Washington State
Institute for
Public Policy

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DEPRESSION IN WASHINGTON'S FEMALE TANF POPULATION: PREVALENCE, DSHS SCREENING, AND TREATMENT

Major depressive disorder (MDD) is a condition characterized by "extended periods of low mood, apathy, diminished energy, poor sleep and appetite, suicidality, loss of capacity to experience pleasure, feelings of worthlessness and similar symptoms."[1] MDD ranks third in the world among causes of disability.[2]

In the United States, the prevalence of current or lifetime MDD is estimated to be 6.6 percent and 16.2 percent, respectively.[3] Studies in several states have found higher rates of current depression among welfare recipients than those found in the general population.[4, 5, 6]

The Washington State Legislature directed the Washington State Institute for Public Policy (Institute) to report on depression among women who receive cash assistance through Temporary Assistance for Needy Families (TANF) in Washington State (see study language on page 2).

In this report, we estimate the prevalence of MDD in women receiving TANF in Washington State in 2008. We then present information on Department of Social and Health Services' (DSHS) policies regarding client screening for depression and referral for treatment.

Summary

Temporary Assistance for Needy Families (TANF) is a federal/state program providing cash assistance to families with children. In Washington, the TANF program is administered by the Department of Social and Health Services (DSHS). The 2007 Legislature directed the Institute to study the prevalence of depression among women receiving TANF and to evaluate the effectiveness of current screening methods used by the DSHS.

A random sample of 707 women receiving TANF in February 2008 was interviewed by telephone using a well-validated survey instrument to diagnose major depressive disorder (MDD). If respondents gave their consent, we accessed their records use of state services and employment during the nine months following the survey.

Findings: Prevalence of major depression among women receiving TANF was significantly higher than among women with children in the general population. Further, the depression among female TANF clients was twice as likely to be categorized as severe.

Based on responses to the survey, DSHS identifies a substantial portion of depressed TANF clients and refers them to treatment.

Depressed female TANF clients were more likely to have received professional treatment in the past year than a national sample of depressed women with children: 72 percent of TANF clients compared with 51 percent mothers in the general population.

During the nine-month follow-up period, depressed women were employed less than non-depressed women and received TANF longer in the follow-up period.

Depression was not associated with TANF sanction, either at the time of sampling or during the follow-up period.

Recommendation: DSHS has implemented screening procedures that identify a substantial portion of depressed TANF clients. To the extent the state wishes to increase treatment rates, DSHS could modify its Comprehensive Evaluation to include one of several brief, freely available mental health screening instruments.

Suggested citation: Marna Miller. (2011). *Depression in Washington's female TANF population: Prevalence, DSHS screening, and treatment.* Olympia: Washington State Institute for Public Policy, Document No. 11-02-3401.

[1] P.D. Kramer. (2005). *Against depression.* New York: Viking Penguin, p. xiii.
[2] World Health Organization. (2008) .*Global burden of disease, 2004 update.* Geneva: WHO. In this study, major diseases are ranked based on calculated "disability life-years," defined as "a time-based measure that combines years of life lost due to premature mortality and years of life lost due to time lived in states of less than full health."
[3] R. Kessler, P. Berglund, O. Demler, R. Jin, D. Koretz, K. Merikangas, et al. (2003). The epidemiology of major depressive disorder: Results from the National Comorbidity Survey Replication (NCS-R). *Journal of the American Medical Association, 289*(23), 3095-3105.
[4] B. Fuller & S.L. Kagan. (2000). *Remember the children: Mothers balance work and child care under welfare reform. Growing Up in Poverty Project: Wave 1 Findings—California, Connecticut, Florida*. University of California, Berkeley & Yale University. (ERIC No. ED438924).
[5] S.M. Horwitz & B. Kerker. (2001). Impediments to employment under welfare reform: The importance of physical health and psychosocial characteristics. *Women & Health, 32*(1), 101-116.
[6] J.A. Cook, J.A. Jonikas, J.K. Burke-Miller, T.M. Carter, D.D. Grey, C.A. Petersen, & D. Gruenenfelter. (2009) Prevalence of psychiatric and substance use disorders among single mothers nearing lifetime welfare eligibility limits. *Archives of General Psychiatry, 66*(3), 249-258.

Next, we discuss rates of treatment. Finally, we explore the relationships between a diagnosis of depression in this population and other outcomes, such as employment and continued months on TANF in the nine months following the survey.

BACKGROUND

TANF is a federal/state program providing cash assistance for low-income families with children. In Washington the program is called WorkFirst and is administered by the Economic Services Administration (ESA) of DSHS. Parents receiving TANF are required to work or engage in work-related activities.[7] When parents do not work, DSHS may withhold a portion of the cash assistance. This withholding of assistance is referred to as a sanction.

Once WorkFirst clients have been placed in sanction status, the grant will not be restored until they have engaged in work activities for four consecutive weeks. If a client fails to participate for four months, DSHS will close the case, ending the grant entirely.[8]

Studies in several states have found higher rates of depression among female welfare recipients than in the general population.[9] Legislative sponsors of this study directed the Institute to study whether Washington's TANF population has high rates of depression, similar to observations in other states, and if untreated depression is related to lower rates of employment and increased sanction rates. The legislation also directed the Institute to determine whether DSHS is adequately screening TANF clients for depression. (See Study Language, this page.)

Each time WorkFirst clients are approved for cash assistance (when they apply initially, as well as at each six-month eligibility review), they are screened using Washington's Comprehensive Evaluation (CE) protocol. The CE is designed to identify issues that may affect a client's ability to participate in work activities. It covers a range of issues including employment history, education background, legal issues, transportation, housing, finances, family health, chemical dependency, and family violence.[10] The CE asks a single question related to mental health:

> *"Do you have any emotional or mental health issues that would make it hard for you to participate in WorkFirst activities or work*?"

If the client answers yes to this question, his or her WorkFirst program specialist (the case worker) will recommend an assessment by a WorkFirst social worker.

Based on the assessment, the social worker may then refer the client to treatment.

TANF clients have medical coverage under Medicaid and are eligible for mental health services provided through DSHS' Division of Behavioral Health and Recovery.

Study Language
SHB 1128, § 608 (9), Chapter 522, Laws of 2007

The Institute is directed to:

"…evaluate the effectiveness of current methods for screening and treating depression in women who receive temporary assistance for needy families (TANF), and to make recommendations for their improvement."

Further direction from legislative budget notes C 522, L 07, PV, § 608 (11), available from: http://leap.leg.wa.gov/leap/budget/lbns/2007he.pdf.

"Using a random sample of women who have received Temporary Assistance for Needy Families (TANF) for various lengths of time, WSIPP is to: (1) review current depression screening methods used by the Economic Services Administration of the Department of Social and Health Services or their effectiveness; (2) determine the prevalence of depression among TANF recipients; (3) review how many TANF women receive treatment upon being identified as having depression; (4) evaluate the effectiveness of current treatment methods for TANF women; and (5) make recommendations for more efficacious screening and/or treatment models."

[7] Work-related activities may include for example, looking for work or participating in services such as substance abuse treatment, mental health treatment, parenting classes, counseling, adult education, or money-management classes.

[8] WAC 388-310-1600 WorkFirst Sanctions. http://www.dshs.wa.gov/manuals/wac/388-310-1600.shtml

[9] See: Fuller & Kagan, 2000; Horwitz & Kerker, 2001; or Cook, et al., 2009.

[10] WorkFirst Partnership. (2009). *Comprehensive Evaluation (CE) documentation guidelines*. Olympia WA: Economic Services Administration, Department of Social and Health Services. http://www.dshs.wa.gov/esa/wfhand/docs/Comprehensive%20Evaluaton%20Documentation%20Guidelines.pdf

RESEARCH APPROACH

To address the study directions, we posed the following research questions:

1) What is the prevalence of depression among female TANF clients? How does prevalence compare with the prevalence in the general population of women with children and among women receiving TANF in other states?
2) Do we see a relationship between depression and sanction status?
3) Are TANF clients adequately screened for depression?
4) Do depressed and non-depressed TANF clients differ on major demographic characteristics?
5) Do depressed TANF clients receive treatment? Does the treatment qualify as "adequate"? How do treatment rates for depressed TANF clients compare with treatments rates in the general population?
6) What is the effect of depression on outcomes in the follow-up period (June 2008 through March 2009)?
    - Continued TANF
    - Continued food stamps
    - Employment
    - TANF sanction
    - Reports to Child Protective Services (CPS).[11]

Sample. To study these questions, we conducted a survey of women who were receiving TANF in Washington in January 2008. A random sample of 4,000 women was drawn from the pool of 25,954 eligible women.

Because of the interest in sanction status, we oversampled women who received sanctions. In January 2008, 3 percent of all female TANF clients were in sanction status as compared with 17 percent of women in the sample.

Economic Services Administration mailed letters to women in the sample, describing the survey and inviting participation. Enclosed with the letter was a postcard that women could use to decline to participate in the study. If a letter was returned to DSHS as undeliverable, or the woman opted out, the individual was dropped from the sample. The contact information for the final sample of 3,786 was sent to Social and Economic Sciences Research Center (SESRC), at Washington State University, where telephone interviews were conducted.

Our goal was to obtain at least 600 completed interviews. Because we were uncertain about the number of women who could be contacted by telephone, SESRC randomly sampled several waves of women in the larger sample. SESRC attempted to contact 3,040 women by phone. After six attempts to reach each woman in the sample, 914 were contacted, of which 707 agreed to participate and completed the survey.

In accordance with the conditions of the Washington State Institutional Review Board,[12] at the end of the survey, respondents were asked for permission to access their confidential records: 539 gave permission to access records from DSHS, and 448 gave permission to access employment records through the Employment Security Department. A summary of the sampling frame is shown in Exhibit 1.

Survey. The interview questionnaire included modules from the Composite International Diagnostic Interview (CIDI). The CIDI was developed at Harvard University and adopted by the World Health Organization to better understand the national and worldwide prevalence of mental illness. The CIDI was designed to be administered by lay interviewers. Survey responses are coded and computer algorithms are used to generate diagnoses of mental disorders. Diagnoses from the CIDI have been shown to correspond well with diagnoses obtained from clinical interviews.[13]

The CIDI has multiple diagnostic modules. Because our legislative direction focused specifically on depression, we used only those modules necessary to diagnose major depressive disorder, inquire about

[11] Others have found that maternal depression is associated with child maltreatment. See, for example, (1) M. Chaffin, K. Kelleher, & J. Hollenberg. (1996). Onset of physical abuse and neglect: Psychiatric, substance abuse, and social risk factors from prospective community data. *Child Abuse and Neglect, 20*(3), 191-203; (2) K.J. Conron, W. Beardslee, K.C. Koenen, S.L. Buka, & S.L. Gortmaker. (2009). A longitudinal study of maternal depression and child maltreatment in a national sample of families investigated by child protective services. *Archives of Pediatric and Adolescent Medicine, 163*(10), 922-930.

[12] The Washington State Institutional Review Board is responsible for reviewing and approving human subjects' research in the jurisdiction of three Washington State Agencies: Department of Social and Health Services, Department of Health, and Department of Labor and Industries.

[13] J.M. Haro, S. Arbabzadeh-Bouchez, T.S. Brugha, G. de Girolamo, M.E. Guyer, R. Jin,…R.C. Kessler. (2006). Concordance of the Composite International Diagnostic Interview Version 3.0 (CIDI 3.0) with standardized clinical assessments in the WHO World Mental Health surveys. *International Journal of Methods in Psychiatric Research, 15*(4), 167-80.

services, and, in a subset, inquire about the presence of chronic conditions. We focused on diagnosis of major depressive disorder (MDD).[14] For this study, women with diagnoses of minor depression were not considered to be depressed; only major depression met the study criteria.

The survey was conducted over the telephone by trained interviewers at SESRC. The average interview lasted 28 minutes. Women screening into the depression module took somewhat longer to complete the survey because many additional questions accompanied the depression module. All women participating in the survey received a $25 gift card from their choice of Safeway, Target, or Walmart.

Comparisons to the general population. To compare prevalence and severity in the TANF sample to rates in the general population, we used publicly available data from the National Comorbidity Survey-Replication (NCS-R). The NCS-R was conducted in 2001-02 using the CIDI instrument for interviews with a nationally representative sample of 9,282 people in the United States. Using NCS-R data, we applied the same algorithms used in our analysis of the TANF sample to estimate national prevalence of depression in women with children and to estimate serious mental illness among depressed women with children.

Administrative records. For women giving permission to access their DSHS records (539), we identified the following:

- Number of months women had received TANF as of November 2007 (shortly before the sample was drawn).
- Number of months women had received TANF through February 2009.
- TANF sanctions through February 2009.
- Diagnosis of depression in medical records.
- Medical records of treatment with antidepressants.
- Mental health records of medication events.
- Professional mental health treatment encounters and descriptions.
- Reports to Child Protective Services where TANF client was the subject of the report.

We obtained the employment records of women who consented to the release of their social security numbers (448) from the Employment Security Department.

[14] Because we did not use all survey modules, a diagnosis of MDD includes women with bipolar disorder.

Selection Bias. It is possible that respondents giving permission to access their administrative records may not represent all respondents. To investigate the possibility of selection bias, we employed a statistical technique (a Heckman correction.)[15] The Heckman correction is a two-stage analysis, first predicting likelihood of granting permission and, second, estimating outcome given that the client has granted permission. Based on our knowledge of respondents, we found no evidence of selection bias in our analysis of treatment rates prior to the survey or outcomes in the nine-month follow-up period.

Limitations. Low income adults, and welfare populations in particular, are difficult to reach in telephone surveys.[16] Furthermore, recent changes in technology, such as caller ID, call blocking, the federal no-call list, and the use of cellular phones have reduced survey response rates among the general population.[17]

Our survey employed several strategies that have been shown to increase response rates in telephone surveys:

- Advance letters,[18] one from DSHS and a second from SESRC in the week prior to the first call;
- Incentives ($25 dollar gift cards);[19] and
- Multiple calls, made at various times of the day and days of the week, in efforts to reach the TANF clients.[20]

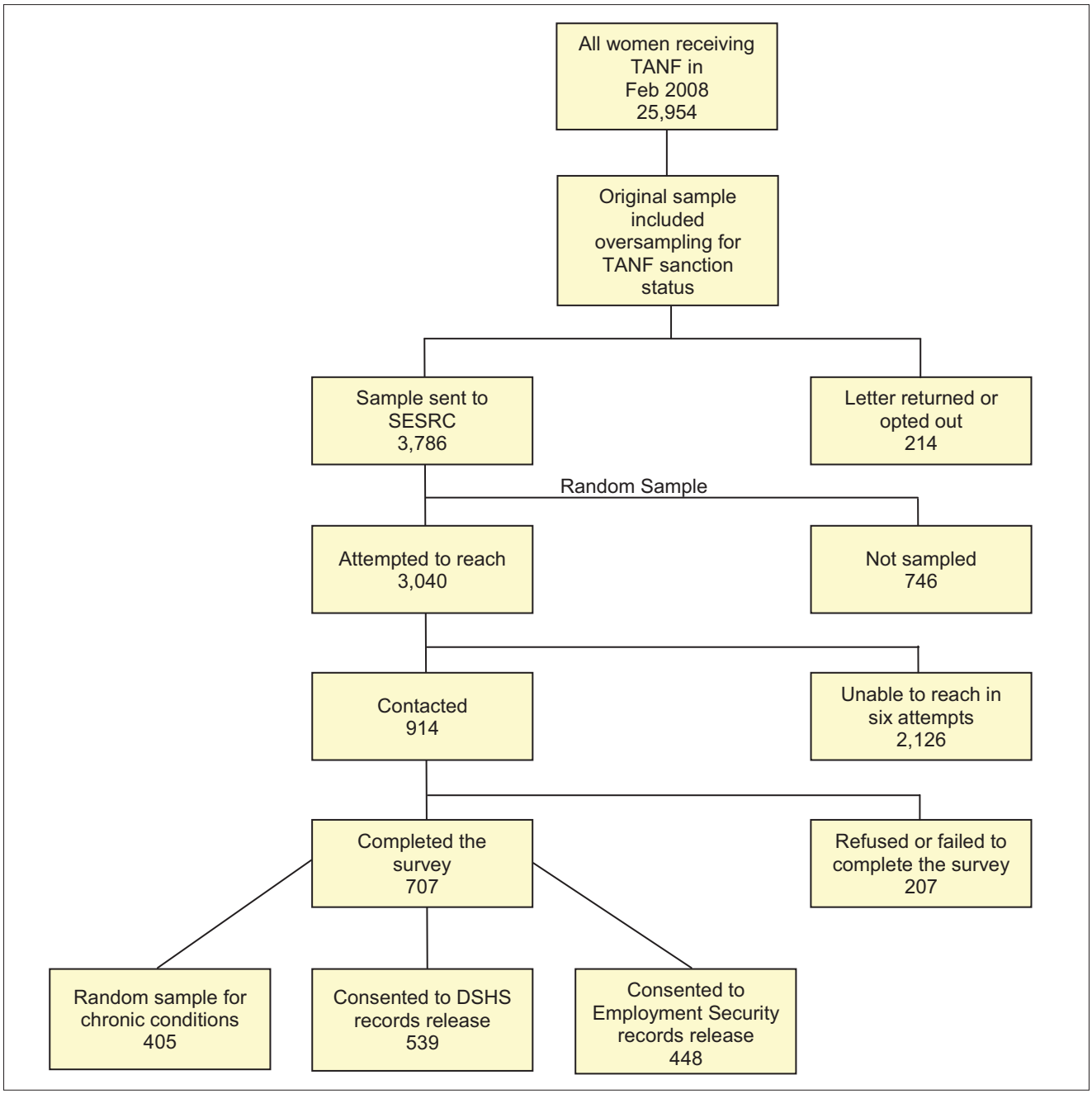
Nevertheless, SESRC was able to contact only 30 percent of those it attempted to reach[21] and obtained interviews with 81 percent of those who were contacted. Given the relatively low contact rate for our survey, we tested to determine whether the sample was representative of the population of women receiving TANF.

We found that, compared with all adult women on the TANF caseload in FY2008, the average respondent was significantly older (about one year); women in

[15] See section A8 in Appendix for further description of the Heckman correction for selection bias and outcomes analyses.
[16] M. Ver Ploeg, R.A. Moffitt, & C.F. Citro. (2002). *Studies of welfare populations: Data collection and research issues.* Washington DC: National Academies Press.
[17] R. Curtin, S. Presser, & E. Singer. (2005). Changes in telephone survey nonresponse over the past quarter century. *Public Opinion Quarterly, 69*(1), 87-98.
[18] Ibid.
[19] R.M. Groves & M.P. Couper. (2002). Designing surveys acknowledging nonresponse. In: M. Ver Ploeg, R.A. Moffitt, & C.F. Citro. (Eds.). *Studies of welfare populations: Data collection and research issues.* Washington, DC: National Academies Press.
[20] Ibid.
[21] In our TANF sample, over a third of the telephone numbers on record at DSHS in February 2008 were non-working by June of the same year.

TANF sanction at the time of sampling were less likely to respond to the survey. However, respondents did not differ significantly with respect to race, marital status, or cumulative months receiving TANF.[22] While our sample closely resembled the total population, the fact that we observed some differences suggests that the women responding to the survey may have differed from non-respondents in other aspects as well. In particular, it is possible that non-respondents were more (or less) likely to be depressed than those responding. Thus, there is some degree of uncertainty surrounding our estimates of prevalence.

Exhibit 1
Sampling Frame



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[22] Staff at the Economic Services Administration provided us with a demographic profile of all female TANF recipients in FY2008. Tables comparing demographic information are provided in Exhibit A.2 in the Appendix.

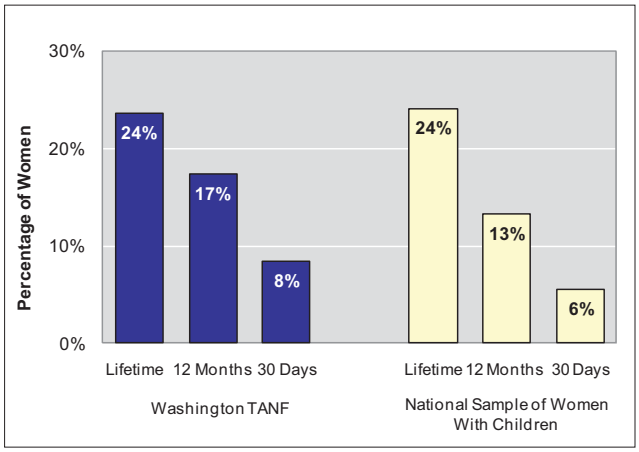
FINDINGS

Prevalence of Depression in Washington's Female TANF Clients

As described earlier, the Composite International Diagnostic Interview[23] allows us to determine whether the respondent has experienced a major depressive episode ever in her lifetime, in the past 12 months, and in the past 30 days. Exhibit 2 displays the prevalence for female TANF recipients in Washington State and for a national sample of women with children.[24]

Lifetime prevalence of MDD was similar for female TANF recipients and the national sample of women with children. TANF recipients were significantly more likely to have experienced recent depression (in the past 12 months or 30 days) than women in the general population.

Exhibit 2
Prevalence of Depression Among TANF Recipients and a National Sample of Women With Children



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Prevalence of 12-month and 30-day depression differs significantly between Washington TANF recipients and a national sample of women with children ($p<0.05$).

For the remainder of this report, we focus our analysis on women diagnosed with major depression in the previous 12 months.

Depression Severity

Various scales have been developed to capture the severity of mental illness in terms of the impact on day-to-day functioning. We used the scale employed by the Division of Behavioral Health and Recovery at DSHS to identify those depressed TANF clients with serious mental illness (SMI).[25] The client's depression was classified as serious if her first depressive episode began more than one year before the survey and, based on her responses to CIDI questions, met either of the following criteria specified in the Washington State definition of SMI:[26]

- Functional impairment that limits major life activities, ability to work, or taking care of personal needs,[27] or
- Inability to carry out normal activities due to depression for at least 120 days in the past year.

By this definition, 63 percent of the depressed TANF clients were classified as seriously depressed. Applying the same standards to data from the NCS-R, we found that in the general population, 23 percent of all depressed adults and 30 percent of women with children would be considered to have SMI.[28] That is, not only are TANF recipients more likely to be depressed, but their depression is twice as likely to be severe compared with depressed women with children in the general population.

[23] The CIDI used in this study was developed at Harvard University and the World Health Organization to determine the prevalence of mental illness in the U.S. and multiple other countries.

[24] We used publicly available data from the National Comorbidity Survey–Replication. The NCS-R was conducted using the Comprehensive International Diagnostic Interview (CIDI), with a sample of 9,282 adults. For this analysis, we focus on women with children in the NCS-R sample.

[25] The definition of SMI used by the Division of Behavioral Health and Recovery is described in: T.R. Konrad, A.R. Ellis, K.C. Thomas, C.E. Holzer, & J.P. Morrissey. (2009). County-level estimates of need for mental health professionals in the United States. *Psychiatric Services, 60*(10), 1307-14.

[26] Our estimate of SMI is an underestimate. The HRSA definition would include individuals diagnosed with conditions other than depression that we could not identify.

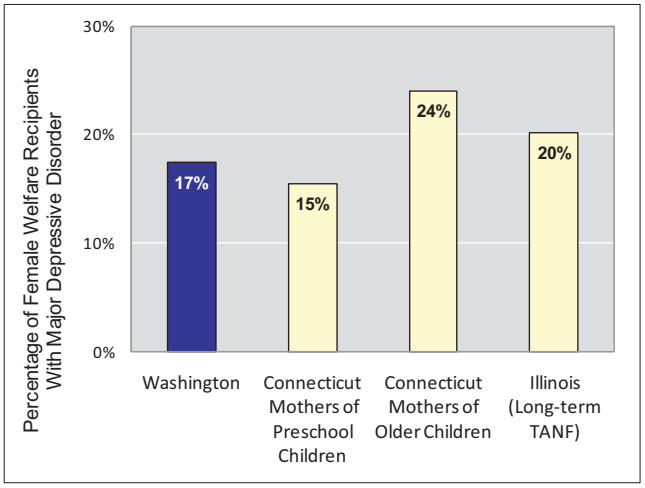
[27] Functional impairment was measured over four domains in the past year: home, work, relationships, and social life. A woman was considered to have SMI if her average score over these domains was at least 7, on a scale of zero to 10.

[28] We used the publicly available NCS-R data and applied our algorithms to define SMI for respondents diagnosed with 12-month depression.

Depression in Welfare Recipients in Other States

Three other studies have used the CIDI to examine the prevalence of depression among female welfare recipients in other states. Two studies were conducted in Connecticut[29] and the third in Cook County (Chicago), Illinois.[30] Exhibit 3 compares the 12-month prevalence of depression in the Washington TANF sample with prevalence observed in these other studies.[31] Prevalence of depression in the past year in Washington's TANF population is similar to that in the other studies.

Exhibit 3
Prevalence of 12-month Depression Among Female Welfare Recipients
(Diagnosis of Major Depressive Disorder Using CIDI)



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Comparing Depressed and Non-depressed TANF Recipients

Based on their responses to the survey, depressed and non-depressed women differed on a number of traits. Compared with non-depressed women on TANF, those with recent MDD were *more* likely to:

- Be older,
- Have longer TANF histories,
- Have older children,
- Have experienced domestic violence,
- Have some college education,
- Be smokers,
- Have chronic illness,[32] and
- Have chronic pain.

In addition, those with recent MDD were *less* likely to be Hispanic and to have been pregnant in the past year.

Characteristics of respondents are provided in Exhibit A.1 in the Appendix.

The causes of depression are complex with both environmental[33, 34] and genetic components.[35] Depression may also overlap with physical illness[36] and pain.[37] Therefore, we cannot conclude that the factors listed above caused the depression, only that they are more (or less) likely to occur among depressed women in the sample.

[29] Mothers with preschool aged children: Fuller & Kagan, 2000; mothers with older children: Horwitz & Kerker, 2001.
[30] Cook, et al., 2009.
[31] Several other studies estimating prevalence of depression among female welfare recipients have used short screening questionnaires. We do not include those studies here, because they do not provide a diagnosis of depression and tend to have a number of false positives. For example, the short form of the CIDI, has been shown to overestimate the prevalence of depression by about 25 percent. See: S.B. Patten, J. Brandon-Christie, J. Devji, & B. Sedmak. (2000). Performance of the Composite International Diagnostic Interview Short Form for major depression in a community sample. *Chronic Diseases in Canada, 21*(2), 68-72.

[32] A list of the medical conditions identified as chronic is included in Exhibit A.6 in the Appendix.
[33] D.M. Grant, J.G. Beck, L. Marques, S.A. Palyo, & J.D Clapp. (2008). The structure of distress following trauma: Posttraumatic stress disorder, major depressive disorder, and generalized anxiety disorder. *Journal of Abnormal Psychology, 117*(3), 662-672.
[34] A. Subbarao, S.H. Rhee, S.E. Young, M.A. Ehringer, R.P. Corley, & J.K. Hewitt. (2008) .Common genetic and environmental influences on major depressive disorder and conduct disorder. *Journal of Abnormal Child Psychology, 36*(3),433–444.
[35] P.F. Sullivan, M.C. Neale, & K.S. Kendler. (2000). Genetic epidemiology of major depression: Review and meta-analysis. *American Journal of Psychiatry, 157,* 1552-1562
[36] W. Katon. (2003). Clinical and health services relationships between major depression, depressive symptoms, and general medical illness. *Biological Psychiatry, 54*(3), 216-226.
[37] M.J. Bair, R.L. Robinson, W. Katon, & K. Kroenke. (2003). Depression and pain comorbidity: A literature review. *Archives of Internal Medicine, 163*, 2433-2445.

TANF Sanction and Depression

As mentioned earlier, we intentionally over-sampled women in TANF sanction status; that is, their grant was reduced or suspended because of failure to participate in work activities. Of the 87 respondents sanctioned at the time the sample was drawn, 18 percent had been depressed in the past 12 months compared with 17 percent of non-sanctioned women. The difference is not significant. That is, at the time of sampling in January 2008, **depressed women on TANF were no more likely to be in sanction status than non-depressed women on TANF.** Similarly, as we will show later in this report, depressed women were no more likely to receive a sanction during the nine-month follow-up.

Rates of Mental Health Treatment for Depressed Women

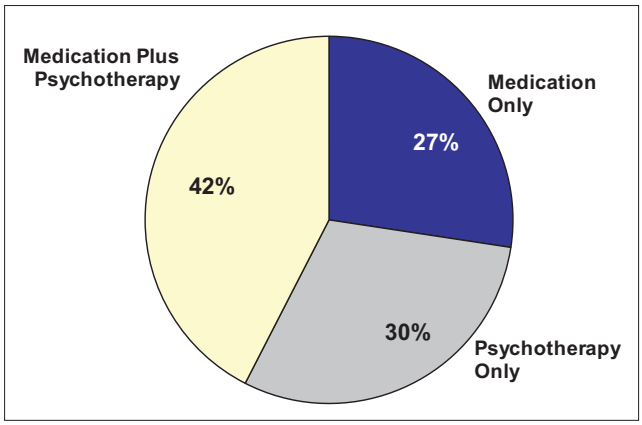
Of the 123 women in the Washington TANF sample diagnosed with depression in the past year, 100 (81 percent) gave permission to access their DSHS records. Using administrative records, we identified those depressed women who had received professional medical or mental health treatment for depression in the 12 months prior to the survey. From Medical Assistance Administration (MAA) records, we identified diagnoses of depression and/or prescriptions for anti-depressant medication.[38] From the Division of Behavioral Health and Recovery records, we identified women receiving mental health treatment.

Of those allowing access to records, 72 had received treatment in the 12 months prior to the survey. By the end of the follow-up period in March 2009, 82 percent of depressed women had received treatment.

Types of Treatment

The types of treatment received in the previous year by depressed women in our sample are shown in Exhibit 4. The greatest number received both medication and psychotherapy. About equal numbers received only antidepressants or only psychotherapy. The rate of combined medication and psychotherapy is higher than observed in other populations.[39, 40]

Exhibit 4
Types of Treatment Provided to Depressed TANF Recipients in the Past 12 Months



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Selection Bias. If women receiving treatment were more likely to grant access to their records than those not being treated, we might overestimate rates of treatment. Using the Heckman analysis described previously, we found no evidence of selection bias; our estimate of treatment rates remained unchanged.

Treatment Adequacy

Authors of the National Comorbidity Survey-Replication define "minimally adequate" treatment for depression as:

1) At least four prescriptions for antidepressants in the past 12 months,[41] or
2) At least eight psychotherapy visits with a mental health professional in the past 12 months.[42]

[38] All women with a diagnosis of depression also received treatment, either in the form of antidepressant medication, psychotherapy, or both. A list of antidepressants prescribed for TANF clients is provided in Exhibit A.5 in the Appendix.

[39] Kessler, et al., 2003. In the general population surveyed for NCS-R, of the 52 percent receiving professional treatment, 16 percent received combined treatment.

[40] W.J. Katon, G. Simon, J. Russo, M. Von Korff, E.H. Lin, E. Ludman, …Bush T. (2004). Quality of depression care in a population-based sample of patients with diabetes and major depression. *Medical Care, 42*(12), 1222-1229. Among depressed diabetics belonging to a health maintenance organization, 51 percent received professional treatment for depression; of those receiving treatment, 20 percent received combined treatment.

[41] Some women received prescriptions for two separate antidepressants on a single day. In assessing adequacy of treatment, we count the number of separate dates on which a woman received a prescription.

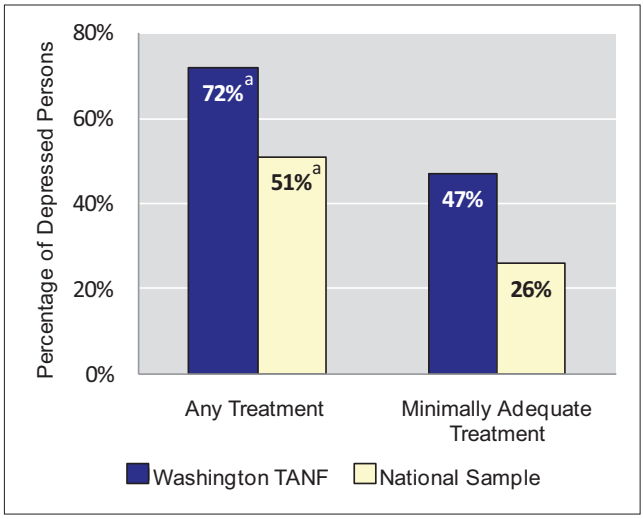
Differing approaches to psychotherapy have varying rates of symptom reduction and remission. The NCS-R definition of minimally adequate treatment addresses only the number of mental health visits, not any particular psychotherapeutic approach.

Using the NCS-R definition, we found that 47 percent of the depressed women in the TANF sample received adequate treatment.

To put the treatment rate of depressed TANF recipients into context, we calculated treatment rates for the general population of women with children who responded to the NCS-R. Applying the same definitions to depressed women with children in the NCS-R, we found that 51 percent had received any professional treatment and only 26 percent had received adequate treatment.

Thus, treatment rates were significantly greater for depressed TANF clients than for depressed women with children in the general U.S. population (see Exhibit 5.)

Exhibit 5
Rates of Depression Treatment for Washington's TANF Recipients and Women With Children in the General Population



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[a] Treatment rates are significantly higher ($p<0.05$) for Washington's TANF recipients than for depressed women with children in the general population.

[42] Kessler, et al, 2003, base their definition of "minimally adequate" treatment on recommendations in the American Psychiatric Association's *Practice Guidelines for Treating Depression*.

DSHS Comprehensive Evaluations and Referral

As previously mentioned, the legislature directed the Institute to determine whether DSHS' WorkFirst Comprehensive Evaluation process was doing an adequate job of identifying TANF clients with depression and referring them to treatment. The CE asks a single question related to mental health:

> *"Do you have any emotional or mental health issues that would make it hard for you to participate in WorkFirst activities or work*?"

If the TANF client answered yes to this question, the program specialist must refer the client to a DSHS social worker for further assessment. Based on the assessment, the social worker may then refer the client to treatment.

Exhibit 6
DSHS Screening Questions, Assessment, and Referral to Treatment

Responses to Survey Questions	Depressed in Past 12 Months (N=123)	Not Depressed in Past 12 Months (N=584)
Her case worker screened for mental or emotional condition	85%	76%
She received an assessment by a social worker for mental or emotional condition	76%	38%
She was referred to clinic/therapist	57%	22%

Note: Blue highlight indicates significant difference between depressed and non-depressed. (Two-tailed test, p-value <0.05.)

To investigate how well DSHS was identifying depressed TANF clients, we asked TANF clients three questions about screening, assessment, and referral at the WorkFirst office. Responses to those questions are displayed in Exhibit 6.

A large majority of all respondents reported being asked by their program specialist about physical or mental conditions that might interfere with their ability to work. Depressed women were far more likely than non-depressed women to report that a social worker assessed their emotion/mental health.

Among TANF clients depressed in the past 12 months, 57 percent reported that WorkFirst staff had referred them to a clinic or therapist for treatment. We found that an even greater percentage of TANF clients actually received treatment for their depression. Thus, the DSHS Comprehensive Evaluation appears to identify depression in the majority of women with MDD.

The Institute was asked by the legislature to "…make recommendations for more efficacious screening and/or treatment models." The current Comprehensive Evaluation asks only a single question about mental or emotional conditions that might interfere with a client's ability to work. In recent years, a number of brief questionnaires have been developed for use in primary medical care. These freely available screening tools identify individuals with depressive symptoms.[43] They can be completed by the respondent in less than five minutes and are easy to score. Individuals scoring above a threshold are candidates for further assessment. If the state wishes to increase treatment rates, DSHS could modify its Comprehensive Evaluation to include one of these screening tools.

Outcomes During the Follow-up Period

Exhibit 7 summarizes the results of our analysis of the relationship between a diagnosis of depression in the summer of 2008 and the outcomes through March 2009 based on administrative records. Because we have information only for women consenting to release of records, we used a Heckman analysis to correct for any selection bias. We found no evidence of bias; Exhibit 7 shows the observed values. Results of our analyses showing regression-adjusted values are available in Exhibit A.3 of the appendix.

Forty-five percent of all respondents worked for wages at some point during the follow-up period. Recently depressed women were significantly less likely to be employed (31 percent compared with 48 percent).

On average, over the period July 2008 through March 2009, depressed women remained on TANF longer (6.1 additional months compared with 4.8 additional months for non-depressed women.)

Exhibit 7
Summary of Outcomes
In the Follow-up Period

Outcome in Follow-Up	Depressed	Not Depressed
Percentage working	31%	48%
TANF (months)	6.1	4.8
Food stamps (months)	8.2	7.8
Any TANF sanction	15%	16%
Any CPS report	8%	9%

Note: Blue highlight indicates significant difference between depressed and non-depressed. (Two-tailed test of significance, p-value <0.05)

We observed no statistically significant relationship between recent depression and the number of months receiving food stamps, TANF sanctions, or reports to Child Protective Services in the follow-up period.

Effect of Treatment on Outcomes

From a policy standpoint, it would be of interest to know whether mental health treatment affects outcomes for depressed TANF recipients. Although others have found that treatment for depression increases involvement in the workforce,[44, 45] this study was not designed to address that question. We cannot control for factors involved in a woman's decision to seek and follow through with treatment.

[43] A list of several screening instruments is included in Exhibit A.4 of the Appendix.

[44] M. Schoenbaurm, J. Unutzer, D. McCaffrey, N. Duan, C. Sherbourne, & K.B. Wells.(2002). The effects of primary care depression treatment on patients' clinical status and employment. *Health Services Research, 37*(5), 1145-1158.

[45] M. Zhang, K.M. Rost, J.C. Fortney, & G.R. Smith. (1999). A community study of depression treatment and employment earnings. *Psychiatric Services, 59*(9), 1209-1213.

CONCLUSIONS

We found high rates of recent depression in a sample of female TANF recipients in Washington State. Compared with the general population of women with children, rates of depression were significantly[46] greater among TANF clients, and their depression was twice as likely to be classified as "serious mental illness." TANF clients with depression were less likely to work (31 percent vs. 48 percent) and, on average, remained on TANF 6 months longer than their non-depressed counterparts in the nine-month follow-up period.

TANF recipients are required to participate in work activities to maintain their cash assistance and avoid sanction status. TANF clients and their DSHS program specialists develop individual employment plans. As part of that process, program specialists at DSHS administer Washington's Comprehensive Evaluation (CE) protocol when clients initially apply for TANF and at each six-month eligibility review. The CE is designed to identify issues that may affect a client's ability to participate in work activities. It covers a range of issues including employment history, educational background, legal issues, transportation, housing, finances, family health, chemical dependency, and family violence.[47] If the CE identifies barriers to employment, DSHS may refer clients to treatment or services as part of their employment plan.

The CE only asks whether the client has emotional or mental health issues that would make it hard to participate in WorkFirst activities or work.

Clients indicating they have emotional or mental health issues will be referred to a DSHS social worker for further assessment. The social worker may then refer the client to treatment.

Legislative members who authored this study had concerns that the Comprehensive Evaluation might fail to recognize depression among TANF clients. If so, clients with untreated depression might work less and, thus, be at higher risk of TANF sanction than other clients.

For this project we asked women who were TANF recipients in 2008 about mental health screening at the DSHS office; we accessed their mental health and medical records to learn about their treatment. We used administrative records to study the relationship between depression and sanction and the effect of depression on outcomes during the follow-up period.

We found the DSHS Comprehensive Evaluation identified a substantial portion of depressed TANF clients. The majority of these clients indicated WorkFirst staff had referred them to treatment. Based on their medical and mental health records, these clients received professional treatment at significantly higher rates than would be expected for women with children in the general population.

Depressed TANF clients worked less than non-depressed clients. However, they were no more likely to be placed in sanction status.

Recommendation. The Institute was asked by the legislature to "…make recommendations for more efficacious screening and/or treatment models." Although it appears DSHS is paying attention to the mental health issues of TANF clients, to the extent the legislature is interested in further increasing treatment rates for depression, DSHS could modify its Comprehensive Evaluation by adding one of several brief, freely available mental health screening instruments.

[46] Two-tailed test, p-value <0.05.
[47] WorkFirst Partnership, 2009

TECHNICAL APPENDIX

A1. Sampling. A random sample of female TANF recipients was drawn from the population of women receiving TANF on February 1, 2008. Because the legislature was concerned about whether depression was related to sanction status, we oversampled those in sanction status. In January 2008, 3 percent of all women receiving TANF were in sanction status, while 17 percent of our sample was sanctioned at that time.

A2. The survey instrument. The basis of the survey was modules from the Composite International Diagnostic Interview (CIDI). The CIDI was developed at Harvard University and has been adopted by the World Health Organization to estimate prevalence of mental illness in many countries. The CIDI has been translated and validated in many languages. For this study, the survey was conducted in English and Spanish, using a translation from the using a translation prepared for the Mexican National Comorbidity Survey.[48] Diagnoses from the survey highly corresponded with diagnoses from clinician interviews.

In order to gain access to the survey, the author attended a two-day training at the University of Michigan.

Additional questions were added to the survey regarding history of domestic violence, and screening, assessment, and referral by WorkFirst case managers and social workers.

The survey was conducted over the telephone by staff at the Social and Economic Sciences Research Center at Washington State University, using a computer-assisted interviewing protocol. Interviewers entered responses directly in the computer database.

The average time to complete the survey was 28 minutes, although the time varied depending upon whether a respondent screened into the depression module or not. Those with no history of depression (as determined by the screening module) completed the interview in a much shorter time.
A copy of the entire survey is available from the principal investigator.

A3. Diagnosis. University of Michigan provided access to computer algorithms for diagnosis of depression. Because we focused on depression only, our estimates of prevalence were not subjected to the hierarchical screening that would have distinguished the depressive episodes of bipolar disorder from depression.

A4. Matching to other administrative data. Case numbers belonging to women who granted permission to access their administrative records were sent to the Research and Data Analysis Division (RDA) at the Department of Social and Health Services (DSHS). RDA has developed an integrated data base of clients in the various administrations of the department. RDA matched the client IDs from the survey against administrative data bases from:

- The Economic Services Administration
  - ✓ Cumulative months women had received TANF through November 2007 (three months before the sample was drawn)
  - ✓ Cumulative months women received TANF through February 2009
  - ✓ TANF sanctions through February 2009
- The Medical Assistance Administration
  - ✓ Diagnosis of depression
  - ✓ Treatment with antidepressants
- The Mental Health Division
  - ✓ Treatment encounters and descriptions

[48] The translation protocol is described in: M.E. Medina-Mora, G. Borges, C. Lara, C. Benjet, J. Blanco, C. Fleiz, J. Villatoro, E. Rojas, J. Zambrano. (2005). Prevalence, service use, and demographic correlates of 12-month DSM-IV psychiatric disorders in Mexico: Results from the Mexican National Comorbidity Survey. *Psychological Medicine, 35*(12), 1773–1783.

RDA then provided us with social security numbers (SSN) of women who granted permission to access their employment records; the SSNs were matched to employment records for the period July 1, 2008, through June 30, 2009, by the Employment Security Department. RDA also provided identifiers to the Children's Administration for matching the Child Protective Services reports where the survey respondent was the subject of an investigated report during the period from June 2007 through March 2009.

A5. Depression prevalence in other female welfare populations. Using the CIDI to diagnose depression takes considerable time and is rather costly. Several studies in other states have used brief screening tools to assess prevalence of depression among welfare recipients. For example, three studies used an abbreviated form of the CIDI.[49] Studies have shown that the CIDI short form over-estimates the prevalence of MDD by about 33 percent. (That is, 25 percent of those diagnosed with depression using the CIDI short form did not have major depression.)[50]

In order to make "apples-to-apples" comparison, Exhibit 2, on page 6, includes only those studies that diagnose depression using the full CIDI depression module.

A6. Depression prevalence in the general population of women with children. Using the publicly available data set for the National Comorbidity Survey Replication (NCS-R), we used the same algorithms used to diagnose depression in our sample (that is, without hierarchy) to estimate the prevalence among women with children in the general population. Because women with children in the NCS-R sample were somewhat older than the Washington female TANF population, we also subsampled the NCS-R so that the ages mirrored those of women in the TANF sample.

A7. Characteristics of depressed and non-depressed female TANF recipients. Exhibit A.1 provides information on characteristics of women responding to the survey. Statistically significant differences between depressed and non-depressed women are highlighted in blue.

Because a number of traits are correlated with each other, and with depression, we were unable to conduct a regression analysis to identify factors predictive of a diagnosis.

Exhibit A.1
Characteristics of Female TANF Recipients Completing the Institute Survey: Comparing Depressed and Non-Depressed Women[a]

	Depressed in Past 12 Months (N=123)	Not Depressed in Past 12 Months (N=584)
	Percentage or mean (std dev)	Percentage or mean (std dev)
Age	33.4 (8.7)	29.9 (8.5)
Race/ethnicity		
Asian	2%	3%
Black	11%	11%
American Indian	12%	11%
Hispanic	8%	15%
White	66%	60%
Number of children	2.6 (1.6)	2.4 (1.9)
Age at first birth	20.4 (4.3)	20.2 (4.3)
Age youngest	6.7 (6.0)	4.8 (5.9)
Pregnant last year	20%	31%
Ever domestic violence	63%	39%
Ongoing domestic violence	3%	2%
Obese [b]	48%	41%
Chronic illness [c]	78%	50%
Chronic pain [c]	44%	17%
Married	12%	13%
Coupled	18%	20%
Single	70%	67%
Education		
Less than 8th grade	0%	2%
Less than HS	22%	28%
High school/GED	33%	34%
Some college	41%	33%
College graduate	3%	3%
Smoker	62%	46%
In sanction status in Jan 2008 [d]	13%	12%
Months on TANF as of Nov 2007 [e]	40.9 (28.3)	29.6 (28.1)

[a] Characteristics based on survey responses. Blue highlight indicates significant difference between depressed and non-depressed women (two-tailed test of significance, p-value <0.05).
[b] Women with recent depression were not significantly more likely to be obese than women without depression. However, obesity was significantly more common among women with lifetime prevalence of depression than never-depressed women.
[c] Based on subsample of 405 women who were asked the chronic conditions questions.
[d] Note that we over-sampled women in sanction status. These percentages do not reflect the prevalence of sanction status in the TANF population.
[e] Only women consenting to records review (439 non-depressed, 100 depressed).

[49] See, for example: G.G. Kirby, & Mathematica Policy Research, Inc. (2003). *Families on TANF in Illinois: Employment assets and liabilities*. Washington, DC: Mathematica; M. Edelhoch, et al., & South Carolina. (2004). *Families on TANF in South Carolina: Employment assets and liabilities: Final report*. Columbia, SC: SC Department of Social Services; Naylor, et al. (2000). The CalWORKS Project: *The prevalence of mental health, alcohol and other drug & domestic violence issues among CalWORKS participants in Kern and Stanislaus Counties.* Sacramento: California Institute for Mental Health. http://www.cimh.org/downloads/Calworks_prev_complete.pdf

[50] See R.C. Kessler, et al. (1998). The World Health Organization Composite International Diagnostic Interview short-form (CIDI-SF). *International Journal of Methods in Psychiatric Research,* 7(4), 171-185; and, S.B. Patten, et al., 2000.

A8. Assessing selection bias. We were able to reach 30 percent of our original sample. We were interested in knowing whether the women in our sample were representative of the population of women receiving TANF.

In Exhibit A.2 displays the information available to us about the entire female TANF population, those in the overall sample, and those responding to the survey. We observed no differences between the all female TANF recipients and those in the sample with respect to marital status, non-White race, prior months on TANF, or Spanish language. Those responding to the survey were significantly older than non-respondents. Those sanctioned at the time of sampling were less likely to respond to the survey.

Exhibit A.2
Known Characteristics of the Total Female TANF Population, Total Sample, and Respondents

Characteristic	All TANF	SESRC Sample	Non-Respondents	Respondents
Number of women	25,954	3,040	2,393	707
Age (years)[1]	29.1 (8.2)	29.2 (8.1)	29.0 (8.0)	29.9* (8.5)
Spanish language speaker	1.8%	1.3%	1.2%	1.6%
Sanctioned in Apr 08	3.2%	16.5%	18.0%	12.3%**
Married	14.9%	N/A	N/A	12.8%
Average number of months on TANF	31.7	N/A	N/A	31.7
Non-White race	36.2%	N/A	N/A	38.9%

[1] Means (standard deviation)
* Respondents significantly different from TANF population and non-respondents at p<0.05.
**Respondents significantly different from non-respondents at p<0.01

Of those completing the survey, 76 percent gave permission to access their DSHS records. We wanted to understand whether those we could reach and those giving permission differed from those we could not reach, and whether the decision to permit access to records was related to the outcomes we were measuring. For example, perhaps those women granting permission to view their treatment records were more likely to have received treatment than those refusing.

Among respondents, those consenting to records review were similar in most respects to those refusing. However, women granting permission were significantly more likely to be depressed, to suffer from a chronic illness, and to be obese.

To be confident that our conclusions about treatment rate and outcomes were not the result of the decision to grant consent, we employed the methods described by Heckman[51] to correct for selection bias. This involves a two-step process: in the first step, we model the likelihood that a woman would grant permission to access her records. In the second, the outcomes are modeled, contingent on granting permission.

We used Stata® software to evaluate the effect of selection bias. For dichotomous (yes/no) outcomes (professional treatment for depression, employment, sanction, reports to CPS), we used the heckprob procedure. For continuous outcomes (months on TANF and months on food stamps) we used the Heckman procedure.

Column (1) in Exhibit A.3 displays the observed values for non-depressed women. Columns (2) through (4) contain information on depressed women. Column (2) displays observed values; column (3) contains the regression adjusted estimates (based on probit analysis for dichotomous outcomes and ordinary least squares analysis for continuous variables), controlling for known characteristics of the women; and column (4) provides the estimates based on regressions using the Heckman procedures.[52] Across measures, we observed little evidence of selection bias. We see no significant differences between observed values and regression-adjusted and Heckman-adjusted values in treatment or outcomes for depressed women. Our conclusions remain unchanged. Compared with non-depressed women, those with depression were less likely to work and, on average, received TANF for more months in the follow-up period.

Nearly three-fourths of depressed women received professional treatment for depression in the 12 months prior to the survey.

Exhibit A.3
Observed and Regression Adjusted Outcomes and Treatment Rates for Depressed Women

	Not Depressed	Depressed		
Outcome During Follow-Up or Treatment	Observed (1)	Observed (2)	Regression Adjusted (3)	Adjusted With Heckman (4)
Percentage working	*45%*	*30%*	*33%*	*32%*
TANF (months)	*4.8*	*6.1*	*6.1*	*6.2*
Food stamps (months)	*7.8*	*8.2*	*8.1*	*8.1*
Percentage TANF sanction	*16%*	*15%*	*15%*	*13%*
Percentage with CPS report	*9%*	*8%*	*9%*	*8%*
Depression treatment	N/A	0.72	0.72	0.77

[51] J.T. Heckman. (1979). Sample selection bias as a specification error. *Econometrica, 47*(1), 153-161.
[52] Details of the models used to derive the estimates in Exhibit A.2 are available from the author upon request.

A9. Brief screening questionnaires to identify depressive symptoms. A number of brief questionnaires have been developed for use in primary medical care and research. The following table describes some of the most frequently used screening tools.

Exhibit A.4
Brief Screening Tools to Identify Depressive Symptoms

Questionnaire	Short Name	Description	Time to Complete	Citation
PRIME-MD Patient Health Questionnaire	PHQ	Single-page, containing 9 items related to depression, 5 items related to anxiety, and 1 question inquiring about degree of disability. Focus on symptoms in the past 2 weeks	< 5 min	Spitzer, R.L., Kroenke, K., Williams, J.B.W., The Patient Health Questionnaire Study Group. (1999). Validation and utility of a self-report version of the PRIME-MD. The PHQ primary care study. *Journal of the American Medical Association, 282*(18), 1737-1744.
Patient Health Questionnaire 9	PHQ-9	This is a shortened version of the PHQ. It contains only the 9 items related to depression plus the 1 disability question. Focus on symptoms in the past 2 weeks.	< 5 min	Kroenke, K., Spitzer, R.L., Williams, J.B.W. (2001) PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine, 16* (September): 606-613.
Beck Depression Inventory II	BDI-II	20 item, self-administered questionnaire. Each item rated on a 4-point scale, ranging from 0 to 3. Focus on symptoms in past 2 weeks. (Original BDI focused on the past week only.)	5 to 10 min	Arnau, R.C., Meagher, M.W., Norris, M.P, Bramson, R. (2001). Psychometric evaluation of the Beck Depression Inventory II with primary care medical patients. *Health Psychology, 20*(2), 112-119.
Beck Depression Inventory for Primary Care	BDI-PC	A 7-item version of BDI. It focuses on issues such as sadness, loss of pleasure, sense of failure, etc. It avoids confounding of depression with somatic illness that might also result in loss of appetite and fatigue.	< 5 min	Steer, R.A., Cavalieri, D.O., Leonard, D.M., Beck, A.T. (1999). Use of the Beck Depression Inventory for Primary Care to screen for major depression disorders. *General Hospital Psychiatry, 21*(2), 106-111.
Center for Epidemiologic Studies Depression Scale	CES-D	20-item, self-administered questionnaire. Each item rated on a 4-point scale, ranging from none of the time (less than 1 per day) to most of the time (5 to 7 days). Questions relate to the past week.	5 to 10 min	Radloff, L.S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*(3), 385-401.

A10. Antidepressant medications prescribed for depressed TANF recipients. The list below indicates the antidepressants prescribed for depressed clients based on their medical records. Respondents may have been prescribed other psychotropic medications. Our query focused only on drugs in the antidepressant category.

Exhibit A.5
Antidepressant Medications Prescribed for Survey Respondents

Generic Drug Name	Percentage of All Antidepressant Prescriptions
Amitriptyline HCl	8%
Bupropion HCl	13%
Citalopram Hydrobromide	19%
Doxepin HCl	1%
Duloxetine HCl	9%
Escitalopram Oxalate	8%
Fluoxetine HCl	5%
Mirtazapine	1%
Nortriptyline HCl	4%
Paroxetine HCl	12%
Phenelzine Sulfate	0%
Sertraline HCl	6%
Venlafaxine HCl	14%

A11. Chronic conditions reported by respondents. Among women responding to the survey, 55 percent reported having at least one chronic medical condition. The following table identifies those conditions.

Exhibit A.6
Chronic Medical Conditions Reported By Survey Respondents

Medical Conditions	Percentage of TANF Clients
Arthritis/rheumatism	16%
Stroke	1%
Heart attack	0%
Heart disease	3%
High blood pressure	19%
Asthma	26%
Tuberculosis	0%
Chronic lung disease	4%
Malaria/other parasitic	0%
Diabetes/high blood sugar	9%
Stomach/intestinal ulcer	10%
Thyroid disease	7%
Neurological disorder such as Parkinson's or Multiple sclerosis	2%
Epilepsy/seizure	3%
Cancer	4%
Any chronic condition	***55%***

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This complex project involved both a survey of TANF clients and access to multiple administrative data sources. Without the assistance of many, this project would not have been possible.

Kent Miller and Danna Moore and others at the Social and Economic Sciences Research Center at Washington State University ensured that the telephone survey was conducted in a sensitive and professional manner.

We are grateful to many individuals at the Department of Social and Health Services who provided assistance in completing this study.

Staff at the Economic Services Administration mailed the initial notification letters to TANF recipients in the sample and saw to it that women declining to participate were not further contacted. Can Du and Lance Krull at ESA provided us with a demographic profile of all female TANF recipients in 2008. At the Division of Research and Data Analysis, Rebecca Yette, Kathryn Beall, David Mancuso, and Dan Nordlund were essential in matching survey respondents to administrative records. Lee Doran at the Children's Administration provided information on referrals to Child Protective Services.

Staff at the Employment Security Department provided information on employment.

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