Suitability Analysis for Health Stores in Guatemala

Overview

This project was prepared especially for Linked Foundation as part of a strategic business analysis report titled "*Tiendas de la Salud*: Recommendations for a Sustainable Micro-franchise." (To download the report see QR code at bottom right.)

Guatemala has a total population of 14.6 million people, of which 53 percent live in poverty, while 13 percent live in extreme poverty. According to the World Health Organization, Guatemala lacks basic health service coverage for a majority of its citizens. Linked Foundation is committed to addressing this need by promoting and investing in solutions that improve the health of women in Latin America.

At present, Linked Foundation has partnered with Mercy Corps and *Farmacias de la Comunidad* to establish *Tiendas de la Salud* (TISA), a network of financially sustainable health stores designed to operate as social enterprises. TISA empowers local villagers through-out the country with income generating opportunities that give participants access to affordable, high-quality medicines and basic health products.

This spatial analysis seeks to highlight locations throughout the country that are best suitable to establish TISA stores.

Methodology

To determine the best locations for TISA stores in Guatemala, five main factors were examined: Human Development Index (HDI) per department, which is determined with health, education, and quality of life data; primary schools for children; roads; hospitals; and population. The data was acquired from the Guatemala National Statistics Institute and Segeplan, the Ministry of Planning and Programming of the Presidency.
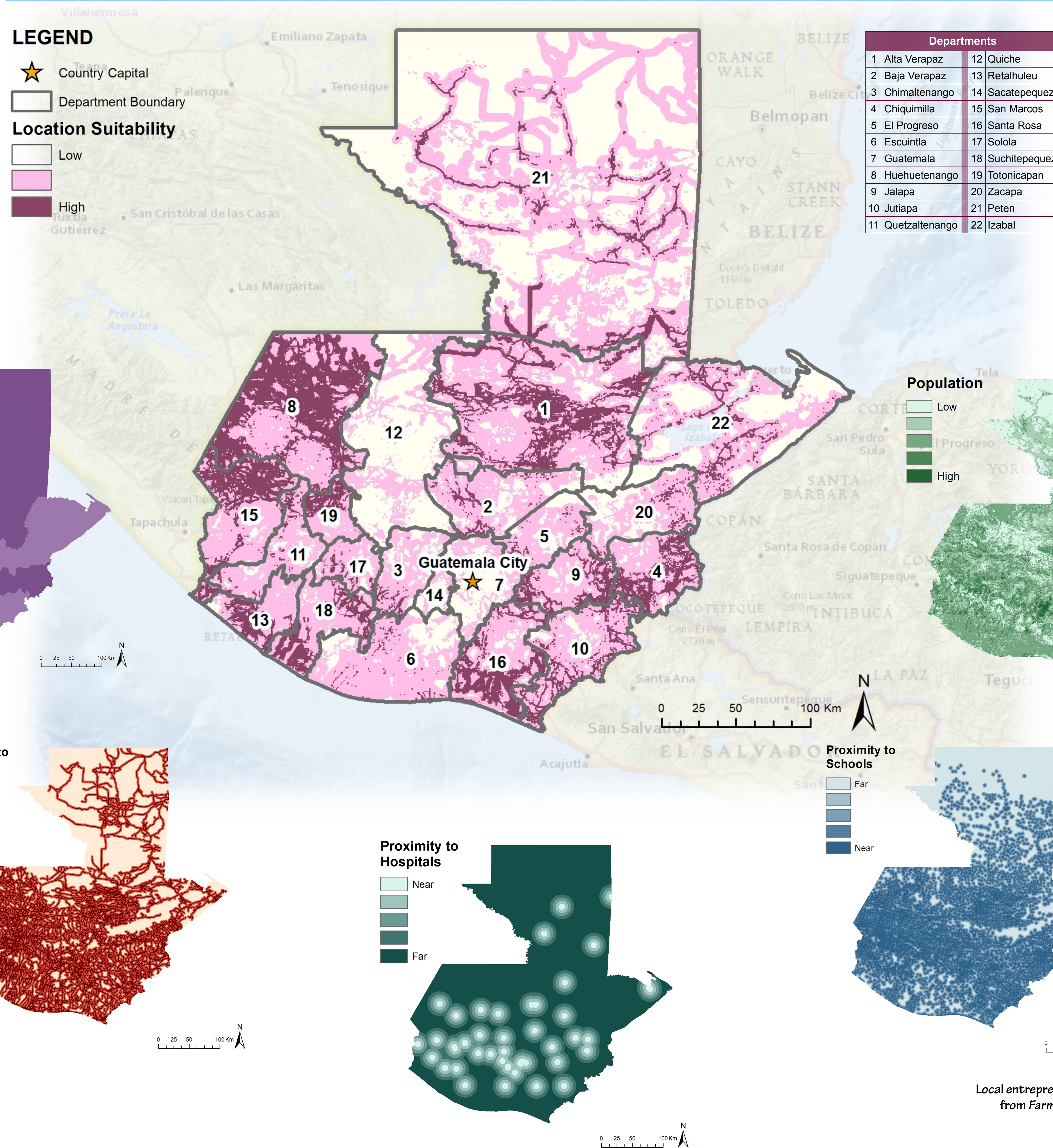
The data for each factor considered was converted into map layers and each was turned into raster data to reclassify into a gradient range of 1-5. This scale represents the level of suitability for locating a TISA store based on specific proximity criteria displayed in the table below.

Finally, all five factors were calculated into one map by using the raster calculator tool. This final map shows the areas most suitable to open a TISA store.

Reclassify (Weights)	Roads	Hospitals	Schools
1 less suitable	0 - 500m	0 - 5,000m	> 4,000m
2	500 - 1,000m	5,000 - 10,000m	3,000 - 4,000m
3	1,000 - 1,500m	10,000 - 15,000m	2,000 - 3,000m
4	1,500 - 2,000m	15,000 - 20,000m	1,000 - 2,000m
5 most suitable	> 2,000m	> 20,000	0 - 1,000m

Final Suitability Analysis for TISA Store Locations

LEGEND

- ★ Country Capital
- ▢ Department Boundary

Location Suitability
- Low
- High

Human Development Index
- Low
- High

Population
- Low
- High

Proximity to Roads
- Far
- Near

Proximity to Hospitals
- Near
- Far

Proximity to Schools
- Far
- Near

Departments			
1	Alta Verapaz	12	Quiche
2	Baja Verapaz	13	Retalhuleu
3	Chimaltenango	14	Sacatepequez
4	Chiquimilla	15	San Marcos
5	El Progreso	16	Santa Rosa
6	Escuintla	17	Solola
7	Guatemala	18	Suchitepequez
8	Huehuetenango	19	Totonicapan
9	Jalapa	20	Zacapa
10	Jutiapa	21	Peten
11	Quetzaltenango	22	Izabal

Results

The accessibility analysis determined areas most suitable to locate TISA stores. The darkest areas on the map (situated in the Huehuetenango and San Marcos Departments) indicate suit-able locations for new stores. Additional opportunities can be found in the departments of Alta Verapaz, Chiquimula, Santa Rosa, and Retalhuleu.

According to the suitability criteria denoted earlier, the darkest areas represent optimal locations for future stores. They are conveniently located near primary schools, in communities with high population density, and where HDI is relatively low. TISA stores must also be near roads in order for customers to access them, as well as far enough away from hospitals to address the needs of the most vulnerable communities. To ensure their effectiveness, TISA stores must be closer than the local hospital, where customers could purchase similar goods. However, TISA stores should not shy away from partnering with local hospitals, which could direct pharmaceutical referrals toward TISA services.

Proximity to primary schools serves a dual purpose. First, store owners with children prefer working near where their children go to school. Second, it is assumed that most families with young children live near schools. Since children are more vulnerable to disease than adults, siting TISA stores within a short distance of schools would both increase convenience for parents and the likelihood of their use.

While some areas have very low HDI, the success of TISA stores depends upon their continued usage. Thus, selecting high population locations for TISA stores allows them to reach a greater number of clients and ensures their sustainability.

Limitations

This analysis offers very basic variables. Other spatial indicators like elevation of the terrain could add value to the results to determine time for distance traveled. Unfortunately, this data was difficult to find. Furthermore, in light of time constraints some assumptions had to be made regarding consumer and store-owner preferences.

Local entrepreneurs can access health care product inventory from *Farmacias de las Comunidad's* existing network of 400 pharmacies across the country.

TISA owners in rural Guatemala proudly in front of their store, newly stocked with much-needed health products. Photos: Lindsay Murphy/Mercy Corps.

Sources

Data Sources: Guatemala National Statistics Institute; Segeplan - Ministry of Planning and Programming of the Presidency; the National Human Development Reports and Millennium Development Goals Program; and National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
Works cited: Central Intelligence Agency. Accessed May 03, 2014. www.cia.gov; "Guatemala's Tiendas De La Salud: Where Profit and Social Impact Meet." Global Envision Latest Stories. Accessed April 20, 2014. www.globalenvision.org; and Country Cooperation Strategy: Guatemala. 2007: World Health Organization.

Disclaimer: This is just a sampling of the data available and should not be used "as is" to make determinations on future locations. A deeper analysis should be made with a more comprehensive dataset and other indicators relevant to the TISA business model. Furthermore, this analysis is not based on any econometric or scientific study. The data and methodology in this poster are simply used as an illustration of GIS toolsets as part of graduate level coursework. No warranties are made on data accuracy and analysis.

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Scan to download - "Tiendas de la Salud: Recommendations for a Sustainable Micro-franchise."