

**The Economic Cost of Teenage Childbearing and Parenting in New Mexico:
New Estimates**

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1. Introduction and background

Although there has been a decline in births to teenagers in New Mexico since 2000, the data in Table 1 below show that problem remains serious. New Mexico had the 4th highest teen pregnancy rate in 2000 and the 3rd highest teen birth rate in the nation in 2004 (excluding the District of Columbia). In the year 2000, an estimated 7290 girls aged 15 to 19 became pregnant implying a rate of 103 per 1000 and the birth rate was 66 per 1000 teenage women. (Alan Guttmacher Institute, 2004 Tbl. 2) Despite the falling teenage birth rate, the New Mexico rate has declined less than the national rate. This recent decline in teenage birth rates is slightly larger than the decline in birth rates for older women aged 20 to 24, also shown in Table 1.

<p style="text-align: center;">Table 1 Births¹ and Birth Rates⁴ by Age Group for New Mexico, 2000 to 2004 (rates per 1000)</p>						
	2000 ²	2001	2002	2003	2004	Average decline
Age						
< 15	78	82	91	74	59	
15 – 17		1693	1682	1640	1604	
18 – 19		2959	2937	2953	2676	
15 – 19	4650 (65.5)	4652 (64.8)	4619 (63.9)	4593 (63.6)	4399 ³ (60.8)	1.9%
20 – 21	1693 (66.9)	3540	3609	3616	3524	
20 – 24	8158 (136.1)	8534 (136.2)	8783 (134.6)	8970 (131.6)	8997 ³ (127.6)	1.6%
Teen families formed ⁵	3720	3675	3649	3619	3475	

Sources:

1. BBER, March 2006

2. Ganderton, 2003 Tbl. 1a

3. 2004 NM Vital Records sourced data

4. “Tbl. 2 Annual Estimates of Population by Sex and Age for New Mexico” Population Division, US Census Bureau, March 2005.

5. Calculation based on number of repeat births each year.

This report provides updates to the analysis of the economic impacts of teenage childbearing in New Mexico previously published by the New Mexico Department of Health in 2003. (Ganderton, 2003) There are many costs, and benefits, associated with parenting for all women, including teenage women. Many of these impacts are psychological, physical and social, and some are economic. This study tries to identify and measure, if possible, the economic costs and benefits of teenagers having babies. As Fessler (2003) points out, recent research in adolescent childbearing reveals that the consequences for mothers and children are not universally negative, but diverse and complex. A major problem when determining the costs of teenage parenting is the conflation of two related forces: the pregnancy and birth of a child, and the socio-economic environment in which the teenager lives. Research has shown that young women raised in poverty, in single-parent homes and by parents with lower levels of education, to name the major correlates, are at higher risk of becoming

adolescent mothers. (Fessler, 2003, p.2) The cause and consequence are difficult to separate when, for example, poverty makes teenage childbearing and parenting more likely, which then makes it more likely the mother and child will live in poverty. While the outcomes for such women are serious social policy concerns, it is important not to confuse the outcomes of poverty and low education with the separate outcomes of teenage childbearing and parenting. Regarding the potential benefits of early childbearing there is some evidence that neonatal mortality is lowest in early years for some racial and ethnic groups. (Fessler, 2003, p.3) Other potential benefits mentioned in the literature include increased self-worth of those teens who become mothers and encouraging young women to break free of destructive and negative behaviors. There is also the weathering hypothesis that reflects some physiological benefits of early childbearing for some groups of women. (Wildsmith, 2002) When designing policy, it is important to remember that not all teenage childbirth can be prevented, nor can all the cost of teenage parenting be avoided. For example, a study of the economic impact of adolescent pregnancy on South Carolina published in 2000 calculates the cost of teenage childbearing as if these births could be avoided completely rather than delayed, providing a gross overstatement of the costs of, and hence savings from preventing, teenage pregnancy. (Parker, 2000)

The previous study of the economic impact of teenage childbearing in New Mexico relied heavily on the edited volume called *Kids Having Kids*, by Maynard in 1996 for methods and data. (Ganderton, 2003) In particular, the study by Hotz, et al (1996) was referenced for its finding that childbearing was better for teenage mothers than delay when controls for the background and socio-economic status of the mothers were considered. Subsequently, work by Hoffman (2006a, 2006b) has shown that data errors, miscalculations and inappropriate assumptions were responsible for the large part of Hotz, et al's findings. When re-calculated, the results indicate that at best, teenage childbearing and parenting has no negative economic impact on the mothers, when compared to an otherwise similar control group.

2. Method of analysis

The calculation of the economic cost of teenage childbearing and parenting has two dimensions. The first is identifying all those mothers and parents who had children as teenagers who are bearing the burden (incurring the costs and enjoying the benefits) of parenting and the second is finding an appropriate comparison group that represents a reasonable alternative to teenage parenting. The first dimension defines the scope of the calculation by recognizing that each teenage mother loses opportunities and achieves less economically not only in the year of birth of her child, but for many subsequent years as her life course has been irreversibly altered by the birth of her child or children. In any year in New Mexico there are teenagers giving birth to children as well as other mothers and parents with older children who were once teen parents. The second dimension would be ideally resolved if we could observe teenage mothers in an alternative life course where they did not become teenage mothers. Because it is impossible, or impractical to observe this counterfactual, a reasonable, although not perfect comparison group must be identified, which in this case is the group of women who delayed childbearing to at least the age of 20. Defining and describing the economic dimensions of life to a teenage parent and her children compared to the economic dimensions of her life and her children's lives if she had delayed until at least 20 years of age is practically impossible because there is considerable evidence

that women who become teenage mothers are different in many observable, and unobservable ways, to women who do not. The comparison with older women who delay has the effect of overstating the negative impacts of teenage childbearing. At the same time, there are many negative consequences of adolescent parenthood that can not be measured in dollars, nor do the data or resources allow for their inclusion in the calculations of the costs of teenage pregnancy. It must also be realized that due to the high level of aggregation considered here, there are many interesting detailed individual or program calculations that could not be done.

This study identifies and calculates costs of teenage childbearing and parenting from various points of view, which derive from the behavioral aspects of the teenage pregnancy and parenting problem. The economic method of analysis used in this report, termed Benefit-Cost Analysis, allows for a calculation of net benefits (or costs) at various levels of accounting that correspond to different points of view. Consequently, there are calculations of the net costs of teenage parenting (measured by the net benefits of delaying having children) at the following levels of aggregation:

1. For the teenage mother.
2. For taxpayers as supporters of public assistance, to the children born to teenage mothers.
3. To society as a whole.

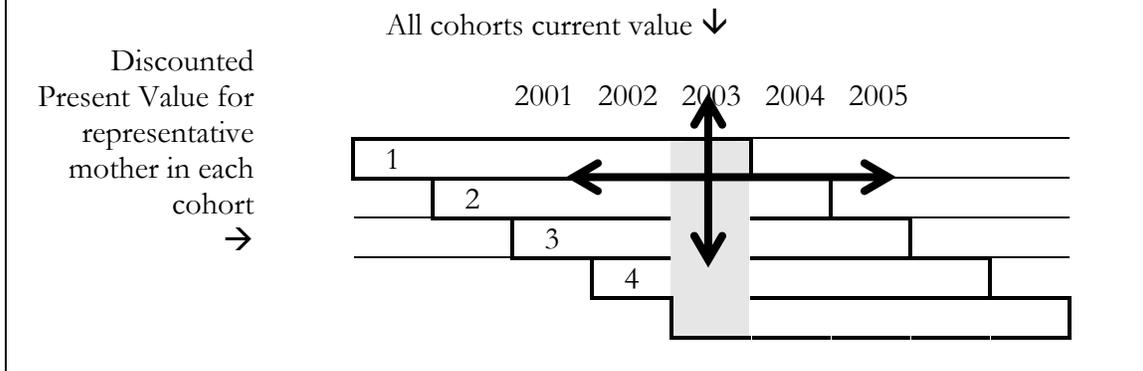
Incident model calculations are presented for a single year cohort of teenage mothers, represented by an individual mother over 17 years following the convention established by the US Department of Agriculture in its annual calculations of the costs of raising children in the US. (e.g. Lino, 2006) Alternatively, prevalence model calculations are made for the contemporaneous impact of all cohorts of families formed by teenage mothers in any one year. These calculations can answer the following two questions:

1. What is the current value of the economic impact of not delaying childbirth to a teenage woman over the next 17 years?
2. What is the economic impact of all 17 concurrent cohorts of teenage mothers in any one year?

The first question requires projecting economic impacts on a representative teenage mother for 17 years, then discounting and summing to obtain a present value. The second question does not involve discounting, as each cohort's impact is felt in the same year. Although limited to only calculating the effect of 17 cohorts of teenage mothers and children in any given year, the second calculation reflects the fact that teenage childbearing has deep and long term impacts on the economy.

Figure 1 provides a graphical representation of the two different cohort calculations; for the incidence model the discounted present value for a single cohort is found by summing across a row, after appropriate discounting, whereas for the prevalence model the single year calculation for all concurrent cohorts is found by summing a column of values with no discounting. The incidence model estimate will be larger than the prevalence model estimate due to the application of discounting. The incidence-type calculation is more appropriate for considering the impact of teenage pregnancy on mothers, whereas the prevalence-type calculation is more appropriate when considering the impact on taxpayers, and both are important for society to consider.

Figure 1
Two measures of cohort costs of teenage childbirth
Single Cohort and Single Year



Notes:
 Horizontal summation yields discounted present value for one cohort (example: Cohort 3)
 Vertical summation yields current year value for all cohorts concurrently (example: all cohorts in 2000)

3. Costs of teen childbearing and parenting to mothers

The most direct economic impact of teenage pregnancy and childbearing falls on the mother. (Frost and Oslak, 1999; Tomal, 1999) Many teenage mothers live with family members and accept the financial support of relatives. Teenage mothers are less likely to complete high school, more likely to be unmarried and more likely to use public assistance than other mothers. (National Campaign to Prevent Teen Pregnancy, 2002; Maynard, 1996) Nationally, nearly half of all teenage mothers are officially living in poverty 5 years after giving birth. Approximately 16% of teenage mothers in New Mexico are married at the time they give birth and many teenage mothers do not receive support from the father of the child. (NM Vital Records; Maynard, 1996) Their employment opportunities are limited by a combination of lower education and the demands of caring for young children. Workplace attachment is low and many teenage mothers hold minimum wage jobs with no employer-paid benefits. These are the most obvious economic impacts, but the literature has identified others, which are harder to quantify and monetize. (National Campaign to Prevent Teen Pregnancy, 2002)

In some respects the health of teenage mothers is generally better than that of older mothers, yet teenage mothers are more likely to be exposed to sexually transmitted diseases and sexual and physical abuse. (Cates, et al, 2004; PRAMS 2005) For example, using PRAMS 2002 data for New Mexico, teenage mothers are less likely to abuse alcohol than 20 to 24 year old first time mothers (18.6% versus 22.9%), less likely to smoke (17.3% v. 20.8%) and less likely to have a weight problem (19% v. 37%). However, national data indicates that as many as 50% to 60% of teenage mothers have experienced sexual or physical abuse. (Klein, 2005, p.282)

Earnings

A teenage mother can expect to earn less throughout their lives than those who delay childbirth. About 60% of teenage mothers do not complete high school and are less likely than older mothers who do not complete high school to obtain a GED (61% compared to 91%). (Kaiser Family Foundation, 2003) However, an interesting confounding factor when interpreting these facts is the finding by Manlove (1998) that nearly half of all teenage women who become pregnant drop out of high school before becoming pregnant. It is this cause and effect reversal, referred to earlier, that makes solving the teenage pregnancy and parenting problem through public policy more difficult.

Estimates of the present discounted value of average earnings for a representative teenage mother compared to a representative older (age 20-24 years) mother are given in Table 2 below. These estimates are based on 2003 PRAMS sample data from New Mexico using age-specific earnings growth rates for the US. Two earnings growth scenarios are modeled for teenage mothers: the high growth assuming that their earnings increase at the same rates as older mothers, and a low growth scenario in which earnings grow at age specific rates applicable to those with no completed high school diploma or GED. In addition to low and high earnings growth scenarios, ranges are calculated for the estimates based on the estimated standard errors provided by PRAMS. Based on the sampling data the average earnings are within these bounds with 95% confidence. Discounting is done at the federal long-term discount rate published by the US Office of Management and Budget.

<p align="center">Table 2 Household Earnings Over Time, Single Cohort Discounted Present Value for 17 years (year 2003 dollars)</p>			
	Average	95% lower bound	95% upper bound
Delay to 20-24	\$467,700	\$387,500	\$547,100
Teen (high growth)	\$391,600	\$305,500	\$479,000
Teen (low growth)	\$264,400	\$206,200	\$323,300
Difference (high)	\$76,100	\$68,100	\$82,000
Difference (low)	\$203,300	\$181,300	\$223,800

Notes:

All figures rounded to nearest hundred.

Sources:

Average household earnings by age group: PRAMS 2003 data analysis (NM Dept of Health).

Age specific growth rates in earnings: US Dept of Labor "Tbl. 5 Average annual percent growth in inflation-adjusted hourly earnings, 1978 to 2002".

Discount rate (5.1%): Office of Management and Budget "Table of Past Years' Discount Rates from Appendix C of OMB Circular No A-94" accessed on-line April, 2006.

Table 2 shows that teenage parents with low earnings growth due to not completing high school or having a poor employment experience earn over \$200,000 less than those who delay. Even if teen mothers “catch up” to older mothers by having a similar earnings growth rate they earn over \$75,000 less. Earnings and all subsequent calculations are based on 17 years from childbirth, although many of the impacts of teenage parenting last an entire lifetime. Projections much beyond 17 years suffer from prediction error and considerable uncertainty. By only considering the first 17 years the figures given here underestimate the discounted present value of lifetime earnings.

Table 3 presents alternative calculations of earnings at a specific time (the year 2003) across all (17) cohorts of teenage mothers. Instead of one mother living all 17 years at once, this calculation is equivalent to 17 teenage mothers each having a birth one year apart. These estimates are larger than for a single cohort because they do not involve discounting, as they occur concurrently rather than over time. They estimate the annual earnings cost of teenage childbearing experienced by many cohorts of teenage mothers, including those who gave birth many years ago.

Table 3 Annual Household Earnings, Single year value for all 17 cohorts (year 2003 dollars)			
	Average	95% lower bound	95% upper bound
Delay to 20-24	\$726,200	\$601,700	\$849,400
Teen (high growth)	\$616,700	\$481,100	\$754,200
Teen (low growth)	\$394,200	\$307,500	\$482,100
Difference (high)	\$109,500	\$95,200	\$120,600
Difference (low)	\$332,000	\$294,200	\$367,300

Notes:

All figures rounded to nearest hundred.

Sources:

Average household earnings by age group: PRAMS 2003 data analysis (NM Dept of Health).

Age specific growth rates in earnings: US Dept of Labor “Tbl. 5 Average annual percent growth in inflation-adjusted hourly earnings, 1978 to 2002”.

Table 3 shows that all those teenage mothers who had children combine to earn substantially less in any year than those women who delayed until at least 20 years of age to have children. It must be kept in mind, however, that these differences are gross differences, due to the combined influence of all factors that differ between teenage and older mothers, not just the impact of having a child as a teenager. It is highly unlikely that any randomly selected teenage mother could earn the wages of an older mother simply by delaying childbirth, without changing other, important, factors.

Income and consumption taxes

Earned income creates an income tax liability both to the Federal government and the state government, and attracts sales taxes when spent. Because they earn less than older mothers, teenage mothers pay fewer and lower taxes. Although earning less is a cost, paying fewer taxes is a benefit to teen mothers. Table 4 uses data on earnings from Table 2 and estimates of tax rates and burdens from the literature to calculate the taxes due to teenage and older mothers. These estimates are presented for the low and high earnings growth rate scenarios. Ranges of estimates are also given to indicate the degree of error due to the estimates being based on PRAMS samples. Table 5 shows the corresponding estimates of tax burdens for all cohorts in any single year. The entries in both tables are positive numbers but represent benefits as they estimate lower tax burdens compared to the cost estimates given in other tables. Although paying less tax is a benefit, the after-tax earnings of teenage mothers remains significantly less than older mothers.

<p align="center">Table 4 Difference in taxes paid (increase due to delay) Over Time Single Cohort Discounted Present Value for 17 years (2003 dollars)</p>				
	Income growth	Average	95% lower bound	95% upper bound
Federal income tax	High rate	\$5,700	\$10,600	\$18,100
	Low rate	\$22,500	\$12,400	\$40,300
Federal payroll tax	High rate	\$9,300	\$9,000	\$11,000
	Low rate	\$25,400	\$22,000	\$29,700
NM state income tax	High rate	\$6,100	\$4,200	\$10,100
	Low rate	\$18,500	\$14,200	\$22,800
NM sales tax	High rate	\$4,900	\$4,400	\$5,300
	Low rate	\$13,200	\$11,800	\$14,500
Total taxes	High rate	\$26,000	\$28,200	\$44,500
	Low rate	\$79,600	\$60,400	\$107,300

Note: All figures rounded to nearest hundred.

Sources for tax rate estimates: Sammartino, (2001); Ganderton, (2003)

<p style="text-align: center;">Table 5 Difference in taxes paid (increase due to delay) Single year value for all 17 cohorts (2003 dollars)</p>				
	Income growth	Average	95% lower bound	95% upper bound
Federal income tax	High rate	\$10,100	\$6,400	\$14,300
	Low rate	\$38,400	\$27,400	\$45,300
Federal payroll tax	High rate	\$13,700	\$7,700	\$15,300
	Low rate	\$42,400	\$38,300	\$45,500
NM state income tax	High rate	\$7,200	\$5,300	\$8,700
	Low rate	\$20,900	\$20,500	\$23,200
NM sales tax	High rate	\$7,100	\$6,200	\$7,800
	Low rate	\$21,600	\$19,100	\$23,900
Total taxes	High rate	\$28,200	\$25,600	\$46,100
	Low rate	\$123,300	\$105,300	\$137,900

Note: All figures rounded to nearest hundred.
Sources: Sammartino, (2001); Ganderton, (2003)

As was the case for earnings, the discounted present value of tax burdens for a single cohort shown in Table 4 is lower than the single year tax burdens shown in Table 5.

Public assistance

Not only do teenage mothers and families pay fewer taxes than older mothers, they receive more public assistance. Nationally nearly 80% of teenage mothers are receiving some form of public assistance at the time their child is born. Approximately 60% of welfare spells last more than 2 years and 40% last over 4 years. The average time teenage mothers spend on welfare is 9 years. (Maynard, 1995) Teenage mothers are more likely to have Medicaid coverage therefore their prenatal care, births and postpartum care are more likely to be paid by Medicaid. Almost 82% of all births to teenage mothers aged 15-19 are covered by Medicaid compared to 73.1% of births to women aged 20-24. (NM-PRAMS 2003) The Medicaid coverage of teenage mothers has risen since 2000 when the rate was 72.6%. (Ganderton, 2003) Usage rates for teenage mothers are higher for home visits, including prenatal (1.25 times higher) and postpartum (1.76 times higher.)

Teenage mothers more likely to have low birth weight (LBW) babies than older mothers, incurring higher medical expenses. The NM-PRAMS data show teenage mothers to be 1.5 times more likely to have LBW babies than older mothers, and 1.6 more likely to have premature babies. Using claims data for 2002, the Texas Department of Health estimates that the cost to Medicaid of prenatal care, birth and first year medical services totals \$8072 (range of \$7265 to \$8879) for a teenage birth. (Franzini, 2004).

Teenage mothers in New Mexico have access to the Women, Infants and Children (WIC) program supported by the US Department of Agriculture and receive home visits from nurses and community health workers, and may be covered by the Families FIRST

program. (PRAMS, 2005) In general, teenage mothers use these services more than older mothers. PRAMS data show teenage mothers are also more likely than older mothers to receive WIC services (1.2 times more likely), which include food and breast feeding supplies.

Although teenage mothers use more public assistance, the beneficial impact these programs have on mothers and children should not be forgotten, and so a higher take up rate among teen mothers produces an (unmeasured) additional benefit to offset the economic cost to taxpayers. For example, the New Mexico WIC website quotes a Colorado WIC study claiming that breast fed babies cost \$478 per year (including Medicaid, WIC and other costs) less than those not breast fed.

Table 6
The Economic Costs¹ of Childbirth to a Teenage Mother
Discounted Present Value Over Time²
(2003 dollars)

	Income growth rate	
	High income growth	Low income growth
Household earnings	\$76,100	\$203,300
Household taxes paid	-\$26,000	-\$79,600
Total earnings impact	\$50,100	\$123,700
Medicaid for birth ³ (assume coverage)	-\$600	-\$600
Medical assistance to mother	-\$2,500 ⁴	-\$5,000
Medical assistance to child	-\$6,900 ⁴	-\$14,100
TANF, Food stamps ⁵	-\$7,000	-\$7,000
WIC ⁵	-\$800	-\$800
Total Public Assistance	-\$17,800	-\$27,500
Total Economic Impact	\$32,300	\$96,200

Notes:

All figures rounded to the nearest hundred.

1. Negative entries are benefits indicating a gain to early motherhood.

2. Generally 17 years, but some programs have time limits on eligibility. These are included where applicable.

3. Figure is calculated based on difference in proportion of births that are low birth weight by age. This is a one-time contemporaneous impact.

4. High income growth rate individual is assumed to “catch up” to older reference group after 8 years (based on earnings estimates.)

5. Impacts are calculated for 5 years (single cohort) or 5 cohorts due to the TANF and WIC entitlement limit of 5 years. Even though food stamps have no such limit, the assumptions of the full 5 years for TANF and only 5 years for food stamps should offset each other. TANF and food stamp estimates based on Ganderton (2003) data adjusted for inflation.

Table 6 shows estimates for the difference in public assistance receipts for a teenage mother compared to an older reference-group mother. These are discounted total amounts over a period of 17 years and negative values represent higher amounts for the teenage mother, or losses in benefits due to delay. The impacts measured include Medicaid expenses

for the birth of the child, driven in this case by the higher incidence of LBW babies born to teenage mothers, higher Medicaid coverage by teenage mothers before and after birth and the need for higher medical expenditures, both covered by Medicaid and covered by other insurance of out-of-pocket for children born to teenage mothers, higher eligibility and take up rates for teenagers than older women of TANF and food stamps and greater use of WIC services. The estimated difference in WIC benefits due to delay is based upon annual per enrollee expenditures applied to the differential take-up rate of teen mothers and older mothers.

Table 6 shows two estimates, one for the high income growth of a teenage mother's earnings and one for low earnings growth, based on the earnings estimates in Table 2 and the tax estimates in Table 4. Delay increases earnings, but also increases taxes paid, which enter as negative numbers in the table. The after-tax earnings impact is still a discounted present value of \$123,700, representing a substantial gross lifetime earnings difference between teenage mothers and older mothers. Even if a teenage mother achieved the earnings growth of older women, the after-tax earnings impact is \$50,100. Estimates of differences in public assistance are calculated assuming the mother is eligible over the whole time period, or the maximum period of eligibility. Teenage mothers with a high earnings growth rate are assumed to catch up to older mothers after 8 years, restricting their public assistance and hence reducing the difference between teenage mothers and older mothers in those categories in which eligibility is not limited to 5 years. As the entries in the table are negative, they represent a greater receipt of public assistance by teenage mothers over the 17 year "lifetime" estimation period. Teenage mothers with low earnings growth receive more public assistance (\$27,500 over 17 years discounted) than those with high earnings growth (\$17,800) as expected. The net effect of earnings, taxes and public assistance gives a range for the discounted present value of the economic impact on teenage mothers of \$32,300 to \$96,200. This represents a reasonable bound on the total impact since not every teenage mother will suffer the lower earnings growth rate for all 17 years and very few will enjoy the higher earnings growth rate for all 17 years after the birth of their child. The impact of teenage family formation on the entire cohort of teenage mothers can be found by multiplying the per mother costs in Table 6 by the average of 3,700 new mothers forming families annually over the last 14 years in New Mexico. The average total discounted economic impact to teenage mothers in any one cohort is approximately \$197 million with a range from \$94 million to \$300 million.

Estimates of the one-year economic impact of teenage mothers in all (17) cohorts are given in Table 7 below. These estimates are based on the undiscounted data used to produce Table 6 and show a greater after-tax earnings impact, but similar public assistance other than the effect of some discounting, leaving greater net impacts of teenage childbearing in any one year. In what is essentially the worst-case scenario, where all teenage mothers have low earnings growth, the one-year all-cohorts economic cost is \$205,800.

Table 7
The Economic Costs¹ of Childbirth to Teenage Mothers
Single year value for all 17 cohorts²
(2003 dollars)

	Income growth rate	
	High income growth	Low income growth
Household earnings	\$109,500	\$332,000
Household taxes paid	-\$28,200	-\$88,000
Total earnings impact	\$81,300	\$244,000
Medicaid for birth ³ (assume coverage)	-\$600	-\$600
Medical assistance to mother	-\$3,000	-\$7,700
Medical assistance to child	-\$8,200	-\$21,300
TANF, Food stamps ⁵	-\$7,800	-\$7,800
WIC ⁵	-\$800	-\$800
Total Public Assistance	-\$20,400	-\$38,200
Total Economic Impact	\$60,900	\$205,800

Notes:

All figures rounded to the nearest hundred.

1. Negative entries are benefits indicating a gain to early motherhood.

2. Some programs have time limits on eligibility. These are included where applicable.

3. Figure is calculated based on difference in proportion of births that are low birth weight by age. This is a one-time contemporaneous impact.

4. High income growth rate individual is assumed to “catch up” to older reference group after 8 years (based on earnings estimates in Table 2 above.)

5. Impacts are calculated for 5 years (single cohort) or 5 cohorts due to the TANF and WIC entitlement limit of 5 years. Even though food stamps have no such limit, the assumptions of the full 5 years for TANF and only 5 years for food stamps should offset each other.

These economic impacts underestimate the costs to teenage mothers because of the many other cost and benefit categories not included. Teenage mothers receive public assistance for housing and utilities, but so do older mothers. Any differences will be due to lower earnings and greater eligibility of the younger mothers, but data needed to calculate the differences was not available for this report. It should also be recognized that there are benefits of early childbearing that are not measured and included in these estimates. They are primarily social and psychological and do not lend themselves to be monetized.

4. Costs to children born of teenage mothers

Research during the past decade confirms the common belief that children of adolescent mothers do not fare as well as those born to adult mothers. These children have increased risks of developmental delay, academic difficulties, behavioral disorders, substance abuse, early sexual activity, depression, and becoming adolescent parents themselves. (Klein, 2005) A study by Terry-Humen, et. al. (2005) reveals that children born to teenage mothers have lower cognition and general knowledge, weaker language and communication skills,

lower measures of approaches to learning, are more likely to be impulsive, overactive and suffer from anxiety, loneliness and low self-esteem and have poorer health and motor development than children of older mothers. Based on national research, children born to teenagers are more likely to be placed in foster care. As adolescents, they are also more likely to fail at school, have higher delinquency and incarceration rates, engage in early-age sexual activity and suffer higher pregnancy rates than those born to older mothers. (Fessler, 2003) Girls born to teenagers are twice as likely to become teen mothers as girls born to older mothers. (O'Connor 1997) All these factors mean that children born to teenagers are more likely to remain in the cycle of poverty from which their mothers came. They will be less productive as adults due to health and education factors and more likely to need public assistance, extending the burden on taxpayers and society of adolescent family formation.

Based on the estimate of the average annual difference in earnings between children born to teens and to older women in the previous study (Ganderton, 2003), the discounted present value of lower lifetime earnings is \$22,000 for children born to teenage mothers. This calculation assumes a growth rate of earnings of 3% over 43 years discounted at a rate of 5.1%. For the cohort of 4,400 children born to teenage mothers in 2004 in New Mexico, this would amount to a total negative impact of \$96.8 million per cohort. Because of lower earnings, all children born to teenage mothers will pay \$8.9 million less income and sales taxes over their lifetimes as well. The negative impact for all 17 co-existent cohorts in any year totals \$77.3 million using the average number of children born to teenage mothers in New Mexico over the 14 years to 2003.

Medical expenses for children born to teens are estimated to be \$890 higher in the year 2003 based on previous estimates. (Ganderton, 2003) Assuming the expense difference grows at the average of the medical consumer price index over the years 2001-2004 and then discounting a 60-year lifetime at 5.1% yields a discounted present value of higher medical expenditures of \$41,200. Applying this average amount to the number of children in the 2004 cohort of 4,400 gives a total present value of extra medical expenses of \$181.3 million. An estimate of the increased burden on the welfare system due to teenage parenting based upon data from the previous study ranges from \$1.1 million to \$1.8 million per cohort annually. The estimates of the economic impacts on children are subject to greater error than estimates for mothers, and others, mainly because less is known about these children. There is much to be learned from a concerted effort to study children born to teenage mothers, especially in identifying the long-term impacts on earnings, public assistance and the furthering of the cycle of poverty.

5. Costs of teen childbearing to taxpayers

Reduced taxes and increases expenditures on welfare programs are economic impacts that cost one group of people (taxpayers) and benefit another group of people (teenage mothers). Apart from the cost of administering these programs, the costs and benefits essentially cancel each other, however they are of considerable importance when evaluating public programs and justifying public expenditures. The estimates of benefits and costs already used in the previous tables are presented in Table 8 below, but using a different accounting basis to show the impact of tax and expenditure flows due to teenage childbirth rather than delay to a later age.

Table 8
Single Cohort Cost of Teenage Childbearing to Taxpayers
Increased Expenditures compared with delay to 20-24^{1,2}
(2003 dollars)

Federal taxes avoided (millions)	\$109.3
State income and sales taxes avoided (millions)	\$74.2
Total taxation losses	\$183.5 million
Medical benefits (millions)	\$61.3
Public assistance (millions) ³	\$51.4
Program administration (millions)	\$3.8
Total public programs	\$126.5 million
Total due to children	\$ 8.9 million
Total taxpayer impact	\$ 318.9 million

Notes:

1. Discounted present value calculated over 17 years.
2. Calculations use number of families formed in 2004 (3475). Estimates are averages of high and low earnings projections.
3. Public Assistance calculation based on Ganderton 2003 Tbl 5 ratio of PA to Medicaid.

The entries in Table 8 are for a single cohort, based upon the number of new mothers in 2004 of 3,475, so selected entries from Tables 4 and 6 for a representative teenage mother are multiplied by the number of new mothers to obtain these total taxpayer impacts. The taxes not paid and increased expenditures are calculated as the average for the high earnings growth and low earnings growth scenarios. As was already mentioned above, taxpayer impacts include taxes not paid by teenage mothers relative to delay, increased public expenditures through programs more heavily used by teenage mothers and lower taxes paid and public assistance to children born to teenage mothers. While the annual total for the cohort is nearly \$320 million dollars, the discounted present value of taxpayer cost per teenage mother is \$91,800. In other words, each teenage mother generates a discounted present value cost over 17 years of \$91,800 on all taxpayers.

Due to the nature of federal and state income taxes and the funding of public programs, the burden of this tax cost falls more heavily on the national class of taxpayers than on New Mexico taxpayers separately. For example, for every dollar in federal tax that New Mexico pays it receives \$2 in federal program expenditures. (Dubay, 2006) In addition, New Mexico residents pay approximately 0.5% of all federal taxes collected nationally and a considerable portion of all public program expenditures are federally funded whether directly or indirectly, thereby passing the burden of program costs on to non-New Mexico residents. At a minimum, however, delay of all births to teenagers would save New Mexico taxpayers the amount of state income and sales taxes of nearly \$75 million annually.

The total impact on taxpayers in any one year from all 17 cohorts of teen mothers is \$488.4 million. This is a sum of \$280.1 million loss in Federal and State taxes and \$201.2 million expenditures on public assistance, and \$7.1 million due to children. This calculation, as with all other cross-cohort estimates, assumes that each teenage mother representing a cohort is experiencing the impact of the representative single-cohort mother at the same point in her life course, so that the impact on a 5-years previous teenage mother is the same as the impact on the current mother 5 years hence, without discounting. It is the absence of discounting that creates the difference in estimates with the all-cohorts estimates being higher than the discounted single cohort estimates.

Table 9
Annual Cost of Teenage Childbearing to Taxpayers¹
Increased Expenditures compared with delay to 20-24
“The 55% Calculation”²
(2003 dollars)

Public Assistance Program (year for data)	Program Expenditure (millions)	10% of program expense (millions)
Medicaid (2004)	\$2,200	\$220
TANF (2004)	\$136	\$13.6
Food Stamps (2003)	\$184	\$18.4
WIC (2005)	\$52	\$5.2
Child Welfare (2005)	\$334	\$33.4
TOTAL	\$2,908 million	\$290.6 million

Notes:

1. Represents costs of all cohorts in the same year rather than discounted present value for one cohort.
2. These calculations replicate those of the DC Campaign to Prevent Teen Pregnancy, 2002
3. 55% of costs attributable to families formed by teenagers, leaving 45% by others, hence difference for delay is 55 – 45=10%. This over-estimates the difference between teens and mothers aged 20-24.

In a study entitled “The \$747 million question”, the Campaign to Prevent Teen Pregnancy, Washington DC chapter (DC-CPTP, 2002) used a novel approach to calculate the economic cost of teenage pregnancy. The study measures the cost as a percentage of expenditures on various public assistance programs funded by the District and the federal government, and is based on the analysis of Fiejo (1999) in which it was determined that on average 55% of public assistance program recipients were teenage mothers at one time. The authors assume all 55% of program costs could be avoided by eliminating teenage pregnancy rather than reduced by delaying. Given that 45% of program costs are due to older women, a rough, but high, estimate of the savings from delaying childbearing would be 10% (=55% – 45%). Table 9 shows the results of calculating 10% of public assistance program costs in New Mexico. The result is \$290 million. Because this calculation ignores lost taxes paid by

teenage mothers and children born to teenage mothers it is not directly comparable to the estimates provided in Table 8, but the method appears to over-estimate the savings from delaying childbirth. Assuming the low earnings growth rate for teenage mothers, the public program costs in Table 8 would total \$185.8 million, which is about 2/3 of the “55% Calculation” estimate, which should be more aptly titled the “10% Calculation.”

6. Costs of teen childbearing to society

The net impact of teenage pregnancy on the economy reflects the value of economic resources, especially human resources in this case, measured by earnings that would be available for other uses if not being used to support teenage mothers and their children. To avoid double-counting the social calculation does not include the cost to taxpayers as that is a transfer of economic resources from one group in society to another, although the relatively small cost to administration these transfers are counted. Apart from the treatment of transfers the main difference between the estimates for society and the estimates for a representative teenage mother is the need to aggregate over the entire cohort, which for New Mexico in 2004 comprised 3,475 new mothers and 4,400 newborn children. Table 10 shows these estimates and provides a range for the average based on teenage mother’s earnings averaging low and high earnings growth rate scenarios.

<p style="text-align: center;">Table 10 Single Cohort Cost of Teenage Childbearing to Society Increased Expenditures compared with delay to 20-24 (Discounted Present Value in 2003 dollars)</p>	
Household earnings impact¹	\$485.5 million (\$433.3 - \$531.3 million)²
Program administration	\$3.8 million
Medical assistance for children (millions)	\$30.4
Public programs for children (millions)	\$1.1
Productivity of children as adults (millions) ³	\$70.0 (\$55.9 -\$84.0)
Total due to children⁴	\$101.4 million (\$87.1 – \$115.5 million)
Total societal impact	\$590.7 million (\$524.2 - \$650.6 million)

Notes:

1. Average of low and high earnings growth rates for mother assumed, and discounted over 17 year period.
2. Range of values coincides with 95% upper and lower bounds for earnings estimates.
3. Teen-born children’s earnings loss starting at age 18 for 43 years assumed to grow at 1% annually discounted at 5.1%.
4. Latest data calculations for 4400 children born to mothers in 2004. All other calculations for new families formed in 2004 of 3475.

Society loses the earnings of teenage mothers, and incurs the cost of administering public assistance programs to support them. It also bears the burden of medical care and public support of the children born to teenage mothers as well as lower earnings of those children. The total discounted present value of these lost resources for a single representative cohort of teenage mothers in New Mexico is about \$590 million. The average societal impact per teenage mother is \$170,000. Losses to society in one year from all teenage mother cohorts are \$816.7 million in household earnings. Program administration costs \$4.1 million and additional costs due to children born to teenager mothers are \$257.3 million for one year. This combines to produce a total single year societal impact of \$1,078.1 million from all teenage mother cohorts combined. This represents an upper bound on the cost to society of teenage pregnancy.

When interpreting these estimates, it is important to recognize that these estimates are gross impacts due to teenage pregnancy verses delaying childbirth until after the teen years. They are a result of many correlated factors that make teenage mothers more likely to earn less and take more public assistance regardless of their status as teen mothers. In the 1996 *Kids Having Kids* book, it was estimated that about 40% of these costs might be saved by eliminating teenage childbearing alone. (Maynard, 1996) Although there are many alternative scenarios to consider, a few are worth noting. If all teenage mothers could be persuaded to delay childbirth, but their social and economic conditions were to remain, the savings to society would be approximately \$235 million. If all those unintended births to teenage mothers in New Mexico (70%) could be delayed the savings to society would be \$165 million. If teenage pregnancy and childbirth could be reduced by 50%, including intended and unintended pregnancies, the savings would be \$118 million. Finally, if the New Mexico Challenge 2010, which aims to reduce teen births by 15%, is successful, the savings to society would be nearly \$90 million per cohort of teenage mothers.

7. Program Effectiveness – the next step

The estimates above suggest that substantial savings, to mothers, children and society, can be realized if teenage pregnancy and parenting prevention programs are effective. Unfortunately, the economic analysis of teenage pregnancy prevention programs is not as well developed as the general assessment of such programs, from a health and social perspective. (e.g Somers and Fahlman, 2001) For example, prevention programs are often assessed in terms of the reduction in pregnancy rates and other non-economic outcomes for participants compared to non-participants.

In order to conduct a comprehensive program evaluation using the tools of benefit costs analysis, the costs of programs, the effectiveness of programs in measured outcomes and the economic values of those outcomes must be estimated. In providing a simple description of what is involved in such an analysis, many difficulties emerge. For example, many prevention programs are part of larger programs, and many times expenditures are not identified separately to allow allocation to pregnancy prevention activities as opposed to other activities. Similarly, even programs that provide services to teenagers might not identify expenditures on teenagers separately from other expenditures on the more general clientele. When considering program effectiveness, there is the issue of what proportion of the intended population is covered by the program, and then what proportion of the covered population achieves the desired outcome. For example, if a program reaches 50% of all teenage girls, and the program achieves success with 50% of them, the overall success

of the program is at best 25%. The study of Texas family planning in 2004 shows a pregnancy and childbirth outcome reduction of 20% from publicly funded family planning clinics, but this is for clients, not the entire population. (Franzini, et al, 2004) A national study by Forrest and Samara (1996) showed overall effectiveness of 31% for teenage clients in averting pregnancy. A 1994 study of family planning programs in Washington State looked at the net benefits of averting, rather than delaying, teenage childbirth compared to expenditures on family planning programs. (Fitzgibbons and Vennewitz, 1994) The study calculated the net benefits of averted births at three levels of program effectiveness: 52%, 82% and 90%, being based on the expected reduction in pregnancies to clients using services provided under family planning programs in the state. Benefit-cost ratios for program dollars spent range from 116:1 to 9:1 depending upon the assumptions used in the calculations of net benefits. The program effectiveness rates would seem to be unrealistically high compared to other evidence cited above. Forrest and Samara (1996) concluded that the benefit-cost ratio for publicly funded contraceptive services was 3:1, that for every \$1 spent on program services, \$3 was saved in Medicaid costs for pregnancy and prenatal and postpartum services.

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