

1990 Census Measures

Fast Track Project Technical Report
Patrick S. Malone (919-668-6910; malone@alumni.duke.edu)
9-May-00

Table of Contents

- I. Scale Description
- II. Report Sample
- III. Scaling
- IV. Differences Between Groups
- V. Differences Among Sites
- VI. Recommendations for Use
- VII. Item and Scale Means and SD's
- VIII. Item and Scale Correlations

Citation

Report

Malone, P. S. (2000). 1990 Census Measures (Technical Report) [On-line]. Available: <http://www.fasttrackproject.org/>

Variable Definitions

Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. Science, 277, 918-924.

Census Data

U.S. Census Bureau. (1992). Census of Population and Housing, 1990: Summary Tape File 3 on CD-ROM [Electronic data files]. Washington, DC: Author.

I. Scale Description

Target child home addresses from the Family Information Form (FIF, PxB) in each study year have been coded with respect to state, county, and tract/block numbering area codes from the U.S. Census, and can thereby be linked to summary information from the Census on households and individuals in the respective areas (see Addendum to this report for details). Ten selected variables have been derived at the level of Census tract¹ from the 1990 Census summary files for each student in each study year. These variables were drawn from Sampson, Raudenbush, and Earls (1997), and are intended to reflect concentrated disadvantage, immigrant concentration, and residential stability. Variable values are proportions of individuals (or households, as applicable) in a census tract that meet defined criteria (e.g., individuals below poverty line, individuals born outside the U.S., households occupied by the owner).

II. Report Sample

This report is based on 1990 Census data for Year 1 addresses for all cohorts, including both high-risk ($n = 891$) and normative samples ($n = 387$ including overlap, total $N = 1199$). Address matches to the Census data were unsuccessful for 11 students (1% of sample), all of whom are high-risk students. The non-matches included 1 student from the Durham site, 1 student from Nashville, 6 students from Pennsylvania, and 3 students from Seattle. The 1,188 matched addresses were located in 132 tracts (see Table 1; the table also indicates typical tract size, measured by residents and households). The unit of analysis in this dataset is the census tract; analyses are based on the tract-level sample, except where otherwise noted. Also, because the variables are measured at the level of tract, and because the data are from a fixed point in time (1990), analyses are based on the entire sample (treatment, high-risk control,

¹ Typically, Census tracts have only been identified for relatively urban counties. A block numbering area [BNA] is analogous to a census tract in rural counties. This report uses the term "tract" for either.

and normative students), except where otherwise noted.

Table 1. Matches to Tracts

	All Sites	DURH	NASH	PENN	WASH
Number of Addresses	1188	304	294	303	287
Number of Tracts	132	30	29	24	49
Addresses/Tract					
Mean	9.00	10.13	10.14	12.63	5.86
SD	10.65	9.65	16.08	9.72	6.26
Min	1	1	1	1	1
Mdn	5	6.5	2	10	2
Max	63	37	63	33	24
Residents/Tract					
Mean	4266	3182	4420	4291	4827
SD	1825	1272	1949	1602	1896
Mdn	4106	3058	4171	3776	4702
Households/Tract					
Mean	1833	1461	1982	1742	2016
SD	756	587	839	579	802
Mdn	1858	1334	1906	1600	2033

III. Scaling

Values of the derived variables are proportions of individuals (or households, as applicable) in a tract that meet defined criteria. The ten variables (and content domains) identified by Sampson et al. (1997) are presented in Table 2 (Sampson et al. did not provided details of the calculation; there may be some discrepancies in variable derivation).

Table 2. Census Variable Derivation

Domain / Variable	Numerator	Denominator
Concentrated disadvantage		
Below poverty line	Persons with income in 1989 below poverty level	Persons for whom poverty status is determined
On public assistance	Households with public assistance income	All households
Female-headed families	Households with female householder, no husband present	Family households
Unemployed	Persons unemployed	Persons 16 years and over in labor force
Less than age 18	Persons 17 years old and under	All persons
Black	Persons Black	All persons
Immigrant concentration		
Latino	Persons of Hispanic origin	All persons
Foreign-born	Persons foreign-born	All persons
Residential stability		
Same house as in 1985	Persons residing in same house in 1985	Persons 5 years and over
Owner-occupied house	Owner-occupied housing units	Occupied housing units

Internal consistency analyses are based on items measured at the level of tract and weighted according to tract population. For these data, the 6 items measuring Concentrated Disadvantage, taken as a summated scale, yielded a coefficient alpha of .913 for the entire sample of tracts ($N = 132$) for standardized items, and a coefficient alpha of .801 for unstandardized items. Standardization for this purpose is with respect to the analysis sample of tracts; weighted standard deviations of the items range from 2.60 (percent unemployed) to 19.44 (percent Black). Item-total correlations for standardized items ranged from .481 (percent under 18) to .884 (percent on public assistance); the median item-total correlation was .832. The weighted correlation between the two Immigrant Concentration items was .543; the correlation between the two Residential Stability items was .779.

Although correlations and internal consistencies are generally reasonable, the scored dataset does not include scale scores for the three content domains because of questions of standardization. The marked difference in item variances and internal consistency suggests the use of standardized items, but the selection of an appropriate standardization sample for this purpose is not obvious and may vary by analysis; also, individual variables are scored on a non-arbitrary scale.

IV. Differences Between Groups

Differences between groups were tested by a series of mixed logistic regression models in SAS PROC NLMIXED, in which tract and tract-level variables were modeled as predictors of group membership at the level of the individual child.

The unconditional model indicated significant variance associated with Census tract in predicting high-risk status (i.e., Census tract was a predictor of group membership, $p < .005$); however, none of the 10 tract-level variables accounted for a significant portion of this variance, all p 's $> .20$.

Similarly, Census tract was associated with significant variance in predicting treatment versus control status among high-risk children, $p < .0005$. Again, none of the 10 tract-level variables accounted for a significant portion of this variance, all p 's $> .18$.

V. Differences Among Sites

A series of ANOVAs weighted by target child population in each tract (not total tract population) indicated differences among sites on all items at the .05 level. Weighted means are presented in Table 3. Within item, cells that share a superscript are not significantly different, according to pairwise t-tests.

Table 3. Site Differences

	DURH	NASH	PENN	WASH	Overall
<u>N</u>	30	29	24	49	132
Poverty	.27 ^a	.32 ^a	.13 ^b	.14 ^b	.22
Public Assistance	.14 ^a	.15 ^a	.07 ^b	.09 ^b	.11
Female-Headed	.46 ^a	.42 ^a	.13 ^b	.22 ^c	.31
Unemployed	.08 ^a	.12 ^b	.06 ^a	.07 ^a	.08
Under 18	.25 ^a	.29 ^b	.23 ^a	.26 ^a	.26
Black	.75 ^a	.55 ^b	.01 ^c	.17 ^d	.37
Latino	.01 ^a	.00 ^a	.00 ^a	.04 ^b	.01
Foreign-Born	.02 ^a	.01 ^a	.01 ^a	.15 ^b	.05
Same as 1985	.47 ^a	.47 ^a	.65 ^b	.51 ^a	.52
Owner-Occupied	.35 ^a	.42 ^a	.70 ^b	.60 ^c	.52

The Durham and Nashville sites were generally similar on these variables, and showed greater concentrated disadvantage and lower residential stability than Pennsylvania and Washington (weighted to

reflect the addresses of Fast Track students). Nashville tracts showed somewhat higher unemployment and youth population than Durham, and somewhat lower Black population. The Washington and Pennsylvania sites were generally similar on the disadvantage variables. Washington had higher Black, Latino, and foreign-born population proportions, and lower residential stability than Pennsylvania.

VI. Recommendations for Use

The selected variables from the 1990 Census are available and ready for use, keyed to each student's address by year. Other items from the 1990 Census can be attached to an analysis dataset on the basis of the coded addresses reasonably easily (see separate instructions).

Analysts wishing to use a combination of variables should be alert to the range of variances across items. For analyses of tract-level attributes, weighting by either the total tract population or the target-child tract population is recommended, as appropriate to the analysis question. Also, the multilevel nature of the data should be taken into account for analyses involving both tract-level and child-level variables.

VII. Item and Scale Means and SD's

1990 Census Items - Full Tract Sample
Weighted by Tract Population

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
Y1_POVRT	Y1: Pct below poverty line	132	0.153	8.212	0.0116	0.739
Y1_PBAST	Y1: Pct on public assistance	132	0.0818	4.716	0.00646	0.467
Y1_FEMHH	Y1: Pct female-headed families	132	0.235	10.070	0.0297	0.779
Y1_UNEMP	Y1: Pct unemployed	132	0.0653	2.595	0.0114	0.239
Y1_UND18	Y1: Pct under age 18	132	0.241	3.968	0.0356	0.493
Y1_BLACK	Y1: Pct Black	132	0.239	19.443	0	0.997
Y1_LATIN	Y1: Pct Latino	132	0.0193	1.364	0	0.176
Y1_FBORN	Y1: Pct foreign-born	132	0.0675	5.872	0	0.379
Y1_NOMOV	Y1: Pct same house as 1985	132	0.500	8.428	0.160	0.768
Y1_OWNO	Y1: Pct owner-occupied house	132	0.560	14.362	0.0429	0.929

----- Site Name=DURH -----

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
Y1_POVRT	Y1: Pct below poverty line	30	0.190	7.343	0.0116	0.543
Y1_PBAST	Y1: Pct on public assistance	30	0.0902	3.776	0.00847	0.284
Y1_FEMHH	Y1: Pct female-headed families	30	0.348	9.443	0.0688	0.744
Y1_UNEMP	Y1: Pct unemployed	30	0.0608	1.994	0.0114	0.167
Y1_UND18	Y1: Pct under age 18	30	0.230	3.983	0.0971	0.493
Y1_BLACK	Y1: Pct Black	30	0.579	16.784	0.0251	0.997
Y1_LATIN	Y1: Pct Latino	30	0.0123	0.628	0	0.0382
Y1_FBORN	Y1: Pct foreign-born	30	0.0333	2.418	0	0.170
Y1_NOMOV	Y1: Pct same house as 1985	30	0.435	7.077	0.160	0.680
Y1_OWNO	Y1: Pct owner-occupied house	30	0.403	12.475	0.0429	0.862

----- Site Name=NASH -----

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
Y1_POVRT	Y1: Pct below poverty line	29	0.204	11.968	0.0464	0.739
Y1_PBAST	Y1: Pct on public assistance	29	0.0928	6.386	0.00646	0.417
Y1_FEMHH	Y1: Pct female-headed families	29	0.289	13.101	0.0711	0.779
Y1_UNEMP	Y1: Pct unemployed	29	0.0796	4.015	0.0213	0.239
Y1_UND18	Y1: Pct under age 18	29	0.253	4.703	0.0356	0.467
Y1_BLACK	Y1: Pct Black	29	0.327	24.346	0.0135	0.993
Y1_LATIN	Y1: Pct Latino	29	0.0078	0.461	0	0.0239
Y1_FBORN	Y1: Pct foreign-born	29	0.0172	1.335	0	0.0807
Y1_NOMOV	Y1: Pct same house as 1985	29	0.465	5.870	0.262	0.608
Y1_OWNO	Y1: Pct owner-occupied house	29	0.489	12.072	0.0591	0.876

1990 Census Items - Full Tract Sample
 Weighted by Tract Population

----- Site Name=PENN -----

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
Y1_POVRT	Y1: Pct below poverty line	24	0.111	3.489	0.0300	0.272
Y1_PBAST	Y1: Pct on public assistance	24	0.0627	2.243	0.0263	0.175
Y1_FEMHH	Y1: Pct female-headed families	24	0.116	3.721	0.0387	0.276
Y1_UNEMP	Y1: Pct unemployed	24	0.0627	1.468	0.0288	0.136
Y1_UND18	Y1: Pct under age 18	24	0.234	2.234	0.159	0.280
Y1_BLACK	Y1: Pct Black	24	0.0228	3.944	0	0.187
Y1_LATIN	Y1: Pct Latino	24	0.00645	0.602	0	0.0306
Y1_FBORN	Y1: Pct foreign-born	24	0.00774	0.420	0	0.0198
Y1_NOMOV	Y1: Pct same house as 1985	24	0.660	5.248	0.481	0.768
Y1_OWNO	Y1: Pct owner-occupied house	24	0.757	8.433	0.462	0.886

----- Site Name=WASH -----

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
Y1_POVRT	Y1: Pct below poverty line	49	0.128	6.755	0.0226	0.516
Y1_PBAST	Y1: Pct on public assistance	49	0.0808	4.962	0.00702	0.467
Y1_FEMHH	Y1: Pct female-headed families	49	0.212	7.063	0.0297	0.488
Y1_UNEMP	Y1: Pct unemployed	49	0.0604	2.197	0.0249	0.224
Y1_UND18	Y1: Pct under age 18	49	0.242	4.168	0.0642	0.409
Y1_BLACK	Y1: Pct Black	49	0.148	10.810	0.00201	0.649
Y1_LATIN	Y1: Pct Latino	49	0.0340	1.636	0.00349	0.176
Y1_FBORN	Y1: Pct foreign-born	49	0.135	7.109	0.0309	0.379
Y1_NOMOV	Y1: Pct same house as 1985	49	0.475	7.764	0.179	0.647
Y1_OWNO	Y1: Pct owner-occupied house	49	0.576	14.264	0.144	0.929

VIII. Item and Scale Correlations

1990 Census Items - Full Tract Sample
Weighted by Tract Population

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 132 / WEIGHT Var = Y1_NPOP

	Y1_POVRT	Y1_PBAST	Y1_FEMHH	Y1_UNEMP	Y1_UND18
Y1_POVRT	1.00000	0.86667	0.85346	0.83109	0.41437
Y1: Pct below poverty line	0.0	0.0001	0.0001	0.0001	0.0001
Y1_PBAST	0.86667	1.00000	0.78674	0.82091	0.59781
Y1: Pct on public assistance	0.0001	0.0	0.0001	0.0001	0.0001
Y1_FEMHH	0.85346	0.78674	1.00000	0.70788	0.37367
Y1: Pct female-headed families	0.0001	0.0001	0.0	0.0001	0.0001
Y1_UNEMP	0.83109	0.82091	0.70788	1.00000	0.46136
Y1: Pct unemployed	0.0001	0.0001	0.0001	0.0	0.0001
Y1_UND18	0.41437	0.59781	0.37367	0.46136	1.00000
Y1: Pct under age 18	0.0001	0.0001	0.0001	0.0001	0.0
Y1_BLACK	0.62307	0.55540	0.82625	0.52868	0.29480
Y1: Pct Black	0.0001	0.0001	0.0001	0.0001	0.0006
Y1_LATIN	0.02223	0.11669	0.03641	0.04908	0.03848
Y1: Pct Latino	0.8003	0.1827	0.6786	0.5763	0.6613
Y1_FBORN	0.11036	0.24454	0.06846	0.08906	0.09245
Y1: Pct foreign-born	0.2078	0.0047	0.4354	0.3099	0.2917
Y1_NOMOV	-0.23315	-0.09376	-0.37889	-0.01546	0.18750
Y1: Pct same house as 1985	0.0071	0.2849	0.0001	0.8603	0.0313
Y1_OWNOV	-0.62323	-0.46199	-0.68630	-0.36009	0.02224
Y1: Pct owner-occupied house	0.0001	0.0001	0.0001	0.0001	0.8002

1990 Census Items - Full Tract Sample
Weighted by Tract Population

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 132 / WEIGHT Var = Y1_NPOP

	Y1_BLACK	Y1_LATIN	Y1_FBORN	Y1_NOMOV	Y1_OWNO
Y1_POVRT Y1: Pct below poverty line	0.62307 0.0001	0.02223 0.8003	0.11036 0.2078	-0.23315 0.0071	-0.62323 0.0001
Y1_PBAST Y1: Pct on public assistance	0.55540 0.0001	0.11669 0.1827	0.24454 0.0047	-0.09376 0.2849	-0.46199 0.0001
Y1_FEMHH Y1: Pct female-headed families	0.82625 0.0001	0.03641 0.6786	0.06846 0.4354	-0.37889 0.0001	-0.68630 0.0001
Y1_UNEMP Y1: Pct unemployed	0.52868 0.0001	0.04908 0.5763	0.08906 0.3099	-0.01546 0.8603	-0.36009 0.0001
Y1_UND18 Y1: Pct under age 18	0.29480 0.0006	0.03848 0.6613	0.09245 0.2917	0.18750 0.0313	0.02224 0.8002
Y1_BLACK Y1: Pct Black	1.00000 0.0	-0.13296 0.1285	-0.06720 0.4439	-0.20312 0.0195	-0.45379 0.0001
Y1_LATIN Y1: Pct Latino	-0.13296 0.1285	1.00000 0.0	0.54326 0.0001	-0.32439 0.0001	-0.17275 0.0476
Y1_FBORN Y1: Pct foreign-born	-0.06720 0.4439	0.54326 0.0001	1.00000 0.0	-0.13612 0.1196	-0.06821 0.4371
Y1_NOMOV Y1: Pct same house as 1985	-0.20312 0.0195	-0.32439 0.0001	-0.13612 0.1196	1.00000 0.0	0.77919 0.0001
Y1_OWNO Y1: Pct owner-occupied house	-0.45379 0.0001	-0.17275 0.0476	-0.06821 0.4371	0.77919 0.0001	1.00000 0.0