

# DASHBOARD PROJECT

Getting Climate Variables and Their  
Impact on Critical Buildings



# Getting Climate Variables and Their Impact on Critical Buildings

## INTRODUCTION

**Project Title:** Dashboard for Getting Climate Variables and Their Impact on Critical Buildings

**Competition:** Higher Education Data Analysis Competition.

**Objective:** Analyze and visualize the impact of climate variables on critical buildings to facilitate decision-making for stakeholders in Hamilton, Ontario.

**Key Outcome:** Won the main competition with this innovative analysis and visualization approach.



## Getting Climate Variables and Their Impact on Critical Buildings

# PURPOSE OF THE DASHBOARD

**Goal:** Provide an interactive tool to analyze building characteristics and their relationship with climate variables.



**Target Variable:** Facility Condition Index (FCI Rating).



## Getting Climate Variables and Their Impact on Critical Buildings

# PURPOSE OF THE DASHBOARD

### Influential Variables:

- Building age
- Location
- Facility type and size
- Climate data: Ice days, cold cycles, hours of sunlight, humidity, precipitation
- Two categorical variables: FCI criticality and human criticality

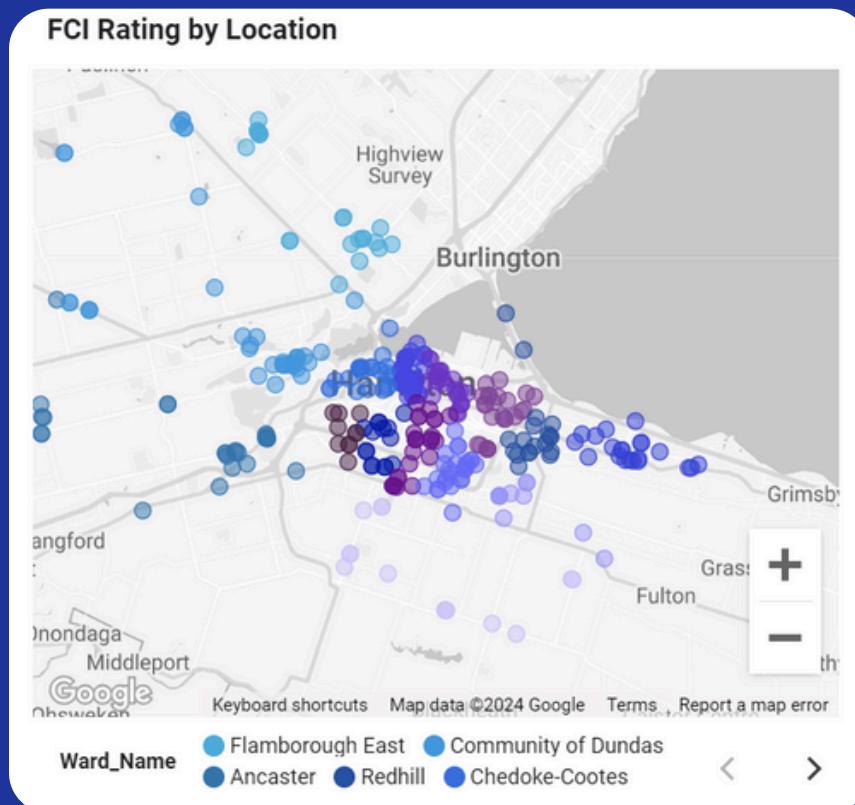


# Getting Climate Variables and Their Impact on Critical Buildings

## VISUALS OVERVIEW

### Visual 1 & 2: FCI Rating vs. Location

- Map (GeoJSON-based): Interactive visualization by wards (e.g., H13-2).
- Bar Chart: Comparative data across locations.



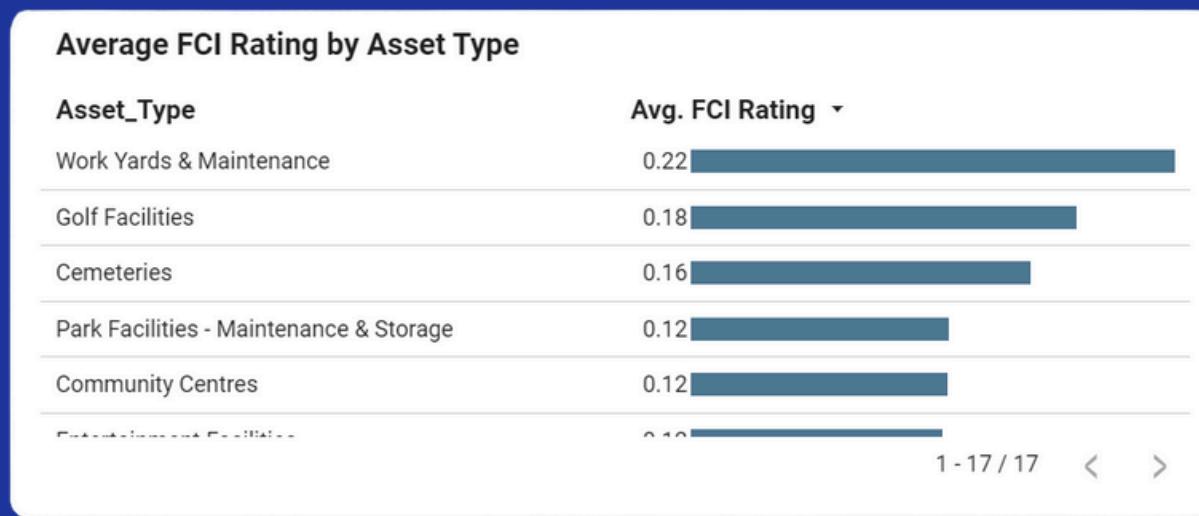
ID...	Ward	Count	Avg. FCI Rating
1	Chedoke-Cootes	52	0.13
2	Downtown	50	0.06
3	Hamilton Centre	37	0.15
4	East Hamilton	36	0.09
5	Redhill	22	0.04
6	East Mountain	38	0.11
7	Central Mountain	34	0.09
8	West/Central Mou...	18	0.06
9	Upper Stoney Creek	18	0.16
10	Lower Stoney Creek	23	0.09

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## VISUALS OVERVIEW

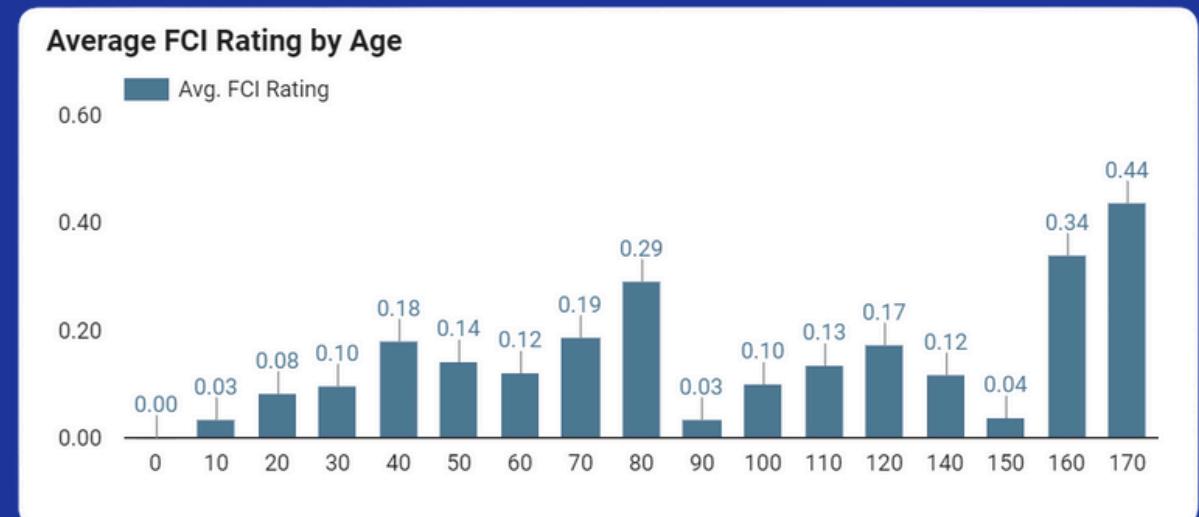
### Visual 3: FCI Rating vs. Asset type

- Comparison of the impact of each asset type.



### Visual 4: FCI Rating vs. Building Age

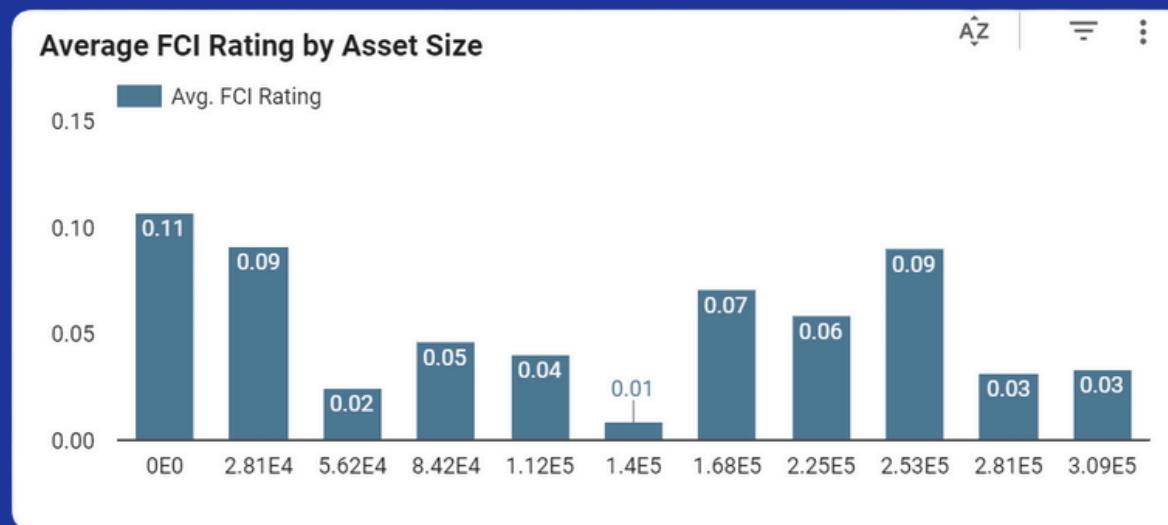
- Positive correlation identified up to 80 years, indicating potential refurbishments in older buildings.



# Getting Climate Variables and Their Impact on Critical Buildings

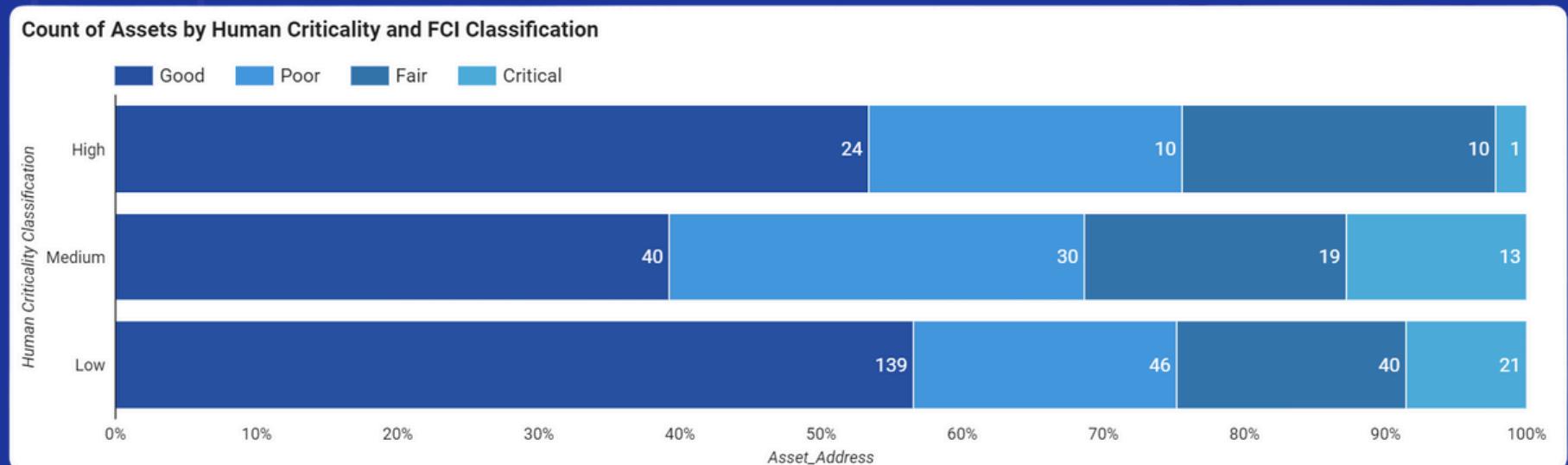
## VISUALS OVERVIEW

### Visual 5: FCI Rating vs. Asset Size



### Visual 6: Number of Advisors by Human Criticality and FCI Classification

- Quick assessment of advisor distribution.



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## VISUALS OVERVIEW

### Visual 7: Table of Assets

- Displays climate data averages affecting each asset for detailed analysis.

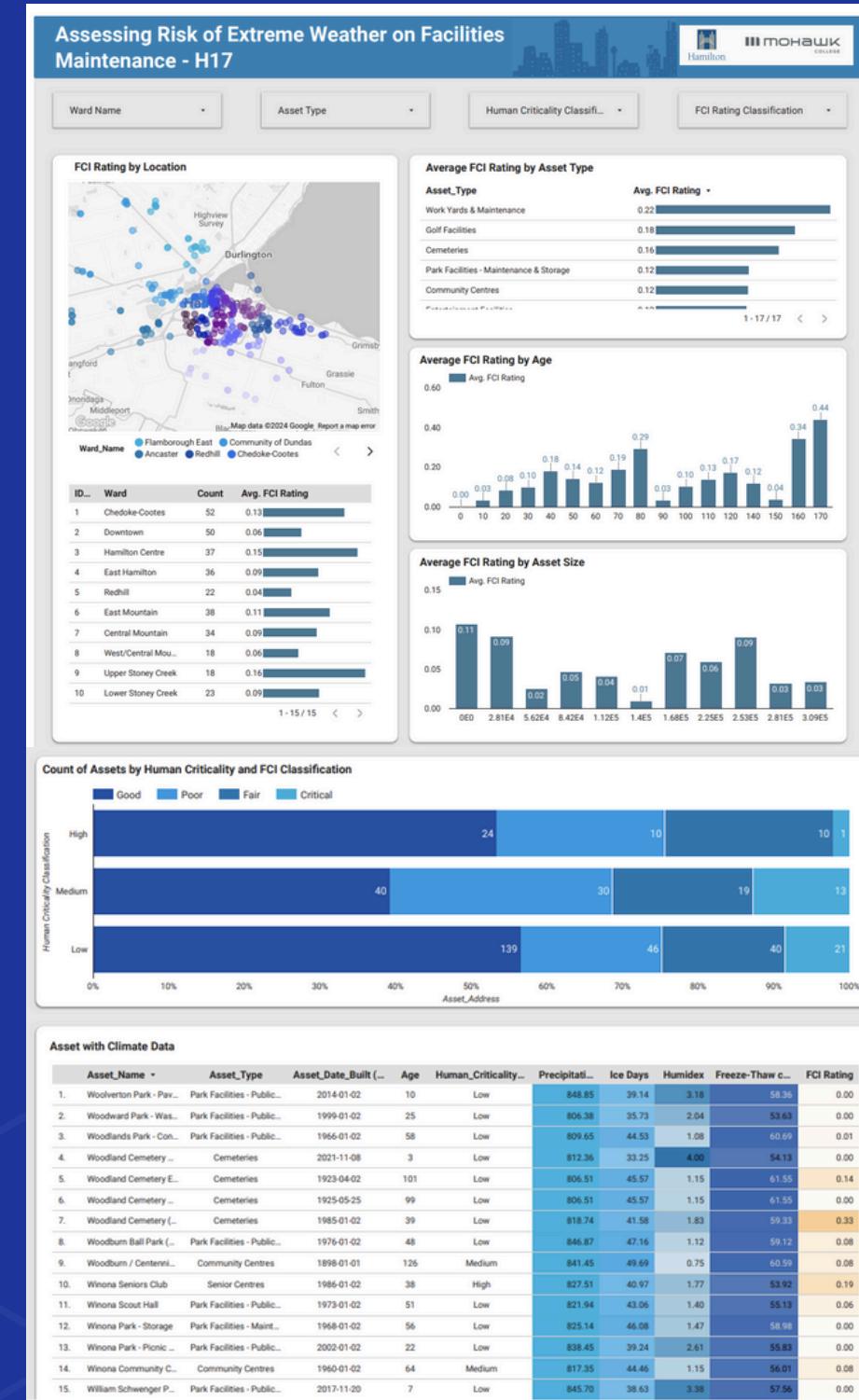
Asset with Climate Data

Asset_Name	Asset_Type	Asset_Date_Built	Age	Human_Criticality	Precipitation	Ice Days	Humidex	Freeze-Thaw c...	FCI Rating
1. Woolverton Park - Pav...	Park Facilities - Public...	2014-01-02	10	Low	848.85	39.14	3.18	58.36	0.00
2. Woodward Park - Was...	Park Facilities - Public...	1999-01-02	25	Low	806.38	35.73	2.04	53.63	0.00
3. Woodlands Park - Con...	Park Facilities - Public...	1966-01-02	58	Low	809.65	44.53	1.08	60.69	0.01
4. Woodland Cemetery ...	Cemeteries	2021-11-08	3	Low	812.36	33.25	4.00	54.13	0.00
5. Woodland Cemetery E...	Cemeteries	1923-04-02	101	Low	806.51	45.57	1.15	61.55	0.14
6. Woodland Cemetery ...	Cemeteries	1925-05-25	99	Low	806.51	45.57	1.15	61.55	0.00
7. Woodland Cemetery (...	Cemeteries	1985-01-02	39	Low	818.74	41.58	1.83	59.33	0.33
8. Woodburn Ball Park (...	Park Facilities - Public...	1976-01-02	48	Low	846.87	47.16	1.12	59.12	0.08
9. Woodburn / Centenni...	Community Centres	1898-01-01	126	Medium	841.45	49.69	0.75	60.59	0.08
10. Winona Seniors Club	Senior Centres	1986-01-02	38	High	827.51	40.97	1.77	53.92	0.19
11. Winona Scout Hall	Park Facilities - Public...	1973-01-02	51	Low	821.94	43.06	1.40	55.13	0.06
12. Winona Park - Storage	Park Facilities - Maint...	1968-01-02	56	Low	825.14	46.08	1.47	58.98	0.00
13. Winona Park - Picnic ...	Park Facilities - Public...	2002-01-02	22	Low	838.45	39.24	2.61	55.83	0.00
14. Winona Community C...	Community Centres	1960-01-02	64	Medium	817.35	44.46	1.15	56.01	0.08
15. William Schwenger P...	Park Facilities - Public...	2017-11-20	7	Low	845.70	38.63	3.38	57.56	0.00
16. William McCullouch P...	Park Facilities - Maint...	1998-01-02	26	Low	848.91	43.87	2.33	60.06	0.24
17. William McCulloch Pa...	Park Facilities - Public...	1998-01-02	26	Low	848.91	43.87	2.33	60.06	0.01

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## FINAL RESULT VIEW

<https://lookerstudio.google.com/u/0/reporting/79980d99-e80b-4ac2-a13d-9b6b119aa178/page/aFZtD>



## Getting Climate Variables and Their Impact on Critical Buildings

# TOOLS AND TECHNOLOGIES USED

### Looker Studio:

- Free, accessible platform for users with Google accounts.
- Promotes collaboration and democratized data insights.



Looker Studio

### BigQuery:

- Enhanced data processing and visual performance.
- Efficiently handled large datasets.



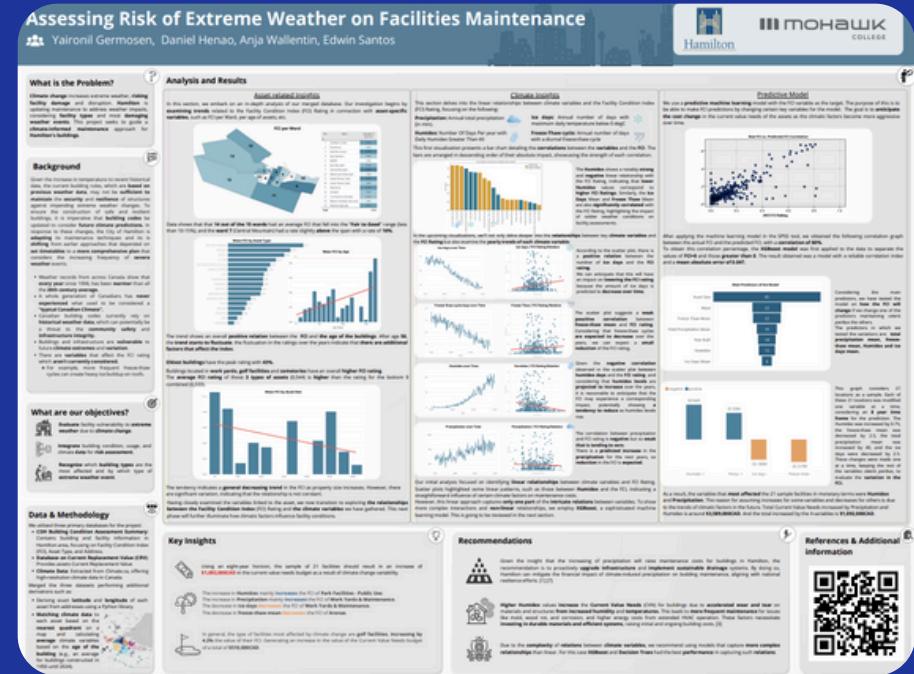
BigQuery

# Getting Climate Variables and Their Impact on Critical Buildings

## ACHIEVEMENTS

- **Competition Recognition:**  
Won the primary competition due to the depth and clarity of the analysis.

- **Complementary Project:**  
Developed a poster summarizing the complete data analysis for broader dissemination.



## Getting Climate Variables and Their Impact on Critical Buildings

### KEY TAKEAWAYS

- **Impactful Visualizations:** Provided stakeholders with actionable insights through interactive and accessible tools.
- **Practical Solutions:** Showcased the ability to use data to solve real-world infrastructure challenges.
- **Collaboration-Friendly:** Tools used facilitated team-based decision-making and wide usability.

