

engineering**worldhealth**

Summer Institute
Dominican Republic 2022
Final Report

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EXECUTIVE SUMMARY

EWH's 2022 Dominican Republic Summer Institute was our first in-person program after a two-year hiatus due to the COVID-19 pandemic. 15 undergraduate students and recent graduates from the University of Portland's Shiley School of Engineering traveled to the Dominican Republic for a 3-week Institute where they served as volunteer biomedical equipment technicians in hospitals around Santiago de los Caballeros, the second-largest city in the country with a population of over 1.3 million people.



SI Participant with a local BMET

Prior to traveling, students participated in a semester-long course at the University of Portland's Shiley School of Engineering, EGR 380 Medical Instrument Repair in the Developing World. This course focused on hands-on and technical knowledge required to complete basic electronic and mechanical repairs as well as skills including troubleshooting, problem solving, and testing.

During the first week of the program, participants underwent intensive language, cultural, and technical training in Santiago de los Caballeros. The group went on an excursion to the Centro León Museum and Cultural Center, a Dominican heritage and art museum, and visited the Monumento a los Héroes de la Restauración.

During their 2.5 weeks of hospital work, participants completed an estimated \$270,000 worth of service and repairs. A total of 135 pieces of equipment were returned to service across four different partner hospitals, including the Hospital Regional Universitario Jose Maria Cabral y Baez, Hospital Infantil Regional Universitario Dr. Arturo Grullón (a children's hospital), Hospital Presidente Estrella Ureña, and Asociación Dominicana de Rehabilitación.

Notable, high-impact repairs included a surgery table and surgical lights that were needed immediately for surgery, and 72 hospital beds at one location.

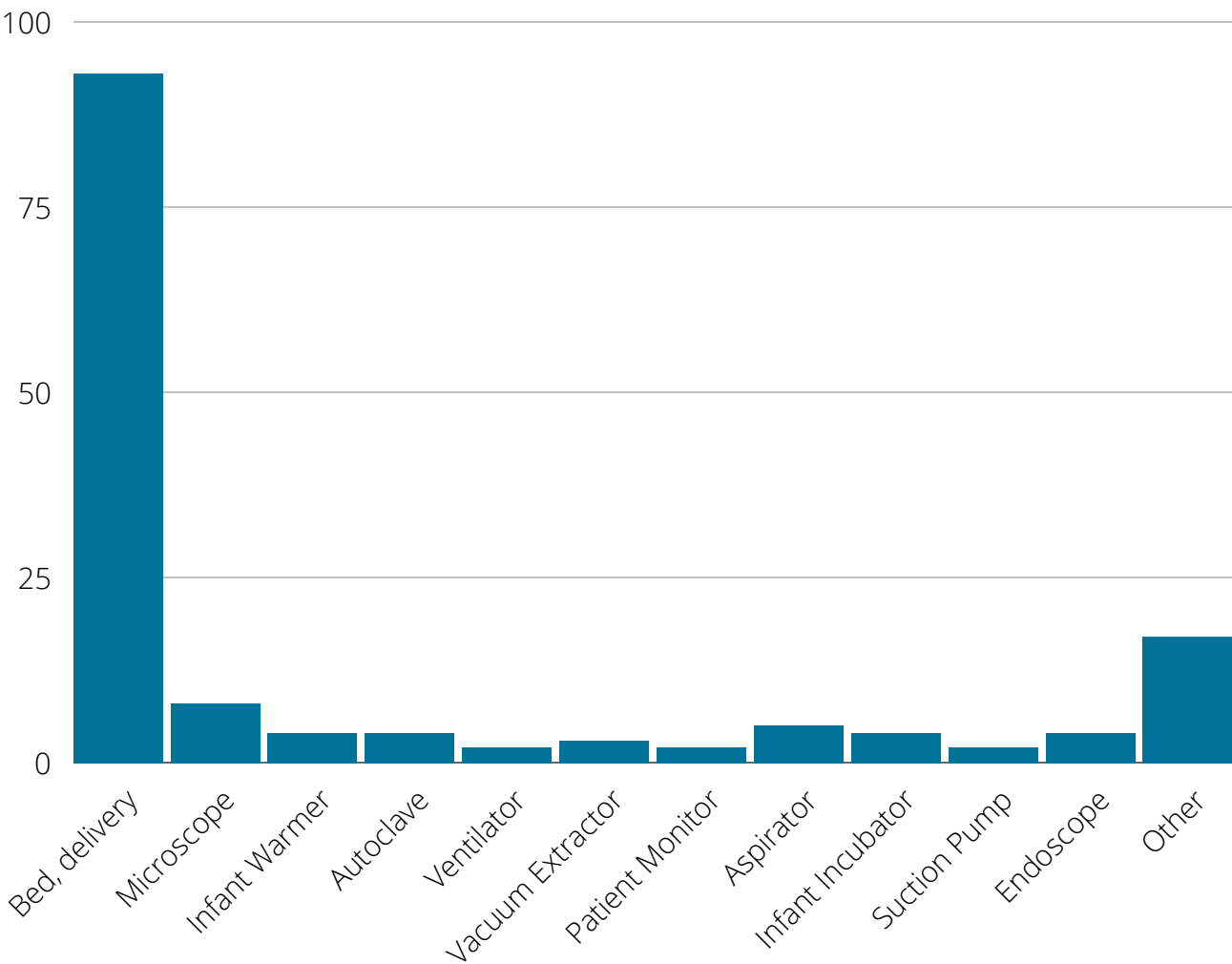
MEDICAL EQUIPMENT REPAIR

The 2022 Dominican Republic Summer Institute was highly successful. Of the pieces of equipment worked on by the cohort, 87% were returned to service. Participants repaired a total of 93 hospital beds, many of which went directly to patient rooms, greatly contributing to an improved patient experience. They also repaired a number of microscopes, infant warmers, autoclaves, and other critical pieces of medical equipment.



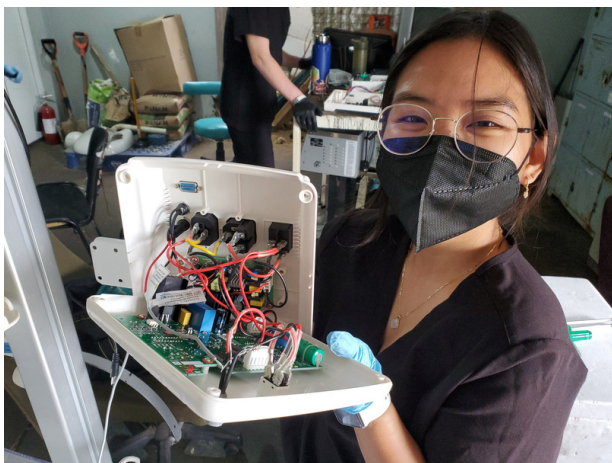
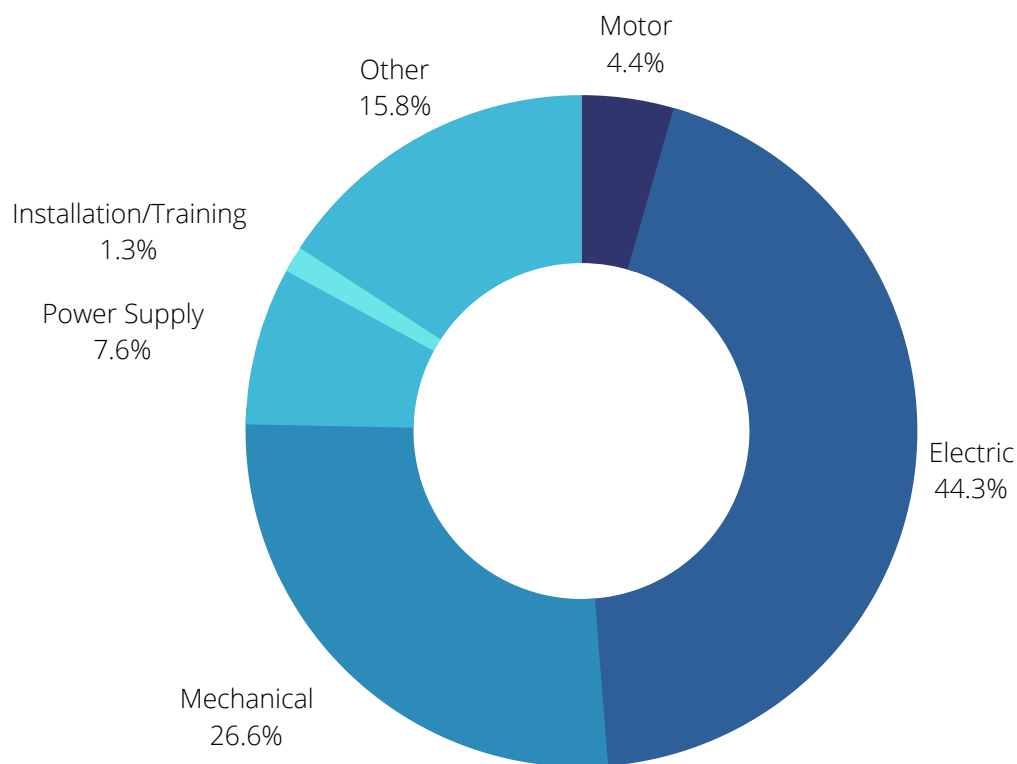
SI participant harvesting parts in a "graveyard" of broken beds in the basement of a hospital

Repairs/Maintenance by Type of Equipment



MEDICAL EQUIPMENT REPAIR

Total Pieces Fixed by Type



SI participant with a repaired monitor from an infant warmer

This was a very valuable experience for building confidence in my engineering abilities. Especially projects with multiple fixes - I found those to be the most rewarding.

PARTICIPANT DEBRIEFS AND FEEDBACK

Feedback was overwhelmingly positive, with 100% of students responding that "Yes" they would recommend the program to a friend. When asked to choose one word to describe the experience, participants responded with words like "eye-opening," "life-changing," "immersive," and "meaningful," among others.

On-the-Ground Coordinators and Instructors were reviewed positively, as were accommodations and hospital placements. Language training was noted as a potential area of improvement.



SI participant scrubbing into a surgery room

One common theme among the participant feedback was that students were shocked to see how immediately the equipment they repaired was put back into use serving patients in need. Ryan, a recent mechanical engineering graduate said, **"Fixing beds that went straight to use was quite amazing - we were able to see our fixes go straight to being used."** Jordyn, an electrical engineering graduate added, "We literally got to take our fixed beds to a room and see the patients use them and be excited to actually have a bed that works."

Several times, volunteers were able to respond to urgent situations. Alex, another recent grad, scrubbed into a surgery room to repair a surgery table; "...they needed [the table] in the next 10 minutes or so, so we had to go quickly and make the table operational," he said. Martin, a junior, who described the experience as "life-changing," told us that his favorite fix was replacing surgical lights during an active surgery. "It was one of the key moments that made me rethink my career path and make the decision to switch to neurosurgery."

EWB would like to thank all of the students, coordinators, instructors, partners, and donors who helped make this program possible!