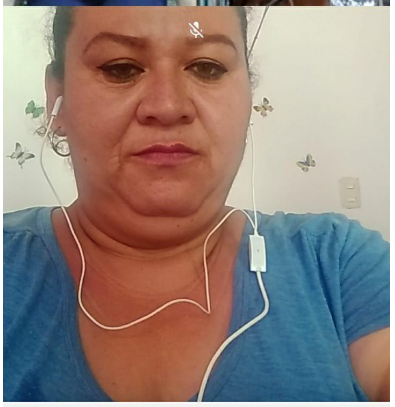
ROMP
Range of Motion Project

Expanding Access to Community-Based Rehabilitation for People with Amputation in Guatemala



2021 Year-End Report

Implemented By:

Proyecto de Rangos de Movimientos (ROMP-Guatemala), Zacapa, Guatemala

The Range of Motion Project (ROMP-Global), Denver, United States

Wuqu'Kawoq Maya Health Alliance, Tecpán, Guatemala

Universidad Mariano Gálvez, Guatemala, Guatemala

Supported By:

The Pro Victimis Foundation, Geneva, Switzerland

The Barr Amputee Assistance Foundation, Chicago, United States

RTI International, Research Triangle Park, United States

Telus International, Guatemala City, Guatemala

I. Global Progress

Summary

In 2021 ROMP carried onward through the second year of the COVID-19 pandemic, providing an increased amount of services in each of our three countries compared to 2020.

In addition to continuing to operate existing programs in 2021, ROMP piloted service delivery mechanisms that proved effective and will be scaled in 2022. These include the satellite clinic and CBR-Lite protocol in Guatemala, the pop-up and mobile clinics in Ecuador, and the *Wheelchair to Walking* (W2W) program in the United States. The implementation of the *Production Index Points* (PIPs) system enabled a more complete and objective form of evaluating and adjusting production across our three countries.

ROMP-Global surpassed revenue goals in 2022, established a significant operational cash reserve for future emergencies and investment, and continued investing in our capacity and impact in the United States and abroad. An independent audit of the 2020 financial statements was completed and is available upon request. ROMP-Global is increasing direct investment in our global programs and staff in 2022 to make mobility services more accessible to people with limb loss in Guatemala, Ecuador, and the United States.

The ROMP-Global board of directors approved a new 2022-2025 strategic plan for ROMP. The process of creating this plan involved an in-depth survey of numerous ROMP stakeholders across our three countries and a review of the ROMP vision, mission, and values. The following strategic goals will drive our activities during the next four years.

1. Increase breadth by adding locations and influencing change to systems.
2. Increase depth by expanding coverage in current locations.
3. Enhance board, staff, and volunteer leadership and management.
4. Improve internal and external communications.
5. Strengthen practices and systems.
6. Develop a sustainable economic model consistent with vision and strategy.

Summaries of the 2021 progress in each of our countries are given below.

ROMP-Guatemala

In Guatemala, our permanent clinic in Zacapa provided significantly more prosthetic care in 2021 than 2020 (469 v 223 PIPs, 163 v 139 deliveries, and 713 v 282 visits, in 2021 v 2022). This increase was driven by the implementation of the PIPs system, and it was made possible by the leadership of Executive Director Luis Aragón, increased outreach to the public health system, continual importation of donated components, and biosecurity safeguards at the clinic. In 2022, we will once again significantly increase services provided, achieving a minimum of 640 PIPs.

ROMP Operational Scorecard 2021

SERVICE	ROMP GUATEMALA												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total YTD
Delivery clinic	13	11	6	16	8	11	12	11	9	32	15	2	146
Delivery mobile/satellite	0	0	0	0	0	0	0	0	0	0	0	0	0
CBR graduates	0	0	0	0	0	15	0	0	0	0	0	15	30
Socket change	1	2	2	0	0	1	0	3	1	2	0	5	17
Socket repeat	0	0	0	0	0	0	0	0	0	0	0	0	0
Microprocessor knee	0	0	0	0	0	0	0	0	0	0	0	0	0
Running foot	0	0	0	0	0	0	0	0	0	2	0	0	2
Follow-up, adjustment, change, repair	53	50	58	41	39	48	50	44	62	35	43	25	548
PIPs	40.5	38	37	36.5	27.5	51	37	36	41	53.5	36.5	34.5	469

In February, we began piloting a satellite location in Guatemala City at the *Fundación Guatemalteca para Niños con Sordoceguera Alex* (FUNDAL). Visits were utilized to conduct initial evaluations and castings with new patients, and follow-ups with existing patients. By decentralizing services from Zacapa to Guatemala City we were able to greatly reduce the geographic/transportation barrier these patients face. In 2022, we will add more satellite locations in Western and Southern Guatemala to further decentralize care provision.

In April and May, we conducted the *Rapid Assistive Technology Assessment* (rATA) in the province of Sololá, in partnership with the World Health Organization (WHO), London School of Hygiene and Tropical Medicine (LSHTM), and Liliane Foundation (LF). In this study we found the approximate prevalence of limb loss to be 0.2% of the population, which provides some of the first-ever data on the number of Guatemalans with amputation.[1] We presented the results in October for inclusion in the WHO *Global Report on Assistive Technology* (GReAT). In 2022, we will submit for publication in the *Disability, CBR & Inclusive Development* journal.

In August, we worked with *The Fixers* - a US television program that builds infrastructure in partnership with socially-focused organizations - to construct the *Mobility Park* at our clinic in Zacapa. This park allows patients to practice using their prostheses on stairs, ramps, bridges, and different terrains in a safe, outdoor area. The filming included substantial footage of the Zacapa clinic and the CBR Program, and the episode will premiere in April 2022 on the BYUTV network.

In September, we hosted our annual *Mobility Conference* - a lecture on the best practices in amputation surgery/rehabilitation for physicians - via webinar. The 2021 lecture was given by Dr. Michael Pinzur and focused on the best practices in knee disarticulation. Participants have since consulted our clinicians regarding amputation level and referred patients to our clinic. In 2022, the lecture will focus on best practices in pediatric oncological amputation.

In October, we operated our first clinical volunteer program in Guatemala since the beginning of the pandemic. A total of 16 volunteers worked alongside our Zacapa staff to

[1] Results tentative and pending publication.

provide prosthetic care to 34 patients, with a special emphasis on difficult-to-treat cases like those with hip- and shoulder-disarticulations. In 2022, we will operate three clinical volunteer programs in Guatemala with an approximate total of 45 clinical volunteers.

In October and November, we created an implementation plan for the new strategic goals. This process included setting goals/indicators, conducting a SWOT analysis, delineating responsibilities/communications, and creating a 2022 work plan. One of the key outcomes of this process was the promotion of Luis Aragón to a more formal version of Executive Director of ROMP-Guatemala. In 2022, he will begin to focus on the execution of strategic goals in Guatemala, as well as the management of the CBR and volunteer programs.

ROMP-Ecuador

In Ecuador, we also provided significantly more prosthetic care in 2021 than 2020 (320.5 v 171.0 PIPs, 116 v 57 deliveries, and 446 v 285 visits, in 2021 v 2022). A major part of this care was provided by partner clinics in the *Ecuador Assistance Program* (EAP) due to the lack of a ROMP-Ecuador brick-and-mortar clinic. In 2022, we will achieve a minimum of 640 PIPs, leveling production in Ecuador with Guatemala. This will be made possible through the start-up of a permanent ROMP clinic in Quito and the continued growth of the EAP network.

ROMP Operational Scorecard 2021

SERVICE	ROMP ECUADOR												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total YTD
Delivery clinic	1	4	9	3	8	5	5	0	11	3	4	4	**57**
Delivery mobile/satellite	0	0	0	0	0	0	15	20	0	0	1	0	**36**
CBR graduates	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Socket change	0	3	4	1	0	3	1	0	1	0	3	2	**18**
Socket repeat	0	0	1	0	1	0	0	0	1	2	0	0	**5**
Microprocessor knee	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Running foot	0	0	1	1	0	0	0	0	0	0	0	0	**2**
Follow-up, adjustment, change, repair	13	11	18	100	15	22	57	48	16	13	16	4	**333**
PIPs	**7.5**	**12.5**	**24**	**55**	**16.5**	**19**	**64.5**	**64**	**21**	**11.5**	**17**	**8**	**320.5**

We made trips in the mobile clinic to the outskirts of Quito, the Amazonian province of Morona-Santiago, and the coastal city of Quevedo. In each of these locations partner institutions identified cases to be treated. During a series of visits to Morona-Santiago, we created a partnership with a local government organization (CEFAS) to bring prosthetic care to the provincial population, much of which is decentralized into remote, rural villages along the Amazon River. In 2022, we will stand-up a satellite location in partnership with CEFAS.

In July and August, we operated clinical volunteer programs in Ecuador. The July program had a total of 16 volunteers and 14 patients, while the August program had a total of 14 volunteers and 16 patients. These programs utilized a ‘pop-up’ approach to providing care at venues loaned to ROMP in the Quito area. In 2022, we will operate three clinical volunteer programs in Ecuador with an approximate total of 55 clinical volunteers.

ROMP-Ecuador received a grant from the US State Department to create a Spanish language, digital resource portal called ROMPTeMueve.org for people with amputation and their caregivers. ROMPTeMueve will be the best digital portal containing information that inspires and improves the mobility of people living with limb loss in the Spanish speaking world. Production of ROMPTeMueve is underway with a planned launch in May 2022.

In October and November, we created an implementation plan for the new strategic goals, using the same process described above for ROMP-Guatemala. In 2022, ROMP-Global will make a major investment in ROMP-Ecuador to level its production with ROMP-Guatemala. In 2022, a new Executive Director will be hired, as well as key staff including a Director of Programs, Prosthetist/Orthotist, and Administrative Assistant.

ROMP-USA

In the United States, we provided more prosthetic care in 2021 than 2020 (86 v 57 PIPs, 27 v 19 deliveries, and 137 v 76 visits, in 2021 v 2022). All of this care was provided through the *US Assistance Program* (USAP). This program continues to be an important resource for access-limited patients in the United States, however it has underlying design and capacity issues that limit its effectiveness. In 2022, we will overhaul this program, hiring a US Program Associate to provide a much-needed increase in management bandwidth.

ROMP Operational Scorecard 2021

SERVICE	ROMP USA												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total YTD
Delivery clinic	0	1	0	2	1	3	2	3	4	3	2	2	23
Delivery mobile/satellite	0	2	0	0	0	1	1	0	0	0	0	0	4
CBR graduates	0	0	0	0	0	0	0	0	0	0	0	0	0
Socket change	0	0	0	0	0	0	0	0	0	0	0	0	0
Socket repeat	0	0	0	0	0	0	0	0	0	0	0	0	0
Microprocessor knee	0	0	0	0	0	0	0	0	0	0	0	0	0
Running foot	0	0	0	0	0	0	0	0	0	0	0	0	0
Follow-up, adjustment, change, repair	8	6	11	11	10	11	12	11	11	3	11	5	110
PIPs	4	8	5.5	7.5	6	10.5	10	8.5	9.5	4.5	7.5	4.5	86

In February and March, Jonathan Naber consulted to the Clinton Health Access Initiative (CHAI) and ATscale on a market landscaping analysis entitled *Increasing Access to Affordable Quality Prosthetic Components in LMIC Markets*. This will help inform ATscale investments as part of the AT2030 initiative during the next several years. In 2022, we will continue to support AT2030, specifically its work to expand access to prosthetic care.

In April, we conducted our first-ever *Limb Drive* in conjunction with the *National Limb Loss Awareness Month* in the United States. This resulted in a significant increase in components received in 2021 compared to 2020 (7,789.9 v 5,678.4 pounds). We deepened resource-sharing with the Limbs for Life Foundation and Penta Prosthetics, exchanging our bulk inventory with hard-to-find items. We also piloted C4C to Germany and Norway,

collecting components for direct shipment to Guatemala and Ecuador. In 2022, the new US Program Associate will lead our move to a new warehouse, and the growth of the C4C in the United States and Europe.

In July, we launched the pilot of the *Wheelchair to Walking* (W2W) program with five participants in the San Antonio, Texas area. Care coordinators from Connect+Ability were trained to provide periodic home visits to participants during five months, and coordinate general and mental health, physical therapy, and prosthetic care services. In 2022, we will continue the program in San Antonio and graduate five more participants. We will also conduct a controlled-intervention study of the effectiveness of the program with 16 participants in the Houston, Texas area, in partnership with the Baylor College of Medicine.

II. Project Progress

Summary

In 2021, we expanded the CBR Program to cover more participants across a wider geography than ever before. We graduated a total of 30 participants from seven provinces in 2021, compared to 20 participants from four provinces in 2020. This expansion was enabled by three key factors: teleCBR, task-shifting, and CBR-Lite.

Since 2020, the COVID-19 pandemic has forced us to conduct teleCBR - home visits and coordinated services - in lieu of in-person CBR. This allowed us to reach participants in more provinces than we had originally anticipated.

During this time, we have 'task-shifted' an increasing number of cases from salaried community rehabilitation workers (CRWs, or *Movilizadores*) to volunteer community health workers (CHWs) like those from partner Wuqu'Kawoq. This has allowed us to multiply forces and cover a larger number of participants while maintaining a small number of program staff.

In cohort 6, we developed and piloted CBR-Lite, a simpler, quicker version of the home visit protocol which includes a *Rehabilitation Wheel* and *Exercise Booklet*. This has allowed us to make the process of CBR more accessible to participants and CHWs alike.

In cohort 7, we developed a partnership with the Physical Therapy Program at the *Universidad Mariano Gálvez* (UMG) in Guatemala City. Practicum students were paired with CBR participants to provide telePT on a weekly basis for the duration of the cohort.

In 2022, we will continue to expand the volume and reach of the CBR Program, graduating a total of 40 participants from ten provinces of Guatemala. New *Mobilizers* from UMG, as well as municipalities in the coverage areas, will be trained to provide CBR-Lite to their designated participants via video call.

In 2022, we will also conduct the handover of the CBR Program from ROMP-Global to ROMP-Guatemala. We will accompany the Executive Director of ROMP-Guatemala as he takes responsibility for the administration of the program as part of his increasingly strategic role in Guatemala.

The details of the project in 2021 are given below, and the updated logframe, financials, and visual guides are attached to this report.

Personnel Development

In cohort 6, we recruited Martha Vásquez as a salaried Movilizador in the province of Escuintla. She received training from our other salaried Movilizadores (Zoila Mérida and Caty Atz), and ongoing mentorship from Caty. Martha is now an excellent asset.

Also in cohort 6, we trained Blanca Luisiana and Reyna Tumax, CHWs of partner *Wuku'Kawoq*, to serve as volunteer Movilizadores in the provinces of Sololá and Suchitepéquez, respectively. Mérida Coja and Susana Tambriz from Wuqu'Kawoq also continued to serve as volunteer Movilizadores. Each of the volunteer Movilizadores was responsible for managing one case in each cohort. In 2022, Blanca and Reyna will continue to serve as volunteer Mobilizers.

In cohort 7, we trained physical therapy students from UMG to provide weekly telePT appointments to all participants of the program. They used the pre- and post-prosthetic exercise booklets developed for CBR-Lite. In 2022, we will continue to partner with UMG, training 20 students to be volunteer Mobilizers.

Also in cohort 7, we piloted the training of new volunteer Mobilizers at the Municipality of Villa Canales. Lourdes and Zoila trained 20 nurses, physicians, firefighters, and other community leaders to serve as volunteer Movilizadores. In 2022, we will train more volunteer Mobilizers in new areas of coverage in Totonicapán, Quetzaltenango, and Retalhuleu.

Participant Recruitment

At the beginning of each cohort, the salaried Movilizadores and Field Supervisor contacted physicians in the public hospitals of the provinces of Guatemala, Sacatepéquez, Chimaltenango, Escuintla, Sololá, Suchitepéquez, and Santa Rosa. They provided information about ROMP and CBR, and requested referrals of patients with amputation. Emphasis was placed on patients recuperating from recent amputations in the trauma and surgery wards. In 2022, hospitals in the provinces of Totonicapán, Quetzaltenango, and Retalhuleu will also be contacted.

Candidates were also identified by municipal governments, community leaders, and participants of past cohorts. In 2022, these institutions will also be contacted in the new provinces covered by the program.

All candidates were administered a short questionnaire to determine if they met the high-level requirements of the program, and then a longer questionnaire to further vet their qualification. Descriptive characteristics of the cohort 6 and 7 graduates are given below.

Cohort 6 (February-July 2021)				
Sex	**Age (Years)**	**Province**	**Amputation Level**	**Amputation Cause**
Female = 4 Male = 11	Oldest = 59 Youngest = 9 Average = 34	Guatemala = 6 Chimaltenango = 2 Sololá = 1 Escuintla = 4 Suchitepéquez = 1	Transfemoral = 9 Transtibial = 6 Ankle disarticulation = 0 Hip disarticulation = 0	Diabetes = 4 Trauma = 10 Cancer = 0 Congenital = 1

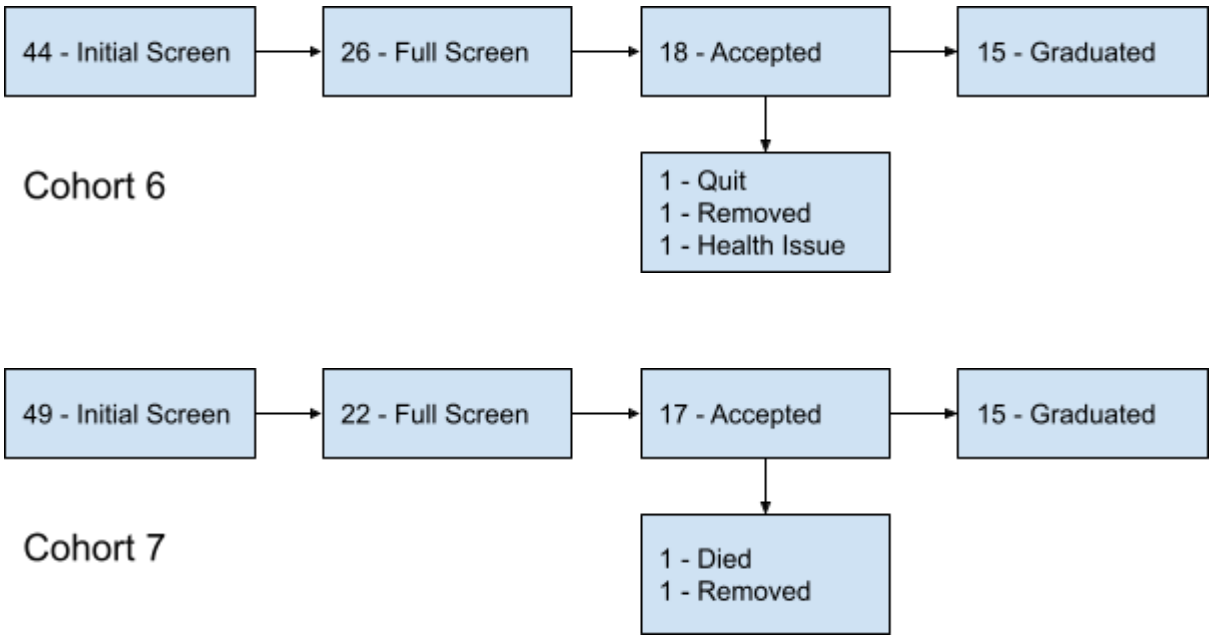
		Santa Rosa = 1		

Cohort 7 (August-December 2021)				
Sex	**Age (Years)**	**Province**	**Amputation Level**	**Amputation Cause**
Female = 4 Male = 11	Oldest = 59 Youngest = 22 Average = 41	Guatemala = 4 Chimaltenango = 1 Sololá = 1 Escuintla = 4 Suchitepéquez = 1 Sacatepéquez = 3 Santa Rosa = 1	Transfemoral = 9 Transtibial = 5 Ankle disarticulation = 0 Hip disarticulation = 1	Diabetes = 2 Trauma = 11 Cancer = 1 Congenital = 1

Intake Screening

Candidates who passed the first two screens gave informed consent and were administered a full intake screen, which included: physical health, mental health, physical rehabilitation, and livelihood (or education, in the case of children participants). Screens were administered via video or phone call as a COVID-19 prevention measure. For those candidates selected as participants, the full intake screen served as their baseline data.

Each candidate underwent a comprehensive mental health evaluation by one of the three psychiatrists affiliated with the program prior to being formally accepted to participate in the Program. The selection process flowchart of the cohort 6 and 7 participants is given below.



Note: The participant that died in Cohort 7 succumbed to a longstanding, chronic health issue unrelated to their participation in the program.

Intervention Planning

Once a candidate was formally accepted to participate in the program, the salaried Movilizadores and the participant co-created a list of five goals for their intervention. The Movilizadores then worked with the Field Supervisor to develop a comprehensive intervention plan for each participant.

These plans were digitized and updated weekly by the Field Supervisor. She created a weekly work plan for all personnel based on the plans. The progress of these goals was checked at the midpoint and endpoint visit for each participant.

Home Visits

In each cohort, the Movilizadores conducted two home visits per month to each of their designated participants, during a period of five months.

Following the first home visit, each participant was provided a pre-prosthetic kit that contained materials for wound care, residual limb bandaging, sound leg care, and pre-prosthetic exercises.

Due to the ongoing COVID-19 pandemic, the majority of these visits were conducted virtually via video call. In-person visits were made to participants requiring special, in-person assistance with wound care, physical therapy, prosthesis use, etc.

CBR-Lite was used for 4 of the 15 participants in cohort 6, and then 7 of the 15 participants in cohort 7. In 2022, all participants will be administered the CBR-Lite. The key differences of CBR-Lite from the normal version of the home visit protocol are given below.

- The CBR-Lite home visits take significantly less time than the normal visits (45 minutes compared to 2-3 hours). This lowers the barrier to training new CHWs to serve as volunteer Movilizadores in their communities. It also takes less of their limited bandwidth to serve patients with amputation.

- The CBR-Lite protocol is organized into an easy-to-read, rotatable wheel. Each week the participant aligns the window on the wheel with the week they are at in the process. Through the window they see the activities for their body, mind, residual limb, and exercises. Exercises are illustrated in a separate booklet.

- The CBR-Lite protocol places more responsibility for advancing into the hands of the participant. They must complete the instructions for the week before moving-onto the next. The role of the periodic visits by the Movilizador is to follow-up on the participant's progress of the preceding two weeks, and review the activities of the next two weeks.

- No written notes are taken by the Movilizador as they complete the CBR-Lite visit. They simply file a brief report via a Google Form upon completing the visit. When a response is submitted, the field supervisor can briefly review it to see if there is anything needing intervention from permanent program staff.

All participants were provided with extensive information on COVID-19 prevention, management, and vaccination. Guatemala currently has one of the lowest rates of COVID-19 vaccination in the Americas, and as a program we are doing everything we can to provide participants with correct information and support them in signing-up for vaccination.

Each participant was paired with a graduate of one of the past cohorts of the program who could serve as a peer mentor. Each was also paired with a community contact who could serve as a connection to local resources.

Coordinated Services

In both cohorts the salaried Movilizadores coordinated services for each of their designated participants, based on the intervention plans created after intake screening. When possible, these services were conducted via video call to minimize COVID-19 exposure risk to the participants.

Physical therapy was provided virtually by the UMG practicum students. During each 30 minute video appointment they worked with the participant on the pre- or post-prosthetic exercises corresponding to where they were at in the rehabilitation process.

Vocational training was provided virtually by salaried Movilizador Zoila. Each participant was able to choose from basket-weaving, candle making, donut baking, and sausage making. We sent the participant the corresponding kit of starter materials, and Zoila then gave them a series of virtual lessons. We started to record these sessions to use in future cohorts.

Group therapy was provided virtually by a psychologist affiliated with the Program. All participants were invited to participate via a video call. There was a special group for the children participants.

Other services like prosthetic care, cardiology, and diabetology took place in-person, at the provider's office. In 2022, the Medical School of the *Universidad Francisco Marroquin* (UFM) will provide general health, nutrition, and psychology services to participants.

Data Collection and Analysis

Outcome data were taken for participants at the start (baseline), middle (midpoint), and end (endpoint) of the intervention. They were digitized, combined, and analyzed for net improvements and declines.

There were a total of 28 adult participants, between cohorts 6 and 7. All indicators of general health, mental health, physical mobility, and livelihood tracked in the logframe showed net improvement from baseline to endpoint, with the exception of systolic blood pressure and blood glucose in-range, which showed declines from baseline to endpoint. The tables below exhibit the data for the adult graduates.[2]

Tracked in Logframe for Adult Graduates (n = 28)
Net Improvements *General Health Indicators:* *Self-reported satisfaction with health (↑ 13.3%) *Physical functioning score (↑ 60.6%) *Pain score (↑ 18.1%) *Diastolic blood pressure (↓ 4.0%) *Mental Health Indicators:* *Depression severity (↓ 76.9%) *Anxiety severity (↓ 67.6%) *Psychological domain (↑ 28.6%) *Role limitations due to emotional problems score (↑ 89.2%) *Physical Mobility Indicators:* *Prosthesis use hours (↑ in mean 0.4 to 11.8 hours/day) *Physical functioning score (↑ 60.6%) *Pain score (↑ 18.1%) *Livelihood Indicators:* *Having worked (↑ 50.0%) *Work past week (↑ 85.7%) *Work all year (↑ 50.0%) *Avg. income per day past week (↑ 367.2%)
Net Declines *Systolic blood pressure (↓ 0.5%)
No Net Change None.

NOT Tracked in Logframe for Adult Graduates (n = 28)
Net Improvements

[2]Note: These tables exhibit net percent change measured for a relatively small group of patients (n=28). They were made for the purpose of giving a high-level summary of impact, but should not be regarded as statistically significant. A scientific analysis of the data will be published in the future. Please see the logframe for further assumptions/details about the data.

*Physical domain (↑ 33.3%) *Environmental domain (↑ 26.3%) *Self-reported quality of life (↑ 26.7%) *Role limitations due to physical health (↑ 234.6%) *Energy/fatigue (↑ 13.8%) *Emotional wellbeing (↑ 15.6%) *Social functioning (↑ 29.5%) *General health (↑ 18.3%) *Social relationships domain (↑ 21.0%) *Days worked in past week (↑ 164.9%) *No expenses covered by family/household (↓ 25.0%)
Net Declines *Blood glucose in-range (↓ 66.7%)[3]
No Net Change *None.

There were a total of 2 children participants, both in cohort 6. Most indicators of general health, mental health, physical mobility, and education showed net improvement from baseline to endpoint. There were also some indicators that either declined or did not change on the same interval. This sample size is extremely small, and the changes measured will be corroborated by including more children participants in future cohorts.

Children Graduates (n = 2)
Net Improvements *General Health Indicators:* *Self-reported health/activities (↓ 91.7%) *Parent-reported physical performance (↓ 33.3%) *Mental Health Indicators:* *Self-reported emotions (↓ 100.0%) *Parent-reported emotional performance (↓ 50.0%) *Self-reported getting along with others (↓ 33.3%) *Physical Mobility Indicators:* *Prosthesis use hours (↑ in mean 0.0 to 12.5) *Education Indicators:* *Self-reported school (↓ 25.0%)

[3] Note: Since most baseline and endpoint data was taken via call due to COVID-19, the clinical data, unlike the self-reported data, were scarce. For this reason, the clinical indicators should be viewed as very low sample size and not highly valid information.

*Parent-reported school performance (↓ 25.0%) *Currently enrolled (Yes) (↑ 100.0%) *Enrolled in grade corresponding to age (Yes) (↑ in mean 0.0 to 0.5)
Net Declines *Mental Health Indicators:* *Anxiety severity (↑ 50.0%) *Parent-reported social performance (↑ 12.5%)
No Net Change *Mental Health Indicators:* *Depression severity

Other Developments

We published three short videos featuring the stories of several outstanding participants from this cohort, including Sofia, Mynor, and Angel. All videos are available online at the following links:

- Sofia in Her Own Words - https://vimeo.com/573228681)
- Mynor Never Backs Down - https://vimeo.com/575106572)
- Angel - https://vimeo.com/578193448

We were involved with the following consensus groups organized by the International Society of Prosthetics and Orthotics (ISPO):

- In May, Dave Krupa participated in the *Core Data Consensus Group*.
- In June, Luis participated in the *Outcome Measures Consensus Group*.

We were involved in publishing the following peer-reviewed journal articles:

- Prynn JE, Polack S, Mactaggart I, Banks LM, Hameed S, Dionicio C, Neupane S, Murthy G, Oye J, Naber J, Kuper H. Disability among Older People: Analysis of Data from Disability Surveys in Six Low- and Middle-Income Countries. Int J Environ Res Public Health. 2021 Jun 29;18(13):6962. doi: 10.3390/ijerph18136962. PMID: 34209792; PMCID: PMC8297350.
- Mactaggart I, Hasan Bek A, Banks LM, Bright T, Dionicio C, Hameed S, Neupane S, Murthy G, Orucu A, Oye J, Naber J, Shakespeare T, Patterson A, Polack S, Kuper H. Interrogating and Reflecting on Disability Prevalence Data Collected Using the Washington Group Tools: Results from Population-Based Surveys in Cameroon, Guatemala, India, Maldives, Nepal, Turkey and Vanuatu. Int J Environ Res Public Health. 2021 Aug 31;18(17):9213. doi: 10.3390/ijerph18179213. PMID: 34501803; PMCID: PMC8431177.

III. Case Studies

Lesbia (Cohort 7)

Lesbia is 25 years old and lives in Nueva Concepción, a municipality in the province of Escuintla, located on the Pacific coast of Guatemala. In 2015 she and her husband went on motorcycle to buy ingredients to make lunch. On the way, a vehicle recklessly pulled in front of them without putting on its turn signal, and they ran into the car. After the collision, the car went into reverse and crushed Lesbia's leg. She was given first aid at the Tiquisate Hospital, but due to the severity of the injuries, Lesbia was transferred to the Escuintla Hospital, where surgeons attempted to rescue her leg. They performed reconstructive surgery, but after three days they informed her that the surgery had not worked and amputation was the way forward. At first, Lesbia refused to accept her situation, but realizing that her life was in danger, she authorized the amputation. Lesbia's amputation immediately and massively changed her life. Without one of her legs, Lesbia needed help to carry out all of her daily activities, leading her to moments of depression. Lesbia could no longer work and earn money, leading to economic problems in her household. In August 2021, Lesbia entered the ROMP CBR Program, and since then, she has made the most of this opportunity. After six years of living with limb loss, Lesbia finally had hope to obtain a prosthesis. She followed all of the pre-prosthetic recommendations given by Martha - her assigned mobilizer - remaining disciplined and cooperative at each step of the process. Martha provided daily follow-up to Lesbia, and once she completed the pre-prosthetic phase, Lesbia traveled to Zacapa to be cast and delivered her prosthesis. Lesbia faced difficulties adjusting to her prosthesis since she was used to moving around with one leg and crutches during the six years following her amputation. However, with her own discipline and Martha's constant follow-up, Lesbia achieved her goal of walking without support equipment before graduating from the program. During the five months she was in the program, Lesbia received a total of 11 virtual home visits by Martha. She also received training to make sausages and paper baskets, from Zoila, another of the ROMP mobilizers. Today, Lesbia is selling sausages and looking for a full time job in the food sector. She exercises every day, even riding a bicycle when she needs to move from one place to another. Lesbia also participated in the inauguration of the ROMP *Mobility Park*, being one of the first patients to use this space for post-prosthetic exercise and practice at the Zacapa clinic. Lesbia feels happy to no longer depend upon the help of others, and to no longer need help from her extended family or her husband. She has achieved full independence in her daily activities and fully recovered from her amputation.

Aramis (Cohort 7)

Aramis is 27 years old and lives in Zona 18 of Guatemala City in the province of Guatemala. In March 2020, he was working as a courier when a car hit his motorcycle and ran over him. In the accident, Aramis suffered a broken femur, tibia, and fibula. He was transferred to Hospital General San Juan de Dios where the surgeons placed external fixators on his damaged leg. Aramis required orthopedic surgery, but when he was admitted to the hospital, all surgeries were suspended due to the recent arrival of COVID-19 in the country of Guatemala. He remained in the hospital for a month and a half, and although the doctors did what was possible to rescue his leg, it became gangrenous and the only solution was to amputate. Aramis' leg was amputated on 5 April 2020 at 2:30 PM. Suffering an amputation affected Aramis in his work life - he could no longer work as a courier - and in his family life - his wife abandoned him and took their daughter with her, leading Aramis into depression. In August 2021, Aramis received a screening call for entry into the ROMP CBR Program. The possibility of entering the program and receiving his prosthesis brought him great joy, because he now had hope of resuming his life. Since he left the hospital, Aramis had not received any type of physical therapy or medical care. Realizing the opportunity of participating in the program, Aramis took full advantage, being a highly cooperative, responsible, and positive participant. His designated mobilizer - Zoila Mérida - conducted 11 visits during a five month period of time, only one of which was done in-person due to the ongoing COVID-19 pandemic. When he entered into the program, Aramis had just returned to his work as a courier; his former boss asked him to resume his work, and he adapted his motorcycle to be driven with just one leg. Aramis also started a relationship with a woman who supported him during his crisis. He worked hard during the entire pre-prosthetic process, and he was one of the first participants to receive a prosthesis in his cohort. He traveled to the Zacapa clinic in October to be cast for, and delivered, his prosthesis. From the moment he received his prosthesis, Aramis did not use any support equipment. He started the post-prosthetic process with yet more responsibility and discipline, following the post-prosthetic indications provided by Zoila. Today, Aramis continues to work as a courier, riding his motorcycle normally as he did before his accident. His daughter has returned to live with him, and he has become closer to his new partner. Zoila also trained him in making sausages, which is another possible source of income for his family. Aramis walks on any terrain, expertly using his prosthesis to go anywhere he needs to. He has smiled once again, and made short, medium, and long plans for his life.

Ángel (Cohort 7)

Ángel is 32 years old and lives in the municipality of Villa Canales in the province of Guatemala. On 31 December 2020 at 4:30 in the afternoon, he was returning from work on his motorcycle when he was in a serious accident. The first responders brought Ángel to Hospital General San Juan de Dios where the surgeons immediately decided to amputate his leg due to the injuries he had sustained. His family gave consent for the amputation to proceed since he was unconscious at the time of his admission to the hospital. Upon waking-up from the anesthesia, Ángel checked his legs and, realizing that he only had one, he struggled to accept what had happened. Feeling that his life was over, and seeing time pass with no hope of getting a prosthesis, he fell into depression. Ángel learned through people from the municipality of Villa Canales that an institution called ROMP could provide him with a prosthesis, and in July he received a call from Zoila - one of the mobilizers - to screen him for entry into the CBR Program. At the time of entry into the program in August, Ángel was highly depressed, in poor physical health, without physical mobility, and in a precarious economic situation. However, his goal was clear: to take advantage of the opportunity that was presented to him to receive comprehensive rehabilitation and get his prosthesis. Zoila initially focused on his physical health problems, referring him to the primary care clinic of the Municipality of Villa Canales. She also focused on his mental health problems, referring him to one of the program psychiatrists in Antigua. During this time, Zoila guided Ángel through the pre-prosthetic process, preparing him to receive his prosthesis at the Zacapa clinic. In October, he was cast for, and delivered, his prosthesis at the Zacapa clinic. From the first day of his post-prosthetic process, Ángel did not use support equipment. This led to great improvements in his gait (walking) and the ability to move on any type of terrain. In addition to Zoila's home visits and coordinated services, Ángel also received her training to make plastic filament baskets. He learned how to sell these baskets and re-invest the income into acquiring more raw materials for making and selling additional baskets. Today, Ángel is working, his physical and mental health have significantly improved, and he is able to mobilize himself without limitations. He has returned to life.

Mario (Cohort 7)

Mario is 43 years old and lives in the municipality of Villa Canales in the province of Guatemala. On 3 July 2019 at dawn, he went on his motorcycle to buy vegetables for his family at one of the main markets of Guatemala City. As Mario neared the market, he was hit by a truck, falling onto the asphalt and suffering serious injuries to his leg. Unable to get up, he tried to call his wife, but his phone had been destroyed in the accident. Passerbys helped Mario by calling the first responders and lending him their phone so he could call his wife. He was transferred to Hospital General San Juan de Dios where the surgeons attempted to save his leg using external fixators. Mario went into a coma for several days. Unfortunately his leg became gangrenous and, on 14 July, the surgeons were forced to amputate. Mario was discharged from the hospital on 21 July. He was depressed, feeling that his life was over and there was no hope for his future. Mario believed that he would not be able to return to his work in construction, and that he would be dependent upon others to carry out the activities that he had always done on his own. He received no rehabilitation within the public health system following his amputation, and his attempt to obtain a prosthesis was unsuccessful due to his economic situation. Two years later, in July 2021, a person from the municipality of Villa Canales told Mario about ROMP. He showed his interest and a few days later he received a call from ROMP, screening him for entry into the CBR Program. Mario entered the program in August. At the time of his entry to the program, his mental health had deteriorated, his mobility was extremely limited, and he had a negative attitude, without hope or future aspirations. As he began his comprehensive rehabilitation process with Caty - his assigned mobilizer - his emotional state improved bit by bit. Caty made a total of 11 visits to Mario - mostly virtual due to the ongoing COVID-19 pandemic - during which time she guided Mario through the pre- and post-prosthetic phases of his rehabilitation. In October, having completed the pre-prosthetic phase, he went to the Zacapa clinic to be cast for, and receive, his prosthesis. From that moment, Mario no longer used support equipment. He began the post-prosthetic process with great attitude and effort. By the time he graduated from the program, Mario had recovered his mental health, resumed his work activities, and achieved excellent mobility and independence with his prosthesis. He was also trained by Zoila - one of the ROMP mobilizers - in making plastic baskets, an activity that he sees as a potential source of income for his family. Mario states that he greatly appreciates the opportunity that was given to him, because today he feels alive once again. He knows that not everything was lost with his amputation; he still has the present and the future to take advantage of, day by day.

Mynor (Cohort 6)
See Mynor's story at: https://vimeo.com/575106572

Mynor is 29 years old and is originally from the city of San Agustín Acasaguastlán in the province of El Progreso. He now lives in the city of Villa Nueva in the province of Guatemala.

On 16 December 2020 he was on his way to work in the morning when his motorcycle was hit head-on by a vehicle going the wrong way on a busy street. Mynor's leg was lost instantaneously in the collision and he was thrown many meters down the road. Fortunately Mynor was wearing a helmet, which was destroyed as it protected his head from injury. Mynor was assisted by a passerby and by his brother until the paramedics arrived to take him to Hospital Roosevelt. He saw some graphic things in the operating room before he lost consciousness. Mynor spent the next 24 days in the hospital before being discharged home. ROMP community rehabilitation worker (CRW) Zoila saw a video of the accident on the morning news and was struck by Mynor's composure while he lay wounded on the asphalt. She started trying to locate Mynor thinking he would be a good fit for the ROMP CBR Program. She succeeded a couple of weeks later after numerous dead-ends. Zoila administered the intake screening to Mynor and it was clear that he was an excellent candidate for the Program. During the pre-prosthetic phase of his recuperation, Mynor received coaching and support from Zoila to prepare him for prosthetic care. His residual limb had become infected shortly after leaving the hospital, and he received coaching from Zoila regarding antibiotic medication, draining and cleaning his wound, and massaging and wrapping his residual limb. Mynor completed his pre-prosthetic therapy and became one of the first participants to be cast at the new ROMP satellite location in Guatemala City. He was delivered his prosthesis a couple of weeks later at the ROMP clinic in Zacapa, at which point 'he didn't walk, he flew' according to Zoila. He then went through his post-prosthetic therapy with the guidance of Zoila, effectively finishing all post-prosthetic exercises there were to assign him. Mynor frequently practiced on the uneven terrain near his home, refusing to back-down from challenging situations. Outside of his physical rehabilitation, Mynor learned from Zoila how to make plastic-filament baskets, which he has started to sell to friends and family. He also learned how to bake *pan frances* - french bread - through a local church, and has thoughts of eventually returning to his pueblo to set up a bakery. For now, Mynor has returned to his job as a courier and apprentice machine operator, thanks to a highly supportive boss. He is now in the process of moving to an apartment just four blocks from his work, and he plans to commute each day on foot. Mynor became a father during his rehabilitation, with his wife giving birth to his daughter just days before he received his prosthesis. Zoila attributes Mynor's success to following instructions, and staying positive. He will, without a doubt, become a great mentor to participants in future cohorts.

Sofia (Cohort 6)
See Sofia's story at: https://vimeo.com/573228681

Sofia is 30 years old and lives in the sugarcane fields of La Gomera in the coastal province of Escuintla, one of the provinces we expanded the program to in 2021. On 6 September 2020 the front wheel of the motorcycle she was driving hit a hole in the road, causing her to crash and sustain severe damage to her leg. A couple of weeks later her family authorized the amputation of her leg when her surgeons determined that the damage was irreparable. Sofia's amputation had a major impact on her life, particularly in her ability to move about and care for her two children. Her family was very supportive and she relied upon them for the support she needed. Sofia was thrilled to be accepted into the ROMP CBR Program in February 2021 and she took full advantage of her participation. Her designated community rehabilitation worker (CRW) was Martha, a nurse the CBR Program hired to expand the CBR Program into the province of Escuintla. Martha conducted a total of 11 home visits to Sofia, most of which were virtual due to the ongoing COVID-19 pandemic. In each visit Martha followed-up on Sofia's physical health, emotional wellbeing, and pre-prosthetic exercises. Upon completing this pre-prosthetic phase, Sofia was cast for her prosthesis at the new ROMP satellite location in Guatemala City, and she was delivered her prosthesis a couple weeks later at the ROMP clinic in Zacapa. Martha then guided Sofia through the post-prosthetic phase, during which she mastered the use of her prosthesis, becoming comfortable walking on uneven terrain like that surrounding her house and even riding a motorcycle. Sofia also learned how to make decorative candles at home, with virtual training provided by CRW Zoila. This activity kept her hands and mind busy during her lengthy recovery. Now that she has physically and mentally recovered from her amputation, Sofia is in the process of searching for a job - with the support of ROMP - at one of the major sugarcane producers in La Gomera. Her goal moving forward is to always be more independent and to provide the best future for her children. In August Sofia will return to Zacapa for the opening of the ROMP *Mobility Park*, a project with the purpose of training patients to face the challenging obstacles and terrain they encounter in their communities. Given her overcoming the obstacles where she lives, Sofia is the perfect person to inaugurate this project and show other patients what is possible with dedication.

Angel (Cohort 6)
See Angel's story at: https://vimeo.com/578193448

Ángel is nine years old and lives in the pueblo of Balanyá in the province of Chimaltenango, the agricultural heartland of Guatemala. He was born without one of his legs below the knee, as well as syndactyly - webbed fingers. Ángel's parents were surprised and concerned when they learned of his conditions, but they resolved to love him just as they had loved their other children. He received plastic surgery to correct his syndactyly from a foundation focused on pediatric surgery, and he eventually received prosthetic care from a local NGO. As he grew, however, this prosthesis no longer fit, and the cost of a replacement was out-of-reach for his laboring parents. This led Ángel to rely increasingly upon a wooden crutch and prevented him from enjoying the full mobility of a young, energetic boy. Ángel was referred to the ROMP CBR Program by the Secretariat of Social Works of the Wife of the President (SOSEP). During his intake screening, the team determined that his residual limb had a bony protrusion that was becoming increasingly pronounced as he grew, and which would be painful and compromise his future prosthesis use and mobility. For that reason, his community rehabilitation worker (CRW) Caty referred him for surgical correction of his residual limb in the public health system. Our physician contacts performed the operation at no cost to Ángel or the Program, and we provided him with a pre-prosthetic kit that contained the key materials his mother would use to clean and heal his residual limb. During the subsequent virtual home visits by Caty and Susana, Ángel did pre-prosthetic bandaging and exercises. He was cast for his prosthesis at the ROMP satellite location in Guatemala City and traveled shortly thereafter to the ROMP clinic in Zacapa to be fit with his prosthesis. Ángel was able to quickly learn how to don and use his prosthesis, walking around the clinic to everyone's delight. In the home visits that followed, Ángel completed post-prosthetic exercises and continued to excel with his new prosthesis. As an extremely active, young boy, Ángel is now able to play soccer, ride his bicycle, play with his cousins, and even climb trees with his prosthesis. He has continued his studies from home due to the ongoing COVID-19 pandemic, and he enjoys his English, Kaqchikel, and mathematics classes. This is a good sign since he hopes to become a teacher when he grows up. Additionally he has improved control of his emotions and has been less aggressive with his siblings. His mother believes that 'God has a purpose for him' and that he will accomplish his goal of becoming a teacher if he really works for it.