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REPORT TO THE DEPARTMENT OF FAMILY AND COMMUNITY SERVICES

Neighbourhood and family effects on employment

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EXECUTIVE SUMMARY

This report investigates the effects of community influences on the chances of employment, the amount of employment, and the quality of employment. It uses the largest dataset ever brought to bear on this topic in Australia, the pooled set of 13 IsssA surveys between 1984-2001 (IsssA-Pool) with over 26,000 cases. Not every variable is available in every year; each analysis uses as many of the cases as are available. Methods of analysis include logistic regression, OLS regression, and structural equation modeling. Our modeling strategy follows a biographical logic, familiar from path analyses of status attainment, beginning with enduring consequences of the family of origin and then assessing the consequences of current family and community situation.

 These effects we report are estimated from multivariate models, so each effect described is the independent contribution of that variable, holding all the other variables in the model constant. Each finding in this summary should be understood to be qualified by the phrase "according to our models". In theory, the effects could change were other causal variables to be entered into the model; in practice such changes are rare. The findings are based on a sample survey, and so are subject to sampling error.

In this summary, by "workforce participation", we mean the probability that a person is part of the active workforce – that they have a job or are looking for one. By "hours worked" we mean the number of hours that a person works for pay, scored zero for those not currently working for pay. Unless a gender difference is stated, the pattern holds for both women and men. We find that:

Effects of family of origin

- o   Parental education has pervasive effects on participation and occupational status

- o   The home literacy environment has many effects above and beyond parental education

- o   Maternal employment mainly affects participation

- o   Father's occupational status (job quality) affects daughters' participation and job quality of both sons and daughters

- o   Whether father supervised other workers in his job affects daughters' participation and job quality of both sons and daughters

- o   Whether father was self-employed, affects offspring's self-employment and occupational status

- o   Parental income during childhood does not affect their work patterns as adults

- o Parents' age raises occupational status

- o Parental divorce reduces hours worked and lowers occupational status

- o Number of siblings lowers occupational status

- o Private schooling increases women's self-employment, raises occupational status of both men and women

- o Being a migrant is largely inconsequential

- o An urban upbringing (size of place) is largely inconsequential

Effects of educational attainment, religion, and time

- o One's own education has pervasive effects

- o Religion: attendance and denomination have a few scattered effects

- o Time trends (remember these are net of individual-level change) are only evident in a decline in men's participation and hours worked, a rise in women's hours worked, and a rise in female self-employment

Effects of family life cycle stage

- o Age on participation: workforce participation and hours worked rise slightly (men) or holds steady (women) from young adulthood to early middle age then falls somewhat to prime middle age and falls very steeply to late middle age

- o Age patterns of self-employment and occupational status: steep rise from young adulthood to early middle age, further slight rise to prime middle age, and even further rise to late middle age

- o Effects of marriage per se are larger for women, but having a spouse in employment strongly increase participation and hours for both sexes

- o Children affect participation, but not occupational status (job quality). Young children increase their mother's probability of self-employment.

Effects of community/ neighbourhood

- o Community socioeconomic status (postcode SES) plays no independent role in employment patterns

o   Community unemployment level reduces hours worked

o   Community's ethnic diversity reduces men's working hours, but increases women's and reduces self-employment for both sexes.

o   Community's residential stability does not affect employment patterns

o   National unemployment rate has no net effect on employment patterns except to reduce women's working hours

o   Neighbourhood social capital does not affect employment patterns, nor does neighbourhood age structure

o   Community industrial composition does not affect employment patterns

o   State of origin does not affect employment patterns

Implications: What can FaCS do about employment?

1. Neighbourhood social capital enhancing programs will not help employment problems.

2. Programs teaching self-employment skills might help single mothers with young children integrate family and financial responsibilities.

3. Special support is needed for children of divorce.

4. Encouraging parents on benefit support to extend their education would have employment benefits in the next generation.

5. Home literacy programs to encourage single mothers to read with their children would have long term benefits, even among mothers with little education.

6. Encouraging fathers on benefits to improve their job skills would improve the work situation of the next generation.

7. All work outcomes are better for people with more education, so any programs that encourage young people to persist as far as possible with their education would have future benefits. Note that quite different programs would be required to encourage youth to stay in school (more pastoral care) and to encourage those in school to extend their skills (more challenges).

8. Early exit from the workforce is a large and growing drain on the public purse, and the indications are that this will get worse, so long as public funds continue to be used to support early exiters. Tightening up on access to disability payments is an obvious path, as is well known. The only really new light our results cast on this issue is the finding that self-employed people stay in the workforce longer.

TABLE OF CONTENTS

INTRODUCTION

This report examines influences of family and neighbourhood factors on people's employment patterns – whether they participate in the workforce at all, the extent of their participation in the workforce, the quality of the jobs they get there, and whether they are self-employed or employees.

The Department of Family and Community Services (FaCS) identifies three social policy outcomes in its Strategic Plan: stronger families, stronger communities and economic and social participation. The outcomes are achieved through capacity building and early intervention; promotion of independence, choice and self-reliance; and maintaining a strong and sustainable social safety net. The motivation for this project is that assessing the role of family and community in employment will enable FaCS more effectively to target social policy interventions to assist people back into the workforce. Thereby enhancing their self-reliance. Equally important is identifying plausible-sounding factors that do not actually affect employment. For example, if community factors play an important role in employment, then there may be a case for encouraging people who are out of work to relocate in order to improve their prospects, but if community factors play little or no role, then encouraging relocation would merely entail disruption and cost to no purpose.

The influences we examine fall into two main groups, family situation and neighbourhood context. Specifically we consider:

- o marital status and, marital history;

- o children,

- o labour force status and spouse's labour force status;

- o quality of job and job security,

- o family income,

- o the socio-economic composition of the neighbourhood and its unemployment rate,

- o the neighbourhood's ethnic composition,

- o neighbourhood social capital, and

- o levels of incivility in the neighbourhood.

Prior research and theory

Prior research in this area is very uneven. Some areas, such as the effect of parents' education and father's occupational status on respondent's occupational

status, have been very thoroughly researched in Australia and overseas for some decades, and the point of including them here is to obtain especially precise estimates of effects using the using the largest dataset yet brought to bear on the topic in Australia, and to control for their effects in models where their omission would lead to seriously biased estimates. In other areas, such as male labour supply, the evidence is very thin, and hypotheses are necessarily based on analogies to related areas.

Because this report covers such a huge territory and its focus is not so much on the assembly and synthesis of literature as on discovery and refinement of findings, we do not undertake a comprehensive literature review (which would require, on its own, another project the size of this one). Instead, this introduction sketches immediately relevant literatures, organized according to the biographical logic we will follow for each topic also in the empirical paper – beginning with the family of origin, then introducing the effects of education, life course stage, other contemporary individual characteristics, spouse characteristics and contextual characteristics of the neighbourhood and the society at large.

We focus only on paid employment; there are emerging literatures on time devoted to caring for disabled and elderly family members (e.g. Evans 2002a) and on time spent volunteering (e.g. Evans, and Kelley 2000) but they are beyond the scope of this project.

Effects of family background

Parent's Education

EFFECTS ON WORKFORCE PARTICIPATION AND INTENSITY

The effects of parental education on workforce engagement have not been intensively studied, but it is reasonable to expect that it should have a positive total effect (since it tends to steer children onto paths that lead to more rewarding work), and the effects should be stronger for women than for men (because they are more likely to be choosing between housework and market work rather than between market work and leisure). But it is less clear what to expect concerning parents' education's direct effects on employment, so it seems best to treat that as an inductive issue, with the findings generating working hypotheses rather than testing them on this issue.

EFFECTS ON SELF-EMPLOYMENT

Prior research has not extensively studied the effects of parents' education on self-employment, but has noted that self-employment occurs throughout the occupational hierarchy – not evenly scattered across occupations, but rather groups of high self-employment occupations occur both high and low (Kelley and Sikora 2001), so it is reasonable to expect no strong effect of parent's education on self employment.

Parents' education is normally found to have significant total effects on occupational status in Australia and throughout the rest of the world (e.g. Crook 1995; Dronkers 1992; Harper and Haq 1997; Kalmijn 1994; Treiman and Yip 1989; Treiman and Ganzeboom 1990), although the direct effects are sometimes found (Kerckoff 1995) and sometimes not (Warren 2001). The exception here is that studies which attempt to separate the influence of father's and mother's education often experience estimation difficulties because of the high correlation between the two (e.g. yes for mother no for father Lehrer and Stokes [1985]). Detailed investigations reveal that the effects of parents' education do not differ by gender or life course stage (De Graaf 1992; Kalmijn 1994), so it is no longer necessary to test for interaction effects. The effects of parents' education on their children's occupational status are likely to be substantive and causal rather than being a proxy for some other process, as parents' education has been abundantly shown to be highly consequential for a wide range of aspects of children's development (Bradley and Corwyn 2002). Moreover, research including family background measurement and detailed personality measurement has shown that the impact of parents' education is independent of personality, and hence estimates of the effect of education in datasets lacking personality measures will experience no omitted variables problem relating to personality (Van Eijck and De Graaf 2001).

Studies of childhood reading or book ownership tend to find that this has a total effect on occupational attainment, but that the effect is entirely indirect through educational attainment (e.g. Crook 1997).

Father's occupational status

Father's occupational status has been abundantly demonstrated to have a large positive total effect on respondent's occupational status in Australia (e.g. Crook 1995, 1997; Kelley 1990), as it does throughout the world (Harper and Haq 1997; Kerckoff 1995; Treiman and Yip 1989; Treiman and Ganzeboom 1990), and most studies report a small direct effect net of educational attainment as well (e.g. Crook 1995, 1997; Treiman and Yip 1989; Treiman and Ganzeboom 1990). The effects of father's occupation on his children's occupational status is likely to be substantive and causal rather than being a proxy for some other process, as father's occupation has been abundantly shown to be highly consequential for a wide range of aspects of children's development (Bradley and Corwyn 2002). Moreover, research including family background measurement and detailed personality measurement has shown that the impact of father's occupation is independent of personality, and hence estimates of the effect of occupation in datasets lacking personality measures will experience no omitted variables problem relating to personality (Van Eijck and De Graaf 2001).

Hypotheses about effects on hours of work and self-employment must be largely developed by analogy to other areas because there is little substantial prior research in these areas. Concerning hours of work, it seems reasonable to expect that there are positive total effects of father's occupational status on labour force

participation and on hours of work for two reasons (a) the theoretical reason that children from high status homes are likely to learn to value the intrinsic aspects of work – the sense of accomplishment it gives, etc – and so are likely to be more deeply engaged in work than people to whom a job is just a means to an end, and (b) the empirical reason that people in high status jobs tend to work longer hours (Evans 1996a; Kelley 2001), so part of the endowment from a father working in a high status occupation should be a tendency towards more labour force engagement.

Prior research on Australia finds no effect of father's occupational status on point-in-time self-employment – the probability of being self-employed at least since the 1970s when research on the topic began (Broom et al 1980, Kelley 1990). Moreover, a dynamic analysis of Australia's only long span of longitudinal data on self-employment finds non-significant effects of father's occupation on both men's and women's entry into self-employment using the IsssA-Pool pooled data file to model all entries into self-employment between 1980 and 1999 (Evans and Sikora 2003: Table 4). This is not as rock-solid a body of evidence as that concerning the positive effects of parents' education and father's occupation on offspring's occupational status, in part because some studies from abroad have found a significant positive effect, albeit a small one (e.g. Robinson and Kelley 1979: 45). Nonetheless, prior research for Australia suggests that there is no effect of father's occupational status, and thus a sensible working hypothesis is that the effect will fail to be statistically significant in our multivariate model.

A study using a contemporaneous measure of parents' **income** finds that the apparent effect of parents' income on children's education becomes insignificant when parents' education and occupations are taken into account (Orr 2000, see Teachman 1997 and the other studies in Duncan and Brooks-Gunn 1997). This result means that analyses predicting children's education, or, by analogy, children's occupational status, that include parents' income but that do not include parents education and occupational status suffer seriously from omitted variables problems and are likely to yield coefficient estimates that are seriously misleading. In a model of this kind, if stretched out in a full causal chain, parents' income and occupational status are some of the sources of parent's income, so if income had a substantial role as an intervening variable in the status attainment process, transmitting the effects of education and occupation, then the effect we observe for income in a compressed model entering it at the same stage as parents' education and occupation would comprise both the indirect effect of parents education and occupation as transmitted through income and the independent effect of income above and beyond its role as a transmitter. The fact that parents' income appears, in the studies so far including all the relevant measures, to have nil effects on children's stratification outcomes suggests that income plays little or no role among the ways that parents' resources of educational and occupational position influence their children's capacity to get ahead, but rather that they work through other channels such as the instilling of values and skills. Accordingly, it seems reasonable to expect that there will be not total or direct effect of parents' income on offspring's occupational status in a multivariate model that includes parents'

10

education and occupation. On the other hand, prior research has found that parental assets do seem to assist status attainment, net of parents' education and occupation (Kelley 1978). That combined with the fact that parental money-management skills do seem to enhance education suggests that something associated with a tolerance for deferred gratification (which shows up as saving and as keeping within one's budget) may be a habit of mind, a social practice, which helps children to persist in school and to climb higher on the occupational ladder. But the effects seems not to have to do with income per se, and so are not pertinent to the question of the effects of parents' income on occupational status.

The logic of effects on engagement in the workforce is not clear and has not formed the focus of prior research, but it seems plausible that children from higher income homes might see workforce engagement as more rewarding and therefore be inclined to do more of it. That is, at most, an educated guess, and, in the absence of prior research, it is reasonable to take an inductive approach to the question and develop working hypotheses from the data. In terms of effects on self-employment,

It has been argued that non-standard jobs are not substandard jobs, and the evidence seems to support the claim (Wooden 2001a). If so, then parents' stratification characteristics – specifically father's occupation, supervisory responsibilities, and self-employment could be expected to have little or no total effect on women's hours of employment – neither inclining them towards nor against part-time employment.

Total effect of number **of siblings** on occupational status is generally found to be negative (e.g. Kerckoff 1995; Marjoribanks 1989), although there are conflicting findings on whether there is (Marjoribanks 1989) or is not (Lehrer and Stokes 1985) a direct effect, net of education.

Mother's employment per se seems to have little effect on children's stratification outcomes (Acock , Barker, and Bengtson 1982).

Father's self-employment

Workforce participation and intensity. So far as we have been able to discover, there is no prior research on the impact of father's self-employment during childhood on their offspring's subsequent labour supply. It seems reasonable to take as a working hypothesis the possibility that parental self-employment may endow children with orientations and skills that enhance workforce engagement.

It is well established that self-employment runs in families. Every study that has measured the effect of paternal self-employment on offspring's self-employment in Australia has found a substantial positive effect whether measured as impact on point-in-time self-employment in the male workforce as a whole (Broom et al 1980, Kelley 1990) or on entry into non-agricultural self-employment for both men and women (Evans and Sikora 2003: Table 4). Accordingly, we expect that

father's self-employment will have a positive effect on self-employment on our model.

Self- employment jobs occur throughout the social hierarchy (Kelley and Sikora 2001), so having a self-employed father should not have a large effect on respondent's **occupational status**. Of course, the highest percentage self-employed is in farming at 52%, but there are also substantial concentrations of the self-employed among semi-skilled manual workers, 18%, higher sales workers, 26%, and among administrators, 17% (Kelley and Sikora 2001). Rates of self-employment have been fairly steady over recent decades for both men and women, except for a pronounced fall in the percentage self-employed among those working in the agricultural industry (Sikora 2001).

Gender. It has long been known that working men and women hold, on average jobs of the same quality, whether this be measured by occupational status measures such as the Duncan SEI (e.g. Featherman and Hauser 1976; Treiman and Terrell 1975), by explicit skill measures – which are in practice highly correlated with occupational status measures (England, Chassie, and McCormack 1982; Lehrer and Stokes 1985). Nonetheless occupational sex segregation remains high throughout the developed world, and some studies report that the strength of influences on the process of occupational choice within levels of the occupational hierarchy may differ for men and women (e.g. Tilleczek and Lewko 2001), whereas others find that occupational attainment processes are substantially similar for men and women not only in the vertical dimension (which is well established by the studies mention above) but also in the magnitude of the exogenous influences on field choice within levels – that is, a substantial main effect of gender, but no interactions with family background factors (e.g. Dronkers 1992).

Effects of divorce on educational attainment have drawn more attention than effects of parental divorce on children's labour market outcomes, but there is some sign, at least in the US, that daughters of divorce expect to spend more time in the workforce (Measell 1992).

In general, family effects on occupational status do not differ by gender or by life cycle stage (De Graaf 1992).

There is considerable inheritance of self-employment (Le 1999; Peng 2001).

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Effects of education

On workforce participation and intensity

It has long been known that education -- whether measured in years of education completed (e.g. Evans 1988, 1996b) or in broad categories (Eccles 1982, 1984; Norris and Bradbury 2001: Table 4.2) -- has a large positive effect on Australian women's labour force engagement, and there may be an effect on men's probability of being employed (Norris and Bradbury 2001: Table 4.1)

Moreover, more highly educated men and women tended to work longer hours than their less educated peers in the mid-1990s (Evans 1996a), although there was some instability in those models, so the evidence on this topic is less clear.

On self-employment

Education seems to have a small positive or nil total effect on self-employment, both among the population at large (Broom et al 1980; Kelley 1990; Kidd 1993) and among immigrants (Evans 1989; Kidd 1993; Le 2000). The positive impact is transmitted through occupation, and the residual direct effect of education net of occupational is nil or even negative (Evans 1989; Le 2000).

On occupational status

Prior research consistently reports a strong positive effect of respondent's education on occupational status for both men and women both in Australia and internationally (e.g. Marks 1992; Treiman and Yip 1989; Treiman and Ganzeboom 1990). This is perhaps not surprising, since occupational status has been shown to be highly correlated with the cognitive demands and skill requirements of jobs (Bidwell 1989). The positive linkage here is among the most strongly established in the social sciences, leading to a firm expectation that we will find such a positive effect in our model.

Effects of life course stage

On workforce participation and intensity

Studies from other developed countries indicate that **young children** inhibit women's employment, but not men's (e.g. Aaberge Colombino, and Strom 1999; Aronsson and Karlsson 1997; Koenigsberg, Garet,, and Rosenbaum 1994), and Australian studies separating preschool age children from others tend to find that having small children tends to reduce labour force participation among women (Evans 1988, 2000). Further, when the children are primary school age, mothers are roughly as likely as childless women to participate in the workforce, but they work fewer hours per week (Evans 2000). A recent study has found no effect of children on men's or women's probability of employment (Norris and Bradbury 2001: Table 4.1 and Table 4.2). but this could be due to the broad definition of children – it refers to any child under age fifteen or an older child who is financially dependent (e.g. students), so it is very heterogeneous..

Positive effect of **marriage** on men's probability of employment, but not women's (Evans 2000; Koenigsberg, Garet,, and Rosenbaum 1994; Norris and Bradbury 2001: Table 4.1 and 4.2).

Prior research also finds a nil effect of rental status or household wealth on male or female probability of employment (Norris and Bradbury 2001: Table 4.1 and Table 4.2). The substantiates an earlier exploratory result suggesting that home

13

ownership status (rent/ buying/ owning) has no independent effect on the intensity of female workforce participation (Evans 1988), so there is no need to include them in our analysis.

Descriptively speaking (i.e. in averages without other controls), men's working hours, in the early 1990s, peaked among men in their 40s at about 45 hours a week which is about 5 hours more than the average of the other (mostly developed) countries taking part in the 1992/93 "Family values" ISSP survey, in connection with which these data were collected. Australian men in their 50s work about 5 hours less than did those in their 40s, but remained well above the average employment effort of men in their 50s in other developed countries (Evans 1999a). Australian women's patterns followed a similar age pattern of rises and falls, but at a much lower level, peaking at 23 hours a week among women in their 40s in the early 1990s and then falling away. Interestingly, younger Australian women – those aged under 55 – worked several hours a week less than the average of the developed countries in the survey, but older Australian women worked more than the average for women in their age bracket in the other developed countries (Evans 1999b). These patterns continued to hold into the middle 1990s, except that female participation in late middle age was rising (Evans and Kelley 2002b).

Effects on self-employment

Prior research has not strongly focused on the impact of marriage and children on self-employment. Accordingly, we will treat these as domains where an inductive approach is appropriate.

There is, by contrast, considerable prior research on age which all points towards an increase over the life course in self-employment, whether measured as point-in-time self employment for immigrant men (e.g. Evans 1989; Le 2000) or as risk of entering self-employment for men and women in the non-agricultural labour force (Evans and Sikora 2003).

EFFECTS ON OCCUPATIONAL STATUS

Prior research suggests that there are few or no effects of family situation on occupational status. Prior research tends to find that married men tend to earn more but married women do not (e.g. Hill 1979; Korenman and Neumark 1991, Waite 1995). But it is possible that this is because married work longer hours within the full-time category (and so were estimated incorrectly to have higher hourly wages in studies relying on categories like "full-time" rather than explicit measurement of hours actually worked), rather than because they get better jobs (Jacobsen and Rayack 1996; Waite 1995). Accordingly, it seems wisest to treat the issue as "unproven" and so to proceed inductively in the area of occupational status and marriage. To the extent that there may be an association between men's occupational status and marriage, a cautionary note is in order about causality, for some have argued that it is lack of occupational success that impedes men's marriage, rather than marriage enhancing men's success (Oppenheimer, Kalmijn, and Lim 1997). There does not appear to be an

association between men's earnings and the presence of children (Hill 1979), so it seems likely that there will be no linkage between presence of children and occupational status. For both men and women who are working, neither marital status nor presence of young children

Spouse characteristics

Links with respect to participation

Prior research tends to find a positive association between **husband's and wife's workforce participation** (e.g. Bernasco, De Graaf, and Ultee 1998; Blau 1998), although relatively few individual-level or neighbourhood-level characteristics are controlled in these analyses (e.g. Evans and Kelley 2001a; Norris and Bradbury 2001, Figure 3.17, Table 4.3) and results may differ among countries (e.g. Bernardi 1999), and many analyses of husband-wife linkages in work careers arbitrarily assume a dubious causal model (Philliber and Vannoy-Hiller 1990). Thus the possibility remains that assortative mating and similar labour market conditions might account for the observed similarity (rather than mutual influence). Homophily – the choice of friends and acquaintances with similar attitudes, opinions, and ways of life -- is widespread (McPherson, Smith-Lovin, and Cook 2001) so it would not be surprising to find spouse-choice heavily conditioned by it, as marital homogramy on objective characteristics is well-demonstrated (e.g. Kalmijn 1991), and it has been demonstrated for a broad array of countries that there is a strong association between job quality of husband and wife (e.g. Hout 1982; Smits, Ultee, and Lammers 1996). So the issue remains an open one.

Links with respect to self-employment

These have not formed the focus of substantial research attention, but the argument has been put forward that the presence of small children ought to enhance the probability of self-employment for women because self-employment can enable women to work without having to send their children to institutional childcare (Holmes, Smith, and Cane 1997)

Links with respect to occupational status

The linkage between having a working spouse and occupational status has not been intensively studied

Effects of time

Upward trend in hours worked observed by Evans (1996) for the 1980s and early 1990s using IsssA data has also been found in ABS data and reaches a plateau from the early 1990s to 2000 (Wooden 2001b).

Interest in neighbourhood effects on status attainment and employment outcomes in Australia received a strong impetus from a research programme by Robert Gregory and Boyd Hunter (summarized in Gregory and Hunter 1995). This research was principally concerned with the issue of whether neighbourhoods were becoming increasingly differentiated by income. Of particular interest to this project is the implication that work opportunities are strongly conditioned by neighbourhood characteristics. This could not be tested directly in the Gregory and Hunter research programme, because that was entirely based on aggregate, rather than individual-level data, and hence inferences about individual-level processes from it would be bedeviled by the ecological fallacy, a point already made by Whiteford (1995, p 7). To our knowledge, no one has yet tested the impact of neighbourhood characteristics on individual-level outcomes net of individual characteristics in Australia, so it would be imprudent to have strong hypotheses about what we will find, and it is wiser to proceed inductively. Accordingly, we assess the impact of neighbourhood effects

Internationally, some claim that neighbourhood effects on status attainment are well-established. For example, Piketty (2000, p 464) holds that "The fact that intergenerational mobility depends not only on parental characteristics but also on the composition of the local neighbourhood is well documented." However, most studies that report neighbourhood effects have rather sparse sets of measures of family background and so risk confusing assortative residence with neighbourhood effects per se. For example, Kremer's (1997) study of education finds an effect of neighbourhood educational level that is about one third the size of the effect of parents' education, but his model includes no controls for other family background factors known to affect education which might be correlated with residence, e.g. father's occupation, number of siblings, urban or rural residence, and the like. The results are not univocal. A longitudinal study with a good range of family measures finds no neighbourhood effect, but the samples are restricted to black residents of a particular metropolis (Sydnor 2001), so the results cannot be taken as definitive

Postcode SES has a significant, positive effect on male employment in a model with few controls for individual-level effects and with no corrections for the fact that the postcode measure is based on aggregate data (Norris and Bradbury 2001: Table 4.1). Local SES has been found to have a positive association, net of several individual characteristics with the probability of self-employment in post-Soviet Russia (Gerber 2001).

Studies from the US have particularly pointed to **local unemployment rates** as having an effect on participation, intensity of employment, and sometimes occupational status, independent of individual characteristics (e.g. Hirschman, and Kraly. 1990; Wilson, Tienda, and Wu 1995).

16

Data, Measurement, Models, and Methods

Data Sources

The analyses in this project are largely based on data from the International Social Science Surveys Australia (IsssA), which we direct. The IsssA regularly collects extensive and detailed survey data on large, representative national samples of Australians, beginning in 1984 and repeated most years since then.[1] There are now over 26,000 cases and many hundreds of variables. Some of the analyses also include aggregate data at the postcode-level from the ABS which we shall discuss below in the "Measurement" section.

The IsssA

The IsssA surveys' particular strengths are that they offer:

o   Individual level data on a very large number of variables simultaneously, facilitating multivariate analysis and enabling one explicitly to control for many sources of selectivity.

o   Extensive measurement of public policy preferences, attitudes, and values, based on carefully pretested multiple-item scales for more reliable measurement.

o   Extensive information on family background and on current labour force involvement.

o   Cross-national comparisons on many variables, allowing one to discover what is unique to Australia; what is common to culturally similar nations such as Britain and the USA; and what holds for industrial nations generally.

o   Historical depth, with many items appearing regularly since 1984.

o   Panel components with some measures available for the same respondents at several points in time.

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[1] The first survey, then called the National Social Science Survey, was supported primarily by the Australian Research Grants Committee and research funds kindly provided by Don Aitkin, now vice-chancellor of the University of Canberra. Most, but not all, subsequent surveys through 1997 were mainly supported by the Research School of Social Sciences at the Australian National University. The IsssA is now core-sponsored by the Melbourne Institute of Applied Economic and Social Research, the University of Melbourne, being designed as an omnibus the survey episodically includes modules sponsored by other organisations. Merging all the surveys into a pooled, user-friendly file with consistent variable definitions was sponsored by an ARC-Research Infrastructure and Equipment grant to the Melbourne Institute.

Population sampled

The population sampled by the IsssA consists of citizens of Australia who reside at the address which they have provided to the Electoral Office, who can read English sufficiently well to answer a self-completion questionnaire, and who are not too cognitively impaired to answer a self-completion questionnaire. For simplicity, we refer to this population as "Australians". The selection on citizenship should have little effect, since prior research shows that non-citizen immigrants differ from citizen immigrants principally in their duration of residence, with few or no differences in issues that would be more relevant to this report, namely marital status and stratification characteristics (Evans 1988)

A note on sample size

The IsssA, unlike most social surveys, is based on a simple random sample. This is the optimal type of sample for most purposes, and the type of sample implicitly assumed by most statistical packages, so ordinary standard errors based on it are correct and do not require the inflating factors that cluster samples do. Simple random samples such as the IsssA are more efficient than the cluster samples used in almost all face-to-face surveys.[2]

A reasonable rule of thumb for high quality cluster designs is that they are worth approximately two-thirds as much as simple random samples (NORC 1987: 435). Thus an IsssA sample of about 2,200 would provide as reliable information as a good cluster sample of around 3,300 cases.

Data collection procedures: IsssA

The IsssA surveys are from simple random samples of Australian citizens[3] drawn by the Electoral Commission from the compulsory electoral roll, a public document.[4] They are conducted by mail[5] using a minor modification of Dillman's (1993) Total Response Method. First, a personally-addressed preliminary letter announces the survey; offers a free telephone contact number for queries; and provides information on how to decline to participate[6]. Then the survey booklet

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[2] Travel costs make simple random samples unaffordable for most face-to-face surveys.

[3] For the exact definition, see the section on "Population sampled", above.

[4] Most of the early surveys are repeated cross-sections (ie new samples drawn each time) but a few are panels (re-contacting previous respondents). Our current design is a permanent panel, augmented with some fresh respondents in each wave.

[5] The first survey was mainly face-to-face interviews, with only the most rural quarter of the sample contacted by mail. Comparison of the face-to-face interviews with mail samples suggests that there are no systematic differences (Bean 1991), and similar results have been reported for the US (Goyder 1985). Mail surveys may be better than face-to-face or telephone surveys for sensitive issues, such as income, since there is no interviewer to create embarrassment (e.g. Babbie 1995: 272). Moreover, non-governmental surveys are more likely to detect participation in the gray economy and income derived from it. Probably the chief drawback to postal questionnaires is that because they are self-administered they are not suitable for questions requiring complex skip patterns (e.g. Babbie 1995: 272).

[6] For our surveys of 1984-85 through 1996-97, we did not use a preliminary letter, but rather a cover letter. The transition to a preliminary letter was at the suggestion of Malcolm Mearns, principal of Datacol Research on the grounds that it would be likely to boost response rates and that it would make refusals cheaper (because the preliminary letter costs only ordinary letter postage, and people who refuse at that

itself arrives in the post about two weeks later (together with its pre-paid return envelope and a further cover letter). These average around 64 pages, ranging from 32 to 84 pages, are attractively laid out, and are printed in black and white. The covers feature a map of Australia and are usually glossy white, with the map in a colour that varies from year to year[7]. For non-respondents, this is typically followed by four follow-up mailings, two with fresh copies of the questionnaire, over a 6 to 12 month period.[8]

The data entry process is too elaborate to cover in detail here, because it changes over time[9], but it is worthwhile giving a sketch of current practices. Because the IssssA relies almost entirely on closed-ended questions (because of their superior analytic properties), data processing is relatively straightforward. Upon receipt, the answers from the survey booklets are entered into a specialised computer program that flags out-of-range codes (usually keypunching errors), and has column location checks at the end of every page to guard against the keypuncher missing a question and thus punching answers to subsequent questions in the wrong fields, a problem sometimes known as "off-column" errors. Double answers (respondent circles two adjacent answer categories) are randomly assigned to one or the other answer (with special arrangements for a few unusual items). Experienced coders work with an automated occupation-coding program to transform open ended occupation questions into ABS 4-digit occupational codes. Experienced coders also convert open ended questions on industry educational qualifications into standard ABS codes. Throughout the data entry process, coders and data-entry personnel flag all confusing or unclear cases which are subsequently dealt with in problem-resolution sessions with experts. All personnel are carefully trained and supervised[10] to maintain high standards of data-quality. With these procedures, we estimate that the data entry errors are substantially less than one per thousand questions (based on a sample of questionnaires that were entered twice, with different personnel performing the two entries).

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stage are excised from the mailing list before the higher cost mailing of the questionnaire). Research is now in progress systematically to evaluate the impact of the preliminary letter.

[7] Our assessment indicates that colour makes no difference to response rates, but varying the colour helps to keep track of multi-year surveys and was an important mnemonic device for questionnaire designers trying to locate questions from earlier survey booklets. The electronic age has made the last issue less relevant, so if one were starting a survey today, one might well prefer to choose one permanent "signature" colour-scheme.

[8] In some years we have experimented with telephone follow-ups and various other alternatives for the last contact, which proved neither demonstrably better nor demonstrably worse than standard practice.

[9] The data from the first survey were coded and entered by Reark Research, the data from the 1986-87 and 1987-88 surveys were coded by research assistants at the Australian National University and entered by data processing personnel at the Australian National University's (former) Data Processing Unit, and the data from subsequent surveys are coded and entered by personnel at Datacol Research. Datacol Research also provides the foundational SPSS locating, identifying, and labelling variables.

[10] Including random checks.

Representativeness

A very important feature of samples is their representativeness, for it is on this basis that one can make generalisations to the large population which is a key goal of most survey research. Indeed, modern survey research textbooks generally emphasise that completion rates/ response rates are only of interest because a very low completion rate may be a symptom of non-representativeness (e.g. Babbie 1995: 262). The representativeness of IsssA achieved samples has been clearly established in prior research (Bean 1991; Sikora 1997), and analyses using IsssA data appear regularly in the world's leading sociology journals.[11]

Here, we take two approaches to the issue of representativeness (also sometimes known as survey response bias): (1) comparisons of IsssA survey results with the Australian Census, and (2) comparisons of prompt respondents with tardy respondents (who would have been non-respondents if not for our extensive follow-up procedures).

Results for IsssA surveys conducted around the time of the 1991 Australian census show that the survey samples (1989-1993; 8234 cases) are representative of the population (Table A1).[12] Similar comparisons with the 2001 Census will be conducted in due course.

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[11] For example: Evans, Kelley, and Kolosi (1992); Kelley and De Graaf (1997); Kelley and Evans (1993, 1995).

[12] More extensive comparisons show this as well (Bean 1991; Sikora 1997).

Table A1: Comparison of IsssA surveys with the census.

	Census 1991	IsssA 1989-93
Gender		
Male	49%	51%
Female	51%	49%
Age Groups		
18 - 24	15%	11%
25 - 34	22%	21%
35 - 44	21%	23%
45 - 54	15%	17%
45 - 64	12%	14%
65+	16%	14%
Education: Age Left School		
Under 15/none	18%	18%
15	24%	23%
16	22%	23%
17	19%	21%
18	11%	11%
19 and over	7%	3%
Employment Status		
Employed	58%	65%
Unemployed	7%	2%
Not in labour force	36%	33%
Occupation of employed persons		
Managers & admin	14%	13%
Professionals	14%	19%
Para-professionals	8%	11%
Tradespersons	14%	12%
Clerks	16%	16%
Sales, service	13%	12%
Plant & mchn operators	8%	7%
Labourers	13%	10%

Another line of insight into the representativeness question comes from comparisons of prompt respondents, who complete and return their questionnaires shortly after receiving them, with tardy respondents (who would be non-respondents had they not been contacted on multiple occasions). Note that our preliminary letter invites sample members to refuse if they do not wish to participate, and we do not re-contact anybody who refuses. So the non-respondents are people who have not indicated a desire not to participate. An analysis of characteristics of non-respondents compared to respondents is given below in the section on "Non-response".

Survey non-response: Completion rates

Completion rates are one of the data quality issues that greatly concern survey researchers, because of the possibility that non-respondents may differ systematically from respondents, yielding and unrepresentative achieved sample, and thereby violating the assumptions that justify generalization from a sample to a population (e.g. Donald 1960; Brownlee 1975; Miller 1991: 145-155; Babbie 1995: 262). Completion rates for the IsssA -- defined, following the International Crime Victimisation Survey [van Dijk, Mayhew, and Killias 1990] as completions divided by eligibles [refusals plus completions] -- range between 60 and 65 per cent. Potential respondents are defined as "eligible" if they are currently living at the address given in the electoral roll, able to read English, and not seriously ill. The main uncertainty has to do with the addresses, a proportion of which are out of date, erroneous, or unoccupied and so ineligible. Following van Dijk, Mayhew and Killias (1990) we define as ineligible addresses from which we have heard nothing after 5 or 6 contacts. The IsssA

completion rate compares favourably with recent experience in Australia, the USA, and many other industrial nations. For example, the well-regarded International Crime Victim Survey averaged 41 per cent in 14 nations using a similar definition (van Dijk, Mayhew and Killias 1990).[13]

However, diligent pursuit of non-respondents is expensive. In the IsssA, as in other mail surveys (Dillman 1993), the great majority of the completions come within a month or two of entering the field[14]. But then things begin to get expensive. The IsssA typically sends a second questionnaire (expensive both in printing and in postage), followed by another reminder letter, followed by a third questionnaire, and often a final desperation contact of some sort. All this obtains relatively few responses. Much of the follow-up mail goes to "bad" addresses, mostly because the person we are seeking has moved house. So, much is spent, for little gain. At a rough guess, we spend two or three times more per completed questionnaire at this stage than at the first stage.

But is all this is worthwhile? Since the budget is fixed, an attractive alternative is to draw a bigger sample in the first stage, but then cut the pursuit of non-respondents short, dropping the third questionnaire (and possibly even the second). That would produce a larger sample within the same budget – of course, bigger samples are unequivocally better. The danger is that the "difficult" respondents who initially refuse our requests to participate and only complete the questionnaire months later are different from the "good" respondents who answer right away. So by giving up on those who initially refuse, we might get an un-representative sample. That would be unequivocally bad.

So a key question is whether "good" (and inexpensive) respondents differ systematically from "difficult" (and expensive) respondents and, by extension, from non-respondents (who are presumably like "difficult" respondents, but even more extreme). Good arguments can easily be made on both sides of this question,[15] but in the end the question is an empirical one, and is an important tool in the assessment of sample representativeness (Babbie 1995).

Are those who initially fail to complete the questionnaire, eventually answering only after many reminders, in fact different from "good" respondents? The logistic regression analysis in Table A2 suggests that, in the main, they are not. At a simple descriptive level, nothing we have measured is strongly correlated with initially not answering the survey (column 1), a finding confirmed by the

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[13] The ICVS is an appropriate benchmark because it offers the same definition of response rate in all the countries taking part, whereas in many other international surveys each country defines the response rate in a way that is customary for them, so the reports are not comparable.

[14] For example, the University of Hawaii estimates that on its impressive panoply of student surveys, 40 percent of responses are returned within two weeks of receipt (Babbie 1995: 280).

[15] It might be that poorly educated respondents find our lengthy questionnaire daunting; or that the rich have no time for it; or that housewives find the focus on work uninteresting; or that right-wingers find it intrusive, or left-wingers find it threatening. Alternatively, it could be that none of these matter – that filling out a questionnaire depends on random things (such as happening to have some free time that week) or on things uncorrelated with the variables we are interested in (such as mood, personality, or co-operativeness).

logistic regression (columns 2 and 3).[16] Demographic differences are minimal; status and political differences even smaller; and attitudinal differences negligible. There is only one statistically significant difference: younger people are very slightly more likely initially not to complete the questionnaire, all else equal.

Table A2. Analysis of non-response. Panel 1: Respondents who initially refused to complete the survey but eventually answered after many reminders (=1, all others=0). Panel 2: Item non-response (=number of individual questions not answered). Correlations (r), logistic regression coefficients (b), standardized partial regression coefficients estimated by OLS (beta), and significance tests. Australia IsssA 1994-95. N=1503.

	1. Initially refused to answer survey			2. Item non-response		
	r	logistic b	Wald χ^2	r	OLS beta	t
Male	-0.034	ns	0.45	-0.10	-0.07	-2.24
Age	-0.123	-0.02	12.91	0.11	ns	1.63
Parents' party	-0.014	ns	2.04	-0.04	ns	-1.12
Born in Australia	-0.026	ns	1.51	-0.05	ns	-1.35
Urban	0.012	ns	0.23	-0.01	ns	0.47
Education	0.017	ns	0.91	-0.13	-0.07	-2.08
Family income	0.001	ns	0.72	-0.07	ns	-0.40
Liberal or National Party	-0.013	ns	1.34	0.02	ns	1.33
In labor force	0.031	ns	0.01	-0.11	ns	-1.11
Catholic	0.023	ns	0.23	0.01	ns	-0.20
Christian belief (scale)	0.056	ns	1.23	0.04	ns	0.42
Pro-union (scale)	-0.003	ns	2.11	-0.01	ns	0.55
Govt regulate business (scale)	0.072	ns	0.99	0.00	ns	-0.43
Knowledge of science	-0.001	ns	1.04	-0.11	ns	-1.21
For genetically engineered food	0.001	ns	1.32	-0.08	ns	-1.59
Govt pay more on superannuation	0.036	ns	2.10	0.06	ns	1.23
Initially refused to answer survey	--	--	--	0.03	ns	1.20

ns – Not significantly different from zero, p<.05, two-tailed.

Item non-response

Item non-response is also a long-standing concern for survey analysts (e.g. Sudman 1983). Respondents' typically do not answer all the questions in a survey, and the concern is that those skipping an item are systematically different from those who do answer. On a few topics (for example, income) 10 percent or more may not answer, although generally item non-response tends to be closer to 5 percent in IsssA surveys[17]. There is a large statistical literature

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[16] There are also statistical ways of getting some empirical leverage even on permanent non-response and adjusting for any resulting biases in the multivariate analysis (see Heckman 1979 and the literature flowing from that). But the cure often seems more dangerous than the disease, so conventional wisdom has generally turned against such corrections – a view with which we concur.

[17] Item non-response is very low on some items, such as the goals for scientists in the 2001 survey where we have missing data under one per cent.

how to handle item non-response, with implications that turn largely on how distinctive the non-responders actually are (e.g. Joreskog and Sorbom 1988, chapter 1: 12-17; Little 1992:1229-31). If they are very different, serious difficulties can arise in the analysis; conversely, if item non-response is more or less random with respect to the variables of interest, it is relatively easy to deal with.

So again it is an empirical question: how distinctive are those who do not answer particular questions? To get some insight on this, we selected some widely used items and counted how many each respondent failed to answer. A typical count, for eight demographic and background items in the 1994-95 IsssA is:[18]

```
No missing data, answered all      74%
Missed 1 question                  21%
Missed 2 questions                  4%
Missed 3 questions                  1%
Missed 4 questions                0.4%
Missed 5 questions                0.1%
Missed 6 or more questions          0%
                                  100%(1503 cases)
```

Thus, most people answered all these questions but 21 per cent skipped one, four per cent skipped two and a handful skipped more. We made similar counts for other sorts of questions, with similar results.

Who, then, are not answering? In all, there are no substantial differences between those who skip questions and those who do not,[19] at least for the variables we have measured (see Table !!!, panel 2):

The tendency not to answer is not strongly correlated with anything we have measured (first column of panel 2). Most of the correlations are near zero.

Multivariate analysis suggests that there are, however, a couple of significant, but small, differences (see the second and third columns of panel 2). Men are a little less likely than women to skip questions, and the well-educated less likely than the poorly educated. Both differences are small, with a standardised effect of only -.07. Interestingly, there is no relation between skipping questions and being a tardy respondent – that is, no statistically significant link between item non-response and survey nearly-non-response. Instead, we suspect that doing a survey involves a two-stage decision process: first one decides whether or not to do the survey, then after that and quite independently, whether or not to answer each particular question.

There seems to be a general tendency toward skipping questions in a survey, although not a strong one (Table A3). For example, those who tended to skip background items also tended to skip political attitude questions (r=.32), questions on science (r=.21), attitudes toward retirement income provisions

---

[18] Sex, age, parents' political party, place of birth, urban residence, education, family income, and party preference.

[19] Results on earlier IsssA data are similar Bean 1991

(r=.31) and religious matters (r=.19). All these links are clear, but only moderately strong.

In some analyses, we have estimated the effects of item nonresponse using a variation of Heckman's (1979) method suggested by Kelley and Evans (1993:118-20) which uses nonresponse on related questions elsewhere in the questionnaire to give an independent indicator of the underlying propensity not to respond. However, our experience thus far is that these adjustments rarely make any practical difference.

In practice, we therefore generally use the pairwise present method for missing data, without any further adjustment. It is statistically preferable to the usual simple alternatives (Joreskog and Sorbom 1988, chapter 1: 12-17; Little 1992:1229-31).

Table A3. Correlations between initial refusal to complete the survey and non-response to particular items in the survey. Australia IsssA 1994-95. N=1503.

	Initially refused to complete the survey	Item non-response on:				
		Background items	Political attitudes	Attitudes to science	Attitudes toward retirement	Religious issues
Background items	0.06	1.00	0.32	0.21	0.31	0.19
Political attitudes	0.01	0.32	1.00	0.15	0.20	0.16
Attitudes to science	0.02	0.21	0.15	1.00	0.40	0.07
Attitudes to retirement	0.03	0.31	0.20	0.40	1.00	0.10
Religious issues	-0.03	0.19	0.16	0.07	0.10	1.00

Missing data on some specific questions have also been examined with reference to the question of whether they can be safely treated as missing at random (Table A4).

Table A4. Are missing cases missing at random? Selected variables.

Variable	Missing-at-random?	Source of evidence
Parents' political party	Yes	Kelley 2002 "Missing on parents' party." Australian Social Monitor 5(4): 67.
Political party	Probably	By analogy to "Parents' political party"

General matters of question design

In general, scale types and formats matter little to the psychometric quality of questionnaire items, so long as the substance of the question is clear and respondents can tell which end is high and which is low (Sheatsley 1983), although the reliability of ratings drops if there are under 3 answer categories or more than 9 answer categories (Milkovich and Wigdor 1991: 3). As a result, 5 to 7 answer categories are often treated as ideal, although one may need to vary this for specific purposes, such as replication. Some degree of balance of topics is ideal to maintain respondent concentration (Sheatsley 1983). To enhance accuracy, the IsssA routinely assesses new factual questions qualitatively in terms of respondents' experience of their clarity and complexity.

Measurement

Individual characteristics

CLASS AND STATUS VARIABLES

Family background on occupational status have of course been widely studied, most notably in the vast tradition of sociological research stemming from the Blau-Duncan paradigm (Blau and Duncan 1967; Featherman and Hauser 1978). Subsequent developments included class models (e.g. Erickson and Goldthorpe 1992; Wright 1985), models incorporating both class and status elements (e.g. Robinson and Kelley 1979), and many others. The Blau-Duncan paradigm led to a flowering of research unprecedented in sociology. Robust findings about stratification emerged first for the US (Blau and Duncan 1967; Duncan, Featherman and Duncan 1972) and soon afterward for many other countries, including Britain and Australia in the western industrial world (Broom and Jones 1969); Poland and Hungary in Eastern Europe (Zagorski 1984); and developing and even tribal societies (Kelley 1978). A Kuhnian (1962) "normal science" of social stratification was the outcome.

Our model is in the comprehensive tradition, incorporating both class and status aspects of family background. Objective class is measured by Kelley's extension of the Blau-Duncan model to include ownership and authority. It provides a more powerful and parsimonious model than the usual typological alternatives (Kelley 1990:350-56, 1992:23-34; Robinson and Kelley 1979).

SELF-EMPLOYED

Self-employment is measured by a direct question. **Father self-employed** is measured in the same way based on a question about father's work "when you were age 14".

```
SELFEQ     Self-employed
Value Label                   Value    Percent
Private/govt/other               .0        87
Self-employed                   1.0        13
                              Total       100
Mean            .132    Std dev        .339
Valid cases    20845
```

Supervisor is based on a direct question about supervision and, for those who do supervise, a second question asking whether those supervised themselves supervise yet other workers. It is scored 1 for high level supervisors (viz, those who supervise other supervisors); 0.5 for low level supervisors (viz, those who supervise only ordinary non-supervisory workers); and 0 for everyone else. The importance of the distinction between high and low level supervisors has long been known (Robinson and Kelley 1979). **Father supervisor** is measured in the same way.

```
SUPER3Q    Supervises (0, 0.5, 1.0)
Value Label                   Value    Percent
Not supervise                    .0        61
Low level supervisor             .5        25
Higher supervisor               1.0        14
                              Total       100
Mean            .270    Std dev        .366
Valid cases    20438
```

In some analyses, we use a dichotomous version of supervision which scores both low and high level supervisors 1 and everyone else 0.

Owners are defined as the self-employed who also supervise (and so presumably have employees). They are scored 1; all others are scored 0. Most owners run very small businesses. **Father owner** is defined in the same way, based on direct questions about father's work "when you were 14".

```
OWN2Q     Big owner (=self-employed & supervise)
Value Label                   Value    Percent
No                               0        95
Owner                            1         5
                              Total     100.0
Mean            .051    Std dev        .219
Valid cases    20669
```

Petty bourgeoisie are defined as the self-employed who do not supervise (and so presumably have no employees). They are scored 1 and all others 0. **Father petty bourgeoisie** is defined in the same way.

```
PBOURGQ    Petty bourgeoisie (self-emp, no employee
Value Label                    Value    Percent
No                                 0        92
Petty Bourg                        1         8
                               Total      100
Mean            .082       Std dev        .274
```

GOVERNMENT EMPLOYMENT

Government employment is scored 1 for national, state and local government employees, and zero for everyone else. It is based on a direct question. **Father government employee** is defined in the same way.

```
GOVTQ      Government employee
Value Label                    Value    Percent
                                   0        68
                                   1        32
                               Total    100.0
Mean            .317       Std dev        .465
Valid cases   20845
```

EDUCATION

Education is years of schooling. In Australia, respondent's education was ascertained by a series of questions on years of primary and secondary schooling and details on highest educational qualification. These were coded into the Australian Bureau of Statistics' 3 digit educational code and recoded into usual years of schooling.

```
Mean          11.227       Std dev        2.962
Valid cases   26061
```

Mother's and father's education was measured by direct questions with 8 or 9 categories, and recoded into approximate years of schooling. In many analyses, we use **parents' education**, defined as mother's education if only that is known; or father's education if only that is known; or the average of the two if both are known.

For cross-national analyses, we take years of education as defined by the original ISSP or ISEA investigators, often with country-specific corrections and refinements using data on qualifications.

PRIVATE SCHOOLING

Private schooling is measured by a direct question asking whether respondent attended a government, religious, or secular private school for their secondary education. In many analyses, we distinguish private non-Catholic schools (mainly fee-paying) from all others, both government and Catholic (which generally have low or negligible fees).

```
PVTEDUCQ  Private (non-Catholic) secondary school
Value Label                       Value    Percent
Other                               .00       90.5
Private non-C                      1.00        9.5
                                  Total      100.0
Valid cases    24537
```

Books in parents' home, a good indicator of the family cultural orientation, was asked by a direct question. The reference period was when respondent was age 14.

```
BOOK14Q   # books in parents house (R age 14)
Value Label                       Value    Percent
                                      1         2
                                      2         5
                                      5         0
                                     10        11
                                     20        16
                                     50        23
                                    100        19
                                    200        13
                                    500         8
                                   1250         4
                                  Total      100.0
Valid cases    25127
```

Family Income is income from all sources for respondent and, if married, their spouse.

Earnings is income from respondent's main job.

All income figures are adjusted to the price levels of the year 2000, using the consumer price index.

We use the natural log of income for some analyses, as is usual in many contexts. This means that metric coefficients reflect percentage rather than absolute changes – for example, that one additional year of education increases earnings by (say) 9% rather than $1200 per year.

```
Variable        Mean    Std Dev  Label
EARNQ        23351.58   27990.21  Earnings (inflation adjusted to yr 2000)
FAMINCQ      47680.36   38822.45  Family income: (inflation adjusted to yr
LNEARNQ          6.50       5.21  ln earnings (inflation adjusted to yr 20
LNFINCQ         10.48        .80  ln family income: (inflation adjusted to
```

We have no direct measure of **parents' income** because survey respondents are not generally able to provide reliable information on their parents's income. The do, however, provide reliable information on their parents' education, occupation, supervision, labour force participation and the like. We estimated parents' income from those known facts in the following way. (1) First, we estimated the impact of education, occupation. supervision, labour force participation and the like on the (log of) family income of comtemporary families by OLS regression. (2) Next, we assumed that this relationship held equally in the past, and so

29

predicted their parents' income on the basis of their parents' education, occupation, labour force participation, and the like. The resulting estimate is provides a plausible but by no means perfect proxy for family income, and we used this proxy in some analyses.

The estimating equation is:

```
Variable                B          SE B        Beta         T
EDUCQ              .025630       .003443     .161275      7.444
OCCSTATQ          .003600     3.9070E-04    .206906      9.215
SUPER3Q           .236724       .022586     .201801     10.481
SELFEQ            .017019       .033738     .013528       .504
OWN2Q             .103667       .042383     .065266      2.446
GOVTQ            -.065521       .018814    -.064779     -3.483
LNURBANQ          .006583       .002547     .045702      2.585
SEDXWRKQ          .031160       .001593     .343437     19.557
(Constant)      10.222974       .042726                239.270
    Adjusted R Square     .37628
    Standard Error        .38213
    n=3247 varying somewhat with missing data
```

where SEDXWRKQ is a measure of the spouse's education and employment. Parents' income was then estimated from the corresponding equation for parents' characteristics, and adding a random component with mean zero and standard deviation equal to the standard error in the estimating equation:

```
P_LnIncQ = FAEDYR2Q* .025630 +FASTATQ * .003600 + FASUPR3Q * .236724
    + FaSelfEQ*.017019 + FaOwn2Q *.103667 +FaGovtQ* -.065521
    + LnUrb14Q *.006583 + mEdXWrkQ *.031160  +    10.222974
    + .38213 * NORMAL(1)
```

The result then reflects what parents' income would have been if they had lived under the economic conditions of 1984-2001, in year 2000 dollars. That will somewhat over-estimate parents' incomes (because of productivity growth in the interval between the reference year for parents' characteristics and the survey date), but nonetheless put parents in roughly their correlative relative income rank. The distribution:

```
Variable       Mean      Std Dev   Label
P_LNINCQ       10.84         .47   Est parent ln income, R age 14 (w random)
```

An alternative would be to use a measure based on the possessions (house, car, VCR etc) which we have in several of our surveys. We did not do that because, other things being equal, older families are much less likely to have these possessions than younger families (cars, for example, were rare in the past and VCRs non-existent). Since age is linked to education and other key variables, that produces a serious bias.

LABOUR FORCE PARTICIPATION, EXPERIENCE

IN LABOUR FORCE, SPOUSE IN LABOUR FORCE

Labour force participation and **spouse's labour force participation** were measured by direct questions. In some analyses, we use a dichotomous version (working versus all other); in others a version distinguishing not in labour force (=0), part-time (=0.5), and full-time (=1.0) or the equivalent in approximate

hours worked (none=0; part-time=20; full-time=40). In other analyses, we distinguish those working long or very long hours (as defined below).

```
HOURS5Q   Hours worked: Tabular
Value Label                 Value     Percent
Not working: 0-4             1.00       38.5
Part time: 5-34              2.00       14.4
Full time: 35-48             3.00       34.9
Long: 49-59                  4.00        7.0
Very long: 60+               5.00        5.2
                            Total      100.0
```

MOTHER WORKED WHEN RESPONDENT WAS YOUNG

Mother worked was asked directly, in most surveys with three questions referring to key stages in respondent's life-cycle: when respondent was under school age (5 or under); when respondent was age 6 to 9; and when respondent was age 10 to 14. In many analyses, we averaged these three items to make a summary scale of mother's employment.

```
MOWKPREQ  Mother work when R age 0-5
Value Label                 Value     Percent
Not working                   .00       76.0
Yes, Part time                .50        9.9
Yes, Full time               1.00       14.1
                            Total      100.0
Mean            .190     Std dev         .359
Valid cases   21800
```

```
MOWK6Q     Mother work when R age 6-9
Value Label                    Value     Percent
Not working                      .00       66.8
Yes, Part time                   .50       15.7
Yes, Full time                  1.00       17.5
                               Total      100.0
Mean            .253     Std dev          .387
Valid cases   17628




MOWK10Q    Mother work when R age 10-14
Value Label                    Value     Percent
Not working                      .00       60.7
Yes, Part time                   .50       17.2
Yes, Full time                  1.00       22.1
                               Total      100.0
Mean            .307     Std dev          .412
Valid cases   23026




MO_WORK$   Mother work when R young (scale averaging the items above)
Mean            .252     Std dev          .344
```

OCCUPATIONAL STATUS SCORES

I assume that the true status of an occupation is intimately related to the
education of incumbents (well educated people get the best jobs), to their income
(high status jobs command larger rewards), and to the success of their children in
the next generation (high status jobs provide resources that can be used to give
children a head start in life). If so, and if Treiman's 14 categories (Treiman 1977)
give groups of occupations with similar status, then it follows that a scoring
scheme (applied to the 14 categories) that maximizes the correlation between them
and education, or income, or occupation in another generation would reflect the
true status of occupations in each group. This scoring scheme can be found from a
canonical (or, equivalently, discriminant) analysis -- for example, Klatzky and
Hodge's (1972) procedure using only occupation in two generations. Rather than
relying on a single pair of variables, I prefer a variant of Duncan-Jones' procedure
predicting respondent's occupation (treated as a set of dummy variables without
assumptions about rank) from education, income, and father's occupation (also
scored as a set of dummy variables without assumptions about rank). I applied
this procedure to individual level data from 16 countries, obtaining entirely
independent scores for each. As the resulting scores are invariant under a linear
transformation, there is no natural unit nor zero point; I have therefore
(arbitrarily but conveniently) normed them from a low of zero to a high of 100.

These results suggest that occupational status hierarchies are much the same
throughout the world. Table B1 shows the (product-moment) correlations between
hierarchies in 16 societies. The correlations are high, averaging 0.84. Indeed, this
is slightly higher than the correlation Treiman found among prestige scores

around the world (Treiman 1977). Furthermore, the similarity holds not just for western industrial societies but is equally apparent for the developing societies of Latin America, Africa, and Asia; correlations between industrial and developing societies average 0.82. Poland, though communist, is little different from the rest of the world. By far the lowest correlations involve Finland but since the other three Scandinavian countries are in no way unusual and the Finnish sample is the smallest analyzed (N=345), we attribute this to sampling error.

Since occupational status is essentially the same throughout the world, it is reasonable to construct a single scale for use throughout the world. I did this simply by averaging the scores for each country and norming the result to range again from zero to 100. These worldwide status scores are given in the text above and graphically in the figure below:

For the world as a whole, higher professionals -- the traditional free professions -- are clearly at the top of the hierarchy. Administrators are well behind, closely followed by technical employees, with higher clerical and higher sales employees coming next. Then there is a distinct gap; below that, the bottom of the white collar hierarchy overlaps with skilled manual workers. Ordinary semi-skilled workers follow next, then unskilled, followed by farmers and farm labourers at the bottom. Note that the traditional white collar - blue collar is poor because of the overlap between the bottom of white collar and the top of blue and that farmers are very low in status, although of middling prestige.

Table B1. Correlations among socioeconomic status scores for 16 societies; decimals omitted.[1]
_____

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Industrial Nations															
1. USA															
2. Australia	82														
3. Denmark	86	91													
4. Finland	63	28	73												
5. Germany	90	89	91	63											
6. Britain	92	91	93	43	99										
7. Netherlands	93	84	96	61	84	91									
8. N. Ireland	79	53	81	60	75	92	87								
9. Norway	88	82	90	67	87	89	92	78							
10. Poland	84	87	91	89	89	86	89	99	98						
11. Sweden	91	91	97	69	99	99	95	79	99	94					
Developing nations															
12. Bolivia	94	87	94	84	91	96	99	87	94	92	95				
13. Kenya	92	90	84	44	83	79	88	97	96	94	94	99			
14. Malaysia	79	63	72	70	62	77	80	93	84	93	78	84	96		
15. Philippines	89	70	81	57	73	84	92	94	93	93	93	98	97	89	
16. Taiwan	82	69	69	78	51	65	84	88	82	78	76	98	93	82	92

_____
[1] Computed over occupational groups, not individual respondents.

AGE, PARENTS' AGE

Age at the time of the survey is measured in years, based on date of birth.

Parents' age is the average age of respondent's mother and father when respondent was born. There is some evidence in other countries that older parents do a somewhat better job of raising their children than do younger parents

```
Variable        Mean     Std Dev  Label
AGEQ           44.25      16.00  AgeQ (at time of survey)
PNTAGEQ        29.58       6.22  Parents age when R born (mean).
```

SEX

Male is scored as a deviation from female: 1 for men and 0 for women.

```
MALEQ      MaleQ =1, female=0
Value Label                  Value     Percent
Female                         .00      50.5
MaleQ                         1.00      49.5
                             Total     100.0
```

MARRIED, DE FACTO, DIVORCED; PARENTS DIVORCED

Marital status was asked in a direct question. In most analyses we use it to distinguish three marital states: currently **married**, currently **de facto**, and everything else.

```
MARRIEDQ  Married (not defacto)
Value Label                  Value    Percent
No                              0        28
Yes                             1        72
                             Total      100
Valid cases    26126
```

```
DEFACTOQ  De facto (living together
Value Label                  Value    Percent
No                              0        95
Yes                             1         5
                             Total     100.0
Valid cases    25915
```

```
DIVORCEQ  Divorced or separated now
Value Label                  Value    Percent
No                             .00      93.2
Yes                           1.00       6.8
                             Total     100.0
```

Parental divorce is also measured by a direct question. This refers to whether or not your parents ever got divorced, including those who divorced and then married someone else, so many respondents with divorced parents would have spent part of their childhood in a family with a step-parent.

```
PNTDV14X  Parents get divorced
Value Label                      Value    Percent
No                                   0         90
Yes, Divorced                        1         10
                                 Total        100
Valid cases    26467
```

Number of siblings is derived from direct questions on number of brothers and number of sisters (save for one year when we asked brothers and sisters combined).

```
NSIBSQ    Number of siblings
Value Label                      Value    Percent
                                     0          5
                                     1         21
                                     2         25
                                     3         19
                                     4         11
                                     5          7
                                     6          4
                                     7          3
                                     8          5
                                 Total        100
Valid cases    22754
```

Urban residence is the natural log of the approximate population size of the place of residence, based on a direct question. In some analyses, it is dichotomised, with urban areas (population 500,000 and over) scored 1 and all others 0.

```
LNURBANQ  ln size of city now
Value Label                      Value    Percent
Farm, property                    2.30          6
Village (under 1,000)             6.21          5
Town (to 20,000)                  9.26         17
Mid-sized city                   11.00         17
City (to 500,000)                12.61         13
Metropolitan (500,000+)          14.73         42
                                 Total        100
Mean          11.709     Std dev       3.461
```

Urban residence at age 14 is measured similarly.

Place of birth is coded from a direct question into the ABS 4 digit code.

RELIGION

Church attendance is the log of number of services attended per year (counting one per year for the lowest category). The raw figures are from a direct question, coded into approximate number of services attended per year:

```
CHGOX        Church attendance now (# days/year)
Value Label                  Value      Percent
Missing: Ask, no ans         -1.00         2
Never                          .50        31
< 1 year                       .75        15
Once a year                   1.50        13
Several times yr              4.00        15
Once month                   12.00         3
2-3 per month                30.00         3
Each week, nearly            45.00         5
Every week                   52.00        10
Several times week          140.00         3
                             Total        100
```

CHRISTIAN BELIEF

Christian belief is a reliable 4 item question covering belief in god, heaven, hell, and life after death (Kelley 1988; Kelley, Evans, and Headey 1993).

```
                     Correlation Matrix
    --------------------------------------------------------
              GOD1Q      AFTLIFEQ    HEAVENQ      HELLQ
    --------------------------------------------------------
    GOD1Q        1.00
    AFTLIFEQ      .60       1.00
    HEAVENQ       .75        .72       1.00
    HELLQ         .58        .59        .73       1.00
    --------------------------------------------------------
    Reliability Coefficient  Alpha = .89

    Variable      Mean    Std Dev Label
    CBELIEF$       55          30 Christian belief scale
```

DENOMINATION

Denomination is based on a direct questions, usually scored as a set of dummy (indicator) variables. The exact dummy variables depend on the level of detail required in the analysis and the subject matter. In some analyses, we distinguish **Catholic** from all others. In other analyses, others we distinguish four groups: Catholic, **Protestant**, **Atheist**, and **Others**. And in yet other analyses we make further distinctions, for example separating **Anglicans** (Church of England) from other Protestants. We d no not show the frequency here as there are a great many small denominations.

POSTCODE CHARACTERISTICS

We tailored data from our large scale survey data (representative national samples of over 20,000 cases and over 10,000 cases for geographic data) from the IsssA-Pool Database (1984-2000). This merges postcode level data from the census with unit-record data from IsssA surveys. These data allow the simultaneous joint assessment of the impact of family background and neighbourhood effects, each taking the other into account. We developed measures of family background and selected (on the basis of theory, past research, and preliminary analysis) key variables measuring neighbourhood context

From the ABS postcode data, we developed objective measures of neighbourhood quality. To this end, we winnowed the wide variety of affluence measures that are available in the ABS postcode data to find those that best discriminate among neighbourhoods. We also examined the other traditional elements of socioeconomic status measures – placement in the occupational hierarchy, educational level, engagement in work. To evaluate the various possible measures, we assessed descriptive statistics and listings of cases to check data quality, and examined data structures to see whether items that we hoped to combine into multiple-item indices (because they are theoretically linked and because combining into multiple-item indices reduces random measurement error) have the kinds of relationships that permit us to do this.

For these purposes, we used Pearson correlations and exploratory factor analysis: Combining items into a multiple item index or scale is only justified if they are really multiple measures of the same thing. In addition to conceptual similarity, this means that they should all be highly correlated with each other, that exploratory factor analysis should find that they all belong on a single "factor" or "dimension", and that their correlations with criterion variables should be proportional to their factor loadings. The multiple-item indices constructed in this way are our objective socioeconomic measures of neighbourhood quality. They are needed to address such issues as how much neighbourhood characteristics matter compared to one's own human capital characteristics and other relevant causal factors.

Postcode socioeconomic status

ABS data include a variety of possible indicators of the socioeconomic status of postcodes, from which we have harvested a set that cover important dimensions of socioeconomic status – the percentage of postcode residents who hold university degrees, the percentage who left school at 14, the percentage who work in professional occupations, the percentage who work as labourers, and the earnings of prime age men. These variables are shown by factor analysis to cohere well, substantiating our expectation that the various indicators are all measures of a single, uni-dimensional underlying construct [see Appendix Table A].

[Appendix Table A about here]

Appendix Table A. Factor analysis of postcode socio-economic characteristics, 1996. N= 2,364 postcodes.[1]

Panel A: Variables	Mean	s.d.		
1. % left school at age 14	8.4	6.3		
2. % university educated	17.6	6.3		
3. % labourers	14.2	7.5		
4. % professional	10.8	5.4		
5. Earnings, prime age men	$595 week	199		
Panel B: Correlations	(1)	(2)	(3)	(4)
1. % left school at age 14	1.00			
2. % university educated	-0.58	1.00		
3. % labourers	0.50	-0.56	1.00	
4. % professional	-0.53	0.92	-0.58	1.00
5. Earnings, prime age men	-0.66	0.70	-0.54	0.65

Panel C: Maximum likelihood factor analysis (preferred) [2]	Factor loading	Factor scores
1. % left school at age 14	-0.60	-0.03
2. % university educated	0.97	0.62
3. % labourers	-0.60	-0.03
4. % professional	0.94	0.30
5. Earnings, prime age men	0.72	0.05

Panel D: Principal axis factor analysis (alternative)	Factor loading	Factor scores
1. % left school at age 14	-0.69	-0.13
2. % university educated	0.92	0.46
3. % labourers	-0.66	-0.12
4. % professional	0.88	0.19
5. Earnings, prime age men	0.80	0.21

Panel E: Correlations among alternative factor scores	Maximum likelihood	Principal axis
Maximum likelihood	--	0.977
1. % left school at age 14	-0.686	-0.680
2. % university educated	0.867	0.747
3. % labourers	-0.604	-0.566
4. % professional	0.823	0.697
5. Earnings, prime age men	0.959	0.997

[1] Postcode socio-economic characteristics are from the 1996 Census: Australian Bureau of Statistics, *1996 Census of Population and Housing: Basic Community Profile.* Canberra: Commonwealth of Australia 2000.

[2] Scale relialibity: standardized item alpha = .89.

Other postcode based measures of community characteristics

> o *Neighbourhood prosperity and local opportunity structure*: The separate items we examined here included (in addition to the Postcode socio-economic status index discussed above); %

Unemployed in postcode; % Left school by age 14; % University graduates among the population aged 15+ in postcode; % Unskilled labourers in postcode labour force; % Professional in postcode labour force; and Average weekly earnings of men 45-54.

o *Family structure*: As measures of family structure, we examined: % of postcode households containing a father, mother, and children; % of postcode households containing a couple without children; % of postcode households that are single parent with child(ren) under 15; % of postcode households containing a lone person.

o *Stability:* As a measure of the stability and temporal depth of neighbourhood social networks, we examined the % of postcode households at same address 5 years ago.

o *Male age structure*: High concentrations of adolescent boys and young men in particular neighbourhoods has been thought to stimulate crime and public incivility, and a dearth of prime-aged men may contribute to that effect: % males aged 10-14 in postcode; % males aged 15-19 in postcode; % males aged 20-24 in postcode; etc through % males aged 50-54 in postcode.

o *Industrial structure:* % Agriculture in postcode; % Mining in postcode; : % Manufacturing in postcode; % Electricity, gas & water; % Construction; % Wholesale in postcode; % Retail in postcode; % Accommodation, restaurant; % Transport; % Communications services; % Finance & insurance; % Property, business services; % Government administration; % Education; % Health & community service; % Cultural & recreational; % Personal & other services.

o From the ABS postcode data, we also developed measures of *neighbourhood ethnic diversity*: % Aboriginal & TSI in postcode; % Australian-born in postcode; % English-speaking immigrants; % Non-English speaking immigrants.

Models

The dependent variables of interest in this report are workforce participation, hours worked, self-employment, and occupational status, the measurement of which is discussed below in the section "Measurement of Dependent Variables". The measurement of the causal variables is discussed in the "Appendix: Measurement". We estimate the models of workforce participation and hours worked separately for men and women because prior research and theory strongly indicate that the influences on these matters work differently by gender. This strategy is equivalent to estimating pooled models with all possible

interactions of gender with all the other variables; our method tends to be slightly less efficient than the all-possible-interactions method, but is probably more robust. In the case of occupational status, prior research has shown that the process of occupational attainment is essentially the same for men and women, so there is no need for the separate estimation.

To assist in navigation, the equations are numbered to match the table in which their estimates appear. For example, the estimates for equation 1.1 occupy Table 1.1, the parameter estimates for equation 1.2 are found in Table 1.5, and so on. Thus, whilst reading the tables, one can readily find the relevant equation by locating the matching equation number.

The multivariate analyses of workforce participation and hours worked open with an analysis of the long term impact of family background. From a policy perspective, family background effects have two key interests. (1) They help illuminate the possible long-range consequences of current policies, for example, whether encouraging work participation in the current generation will, by ordinary social processes without further policy intervention, have an automatic flow-on to the next generation. Thus, they are particularly useful in helping to target early interventions. (2) Shifting the focus to the short-term, controlling family background effects in the direct effects models focusing on effects of current situation and behaviour helps to eliminate omitted variables problems in these models, notably to ensure that contemporary linkages (potentially policy manipulable) do not merely reflect deep-rooted causes. For example, suppose that we found that education had a large effect on work outcomes. Unless family background measures are included in the model, we would not normally know whether the education effect was real – representing the behaviour and attitudes of educated persons and the responses of potential employers to them – or merely proxied the long range effects of family background factors. To the extent that education effects were found when family background measures were controlled, it would suggest that policy interventions aimed at extending education (such as income or housing support for students or parents of students) have the potential to be effective. To the extent that education were to have a nil effect when the family background factors are controlled, the usual interpretation would be that this is a rather difficult area for later interventions.

We aimed to develop a relatively inclusive model of effects of family background. It is much more comprehensive than other models currently available in the literature. Naturally no model contains everything one wants: this one is a compromise between the theoretical goal of inclusiveness and the practical goal of being able to include as many surveys as possible in order to achieve precise estimates.

All the variables in the family background models are causally prior to other variables we investigate in later models, so we estimate their total effects without including the intermediate variables (e.g. Alwin and Hauser 1975). All the variables on the right hand side in the family background models are hypothesized to play a causal role in workforce participation and in hours worked.

Defining "Workforce_participation" to be estimated workforce participation (y-hat):

The findings in Table 1.1 come from this model estimated for men (so there is no gender variable in the model).

Because work is not an either/or proposition, people can engage in it for greatly varying amounts of time, so it makes sense also to investigate the effects of family background on the intensity of workforce participation, on hours worked. Defining "Hours_worked" to be estimated workforce participation (y-hat):

The findings in Table 1.2 come from this model estimated for men.

The corresponding models for women have exactly the same explanatory variables:

The findings in Tables 1.3 and 1.4 come from these equations.

Having established the total effects of family background variables in these models, we next move closer in the life cycle, introducing respondent's educational attainment and current life course situation. The effects of family background estimated at this stage are "direct effects" which means that each of them represents that part of the total effects of the variable which are not indirectly transmitted by the newly introduced intermediate explanatory variables. For example, if there is an effect of parents' education found in this model, it will be an effect above and beyond that which comes about because of the causal action of respondent's own education which is now controlled in the model – examples might include employers screening potential employees by accent, or by familiarity with the fine arts and theatre, or the extra vocabulary that even academically unsuccessful children from educated families may acquire. The reason for maintaining the family background effects into the next stage of the modelling is that it ensures that the effects of contemporary social forces which we might observe are not merely proxying omitted background variables (e.g. Pedhazur 1997: 765-840).

Normally, direct effects of family background will be of the same size or smaller than the total effect, particularly in cases such as this where we expect a great deal of their causal influence to be transmitted by respondent's own education.

To the extent that this is so, it suggests that schooling is an important policy lever that can compensate for disadvantages in family background.

The linkages represented in this model are all hypothesized to be causal, except that of spouse's work force participation. This is an exploratory assessment of the degree of association between spouse's workforce patterns, net of a wide range of control variables, with the aim of moving towards a reciprocal causation model in the future. The others represent a wide range of theories, some of which represent potential policy levers, others of which are included as controls to avoid omitted-variables problems and to aid in understanding of the forces which may also be at work here and not be amenable to policy change.

There is an important set of omitted variables worth noting at this stage: attitudes and preferences concerning employment. For women, the role of these attitudes and values for married women is the focus of a current FaCS project building on this one. For several years we have been developing measures of attitudes, preferences, and identities on employment which are suitable to men and we hope to make them the focus of a future FaCS proposal.

Eq. 1.5. Workforce_participation_men = f(RHS_variables from equation 1.1, Secondary_school_completion, University_completion,[reference category is early school leaver], Age_25_to_34, Age_45_to_54, Age_55_to_64, [reference category is 35 to 44], Catholic denomination, [reference category is all other religions and atheist], Church_attendance, Year_of_survey, Married [reference category is not currently married], Preschool_age_children, School_age_children, and Spouse's_workforce_participation).

Eq. 1.6. Hours_worked_men = f(RHS_variables from equation 1.1, Secondary_school_completion, University_completion,[reference category is early school leaver], Age_25_to_34, Age_45_to_54, Age_55_to_64, [reference category is 35 to 44], Catholic denomination, [reference category is all other religions and atheist], Church_attendance, Year_of_survey, Married [reference category is not currently married], Preschool_age_children, School_age_children, and Spouse's_workforce_participation).

The models for women are identical. In detail:

Eq. 1.7. Workforce_participation_women = f(RHS_variables from equation 1.1, Secondary_school_completion, University_completion,[reference category is early school leaver], Age_25_to_34, Age_45_to_54, Age_55_to_64, [reference category is 35 to 44], Catholic denomination, [reference category is all other religions and atheist], Church_attendance, Year_of_survey, Married [reference category is not currently married], Preschool_age_children, School_age_children, and Spouse's_workforce_participation).

Eq. 1.8. Hours_worked_women = f(RHS_variables from equation 1.1, Secondary_school_completion, University_completion,[reference category is early school leaver], Age_25_to_34, Age_45_to_54, Age_55_to_64, [reference category is 35 to 44], Catholic denomination, [reference category is all other religions and atheist], Church_attendance, Year_of_survey, Married [reference category is not currently married], Preschool_age_children, School_age_children, and Spouse's_workforce_participation).

Having investigated the direct and indirect effects of the family background variables, it is possible to prune the model slightly using a combination of criteria. First, we are looking to prune variables that were fairly weakly hypothesized to have effects (i.e. were generally included because of their known importance in   related areas rather than because of their clearly established

theoretical importance in this). Second, we are looking to keep the models for the two genders parallel, so we only want to omit variables that appear not to play an important role for either gender, in this case variables that are not significant. Following this strategy, the variables that we drop at this stage are: private schooling, parent's age when respondent was born, and being a second generation migrant.

With this wide range of individual-level factors assessed and controlled, we can examine the degree to which neighbourhood factors matter. Note that to obtain a correct estimate of the separate, direct effect of postcode unemployment level – to avoid the ecological fallacy -- it is necessary to control individual unemployment, as well as to add in the contextual variables of interest. Moreover, the national unemployment rate needs to be controlled as well, to ensure that the effect is actually occurring at the postcode level, because it is important for policy reasons to be able to address the effect at the correct level. The other indicators introduced at this stage of the model are of other community characteristics: postcode SES, % Aboriginal and Torres Straits Islander among postcode residents, and residential stability. Thus we have an indicator of the quality of local employment (postcode SES), an indicator of the availability of local employment (postcode unemployment), an indicator of ethnic diversity (postcode % ATSI), and an indicator of avilability of other residents for long-term engagement in local social networks (postcode residential stability).

Eq. 1.9. Hours_worked_men = f (Father's_occupation, Father_supervised, Father_self-employed, Parents'_education, Number_of_Siblings, Foreign_born, Parental_divorce, Maternal_employment, Size_of_place,

Secondary_school_completion, University_completion,[reference category is early school leaver], Age_25_to_34, Age_45_to_54, Age_55_to_64, [reference category is 35 to 44], Catholic denomination, [reference category is all other religions and atheist], Church_attendance, Year_of_survey, Married [reference category is not currently married], Preschool_age_children, School_age_children, Spouse's_workforce_participation, R_unemployed,

postcode_SES, postcode_%_Unemployed, postcode_%_ATSI, postcode_residential_stability).

The corresponding model for women is:

Eq. 1.10. Hours_worked_women = f(RHS variables from Eq 1.9).

This completes the modelling of hours worked for pay.

The next topic of the project is self-employment. Here, we use the same biographical modelling strategy, beginning with the total effects of family background, using the same set of explanatory variables as in the total effects model of labour force participation and hours worked (equation 1.1).

Eq. 2.1. Self_employment_men = f(Father's_occupation, Father_supervised, Father_self-employed, Parental_income, Parents'_education, Parents'_books, Number_of_Siblings, Foreign_born, Second_Generation, Parental_divorce, Maternal_employment, Private_schooling, Size_of_place).

The model for women includes exactly the same explanatory variables.

Eq. 2.2. Self_employment_women = f(RHS variables from Eq 2.1).

Next, we move forward in the life course to education and the present.

Eq. 2.3. Self_employment_men = f(RHS_variables from equation 2.1,

Secondary_school_completion, University_completion,[reference category is early school leaver], Age_25_to_34, Age_45_to_54, Age_55_to_64, [reference category is 35 to 44], Catholic denomination, [reference category is all other religions and atheist], Church_attendance, Year_of_survey, Married [reference category is not currently married], Preschool_age_children, School_age_children, and Spouse's_workforce_participation).

The model for women is identical:

With this wide range of family background and life course explanatory variables' effects investigated, we proceed to the assessment of the effects of community context. We could have pruned several of the background variables at this stage, as we did in the analysis of workforce participation and hours worked, but there was no pressing need to as the estimates, it turns out, are not sensitive to minor modifications in the model. (It is also true that we could have left the models unpruned in the analysis of workforce participation and hours worked, because the estimates are quite insensitive to the inclusion or omission of these non-significant variables.) In this instance we did not prune but rather incorporated the full set of family background variables into the direct effects model of community characteristics.

The community characteristics introduced at this stage to predict self-employment include those used previously to predict hours worked: an indicator of the quality of local employment (postcode SES), an indicator of the availability of local employment (postcode unemployment), an indicator of ethnic diversity (postcode % ATSI), and an indicator of availability of other residents for long-term engagement in local social networks (postcode residential stability).

We also introduce an extended set of locality variables, because self-employment usually involves a small-scale business, the neighbourhood advantages and disadvantages as an ecological niche for self-employment seemed especially likely to warrant exploration. To extend measurement of the availability of local employment, we introduce a set of dummy variables measuring the percentage of postcode residents working in different industries, because it is known that the percentage self-employed varies strongly among industries (Sikora 2001a). We also, more speculatively included three indices of neighbourhood social capital: an active neighbouring index (detailed in Evans and Kelley 2002d) which is composed of measures of neighbours' cooperation, a measure of the number of local friends, and a multiple item measure indexing neighbourhood incivilities. We also include measures of the population age structure, particularly the percentage of postcode residents who are males in their 20s. In addition, we control for potential long-run consequences of growing up in different states.

The model for women is the same:

Eq. 2.6. Self_employment_women = f(RHS_variables from equation 2.5)

The next topic of this report is job quality as indexed by occupational status. Here, because prior research demonstrates that the process of occupational attainment is the same for men and women (Crook 1997; Marks 1992; Treiman and Yip 1989), we are justified in estimating a pooled model for both men and women, needing merely a dummy variable to allow for a potential shift factor. We follow the same biographical logic in modelling quality of employment that we previously used for workforce participation, hours of work, and self-employment, and so begin with the effects of family background:

Eq. 3.1. Occupational_Status = f(RHS_variables from eq 1.1 plus gender).

Then, following the standard biographical logic of used throughout this paper, we enter in education and life course stage measures:

Eq. 3.2. Occupational_Status = f(RHS_variables from eq 3.1. ,
Secondary_school_completion, University_completion,[reference category is early school leaver], Age_25_to_34,
Age_45_to_54, Age_55_to_64, [reference category is 35 to 44], Catholic denomination, [reference category is all
other religions and atheist], Church_attendance, Year_of_survey, Married [reference category is not currently
married], Preschool_age_children, School_age_children, and Spouse's_workforce_participation).

The paper then takes up the issue of potential selectivity into neighbourhoods, develops a recommendation for circumventing this by examining the long-term impact of neighbourhood during adolescence. These matters are dealt with in Tables 3.3 and 3.4. That completes the exploratory modelling. Then, returning to our main substantive issue, we proceed to a series of structural equation models to test for the presence of a long-term neighbourhood effect on occupational status, and to assess the degree to which that is a consequence of neighbourhood SES's effect on occupational status.

We next estimate a structural equation model that models these effects with corrections for attenuation due to random measurement error in the postcode SES measure. Attentuation due to random measurement error is a perennial concern in social science measurement (Alwin and Jackson 1979; Andrews 1984; Joreskog 1993), so when one has arrived at a final exploratory OLS model, it is a good plan to estimate a structural equation model. Structural equation models can incorporate simultaneous equations with multiple endogenous variables, allow random measurement error both in the endogenous and exogenous variables, and incorporate a psychometric measurement model (e.g. Bollen and Long 1993: 1; Joreskog 1979).

Eq. 3.5a Postcode_14_SES_true= f(postcode_%_University_educated, postcode_%_left_school_at_age_14,
postcode_%_of_workforce_in_Professional_occupations, postcode_%_of_workforce_in_Labouring_occupations,
Postcode_median_Earnings_prime_age_men)

The measurement model's maximum-likelihood factor analyses are given in at the bottom of Table 3.5. We also constrain the point-estimates of the maximum likelihood factor loadings estimate from Eq 3.5a to be the same in all three structural equation models, Eq 3.5b, Eq 3.5c, and Eq 3.5d. We assume for simplicity that the other variables in the model are measured with perfect reliability[20].

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[20] This is the conventional assumption, of necessity, for variables for which we have only one measurement.

45

This model establishes that there is a moderate sized total effect of postcode SES during adolescence on the subsequent occupational career. We probe further, to see whether anything is left of this total effect once we take into account educational attainment.

Eq. 3.5c. Occupational_status = f(RHS variables from Eq 3.5b, Education) .

In fact, the effect of postcode SES becomes non-significant. This strongly suggests that the way that postcode SES during adolescence influences subsequent occupational attainment is by influencing success at school. This interpretation is reinforced by the results of Eq 3.5d where the estimates suggest a moderate-sized effect of SES of postcode at age 14 on educational attainment.

Eq. 3.5d. Years_of_education = f(Postcode_14_SES_true, RHS variables from Eq 3.2 except education) .

That together with the large effect of education on occupational status (in estimates of Eq. 3.5b) tell us that SES of postcode at age 14 has a moderate-sized influence on education which has a very large influence on occupational status, but aside from that indirect effect, SES of postcode at age 14 has no direct effect net of education on occupational status.

Methods

Estimation of equations with continuous dependent variables in this report is by ordinary least squares (except for Eqs 3.5a through 3.5d which are by maximum likelihood methods). Estimation of equations with dichotomous dependent variables (workforce participation and self-employment) is by logistic regression, because the coefficient estimates are more efficiently done by this method than by OLS in the case of dichotomous dependent variables (although, in practice, our experience is that the predicted values from OLS estimates and logistic regression estimates are very close, so the risk would appear to be more a logic possibility than a practical worry). OLS estimates tend to be highly robust across datasets and so are strongly preferred as exploratory methods in general. Nonetheless, the estimates from OLS (and logistic regression) do not correct for random measurement error which can produce biased and inefficient coefficient estimates. Accordingly, in the area of this report where modeling is best developed – where it rests on the firmest foundation of prior research – in the models of the effects of neighbourhood on occupational status we are able to use structural equation modeling (e.g. Bollen and Long

1. EFFECTS ON LABOUR FORCE PARTICIPATION AND HOURS WORKED

This section focuses, first, on whether people are in the labour force – the traditional dichotomous in/out distinction. Second, to give a more nuanced view of the same basic issue, we focus on "intensity of employment" – on how many hours people work (counting 0 hours for those not in the labour force). The hours worked perspective is useful in picking up differences that are missed by the crude but traditional "in the labour force/ out of the labour force" distinction. Important among these is the difference between those (mainly men) who work long hours and those who work ordinary full-time hours; it is also important in picking up the distinction between part-time workers (mainly women) and full-time workers.

We follow a biographical/ temporal logic, so our first model focuses on effects of the family of origin, asking whether conditions in the family of origin affect sons' labour force participation years later when they are adults. Our analysis focuses on the post-education ages 25 to 64.

To model workforce participation, we use logistic regression, because that provides more accurate estimates than does ordinary least squares regression with a binary (dummy) dependent variable. In analysing hours of work, a continuous variable, we use OLS regression.

Effects of family background

Men's workforce participation

Equation 1.1 in the Models and Methods section gives the model formally.

Men's workforce participation has traditionally been high throughout young adulthood and early middle age. However, as retirement age approaches differences increasingly emerge.

Maternal employment has a large and important effect on men's workforce participation in this logistic regression model (Table 1.1). According to these coefficient estimates, men whose mothers' worked extensively were over two and one half times as likely to be in the workforce as men whose mothers were housewives, all else equal. The effect is highly significant. Note that this is not an artefact of the expansion of maternal employment over time. Later tables will show that, unlike maternal employment, time does not have a positive effect. To take a closer look at this interesting and large effect, we re-ran the analysis separately for different age-groups and found that maternal employment has no effect on the workforce participation of young men or of men in early middle age. Instead, the effect maternal employment is large, but limited to prime middle age and later middle age (up to age 65). The sons of working mothers are much

less likely to retire early. This is also a potentially important result because so few things seem to effectively counter the trend towards early retirement.

Table 1.1: Effects of family background on men's labour force participation: Logistic regresson estimates. Men, aged 25 to 64 with complete data on all variables N=4,948.[1]

	b	Std. Err.	Chi-sq	Sig.	exp(b)
Migrant: 1st generation	0.41	0.12	12.10	0.00	1.51
Migrant: 2nd generation	-0.07	0.17	0.20	n.s.	0.93
Urban at 14 (ln)	0.01	0.01	0.64	n.s.	1.01
Number of siblings	0.00	0.01	0.54	n.s.	1.00
Parent's education	0.09	0.02	20.65	0.00	1.09
Books in parents' home	0.00	0.00	4.53	0.03	1.00
Father's status	0.00	0.00	2.67	n.s.	1.00
Fathr supervises	0.09	0.13	0.54	n.s.	1.10
Parents income	0.22	0.12	3.44	n.s.	1.25
Father self-employed	-0.05	0.10	0.25	n.s.	0.95
Parents' age	-0.01	0.01	2.87	n.s.	0.99
Parents divorced	0.00	0.18	0.00	n.s.	1.00
Mother worked	0.97	0.16	36.76	0.00	2.63
Private school	-0.05	0.26	0.04	n.s.	0.95
(constant)	-1.21	1.24	0.95	n.s.	

[1] Chi-square = 127.96, 14 d.f.

Father's employment characteristics are less consequential (Table 1.1). We were able to include measures of **father's self-employment**, **father's occupational status** (job quality), and **father's supervisory responsibilities**, but none of them has a significant effect on men's probability of workforce participation, net of the income they generate, in this model. This is interesting because father's occupational status is known to be consequential in capacity building/ human capital formation, and supervisors and the self-employed tend to be highly work-committed so it was reasonable to hypothesise that these characteristics would have encouraged workforce participation, but it seems, not to be the case, on average and all else equal.

Moreover, the fact that the regression coefficient for **income** generated by father's and mother's employment is not statistically significant even in this large sample, suggests that parental prosperity does not affect their sons' later workforce participation, on average, and all else equal (Table 1.1). This is evidence against the underclass hypothesis of poverty traps inherited from generation to generation.

Some non-economic features of family background also affect men's engagement in the workforce.

In particular, **parents' education** has a direct effect (completely independent of its effects on parents' employment and earnings) on their sons' later workforce participation in this model (Table 1.1). All else equal, the more highly educated the parents, the more likely are their sons to grow up to participate in the workforce, on average. Even aside from   parental education, the number of

48

books in the home has a statistically significant effect on men's probability of being workforce participants, in this model.

By contrast, the **number of siblings** has no statistically significant effect on men's workforce participation in this model (Table 1.1). This is contrary to the economic hypothesis that, net of all else, having smaller families enables parents to produce "higher quality" children – including a greater capacity for economic independence.

Parents' age – that is, the mean age of the parents when the respondent was born – does not have a statistically significant effect on men's workforce participation in this model (Table 1.1). This is important, because there has been concern that early childbearing by some single mothers might be especially disadvantageous to their children. But the evidence here is that, aside from youthful parents' potentially low education, their age per se does not impair their sons' engagement in the workforce. But the null finding also runs against the hope that rising ages at parenthood over the last couple of decades would lead to generally wiser and more mature parenting. At least in the area of son's later workforce experience, the statistically non-significant result suggests that there will be no measurable benefit.

Neither does **parental** divorce have a statistically significant effect on men's workforce participation, according to this model (Table 1.1). When they grow up, the sons of divorce are just as likely to be engaged in paid work as are the sons of intact families, all else equal, according to the estimates in this model.

The **type of school** respondent attended does not significantly affect men's later propensity to participate in the workforce, according to this model (Table 1.1). Thus, men who went to government schools are no less likely to be in the workforce than are men who went to private schools, all else equal.

Immigrant men are even more likely to be in the workforce than are men from long-established Australian families (Table 1.1). This is a large effect, with immigrant men being about one and one half times as likely to be in the work force as are otherwise similar men whose parents were Australian born. It seems likely that this has more to do with their personal determination to succeed in Australia than with cultural traits they might bring, since the effect of being a **second generation** immigrant is not statistically significant . Thus, all else equal, the immigrant advantage is large, on average, but evanescent.

Aside from the kinds of families who live there, **urban and rural** places do not seem to have any encouraging or discouraging effect on the later workforce participation of men who grew up there. Otherwise put, all else equal, size of place at age 14 does not have a statistically significant effect on men's later workforce participation, on average (Table 1.1).

Equation 1.2 in the Models and Methods section gives the model formally.

Men's intensity of employment – how much they work– is the focus of this section. Our analysis focuses on the post-education ages 25 to 64. We follow a biographical/ temporal logic, so this model focuses on effects of the family of origin, asking whether conditions in the family of origin affect ' weekly hours of work among men with jobs years later when they are adults. To model hours of work, we use OLS regression, because hours of work approximates a well-behaved continuous variable, so OLS is justified.

In this model, **maternal employment** (a three item index averaging the extent to which respondent's mother worked when he was under school age, when he was age 6 to age 9, and when he was age 10 to age 14, details in measurement appendix**)** has a large, statistically significant effect on working men's intensity of employment, on how many hours they work, on average, all else equal (Table 1.2). According to these estimates, men whose mothers' worked extensively will themselves work almost 4 more hours a week than men whose mothers were housewives. The effect is highly significant. This is a potentially important result, because it suggests that encouraging single mothers back into employment when their children reach school age (even if income support is still needed then) can encourage financial independence in adulthood. To take a closer look at this interesting and large effect, we re-ran the analysis separately for different age-groups and found that maternal employment has no effect on the hours worked by young men or by men in early middle age. Instead, the effect maternal employment is large, but limited to prime middle age and later middle age (up to age 65). According to the estimates from these models, the sons of working mothers work longer hours in prime middle age and later middle age, all else equal, on average.

Table 1.2: Effects of family background on men's weekly hours of employment:OLS regresson estimates. Men, aged 25 to 64 N=9,281.[1]

Variable	b	s.e.	Standardized	t
Migrant: 1st generation	-0.33	0.60	n.s.	-0.55
Migrant: 2nd generation	-1.63	1.09	n.s.	-1.50
Urban at 14 (ln)	-0.10	0.07	n.s.	-1.35
Number of siblings	-0.05	0.03	n.s.	-1.71
Parent's education	0.48	0.11	0.07	4.45
Books in parents' home	0.00	0.00	0.03	2.44
Father's status	-0.01	0.01	n.s.	-0.64
Fathr supervises	1.38	0.72	n.s.	1.91
Parents income	1.12	0.73	n.s.	1.53
Father self-employed	2.44	0.61	0.05	3.99
Parents' age	-0.06	0.04	n.s.	-1.54
Parents divorced	-3.26	0.87	-0.05	-3.75
Mother worked	4.94	0.77	0.09	6.45
Private school	-0.21	1.67	n.s.	-0.13
(constant)	21.54	7.68		

[1] Adjusted R^2 = .02.

According to the estimates in this model, **father's self-employment** has a significant positive effect on the hours that their sons work as adults (Table 1.2). The metric regression coefficient suggests that when grown, the sons of self-employed fathers work about two and a half hours a week more than do otherwise comparable men reared in employee families, on average and all else equal.

By contrast, neither **father's occupational status** (job quality) nor **father's supervisory responsibilities** has a significant effect on men's weekly hours of employment in this model (Table 1.2). In other words, this model finds that on average, the sons of men at the bottom of the occupational hierarchy work just as long hours when they grow up as do the sons of men at the top of the ladder, all else equal. Similarly, the sons of non-supervisory workers work just as long hours as the sons of their fathers' supervisors, on average and all else equal.

Moreover, in this model the **income** generated by father's and mother's employment does not have a statistically significant effect on how much work their sons do when they grow up, on average and all else equal (Table 1.2). It should be remembered that this is estimated rather than actual income so these results are less certain than for the other variables.

Some non-economic features of family background also affect men's work intensity.

In particular, in this model, **parents' education** has a statistically significant direct effect (completely independent of its effects on parents' employment and earnings) on their sons' later workforce participation (Table 1.2). The more highly educated the parents, the longer hours of work their sons do as adults. The metric regression coefficient suggests that each additional year of education the parents have raises their son's weekly hours of employment by about one

half, so, for example, the difference between a man whose parents left school after year 8, and a man whose parents completed 4-year university courses, would amount to about 4 hours a week, all else equal. Even aside from their education, the statistically significant regression coefficient for the number of books in the house while respondent was growing up suggests that parents who invest in **books** enhance their sons' capacities for working longer hours.

By contrast, the **number of siblings** has no statistically significant effect on men's workforce time in this model (Table 1.1). This is contrary to the economic hypothesis that, net of all else, having smaller families enables parents to produce "higher quality" children – including greater diligence. In fact, the non-significance of the regression coefficient suggests that, to the extent that the model is correctly specified, big families and small families seem to be equally successful in developing their sons' capacity for sustained effort.

In this model of men's weekly hours of employment, **parents' age** during respondent's childhood fails to have a statistically significant effect (Table 1.2). This is important, because there has been concern that early childbearing by some single mothers might be especially disadvantageous to their children. But the evidence here is that, aside from parents' education, their age does not impair their sons' engagement in the workforce.

In this model, **parental divorce** has a substantial negative effect, on average, on the hours worked by men years later as adults, all else equal (Table 1.2). Men whose parents divorced (while the respondent was a child or young teenager) work 3.26 hours less a week, on average, than do comparable men from intact families, according to the metric regression coefficient. This is larger than the difference between the sons of the self-employed and the sons of employees (2.44 hours), about the same size as the difference between sons of university graduates and men whose parents left school after year 8, and smaller than the difference between men whose mothers worked extensively and the sons of housewives (4.94 hours).

The **type of school** respondent attended does not significantly affect men's weekly hours of employment in adulthood, in this model (Table 1.2). This non-significance of effect suggests that men who went to government schools work just as long hours as men who went to private schools, on average, all else equal.

In this model, the effect of the dummy variable representing migration status is not statistically significant(Table 1.2). Similarly, the dichotomous variable representing s**econd generation** immigrant status is not statistically significant .

Size of place at age 14 -- our indicator or rurality/urbanicity of upbringing -- does not have a significant effect on employed men's weekly hours of work in this model (Table 1.2).

Women's workforce participation

Equation 1.1 in the "Models" section above gives the model estimated below in Table 1.4 which forms the focus of this section.

Women's workforce participation has been more thoroughly studied than has men's, although there is still much to learn. Our analysis focuses on the post-education ages 25 to 64. We follow a biographical/ temporal logic, so our first model focuses on effects of the family of origin, asking whether conditions in the family of origin affect daughters' labour force participation years later when they are adults. To model workforce participation, we use logistic regression, because that provides more accurate estimates of standard errors than does OLS regression with a binary (dummy) dependent variable.

In this model, **maternal employment** while a girl was growing up has a large and statistically significant effect on her later workforce participation (Table 1.3). According to these estimates, women whose mothers' worked extensively were about one and three quarters times as likely to be in the workforce as otherwise comparable women whose mothers were housewives. The effect is highly significant. This is a potentially important result, because it suggests that there is an intergenerational momentum to women's labour force participation. Because of the special age pattern we found for men, we investigated it for women too, but found no sign of the concentration of this effect at a particular stage of the life cycle. Instead, maternal employment seems to continue to encourage employment on the part of their daughters throughout the 25 to 64 age span we investigated here. Note that this is independent of the estimated income effect of maternal employment (which some have argued generates a kind of consumption treadmill with each generation feeling challenged to exceed the wealth of their parents).

> *Whether this strong effect comes about by the mother's employment shaping the daughter's attitudes and preferences towards employment, or whether it comes about more directly by imitation or by learning skills that facilitate the coordination of work and family life are questions we hope to take up in our in-progress FaCS project on women's workforce participation.*

[Insert Table 1.3 about here]

Table 1.3: Effects of family background on women's labour force participation: Logistic regresson estimates. Women, aged 25 to 64 with complete data on all variables N=5,387.[1]

	b	Std. Err.	Chi-sq	Sig.	exp(b)
Migrant: 1st generation	-0.11	0.07	2.34	n.s.	0.89
Migrant: 2nd generation	-0.15	0.12	1.67	n.s.	0.86
Urban at 14 (ln)	0.01	0.01	1.85	n.s.	1.01
Number of siblings	-0.01	0.00	6.60	0.01	0.99
Parent's education	0.05	0.01	12.19	0.00	1.05
Books in parents' home	0.00	0.00	6.63	0.01	1.00
Father's status	0.00	0.00	4.62	0.03	1.00
Father supervises	0.27	0.09	9.66	0.00	1.31
Parents income	-0.03	0.08	0.14	n.s.	0.97
Father self-employed	0.13	0.07	3.28	0.07	1.14
Parents' age	0.00	0.00	0.42	n.s.	1.00
Parents divorced	-0.23	0.11	4.64	0.03	0.80
Mother worked	0.56	0.10	33.72	0.00	1.75
Private school	0.14	0.16	0.77	n.s.	1.15
(constant)	0.06	0.82	0.01	n.s.	

[1] Chi-square = 156.90, 14 d.f.

Father's employment characteristics have smaller effects in this model, but several of them are statistically significant (Table 1.3).

In this model, **father's occupational status** (job quality) fails to have a significant effect on his daughter's later likelihood of being in the workforce (Table 1.3).

By contrast, **father's self-employment** while a girl was growing up does affect her later probability of workforce participation, in this model (Table 1.3). As adults, the daughters of self-employed fathers are 1.14 times as likely to be in the workforce as are the daughters of employees.

In this model, women's workforce participation is also affected by growing up in a family where the father had **supervisory responsibilities** in the workplace: there is a positive, statistically significant effect (Table 1.3). The daughters of supervisors are 1.31 times as likely to be in the workforce as are their peers whose fathers did not supervise other workers.

In this model, the estimated **income** generated by father's and mother's employment does not have a statistically significant effect on their daughters' later workforce participation (Table 1.3). It should be remembered that this null finding is based on estimated rather than measured income and so is subject to additional sources of random error, compared to the measured variables.

Some non-economic features of family background also affect women's engagement in the workforce.

In particular, **parents' education** has a small, significant direct effect (completely independent of its effects on parents' employment and earnings) on their daughters' later workforce participation in this model (Table 1.3). But the

effect is not large. Even aside from their education, parents who fill their homes with **books** have a positive statistically significant effect on their daughters' later labour force participation.

By contrast, the **number of siblings** has a small,   statistically significant negative effect on women's workforce participation (Table 1.3).

Parents' age during respondent's childhood fails to have a statistically significant negative effect on women's workforce participation (Table 1.3) in this model. This result suggests that, aside from correlated differences (notably educational attainment), women who were raised by younger parents are just as likely to be in the workforce as are their peers who were raised by more mature parents.

Parental divorce has a large, statistically significant negative effect on women's workforce participation, in this model (Table 1.3). The exponent of the logistic regression coefficient suggests that, all else equal, when they grow up, the daughters of divorce are only 80 per cent as likely to be engaged in paid work as are comparable daughters of intact families. This is a particularly striking result, because one might well have expected that the experience of parental divorce might make women especially chary of being out of the workforce and especially keen on maintaining and enhancing their hard won career prospects, but the facts suggest otherwise.

> *There are complex linkages between this result and the positive effect*
> *of maternal employment, which we are taking up in more detail in*
> *our on-going FaCS project on Women's Labour Force Participation.*

In this model, the **type of school** respondent attended does not significantly affect women's later propensity to participate in the workforce (Table 1.3). The import of this finding is that women who went to government schools are no less likely to be in the workforce than are women who went to private schools, on average, all else equal.

In this model, **immigrant women** are not significantly more likely to be in the workforce than are otherwise similar women from long-established Australian families, on average, all else equal (Table 1.3). Nor do **second generation** immigrant women significantly differ from their longer established Australian peers. These, of course, are generalised results averaging across many different immigrant groups. Prior research using Census data with its lavish abundance of cases finds that there are many differences among rather narrowly defined immigrant groups (e.g. Evans 1984; Evans and Lukic 1998), but the absence of family background information in that data leaves us necessarily uncertain of the extent to which those differences would be found in data that had both enough cases and enough variables to examine them in detail.

The non-significant effect of size of place during childhood in this model suggests that, aside from differences in the kinds of families who live there, **urban and rural** origins do not seem to have any encouraging or discouraging effect on

women's later workforce participation (Table 1.3). This is important, because as we will see later there is a significant effect of current place of residence on workforce participation. The fact that there is a current effect, but not a background effect suggests that it is the relative opportunities available in the city and the countryside, rather than unmeasured cultural differences between urban and rural areas, that are the relevant social force affecting women's workforce participation.

Intensity of employment

Equation 1.2 in the "Models" section above represents the model of Table 1.4 in equation form.

Maternal employment has a positive statistically significant effect on how many hours women work, in this model (Table 1.4). According to these estimates, women whose mothers' worked extensively themselves work more than otherwise comparable women whose mothers were housewives, on average and all else equal. The effect is not huge, amounting to about 8 minutes a week, but that is its independent effect apart from many other influences. This reinforces the suggestion in Table 1.3 that there is an intergenerational momentum to women's labour force participation.

[Insert Table 1.4 about here]

Table 1.4: Effects of family background on women's weekly hours of employment:OLS regresson estimates. Women, aged 25 to 64 N=9,626.[1]

Variable	b	s.e.	Standardized	t
Migrant: 1st generation	0.00	0.02	n.s.	0.00
Migrant: 2nd generation	0.01	0.03	n.s.	0.49
Urban at 14 (ln)	0.00	0.00	n.s.	0.34
Number of siblings	0.00	0.00	n.s.	-1.93
Parent's education	0.014	0.003	0.07	5.19
Books in parents' home	0.00	0.00	n.s.	1.42
Father's status	0.001	0.000	0.04	2.41
Fathr supervises	0.07	0.02	0.05	3.78
Parents income	-0.01	0.02	n.s.	-0.40
Father self-employed	0.02	0.01	n.s.	1.60
Parents' age	0.00	0.00	n.s.	-0.45
Parents divorced	-0.05	0.02	-0.03	-2.48
Mother worked	0.14	0.02	0.10	7.41
Private school	0.07	0.04	n.s.	1.79
(constant)	0.45	0.19		

[1] Adjusted R^2 = .03.

In this model, **father's occupational status** (job quality) during his daughter's childhood has a very small but significant effect on her later hours of employment as an adult, all else equal (Table 1.3). Note that this effect is independent of both parental education and income (as well as many other things), so it is something specific to father's location in the jobs hierarchy.

By contrast, **father's self-employment** during a women's childhood does not have a statistically significant effect on her later weekly hours of employment as an adult, in this model (Table 1.4).

Having a **father who supervised** at work while one was growing up has a very small, but clearly significant effect on women's working hours (Table 1.4). The metric regression coefficient suggests that the daughters of supervisors work about 4 minutes more a week than do their peers whose fathers did not supervise other workers, on average and all else equal.

In this model, the **income** generated by father's and mother's employment fails to have a statisticcally significant effect on their daughters' later intensity of employment (Table 1.4).

Some non-economic features of family background also affect women's engagement in the workforce.

In this model, **parents' education** during respondent's childhood has a small direct effect (completely independent of its effects on parents' employment and earnings) on how much their daughters work after they grow up (Table 1.4). The metric regression coefficient suggests that the more highly educated the parents, the longer hours their daughters work, on average and all else equal. But the effect is not large. Aside from parents' education, the abundance of **books** in the family home fails to have a statistically significant effect on daughters' later hours of work as an adult in this model.

In this model, the **number of siblings** has no effect on women's hours of work (Table 1.4). This null finding suggests that women from large families and women from small families are equally likely to be working short, medium, or long hours, on average, all else equal.

Parents' age during respondent's does not have a statistically significant effect on working women's hours of employment I nthis model (Table 1.4).

According to the estimates in this model, **parental divorce** has a small, statistically significant, negative effect on women's hours devoted to employment (Table 1.4). The difference is small, amounting to around 3 minutes a week, but it is robust under a variety of sensitivity tests.

The **type of school** respondent attended does not have a statistically significant effect on women's hours of employment in this model (Table 1.4). This null effect suggests that women who went to government schools are employed just as many hours as are women who went to private schools, on average, all else equal.

In this model, the dichotomous variable representing immigrant status fails to have a statistically significant effect on women's hours of work (Table 1.4). Moreover, **second generation** immigrant women do not differ in their work

intensity to a statistically significant extent from their longer established Australian peers, on average, all else equal..

Size of place during childhood fails to have a statistically significant effect on women's working hours, in this model. This results suggests that **urban or rural** origins do not seem to lead women to work longer hours of work, on average, all else equal (Table 1.4). .

Effects of education, religion, and time

This section begins to introduce respondent's individual adulthood characteristics, to supplement the family background effects described in the last section. For this analysis, we augment the model of Table 1.1 with a set of variables specifying educational attainments and religion, as well as life course stage effects, which we discuss in the subsequent section (see Equation 1.5 in the "Models" section, above).

Men's workforce participation

Because workforce participation is a binary dependent variable, OLS estimators would be less efficient (would have large variances), so we estimate the model predicting it using logistic regression. The OLS estimates would still be unbiased, so the gains are relatively minor and prior research using OLS methods on this topic should not be dismissed.

In this model, **education** does not have a statistically significant effect on men's labour force participation (Table 1.5). That result suggests that early school leavers, men who completed secondary school but did not proceed to university, and male university graduates are all equally likely to be in the workforce, on average, all else equal. Unfortunately ths null effect suggests that, to the extent that these results continue to hold in the future, educational "bracket creep" – the built in rise in educational attainment of the workforce over the next couple of decades – cannot be expected to elevate men's workforce participation.

[Table 1.5 about here]

Table 1.5: Effects of family structure, education and religion on men's labour force participation: Logistic regresson estimates. Men, aged 25 to 64 with complete data on all variables N=4,131.[1]

	b	Std. Err.	Chi-sq	Sig.	exp(b)
Migrant: 1st generation	0.48	0.15	10.03	0.00	1.62
Migrant: 2nd generation	-0.22	0.21	1.08	n.s.	0.80
Urban at 14 (ln)	-0.03	0.02	2.74	n.s.	0.97
Number of siblings	0.00	0.01	0.24	n.s.	1.00
Parent's education	0.03	0.03	1.74	n.s.	1.03
Books in parents' home	0.00	0.00	1.19	n.s.	1.00
Father's status	0.00	0.00	0.53	n.s.	1.00
Fathr supervises	-0.18	0.17	1.15	n.s.	0.84
Parents income	0.38	0.16	5.75	0.02	1.47
Father self-employed	0.14	0.14	1.07	n.s.	1.15
Parents' age	0.00	0.01	0.18	n.s.	1.00
Parents divorced	-0.01	0.23	0.00	n.s.	0.99
Mother worked	0.19	0.19	0.93	n.s.	1.21
Private school	0.56	0.32	3.13	n.s.	1.75
Married	0.15	0.15	1.08	n.s.	1.16
Spouse in labor force	1.52	0.13	131.98	0.00	4.55
Children: Pre-school	0.12	0.29	0.16	n.s.	1.12
Children: School age	0.58	0.21	7.89	0.01	1.79
Church attendance (ln)	-0.04	0.03	1.11	n.s.	0.97
Catholic	0.29	0.15	3.90	n.s.	1.34
Year of survey	-0.06	0.01	17.99	0.00	0.94
School: Complted year 12	0.16	0.15	1.11	n.s.	1.17
University graduate	-0.03	0.18	0.03	n.s.	0.97
Age 25-34	-0.04	0.26	0.02	n.s.	0.96
Age 35-44 (reference)	--	--	--	--	--
Age 45-54	-1.27	0.22	33.63	0.00	0.28
Age 55-64	-3.03	0.22	193.53	0.00	0.05
(constant)	-0.73	1.71			

[1] Chi-square = 1080.92, 26 d.f.

In this model, **time** has a statistically significant negative effect on men's workforce participation (Table 1.5). The exponent of the logistic regression coefficient (last column of Table 1.5) suggests that net of a wide variety of individual characteristics, men's labour force participation would be falling fairly steeply – by around 6 per cent per year (that is, by 6 per cent of the employment rate, not by 6 percentage points), on average, were all else equal.

In this model, **religion** fails to have a statistically significant effect on men's labour force participation (Table 1.5). Neither church attendance nor Catholic denomination has a significant effect on whether men are in the workforce.

Men's intensity of employment

Men's intensity of employment – how many hours they work -- is the focus of this section. Our analysis focuses on the post-education ages 25 to 64. We follow a biographical/ temporal logic, so this model focuses on "second stage" effects of the education, religion, and time on weekly hours of employment among labour force

participants, augmenting the original model with variables measuring these concepts. To model hours of work, we use OLS regression, because hours of work approximates a well-behaved continuous variable so OLS is justified.

According to the results in this model, the intensity of employment among men is not significantly affected by in the labour force is not differentiated by **education** (Table 1.6). That means that early school leavers, men who completed secondary school but did not proceed to university, and male university graduates work equally long hours, all else equal.

Table 1.6: Effects of family structure, education and religion on men's weekly hours of employment:OLS regresson estimates. Men, aged 25 to 64 N=9,281.[1]

Variable	b	s.e.	Standardized	t
Migrant: 1st generation	0.07	0.58	0.00	n.s.
Migrant: 2nd generation	0.02	1.04	0.00	n.s.
Urban at 14 (ln)	-0.22	0.07	-0.04	-3.22
Number of siblings	-0.05	0.03	-0.02	n.s.
Parent's education	0.19	0.10	0.03	n.s.
Books in parents' home	0.00	0.00	0.01	n.s.
Father's status	0.00	0.01	0.00	n.s.
Fathr supervises	0.05	0.69	0.00	n.s.
Parents income	1.13	0.69	0.02	n.s.
Father self-employed	2.59	0.58	0.06	4.46
Parents' age	-0.02	0.04	-0.01	n.s.
Parents divorced	-1.86	0.83	-0.03	-2.25
Mother worked	0.95	0.74	0.02	n.s.
Private school	3.00	1.61	0.02	n.s.
Married	1.57	0.68	0.03	2.31
Spouse in labor force	5.84	0.52	0.15	11.17
Children: Pre-school	0.88	0.74	0.02	n.s.
Children: School age	1.45	0.59	0.03	2.46
Church attendance (ln)	0.04	0.15	0.00	n.s.
Catholic	0.42	0.59	0.01	n.s.
Year of survey	-0.23	0.05	-0.06	-4.63
School: Complted year 12	0.87	0.63	0.02	n.s.
University graduate	1.24	0.73	0.03	n.s.
Age 25-34	-1.72	0.70	-0.04	-2.44
Age 35-44 (reference)	--	--	--	--
Age 45-54	-3.74	0.69	-0.08	-5.40
Age 55-64	-18.43	0.80	-0.38	-23.06
(constant)	27.29	7.31		

[1] Adjusted R^2 = .21.

[Table 1.6 about here]

Time is reducing the hours of employment of men in the workforce participation (Table 1.6). Net of a wide variety of individual characteristics, men's labour force participation is falling by about 14 minutes a year. That does not sound like much, but it amounts to something over two hours in a decade. Much ink has

been spilt over the pros and cons of long hours of work which has been thought to be increasing as Australia's economy marketises. This analysis suggests that, net of changing social composition of the male work force, the dominant trend has been towards a shorter work week for employed men.

Religion does not affect male labour force participants' hours of work (Table 1.6). Neither church attendance nor Catholic denomination has a significant effect on the hours that men work, given that they are in the work force.

Women's workforce participation

Because workforce participation is a binary dependent variable, we estimate the model predicting it using logistic regression.

Women's labour force participation is strongly differentiated by **education** (Table 1.7). Women who completed secondary school but did not proceed to university, are about one and one half times as likely to be in the work force are otherwise similar female early school leavers. Even more strikingly, female university graduates are nearly twice as likely as female early school leavers to participate in the work force. This means that educational "bracket creep" – the built in rise in educational attainment of the workforce over the next couple of decades – is likely to continue to elevate women's workforce participation over the coming decades.

> *The extent to which this educational effect comes about because of a "wage pull" drawing more educated women into the workforce by making their productivity in the workforce greatly exceed their productivity at home, and the extent to which it comes about because education changes women's attitudes and values in ways conducive to work force participation is one of the topics we will examine in depth in our report on women's workforce participation.*

[Table 1.7 about here]

Table 1.7: Effects of family structure, education and religion on women's labour force participation: Logistic regresson estimates. Women, aged 25 to 64 with complete data on all variables N=4,502.[1]

	b	Std. Err.	Chi-sq	Sig.	exp(b)
Migrant: 1st generation	-0.19	0.09	4.33	0.04	0.82
Migrant: 2nd generation	-0.38	0.15	6.61	0.01	0.68
Urban at 14 (ln)	0.01	0.01	1.97	n.s.	1.02
Number of siblings	-0.01	0.00	7.66	0.01	0.99
Parent's education	0.03	0.02	2.80	n.s.	1.03
Books in parents' home	0.00	0.00	0.05	n.s.	1.00
Father's status	0.00	0.00	1.51	n.s.	1.00
Fathr supervises	0.20	0.11	3.45	n.s.	1.22
Parents income	-0.02	0.10	0.04	n.s.	0.98
Father self-employed	0.09	0.09	0.97	n.s.	1.09
Parents' age	-0.01	0.01	2.83	n.s.	0.99
Parents divorced	-0.32	0.13	6.17	0.01	0.73
Mother worked	0.42	0.12	12.42	0.00	1.53
Private school	0.12	0.19	0.42	n.s.	1.13
Married	-1.34	0.12	124.89	0.00	0.26
Spouse in labor force	1.29	0.11	140.64	0.00	3.64
Children: Pre-school	-1.47	0.10	198.31	0.00	0.23
Children: School age	-0.16	0.09	3.62	n.s.	0.85
Church attendance (ln)	0.00	0.02	0.00	n.s.	1.00
Catholic	0.06	0.09	0.55	n.s.	1.07
Year of survey	0.01	0.01	0.51	n.s.	1.01
School: Complted year 12	0.42	0.09	21.88	0.00	1.53
University graduate	0.66	0.12	30.16	0.00	1.93
Age 25-34	-0.18	0.10	3.34	n.s.	0.83
Age 35-44 (reference)	--	--	--	--	--
Age 45-54	-0.31	0.11	8.89	0.00	0.73
Age 55-64	-1.73	0.13	182.24	0.00	0.18
(constant)	1.02	1.03			

[1] Chi-square = 1082.07, 26 d.f.

Time – that is, historical period – is now neutral with respect to women's workforce participation (Table 1.7). Net of a wide variety of individual characteristics, women's labour force participation is unchanged over the last 15 years. That suggests that societal shifts via an opinion climate increasingly favourable to female employment and a legal and regulatory environment increasingly favourable to female employment had largely run their course by the early 1980s, and that, since then, changes in women's workforce participation have been entirely attributable to changes in individual characteristics.

Religion does not affect women's labour force participation (Table 1.7). Neither church attendance nor Catholic denomination has a significant effect on whether women are in the workforce.

Women's intensity of employment

The number of hours worked by female labour force participants is strongly differentiated by **education** (Table 1.8). Women in the workforce who completed

secondary school but did not proceed to university, work about three and one half hours more per week than do otherwise similar female early school leavers. Even more strikingly, employed female university graduates work a bit over five hours more a week than do their peers among female early school leavers. This means that educational "bracket creep" – the built in rise in educational attainment of the workforce over the next couple of decades – is likely to continue to expand the average hours of work of the female workforce over the coming decades.

[Table 1.8 about here]

Table 1.8: Effects of family structure, education and religion on women's weekly hours of employment:OLS regresson estimates. Women, aged 25 to 64 N=9,626.[1]

Variable	b	s.e.	Standardized	t
Migrant: 1st generation	0.34	0.56	n.s.	0.62
Migrant: 2nd generation	-0.64	0.96	n.s.	-0.67
Urban at 14 (ln)	-0.17	0.06	-0.03	-2.64
Number of siblings	-0.02	0.03	n.s.	-0.78
Parent's education	0.17	0.10	n.s.	1.68
Books in parents' home	0.00	0.00	n.s.	0.09
Father's status	0.00	0.01	n.s.	-0.16
Fathr supervises	1.28	0.65	0.03	1.97
Parents income	-0.27	0.64	n.s.	-0.43
Father self-employed	-0.08	0.53	n.s.	-0.15
Parents' age	-0.04	0.04	n.s.	-1.10
Parents divorced	-0.99	0.73	n.s.	-1.37
Mother worked	3.14	0.70	0.06	4.50
Private school	0.39	1.36	n.s.	0.29
Married	-8.24	0.66	-0.18	-12.42
Spouse in labor force	7.38	0.64	0.18	11.52
Children: Pre-school	-13.29	0.67	-0.26	-19.84
Children: School age	-3.80	0.53	-0.10	-7.17
Church attendance (ln)	-0.48	0.13	-0.05	-3.68
Catholic	1.05	0.53	n.s.	1.98
Year of survey	0.11	0.04	0.03	2.52
School: Complted year 12	3.43	0.58	0.09	5.92
University graduate	5.11	0.72	0.10	7.14
Age 25-34	0.01	0.61	n.s.	0.01
Age 35-44 (reference)	--	--	--	--
Age 45-54	-3.53	0.66	-0.08	-5.34
Age 55-64	-12.53	0.79	-0.25	-15.77
(constant)	25.84	6.76		3.82

[1] Adjusted R^2 = .21.

The passage of **time** is gradually raising the hours worked by the female labour force (Table 1.8). Net of a wide variety of individual characteristics, the female work force is contributing about 7 more minutes a year, slightly over an hour more in each passing decade.

Some aspects of **religion** affect the intensity of women's labour force participation (Table 1.8). In particular, church attendance decreases the hours worked by employed women. But denomination does not affect the amount of

time that working women devote to employment – Catholics and others put in equal hours, all else equal.

Effects of life course stage

For this analysis, we focus on the effects of the remaining variables in the model of Table 1.5. These variables specify the respondent's location in the life course. It is to be noted that Table 1.5 represents a direct effects model, so it includes both contemporary variables, including the life course measures that are of interest in this section, and key deeper causes – some of which operate partly through the contemporary causes and partly separately from them.

Men's workforce participation

According to this model and these data, men's labour force participation is sharply differentiated by **age**, even within what are normally considered the prime working ages (Table 1.5). The significant logistic regression coefficient for age suggests that young men, age 25 to 34 are a little less likely to be in the work force than are men in early middle age (35 to 44). Even more strikingly, the coefficient estimates suggest that workforce participation has already begun a noticeable decline among men in prime middle age (45-54), followed by a precipitous decline in late middle age (55-64), on average and all else equal.

Aside from age and the other variables in the model, **marriage** does not have a significant effect on men's workforce participation (Table 1.5).

However, according to this model and these data, men who have a **wife in the workforce** are 1.16 times as likely to participate in the workforce participation as are other men, on average and all else equal (Table 1.5). To what extent this reflects joint decision making, to what extent it reflects a shared orientation towards income maximization or a shared preference for work-related activities, and to what extent it reflects unmeasured characteristics of couples is unknown. But it is confirmation that, net of many individual characteristics, there is a positive association between husband's and wife labour force participation (directly contrary to the role specialization theories of Parsons and Becker).

In this model, the effects of children depend on their ages. Net of other influences, the non-significance of the coefficient for having preschoolers suggests that fathers are no more, nor less, likely to work than are childless men when the **children are preschoolers.** But the significant positive coefficient in this model for having school age children suggests that having **a child in school** encourages men's work force participation: the exponent of the logistic regression coefficient suggests that men with children in school are about 1.8 times as likely to be in the workforce as are others (Table 1.5). To what extent this reflects the routinisation of time that necessarily accompanies children going to school, to what extent it involves a heightened sense of financial responsibility, and to what extent other factors are involved in unknown.

The effects life course stage on men's intensity of employment – on how much they work – form the focus of this section. The model controls for family of origin effects, and effects of education, time, and religion (see Table 1.6 for the control variables).

According to the coefficient estimates in this model, employed men's hours of work are slightly differentiated by **age** early in adulthood, but then sharply differentiated by late middle age (Table 1.6). Young men (age 25 to 34) in the labour force work a slightly shorter week – by about two hours on average -- than do their peers in early middle age (35 to 44). After peaking in early middle age, hours of work have already begun to decline by the time men reach prime middle age (45-54); they work about 4 hours a week less than do their peers in early middle age (35 to 44). Even more strikingly, there is a sharp decline by late middle age: among men in the workforce, the hours devoted to employment have fallen by 18, on average, between early middle age and late middle age (55-64).

Aside from age and the other variables in the model, **marriage** modestly raises the amount of time that men devote to employment, on average and all else equal (Table 1.6). Upon marriage, men work about one and one half hours more per week than the did while they were single, on average.

Moreover, having a **wife in the workforce** encourages men to work longer hours (Table 1.6). Men with working wives work nearly six hours a week more. To what extent this reflects joint decision making, to what extent it reflects a shared orientation towards income maximization or a shared preference for work-related activities, and to what extent it reflects unmeasured characteristics of couples is unknown. But it is confirmation that, net of many individual characteristics, there is a positive association between the time that husband and wife devote to employment (directly contrary to the role specialization theories of Parsons and Becker). At some level, this is the association that gives rise to the rift between overworked and workless families.

The effects of children depend on their ages. Net of other influences, employed fathers work no more (and no less) than do childless men when the **children are preschoolers,** on average. But fathers work a slightly longer week when they have **a child in school** – during that life course stage, they work about one and one half hour more (Table 1.6).

Women's labour force participation is sharply differentiated by **age**, even within what are normally considered the prime working ages, according to this model and these data (Table 1.7). The point estimates of the coefficients suggest that young women, age 25 to 34, are a little less likely to be in the workforce than are women in early middle age (35 to 44), all else equal. After that brief peak, workforce participation has already begun a noticeable decline among women in

prime middle age (45-54), followed by a precipitous decline in late middle age (55-64), on average and all else equal.

Aside from age and the other variables in the model, **marriage** significantly reduces women's workforce participation, on average and all else equal (Table 1.7). However, having a **husband in the workforce** has a positive association with women's own workforce participation (Table 1.7). This effect is large enough that in the normal course of events, it counterbalances the work-reducing effect of marriage per se. But it does suggest that marrying a man who is not in the workforce impedes a woman's own likelihood of participating in the workforce. This linkage would require further investigation before it could be deemed to be causal; there is not strong, clearly persuasive theory to establish the causal priority of husband's and wife's workforce participation, so it will ultimately need to be estimated in a reciprocal causation model. The effect estimated here is a somewhat artificial one in the sense that reciprocal influences are not allowed, so it actually gives us an upper bound on the effect. It would also be worth exploring in future work whether this apparent effect might reflect assortative mating on preferences and attitudes about employment.

In this model, the effects of children depend on their ages. Net of other influences, the coefficient estimates suggest that mothers are substantially less likely to work than are childless women when the **children are preschoolers**, on average and all else equal. But, the non-significance of the effect for having **school age children, but no preschoolers** suggests that, at this life course stage, mothers are again just as likely to be in the workforce as are their childless peers, on average and all else equal (Table 1.7).

Women's intensity of employment

The effects life course stage on women's intensity of employment – on how much they work – is the focus of this section. The model controls for family of origin effects, and effects of education, time, and religion. To model hours of work, we use OLS regression.

According to the coefficient estimates in this model, women's hours of work are not differentiated by **age** early in adulthood, but are then sharply differentiated by late middle age (Table 1.8). The tiny size and statistical non-significance of the regression coefficient representing the effect of being age 25 to 34 rather than 35 to 44 suggests that young women (age 25 to 34) in the labour force work just as long a week as do their peers in early middle age (35 to 44). The estimates of this model suggest that, after peaking in early middle age, hours of work have already begun to decline by the time women reach prime middle age (45-54): according to the point estimate of the relevant regression coefficient, women in prime middle age work about 4 hours a week less than do their peers in early middle age (35 to 44), on average and all else equal. Even more strikingly, there is a sharp decline by late middle age: among women in the workforce, the hours devoted to employment have fallen by 13, on average, between early middle age and late middle age (55-64), all else equal.

Aside from the effects of age, spouse characteristics, and the other variables in the model, the estimate of the regression coefficient suggests that **marriage** is associated with about 8 hours less employment per week (Table 1.8), on average and all else equal (although it should be noted that this model contains no controls for pre-existing differences in attitudes and values that might differentiate married and non-married women). But, the coefficient estimates further suggest that for most women the negative association of work and marriage is almost counterbalanced by the positive effect of having a **husband in the workforce**. In this model, having a husband in the workforce is associated with an increase in a wife's workforce participation by about seven hours a week. Taken together the coefficient estimates for marriage and for work status of husband suggest that married women with working husbands are employed about one hour a week less than are their single peers, on average and all else equal. Note that this could come about because of shared preferences or norms, or because of joint decision-making rather than as her response to his fixed employment pattern.

The estimates of this model reveal that the effects of children depend on their ages. The estimates of the relevant regression coefficients suggest that, net of other influences, employed mothers with one child work about 13 hours a week less than do childless women when the **children are preschoolers,** on average, and all else equal**.** The coefficient estimates further suggest that employed mothers with two preschoolers work 26 hours a week less than do their childless peers, on average and all else equal. But by the time all the children **are in school** mothers work just four hours less per child, according to the coefficient estimates for this model (Table 1.8).

Effects of neighbourhood

For this analysis, we focus on the effects of postcode characteristics, to see whether the community context affects how much people work.

Men's intensity of employment

The effects of community context on men's intensity of employment – on how much they work – is the focus of this section. The model controls for family of origin effects, effects of education, time, and religion, and the effects of current life course stage (described above). One of the community characteristics of interest is the unemployment rate in the postcode. To estimate that effect correctly, we need to control for whether or not the respondent himself or herself was unemployed, lest we mistakenly attribute to the neighbourhood context an effect that really reflects individual circumstances. The effect of the individual's own unemployment on hours of work is of no substantive interest, because it is built into the definition of unemployment, but it needs to be controlled in the model. To model hours of work, we use OLS regression.

According to the estimates of the regression coefficients for this model, **urban** residence is associated with a decrease in time spent on the job, on average and all else equal (Table 1.9). Men in rural and regional areas work longer hours, on average and all else equal.

[Table 1.9 about here]

Table 1.9: Effects of geographic location on men's weekly hours of employment:OLS regresson estimates. Men, aged 25 to 64 N=9,281.[1]

Variable	b	s.e.	Standardized	t
Migrant: 1st generation	1.02	0.52	n.s.	1.95
Parent's education	0.16	0.09	n.s.	1.74
Father's status	-0.01	0.01	n.s.	-0.54
Fathr supervises	0.30	0.63	n.s.	0.48
Parents income	1.14	0.63	n.s.	1.80
Father self-employed	2.23	0.52	0.05	4.27
Parents divorced	-1.42	0.75	n.s.	-1.89
Mother worked	1.01	0.67	n.s.	1.52
Married	0.13	0.62	n.s.	0.20
Spouse in labor force	5.25	0.48	0.13	10.95
Children: Pre-school	0.96	0.68	n.s.	1.43
Children: School age	1.06	0.54	n.s.	1.96
Church attendance (ln)	0.01	0.13	n.s.	0.04
Year of survey	-0.20	0.04	-0.05	-4.52
School: Complted year 12	0.13	0.58	n.s.	0.22
University graduate	0.99	0.67	n.s.	1.48
Age 25-34	-1.62	0.64	-0.04	-2.53
Age 35-44 (reference)	--	--	--	--
Age 45-54	-3.46	0.63	-0.07	-5.45
Age 55-64	-18.61	0.73	-0.38	-25.53
Urban (ln population size)	-0.31	0.07	-0.05	-4.20
Unemployed at time of survey	-36.63	1.15	-0.36	-31.86
Postcode characteristics:				
Postcode SES	-0.02	0.01	n.s.	-1.84
% unemployed	-0.29	0.07	-0.06	-4.19
% Aboriginal or TSI	-0.10	0.05	-0.02	-2.09
Residential stability	0.00	0.02	n.s.	-0.13
Time varying characteristic:				
% unemployed in nation	-0.27	0.17	n.s.	-1.60
(constant)	37.18	6.99		

[1] Adjusted R^2 = .34

The non-significant effect of **Postcode SES** – a multiple item index of the educational and occupational level of the community's residents -- indicates that the number of hours worked weekly by men do not differ systematically according to the neighbourhood's SES, on average and all else equal (Table 1.9).

By contrast, the point estimates and significance levels for the relevant regression coefficient suggest that the **postcode unemployment** context does affect the number of working hours available to men, on average and all else equal (Table 1.9). In this model, the estimated regression coefficient shows that a one percentage point rise in postcode unemployment is associated with about 0.3

fewer hours worked weekly – about 18 minutes – on average and all else equal. Importantly, this effect is both independent of the person's own unemployment and independent of the nationwide employment rate. This suggests a generalised work dearth in these communities which is reasonably well indexed by the postcode unemployment rate.

Even aside from the unemployment level, communities where many **Aborigines and Torres Straits Islanders** reside provide shorter working hours to their residents, according to the results of this model (Table 1.9). This is not a huge effect: The point estimates of the regression coefficients imply that for each one percentage point increase in Aboriginal and Torres Straits Islanders residents, the average man has six minutes less a week of work, all else equal. Despite its small size, it is a sign that the demand for workers is a little weaker in these communities, even aside from the high levels of employment that many of them experience.

By contrast, **residential stability** of neighbourhoods has no effect upon the number of hours worked by men (Table 1.9).

Finally, we also assessed the impact of the **nationwide unemployment rate**. Net of local postcode unemployment, the national unemployment rate has no effect on the hours worked by male labour force participants (Table 1.9).

Women's intensity of employment

Among women, urbanicity, **size of place of current residence,** is associated with an increase in hours of employment (Table 1.10). The larger the city, the more time devoted to paid employment by women.

[Table 1.10 about here]

Table 1.10: Effects of geographic location on women's weekly hours of employment:OLS regresson estimates. Women, aged 25 to 64 N=9,626.[1]

Variable	b	s.e.	Standardized	t
Migrant: 1st generation	0.69	0.55	n.s.	1.26
Parent's education	0.17	0.10	n.s.	1.75
Father's status	-0.01	0.01	n.s.	-1.06
Fathr supervises	1.31	0.64	0.03	2.03
Parents income	-0.46	0.63	n.s.	-0.74
Father self-employed	0.20	0.52	n.s.	0.38
Parents divorced	-1.05	0.72	n.s.	-1.45
Mother worked	3.15	0.68	0.06	4.64
Married	-8.66	0.66	-0.19	-13.07
Spouse in labor force	7.03	0.64	0.17	11.04
Children: Pre-school	-13.55	0.67	-0.27	-20.35
Children: School age	-4.00	0.53	-0.10	-7.62
Church attendance (ln)	-0.38	0.12	-0.04	-3.10
Year of survey	0.16	0.04	0.05	3.72
School: Complted year 12	3.41	0.57	0.09	6.00
University graduate	4.41	0.71	0.09	6.19
Age 25-34	0.03	0.61	n.s.	0.05
Age 35-44 (reference)				
Age 45-54	-3.60	0.65	-0.08	-5.51
Age 55-64	-12.98	0.79	-0.26	-16.50
Urban (ln population size)	0.15	0.07	0.03	2.17
Unemployed at time of survey	-21.59	1.58	-0.16	-13.63
Postcode characteristics:				
Postcode SES	0.00	0.01	n.s.	-0.16
% unemployed	-0.25	0.07	-0.05	-3.46
% Aboriginal or TSI	0.18	0.05	0.04	3.25
Residential stability	-0.02	0.02	n.s.	-0.72
Time varying characteristic:				
% unemployed in nation	-0.66	0.17	-0.04	-3.83
(constant)	32.60	7.10		

[1] Adjusted R^2 = .24

The non-significance of the effect of **postcode SES** – a multiple item index of the educational and occupational level of the community's residents -- in this model implies that postcode SES has no independent effect on the number of hours worked weekly by women (Table 1.10). .

By contrast, the **postcode unemployment** context does affect the number of hours available to women in the workforce (Table 1.10). Importantly, this is independent of both the person's own unemployment and independent of the nationwide employment rate. This suggests a generalised work dearth in these communities which is reasonably well indexed by the postcode unemployment rate. So, unlike the situation with neighbourhood social capital which cannot be pinpointed with social-compositional characteristics available in Census data (see the report on Family and Community Effects on Well-Being), when it comes to work shortages, the postcode unemployment level is a good indicator of a local shortage of work that affects not only the relatively few who are actually

unemployed, but also many residents who are not unemployed but who are working limited hours.

Aside from the unemployment level and respondents individual characteristics, women living in communities where many **Aborigines and Torres Straits Islanders** reside work slightly shorter working hours, on average and all else equal (Table 1.9). The point estimate of the regression coefficient implies that this amounts to 0.18 of an hour – about 11 minutes – per week per percentage point rise in the postcode percentage ATSI. This effect is not enormously robust across sensitivity tests, so it should be regarded as a working hypothesis rather than a solid fact.

The non-significance of the effect of postcode **residential stability** in this model implies that residential turnover has no effect upon the number of hours worked by women, net of their own individual characteristics and of other salient neighbourhood characteristics, on average (Table 1.10).

Finally, we also assessed the impact of the **nationwide unemployment rate**. Net of local postcode unemployment and the other characteristics in the model, the national unemployment rate has no effect on the hours worked by women (Table 1.10).

2. EFFECTS ON SELF-EMPLOYMENT

Self-employment is of particular interest to FaCS (1) because of the possibility that some unemployed people could be aided back into the workforce by programs to enhance their self-employment prospects, and (2) because of the possibility that self-employment might permit better integration of family and work duties for people with small children.

Effects of family background

Our analysis of self-employment begins by exploring family-of-origin effects using the same broad range of variables that we have examined before. For FaCS's purposes, such a model has two interests: (1) in considering the long-range impact of today's family arrangements and family characteristics on the capacities of tomorrow's adults, and (2) in developing a sense of the deep causes that may be operating well behind apparent causes. To model self-employment, we use logistic regression, because self-employment is a dichotomous variable, so logistic regression provides more efficient estimates.

Men's self-employment

This model finds a very substantial and statistically significant effect of father's self-employment while a boy was growing up on his likelihood of own self-employment decades later when he has grown to adulthood (Table 2.1). Indeed, the exponent of the logistic regression coefficient (last column in Table 2.1) suggests that the sons of the self-employed are a little over twice as likely to be self-employed themselves, all else equal. Neither father's occupational status (job quality) nor parents' income has a significant effect on their sons' later self-employment chances. Moreover, the fact that the relevant regression coefficient is not statistically significant suggests that a father's place in the supervision hierarchy at work does not play a role in his sons' later probability of self-employment.

[Table 2.1 about here]

Table 2.1: Effects of family background on men's self-employment: Logistic regresson estimates. Men, aged 25 to 64, in the labor force, with complete data on all variables N=4,243.[1]

	b	Std. Err.	Chi-sq	Sig.	exp(b)
Migrant: 1st generation	-0.04	0.10	0.15	n.s.	0.96
Migrant: 2nd generation	-0.34	0.19	3.25	n.s.	0.71
Urban at 14 (ln)	-0.03	0.01	7.10	0.01	0.97
Number of siblings	0.00	0.01	0.42	n.s.	1.00
Parent's education	0.02	0.02	1.48	n.s.	1.02
Books in parents' home	0.00	0.00	1.89	n.s.	1.00
Father's status	0.00	0.00	0.71	n.s.	1.00
Fathr supervises	0.23	0.12	3.60	n.s.	1.26
Parents income	-0.09	0.11	0.65	n.s.	0.91
Father self-employed	0.78	0.09	70.08	0.00	2.17
Parents' age	0.01	0.01	2.04	n.s.	1.01
Parents divorced	-0.10	0.16	0.38	n.s.	0.91
Mother worked	0.06	0.13	0.24	n.s.	1.07
Private school	0.41	0.20	4.23	n.s.	1.51
(constant)	-1.02	1.19			

[1] Chi-square = 120.08, 14 d.f.

In contrast to its important role in men's workforce participation and intensity of work, **maternal employment** does not have a statistically significant effect on their sons' likelihood of self-employment, on average and all else equal (Table 2.1)

Some non-economic features of family background also affect men's engagement in the workforce.

Despite its importance in many zones of life, **parents' education** fails to have any impact on whether their sons are employees or are self-employed   (Table 2.1). This may be because high self-employment occupations are scattered across the occupational hierarchy, from being the owner-operator of a small lawn-mowing business to being a physician. Neither does the number of **books** in the parental home alter their sons' propensities for self-employment: those from bookworm homes and those from homes where no one ever cracks a book are equally likely to enter self-employment, all else equal.

The non-significance of the relevant regression coefficient suggests that the **number of siblings** has no effect on men's probability of being self-employed, on average and all else equal (Table 2.1.

Similarly, the non-significance of the relevant regression coefficient suggests that the **parents' age** during respondents' childhood does not influence whether men are self-employed or are employees as adults (Table 2.1).

Neither does **parental** divorce have a significant effect on men's self-employment chances in this model (Table 2.1).

The **type of school** respondent attended does not significantly affect men's later propensity to self-employment (Table 2.1). Thus, men who went to government schools are no less likely to be self-employed than are comparable men who went to private schools.

Immigrant men are no more likely to be self-employed than are men from long-established Australian families (Table 2.1), all else equal. It is known that there are large differences among immigrant groups in this regard, but our finding substantiates the view that there is no general pro-self-employment bent among immigrants. This is also true of **second generation** immigrant men.

Aside from the kinds of families who live there, an **urban** upbringing has a slight discouraging effect on men's later self-employment propensity as adults (Table 2.1).   Thus, a rural childhood continues to orient people towards independent economic activity via self-employment.

Women's self-employment

Fathers' self-employment during one's girlhood encourages daughters to themselves pursue self-employment decades later when they have grown to adulthood (Table 2.2). This effect seems likely to be due to tastes and preferences, and perhaps skills, learned at one's father's knee rather than to advantages conferred by successful parents, for neither **father's occupational status** – his rung on the jobs ladder – nor **parents' income** has a significant effect on their daughters' later self-employment chances. Moreover, a father's place in the supervision hierarchy at work does not play a role in his daughters' later probability of self-employment: women whose fathers do not supervise others and men whose **fathers are supervisors** are equally likely to move into self-employment, all else equal. The fact that self-employment is related to father's self-employment, but not to any of these stratification characteristics, reinforces the interpretation that the inheritance is largely a matter of tastes and skills. That calls into question the probability of success of recruiting previously uninterested unemployed women into self-employment.

[Table 2.2 about here]

Table 2.2: Effects of family background on women's self-employment: Logistic regresson estimates. Women, aged 25 to 64, in the labor force, with complete data on all variables N=3,345.[1]

	b	Std. Err.	Chi-sq	Sig.	exp(b)
Migrant: 1st generation	-0.06	0.15	0.15	n.s.	0.94
Migrant: 2nd generation	-0.25	0.25	1.01	n.s.	0.78
Urban at 14 (ln)	-0.02	0.02	1.50	n.s.	0.98
Number of siblings	0.00	0.01	0.08	n.s.	1.00
Parent's education	-0.07	0.02	7.76	0.01	0.93
Books in parents' home	0.00	0.00	3.12	n.s.	1.00
Father's status	0.00	0.00	0.12	n.s.	1.00
Fathr supervises	0.04	0.17	0.06	n.s.	1.04
Parents income	0.11	0.15	0.48	n.s.	1.11
Father self-employed	0.27	0.13	4.04	0.04	1.31
Parents' age	0.00	0.01	0.02	n.s.	1.00
Parents divorced	-0.37	0.24	2.34	n.s.	0.69
Mother worked	0.02	0.18	0.01	n.s.	1.02
Private school	0.67	0.23	8.64	0.00	1.95
(constant)	-2.64	1.61			

[1] Chi-square = 28.86, 14 d.f.

In contrast to its important role in women's workforce participation and intensity of work, **maternal employment** has no effect on their daughters' likelihood of self-employment (Table 2.2)

Some non-economic features of family background also affect women's engagement in the workforce.

Parents' education has a small negative effect on their daughters entry into self-employment (Table 2.2). This may be because high status traditionally female occupations are largely occupations with few self-employed, and, indeed are highly concentrated in the government sector (e.g. teacher, social worker). Aside from that, the number of **books** in the parental home does not have any enduring impact on whether women go into self-employment or become employees.

The **number of siblings** has no effect on women's probability of being self-employed (Table 2.2), although one might have expected that siblings would make unusually good business partners.

Parents' age does not seem to matter to whether men are self-employed or are employees (Table 2.2). Older parents may have had the opportunity to accumulate more resources, but they do not appear to use them to facilitate their daughters' entry into self-employment, in general.

Neither does **parental** divorce matter to women's self-employment chances (Table 2.2). When they grow up, the daughters of divorce are just as likely to be engaged in self-employed as are the daughters of intact families.

The **type of school** respondent attended significantly affects women's later propensity to self-employment (Table 2.2).   More specifically, women who

attended private school in their girlhood are more likely than their peers who attended government school to be in self-employment. It is possible that we observe this effect for girls private schooling but not boys private schooling because single sex schooling (which is much more widespread in the private sector than in the government sector) encourages girls' independence (as well as demonstrably enhancing their achievement), and hence a propensity towards self-employment.

Immigrant women are no more likely to be self-employed than are men from long-established Australian families (Table 2.2), all else equal. This is also true of **second generation** immigrant women.

Aside from the kinds of families who live there, **urban and rural** girlhoods are equally conducive towards women's later self-employment propensity as adults (Table 2.2). In other words, the size of place in which a girl grew up has no lasting influence on whether she becoems self-employed or works as an employee.

Effects of education, religion, and time

For this analysis, we augment the model of Table 2.1 with a set of variables specifying educational attainments and religion, as well as life course stage effects, which we discuss in the subsequent section.

Men's self-employment

Men who completed their **education** with Year 12 are no more, and no less, likely to be self-employed than are male early school leavers (Table 2.3). Male university graduates are somewhat less likely than early school leavers to be self-employed.

[Table 2.3 about here]

Table 2.3: Effects of family structure, education and religion on men's self-employment: Logistic regresson estimates. Men, aged 25 to 64, in the labor force, with complete data on all variables N=3,527.[1]

	b	Std. Err.	Chi-sq	Sig.	exp(b)
Migrant: 1st generation	-0.13	0.12	1.24	n.s.	0.88
Migrant: 2nd generation	-0.02	0.20	0.01	n.s.	0.98
Urban at 14 (ln)	-0.02	0.01	2.65	n.s.	0.98
Number of siblings	-0.01	0.01	0.79	n.s.	0.99
Parent's education	0.06	0.02	8.17	0.00	1.06
Books in parents' home	0.00	0.00	4.41	0.04	1.00
Father's status	0.00	0.00	1.96	n.s.	1.00
Fathr supervises	0.25	0.13	3.67	n.s.	1.29
Parents income	0.05	0.13	0.16	n.s.	1.05
Father self-employed	0.81	0.10	61.56	0.00	2.25
Parents' age	0.01	0.01	0.89	n.s.	1.01
Parents divorced	-0.11	0.17	0.39	n.s.	0.90
Mother worked	0.24	0.14	2.67	n.s.	1.27
Private school	0.40	0.22	3.33	n.s.	1.49
Married	0.09	0.14	0.39	n.s.	1.09
Spouse in labor force	0.22	0.10	4.65	0.03	1.24
Children: Pre-school	0.02	0.15	0.03	n.s.	1.02
Children: School age	0.16	0.11	2.10	n.s.	1.17
Church attendance (ln)	0.00	0.03	0.01	n.s.	1.00
Catholic	-0.28	0.12	5.34	0.02	0.76
Year of survey	0.02	0.01	2.18	n.s.	1.02
School: Complted year 12	-0.23	0.12	3.98	n.s.	0.79
University graduate	-0.36	0.14	6.98	0.01	0.70
Age 25-34	-0.65	0.14	19.85	0.00	0.52
Age 35-44 (reference)	--	--	--	--	--
Age 45-54	0.08	0.12	0.41	n.s.	1.08
Age 55-64	0.19	0.16	1.41	n.s.	1.21
(constant)	-3.06	1.36			

[1] Chi-square = 191.35, 26 d.f.

There is no significant independent **time** trend in men's self-employment rates, aside from compositional changes in individual characteristics (Table 2.3). Net of a wide variety of individual characteristics, and despite major changes to the labour market, self-employment is neither increasing nor decreasing among men..

Religion yields mixed results (Table 2.3). **Church attendance** does not have a significant effect on male self-employment – regular church goers and the unchurched are equally likely to run their own businesses. But there is a significant denominational difference – **Catholic** men are significantly less likely than others to be self-employed.

Women's self-employment

Education significantly discourages self-employment among women (Table 2.4). Early school leavers are the most likely to be in self-employment, net of all else,

followed by those who exited the educational system after completing secondary school, followed – at some distance by female university graduates.

[Table 2.4 about here]

Table 2.4: Effects of family structure, education and religion on women's self-employment: Logistic regresson estimates. Women, aged 25 to 64, in the labor force, with complete data on all variables N=2,822.[1]

	b	Std. Err.	Chi-sq	Sig.	exp(b)
Migrant: 1st generation	-0.06	0.17	0.15	n.s.	0.94
Migrant: 2nd generation	-0.16	0.29	0.28	n.s.	0.86
Urban at 14 (ln)	-0.02	0.02	1.41	n.s.	0.98
Number of siblings	0.00	0.01	0.00	n.s.	1.00
Parent's education	-0.05	0.03	3.57	n.s.	0.95
Books in parents' home	0.00	0.00	0.68	n.s.	1.00
Father's status	0.00	0.00	2.01	n.s.	1.00
Fathr supervises	0.03	0.19	0.03	n.s.	1.03
Parents income	0.16	0.17	0.89	n.s.	1.18
Father self-employed	0.37	0.15	6.32	0.01	1.45
Parents' age	0.01	0.01	0.67	n.s.	1.01
Parents divorced	-0.16	0.25	0.41	n.s.	0.85
Mother worked	0.10	0.21	0.23	n.s.	1.10
Private school	0.59	0.25	5.38	0.02	1.80
Married	0.35	0.23	2.32	n.s.	1.42
Spouse in labor force	0.50	0.24	4.48	0.03	1.65
Children: Pre-school	0.66	0.19	12.03	0.00	1.94
Children: School age	0.13	0.14	0.84	n.s.	1.14
Church attendance (ln)	0.01	0.04	0.05	n.s.	1.01
Catholic	-0.14	0.16	0.71	n.s.	0.87
Year of survey	0.04	0.02	7.92	0.00	1.05
School: Complted year 12	-0.33	0.16	4.43	0.04	0.72
University graduate	-0.59	0.20	8.44	0.00	0.55
Age 25-34	-0.43	0.18	5.74	0.02	0.65
Age 35-44 (reference)	--	--	--	--	--
Age 45-54	0.08	0.17	0.22	n.s.	1.08
Age 55-64	0.24	0.26	0.82	n.s.	1.27
(constant)	-4.92	1.86			

[1] Chi-square = 107.08, 26 d.f.

There is a significant independent **time** trend raising women's self-employment rates, aside from compositional changes in individual characteristics (Table 2.4). Net of a wide variety of individual characteristics, self-employment is on the rise for women.

Religion does not significantly affect women's self-employment chances (Table 2.4). **Church attendance** does not have a significant effect on female self-employment – regular church goers and the unchurched are equally likely to run their own businesses. Nor is there any denominational difference – **Catholic** women are just as likely as others to be self-employed.

Effects of life course stage

For this analysis, we focus on the effects of the remaining variables in the model of Table 2.3, above. These variables specify the respondent's location in the life course.

Men's self-employment

Men's self-employment is sharply differentiated by **age** (Table 2.3). Young men, age 25 to 34 are much less likely to be self-employed than are men in early middle age (35 to 44). But self-employment doesn't stop there. Instead, it continues to climb among men in prime middle age (45 to 54), and climbs even further by late middle age (55-64).

> *This could come about (1) because accumulation of savings, social networks, and the like makes it easier the older you are to start a business, (2) because self-employed people get set in their ways and develop skills that inhibit business failure, so exit rates are lower among older self-employed people, or (3) because self-employment is enjoyable, so older self-employed men retire later than their employees. The last possibility is particularly interesting because it suggests that encouraging men to move into self-employment in later life might help slow the flood of senior men out of the workforce. This question is beyond the scope of this report, because it requires different methods and a different subset of the IsssA-Pool data to answer, but all the necessary data exist in IsssA-Pool, and this could be the subject of a future report if desired.*

Aside from age and the other variables in the model, **marriage** by itself does not have a significant effect on men's self-employment (Table 2.3). However, having a **wife in the workforce** clearly facilitates husbands' self-employment (Table 2.3).

Children neither encourage nor discourage men's self-employment. Net of other influences, fathers of **preschoolers** are no more, nor less, likely to work than are childless men (Table 2.3). Similarly self-employment is equally common among childless men and fathers whose children are school age (Table 2.3). Children once helped on family farms, but they do not seem to play much role in modern small businesses,

Women's self-employment

For this analysis, we focus on the effects of the remaining variables in the model of Table 2.4 for women, above. These variables specify the respondent's location in the life course.

Women's self-employment is sharply differentiated by **age** (Table 2.4), with the pattern of age differences being very similar to men's (compare Table 2.3). Young women, age 25 to 34 are much less likely to be self-employed than are women in early middle age (35 to 44). Moreover, self-employment continues to rise among women in prime middle age (45 to 54), and climbs even further by late middle age (55-64).

> *This could come about (1) because accumulation of savings, social networks, and the like makes it easier the older you are to start a business, (2) because self-employed people get set in their ways and develop skills that inhibit business failure, so exit rates are lower among older self-employed people, or (3) because self-employment is enjoyable, so older self-employed women retire later than comparable employees. The last possibility is particularly interesting because it suggests that encouraging women to move into self-employment in later life might help stanch the haemorrhage of senior women out of the workforce. This question is beyond the scope of this report, because it requires different methods and a different subset of the IsssA-Pool data to answer, but all the necessary data exist in IsssA-Pool, and this could be the subject of a future report if desired.*

Aside from age and the other variables in the model, **marriage** by itself does not have a significant effect on women's self-employment (Table 2.4). However, having a **husband in the workforce** very substantially facilitates wives' self-employment (Table 2.4). Whether this comes about because couples tend to hedge their bets on the wife's business by planting the husband in a secure job with a steady income flow to compensate for the uncertainties of her small business or whether they tend to go into self-employment together as a family business could form a subject for future research..

The effect of children on women's self-employment depends on the children's ages. Net of other influences, mothers of **preschoolers** are very substantially likely to be self employed than are childless women (Table 2.4). But, interestingly, self-employment is equally common among childless women and mothers whose children are school age (Table 2.4), all else equal.

This suggests that something about self-employment is conducive to the blending of mothering and working roles. Because this effect is limited to the preschool stage, it suggests that self-employment may provide the temporal flexibility and perhaps the opportunity to work from home that enable women to be employed in a job that can expand or contract as they see fit. This is a question that is well worth exploring, because if single parents could develop suitable self-employment (even at just a few hours a week) while their children are small, that might ease their transition back into more hours of work later, when they could either expand the business or close it and take a job as an employee.

Effects of community context

For this analysis, we focus on the effects of postcode social composition, neighbourhood social capital, postcode industrial mix, and state of origin to see to what degree the community context affects self-employment. To this end, we augmented the models of Table 2.3 (for men) and Table 2.4 (for women), with variables representing the various dimension of community context. Because self-employment is a binary variable, we estimate these models by logistic regression to obtain efficient estimates.

Men's self-employment

The effects of community context on men's self-employment is the focus of this section. The model controls for family of origin effects, effects of education, time, and religion, and the effects of current life course stage which we have already discussed.

Postcode characteristics

The logistic regression results show that we cannot rule out the possibility that **postcode SES** – a multiple-item index of the educational and occupational level of the community's residents -- has no independent effect on men's chances of self-employment, net of individual-level and other community level characteristics (Table 2.5). That is clear from the non-significance of the relevant coefficient. Moreover, the point estimate of the coefficient is so small that it rounds to zero in the hundredths place: even if the effect were present it would be trivially small.

[Table 2.5 about here]

Table 2.5: Effects of family structure, education and religion on men's self-employment: Logistic regresson estimates, separately for each panel, controlling for 28 individual characteristics[1]. Men, aged 25 to 64, in the labor force, with complete data on all variables N=3,045.[2]

	b	Std. Err.	Chi-sq	Sig.	exp(b)
Panel A: Postcode characteristics:					
Postcode SES	0.00	0.00	1.48	n.s.	1.00
% unemployed	0.01	0.02	0.13	n.s.	1.01
% Aboriginal or TSI	-0.11	0.02	19.68	0.00	0.90
Residential stability	0.00	0.01	0.34	n.s.	1.00
Time varying characteristic:					
% unemployed in nation	0.00	0.04	0.01	n.s.	1.00
Panel B: Neighbourhood characteristic:					
Social capital:Sociable	0.00	0.00	0.54	n.s.	1.00
Social capital: Friends	0.01	0.00	10.48	0.00	1.01
Neighbourhood incivility: Louts	0.00	0.00	0.89	n.s.	1.00
Postcode population structure:					
% males, aged 10-14	-0.12	0.06	4.43	0.04	0.88
% males, aged 15-19	-0.03	0.07	0.21	n.s.	0.97
% males, aged 20-24	0.00	0.07	0.01	n.s.	1.00
% males, aged 25-29	-0.13	0.06	5.70	0.02	0.87
Panel C: Postcode industry:					
% Agriculture	0.00	0.04	0.01	n.s.	1.00
% Mining	-0.11	0.05	5.04	0.02	0.90
% Manufacturing	-0.04	0.04	0.68	n.s.	0.96
% Electrical	-0.08	0.07	1.07	n.s.	0.93
% Consturction	-0.03	0.05	0.42	n.s.	0.97
% Wholesale trade	-0.09	0.06	2.45	n.s.	0.91
% Retail trade	-0.03	0.05	0.31	n.s.	0.97
%Accomodation	0.01	0.05	0.06	n.s.	1.01
% Transport	-0.07	0.05	1.94	n.s.	0.93
% Communications	-0.03	0.08	0.11	n.s.	0.97
% Financial services	-0.01	0.07	0.05	n.s.	0.99
% Business services	0.02	0.05	0.11	n.s.	1.02
% Government	-0.08	0.05	3.28	n.s.	0.92
% Educaiton	-0.05	0.05	1.03	n.s.	0.95
% Health	-0.05	0.05	1.32	n.s.	0.95
% Culture	-0.09	0.07	1.58	n.s.	0.92
% Personal services	-0.08	0.07	1.14	n.s.	0.93
Panel D: State of birth: NSW (reference)					
Victoria	0.14	0.13	1.12	n.s.	1.15
Queensland	-0.64	0.20	9.92	0.00	0.53
South Australia	-0.20	0.18	1.12	n.s.	0.82
West Australia	0.20	0.21	0.90	n.s.	1.22
Tasmania	-0.39	0.27	2.14	n.s.	0.68

[1] Migrant: 1st generation; Migrant: 2nd generation; Urban at 14 (ln); Number of siblings; Parent's education; Books in parents' home; Father's status; Fathr supervises; Parents income; Father self-employed; Parents' age; Parents divorced; Mother worked; Private school; Married; Spouse in labor force; Children: Pre-school; Children: School age; Church attendance (ln); Catholic; Year of survey; School: Complted year 12; University graduate; Age 25-34; Age 45-54; Age 55-64; Urban (ln population size); and Unemployed at time of survey.

[2] Number of cases varies slightly from analysis to analysis, depending on missing data.

Nor does the **postcode unemployment** have a statistically significant effect on men's self-employment probabilities in this model controlling for other community-level characteristics and for individual characteristics (Table 2.5).

Even aside from the unemployment level, the significant negative effect of **postcode percent ATSI** suggests that men living in communities where many Aborigines and Torres Straits Islanders reside are less likely to be in self-employment than are men living in otherwise comparable communities with different ethnic composition, on average and all else equal (Table 2.5). This is not a huge effect, nonetheless, it is a sign that special support may be required in these communities.

The non-significance of the relevant logistic regression coefficient suggests that **residential stability** of neighbourhoods has no effect upon men's self-employment, on average and all else equal (Table 2.5).

Finally, we also assessed the impact of the **nationwide unemployment rate**. Net of local postcode unemployment and other community characteristics and individual characteristics, the national unemployment rate has a non-significant effect on male self-employment in this model (Table 2.5).

Neighbourhood social capital

The non-significant effect of our measure of one of the dimensions of neighbourhood social capital – **neighbourhood sociability --** suggests that sociable neighbourhoods may not especially facilitate men's self-employment, on average and all else equal (Table 2.5). The measure of neighbourhood sociability is an index with very good measurement properties which has been found to have strong links to a number of relevant variables (for example, to well-being, see the results in the report on Project # 10), so the non-significance of the effect is more likely due to the substantive absence of an effect rather than to measurement difficulties.

By contrast, there is a significant positive effect of **local friendships** on men's self-employment (Table 2.5), on average and all else equal. We are inclined to discount this effect as a false positive, because it does not form part of a logical pattern of effects (e.g., it would seem more plausible if both it and sociable neighbourhoods had positive effects) and because the effect is not found among women (see below), and we can see no compelling reason that friendships should matter to business success or entry for men, but not for women.

The estimates in Table 2.5 show a non-significant effect of **neighbourhood public incivilities** on men's probability of being in self-employment on average and all else equal (Table 2.5). Loitering, street hostility and public rudeness – the components of neighbourhood incivility seem to depress the quality of life for residents (see the report on Project # 10 on Family and Community Effects on Wellbeing), but the non-significance of the effect in Table 2.5 suggests that they do not to discourage small business, on average and all else equal. This apparent non-significance seems likely to reflect substantive non-significance rather than measurement difficulties, because the index of public incivilities has excellent measurement properties and is significantly associated with other relevant variables

Neither does a **community age structure** with large number of teenage boys and young men deter self-employment. There are two apparently significant effects – negative effects of the percentage of postcode residents being boys age 10 to 14 and of the percentage of postcode residents being men are age 25 to 29 – but the effects for the representation of males of intermediate ages are non-significant. Since this does not correspond to any theoretically predicted or substantively sensible pattern, we are inclined to dismiss the apparently significant effects as false positives.

Industrial base

It is intuitively plausible to think that the existing **industrial** mix of the community could facilitate or impede self-employment, but the facts are against it (Table 2.5). More specifically, net of respondent's own individual characteristics, there is no significant effects of the percentage of the postcode's workforce who are in agriculture, or the percentage who are in manufacturing, or the percentage who are in the electrical industry, or the percentage who are in construction, or the percentage who are in retail trade, or the percentage who are in wholesale trade, or the percentage in the accommodation industry, or the percentage in transport, or the percentage in communications, or the percentage in financial services, or the percentage in business services, or the percentage in government, or the percentage in education, or the percentage in health industries, or the percentage in culture industries, or the percentage in personal services, on average and all else equal. In fact, the only significant effect is from mining which could reflect the special isolated nature of many mining communities, but seems more likely to be a false positive as it does not form part of a pattern and is not found for women (in a list of 34 possibilities [=17 industries x two genders), one false positive would not be a rare occurrence).

State of origin

State heritages favourable or unfavourable to self-employment could conceivably shape people's employment orientations and practices on into adulthood. But, in this model, net of the characteristics of family of origin and net of current circumstance, none of the states of origin except Queensland has a statistically significant effect on men's chances of self-employment, in this model, on average and all else equal (Table 2.5). To the extent that the estimates from the model apply to the population in general, coming from Queensland seems slightly to discourage self-employment, on average and all else equal.

Women's self-employment

The effects of community context on women's self-employment is the focus of this section. The model controls for family of origin effects, effects of education, time, and religion, and the effects of current life course stage (discussed above).

Postcode characteristics

The non-significance of the relevant regression coefficient implies **that postcode SES** – a multiple item index of the educational and occupational level of the community's residents -- has no independent effect on women's chances of self-employment (Table 2.6).   In short, women living in communities largely inhabited by people with little education and modest jobs work are no less (and no more) likely to be self-employed than are women in high SES postcodes, on average and all else equal.

[Table 2.6 about here]

Nor does the   **postcode unemployment** rate affect women's self-employment (Table 2.6).

Table 2.6: Effects of family structure, education and religion on women's self-employment: Logistic regresson estimates, separately for each panel, controling for 28 individual characteristics[1]. Women, aged 25 to 64, in the labor force, with complete data on all variables N=2,753.[2]

	b	Std. Err.	Chi-sq	Sig.	exp(b)
Panel A: Postcode characteristics:					
Postcode SES	0.00	0.00	0.09	n.s.	1.00
% unemployed	0.01	0.02	0.08	n.s.	1.01
% Aboriginal or TSI	-0.05	0.02	4.79	0.03	0.95
Residential stability	-0.02	0.01	9.48	n.s.	0.98
Time varying characteristic:					
% unemployed in nation	0.02	0.05	0.08	n.s.	1.02
Panel B: Neighbourhood characteristic:					
Social capital:Sociable	0.00	0.01	0.16	n.s.	1.00
Social capital: Friends	0.00	0.01	0.00	n.s.	1.00
Neighbourhood incivility: Louts	0.00	0.01	0.44	n.s.	1.00
Postcode population structure:					
% males, aged 10-14	-0.20	0.08	5.64	0.02	0.82
% males, aged 15-19	0.01	0.09	0.01	n.s.	1.01
% males, aged 20-24	0.04	0.09	0.17	n.s.	1.04
% males, aged 25-29	-0.11	0.08	1.83	n.s.	0.90
Panel C: Postcode industry:					
% Agriculture	0.00	0.06	0.00	n.s.	1.00
% Mining	-0.05	0.07	0.57	n.s.	0.95
% Manufacturing	-0.02	0.07	0.11	n.s.	0.98
% Electrical	-0.01	0.09	0.02	n.s.	0.99
% Consturction	-0.01	0.07	0.01	n.s.	0.99
% Wholesale trade	0.04	0.08	0.23	n.s.	1.04
% Retail trade	-0.06	0.07	0.75	n.s.	0.94
%Accomodation	0.01	0.07	0.05	n.s.	1.01
% Transport	0.00	0.08	0.00	n.s.	1.00
% Communications	0.00	0.12	0.00	n.s.	1.00
% Financial services	-0.19	0.09	4.22	0.04	0.83
% Business services	0.09	0.07	1.54	n.s.	1.09
% Government	-0.08	0.07	1.33	n.s.	0.93
% Educaiton	-0.06	0.07	0.74	n.s.	0.94
% Health	0.04	0.07	0.37	n.s.	1.04
% Culture	0.07	0.10	0.51	n.s.	1.08
% Personal services	-0.10	0.11	0.91	n.s.	0.90
Panel D: State of birth: NSW (reference)					
Victoria	0.28	0.19	2.14	n.s.	1.32
Queensland	0.40	0.23	3.15	n.s.	1.49
South Australia	0.30	0.25	1.47	n.s.	1.35
West Australia	0.70	0.27	6.86	0.01	2.01
Tasmania	-0.07	0.35	0.04	n.s.	0.93

[1] Migrant: 1st generation; Migrant: 2nd generation; Urban at 14 (ln); Number of siblings; Parent's education; Books in parents' home; Father's status; Fathr supervises; Parents income; Father self-employed; Parents' age; Parents divorced; Mother worked; Private school; Married; Spouse in labor force; Children: Pre-school; Children: School age; Church attendance (ln); Catholic; Year of survey; School: Complted year 12; University graduate; Age 25-34; Age 45-54; Age 55-64; Urban (ln population size); and Unemployed at time of survey.

[2] Number of cases varies slightly from analysis to analysis, depending on missing data.

Even aside from the postcode unemployment level, postcodes where a larger percentage of the residents are **Aborigines and Torres Straits Islanders** sustain less female self-employment than do otherwise comparable communities with different ethnic composition on average and all else equal, according to the

significant, negative effect of the postcode percentage ATSI residents (Table 2.6).

Residential stability of neighbourhoods fails to have a upon self-employment of female labour force participants (Table 2.6). This is interesting because it suggests that small businesses do just as well among a constantly renewed clientele of strangers as in more settled and networked communities.

Finally, we also assessed the impact of the **nationwide unemployment rate**. The national unemployment rate has no effect on women's self-employment , all else equal (Table 2.6).

Neighbourhood social capital

The non-significant effects of **neighbourhood sociability** suggest that sociable neighbourhoods do not especially facilitate women's self-employment, on average and all else equal (Table 2.6). The kind of support that neighbours gives each other through informal social contacts does not especially seem to encourage self-employment (although it considerably enhances residents quality of life, see the report on project # 10 on Family and Community Effects on Wellbeing). The facts that a parallel non-significant effect is found for men, that the multiple-item index has good measurement properties, and that significant effects of this same measure are found in other domains increase confidence that this absence of effect is likely to be real rather than reflecting shortcomings of measurement.

By contrast, according to these estimates, neighbourhoods where people develop **friendships,** do seem to very slightly encourage women's self-employment on average and all else equal   (Table 2.6). Although this effect is small in magnitude, confidence that it is substantively present is increased by the presence of a similar effect among men (Table 2.5).

In these estimates, the non-significance of the effect of **public incivilities** suggests that neither encourage or discourage female self-employment (Table 2.6). Loitering, street hostility and public rudeness depress the quality of life for residents (see the report on Family and Community Effects on Wellbeing), but they do not seem to deter women from starting businesses. Neither does a **community age structure** with large number of teenage boys and young men deflect women from self-employment. Both of these findings parallel those for men thereby increasing confidence that these null effects are substantively real rather than being artefacts of measurement difficulties. Other reasons to think that these null effects represent the real world well rather than merely being side-effects of poor measurement are that the neighbourhood public incivilities index has good measurement properties and that it has strong links to other theoretically related variables such as subjective well-being (see the report on project #10 on Family and Community Effects on Wellbeing).

Industrial base

According to these estimates, the **industrial** mix of the community is not significantly associated with women's self-employment, net of their own characteristics and of other neighbourhood characteristics (Table 2.6). More specifically, net of respondent's own individual characteristics, there is no significant effect on women's self-employment of the percentage of the postcode's workforce who are in agriculture, or the percentage who are in mining, or the percentage who are in manufacturing, or the percentage who are in the electrical industry, or the percentage who are in construction, or the percentage who are in retail trade, or the percentage who are in wholesale trade, or the percentage in the accommodation industry, or the percentage in transport, or the percentage in communications, or the percentage in business services, or the percentage in government, or the percentage in education, or the percentage in health industries, or the percentage in culture industries, or the percentage in personal services. In fact, the only significant effect is from or the financial services which seems likely to be a false positive since it does not form part of a pattern, and is not found for men (in a list of 17 industries, one false positive would not be a rare occurrence).

State of origin

The non-significant effect of **state of origin** suggests that, net of the characteristics of her family of origin and of her contemporary characteristics, a woman's state of origin does not influence her chances of self-employment, in general (Table 2.6). The only exception is coming from Western Australia, which seems to boost self-employment.

3. EFFECTS ON QUALITY OF EMPLOYMENT

This section explores the effects of family and geographic context on the quality of the jobs people get, specifically on their occupational status. Occupational status provides a robust and reliable measure of job quality, ranging from farm workers (mostly unskilled, ill-educated, and poor) at the bottom of the hierarchy to professional occupations at the top (mostly highly skilled, well educated, and prosperous). Although less familiar in economics, occupational status is one of sociology's most widely used variables (Blau and Duncan 1967; Featherman and Hauser 1978; Ganzeboom, Luijkx and Treiman 1989; Haller and Portes 1973; Kelley and Evans 1995).

The measure of occupational status we use Kelley's Worldwide Status Scores (Kelley 1990: 344-346; Kelley and Evans 2002), which are conceptually similar to Duncan's SEI scores and, in the United States, interchangeable with them (Kelley 1990: 344-346). It is based on Treiman's (1977: 203-208) 14 category classification, in turn based on the major groups of the International Labour Office's International Standard Classification of Occupations (ILO, 1968) with further distinctions within major groups based on Treiman's prestige scores. Occupational status refers to present occupation for those currently employed, or to past occupation for those not now employed, or to spouse's occupation if no other information is available.[21] Occupations were initially coded into the 4-digit Australian Standard Classification of Occupations; and thence recoded into Worldwide Status Scores. These scores range from 0 to 100. Details:

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[21] This procedure typically leaves under 10 percent of respondents with missing data on occupational status. We have regularly found that including a "no occupation" dummy variable in an analysis makes little difference to the substantive results and so, for simplicity, we omit it.

Definition of occupational status

Status   Group   (Definition: ISCO major group; Treiman prestige)

100   Higher professionals (ISCO 0 or 1; prestige 58 or more)
  -- lawyers, doctors, dentists, pilots, engineers, accountants, academics, secondary school teachers, economists, etc.

75   Administrators and managers (ISCO 2; any prestige)
  -- managing directors of companies, sales managers, bank managers, parliamentarians, high ranking bureaucrats, etc.

70   Technical employees (ISCO 0 or 1; prestige under 58)
  -- computer programmers, nurses, primary school teachers, librarians, artists, social workers, etc.

60   Higher clerical employees (ISCO 3; prestige 41 or more)
  -- clerks, secretaries, bookkeepers, bank tellers, etc.

51   Higher sales employees (ISCO 4; prestige 40 or more)
  -- owners of retail stores, sales representatives, insurance agents, wholesale managers, etc.

38   Routine clerical workers (ISCO 3; prestige under 41)
  -- filing clerks, postal clerks, telephone operators, etc.

37   Skilled manual workers (ISCO 7, 8 or 9; prestige 38 or more)
  -- mechanics, machinists, master craftsmen, foremen, television repairmen, locomotive drivers, etc.

33   Skilled service workers (ISCO 5; prestige 27 or more)
  -- restaurant managers, policemen, cooks, hairdressers, etc.

32   Routine sales workers (ISCO 4; prestige under 40)
  -- shop assistants, sales clerks, etc.

24   Ordinary semi-skilled workers (ISCO 7, 8 or 9; prestige 26 to 37)
  -- carpenters, plumbers, sheet metal workers, drivers, painters and decorators, bricklayers, etc.

18   Unskilled service workers (ISCO 5; prestige under 27)
  -- waiters, bartenders, cleaners, etc.

14   Unskilled manual workers (ISCO 7, 8 or 9; prestige under 26)
  -- labourers, porters, garbage collectors, etc.

10   Farmers (ISCO 6; prestige 34 or more)
  -- farm owners, farm foremen, etc.

0   Farm labourers (ISCO 6; prestige under 34)
  -- farm workers, tractor drivers, fishermen, etc.

Family influences on occupational status

The impact of family background on occupational status has been widely studied, most notably in the vast tradition of sociological research stemming from the Blau-Duncan paradigm (Blau and Duncan 1967; Featherman and Hauser 1978).[22] Subsequent developments included class models (e.g. Erickson and Goldthorpe 1992; Wright 1985), models incorporating both class and status elements (e.g. Robinson and Kelley 1979), and many others. Our model is in the comprehensive tradition, incorporating both class and status aspects of family background and a variety of ascriptive factors (sex, age, ethnicity, immigration, religion, marriage, divorce).

Effect of family background

Family background has a major impact on occupational success: Children from high ranking families do well themselves in the occupational world. This is well known for Australia (e.g. Broom, Jones, McDonnell and Williams 1980) and indeed throughout the world (Ganzeboom, Luijkx, and Treiman 1989; Kelley 1978). Less well known are the relative importance of various aspects of family background – it is not just father's occupational status that matters, or parents' education, or parents' income. Rather many things about the family one grew up in matter, some more than others. Specifically (Table 3.1):

> o The most important single thing is **father's occupational status**, with a standardised effect of .13. If two children grew up in families with similar education, income, ethnicity and so forth, differing only in that the father was an unskilled labourer (status=0) in one and a professional in the other (status=100), the child from the professional home could expect to get a job 13 status points higher, on average and all else equal according to the metric regression coefficient. For example, he might be a skilled manual worker rather than a semi-skilled worker; or an administrator rather than a higher clerical employee. That is a real advantage, although not an overwhelming one.

> o **Parents' education** is also important, with a standardised effect of .09. The estimate of the metric regression coefficient in Table 3.1 suggests that, for example, the child of university educated parents (16 years of education) could expect to get a job

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[22] The Blau-Duncan paradigm led to a flowering of research unprecedented in sociology. Robust findings about stratification emerged first for the US (Blau and Duncan 1967; Duncan, Featherman and Duncan 1972) and soon afterward for many other countries, including Britain and Australia in the western industrial world (Broom and Jones 1969); Poland and Hungary in Eastern Europe (Zagorski 1984); and developing and even tribal societies (Kelley 1978). A Kuhnian (1962) "normal science" of social stratification was the outcome.

6 points higher than the child of parents who both left school at year 9, all else equal.[23]

o According to this estimate of the metric regression coefficient, growing up in a family where the father **supervised** other workers on the job leads, in the long run to the children later, as adults, getting jobs 5 points higher in occupational status than people from otherwise similar families where the father did not supervide, on average.

o Although the regression coefficient for growing up in a home with a **self-employed father** is statistically significant, it is very small. Indeed, the point estimate is only about 1 status point.

o The positive significant effect of **number of books** in the home while respondent was growing up suggests that families that are inclined toward the literary culture and have many books around the house also provide a small advantage to their children, on average, other things being equal. This finding is in line with prior research demonstrating an effect of this (and related) variables on education (Crook 1997; Evans and Kelley 2002).

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o Surprisingly, **family income** does not seem to confer any discernable advantage on their children. While there is some

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[23] Viz .87 * 16 - .87 * 9 = 5.

uncertainty in this estimate for technical reasons (see Measurement Appendix),[24] we feel reasonably confident in claiming that family income is, at most, only a minor influence. In general, studies that examine the effects of income on educational outcomes only find a significant effect of income when they omit parents' education and occupation (see, for example, the studies in Duncan and Brooks-Gunn 1997), so it is not really surprising to find a parallel absence of effect on occupation.

[Table 3.1 about here]

Table 3.1: Effects of family background on occupational status:OLS regresson estimates. Men and women, aged 25 and over. N=17,875.[1]

Variable	b	s.e.	Standardized	t
Male	0.77	0.47	n.s.	1.62
Migrant: 1st generation	0.68	0.58	n.s.	1.18
Migrant: 2nd generation	2.13	1.01	0.02	2.12
Urban at 14 (ln)	0.78	0.07	0.11	11.48
Number of siblings	-0.25	0.03	-0.07	-8.20
Parent's education	0.87	0.10	0.09	8.39
Books in parents' home	0.01	0.00	0.06	6.73
Father's status	0.13	0.01	0.13	11.72
Fathr supervises	5.00	0.68	0.07	7.32
Parents income	-0.85	0.68	n.s.	-1.24
Father self-employed	1.35	0.57	0.02	2.36
Parents' age	0.16	0.04	0.04	4.03
Parents divorced	-2.46	0.81	-0.03	-3.05
Mother worked	0.71	0.74	n.s.	0.97
Private school	7.18	1.45	0.04	4.94
(constant)	32.26	7.17		

[1] Adjusted R^2 = .11.

Other aspects of the family matter only a little. The children of divorced parents get jobs about 2.5 points lower, on average, than their peers from intact families according to the metric regression coefficient. **Older parents** do a little better by their children, according to the metric regression coefficient which implies, for example that men each additional year of age the parents have at the child's

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[24] We have no direct measure of family income because survey respondents are not generally able to provide reliable information on their parents's income. The do, however, provide reliable information on their parents' education, occupation, supervision, labour force participation and the like. We estimated parents' income from those known facts in the following way. (1) First, we estimated the impact of education, occupation. supervision, labour force participation and the like on the (log of) family income of comtemporary families by OLS regression. (2) Next, we assumed that this relationship held equally in the past, and so predicted their parents' income on the basis of their *parents'* education, occupation, labour force participation, and the like. The resulting estimate is provides a plausible but by no means perfect proxy for family income, and we used this proxy in the analysis. An alternative would be to use a measure based on the possessions (house, car, VCR etc) which we have in several of our surveys. We did not do that because, other things being equal, older families are much less likely to have these possessions than younger families (cars, for example, were rare in the past and VCRs non-existent). Since age is linked to education and other key variables, that produces a serious bias.

birth leads to a 0.16 of a gain in the occupational status the child could expect, on average and all else equal. That would mean, for example, that whose parents who were age 35 when the children were born get jobs 1.6 points higher in occupational status than do otherwise similar children whose parents were age 25, on average. . The fact that the maternal employment coefficient is not significant in this model suggests that **mothers who work** confer no occupational advantage on their children, but neither do they impose a disadvantage.[25] This could come about either because maternal employment is irrelevant or because the advantages and disadvantages counterbalance, and further research would be needed to disentangle which.

In this model, the effect of **gender** is not statistically significant, as is normally true in studies of job quality.

The fact that the relevant regression coefficient is statistically non-significant (and would be very small even if it were significant) in this model suggests that, on average, **first generation migrants** get jobs neither better nor worse than those held by comparable native-born Australians, net of other factors – a counter-intuitive but long-established finding (Evans and Kelley 1991). The small but statistically significant positive regression coefficient suggests that, on average, migrants in the **second generation** may rise fractionally higher on the job ladder better than the native-born, other things equal.

Parents who send their children to **private school** provide them with a substantial 7 point advantage in occupational status. This is consistent with much other evidence that private schooling provides a substantial educational advantage (e.g. Evans and Kelley 2002: Ch. 6). As a consequence, it indirectly provides an occupational advantage (compare private schooling's effect in Table 3.1 with its effect controlling education in Table 3.2 below).

Coming from a family with a large **number of siblings** is a small but real educational disadvantage, as is well known.

Effect of family structure, education, and religion

Family structure has no appreciable effect on occupational status (Table 3.2). The **married** and the single have equally good (or bad) jobs. People with **children** get no better and no worse jobs than the childless. Nor does it matter whether one's **spouse is in the labour force** or not. **Age** matters little. People in their late 20s and early 30s have slightly lower status jobs than those further along in their careers. But by the late 30s, people are settled into jobs as good -- or as bad-- as they will have later in life: there is, on average, neither an occupational premium to older workers, nor an occupational cost to them.

[Table 3.2 about here]

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[25] There is, however, a small effect on education with the children of highly educated working mothers suffering a disadvantage (Evans and Kelley 2002: Ch. 4).

Table 3.2: Effects of family structure, education and religion on occupational status:OLS regresson estimates. Men and women, aged 25 and over. N=17,875.[1]

Variable	b	s.e.	Standardized	t
Male	-0.59	0.45	n.s.	-1.31
Migrant: 1st generation	-1.87	0.54	-0.03	-3.48
Migrant: 2nd generation	1.23	0.93	n.s.	1.33
Urban at 14 (ln)	0.57	0.06	0.08	9.22
Number of siblings	-0.13	0.03	-0.04	-4.68
Parent's education	0.28	0.10	0.03	2.93
Books in parents' home	0.00	0.00	n.s.	0.40
Father's status	0.07	0.01	0.07	6.63
Fathr supervises	2.50	0.63	0.04	3.97
Parents income	-0.78	0.62	n.s.	-1.25
Father self-employed	-0.54	0.52	n.s.	-1.03
Parents' age	0.02	0.04	n.s.	0.59
Parents divorced	-1.14	0.74	n.s.	-1.55
Mother worked	0.97	0.69	n.s.	1.40
Private school	0.60	1.36	n.s.	0.44
Married	0.74	0.60	n.s.	1.22
Spouse in labor force	0.22	0.52	n.s.	0.43
Children: Pre-school	0.07	0.68	n.s.	0.11
Children: School age	-0.44	0.51	n.s.	-0.86
Church attendance (ln)	0.71	0.13	0.05	5.42
Catholic	-1.20	0.54	-0.02	-2.22
Year of survey	-0.04	0.04	n.s.	-0.93
School: Complted year 12	14.44	0.57	0.27	25.46
University graduate	19.17	0.67	0.29	28.68
Age 25-34	-4.85	0.60	-0.08	-8.08
Age 35-44 (reference)				
Age 45-54	0.66	0.61	n.s.	1.08
Age 55-64	-0.40	0.71	n.s.	-0.56
(constant)	39.51	6.60		

[1] Adjusted R^2 = .32.

Success in **school** and **university** pays enormous occupational benefits, as is true in all known societies, rich and poor, modern and ancient. Other things being equal, someone who completes year 12 at school gets a job 14 status points higher than an early school leaver. On average, university graduates get jobs 19 points above an early school leaver's job, ceteris paribus in this model.

Most of the occupational advantage that stems from family background comes about indirectly through its impact on education. For example, the children of well **educated parents** had an advantage of .09 in standardised terms compared to children with otherwise similar family background (Table 3.1). But compared to others with similar family background **and** education (Table 3.2), their advantage drops by two-thirds, to .03. All the advantages of growing up in a cultured family with many **books** comes about in this indirect way. But only half of the advantage of having a **high status father** comes about in this way (.13 to .07)..

Postcode SES: An advantage in getting good jobs?

At first glance it would seem that growing up in a community full of well-educated, prosperous people in high status occupations would confer a great advantage. Certainly, the fate of children who grew up in, for example, Sydney's salubrious harbour-side suburbs differs from the fate of children who grew up in unappealing inner suburbs surrounded by poor, ill-educated, low-skilled workers. So the image in the mind of many politicians and social commentators is stark. Moreover, perusal of ABS postcode data confirms sharp differences between postcodes. So it is easy to make a seemingly persuasive case about geographical disadvantage. But is geography really an advantage to some and a a disadvantage to others?

Complications in the analysis

There are two fundamental complications in estimating the effect of postcode SES on occupational status:

> o First, people living in poor postcodes tend to be poor themselves: less educated, in worse jobs, and with lower incomes. So to compare like with like, you need to take that into account. Specifically, you need to have individual level data (not just aggregate data for the postcode as a whole). For the issues at hand, in addition to the postcode these data would need to include father's occupational status, parents' education and other variables characterizing the family respondent grew up in.

> o Second, people can choose for themselves where to live. Someone who starts life in a poor area but does well in school, gets a high status professional job, and earns a lot of money can then buy a house in the most salubrious of suburbs. Conversely, someone else born into a rich area who does poorly in school and gets a modest job may find he can no longer afford to live in the good suburb and must perforce move to a cheaper one. In short, living in a good suburb is in part a *consequence* of success, not a cause of it. The implication is that we need to know where people grew up, not just where they live now.

Finding data to deal with the first complication is straightforward. Any sample survey (like the IsssA) which has family background information as well as postcode information will do.

But finding data to deal with the second complication is not so easy, as few surveys ask for postcode in childhood. Fortunately, the IsssA surveys began to include this question in the mid-1990s, so we do have some data of the sort required, albeit for only a moderate number of cases (somewhat over 3,000).

An alternative possibility would be to use current postcode as a surrogate for childhood postcode. This might well work in times and places where migration is rare – as it was in many countries in earlier centuries, or as it is in nations like China and Russia today which control restrict migration. However Australia is not such a nation, as can be seen by comparing postcode now with postcode in childhood (Table 3.3).

[Table 3.3 about here]

Table 3.3. Correlations: SES of postcode of curent residence, SES of postcode at age 14, and selected variables.N=3,348 men and women with complete data on both postcode questions.

	SES of postcode now	SES of postcode at age 14
SES of postcode now	1.00	0.33
SES of postcode at age 14	0.33	1.00
Education (years)	0.26	0.14
Occupational status	0.27	0.17
Supervisor	0.09	0.01
Family income (ln)	0.22	0.11

In Australia, current postcode SES is a poor proxy for childhood postcode SES (column 1). The product-moment correlation is only .33. Moreover, there is clearly selective migration, as the correlation between current postcode SES and education is noticeably higher than the correlation between education and childhood postcode (.26 versus .14). Similarly, occupational status is much more highly correlated with postcode now than with childhood postcode (.27 versus .17). The same is true of income (.22 and .11).

Some misleading estimates of the effect of postcode SES

These complications make it easy to be misled about the effect of postcode SES.

(A) It is instructive to begin with an analysis that ignores all the complications and just compares people in rich and poor postcodes (as many social commentators and politicians do). This is done in the Panel A of Table 3.4. It seems to show that postcode SES has a huge impact on occupational status, with a standardised effect of fully .28. This effect is clearly statistically significant (t=31.2, p<.001).

[Table 3.4 about here]

Table 3.4: Alternate estimates of the effect of postcode SES on occupational status:OLS regresson estimates. Men and women, aged 25 and over. [1]

Variable	b	s.e.	Standardized	t
Panel A. Postcode now, no controls				
SES of postcode	0.28	0.01	0.28	31.32
Panel B. Postcode now, controling for family background [2]				
SES of postcode	0.21	0.01	0.20	19.95
Panel C. Postcode at age 14, controling for family background [2]				
SES of postcode	0.04	0.02	0.05	2.32

[1] N=11,716 for Panels A and B. Postcode at age 14 was asked only in recent surveys and has substantial missing data, so for Panel C N= 3,348.

[2] Controlling for Migrant: 1st generation; Migrant: 2nd generation; Urban at 14 (ln); Number of siblings; Parent's education; Books in parents' home; Father's status; Fathr supervises; Parents income; Father self-employed; Parents' age; Parents divorced; Mother worked; and Private school.

(B) Next, consider an analysis that (correctly) adjusts for differences in the kind of people who live in high and low SES postcodes, drawing on individual level data with an extensive battery of questions on family background (Panel B of Table 3.4). This also suggests that postcode SES has a major impact on occupational status, with a standardised effect of fully .20. That effect is also clearly significant statistically (t=19.95, p<.001).

(C) Third, consider an analysis that (correctly) adjusts for differences in the kind of people who live in different postcodes and (also correctly) measures SES for the postcode they lived in childhood (Panel C of Table 3.4). This suggests a much smaller postcode effect, around .05 in standardised terms. It seems statistically significant (t=2.32, p<.05), although uncertainties in model specification and limits on the range of control variables leave one with some unease. A Scottish verdict of "suspicious but not proven" is indicated.

(D) Finally, there is another serious difficulty: Random measurement error. We have measured postcode SES using five seemingly sensible indicators, but they (or any other set of indictors) can not completely characterise a postcode's SES. Even if we assume (optimistically) that demographic and family background measurements have little measurement error, measurement error in postcode SES can entirely vitiate our analysis.

It has long been known that measurement error leads to biased and inconsistent results – errors that are often large, usually unpredictable in direction, and cannot be cured simply by getting larger samples (Arbuckle and Wothke. 1999; Joreskog and Sorbom 1989; for a striking example, see Kelley 1973). Without

some attempt to deal with this fundamental difficulty, we cannot know whether or not postcode SES has any effect at all.

Estimates correcting for attenuation due to random measurement error

Correcting for attenuation due to random measurement error using a structural equation (LISREL) model provides our preferred estimate of the effect of childhood postcode SES on occupational status (Table 3.5, Model 1).

Postcode SES matters to occupational success

These results suggest that the socio-economic status of the postcode one grows up in has a real, albeit modest, effect on occupational success, with those growing up in more advantaged areas getting slightly better jobs. These estimates are net of a wide range of controls for family background characteristics and are statistically significant.

[Table 3.5 about here]

Table 3.5. Structural equation (LISREL) models of the effects of family background and postcode SES, correcting for attenuation due to random measurement error in postcode SES at age 14. Models 1: effects on occupational status; Model 2: same, also controlling for education; Model 3: effects on education. Full information maximum likelihood estimates. N= 2,835 [1]

	Model 1: Occupational status		Model 2: Occupational status		Model 3: Education (years)	
	Standardized	t	Standardized	t	Standardized	t
Structural model:						
SES of postcode at 14	0.10	4.51	n.s.	1.89	0.11	5.28
Parent's education	0.07	3.53	n.s.	-0.76	0.15	7.51
Father's status	0.13	5.80	0.05	2.41	0.14	6.82
Father supervises	0.04	2.05	0.01	0.61	0.05	2.78
Parents' income	n.s.	-0.76	-0.01	-0.77	n.s.	-0.21
Father self-employed	n.s.	0.63	-0.03	-2.03	0.07	4.17
Parent divorced	-0.05	-2.59	n.s.	-0.87	-0.06	-3.36
Mother worked	n.s.	-0.25	n.s.	-1.33	n.s.	1.53
Migrant: 1st generation	0.04	2.03	n.s.	1.46	n.s.	1.47
Male	n.s.	1.94	n.s.	-1.13	0.09	5.18
Married	n.s.	-1.54	n.s.	1.83	-0.11	-5.53
Spouse in labor force	0.05	2.43	n.s.	-0.95	0.12	5.81
Children: Pre-school	n.s.	-0.61	n.s.	-1.75	n.s.	1.53
Children: School age	n.s.	-1.63	-0.04	-2.11	n.s.	0.22
Church attendance (ln)	0.08	4.34	n.s.	1.94	0.09	4.90
Age 25-34	n.s.	-1.66	-0.08	-4.17	0.07	3.27
Age 45-54	n.s.	-0.33	n.s.	0.04	n.s.	-0.66
Age 55-64	n.s.	-1.54	n.s.	1.90	-0.11	-5.63
Year of survey	0.05	2.54	0.03	2.03	n.s.	1.52
Urban at 14 (ln)	0.08	3.74	0.08	4.33	n.s.	0.25
Education (years)	--	--	0.58	35.52	--	--
Measurement model (postcode characteristics)						
% university educated	0.95	--	0.95	--	0.95	--
% left school at age 14	-0.75	-55.08	-0.75	-55.08	-0.75	-55.10
% professional	0.97	115.17	0.97	115.18	0.97	115.15
% labourers	-0.84	-71.46	-0.84	-71.46	-0.84	-71.46
Earnings, prime age men	0.83	69.56	0.83	69.57	0.83	69.58
Chi-square	2326.6		2330.0		2317.1	
Degrees of freedom	85		89		85	
Adj goodness of fit	0.77		0.77		0.77	

[1] All surveys for which the relevant data are available.

What is it about childhood postcode SES that matters?

What matters about a postcode appears to be its effect on the educational attainment of children living in it (Table 3.5, Model 2). Once education is taken into account, the postcode SES effect dwindles into statistical insignificance (t=1.89, n.s.).[26]

So the story is simple. In prosperous postcodes, children go a little longer to school, other things being equal (Table 3.5, Model 3). The reason they get more schooling is not clear from this analysis. It is probably not some unmeasured characteristics of their family background, as our model includes an unusually comprehensive range of background controls. It might be that schools in rich

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[26] It is possible that there is some residual effect that would be found in a sample larger than ours, but even if so, it is certainly small.

postcodes are better. It might also, or additionally, be that postcode SES is reflecting the nature of the reference group among which children live. Educational research suggests that having academically inclined peers leads some children to emulate their friends and do well in school. It may also mean there is less disruption by disgruntled lower-class students in the schools, and hence less hindrances to academically inclined students performance.

But whatever the reason, educational success however achieved in turn leads to much better jobs. For that reason, and probably for that reason alone, the SES of the postcode one grows up in matters to one's occupational career.

State differences in occupational status

At first glance, it would seem to be a disadvantage to be born in Tasmania, even if you subsequently migrate to another state(Table 3.6, Panel A). It also would seem to be a disadvantage, albeit a smaller one, to be form in Western Australia or Queensland.

[Table 3.6 about here]

Table 3.6: Alternate estimates of the effect of state of birth on occupational status:OLS regression estimates. Men and women, aged 25 and over. N=17,875.

Variable	b	s.e.	Standardized	t
Panel A. No controls				
NSW (reference)	--	--	--	--
Victoria	1.03	0.52	n.s.	1.96
Queensland	-1.75	0.69	-0.02	-2.55
South Australia	-0.44	0.76	n.s.	-0.59
West Australia	-2.51	0.87	-0.02	-2.90
Tasmania	-4.04	0.94	-0.03	-4.30
Panel B. Controlling for family background [2]				
NSW (reference)	--	--	--	--
Victoria	0.69	0.69	n.s.	1.00
Queensland	0.28	0.86	n.s.	0.32
South Australia	0.48	0.94	n.s.	0.51
West Australia	-1.63	1.07	n.s.	-1.53
Tasmania	-0.41	1.15	n.s.	-0.36

[1] Controlling for Migrant: 1st generation; Migrant: 2nd generation; Urban at 14 (ln); Number of siblings; Parent's education; Books in parents' home; Father's status; Fathr supervises; Parents income; Father self-employed; Parents' age; Parents divorced; Mother worked; and Private school.

But first appearances are deceiving. The complication is that Tasmanian parents are a little less educated, have slightly worse jobs, and are generally not as well off as parents in other states. And similarly for Western Australia and Queensland. Once these complications are taken into account, state differences disappear (Table 3.6, Panel B). Children living in Tasmania, Western Australia and Queensland are at no disadvantage relative to their peers from comparable families living in NSW, Victoria and South Australia.

4. Extended summary

All results of statistical modeling are at risk of being revised when other models bringing to bear a different array of explanatory variables come to be estimated in the future, and so it is with the estimates in this report. For brevity's sake, in this summary we have not repeated that standard cautionary note beside each of the findings. The reader needs to remember that all the findings – whether of positive effects, negative effects, or null effects are provisional. In this summary, the phrase "has no effect on" should be understood to mean "the regression (or other) coefficient of this variable in this model estimated on this dataset was not statistically significant at the 0.05 level in a two-tailed test." It should also be noted that the results are those of sample surveys and hence are inevitably subject to sampling error: it is in the nature of sampling that, purely by chance, there is an inevitable risk that one draws a non-representative sample, but this seems unlikely to be a major worry in light of the assessment of sample representativeness in the data section above. It is also true that discussion of the point-estimates of coefficients tends to occur because it is so convenient, but it should always be understood that there is some, occasionally considerable, zone of uncertainty, so the following summary focuses on the existence and direction of effects rather than their magnitudes. Note also that the models we have presented here represent causal theories, and their results are described as representing causal processes, rather than accidental coincidences or proxying unrepresented genuine causal variables, and this aspect of this report, too, is inevitably provisional, pending confirmatory work testing other implications of the theories and replicating the work on other datasets. (The exception are the results on association of spouses' employment which is investigated here as an interesting association which requires special, more elaborate modeling in the future.)

Effects of family of origin

- o Parental education
    - raises workforce participation (Table 1.1 and 1.3)
    - increases hours worked   (Table 1.2 and 1.4)
    - has no effect on men's self-employment (Table 2.1)
    - raises women's self-employment (Table 2.2)
    - raises occupational status (Table 3.1)

- o Literacy environment: books in the parental home
    - raises workforce participation (Tables 1.1 and 1.3)
    - increases hours worked by men (Table 1.2)
    - does not affect women's hours worked (Table 1.4)
    - has no effect on self-employment (Tables 2.1 and 2.2)
    - raises later occupational status (Table 3.1)

- o Maternal employment
  - raises workforce participation (Table 1.1 and 1.3)
  - increases hours worked (Tables 1.2 and 1.4)
  - has no effect on self-employment (Tables 2.1 and 2.2)
  - has no effect on occupational status (Table 3.1)

- o Father's occupational status (job quality)
  - does not affect men's workforce participation or hours worked (Tables 1.1 and 1.2)
  - raises women's workforce participation and hours worked (Tables 1.3 and 1.4)
  - has no effect on self-employment (Tables 2.1 and 2.2)
  - raises   occupational status (Table 3.1)

- o Whether father supervised other workers in his job
  - does not affect men's workforce participation or hours worked (Table 1.1 and 1.2)
  - raises women's workforce participation and hours worked (Table 1.3 and 1.4)
  - has no effect on self-employment (Tables 2.1 and 2.2)
  - raises occupational status (Table 3.1)

- o Whether father was self-employed
  - does not affect men's workforce participation (Table 1.1)
  - increases men's hours worked (Table 1.2)
  - raises women's workforce participation (Table 1.3)
  - does not affect women's hours worked (Table 1.4)
  - substantially increases self-employment (Tables 2.1 and 2.2)
  - raises occupational status (Table 3.1)

- o Parental income during childhood
  - does not affect workforce participation or hours worked (Tables 1.1, 1.2, 1.3, 1.4)
  - does not affect self-employment (Tables 2.1 and 2.2)
  - does not affect occupational status (Tables 3.1)

- o Parents' age
  - does not affect workforce participation or hours worked (Tables 1.1, 1.2, 1.3, 1.4)
  - has no effect on self-employment (Tables 2.1 and 2.2)
  - raises occupational status (Tables 3.1)

- o Parental divorce
  - does not affect men's labour force participation, but reduces women's (Table 1.1, 1.3)
  - reduces hours worked (Table 1.2, and 1.4)
  - does not affect on self-employment (Tables 2.1 and 2.2)
  - lowers occupational status (Table 3.1)

- o Number of siblings
  - does not affect men's labour force participation, but reduces women's (Table 1.1, 1.3)
  - does not affect hours worked (Table 1.2, 1.4)
  - does not affect on self-employment (Tables 2.1 and 2.2)
  - lowers occupational status (Table 3.1)

- o Private schooling
  - does not affect labour force participation (Tables 1.1, 1.3) or hours worked (Tables 1.2, 1.4)
  - has no effect on men's self-employment (Table 2.1)
  - increases women's self-employment (Table 2.2)
  - raises occupational status (Table 3.1)

- o Being a migrant
  - raises men's labour force participation in the first generation, but not the second (Table 1.1)
  - does not affect women's workforce participation (Table 1.3)
  - does not affect hours worked (Tables 1.2, 1.4)
  - has no effect on self-employment (Tables 2.1 and 2.2)
  - has no effect on occupational status (Table 3.1)

- o An urban upbringing (size of place)
  - does not affect workforce participation (Table 1.1, 1.3) or hours worked (Table 1.2, 1.4)
  - decreases men's self-employment (Table 2.1)
  - does not affect women's self-employment (Table 2.2)
  - has no effect on occupational status (Table 3.1)

Effects of educational attainment, religion, and time

- o One's own education
  - neither secondary school completion nor university changes either men's workforce participation or hours worked (Tables 1.5 and 1.6)
  - secondary school completion raises women's workforce participation and hours worked, and university raises them further (Tables 1.7 and 1.8)
  - secondary school completion does not change men's self-employment, but university discourages male self-employment (Table 2.3)
  - secondary school completion discourages women's self-employment, and university discourages it more (Table 2.4)
  - secondary school completion raises occupational status and university raises it further; education is by far the largest influence on occupational status (Table 3.1)

- o Religion: attendance and denomination

104

- neither church-going nor being Catholic affects either men's workforce participation or hours worked (Tables 1.5 and 1.6)

- neither church-going nor being Catholic affects women's workforce participation (Table 1.7)

- church-going decreases the hours worked by employed women, but being Catholic has no effect (Table 1.8)

- church-going has no effect on men's self-employment, but being Catholic discourages it (Table 2.3)

- neither church-going nor being Catholic affects women's self-employment (Table 2.4)

- church-going increases occupational status (Table 3.2)

- Catholics experience a small deficit in occupational status (Table 3.2)

o   Time trends (remember these are net of individual-level change)

- men's workforce participation is declining over time (Table 1.5)

- men are working fewer hours over time (Table 1.6)

- there is no trend in women's workforce participation (Table 1.7)

- women are working longer hours over time (Table 1.8)

- there is no underlying trend in men's self-employment (Table 2.3)

- there is a positive time trend in women's self-employment (Table 2.4)

- there is no underlying trend in occupational status (Table 3.2)

Effects of family life cycle stage

o Age patterns

- workforce participation rises slightly from young adulthood (age 25 to 34) to early middle age (35 to 44), then falls somewhat to prime middle age (45 to 54) and falls very steeply to late middle age (55 to 64), (Table 1.5, 1.7)

- men's hours worked follow the same age pattern (Table 1.6)

- women's hours worked hold steady from young adulthood to early middle age, followed by a moderate decline to prime middle age, followed by a steep decline to late middle age (Table 1.8)

- self-employment rises steeply from young adulthood to early middle age, rises slightly further to prime middle age, and rises even further to late middle age (Tables 2.3 and 2.4)

- occupational status rises steeply from young adulthood to early middle age, then holds steady through prime middle age and into late middle age (Table 3.2)

o Effects of marriage

- men's workforce participation is unchanged by marriage per se, but is substantially elevated by having an employed wife, (Table 1.5)

- marriage, in itself, encourages employed men to work longer hours, and the stimulus to additional work effort is greater if the wife is employed (Table 1.6)

- marriage, in itself, draws women out of the workforce and reduces hours worked, but having a working husband increases the chance that a woman will work and increases the hours worked by employed women (Tables 1.7 and 1.8)

- being married does not, in itself, alter the probability of self-employment, but having a working spouse increases self-employment (Tables 2.3 and 2.4)

- does not affect occupational status of men or women (Table 3.2)

o Effects of children

- men's workforce participation and hours worked are unchanged by having children under age 6, but having school age children raises men's workforce participation and hours worked (Tables 1.5 and 1.6)

- having children under age 6 draws women out of the workforce, but mothers of school age children are just as likely to work as are childless women (Table 1.7)

- employed mothers of children under age 6 work much shorter hours than do childless women, and hours of work rise, albeit remaining below those of childless women, when the children are at school (Table 1.8)

- children do not affect their father's likelihood of self-employment (Table 2.3)

- working mothers of children under age 6 are much more likely to be self-employed than are their childless peers, but the stimulus to self-employment fades as the children reach school age (Table 2.4)

- children do not affect parents' occupational status (Table 3.2)

Effects of community/ neighbourhood

- o Effects of community socioeconomic status (postcode SES)
  - does not affect working hours (Tables 1.9 and 1.10)
  - does not affect self-employment (Tables 2.5 and 2.6)
  - does not affect on occupational status (apparent effect disappears when individual characteristics are taken into account (Table 3.5)

- o Effects of community unemployment (postcode % unemployed)
  - reduces working hours (Table 1.9, 1.10)
  - does not affect self-employment (Tables 2.5 and 2.6)

- o Effects of community's ethnic diversity (postcode % Aboriginal or TSI)
  - reduces men's working hours (Table 1.9)
  - increases women's working hours (Table 1.10)
  - reduces self-employment (Tables 2.5 and 2.6)

- o Effects of residential stability (postcode % residence unchanged)
  - no effect on working hours (Tables 1.9 and 1.10)
  - no effect on self-employment (Tables 2.5 and 2.6)

- o Effects of national unemployment rate
  - no effect on men's working hours (Table 1.9)
  - reduces women's working hours (Table 1.10)
  - no effect on self-employment (Tables 2.5 and 2.6)

- o Effects of neighbourhood social capital on self-employment
  - sociable neighbourhoods have no effect on self-employment (Tables 2.5 and 2.6)
  - neighbourhoods where friendships develop clearly have no effect on women's self-employment, and this is probably true for men, as well (Tables 2.5 and 2.6)
  - neighbourhood incivility has no effect on self-employment (Tables 2.5 and 2.6)

- o Effects of the prevalence of young men (postcode age structure)
  - no systematic effect on self-employment (Tables 2.5 and 2.6)

- o Effects of community industrial composition (postcode age structure
  - no systematic effect self-employment (Tables 2.5 and 2.6)

- o Effects of state of origin
  - no systematic effect on self-employment (Tables 2.5 and 2.6)

5. Discussion

Parents' education has a positive effect on workforce participation and hours worked for both men and women. By contrast, despite its importance in many zones of life, **parents' education** fails to have any impact on whether their sons are employees or are self-employed, perhaps because high self-employment occupations are scattered across the occupational hierarchy, from being the owner-operator of a small lawn-mowing business to being a physician (e.g. Kelley and Sikora 2001).

Neither does the number of **books** in the parental home alter their sons' propensities for self-employment: those from bookworm homes and those from homes where no one ever cracks a book are equally likely to enter self-employment, all else equal. By contrast, there is a positive, significant effect of books in the parental home on job quality in later life.. This finding is net of parents' educational level (as well as other family-of-origin variables) suggests that a bookish orientation in the home can enhance occupational prospects even among less educated families. That in turn suggests that programs to enhance home literacy might be worth considering as a way of enhancing the occupational opportunities of the next generation.

The finding that **maternal employment** has a large and important effect on men's workforce participation a potentially important result, because it suggests that encouraging single parents back into employment when their children reach school age (even if income support is still needed then) can help prevent multi-generational welfare dependency. In particular, the sons of working mothers are much less likely to retire early. This is also a potentially important result because so few things seem to effectively counter the trend towards early retirement.

The fact that **parents' income** does not have a statistically significant effect on probability of men's workforce engagement nor on the intensity of their workforce engagement suggests that the sons of poor parents work just as much as do the sons of prosperous parents, all else equal. This is evidence against the underclass hypothesis of poverty traps inherited from generation to generation.

The fact that **parents' age** does not have a statistically significant effect on men's workforce engagement in our models suggests that the capacity-reducing effect of teen motherhood on the next generation reflects low educational levels rather than age per se. To the extent that this is correct, encouraging teenage mothers to pursue their own education could be an effective capacity-building strategy both for themselves and for the next generation. It also suggests, however, that there will be no special maturity bonus flowing on into enhanced capacities in the next generation from today's older ages at parenthood.

Thus, what matters about a **father's occupation** to his daughter's future work career is how much education he brings to it. Neither the rank of his employment, nor the income it generates matters aside from that. None of these

indicators of father's location in the jobs hierarchy is significantly associated with sons' self-employment.

It remains possible that the connection between father's occupation and parent's education and offspring's employment outcomes is indicative rather than substantive. In particular, future research should examine the degree to which parents' SES proxies health risks (e.g. Halldorsson, Kunst Kohler, and Mackenbach 2000) and IQ.

Parental divorce. When they grow up, the sons of divorce are just as likely to be engaged in self-employed as are the sons of intact families.

By contrast, the **number of siblings** slightly reduces women's workforce participation, according to our models (Table 1.3). It is possible that larger families of origin tend to encourage a taste for homemaking rather than paid employment, an issue that we are examining in more detail in our project on Women's Labour Force Participation.

Rural and regional origins. Women reared in farms, villages, country towns, regional cities and metropolitan areas are all equally likely to participate in the work force and work equally long hours, all else equal. By contrast, the size of place of current **residence** is associated with an increase in hours of employment (Table 1.10). The larger the city, the more time devoted to paid employment by women. It seems likely that this reflects differences in opportunities rather than differences in local cultures, since there is an effect of contemporary residence, but no effect of childhood size of place.

The fact that self-employment is related to **father's self-employment**, but not to any of his stratification characteristics suggests that the inheritance is largely a matter of tastes and skills, rather than of resources. That calls into question the probability of success of recruiting previously uninterested unemployed men into self-employment.

We find **neighbourhood sociability** is not significantly linked to men's self employment, suggesting that sociable neighbourhoods may not especially facilitate men's self-employment, on average and all else equal (Table 2.5). The kind of support that neighbours gives each other through informal social contacts does not especially seem to encourage self-employment (although it considerably enhances residents quality of life, see the report on Family and Community Effects on Wellbeing).

We find that men and women living in communities largely inhabited by people with little education and modest jobs work no fewer (and no more) hours than women in high SES postcodes The fact that **postcode SES** has no impact on men's hours worked suggests that encouraging low income people to move into more prosperous postcodes in hopes of finding more work there might be ill-conceived. Postcode SES also fails to have a significant impact on men's or women's self-employment, net of other community and individual influences, suggesting that people living in communities largely inhabited by neighbours

with little education and modest jobs are no less (and no more) likely to be self-employed than are otherwise similar people in high SES postcodes. There may be richer pickings in prosperous neighbourhoods, but that appears to be counterbalanced by more competition, higher rents and the like.

In contrast to the null effect of postcode SES on hours of work, **postcode unemployment** has a significant negative association with individual hours worked, net of a broad range of other contextual and individual characteristics. This suggests that, to the extent that mobility encouraging program are desired, better results might conceivably flow from encouraging movement into postcodes with low unemployment (even those of low SES), rather than focusing on movement into high SES postcodes. This suggests a generalised work dearth in these communities which is reasonably well indexed by the postcode unemployment rate. So, unlike the situation with neighbourhood social capital which cannot be pinpointed with social-compositional characteristics available in Census data (see Report 10 on Family and Community Effects on Well-Being), when it comes to work shortages, the evidence here suggests that the postcode unemployment level is a good indicator of a local shortage of work that affects not only the relatively few who are actually unemployed, but also many residents who are not unemployed but who are working limited hours. Nor does the postcode unemployment have a statistically significant effect on men's self-employment probabilities. This is important because some commentators have seen self-employment as a kind of last-ditch effort to escape unemployment in economically troubled communities, but the finding that self-employment is no more common in postcodes with high unemployment than in postcodes with low unemployment runs against that interpretation.

Communities where many **Aborigines and Torres Straits Islanders** reside appear to provide slightly shorter working hours to their male residents, and perhaps, although less certainly, to their female residents as well. This is not a huge effect – for each one percentage point increase in Aboriginal and Torres Straits Islanders residents, the average man in the workforce has six minutes less a week of work, according to the estimates from our model. Nonetheless, it is a hint that the demand for workers is a little weaker in these communities, even aside from the high levels of unemployment that many of them experience. In terms of self-employment prospects, women living in postcodes with a larger percentage of ATSI residents are a little less likely to be in self-employment. This is a small effect. Nonetheless, it is a sign that special support may be required in these communities.

Equally long hours of work are available to men in neighbourhoods churning with residents moving in and out and in neighbourhoods where most residents have settled in for good and collective memory is long. Similarly, equally long hours of work are available to women in neighbourhoods where the residents are a constantly changing cast of characters and in neighbourhoods where most residents have settled in for good. Our models also found that residential stability of neighbourhoods has no effect upon men's self-employment which

suggests that small businesses do just as well among a constantly renewed clientele of strangers as in more settled and networked communities.

In contrast to significant effects of local unemployment rates, net of those and of individual characteristics, the **national unemployment rate** has no effect on the hours worked either by men or women, according to the estimates of our models. Moreover, the national unemployment rate has no effect on male self-employment net of other factors. The absence of effects on hours or on self-employment suggest that both employers and potential self-employed people are responding much more to local conditions that to national conditions.

In order to obtain estimates as precise as possible, this analysis has focused on variables common to a large number of surveys, which necessarily leaves us with many **omitted variables**. Disability is increasingly being highlighted in recent years as quite likely playing a role in depressed employment outcomes and IsssA data collected over the past several years including disability measures as well as the variables included in this analysis would make a future project on this topic possible. Moreover, evidence from abroad suggests that use of hard drugs during adolescence reduces employment prospects in adulthood (e.g. MacDonald and Pudney 2000). Measured academic ability or IQ also warrants investigation (Bond and Saunders 1999). Mother's occupation mainly adds a little more explained variance to occupational outcomes (e.g. Crook 1995; Kalmijn 1994; Lampard 1995), but there may, in addition, possibly be an interaction with gender and father's occupation (Khazzoom 1997). Interruptions in workforce participation are associated with lower occupational attainments for women, but it is noteworthy that inclusion of career interruption measures does not substantially alter coefficients for other more-thoroughly-studied variables, so it adds explained variance, but its omission probably does not bias other coefficients (Felmlee 1995).

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