

Who has access to public health services? Understanding spatial and non-spatial variations in utilization of primary and secondary public health care services in Guatemala

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Background:

Access to health care services can preserve population health status (Whitehead, 1991; WHO, 2007) and promotes equity in health and wellbeing (Culyer, 2001; Sen, 2002). Strengthening the provision of the public health care system to improving access to health for all is a target of global policy (UN, 2013, 2019; WHO, 2018). Access to health care is understood as a dynamic set of factors that mediate between the potential to gain health care services and the realization of using health care (Andersen, McCutcheon, Aday, Chiu, & Bell, 1983; Penchansky & Thomas, 1981). Realized access provides evidence about the factors associated with health care-seeking experience and utilization of services (Andersen, 1995; Andersen et al., 1983). Understanding the factors associated with utilization provide insights for designing interventions and guide policy for promoting access and reducing morbidity and mortality (Ensor & Cooper, 2004; Levesque, Harris, & Russell, 2013).

Measuring realized access to health care involves the consideration of the factors that predispose and enable health-seeking behaviour (Andersen, 1995; Andersen et al., 1983), including geographic accessibility to health care services (Penchansky & Thomas, 1981). Reduced access is associated with greater distances to travel to reach health care services (Buor, 2003; Joseph & Phillips, 1984; Lowe & Sen, 1996). Moreover, the spatial influence of distance over utilization can be modified when considering additional factors of access such as the type of health service and health condition (Akin & Hutchinson, 1999; Arcury, Preisser, Gesler, & Powers, 2005; Kruk et al., 2009). Measuring realized access requires detailed individual data; task particularly complex for limited data settings such as low and middle-income countries (Higgs, 2004; Levesque et al., 2013; McLafferty, 2003). This research focuses on measuring realized access to primary and secondary health care in Guatemala, using a unique dataset that allows the examination of both reason for health care visit and distance to travel.

Guatemala has been categorized as a low performing country towards achieving Universal Health Care Coverage (Wagstaff, Cotlear, Eozenou, & Buisman, 2016). A reduced availability of public health services is understood to push individuals to seek private health care or health care facilities located further distance than the nearest public health care facility (Lindblade et al., 2011; Seiber & Bertrand, 2002; van der Stuyft, Delgado, & Sorensen, 1997). Seeking for health care at private services and incurring to out-of-pocket expenditure can increase health inequalities, since most of Guatemalan population cannot afford to pay for these services (Bowser & Mahal, 2011). Strengthening the provision to improve utilization of public health care services might be important intervention to improve access to health care in Guatemala. Moreover, greater understanding about realized access is required. This research aims to explore the factors associated with realized access in Guatemala by measuring the utilization of primary and secondary public health services for different health conditions.

Data and methods:

This research uses a unique data source of administrative records generated at selected primary and secondary public health care facilities in two areas of Guatemala. The data encompasses individual level

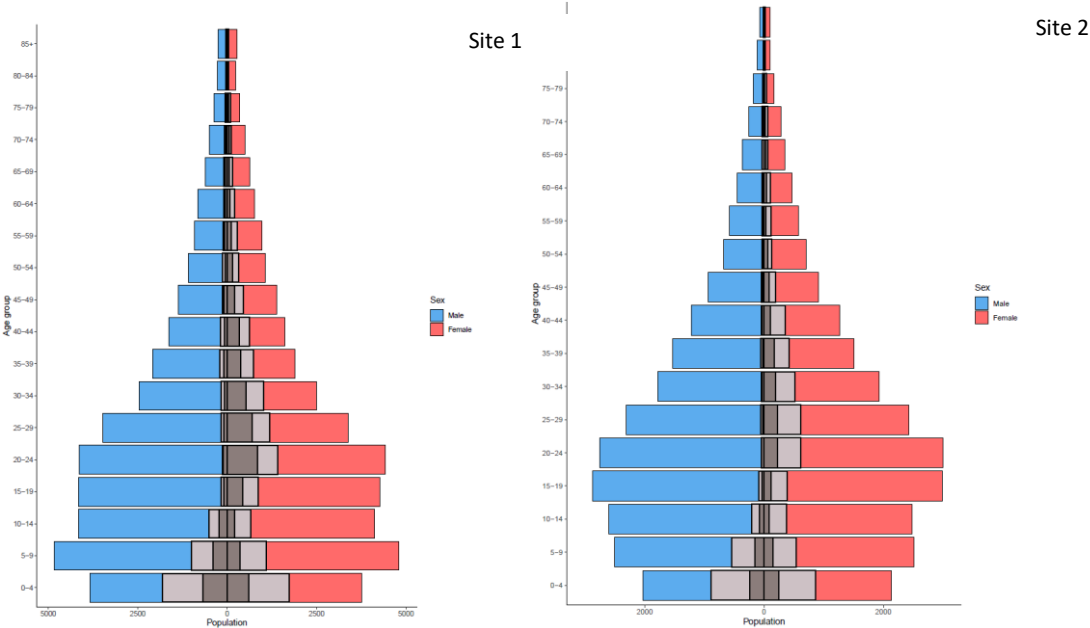
data about socio-demographic characteristics, visits to primary and secondary health care services and health status. Demographic characteristics are obtained from a population enumeration exercise conducted once per year. Additionally, births, deaths, in-migration and out-migration are recorded during household visits to update annual population counts. All individuals and households have a unique geographical codification, which allows to follow individuals over time and to identify individuals each time they visit public health care services within the catchment area. The catchment area encompasses the entire population living two of the lowest geo-administrative level in the country, the municipality. Socio-demographic characteristics are collected by household survey every two years. Individual's health status is gathered during visits to health care facilities located in the delimited geographical areas.

This research measures utilization of public health care including the spatial and non-spatial dimensions of access(Khan, 1992). The spatial dimension accounts for the geographical barrier, the distance to travel to reach the facilities (Guagliardo, 2004; A. E. Joseph, 1979; McLafferty, 2003). The non-spatial dimensions measures the association of utilization with factors that predispose and enable health care seeking behaviour(Levesque et al., 2013). We measure the association of spatial and non-spatial factors at the individual data by using Poisson log-linear regression to associate the rate of utilization health services and the explanatory covariates. This association is tested for different health conditions. The analysis studies the utilization of health care services of the population living within the catchment area between 2012 to 2019.

Results:

Utilization of health care services is measured by the counts to a primary or secondary health care facility for a given calendar year. The preliminary descriptive analysis (Figure 1) depicts utilization of primary and secondary health care by sex and age. For both levels of health care, greater utilization rates are observed among children and woman at childbearing ages.

Figure 1: Population structure and number of individuals that have visited a primary or a secondary public health care service at least once in the year 2018, two sites.



Health facilities colour legend: Light grey: primary health care facilities, Dark grey: secondary health care facilities.

We expect to find differences in utilization of primary and secondary health care services. Preliminary results illustrate that higher contact with public health services occurs at primary health care (Table 1). For site 1, The overall population that have used a primary health care service during the 2018 has been 13.4% and 29.4% for male and female respectively. The overall utilization of secondary health care services is further reduced. From the overall population 5.9% of males and 13.9% of females had visited a secondary health care facility least once during the year 2018. Site 2 shows similar behaviour in male being in lower contact with public services and overall reduced contact with secondary health services.

Table 1: Percentage of individuals that have visited at least once a public health care service in the year 2018

Age interval	Site 1				Site 2			
	Primary		Secondary		Primary		Secondary	
	Males(%)	Females(%)	Males(%)	Females(%)	Males(%)	Females(%)	Males(%)	Females(%)
0-4	45.5	45.1	17.0	15.6	42.8	39.9	11.2	11.4
5-9	20.4	22.6	7.9	7.5	21.0	21.0	5.9	5.8
10-14	11.8	16.0	5.3	5.3	7.8	14.8	3.0	3.3
15-19	3.9	20.5	2.0	10.2	3.1	12.9	1.2	4.0
20-24	3.3	31.8	2.4	19.2	1.8	20.2	1.4	7.4
25-29	4.9	35.0	2.8	20.8	2.3	25.0	1.2	9.3
30-34	6.3	41.1	3.2	21.5	2.7	26.6	1.7	10.1
35-39	9.9	39.0	4.4	19.5	3.4	27.7	1.6	11.1
40-44	11.4	38.1	4.2	20.8	4.1	27.5	2.3	8.5
45-49	9.4	32.5	6.1	14.5	4.7	20.8	2.0	8.7
50-54	11.6	29.1	5.3	13.8	5.1	17.4	2.3	8.0
55-59	11.2	27.5	6.7	12.5	5.2	19.9	2.9	4.6
60-64	11.4	27.8	6.0	11.1	8.0	20.2	3.7	7.3
65-69	13.3	23.9	6.7	10.1	9.1	16.4	1.5	8.6
70-74	13.5	22.2	6.2	11.7	12.5	22.0	4.9	7.1
75-79	13.6	24.7	8.4	9.1	11.2	19.0	3.9	7.6
80-84	11.3	16.8	7.2	7.7	7.8	16.1	3.5	9.3
85+	8.2	9.6	7.7	5.1	12.8	12.7	2.3	3.8
Overall population	13.4	29.6	5.9	13.9	9.5	22.3	3.2	7.4

Further analysis will test the association of individuals' utilization of public health services with the reasons for seeking health care. It will provide an understanding about the influence of distance over utilization of health care services, the socio-demographic factors of the population using health care services and identify variations by specific cause of visit, such as maternal and child health, communicable diseases and acute ill-health conditions. This research aims to contribute to understand the influence of distance to reach health care facilities over utilization of health care services. We will also provide further details about the characteristics of the population that uses public health care services and variations according to the ill-health status in Guatemala.

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