

# On the Economics of Street Children\*

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April 2013

## Abstract

We view street life as a vice. Children that get addicted to it find it difficult to quit. Based on fieldwork and data from a Senegalese NGO that patrols the streets in search of homeless children and holds a rehabilitation center, we estimate the impact that the NGO has on getting children off the streets. Rainfall is used as an instrument for estimating children's willingness to go to the center at the first street encounter with the NGO. We find that extreme rainfall helps at explaining that a child may be willing to go to the rehabilitation center within a week after a first encounter. The fitted values of going to the center within a week or a year, however, do not explain not being seen on the streets of Dakar again at most a year later. Tracking down highly mobile street children is impossible. Our data and qualitative interviews nevertheless suggest that the risk of reinforcement of street life vice is high; but that tolerance beyond a certain threshold at adolescence and adulthood is exhausted when prospects of informal employment are high.

***JEL Classification:*** O12, O15, J15

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\* We thank Erika Field, Guido Imbens, Michael Kremer and Rohini Pande for useful comments. We gratefully acknowledge useful insights by seminar participants at the Harvard Development lunch, the Paris School of Economics and the Toulouse School of Economics seminars. Andrea Locatelli provided valuable insights from a first wave of data. We are infinitely grateful to the SamuSocial Senegal, and, in particular, to Isabelle de Gibellon for facilitating field work and access to data in Paris and Dakar.

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## Introduction

*“The exact number of street children is impossible to quantify, but the figure almost certainly runs into the tens of millions across the world.” UNICEF (2005).*

Street children are a pervasive phenomenon across Sub Saharan African cities and many other urban areas in the world. Sociologists and psychologists generally distinguish between returning-home street children from those children who live permanently on the streets. We henceforth use the word street children in connection with the latter type, and, in particular, with homeless male children.<sup>1</sup> Young children on the streets forgo an education, take risks, take drugs, and lose tolerance for taking orders.

We argue that these and other street life activities are addictive. Specifically, following a distinguished tradition started by Becker, Grossman, and Murphy (1991), we view street life as an addictive behavior. It involves both reinforcement and tolerance. In the context of street children, reinforcement means that greater past consumption of freedom offered by street life reinforces present consumption. Tolerance means that utility from present consumption is lower when past consumption of street life freedom is greater.

Street life freedom is way too attractive once children have become addicted to it. Reinforcement from past consumption of street life therefore makes it exceedingly difficult for numerous NGOs and charities to persuade children to return to their families and/or other non-stigmatized social networks where the continuous presence of adults for guidance and instruction is inevitable. The received wisdom from NGO practitioners is that moving on from the streets into a high-paying job later on in life is impossible.

Daily self-inflicting damage, a by-product of street life freedom also has negative externalities. At young ages, street children beg or steal to survive. As young adolescents, they cease to inspire pity and begging is no longer an option. Survival skills ranging from pick-pocketing and drug-dealing to organized criminal activities involving violence in gangs may take hold. Moreover, a vast majority of street children live with peers in public places that are difficult to access and inhospitable, such as garbage dumps or sewers. This magnifies self-inflicting health hazards and negative externalities in developing country cities.<sup>2</sup> Is there a threshold beyond which young kids lose tolerance for street life? We will argue that age and the size of the informal sector play a role.

There is little quantitative research on street children. As the quote above suggests, even the most basic statistics on the number of street children are elusive. The reasons are twofold. First, street children are exceedingly mobile.

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<sup>1</sup> Girls from poor backgrounds are less prone to live their homes for the streets. When they stay at home, they are often abused and work in household chores. Girls who leave their home generally engage themselves in prostitution. (Aptekar, 1994).

<sup>2</sup> Aptekar (1994), Baker et al (1996), Nalkur (2004 and 2009), Raffaelli and Koller (2005), Dramé (2010), and Derge (2010).

They are often described as rural-urban migrants. They also beg or steal in different locations such as market places and airports, at different times within a day; and move around different dwellers at night because of age and conflict with peers. Second, street children are often psychologically unsettled; do not trust adults or both. Hence, reported answers from sporadic surveys collected on the streets are unreliable at best misleading at worse. More reliable and comprehensive data on street children is found in local NGOs offering relief and shelter to those children who lose temporary tolerance for street life vice and are in principle prone to quit. This database has not been exploited. To our knowledge, this is the first article on street children written by economists. In particular, while qualitative analyses by sociologists and psychologists on street kids abounds, more rigorous quantitative analysis using data recorded by NGOs is missing.

In this paper we attempt to bridge the gap. We view street life as a vice. Children that get addicted to it find it difficult to quit. Based of fieldwork and data from a Senegalese NGO that patrols the streets in search of homeless children and holds a rehabilitation center, we estimate the impact that the NGO has on getting children off the streets. Rainfall is used as an instrument for estimating children's willingness to go to the center at the first street encounter with the NGO. We find that extreme rainfall helps at explaining that a child may be willing to go to the rehabilitation center within a week after a first encounter. The fitted values of going to the center within a week or a year, however, do not explain not being seen on the streets of Dakar again at most a year later. Tracking down highly mobile street children is impossible. Our data and qualitative interviews nevertheless suggest that the risk of reinforcement of street life vice is high; but that tolerance beyond a certain threshold at adolescence and adulthood is exhausted when prospects of informal employment are high.

The remainder of this paper is divided into five sections. Section I overviews some common characteristics of street children through the lens of economic development theories, with a focus on street children in Dakar. Section II documents our field experience and data from the SamuSocial Senegal, our partner NGO in 2010 and 2011. Section III delivers a snapshot of relevant descriptive statistics and our identification strategy. Section IV shows the advantages of using extreme rainfall as an instrumental variable, and our results. Section V offers a discussion on data obstacles and potential venues for circumventing those barriers in future research. Section VI concludes.

## **I Overview**

Street children are most prevalent in emerging markets and low-income countries where poverty widespread and acute. Viewed through the lens of economic analyses, existing literature on street children written by sociologists and psychologists, touches upon at least three interconnected strands. First is child labor. Second is rural-urban migration. And, third, is human capital accumulation. Child labor is indeed one of the most severe manifestations of poverty. A child growing up into a poor family works for himself and others

instead of being sent to school by household heads. This decision is made by adults. And the reason is well - known. A poor household needs additional income from the child in order to meet immediate needs. The costs in terms of forgone future earnings from education are borne by the child while the immediate benefits accrue to the household. Child labor is often described as a predominantly rural phenomenon (Udry, 2006).

The type of within-household child labor analyzed by Udry, however, is very different from child labor on the streets in developing countries' urban areas in at least two dimensions. First, the motive is different. Street working life is generally triggered by parental death or serious abuse by adults. This often carries the risk of mental-health problems. Street children are described as being extremely mistrustful of adults, guardians/legal representatives, and as pathological liars - . Second, the street environment as a work place carries a much higher degree of risk relative to child labor at home (Evans, 2005).

In Sub Saharan Africa, children are often sent to Koranic schools (called "Daaras" in Senegal). At the Daaras, room and board in addition to religious education is free for the parents, but paid by children from poor backgrounds (Dramé, 2010). Poor children from religious schools – called "talibés" in Senegal - beg to earn a meager income. Unlike the standard analysis of child labor, income earned by the child does not accrue to the household heads but to the Daaras. These are controlled by headmasters or "Malibus". Poorly endowed Daaras abound, and their Malibus are often portrayed as heartless individuals who mistreat boarders.

The Malibus send boarders to the streets to beg, and beat those children who fail to contribute to the Daaras' incomes. Children often find the Daaras as inhospitable. At early ages, those children inspire pity, obtain an income from begging to pay for shelter in their Daaras, some food, and religious education. Later on, as young adolescents, children are often tempted to leave their Daaras because of hostile living conditions and fear of severe punishment.

Leaving the Daara for the streets involves a cost, however. It implies cutting ties with their families completely on the one hand, and with a religious network that may facilitate employment opportunities in an Islamic society where ties in institutionalized religious networks linked to the Koranic Schools are strong on the other. Fleeing the Daaras is often described as a gradual process starting with sporadic absences to full immersion into street life with homeless peers. These have either experienced mistreatment in Daaras or have fled from a dysfunctional family in Islamic societies where polygamy is socially accepted, and treatment or neglect of step-children by male household heads is cruel.<sup>3</sup> Once a child has permanently settled on the streets, he enjoys freedom from adults. His life on the fringes of legality involves risk-taking activities to

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<sup>3</sup> Dysfunctional families also seem to be at the root of adult males finding themselves homeless on the streets of industrialized countries. Braga – Corno (2011), for example, report that up to 60 percent of adult males found on the streets of Milan declare that they have found themselves homeless after a divorce.

earn a living, drugs and alcohol consumption, and unprotected sexual activity among others.

Second is migration, directly from the family network or indirectly from the Daara, to the streets. Migration in economics is often seen through the lens of two-sector rural-urban models dating back to the work by Lewis (1954) and Harris-Todaro (1970). According to this literature, what triggers rural-urban migration is a wage differential between rural and urban areas. In the Harris-Todaro model, for example, the probability of being formally employed in cities is less than one. A vast number of rural migrants take the risk, and find themselves employed in an informal sector in urban areas. In the context of street children, attaching a positive probability to finding a job in the formal sector is unrealistic. Instead, migration seems to be triggered by the income differential between begging or working for room and board -in a rural family economic activity or the Daaras- and begging/ stealing without being accountable to adults. Both are informal-sector activities where the prospect of finding a formal sector job in urban sector areas is nil. While immediate income might be higher from begging/stealing, future income is lower because children forgo human capital, lose ties with a well-established social network, end up in prisons and/or are stigmatized as they represent a threat to society.

Indeed, sociologists, psychologists, and practitioners suggest that age and time spent on the street matters for successful re-insertion (Aptekar, 1994). In particular, the older the child is and the longer the duration of street time spells, the more difficult it becomes to earn a living out of begging on the streets (Gigengack, 2008, Covey, 2010, and HRW, 2010, Senegal). This sheds light on how the main objective of the SamuSocial in Dakar is carried out in practice. The mission of the NGO is to get seemingly shortsighted children out of the streets and reinsert them into a non-stigmatized social network, including a dysfunctional family and the Daaras, where opportunities for informal (non-criminal) employment are higher. In principle, all kids found on the streets by the ambulance doctors and social workers qualify for treatment at the rehabilitation center. In practice, less resistance to being treated at the rehabilitation center is found in young children and/or new arrivals.<sup>4</sup>

Third is human capital, health and education. Various articles on health suggest that meager earnings at adulthood are linked to poor health at early age and/or high fertility rates (see, for example, Behrman and Rosenzweig, 2004, Acemoglu-Johnson, 2006, Kalemli – Ozcan, 2007, and Lorentzen et al, 2008). One main finding is that the greater the risk of early death is associated with higher levels of risky behavior such as AIDS infection due to unprotected sexual activity. In our data we found a large number of street children approaching the NGO ambulance to be treated for wounds. Most of them are offered to receive follow-up treatment at the NGO rehabilitation center or at a nearby public hospital. Take-up rates are exceedingly low. Only in extreme critical conditions a street

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<sup>4</sup> This is somewhat puzzling. It might be true that the NGO has better chances of success with young and new arrivals. It might also be true, however, that the older the kid is, the more the kid will demand to be treated because life on the streets becomes increasingly unbearable.

child accepts treatment at a place other than the street itself or the children's street dwellings.

The effect of education on future earnings is known to be important. For example, Duflo's (2001) study on Thailand suggests that an additional year of education can yield up to a 12 percent increase in earnings at adulthood. This study also delivers an interesting insight regarding context-specific practices. In particular, children in Thailand and most other poor and emerging market economies attend school between ages of six and twelve.<sup>5</sup> Senegal is no exception. Street children are often considered too old to learn basic literacy and numeracy skills. We have scant data on education of street children under the care of the SamuSocial in Senegal. However, like in any other ethno linguistic fragmented country in Sub Saharan Africa, basic literacy skills in French – the official language – are rare among street children. The most widely spoken language, Wolof, la lingua franca, is widely used but our observation at the rehabilitation center, data, and accounts from social workers suggest that the vast majority of street kids found in the streets of Dakar are illiterate in Wolof too. Basic literacy skill acquisition is beyond the scope of this particular NGO, which focuses on mental and physical health delivered by doctors, nurses, psychiatrists, cooks, social workers and entertainers.<sup>6</sup>

At early age, street life seems rational. On the streets, children manage to earn a living for themselves and their peers. Their meager earnings in urban areas accrue to themselves, not to the adults within the rural (extended) households or the Malibus in the Daaras whose control and guidance street children avoid. At subsistence levels, and in the absence of parental guidance, investments in health and education are nil. Young children derive utility from street life consumption. NGOs like the SamuSocial Senegal experience exceedingly low success rates. For example, out of the three thousand street children treated at the SamuSocial Senegal rehabilitation center in 2001 - 2012, only a few hundred kids are recorded as having returned to their families, their Daaras, or having agreed to join a vocational program at partner NGOs over the entire eleven-year period in our sample.

## **II The Samu Social Senegal**

The SamuSocial Senegal is a French NGO sponsored by the Agence Française du Développement (AFD) in partnership with other international aid agencies. It was started at the initiative of Xavier Emmanuelli in 1993, as an emergency service mobile team to assist homeless individuals found on the

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<sup>5</sup> Twelve is the mean age at which a child is found on the streets (see, descriptive statistics below).

<sup>6</sup> Other rehabilitation centers in for example, Colombia, do offer more structured literacy and numeracy skills to street children. We are currently working in partnership with a government agency, a branch of the Instituto Colombiano del Bienestar Familiar, which does have data on educational background and attainment at various rehabilitation centers. We hope to document our field experience and data on education from ongoing work in the no so distant future.

streets of Paris.<sup>7</sup> In 1998, Dr Emmanuelli founded the SamuSocial International operating in a dozen cities throughout the world. The focus of the SamuSocial Senegal (SSS) is on street children. (We henceforth use the SamuSocial Senegal acronym, SSS, and the acronym for non-governmental organization (NGO) interchangeably).

The SSS is based in Dakar. Its main mission is to assist the children in need, and to persuade them to leave the streets for re-insertion into a structured social network such as the children's families, their Daaras, or a vocational NGO. The SSS is endowed with a rehabilitation center, which can accommodate up to thirty street children as full-time boarders. At the center, the children are looked after by a medical doctor, a psychiatrist, a nurse, two social workers, and an entertainer.

In addition to the rehabilitation center, the SSS has a mobile team. This consists of an ambulance operated by a chauffer, a social worker and a medical doctor. The mobile team patrols the streets of Dakar day and night – except for Mondays.<sup>8</sup> Although the team has a pre-determined weekly schedule of streets and children's dwellings to go to, last-minute schedule changes are made on a daily basis due to unforeseen contingencies. These include new arrivals requesting protection from incumbents and/or longer than expected time spent at a site where too many children needed medical attention, for example. Moreover, because children move about and around quite frequently, encounters between different kids and the mobile team could be labeled as being quasi random.

Deeply rooted in the Samu Social International approach to street life is the idea of helping homeless individuals in need without asking them questions or judging their behavior. To the eye of homeless children, mobile team members are not a threat. On the contrary, they are reliable allies who mitigate street life hardship.

The SSS mobile team, for example, stops at the first sight of a street child experiencing difficulties or at a street children gathering. Each member of the team has a task. The chauffer distributes milk. The medical doctor treats wounds, flues, diarrheas and other (minor) health hazards. The social worker activities include information delivery about potential dangers of sexual activity without adequate protection, and drug abuse, to mention a few. She also informs new arrivals about the rehabilitation facility, taking for granted that all other kids know about it directly because they have been boarders at the center already, or indirectly via peers. Age matters too. The probability of becoming a social worker's target is higher the shorter the time spent on the streets and the younger the child is.

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<sup>7</sup> Dr Emmanuelli is co-founder of "Doctors Without Frontiers". The Samu Social Mobile team was closed in late 1990s due to French government budget restrictions.

<sup>8</sup> On Mondays, the mobile team and the staff working at the rehabilitation center get together to exchange ideas about children found on the streets and the boarders at the rehabilitation center. Decisions with regards to children's needs, and resource allocation are taken at those meetings.

Becoming a boarder at the rehabilitation center is voluntary. Some children seize the opportunity. New arrivals and younger children, in particular, often manage to persuade the social worker that they wish to start a new life off the streets of Dakar, and that are in need of rehabilitation . They also invoke the need to have a mediator to re-insert themselves into a structured social network. The idea of returning to their families, their Daaras, or a vocational NGO is entertained at street gatherings. The content of these conversations are presented by the social worker to the other staff members at their Monday meetings. If consensus is reached about good prospects of helping a particular child’s desire to reinsert himself into a life off the streets, the child is brought to the center by the mobile team. In some instances, the social worker has discretion over taking children directly from the streets to the rehabilitation center in emergency situations, e.g., when a child is starving or critically ill and/or when a needy child requests to be taken to the center immediately. In other instances, street kids come to the center on their own requesting food, shelter, and rehabilitation. Younger children that have never been at the center before stand a higher chance of being admitted.

### III Descriptive Statistics and Identification Strategy

We are interested in three data sets, two of which were gathered by the SSS over the 2003 – 2012 period. First, a database containing over 20,000 data points on interactions between the SSS staff –medical doctor and social worker – with street children in Dakar. This set contains basic information such as the child’s name, an identifier, an approximate age of the child, record and number of encounters with the child and order (first, second, third, etc), and nature of treatment on the street – type of medical treatment, bruises, infections, psychological – and type of orientation by social worker. Second, a dataset containing more detailed information on 3,859 children who have been interviewed by a social worker. This set contains information regarding the children’s ethnicity, country/region of origin, approximate birth date, stated reasons for being on the streets, type of treatment –medical, psychological – and orientation. Table 1 below shows a snapshot of basic information gathered by the SSS on street children in Dakar.

Table 1. Street Children In Dakar 2003 – 2012

	Mean	S.D.	Min	Max	N
Age at first encounter	12.42218	5.517973	.0109589	29.77808	3763
Time in Center	9.093029	56.2658	0	1472	3859
Male	.9122067	.2830314	0	1	3793
Accompanied by parent	.1759523	.3808289	0	1	3859
Koranic school student	.1818182	.3857453	0	1	3806
Fled Koranic school	.1045717	.306041	0	1	3806
N	10860				

Children first encounter mean age with the SSS mobile team is 12 years of age. The mean time spent at the SSS rehabilitation centre is 9 days. A vast



majority – over 90 percent – are male. Approximately 80 percent are found on their own, that is, not accompanied by an adult. Approximately 30 percent are either Koranic school (Daara) boarders or have already fled their Daaras.

The third dataset was originally not in electronic format. The authors gathered the data from the SSS rehabilitation center archives in Dakar. These contained 951 files with detailed data on children treated at the rehabilitation center. The files of 581 children showed the entry and exit dates, presumably of those children that were treated more intensively, i.e., children that boarded for a sufficiently long period of time. Only 291 children or approximately 30 percent over the entire 2003 – 2012 period were recorded as having been successfully rehabilitated. These children were sent back to their families or relatives, to their Daaras, or to a vocational NGO.

These data should in principle suffice to assess the impact that the SSS has on taking the children off the streets of Dakar in order to re-insert them into a structured/ not stigmatized social network. Notice, however, that children that were treated on the streets might have been successfully rehabilitated. We do not have data on those children and using the data from the rehabilitation center alone might be underestimating impact.

In trying to assess SSS overall impact, however, we face two problems. First, those children that are treated on the streets are different from those treated at the rehabilitation center. If we were to compare the two populations, we would need one outcome variable for both. This is a major challenge for we have more detailed data on those children that have been interviewed by the social workers and/or have been treated in the rehabilitation center relative to those children that have been treated less intensively by medical doctors for all kinds of injuries and physical health-related problems only.

One potential solution would be to use as an outcome variable a pre-determined number of months or years that have passed without the SSS mobile team having spotted a particular child on the streets of Dakar since the child was last treated. This approach is not perfect because of obvious reasons. We do not know whether the child has not been spotted again because he was successfully rehabilitated or because other reasons. These include death, incarceration, avoidance of SSS mobile teams, the child having fled from the streets, among other causes. Our partner NGO reports low mortality and incarceration rates, and that children never hide from the SSS mobile teams. Children that are no longer spotted on the street, the SSS declares, are likely to either have found a job or to have re-connected with their family network.

Another solution is to assess impact that the SSS has on rehabilitation via focusing exclusively on those children that were treated at the rehabilitation center, although this might underestimate impact. We nevertheless could, in principle, think that the longer the period of time a child spends in the rehabilitation center the higher the probability of successful rehabilitation. The policy prescription would then be to keep the child at the center for as long as the SSS possibly can. This would however be misleading because it might be that

more time spent at the center could better prepare the children to leave the streets completely. At the same time, some children that are ready to leave the streets and just need a mediator between themselves and a social network might find the center as a useful stepping-stone to reinsertion for a short period of time only. Additional time and resources spent to make sure that the child is in rehabilitation for a longer period of time in the latter scenario would therefore be wasted.

Conversely, suppose we find that the shorter the time spent in the rehabilitation center the higher the re-insertion rate is. This might be because the child is using the rehabilitation center as a pit stop to reconnect himself with society not because the SSS is investing in rehabilitation. This might lead to a policy prescription that directs the SSS into spending less time and resources in the rehabilitation center in order to prepare the children to live a life off the streets. But this will also be potentially misleading.

In short, we face an endogenous problem here. If children decide to go to the center, it might be because they are willing to be rehabilitated, and therefore treatment at the SSS rehabilitation facility has little impact on re-insertion. If they decide to go, and are not willing to be rehabilitated but are successfully re-inserted, treatment at the SSS has a great deal of impact.

While there is not an obvious way of getting around the endogeneity problem, we can use external events, which might make it relatively more attractive for children to go to the rehabilitation center. In what follows we use the weather as the external event or as an instrumental variable. On a particularly rainy day, for example, children might be more prone to go to the SSS rehabilitation center. Rain in Senegal does not fall randomly during the entire year, and it may therefore correlate with other seasonal events. In what follows we nevertheless use rainfall shocks to instrument to estimate the probability of going to the rehabilitation center.<sup>9</sup>

#### **IV Using Rainfall As An Instrument and Results**

We have obtained rainfall data from the NCDC GHCN-daily database in the IRI/LDEO Climate Data Library.<sup>10</sup> The data includes quantitative and qualitative 6-hour precipitation information about the weather. The qualitative data ranges from 0 to 99. It includes categories such as light drizzle and fog. This variable has up to 59 percent missing values. The quantitative variable measures precipitation. This has up to 86 percent missing values. Because the qualitative variable has less missing values than the quantitative one, we regress the former on the latter, and use the qualitative values obtained as our proxy for precipitation.

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<sup>9</sup> Heavy rain in Dakar is generally experienced during the months of July through September. Other seasonal/religious events such as Ramadan, the Korité, or Tabaski might or might not coincide with the rainy season.

<sup>10</sup> <http://iridl.ldeo.columbia.edu/>

The data covers the period from January 2000 to November 2011. In order to construct our measure of extreme rainfall, we further set all precipitation values below one standard deviation from the past 30 days to zero. Our estimated rainfall data is shown in Table 2 below.

We then match extreme rainfall data with the first time the SSS records an encounter with a street child. Our results, controlling for age of the child, and for unaccompanied and Koranic school children, are shown on Table 3 below. Extreme rainfall on the first recorded interaction does a good job at predicting that the child will be at the SSS rehabilitation center a week after the event (first column), but not a month later (second column), a year later (third column) or at any other point in time thereafter (fifth column).

Table 2: Dakar Rainfall Precipitation 2002 - 2011

	Mean	S.D.	Min	Max	<i>N</i>
6-hour precipitation	.0342184	.3325803	0	10.11	3928
Qualitative precipitation	4.027561	15.59044	0	99	69882
Precipitation (fitted)	.0011129	.0189749	0	.4189134	67178
Extreme rainfall	.0057849	.0385787	0	.3399888	10805
<i>N</i>	70000				

Table 3: Extreme Rainfall Effect on Children’s Decision to attend the rehabilitation center

	(1)	(2)	(3)	(4)	(5)
xmaxrainfall60ie1	0.289* (0.162)	0.249 (0.166)	0.282 (0.175)	0.240 (0.189)	-16.05 (24.51)
Constant	0.165*** (0.00611)	0.175*** (0.00625)	0.203*** (0.00661)	0.250*** (0.00712)	8.830*** (0.924)
Observations	3,804	3,804	3,804	3,804	3,804
R-squared	0.001	0.001	0.001	0.000	0.000

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

These results provide evidence that extreme rainfall does affect a child’s decision to go the rehabilitation center initially, which is a necessary condition for it to be a good instrument. Extreme rainfall, however, neither affects the child having been at the center at all nor the time the child has spent at the center. We interpret this result as the weather having a short-term boost to the center’s attendance by children seeking shelter.

In order for the exclusion restriction to hold, it must be that extreme rainfall only affects our outcome variable through its effect on center attendance. This is a reasonable assumption. In particular, by focusing on extreme rainfall we are ensuring that the shocks are random or unexpected short-term events. It can be argued that an extreme rainfall event may trigger a child’s decision to attend the rehabilitation center, which would affect our outcome variable and our exclusion restriction. Note that we are however capturing extreme rainfall at the first encounter between the SSS and a child, which is a random event in its own right because of two reasons. First, and as we have already mentioned above, street children are highly mobile. Second, also explained above, because the SSS mobile team scheduled trajectories change quasi randomly. The shock we are focusing on is therefore a random sample of extreme rainfall – related events that street children experience in Dakar.

Is extreme rainfall a good predictor of whether the child will be seen on the streets of Dakar again a year later? Table 4 below shows that it isn’t. In particular, extreme rainfall does not predict that a child will not be seen on the streets again a week or a year later. In particular, the fitted values are statistically insignificant in all cases.

Table 4: Predicting Street Children Not Being Spotted Again in Dakar Streets

	(1)	(2)	(3)	(4)
In center a week later		-0.357 (0.672)		
In center a year later	-0.365 (0.704)			
Time in center			0.00642 (0.0144)	
Was in center				-0.430 (0.909)
Constant	0.315** (0.144)	0.300*** (0.112)	0.184 (0.126)	0.348 (0.229)
Observations	3,804	3,804	3,804	3,804

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## V Discussion

Had we found statistically significant results above, the natural way to proceed would have been to double-check on whether the SSS data was accurate as a robustness check. Ideally, the data we have could be reproduced. This is impossible, however, if only because we cannot turn the clock back. Reproducing data generating process on this particular population for the 2003 – 2011 period is simply unfeasible. Moreover, we do not believe that there is any NGO in the world with a clear mission to support/offer relief to street lives of children in need in the least intrusive manner, which can possibly gather reliable data. This is impossible. Not on an a highly elusive population like the one we have been dealing with in this article.

But let us go back to our original question: What impact does the SSS rehabilitation center has on pulling the children out of the streets? To answer this question in a more precise manner we would need exact identification of street children by the SSS ambulance team day and night. Our observation is that the SSS team daily route is quasi random – as explained above. In particular, a pre-determined trajectory is systematically interrupted by recurrent emergencies – many are medical. Children are on the other hand highly mobile. A child found in one site on a particular night might be found at another site a different night. And, during the day, kids move across the city seeking the most

profitable locations, which are different within a day, during the week, and are always changing across seasons as well.

To request that the NGO conducts random visits is simply not feasible for at least two reasons. First, one of the principal objectives of the NGO is to gain the children's trust. If a particular child request to see the social worker/psychologist at a follow-up appointment, the best the social worker can do to honor her word and gain the child's trust, is to arrange an appointment around a particular night and location, e.g., a Tuesday or a Wednesday next week between 8 pm and 2 am. The child's request might be random, but if the NGO fails to turn up, it loses the trust/credibility of the child and his peers. Children's trust is a valuable asset for the SSS. Visits to certain sites therefore cannot be completely random unless the entire philosophy of the organization changes, which is not going to happen.

Second, record keeping of the kids found on the streets is done manually at present. The scope for error is high relative to electronic record-keeping of children's identities via latest-state-of-the-art technology such as fingerprints. Imposing on the SSS mobile teams to carry finger scanners is simply impossible, for it once again contravenes the non-intrusive nature of street support and interventions that are very close to the mission statement and philosophy of the SSS. Similarly, installation of GPS devices to track children down can be detected by children who might feel intimidated and betrayed. Recall that children's trust is the most valuable asset the SSS has, and it will not be willing to risk it.

Third, assuming that the NGO was willing to conduct random visits and that scanners, finger printings, GPS devices, and even urine and saliva samples can be taken to test for whether the children are on drugs and measure health outcomes, ensuring that this particular population would be willing to participate in researchers' efforts is idealistic at best a complete waste of resources at worse. We will inevitably end-up with a sample selection bias: Children who are willing to participate in the study will be those that are not petty criminals, are not in drugs and/or are willing to lead a life off the streets. Impact will be largely overstated.

Fourth, let us suppose that a system of rewards can be designed to entice children to participate in the research project. The rewards must be different – probably depending on age and time spent on the streets. But let us assume for the sake of argument that a reward scheme is well designed so as to warrant a high take up rate. To avoid an scenario where the kids will simply take the money and run, we should be able to promise a pre-determined post rehabilitation reward. Since the NGO cannot enforce post rehabilitation re-insertion, kids might be tempted to remain in the rehabilitation premises for as long as it takes to get the reward and then return to the streets once the reward has been granted. Again, to follow-up on children who have been boarders at the center under a system of rewards will be difficult at best impossible at worse. Moreover, the NGO cannot credibly commit itself to punish children who return to the streets.

## VI Concluding Remarks

Fleeing from dysfunctional families and harsh living conditions in religious boarding schools to the streets is tempting. Qualitative interviews with the kids and NGO staff suggest that the payoff from freedom on the streets largely offsets the street life hardship at early stages in those children's life cycle.

Our field work in Senegal and the results obtained from the data we have, suggest that street life is a vice. This is our interpretation, which accords well with qualitative interviews in situ. Past consumption of street life or long street time spells reinforces consumption. This offers an explanation of the NGO bias in favor of young and new arrivals. At the same time, we have seen that the percentage of successfully rehabilitated children is exceedingly low suggesting that even new arrivals might find it difficult to surrender street vice freedom and peer pressure.

Our empirical investigation suggests that children's decision to attend the rehabilitation center might be prompted by weather conditions. Shelter during a particular period of the year where heavy rain is unbearable seems to increase the probability that a street child will go to the rehabilitation center. But extreme weather does not explain that the child will not be seen on the streets of Dakar again a year later.

We take SSS practitioners suggestions seriously. If incarceration and death rates are indeed low because street children develop immunity to infectious diseases and extraordinary skills to avoid trouble and prisons, what happened then to those kids who seemed to have disappeared from the streets of Dakar? The NGO argues that those children might have either returned to their family or religious networks, or have found a job. And because tracking this particular population of young migrants is impossible, gaining perspective via looking at context-specific Sub Saharan city like Dakar might help.

Our conjecture is that many street children at adolescence and early adulthood find a job in the informal sector. A comprehensive study by Sigrid Colnerud Ganström (2009) from Lund University in Sweden, for example, reports that an astonishing 74 per cent of the male labor force in Dakar is self-employed, most of it in services. Moreover, up to 14 percent of informal employees are reported as being unpaid –probably they are simply fed, sheltered and gain on-the-job experience as trainees. The fixed cost incurred for setting-up informal sector activities, on the other hand, are presumably low, and we would not be surprised if such activities are within reach of former street children.

We think that street children in the context of Sub Saharan cities might lose tolerance for street life at late adolescence during their street life cycle. At young age - when they inspire pity and are not perceived as a threat - maintaining street life vice is relatively costless. As they grow older and become increasingly stigmatized, they lose tolerance, and join the informal sector, which is those children's fall back option.

Notice that while the SSS, except for rare occasions, might fulfill its re-insertion mission, the temporary relief it offers to children's harsh living conditions on the street is nevertheless extremely important. Milk distribution, medical doctor interventions for pain relief and other injuries, psychological support, and the option of shelter at the rehabilitation center can undeniably mitigate the perils of street life vice and avoid high morbidity. Assessing the impact that the SSS has on health outcomes is however a huge challenge, which we think it would be worth taking up in future research.

Our view on street life as a vice at early stages in the life cycle deserves further scrutiny. Forgoing human capital accumulation and generating negative externalities in developing countries cities has negative welfare implications. The extent of the loss incurred by society due to wasted talents and negative externalities is difficult to assess, and also worth exploring in future research.

Peer effects may play an important role. Our conjecture is that the larger the number of kids on street vice, the more tempting it becomes for a child to find the street as an attractive place to live and earn a living. We also think that street life becomes bearable when the size of the informal sector is large. The longer the time street children are willing to stay on the vice, the quicker a no – tolerance threshold is reached. At this point, children cognitive abilities and life expectancy might hinder their ability to be as productive as they would have otherwise been had they gotten off the vice earlier. But in the Senegalese society, there seems to be no incentive to get off the vice earlier. Children beg and inspire pity at young ages. It is deeply rooted in Senegalese culture to give money and/or food to those young children. Street life vice is therefore attractive at young ages. But street life ceases to be consumed once it becomes exceedingly costly. Age seems to be street vice worse enemy. We leave this and street trap vice ideas in developing countries for futures research. A different NGO in a different country might deliver different economic insights.

Current work on street children in Bogotá, for example, offers a promising venue for studying street children vice more rigorously. Those children are petty criminals that are caught by the Colombian police. The police objective is to catch street children off guard and send them to a rehabilitation center where children remain for two years. Children are basically imprisoned. And against their will, they must obey orders, and attend school in the prison/rehabilitation center.

While we hope to learn a great deal about street children when they are incarcerated, we remain equally skeptical about measuring impact when impact is proxied by re-insertion rates. Tracking down kids that have been under street vice after rehabilitation is and will remain mayor challenge. We believe that this challenge is even greater in the case of Colombian children who, relative to Senegalese children, have a higher exposure to drug dealing and violence since very early age, and returns to violent gangs after rehabilitation at adulthood can be tempting.



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