# ACCESSIBILITY *in* PANAMA CITY

## AN INVESTIGATION INTO THE PANAMA CITY PROJECT CENTER

**AUTHORS:**

Shiivek Agarwal
Mia Bourguignon
Sarah McCarthy
Cassandra Zimmerman

**SPONSOR:**

Dr. Aaron Sakulich

**ADVISORS:**

Dr. Grant Burrier

Dr. Curt Davis

# Accessibility in Panama: An Investigation into the Panama City Project Center

An Interactive Qualifying Project

**Submitted to:**

*The Faculty of Worcester Polytechnic Institute in Partial Fulfillment of the*

*Bachelor of Science Degree*

*&*

*Bachelor of Arts Degree*

*Sponsor:* Dr. Aaron Sakulich

*Project Advisors:* Dr. Grant Burrier and Dr. Curt Davis

**Submitted by:**

Shiivek Agarwal

Mia Bourguignon

Sarah McCarthy

Cassandra Zimmerman

**Date Submitted:** October 12, 2023

# Abstract

The purpose of this project was to assess the accessibility of the Worcester Polytechnic Institute (WPI)'s Panama City Project Center and to offer recommendations for improvements. Through archival research, interviews, surveys, observational studies, and personal auto-ethnographies, we accomplished our objectives and research targets. We provided the Project Center Director with a comprehensive list of available accommodations and alternatives, an infographic addressing common student questions, and photographs for publication on the Panama City Project Center eProjects page and website.

# Meet The Team



## SHIIVEK AGARWAL

SHIIVEK IS A COMPUTER SCIENCE AND ROBOTICS
ENGINEERING MAJOR, AND IS EXPECTED TO
GRADUATE WITH TWO B.S. DEGREES IN MAY OF 2025.

## MIA BOURGUIGNON

MIA IS AN INTERACTIVE MEDIA AND GAME
DEVELOPMENT MAJOR WITH A CONCENTRATION IN
TECHNICAL ART. SHE IS EXPECTED TO GRADUATE
WITH A B.A. IN MAY OF 2025.





## SARAH MCCARTHY

SARAH IS A BIOMEDICAL ENGINEERING MAJOR WITH
A CONCENTRATION IN BIOMECHANICS, AND IS
EXPECTED TO GRADUATE WITH A B.S. IN MAY OF 2025.

## CASSANDRA ZIMMERMAN

CASSANDRA IS A CIVIL ENGINEERING AND
MECHANICAL ENGINEERING MAJOR, AND IS
EXPECTED TO GRADUATE WITH TWO B.S. DEGREES IN
MAY OF 2025.

# Acknowledgments

# Executive Summary

Within the context of Worcester Polytechnic Institute (WPI)'s Panama City Project Center, director Aaron Sakulich has voiced concern regarding the completeness of the information that he is able to offer prospective students. To address this problem, WPI has launched an accessibility initiative to evaluate the state of accessibility at WPI's Project Center in Panama City, Panama.

## Project Goal and Objectives

The purpose of this project was to assess the state of accessibility at WPI's Project Center in Panama City, Panama with the goal of promoting confidence in students' decisions to attend the Project Center by improving the information available to prospective traveling students. To achieve this goal, our team worked to accomplish the following objectives:

1. identify the most prevalent disability and accessibility issues that affect WPI students attempting to travel abroad;

2. assess accommodations in Ciudad del Saber (CdS) and surrounding areas regarding these disabilities;

3. investigate the personal experiences of people with disabilities in Panama City, particularly at CdS; and

4. advise the Project Center Director, Dr. Sakulich, regarding available accommodations and alternatives.

## Methodology

We implemented archival research to accomplish Objective 1 and Objective 2. Archival research developed a base of information regarding the experiences of students with disabilities when traveling abroad, and the process and support systems currently in place at WPI. Additionally, we established an understanding of the disability legislature in Panama, as well as the facilities present at CdS.

We implemented interviews to accomplish Objective 1 and Objective 2. Interviews of WPI staff illuminated barriers that WPI students perceive and address with campus offices prior to international programs. Interviewing Panamanian subjects provided insight into the current initiatives towards accessibility at the CdS campus and Casco Antiguo Spanish School.

We implemented surveys to accomplish Objective 1 and Objective 3. Survey responses by WPI students and alumni strengthened conclusions drawn from interviews and also enunciated concerns that students have but do not discuss with WPI staff. Through our survey of CdS users, we were able to gauge how visitors at CdS considered the general accessibility of the campus.

We implemented observational studies to accomplish Objective 2 and Objective 4. The observations of the CdS campus and Panama City provided empirical evidence to support conclusions about the state of accommodations in these areas. This empirical evidence heavily informed recommendations to the Project Center Director.

We implemented ethnographies to accomplish Objective 3 and Objective 4. Personal ethnographies gather information about lived experiences with personal details and depth.

With the information gathered from the aforementioned methods, we compiled a list of accommodations that are either available or unavailable at the Panama City Project Center. To

ensure this information is as accessible as possible, this document was distributed to Dr. Sakulich, the Global Experience Office, and the Office of Accessibility Services.

**Findings and Recommendations**

The objectives detailed in the Methodology section served to accomplish two key research targets:

1. identifying prevalent accessibility concerns for WPI students traveling abroad; and

2. assessing the accessibility of the Panama City Project Center to compile a list of accommodation needs that can be met.

Figure 1 outlines the survey results we collected, allowing us to investigate the most prevalent concerns in students planning to go abroad.

**Figure 1**

*Common Concerns from Survey Results*
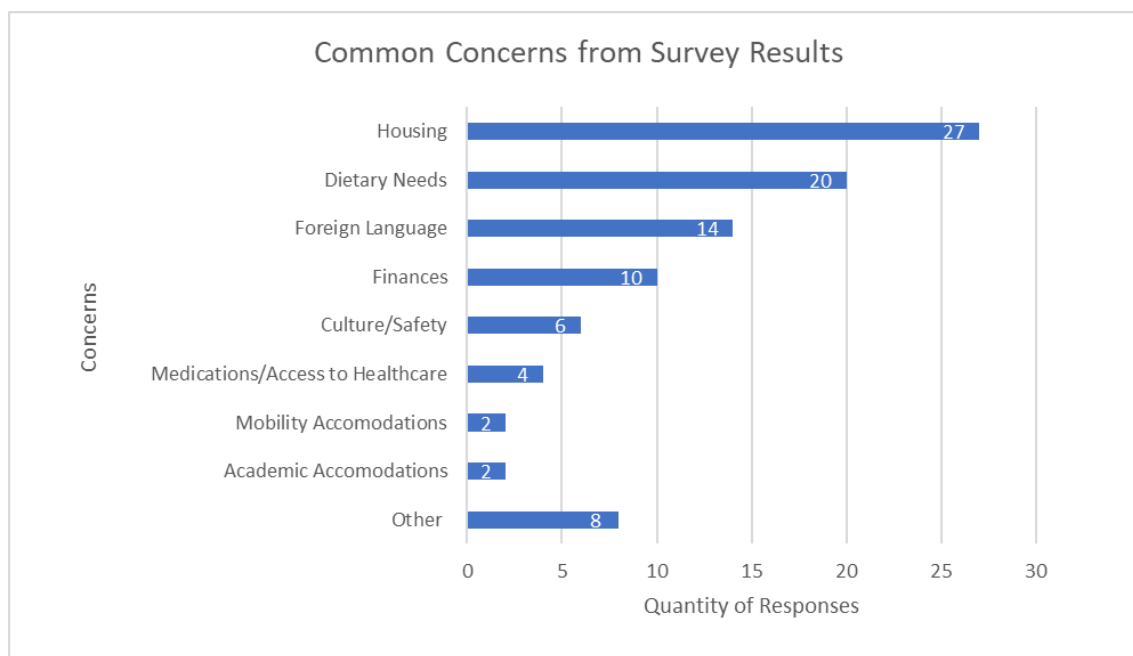


*Note.* Data collected from the survey sent out to WPI students regarding concerns about traveling abroad.

In our survey, 73.6% of respondents (53 of 72) shared concerns with the availability of information regarding Project Centers, and 50.9% of these respondents (27 of 53) specifically stated that they felt unclear regarding the housing arrangements. Another overwhelmingly popular response from our survey of WPI students was that they felt apprehension towards traveling due to diet. Respondents mentioned being unaware of whether they would have access to a kitchen and feeling unsure of whether they could avoid allergens. As the third most prevalent concern, 19.4% of respondents expressed concerns about language being a barrier when choosing a Project Center abroad. Survey respondents mentioned additional concerns as well, including financial barriers, safety to express identity, ability to access medications and healthcare, mobility accommodations, and academic accommodations.

**Table 1**

*Overview of Available Accommodations at the Panama City Project Center*

| Accommodation | Status |
|---|---|
| Air Conditioning | Provided |
| Private Room | Provided Upon Request |
| Private Bathroom | Provided Upon Request |
| Elevator | Provided |
| Wheelchair Accessible Room/Bathroom | Alternative Options |
| Wheelchair Accessible Pathways | Not Available |
| Wheelchair Accessible Transportation | Not Available |
| Full Kitchen | Provided |
| The Big 9 Allergies | Options Available |
| Vegan Diet | Options Available |
| Vegetarian Diet | Options Available |
| Pescetarian Diet | Options Available |
| Kosher Diet | Options Available |
| Halal Diet | Options Available |

While we discuss in detail what specific accommodations can be provided at the Panama City Project Center, a shortened list can be seen in Table 1. The status of these accommodations has been collected from all the methods detailed above.

The lodging complex is a dormitory-style housing arrangement, with double-occupancy rooms being the standard living arrangement. Single occupancy rooms with a private bathroom are available under special circumstances. Air conditioning is available in indoor spaces, including the bedrooms, hallways, and common rooms. It is fairly easy to accommodate a diverse range of diets, including vegan, vegetarian, pescatarian, Kosher, and Halal. Most allergies can be accommodated as well. Spanish is the primary language in Panama, and to help students with conversational skills and self-advocacy, students participate in an introductory Spanish course upon arrival. Regrettably, several elements of the Project Center were found to be inaccessible to people with mobility impairments. However, many government officials, as well as personnel from Ciudad del Saber, are aware of this issue, and efforts are being made to increase accessibility across Panama. Equaldex, a resource for Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ+) students looking to travel abroad, ranks Panama with an acceptance score of 42 out of 100, which is unfortunately quite low. However, social spaces for the LGBTQ+ community do exist in Panama, especially throughout Panama City. They are openly advertised as such and act as a safe space for both those in the community and allies to the community.

In order to detail these findings, our team created the following resources and recommendations. We created a single-page infographic detailing key features of the Panama City Project Center. This document includes information regarding housing accommodations, restaurants, and kitchen equipment, and contact information for parties who can answer additional questions. Our group also created a business card-sized infographic containing Spanish translations of the FDA's nine major food allergens as well as gluten. We recommend both these resources be distributed to students considering traveling abroad. Additionally, we have proposed ways to make information that already exists more accessible to prospective travelers, such as including this information in plain text on the main website. Finally, our team collected pictures of the housing complex and surrounding area which we supplied to Dr. Sakulich to provide potential students an insight into what their living situation will look like.

# Authorship

**Shiivek Agarwal:**

2.2: Accessibility Definition, 2.4.1: Dr. Sakulich, 2.4.3: Ciudad del Saber, 2.5: Conclusion, 3.2.4: Limitations, 3.6: Final Deliverables, 4.1.3: Language Barriers, 4.1.6: Mobility Accommodations, 4.2.3: Language Barriers, 4.2.6: Mobility Accommodations

**Mia Bourguignon:**

Cover Page, Meet The Team, 2.1.2: Other Limitations, 2.3.2: Studying Abroad with Disabilities, 2.3.4: WPI Campus Offices, 3.5.1: Autoethnography Methods, 3.5.3: Limitations, 4.1.4: Culture and Safety, 4.1.7: Academic Accommodations, 4.2.4: Culture and Safety, 4.2.7: Academic Accommodations, 4.4: Recommendations

**Sarah McCarthy:**

2.2: Accessibility Definition, 2.3.3: WPI International Programs, 2.4.2: Panamanian Disability Legislature, 3: Methodology, 3.2.1: Identification of Interview Subjects, 3.3.2: Survey Methods, 3.3.3: Analysis of Data, 3.3.4: Limitations, 3.4.1: Observational Study Methods, 3.4.2: Analysis of Data, 3.4.3: Limitations, 4.1.1: Housing Accommodations, 4.2.1: Housing Accommodations, 4.2.6: Mobility Accommodations, 4.4: Recommendations

**Cassandra Zimmerman:**

2.1.1: Definition of a Disability, 2.1.2: Other Limitations, 2.3.1: American Disability Legislature, 3: Methodology, 3.1.1: Archival Research Methods, 3.1.2: Limitations, 3.2.1: Identification of Interview Subjects, 3.2.2: Interview Methods, 3.2.3: Analysis of Data, 3.3.1: Identification of Survey Targets, 3.5.2: Analysis of Data, 4.1: Major Accessibility Concerns for WPI Students Traveling Abroad, 4.1.2: Dietary Restrictions, 4.1.5: Medications, 4.2.2: Dietary Restrictions, 4.2.5: Medications, 4.4 Recommendations

**All authors contributed equally to the following sections:**

Abstract, Executive Summary, 1: Introduction, 4: Findings and Recommendations, 4.3: Limitations of the Findings, 5: Conclusion

**All authors contributed equally to the editing of all sections.**

# Table of Contents

# List of Figures

# List of Tables

# Chapter 1: Introduction

While sitting around a table at the Albrook Mall in Panama City, we enjoyed a meal in one of its three multi-tiered food courts. Albrook Mall is the largest mall in Latin America, a source of pride and a signifier of progress within Panama (Smith, 2022). Looking to our right, we noticed a man in a wheelchair using a ramp, attempting to enter the same food court that *we* were able to easily access. On the first attempt, he advanced slightly up the ramp, before he was required to reverse and prepare himself to make his ascent. The ramp was very steep, causing trouble for able-bodied people as well. His eyes squinted a bit, throwing his weight into the wheels in order to quickly accelerate. Even with this added momentum, he climbed halfway up the ramp before halting his wheels to a stop. His hands tightly gripped the wheels; if he let go, he would lose all the uphill progress he had made. He shoved his wheels forward a few more times before barely making it to the top of the ramp. His face was flushed with fatigue. His progress upward had been slow, yet fruitful and triumphant. This sight invoked a thought: just how accessible is Panama?

Panama is a nation known for its impressive engineering feats, including "one of the Seven Wonders of the Modern World: the Panama Canal" (Visit Panamá, n.d., para. 1), and a prosperous economy, attracting close to two million tourists in 2022, even after the negative impacts of COVID-19 on tourism (López, 2023). However, this prosperity is concentrated in cities near the Panama Canal, leaving distant areas with less developed infrastructure and lower wealth (Statista, 2023).

Unfortunately, the lack of accessible infrastructure in even large cities like Panama City poses significant challenges for people with disabilities. For instance, we observed that many public establishments do not have wheelchair-accessible bathrooms, curb cuts, and wheelchair ramps. Additionally, it proved challenging to acquire accessible transportation between cities, and dining out can be difficult for those with serious food allergies. These issues significantly impact the quality of life for people with accessibility requirements living in Panama and prevent some tourists from visiting the country.

Students with disabilities who look to travel abroad are often presented with unique struggles that may dissuade them from doing so (Kutsche, 2012). There is still a lack of research regarding students with disabilities in relation to traveling abroad (Chickering & Braskamp, 2009; Johnstone & Edwards, 2020; Kutsche, 2012; Matthews et al., 1998).

Within the context of Worcester Polytechnic Institute (WPI)'s Panama City Project Center, director Dr. Sakulich has voiced concern regarding the completeness of the information that he is able to offer prospective students. To address this problem, WPI has launched an accessibility initiative to evaluate the state of accessibility at WPI's Project Center in Panama City, Panama. The goal of this project was to promote confidence in students' decisions to attend the Project Center by improving the information available to prospective traveling students. To achieve this goal, our team worked to accomplish the following objectives:

1. identify the most prevalent disability and accessibility issues that affect WPI students attempting to travel abroad;

2. assess accommodations in Ciudad del Saber (CdS) and surrounding areas regarding these disabilities;

3. investigate the personal experiences of people with disabilities in Panama City, particularly at CdS; and

4. advise the Project Center Director, Dr. Sakulich, regarding available accommodations and alternatives.

Ultimately, the project will help WPI students to make informed decisions regarding study abroad opportunities.

# Chapter 2: Background

## 2.1 Disability and Limitations

### 2.1.1 Definition of a Disability

Most definitions of widely used words are clear, but the opposite is true for defining a disability. In the case of our project, we feel it is necessary to provide a definition that will be used.

The World Health Organization (WHO) (n.d.-e) "...strives to give everyone, everywhere an equal chance at a safe and healthy life" (para. 1). The WHO has published many articles, projects and policies concerning the quality of life in countries all around the world. According to a 2023 statistic provided by the WHO (n.d.-c), "an estimated 1.3 billion people - or 1 in 6 people worldwide - experience significant disability" (para. 1). In the United States alone, this statistic jumps to include around 1 in every 4 adults, as seen in Figure 2 (Centers for Disease Control and Prevention, 2020).

**Figure 2**

*Disability Impacts ALL of US*
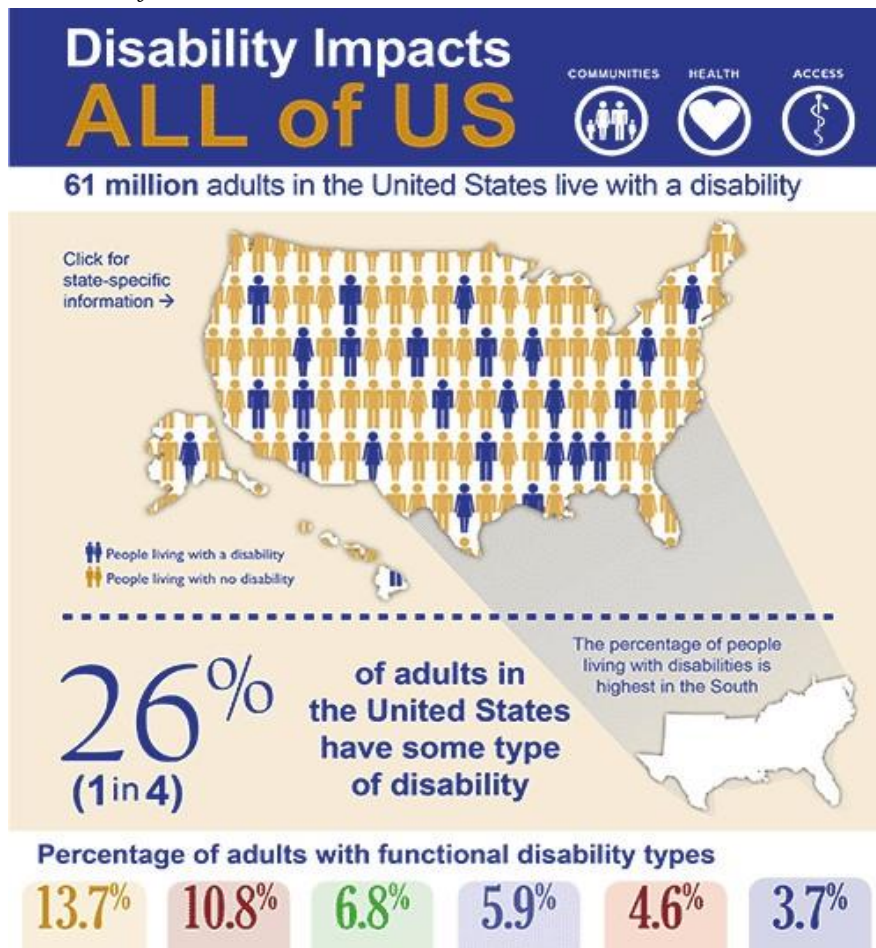


*Note.* From Centers for Disease Control and Prevention, 2020

This statistic encompasses a massive number of people, leading to the conclusion that "disability is part of being human" (World Health Organization, n.d.-b, para. 1). As it is such a widespread experience, there are multiple possibilities for what is considered a disability. Through various legislation, similarities between definitions can be found and used to create a master definition.

The Americans with Disabilities Act (ADA) is an act that defines a disabled person as:

> ... a person who has a physical or mental impairment that substantially limits one or more major life activities. This includes people who have a record of such an impairment, even if they do not currently have a disability. It also includes individuals who do not have a disability but are regarded as having a disability. It makes it unlawful to discriminate against a person based on that person's association with a person with a disability (ADA National Network, 2023a, para. 2).

The rights of people within this definition are protected, providing them with effective communication, adequate parking, ease of access to public transportation and spaces, equal employment opportunities, and equal rights under state and local governments.

The Center for Disease Control (CDC) is another American office that defines disability. Their definition is as follows: "[a] disability is any condition of the body or mind (impairment) that makes it more difficult for the person with the condition to do certain activities (activity limitation) and interact with the world around them (participation restrictions)" (Centers for Disease Control and Prevention, 2020, para. 1). This definition includes conditions that affect someone's vision, movement, thinking, remembering, learning, communicating, hearing, mental health, and social relationships (Centers for Disease Control and Prevention, 2020).

As our project takes place in Panama, it is important to note that the Panamanian government recognizes a variety of disabilities through Disability Certificates, which are discussed in section 2.4.2. The main categories are visual disability, physical disability, hearing disability, intellectual-mental disability, and visceral disability. Mobility impairments and limb differences are categorized as physical disabilities. Visceral disabilities include cardiological, renal/urological, respiratory, and digestive conditions that cause significant impairment (SENADIS, 2018c). In another piece of legislation, the Panamanian Government also defines a person as having a disability if they "... suffer(s) any restriction or impediment to performing an activity…" (Disability Rights Education & Defense Fund, 2019, para. 7). This correlates fairly well with most of the American definitions, the only differences being the specificity of definitions.

These authorities all generally agree on the definition of a disability. For our project, the most relevant and inclusive is from the ADA. Defining a disability as such allows our project to encompass the broadest range of disabilities possible, and leaves room to add notes about other limitations that may not fall under the category of disabilities.

### 2.1.2 Other Limitations

Although barriers are frequently framed through the lens of disabilities, it is significant to note that disabilities are not the only cause of barriers. Other situations, existing both in the short- and long-term, can affect the well-being, safety, and ease of life of those who are experiencing them (Lohr et al., 2018). For example, one may not expect to sustain a major injury during their time abroad, but one accident could temporarily leave a student on crutches or some other form of mobility aid. Considerations regarding healthcare while abroad should be considered while

choosing a Project Center, such as the availability of assistive devices and adequate medication (Lang, 2019). If a student assumed they would be able to navigate the facilities of their Project Center on the basis of them being able-bodied, these navigation concerns could present challenges, despite the student not having any documented disabilities. Furthermore, while again unlikely, those with the capacity to become pregnant, or those who are raising a newborn child, may also need to pay additional care to the environment around them while traveling abroad to ensure the safety of themselves and their child. For example, people who are currently pregnant are at higher risk for complications regarding Malaria and the Zika virus than their non-pregnant counterparts (Lohr et al., 2018).

Another major barrier for those looking to travel abroad is dietary concerns. In many foreign countries, food labels are uncommon and cross-contamination in restaurants is more likely (Food Allergy Research & Education, n.d.). A lack of food labels can make shopping for food difficult. Cross-contamination is a risk for people with allergies as well, and even food that does not contain allergens can induce anaphylaxis if cooking equipment has come in contact with allergens (Food Allergy Research & Education, n.d.). While on campus at WPI, students with dietary restrictions can receive personalized accommodations to help them feel more comfortable with the experience of eating. Trained food allergen staff and health services are available to students, including a guide on dining with food allergies and celiac disease (Worcester Polytechnic Institute, 2023c). However, while abroad, such services cannot be guaranteed.

Some may also have concerns about the tolerance and acceptance of their identity when traveling abroad. Women, Gender-Non-Conforming Individuals, members of the Lesbian, Gay, Bisexual, Transgender, and Queer +[1] (LGBTQ+) community, and people of color—to name a few— often fear about their safety in regard to their identity, fearing unwanted sexual advances, verbal and opportunistic discrimination, and lack of protection under the law (Bingham et al., 2023). Within their study, Bingham et al. (2023) notes that there is a lack of qualitative research focusing specifically on the LGBTQ+ community in relation to studying abroad but makes note of several scholarly works that provide some insight into the topic.

This potential intolerance can be especially concerning when one is unaware of the risks associated with their identity while abroad. Over time, many countries have changed their stances on the topic of LGBTQ+ rights; although this change is usually for the better, it is not unheard of for unaccepting countries to grow increasingly more unaccepting (Flores, 2019). In Figure 3 there are nine countries showing similar trends in acceptance, these countries were chosen purely to showcase Panama, and as the graphs are listed alphabetically the other eight counties were not chosen for a specific reason.

---

[1] The "+" as noted within the "LGBTQ+" signifies that there are other orientations and identities within the community that are not necessarily encompassed by the first 5 letters of the acronym.

**Figure 3**

*Graph of LGBTQ+ Acceptance Across Nine Countries*
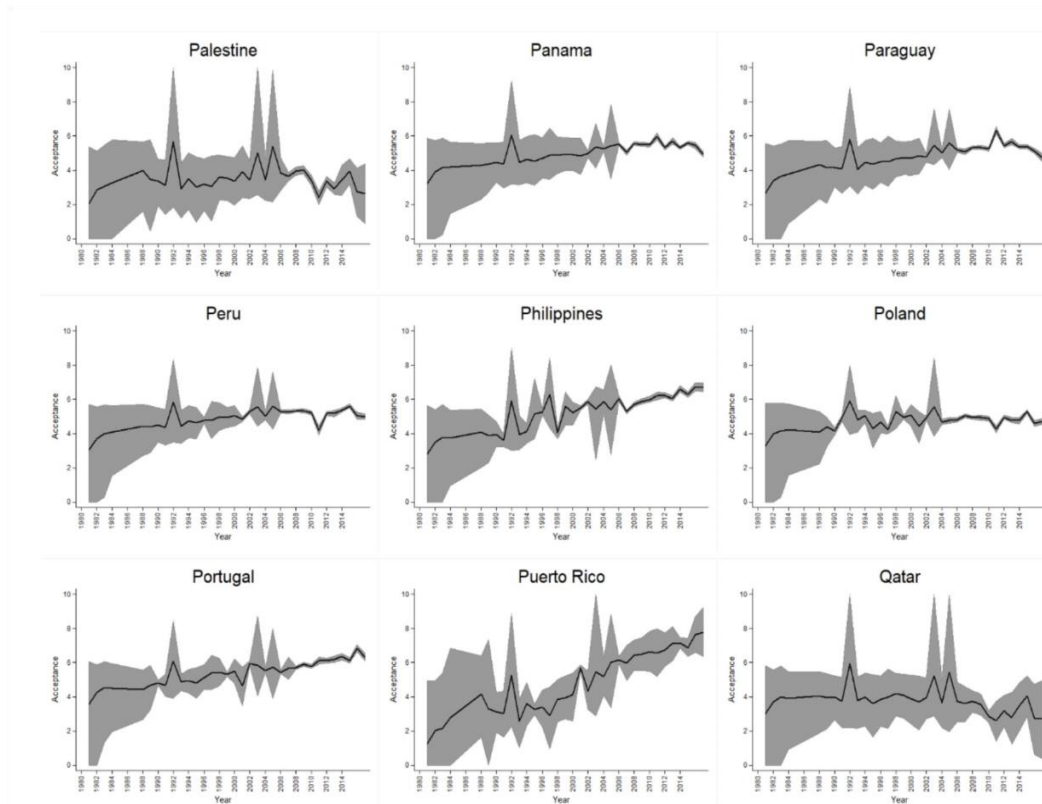


*Note.* The y-axis, labeled "Acceptance" compiles public opinion and legislature to determine a score for any given country's general stance on LGBTQ+ issues. The greater the number on the y-axis, the more accepting of the LGBTQ+ community the country is at any given time. From *Social acceptance of LGBT people in 174 countries: 1981 to 2017,* by Flores, A.R. (2019).

As demonstrated within the graph in Figure 3, many countries' stances on the matter can be unpredictable, for many of the countries do not follow a specific pattern in their acceptance and fluctuate in acceptance levels. Thankfully, many activists have compiled resources to make definitive statements on LGBTQ+ acceptance by country. Specific acceptance data regarding Panama and the U.S. are discussed in more detail in section 4.2.7.

The last important aspect to note is that many of these barriers are inter-sectional. In other words, humans are complex beings that do not fit into a "black and white" scale. Those who are—for example— both disabled and in the LGBTQ+ community often face discrimination on both fronts, which can compound and create further barriers. Or, on another end of that spectrum, they could also receive sufficient accommodations for one barrier but struggle immensely with the other. The more barriers that are taken into account, the more complicated it can be for a person to exist within a given space, which is why it is crucial to ensure that their experiences are not invalidated or dismissed within the context of accessibility.

## 2.2 Accessibility Definition

Just as disability is a term that encompasses a wide range of conditions, accessibility is a term that can have a somewhat ambiguous definition. While accessibility is often implied to

correlate with disability, accessibility can be discussed with regard to barriers other than disabilities as well.

Physical accessibility helps people enter a building and use all of its features. With adequate physical accessibility, everyone—including, for example, a person using a wheelchair, walker, or other mobility aid—is able to enter the building and access all aspects of the building that anyone else can access. Curb cuts, ramps, elevators, accessible bathrooms, braille on signs, and other examples help in the physical accessibility of a location (Northeast ADA Center, n.d.).

Furthermore, common barriers to physical accessibility in a facility include issues related to parking, ramps, stairs, doors, and bathrooms. These barriers include the absence of van-accessible parking spaces and blocked routes to accessible entryways in the parking lot, narrow and steep ramps without handrails, staircases lacking horizontal handrails at landings, doors with insufficient clearance, narrow doorways, difficult-to-open handles or latches, heavy doors, and a lack of level landings at building entrances. (Office of Minority Health, n.d.).

To address these common barriers to physical accessibility, the UN has provided outlines of various considerations for ensuring accessibility in a building. It covers signage requirements, building access, reception areas, restrooms, meeting and conference rooms, accessible work areas, eating areas, and transportation access. These considerations encompass elements such as the use of International Symbols of Accessibility for signage, the provision of ramps and wide doorways for wheelchair access, ensuring clear paths within the building, creating workspaces with adjustable furniture, and promoting accessible transportation options. The goal is to provide equal access and accommodation for individuals with disabilities throughout the building's premises, including parking, entrances, facilities, and common areas (Development Coordination Office, n.d.).

The Northeast ADA Center, Office of Minority Health, and United Nations Development Coordination Office all concur with the idea that physical accessibility means everyone—including people using a wheelchair, walker, or other mobility aid—is able to enter a public space and access all aspects.

The U.S. Department of Education defines accessibility of information as "a person with a disability is afforded the opportunity to acquire the same information, engage in the same interactions, and enjoy the same services as a person without a disability in an equally effective and equally integrated manner, with substantially equivalent ease of use" (U.S. Department of Education, 2020, para. 3). The WHO utilizes a similar definition of accessibility in their objectives as an organization. The WHO states that "communicators must ensure that everyone can access WHO information" (World Health Organization, n.d.-d, para. 1). Outside the context of disability, the WHO requires that their informational web pages must be compatible with devices such as tablets and smartphones, and functional through all internet browsers. Furthermore, attached files must remain below 300 kilobytes when possible, in order to be accessible to readers with poor internet connection (World Health Organization, n.d.-d). The type of devices and internet connection that a person has are certainly not disabilities but can be barriers to accessing information. Thus, circumventing these obstacles is a valid consideration towards accessibility. Furthermore, the WHO utilizes the World Wide Web Consortium (W3C) Content Accessibility Guidelines to ensure that content is accessible to those with disabilities. The W3C Web Content Accessibility Guidelines 2.0 (WCAG 2.0) outline the ways that online content should be formatted in order to be compatible with assistive technology for those with visual and auditory disabilities,

operable for those with motor disabilities, and easily understandable (World Wide Web Consortium, 2008). The WCAG 2.0 document directly qualifies accessibility as the ability of people with disabilities to access online content (World Wide Web Consortium, 2008). Overall, the Department of Education, the WHO, and the W3C all support a definition of accessibility as the ability of all users to access information in a format that is suitable for their needs.

## 2.3 The United States

### 2.3.1 American Disability Legislature

In America there are countless laws and regulations put together that protect those with disabilities. From physical to mental impairments, if daily life activities are limited due to the disability, there is some form of law that protects those people's rights. The ADA is the biggest law in protecting areas of public life for those with disabilities.

The ADA was passed in 1990, and has been updated multiple times since, with the most recent being in 2008 (U.S. Department of Justice Civil Rights Division, n.d.). Even with these updates there are disabled people who feel that the accommodations are not enough in today's society. Experiences with not being able to bring wheelchairs places, getting kicked out of places with a service dog, or even just dealing with ignorant people in society plague the lives of people with disabilities. There is no "ADA police," which floods the Equal Employment Opportunity Commission and the Department of Justice with violations and leaves many incidents of violation not reported (Rajkumar, 2022). While the purpose of the law was "to make sure that people with disabilities have the same rights and opportunities as everyone else" (ADA National Network, 2023b, para. 1), it is important to note that needs change and legislation as detailed as the ADA, should change with those.

For all the regulations that the ADA puts into place, checklists can be found on their website. One of these is close to 100 pages, detailing what buildings, new and existing, must have on-site in order to be in compliance. From the height of doorknobs to the width of the hallways, it is all included on the checklist and must be accommodated in order for the building to be legally acceptable (New England ADA Center, 2017). If a building or establishment is not following any of the rules and regulations outlined in the ADA there is a section on their website to report those in non-compliance. Reports are made, reviewed and then next steps are determined and brought back to the original reporter. This process allows for the average citizen to bring to attention when things are not being followed correctly (U.S. Department of Justice Civil Rights Division, n.d.).

For other barriers Americans face, there are other offices that regulate policies to protect them. The Food and Drug Administration (FDA) is responsible for protecting many aspects of public health. The FDA works closely with departments of health in each US state to come up with food safety rules, food codes, and other health sanitation rules. In addition to regulating food codes, the FDA also regulates food labels in regard to allergens, something that does not necessarily happen in other countries. The nine major food allergens have been identified as milk, eggs, fish, crustacean shellfish, tree nuts, peanuts, wheat, soybeans, and sesame (Center for Food Safety and Applied Nutrition, 2023). These are required by law to be labeled by the Food Allergy Safety, Treatment, Education and Research Act of 2021, adding an allergen to the previous eight the Food Allergen Labeling and Consumer Protection Act of 2004 identified (Center for Food Safety and Applied Nutrition, 2023). In addition to guidelines, the FDA provides guidance on food allergies and research opportunities for those who want or need more information.

### *2.3.2 Studying Abroad With Disabilities*

In the United States, the number of higher education students who elect to travel abroad has increased steadily, and its benefits are thoroughly documented, boasting an increase in the "holistic and global development of students" (Chickering & Braskamp, 2009, p. 29). Chickering and Braskamp (2009) also claim that studying abroad can help one understand themselves and their role in a greater global context, while also gaining awareness of and sensitivity to other cultures. WPI has created a robust global program in which many students choose to travel abroad during their undergraduate education. However, there is one demographic that is consistently underrepresented in both participation in and research of study abroad programs—people with disabilities. While approximately 11% of undergraduate students self-identify to their institution as having a disability, only 8.8% of undergraduate students traveling abroad have done the same (Johnstone & Edwards, 2020). At this moment in time, it is difficult to make a concrete conclusion as to what is causing this disparity, but the limited research that has been done seems to highlight several recurring themes.

One such theme is based on the perception of one's identity. In a study sponsored by Virginia Tech, nine of the twenty-five correspondents opted not to go abroad due to concerns directly related to their disability. The study states, "another disability-related barrier mentioned was society's reaction to the student's disability: 'I was unsure how the people that lived there would respond to me.' This student had clearly considered [studying] abroad but had decided not to go due to possible cultural differences regarding acceptance of disability" (Kutsche, 2012, pp. 35-36).

In addition to the concerns regarding perception of identity, there is also a significant stigma pertaining to the use of accommodations, which may result in students with disabilities feeling "othered." In an effort to prevent this social stigma, it is suggested that educational programs prioritize accessibility beyond individualized accommodations; personal accommodations are incredibly important, but it is even better to reduce the need for them (Johnstone & Edwards, 2020). Elaborating on this claim, they state, "accessible environments provide opportunities for persons with disabilities to participate without the stigmatizing effects of accommodations and often open up new opportunities for persons without disclosed disabilities, but for whom accessibility may also be a challenge" (Johnstone & Edwards, 2020, p. 428). Furthermore, in a study done on the attitudes of college students toward travel abroad, students placed greater emphasis on being part of a program for students both with and without disabilities in lieu of a program with students who have similar disabilities (Matthews et al., 1998).

Another concern that was shared across multiple studies was financial barriers. In a study done on the attitudes of college students toward study abroad, it was noted that scholarships provided by the institution to financially support studying abroad may be the catalyst to enable more students with disabilities to be able to travel abroad (Matthews et al., 1998). At WPI, many incoming students are provided with a Global Scholarship to financially support those wishing to go abroad, which can mitigate the effects of this barrier. However, students requiring additional needs, such as accessible transportation options, may need to pay the difference out of pocket. This could, in theory, influence where one chooses to go abroad on the basis of transportation costs, if these accessible options are even offered in that particular country.

The final barrier shared by most studies pertains to knowledge regarding project sites, which is most relevant to our study. Due to the fact other countries are not held to the same standard

as the ADA, there is a level of complexity and uncertainty as to whether or not their needs will be met; this is compounded further if the university is unaware of the state of accessibility at its collaborative sites (Johnstone & Edwards, 2020). A student, when asked about unique barriers that people with disabilities may face while traveling abroad, states, "The amount of support or accommodations available away from home is unpredictable and highly variable from place to place" (Kutsche, 2012, p. 37). This uncertainty also extends to medical care, as students with disabilities may have limited options for Project Centers on the basis of medical care in their immediate vicinity (Kutsche, 2012). In the fostering of inclusion regarding students with disabilities, it is incredibly important to alleviate as much uncertainty as possible, so students with disabilities can make a confident and well-informed decision.

### 2.3.3 WPI International Programs

Project-based learning is a point of pride for WPI, and a unique aspect of the education that the institution provides. One of the most distinctive aspects is the Interactive Qualifying Project (IQP). The IQP is a project typically completed in a student's third year of undergraduate education, which "challenges students to address a problem that lies at the intersection of science or technology with society" (Worcester Polytechnic Institute, 2023g, para. 1). Students work in teams with students of different majors than their own in order to complete technology and social science related projects for local sponsors in their project area.

While on-campus IQP project opportunities are available, many students choose to complete their IQP off campus. According to the Project Center Directory, WPI currently has 10 active off campus IQP Project Centers in the United States, and 37 active IQP Project Centers in other countries (Worcester Polytechnic Institute, 2023f). An off-campus IQP is completed over the course of one academic term, which is approximately seven weeks. Students also complete a preparatory course in the academic term prior to their travel, in order to learn about the culture of their project area and set up their project (Worcester Polytechnic Institute, 2023g).

Prior to application for international projects, the Global Experience Office (GEO) holds informational events such as the Global Fair, which showcases the Project Centers that students may apply to, with representatives present to answer any questions that students may have (Worcester Polytechnic Institute, 2023a). The application process for the IQP is typically completed in a student's second year of undergraduate education, through a website called eProjects. This website contains information regarding each of the Project Centers, including location, housing accommodation type, and topics of previous projects. Based on this information, students can select which Project Centers they are interested in attending, and students are matched with a Project Center from this list.

While the IQP is the most commonly utilized opportunity for WPI students to travel abroad during their undergraduate education, there are a few additional opportunities to complete major requirements off campus. All students are required to take five humanities courses during their undergraduate education, and complete a capstone Humanities and Arts (HUA) project. The HUA requirement can be completed at any time during a student's undergraduate education. As an alternative option, students may take at least three humanities courses on campus, followed by one academic term at an international Project Center, which will award the student credit for the remaining two humanities courses and HUA project (Worcester Polytechnic Institute, 2023b). According to the Project Center Directory, WPI currently has five active HUA Project Centers in other countries (Worcester Polytechnic Institute, 2023f). Additionally, all students are required to

complete a Major Qualifying Project (MQP). This project is a rigorous research and design project, specifically related to a student's major and field of interest. The MQP is typically completed in a student's final year of undergraduate education, and often spans multiple academic terms, in addition to the student's other coursework (Worcester Polytechnic Institute, 2023h). Most students complete their MQP on campus, but off campus and international opportunities are available as well. According to the Project Center Directory, WPI currently has four active off campus MQP Project Centers in the United States, and ten active MQP Project Centers in other countries (Worcester Polytechnic Institute, 2023f).

### 2.3.4 WPI Campus Offices

WPI houses several offices that are utilized by students looking to go abroad.

1. GEO
2. The Office of Accessibility Services (OAS)
3. The Office of Diversity, Inclusion, and Multicultural Education (ODIME)

These offices work in conjunction with one another, working with GEO in upholding the goal of ensuring that WPI students are adequately prepared to go abroad. Students may opt to work with several of these offices at the same time, but this is not required. Generally speaking, most WPI students interact primarily with the GEO.

The GEO is the office that fosters off-campus experiences, including projects such as the HUA, IQP, and MQP. This office also handles additional off-campus travel such as athletic events (Worcester Polytechnic Institute, 2023a). Students that wish to go abroad are required to have several interactions with the GEO staff via pre-departure orientation, passport and flight submission, travel waivers, and general information sessions, just to name a few. The application to go abroad is also handled through this office. These protocols are all in accordance with its mission statement, stating that it "strives to ensure that off-campus programs are safe, cost effective, and accessible to all students while cultivating informed travelers and fostering global and intercultural competency as students engage with local and global communities" (Worcester Polytechnic Institute, 2023a, para. 2).

In addition to the GEO, many students with disabilities are also in close contact with the OAS. The OAS encompasses a wide variety of accessibility concerns, primarily seeking to "coordinate accommodation services and support to assist students with documented physical, learning, sensory, psychological, and developmental disabilities during their time at WPI" (Worcester Polytechnic Institute, 2023c, para. 1). This office is particularly important when it comes to going abroad, for a change in setting can be incredibly overwhelming and difficult for those with disabilities, as many students with disabilities perceive many potential barriers in the prospect of traveling abroad (Kutsche, 2012). The OAS contains records and lists of accommodations for students looking to go abroad. In conjunction with the GEO and Project Center Directors, a plan is formulated to ensure that their needs are met as best as possible, in terms of both academics and comfort.

The final relevant office is not one that is directly involved in the pre-departure process, but still holds great significance regardless. The ODIME acts as a general resource for fostering inclusivity on campus, and acts as a great outlet for cultural sensitivity. The ODIME recognizes the intersectionality of diversity, "including but not limited to differences of race, ethnicity, sex, gender, sexual orientation, age, religion, socioeconomic status, ability, nationality/ citizenship, and other identities" (Worcester Polytechnic Institute, 2023d, para. 1). As such, it is an important office

to consider when tackling issues of accessibility. Accessibility extends beyond the scope of just disabilities, and certain demographics may face barriers while traveling that are equally important to address and acknowledge.

## 2.4 The Panama City Project Center

### 2.4.1 Dr. Sakulich

Dr. Sakulich is an associate professor in the Department of Civil, Environmental, and Architectural Engineering at WPI. He earned his Bachelor's and Ph.D. degrees from Drexel University. Currently serving as the Director for the Panama City IQP/MQP and the Reykjavik IQP Project Centers at WPI (Worcester Polytechnic Institute, 2022), Dr. Sakulich's involvement with the project-based system dates back to 2013 when he first joined WPI. His initial engagement included writing an NSF proposal to send MQP students to Panama, which not only secured the grant but also led to his appointment as the co-director of the Panama project site alongside Dr. El-Korchi. Initially dedicated to MQP students, Dr. Sakulich expanded the site's scope in 2015 to include IQP students. Since 2020, he has assumed sole directorship following Dr. El-Korchi stepping down as the co-director of the Panama City Project Center (A. Sakulich, personal communication, September 26, 2023).

Dr. Sakulich is the Project Center Director of Panama and this encompasses several key responsibilities. Primarily, it involves the selection of suitable projects for students' engagement, which requires extensive communication with contacts in Panama to secure six high-quality projects annually. Additionally, a Project Center Director is tasked with overseeing budgetary matters, maintaining essential documents like the student handbook and Project Center websites, and making accommodation arrangements (A. Sakulich, personal communication, September 26, 2023).

Ultimately, Dr. Sakulich's sponsorship of our project stems from his commitment to addressing the questions and concerns posed by students. He recognizes that these questions play an integral aspect of international project experiences. Furthermore, he highlights the significance of project-related travel as an integral part of the WPI academic journey. Dr. Sakulich's sponsorship comes from a sincere desire to equip students with the knowledge and answers essential for meaningful project work, thus enriching their educational journey at WPI (A. Sakulich, personal communication, September 26, 2023).

### 2.4.2 Panamanian Disability Legislature

The Constitution of the Republic of Panama defines disability as "deficiencies," particularly with regards to differences in mental ability, sensory organs, or skeletomuscular disfigurement. Following this definition, the Constitution declares that persons with disabilities have the same rights, must comply with the same laws, and are entitled to the same governmental benefits as all other citizens (Disability:IN, 2022b)[2].

---

[2] Disability:IN is an international nonprofit organization advocating for disability inclusion in business and society. They are affiliated with over 500 corporations (Disability:IN, 2022). Disability:IN also produces reports on disability inclusion in several countries. In their report on Panama, they include English translations of multiple sections of the Panamanian constitution. More information on Disability:IN can be found on their website: https://disabilityin.org/who-we-are/about/

A later section of the Constitution details the responsibilities and functions of the Employment Service. The Employment Service of Panama is a governmental agency that functions to provide job placements for all people wishing to work in Panama. According to the Constitution, the Employment Service works to ensure job preservation and create "sources of employment that are necessary" (Disability:IN, 2022b, para. 3). The Constitution further states that "the Employment Service shall give special attention to partially disabled workers" (Disability:IN, 2022b, para. 3) but does not specify what this "special attention" entails. Furthermore, employers are not required to provide specific benefits to employees with disabilities. Although some employers do, this is not necessarily standard or universal practice.

According to the 2020 Panama Human Rights Report, compiled by the US Department of State, the Panamanian Constitution permits "denial of naturalization to persons with mental or physical disabilities" (U.S. Department of State, 2021, p. 17). Naturalization is the process by which a permanent resident can become a citizen of a country. The statement that persons with disabilities have the same rights as all other persons seems to be contradicted by the allowance of denial of citizenship on the basis of disability.

The governmental agency in Panama regulating accommodations for disability is the National Secretariat for Disability (SENADIS). This office was established in 2007, and its main function is approving the design of urban and architectural projects, as well as overseeing renovations of public spaces to improve physical accessibility (Disability:IN, 2022). The mission of the SENADIS, along with ensuring compliance with disability laws, is "promoting a change in attitude, respect for human rights, and equalization of opportunities" (SENADIS, 2018a).

The SENADIS performs several functions in Panama. One function is the issuing of Disability Certificates. Disability Certificates confirm that a person in Panama has a legally recognized disability, and entitles them to benefits such as discounts on food, transportation, and utilities (SENADIS, 2018c). As detailed in section 2.1.1, legally recognized disabilities in Panama are categorized as visual, physical, hearing, intellectual-mental, and visceral disabilities (SENADIS, 2018c).

Parking permits for the use of parking spots for people with disabilities are issued by the SENADIS to wheelchair and mobility aid users, those who use portable oxygen, and those with severe respiratory or heart failure. Parking permits are free to acquire and may be obtained by those with permanent or temporary conditions causing disability (SENADIS, 2018d). Parking in a designated accessible parking spot without a permit is punishable by a fine of 300.00 Balboa, which is equivalent to $300.00 USD, and this fine doubles progressively with repeated offenses. The Transit and Land Transportation Authority of Panama is responsible for enforcing and collecting this fine (SENADIS, 2018d).

Information regarding the functions of the SENADIS is publicly available on the SENADIS website. This website also contains information and forms for application for a Disability Certificate or parking pass. The SENADIS website itself is also designed with consideration for various disabilities. The background for all pages of the website is white, with black or dark blue text. These colors have high contrast with each other, which is helpful for readers with certain visual impairments. According to Papadopoulos & Goudiras (2005), text and background colors should contrast in both hue and saturation in order to promote ease of reading for those with visual impairments. However, Papadopoulos & Goudiras (2005) also mention studies suggesting that light text on a dark background may be easier to read than dark

text on a light background, particularly for those with visual impairment. While the SENADIS website arguably does not have an ideal visual design, the chosen color scheme still accommodates readers with reduced vision. Furthermore, when a new page is selected, an audio message introducing the page plays automatically, which is especially helpful for those with very low vision who benefit from the use of text-to-speech tools.

The SENADIS also cooperates with other governmental and international agencies to collaboratively achieve accessibility goals. One member of the SENADIS acts as a chairperson on the Committee for the Elimination of All Forms of Discrimination against Persons with Disabilities (CEDDIS) (Organization of American States, 2023). The CEDDIS is a subcommittee of the Organization of American States, a collaborative organization of governmental representatives from many Central and South American countries. In particular, this committee surveys the quality of accommodations and inclusion of people with disabilities in society in each of the member countries and develops programs to improve these accommodations (Organization of American States, 2023). The SENADIS also cooperates with the United Nations, in particular the Partnership on the Rights of Persons with Disabilities. This group is currently implementing a program in Panama with a budget of $400,000 US dollars, expected to conclude on December 31, 2023 (United Nations, 2021). The main objective of this program is stated as "to contribute to the setting of a favorable environment for the acknowledgment of persons with disabilities as subjects of rights and promote their participation and inclusion in the Panamanian society" (United Nations, 2021, para. 2).

### 2.4.3 Ciudad del Saber

Transitioning from an exploration of disability legislation, WPI offices, and accessibility needs, we shift our focus to the site of the Panama City Project Center, Fundación Ciudad del Saber (CdS, or "City of Knowledge Foundation" in English), a prominent institution nestled within Panama City. This foundation is guided by a lofty mission: to foster innovation, education, and technology. Located across the street from the Panama Canal and a short drive from the inner city, CdS provides a bit of everything for WPI students. In A-Term, during the months of August through October the temperature averages 30℃ (86 ℉), with 82-85% humidity during the daytime (World Data Info, n.d.). This thriving international community, born from the former Clayton U.S. military base, fosters collaboration among academic, scientific, humanistic, and corporate institutions, all committed to advancing human and sustainable development through knowledge. The site's conversion repurposed old military facilities into modern offices, laboratories, and classrooms, turning training areas and parade grounds into spaces conducive to research, innovation, and interaction. CdS aspires to become a global knowledge nexus, connecting Panama to international networks and contributing to sustainable development regionally and beyond (Ciudad del Saber, 2020).

Initially a part of the former U.S. Canal Zone military base, CdS has evolved into a dynamic, research-driven campus under the stewardship of a non-profit organization bearing the same name. Alongside hosting WPI students in Leadership in Energy and Environmental Design (LEED)-certified dormitories, it supports research initiatives bridging academia and business in the unique Panamanian social context. Additionally, La Plaza is a popular destination for tourists, students, and locals since it offers a wide selection of eateries.

The sector serves as a platform for collaboration with diverse entities, including SENACYT, UNICEF, the Red Cross, Balboa Academy, Isthmus University, and various corporations, all engaged in research endeavors within CdS (Worcester Polytechnic Institute, 2023e).

## 2.5 Conclusion

In this chapter, we discussed various aspects of disability legislation, accessibility definitions, and experiences in both Panama and the United States. We offered a multifaceted definition of disabilities and the legal frameworks that protect the rights of individuals with disabilities. Additionally, we shed light on the accessibility challenges faced by students studying abroad with disabilities, including identity perceptions, stigma surrounding accommodations, and the need for comprehensive knowledge of project sites. Within the context of WPI, we highlight the pivotal role of various campus offices, including the GEO, the OAS, and the Office of Diversity, Inclusion, and Multicultural Education (ODIME), in supporting students with disabilities during their educational journeys. Furthermore, we introduce Dr. Sakulich, an associate professor dedicated to addressing critical infrastructure challenges, who serves as the project site director for the Panama City IQP and MQP. Lastly, we provide insights into CdS, a foundation in Panama City, showcasing its transformation from a former U.S. military base into a vibrant hub for innovation, education, and technology, with a vision to become a global knowledge nexus.

# Chapter 3: Methodology

The purpose of this project was to assess the state of accessibility at WPI's Project Center in Panama City, Panama with the goal of promoting confidence in students choosing to attend the Project Center by improving the information available to prospective traveling students. To achieve this goal, our team worked to accomplish the following objectives:

1. identify the most prevalent disability and accessibility issues that affect WPI students attempting to travel abroad;
2. assess accommodations in CdS and surrounding areas regarding these disabilities;
3. investigate the personal experiences of people with disabilities in Panama City, particularly at CdS; and
4. advise the Project Center Director, Dr. Sakulich, regarding available accommodations and alternatives.

In this chapter, we describe the methodologies developed to specify relevant disability issues for investigation, gather and analyze input from a variety of relevant perspectives, and how results from that analysis directed proposed solutions for the Project Center Director.

## 3.1 Archival Research

### 3.1.1 Archival Research Methods

Archival research is the first step in any research project. It is important to develop a strong background in the topic of the project, including the results and limitations of similar efforts by other researchers (Atkinson et al., 2014).

To achieve this our group first started by researching the offices on WPI's campus that deal with students going abroad, and student accommodations. Identifying these offices, the GEO (Worcester Polytechnic Institute, 2023a) and the OAS (Worcester Polytechnic Institute, 2023c), allowed our team to find information detailing the process of acquiring accommodations at WPI. We also gained a foundational understanding of what the application process looked like for assuring accommodations abroad.

An additional topic for archival research was the Panamanian disability legislation. The team used academic databases to find information on official legislation regarding disability in Panama. Specifically, we conducted our searches through JSTOR and Google Scholar. As with all archival research, it was imperative that valid sources providing multiple perspectives were included. In particular, the team used an English translation of the Panamanian constitution, which includes a clause regarding the rights of persons with disabilities. This document served as a primary source, indicating what protections are afforded by law. Furthermore, the team used the 2020 Report on Human Rights and Practices for Panama, from the U.S. Department of State. This report provided a different perspective, as the authors of the report are from the U.S., not Panama. The report is rather thorough, and provided insight into the infrastructure present in Panama, the cultural attitude towards disability, and the degree to which disability laws are truly implemented. Additional sources provided perspectives from both Panamanian and non-Panamanian authors.

The team also conducted research regarding the facilities at CdS. In an effort to realize what information is available to prospective students, we researched publicly available information regarding the CdS campus accommodations by searching for information on Google. This

provided perspective on what information is already available to prospective students, and how easily that information could be obtained.

Finally, we conducted further research regarding experiences in Panama City. This included reading and comparing personal blogs on foreigners' experiences in the city, and allowed us to make conclusions on the viability of living with a restriction. Specifically, these blogs and other online sources focused on dietary restrictions like eating Kosher, halal, with celiac disease, or with an allergy, renting a wheelchair accessible van, as well traveling with medications. Through this research we found additional resources like phone applications for finding restaurants to cater to dietary restrictions, and search engines to identify active ingredients in medications.

### 3.1.2 Limitations

In selecting sources, it was imperative to consider selection bias, or "a nonrandom selection of cases that is not statistically representative of the population," (Lustick, 1996, p. 606). As each member of our team had their own background and their own internal biases, the sources that we chose may reflect bias (Hegedus & Moody, 2010). To avoid the detrimental effects of selection bias, our group selected sources with credibility, such as peer-reviewed reports and governmental documents. Furthermore, we compared sources with each other to validate their claims and understand discourse. The journals and papers that we chose to use also have limitations. Most sources are biased in some way due to the writer's background (Lustick, 1996).

Additionally, some information was inaccessible or very difficult to find. In particular, we encountered several mentions of Panamanian infrastructure guidelines, but were ultimately unable to find this document. Furthermore, Panamanian legislation is written in Spanish, and we are not fluent in Spanish. Thus, we had to rely on translated versions of these sources.

## 3.2 Interviews

### 3.2.1 Identification of Interview Subjects

It was imperative that we know more about the concerns that students present, so we decided to interview a few key WPI staff members. We contacted seven members of the WPI staff and conducted four interviews. Our final interview list appeared as follows:

- Dr. Aaron Sakulich - Panama City Project Center Director
- Amy Curran - OAS Director
- Krista Miller - GEO Assistant Director
- Dr. Rick Vaz - Former Dean of Interdisciplinary and Global Studies.

The GEO and OAS were selected as key offices for interviews because these offices are directly involved with securing accommodations for students abroad, as described in section 2.3.4. Specifically, Amy Curran was selected for an interview due to her personal communication with a member of our team receiving accommodations at the Panama City Project Center. We chose to interview Krista Miller due to her role as both Assistant Director of the GEO and liaison between the OAS and GEO. Dr. Vaz was selected due to his former role as the Dean of Interdisciplinary and Global Studies and his work as an advisor in Worcester, UK, which was described by Krista Miller as an exceptionally accessible Project Center. Additional interviews were not conducted, as the aforementioned interview subjects provided detailed and concurring responses. Each of these people provided points of view that were extremely beneficial to our project.

Additionally, we identified Panamanian subjects with positions related to accessibility and contacted them for interviews. We contacted our liaison with CdS, who directed us to the facilities and urban planning team at CdS. Through this contact, we were able to interview Anayansi Chichaco, an architect dedicated to accessible infrastructure at the CdS campus. Ms. Chichaco was an extremely qualified individual to discuss the available facilities and accommodations at CdS.

We also contacted David Gold. Mr. Gold is the director of Casco Antiguo Spanish School, where we took Spanish language classes upon arrival in Panama. Mr. Gold, who is responsible for creating and implementing policies regarding accessibility, was the most qualified individual to discuss the facilities and accommodations offered at Casco Antiguo Spanish School.

Additionally, we attempted to contact one Panamanian governmental organization and one international organization dedicated to disability legislation. We sent emails to the SENADIS and the Organization of American States. Both organizations are described in detail in section 2.4.2. Our messages were drafted in English and translated to Spanish using Google Translate, and verified for accuracy by both of our advisors. We found email addresses for contacting both of these organizations on their websites (SENADIS, 2018b; Organization of American States, 2023). Unfortunately, interviews did not materialize from these attempts.

### 3.2.2 Interview Methods

All interviews were conducted as 1-on-1 interviews in a semi-structured format, which meant that leading questions were posed, and depending on the respondents' answers we were able to ask further in-depth questions (Lune & Berg, 2017). This style of interview was advantageous for our research because it allowed for focus on a particular topic, but also encouraged digression from the initial list of interview questions (Lune & Berg, 2017). In accordance with the Institutional Review Board's policies, a consent script was read, and each interviewee acknowledged their consent before each interview began. An example consent script used in these interviews can be found in Appendix A. Interviews with Ms. Curran, Ms. Miller, and Dr. Vaz were conducted via Zoom, as interviewees were located in Worcester, MA and we were located in Panama City, Panama. All other interviews were conducted in person. Our complete list of interview subjects and schedule of interviews is shown in Table 1. The appendices containing the interview question guides for each interview are indicated in Table 1 as well.

**Table 2**

*Timeline of Interviews*

| Interview Subject | Date of Interview | Interview Question Guide |
| --- | --- | --- |
| Amy Curran | 9/12/2023 | Appendix B |
| Dr. Aaron Sakulich | 9/13/2023 | Appendix B |
| Krista Miller | 9/14/2023 | Appendix B |
| David Gold | 9/19/2023 | Appendix C |
| Dr. Rick Vaz | 10/3/2023 | Appendix D |
| Anayansi Chichaco | 10/4/2023 | Appendix E |

### *3.2.3 Analysis of Data*

All interviews conducted for this project were recorded to allow review and extraction of specific responses. Once these recordings were acquired, a group member transcribed the entirety of each interview, allowing descriptive coding. In this context, coding is a process by which qualitative data from a survey or interview is categorized by content, to allow easy location of specific quotations or comparison of responses between participants. Descriptive coding allows responses to be grouped based on the general categories of the data (Miles et al., 2014). Some categories for our coding of interviews included housing concerns, dietary needs, and academic accommodations. Once the responses were coded, we drew similarities between the interviews, allowing us to expand on concentrated topics.

### *3.2.4 Limitations*

Limitations presented by interviews can include potential bias due to unreliable memories and the possibility of interviewees not being entirely truthful (Lune & Berg, 2017). Typically, responses obtained from individuals regarding their intentions or past actions may not accurately reflect their true behaviors (Lune & Berg, 2017). To address these limitations, we interviewed four staff members across three departments at WPI. This approach reduced the likelihood of interview results being skewed or biased towards specific perspectives. However, we were only able to conduct one interview with a staff member at CdS.

### 3.3 Surveys

### *3.3.1 Identification of Survey Targets*

To gain valuable information pertaining to what prevents students from traveling abroad, our group conducted surveys of students and alumni at WPI.

In addition to the surveys we conducted with the WPI general student body, we conducted surveys of WPI students who have utilized the CdS facilities.

The advantages that we identified for conducting surveys of students were: that we had people with first-hand knowledge telling us their concerns, the surveys reached a wide audience, and a survey of a large group of students provided an outlet for those without explicit disabilities to let us know their concerns. Surveys were better in this context than interviewing multiple students to maintain anonymity while allowing a wide reach, as well as allowing us to collect multiple responses in a shorter period of time.

### *3.3.2 Survey Methods*

The surveys were presented in the form of a virtual questionnaire with predetermined questions and were administered through Qualtrics - which helps create surveys and generate reports (Qualtrics XM., 2023b). Both surveys had a cross-sectional design as we did not anticipate that students' responses would change over the course of our study (Lau & Kuziemsky, 2017), so we asked that each student only respond to the survey one time. Our survey implemented skip logic, which had respondents skip forward to certain questions depending on how they answered previous questions (Qualtrics XM., 2023a). This was critical to allowing us to ask specific questions based on experience to different respondents while utilizing one survey. We did *not* target our surveys towards those with disabilities, as some people may have felt intimidated and wished to not respond. We offered an incentive for survey completion by allowing respondents the option to enter a raffle for a $20.00 Amazon gift card. Respondents were offered our email to contact if

they wished to participate in an interview, but no respondents contacted us. Some respondents submitted multiple responses, which is discussed in greater detail in section 3.3.4. Both surveys were open for responses for a span of about one week, from September 25, 2023, to October 3, 2023.

We distributed our general survey of WPI students to student organizations in which we are involved and reached additional students and alumni by posting our survey link on the WPI forum on Reddit. The survey questionnaire included questions regarding concerns that respondents have when applying for WPI international projects, accommodations provided to them at WPI's campus and international Project Centers, and limitations that prevented them from selecting certain Project Centers. The specific questions used for this questionnaire can be found in Appendix F. At the end of our survey, we had a total of 697 responses, and through filtering, we ended with 72 usable responses. This selection process is detailed in section 3.3.3.

We distributed our survey of CdS users to the 2023 and 2022 Panama City Project Center cohorts through email. We acquired contact information for the 2022 Panama City Project Center cohort through our advisor, Dr. Burrier, who served as an advisor at the Panama City Project Center in 2022. Questions on the survey regarded concerns users had before coming to the CdS facilities and accommodations at CdS. Survey questions for CdS users are located in Appendix G. This survey was sent to 46 students, and we received 32 responses. Of these, 19 responses were usable. Our response filtration process is detailed in section 3.3.3.

### 3.3.3 Analysis of Data

When examining survey results, we utilized holistic coding to interpret responses to each survey question. Holistic coding involves assigning one or two codes to an entire response, rather than more specific line-by-line coding (Miles et al., 2014). For example, in our general survey of WPI students, several respondents mentioned that they were unaware of what type of food would be available or how they would be able to avoid allergens. All of these responses were coded as "DIET." Once all survey responses were coded, we inferred which types of concerns were most common among WPI students based on their popularity within survey responses.

Before we started coding, we filtered the response pool to remove invalid answers. To identify these responses, we exported the response list to Microsoft Excel and then deleted those with no text responses, multiple separate responses with the same text, and responses that were completed in a different language. In addition, we deleted responses, which were obviously falsified, such as respondents who indicated that they were first year students but had completed their MQP —a project typically completed in a student's senior year— abroad. We also removed responses that were incomplete. We used the same filtration criteria for the survey of WPI students and the survey of CdS users. The total number of responses, number of usable responses, and percentage of responses which were usable are detailed below in Table 2.

**Table 3**

*Overview of Survey Response Numbers*

|  | Total Number of Responses | Number of Usable Responses | Percentage of Usable Responses |
|---|---|---|---|
| WPI Student Survey | 697 | 72 | 10.33% |
| CdS User Survey | 32 | 19 | 59.38% |

*Note.* 'Number of Usable Responses' indicates the number of responses remaining in the response pool after filtering. 'Percentage of Usable Responses' indicates the number of usable responses divided by the total number of responses, expressed as a percentage.

### 3.3.4 Limitations

There are various potential disadvantages inherent in survey studies, which can be mitigated both by utilizing proper survey practices and by supplementing survey results with other research methods before drawing conclusions.

One potential challenge in this survey study is the collection of a large and representative sample of responses. Responses were collected through simple random sampling, which means that survey participants were selected at random rather than targeted due to particular characteristics (Lau & Kuziemsky, 2017). This sampling method was selected because it circumvents the bias of purposeful sampling. However, the group received a large number of responses from participants without conditions relevant to the research question. Furthermore, our survey responses do not necessarily contain a representative sample of the population at WPI or CdS. However, these responses still provided valuable direction and context for our research.

In an effort to reach as many WPI students and alumni as possible, we advertised our survey on the WPI Subreddit: a forum within the social media platform Reddit intended for those who have received or are currently receiving an education from Worcester Polytechnic Institute. The community currently has 7,910 members, but it is important to note that verification is not required to become a member of this forum (Reddit, 2023). It is possible for people outside of the WPI community to see the contents of the Subreddit. Although this openness is intended to allow prospective students to ask questions to those within the community, this acted as a limitation, for we had to filter several invalid results.

Another limitation of using surveys was understanding the survey software. In an effort to maintain anonymity on the survey of WPI students, particularly out of consideration for any sensitive information that respondents shared, responses were collected without any verification of identity. While verification of identity can be collected through the survey software we employed, we did not have respondents log in or verify their email address before completing our survey. As a result, respondents were not restricted from submitting multiple responses. Thus, we needed to conservatively filter survey responses. We were unable to use many of the responses we received, and it is possible that we removed valid responses during the filtering process.

**3.4 Observational Studies**

*3.4.1 Observational Study Methods*

It was important to consider that the information shared in interviews and surveys was not objective. Thus, empirical evidence collection was also necessary for a holistic assessment.

In order to survey the state of the CdS campus, we conducted assessments of physical campus spaces. The ADA includes a comprehensive checklist of accessibility features for public buildings and spaces (New England ADA Center, 2017). While we recognized that the ADA is American legislation, and thus Panama is not required to comply with ADA standards, we found that the presented guidelines cover an extensive range of physical accessibility concerns. Furthermore, the ADA guidelines put observation results in a familiar context for WPI students, as these guidelines dictate infrastructure requirements in the United States. Thus, while at CdS, we utilized the ADA accessibility checklist to survey several buildings on the campus.

These building surveys were synchronic, meaning they were conducted once for each location and reflected the current state of the space (Douglas, 2010). This method was chosen because the infrastructure in these locations is permanent and was not expected to change over the time period of this study, or for the next several years. Thorough and systematic inspection methods minimize error and omission (Douglas, 2010). Thus, we utilized the ADA accessibility checklist by assessing all guidelines in their printed order. In particular, we surveyed the dormitories at CdS, the main food court on the CdS campus, and the walking path between the two. We used a measuring tape to take measurements, and measured the height change and run distance to measure the slopes of ramps. We recorded findings from these physical surveys in a written form, as well as photographic documentation of compliant and noncompliant aspects.

In addition to using the written guidelines, we conducted additional observations. While these observations did not include taking measurements, they provided a more thorough understanding of what is truly accessible on CdS's campus, and in Panama City. These observations encompassed aspects of spaces that could be verified without formal measurements, such as the presence of air conditioning in buildings.

Furthermore, we documented our observational studies by taking photographs of accessible and inaccessible aspects of locations that we visited. While at the dormitories, we captured several photographs of ramps, hallways, doors, and rooms. Although we did not conduct formal ADA assessments of locations outside of CdS, we took photographs at several cultural and tourist locations that we visited and noted the presence or lack of accessible infrastructure.

The collection of empirical evidence regarding the construction of commonly used buildings and areas at the Panama City Project Center allowed for a factual discussion of the facilities provided to students.

*3.4.2 Analysis of Data*

We collected observational data in the form of ADA building assessments by hand. This data was converted to a digital format in the form of tables, organized in the same categories and order as the ADA guideline checklist. This was further converted into a verbal summary of the ADA compliance of spaces, with quantitative and qualitative descriptions of significant aspects. Results of these assessments and verbal summaries can be found in Appendix H.

### *3.4.3 Limitations*

As the ADA guidelines are thorough, observing locations with these guidelines required dedicating a large portion of time to a relatively small area. Thus, while we surveyed as many relevant locations as possible, it was not feasible to fully examine every location that WPI students may visit at the Project Center.

It is also necessary that the group, and any others utilizing the results of these observations, acknowledge that we are not accredited professional building surveyors. For many purposes, it is important that building surveyors have a high level of skill and knowledge with regard to property surveying (Douglas, 2010). Additionally, we did not have access to professional surveying tools. However, the purpose of this study was not to assess the structural integrity of a building, but rather to assess general compliance with a list of guidelines and draw conclusions regarding potential uses of these spaces. It is possible that our collected measurements contained a degree of error, though not so much as to compromise our overall conclusions.

As with all research methods, it is important to acknowledge the existence of bias. The collection of empirical evidence through observational study is nearly objective, as the measurements taken through assessment with the ADA checklist represent the factual state of the facilities. However, conclusions made by the group based on these observations were subjective. In order to reduce the effects of this bias, we provided findings as a list of observations, and did not make assertions regarding disabilities that can be accommodated. Furthermore, we attempted to find accessible alternatives to areas that were deemed inaccessible by our assessment. Thus, we presented an assessment of the CdS property that was fair and not overly negative in nature.

## 3.5 Ethnographies

### *3.5.1 Autoethnography Methods*

In addition, one of our team members with disabilities (Mia Bourguignon) and one with a vegetarian diet (Shiivek Agarwal) logged a journal of their experiences traveling abroad as autoethnographies. In particular, Mia kept a diary with a focus on incidents when accommodations were especially necessary for her and situations that were notably different from her experiences in the United States. Shiivek focused on keeping a list of restaurants where he was able to find vegetarian options and any unexpected difficulty with finding food. With this method, we did not wish to represent every person with concerns abroad; rather, this supplementary information provided context for personal experiences.

In her defense of autoethnographies, Sarah Wall (2006) argued, "taking the question of voice and representation a step further, we could argue that an individual is best situated to describe his or her own experience more accurately than anyone else," (p. 148). Autoethnographies excel in the collection of intimate details that are seldom yielded from other methods of data collection. Furthermore, the voice and background of an autoethnography allow others to "humanize" the data; autoethnographies can be raw, heartfelt, and personal— all while maintaining their methodological integrity. Additionally, this helped to mitigate concerns of political and cultural representation, as this method had the potential to uplift the voices of those who are often underrepresented in academic literature (Clough, 2000).

## 3.5.2 Analysis of Data

The ethnographies we compiled were analyzed using in vivo coding. In vivo coding consists of breaking up the participant's responses and using their own specific phrases to create

categories. This means that the different tones in different sentences are broken up, allowing for easier categorizing and analysis (Miles et al., 2014). With the coded results from these ethnographies, we were able to group experiences within a testimony and apply them to a larger narrative. Using this analysis we were able to point out discrepancies, recognize satisfactory accommodations, and identify alternatives to inadequacies.

### 3.5.3 Limitations

Although ethnographies excel in regard to the collection of intimate details, the do not — and should not— represent everyone's lived experiences within a certain demographic. In other words, ethnographies are great for providing personal details but usually do not necessarily represent the general public.

Although the details that ethnographies provide are valuable, it is also significant to note that this method of data collection is very subjective (Nurani, 2008). Nurani (2008) argues further that a balance of personal involvement and a level of objectivity is necessary to maintain methodological integrity. In an effort to maintain this balance, we used these ethnographies in conjunction with empirical data collection to portray a balanced and comprehensive picture.

Another potential shortcoming of ethnographies stems from the interpretation of the data. Due to the sensitivity of the data collected, as well as every group member holding a unique perspective, it was important to avoid bias. As suggested by Nurani (2008), ethnographies were used to provide facts about the Project Center, not to impose personal judgments.

## 3.6 Final Deliverables

We have advised the Project Center Director, Dr. Sakulich, on identifying accommodations that can and cannot reasonably be provided.

Information from our assessments was primarily delivered to Dr. Sakulich in the form of a document summarizing available accommodations and alternatives, which can be accessed in Appendix I. This document includes summaries of ADA compliance assessments, notes from additional observations, and photographs of the CdS campus. The document also contains alternative options for some unavailable accommodations, which were identified through the interviews described in section 3.2.2 and online research.

Additionally, we provided Dr. Sakulich with a half-page infographic describing general information about the project center and answering commonly mentioned student questions. This graphic can be found in Appendix J. We also developed a business card-style graphic containing translations for the FDA's nine major allergens (Center for Food Safety and Applied Nutrition, 2023), with the addition of gluten, as well as a few phrases to assist students in ordering food in Spanish. We verified our translations with Mr. Gold of Casco Antiguo Spanish School, to ensure that our resource reflected the Panamanian dialect. This card can be found in Appendix K.

Finally, we supplied Dr. Sakulich with a collection of photographs of the CdS dormitories, for publication on WPI eProjects and the Panama City Project Center website. These photographs can be found in Appendix L.

Our final deliverables are described in more detail in section 4.4.

# Chapter 4: Findings and Recommendations

Throughout this investigation, two main research targets were accomplished through our four objectives. The first target was to identify the most prevalent accessibility concerns for WPI students when preparing to travel abroad. Interviews with key WPI staff members and a survey of WPI students informed our conclusions regarding the accommodations that are most commonly requested. Once major concerns were identified, our second target was to assess the Panama City Project Center in order to compile a list of accessibility needs that can be accommodated. The following is a review of the accessibility needs that we have identified.

## 4.1 Major Accessibility Concerns for WPI Students Traveling Abroad

Having a basic knowledge of challenges that affect the student population was inherently helpful as we implemented our project. The challenges described in this section plague countries all around the world, and any typical traveler may encounter these issues. As college students who are still not accustomed to living completely on their own–or traveling solo for the first time, even on a school-sanctioned educational trip–it leaves even more uncertainty in their daily lives. As the institution responsible for these students, it is part of WPI's duty to ensure that students are getting the required accommodations, and if those accommodations cannot be provided, it is imperative that this information is known.

As shown in Figure 4, the following concerns are the most common for WPI students.

**Figure 4**

*Common Concerns from Survey Results*
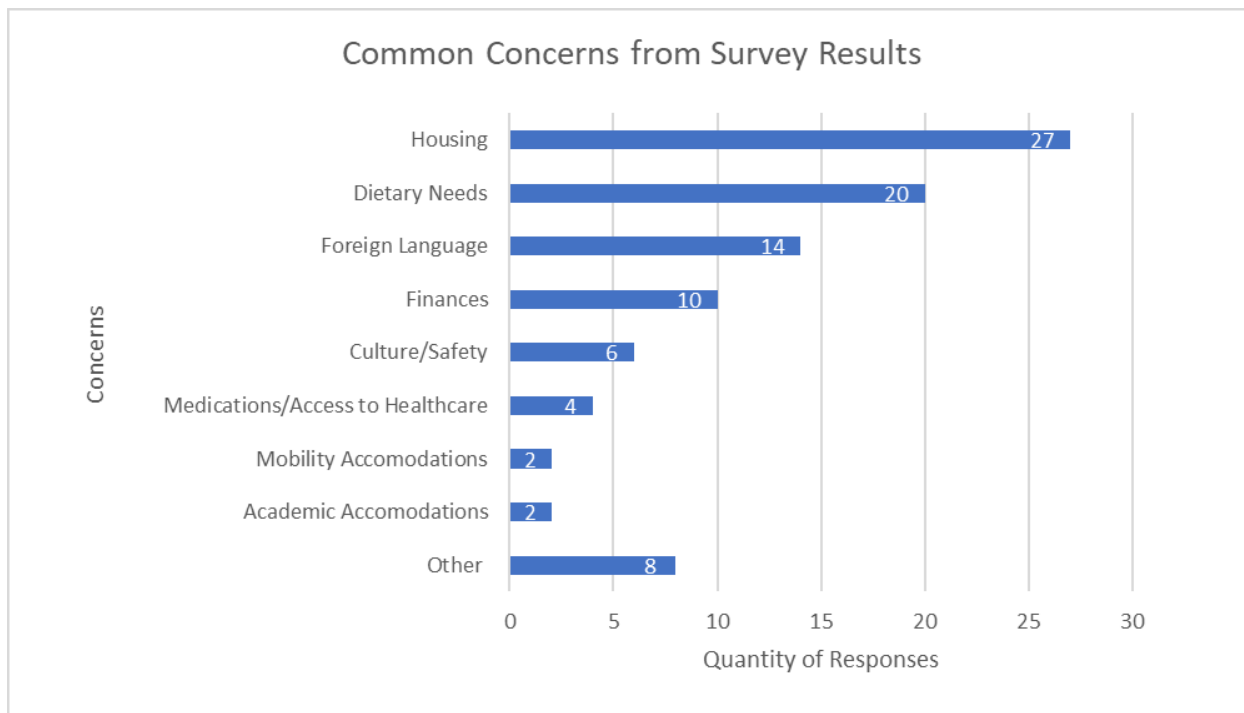


*Note.* Data collected from the survey sent out to WPI students regarding concerns about traveling abroad.

The rest of this chapter is organized as the survey results suggest, starting with the most prevalent concerns. However, it should be noted that we do not discuss financial concerns in this project. Concerns relating to finances for IQP or the Global Scholarship (Worcester Polytechnic Institute 2023a), are outside the scope of our findings. Due to this, the GEO would be more knowledgeable regarding these concerns. In addition, Dr. Sakulich has financial information regarding the Panama City Project Center, which resulted in us focusing on other concerns he felt required more information.

### 4.1.1 Housing Accommodations

The most prevalent type of accessibility concern identified through our investigation was related to housing accommodations. Many WPI students feel regrettably uninformed through the IQP application process. 73.6% of WPI student respondents (53 of 72) in our survey shared concerns with the availability of information regarding Project Centers, and 50.9% of these respondents (27 of 53) specifically stated that they felt unclear regarding the housing arrangements at WPI international Project Centers during the application process for their international project. These concerns ranged from respondents feeling unsure whether their accessibility-related accommodations could be fulfilled, to respondents having nearly no information regarding the type of housing provided at their Project Center. Many survey respondents indicated that they would have liked to have seen photographs and a more detailed description of the housing arrangements at international Project Centers.

Every member of the WPI staff that we interviewed mentioned that they often receive questions or requests from students regarding the availability of a single room, meaning a room without a roommate. During our interview, Amy Curran of the OAS mentioned that single occupancy rooms are one of the most commonly requested accommodations, both on campus at WPI and at international Project Centers. In connection with this accommodation, some students also require a fully private bathroom, as mentioned by Krista Miller of the GEO.

Air conditioning in housing is also a commonly requested accommodation, as stated by each WPI staff member we interviewed. Ms. Curran indicated that several medical conditions can cause a student to be particularly sensitive to heat, and thus require air conditioning in their housing arrangement. This is particularly relevant at international Project Centers in warm and tropical climates, such as Panama.

Fortunately, the availability of each of the aforementioned accommodations was easily verified through observations of the dormitories, which we will discuss in section 4.2.1.

### 4.1.2 Dietary Restrictions

Another popular result from our survey of WPI students was that there was no indication of what eating would look like in any given country. From not knowing if it is possible to avoid allergens, or not knowing if there is even a kitchen available, there is a lot of concern about being able to survive in these new places. Throughout our interview process, we inquired about the most common concerns among WPI students; dietary restrictions were not regarded as a common concern by staff in the GEO or the OAS and were only mentioned in our interview with Dr. Sakulich. Students are typically told to go do their own research, but that task is daunting for some people especially when the information is not easily accessible. One student stated:

"I think more resources for those who have dietary restrictions would be helpful and make the process seem less daunting. It's hard to fill out an application with your diet in mind when you don't know what place you'll be sent to."

This concern is shared by 37.7% of students with concerns about going abroad. The severity of different allergies, as well as dedication to certain diets, varies between individuals. As Shiivek noted in his ethnography, online information sometimes differs from actual options available at food service establishments, thus people with dietary restrictions may feel apprehensive about their options despite researching.

### 4.1.3 Language Barriers

19.4% of the respondents to our survey have concerns about language being a barrier when choosing a project abroad. Some Project Centers have language fluency requirements or require students to complete a language preparation course (Worcester Polytechnic Institute, 2023i). While this policy can offer significant benefits to individuals, it may also serve as a challenge, particularly in non-English speaking countries, where students with limited language proficiency may encounter substantial difficulties. One respondent from the WPI student survey expressed that their preparatory language course at WPI was insufficient in teaching written language, and they felt anxious ordering food due to an allergy combined with their inability to read labels on food packaging.

### 4.1.4 Culture and Safety

Throughout the survey responses, some students shared concerns regarding knowledge about the cultures, laws, and environments of the Project Centers to which they were applying, specifically in relation to the safety of LGBTQ+ students. Six respondents mentioned feeling apprehension or abstaining from applying to certain project centers due to their identity and personal safety. One respondent expressed discomfort at the idea that countries abroad may not have the same protections against hate crimes and other identity-based injustices that exist within some parts of the United States and wished for that information to be readily available and clarified on the application itself. WPI eProjects currently has a disclaimer urging applicants to "[ensure] that you take proper care of yourself, researching and familiarizing yourself with the Program and location, and avoiding any activity or behavior which would cause harm to yourself" (Worcester Polytechnic Institute, 2023i, para. 25). Although this is a great way to encourage dialogue regarding student safety, there are currently forty-two international Project Centers (Worcester Polytechnic Institute, 2023f), and managing that information has clearly been a cause of great stress to WPI students— both part of the LGBTQ+ community or otherwise.

### 4.1.5 Medications

Additionally, medications are a stressful part of traveling in any scenario. That stress may be amplified when students are traveling by themselves to a foreign country for an extended period of time. Students in our survey voiced concerns about not being able to find information on what medications they are allowed to bring with them on IQP. They also were worried about finding medical care at their Project Centers, and not having proper access to emergency phone numbers. One student goes on to say that while medical care was available, "it was not made clear to us how far we would be from ANY true medical care [for them it was a five-hour drive]". While the GEO provides the International SOS as a resource, some students indicate that it is hard to navigate and does not always have all the answers. Another part of this concern is acquiring enough of a medical

prescription to last throughout the seven weeks students are abroad. While this is not a problem that WPI can solve, it is something that students should be made aware of before traveling. Communicating with different doctors and pharmacies can be extremely time-consuming and if students are given late notice there is no guarantee they will be able to get the medications they need.

### 4.1.6 Mobility Accommodations

Mobility-related accessibility concerns were mentioned by two WPI students in our survey, making it not as prevalent as the previously mentioned barriers. However, mobility-related concerns are particularly restrictive to a student's ability to travel abroad when finding a suitable Project Center for a wheelchair user, as mentioned by Amy Curran in our interview.

### 4.1.7 Academic Accommodations

Of our responses to our survey, concerns relating to academic accommodations were very minimal. In our interview with Amy Curran, she mentioned that one of the most common academic accommodations given at WPI pertains to extended time on tests (i.e. "time and a half" and "double time"). Since the IQP's curriculum does not include the administration of exams, those academic accommodations— despite being discussed with students and advisors— may not always be relevant to a project setting.

## 4.2 Available Accommodations at the Panama City Project Center

These aforementioned concerns impact students' daily lives and are of vital importance for their survival in a new place. Most of these concerns relate to specific accommodations provided on the WPI campus. This section identifies which of these accommodations can be applied in Panama.

**Table 4**

*Overview of Available Accommodations at the Panama City Project Center*

| Accommodation | Status |
|---|---|
| Air Conditioning | Provided |
| Private Room | Provided Upon Request |
| Private Bathroom | Provided Upon Request |
| Elevator | Provided |
| Wheelchair Accessible Room/Bathroom | Alternative Options |
| Wheelchair Accessible Pathways | Not Available |
| Wheelchair Accessible Transportation | Not Available |
| Full Kitchen | Provided |
| The Big 9 Allergies | Options Available |
| Vegan Diet | Options Available |
| Vegetarian Diet | Options Available |
| Pescetarian Diet | Options Available |
| Kosher Diet | Options Available |
| Halal Diet | Options Available |

While we use this section to detail what specific accommodations can be provided at the Panama City Project Center, a shortened list can be seen in Table 2. The status of these accommodations has been collected from all the methods detailed in Chapter 3.

### 4.2.1 Housing Accommodations

Fortunately, many commonly requested accommodations regarding housing can be provided for students at the Panama City Project Center.

Typically, WPI students are housed at the CdS lodging complex which is a LEED Platinum certified building. The lodging complex is a dormitory-style housing arrangement, with single, and double occupancy rooms available. Double occupancy rooms have twin-sized beds and bathrooms are shared between roommates. Single occupancy rooms have a queen-sized bed and a private bathroom. Single occupancy rooms are located on the same floors as the double occupancy rooms. Therefore, students requiring a single occupancy bedroom, or a private bathroom can be accommodated at the Panama City Project Center, both in designated single occupancy rooms and in double occupancy rooms without a roommate. Furthermore, because the single occupancy rooms are located in the same area as the double occupancy rooms, students requiring a single occupancy room do not experience increased inconvenience or isolation as a result of this accommodation.

Within her ethnography, Mia detailed the process of receiving her accommodations while abroad. In the terms leading up to her A-term travel, she was in frequent contact with both the GEO and OAS in order to verify which accommodations she would like provided at the Project Center. Mia suffers from a chronic pain condition that has been documented to affect her sleep, and as such, requires an accommodation for a bed larger than a Twin-XL. Due to her neurological disorders, she also has accommodations for a single room with a private bathroom (studio-style living). This information was provided to both GEO and the OAS, and was taken into consideration when placing her into housing on the CdS campus. The single rooms in the dormitories have a private bathroom and a queen bed by default, but there was also dialogue between Mia and the GEO staff regarding the prospect of providing a double room and pushing the beds together to create a single, larger bed.

Air conditioning, another commonly requested accommodation, is provided at the CdS dormitories as well. Bedrooms and hallways are equipped with air conditioning, which is set to 22.0 °C (71.6 °F). This provides a cool and dry environment in relation to the typical Panama City temperatures, see section 2.4.3. The temperature settings in personal rooms cannot be adjusted specifically, however, a temperature control box in each personal room allows occupants to turn the air conditioning off if desired. Furthermore, each bedroom has a private balcony with a sliding door, which affords residents additional control over the temperature of the room and the exchange of fresh air. WPI students are also allowed access to a common room and a study space in the CdS dormitories, and these rooms are equipped with air conditioning as well.

The lodging complex website is publicly available online and can be used to book rooms in the dormitories. This website contains information regarding the types of rooms and amenities that are available but does not specify the accessibility of the rooms. A photo of each type of room is available on the website as well, but only includes the bedroom area and does not show the bathroom, hallway, or balcony (Ciudad del Saber, 2023).

### *4.2.2 Dietary Restrictions*

With the countless types of dietary restrictions that exist, it is often concerning to travel while not knowing what the food situation will be. In Panama, it is possible to eat a variety of different diets, including vegetarian, vegan, pescatarian, and Kosher. Vegetarian substitutions like tofu are not very common in the city but there are a lot of vegetable-based meal options. We have compiled a list of nineteen restaurants that serve vegetarian meal options, based on Shiivek's personal experience in Panama City, see Appendix M. On the CdS campus, at La Plaza, there are seven restaurants that cater to a vegetarian diet, and a list of these restaurants can also be found in Appendix M. Those who practice veganism have fewer options with only two restaurants offering vegan food, but it is still possible to find food. In terms of eating Kosher, a Kosher supermarket, Super Kosher, exists in Panama and is approximately a thirty-minute drive away from the CdS dormitories (Super Kosher, n.d.). Allergies are not as straightforward. Labels on prepackaged food are very common, and although they are often in Spanish, they can be easily translated using an online translator. It's important to note that phone service in the city is unreliable, and cannot always be depended on. In restaurants, complete lists of ingredients are not always available. This makes it difficult for those with allergies to be certain that dishes are clean of allergens. However, we have witnessed staff members at multiple establishments help clarify ingredients, and ensure that the customer received what they required.

If dining out is not available or preferred, guests have access to a full kitchen. While this kitchen is available to CdS residents, the dishes, pots and pans, and silverware are all shared. Some people with severe food allergies may require their own dishes, and this accommodation is not currently provided. The convenience store on campus does have options for separate plastic utensils and paper dishes, and the Albrook Mall has options to purchase cookware and ceramic or plastic dishes, so an alternative could be arranged. Furthermore, the shared kitchen and kitchenette areas do not contain designated Kosher dishes or appliances. Ease of dining is thus also dependent on the severity of one's allergies or strictness of adherence to a particular diet.

### *4.2.3 Language Barriers*

The Panama City Project Center does not have a Spanish fluency requirement for enrollment (Worcester Polytechnic Institute, 2023i). Major tourist attractions like the Biomuseo, the Smithsonian Nature Center, and Casco Viejo have English signage, as observed during our cultural expeditions and while walking around Panama City. Additionally, during our observations of CdS, we see a considerable amount of English signage across campus, including in La Plaza where Spanish and English menus are available. These examples alone do not represent the entirety of Panama City, and getting around the city without knowing the Spanish language may present challenges.

Upon arrival in Panama, students complete a three-day preparation course in the Spanish language. Receiving a foundation of basic conversational skills in Spanish allows for easy acclimation into the Panama City Project Center. The Casco Antiguo Spanish School intends for students to build confidence in practical applications such as introducing themselves, navigating transportation, and ordering food, as mentioned in an interview with David Gold, the Director of the Casco Antiguo Spanish School. Cultural immersion is also included in the curriculum of the Spanish school, allowing students to develop an understanding and appreciation for Panama. As a result of our Spanish school experience, we have found that our ability to articulate our needs and advocate for ourselves has grown over the course of the entire IQP.

### *4.2.4 Culture and Safety*

As many students showed concerns regarding culture and safety, while on the grounds in Panama, we did further research into LGBTQ+ acceptance in Panama. Using a website known as Equaldex, we compared acceptance-level scores between the United States, Panama, and other Latin American countries and US territories that house WPI Project Centers. These scores are detailed in Table 3 below.

**Table 5**

*Comparison of LGBTQ+ Acceptance Among Countries with WPI Project Centers*

| Project Center | Equality Index (Out of 100) |
|:---:|:---:|
| Puerto Rico | 80 |
| The United States | 76 |
| Costa Rica | 71 |
| Ecuador | 63 |
| Panama | 42 |
| Brazil | 80 |
| Paraguay | 36 |
| Argentina | 74 |

*Note.* The Equaldex Equality Index is written as a score between 0 and 100, where 0 is the least accepting and 100 is the most accepting (Equaldex, 2023a).

These scores are formulated using both public opinion data and the amount of protections that exist under the law. Even among other Project Centers in Latin America, Panama ranks surprisingly low. This does not, however, mean that Panama is impossible to visit if you are in the LGBTQ+ community. Rather, it does suggest that a level of caution should be taken to ensure one's safety. In a 2023 study detailed by Equaldex, 45% of people feel that Panama is a "'good place' for gay and lesbian people" (Equaldex, 2023b, para. 2). It is also important to note that not all of these Latin-American Project Centers may be accessible to a person within the community, given they do not meet the language requirement. This may potentially limit or bar someone from being able to travel abroad to Latin America since several Project Centers in this region have a requirement for proficiency in the Spanish language.

Furthermore, in the study of LGBTQ+ acceptance referenced in section 2.1.2, within the timeframe of 2014 to 2017, Panama ranked 49th out of the 174 countries that were evaluated. For comparison, the United States ranked 29th (Flores, 2019, p. 31). When this data is calculated as a percentage, Panama scored higher than 71.8% of other countries that were also evaluated over this period of time (Flores, 2019).

That being said, however, social spaces for the LGBTQ+ community do exist in Panama, especially throughout Panama City. They are openly advertised as such and act as a safe space for both those in the community and allies to the community. Of course, some degree of caution may be needed, as there are no specific laws protecting the LGBT community (Equaldex, 2023b). It is not illegal to be homosexual or transgender in Panama, allowing these establishments to maintain a great level of transparency— which signifies great progress. In general, LGBTQ+ rights do not exist to the same standard as in the United States, but this does not guarantee imminent danger for LGBTQ+ students in Panama.

### 4.2.5 Medications

Concern over medications is very personalized to each student going abroad. There are endless possibilities of what medications students may need, and the process of getting those to their location abroad cannot be easily assured or explained. In Panama specifically, most medications are acceptable to travel with, and typical over-the-counter drugs are cleared to bring as long as they are in the original packaging. Prescription drugs are also often okay to bring, but they must be in their original packaging and accompanied by the prescription. While no list of banned substances is available, the International Trade Administration (ITA) has a short list of prohibited imports (International Trade Administration, 2023). Two well-known exceptions to medications are Pseudoephedrine, which is an active ingredient in Claritin D[3], and Marijuana products (Australian Government Department of Foreign Affairs and Trade, n.d.). In addition to the ITA, the International Narcotic Control Board (INCB) has a database of information provided by countries regarding documentation and restrictions on medications. While this information is helpful, some of it is very out of date, with the last update to Panama's policies dating to December 2013, and the INCB strongly recommends travelers contact the embassy of the country they are traveling (International Narcotics Control Board, 2022).

At La Plaza on the CdS campus there is also a pharmacy that stocks the most common over-the-counter medications. Medications that can be bought over-the-counter include ibuprofen, acetaminophen, nausea medication, cough medicine, and cold and flu medication. Allergy medications can also be purchased, but it is important to note that they are only available in liquid form. Most of these medications are generic versions of name brands, so it is important to be aware of what active ingredients are in your preferred treatment.

In terms of receiving medical care in Panama City, things are much simpler. WPI provides students with a policy number for International SOS, an online health and security service that assists students in finding medical and mental health care. There is a clinic on the CdS campus, which, while not open 24 hours, is open from 7 a.m. to 9 p.m. on weekdays, and 8 a.m. to 5 p.m. on weekends. There are also phone numbers for ambulance services posted in all of the bedrooms. Emergency services can be reached by dialing 911, the same code used in the United States. Ambulance and fire departments can be reached specifically by dialing 103, while police can be reached by dialing 104.

---

[3] The information regarding Claritin D's active ingredients was sourced from DailyMed: a resource provided by the National Institutes of Health (2022). This resource contains information about several other medications besides Claritin D, and can be utilized to verify ingredients within common medications.

### *4.2.6 Mobility Accommodations*

Regrettably, our physical inspections, guided by the comprehensive criteria outlined in the ADA guidelines, have substantiated the partial inaccessibility of the dormitory rooms and bathrooms for individuals reliant on mobility aids. Specifically, the rooms and bathrooms have been determined to lack the necessary features and accommodations, such as wider doorways, grab bars, slip-resistant flooring, gradual incline of slopes, and curb cuts, which are all essential for accommodating wheelchair users. In the typical arrangement of double occupancy rooms, the space between the beds is smaller than recommended by the ADA for a wheelchair user to navigate. However, the furniture in these rooms can be rearranged to allow a larger space. This rearrangement would require assistance from CdS staff or WPI faculty, as a wheelchair user could not feasibly move the beds and desks by themselves. The bathrooms are not spacious enough and do not have appropriate adaptations for a wheelchair user to comfortably navigate. For example, the floor plan does not contain a sufficient diameter for a wheelchair user to turn around and a vertical threshold of 3.25 inches blocks access to the shower. In addition, there is a lack of grab bars around the toilet and inside the shower.

These mobility concerns may be mitigated for residents at CdS by staying at the only hotel on campus, the Holiday Inn, which offers one type of wheelchair-accessible room. The booking website has a specific filter for wheelchair accessibility (Holiday Inn Express Hotels, n.d.), which can help travelers with disabilities find an acceptable housing option and make an informed decision. However, the Holiday Inn hotel is located slightly over a quarter of a mile away from the dormitories, and the path between the two contains a steep incline and several sections of uneven or missing sidewalk. A WPI student with a mobility aid could choose to stay in the Holiday Inn hotel, but would likely require additional assistance with transportation around campus, which would generate additional monetary costs.

Rental vehicle companies in Panama City do not provide wheelchair-accessible vans for rental (Budget, n.d.; Kayak, n.d.). For individual commutes, ride-hailing services like Uber are available at CdS and throughout Panama City, but wheelchair-accessible vehicles are not available for request as seen in Figure 5.

**Figure 5**

*Uber Results with No Wheelchair-Accessible Vehicle*



*Note:* From Uber. (n.d.). *Uber login | uber official site*. Request a ride now.

The walking path from the dormitories to La Plaza does not have an appropriate amount of curb cuts and sidewalks, making it a challenging path to navigate for people with mobility aids. A ramp is present between the dormitory building and the sidewalk, which is shown in Figure 6, but this ramp does not comply with ADA guidelines due to its steepness and lack of a flat landing for turning. Figure 7 shows a curb cut between the aforementioned sidewalk and the road, which is steeper than recommended by the ADA, but is sufficiently wide. Figure 8 shows the intersection of the previously mentioned sidewalk with the road. This intersection does not have a curb cut, and the gap between the sewer drain and sidewalk is very large.

**Figure 6**

*Non-ADA Compliant Ramps at CdS Dormitories*



**Figure 7**

*Curb Cut at the CdS Dormitory Entrance*

**Figure 8**
*Storm Drain Beneath the Sidewalk*



On campus, La Plaza has ramps and parking spots for people with physical disabilities. The ramps themselves are steeper than recommended in the ADA guidelines. The food service counters are also slightly higher than recommended. However, the dining tables are sufficient for a wheelchair user to access, and we witnessed a service worker assisting a wheelchair user who could not reach the counter. These attempts demonstrate efforts to support accessibility at CdS.

Verbal summaries of ADA compliance assessments for both the dormitories and La Plaza, as well as a link to a full report of the assessments, can be found in Appendix H.

Even with the preceding efforts to support accessibility on campus, many survey respondents who have lived at CdS have struggled with the distance between the dormitories and La Plaza, citing concerns with uneven sidewalks, as well as concern for tripping. One of the respondents said "the sidewalks are not wheelchair accessible, with little to no ramps at the crosswalks. Sidewalks are also extremely uneven and could cause many tripping accidents." To further explain this concern, Mia Bourguignon, one of our group members who suffers from a chronic pain condition, also detailed her experience with this barrier:

> "On a good day, I can make multiple trips to La Plaza. On a bad day, when I have severe flare-ups, I am in a wheelchair and have to find alternative—and usually more expensive— options for food and other necessities."

This concern as mentioned in her ethnography showcases her struggle with the distance between the dormitories and La Plaza, citing concerns with weather and heat, as well as fatigue and pain. While she was traveling through the Panama City airport, she had a severe flare-up in her back pain, which left her unable to walk. Luckily, the airport had an abundance of wheelchairs that were free and accessible to use, which cannot necessarily be said about the CdS campus. Had this event happened on campus, in similar ways that it had happened back in the United States, she would have been unable to travel to La Plaza.

Although some aspects of the CdS campus were found to be inaccessible for those with mobility-related disabilities, our discussion with CdS staff and observations of the campus illuminated continued, conscious efforts to increase accessibility on campus. In our interview with

Anayansi Chichaco, she indicated that each year, four to five buildings at CdS are renovated in order to implement accessible infrastructure such as ramps and elevators.

**Figure 9**

*Office Renovation with Ramp Installation*



**Figure 10**

*Unrenovated Building without a Ramp*



Figure 9 and Figure 10 contrast the current building renovation project at CdS with an adjacent building that has not been renovated, photographed on October 4th, 2023. Furthermore, Ms. Chichaco described her involvement on a board of architects currently working to update the Panamanian accessibility guideline manual. However, Ms. Chichaco indicated that the dormitories at CdS are considered some of the most sustainable and sophisticated lodging facilities in Panama, and thus would likely be a low priority for renovation. Therefore, some portions of the CdS campus will be more accessible for those with mobility-related disabilities in the future, but the dormitories are likely to remain in the same state for the considerable future.

Outside of CdS, the Casco Antiguo Spanish school implements accessible options for students with mobility impairments. For example, the director of the school shared in an interview that there have been instances where the school has sent faculty to students' hotels because of a student's difficulty accessing the building or adequate transportation. In the school building, there are classrooms on the ground floor for those who are unable to get upstairs.

Some other locations that WPI students frequent have made efforts to address accessibility concerns. Sites such as Panama Viejo Museum, Biomuseo, and Miraflores Locks have been a part

of cultural excursions with our advisors. The Panama Viejo Museum provides accessible parking spaces, shown in Figure 11, and ramps for wheelchair users. However, many of these ramps, such as the ramp in Figure 12, were steeper and less wide than recommended by the ADA. While these measures demonstrate improvements and notable initiatives at a popular tourist destination, they do not guarantee a smooth experience for individuals with mobility issues.

**Figure 11**

*Accessible Parking Space at Panama Viejo*



**Figure 12**

*Ramps for Wheelchair Users (Non-ADA Compliant) at Panama Viejo*



The Biomuseo, which was designed by Frank Gehry, "the most important architect in the contemporary era" (Kanter, 2019, para. 1), is a positive example of the implementation of accessibility accommodations in public infrastructure. Here, not only are there elevators to facilitate movement between different levels, as seen in Figure 13, but ramps have also been strategically positioned to aid visitors with mobility impairments.

**Figure 13**
*Elevator at Biomuseo*



These are only some of the examples demonstrating the accessibility and the inaccessibility at places frequently visited by WPI students during their time at the Panama City Project Center.

### 4.2.7 Academic Accommodations

When we spoke with Krista Miller, she mentioned that in the process of training prospective IQP advisors, they are given debriefs about what an academic accommodation may look like while abroad, given the different contexts of academic work. Many academic accommodations can be taken care of through the nature of the project. For example, in her interview, Amy Curran mentioned that students commonly request a word processor for written assignments, but if students are working on their laptops, this accommodation is taken care of. However, if a student has extended time on tests, but still requires accommodations regarding the amount of time they need to complete work, the GEO, OAS, and Project Center advisors can formulate a plan that considers the needs of the individual and their teammates— given that the student self-identifies as having a disability and requiring accommodations.

From our group's understanding, many of these academic accommodations can be remedied with support within the project group/team and understanding from advisors. In one of our group member's personal experiences with academic accommodations while on IQP, Mia received support from both ends, and it yielded a positive, more productive work environment that considered the needs of everyone. Through the OAS, she has academic accommodations for extended time on tests due to her Obsessive-Compulsive Disorder (OCD); she frequently scraps perfectly adequate work and starts over as a result of her disorder, which means she takes significantly longer to complete work than her peers, especially under intense pressure. In her ethnography, Mia said, "I informed my group mates of this issue, and as a result, we were able to divide up the work in a way that was equitable. I also feel fortunate to have teammates that are willing to strongly advocate for me, which may not be the case in all project groups."

### 4.3 Limitations of the Findings

Our group experienced a few challenges that limited our findings, the most prominent of these being the lack of time we had in Panama City. As we were only in the country for less than

eight weeks, we were forced to narrow the scope of our project. Ideally, we would have liked to broaden our searches to include more areas outside of Panama City and perspectives outside of the day-to-day life of a WPI student.

Additionally, the group encountered complications with the interpretation of survey results. We identified several duplicate responses, as well as responses that were obviously dishonest, as detailed in section 3.3.4. Responses lacking input to short answer questions, duplicate responses, and clearly dishonest responses were eliminated from the response pool. Analysis of data could only be performed on the remaining collection of 72 valid WPI survey responses and 19 CdS survey responses. Though the number of usable survey responses was markedly lower than the initial number of responses in the case of both surveys, 72/697 and 19/32, this collection still constituted a significant sample.

Another limitation that we identified was the process of finding the most knowledgeable personnel at CdS that would be appropriate to interview regarding accessibility. When we first arrived at the campus, we met one staff member who was presented to us as our liaison with CdS. Later in the timeline of our project, we reached out to this liaison and were directed to another staff member, who led us to the person we were finally able to interview. The entire process of finding the correct person took multiple weeks, and once we were in contact with them, we felt limited in our ability to follow up on information given to us by this connection due to the time restraints of our project.

Our last limitation was that it was difficult to obtain data from significant organizations that deal with accessibility. To broaden the scope of our research, we attempted to contact the Organization of American States, which is an international organization, and the SENADIS, which is a Panamanian governmental organization. We did not receive responses to our email communications. This might be because the centralized hierarchies in these two enormous organizations make it difficult to establish contact or because people in these organizations are very busy.

### 4.4 Recommendations

Our team has compiled a comprehensive list of available accommodations at the Panama City Project Center. We have distributed this list to Project Center Director Dr. Sakulich, the GEO, and the OAS. We developed an initial draft based on our findings, which was reviewed in person with Dr. Sakulich. Following this meeting, we added more information based on his feedback regarding questions he still had. In our final iteration, our document spanned seventeen pages, and detailed a comprehensive list of what could or could not be accommodated. In addition to the available accommodations, we included alternative options for accommodations that cannot be provided. We recommend that Dr. Sakulich, the GEO, and the OAS use this list to advise students on any questions they may have. This document only contains information regarding available accommodations and alternatives and does not make claims regarding conditions that can and cannot be accommodated. As most conditions exist on a spectrum, disabilities, medical conditions, and dietary restrictions affect individuals differently. Students should be provided with this information regarding the Project Center and encouraged to make their own determination of their ability to attend the Panama City Project Center.

In addition to our report of recommendations, we created a single-page infographic detailing key features of the Panama City Project Center, which can be seen Appendix J. This document includes information regarding housing accommodations, restaurants, and kitchen

equipment, and contact information for parties who can answer additional questions. We recommend that this document be given to students at the GEO Global Fair. This document will garner interest, answer common questions for prospective students, and equip students with additional resources to determine whether they can be accommodated at the Panama City Project Center. Thus, students will feel more informed about the Project Center and will be confident in their decision to apply or abstain from the Panama City Project Center.

Our group also created a business card-sized infographic containing Spanish translations of the FDA's nine major food allergens, as described in section 2.3.1, as well as gluten, which can be seen in Appendix K. The card also includes Spanish translations of phrases that a person with allergies may need while ordering food. Specifically, these phrases are: 'without _____,' 'I am allergic to _____,' and 'Does this food have _____?'. We recommend that this card is also given to students with food allergies or intolerances traveling to Spanish-speaking countries. We also recommend that additional iterations of this card be created in other languages for students traveling to other countries where English is not the primary language.

Although the GEO currently provides an abundance of resources, many respondents perceived barriers to accessing this information. Under the "Travel Risks" subheading in eProjects, there is currently a hyperlink to access resources that pertain to traveling abroad, organized by category. It is possible for LGBTQ+ students to navigate to the Equaldex website, but we recommend that this acceptance score is included within the general text, as well as a comparison to the United States' score for context.

Additionally, we recommend that the eProjects website include text transcripts of Project Center videos. The video description of the Panama City Project Center is very informative and a valuable resource for potential students. However, this information is overlooked by some students and inaccessible to others. A textual transcript would make this information more accessible to students with auditory impairments, as well as those who simply prefer information in a textual medium.

Finally, our team amassed pictures of the housing complex and surrounding area to provide potential students an insight into what their living situation will look like. These pictures have been provided to the Project Center Director (Dr. Sakulich) and the GEO, and we recommend that these pictures be added to the eProjects website as well as the Panama City Project Center website.

# Chapter 5: Conclusion

Rarely do students in a STEM program have to concentrate on a project that extensively focuses on social sciences and the ways in which they affect people's lives. A sensitive topic like accessibility at a prestigious foundation, Ciudad del Saber, has taught us many profound life lessons. In order to understand and assess accessibility at CdS, we focused on understanding some key social science concepts.

Through this project, we addressed two main research targets. The first target was to identify the most prevalent accessibility concerns for WPI students when preparing to travel abroad. The second target was to assess the Panama City Project Center in order to compile a list of accessibility needs that can be accommodated. In the previous chapter, we provided an overview of our findings, deliverables, and recommendations.

We were able to find accommodations for most of the prevalent concerns of WPI students looking to travel abroad. We are confident that air conditioning in indoor spaces, a private room and bathroom, elevators, and a full kitchen can be provided at the Panama City Project Center. A variety of dietary needs are also fairly easy to accommodate, such as food allergies and personal diet choices including vegetarianism, veganism, pescetarianism, Halal, and Kosher. Depending on the severity of allergies, or commitment to traditional standards, students may find it difficult to utilize shared kitchen spaces.

Travelers are permitted to transport most prescription-based medications into Panama, and most over-the-counter medications can either be brought into the country or bought while here. There is ample English signage around CdS and major tourist attractions in Panama City, showing consideration for English speakers. As an alternative, wheelchair-accessible rooms with bathrooms are available at the Holiday Inn on campus, but it is substantially further away from primary working spaces than the dormitories are. Transportation to shared study areas also requires traveling uphill at a steep incline. Navigating around Panama City is often difficult due to uneven terrain, open sewer drains beneath sidewalks, and few curb cuts making it especially challenging for wheelchair users. Lastly, a key finding showcases that Panama is exhibiting an upward trend in safety and acceptance for the LGBTQ+ community, which instills confidence in travelers with these apprehensions.

Several deliverables were developed through the completion of this project. The first was a comprehensive list of accommodations that are currently provided at the Panama City Project Center, as well as alternatives to unavailable accommodations. This document was provided to Project Center Director Dr. Sakulich and the GEO, and we recommend that both parties use this document to inform students with accessibility concerns who are considering travel to Panama City. Our second deliverable was a half-page infographic containing information about the Panama City Project Center, both general and accessibility related. We recommend that this infographic be distributed to students at the GEO Global Fair, to garner interest in the Project Center and answer common questions. Our third deliverable was a business card graphic containing Spanish translations of the FDA's nine major allergens with the addition of gluten, as well as a few related phrases. We recommend that this card be given to students with allergies traveling to countries where Spanish is the primary language, to assist them in ordering food and avoiding allergens. Finally, we recommend additions to the WPI eProjects website, specifically a text-based transcription of the Project Center video and photographs of the CdS dormitories.

Through the completion of this project, our team feels as though we have grown, not only as team members, but as individuals. We look forward to seeing future projects adapt and learn from our findings.

# References

Atkinson, K. M., Koenka, A. C., Sanchez, C. E., Moshontz, H., & Cooper, H. (2014). Reporting standards for literature searches and report inclusion criteria: Making research syntheses more transparent and easy to replicate. *Research Synthesis Methods*, *6*(1), 87–95. https://doi.org/10.1002/jrsm.1127

ADA National Network. (2023a, October 11). *What is the Americans with disabilities act (ADA)?*. https://adata.org/learn-about-ada

ADA National Network. (2023b, October 11). *What is the definition of disability under the Ada?*. https://adata.org/faq/what-definition-disability-under-ada

Australian Government Department of Foreign Affairs and Trade. (n.d.). *Panama*. Smartraveller. https://www.smartraveller.gov.au/destinations/americas/panama

Bingham, W. P., Brunsting, N., & Katsumoto, S. (2023). A Systematic Literature Review on LGBT+ US Students Studying Abroad. *Frontiers: The Interdisciplinary Journal of Study Abroad, 35*(1), 152-187. https://doi.org/10.36366/frontiers.v35i1.736

Budget. (n.d.). *Start your online car rental reservation.* https://www.budget.com/en/reservation#/vehicles

Center for Food Safety and Applied Nutrition. (2023, January 10). *Food allergies*. U.S. Food and Drug Administration. https://www.fda.gov/food/food-labeling-nutrition/food-allergies

Centers for Disease Control and Prevention. (2020, September 16). *Disability and health overview.* https://www.cdc.gov/ncbddd/disabilityandhealth/disability.html

Chickering, A., & Braskamp, L. A. (2009). Developing a Global Perspective for Personal and Social Responsibility. *Peer review, 11*(4), 27-31. https://link.gale.com/apps/doc/A214547677/AONE?u=mlin_c_worpoly&sid=googleSchola r&xid=0d412e30

Ciudad del Saber. (2020, April 28). *What is city of knowledge?*. https://ciudaddelsaber.org/en/what-is-city-of-knowledge

Ciudad del Saber. (2023). *Complejo de Hospedaje*. https://live.ipms247.com/booking/book-rooms-complejodehospedaje

Clandinin, D. J., & Connelly, F. M. (1994). *Personal experience methods*. American Psychological Association

Clough, P. T. (2000). Comments on setting criteria for experimental writing. *Qualitative Inquiry*, *6*(2), 278–291. https://doi.org/10.1177/107780040000600211

Development Coordination Office (n.d.). *Physical Accessibility Making UN Premises & Facilities Accessible through the Business Operations Strategy (BOS)2.0.* United Nations.

Disability Rights Education & Defense Fund. (2019, June 12). *Panama - codigo de la familia*.

https://dredf.org/legal-advocacy/international-disability-rights/international-laws/panama-codigo-de-la-familia/

Disability:IN. (2022a, September 7). *About*. https://disabilityin.org/who-we-are/about/

Disability:IN. (2022b, September 7). *Panama*. https://disabilityin.org/country/panama/

Douglas, J. (2010). *Building Surveys and Reports.* John Wiley & Sons.

https://doi.org/10.1002/9781444391091

Equaldex. (2023a). *LGBT Rights by Country & Travel Guide.*

https://www.equaldex.com/?gclid=CjwKCAjw38SoBhB6EiwA8EQVLoaCZsGYjwDbojvZb1eOS6JFjoqkqo2j31MYyHwa00ZmvIVDXV1kiRoCTNkQAvD_BwE

Equaldex. (2023b). *LGBT rights in Panama: Equaldex.*

https://www.equaldex.com/region/panama

Flores, A. R. (2019). *Social Acceptance of LGBT People in 174 Countries.* University of

California, Los Angeles School of Law Williams Institute.
https://escholarship.org/content/qt5qs218xd/qt5qs218xd_noSplash_7cd0debad76b1e424872a41959a2350d.pdf

Food Allergy Research & Education. (n.d.). *Avoiding cross-contact*. FARE
https://www.foodallergy.org/resources/avoiding-cross-contact

Hegedus, E. J., & Moody, J. (2010, June). Clinimetrics Corner: The Many Faces of Selection

Bias. *The Journal of manual & manipulative therapy, 18*(2), 69–73.
https://doi.org/10.1179/106698110X12640740712699

Holiday Inn Express. (n.d.). *Book Hotel Rooms & Hotel Accommodations*. Holiday Inn Express

Hotels. https://www.ihg.com/holidayinnexpress/hotels/us/en/%20reservation

International Narcotics Control Board. (2022, August 31). *Country Regulations for Travellers*

*Carrying Medicines Containing Controlled Substances*. INCB.
https://www.incb.org/incb/en/travellers/country-regulations.html#P

International Trade Administration. (2023). *Panama - prohibited & restricted imports*.
https://www.trade.gov/country-commercial-guides/panama-prohibited-restricted-imports#

Johnstone, C., & Edwards, P. (2020). Accommodations, accessibility, and culture: Increasing
access to study abroad for students with disabilities. *Journal of Studies in International
Education, 24*(4), 424-439. https://doi.org/10.1177/1028315319842344

Kanter, D. (2019, April 8). Frank Gehry paintings, Bio, ideas. The Art Story.

https://www.theartstory.org/artist/gehry-frank/

Kayak. (n.d.). Car rental at Panama City (PTY) . Kayak.
https://www.kayak.com/cars/PTY-a18478/Panama-City,Panama-c18478/2023-10-16/2023-10-23?sort=rank_a

Kutsche, M. J. (2012, April). An Exploratory Study of Perceptions of Benefits and Barriers to Study Abroad for Students with Disabilities. *Masters Theses, 14.*
http://scholarworks.gvsu.edu/theses/14

Lang, W. L. (2019). Health care abroad. *Travel Medicine,* 475-481. Elsevier.

Lau, F., & Kuziemsky, C. (Eds.). (2017). *Handbook of ehealth evaluation: An evidence-based approach.* National Library of Medicine.
https://www.ncbi.nlm.nih.gov/books/NBK481590/

Lohr, J., Fredrick, N. B., Helm, L., & Cho, J. (2018). Health guidelines for travel Abroad. *Primary Care: Clinics in Office Practice*, *45*(3), 541-554.
https://doi.org/10.1016/j.pop.2018.05.012

López, A. M. (2023, July 28). *International visitor arrivals in Panama 2022*. Statista.
https://www.statista.com/statistics/718079/number-tourists-entering-panama

Lune, H., & Berg, B. L. (2017). *Qualitative Research Methods for the Social Sciences.* Pearson
Lustick, I. S. (1996). History, historiography, and political science: Multiple historical records and the problem of selection bias. *American Political Science Review*, *90*(3), 605-618.
https://doi.org/10.2307/2082612

Matthews, P. R., Hameister, B. G., & Hosley, N. S. (1998). Attitudes of College Students Toward Study Abroad: Implications for Disability Service Providers. *Journal of Postsecondary Education and Disability*, *13*(2), 67-77. https://files.eric.ed.gov/fulltext/EJ575675.pdf

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). Qualitative Data Analysis: A Methods Sourcebook. 3rd. Sage Publications

National Institutes of Health. (2022). *DailyMed - Claritin-D 12 hour- loratadine and pseudoephedrine sulfate tablet, extended release*. U.S. National Library of Medicine.
https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a7125705-01ff-4418-8c53-9209c2bbb484

New England ADA Center. (2017). *ADA Checklist for Existing Facilities - Home*. ADA Checklists for Existing Facilities. https://www.adachecklist.org/

Northeast ADA Center. (n.d.). *Physical Accessibility. Glossary: Physical accessibility*.
https://northeastada.org/glossary/physical-accessibility

Nurani, L. M. (2008). Critical review of ethnographic approach. *Jurnal Sosioteknologi*, *7*(14), 441-447. https://multisite.itb.ac.id/kkik-fsrd/wp-content/uploads/sites/154/2007/04/5-Lusi-Ethnography-Approach.pdf

Office of Minority Health. (2021). *MODERNIZING HEALTH CARE TO IMPROVE PHYSICAL ACCESSIBILITY*. The Centers for Medicare & Medicaid Services. https://www.cms.gov/files/document/cmsmodernizinghealthcare.pdf

Organization of American States. (2023). *SEDI - DSDE - Department of Social Development and Employment*. https://www.oas.org/en/sedi/ddse/pages/index-4_committee.asp

Papadopoulos, K. S., & Goudiras, D. B. (2005). Accessibility Assistance for Visually-Impaired People in Digital Texts. *British journal of visual impairment*, *23*(2), 75-83. https://doi.org/10.1177/0264619605054779

Qualtrics XM. (2023a). *Qualtrics Digital Support - Skip Logic.* Qualtrics XM. https://www.qualtrics.com/support/survey-platform/survey-module/question-options/skip-logic/

Qualtrics XM. (2023b). *Qualtrics XM - experience management software.* Qualtrics. https://www.qualtrics.com/

Rajkumar, S. (2022, July 29). *The Ada was a victory for the disabled community, but we need more. my life shows why.* NPR. https://www.npr.org/2022/07/29/1113535976/ada-disabilities-act-activists-more-protections

Reddit. (2023). *Worcester Polytechnic Institute*. r/WPI. https://www.reddit.com/r/WPI/?rdt=64085

SENADIS. (2018a). *About Us*. https://www.senadis.gob.pa/quienes_somos.html

SENADIS. (2018b). *Contact*. SENADIS. https://www.senadis.gob.pa/contacto.html

SENADIS. (2018c). *Disability Certification*. https://www.senadis.gob.pa/proyectos_y_servicios_certificacion.html

SENADIS. (2018d). *Parking Permits*. https://www.senadis.gob.pa/proyectos_y_servicios_pde.html

Smith, P. (2022, January 13). *Largest malls in Latin America 2021 by GLA*. Statista. https://www.statista.com/statistics/1201400/largest-shopping-malls-latin-america-gross-leasable-area/

Statista. (2023, October 4). *Income held by top 20 percent in Panama.* https://www.statista.com/statistics/1075285/panama-income-inequality

Super Kosher. (n.d.). *Super Kosher*. https://www.skosher.com/

Uber. (n.d.). Uber login | uber official site. Request a ride now.
https://www.uber.com/global/en/sign-in/

United Nations. (2021). *Panama*. UN PRPD. https://unprpd.org/programme/panama

U.S. Department of Justice Civil Rights Division. (n.d.). *The Americans with Disabilities Act*.
ADA.gov. https://www.ada.gov/

U.S. Department of State. (2021, November 4). *2020 country reports on Human Rights Practices - United States Department of State*. https://www.state.gov/reports/2020-country-reports-on-human-rights-practices/

U.S. Department of Education. (2020, January 16). *Resolution Agreement- South Carolina Technical College System*.
https://www2.ed.gov/about/offices/list/ocr/docs/investigations/11116002-b.html

Visit Panamá. (n.d.). *Visit the Panama Canal*. The Panama Canal | Seven Wonders of the Modern World. https://www.tourismpanama.com/things-to-do/panama-canal

Wall, S. (2006). An Autoethnography on Learning about Autoethnography. *International journal of qualitative methods*, *5*(2), 146-160. https://doi.org/10.1177/160940690600500205

Worcester Polytechnic Institute. (2022, July 25). *Aaron R. Sakulich*.
https://www.wpi.edu/people/faculty/arsakulich

Worcester Polytechnic Institute. (2023a). *Global Experience Office*.
https://www.wpi.edu/offices/global-experience

Worcester Polytechnic Institute. (2023b). *Humanities and Arts Requirement*. Worcester Polytechnic Institute Undergraduate Catalog. https://wpi.cleancatalog.net/humanities-and-arts-requirement

Worcester Polytechnic Institute. (2023c). *Office of Accessibility Services*.
https://www.wpi.edu/offices/office-accessibility-services

Worcester Polytechnic Institute. (2023d). *Office of Diversity, Inclusion, and Multicultural Education (ODIME)*. https://www.wpi.edu/offices/diversity

Worcester Polytechnic Institute. (2023e). *Panama City Project Center- Partners*. Panama City Project Center. https://wp.wpi.edu/panamacity/partners/

Worcester Polytechnic Institute. (2023f). *Project Center Directory*.
https://www.wpi.edu/project-based-learning/project-based-education/global-project-program/project-centers

Worcester Polytechnic Institute. (2023g). *The Interactive Qualifying Project*. Worcester Polytechnic Institute Undergraduate Catalog. https://wpi.cleancatalog.net/the-interactive-qualifying-project

Worcester Polytechnic Institute. (2023h). *The Major Qualifying Project.* Worcester Polytechnic Institute Undergraduate Catalog. https://wpi.cleancatalog.net/the-major-qualifying-project

Worcester Polytechnic Institute. (2023i). *WPI eProjects*. WPI eProjects 2.0 | WPI eProjects. https://eprojects.wpi.edu/front

World Data Info. (n.d.). *The Climate in Panama.* WorldData.info. https://www.worlddata.info/america/panama/climate.php

World Health Organization. (2021). *WHO policy on disability.* World Health Organization https://iris.who.int/bitstream/handle/10665/341079/9789240020627-eng.pdf?sequence=1

World Health Organization. (n.d.-a). *Disability - Health Inequity*. https://www.who.int/health-topics/disability#tab=tab_2

World Health Organization. (n.d.-b). *Disability - Overview*. https://www.who.int/health-topics/disability#tab=tab_1

World Health Organization. (n.d.-c). *Disability.* https://www.who.int/news-room/fact-sheets/detail/disability-and-health

World Health Organization. (n.d.-d). *Ensuring accessibility*. https://www.who.int/about/communications/accessible/ensuring-accessibility

World Health Organization. (n.d.-e). *Our work*. https://www.who.int/our-work

World Wide Web Consortium. (2008, December 11). *Web Content Accessibility Guidelines (WCAG) 2.0.* https://travesia.mcu.es/server/api/core/bitstreams/6c7e00c8-cd2d-4066-bba0-2203ba2281ad/content

# Appendices

## Appendix A: Consent Script for WPI Staff

As a group of students from WPI, we would like to invite you to participate in an interview for our research to learn more about accessibility at Ciudad del Saber and in Panama City. The purpose of our research is to make the WPI Panama City Project Center more accessible for students with disabilities in the future. During this interview, we hope to gain information regarding the types of accessibility concerns that WPI students often have when traveling abroad, and how accommodations for those concerns are provided. We anticipate that the interview should take about 30 minutes.

This is a collaborative project between Dr. Aaron Sakulich and WPI, and your participation is greatly appreciated. Information from our project will be published in a publicly available academic document at the end of our term and we can share a copy of our results if you are interested. No names or identifying information will appear in any of the project reports or publications unless you give us consent to do so.

Your participation in this interview is completely voluntary, not compensated, and you may withdraw at any time. This also means that you can skip any questions that you want. Do you have any questions for us about this interview?

For more information about this research and the rights of research participants, you may contact us by email at gr-Accessibility-PANAMA-A23@wpi.edu or the Institutional Review Board (IRB) Manager (Ruth McKeogh, Tel. 508-831-6699, Email: irb@wpi.edu) or Human Protection Administrator (Gabriel Johnson, Tel. 508-831-4989, Email: gjohnson@wpi.edu).

Thank you very much!

## Appendix B: Interview Guide for WPI Staff

- Would you please briefly describe your role at WPI?
- Have you worked at other universities in a similar role to your role here at WPI?
- What are students' main concerns for [GEO/OAS] staff prior to traveling abroad?
- Are there any special considerations or conditions that you feel would be particularly difficult to accommodate at a WPI Project Center? At the Panama City Project Center specifically?
- What questions from students regarding accessibility of the Panama City Project Center would require additional resources or research?
- Are there any common concerns that people who are abroad bring to your attention, while they are not in the country?

## Appendix C: Interview Guide for Casco Antiguo Spanish School Director

- Would you please briefly describe your role at Casco Antiguo Spanish School?
- Would you consider Casco Viejo to be accessible for those with mobility impairments?

  Would you consider other parts of Panama City accessible?
- Does Casco Antiguo Spanish School offer alternative options for potential students who cannot physically get to the school? (for example if a WPI student was in a wheelchair but wanted to take the Spanish classes)
- Do you think it is easy to find food near the school for people with dietary restrictions?

  (allergies, vegetarians, Kosher, etc.)

- Are there any dietary restrictions that you think it is particularly easy or difficult to find food for?

## Appendix D: Interview Questions for the Former Dean of The Global School

- Would you please briefly describe your role at WPI?

- Have you worked at other universities in a similar role to your role here at WPI?

- At the Worcester UK Project Center, what do you believe is done well in terms of increasing and being transparent about accessibility?

- Are there any specific accommodations you cannot provide at the Worcester Project Center?

- Is there anything additional that you believe advisors at the Worcester Project Center do to help those with accommodations that could be implemented in other project centers?

- Do you believe there is something being done correctly at the Worcester Project Center that could be implemented in other project centers, regarding how available accommodations are assessed or provided?

## Appendix E: Interview Guide for Ciudad del Saber Staff

- Would you please briefly describe your role at CdS?

- Are there any accessibility related projects that you are currently working on? Have you worked on any accessibility related projects in the past?

- Have you worked in a similar role at other places like CdS in the past?

- Are there wheelchair accessible bedrooms at the Complejo de Hospedaje (dormitories)?

- We are aware that many people are housed at CdS from around the world, each with varying needs and abilities. In the event that the dormitories are not suitable for someone, are there any alternatives?

- Are there any accommodations that CdS residents and visitors often require or request?

## Appendix F: Survey Questions for WPI Students

- What year are you? First Year, Sophomore, Junior , Senior, Other.

- Have you participated in a project abroad?

- If yes, Which one - IQP, MQP, HUA?

- Which WPI International Project Center did you attend?

- If no, Have you applied to a project abroad?

- Do you have any physical or academic accommodations on campus through the WPI OAS? (yes/no/prefer not to say) As a reminder, all questions in this survey are fully optional and the survey is anonymous, please only disclose information you are comfortable sharing.

- If yes, did you also receive these accommodations at a WPI International Project Center?

- Were there WPI International Project Centers that you could not attend, because your accommodations could not be guaranteed?

- Were there any barriers that prevented you from attending certain WPI International Project Centers, not associated with WPI OAS accommodations? (dietary restrictions, language barrier, etc.)

- Were there any aspects of the WPI Project Centers (housing, food, climate, etc.) that were unclear to you when applying for an international project?

- Are there any changes to the process or information provided that would have made you feel more comfortable in your Project Center selection?

- If you would like to share more regarding your experience with accessibility at a WPI International Project Center, please reach out to us via email at gr-Accessibility-

    PANAMA A23@wpi.edu

## Appendix G: Survey Questions for CdS Users

- Please rate the following with regards to dormitories/campuses that you have lived in, in the U.S., with 0 being very bad and 10 being very good.
    - Quality of facilities
    - Accessibility of dormitories
    - Accessibility of campus buildings
    - Ease of navigating campus
    - Ease of physically getting around campus
    - Please elaborate on any of the previous ratings, if desired.
- Please rate the following with regards to the dormitories/campus at CdS, with 0 being very bad and 10 being very good.
    - Quality of facilities
    - Accessibility of dormitories
    - Ease of navigating campus
    - Ease of physically getting around campus
    - Please elaborate on any of the previous ratings, if desired.
- Please rate your experience at CdS with the following, with 0 being extremely difficult and 10 being extremely easy.
    - Accessing allergy information at foodservice locations
    - Accessing vegetarian/vegan food at foodservice locations
    - Accessing food for another specialized diet (Kosher, Halal, keto, etc) at foodservice locations
    - Please elaborate on any of the previous ratings, if desired.
- Are there any barriers that you have encountered at CdS, which have not previously been addressed in this survey?

## Appendix H: ADA Compliance Assessment Reports

The results of our ADA compliance assessments, as well as verbal summaries of the assessments, can be accessed here.

The full ADA guidelines can be found here.

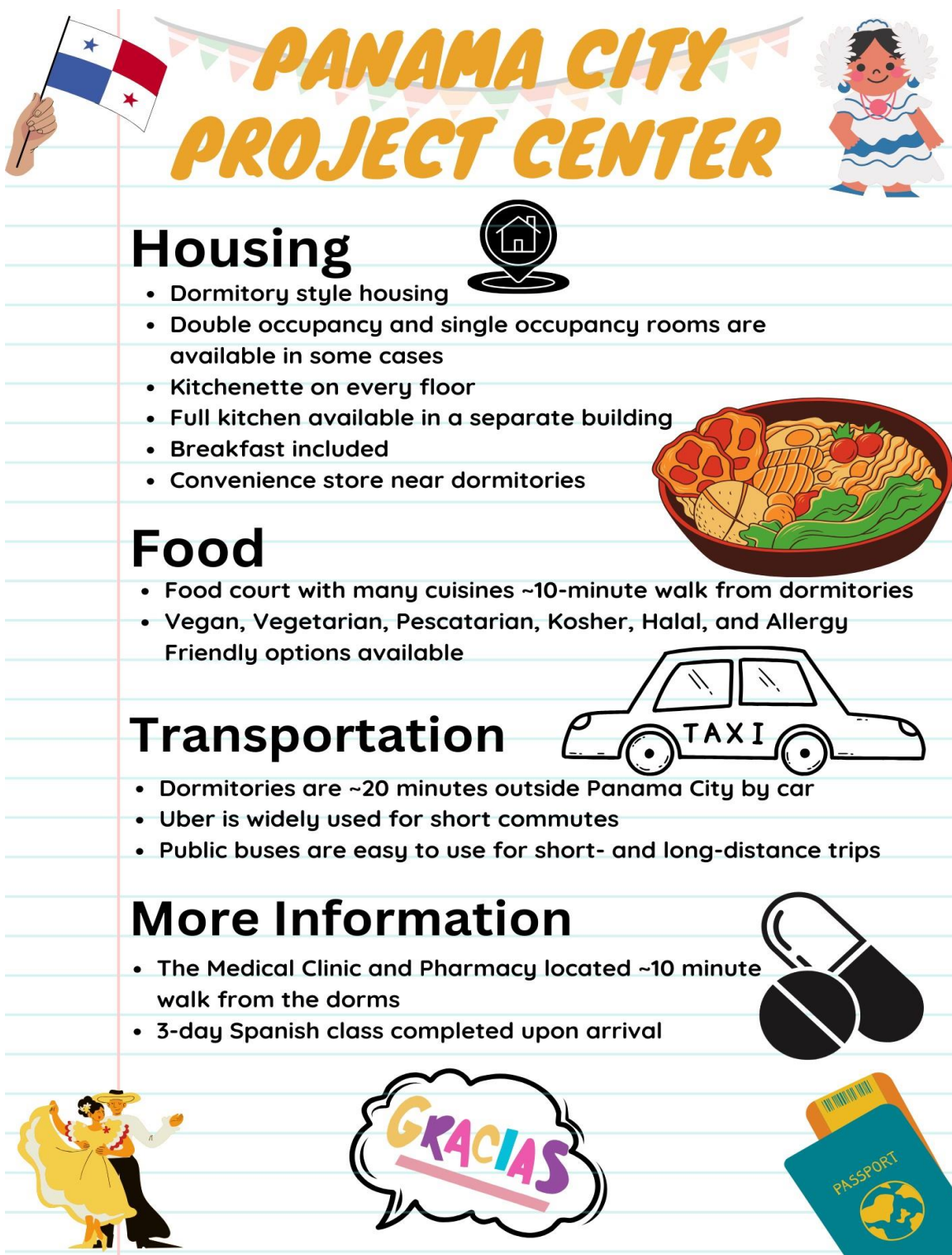## Appendix I: Panama City Project Center Accessibility Handbook

Our Panama City Project Center Accessibility Handbook can be accessed here.

**Appendix J: Panama City Project Center Infographic**

**Figure J1**

*Infographic to Distribute to Students at the GEO Global Fair*



# PANAMA CITY PROJECT CENTER

## Housing

- Dormitory style housing
- Double occupancy and single occupancy rooms are available in some cases
- Kitchenette on every floor
- Full kitchen available in a separate building
- Breakfast included
- Convenience store near dormitories

## Food

- Food court with many cuisines ~10-minute walk from dormitories
- Vegan, Vegetarian, Pescatarian, Kosher, Halal, and Allergy Friendly options available

## Transportation

- Dormitories are ~20 minutes outside Panama City by car
- Uber is widely used for short commutes
- Public buses are easy to use for short- and long-distance trips

## More Information

- The Medical Clinic and Pharmacy located ~10 minute walk from the dorms
- 3-day Spanish class completed upon arrival
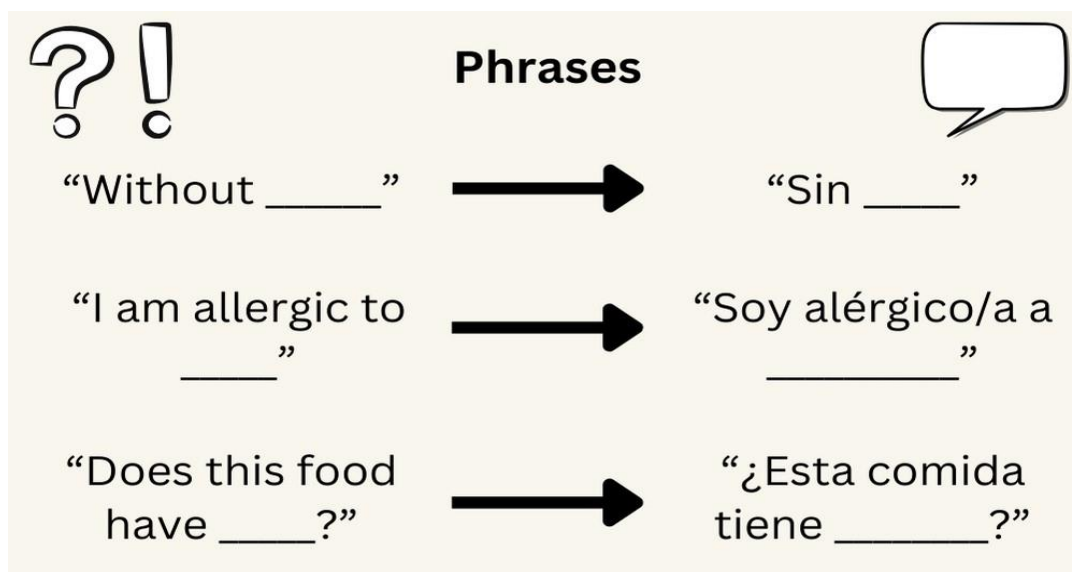
GRACIAS

**Appendix K: Allergen Card**

**Figure K1**

*Side A- Allergen Card*

| Allergens | | | |
|---|---|---|---|
| English | Spanish | English | Spanish |
| Peanuts | Maní | Shellfish | Marisco(s) |
| Tree Nuts | Nuez/Nueces | Wheat | Trigo |
| Milk | Leche | Gluten | Gluten |
| Eggs | Huevo(s) | Soy | Soja |
| Fish | Pescado | Sesame | Sésamo |

**Figure K2**

*Side B- Allergen Card*

**Phrases**

"Without _____" → "Sin _____"

"I am allergic to _____" → "Soy alérgico/a a _____"

"Does this food have _____?" → "¿Esta comida tiene _____?"

**Appendix L: Photographs of Ciudad del Saber's Lodging complex**

**Figure L1**

*Single Bedroom*



**Figure L2**

*Bathroom*

**Appendix M: List of Vegetarian Restaurant Options**

Restaurants in Panama City
1. La Pulperia
2. Casablanca
3. Nomada
4. Taco Bell
5. Little Caesars Pizza
6. Domino's Pizza
7. Tantalo
8. Mahalo Snack Shack
9. Super gourmet
10. Nacion sushi

Restaurants at La Plaza
1. Red Pocket
2. THouse
3. Jungle Juice
4. Roma
5. Kazoku
6. La Michoacana