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Racial and Ethnic Disparities in Health Insurance Coverage: Dynamics of Gaining and Losing Coverage over the Life-Course

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Abstract

Health insurance coverage varies substantially between racial and ethnic groups in the United States. Compared to non-Hispanic whites, African Americans and people of Hispanic origin had persistently lower insurance coverage rates at all ages. This article describes age- and group-specific dynamics of insurance gain and loss that contribute to inequalities found in traditional cross-sectional studies. It uses the longitudinal 2008 Panel of the Survey of Income and Program Participation (N=114,345) to describe age-specific patterns of disparity prior to the Affordable Care Act (ACA). A formal decomposition on increment-decrement life-tables of insurance gain and loss shows that coverage disparities are predominately driven by minority groups' greater propensity to lose the insurance that they already have. Uninsured African Americans were faster to gain insurance than non-Hispanic whites but their high rates of insurance loss more than negated this advantage. Disparities from greater rates of loss among minority groups emerge rapidly at the end of childhood and persist throughout adulthood. This is especially true for African Americans and Hispanics and their relative disadvantages again heighten in their 40s and 50s.

Keywords

race; inequality; health insurance; life tables

Racial and ethnic disparities in health insurance coverage rates account for a sizable share of the difference in access to health care (Lillie-Blanton and Hoffman 2005). African American and Hispanic individuals in the United States are more likely to be uninsured throughout adulthood than non-Hispanic individuals (Kirby and Kaneda 2010). Without insurance, people face considerable barriers in receiving health services. Many health care providers require insurance coverage from their patients or charge a prohibitively high fee (Himmelstein et al. 2005; Institute of Medicine 2002; Kasper et al. 2000; Nelson et al. 1999; Zuekas & Weinick 1999). Inconsistent or unstable insurance coverage also have negative consequences. Patients who frequently change health care providers due to insurance loss or change experience more interruptions in their care and are less likely to establish ongoing relationships with their physicians.

Efforts to decrease health disparities between racial and ethnic groups must identify and reduce factors that cause African Americans, Hispanics, and Asians to have greater uninsurance rates relative to non-Hispanic whites. Prior literature has identified socioeconomic characteristics—income, employment, citizenship, and language—associated with uninsurance that are more prevalent in minority populations. The literature focuses on these factors as barriers to acquiring health insurance. Few studies acknowledge that high uninsurance rates can occur in populations from high rates of insurance loss. Even fewer studies, if any, account for how the changing dynamics of gaining and losing insurance across the life-course contributes to overall disparities in insurance coverage rates.

Identifying the factors that are creating disparities at various ages is especially important with policy changes that affect people differently by age. For example, the recent Dependent Coverage Mandate of the Affordable Care Act (ACA) now allows parents to cover their children until age 26 regardless of their marriage, residential, and employment statuses. This has improved coverage among 19 to 25 year olds (Simon et al. 2015) and more so for children of parents who already had private coverage.

This paper examines how differences in rates of insurance loss and gain contribute to coverage inequalities between Non-Hispanic whites, African Americans, Hispanics, and Asians. The analysis adapts a multiple increment-decrement life table approach to demonstrate how age-specific probabilities of gaining and losing insurance leads to disparities across the life course. From life-tables, I construct synthetic cohorts and compare their insurance coverage. I decompose between-group coverage differences into rates of insurance gains and losses controlling for differential mortality to identify whether lower rates of gain or excess rates of loss leads to coverage inequality at each age. Specifically, I address the following research questions.

1. How much of between-race/ethnic disparities are explained by differences in rates of insurance gain? How much of it is explained insurance loss?
2. How do the dynamics of losing and gaining insurance contribute to the disparity across the life-course? At which ages do gains or losses exacerbate disparities?

Prior to the ACA, about 19 percent of the non-elderly US population was uninsured (Clemens-Cope et al. 2012) but the prevalence of uninsurance differed substantially by race or ethnic group. About twenty-percent of African Americans were uninsured. In comparison non-Hispanic whites had an uninsurance rate of about thirteen percent (KFF 2013). About 18 percent of Asians were not insured. Hispanics had the highest prevalence of uninsurance; about a third of Hispanics living in the United States were without health insurance. Researchers cite low income and propensity to work in jobs with no health benefits as the primary causes for high uninsurance rates among African Americans (Institute of Medicine 2003). Studies say that these low-income jobs pay too much to qualify for public assistance but pay too little to be able to afford private insurance policies leaving individuals and families to live without coverage (Edin and Kefalas 2011). Lack of job-based insurance is also a reason why Hispanics have high uninsurance rates. In addition, language barriers and immigration rules that prevent undocumented and recent immigrants from enrolling in public plans prevent Hispanics from getting insurance (DeNavas-Walt et al. 2013; Goldman,

Smith, and Sood 2005). Low take-up of public insurance has been cited along with employment in jobs without health benefits as the cause of higher uninsurance rates among Asians (Institute of Medicine 2003).

The ACA attempts to address these issues. It is offering subsidies to help lower-income working families without employer benefits afford private insurance plans. Medicaid aims to expand eligibility beyond children and the medically needy to reduce uninsurance rates among low-income, healthy adults. Outreach in multiple languages aims to lower linguistic barriers to enrolling in both public and private insurance among Hispanics and Asians. The ACA has also expanded the age of eligibility of a dependent to 26 regardless of student, employment, and marital status to reduce uninsurance as young people transition into adulthood. It has also barred insurers from denying coverage based on preexisting conditions. These changes are expected to increase enrollment among racial and ethnic minorities (Clemans-Cope et al. 2012; Holahan and McGrath 2013). Recent studies indeed show greater declines in coverage inequality between non-Hispanic white and minority groups (CDC 2015). Cross-sectional evaluations of the reform's impact are informative but can obscure differences in how fast people gain or lose their insurance plans. The life-table models in this paper shows that the predominant factor—quicker to lose insurance or slower to gain coverage—that leads to racial and ethnic disparities differ widely by age and group. The findings demonstrate a need for a more dynamic approach in examining coverage inequality.

Background and Literature

Racial and ethnic disparities in insurance coverage rates result from differences in their tendencies to find and keep health insurance. In this section, I first briefly discuss the necessity of examining health insurance status as a dynamic process. Second, I review the literature on racial and ethnic disparities in insurance gain and loss. Third, I discuss the importance of comparing age-specific patterns of insurance transitions to understand and to reduce coverage disparities.

Dynamic Nature of Insurance Coverage

The life-table approach in this article allows insurance coverage to be examined as a function of a population's rates of insurance gain and loss. This methodology of examining the uninsured stems from research on persistence of spells of poverty and unemployment (Bane and Ellewood 1985; Corcoran et al. 1985). Similarly to poverty and unemployment, a person's insurance status or a change in status is not permanent. A simple cross-sectional snapshot of the uninsured cannot adequately capture people who are likely to experience short spells with no coverage. Point-in-time estimates of the uninsured are also over-represented by the proportion that has been uninsured for a long time and masks the true heterogeneity of the group (Swartz and McBride 1990; Swartz, Marcotte, and McBride 1993; Monheit and Schur 1988). Examining insurance status as a dynamic process can distinguish groups that have precarious coverage from groups who are perpetually living without insurance. In other words, it allows us to differentiate people who are uninsured

because they are more likely to lose insurance from people who are uninsured because they are less likely to find insurance.

When researchers began to examine poverty as a dynamic process, scholarly understanding of who experience poverty changed. The perception of the persistent “underclass” popularized by poverty debates in the 1960s (Harrington 1962; Willis 1977) gave way to new research in the 1970s and 1980s that showed the dynamic and heterogeneous nature of falling into and out of poverty. People from various socioeconomic backgrounds experienced poverty often coinciding with life events such as the birth of a child, starting a new household, job loss, and divorce (Edwards 2014; Corcoran 1995).

Researchers have been applying these methods on longitudinal data to examine the dynamics of health insurance coverage (Swartz and McBride 1990; Fairlie and London 2009). The vast majority of people live without insurance in short spells; only a small fraction of uninsured had been living without insurance for more than two years (Swartz and McBride 1990; Congressional Budget Office 2003). The literature on uninsurance is beginning to evolve from cross-sectional examinations of the uninsured to studying the dynamics of insurance gain and loss.

Young adults, individuals with less education, the unemployed, and the unmarried have higher rates of losing health insurance. Trigger events such as losing employment, changing jobs, losing a spouse are also connected to insurance loss (Lavelle and Smock 2012; Peters, Simon, and Taber 2014). Once an individual loses health insurance the person’s demographic and socioeconomic characteristics also determine how quickly they will regain coverage. Individuals with higher income, full-time employment, and greater educational attainment have higher rates of gaining insurance which result in shorter spells without insurance (Swartz, Marcotte, and McBride 1993).

Racial and Ethnic Disparity in Uninsurance

The African American and Hispanic population has a greater prevalence of trigger events and socioeconomic characteristics that are associated with greater insurance loss and slower insurance gain. Access to private health insurance coverage is tied to employment and marriage in the United States. Minority groups are disadvantaged in both areas. Rates of unemployment are higher among African American men and women than their non-Hispanic white counterparts and job loss is more prevalent among minority groups (Bureau of Labor Statistics 2014). African American and Hispanic individuals are less likely to marry than non-Hispanic whites. Among those who did marry, their first marriages are more likely to end in divorce and the proportion remarrying is lower than non-Hispanic white men and women (Aughinbaugh, Robles, and Sun 2013; Bulanda and Brown 2007). Insurance policies that aimed to provide safety nets during events associated with insurance loss (COBRA) and needs-based public insurance options that made insurance more accessible (Medicaid) did not completely mitigate the insurance consequences of socioeconomic differences.

Prior studies find African Americans and Hispanics were more likely to lose existing health insurance coverage but these coverage disparities could not be completely explained by

compositional differences in educational attainment, income, and employment (Fairlie and London 2008). Swartz and coauthors (1993) found that the rate of gaining insurance after an uninsurance spell did not differ by race or ethnic background. These early studies compared overall coverage disparity and did not consider the age pattern of insurance gain and loss.

Age-Dependent Nature of Insurance Coverage

Health insurance coverage varies distinctly by age (Kirby and Kaneda 2010). Empirically, the uninsurance coverage rate is below 10 percent for children under 18. The rate of uninsurance increases to around 20 percent between 18 and 24 and reaches its peak in early adulthood between 25 and 35. The uninsurance rate decreases in later adulthood but does not reach under-18 levels until age 65 when the vast majority of US residents become eligible for Medicare (Cohen and Martinez 2014).

Age-dependent demographic, economic, and policy factors lead to this age-pattern of insurance coverage. Children under 18 are more likely to be eligible for needs-based insurance than adults through programs such as Medicaid and Children's Health Insurance Program (CHIP). Due to state-level eligibility rules, younger children are more likely to have access to state-sponsored health insurance coverage than older children. Children age out of public health insurance plans after turning 19. Getting married and having children is also associated with great insurance gain among the general population (Fairlie and London 2008). Full-time employees are more likely to gain and maintain health insurance coverage (Fairlie and London 2008) and the proportion of the population with full-time employment steadily increases throughout adulthood until retirement at 65 (Bureau of Labor Statistics 2015). The ACA allowed children to be enrolled in their parents' private health plans until age 26 instead of 19. Medicaid expansions gave coverage to many low-income men in participating states. The analyses presented in this paper document the age-specific dynamics of insurance gain and loss during the period immediately prior to the ACA.

Data

I used the 2008 Panel of the Survey of Income Program Participation (SIPP) to derive the age-specific rates of losing and gaining health insurance that served as the basis of my life-table calculations. The SIPP is a nationally representative series of longitudinal panels whose survey duration ranges from 2.5 to 4 years. The first SIPP panel was sampled in the early 1980s and a new panel was re-sampled from the non-institutionalized population in the U.S. every one to four years. The SIPP revisits respondent every four months and collects information on their insurance status for the preceding four months. Each four-month period is known as a wave. SIPP's 2008 panel collected up to 14 waves for over 42,000 households (non-institutionalized, US residents) covering information across 56 months from 2008 to 2012.

Heaping is a known problem in the SIPP and respondents are biased towards reporting changes to their insurance status at the beginning of each wave rather than at the actual month that the change occurred. While monthly insurance status is available in the SIPP, I chose to consider only the first reference month of each wave to evaluate respondents' insurance statuses and record changes. This method makes the assumption that changes in

insurance status can only happen up to once in a four-month period. All calculations are weighted by SIPP's person-level weights that account for sampling and attrition.

I limited my analysis to persons aged below 65. Insurance coverage become nearly universal after age 65 as people become eligible for Medicare. All summary values in the analyses (proportion and expected years without insurance) are for ages between zero and 65. The final analysis sample had 847,213 person-waves.

Analytic Strategy

I utilized insurance data from the 2008 SIPP to calculate the rates of gaining and losing insurance. The analysis categorizes people into those who are insured and those who are not insured. People who have private coverage, Medicaid, Medicare, or other military-related coverage are considered insured. Those who do not indicate a source of insurance is deemed uninsured. Rates of gaining insurance are derived from the proportion of people who newly became insured among those who were not insured in the previous period. Similarly, rates of losing insurance are derived from the proportion of people who newly became uninsured among those who were insured in the previous period.

I derived these transition rates separately for each race or ethnic group to compare their overall rates of insurance loss and gain. Rates of insurance gain or loss depend on age. Thus, I calculated age-specific rates of insurance transitions by race and created two-state increment-decrement life tables for each group to describe the dynamics of living with and without insurance. I then compared the differences in the proportion uninsured between race/ethnic groups by age controlling for difference in age distributions and mortality schedules. Lastly, I decomposed this difference across the life course to determine how much of the racial and ethnic disparity can be explained by the differences in the rates of insurance gain or loss. All analyses are limited to persons under 65 years of age. I describe this process in more detail.

Calculating Transition Rates

To address the first research question, I calculated the rates of losing and gaining insurance for each racial or ethnic group. The pattern of gaining and losing insurance resembled a Poisson distribution (Swartz and McBride 1990). Using this property, I derived the probability of losing or gaining insurance within a year of being insured or uninsured. I took all persons whose insurance statuses were recorded in two consecutive waves and calculated the proportion of insured in the former wave that was uninsured in the latter wave. I repeated a similar calculation to derive the proportion of uninsured who gained insurance in the later wave. From these proportions, I converted them into annual rates using the assumption that these transitions occurred in a Poisson process with a constant rate.

$$m_{r_{ij}} = - \left(\ln \left(1 - \frac{\left(\frac{d_{r_{ij}}}{p_{ri}} \right)}{\left(\frac{4}{12} \right)} \right) \right),$$

where i is the initial insurance status and j is the insurance status after 4 months for group r . d denotes the number of people who transitioned from state i to j and p denotes the number of persons in insurance state i at the beginning of the four-month period.

Using these rates I converted them into annual transition probabilities for each group.

$$p_{r_{ij}} = 1 - \exp(-m_{r_{ij}}),$$

where i is the initial insurance status and j is the insurance status after 4 months for group r .

These numbers represent the probability of losing or gaining insurance within one year of being insured or uninsured. I compared these rates between groups and examined how fast one group loses or gains health insurance relative to another.

Creating Multi-state Increment-Decrement Models

These models describe how each racial and ethnic group transition between being insured and uninsured throughout the life course taking into account differential rates of gaining and losing insurance by age. I standardize the mortality rates by applying the 2010 US mortality schedule to all groups.

First I derived the age-specific insurance transitions by group from the 2008 SIPP. I took all persons whose insurance statuses were recorded in two consecutive waves and calculated the proportion who transitioned into another state since the prior wave. I calculated these proportions separately by age at the beginning of the prior wave. I derived the proportion that lost/gained insurance among those who had/did not have insurance at the beginning of the prior wave. In a similar fashion, I calculated the proportion that gained insurance. Again using the properties of the Poisson distribution, I converted these 4-month transitions probabilities into annual rates.

$${}_n m_{x r_{ij}} = - \left(\ln \left(1 - \frac{\left(\frac{{}_n d_{x r_{ij}}}{(p_{x r_i})} \right)}{\left(\frac{4}{12} \right)} \right) \right),$$

where i is the originating state (insured or uninsured) at age x and j is the transition state (insured, uninsured, or dead) after 4 months, for group r . Using these rates, I calculated transition probabilities for each age.

$${}_n p_{x r_{ij}} = 1 - \exp(-{}_n m_{x r_{ij}} \cdot n),$$

where i is the originating state (insured or uninsured) at age x and j is the transition state (insured, uninsured, or dead) at age $x+1$, for group r .

These transition probabilities serve as the basis for the multi-state increment-decrement life tables (Schoen 1975). The life tables simulate synthetic cohorts that would experience different probabilities of gaining and losing insurance at each age. A cohort starts at age 0 with full insurance coverage. A proportion of the cohort will lose coverage before reaching age 1 while other will remain insured. At each age, the rates of gaining insurance conditional of being uninsured and rates of losing insurance conditional on being insured will shift people in the synthetic cohort between states of insured and uninsured. The resulting life-tables will yield changing coverage across the life-course.

Comparing Standardized Life-Tables between Groups

I examined the disparity in insurance coverage between racial and ethnic groups by age by comparing the proportion uninsured at each age. Because these life tables are solely derived from two factors—age-specific rates of losing insurance and age-specific rates of gaining insurance—we can compare the effects of the difference in one factor while standardizing the other. (Almost every infant is insured at birth (CDC 2009) and accordingly all life-tables in this paper all start with 100 percent coverage.) I also standardize the mortality schedule using the 2010 US life table. Standardizing mortality between groups will eliminate differences in expected years uninsured due to differences in mortality. For example, if mortality is not standardized, African Americans' expected years without insurance coverage might be understated due to their greater mortality in early adulthood when the proportion of uninsured is relatively high. Taking the difference between equivalently standardized life-tables from two racial or ethnic groups will display the age-specific disparity attributable to rates of gain and loss. In this analysis, I specifically I examine the life-course disparity in uninsurance prevalence due to difference in age-specific rates of gaining insurance and difference in age-specific rates of losing insurance.

Decomposing the Disparity across the Life Course

The last component of this analysis calculates the proportion of the overall racial and ethnic disparity that is caused by each of the three factors. I adapt the decomposition methodology described in Das Gupta (1993) and apply the standardized life-tables created in the previous section onto a common population distribution (US 2009 population). I then derive the difference in the proportion uninsured attributable to each factor. These differences sum to the overall between-group difference. In addition, I examine the disparity in terms of expected number of years lived without insurance between birth and age 65. In a similar manner, I decompose the difference to determine how many more years each factor contributes to a group living without insurance relative to non-Hispanic whites.

Sensitivity Analyses

In a sensitivity test, I used the observed mortality in the SIPP by age, race/ethnicity, and insurance status instead of a common mortality schedule. I decomposed the insurance coverage disparity into four factors including age-specific mortality for insured and age-specific mortality for uninsured in addition to the two factors—age-specific rates of losing insurance and age-specific rates of gaining insurance—that I study in the main analyses. Many race-age-insurance groups did not have a single death (especially at younger ages)

during the survey period and rates for smaller groups (i.e. Asians) are very noisy. In general, the mortality rates for uninsured are higher than the insured.

The simulated age-specific proportion uninsured using observed mortality from the SIPP was almost identical to the age-specific proportion uninsured using standard US mortality tables. However, the expected number of years without insurance is slightly higher when using observed mortality as any empty cell (age-race-insurance) in the observed mortality was treated as having a mortality rate of 0. Non-Hispanic whites spent 0.17 years and African Americans spent 0.16 years longer without insurance when I used observed mortality from the SIPP. Using a standard US mortality table yielded shorter years without insurance as it had more complete mortality information.

Results

I present the results in answer to this paper's research questions.

Question 1: How much of between-race/ethnic disparity is explained by difference rates of insurance gain? How much of it is explained insurance loss?

The first two lines of Table 1 compare the dynamics of losing and gaining insurance between the groups. The disparity in the rates of losing insurance is large. Non-Hispanic whites have a probability of .12 of losing health insurance within one year. African Americans are twice as likely to lose insurance with a probability of .23. Hispanics have a greater probability still at .30. The probability of losing insurance is not as high for Asians at .16. In contrast, the disparity in the rates of gaining insurance between groups is not as high. In fact, African Americans are more likely to get insured within one year of losing insurance (.66) than non-Hispanic whites (.61). Hispanics are about 9 percent less likely than whites to gain insurance after one year of living without coverage.

These rates of insurance gain and loss result in disparate coverage between groups. Non-Hispanic whites have the smallest proportion (.12) living without health insurance among African Americans, Hispanics, and Asians. In concordance with prior research, the rate of uninsurance is very high among the Hispanic population (.35). Approximately a third of non-elderly Hispanic persons live without health insurance coverage. Table 1 presents these results. The disparity in the expected number of years to live without insurance under current conditions is also quite large. Whites are expected to live on average a little less than eight years without insurance before reaching 65. In comparison, African Americans are expected to live over 12 years and Asian Americans live over 10 years without health insurance. Hispanics are expected to live almost 22 years without health insurance coverage before reaching 65.

A decomposition analysis of the race or ethnic difference in insurance coverage confirms that differences in the rates of loss accounts for much of the disparity. Table 2 shows how much of the overall disparity is caused by each of the three factors. Negative numbers indicate that the minority group has an advantage over non-Hispanic whites for the corresponding factor. All groups are compared to the non-Hispanic white population.

African Americans' advantageous rates of insurance gain relative to non-Hispanic whites are completely offset by their very high rates of loss. Their higher rates of insurance gain alone would yield a lower prevalence of uninsurance relative to whites but their significantly greater rates of loss results in a difference of .08. That is, after accounting for differences in population distribution, African Americans are 8 percent more likely to live without health insurance than whites. Seventy-eight percent of the Hispanic-white disparity in insurance coverage is explained by their greater rates of coverage loss. Twenty-two percent of the disparity is caused by their lower rates in obtaining health insurance. The rates of insurance gain among Hispanics are the lowest relative to whites. Together, they contribute to a greater proportion of Hispanics being uninsured (22% more) than whites. Almost all of the Asian-white disparity—a difference of 4 percent—is caused by Asians' greater probability of losing insurance (98%).

Question 2: How do the dynamics of losing and gaining insurance contribute to the disparity across the life-course?

Figure 1 shows the proportion uninsured by race/ethnic group from birth to age 65 simulated from age-specific rates of gain and loss. Observed proportions result in a similar graph with more noise. Children under 18 have lower rates of uninsurance relative to adults within their race/ethnic group. This reflects the availability of state-sponsored insurance options for lower-income children. The age-specific patterns and levels of insurance coverage differ substantially by group. The prevalence of uninsurance is the highest among Hispanics at all ages. The difference is particularly high after the age of 30. African American and Asian children have similar coverage to non-Hispanic whites during childhood but they diverge in young adulthood. The 20s is a period of high uninsurance for all groups but it is particularly higher for minorities. African Americans' coverage increases in later adulthood until 40 before peaking again around age 50 before qualifying for Medicare at age 65. Asians' coverage exceeds that of whites in their early 30s but steadily falls until 65. Much of the coverage disparity between Asians and non-Hispanic whites originate from greater uninsurance among middle-aged Asians.

Figure 2's age-specific rates of insurance loss loosely mirrors the age-patterns of insurance coverages rates. Insurance loss spikes in the early 20s for all groups but Hispanics have the greatest loss rate at almost all ages. Insurance coverage is notably precarious for African American infants and young adults; their rates of loss are similar to that of Hispanics' during these age groups. Asians have relatively higher rates of loss during young adulthood and after age 40 reflecting their age-patterns of uninsurance prevalence. Middle age appears to be a particularly detrimental time for insurance coverage for minorities. While rates of insurance gain remains low and similar to non-Hispanic whites between ages 40 and 60, rates of loss among minorities remain high.

Surprisingly, age-specific rates of insurance gain (Figure 2 top panel) are the highest among African Americans. This gain-advantage over whites is particularly prominent during childhood. Except for a brief period in early adulthood, African Americans have advantageous insurance gain rates relative to whites throughout adulthood. For

Hispanics, their rates of insurance gain are lower than their white counterparts at all ages. Asians' rates of insurance gain are equivalent to that of whites after early childhood.

How do these disparate age-specific rates of insurance gain and losses contribute to the age patterns of uninsurance? Figures 3 to 5 examines the age-specific disparity in uninsurance rates of the three minority groups relative to the non-Hispanic population. In each of these graphs, I show three lines. The solid line is the actual difference in the proportion uninsured. Values above 0 indicate greater proportion of the minority group without insurance. The dashed line is the simulated difference in proportion due to differences in age-specific rates of insurance loss standardized for all other factors. This can be interpreted as the disparity in uninsurance prevalence had only the rates of loss been different. The dotted line is the simulated difference in proportion due to differences in age-specific rates of insurance gain.

The prevalence of uninsurance among African American is higher than whites throughout all ages. They are also more likely than whites to gain insurance at all ages with the exception of a brief period in their early 20s. The dotted line in Figure 3 shows that African Americans' gain-advantage would yield lower rates of uninsurance than whites. However, the high rates of insurance loss among African Americans more than offset this gain-advantage. The dashed line in Figure 3 shows that African Americans would have had an even higher uninsurance rate without their advantageous rates of insurance gain. The effect of insurance loss on coverage inequality is most pervasive during childhood and later adulthood (early-40s to mid-50s).

The coverage disparity between Hispanics and whites are explained both by Hispanics' lower rates of insurance gain and higher rates of insurance loss (Figure 4). Differences in rates of loss account for most of the coverage disparity in childhood but, Hispanics' increasing difficulty in gaining insurance becomes a greater contributor to coverage disparity in adulthood especially from the 20s to 40s. Similarly to African Americans, greater rates of insurance loss among the Hispanic population are resulting in disproportionately high uninsurance in later adulthood compared to non-Hispanic whites.

Asians' rates of insurance loss account for almost all their lower coverage rates relative to whites. Figure 5 shows that the simulated coverage disparity due to difference in insurance loss closely follows the age-patterns of actual coverage disparity. Coverage inequality is particularly large for Asians in their 50s and early 60s, even more so than in their early 20s. The inequality at all ages is predominately driven by Asians' greater rates of insurance loss compared to non-Hispanic whites.

Lastly, Table 3 represents the findings in terms of number of years without insurance. These numbers indicate the number of years a person would expect to live without coverage before age 65 if he or she is exposed to the age-specific rates of insurance gain and insurance loss observed from cross-sectional data. African Americans are expected to spend almost five more years without insurance throughout the life-course than non-Hispanic whites. If they had the same rates of insurance loss as whites, African Americans would spend 6.1 less years uninsured meaning that they would have the lowest uninsurance rates. From our previous graphs we saw that the rates of insurance gain among African Americans were

higher than non-Hispanic whites. If the gain rates of African Americans' were lowered to that of whites, the African Americans would spend 1.3 more years without coverage. Ensuring that insured Hispanics do not lose their coverage more than whites would reduce the expected number of years without insurance by half from 21.7 years to 10.8 years. Increasing the rates of insurance gain for uninsured Hispanics to white-levels would only decrease the expected number of years spent without insurance to about 18.6 years. Asians are expected to live about 2.3 years longer without insurance than whites. If Asians were to have the same level of insurance security as whites, their expected years without insurance would decrease to 7.9 years.

Discussion

The results show prominent differences in rates of insurance loss between racial and ethnic groups throughout the life-course. While the coverage gap in childhood is relatively small, disparities rapidly grow in the early 20s as people transition into adulthood. The rates of insurance loss are particularly high for African Americans and Hispanic young men and women and remain elevated throughout adulthood. Differential likelihood of college attendance (where insurance coverage is often mandated) between groups may be contributing to disparities in the early 20s. This sets diverging paths for the types of jobs and health benefits accessible for each group. The 40 to 60 age range appears to be second period of heightened disparity for all minority groups compared to whites. For African Americans, their high rates of loss negate and even exceed their insurance gain advantage over non-Hispanic whites.

The 2008 SIPP coincides with the recession that lasted from late-2007 to mid-2009. The recession had a disproportionately strong effect on employment and insurance coverage of young adults and people with less education (Hout et al. 2011). I conducted a parallel analysis using the 2004 SIPP panel (2004–2007) to test whether the trends highlighted in this paper were unique to this time period. The overall level of uninsurance is lower in the 2004 panel for all groups and disparities in insurance coverage are higher in the 2008 panel. However, the general pattern remained constant between the two periods. Between 2004 and 2007, African Americans were more likely than non-Hispanic whites to gain insurance yet, their greater rates of loss accounted for the overall coverage disparity. Greater insurance loss accounted for almost three quarters of the disparity between Hispanic and non-Hispanic whites. Lastly, the significance of inequality among adults in their 40s and 50s were even more pronounced between 2004 and 2007 in the absence of the extreme spikes of inequality among young adults during the recession.

The analyses in this paper do not distinguish the different forms of insurance: employment-based private, marriage-based private, Medicaid, or Medicare. Employment-based private insurance plans may be more stable than Medicaid. Economic, demographic, and social inequalities between racial/ethnic groups determine the types of health insurance that groups enroll in. The type of health insurance is a large determinant in the likelihood of losing coverage. The analyses of this paper calculate the inequalities in insurance gains and losses that result from these factors. However, an examination of coverage differences without distinguishing the sources provides a high-level view of the overall disparity. This approach

can be useful in evaluating several policy changes that aim to work together to reduce inequality. For instance, the ACA comprises several provisions to improve insurance coverage. Medicaid expansions, dependent coverage mandate, and insurance exchanges collectively work to broaden access to both public and private coverage. How these recent provisions along with others are changing overall racial and ethnic disparity in the United States would be an appropriate extension of this paper.

A drawback of the SIPP is that it does not include persons who are incarcerated. Almost ten percent of African American adult men under 40 were incarcerated at any given day in 2010 (Neal and Rick 2014). In comparison, less than three percent of non-Hispanic white men were incarcerated. The disproportionately high incarceration rate among African American men may bias the results drawn from the SIPP. If these men were not incarcerated, the insurance coverage disparity would increase as the uninsurance rate would likely be high among those at risk for incarceration. More African American men without stable health insurance coverage would be included in the analysis pool increasing the already large coverage gap in early adulthood. The current results would be understating the racial inequality.

Examining insurance coverage as a dynamic process is important in evaluating a population's access to and relationship with health care. It is very likely that frequent insurance gain and loss will have negative consequences on a person's health care. After insurance loss, patients may need to stop ongoing care. And when they re-gain insurance coverage, they may need to seek new health care providers that accept the new plan. The frequent changes in sources of care prevent patients from developing an ongoing, established relationship with health care providers. Physicians have less knowledge of the medical history of new patients than established patients. Levels of trust between physicians and patients may also be low. These factors could contribute patients with unstable health insurance coverage to receive poorer care compared to their continuously insured counterparts even when insured. Unstable health insurance coverage may contribute to the empirically observed lower levels of physician trust among patients of minority racial and ethnic backgrounds (Blendon et al. 1995; Gamble 1993; Peterson 2002; Stepanikova et al. 2006).

Patients who have unstable insurance may make their medical decisions with the expectation of losing insurance coverage. They may have a preference for shorter-term solutions or treatments plans that requires fewer follow-ups. Greater expectation of insurance loss by either the patient or the physician may contribute to biases in referrals to specialists and in receiving surgical procedures (Einbinder and Schulman 2000).

While establishing a direct connection between insurance instability and health care delivery is beyond the scope of this paper, the results draw attention to a potentially large and significant mechanism through which health inequality persists between racial and ethnic groups in the United States. Social and economic factors create unstable and precarious insurance coverage among minority groups compared to non-Hispanic whites. This greater insurance instability may translate into disparities in health care delivery and inequalities in health outcomes.

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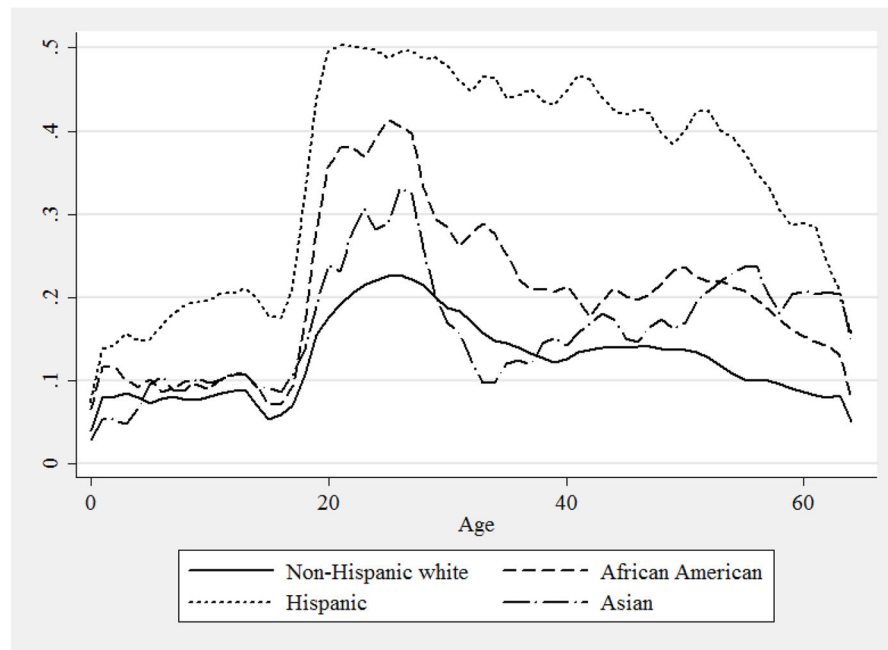


Figure 1.

Age patterns of proportion uninsured by race or ethnicity

Notes

Proportions without health insurance coverage are calculated from observed age-specific rates of insurance gain and loss. Mortality is standardized across all groups using the 2010 US mortality tables. Values are standardized using the US population distribution in 2009. Data source: SIPP 2008, CDC/NCHS, National Vital Statistics System

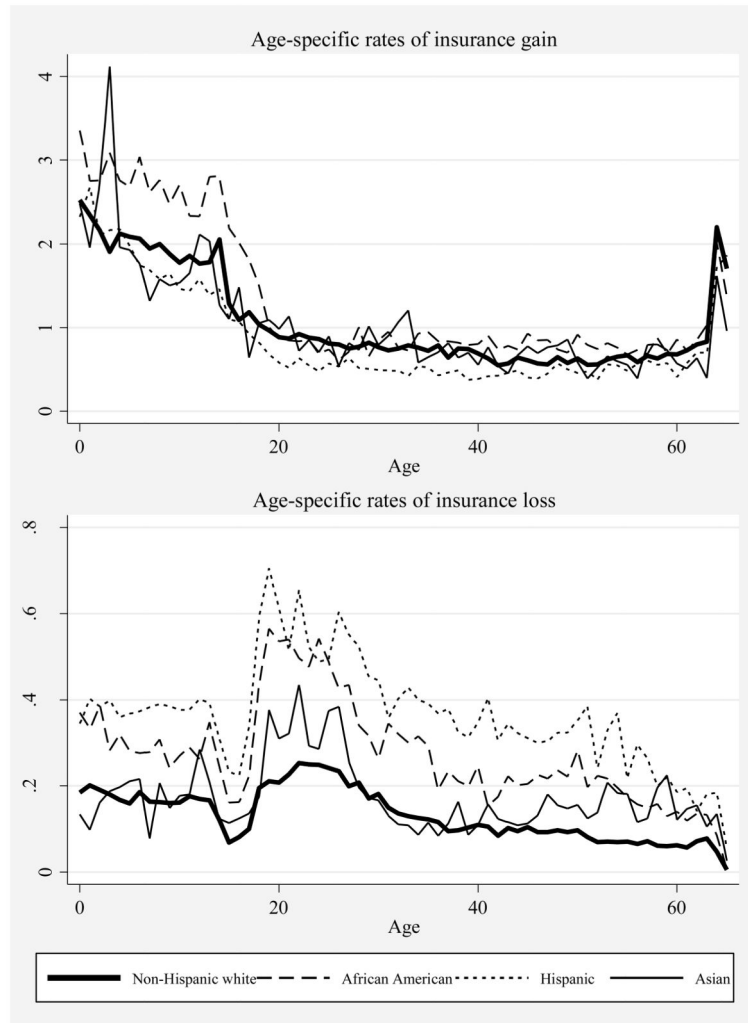


Figure 2.
Age patterns of insurance gain and loss by race or ethnicity
Data source: SIPP 2008

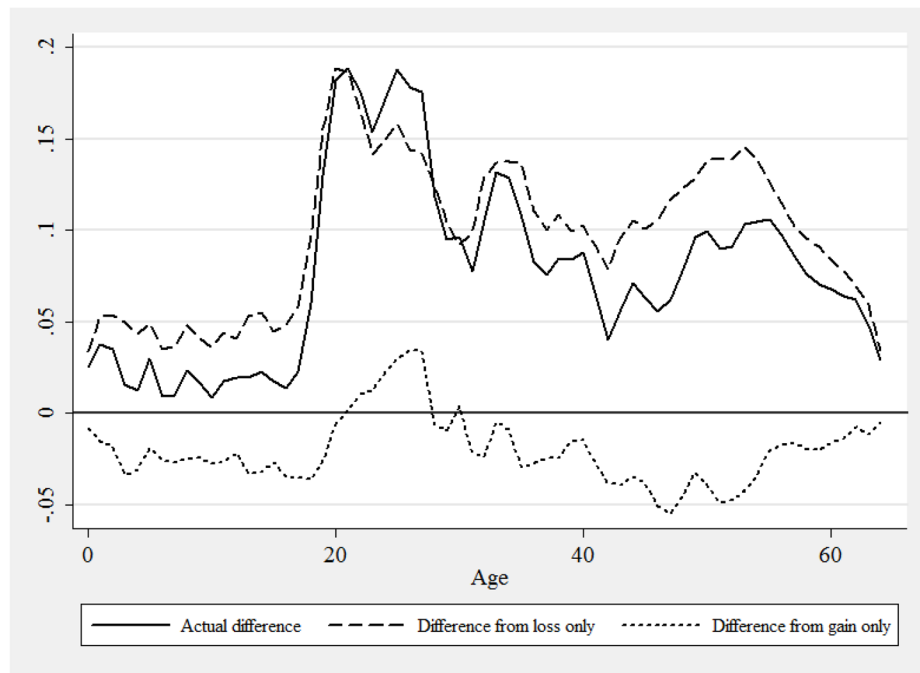


Figure 3.
Difference in proportion without health insurance between African Americans and non-Hispanic whites

Notes

Values greater than 0 indicate greater proportion of African Americans without insurance relative to the non-Hispanic White population. Difference from loss/ gains rates are derived by taking the difference in simulated proportion uninsured controlling for differences due to gain/loss, population distribution, mortality, and initial proportions. Mortality is standardized across all groups using the 2010 US mortality tables. Values are standardized using the US population distribution in 2009.

Data source: SIPP 2008, CDC/NCHS, National Vital Statistics System

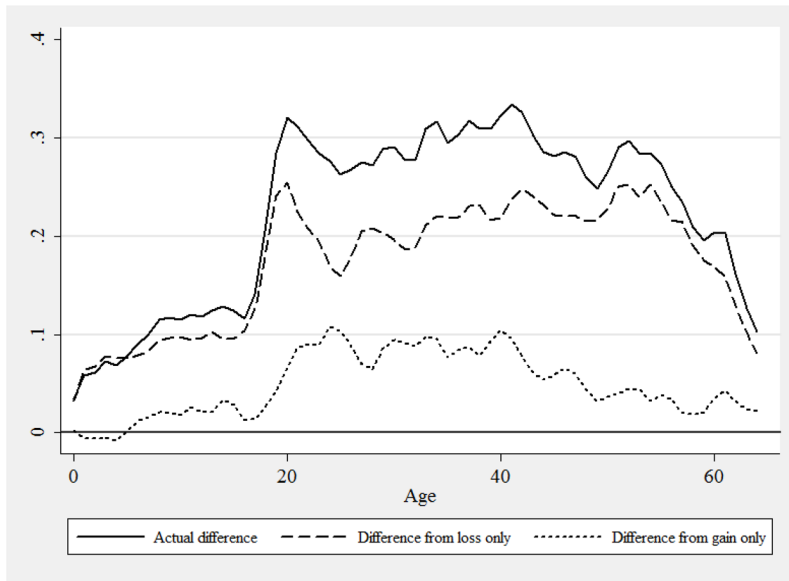


Figure 4. Differences in proportion without health insurance between Hispanics and whites

Notes

Values greater than 0 indicate greater proportion of Hispanics without insurance relative to the non-Hispanic White population. Difference from loss/ gains rates are derived by taking the difference in simulated proportion uninsured controlling for differences due to gain/loss, population distribution, mortality, and initial proportions. Mortality is standardized across all groups using the 2010 US mortality tables. Values are standardized using the US population distribution in 2009.

Data source: SIPP 2008, CDC/NCHS, National Vital Statistics System

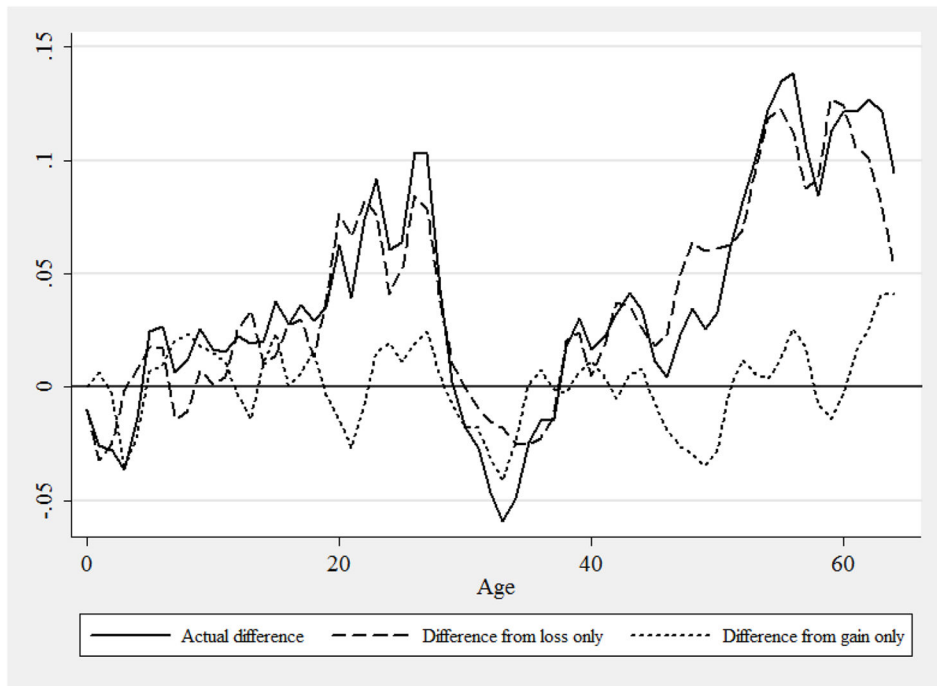


Figure 5.
Differences in proportion without health insurance between Asians and whites

Notes

Values greater than 0 indicate greater proportion of Asians without insurance relative to the non-Hispanic White population. Difference from loss/ gains rates are derived by taking the difference in simulated proportion uninsured controlling for differences due to gain/loss, population distribution, mortality, and initial proportions. Mortality is standardized across all groups using the 2010 US mortality tables. Values are standardized using the US population distribution in 2009.

Data source: SIPP 2008, CDC/NCHS, National Vital Statistics System

Table 1
Differences in dynamics and prevalence of living without insurance between groups (age 0–65)

	Non-Hispanic White	African American	Hispanic	Asian
Probability of losing insurance within one year	0.122 (0.122, 0.123)	0.233 (0.232, 0.232)	0.301 (0.3, 0.301)	0.156 (0.155, 0.158)
Probability of gaining insurance within one year	0.610 (0.609, 0.611)	0.665 (0.663, 0.666)	0.523 (0.522, 0.524)	0.596 (0.593, 0.599)
Proportion of person-years without insurance ¹	0.124	0.201	0.346	0.162
Expected years without insurance ¹	7.782	12.607	21.659	10.094

Notes

Values represent uninsurance prevalence of a hypothetical cohort exposed to the age-specific rates of insurance gain and loss observed from cross sectional data. Lower and Upper bounds at the 99 percent confidence interval are presented in parentheses. Bounds for proportion of person-years without insurance and expected years without insurance are too narrow for meaningful presentation. Mortality is standardized across all groups using the 2010 US mortality tables. Values are standardized using the US population distribution in 2009.

Data source: SIPP 2008, CDC/NCHS, National Vital Statistics System

Decomposition of disparity in proportion of person-years without health insurance prior to age 65

Table 2

	African American v. non-Hispanic white	Hispanic v. non-Hispanic white	Asian v. non-Hispanic white	(%)
Disparity due to greater rate of insurance loss	0.10	0.17	77.91	97.85
Disparity due to lower rates of insurance gain	-0.02	0.05	22.09	2.15
Overall Difference	0.08	0.22	100	100

Notes

Mortality is standardized across all groups using the 2010 US mortality tables. Values are standardized using the US population distribution in 2009. All infants are assumed to be insured at birth.

Data source: SIPP 2008, CDC/NCHS, National Vital Statistics System

Actual and simulated expected number of years to live without insurance from birth to age 65

Table 3

	African American (%)	Hispanic (%)	Asian (%)
a Actual expected years to live uninsured	12.6	21.7	10.1
Excess uninsured years relative to non-Hispanic whites (a - 7.81 years)	4.8	13.9	2.3
Simulated expected years uninsured with white insurance loss rates	6.5	10.8	7.8
	51.7	50.1	77.6
Years saved from reducing insurance loss to non-Hispanic white levels	6.1	10.8	2.3
Simulated expected years uninsured with white insurance gain rates	13.9	18.6	10.0
	110.1	85.8	99.5
Years saved from increasing insurance gain to non-Hispanic white levels	-1.3	3.1	0.0
	-10.1	14.2	0.5

Notes

Values represent expected years without insurance for a hypothetical cohort exposed to the age-specific patterns of insurance gain and loss observed from cross-sectional data. Expected number of years without insurance for non-Hispanic whites is 7.81 years. Negative values indicate that expected years uninsured will increase. Mortality is standardized across all groups using the 2010 US mortality tables. Values are standardized using the US population distribution in 2009.

Data source: SIPP 2008, CDC/NCHS, National Vital Statistics System