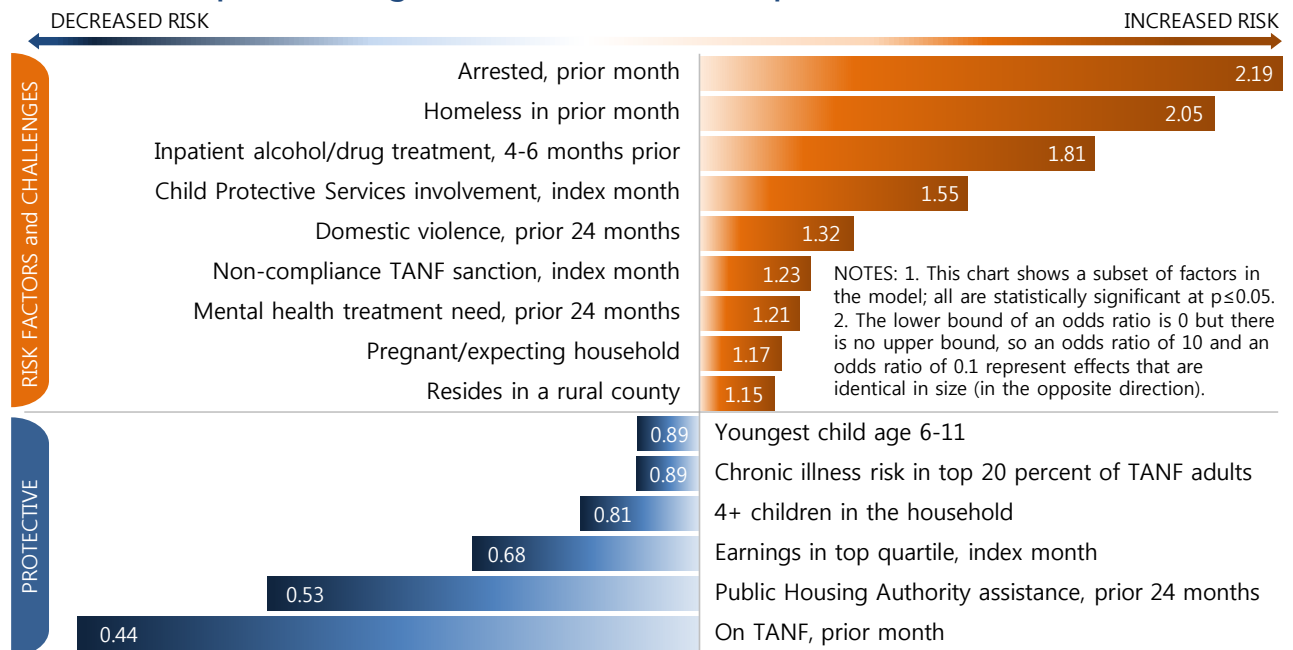# Predicting Homelessness among Low-Income Parents on TANF

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Report to the Vulnerable Families Partnership, under contract to the Department of Commerce, Tedd Kelleher, MPA, Cary Retlin, MPA and Mary Schwartz, MA

THE VULNERABLE FAMILIES PARTNERSHIP (VFP), funded by the Bill & Melinda Gates Foundation, is focused on aligning housing and anti-poverty policies in Washington State. It is comprised of individuals from the Department of Commerce, the Department of Social and Health Services (DSHS), the Employment Security Department, the Governor's Office, and Building Changes (a non-profit focused on ending homelessness). Through the work of the VFP, services to homeless families receiving Temporary Assistance for Needy Families (TANF) have been expanded and increased attention has been paid to the coordination of services across systems. This work has included the development and implementation of the Ending Family Homelessness program, which provides rapid re-housing and employment services to homeless TANF families. Yet given the limited housing resources available—and the toll homelessness can take on those who experience it—the partnership asked the DSHS Research and Data Analysis Division (RDA) to develop a statistical model to predict family homelessness. The aim of this work is to identify potential opportunities to intervene earlier to help families avoid a housing crisis.

Odds of Experiencing a New Homeless Spell

DECREASED RISK ◀ ▶ INCREASED RISK

RISK FACTORS and CHALLENGES

Factor	Odds Ratio
Arrested, prior month	2.19
Homeless in prior month	2.05
Inpatient alcohol/drug treatment, 4-6 months prior	1.81
Child Protective Services involvement, index month	1.55
Domestic violence, prior 24 months	1.32
Non-compliance TANF sanction, index month	1.23
Mental health treatment need, prior 24 months	1.21
Pregnant/expecting household	1.17
Resides in a rural county	1.15

NOTES: 1. This chart shows a subset of factors in the model; all are statistically significant at $p \leq 0.05$. 2. The lower bound of an odds ratio is 0 but there is no upper bound, so an odds ratio of 10 and an odds ratio of 0.1 represent effects that are identical in size (in the opposite direction).

PROTECTIVE

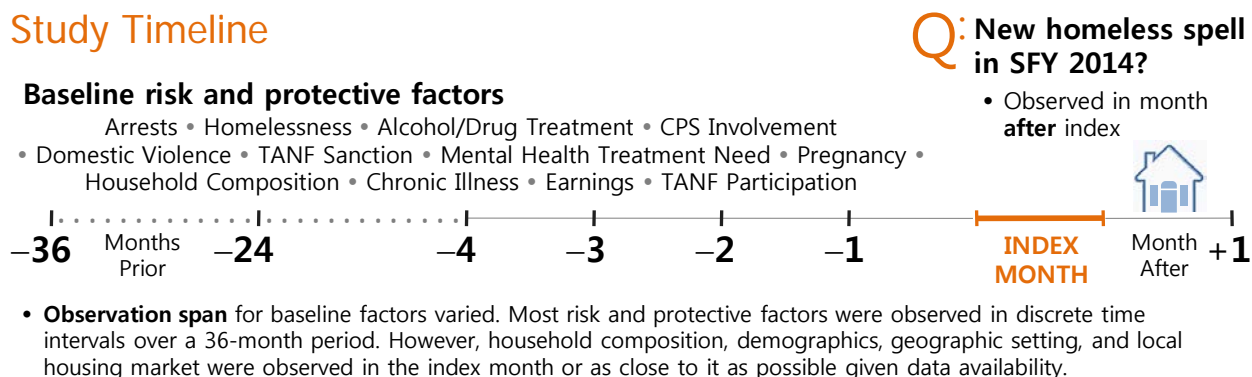| Odds Ratio	Factor
0.89	Youngest child age 6-11
0.89	Chronic illness risk in top 20 percent of TANF adults
0.81	4+ children in the household
0.68	Earnings in top quartile, index month
0.53	Public Housing Authority assistance, prior 24 months
0.44	On TANF, prior month

Study Design: Predictive Modeling

We developed a statistical model identifying the factors most predictive of a new spell of homelessness following a month in which a TANF parent was not identified as homeless by DSHS caseworkers or local housing providers. Homelessness was defined based on:

1. A living arrangement code of homeless with housing, homeless without housing, emergency shelter, or domestic violence shelter in the DSHS Automated Client Eligibility System (ACES), or

2. Receipt of Emergency Shelter, Transitional Housing, or Rapid Re-housing services recorded in the Homeless Management Information System (HMIS).

Because the start of a new homeless spell among TANF parents is a relatively rare event, we used TANF client-benefit months (rather than clients) as the unit of analysis to increase the number of observations. Therefore, the same individual may be represented more than once in the analysis if he or she experienced more than one new homeless spell in State Fiscal Year (SFY) 2014, the period in which this outcome was observed. In that year, there were 252,832 TANF client-benefit months and approximately 1.2 percent (n = 3,120) of those client-months represented the start of new homeless spells.

Defining each benefit month as an "index month," we leveraged data from multiple systems over a 36-month pre-period to predict whether a particular index month would mark the beginning of a new homeless spell for a TANF parent.

Study Timeline

Q: **New homeless spell in SFY 2014?**
- Observed in month **after** index

Baseline risk and protective factors
Arrests • Homelessness • Alcohol/Drug Treatment • CPS Involvement • Domestic Violence • TANF Sanction • Mental Health Treatment Need • Pregnancy • Household Composition • Chronic Illness • Earnings • TANF Participation

−36 Months Prior   −24   −4   −3   −2   −1   **INDEX MONTH**   Month After   +1

- **Observation span** for baseline factors varied. Most risk and protective factors were observed in discrete time intervals over a 36-month period. However, household composition, demographics, geographic setting, and local housing market were observed in the index month or as close to it as possible given data availability.

The process for developing a statistical model to identify factors associated with a new spell of homelessness occurred in the following two steps:

STEP 1. Construct candidate measures with administrative data and conduct two-way analyses. Based on a review of the limited existing research attempting to predict family homelessness, approximately 100 candidate measures were constructed that were thought to potentially be predictive. While some measures were based on a fixed point in time, others were measured in discrete time intervals to capture the recency of an experience. Separately for each measure, we looked for an association with a new spell of homelessness.

STEP 2. Develop and refine the statistical model. Once all fixed and time interval measures were constructed, we conducted a stepwise regression analysis to identify factors that survived the model based on their statistical significance. This involved In further iterations of the modeling, we refined the risk and protective factors included, consolidating measures where appropriate. For example, we ultimately included a single measure of prior homelessness that combined data from ACES and HMIS.

Key Findings

1. **Recent housing experience matters.** Receipt of housing assistance from a Public Housing Authority reduces the odds of a new homeless spell by 47 percent (Odds Ratio = 0.53).[1] By contrast, a client with homelessness recorded by DSHS caseworkers or local housing providers in the month prior to the index month is twice as likely to begin a new homeless spell in the month after the index month (Odds Ratio = 2.05).

2. **Criminal justice, behavioral health, and family violence issues increase risk.** TANF parents who were arrested in the month prior to the index month are over twice as likely to experience a new spell of homelessness (Odds Ratio = 2.19). Also at increased risk are clients who received recent residential alcohol/drug treatment and those with identified mental health issues (Odds Ratios = 1.81 and 1.21, respectively). In addition, parents involved with Child Protective Services in the index month and those who have experienced domestic violence within the past two years are more likely to experience a new homeless spell (Odds Ratios = 1.55 and 1.32, respectively).

3. **Income from work earnings and public assistance buffers parents from homelessness.** Receipt of TANF cash assistance in the month prior to the index month reduces the odds of a new homeless spell by 56 percent (Odds Ratio = 0.44) and having employment earnings in the top quartile of the adult TANF population reduces the odds by 32 percent (Odds Ratio = 0.68). On the other side of the coin, clients who receive non-compliance TANF sanctions in the index month—whereby their cash assistance is reduced or eliminated—are about 20 percent more likely to begin a new spell of homelessness in the following month. Of the 31,384 index months included in this analysis for which there was a non-compliance sanction in place, 25 percent (n = 7,938) represented months in which the client was no longer on TANF in the subsequent month. An additional 20 percent (n = 6,323) left TANF in the second month following the index month.

Discussion

This analysis builds upon previous attempts to predict family homelessness by broadening the definition of homelessness beyond simply entry into shelter and by relying on administrative data rather than client self-report for key measures.[2] Consistent with Shinn, et al.'s (2013) findings, we find that CPS involvement, recent housing instability, and being pregnant are key risk factors. However, in contrast to their analysis—which relied on self-report for certain measures—we also find that criminal justice involvement, substance abuse, mental illness, and domestic violence are significant risk factors.

Our findings also underscore the importance of considering household composition when thinking about which families on the TANF caseload may be at greatest risk for homelessness. For example, while pregnant/expecting households are at increased risk, households with four or more children are at decreased risk of experiencing a new spell of homelessness. This makes sense given that a prior RDA analysis of TANF families in King County found that clients receiving Public Housing Authority assistance were more likely to be in households with multiple children compared to households that were homeless and not receiving any housing assistance (31 percent of TANF families in PHA housing had 3 or more children compared to 11 percent of homeless TANF families).[3]

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[1] Public Housing Authority (PHA) data was only available through December 2013, so we did not capture PHA housing assistance received in the second half of the study period (January 1 to June 30, 2014). Nevertheless, our Odds Ratio point estimate (0.5) is the same as that found by Shinn, et al. (1998).

[2] See: Shinn, Marybeth, et al. (2013). "Efficient Targeting of Homelessness Prevention Services for Families," *American Journal of Public Health*, Vol. 103 (S2): S324-S330 and Shinn, Marybeth, et al. (1998). "Predictors of Homelessness Among Families in New York City: From Shelter to Request to Housing Stability," *American Journal of Public Health*, Vol. 88 (11): 1651-1657.

[3] Galvez, et al. (2014). Housing Matters: Characteristics and Experiences of TANF Clients by Housing Status. Olympia, WA: DSHS Research and Data Analysis Division.

Factors Associated with a New Homeless Spell

VARIABLE	ODDS RATIO	p-value
Demographics and Family Composition		
Female	1.23	0.001
Age 18-24 (relative to <18)	1.295	<.0001
Age 25-34 (relative to <18)	1.111	0.04
White	1.021	0.72
Hispanic	0.877	0.04
African American	1.557	<.0001
Native American	1.201	0.002
Asian/Pacific Islander	1.051	0.63
Other race	0.969	0.56
4+ children in household	0.806	0.02
Youngest child age 6-11	0.888	0.04
Two-parent household	1.114	0.04
Pregnant	1.168	0.004

VARIABLE	ODDS RATIO	p-value
Geography and Housing History		
Resides in a rural county	1.15	0.01
Homeless 1 month prior	2.05	<.0001
Homeless 2 to 6 months prior	1.26	0.0004
Homeless 7 to 12 months prior	1.16	0.01
Homeless 13 to 36 months prior	1.49	<.0001
PHA assistance, prior 24 months	0.53	<.0001

VARIABLE	ODDS RATIO	p-value
Health and Behavioral Health		
Chronic illness risk in top 20 percent of TANF adults	0.89	0.01
Substance use disorder, prior 24 months	1.10	0.04
Inpatient substance use disorder treatment, index month	1.49	0.02
Inpatient substance use disorder treatment, prior 1 to 2 months	1.43	0.06
Inpatient substance use disorder treatment, 3 months prior	1.37	0.11
Inpatient substance use disorder treatment, 4 to 6 months prior	1.81	<.0001
Mental health treatment need, prior 24 months	1.21	<.0001

VARIABLE	ODDS RATIO	p-value
TANF and Employment		
Earnings in bottom two quartiles	0.88	0.08
Earnings in third quartile	0.73	0.003
Earnings in top quartile	0.68	0.004
On TANF, 1 month prior	0.44	<.0001
On TANF, 2 to 3 months prior	0.93	0.29
On TANF, 4 to 6 months prior	0.87	0.007
On TANF, 7 to 24 months prior	0.90	0.03
On TANF, 25 to 36 months prior	1.03	0.44
TANF sanction, index month	1.23	0.003
TANF sanction, 1 month prior	1.15	0.13
TANF sanction, 2 months prior	1.18	0.05

VARIABLE	ODDS RATIO	p-value
Family Violence and Arrest History		
Domestic violence, prior 24 months	1.32	<.0001
Child Protective Services (CPS) involvement, index month	1.55	<.0001
CPS, 1 month prior	1.04	0.71
CPS, 2 to 3 months prior	1.37	0.0001
CPS, 4 to 6 months prior	1.15	0.05
CPS, 7 to 12 months prior	1.11	0.08
CPS, 13 to 24 months prior	1.11	0.05
CPS, 25 to 36 months prior	1.15	0.01
Arrested in index month	1.98	<.0001
Arrested 1 month prior	2.19	<.0001
Arrested 2 to 3 months prior	1.44	<.0001
Arrested 4 to 6 months prior	1.26	0.01

The following measures were included initially but did not survive the stepwise regression analysis, an iterative process that involved the forward selection and backwards elimination of predictive factors:

- Mental health inpatient stay in prior 24 months,
- Population density of county (level of "urbanicity"),
- County housing vacancy rates (low, medium, or high), and
- Ever incarcerated in a state Department of Corrections facility.

NOTES: 1) "prior 24 months" refers to the index month and the 23 months preceding it, 2) the reference/comparison category for youngest child age 6-11 is children of any other age (including children not yet born), and 3) the reference/comparison category for the earnings quartiles is having zero earnings.

Predicting Homelessness among Low-Income Families on TANF

DSHS

This report summarizes the results of an analysis that identified key risk and protective factors associated with whether or not a head-of-household receiving Temporary Assistance for Needy Families (TANF) cash assistance will begin a new spell of homelessness next month.

STUDY POPULATION

The study population for this analysis included all TANF heads-of-households in State Fiscal Year (SFY) 2014. Given the relatively small number of TANF families who become homeless in a year, we chose TANF client-benefit months (rather than clients) as the unit of analysis in order to maximize the number of observations (new homeless spells).

DATA AND MEASURES

Demographics and Family Composition

- The RDA Client Services Database (CSDB) provided information on county of residence, age, race and ethnicity, and gender.

- Family composition was measured in the following ways: age of the youngest child in the household (under 6, 6-11, or 12+ years-old), number of children in the household (pregnant or 1, 2 to 3, or 4 or more children), pregnancy status, and two-parent status. Each of these measures was obtained from the DSHS Automated Client Eligibility System (ACES).

Geography and Local Housing Market

- Using U.S. Census data, a measure of "urbanicity" was constructed based on the percent of each county's population residing in an urbanized area. Clients were assigned to one of the following categories based on their county of residence in the index month: 1) rural, 2) urban – low density, or 3) urban – medium or high density.

- A housing vacancy rate was assigned to each of the 39 counties in Washington State using the U.S. Census Bureau's American Community Survey (ACS) 2012 five-year estimates. The ACS samples nearly 3 million addresses a year and housing units that are unoccupied at the time of the interview are considered vacant.[4] We grouped each county into one of three possible categories: 1) low (under 8 percent vacancy rate), 2) medium (8 to 22 percent vacancy rate), and 3) high (greater than 22 percent vacancy rate).

Health and Safety Risk Factors

- Data from three information systems—ProviderOne (medical), the Consumer Information System (CIS; mental health), and the Treatment and Assessment Report Generation Tool (TARGET; chemical dependency)—were used to identify the presence of substance abuse and mental illness based on health and behavioral health diagnoses, prescriptions, and treatment records. In addition, drug and alcohol-related arrest data maintained by the Washington State Patrol was used to identify probable substance abuse issues. Finally, separate measures from TARGET and CIS captured inpatient chemical dependency and mental illness stays, respectively.

- An indicator of chronic illness was developed to identify individuals with chronic illness risk scores equal to or greater than 1, which represents the score for the average Medicaid client in Washington State meeting Social Security Insurance (SSI) disability criteria. Chronic illness risk scores were calculated from health service diagnoses and pharmacy claim information, with scoring weights based on a predictive model associating health conditions with future medical costs.

- Involvement with Child Protective Services was identified through the RDA Client Services Database.

- Domestic violence was identified if any of the following were present in the 24 months prior to the index month: 1) the client was exempt from cooperating with the Division of Child Support in identifying the non-custodial parent, 2) the client was participating in the Address Confidentiality Program, or 3) family violence was identified in the Comprehensive Evaluation conducted as part of the WorkFirst program.

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[4] Units occupied entirely by persons staying fewer than three months and who have a more permanent residence elsewhere are classified as "vacant," as are new units not yet occupied if construction has reached a point where all exterior windows and doors are installed and final usable floors are in place. Units are not considered vacant if the interior is not protected from the elements or they are condemned or slated to be demolished.

Homelessness and Housing Assistance

- Homelessness was identified through living arrangement status reported to DSHS caseworkers and recorded in ACES, as well as through records indicating receipt of homeless housing assistance in HMIS. In particular, clients who were homeless with housing (HH), homeless without housing (HO), in emergency shelter (EH), or in a domestic violence shelter (BT) in ACES and those who were receiving emergency shelter, transitional housing, or rapid re-housing in HMIS were identified as homeless.

- Data from the U.S. Department of Housing and Urban Development (HUD) was used to identify individuals who received housing assistance through any Public Housing Authority (PHA) in the state, though this data was only available through December 2013. PHA assistance includes low income public housing, project based housing vouchers, and tenant based housing vouchers.

Employment and TANF Experience

- Data on earnings came from self-reported employment and earnings recorded in ACES in the index month. A categorical measure was constructed placing a client into the bottom, low, medium, or top quartile based on their earnings in that month.

- TANF receipt and non-compliance TANF sanctions were identified through ACES tables related to benefit receipt.

Criminal Justice Involvement

- Washington State Department of Corrections (DOC) data provided information on whether an individual had ever been incarcerated in a DOC facility, with release dates available from 1984 forward.

- Arrest data from the Washington State Patrol (WSP) identified clients who had been arrested, with the caveat that some misdemeanor offenses are not required to be reported in the WSP database.

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