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Assessing the Incidence of Public Works Programmes: Using Propensity Score Matching Techniques to Assess the Poverty Targeting of Employment in Two Public Works Programmes in South Africa.

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Abstract

This paper explores the socio-economic identity of Public Works Programme (PWP) participants in two programmes in South Africa, in order to establish the incidence of PWP participation, a question which is central to assessing the social protection impact of PWPs, but which is frequently omitted from programme analysis, particularly in sub-Saharan Africa. The paper focuses on an analysis of the demographic and socio-economic characteristics of PWP participants. As in many PWPs, no baseline data on participants in these programme were collected. Therefore, it is not possible to ascertain a priori who the beneficiaries of the programmes are, a situation which fundamentally challenges any attempt to or to assess incidence or the social protection impact of such an intervention. The research interrogates the assumption that the 'less eligibility criteria' central to the design of PWPs (the work requirement and low wages) will lead to participation of the poorest, thereby reducing the likelihood of inclusion errors, attempting first to ascertain who the participants in the programmes are. The question is explored using survey data gathered in 2003 on two case study PWPs implemented simultaneously in South Africa, which adopt different design and targeting approaches. Programme incidence is then considered in relationship to targeting and programme objectives, and the conclusion drawn that in order for PWPs to reach the poorest in a given community, reliance on self targeting through the work requirement and a low wage is not adequate, and explicit targeting measures are needed during participant selection.

Introduction

This paper interrogates the assumption that the 'less eligibility criteria' central to the design of PWPs (the work requirement and low wages) will lead to participation of the poorest, thereby reducing the likelihood of inclusion errors, attempting first to ascertain who the participants in the programmes are. This paper explores the socio-economic identity of PWP participants in two programmes in South Africa, in order to establish the incidence of PWP participation, a question which is central to assessing the social protection impact of PWPs, and its relationship to targeting practices and programme objectives, but which is frequently omitted from programme analysis, particularly in sub-Saharan Africa, an omission which has critical implications for evidence based policy selection.

The question of incidence is explored using survey data gathered in 2003 on two case study PWPs implemented simultaneously in South Africa, the, adopting different design and targeting approaches. As with many PWPs, no baseline information on the socio-economic characteristics of those included and excluded was gathered in either programme. This makes an assessment of incidence problematic, and renders attempts to assess the effectiveness of the programmes as social protection instruments somewhat heroic. In this paper, this problem is addressed by analysing a number of key demographic and socio-economic indicators drawn from original survey data in order to locate the participating households within the South African socio-economic distribution, and comparing them to independent census and survey data using both direct comparison and matching techniques.

Structure of the Paper

The paper starts by outlining the two public works programmes and reviewing the targeting and rationing approaches used to control access to both programmes, as these are key determinants of programme incidence. Once the modalities of each programme have been discussed, the paper then reviews the PWP Survey data in a number of different ways in order to construct an assessment of incidence. The demographic and socio-economic characteristics of the PWP participants in each programme, and the households to which they belong, are extracted from the survey data. These are then compared to provincial and district data on the same variables from the LFS and the 2001 Census. First the demographics of the PWP participants from the two programmes are reviewed in terms of age, gender, location within household structure, education and literacy. These characteristics are compared between the programmes, revealing significantly different characteristics. Next the characteristics of PWP households are reviewed and compared to LFS 2003 and Census 2001 data as appropriate, in order to locate the PWP households within the populations from which they are drawn, first focusing on the characteristics of the household heads, looking at gender and education level, and then examining household characteristics (including household size and asset ownership, which was found to be a good proxy for household income, and social grant receipt). Finally, a propensity score matching (PSM) exercise is carried out, in order to match the survey PWP households with households in the Census 2001 on the basis of key household variables. The validity of the matching exercise is checked by analysing

the basic household characteristics of PWP and matched households, to ensure consistency with the prior analysis, and then the income data for the matched households are used to draw some conclusions on the poverty targeting of both programmes. These findings are then reviewed in the light of programme design factors.

The Question of Incidence

First the characteristics of the PWP workers and their households are examined, in order to determine which segment of the population is participating in PWPs and what targeting of PWP employment is taking place. The characteristics of the workers and their households are identified in terms of a number of demographic and socio-economic indicators, and compared with data for the local population in the programme areas derived from both the 2001 Census, and the March 2003 LFS, which are used as comparators.[1] Propensity score matching techniques are then adopted to identify PWP-matched households within the Census 2001 and these are then compared to non-matched households in these areas in order to assess the relative income status of PWP-participating households, and carry out an income-based poverty incidence assessment.

PWP Access: Targeting and Rationing Practices

In the context of mass unemployment and extremely low informal sector earnings, it is not evident that the principle of 'less eligibility' through the work requirement and low wage will ensure that the 'poorest' will succeed in accessing PWP employment. Hence, the modalities of targeting and rationing become critical determinants of the extent to which such programmes reach intended vulnerable target groups. In the case of South Africa, access to PWP employment is strictly rationed, due to the large scale of the unemployment problem, and the relatively limited scale of PWP employment; full implementation of the national EPWP, of which both case study programmes form a part, would absorb less than 1% of unemployed workdays per annum (McCord, 2003). Since the national PWP (the Expanded Public Works Programme, or EPWP) is the only significant policy response to the social protection needs of the unemployed working-age poor, it is particularly important to examine the incidence of differently designed EPWP interventions; in the context of a highly rationed resource, it is important to know whom the wage transfer is reaching, and the socio-economic identity of the beneficiaries.

The Unemployment and Social Protection Context

After rising for 30 years, unemployment reached a plateau in the mid 2000s, standing at 23% in September 2007 by the narrow definition, and 36% by the broad

[1] While the March 2003 LFS represented the closest temporal and design match to the PWP surveys, this data cannot be analysed at a district level, and for this reason the Census 2001 data were also used in the following analysis, see discussion below.

(StatsSA, 2008a).[2] At the time of the PWP Survey in 2003 the unemployment rates were 31% and 42% respectively (StatsSA, 2004). Structural changes in the economy, arising from shifts in labour intensity and declining primary sector activity, are having a significant impact on both total employment rates and the composition of labour demand, leading to slow employment growth and rising unemployment among the low and unskilled during the 1990s and early 2000s (McCord and Bhorat, 2003) a situation described by Kingdon and Knight in 2000 as 'catastrophic' (2000: 13)[3]. Since the mid 2000s, levels of demand for unskilled labour have been sufficient to absorb additional workers entering the labour force, but have only been able to make a limited impact on reducing the massive stock of the unemployed within this group (Meth, 2008b). Given the structure of the South African economy, it has been estimated that even with optimistic growth projections of 6% per annum, broad unemployment among the semi-skilled and unskilled is unlikely to fall significantly below 30% in the medium term (Lewis, 2001:55). Poverty levels are closely correlated with unemployment in South Africa (Leibbrandt and Woolard, 2001), and out of a total population of 45 million, approximately 19 million live below a per capita poverty line of R430 (US$68[4]) a month, with 3.3 million people living in the bottom decile (mean per capita income of R128 (US$20)), and a further 3.9 million in the next decile (mean income of R242(US$38)).[5]

While South Africa provides an extensive social assistance programme for various categories of the vulnerable, providing grants to more than 12 million recipients, no social grants are available for the working age unemployed poor. Rather than addressing the needs of this group directly through large-scale social protection interventions, the policy strategy is to promote GDP growth, on the assumption that this will provide additional employment opportunities in the medium to long term, and in this way the working age poor will be supported. The only significant social protection intervention for the working age unemployed poor in the short term, pending the success or otherwise of the national growth strategy, is the national PWP. Given the limited number of short-term employment opportunities offered under this programme, in the context of 2 to 4 million unemployed, it is crucial to examine which groups are likely to benefit from participation in such a programme. Hence, the two PWPs which formed models for the development of the national EPWP are examined in this study in order to assess the efficacy of such programmes in terms of their incidence, and whether they are likely to reach the poor.

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[2] The official or narrow rate of unemployment is calculated by Statistics South Africa (Stats SA, 2002) on the basis of those unemployed who a) did not work during the seven days prior to the interview, b) want to work and are available to start work within a week of the interview, and c) have taken active steps to look for work or to start some form of self-employment in the four weeks prior to the interview, while the broad or expanded unemployment rate excludes criterion c).

[3] However, recent research in South Africa indicates that self-employment, subsistence agriculture and casual employment may not always be considered as 'work' (see, for example, Adato et al. (2004)). This may lead to a bias in survey based estimates of unemployment.

[4] US$1 = ZAR6.35 in 2005 prices.

[5] Estimated on the basis of the 2005/6 Income and Expenditure Survey (IES) (Stats SA, 2008b:31) and Hoogeveen and Ozler's poverty line inflated to 2005 values (Hoogeveen and Ozler, 2005).

Overview of the Case Study Programmes

The two case study PWPs which have significantly different design components conforming to different PWP types,[6] were implemented simultaneously in discrete areas of South Africa with similar poverty and unemployment profiles. This offers the opportunity to explore the consequences of different design modalities on incidence and provides insights into the impact of programme design on participation.

The two PWPs under review are the Gundo Lashu programme in Limpopo, and the Zibambele programme in KwaZulu-Natal.[7] The programmes were selected because of their high profiles, differing design and implementation modalities, and the use of components of the programmes in the EPWP, with the Limpopo programme being used as a model for the labour-intensive construction component of the national EPWP. The operational areas of the two programmes are illustrated in Figure 1. The Gundo Lashu programme was implemented in just one area, Capricorn District (shaded), while the Zibambele programme was implemented throughout the province.

The Characteristics of Limpopo and KwaZulu-Natal

Limpopo has a population of 5.4 million (12% of the total population of South Africa), and KwaZulu-Natal has a population of 9.8 million (21% of the total) (Stats SA, 2004). Limpopo and KwaZulu-Natal are two of the poorest provinces of South Africa, with the highest unemployment rates in the country, at 38% and 36% respectively by the narrow definition, compared with a national figure of 31% (Stats SA, 2003a). In both provinces employment is dominated by elementary occupations, which account for 33% of workers in Limpopo, and 25% in KwaZulu-Natal. Both provinces have traditionally been highly dependent on agricultural employment and remittances from migrant labour, and the structural shifts in the national economy in recent decades have had a major negative impact on both poverty and formal sector employment (Leibbrandt and Woolard, 2001). The historical nature of disadvantage in the two provinces is illustrated by the fact that, among those aged 20 and over, 33% of the Limpopo population and 22% in KwaZulu-Natal have no schooling, compared with the national average of 18% (Stats SA, 2003b).

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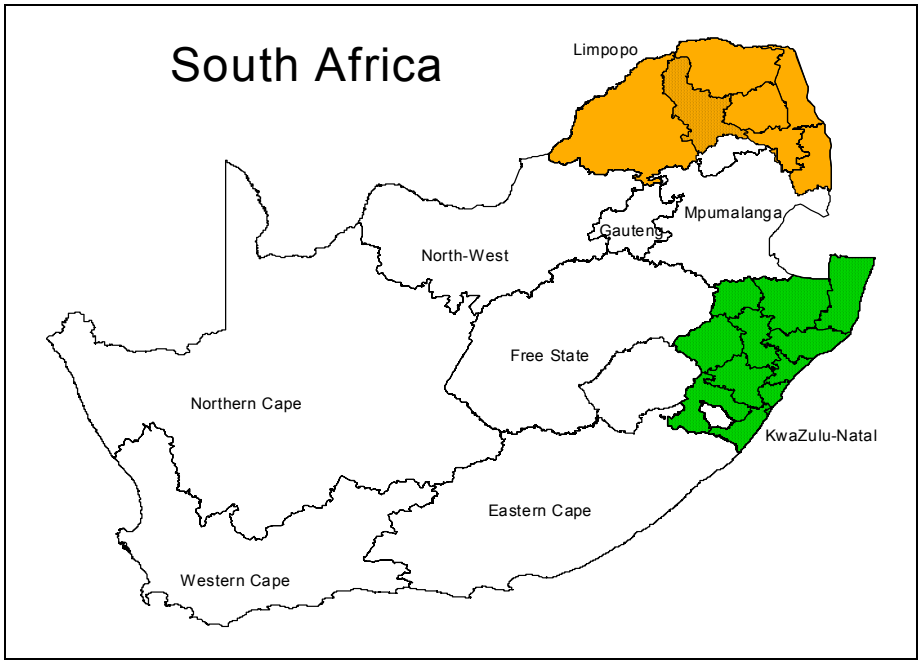
[6] The PWP typology referred to here is set out in 'Recognising Heterogeneity: A Proposed Typology for Public Works Programmes' (forthcoming SALDRU working paper). In this paper McCord identifies four basic types of PWP; Type A PWPs offering a single short-term episode of employment, Type B PWPs comprising large-scale government employment programmes offering repeated or ongoing employment which may provide some form of employment guarantee, Type C PWPs promoting the labour intensification of government infrastructure spending, and Type D PWPs which aim to enhance the employability of participants.

[7] 'Gundo Lashu' means 'Our victory' in Venda, and 'Zibambele' means 'Doing it for ourselves' in Zulu.

Figure 1 PWP Coverage



Programme Objectives and Modalities

The goal of the Gundo Lashu programme is the 'improvement of livelihoods in rural communities in the Northern Province', and the purpose 'employment creation within the rural communities … skill transfer from private contractors to community members … [and] enhancement of livelihoods for those community members providing labour to the programme' (Roads Agency Limpopo, 2003), which may be characterised as sustainable poverty reduction and improved labour market performance. The programme is implemented by the Roads Agency Limpopo,[8] with support from DFID and the ILO, and is focused on both employment creation and the training of contractors and consultants in labour-intensive road rehabilitation. It was initiated in 2000, and had employed a total of 1,700 labourers at the time of the survey.

The programme was implemented through private contractors who directly recruited PWP labour with support from social facilitation agencies which managed the contractors' relations with the communities supplying the labour. The period of employment ranged between less than one month and four months, and labour was recruited on the basis of the 'Special Public Works Programme' Code of Conduct, gazetted in 2001, which sets out participation targets (60% women, 20% youth and 2% disabled), prohibits employment exceeding 24 months in duration, and also allows for a derogation from national minimum wage legislation in favour of a locally negotiated wage, in return for training inputs for workers of two days for every 20 worked. In the Gundo Lashu programme, a task rate of R30 (US$4.05 at 2003

[8] The Roads Agency Limpopo is a parastatal with responsibility for the management of all provincial-level roads.

rates)[9] was negotiated, which in most cases translated into a daily wage of R30.[10] Wage payments were made directly to labourers by the contractors in cash, and training inputs were delivered by the Department of Labour.[11] Where PWP employment was oversubscribed, rationing was carried out using a lottery, with ownership of an identity card being the condition for consideration, thereby excluding those without such documentation who tend to be among the poorest. Demand for labour exceeded the locally available supply during the construction of highly labour-absorbing components of the road, and at these times all available labour was employed, compromising any attempt at targeting, in the interests of the exigency of the construction process.

The Zibambele programme in KwaZulu-Natal was also initiated in 2000, with the goal of the 'creation of sustainable job opportunities for poor rural families through the maintenance of rural roads' (South Africa, KwaZulu-Natal Department of Transport, 2002). The objectives of the programme were to:

- Maintain the province's rural road network
- Provide destitute rural households which have no other source of income with a regular income
- Put people to work who are unemployable due to their poverty
- Improve the life chances of the contractors and their children (nutrition, education, dignity and economic activities)
- Enable contractors [PWP participants] to organise themselves into credit unions and invest savings in other productive activities
- Create sustainable work opportunities

(South Africa, KwaZulu-Natal Department of Transport and Public Works, 2002).

The programme was implemented directly by the Provincial Department of Transport, and provided permanent employment through labour-intensive road maintenance (rather than construction, as in the Gundo Lashu programme) for 14,000 workers on a part-time basis (eight days per month), with a large degree of flexibility regarding when the hours were worked during the month. The programme targeted the poorest members of communities, particularly female household heads, who were selected by community representatives using community institutions developed over several years by the Department of Transport.[12] Zibambele employment was oversubscribed and selection was made on the basis of community identification of the poorest with no alternative forms of income or support. Workers

[9] US$1 was R7.4 in May 2003.
[10] It was possible to earn more than R30 if more than one task was completed in a day.
[11] It should be noted that the training package offered to the Gundo Lashu workers was recognised as not being optimal, and has subsequently been revised.
[12] These institutions are called Rural Road Transport Fora (RRTF), and they are charged with a range of transport-related tasks including the selection of priority roads for maintenance, in addition to the selection of PWP participants.

were contracted directly by the Department of Transport, and paid at the minimum construction industry wage (R5.57 per hour (US$0.75 at 2004 prices)) for the 60 hours a month they worked on the basis of twelve-month annually renewable contracts, totalling R334 a month (US$45). Wage payment was made monthly through electronic transfers to the workers' bank accounts in the nearest town,[13] and training was delivered on an ongoing basis by the Department of Transport and its social development consultants. The Zibambele contract was given to a household rather than to an individual, so that if the primary worker were sick or had passed away, employment in the PWP would shift to another household member.

Targeting Practices

The two case study programmes adopted different targeting mechanisms and participation criteria, with the Gundo Lashu programme in Limpopo adopting conventional PWP targeting practices, relying on the principle of less eligibility, mediated through the work requirement and a restricted wage, while the Zibambele programme in KwaZulu-Natal relied on a combibnation of the work requirement, and community-based targeting, adopting a higher hourly wage, consistent with the national minimum wage.[14] These different modalities a instructive and are discussed in detail below.

The Gundo Lashu programme adopted a restricted wage as the primary mechanism to target the poor. The Gundo Lashu wage is set below the minimum wage, on the basis that this would deter all but the poorest from self-selecting into PWP employment, in line with the principle of 'less eligibility'. In contrast, in the Zibambele programme the wage is set at the minimum wage for the rural construction sector. In addition to the wage, the case-study programmes both adopt additional demographic targeting criteria. The Gundo Lashu programme nominally adopted the official EPWP participation targets with quotas for the employment of women (60%), youth aged between 18 and 25 years (20%), and those with disabilities (2%) (South Africa, Department of Labour, 2002b).[15] It is interesting to note that membership of a broad demographic grouping, rather than poverty, is the criterion for inclusion in the programme. There is no explicit adoption of eligibility criteria based on poverty, as it is implicitly assumed that poverty targeting is sufficiently addressed through the reduced wage level.[16] In the Zibambele programme, in contrast, poverty is explicitly used as the targeting criterion which is implemented by community groups, and within the group identified as the 'poor', the poorest were explicitly targeted, using membership of female-headed households as a secondary criterion to reach the subset of the most disadvantaged. The outcomes of these differing eligibility criteria and targeting methods are empirically tested in the analyses below by comparing the characteristics of the PWP participants and their households with those of the

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[13] Many participants without identity cards were helped to procure them by programme staff in order to open bank accounts.

[14] , although given the part time nature of the employment, it should be noted that this results in a lower total monthly wage

[15] These quotas are articulated in the Basic Conditions of Employment Act 1997.

[16] Everatt suggests that the expectation of positive poverty outcomes from programmes with limited or inconsistent definitions of poverty, and hence a limited poverty focus, may not be uncommon in the South African policy context (2003: 86).

population of their respective catchment areas drawing on the 2001 Census as a comparator, and also by comparing matched samples with the overall population. By comparing the characteristics of participants and locating them in their respective district and provincial contexts in this way, the targeting performance of the PWPs can be assessed as a means to gauge programme incidence, and as a first step towards evaluating the two programmes' social protection performance.

During the implementation of the Gundo Lashu programme, mobile labour from outside the immediate programme area complemented local labour supply at times when local labour supply was insufficient to meet construction demand, with participants being selected on the basis of availability, rather than other explicit targeting criteria. The migrant labour which participated in the PWP during periods of peak labour demand was not captured in the survey, which was limited to those domiciled in the intended target area. The fact that 15% of those on the payment roster sample frame were 'not known' in the host communities during the survey process, implies that the extent of migrant labour included in the programme was significant. While the existence of this problem was identified by programme managers during implementation, the extent of the participation of participants from outside the local communities had not been recognised. The inclusion of migrant labour in PWP is *not de facto* problematic. However, the resultant exclusion of those living outside the programme area from the survey does impact adversely on the ability of the survey to adequately assess the characteristics of programme participants, since 15% of participants are excluded from the analysis.

At other points in the construction cycle, when the local labour seeking employment exceeded PWP job availability, job rationing was required, and ownership of an ID card was reported in most cases to be the initial criterion for eligibility[17], with selection subsequently proceeding on the basis of a lottery, [18] with exigency once again overriding the more complex participation criteria set out in the SPWP.[19]

Hence, in the Gundo Lashu programme, the degree of participation by particular target groups at any point in the implementation cycle was contingent on the size of the available labour supply in relation to demand, and also on the commitment, interest and time invested in the targeting component of the recruitment process by the contractors. Contractually there were no incentives for the private sector contractors executing the programme to meet either explicit demographic or implicit poverty targets in their recruitment processes. This insight has negative implications for the degree of poverty targeting, and targeting to the poorest likely to occur in such programmes, and this highlights the critical importance of the institutional processes through which targeting takes place, and also the phasing and scale of labour demand in relation to supply in a given area, if poverty-related targeting of PWP employment is to be achieved. Both these scenarios, excess demand for PWP employment leading to a lottery-based allocation, on the basis of the assumption that the wage level itself will exclude the non-poor; and excess demand for labour

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[17] Focus group discussions, Capricorn District, May 2003.
[18] This process was reported by focus group participants in both the Gundo Lashu clusters.
[19] At these times of insufficient local labour supply, additional labour was recruited from outside the project areas, pers. comm., May 2003, Mbongeni Mondlane, ILO Social Development Adviser to the Gundo Lashu programme.

outstripping local labour availability, leading to participation of migrant labour in PWPs, are common in type A and C programmes. The implication is that the targeting nuances incorporated into type A or C programme design may be compromised by the exigencies of differential labour demand throughout the construction process.

In the Zibambele (type B) programme, excess demand for PWP jobs led to high levels of competition for employment, and as a result access to employment was strictly rationed. In this case, each applicant was considered on the basis of strict poverty criteria (based on a combination of factors such as household labour availability, wage income and grant income) by community representatives from the RRTF which included representatives of the poor within the community. The extent of community participation in the selection process was feasible due to the long-term relationship between the community and government implementing agencies, as the RRTF institutions adopted for PWP selection were functioning prior to the implementation of the PWP (McCord, 2003). The extent of active governance of the programme by the community resulting from this institutional setting was illustrated by a report given by one focus group that one Zibambele participant had been invited, by the community who had previously selected her for participation, to step down from the Zibambele programme upon receipt of a pension by a household member, on the grounds that she no longer conformed to the poverty selection criterion, since her household now had access to an alternative form of income. This is indicative of the effective community ownership and commitment to the programme's purpose and the objective of selecting the poorest for participation.

This description of the two programmes implies different targeting outcomes. The survey findings are examined below to assess whether they indicate different incidence outcomes resulting from the differing targeting modalities in the two programmes.

Data Constraints

In conducting this analysis, a number of data constraints were faced, relating to the lack of comparator or control data in the PWP Survey, as a consequence of the lack of initial baseline data on participants, poor quality income data in the key national surveys used for comparison (LFS 2003, and Census 2001), lack of geographically disaggregated data in the LFS 2003, lack of PWP Survey panel data, confusion regarding the employment status of PWP employees included in the sample, and lack of a nationally agreed poverty line. These issues are discussed below.

Lack of Baseline Data

The lack of baseline data on PWP participants in the two programmes posed a serious methodological constraint. A 'difference-in-difference' (DD) methodology would have been the most appropriate way to evaluate the impact of the programmes, using as a control households with similar pre-programme characteristics to those of the households 'treated' by becoming PWP participants. However, this approach was not feasible due to the fact that the characteristics of PWP participants were not known *a priori*, rendering the inclusion of a non-treatment control group in the survey impossible; the identification of the characteristics of

participants itself formed one of the critical questions which the study set out to examine. In the absence of a control group, the survey was conducted only on households with members who participated in the PWPs, the 'treated' group. Comparative analysis was then carried out *post hoc* using data from both the March 2003 LFS and the 2001 Census, once the characteristics of the PWP workers had been identified from the PWP Survey data, on the basis of both direct comparison of the overall population with the PWP sample, and matching techniques.

The PWP Survey was designed to be directly comparable to 2003 Labour Force Survey (LFS),[20] implemented biannually by Statistics South Africa (StatsSA). However, there are two key constraints relating to the use of the March 2003 LFS for control data; the limited geographical disaggregation possible with this survey, and the quality of the income data. In terms of the first constraint, it is not possible to disaggregate the March 2003 LFS data to district level, or to specify 'rural' as a condition[21]. While the KwaZulu-Natal programme was implemented across the province, and so provincial comparator data are acceptable, analysis at district level is necessary in the case of the Limpopo survey, as the programme was concentrated in a single district, and yet could only be compared to province-wide data if the LFS data were adopted, thereby risking a reduction in the quality and nuance of analysis. Using provincial LFS data would be particularly problematic as Capricorn District, where the programme was implemented, is significantly less poor than other districts in Limpopo, by a range of indicators (such as lower unemployment rates than the provincial mean, and significantly higher incomes,[22] see discussion in Elsenburg, 2005). In order to avoid the risk of biasing an interpretation of incidence and impact, it is not appropriate to compare survey findings with provincial level data from the LFS. For this reason, where possible, data from the 10% sample of the 2001 Census, disaggregated to district level and limited to rural respondents, have been used for comparative purposes. Compared to the provincial means, the Limpopo PWP participants were not poor in relative terms, on the basis of a range of non-income poverty indicators, but it is necessary to compare the PWP respondents with the norm of the district in which the programme was implemented in order to make an assessment of incidence within the programme. In this way, the socio-economic status of the PWP participants can be assessed in relation to the district population overall, which enables a more accurate analysis of incidence.

Limited Income Data

The second major data constraint relating to the 2003 LFS is that the income data are not sufficiently detailed to offer meaningful comparisons with the PWP Survey data. While the LFS provides only limited summative income and social grant receipt data, the Census 2001 income data are also limited, with income data restricted to broad income bands, rendering any matching or incidence analysis based on

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[20] The March 2003 Labour Force Survey was the seventh round of a twice-yearly household survey implemented by Statistics South Africa. The survey examines the extent of employment in the formal and informal sectors, and the extent of unemployment, gathering data from 69,000 adults aged between 15 and 65 from 30,000 dwellings around the country.

[21] The 2003 LFS adopted an urban/non-urban dichotomy, rather than an explicit identification of 'rural'.

[22] Mean household income in agricultural households in Capricorn was ZAR 19,345, compared to a provincial norm of ZAR 14,186, and for non-agricultural households ZAR 30,361, compared to ZAR 25,402 (Elsenburg (2005:7) based on the 2000 LFS)

monetary indicators problematic. In order to carry out an incidence analysis without recourse to income data, a set of non-monetary indicators of poverty have been used for both descriptive and econometric analysis which relate to individual and household material and human capital characteristics (asset ownership, nature of dwelling, gender of household head, educational attainment of household head, educational attainment of household head). In addition to descriptive comparisons of the non-monetary characteristics of the treatment and control groups, a model has been developed based on propensity score matching using a core set of characteristics to ascertain the relative socio-economic status of PWP participants, in order to assess targeting and incidence in relational, if not absolute, income terms.

Geographical Disaggregation

Where Census 2001 has adequate variables it has been used as the comparator of choice, using data aggregated at province level for the Zibambele analysis, as the survey groups were drawn from each of the province's districts, and district level for Gundo Lashu analysis, as the PWP was implemented in Capricorn District alone, with both survey clusters falling within this district. In each case, only rural Census data were used, reflecting the rural focus of the two PWPs. Where the LFS has been used as the comparator, the data have been conditioned on the basis of province and 'non-rural' identity.

Panel Data

The absence of panel data is problematic in terms of an assessment of programme impact over time. In order to address this constraint, recall questions were included in the PWP Survey relating to nutrition, savings, education, asset ownership and perceptions of poverty.

Data Analysis: The Characteristics of PWP Participants

The age and gender of PWP participants is set out in Table 1.

Table 1: Age and Gender of PWP Participants

	Mean Age	Age Range	Aged <25 (%)	Aged >40 (%)	Female (%)	n
Gundo Lashu	35	14-61	22	29	48	415
Zibambele	45	19-63	2	72	93	268

Source: Own calculations using PWP Survey 2003.

The mean age of the Gundo Lashu participants was 35, with 29% of the participants being above the age of 40, whereas the mean age of the Zibambele participants was

45, with 72% being over 40. In terms of the programmes' respective targets, the Gundo Lashu programme met its youth target, with 22% participation by those under 25, compared with a target of 20%. However, the programme failed to meet its female participation target of 60%, with only 48% of the Gundo Lashu workers being female. The Zibambele programme aimed to employ women, and succeeded in this respect, with 93% of the Zibambele sample being female. In this way the demographics of the PWP participants is consistent with the differing age and gender distributions which would be expected, given the programmes' respective targeting objectives and implementation modalities, since the Zibambele programme explicitly focused on reaching poor female-headed households[23], while the Gundo Lashu programme nominally prioritised 'youth' as a target group and in practice, accepted all comers on a first-come, first-served or lottery basis[24].

The demographic difference between the two programmes is further illustrated by an analysis of the position of participants within the household structure, see Table 2. Some 68% of the Zibambele participants were household heads, and a further 24% were the spouses of household heads, rendering 92% of all participants household heads or spouses of heads. Only 42% of their Gundo Lashu counterparts fell into this category, with the participants more likely to be the children of household heads. This suggests that the two programmes were recruiting different household segments, participants of differing ages and positions within the household hierarchy, and consequently, it may be imputed, with different labour market functions and responsibilities within the household.

Table 2: Location of Participants within Household Structure (%)

	Household head (%)	Partner of household head (%)	Children of household head (%)	Other (%)	Total (%)
Gundo Lashu	22	20	45	13	100
Zibambele	68	24	4	4	100

Source: Own calculations using PWP Survey 2003.

[23] If age and gender are considered together, it is evident that male PWP participants in the Gundo Lashu programme were concentrated in their twenties (43% of the total), while female Gundo Lashu participants were older, being concentrated in their thirties (38%). Both male and female Zibambele participants were concentrated in their forties (31% and 38% respectively), with 68% of women being in their forties and fifties. This also reflects the Zibambele policy of recruiting female household heads as their priority employees, as, de facto, household heads are likely to be older than other household members.

[24] The preceding analysis makes the simplifying assumption that demographic characteristics are similar across the two provinces and therefore any disparities are not a consequence of provincial differences in demographics. While the two provinces enjoy similar demographic profiles, they are not identical, and this approach is refined in the following analysis.

These demographic findings are consistent with the Gundo Lashu practice of employing i) all available participants seeking full-time work, or ii) randomly selected participants who were available for full-time work, but not explicitly the poor, while the Zibambele programme focused on recruiting poor rural female household heads who, by definition, would tend to be older, and comprise a group for whom full-time work, such as that offered in the Gundo Lashu programme, may have been unattractive due to competing domestic responsibilities; a factor which would not represent a similar constraint for younger household members without the same burden of domestic responsibility.

It could be argued that extending PWP employment to the different groups of participants identified above is appropriate given the elevated unemployment rate in rural areas and the pervasive difficulties of gaining access to employment. However, these demographic incidence differences are problematic if the objective of the programme is the provision of social protection, rather than employment provision *per se,* particularly given the limited scale of PWP employment and the extensive rationing of PWP employment which this implies.

In addition, the social protection discourse suggests that transfers to women tend to deliver greater human and social capital benefits at a household level than transfers received by men (Appleton and Collier, 1995:563; Hoddinott and Haddad, 1995). This supposition is supported with reference to South Africa by Duflo (1999), who found that the welfare impact of pensions received by women had a significantly greater impact on household welfare than those received by men. This was affirmed during focus group discussions conducted among PWP participants in Limpopo and KwaZulu-Natal where female participants argued that PWP wage transfers received by men (and youth) had a more limited impact on household welfare than those received by women.[25] This challenges the limited participation target for women in the Gundo Lashu programme, given the objective of poverty reduction. It also highlights the potential tension between the objectives of poverty reduction and enhancing labour market participation among the youth (McCord, 2003).

The human capital indicators, maximum attained education level and literacy, may also be used to contribute to the socio-economic profiling of PWP participants. The Gundo Lashu participants had a modal education level of Grade 8 to 10 (36%) while for Zibambele participants the mode was 'no education' (31%). When these findings were disaggregated to control for age and gender, it was found that in every age cohort the modal level of education of Zibambele participants was lower than that of Gundo Lashu participants. Literacy rates follow a similar pattern when disaggregated by age and gender, with Zibambele participants again having significantly lower literacy rates than the Gundo Lashu participants in all age categories. These findings are also consistent with the greater emphasis on poverty targeting in the Zibambele programme and support the argument that the participants in the two different programmes may come from different socio-economic population segments.

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[25] The reduced welfare benefits accruing to households where youth and males were the PWP participants, were voiced by female participants in the Gundo Lashu programme during focus group discussions in Sekhukhune, Limpopo, in April 2003. Participants in the Zibambele programme also highlighted, during focus group discussions in Eshowe and Mapumulo, the more limited household benefits accruing from wage transfers to men rather than women household members, in February 2004.

These individual differences offer insights into the different targeting outcomes of the two programmes, and in order to explore these insights in more detail, it is necessary to locate the participants within their household context and identify their socio-economic location within their communities. To achieve this, an analysis of the characteristics of the households to which PWP participants belong is carried out, first using simple comparative analysis, and then using a propensity score matching approach.

PWP Household Characteristics

In this section, the characteristics of households within which the PWP participants were located are identified, and compared to the general population using key household variables, in order to assess their relative socio-economic status. Comparison is made to the Census 2001 10% sample for rural Capricorn district data for the Gundo Lashu programme, and rural KwaZulu-Natal provincial data for the Zibambele programme, including only black rural census respondents in both cases.

Household Head Characteristics

First the characteristics of the household heads are examined by reviewing their gender and education attainment. 40% of the Gundo Lashu households were female-headed, compared with a 54% prevalence in Capricorn District, Limpopo, implying that fewer female-headed households were included in the programme than would be expected if PWP employment were randomly distributed among the population. By contrast 70% of the Zibambele households were female-headed, compared with a provincial prevalence of 58%, suggesting that the policy of targeting female-headed households in this programme was successfully implemented[26]. These findings are notable given the positive correlation between female-headed households and poverty in Africa (IFAD, 1999), suggesting that there may be a greater poverty focus in the Zibambele targeting.

The maximum educational attainment of household heads in each programme is compared by gender with the respective provincial/district levels, in Tables 3 and 4. Table 3 illustrates that while significantly fewer male Gundo Lashu household heads have no schooling than household heads overall in Capricorn district (20% and 30% respectively), this is not reflected in the case of female Gundo Lashu household heads who have marginally higher rates of no schooling than the female household heads in the general population (48% compared to 44% in the sample report). For both genders, Gundo Lashu households report a lower percentage of household heads having completed secondary or tertiary education than the district mean.

[26] Given South Africa's history of migrant labour an elevated female household head rate is prevalent in rural areas of the country, particularly those which were previously labour reserves.

Table 3: Household Head Education Level in Capricorn and Gundo Lashu Households by Gender

	Capricorn District		Gundo Lashu	
Education Level of Household Head	**Male (%)**	**Female (%)**	**Male (%)**	**Female (%)**
No schooling	30	44	20	48
Some primary schooling	21	15	23	22
Complete primary schooling	8	6	8	7
Some secondary schooling	27	24	36	17
Grade 12 / Standard 10	10	7	5	1
Higher education	4	4	1	0

Source: Own calculations using PWP Survey 2003 and Census 2001.

Table 4: Household Head Education Level in KwaZulu-Natal and Zibambele Households by Gender

	KwaZulu-Natal Province		Zibambele	
Education Level of Household Head	**Male (%)**	**Female (%)**	**Male (%)**	**Female (%)**
No schooling	41	52	38	35
Some primary schooling	25	23	33	42
Complete primary schooling	7	5	8	8
Some secondary schooling	19	14	20	13
Grade 12 / Standard 10	6	4	1	1
Higher education	2	2	0	0

Source: Own calculations using PWP Survey 2003 and Census 2001.

The percentage of Zibambele household heads with no schooling was lower than average in the province, particularly among the women (35% compared with 52%), suggesting that at the bottom end of the education distribution the level of household head education may be slightly superior in PWP households. However, if the bottom two education categories are taken into account, both groups (PWP household heads and overall household heads) have similar education profiles, with 75% and 77% of women respectively having no or incomplete primary education, and 70% and 71% of men, respectively. It is interesting to note that the percentage of PWP

households attaining Grade 12 or above is significantly below that for the overall population for both sexes, suggesting that the PWP households may be less well educated than the provincial mean, Overall, at the bottom end of the education distribution Zibambele household heads have attained higher levels of education than the provincial norm, and at the top end lower levels, indicating a narrower distribution of educational attainment among this group.

Asset Ownership

Households were asked to report on ownership of a list of eleven items, in order to assess their levels of material asset ownership. The full responses are outlined in appendix 5. In order to compare asset ownership with the control populations, television and radio ownership is compared to the Census 2001 data for the rural Capricorn district and KwaZulu-Natal province, in Table 5. Only these two assets have been selected out of the full set included in the PWP Survey, as these are the ones which are included in both the PWP Survey, and the Census data on asset ownership.

This Table indicates that the material asset base of the Gundo Lashu households is similar to or superior to the average for the Capricorn population, while that of the Zibambele households is significantly below the KwaZulu-Natal average. Regression analysis taking the log of household income as the dependent variable and asset ownership as the explanatory variable using the Census 2001 data, indicated that radio and television ownership were both closely correlated with log household income, with the coefficients of impact on log household income being 0.38 and 0.46 for radio and television respectively for Capricorn, and 0.48 and 0.63 for KwaZulu-Natal. This indicates that these two variables may be useful proxies for assessing relative household income in the absence of comparable household income data, with ownership of either asset indicating a higher level of household income than non-ownership, and television ownership being associated with greater household income than radio, adding an additional level of nuance to the analysis. The implication of this is that low relative asset ownership among Zibambele households compared to the Census 2001 data, and the high relative asset ownership levels in the Gundo Lashu households compared to Census data, again suggests that the Zibambele participants were drawn from a poorer segment of the local population than the Gundo Lashu households.

Table 5: PWP and Census Asset Ownership

	Gundo Lashu	Capricorn District	Zibambele	KwaZulu-Natal Province
	% households reporting ownership			
Television	40	39	14	28
Radio	80	71	57	67

Source: Own calculations using PWP Survey 2003 and Census 2001.

Social Grant Receipt

A range of social assistance grants are provided in South Africa for the indigent, and the linkage between grant receipt and household poverty reduction in South Africa has been well documented, with households in receipt of higher value grants (such as the Old Age Grant) by definition falling outside the poorest decile, by virtue of the value of the transfer (Leibbrandt and Woolard, 2001). In order to capture the extent of grant receipt among the PWP households, each household was asked what grants they received[27]. The Old Age Grant, Disability Grant, Child Support Grant, Care Dependency Grant and Foster Care Grant were the main state transfers reported by respondents and the two most significant transfers in terms of incidence, the Child Support Grant and the Old Age Grant, are discussed in detail below.

49% of Gundo Lashu households and 28% of Zibambele households received the Child Support Grants for one of more children, with Gundo Lashu households having a 66% take-up rate, and Zibambele households 36%.[28] These take-up rates may be compared with the overall (rural and urban) provincial take-up rates of 48% in Limpopo and 62% in KwaZulu-Natal in February 2003 (Guthrie, 2003).[29] Hence, among the Gundo Lashu households take-up is higher than the provincial average (66% compared to 48%) while among Zibambele households take-up at is significantly lower than the provincial norm (36% compared to 62%). Interestingly the 36% rate of take-up among Zibambele children is consistent with recent findings in rural KwaZulu-Natal by Case *et al.* (2002) who found a 33% take-up rate, suggesting that the rural/urban location of the PWP sample has a significant impact on take-up rates. Given the link established between grant income and poverty reduction this low grant take-up rate serves as an indicator of the poverty of

[27] There were 919 such household members in the Gundo Lashu survey, and 1306 in the Zibambele survey.

[28] There were 256 eligible children in Gundo Lashu households receiving 169 grants, and 462 eligible children in Zibambele households receiving 165 grants.

[29] These figures apply to take-up rates among 'poor' children, defined as those living below a poverty line of R400 per month in 2002. 99% of the sampled Zibambele households, and 93% of Gundo Lashu households, fell below the HSL of R473 in 2003, and so the simplifying assumption has been made that it is appropriate to consider all the children in the sample poor for the purpose of comparison with national-level take-up of the CSG. Using an alternative poverty line, derived from the 2000 Income and Expenditure Survey, and January 2003 SOCPEN data, Samson et al., (2003) found similar provincial take-up rates, 58% for KwaZulu Natal, and 56% for Limpopo.

Zibambele households in relation to the provincial population overall, compared to Gundo Lashu households who were significantly more successful in accessing the grants to which they were entitled.

For both groups, take-up rates decreased as the number of eligible children increased; in Gundo Lashu households, take-up was 72% when one child was eligible, falling to less than 17% when three or more children were eligible. Among Zibambele households, take-up rates were 40% when one child was eligible, falling to less than 6% of full take-up when three or more children were eligible. The issue of grant take-up was explored in the focus group discussions. This revealed that, while most participants were aware of their rights in terms of eligibility for the Child Support Grant, discouragement during the application process as a result of bureaucratic delays, and the opportunity cost of continuing with the process in the face of these delays was the primary factor limiting grant take-up.

Receipt of an Old Age Grant has been found to have a significant impact on welfare (Case and Deaton, 1998; Duflo, 1999), and so identification of Old Age Grant receipt in PWP households is a useful proxy indicator of household economic status. Thirty-two percent of Gundo Lashu households received state Old Age Grant, compared with only 9% of Zibambele households, reflecting a lower number of pensioners[30] in the Zibambele households and lower take-up rates.

The household take-up rate for the Old Age Grant was 80% in Gundo Lashu households[31] and 58% in Zibambele households[32]. This reflects the greater emphasis on poverty targeting in the Zibambele programme, where receipt of a state transfer was in some instances adopted as a criterion for exclusion from the programme. Hence, the low rate of pensioners and Old Age Grant take-up among the Zibambele group is indicative of the programme's successful targeting. The high incidence of pensioners and take-up rates among the Gundo Lashu group suggests less of a poverty focus in this programme

The low Child Support and Old Age Grant take-up rate among the poor is paradoxical, as is the implication that poorer households in the sample have lower take-up rates than the better-off households, although when this is considered in the context where receipt of a transfer, such as a Old Age Grant or multiple Child Support Grants, is sufficient to move a household above the poverty line, this effect is not surprising. This research suggests that the low grant take-up among the poor

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[30] The number of pensioners in the Gundo Lashu households was significantly higher than in the Zibambele households, with 0.45 pensioners per household, against 0.15 for the latter. A higher percentage of Gundo Lashu households included pensioners than the regional norm, with 38% of Gundo Lashu households containing members of pensionable age compared with the rural Limpopo figure of 33% (Stats SA, 2003a). By contrast, only 14% of Zibambele households included pensionable members, compared with a provincial rural norm of 39% (ibid).

[31] While 98 Old Age Grants were recorded and 118 household members were of pensionable age, four of those who reported pension receipt were not eligible, and were excluded from the analysis, see Case and Deaton (1998), and Ardington and Lund (1995), for a discussion of the payment of Old Age Grants to non-eligible recipients.

[32] Three of the 38 reported as receiving pensions were not eligible and were therefore excluded from the analysis.

is the consequence of both supply-side problems such as bureaucratic delays, and demand-side problems such as lack of documentation among the poor.[33]

Propensity Score Matching to Assess PWP Incidence

Thus far, only demographic and basic household data have been used to inform the discussion of incidence, based on descriptive analysis and direct comparison with Census and LFS data. In order to assess income incidence, which is critical in terms of assessing the poverty targeting of the two programmes, propensity score matching techniques are used in order to construct an income profile of PWP participants which may be reviewed in the context of the income distribution of the population from which participating households are drawn.

In this section, a propensity score matching (PSM) approach is adopted to gain further insight into the incidence of the two programmes in terms of the relative economic status of PWP workers. Direct comparison of income data between the PWP Survey and in the 2001 Census is not appropriate, since although income data are available in both, the Census income data are limited as they do not provide detail on income from different sources and offers only banded income data. In addition, the income inflation during the two-year period between Census and survey implementation also makes direct comparison between the two surveys invidious. To overcome this problem, PWP Survey households were matched with Census households on the basis of a number of household characteristics excluding income, using a technique called propensity score matching (PSM), developed by Rosenbaum and Rubin (1983). The income distribution of the matched households was then compared to that of the other households in the survey areas in order to assess incidence. Other household characteristics were also compared across the two groups.

PSM is typically used to evaluate programme impacts by identifying a 'control' group with similar characteristics to the 'treatment' group and comparing the outcomes of the groups on a particular variable, such as unemployment status. In this case, however, the aim was not to select a comparator group for purposes of impact evaluation, but rather to identify households similar to the PWP households in the Census, in order to ascertain their income status relative to the overall population, to provide an insight into incidence.

The use of PSM in the analysis of characteristics of households taking part in PWPs in KwaZulu-Natal and Limpopo is not typical, in that i) it is not being used for programme impact evaluation, and ii) PSM is most often used to match individuals with other individuals, rather than matching households as in this instance. However, the use of PSM in a non-evaluation method is not problematic, as the basic assumption, that the probability of selection into the treatment group is the same for

[33] Kingdon has suggested that an additional explanation could be the under-reporting of grant income in poor households in the hope of promoting eligibility for PWP employment, particularly given that in the Zibambele programme, receipt of a state transfer is a criterion for exclusion from the programme. However, given the close community scrutiny of income flows within Zibambele households indicated above in the focus group discussion, this explanation does not seem likely in this instance. (G Kingdon, May 2004, pers. comm.)

participants and non-participants, is not broken. Also, many examples can be found in the literature where matching has been used for households (and other units of analysis), such as Mendola (2007) in Bangladesh; Arun *et al.* (2006) in India and Guarcello *et al.* (2003) in Guatemala. What is important in determining the unit of analysis is that the unit is appropriate given the particular area of interest and that the unit of analysis does not compromise the quality of the match. For example, in this case the aim is to compare the household characteristics of PWP-participating households with other households in the local area. This could be done by matching households (which is the method used) or matching the individuals who are PWP workers and then comparing household characteristics. The second method is less satisfactory in this case because there is insufficient comparable individual level information in the Census which would compromise the quality of the match. Thus, in order to compare the characteristics of households, it is most appropriate to match at household level rather than individual level.

Matching Households

The first step in the matching process is the generation of a propensity score for each case in the PWP Survey and the Census by running a probit model with the binary outcome variable equalling 1 where the household is drawn from the PWP Survey and 0 where the household is not a PWP household (i.e. drawn from the Census). The resulting propensity score can be interpreted as the probability that any household (from the Census or survey) will contain a PWP participant. For each of the PWPs, survey and Census cases were pooled and a separate probit model run for each PWP group, the one using Census data from the rural Capricorn district, and the other from rural KwaZulu-Natal province overall. The propensity score is then used to select a 'matched' household from the Census. The independent variables in the model are the characteristics on the basis of which the households are matched. The following characteristics were used:

- Age of head of household
- Gender of head of household
- Highest level of education achieved for head of household
- Number of people in household
- Dependency ratio (the number of dependants in the household divided by the number of 'working-age' members – dependants are under 15 or over 64)
- Type of dwelling (traditional or non-traditional)
- Household ownership of a television
- Household ownership of a radio

The survey cases included in the model were all cases without missing variables on any of the matching characteristics. To be included in the pool of possible Census matches, households had to fulfil certain conditions, namely:

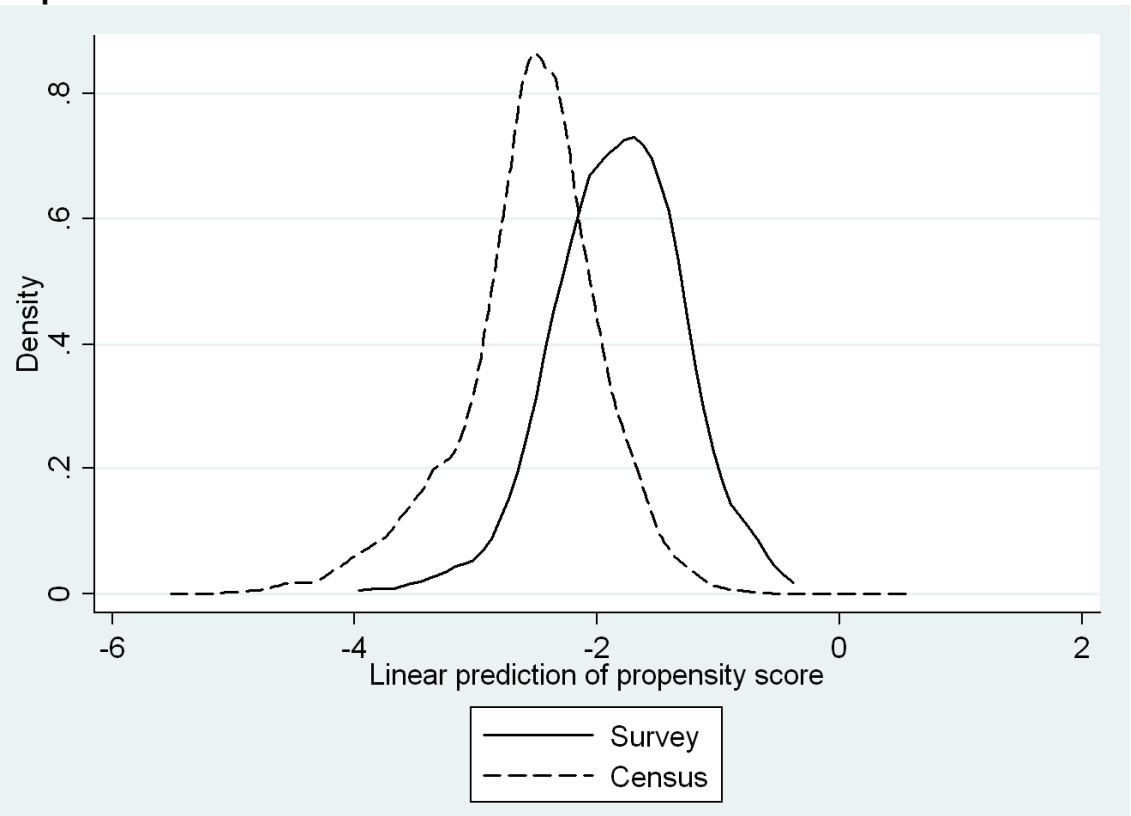
- Their accommodation type is a 'housing unit' (other accommodation types such as hostels and student accommodation were excluded)
- The head of the household was Black African
- The household resided in a rural area
- The household included at least one person of working age (aged 15-65)
- The household had no missing values for any of the matching characteristics

- The household resided in the Capricorn District (for Limpopo only)

The resulting sample comprised 238 survey and 17,440 census households in Capricorn District, Limpopo and 400 survey and 66,841 census households in KwaZulu-Natal province. The matching specification employed was nearest neighbour matching where the census household with the propensity score closest to the PWP household was selected into the comparison group. The data were randomly sorted prior to running psmatch2 as the sort order can impact upon the selection of households into the matched group. The 'no replacement' option was used, meaning that each matched household can only be selected once and after selection a household is removed from the pool of potential matches. Not allowing replacement simplifies the calculations as it means that matching weights do not have to be taken into account.

The linear prediction of the propensity scores for each group is shown in Figures 1 and 2. As might be expected, the distribution of propensity scores is wider for the census households than for the PWP Survey households. Critically, the PWP Survey households all lie within the range of 'common support', such that each PWP household can be matched to a Census household with a similar propensity score. This result indicates that the Census contains households that are similar enough to the survey households to provide suitable matches.

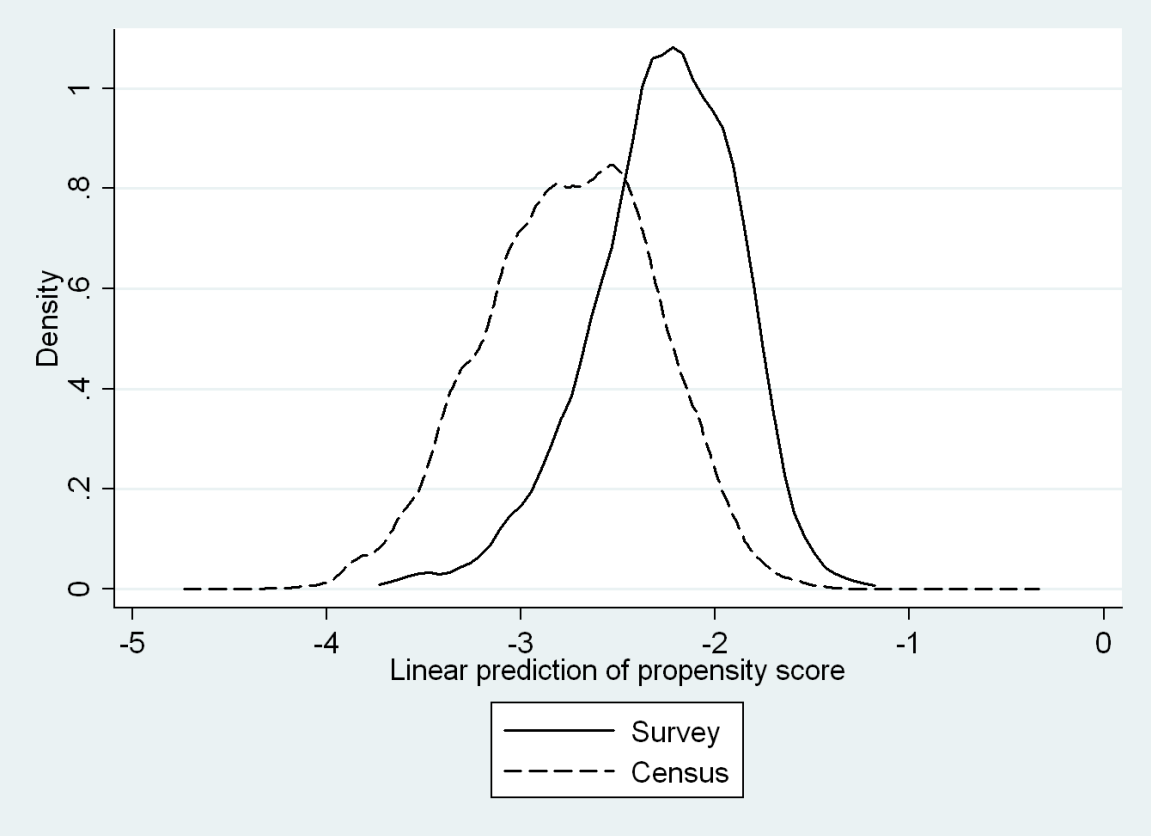
Figure 1: Propensity Score Distribution for Census and Survey Households – Capricorn



Source: McCord and Wilkinson (forthcoming) using PWP Survey 2003 and Census 2001.

Having generated a propensity score for each household, the next step of the matching process was to use the programme psmatch2[34] to match households from the PWP Survey with similar households from the Census according to the propensity scores of the two sets of households. The result was the selection of households within the Census who were assumed to be similar to the households in the PWP Survey.

Figure 2: Propensity Score Distribution for Census and Survey Households – KwaZulu-Natal



Source: McCord and Wilkinson (forthcoming) using PWP Survey 2003 and Census 2001.

The characteristics of the matched and survey group were very similar, indicating that the matching technique worked successfully and that the matched cases are sufficiently similar to be used in further analysis to assess programme incidence. The matched and PWP groups differ slightly in their values for the dependency ratio, with the matched households containing more children and fewer adults than the PWP households, resulting in a slightly larger dependency ratio. This may be an artefact of a difference between the Census and PWP Survey questionnaires in terms of the definition adopted for assessing the number of people normally residing in the household[35]. In the analysis that follows, the assumption was made that the matches

[34]Leuven, E and Sinaesi, B, available from: http://ideas.repec.org/c/boc/bocode/s432001.html.

[35] The Census only records people staying in the household on the census day, while the PWP survey included all those who resided in the household for at least 15 days per year.

are appropriate and successful, despite the weighting of the Census cases not being taken into consideration[36].

PSM Data Analysis

After selecting a matched group of households, a number of comparisons were made between the characteristics of the matched households and those of other households in the local area in order to assess incidence, firstly in terms of a variety of household characteristics indicative of socio-economic status, and then in terms of income. The following groups are referred to in the text below and are defined as follows:

- 'Matched' – all matched households drawn from the Census (note that this only includes households with at least one working age member)
- 'Non-matched' all non-matched households from the original Census matching pool, including households without any working-age members
- 'Census' – 'Matched' and 'Non-matched' groups as defined above, combined
- 'Non-matched working age' – as 'Non-matched' but excluding households with no working-age members

Matching Results: Household Characteristics (Non-income)

Tables 6 and 7 show the household characteristics for the household groups outlined above. As would be anticipated, these results are consistent with the profile emerging from the comparative analysis above.

[36] One difficulty here was that the objective is to compare the income distributions of the matched and non-matched group, and, as the Census data is a 10% sample, this can only be correctly done by applying the appropriate household weights. Unfortunately, psmatch2 does not take account of the household weights and each Census case is taken to represent a single household (when in practice it generally represents around 10 households). However, examining the Census weights it can be seen that the majority are very close to 10, and a comparison of the characteristics of the survey group with the matched group with and without applying the Census weights indicates that this does not significantly alter the closeness of the match, as indicated in appendices 7 and 8.

Table 6: Household Characteristics – Capricorn

Characteristic	Matched	Non-matched	Non-matched with working-age members	Census
Mean age of head of household	56.24	47.85	46.90	47.96
Mean household size (persons)	7.02	4.39	4.50	4.42
Dependency ratio*	0.72	1.06	1.06	1.05
Dependency ratio (whole population)**	0.67	0.96	0.91	0.95
Traditional dwellings	11.22%	9.58%	9.56%	9.60%
Owning a TV	40.72%	39.42%	40.03%	39.44%
Owning a radio	85.71%	71.52%	71.91%	71.70%
Female-headed household	43.20%	58.58%	58.09%	58.38%
Household heads with no schooling	35.79%	39.10%	37.94%	39.05%
Household heads with some primary schooling	26.75%	17.02%	16.83%	17.14%
Household heads with complete primary schooling	5.02%	7.09%	7.18%	7.07%
Household heads with some secondary schooling	28.22%	24.92%	25.65%	24.96%
Household heads with Grade 12 / Standard 10	3.77%	7.83%	8.16%	7.78%
Household heads with higher education	0.44%	4.05%	4.24%	4.00%

Source: McCord and Wilkinson (forthcoming) using Census 2001.

Notes: * The household dependency ratio cannot be calculated for households with no working age members.

** The whole population dependency ratio is the total number of dependants in the group divided by the total number of non-dependants, including households with no working-age members.

Table 7: Household Characteristics – KwaZulu-Natal

Characteristic	Matched	Non-matched	Non-matched with working-age members	Census
Mean age of head of household	48.64	48.27	47.61	48.27
Mean household size (persons)	7.09	5.09	5.20	5.10
Dependency ratio*	0.93	0.95	0.95	0.95
Dependency ratio (whole population)**	0.81	0.85	0.82	0.85
Traditional dwellings	87.52%	55.20%	54.85%	55.38%
Owning a TV	13.35%	27.23%	27.76%	27.16%
Owning a radio	57.36%	67.45%	67.97%	67.40%
Female-headed household	73.25%	53.90%	53.51%	54.01%
Household heads with no schooling	34.88%	46.96%	46.19%	46.90%
Household heads with some primary schooling	44.41%	23.68%	23.80%	23.79%
Household heads with complete primary schooling	5.38%	5.82%	5.90%	5.81%
Household heads with some secondary schooling	13.63%	16.28%	16.62%	16.26%
Household heads with Grade 12/ Standard 10	1.69%	5.15%	5.30%	5.13%
Household heads with higher education	0.00%	2.12%	2.18%	2.11%

Source: McCord and Wilkinson using Census 2001.

Notes: * The household dependency ratio cannot be calculated for households with no working age members.

** The whole population dependency ratio is the total number of dependants in the group divided by the total number of non-dependants, including households with no working-age members.

In Limpopo, matched households have older household heads, are larger, are less likely to be female headed and have fewer non-working age members than the overall population. In terms of education levels the households are fairly similar. The matched households have fewer household heads with further or higher education.

The dependency ratio for the matched population is much lower than the dependency ratio for the census as a whole. This indicates that matched households have relatively more working-age than non-working age members[37].

Table 7 indicates that in KwaZulu-Natal, matched households are larger, more likely to live in a traditional dwelling, and more likely to be female headed than the overall population, reflecting the targeting of women in the Zibambele programme. The matched households are less likely to own a TV or radio but the household head is more likely to have had some primary education, and less likely to have completed secondary education. The dependency ratio for the matched population is similar to the overall Census dependency ratio of 0.85, which is higher than the figure for the whole province reported above (0.63), mainly due to the exclusion of urban households.

PWP Incidence on the Basis of Income Distribution

The primary purpose of the PSM exercise was to locate the PWP households within the overall population income distribution in order to assess programme incidence in terms of the income status of participating households. Having identified adequate matches for the PWP Survey households, as indicated above, the final step was an assessment of incidence on the basis of income, to compare the income distributions of the Census households in the matched group with the other households in the comparison areas for each PWP. The matched households were compared to the sample from which the match was originally drawn.

The income distributions for matched, non-matched, non-matched working-age and Census households are shown in Tables 8 and 9 below[38]. These tables indicate that 35.2% of PWP households in Capricorn and 57.1% of households in KwaZulu-Natal fall in the bottom 40% and 45% of the income distribution respectively.

[37] It should be noted that at 0.95, the Census population dependency ratio is higher than the figure reported for Limpopo province above (78.7) (Health Systems Trust, 2003). This is likely to be largely the result of excluding particular groups from the census population, as excluding urban households increases the dependency ratio substantially. Appendix 6 shows the impact of excluding different groups on the overall dependency ratio.

[38] Inclusion of the household with no working age members group does not significantly alter the results and the values for the Census group are very close to the value of the non-matched group: this is due to the fact that there are many more cases in the non-matched than matched group

Table 8: Household Income Distribution – Capricorn

Income category (monthly household income)	Matched	Non-matched	Non-matched working age	Census
No income	35.2%	40.1%	41.6%	40.0%
R1-R400	9.7%	14.5%	14.8%	14.5%
R401-R800	41.7%	33.3%	31.0%	33.4%
R801-R1600	7.5%	5.3%	5.5%	5.4%
R1,601-R3,200	5.0%	3.8%	4.0%	3.9%
R3,201-R6,400	0.9%	2.2%	2.3%	2.2%
R6,401-R12,800	0.0%	0.5%	0.5%	0.5%
R12,801-R25,600	0.0%	0.1%	0.1%	0.1%
R25,601+	0.0%	0.1%	0.1%	0.1%

Source: McCord and Wilkinson using Census 2001.

Table 9: Income Distribution – KwaZulu-Natal

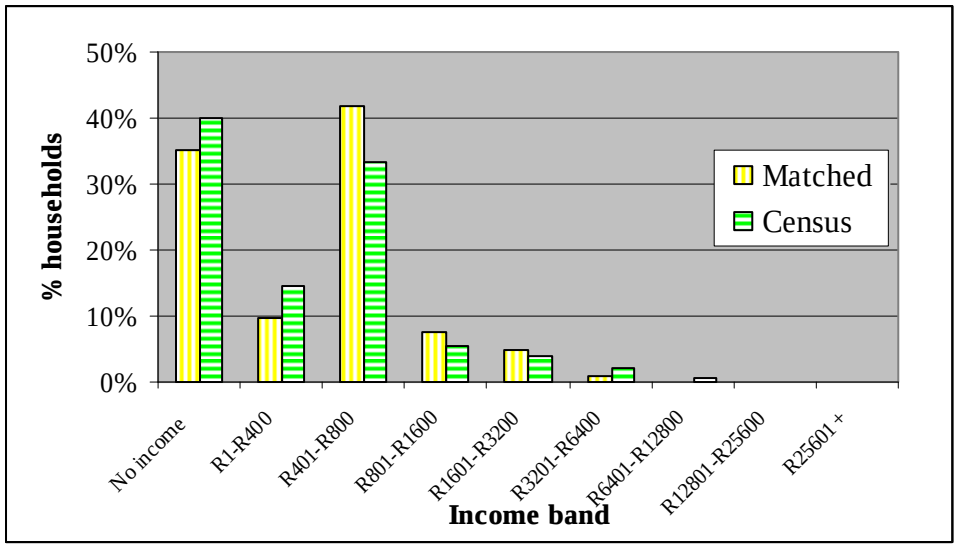
Income category (monthly household income)	PWP	Non-PWP	Non-PWP working age	Census
No income	57.1%	44.7%	45.6%	44.8%
R1-R400	15.0%	13.8%	14.0%	13.8%
R401-R800	19.8%	29.7%	28.4%	29.7%
R801-R1600	5.0%	5.9%	6.1%	5.9%
R1,601-R3,200	2.2%	3.8%	3.9%	3.8%
R3,201-R6,400	1.0%	1.6%	1.6%	1.6%
R6,401-R12,800	0.0%	0.4%	0.4%	0.4%
R12,801-R25,600	0.0%	0.1%	0.1%	0.1%
R25,601+	0.0%	0.1%	0.1%	0.1%

Source: McCord and Wilkinson using Census 2001.

The income distributions for the matched and Census groups are shown graphically in Figures 3 and 4. The two groups differ in that the Capricorn matched households appear generally to be better off across the distribution, having fewer households in

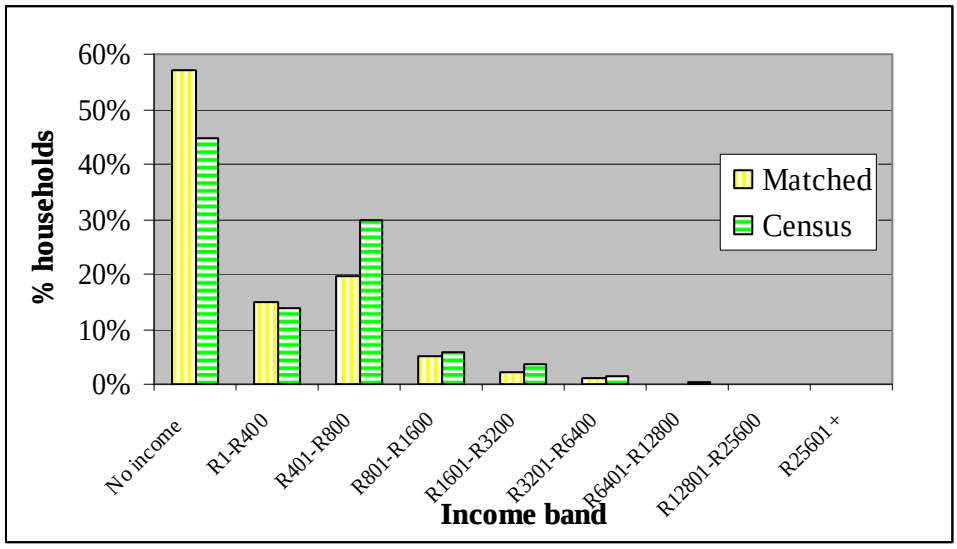
the bottom two income groups and more households in the third income group. In KwaZulu-Natal, the matched households are generally poorer than the non-matched households, with almost 75% of the PWP group in the bottom two income groups. In terms of the incidence of poverty amongst the general population, in both Capricorn and KwaZulu-Natal more than 40% of all households in the Census group record zero income.

Figure 3: Income Distribution for Matched and Census Households – Capricorn



Source: McCord and Wilkinson using Census 2001.

Figure 4: Income Distribution for Matched and Census Households – KwaZulu-Natal



Source: McCord and Wilkinson using Census 2001.

A chi-square test confirms that the income distributions of the matched households are significantly different from the non-PWP households for both groups; for

Capricorn the results were χ=33.48, p=0.0399, and for KwaZulu-Natal χ=70.93, p=0.0001 (null hypothesis is that the distribution of income is identical between the PWP and non-PWP households .

Table 10 shows the estimated mean income per month for households in each of the groups. Interestingly, if the mean household income between matched and non-matched households are compared[39], the difference between the mean household income for matched and non-matched households in Capricorn is significant only at the 5% level, whereas the difference for KwaZulu-Natal is statistically significant at the 1% level and the gap between matched and non-matched household incomes is much wider.[40]

Table 10: Mean Household Income

Mean household income (R per month)	Capricorn	KwaZulu-Natal
Matched	521.25*	307.34**
Non-matched	624.52*	620.00**
Non-matched working age	626.90*	623.00**
Census	623.20	618.32

Source: McCord and Wilkinson using Census 2001.
Notes: * Significant at the 5% level.
** Significant at the 1% level (matched and non-matched groups are compared).

Mean equivalised household income is also compared between the different groups of households. As the matched households tend to be larger, this results in the equivalised income for matched households being lower than for the non-matched households. The difference is statistically significant for both groups at the 1% level. However, the difference is much larger for households in KwaZulu-Natal.

[39] This is done by assigning the mid-point of each income band to each household in that income band.
[40] It should be noted that the income of the non-matched working age group is only slightly higher than that of the group including households with no working age members. The reasons for this are that household sizes tend to be large with several generations living together so there are relatively few households with no working age members. In addition, households containing pensioners may be in receipt of an Old Age Grant and so may even have higher household incomes than households containing working age people who are unable to find employment.

Table 11: Mean Equivalised Household Income

Mean equivalised household income (R per month)	Capricorn	KwaZulu-Natal
Matched	141.74**	74.89**
Non-matched	281.25**	266.54**
Non-matched working age	273.64**	261.22**
Census	279.47	265.51

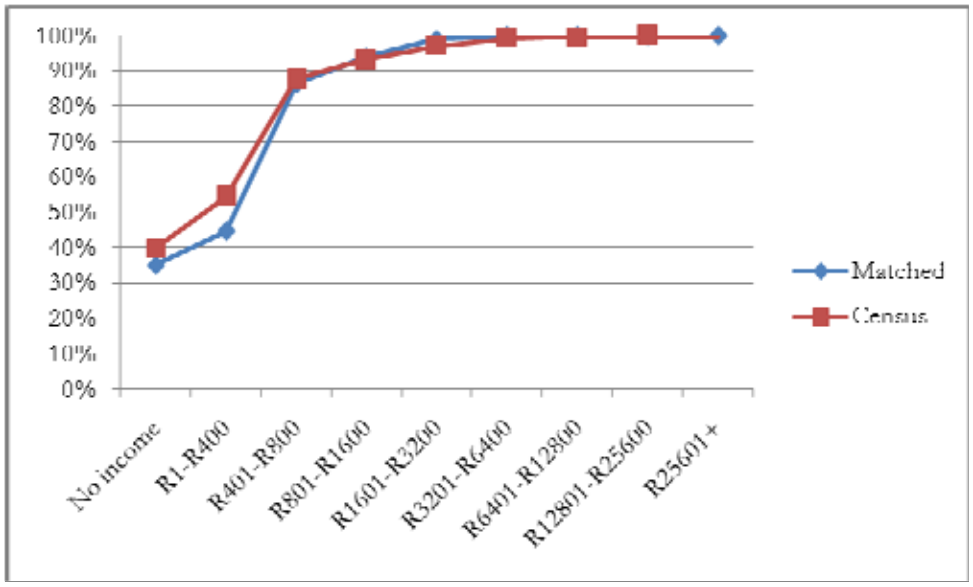
Source: McCord and Wilkinson using Census 2001.
Notes: * Significant at the 5% level.
** Significant at the 1% level (matched and non-matched groups are compared).

Given that i) the matched households were slightly larger than the survey households as they tend to contain more adults and fewer children and ii) that the calculation is based on banded income data, the results should be treated with caution. However, it is clear that matched households in KwaZulu-Natal are relatively poorer compared to non-matched households than is the case in Capricorn where the income of matched and non-matched households are closer together (though still significantly different from one another at the 5% level).

Cumulative Distribution

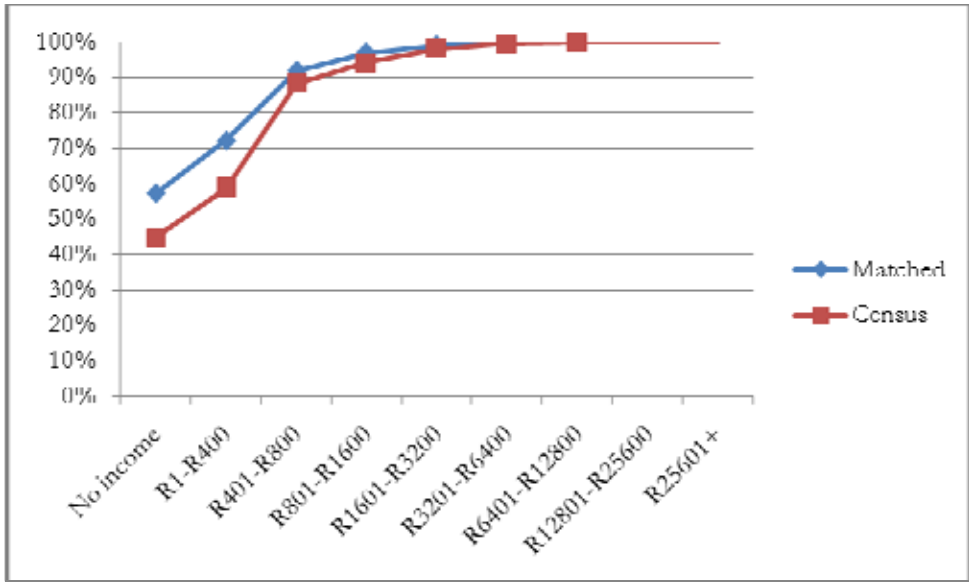
The cumulative distribution of the household income of matched households is presented in Figures 5 and 6. This illustrates the differential poverty incidence in the two programmes, based on PSM income bandings for matched households. These figures indicate that on the basis of the PSM matching, the lower income bands were under-represented in the Gundo Lashu programme, relative to their share of the overall population, whereas in the Zibambele programme lower income bands were over represented among participants, with the percentage of PWP households exceeding the percentage of members of the overall population in the lower income bands illustrating a greater degree of poverty targeting in the Zibambele programme. Only 45% of Gundo Lashu matched households had an income of R400 or less per month compared to 55% of the total number of households in the sample, while in contrast, 72% of the Zibambele matched sample had an income of R400 or less, compared to only 59% of the total number of census households.

Figure 5: Cumulative Distribution of Census Income and PWP Matched Income - Capricorn



Source: McCord and Wilkinson using Census 2001.

Figure 6: Cumulative Distribution of Census Income and PWP Matched Income – KwaZulu-Natal



Source: McCord and Wilkinson using Census 2001.

The cumulative distribution of income in matched households illustrated in Figures 5 and 6 can be used to draw some conclusions regarding incidence of the two programmes, linking the PWP Survey analysis and PSM results with current research into assessing social protection programmes' poverty incidence. The preceding analysis suggests that in the Gundo Lashu programme, 35.2% of

programme households were below the 40th income percentile, while for the Zibambele programme, 57.1% of households were below the 45th income percentile (the 45th percentile is adopted in place of 40th as it is the closest approximation possible given the banding approach adopted in the Census, rather than continuous variable, which a 40th specification would require). Caldes *et al.* (2004) cite work by Coady *et al.* (2002) who reviewed more than 100 social protection programmes and found that the 'median targeting performance was consistent with 50% of programme benefits accruing to the poorest 40% of the population' (Caldes *et al.*, 2004:31). On this basis, Zibambele programme incidence would fall above this median targeting performance at 57%, and Gundo Lashu below, at 35%, with the poor receiving 1.27 times their population share in the case of the Zibambele programme, and 0.875 in the Gundo Lashu programme, representing a significant difference between the two programmes. This confirms the incidence conclusions drawn from the demographic data, that the Zibambele programme was more effectively targeted at the poor than the Gundo Lashu programme

Comparing PWP 'Matched' Households and Non-PWP Households Using Logistic Regression

It is possible to explore differences in the characteristics of the matched and non-matched households in more detail using a logistic regression model. Such a model is beneficial as it controls for the effect of other variables, making it possible to estimate the independent impact of each independent variable, while controlling for other factors. A logit model is run for each group with a binary dependent variable indicating matched or non-matched status, using the characteristics outlined in Tables 6 and 7, together with household equivalised income[41], based on the Census income bands, as the independent variables. A household (rather than population) dependency ratio has been included as an independent variable, and in this case the groups compared are the matched and the non-matched with the working-age members group, as the dependency ratio cannot be calculated for households with no working-age members.

The odds ratios and β coefficients from the logit models are shown in Tables 8 and 9. In KwaZulu-Natal the effect of education level on participation in the PWP was found to vary by gender of the household head so an interaction between household head gender and education level was included in the model.[42]

In both Capricorn District and KwaZulu-Natal equivalised household income was found not to be a significant predictor of PWP participation. This implies that if there were two households with otherwise identical characteristics and one contained PWP participants and the other did not, the participating household could not be reliably identified on the basis of equivalised household income. In the earlier analyses asset ownership (specifically ownership of a TV and/or radio were identified

[41] Equivalised household income is calculated following Leibbrandt and Woolard, 2001, where $E=(A + \alpha K)\theta$, E=the number of adult equivalents, A=number of adults, α=the child cost ratio, K=number of children, and θ the household economies of scale factor. Values used are $\alpha=0.5$ and $\theta=0.9$.

[42] Other interactions were explored in the analysis, but this was the only one that was found to be significant.

as being good proxies for income. However, here income and assets appear to have quite differing effects. Whilst both are able to predict participation in the absence of any other control variables, once other characteristics are controlled for income has a non-significant effect regardless of the inclusion of asset ownership in the model and the significant impact of asset ownership does not depend upon whether or not household income is included in the model. This suggests that the relationship between income and assets is not straightforward.

Table 12 shows that as the household size increases by one person and the age of the household head increases by one year, a household is respectively 1.41 and 1.04 times more likely to have a PWP participant. Education seems to play a significant role: households where the head has some primary education are twice as likely to have PWP participants compared to households where the head has no schooling, and households where the head has some secondary education are three times more likely to have PWP participants. As illustrated in Table 8, households that have no dependent members are 3.5 times more likely to have members participating in a PWP than those households that have equal numbers of dependants and non-dependants[43], possibly illustrating the Barrett and Clay thesis (Barrett and Clay, 2003) that PWP participation may be an attractive option where there is surplus household labour with low marginal value.

The impact of assets and income is particularly interesting as households with a TV are less likely to participate (as we might expect as these will be high income households) whereas households with a radio are twice as likely to participate. This seems to indicate that the poorest households (i.e. those owning neither a TV nor a radio) and the richest (those owning a TV) are less likely to participate. Households who are poor but still able to afford some assets (i.e. a radio) are the most likely to participate.

[43] The coefficient of 0.29 relates to the ratio of the odds that a household with equal numbers of dependents and non-dependents will take part to the odds that a household with no dependent members will take part. Inverting this ratio (1/0.29) gives the odds that a household with no dependent members will take part relative to a household with equal numbers of dependents and non-dependents which, as quoted in the text, is 3.5.

Table 12: Household Characteristics, Logistic Regression - Capricorn

Characteristic	Odds ratio	β	Standard Error
Mean age of head of household	1.0372**	0.0366**	0.0050
Mean household size (persons)	1.4143**	0.3467**	0.0266
Dependency ratio	0.2859**	-1.2522**	0.1761
Traditional dwellings (reference – not living in a traditional dwelling)	1.0960	0.0914	0.2239
Owning a TV (reference – households without a TV)	0.7472*	-0.2914*	0.1415
Owning a radio (reference – households without a radio)	1.9990**	0.6925**	0.1993
Female headed household (reference – male headed households)	0.7875	-0.2388	0.1419
Household heads with some primary schooling (reference – household heads with no schooling)	2.1830**	0.7805**	0.1827
Household heads with complete primary schooling (reference – household heads with no schooling)	1.1938	0.1772	0.3263
Household heads with some secondary schooling (reference – household heads with no schooling)	2.9714**	1.0890**	0.1981
Household heads with grade 12 / standard 10 (reference – household heads with no schooling)	1.7487	0.5589	0.3788
Household heads with higher education (reference – household heads with no schooling)	0.2999	-1.2045	0.8746
Household equivalised income	0.9999	-0.0001	0.0002

Source: McCord and Wilkinson using Census 2001.

Notes: * Significant at the 5% level

** Significant at the 1% level

Number of observations=17,440, population size=437,336, $F(13,17427)=23.00$, $p<0.01$

Table 13: Household Characteristics, Logistic Regression – KwaZulu-Natal

Characteristic	Odds ratio	β	Standard Error
Mean age of head of household	0.9933	-0.0067	0.0033
Mean household size (persons)	1.1810**	0.1664**	0.0118
Dependency ratio	0.7097**	-0.3428**	0.0610
Traditional dwellings (reference – not living in a traditional dwelling)	4.9515**	1.5997**	0.1590
Owning a TV (reference – households without a TV)	0.4421**	-0.8163**	0.1539
Owning a radio (reference – households without a radio)	0.6949**	-0.3640**	0.1050
Female headed household (reference – male headed households)	1.7984**	0.5869**	0.1911
Household heads with some primary schooling (reference – household heads with no schooling)	2.0744**	0.7300**	0.2334
Household heads with complete primary schooling (reference – household heads with no schooling)	0.6681	-0.4033	0.6033
Household heads with some secondary schooling (reference – household heads with no schooling)	1.7210	0.5429	0.2911
Household heads with grade 12 / standard 10 (reference – household heads with no schooling)	1.0990	0.0943	0.5959
Household heads with some primary schooling*female headed household	1.8106*	0.5940*	0.2678
Household heads with complete primary schooling*female headed household	3.8001*	1.3351*	0.6572
Household heads with some secondary schooling*female headed households	1.1458	0.1376	0.3460
Household heads with grade 12 / standard 10*female headed households	0.7889	-0.2371	0.7862
Household equivalised income	0.9996	-0.0004	0.0003

Source: McCord and Wilkinson using Census 2001.

Notes: * Significant at the 5% level

** Significant at the 1% level

Number of observations=66,839, population size=2,102,960, $F(16,66823)=34.83$, $p<0.01$

The effect of the education level of the head of the households is particularly interesting given that the descriptive analysis in Table 6 does not indicate any

significant differences in the education levels of the heads of matched and non-matched households. Finally, when controlling for other characteristics there is no effect of household income, thus, household income does not appear to have a significant influence on a household's decision to participate in a PWP. Although the likelihood of participation decrease as income increases, the effects are small and insignificant.

Table 13 indicates that an increase in the size of the household also increases the likelihood of PWP participation in KwaZulu-Natal, but the age of the head of the household is not significant. Again, the education level of the head of the household is important, with households where the head has some primary education approximately twice as likely to have PWP participants compared with households where the head has no schooling. Female-headed households are also almost twice as likely to be PWP participants (reflecting the targeting of women-headed households). The impact of the education level of the head of the household varies by gender: female-headed households with some primary education are 3.75 times more likely to have PWP participants compared to female-headed households with no schooling[44] and 3.25 times more likely to have participants than male-headed households with an equivalent level of schooling. As supported by the cross-sectional analysis, matched households have fewer dependent members, are more likely to live in a traditional dwelling and are less likely to own a television or a radio. Again, controlling for other factors, household income is not a significant factor in the participation decision, although the (non-significant) coefficient on income suggests that the likelihood of participation does decrease as income increases.

Discussion of Incidence Analysis

The main conclusions from the preceding analysis are that the Gundo Lashu households appear, on average, to be better off across both the income distribution and a range of other socio-economic indicators than the overall population from which they are drawn, while on the same basis, the Zibambele households are much poorer than the overall population. Logistic regression analyses comparing matched and non-matched households whilst controlling for their different characteristics indicate that the level of education of the head of the household appears to be important, with household heads with some basic education being more likely to contain a PWP participant, compared with household heads with no schooling. In KwaZulu-Natal, the impact of education varies according to the gender of the household head, with the strongest effects seen for female-headed households, where having some basic education makes participation much more likely.

In both cases, after controlling for other household characteristics, household income appears not to have a significant impact on whether or not a household participates in PWP. This is a particularly interesting finding given that there are significant differences in the income levels of the matched and non-matched households. One

[44] The odds ratio for female-headed households with some primary schooling relative to female-headed households with no schooling is calculated by multiplying the odds for households with some primary schooling (2.0757) by the odds for female-headed households with primary schooling (1.8090).

explanation for this could be that PWP employment was not provided on a sufficient scale to absorb all households living in poverty, and so the available jobs were distributed between poor households. The regression analyses indicate that whilst there appeared to be no variation in income between households that did participate and those that did not, controlling for other characteristics shows that certain types of poor households were more likely to participate than others. The income analysis confirms that the PWP households are poorer than the non-PWP households, as would be expected, but when the analysis is extended it indicates that although the PWP households are poorer they are no poorer than would be expected given their characteristics, and whilst PWP participation appears to be random on some variables (for example income) others such as education level and dependency ratios have a significant impact, indicating that some types of poor households are missing out because of particular characteristics. These findings would merit further analysis into factors which may exclude certain types of poor households from gaining access to employment through PWPs. Other factors may also be acting to exclude households from participation. Whilst an excess of labour supply (meaning that some poor households had to be excluded) seems plausible in the case of the Zibambele programme, in the Gundo Lashu programme it was reported that the recruitment of sufficient labour in the local area was problematic, and as a consequence, immigrant labour from outside the project area was recruited. While this appears to be contradictory to the findings set out above that there were still large numbers of poor households who did not take part in the programme, in part it may be possible to explain this in terms of the fact that the Gundo Lashu programmes were extremely localised, and it may also indicate that the 'local' poor were less able to compete successfully with less poor 'outsiders' in terms of gaining access to PWP employment. Again, this would be an interesting area for future study.

The findings regarding the impact of the effect of the dependency ratio on the participation decision may be related to the relationship between income and the participation decision. In both cases it was found that, as the number of dependents in the household increased relative to the number of non-dependent persons, the likelihood of PWP participation declined. The effect was much stronger in Capricorn than in KwaZulu-Natal, which may reflect the fact that the Gundo Lashu programme only offered full-time employment whilst the Zibambele programme provided more flexible part-time employment. The findings here suggest that the ability of a household to care for non-dependent members may have a significant impact on a household's ability to participate in a PWP.

The interpretation of these results relies on how well the matching characteristics used allowed selection of similar households from the Census data. Comparison of the matched group with the survey group indicates that they are very similar, aside from small differences in the dependency ratio already discussed, but it is important to consider that the groups may differ on unmatched characteristics that may impact upon the income distribution and other characteristics of the households selected. It is likely that households similar across a number of characteristics will also be similar across unobserved factors, but this cannot be guaranteed. Further matching variables would have been desirable but could not be generated in a consistent form from both data sets. Because of this, the results should be treated with a degree of caution. However, given that the match is robust and the results confirm findings

from other analyses of the data, they are considered to provide a reasonably reliable view of the income status and general characteristics of PWP households in relation to other households in the same area. On this basis it can be concluded that the analysis in this paper has illustrated consistently that, over a range of different indicators, the poverty incidence of the Zibambele programme was significantly superior to that of the Gundo Lashu programme.

Conclusion

The conclusion drawn from this case study exploration of PWP targeting and incidence is that both programme design and implementation modalities have a significant impact on programme incidence in terms of targeting the poor. Empirical analysis of the PWP Survey revealed that significantly different demographic and socio-economic segments of the population participated in the two different case study programmes. In the type B Zibambele programme with explicit poverty targeting objectives, utilising community selection techniques, and offering flexible employment, the poor received 1.27 times their population share of the PWP employment. By contrast, in the type A/C Gundo Lashu programme, which relied on self-targeting and offered full-time non-flexible employment opportunities, the poor received only 0.88 of their population share of employment.[45] This low share is particularly noteworthy given the fact that the demand for labour in the latter programme exceeded locally available supply at times but even so, the poor were unable to access their share of employment, highlighting the relative failure of the poor to compete successfully for PWP employment.

The case study has suggested that active poverty targeting, rather than reliance on the work conditionality, is required to promote the share of programme benefits transferred to the poor, and that by tasking community groups with selection, where community groups enjoy a degree of programme ownership in the context of a long-term relationship between local communities and implementing agencies, it is possible to promote the participation of the very poor, a relationship which, by definition, is more likely to be achieved in type B programmes. By contrast, in the context of the short-term case study programme (conforming to PWP types A and C) which was implemented by contractors without explicit poverty targets or incentives, the poverty incidence of participants was significantly lower, with the poorest being under-represented in the PWP participant group.

The case study also suggests that the quality of employment provided may impact on incidence, with labour-constrained households in particular, which are likely to be among the more vulnerable, experiencing some degree of exclusion from PWP participation. This indicates the need to consider the quality of employment provided in terms of flexibility, household labour substitutability, part-time nature, etc in order to defray the participation disincentives for labour-constrained households, and promote PWP participation among the more vulnerable.

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[45] Type A PWPs offer a single short-term episode of employment, Type B PWPs offer large-scale repeated or ongoing government employment programmes which may provide some form of employment guarantee, and Type C PWPs promote the labour intensification of government infrastructure spending.

The demographic characteristics of the PWP workers differ in the two programmes, with the Zibambele workers being predominantly female, household heads, and significantly older than the Gundo Lashu participants, who tended to be the children of the household head, and of equal gender proportions. Also, while the Zibambele households had only one PWP worker, multiple PWP employment was common in the Gundo Lashu households. The data analysis, PSM analysis, and direct comparison with Census 2001 and the LFS 2003 all suggest that different segments of the population were being targeted in each programme.

These differences are consistent with the targeting and rationing methods used in each case, and the fact that the Zibambele programme was explicitly (and *exclusively)* poverty-targeted, while the Gundo Lashu programme was more plural in its objectives, aiming to address both poverty and labour market issues through the same intervention.[46] The effectiveness of the community-targeting mechanism in the Zibambele case was contingent on significant investment in social development by the implementing agency over a period of years, which was possible because of the extended duration of the programme and hence, the sustained nature of the relationship between the workers, the programme, and the community institution managing the programme at the local level.[47] It is not clear whether such issues can be addressed in the context of short-term employment projects, particularly when they are implemented by the private sector, and when neither targets nor incentives for targeting the poor are in place, particularly given the additional expenditure on social development required. The limited poverty focus of the Gundo Lashu programme is illustrative of this problem, confirming research on the MEGS in India, which has also found evidence of the negative implications for poverty targeting of private sector implementation, due to the inherent tension between profit-based incentives and the social investment required to ensure the inclusion of the poorest.[48]

[46] For a discussion of the conceptual and implementational difficulties and inefficiencies arising from PWP programmes with plural objectives, see McCord (2003).
[47] A further indication of the community ownership of the programme was the social regulation of the distribution of the scarce resource of PWP employment within the community.
[48] S Pellissery, Department of Social Policy and Social Work, Oxford University, 2004, pers. comm.

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The Southern Africa Labour and Development Research Unit

The Southern Africa Labour and Development Research Unit (SALDRU) conducts research directed at improving the well-being of South Africa's poor. It was established in 1975. Over the next two decades the unit's research played a central role in documenting the human costs of apartheid. Key projects from this period included the Farm Labour Conference (1976), the Economics of Health Care Conference (1978), and the Second Carnegie Enquiry into Poverty and Development in South Africa (1983-86). At the urging of the African National Congress, from 1992-1994 SALDRU and the World Bank coordinated the Project for Statistics on Living Standards and Development (PSLSD). This project provide baseline data for the implementation of post-apartheid socio-economic policies through South Africa's first non-racial national sample survey.

In the post-apartheid period, SALDRU has continued to gather data and conduct research directed at informing and assessing anti-poverty policy. In line with its historical contribution, SALDRU's researchers continue to conduct research detailing changing patterns of well-being in South Africa and assessing the impact of government policy on the poor. Current research work falls into the following research themes: post-apartheid poverty; employment and migration dynamics; family support structures in an era of rapid social change; public works and public infrastructure programmes, financial strategies of the poor; common property resources and the poor. Key survey projects include the Langeberg Integrated Family Survey (1999), the Khayelitsha/Mitchell's Plain Survey (2000), the ongoing Cape Area Panel Study (2001-) and the Financial Diaries Project.

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