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# Enrolment in early childhood care and education programmes in South Africa: challenges and opportunities

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*saam vorentoe · masiye phambili · forward together*



# Enrolment in early childhood care and education programmes in South Africa: challenges and opportunities

Eldridge Moses<sup>1</sup>

## Abstract

This paper is primarily concerned with identifying demand and supply-side constraints that negatively affect the enrolment of children early childhood care and education (ECCE) programmes in South Africa. The primary data set used in this analysis is the 2018 General Household Survey, as collected by Statistics South Africa. Supporting data on ECCE programme location and other characteristics are obtained from the Early Childhood Development Audit data of 2013 to further explore the impact of geographical marginalisation and ECCE supply constraints on enrolment probabilities. Our preliminary findings on enrolment suggest that household socio-economic status, proximity to an ECCE centre and the mother's educational attainment are positively associated with pre-primary education enrolment. Additionally, the presence of at least one economically inactive adult in the household is negatively associated with enrolment rates. South Africa's persistently high unemployment rate therefore poses some risk to the immediate future of ECCE enrolment if ECCE access is expanded without sufficient consideration of the role that economic duress and vulnerability play in household decisions to enrol children in early learning programmes.

The Ilifa-Resep ECD Working Paper Series is a collaboration between Ilifa Labantwana and Research on Socio-Economic Policy (Resep) at Stellenbosch University. The working paper series aims to promote research that addresses the major systemic issues facing the ECD sector in South Africa. Key themes of the series include: financing and funding, labour, nutrition, ECD governance, regulation, economics of ECD, the household environment, and developmental outcomes of children. The series will contain research papers that address any of the components of the ECD essential package - early learning, parent and caregiver support, nutrition, maternal and child health, and social protection.

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# 1. Introduction

Since the 1990s early childhood development (hereinafter referred to as ECD) as a field of study and as a site of focused policy formulation has evolved at a tremendous pace, with ever-increasing attention being given to the impact of early childhood nutrition, early learning stimulation and living conditions on brain development, social development and outcomes in the child's adult life (see for example Campbell *et al.*, 2002; Walker *et al.*, 2011). In recent years, ECD research focus has expanded from basic health and nutrition needs of the child and mother to a focus on mother's health from conception, child protection and school readiness (Shaeffer, 2016; Bailey *et al.*, 2017).

All children in South Africa have rights to health, protection, survival and development. Early childhood care and education (ECCE) services are a critical resource that is needed to realise these rights. There are further benefits to the household associated with early childhood care and education that can be delineated into three broad categories: human capital accumulation for the household (Heckman, 2000), an increase in labour market participation opportunities, and the advancement of human rights, particularly the rights of women<sup>2</sup> (Davis, 2005). In relation to the former, investment in quality early childhood education raises the return to formal schooling by reducing the need for remedial action in the formal schooling years (UNICEF, 2019), reduces grade repetition on average (Haskins, 1989; Barnett, 1995) and on average contributes to higher levels of educational attainment (Fessler and Schneebaum, 2019). These factors contribute to the child's learning success and later labour market outcomes, and in turn contributes positively to the family's accumulation of human capital (Heckman *et al.*, 2010).

An additional benefit of early childhood care and education (ECCE) for caregivers is the possibility for both caregivers to participate in the labour force (Baker *et al.*, 2008). This is particularly relevant in the South African context, with the growth of women-headed households and growing labour force participation of women in South Africa over the last three decades (Posel, 2001; Statistics South Africa, 2018). Positive externalities, or the benefits to society at large, include lower crime rates, decreased infant mortality, democracy benefits, lower rates of recidivism, lower dependency rates on welfare and various other non-market, often intergenerational, benefits to the child and their families<sup>3</sup> (Schweinhart *et al.*, 1993; Wolfe and Haveman, 2002).

Yet, despite the well-documented benefits of quality ECCE, sub-Saharan African countries have typically experienced low gross enrolment rates of pre-school children in ECCE programmes, due to both low demand and low supply for such services (UNICEF, 2019). Low enrolment rates often co-exist with poor nutrition and living conditions, which in turn perpetuate poverty patterns and intergenerational inequality (Engle *et al.*, 2007). The perpetuation of poverty and inequality through poor schooling outcomes is of particular importance in South Africa, where academic input and output inequalities manifest themselves in enduring labour market outcomes that are vastly unequal by race, gender and geography. It is therefore of some use to researchers and policymakers to understand the demand and supply-side factors that negatively affect ECCE centre enrolment rates, so that resources to address poor enrolment are directed in more targeted and sustainable manners.

This paper is therefore primarily concerned with examining the factors associated with the household decision not to enrol 2-to-5-year-old children in centre-based early learning programmes in South Africa. The decision to focus on centre-based ECCE is based on one primary consideration: the main data set used in this paper, the 2018 General Household Survey, only provides the reasons for non-enrolment in ECD centres, which severely limits interrogation of enrolment in alternative childcare and education modalities. The collection of data on this manner is possibly related to the South African government's long-term goal of ensuring that children are able to attend at least 2 years of pre-primary education by 2030, as articulated in the country's National Development Plan 2012 (National Planning Commission, 2012).

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2 For example, the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) states that participating countries should "encourage the provision of the necessary supporting social services to enable parents to combine family obligations with work responsibilities and participation in public life, in particular through promoting the establishment and development of a network of child-care facilities" (CEDAW, Art. 11 (2c)).

3 For a comprehensive overview of these non-market benefits, refer to Wolfe and Haveman (2002.)



This paper is organised as follows: Section 2 outlines the data and methodology used to study ECCE non-enrolment in South Africa in 2018. Section 3 discusses present reasons for child non-enrolment as cited by survey respondents while Section 4 presents factors that are possibly associated with ECCE non-enrolment. Section 5, 6 and 7 present the regression results, a discussion of the results and a broad conclusion, respectively.

## 2. Data and methodology

### 2.1. Data

The primary data source used in this study is the General Household Survey (GHS) 2018, as collected by Statistics South Africa over four quarters in 2018. The GHS data are meant to be nationally representative, with researchers advised to proceed with caution when interpreting results at lower level of geographical aggregation. For this reason, the weighted sample is used only to produce descriptive statistics at the provincial and national level. Analysis done at lower levels of geographical aggregation will therefore be done with the unweighted data and is meant to reflect findings about the sample rather than the population. The GHS 2018 data is used to describe child characteristics, ECCE centre enrolment status and household conditions in 2018.

Supporting data on centre location are obtained from the National ECD Audit data of 2013, which audited 19 971<sup>4</sup> unregistered, conditionally registered and fully registered ECCE centres in South Africa between August 2013 and May 2014. While the coverage included all 9 provinces in South Africa, it is unclear from the Department of Social Development and the Economic Policy Research Institute's report (2014) how representative or comprehensive the coverage of ECCE centres is meant to be. Eventual exclusion for various reasons of 2 125 centres from the original sample of 19 971 centres is also unlikely to have been completely random, which further complicates analysis of the data. For this reason as well, the only variable that is extracted from the ECCE Audit data set is the location of ECCE centres, and the results from the ECCE Audit 2013 data are listed in the appendix rather than the main body of this document.

### 2.2. Methodology

The sample under investigation includes children residing in South Africa, and who are between the ages of 2 and 5 years. The upper bound of 5 years is chosen because the year in which the child turns 7 years old (which would for the most part include 6-year-olds at the beginning of the year) is the compulsory school entrance year in South Africa, as defined by the South African Schools Act No. 84 of 1996 (Republic of South Africa, 1996). The 3-to-5 year-old age category is also targeted for pre-grade R enrolment by South Africa's National Early Childhood Development Policy (Richter *et al.*, 2017), in a bid to improve school readiness and increase returns to investment in later education.

*A child between the ages of 2 and 5 years old is assumed to be enrolled in ECCE if the child is enrolled in a centre. Children staying with day mothers, childminders, family members or friends, or who use playgroups and toy libraries are not considered enrolled.*

The term ECCE centre, according to the Audit of Early Childhood Development Centres National Report (DSD, 2014: xi), who commissioned the data collection, can refer to:

*“... a crèche, day care centre for young children, a pre-school, and/or after school care. Exclusions include Grade R classes attached to a primary school and home-based*

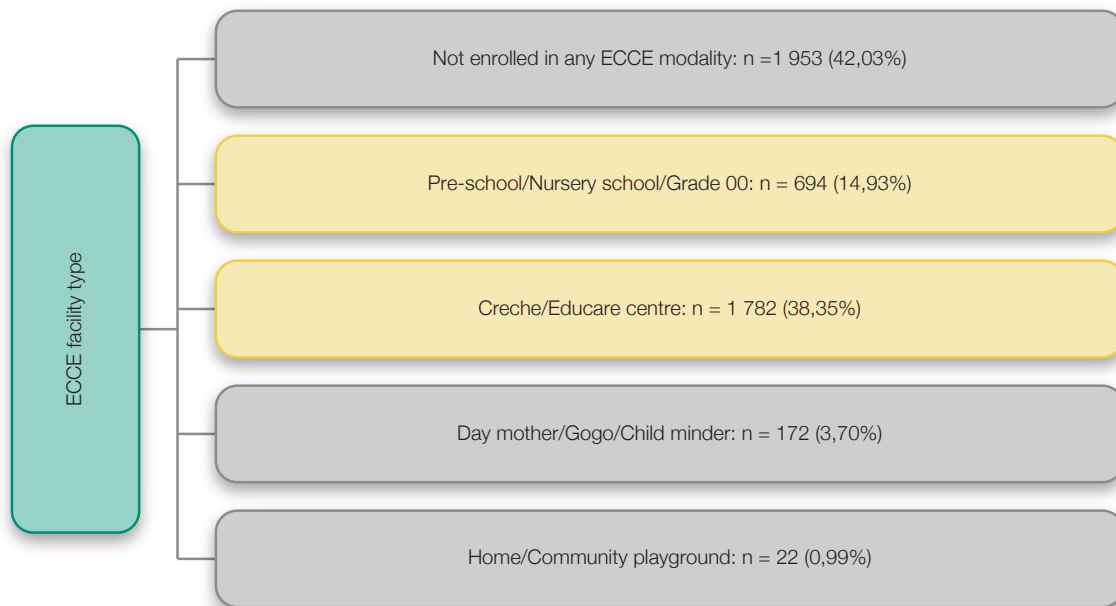
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<sup>4</sup> Eventually a total of 17 846 centres were audited.

*programmes with less than six children run by day mothers and child minders and/or play groups and for the purposes of the audit those with no children under the age of 6."*

As shown in Figure 1, GHS 2018 distinguishes between 6 types of modalities in the question asking respondents what type of ECCE facility the child attends. From the GHS data, it is not possible to identify which Grade R classes are attached to schools and which are not. For that reason Grade R and school enrolments are excluded. Therefore, a child is defined as being enrolled in an ECCE centre if that child is 2 to 5 years old, or is attending a pre-school, nursery school, crèche or educare centre. A child's status is "not enrolled" if they are staying at home or are reported as being active in other modalities.

**Figure 1 ECCE programme types (GHS 2018)**



**Source:** Adapted from General Household Survey 2018 (Statistics South Africa, 2018).

The unweighted GHS sample rather than the weighted sample is used for the regression analysis, as the General Household Survey 2018 was not designed to be representative at the enumeration area (EA) level. Although the findings presented here are therefore restricted to the sample rather than the population, they nevertheless present researchers and policymakers with some indication of the variables associated with poor ECCE centre enrolment in South Africa.

### 3. Reasons for children not being enrolled in ECCE centres<sup>5</sup>

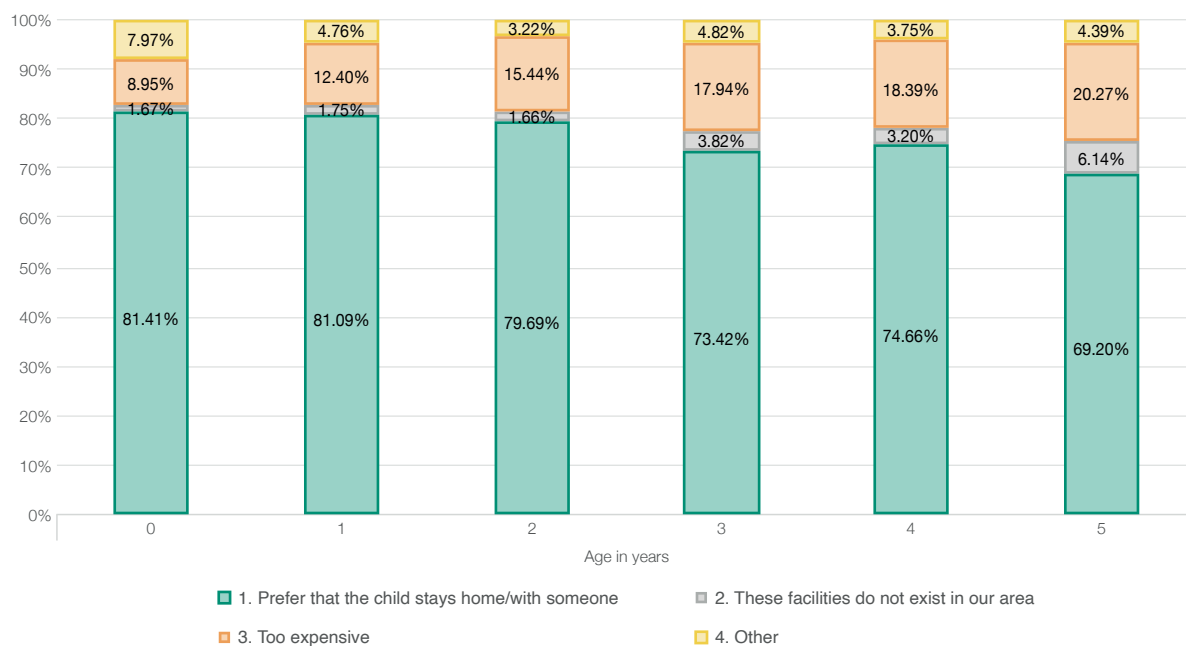
The main reasons<sup>6</sup> cited for children between the ages of 0 and 5 not being enrolled ECCE centres are listed below in Figure 2. The most prevalent reason for children not being enrolled is one of preference, with 78.55% of respondents with pre-school children stating that personal preference prevents them from enrolling children in daycare or early learning facilities. The preference declines with the age of the child – while 81.4% of children in their first year of life stay home because of caregiver preference, by age 5 only 69.2% of children remain out of ECCE centres for the same main reason.

The second most prevalent reason for keeping children home was the cost of ECCE centres. This reason became more important as the child aged, with approximately one-fifth of unenrolled children between the ages of 2 and 5 years being kept at home because ECCE services were too expensive.

<sup>5</sup> Note that the GHS 2018 question on ECCE non-enrolment refers to centres only.

<sup>6</sup> The GHS question on centre non-attendance focuses on the main reasons why the child is not enrolled in a centre, rather than all of the reasons.

**Figure 2 Main reason why the child is not enrolled in an ECCE centre**



**Notes:** Based on General Household Survey 2018 weighted data. Includes all children aged 0 to 5 years.

Of less importance for keeping children home is the absence of ECCE facilities. However, the absence of facilities as a main reason for non-enrolment becomes more important as children age, which is possibly reflective of a shortage of skills needed in early learning programmes for children between the ages of 2 and 5 years.

## 4. Factors expected to affect the demand for ECCE services

Of interest for this paper are the observable reasons for non-enrolment of a child in an early learning centre. In this section proximity to an ECCE centre as well as household and mother characteristics are discussed as possible contributors to non-enrolment. The summary statistics for each variable are presented in Appendix Table A1.

### 4.1. Proximity to an ECCE centre

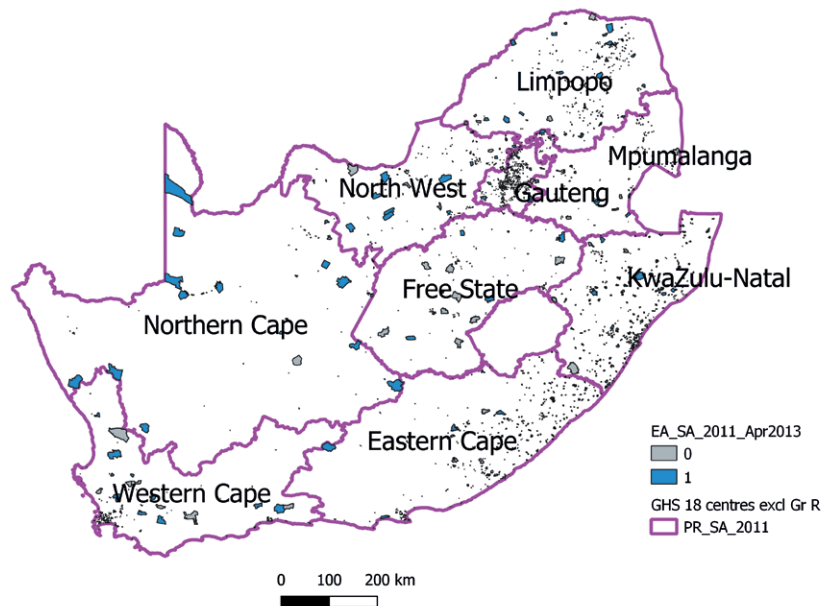
In developing countries distances from ECCE services are often largest for rural area residents, and much smaller for urban area residents (Atmore *et al.*, 2012). It is therefore unsurprising that enrolment rates differ substantially by area type. However, in South Africa there are rural regions that appear to be relatively well-served by ECCE centres. Simple area categorisation is therefore inadequate to express differences in access to ECCE centres. Where possible, distance to ECCE centres should be approximated to act as a proxy for financial, time, psychological and other opportunity costs of traveling to an ECCE centre.

In this paper three measures of nearness to an ECCE centre are constructed and tested to determine the association between proximity and ECCE centre enrolment:

1. The first measure is constructed using the enrolment of other children in ECCE centres within the same enumerator area (EA). If at least one child in the EA is enrolled in an ECCE centre, then it is assumed that ECCE centres are close enough for the non-enrolled child to have also been enrolled if preferences and demand-side finances allow. The sampled EA's in GHS 2018 are shown below in Figure 3. The EAs shaded in blue indicate where at least one child is enrolled in an ECCE centre and therefore proxies access to an ECCE centre using the first proximity measure

derived from GHS 2018. The grey-shaded polygons represent the EAs where no child is enrolled in an ECCE centre. A child living within the grey polygon borders is therefore assumed to have no access to an ECCE centre close by.

**Figure 3 Distribution of sampled EA's and ECCE centres in South Africa (GHS 2018)**

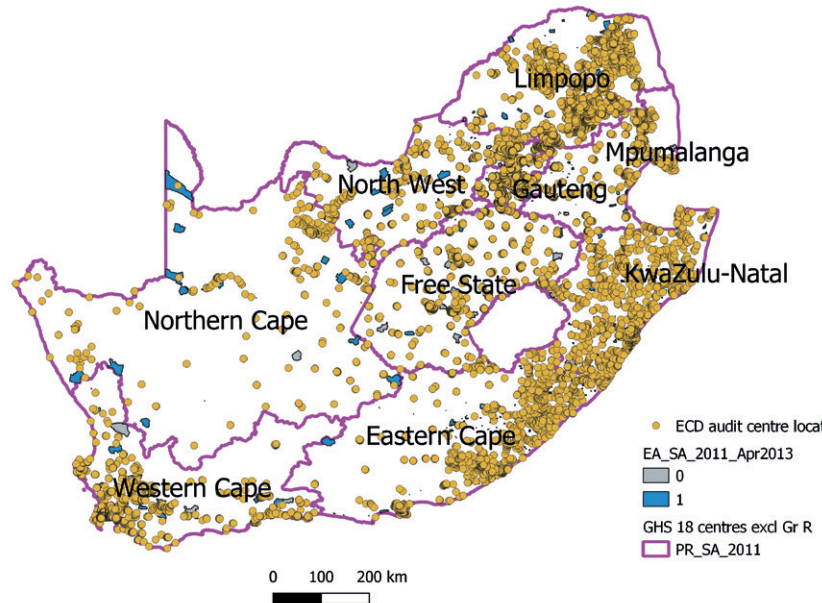


**Source:** Constructed using General Household Survey 2018 (Statistics South Africa, 2018).

2. A second measure of proximity to ECCE centres is constructed by combining the ECCE access proxy in the first measure with actual locations of ECCE centres as detailed in the ECCE Audit 2013 data. It is assumed that there was a 100% survival rate of centres from 2013 to 2018. All centres are assumed to be equal in the quality of their programmes.<sup>7</sup> Centres that had the same name and were not separable using other differentiating characteristics were dropped from the data.
3. The centre locations, overlaid with the GHS centre access proxy, are shown below in Figure 4. The centre locations from the ECCE Audit data are shown as yellow dots below. The resolution and size of the image do not do justice fully to the densities of EA locations but it is clear from Figure 3 that ECCE centre access is best in urban areas and highly populated rural areas. The density of ECCE centres in the previous homeland areas is consistent with findings by the Department of Basic Education (2021: 93), who uses the Community Survey 2016 to show that ECCE enrolment is unexpectedly high in these areas. The finding appears to corroborate the Department of Social Development's (2014) assertion that the supply of ECCE centres is responsive to demand, given the child-heavy population age pyramids in and relatively high rates of adult migration from South Africa's poorer provinces.

<sup>7</sup> The author attempted to produce input quality indicators but internal child count inconsistencies at centres made this difficult.

Figure 4 GHS 2018 ECCE centre access, combined with ECCE Audit data 2013 centre locations



Source: Constructed using General Household Survey 2018 (Statistics South Africa, 2018) and Early Childhood Education Centre Audit data (Department of Social Development, 2014).

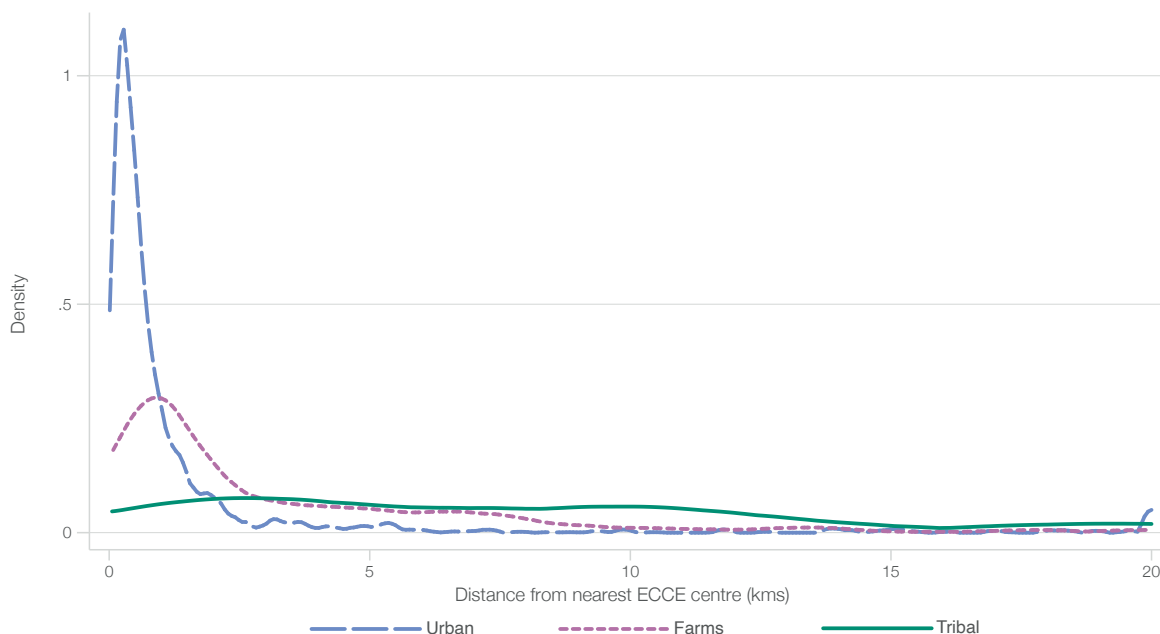
4. A third measure of proximity to an ECCE centre is constructed by measuring the distance between the child's EA of residence and the nearest ECCE centre as indicated by the ECCE Audit 2013 data. In GHS 2018 the finest measure of geographical aggregation for the child's residence is at the EA level. Each child is assumed to reside in the centre of the EA polygon (the centroid). Using this measure, on average 2 to 5-year-olds reside within 2.67km of an ECCE centre. The standard deviation of 5.1km is somewhat larger than the mean, which could be attributable to sampling bias or actual distance from ECCE centres differing substantially by area type, distance from economic centres, population densities or combinations of various factors.

As the latter two measures of access are constructed using the ECCE Audit 2013 data set which has a sampling frame that is inconsistent with the GHS sampling frame, the findings using the ECCE Audit location data are reported in the appendix of this paper.

Disaggregating by area type in Figure 5 does reveal differences in proximity to ECCE centres, as would be expected. On average the nearest ECCE centre is 1.8km away from urban children, 3.4km away from children in tribal authority areas and 8km away from children in farm areas. There are also considerable differences between provinces in terms of distance to the nearest ECCE centre.



**Figure 5 Distance from nearest ECCE centre, by area type**



**Source:** Constructed using General Household Survey 2018 (Statistics South Africa, 2018) and Early Childhood Education Centre Audit data (Department of Social Development, 2014). Note: distances on the x-axis have been truncated to a 20km maximum (actual maximum is 84.8kms).

Table 1 overleaf shows enrolment rates for the sample, dependent on whether there is an ECCE centre that is accessible to them. The table reveals that accessibility is important for enrolment. Predictably, enrolment rates are low where there is no ECCE centre that is accessible to children in the EA (5.78%) and very high in areas where ECCE centres are accessible (59.03%).

**Table 1 Enrolment rates for 2 to 5-year-olds (dependent on access)**

|              |   | No ECD centre in EA | ECD centre in EA |        |
|--------------|---|---------------------|------------------|--------|
| Enrolled     | n | 23                  | 1 879            | 1 902  |
|              | % | 5.78                | 59.03            | 53.11  |
| Not enrolled | n | 375                 | 1 304            | 1 679  |
|              | % | 94.22               | 40.97            | 31.77  |
| Total        | n | 398                 | 3 183            | 3 581  |
|              | % | 100.00              | 100.00           | 100.00 |

**Source:** Constructed using General Household Survey 2018 (Statistics South Africa, 2018) and Early Childhood Education Centre Audit data (Department of Social Development, 2014).

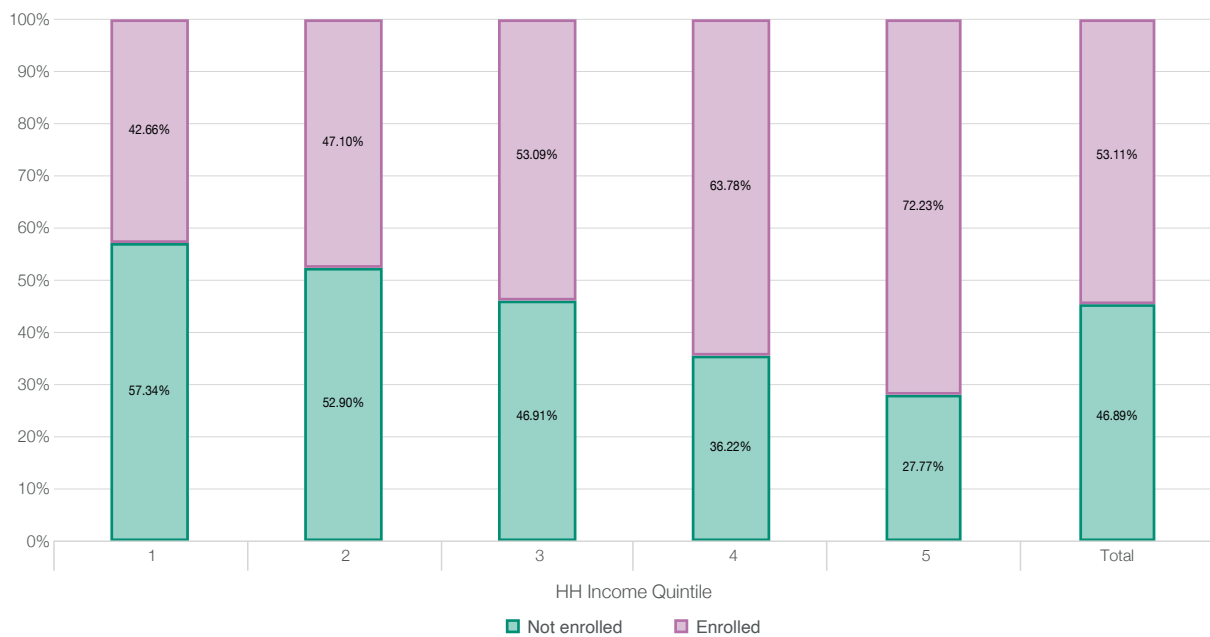
## 4.2. Household socio-economic status

School readiness involves complex and powerful interactions between household characteristics and external sources of stimuli and caring such as early learning programmes. Household income has consistently been shown to be a strong predictor of selection into early learning programmes (Bassok, 2010; Bainbridge *et al.*, 2005). The impact of ECCE on later learning and labour market outcomes through nutrition, learning and positive social interactions has also been found to be largest for children from low-income households (Garces *et al.*, 2000, Magnuson, 2007), making the selection of poor children into early learning programmes important for inequality and poverty reduction

purposes, as well as advancing and preserving the rights of children, as articulated in section 28 of the South African Constitution (Constitution of the Republic of South Africa, 1996).

For the purposes of this paper the household's socio-economic status is expressed as the total household per capita income in 2018 rands. Quintile disaggregation of the household income in Figure 6 reveals that there is a 30 percentage-point difference between households in South Africa's top income quintile and households in the bottom quintile. In other words, children from quintile 5 households are 69.3% more likely to be enrolled in ECCE centres than children from quintile 1 households.

**Figure 6 ECCE centre enrolment for 2 to 5-year-olds by household income quintile (GHS 2018)**



**Source:** Constructed using General Household Survey 2018 (Statistics South Africa, 2018).

### 4.3. Race of the child

Treatment effects of being enrolled in early learning programmes have typically been found to be larger for poor children (Barnett *et al.*, 2008), and black and Hispanic children (relative to white children) in the United States, even after controlling for socio-economic status (Loeb *et al.*, 2007). Part of the higher gains amongst US minorities could stem from these groups having low bases to start off with, but there may also be pre-treatment differences that affect selection into ECCE attendance. Often, the characteristics that affect selection into early learning programmes overlap with characteristics that intersect with race. These include incomes as mentioned earlier, family structure, migration status and employment status but it could also include language barriers, social integration, or norms specific to a culture about childcare and education.

It is therefore of some importance not only to control for this selection bias but also to attempt to understand the reasons why enrolment in ECCE may differ by race, beyond the socio-economic contributors that are often confounded with or intersect with race.

### 4.4. Gender of the household head

Women-headed households are more likely to head economically vulnerable households. On the one hand financial strain could lead to low or no demand for childcare. On the other hand, women-headed households may need childcare to participate more fully in the labour market. The benefits of childcare have been demonstrated to be particularly strong for single mothers in the United States, where 6 to

25% increases in labour supply have been observed (Gelbach, 2002; Cascio, 2009). Women, more often than men, in developing countries such as Kenya (Clark *et al.*, 2021), and countries in the Caribbean (Seguino, 2003) state that their reasons for entering and remaining in marginal employment is to retain the flexibility needed to also take care of unpaid domestic duties, in particular childcare

#### 4.5. Mother’s educational attainment

Beyond the possible socio-economic status benefit of the primary caregivers’ educational attainment, the mother’s educational attainment is often positively associated with ECCE enrolment. Parent or caregiver understanding or appreciation of the benefits of early childhood education may affect demand positively as parental aspirations for their children are likely to be dependent on personal experience or lack of experience of the link between investment in early learning and later life outcomes (Jonsson and Erikson, 2000).

Unlike many other household surveys in South Africa, GHS 2018 provides researchers with the mother’s household member number. It is therefore possible to link mother characteristics such as educational attainment to the child. Table 2 presents ECCE enrolment rates by the mother’s educational attainment category. Enrolment rates are positively associated with the mother’s educational attainment. Three quarters of children with tertiary-educated mothers are enrolled in ECCE centres, with that ratio declining in an almost linear fashion as educational attainment decreases.

**Table 2 ECCE enrolment of 2 to 5-year-olds by mother’s educational attainment (GHS 2018)**

|                           | Enrolled      | Not enrolled  |               |
|---------------------------|---------------|---------------|---------------|
| No education              | 41.86%        | 58.14%        | 100.00        |
| Some primary              | 28.73%        | 71.27%        | 100.00        |
| Primary complete          | 39.06%        | 60.94%        | 100.00        |
| Some secondary            | 46.60%        | 53.40%        | 100.00        |
| Matric\Gr 12\N3           | 59.81%        | 40.19%        | 100.00        |
| Post-school certificate   | 70.00%        | 30.00%        | 100.00        |
| Degree\Diploma            | 76.68%        | 23.32%        | 100.00        |
| Honours degree and higher | 75.61%        | 24.39%        | 100.00        |
| <b>Total</b>              | <b>53.12%</b> | <b>46.88%</b> | <b>100.00</b> |

**Source:** Constructed using General Household Survey 2018 (Statistics South Africa, 2018).

For regression analysis purposes, the mother’s educational attainment is specified in 2 categories: “Less than Grade 12” and “Grade 12 or higher completed”. Including the mother’s educational attainment does however introduce some attrition, as the mother’s educational attainment is only observable when the mother is present in the same household as the child.<sup>8</sup>

<sup>8</sup> 16.32% of 2 to 5-year-olds have mothers who are not present in the household.

#### 4.6. Presence of other household members who are not economically active

Unemployment of household members not only reduces the household's ability to pay for ECCE services but could also reduce the demand for ECCE through two additional channels. Firstly, if unemployed, a parent could decide to care for children himself/herself while at home and forego the benefits of centre-based ECCE services. Secondly, family members who are not economically active or attending school could also take care of children at their homes without incurring the pecuniary and non-pecuniary costs of enrolling children in and taking them to ECCE centres.

This variable is expressed in binary form and describes whether or not there is at least one person in the household who is 15 years and older, who is not in school or is not economically active. The lower age bound coincides with South Africa's minimum labour market entry age. The country struggles with persistently high dropout rates in disadvantaged communities, which may have affected childcare arrangement norms over time. The need for adults attached to the labour market to work may also force suboptimal childcare arrangements where teenagers and older adults may care for 2 to 5-year-olds instead of children being enrolled in centres. 59.8% of children in the analysed age group live with at least one economically inactive person not enrolled in school in the same household.

#### 4.7. Regional and seasonal factors

As stated before in this section, there are differences between provinces and area types that impact ECCE enrolment. The decision not to enrol a child in an ECCE centre could also be driven by regional factors that are not observable in the data. The GHS 2018 data was also collected in four different quarters, which may also introduce seasonal variance. Thus, all regressions will control for unobserved regional and time effects by including dummies for the province and time quarter that the data was collected in. The final regression specification will also be split into metro and non-metro residents to determine if there are differences between the two area types.

### 5. Results

The ordinary least squares regression estimates are shown in Table 3. The dependent variable is the probability of a 2 to 5-year-old child not being enrolled in an ECCE centre. Reference groups are shaded in grey. For the sake of simplicity, in the discussion of the results below, the coefficient signs are reversed so that the dependent variable is interpreted as the probability of being enrolled in an ECCE centre.

Models 1 and 2 test the association between the household characteristics and being enrolled. Children in households headed by a coloured or Indian/Asian person are significantly less likely than children in black-headed households to be enrolled in an ECCE centre. The enrolment probability differences between children in black and white households are insignificant. Children in female-headed households are more likely to be enrolled in ECCE centres, as well as children from richer households (although there is a decline in the rate of increased enrolment as income increases). Older children are more likely to be enrolled than younger children.

Model 2 adds the presence of an adult who is not economically active in the household and the mother's educational attainment. The presence of an economically inactive person in the household who is 15 years and older decreases the probability of being enrolled in an ECCE centre. Children with mothers who have educational attainments of Grade 12 and higher are more likely to be enrolled than children whose mothers have less than 12 years of educational attainment. The addition of mother's educational attainment and the presence of an unemployed adult reduce the household income coefficient, suggestive of the relationships between household income, the mother's educational attainment and unemployment.

Model 3 finds that the presence of at least one ECCE centre that is accessible to other children within the same EA has a large, positive and significant impact on child ECCE enrolment. The older the child, the more likely it is that the child will be enrolled in an ECCE centre. Model 4 controls for the area type. Children living in tribal authority areas are (statistically) significantly less likely to be enrolled than children in urban areas. Children living on farms are also less likely to be enrolled than children living in urban areas but the difference between these two groups is not statistically significant.

Although this paper is primarily concerned with the 2-to-5-year-old age group, the same regression analysis is run in Model 5 for children between the ages of 0 and 1 year. While the coefficient signs suggest that white children who are 1 year old and younger are most likely to be enrolled, followed by black children, the differences between the black reference group and the other groups are not statistically significant. There are no significant differences in enrolment probabilities between female and male-headed households but as with the older age group in model 4, the higher the household per capita income, the more likely it is that children aged 0 to 1 year would be enrolled in an ECCE programme. Having at least one economically inactive individual in the household also reduces the probability of enrolment for 0 to 1-year-olds. Older children in the 0-to-1-year-old sample are also more likely to be enrolled than younger children.

In Models 6 and 7, shown in Appendix Table A2, alternative expressions of ECCE centre access are included. Model 6 adds the 2013 ECD Audit data on ECCE location to the GHS 2018 access measure. Using this measure of ECCE access, it is still clear that access to an ECCE centre is positively associated with child enrolment.

In Model 7, a second alternative measure of EA access (having a centre within 2km of the child) shows that having a centre within 2km of the residential EA does not have any significant positive impact on enrolment (relative to having the nearest EA further away). However, in alternative specifications where the area type are omitted, ECCE centre within 2km of a child's residence significantly and positively affects ECCE enrolment (shown in Model 8 in Appendix Table A2). This result may be driven by the relationships between area type, as well as ECCE centre location and density within enumeration areas.

**Table 3 Probability of ECCE centre non-enrolment for 2 to 5-year-olds in 2018 (unweighted sample)**

| VARIABLES              | Model 1                  | Model 2                  | Model 3                  | Model 4                 | Model 5*                |
|------------------------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------|
| <b>Black head</b>      |                          |                          |                          |                         |                         |
| Coloured head          | 0.175***<br>(0.0331)     | 0.153***<br>(0.0326)     | 0.123***<br>(0.0307)     | 0.131***<br>(0.0311)    | 0.00290<br>(0.0277)     |
| Indian head            | 0.245***<br>(0.0667)     | 0.199***<br>(0.0643)     | 0.0845<br>(0.0548)       | 0.0942*<br>(0.0551)     | -0.0682<br>(0.0958)     |
| White head             | 0.00880<br>(0.0437)      | 0.0227<br>(0.0416)       | 0.000481<br>(0.0373)     | 0.00398<br>(0.0373)     | -0.0365<br>(0.0550)     |
| <b>HH head is male</b> |                          |                          |                          |                         |                         |
| HH head is female      | -0.0541***<br>(0.0164)   | -0.0491***<br>(0.0161)   | -0.0361**<br>(0.0151)    | -0.0369**<br>(0.0152)   | -0.00401<br>(0.0142)    |
| Per capita income      | -0.0713***<br>(0.00820)  | -0.0402***<br>(0.00815)  | -0.0340***<br>(0.00745)  | -0.0319***<br>(0.00751) | -0.0279***<br>(0.00928) |
| Per capita income (sq) | 0.00331***<br>(0.000705) | 0.00188***<br>(0.000639) | 0.00148***<br>(0.000556) | 0.00134**<br>(0.000556) | 0.00124<br>(0.000954)   |

| No NEA adults in HH                                     |                       |                       |                       |                       |                        |
|---|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|
| At least one NEA adult in HH                            |                       | 0.163***<br>(0.0167)  | 0.139***<br>(0.0157)  | 0.134***<br>(0.0158)  | 0.111***<br>(0.0168)   |
| Mother less than Grade 12 educ                          |                       |                       |                       |                       |                        |
| Mother Grade 12 educ or higher                          |                       | -0.133***<br>(0.0165) | -0.113***<br>(0.0156) | -0.114***<br>(0.0156) | -0.00546<br>(0.0138)   |
| No centre in EA (GHS 2018 measure excl Grade R)         |                       |                       |                       |                       |                        |
| At least 1 centre in EA (GHS 2018 measure excl Grade R) |                       |                       | -0.496***<br>(0.0129) | -0.497***<br>(0.0132) | -0.124***<br>(0.00905) |
| Urban area  |                       |                       |                       |                       |                        |
| Tribal authority area                                   |                       |                       |                       | 0.0368*<br>(0.0198)   | 0.000302<br>(0.0160)   |
| Farms   |                       |                       |                       | 0.000156<br>(0.0375)  | 0.00153<br>(0.0302)    |
| Child aged 2 (0 yrs in Model 5*)                        |                       |                       |                       |                       |                        |
| Child aged 3 (1 yr in Model 5*)                         | -0.194***<br>(0.0203) | -0.191***<br>(0.0197) | -0.180***<br>(0.0189) | -0.180***<br>(0.0188) | -0.0958***<br>(0.0131) |
| Child aged 4  | -0.314***<br>(0.0202) | -0.306***<br>(0.0197) | -0.294***<br>(0.0186) | -0.295***<br>(0.0186) |                        |
| Child aged 5  | -0.366***<br>(0.0239) | -0.364***<br>(0.0237) | -0.342***<br>(0.0220) | -0.342***<br>(0.0220) |                        |
| Quarter 1 (ref group)                                   |                       |                       |                       |                       |                        |
| Quarter 2   | -0.0267<br>(0.0220)   | -0.0250<br>(0.0214)   | -0.0124<br>(0.0202)   | -0.0116<br>(0.0201)   | 0.0107<br>(0.0199)     |
| Quarter 3   | 0.0212<br>(0.0222)    | 0.0291<br>(0.0216)    | 0.0206<br>(0.0201)    | 0.0212<br>(0.0201)    | 0.0367**<br>(0.0187)   |
| Quarter 4   | 0.0775***<br>(0.0215) | 0.0777***<br>(0.0211) | 0.0645***<br>(0.0198) | 0.0658***<br>(0.0198) | 0.0431**<br>(0.0186)   |
| Province control  |                       |                       |                       |                       |                        |
|   | Y                     | Y                     | Y                     | Y                     | Y                      |
| Constant  | 0.741***<br>(0.0382)  | 0.654***<br>(0.0390)  | 1.091***<br>(0.0372)  | 1.086***<br>(0.0376)  | 0.977***<br>(0.0395)   |
| Observations  | 3 581                 | 3 581                 | 3 581                 | 3 581                 | 2 111                  |
| R-squared   | 0.172                 | 0.210                 | 0.304                 | 0.304                 | 0.140                  |

**Robust** standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
**\*Model** 5 only includes children aged 0 to 1 year.

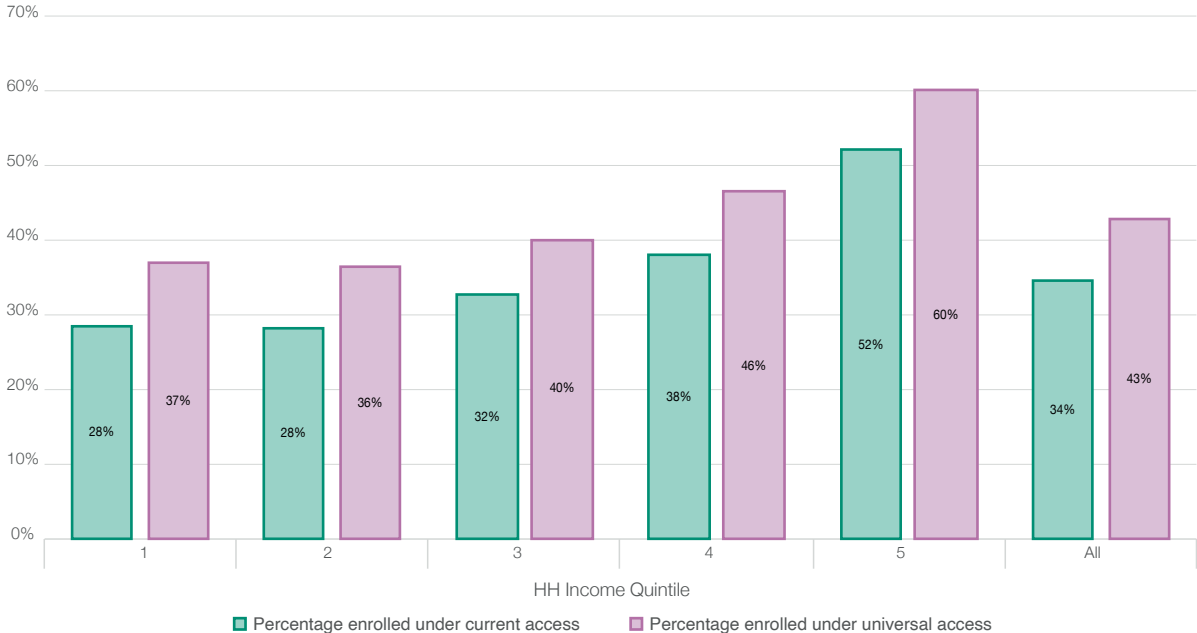


The models can be used to predict the outcomes of implementing universal access to early childhood centres. Model 4 is chosen as to obtain the predicted non-enrolment rates, categorized by household income quintile, race and area type in Table 3.

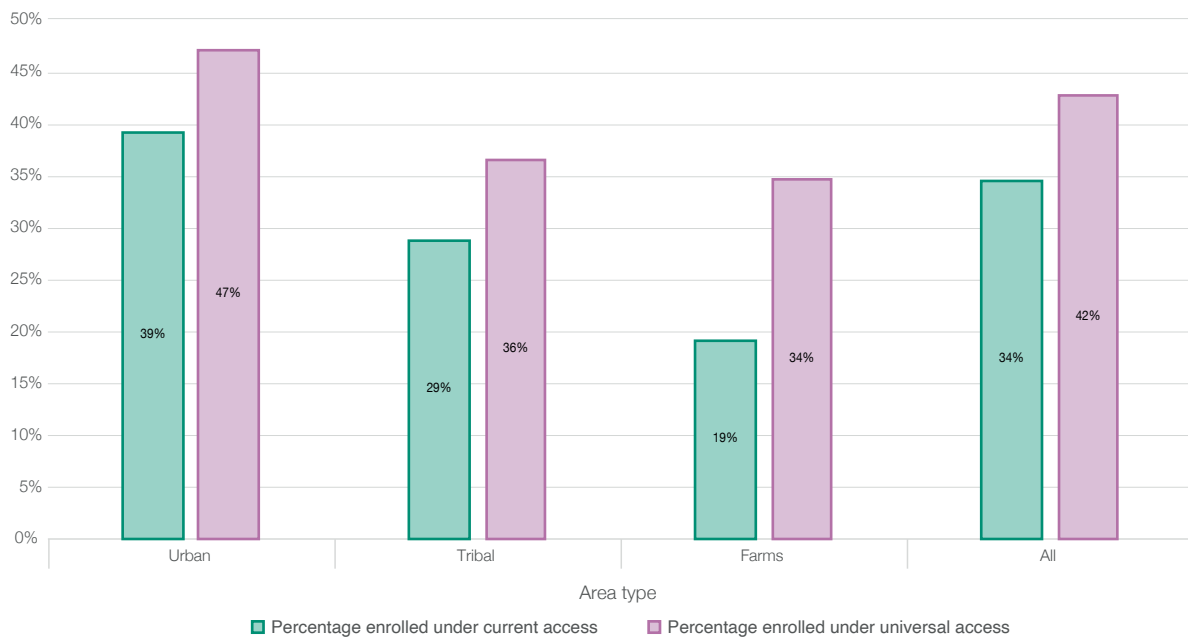
Figures 7 to 9 shows the predicted probabilities of enrolment under universal access to ECCE centre conditions. The figures reveal that expanding access so that an ECCE centre is accessible to all children improves enrolment rates regardless of income, area type or race. The percentage (rather than percentage-point gains) in enrolment are larger for households in quintile 1 to 3 than it is for households in quintiles 4 and 5. Geographical area type disaggregation reveals that children residing on farms are much more likely to gain enrolment-wise from universal access to ECCE than children residing in any other area type. Our model also reveals that Coloured and Indian households also experience the largest gains in enrolment from universal access.

The comparisons in Figures 7 to 9 illustrate the enrolment gains from ECCE centre expansion. However, as ECCE centres are often not feasible options in very sparsely populated areas, the provision of high-quality substitute modalities should be explored to serve areas where ECCE centres are not available.

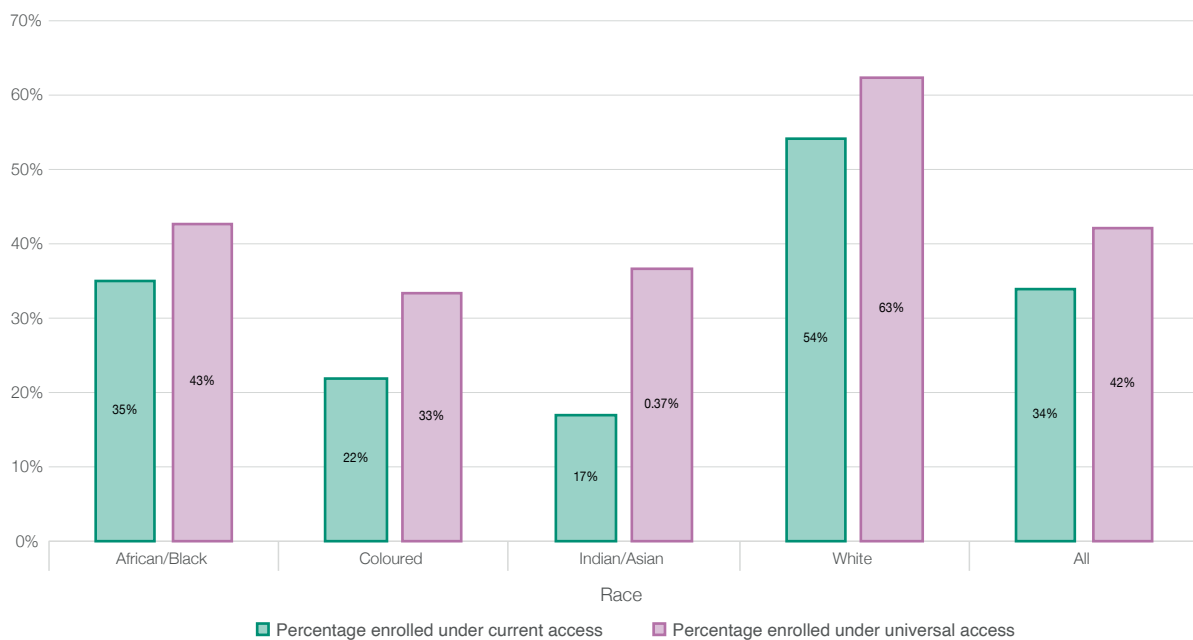
**Figure 7 Predicted probability of being enrolled under current and universal access conditions (by income)**



**Figure 8 Predicted probability of being enrolled under current and universal access conditions (by area type)**



**Figure 9 Predicted probability of being enrolled under current and universal access conditions (by race)**



## 6. Discussion

As expected, household income enjoys a positive relationship with ECCE centre enrolment. Poorer households either keep children at home or make use of less formal childcare and learning arrangements. This group of children in the 2 to 5-year-age bracket would be less likely to be exposed to structured or productive unstructured learning, nutrition or supporting social services than their ECCE centre-enrolled peers and are therefore at risk of starting formal schooling with a substantial disadvantage.



In all specifications female household headship is associated with higher ECCE enrolment rates for children. ECCE enrolment is also positively associated with the mother's educational attainment. There are a number of possible reasons for this. Mothers with higher educational attainment are likely to be more affluent or more likely to be participating in the labour market. They may therefore be in more need and may be better able to afford ECCE centre enrolment than mothers with lower levels of educational attainment. However, the finding on mother's educational attainment remains robust even when the household income is included in the regression, suggesting that there is something else (perhaps more appreciation of the benefits of ECCE or aspirations for their children) may be driving the positive relationship between mother's educational attainment and ECCE enrolment. The positive impacts of both female household headship and mother's educational attainment suggest that women rather than men are more inclined to direct household resources towards ensuring that children aged 2 to 5 years are enrolled in ECCE centres.

ECCE centre access is a significant contributor to ECCE enrolment. Children living in rural areas (tribal authority and farm) have less access to ECCE centre access than their urban resident counterparts.

The inclusion of race dummies shows that coloured and Indian households are significantly less likely to enrol their children in ECCE centres than any other household. This result remained stable from Models 1 to 4 in Table 3 and remains robust even when the reference group is changed to white. The finding suggests that coloured and Indian/Asian households have a relative preference for children staying at home or in less formal childcare arrangements.

Having an unemployed or economically inactive person at home is also negatively associated with enrolment. While it is uncertain whether children staying home with caregivers who may otherwise be engaged in labour market activity are better or worse off as a result, the negative relationship between enrolment and unemployed adults at home, especially in light of COVID-related job losses and reduced working hours/days, may mean that ECCE enrolment rates may recover quite slowly in future.

## 7. Conclusion

This paper has used a recent household survey to investigate the factors associated with non-enrolment of children in ECCE programmes. While the findings are restricted to the unweighted sample of GHS 2018, the findings are instructive nevertheless. Children in the sample were more likely to be enrolled in an ECCE programme if the ECCE centre was located close by, if their household was more affluent and was female-headed, and if their mother's educational attainment was higher. The fact that children are more likely to be enrolled in ECCE if households are headed by women may point to a need for information campaigns about the benefits of ECCE that are targeted specifically towards men or male-headed households. A risk factor associated with poor enrolment was having an economically inactive adult at home. South Africa's persistently high unemployment rate (especially in light of COVID-related job losses and reduced working hours/days) therefore poses some risk to the immediate future in terms of ECCE enrolment if ECCE access is expanded without sufficient consideration of the role that economic duress and vulnerability play in household decisions to enrol children in early learning programmes. Increased supply-side financing (in subsidy or other forms), demand-side subsidies or vouchers as well as serious considerations of expansion through pragmatic childcare and education modalities (such as organised playgroups and other non-centre-based modalities) in remote areas are therefore possible important interventions to support vulnerable households in accessing early childhood education and participating more fully in the labour market.

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## APPENDIX

**Table A1. Summary statistics**

|  | Enrolled (n = 1902) |         | Not enrolled (n = 1 679) |         |
|--|---------------------|---------|--------------------------|---------|
|  | Proportion/<br>Mean | Std Dev | Proportion/<br>Mean      | Std Dev |
| <b>Race of household head</b>          |                     |         |                          |         |
| Black                                  | 84.55%              |         | 84.48%                   |         |
| Coloured                               | 7.30%               |         | 10.35%                   |         |
| Indian/Asian                           | 1.77%               |         | 3.11%                    |         |
| White                                  | 6.38%               |         | 2.07%                    |         |
| <b>Area type</b>                       |                     |         |                          |         |
| Urban                                  | 52.01%              |         | 61.46%                   |         |
| Tribal authority                       | 41.72%              |         | 35.83%                   |         |
| Farms                                  | 6.26%               |         | 2.71%                    |         |
| At least one ECD centre in the same EA | 67.75%              |         | 98.60%                   |         |
| <b>Gender of HH head</b>               |                     |         |                          |         |
| Male                                   | 58.04%              |         | 54.65%                   |         |
| Female                                 | 41.96%              |         | 45.35%                   |         |
| Per capita income (divided by 1000)    | 2.79                | 3.21    | 1.595581                 | 2.11    |
| At least one NEA adult in HH           | 48.04%              |         | 71.84%                   |         |
| <b>Mother's educational attainment</b> |                     |         |                          |         |
| Primary education or lower             | 5.50%               |         | 12.52%                   |         |
| Incomplete secondary                   | 37.19%              |         | 50.18%                   |         |
| Grade 12 or higher                     | 57.30%              |         | 37.30%                   |         |
| <b>Province</b>                        |                     |         |                          |         |
| 1. Western Cape                        | 12.40%              |         | 11.15%                   |         |
| 2. Eastern Cape                        | 10.27%              |         | 9.16%                    |         |
| 3. Northern Cape                       | 1.60%               |         | 2.62%                    |         |
| 4. Free State                          | 6.16%               |         | 2.77%                    |         |
| 5. KwaZulu-Natal                       | 12.76%              |         | 27.59%                   |         |
| 6. North West                          | 6.19%               |         | 8.11%                    |         |
| 7. Gauteng                             | 30.03%              |         | 17.85%                   |         |
| 8. Mpumalanga                          | 8.71%               |         | 9.30%                    |         |
| 9. Limpopo                             | 11.89%              |         | 11.45%                   |         |

**Table A2. Probability of non-enrolment for 2 to 5-year-olds in 2018 (using alternative measures of access)**



| VARIABLES                                  | Model 6<br>(access within same<br>EA using GHS 2018<br>and ECD Audit 2013<br>location data) | Model 7<br>(access if centre 2km or<br>closer to home, using<br>GHS 2018 and ECD<br>Audit 2013 location<br>data) | Model 8<br>(same as Model 7, but<br>omitting area type) |
|--|---|--|---|
| <b>Black head</b>                          |   |  |   |
| Coloured head                              | 0.136***<br>(0.0300)  | 0.145***<br>(0.0306)   | 0.143***<br>(0.0304)                                    |
| Indian head                                | 0.136**<br>(0.0567)   | 0.197***<br>(0.0629)   | 0.189***<br>(0.0627)                                    |
| White head                                 | 0.0105<br>(0.0351)  | 0.0144<br>(0.0380)   | 0.0134<br>(0.0382)                                      |
| <b>HH head is male</b>                     |   |  |   |
| HH head is female                          | -0.0292**<br>(0.0139)   | -0.0426***<br>(0.0144)   | -0.0429***<br>(0.0144)                                  |
| Per capita income                          | -0.0240***<br>(0.00683)   | -0.0295***<br>(0.00716)  | -0.0310***<br>(0.00706)                                 |
| Per capita income (sq)                     | 0.000848*<br>(0.000509)   | 0.00126**<br>(0.000547)  | 0.00135**<br>(0.000544)                                 |
| <b>No NEA adults in HH</b>                 |   |  |   |
| At least one NEA adult<br>in HH            | 0.124***<br>(0.0143)  | 0.140***<br>(0.0147)   | -0.118***<br>(0.0146)                                   |
| <b>Mother less than Grade 12 education</b> |   |  |   |
| Mother Grade 12 educ<br>and higher         | -0.105***<br>(0.0141)   | -0.117***<br>(0.0146)  | -0.106***<br>(0.0141)                                   |
| <b>Urban area</b>                          |   |  |   |
| Tribal authority area                      | 0.0298*<br>(0.0178)   | 0.0224<br>(0.0190)   | Omitted   |
| Farms                                      | 0.0261<br>(0.0357)  | 0.0677<br>(0.0415)   | Omitted   |

| Child aged 2  |                       |                       |                       |
|---|-----------------------|-----------------------|-----------------------|
| Child aged 3  | -0.180***<br>(0.0190) | -0.192***<br>(0.0196) | -0.192***<br>(0.0196) |
| Child aged 4  | -0.323***<br>(0.0184) | -0.332***<br>(0.0191) | -0.332***<br>(0.0191) |
| Child aged 5  | -0.482***<br>(0.0175) | -0.500***<br>(0.0178) | -0.500***<br>(0.0179) |
| Quarter 1 (ref group)                               |                       |                       |                       |
| Quarter 2   | -2.14e-05<br>(0.0178) | -0.00955<br>(0.0183)  | -0.00936<br>(0.0183)  |
| Quarter 3   | 0.0564***<br>(0.0181) | 0.0505***<br>(0.0189) | 0.0509***<br>(0.0189) |
| Quarter 4   | 0.0986***<br>(0.0179) | 0.103***<br>(0.0187)  | 0.104***<br>(0.0187)  |
| At least 1 centre<br>(GHS 18 and ECD 13<br>measure) | -0.375***<br>(0.0182) |                       |                       |
| Nearest ECD<br>within 2km                           |                       | -0.0264<br>(0.0194)   | -0.0337**<br>(0.0164) |
| Province control                                    | Y                     | Y                     | Y                     |
| Constant  | 0.951***<br>(0.0382)  | 0.657***<br>(0.0401)  | 0.672***<br>(0.0392)  |
| Observations  | 4 177                 | 4 177                 | 4 177                 |
| R-squared   | 0.302                 | 0.248                 | 0.248                 |

**Robust** standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



*saam vorentoe · masiye phambili · forward together*

