Estimation of Homeless Children Across Seven Cities in Cambodia
Foreword

It is our great pleasure to officially release the final results of the Estimation of Homeless Children in Cambodia, which were conducted over a four-week period between August and September 2015. Data were collected in seven cities across seven provinces. This is the first known study to apply a statistically rigorous method to simultaneously estimate the number and profile of homeless children in all major urban areas in a country.

The study findings demonstrate that, with innovative methods, it is feasible to collect data on a hard to reach population. The results also document the specific risks of homeless children in Cambodia and provide important information for practitioners and policymakers committed to strengthening Cambodia’s child protection efforts with regards to vulnerable children.

Many organizations and individuals contributed to this endeavor. This report was prepared by (in alphabetical order): Jarrett Davis (Friends International), Sok Kosal (National Institute of Statistics, Ministry of Planning), Kimchoeuon Pak (Moulatham Consulting), Beth Rubenstein (Columbia University), Lindsay Stark (Columbia University) and Rosemary Taing (Friends International). Sections of the report were reviewed by Ros Sokha and Oum Sophannara (Ministry of Social Affairs, Veterans and Youth Rehabilitation) and Bruce Grant (UNICEF Cambodia).

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In addition to the financial and/or in-kind support of the Program on Forced Migration and Health, Mailman School of Public Health, Columbia University, which houses the Child Protection in Crisis Learning Network, we would also like to thank our international collaborators: Richard Rinehart, John Williamson, Leslie Roberts, Saeed Rahman, Anjoli Anand, Christian Larsson, David Whitford, Gary Yu and Neil Penman, as well as our in-country partners, especially the National Institute of Statistics (Ministry of Planning), David Harding and Friends International, and all members of the Technical Working Group (Ministry of Social Affairs, Veterans and Youth Rehabilitation, Ministry of Interior, Ministry of Labour, UNICEF Cambodia, Cambodian National Council for Children, USAID Cambodia and Global Alliance for Children). Finally, we would like to express our special gratitude to the implementing organizations in the Cambodian Street Child Network such as Mith Samlanh (Phnom Penh), Kallyan Mith (Siem Reap), Damnoe Toek (Poi Pet and Neak Leoung), Komar Rikreay (Battambang), M’lop Tapang (Preah Sihanouk) and Buddhism for Social Development Action (Kampong Cham) and, most importantly, to the children and families who participated in the study.

Photos were taken by Beth Rubenstein and Lindsay Stark. All children consented to being photographed.

Delegate of the Royal Government of Cambodia
In Charge of Director General
National Institute of Statistics

Dean of the Mailman School of Public Health
at Columbia University

Hang Lina
Phnom Penh
July 2016

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New York
July 2016
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OVERVIEW

The Royal Government of Cambodia considers the protection of vulnerable children a cornerstone of the country’s social and economic development. Recently the government has made a commitment to invest in initiatives focused on supportive family care for vulnerable children, including homeless children. However, before rolling out the programs associated with this initiative, collecting baseline data on the numbers of homeless children was prioritized to illuminate the scope of the issue, mobilize resources and direct the response.

This report describes the methodology and findings from an estimation of homeless children in seven major cities in Cambodia. Children were classified as homeless if they were under 18 years of age and always or sometimes lived on the street, in emergency shelters, in public places, or in insecure or improper housing. Data were collected in 15 urban zones across seven cities in seven provinces. To our knowledge, this is the first time statistically rigorous methods have been applied to a homeless estimation of this scale in a resource-limited setting.

The work was led by the National Institute of Statistics (NIS) within the Ministry of Planning. Friends International implemented the data collection through the Cambodia Street Children Network, consisting of the following orga-
organizations: Mith Samlanh, Kaliyan Mith,Damnok Toek, Komar Rikreay, M’lop Tapang and Buddhism for Social Development Action. Technical support was provided by Columbia University (CU) in the United States and Moulathan Consulting (MLT) in Cambodia. The project was also guided by a technical working group, which included members from the Ministry of Social Affairs, Veterans and Youth Rehabilitation (MoSVY), the Ministry of Interior, the Ministry of Labour and Vocational Training, UNICEF Cambodia and the United States Agency for International Development (USAID). USAID provided funding for the project, via John Snow International (JSI).

**KEY FINDINGS**

- We estimate there are at least 4,086 homeless children under 18 across the seven cities where data was collected. This estimate covers all the major hotspots in Cambodia where homeless children are known to reside.
- There are large numbers of homeless children, such as children living on construction sites, who are mostly hidden from outreach workers. The magnitude of vulnerable children requiring social services may exceed current capacity.
- Across all zones combined, 56.40% of the children counted were male and 43.60% were female.
- The mean age was 7.98 years overall, but on average, boys were one year older than girls (8.43 years versus 7.39 years).
- Parents were reported to be the primary caregivers for 83.66% of 13-17 year olds interviewed, and most other children outside of parental care reported being cared for by other family members.
- Despite some level of school attendance in more than half of the 13-17 year olds, literacy was poor. Only about one third of the children could fully read the simple sentences presented to them (32.19%), and one third of the children could not read at all (33.33%).
- In terms of work, 29.75% of 13-17 year olds reported working five or more hours per day on five or more days per week.

**NEXT STEPS**

- The intention is to repeat this estimation exercise in approximately three years in order to gauge Cambodia’s progress towards meeting its stated goal to reduce the total number of homeless children.
2. Background

“Leave no one behind” is one of the central guiding principles of the recently released post-2015 global development agenda. The international community is increasingly embracing the importance of inclusiveness and equity in policies and programming. At the same time, however, actors are recognizing that the global monitoring framework lacks mechanisms to assess the most vulnerable and hard to reach populations. For example, it is estimated that household surveys such as DHS and MICS may overlook up to a quarter of the poorest wealth quintile (Carr-Hill, 2013). Many of these missing millions are children who are homeless or migrants living in improper housing, such as in construction sites or in urban slums. Some of these children have loving families who struggle to provide adequate care. Other children are exploited by their families or other caregivers to engage in dangerous work. Still others have no adult caregivers at all.

Insufficient data on homeless children impedes efforts to adequately understand and serve this population.

The data that are available indicate that children who lack a safe, stable and protective home face a multitude of risks. Childhood adversity and extreme poverty are associated with toxic levels of stress which impede proper physical, intellectual and emotional growth. Children living on the street may also be susceptible to substance abuse, gang membership or commercial sex work (Nada & El Daw, 2010). Their food security is often precarious and many do not attend school (Verma, 2013). Scientific evidence about the specific impact of living on the street
is limited, but some studies suggest that homeless children experience more common illnesses and have unique risks, such as drug abuse, compared to children living in homes (Anarfi, 1997; Ayaya & Esamai, 2001). Furthermore, the disadvantages of childhood adversity do not fade with time. As children who experience toxic stress in early life become adults, they are more likely to have poor health and limited productivity, compared to children who do not experience toxic stress (Anda et al., 2006; Felitti et al., 1998).

The Royal Government of Cambodia considers the protection of vulnerable children a cornerstone of the country’s social and economic development. Recently the government has made a commitment to invest in initiatives focused on supportive family care for vulnerable children, including homeless children. However, before rolling out the programs associated with this initiative, collecting baseline data on the numbers of homeless children was prioritized to illuminate the scope of the issue, mobilize resources and direct the response.

This report describes the methodology and findings from an estimation of homeless children in seven major cities in Cambodia.

To our knowledge, this is the first time statistically rigorous methods have been applied to a homeless estimation of this scale in a resource-limited setting. While Friends International and its partners in the Cambodia Street Children Network conduct annual snapshots of street children, these snapshots primarily describe the profile of children receiving services and do not include statistical measures to assess the completeness of the count. In contrast to the snapshots, this exercise sought to estimate the total number of homeless children in selected cities in Cambodia, including children who may not be visible to service providers.

The work was led by the National Institute of Statistics (NIS) within the Ministry of Planning. Friends International implemented the data collection through the Cambodia Street Children Network, consisting of the following organizations: Mith Samlanh, Kaliyan Mith, Damnok Toek, Komar Rikreay, Cambodian Children’s Trust, M’lop Tapang and Buddhism for Social Development Action. Technical support was provided by Columbia University (CU) in the United States and Moulathan Consulting (MLT) in Cambodia. The project was also guided by a technical working group, which included members from the Ministry of Social Affairs, Veterans and Youth Rehabilitation (MoSVY), the Ministry of Interior, the Ministry of Labor, UNICEF Cambodia and the United States Agency for International Development (USAID). USAID provided funding for the project, via John Snow International (JSI).
3. Methods

**SAMPLING**

Sampling zones were purposively selected to cover urban areas known to have homeless children. Identification of cities with homeless children was primarily determined based on key informant interviews with Friends International and other NGOs in the Cambodia Street Children Network, as well as district-level MoSVY representatives. NGO program data were also reviewed. In Phnom Penh, selection was done at the khan level and elsewhere, selection was done at the district level. All selected zones are listed below (see Table 1 and Figure 1). Within the selected zones, data collectors created maps to identify key sub-areas to visit and count children. All homeless children encountered in a given zone were enumerated.

**INCLUSION CRITERIA**

**TABLE I: List of Sentinel Zones by Province**

<table>
<thead>
<tr>
<th>Province</th>
<th>District or khan*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banteay Meanchey</td>
<td>Krong Poi Pet</td>
</tr>
<tr>
<td>Battambang</td>
<td>Battambang Komrieng</td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>Kampong Cham</td>
</tr>
<tr>
<td>Prey Veng</td>
<td>Krong Prey Veng Peam Ro Svay Antor</td>
</tr>
<tr>
<td>Preah Sihanouk</td>
<td>Preah Sihanouk</td>
</tr>
<tr>
<td>Phnom Penh</td>
<td>Chamkar Mon Chbar Ampov Doun Penh Prampir Meakkara Russei Keo Tuol Kouk</td>
</tr>
<tr>
<td>Siem Reap</td>
<td>Siem Reap</td>
</tr>
</tbody>
</table>

*Khans are for Phnom Penh only*
Estimation of homeless children is complicated by the definition of homeless. For example, despite the fact that most outsiders would classify them as homeless, children who sleep in a shelter made of plastic tarps may not identify as homeless. Other children who are not homeless, but who work on the street to earn income on a daily basis, are often mistakenly classified as street-living by observers. In our study, children were classified as homeless if they were under 18 years of age and, during the week preceding data collection, they always or sometimes lived on the street, in emergency shelters or in public places, including construction sites (according to self-report).

In addition, children living in dwellings with daily rent were included on the basis that the risk of eviction in these situations was extremely high. Children were also classified as homeless if they slept in dwellings that did not offer approximately 3.5 square meters of covered space per person and did not provide basic protection from the elements (Red Cross & Red Crescent, 2011).

Insufficient protection from the elements was operationalized to mean two or more walls made out of makeshift plastic sheeting.

Boat-living children were included based on the size of the living space and the adequacy of the construction, as previously defined. (See Figure 2 for examples of housing that met the inclusion criteria for the study.)

The inclusion criteria were established based on international standards, field observations, and extensive conversations with NGO outreach workers and members of the inter-agency technical working group guiding the project. The criteria were discussed until consensus was reached. Of note, all criteria were only applied to urban areas; inclusion criteria in rural areas may differ. Furthermore, the criteria were based on the adequacy of children’s current living situation. Therefore, children who may have proper homes in rural areas, but who had migrated to cities, were evaluated based on their current living situation in the city.

STUDY DESIGN

Due to ethical considerations in collecting identifying information from young children (discussed in more detail in the following section), different procedures were implemented for children under 13 years of age, compared to children 13-17 years of age.

For children under 13 years of age, enumerator pairs were assigned to cover sub-areas within a given sentinel site over the course of one full day (early morning through night, up to 9pm). Within these sub-areas, the
FIGURE 2: Examples of Housing that Met Inclusion Criteria for the Study
enumerators approached any child thought to meet the inclusion criteria and asked the child to describe his or her housing situation. If the child was considered homeless, the child’s sex and age were also recorded. In the case of very young children, this information was gleaned from older children or caregivers. To avoid duplicate counting, all children (or children’s caregivers) were shown a unique cartoon. If the child or caretaker told the enumerator that s/he had already been shown the same cartoon earlier in the day, the child was not counted again.

For 13-17 year old children for whom identifying information could be collected, a more detailed multi-staged methodology was designed to enable statistical estimates of completeness.

First, two separate teams of enumerators conducted two independent counts of all homeless children, ages 13-17, in each sentinel site.

The counts were conducted on two separate, full days (early morning through night). The reason for the two counts was to use the overlap between counts to approximate the extent to which the first count may have missed children (i.e. by matching the same children identified in both counts). This technique is known as capture-recapture (Stephen, 1996; Lum et al., 2013).

The minimum age of 13 years was selected based on extensive conversations with social workers in Cambodia who work with the target population and regularly observe children’s decision-making skills in action. The minimum age of 13 was also consistent with another recent survey of children in Cambodia (Ministry of Women’s Affairs, UNICEF Cambodia, & US Centers for Disease Control and Prevention, 2014). Furthermore, the process used for determining eligibility is consistent with current international recommendations, which state that adolescents’ ability to meaningfully participate in the consent process is informed by their cultural and experiential context (Alderson, 2007; Petersen & Leffert, 1995). Given the independence and responsibility required of homeless children, it is within accepted reason to argue that adolescents in these situations are mature minors capable of making informed choices (Ritterbusch, 2012).

Second, individual interviews were conducted with all street-living children between 13 and 17 years of age to gather data on children’s circumstances, including schooling, literacy, health, caregiver status and general well-being.

Data collection took place over a four-week period between August and September 2015. All data was collected electronically using the Field Task application for smartphones (Penman, 2015).

**ETHICAL CONSIDERATIONS**

Recognizing the sensitivity of implementing a system that seeks to collect data from vulnerable children, the team spent considerable time and effort designing protocols and supports to protect the children involved in the estimation. Eligibility for collection of identifying information and direct participation in interviews and was therefore restricted due to concerns regarding the capacity of children under 13 to completely understand the possible risks and benefits of consenting to the collection of personal information. This was of particular concern for children who have no adult guardian to consent on their behalf. (Children under 13 were counted, but because only their age and sex were recorded, consent was not required.)

To ensure confidentiality of the identifiable data (e.g., names), data were only accessible to research team leads on a password-protected server. All identifying information was deleted after matching was complete.
Still, despite these precautions, there remained a small risk that confidentiality would be breached, hence the requirement of informed consent and the restriction against participation by children under 13 years of age. Raids and arrests of street-living children regularly occur in Cambodia and therefore breaches of confidentiality could have serious consequences for this population.

All data collectors were hired through partnerships with local NGOs and thus already had substantial experience working with vulnerable children prior to this study. In addition, regardless of prior experience, all data collectors received training on child protection as part of the study procedures. Specific referral protocols were established for data collectors to follow if they encountered a child who was in danger or asked for help, and these protocols were codified in a statement signed by all data collectors. All children who were encountered were given a small snack whether or not they consented to participate in the research.

Ethical approval was obtained from the Institutional Review Board at Columbia University (AAAP2507), as well as the Cambodian National Ethics Committee. Both committees agreed with the procedures described above.

TRAINING

NIS, Columbia University, Friends International and MLT Consulting co-led a three-day training-of-trainers in Phnom Penh for 14 supervisors from seven provinces. All supervisors had prior experience working with vulnerable children, but most supervisors had limited experience with data collection. The first two days of the training focused on an introduction to the project, inclusion criteria, capture-recapture methods, and preliminary mapping of sentinel districts, as well as substantial practice using the smart phones for electronic data collection. Time was also devoted to a discussion of child protection and ethics. This discussion culminated in all participants signing a copy of the Friends International child protection policy. The third day of the training involved field practice in Phnom Penh outside of the sentinel districts. All supervisors practiced data collection in two separate areas to simulate capture-recapture.

Upon completion of the training-of-trainers course, supervisors returned to their provinces to lead a four-day training for local enumerators from their organizations. During the provincial-level trainings, supervisors were accompanied by a representative from Columbia University and MLT Consulting for technical support. The provincial trainings covered the same material as the training-of-trainers, with the addition of one extra day for a detailed mapping of the sentinel districts to be visited. All participants were regularly evaluated throughout the trainings and any areas of misunderstanding were corrected prior to data collection. A total of 152 local enumerators were trained.

STATISTICAL ANALYSIS

Chi-squared tests and t-tests were used to compare the characteristics of male and female children and younger and older adolescents. For capture-recapture, the final estimate was calculated by multiplying the first count of 13-17 year old children by the second count of 13-17 year old children, and then dividing this product by the number of matched respondents. For the purpose of this study, matching was achieved by comparing the following variables for 13-17 year old children: family name, given name, nickname, sex, age, parents’ names and province of origin.

All descriptive statistics were calculated using R computing software (R Core Team, 2015) and SAS 9.4 (SAS Institute, 2013). Matching was conducted using the CRAN RecordLinkage package in R.
4. Findings

After capture-recapture adjustment, the study yielded an estimate of 2,697 homeless children ages 13-17 across all seven cities where data collection was conducted. An additional 1,389 homeless children under 13 years of age were counted directly on a single day, indicating there are at least 4,086 homeless children under 18 across the seven cities where data was collected.

These estimates cover all the major hotspots in Cambodia where homeless children are known to reside.

The areas with the largest numbers of children counted were Krong Poi Pet (Banteay Meanchey), Chbar Ampov (Phnom Penh), Preah Sihanouk (Preah Sihanouk), Doun Penh (Phnom Penh) and Siem Reap (Siem Reap). The areas with the smallest numbers of children counted were Tuol Kouk (Phnom Penh), Krong Prey Veng (Prey Veng) and Svay Antor (Prey Veng). In almost all areas, there were more males than females, though this difference was not always statistically significant, partially owing to small sample sizes (see Table 2).

### TABLE 2: Numbers of children counted by province and district/khan, all ages (n=1,766)

<table>
<thead>
<tr>
<th>province</th>
<th>district or khan</th>
<th>all</th>
<th>male</th>
<th>female</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banteay Meanchey</td>
<td>Krong Poi Pet</td>
<td>338</td>
<td>180</td>
<td>158</td>
<td>0.0906</td>
</tr>
<tr>
<td>Battambang</td>
<td>Battambang</td>
<td>99</td>
<td>49</td>
<td>50</td>
<td>0.8870</td>
</tr>
<tr>
<td></td>
<td>Komrieng</td>
<td>47</td>
<td>31</td>
<td>16</td>
<td>0.0002</td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>Kampong Cham</td>
<td>79</td>
<td>49</td>
<td>30</td>
<td>0.0025</td>
</tr>
<tr>
<td>Phnom Penh</td>
<td>Chamkar Mon</td>
<td>89</td>
<td>54</td>
<td>35</td>
<td>0.0044</td>
</tr>
<tr>
<td></td>
<td>Chbar Ampov</td>
<td>313</td>
<td>163</td>
<td>150</td>
<td>0.2987</td>
</tr>
<tr>
<td></td>
<td>Doun Penh</td>
<td>184</td>
<td>104</td>
<td>80</td>
<td>0.0123</td>
</tr>
<tr>
<td></td>
<td>Prampir Meakkara</td>
<td>72</td>
<td>45</td>
<td>27</td>
<td>0.0027</td>
</tr>
<tr>
<td></td>
<td>Russei Keo</td>
<td>71</td>
<td>47</td>
<td>24</td>
<td>0.0001</td>
</tr>
<tr>
<td></td>
<td>Tuol Kouk</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1.0000</td>
</tr>
<tr>
<td>Preah Sihanouk</td>
<td>Preah Sihanouk</td>
<td>261</td>
<td>153</td>
<td>108</td>
<td>0.0001</td>
</tr>
<tr>
<td>Prey Veng</td>
<td>Krong Prey Veng</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>0.1088</td>
</tr>
<tr>
<td></td>
<td>Peam Ro</td>
<td>26</td>
<td>19</td>
<td>7</td>
<td>0.0009</td>
</tr>
<tr>
<td></td>
<td>Svay Antor</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>0.5271</td>
</tr>
<tr>
<td>Siem Reap</td>
<td>Siem Reap</td>
<td>171</td>
<td>92</td>
<td>79</td>
<td>0.1597</td>
</tr>
<tr>
<td>All areas</td>
<td></td>
<td>1,766</td>
<td>996</td>
<td>770</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
Across all areas combined, 56.40% of the children were male and 43.60% were female. The mean age was 7.98 years overall, but on average, boys were one year older than girls (8.43 years versus 7.39 years). The older age of boys was also apparent when age was analyzed categorically, with 25.10% of boys falling into the 13-17 year old age category, compared to only 15.99% of girls (see Table 3).

Also of note, after adjustment, the relative size of the 13-17 year old homeless populations in each area changed compared to before adjustment. For example, relative to other areas where data were collected, Siem Reap ranked fifth in size when using the direct count data for all age homeless children (see Table 2). However, when the population of 13-17 year olds in each area was adjusted based on the capture-recapture method, Siem Reap became the area with the largest number of homeless 13-17 year old children (see Table 4). This finding is consistent with Siem Reap’s high match rate in the capture-recapture study.

These findings suggest that the population of homeless children is significantly larger than enumerators were able to document on either of the individual counts.\(^1\)

\(^1\) Note that capture-recapture was not performed in areas with fewer than 25 children across both counts due to concerns about the precision of the match rate in such settings.

### Table 3: Characteristics of children counted all ages (n=1,766)

<table>
<thead>
<tr>
<th></th>
<th>all</th>
<th>male</th>
<th>female</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>sex</td>
<td>—</td>
<td>56.40%</td>
<td>43.60%</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5 years</td>
<td>27.54%</td>
<td>25.10%</td>
<td>30.69%</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>5 to &lt;9 years</td>
<td>27.60%</td>
<td>26.31%</td>
<td>29.26%</td>
<td></td>
</tr>
<tr>
<td>9 to &lt;13 years</td>
<td>23.74%</td>
<td>23.49%</td>
<td>24.06%</td>
<td></td>
</tr>
<tr>
<td>13 to &lt;18 years</td>
<td>21.12%</td>
<td>25.10%</td>
<td>15.99%</td>
<td></td>
</tr>
<tr>
<td>mean age, years (SD)</td>
<td>7.98 (4.57)</td>
<td>8.43 (4.72)</td>
<td>7.39 (4.31)</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

### Table 4: Numbers of children by province and district/khan, 13-17 year olds (capture-recapture)

<table>
<thead>
<tr>
<th>province</th>
<th>district or khan</th>
<th>count 1</th>
<th>count 2</th>
<th>matches</th>
<th>adjustment factor</th>
<th>total estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banteay Meanchey</td>
<td>Krong Poi Pet</td>
<td>55</td>
<td>48</td>
<td>5</td>
<td>11.56</td>
<td>636</td>
</tr>
<tr>
<td>Battambang</td>
<td>Battambang</td>
<td>19</td>
<td>16</td>
<td>2</td>
<td>9.95</td>
<td>189</td>
</tr>
<tr>
<td></td>
<td>Komrieng</td>
<td>11</td>
<td>20</td>
<td>3</td>
<td>9.73</td>
<td>107</td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>Kampong Cham</td>
<td>22</td>
<td>19</td>
<td>4</td>
<td>6.82</td>
<td>150</td>
</tr>
<tr>
<td>Phnom Penh</td>
<td>Chamkar Mon</td>
<td>19</td>
<td>9</td>
<td>5</td>
<td>3.53</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>Chbar Ampov</td>
<td>52</td>
<td>39</td>
<td>10</td>
<td>5.85</td>
<td>304</td>
</tr>
<tr>
<td></td>
<td>Doun Penh</td>
<td>31</td>
<td>20</td>
<td>4</td>
<td>6.77</td>
<td>210</td>
</tr>
<tr>
<td>Preah Sihanouk</td>
<td>Preah Sihanouk</td>
<td>49</td>
<td>25</td>
<td>4</td>
<td>7.84</td>
<td>384</td>
</tr>
<tr>
<td>Siem Reap</td>
<td>Siem Reap</td>
<td>24</td>
<td>25</td>
<td>1</td>
<td>27.08</td>
<td>650</td>
</tr>
<tr>
<td>All areas</td>
<td></td>
<td>282</td>
<td>221</td>
<td>38</td>
<td></td>
<td>2,697</td>
</tr>
</tbody>
</table>

\(^1\) Note that capture-recapture was not performed in areas with fewer than 25 children across both counts due to concerns about the precision of the match rate in such settings.
Reap's position as Cambodia's tourist epicenter. The rapidly growing tourism industry exerts substantial pull on the largely poor, rural population from the surrounding areas, many of whom migrate to the city to pursue work.

In examining the characteristics of the 569 adolescents interviewed (response rate=96.30%), there were several striking findings (see Charts 1–11). Almost all 13-17 year old homeless children reported having at least one parent alive (97.51% of children). Furthermore, parents were reported to be the primary caregivers for 83.66% of 13-17 year olds (79.78% for males and 90.59% for females), and most other children outside of parental care reported being cared for by other family members. Very few children reported having no adult caregiver (3.02%), but amongst those 13-17 year olds in this situation, all of the children were male. Not having an adult caregiver was also more common amongst older adolescents (15-17 years), compared to younger adolescents (13-14 years) (5.06% versus 1.53%).

About half of the 13-17 year old children attended school on a daily basis (49.73%), with girls attending school significantly more regularly than boys. School attendance decreased as children got older. Still, despite some level of school attendance in more than half of the children...
interviewed (62.34%), literacy was poor. Only about one third of the children could fully read the simple sentences presented to them (32.19%), and one third of the children could not read at all (33.33%). Again, girls’ literacy was significantly better than boys’ literacy.

In terms of work, 29.75% of 13-17 year olds reported working five or more hours per day on five or more days per week.

The percent of children doing this amount of work differed significantly for older adolescents (42.01%) compared to younger adolescents (20.86%), but did not differ significantly for boys (32.33%) compared to girls (25.26%). In contrast to work, only 6.60% of children reported a heavy burden of chores (five or more hours per day on five or more days per week). The percent of children doing this amount of chores did not differ by age or across boys and girls. One in four children reported that work or chores sometimes or always interfered with their schooling (25.15%) and nearly one in three children reported that work or chores sometimes or always interfered with their sleep (31.43%). Interference with schooling and sleep was significantly more common for boys, compared to girls.

In terms of health and safety, in the 30 days prior to being interviewed, 13.14% of 13-17 year old children reported being unable to work, study or do chores due to injury and 29.14% of children reported being unable to work, study or do chores due to illness. Rates of illness were similar between boys and girls, but rates of injury were slightly higher amongst boys compared to girls (15.57% versus 8.90%). When asked to assess their own sense of safety and trust, 10.48% of children said that they did not feel at all safe where they lived and 8.38% of children said that they did not have any trust in the adults with whom they interact. Older adolescents were significantly more likely to feel unsafe, compared to younger adolescents (14.86% versus 7.26%).
5. Learning and Implications

METHODOLOGICAL STRENGTHS

Globally, this is the first known study to attempt to apply a robust method to simultaneously estimate homeless children in all of the major urban areas within a country. Application of capture-recapture methods to the estimation of street children is relatively new. The research in Cambodia builds on recent work to estimate the population of street children in Brazil and Malawi using similar methods (Bezerra, Gurgel, Ilozue, & Castaneda, 2011; Gurgel, Da Fonseca, Neyra-Castaneda, Gill, & Cuevas, 2004; Retrak, 2015).

Our findings, combined with the findings from Brazil and Malawi, demonstrate that capture-recapture can be feasibly carried out to measure homeless children in a range of settings.

An additional strength of this study is the use of clear inclusion criteria to define homeless children. Although the criteria diverge somewhat from commonly understood notions of street-living or street-working children, by focusing on children’s housing situations as opposed to their daily activities (e.g., panhandling), this study is able to better target those children who are otherwise missed by household surveys. Furthermore, the housing-related inclusion criteria also facilitated the recognition of new populations of vulnerable children, such as children living on construction sites, who may not have been known to NGOs yet are in need of social services.
Finally, having outreach workers serve as supervisors and enumerators was invaluable. Not only were the outreach workers intimately familiar with the local geography, but they also were able to establish special trust and rapport with the children and families that were approached, as reflected by the response rate of 96.30% for the interviews.

**POLICY IMPLICATIONS**

The estimation findings provide important information for practitioners and policymakers in Cambodia. First, the areas with the highest numbers of homeless children all contained major cities with substantial tourism activity. This suggests that urban centers, and tourism in particular, may attract children and families seeking income generation opportunities. Unfortunately, the reality for these economic migrants can be harsh and available living conditions in cities are often suboptimal. Support and job training for residents living in rural areas surrounding cities may be an effective way to prevent some would-be migrants from relocating and falling into homelessness.

Second, the total number of homeless boys counted was significantly greater than the number of homeless girls counted.

This finding highlights the need for programming that specifically targets homeless adolescent boys, some of whom are living without any adult guardians and many homeless boys who were counted. Further research is also needed to learn more about the trajectory of homeless girls to understand what happens to them as they age and disappear from the population that was enumerated. The pathways and vulnerabilities faced by these uncounted girls, including in regard to sex work, need illumination.

Third, the capture-recapture results suggest that the number of homeless children in Cambodia ages 13-17 is much greater than one would expect, if relying on single count data alone.

Specifically, in eight out of nine areas where the number of 13-17 year olds was estimated, Count 1 undercounted homeless children by a factor of five or more. This implies that there are large numbers of homeless children who are mostly hidden from outreach workers and that the magnitude of vulnerable children requiring social services may exceed current capacity. Conversations with NGO partners confirmed that certain categories of children covered by the estimation, such as children living on construction sites, were previously unknown to the organizations and are not currently receiving social services, despite apparent need. Now that the NGOs are aware of these sub-populations, the organizations will be able to use the information from the estimation to expand outreach activities to as many of these children as possible.
While capture-recapture was not performed on children below 13 years of age and therefore exact multipliers are unknown for this population, one could apply the same multipliers from the 13-17 year olds to get an indicative estimate of the numbers of homeless children under 13 years of age. Doing so, however, assumes that the ratio of counted to uncounted children is the same for all children, regardless of age. Homeless children under 13 years of age may have different characteristics than homeless children 13-17 years of age and these characteristics may make the proportion of visible children vary by age. Applying the observed capture-recapture multipliers from the 13-17 year olds to homeless children under 13 years of age could therefore lead to erroneous estimates. Because of this uncertainty regarding age-related differences in visibility ratios of homeless children, we chose not to report the estimates of younger children using the capture-recapture multipliers calculated from the older children.

Lastly, the interviews with homeless 13-17 year olds confirmed the many hardships that these children face. Homeless children often work long hours and do not get enough sleep. They are unable to pursue their education or attain basic literacy, and contend with frequent health problems that interfere with their day-to-day activities. An alarming number of children do not feel safe or have relationships with any adults who they can trust. Still, despite these bleak circumstances, the vast majority of children interviewed said that they have a caregiver who is related to them, suggesting that one way to maximize the effectiveness of social services may be through family strengthening programs.

**NEXT STEPS**

This estimation was designed to inform actionable steps to improve the lives of homeless children in Cambodia. At the local level, the results reported here will inform more nuanced outreach from NGOs working with vulnerable children. At the national level, these findings will be used to mobilize greater resources and attention for such children, including those categories of children who were previously unrecognized.

Ultimately, the goal is to reduce the total number of homeless children in Cambodia through the collective impact of NGOs, government and international donors working together.

Another estimation will be conducted in Cambodia in three to five years, and data from this follow-up estimation will be compared to the baseline to assess progress towards the stated reduction. Benchmarks will be tracked on a national scorecard.

By prioritizing rigorous and comprehensive measurement, Cambodia has positioned itself as a leader in evidence-based policymaking for marginalized children. Research has already shown that investments in children can sustain long-lasting gains that benefit families, communities, and nations (Engle et al., 2007; Irwin, Siddiqi, & Hertzman, 2007). Now is the time for Cambodia to make these investments and remain accountable to every child, including those outside of households.
6. References


