Variations in state welfare generosity and preterm birth in the US: Can it explain our low international infant mortality rankings?

Ashley Fox, PHD MA Wenhui Feng, MPP Benjamin Meier, PHD JD Lyle Scruggs, PhD Elizabeth Howell, MD MPP

Abstract

There are large variations in birth outcomes across the US, with higher rates of low birth weight and preterm birth in the Southeast US. This study aims to explain this variation with reference to state safety-net generosity (the various laws establishing eligibility, enrollment and value of benefits for welfare programs). Previous studies have looked at how individual safety-net policies affect birth outcomes, but not comprehensively at the range of different programs that vary across states. This study examines the contribution of variations in the generosity of four major safety programs on state birth outcomes: unemployment insurance, cash assistance (TANF), food assistance (SNAP) and Medicaid. We developed an index of state safety-net generosity (eligibility rules and benefit levels) between 1996-2012 for each program based data from publicly available sources and tested the contribution of generosity to preterm birth/low birth weight outcomes using a longitudinal model adjusting for state sociodemographic characteristics (race/ethnicity, median income, poverty, inequality) and state ideology. Preliminary analysis finds that higher generosity across each program except UI predicts better birth outcomes.

Word count: 171

Background

The United States ranks poorly on infant mortality rates as compared with other industrialized countries. In 2005, the US ranked 30th in the world on infant mortality behind most European countries, Canada, Australia, New Zealand, Hong Kong, Singapore, Japan, and Israel and Cuba.¹ One explanation for these excess infant deaths is the high rate of preterm delivery in the US. Preterm births, births which occur prior to 37 weeks gestation, occur in 12-13% of pregnancies in the US versus 5-11% in Europe and preterm births account for the vast majority of perinatal mortality.^{23,4} It has been estimated that if the US had Sweden's gestational age distribution, its infant mortality rate would be 33% lower – or 3.9 per 1000.³

Researchers have speculated that differences in countries "welfare state generosity" explains differences in country-level health outcomes, though there are few empirical tests to substantiate this assumption. Studies have found that the most generous type of welfare state (Social Democratic) is associated with lower infant mortality and low-birth weight babies.⁶⁷ As a "liberal" welfare state, ⁸ low rates of redistribution leading to high rates of poverty and inequality in the US, are believed to play a role in the US's poor performance in international health comparisons, however, due to lack of comparative data and a small N-size, this theory currently remains mostly speculative.

One reason for the low infant mortality performance of the US relative to European countries may be the large variability in preterm births and low birth weight across the US states and the wide disparities in preterm births between whites and other racial/ethnic groups in the US. In fact, the variability in preterm birth rates among the 50 states is comparable in magnitude to differences observed internationally,²⁹ and some states have rates that are close to those in European countries, while other states have rates closer to low and middle-income countries. Given the construction of US Federalist institutions, with many welfare decisions delegated to the states, the US is better thought of as a collection of numerous semi-autonomous welfare states rather than a single unit. In general, more conservative "red" states tend to be poorer, more unequal, and have the highest pre-term birth rates while more liberal "blue" states are wealthier, more equal and have lower pre-term birth rates. To what degree does cross-state variability in welfare generosity explain differences in preterm birth rates apart from other socio-demographic differences between states? To what extent might this variability explain the US poor performance in international comparisons?

This study aims to assess how social welfare generosity (unemployment insurance, cash and food assistance programs, and Medicaid) influences preterm birth outcomes across states over time. In spite of the growing attention to the concept of "Health in all Policies,"¹⁰ research has been slow to connect the effects of "non-health" policies on health outcomes. Instead, a great deal of research has focused on state variation in the "social determinants" of health, most notably state-level income inequality, on infant mortality and preterm birth,¹¹ but few, if any, studies examine how redistributive policies that influence state income inequality and poverty levels correlate with health outcomes- the so-called "causes of the causes."^{12,13}

The inequality level in a state does not arise in a vacuum. Unequal pre-tax distribution and high poverty within a state can be counteracted by redistributive policies, which will have direct and indirect impacts on maternal and fetal health. Variation in access to social policies that provide benefits directly to women and infants after pregnancy begin, such as Medicaid and WIC, can be expected to have direct links to birth outcomes and early childhood development. But research also suggests that mothers' health before and in the early stages of pregnancy, are very important for promoting good birth outcomes and later infant development.^{14,15,16} These may be influenced by social protection policies that may not specifically target perinatal women. Furthermore, programs targeting only health and nutrition in pregnancy may not address many material and psychosocial consequences of pregnancy, particularly at-risk pregnancies that worsen birth outcomes. Many pregnant women work, and reforms to social assistance in the 1990s cut cash benefits massively, in large part as an incentive to induce women into paid employment. Temporary Assistance for Needy Families (TANF) only ensures benefits for pregnant women in the last three months of pregnancy, which still leaves women facing a choice between unemployment, leading to increased stress from financial hardships in their households, or increasing risks to their pregnancies. The impact of the wider economic environment of pregnant mothers potentially implicates a much larger array of state and federal safety net programs, such as unemployment benefits (UI), food assistance (SNAP), and cash assistance (TANF). All three of these programs, particularly UI and TANF the federal government has

3

been granted considerable policy discretion to the states in determining access to and the level of these benefits.

Previous studies have tried to ascertain the direct impact of individual policies such as Medicaid,¹⁷ WIC¹⁸ or AFDC/TANF¹⁹, ²⁰ participation on health outcomes, but previous studies have not looked at the overall welfare generosity of a state and the effect on birth outcomes. Preterm birth is a particularly important outcome to assess because unlike infant mortality, which is plausibly influenced by a variety of clinical and medical care related factors, preterm birth is believed to be primarily affected by social and environmental health determinants including behaviors and psychosomatic mechanisms such as stress. In fact, there have been few clinical advances in the prevention of preterm births (though there have been advances that have reduced infant mortality related to prematurity). Despite billions of dollars spent on research, the preterm birth rate for all pregnancies rose steadily between 1990 and 2006 by approximately 1% per year in the US.²¹ Although recent trends show modest declines,²² preterm birth rates remain elevated in the United States. Furthermore, pregnant women are a group that is eligible for most forms of welfare assuming they meet income thresholds. Nearly half of births in the US occur to women on Medicaid²³ and about half of infants and nearly 9 million women in 2006 used WIC.²⁴ While a number of studies have examined how specific program participation (notably WIC, TANF and Medicaid) influences birth outcomes,¹⁷²⁰ few studies examine the wider set of benefits that women may have access to outside of pregnancy and their effect on birth outcomes.

Existing state welfare generosity measures. Although there are a number of datasets that examine state welfare rules separately,²⁵ few studies have attempted to combine the myriad state welfare rules into a single index to capture overall program generosity of a state. Two recent studies have combined a variety of social and welfare policies that vary at a state level into indices of state policy "liberalism"²⁶ and state policy "innovativeness".²⁷ The measures utilized in this study are specifically interested in policies that affect the safety net, or economic security of citizens, rather than broader civil rights policies (e.g., policies affecting gay marriage, marijuana legalization, etc).

The extent to which the adequacy of state UI, SNAP, AFDC/TANF, Medicaid and WIC policies are associated with variation in preterm births after accounting for sociodemographic factors is not known. We propose to develop a longitudinal model that tests the contribution of welfare state generosity on statelevel preterm birth rates between the period 1990 to present. Our specific aims are to:

- 1. Develop and refine a composite index of state welfare generosity between 1990-2012.
- Assess the degree to which state welfare generosity explains differences in state preterm birth rates adjusting for other state socio-demographic characteristics and measure how changes in welfare generosity affect changes in state level preterm birth rates over time.
- 3. Analyze the degree to which state income inequality mediates the relationship between state welfare generosity and preterm birth rates.

We hypothesize that:

- Higher state welfare generosity will predict lower preterm birth rates and changes in generosity will be associated with increases(decreases) in preterm birth rates.
- 2. This relationship will hold even adjusting for state socio-demographic characteristics.
- Economic inequality will explain observed relationships between state welfare generosity and preterm birth rates.

Methods

We developed a decomposable index of State welfare generosity capturing state policy variation across four programs (TANF, SNAP, Unemployment Insurance and Medicaid/CHIP) and two dimensions (eligibility requirements and benefit levels) (see **Table 1** Appendix). We chose these programs because they constitute the major sources of social assistance in the US and each has a theoretically and biologically plausible potential to impact birth outcomes through direct, indirect and contextual mechanisms that have been established in the literature. Direct influences of state welfare policies may include access to prenatal care being included as a Medicaid benefit (though this has been shown to be only weakly associated with preterm birth)^{**} and access to food assistance, which may improve diet during and prior to pregnancy. Indirect influences on preterm birth include stress pathways occasioned by the higher economic insecurity and more demeaning process of gaining access to benefits experienced among low-income individuals in less generous states.^{20,00,1,37} Finally, there are contextual level effects that may impact residents of states whether or not they themselves receive any benefits directly. For instance, greater welfare generosity should reduce economic inequality and poverty within a state, which have been found to be associated with worse birth outcomes even among individuals not eligible for public programs.^{11,30} More generous, universalistic welfare policies may also be associated with improved social capital, another mechanism believed to influence population health outcomes.³⁴ We include both policies that are intended to have a direct impact on maternal and infant health (e.g., Medicaid & WIC), as well as policies that likely have a more distal impact *in order to tease out the separate contributions of each* (see Conceptual Model, Figure 1). More importantly, our measures of unemployment and social assistance generosity evaluate the adequacy or level of benefit entitlement, something largely untapped in the health literature.

There are also important distinctions across these different welfare policies. Unemployment insurance is generally not a means-tested program- anyone who loses his/her job can access UI regardless of income (and some states provide benefits for non-working spouses of the unemployed); however, the level of UI benefits varies widely across states and has declined slightly over time. The absence of means-testing of UI should make it a less stigmatizing, more universalistic benefit. Though the US is the only industrialized country with no state mandated maternity benefits, UI also functions as temporary disability program that covers disabilities due to pregnancy for working women in several states: California, Hawaii, New Jersey, New York, and Rhode Island.³⁵

TANF offsets economic insecurity and poverty through general income support. SNAP provides a direct benefit by offsetting food insecurity, and an indirect benefit as a form of income support. Diet and obesity are believed to be pathways that may have a profound influence on preterm birth rates, and recent studies suggest that the SNAP program raises birthweights and may improve self-reported health.³⁶ Medicaid and CHIP provide benefits specifically targeted towards the health of mothers and children, but also have implications for economic insecurity. All programs tend to provide more generous access to pregnant

women and mothers, but together have broader implications for meeting material needs and economic security, which can reduce social stress.

Although Medicaid likely has the most immediate impact on birth outcomes, to the extent that Medicaid is inadequate to address many material needs, these broader programs matter. By including both types of measures in the models, we can model the total benefit environment on health outcomes, as well as running disaggregated models to test whether some benefits matter more.

Measures & Data Collection

Data Sources and Measures. We used multiple primary data sources for these analyses. Aggregate level data on state birth outcomes from 1992-2012 were obtained through vital statistics birth records online through CDC Wonder (http://wonder.cdc.gov/) and Vitalstats

(http://www.cdc.gov/nchs/data_access/vitalstats/VitalStats_Births.htm). In addition, we used publicly available program data to generate the welfare generosity index and data from the Census Bureau to compile state level control and mediating variables as described further in the *Statistical Appendix*.

Dependent Variable: State Birth Outcomes (% preterm, % low birth weight, % very low birth weight).

We examined three primary birth outcomes that are most influential on infant morbidity and mortality- low birth weight, very low birth weight and preterm birth. State preterm birth rates consist of all singleton preterm births that occur prior to 37 weeks gestation. Importantly, in contrast with previous studies interested only in the direct impact of welfare policy on outcomes,³⁷ we will include ALL women who give birth in a given year, and not only low income that are presumptively eligible for social programs. We include all women to estimate the contextual impact of policies beyond the women who may immediately benefit from the programs.

Explanatory Variable: State welfare generosity. We measured state welfare generosity across two dimensions- 1. Eligibility and enrollment rules (affects the proportion of the population that qualifies and signs up); 2. Benefit levels (affects how much individuals get for those who access it).¹ These two dimensions across the five welfare programs were combined into integrated and separate decomposable indicators. To

¹ Medicaid will be treated differently since it is an in kind rather than a cash benefit.

develop the state welfare generosity measure, we combined different state policies related to eligibility and enrollment procedures and cash benefit replacement rates, into two indices (one for eligibility and enrollment and one for cash benefit replacement) using the methods employed in previous studies³⁸ and by Scruggs,^{30,40,41,42} to develop the European Comparative Welfare Entitlements Dataset (CWED). The resulting index provides summary scores of welfare generosity for each state that is an aggregate of overall program generosity as well as decomposable into sub-scales for particular programs. These indicators can be used to identify states that are more or less generous than the federal minimum. The **Statistical Appendix** summarizes data sources and our general approach to coding policies related to different welfare programs. **Control and Mediating Variables**

Sociodemographics

To disentangle the degree to which state birth outcomes reflect differences in state level policies versus differences in the sociodemographic composition of the state we will include a series of state level sociodemographic characteristics. In the US, the more conservative Southern states tend to also be poorer and have a higher percent of the population that is African-American or Hispanic. It could be that worse birth outcomes in these states merely reflect their higher demographic presence of "risk groups". Less generous welfare policies may also reflect the greater socio-demographic diversity of these states as there is evidence that more heterogeneous societies produce less universalistic social benefits.⁴³

Median Household Income & % below Federal Poverty Level (FPL). Information on state poverty and median household income is available through the Census Bureau. State poverty was measured as the percentage of individuals who live under the poverty threshold as defined by the US Office of Management and Budget. The Census Bureau's small-area income and poverty estimate files provide annual state-level information on poverty thresholds that can be publicly accessed.⁴⁴

% Black, % Hispanic. Information on race/ethnicity distribution is available through the Census Bureau.²² African-Americans and Hispanics have been found to have substantially higher rates of preterm birth than whites even after adjusting for income and socioeconomic status.^{45,46,47} State income inequality. State income inequality will be measured as a Gini coefficient, which accounts for the distribution of income within states. Historical state-level Gini coefficients are available through the American Community Survey and can be accessed through the American Factfinder Tool (http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml). State Gini coefficient will be used to assess whether income inequality mediates the relationship between state welfare generosity and preterm birth rates.

Data Analysis

Random Effects Model. State birth outcomes were modeled over time (1996 through 2012) using linear mixed-effects models for repeated measures (repeated observations over time nested within states). The basic model will be specified as follows: $y(_{st}=\mu t + \beta xst + \gamma zs + \varepsilon st, s= 1,...,50; t=1990,...,2011$, where $y_{st}=$ e.g., preterm birth rate at time t in state s. x_{st} is a column vector of variables that vary both over states and over time (e.g., disposable income replacement rates). Z is a column vector of variables that describe states but do not change (substantially) over time (e.g., state socio-demographic and political characteristics). Both random effects and fixed effects models were run as robustness checks.

Bivariate and multivariate analysis was conducted with each dependent and independent variable (each component part of the index and the combined index) to assess the independent and interdependent influence of each program on state birth outcomes. Next, socio-demographic controls were entered to examine whether significant relationships remain significant after adjusting for the demographic characteristics of the states. As the effects of changes in generosity over time should take time to have an impact on birth outcomes, models were lagged by 2, 3, 4 and 5 years. All data analysis was performed using STATA version 13.

Results

Figures 2-5 summarize the welfare generosity indicators over time. UI and TANF have been the most stable over time with TANF generosity declining somewhat over time. SNAP generosity increased

substantially across most states in the early 2000s, though has seen a recent dip. Medicaid generosity increased in the early 2000s as well and has been fairly stable since. High generosity and low generosity states have remained relatively constant over time.

Tables 2 and **3** summarize the results of the time lagged fixed effects models for each program entered separately and collectively (combined welfare generosity). These preliminary results suggest that even accounting for a variety of state demographic factors likely affecting birth outcomes, higher state welfare generosity in aggregate and individually predicts better birth outcomes. Higher scores on all programs except UI predict lower rates of low birth weight, very low birth weight and preterm birth, each of which contribute to infant mortality and morbidity. As a more universalistic safety-net program, UI may not affect outcomes as much as programs more targeted at poverty reduction.

Discussion

Traditionally, most studies have examined how changes in single-policies (e.g., changes in TANF or state minimum wage policies) have impacted on infant health outcomes. However, it is plausible that state policies have interactive effects and that states that are generous in one policy area may be more generous in others. Indeed, recent research has shown that "liberalism" in state policies tends to cluster and that certain states are consistently more "innovative". However, few studies test the collective impact of state policy variation on explaining long run differences in health outcomes across states.

This analysis finds considerable variation in states in their safety-net generosity and that more generous states predict fewer birth complications over time. Generosity in each programs individually and collectively predict better birth outcomes over time except for unemployment insurance, which is more of a universal policy and less likely to only benefit the least well off.

Next steps include filling in additional years of data for all safety-net programs and including additional welfare policies in the model (i.e., state minimum wage and EITC policies) and running further robustness checks. While the income replacement rates **Tables and Figures**

Figure 1: Conceptual Model



Table 1: Summary of Welfare Eligibility & Enrollment Rules and Scoring Approach

Program	Rules and Scoring Procedure
Medicaid	
Eligibility thresholds for categorically eligible groups: Childless adults	(0=none; 1=<50%FPL; 2=50%
Children	(0= <150 FPL; 1=150-199% FPL,
Pregnant women	(0= <150 FPL; 1=150-199% FPL, 2=200-240 FPL; 1=2=250+ FPL)
Other groups (medically needy, tuberculosis, aged, blind, disabled, parents)-	(0,1)
Enrollment rules:	
No Asset test, Presumptive eligibility, Continuous coverage through 60 days postpartum	(0,1)
Application rules:	
Short Application, Forms submitted at other sites, Out stationed eligibility workers, Combined application form, Mail in application, Multi-lingual form	(0,1)
WIC	
State requires women to document income	(0,1)
TANF, the free School Lunch/Breakfast program, or SSI automatically confer WIC eligibility	(0, 1)
Agency requires WIC participants to report monthly in order to receive food vouchers	(0, 1)
SNAP	
Broad-based categorical, eliminates asset test Exclusion of vehicles from the asset test	(0,1) (0, 1=excludes some vehicles;
Recertification and reporting requirements: Recertification period	(1-3 months=0; 4-6=1; 7-12=2; 13+=3)
State disqualifies SNAP applicants/recipients who fail to perform actions required by other means-tested programs	(-1, 0)
State has been granted a waiver to use a telephone interview in lieu of a face- to-face interview at initial certification	(0,1= select parts of states, 2)
Availability of online applications: State allows households to submit a SNAP application online	(0,1=only select parts of states, 2)
State accepts a digital signature on the SNAP online application submission	(0,1, NA)
Use of biometric technology: State requires fingerprinting of SNAP applicants	(0,1)
Coordination with other low-income assistance programs: Operates a Combined Application Project for recipients of Supplemental Security Income	(0,1)
Legal non-citizen adult eligibility	(2=All; 1=some but not all; 0=only children)
TANF	
Does the state try to divert some families from becoming recipients? Asset Limits for Recipients	(0,1) (0=\$3,000+, 1=\$1-2,000, 2=\$0- 1,000, 3=no limit)
Sanction Policy for Noncompliance with Work Requirements	(0=entire benefit; 1= some period of time/portion of benefit; 2=no sanction)
Maximum Monthly Benefit for a Family of Three with No Income	0=<\$100; 1=\$2-299; 2= \$3-399; 3=\$4-499; 4=\$500+
Behavioral requirements (school, immunization and health screening requirements)	(0,1) for each
Work requirement exemptions (hours, ill or incapacitated; caring for an ill or incapacitated person; pregnancy; caring for child under a given age)	(0=none; 1=some) for each
Maximum earnings recipient can retain & still remain eligible for assistance in month	(0= <\$500; 1=\$500-999; 2=\$1- 1,499; 3=\$1,500+; 4=no max)

Table 2: Bivariate Models

1					1										1		
			Low Birth Weigl	ht			v	ery Low Birth Wei	ght		Preterm Birth						
	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95		
Medicaid	-0.05***					-0.13***					-0.03***						
	[-0.07,-0.04]					[-0.17,-0.09]					[-0.03,-0.03]						
UI		0.19**					0.19*					0.01					
		[0.06,0.31]					[0.02,0.36]					[-0.01,0.03]					
SNAP			0.05*					-0.20***					-0.04***				
			[0.00,0.10]					[-0.29,-0.11]					[-0.05,-0.03]				
TANF				-0.46***					-0.21*					-0.04***			
				[-0.55,-0.36]					[-0.39,-0.03]					[-0.06,-0.03]			
WG					-0.04***					-0.10***					-0.02***		
					[-0.06,-0.03]					[-0.13,-0.07]					[-0.03,-0.02]		
_cons	2.11***	1.98***	2.06***	2.17***	2.13***	0.42***	0.25***	0.36***	0.38***	0.46***	0.14***	0.11***	0.13***	0.13***	0.15***		
	[2.07,2.16]	[1.92,2.04]	[2.02,2.11]	[2.13,2.21]	[2.08,2.18]	[0.36,0.49]	[0.17,0.33]	[0.30,0.43]	[0.32,0.45]	[0.39,0.53]	[0.14,0.15]	[0.11,0.12]	[0.12,0.13]	[0.13,0.14]	[0.15,0.16]		
Ν	394	887	598	551	366	394	887	598	551	366	398	891	602	554	369		

			Low Birth Weigh	ıt			Ve	ery Low Birth We	eight		Preterm Birth					
	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	b/ci95	
Medicaid	-0.04***					-0.10***					-0.02***					
	[-0.07,-0.02]					[-0.15,-0.06]					[-0.03,-0.02]					
UI		0.19***					0.21*					-0.01				
		[0.08,0.29]					[0.04,0.37]					[-0.02,0.01]				
SNAP			-0.02					-0.22***					-0.03***			
			[-0.09,0.04]					[-0.33,-0.11]					[-0.04,-0.02]			
TANF				-0.39***					-0.17*					-0.05***		
				[-0.50,-0.29]					[-0.34,-0.00]					[-0.06,-0.03]		
Overall Welfare Generosity					-0.04***					-0.08***					-0.02***	
					[-0.06,-0.02]					[-0.11,-0.05]					[-0.02,-0.02	
poverty rate	0	-0.01***	-0.00**	0	0	0	-0.01**	-0.00*	0	0	0	-0.00***	-0.00***	-0.00*	0	
	[-0.00,0.00]	[-0.01,-0.00]	[-0.01,-0.00]	[-0.00,0.00]	[-0.00,0.00]	[-0.01,0.00]	[-0.01,-0.00]	[-0.01,-0.00]	[-0.01,0.00]	[-0.01,0.01]	[-0.00,0.00]	[-0.00,-0.00]	[-0.00,-0.00]	[-0.00,-0.00]	[-0.00,0.00]	
hincomemed	0	0.00**	0	0	0	0	0	0	0	0	-0.00**	0.00**	0	0	-0.00*	
	[-0.00,0.00]	[0.00,0.00]	[-0.00,0.00]	[-0.00,0.00]	[-0.00,0.00]	[-0.00,0.00]	[-0.00,0.00]	[-0.00,0.00]	[-0.00,0.00]	[-0.00,0.00]	[-0.00,-0.00]	[0.00,0.00]	[-0.00,0.00]	[-0.00,0.00]	[-0.00,-0.00	
State Ideology	0.03	0	0.04*	0.04*	0.03	0.05	0.01	0.03	0.02	0.03	0	0	0.01*	0	0	
	[-0.00,0.07]	[-0.04,0.04]	[0.01,0.08]	[0.00,0.07]	[-0.00,0.06]	[-0.02,0.12]	[-0.05,0.07]	[-0.04,0.10]	[-0.05,0.09]	[-0.04,0.10]	[-0.00,0.01]	[-0.01,0.00]	[0.00,0.01]	[-0.00,0.01]	[-0.00,0.01]	
% black	1.26***	1.53***	1.26***	1.00***	1.21***	1.96***	2.11***	2.01***	1.83***	1.87***	0.14***	0.16***	0.14***	0.11***	0.13***	
	[0.98,1.54]	[1.27,1.78]	[1.01,1.52]	[0.75,1.24]	[0.93,1.49]	[1.68,2.25]	[1.86,2.36]	[1.75,2.28]	[1.55,2.11]	[1.58,2.16]	[0.12,0.17]	[0.14,0.19]	[0.12,0.17]	[0.09,0.14]	[0.10,0.16]	
% hispanic	0.11	0.56***	0.38***	0.14	0.09	-0.05	0.17	0.13	-0.06	-0.06	0.03	0.08***	0.05***	0.01	0.02	
	[-0.19,0.41]	[0.35,0.76]	[0.16,0.60]	[-0.07,0.34]	[-0.21,0.39]	[-0.38,0.28]	[-0.09,0.43]	[-0.15,0.42]	[-0.34,0.22]	[-0.40,0.27]	[-0.00,0.06]	[0.05,0.10]	[0.02,0.08]	[-0.01,0.04]	[-0.01,0.05]	
Gross State Product	-0.04	0.08***	0.07*	0.06*	-0.03	-0.01	0.03	-0.01	-0.03	-0.02	-0.01**	0	0	-0.01*	-0.01*	
	[-0.11,0.04]	[0.04,0.13]	[0.02,0.12]	[0.00,0.11]	[-0.10,0.05]	[-0.12,0.09]	[-0.04,0.10]	[-0.09,0.08]	[-0.12,0.05]	[-0.12,0.09]	[-0.02,-0.00]	[-0.01,0.01]	[-0.01,0.00]	[-0.02,-0.00]	[-0.02,-0.00	
Gini Index	-0.06	0.26***	-0.05	-0.06	-0.09	-0.14	-0.02	0.03	-0.13	-0.19	-0.07***	-0.03*	-0.07***	-0.08***	-0.07***	
	[-0.19,0.07]	[0.11,0.41]	[-0.19,0.09]	[-0.19,0.07]	[-0.22,0.04]	[-0.40,0.12]	[-0.26,0.23]	[-0.22,0.28]	[-0.37,0.11]	[-0.45,0.06]	[-0.09,-0.05]	[-0.05,-0.00]	[-0.09,-0.05]	[-0.11,-0.06]	[-0.09,-0.05	
_cons	2.08***	1.61***	1.97***	2.10***	2.09***	0.35**	0.11	0.23*	0.29**	0.36**	0.18***	0.11***	0.16***	0.18***	0.19***	
	[1.96,2.21]	[1.49,1.72]	[1.86,2.09]	[1.99,2.21]	[1.97,2.21]	[0.12,0.58]	[-0.07,0.30]	[0.03,0.43]	[0.09,0.49]	[0.14,0.59]	[0.17,0.20]	[0.09,0.13]	[0.15,0.18]	[0.16,0.20]	[0.17,0.21]	
Ν	350	840	550	505	329	350	840	550	505	329	350	840	550	505	329	

Table 3: Main Results









Figure 5: State TANF Generosity, 1996-2011



Statistical Appendix Data Sources for State Welfare Generosity Index

Unemployment Insurance. Information on state UI conditions including basic benefit ratios, the maximum benefit amount, duration of benefits, benefit waiting period, and various work and income qualifying conditions is available in the US Department of Labor's Significant Provision of State Unemployment Insurance Laws. This information comes from bi-annual state reporting requirements mainly under the terms of the Federal Unemployment Tax Act.

TANF. Temporary Assistance for Needy Families (TANF) is a cash assistance programs for indigent American families with dependent children. In 1997, TANF succeeded the Aid to Families with Dependent Children (AFDC) program, which had been in effect since 1935. Prior to 1997, states were required to provide cash assistance, but states have differed considerably in the level of benefit entitlement. Since 1997, states have had even more latitude to vary cash benefit programs as funding has changed to block grants, and federal *entitlement* to cash assistance was been eliminated. Consequently, maximum cash benefits have seen real cuts in almost all states. Access to welfare and amount of assistance had already varied quite a bit by state and locality under AFDC, both because of the differences in state standards of need and considerable subjectivity in caseworker evaluation of qualifying families. Under TANF, welfare recipients are actually in completely different programs depending on their state of residence, with different social services available to them and different requirements for maintaining aid.

The Office of Planning, Research and Evaluation Administration for Children and Families U.S. Department of Health and Human Services publishes an annual Welfare Rules Databook, which provides information on State TANF Policies. This information includes 1. Initial eligibility rules (e.g., what level of assets can a family have and still be eligible, how is income counted in determining eligibility?, how much income can a family have and still be eligible?), 2. Benefits levels; 3. Requirements (e.g., required work activities); 4. Ongoing eligibility (e.g., what eligibility tests must recipient families pass for continuing eligibility?, how long can a family receive benefits?), and 5. Eligibility rules for pregnant women. The databook is available for 2011 and includes a longitudinal database of policies across time, 1996–2011.

http://www.acf.hhs.gov/sites/default/files/opre/welfare_rules_databook_2011.pdf. Of primary interest for our generosity index is the maximum cash benefit payable for a qualifying family with no other income, and the eligibility of pregnant women without other children.

SNAP. In response to the falling participation of the 1990s, many states made changes to their Food Stamp Programs to improve accessibility. While benefits and income limits are set at the federal level, the Food Stamp Program is state administered, so states had discretion to change some aspects of their programs, such as the length of recertification periods, the application process, and outreach spending. During the same period, the federal government increased state flexibility. During the late 1990s, new options such as simplified reporting for earners and vehicle exemptions for applicants were made available through administrative actions and legislation. These changes culminated in the Farm Security and Rural Investment Act of 2002 (the Farm Bill), which provides broader flexibility to states along many dimensions. States, for example, were given 10 new options designed to improve the delivery of food stamp benefits to eligible households (Dean and Rosenbaum 2002). State data on SNAP application processes is available through the USDA's SNAP Policy Database: http://www.ers.usda.gov/data-products/snap-policydatabase/documentation.aspx#.Uuu6cxCwJ8A.

The SNAP Policy Database provides a central source of information on state policy choices over time. The database draws on policy information from a wide variety of sources, including surveys by USDA's Food and Nutrition Service (FNS), national and state policy research organizations, state policy manuals, and news articles. Data are provided for all 50 States and the District of Columbia, for each month from January 1996 through December 2011. The variables in the database cover eligibility criteria, recertification and reporting requirements, benefit issuance methods, availability of online applications, use of biometric technology, and coordination with other low-income assistance programs. Definitions and coding conventions for each variable in the data set are detailed below. Of critical importance for the state program generosity measure is the benefit level. While the SNAP benefit standard does not vary across states, the benefit is reduced by 30% of income from other sources, including TANF or unemployment insurance.

Medicaid eligibility and enrollment procedures. States vary dramatically in terms of the categories of individuals that are eligible for Medicaid (e.g., working vs. non-working parents, low-income individuals without children), the income thresholds that determine eligibility (e.g., federal minimum versus more generous), the types of procedures for establishing eligibility (e.g., presumptive eligibility, asset tests or no asset tests), and the scope of services that is actually covered for individuals on Medicaid (e.g., case management, smoking cessation, genetic screening). Federal law requires that states must cover all pregnant women up to 133% of the federal poverty level. However, 133% is a minimum requirement and many states have more generous eligibility rules. Furthermore, women who qualify through this pathway are limited to services related to pregnancy and complications of the pregnancy and eligibility is also time limited and extends only to 60 days after labor. In addition, while federal regulations require all states to cover certain groups and limit the additional groups that states may cover, each state can elect to include other groups falling somewhere between the federal "floor" and "ceiling." Eligibility rules for other categorical groups vary dramatically across states. Many states have chosen to extend eligibility beyond the statutory ceiling. Medicaid changed dramatically during the 1990s with some states expanding and other states contracting their Medicaid programs in various ways. The Children's Health Insurance Program (CHIP) was introduced in 1997, and provides federal matching funds to states to provide coverage to children in families with incomes too high to qualify for Medicaid.

Information on state Medicaid and CHIP rules and eligibility requirements is available for 2011 through the Kaiser Family Foundation (KFF). KFF publishes annual estimates of state policies regarding: 1. State income eligibility thresholds for different categorical groups including pregnant women; 2. Methods to streamline the application process. In 2007, the non-profit Public Citizen Health Research group published a study that ranked state Medicaid programs in terms of their overall levels of generosity and performance along 4 dimensions³⁹: 1. Eligibility; 2. Scope of Services; 3. Quality of care; 4. Provider reimbursement. We will adapt their methodology for scoring Medicaid programs according the first two categories (eligibility and scope of services).

Methods for Constructing the State Welfare Generosity Index

The State Welfare Generosity measure was composed of two separate measures, assessed in each stateyear: 1. Eligibility and Enrollment Program Rules Index; 2. Adequacy of Cash Benefit Programs for: a) social assistance (AFDC/TANF plus SNAP plus WIC), b) unemployment insurance, c) Medicaid scope of services (in kind). Capturing both of these aspects of state welfare generosity is important since there may be a trade-off for states to expand richer benefits to fewer people or thinner benefits to more people. Measuring both allows us to capture both and identify states where both eligibility/enrollment and cash generosity are low(high) to identify state over- and under-achievers. We apply higher weights to rules affecting income eligibility thresholds, which we view as

Eligibility and Enrollment Program Rules Index. For each program, information on program eligibility and enrollment rules was used to calculate a composite state score to measure the income thresholds, categorical eligibility rules and various enrollment procedures that make accessing benefits easier and more difficult in each state (see **Table 1** in Appendix). To calculate this index, we adapted the methodology of Public Citizen,³⁰ which has coded state Medicaid eligibility and enrollment rules. In calculating their index, states that are only doing the minimum floor required by law receive a score of zero and states that do everything up to the identified ceilings and benchmarks receive the maximum possible points of one in their index. Initially items were weighted equally in the index (see **Table 1** for examples). Later, weights were applied. For instance, enrollment rules that affect a broader set of individual such as income eligibility thresholds were given a higher weight (e.g., .75) compared with more minor rules (e.g., whether vehicle ownership factors into asset limits). Each eligibility and enrollment index was calculated out of maximum of 1 point and was aggregated across programs for a maximum of 4 points.

Adequacy of Cash Benefit Programs: Income Replacement Rates. We measured the adequacy of cash benefit programs as the income replacement rates for each of the cash assistance programs. For the social

assistance benefits we determined the AFDC/TANF plus SNAP benefit amount for a (single-parent) family of three with no other income or assets. For the unemployment/temporary assistance benefit, we determined the unemployment benefit for a previously employed (pregnant) single parent with no other children. The adequacy of these benefits was assessed as a "replacement ratios," or the ratio of each benefit to the net wage of a household earning the state minimum wage. Replacement ratios therefore represent the extent to which "earnings" from welfare benefits in a state fall short of, meet or exceed the amount someone would make working at minimum wage. This was done for SNAP, TANF and UI, but not Medicaid since Medicaid is an in kind benefit. The final measures also produced a score that ranges from 0-1 and can be combined with the state eligibility rules index. A ratio of >1 means the benefits exceed full time work.

Rules for benefit amounts were computed based on information reported bi-annually in the US Department of Labor's Significant Provision of State Unemployment Insurance Laws. Information on average state wage is available from the Bureau of Labor Statistics. Benefit calculations are based on the state program rules based on their regular state reports to the US Department of Health and Human Services Characteristics of State Plans for AFDC, the Green Book Reports to the House Ways and Means Committee, and the Urban Institute's online Welfare Rules Databook. The benefit amount is based on the Food Stamp/SNAP and AFDC/TANF benefit for a single mother with two children with no other income. This benefit data is generally available annually back to the early 1970s. The AFDC and SNAP benefits are decomposable, so we could compute each separately. Disposable benefits and wages (i.e., after any federal, state and FICA taxes are deducted) are estimated using the TAXSIM program available from NBER.⁴⁴

References

¹ OECD. OECD Health Data 2010. 2010.

² Zeitlin J, Szamotulska K, Drewniak N, et al. Preterm birth time trends in Europe: a study of 19 countries. BJOG. Oct 2013;120(11):1356-1365.

⁸ Goldenberg RL, Culhane JF, Iams JD, Romero R. Epidemiology and causes of preterm birth. Lancet. Jan 5 2008;371(9606):75-84.

⁴ Slattery MM, Morrison JJ. Preterm delivery. Lancet. Nov 9 2002;360(9344):1489-1497.

⁵ MacDorman MF, Mathews TJ. Behind international rankings of infant mortality: how the United States compares with Europe. International Journal of Health Services : Planning, Administration, Evaluation. 2010; 40(4):577-588.

⁶ Bambra, C. Health status and the worlds of welfare, *Social Policy and Society* 2006; 5:53-62.

⁷ Chung H, Muntaner C. Welfare state matters: a typological multilevel analysis of wealthy countries Health Policy 2007; 80(2):328-339.

⁸ Andersen E. The Three Worlds of Welfare Capitalism. Princeton University Press: Princeton, NJ, 1990.

⁹ Martin JA, Hamilton BE, Ventura SJ, Osterman MJ, Wilson EC, Mathews TJ. Births: Final Data for 2010. Natl Vital Stat Rep. August 28, 2012 2012;61(1):1-72.

¹⁰ Rudolph, L., Caplan, J., Ben-Moshe, K., & Dillon, L. (2013). Health in All Policies: A Guide for State and Local Governments. Washington, DC and Oakland, CA: American Public Health Association and Public Health Institute.

¹¹ E.g., Olson ME, Diekema D, Elliott BA, Renier CM. Impact of income and income inequality on infant health outcomes in the United States. Pediatrics. Dec 2010;126(6):1165-1173.

¹² Rose, G. Sick individuals and sick populations. Int. J. Epidemiol. (2001) 30 (3): 427-432.

¹³ Pega F, Kawachi I, Rasanathan K, Lundberg O..Politics, policies and population health: A commentary on Mackenbach, Hu and Looman. *Social Science & Medicine* 2013; 93: 176-179

¹⁴ Misra, D. P., Guyer, B., & Allston, A. (2003). Integrated Perinatal Health Framework: A multiple determinants framework with a life span approach. American Journal of Preventive Medicine, 25, 65–75

¹³ Virk, J., Li, J., Vestergaard, M., Obel, C., Lu, M., & Olsen, J.(2010). Early life disease programming during the preconception and prenatal period: Making the link between stressful life events and type-1 diabetes. PLoS One, *5*(7), 1–5.

¹⁶ McEwan, B. S. (1998). Protective and damaging effects of stress mediators. The New England Journal of Medicine, 338, 171–179

Sandman, et al. http://onlinelibrary.wiley.com/doi/10.1111/j.1749-6632.1997.tb46162.x/full

¹⁷ E.g., Anum EA, Retchin SM, Strauss JF, 3rd. Medicaid and preterm birth and low birth weight: the last two decades. J Womens Health (Larchmt). Mar 2010;19(3):443-451.

¹⁸ Bitler MP, Currie J. Does WIC work? The effects of WIC on pregnancy and birth outcomes. Journal of Policy Analysis and Management 2005; 24(1): 73–91.

¹⁹ Fairlie RW, London RA. The effect of incremental benefit levels on births to AFDC recipients, Journal of Policy Analysis and Management 1997; 16(4): 575–597.

²⁰ Wise P, Chavkin W, Romero D. Assessing the effects of welfare reform policies on reproductive and infant health. *AJPH* 1999: 89(10): 1514-1521.

²¹ Martin JA, Osterman MJ, Sutton PD. Are preterm births on the decline in the United States? Recent data from the National Vital Statistics System May 2010. 1941-4927.

²² Martin JA, Osterman MJ, Sutton PD. Are preterm births on the decline in the United States? Recent data from the National Vital Statistics System. NCHS Data Brief. May 2010(39):1-8.

²³ Markus AR, Andres E, West KD, Garro N, Pellegrini C. Medicaid Covered Births, 2008 through 2010, in the Context of the Implementation of Health Reform, *Women's Health Issues* 2013; 23(5): e273–e280

²⁴ <u>http://www.fns.usda.gov/wic/about-wic-wic-glance</u>

²⁵ De Jong GF, Graefe DR, Irving SK, St. Pierre T. (2006). Measuring State TANF Policy Variations and Change After Reform, SOCIAL SCIENCE QUARTERLY, 87(4): 755-781.

²⁶ Caughey, Devin, and Christopher Warshaw. 2015. "The Dynamics of State Policy Liberalism, 1936-

2014." American Journal of Political Science, September. doi: 10.1111/ajps.12219.

²⁷ Boehmke, Frederick J., and Paul Skinner. 2012. "State Policy Innovativeness Revisited." State Politics and Policy Quarterly, 12(3):303-29.

²⁸ Fiscella K. Does Prenatal Care Improve Birth Outcomes? A Critical Review. Obstetrics & Gynecology 1995; 85(3):

²⁹ Wadhwa PD, Culhane JF, Rauh V, Barve SS. Stress and preterm birth: neuroendocrine, immune/inflammatory, and vascular mechanisms. *Matern Child Health J* 2001;5(2):119-125.

³⁰ Culhane JF, Rauh V, McCollum KF, Elo IT, Hogan V. Exposure to chronic stress and ethnic differences in rates of bacterial vaginosis among pregnant women. Am J Obstet Gynecol. Nov 2002;187(5):1272-1276.

³¹ Mettler S, Soss J. The consequences of public policy for democratic citizenship: Bridging policy studies and mass politics. Perspectives on Politics. 2004;.(1):55-73.

³² Soss J. Lessons of welfare: Policy design, political learning, and political action. American Political Science Review (1999):363-380.

³⁰ Pickett KE, Ahern JE, Selvin S, Abrams B. Neighborhood socioeconomic status, maternal race and preterm delivery: a case-control study. Ann Epidemiol. Aug 2002;12(6):410-418.

³⁴ Kawachi I, Kennedy BP, Lochner K, Prothrow-Stith D. Social capital, income inequality, and mortality. Am J Public Health. Sep 1997;87(9):1491-1498.

³³ Fass S. Paid Leave in the States: A Critical Support for Low-wage Workers and their Families, March 2009: <u>http://www.nccp.org/publications/pub_864.html</u>

³⁶ Almond D, Hoynes HW, Schanzenbach DW. Inside the war on poverty: The impact of food stamps on birth outcomes, *Review of Economics and Statistics* 2011; 93(2): 387–403.

³⁷ Kaestner R, Lee WC. The Effect of Welfare Reform on Prenatal Care and Birth Weight. NBER Working Paper No. 9769, Issued in June 2003: http://www.nber.org/papers/w9769

^{**} Ramírez de Arellano AB., Wolfe SM, Unsettling Scores: A Ranking of State Medicaid Programs. Public Citizen Health Research Group, April 2007: <u>http://www.citizen.org/medicaid</u>

³⁰ Pallage S, Scruggs L, Zimmerman C. Measuring Unemployment Insurance Generosity. *Political Analysis* 2013; online ahead of print: doi: 10.1093/pan/mpt011 ⁴⁰ Scruggs L. Measuring and validating social program replacement rates. *Journal of European Public Policy* 2013; 20(9): 1267-1284.

⁴¹ Scruggs S. Welfare State Generosity Across Space and Time. In J. Clasen and N. Siegel, eds.

Investigating Welfare State Change, Edward Elgar, 2007, 133-66.

⁴² Allan J, Scruggs L. Welfare State Decommodification in Eighteen OECD Countries: A Replication and Revision. *Journal of European Social Policy* 2006; 16(1): 55-72.

⁴³ Alesina A, Glaeser E, Sacerdote B. Why Doesn't the US Have a European-Style Welfare System? NBER

Working Paper No. 8524; 2001: http://www.nber.org/papers/w8524

⁴⁴ United States Census Bureau. Small Area Income and Poverty Estimates.

http://www.census.gov/did/www/saipe/data/statecounty/data/2010.html July, 2013.

⁴⁵ Elder TE, Goddeeris JH, Haider SJ, Paneth N. The changing character of the black-white infant mortality

gap, 1983-2004. Am J Public Health. Feb 2014;104 Suppl 1:S105-111.

⁴⁶ Reagan PB, Salsberry PJ. Race and ethnic differences in determinants of preterm birth in the USA:

broadening the social context. Soc Sci Med. May 2005;60(10):2217-2228.

⁴⁷ Kramer MR, Hogue CR. Place matters: variation in the black/white very preterm birth rate across U.S. metropolitan areas, 2002-2004. Public Health Rep. Sep-Oct 2008;123(5):576-585.

⁴⁸ Feenberg D, Coutts E. An Introduction to the TAXISM Program. *Journal of Policy Analysis and Management* 1993; 12(1): 189-194.