

**Papsak consumption and problem drinking amongst farm workers
in the rural Western Cape: prevalence and risk factors**

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Declaration

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ABSTRACT

Motivation A high prevalence of alcohol consumption and the negative impact of alcohol on rural communities in the Western Cape have been linked to coercive labour practices and the ease of availability of cheap, low quality white wine, typically packaged in foil bags (papsakke). A process is underway to regulate papsakke out of the market. However, limited research has been conducted on the use and impact of papsakke.

Aims and objectives This study aims to determine the prevalence of, and risk factors for papsak consumption and problem drinking amongst farm workers in the rural Western Cape. It also explores the attitudes of drinkers with respect to their choice of alcohol type and the practices of papsak drinkers, in order to identify target groups for community level interventions and to inform the content and monitoring of developmental and/or restrictive interventions.

Study design A cross sectional analytical study performed as a post hoc analysis of data obtained from a larger study on papsakke which included a farm worker survey.

Subjects 461 female and male farm workers resident on predominantly wine grape producing farms in Stellenbosch, Franschhoek and Vredendal in the rural Western Cape Province from February to May of 2004.

Measurements An interviewer administered structured questionnaire was used to obtain socio-economic and demographic information, information on alcohol and papsak consumption and included the CAGE questionnaire as a screening test for alcohol abuse and alcohol dependence. Socio-economic status was determined by means of an asset score.

Results 69.0% (95% CI: 63.1-74.3) of farm workers were current drinkers and 73.0% (95% CI: 65.5-79.3) of drinkers were CAGE positive; no gender difference for a positive CAGE prevalence was found. Half of drinkers (95% CI: 41.9-59.3) preferred papsak and 83.2% (95% CI: 74.6-89.4) were CAGE positive compared to 62.4% (95% CI 51.5-72.2) of drinkers who preferred other alcohol types. Being male was marginally positively associated with current drinking and being employed in a non-labourer position was negatively associated with current drinking. Increasing poverty predicted both current drinking and preferred papsak consumption. Increasing age, being married, Coloured and living in Vredendal (adjusted OR 6.6; 95% CI: 3.0-14.7) were positively associated with papsak use. Papsak is preferred because it is cheap. A strong association (adjusted OR 2.8; 95% CI: 1.4-5.5) exists between preferred papsak consumption compared to a preference for other alcohol types and a positive CAGE test, suggesting that papsakke are associated with alcohol dependence more so than other alcohol types. Employer provided housing and non-labourer occupations were negatively associated with a positive CAGE test.

Conclusion The results suggest that the attention paid to the papsak industry is warranted as a combination of socio-economic factors, entrenched drinking patterns and ease of availability have led to preferred consumption of papsakke amongst a large proportion of farm workers. In turn, preferred papsak consumption is associated with possible alcohol dependence more so than other alcohol types used by farm workers. There is some evidence that employer investment is associated with improved health outcomes amongst farm workers. If restrictive interventions are implemented they should be within the context of effective measures to address poverty amongst farm workers, pre-emptive community level interventions targeting papsak drinkers and the provision of treatment options for alcohol abuse and dependence.

Contents	Page
Declaration.....	ii
Abstract.....	iii
Acknowledgements and dedication.....	vii
Abbreviations and acronyms.....	viii
Glossary of terms.....	ix
List of Tables.....	x
List of Figures.....	xi
 Chapter One: Introduction.....	 1
 Chapter Two: Literature Review.....	 3
2.1 The cost of alcohol use.....	3
2.2 Measuring problem drinking.....	4
2.3 Current drinking and problem drinking in South Africa.....	5
2.4 Current drinking and problem drinking in the Western Cape.....	6
2.5 The history and impact of alcohol use and dependence among farm workers.....	7
2.6 Alcohol and apartheid.....	10
2.7 Contemporary issues affecting the lives of farm workers.....	11
2.8 Cheap white wine and papsakke.....	12
2.9 Interventions and strategies.....	14
 Chapter Three: Study Aim and Methods.....	 15
3.1 Aim.....	15
3.2 Objectives.....	15
3.3 Study design.....	16
3.4 Study population.....	16
3.5 Sampling.....	17
3.6 Instrument.....	17
3.7 List of variables and definitions.....	19
3.7.1 Socio-economic and demographic variables.....	19
3.7.2 Alcohol consumption and attitudes.....	19
3.7.3 The asset score.....	20
3.8 Validity and reliability of the questionnaire.....	20

3.9	Analysis.....	21
3.9.1	Non parametric bivariate comparisons.....	21
3.9.2	Test of association – bivariate comparisons.....	21
3.9.3	Analysis of the measures of socio-economic status.....	22
3.9.4	Multivariate risk factor analysis.....	23
3.10	Ethical considerations.....	24
Chapter Four: Results.....		26
4.1	The socio-demographic and economic features of farm workers and their households.....	26
4.2	The prevalence of, and risk factors for, alcohol consumption amongst farm workers.....	37
4.3	The prevalence of papsak consumption and other preferred alcohol types amongst farm workers.....	42
4.4	The social, demographic and economic risk factors for papsak consumption amongst farm workers.....	45
4.5	The prevalence of CAGE positive drinkers amongst farm workers.....	50
4.6	The prevalence of CAGE positive drinkers amongst papsak drinkers.....	51
4.7	The risk factors for a positive CAGE test amongst farm workers.....	53
4.8	Attitudes and drinking practices among papsak users	55
4.8.1	Reasons given for alcohol choice.....	56
4.8.2	Sources of papsak.....	59
4.8.3	Venues where papsak is drunk.....	61
4.8.4	Drinking companions.....	61
Chapter Five: Discussion.....		63
5.1	Generalisability of the results.....	63
5.2	Limitations.....	64
5.3	Alcohol consumption, papsak consumption and problem drinking.....	65
5.4	Causality in the context of a prevalence study.....	69
5.5	Farm workers other than labourers: transformation and gender issues....	72
5.6	State grants.....	72
5.7	Structural changes in agriculture.....	73
5.8	Restrictions on papsakke and other interventions.....	74
5.9	Monitoring.....	75

Chapter Six: Conclusion and Recommendations.....	77
6.1 Conclusion.....	77
6.2 Recommendations.....	78
References.....	79

Appendices

Appendix 1 Definitions of alcohol abuse and alcohol dependence

Appendix 2 Map of the Western Cape

Appendix 3a Study questionnaire (Afrikaans)

Appendix 3b Study questionnaire (English)

Appendix 4 Consent form

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Abbreviations and acronyms

AIDS	Acquired Immune Deficiency Syndrome
AUDIT	Alcohol Use Disorders Identification Test
Dopstop	The Dopstop Association
IQR	Interquartile range
AIC	Akaike's Information Criterion
Co-ops	Co-operatives
DALYs	Disability-adjusted-life-years
DSM IV	Diagnostic and Statistical Manual IV of the American Psychiatric Association
FAS	Foetal Alcohol Syndrome
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
NAMC	National Agricultural Marketing Council
SADHS	South African Demographic and Health Survey
SAWIS	The South African Wine Industry Information and Systems (an operating unit of SAWB)
SAWB	South African Wine and Brandy Company (now trading as the South African Wine Industry Council)
WHO	World Health Organisation

Glossary of terms

Alcohol abuse	see appendix 1
Alcohol dependence	see appendix 1
CAGE questionnaire	A screening test for alcohol abuse and alcohol dependence, the name of which is an acronym formed from the 4 questions that make up the questionnaire and is derived from the words: Cut, Annoyed, Guilty and Eye-opener
Co-ops	Wine co-operatives in the Western Cape who produce wine from the pooled production of farmers who are members
NAMC	The National Agricultural Marketing Council is an advisory body to the Minister for Agriculture and Land Affairs
Papsak (pl papsakke)	An informal Afrikaans word which literally translates as “soft bag” and refers typically to a wine filled 5-litre foil bag which is not contained in a box

List of tables	Page
Table 1 Sample summary overall and by area.....	26
Table 2 Individual level demographic and socio-economic results: categorical data.....	27
Table 3 Individual and household level demographic and socio-economic results: continuous data.....	29
Table 4 Household assets overall and by area.....	32
Table 5 Household level socio-economic results: categorical data.....	32
Table 6 Unadjusted and adjusted odds ratios for a low asset score by measures of socio-economic status.....	34
Table 7 Drinking status overall and by area.....	37
Table 8 The prevalence of current drinkers by gender and area.....	37
Table 9 Unadjusted and adjusted odds ratios for potential risk factors for current drinking.....	39
Table 10 Adjusted odds ratios for the risk factors for current drinking: The final model.....	41
Table 11 Types of alcohol preferred by current drinkers.....	42
Table 12 Unadjusted and adjusted odds ratios for potential risk factors for papsak consumption.....	46
Table 13 Adjusted odds ratios for the risk factors for papsak consumption: The final model.....	47
Table 14 CAGE positive drinkers amongst current drinkers overall, by area and gender.....	50
Table 15 CAGE positive drinkers by preferred alcohol type.....	51
Table 16 Unadjusted and adjusted odds ratios for potential risk factors for a positive CAGE test amongst current drinkers.....	54
Table 17 Adjusted odds ratios for risk factors for a positive CAGE test amongst current drinkers: The final model.....	55
Table 18a Reasons given for papsak being the preferred choice of alcohol.....	56
Table 18b Reasons given for beer being the preferred choice of alcohol.....	56
Table 19 Unadjusted and adjusted odds ratios for basing alcohol choice on the cheapness of the product.....	57

List of tables continued	Page
Table 20 Usual sources of papsak.....	60
Table 21 Where people usually drink papsak.....	61
Table 22 With whom people usually drink papsak.....	61

List of figures	Page
Figure 1a Percentage of farm workers and asset score overall.....	31
Figure 1b Percentage of farm workers and asset score by area.....	31
Figure 2a Percentage of preferred alcohol type overall.....	43
Figure 2b Percentage of preferred alcohol type in Stellenbosch.....	43
Figure 2c Percentage of preferred alcohol type in Vredendal.....	43
Figure 3 Percentage papsak drinkers out of all current drinkers by age category.....	47

CHAPTER ONE

INTRODUCTION

The Western Cape province of South Africa is internationally renowned for wine production and the picturesque wine farms are popular tourist attractions (Collinson 2001). However, a high prevalence of alcohol use and problem drinking (London et al. 1997; Te WaterNaude et al. 2000) amongst farm workers in the province has been influenced historically by less illustrious features of the wine industry such as the dop system (the part payment of farm workers in alcohol) (London 1999b), exploitative and coercive labour practices (De Kock 2002; du Toit 1992; Waldman 1994) and the ease of availability of cheap, low quality white wine (London 2000). More recently the industry has experienced profound change as a result of social, political and legislative reform and global economic pressures which have affected the lives and well being of farm workers with mixed outcomes (Atkinson 2007; Barrientos and Kritzing 2003; Collinson 2001; du Toit and Ally 2003; Ewert and du Toit 2005; Ewert and Hamman 1999; Hall 2003). Nonetheless, cheap white wine remains easily accessible to farm workers, sold in various types of low cost packaging including the colloquial “papsak” (plural “papsakke”). “Papsak” is an informal Afrikaans word which literally translates as “soft bag” and refers typically to a wine filled 5-litre foil bag which is not contained in a box.

In June 2004 the wine industry expressed intentions to ban papsakke and inferior plastic containers¹ by July 2005. The motivation was to improve the quality of wine produced, to decrease harmful alcohol use amongst low-income and unemployed communities and to enhance the reputation of the industry (Joubert 2004). Non-industry researchers and

¹ Cheap white wine is usually sold to the public in quantities ranging from 300ml to 5l and may be packaged in foil bags (papsakke), plastic sachets or other types of inferior plastic containers. For brevity and as an acknowledgement of the local use of the term, this document refers to all cheap, poor quality white wine in various packaging forms as “papsak”.

public health policy advisors have recommended that restrictions on large volume containers such as papsakke should be considered as a specific intervention to reduce problems associated with drinking in South Africa (Parry 2005b; Te WaterNaude et al. 1998). In October 2006 it was announced that the Department of Agriculture would proceed with changes in regulations in order to ban papsakke (SAWB 2006).

The high levels of alcohol consumption and problems associated with drinking amongst farm workers and rural residents in the Western Cape province have culminated in the highest published prevalence of Foetal Alcohol Syndrome (FAS) in the world (May et al. 2000; Viljoen et al. 2002). However, research on papsak use and the risk factors thereof in this population (or any other) is limited. Unpublished studies (NAMC² 2002; Henn et al. 2005) have provided evidence of an association between papsak use and negative health and social impacts. The papsak industry is large, estimates of as high as 30% of the Western Cape wine market have been cited (Henn et al. 2005) and there is opposition from within the industry to a ban on papsakke (Morris 2006); in this context policy makers have limited research to draw on in informing their decisions.

This study presents results from a detailed analysis of data collected from a larger survey on the impact of bulk wine on rural Western Cape communities (Henn et al. 2005) in order to quantify current drinking, papsak consumption and potential alcohol dependence and the risk factors thereof amongst farm workers on wine grape producing farms in the rural Western Cape province. The interpretation seeks to provide insight regarding the characteristics of farm workers who drink papsak wine in order to make recommendations regarding the target audience for proactive community level interventions and the content and monitoring of these interventions, as well as to provide information for policy makers with respect to possible restrictions on papsakke.

² The National Agricultural Marketing Council

CHAPTER TWO

LITERATURE REVIEW

2.1 The cost of alcohol use

It is well established that the impact of alcohol use presents important public health challenges (Parry and Bennets 1998; Room et al. 2003). In 2000 the World Health Organisation (WHO) estimated that alcohol was responsible for 4.0% of the disease burden worldwide, comparable to that of tobacco use (4.1%) and hypertension (4.4%).

South Africa has a quadruple burden of disease, these being diseases of underdevelopment, chronic diseases, injuries and HIV/AIDS (Bradshaw et al. 2002). The all-pervasive nature of alcohol's effects - biological, psychological and social - ensure that it is linked in some way with each of these epidemics and in almost all cases detrimentally so (Rehm et al. 2003). Alcohol dependence features as number 15 of the top 20 causes of disease burden in disability-adjusted-life-years (DALYs) in South Africa (Bradshaw et al. 2007). The negative impact of alcohol use has been measured in terms of disease, trauma and social effects (Parry et al. 2002a; Parry et al. 2002b); in addition there are important economic considerations.

In South Africa regulated and unregulated alcohol production and sale are a source of livelihood for many (Parry and Bennets 1998). A recent study commissioned by the South African Wine Industry Information Systems (SAWIS) by Conningarth Consultants (2004) found that the wine industry in the Western Cape contributed R16.3 billion per year to the Gross Domestic Product (GDP), had shown strong growth and employed approximately 257 000 people (including tourism). However, the direct and indirect economic costs related to alcohol use are considerable. These costs have not been fully quantified in South Africa (Parry et al. 2003); previous estimates were that they exceeded the alcohol related excise taxes received by government by between two

and three times and that they constituted approximately 1% of the GDP and therefore around R8.7 billion per year (Parry and Bennets 1998; Parry et al. 2003).

2.2 Measuring problem drinking

Surveys to determine the prevalence of broadly defined problem drinking (Parry and Bennets 1998) often rely on screening tests which have been validated against a clinical criterion such as alcohol dependence as defined by the diagnostic criteria in the Diagnostic and Statistical Manual IV (DSM-IV) of the American Psychiatric Association. One commonly used and validated (Bataille et al. 2003; Dawe and Mattick 1997; Ewing 1984; Fiellin et al. 2000; Mayfield et al. 1974; Saitz et al. 1999) test is the CAGE questionnaire which consists of four questions which generate the acronym "CAGE". Two or more affirmative answers suggest that the individual concerned is "likely to have a problem" (Wilson 1999, p. 949) warranting further investigation.

The CAGE Questionnaire:

1. Have you ever felt you ought to Cut down on your drinking?
2. Have people Annoyed you by criticising your drinking?
3. Have you ever felt bad or Guilty about drinking?
4. Have you ever taken a drink first thing in the morning to steady your nerves or to get rid of a hangover (Eye-opener)?

A systematic review concluded that in primary care settings the CAGE performed best for detecting alcohol abuse and dependence and that another screening test, the AUDIT (Alcohol Use Disorders Identification Test) most accurately identified those with at-risk, hazardous and harmful drinking practices (Fiellin et al. 2000). The review reiterated that both of these screening tests had a variable performance when used in populations with different socio-demographics.

Despite questions around the impact of social (Henn et al. 2005) and cultural (Siegfried et al. 2001) norms related to alcohol consumption the CAGE has been used in a number of studies having shown good internal reliability and being easy to administer (Dawe and Mattick 1997). The CAGE has been validated (Claassen 1999) and used in recent South African studies (London 2000; Parry et al. 2005; Schoeman et al. 1994; Te WaterNaude et al. 2000) making it useful for comparison purposes.

2.3 Current drinking and problem drinking in South Africa

The prevalence of current alcohol consumption (defined as the use of alcohol in the preceding 30 days) is estimated to be 45% for men and 17% (Parry et al. 2005) for women. These findings are from the first South African Demographic and Health Survey (SADHS) and the authors note this prevalence is low when compared to the general population of most developed countries. Current drinking was more likely to be reported by urban as opposed to nonurban residents and by White³ men, whose prevalence of current drinking was 71% (Parry et al. 2005).

However, as has been demonstrated by HIV sero-prevalence studies, broadly generalised findings can conceal geographical and demographic pockets of high prevalence where targeted interventions and additional resources are needed (Shaikh et al. 2006). The SADHS determined the prevalence of risky drinking, defined as five or more standard drinks per day for men and three or more for women. One third of current drinkers (men and women) met the criteria for risky drinking over weekends and in contrast with the demographic features reported for current drinkers, those most likely to partake in risky drinking were resident in nonurban areas, in the middle age categories, had a low level of education and were from the African and Coloured

³ The relevance and justification for the use of race descriptors in the current study is discussed in the methods section on page 18.

'population groups'. The proportion of current drinkers who were CAGE positive was extrapolated as about two thirds of both male and female drinkers and the prevalence of lifetime alcohol dependence in South Africa, based on the CAGE, was estimated as 28% for men and 10% for women.

2.4 Current drinking and problem drinking in the Western Cape

Vast socio-economic inequities exist between the urban and rural areas of all 9 provinces of South Africa with consequent public health implications (McIntyre et al. 2002). The national census of 2001 determined that 9.6% of the Western Cape population (just over 4.5 million in total) live in nonurban areas (Statistics South Africa 2001).

In this province 43.6% of men and 24.2% of women are current drinkers and 27.9% of men and 11.8% of women are CAGE positive (Parry et al. 2005), this extrapolates to approximately 60% of male and 50% of female drinkers being potentially alcohol dependent. In contrast an occupational study conducted in 1993 of 247 male farm workers on fruit farms in the Western Cape identified 67.7% as current drinkers; 87% of whom were CAGE positive (London 2000). A survey conducted amongst farm workers in 1998 in the Stellenbosch area, found 56% of adults (76% of men and 34% of women) to be current drinkers, of these 83% were CAGE positive (Te WaterNaude et al. 2000).

The average weekend consumption of fruit farm workers was the equivalent of six 750ml bottles of wine; 73% of workers reported drinking on weekends only (London 2000). Other studies have identified heavy weekend drinking in the rural areas (Viljoen et al. 2002) and amongst farm workers in particular (De Kock 2002). This pattern of heavy weekend drinking is not unique to these areas and the SADHS found that

nationally a third of current drinkers (men and women) drank at risky levels over weekends and reported rates of risky weekend drinking of 4-5 times compared to during the week (Parry et al. 2005).

2.5 The history and impact of alcohol use and dependence among farm workers

Parry (2000) discusses that a change from traditional brewing and use of alcohol to Western-style, higher alcohol content products such as commercial beer, urbanisation, changes in gender and age roles and the marketing of alcoholic beverages have contributed to increases in alcohol consumption. These factors no doubt apply in South Africa. However, the history of alcohol use and dependence amongst farm workers in the Western Cape (and other farming areas in South Africa) has had an additional and unique influence – that of institutionalised alcohol use in the form of the dop system (Scully in London 1999b; London 1999a; London 2000).

The dop system began in the second half of the 17th century as the purposeful part-payment in wine of indigenous people in order to secure adult and child labour on farms in the colonised Cape. Wine was supplied at regular intervals during the working day to farm workers (Scully in Parry and Bennets 1998; Scully in London 2000). Over time, farmers part paid in wine not only to induce agricultural labour but because wine was cheaper than wages; this payment became a useful (if not profitable) mechanism for dealing with wine gluts and poor quality wine (London 2000). The dop system was not restricted to the wine growing areas of the Western Cape and was a feature of the agricultural sector in general. Alcohol was also used in the mining sector to secure cheap labour (Parry and Bennets 1998).

Though outlawed in 1961 (Scharf in London 1999b), the dop system is documented to have continued on some farms into the 1990s (London 2000; te Water Naude et al.

1998) in various permutations, actively or tacitly supported by the farmers. To estimate the prevalence of the dop system, researchers adopted an inclusive definition: “where workers may expect to be provided with alcohol as part of their farm work” (London 2000) to encompass situations where workers were given wine at the end of the working week as, though outside of working hours, it remained an expectation of employment. A survey of farms in Stellenbosch in 1995 found evidence of its use on 9.5% of farms but judged this to be an underestimate. On 10 of these farms the workers had no choice in substituting cash for wine as part payment for work done; wages on these farms were also found to be lower compared to the remainder (Te WaterNaude et al. 1998).

In the aforementioned survey of male fruit farm workers just less than half had at some time worked on farms where the dop system was practised. In this study workers exposed to the dop system were 9.8 times (95% CI: 1.24–78.03) less likely to be non-drinkers than un-exposed workers, however no association with experience of the dop system and a positive CAGE test was found (London 2000). Farm workers who had ever lived on a farm where the dop system was practised were found to be 2.8 times (95% CI: 1.01–7.82) more likely to have had an episode of pesticide poisoning (London et al. 1998a). Respondents from 12.5% of households reported that the farmer supplied wine to them (for example, on credit); these households had a lower socio-economic score compared to households where this practice was not reported. These studies therefore linked the practice of the dop system and heavy alcohol use (London 2000) with negative health impacts and greater poverty amongst farm workers.

The dop system relied on the ease of availability of large volumes of very cheap, low quality wine. By and large, the wine used for dop was not produced on farms where the dop system was practised; rather, poor quality wine which could not be sold on the

open market was sold back to farmers by co-operatives (co-ops) at a very low cost (London 2000) and there may have been opportunities for the evasion of excise duties at this point. Farm workers were thus an important market to almost literally soak up and even make profitable the production of low quality wine.

In ethnographic research (conducted in 1999) on wine farm workers in Stellenbosch, De Kock argued that even where the dop system was no longer practised alcohol continued “to be used as a means within exploitative labour relations to control and maintain a low cost labour force” (De Kock 2002, p. 46) and that the use of alcohol, particularly heavy weekend drinking by farm workers, was a ritualised practice which enabled a temporary escape from desperate circumstances. The ritual provided farm workers with an independent cultural space from which to operate within a broader environment of paternalism (du Toit 1992) and social control (De Kock 2002; London 2000) however, the consequences were likely worsening poverty, disease, disability and violence (De Kock 2002; Henn et al. 2005; London et al. 1998b) with evidence that women and children bore a disproportionate burden of the suffering (De Kock 2002; Te WaterNaude et al. 2000; Waldman 1994). Domestic violence and sexual assault on women and children related to alcohol use is common (Waldman 1994) although not easily quantifiable. Crimes of this nature are infrequently reported to the health services or police. Children are disciplined violently and violent conflict resolution among intoxicated adults is witnessed by children (De Kock 2002).

Perhaps the most devastating manifestation of problem drinking in rural communities of the Western Cape is the permanent intellectual and physical damage to the children of mothers who typically partake in heavy episodic drinking whilst pregnant (May et al. 2000; Viljoen et al. 2002). A study conducted in a farming town in the Western Cape reported that more than 40/1000 in-school children had foetal alcohol syndrome (FAS),

the highest published prevalence in the world. These rates are astronomically high when compared to an average of 0.97/1000 of FAS in the developed world and around 8/1000 in high risk North American populations as cited by May et al (2000). It is reasonable to link patterns of drinking entrenched by the dop system to the contemporary drinking patterns of childbearing women in the rural areas of the Western Cape (McKinstry 2005). There are a host of other environmental factors, such as poverty, poor nutrition, structural and physical violence, limited education and limited access to opportunities (May et al. 2000; Viljoen et al. 2002), as well as possible genetic factors (Viljoen et al. 2001) to consider when determining the reasons for the high prevalence of FAS.

An important outcome of research into the dop system and its legacy was the establishment in 1997 of the Dopstop Association (Dopstop). Dopstop is a non-government organisation (NGO) which has worked with farm workers, managers and owners and a host of other stakeholders towards the eradication of the dop system. It addresses alcohol related problems in rural communities using a comprehensive, collaborative and multi-sectoral approach (London 1999a).

2.6 Alcohol and apartheid

During the colonial and apartheid eras in South Africa, alcohol related policy and legislation influenced alcohol use on a racist basis. The dop system promoted the use of alcohol by Coloured farm workers in the Western Cape and paradoxically restricted the use of alcohol by Africans within a broader context of social control. Alcohol became a tool of both oppression and resistance, the latter in the form of shebeens (illegal taverns) which became a feature of anti-apartheid culture. Shebeens have left their own legacy, such that it is estimated that 80% of retail sales are unregulated (Parry and Bennets 1998). Typically shebeens operate in residential areas and some are

associated with organised crime. Processes to facilitate the licensing of unlicensed traders have been proposed in a draft white paper (Department of Economic Development and Tourism 2005).

2.7 Contemporary issues affecting the lives of farm workers

Farm workers are extremely marginalised, they have low wages (Barrientos and Kritzingner 2003; De Kock 2002; Te WaterNaude et al. 2000), typically spend most of their lives on farms (London et al. 1998a; London et al. 1998b; Waldman 1994) have low levels of literacy and education (De Kock 2002; London et al. 1998b; Te WaterNaude et al. 2000) and few opportunities to break out of the cycle of poverty they were born into (London et al. 1998a; Waldman 1994). Farm workers have historically held little power in labour relations (De Kock 2002; du Toit 1992).

Employment, housing and land tenure are inextricably linked issues for farm workers although this is now within a frame work of protective labour and tenure legislation (Barrientos and Kritzingner 2003; Collinson 2001; Ewert and du Toit 2005). In response to both legislative reforms and economic pressure many farmers have decreased the size of their permanent workforce. There is increased mechanisation (Collinson 2001; Ewert and Hamman 1999) and an increased casualisation of the workforce (du Toit and Ally 2003; Ewert and du Toit 2005) with the use of seasonal and contract labour (Barrientos and Kritzingner 2003). In general permanent employees, who have the farmer's consent to live on the farms on which they work, enjoy a measure of job security (du Toit and Ally 2003) and better pay (Barrientos and Kritzingner 2003). In 2002, of the 223 175 people employed on farms in the Western Cape, 56% were employed on a seasonal basis (Statistics South Africa 2002).

Stockwell and Crosbie (2001) note that Australia is credited with having invented “bag-in-the-box” wine (cask wine) in the 1970s. Said to be cheap, of low quality and comprising two thirds of the domestic Australian wine market, cheap bulk wines are attributed with having “had a devastating public health impact, particularly on aboriginal communities⁴ (2001, p.139) being “highly associated with local rates of night-time assault and acute alcohol related hospital episodes” (2001, p.145).

2.8 Cheap white wine and papsakke

Papsakke are South Africa’s modification of cask wine, supposedly a response of industry to the habits of the poor who in the absence of access to affordable transport, would purchase “bag-in-the-box” wine but disposed of the box at the point of purchase as the bags were easier to carry. The product became even cheaper (but potentially more profitable) as a result of reduced packaging costs (Hopkins 2001; NAMC 2002). Foil bags usually have a capacity of 2l or 5l. Cartons, plastic sachets (1l) and an array of other plastic containers are used. Some producers have facilities to manufacture the plastic containers on site (NAMC 2002). Consumers may also bring their own empty containers to be filled at central points (Henn et al. 2005; NAMC 2002).

Papsakke may or may not have a closable tap; it follows that those without a closable tap are cheaper and may fuel patterns of excessive drinking by encouraging consumption of the entire contents at one sitting. Communal drinking (drinking from a shared container) has been described as a form of potentially harmful drinking occurring in South Africa (Parry 2005a) and is conceivably facilitated by large volume containers.

⁴ Aboriginal Australians were granted full citizenship and rights to drink alcohol in the late 1960s (Stockwell and Crosbie, 2001)

In recent years cheap wine has retailed for under R20 for a 5l papsak, the usual price is under R30 when purchased from liquor stores and roughly double from a shebeen (Henn et al. 2005; Hopkins 2001). Shebeens or other illicit retailers sell on or near farms thus reducing the transport costs incurred by farm workers (De Kock 2002; Henn et al. 2005; NAMC 2002). Illicit retailers have also been reported to simply trade outside liquor stores after closing time (NAMC 2002).

The quality of cheap white wine is variable and evidence exists that some wine is tampered with in order to increase the volume or sweetness (Henn et al. 2005; NAMC 2002) thereby reducing production costs. Various contaminants, introduced during the production, supply and storage (Henn et al. 2005) have been identified. A recent court case found two manufacturers guilty of fraud for adding methanol to cheap wine (Schroeder 2007). Labelling (if present) frequently fails to meet the requirements of the Department of Agriculture or accurately describe the contents of the container (Hopkins 2001; NAMC 2002). In effect this makes many papsakke “illegal” in their current form.

A prevalence of papsak consumption of 17% of drinkers in crime hotspot areas in a national study (NAMC 2002) and 35% of rural residents in the Western Cape (Henn et al. 2005) has been found, however, the prevalence of its use amongst farm workers has not been precisely quantified.

In 2001 the Vredendal Co-op sold over 4.6 million 5 litre papsakke and 5 litre plastic “cans” and over 19 million 1 litre plastic bottles (NAMC 2002). In 2005, the year by which industry proposed to have papsakke withdrawn from the market, the total sales of untapped foil bags by producers, cellars and wholesalers of natural wine was over 36 million litres, representing 12.6% of the natural wine market (SAWIS 2006).

The proposed wine quality and packaging regulations would effectively remove papsakke and inferior plastic containers from the market. By making it more expensive to package wine in cheap containers, producers would inevitably produce better quality wines. Opponents to restrictions on papsakke cite the inevitable negative economic impact on those within the regulated wine industry whose livelihoods depend on papsak trade and argue that the illicit producers and traders should be the focus of interventions (Morris 2006).

2.9 Interventions and strategies

In a “review of policy-relevant strategies and interventions to address the burden of alcohol on individuals and society in South Africa” Parry (2005b) draws on interventions rated according to proven effectiveness to suggest intervention strategies likely to be effective in South Africa. The abolition of papsakke is recommended on the basis that restrictions on the size of packaging for retail use are likely to be effective. Parry adds that work-place interventions and broad-based community development initiatives are relevant in the South African context (2005b).

Interventions, be they broadly restrictive or focussed at a community level and developmental in nature can be informed by further information of the use and impact of papsakke amongst farm workers.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Aim

The aim of this study was to investigate the prevalence of papsak consumption and problem drinking and associated risk factors among farm workers in the rural Western Cape.

3.2 Objectives

1. To determine the prevalence of, and risk factors for, alcohol consumption among farm workers in the rural Western Cape.
2. To determine the prevalence of papsak consumption and to compare this with the prevalence of consumption of other forms of alcohol among farm workers in the rural Western Cape.
3. To explore the social, demographic and economic risk factors for papsak consumption amongst farm workers in the rural Western Cape.
4. To determine the prevalence of problem drinking amongst farm workers in the rural Western Cape.
5. To determine and compare the prevalence of problem drinking in users of papsak and users of other forms of alcohol, amongst farm workers in the rural Western Cape.
6. To determine whether problem drinking is associated with papsak use when adjusted for social, demographic and economic risk factors among farm workers in the rural Western Cape.
7. To explore the attitudes of drinkers with respect to their choice of alcohol and drinking practices amongst papsak users.

3.3 Study Design

A cross sectional analytical study was performed. This was a post hoc analysis of data obtained during a larger study that was coordinated by Dopstop (Henn et al. 2005) to determine the impact of bulk wine on Western Cape communities; it included a household survey of farm workers which provided the data for this study.

3.4 Study Population

The study population was male and female farm workers employed and resident on predominantly wine grape producing farms in the Stellenbosch, Franschhoek and Vredendal areas in the Western Cape province of South Africa from February to May of 2004.

Stellenbosch and Franschhoek are neighbouring areas and for the purposes of this study are referred to as “Stellenbosch” or “the Stellenbosch area”. Stellenbosch and Vredendal are typical of rural Western Cape wine farming areas and were chosen for the study because both have a large number of wine grape farms. In 2006 there were 644 wine grape producing farms in the Stellenbosch region and 539 in the Olifants River region in which Vredendal is located (D Wait at SAWIS 2006, personal communication, 28 August).

Stellenbosch is just over 50km from Cape Town. It is a well-established agricultural area renowned for viticulture and a popular tourist destination (Collinson 2001). Vredendal is over 300km from Cape Town and has more diverse agriculture than Stellenbosch producing wine and table grapes, fruit and vegetables. Appendix 2 is a map of the Western Cape and shows the position of Stellenbosch and Vredendal in relation to areas of deprivation within the province. It suggests that Vredendal has a more deprived socio-economic profile than Stellenbosch.

3.5 Sampling

Farms were selected from a wine farm route list (Stellenbosch) and a wine farm association list (Franschoek), using simple random sampling. Farm owners on the selected farms were approached for permission to interview their employees. Refusals were not recorded but were estimated to be less than 5 farms (C Henn 2006, personal communication, 21 June). Eighty one farms, 41 from Stellenbosch and 40 from Vredendal were surveyed in the original study, however, the data for 5 farms from Vredendal was not available for analysis in this study. The effective response rate at the farm level was therefore 88%.

All households on the selected farms were included in the survey and the first adult (aged 18 or over) resident available was selected as the respondent. There were no refusals reported at the household level. Of 470 interviews 6 were incomplete; the results of which were not entered into the original database. Three respondents were pensioners and were excluded from the current analysis leaving a final sample size of 461 respondents.

In summary, each cluster (farm) was selected using simple random sampling, every household was surveyed and opportunistic sampling was used to select the adult respondent in each household. Selecting a large number of clusters reduced the effect of increased homogeneity within the clusters.

3.6 Instrument

An interviewer administered structured questionnaire (appendix 3) consisting mainly of closed questions was used. The questionnaire was developed in the context of the larger study and following qualitative input (key informant interviews and focus group discussions) from a number of stakeholders including government regulators, industry

representatives, employers, farm workers, police, and other members of helping professions and organisations.

The questionnaire was developed in English and translated into Afrikaans and Xhosa. The majority of interviews were conducted Afrikaans, however one interviewer, fluent in both Afrikaans and Xhosa, conducted the interviews in Xhosa when requested. For all questions the first unprompted answer was recorded.

Respondents answered questions on socio-demographics, income, other economic indicators, and drinking attitudes and practices. Both personal and household information was requested.

Respondents were also asked to indicate which 'population group' they belonged to. Neither 'population group' nor 'race' are valid biological categories (Ellison et al. 1996) and this study does not investigate or assume a biological association between 'race' and alcohol use. In apartheid South Africa access to both resources (Ellison et al. 1996) and alcohol (Parry and Bennets 1998) were determined by policy, legislation and practices which were underpinned by institutionalised racial discrimination (Ellison et al. 1996; McIntyre and Gilson 2002). In post apartheid South Africa socio-economic status, a key determinant of both health and disease, continues to be associated with 'population groups' (Lehohla 2005; McIntyre and Gilson 2002) namely, African, Coloured, Asian and White.

This study uses self-ascribed 'population groups' in the analysis in order to explore the impacts of past policies and measures to redress their impact, and to compare the results of this study with other research. Any discussion in this study regarding culture and

tradition in no way implies a relationship between an individual's cultural identity and a notion of race.

3.7 List of variables and definitions

3.7.1 Socio-economic and demographic variables

- Age in years
- Gender
- Marital status - unmarried or married/common-law
- Population group - African, Coloured, White, Asian or other
- Occupation - labourer, domestic worker/childminder, receiving tertiary education, professional, non-professional, unemployed or other
- Payment frequency - weekly, fortnightly, monthly or other (daily, none)
- Area of residence - Stellenbosch or Vredendal
- Housing - owned, rented, included in the employment package or other
- Commodities - ownership, or access to, within the household of a motorcar in working order, television, fridge and/or telephone (or cellphone).
- State grant - receipt by anyone in the household of state financial aid (such as a disability grant, child support grant or pension)
- Household size - number of adults and children in the household

3.7.2 Alcohol consumption

Respondents indicated whether they had drunk alcohol in the last 30 days (current drinkers), within the preceding year but not in the last 30 days (occasional drinkers), more than a year ago (non-past year drinkers) or never (non-drinkers). Current and occasional drinkers were asked which type of alcohol they drank the most and the response interpreted as their preferred choice of alcohol. Respondents were asked in a

closed question which incorporated an “other” category why it was their preferred choice.

Those who preferred papsak (defined as a foil bag or any plastic container 1-5 litres in volume) were asked where they purchased it from, where they drank and with whom they drank. Non-papsak drinkers were asked why they did not drink papsak. The four questions constituting the CAGE questionnaire were posed to current and occasional drinkers. Two or more affirmative responses indicated a positive screening test for alcohol abuse or alcohol dependence.

3.7.3 The asset score

One point was awarded for each commodity available in the household; points were totalled to generate an asset score. Scores from 0-4 were possible with a higher score indicating higher socio-economic status.

3.8 Validity and reliability of the questionnaire

There were 12 interviewers; some had previously worked on research projects for Dopstop. Interviewers completed 2 days of training in interviewing skills from the University of the Western Cape and a 1-day training session on the questionnaire.

The questionnaire was piloted in Afrikaans amongst farm workers on predominantly wine grape producing farms in Somerset West (near Stellenbosch) with particular attention to the face validity of the CAGE component.

The questionnaire included questions on personal and household income, volumes of alcohol consumption and the amount of money spent on alcohol. During analysis of the original study it was found that these questions were incomplete and not answered

consistently. Analysis of these variables was therefore not attempted. In addition, the 5 interviews excluded because of internal inconsistencies were all from one interviewer.

3.9 Analysis

As this study was a post-hoc one with a focus on statistical analysis the approach to the statistical methods used and interpretation is discussed in detail. All data analysis was performed using Stata 8.2 statistical software (StataCorp. 2003) and utilising the survey settings for complex survey data. This decision to use the survey settings procedures, taken in consultation with a statistician, ensured that the analysis and interpretation of the results took into account the design effect introduced by the step of cluster sampling.

3.9.1 Non-parametric bivariate comparisons

The continuous variables in this survey were not normally distributed even when log transformed. Because the Stata survey procedures were not developed for non-parametric statistical analysis, it was not possible to compare measures of central tendency using the survey procedures. In order to give an indication as to whether there were significant differences between various medians simple logistic regression analysis was used. This approach was able to adjust for the cluster sampling but did assume a linear relationship between the arbitrarily designated variables in question. For example, living in Vredendal was designated as the response variable, for every 1-unit change in age the odds of living in Vredendal versus Stellenbosch were calculated. A significant result suggested a difference in the median age of farm workers in the two areas.

3.9.2 Test of association – bivariate comparisons

Bivariate associations were analysed using two way frequency tables and tested for statistically significant associations using a design based F statistic which is an adjusted F

statistic that has taken the design effect into account (Korn and Graubard in StataCorp 2003). The p values are reported in the results section; a significant p value ($p < 0.05$) resulted in the hypothesis of no association being rejected. Categorical variables with multiple subcategories were collapsed to the subcategory of interest versus the remainder in order to perform bivariate analyses. As an odds ratio provides additional information regarding the associations between 2 variables, unadjusted odds ratios were calculated using logistic regression analysis when bivariate analyses yielded significant p values.

3.9.3 Analysis of the measures of socio-economic status

Certain assumptions were employed when analysing and interpreting the measures of socio-economic status. In the absence of valid personal and household income data it was assumed that the asset score most closely approximated the overall socio-economic status of the respondent and their household. It was further assumed that the remaining variables, namely payment frequency, receipt of a state grant, occupation and 'population group', reflected different aspects of socio-economic status. These were individually relevant to the main outcomes under consideration in this study namely, current drinking, papsak consumption and potential alcohol abuse or dependence. The measures were therefore not combined to form an index, neither were the assets which formed the asset score weighted or given a monetary value as others have done (Westaway et al. 1999).

Correlations between the asset score and the other proxies of socio-economic status were a reasonable expectation and as it was the intention to consider all of these proxies as possible risk factors in multivariate models it was necessary to consider the possibility of multi-collinearity between these variables. Exploratory analysis therefore included

tests to determine the relationship between the various proxy measures of socio-economic status and those of particular interest are reported in the results section.

3.9.4 Multivariate risk factor analysis

The following approach to the risk factor analysis was used consistently:

1. Unadjusted odds ratios for each of the potential risk factors were calculated using the survey procedures in order to identify likely significant risk factors.
2. Multivariate analysis was performed where every observation was a term in the model also using the survey procedures (a so-called “full” model).
3. Manual model building was conducted and risk factors identified as significant during step 1 were entered sequentially followed by non-significant variables. Model building assumed simple random sampling in order to generate the Akaike’s Information Criterion (AIC) for each model and the model with the lowest AIC was selected as the final (“best-fit”) model. The goodness of fit statistic was also calculated for the final model.
4. A backward-stepwise automated model building procedure assuming simple random sampling (and p to enter 0.05 and p to remove 0.10) was performed to confirm the final model as being the one that was constructed manually.
5. Model diagnostics performed on the final model showed that in each case the graph of the residuals versus the linear predictor had an acceptable general structure. Outliers were identified. Where single observations had a large influence (leverage) on the final model estimates, the analysis was repeated with these observations excluded.
6. This final model was then re-entered within the survey setting option in order to take the design effect into account. This had the effect of increasing the standard errors, consequently widening the confidence intervals and increasing the size of the estimated p values when compared to the results when assuming

simple random sampling. As such, marginally non-significant variables should not be readily dismissed as predictors⁵.

7. To aid interpretation, when a subcategory of a variable was found to be significant when compared to the reference subcategory, the remaining subcategories were entered into the final model. A repeat of the model diagnostics invariably showed that the new observations exerted leverage on the model, however, the changes to the odds ratios, 95% confidence intervals and p values of interest were unremarkable.

Procedures for determining multi-collinearity within multiple logistic regression models are not as clearly defined as those for multiple linear regression models, for example there is no equivalent calculation for the variance inflation factors. Three methods were employed in the analysis, the first was to explore the relationship between the numerous x variables using bivariate analysis and/or simple logistic regression, the second was to examine the size of the standard errors in the multiple logistic regression models and the third was to note if collinearity was reported in the Stata output.

For the purposes of all of the statistical tests $p < 0.05$ was considered significant and all of the reported results took the design effect into account.

3.10 Ethical Considerations

The Ethics Research Committee of the Faculty of Health Sciences of the University of Cape Town approved the original study (009/2004) which provided the data for this study. Farm workers who consented to participate in the survey signed a consent form (appendix 4). Access to the data has been restricted to researchers directly involved in the study.

⁵ The terms predictor and risk factor are used interchangeably in this thesis.

There is a concern that restrictions on papsakke could have a negative economic impact on certain sectors of the wine industry (Henn et al. 2005; Morris 2006) and could even negatively impact the job security of some wine farm workers. Restrictions on papsakke could leave households with less disposable income if drinkers end up paying more for their alcohol. On this basis farm workers who participated in this study could be negatively affected if the results contribute to the implementation of restrictions on papsakke.

Whilst there is a policy imperative to support entrepreneurship and job creation this has to be balanced with the knowledge that alcohol is a substance of potential abuse and recognition that its harmful effects are particularly devastating for the poor. This study aims to accurately describe the context in which restrictions on papsakke may take place and thereby to provide data to inform the decisions of policy makers. Furthermore the results may inform alcohol related interventions at a community level thereby reducing the potential for harm both from alcohol and from restrictions on papsakke to the study participants.

A copy of this report will be forwarded to Dopstop, to the South African Wine Industry Council as per request and to the funder of the original study, the Western Cape Department of Economic Affairs and Tourism. The findings will be prepared for publication.

CHAPTER FOUR

RESULTS

4.1 The socio-demographic and economic features of farm workers and their households

Tables 1 to 5 show the exploratory results for the 461 eligible respondents and their households. Results are presented overall and by area, namely, Stellenbosch and Vredendal. The tests for normality (summary statistics, histograms and the Shapiro-Wilk test) indicated a significant departure from the normal distribution for all of the continuous variables hence non-parametric summary measures are presented.

Table 1 shows that 58.1% of the respondents were resident in Stellenbosch and 41.9% in Vredendal. There was a median of 6 interviews per cluster; as there were no refusals at the household level and as only 9 cases were excluded from the analysis this figure represents the median number of farm worker households per farm.

Table 1. Sample summary overall and by area

	Overall	Stellenbosch	Vredendal
Sample size (%)	461	268 (58.1%)	193 (41.9%)
Number of farms (%)	76	41 (53.9%)	35 (46.1%)
Median interviews per farm	6	6	5
Interquartile Range (IQR)	3-9	2-8	4-9
Range	1-16	1-16	1-13

Three quarters (95% CI: 68.3-81.1) of the respondents were male (Table 2). The sampling procedure may have resulted in men being over represented by sampling mainly heads of households (Henn et al. 2005). A significantly higher proportion ($p=0.013$) of respondents in the Vredendal sample were male (83.9%) compared to the Stellenbosch (69.0%) sample.

Table 2. Individual level demographic and socio-economic results: categorical data

	Overall (n=461)		Stellenbosch (n=268)		Vredendal (n=193)	
	n	%	n	%	n	%
	95%CI		95%CI		95%CI	
Gender						
Male	347	75.3 68.3-81.1	185	69.0 59.2-77.4	162	83.9 75.6-89.8
Female	114	24.7 18.9-31.7	83	31.0 22.6-40.8	31	16.1 10.2-24.4
Marital status						
Unmarried	142	30.8 25.8-36.3	70	26.1 20.1-33.6	72	37.3 30.1-45.1
Married/common law	319	69.2 63.7-74.2	198	73.9 66.9-79.9	121	62.7 54.9-69.7
Population group						
Coloured	409	88.9 84.9-92.0	229	85.8 80.0-90.1	180	93.1 88.0-96.3
African	46	10.00 7.1-13.9	34	12.7 8.6-18.5	12	6.2 3.3-11.5
White	3	0.7 0.2-1.9	3	1.1 0.4-3.3	0	—
Asian	2	0.4 0.1-1.8	1	0.4 <0.1-2.7	1	0.5 <0.1-3.7
Occupation						
Labourer	434	94.1 91.3-96.1	248	92.5 88.4-95.3	186	96.4 91.9-98.4
Domestic worker or childminder	4	0.9 0.3-2.2	3	1.1 0.4-3.3	1	0.5 <0.1-3.5
Non professional	4	0.9 0.3-2.3	4	1.5 0.6-4.0	0	—
Professional or in tertiary education	13	2.8 1.5-5.4	8	3.0 1.3-6.8	5	2.6 0.9-7.3
Unemployed	6	0.1 0.6-2.8	5	1.9 0.1-4.3	1	0.5 <0.1-3.7
Remuneration frequency						
Weekly	339	73.5 62.0-82.6	162	60.5 45.0-74.1	177	91.7 75.5-97.5
Fortnightly	58	12.6 6.5-22.8	45	16.8 8.1-31.7	13	6.7 1.6-24.1
Monthly	58	12.6 6.9-21.9	55	20.5 11.1-34.8	3	1.6 0.4-6.6
Daily or unemployed	6	1.3 0.5-3.2	6	2.2 0.9-5.4	0	—

Just over two thirds of respondents (69.2%; 95% CI: 63.7-74.2) were in a marriage type relationship (Table 2) and almost 90% classified themselves as Coloured or San (88.9%; 95% CI: 84.9-92.0) or African 10% (95% CI: 7.1-13.9).

By far the majority of farm workers living on farms were labourers (94.1%; 95% CI: 91.3-96.1). Domestic workers, other non-professional employees, professionals and those currently receiving a tertiary education whilst working on a farm together represented less than 5% of the sample (Table 2). The unemployment figure of less than 1% simply reflects that this is a study of an occupational group and cannot be interpreted as low unemployment rates in the rural areas of the Western Cape. It does however suggest low levels of on-farm unemployment. Labourers comprised the majority of Coloured respondents (96.3%; 95% CI: 94.1-97.7) and a lower proportion of African respondents (76.1%; 95% CI: 57.3-88.3).

Almost three quarters (73.5%) of respondents were paid weekly (95% CI: 62.0-82.6). Weekly pay was more common in Vredendal (91.7%) compared to Stellenbosch (60.5%, $p=0.003$), whereas monthly pay was more common in Stellenbosch (12.6%) compared to Vredendal (1.55%, $p<0.001$). Given that payment frequency may be a proxy of socio-economic status these results suggest that the majority of farm workers, and particularly those in Vredendal, have limited disposable income; they are paid wages rather than salaries.

Table 3. Individual and household level demographic and socio-economic results: continuous data

Parameter	Overall (n=461)	Stellenbosch (n=268)	Vredendal (n=193)
Age			
Median age in years	38	38	39
IQR	30-46	30.5-46	30-46
Range	18-64	18-64	20-63
Total household size			
Median total household size	4	5	3
IQR	3-5	3-6	2-4
Range	1-16	1-16	1-7
Number of adults in the household			
Median number of adults per household	2	2	2
IQR	2-3	2-3	2-2
Range	1-16	1-16	1-5
Number of children in the household			
Median number of children per household	2	2	1
IQR	0-3	1-3	0-2
Range	0-7	0-7	0-5
Asset score			
Median asset score	2	2	0
IQR	0-3	1-3	0-1
Range	0-4	0-4	0-4

Age was skewed to the older age groups, which is expected in an occupational group where physical work is involved. The median age of the farm workers was 38 years with an interquartile range (IQR) of 30-46 years (Table 3). Men appeared slightly older than women (median age 39; IQR 31-46 compared to 36.5; IQR 29-45 respectively). In order to compare the non-parametric summary measures whilst adjusting for the cluster effect an odds ratio was calculated (as detailed in the methods section on page 21). For every 1-year increase in age, a respondent was 2% (95% CI: 0.3-4, $p=0.025$) more likely to have reported being male compared to female, confirming that male farm worker respondents were significantly older than their female counterparts.

The median household size was 4 occupants (Table 3) with a median of 2 adults per household. Households in Vredendal had a median of 1 child compared to 2 in Stellenbosch. Unadjusted odds ratios confirmed larger household sizes in Stellenbosch; the odds of living in Stellenbosch increased by 60% for every 1-person increase in

household size (OR 1.6; 95% CI: 1.4-1.8, $p < 0.001$). This difference was significant for both adult and child occupants and the unadjusted odds ratios for living in Stellenbosch were 2.7 (95% CI: 1.9-3.7, $p < 0.001$) and 1.4 (95% CI: 1.2-1.7, $p = 0.001$) for a 1-person increase for adults and children respectively. Two households on the same farm in Stellenbosch had 16 adult occupants each but no children. It may be that these were hostel type living quarters. A repeat of the analysis excluding these two households (outliers) made no appreciable difference to the distribution of the data or odds ratio calculations (results not shown). Children were absent in a quarter of households (25.6%; 95% CI: 20.7-31.3).

The construction and interpretation of the household asset score (Table 3) is explained in the methods section (page 20). Figure 1a shows that a mere 6.3% (95% CI: 4.2-9.4) of farm workers had access to all four commodities under study and almost a third (31.0%; 95% CI: 24.6-38.6) lacked access to any of the commodities. Figure 1b illustrates the breakdown of asset scores by area. It shows that over half (54.4%; 95% CI: 46.6-62.0) of Vredendal households had none of the assets studied compared to 15% (95% CI: 9.0-21.6) of Stellenbosch households, a highly significant difference ($p < 0.001$). A higher proportion of Stellenbosch households had access to two or more assets compared to Vredendal households.

Figure 1a. Percentage of farm workers and asset score overall

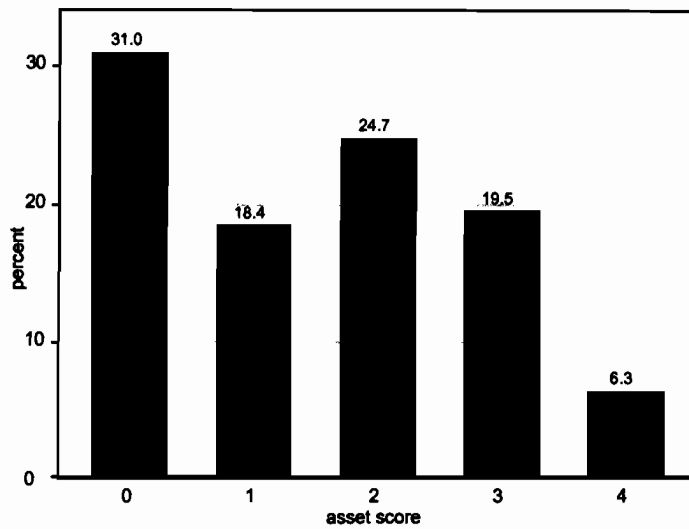
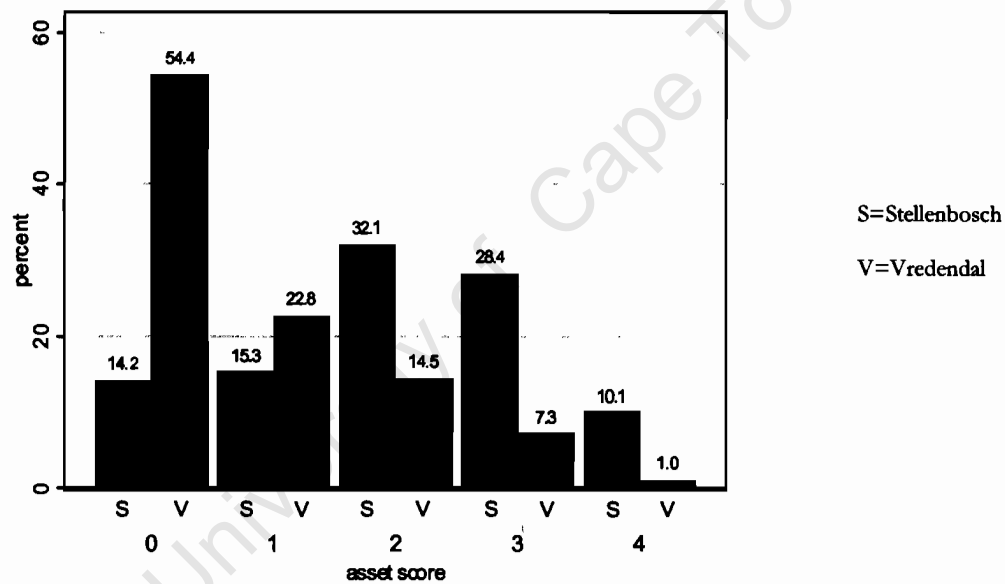


Figure 1b. Percentage of farm workers and asset score by area



Ownership within the household of any of the four commodities, which constituted the asset score, was significantly less for each asset category for farm workers in Vredendal compared to Stellenbosch (Table 4).

Table 4. Household assets overall and by area

Household asset	All (n=461)		Stellenbosch (n=268)		Vredendal (n=193)		p*
	n	% 95%CI	n	% 95%CI	n	% 95%CI	
Car	32	6.9 4.7-10.2	30	11.2 7.8-15.8	2	1.0 0.2-7.0	0.002
Fridge	250	54.2 45.6-62.6	200	74.6 65.7-81.9	50	25.9 19.4-33.7	<0.001
Telephone or cell phone	140	30.4 24.0-37.7	115	42.9 34.1-52.12	25	13.0 8.7-18.9	<0.001
Television	277	60.1 52.7-67.1	204	76.1 69.4-81.8	73	37.8 29.7-46.7	<0.001

*test of association between ownership of the asset of interest and area

The median asset score in Stellenbosch was 2 (IQR 1-3) whilst that in Vredendal was 0 (IQR 0-1) (Table 3) and the odds of living in Vredendal compared to Stellenbosch increased by 2.6 times (95% CI: 2.0-3.4, $p < 0.001$) for every 1-fewer asset available in the household. The results show that against a background of general poverty amongst farm workers (Te WaterNaude et al. 2000), those in Vredendal are poorer than those in Stellenbosch.

Table 5. Household level socio-economic results: categorical data

	All (n=461)		Stellenbosch (n=268)		Vredendal (n=193)	
	n	% 95%CI	n	% 95%CI	n	% 95%CI
Government Grant						
Received by anyone in the household	114	24.7 20.6-29.4	59	22.0 17.1-27.8	55	28.5 21.9-36.1
Housing						
Rented	213	46.2 36.8-55.9	104	38.8 26.6-52.6	109	56.5 44.2-68.0
Provided by employer on farm	154	33.4 25.4-42.4	109	40.7 29.0-53.5	45	23.3 15.4-33.7
Owned	74	16.1 11.6-21.8	41	15.3 9.8-23.2	33	17.1 10.5-26.5
Other (homeless, informal settlement or living with girlfriend)	20	4.3 2.5-7.4	14	5.2 2.9-9.4	6	3.1 1.0-8.9

A quarter of households (24.7%; 95% CI: 20.6-29.4) had at least one occupant who received some type of state financial aid (Table 5). A greater proportion of households

in Vredendal (28.5%) reported receipt of a grant compared to those in Stellenbosch (22.0%), however this difference was not statistically significant ($p=0.145$) in bivariate analysis.

In this survey almost half (95% CI: 36.8-55.9) of farm workers stated that they rented their accommodation whilst a third (95% CI: 25.4-42.4) said they were provided with accommodation on the farms where they worked (Table 5). The distinction is rather subtle and technically one of perception on the part of the respondents; it alludes to autonomy and labour practices. The provision of accommodation is regarded by most employers as part of the cost of employment and should be quantified and reflected on payslips – essentially rent-free accommodation on farms does not exist. A marginal difference in the proportion of rented homes by area was found ($p=0.059$) compared to a significant ($p=0.028$) difference in the proportion of employer provided housing by area when collapsed to the proportion of interest and the remainder. Sixteen percent of farm workers owned their homes, the proportions were similar for the two areas ($p=0.728$). Less than 5% of the sample may not have had the farmer's consent to live on the farm and/or were possibly not employed on the farm.

As outlined in the methods section (on page 22) the relationship between the various proxy measures of socio-economic status was explored at length. For example, the asset score was arbitrarily dichotomised to “very poor” (having nil or 1 asset) versus the remainder (2-4 assets); this was 49.5% and 50.5% of the sample respectively. The results reported in Table 6 show the unadjusted and adjusted odds ratios where “very poor” was the outcome variable in a regression analysis of the measures of socio-economic status.

Table 6. Unadjusted and adjusted odds ratios for a low asset score by measures of socio-economic status (n=461)

Risk factor (n)	Unadjusted odds ratios			Adjusted odds ratios*		
	OR	95% CI	p	OR	95% CI	p
Occupation						
Labourer (434)	1.0	—	—	1.0	—	—
Other (21)	0.9	0.3-2.7	0.886	1.4	0.4-4.2	0.561
Unemployed (6)	1.0	0.2-5.7	0.983	1.2	0.1-23.1	0.917
Population group						
Coloured (409)	1.0	—	—	1.0	—	—
African (46)	0.7	0.3-1.5	0.354	0.6	0.2-1.3	0.177
White and Asian (5)	0.7	0.2-2.6	0.542	0.6	0.1-2.7	0.503
Housing						
Rented (213)	1.0	—	—	1.0	—	—
Provided by employer (154)	0.5	0.3-0.9	0.023	0.6	0.3-1.1	0.087
Owned (74)	1.1	0.6-2.0	0.763	1.2	0.6-2.3	0.648
Other (20)	0.4	0.1-1.3	0.139	0.5	0.1-1.6	0.236
Payment frequency						
Weekly (339)	1.0	—	—	1.0	—	—
Fortnightly (58)	0.7	0.3-1.6	0.391	0.7	0.3-1.4	0.260
Monthly (58)	0.2	0.1-0.6	0.005	0.2	0.1-0.4	0.000
Other (6)	0.9	0.1-8.5	0.944	0.6	0.0-8.9	0.687
Receipt of a state grant						
No grant received (347)	1.0	—	—	1.0	—	—
Grant received (114)	0.8	0.5-1.3	0.350	0.8	0.5-1.3	0.399

* the adjusted odds ratios were obtained where each observation was a term in the model

No association was found between the asset score and occupation type. This can in part be attributed to the fact that the majority of farm workers were labourers and that the "other" category includes all other employed people ranging from domestic workers to professionals, a considerable socio-economic spread. No association was found between self-ascribed 'population group' and asset score suggesting that amongst farm workers 'population group' may not be a useful proxy for socio-economic status. Farm workers whose housing was provided for by their employer were 50% less likely to be classified as very poor (unadjusted OR 0.5; 95% CI: 0.3-0.9, $p=0.023$). The result suggests that accommodation provided by the farmer was not a good marker of poverty which intuitively may have been the case in a paternalistic system where dependent and poor farm workers were provided with housing by the farm owner.

Farm workers who received monthly versus weekly payment were 80% (unadjusted OR 0.2; 95% CI: 0.1-0.6, $p=0.005$) less likely to be classified as very poor supporting the interpretation that weekly payment was a marker for relatively greater poverty.

Receipt of a state grant was not associated with being very poor. However when the analysis was repeated with the asset score arbitrarily dichotomised to no assets (31.0%) and the remainder, households where no-one received a state grant were found to be 2.1 times more likely to have no assets versus 1 or more assets (adjusted OR 2.1; 95% CI: 1.27-3.43, $p=0.004$) when compared to households with a grant recipient. Extreme poverty may in itself have been a barrier to accessing grants. Alternatively, it may be that in some households where a grant was received, it had made an appreciable difference to improving the living conditions within the household.

In order to explore the possibility of joint effects the above variables were considered together using multiple logistic regression. There was little change in the significant odds ratios, no further variables were identified as significant, no large standard errors were found (results not shown) and no subcategories within variables were dropped due to the detection of collinearity by the statistical programme. It was concluded that the proxies of socio-economic status could be considered together in further models in the study.

Gender issues are important considerations on farms (Barrientos and Kritzing 2003; Waldman 1994). Women are paid less (Barrientos and Kritzing 2003; De Kock 2002; Te WaterNaude et al. 2000; Te WaterNaude et al. 1998) and their access to housing and employment is often linked to that of men such as their husbands or fathers (Hall 2003). Women tend to have seasonal rather than permanent employment (Barrientos and Kritzing 2003; Ewert and Hamman 1999). Whilst the majority of farm workers were

labourers, the proportion of women reporting that they were labourers was significantly less than that of men, thus 86.0% (95% CI: 76.0-92.2) of women compared to 96.8% (95% CI: 94.4-98.2) of men indicated that they were farm labourers ($p < 0.001$). Women were in fact 5.6 times (95% CI: 1.9-16.6, $p = 0.002$) more likely than men to report other occupations. The large confidence intervals are as a result of the small numbers in the non-labourer subcategories. Intuitively one would ascribe this result to more women being domestic workers. However, when dichotomising the occupation category to the other occupations (non-professional, professional and those receiving tertiary education) and including in the remainder labourers, domestic workers and the unemployed, a significant association between being female and reporting other occupations was found. Women were then 11.0 times more likely to report other occupations compared to all other occupations than men (95% CI: 2.6-46.1, $p = 0.001$). Of the 8 African farm workers occupying these other positions 7 were women.

In the context of a very low prevalence of unemployment in this study and taking note of the fact that men tend to fill permanent positions with women usually obtaining seasonal work, no association was found between gender and unemployment ($p = 0.151$) and no association between gender and payment frequency. Payment frequency was dichotomised to fortnightly and monthly compared to weekly, daily and other ($p = 0.947$) and investigated using a regression analysis (results not shown). No association was found between gender and an increasing asset score. The unadjusted odds ratio was 1.2 (95% CI: 1.0-1.5, $p = 0.075$) and when adjusted for area the odds ratio was an unremarkable 1.04 (95% CI: 0.8-1.3, $p = 0.673$).

4.2 The prevalence of, and risk factors for, alcohol consumption amongst farm workers

Table 7. Drinking status overall and by area

Drinking status	All (n=461)		Stellenbosch (n=268)		Vredendal (n=193)		p ^d
	n	% 95%CI	n	% 95%CI	n	% 95%CI	
Current drinkers ^a	318	69.0 63.1-74.3	166	61.9 53.1-70.0	152	78.8 73.0-83.6	<0.001
Occasional drinkers ^b	28	6.1 4.2-8.7	18	6.7 4.3-10.4	10	5.2 2.7-9.7	0.505
Non drinkers and non- past year drinkers ^c	115	25.0 20.6-29.8	84	31.3 25.1-38.3	31	16.1 12.1-21.0	<0.001

^a alcohol consumed in the preceding 30 days

^b alcohol consumed in last year but not last 30 days

^c have never drunk alcohol or last drank more than a year ago

^d estimated p value for test of association between the drinking status of interest and area

Table 7 shows that 69.0% (95% CI: 63.1-74.3) of farm workers were classified as current drinkers. A significantly higher proportion of farm workers in Vredendal (78.8%) compared to Stellenbosch (61.9%) reported current drinking ($p < 0.001$). Farm workers from Vredendal were in fact 2.3 times (95% CI: 1.4-3.7, $p = 0.001$) more likely than those in Stellenbosch to have reported current drinking (unadjusted odds ratio, Table 9). More men (71.5%) than women (61.4%) were current drinkers (Table 8) although the difference was of marginal statistical significance ($p = 0.053$).

Table 8. The prevalence of current drinkers by gender and area

Gender	Study (n= 461)		Stellenbosch (n= 268)		Vredendal (n= 193)	
	Drinkers	% 95%CI	Drinkers	% 95%CI	Drinkers	% 95%CI
Men	248/347	71.5 65.3-76.9	116/185	62.7 53.2-71.3	132/162	81.5 74.3-87.0
Women	70/114	61.4 50.8-71.0	50/83	60.2 46.9-72.3	20/31	64.5 47.8-78.3

A host of potential risk factors for current drinking were analysed, these were: age, gender, marital status, 'population group', occupation, payment frequency, area, housing, asset score, receipt of a state grant and the number of adults and the number

of children in the household. Preliminary analysis revealed an inverse relationship between the asset score and current drinking, therefore for all following logistic regression analyses an inverted asset score was used and a higher score signified less assets and greater poverty. This facilitated a more intuitive interpretation of the odds ratio between increasing poverty and the outcome variables.

The model building was performed as detailed in the methods section (on page 23). In summary, the model building and model checking process was performed assuming simple random sampling. The final model was re-entered using the survey settings and procedures thereby taking into account the cluster sampling. Unadjusted odds ratios are reported in the same table (Table 9) as the adjusted odds ratios where each observation is a term in the model. The results for the final model are reported in Table 10.

Table 9. Unadjusted and adjusted odds ratios for potential risk factors for current drinking (n=461)

Risk factor (n)	Unadjusted odds ratios			Adjusted odds ratios*		
	OR	95% CI	p	OR	95% CI	p
Age						
Increasing age in years	1.0	0.9(7)-1.0(1)	0.157	1.0	0.9(6)-1.0	0.097
Gender						
Female (114)	1.0	--	--	1.0	--	--
Male (347)	1.6	1.0-2.5	0.053	1.6	1.0-2.9	0.083
Marital status						
Unmarried (142)	1.0	--	--	1.0	--	--
Married /Common law (319)	0.6	0.4-1.0	0.048	0.9	0.6-1.5	0.777
Population Group						
Coloured (409)	1.0	--	--	1.0	--	--
African (46)	0.8	0.4-1.8	0.642	0.7	0.3-1.9	0.525
White and Asian (5)	1.8	0.2-18.2	0.625	1.8	0.2-14.5	0.558
Occupation						
Labourer (434)	1.0	--	--	1.0	--	--
Other (21)	4.5	0.9-21.5	0.061	8.1	1.7-38.0	0.009
Unemployed (6)	0.9	0.2-5.5	0.947	2.4	0.1-50.5	0.565
Payment frequency						
Weekly (339)	1.0	--	--	1.0	--	--
Fortnightly (58)	1.5	0.7-3.2	0.362	1.8	0.8-4.3	0.172
Monthly (58)	0.5	0.2-1.0	0.055	0.7	0.2-1.9	0.426
Daily and other (6)	0.8	0.2-3.6	0.807	0.6	0.03-10.7	0.730
Area						
Stellenbosch (268)	1.0	--	--	1.0	--	--
Vredendal (193)	2.3	1.4-3.7	0.001	1.3	0.7-2.7	0.420
Housing						
Rented (213)	1.0	--	--	1.0	--	--
Employer provided (154)	0.8	0.4-1.5	0.485	1.4	0.8-2.5	0.292
Owned (74)	1.1	0.6-2.1	0.682	1.2	0.7-2.3	0.498
Other (20)	0.8	0.2-2.5	0.671	1.0	0.3-3.7	0.956
Socio economic status						
Inverted asset score	1.6	1.4-1.9	<0.001	1.5	1.2-1.9	<0.001
Receipt of a state grant						
No grant received (347)	1.0	--	--	1.0	--	--
Grant received (114)	0.7	0.5-1.1	0.134	0.8	0.5-1.3	0.373
Household size						
Increasing no. of adults	0.9	0.8-1.0	0.046	1.0	0.8-1.2	0.892
Increasing no. of children	0.8	0.7-1.00	0.035	1.0	0.8-1.2	0.742

* the adjusted odds ratios were obtained where each observation was a term in the model as per step 2 on page 23

The unadjusted odds ratios suggested that increasing poverty was positively associated with current drinking. Marriage and an increasing number of adults or children in the household appeared negatively associated with current drinking. Farm workers who were paid monthly versus weekly appeared marginally less likely to have reported current drinking. Men were marginally more likely than women to report current drinking as were farm workers in Vredendal compared to those in Stellenbosch. The

reader will recall that exploratory analysis showed a preponderance of men in Vredendal, therefore it is possible that area is confounding the relationship between gender and current drinking or vice versa. A similar case can be made for the relationship between poverty, area and current drinking; hence the value of multivariate logistic regression analysis as it enables simultaneous adjustment for all of the potential risk factors and/or confounders for which data was available in this study.

The right hand column in Table 9 shows that living in Vredendal became non-significant in multivariate analysis suggesting that a higher prevalence of current drinking in Vredendal is explained by the higher prevalence of current drinking among poorer farm workers – who predominate in Vredendal. This finding is particularly pertinent to the interpretation of subsequent results. The lack of an association between being married and current alcohol consumption is similarly noteworthy and revisited when discussing drinking amongst partners and in groups.

Access to greater disposable income (monthly payment) is not associated with current drinking when adjusted for by the asset score. Increasing household size appeared significantly protective against drinking and could be explained not on the basis that drinkers have smaller families but possibly that they cannot stay in large families because of the negative effects of alcohol. This result fell away in multivariate analysis, probably because of an association between household size and increasing poverty. There was no association between current drinking and receipt of a state grant.

Whilst not significant, the odds ratio for alcohol consumption amongst White and Asian farm workers was positive when compared to Coloured farm workers. Due to the small number of White and Asian workers in this sample and by inference on farms, it may be

that there is a lack of power to yield a significant finding. African and Coloured farm workers were equally likely to report current drinking.

Table 10. Adjusted odds ratios for the risk factors for current drinking: The final model (n=461)

Risk factor (n)	Adjusted OR ^a	95% CI	p
Age			
Increasing age in years	1.0	1.0-1.0	0.092
Gender			
Female (114)	1.0	—	—
Male (347)	1.7	1.0-2.9	0.052
Socio economic status			
Inverted asset score	1.6	1.3-1.9	<0.001
Occupation			
Labourer (434)	1.0	—	—
Other (21)	7.2	1.5-34.8	0.015
Unemployed (6)	2.1	0.1-43.7	0.623
Payment frequency			
Weekly (339)	1.0	—	—
Fortnightly (58)	1.9	0.9-4.0	0.114
Monthly (58)	0.7	0.2-1.9	0.445
Other (6)	0.7	0.0-13.8	0.791

^athe adjusted odds ratios were obtained as per steps 3-7 on pages 23 and 24

The key finding is that increasing poverty was independently associated with current drinking. The odds ratio for the inverted asset score is minimally changed whether it is the only variable in the model, fully adjusted by inclusion of all the studied variables or adjusted for by age, gender, occupation and payment frequency in the model with the best fit as shown in Table 10. One less asset in the household is associated with a farm worker being 60% (95% CI: 30-90) more likely to have reported current drinking after adjustment for age, gender, occupation and payment frequency. A model (not shown) which adjusted for the same variables but which treated the asset score as a categorical rather than a continuous variable by creating 4 subcategories and a reference category revealed that farm workers with no assets (31% of the sample) were 5.0 times (95% CI: 2.0-10.0, p=0.001) more likely to have reported current drinking when compared with farm workers who had access to all of the assets studied (6.3% of the sample).

Table 10 shows that farm workers who were non-labourers were 7.2 (95% CI: 1.5-34.8, $p=0.015$) times more likely than farm workers who were labourers to be current drinkers. The 95% confidence interval is extremely wide due to the small number of people in this collapsed subcategory (all other employed people and those receiving a tertiary education). The possible significance of this result is presented in the discussion in Chapter 5.

Being male was marginally associated with current drinking (OR 1.7; 95% CI: 1.0-2.9, $p=0.052$). However, it has been explained on pages 23 and 24 that marginal results are potentially relevant as the adjustment for the design effect results in widened confidence intervals compared to if the data had been obtained from simple random sampling.

4.3 The prevalence of papsak consumption and other preferred alcohol types amongst farm workers

Alcohol type	Study (n=318)		Stellenbosch (n=166)		Vredendal (n=152)	
	Number	% 95%CI	Number	% 95%CI	Number	% 95%CI
Papsak wine	161	50.6 41.9-59.3	45	27.1 17.8-39.0	116	76.3 69.4-82.1
Beer	122	38.4 30.0-47.5	100	60.2 47.4-72.0	22	14.5 9.8-20.8
Cider	9	2.8 1.4-5.6	4	2.4 0.9-6.2	5	3.3 1.4-8.3
Wine - bottled	9	2.8 1.4-5.6		4.2 1.9-9.0	2	1.3 0.4-4.8
Wine - carton	7	2.2 0.8-6.1	7	4.2 1.6-10.8	0	--
Spirits	4	1.3 0.4-4.1	0	--	4	2.6 0.8-8.3
Other (incl. homebrew)	2	0.6 0.2-2.6	1	0.6 0.0-0.4	1	0.7 0.0-4.6
No preference	4	1.3 0.4-4.1	2	1.2 0.3-4.8	2	1.3 0.3-5.4

Current drinkers reported the type of alcohol they mostly drank; responses were interpreted as their preferred alcohol type. The results are summarised in Table 11 and illustrated in Figures 2a, 2b and 2c.

Figure 2a. Percentage of preferred alcohol type overall (n=318)

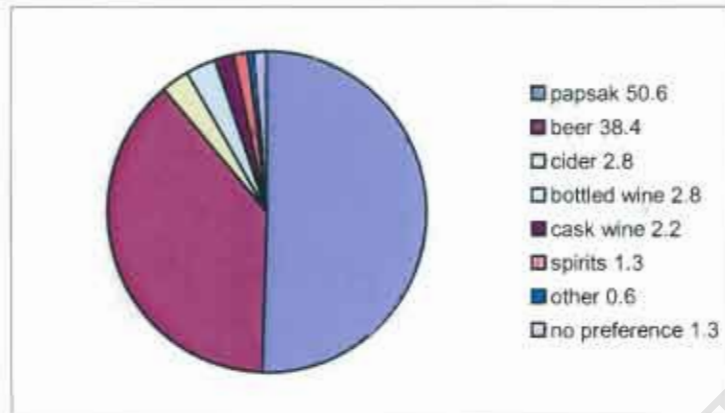


Figure 2b. Percentage of preferred alcohol type in Stellenbosch (n=166)

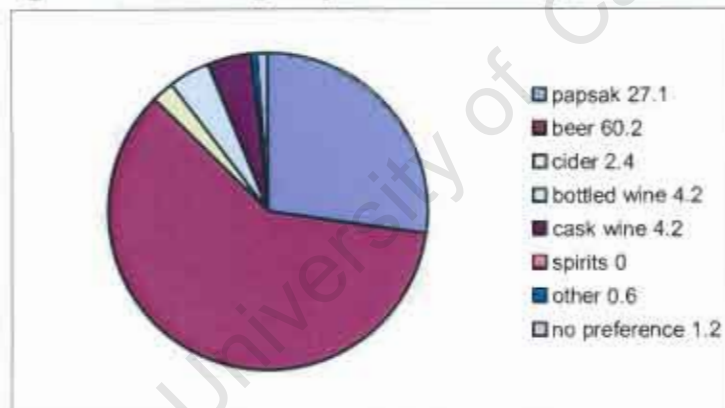
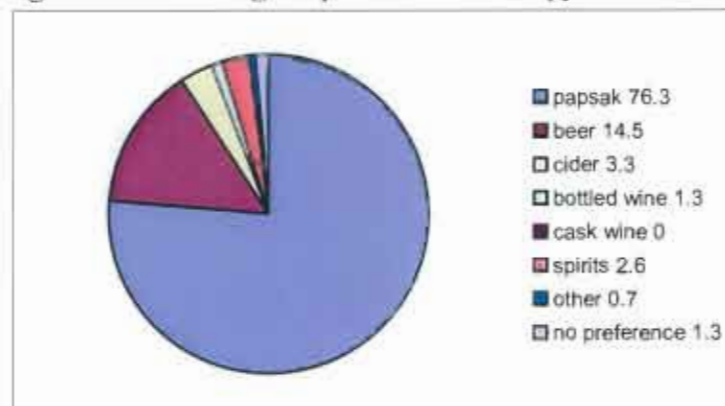


Figure 2c. Percentage of preferred alcohol type in Vredendal (n=152)



Half (50.6%; 95% CI: 41.8-59.4) of current drinkers mostly drank papsak and 38.4% (95% CI: 29.9-47.5) mostly drank commercial beer. The breakdown by area shows that the prevalence of papsak consumption in Vredendal vastly exceeded that in Stellenbosch, 76.3% versus 27.1% respectively, among current drinkers ($p < 0.001$).

When using the entire Vredendal sample as the denominator and current drinkers who prefer papsak as the numerator it is estimated that 60.1% (95% CI: 53.0-66.8) of the resident farm workforce are papsak drinkers. It follows that, in the event of restrictions on papsakke, a considerable proportion of the Vredendal workforce will be directly affected. This may have potentially sizeable labour and social implications.

The majority of farm workers in Stellenbosch (60.2%; 95% CI: 47.4-72.0) preferred beer (Figure 2b). They seem to eschew papsak and 60.0% (95% CI: 48.4-71.7) of beer drinkers volunteered that they didn't drink papsak because of its poor quality or poor taste, or the negative effect that it appeared to have on people's behaviour or health. Thus, despite living on wine grape producing farms, the historical use of wine as the currency for the dop system and that per unit of alcohol papsak is cheaper than beer (Henn et al. 2005), many farm workers prefer beer. Some seem to choose beer based on choices that align themselves with responsible alcohol use. It is also not surprising that farm workers are unlikely to accept drinking poor quality wine if they can afford an alternative alcoholic beverage. Around 5% of respondents preferred cask or bottled wine and the majority of these were from Stellenbosch (Table 11).

4.4 The social, demographic and economic risk factors for papsak consumption amongst farm workers

Living in Vredendal appears strongly associated with preferred papsak consumption. However the demographic and socio-economic differences between farm workers in Vredendal and Stellenbosch must be considered in order to accurately describe the relationship between area and papsak consumption. Therefore multiple logistic regression analysis was performed using the subpopulation of current drinkers only (n=318). The outcome variable was whether or not drinkers preferred papsak wine. The potential risk factors considered are indicated in Table 12. Observations from variables which were found to be significant predictors of current drinking were included in this round of analysis in order to explore whether the same variables predicted preferred papsak consumption.

The unadjusted odds ratios (Table 12) indicate that increasing age, being male, living in Vredendal and increasing poverty were positively associated with preferred papsak consumption whilst being African compared to being Coloured, monthly payment versus weekly payment and an increasing number of adults and children in the household were negatively associated with preferred papsak consumption. After adjustment gender, monthly payment and the number of adults in the house were no longer significant, whilst being married became positively associated with preferred papsak consumption (right hand column of Table 12). Preferred papsak consumption was not associated with receipt in the household of a state grant.

Table 12. Unadjusted and adjusted odds ratios for the potential risk factors for papsak consumption (n=318)

Risk factor (n)	Unadjusted odds ratios			Adjusted odds ratios ^a		
	OR	95% CI	p	OR	95% CI	p
Age						
Increasing age in years	1.1	1.0-1.1	<0.001	1.1	1.0-1.1	<0.001
Gender						
Female (70)	1.0	—	—	1.0	—	—
Male (248)	2.6	1.4-4.7	0.003	1.2	0.5-2.6	0.665
Marital status						
Unmarried (107)	1.0	—	—	1.0	—	—
Married/Common law (211)	1.3	0.8-2.0	0.304	2.3	1.2-4.1	0.009
Population Group						
Coloured (284)	1.0	—	—	1.0	—	—
African (30)	0.3	0.1-0.8	0.012	0.3	0.1-0.9	0.036
White and Asian (4)	2.7	0.2-31.9	0.430	7.8	0.5-114.2	0.131
Occupation						
Labourer (295)	1.0	—	—	1.0	—	—
Other (19)	0.6	0.2-1.4	0.216	1.6	0.4-6.5	0.520
Unemployed (4)	0.9	0.1-6.9	0.952	0.8	0.1-6.4	0.856
Payment frequency						
Weekly (239)	1.0	—	—	1.0	—	—
Fortnightly (45)	0.5	0.2-1.3	0.141	1.0	0.3-3.0	0.951
Monthly (30)	0.3	0.1-0.9	0.030	0.9	0.3-3.1	0.846
Other (4)	0.8	0.1-5.6	0.818	^b	—	—
Area						
Stellenbosch (166)	1.0	—	—	1.0	—	—
Vredendal (152)	8.7	4.6-17.0	<0.001	6.3	2.5-16.2	<0.001
Housing						
Rented (150)	1.0	—	—	1.0	—	—
Employer provided (101)	0.7	0.4-1.3	0.229	1.1	0.6-2.2	0.776
Owned (54)	1.1	0.5-2.2	0.862	1.4	0.6-3.1	0.454
Other (13)	0.5	0.1-2.5	0.421	0.6	0.1-3.8	0.561
Socio economic status						
Inverted asset score	2.1	1.7-2.6	<0.001	1.7	1.2-2.3	0.003
Receipt of a state grant						
No grant received (245)	1.0	—	—	1.0	—	—
Grant received (73)	1.2	0.7-2.3	0.482	1.2	0.5-2.8	0.739
Household size						
Increasing no. of adults	0.7	0.5-0.9	0.007	1.0	0.8-1.3	0.934
Increasing no. of children	0.7	0.5-0.8	<0.001	0.8	0.6-1.0	0.072

^a the adjusted odds ratios were obtained where each observation was a term in the model as per step 2 on page 23

^b observations were collapsed into the reference category following detection of collinearity by the statistical programme

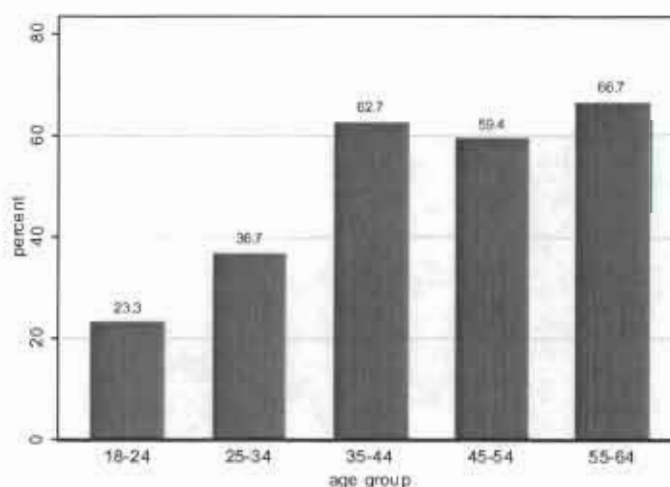
Table 13. Adjusted odds ratios for the risk factors for papsak consumption: The final model (n=318)

Risk factor	Adjusted OR ^a	95% CI	p
Age			
Age in years	1.0(7)	1.0(4)-1.1	<0.001
Marital status			
Unmarried (107)	1.0	--	--
Married/Common law (211)	2.2	1.2-4.0	0.009
Population Group			
Coloured (284)	1.0	--	--
African (30)	0.3	0.1-0.9	0.036
White and Asian (4)	6.1	0.4-83.0	0.174
Area			
Stellenbosch (166)	1.0	--	--
Vredendal (152)	6.6	3.0-14.7	<0.001
Socio economic status			
Inverted asset score	1.7	1.2-2.3	0.003
Household size			
Increasing no. of children	0.8	0.6-1.0	0.069

^a the adjusted odds ratios were obtained as per steps 3-7 on pages 23 and 24

The final model (Table 13) showed that for every 1-year increase in age the odds of a farm worker reporting preferred papsak consumption increased by 7% (95% CI: 4-10, $p < 0.001$). However, the prevalence of papsak may not be linearly related to age. Figure 3 shows the proportion of papsak drinkers by different age categories. Older workers (35 and over) have a steady and high prevalence of preferred papsak consumption whilst for younger age groups the prevalence of papsak consumption declines.

Figure 3. Percentage papsak drinkers out of all current drinkers by age category



An intuitive interpretation is that papsak consumption is not consistent with the image that younger people wish to portray as they prefer more fashionable alcohol such as beer and ciders; 4% (95% CI: 1.5-15.1) of beer drinkers specifically stated that drinking papsak did not suite the image of a young person. In addition older drinkers are more likely to have experienced the dop system and may have been socialised to prefer papsak. Previous research amongst fruit farm workers has shown that ever living on a farm where the dop system was practised was more likely among drinkers compared to non drinkers (London et al. 1998a).

Farm workers in a marriage type relationship were 2.2 times (95% CI: 1.2-4.0, $p=0.009$) more likely to report preferred papsak consumption compared to all other alcohol types. As marital status and age were adjusted for each other an assumption that older farm workers were more likely to be married does not explain this association. Being male was only significant in the unadjusted analysis (Table 12) probably because of the preponderance of men in Vredendal. Therefore, while men and women were equally likely to drink papsak those who were married seemed to prefer papsak suggesting that papsak may play a role in drinking within families and groups.

The massive unadjusted odds ratio of 8.7 for preferred papsak consumption versus all other alcohol types by area (Table 12) was somewhat reduced after adjusting for significant socio-economic and demographic variables in the final model (Table 13); farm workers living in Vredendal were determined to be 6.6 times (95% CI: 3.0-14.7, $p<0.001$) more likely than farm workers living in Stellenbosch to have reported preferred papsak consumption. Living in Vredendal is a potent predictor of preferred papsak consumption amongst farm workers. A large papsak producer is located in Vredendal (NAMC 2002) which suggests that papsak has been more easily available in

Vredendal and that availability has influenced usage patterns resulting in an increased preference for papsakke.

For every 1-less asset in the household, there was a 70% increase in the odds of preferred papsak consumption (95% CI: 1.2-2.3, $p=0.003$). Notwithstanding the fact that the relationship between alcohol and poverty is complex and not simply one of cause and effect (Khan et al. 2002; Parry 2005a), this result suggests that papsak is the preferred alcohol of farm workers from poorer households. Therefore this study has shown that increasing poverty is a predictor of current drinking among farm workers and of preferred papsak consumption among farm workers who drink. It corroborates findings that papsak is drunk by the "poorest of the poor" (NAMC, 2002, p.68).

Among African farm workers current drinkers were 70% less likely to report preferred papsak consumption (OR 0.3; 95% CI: 0.1-0.9, $p=0.036$) compared to Coloured farm workers. This is consistent with a lack of cultural and historical reasons for African drinkers to prefer papsak. Of the 318 current drinkers only 30 were African, 19 (63.3%; 95% CI 43.1-79.8) preferred commercial beer, 8 (26.7%; 95% CI 13.4-46.0) preferred papsak and only 1 (3.3%; 95% CI: 0.4-21.4) preferred homebrew. No distinction was made between homebrewed beer and homebrews made from grapes. These results perhaps illustrate the anticipated penetration of commercial beer over traditional alcohol products in the contemporary market (Parry and Bennets 1998).

A repeat of the analysis with Africans as the reference category found that Coloured farm workers were 3.3 times (95% CI 1.01-9.9, $p=0.036$) more likely to report a preference for papsak which is in keeping with the historical precedents where predominantly Coloured workers were exposed to cheap wine through the dop system.

An increasing number of children in the household was marginally negatively (95% CI: 0%-40%, $p=0.069$) associated with papsak consumption (Table 13). Rather than suggesting that papsak drinkers have less children this finding may suggest that children are less able to live in households with papsak drinkers because of the latter's destructive behaviour towards children. De Kock quotes a farm worker who describes how during her childhood she would sleep outside of the house because "My father would hit you no matter how small. We had to stay away until 'die wyn uitgetrek het' (the wine had worked its way out [of the body])" (2002, p.80).

4.5 The prevalence of CAGE positive drinkers amongst farm workers

Table 14. CAGE positive drinkers amongst current drinkers overall, by area and gender (n=318)

Drinking status	All (n=318)		Stellenbosch (n=166)		Vredendal (n=152)		p ^a			
	n	%	n	%	n	%				
								95%CI	95%CI	95%CI
Current drinkers	232/318	73.0%	104/166	62.7	128/152	84.2	0.001			
		65.5-79.3		50.8-73.1		76.5-90.0				
Men	185/248	74.6	72/116	62.1	113/132	85.6	<0.001			
		67.3-80.7		50.0-72.8		77.1-91.3				
Women	47/70	67.1	32/50	64.0	15/20	75.00	0.530			
		49.0-81.3		41.9-81.4		42.2-92.5				

^a test of association: Stellenbosch compared to Vredendal

* test of association, Stellenbosch compared to Vredendal

Table 14 demonstrates that almost three quarters of current drinkers (95% CI: 65.5-79.3) screened positive for alcohol abuse or alcohol dependence. A notable 84.2% of current drinkers in Vredendal had a positive CAGE, a significantly higher proportion than in Stellenbosch (62.7%, $p=0.001$). Men and women had comparable prevalences of positive CAGE tests, 74.6% and 67.1% respectively ($p=0.353$).

The CAGE questions were posed to current and occasional drinkers and together the results formed the numerator for calculating the prevalence of CAGE positive farm

workers in the study population. The CAGE screens for a lifetime of alcohol dependence; that farm workers who last drank more than a year ago did not answer the CAGE questions could very slightly underestimate the true prevalence of CAGE positive farm workers. This study found 56.8% (197/347; 95% CI: 49.4-63.8) and 41.2% (47/114; 95% CI: 30.6-52.8) of all male and female farm workers respectively, to be CAGE positive. The SADHS reported that 28.2% of men and 9.3% of women tested CAGE positive in non-urban areas (Parry et al. 2005). The difference dramatically illustrates a potentially large burden of alcohol abuse and dependence amongst workers in the agricultural sector in the Western Cape. For female farm workers the prevalence of CAGE positivity is 3 times greater than the national rural average which confirms the importance of this group in FAS prevention efforts.

4.6 The prevalence of CAGE positive drinkers amongst papsak drinkers

Table 15. CAGE positive drinkers by preferred alcohol type (n=318)

Alcohol type	Result	%	95% CI
Papsak wine	134/161	83.2	74.6-89.4
All non papsak combined	98/157	62.4	51.5-72.2
Beer	76/122	62.3	50.9-72.5
Cider	6/9	66.7	31.0-89.9
Wine - bottled	5/9	55.6	22.5-84.3
Wine - cask	6/7	85.7	36.1-98.5
Spirits	4/4	100.0	—
Other (incl homebrew)	0/2	0	—
No preference	1/4	25.0	3.2-77.2

Table 15 shows that 83.2% of papsak drinkers, were CAGE positive compared to 62.3% ($p=0.002$) of beer drinkers and 62.4% ($p=0.001$) of drinkers of all other alcohol types combined.

Drinkers preferring bottled wine may have the lowest prevalence of potential alcohol abuse and dependence whilst drinkers of cask wine and spirits may have the highest

proportion of CAGE positive drinkers (Table 15). However, very few respondents preferred alcohol other than papsak or beer and it is unwise to interpret these results further.

The reader will recall that half of farm workers preferred papsak whereas 38% preferred beer. Analysis of the contribution of papsak and beer drinkers to the total of CAGE positive current drinkers revealed that 57.8% (95% CI: 48.0-66.9) preferred papsak and 32.8% (95% CI: 24.4-42.4) preferred beer ($p=0.002$ when the bivariate analysis was restricted to these 2 groups). Thus not only are the majority of papsak drinkers potentially alcohol dependent but the majority of potentially dependent drinkers prefer papsak.

4.7 The risk factors for a positive CAGE test amongst farm workers

In order to determine whether preferred papsak consumption was associated with a positive screening test for alcohol dependence it was necessary to consider a positive CAGE test as the outcome variable and include preferred papsak consumption as a potential risk factor. Preferred papsak consumption is thus being brought into the same mix of potential risk factors in the same subgroup of current drinkers but as a predictor of a higher level outcome, namely, problem drinking. Consequently, those variables associated with preferred papsak consumption (Table 13) were excluded from this round of analysis so as to avoid counting them twice.

Nevertheless, the excluded risk factors were thoroughly explored during the model building process; none were significantly associated with a positive CAGE. Living in Vredendal most approximated significance ($p=0.096$ in adjusted analysis where each observation was a term in the model) and analysis including an interaction term with area and papsak consumption concluded that the impact of papsak drinking in Stellenbosch and Vredendal was the same ($p=0.839$). Thus, area was associated with preferred papsak consumption but not with a positive CAGE test and the same was found for a decreasing asset score. The model building process was otherwise exactly as described in the methods section (pages 23 and 24) and the results are presented in Tables 16 and 17.

Unadjusted analysis showed papsak consumption to be positively associated with a positive CAGE test while non-labourer employment, employer provided housing and other housing (living in an informal settlement, being homeless or living with ones girlfriend) appeared protective. The latter fell away in adjusted analysis (Table 16).

Table 16. Unadjusted and adjusted odds ratios for potential risk factors for a positive CAGE test amongst current drinkers (n=318)

Risk factor	Unadjusted odds ratios			Adjusted odds ratios ^a		
	OR	95% CI	p	OR	95% CI	p
Preferred alcohol type						
Non-papsak (157)	1.0	—	—	1.0	—	—
Papsak (161)	3.0	1.6-5.8	0.001	2.7	1.3-5.5	0.007
Gender						
Female (70)	1.0	—	—	1.0	—	—
Male (248)	1.4	0.7-3.1	0.354	0.8	0.4-1.5	0.425
Occupation						
Labourer (295)	1.0	—	—	1.0	—	—
Other (19)	0.2	0.1-0.6	0.004	0.1	0.1-0.4	0.001
Unemployed (4)	1.0	0.1-9.7	0.991	0.8	0.0-15.6	0.878
Housing						
Rented (150)	1.0	—	—	1.0	—	—
Employer provided (101)	0.3	0.2-0.7	0.003	0.3	0.2-0.6	0.001
Owned (54)	0.8	0.3-1.9	0.552	0.8	0.3-1.9	0.610
Other (13)	0.2	0.1-0.7	0.017	0.3	0.1-1.2	0.075
Payment frequency						
Weekly (239)	1.0	—	—	1.0	—	—
Fortnightly (45)	1.2	0.4-3.3	0.725	1.6	0.6-4.2	0.368
Monthly (30)	0.4	0.1-1.6	0.186	0.8	0.2-4.5	0.836
Other (4)	1.0	0.1-10.2	0.981	^b	—	—
Receipt of a state grant						
No grant received (245)	1.0	—	—	1.0	—	—
Grant received (73)	1.2	0.6-2.2	0.601	1.3	0.7-2.6	0.362
Household size						
Increasing no. of adults	0.8	0.6-1.0	0.065	0.8	0.7-1.0	0.062

^a the adjusted odds ratios were obtained where each observation was a term in the model as per step 2 on page 23

^b observations were collapsed into the reference category following detection of collinearity by the statistical programme

A key finding of this study was that preferred papsak consumption was independently associated with a positive screening test for alcohol abuse or dependence. Papsak drinkers were 2.8 times (95% CI: 1.4-5.5, $p=0.004$) more likely than drinkers preferring other alcohol types to return a positive CAGE test when adjusted for by the other significantly associated variables namely occupation and housing in the final model (Table 17). Notwithstanding that this was a cross-sectional study, preferred papsak consumption seems to be a significant predictor of problem drinking.

Table 17. Adjusted odds ratios for risk factors for a positive CAGE test amongst current drinkers: The final model n=318)

Risk factor	Adjusted OR ^a	95% CI	p
Preferred alcohol type			
Non-papsak (157)	1.0	—	—
Papsak (161)	2.8	1.4-5.5	0.004
Occupation			
Labourer (295)	1.0	—	—
Other (19)	0.2	0.1-0.5	0.002
Unemployed (4)	0.6	0.0-8.5	0.722
Housing			
Rented (150)	1.0	—	—
Employer provided (101)	0.3	0.1-0.7	0.003
Owned (54)	0.9	0.4-2.1	0.820
Other (13)	0.3	0.1-1.2	0.077

^a the adjusted odds ratios were obtained as per steps 3-7 on pages 23 and 24

Farm workers employed in non labourer positions or receiving tertiary education were 80% less likely to be CAGE positive (95% CI: 50-90, $p=0.002$) compared to labourers (Table 17), and farm workers who lived in accommodation provided by the employer were 70% less likely to test CAGE positive (95% CI: 30-90, $p=0.003$) compared to those who rented their accommodation. This negative association with potential alcohol dependence may suggest that as farmers capitalise and more skilled workers are retained, investing in their well-being is more likely. It may also simply reflect that farm workers with symptoms of alcohol problems are less likely to be retained as permanent employees.

4.8 Attitudes of drinkers with respect to their choice of alcohol and drinking practices among papsak users

Current drinkers gave the reason for their preferred alcohol choice. However only those who preferred papsak were asked where they purchased, where they drank and with whom they drank papsak, therefore a comparison with attitudes held by drinkers of

other types of alcohol (and whom had a lower prevalence of CAGE positive drinkers) was not possible.

4.8.1 Reasons given for alcohol choice

The results for papsak and beer drinkers, who together constituted 89% of current drinkers are shown in Tables 18a and 18b respectively.

Table 18a. Reasons given for papsak being the preferred choice of alcohol (n=161)

Reason	Study (n= 161)		Stellenbosch (n= 45)		Vredendal (n= 116)	
	No.	% 95%CI	No.	% 95%CI	No.	% 95%CI
Cheap	97	60.3% 52.0-68.0	36	80.0 67.6-88.5	61	52.6 43.3-61.7
Taste	40	24.8% 18.4-32.7	5	11.1 6.2-19.2	35	30.2 22.0-39.9
Easily available	13	8.1 4.8-13.3	4	8.9 3.1-23.2	9	7.8 4.3-13.5
Quality	6	3.7 1.4-9.9	0	--	6	5.2 1.9-13.3
"To forget ones problems"	2	1.24 0.3-4.9	0	--	2	1.7 0.4-6.7
No reason given	3	1.9 0.6-5.6	0	--	3	2.6 0.9-7.6

Table 18b. Reasons given for beer being the preferred choice of alcohol (n=122)

Reason	Study (n= 122)		Stellenbosch (n= 100)		Vredendal (n= 22)	
	No.	% 95%CI	No.	% 95%CI	No.	% 95%CI
Cheap	28	23.0% 15.5-32.7	23	23.0% 14.7-34.1	5	22.7% 9.1-46.3
Taste	51	41.8% 32.1-52.2	39	39.0% 28.4-50.8	12	54.6% 33.2-74.4
Easily available	11	9.0% 5.2-15.3	10	10.0% 5.6-17.1	1	4.6% 0.6-26.6
Quality	22	18.0% 10.5-29.2	19	19.0% 10.4-32.2	3	13.6% 5.5-34.9
Well marketed	2	1.6% 0.4-6.3	1	1.0% 0.1-6.7	1	4.6% 0.7-24.6
Doesn't make one drunk	2	1.6% 0.4-6.5	2	2.0% 0.5-7.9	0	--
No reason given	6	4.92% 1.41-15.8	6	6.0% 1.7-18.9	0	--

The majority of papsak drinkers (60.3%) gave low price as their reason for preferred papsak consumption and significantly more respondents in Stellenbosch gave this reason than in Vredendal (cheap versus all other reasons, $p < 0.001$). A quarter of papsak drinkers gave taste as their main reason, a reason given by more Vredendal drinkers than Stellenbosch ones ($p = 0.002$ when dichotomised to taste versus the remainder).

In contrast 41.8% of beer drinkers gave taste as their reason for preferring beer and only 23.0% cited the cheap price thereof (Table 18b). Beer drinkers were 4.4 times (95% CI: 2.2-9.0, $p < 0.001$) more likely than papsak drinkers to cite taste rather than price as the reason for their preferred alcohol when adjusting for all other reasons.

Lower socio-economic status predicted preferred papsak consumption (Table 13) yet a greater proportion of papsak drinkers in Stellenbosch, which is by all accounts a wealthier area than Vredendal, cited cheap price as their reason for preferring papsak. To further explore the choice of alcohol based on cheap price a model exploring all observations for beer and papsak drinkers was constructed (as per the methodology on pages 23 and 24). However, for brevity only the adjusted odds ratios obtained from the best-fit model and the respective unadjusted odds ratios are reported in Table 19.

Table 19. Unadjusted and adjusted odds ratios for basing alcohol choice on the cheapness of the product (n=283, beer and papsak drinkers only)

Risk factor (n)	Unadjusted odds ratios			Adjusted odds ratios*		
	OR	95% CI	p	OR	95% CI	p
Papsak preferred (161)	5.1	2.8-9.3	<0.001	8.0	3.6-17.5	<0.001
Asset score <2 (171)	2.3	1.3-3.9	0.003	2.2	1.2-4.1	0.013
Male (221)	2.1	1.2-3.8	0.015	1.9	1.0-3.6	0.065
Living in Stellenbosch (145)	0.7	0.5-1.2	0.260	3.0	1.4-6.4	0.005
Increasing no. of adults in household	1.1	0.9-1.3	0.269	1.3	1.0-1.7	0.041

* the adjusted odds ratios were obtained from the best fit model as outlined in Steps 3 to 7 on pages 23 and 24

The adjusted odds ratio shows that papsak drinkers were 8 times (95% CI: 3.6-17.5, $p < 0.001$) more likely than beer drinkers to report choosing their preferred alcohol

because it was cheap versus all other reasons (and no reason) given. Papsak drinkers clearly attribute a great deal of importance to the cheap price of their preferred product. Poverty, as indicated by an asset score of 0 or 1 was associated with 2.2 (95% CI: 1.9-4.1, $p=0.013$) times greater odds of choosing ones alcohol based on the cheap price thereof. The unadjusted odds ratio for area was not significant but when adjusted, living in Stellenbosch predicted cheap price being the reason for one's alcohol choice by 3 times more than living in Vredendal (95% CI: 1.4-6.4, $p=0.005$). A farm worker in Stellenbosch with the same socio-economic status as one in Vredendal is by comparison poorer as they are surrounded by better off farm workers and households. Thus, the findings may be explained by relative poverty because, in Vredendal poverty is more pervasive and therefore price doesn't seem as obvious to the individual farm worker as being the reason for choosing ones alcohol.

The unadjusted odds ratio for an increasing number of adults in the house was not significant whereas the adjusted odds ratio was. One more adult in the house was associated with a 10% increased chance (95% CI: 0-70, $p=0.041$) of giving cheap price compared to all other reasons as the reason for ones alcohol choice. This may suggest that when purchasing alcohol drinkers are aware of the cost of sharing their alcohol with other adults in the household. By the same token an increasing number of children in the household was not significant perhaps suggesting that the awareness of the financial needs of children are less apparent when purchasing alcohol.

Less than 5% of papsak drinkers gave the quality of the product as their reason for their choice and none of these respondents were from Stellenbosch (Table 16a). In contrast a substantial proportion of beer drinkers (18.0%) felt that the quality of beer was the reason why it was their preferred alcohol choice; they were 5.7 (95% CI: 1.7-18.8, $p=0.005$) times more likely to report choosing their drink on the basis of quality

compared to papsak drinkers. Papsak consumers were clearly under no illusion that their preferred choice of alcohol was of good quality.

A low and comparable proportion of papsak and beer drinkers cited easy availability as the reason for their preferred choice of alcoholic beverage, 8.07% and 9.02% respectively ($p=0.759$). Furthermore, amongst the subpopulation of papsak drinkers there was no difference ($p=0.818$) between the proportions of drinkers in Vredendal compared to Stellenbosch who gave this reason. Assuming that there is easier access to papsak in Vredendal, individuals may not be aware of the extent to which easy access and availability influence their choice of alcohol.

Marketing of the product did not feature as an important reason for alcohol choice. Notably no respondents volunteered that papsak was their preferred choice of alcohol because it was easy to transport –the explanation given for the local evolution from cask wine to papsakke (Hopkins 2001; NAMC 2002).

4.8.2 Sources of papsak

Papsak drinkers were asked where they obtained their wine and not specifically whether or not it was purchased.

The majority of respondents (63.8%) obtained papsak from liquor stores (Table 20). Shebeens, some of which may have been legalised, were the next most frequent source (15.6%) indicating that most farm workers purchase papsak from the regulated industry. As with any commercial alcohol, papsak purchased from liquor stores is cheaper than that purchased from shebeens (Henn et al. 2005; NAMC 2002) and bars providing some explanation for the preponderance of liquor store clientele.

Table 20. Usual sources of papsak (n=160*)

Source	Study (n= 160)		Stellenbosch (n= 45)		Vredendal (n= 115)	
	No.	% 95% CI	No.	% 95% CI	No.	% 95% CI
Liquor store	102	63.8 52.1-74.0	21	46.7 28.9-65.3	81	70.4 57.4-80.8
Shebeen	25	15.6 9.1-25.6	13	28.9 12.7-53.1	12	10.4 5.9-17.9
Cellar	5	3.1 0.8-11.1	0	—	5	4.6 1.2-15.1
Shop	9	5.6 2.4-12.5	2	4.4 1.1-16.2	7	6.1 2.2-15.5
Farmer (employer)	3	1.9 0.4-8.2	0	—	3	2.6 0.6-11.3
Friends	1	0.6 0-4.58	0	—	1	0.9 0.1-6.3
No source recorded	15	9.4 5.1-16.6	9	20.0 8.7-39.7	6	5.2 2.3-11.5

*1 missing response

However, there appears to be a greater patronage of liquor stores in Vredendal compared to Stellenbosch (Table 20). An unadjusted analysis comparing legal (liquor store and cellar) compared to illegal and possibly illegal (shebeen, shop, farmer and no source given) sources showed that farm workers in Vredendal were 3.3 times (95% CI: 1.2-8.7, $p=0.018$) more likely to obtain papsak from legitimate distributors compared to possibly illegal ones when compared to farm workers in Stellenbosch. It appears that in the region where large volumes of papsak are produced (NAMC 2002) it is more likely to be distributed via legitimate means compared to Stellenbosch where this seems less likely. The negative image of papsakke may mean that less liquor stores in Stellenbosch stock it.

No information was obtained regarding the prevalence of liquor stores and shebeens in the study areas. Three farm workers (from 2 farms) obtained wine from the farmer however the details of the exchange were not explored further.

4.8.3 Venues where papsak is drunk

Just over three quarters (77%; 95% CI: 66.1-85.2) of papsak drinkers usually drank at home (Table 21) suggesting that the majority of papsak drinkers purchase papsak from liquor stores or shebeens for consumption at home. In Stellenbosch 29% of papsak drinkers indicated that they purchased papsak from shebeens yet none drank it there.

Table 21. Where people usually drink papsak (n=161)

Venue	Study (n= 161)			Stellenbosch (n= 45)			Vredendal (n=116)		
	No.	%	95% CI	No.	%	95% CI	No.	%	95% CI
At home	124	77.0	66.1-85.2	31	68.9	50.4-82.9	93	80.2	66.4-89.2
Bar	8	5.0	2.5-9.7	5	11.1	4.7-24.2	3	2.6	0.8-7.7
Shebeen	2	1.2	0.3-5.0	0	—	—	2	1.7	0.4-6.8
Friend's house	7	4.4	2.0-9.4	4	8.9	3.1-23.2	3	2.6	0.9-7.5
No preference	20	12.4	6.3-23.1	5	11.1	4.9-23.2	15	12.9	5.4-28.0

4.8.4 Drinking companions

Table 22. With whom people usually drink papsak

Usual drinking companion	Study (n= 161)			Stellenbosch (n= 45)			Vredendal (n=116)		
	No.	%	95% CI	No.	%	95% CI	No.	%	95% CI
Alone	41	25.5	19.0-33.2	7	15.6	8.1-27.7	34	29.3	21.7-38.3
With friends	60	37.3	30.7-44.4	20	44.4	31.1-58.6	40	34.5	27.4-42.3
With strangers	1	0.6	0-4.7	1	2.2	0.3-15.9	0	—	—
With family/spouse	30	18.6	12.9-26.2	5	11.1	5.0-22.8	25	21.6	14.4-31.0
No preference	29	18.0	10.8-28.4	12	26.7	12.2-48.8	17	14.7	7.6-26.3

A quarter (95% CI: 19.0-33.2) of papsak drinkers drank alone (Table 22). Just over half (56%) drank with a family member, spouse or in a group. However, this proportion could be higher as no preference was recorded for 18% of respondents. Being married predicted preferred papsak consumption, however, among papsak drinkers no

association was found between being married and drinking with a spouse or family member in the same household ($p=0.309$) in bivariate analysis.

University of Cape Town

CHAPTER FIVE

DISCUSSION

5.1 Generalisability of the results

The study population was farm workers resident on predominantly wine grape producing farms in the Western Cape. It did not include “off-farm” labour such as contract workers. This does not affect inferences made regarding the study population but it does mean that generalisations to the entire farm worker population need to be qualified.

By virtue of the respondents in this study being resident on a farm, at least one person in the household was probably permanently employed on the farm. Despite this a third of households lacked all of the commodities investigated in this study. The other measures of socio-economic status point to limited disposable income for the purchase of commodities or alcohol. Over 90% of farm workers were employed as labourers, which are low paying jobs (Barrientos and Kritzing 2003) and almost three quarters received weekly wages, a quarter lived in households where someone received state financial aid.

In Stellenbosch in 1998 a similar number of households owned a fridge and television but only 11.7% had access to a telephone in the home compared to 43% in 2004. The lack of telephones in the rural areas has been included in measures of deprivation (McIntyre et al. 2002) therefore this increase in household access to a phone may indicate an improvement in the living standards of permanently employed farm workers. It may also reflect the growth of the cell phone industry.

5.2 Limitations

Permission to interview farm workers on a small number of farms was denied by the farmer. Reasons could have included that there were practices relating to alcohol, labour or just general conditions on the farms which the farmer did not want researched. That a form of the dop system was practiced on the non-participating farms cannot be excluded. Farms from Vredendal were slightly under represented due to missing data on 5 farms, however, the overall response rate was high and the significance of the impact of these selection biases was probably negligible.

Lack of data on personal and household income has resulted in the reliance on the asset score in this study as the main measure of socio-economic status.

The results showed a number of socio-economic and demographic differences between farm workers in Stellenbosch and Vredendal. Workers in Vredendal were concluded to be poorer than those in Stellenbosch in absolute terms based on the measures used in this study. However, the cost of living in Stellenbosch is higher than that of Vredendal. Similarly, wine grape production costs in Stellenbosch exceed those in Vredendal (SAWIS 2005). An adjustment to the asset score to take into account the differences in the cost of living reduces the absolute difference in socio-economic status between Stellenbosch and Vredendal and increases the magnitude of odds ratio between living in Vredendal compared to Stellenbosch and preferred papsak consumption. In other words failure to take into account the differences in the cost of living in the study areas has resulted in an underestimation of the increased likelihood of a farm worker preferring papsak if he or she lives near a papsak producer.

5.3 Alcohol consumption, papsak consumption and problem drinking

The high prevalence of alcohol consumption (69%) was expected given similar results from earlier studies (London et al. 1997; Te WaterNaude et al. 2000). The risk factor analysis for current drinking revealed that increasing poverty as measured by an asset score is independently associated with alcohol consumption. Therefore amongst marginalised, low-income earners, it appears that those who are poorer still are more likely to drink alcohol; thus corroborating findings of an association between poverty and alcohol consumption amongst farm workers (De Kock 2002; London et al. 1998a). Men are only marginally (OR 1.7; 95% CI: 1.0-2.9) more likely than women to be current drinkers which highlights the high prevalence of alcohol consumption amongst female farm workers. In contrast to the population of the Western Province where 41.4% of men and 13.2% of women were estimated to be current drinkers (Parry et al. 2005), amongst farm workers the estimates are 71.5% of men and 61.4% of women for current drinking.

A very high proportion (50.6%) of farm workers in the Western Cape who are current drinkers prefer papsak. This appears to be the highest prevalence of preferred papsak reported in any community so far (Henn et al. 2005; NAMC 2002). Papsak is preferred because it is cheap. The next most preferred alcohol is beer (38.4%) which is drunk for the taste. Most papsak is purchased from liquor stores for drinking at home. Farm workers are therefore an important market for papsak within the regulated liquor industry.

Increasing poverty, living in Vredendal, increasing age, being married and being Coloured compared to African predict preferred papsak consumption amongst farm workers. Papsak is the preferred alcohol of the very poor – over and above the fact that farm workers are poor and that increasing poverty predicts alcohol consumption. This

finding is likely true of many other deprived and marginalised communities (NAMC 2002). Restrictive interventions on papsakke will therefore impact directly on the poor. However, the nature of the impact could be to plunge households into further poverty if alcohol dependent drinkers simply spend more money to obtain alcohol. A similar situation was described when farm workers were deprived of the dop system (London et al. 1998b) highlighting again the need for “social alternatives to alcohol and support systems for cessation” (London et al. 1998b, p1094) amongst farm workers. Impending restrictions on papsakke may therefore add impetus to interventions which are more treatment oriented.

The association between preferred papsak consumption and living in Vredendal (OR 6.6; 95% CI: 3.0-14.7), which is by all accounts a centre of papsak production, provides evidence for a hypothesis that easy access to papsak leads to a preference for papsak consumption over and above the influence of poverty. Different distribution channels in Vredendal and Stellenbosch were described with papsak distributed via more legitimate channels in Vredendal. A “cascade effect” may operate in areas near to where papsak is produced – a local industry producing papsak leads to more local liquor stores stocking it and consequently more local farm workers (and other low income or unemployed people) buying it. However, consumers may not be aware that this increased availability influences their alcohol choice, as similarly low proportions of both Stellenbosch (10.0%) and Vredendal (4.6%) respondents gave easy availability as their reason for preferring papsak.

The association with papsak consumption and increasing age, being married and being Coloured versus being African add to the picture of the legacy of the dop system and apartheid and the social and cultural space within which alcohol is consumed amongst farm workers. The markers of socio-economic status in this study were not associated

with 'population groups', and both decreasing socio-economic status and being Coloured compared to being African independently predicted preferred papsak consumption. Historically it was mainly Coloured farm workers who were exposed to low quality white wine; the impact of this is demonstrated in the risk factor analysis.

Reference has been made to the prominence and place of group drinking in farm worker culture (De Kock 2002; London 1999b) and to the features of papsak that may fuel patterns of heavy and or/communal drinking. The study found evidence to support group drinking – at least 56% of papsak drinkers drank with friends, a family member or spouse. Being married was a risk factor for preferred papsak consumption (OR 2.2; 95% CI: 1.2-4.0), however no association was found between being married and drinking with a spouse. Although both partners may drink papsak this does not mean that they usually drink together. In fact, there are accounts that for reasons of physical safety partners may deliberately choose to drink apart (De Kock 2002).

Younger people (under 35 years), who were less likely to have had direct exposure to the dop system, seem to favour more fashionable alcohol whereas older farm workers prefer papsak. The change in prevalence of preferred papsak consumption at this age is dramatic and a cohort effect could be operating. Over time, as fewer farm workers take up drinking papsak the market amongst farm workers (but probably not that of other marginalised communities) could decrease. The association between papsak consumption and age links in with previous research which found that whilst older farm workers drank in a ritualistic manner to temporarily escape their circumstances, younger people on farms drank out of boredom (De Kock 2002). This interpretation may signal an additional opportunity to reorientate the drinking context amongst the youth and facilitate a fundamental shift with regards to the role of alcohol use on farms and by farm workers.

Further interpretation of the results suggests that community level interventions need to be effective within the home as this is where papsak is mostly drunk. They also need to address the dynamics of group drinking, and to consider specific interventions to target couples. Interventions in these areas may pose specific challenges to Farm Health Workers who are key agents of community level interventions (HST 2003) but at the same time subject to the conditions and power inequities of farm life (du Toit 1992; Hall 2003; Waldman 1994).

Almost three quarters (95% CI: 65.5-79.3) of current drinkers are CAGE positive. The prevalence for men is slightly higher but the upper limit of the 95% confidence interval (80.7%) is still less than the 87% found a decade previously amongst fruit farm workers (London et al. 1997). The result may reflect the impact of the eradication of the dop system and other community level interventions. However, the results point to a considerable possible burden of alcohol abuse and dependence which has implications for the health services. Previous research has found that alcohol related research, interventions and resources tend to be concentrated in urban areas in South Africa (Myers et al. 2004) and public health interventions usually focus on primary prevention strategies. However, programmes focussing on the identification and treatment of alcohol problems may be more appropriate amongst farm workers and have secondary consequences for prevention in a similar way as anti-retroviral treatment programmes have had in the overall management of HIV and AIDS (Levy et al. 2005).

Further analogies with HIV and AIDS are possible; the transmission of HIV from mother to child bears a resemblance to FAS which is also "transmitted" in-utero despite not being an infectious disease. This study found that 41.2% (95% CI: 30.6-52.8) of all female farm workers are potentially alcohol dependent; in order for alcohol dependent women to abstain from alcohol when pregnant they need effective treatment. However,

the true prevalence of alcohol dependence amongst female farm workers is likely to be much lower than the CAGE would suggest, in addition, it is heavy episodic drinking and not alcohol dependence which has been shown to be a risk factor for FAS amongst mothers in the rural Western Cape.

The central finding of this study is that preferred papsak consumption is a risk factor for a positive CAGE test. Papsak drinkers are 2.8 times (95% CI: 1.4-5.5) times more likely than drinkers of other alcohol types to screen positive for alcohol abuse or dependence when adjusting for significant socio-economic variables, namely, employer provided housing and non-labourer occupations. The latter were found to be negatively associated with a positive CAGE test. Over 80% of papsak drinkers had a positive CAGE test compared to 62.3% who preferred beer.

5.4 Causality in the context of a prevalence study

This study was a cross sectional study and the results can lead to a hypothesis regarding causation, however, it be simplistic to suggest that preferred papsak consumption causes alcohol abuse or alcohol dependence more so than other alcohol types.

Rothman and Greenland (1998, pp.24-28) explain in their discussion of the criteria for causation proposed by Hill that "there is no necessary or sufficient criterion for determining whether an observed association is causal", nevertheless, a discussion of a hypothesis of a possible sequential and causal relationship between papsak access, preferred consumption and alcohol dependence is presented based on their critique.

The study showed a strong association between access to papsak and preferred papsak consumption (OR 6.6; 95% CI 3.0-14.7), and preferred papsak consumption and problem drinking (OR 2.8; 95% CI: 1.4-5.5), strength of association being a criterion for

causality. A number of potential confounders were explored and there is no reason why in this study the validity of the CAGE test should be different in papsak drinkers and those who prefer other alcohol types. The limited research available on papsakke and on similar products in other countries is consistent with an association between papsakke and problem drinking (De Kock 2002; Henn et al. 2005; NAMC 2002; Stockwell et al. 2001).

Temporality is a useful criterion in a cause-effect analysis (Rothman and Greenland 1998). Historically, easy access to cheap white wine preceded a preference for wine and problem drinking among farm labourers; there is no evidence to suggest that dop system merely capitalised on a pre-existing alcohol dependence amongst indigenous communities. Whilst the dop system enabled easy (institutionalised) access to low quality wine which led to drinking problems at a community level, it is debatable as to how “transportable” this view of temporality is to an individual farm worker in the present.

More recently wine gluts (NAMC 2002), the growth of the papsak industry and the accessibility of the product (by virtue of cheap packaging such as foil bags and cheap plastic packaging) have made papsakke increasingly available, accessible and affordable. Added are the physical features of papsak – the low price, high volume, high alcohol content (around 12%, compared to that of beer which is around 5%) and at times lack of a closable tap – which all point towards facilitating heavy drinking. This gives social plausibility to the hypothesis.

There was insufficient volume and frequency data available from this study to explore a dose-response relationship although the absence of a biologic gradient does not weaken the case for preferred papsak consumption causing problem drinking.

There is no experimental evidence to support the hypothesis although, by analogy, restrictions on cask wine in Australia were shown to reduce problem drinking outcomes (Stockwell et al. 2001). One can suggest that the cascade effect described previously incorporates elements of the criteria of plausibility, dose-response and experimental evidence (in as much as Stellenbosch would represent the control group) to support a hypothesis that proximity to a papsak producer leads to more easily available papsakke (more visible and possibly cheaper), an increased preference for drinking papsakke and the combination of entrenched drinking patterns and papsak preference causes problem drinking more so than with, for example, beer.

Evidence to refute the hypothesis would centre on the (undisputed) fact that it is the alcohol molecule that is the necessary cause for alcohol dependence and that a papsak is merely an excipient. Counter arguments would include that low-income, alcohol dependent farm workers drink papsak as it's the most affordable alcohol available, although interestingly, this study did not find an association between increasing poverty and a positive CAGE test.

Finally, this discussion should not imply that farm workers who prefer beer are not at risk for problem drinking. Beer drinkers, though possibly protected by a slightly higher socio-economic position still have a very high CAGE positive prevalence and have been subject to the same social forces as papsak drinkers.

5.5 Farm workers other than labourers: transformation and gender issues

Around 5% of farm workers we employed in "non-labourer" positions. This group had interesting features in the risk factor analysis. They were more likely to report current drinking (OR 7.2; 95% CI: 1.5-34.8) but less likely to return a positive CAGE test (OR 0.2; 95% CI: 0.1-0.5) when compared to labourers. At the exclusion of the

domestic workers one would assume that this group were socio-economically better off than labourers as the list included a number of “higher level” occupations. However, there was no association between this group and asset score. Women, particularly African women were over represented in this group but it is unclear whether these findings are relevant to transformation in the wine industry.

This group may deserve further study as their drinking patterns and choices may be relevant to community and farm level interventions to empower people to make healthier drinking choices.

This study found no association between gender and payment frequency, unemployment or the asset score. In the absence of more detailed personal income information, the markers of poverty in this study suggested that female farm workers were no worse off than males. However, the key measure of socio-economic status in this study was the asset score which was a household level variable. Recent studies demonstrate a continued genderisation of payment for farm workers – where permanently employed women are paid less than seasonally or contractually employed men (Barrientos and Kritzing 2003).

5.6 State grants

There are anecdotal reports of increased and excessive liquor consumption among farm workers on days when state grants are received (Henn et al. 2005), whilst this study cannot refute these reports, receipt of a state grant by someone in the household was not associated with current drinking, preferred papsak consumption or a positive CAGE test. The lack of an association may be analogous to the findings of recent research on child support grants. Soon after introduction of the grants it was suggested that young women were conceiving in order to benefit from the grant but research has

failed to support these claims (Department of Social Development 2006; Moultrie 2007).

Whilst a quarter of households had at least one grant recipient, poorer households were less likely to report grant receipt. If poverty is a barrier to obtaining a grant this has implications for the households of contract and off-farm seasonal workers who may need additional assistance from community organisations to obtain grants.

5.7 Structural changes in agriculture

The unemployment figure of less than 1% perhaps quantifies one of the peculiarities of land tenure in the agricultural sector, although now within a framework of protective legislation (Collinson 2001; Ewert and du Toit 2005; Hall 2003), effectively only people employed on farms obtain consent to live on farms. It follows that there may even have been under reporting of unemployment in this study.

Research in 1998 Stellenbosch area found an average of 11 households per farm (L London 2006, personal communication, 17 September) with a median of 5 (IQR 4-6) people per household (Abie 2007). This study found a median of 6 households per farm and 5 (IQR 3-6) people per household in Stellenbosch. Therefore over the 6 years between the surveys there is evidence of a reduction in the number of households per farm but not in the size of the households. This result is consistent with evidence that some farmers are shrinking their permanent (on-farm) workforce in favour of contract labour (du Toit and Ally 2003) in response to, amongst other factors, legislative reforms, deregulation and global economic pressures (Barrientos and Kritzing 2003; Ewert and du Toit 2005).

A third of farm workers, and significantly more in Stellenbosch (40.7%) compared to Vredendal (23.3%), indicated that they lived in employer provided housing. They were 70% less likely to be CAGE positive compared to those who lived in rented housing (95% CI: 30-90%) and there was a weak association ($p=0.087$) between employer provided housing and a higher asset score. Whereas in a paternalistic and exploitative labour system (du Toit 1992) employer provided housing may have been a marker for poverty (De Kock 2002) it may now be associated with improved conditions and associated health outcomes for farm workers. Whether housing is provided for by the employer or rented is essentially one of perception by the employee and inspection of the individual data shows that farm workers on the same farms gave different answers to this question.

A shift towards casualisation of the farm workforce may result in “off-farm” labour becoming further marginalised not only through a lack of employer investment but because they fall outside of some protective legislation (du Toit and Ally 2003; Ewer and du Toit 2005). This group appear less researched because they are less accessible. It follows that they have less access to resources and may be more at risk of the negative impacts of alcohol use.

5.8 Restrictions on papsakke and other interventions

Much of the debate around banning papsakke does not recognise that a lot of cheap white wine is already sold outside of the law – by virtue of not adhering to labelling requirements, or the contents not meeting minimum standards, or because the distribution channels are illegal. An important question is whether any further restrictions on papsakke are enforceable both from within the industry and by the authorities.

The paradoxical effect of papsak restrictions worsening the position of poor farm workers has been discussed. At the same time farm workers may turn to increased use of home brews with additional health risks and increase in the unregulated trade in alcohol (an extensive infrastructure for the latter already exists). Paying more for a better product could however, encourage responsible drinking in the longer term if combined with effective education and other measures. A public health perspective recognises that measures to effectively address poverty amongst farm workers and other users of papsakke are critical.

In his analysis of the prohibition of alcohol in the United States (1920-1933) Thornton (2001, p.1) argues that “the prohibition of mutually beneficial exchanges is doomed to failure”. From a historical and contemporary perspective the trade in papsakke is not mutually beneficial: the producers profit whilst the consumers (who gain temporary enjoyment) do not; neither do their dependants (De Kock 2002). Features of the papsak trade are reminiscent of the dop system, namely, the ease of availability of low quality wine, the “dumping” of low quality wine on the poor and the entrapping of farm workers in a mix of poverty and problem drinking.

The high response rate in this study suggests an ongoing willingness amongst farm workers, owners and managers to address problems related to alcohol use on farms. It also points to support for the role of the Dopstop Association to this end. There was no objective in this study to investigate the ongoing practice of the dop system, however, if the less than 3% prevalence found in this study is a true reflection it points to the success of interventions to eradicate it.

5.9 Monitoring

There are challenges to monitoring the effectiveness of papsak and other alcohol related interventions amongst farm workers. For example, the removal of papsakke from the market will automatically increase the prevalence of problem drinkers who drink beer and home brews, and this will apply in every community where papsak wine is currently drunk.

Over and above the limitations noted with regards to the validity of the CAGE questionnaire, it probably has limited value in follow up studies because it measures a lifetime of potential problem drinking using questions that begin “have you ever?”

There appears to be scope for community level organisations to explore measures of problem drinking and socio-economic status that can be used in follow up studies amongst farm workers.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study has shown a high prevalence of alcohol consumption (69%), a high prevalence of preferred papsak consumption (50.6% of current drinkers) and a high prevalence of CAGE positive drinkers (73%). There was no gender difference for the CAGE test.

The risk factors for alcohol consumption amongst farm workers were identified as: increasing poverty and being male whilst being employed in a position other than a labourer was found to be protective. The risk factors for preferred papsak consumption amongst current drinkers were: increasing age, being married, living near Vredendal (a centre of papsak production), and increasing poverty. Coloured compared to African farm workers were more likely to have reported preferred papsak consumption. Finally the risk factors for potential problem drinking were preferred papsak consumption whilst employment other than as a labourer and housing provided by the employer were found to be protective. There is some evidence that employer investment is associated with improved health outcomes amongst farm workers.

The interpretation has led to a hypothesis that proximity to a papsak producer leads to more easily available papsak and an increased preference for drinking papsak, the combination of entrenched drinking patterns amongst farm workers and a preference for papsak result in problem drinking more so than when farm workers prefer other alcohol types.

Identifying and treating current problem drinkers may impact positively on prevention strategies.

6.2 Recommendations

Tighter legislation regarding papsakke should be in the context of (1) effective developmental interventions (2) effective upholding of existing regulations applicable to the industry and (3) pre-emptive community level interventions directed at people who are currently papsak drinkers.

Further consideration should be paid to the screening of farm workers, and particularly papsak drinkers, for possible alcohol abuse or dependence with more attention paid to therapeutic interventions.

Research on alcohol use amongst contract and other off-farm agricultural workers may be indicated as these appear to be becoming a particularly marginalised group.

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APPENDIX 1

DSM Criteria for Alcohol Dependence

A pattern of use which leads to clinically significant impairment or distress, as manifested by three (or more) of the following in a 12-month period:

- Tolerance – needing more alcohol to achieve intoxication or the desired effect
- Withdrawal – evidence of a withdrawal syndrome in the absence of alcohol
- Alcohol taken in larger amounts or over longer periods than was intended
- A persistent desire or unsuccessful attempts to cut down alcohol use
- A great deal of time spent obtaining alcohol or recovering from its effects
- Important activities (social, occupational or recreational) given up or reduced because of alcohol
- Alcohol use is continued despite its negative effects

DSMIV Criteria for Alcohol Abuse

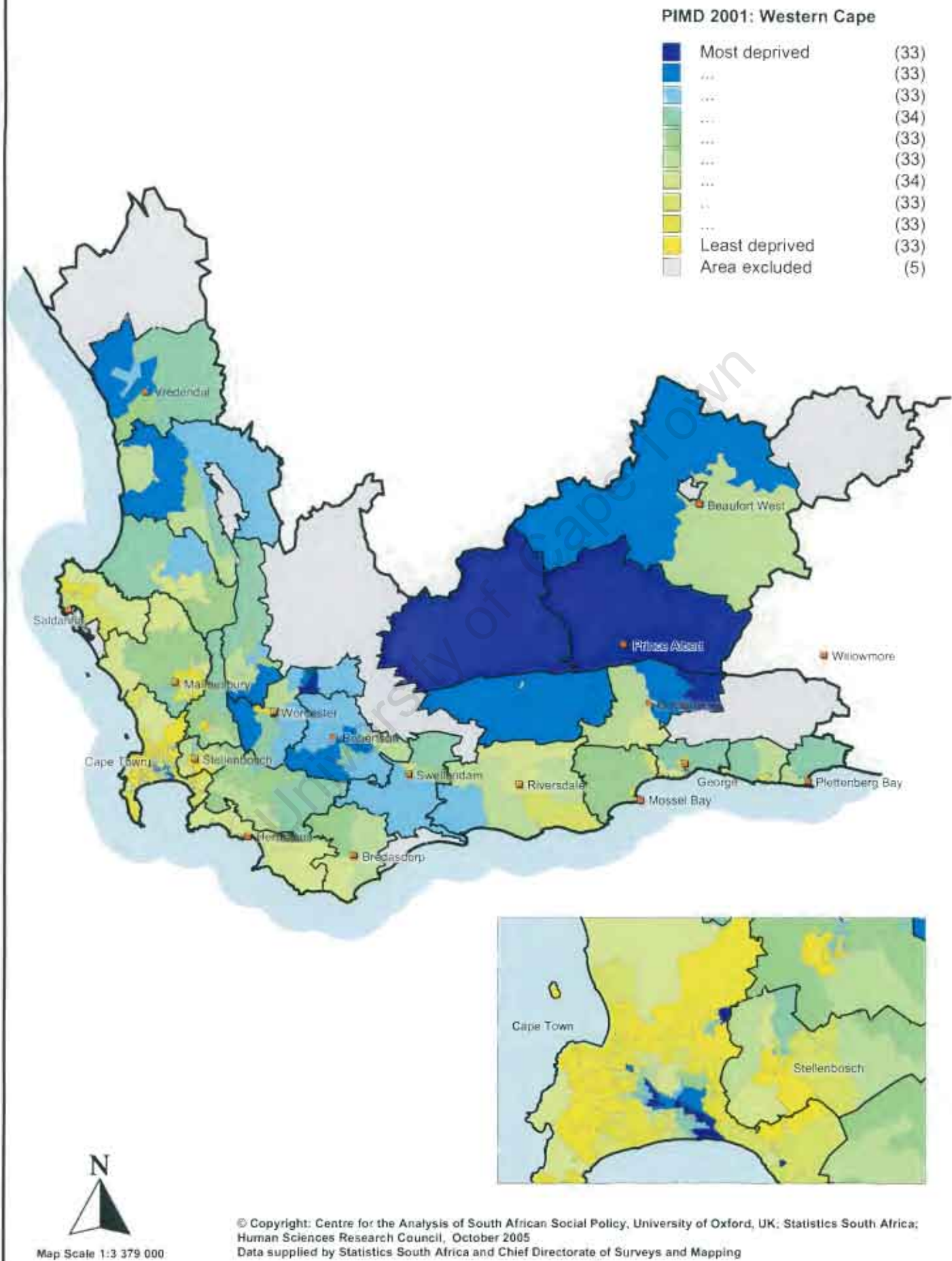
A pattern of use which leads to clinically significant impairment or distress, as manifested by three (or more) of the following in a 12-month period:

- Recurrent alcohol use results in a failure to fulfil major role obligations at home, school or work
- Alcohol is used in situations in which it is physically hazardous (e.g. driving a car)
- Recurrent alcohol use leads to legal problem (e.g. drunken driving)
- Continued alcohol use despite persistent or recurrent social or interpersonal problems caused or exacerbated by alcohol

Reference:

Wilson, D. (1999) Routine screening tests for alcoholism. *S Afr Med J*, 89, pp 949-951.

Map 1 - Western Cape Index of Multiple Deprivation 2001 at Ward Level
Provincial Deciles



APPENDIX 3

GROOTMAAT ALKOHOL STUDIE VRAELYS: VERBRUIKERS

I: Grootmaat alkohol word gedefinieer as 5lt, 2lt, 1lt, 500ml plastiek en karton bousers en plastiek foelie sak sonder karton

I: Respondent moet 18 of ouer wees

Datum: _____ Onderhoudvoerder naam: _____

Time: _____

Area: Stellenbosch / Franschhoek: ☐ Vredendal: ☐

Plaas / verspreider / area: _____

Demografiese inligting:

(1) Hoe oud is u?

(2) Hoeveel grootmense en kinders (onder 18 jaar) is in u huishouding?

Grootmense	
Kinders	

(3) Geslag

Manlik	
Vroulik	

(4) Tot watter populasie groep behoort u?

Wit	
Asiër	
Kleurling	
Swart	
Ander: Spesifiseer	

(5) Wat doen u?

Skolier	
Têrsiere onderrig	
Profesioneel	
Arbeider	
Werkloos	
Ander: Spesifiseer	

(6) Behuising

Besit u die huis waarin u woon?	
Huur u die huis waarin u bly?	
Ander: Spesifiseer	

(7) Wat is u huwelikstatus?

Ongetroud	
Getroud / bly saam	

Nie van toepassing	
--------------------	--

Inkomste:

(8) Hoe word u betaal?

Weekliks	
Tweeweekliks	
Maandeliks	
Ander	
Geen inkomste	

Indien die respondente 'n inkomste verdien,

(8.1) Hoveel word u betaal?

Rand

0 - 399	
400 - 999	
1000 - 1999	
Meer as 2000	

(8.2) Hoeveel word per maand in hierdie huishouding verdien?

Rand

0 - 499	
500 - 999	
1000 -1999	
Meer as 2000	
Weet nie	

(9) Kry enige persoon 'n pensioen of grant in u huishouding?

Ja	
Nee	
Weet nie	

(9.1) Indien ja, watter tipe grant en hoeveel mense ontvang dit?

Hoeveel mense

Oudersoms pensioen	
Ongeskikheids toelaag	
Kinder toelaag	
Ander: Spesifiseer	

(10) Besit u familie die volgende?

	Ja	Nee	Weet nie
'n Lopende motor			
TV			
Yskas			
Telefoon / sellfoon			

(11) Wanneer het u enige alkohol gedrink?

In die laaste maand (30 dae)	
In die laaste jaar, maar meer as 'n maand gelede	
Meer as 'n jaar gelede	
Nooit	

Indien ja vir “drink in die laaste jaar of in die laaste 30 dae”, gaan voort met vraag (12), indien nee gaan na vraag 31.

(12)Watter tipe alkoholiese drankies drink u?

I: Kan meer as een merk

Bier	
Ciders (Savannah, Reds)	
Spirits (Vodka, Brandy)	
Wyn – gebottleerd	
Wyn – karton	
Wyn – papsak (of plastiek kan of maxi of 1lt plastic)	
Wyn – tuisgemaak	
Ander: Spesifiseer	

Indien die respondēt NIE papsak wyn drink nie:

(12.1) Waarom drink u nie papsak wyn nie?

(13) Watter tipe alkoholise drankies drink u die MEESTE?

Bier	
Ciders (Savannah, Reds)	
Spirits (Vodka, Brandy)	
Wyn – gebottleerd	
Wyn – karton	
Wyn – papsak (of plastiek kan of maxi of 1lt plastic)	
Wyn – tuisgemaak	
Ander: Spesifiseer	

(14)Waarom is / was dit u gunsteling drankie?

Omdat dit goedkoop is	
Vir die smaak	
Omdat dit maklik beskikbaar is	
Vir die kwaliteit	
Omdat goed bemark word	

(15)Hoeveel het u in die laaste week gedrink?

I: BAIE BELANGRIK: gebruik die foto's (prente) om die groote van die bouer en die presiese getal wat gedrink is aan te dui, skryf die nommer en die groote van die bouer neer.

Tipe alkohol

Die getal gedrink in die laaste week

Bier	
Ciders (Savannah, Reds)	
Spirits (Vodka, Brandy)	
Wyn – gebottleerd	

Wyn – karton	
Wyn – papsak (of plastiek kan of maxi of 1lt plastic)	
Wyn – tuisgemaak	
Ander: Spesifiseer	

(16) Moet u u eie houer bring wanneer u goedkoop wyn koop?

Ja	
Nee	

(16.1) Indien ja, is die wyn verskillend van normale geseëde papsak wyn?

Geen verkil	
Proe verkillend	
Lyk verskillend	
Ruik verskillend	
Ander: Spesifiseer	

(17) Hoe betaal u vir u alkohol?

Kontant	
Krediet (teken)	
Verruil (bottels)	

(18) Het u al ooit gevoel dat u minder moet drink?

Ja	
Nee	
Weet nie	

(19) Het mense u al geïriteer deur u drankgewoontes te kritiseer?

Ja	
Nee	
Weet nie	

(20) Het u al skuldig gevoel oor u drankgewoontes

Ja	
Nee	
Weet nie	

(21) Het u al ooit 'n drankie in die oggend gehad om u senuwees te kalmeer of om oor 'n babelas te kom?

I: Somtyds voel 'n mens babelas. Gebruik u somtyds iets om die babelas, die volgende oggend reg te maak (om jou kop oop te skiet)?

Ja	
Nee	
Weet nie	

I: Die volgende vrae is vir die respondente wat WEL 'papsak'wyn drink. Vir die wat nie 'papsak'wyn drink nie, gaan na vraag 31.

(22) Van waar kry u u papsak wyn die meeste?

Drank winkel	
Shebeen	
Kelder	

Winkel	
Plaas boer	
Ander: Spesifiseer	
Nie van toepassing	

(23) Hoe betaal u vir u 'papsak' wyn?

Kontant	
Krediet (teken)	
Verruil /inruil (bottels/ horlosies ens)	

(23.1) Wat is die prys van 'papsak' wyn?

(23.2) In die laaste week hoeveel het u vir u papsak wyn betaal?

	Kontant	Krediet	Verruil/ inruil
500ml			
1lt			
2lt			
5lt			

(24) Waar drink u, u papsak wyn?

I: Kan meer as een merk

By die huis	
By 'n kroeg	
By 'n shebeen / smokkelhuis	
By 'n vriend se huis	
Ander: Spesifeer	

(25) Met wie drink u, u papsak wyn?

Alleen	
Met vriende	
Met vreemdelinge	
Met familie (man / vrou)	
Ander: Spesifiseer	

Indien die respondnet met ander mense drink,

(25.1) Die laaste keer toe u papsak wyn gekoop he,

I: Teken nommer en aantal bouers aan

Hoeveel het jy bygedra tot die koop van die papsak wyn?	
Hoeveel van die wyn het jy self gedrink?	
Hoeveel wyn was gesamentlik deur almal gedrink?	

(26) Proe alle 'papsak'wyn dieselfde?

Ja	
Nee	
Weet nie	

(26.1) Indien ja, how verskil hulle?

Sterkte	
Smaak	
Kleur	
Ruik	
Ander: Spesifiseer	

(27) Word ander middele met papsakke gebruik?

Ja	
Nee	

(27.1) Indien ja, watter middele?

Mandrax (buttons)	
Cocaine / dust / powder	
Dagga / marijuana	
Ander: Spesifiseer	

(28) Doen u enige iets aan die 'papsak' wyn voor dit gedrink word?

Ja	
Nee	

(28.1) Indien ja, wat?

I: Kan meer as een merk

Word die wyn in die son geplaas om verder te vermenteer?	
Word water by gegooi om dit meer of flouer te maak?	
Gooi u ander stowwe by om dit sterker te maak?	
Doen u enige iets anders aan die papsak wyn voor dit gedrink word? (Spesifiseer)	

(28.2) Dink u dat die shebeen (smokkelhuis) eienaars en ander verkopers doen die bogenoemde aan die papsak wyn?

I: Kan meer as een merk

Word die wyn in die son geplaas om verder te vermenteer?	
Word water by gegooi om dit meer of flouer te maak?	
Gooi u ander stowwe by om dit sterker te maak?	
Doen u enige iets anders aan die papsak wyn voor dit gedrink word? (Spesifiseer)	

(29) Hoe het u van papsak wyn uitgevind?

Vriende	
Partytjie	
Eie nuuskurigheid	
Promosie / bemarking	
Advertensies	
Ander: Spesifiseer	

(30) Wat sal veroorsaak dat jy jou drank gewoontes verander?

I: Merk die eerste kolom (Nie voorgesê) volgens hoe die respondente antwoord. Wanneer die respondente klaar geantwoord het, vra dan die kategorieë wat hulle nie geantwoord het nie.

Nie voorgesê

Voorgesê

		Ja	Nee
Prys verandering			
Advertering			
Verandering in omstandighede (siekte)			
Familie invloed			
Siekte as gevolg van alkohol / papsak			
Ander: Spesifiseer			

Die volgende vrae is vir alle respondente (beide drinkers en nie-drinkers)

(31) Hoeveel grootmense drink u huishouding en wat is hulle verhouding tot u?

I: Sirkel of dit 'n grootmens of kind is en skryf neer wat hul verhouding is met die respondent.

Persoon

Verhouding

Grootmens/ kind	
Grootmens/ kind	
Grootmens/ kind	
Grootmens/ kind	
Grootmens/ kind	
Grootmens/ kind	
Grootmens/ kind	
Grootmens/ kind	
Grootmens/ kind	

(32) Ondervind u of enige persoon in u huishouding enige probleme as gevolg van hulle of 'n ander persoon se drank gebruik, anders as papsak?

Ja	
Nee	

(33) Ondervind u of enige persoon in u huishouding enige probleme as gevolg van hulle of 'n ander persoon se papsak gebruik?

Ja	
Nee	

(33.1) Indien ja, vir enige van die bogenoemde vrae verduidelik asseblief die probleme.

Dankie dat u die tyd geneem het om die vrae te beantwoord. Dit word baie waardeer. Alle informasie wat u my gegee het is vertroulik en u identiteit sal geheim gehou word.

APPENDIX 3b¹

BULK WINE SURVEY QUESTIONNAIRE: CONSUMERS and FARM SURVEY

I: Bulk wine is defined as 5l, 2l, 1l, 500ml plastic and carton containers and plastic and foil containers without a carton

I: The respondent must be 18 years or older

Date: _____ Interviewer's name: _____

Time: _____

Area: Stellenbosch / Franschhoek: ☐ Vredendal: ☐

Farm / distributor / area: _____

Demographic information:

(1) How old are you?

(2) How many adults and children (under 18 years) are in your household?

Adults	
Children	

(3) Gender

Male	
Female	

(4) To which population group do you belong?

White	
Asian	
Coloured	
African	
Other (specify):	

(5) What do you do?

Scholar	
Tertiary education	
Professional	
Labourer	
Unemployed	
Other (specify):	

(6) Housing

Do you own the house you live in?	
Do you rent the house you live in?	
Other (specify):	

¹ This is a translation from Afrikaans into English of the survey questionnaire. It was completed by the current researcher and was not used in the field.

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(7) What is your marital status

Unmarried	
Married/living together	
Not applicable	

Income:

(8) How often are you paid?

Weekly	
Fortnightly	
Monthly	
Other (specify):	
No income	

If the respondent receives an income,

(8.1) How much are you paid?

Rand

0 - 399	
400 - 999	
1000 - 1999	
More than 2000	

(8.2) How much money is earned within your household per month?

Rand

0 - 499	
500 - 999	
1000 -1999	
More than 2000	
Do not know	

(9) Does anyone in your household receive a pension or a grant?

Yes	
No	
Do not know	

(9.1) If yes, what type of grant and how many people receive it?

Number of people

Old age penion	
Disability grant	
Child care grant	
Other (specify)	

(10) Does your household own any of the following?

Yes

No

Do not know

A motor vehicle in working order			
Television			
Fridge			
Telephone/cell phone			

(11) When last did you drink an alcoholic beverage?

In the last month (30 days)	
In the last year but more than a month ago	
More than a year ago	
Never	

I: If "yes" for "drank alcohol in the last year or last 30 days", continue with question (12) if "no" continue with question (31).

(12) Which types of alcoholic beverages do you drink?

I: More than one answer is acceptable

Beer	
Ciders (Savannah, Reds)	
Spirits (Vodka, Brandy)	
Wine – in a bottle	
Wine – in a carton	
Wine – (papsak or plastic "can" or "maxi" or 1litre plastic)	
Wine – homemade	
Other (specify):	

If the respondent does NOT drink papsak wine:

(12.1) Why do you not drink papsak wine?

(13) Which type of alcoholic beverage do you drink the MOST?

Beer	
Ciders (Savannah, Reds)	
Spirits (Vodka, Brandy)	
Wine – in a bottle	
Wine – in a carton	
Wine – (papsak or plastic "can" or "maxi" or 1litre plastic)	
Wine – homebrew	
Other (specify):	

(14) Why is/was this your favourite alcoholic drink?

Because it is cheap	
For the taste	
Because it is easily available	
Because of the quality	
Because it is well marketed/promoted	
Other (specify):	

(15) How much did you drink the the preceding week?

I: VERY IMPORTANT: use the photos (pictures) in order to indicate the size of the containters and the precise number consumed, record the number and size of the containers.

Type of alcohol	The number consumed in the previous week
Beer	
Ciders (Savannah, Reds)	
Spirits (Vodka, Brandy)	
Wine – in a bottle	
Wine – in a carton	
Wine – (papsak or plastic “can” or “maxi” or 1litre plastic)	
Wine – homemade	
Other (specify):	

(16) Do you take your own containter to be filled when you buy cheap wine?

Yes	
No	

(16.1) If yes, is the wine different to normal sealed papsak wine?

No difference	
Tastes different	
Looks different	
Smells different	
Other (specify):	

(17) How do you pay for your alcohol?

Cash	
Credit	
Exchange (bottles)	

(18) Have you ever felt you ought to cut down on your drinking?

Yes	
No	
Do not know	

(19) Have people annoyed you by criticising your drinking?

Yes	
No	
Do not know	

(20) Have you ever felt bad or guilty about drinking?

Yes	
No	
Do not know	

(21) Have you ever taken a drink first thing in the morning to steady your nerves or to get rid of a hangover?

Yes	
No	
Do not know	

I: The following questions are for those respondents who do drink papsak wine. For those who do not drink papsakke, continue with question (31).

(22) Where to you mostly get your papsak wine?

Bottle store	
Shebeen	
Cellar	
Shop	
Farmer	
Other (specify):	
Not applicable	

(23) How do you pay for your papsak wine?

Cash	
Credit	
Exchange (bottles or other items)	

(23.1) What is the price of papsak wine?

(23.2) In the preceding week how much have you paid for papsak wine?

	Cash	Credit	Exchange
500ml			
1lt			
2lt			
5lt			

(24) Where do you drink your papsak wine?

I: More than one answer is acceptable

At your house	
At a bar	
At a shebeen	
At a friend's house	
Other (specify):	

(25) With whom do you drink your papsak wine?

Alone	
With friends	
With strangers	
With family (husband/wife)	
Other (specify):	

If the respondent drinks with other people,

(25.1) With reference to the last time that you purchased papsak wine,

I: Record the number and size of the containers

How much did you contribute to the purchase of the papsak wine?	
How much of the wine did you drink yourself?	
How much wine was consumed by all of you together?	

(26) Does all papsak wine taste the same?

Yes	
No	
Do not know	

(26.1) If no, how does it differ?

Strength	
Taste	
Colour	
Smell	
Other (specify):	

(27) Are any other substances used with papsakke?

Yes	
No	

(27.1) If yes, what substances?

Mandrax (buttons)	
Cocaine / dust / powder	
Dagga / marijuana	
Other (specify):	

(28) Is anything done to papsak wine before it is drunk?

Yes	
No	

(28.1) If yes, what?

I: More than one answer is acceptable

Place in the sun to ferment more?	
Add water to weaken it or increase the amount?	
Add other substances to make it stronger?	
Anything else done to papsak wine before it is drunk (specify):	

(28.2) Do you think that shebeen owners or other sellers of papsak do any of the above to papsake?

I: More than one answer is acceptable

Place in the sun to ferment more?	
Add water to weaken it or increase the amount?	
Add other substances to make it stronger?	
Anything else done to papsak wine before it is drunk (specify):	

(29) How did you come to know about papsak wine?

Friends	
Party	
Own curiosity	
Promotion/marketing	
Advertising	
Other (specify):	

(30) What would lead you to change your drinking preference?

I: Mark the first column (Unprompted) as for the respondent's first unprompted answer. Thereafter enquire about the reasons that the respondent did not mention.

	Unprompted	Prompted	
		Yes	No
Price change			
Advertising			
Change in circumstances (illness)			
Family influence			
Illness as a result of alcohol/papsak			
Other (specify):			

I: The following questions are for all respondents (drinkers and non-drinkers)

(31) How many adults drink alcohol in your household and what is their relationship to you?

I: Circle whether adult or child and indicate the relationship to the respondent.

Person	Relationship
Adult/child	
Adult/child	
Adult/child	
Adult/child	
Adult/child	
Adult/child	
Adult/child	
Adult/child	

(32) Does anyone in your household experience any problems as a result of your or another person's use of alcohol, other than papsak?

Yes	
No	

(33) Does anyone in your household experience any problems as a result of your or another person's use of papsak wine?

Yes	
No	

(33.1) If yes, to either question (32) or (33) please explain the circumstances.

Thank you for your time in answering these questions. It is appreciated. All of the information you have given me, as well as your identity, will be kept confidential.

APPENDIX 4

Introduction and Informed Consent Form [Consumer Interview]

Read to the respondent:

Hello! My name is _____, and I am from the Dopstop Association. We are busy conducting a survey on health and social conditions in your area.

The survey is being conducted by the Dopstop Association for the Western Cape Departments of Economic Development & Tourism, and Social Services. The aim of the research is to understand better the way people live in rural areas and how alcohol is used.

We would like to ask you a few questions about your household and about how people use alcohol.

Any information we collect is completely confidential. This means that we will not reveal your information to anyone else. Only the researchers will handle the original questionnaires in compiling their report, which will be stored safely locked at the DOPSTOP offices. The final report will not give any details which will identify individuals or farms.

Your participation is completely voluntary. If you decide to participate, you could also decide to stop participating at any time. You are not required to answer any questions that you are not comfortable with. Your decision not to participate in the study or to withdraw from the study will not be shared with anyone. If you decide not to take part or to withdraw at any stage, this will not affect your employment, or care at any service you may be attending.

The interview will last about ____ minutes. Please try and answer as honestly as possible.

Please sign this separate sheet to indicate your consent to participate in the study.

The study has been explained to me by _____

I confirm that I understand what has been said to me and agree to participate in the study.

Signature of participant: _____

Name in print: _____

Signature of interviewer: _____

Date: _____

Dopstop Association Research Co-ordinator:

Gerhard Van Wyk

1 Paradyskloof Street

Paradyskloof

Stellenbosch, 7600

Tel.: 021 880 0121

Fax: 021 880 2638

Inleiding en Inligtings Toestemmings Vorm [Verbruiker Onderhoud]

Read to the respondent/Lees aan die proef-persoon:

Goeie dag! My naam is _____, en ek is van die Dopstop Vereniging. Ons is besig om 'n opname te doen oor gesondheid en sosiale toestande in u gebied.

Die opname word deur die Dopstop Vereniging vir die Ekonomiese Ontwikkeling en Tourisme, en Sosiale Dienste in die Wes Kaap uitgevoer. Die doel van die navorsing is om beter te verstaan die omstandighede waaronder mense in die plattelands lewe en hoe alkohol gebruik word.

Ons wil graag vir u 'n paar vrae vra oor u huishouding en hoe die mense alkohol gebruik.

Al die informasie wat ons kollekteer is vertroulik . Dit bedoel dat ons nie u informasie sal afkondig nie. Die navorsers sal alleenlik saam met die oorspronklike vraelys werk om die rapport te versamel dit sal dan veilig gesluit en gestoor word by die dopstop kantoore. Die finale rapport sal geen inligting uitgee nie wat die individuele of plase sal identifiseer.

U deelname is vrywillig. As u besluit om deel te neem, u het 'n keuse om op enige tyd te stop. U is ook nie vereis om vrae te antwoord wat u ongemaklik laat voel nie. U mag weier om deel te neem of te ontrek teen enige tyd van die studie . U onttrekking sal met geen ander bespreek word nie. As u op enige stadium besluit om u deelname te ontrek, sal dit nie u werk affek nie.

Hierdie onderhoud sal ongeveer ____ minute duur. Probeer om u antwoorde vertroulik as moontlik te antwoord.

Teken asseblief die aparte blae om u toestemming van die deelname te herken.

Die studie was verklaar deur _____

Ek bevestig dat ek verstaan wat aan my gese was en dat ek ooreenstem om in die studie deel te neem.

Handtekening: _____

Naam in blokletters: _____

Handtekening van Verslaggewer: _____

Datum: _____

Dopstop Vereniging Navorsing Co-ordinator:

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