Socio-Economic Evaluation

Gécamines "Partants Volontaires"

November 17, 2009

1. Background 3

2. Current Context 4

3. Objectives of this study 5

4. Methodology 5

5. Findings 7

    A. Overall Economic Well Being of the PVs Today 8

    (i)   Overview 8

    (ii)   Age 9

    (iii)   Housing & Mobility 9

    (iv)   Other Physical Assets 10

    (v)   Intangible Assets 12

    (vi)   Vulnerability 18

    (vii)   Coping Mechanisms 20

    (viii) Access to Education Services 20

    (ix)   Health Care 22

    B. Reinsertion Programs 23

    (i)   Indemnity 23

    (ii)   Reinsertion Assistance 25

    (iii)   Attitude Shift on the Departure Program 27

    (iv)   Exploring Economic Well Being: Who did well and who did not? 29

            Vulnerability Index 35

    C. Observations for Future Programs 37

    Appendix A: Methodology 40

    Appendix B: Wealth Index 43

    Appendix C: Indicators and Weights in the Vulnerability Index 44

    Appendix D: Self-Recollection of Changes in Assets (recall of 2003 in 2009) 45

    Appendix E: Information Provided by Gécamines on the LVM (Housing Purchase Program) 46

    Appendix F: The Vulnerability Index 47

1. Background

The World Bank resumed its DRC operations in 2001 after years of civil unrest. A Transitional Support Strategy was approved to assist the government's peace and stability programs and to meet basic and urgent needs, rebuild public institutions and policies, and revitalize the economy. In 2003, the Private Sector Development Competitiveness (PSDC - IDA Credit No. 3815-DRC) project was approved. This project, together with the World Bank's Economic Recovery Credit (ERC), which was approved in 2002, included support for structural reforms in the mining sector and financing for the cost of voluntary separation of a subset of the large mining parastatal, Gécamines, workforce. Gécamines, which stands for Générale des Carrières et des Mines, was once a powerful mining company, with a century of industrial history. In 1988, Gécamines was producing 450,000 tons of copper metal and had over 30,000 employees in three mining centers (Groupe Centre, Groupe Sud, and Groupe Ouest, located respectively in Likasi, Lubumbashi, and Kolwesi). In 2003, Gécamines's production was down to 8,000 tons, and it was deeply indebted and was not making regular salary payments to employees, in some cases for as long as 36 months.[1]

The voluntary departures program (VDP) involved 10,655 Gécamines workers with more than 25 years of service. The PSDC project also included support for reinsertion activities for the workers who participated in the VDP (the *Partants Volontaires* [PVs]). The implementing agency of the PSDC project and likewise of the VDP is the *Comité de Pilotage de la Réforme des Entreprises Publiques* (COPIREP).

The objectives of the PSDC project are to: (i) improve the investment climate; (ii) support parastatal reform in the telecommunications, energy, finance, transport, and mining sectors; and (iii) support economic development in the Katanga region. The project was designed to stimulate private sector-led growth in a competitive environment; generate fiscal revenues; reduce subsidies to loss-making enterprises, such as Gécamines in the mining sector; and improve governance through reforms of the mining, telecommunications, transport, financial, and energy sectors. In April 2008, additional financing of US$60 million was granted to the project, with a view to scale up investment climate reform activities and to jump start the reform of SNCC, the public railway, while the proposed World Bank-financed transport operation is being prepared. The Mid-Term Review took place in June 2007 and noted the generally satisfactory implementation of the project in a difficult environment. At the request of the Government of DRC, the closing date is to be extended to 2012.

Baseline data on the PVs was collected prior to the departures program, and analyzed in baseline studies and in a Poverty and Social Impact Analysis (PSIA), which included technical assistance to the University of Lubumbashi to complete this work. The PSIA also explored broader issues of the impact of Gécamines' decline on the region (the one-company town phenomenon), and on the geographic impact stemming from a decline in social services. At the time of the VDP Gécamines

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[1] This is not meant to be a representative figure, but based on specific anecdotes.

was having serious financial difficulty, its cash flow severed, was unable to pay workers or to keep up its social services; this was affecting the entire mining basin, already fragile in a post-conflict environment.

The PSIA also provided recommendations on some immediate actions, such as providing transitional subsidies to keep students of PVs in schools (and to keep the schools functioning) and to provide the same for health care. The data analysis from the baseline surveys and from the PSIA were provided to COPIREP, which was responsible for designing the reinsertion programs; the surveys were discussed with stakeholders in the Katanga region and later disseminated in a workshop in Kinshasa in 2005, which included representatives from Katanga, from the PVs, and from various Government Ministries.

2. Current Context

In the spring of 2009, two groups of PVs (Collectif des Partants Volontaires and ADDES) submitted a complaint to the World Bank's Inspection Panel, to protest the terms of their 2003-04 severance package and claim full payment of arrears and pensions. It is in this context that this socio-economic survey has been conducted in the Gécamines mining basin (June to early September 2009), and that subsequently a series of 15 Focus Groups were organized to discuss the preliminary results of the survey, the problems experienced by the PVs, and their suggestions.

Since the baseline studies were carried out in 2003/4, the socioeconomic context in the Katanga region has changed substantially. Increases in world minerals prices, including in the price of copper between 2006 and 2008, and a boom in private sector involvement in the sector led to a rise in economic activity, and to secondary effects such as substantial increases real estate prices. Gécamines has entered into a number of joint ventures, which have attracted public attention because of some of the up-front payments involved, but continues to have high operational losses and unresolved structural issues that constrain its production capacity and its financial restructuring. After a period of years in which it was able to make regular salary payments, it is once again facing salary arrears.

The environment for this research is charged; it is one in which there are weekly meetings of PV groups regarding what they perceive as an expected payment and the potential for magnifying reporting on the current hardship with the expectation that this is more likely to lead to an additional payment. On the other hand, based on feedback in focus group discussions, the relationship between the broader PV community and the implementing agency for the VDP and the reinsertion program, COPIREP, appears to be fraught with tension; PVs need to be reassured that the research is not being influenced by COPIREP, which implemented the VDP.

3. Objectives of this study

The primary objective of the current study is to determine whether, following the VDP, some of the PVs have "fallen through the cracks," and descended into poverty.   This question involves assessing both relative changes, as well as absolute levels.   Relative changes are assessed in comparison to baseline data collected prior to the departures program.   In addition, in order to provide context with regard to how the general urban Katanga population looks compared to the PV population (for relevant indicators within the same age group) where possible a 2005/6 1-2-3 household survey, the most recent survey data available, has been used.[2]   In addition, to the degree possible within the time and data constraints, the research has sought to explore whether certain factors are better predictors of whether a specific PV household is likely to have a low socioeconomic level, and why. These might provide useful information for other such programs.

The causes of poverty are often a complex interplay of various factors – both situational and individual. For this reason, and within this timeframe, this current analysis does not attempt to establish causal relationships between the current welfare and the ODV program; both individual characteristics and the economic context play into welfare and it is difficult to tease out the myriad strands of causality.

4. Methodology

Before the start of the VDP, a detailed socioeconomic survey was conducted by the University of Lubumbashi as a baseline. In addition to this, exit surveys on a smaller subset of questions were administered to all departing workers being processed in the Katanga region.[3] The former survey covered 534 households in the three main production centers (Lubumbashi, Likasi and Kolwezi), including three groups: [a] households planning to participate in the departures program [254]; [b] households planning on remaining at Gécamines [163]; and [c] households that were not associated with Gécamines in any way [97 households, often referred to as a "control group"].   The baseline surveys covered variables providing proxies for income, poverty, and assets, as well as covering issues relevant to the likely reinsertion plans of departees (sectors, access to land etc.).

Given the environment in which the survey is taking place, the approach prioritized the use of a non stratified random sample of 800 households using the baseline exit survey database as the sample frame (using SPSS). This database allowed comparison of data on specific *partants* based on their responses in 2003, and compared to today because it included identification numbers for each

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[2] The 1-2-3 was a separate survey that was conducted and analyzed in 2005/2006. It represents the largest available and most recent large-scale household survey data on socio-economic levels in the region. All data from this survey was provided by Q. Wodon and Prospere Backiny-Yetna who were involved in its management.
[3] Or, 97% of all PVs.

partant that could be matched to photo identification cards.[4]   Analysis was carried out on the 547 PV households that were interviewed during the research period, which is sufficient for statistically significant trends.[5] [6]   Because the research team wanted to reserve the possibility to carry out additional analysis on smaller sub-groups, a supplemental random sample of approximately 350 households was provided in the event that further analysis would be required on sub-groups.   This supplemental sample will be updated in November, 2009, and will allow for further disaggregation and analysis of sub-groups, but is not expected to vary to any degree of statistical significance from the results presented here.

Figure 1: Status of PVs Contacted (in %)

Status	Percentage
Moved	17%
Deceased	9%
At Same Address	69%
Not Found	4%
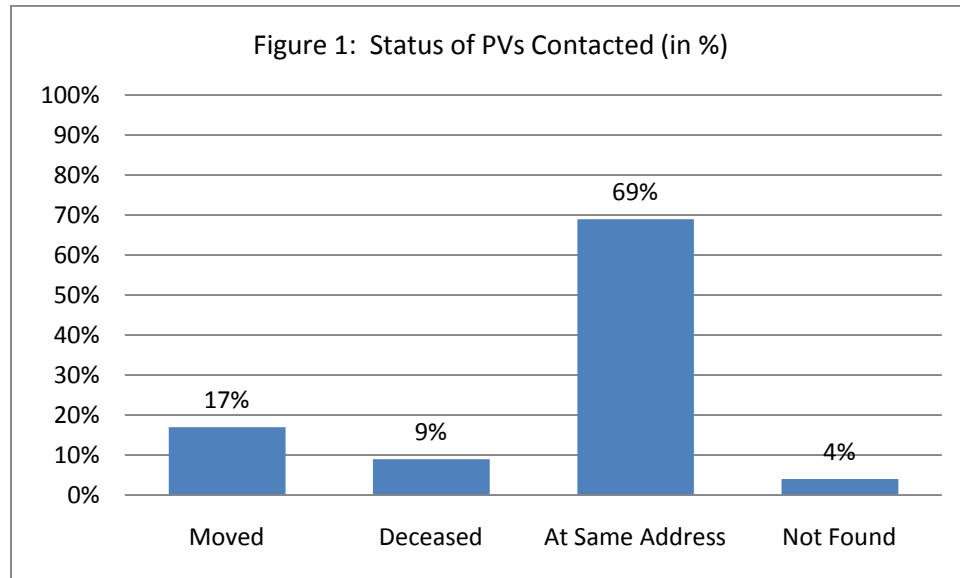
While the decision to visit only PVs on this sample list (versus some other method of selection such as interviewing any PV found) required more time and logistics, it was important to assure both PVs and others that there was no selection bias. In addition, protocols were established to ensure every effort was made to find these randomly selected PVs (minimum three visits), and interviewers often conducted research at night and on the weekend in order to locate PVs. This approach allowed observation of the interviewers on housing materials, assets and eliminated the possibility that a pre-organized group presents itself to be interviewed. In addition, the questionnaire used numerous indicators of both well being and poverty and the reliance on composite indicators of well being is likely, on average, to diminish potential bias.

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[4] In order to compare the same households, wherever possible the 2003 data for the households included in the 2009 sample is presented here, thus providing a robust before/after comparison. Data for the entire exit survey population (97% of PVs) is also provided for information purposes where relevant.

[5] Wherever possible the level of significance has been shown and is generally 95% or higher.

[6] An additional 37 households from an original control group (of 98) were also interviewed, but because of the small size of this control group, and the availability of a much larger sample size from a statistically robust 1-2-3 survey to provide context on how the overall urban population in Katanga was faring, the 1-2-3 survey data was used to provide this context. In addition, a supplemental random sample was drawn (to equal a total number of interviews of 800) in the event that more detailed sub-analysis would be later required on individual sub-groups. Analysis of this supplement was not expected to be completed in time for this report, but is not expected to vary to any degree of statistical significance from the results presented here.

The research team was composed of a Lead International Consultant from the University of California (Long Beach), an operations consultant for the survey set-up, a consultation consultant and Bank social development staff. COPIREP, the agency responsible for the reinsertion program, provided logistical support and contracted three teams of local researchers (12) and three coordinators to conduct the field work and data entry staff to enter the data. The international consultants and Bank social development staff developed the questionnaire, and had full control of the methodology and data analysis. In addition, the research design integrated an independent check re-interview by the supervisory consultant on a random sub-sample of households who had already been interviewed, and on a random sample of data entered, in order to verify the quality and accuracy of the work completed. Finally, no members of the research team are part of COPIREP, and several members of the research team are associated with the University of Lubumbashi and were involved in the baseline studies.

The research has taken place in four urban/periurban centers: Lubumbashi, Kipushi, Lisaski, and Kolwezi. These centers were chosen for their critical role in the mining sector and because they house the propensity of Gécamines partants. Given the relative proximity of Lubumbashi and Kipushi these two centers were managed together, making for three geographic areas of research.

Following the preliminary data analysis, a mission of Bank staff and consultants carried out additional focus groups (15) with PVs on the preliminary results in Likasi (including Kambove), Lubumbashi (including a session in Kipushi) and Kolwezi. Prior to this, focus groups had been held during the first mission to inform the questionnaire (including to households identified as potentially vulnerable), and during the quantitative research mission by the lead international consultant.

While the timeframe for research did not allow a full income and expenditure module, it did include "markers" of both poverty and wealth.   In addition, in order to improve the confidence in the robustness of the data, it included questions that serve as cross-references and logical checks.

Markers of Poverty: Even without a detailed income and expenditure module, there are at a minimum some observable manifestations of extreme hardship and poverty that were used for this survey. For example, households with insufficient income tend to, over time, also have decreasing assets (selling television sets, selling cars, selling property).   Even short-term hardship can prompt households to reduce expenditures on items such as cell phones, electricity or water where it is being paid. Such households can cut back on aid to others, and end of being a net recipient of aid. They can pull children out of school.   With prolonged hardship, such households may move (where they do not own their home), or shift to precarious housing.   They tend to have higher debts. The advantage of looking at assets, is that interviewers not only ask about them, but can to some degree observe them. This reduces subject bias.

5. Findings

A. Overall Economic Well Being of the PVs Today

(i)   Overview

The report below provides a summary of the results that emerged from the qualitative and quantitative randomized survey of the current welfare of the *partants volontaires (PVs).*   Focus groups held before, during and after the initial analysis provided a richer understanding of the perspective of the PVs.   In the report on focus groups, it was noted that "*Whether the Focus Groups comprised rather better educated PVs or low-ranking workers, there was a general agreement that the data did reflect their living situation....[at the same time]   Anger and despair were always close to the surface.*"   There were also some exceptions where those in a specific location differed from the mean, and where there were nuances, and these have been noted below.

Thus, while the data below shows that there is no evidence of tangible socioeconomic decline relative to the baseline, the baseline represented a low point – one in which PVs had not been paid or were paid only sporadically for a long period of time.[7]   This helps to explain the fact that on most indicators (with the exception of enrollment ratio) the PV is not worse off – and in some cases better off - than other urban Katangais in their age group however, that is not the same thing as saying that the PVs do not have to struggle. [8]   In Katanga, with a poverty headcount index of 67 percent, most people have to struggle to make ends meet. The PV's frame of reference is to his situation when Gécamines was a well functioning enterprise (for example in 2000 or before), when he was the provider to a large family base, part of a prestigious group in the region.   As outlined in the Poverty and Social Impact Analysis, the current economic situation of PVs most likely represents a

Figure 2: Current Age Distribution of Partants

decline from that much earlier period many years ago. In essence, the PV has lost the strong sense of identity that accompanied his work at Gécamines. In focus groups, it is clear that they feel abandoned, stripped of this identity.   This despair may also stem from the very human desire to once again belong to what was one of the most paternalistic organizations.   These expectations and

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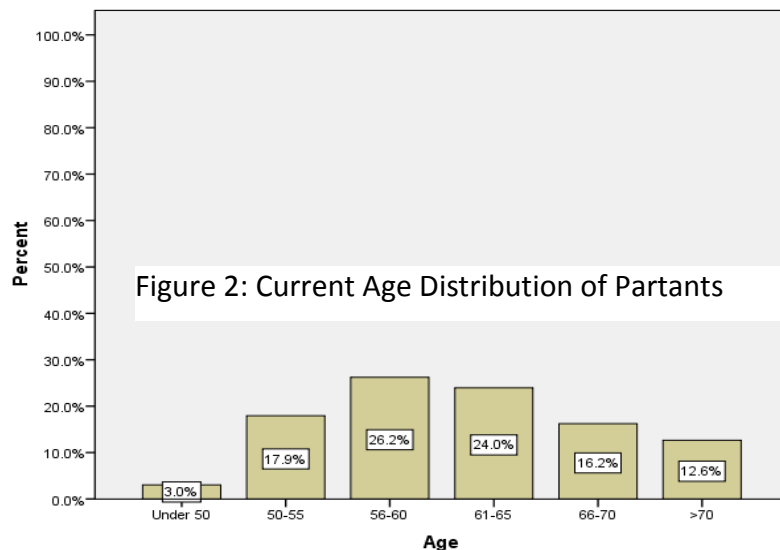
[7] Anecdotally one hears reference to roughly 2 years of arrears;   this study did not attempt to verify these figures.
[8] This is comparing to Katangais in late 2005 - which was a time of high growth in the region relative to today.

this mindset – difficult to change late in life and yet problematic for the entrepreneurial alternatives to working for Gécamines - are the very real challenges for reinsertion.

(ii)   Age

At time of departure partants were, by definition, amongst the oldest in the workforce.   Today the average age is over 60 with only 3 percent under the age of 50. This advanced age has an important impact on the prospects of absorbing training for a new profession, being hired back into (alternate) mining employment or adapting to a new work culture. There is a statistically significant difference in age between regions; those who live in Likasi (on average 63 years old) are older than those in Lubumbashi (60 years old) or in Kolwezi (62 years old).

(iii)   Housing & Mobility

The number of PVs living in precarious housing (squatter, no housing, Gécamines house of which one is not the owner) has dropped from 9% in 2003 (Exit Survey)[9] to 2% percent in 2009. Another aspect of housing are those living in rented housing; while the percent of PVs renting housing declined from 16% to 5%[10], the number of PVs who own their home increased, and is substantially higher than for urban Katangais.   It can also be said that among those who own their homes, 6% live in the home but rent out rooms.

Figure 3: Home Ownership

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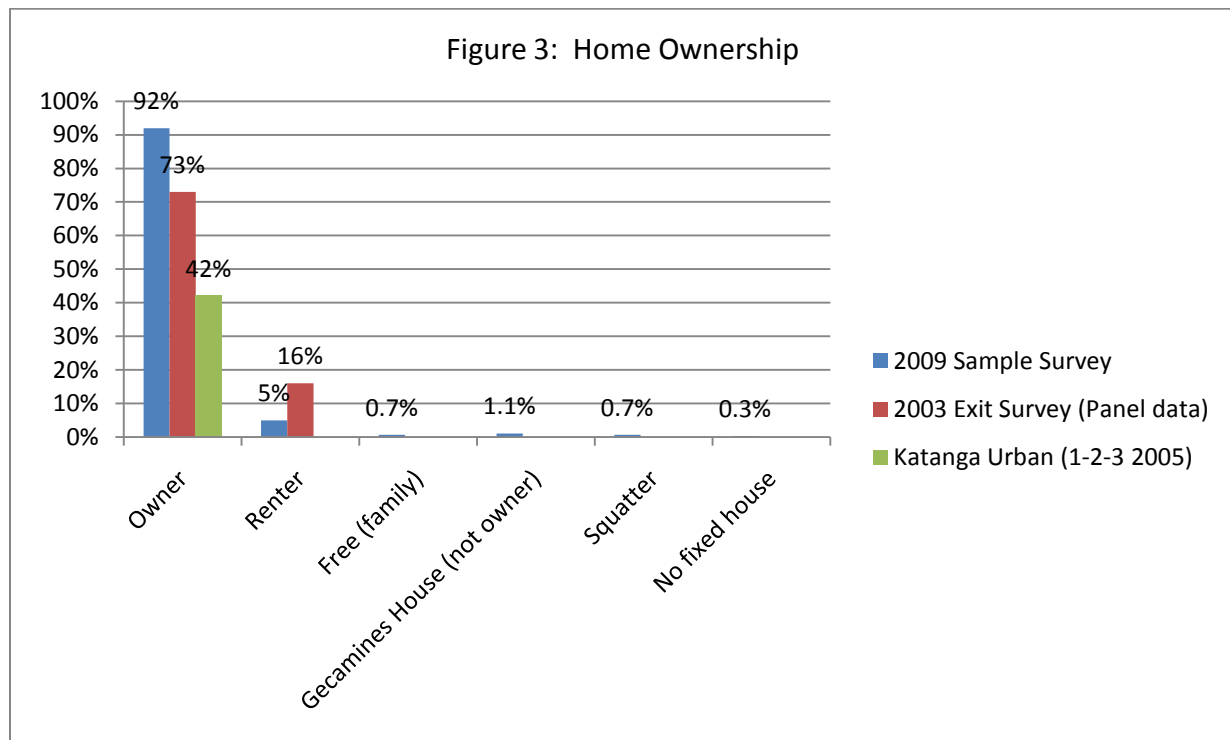
[9] This compares to 12.9 percent for the entire exit survey (versus the percentage for those included in the follow up survey presented above).

[10] For the entire exit survey (not just the households included in the 2009 follow up) 12% rented housing in 2003.

In the main the partants have not been mobile. More than two-thirds live in the same house they lived in at the time of departure. Of those that did not remain in the same house most moved to another house in the same area. Of those that had moved within the region or city, and were able to site the reasons, the most common was to move into a house they owned, or to a larger house they had purchased (12% of those who had moved once, or 4% of the total PVs), followed by 4% who had moved because rents were too high (1% of the total PVs); 3% moved to look for work (1% of total PVs); 3% sold their house (1% of total PVs).[11] Two percent of those who moved (1 percent of total PVs) said they moved because the house they were in had decayed or they were evicted. Further, for households included in the 2009 sample survey there were no cases where someone was a homeowner in 2003 but is not a homeowner today.[12] The particular case of Gécamines PVs who were living in Gécamines housing that they did not own, or had not decided to purchase, is explained in further detail in Appendix E.

On average, the quality of housing appears to have approved among PVs. In 2003 25%[13] of PVs in the sample lived in houses not made of durable materials; in 2003 this had decreased to 2.7% . Similarly, the average number of rooms has shifted slightly; in 2003 it was 4.10 [exit survey] for the PVs included in the 2009 sample]; in 2009 it was 4.74. This would be consistent with the trends in home ownership and reasons for moving.

(iv)   Other Physical Assets

In aggregate, the asset base of PV households has stayed the same or even increased slightly with more PVs having access to water and electricity, more people with cell phones, and movement from black and white to color televisions (comparing the baseline to the current situation).

The assessment measured changes in physical assets in several different ways; (i) PVs own recollection in 2009 on what assets they owned 5 years ago versus today; (ii) exit survey data on almost all PVs for two key assets, electricity and water, and for those in the same sample today; (iii) data from the 2003 sample survey; and (iv) contextual data on assets for urban Katangais in general from the 2005 1-2-3 survey.

The most precise data – because it covers almost all PVs rather than emerging from a sample and because it allows comparison of what a specific individual said in 2003 and what they say today – is found in the exit survey, though this only covered two assets, electricity and water. Electricity is particularly important as an indicator of economic well being because it requires monthly payment, and failure to pay results in services being cut off (high percentage of PVs said they paid and provided specific amounts). Based on comparison of the exit survey, it is significantly more likely

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[11] 177 respondents said they had moved once in the past 5 years. Of these 49 volunteered reasons why they had moved.

[12] Comparing responses in the 2003 exit survey to responses from the same households in the 2009 sample survey. Because 2009 survey is a sample survey it is possible that a small – albeit statistically insignificant number - of cases can exist in the general PV population even if not picked up in a sample survey.

[13] This was 10.8% of all PVs in the entire exit survey. The baseline number above is for the panel – meaning only those also re-interviewed in 2009 in order to allow more accurate comparison.

that people will have water today (t=5.01***) than in 2003. [14]   The same is true of electricity. Comparing 2009 data to 2003 (Exit Survey for these same households) on electricity access there is an increase which is statistically significant, albeit lower than for water (t=2.588***).

When asked in the 2009 survey to *recall* asset ownership in 2003 the story is slightly different, and may reflect some bias in reporting or in recollection. More PVs report that they have lost access to water, electricity, and some other assets (while others increased). However, even these figures are not statistically significant for water or electricity.   This is important as one of the concerns in 2003 was that PVs would lose access to electricity, where GCM had previously paid for it (98% of PVs reported paying for electricity).[15]   In terms of other assets that are based on recall of 2003 (as they were not included in the exit survey), the number of PVs with cell phones has increased.   The remainder of the indicators showed no statistically significant change from 2003, other than televisions which is represented by a shift *from* black and white to color.

Comparing the PV socioeconomic indicators to the population of urban Katanga overall using the 2005 1-2-3 survey, on key indicators such as water access, ownership of comparable durable goods including bicycle, car, and generator ownership it appears that there is a small but significant difference between PVs and the population overall where PVs have a slight advantage, with the exception of access to running water which has nonetheless increased since 2003 to come closer to the urban Katanga average. [16]

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[14] This was a paired sampled t-test. Note that in all cases herein a Kolmogorov-Smirnov test was used to determine the normal distribution of data. Where the data is not normally distributed non-parametric measures for comparing central tendecies, such as Wilcoxon is necessary. All data presented in this report passed the K-S test for normal distribution thus (stronger) parametric measures were used.

15 This implies that the net augmentation in people with access to electricity is less than the augmentation in people with access to water. That said, there are significant shifts in who has water access. Looking at the 2003 Exit Data in comparison to the 2009 Survey Data 6.3 percent (652 partants) of individuals who reported having electricity in 2003 did not in 2009. Fourteen (14) percent of individuals who reported not having electricity in 2003 reporting having it in 2009. This is a net increase of 7.7 percent. For water that figure is substantially higher with 14.5 percent (1503 partants) of those reporting having water access in 2003 (Exit Survey) reporting they do not in 2009. Yet, 26.3 percent gained access to water (thus the net change in individuals reporting access to water is +11.8%)

[16] There is a slight variation in data based on how the question was asked in each survey. In the 1-2-3 Survey the question was about the "Approvision en eau" with 11 possible responses (interior tap, exterior tap, forage, etc.). In the 2009 PV Survey the question was "Biens du Menage" and included observation by the surveyor. If both an interior and an exterior tap are considered in the 1-2-3 data the figure shows to 74.8% of households in Urban Katanga having access to water. The figure shown in the table above comes from the author of the 1-2-3 survey (versus this paper's authors' analysis of the 1-2-3 database which showed the 74.8% figure).

Table 1: Socioeconomic Indicators: PVs 2009, PVs Current Perception of 2003, PVs Reported in 2003, and Urban Katanga Overall (2005)
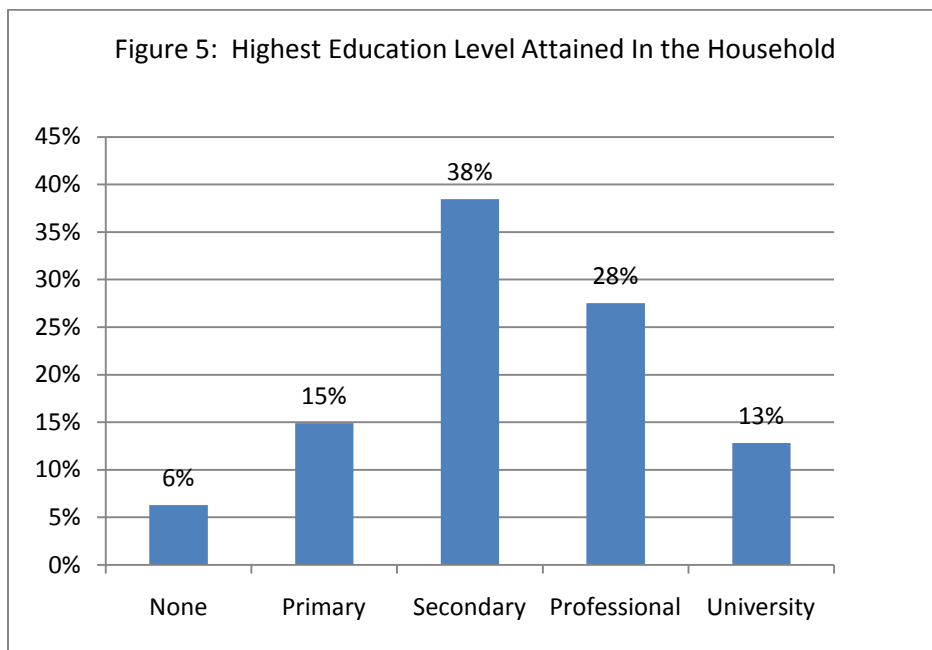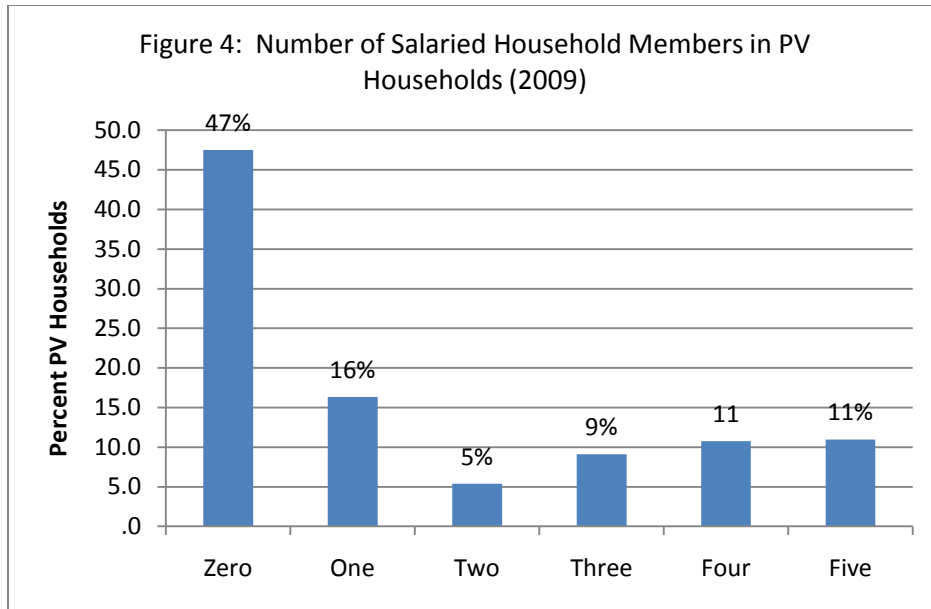
Indicator	(1) PVs Today	(2) PVs Own Perception of 5 Years Ago (as reported today)	(3) PVs reporting in 2003 Sample Survey	(4) PV reporting in 2003 exit survey (panel data)	(5) Urban Katanga (2005 1-2-3 Survey)
Electricity	85%	86%	71%	76%	51%
Water	66%	69%	49%	49%	86%
Arable Land	64%	69%			
Access to Arable Land	44%	47%			
Equipment for Agriculture	66%	61%			
Motorcycle	4%	4%			0.30%
Bicycle	63%	68%			43%
Color TV	67%	62%	18%		34%*
B&W TV	34%	52%	55%		34%*
Mobile Telephone	64%	43%	15%		
Bank Account	6%	9%			
Radio	73%	74%	68%		
Freezer	39%	32%			
Refrigerator	24%	29%	31%		18%
Car	8%	11%			6%
Group Generator	3%	2%			0.30%

*The 1-2-3 survey did not distinguish between black and white or color television.

While the table above shows the aggregate picture, with the most reliable figures based on what specific individuals reported in 2003 compared to what the same individual reported in 2009 (4), it is useful to look behind the aggregate self-reported net change to make sure that it did not reflect large numbers of people losing assets, while larger numbers of people gained assets. Overall, the average self-reported level of asset decline among those who lost assets is 5% or less, even including assets which have declined because they have been upgraded (from black and white to color television, from generator to electricity).

(v)   Intangible Assets

In the African context, an important asset includes the "wealth" of the family network upon which one can draw. In this case, it is useful to look at the other household members who have advanced education, or are salaried, both generally markers for relative welfare. Just less than half of PV households ave no salaried members, while around half have one or more household members who are salaried.
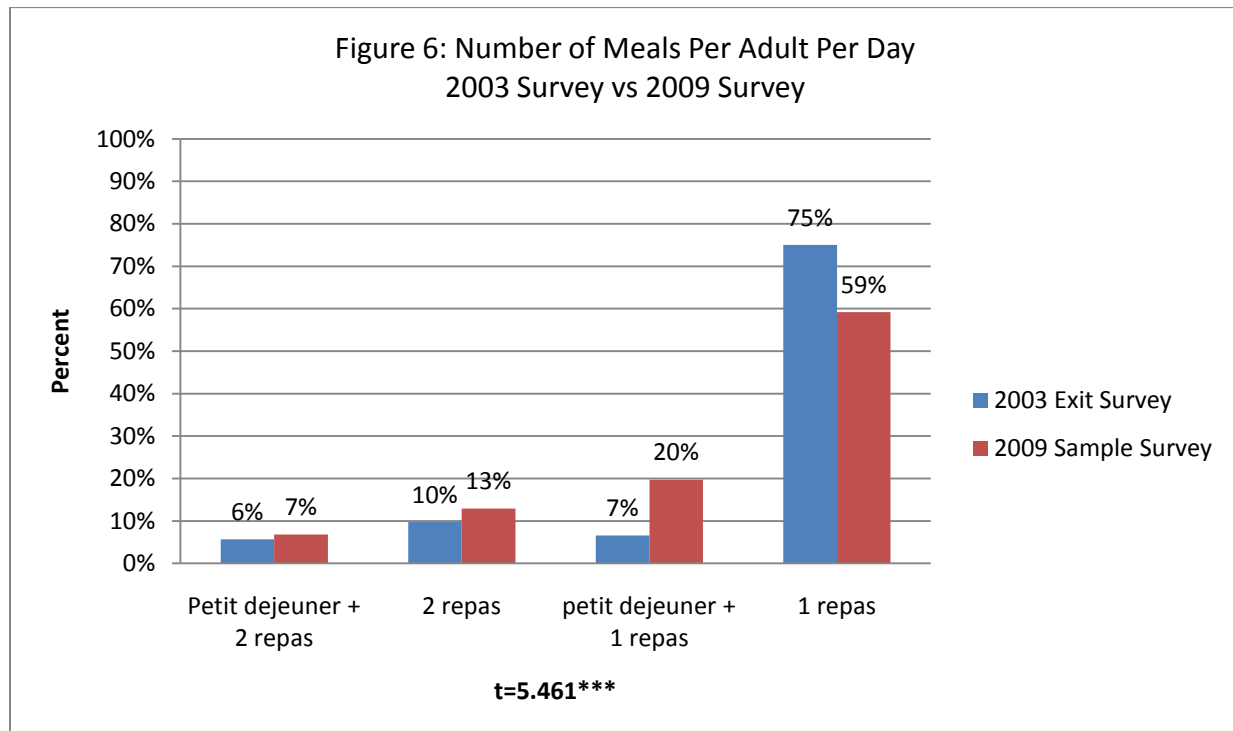
Figure 4: Number of Salaried Household Members in PV Households (2009)

(bar chart)
Y-axis: Percent PV Households (.0 to 50.0)
Zero 47%, One 16%, Two 5%, Three 9%, Four 11, Five 11%

Figure 5: Highest Education Level Attained In the Household

(bar chart)
Y-axis: 0% to 45%
None 6%, Primary 15%, Secondary 38%, Professional 28%, University 13%

Similarly, a fairly high percentage – 41% - of PV households have a household member who has attained professional or University level education. This reflects the past investment that PVs made in their children's education and may provide some explanation for why the asset base has not appeared to decrease.

Consumption, Income, Occupation

Consumption

While the asset base of PVs may not have changed substantially, a more immediate indicator of welfare is in consumption, both in terms of quantity (how many meals per day) and quality. Some 59 percent of respondents reported only eating one meal per day. However, it is an improvement on 2003. Indeed, measuring across measures of meal consumption partants report higher figures in 2009 than they did in 2003. It should be remembered that the 2003 exit survey from which this data is derived was conducted at time of great hardship after an extended period of time of non-payment of salaries by Gécamines. Thus, while the aggregate situation is better, this does not mean that the PVs as a whole are doing well; this would explain the sentiment of many PVs in focus group discussions.

It is notable and interesting that only a small fraction of partants grow their food as opposed to purchasing it. What one eats is as much an indicator of socioeconomic well being as how much. Based on feedback in discussion groups, there is a consensus in Katanga that sweet potatoes is generally considered a "poor" food whereas meat and vegetables "rich" foods. It is also an interesting finding that both have gone up; people report eating more sweet potatoes but also more meat and vegetables. This is consistent with the above finding that people are eating more meals in sum. Less than half of the PVs (38%) reported having at least one month's food reserves.

Figure 6: Number of Meals Per Adult Per Day
2003 Survey vs 2009 Survey

Figure 7: Household Consumption
2003 vs 2009
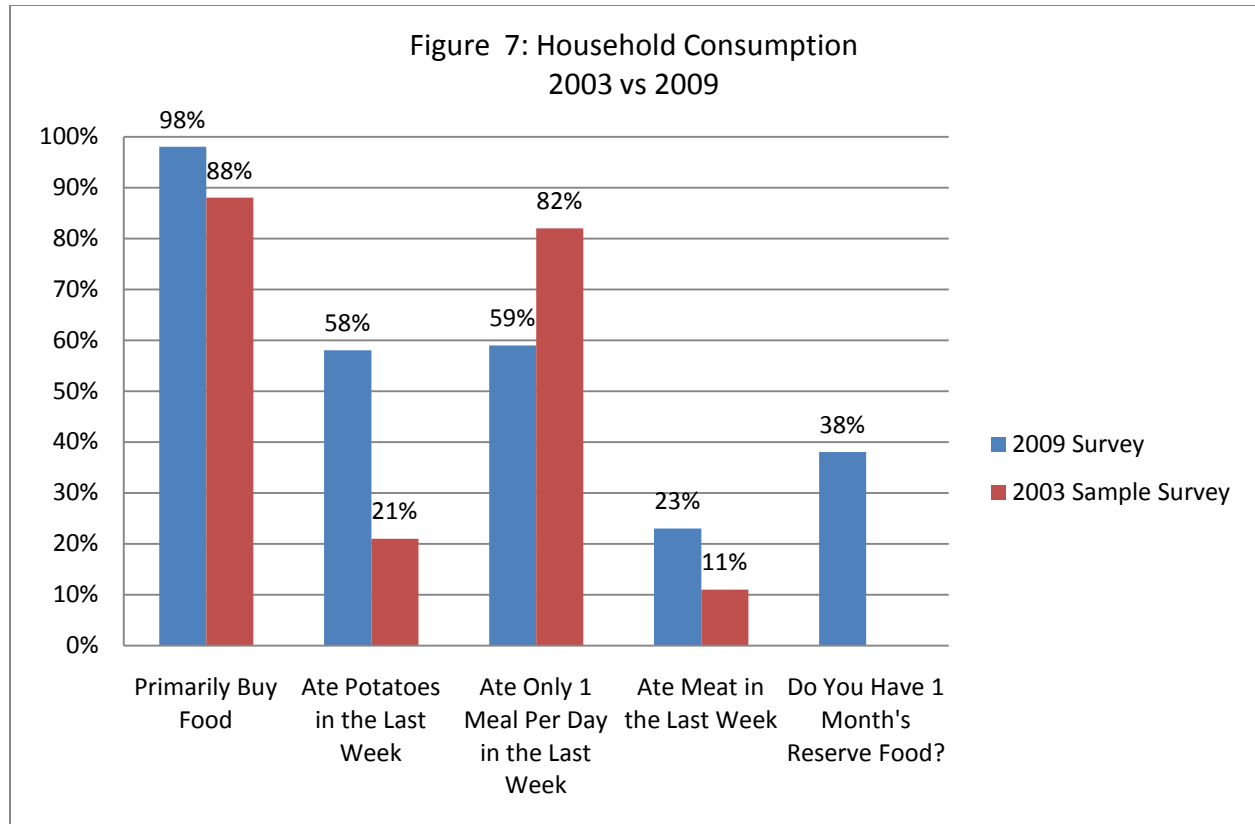
The reverse side of consumption is debt.   Whereas in 2003 (Exit Survey) 7.3 percent of partants reported having debts, in 2009 16.6 percent were able to report specific debts (a larger percentage reported having debts, but then were not able to provide any amount).   However, of those reporting debt the average debt per household in 2003 (Exit Survey) was $406 as opposed to $188 in 2009.   As will be explored below, it is likely that there are "soft" debts that PVs have towards family members who provide support.

Income and Occupation

Determining whether the income of PVs increased or decreased during this period presents numerous challenges, both because of the current climate surrounding the voluntary departure program, and because of the short timeframe.   Questions on aggregate income are commonly viewed as unreliable both because households with informal income sources may not have net income figures calculated in monthly terms, and because there is often a tendency to underreport income.   To obtain accurate income figures, researchers often resort to detailed expenditure and income modules – which require a substantial amount of time and skill to compile. Therefore, while this assessment included a question on income range as a general indicator, it is considered significant only when viewed in tandem with other proxy indicators for poverty or wealth, or comparing the same question over time to assess *relative* changes in welfare.

In terms of reported aggregate income, if one compared what the PVs should have received prior to the departures program (their formal salary level), there are more PVs today earning less than
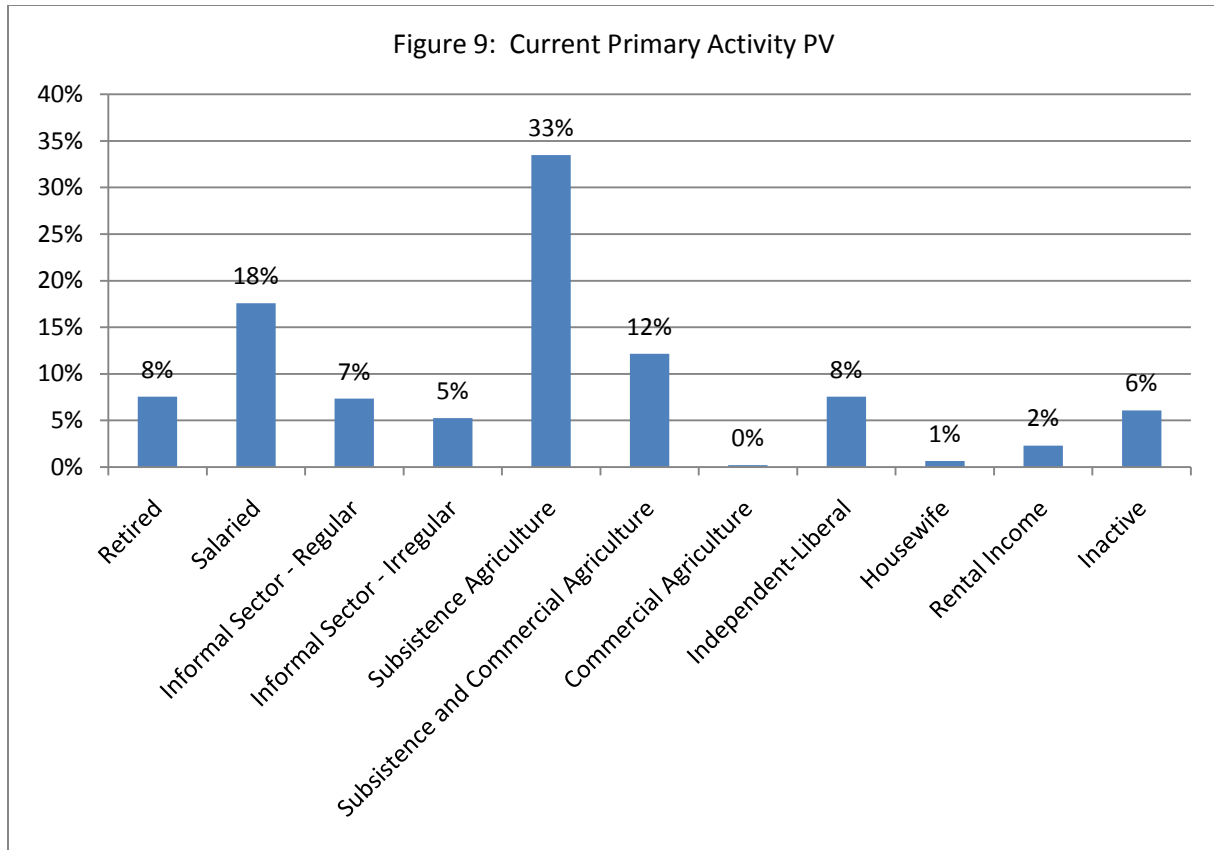
US$100 per month than in 2003. However, if one compares what the PVs reported actually receiving in terms of monthly revenues from Gécamines in the 2003 exit survey, there has been a decrease in the proportion of PV households earning less than US$100 per month. It must be noted that while these figures are in US$ terms and thus can self-adjust for domestic inflation, the inflation in international food prices can affect the US$ terms. Adjusting for such international inflation – for example through higher international food prices - and the relationship still holds: assuming that income distribution were linear within each income range (as the survey inquired about ranges), then just under 37% of PVs today have income under US$109 (the equivalent of US100 in 2003) compared to 66% in 2003, or to 7% based on contractual salary levels.[17] However, given the multiple assumptions herein (with regard to linearity of income ranges, the proportion of expenditures on imported food etc.) these numbers must be taken with great caution, and compared with a host of correlates.

Figure 8: PVs with Self Reported Monthly Revenues Under $100
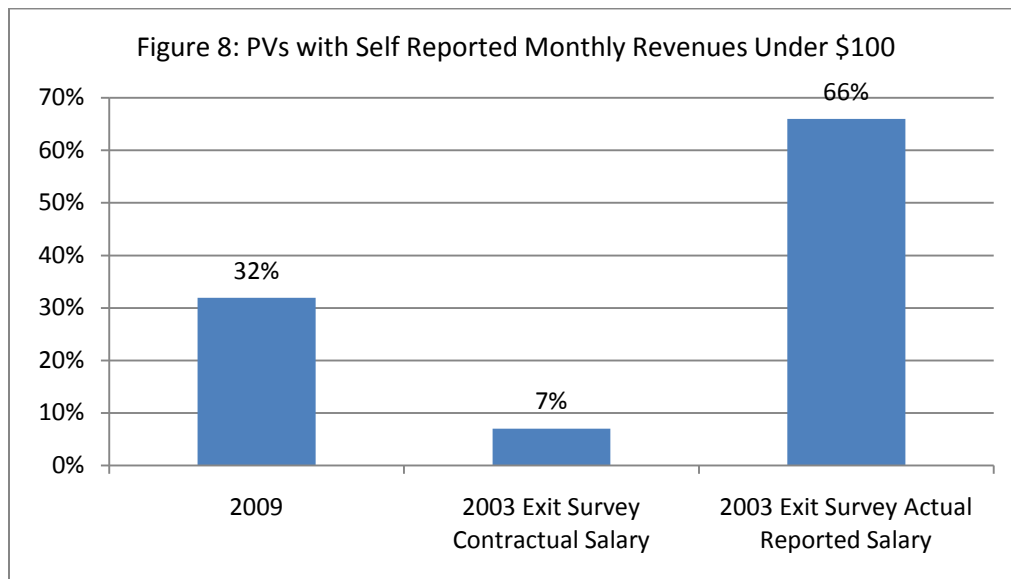
Another indicator of income levels is the percentage of people with salaries, which in other studies in the region have been shown to be associated with higher incomes, than, for example, subsistence agriculture.

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[17] If one were to take the high-end assumption that 50% of a households food expenditures in urban Katanga were on imported food (this is likely to be much less based on 1-2-3 data), using expenditure weights from 1-2-3 (54% of expenditures on food and half of that imported), and international food price indices, the equivalent of 2003 US$100 today is US$109.

Figure 9: Current Primary Activity PV

Figure 10: Percent Salaried: Partants Vs. Urban Katanga [with and without controlling for age]
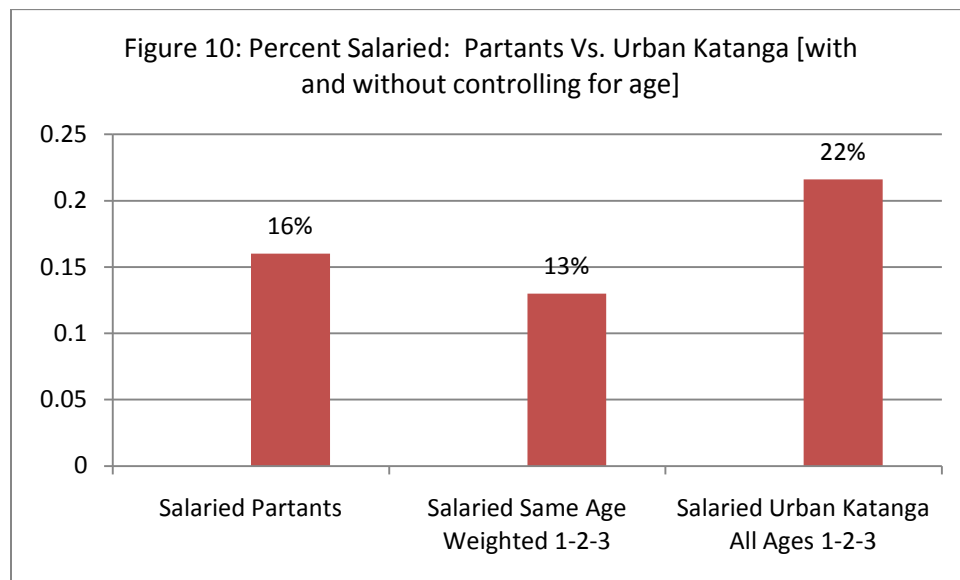
The majority of PVs have not returned to salaried employment, but rather, engage in subsistence agriculture.   The 16% of PVs who are salaried today (or 18% of those who have reported this as a *primary* activity) is lower than the overall percent of people salaried in urban Katanga (22%), but higher than those in urban Katanga who are in the same age group, weighted for similar age

distribution as the partants (13%).[18]   Overall only 4.5% of PVs stated that they receive a social security payment from INSS. These payments tend to be modest (in focus group discussions some quoted US$50 once every three months). The sections below will explore which PVs are more likely to be salaried and to receive INSS.[19]

Multiple reasons for low INSS coverage – which is nonetheless in line with the levels received by other urban Katangais - emerge both from the data and focus group discussions:

- There is a clear geographic bias, with no PVs from Kolwezi - which is farthest away from the INSS offices – reporting receiving benefits. In focus groups, some PVs from Likasi explained that the process was complicated and required that they spend several days in Lubumbashi, an expense which they said they could ill afford;
- According to Gécamines, PVs under the age of 65 at time of departure (60 for women) were not eligible for INSS benefits; however, even taking this into account, only 9% of those currently over 70 (who would have met this requirement) reported receiving INSS.
- PVs stated that there has been a recommendation by the *Collectif* – an organization of PVs - not to apply for INSS pension, as this application would have been construed as an acceptance of the 2004 operation and a renouncement to any additional claim;
- PVs stated that Gécamines has not provided the necessary forms to apply to the INSS;
- PVs were concerned that they were not eligible for the INSS pension because Gécamines has not paid the required contributions to the INSS prior to 2004;
- Some PVs said they were waiting for Gécamines to file the papers for them or did not know what procedures they needed to follow in order to benefit from the INSS pension.

(vi)   Vulnerability

Vulnerability points to the fragility of the household to sudden shocks.   It is useful to examine how many people fell into this category in 2003 compared to present day, according to different gradations.   Changes in vulnerability can be affected – positively or negatively - by a number of factors outside of the departures program including the progressing age of the PVs, the composition of the household and the overall economy.

There were certain sub-groups of PVs identified as potentially vulnerable at the start of the departures program. This included widows who are partants themselves, partants over 60 years old, partants who live in rented housing or without housing, and partants who had two or more dependent children of school age to support. The number of widows who are partants themselves was a very small part of the partant population in Katanga in 2003 (410 people total or about 4% of the exit survey) and thus the number of widows that were picked up in the random 2009 survey – again 4% of the 2009 sample - was too small to explore via detailed statistical sub-analysis.

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[18] The profile of partants is more heavily weighted towards the older population than the general population; thus the lower employment ratios in the general population of those over 61 have more weight.
[19] Not all PVs

A partant can be considered potentially vulnerable if he has two of these indicators - is living in housing made of non-durable materials and is above the age of 60 - and can be considered potentially extremely vulnerable if he has three of these indicators - is in housing made of non-durable materials, is above the age of 60, and has two or more dependent children of school age to support.

Using the definition above, the potentially vulnerable population (which excludes the number of dependent children of school age to support) was 2.9 percent in 2003 and is 1.4 percent today. The population potentially extremely vulnerable by this definition in 2003 (Exit Survey) was 0.2 percent and has gone up slightly to 0.8 percent today.   The reason that this indicator has increased slightly stems from increased number of PV households reporting that they have two or more dependent children (or grandchildren) of school age in their household (from 26% in 2003 to 64% today). This helps to explain the sensitivity of the PVs to the issue of school fees, which have increased over the years. Given the larger household sizes, more PV families in Kolwezi (70 percent) and Likasi (69 percent) have more than two children of school age than in Lubumbashi (51 percent) or Kipushi (51 percent).

Consistent with this trend, as noted above, the number of people living in rented or no housing has dropped from 16% of households[20] in 2003 (Exit Survey) to 5% of sampled households in 2009 and the percentage of people living in non-durable housing decreased from 25% of households[21] in 2003 to 2.7 percent today.[22]

The research attempted to explore whether there was one particular group that could be identified as vulnerable by running correlations with areas of concern. These other concerns may include whether a partant does not own durable goods (radio, TV, bicycle, etc.), does not have access to electricity, access to water, and access to arable land. A sign of vulnerability might also include high debts and the seeking of loans.

The most important of these indicators, consistent with the PSIA, is lack of home ownership. While only a small and decreasing subset of the population it nonetheless is a harbinger for potential financial challenges. Although the relationship is not particularly strong, it is statistically significant. As one would expect, those who do not own their home tend also tend to own fewer durable goods (r=.10*), have less access to electricity (r=.19***), have less access to water (r=.16**), have less

---

[20] 12.9 percent of all PVs in the baseline versus the panel.

[21] And 10.8 percent of all PVs in the exit baseline versus the panel.

[22] Results are similar of one uses another measure of vulnerability, the number of partants who do not own a home, are not salaried, do not have a spouse with a salary, and have more than two school aged children is approximately 2 percent or, not controlling for mortality rate (which is volatile considering the inverse relationship between age and home ownership), approximately 207 partants. There is no single geographic area for this most vulnerable group. Ten percent (21 partants) live in Lubumbashi, 12 percent (25 partants) live in Kipushi, 40 percent (83 partants) live in Likasi , and 38 percent (79 partants) live in Kolwezi.

access to arable land (r=.11*), be more likely to seek loans23 (r=.13**), have less overall wealth 24 (r=.22***).[25] They tend to be younger (r=.16***) and, with a closer look, to be part of the youngest subgroup (under 50). The age factor, however, would encourage a closer look at salary on the assumption that those under 50 could more easily obtain salaried employment.

(vii) Coping Mechanisms

Partants have clearly developed mechanisms to cope with the lack of formal employment (Table 2). The most important of these appears to be resourcefulness ("se debrouiller"), followed by help from others – most likely other family members which has increased since 2009. In focus group discussions, there was also reference to a much more extreme and detrimental coping mechanism – prostitution by either a wife or a child. While it is impossible to ascertain the veracity or prevalence of this extreme coping mechanism, the information on assets, income and other elements of economic well being would suggest that for the vast majority of PVs, resorting to such a mechanism would seem unlikely for all but the most vulnerable (less than 2% to 3%) populations. This discussion of children, however, does appear to resonate among PVs, perhaps because it links to their sense of changed status; when discussing this issue, PVs spoke about their powerlessness in controlling their children's behavior, or simply asking them questions, as they themselves feel unable to provide for their family as they did before.

Table 2: Coping Mechanisms: What do you do to make ends meet when you do not have enough revenue?

	Sample 2003	Sample 2009
Savings Group (Tontine)	1%	2%
"se debrouiller"	45%	32%
Farming	57%	28%
Help from others	15%	23%
Borrow money	35%	9%
Church	4%	2%
Other	NA	4%

(viii) Access to Education Services

One of the issues outlined in the PSIA was the dependence on Gécamines not only for salary, but for a variety of health and education services. Historically, non-wage benefits were important, and

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[23] This is a combined indicator of seeking loans from diverse sources.
[24] See Appendix B: Wealth Index for the elements of this combined measure.
[25] The r-value reflects the degree of linear relationship between two variables. It ranges from +1 to -1., An r of 1 would reflect a perfect positive relationship between two groups. An r of -1 would reflect a perfect negative relationship between two groups. An r of 0 would reflect that there is no relationship between the two groups. For example: If you lined up the two groups of "people who do not own their home" and their scores on the wealth index 22 percent of the dots would fall in a straight line.

although they had declined dramatically leading up to 2003 (teachers on strike, lower quality of service in health), they nonetheless were valued by Gécamines workers. [26]   In 2009 24% of Gécamines' PVs reported that they had at least one child currently attending a Gécamines school.

The large family size (over 8 people) relative to other urban Katangais (just over 5), the dramatic increase in number of household members of school age, and high and increasing school fees ($18 - $22 per month per student at Gécamines schools where the salary floor for all employees in the mining sector, set by the government, is $100/mo)[27] explains the concern that PVs feel about losing the Gécamines education benefit.

Figure 11: Students in PV Households Who Have Stopped School

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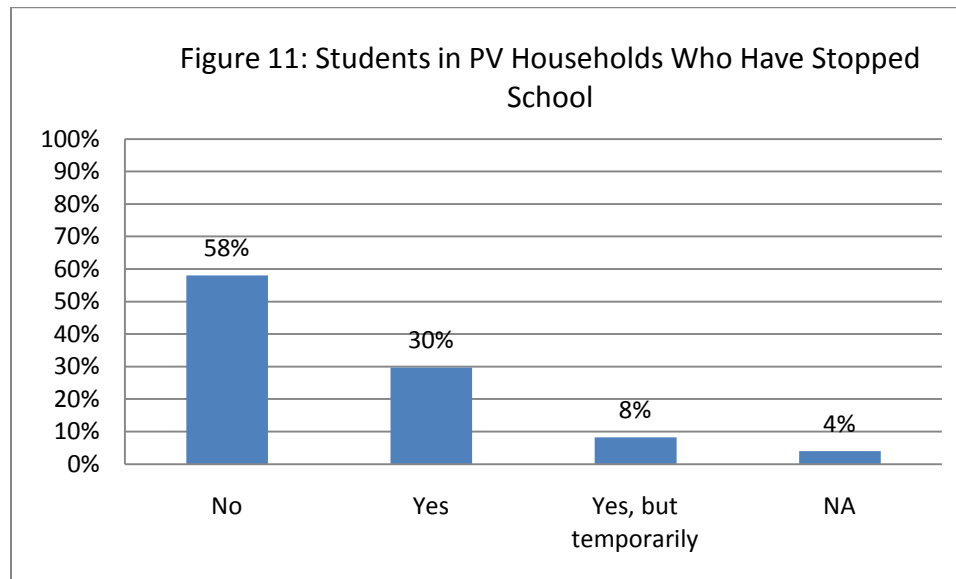
[26] According to the Management Report on the IP case free health care for PVs was provided for two years after the departures program.   In addition a subsidy for Gécamines schools was devised, which channeled resources to Gécamines teachers, in exchange for an agreement to keep the children of *partants* in school for the school year (it ended up covering two years), and for teachers to show up for work.

[27] In focus groups *partants* reported paying school fees of between $18 and $20 per student per month. This was not a specific reference to Gécamines schools but rather in general. Using the 2009 survey (total school fees paid minus number of children 6-15 years old in school) that figures comes to $22. This is up from the 2003 Exit Survey in which *partants* report paying $17/mo. These figures are converted to dollars to control for inflation. However, this conversion also masks some of the real world impact of increased school fee costs. The costs figures were also confirmed verbally by faculty at the University of Lubumbashi and the local COPIREP representative.   School fees are, however, complex. These figures represents the reported cost for a *partant* to send a child to a Gécamines school. There are government owned schools that are a fraction of the cost in fees but in some cases such schools are non-existent (as has been a problem in Kolwezi) or offer poor and irregular classwork. Fee structures in government owned schools can also be complex. While the legal fees under the aegis of the central ministry is small, there can be many fees. What is actually charged differs greatly by Province and even from one school to the next. There is often a mix of "illegal" and legal fees. Public schools managed by the Catholic Church are also subject to a large fee levied by the church. When a respondent in a focus group complains of school fees in public schools s/he may well be concerned with the total fees out of pocket as opposed to the more just what the official fees charged by the ministry are.

Thirty percent of PVs reported that they had pulled children out of school permanently for financial reasons. Notably, there is a distinction by region on this indicator (F=8.23***). The percentage of respondents indicating that they had children stop school was far and away the highest in Kipushi (57 percent) as compared to Lubumbashi (31 percent), Likasi (33 percent), and Kolwezi (25 percent). The number of children attending school overall, however, does not differ significantly by region – even if controlling for household size. An additional 8% have pulled children from school temporarily. This is a fairly common practice in Katanga and is often linked with needing to pay final school fees in order to get final exams.

In comparison, a smaller percentage of the PV children of school age (6-15) are in school - sixty-two percent (2009 survey) compared to 66 percent of children aged 6-15 for urban Katanga Province (2005 1-2-3 Survey). This is likely driven by the expense of paying fees for the large number of (grand) children in PV households

There is a possibility that in some specific locales there may be a supply side issue as well; since 2003, Gécamines reported that it has closed 25 schools either because it no longer had teachers, or because it did not have enough students.

(ix)   Health Care

Today nearly three-fourths of all partants rely on private health care. Payments are highly variant across respondents as those who required hospitalization paid dearly while those who didn't require hospitalization didn't pay at all. However, the concerns expressed in the PSIA that "access" to health care providers is of concern is upheld today. In focus group discussions, PVs spoke of the issue of occupational health problems linked to their prior work with Gécamines. Further research would be required to confirm or refute this link.

Figure 12: Health Care Access
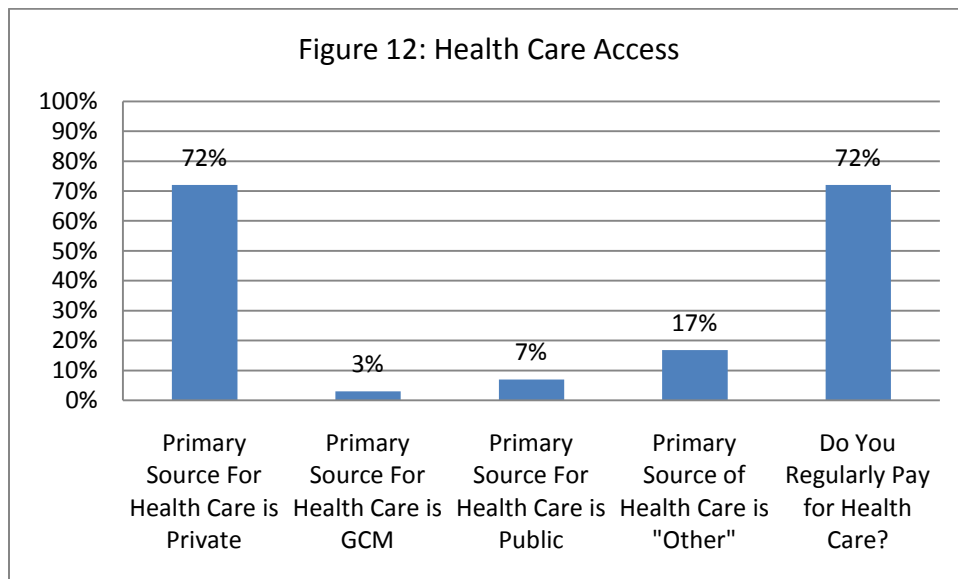
B. Reinsertion Programs

(i)   Indemnity

In Katanga today, there is much debate on the level of indemnity received. In focus groups in 2009 *partants* argued that they did not receive what they expected to and, in hindsight, didn't agree with the indemnity formula. While the objective of this report was not to delve into the technical discussion on the level of indemnity, it did seek to find any patterns in terms of effectiveness of the indemnity to provide lessons for any future programs. Two issues emerge from the analysis; indemnity levels for *most* PVs did not show a link with greater wealth, with the exception of those receiving more than the mean – but this is driven in part by the lack of large variance in indemnity levels for most PVs - and in spite of efforts by the project to encourage savings, most PVs report using indemnities for consumption, perhaps not surprising given the family network, lack of trust in the banking system, and fact that the program had come after a long period of non-payment.

Upon departure, each PV received a lump sum indemnity ($4,083[28] on average).   The following analysis is based on the 97% of PVs captured in the 2003 exit survey, for which the mean indemnity was US$3,895. [29]   The majority of PVs (88 percent) received less than the mean; most people received between $2304 and $3171, a relatively narrow range. A small number received large sums as high as $24,273 (for example, among the Directors).


Figure 13: Percent of Respondents by Indemnity Amount
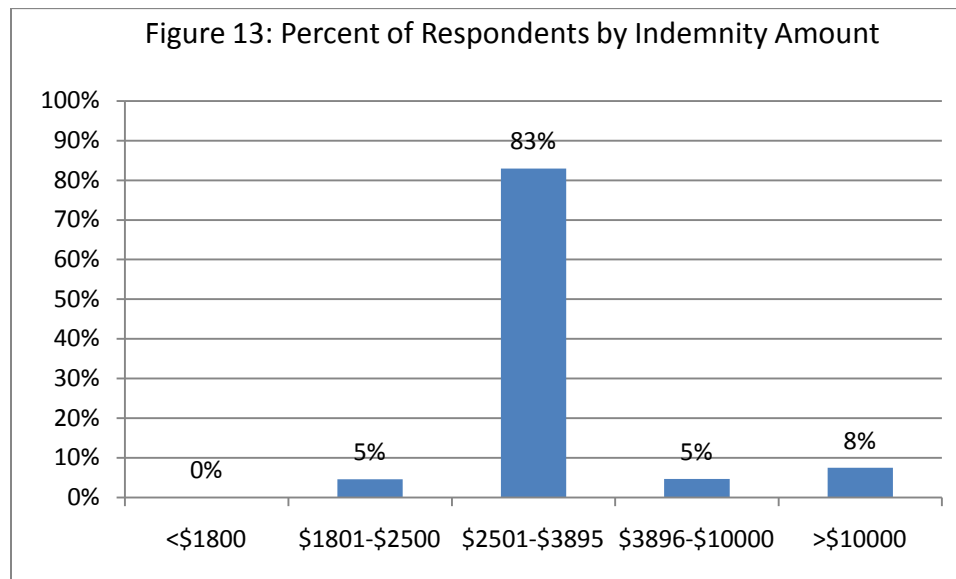
In pre-exit interviews in 2003 Partants were planning to use a little less than 40% of their package on average for reinsertion activities (or $1,150), and to save about 32% ($870) . Rates were only slightly different for the managers and supervisors (34% for savings and 38% for investment). These,

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[28] Management response to the request for Inspection Panel Review (Credit No. 3815-DRC). World Bank, 2009.
[29] All but about 290 households (about 2%) who tended to be higher level employees processed outside Katanga.

however, were only expressed intentions, and they were collected after a meeting during which the officials in charge of the program had strongly emphasized the ideas of saving money and investing for reinsertion. There were widely circulated stories of households buying mattresses and bicycles – the latter being most useful to go work in fields that are on average 13 kms away.

Based on recall responses from the 2009 survey, few PVs reported using their indemnity for

Figure 14: Use of Indemnity
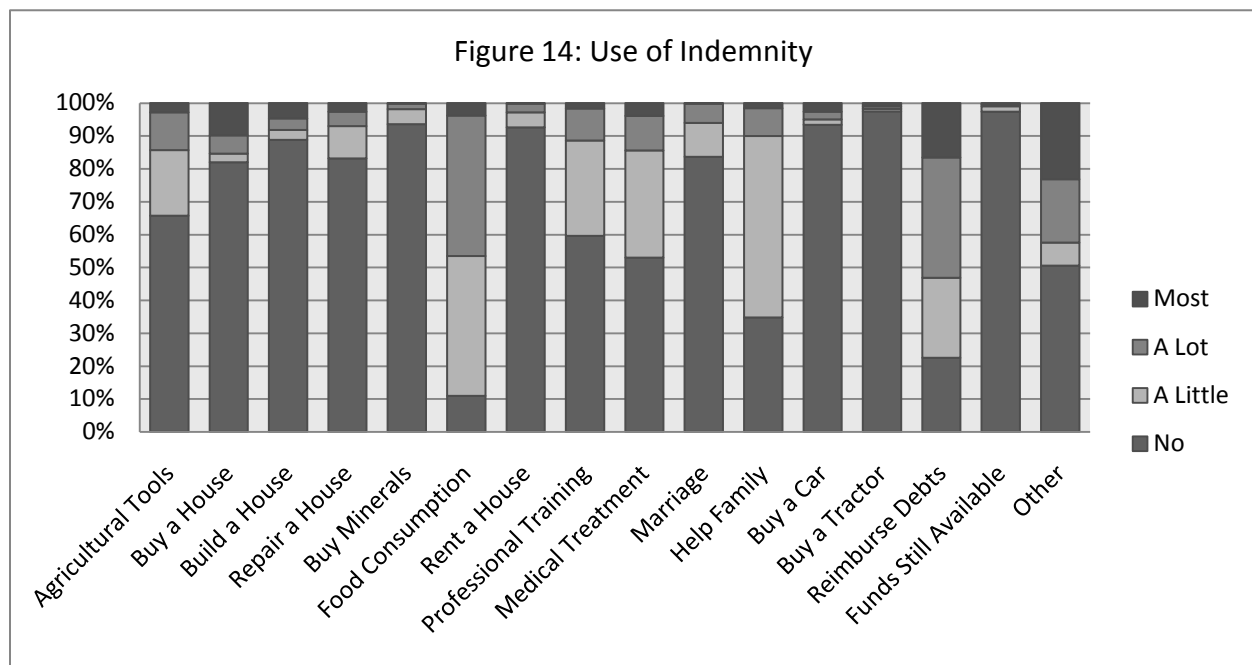
investment purposes (buying or building a house, buying minerals, training, buying a tractor, etc.) ; the vast majority, it was reported, was used for consumptive items (food, reimburse debts, etc.). Debt has been an issue of controversy. At the time of departure the average indemnity was more than 10 times the reported household debt. However, *partants* have reported repeatedly that the repayment of debt absorbed the principal share of indemnity. If indeed indemnity was used to retire debt the years since have seen new debts created. Whereas in 2003 (Exit Survey) 7.3 percent of *partants* reported having debts, in 2009 16.6 percent reported having debts. However, of those reporting debt the average debt per household in 2003 (Exit Survey) was $406 as opposed to $188 in 2009.

There is reason to believe, based on focus group responses, that there is "soft" debt. That is, *partants* received assistance from family in an informal fashion and were then expected to return the favor. It is also possible that *partants* in focus groups have an incentive to maximize this whereas in the 2003 baseline they did not. Focus groups also tend to maximize concerns as individual perceptions are influenced by the expressed views of others. Regardless, food consumption and debt were the two highest reported uses of the indemnity.
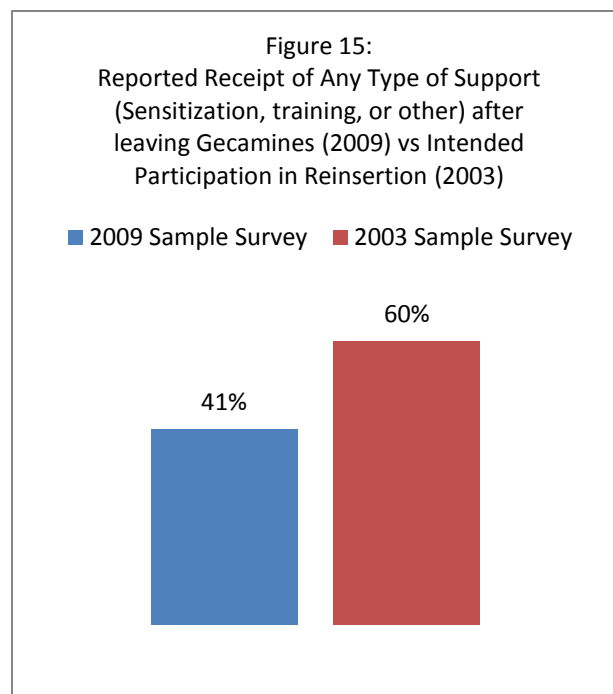
(ii)   Reinsertion Assistance

Reinsertion assistance included sensitization and training programs, coaching in business management and the formation of cooperatives and small business, a grant program and agricultural assistance.[30]

When asked in 2009 41 percent of *partants* recalled that they or someone in their household had received some training, sensitization, or other support following the departure from Gécamines versus 61 percent who had stated they intended to participate in reinsertion in the 2003 exit survey. However, based on feedback in the 2009 survey, it appears that the most far ranging reinsertion support was for sensitization, versus the more concrete support (kits for agriculture, access to land, financing, training on project management). When asked to name this type of more tailored concrete support, only 13 percent reported what specifically they received.

There are several possible explanations for the low levels of participation. First, for some programs, individuals would submit requests for participation and for projects and would receive awards on a competitive basis. This was presumably carried out in this manner in order to ensure sound proposals were funded, and based on experience with such programs elsewhere. Second, when asked in the socioeconomic survey why they did not participate (2009), the most frequent answer was "no information" about the reinsertion programs. Third, the project encountered problems in disbursing on this component. [31]

Further, based on discussions in focus groups, many PVs expected individual attention, whereas many programs were in the context of group or collective projects. The failure of one cooperative run by a priest (*Coopérative FDC* in Kambove), which regrouped almost 1600 PVs and which lost a large amount of money, has left the PVs distrustful of any collective venture.[32] In an environment where there was widespread distrust of Banks (which had failed in the past, taking depositors money with them), the FDC Cooperative offered to PVs the illusion of a safe place to park funds and to earn a return, without having to provide any sweat equity. It is perhaps not surprising that today, fewer than a quarter of *partants* report belonging to any civic groups. This


Figure 15:
Reported Receipt of Any Type of Support (Sensitization, training, or other) after leaving Gecamines (2009) vs Intended Participation in Reinsertion (2003)

■ 2009 Sample Survey   ■ 2003 Sample Survey

60%

41%

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[30] For a full listing and status, refer to the Management Report.
[31] "Evaluation des Activites de Reinsertion des Partants Volontaires de La Generale des Carrieres et des Mines, 'Gécamines'", provisional report, January 2006, Cretes.
[32] At least as expressed in focus group discussions, September 2009.

is an alarmingly low number when compared to similar findings in Mozambique, Tanzania, Kenya, Uganda, Zambia, and even countries like Madagascar with weak civil societies. It is, however, an improvement over 2003.

Figure 16: Group Membership

Group Membership
t=25.87***
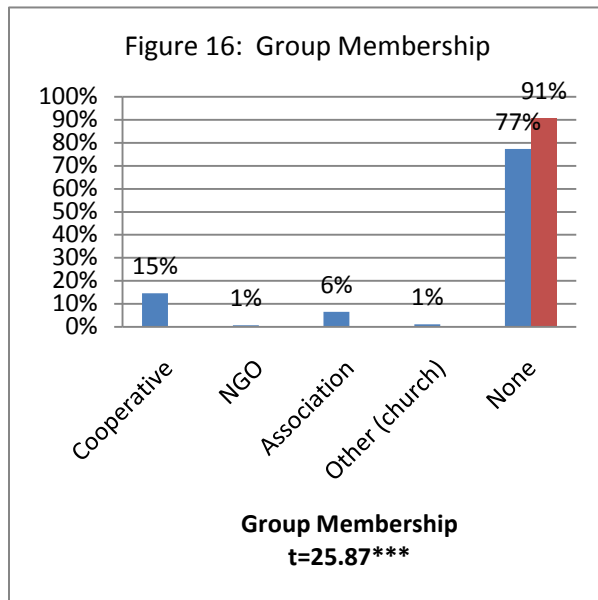
Data shows that there is no correlation between having received reinsertion assistance and the wealth index (the wealth index is explained in further detail in the next section), nor between having received such assistance and other aspects of socioeconomic well being, such as having more assets. [33] This suggests that reinsertion is indeed very difficult and that reflection is needed both on the objectives and the approaches to reinsertion for this type of a demographic group in this context.

Beyond speculation, it is difficult to pinpoint the reasons behind this lack of a relationship (there could be many - the types, quality or quantity of reinsertion programs offered, the age of the PVs, their ability to adapt, the economic environment, the types of opportunities available in the economic context of the region etc.).   While discussion groups are not representative, and likely reflect some selection bias, they did provide some potential explanations for the types of challenges that PVs ran into in pursuing agricultural enterprise, the first choice of intended activity selected by PVs during the baseline:

➢ The difficulty and cost of turning land into arable land, and particularly clearing land of tree stumps;

➢ Rising input prices;

➢ Anecdotal information on PVs in discussion groups not reaching important yields. In one Focus Group in Likasi, the PVs involved in farming acknowledged not knowing the type of fertilizer they needed to apply to their field (the PSIA documented overall low levels of public agricultural extension services in the region);

➢ Because of the lack of available lands around Gécamines estates, fields are often far away, and may take hours to reach by bicycle;

➢ Transport is prohibitively expensive (because of the state of disrepair of the road infrastructure and the distances), making it difficult to bring back harvest or to market it;

➢ Insecurity is often a problem, with harvests being regularly stolen.

The 2009 survey showed that PVs reported that only 17 percent of reinsertion projects started at the time of departure continue to function today. Four percent are said to be flourishing, two percent

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[33]For the wealth index and reinsertion assistance r=.10, p=.065 and controlling for household size, r= .094, p=.09

are said to be operating at the same level, and the remainder are seen as dying or defunct.   The Cretes report showed that there were more projects created in Lubumbashi than in Kolwezi and Likasi.[34]   Reporting could also be linked to perceptions, as in focus groups, most PVs did not consider subsistence agriculture as a worthy activity; in these groups, PVs who were involved in agriculture often categorized themselves as unemployed rather than as a farmer.   This links back to a loss of sense of identity, covered below.   Further, some PVs explained that the new mining operations would not hire them because of their advanced age. Reinsertion is not very easy in general, and is particularly challenging given the post-conflict context, with poorly functioning agricultural markets, and weak state institutions of support (i.e. agricultural extension).

(iii)   Attitude Shift on the Departure Program

There appears to be a marked shift in attitude between 2003 and 2009.   In 2003, in the context of no salary payments, in the baseline survey PVs expressed positive attitudes about the VDP.   In 2009, with Gécamines having paid workers for at least several years, and with new external investments and concessions in the mining sector, the PVs are extremely negative about the VDP.
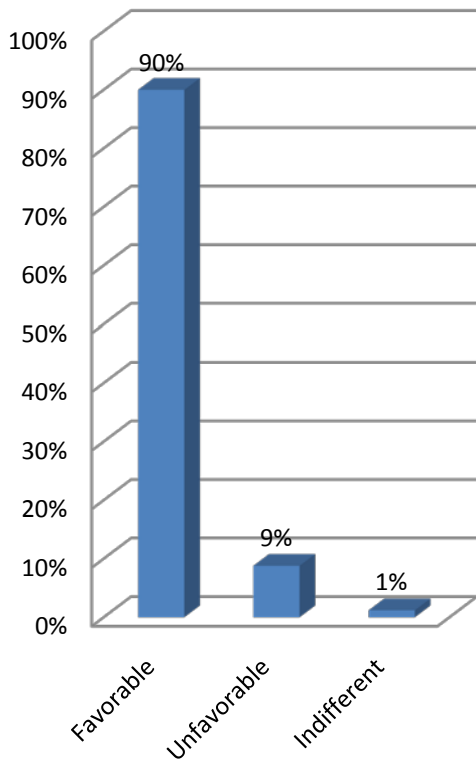
In the 2009 exit survey 99 percent reported being informed about the departure program and the largest source of information was the union (51 percent).   Sixty-five percent spoke to specific financial reinsertion need.

There is a gap as well between how *partants* viewed the departure program prior to departure and how they view it now. In the 2003 exit survey 90% had a favorable view of the program. In 2009 76 percent of *partants* argued that the economic environment is worse than in 2002. Whereas today *partants* in focus groups argue that the reason they left Gécamines is because they were not receiving regular payment, in the 2003 sample survey that response was given only 29 percent of the time. The leading reason given was age of retirement. Part of the reason for the change in views may be tied to changes in Gécamines, as well as the overall boom in the economy. As an older, non-entrepreneurial group in general *partants* were less well positioned than younger people to take advantage of the boom.
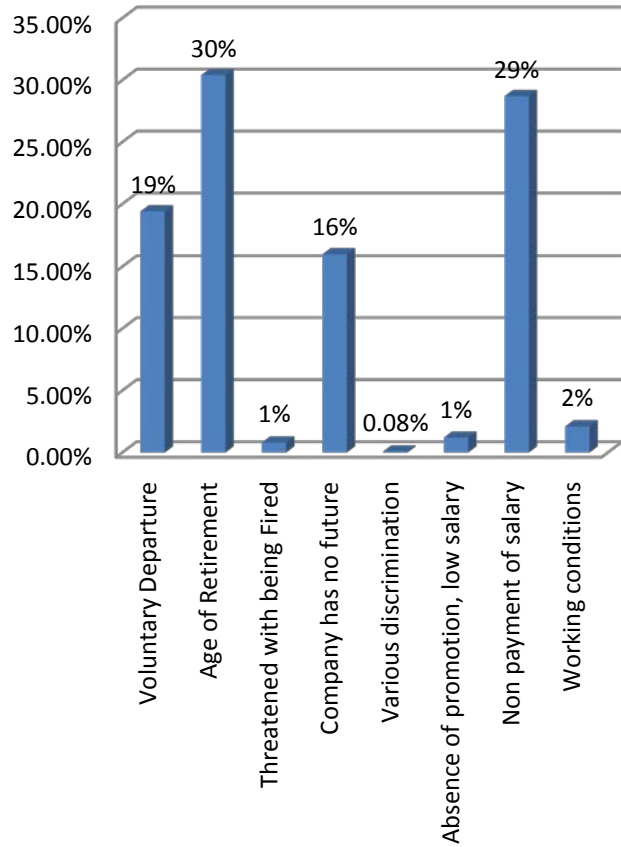
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[34] "Evaluation des Activites de Reinsertion des Partants Volontaires de La Generale des Carrieres et des Mines, 'Gécamines'", provisional report, January 2006, Cretes.
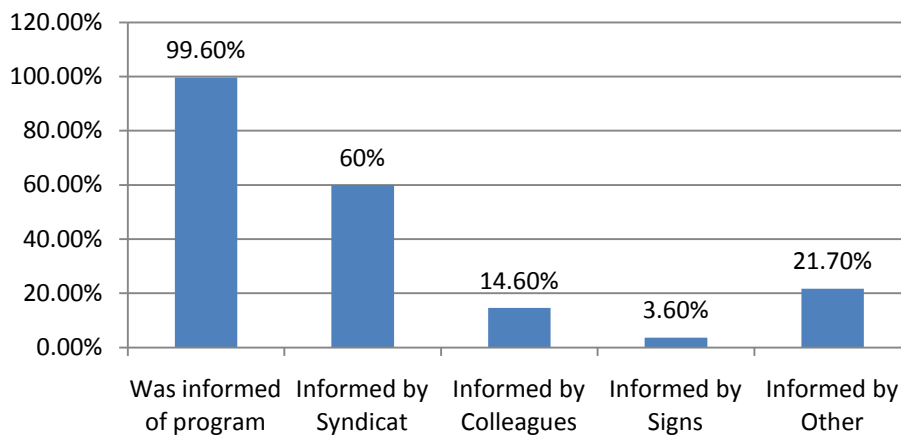
Figure 17:
Attitude of PVs to VDP Prior to
Departure
(2003 Sample Survey)

100%
90%
90%
80%
70%
60%
50%
40%
30%
20%
10%
9%
0%
1%
Favorable   Unfavorable   Indifferent

Figure 18:
First Motivation for Leaving GCM (2003
Sample Survey)

35.00%
30.00%   30%
29%
25.00%
20.00%   19%
16%
15.00%
10.00%
5.00%
1%   0.08%   1%   2%
0.00%

Voluntary Departure
Age of Retirement
Threatened with being Fired
Company has no future
Various discrimination
Absence of promotion, low salary
Non payment of salary
Working conditions

Figure 19: Information of PVs Prior to Departure (2003
Sample Survey)

120.00%
100.00%   99.60%
80.00%
60.00%   60%
40.00%
20.00%   14.60%   21.70%
3.60%
0.00%

Was informed   Informed by   Informed by   Informed by   Informed by
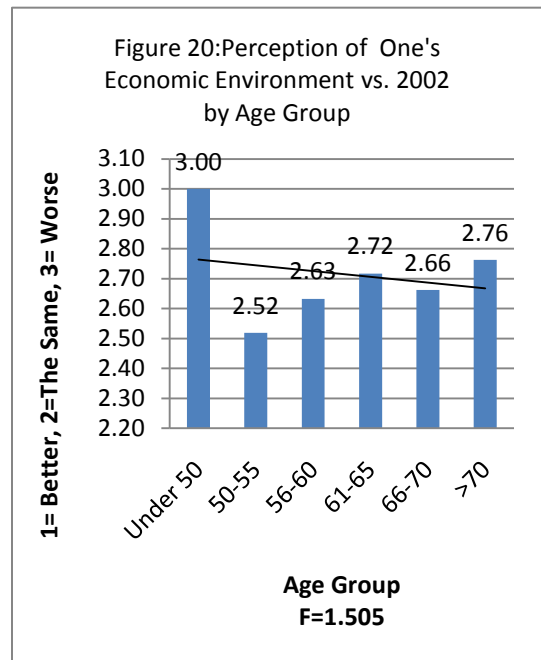of program   Syndicat   Colleagues   Signs   Other

(iv)   Exploring Economic Well Being: Who did well and who did not?

In order to better understand the process of the VDP, and in order to attempt to begin to draw any lessons for other similar programs, it is important to explore behind the aggregate, to see whether there are any patterns in who did well after leaving Gécamines and who did not.

Age: One concern in 2003 was that those of more advanced age would be at a disadvantage as compared to those who were younger. However, because the majority of PVs were of an advanced age, being in the relatively "younger" age bracket among PVs did not make a substantial difference, as these were still older - close to 50 in age.   While the perception of one's economic environment in 2009 was lowest amongst those of the youngest (under 50) age category, this is such a small proportion of the PV population in this age group that the difference in perception among age groups is not statistically significant. While there is a propensity for those under 50 to have greater employment in the mining sector but overall (in terms of welfare index – see subsequent section) they have fared no better than other age categories. [35]

Safety Nets – Social Security: Under normal circumstances, one might also expect those in the two most advanced age groups would receive some protection from the social security system (INSS). [36]

However, as noted above, according to Gécamines, PVs had to be 65 or older at the time of departure to qualify to receive INSS.   If this were not the case, then roughly 28% of PVs would be eligible for INSS; if this is the case roughly 12% of PVs would qualify (versus 4% who receive it).[37]   While the section on income above provided some reasons that this coverage is low, there are also system-wide weaknesses in the functioning of the INSS system in DRC.   Thus, comparison of PVs receiving INSS to urban Katanga overall (using the 2005 1-2-3 data) reveals little distinction between the partants in 2009 and the population as a whole. They both follow the same trend including by age category. The number of people in both surveys receiving pension before the eligible age and the small number receiving pension at retirement age would appear to indicate a problem with the Congolaise pension system write large and does not appear to be a problem singled out for partants.

Figure 20:Perception of One's Economic Environment vs. 2002 by Age Group

1= Better, 2=The Same, 3= Worse

Age Group
F=1.505

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[35] There is no statistical relationship between the age of PV and welfare (see subsequent section).

[36] Qualifying age for pension in the Congo is 65 years for men and 60 years for women.

[37] The percent qualifying is based on age at exit survey for all PVs (not just those included in the 2009 sample), plus 5 years. This is approximate as it does not take into account where birthdates fall in the year.

Figure 21: *Partant* Salaried Employment by Age Category 2009

F=.336 (Salaried)
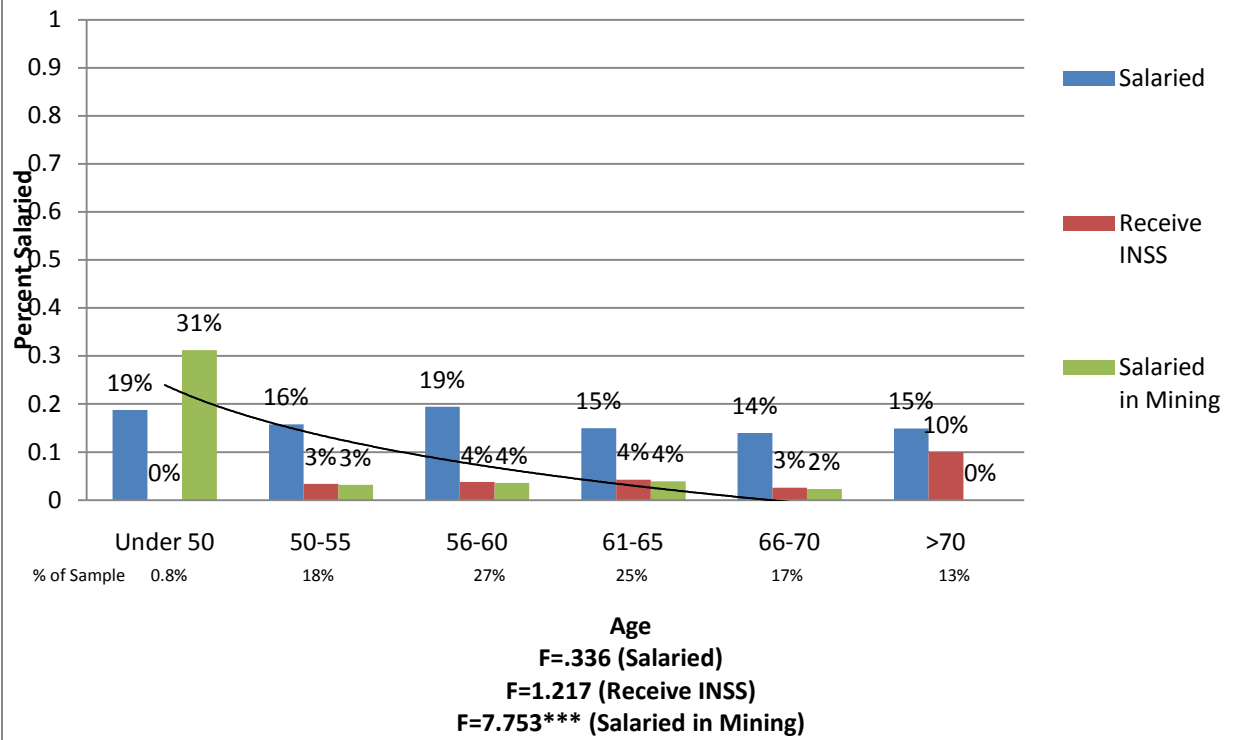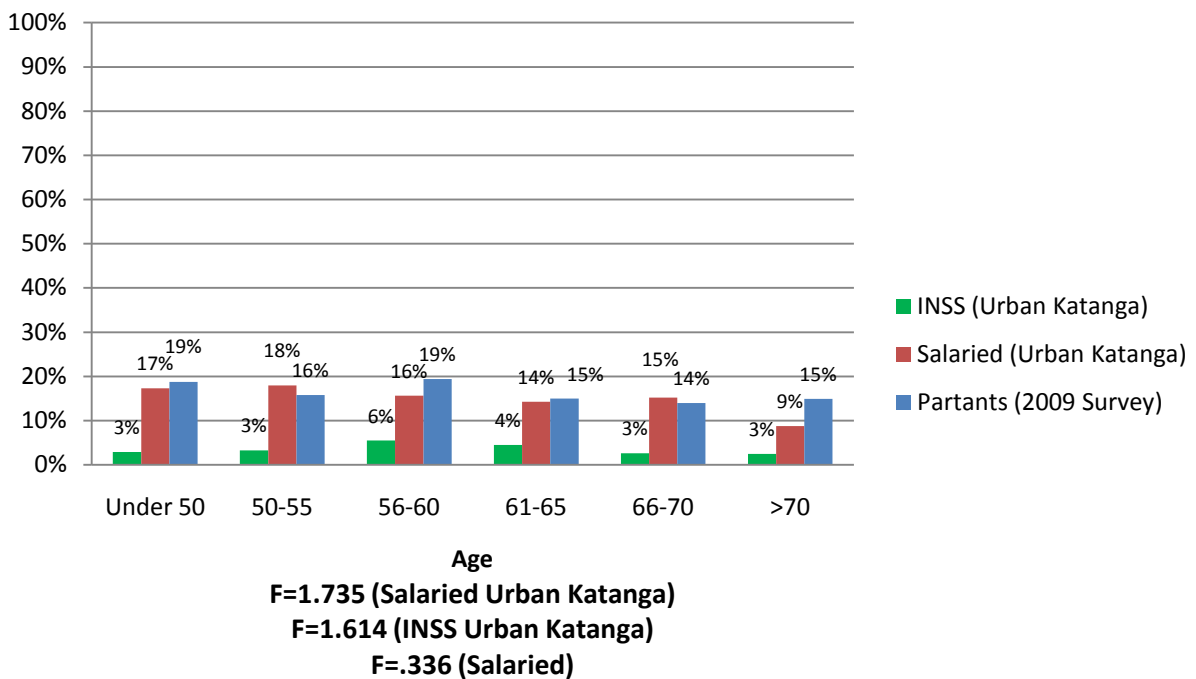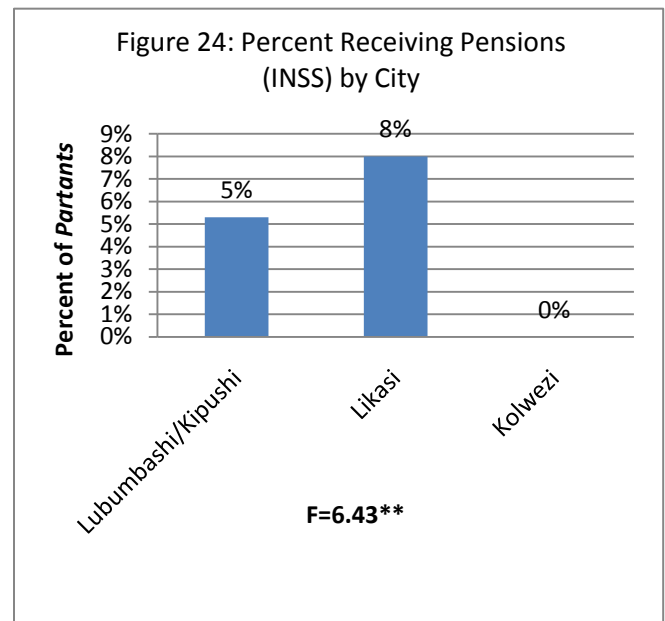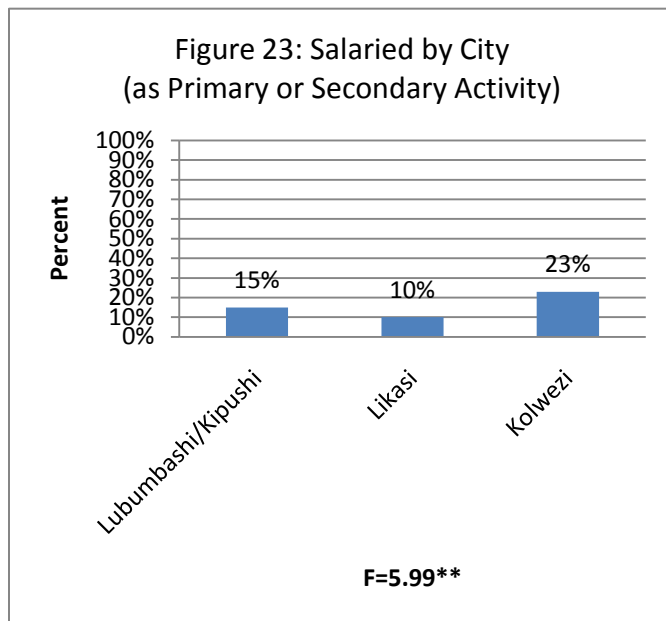F=1.217 (Receive INSS)
F=7.753*** (Salaried in Mining)

Figure 22: Salaried Employment and INSS by Age Category
Urban Katanga (2005 1-2-3 Data) vs *Partants* (2009 Survey)

F=1.735 (Salaried Urban Katanga)
F=1.614 (INSS Urban Katanga)
F=.336 (Salaried)

Location: A key question is whether PVs have fared better or worse in specific locations. The PSIA noted some concern about Kolwezi given its distance from other urban areas, its poor road connection, and more limited market access and low job diversification. In 2003/4 it was also found to be more dependent in certain specific areas on Gécamines schools. At the same time, Kolwezi has been the center of substantial mining activity in recent years.

Figure 23: Salaried by City (as Primary or Secondary Activity)

F=5.99**

Figure 24: Percent Receiving Pensions (INSS) by City

F=6.43**

In terms of salaried employment, it is important to disaggregate between Lubumbashi and Kipushi; while Kolwezi and Lubumbashi report about the same amount of salaried employment (primary activity) from 23% to 24%, Kipushi and Likasi report a greater degree of dependence on subsistence agriculture with lower levels of salaried employment.

Table3: Primary Economic Activity by Location

	Retired	Salaried	Informal Sector - Regular Income	Informal Sector - Irregular Income	Subsistence Agriculture	Subsistence -cash crop Agriculture	Cash Crop Agriculture	Independent / Liberal Profession	"Menagere"	Rental Income	Inactive
Kipushi	7.4%	11.8%	.0%	.0%	48.5%	8.8%	.0%	14.7%	.0%	2.9%	5.9%
Kolwezi	.0%	23.3%	8.8%	6.9%	26.4%	15.7%	.6%	5.0%	1.3%	3.1%	8.8%
Likasi	11.9%	11.9%	9.1%	5.1%	42.6%	11.9%	.0%	4.0%	.0%	1.1%	2.3%
Lubumbashi	13.3%	24.0%	6.7%	6.7%	13.3%	8.0%	.0%	14.7%	1.3%	2.7%	9.3%

It is not clear what is behind the similarity in the figures on salaried employment between Kolwezi and Lubumbashi, given the more diversified economy in Lubumbashi. This study did not collect data on the overall economies in each city in order to determine whether this is driven by the mining

activity in Kolwezi (which exists to some degree in Likasi, but is far less common in Lubumbashi or Kipushi) or due to reporting.

As illustrated in Figure 24, about 8% of partants in Likasi reported receiving payments from INSS versus 5% in Lubumbashi/Kipushi and none in Kolwezi. This variation appears to be tied to proximity within the deeply flawed INSS system, as opposed to Gécamines or the reinsertion process but it nonetheless is one less safety net for *partants* in Kolwezi. As noted above, some *partants* in focus groups queried on this issue expressed a fear that applying for INSS would refute any claim on future Gécamines payments. This could be another driver for low pension rates. Since receipt of INSS today is based on *partant* response rather than analysis of INSS records there is also the possibility that there are some strategic responses.

Figure 25: "Wealth Index"
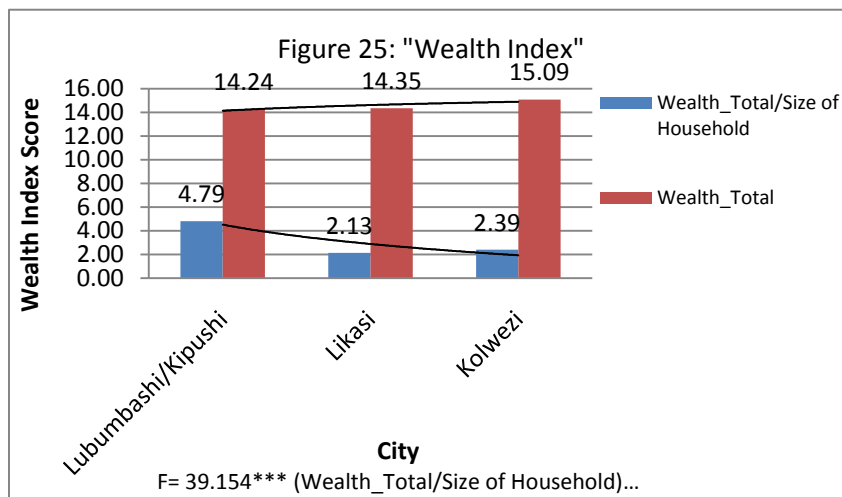
In order to further explore the determinants of wealth and vulnerability, a wealth index was created (see Appendix B: Wealth Index for the indicators of wealth employed and their weights). This index provides a more robust indication of socio-economic well being as it combines self-reported overall income level (which as noted above is subject to bias and to some error if not part of a more elaborate income and expenditure survey) with a series of weighted indicators.[38] For example, the wealth index includes information on assets (the more assets the higher the index), consumption (high number of meals per day, eats meat, chicken, vegetables, has reserves), income (salary level of PV and spouse, INSS, level of work), has bank account, and housing characteristics (durable materials, owns home).

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[38] Where possible it is common to use a Factor Analysis to determine index weighting. Factor Analysis is used describe variability among observed variables in terms of fewer unobserved variables. The observed variables are modeled as linear combinations of the factors, plus "error" terms. It has the advantage of combining multiple factors into one single factor and identifying groups of inter-related variables. Yet, the Factor Analysis is dependent on the data at hand. It is often unreliable when self-reporting as in this study. Factor analysis is also only effective where there is a high inter-relationship between the variables. Often this is not the case in the social sciences, particularly in psychology or, in this case, perceptions-related research. The alternative is to use subjective weighting measures, common in the social sciences (see, for example, Schmitt, Neal "Comparison of Subjective and Objective Weighting Strategies in Changing Task Situations." *Organizational Behavior & Human Performance;* Apr78, Vol. 21 Issue 2, p171-188, 18p). Different methods commonly produce similar results leading to the conclusion that the simple method produce a simple and reliable function (Goldberg, L.R. (1968) "Simple Models or Simple Processes? Some Research on Clinical Judgements," *American Pyschologist*, 23, 483-496). In a subjective approach the researcher assigns subjective weights based on presumed norms (for example: a car indicates higher wealth than a bicycle). Given the nature of the data this was the method selected herein.

Probing deeper by region confirms the importance of household size. While Kolwezi appears to have a higher overall wealth index, this difference is not statistically significant, and in fact larger families in Kolwezi and smaller families in Lubumbashi lead to a significant advantage of the latter the former.[39] Indeed, controlling for household size the distribution of "wealth" is nearly flat across the respondent population. Because of the family size differences, in per capita terms members of *Partant households* in Kolwezi are overall worse off in relative "wealth" than in Lubumbashi.

Indemnity: A key question for future policies on retrenchment is whether the level of indemnity had a significant relationship to the current wealth of PV households – whether those who received higher indemnities in 2003 would be able to invest their funds and otherwise prosper today. [40] If one looks at the impact of indemnity on wealth, controlling for household size, the impact is small but positive and significant [$r=.212***$][41]. However it is worth assessing whether this relationship changed depending on the absolute level of the indemnity, whether it is linear. If one only looked at the 12% of PVs who received an indemnity above the mean (US$3,895) then the correlation between indemnity and wealth remained. However, if one looks at the relationship between indemnity and wealth among over 88% who who received below the mean (below US$3,895), there is no relationship between wealth and indemnity, whether controlling for the size of the household or not. Thus, for all but the highest level employees at the point of departure, indemnity did not serve to generate wealth.

Further, when one looks at the degree to which the change in indemnity *explains* different levels in the wealth index, for those receiving indemnities above the mean, 7% of wealth can be explained by the higher indemnity; however, for those receiving indemnities below the mean (US$3,895) the different levels of indemnity explain none of the different levels of wealth. This is likely due to the distribution of indemnity levels, itself in part a reflection of Gécamines salary levels, and the fact that the difference in receiving say US$3,000 versus US$3,500 is null in terms of impact on overall wealth. Thus for all but 12% of the PVs receiving indemnity levels above the mean, the amount of indemnity did not influence levels of wealth.

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[39] The difference between the two groups of "Wealth" vs "Wealth Controlling for Household Size is significant ($t=21.268***$). .

[40] . Salary at departure from Gécamines (reflecting level of employment) is also an important indicator. However, indemnity is highly correlated with ($r=.496**$) with salary at departure (because employment type was a key factor in the indemnity formula). For this reason it is necessary to choose between the impacts of employment type vs salary at departure. Multiple data runs indicate that "indemnity" is a stronger predictory than "salary at departure." Thus "indemnity" is used in this analysis.

[41] In other words 21% of the time those receiving a high indemnity were also high on the wealth index.

Figure 26:
Relationship Between Indemnity and
Wealth Index Controlling for Household Size
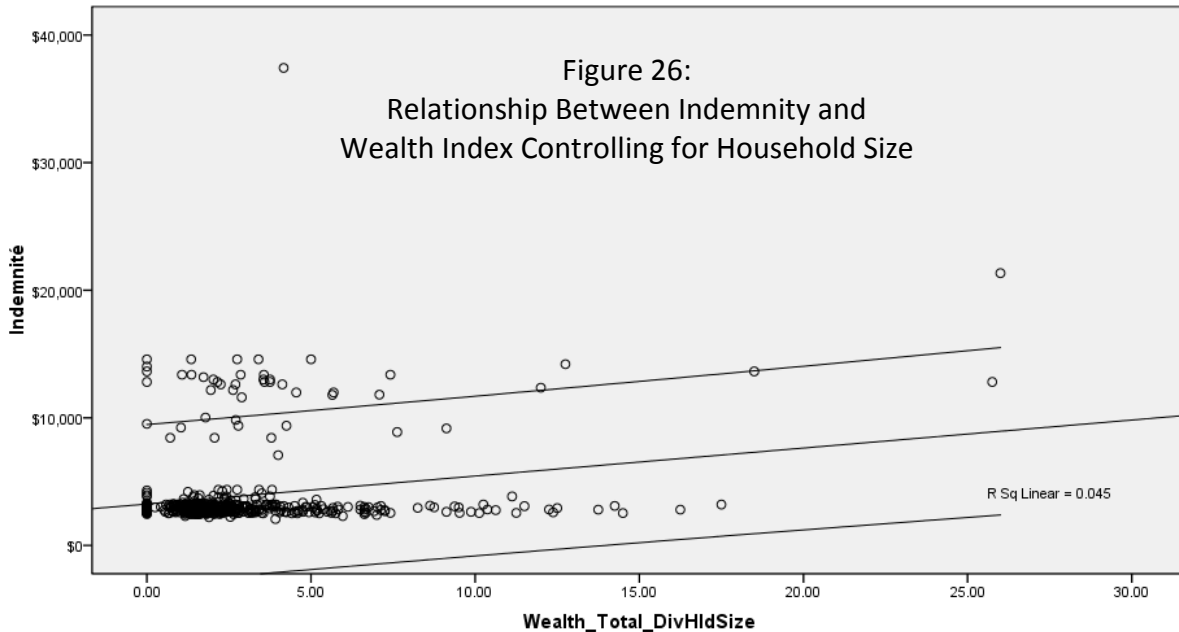
One could hypothesize that the relationship between wealth and indemnity here might be driven by higher education levels of the higher level staff who received high indemnities. However, controlling for education alone does not change the relationship between indemnity and wealth where wealth is considered by household size. [42]

It is important to look underneath the averages to understand the relationship between the level of indemnity received and current wealth. The 12 percent of the PVs who received above the mean indemnity tend to have been in a higher position, earning a higher salary, and having a higher education. They tended to be *cadre* (r=.61**) and to be less likely to have more than two children (r=.12**). However, they were not necessarily more educated. [43] [44] [45]

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[42] Wealth/HH Size and Indemnity has a correlation of r=.212***, controlling for Education it changes a miniscule amount to r=.220***.

[43] Controlling for education (using numerically sequenced categories of "none" "P1-P6" "PP1-PP6" "Professional" and "University") the relationship between being in the high indemnity bracket (top 12 percent) and cadre is statistically insignificant. Likewise, controlling for education the relationship between hight indemnity and likelihood to have more than two children is statistically insignificant.

[44] There is no relationship between cadre and more or less vulnerable housing. This is likely due to the relatively small number of cadre and relatively small number of *partants* in vulnerable housing.

[45] Eight point six (8.6) percent of PVs surveyed in 2009 were cadre at the time of departure. Given the formula for determining the indemnity, it is not surprising that there is a tendency for those in the 12 percent receiving the highest indemnity to be cadre (r=.61*) and tend to be less likely to have more than two children (r=.12**). The 12 percent of the partant population who received above the mean tend to have been in a higher position, earning a higher salary, and having a higher education. Eight point six (8.6) percent of partants surveyed in 2009 were cadre at time of departure. Given the formula for determining the indemnity it is not surprising that there is a tendency

Figure 27: Relationship Between Indemnity and Wealth Excluding the Top 12% of Partants ("above the mean")
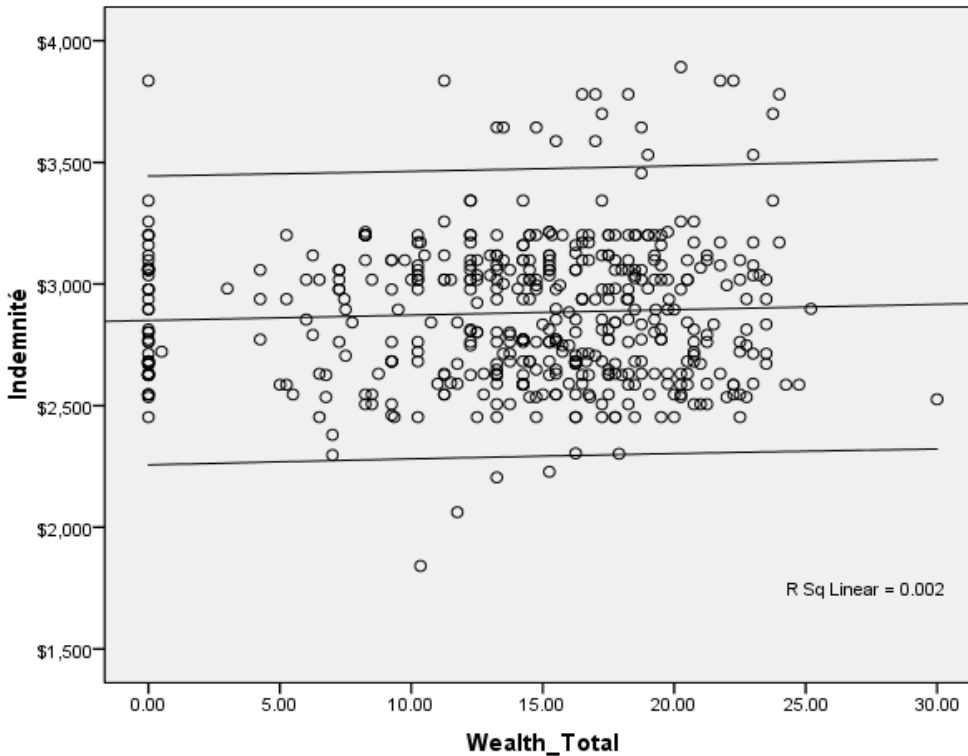
Vulnerability Index

In order to measure who is not doing well and to try to identify any patterns emerging, a vulnerability index was used which measures various contributing aspects of vulnerability. As constructed here, it various factors that could contribute to vulnerability (which is not the same thing as poverty). For example, having two or more school age (grand) children in the household has the potential to make one more vulnerable because of the dependents and school fees; however, that does not mean that all households with more than 2 school age children are in fact vulnerable.

Figure 28: Vulnerability Index by City
(The Higher the Number the More "Vulnerable")

F=4.67**
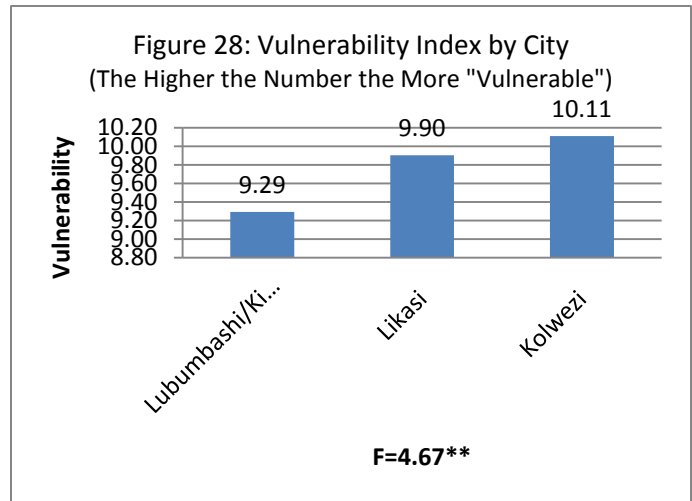
Whereas the wealth index approximates a

for those in the 12 percent receiving the highest indemnity tended to be cadre (r=.61**) and tend to be less likely to have more than two children (r=-.12**).

person's "haves" the vulnerability index measures their "have nots." Thus a higher vulnerability index score (the maximum is 25) indicates a higher economic vulnerability of the household (see Appendix C).

Looking at "vulnerability" across regions we find that despite the difference of indicators the pattern is very much the same as "wealth." *Partants* in Kolwezi are most vulnerable, *partants* in Lubumbashi are least vulnerable. Household size – which was key in understanding the per capita wealth index – is incorporated into the vulnerability index directly (the more dependents under 18 the more vulnerable).

Further, there is a relationship between the level of indemnity received and vulnerability; the level of indemnity only explains about 6 percent of the change in vulnerability but it is highly significant (F=29.29, p,.000). In other words there is a strong tendency for those who received more indemnity to be less vulnerable, but the indemnity itself is only a small part of the explanation for how they rank on vulnerability. Considering a broad array of possible (demographic) explanations for change in vulnerability the only other factor (besides region) is gender. It appears that female heads of household are *less* vulnerable than male heads of household. However, there were very few female *partants* and, even when combined with widows, the number of female heads of households in *partant* families if very small. This indicator is therefore not very reliable.

Figure 29: Relationship Between Indemnity and Vulnerability
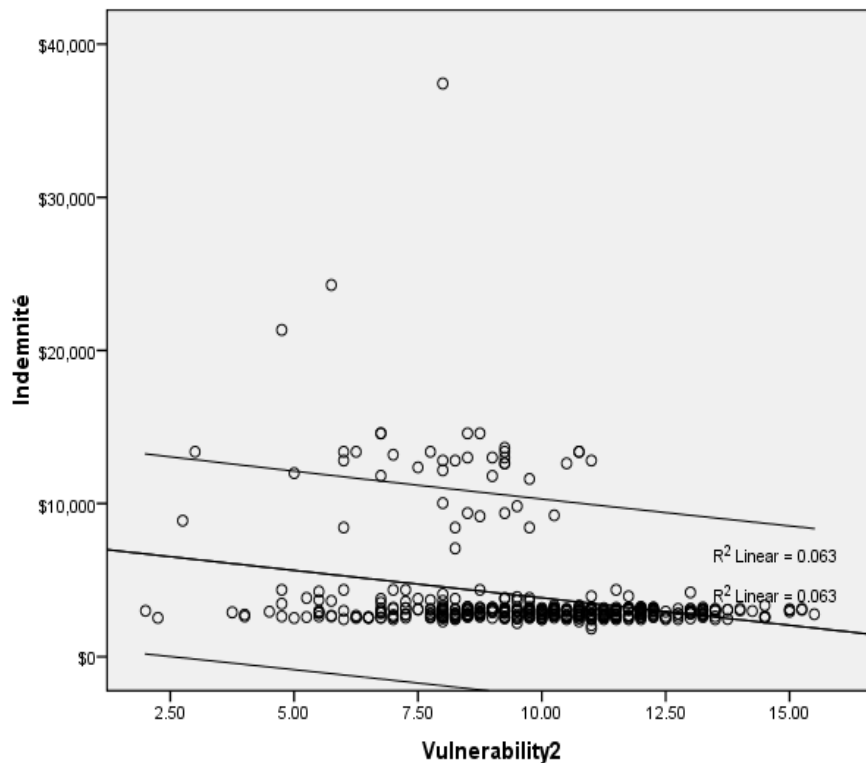
Vulnerability and Its Causes : In an effort to understand the causes of vulnerability among the PV population, a number of models were constructed (See Appendix F). However no matter how the models were constructed using a linear model (the index) or logit (for dichotomous variables) did not produce strong relationships – there was no one aspect that emerged as *causing* vulnerability. [46] There several reasons for this: (i) the relatively low number of people falling into vulnerable categories overall, means a much larger sample would be needed to carry out such sub-analysis (i.e. the entire PV population); (ii) there are many factors affecting vulnerability – not captured in this survey - other than the factors considered in relation to being a PV.

C. Observations for Future Programs

While the purpose of this assessment was not to evaluate the reinsertion process per se, it did gather the PV's perspective on the program. – a challenge as many partants and their representatives (the *Collectif*), bitter about reinsertion, preferred not to discuss lessons learned but rather to focus on their key objective of obtaining what they perceived as back pay.

The level of trust PVs have in cooperative economic ventures was – and remains - particularly low. Efforts to build this through reinsertion met substantial resistance (this was also cited in the Cretes report), and were complicated by the failure of one cooperative reinsertion scheme run by a Catholic priest.[47]

While COPIREP had an active communication strategy during the program of payments and just afterwards, the need for communication represents a long-term need. The current high level of misinformation among PVs has certainly contributed to the anger and unrealistic expectations expressed in the Focus Group discussions. This is linked to a broader policy question on how long reinsertion and communication efforts should continue after retrenchment.

Reinsertion does not occur in a vacuum. The combination of the post-conflict setting and systemic problems in agricultural markets, and in education and health with the culture and age of the Gécamines employees means that reinsertion activities present a substantial challenge and require substantial resources. Gécamines employees had deep psychological and cultural patterns that would need to be adjusted given the type of opportunities available in the general economy (low general levels of formal employment). A critical question for future programs is whether such a transition is possible, or whether given the massive resources it would require (individual rather than group training, financing, coaching, mentoring), alternatives such as reinforcement of pensions systems is more effective. PVs said it is possible, but would require, for example assistance and support through several agricultural cycles in order to allow learning.

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[46] As the dependent variables are dichotomous logit models were used. The models themselves had marginal significance (.05-.08) but nothing to write home about as even with the Nagelkerke correction the R-sq description was miniscule.

[47] This is the cooperative run by Father Tony.

Overall, *partants* emphasized their interest in (i) cash payments with a focus on arrears (ii) restoration of education and health benefits. Some other concrete suggestions that emerged from the focus groups with PVs included:[48]

- Clarify the issue of INSS (national social security) eligibility. Provide support (legal or otherwise) and certificates for those who are eligible to ensure they receive their benefits, including those in Kolwezi. Prioritize payment of Gécamines arrears to INSS. Assess INSS health centers' actual capacity in the region to serve PVs.

- There is a mixed appetite for reinsertion among PVs; in focus group many said they were too old for being reinserted – particularly for activities requiring manual labor such as agricultural activity – and they preferred to receive what they feel is due to them in additional payments. However, some other PVs did express interest in additional reinsertion and concrete suggestions if it was offered. That said, in focus groups it appeared that many PVs thought of reinsertion principally as money that they should receive individually.

- It may take substantial investment to help PVs become economically literate, with some unknowns regarding whether such a shift in perspective will succeed for those who have not, to date, succeeded on their own; any reinsertion program would need to have realistic expectations of success. The dependence streak runs deep, and permeates many a PVs' reinsertion project. Most projects were discussed in terms of the investments they would require (including tractors for farming), but rarely in terms of revenue streams. There may be an expectation that functioning costs would be covered by an outside source – as in the Gécamines model. Several PVs acknowledged, and a few observers noted, that deferred gratification (i.e., waiting more than a year to reap the benefits of a project) is not a common pattern. Similarly, key aspects of management – marketing, cash flow management, provision for depreciation – as well as basic agricultural know how did not come to the fore in discussions among PVs.

- PVs requested that training (manioc farming, market gardening, livestock or poultry farming) come with NGO-provided agricultural extension and supervision for at least three agricultural cycles, and that support be extended to the family (many times wives are doing the farming). One issue to consider in future programs is how to best integrate spouses, particularly where they may have been the primary farmer in the household. Other suggestions were linked to the need for agricultural extension, research and the provision of inputs. Elements of these were tested under some reinsertion programs by COPIREP, and would need to be evaluated in terms of their effectiveness.

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[48] It is important to note that these are suggestions from the PVs, reflecting their opinions, and have not been checked for their factual accuracy.

- PVs suggested that they needed property documents to recognize their ownership of their houses, so that they could use the house as collateral.

- Not surprisingly, there is high demand among PVs for a reinstatement of free health and education services, but no suggestions on how this could be done.

Finally, the combination of frustration among PVs regarding their expectations on reinsertion, and the rapid circulation of misinformation leading to rumors on ever larger amounts of resources that they will receive, means that any future action plan to address the needs of the PVs will require: (a) an intensive open dialogue in Katanga to rebuild some trust and to clearly communicate what will be done (and what will not be done), why, and (b) a new approach to monitoring which involves PVs and other regional stakeholders in the monitoring process.

Appendix A: Methodology

Objective

The objective of this task has been twofold: (i) to provide supervision and quality control to the implementation of the follow-up survey and (ii) to undertake the quantitative and qualitative analysis of the survey.

Fieldwork

The survey instrument, hiring of survey staff, training, and pre-testing preceded this mission, taking place in June 2009. Three research teams were formed, each consisting of a coordinator and three surveyors. Three data entry professionals were hired to input the data. The coordination for the research logistics was handled by the Comité de Pilotage de la Réforme des Entreprises Publiques (COPIREP) with substantive supervision by a World Bank technical team.

The survey began July 1, 2009.

There were four locations of research:

- Lubumbashi
- Kipushi
- Likasi
- Kolwezi

Lubumbashi and Kipushi are close (28 km) so one team was assigned to cover both locales. A second team was assigned to Likasi and a third team was assigned to Kolwezi. The roads between Lubumbashi, Kipushi, and Likasi are generally good but the road to Kolwezi is poor, requiring a 7 or 8 hour journey. There is also a short (50 min) flight.

A great deal of emphasis during fieldwork was placed on the data collection itself. The Lead Researcher worked very closely with the coordinators, reviewing the surveys as collected, and discussing the findings with the surveyors. In each region six households were chosen at random to resurvey for quality control purposes. In addition, in a few cases review of an individual survey by the Lead Researcher led to some questions. In these cases either the surveyor returned to the respondent with the coordinator and/or the Lead Research or, where possible, the surveyor phoned the respondent with the Lead Researcher present in order to obtain the missing details.

Given the extremely tight timeline it was decided that the survey would be implemented in two phases. The first phase, resulting in a sample size of 583 (of which 547 PVs) was completed while the Lead Researcher was present in Katanga. Distribution across survey locales was ensured making this a suitable sample size for most purposes. A secondary sampling was conducted in the beginning of September. The goal of this secondary sampling was to enlarge the sample size of the database to 800

making it possible to parse small groups further without significant compromise to the statistical probability of the results. *Given the time frame this report reflects only the primary sample (n=547).* Statistically the distinction between the sample sizes will not be significant for aggregate purposes. However, there are a couple points in this report where it is noted that the sample size did not allow for futher statistical probing into a particular *partant* population subset.

Focus groups were conducted at three stages of this research. The implimenting team conducted focus groups prior to the survey, the Lead Researcher conducted two focus groups in each location during the survey, and a small team conducted focus groups after the survey with the intent of bringing preliminary findings of the surveys to *partants* and elliciting their views of the survey results.

Analytics

The first step in analyzing the data was to consider the descriptive data (means and frequencies). Second, data was divided into groups for means testing (such as how particular variables differ by age, location, etc.). Third, the data was compared to two other datasets: 2003 Exit Survey and the 2003 Sample Survey. The 2003 Exit Survey includes all *partants* who were processed in Katanga. *Partants* were identified by number. As all possible respondents in the 2009 sample survey were in the Exit Survey it was therefore possible to match those numbers with the 2009 survey on an individual respondent basis. This allowed for direct statistical comparison between groups in 2003 and 2009. The data in the 2003 Exit Survey is, however, somewhat limited as it was not a long survey. A more comprehensive sample survey was conducted in 2003 by a team from the University of Lubumbashi prior to departure. Many of the questions on the 2003 Sample Survey and the 2009 Sample Survey are the same but it is not possible to statistically compare to independent samples. It is, however, possible to make contextual comparisons between variables.

It was not possible in 2003 to obtain a sufficient control group though the University of Lubumbashi team did attempt to in the short time frame; they were constrained by several factors including the lack of any available population data at that time (recent post conflict) from which to draw a sample frame, and the need to complete the survey prior to the departures program. In lieu of this measure, where possible the 2005 1-2-3 household survey dataset (a national study) was used. Included for comparative purposes was just the urban Katanga population. Once again only contextual, not statistical, comparisons can be made between the urban population of Katanga as a whole and the 2009 *partant* responses because these were different sample frames. The data also was not coordinated so many questions were posed in a way too different to be of useful comparison. Nonetheless, several key variables (such as home ownership, education rates, etc.) were comparable questions and thus the 1-2-3 data provides a valuable contextual comparison of *partant* livelihoods.

Finally, an effort was made to consider how various factors influence vulnerability. There are myriad ways of considering this. An effort was made to construct a series of six vulnerability indices ranging from a very broad definition to a very narrow definition. Linear were run on each. The three most critical variables were then considered as dichotomous dependent variables (running a Logit on each).

The exercise was useful in gaining a broader understanding of how different factors interact, and informed other analysis (correlates and means testing). However, in the end a valuable predictive model of changes of factors influencing vulnerability measured in the aggregate was not found.

Appendix B: Wealth Index

"Wealth" Index and Trend

Variable	Weighted Response
Own Home	2
Durable Materials	1
Durable Soil	1
Electricity	1
Water	1
Own Arable Land	2
Ha Arable Land (Access)	.10-.50=1
	.51-1=1.25
	1.10-2=1.5
	>2.1=2
Ag Equipment	2
Motorcycle	2
Bicycle	1
Color TV	1
B&W TV	1
Mobile Phone	1
Radio	1
Generator	1
Refridgerator	1
Car	3
Bank Account	1
Number of Meals per Day	4=.25 (one meal)
	3=.5 (breakfast+1 meal)
	2=.75 (two meals)
	1=1 (breakfast + 2 meals)
Eat Vegetables	1
Eat Meat	1
Eat Chicken	1
Keep 1 mo Reserves	1
Revenue ($)	1=1 ($0-100)
	2=2 (100-300)
	3=3 (300-500)
	4=4 (500-1000)
	5=5 (1000-2000)
	6=6 (>2000)
Salary Level	3=.5 (Main d'oeuvre)

	2=.75 (Maitrise)
	1=1 (Cadre)
Receive INSS	1
Rental Income	1-10=.10
	11-20=.20
	21-30=.30
	31-40=.40
	41-50=.50
	51-60=.60
	61-70=.70
	71-80=.80
	81-90=.90
	91-100=1
	101-200=2
	201-500=3
	>500=4
Spouse INSS	1
Spouse Salary Level	3=.5 (Main d'oeuvre)
	2=.75 (Maitrise)
	1=1 (Cadre)
Spouse Rental Income	1-10=.10
	11-20=.20
	21-30=.30
	31-40=.40
	41-50=.50
	51-60=.60
	61-70=.70
	71-80=.80
	81-90=.90
	91-100=1
	101-200=2
	201-500=3
	>500=4

Appendix C: Indicators and Weights in the Vulnerability Index

Vulnerability (first run)=

Don't own home=1

Home not of Durable Material=1

Not Salaried =1

No INSS=1

No Spouse Salary=1

No Spouse INSS=1

Children of School Age Stopped School=1

Revenue >100

Annuity=1

Resourcefulness =1

Field=1

Aid from Others=1

Loans=1

Church Assistance=1

Other Assistance=1

Eat Sweet Potatoes=1

Eat Rice=1

Eat only 1 meal/day=1

No Vegetables=1

No Meat=1

No Chicken=1

No Reserves=1

School Age Children not in School: (1=.25) (2=.5) (3=.75) (4=1) (5=1.25) (6+=1.50)

Members in Household Under 18: (1=.25) (2=.5) (3=.75) (4=1) (5=1.25) (6+=1.50)

No. Salaried People in Household (note these are SUBTRACTED from vulnerability): (1=-.25) (2=-.5) (3=-.75) (4=-1) (5=-1.25) (6=-1.50, (7=1.75,) (8+=2)

Members in Household with University Education (note these are SUBTRACTED from vulnerability): (1=-.25) (2=-.5) (3=-.75) (4=-1) (5=-1.25) (6=-1.50, (7=1.75,) (8+=2)

Appendix D: Self-Recollection of Changes in Assets (recall of 2003 in 2009)

This table is useful not so much for the absolute levels, as the comparison with the exit survey showed that there are some inaccuracies in recollection of assets five years ago, but in terms of determining whether, behind the net changes, there are some groups with significant loss in assets.

Change in Assets for Individual Households (2009 vs. Reported in 2009 about 2003 Holdings)

Asset	Decrease	Increase	Net Change	Net Change from Exit Survey 2003 to Sample Survey 2009
Electricity	1.5%	1.1%	-0.4%	+7.7%
Water	3.6%	.9%	-2.7%	+11.8%
Arable Land Ownership	4.3%	3.1%	-1.2%	
Agricultural Equipment	2.7%	4.4%	+1.7%	
Motorcycle	1.5%	2.4%	+0.9%	
Bicycle	9.6%	5.5%	-5%	
Color TV	3.4%	15%	+11.6%	
B&W TV	16.1%	0.4%	-15.7%	
Mobile Phone	1.6%	20.1%	+18.5%	
Bank Account	4.6%	2%	-2.6%	
Radio	7.5%	6.4%	-1.1%	
Freezer	2.2%	8.6%	+6.4%	
Refrigerator	6.9%	1.8%	-5.1%	
Car	4.4%	1.6%	-2.8%	
Generator	12.4%	1.3%	-11.1%	

Appendix E: Information Provided by Gécamines on the LVM (Housing Purchase Program)

Information on Gécamines PVs who were still living in Gécamines housing that they did not own was requested from Gécamines during the June, 2009 World Bank mission on this socioeconomic assessment. This appendix presents the information furnished by Gécamines related to PVs living in Gécamines housing.

All PVs who had 10 years of uninterrupted service and living in a GCM alienable house could purchase their house (this was prior to the PV program) through a program termed LVM (1983 – 2008). According to the Gécamines director of human resources 24 PVs who still owed money on their houses were absolved of this debt when they left through the VDP.

Some Gécamines employees who had purchased their houses through this program earlier, had in turn rented out their homes to other Gécamines employees. As this was a private transaction between two parties, it was not tracked by Gécamines. For Gécamines employees, some high level workers (Cadres) received an indemnity for lodging, or Gécamines rented housing for them from third parties. For the high level employees living in housing that Gécamines had rented for them from third parties, Gécamines requested that they vacate in a period of between from 3 to 12 months[49] as this employment benefit ended with employment. Nonetheless, 8 continued to occupy this rented housing. For rank and file (MOE) workers not living in Gécamines housing areas (cités), Gécamines did not provide any housing indemnity or rent houses for them.

There were some houses that Gécamines did not include in the LVM program (referred to as "inalienable"). In 2005 some of these "inalienable" houses were made salable by the Ministry of Mines as outlined in a letter dating from May 2005. Sale started in September 2005 (this applied both to current employees and to PV). This concerned 207 houses of Cadres and 918 houses of rank and file workers (MOE, in total including current employees). Some people left within the time given, some did not, even though they owned houses elsewhere (for example, where they had been transferred from one work place to another, owned a house in the original area, and then Gécamines had rented or provided housing in the new area). According to Gécamines, those who stayed, as well as those living in Gécamines owned houses, do not pay any rent.

In terms of PVs, Gécamines reports that there were 8 cases where Gécamines had been renting housing (for cadre PV) from a third party, 15 houses occupied by PV where the house had been sold by Gécamines, 12 cases where a house owned by Gécamines was occupied by PVs. Gécamines notes that other than the letter it sent requesting vacation of houses in these cases, it never used force to vacate someone. To date there are still people living in some of these houses. There were only 2 cases where Gécamines took the PVs to court to get them to vacate – these 2 PVs owned houses elsewhere.

[4949] Communication DRH, GCM, July, 2009. Although the letter attached to this communication only shows 3 months.

Appendix F: The Vulnerability Index

The goal in creating a "vulnerability index" was to investigate potential causes of vulnerability. This required the creation of a dependent variable (an index comprised of elements we can consider to be signs of vulnerability) and selection of independent variables that might lead to change in vulnerability. In this case there are a number of factors that could be considered both. For instance, a person's age is a vulnerability but it could also be a cause of vulnerability. For this reason, multiple definitions of "vulnerable" were considered, expressed as different vulnerability indices. The first index was very large, leaving few opportunities to explain its variability. Each vulnerability index that followed was smaller to allow for more opportunity to explore variance through the use of independent variables. (See the tables below.)

For the six indices the obvious statistical test is a linear regression. That is, the model depends linearly on the unknown parameters to be estimated from the data. The goal is to look at the effect one variable or multiple variables have on the change of a dependent variable (the vulnerability index). An Adj-R2 value is a "goodness of fit" test. This statistic will be equal to one if fit is perfect, and to zero when regressors have no explanatory power whatsoever. Such a regression also gives an "F statistic" which tries to test the hypothesis that all coefficients (except the intercept) are equal to zero. In short, this tells us how strong the model is. Finally, such a regression gives us a "p value". This is what tells us if the model is statistically significant or not. In the case of the six vulnerability indices it was not possible to create a "best fit" model with a high level of statistical significance. This implies that there are too many factors not covered by the survey that would explain why someone is vulnerable (this is not surprising given the significant structural changes in mining, government, etc. associated with a post-conflict country).

Beyond the vulnerability indices this analysis looked at change in particular single indicators of vulnerability: eating (only) one meal per day, eating sweet potatoes (a food of last resort in Katanga), and living in non-durable housing. These are dichotomous variables (responses of "yes" or "no") and thus a stronger test can be used. A Logistical Regression works similarly to a linear regression except it estimates not just variance but probability of an occurrence. (Such an approach can only be used where the dependent variable is dichotomous so it isn't possible with an index.) While there were some strong relationships apparent between some of the indicators of vulnerability (discussed elsewhere in this report) it still proved difficult to find a model that explained *why* people are vulnerable. Once again, this is an indicator that there is a lot going on in Katanga that goes well beyond just the factors considered in relation to being a *partant*.

Part of the explanation for the weakness of the models is also the sample size. A relatively small number of people live in non-durable housing or eat sweet potatoes. The models showed a strong explanation of vulnerability in some cases but it wasn't statistically significant because it really isn't possible to generalize to a whole population with any confidence from a relatively small number of people who say they live in non-durable housing or eat sweet potatoes. Were the survey to have included the entire population of *partants* it is likely the explanatory power of the models would have

gone up. This it is possible to say where there *are* relationships between vulnerability – or changes in vulnerability between 2003 and 2009 – without explaining what the causes of these vulnerabilities are.

Dependent Variables

Vulnerability (First Run)	Vulnerability 2	Vulnerability 3	Vulnerability 4	Vulnerability 5	Vulnerability6	Single Dep Variables (considered as dichotomous)
Don't own home=1 Home not of Durable Material=1 Not Salaried =1 No INSS=1 No Spouse Salary=1 No Spouse INSS=1 Children of School Age Stopped School=1 Revenue >100 Annuity=1 Resourcefulness =1 Field=1 Aid from Others=1 Loans=1 Church Assistance=1 Other Assistance=1 Eat Sweet Potatoes=1 Eat Rice=1 Eat only 1 meal/day=1 No Vegetablies=1 No Meat=1 No Chicken=1 No Reserves=1 School Age Children not in School: (1=.25) (2=.5) (3=.75) (4=1) (5=1.25) (6+=1.50) Members in Household Under 18: (1=.25) (2=.5) (3=.75) (4=1) (5=1.25) (6+=1.50) No. Salaried	Own_Home+ Durable_Material + Sol_Durable + Salaried+ B11INSS + B21INSS + StoppedSchool + F5RevenueMenage + F6Tontine + F6Debrouille + F6Champ + F6AideDesAutres + F6Emprunts + F6Eglise + F6Autre + G2Mange2semaine1Patates + G2Mange2semaine2Riz=+ G3UnRepas + Eat_Veg + Eat_Meat + Eat_Chicken + Reserves + C1NoSchool + C1_Under18 – C1_NoSalaried – C1_Univ.	C1_Under18 + C1NoSchool + G3UnRepas + StoppedSchool + F6Tontine + F6AideDesAutres + F6Emprunts + F6Eglise + F6Autre + G2Mange2semaine1Patates	C1_Under18 + C1NoSchool + G3UnRepas + StoppedSchool + F6Tontine + F6AideDesAutres + F6Emprunts + F6Eglise + F6Autre + G2Mange2semaine1Patates + Vulnerable_NoHome.	Vulnerable_Age + Vulnerable_Under18 + Vulnerable_NoSchool + Vulnerable_UnRepas2 + Vulnerable_Tontine2 + Vulnerable_AidDesAutres2 + Vulnerable_Emprunts2 + Vulnerable_Eglise2 + Vulnerable_Autre2 + Vulnerable_Patates.	Vulnerable_Age + Vulnerable_Under18 + Vulnerable_UnRepas2 + Vulnerable_Patates.	UnRepas PatatesDouces MateriauxDurable

People in Household (note these are SUBTRACTED from vulnerability): (1=-.25) (2=-.5) (3=-.75) (4=-1) (5=-1.25) (6=-1.50, (7=1.75,) (8+=2) Members in Household with University Education (note these are SUBTRACTED from vulnerability): (1=-.25) (2=-.5) (3=-.75) (4=-1) (5=-1.25) (6=-1.50, (7=1.75,) (8+=2)						

Independent Variables

The independent variables used in looking for a "best fit" model were different depending on which index was used (or single dependent variable). This is because it isn't possible to look at variance in a variable (dependent) and its causative power (independent variable) at the same time. Here below, however, are some of the independent variables used in different combinations. The hypotheses can be read as follows: "Does having salaried employment lead to a change how vulnerable a person is?" "Does having a larger number of children in the household lead to a change in how vulnerable a person is?" "Does having a higher education lead to a change in how vulnerable someone is?" etc. Generally a best fit model is achieved by looking at what combination of independent variables explain the most amount of the dependent variable (vulnerability) while considering the relationship between the independent variables. Such a statistic does not determine for certain that a particular independent variable (such as "education level") does not explain part of the reason why a person is vulnerable. It tells us that, given the data that exists, we can't be statistically certain whether it does or not. Again, this is not a surprising conclusion given the myriad structural indicators in Katanga that were not possible to include.

Salaried
Indemnity
Number of Children
Children in School
Age
Living in Kolwezi
Investor (an aggregated variable)
Currently Salaried in Mining
Education

Water
Electricity
Arable Land
Ag Equipment
Motorcycle
Bicycle
Color TV
B&W TV
Telephone
Bank Account
Generator
Fridge
Car
Durable Goods (aggregated)
Aid from Others
Aid from Church
Renter
Debt