Gender and Race/Ethnic Differences in Labor Force Participation: New Evidence from the Current Population Survey, 1962-2013

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Introduction

Sources of temporal trends in women's labor force participation (LFP) have been the subject of much research (see, e.g., Connelly 1992; Farkas 1977; Hollister and Smith 2014; Macunovich 2012; Treas 1987). While LFP is obviously a function of age, there is no consensus among scholars about to what extent the temporal patterns in female LFP are driven by social and historical shifts (period effects) or by population metabolism (cohort effects) (Clogg 1982; Percheski 2008). The disagreement is at least partially methodological; there is a lack of age-period-cohort (APC) methods that give valid estimates of the separate effects of age, period, and cohort on demographic and social outcomes, so researchers are forced to make assumptions about whether and how the three time processes are operative (Glenn 2005; Mason, Mason, Winsborough, and Poole 1973; Luo 2013; O'Brien 2011).

At the same time, limited attention has been given to changes in men's LFP over the past decades. This underdevelopment of the literature on men's LFP is perhaps due to the fact that the magnitude of secular or period trends in LFP among men is not as profound as those for women's LFP. However, period variation, or lack thereof, represents only one dimension of time processes and thus is insufficient evidence on which to make any definitive conclusion about temporal variation. What is more, ignoring trends in LFP of the other gender misses the opportunity to obtain a more comprehensive view of temporal patterns in LFP and to advance knowledge about how gender and race/ethnic differences in this important aspect of life manifest across different dimensions of time.

In this research, using a newly-developed APC model, we address these substantive and methodological limitations in the LFP literature by examining temporal patterns in white and black men's and women's LFP and how gender and race/ethnic inequalities in LFP manifest over different dimensions of time. In addition, for a number of reasons, the few studies on LFP that adopted a cohort perspective focused on inter-cohort differences—differences between cohorts. This ignores intra-cohort dynamics—dynamics within cohorts that are intrinsic to cohorts and beyond a general age pattern. In this study, we consider both inter- and intra-cohort variation by investigating whether advantages or disadvantage of a cohort in LFP are constant, cumulative, or compensatory over one's life course *over* and *above* the general age trajectory. Specifically, we attempt to answer three sets of research questions:

1. For each gender (male and female) and race/ethnic (white and black) group, (a) to what extent does their LFP vary as a function of the three dimensions of time, i.e., age, period, and cohort? (b) Which cohorts have especially high and especially low LFP rates? In particular, did the increase in women's LFP since the 1960s extend to recent cohorts? (c) Are cohort effects on LFP constant, accumulative, or compensatory over the life course over and above the general age pattern?

2. For each gender and race/ethnic group, in what ways have changes in educational attainment, the labor market, marriage patterns, and in couples' work-family arrangements affected those trends? Would LFP rates be stagnant or lower had education, the labor market, marriage, or work-family arrangements not change in the United States?

3. Have the gender and race inequalities in LFP been unchanged, increasing, or diminishing in each of the three dimensions of time, (by the time of PAA) before and after adjusting for the influencing factors mentioned above?

Data and Methods

We use data from the 1962 through 2013 Current Population Survey (CPS) March Supplement (as disseminated by IPUMS-CPS). The CPS is a monthly survey conducted by the Census Bureau and the Bureau of Labor Statistics. A battery of questions on demographic information and labor force participation is fielded very month. The focal outcome is labor force participation (LFP). Every year since 1962, CPS asks respondents whether they participated in labor force during the week prior to the interview. In the labor force (coded 1) means the participant "were at work; held a job but were temporarily absent from work due to factors like vacation or illness; were seeking work; or were temporarily laid off from a job during the reference period" (Mariam et al. 2010). The respondents were otherwise out of the labor force (coded 0). Age and year of interview are ascertained in every survey. We exclude respondents with missing data on LFP, age, survey year, gender, or race, giving a sample of 5,699,959 records[1] , including 2,458,550 white males, 262,533 black males, 2,685,884 white females, and 345,230 black females. To examine how changes in educational attainment, the labor market, marriage, and couples' family-work arrangements affect age, period, and cohort patterns in LFP, we further exclude respondents with missing data on years of schooling, resulting in a slightly smaller sample size for each subgroup. We constructed 13 age groups (18-19, 20-24, 25-29, … 70-74, and 75 and older) , 11 periods (1962-1964, 1965-1969, 1970-1974, …, 2005-2009, and 2010-2013), and thus 23 birth cohorts (1885, 1890, …, 1990, 1994)[2]. Table 1 presents

[1] A person who appears in one March CPS will also appear in an adjacent March CPS. Therefore, the sample size in this research refers to the number of individual records, not respondents.

[2] In a table of five-year age groups and five-year periods, a birth cohort is defined by diagonals of the age-period cross-classification table and extends over a nine-year interval. For example, the observations in 1975 through 1979 for people in the 30 to 34 age group describe the birth cohort of 1941 to 1949. Conventionally, each cohort is identified by its mid or central birth year (e.g., Mason and Winsborough 1973; O'Brien 2011). We follow this practice so, for example, the 1945 cohort refers to the group of people born between 1941 and 1949. When so defined,

descriptive statistics for the outcome variable and for gender, race, educational attainment, and the three time-related predictors (age, period, and cohort).

[Table 1 About Here]

We analyze the LFP data using a newly developed APC model, called the age-period-cohort Interaction (APC-I) model (Luo and Hodges 2014b). Other APC models including the intrinsic estimator (Yang et al. 2008) and cross-classified APC models (Yang and Land 2008) suffer from serious methodological and theoretical limitations (Bell and Jones 2013, 2014; Fienberg 2013; Fienberg and Mason 1985; Luo 2013; Luo and Hodges 2014a; O'Brien 2011). Methodologically, they rely on problematic technical assumptions that are difficult to verify, and as a result, estimation of age, period, and cohort effects are not reliable. Theoretically, the cohort effects estimated in these models are different from those conceptualized by demographers and sociologists. In contrast, the APC-I model avoid these methodological problems and is tied more closely to the conceptual ideas of cohort effects in the demographic and sociological literature (Luo and Hodges 2014b). For these considerations, we choose to employ this model to analyze temporal patterns in LFP rates.

Specifically, per conceptualization, cohort effects occur when "transformations of the social world modify people of different ages in different ways" (Ryder 1965: 861). In statistics, interactions between two variables measure the differential effects of one variable depending on the level of the other variable (Scheffé 1959). In the context of age-period-cohort research, if temporal trends in the outcome can be attributed to the variation between cohort groups, then statistically significant age-by-period interactions should be observed. When cohort membership does not affect the outcome—that is, when the effects of historical or social shifts (period) are no different across age categories—then statistically significant age-by-period interactions should not be observed. Therefore, the APC-I model explicitly considers cohort to be a specific form of the interaction between age effects and period effects. The general form of the APC-I model can be written as

$$g(E(Y_{ij})) = \mu + \alpha_i + \beta_j + \alpha\beta_{ij(k)}, \tag{1}$$

for age groups $i = 1,2, \ldots, a$ and periods $j = 1,2, \ldots, p$, where $\sum_{i=1}^{a} \alpha_i = \sum_{j=1}^{p} \beta_j = \sum_{i=1}^{a} \alpha\beta_{ij} = \sum_{j=1}^{p} \alpha\beta_{ij} = 0$. $E(Y_{ij})$ denotes the expected value of the outcome of interest Y for the ith age group in the jth period of time; g is the "link function;" α_i denotes the mean difference from the global mean μ associated with the ith age category; β_j denotes the mean difference from μ associated with the jth period; $\alpha\beta_{ij(k)}$ denotes the interaction of the ith interaction of the ith age

birth cohorts overlap with adjacent cohorts. This overlap is usually ignored in statistical modeling (Kupper et al. 1985).

group and jth period group that corresponds to the effect of the kth cohort. Note that the effect of one cohort includes multiple age-by-period interactions that lie on that diagonal in a table with age groups in rows and periods in columns. The usual ANOVA constraint applies such that the sum of the coefficients for each effect is set to zero.

We employ a three-step procedure to investigate variation between and within cohorts. First, we conduct a *global F* test of the age-by-period interactions in Equation (1), an ANOVA model that includes age main effects, period main effects, and their interactions. When the global *F* test does not reject the null hypothesis that the age effects on LFP do not vary by time periods, then we conclude that there are no cohort effects. If the global *F* test rejects the null hypothesis that there are no age-by-period interactions, it suggests that at least some of the age-by-period interactions are significant; that is, it is possible that cohort effects are operative. In this case, we proceed to the second step of *local F* tests: Separately for each cohort, we conduct an *F* test to examine whether membership in a given birth cohort matters for LFP. In other words, the local *F* test aims to identify *which* cohorts have higher or lower levels of LFP rates. For cohorts with significantly different levels of LFP rates based on the results of local *F* tests, the third step involves two sets of *t* tests about *how* membership in that cohort is associated with LFP. For variation between cohorts, we use a *t* test to investigate whether a cohort, averaged across the age groups they have travelled through, has significantly higher or lower LFP rates. To consider whether the average higher or lower LFP of a cohort is accumulative, compensatory, or unchanged over their life course, we develop a *t* test of orthogonal polynomial contrasts that focuses on the linear trend in the effects of each cohort represented by the age-by-period interactions. For more details about this modeling strategy, see Luo and Hodges (2014b).

Results

Table 2 reports the results of a global *F* test for age, period, and cohort effects on LFP for the whole March CPS sample, white men, black men, white women, and black women, respectively. These model fit statistics suggest that the model that includes the age-by-period interactions fits better than the model with age and period main effects only. We thus conclude that there are cohort effects on LFP rates, where cohort effects are conceptualized and modeled as described above. Tables 3 and 5 report—and Figure 1 illustrates—estimated age, period, and cohort trends in LFP respectively; note that the results of local *F* tests and *t* tests for the age-by-period interactions corresponding to cohort effects for each model are reported in Tables 4 and 5. Models 1 through 5 describe temporal trends for each gender and race group; later we endeavor to explain these temporal trends.

[Table 2 About Here]

An inspection of the estimated age and periods effects shows that age trends in LFP rates do not differ in *a cross-over* or *qualitative* manner[3] depending on periods, so a meaningful description of a general age trend and a general period trend is warranted. Not surprisingly, we find that LFP increases with age through midlife and then declines thereafter for all gender and race groups. While white men have the highest LFP rates across all ages, black men exceed white and black women in LFP. The estimated period effects in the models in Table 3 suggest that there was a decline in men's LFP, especially from the 1960s to late 1990s. In contrast, women's LFP was increasing so that it reached the same level as black men's. In general, the magnitude of the period effects is smaller than that of the age effects.

[Table 3 About Here]
[Figure 1 About Here]

Tables 4 and 5 present the remainder of the results from the ten APC-I models in Table 3. Local (cohort specific) *F* tests about each set of multiple age-by-period interactions indicate, generally speaking, whether belonging to particular cohorts is associated with LFP rates. Based on the results of the local *F* tests and *t* tests for inter-cohort differences reported in Tables 4 and 5 and illustrated in Figure 1, we conclude that on average, for white and black males, between-cohort differences in LFP were not substantial, although many are statistically significant because of the large sample size of the March CPS; exceptions include the second and third oldest cohorts and the youngest and second youngest cohorts of white and black men who had especially low LFP rates. Between-cohort variation was more pronounced among women: Female LFP decreased between the 1885 and 1930 cohorts, increased afterwards until the 1980 cohort for black women and the 1955 cohort for white women, and then decreased for more recent cohorts.

[Table 4 About Here]
[Table 5 About Here]

In addition to a description of the average differences *across* cohorts in LFP rates, Table 5 also shows the diversity and variability across ages and periods *within* cohorts that are above

[3]. In general, there are two types of interactions: quantitative interactions, in the trend of the outcome in one variable has the same direction across levels of another variable but differs in the strength of the trend; and cross-over or qualitative interactions, in which the trend of the outcome in one variable has a different direction depending on the level of another variable. It is difficult to interpret main effects in a meaningful way when cross-over or qualitative interactions are present. However, one can still interpret main effects in the presence of quantitative interactions, as the average trend. See Aiken and West (1991) and Jaccard and Turrisi (2003) for detailed discussions on this topic.

and over what can be described by a general age pattern[4]. According to the "accumulative advantage" hypothesis (Dannefer 1987; Dannefer 2003; Hobcraft, Menken and Preston 1982), cohorts with high LFP rates should have persistently higher rates across the life course as they accumulate more experiences, skills, and resources. The results of the *t* tests for intra-cohort slopes in Table 5 show limited support for the "cumulative advantage" hypothesis. For example: While white women in the 1955 through 1975 birth cohorts had higher LFP rates than other cohorts at young ages, the intra-cohort slopes for those cohorts are significantly negative and substantial in magnitude—suggesting that these cohorts lost their relative advantage as they aged. For the 1950 and 1975 birth cohorts, the substantively trivial slopes indicate that members of these cohort were able to maintain (but not to increase) their relative advantage in LFP. Similarly, the non-significant intra-cohort slopes for the 1925 cohort suggest that this cohort remained (neither increased nor decreased) at a low level of LFP. In contrast, the significant negative intra-cohort slopes for the 1895 through 1920 birth cohorts indicate that members of those cohorts had increasingly lower LFP as they grew older. For the 1930 through 1940 cohorts, although on average, their LFP rates were lower than other cohorts, they were catching up as they aged. Most interestingly, for the 1945 and 1980 cohorts, their LFP rates seemed "compensatory"; that is, these cohorts' lower-than-average LFP rates at younger ages are compensated by higher-than-average rates so that the average cohort effects on LFP for them were not statistically or substantively significant.

To what extent can we attribute the age, period, and cohort patterns described in Tables 3 and 5 to changes in demographic and socioeconomic factors? By the time of PAA, we will investigate the extent to which age, period, and cohort effects in LFP can be attributed to changes in educational attainment, in marriage, in the labor market, and in couples' family-work arrangements. Our strategy is to begin with each model in Table 3 and then add—in separate analyses—measures for educational attainment, marriage, labor market conditions, and couples' family-work arrangements . In each case, we ask how the age, period, and cohort patterns noted in the models in Table 3 are changed by holding constant the value of each factor. If we find, for example, that there are no longer age-by-period interactions after adjusting for educational attainment, then we will conclude that the cohort patterns we noted above are due to changes over time in educational attainment.

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[4] We caution about the estimates for intra-cohort trends for the young and old cohorts when there are less than three age-by-period interactions that lie at the cohort diagonals in the age-by-period cross-classifications; the effects estimates of these cohorts are determined by only two age-by-period interactions, so the linear trend in these effects may be different from the trend that we would observe should there be more age-by-period interactions available for these cohorts. For the oldest and youngest cohort, there is only one corresponding age-by-period interaction, so no information about the intra-cohort change can be drawn.

Conclusion and Discussion

In general, these findings suggest that the effects of age on labor force participation (LFP) do vary across periods, at least in some cases; likewise, the effects of period are not always the same for people in all age groups. Consequently, explanations of these trends should focus on at least some social and historical factors that might have mattered differently across age groups. In this research, we highlight the importance of within-cohort variation, a type of temporal variation that is intrinsic to cohort but has been ignored in prior research, in understanding temporal changes in LFP. Our findings also shed lights on how gender and race differences in LFP change across different dimensions of time.

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Table 1. Descriptive Statistics for All Analytic Variables, Current Population Survey March Supplement, 1962-2013

Description	N	Mean	S.D.	Min.	Max.
Labor force participation (LABFORCE; 0=not in labor force, 1=in labor force)	5,752,197	0.65	(0.48)	0	1
Age at time of survey (AGE)	5,752,197	43.01	(18.05)	16	75 and older
Survey year (YEAR)	5,752,197	-	-	1962	2013
Birth year (YEAR - AGE)	5,752,197	-	-	1885	1995
Gender (SEX; 0=male, 1=female)	5,752,197	0.52	(0.50)	0	1
Race (RACE; 0=white, 1=black)	5,752,197	0.11	(0.31)	0	1
Educational attainment (EDUC; 5=graduate school; 4=college; 3=some college; 2=high school; 1=less than high school)					
Marrital status (MARSTAT; 0=not currently married; 1=currently married)			Next Step		
Employment status (EMPSTAT; 0=not employed; 1=employed)					
Total Income (INCTOT)					

Note: Analysis includes respondents who participated in the 1962 through 2013 CPS surveys March Supplement for whom labor force participation status, year of birth, gender, and race are available. Words in all caps are CPS variable names.

Table 2. Global F Tests for Age, Period, and Cohort (Age-by-Period Interaction) Effects on Labor Force Participation in March CPS, 1962-2013

	Whole Sample	Men		Women	
		White	Black	White	Black
	Model 1	Model 2	Model 3	Model 4	Model 5
Age	***	***	***	***	***
Period	***	***	***	***	***
Cohort	***	***	***	***	***
N	5,752,197	2,458,550	262,533	2,685,884	345,230

Note: ***=p<0.001 ; ** = p < 0.01 ; * = p < 0.05.

Table 3. Estimated Age, Period, and Cohort Effects on Labor Force Participation in March CPS, 1963-2013

		Whole Sample	Male		Female	
			Black	Black	White	Black
		Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Intercept		0.316 ***	1.309 ***	0.710 ***	-0.195 ***	-0.171 ***
Age	16-19	-0.481 ***	-1.304 ***	-1.275 ***	0.034 ***	-0.672 ***
	20-24	0.694 ***	0.281 ***	0.574 ***	0.882 ***	0.632 ***
	25-29	0.991 ***	1.527 ***	1.476 ***	0.798 ***	0.993 ***
	30-34	1.014 ***	1.910 ***	1.637 ***	0.745 ***	1.087 ***
	35-39	1.092 ***	1.891 ***	1.545 ***	0.863 ***	1.172 ***
	40-44	1.142 ***	1.716 ***	1.385 ***	0.999 ***	1.107 ***
	45-49	1.078 ***	1.436 ***	1.131 ***	0.995 ***	1.004 ***
	50-54	0.857 ***	1.008 ***	0.755 ***	0.811 ***	0.773 ***
	55-59	0.464 ***	0.366 ***	0.263 ***	0.464 ***	0.394 ***
	60-64	-0.300 ***	-0.690 ***	-0.490 ***	-0.233 ***	-0.258 ***
	65-69	-1.394 ***	-1.980 ***	-1.685 ***	-1.245 ***	-1.258 ***
	70-74	-2.097 ***	-2.650 ***	-2.254 ***	-2.016 ***	-1.975 ***
	75+	-3.059 ***	-3.512 ***	-3.063 ***	-3.098 ***	-3.000 ***
Period	1962-64	-0.210 ***	0.526 ***	0.788 ***	-0.590 ***	-0.297 ***
	1965-69	-0.199 ***	0.423 ***	0.597 ***	-0.501 ***	-0.159 ***
	1970-74	-0.166 ***	0.267 ***	0.319 ***	-0.384 ***	-0.213 ***
	1975-79	-0.131 ***	0.054 ***	0.060 **	-0.239 ***	-0.165 ***
	1980-84	-0.050 ***	-0.029 ***	-0.082 ***	-0.074 ***	-0.131 ***
	1985-89	0.011 **	-0.132 ***	-0.145 ***	0.065 ***	0.014
	1990-94	0.064 ***	-0.203 ***	-0.260 ***	0.196 ***	-0.003
	1995-99	0.121 ***	-0.241 ***	-0.341 ***	0.300 ***	0.128 ***
	2000-04	0.178 ***	-0.198 ***	-0.311 ***	0.382 ***	0.249 ***
	2005-09	0.207 ***	-0.187 ***	-0.288 ***	0.421 ***	0.306 ***
	2010-13	0.176 ***	-0.281 ***	-0.338 ***	0.423 ***	0.271 ***
Cohort			**(See Tables 4 and 5)**			
N		5,752,197	2,458,550	262,533	2,685,884	345,230

Note: Analysis includes CPS respondents who participated in the 1962 through 2013 CPS surveys in years for whom labor force participation status and year of birth are available. Then, samples are resticted to respondents for whom all data are available. Figures represent REML regression coefficients coded to sum to zero. ***=p<0.001 ; ** = p < 0.01 ; * = p < 0.05

Table 4. Local F Tests for Cohort Effects on Labor Force Participation in March CPS, 1962-2013

		Whole Sample		Male				Female			
				White		Black		White		Black	
		Model 1		Model 2		Model 3		Model 4		Model 5	
		LLR	**df**	***LLR***	**df**	***LLR***	**df**	***LLR***	**df**	***LLR***	**df**
	1885	235.831	1 ***	0.400	1	2.372	1	79.23981	1 ***	5.674	1 *
	1890	416.854	2 ***	30.126	2 ***	14.427	2 ***	163.2676	2 ***	10.794	2 **
	1895	577.206	3 ***	134.493	3 ***	19.171	3 ***	380.5563	3 ***	38.268	3 ***
	1900	1150.782	4 ***	85.762	4 ***	2.785	4	419.6487	4 ***	74.137	4 ***
	1905	1392.322	5 ***	182.094	5 ***	19.378	5 **	497.6747	5 ***	34.060	5 ***
	1910	1265.247	6 ***	299.458	6 ***	22.524	6 ***	498.6356	6 ***	30.544	6 ***
	1915	975.576	7 ***	261.696	7 ***	11.477	7	388.2435	7 ***	15.350	7 *
	1920	2000.626	8 ***	322.804	8 ***	28.681	8 ***	1185.06	8 ***	101.307	8 ***
	1925	3202.782	9 ***	334.121	9 ***	43.716	9 ***	2246.918	9 ***	181.026	9 ***
	1930	3454.029	10 ***	366.015	10 ***	18.821	10 *	2839.643	10 ***	262.535	10 ***
	1935	2868.903	11 ***	735.445	11 ***	106.377	11 ***	2417.029	11 ***	212.603	11 ***
Cohort	1940	2405.351	11 ***	914.448	11 ***	70.044	11 ***	1736.263	11 ***	190.769	11 ***
	1945	1767.079	11 ***	2176.605	11 ***	127.008	11 ***	1095.036	11 ***	83.257	11 ***
	1950	1938.885	10 ***	1186.320	10 ***	53.458	10 ***	2181.309	10 ***	166.318	10 ***
	1955	3436.545	9 ***	158.267	9 ***	33.398	9 ***	3423.781	9 ***	92.513	9 ***
	1960	4367.540	8 ***	804.679	8 ***	32.529	8 ***	3531.892	8 ***	90.901	8 ***
	1965	2649.996	7 ***	916.215	7 ***	26.280	7 ***	1828.557	7 ***	74.362	7 ***
	1970	1116.994	6 ***	793.248	6 ***	29.926	6 ***	645.7714	6 ***	101.158	6 ***
	1975	254.724	5 ***	797.431	5 ***	53.465	5 ***	102.0023	5 ***	80.511	5 ***
	1980	61.201	4 ***	639.043	4 ***	129.325	4 ***	115.0976	4 ***	22.635	4 ***
	1985	601.966	3 ***	283.594	3 ***	58.127	3 ***	680.8047	3 ***	19.053	3 ***
	1990	2895.027	2 ***	109.391	2 ***	43.983	2 ***	2078.161	2 ***	64.130	2 ***
	1995	5060.580	1 ***	585.105	1 ***	19.734	1 ***	3129.376	1 ***	159.644	1 ***
N		5,752,197		2,458,550		262,533		2,685,884		345,230	

Note: Analysis includes CPS respondents who participated in the 1962 through 2013 CPS surveys March Supplement for whom labor force participation, veteran status, year of birth, gender, and race are available. Then, samples are resticted to respondents for whom educational attainment are available. Figures represent REML regression coefficients coded to sum to zero. LLR=log likelihood ratio. df=degree of freedom ***=p<0.001 ; ** = p < 0.01 ; * = p < 0.05.

Table 5. Estimated Inter- and Intra-Cohort Effects on Labor Force Participation in March CPS, 1962-2013

		Whole Sample		Male				Female			
				White		Black		White		Black	
		Model 1		Model 2		Model 3		Model 4		Model 5	
		Inter-cohort	Intra-cohort	Inter-cohort	Intra-cohort	Inter-cohort	Intra-cohort	Inter-cohort	Intra-cohort	Inter-cohort	Intra-cohort
	1885	0.670 ***	NA	0.028	NA	-0.241	NA	0.678 ***	NA	0.574 **	NA
	1890	0.435 ***	-0.071 *	-0.116 ***	-0.064	-0.331 ***	0.041	0.478 ***	-0.031	0.314 **	0.216
	1895	0.313 ***	-0.164 ***	-0.176 ***	-0.003	-0.236 ***	0.106	0.405 ***	-0.202 ***	0.385 ***	-0.099
	1900	0.241 ***	-0.300 ***	-0.006	-0.275 ***	0.021	-0.084	0.242 ***	-0.198 ***	0.298 ***	-0.225 *
	1905	0.119 ***	-0.322 ***	0.031 *	-0.293 ***	0.139 ***	-0.031	0.100 ***	-0.348 ***	0.048	-0.371 ***
	1910	-0.030 ***	-0.356 ***	0.004	-0.428 ***	-0.022	-0.348 **	-0.034 **	-0.341 ***	0.045	-0.316 ***
	1915	-0.139 ***	-0.222 ***	-0.035 **	-0.293 ***	-0.030	-0.080	-0.145 ***	-0.250 ***	-0.076 *	-0.194 *
	1920	-0.222 ***	-0.132 ***	-0.040 **	-0.287 ***	-0.015	-0.185	-0.246 ***	-0.145 ***	-0.176 ***	0.030
	1925	-0.246 ***	0.055 ***	0.004	-0.187 ***	-0.093 **	0.073	-0.284 ***	0.046	-0.245 ***	0.052
	1930	-0.214 ***	0.279 ***	0.019	0.064	0.032	0.081	-0.258 ***	0.361 ***	-0.234 ***	0.252 ***
	1935	-0.164 ***	0.324 ***	0.059 ***	-0.307 ***	0.098 ***	-0.525 ***	-0.204 ***	0.434 ***	-0.173 ***	0.273 ***
Cohort	1940	-0.064 ***	0.368 ***	0.062 ***	0.487 ***	0.139 ***	-0.020	-0.077 ***	0.414 ***	-0.079 ***	0.238 ***
	1945	0.027 ***	0.225 ***	-0.044 ***	0.728 ***	-0.016	0.454 ***	0.057 ***	0.155 ***	0.058 ***	0.117 *
	1950	0.121 ***	0.030 **	-0.062 ***	0.344 ***	0.015	0.161 ***	0.188 ***	0.040 **	0.125 ***	-0.117 **
	1955	0.181 ***	-0.127 ***	-0.003	-0.060 **	-0.051 **	0.012	0.249 ***	-0.132 ***	0.100 ***	-0.104 **
	1960	0.197 ***	-0.226 ***	0.003	-0.394 ***	-0.052 **	-0.146 ***	0.251 ***	-0.240 ***	0.106 ***	-0.021
	1965	0.171 ***	-0.191 ***	0.023 **	-0.470 ***	0.020	-0.198 ***	0.192 ***	-0.228 ***	0.086 ***	0.061
	1970	0.125 ***	-0.108 ***	0.032 ***	-0.468 ***	0.025	-0.151 **	0.115 ***	-0.134 ***	0.130 ***	-0.011
	1975	0.073 ***	0.000	0.023 *	-0.512 ***	-0.053 *	-0.273 ***	0.041 ***	0.057 ***	0.134 ***	0.023
	1980	0.020 ***	0.041 ***	0.005	-0.477 ***	-0.094 ***	-0.510 ***	-0.011	0.126 ***	0.083 ***	-0.024
	1985	-0.111 ***	0.084 ***	-0.053 ***	-0.318 ***	-0.075 **	-0.305 ***	-0.156 ***	0.184 ***	-0.064 **	0.060
	1990	-0.323 ***	0.085 ***	-0.106 ***	-0.001	-0.105 ***	-0.207 ***	-0.408 ***	0.119 ***	-0.144 ***	0.166 ***
	1995	-0.655 ***	NA	-0.346 ***	NA	-0.172 ***	NA	-0.779 ***	NA	-0.471 ***	NA
N		5,752,197		2,458,550		262,533		2,685,884		345,230	

Note: Analysis includes CPS respondents who participated in the 1962 through 2013 CPS surveys in years for whom labor force participation status and year of birth are available. Then, samples are resticted to respondents for whom all data are available. Figures represent REML regression coefficients coded to sum to zero. ***=p<0.001 ; ** = p < 0.01 ; * = p < 0.05

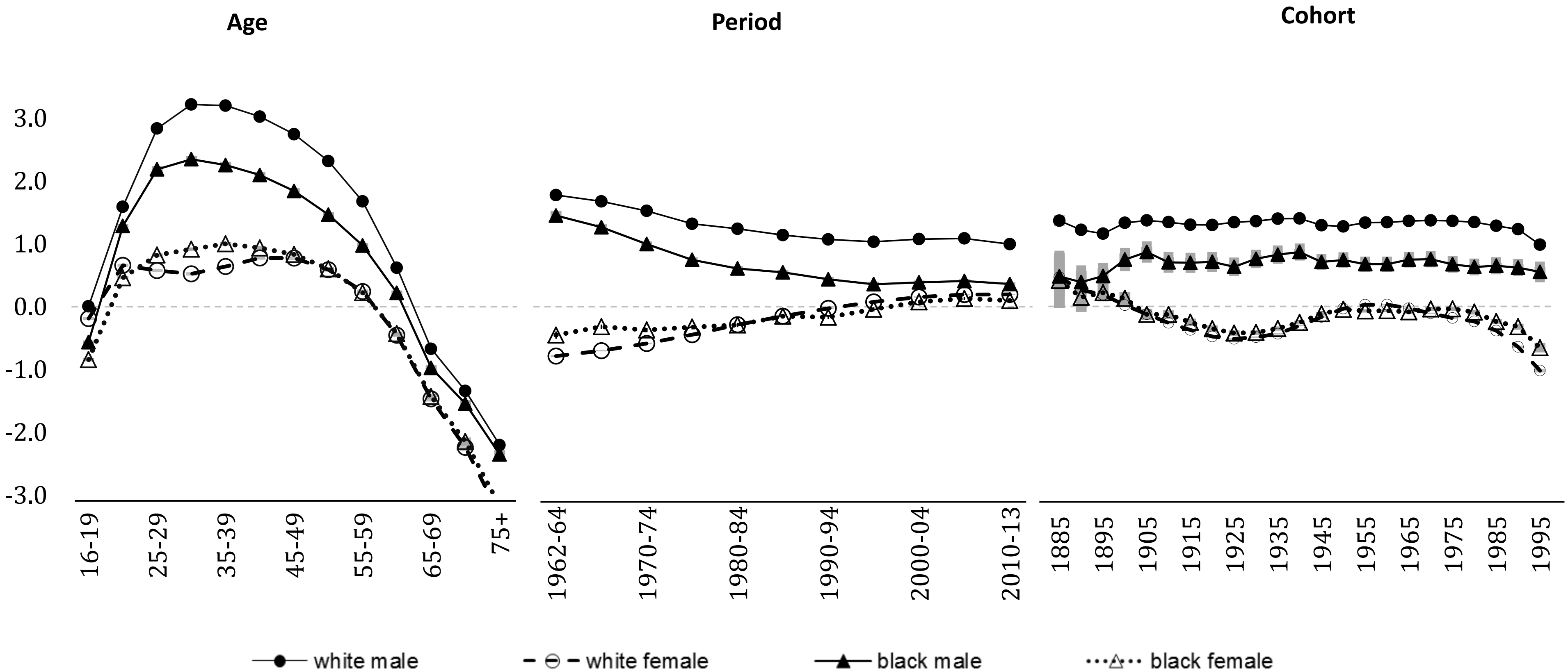

Figure 1. Age, Period, and Cohort Patterns in Labor Force Participation, Current Population Survey, March Supplement, 1962-2013

Note: Estimates derived from Models 2 through 5 in Tables 3 and 5. Analysis includes CPS respondents who participated in the 1962 through 2013 CPS surveys for whom labor force participation status and age are available. Values represent REML coefficients coded to sum to zero. Grey bars depict 95% confidence intervals.