The Differential Impact of Welfare Reform in Non-metropolitan and Metropolitan Areas of Virginia

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(ABSTRACT)

The state of Virginia has been a leader in the design and implementation of welfare reform measures. State welfare reforms were enacted in 1996 and federal reforms followed shortly after in 1996. Initial decreases in program caseloads and the movement of former recipients from unemployment to employment have led initial reform measures to be widely heralded as successes. Significant concerns remain, however, about the ability of non-metropolitan labor markets to absorb female household heads currently on welfare. This thesis addresses potential differences in the impact of welfare reform measures in non-metropolitan and metropolitan labor markets by estimating wage and reservation wage equations for female household heads in Northern and Southwest Virginia. The results suggest young children and lack of access to automobiles create significantly greater barriers to employment in non-metropolitan than metropolitan labor markets. Estimated potential earnings in Southwest Virginia were lower than in Northern Virginia and suggest that female household heads will have trouble escaping poverty through employment. In fact, initial reported earnings for both areas have fallen below estimates of living wages needed to escape poverty. The results also suggest traditional labor market characteristics do not explain all of the differences in earnings, particularly the differences in the observed wages of persons exiting welfare as compared to the general population. If this is the case, policies that only address child care and transportation costs may have little impact as to the ability of welfare recipients to get and keep jobs that enable them to become economically self-sufficient.

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Chapter 1: Introduction

1.1 Problem Statement

The state of Virginia is currently implementing state and federal welfare reform measures that were enacted in 1995 and 1996. One consequence of the reforms was the dissolution of the program previously called Aid to Families with Dependent Children (AFDC) and the creation of a program called Temporary Assistance for Needy Families (TANF) which essentially serves the same group. The implications of this reform for low income single female headed households in Virginia is the major focus of this study. The most substantial change for recipients of TANF benefits is a new requirement that most welfare recipients work within ninety days of receiving benefits or face the loss of program eligibility. Furthermore, recipients are limited to twenty-four months of benefits in any five-year period and to a lifetime limit of sixty months.

These work requirements were enacted with the twin goals of insuring that recipients do not take advantage of the welfare system and of fostering self-sufficiency. The number of welfare recipients receiving payments has indeed declined across the country (and in Virginia) as reforms have gotten under way. The number of recipients in the United States dropped from 13.9 million in January of 1995 to 8.4 million in June of 1998. In Virginia, the number of recipients dropped from 189,493 to 98,409 in June of 1998. There is some debate as to why this has occurred. The current wave of welfare reforms has coincided with a booming economy. This drop in the welfare rolls might not have been possible with more moderate economic growth or during a recession. If this is the case, then reforms may not prove as successful in the long term. Even if welfare recipients are able to find jobs, there is some evidence in the literature that they are unlikely to earn a wage that brings the household above the poverty line. Furthermore, the literature suggests that low wage, low skill workers have few chances to move up the ladder to better paying jobs in the future with additional work experience.

One of the many problems in evaluating the potential impact of the work requirements of welfare reform is that Virginia is by no means a homogeneous state in terms of population and labor force characteristics. Virginia's welfare programs are administered at the county level. The counties in Virginia are a mix of metropolitan and non-metropolitan. Each of these counties has its own set of unique labor market conditions and constraints. A study that uses aggregate data for the entire state would miss pockets of program failures and successes among the counties. A comparison of Northern Virginia and Southwest Virginia is perhaps the best, and most extreme, example of this heterogeneity. Southwest Virginia and Northern Virginia have very different circumstances in terms of population and public service provision. Differences in public service

provision include: access to transportation; access to education (beyond public schools through grade twelve); access to community programs that provide childcare and job skills training; and administrative capacity on the part of local social service departments. Populations differ in terms of racial makeup, age, and level of education. Southwest Virginia falls behind the rest of Virginia in terms of income, infant mortality rate (a measurement of health), and educational attainment (Johnson, Kraybill, and Deaton, p. 38).

Finally, and most importantly, characteristics of the labor markets in the two regions are radically different. This directly relates to welfare reform in that work requirement goals may be met much more easily by welfare recipients in Northern Virginia. Northern Virginia is generally perceived as having a dynamic economy with low unemployment rates. Southwest Virginia, on the other hand, has higher unemployment rates and has less demand for low-skill service positions, for which welfare recipients are thought to be the most qualified.

Yet, problems in evaluating welfare reform go beyond noting differences between metropolitan and non-metropolitan regions. Two key questions associated with current welfare reform legislation are whether recipients will be able to find employment before the time limit is imposed and what level of earnings they can expect to receive from employment. Estimating the earning potential of current welfare recipients is particularly troublesome. Evaluations tend to look at what currently employed members of the labor force are making in terms of wages, and impute these wages on the unemployed. This approach can potentially introduce serious selection bias into the result. Those persons who are working may in fact be able to make a higher wage than the current pool of unemployed persons. This is perhaps why they have chosen to work. As a result, estimates of potential earnings, which use data from only those who are currently employed to predict what welfare recipients would make, may be biased upwards. In fact, as welfare reform proceeds, those left on the welfare rolls are expected to be persons with more obstacles to employment, and thus may be expected to earn even less compared to persons who leave welfare rolls early in the process. Careful evaluation of the potential earnings of individuals affected by welfare-to-work programs must control for this bias.

1.2 Objectives

The goal of this study is to determine the potential for current welfare recipients to enter and actively participate in metropolitan and non-metropolitan labor markets in Virginia. This analysis will focus on female-headed households since the overwhelming majority of TANF

benefits go to members of families headed by single mothers. To this end, the following specific objectives were pursued:

1. Compare individual, household, and employment characteristics of single female-headed households in selected non-metropolitan and metropolitan areas of Virginia.
2. Estimate potential earnings and factors influencing labor market participation in selected non-metropolitan and metropolitan areas of Virginia.
3. Discuss potential differences in the impact of welfare reform arising from structural differences in labor markets in non-metropolitan and metropolitan Virginia, and potential policy mechanisms to compensate for these differences.

1.3 Methods and Data

Data for this study will be drawn from the 1990 Census of Population and Housing, Public Use Microdata Sample, five-percent sample. The 1990 Census is especially appropriate given the fact that the data is representative of more typical economics conditions in terms of economic and employment growth than 1998 data would be, and may better predict how welfare recipients will fare in the long run. The data areas to be used will be PUMA 01100, which represents Northern Virginia (metropolitan), and PUMAs 03200 and 00200, which represent Southwest Virginia (non-metropolitan). Estimates will be made using only observations of single women, ages eighteen to forty. This cohort will be discussed in further detail later. This study will make use of Heckman's (1974) model of female labor supply. The statistical model will jointly estimate the probability of employment and wage earnings of those employed to correct for selectivity bias when imputing potential earnings of individuals currently not participating in labor markets.

1.4 Organization of the Thesis

The next chapter includes an outline of current welfare reform policy, the literature on welfare reform, labor demand and supply in metropolitan and non-metropolitan regions, and preliminary results of welfare reform in Virginia. Chapter three compares the characteristics of the two regions chosen for this study and the characteristics of those individuals in each region which may prove to be important to the success or failure of welfare reform. Chapter four presents the empirical model and variables that are used to determine the employment and

earnings prospects of current welfare recipients. Chapter five presents the results from this model. Chapter six presents a summary and conclusion of the thesis as well as implications for welfare reform policy.

Chapter 2: Literature Review and Preliminary Results of Welfare Reform in Virginia

2.1 A Brief History and Description of Women on Welfare

The history of welfare programs and reform is essentially a history of women on welfare. In 1935, when the AFDC program was in its infancy, most benefit recipients were widows whom society chose to care for, and it was generally agreed upon that mothers should stay home with their children. But, as societal values changed, so did the expectations about working mothers. The Work Incentive Program (WIN), established in 1967, was the first program that sought to have mothers work (Burtless 1995, p. 73). But, WIN programs remained, de facto, voluntary for women in most of the United States. In 1988 program requirements were strengthened and single parents on welfare were required to work if their child was four or older. If they could not, they had to enroll in job training or education. Few effects have been seen from these programs because states "were slow to implement large-scale employment and training programs" (Burtless 1995, p. 74). Current welfare reform may be one of the first real tests of getting single mothers of children over eighteen months into the labor market.

Today, more than ninety percent of female welfare recipients are divorced or never married, not widowed (Gueron 1990, pp. 80-81). In 1987, sixty-five percent of all mothers worked. While more women are working, the median weekly earnings for full-time working women remain seventy-five percent of that which male workers achieve as of 1992 (Blank 1995, p. 41). This means working women are more likely to still be in need of assistance. Not only do women experience discrimination in pay, but they are more likely to have custody of children and may not be receiving child support. About half of all women with children on welfare work at least some of the time while receiving benefits. At any particular time, about one-third of welfare mothers are working (Harris, p. 344). As to the argument that this group of women would work more if benefits were cut: studies show that AFDC benefits reduced the work effort of single mothers by only about 5.4 hours a week. This translated to a drop in income of about $1,000 a year, which does not affect the overall poverty rates or recipient status of these mothers (Harris, p. 320).

The typical TANF recipients today are female heads of households and their children. Women make up ninety-three percent of Virginia's adult recipients[1]. Only one percent of AFDC mothers had graduated from college in 1996. This is compared to twenty-three percent of twenty-five to thirty-four year olds in the overall female population (Nightingale and Haveman, p. 75). Only half of recipients had completed high school. Sixty-percent of Virginia Initiative for Employment not Welfare (VIEW) participants are non-white (VDSS 1997, p. 11). The average number of children in a TANF household in Virginia is 1.9 and roughly forty-nine percent of mothers are ages twenty to twenty-nine. Slightly more than half of the female adult recipients in Virginia have never been married.

2.2 Welfare Reform Policy

Reforms in welfare policy may in fact be due, at least in part, to the changing demographic of welfare recipients. As programs become more expensive--and recipients more "able-bodied" in the view of many--calls for reform were inevitable. The state and federal welfare reform measures have quite similar goals, perhaps, in part, because Virginia's programs were designed in anticipation of the federal reforms. The goals are: to make welfare programs less costly by reducing welfare rolls; to provide welfare recipients with job search aid; to change the incentives of welfare in order to make working more lucrative than remaining on welfare; and to change the "culture" of welfare by mandating "family friendly" requirements. To this end, the state and federal reforms include time limits on the receipt of benefits, require participation in work programs, restrict benefits to children born after a parent enters the welfare program, and enforce child support and paternity identification.

Several important changes were made in state and federal welfare program administration. One of the federal changes was to levy monetary sanctions on states that did not meet particular requirements and deadlines[2]. Most importantly, the programs have given broad decision-making power to the states by converting the previous programs to one block grant (TANF) which will be of a fixed amount. This block grant is based on past state level expenditures for AFDC, Emergency Assistance (EA) and Job Opportunity and Basic Skills

[1] Statistics on TANF recipients can be found on the Administration for Children and Families' website at www.acf.dhhs.gov. Data on the typical recipient for this study was taken from fiscal year 1995.
[2] Details of the federal welfare reform law (P.L. 104-193) can be found in the "Welfare Reform Implementation Informational Package" April 1997 posted on the Administration for Children and Families website at www.acf.dhhs.gov/news/welfare/wrpack.htm.

program (JOBS). The amount will be the greater of: (1) average payments for the program in fiscal years 1992-1994, (2) payments in fiscal year 1994, plus additional funding for EA in some states, or (3) estimated payments for 1995. It should be noted that this fixed amount is based on a period of time when unemployment was at a relative low.

State reforms, as characterized by the Fairfax Department of Family Services in a report to the Human Services Council, have included several important changes. While old programs focused on "training first", new programs focus on "work first". The report expressly states that VIEW has "limited training/educational opportunities" (p. 4). Federal mandates do not require that states offer job-training and educational programs, only that recipients begin work. Again, strict time deadlines are followed in regard to gaining employment to receive benefits and a lifetime cap as to the amount of time an individual can receive benefits. Finally, sanctions are "more rigorous" for failure to meet program requirements.

The Virginia Initiative for Employment not Welfare (VIEW) program requires that all "able-bodied" recipients find work within ninety days of receipt of TANF.[3] There is a twenty-four month time limit on benefits within any one five year period. Exemptions to the work requirement include those persons who are: under sixteen and over sixty; sixteen to nineteen, and are in school or vocational training full-time; sole care giver to a disabled household member; parents of child under eighteen months; in the fourth to ninth month of pregnancy; an AFDC foster care child; or a caretaker, relative or adoptive parent. Recipients must sign a Personal Responsibility Agreement. New requirements include compulsory school attendance for children, minor parent residency, and paternity establishment. There are sanctions for non-compliance with regards to work and child support requirements. Additional children born to a parent receiving TANF are not covered (Specifics of VIP/VIEW).

States will have to follow a federal time line established to get people to work, otherwise large financial penalties will result. Two-parent families--considered the easiest to put at least one member to work--were required to have a seventy-five percent employment rate in 1997. This figure rises to ninety percent in 1999. Twenty-five percent of one-parent families were required to participate in work activities in 1997. This goal increases by five percent each year and will reach fifty percent in 2002 (McMurrer, Sawhill, and Lerman, pp. 2-3).

[3] Details of Virginia's welfare reform program can be found in *Specifics of VIP/VIEW,* Commonwealth of Virginia, 1995.

2.3 Past Welfare-to-Work Program Results

In 1982 Manpower Demonstration Research Corporation (MDRC) began a comprehensive study of state welfare-to-work initiatives (Gueron 1987, p. 13). These state welfare-to-work initiatives were very similar to those designed as part of current welfare reform programs. Gueron has analyzed the MDRC's findings. The MDRC study conducted experiments by creating control groups that were excused from any work requirements in their jurisdictions, to test if changes in welfare rolls were due to the reforms. Experiments included Baltimore, Cook County, San Diego, and parts of Arkansas, Virginia, and West Virginia (Gueron 1990, p. 87). In Virginia, a job search was required of every welfare recipient and training was available. Four metropolitan and seven non-metropolitan agencies in Virginia were involved in the study. Table 2 - 1 summarizes the results and suggests that modest gains in employment did occur.

Table 2 - 1: Past Virginia Employment Results from the MRDC

	Experimental Mean	Control Mean	Percent Change
Employed at end of			
Year 1	34.7%	31.0%	12%
Year 2	39.3%	33.3%	18%
Year 3	38.7%	34.1%	13%
On Welfare at end of			
Year 1	59.8%	59.4%	1%
Year 2	44.0%	44.9%	-2%
Year 3	36.6%	39.3%	-7%

But, these results were not broken down into metropolitan versus non-metropolitan populations. The same program in West Virginia was found to be disappointing as far as employment was concerned. Gueron concluded that this was due to the fact that West Virginia was a non-metropolitan state and had high unemployment (1990, p. 91). One might assume that programs in Southwest Virginia may more closely resemble West Virginia as opposed to Northern Virginia. The MDRC study results for earnings are contained in Table 2 - 2.

Table 2 - 2: Virginia Monthly Earnings Results from the MRDC

	Experimental Mean	Control Mean	Difference	Percent Change
Earnings				
Year 1	$1352	$1282	$69	5%
Year 2	$2268	$1988	$280	14%
Year 3	$2624	$2356	$268	11%
Avg payment*				
Year 1	$1961	$2029	-$69	-3%
Year 2	$1480	$1516	-$36	-2%
Year 3	$1184	$1295	-$111	-9%

*Avg. payment is the average benefit amount a client received

Earnings gains were positive for program participants and government expenditures fell. Again the data does not illustrate differences that may exist between regions. Nonetheless, the MRDC studies do lead one to an important conclusion with regard to welfare-to-work programs. The studies found that counties implementing the same program model had very different results (even within the same state). Program results then, depend on local economic conditions. Furthermore, one might expect that non-metropolitan conditions differ from metropolitan conditions.

2.4 A Comparison of Metropolitan and Non-metropolitan Labor Markets

There is literature available that does address the issue of the performance of welfare-to-work programs in non-metropolitan areas. In studies addressing the effects of the Omnibus Budget Reconciliation Act, workfare programs were shown to have produced much better results in metropolitan areas than in non-metropolitan areas (Whitener 1993, pp. 114-115). There were no gains in unsubsidized employment in West Virginia--a largely non-metropolitan state. In non-metropolitan Virginia and Arkansas there were "little or no" employment gains when compared to results in metro regions. Whitener cites many of the same reasons Gueron does for this difference:

> Studies of past AFDC work programs in rural areas of West Virginia, Virginia and Arkansas found that high unemployment, limited job opportunities, and isolated rural conditions hindered

> employment gains for AFDC recipients in these areas (1990, p. 24).

This may in fact be why, in the past, the Job Opportunities and Basic Skills (JOBS) program did not apply to all counties and recipients. Typically, those left out of mandatory work programs were AFDC recipients in non-metropolitan areas (Whitener 1990, p. 23).

A review of the literature leads to the conclusion that the body of studies on this issue is still mixed as to whether non-metropolitan or metropolitan areas are better at absorbing welfare recipients into the work force. On the positive side, there may be more jobs that require less formal education in non-metropolitan areas. Those people who do participate in work training programs may in fact become more competitive than the general population when applying for jobs (Bloomquist).

The negative aspects of non-metropolitan labor markets seem to outweigh these advantages. Unemployment is much higher in Southwest Virginia than in Northern Virginia, so welfare recipients must compete with others looking for jobs in an economy that has few. Studies of past AFDC work programs have shown that non-metropolitan areas in Virginia were unable to provide their clients with jobs (Whitener 1990, p. 24). Swaim has found that the median time of joblessness was higher for non-metropolitan workers, in part due to the low rate of job growth in these areas. In both metropolitan and non-metropolitan areas men spent less time unemployed than did women (p. 11). This makes the prospects for female headed households lower in both regions of Virginia. Swaim finds that workers in non-metropolitan areas have a harder time finding jobs due to the low rate of employment growth, and thus there is greater competition for any one job. He concludes, then, that workers in metropolitan areas, such as Northern Virginia, have a greater chance of finding a similar job, in the same field and geographical area, when they lose their jobs.

Non-metropolitan labor markets may also pose a problem for female-headed households because of the type of positions available. Jobs for low-skill workers in non-metropolitan markets tend to be in more male-dominated fields. Many of the occupations that are available for welfare-to-work program participants tend to employ more men than women (Bloomquist, Jensen and Texeira, p. 10). Jobs for low-skill workers in Northern Virginia, on the other hand, are more likely to be in the service sector where females are less likely to be discriminated against. Other studies also point to the fact that "worker poverty rates" are higher in non-metro areas (Morrissey, p. 37). What this means for welfare rolls is that it is far more likely that recipients in non-metropolitan areas who find jobs still may require assistance but will not be entitled after

time limits expire. Jobs in non-metropolitan areas then, are not only harder to come by, but also provide no assurance that the worker can earn a "living wage". Having a job may not be enough for single mothers to raise their family out of poverty. This is particularly true in non-metropolitan areas. Overall, one in five heads of family that were in employed in non-metropolitan areas were still "unable to avoid poverty". Single women who head families in non-metropolitan areas are particularly vulnerable to poverty. "While single women who were heads of families constituted only about 9% of non poor working heads of families, they represented 35% of rural working poor" (Morrissey, p. 38).

Welfare recipients are generally believed to face several obstacles that limit employment. These obstacles are in the areas of health, education and job skills, transportation and childcare (Blank et al., p. 60). All of these obstacles tend to be more prevalent in non-metropolitan areas such as Southwest Virginia. In the case of non-metropolitan areas, one must take into account the problems of economies of scale and distance. Can there be an adequate "delivery system" for education and training without many facilities? Can the local community support day care and transportation needs? Non-metropolitan areas have had difficulty in the provision of child care during past welfare-to-work experiments and many participants had to be exempted from work requirements due to lack of transportation (Whitener 1991, pp.25-26). One tends to find basic public social services in non-metropolitan areas, with few special programs available. There are fewer non-governmental and charity organizations which are usually part of the backbone of any social services program in metro areas. Many times, non-metropolitan communities must rely on organizations whose primary goal in not the delivery of social services (Ginsburg, p. 59). Finally, even when services are available they are less visible and often recipients find it difficult to travel to social services offices. Full-time office hours are not the norm. Getting to both a job and job readiness programs may be harder for people in non-metropolitan areas. Three-quarters of non-metropolitan counties have an average of thirty-five percent of their workforce commuting to other counties. So, workers must travel further, on average. This is tough in non-metropolitan areas given the fact that fifty-seven percent of the non-metropolitan poor do not have cars (Dewees, p. 3). Child care and transportation obstacles have been found to be the two greatest problems in past studies of JOBS programs (Ginsburg, p. 69).

2.5 Labor Supply

Determining the prospects for labor market participation and potential wages for current TANF recipients requires an understanding of a few key concepts in the study of female labor supply. Participation is a function of the net effect of a woman's market wage and her reservation wage. The distinction between a market wage and a reservation wage is perhaps the most important concept to understand. A woman's market wage is simply what an employer is willing to pay her to do a job. Variables that effect this wage include the level of education, experience, and, race of a job applicant[4]. Labor market studies involving men generally use age minus years schooling to determine experience. This is less applicable to women given the fact that marriage and children often cause breaks in a woman's contact with the labor market. In this study, both the individual's age and the number of children in two age groups will serve as proxies for the experience variable. In fact, many studies of the labor supply behavior of women use the number of and/or age of children in the estimation of wage offers. Gronau, for instance, claims that staying home to care for a child and "leaving the labor market may accelerate the depreciation of the woman's market-oriented skills and shift her wage-offer distribution downward" (Gronau, p. 1129).

This distinction between male and female labor market behavior is best illustrated by a discussion of the reservation wage. A reservation wage is the opportunity cost of a person's time and it functions as the "dividing line" between the person's choice to accept a job or decline a job offer. For men, this usually just refers to his calculation of how much he thinks he can make in the labor market. If he does not receive a job offer at this level, a man will usually adjust the reservation wage lower, until he finds a job. Cultural norms and family structures in the United States usually dictate that a man is working, while women have more flexibility. Women, on the other hand, are more likely to use the reservation wage as a "hard and fast" rule. So, what determines their decision to enter the labor market is whether the market wage offer is above their calculated reservation wage. Labor supply models, especially those involving females, generally focus on entry and exit from the labor market not on the choice of hours of work. In fact, Heckman states that the past twenty years of labor supply research has shown that "…the strongest empirical effects of wages and nonlabor income on labor supply are to be found at the

[4] Studies of female labor supply tend to use similar explanatory variables in their analysis. See Gronau, Heckman and Nelson. This study uses a slightly different set of variables due to the fact that it investigates unmarried women.

extensive margin--at the margin of entry and exit--where the elasticities are definitely not zero" (Heckman 1993, p. 118). This is especially true in the case of female labor supply.

In past studies of female labor supply, most authors have dealt with white, married women[5]. In this case, the reservation wage is quite stable given the fact that she is assumed to be a second wage earner and may have children. In the case of married women, determinants of participation often include the husband's income and education. Heckman acknowledges that female labor supply has not been studied adequately in relation to new trends where women are often not a second wage earner, more women are working, and even when married, often do not view themselves as secondary earners. As to whether women's labor supply behavior more resembles men's behavior today he writes: "Whether labor supply behavior by sex will converge to equality as female labor-force participation continues to increase is an open question" (Heckman 1993, p.118). In light of the higher participation rates of women in today's labor market one might expect to see a general reduction of the reservation wage over the entire population. This is an issue in female labor supply theory that should be studied more fully.

Why does a woman have a higher reservation wage than a man and what factors influence the reservation wage? Labor supply theory has traditionally defined the participation decision in terms of the leisure/labor dichotomy. Labor supply is then determined by both an income and substitution effect. The substitution effect is positive; work increases as the wage does and leisure time becomes more expensive. The income effect is negative; work decreases as income rises and the worker "buys" more leisure (Mincer, p. 41). Essentially, participation and the amount of participation in the labor market are dependent on the strength of each effect on an individual's decision making process. But, this method of analysis has never been satisfactory when modeling female labor supply. The reality is that children and household duties affect female labor supply, much more so than is the case with males. Mincer notes that this a key difference in the estimation of female labor supply and suggests that economists have to take the demand for work in the home into consideration when we derive the market supply function for females (p. 43).

The reservation wage is determined by many of the same explanatory variables that determine the market wage above. But, these variables have different effects on the reservation wage. These include the presence of children in the household, access to a car, race, and education. Past studies have also included the husband's income and level of education in the determination of the reservation wage, but as mentioned previously, this is not an issue in single

[5] Major studies include Heckman, 1974 and 1979, Gronau 1974, Nelson 1977, and Smith, 1980.

female headed households. Still, traditionally, an increase in the man's wage rate would raise the woman's reservation wage accordingly. Factors that raise the reservation wage in this thesis include items such as the cost of child-care, transportation, the up front cost of a job uniform or clothing suitable for work. These variables raise the cost of taking a job relative to other uses of a woman's time, and as such a woman's reservation wage is higher. The educational variable is a bit counterintuitive at first. Each unit increase in schooling raises a woman's expected wage but women with more schooling tend to be more likely to participate. This is because although the asking wage increases with schooling the gains to market wage offer increase at a higher rate, thus reducing the relative reservation wage (Heckman 1974, 686). Residential and hiring discrimination may raise the cost of a job search for a minority and thus raise the reservation wage. Finally, the value a woman places on her time working in the home and spending quality time with her children will raise the reservation wage, but the effect is difficult to isolate. One study of the effect of children on female labor supply estimates that the presence of one child under the age of six raises a woman's asking wage by fifteen percent (Heckman 1974, p. 686). When a reservation wage is binding it determines whether or not the woman will accept a job offer. If she receives a job offer less than the reservation wage then she will not participate in the labor force. When the market wage is above the reservation wage then we will observe a working woman.

2.6 Labor Demand

Successful welfare reform depends not only on people deciding to work and/or getting past the above-mentioned obstacles, but also on the availability of jobs, or the demand for labor. Some observers worry that there may not be enough jobs to employ all of the TANF recipients who will have to find jobs under the new reforms. Two separate numbers are at issue. First, are there enough jobs available in the economy to employ every person who is now a TANF recipient? Second, are there enough of the right kinds of jobs? In other words, are there new job openings being made in areas where TANF recipients have the appropriate mix of experience and skill? Under current welfare reform legislation, the new TANF program regulations are expected to add over 800,000 workers to the economy between 1997 and 2002 (McMurrer, Sawhill, and Lerman, p. 2). This means that, on average, there will be 140,000 "ex-welfare recipients" looking for jobs each year. It is important to remember that TANF recipients are not the only persons who will be looking for jobs at any given time. Many unemployed persons do not apply for or qualify for and receive benefits and new people are always entering the labor force. The

projected overall growth in the labor force between 1997 and 2002 is estimated at 1.4 million a year.

It may be possible for all of these workers to be absorbed into the labor market given a good economy. Demand for labor has grown at a rate of approximately 2 million workers a year for the past few years. From April 1993 to April 1997, ten million new jobs were created nationwide, and the unemployment rate dropped from 7.1% to 4.8%. "Welfare Reform, in short, could not have come at a better time" (McMurrer, Sawhill, and Lerman, p. 2). So, it would appear that as long as the government is able to deal with labor supply issues such as childcare and transportation needs, more employment of welfare recipients is certainly possible given the demand.

Unfortunately, simple numbers do not tell the whole story. This brings us to the measurement of job fit. There also have to be job openings that match the job skills of people leaving welfare programs. An October 1988 article calculated that there were less jobs available, for which the unemployed qualified, than the total number of people who were eligible to participate in their state's welfare-to-work programs (Bloomquist, Jensen, and Teixeira, p. 8). While the study looked at welfare-to-work programs in the 1980's, some interesting conclusions remain pertinent. The number of AFDC recipients who were expected to participate in a job search outnumbered those jobs available (for which they had the educational qualifications) by a ratio of five to one in non-metro areas (Whitener 1993, p. 126). When non-AFDC recipients who were looking for jobs were included in the calculation the ratio rose to twelve searchers for every one job. The current economic boom, led by high-tech firms, is a good example of why numbers can be deceiving. There is a high demand for jobs in the high-tech field, but we can not simply place welfare recipients into these jobs. Employers are complaining that they cannot find enough qualified people to work in the information technology sector. They want, most often, college-educated workers with programming skills that welfare recipients do not have. Employability workshops, resume writing workshops, and even access to childcare and transportation do not prepare somebody to be able to take this kind of job. Unfortunately, in most cases, the kind of jobs available do not appear to match the kind of job welfare recipients are qualified for.

Finally, there also is a problem of geographical fit or spatial mismatch. The United States does not represent one labor market. People are not able to, and often do not choose to move based solely on where jobs are available. If we assumed for a moment that the only problem involved here is getting those people who are unemployed to places where there was an abundance of jobs, we would still face the often cited obstacles of family ties and costs of a physical move. Jobs for less-skilled workers in California are not really open to people in

Southwest Virginia. This is one of the key distinctions between Northern and Southwest Virginia. Non-metropolitan areas have higher underemployment rates than do metropolitan areas. Structural unemployment is common and an excess labor pool tends to be much larger in non-metropolitan areas (Goetz and Freshwater, pp. 1611-12).

Less-skilled workers also tend to bear the brunt of swings in labor demand. Even when unemployment rates are low, less-skilled workers "experience a disproportionate share of the burden of unemployment, an imbalance that . . . does not seem to have shifted much" (Blank 1995, p. 39). When unemployment rates go back up to historical averages less-skilled workers will most likely be the first to feel the effects.

2.7 Potential Earnings

Even in current economic conditions, while unemployment remains low, there is some worry that the addition of less-skilled workers into the labor force may in fact depress wages on the low end, making it harder for low-wage workers to make a living wage (McMurrer, Sawhill, and Lerman, p. 5). While the economy is doing so well, there may be little risk of this, if one assumes that economic activity creates demand at all levels of the economy. But, as noted previously, Northern and Southwest Virginia represent very different markets. The unemployment rate, is in fact not as low in Southwest Virginia, and as such may have a harder time absorbing any newcomers into its labor market.

In a study on welfare mothers and work, Kathleen Harris point to two ways that recipients leave welfare through work (p. 323). First, recipients can find a good quality job in which they are able to make a good living and earn benefits. This is often how the media and politicians portray the move from welfare. The assumption is that people who work are not on welfare. "Employment is equated with self-sufficiency" (Harris, p. 320). This is not necessarily the case. Second, they can move off welfare more slowly by "cumulative work experience" in which they may still receive benefits for a while. As they move up the job ladder, through job experience, they will no longer be dependent on TANF funds. This is a more realistic scenario.

Moving directly to a well-paying position may be difficult given the educational background of most women on welfare and their cognitive abilities. Gary Burtless used the national Longitudinal Survey of Youth (NLSY) to make some conclusions about women and welfare. He found that among those women most dependant on welfare (those who had benefits during all twelve months of a year), fifty-two percent had not finished high school. Furthermore, seventy-two percent of these women placed in the bottom quarter of the Armed Forces

Qualification Test (AFQT). This test scores arithmetic ability, word knowledge, and comprehension, and is "considered a reliable indicator of a person's general problem-solving ability" (1995, p. 77).

If we assume that we can ignore those who do get a "good" job, requiring no more assistance and providing a family with a lifestyle above the poverty line, we must focus on the ability of those left to move up a job ladder. Certainly, most people do move up the ladder in their lifetime careers. A student who graduates college must work for less money than their counterpart in the working world because they have no experience. As he or she gains experience they tend to become more productive and receive a higher wage. But, there remains a proportion of those in the work force for which this is not the reality. Those who move up the ladder in their careers do not have many of the same characteristics exhibited by welfare recipients, who tend to be less educated, female, and minority persons (McMurrer, Sawhill, and Lerman, p. 6). Less-skilled workers and women tend to have less mobility, making it less likely that those jobs that recipients take to fulfill welfare-to-work requirements will enable them to make a wage that is higher than the poverty level. Nightingale and Haveman agree that less-skilled workers can still find jobs. Unfortunately, they also agree that "their long-term earnings opportunities have eroded, and there is little reason to believe that these changes will be reversed in the near future" (p. 63). Young women with little education have seen their earnings fall consistently since 1979 (Burtless 1995, p. 72).

Studies that have looked at less-skilled women tend to agree that after even two years in a job they still may not have health insurance or enough money to pay for childcare. "It would be foolish for work/welfare programs to assume that women who find jobs will make steady economic progress toward substantially higher wages" (Blank 1995, p. 63). In fact, work has not been found to be the most frequent way women leave welfare rolls; only twenty-one percent of women left because of increased earnings. Marriage was the number one way women left the welfare rolls (Harris, p. 322). Burtless looked at women who had received AFDC for at least part of a year between 1979 and 1981 and found that wage gains were much smaller for former AFDC recipients than for those women who had never received AFDC (1995, p. 78). Women who had never received benefits saw their hourly wages rise from $6.07 to over $10.00 from 1979 to 1990. Those who were "AFDC dependent" at some time between 1979 and 1981 and then became employed saw their wages rise from $6.18 to just $6.85 an hour between 1979 and 1990. Clearly, women who had received benefits did not rise through the ranks in the same manner as non-recipients.

If work experience does not seem to be the answer to dependency for less-skilled women, then what is? Studies tend to agree that education has a far greater influence on one's earnings than work experience (Harris and Blank). Investing in education seems to be more important than investing in job skills programs. Employability workshops and job placement programs do not change the fact that welfare recipients often do not fit job requirements. Not, only will wages rise with educational level but: "Less-skilled men and women experienced almost five times as much unemployment as college-educated men and women" (Burtless, p. 39). Higher education leads to higher wages and less unemployment.

2.8 The "Living Wage" Concept

Much of the debate surrounding the earnings results of welfare-to-work programs is the debate about what constitutes a "living wage". A living wage can be defined as the "amount of earnings necessary for a family to meet their most basic costs" (Zimmerman and Garkovich, p. 2). As discussed previously, welfare recipients may be able to obtain jobs, but they may not be able to rise above the poverty level in these positions. A "living wage", although calculated differently throughout the literature, falls above the federal poverty threshold and proponents of the use of this definition support the idea that earnings must provide for a comfortable, if sparse, living standard, not a level at which a family may not be able to pay rent every month. Burtless has analyzed past program results with the "living wage" concept in mind. The poverty line for one adult and two children in 1990 was $10,419, but the average income of poor female headed families in 1990 was $4,500. Several programs did indeed raise earnings of program participants; the most impressive rise in earnings was $1,800. But, the poverty gap of female headed households is about $5,900, which is three times the earnings gain. Burtless concludes that welfare-to-work programs fail to raise living standards (1992, p.29). The 1996 Current Population Survey calculated that the average weekly earnings for all non-metro women was 82 cents for every dollar earned by metro women. The question is whether all of this difference is due to a cost of living differential. "To date, most of the attempts to calculate a living wage have been based on estimates of the cost of living in metropolitan areas" (Zimmerman and Garkovich, p. 2).

A study done for the Southern Rural Development Center in March of 1998 shows that, in fact, some household costs are higher in non-metropolitan areas. For instance, utilities, food, and gasoline make up a larger proportion of non-metropolitan expenditures. The study estimated the monthly expenditures needed to cover the basic needs of a single mother with two children in

non-metropolitan Kentucky. The authors then compare this with average earnings to see if these women make a "living wage". Average hourly wages of non-metropolitan women and women in Kentucky fell below what they estimated was needed to provide for basic needs. They estimate a cost of living of $19,709 for a single mother with two children. This would mean this woman would need to work full-time (2,000 hours a year) at a wage of $9.85 an hour (Zimmerman and Garkovich, p. 2). This excludes Social Security and Medicare taxes. The authors calculate a higher wage needed because of these taxes, but this author will leave these out given the fact that their study did not address the Earned Income Tax Credit, which may offset the negative effect of the taxes. In any case, the average hourly wages of non-metropolitan women in 1996 is estimated to be $8.33, which is below the cost of living calculated by the authors. Furthermore, younger women, age sixteen to twenty-four (some of which may be single mothers) earned just $5.55 on average in non-metropolitan areas (Zimmerman and Garkovich, p. 6). These calculations will be used later in this study to compare Virginia's earnings estimates to the non-metropolitan cost of living estimates below.

Table 2 - 3: Average Hourly Wage Comparisons*

Population	Average Hourly Wage
Non-metropolitan South	$10.15
Non-metropolitan Women	$8.33
Non-metropolitan Women 16-24	$5.55
Wage needed to meet poverty threshold	$6.66
"Living Wage" as calculated by Zimmerman and Garkovich	$9.85

*****All information in table comes from Zimmerman and Garkovich pp. 2-6

It is important to note that the wage needed to meet the poverty threshold and the wage needed to meet a household's cost of living differs by about 48% and this is what is at the heart of the argument between those who believe that welfare-to-work programs are succeeding and those who believe they are not. Proponents of the utilization of a "living wage" figure believe that the poverty threshold does not accurately reflect what households must spend for a basic standard of living, and this is especially the case when one looks at a single parent households. Proponents of the "living wage" would not conclude that welfare reform was successful if former TANF recipients gained employment but still had earnings that brought them just over the poverty level.

2.9 Preliminary Results in Virginia

Welfare reform policies and procedures were implemented gradually in Virginia. Varying "Economic Development Districts" (EDDs) entered the VIEW program at different times. EDD2 was one of the first regions to enter VIEW on January 1st, 1996. EDD2 encompasses PUMA 00200, part of our Southwest region. The other part of the Southwest Region (EDD1) was not officially part of the VIEW program until October 1st of 1997. This may be due to some of the discrepancies in development as seen earlier in the "Characteristics" section of the study. Finally, Northern Virginia (EDD 6, which covers PUMA 01100 and several other Northern Virginia counties) was brought into the VIEW program in April of 1996.

Overall general statistics presented by the state have been impressive. TANF cases fell by nineteen percent between April of 1997 (52,607 cases) and May 1998 (41,390 cases) (VDSS 1998, i). If one examines this drop in more detail one finds that most of the decline can be accounted for by a drop in the applications received and those approved during this same period. The number of TANF applications received by localities in Virginia fell by thirteen percent from June of 1995 to April of 1998. Further, of those applications received, fifteen percent fewer were approved in April 1998 as were approved in June of 1995 (VDSS 1998, p. 1). So, the assertion that drops in welfare caseloads necessarily signal successful job placement is suspect. Much of the caseload decline has not been due to the fact that people have left welfare, but that fewer people started receiving TANF benefits in the first place than in earlier years. It is important to note, however, that reforms may indeed still have had an impact. Potential recipients may have been deterred from applying for benefits because they thought standards for assistance had become tougher. Standards have remained the same, but the political rhetoric and media coverage may have lead potential recipients to believe that this was this case. Additionally, fewer people may be applying for benefits because they have chosen to save their option to receive TANF benefits until their circumstances are more dire given the fact that there are now time limits. On the other hand, reforms may have had little effect and it could simply be that less people needed to receive TANF benefits given the fact that the economy was steadily doing better and better over this same time period and that job growth was occurring.

In spite of looming questions, many in Virginia believe the decline in welfare rolls is a direct result of VIEW. The Virginia Department of Social Services wrote in their Annual Report for Fiscal Year 1997:

> VIEW localities with more than one year of VIEW experience had a caseload decline of 36 percent. VIEW localities with less

> than one year of VIEW experience had a caseload decline of 34 percent. Localities that has not yet implemented VIEW had a caseload decline of 31 percent (VDSS 1997, p. 4).

The Virginia Department of Social Services uses these numbers in their report to illustrate that VIEW has been a success. Without knowing how these numbers were arrived at, it is hard to know whether the margin of error is larger than the difference in rates of decline. Another important point to keep in mind is that those districts that undertook reform first did so because they were better prepared for the reform. These differences may have less to do with the implementation of reform than with differences between regional labor markets.

Taxpayers certainly see the reform as a success. Virginia spent $101 million less in welfare benefits in 1996 and 1997. This produced a net taxpayer savings of over $57 million according to the Department of Social Services (1997, p. 30). Virginia has been careful not to place too many recipients into "make work" government jobs or to subsidize many private sector positions. Ninety-three percent of those recipients who are working do so in unsubsidized, private jobs. Program monies were allocated as follows: almost $12 million went to administration, $9.7 million to provide child-care, and $2.5 million to cover training and education (VDSS 1997, p. viii). The training and education category also includes supportive services so the category includes item such as gas coupons, glasses, uniforms, and license fees. With that in mind, the education portion of VIEW seems quite low.

What happened to those recipients who did indeed start working and/or leave the rolls since VIEW began? Eighty-eight percent of those who had reported wages were still working two quarters later and seventy-one percent of those persons were still working three quarters later. Only fifty-nine percent of those who had reported wages were still employed four quarters out. This includes people who may have switched jobs but were still working (VDSS 1997, p. vii). Of the 10,800 cases that were closed since VIEW reform began, thirty-five percent returned to welfare in year two. So, job retention has not been as high as many would have hoped. It seems that getting a job may not be as difficult as keeping one.

The types of jobs that recipients took were concentrated in a few key areas. Nineteen percent of recipients obtained positions in "Food Service", eighteen percent in "Cashier/Sales", fourteen percent in "Production Work" and eleven percent in "Housekeeping/Building Maintenance" (VDSS 1997, p. 12). Seventy-five percent of VIEW participants received wages of between $4.25 and $6.50 an hour. The largest proportion, thirty-four percent, making between $4.76 and $5.50 and hour.

Whether participants were able to obtain jobs with higher wages was highly dependent on the regions in which they lived:

> VIEW participants from localities in the Northern Virginia area, EDD 6, found jobs with the highest hourly rates of pay at ~ $6.21, while VIEW participants from the Bristol-Galax (EDD 2) region and the Lynchburg (EDD 9) region found jobs with the average hourly rates, $4.95 and $4.84 respectively (VDSS 1997, p. 15).

Those recipients in Lynchburg (the lowest paying region) earned seventy-eight cents for every dollar earned in Northern Virginia. One must also keep in mind that the $4.95 an hour earned in our study region of Bristol-Galax represents an average wage and so many workers in this region are making less than this. Typically, the lowest paying jobs are in the field of child-care and food service which often do not pay the minimum wage.

The individual regions for this study varied quite a bit in their results since implementation. The figures below represent cumulative numbers from VIEW inception through April 30, 1998 (VDSS 1998, pp. 22-24). Individual statistics for each county and city in this study can be found in Appendix A. It is interesting to note that although the Southwest region (EDD 1) showed the smallest percent of View participants who were employed, six months after becoming employed they were more likely to still hold a job than in the other two districts. This might indicate that the real problem in Southwest Virginia is job availability. In Lee, for example, only nineteen percent of recipients found jobs, but one hundred percent had those jobs six months later. Still, a substantial minority, thirty-six percent, of recipients who had found jobs in EDD 1 did not keep their job for six months.

Table 2 - 3: Preliminary Results by Economic Development District

Area	Percent Employed	6 months out*	Avg Hourly Wage	Avg Monthly Earnings
EDD 6	72%	57%	$6.52	$833
EDD 1	36%	64%	$5.22	$618
EDD 2	71%	47%	$5.12	$702

*Percent of those persons who were initially employed who hold a job for at least six months

Monthly earnings in individual counties varied quite dramatically ranging from $505 in Norton to $847 in Fairfax County and Falls Church City. Average monthly earnings in EDD 1 were just seventy-four percent of earnings in EDD 6.

The Fairfax Works! program, which covers Fairfax County and City and Falls Church City, is the administration set up to deal with TANF and VIEW program recipients in Northern Virginia. It has served twenty percent of all VIEW clients so far in Virginia and almost three times more than any other jurisdiction in Northern Virginia (FSDFS, 8). The Fairfax area was phased in to all welfare reform programs in April of 1996. Characteristics of the current caseload are as follows (FCDFS, p. 13):

- 72% are racial or ethnic minorities
- 41% have less than a high school education
- 41% have a high school education
- 36% are under 30
- 39% are 31-40
- 5.2% are 51 or older
- 26.5% are legal aliens
- average number of children in households in 1996 was 2

The Fairfax County Department of Social Services bulletin, "Welfare Reform Today", describes the welfare-to-work program being undertaken in April 1996 as "employability workshops, employment resource center, assisted job search, and employer outreach for unsubsidized and subsidized jobs and community work experience." The administration of these programs is contracted to private companies.

As with Virginia as a whole, the TANF caseloads have indeed fallen since welfare reform went into effect in the Fairfax region. As of April 1996, there were 3,722 cases open. This dropped to 2,175 in August of 1997 and 2,086 in December of 1997 (FCDFS Nov1997/Feb 1998). The average hourly wage of those people who found jobs was $6.34 for full-time workers and $6.10 for part-time workers in August 1997 and $6.50 for full-time workers and $6.24 for part-time workers in December 1997. In terms of monthly wages, this translates to an average of $820 in August and $834 in December. The "ninety day retention rate" for these workers was seventy-five and seventy-four percent respectively. These statistics do show improvement from the July/August 1996 "Welfare Reform Today" newsletter which stated that twenty-two percent of six hundred families receiving TANF had found employment and the average monthly salary was estimated at $740.

A few caveats should be pointed out with respect to the Fairfax Works! program success. First, of the TANF cases which were closed between April 1, 1996 and March 30, 1997, only twenty-one percent were closed because the clients had incomes that exceeded program limits

(FCDFS, p. 9). This is important because caseload decline seems to be the most important goal of jurisdictions and the number one indicator that jurisdictions, politicians, and the media use to demonstrate that welfare reform has been successful. A huge number--thirty-three percent--of cases were closed because clients "failed to provide the verification needed to establish eligibility." Yet, these cases were counted as having been opened and closed, rather than having never been opened. This means that they were used to show caseload decline for federal guideline and publicity purposes. Second, a survey undertaken by Virginia Tech for the Fairfax County Department of Social Services found that among those who were employed, "their income remains at poverty level and among the lowest household incomes within Fairfax County" (Fairfax Works! Nov 1997/Feb 1998). The federal poverty level for a family of three was $1,082/month in 1996 and $1,111/month in 1997 (FCDFS, p. 7). Comparing these numbers with the results from Fairfax Works! above, one finds that the average earnings of employed persons in the program were still below the poverty level.

2.10 Summary and Conclusions

It is this author's contention that non-metropolitan areas will have more difficulty with job placement requirements than will metropolitan areas. This is, in part, due to the fact that obstacles to employment effecting labor supply (childcare, transportation, health, and education) are more prevalent in non-metropolitan areas. Single women in Southwest Virginia tend to be less educated, have more children, and lower access to child-care and transportation programs. Demand for labor tends to be lower as well, raising problems with structural unemployment. The unemployment rates in the non-metropolitan areas of Virginia are much higher than rates in Northern Virginia. Furthermore, there is evidence that the addition of so many welfare recipients to the labor market may harm female headed households, especially when these women have little education. The "labor supply shock" from reform will more likely effect poorly educated women through unemployment, not wage rates (Bartik, p. 42).

It is hypothesized that potential earnings of welfare recipients will be lower in Southwest Virginia. This is evidenced by the preliminary results of reform outlined above. Single women in Southwest Virginia have more children and studies have linked small children in families to poverty. Morrisey claims that the presence of small children makes non-metropolitan families especially "susceptible to poverty" (p. 41). Furthermore, the women in Southwest Virginia are less educated and have had less contact with the labor market in the past. Although workers may earn more in Northern Virginia, earnings gains from welfare reform may not be enough to

provide for a "living wage" in either region. As such, as time limits occur policy makers may find that additional assistance is needed.

While this study deals with single women, it is the assumption of this study that a reservation wage still exists in the case of unmarried women. The presence of children, for example, will raise a woman's reservation wage whether or not she is married. This reservation wage may or may not be binding for all women, but it is hypothesized that the reservation wage is higher than the market wage for TANF recipients and this is one reason why labor market participation does not occur.

This thesis will add to the literature on both welfare reform and female labor supply in several ways. First, it will focus specifically on possible outcomes in Virginia. Second, it will compare and contrast the differences in labor markets and potential for successful welfare reform in non-metropolitan and metropolitan areas. Too often, research has focused on one or the other, but most programs effect both metropolitan and non-metropolitan areas and cannot be formed without taking this into account. Finally, this thesis will add to the literature on female labor supply by considering single women. Female labor supply models need to be applicable to single women if economists want to use them in the analysis of welfare reform.

Chapter 3: Data and Descriptive Statistics

3.1 Data Sources

The primary source of the data to be used in this study will come from the *Census of Population and Housing, 1990: Public Use Microdata Sample: 5 - Percent Sample*. The data is arranged by Pubic Use Microdata Areas (PUMAs), that do not cross state lines. This particular sample includes household and personal records of the five percent of U.S. households who received the long form of the 1990 census questionnaire. A few general statistics from the following descriptive section come from the Regional Economic Information System (REIS), U.S. Bureau of Commerce (1996).

3.2 Choice of Regions

To compare non-metropolitan and metropolitan regions in Virginia, this study will use the designation of Southwest and Northern Virginia respectively. The census data corresponding to Southwest Virginia for this study includes Public Use Microdata Areas (PUMAs) 00200 and 03200. PUMA 03200 includes data for the counties of Dickenson, Lee, Scott, Wise and the City of Norton. PUMA 00200 includes data for the counties of Bland, Grayson, Smyth, Wythe, Carroll, Washington and the cities of Galax and Bristol. Two PUMAs are used for Southwest Virginia because of their relatively small size. These two PUMAs still represent thirty-four percent of the observations included in the PUMA used to represent Northern Virginia. The census data corresponding to Northern Virginia for this study is PUMA 01100, which includes data for Fairfax County, Fairfax City, and Falls Church City.

3.3 Study Cohort

This study will focus on single female household heads, ages eighteen through forty. The reason for this is directly related to the characteristics of the "typical" welfare household. AFDC, now TANF, recipients have traditionally been single female-headed households with little education. The Administration for Children and Families reports that female-headed households accounted for eighty-eight percent of AFDC caseloads in Fiscal Year 1995. In Virginia, female-headed households accounted for ninety-six percent of recipient households. Two-parent families accounted for only seven percent of recipients in the United States and only one and one-half

percent in Virginia in May of 1997 (AFC). Finally, the Administration for Children and Families reports that the bulk, eighty-six percent, of women on welfare in 1995 were between the ages of eighteen and forty. In Virginia, this same age cohort represents eighty-nine percent of female recipients. Given this data on age, sex, and marital status it should be quite easy to see why single women, ages eighteen to forty were chosen as the unit of analysis for this study.

This cohort of recipients is especially important given the fact that fifty-five percent of children who live in a female-headed household are considered poor, five times the rate of poverty among children living in all other families (Harris, p. 318). Blank contends that the rise in single-parent households has been the direct cause of the rise in children's poverty rates (1995, p. 57).

3.4 Regional Economic Indicators

A basic introduction to and comparison of the two areas, Northern and Southwest Virginia, is presented. Population growth is a particularly good indicator of economic health and robustness. Table 3-1 presents population growth figures.

Table 3 - 1: Population Statistics

Region	1989	1994	% Change
Northern Virginia	828,800	911,500	+10.0
Dickenson	17,900	17,700	-1.1
Lee	24,800	24,400	-1.6
Scott	23,400	23,200	-.9
Wise and Norton	44,400	44,100	-.7
Bland	6,500	6,800	+4.6%
Grayson	16,300	16,100	-1.2%
Smyth	32,500	33,000	+1.5%
Wythe	25,400	26,300	+3.5%
Carroll & Galax	33,300	34,200	+2.7%
Wash. & Bristol	64,500	65,700	+1.9%

Northern Virginia has shown steady growth over the past several years. The jurisdictions of Fairfax County, Fairfax City, and Falls Church (referred to here after as Northern Virginia) have grown from a population of 828,800 persons in 1989 to 911,500 persons in 1994, an almost ten

percent increase in population. The population of Southwest Virginia, on the other hand, has remained stagnant and some areas have lost populations. Dickenson County had a population of 17,900 in 1989 and 17,700 in 1994. The other counties in PUMA 03200 followed a similar pattern. PUMA 00200 experienced positive, but minimal growth in its population.

Average income and transfers also differ between the areas. Average per capita personal income in Northern Virginia was $33,529 in 1994. In Southwest Virginia, average per capita income ranged from $13,541 in Bland County to $17,376 in Wise County and the City of Norton. On average, the highest per capita income in Southwest Virginia is just fifty-one percent of the per capita income in Northern Virginia.

Table 3 - 2: Per Capita Personal Income, 1994

Region	Per capital personal income, 1994
Fairfax Co. and City, and Falls Church	$33,529
Lee County	$13,552
Dickenson County	$14,353
Wise County and Norton	$17,376
Scott County	$14,424
Bland County	$13,541
Grayson County	$14,765
Smyth County	$15,659
Wythe County	$15,926
Carroll County and Galax	$14,972
Washington County and Bristol	$17,232

What about transfer payments in the two regions? This may be an important indicator of labor market robustness and an indicator of the types of populations in the two regions. Average per capita transfer payments in 1994 for Northern Virginia were $3,084. Average per capita income maintenance was $94 and per capita unemployment insurance was $18. In the category of per capita retirement (and other), transfers were $2972 in 1994. In Southwest Virginia, Lee County per capita transfer payments were $4,561 in 1994, about one-third more than in Northern Virginia. Unemployment insurance was much higher at $99 per capita, and retirement transfers were also higher at $3,767 per capita. Wise County and Norton had even larger total transfer payments and income maintenance transfers are almost six times higher per capita than is the case in Northern Virginia. Hoppe and Ghelfi have studied income transfers and found that Appalachian Virginia is one of the areas where transfers represented one of the highest shares of income in the country. They conclude that "high-share" regions are dependant on retirement and

disability income because "earnings per job are generally low" and because older persons make up a larger proportion of the population than in most regions (p. 23).

Indeed, Southwest Virginia has an older population than does Northern Virginia. Table 3-3 illustrates this fact. Over one quarter of the population living in Southwest Virginia is age fifty-six and older compared to almost fourteen percent in Northern Virginia.

Table 3 - 3: Percent of Population in each Age Cohort

Age Group	Southwest VA	Northern VA
0-17	23.5%	24.8%
18-25	10.7%	11.3%
26-40	22.0%	28.2%
41-55	18.3%	22.1%
56-90	25.5%	13.6%

If the age groups are broken down even further, one finds that the percent of persons who are sixty-five or older in Southwest Virginia (16.3%) is over twice that of those persons in Northern Virginia (6.9%). Person age sixty-five and older are a growing percent of the population in most non-metropolitan areas in the United States (Hoppe, p. 22). This is due to a combination of older persons moving to non-metropolitan areas to retire, and the out migration of younger people to universities and jobs in more metropolitan areas.

Employment, especially for this study, is an important indicator of the health of the two regional economies and the respective labor markets. The total number of persons employed, both full and part-time, in Northern Virginia was 543,179 in 1989 and 574,156 in 1994. This means that sixty-six percent of the population was working in 1989 and sixty-two percent in 1994. The counties of Southwest Virginia show a wide variation. In Dickenson, only twenty-eight percent of the population was working in 1994. Scott County employment was slightly higher, with thirty-three percent of the population working. In contrast, sixty percent of the population in Washington County and Bristol were employed. One cannot make any conclusions simply by looking at these statistics. The differences in employment could be due to several reasons: a higher population of retirees in Southwest Virginia; a decreased need, real or perceived, for families to have dual incomes; an inadequate demand for labor (thus unemployment and underemployment); or few jobs which pay more than the reservation wage (particularly in the case of women with children).

Although all of the factors above are important, the unemployment rate might be an important indicator whether or not welfare recipients will be able to find any job, regardless of one's reservation wage. It is certainly the most important indicator of labor demand (although, as

discussed earlier, there still may be a poor fit between skills and job openings). The unemployment rates in the two regions are very different.

Table 3 - 4: Unemployment Rates of Individual Counties and Cities

Region	Unemployment Rate	Region	Unemployment Rate
Fairfax County	1.3%	Bland County	4%
Fairfax City	0.7%	Grayson County	6.8%
Falls Church City	1.9%	Smyth County	5.7%
Dickenson County	15.1%	Wythe County	3.2%
Lee County	6.5%	Carrol County	7.5%
Scott County	8.0%	Galax City	7%
Wise County	9.1%	Bristol City	3.6%
Norton City	5.9%	Washington County	3.8%

Source: www.virginia.edu/~cpserv/vastat.html

Statistics from the Virginia Employment Commission illustrate this difference with unemployment rates from April of 1998. Fairfax County had an unemployment rate of just 1.3%. In Southwest Virginia, the closest county was Wythe with a rate of 3.2%; two times that of Fairfax. Dickenson County came in last with a 15.1% unemployment rate, almost twelve times the Fairfax rate. A crude average of Southwest Virginian unemployment rate is 6.63%, over five times the average rate in Northern Virginia. It is important to note that during more "normal" economic times, these rates are much higher.

3.5 Cohort Characteristics

Now that we have a general idea as to the broad-based characteristics of the two regions, we need to delve deeper and take a look at our target population: female household heads, ages eighteen to forty. Again, we see a large difference with regard to household income. For Southwest Virginia, the cohort of the population that fits these parameters amounts to 861 personal records in the Census of Population and Housing for 1990. There are 3,290 records for the Northern Virginia PUMA. Just over twenty-five percent of this cohort living in Southwest Virginia has a household income of $7,500 or less. This is significant given the fact that the United States Poverty Guidelines used to determine eligibility for income assistance use $7,890 as a benchmark for a household of one person. The guidelines set incomes of $10,500, $13,300,

and $16,050 for households of two, three and four persons respectively. Fifty percent of these women in Southwest Virginia have a household income of $17,766 or less. Although all of the households do not have four persons, this is interesting nonetheless, especially when comparing these numbers to the same population in Northern Virginia. There, only four percent of the women make $7,500 or less, and the fifty-percent benchmark is not reached until household income is $55,695. This is over three times the household income of $17,766. It appears that regional household income differences hold for female-headed households as well as for all families. In fact, a larger proportion of single women (age eighteen to forty) fall below the poverty level than when compared with the general population. Furthermore, the observed regional differences remain even when just looking at single women. Single women, with and without children, make more money in Northern Virginia. Table 3-5 illustrates this fact.

Table 3 - 5: Level of Household Income, Total Population Compared to Study Cohort

Percent of Poverty Level	Southwest Virginia		Northern Virginia	
	All Persons	Single Women	All Persons	Single Women
50%	9.7%	23.9%	3.4%	6.0%
100%	21.8%	35.0%	5.3%	9.9%
125%	28.8%	41.3%	6.6%	11.5%
150%	35.2%	47.4%	7.7%	13.1%

It is important to point out that the number of single women living below the poverty line is higher than the number of persons living below the poverty line in the entire population, even in Northern Virginia.

Table 3 - 6 takes account of the number of children a woman has when looking at their household income. The more children a woman has, the more likely she is to fall below the poverty level.

Table 3 - 6: Percent of Cohort Living at or Below Poverty Level

Persons in Household	Southwest Virginia	Northern Virginia
Single person	28.4%	8.8%
with one child	32.2%	9%
with two children	47.8%	13%
with three children	83.9%	27%

Several other comparisons may shed light on the differences in household income of single women ages eighteen to forty in the two regions. First, the percentage of the cohort that is divorced is twice as high (twenty-seven percent as compared with fourteen) in Southwest Virginia. Women in Northern Virginia are more likely to never have been married. The popular assumption that divorce impoverishes women seems to ring true here. This may, in part, be due to the fact that women may have given up a career and/or an education when getting married and have no way of supporting themselves after a divorce. Also, they are more likely to have custody of children, which a single woman is less likely to have in the first place. An interesting question for further study may be whether those women who receive TANF benefits are more likely to have been divorced or simply conceived children out of wedlock. It is certainly a popular notion, which the public and politicians tend to hold, that welfare mothers usually have children out of wedlock.

A look at the number and ages of children that are in these women's household may shed some light on their ability to accept employment**.** Ninety percent of women in Northern Virginia have no children. This is compared to almost seventy-five percent in Southwest Virginia. Those women having children six and under in Southwest Virginia amounts to seven and one-half percent, while only three percent of the women in Northern Virginia do.

Women are much more likely to have never worked if they live in Southwest Virginia. The difference here between regions is much greater than would be explainable by the differences in the number and age of children a woman has. Only three percent of the women in Northern Virginia indicated having never worked, while sixteen percent of the cohort in all of Southwest Virginia had never worked. It is important to bear in mind here that these are single women, not married ones, who therefore are not relying on husbands for income.

Those women who were never married but had at least one child represented almost eight percent of the entire study cohort (divorced and never married) in Southwest Virginia. In

Northern Virginia, four and one-half percent of the cohort are women who have never married with at least one child. Table 3 - 7 shows that of those women who have never been married in Southwest Virginia, eleven percent had children. In Northern Virginia this group represented just over five percent of women who had never married.

Table 3 - 7: Number of Children by Marital Status

	Southwest Virginia		Northern Virginia	
Children	Never Married	Widowed/Divorced	Never Married	Widowed/Divorced
Under 6	6.1%	11.2%	2.7%	6.7%
6-17 yrs.	3.3%	37.5%	1.8%	26.3%
Both	1.8%	9.5%	0.6%	5.3%
None	88.8%	41.8%	94.8%	61.7%

The census data contains no date on AFDC receipt by a household, so we cannot find out which observations are single mothers on welfare. But, we can see if more unemployed women have children. Table 3 - 8 compares marital status and labor force status of those women who have children in the two regions.

Table 3 - 8: Labor Force Status by Marital Status of Women with Children

	Southwest Virginia	Northern Virginia
Never married, employed	11.9%	32.7%
Never married, unemployed	5%	1.2%
Never married, not in labor force	14.2%	8.6%
Divorced/Widowed, employed	34.4%	53.4%
Divorced/Widowed, unemployed	6.9%	1.2%
Divorced/Widowed, not in labor force	27.5%	2.9%

The labor force status of the cohort in general is fairly predictable. Since Southwest Virginia tends to have structural unemployment, even women who are single tend to simply stay out of the labor force. There is also a much higher unemployment rate for women in Southwest Virginia. In fact, the rate is even greater than in the general population even slightly so for Northern Virginia.

Table 3 - 9: Labor Force Status of All Women in Cohort

Status	PUMA 03200[6]	Southwest Virginia	Northern Virginia
Employed	45.5%	55.3%	84.3%
Unemployed	11.2%	7.8%	2.3%
Not in labor force	43.3%	36.9%	13.5%

Now that we have looked at poverty levels and labor force status these indicators can be combined to paint a better picture of the earnings potential of those who work in the two regions and how this may effect a woman's decision to work. An important question to answer is whether women who work fair better in one region or the other. Table 3 - 10 looks only at women who are employed in the two regions to compare earnings to the poverty level. The table also breaks PUMA 03200 out from the rest of Southwest Virginia because counties in this region seem to have more women who are working but still live below the poverty level. For instance, thirty-five percent of our cohort in PUMA 03200 who have a job still live at or below the poverty level compared to under ten percent in Northern Virginia. This would seem to indicate that women in Northern Virginia have greater earning potential once they obtain employment.

Table 3 - 10: Cumulative Percent of Working Women Living at or below Poverty Level

Percent of Poverty Level	PUMA 03200	Southwest Virginia	Northern Virginia
100%	35.1%	19%	9.7%
150%	49.7%	33.4%	12.8%
200%	62%	46.8%	17.9%

It would appear that women in Northern Virginia might have a greater chance of leaving poverty through work. This may in fact lead some women in Southwest Virginia to make the choice not to work.

Differences in educational attainment are perhaps the most important indicator of earning potential. The differences between females household heads in Southwest Virginia and those in Northern Virginia are striking in this regard, and may explain a portion of the difference in household income, even for those women who work.

[6] PUMA 03200 is a subsection of Southwest Virginia that is made up of Scott, Dickenson, Lee, and Wise Counties and the City of Norton. It is included in some of the following tables because this section of Southwest Virginia illustrates an even starker difference in descriptive statistics between metro and non-metro regions and the probability of successful welfare reform.

Table 3 - 11: Educational Attainment

Level of Education	Southwest Virginia	Northern Virginia
Less than high school degree	25.4%	10.1%
High school degree	33.2%	17%
Some college, no degree	26.9%	30.2%
Associate degree	7.1%	6.1%
Bachelor's degree	6.4%	29.4%
Master's degree	.7%	5.8%
Professional degree	0.2%	1.1%
Doctorate degree	--	0.3%

In Southwest Virginia, sixty-five percent of single female household heads had a high school degree or less and only six and one-half percent had a bachelor's degree or more. A large portion of respondents had some college courses, but no degree, even at the associate's level (twenty-six percent). Female household heads in Northern Virginia, on the other hand, are extremely well educated by comparison. Only thirty-seven percent of the cohort had a high school degree or less. Over thirty percent of the women had some college courses, but no degree, and almost thirty percent had a bachelor's degree. Seven percent of the population had a graduate degree. One caveat to take note of is that not all individuals in the sample have attained their eventual highest level of education. An eighteen-year old can not have a college degree. But given the fact that the age cohorts (18-25) are almost identical in both regions, the comparison is still a valid illustration of the regional disparity in educational attainment. Both regions might have a high proportion of college graduates if one looked at older women. But, the educational attainment of women at age eighteen is important given the fact that many will be in the labor market, and not be going on for more education.

Table 3 - 12: Educational Attainment, (25-40 yrs)

Level of Education	Southwest Virginia	Northern Virginia
High School or less	59.3%	21.4%
Some college or associate's	28.8%	30%
Bachelor's degree	10.3%	36.4%
Graduate/Professional Degree	1.7% (no PHDs)	12.1%

Race and age do not seem to play a big part in any differences one may discern in earning power. In these two instances, the populations are quite similar. Both regions have roughly fifty percent of the population age eighteen to twenty-five. White non-Hispanic women make up eighty percent of the female household heads living in Northern Virginia. In Southwest Virginia, ninety-four and one-half percent of female household holds are white non-Hispanic. Furthermore, differences in earnings due to racial discrimination have been shown to be more prevalent among males. Black and white women have similar earnings in all categories of occupations (Blank 1995, p. 43).

3.6 Summary and Implications

Generally, the characteristics of the women in the two regions are very similar to what the literature describes as differences between metropolitan and non-metropolitan areas. Southwest Virginia is an area with low population growth and high unemployment rates. Persons living there tend to have lower incomes and a smaller proportion of the population is in the labor market at any given time. This tends to indicate that Northern Virginia is a more dynamic and growing economy with more job opportunities.

These differences carry over when we compare our cohort in the two regions. Single women, particularly single women with children, are much more likely to live below the poverty line in Southwest Virginia. This difference is evident even when comparing only working women: nineteen percent of working, single women still live at or below the poverty level in Southwest Virginia. Women in Southwest Virginia are also more likely to have never had any contact with the labor market and are much less educated.

These differences tend to indicate that women in Southwest Virginia will be less likely to find jobs and will earn a lower wage when they are employed. While cost of living differences may make up for some of the difference in wage rates, welfare benefits are not determined by this cost of living difference and the fact remains that more women live below the poverty level in Southwest Virginia, a standard of living that is not acceptable no matter where one lives. Finally, as mentioned in the literature review, many items may cost more in non-metropolitan areas, thus closing the gap in the cost of living. Above and beyond this, the difference in income maintenance transfers outlined above indicates that the cost of living differences between the two regions do not make up for the differences in average wages.

Chapter 4: Model

4.1 Chapter Outline

This chapter outlines the empirical model developed to analyze the labor supply of female headed households. The explanatory variables and their effects on the model are described and hypothesized.

4.2 Model Justification

In this study, we will assume that the reservation wage is still a factor for single female household heads, although it may be shown that the reservation wage is very low, or non-binding, for many single females. Further, there may be variables that influence the reservation wage that we do not observe and that were not described in the literature review. Sources of unearned income is a major one. Sources may be friends and family or participation in a welfare program. One does not directly observe the receipt of TANF benefits in the census data, so we can not measure this effect, if any. The receipt of TANF benefits may act to raise a reservation wage, but there is no evidence that without benefits these women would have a reservation wage equal to zero. Even if TANF benefits were to no longer function this way (one of the goals of reform) because of time limits and work requirements, women may still have family members to rely on or ways to make small amounts of money and may still have a reservation wage.

The reservation wage is not observable and is not measurable using labor market data. This makes it difficult to measure the probability of employment and the potential wages a TANF recipient could hope to earn. Because the earnings are only observed conditional on finding a job, one must use a regression model with a censored dependant variable to develop consistent estimates of potential earnings. The entire density function of potential wages is not visible because observations below the reservation wage are not observed. As a result we can not infer her potential wage by examining the current wage distribution. But, we do observe the fact that reservation wage is above market wage.

The inability to observe the market wage for non-labor market participants leads to selection bias. If one simply estimates potential wages using the sample of employed women it is likely that potential wages of unemployed women will be overestimated, and thus biased. "If one estimates a wage equation using samples of working women, biases result because the same sets

of variables that determine wages enter in as criterion for sample eligibility. The estimated wage function confounds the true behavioral wage function with the rules for sample inclusion" (Smith, p. 7). A simple example of this phenomenon might be a study on the effects of education on wage potential. We can not simply impute the observed wages of college graduates onto those persons who do not have a degree to see what these people would earn if they had a college education. This is because those people who went to college may already have characteristics that enable them to earn higher wages. The unobservable characteristics that led people to choose not to enter college may also make them less able to earn high wages. In this study, many factors for which we do not have data, including the health of the woman, drug abuse, and depression, effect a woman's reservation wage and participation rate, which in turn will effect her wage offer. While a woman may have the same education level (a large determinant of market wage) they may not be able to earn the same wage in the market because of these factors. But, factors for which we do have data also have a significant influence on the reservation and market wages. These variables will be introduced in the next section. The selection bias outlined above is important because it has been determined that if one does not control for this bias and simply estimates wage offers by a Ordinary Least Squares procedure the mean wage offer may be overestimated by as much as twenty percent.

The female labor supply model developed by Heckman (1974) is applicable to the issue of how to estimate wage offer and reservation wage distributions of non-working women. Until Heckman developed his model it was typical to simply estimate a wage function for a sub-sample of working women and impute these wages on non-working women. Heckman produced one of the first models that integrated decisions about wages and participation into the same model.

4.3 Empirical Model

An empirical model that accounts for the observable relationship between market and reservation wages is specified. The model is based on Heckman's model of female labor supply (1974). Market and reservation wage equations can be written as:

$\ln Y_{1i} = B_{1i}X_{1i} + U_{1i}$ (Market Wage)

$\ln Y_{2i} = B_{2i}X_{2i} + U_{2i}$ (Reservation Wage)

And:

$Y_i = Y_{1i}$ if $Y_{1i} > Y_{2i}$

$Y_i = 0$ if $Y_{1i} < Y_{2i}$

The variables X_{1i} and X_{2i} are vectors of exogenous variables that influence one's market wage and reservation wage, respectively. U_{1i} and U_{2i} are random disturbances assumed to have a bivariate normal distribution. They are assumed to be independent of the Xs. The dependent variable represents the market wage, but we only have observations for the population that is working. Thus, Y_{1i} is the censored dependent variable, since market wage is unobserved if it falls below the reservation wage. We observe a wage of zero for those who are not working, even though they may be able to find a market wage above zero but still below their reservation wage. Further, we do not observe the reservation wage, Y_{2i}, and thus the point where the distribution is truncated. We have an unobserved threshold.

We can, however, define a dummy, or dichotomous variable, and observe:

$I_i = 1$ if $Y_{1i} > Y_{2i}$ (Participation)

$I_i = 0$ if $Y_{1i} < Y_{2i}$ (Non-participation)

We observe that a woman is employed if:

$B_1X_{1i} + U_{1i} > B_2X_{2i} + U_{2i}$

$B_1X_{1i} - B_2X_{2i} > U_{2i} - U_{1I}$

So, the probability of being employed,

$$P\left(\frac{B_1X_{1i} - B_2X_{2i}}{\sigma}\right) = \Phi$$

where $\sigma^2 = Var(U_{2i} - U_{1i})$.

So, the probability of unemployment is 1-Φ. This probability function will be used with all observations, employed and unemployed women, to predict employment status. Second, we must establish an estimated wage. The joint distribution function for the market wage and reservation wage is

$f(U_{1i}, U_{2i})$

So, the marginal distribution of wages is then

$$\int_{-\infty}^{Y_i - B_2X_{2i}} f(Y_i - B_1X_{1i}, U_{2i})dU_{2i}$$

Notice that this limit imposes the condition that

$Y_i > B_2X_{2i} + U_{2i}$

meaning that the observed market wage is greater than the reservation wage. So, for this function the associated likelihood function then becomes:

$$L(B_1, B_2, \sigma_1^2, \sigma_2^2, \sigma_{12}) = \prod_i \left(\int_{-\infty}^{g_{2i}} (g_{1i}, U_{2i})dU_{2i}\right)^{I_i} (1-\Phi)^{1-I_i}$$

where

$g_{1i} = y_{1i} - B_{1i}X_{1i}$

$g_{2i} = y_{2i} - B_{2i}X_{2i}$

The two-stage method offered by Heckman begins by obtaining the expected value of the residuals of a probit equation for labor market participation. This is used to form an inverse mills ratio. The inverse mills ratio is put into the wage equation as a left hand side variable. The wage equation is then estimated by ordinary least squares.[7] As such, the likelihood equation outlined above is not actually estimated, instead the two-stage consistent equivalent below is estimated:

$E(Y_{1i} \mid I_i = 1) = B'_1X_{1i} - \sigma_{1u}(\phi_i / \Phi_i)$.

Unlike estimation by Ordinary Least Squares, the two-stage procedure produces consistent estimates of the wage equation parameters. Parameter estimates via this method are the same as Maximum Likelihood estimates, but are slightly less efficient.

For this model, there must be at least one of the following conditions for identification:

1. $\sigma_{12} = 0$.
2. At least one variable must be present in X_1 that is not in X_2, or there is at least one independent variable in the market wage function that is not in the reservation wage function.

In this case, the model specification satisfies the second identification condition. The market wage function is defined as:

$\ln Y_{1i} = B_{1i}X_{1i} + U_{1i}$

where X_1 = Age, Single, Under, Over, Some, College, Nminor.

The reservation wage is defined as:

$\ln Y_{2I} = B_{2i}X_{2I} + U_{2I}$

where X_2 = Single, Under, Over, Some, College, Nminor, Car.

Age is specified in the wage equation but not in the reservation wage equation.

4.4 Model Variables

The explanatory variables specified in the wage and reservation wage equations are described below and their effects on the dependent variables are hypothesized. The wage equation includes proxies for labor market experience (Age, Single, Under, Over), education (Some, College), and race (Nminor). The reservation wage includes proxies for the household

[7] An excellent review and explanation of Heckman's model can be found in Maddala, Chapter 8.

opportunity cost of time (Single, Under, Over), education (Some, College), race (Nminor), and access to transportation (Car).

AGE

AGE is included as a loose proxy of experience. It is only included in the wage equation, because it should not effect the reservation wage. In the wage equation, AGE is used as a loose indicator of experience. While age minus years of education is often used to represent experience in men, this is less likely to work well with women. Those members of the cohort that have been married may not have worked during that period, and even single women may have chosen to stay home with children and rely on other family members for income. Women on welfare pose a particular problem because they most likely have been unemployed for one or more periods of time. Finally, the one variable in the census data that would have been an appropriate measure of recent experience, year last worked, would have made the probit inoperable. The parameter estimate of this variable in the wage equation is hypothesized to be positive because as age increases a woman's experience should as well.

SINGLE

SINGLE is also used as a proxy for experience in the wage equation because, never having been married, a woman is more likely to have a continuous stream of work experience. Single is included in the reservation wage equation to account for factors besides the presence of children that raise the cost of labor market participation. Additionally, it is simply an interesting research question to see whether or not the distinction between single, never married and single, divorced has an effect on the model. The parameter estimate is hypothesized to be positive in both the wage equation and the reservation wage equation. In the wage equation the effect should be positive because she is more likely to have a continuous stream of experience.

UNDER

UNDER is a dummy variable that becomes a one if the woman has a child who is under the age of six. This variable is included in all of the equations because a child under six is a barrier to participation. A child under the age of six raises the reservation wage because a woman must pay for childcare if she takes a job. Also, there is the psychological cost of leaving one's child to enter the labor market. In the wage equation, a child under six in the home may lower a wage offer if the woman stayed home at all after the child was born. The parameter estimate of this variable is hypothesized to be negative for both the wage equation and the reservation wage equation.

OVER

OVER is a dummy variable that becomes a one if the woman has a child who is six or older. The distinction between UNDER and OVER is important because of child-care issues. Essentially, once a child is six they are in school full-time and school functions as a day-care system for the woman. The reservation wage might not be as high for a woman when her children reach school age given the fact that childcare poses less of a problem. Again, one must not overlook the psychological aspects that will still raise the reservation wage, just maybe not to the same level as a child under six. Thus, we should see that the barrier to participation would fall some in comparison to women with children under six. By contrast, a child age six or over might actually have a greater negative impact on wages than a child under six. This would happen because the working woman with the child age six or over may have spent more time at home and sacrificed work experience. Thus, UNDER and OVER are included in the wage equation because although employers do not offer wages based on the number of children and applicant has, the variables may act as a proxy for experience if a woman has taken time off and thus lowered her years of experience. The parameter estimate of the variable is hypothesized to be negative for both the wage equation and the reservation wage equation.

SOME

SOME is a dummy variable that takes the value of one if the woman has at least taken courses at the community college level. She does not have to have an associate's degree. In this way, the baseline for education becomes a High School diploma, and is included in the constant term. Education effects the wage and reservation wage equation. The parameter estimate of this variable is hypothesized to be positive for both the wage equation and the reservation wage. It will effect her market wage because employers will offer a higher wage for someone with more education. It will effect her reservation wage because she will value her time more and expect a higher wage offer.

COLLEGE

COLLEGE is a dummy variable which becomes one if the woman has a bachelor's degree or higher level of education. The parameter estimate is hypothesized to be positive for both the wage equation and the reservation wage equation for the same reasons given under the SOME variable description.

NMINOR

NMINOR is a dummy variable that takes the value of one if someone is white, non-Hispanic. Race may lower a woman's potential income due to discrimination. Residential and hiring discrimination may also raise the costs of a job search for a minority and thus raise her

reservation wage. The parameter estimate for this variable is hypothesized to be positive in the wage equation. The parameter estimate for NMINOR is hypothesized to be negative in the reservation wage equation.

CAR

CAR is a dummy variable that takes the value of one if the household has one or more vehicles. CAR is used only in the estimation of the reservation wage because it should only determine a woman's reservation wage, not what someone will pay her. If a woman has access to a car then her search costs and costs of going to work are lower, and therefore her reservation wage is lower.

Table 4-1 describes each variable in the model. Means and the standard deviations of each variable in both equations are presented for both regions. The means and standard deviations presented are only for single females, ages eighteen to forty, as this is the group of observations to be estimated. The women in each region are similar in age, but women in Northern Virginia are more likely to be single and have fewer children. Given the means of this group of variables, which act as a proxy for experience, it is predicted that wages will be higher in Northern Virginia due to greater labor market experience and a higher overall level of education. The reservation wage is predicted to be higher in Southwest Virginia because the household opportunity cost of time will be much higher for the entire group of women given the higher incidence of children in the home in Southwest Virginia. The reservation wage is also predicted to be higher in the Southwest because fewer women have access to cars, thus raising the cost of accepting a job offer.

Table 4 - 1: Model Variables

Variable	Description	Southwest		North	
		Mean	S.D.*	Mean	S.D.
Age	Age in years	26.14	6.997	26.58	6.276
Single	Dummy Value of 1 if woman has never been married	.703	.457	.845	.362
Under	Dummy Value of 1 if woman has a child under the age of six and he/she is present in household	.117	.322	.047	.211
Over	Dummy Value of 1 if woman has a child age six or older and he/she is present in household	.178	.382	.070	.255
Some	Dummy Value of 1 if woman has taken some college courses or has an Associate degree	.340	.474	.364	.481
College	Dummy Value of 1 if woman has a Bachelor's degree or higher degree	.073	.261	.366	.482
Nminor	Dummy Value of 1 if observation is a non-Hispanic white woman	.943	.231	.750	.433
Car	Dummy Value of 1 if woman has access to one or more vehicles	.698	.459	.951	.216

*Standard Deviation

Chapter 5: Results of Model Estimation

5.1 Chapter Outline

This chapter presents the results of estimation of the empirical model. This includes: a reduced form probit and predictions of labor force participation; the estimated wage equation and predicted wages for each region; and the estimated reservation wage equation and reservation wages for various groups in each region.

5.2 Labor Force Participation

The reduced form probit is used to predict labor force participation. The statistical package, Limdep, was used to determine the factors most likely to effect participation in the two different regions. The probit results provide a measure of the net effects of the wage equation and reservation wage equations on labor market participation. Results are presented in Table 5-1.

Table 5 - 1 Probit Results (Maximum Likelihood Estimates) for Southwest Virginia

Number of observations	861
Log likelihood	-472.8456
Restricted log likelihood	-527.3866
Chi-squared	109.0820
Significance level	0.0000

Variable (SW)	Coefficient	Standard Error	P [|Z| ≥ z]
Constant	-0.418975	0.38652	0.27838
AGE	0.007667	0.008949	0.39139
SINGLE	-.195829	0.14459	0.17563
UNDER	-0.467136	0.14632	0.00141
OVER	-0.358793	0.14790	0.01527
SOME	0.565468	0.10355	0.00000
COLLEGE	1.291490	0.28955	0.00001
CAR	0.516213	0.12455	0.00003
NMINOR	0.358560	0.20236	0.07641

Having a child under the age of six, having some college courses or a college degree, and having a car were all significant at the .01 level. Having a child age six or older also was a factor with a .05 level of significance. NMINOR is significant at ten percent. AGE, SINGLE, and the Constant term were not found to be significant variables.

The marginal effects of the variables, illustrated in Table 5-2, represent what the effect of a movement in one particular independent variable will be on the dependent variable--in this case participation--given the assumption that all other variables remain unchanged. One caveat to keep in mind when viewing this information is that these effects are evaluated at the means of each variable and as such do not necessarily provide a reasonable interpretation for binary variables. The results, combined with the initial results of the reduced form probit, are interesting nonetheless.

Table 5 - 2 Marginal Effects for Probit for Southwest Virginia

Variable	All Observations
Constant	-0.1408
AGE	0.0026
SINGLE	-0.0658
UNDER	-0.1569
OVER	-0.1205
SOME	0.1900
COLLEGE	0.4339
CAR	0.1734
NMINOR	0.1205

Having a child clearly lowers the chances a woman will work in Southwest Virginia. A child under six lowers the probability of participation by just over fifteen percent, and having one six or older lowers the probability of participation by twelve percent. It is interesting to note that the marginal effect (effect of the explanatory variable on participation holding all others constant) of children of both ages is so similar given the assumption that school functions as child-care once a child is six. Access to a car also has a positive effect on participation and raises the probability of participation by just over seventeen percent. Transportation is clearly an important determinant of participation in Southwest Virginia. The educational background of a woman in Southwest Virginia seems to stand out as the most important factor in determining participation.

If a woman has some college courses her probability of participation is raised by nineteen percent and if she has a bachelor's degree or higher she is forty-three percent more likely to participate.

The results of the probit for observations in Northern Virginia revealed that different explanatory variables were important for participation in this region.

Table 5 - 3 Probit Results (Maximum Likelihood Estimates) for Northern Virginia

Number of observations	3,290
Log-likelihood	-756.4136
Restricted log-likelihood	-859.3462
Chi-squared	205.8651
Significance level	0.0000

Variable	Coefficient	Standard Error	P [|Z| ≥ z]
Constant	-0.554966	0.29574	0.06059
AGE	0.032364	0.007382	0.00001
SINGLE	0.130225	0.12777	0.30812
UNDER	-0.163224	0.14298	0.25363
OVER	-0.111809	0.14813	0.45038
SOME	0.441458	0.080583	0.00000
COLLEGE	0.611061	0.098289	0.00000
CAR	0.448866	0.12674	0.00040
NMINOR	0.538288	0.73681	0.00000

A woman's age, her education level, access to a car and her race are all significant to the .01 level. Presence of children is not a significant factor in determining participation in the case of women in Northern Virginia. This result contradicts the hypothesis that having children would bear the most weight when women made labor market participation decisions. A woman's past history of marriage also had no significant effect.

Table 5 - 4 Marginal Effects for Probit for Northern Virginia

Variable	All observations
Constant	-0.0601
AGE	0.0035
SINGLE	0.0141
UNDER	-0.0177
OVER	-0.0121
SOME	0.0478
COLLEGE	0.0662
CAR	0.0486
NMINOR	0.0583

All of the significant variables seem to have a small, positive marginal effect. Although the variable Age was significant, its marginal effect on participation was positive but only four-tenths of a percent. Thus, an additional year of age raises the probability of participation by only four-tenths of a percent. Education had a small positive marginal effect, with some college courses raising the probability of participation by almost five percent and a bachelor's degree or higher raising the probability by just over six and one half percent. It is surprising that the difference between Southwest Virginia and Northern Virginia is so great here. Since there are more jobs that require more education in Northern Virginia one might think that education might play a larger role in the participation decision. On the other hand, one could argue that jobs are simply more plentiful in Northern Virginia including many service jobs that require little or no education. This difference in marginal effect may be because one observes offsetting wage and reservation wage influences. Having access to a car raises the probability of participation by five percent. Finally, the probability of participation is almost six percent higher for white, non-Hispanic women.

5.2 Potential Wages

The probit results were used in the second stage estimation of the wage equations for each region in Virginia.

Table 5 - 5 Sample Selection Model Results for Southwest Virginia

Lwage mean = 1.64045 s.d.= 0.6727

Variable	Coefficient	Standard Error	P[|Z| ≥ z]	Mean of X
Constant	0.966091	0.35987	0.00726	
AGE	0.031668	0.005837	0.00000	26.37
SINGLE	0.323225	0.091962	0.00044	0.7038
UNDER	0.318049	0.13176	0.01578	0.08153
OVER	0.025306	0.10625	0.81174	0.1564
SOME	-0.094551	0.10118	0.35005	0.3910
COLLEGE	0.255128	0.17988	0.15609	0.09983
NMINOR	-0.090529	0.15462	0.55821	0.9567
LAMBDA	-0.718007	0.30056	0.01690	0.4455

The variables Age and Single are significant to the .01 level. Age has a positive effect and so does never having been married. The effect was as hypothesized because both Age and Single are proxies for experience. The more experience a woman has, the higher her market age potential. Having a child under the age of six is significant to the .05 level, and has a positive effect on the market wage. The effect of a child turns out to have the opposite effect of what was hypothesized. One explanation for this result may be that if a woman is working while she has a child under six then she probably did not choose to stay home long after she gave birth. Therefore, her wage has not been effected by a gap in her work experience. Community ties may also be stronger in non-metropolitan regions with the result that employers may actually pay a woman with a small child a higher wage. Lambda, the selectivity correction coefficient, was particularly high and was found to be significant at the .05 level. The variable corrects the earnings estimates for the strong correlation between the error term in the probit equation and the earnings equation. In other words, this may seem to indicate that much more selectivity bias exists in Southwest Virginia than in Northern Virginia. The variables Over, Some, College and Nminor were not found to be significant.

From these results potential wages were determined for different groups within the Southwest region. First, "working women" includes all those women in the cohort who were working in 1989. Second, "all women" includes every observation in our cohort. Third, "poor women with children" represents all women in the study cohort who live at or below the poverty level and have at least one child. Fourth, the "Average" TANF recipient was constructed using

Virginia and Fairfax County literature to construct an average. The typical recipient was outlined in Chapter two.

Means of each cohort were used, with the estimated coefficients, to produce a predicted average hourly wage for each group. The "Average TANF Recipient" was calculated as being a non-minority and divorced. Results are presented in Table 5-6.

Table 5 - 6 Potential Wages in Southwest Virginia

Type of Worker	Hourly Wage
Working women	$7.17
All women	$7.13
Poor women with children	$8.14
"Average" TANF recipient	$8.48

This approach to calculating potential wages gives rise to an unexpected result whereby the Average TANF recipient is shown to make a higher wage than does a woman in the workforce in 1989. This may be the case for two reasons. First, the wages are estimated using parameter estimates for the entire population, both working and non-working. Second, the Average TANF recipient's wages are estimated using integers, instead of means, to represent a variable's value. All others are calculated using means.

It is also interesting to note here that the predicted wages falls under the "Living Wage" calculated by Zimmerman and Garkovich mentioned earlier. The average wage for all women is $7.13, which is higher than the wage of $6.66 needed to reach the poverty threshold for a single woman with two children. But, it is under the average hourly wage of $9.85 that was calculated as a "Living Wage". Obviously, all of these single woman do not have children, but for those who do the predicted wage puts them just over the poverty level.

Different variables proved to be important in the wage equation for Northern Virginia. AGE, OVER, SOME, and COLLEGE are all significant to the .01 level. A woman's age and her education level positively effect her wage. Age was hypothesized to have a positive effect because of its direct relation to experience. Education was also expected to have a positive effect given the demand for an educated workforce in Northern Virginia. Having a child age six or older negatively effects her wage. This may be due to a break in experience--an effect that was hypothesized. Lambda was not significant in the estimates for Northern Virginia.

Table 5 - 7 Sample Selection Model Results for Northern Virginia

Lwage mean = 2.21563 s.d. = 0.6166

Variable	Coefficient	Standard Error	P[|Z| ≥ z]	Mean of X
Constant	1.000634	0.14048	0.00000	
AGE	0.039128	0.002394	0.00000	26.77
SINGLE	-.038259	0.032391	0.23754	0.8423
UNDER	0.080520	0.050474	0.11065	0.04295
OVER	-0.111776	0.043443	0.01008	0.06852
SOME	0.144985	0.038241	0.00015	0.3689
COLLEGE	0.358517	0.043649	0.00000	0.3833
NMINOR	0.030857	0.039945	0.43983	0.7715
LAMBDA	-0.080301	0.24007	0.73801	0.1326

Potential wages were calculated for the region of Northern Virginia in the same manner as discussed for Southwest Virginia. The only difference is that the "Average TANF Recipient" was calculated to be a minority and never married, given the higher proportion of minorities in Northern Virginia and data from the Fairfax Works! program about who is the typical recipient. Results are presented in Table 5-8.

Table 5 - 8 Potential Wages in Northern Virginia

Type of Worker	Hourly Wage
Working women	$9.43
All women	$9.13
Poor women with children	$8.78
"Average" TANF recipient	$7.89

The predicted wages fall short again of the calculated "Living Wage" for non-metropolitan areas. Although in this case all groups are above the wage of $6.66 which puts them at the poverty level.

5.3 The Reservation Wage

The reservation wage equation was recovered using the previous results and the covariance matrix. This was possible because the system was just-identified as described when the empirical model was set up in Chapter Four.

Table 5 - 9 Recovered reservation wage equation (Southwest)

Variable	Coefficient	Standard Error	Level of Significance
Constant	2.698085	.915124	P = 0.01
SINGLE	1.132755	.429077	P = 0.01
UNDER	2.249273	.532505	P = 0.01
OVER	1.508382	.508303	P = 0.01
SOME	-2.43272	.359523	P = 0.01
COLLEGE	-5.08474	.655436	P = 0.01
CAR	-2.13428	.465742	P = 0.01
NMINOR	-1.57317	.728498	P = 0.05

The variables Single, Under and Over all raise the reservation wage. Predictably, having children raises the reservation wage, more so for younger children. This is because of the value a woman places on being home with her children and the problem she may have with finding child-care, especially for children under age six. Access to a car reduces a woman's reservation wage, as does a college education. Having a car available lowers the cost of taking a job, and thus the wage she requires to do so. The college factor may seem counterintuitive at first, because we would expect a woman with a college education to demand a higher wage. But, if a woman went to college she is more likely to have already made the decision to enter the labor force, and place more value on working than her counterpart who did not attend college. A white non-Hispanic woman has a lower reservation wage than a non-minority in Southwest Virginia. It is important to note that these results are subject to large swings as evidenced by the large standard errors of the coefficients.

The reservation wages were calculated the same way the wages were, using the four different groups described above.

Table 5 - 10 Reservation Wages in Southwest Virginia

Type of Worker	Reservation Wage
Working women	0.01
All women	0.01
Poor women with children	0.51
"Average" TANF Recipient	131.97

The "Average TANF Recipient" has a much larger reservation wage than any other group. In fact, no other calculated reservation wage can be considered binding since all wage offers will be above this reservation wage. The Average TANF Recipient, though, has a reservation wage that is higher than any wage offer will be. This woman has been calculated assuming she had been married at one time and that she is white non-Hispanic. This already reduces her reservation wage some, but is a good assumption for the population in Southwest Virginia. What other variables, then, could change and what effect would they have on the reservation wage? If we "give" this woman a car her reservation wage drops to $15.61, which is just fifteen percent of her original reservation wage. If we "give" her a college education (taking away the car) her reservation wage drops to $.07, a wage that is no longer binding, and similar to the rest of the population. In fact, if we simply "give" her some college courses her reservation wage becomes $5.15, a wage that she may be able to find in the labor market. If we take away the presence of children her reservation wage becomes $3.07. By providing child-care, some of this effect could presumably be reproduced, but given the fact that a woman also puts a value on spending time with her children above what child-care would cost, the result would not be quite as dramatic. In any case, one sees that by changing a woman's educational level, access to transportation, and access to child-care policies can effect her reservation wage, and thus her probability of accepting a job. Remember, she will accept a job if the market wage is above the reservation wage, so by lowering the reservation wage, more job offers become acceptable.

The same procedure was used to recover the reservation wage equation for the observations in Northern Virginia.

Table 5 - 11 Recovered reservation wage equation (North)

Variable	Coefficient	Standard Error	Level of Significance
Constant	1.676406	.142934	P = 0.01
SINGLE	-0.1964375	.07467729	P = 0.01
UNDER	0.279656	.119407	P = 0.05
OVER	0.0245	.107229	not significant
SOME	-0.39247	.062512	P = 0.01
COLLEGE	-0.38566	.063538	P = 0.01
CAR	-0.54722	.114969	P = 0.01
NMINOR	-0.34669	.057994	P = 0.01

Having children is the only factor that has a positive effect for the reservation wage in the North. Having children age six or older only raises the reservation wage by a small amount. The effect of children on the reservation wage is what was hypothesized. The value a woman places on staying home with her children raises here reservation wage, more so for younger children. If a woman has never been married her reservation wage is lower probably because she does not have income coming from alimony or child support. Again, like in Southwest Virginia, a woman's reservation wage is lowered if she has education past high school. She is more likely to place less value on staying home. Access to a car lowers the reservation wage as expected. A white non-Hispanic woman has a lower reservation wage than a minority.

Again, the parameter estimates above were used to produce calculations of the reservation wages of the different groups.

Table 5 - 12 Reservation Wages in Northern Virginia

Type of Worker	Reservation Wage
Working Women	0.44
All women	0.44
Poor women with children	1.65
"Average" TANF Recipient	5.95

The reservation wages for the North seem to behave as expected. If we take children away a woman's reservation wage falls to $4.39. If we "give" her some college courses the reservation wage falls to $4.02. If we give her a car it falls to $3.44. Finally, a college degree has the greatest effect lowering the reservation wage to $2.73.

5.4 Discussion of Results

The results above indicate that crucial differences between the two labor markets do exist. The difference in the results of the reservation wage equation is perhaps the most dramatic. The presence of children, perhaps generally thought of as the most important factor in participation, proves to be a significant factor in both metropolitan and non-metropolitan areas of Virginia. The presence of a child under six in the household raises the reservation wage by over two-hundred twenty-five percent in Southwest Virginia while the same child in Northern Virginia would raise the reservation wage by twenty-eight percent. This difference seems to indicate that there are fewer childcare options in Southwest Virginia. This could also mean that more value is placed on staying home with children in non-metropolitan communities as well. Access to a car was significant in both regions, but again the impact on reservation wages in Southwest Virginia was much greater. One reason for this difference may be that in Northern Virginia public transportation is more readily available and workers do not have to commute out of the area in order to work.

The reservation wages calculated for all four groups in both regions were not binding except in the case of the Average TANF recipient. In Southwest Virginia, the reservation wage was well above any possible wage offer. In Northern Virginia, on the other hand, the reservation wage will enter as a determining factor when a wage offer is given. In other words, the reservation wage will determine which, if any, job a TANF recipient will take. Data on the wages of former TANF recipients indicates that many wage offers will fall below the predicted reservation wage.

Surprisingly, education did not seem to be a significant factor in the market wage equation for the Southwest, but having never been married did effect one's wage. In the North, on the other hand, a college degree had a large effect, and past marital status was not significant. It would seem that experience has a larger effect on wages in the Southwest than in the North. This may be because jobs in the Southwest do not require the same education level to begin with. This may help in obtaining jobs, but as mentioned previously may harm future earnings. As would be expected, potential earnings in the North are higher than in the Southwest. The mean of potential earnings for all women in the cohort of the Southwest was seventy-eight percent of the same cohort in Northern Virginia.

Chapter 6: Conclusions and Policy Implications

As welfare reform begins in earnest--the two year time limits now taking effect--observers are hopeful and point to dropping caseloads for proof of successful welfare reform policy. This may be pre-mature, as a simple drop in caseloads is not indicative of a successful program outcome. Instead of focusing on numbers and dollars spent on programs this thesis looks at the effect of reforms on individuals. Specifically, what factors influence labor market participation for single females? What is a former welfare recipient's earning potential? Finally, what differences, if any, exist in the metropolitan and non-metropolitan labor markets in Virginia that may be important for reform outcomes? Through review of the literature, analysis of census data, and development of a labor supply model for single females it was found that differences do exist between metropolitan and non-metropolitan labor markets and the characteristics of the individuals who live in each market area. These differences suggest that it will be harder for women in Southwest Virginia to find jobs, obstacles to participation are greater, and potential earnings are lower. Although women in Northern Virginia are more likely to find work, jobs in both regions may also not pay a "living wage". As more and more recipients are forced off welfare the prospects for sustained employment and earnings gains are reduced. Those last to leave generally have fewer skills and may be more likely to face other problems such as depression, domestic violence, and alcoholism.

The prospects for labor market participation, among female household heads that are currently receiving TANF benefits, in non-metropolitan Virginia are poor. Barriers to participation are higher in Southwest Virginia and potential wages remain below those in Northern Virginia. Southwest Virginia has higher rates of unemployment, lower rates of female labor participation, and continued structural unemployment. Evidence from past welfare-to-work programs indicates that JOBS programs in non-metropolitan areas were not successful in finding employment for program participants and this thesis confirms that current welfare recipients will face differential barriers to productive employment in metropolitan and non-metropolitan areas.

Both the market wage and reservation wage determine a female's labor supply, and thus participation. First, the market wage a woman in Southwest Virginia can hope to earn is quite low, due in part to the types of jobs available and due to individual characteristics. These women were also more likely to have less contact with the labor market, thus less job experience. This was due, in part to the fact that single women in Southwest Virginia are twice as likely to have children as compared single women in Northern Virginia. Interestingly, education was not found

to be a significant factor in the determination of the wage in Southwest Virginia. It was significant in the case of Northern Virginia.

Second, the reservation wage of the typical TANF recipient was found to be much higher in Southwest Virginia. In fact, the reservation wage calculation for Southwest Virginia was so high that no wage offer would be above the reservation wage. In Northern Virginia, a typical TANF recipient also had a reservation wage that may be binding, depending on the wage offer. The presence of children in a household raised the reservation wage of women in both regions and access to a car and higher education lowered the reservation wage. The estimated effects were much higher in Southwest Virginia though. Women in Southwest Virginia tend to have characteristics that produce a higher reservation wage. A single woman in Southwest Virginia is likely to be much less educated. Only ten percent of this cohort had a college degree in 1989 while over thirty-six percent of the same cohort in Northern Virginia had a bachelor's degree or more education. They are much more likely to have children and less likely to have access to a car.

The net effect of the wage and reservation wage can be found in the participation outcome and measured with the probit that was undertaken in this thesis. Participation will occur when the market wage offer is higher than the reservation wage. It is clear from the analysis that the reservation wage variables had much larger effects on the probability of employment in Southwest Virginia. Thus, it can be concluded that women in Southwest Virginia face much larger obstacles to employment. Children had a large negative effect in Southwest Virginia and a much smaller one in Northern Virginia. Access to a car was found to raise participation in both regions, although again, there was a much greater effect in Southwest Virginia. What is interesting to note is that although education did not have much significance for wages in Southwest Virginia it did have the largest marginal effect on participation of any variables. This analysis has shown that indeed the reservation wage is still important for single women, especially in Southwest Virginia. Differences in the structure of the labor markets of metropolitan and non-metropolitan areas do exist and are an important determinant of the difference in participation rates. Policies to lower the reservation wage of women in Southwest Virginia would go a long way towards raising participation in this region.

Policies to lower the reservation wage include programs that provide access to child-care, transportation, and educational opportunities. This is particularly important given the fact that while this thesis has found that these variables are greater obstacles in Southwest Virginia, often non-metropolitan areas are excluded from these types of programs due to an economies of scale problem. While transportation programs will help to lower the reservation wage, this analysis

shows that access to a car will not lower the reservation wage enough if a women still is poorly educated and has children. Child-care programs also lower the reservation wage, but the magnitude of the result is open to debate. Providing child-care is not the same as taking the effect of having children out of a model. One must remember that the unmeasurable benefits for both mothers and children of a mother being at home with her children also affect the reservation wage. Child-care programs will probably only partially reduce the effect of children. Finally, a college education renders the reservation completely non-binding. Today, women must work, not go to school, to be eligible for welfare benefits. In light of the evidence on how a college education effects the reservation wage, this policy should be re-examined. In the long run, a college education seems to be the best way to induce participation. This may seem fruitless given the fact that jobs in Southwest Virginia often do not require higher degrees. But, a more educated workforce may be good for the economic development of the entire region, not just to the prospects for participation of one woman.

Unfortunately, welfare reform legislation was formed with one goal in mind: getting caseloads down to save money. Little attention has been paid to how people fare once they take a position. As the literature review illustrated, there is often little room for advancement and earnings gains for less-educated women. Earnings gains in non-metropolitan areas are especially small. The potential earnings calculated for Southwest and Northern Virginia indicate that former welfare recipients will not be able to earn a wage that brings them significantly above the poverty level. In fact, the potential wage of all single women in both wages that was calculated for this thesis fell below the estimated $9.85 an hour "living wage". This is cause for concern given the fact that we know former TANF recipients will fall in the lower portion of this wage distribution. Even lower estimates of the typical wage needed tend to be around $8.00 an hour, still out of range for most former recipients (Kalil etal, p. 16). In fact, the potential earnings estimated by this model are much higher than what is currently being reported by the state of Virginia. Average hourly wages in the Bristol/Galax region were reported to be $4.95 in 1997. In Northern Virginia the average hourly wage was reported to be $6.21. These wages make it particularly hard to deal with job expenses such as transportation and clothing, child-care and to buy health insurance. While legislation has provided for transitional Medicaid and day care benefits these benefits are for women who lose benefits for reasons other than increased earnings. Policymakers must make sure that former recipients who do have jobs that disqualify them from receiving benefits have access to programs that provide subsidized child-care, transportation, and healthcare. A long-term education policy would also make it possible for these women to work

their way out of poverty through job advancement. Little opportunity exists today for job advancement through experience.

Even if jobs are available in Northern Virginia not all people are moving off the rolls and even fewer are retaining their jobs. Former welfare recipients also are not earning the wages predicted by this model. Researchers at the Institute for Research on Poverty have brought attention to the fact that there are many variables which effect participation and wage rates that are much harder to measure than the ones seen in the female labor supply model used here. These factors range from depression and alcoholism to sick children and domestic violence to poor workplace skills and will effect both the wage and reservation wage equations. All of these factors seem to be more prevalent in the life of a welfare recipient. If one compares a recipient to a non-recipient with the exact same schooling and individual characteristics, former recipients tend to leave jobs at a much higher rate (Kalil etal, p. 3). The ability to hold a job becomes especially important given a recipients lifetime limitation to receive benefits and for the probability that they can become self-sufficient. The real test of welfare reform may be the ability to hold jobs, not to become employed. Even in good economic conditions we still see former recipients having trouble retaining employment (Deavers and Hattiangadi, p. 207).

Finally, as we see welfare rolls drop it will become increasingly less likely that those who are left will have the same success we witnessed at first. Those who left the rolls early were less likely to exhibit the characteristics listed above. "Once the more job ready recipients have found work, states will have to dig deeper into the caseload, where they will find a higher proportion of persons who are sick, addicted to alcohol and drugs, or functionally illiterate" (McMurrer, Sawhill, and Lerman, p. 4). It is also not evident that those who left the welfare rolls would not have also left in the absence of reform. Studies indicate that half of all recipients usually leave welfare programs within the first two years, some of them to jobs. States may be "taking credit for those who would have found jobs on their own" (Gueron 1987, p. 21).

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Appendix A

Table A: TANF Recipient Employment Results for Virginia localities

Area	% Employed	Six Months Out	Avg Monthly Earnings	Avg. Yearly Earnings
Fairfax & Falls Church	71.3%	53.0%	$847	$10,164
Bland	71.4%	40.0%	$708	$8,496
Carroll	75.0%	44.1%	$722	$8,664
Dickenson	42.9%	66.7%	$555	$6,660
Grayson	71.8%	59.8%	$714	$8,568
Lee	19.5%	100%	$642	$7,704
Scott	36.7%	0.0%	$788	$9,456
Smyth	66.7%	41.4%	$676	$8,112
Washington	70.8%	47.0%	$716	$8,592
Wise	36.4%	61.1%	$603	$7,236
Wythe	66.6%	44.6%	$687	$8,244
Bristol	77.9%	47.2%	$708	$8,496
Galax	65.9%	55.1%	$684	$8,208
Norton	45.8%	0.0%	$505	$6,060

VITA

Sarah M. Chinnis

Sarah M. Chinnis was born in Rochester, Michigan on February 5th, 1973. She grew up in Fairfax County, Virginia and graduated from South Lakes High School in 1990. She received a bachelor's degree in Political Science from McGill University in Montréal, Canada and a master's degree in International Affairs from The American University, School of International Service in Washington, D.C. In August of 1996, Sarah began her studies in the Department of Agricultural and Applied Economics at Virginia Tech as a graduate research assistant. She moved to Boston, Massachusetts after completing her course requirements and finished her research and thesis there.