

Appendix 1: Age distribution of the study population

Table 7: Age distribution of the study population

Age category	Total	RM	LTR
	n (%)	n (%)	n (%)
<0 - 5]	7 (1.4)	0 (0.0)	7 (1.6)
<5 - 10]	22 (4.4)	3 (5.6)	19 (4.2)
<10 - 15]	31 (6.1)	2 (3.7)	29 (6.4)
<15 - 20]	58 (11.5)	9 (16.7)	49 (10.9)
<20 - 25]	65 (12.9)	9 (16.7)	56 (12.4)
<25 - 30]	53 (10.5)	11 (20.4)	42 (9.3)
<30 - 35]	54 (10.7)	3 (5.6)	51 (11.3)
<35 - 40]	46 (9.1)	7 (13.0)	39 (8.6)
<40 - 45]	43 (8.5)	4 (7.4)	39 (8.6)
<45 - 50]	32 (6.3)	1 (1.9)	31 (6.9)
<50 - 55]	27 (5.3)	2 (3.7)	25 (5.5)
<55 - 60]	22 (4.4)	1 (1.9)	21 (4.7)
<60 - 65]	19 (3.8)	0 (0.0)	19 (4.2)
> 65	26 (5.1)	2 (3.7)	24 (5.3)

Appendix 2: Indices

1. Household knowledge, attitude and practices index (KAPi)

This index was created using information collected using the questions listed in the following table:

Variable	Question	Values
Sabedengue	Have you heard about dengue?	Yes No
Mosquitotrans	How is dengue transmitted?	Do not know Food or water Direct contact Mosquito bite
Infodengue	Who informed you about dengue?	Friend or family Mass media (radio, TV) Health care personnel Other
Buscoinfo	Did you look for more information?	No Yes Friend or family Health care personnel Internet Other
Limpieza	How frequently do you clean the household premises?	Once a month Twice a month Once a week Twice a week Thrice a week Daily
Drena	How do you drain stagnant water in the premises?	Do not drain Sewer drain, ditches Drain manually
Proteccion	Do you do anything to protect yourself from dengue?	Do not take measures Use repellent Use insecticide Use repellent and insecticide

The values for each answer were standardized in order to get a maximum of 1 as the highest score for each question. Furthermore, the total sum of the values of each question was divided in order to achieve the same standardization. The weights used were decided upon by the

investigators based on whether the KAP could have more direct impact on dengue control and prevention:

$$KAPi = \left[\left(\frac{\text{limpieza}}{6} \right) \times 2 + \left(\frac{\text{drena}}{3} \right) \times 2 + \left(\frac{\text{sabedengue}}{2} \right) \times 1 + \left(\frac{\text{infodengue}}{4} \right) \times 1 + \left(\frac{\text{buscoinfo}}{6} \right) \times 3 + \left(\frac{\text{proteccion}}{4} \right) \times 2 + \left(\frac{\text{mosquitotrans}}{3} \right) \times 3 \right] / 14$$

The findings from each of the questions from the administered questionnaire are in Table 8:

Table 8: Information assessed for household KAPi	
	n (%)
Have you heard about dengue?	
Yes	299 (97.4)
No	8 (2.6)
How is dengue transmitted?	
Do not know	9 (2.9)
Food / water	2 (0.7)
Direct contact	0 (0)
Mosquito bite	296 (96.4)
Who gave you information about dengue?	
Other	10 (3.3)
Friend or family	30 (9.8)
Mass media (radio, TV)	41 (13.4)
Health care personnel	226 (73.6)
Did you seek more information?	
No	187 (60.9)
Yes	120 (39.1)
Other	5 (4.2)
Internet	12 (10.0)
Friend or family	6 (5.0)
Health care personnel	97 (80.8)
How do you drain stagnant water?	
Do not drain	77 (25.1)
Sewer drain / ditch	169 (55.0)
Manually	61 (19.9)

How frequently do you clean household surroundings?

Once or twice a month	107 (34.9)
Once a week or more but not daily	128 (41.7)
Daily	72 (23.5)

What do you do to protect yourself from mosquito bites?

Nothing	134 (43.6)
Use repellent	10 (3.3)
Use insecticide	160 (52.1)
Use repellent and insecticide	3 (1.0)

2. Household physical infrastructure and services index (ISi)

A similar approach as for KAPi was used for the ISi. The variables conveyed in this index are:

Variable	Question	Values
Matpared	Wall building material	Other Wood Bricks / cement
Piso	Flooring material	Dirt/sand/clay Wood Cement / bricks Tiles
Techo	Roof material	Plastic tarp or other Tin roof Concrete / cement
Cocinapropia	Do you share a kitchen with other family or business?	No Yes
Banhopropio	Do you share the bathroom with other family or business?	No Yes
Excrementos	How do you dispose of excreta?	Open field Latrine Septic tank Sewer system
Aguacorrente	What is the source of running water for this household?	Other Plumbing into the house
Basura	How do you dispose of garbage?	Burn or bury residue Routine pick-up by municipality

The values from each of the responses were standardized to add up to 1 and then the total sum was divided by 12 for the same purpose. The weights applied to this index were selected according to the relationship with vector breeding risk that has been reported for each of the elements included in the index:

$$CFSi = \left[\left(\frac{pared}{3} \right) \times 1 + \left(\frac{piso}{4} \right) \times 1 + \left(\frac{techo}{3} \right) \times 1 + \left(\frac{excrementos}{4} \right) \times 2 + \left(\frac{basura}{2} \right) \times 2 + \left(\frac{aguacorrente}{2} \right) \times 3 + \left(\frac{banhopropio}{2} \right) \times 1 + \left(\frac{cocinapropia}{2} \right) \times 1 \right] / 12$$

The responses for the variables are detailed in Table 9 below:

Table 9: Information assessed for household ISI

	n (%)
Flooring material	
Dirt	46 (15.0)
Wood	5 (1.6)
Cement / brick	253 (82.4)
Tiles	3 (1.0)
Wall material	
Other	19 (6.2)
Wood	147 (47.9)
Bricks/cement	141 (45.9)
Roof material	
Plastic tarp	12 (3.9)
Tin roof	280 (91.2)
Concrete	15 (4.9)
Shared kitchen	
Yes	30 (9.8)
No	277 (90.2)
Shared bathroom	
Yes	40 (13.0)
No	267 (87.0)
Removal of excreta	
Open field	6 (2.0)
Latrine	57 (18.6)
Septic tank	117 (38.1)
Sewer system	127 (41.4)
Water source	
Other	17 (5.5)
Piped service inside the house	290 (94.5)
Garbage disposal	
Burn or bury	20 (6.5)
Routine pick-up	287 (93.5)

3. Household assets indices (Ai)

To create this index we used weights obtained from market value in US \$ and the amount of each of the items listed below:

Variable	Question	Values
Q01_1	Have you got a radio?	No Yes
Q01_1_CUANTOS	How many?	Number
Q01_2	Have you got a TV set?	No Yes
Q01_2_CUANTOS	How many?	Number
Q01_3	Have you got a mobile phone?	No Yes
Q01_3_CUANTOS	How many?	Number
Q01_4	Have you got a sewing machine?	No Yes
Q01_4_CUANTOS	How many?	Number
Q01_5	Have you got a refrigerator?	No Yes
Q01_5_CUANTOS	How many?	Number
Q01_6	Have you got a bicycle?	No Yes
Q01_6_CUANTOS	How many?	Number
Q01_7	Have you got a motorcycle?	No Yes
Q01_7_CUANTOS	How many?	Number
Q01_8	Have you got a car?	No Yes
Q01_8_CUANTOS	How many?	Number
Q01_9	Have you got a canoe?	No Yes
Q01_9_CUANTOS	How many?	Number

With this information, we took the natural logarithm of the number obtained. Therefore, A_i was calculated as follows:

$$A_i = \ln (Q01_1 \times Q01_{1_{CUANTOS}} \times 46 + Q01_2 \times Q01_{2_{CUANTOS}} \times 124 + Q01_3 \times Q01_{3_{CUANTOS}} \times 50 \\ + Q01_4 \times Q01_{4_{CUANTOS}} \times 183 + Q01_5 \times Q01_{5_{CUANTOS}} \times 312 + Q01_6 \times Q01_{6_{CUANTOS}} \times 82 \\ + Q01_7 \times Q01_{7_{CUANTOS}} \times 1504 + Q01_8 \times Q01_{8_{CUANTOS}} \times 10160 + Q01_9 \times Q01_{9_{CUANTOS}} \times 100)$$

The responses for the variables included in this index are presented in Table 10:

Table 10: Information assessed for household A_i	
	n (%)
The household has got:	
Radio	272 (88.6)
TV set	294 (95.8)
Mobile phone	295 (96.1)
Sewing machine	28 (9.1)
Refrigerator	232 (75.6)
Bicycle	87 (28.3)
Motorcycle	219 (71.3)
Car	17 (5.5)
Canoe	11 (3.6)

Appendix 3: Maps of hot spots, cold spots and migration

1. **Figure 6:** Hot spots for migrant members, KAPi, income and positive households
2. **Figure 7:** Cold spots for ISi using Getis-Ord G_i^* and expansion areas in the city

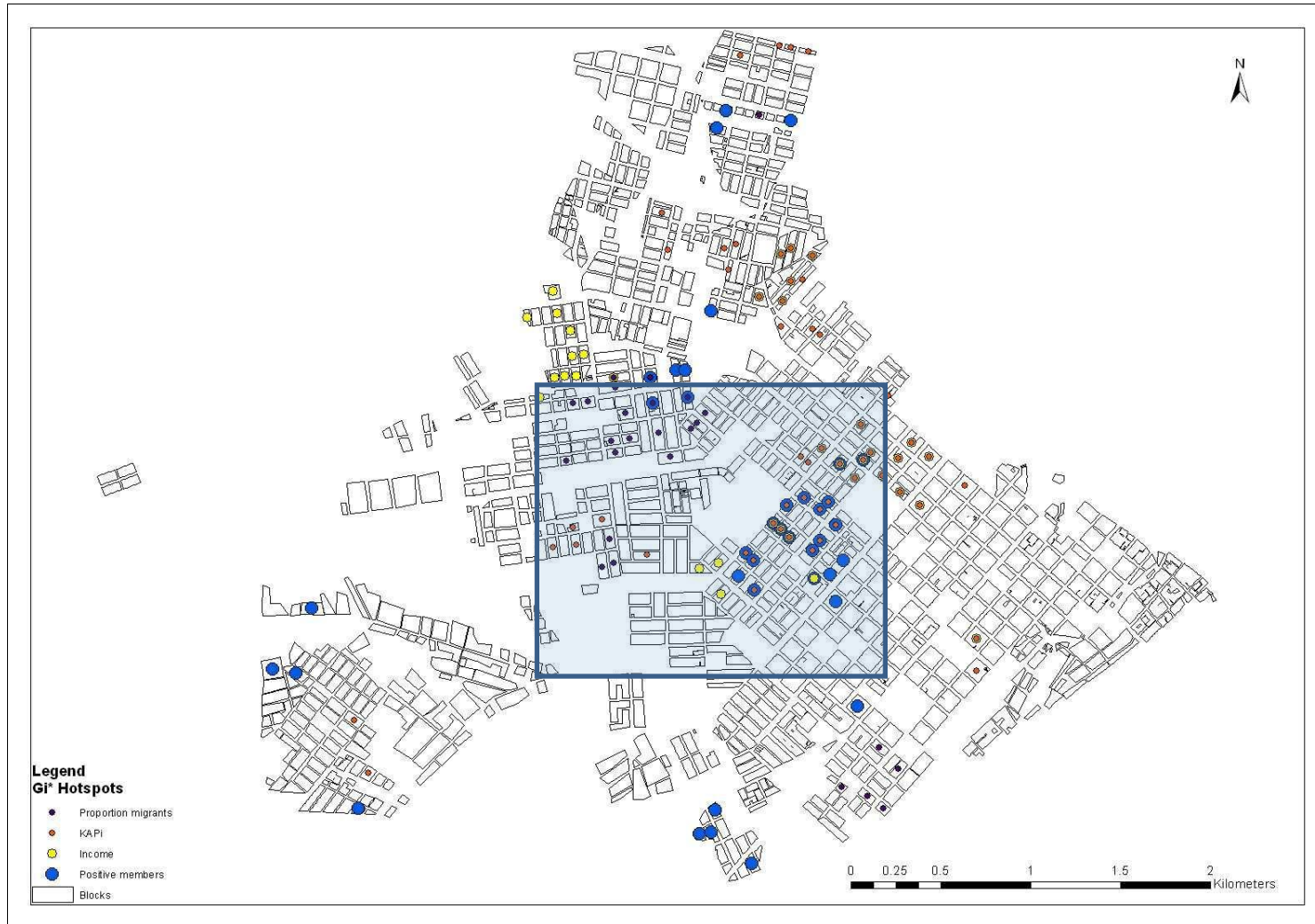


Figure 6: Hot spots for migrant members, KAPi, income and positive households

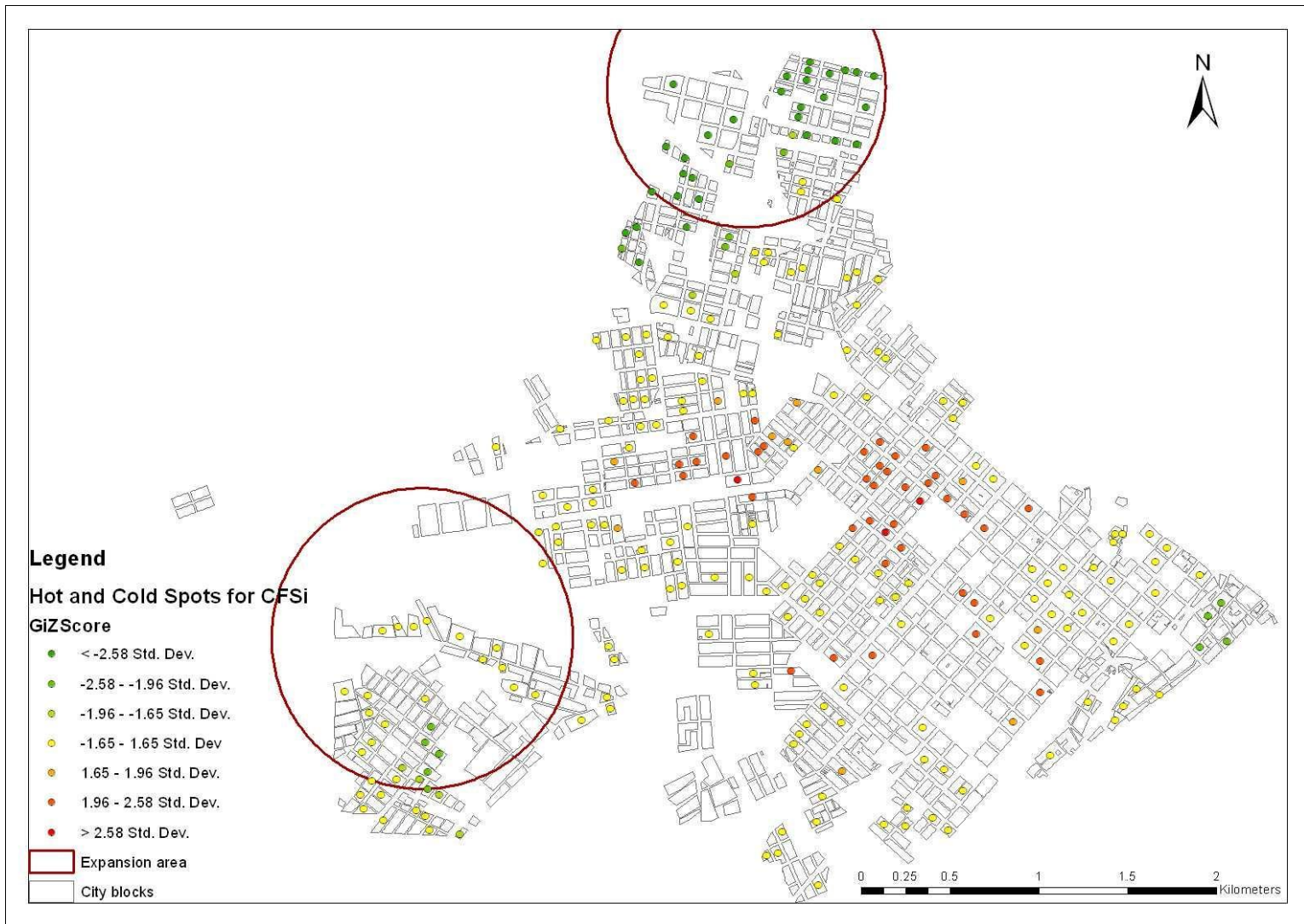


Figure 7: Cold spots for ISI using Getis-Ord G_i^* and expansion areas in the city