



EAC Consultants
Access to Finance, Markets and Social Protection

Measuring the Social Impact of Fundación Paraguaya



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PURPOSE

In the fall of 2013, EA partnered with Triple Jump to assess Fundación Paraguaya's impact on the wellbeing of its microfinance clients. The goals of this evaluation were twofold:

1. **To analyze longitudinal client data** to assess the impact of its programs over time
2. **To conduct an operational assessment** of Fundación Paraguaya's monitoring processes

EA visited Fundación Paraguaya to learn about the organization's vision and methodology for measuring impact and to observe its processes of collecting, storing and utilizing impact data. This visit consisted of meetings with directors, database managers, branch managers, loan agents and clients. It also included direct observations of data management processes at the branch level. It focused in particular on the recent rollout and scale-up of the Semáforo, or "Stoplight," Fundación Paraguaya's poverty measurement tool. After this visit, EA conducted a longitudinal analysis of impact data from the Semáforo's pilot phase.

BACKGROUND

Fundación Paraguaya is a non-profit foundation in Paraguay offering microfinance loans as well as several complementary services to its 55,000 clients. Fundación Paraguaya defines its mission as the **elimination of poverty** among its clients. The organization defines poverty as a multidimensional problem rather than using a simple, income-based definition. Its interventions target the client's whole family and champion clients' own agency as the driver of impact. This vision enjoys widespread buy-in from the organization's directors down to its loan agents.

***Vision:** A Paraguay that is entrepreneurial and free of poverty; an example for the world*

***Mission:** To develop and implement practical, innovative and sustainable solutions to eliminate poverty and to create a decent environment for every family.*

Source: www.fundacionparaguaya.org

In 2012, Fundación Paraguaya introduced the Semáforo, or "Stoplight," a tool that measures its group clients' progress on six dimensions of poverty. The tool contains 50 individual questions with three answer options: red (extreme poverty), yellow (moderate poverty), and green (not in poverty). Using a touch-screen tablet, clients rate themselves on this three-point scale for each indicator. A full list of the Semáforo indicators can be found in **Appendix I**.

During the pilot phase in 2012 and early 2013, only a small sub-sample of group clients took the Semáforo. Since the tool's scale-up in August 2013, all group clients take the Semáforo upon receiving their first loan and again every six months thereafter. Using their baseline assessment, agents help clients build a plan to improve upon their situation, offering additional services and making referrals where appropriate.

The Semáforo's 6 Dimensions

1. Income and Employment
2. Health and Environment
3. House and Infrastructure
4. Education and Culture
5. Organization and Participation
6. Self-Esteem and Motivation

As of the time of this study, Fundación Paraguaya had not yet conducted in-depth analysis on the Semáforo's pilot data. This analysis represents the first detailed look at the changes in clients' Semáforo results over time.

PART I: IMPACT ANALYSIS

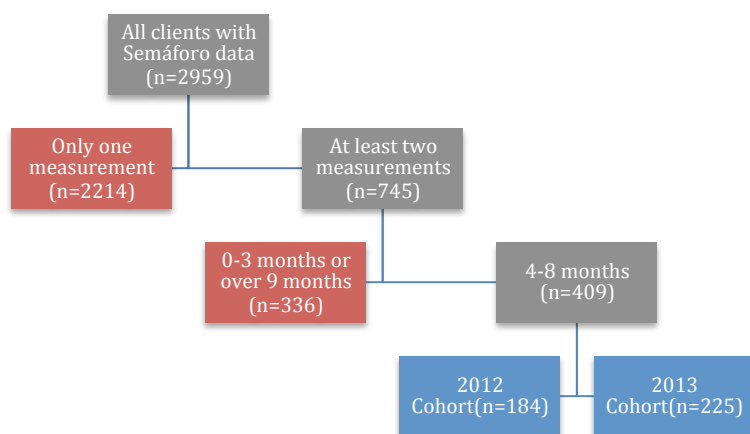
The team compiled and analyzed longitudinal Semáforo data from the tool's pilot phase to determine whether clients showed significant progress in Semáforo results over time.

DATA AND SAMPLING

Two separate databases were merged for the purposes of this analysis:

1. **The Semáforo database** (managed remotely by Hewlett Packard). This database contains (1) the 50 indicators of the Semáforo and (2) household income information for each client. These two parts of the database are stored separately and were joined using client ID, survey upload ID and date.
2. **The portfolio database** (managed in-house by Fundación Paraguaya). This database contains demographic information and data on clients' current and past loans.

To track clients' progress over time, the team selected a sample of clients with at least two Semáforo measurements, separated by between four and eight months.¹ At the time of this analysis, 2959 clients had completed the Semáforo at least once, 745 clients completed the Semáforo at least twice, and **409 of these clients' first two measurements were separated by 4-8 months.**



To account for environmental and methodological changes in the first two years of the Semáforo's rollout, we separated these 409 clients into **two cohorts: the 2012 cohort and the 2013 cohort.** For the 2012 cohort (n=184), baseline data was collected in the year 2012; for the 2013 cohort (n=225), baseline data was collected in the year 2013. The table in **Appendix II** illustrates the demographic and portfolio characteristics of the two cohorts.

The sample faces a few critical limitations. First, all clients in the sample were **interviewed during the tool's pilot phase**, restricting the results to a limited number of branches and subjecting them to higher potential for inconsistency and error. Second, most clients' first measurements **do not represent a true baseline: on average, clients' first Semáforo measurement took place in their fourth or fifth loan cycle.** These drawbacks will naturally right themselves in future analyses as the tool is scaled up and taken by all new clients.

¹ Fundación Paraguaya aims to repeat the Semáforo for each client every six months. In reality, the measurement schedule appears much less regimented, with second measurements ranging from just a few weeks to over one year after the first. The four-to-eight month window allows for some flexibility while still allowing us to compare client progress over similar timeframes.

METHODOLOGY

Our analysis served to answer the following key research question: **Did clients' Semáforo results improve significantly after four to eight months of participation in Fundación Paraguaya?**

As the Semáforo is a qualitative tool, it lends itself primarily to **categorical analysis**. However, where each color is coded with a number (red=1, yellow=2, and green=3), it is also possible to use some quantitative techniques. We have used a combination of categorical and quantitative methods:

Number of Reds, Yellows and Greens We took the **average number of reds, yellows and greens in the full Semáforo at baseline and at the second measurement**, then conducted a **Wilcoxon test** to determine whether the change was statistically significant. We repeated this process for the number of reds, yellows and greens within each of the six dimensions. We have focused on the **number of "greens"** as they key metric for this study.

Semáforo Score Defining red as 1, yellow as 2, and green as 3, we computed a Semáforo "score" by summing all 50 indicators for each client (scores range between 50 and 150). We **averaged clients' scores at baseline and at the second measurement**, computed the difference, and tested for statistical significance. We then repeated the process, computing a separate score for each of the six dimensions.

Percent Red, Yellow and Green For each of the 50 indicators, we calculated the **percent of clients who scored red, yellow and green** at baseline and then at the second measurement, then computed the change for each indicator. We identified which indicators seemed most problematic at baseline and which showed the largest progress over time. We also identified indicators that seemed to show little variation and that might have limited usefulness for Fundación Paraguaya.

Household Income For the 2013 cohort, additional income information is available at both baseline and the second measurement. We calculated the **mean household and per capita income** at baseline and at the second measurement, and then used a **Wilcoxon test** to determine whether the change was significant.

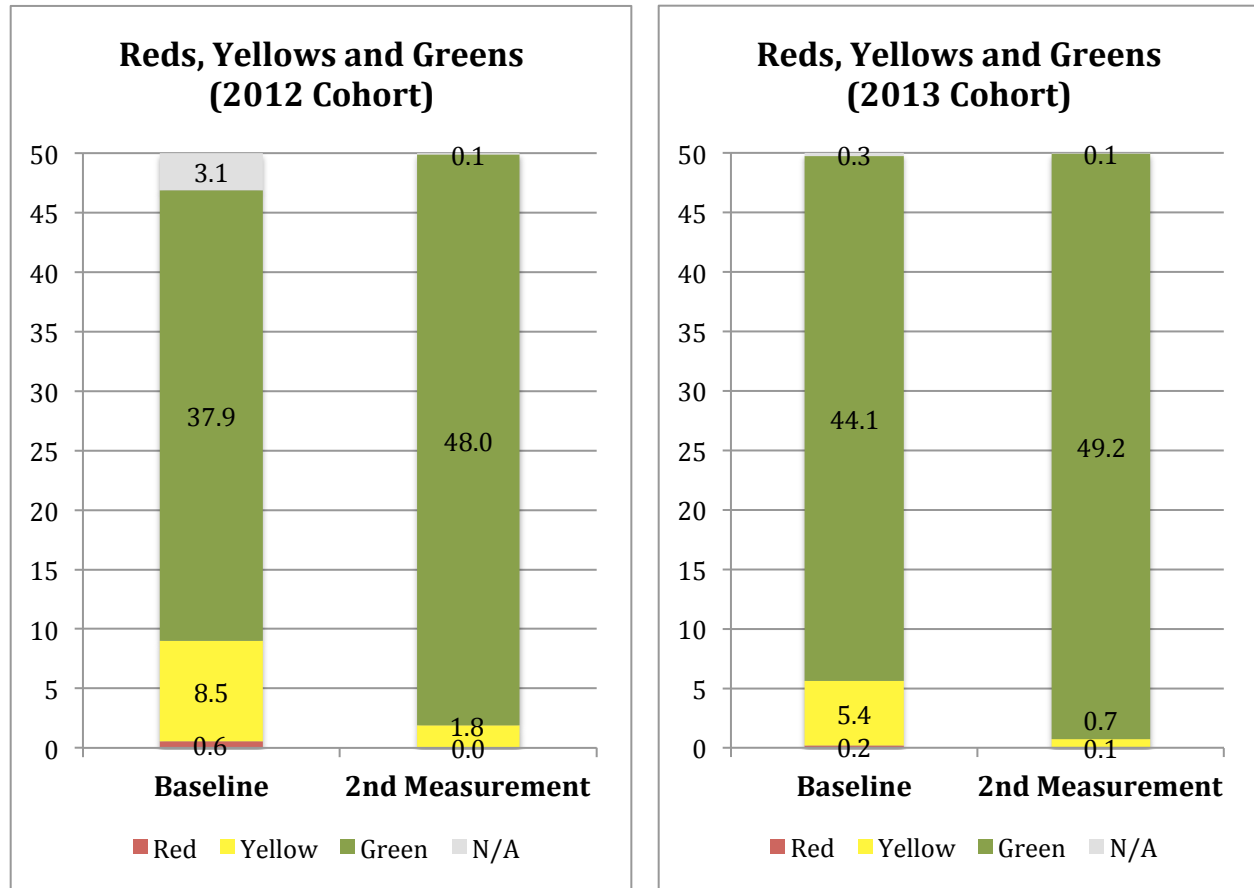
Without a scientific control group, it is difficult to determine whether clients would have made similar progress even in the absence of Fundación Paraguaya. External economic and social changes also have impact on many of the indicators measured for this study. **To approximate a control group, the team used monthly baseline data from new clients** to approximate progress in Fundación Paraguaya's target population. We **modeled the changes** in new clients' Semáforo scores and incomes over time, and used this model to estimate the progress that a non-client would make in four to six months. We then compared the progress of the general population to the progress of the two cohorts to determine how much of clients' progress could be attributed to their participation with Fundación Paraguaya.

differences in population? other regions/villages? lots of opportunities for unobserved differences between groups. different trends? NO controls whatsoever considered. no control variables, no controlling for likely problems with the error term (endogeneity, serial correlation, etc)

RESULTS

Using all four before-and-after techniques, clients in both cohorts made **clear and significant progress** on the Semáforo tool over the four to eight month period of analysis.

When comparing the number of reds, yellows and greens in a client's Semáforo at baseline and at the second measurement, we find that the 2012 Cohort gained an average of **10.1 "greens"** and the 2013 Cohort gained an average of **5.1 "greens."** This change was determined to be highly significant for both cohorts ($p=0.0000$). The breakdown by dimension is found in **Appendix III**.



Similarly, when comparing **Semáforo "scores,"** (red=1, yellow=2, green=3) we see a highly significant change ($p=0.0000$) between baseline and second measurement for both cohorts. The 2012 cohort gained **8.6 points** while the 2013 cohort gained **4.6 points**. Improvement was also consistent: over 90% of clients improved their Semáforo score during the study period. The full results and breakdown by dimension can be found in **Appendix IV**.

When analyzing the results indicator by indicator, we see that clients exhibited dramatic progress with respect to some indicators, while for others a high baseline allowed for little to no improvement. The indicators exhibiting the highest and lowest progress for each cohort are shown in Tables 1 and 2, and the full table of results can be found in **Appendix X**.

Table 1: Indicators with Highest and Lowest Improvement (2012 Cohort)			
Indicator	% Green Before	% Green After	Change
#40: Participation in the public sector	44%	92%	49%
#36: Values cultural and historical traditions	56%	96%	39%
#9: Healthy eating	59%	96%	37%
#35: Access to entertainment and leisure time	59%	95%	36%
#31: Capacity to budget and plan	49%	85%	36%
#14: Environment is not polluted	96%	95%	-1%
#6: National identification	99%	100%	1%
#7: Access to clean drinking water	97%	98%	1%
#12: Vaccination	99%	100%	1%
#25: Telephone	99%	100%	1%

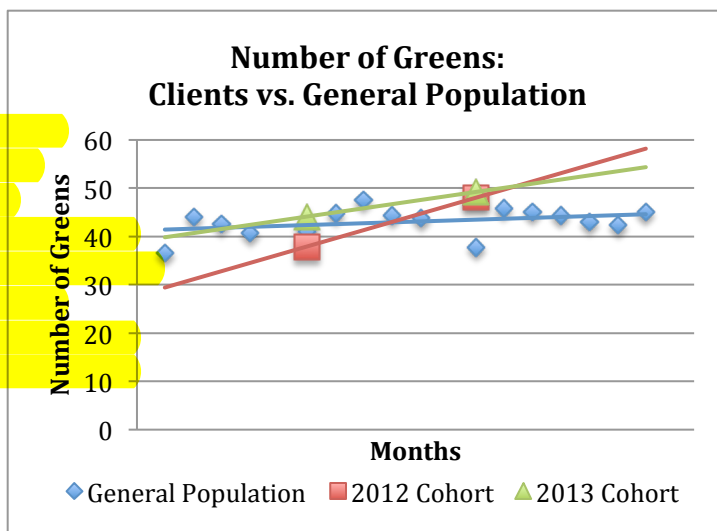
Table 2: Indicators with Highest and Lowest Improvement (2013 Cohort)			
Indicator	% Green Before	% Green After	Change
#31: Capacity to budget and plan	35%	95%	60%
#32: Communication and social capital	72%	100%	28%
#30: Knowledge and skills to generate income	76%	99%	24%
#49: Entrepreneurial spirit	77%	100%	23%
#15: Insurance	79%	100%	21%
#6: National identification	100%	100%	0%
#7: Access to clean drinking water	98%	98%	0%
#8: Nearby health clinic	100%	100%	0%
#16: Safe home	99%	99%	0%
#25: Telephone	100%	100%	0%

Overall, clients' baseline Semáforo results were surprisingly high, with very few clients self-rating as red for any indicator. This was especially true of the 2013 cohort, which began with an average of 44.1 out of 50 possible "greens" and a Semáforo "score" of 144.7 out of a possible 150. We hypothesized that these high baseline results may be due to the fact that many clients were surveyed after several loan cycles. However, when we compared the baseline scores of newer clients (less than one year) and older clients (one year or more), we saw no significant differences. These high scores may be indicative of other issues, as we will discuss in the following section.

Finally, the 2013 Cohort showed significant growth in average income between baseline and second measurement. Monthly household incomes increased from USD 601 to USD 783, and per capita income increased from USD 194 to USD 262. However, this average increase seemed to be brought on by dramatic increases for just a proportion of clients: just 51% improved their income, 29% experienced no change, and 20% of incomes actually decreased. Full income results can be found in Appendix XI.

self-selection?

By comparing these results to trends in baseline data for new clients—our proxy for the general population—we can conclude that **progress by Fundación Paraguaya clients outpaced progress in the general population.** Trends among new clients suggest that the number of greens would increase by an average of 1.1 after four to eight months; by contrast, the actual increase was 10.1 for the 2012 cohort and 5.1 for the 2013 cohort. Thus, the two cohorts progressed 9 times and 5 times faster than the general population, respectively. As a result, **Fundación Paraguaya can claim attribution for approximately 80% of client progress on the Semáforo over the four to eight month period** (89% in 2012 and 78% in 2013).



DISCUSSION AND LIMITATIONS

Clients in both cohorts made **clear and significant progress** on the Semáforo tool over the four to eight month period of analysis. Moreover, there is evidence that **Fundación Paraguaya can claim attribution for the majority of this progress**, as trends in the population show only modest progress over the same period. In our sample, we observed no difference in progress during earlier loan cycles and later loan cycles. However, we recommend testing that hypothesis again in future analysis once true baseline data and multiple follow-up measurements are available for a larger group of clients.

The high number of greens at both baseline and at the second measurement may suggest some flaws in Fundación Paraguaya’s methodology, with regard to both its selection of indicators and its accuracy of data collection. First, **some indicators may be less relevant and useful than others.** We find that **many indicators are green at baseline for nearly 100% of the client population**, and therefore provide little differentiation between clients or insight into clients’ progress. It is in Fundación Paraguaya’s best interest to track indicators that both identify problems in its target population and vary from client to client and over time. This analysis may be an opportunity to identify the most relevant indicators and streamline the Semáforo tool in the future.

Second, **data may not be completely reliable.** In some cases, client may not feel comfortable answering all questions honestly. Although agents take care to administer the questionnaire as privately as possible, clients may be ashamed to self-rate as red or yellow, resulting in an exaggerated number of greens. In other cases, agents may be using the tool hurriedly or incorrectly. Where agents collect Semáforo data on top of an already daunting list of tasks, their incentive is to complete the survey as quickly as possible. In some cases, the agents enter the responses instead of letting the clients do so, potentially glossing over questions and over-reporting greens.

Finally, **the mechanism for many of these improvements is unclear.** Some are the plausible results of increased income or training, but others are much less clearly connected to any formal Fundación Paraguaya intervention. Nonetheless, progress is evident, which raises the question: is

this progress due to credit, complementary non-financial services, informal referrals, or the psychosocial effects of participation itself?

Qualitative interviews with clients hint at a number of pathways toward social impact, from increased income to knowledge and skills, independence, motivation and group solidarity.

"I have been able to buy machines for my business."

"I have taken classes and added new dimensions to my business."

"I am saving for my children's education."

"When my husband left me and I started earning my own money, I felt relieved. I felt free."

"The institution supports you; it gives you the drive to move forward."

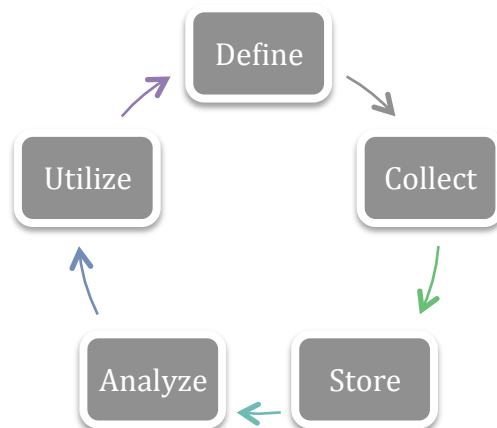
"Now, I have more independence from my husband. I know I can do it on my own."

"Before, I didn't have a lot of friends...now, I have my group, and we are together in the same spirit."

PART II: DATA MANAGEMENT RECOMMENDATIONS

We conclude with a brief overview of the strengths and weaknesses of Fundación Paraguaya's current strategy at each of five steps in the data management process.

Our model first examines the **definition** of the indicators to be measured, and the extent to which these are linked to the organization's social goals and programs. It then assesses how the data is **collected**, both in terms of instruments, logistics, data quality, and incentives at all levels of the institution. The reliability, accessibility and flexibility of how an institution **stores** data are essential for the institution to then be able to analyze data effectively and efficiently. Next, we examine the current tools and processes in place for , as well as the capacity of the team to conduct these analyses. The final piece in the analysis of data management is how the data is **used** once it is analyzed. To fully reap the benefits of social impact measurement, managers should actively and consistently use results to make strategic decisions.



DEFINE

The Semáforo closely mirrors Fundación Paraguay's mission as well as its definition of poverty as a multidimensional, family-level problem whose solution lies with the client herself. Because this idea has strong buy-in at all levels of the organization, the Semáforo has been largely embraced.

However, although the connection between Semáforo and *mission* is strong, the connection between Semáforo and *program* is much less clear. For some indicators, the theory of change is relatively straightforward (for instance, microcredit may lead to an increase in household income, which might lead to better quality food and clothing); however, others lack such a straightforward argument. It is difficult to see, for instance, the connection between a client's participation in Fundación Paraguaya and their increased political participation. This disconnect makes it difficult for the organization to respond to negative results, or indeed, to celebrate positive ones.

Definition of indicators is an iterative process; as more analysis takes place, Fundación Paraguaya will be able to identify the indicators that do or do not add value and insight. For instance, if an indicator is consistently "green" at baseline for all clients, it may be worth eliminating from future data collection and analysis.

Recommendations:

- *Develop a theory of change for each indicator, describing how participation in Fundación Paraguaya might lead to progress in each. Identify a corresponding referral, training, or other programmatic intervention for each indicator. If it is impossible to find a clear relationship, consider eliminating that indicator from future impact analyses.*
- *Conduct follow-up qualitative interviews with a small sample of clients who showed improvements on indicators where the relationship is less clear. Ask them to describe how that transformation happened, and look for patterns across interviews.*
- *Assess the usefulness of the indicators with each analysis; if an indicator does not have enough variation to add value, consider eliminating it from future data collection.*

COLLECT

Fundación Paraguaya employs a highly effective data collection technology: touch-screen tablets that allow the clients themselves to fill out the Semáforo. However, the collection still requires a time-intensive approach, with the agent explaining each question and choice options as the client completes the survey. As the instrument takes between 20 and 30 minutes to complete, it is impossible for an agent to complete more than two or three in a single group meeting. As a result, loan officers have to return to the same site multiple times to collect all members' Semáforo data. This survey administration is often rushed, resulting in less reliable data.

Recommendations:

- *Conduct the Semáforo with the entire group at once.*
- *Consider restricting the full Semáforo to a sample of clients and using a smaller "mini" version for the remainder.*
- *Phase out questions with low relevance and usefulness from the full Semáforo.*

STORE

Semáforo data is stored in a separate database from the loan portfolio database, preventing any systematic joining of the two sets of information. Moreover, the Semáforo database is managed remotely by Hewlett Packard; Fundación Paraguaya staff cannot create or design reports. Current reports allow for easy viewing of the progress of an individual client or a group, but not the full client population. Within the Semáforo database, the 50 indicators are stored separately from client income data from the same survey, causing more difficulties in data merging.

Recommendations:

- *Request an HP report that will allow for export of all Semáforo and income data in a single file, with separate rows for each measurement.*
- *Request an HP report that will allow for export of all Semáforo and income data in a single file, with a single row for each client (new columns for each new measurement). This will allow the organization to match Semáforo data with portfolio data using client ID.*

ANALYZE

As a result of the storage bottlenecks, very little analysis has been done with Semáforo data to date, aside from individual and group-level observation. In the short term, Fundación Paraguaya has the capacity to track trends in the Semáforo tool itself at the macro level. In the longer term, Fundación Paraguaya can begin to connect Semáforo trends with portfolio trends, using the tool to predict client performance and retention. In the meantime, we recommend that Fundación Paraguaya incorporate the following analysis into its annual reporting:

Recommendations:

- *Calculate the average number of greens in a typical Semáforo for baseline and second measurements.*
- *Calculate the percent of clients reporting red, yellow and green for each indicator at baseline and second measurement.*
- *Calculate the average difference between first and second measurements.*
- *Separate this analysis by branch to track the relative performance of each branch.*
- *As the sample of clients with multiple measurements grows, repeat this analysis between the second and third measurements, the third and fourth, etc. This will help determine whether progress is steady over time or varies in earlier or later loan cycles.*

UTILIZE

Currently, Semáforo data is used at the branch level to solve individual clients' problems or to track the accomplishments of a given group or loan agent. As macro-level analysis improves, Fundación Paraguaya's directors can use Semáforo data to make strategic decisions about programming.

Recommendations:

- *Identify indicators that are chronically low at baseline and show slow progress. Design more focused responses around these particular indicators.*
- *Identify groups that are progressing faster than others (by region, income, etc.). Seek strategies to better target those segments that are lagging behind.*

CONCLUSIONS

The analysis set forth herein points to the potential power that the analysis of Semáforo data can have in terms of understanding the plausible gains to clients from working with Fundación Paraguaya. Using only a small sample of pilot data, we see significant perceived changes in all six dimensions of wellbeing as well as increases in self-reported income levels over a mere four to eight months of borrowing. Once larger samples of longitudinal data are available, Fundación Paraguaya will be able to achieve even stronger validity in its results.

As Fundación Paraguaya's impact measurement strategy is deeply rooted in its mission, it is critical that it have a solid and rigorous data management process. A seamless process will maximize the amount of data that can be used at the highest level, not only to understand and promote Fundación Paraguaya's impact but also to improve programming, target more vulnerable clients, and even predict client performance or retention. Without a solid structure in place, the capacity to use this information can be severely constrained.

For instance, data quality challenges can call into question many of the results of the analysis, suggesting perhaps that fewer but more precise data may be beneficial. The analysis in this paper offers specific suggestions to phase out less relevant indicators, thus streamlining data collection. As a second example, the outsourcing of data storage to Hewlett Packard limits and slows Fundación Paraguaya's access to data. Once it is retrieved, matching client data from the Semáforo to client loan data is time consuming and complex. This has limited Fundación Paraguaya's ability to reap the returns on its investment in detailed data collection.

As little analysis has been done to date, we were unable to evaluate the capacity of the team and the quality of their analysis of the data results. This will be critical as Fundación Paraguaya moves forward in its efforts and explores the ways in which it can best leverage the results of the analysis. We anticipate that this document may offer an initial window into the potential use of this data.

Finally, we find that the mechanism for impact is often unclear, and this raises many interesting questions about how clients actually progress through their experience with Fundación Paraguaya. Without a strong connection between program elements and results, it is difficult to understand the reasons behind some of the most significant changes observed. For instance, changes in the level of engagement in public and community activities and increased access to insurance or public utility services do not connect directly to any formal service offered by Fundación Paraguaya. These improvements may come as a result of workshops, referrals to other organizations, or informal advice from Fundación Paraguaya loan officers. They may also be linked to a change in agency driven by the act of proactively borrowing money to improve their business, or the newfound responsibility and discipline resulting from the structured loan payment plan. These results pose interesting questions about how Fundación Paraguaya's intervention may be influencing clients' social wellbeing, outside of the direct impact on income or skills. Qualitative interviews can help to clarify the process and causality behind these results, and would offer a good complement to understanding the results of future Semáforo analyses.

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APPENDIX I: THE SEMÁFORO'S 50 INDICATORS

	Dimension	Indicator
1	Ingresos y Empleo	Ingresos superiores a la línea de pobreza
2	Ingresos y Empleo	Ingresos estables
3	Ingresos y Empleo	Crédito
4	Ingresos y Empleo	Ahorros familiares
5	Ingresos y Empleo	Fuente de ingresos diversificada
6	Ingresos y Empleo	Cédula de identidad
7	Ingresos y Empleo	Acceso a agua potable
8	Salud y Medioambiente	Puesto de salud cercano
9	Salud y Medioambiente	Alimentación nutritiva
10	Salud y Medioambiente	Higiene personal y salud sexual
11	Salud y Medioambiente	Dientes y vista sanos
12	Salud y Medioambiente	Vacuna
13	Salud y Medioambiente	Disposición de basura
14	Salud y Medioambiente	Ambiente no contaminado
15	Salud y Medioambiente	Seguros
16	Vivienda e Infraestructura	Hogar seguro
17	Vivienda e Infraestructura	Letrina sanitaria y cloaca
18	Vivienda e Infraestructura	Electricidad
19	Vivienda e Infraestructura	Heladera y otros electrodomésticos
20	Vivienda e Infraestructura	Dormitorios separados
21	Vivienda e Infraestructura	Cocina elevada y ventilada
22	Vivienda e Infraestructura	Confort del hogar
23	Vivienda e Infraestructura	Medios de transporte regular
24	Vivienda e Infraestructura	Camino de acceso todo tiempo
25	Vivienda e Infraestructura	Teléfono o celular
26	Vivienda e Infraestructura	Seguridad
27	Vivienda e Infraestructura	Vestimenta suficiente y apropiada
28	Educación y Cultura	Sabe leer escribir y comprender en español
29	Educación y Cultura	Hijos escolarizados hasta el 3er. Curso
30	Educación y Cultura	Conocimientos y destrezas para generar ingresos
31	Educación y Cultura	Capacidad para planificar y presupuestar
32	Educación y Cultura	Comunicación y capital social
33	Educación y Cultura	Útiles escolares y libros
34	Educación y Cultura	Acceso a información (radio y TV)
35	Educación y Cultura	Acceso a entretenimiento y esparcimiento
36	Educación y Cultura	Valora tradiciones culturales y patrimonio histórico
37	Educación y Cultura	Respeto la diversidad
38	Educación y Cultura	Conciencia de los derechos humanos
39	Organización y Participación	Forman parte de un grupo de autoayuda
40	Organización y Participación	Incidencia en el sector público
41	Organización y Participación	Capacidad para resolver problemas y conflictos
42	Organización y Participación	Inscripta en el registro electoral y vota en elecciones
43	Interioridad y Motivación	Confianza en sí misma (autoestima)
44	Interioridad y Motivación	Conciencia de sus necesidades
45	Interioridad y Motivación	Conciencia moral
46	Interioridad y Motivación	Capacidad emocional-afectiva
47	Interioridad y Motivación	Autoexpresión estética, arte y belleza
48	Interioridad y Motivación	Violencia hacia la mujer
49	Interioridad y Motivación	Espíritu emprendedor
50	Interioridad y Motivación	Autonomía y capacidad de tomar decisiones

APPENDIX II: COHORT DEMOGRAPHICS

	COHORT 2012	COHORT 2013
	First Semáforo in 2012	First Semáforo in 2013
n	184	225
Age (Average)	41.2	41.5
Age (Median)	42	40
Number of Children	0.3	0.3
Months as a Client (as of Dec. 2013)	34	31
Number of Loans (as of Dec. 2013)	7.5	7.1
Starting Loan Amount (Guaraní)	510929	551333
Starting Loan Amount (USD)	113.43	122.40
Most Recent Loan Amount (Guaraní)	1544262	1503556
Most Recent Loan Amount (USD)	308.85	300.71
Avg. Months at Baseline	16	21
0-3 months at baseline	7%	5%
4-8 months at baseline	12%	16%
9-12 months at baseline	14%	8%
1-2 years at baseline	55%	25%
>2 years at baseline	11%	46%
Time Between Baseline and 2nd Measurement		
4 months	9%	31%
5 months	33%	12%
6 months	29%	24%
7 months	20%	16%
8 months	9%	17%

APPENDIX III: NUMBER OF REDS, YELLOWS AND GREENS

Number of Reds, Yellows and Greens: 2012 Cohort				
Overall				
	1 st	2 nd	Change	p
Red	0.55	0.04	-0.51	0.0000
Yellow	8.46	1.84	-6.62	0.0000
Green	37.88	48.00	10.12	0.0000
N/A	3.11	0.12		

Number of Reds, Yellows and Greens: 2013 Cohort				
Overall				
	1 st	2 nd	Change	p
Red	0.20	0.05	-0.15	0.0001
Yellow	5.41	0.66	-4.75	
Green	44.11	49.22	5.11	
N/A	0.28	0.07		

Income and Employment				
	1 st	2 nd	Change	p
Red	0.04	0.01	-0.03	0.0956
Yellow	0.70	0.16	-0.54	0.0000
Green	5.13	5.83	0.7	0.0000

Income and Employment				
	1 st	2 nd	Change	p
Red	0.04	0.02	-0.02	0.3679
Yellow	0.66	0.05	-0.61	0.0000
Green	5.31	5.92	0.61	0.0000

Health and Environment				
	1 st	2 nd	Change	p
Red	0.06	0.01	-0.05	0.0039
Yellow	1.48	0.29	-1.19	0.0000
Green	7.28	8.70	1.42	0.0000

Health and Environment				
	1 st	2 nd	Change	p
Red	0.01	0.02	0.01	0.6518
Yellow	0.95	0.14	-0.81	0.0000
Green	8.04	8.84	0.8	0.0000

House and Infrastructure				
	1 st	2 nd	Change	p
Red	0.08	0.00	-0.08	0.0001
Yellow	1.56	0.33	-1.23	0.0000
Green	10.04	11.67	1.63	0.0000

House and Infrastructure				
	1 st	2 nd	Change	p
Red	0.04	0.00	-0.04	0.0027
Yellow	0.86	0.33	-0.53	0.0000
Green	11.09	11.66	0.57	0.0000

Education and Culture				
	1 st	2 nd	Change	p
Red	0.08	0.01	-0.07	0.0564
Yellow	2.45	0.53	-1.92	0.0000
Green	7.32	10.35	3.03	0.0000

Education and Culture				
	1 st	2 nd	Change	p
Red	0.06	0.01	-0.05	0.0339
Yellow	1.54	0.08	-1.46	0.0000
Green	9.14	10.86	1.72	0.0000

Organization and Participation				
	1 st	2 nd	Change	p
Red	0.28	0.00	-0.28	0.0000
Yellow	0.90	0.21	-0.69	0.0000
Green	2.43	3.79	1.36	0.0000

Organization and Participation				
	1 st	2 nd	Change	p
Red	0.05	0.00	-0.05	0.0113
Yellow	0.42	0.03	-0.39	0.0000
Green	3.53	3.96	0.43	0.0000

Self-Esteem and Motivation				
	1 st	2 nd	Change	p
Red	0.02	0.02	0.00	0.5680
Yellow	1.36	0.32	-1.04	0.0000
Green	5.67	7.66	1.99	0.0000

Self-Esteem and Motivation				
	1 st	2 nd	Change	p
Red	0.00	0.00	0.00	-
Yellow	0.99	0.03	-0.96	0.0000
Green	7.09	7.97	0.88	0.0000