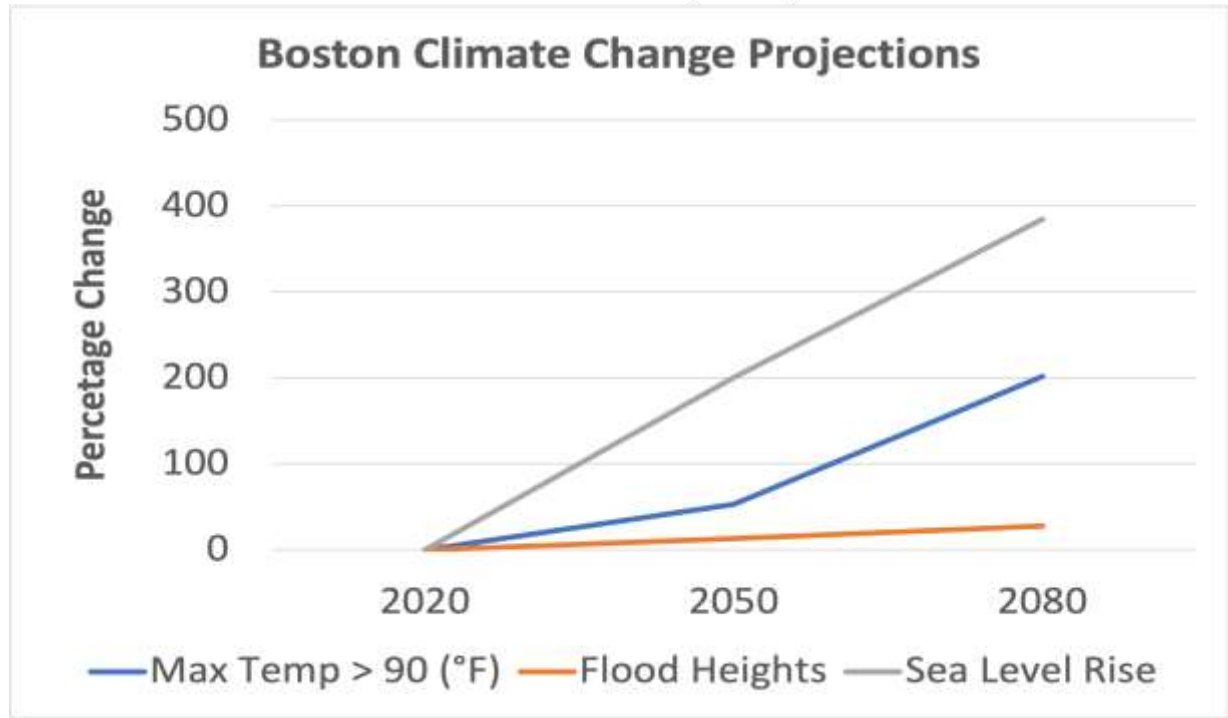
This project will examine how climate change will impact the ability of the BUMC to effectively serve its stakeholders and what mitigation strategies should be undertaken to create necessary resiliency.

2 | Project Methodology*

1. BUMC Criticality Assessment
Tour and Consultation with Responsible BU Personnel
2. BUMC Risk Quantification
Using Data Analysis and Published Literature
3. Mitigation Plan Recommendations
Based on Contemporary Enterprise Risk Management Concepts

* The project does not include the BU Medical Center or the NEIDL

3 | Problem Introduction



(Climate Change Impacts and Projections for the Greater Boston Area)

4 | BUMC Criticality Assessment

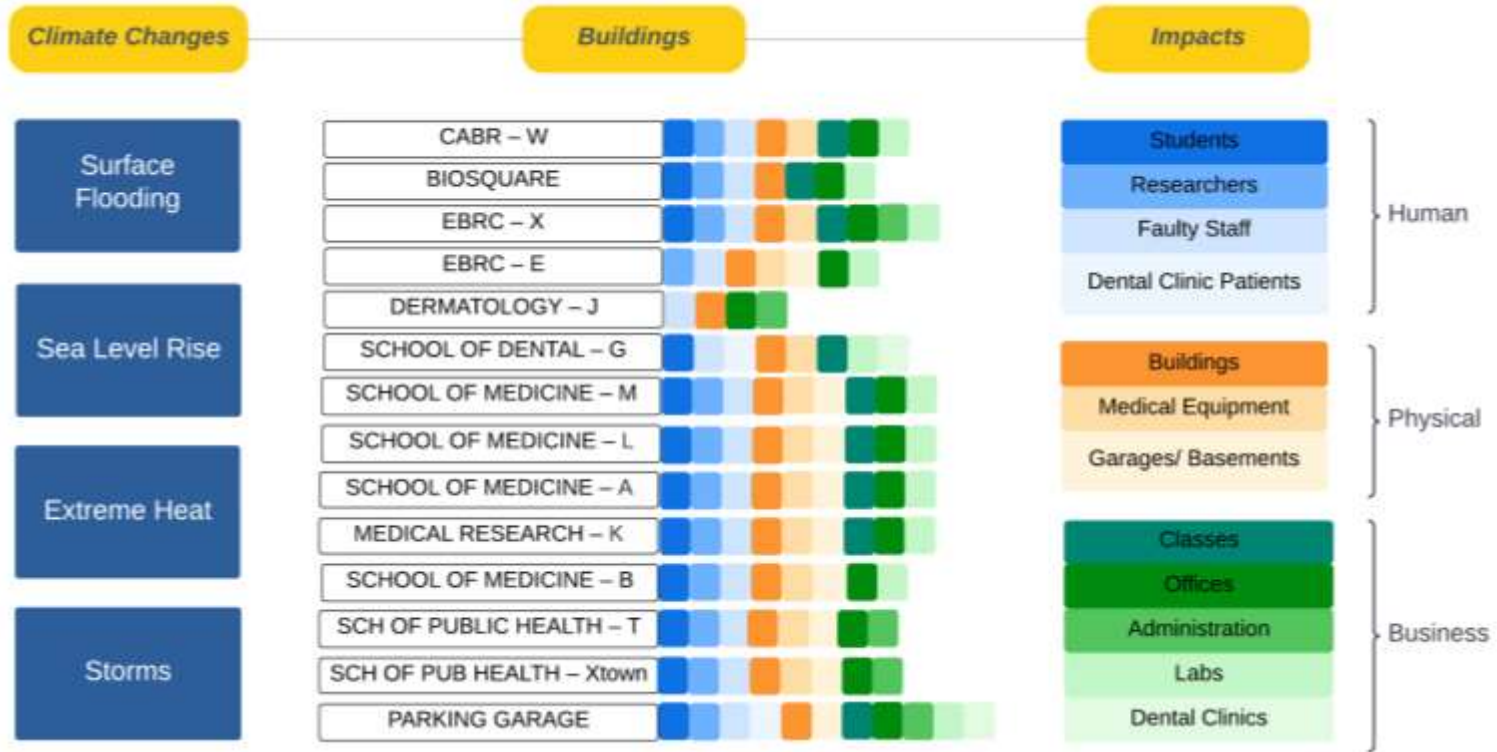
No.	Building Name	Education	Research
1	CABR – W	1	5
2	BIOSQUARE	5	3
3	EBRC – X	1	5
4	EBRC – E	3	5
5	DERMATOLOGY – J	1	3
6	SCHOOL OF DENTAL – G	5	1
7	SCHOOL OF MEDICINE – M	1	1

Critical level: 1 = insignificant | 2 = minor | 3 = moderate | 4 = important | 5 = high

4 | BUMC Criticality Assessment

No.	Building Name	Education	Research
8	SCHOOL OF MEDICINE – L	5	4
9	SCHOOL OF MEDICINE – A	5	1
10	SCHOOL OF MEDICINE – R	3	4
11	MEDICAL RESEARCH – K	1	5
12	SCHOOL OF MEDICINE – B	2	1
13	SCHOOL OF PUBLIC HEALTH – T	5	3
14	SCHOOL OF PUBLIC HEALTH – Crosstown	1	4
15	PARKING GARAGE	2	2

5 | Preliminary Impact Relationship Diagram



6 | Risk Quantification Work In Progress

Customer Hours Out

	coef	std err	t	P> t
const	1536.6276	83.416	18.421	0.000
Tropical Storm	1784.7857	1704.080	1.047	0.295
Flood	2909.8424	935.968	3.109	0.002
Strong Wind	878.6848	648.695	1.355	0.176
High Wind	3673.8751	765.731	4.798	0.000
Winter Storm	-548.4976	1321.028	-0.415	0.678
Winter Weather	-356.9893	1206.409	-0.296	0.767
Coastal Flood	903.1294	935.968	0.965	0.335
Cold/Wind Chill	-1268.4376	2949.194	-0.430	0.667
Blizzard	463.3474	2086.229	0.222	0.824
Excessive Heat	420.1637	201.602	2.084	0.037
Thunderstorm Wind	3529.8687	892.765	3.954	0.000
Flash Flood	-662.2776	2086.229	-0.317	0.751
Hail	2331.6474	2086.229	1.118	0.264
Heavy Snow	-694.7143	1704.080	-0.408	0.684

Boston Eversource Power Outage Data Analysis

$Y_C =$ Total outages per day (thousands of hours)

$$Y_C = 1.5 + 0.4X_H + 2.9X_F + 3.7X_W + 3.5X_T$$

$X_H = 1$ if day has excessive heat (0, otherwise)

$X_F = 1$ if day has flooding (0, otherwise)

$X_W = 1$ if day has extreme windy (0, otherwise)

$X_T = 1$ if day has thunderstorm (0, otherwise)

7 | Future Work (HVA and Mitigation)

- Complete BUMC Hazards and Vulnerability Assessment (HVA)
- Evaluate BUMC Climate Change Mitigation and Adaptation Strategies
- Review Coordination with External Parties (Gov. Agencies, Utilities, etc.)
- Review Collaboration with Insurance Companies, other Universities, etc.



Thank You!

Q&A