Teenage mothers and fathers in Scotland 1991 to 2001

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Summary

This report investigates the factors that predict young parenthood in young men and women and examines the consequences of being a young parent in the years following the birth. The Scottish Longitudinal Study (SLS) holds 1991 Census data for a 5.3% sample of the Scottish population. Young people who became mothers and fathers between 1991 and 2001 were identified from linked birth records. The 2001 Census data was used to identify how young parents differed from other young people in terms of their socio-economic status, education and health. The sample studied included 2,282 teenage mothers and 811 teenage fathers. The reason for the smaller number of fathers was, to a large extent, due to the fact that the fathers of young mothers' babies tend to be older and the same age range was used to identify each sex. The use of census data which is completed by a very high proportion of the population means that our study will be much less affected by participation bias which can affect other surveys of young parents.

Young people not living with both parents, living in local authority housing and with parents from a lower social class in 1991 were all more likely to become teenage parents in the following ten years. Teenage parenthood was more likely for those raised with no religion and, to a lesser extent, for those raised in the Roman Catholic faith.

At 2001 the living arrangements for young mothers were strikingly different from those of other young women. Young women who have not become mothers gradually move away from the parental home to live with a partner or on their own between the ages of 16 and 30. The proportion of young mothers living with a partner and their children gradually increased over this age range, but very few of the remaining young mothers continue to live with their parents, while the majority live alone with their children. Very few young parents become full-time students and the majority gain no qualifications beyond O grades. Young mothers have low participation in the labour market with a large proportion looking after home and family. This proportion decreases between ages 16 and 30 to be replaced mainly by part-time working. The majority of teenage fathers are in full-time work, although they have a higher rate of unemployment than those who are not fathers.

Young parents are more likely to report poor health than other young people. This is especially true of teenage mothers and fathers. The poor health is not explained by social factors measured at 1991. But the relationship between poor health and parenthood is inextricably linked to socio-economic position. Those in full-time employment report relatively good health whereas the unemployed and those looking after home and family report poorer health. For young women socio-economic position is itself linked to living circumstances. Young women living only with their children are much less likely to participate in the labour market than those living with others.

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1 Introduction

There is considerable interest in factors affecting teenage conceptions and births and national data are presented and interpreted in detail for England and Wales by the Teenage Pregnancy Unit and in Scotland by ISD (Henderson et al., 2007). These national data tell us relatively little about the characteristics of young women who experience these events, although some cohort studies have investigated this. The SLS data are uniquely placed to investigate factors influencing teenage births by following the births from the 1991 census onwards. Very little is known about the influence of religious denomination on teenage births, although it is known that religiosity is a major influence on sexual behaviour (Henderson et al., 2002, Hollander, 2003, Studer and Thornton, 1987). We will be able to address this by using the answers to the 2001 census question on religion for those young women who were traced through the 1991 and 2001 censuses.

Previous studies (Rosato, 1999, Sloggett and Joshi, 1999) have used the ONS Longitudinal Study (LS) for England and Wales to investigate factors affecting teenage pregnancy. In particular Rosato (Rosato, 1999) used data from young women present in the 1971 and 1981 censuses.

One of the aims of the current Teenage Pregnancy strategy for England and Wales is to "….help teenage parents into education, training or employment and to reduce their risk of social exclusion" (Wellings et al., 2005). This analysis will be able to address this question directly for young women in Scotland and inform policies to support young mothers. Earlier motherhood has been shown to predict poor physical and mental health in later life (e.g. Mirowsky & Ross., 2002, Grundy & Tomassini, 2005 based on LS data and, Spence 2008). By examining health outcomes within a few years of the birth at the 2001 census we will be able to examine the origins of this effect and relate it to the young women's background before the birth (at 1991) and their social circumstances following the birth (at 2001).

Some recent qualitative research has focussed on the effect of a birth on young fathers as well as on young mothers (Ross et al., 2010). We are able to provide some quantitative results for those SLS members identified as teenage fathers from linked birth records.

2 SLS data on teenage mothers and fathers

2.1 Basic definitions

Teenage pregnancies and teenage births are defined as events where the mother was a teenager at the estimated time of conception. The SLS data can be linked to birth records, but no estimate of gestational age is available on birth records. Thus the dates of conception are estimated as 38 weeks before the birth date. No linkage to any data on miscarriages or abortions is currently possible for SLS members. The numbers of teenage births conceived before age 15 are a very small proportion (around 2%) of all teenage births in Scotland and we would expect that they would yield small numbers in the SLS linked data. Thus these analyses focus on births to young women conceived when aged 15 to 19 and we will refer to these as 'teenage births'.

The SLS currently holds data on births linked to sample mothers between the 1991 and the 2001 census. Thus SLS members who were present at the 1991 census aged less than 20 years 38 weeks at the time of the 1991 census and over 15 years 38 weeks at the time of the 2001 census were at risk of a teenage birth that could be linked to their SLS data. In order for such a linkage to be made the SLS member must have been traced via the NHS Central Register and such women will be called 'traced SLS members'. We will refer to traced women with a linked teenage birth as teen mothers.

The analyses reported here define teenage fathers as SLS members who were teenagers at the estimated time of conception of the child, thus mirroring the definition for teenage mothers[1]. Linkage was only possible where the father's details were given on the registration documents. An alternative approach, not used here, would have been to identify SLS members who were fathers of teenage mothers' children (though not the ones in this report), as reported on their linked birth records. A disadvantage of the alternative method, and the reason we did not chose that option, was that these fathers may not have been teenagers themselves

[1] Note that the teenage mothers and fathers in this report are not couples because the most of the other parents on linked birth certificates would not be SLS members.

and potential difference in age could have made the comparison with teenage mothers less relevant. All other definitions and methods are exactly as reported for teenage mothers.

2.2 Method of calculating rates

A person-years method was used to calculate rates of a teenage parenthood. Only the first birth was considered where more than one birth record linked to an SLS member. Since we are interested in first teenage births we would ideally have linked to earlier births so as to exclude young people who were already teenage parents. As data on earlier births was not available, we identified men or women living with a child at 1991 and excluded them from the analysis. For each remaining SLS member we calculated the number of days when he or she was at risk of a first teenage birth between the 1991 and 2001 censuses. This was the period when he or she was aged between 15 years 38 weeks and 20 years 38 weeks, and this was subdivided into periods for individual years of age at conception. To prevent any risk of disclosure from individual birthdates a small amount of random noise was added to the lengths of the periods at risk before the data were released for analysis. This produced a data set with multiple records for each man or woman, with each record giving the age for the potential conception and the length of time (in years) the young person was at that age during follow-up. In most case this will be 1 year, but it can be less if the period falls at the beginning or end of the time period, or for the last period for those with births. For those men or women who had experienced a teenage conceived birth the final record becomes that for the age at the first conception and no further records are included since he or she will no longer be at risk of a first teenage birth.

The ratio of the total numbers of teenage births to these SLS members is then divided by the total follow-up time to give rates. Rates can be expressed as age-specific rates and the sample can be subdivided by other characteristics of the SLS members measured at the censuses. A Poisson regression using the time at risk as the offset can be used to compare rates between various groups.

2.3 Numbers of cases

2.3.1 Young women

An initial extract identified 25,343 female SLS members at risk of a first teenage birth between 1991 and 2001. This number was reduced by 358 who were already living with a child in 1991 and a further 141 cases who had emigrated from Scotland before they came into the risk period (111 cases) or because they had a first teenage birth aged under 15 (30 cases). This left 24,844 SLS members with 2,282 linked teenage births (including live and still births) that were used to calculate rates.

For the analyses of the effects of being a teenage mother on young women we need to have a 2001 census record linked in the SLS. For these analyses the 10 young women who had a still birth, but no live birth before the 2001 census were not included as mothers. Table 1a gives the numbers and %s of cases that linked. Those with teenage births have a higher linkage rate, most likely because they are less likely to be mobile by, for example, leaving home for university or college courses. Any bias this would introduce would be likely to decrease the estimate of the differences between teenage mothers and non-teenage mothers.

Table 1a Numbers and % of young women linking to their 2001 census data.

		Linked to 2001 census	
	Total women	**Number**	**%**
All cases*	24,844	19,274	77.61*
With teenage live birth	2,282	1870	81.95
No teenage live birth	22,562	17,404	77.14

* Includes cases who had an emigration or death record before 2001, 607 cases only 7.7% of whom were captured in the 01 census. The overall linkage rate for those with no record of emigration or death was 79.3%.

This interpretation is confirmed when we look at the linkage rates by the age of the women at the 2001 census (Figure 1). The linkage rates for those without teenage births fall off from age 18 onwards at the age when university and college courses start.

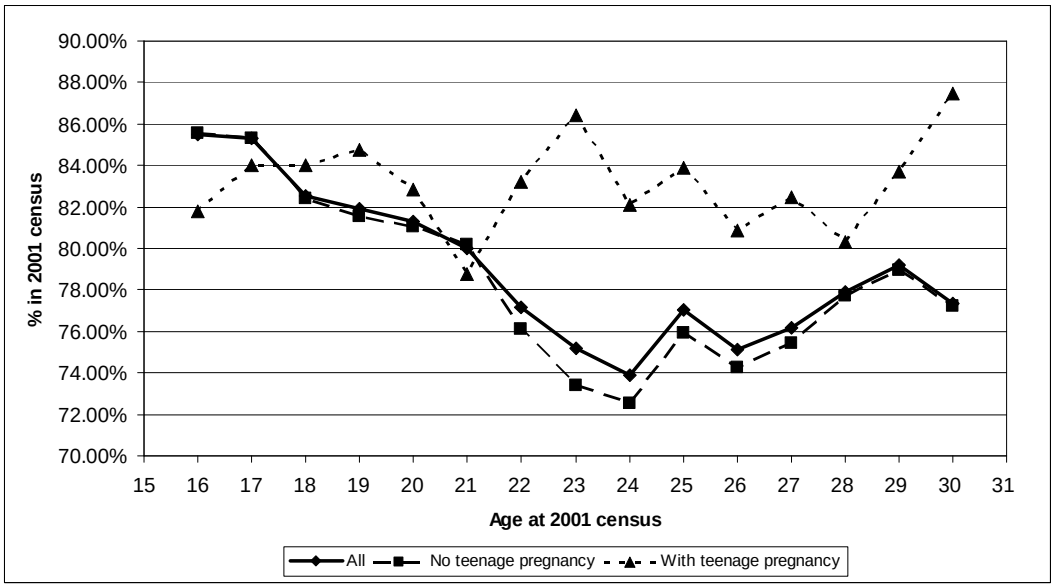

Figure 1 Linkage rate to 2001 census by age of woman at 2001 and whether woman had a teenage birth

2.3.2 Young men

An initial extract identified 26,296 male SLS members at risk of a first teenage fatherhood between 1991 and 2001. This number was reduced by 74 who were already living with a child in 1991 and a further 164 cases who had emigrated from Scotland before they came into the risk period (160 cases) or because they had a first teenage fatherhood aged under 15 (4 cases). This left 26,058 SLS members with 811 linked teenage fatherhoods who were used to calculate rates.

The possible reasons that may contribute to the lower number of fathers are that

1. only jointly registered births can be identified for young men
2. an imbalance between the ages of mothers and fathers
3. a poorer linkage to young men's data

To investigate whether 1 and 2, by themselves are adequate to explain the low number of fathers we have used the registration details for young mothers and the age of the partners of the young parents. Joint registration with details to calculate the father's age at conception was available for 74% of the teenage mothers, so this can only be a small part of the explanation of the low number of fathers. However, of those with father's information only 38% reported fathers who would have been teenagers at the time of conception. Thus we would expect to have found 2,282x0.74x0.38 = 642 teenage fathers of the teenage mothers' children. From the 811 fathers' registrations 629 had mothers who were teenagers at the time of conception, with the other mothers being older. Thus the number of teenage fathers identified is in good agreement with what we would expect. The main reason for the imbalance is the imbalance in the age distributions, with sole registrations making smaller contribution.

For the analyses of the effects of being a teenage father on young men we need to have a 2001 census record linked in the SLS. For these analyses the 4 young men who were fathers of a still born child, but of no live born children before the 2001 census were not included as fathers. Table 2b gives the numbers and %s of cases that linked. Young men have a lower linkage rate than young women. Teenage fathers have even lower rates than other young men, contrasting with the higher rate of found for teenage mothers. Only 490 teenage fathers had linked 2001 records. As for the young women, men with no linked live births between the censuses were not counted as fathers.

Table 2b Numbers and % of cases linking to their 2001 census data.

		Linked to 2001 census	
	Total men	**Number**	**%**
All cases*	26,085	18,832	72.3
With teenage fatherhood	811	490	60.4
No teenage fatherhood	25,247	18,342	72.6

* Includes cases who had an emigration or death record before 2001, 641 cases only 8.9% of whom were captured in the 01 census. The overall linkage rate for those with no record of emigration or death was 74.4%.

3 Rates of teenage parenthood

3.1 Rates of teenage motherhood from the SLS linked data

Table 2a gives the rates of a first teenage birth per year for the whole sample and for those who were traced at the 2001 census.

Table 3a Rates of first teenage motherhood

	All women			**With records in 2001 census**		
Age at conception	**Total person years of follow up**	**Number of events**	**Rate per woman-year (%)**	**Total person years of follow up**	**Number of events**	**Rate per woman-year (%)**
all ages	77,928	2,282	2.93	59,685	1,870	3.13
15	16,299	135	0.83	12,834	106	0.83
16	15,991	387	2.42	12,386	325	2.62
17	15,611	532	3.41	11,920	438	3.67
18	15,229	630	4.14	11,483	501	4.36
19	14,798	598	4.04	11,063	500	4.52

3.2 Comparison of linked sample with Scotland's national rates

ISD Scotland has historically used hospital birth records to calculate teenage pregnancy rates. But in 2007 this system was changed to rates calculated in the same way as has always been done in England and Wales, using the same GRO birth records used here. Teenage birth rates, live births and still births, over the period 1994 to 2001 are published (ISD Scotland, 2010, Table 4). The rates % per woman aged 15 to 19 vary over the time period from 3.5% year to 3.9% per year. These published rates are for all teenage births, not just first births and thus would be expected to give a higher figure. Incomplete linkage to births may be a further reason why our rates are somewhat lower as would selection bias due to failure to trace records. However, our rates are of the same order as those found from ISD data, so it unlikely that any of these biases is substantial.

3.3 Rates of teenage fatherhood from the SLS linked data

Table 4b gives the rates of a first teenage fatherhood per year for the whole same and for those who were traced at the 2001 census.

Table 4b Rates of first teenage fatherhood

	All men			With records in 2001 census		
Age at conception	**Total person years of follow up**	**Number of events**	**Rate per man-year (%)**	**Total person years of follow up**	**Number of events**	**Rate per man-year (%)**
all ages	85,426	811	0.95	61,205	490	0.80
15	17,236	25	0.15	12,798	17	0.13
16	17,215	71	0.41	12,498	37	0.30
17	17,118	173	1.01	12,217	102	0.83
18	17,016	248	1.46	11,967	151	1.26
19	16,842	294	1.75	11,724	183	1.56

Overall rates are about one third of the rate found for young women. Rates of linked fatherhoods are slightly lower for those traced at the 2001 census .

4 Factors affecting rates of teenage parenthood

Poisson regression was used to investigate factors that influenced teenage birth and fatherhood rates. All analyses controlled for age at conception. Analyses designated as univariate included each factor along with age, while multivariate analyses included all factors together.

4.1 1991 Census measures

Table 5 gives the relative risks of a first teenage parenthood by factors measured at the 1991 census as well as the question on religious upbringing from the 2001 Census. . All factors are highly significant predictors of teenage parenthood in both univariate and multivariate analyses (likelihood ratio tests). The 95% confidence intervals for all the odds ratios given in Table 5 exclude the null value of 1.0 with the following exceptions; rates for “Other” and “Other Christians” do not differ significantly from Church of Scotland for men or women, those not answering the religion question are not significantly different from Church of Scotland for young women and living with a single parent is not significantly different from living with two parents for men. The relationship with social class, single parenthood and housing tenure are in line with many other findings about young women in the UK (Buston et al., 2007; Bonell et al., 2005). Rates of live births and stillbirths (as we have here) are much more strongly related to these factors than are all conceptions which include terminations. For example, the relative risk for those in the most deprived quintile compared to the most advantaged quintile is around 10 compared to between 4 and 5 fold for all conceptions (ISD Scotland 2010, Table 6). The higher rate of teenage pregnancy among those with no religious upbringing is interesting and it is relatively little modified by social factors. This echoes surveys that have found that young women who report that religion is important to them have lower rates (Henderson et al 2002, Hollander 2002, Studer and Thornton, 1987).

Table 5: Relative risks of a first teenage birth or fatherhood from a Poisson regression of person-years data, adjusted for age at conception, by 1991 Census characteristics.

	Teenage motherhood (n births=2,282)			Teenage fatherhood (n births=811)		
Factor from 1991 Census	**No of SLS members**	**Relative risk**		**No of SLS members**	**Relative risk**	
		Univariate	**Multi-variate**		**Univariate**	**Multi-variate**
Living with parents						
Neither	1017	4.14*	See note*	719	3.48*	See note*
One	5231	2.51	1.4	5503	2.2	1.11
Both	18596	base	base	19836	base	base
Parental social class						
No parents present	1017	13.43*	7.96*	719	11.26*	6.87*
Lower prof/man	4903	1.72	1.48	5271	1.74	1.55
Intermediate	3417	2.79	1.96	3496	2.8	2.26
Small empl/own account	1897	2.29	2.05	2108	2.85	2.57
Lower technical	2152	4.1	2.91	2342	4.69	3.36
Semi-routine	3244	5.28	2.77	3418	4.48	2.69
Routine	2964	6.43	3.28	3167	7.46	4
Never worked	2491	10.16	3.96	2674	9.8	4.5
Higher prof/man	2759	base	base	2863	base	base
Household tenure						
LA or equivalent	9425	4.93	3.12	9966	4.82	3.17
Owner occupier - mortgage	12595	1.22	1.38	13106	1.31	1.53
Rented/tied	1320	2.42	1.96	1334	2.5	2.13
Owner occupier - outright	1504	base	base	1652	base	base
Religion raised						
None	5470	2.75	2.14	5056	2.14	1.78
Not answered / not in 2001 Census	7041	1.26	1.02	8848	2.2	1.64
Other	202	*0.8*	0.93	233	0.7	0.82
Other christian	890	*1.05*	1.23	761	0.88	0.96
Roman Catholic	3392	1.71	1.34	3251	1.73	1.35
Church of Scotland	7849	base	base	7909	base	base

* ***Note:*** *Those not living with parents have no entry for parental social; class and are treated as a separate category. In the univariate analyses the two relative risks for those with no parents are relative to different bases. In the multivariate analysis the fitted value has just a single value which is relative to the group with both parents present and higher professional social class.*

The predictors of teenage fatherhood are very similar to those for teenage motherhoods and the relative risks for both adjusted and unadjusted models are strikingly similar in almost all cases. While this result is not surprising, we are not aware of any other study that has been able to investigate the determinants of teenage fatherhood in a large representative sample.

The cases living without any parents present were investigated further. Those not living with parents in 1991 (1017, 4.1% for young women and 719, 2.8% for young men) included a substantial number who were already living independently or with a partner at 1991 (502, 49% for young women, 259, 36% for young men) and thus more likely to experience a teenage birth. The increased rates of motherhood and fatherhood for those living apart from their parents were very largely explained by the higher rates for this group.

4.2 Local authority

Table 4 gives the rates of teenage pregnancy by local authority relative to Aberdeenshire, the local authority with a low unadjusted rate and large enough to provide a stable baseline.

Table 4: Relative risk of teenage pregnancy, adjusted for age at conception by local authority of residence in 1991,

Local authority		Relative risk			
	No of SLS members	Univariate	rank	Multivariate*	rank
Aberdeen City	885	2.07		1.35	
Angus	527	1.55		1.24	
Argyll & Bute	447	1.14		1.12	
Clackmannanshire	249	1.23		0.90	
Dumfries & Galloway	708	1.25		1.06	
Dundee City	695	3.20	1	2.06	1
East Ayrshire	611	2.50	3	1.77	4
East Dunbartonshire	612	0.68		0.93	
East Lothian	400	1.84		1.59	
East Renfrewshire	454	1.03		1.48	
Edinburgh, City of	1689	1.55		1.40	
Eilean Siar	150	0.94		0.99	
Falkirk	742	1.98		1.34	
Fife	1799	2.20		1.63	6
Glasgow City	2731	2.93	2	1.77	3
Highland	1007	1.85		1.57	
Inverclyde	451	1.99		1.49	
Midlothian	432	1.67		1.48	
Moray	474	1.36		0.96	
North Ayrshire	750	1.97		1.52	
North Lanarkshire	1802	2.39	4	1.63	5
Orkney Islands	110	1.29		1.49	
Perth & Kinross	598	1.40		1.26	
Renfrewshire	865	1.85		1.49	
Scottish Borders	500	1.48		1.31	
Shetland Islands	104	1.18		1.00	
South Ayrshire	576	1.59		1.50	
South Lanarkshire	1589	1.47		1.20	
Stirling	386	1.47		1.29	
West Dunbartonshire	500	2.38	5	1.59	
West Lothian	796	2.36	6	1.80	2
Aberdeenshire	1205	base		base	

* adjusted for all 1991 census factors as shown in Table 3

Again results are in line with published data (ISD Scotland, 2001, Table3). Differences between local authorities reduce, but do not disappear, when adjusted for individual characteristics measured at the1991 Census. There are still significant differences between areas after adjustment that may relate to local cultural norms.

The numbers of teenage fathers was not used to investigate regional differences because of the smaller number of cases and the expectation that it would be similar to the results for teenage mothers.

5 Teenage parents in 2001, living arrangements employment and education

The 19,247 SLS members who were captured at the 2001 census allow us to look at their subsequent health and socio-economic position compared to other young people. Some of the SLS members will have become mothers or fathers to children conceived when they were aged 20 to 30, although this will most often be at a later time closer to the 2001 census date. Total numbers of mothers and fathers by age at 2001 are given in Table 6. At the 2001 census some records linked to returns for students at their home address, who thus did not answer some questions on economic status, health and religion. For these cases economic position was set to "student". These cases were mainly in the "no birth" group between 17 and 21 years of age at the census.

Table 6: Numbers traced at 2001 by age at 2001 and experience of first birth or fatherhood.

Female SLS members (births)

Age at 2001 Census	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
No birth	434	1515	1334	1260	1225	1156	1130	940	881	742	816	756	784	761	723	437
Older birth	NA	NA	NA	NA	NA	NA	37	67	102	136	220	277	324	417	529	401
Teenage birth	*	9	21	84	156	188	189	189	185	165	182	169	141	106	72	14

Years since birth at 01 census	0	1	2	3	4	5	6	7	8	9
Older birth	466	405	370	305	310	230	201	112	90	21
Teenage birth	192	204	205	200	178	168	161	171	190	201

Male SLS members (fatherhoods)

Age at 01 census	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
No fatherhood	446	1432	1421	1338	1232	1323	1269	1228	1062	905	915	956	927	862	816	544
Older fatherhood	NA	NA	NA	NA	NA	0	22	47	60	93	146	164	253	275	310	296
Teenage fatherhood	0	**	9	20	33	42	52	57	39	44	42	46	41	27	38	***

Years since birth at 01 census	0	1	2	3	4	5	6	7	8	9	All
Older fatherhood	346	290	267	225	190	130	92	75	37	14	1666
Teenage fatherhood	53	56	61	39	53	42	43	39	56	48	490

* , **, ***Combined with 16 year olds with 17 year olds or 29 year olds to prevent disclosure

We can compare 2001 census characteristics between these groups. The figures below give an overview by age of various classifications for each group.

5.1 Living arrangements

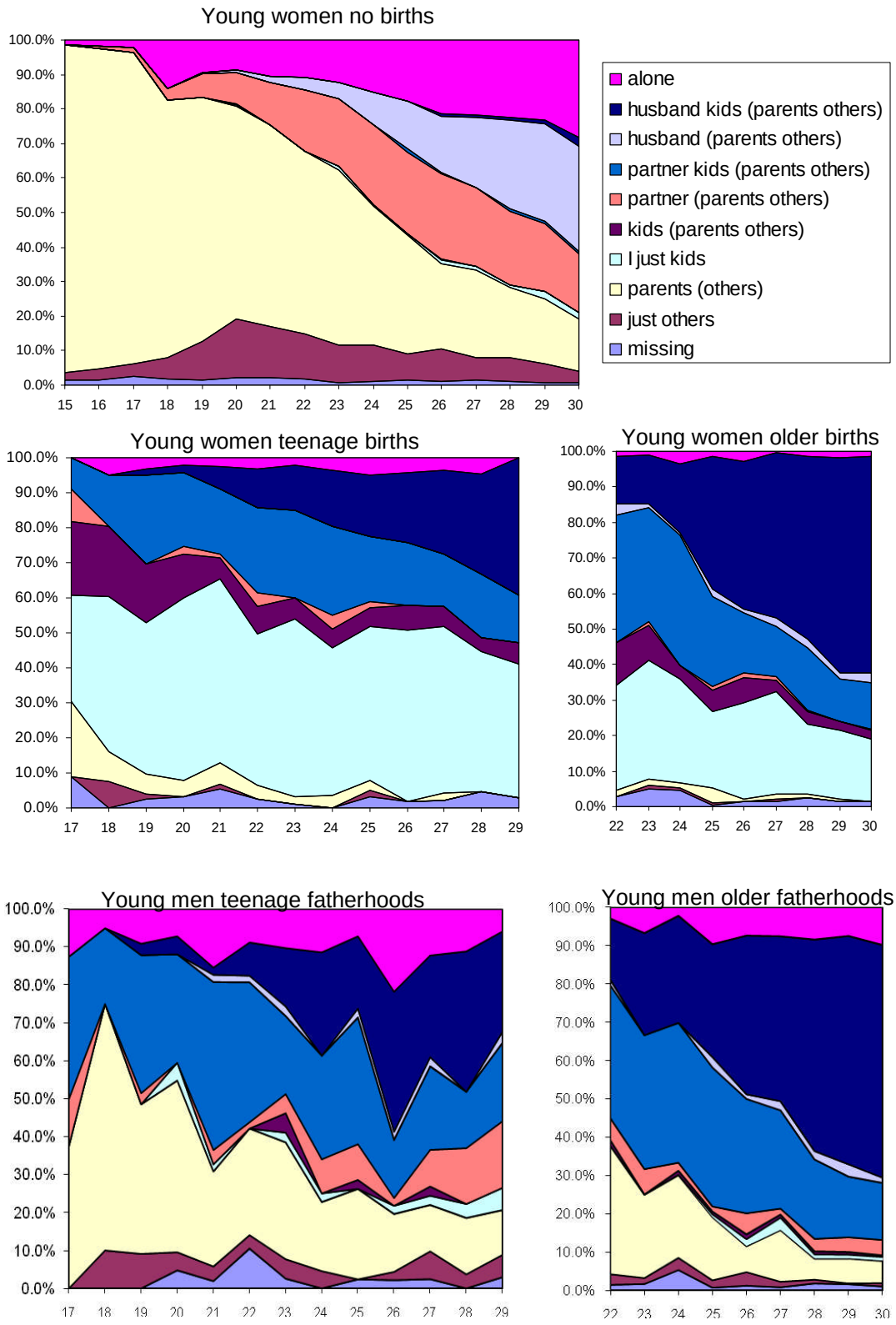

Figure 2: Living circumstances at 2001 census by age and experience of birth or fatherhood between 1991 and 2001 . Note different age ranges in different groups.

Figure 2 illustrates the difference in living arrangements at 2001 between those with births and those without. The family members in brackets are optionally present in the group, so that, for example, “husband (parents others)” means living with husband and optionally with parents or others. Young women with no births

gradually move to living away from the parental home over the ages 17 to 30; the pattern was very similar for young men (not shown). The birth of a child generally results in a woman leaving the parental home. A high proportion of young mothers, especially teenage mothers, live without other adults at a time when support would be beneficial. For teenage fathers the picture is very different. A substantial number still live with parents and only a very small number become lone fathers, The proportion living with a wife or partner and children increases for the older fatherhoods.

5.2 Economic position at 2001

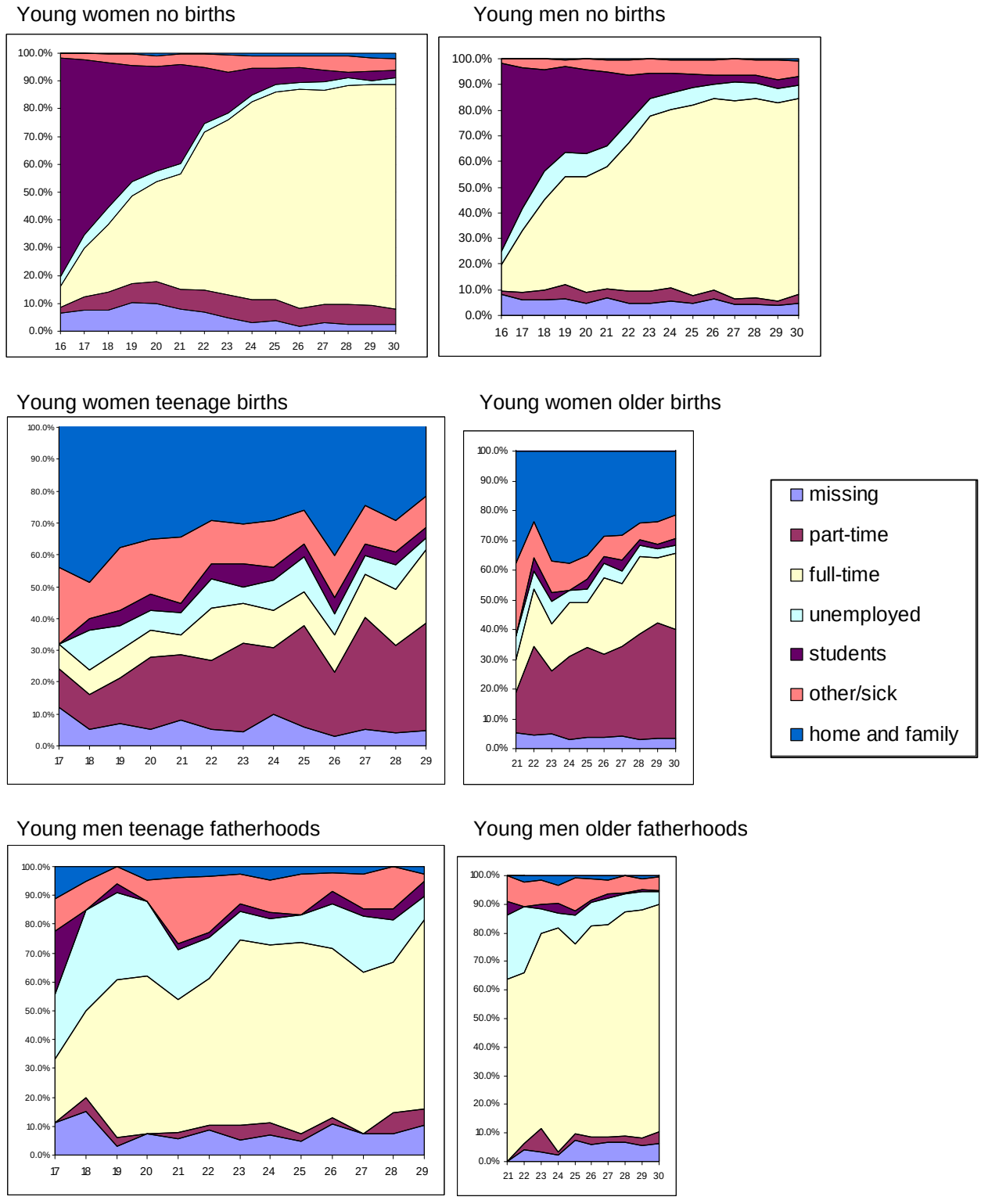

Figure 3: a) Economic position at 2001 census by age and experience of motherhood or fatherhood between 1991 and 2001. Note different age ranges in different groups.

Figure 3 illustrates the economic position of the young people. For those not becoming parents the picture is similar for young men and young women, with a gradual move from being students into work, but with young women having more part-time work and young men more unemployment. After motherhood or fatherhood the patterns are different with neither sex having much time as students and young women looking after home and family. The majority of young fathers are in full-time work (55% of teenage fathers and 76% of older fathers), and teenage fathers are more likely to be unemployed (teenage fathers 17%, older fathers 8%, other young men 7%) are more likely. Both young mothers and young fathers are more likely to report long term sickness than those who are not parents.

5.3 Educational attainment at 2001

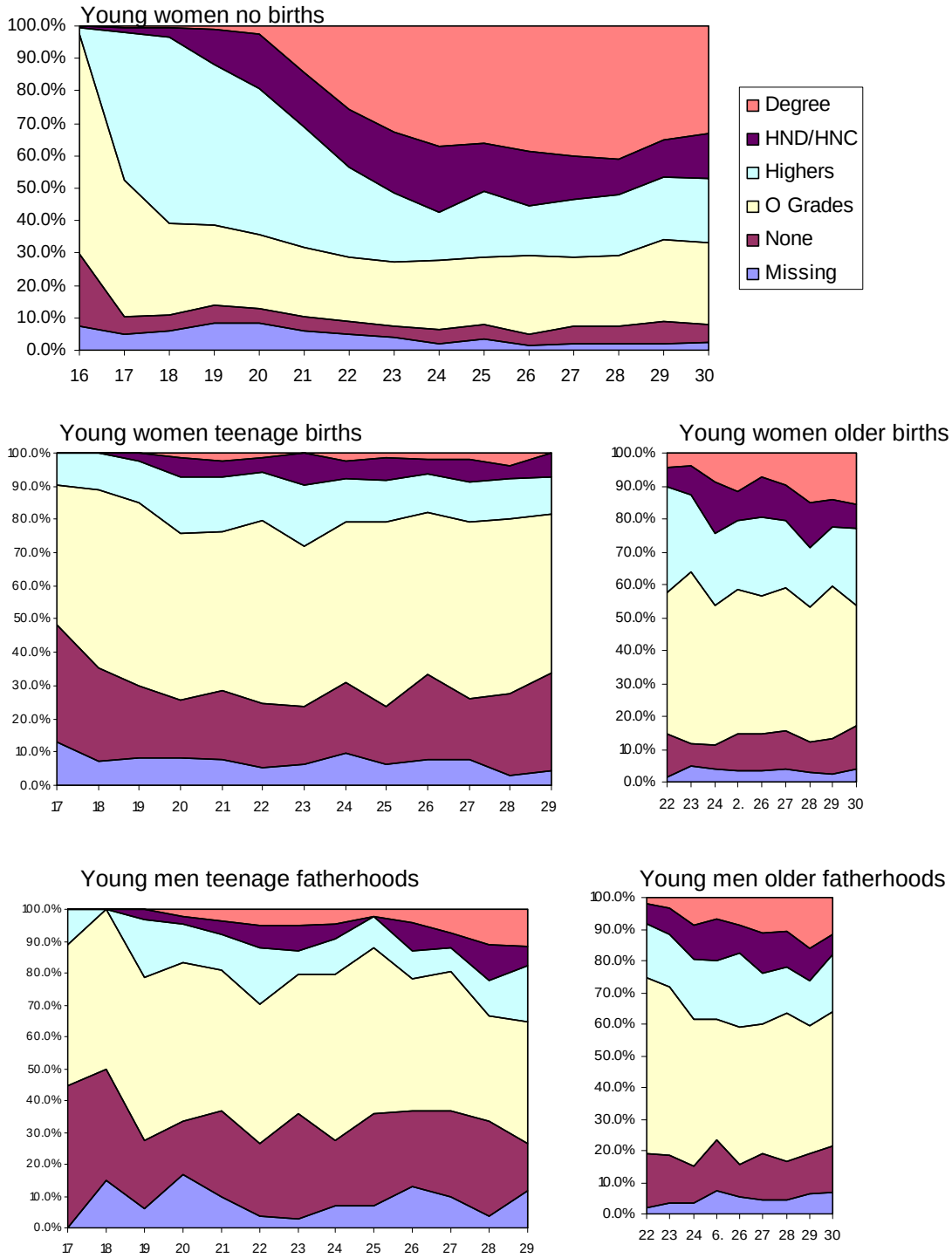

Figure4: Highest qualifications achieved at 2001 census by age and and experience of motherhood or fatherhood between 1991 and 2001 . Note different age ranges in different groups.

Figure 4 illustrates the very strong link between parenthood and educational attainment. Teenage mothers and fathers seldom obtain qualifications beyond O grades even up to age 29 and a substantial proportion remain with no qualifications. Things are somewhat better for those with a later birth, but with fewer qualifications than those with no births.

5.4 Long term illness and general health

The 2001 census asked two health questions, one on long term illness and one on general health. Long term illness affects only a small proportion of the population at these age groups. Of those without a birth only 7.0% of young women and 6.3% of young men report any long-term illness. These numbers rise to 13.2% and 10.1% for teenage parents and for older parents the rates are 7.4% for women and 10.0 % for men.

The question on general health, with three categories elicits a higher rate of unhealthy responses and the differences between the groups are more pronounced, see Table 6.

Table 6: Answers to question "How is your health in general?" for young people by experience of teenage motherhood or fatherhood.

	N*	Not good heath	Fairly good health	Good health
Teenage mothers	1,807	6.8%	30.3%	62.9%
Older mothers	2,473	5.7%	21.4%	72.9%
Not mothers	14,501	3.0%	14.7%	82.4%
Teenage fathers	478	6.9%	18.6%	74.5%
Older fathers	1,645	3.4%	15.5%	81.1%
Not fathers	16,229	2.8%	11.5%	85.7%

* Excluding those where question not asked (students at home address) or not answered

5.5 Modelling general health

The differences between groups in general health could be related to existing characteristics of the young men and women either at 1991 or at 2001 (when the other measures might also be the consequence of the birth). To investigate this, a series of regression models were fitted as described below. A proportional odds model was fitted with the SAS LOGISTIC procedure to incorporate the three level outcome measure. The results are reported as odds ratios of being in a worse health category. This averages the odds ratio of having less than good health, compared to good health and of having not good health compared to good or fairly good health.

Table 7: Odds of being in a worse general health category by mother or fatherhood group adjusted for other characteristics at 1991 and at 2001

	Odds ratios of being in a worse health category					
	Teenage mothers compared to those who are not mothers			Teenage fathers compared to those who are not fathers		
Unadjusted model	2.74	(2.247,	3.03)	2.11	(1.71,	2.60)
Adjusted age at census	2.64	(2.38,	2.93)	1.97	(1.59,	2.43)
Age and 1991 census variables*	2.05	(1.84,	2.29)	1.54	(1.24,	1.90)
Age , 1991 and 2001 census variables**	0.96	(0.78,	1.19)	1.07	(0.83	1.39)
	Older mothers compared to those who are not mothers			Older fathers compared to those who are not fathers		
Unadjusted model	1.77	(1.61,	1.95)	1.39	(1.22	1.59)
Adjusted age at census	1.54	(1.38,	1.72)	1.07	(0.93,	1.22)
Age and 1991 census variables*	1.37	(1.23,	1.53)	0.95	(0.83,	1.10)
Age , 1991 and 2001 census variables**	0.91	(0.73,	1.13)	0.83	(0.67,	1.03)

* 1991 variables include car ownership, whether parents present, household tenure, parents' education and social class.
**2001 variables are tenure, living situation, economic status, educational level, all pertaining to the SLS member.

Neither age nor background characteristics measured at 1991 fully explained the effect of teenage motherhood or fatherhood on self-reported health, although they were themselves predictive of health status (data not shown). This was also true for the effect of older motherhood on young women. For young men older fatherhood had only a small (though significant) effect on health which was no longer evident after adjusting for age and for age combined with 1991 characteristics.

When the 2001 variables were included in the regression model there was no longer any evidence of an independent effect of parenthood in any group. For older fathers there was some evidence that fatherhood might be beneficial for health, when adjusted for other circumstances in 2001. These results do not negate a possible causal relationship between parenthood and health, but they may point to the possibility of other causal pathways. Investigation of further models showed that, it was predominantly economic activity which had the effect of removing the apparent relationship between parenthood and good health.

To understand this better we can examine the % good health by the cross classification of parenthood and economic activity in 2001 (Tables 8a and 8b). The groups with the worst health (except for the small numbers in the sick/other group) are those looking after home and family, hardly represented in the 'no birth' category for young women, and those who are unemployed who are over-represented among teenage mothers and fathers. Thus the imbalance between employment categories is a considerable part of the explanation of the confounding effect of the 2001 census characteristics.

Table 8a: Numbers of young women SLS members and % in good health in 2001 by motherhood group and economic activity in 2001

	Economic position of young women SLS members at 2001							
Motherhood group	missing	part-time	full-time	unemployed	students	other/ sick	home and family	**All**
Number of SLS members								
No motherhood	901	937	6872	523	4603	573	92	14,501
Teenage motherhood	39	420	209	133	79	254	673	1,807
Later motherhood	50	829	560	98	57	200	679	2,473
Percent of SLS members								
No motherhood	6.2	6.5	47.4	3.6	31.7	4.0	0.6	100
Teenage motherhood	2.2	23.2	11.6	7.4	4.4	14.1	37.2	100
Later motherhood	2.0	33.5	22.6	4.0	2.3	8.1	27.5	100
Percent in good health								
No motherhood	87.0	77.2	85.0	69.4	86.1	37.7	59.8	82.4
Teenage motherhood	76.9	72.4	74.6	58.6	60.8	46.1	60.0	62.9
Later motherhood	60.0	81.9	80.7	63.3	73.7	38.0	68.0	72.9

Of course, adjustment for these 2001 measures does not explain away the effect of mother or fatherhood on health. Rather it may help us to understand it either as a selection effect (young people in poor health may decide to stay at home with their children or be unable to find work) or as a part of the mechanism that may lead to poor health (e.g. low self esteem as a result of unemployment or the stresses of being a lone parent may lead to poor health). The poor health of young parents, irrespective of their origins, is an important finding of these analyses and these associations may help us to understand it.

Table 8b: Numbers of young men SLS members and % in good health in 2001 by fatherhood group and economic activity in 2001

	Economic position of young women SLS member at 2001							
Fatherhood group	Missing	part-time	full-time	unemplo yed	students	other/ sick	home and family	**All**
Number of SLS members								
No fatherhood	1155	578	8,560	1,224	3,896	782	34	16,229
Teenage fatherhood	25	14	271	81	13	59	15	478
Later fatherhood	78	47	1,259	129	16	99	17	1,645
Percent of SLS members								
No fatherhood	7.1	3.6	52.7	7.5	24.0	4.8	4.8	100.0
Teenage fatherhood	5.2	2.9	56.7	16.9	2.7	12.3	12.3	100.0
Later fatherhood	4.7	2.9	76.5	7.8	1.0	6.0	6.0	100.0
Percent in good health								
No fatherhood	90.1	86.5	88.2	79.6	89.8	41.7	47.1	85.7
Teenage fatherhood	92.0	92.9	84.5	64.2	76.9	33.9	60.0	74.5
Later fatherhood	87.2	78.7	85.9	65.1	81.3	35.4	88.2	81.1

5.6 Comparison with other findings on young parents

Kiernan et al. (1998) have used data from the General Household survey to look at the living arrangements, economic activity and educational attainment of lone mothers in the 1970s 80s and 90s. The lone mothers with the highest proportion of teenage mothers (over 40%) were those who had never married and the trends for this group are interesting and relevant. In the 1970s 37% of these never-married lone mothers lived alone with their children, by the 1980s this had increased to 59% and by the 1990s to 79%. From the SLS data, selecting young mothers who were not living with a partner in 2001 (as shown in Fig 2), we find that 85% of both teenage and older mothers were living alone with their children. Possible explanations for these trends are the wish for independent living facilitated by the 1977 Housing and Homeless Persons Act which made local authorities duty-bound to find accommodation for those threatened with homelessness as well as those who were actually homeless. Simms and Smith (1986) report on a large in-depth survey of teenage mothers and their partners immediately after the birth and then 15 months later. They describe a common pattern where young parents who are initially living with their own parents experience pressure to move out followed by a letter from the host family evicting them, then a move first to temporary housing and finally to their own flat.

Kiernan et al (1998) found that mothers living alone were more likely to be in full time employment at all three time points if they lived with their parents. The same was true of SLS lone mothers where 14% ot teenage mothers and 21% of older mothers were in full-time employment if they lived with their parents compared with 7% and 11% who lived alone. Living arrangements did not affect young fathers in the same way. Overall the rate of full-time employment was 55%. for teenage fathers and 76% for older fatehrs The only group that had a higher rate (72% for teenage fathers and 87% for older fathers) was that comprising young men who were living with their wives and children. Those living with partners and children had lower rates of full-time employment (55% for teenage fathers and 76% for older fathers).

The survey of Simms and Smith (1986) also provides some insight into the health problems of young parents. A high proportion (43%) of young mothers in that survey reported problems with “depression or nerves” following the birth of their child citing lack of sleep, loneliness and problems with money and housing as the causes. Liao (2003) has also reported higher rates of poor maternal mental health in the three years following a teenage birth. Young fathers in the Simms and Smith survey reported fewer heath problems and high overall satisfaction with being fathers. These young fathers were recruited as the partners of the young women and they differed substantially from the SLS fathers in that 2/3 of those interviewed were living with their partners and children. These differences could be due to selection bias, although the overall response rate of 70% of partners make this unlikely.

6 Discussion

This report linked young men and women living in Scotland and completing the 1991 Census to their experience of teenage parenthood between 1991 and 2001 and how those becoming teenage parents differ from others as measured by their 2001 Census data. Although the 1991 Census did not include a question on religion the 2001 Census in Scotland contained a question on religion of upbringinging, and this was also used as a predictor. The Census data at 2001 includes information on family structure, education, employment, health and long-term illness which can be compared between groups of young people.

The rate of first teenage births to young women (2.96% per woman-year) is slighted lower than those produced by the ISD (3.5% to 3.9% per woman-year), this is to be expected as the ISD data includes all teenage births, not just first births. However, the rates are of the same order as those reported by ISD and it is unlikely any biases created by the linkage were substantial. The rate of teenage fatherhood was only around one third of that for motherhood. This lower rate is explained by the different age ranges of young mothers and fathers and, to a lesser extent, by the fact that information on fathers is only available for those births jointly registered by the mother and father.

Analysis of the risk factors for first teenage pregnancy as measured by the 1991 Census were: not living with both parents, parents who had never worked or who had a lower social class, living in a home that was not owner-occupied and having no religion or being a Roman Catholic. The finding on no religion is in line with previous publications (Buston et al., 2007; Bonell et al., 2007). Furthermore, this report extended that work to include teenage fathers and discovered the risk factors were very much in line with those for teenage mothers. In addition, this report echoes previous research that found having no religion significantly increased the risk of teen parenthood for both genders (Henderson et al., 2002) and that not answering the question on religion was associated with an increased risk for males. A limitation of previous research was that it was conducted among a predominantly Protestant sample, this study extended to a wide range of religions. Roman Catholics (both men and women) had a higher risk of teenage pregnancy than those belonging to the Church of Scotland, perhaps related to the Roman Catholic teaching against the use of contraceptives. For the smaller number of young people reporting a religion other than Church of Scotland or Roman Catholic there was no evidence of a difference in rates of teenage pregnancy. The risk factors that identified those who would become teenage fathers are in line for those for young mothers.

The living situation after parenthood differed between teenage mothers and teenage fathers. Both groups of young parents become more likely to live with a partner and children as they move towards the age of 30, although only about 50% of teenage parents are with a partner and children by this age. Young mothers who are not with a partner are most likely to be living as alone with their children, with only a small minority of mothers and children living with parents or other adults. In contrast young fathers seldom live as lone parents, with those not living with a partner and children mainly living with their parents or other adults, It is ironic, that teenage mothers are less likely than their childless peers to live with parents or other adults who may have helped support them. It would appear there is a need for support for these young mothers.

The pattern of economic activity after parenthood differs greatly between young parents and other young people. Very few young parents are classified as in education or training, although we should note that the census does not include any part-time students in this classification. The data on highest qualification shows that few young parents of either sex obtain qualifications beyond O grades. Of course this may be a precursor rather than a consequence of young parenthood (Bonnell et al., 2005; Fergusson et al., 2000; Hochaday and Crase, 2000; Martin et al. 2001; Shearer et al., 2002; Wellings et al. 2001; Young et al., 2004). Kiernan (1997) has shown how rates of teenage parenthood are higher for those whose educational performance has declined between the ages 7 and 16. Only 60% of teenage conceptions in Scotland end in a birth (ISD Scotland,201) and a young woman's decision as to whether to continue with a pregnancy is likely to be influenced by her educational aspirations (Turner, 2004).

The largest group of young mothers report the economic activity "looking after home and family". Only a small proportion of young women enter full time work, but more enter work part-time. The young fathers are more likely to be in work, but with a higher rate of unemployment than those who are not fathers at the same ages.

Differences in Local Authority rates of teenage pregnancy remained after adjustment for individual differences measured at 1991 Census, thus suggesting that local culture is an influence on teenage pregnancy. The mechanism for this impact requires further research, but candidate explanations could be social norms regarding teenage pregnancy, local employment levels and social norms regarding educational and economic aspirations.

Young mothers and, to a lesser extent, young fathers report much poorer health than other young people. This is in line with findings from other studies of young parents (Mirowsky & Ross., 2002, Grundy &

Tomassini, 2005 based on LS data and, Spence 2008) and we know from other work that this health disadvantage is maintained through the adult life of young mothers. Our results suggest that it is inextricably linked to the economic position of young people during their childbearing years and hence also to their lack of educational attainment. Many teenage mothers have lower educational aspirations to start with, need support with child-care and have financial difficulties. A recent report commissioned by the charity Bernardos has outlined the practical difficulties facing young mothers in accessing education. It makes detailed policy recommendations for the UK and argues that with tailored support, these challenges can be surmounted and notes that motherhood can motivate a young mothers desire for education and economic activity in order to support their child(ren) (Evans and Slowly, 2010).

There is relatively little evidence on the impact of fatherhood on young men. It is difficult to recruit young fathers into surveys and those who do take part are likely to be those who are more supportive of their partners. Although our study is limited to fathers who were named on the child's birth certificate, they represent a substantial proportion of young fathers (over 70%) and there should be no further participation bias. A recent report on the fathers of teenage mothers in Scotland (Ross et al 2010) interviewed 30 young fathers of teenage mothers, recruited by inviting couples via contact with mothers at ante-natal classes. Thus they represent young fathers who were more supportive of their partners and around half of whom were living with the mother of their child after the birth. This report reveals motivation for young fathers to be involved in the lives of their child and that this can help the young fathers to transition into adulthood and motivate their education and economic activity. However, the sample represents more motivated young fathers willing to be involved in the study. That said, it does suggest there is a need to encourage and support young fathers to be involved with their child(ren) and partners and to support the mothers of their children.

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