What Will Be Enough? Suicide Prevention Challenges Of A Parking Garage

Shirley Zhen
shirleyz0715@gmail.com

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What Will Be Enough? Suicide Prevention Challenges of a Parking Garage

By: Shirley Zhen

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Primary Advisor: Dr. Marney White, PhD, MS
Secondary Advisor: Dr. Ashley Hagaman, PhD, MPH
Abstract

Objectives: This project assesses deaths by jumping at a prominent parking garage in New Haven, CT in order to improve upon structural suicide prevention efforts.

Methods: Individuals and organizations potentially involved with the garage were identified and contacted for information regarding any previous suicide prevention efforts, reasons for lack of prior interventions, and any existing or future plans for structural interventions. Physical evaluation of the garage was assessed for accessibility to the rooftop level and features that potentially contribute to the location as a jumping site. Data on suicide deaths was gathered from news reports and the CT Chief Medical Examiner in order to gauge the severity of deaths by jumping at the garage. The number of deaths were compared to other parking garages and tall structures in New Haven.

Findings: There were four deaths by jumping at the parking garage from 2017 to 2020. Local stakeholders convened in the past to discuss the deaths by jumping at the garage and identified plans for short- and long-term interventions. Current suicide prevention measures at the garage include posters with the national suicide hotline number, regular patrolling by security officers, and 24/7 camera monitoring. Assessment of the garage shows features that may contribute to the consideration of the location as a potential jumping site, such as a climbable concrete barrier, and heavy traffic by the garage that may increase perception of lethality.

Discussion and recommendations: The findings suggest that funding and lack of evidence on effectiveness of structural interventions among parking garages have made it difficult to implement structural interventions. Recommendations include forming a task force to oversee suicide prevention at the garage, updating signage, use of ground deterrents, installing physical barriers when possible, and changes in public policy for future construction projects.
Acknowledgements

I would like to give my heartfelt gratitude to Dr. Marney White for her unwavering support in my endeavors and brilliant guidance these past four years. I would not have been able to complete this project or dual degree MPH/MSN program without you. I also have the deepest appreciation for Dr. Ashley Hagaman, who extended her invaluable insight to this project. Thank you for your expertise and patience throughout this year. Many thanks as well to the participants who took the time to share their knowledge and input on this very important topic. Lastly, I would like to acknowledge those with direct experience of suicide, including those bereaved by suicide. The voices of those with lived experiences are crucial to the ongoing work of suicide prevention.
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Introduction

Suicide is the 2nd leading cause of death for individuals aged 10 to 34 (2020), and is the 10th leading cause of death for all ages. Suicide by jumping specifically is the 10th leading cause of death for ages 15 to 24 (CDC, 2020). As one of the leading causes of death in the United States, suicide is a major public health concern. Jumping is an extremely lethal means of suicide, resulting in death among 85% of those who jump from significant heights (Beautrais, 2007). It is difficult to predict if a person will attempt suicide due to the complex nature of mental health. Some hypothesized characteristics of individuals found at jumping sites include impulsivity due to mental illness, contemplative behavior (i.e., pacing around the location or sitting on the edge of a building), and those who are resolute in their decision to die by jumping (i.e., driving to the location and jumping before anyone can intervene)(Beautrais, 2007; Ross et al., 2020). A follow-up study conducted among 515 individuals who were intervened from jumping at the Golden Gate Bridge, considered the number one suicide site in the world, found that 90% did not die by suicide by the end of the 34-year study period (Seiden, 1978). This suggests that jumping incidents tend to be acute situations and that those involved are ambivalent or act on impulse, and may survive if impeded at a distinct time (Beautrais, 2007; Gunnell & Nowers, 1997; Seiden, 1978).

Literature supports the use of structural interventions in preventing deaths by jumping, however, such interventions are not always present among high-rise buildings and other tall structures like parking garages (Cox et al., 2013). In a survey among parking institute members, 38% of parking facilities reported the occurrence of suicide deaths and 20% reported suicide attempts at their location (IPMI, 2019). Prompted by multiple news reports of deaths by jumping in New Haven, CT in the last few years, this project aims to provide an evaluation and
recommendation of means to implement a suicide prevention plan at the Air Rights Garage. The garage does not appear to have had any physical modifications related to suicide prevention since its construction in 1982 (Soong, 2019). Suicide deaths impact not only the individuals, but the rippling effects transcend to the community at large. Understanding some of the factors behind these deaths at the Air Rights Garage is critical to the construction and implementation of a public health intervention.

**Background**

Deaths by jumping are not as common as other lethal means of suicide. In 2019, 50% of suicide deaths were due to firearms while only 2.5% were due to jumping (NCIPC, 2021). The incidence of death by jumping differs greatly by location, occurring more often in cities where high-rise buildings are accessible (Chen et al., 2016). The term “hotspots” is frequently used to refer to locations where more than one suicide death occurs, however, there is no formal definition. Certain locations, such as bridges, cliffs, and even universities, have become infamous as “hotspots” for suicide by jumping.

These deaths can cause significant distress to those who witness the event, find the deceased, first responders, or others involved in some way (Cox et al., 2013). The public nature of these sites often results in media coverage which can increase the risk of contagion effects, also known as “copycat suicides” (Pirkis et al., 2013). This applies to parking facilities as well, where suicide deaths tend to occur more frequently at garages connected to hospitals (IPMI, 2019). The open structure and ease of accessibility make parking garages a prime target for individuals who may be considering death by jumping.
Structural interventions have been implemented in locations that are known to be “hotspots”, in an effort to deter individuals from jumping. While there is no standard definition of structural interventions, for the purposes of this project it will be defined as any intervention that includes the manipulation of a location’s surroundings or the use of physical barriers to prevent access. To date, a variety of interventions have been proposed and implemented across the world, including barriers, fencing, increased surveillance, and posting hotline numbers (Law et al., 2014; Ross et al., 2020).

**Effective interventions**

Evidence shows that structural interventions can be effective in reducing the number of suicide deaths by jumping from a height without displacement to another location. Interventions that appear to be most effective are ones that strictly involve physical barriers (Bennewith et al., 2007; Law et al., 2014). Interventions that exclusively utilize access to third parties (such as posting signage with suicide prevention hotline numbers) only appear to be somewhat effective, but are salient factors in bridging individuals to receiving further mental health treatment (Ross et al., 2020; Waalen et al., 2020). While there does not appear to be much formal research of such interventions among parking garages, efficacy has been demonstrated in locations with more frequent deaths by jumping, such as bridges and natural landmarks.

Two studies involving the installation of barriers on bridges supported the effectiveness of physical barriers as a method of suicide prevention. Law, Sveticic, and De Leo (2014) found a 53% drop in suicide deaths in the four years following the installation of fencing that was 3.3 meters high along the sidewalk of the Gateway Bridge in Brisbane, Australia. They conducted analyses on a nearby bridge that did not have any safety barriers during the same time period for
comparison and determined that there was no evidence of displacement to that location (Law et al., 2014). Bennewith, Nowers, and Gunnell (2007) found that suicide rates halved in the five years following the installation of a 2-meter-high wiring barrier along the main span of the Clifton suspension bridge in Bristol, England.

Some interventions have utilized a mixed-methods approach that included both physical barriers (i.e., fencing, netting, etc.) and deterrents that allowed for third party interventions (i.e., alarms that alert police or phone booths that connect to the national suicide prevention lifeline). The Gap Park Self-Harm Minimization Masterplan in Sydney, Australia involved the installation of 1.3-meter-high fencing, telephone booths with activation buttons that connected to emergency services or trained behavioral health staff, CCTV cameras that recorded footage, and signage with encouraging messages (i.e., “We care. We can help. Day or night!”) and the number to the suicide prevention lifeline (Lockley et al., 2014). There was a significant decrease in suicide deaths among females, but not among males in a six-year period following the intervention (Ross et al., 2020). These results may have been influenced by media reporting of an inquest to a young female’s death (by jumping) at the park at the same time of the study period. Another possible explanation is that females are more likely to respond to interventions that restrict the suicide means than males (although it is unclear why) (Ross et al., 2020).

Waalen, Bera, K., and Bera, R. (2020) analyzed suicide deaths at a large university for hotspots. Additionally, they examined the installation of fencing, call boxes, ground deterrents (e.g., furniture or plants), and postage of the suicide prevention lifeline number as part of the school’s intervention plan. Unique to this study, ground deterrents were used to physically block individuals from getting closer to the edge of the roof, in a way that would make one feel embarrassed if the object was disturbed (i.e., accidentally knocking a trash can over). They saw a
dramatic decline in suicide deaths following the intervention, but results were determined to be inconclusive due to the short follow-up period of 1 year (Waalen et al., 2020).

Community initiatives

Some authorities have implemented suicide prevention strategies following deaths by jumping at their local parking structures. Table 1 depicts several locations that have more recently begun to initiate suicide prevention measures. Each location utilized various measures, but all posted signage with numbers to suicide prevention lines at minimum. The parking authorities in the cities of Boise, ID and Lancaster, PA instituted the most comprehensive plans compared to the others listed (Cohen, 2015; Kane & Sprague, 2016). Both locations consulted outside professionals (i.e., law enforcement and mental health professionals) in the construction of their suicide prevention plans. Additionally, suicide prevention training was provided to the parking garage management and staff in both places (Cohen, 2015; Kane & Sprague, 2016).

In Boise, the garage owners, Capital City Development Co., requested the Boise Suicide Prevention Program (BSPP) conduct an informal investigation of their parking garages for suicide means accessibility. This investigation was prompted by news reporting that sensationalized two suicide attempts that occurred on the same day (Kane & Sprague, 2016). The BSPP members evaluated six parking garages for features that could contribute to jumping as a means of suicide. They created a report of their findings with several recommendations for safety improvement, including the installation of suicide prevention signage and thin metal rails on top of the existing concrete ledge (to deter people from using the ledge) (Kane & Sprague, 2016). It is unclear exactly which of their recommendations the owners ultimately followed as there does not appear to be any documentation of such changes listed on the Boise parking garage website.
Although one article reported that a physical barrier was installed and that parking staff received suicide prevention training, this brings to question who is ultimately responsible for preventing suicide at the garage (Ofeldt et al., 2020). Is it Capital City Development Co.? Or the Boise Suicide Prevention Program? The International Parking & Mobility Institute suggests that it is up to the parking facility owners to form relationships with the local police, suicide prevention organizations, and other related professionals in order to devise a plan (2019). The ambiguity of this responsibility often acts as a barrier to implementation strategies, especially due to the confounded source of funding as well. The Gap Park Self-Harm Minimization Masterplan in Australia took six years to complete because funds had to be secured from various sources (Lockley et al., 2014).

Due to the lack of research on structural interventions among parking garages, the informal reporting of such initiatives could be useful in providing a framework for the city of New Haven to create their own suicide prevention plan. An article written by the executive director of the Lancaster Parking Authority outlines multiple suggestions for suicide prevention measures at parking garages, including landscaping (i.e., planting trees to cover “clear” landing areas) and security patrolling methods (i.e., policy restricting people from lingering around rooftop) (Cohen, 2015). Notably, the biggest barrier to implementing fencing or netting at garages tends to be the varying high costs. Contracting bids to install an eight-foot-high, small chain-link fence on the top two levels of the Lancaster parking garage ranged from $40,000 to $120,000 (Cohen, 2015). The International Parking & Mobility Institute estimated the cost for a four-foot-high fence on the roof of a parking garage in Michigan to be $34,000 and the cost for fencing the top four levels of an eight-level garage in Iowa to be $220,000 (2019).
<table>
<thead>
<tr>
<th>Location</th>
<th>Authority involved</th>
<th>Interventions implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston, Massachusetts</td>
<td>Private university</td>
<td>• 7th to 10th floors were temporarily closed to pedestrians and cars</td>
</tr>
<tr>
<td>One parking garage</td>
<td></td>
<td>• Signage with numbers to suicide prevention lifeline and police department posted on each floor</td>
</tr>
<tr>
<td>(2020)</td>
<td></td>
<td>• Installation of security cameras</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Garage patrol 24 hours a day</td>
</tr>
<tr>
<td>Charlotte, North Carolina</td>
<td>Individual parking garage managers</td>
<td>• Signage with number to suicide prevention lifeline and encouraging messages posted in various locations of garage</td>
</tr>
<tr>
<td>Multiple parking garages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2019)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Brunswick, New Jersey</td>
<td>New Brunswick Parking Authority</td>
<td>• Signage with number to New Jersey Hopeline posted in stairways and elevators</td>
</tr>
<tr>
<td>Multiple parking garages</td>
<td></td>
<td>• Installation of perimeter alarms</td>
</tr>
<tr>
<td>(2020)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boise, Idaho</td>
<td>Capital City Development Corporation</td>
<td>• Informal investigation conducted by Boise Suicide Prevention Program</td>
</tr>
<tr>
<td>Multiple parking garages</td>
<td></td>
<td>• Installation of physical barriers (unknown type)</td>
</tr>
<tr>
<td>(2016)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Owner</td>
<td>Intervention</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Lancaster, Pennsylvania</td>
<td>Lancaster parking authority</td>
<td>• Signage with number to Idaho suicide prevention hotline</td>
</tr>
<tr>
<td>One parking garage (2015)</td>
<td></td>
<td>• Suicide prevention training for garage managers and staff</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• “No tolerance policy” with no-trespassing signage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• “Suicide Summit”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Installation of 8 ft. high, small chain-link fencing on top two levels of garage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Signage with number to local crisis line posted in garage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Suicide prevention training for garage managers and staff</td>
</tr>
</tbody>
</table>

*Note.* List of different interventions other cities have implemented. The number of deaths by jumping post-intervention in each city were not reported in their sources and unable to be found, most likely due to the recentness of the interventions and rare occurrence of suicide deaths.

**Methods**

*Physical Evaluation of Garage*

Research indicates that accessibility to parking garages, particularly the rooftop level, the aesthetic appeal, potential publicity, and perception of lethality can be factors that attract individuals with suicidal ideation (Beautrais, 2007; Ross et al., 2020). The author visited the Air
Rights Garage and assessed for features that could potentially contribute to these attributes. The garage was assessed for any pre-existing suicide prevention measures. All levels of the garage were observed. Public access, number of entryways to the rooftop level, and accessibility to ledges (i.e., lack of barriers) were noted. The existing concrete barrier was also measured. Photos were taken of the rooftop space, ledge design, and surrounding location.

*New Haven Parking Authority Board*

The New Haven Parking Authority was emailed via the “contact us” form on their website with an inquiry for garage security information. No response was received after two weeks. The executive secretary to the board was then emailed, requesting further contact information to speak with a parking authority board member. Although there was no direct response from the executive secretary, an email was received from the chief operating officer of New Haven Parking Authority 2 days later. The author interviewed the chief operating officer through telephone and asked about ownership of the Air Rights Garage, security protocols, and suicide prevention planning. Archived board meeting minutes from the New Haven Parking Authority website were reviewed for any information related to the Air Rights Garage and suicide prevention plans.

*Yale New Haven Psychiatric Hospital (YPH)*

The Yale New Haven Hospital Media Coordinator was contacted with a request for more information regarding the Air Rights Garage, security measures, and any existing suicide prevention plans. No response was received after two weeks and a follow-up email was sent. Again, no response was received after another two-week period.
The Clinical Outcomes Leader for Yale New Haven Psychiatric Hospital (YPH) was emailed with an inquiry for statistical data related to suicide attempts or suicide deaths. They responded the same day and provided information for requesting use of YNHHS data and cc’d other staff they thought could be of assistance. Included in the email was the Associate Medical Director of Quality Improvement at Yale New Haven Psychiatric Hospital, who provided further sources of data for suicide deaths and discussed their previous attempt to contact the Mayor about the Air Rights Garage.

The Director of Nursing at YPH was emailed for further information related to any suicide prevention measures at the Air Rights Garage. No response was received after two weeks and a follow-up email was sent. Again, no response was received after another two-week period.

*Local Police and County Statistics*

An email inquiry was sent to Yale University Police requesting contact information. No response was received after two weeks and a follow-up email was sent. Again, no response was received after another two-week period.

The Connecticut Chief Medical Examiner was contacted via email with an inquiry for annual suicide rates in New Haven in addition to data publicly accessible on the state website. They responded the same day and provided further statistical data on suicide deaths within Connecticut between the years of 2004 and 2020. The data was reviewed for suicide deaths at the Air Rights Garage as well as other tall structures in New Haven.
Table 2

*People/Organizations Contacted for Information*

<table>
<thead>
<tr>
<th>Person/Organization</th>
<th>Contact mode</th>
<th>Number of contacts</th>
<th>Response received and when</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Haven Parking Authority Board</td>
<td>Website contact form</td>
<td>1</td>
<td>None After 2 weeks, follow-up email sent to executive secretary</td>
</tr>
<tr>
<td>Executive secretary of the New Haven Parking Authority Board</td>
<td>Email</td>
<td>1</td>
<td>Yes In 2 days</td>
</tr>
<tr>
<td>Yale New Haven Hospital Media Coordinator</td>
<td>Email</td>
<td>2</td>
<td>None 2 weeks – email sent again</td>
</tr>
<tr>
<td>Clinical Outcomes Leader for Yale Psychiatric Hospital</td>
<td>Email</td>
<td>1</td>
<td>Yes Same day</td>
</tr>
<tr>
<td>The Associate Medical Director of Quality Improvement at YPH</td>
<td>Email</td>
<td>1</td>
<td>Yes Same day</td>
</tr>
<tr>
<td>Director of Nursing at YPH</td>
<td>Email</td>
<td>2</td>
<td>None 2 weeks – email sent again</td>
</tr>
<tr>
<td>Yale University Police</td>
<td>Email</td>
<td>2</td>
<td>None</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------</td>
<td>---</td>
<td>------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 weeks – email sent again</td>
</tr>
<tr>
<td>CT Chief Medical Examiner</td>
<td>Email</td>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Same day</td>
</tr>
</tbody>
</table>

*Note.* Contacts who may be involved with the garage or knowledgeable on local suicide deaths

**Media reports**

News reports of deaths by jumping at the Air Rights Garage were searched using Google Search Engine and two local news publications, *Yale Daily News* and the *New Haven Register*, using the terms “air rights garage” and “falls” or “suicide” or “death”. The titles and content of results were reviewed for reports of the deaths and any suicide prevention initiatives specific to the Air Rights Garage. The language used in the reports of deaths by jumping were examined for adherence to the suicide reporting guidelines (2020).

**Findings**

*Local Police and County Statistics*

From 2004 to 2019, there were 181 suicide deaths by jumping in the state of Connecticut. Comparatively, there were 52 deaths in New Hampshire, 291 deaths in Massachusetts, and 1,963 deaths in New York (NCIPC, 2021). According to the dataset provided by the Connecticut Chief Medical Examiner, 18 deaths by jumping occurred in New Haven, CT from 2004 to 2020. Four of these deaths occurred at the Air Rights Garage from 2017 to 2020 (Figure 1). Figure 2 categorizes the 18 deaths by jumping by the type of location in New Haven. No other singular
parking structure in the city had more than one death during this time period. One particular high rise apartment building was notable, with four suicide deaths by jumping from 2013 to 2020.

**Figure 1**

![Suicide Deaths Graph](image1)

*Note.* Suicide deaths at the Air Rights Garage 2017-2020

**Figure 2**

![Deaths by Jumping in New Haven](image2)

*DEATHS BY JUMPING IN NEW HAVEN*

- Various residences: 31%
- High-rise apartment building: 17%
- Other parking structures: 13%
- Air Rights Garage: 17%
- Other locations: 22%
Note. Location of suicide deaths by jumping in New Haven. Specific names of locations omitted due to concerns for potential contagion.

Physical Evaluation of Garage

Analysis shows that the garage has features that may contribute to the consideration of the location as a potential jumping site. The garage is very accessible, with multiple entrances on different sides of the structure, including a walkway connected to YNHH. The concrete barrier surrounding the rooftop is roughly 45 inches tall which may be short enough for some individuals to climb over (Figures 3 and 4). There are several suicide hotline posters posted around the rooftop. Although the posters appear to be weathered, they have a clear message with non-stigmatizing wording (Figures 5 and 6). It’s possible that the discoloration decreases visibility and attractability of the posters which may affect the likelihood that a person calls the hotline. Notably, there were no posters in the stairwells or any levels (below the roof) of the garage.
Figures 3 and 4

Note. Concrete barrier is roughly 45 inches tall

Figures 5 and 6

Note. Suicide prevention posters along the current border of the rooftop
The geographical location of the parking garage could be another contributing factor. The garage overlooks a busy intersection that tends to have heavy foot and automobile traffic (Figure 9). This may be attractive to someone who covertly wishes to be intervened or someone looking to ensure lethality via the traffic below (Beautrais, 2007). Lastly, those who are visiting the hospital may be in a more vulnerable state and susceptible to suicidal thoughts depending on the context of their visit (Mouw & Troth, 2011; Westfall, 2018).
The Chief Operating Officer of the New Haven Parking Authority stated that the suicide deaths were discussed in 2018 after the second suicide death. The parking authority held a meeting with stakeholders that included representatives from Yale University, Yale New Haven Hospital Protective Services, New Haven Police Department, Connecticut State Department of Mental Health and Addiction Services, and the Connecticut Mental Health Center. They also included a representative from an insurance company, although the chief operating officer did not elaborate on their role in the meeting. The attendees brainstormed ideas to address the suicide deaths at the Air Rights Garage and devised short- and long-term plans. Following the assembly, posters with the suicide prevention hotline number were posted in garage locations that led up to

*Note.* The York St. and South Frontage Rd. intersection; York St. entrance to Air Rights Garage
the rooftop, such as the elevators. The chief operating officer explained that they were careful not to place too many conspicuous posters as they did not want to inadvertently publicize the topic.

Yale New Haven Health Protective Services is contracted by the parking authority to provide security for the garage. Cameras are installed on all levels of the garage and are monitored twenty-four hours a day, seven days a week. The chief operating office reported that after the stakeholders meeting, protective services officers were provided with training to handle crisis situations. Part of the training included recognizing signs of contemplative behavior, such as individuals wandering around the rooftop alone without a car. However, it is unknown if this training was a single occurrence or incorporated further into their structural protocols. Protective services officers also began to routinely patrol and drive through the garage, although the exact frequency of patrolling is unknown.

A physical barrier, such as fencing, was discussed as an ideal long-term solution. However, the expenses can run into millions of dollars which the chief operating officer stated is not affordable at this time. This option remains controversial, as stakeholders contemplated whether fencing would be practical and if it would need to be installed on every level of the garage among other details.

The chief operating officer reported that the initiated measures seem to be helpful since their implementation. However, he noted that it was difficult to truly know due to the rare occurrence of jumping incidents. While some individuals turn out to be visiting the roof for sightseeing purposes, the protective service officers have been able to effectively intercept some individuals experiencing suicidal ideation. These individuals are brought to the hospital when appropriate, but the chief operating officer was unsure of the protocol for those who are not
hospitalized. He acknowledged that the signage and patrolling were not as effective for impulsive situations (i.e., someone who may jump without hesitation).

The chief operating officer believes that what they have implemented so far is the best that they can currently do in terms of practicality. However, he questions if any prevention measures will ever be enough. For example, if they ultimately install higher fencing or netting on the rooftop, then will someone try to jump from the level below the roof? He explained that installing fencing or netting on all three levels of the garage would not be financially feasible and there don’t seem to be many other options at this time. Although it has been a few years since the stakeholder’s meeting, the chief operating officer stated that safety at the Air Rights Garage remains an ongoing discussion by the New Haven Parking Authority and the garage co-owners – the city of New Haven, Yale New Haven Health, and Yale University.

_Yale New Haven Psychiatric Hospital (YPH)_

The Clinical Outcomes Leader for YPH reported that any hospital data for student scholarly use required project approval from the Nursing Scientific Review Committee (NSRC). This process includes submission of a “Letter of Intent” that outlines the objectives, clinical appropriateness, and scientific merits of the project, along with endorsements from a faculty advisor and three other individuals related to the site of interest. A project application can only be submitted upon approval of the letter of intent by the NSRC of the hospital system. Hospital data were not obtained or used for this project due to the extensive process and likelihood of ineligibility.

The Associate Medical Director of Quality Improvement at YPH was cc’d in the email response from the clinical outcomes leader and discussed their previous research on jumping at
the Air Rights Garage. The associate director shared that they found three suicide deaths at the garage over a period of five years using the Office of Chief Medical Examiner (OCME) dataset. This data was also found in the author’s acquisition of data from the OCME. The associate director, along with another faculty member wrote a letter to the Mayor of New Haven in 2020 suggesting installation of barriers at the garage, but they did not receive a response. There was no further follow-up after the letter was sent, but the associate director mentioned that there may have been financial barriers to such a plan.

Media Reports

There was a total of 13 media reports related to three of the deaths by jumping at the Air Rights Garage—three in 2017, eight in 2018, and two in 2019. The reporting was much more frequent than the number of suicide deaths each year. All headlines included explicit wording of the suicide method at Air Rights Garage. No reports were found for the year 2020. Media reports prior to 2017 were also not found through the internet search. Only one report in 2018 pertained to a plan for action – parking officials were looking to hold a meeting with potential stakeholders, although no specific steps were outlined (Westfall, 2018).

Current media reporting guidelines on suicide discourage dramatic headlines and descriptions of the suicide method as this can contribute to suicide contagion, or “copycat suicides” (Recommendations for Reporting on Suicide, 2020). All of the news articles pertaining to New Haven suicides explicitly mentioned death by jumping or falling from the Air Rights Garage specifically and do not adhere to these guidelines.
Discussion

The evaluation of the Air Rights Garage was conducted through physical observation and correspondence with individuals who were either involved with the garage or knowledgeable on the issue. The resulting information provided clarity regarding the frequency of suicide deaths at the garage, accessibility to deaths by jumping, current safety practices, and elements required for public health intervention. While research shows that structural interventions are effective suicide prevention methods, they tend to be opposed if unaesthetically pleasing and are also very costly (Beautrais, 2007; Bennewith et al., 2007). While no physical modifications have been implemented at the Air Rights Garage to date, signage, increased observation, patrolling, and suicide awareness training for security officers have been implemented as a means of suicide prevention. These steps align with the actions recommended by the Surgeon General’s Call to Action for suicide prevention to begin with a broad-based plan and to ensure lethal means safety (2021).

A broad-based plan aims to foster collaboration between different entities within a community, such as the government, businesses, and healthcare systems. The goal is to initiate the conversation of suicide prevention in order to decrease stigma in addition to building a community-wide network (U.S. Surgeon General & NAASP, 2021). New Haven Parking Authority officials were able to bring together stakeholders of the Air Rights Garage and other relevant organizations, such as the Connecticut State Department of Mental Health and Addiction Services, to initiate a public health response. However, one party that seemed to be missing from their meeting was the perspective of people with lived experience. Both the Surgeon General’s Call to Action and Connecticut Strategic Plan for Suicide Prevention highlight the essential role that people with lived experience have in guiding a prevention plan.
that maintains respect and dignity (2020; 2021). Including individuals with lived experience in future meetings related to interventions at the Air Rights Garage would contribute to a stronger plan for lethal means safety and community network.

Notably, there were no deaths by jumping at the garage for a 13-year period until 2017. Since then, there appears to be a significantly higher number of deaths by jumping at the Air Rights Garage compared to other parking garages in New Haven. This brings to question whether the timing of the four deaths is coincidental or do they represent a rising trend? Other locations in the city had lower numbers of suicide deaths, with the exception of one high-rise apartment building.

Although no responses were received from some individuals, the findings suggest that funding and lack of formal evaluations on the effectiveness of structural interventions (i.e., fencing, netting, etc.) for suicide prevention at parking structures have made it difficult to implement measures. While costs should not be associated with saving lives, there is no guarantee that physical barriers will prevent all future suicide deaths (Cohen, 2015). The low baseline of deaths by jumping would also make it difficult to measure statistically significant changes pre- and post-intervention. An issue that was not addressed by the chief operating officer of the New Haven Parking Authority was the ultimate party responsible for suicide prevention at the Air Rights Garage. When asked about ownership and responsibility for safety of the garage, the answer was ambiguous in nature and Yale New Haven Health and Yale University were reportedly considered to be co-owners. Since protective services are a part of Yale New Haven Health, it is unclear if safety and security are shared responsibilities or solely belong to one entity (Figure 11).
Note. Hierarchy of organizations involved in Air Rights Garage co-ownership and security

The extensive process for access to hospital sponsored data presented as a barrier to gathering further information in this project as well. In future discussions, context surrounding individuals who were planning to jump or intervened in the moment could offer insight to the reasons for doing so and why. The public data available report suicide deaths, but not suicide attempts. Understanding these factors and behaviors can help provide other points for intervention. This project was not able to gauge the severity of suicide rates at the Air Rights Garage as there was no comparable structure for comparison. This deficit is another reason why documenting and distributing this information is crucial to forming future interventions and to public health. A myriad of elements must be considered in order to improve upon the current conditions of the Air Rights Garage and foster support within the New Haven community.
Limitations

Certain limitations should be considered for the assessment of this project. In general, suicides are rare events and results can be dramatically impacted by slight shifts due to the low incidence of deaths by jumping. The recommendations outlined by the Surgeon General’s Call to Action and CT Suicide Prevention Plan offer few specific strategies related to suicide deaths at parking garages. The plans mainly refer to posting signage, providing suicide prevention awareness training, and mentions broadly restricting access to lethal means. It seems that limited literature exists regarding deaths by jumping at specifically parking garages. Structural interventions have mostly been studied on bridges and popular hotspots, such as the Golden Gate Bridge. The lack of reported data also prevents adequate comparison of the numbers of suicide deaths at the Air Rights Garage to other parking structures. Additionally, despite the research on reporting guidelines and explicit news coverage of the garage, an association between the media and deaths by jumping cannot be inferred at this time. Lastly, the individuals contacted for this project are not all inclusive and there may be others involved with the Air Rights Garage that were missed, such as representation from the Connecticut Mental Health Center, the New Haven Police Department, or Yale University leadership.
Recommendations

Implementation of a structural intervention at the Air Rights Garage would provide a blueprint for embedding such changes to future construction projects in addition to preventing deaths by jumping. Creating a task force to oversee this intervention would help clarify the roles and responsibilities involved. The task force members should reflect the community accordingly to ideally include: local residents of New Haven with lived experiences to provide suggestions and guidance, a city official or planner responsible for construction developments, a licensed mental health professional for assessing safety risks, representatives from Yale University and Yale New Haven Health leadership to provide their resources and perspectives (due to their close proximity to the garage), a representative from CT Mental Health Center involved with mobile crisis services, and a representative from CT Department of Mental Health and Addiction Services to provide resources (such as connections to other care programs). Additionally, the members could advocate for policies to require future constructions to include suicide prevention measures. This task force would comprise a community-wide network with the means to develop and implement an adequate structural intervention at the Air Rights Garage.

Less costly changes that can be implemented at the garage include updating the suicide hotline posters and placing them on the level directly below the roof as well as the staircase leading up to the roof. Currently the posters only list the National Suicide Prevention Lifeline, adding a local crisis line to the posters, as the cities of Boise, ID and Lancaster, PA have done, may also seem more personal and increase the likelihood that someone will call. Potential phone numbers include the CT Mental Health Center’s crisis service (for those 18 years or older) and the CT Department of Children and Families’ crisis service, also known as 2-1-1 (for those under 18 years). Placing ground deterrents, such as tall trash cans or plants, on the sides that face traffic
may also act as a physical barrier to someone trying to climb over the ledge. Implementing a zero-tolerance policy for pedestrians on the roof who are not going to/from their vehicle could be helpful in decreasing accessibility as well (Cohen, 2015). Signage defining the zero-tolerance policy should be posted around the roof top level to inform people of the regulation. This could be further enforced by the security officers who are monitoring the cameras and routinely patrolling the garage.

Installing fencing, netting, or taller barriers would be most effective in preventing deaths by jumping compared to the other suggestions mentioned. However, these changes are expensive and require a longer time to implement. Thus, changing public policy to incorporate physical barriers in future construction projects would ensure a built in means of suicide prevention. Such a policy for parking structures warrants follow-up discussion with the New Haven Parking Authority.

Increasing access to proper mental health care is a critical component to any intervention. One study described that increasing communication between the individual and healthcare providers or first responders was crucial for maintaining safety, as those who did not obtain appropriate care were more likely to re-attempt suicide (Ross et al., 2020). Following up with the individuals who were intercepted by the YNHH Protective Services officers can help increase access to mental health services. At the time of interception, officers can offer cards with the local and national suicide prevention phone numbers and record the individual’s contact information if they are in agreement (for those who are not hospitalized). The follow-up correspondence could be conducted by CT Mental Health Center’s mobile crisis service which typically offers telephone services or perhaps hiring Yale New Haven Hospital staff dedicated to this purpose. Follow-up should assess for safety and connect to mental health treatment when
possible. The CT Mental Health Clinic has a non-discrimination policy and offers time-limited therapy and walk-in evaluations among other services (CMHC, 2021).

In order to conduct similar evaluations for suicide deaths at parking garages in other locations, I would recommend the following initial steps:

1. After identifying the parking garage in question, identify the owner(s) of the facility
2. Gather data regarding the total number of suicide deaths at the parking garage, in the city, and other tall structures within the city if possible, in order to compare and gauge the scope of the issue
3. Research any pre-existing suicide prevention measures and barriers to implementation of a structural intervention (i.e., budgeting, maintenance, etc.)
4. Visit the garage to physically assess for (and document) accessibility to the parking garage and features that may contribute to the consideration of the location as a potential jumping site (i.e., public entrances to the rooftop, aesthetics, or lack of barriers)
5. Identify stakeholders and other professionals or entities who may be involved with the parking facility (i.e., local police, health centers, or government)
6. Contact the identified individuals and organizations for information regarding responsibility of suicide prevention at the facility, reasons for lack of prior implementation, any existing or future plans for structural interventions, feasibility of a plan and suggestions for moving forward with an intervention
7. Compare results to other structural interventions and suicide prevention policies or plans (i.e., other parking facilities, landmarks, or other cities)

Recommendations for structural interventions for deaths by jumping should be tailored to the individual parking garage and are dependent on the several factors assessed and current
guidelines for suicide prevention, such as pre-existing measures and resources available. Lastly, if there was more time for this project, I would have contacted the identified individuals and organizations more frequently in addition to contacting others, such as CMHC, the CT Department of Mental Health and Addiction Services, or the CT Advisory Board. Based on relevant literature and project findings, these recommendations hope to enhance suicide prevention measures at the Air Rights Garage as well as within the New Haven community at large.
References


Appendix

Figure 12

*Note.* Rooftop area of Air Rights Garage

Figure 13

*Note.* Rooftop area of Air Rights Garage
**Figure 14**

*Note.* Walk way connecting YNHH to Air Rights Garage

**Figure 15**

*Note.* Air Rights Garage entrance to YNHH walkway