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Rodrick Wallace

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Deborah Wallace
Division of Epidemiology
NY State Psychiatric Institute
New York, NY, USA

Rodrick Wallace
New York State Psychiatric Institute
Columbia University
New York, NY, USA

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Preface

As of September 2016, 26 states had adopted right-to-work (RTW) laws, up from a long-standing 22 before 2011 (Table 1).

Other states such as Missouri and Kentucky appear poised to join this group. The essence of RTW laws is to prohibit requiring union membership even in a workplace covered by a legally elected union. The rationale for this prohibition is individual freedom. If the individual does not want to join a union, that person cannot be required to do so even if he/she receives union-won benefits such as wage level, health insurance, paid vacation, defined holidays, protection from baseless firing, protection from favoritism in promotion/demotion, and safe and healthy working conditions.

Sociologists and anthropologists who compare cultures internationally often label America as hyperindividualistic, indeed the most individualistic culture on earth (Bellah et al. 2007). This label neglects the collectivist traditions of the immigrants and the history of periods of collectivism such as the Great Reform and World War II and its immediate aftermath. Labor unions balanced the power of corporations over workers and minimized the inhumane exploitation that the Great Reform publicized and fought. Labor unions formed part of the collectivist surge. Of course, all forms of collectivism, whether labor unions, tenants' rights groups, civil rights organizations, etc., elicit hostile responses by the capitalist class. RTW laws strengthen the anti-collectivist armory of that class, and the political forces behind their enactment include such sources of funds as the Koch brothers' PACs.

With the demise of American industry and the funneling of an ever greater proportion of the nation's wealth into a smaller proportion of its population, labor unions find themselves besieged. The spread of RTW laws tracks the weakening of labor unions and of collectivist engagement throughout the nation. This book explores some consequences of that retreat.

Table 1 Right-to-work and
non-RTW states as of January
2017

RTW	Non-RTW
Alabama	Alaska
Arizona	California
Arkansas	Colorado
Florida	Connecticut
Georgia	Delaware
Idaho	Hawaii
Indiana	Illinois
Iowa	Kentucky[a]
Kansas	Maine
Louisiana	Maryland
Michigan	Massachusetts
Mississippi	Minnesota
Nebraska	Missouri[a]
Nevada	Montana
North Carolina	New Hampshire
North Dakota	New Jersey
Oklahoma	New Mexico
South Carolina	New York
South Dakota	Ohio
Tennessee	Oregon
Texas	Pennsylvania
Utah	Rhode Island
Virginia	Vermont
West Virginia	Washington
Wisconsin	
Wyoming	

[a]Became RTW in 2017

A Little Statistics

Except for the chapter "Resilience," this book depends on a few simple statistical
analyses: the *t*-test to compare averages of normally distributed data, the Mann–
Whitney test for medians and average ranks in case the data are not normally
distributed, bivariate regression to explore association between two factors, and
multivariate stepwise backward regression to explore association between a set of
independent variables with an individual dependent variable.

Averages and medians represent central values of data sets. The *t*-test and
Mann–Whitney test examine whether the central values of two samples of data are
significantly different. "Significantly different" means that there is only a 5% chance
or less that these central values are actually the same. In this book, we compare
socioeconomic and public health measures between right-to-work and non-right-to-
work sets of states. The reader will see different *P* values from these tests. A *P* value

of 0.05 or less means that the central value of the right-to-work set of states differs from that of the non-right-to-work set of states. A P value of 0.05–0.10 means that there is a trend toward difference. It is important to know, for example, whether median household income is significantly lower on average and on median in the right-to-work set of states than in the non-right-to-work set. That is why the book conducts these tests of central values.

The monograph also applies linear bivariate regression and multivariate backward stepwise regression to see which factors are associated. A common measure of how well factors correlate in regression is the R-square. The larger the R-square, the greater the association (the more the two factors vary together). Again, P value indicates the probability that the apparent association occurred by chance. The lower the P value, the greater the confidence that the association is real and not by chance. Again, scientific convention dictates that a statistically significant association has a P value of 0.05 or below and values of 0.05–0.10 are trends to significance. It is important to know, for example, whether union participation is associated with per capita productivity, so that the higher the percent of workers who belong to unions, the higher the per capita productivity. That is why the book uses bivariate regression. It is important to know, for example, whether percent of adults with college or higher degrees and union participation can together explain a large portion of the variation of per capita productivity over the states. That is why the book uses multivariate regression.

The statistical methods used here are, for the most part, deliberately restricted to the simple, standard tests accepted by the scientific community, tests described in basic statistical textbooks. The data came from widely accepted sources such as the Bureau of Labor Statistics, the US Census Bureau, and the Centers for Disease Control and Prevention. The public health framework arose from peer-reviewed publications that have wide acceptance and use in social epidemiology.

New York, NY, USA   Deborah Wallace
                                                                                           Rodrick Wallace

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Chapter 1
The Post-World War II America and the High Point of Union Participation

The Great Depression of the 1930s to early 1940s tried the soul of the industrial nations, including the United States. As in other industrial nations, in America, only collective action could protect workers at all from factory owners in a time of high unemployment such as the Great Depression. Other sectors of the population also found relief in collective action: consumers, renter tenants, farmers, miners, and advocates for children, public health, and other good causes. This acceleration in collectivism threatened the basic social and economic structure and frightened even upper-class supporters of the Great Reform. The FDR administration is well known for its response to this threat: sweeping social and economic reform to stave off any real structural change (Cohen 2010). Legalization of union organizing and activity provided a major component of this reform. Even before World War II united American society, the Great Depression and its reforms pushed that society toward social and economic collectivism to balance against the extreme individualism of unmitigated capitalism (Galbraith 1998).

The quarter century between the end of the war and the Nixon/Agnew Southern Strategy, the era of industrial and urban collectivism, shone with highest participation in unions, tenant associations, civil rights groups, political parties, and charitable organizations. The post-war era brought hope and civic engagement. Events occurred that would not be possible in today's hyperindividualistic milieu. For example: a small outbreak of smallpox in New York City triggered a mass vaccination drive to which millions of New Yorkers responded. Millions of New Yorkers were vaccinated in a few days (Rosner 1995) because of the collective sense of responsibility shared by all classes, races, genders, and religions. Today, public health officials have to use persuasion, threats, and even banishment-from-school power to force parents to get their children immunized against potentially fatal diseases. These parents focus solely on possible side effects of the vaccines on their individual children and ignore their responsibility to public health. The connection between autism and the "booster shot" (trivalent immunization for diphtheria, whooping cough, and tetanus) was thoroughly debunked, and the probability that

any child would suffer from one of the established side effects remains much, much lower than the chance that any unimmunized child will get the disease and become the index case of an outbreak.

In the 1950s film noir *Panic in the Streets*, the only people who tried to evade public health authorities controlling a plague outbreak in a port city were gangsters, parasites with no investment in the larger society. Worse than mere parasites and more like predators, these gangsters used homicidal violence for means to their ends.

The post-war era of booming economy presents a mixed picture of national unity, racial injustice, and conformity enforced by fear. Most Americans felt involved with the basic mechanisms of government and economy. Voting participation was much higher among whites than it is now. Ordinary citizens even ran for local office with such models as *Mr. Smith Goes to Washington*. "Stay-at-home" married women often really didn't stay at home but provided vital volunteer work for PTAs, charities, political clubs, hospitals, and other agencies of community life. "Just a housewife" kept communities quiet, clean, safe, healthy, and beautiful.

The traditional nuclear family dominated demographics. The blue-collar marriage meant that the man went to work at a factory that paid decent wages, the wife did not work but had responsibility for the children and housework, and the aspirations included a single family home in the suburbs, a car, and education for the children so that they could rise on the socioeconomic ladder (Komarovsky 1987). This aspiration toward social mobility for the next generation often held within it a hope for great contribution to America and humanity. Thus, many inventors, hero-physicians, and basic scientists who grew up during the Great Reform and the post-war era came from blue-collar origins. All these aspirations were labeled "the American Dream", but the later "American Dream" constricted to mean only a house, a car, and a middle-class income, omitting hopes of contribution to humanity. This constriction began in the Nixon era but accelerated in the Reagan/post-Reagan era.

The post-war bent for collectivism arose out of the Great Reform when even some of the wealthiest scions of the country admitted that the working class and the poor were human and deserved a reprieve from death and disease. The Great Reform gained its impetus from horrific events. The 1863 Draft Riots were investigated by a committee headed by the early public health physician, John Griscom, whose report used the phrase "hives of sickness" to describe the slums inhabited by the largely immigrant population of Manhattan (Rosner 1995). The deep irony of these riots is that the poor and working classes, looked on as non-human by factory owners and landlords, were drafted into the Union Army whose goal was to establish the humanity of Southern slaves. The sons of the rich bought their way out of the draft by giving money to poor families to send their sons instead.

Griscom, in his previous study (The Sanitary Condition of the Laboring Classes of New York City), had described the slums of Lower Manhattan and the public health status of their residents (Griscom 1844). His 1844 book and 1863 report became the blueprints for the Great Reform in New York City. A few decades later, Jane Addams and Alice Hamilton from the base of Hull House in Chicago further

educated the middle and upper classes about living conditions and occupational dangers of the working and poor classes. Upton Sinclair's *The Jungle* used fiction to arouse the middle and upper classes into action for reform. Finally, certain diseases such as tuberculosis and cholera spread from slums even into wealthy neighborhoods. Tuberculosis, termed "Captain of all the men of death" (Dubose and Dubose 1953), killed more people in industrialized nations, including the United States, than any other single cause. Impetus for The Great Reform arose from both humanitarian empathy and fear/self-interest. Tuberculosis infiltrated even wealthy families because the members had to interact with workers. Contagion between classes forced the wealthy to pay attention to the poor. American society has no impermeable walls between classes.

By the time of the Triangle Shirtwaist Factory fire of 1911, the political machine was well greased to enact building codes, fire safety standards, and occupational safety regulations. The New Deal simply built on the social vision and legal structure of the Great Reform, which valued life and health over absolute property rights of factory owners and landlords (Rosner 1995). The post-war era also built on the New Deal and the Great Reform to enact such health- and life-preserving laws as the Occupational Safety and Health Act, the Clean Air Act, and the Clean Water Act. The civil rights laws brought to the country the fulfillment of the implications of the Great Reform and the New Deal. It is no coincidence that the high point of union participation and the enactment of the civil rights laws occurred in the mid-1960s. Illustrating this relationship, Maya Angelou in her memoir *The Heart of a Woman* described taking the place of Bayard Rustin as director in the New York office of the SCLC when he moved over to take the place of J. Philip Randolph at the Negro Railway Workers' Union (Angelou 2009).

I was born into a working-class Jewish family in April 1945 a few days before VE Day, the youngest of three children. My father was a postal clerk and union organizer. My mother stayed at home until I was six when she went to work half time as a secretary. We lived in a blue-collar neighborhood of St. Louis with a high proportion of Romanian Jews. In fact, we lived a few doors to the west of a small Romanian Jewish synagogue. Most of my father's sibs and their families lived within walking distance of us and maintained close relationships with us. Except for occasional excursions to downtown department stores and movie theaters, our shopping and entertainment were local. There were three movie houses within walking distance and a local shopping strip with banks, groceries, drug stores, dimestores, shoe stores, and clothing shops. I went to the same neighborhood elementary school that my brother and sister had attended where I learned that we should all get along even if some of us are European immigrants with funny names that end in "sky," "witz," or "cu." We had a little song that said, "People with the strangest names can be the best of friends."

Within a two-block radius, we had a kosher butcher, a bakery with Eastern European goodies, a small convenience store, and our piano teacher. At the butcher's, I got my first lessons in haggling. Mother's opening gambit would be something like, "Is Esther married yet?" Esther was Mr. Berg's daughter. His answer: "I see Leah didn't lose any weight yet." Leah, my sister, at that time was decidedly plump.

Haggling was an important social interaction. In fact, the social aspects of haggling often outweighed the consumer aspects. Buying a chicken, chuck steak, veal, and ground beef took time, an ear for subtle tones, and basic good will that the opening attack would eventually lead to reconciliation and a feeling on both sides of a good deal. To haggle properly, you had to know your opponent/conspirator well and for a long time. At the bakery, Mom would open with "Don't give me stale Kaiser rolls like last week." She didn't know Mrs. Schwartz, the bakery owner, as well as she knew Mr. Berg and had to focus only on the bakery goods. Although haggling produced social engagement at the bakery, it wasn't nearly as satisfying as at the butcher shop.

Leah and I both got piano lessons with Miss Hattie, an elderly Southern gentlewoman, who eked out her meager social security by giving piano lessons. She did teach us to read music but had little concept of fingering technique. When first Leah and then later I moved on to a community music school further downtown, we felt great guilt because Miss Hattie was a very kind person and very vulnerable to hardship. I guess that she had received piano lessons as a child down South and could supplement her income only by giving them. She had no skills otherwise and was unmarried. I also guess that she bought her house with her inheritance. She lived two doors east of the synagogue and had adapted to the Jews over many years. She may, in yet another round of adaptation, have given piano lessons to African-American children after black families moved into the neighborhood and Jews moved to the suburbs in the late 1950s.

The neighborhood of the 1950s seethed with social interactions and relationships. My brother's friends lived on the block as did mine. My sister's best friend lived around the corner. Sometimes a mixed-gender, mixed-age crew of children and teenagers would play step ball in front of my home. Many of the families had lived on the block for several generations. My mother's parents had bought our house around 1910. At one point in the 1940s, three families lived there: my grandmother and my bachelor uncle on the ground floor, my family on the second floor, and an uncle and aunt on the third floor. Right across the street lived the Lichts, another three-generation household, and the family of my best friend. I'd get punished regularly for running across the street at age 4 without an adult to see that I didn't get hit by a car, but I wanted to be with my friend.

Outside the Eastern European Jewish families, the only others I got to know had made the rural-to-urban migration from farms in Missouri. A couple doors away, a family from the Ozarks had settled. They had a young cousin who visited them from down home a couple times a year, Donna Jean. Donna Jean was about 4 years older than I: smart, lively, and sweet. The word would get out on the block: Donna Jean's here! We'd wait for her to get out of the house and be with us. She sang us country songs, taught us how to weave garlands, and brought new games. We all loved Donna Jean.

On the other hand, another rural-to-urban family gave us a new menace: tough boys. We avoided these three bullies except when we all played step ball. Somehow, they downshifted to amiable when we brought out the pink rubber ball and began throwing it at the steps between the sidewalk and the porch of my house: two points

if you caught the ball without a bounce and one point if it bounced on the landing between the two flights up to the porch. Step ball illustrates the social use of the outdoor built environment.

Until I was a teenager, I never knew any black, Latino, or Asian people besides the cleaning women who worked for the women in my family. Segregation separated us all, even after the Supreme Court's decision on school desegregation in 1954. By 1957 or 1958, my mother, counseled by her brothers, got the wind up and decided that my sister would not attend a high school with black students. Mom had us moving to a blue-collar section of the then-Jewish suburb of University City in St. Louis County. We simply took part in a massive emigration to the suburbs that left St. Louis with a bimodal class distribution with peaks in the rich and poor sectors, a condition that holds true today. Even in the new neighborhood, we could walk from our little box of a house (four rooms plus basement) to those of my father's sibs who had settled their families in University City.

Until now, I had not realized the significance of the blue-collar dominance in our new neighborhood. Although some owners of ma-and-pa stores lived there, most occupations fell under the blue-collar label: electrician, newspaper lithographer, postal clerk, auto mechanic, secretary, bookkeeper, etc. Most of the women did not work, although my mother did. For this small area of a suburb dominated by professional and middle classes, social life went on as it did in the city: people sat out on their porches in good weather and visited each other; neighbors helped each other; everyone's children got some supervision from everyone; everyone knew lots about everyone else's personal life. Although the suburb was overwhelmingly Jewish, our section was more mixed ethnically and religiously, a cross-section of the Midwest white blue-collar class. Here is where I first met radical Catholics (Italian in ancestry), German Protestants, and suburban mean girls of all white ethnicities. Certain families had middle-class conformist pretentions with a strong judgmental ethos.

Nationally and locally, conformity in politics, manner, garb, and all outward signs reigned in the late 1950s to early 1960s. Nationally, the McCarthy hearings labeled huge sectors of the population as seditious. Televising of the hearings, until the demagogue's final downfall, permeated millions of homes and sent the chilling message of threat to all engaged in such collective endeavors as union participation, peace activism, civil rights, and non-mainstream religions. McCarthy's aide Roy Cohen had close relations with the leaders of B'nai B'rith Anti-Defamation League with its deep roots in the Jewish community. Left-leaning family members received stern lectures about how their activities and behavior would rouse anti-Semitism and would lead to guilt by association of all their friends and family. The executions of the Rosenbergs scarred the Jewish community with the fear of being stereotyped as Jewish Communists if its constituents participated in possibly suspect activities. Similar fears and enforcement swept through African-American, Italian, and other communities that were not White Anglo-Saxon Protestant and middle to upper class. The older civil rights organizations such as the NAACP always acted in non-confrontational ways and feared the firebrands then organizing the new civil rights groups.

I suffered from being severely bullied by mean girls from fifth until tenth grade when I entered high school. I was not the only one, and the bullying eased up a bit only when the parents of another girl threatened to sue the parents of the bullies for harassment. Those parents who threatened to sue were Holocaust survivors. I learned that conformist Jews could be as anti-Semitic as any American Christians.

In junior high school, some of us weird girls got together and formed, ironically, a chapter of B'nai B'rith teens (I don't recall the name of the program). We went out and did really uncool things that the mean girls would never do. Going door to door, we amassed canned and boxed food for people affected by a tornado that tore up several blocks in St. Louis. We visited nursing homes. We collected for UNICEF and March of Dimes.

My father had been an organizer during the Depression for the mattress and furniture worker's union. After the war, he became a postal clerk and promptly returned to union organizing, but this time for the postal clerks. Before the equal employment laws, he was grievance chairman of his local and filed grievance after grievance over racial and gender discrimination. In 1958, he noticed that the discrimination against black male clerks seemed to make them have high blood pressure at much higher rates than the white male clerks. He maneuvered integration of the union before the anti-discrimination laws and before the merger of the AFL with the egalitarian CIO. He eventually campaigned within the local for a fine African-American man to be elected local president. When he became grievance chair at the state level, he forced one of the first showdowns (1960) over an unqualified man being promoted over a qualified woman in a little village with a two-person post office. Although he always ranked very high in his civil service tests, he was never promoted himself. So much for the myth of fair civil service rewards for competence!

I feel fairly sure that at least one of my mother's brothers pressured her over Dad's union activism. As outwardly successful men, they felt empowered to put an oar into our household, telling us where to worship, to shop, and to bank and how to conduct ourselves socially and politically. They did not want their sister to make them guilty by association. In the McCarthy era, collectivist activity was conflated with Communism, even though some of the staunchest Cold War liberals were union leaders such as George Meany and David Dubinsky.

Although McCarthy fell hard, he left a sour legacy of witch-hunt machinery (including a strong FBI focus on left-wing collective activity) and culture of red-baiting. The House Unamerican Activities Committee, the anti-left-wing stance of the Anti-Defamation League, and the governmental spying on citizens prove the depth and longevity of McCarthy's legacy. Nevertheless, the fall of McCarthy acted like a cork coming out of a champagne bottle: the fizzy genii foamed out. Suddenly, collective activity had won its right to existence. The early 1960s saw the emergence of the modern civil rights movement, the women's rights movement, the environmental movement, the welfare rights movement, and the height of labor union participation. It is no coincidence that in 1964, the major civil rights laws were enacted and union participation was about at its highest. The power of these organizations endured into the early 1970s and impelled further nation-shaping laws

in the late 1960s to early 1970s, particularly the National Environmental Policy Act which established EPA and the process of environmental impact assessment, the Occupational Safety and Health Act which established both OSHA and NIOSH, the Clean Air Act, the Clean Water Act, and the Endangered Species Act. When you have environmental groups lobbying for safe and healthy worksites and labor unions like the Oil, Chemical, and Atomic Workers lobbying for a clean environment, you have legislators' heads spinning.

I spent this heady time in high school, college, and graduate school. My high school was no typical suburban one; the children of the faculty of Washington University attended University City Senior High and formed a core of left-wing intellectuals, beatniks who did not label themselves as such. Arts, science, politics, and sexuality occupied stage front in this group with typical teenage rebellion via cigarettes and booze in the background. We handed out leaflets against nuclear weapons at the Veterans' Day parade in downtown St. Louis. We picketed a bank that had branches in black neighborhoods but would not hire black people from those neighborhoods. We participated in marches for integration of service at restaurants and stores. We wrote poetry and prose, organized lectures on archeology and architecture, walked wilderness areas with binoculars for birds and wildlife, collaborated on making movies and modern dances, bathed in happy sweat at weekly folk dance parties, met regularly to discuss philosophy, and generally rubbed against each other lustfully and lovingly. We had an early Summer of Love stretched out over a few years in St. Louis County with most of the pluses and minuses such as tight fellowship, creativity, jealousy, and drunkenness. Miraculously, no one got pregnant or totaled a car. No one was seriously beaten up or charged with a felony during the political activities. One of us was the first non-religious conscientious objector in St. Louis County who refused to register for the draft. We were rebels with causes.

Out of this group came musicians, writers, scientists, therapists, early gay rights activists, physicians, and a bona fide academic philosopher. One genius alternatively plays professional concert piano and conducts biochemical research.

The election of John Kennedy had our parents activated politically. The professors began a campaign to end atmospheric testing of nuclear weapons. My father, on the other hand, besides writing editorials against nuclear weapons in his union newsletter, drafted the first contract between a labor union and the federal government. This contract, eventually negotiated and signed, formalized the rules of engagement between labor and management for postal clerks. It did what most union contracts do: provided a structure of wages, raises, and seniority; defined benefits such as pensions and health insurance; protected against unfair discipline, firing, and promotions; and set standards for working conditions that affected health and morale.

Issues of race openly simmered at all levels of American society, but issues of class simmered under lids. The shock of Sputnik forced the United States to invest in education so that more scientists, engineers, and mathematicians could enter the STEM workforce to make up for the apparent gap. Blue collar smarties got recruited to college and graduate school with financial aid, as a result. So I applied to Barnard

College, a progressive women's school in New York City. A Barnard alumna came to our little four-room "cigar-box" house in that blue-collar neighborhood in St. Louis County. She was so upper class that she had a sable stole and unshaved shins! Her jewels were worth more than my parents' little house. Then we had the interview during which I was terrified by the class difference and she stared at the living room with its dumpy furniture. We managed to discuss natural history, literature, music, and dance. It must have been ok because I was admitted to Barnard and given excellent financial aid. My grades and SAT scores must have been a big help too. But the interview presaged a class culture shock. Thank heavens for membership in that beatnik group in high school that introduced me to the upper-middle and professional classes! Social mobility isn't for sissies.

My father and all his sibs were blue collar but very intelligent. They read widely, listened to classical music, and liked a good play. Between the home emphasis on education, the financial stability from union jobs, and the national drive for higher education, the children garnered a high percent of college and higher degrees. Of the 12 children born to my father and his sibs, 9 graduated college and 5 got advanced degrees (two Ph.D.s among them). Social mobility in this family produced three professional musicians, two nurses, a specialist in prison education, an engineer, a Ph.D. historian, and a Ph.D. ecologist. The grandfather of this bunch had been a junk dealer after he got to America and the grandmother was a stay-at-home severely diabetic housewife. The fathers of this bunch were two postal clerks, a newspaper lithographer, an owner of a newsstand who later became a teamster, and an auto mechanic. My father was the only one with a degree; he did not graduate from high school but got a law degree and passed the bar exam. He went straight from law school to union organizing. So we're talking serious social mobility from junk dealer to cultural, medical, and STEM professionals in two generations! We're talking pre-Southern Strategy, pre-Benign Neglect, pre-Right-to-Work America.

At Barnard, I got a roommate who also came from a blue-collar family. Her sibling had a developmental disability, and her mother placed all her hopes for success on her, a heavy burden. We coped with a decidedly upper-class environment, but thank heaven for the brilliant working-class Jewish girls from Brooklyn, the Bronx, and New Jersey who wiped us all out with profound statements in old pre-TV authentic accents. They discussed Oivan Karamazov and had New York street smarts! Besides the blue-collar culture, we faced an Old World prejudice as Jews. Rosemary Park, the president of Barnard, openly stated that Barnard had a Jewish problem: too many Jews.

I lucked out because my high school placed serious academic challenges on its college-bound students. My roommate did not have that advantage. She broke under the multiple burdens of culture shock, academic trial-by-fire, and family pressure. She began going to sleep right after supper at 6 pm, waking up at midnight, and studying until 5 am. I had trouble sleeping because of the light she had on and because she cried a lot. The less said about her grades, the better. Her mother visited her and told her that if she didn't do well in college, the mother would put her in a car and drive them both off a cliff. Finally, the resident administration stepped in and had her sent home; she had lost it. I met her many years later. She had married and

had children whom she cheerfully confessed to beating occasionally. Even attempts at social mobility aren't for sissies. The failures leave deep scars.

Most departments at Barnard proved fairly class-blind. Not being a person of color, I have no experience of how color-blind or color-encouraging they were at the time. However, the English department prided itself on having many faculty members from Great Britain with upper-class British accents. Even some of the American-born teachers affected upper-class mid-Atlantic accents. The freshman English course requirement plunged us blue-collars into the icy Antarctic Ocean of the late-Victorian/early post-Victorian literature canon: DH Lawrence, EM Forster, GB Shaw, etc. If one is going to concentrate on British literature of that period, even HG Wells with his impoverished background informing his works would have leavened this parade of disdainful authors. When I had one-on-one meetings with my teacher, I objected to this narrow choice. So she assigned me Commentary magazine articles in addition! She also implied that I was mentally ill! This was going on at a time of upheaval in literature and theater when blue-collar and African-American works were on the best seller list. We saw neither hide nor hair of authors like Norman Mailer or the many who graced the pages of New Yorker, let alone the bright galaxy of the Harlem Renaissance. The Invisible Man, whether by Wells or by Ellison, remained invisible. The present and former colonies of the British Empire could not contribute to the literary education of Barnard freshmen at that time. Subsequent events and trends changed the assigned literature of the required freshman English course.

During this time, civil rights and peace movements gained great momentum. Northern college students traveled to the South to register voters. Peace demonstrations grew larger and more young men refused to register for the draft or to be inducted into the armed forces. I did volunteer work in Harlem with children because I had the social mobility obsession to succeed personally and to help others succeed.

Sputnik continued to finance my education in graduate school and gave me a National Defense Education Act fellowship at Columbia. Class continued to rear its weird head. I took the gut-busting physiology course taught by Prof. Hayashi, the famous explorer of muscle protein architecture. One of my physiology classmates invited me to lunch at her pad and proceeded to orate about how we upper-class, educated people had a duty to procreate intensely because the lower classes had so many children. She felt that civilization was threatened. She also assumed that everyone in graduate school in biology at Columbia partook of blue blood. The only way some of us could have blue blood would have taken acts of the vampire.

Meanwhile out in the world and nation, many issues came to a boil so that 1967/1968 made a turning point. Martin Luther King led an anti-war march in 1967 and was assassinated in 1968. President Johnson declined to run for a second term, and Hubert Humphrey suffered defeat by Richard Nixon. Robert Kennedy had been assassinated during the presidential primaries. College campuses exploded over issues of the Indochina War, civil rights, and the structure of education itself. Many universities such as Columbia had faculty who performed work for the Department of Defense, work that directly applied to the Indochina War. Many universities such

as Columbia treated nearby black and brown neighborhoods as colonies, buying up housing and evicting long-time tenants. Universities also treated their staffs with disdain, even exposing them to dangerous situations. All these injustices triggered eruptions, which have been extensively reported in books and news articles.

In the aftermath of the 1968 campus strike, I helped organize two groups, one for left-wing scientists and one for the environmental movement, Ecology Action East. Neither lasted beyond my grad student stint, but while they lasted, they did some nifty things. The acronym for the scientists' group was SAG (Scientists' Action Group). We had exactly one faculty member, Eric Holtzman, and the other eight or so members were graduate students across disciplines from astrochemistry through ecology. Besides holding seminars about topical issues such as neurochemistry and the possibility of mind control, we made forays out into the world. We found out that the head of the Pentagon's program for defoliation in Vietnam would be speaking at Wagner College on Staten Island and went out to confront him. This was highly successful in several ways: we heard the environmental smokescreen that DoD created about the effects of the defoliation and of the defoliants, we shattered that smokescreen in front of a conservative Catholic audience, and we worked together as a team at shattering that smokescreen. A few weeks later, I sent a letter to Bertrand Russell who had organized an international commission on the Vietnam War and its impacts on the peoples of Southeast Asia. I conveyed all our information on the defoliants, their likely environmental health effects, and their likely ecological impacts. This information was given to Nobelist Jacques Monod who served on the commission and, thus, raised the consciousness (as they said in those days) of biochemists, ecologists, and environmental health specialists internationally. The commission judged the defoliation as a war crime against the civilian population.

Ecology Action East came to be known as the people's environment group. We specialized in projects at the junction between environment and human rights. We publicized the use of pesticides on crops and picketed with the friends of the United Farm Workers at local stores that sold grapes from non-unionized farms. Our leaflets linked the farmworkers' heavy exposures to pesticides to the ecological damage and to the lighter consumers' exposures resulting from the pesticide applications. We helped stop Columbia University from operating a research nuclear reactor on the campus at the edge of Harlem. This project got us working with the local community (everyone from the PTAs to the local Democratic club) and with the Scientists Committee for Public Information. Members organized nature hikes, explored the link between rising fares for public transportation and increased use of personal cars, and poverty and exposure to lead paint.

We organized a first Earth Day gathering in April 1970 that gave an alternative to the first corporate greenwash into which the conventional first Earth Day celebration metamorphosed. Our speakers included Tony Mazzocchi from the Oil, Chemical, and Atomic Workers, Jerry Kay from the United Farmworkers, a representative from the welfare rights group in Harlem, a representative from the Black Panthers, Ruth Glick from the progressive city planners' organization, Bill Nicholson (the environmental physicist) who addressed lead paint issues, and a representative from the Army Corps of Engineers who attracted a hail storm of comments. This Earth

Day celebration was co-sponsored by the Environmental Law students' association from Columbia's Law School. Unlike the conventional Earth Day celebration at the School of Engineering, this gathering drew many neighborhood residents as well as students and faculty. A motley crew sat together and exchanged ideas about wealth, production, community, health, and natural resources.

My eclectic, cross-issue activities were not unique. One of the important aspects of this time in this country was the linking of many groups together. This time in this country was the last of the great collective movements, until the anti-Trump activities. The notion of the "strength of weak ties" (Granovetter 1973) assumed national as well as local force during the late 1960s to early 1970s. Granovetter (1973) had viewed the notion of weak ties at the local neighborhood level. He observed that many geographically overlapping social networks exist in old stable neighborhoods with numerous relatively weak interconnections.

Strong connections include those within families, ethnicities, genders, age groups, and religions. Weak connections are those that bridge across these primary ties. People who wait at the same bus stop each weekday morning and differ by gender, age, and ethnicity greet each other casually and come to recognize each other's faces. Some may even sit next to each other and become "bus friends." In a well-functioning neighborhood, if someone suffers from a disaster such as a child in the ICU or sudden unemployment, that afflicted person will get help from his/her social network and from the weak connections to other social networks that members of his/her primary social network developed. Fund-raising for the child's medical bills or the search for employment gains a much wider resource than that offered by the primary social network.

Weak ties also organize a community to wield political power in a concerted way. If the city administration decides to close a fire house or site a potentially dangerous facility in the neighborhood, the word gets out quickly within and between the local social networks. When community meetings are called, most components of the community are represented to join the battle.

During the late 1960s to early 1970s, this kind of joint action occurred at local, state, regional, and national levels on connected issues such as environmental and occupational health, discrimination by race and gender, the war, labor rights, consumer protection, and nuclear weapons. Many organizations broadened their views to see connections between issues. Individual organizations could call on other constituencies for support on important battles and to get desired relief legislation. In 1967, when Martin Luther King pushed for an end to the Vietnam War, he saw what that war did to the young black men who were drafted in disproportionate numbers and what the war did to poor communities that didn't get the "butter" because the "guns" ate up federal and state budgets. He also saw that the war fortified racism against all but Caucasians when even the civil rights-supporting president joked about bringing back coonskin from Vietnam.

The change of administrations and the success of both Southern Strategy and Benign Neglect shifted American society back onto the track of individualism, hierarchy, and anti-communal interpretations of laws and regulations. The South pretended to change toward racial equity under the label The New South but the

migration of its elected officials from the Democrats to the Republicans told a different story. African-Americans in both the North and South had to publicize the Jim Crow stacking of the deck against them and engage in suit after suit to get the civil rights laws enforced. Segregation in both the North and the South translated into concentration of poverty and poverty-related problems in black communities, but Benign Neglect, as interpreted by localities, destabilized these communities so that they could not muster the social and political capital to deal with those problems, as they could in the pre-urban renewal, pre-planned shrinkage eras. The return of black veterans from Indochina with their burdens of drug use and PTSD added to concentrated poverty, violence, and morbidity.

Although most historians of the 1970s look on Southern Strategy and Benign Neglect as weapons aimed at African-Americans, these policies reinforced all Southern hierarchy, not merely racial. By cutting off social mobility for poor whites as well as for blacks, they constructed a system of no-win. The civil rights and labor laws on the federal books allowed conservative leaders to pretend that everyone was equal and had an equal chance at success and the American Dream. But state and local governments failed to enforce these laws and encouraged all manner of discrimination from the Old South and the Old North: race, religion, gender, class, and national descent. Political and economic governance remained firmly in the hands of the few, and the sectors of the many were enticed to fight among themselves.

Gross exploitation of the vulnerable remains operative even today. A contractor supplied men with developmental deficits as slave labor to a poultry processing company with worksites in several states. These men lived in substandard conditions, never were allowed offsite, and were taken from living quarters to work and back again, earning less than minimum wage with no overtime (Barry 2016). They were rescued the way abused dogs are rescued. Such immense violations of civil rights, labor, and public health laws occur where state and local government routinely allow contravention and weak interpretation of Federal laws.

Before 1960, 18 states had Right-to-Work (RTW) laws, mostly states with little industry and mainly agricultural economies such as Iowa, the South, and the Dakotas. Between 1960 and 2010, four more states adopted RTW laws, less than one per decade (Wyoming, Louisiana, Idaho, and Oklahoma). The 2010s saw a surge of adoption: Indiana, Michigan, Wisconsin, and West Virginia. These last states departed from the previous profile of the typical RTW state and are part of the Rust Belt. These new RTW laws arose in the context of the lingering of the Great Recession, the continued export of factory employment to the Third World, the effects of decisions by the conservative Supreme Court about corporate funding of political campaigns, the gobbling up of national wealth by the "one percent," and a new culture of high-tech working conditions of extreme workweeks; discrimination by class, race, and gender; and hardening of class lines by educational attainment, access to the Internet, so-called Welfare Reform, and continued drift toward rewarding of wealth and punishment of poverty by the Republican Party and so-called centrist Democrats.

The benefits offered by a unionized workplace came to rankle among the jealous and beleaguered middle class. From the Reagan 1980s onward, the middle and professional classes became increasingly proletarianized with less and less control over work, working conditions, compensation, and financial security (pensions, health insurance, and employment itself). Because of their inclination to conformity, the pretensions of class, and the pressure of Reagan individualism, these educated masses largely refused to unionize to reverse deterioration in their day-to-day and lifelong conditions. They looked with jealousy and hatred at the benefits enjoyed by unionized blue collar workers, whether in construction, factory assembly lines, or public service. These spineless ahistoric blobs of envy put political pressure on elected officials to wipe out the advantages of unionization. They wrote letters to the editors of newspapers that described their toils and terrors in contrast to what the unionized workers had and asked that these conditions be leveled so that everyone suffered. They "forgot" how unions were created in the first place and "forgot" that they themselves had the right to organize. They were afraid to organize. They preferred to live like modern-day Miss Havishams in shabby gentility with ancient memories of better days and youthful hopes. Organizing was and is beneath them. They also identified with the rulers whom they serve. They are truly house servants, not field workers. They shuffle and deal. They are grateful for every crumb that comes their way. The sad irony is that many middle-class families had attained their position because of the power of labor unions and of the other forces aiding social mobility.

One important question haunting this book asks whether the socioeconomic and public health differences between RTW and non-RTW states that we shall describe arose mostly from presence/absence of RTW laws or from the individualistic, anti-collectivist culture and structure that RTW laws embody. The days of highest union participation also were graced by high levels of "weak ties" and collective action across sectors. The days of accelerating adoption of RTW laws are marked by greed, intensifying hierarchy, social immobility, and disempowerment of an ever-widening percent of the American population. The slippery slope gets ever steeper, and members of more and higher classes slide to the bottom. The question may be insoluble.

Chapter 2
What Unions Do for Workers

For many decades, the Bureau of Labor Statistics has compared the unionized to the non-unionized workforce by specific jobs. Thus, the unionized power plant unionized power plant engineers with respect to salaries, pensions, health insurance, job security, and other attributes of working life. Unionized workers came out better than non-unionized workers at the same jobs.

The following text table gives data from year 2015 for median weekly earnings in US dollars for broad job categories:

Category	Unionized	Non-unionized	Annual difference
Service	753	489	13,728
Sales and office	810	662	7696
Natural resources, Construct., maint.	1070	711	18,668
Private industry	917	765	7904
Public sector	1029	878	7852

The differences in median annual earnings are huge. The only category not showing this huge difference is managers and professionals. George Long of the BLS published a paper in 2013 about the differences in earnings and benefits between unionized and non-unionized workers and explained that unionized managers and professionals generally were lower level than non-unionized and, thus, lower paid. So a comparison between unionized and non-unionized managers and professionals is not valid.

Table 2.1 summarizes the 2015 median weekly earnings broken out by gender.

Only in the males-over-65 category are the median weekly earnings at all close between unionized and non-unionized. For most categories, the annual median difference comes to many thousands of dollars. Women often fill lower wage positions and, thus, have lower median weekly earnings. Unionized women, however, pull in thousands of dollars more annually than their non-unionized sisters.

Table 2.1 Median weekly
earnings, year 2015

Age range	Unionized	Non-unionized	Annual difference
Men			
Over 16	1017	869	7696
16–24	655	505	7800
25–34	888	756	6864
35–44	1093	963	6760
45–54	1107	1023	4368
55–64	1084	1059	1300
65 and over	1010	1005	260
Women			
Over 16	928	697	12,012
16–24	567	443	6448
25–34	884	667	11,284
35–44	1002	764	12,376
45–54	958	768	9880
55–64	937	759	9256
65 and over	905	718	9724

Unions are especially good for women.

Earnings form only part of the picture of union benefits. The percents of the unionized work force with access to defined benefit pensions, defined contribution pensions, health insurance, life insurance, disability insurance, paid holidays, paid sick leave, paid vacation, and paid personal leave hugely exceeded those of the non-unionized work force, except for long-term disability insurance (often required by state governments as a condition of employing workers). Unlike the differences in earnings between unionized and non-unionized workers which bobbled annually between 2001 and 2011, the difference in these other benefits climbed over time from a median of $4.27 to $7.11 per hour (Long 2013), a climb that cannot be explained by inflation. Even the Great Recession could not wipe out the difference between unionized and non-unionized benefits.

How unions can work these wonders gives the greatest benefit of all. Unions foster bonds between members, turn individuals into groups, and fashion policies largely based on workplace democracy with all its messy give-and-take. Furthermore, groups turned mere individuals into empowered social, economic, and political beings through group validation processes. Social science and public health literature abound with examples of how members of groups routinely show greater success at reaching their goals than individuals with no social support. These "bottom-up" groups (as opposed to the "top-down" plutocratic organizations) reach common goals through consensus, often a tedious, loving battle like a married couple making a joint decision.

Union policy and practice arises from discussion at regular union meetings and during informal gatherings like the lunch table or the afterwork supper at the nearest restaurant. A good site unit will hold monthly meetings. When I went to work

at Consumers Union, the NY Newspaper Guild unit on site did not hold regular meetings. I ran on a slate against the guys in office and promised to hold monthly meetings if elected. Although my slate lost, the monthly meetings mysteriously appeared. At these meetings, the chairpersons of each committee reported on events and policy development. Attending members could discuss the work of each committee, convey relevant information about conditions in the various parts of the corporation, and make suggestions. Although attendees usually called each other by first name, sometimes they used the traditional "brother" and "sister" forms of address, a form that carried overtones of solidarity and loyalty beyond the familiarity of first names. The unit chairman also gave a monthly report about contract matters, any threats to job security, and the actions and policies of the governing local, the New York Newspaper Guild. The monthly meetings allowed our representatives to the monthly Guild Executive Board meetings to represent the mood and thoughts of the unit to the local, establishing a regular two-way communication.

I had offered the idea of monthly meetings because when I was on the research faculty of Queens College, that unit of the Professional Staff Congress which represents the faculty of all the City University campuses held monthly meetings. However, not all union site units function on the basis of frequent and regular communication between interested members and elected officials. Different unions differ in efficiency of "bottom-up" communication and in how elected union officials welcome such communication. From my experience, I believe that regular meetings encourage more informal discussion among members and result in easier and better policy and action consensus.

Unions offer a multitude of benefits to members beyond what they get out of their contracts and the protections from favoritism, unfair firing, and other on-the-job problems. Many unions offer supplementary pensions, keyed to job longevity. Some large unions have their own low-cost medical clinics for members. College scholarships for the children of members, discounted ophthalmological and dental care, discounted merchandise from large retailers, discounted vacations and entertainment, and discounted legal services buoy the benefits of membership in many unions. Members of certain unions can even get discounted loans and mortgages. So unions help members with both company-paid benefits (higher pay, health insurance, sick days, vacation, etc.) and lower costs for certain necessities and luxuries.

The camaraderie of union activity confers power. An individual union member is more likely to challenge bad management decisions and bad treatment of workers than a lone worker without an onsite union unit. Other industrialized countries have quality procedures that include the workers' knowledge and experience. In Japan, companies' quality circles helped outcompete American companies in the 1960s–1980s, the early phase of American deindustrialization. American companies, by and large, confine decision-making to management tiers. The more important the decision, the higher the tier to which its solution is confined. Thus, the further from the action the decision-maker is in the hierarchy, the greater weight that manager has in the development of policy and practice. The empowerment conferred by union membership cuts through this stupid mind game to some extent. In particular,

formal labor/management cooperative committees, such as the occupational health and safety committee, establish informal ties between union members and managers through which important observations and suggestions can wend their way to upper levels.

In Japan, all managers in many companies have workman's clothing in their offices and don it to visit the factory floor and to participate in the manufacturing process firsthand. They also rush to the factory floor in the case of either emergencies or odd incidents. The managers stay close to the details of production and maintain familiarity with the workers' experience of production (Haghrian 2010; Martin et al. 1992). In the United States, the opposite prevails so that a reality television show followed CEOs who disguised themselves as workers and spent some time on the assembly line. This "heroic" effort was deemed odd and audacious enough to attract a television audience! Can you imagine the criminal CEO of Wells-Fargo pretending to be a teller or an account sales person who deals with middle-class consumers? Can you imagine the CEO of General Electric actually making lightbulbs on an assembly line?

Despite all these economic and social benefits and enhancement of worker power, unions had their high point in percent of workers who were members in the early-to-mid-1960s. Even then, only about 30% of relevant workers belonged to unions nationally. Membership clustered heavily in the industrial Northeast and Midwest plus the West Coast and coal-mining states such as West Virginia and Kentucky. Since then, percent of workers belonging to unions has declined immensely. The following text table divides the states between RTW and non-RTW and shows the average membership percent for each set by selected year:

Year	RTW	Non-RTW
1964	18.07	30.43
1985	11.39	20.11
1995	8.74	17.27
2004	6.61	14.72
2010	6.52	14.45
2015	7.12	13.62

Between 1964 and 2015, percent of workers in unions declined by an average of 66.4% in RTW states and by an average of 53.8% in the non-RTW states. Additionally, the number of RTW states increased from 19 in 1964 to 25 in 2015. West Virginia became RTW in 2016.

With 1995 as the basis for assigning states to RTW and non-RTW categories, the rates of loss of membership between 1964 and 2015 were an average 1.29% per year for RTW and an average 1.11% per year in non-RTW states. These rates are statistically significantly different ($P = 0.011$). However, the rates of loss were not even over the decades between 1964 and 2015. The highest average rates occurred in 1985–1995 and 1995–2004. During those two periods, RTW states lost an average of 2.4–2.5% per year and non-RTW, 1.7–1.8%. Again, the rates of loss

were significantly different between the two sets. The losses 2004–2010 and 2010–2015 were not significantly different between the two sets and much lower than the 1985–1995 and 1995–2004 periods.

Many factors contributed to the high losses in the 1980s and 1990s. Although America began losing its competitive edge to Japan and Germany in the mid-1960s, the rise of cheap manufacturing in poor countries in the 1970s and 1980s accelerated the erosion of American factory production that was further accelerated by such international trade agreements as NAFTA and GATT. Manufacturing, construction/building maintenance, health care, and public service form the major platforms of labor organization. The phrase "good union job" brings to mind the factory assembly line first and foremost. Of course, all these stable economic sectors interact so that when one catches a cold, all the others start sniffling also. Wallace et al. (1999) explain how America lost its competitive edge: the scientific and technological research that should have gone into civilian industry got sucked up into military research and development for the Cold War and the constant colonial conflicts with small, third-world countries. The guns ate the butter in research and development. Many other publications also describe this process such as Melman's *The War Economy of the United States*, an oldie but goodie (1971).

A second force toward union decline was Reaganism. The election of Ronald Reagan in 1980 signaled the rise of extreme individualism and hypercapitalism. The single action that cracked union power was the firing of the striking air traffic controllers in 1981. This action provided the role model for dealing with unions for employers all across the country. "Morning in America" coded return to a robber baron culture of deregulation, weakening of civil rights, stigmatizing those who needed help for any reason, and attacks on collective enterprises. Reagan and company resumed what Agnew and Moynihan in the Nixon administration began with Southern Strategy and Benign Neglect.

Every national administration since Reagan's has towed this line, whether it be Bill Clinton's welfare reform and GATT and NAFTA agreements, W. Bush's weak enforcement of all regulations but strengthening of military solutions to perceived problems, or Obama's declaring that Big Pharma was a stakeholder in health-care reform so that Americans end up paying so much for medical necessities that many end up bankrupt even after the passage of "Obamacare." Obamacare protected Big Pharma's outlandish increases in revenue. All these administrations attacked consumers, vulnerable minorities, the poor, and the working and middle classes. Unions were weakened in this general war on the public to siphon off the wealth of the country into a few hands and to militarize both foreign and domestic policy and practice.

A third force has been around a long time: the movement for Right-to-Work state laws. A well-oiled organization, the National Right-to-Work Committee, has patiently wooed states for decades to adopt RTW laws. Until the Reagan era which saw the first major changes in state legislatures and governors to the Republican pew, very little happened along this line. Slowly, the movement began its acceleration. Now that most state governments have Republican-majority legislatures and Republican governors, this movement shifted into high gear with

five states converting into the RTW category since year 2000. The Committee also pushes for a national RTW law and succeeded in getting the majority Republican House and Senate to introduce one in 2015. All sponsors of that bill in both houses were Republicans (https://nrtwc.org).

Thus, we can see that RTW laws have both economic and political motivations and are a harvest from Agnew's Southern Strategy. They are part of the larger package of political and economic laws, regulations, and enforcement practices designed to enhance and maintain steep hierarchy: lower taxes for wealthy individuals and large corporations, lax laws on financial institutions and practices, undoing of the civil rights voting law, weakening of enforcement of protective laws and regulations, and failure to prevent Big Money from buying elected officials. The lords and masters have long-term plans for governance and for dominating the economy, plans that they patiently wait to implement until the opportune moment. Waiting for the fruition of Southern Strategy and the invasion of that Strategy into the Rust Belt illustrates this patience. In order to implement these long-term plans, centers of resistance must be weakened into insignificance. Labor unions are important centers of resistance, possibly the most important, and form social, economic, and political nodes of organization. The crumbling of labor union membership marks the crumbling of democracy and the rise of a plutocratic dictatorship.

The massive contradiction in this process is that these Republican politicians who busily undermine democracy were elected largely by middle- and working-class voters. Why are these classes consistently voting against their own interests? Why do the poor, the young, and the racial "minorities" vote at much lower rates than the white middle-aged and elderly? The NRTWC openly observed that labor unions contribute to Democrats' campaign funds. RTW laws have as much to do with voting patterns as with worksite economics and power relations. In an ostensible republic, voting patterns yield power and money. Control over worksites and over whole communities, cities, counties, and states matters as much as the economics of worksites, cities, counties, and states.

The weakening of labor unions likely contributed to the stagnation of wages and the decline in real wages. It has much to do with the decline in working conditions, including higher rates of occupational fatalities and injuries in RTW states (Loomis et al. 2009). The American worker, both blue collar and white collar, has experienced an immense decline in standard of living, in housing, in educational opportunities for the children, in economic security, etc. But that worker also suffers from an increase in hours of work per week, in illegal failure of employers to pay overtime, and in loss of vacation time even if the employer ostensibly offers paid vacation. The worker is simply not allowed to take it, often being told that his/her presence is needed on the job. Making workers take up the slack when the workforce itself at the site is too small, a common method of minimizing costs, results in these added hours of work and lack of vacation time.

Indeed, the non-unionized work force is in such bad shape that some state and local governments have passed new minimum wage laws and laws mandating minimal paid sick leave. If government has to assume the tasks that unions have

traditionally performed, the question of why unions are weak now and why workers aren't organizing to protect themselves carries great legitimacy.

Unions themselves are stretched to the breaking point. They have consistently claimed that RTW laws would result in freeloading, in workers not joining the union in spite of being represented by the union and getting the benefits of union representation (good wages, insurance, pension, vacation, etc.). The Bureau of Labor Statistics lists by year and state the percent of workers who belong to unions and the percent who are represented by unions. I developed a simple measure of freeloading: the state's percent of workers represented by unions minus the percent of workers who are union members divided by the percent who are union members. In equation form: freeloading = (percent represented-percent members)/percent members. Table 2.2 displays by state this measure of freeloading. Between 2005 and 2015, the average measure of freeloading in the RTW states fluctuated between 21 and 25%, whereas it fluctuated in the non-RTW states between 9 and 11%. Certain states such as North Carolina, South Carolina, and Texas showed very high rates of freeloading during individual years, as high as 53%. The claim of likely freeloading in the context of RTW laws is certainly true.

The greater freeloading doesn't come about simply because of the greed of many workers who want union benefits without paying the union dues. In nearly all union-represented shops, even in non-RTW states, there comes a time when the boss directly confronts a worker and asks that person to oppose the union in one way or another. I was subject to this kind of confrontation several times when I worked at Consumers Union. I got a visit from my boss when the contract was under negotiation and the employer wanted to weaken the health-care benefits much more than the union would swallow. The boss tried to tell me that the economics of the health insurance program were unfair and that the workers should pick up more of the tab. I simply did not reply, but found this invasion extremely distasteful.

I got fairly regular visits when my boss would tell me not to be so active in the union because it made me unacceptable to the executives. This was also distasteful and vaguely threatening. I represented the union on the labor/management occupational health and safety committee. The union reps to the committee found that one of the analytical labs was using the "Bhopal" chemical methyl isocyanate unsafely: no signage at all on the door, no locking of the door during the workday when the analyst was away from the lab, no securing of the chemical's container so that it could not be accidentally thrown down, long tubes running from the lid that could be snagged by the broom or mop of the cleaners, and non-isolated ventilation. I looked up the applicable OSHA regs about this situation and sent them to the tech executives. My boss came thundering to my office and made all kinds of threats about my "insubordination." What he did was illegal because the union members on the health and safety committee are exempt from any hierarchical pressure in the course of their acting as committee members. I had to make complaint to the head of human resources who rightly set my boss straight about his limitations in this instance. These attempts at reducing union activity took place in a non-RTW state, in a closed shop, and at a place of employment that prided itself on its do-goodism as a voice against abuse of consumers, a counterweight in unfair power relations.

Table 2.2 Index of
freeloading by state

State	rtw	Freeload05	Freeload10	Freeload15
AL	1	0.147	0.098	0.078
AK	2	0.057	0.083	0.107
AZ	1	0.262	0.266	0.173
AR	1	0.250	0.350	0.255
CA	2	0.079	0.063	0.082
CO	2	0.133	0.212	0.107
CT	2	0.069	0.048	0.024
DE	2	0.093	0.096	0.130
FL	1	0.333	0.232	0.235
GA	1	0.200	0.250	0.275
HI	2	0.035	0.078	0.064
ID	1	0.212	0.211	0.074
IL	2	0.041	0.058	0.053
IN	1	0.065	0.119	0.130
IA	1	0.174	0.211	0.271
KS	1	0.357	0.338	0.241
KY	2	0.113	0.135	0.100
LA	1	0.156	0.279	0.172
ME	2	0.143	0.121	0.172
MD	2	0.128	0.112	0.173
MA	2	0.072	0.076	0.101
Ml	1	0.044	0.048	0.086
MN	2	0.045	0.032	0.056
MS	1	0.366	0.244	0.259
MO	2	0.096	0.121	0.114
MT	2	0.140	0.134	0.139
NE	1	0.145	0.269	0.169
NV	1	0.094	0.120	0.154
NH	2	0.106	0.147	0.175
NJ	2	0.059	0.035	0.078
NM	2	0.321	0.329	0.274
NY	2	0.054	0.074	0.053
NC	1	0.345	0.531	0.367
ND	1	0.260	0.230	0.259
OH	2	0.075	0.073	0.106
OK	1	0.185	0.255	0.321
OR	2	0.083	0.093	0.095
PA	2	0.087	0.082	0.083
RI	2	0.057	0.061	0.049
SC	1	0.435	0.348	0.381
SD	1	0.390	0.179	0.169
TN	1	0.222	0.234	0.204

Table 2.2 (continued)

State	rtw	Freeload05	Freeload10	Freeload15
TX	1	0.170	0.241	0.444
UT	1	0.245	0.292	0.333
VT	2	0.204	0.153	0.167
VA	1	0.292	0.239	0.278
WA	2	0.068	0.098	0.071
WV	1	0.076	0.115	0.105
Wl	1	0.068	0.063	0.133
WY	1	0.203	0.135	0.155

rtw 1 = right-to-work state
rtw 2 = non-right-to-work state
Index of freeloading = (number represented − number members)/number members

Think what the situation must be in RTW states at worksites of great hostility to the representing union. The employees must be under constant immense pressure not to sign that membership card.

Something deep in American culture imposes a class hierarchy almost automatically. Wherever an endeavor takes shape, the division of labor becomes tiered with bosses and those obeying the bosses. Our very constitution starts out with Article 1, defining congress and its governmental role. The House of Representatives is apportioned to the states by virtue of their populations. These populations are counted as follows: "the whole number of free persons, including those bound to service for a term of years, and excluding Indians not taxed, three-fifths of all other persons." The very constitution institutes a deep division of population: slaves are not entire people, Indians don't count as anything, and indentured servants just barely count as whole persons. This constitution was signed by convenors from twelve states, North and South, slave-holding and non-slave-holding, already quasi-industrial or entirely agricultural.

The apportionment of congressional representatives according to the populations defined in Article 1, Section 2 of our constitution reflects the socioeconomic strata of the two pillars of American culture, the agricultural and slave-owning South and the entrepreneurial, cheap labor-dependent North. The North has received little study compared with the South. Its nascent industries, exemplified by the enterprises of Paul Revere, depended heavily on apprentices and contracted labor, both skilled and unskilled. Apprenticeships formed a set of indentured servitude. The apprentices were understood to be journeymen-in-training and often came from good, mechanic families (the equivalent of the middle class). They could read and write and do arithmetic. They often had training in geometry, chemistry, and engineering. Or their apprenticeship gave them such training. Although they formed a type of contract labor, they often lived with their master's family, married into that family, and became journeymen and master craftsmen over time. Or a son was often apprenticed to his own father and learned his trade in the family workshop. A son of a laborer might become an apprentice, if he had early aptitude, and enter the mechanic class.

The apprentice class differed from the factory and railroad-building laborers who, although nominally free, worked hours set by the owners under conditions created by the owners and for wages determined by the owners. Hours, working conditions, and wages could be changed at any time. Apprentices were protected by their contracts which set wages and obligations of the apprentice to his master and of the master to his apprentice. For a description of the old apprentice system and its evolution to modern labor union adoption, see www.lni.wa.gov/TradesLicensing/Apprenticeship/About/History.

In the South, the economic engine was agricultural for a very long time and, according to Wyatt and Brown (2007), the culture derived directly from feudal agricultural England. In the North, the economy was mixed but increasingly dominated by industry, finance, and commerce. The masses of laborers in the two regions diverged (largely black and enslaved vs largely white and free but oppressed). The South also made use of indentured labor, a quasi-illegal system of importing English prisoners and working them almost like slaves for the years of their contracts (usually 8–12 years). Indeed, the state of Georgia began as a prison colony and worked the imported prisoners as slaves. The 13th amendment to the constitution which emancipated the African-American slaves required work to be paid for everyone except prisoners and appears to preserve the prisoner enslavement culture from colonial times.

Wyatt-Brown made the case for continuity of culture in the South from agricultural feudal England. Cultural heritage lasts through time on a very long scale and evolves to survive societal changes. The North was founded on a culture from early nascent industrial, anti-feudal England and the Netherlands whereas the South was founded on serf-owning, liege-loyal, hierarchical agricultural England. Furthermore, the Great Reform in the United States began with do-gooders who aped the Great Reform in England and read such tracts as Edwin Chadwick's (1842) Report from the Poor Law Commission on an Inquiry into the Sanitary Condition of the Labouring Population of Great Britain. John Griscom's (1844) tract was titled *On the Sanitary Conditions of New York's Laboring Classes* and reflected the continued intellectual and cultural connection between the former colony and the mother country.

Both the older industrial, pre-reform culture of the North and the very old agricultural feudal culture of the South espoused fierce individualism, hierarchy, and property rights over most other rights. Victorian literature such as *Barnaby Rudge, Bleak House*, and *Hard Times* by Dickens depicted the British urban slums of pre-reform days and the tinderboxes that they were with apprentices and laborers prone to riots and violence. Both Chadwick and Griscom described the disease epidemics that arose in the slums and spilled over to general society. Urban populations of all classes required the Great Reform to head off general epidemics and both sporadic individual instances of violence and mass outbreaks of violence. However, the heritage of fierce individualism and adherence to the primacy of property rights never vanished from the North and came to the fore again with the erosion of American industry in the Rust Belt and with the rise of Reaganism. Reaganism revalidated the deep cultural British heritage both in the North and in the South.

We all have been taught that Thomas Jefferson wrote the Declaration of Independence with some help from others in the Continental Congress. He was a Southern slave holder who never freed his slaves, in contrast to George Washington. He also stiffed merchants and industrialists who sent him products, expecting him to pay for them. His mode of living contrasted sharply with the outflow of his penned words. He wrote "that all men are created equal; that they are endowed by their Creator with the inalienable rights to life, liberty, and the pursuit of happiness..." The meaning of these words for the two dominant cultures (North and South) probably differs from what we mean by them in this post-Great Reform era. Article 1, Section 2, defines the classes of persons: free men, indentured servants (including rented prisoners and mechanic class apprentices), and human property (slaves). Equality had no meaning in apportioning congressional representation.

Labor unions, economic cooperatives such as granges, worker-owned mines and factories, and all other collective economic enterprises muddle the clear class structure by shifting, to the working class, power that had resided in the class of large capital. Labor leaders in the United States often came from non-British heritage, from collective cultures, and descended from post-1840 immigrants. Granges and other farm cooperatives often arose among non-English immigrant agricultural communities such as the Scandinavians, Italians, Acadians, and Irish. The Mennonites, Shakers, and other "fringe" property-eschewing religious sects of non-British origin organized collectively owned and operated factories. Labor unions even sometimes took over factories that were destined for closing by their owners. These collective enterprises brought the equality so glibly asserted by Jefferson in the Declaration of Independence, an equality at loggerheads with the deep founding cultures.

To be a real American requires participation in that founding culture of inequality and steep hierarchy of race, gender, and class. This aching need of national identity partially explains the puzzle of so many working- and middle-class citizens voting against their own economic and social interests and for their presumptive masters. The proponents of RTW laws push these buttons mercilessly to get these laws enacted in more and more states. As the working and middle classes voted conservatives into local and state offices, the very laws enacted by their elected representatives turned against them. They support these laws, as "real Americans," and follow St. Reagan down to their own ruin, their wealth sucked into the treasury of the real boon-receivers of RTW laws.

Although the core of blue-collar conservative Republicans has British ancestry, many supporters come from families that immigrated from Europe to the United States before 1920. They descend from collective cultures: Jewish, Italian, Greek, French, Slavic, and Irish. Their families endured the anti-immigrant movements of the late nineteenth and early twentieth centuries and the Red Scares of the 1920s and 1930s. These families learned that to get ahead in American society, they had to assimilate into the prevailing British culture. Social mobility required loss of collectivity and adoption of the extreme American brand of individualism. They had to disavow their collectivist family, friends, and neighbors.

My own family split along these collectivist/individualist lines. My mother's parents were store owners and thoroughly petit bourgeois. Her father invented little gadgets like an icebox display case for ice cream and upscale ice cream flavors such as rose and blueberry. My father's father had been a member of the Jewish Socialists in Romania and continued left-wing activism after immigrating. He organized fellow bricklayers in favor of workers' compensation and testified in court cases about construction site accidents although his English was heavily accented and full of grammatical errors.

My mother's brothers owned a print shop and were active in B'Nai B'rith, supporting the Anti-Defamation League (ADL) which began its life as a branch of B'Nai B'rith. ADL defends only "good" Jews who are attacked by anti-Semites. Left-wing Jews can be freely attacked with the grossest and most dangerous anti-Semitic actions, but ADL will respond to any appeals for help from these "bad" Jews with statements about how bad they are and how ADL doesn't defend Jews who aren't patriotic. "Aren't patriotic" is defined in many ways, but chiefly as engaging in activities such as refusing to take the Pledge of Allegiance, organizing against the authorities, and embracing views against rampant capitalism. Roy Cohen, Joseph McCarthy's assistant, was a great supporter of ADL. Albert Shanker, the long-time president of the United Federation of Teachers and a rabid Cold War liberal, used the ADL to disseminate the smear that the organizations agitating in the 1960s for community control of schools were anti-Semitic.

Even ostensibly collectivist endeavors such as labor unions could be subverted into antisocialist strongholds during Red Scares. The conservative, assimilationist wing of each immigrant group acted to subvert organizations into supporters of capitalism and American individualism. The Italians, Irish, Greeks, and other immigrant communities were shaped by this process of subversion of their ancestral collectivist culture. It was part of the divide-and-conquer strategy of the ruling class.

The succession of Red Scares, especially the McCarthy era, frightened the immigrant communities and imprinted them with the ideology of assimilation and individualism. Collective activity was branded as subversive, traitorous, and radical. Executions of minority left-wing activists such as Sacco and Vanzetti blanketed these communities with a thick layer of fear and vulnerability. They reinforced the conservative assimilationist wing and eroded the positions of labor activists.

In this poisonous atmosphere, many labor unions self-purged and lopped from membership and positions of leadership those activists deemed radical. I belonged to the NY Newspaper Guild, a purged union. Decades after the purge, its effects were quite evident. As vice-chair of my unit, I tried to encourage social mobility within the membership with a program of professionalization of blue-collar positions and retention of professional status of the workforce sector with college and advanced degrees. In the 1990s and thereafter, the professionals were turned into assembly line workers, churning out product under ever more stringent deadlines and having to cut corners on quality control. When I observed that the professionals on the staff were being proletarianized, a shudder ran through both management and the unit membership. The word "proletarianized" had more power to horrify than any filthy

four-letter Anglo-Saxon epithet, even though that radical word captured succinctly the process applied to the professional staff.

The dynamic at my job site was interesting and internally contradictory. The management and part of the union membership were professional, i.e., highly educated and trained in hard science, technology, journalism, and social sciences. Union members in the professions interacted with managers as co-professionals. However, the digital revolution turned union members (and the line managers) into technoservants doing the bidding of upper management and losing control over working conditions and methods of producing. In some cases, the union actually had to step in and protect a professional union member from being forced to depart from professionally acceptable methodology. I know because I was one when my boss tried to force me to use statistical methods designed for normally distributed data on data with a bimodal distribution. By refusing to use the union to protect their professional status and culture of excellence, the professional members experienced downward social mobility, and the blue-collar members could not get on the social mobility upward track.

Surrealism pervaded the meeting between the union rep, my boss, and me. This corporation had always paraded as scientifically pure, solid in method, and absolutely objective. We in the lower rungs (line managers and below) had to satisfy a larger and larger set of protocols to document our test methods and defend our test results. Yet, I had to invoke the union to prevent a breach of absolutely basic statistical method. My boss wanted to emphasize a particular idea for the benefit of the writers and editors on this project. He wanted me to generate numbers that would provide this emphasis and demanded use of a parametric analytical method on data that should have been analyzed by nonparametric methods. If I had been viewed as a professional, my refusal to do this would have merely been accepted. My boss looked on me as a technomaid. The union saved my professional status and my fealty to its responsibilities.

However, I rose to professional class from a labor family and understood how I was being demeaned back into assembly line worker. Most of my colleagues in professional positions couldn't detect what was happening to them and how to protect themselves by calling in a union rep. That purge of the late 1940s–early 1950s left a workforce without a class sense.

It also left the workforce at Consumers Union in an anomalous position: loyalty meant two things. The workforce had endless messages of record from administration about the quality of our work and the importance of the science and technology behind testing products. The unrecorded message, however, was obedience and energy in protecting the high ranking tiers in the organization. A "loyal" worker juggled the two responsibilities. When they conflicted, trouble brewed. As in many workplaces, control over the work and the workplace always arose as an issue. If the worker pushed back to protect work quality, that person was marked as disloyal to management. If a worker acquiesced to the demands of superiors but the project suffered and backfired, that worker took the blame because the messages of record about the importance of maintaining quality in testing were violated. The union became an important factor in maintaining the quality of testing,

despite the indignation of the executives when we workers publically voiced this truth. In deep irony, some of the most basic adherence to quality came from the old lab technicians who worked ostensibly under the supervision of the project leaders but who had decades of test experience and knew what did and didn't succeed in product testing. The union's protection of institutional memory saved many a project despite the efforts of upper management and of the executives. This protection exemplifies how unions serve the public at large.

Unions were greatly weakened by the Red Scares in many ways. The proponents of RTW laws could continue to raise the image of Communistic unions trodding on the rights of the individual although unions have been and continue to be defenders of individual members from corporate-imposed conformity and antisocial practices, as the example of Consumers Union and the New York Newspaper Guild illustrates. Now we have to look to whistle-blower protection laws to do what unions used to do in this regard. Unions often form coalitions with other protective groups: consumer organizations, environmental groups, rights groups, etc. When workers find something wrong with the policies or practices of their employer, they have the choice of silence or whistle-blowing. During the Depression, mattress workers came to my father who was their organizer and revealed that mattresses labeled as containing horsehair actually contained pig bristle. He went right to a consumer protection organization with the information. Often occupational exposures to toxic chemicals translate into eventual consumer exposures or exposures to the public living near the factory. The Oil, Chemical, and Atomic Workers Union famously blew whistles about these exposures and was very active during the resurgence of the environmental movement in the late 1960s–early 1970s. The Uniformed Fire Officers Association blew the whistle on the cuts in fire service in New York City that triggered the massive burnouts of poor neighborhoods in the 1970s; battalion chiefs who spoke in public always had a union rep with them. Members of strong unions don't need whistle-blower laws to protect them; they have union protection to expose dangers to or frauds on the public, as well as dangers to or abuse of themselves and their coworkers.

The chapters that follow explore in detail the social, economic, and public health consequences of the RTW laws and the weakening of labor unions and of collective behavior and endeavors in the United States.

Chapter 3
Social and Economic Measures Nationally and by RTW Status

In 2010, nearly all RTW states had histories of little or no industrialization before 1970 and long histories of agricultural dominance. The core of these states was the Old South with extensions into the agricultural Great Plains and Southwest. Before 2011, 22 states had RTW laws. The loss of old manufacturing jobs and Southern Strategy which drove new factories to the South and Southwest vitiated union membership in the old industrial belt and turned it into the Rust Belt. For a map of manufacturing job changes by county, see Wallace et al. (1999). After 2010, more states enacted RTW laws so that by 2016, 26 states had them.

Getting new RTW laws enacted required a good story: unions force employers to hire fewer people; unions cripple productivity; and unions hinder innovation and creativity. Looking at the data on such measures as state unemployment rates and state gross domestic productivity (GDP) per population would plumb the truth of these assertions. For these stories, go to the website of the National Right to Work Committee, https:nrtwc.org.

Dear sisters and brothers, we have to begin wading into real data and analyses. To question the assertion of conservative Big Bucks takes a stiff dose of real evidence and standard statistics. We can't just flail around with heartfelt and inspirational calls for mass health and well-being. The Big Bucks often take refuge in patriotism, in the voice of authority, and in odes to Northern European culture and its social structure. They construct an alternative universe that works with internal logic, if you accept the initial premises. This universe agrees with American culture and history as they have been handed down by the ruling class for generations. As long as reality bore even a smidgen of resemblance to this alternative universe, the social, political, and economic machine kind of moved along. With globalization, a shift in demographics away from white Northern European, and Internet revelations of authoritarian brutality and lawlessness, reality has taken another track increasingly away from the alternative universe of white, male, Northern European feudal triumphalism. So get

down into the mud of reality and gear up for some mental John Henry athletics. We got to pound some iron spike statistics now.

Table 3.1 displays the 2015 annual GDP per unit population of the states.

Table 3.1 Per capita gross domestic product

State	rtw	Per capita GDP 2015
AL	1	42,663
AS	2	81,801
AZ	1	43,269
AR	1	41,129
CA	2	61,924
CO	2	58,009
CT	2	72,331
DE	2	69,930
FL	1	42,595
GA	1	48,574
HI	2	55,598
ID	1	39,398
IL	2	59,472
IN	1	49,328
IA	1	52,807
KS	1	50,159
KY	2	41,586
LA	1	54,159
ME	2	41,477
MD	2	60,097
MA	2	69,705
MI	1	46,585
MN	2	60,256
MS	1	35,717
MO	2	47,209
MT	2	44,308
NE	1	59,175
NV	1	48,639
NH	2	53,834
NJ	2	64,070
NM	2	41,551
NY	2	72,965
NC	1	50,159
ND	1	70,926
OH	2	51,052
OK	1	46,298
OR	2	56,009
PA	2	52,925

(continued)

Table 3.1 (continued)

State	rtw	Per capita GDP 2015
RI	2	53,321
SC	1	40,212
SD	1	51,902
TN	1	46,531
TX	1	59,994
UT	1	48,965
VT	2	47,520
VA	1	56,891
WA	2	62,213
WV	1	38,567
WI	1	51,456
WY	1	68,536

rtw1=rtw state
rtw2=non-rtw state

Clearly, these distributions differ with the bulk in the RTW states at the lower end and the bulk in the non-RTW states in the middle of the distribution of all the states. The following text table shows the basic statistics for each set of states:

	RTW		Non-RTW
Average GDP/pop	49,409		57,465
	$T = -2.9$	$P = 0.0053$	
Median GDP/pop	48,802		57,009
Average rank	19.9		31.5
		$P = 0.0051$	

Thus, whether we use the parametric T-test or the nonparametric Mann-Whitney test to compare the central values of GDP/pop of the RTW and non-RTW states, the two sets of states differ significantly, the non-RTW states showing higher productivity per population than the RTW states. The probability of the two sets of data being the same falls well below the 0.05 conventionally accepted cutoff. GDP is classed as a macroeconomic measure.

However, difference in productivity/population in 2010 during the Recession did not exist. State productivity during the Recession was nearly identical for both sets of states. Thus, in this macroeconomic measure of gross productivity, non-RTW states showed greater vulnerability to this particular recession which was concentrated in the financial industry.

The Great Recession also highlights the greater clout of the financial industry in our overall American economy than in previous generations. Our economy rests too heavily on the renting of money and on making money flow ever faster through our financial sewer pipes. Our economy no longer rests strongly on making actual products in factories that employ large numbers of people who don't have college degrees. The centers of the financial industry remain in areas of high global

culture and high levels of education, not the RTW states. The RTW still cannot compete economically with the non-RTW states because they are trapped in an anti-evolutionary culture and socioeconomic system.

Unemployment rate can be classed as either a macro- or a microeconomic measure depending on whether the emphasis is on how well the economy is working or how well individuals and families live. In 2016, no statistical difference in unemployment rate between the RTW and non-RTW states existed. Mean unemployment rate in RTW states was 4.64% and in non-RTW states 4.81% ($P = 0.54$). The average ranks in nonparametric analysis were 24.34 for RTW and 26.75 for non-RTW ($P = 0.57$). Both probabilities lie far from the 0.05 conventional cutoff for statistically significant difference. However, by 2016, the economy had about 5 years of recovery from the 2007–2011 Great Recession.

Unemployment rates in 2009 would reflect the impact of that recession. RTW states had a rate of 8.27% and non-RTW of 8.88% ($P = 0.32$). Their respective ranks were 23.14 and 27.36 ($P = 0.31$). Although the probabilities in 2009 were lower than those of 2016, they still lay far from the 0.05 conventional cutoff and the 0.1 cutoff from the status of trend to difference. The ranges for both 2009 and 2016 overlapped hugely, and both sets of states showed vulnerability to national and global economic forces. For both sets, the Great Recession imposed much higher unemployment rates than the somewhat recovered economy.

Let's add the usual caveat about unemployment statistics, namely, they don't take into account people who have simply given up looking for work. The long-term unemployed are largely undercounted in the measure. We have no way of differentiating between the two sets of states in the undercount, an inherent flaw. However, the Bureau of Labor Statistics has tried to measure unemployment in more ways and has developed the U6 unemployment rate measure which includes those who have stopped looking for work in discouragement and those employed part-time who want full-time work. When we compare the RTW and non-RTW sets of states for U6 unemployment rate in 2015, we find no significant difference in means, medians, or ranks. Indeed, the P for means is 0.34 and for average ranks is 0.57, nearly the same as for the conventional unemployment measure. The U6 measure of unemployment is shockingly high (around 10% average for each set of states), more than double the conventional measure.

Median household income is a measure of the microeconomy, how well individuals and families live. In 2014, about 3 years into recovery from the Great Recession, average median household income in RTW states was $50,566 and in non-RTW $59,725 ($P = 0.0002$). The medians were $49,715 and $58,972 with respective average ranks of 18.46 and 33.13 ($P = 0.0004$). Thus, during recovery, the two sets of states differed significantly.

Median household income of 2008–2010 reflects well-being of households during the Recession. Averages for RTW and non-RTW states, respectively, were $47,206 and $53,358 ($P = 0.0035$). The medians were $46,908 and $52,791 with average ranks of 18.98 and 30.62 ($P = 0.0052$). Certainly, the two sets of states differed significantly during the Recession. The comparison of the median incomes of Recession and recovery hints that the non-RTW as a group showed more rapid recovery than the set of RTW states. RTW states had an average increase in average

median household income of only about $3300, whereas non-RTW states had an average increase of about $6300. The changes in average ranks in the nonparametric comparison also show this difference in recovery rate. The RTW states actually decrease rank by about 0.5, whereas the non-RTW states increased average rank by about 2.5. So the national household economic recovery actually depended more on the non-RTW states than on the RTW.

Poverty rate is also a microeconomic measure reflecting the proportion of households living with income below the official definition of poverty income. This definition remains unchanged since the mid-1960s: the cost of a minimal diet times 3 to take into account other expenses. In 2015, a single person under 65 years old with income below $12,331 was considered in poverty, as was one over 65 with income below $11,367. A family of four (two adults and two children) had a poverty measure of $24,036. The above data and information came from the US Census website (US Census, poverty). So from the baseline, we're dealing with poverty measures of gross inadequacy. Between the 1960s and the present, the different necessities such as housing, clothing, transportation, and medical care have increased in cost at rates different from the increases in food costs. The formula does not work anymore. Additionally, the meaning of 'minimal diet' is far from a healthy diet.

Table 3.2 displays poverty rates (percent of households with income below defined poverty level) by state in 2010 (toward end of Great Recession) and 2015 (in midst of presumed recovery).

Before we get into comparing RTW and non-RTW sets for poverty rates, let's observe the data in this table. Nationally, poverty rate in 2010 was 15.3% and in 2015 14.8%. This "recovery" at the national level had only a little effect on percent of households with incomes below the miserly measure of poverty. The mass of poor people were not feeling this "recovery," although we have seen that median incomes rose. We're talking about over one-seventh of American households!

The table shows that 28 out of the 50 states experienced an absolute increase in poverty rate between 2010 and 2015. Some of these states suffered large increases of over a half percent: Alaska, Arizona, California, Delaware, Georgia, Hawaii, Illinois, Louisiana, Maine, Maryland, Montana, Nevada, New Hampshire, New Jersey, New York, Oregon, Rhode Island, Tennessee, and Virginia. New York went from 14.9% to 15.9%, Alaska from 9.9% to 11.4%, and Louisiana from 18.7% to 19.9%. So in Louisiana, we're talking about one out of five households in 2015 and in New York almost one out of six!

Our comparisons of the RTW and non-RTW sets of states for poverty rates must be viewed in the context of these astonishing rates of poverty and of the mean, miserly, inadequate measure for poverty. When we use labels for economic class such as poor, working class, and middle class, we probably are stuck in the mid-1960s when the method for defining poverty income infested governmental policy and practice. Today's working- and middle-class have had no substantial real raise in decades that would allow their incomes to keep up with rising costs of living. Besides the cruelly unreal method of defining poverty, inflation is also defined in some unreal way. The US government omits crucial components of household expenses such as food and energy (Bureau of Labor Statistics inflation). Thus,

Table 3.2 State poverty rates
2010 and 2015

State	rtw	Poverty 2010	Poverty 2015
AL	1	19.0	19.2
AK	2	9.9	11.4
AZ	1	17.4	18.2
AR	1	18.8	18.7
CA	2	15.8	16.4
CO	2	13.4	12.1
CT	2	10.1	10.8
DE	2	11.8	13.0
FL	1	16.5	16.6
GA	1	17.9	18.4
HI	2	10.7	11.5
ID	1	15.7	14.8
IL	2	13.8	14.3
IN	1	15.3	15.2
IA	1	12.6	12.3
KS	1	13.6	13.5
KY	2	19.0	19.0
LA	1	18.7	19.9
ME	2	12.9	14.0
MD	2	9.9	10.4
MA	2	11.4	11.7
Ml	1	16.8	16.2
MN	2	11.6	11.4
MS	1	22.4	21.9
MO	2	15.3	15.5
MT	2	14.6	15.2
NE	1	12.9	12.3
NV	1	14.9	15.4
NH	2	8.3	9.2
NJ	2	10.3	11.1
NM	2	20.4	20.6
NY	2	14.9	15.9
NC	1	17.5	17.2
ND	1	13.0	11.1
OH	2	15.8	15.8
OK	1	16.9	16.6
OR	2	15.8	16.4
PA	2	13.4	13.6
RI	2	14.0	14.8
SC	1	18.2	17.9
SD	1	14.4	14.1
TN	1	17.7	18.2

(continued)

Table 3.2 (continued)

State	rtw	Poverty 2010	Poverty 2015
TX	1	17.9	17.2
UT	1	13.2	11.8
VT	2	12.7	12.2
VA	1	11.1	11.8
WA	2	13.4	13.2
WV	1	18.1	18.2
WI	1	13.2	13.2
WY	1	11.2	10.6

rtw 1 = Right-to-work state
rtw 2 = Non-right-to-work state

real wages and salaries (what income can buy) don't keep up with real inflation. Even in comparison with the unreal policy-defined inflation rate, real income for the bottom 90% at best stagnated and, in more likelihood, declined. So when we compare poverty rates of the two sets of states, we are comparing the percents of their households in extremis.

For both 2010 and 2015, the RTW states had significantly higher average and median poverty rates. If we use the 2010 roster of RTW states, they had an average poverty rate of 15.98% and a median of 16.7%. The non-RTW states had an average of 13.66% and median of 13.4%. If we use the 2016 roster, the results are similar: RTW average of 15.96% and median of 16.65%; non-RTW average of 13.3% and median of 13.4%. In 2015, the RTW states had an average of 15.79% and median of 16.4% and the non-RTW states an average or 13.73% and median of 13.4%. So the statistically significant difference remained after recovery from the Great Recession had allegedly gathered steam by 2015. The differences between averages and medians indicate somewhat non-normal distributions, suggesting that the medians are more proper to gauge central value.

If we look at the medians, we can see that poverty affects about one out of six households across the RTW states and one out of a bit more than seven across the non-RTW states, a big difference but with both measures, a horrendously high proportion in what is classed by the UN and the OECD as a wealthy nation. Indeed, every year, the OECD trots out the poverty status of children by country, and the United States in 2015 had a higher proportion of children in poverty than Poland and much higher than countries like Sweden, France, and Germany of ostensibly similar social and economic development (OECD, child poverty).

One way that America handles its poverty is public assistance which can range from actual income help ("welfare") to tax credits to food stamps, Medicaid, and housing cost subsidies. The rules for eligibility for many of these goodies, outside of federal tax credits and social security/Medicare, arise out of the hearts and minds of state authorities. So the percent of need met by public assistance differs from state to state. Not surprisingly, the set of RTW states differs significantly from the non-RTW set in the percent of households with public assistance.

	RTW	Non-RTW	
Average	2.35	3.43	$t = -4.68, P = 0.00002$
Median	2.2	3.15	
Average rank	17.23	34.46	$P = 0.00003$

As you must remember, a significantly higher percent of the population of RTW states, on average and on median, lived in poverty in both 2010 and 2015. So now we have a picture of higher poverty and lower poverty relief in RTW states than in the others. We can generate a measure of unrelieved poverty by dividing the poverty rate by the public assistance rate. This is a little unkosher because the poverty rate measures the percent of individuals living below poverty level and the public assistance rate measures the percent of households with assistance that isn't social security for retired persons. So this is a rough measure but informative about state differences in public policies.

	RTW	Non-RTW	
Mean pov10/pubasst12	7.19	4.17	$t = 5.8, P = E{-}7$
Median	6.59	3.78	
Rank	34.94	15.27	$P = E{-}6$

Although the widely used measure of income inequality, GINI, was no different on average or by median in the RTW from in the non-RTW set of states in 2010, it was vastly different in 1959, year of available data closest to maximal union participation (1964). Poverty, GINI, and median income bridge the economic and social aspects of class. GINI 1959 significantly associated negatively with median income of 2008–2010 and of 2014 and with percent of adults with college or higher degrees in both 2000 and in 2011. The erosion of income equality in non-RTW states mirrors the erosion of union participation and may depend partly on loss of social mobility from blue-collar into professional class. We use GINI as the index of income inequality although other indices such as the Theil index also exist. GINI is used widely by such conventional institutions as the World Bank. When we regress GINI against other socioeconomic factors and against measures of public health, the results make sense. The Theil index showed no association with such SE factors as median income, educational attainment, poverty rate, or per capita GDP. Thus, we feel on firm ground with GINI as a reasonable and reliable index of income inequality.

Social mobility depends partly on educational attainment. In 2010–2014, about 86% of adults on average in RTW states had high school degrees and about 88% in non-RTW states. Although this difference does not appear important, it is statistically significant. Likewise, the medians are significantly different: 85% vs 89%. Many variables associate with percent adults with high school degrees. Percent adults with high school degrees is associated negatively with the deep unemployment rate of the Bureau of Labor Statistics, negatively with poverty rate, negatively with both GINI 1959 and GINI 2010, and positively with median income.

Backward stepwise multivariate regression produces a model of negative influence by poverty 2010 and GINI 2010 that explains almost two-thirds of the pattern of percent adults with high school degrees in 2010–2014 over the 50 states.

The difference in percent adults with college or higher degrees in 2011 is far larger: 33% vs 42% on average and 32% vs 41% on median. Percent adults with college or higher degrees is associated negatively with poverty rates and positively with median incomes and per capita productivity across the 50 states. GINI 1959 negatively associated with college degrees, but GINI 2010 had no association at all. In the backward stepwise multivariate regression, percent adults with college degrees associated positively with median income and negatively with social capital 2000 in a model that explains about two-thirds of the variability over the 50 states. Higher educational attainment at the state level influences and is influenced by both macro- and microeconomic measures and social factors.

Social and political measures also include voting participation. Voting in presidential elections every 4 year is the least a citizen can do politically. For the 2012 presidential election, the difference between the means and medians of RTW and non-RTW states did not rise to even a trend toward significance (59% vs 62%, $P = 0.12$ for medians). However, the general election of 2014 showed a strong trend to difference (38% vs 42% on average and 39% vs 42% on median). Indeed, voting participation in 2014 associated positively with percent adults with high school degrees and negatively with GINI 2010 and with poverty rate. Voting participation in both 2012 and 2014 associated positively with Putnam's measure of social capital of 2000, the latest available year of data. Voting in 2012 associated negatively with GINI 1959. Thus, the basic political process of voting depends on educational attainment, income equality/inequality, prevalence of poverty, and social interactions that give rise to social capital. Even historic configurations such as GINI 1959 continue to influence voting participation at the state level.

Union participation associates with several economic and social indicators: percent adults with college degrees, per capita GDP, and median income associate positively; poverty and unrelieved poverty associate negatively. Social capital 2000, voting in 2012 and 2014, and deep unemployment show little or no association with union participation. However, union participation may influence social and economic measures indirectly. GINI 1959 negatively and strongly associates with percent union participation 1964. GINI 1959 negatively associates with percent adults with college degrees or more of 2011, whereas GINI 2010 has no association with this measure of higher education. Besides the direct association of union participation positively with median income and per capita productivity and negatively with poverty, long-ago union participation may indirectly influence these economic and social measures through its influence on long-ago GINI that influences present higher educational attainment.

Changes over the decades from the peak of union participation in 1964 also show associations with social and economic measures over the 50 states. The present GDP per unit population has been shaved by the decline, especially the percent participation loss between 1985 and 2010. Even stronger than the GDP relationship, the association between median income in 2014 negatively associated with percent changes 1964–1995, 1964–2004, and especially 1964–2010.The 2010 poverty rate

associated with changes in union participation 1964–2010. The percent adults with college or higher degrees had R-squares above 0.10 for the percent changes between 1964 and 2010 and between 1964 and 2015, negative relationships (losses in participation meant lower educational attainment). Changes in union participation associated with public assistance negatively and with unassisted poverty in 2015 positively. Either the changes in participation themselves directly affected these economic and social measures or they signaled broader changes in socioeconomic structure and policy over time that hampered macroeconomic and microeconomic functions as well as access to and success in higher education.

Opponents of RTW laws describe the plague of freeloading wherein workers who enjoy the benefits of union contracts (are represented by unions) don't join and pay union dues. RTW laws encourage freeloading. The Bureau of Labor Statistics displays data on percent of workers represented by unions and percent belonging to unions by state and year 2005–2015. A good indicator of prevalence of freeloading would be

(Percent workers represented by unions − percent belonging to unions)/percent belonging.

Table 2.2 shows that the states differed greatly in this measure of freeloading. In some cases, more workers who were not members enjoyed the benefits of union representation than those who actually paid dues. In North Carolina, in 2014, freeloading reached 67%. For each of the 11 years of data, the RTW set of states significantly exceeded the non-RTW in freeloading with averages and medians more than twice those of the non-RTW set. Beyond the issue of fairness, does freeloading have meaning and impact?

Freeloading negatively associated with GDP per unit population. In particular, the freeloading patterns over the states in 2005 eroded the GDP per unit population of 2015.

GDP per unit population, in turn, boosts median income and lowers poverty rates. GDP per unit population, percent adults with college degrees or higher, and percent adults with high school diplomas explain over three quarters of the pattern of median income over the 50 states. These same three factors explain over three quarters of the pattern of 2015 poverty rates over the 50 states. Eroding GDP per unit population threatens households.

The pattern of unassisted poverty in 2015 over the 50 states was largely explained by freeloading in 2014 (positive relation), percent adults with college degrees or more (negative), and GINI10 (positive). Freeloading directly associated with unassisted poverty without the mediation of GDP per unit population. Freeloading can indicate a culture of extreme selfishness that punishes the weak and those in need. It can also act on the prevalence of poverty by weakening unions to the point of lowering prevailing wages and generating poverty among working families. Higher numbers of families in poverty and a fixed cap on public assistance would result in higher rates of unassisted poverty.

Percent loss of union participation between 1964 and 2015 was immense nationally, well over 50%. However, the RTW set of states lost about two-thirds and the non-RTW states a bit over half. The losses in the RTW states dwarfed those in the non-RTW states. Nationally, freeloading associated significantly with

percent loss of participation over the 50 states, especially freeloading in 2010 and 2011, during the lingering of the Great Recession. We can conclude that freeloading is associated with the weakening of labor unions and hypothesize that it itself erodes union participation. Furthermore, freeloading nationally associates with union participation negatively for each year of the BLS database, 2005–2015, explaining 50–63% of the patterns in participation over the 50 states.

The complaint of the opponents of RTW laws, thus, proves true. RTW laws foster freeloading. Freeloading weakens unions, drags down economic productivity, and directly and indirectly impacts household economics, especially of low-income families. Freeloading has deep meaning and impacts.

Donald Trump's rise to Republican presidential candidate and to the presidency owed much to the support of white working class voters largely in RTW states. Voters with college degrees generally avoided supporting Trump. Trump himself said that he loved uneducated people. Many pundits have commented on the historic path to this phenomenon of white working class people supporting a candidate who has generally opposed their economic interests and whose policies favor the very wealthy. Trump's lies evoke a past that never existed, an impossible future, and a national unity based on oppression of the traditionally oppressed sectors. It does not register with this block of voters that they will be among the oppressed, working long hours for low wages without health insurance, pensions, or occupational safety. Trump's tax proposals show that his main allegiance is with the ruling class, especially the rentier ruling class that does not base its wealth on production of goods but on the FIRE industries (finance, insurance, and real estate).

RTW proponents lie like Trump. Their assertions sound bite economic and social fantasies. They say that unions debase productivity, that unions are bad for consumers, that unions hamper innovation, and that unions delay job creation. Our analyses above show with real data that none of these assertions are true. Non-RTW states have higher per capita production than RTW states; per capita production is associated with percent union participation. Per capita production relies on percent adults with college degrees or higher, a social measure that is also associated with percent union participation. Even voting participation indirectly feels the influence of union participation through poverty rates (negative) and educational attainment (positive). Our analyses above reveal a national system of social, economic, and political forces that require balances against the power of the extremely wealthy in order to retain a true republic, satisfy the basic needs of the population, and connect the classes through such phenomena as social mobility, educational opportunity, and workplace democracy. Innovation is stifled when a worker, imprisoned in extreme hierarchy, cannot show a boss a better way to do something or a gadget he/she invented for an assembly-line process. The RTW proponents harken back to the Robber Baron Gilded Age when workers were simply factory supplies like lumber or coal.

With the differences between RTW and non-RTW states in such measures as median income, percent of adults with college education, and per capita productivity, we should examine whether each of these sets of states has its own socioeconomic system of relationships. That is the subject of the next chapter.

However, in this chapter, we'll take a look at the differences between GINI 1959 and GINI 2010 in their associations nationally and in the two systems with the other SE factors, as displayed on Table 3.3.

GINI 1959 reflects inequalities in states during the post-war era. As mentioned above, GINI 1959 averages and medians differed significantly between the RTW and non-RTW systems with much greater inequality in the RTW system on average and median. By 2010, no difference in GINI was found between the two systems.

Table 3.3 Associations of GINI1959 and GINI2010

National associations						
	GINI59			*GINI10*		
Independent variable	*R*-sq	*P*	Pos/Neg	*R*-sq	*P*	Pos/Neg
Percent college 2000	0.2947	<0.0001	Neg	na		
Percent college 2010	0.2902	<0.0001	Neg	na		
Percent HS diploma	0.1992	0.0007	Neg	0.4041	<0.0001	Neg
Freeload05	0.2858	<0.0001	Pos	na		
Freeload10	0.2800	<0.0001	Pos	na		
Freeload15	0.2164	0.0004	Pos	na		
GDP/pop	0.0961	0.0162	Neg	na		
Median income 14	0.2690	<0.0001	Neg	0.1021	0.0136	Neg
Poverty 10	0.3365	<0.0001	Pos	0.1957	0.0008	Pos
Poverty 15	0.3242	<0.0001	Pos	0.2635	0.0001	Pos
Social capital	0.1622	0.0026	Neg	0.3946	<0.0001	Neg
U6 unemployment	na			0.2458	0.0001	Pos
Union particip 64	0.3819	<0.0001	Neg	na		
Union particip 10	0.2929	<0.0001	Neg	na		
Union particip 15	0.2380	0.0002	Neg	na		
Vote particip 12	0.1017	0.0137	Neg	0.0660	0.0398	Neg
Vote particip 14	na			0.1188	0.0082	Neg
GINI 1959						
	RTW			*Non-RTW*		
Percent college 2000	0.1001	0.0637	Neg	0.1864	0.0202	Neg
Percent college 2010	0.0703	0.1020	Neg	0.2069	0.0148	Neg
Percent HS diploma	0.4135	0.0002	Neg	na		
Freeload05	0.1630	0.0233	Pos	na		
Freeload10	0.1210	0.0457	Pos	na		
Median income 14	0.3698	0.0006	Neg	na		
Poverty 10	0.3991	0.0003	Pos	na		
Poverty 15	0.3946	0.0004	Pos	na		
Social capital	0.1804	0.0176	Neg	na		
Union particip 64	0.4023	0.0003	Neg	na		
Union particip 10	0.320	0.0015	Neg	na		
Union particip 15	0.1835	0.0167	Neg	na		

Table 3.3 (continued)

National associations						
GINI2010						
Percent HS diploma	0.7406	<0.0001	Neg	0.2822	0.0044	Neg
Freeload 15	na			0.1035	0.069	Neg
GDP/pop	0.1256	0.0425	Neg	na		
Median income 14	0.4170	0.0002	Neg	na		
Poverty 10	0.5571	<0.0001	Pos	0.0924	0.0812	Pos
Poverty 15	0.6628	<0.0001	Pos	0.0882	0.0863	Pos
Social capital	0.5648	<0.0001	Neg	0.3684	0.0016	Neg
U6 unemployment	0.3828	0.0004	Pos	0.0831	0.0929	Pos
Union particip 64	0.1511	0.0283	Neg	na		
Union particip 10	0.1285	0.0406	Neg	na		
Vote particip 12	na			0.1084	0.0642	Neg
Vote particip 14	na			0.2153	0.0130	Neg

When we regress GINI59 and GINI10 against the current SE factors nationally, we see that many more SE factors associate with GINI59 than with GINI10 (Table 3.3): fourteen vs eight. Two factors (percent adults with high school diplomas and social capital) showed higher R-squares in the associations with GINI10, and unemployment was associated with GINI10 but not with GINI59. However, median income 2014, poverty 2010, and poverty 2015 associated with GINI59 at higher R-squares than with GINI10; freeloading associated with GINI59 with R-squares above 0.2; and union participation from 1964 up to 2015 associated with GINI59. Nationally, many aspects of our economy and society remain sculpted by post-war America and its inequalities. The past shapes present America as a whole.

When we examine the two systems, we find entirely different dynamics from the national picture. In the non-RTW system, only percent adults with college or higher degrees associates with GINI59 (negatively), whereas ten SE factors in the RTW system associate with GINI59, and one (percent adults with college or higher degrees) trends to association. Freeloading in 2005 and 2010 associate positively with GINI59 and union participation in 1964, 2010, and 2015 negatively.

The picture changes when we regress GINI10 against the SE factors. The non-RTW system yields associations and trends to association in greater number than the sole association produced with GINI59. However, the highest R-square is only 0.37, and the non-RTW side of the table is dominated by trends with R-squares around 0.1. The RTW system yielded eight associations and no trends. Four of the eight had R-squares above 0.5. Thus, in the RTW system, the past and present inequalities are strongly reflected in both economic and social measures, a sign of a tightly connected and rigid structure with little resilience. The rigidity of the RTW structure can be inferred from the fact that GINI10 associates with GINI59 with R-square 0.46, whereas for the non-RTW states there is no significant association or even a trend to association between GINI59 and GINI10. The non-RTW states evolved into a different less egalitarian world, whereas the RTW states maintained the largely same inequalities.

Chapter 4
Social and Economic Differences: RTW and Non-RTW States

Until 2011, the two divisions of RTW and non-RTW states remained fairly stable: 22 RTW and 28 non-RTW. However, intensification of the deindustrialization crisis and ignoring of this crisis by national politicians opened certain non-RTW states to the siren call of conservative ideologies that promised to generate jobs and to realize reforms so that jobs are more easily created, i.e., undo environmental regulation, allow more discrimination of all kinds, cut back on all forms of "welfare," and weaken labor unions. This fairy tale echoed one that I heard repeatedly when I worked for the electric utility industry, that if the company could pollute, screw the workers, gouge the consumers, and discriminate along race and sex lines, it would automatically make money. The fairy tale beguiled voters in several states who elected conservative Republicans to the legislatures and governor's office, Republicans who promptly enacted RTW laws.

By mid-2016, 26 states had RTW laws, some of them such as Michigan, Indiana, and West Virginia in the Rust Belt. Like the RTW states with historically agricultural economies, the new RTW states' populations longed for the good old days. The espousing of RTW laws may have more cultural motives than economic, fear of the changes that this global and high-tech world imposes, and loathing of the politicians who voice concerns about the poor and working class but do nothing about the real fears and deprivations that these classes have increasingly faced over time. Certainty assures and calms fears, even if it is certainty of debasement and of limited future for oneself and one's children. Certainty of hierarchy lets everyone in the system orient to the defined structure and "get along." Change imposes continual adaptation in order to survive and thrive. The culture described by Wyatt-Brown in his masterpiece *Southern Honor: Ethics and Behavior in the Old South* opposed change and fiercely defended existing class hierarchy, a direct legacy of feudal agricultural England. Even servants took comfort in the certainties of a never-changing socioeconomic structure, and only serfs, slaves, and the middle and professional classes loathed it.

Serfs and slaves faced huge uncertainties. They could be sold; their spouses and children could be sold. They could be beaten or killed for any infraction, according to the whim of the master. They could be starved, overworked, or badly housed when times turned tough. They bore the brunt of the uncertainty in the rigid feudal system that took root in agrarian America and the culture that spread from agrarian America. The middle and professional classes wanted opportunity and socioeconomic mobility, not certainty and the class strictures of this particular certainty. The only certainty that they wanted was set down in written contracts, the provisions of which they could negotiate. And even contracts could be renegotiated with change orders and amendments when reality dictated change. Contracts and property deeds conferred the kind of certainty that the middle and professional classes could accept, whereas rigid class hierarchy imposed a prison. When we examine the two systems, we must remember their respective roots and differences with regard to certainty and security vs opportunity and freedom. We must remember the role of labor unions and other collective endeavors that imposed the certainty of contracts and deeds within the non-agrarian socioeconomic system of the Industrial North. Certainty, security, and opportunity are the human equivalents of animals' predator avoidance and foraging success.

We shall briefly explore the socioeconomic structures of two systems of states with the caveat that four of the present RTW states had made the change in status only within the last 5 years. However, years before the actual laws realized the change, these four states had shown public health signs of rigid hierarchy. The next chapters will give details on these omens of coming change. In our exploration, we'll contrast social and economic measures and the relationships between these measures between the two systems of states.

We have already established that the sets of RTW and non-RTW states differ significantly with respect to union participation, loss of participation since 1964, annual freeloading 2005–2015, GDP/population, poverty rates both during the Recession and after the Recession, public assistance, unassisted poverty, median income, percent adults with college degrees or higher, and even percent adults with high school degrees. Table 4.1 summarizes the differences in these SE factors.

The non-RTW set of states had higher average and median percent adults with college or higher degrees, percent adults with high school degrees, GDP/population, median income, and voting in 2014. The RTW set of states had higher average and median poverty rates of 2010 and 2015 and unassisted poverty 2015. Non-RTW states had higher union participation in both 1964 and 2015; RTW states had greater decline in union participation and much greater freeloading.

One question we address in this chapter is whether the two sets of states differ with respect to how these factors associate with each other. We have already seen that they form interacting systems nationally, even to the point of influences of freeloading on productivity and on unassisted poverty directly and on median income and poverty rates indirectly through productivity. A national system of social and economic factors operates. Do systems operate within the sets of states that differ according to RTW status?

Table 4.1 Significant differences in SE factors between RTW and non-RTW states

SE factor	RTW			Non-RTW			Parametric P	Nonparametric P
	Mean	Median	Average rank	Mean	Median	Average rank		
Median income 2014	50,566	49,715	18.46	59,725	58,972	33.12	0.0002	0.0004
%with HS diplomas	86.00	85.45	21.56	88.30	89.00	29.77	0.0271	0.0480
%with college or higher 00	21.43	21.65	17.23	26.31	26.15	34.46	<0.0001	<0.0001
%with college or higher 11	32.94	32.50	16.60	41.50	41.20	35.10	<0.0001	<0.0001
GDP/population	49,409	48,802	19.92	57,465.1	57,009	31.54	0.0053	0.0050
Freeload 2005	0.2474	0.2336	38.05	0.0932	0.0757	15.64	≪<0.0001	≪<0.0001
Freeload 2010	0.252	0.243	37.64	0.1021	0.088	15.96	≪<0.0001	≪<0.0001
Freeload 2015	0.225	0.235	34.2	0.107	0.101	16.8	≪<0.0001	≪<0.0001
Union participation 1964	0.1807	0.173	13.68	0.3043	29.2	32.74	≪<0.0001	≪<0.0001
Union participation 1985	0.1139	0.112	14	0.2011	0.211	33.83	≪<0.0001	≪<0.0001
Union participation 1995	0.0874	0.08	13.24	0.1727	0.177	34.4	≪<0.0001	≪<0.0001
Union participation 2004	0.0661	0.06	12.91	0.1472	0.142	35.39	≪<0.0001	≪<0.0001
Union participation 2010	0.0768	0.0645	16.48	0.1451	0.146	35.27	≪<0.0001	≪<0.0001
Union participation 2015	0.0706	0.0575	15.9	0.1362	0.131	35.9	≪<0.0001	≪<0.0001
Poverty rates 2010	0.1598	0.167	31.14	0.1366	0.134	21.07	0.0078	0.0158
Poverty rates 2015	0.1579	0.164	30.35	0.1373	0.134	20.25	0.0161	0.0148
Public assistance 2012	0.0235	0.022	17.23	0.0343	0.0315	34.46	0.00002	0.00003
GINI 1959	0.4106	0.416	31.64	0.3756	0.3655	18.79	0.0005	0.0018
Social capital	−0.1423	−0.24	21.29	0.1986	0.045	28.3	0.1333	0.0869

Parametric P = probability that averages are different due to chance
Nonparametric P = probability that average ranks are different due to chance
$P < 0.05$ in either case conventionally means a significant difference
P of 0.05–0.1 means a trend to difference

Table 4.2 contains associations of four economic indicators with other SE factors: GDP/population, median income, poverty rate 2010, and index of unassisted poverty 2015 separately for the RTW and non-RTW sets of states. The first detail that meets the eye is the size of the R-squares of the RTW set compared with the non-RTW set. Twenty-three of the regressions had R-squares over 0.3 in the RTW set and only 12 in the non-RTW set. Seven of the RTW R-squares were over 0.5, whereas only four in the non-RTW set were over 0.5. Outside of the union-related regressions, the

Table 4.2 Associations with median income, poverty, unassisted poverty, and per capita GDP

Independent variable	RTW			Non-RTW		
	R-sq	P	Pos/neg	R-sq	P	Pos/neg
	Median income					
GDP/pop	0.4091	0.0003	Pos	0.2543	0.0070	Pos
Social capital	0.4365	0.0001	Pos	na		
GINI59	0.3698	0.0006	Neg	na		
GINI10	0.4170	0.0002	Neg	na		
%college or higher 00	0.5958	<0.0001	Pos	0.4769	0.0001	Pos
%college/higher 10	0.4746	0.0001	Pos	0.3886	0.0007	Pos
Percent HS diploma	0.5335	<0.0001	Pos	0.132	0.0455	Pos
Freeload 05	na			0.0902	0.0838	Neg
Poverty 10	0.7736	<0.0001	Neg	0.7339	<0.0001	Neg
Poverty 15	0.7972	<0.0001	Neg	0.7318	<0.0001	Neg
Unassisted poverty 15	0.153	0.0274	Neg	0.4006	0.0005	Neg
U6 unemploy	0.3786	0.0005	Neg	na		
Union decline 85–10	na			0.2311	0.0101	Neg
Vote 12	0.1564	0.0259	Pos	na		
Vote 14	0.0940	0.0701	Pos	na		
	Poverty 10					
Median income	0.7736	<0.0001	Neg	0.7339	<0.0001	Neg
%college or higher 00	0.3384	0.0011	Neg	0.3568	0.0012	Neg
%college/higher 10	0.2849	0.0029	Neg	0.2911	0.0038	Neg
Percent HS diploma	0.7399	<0.0001	Neg	0.2375	0.0092	Neg
GINI59	0.3991	0.0003	Pos	na		
GINI10	0.5571	<0.0001	Pos	0.0924	0.0812	Pos
GDP/pop	0.4346	0.0001	Neg	0.2692	0.0055	Neg
Social capital	0.4891	<0.0001	Neg	na		
Union particip 04	na			0.0741	0.1060	Neg
Union decline 64–10	na			0.1675	0.0268	Pos
U6 unemploy	0.3397	0.0011	Pos	0.1365	0.0424	Pos
Freeload 10	na			0.1831	0.0212	Pos
Vote 12	0.1515	0.0281	Neg	na		
Vote 14	0.1360	0.0360	Neg	na		

(continued)

Table 4.2 (continued)

Independent variable	RTW			Non-RTW		
	R-sq	*P*	Pos/neg	*R*-sq	*P*	Pos/neg
	Unassisted poverty 15					
Median income	0.1530	0.0274	Neg	0.4006	0.0005	Neg
Percent HS diploma	0.2995	0.0022	Neg	0.1137	0.0595	Neg
Social capital	0.1898	0.0151	Neg	0.1544	0.0398	Neg
GINI10	0.3415	0.001	Pos	0.0927	0.0808	Pos
GINI59	0.2033	0.012	Pos	na		
Union particip 64	0.1003	0.0634	Neg	na		
Union particip 85	0.0859	0.0796	Neg	na		
Union particip 95	0.0721	0.0991	Neg	0.1026	0.0699	Neg
Union particip 04	na			0.1790	0.0226	Neg
Union particip 10	na			0.2349	0.0095	Neg
Union particip 15	na			0.1756	0.0238	Neg
Freeload 05	na			0.1149	0.0584	Pos
Freeload 10	na			0.2090	0.0143	Pos
GDP/pop	na			0.1773	0.0232	Neg
Poverty 10	0.2251	0.0083	Pos	0.5286	<0.0001	Pos
U6 unemploy	0.0983	0.0654	Pos	na		
	Per capita GDP 2015					
Median income	0.4091	0.0003	Pos	0.2543	0.0070	Pos
Poverty 10	0.4346	0.0001	Neg	0.2692	0.0055	Neg
Poverty 15	0.4514	0.0001	Neg	0.2114	0.0138	Neg
Public asst.12	0.2135	0.0102	Neg	na		
Unassisted poverty 15	na			0.1773	0.0232	Neg
%college or higher 00	0.1505	0.0285	Pos	0.2387	0.0090	Pos
%college or higher 11	0.0869	0.0784	Pos	0.2316	0.0100	Pos
Percent HS diploma	0.2168	0.0096	Pos	na		
U6 unemploy	0.3356	0.0011	Neg	na		
Union 64	na			0.1506	0.0345	Pos
Union 85	na			0.1877	0.0198	Pos
Union 95	na			0.2705	0.0054	Pos
Union 04	na			0.3270	0.0021	Pos
Union 10	na			0.4049	0.0005	Pos
Union 15	na			0.3120	0.0027	Pos
Union decline 85–10	na			0.1403	0.0402	Neg
Freeload 05	na			0.2931	0.0037	Neg
Freeload 10	na			0.2317	0.0100	Neg
Freeload 15	na			0.2114	0.0138	Neg
Social capital	0.2160	0.0097	Pos	na		
Vote 14	na			0.2416	0.0086	Neg

RTW set featured 40 associations or trends to association, whereas the non-RTW set had only 27. When we consider the number and strength of associations, we can conclude that the RTW system internally connects more tightly than the non-RTW set of states.

The union-related associations show that per capita productivity benefits from present and recent union participation and that unassisted poverty negatively associates with present and recent union participation in the non-RTW system. In contrast, the only union-related measures associated in the RTW set of states with any of the four economic factors on this table are those from decades ago: participation in 1964, 1985, and 1995. Only the first (participation in 1964) achieves an R-square of at least 0.1. This contrast implies that the RTW system resists change and is rigid, compared with that of the non-RTW states.

When we regress median income 2014 and unassisted poverty 2015 against GINI 1959, only the RTW system shows associations, R-squares of 0.37 and 0.20, respectively. Thus, income inequality from 1959 and union participation from 1964 still influence fundamental economic measures in the RTW set of states. In a later chapter on public health, we'll return to these traits of tightness of relationships and rigidity/resistance to change in the RTW set of states. These traits mark systems of low resilience and vulnerability to catastrophe.

The table under consideration also informs us of qualitative differences between the two systems. For example, educational attainment has very little influence on per capita productivity in the RTW but shows moderate influence in the non-RTW system. Poverty, public assistance, U6 unemployment, and social capital associate moderately or strongly with per capita productivity in the RTW system but either weakly or not at all in the non-RTW, whereas union participation associates moderately to strongly with per capita productivity in the non-RTW system and not at all in the RTW. In the RTW system, percent adults with high school diplomas strongly associate with median income and poverty 2010 but only weakly or moderately in the non-RTW system. Thus, besides the quantitative difference in the strength of the associations, the two systems differ qualitatively in the identity of the interacting factors that form the SE structure. Social capital influences economic factors in the RTW system but not at all in the non-RTW. Indeed, RTW system patterns of the microeconomic measures median income and poverty 2010 depend heavily on social capital.

Now let us consider what multivariate backward stepwise regression can tell us about the two systems when we make the four economic measures dependent variables and the other factors potential independent variables. Table 4.3 presents the equations generated by the stepwise regressions for the SE factors jointly associated with the four economic measures. Per capita productivity in the RTW set of states associates negatively with poverty rate and positively with index of unassisted poverty. The more productive the state in the RTW system, the lower the percent of families in poverty that get public assistance, but poverty rate itself drags down per capita productivity. In contrast, per capita productivity in the non-RTW system associates positively with percent adults with college or higher degree in 2000 and

Table 4.3 Results of multivariate regressions for median income, poverty, unassisted poverty, and GDP/population

Median income
National median income (50 states) $= 91{,}709.5 + 1429.9\,(\text{college00}) + 0.22\,(\text{gdppop15})$ $- 182{,}725\,(\text{GINI10})$ $R\text{-sq} = 0.8304$
RTW median income $= 97{,}469.5 + 1362.5\,(\text{college00}) + 0.199\,(\text{gdppop 15})$ $- 190{,}686\,(\text{GIN110})\,R\text{-sq} = 0.8855$
Non-RTW median income $= -32{,}702.9 + 776.66\,(\%\text{hs diploma}) + 1132.5\,(\text{college00}) -$ $21{,}820.6\,(\text{union decline 85--10})\,R\text{-sq} = 0.6061$
Poverty 2010
National poverty $10 = 13.46 - 0.2\,(\text{college11}) - 0.18\,(\%\text{hs dip}) - 0.000096\,(\text{gdppop15})$ $+ 66.1\,(\text{GINI10})\,R\text{-sq} = 0.8448$
RTW poverty $2010 = 67.74 - 0.12\,(\text{college11}) - 0.5\,(\%\text{hs dip}) - 0.00009\,(\text{gdppop15})$ $R\text{-sq} = 0.8513$
Non-RTW poverty $2010 = -11.75 - 0.47\,(\text{college00}) + 21.21\,(\text{freeload10}) + 7778\,(\text{GINI10})$ $R\text{-sq} = 0.7644$
Unassisted poverty 2015
National unassisted poverty $= -7.1 - 0.194\,(\text{college00}) + 43.69\,(\text{GINI10}) - 0.21\,(\text{union particp10})$ $R\text{-sq} = 0.5859$
RTW unassisted poverty $= -28.91 + 79.91\,(\text{GINI10})$ $R\text{-sq} = 0.3415 \quad P = 0.0010$
Non-RTW unassisted poverty $= 5.32 + 9.46\,(\text{freeload10}) + 7.67\,(\text{union decline 85--10}) - 0.067\,(\text{vote12})$ $R\text{-sq} = 0.6210$
GDP/pop
National GDP/pop (50 states) $= -75{,}407.1 - 1862.79\,(\text{poverty 10}) + 476.13\,(\text{union particip 10})$ $R\text{-sq} = 0.4749$
RTW GDP/pop $= 89{,}547.8 - 1744\,(\text{poverty 15}) - 5372\,(\text{public asst})$ $R\text{-sq} = 0.5734$
Non-RTW GDP/pop $= 4950.71 + 124.3\,(\text{college2000}) + 1364.7\,(\text{union particip 10})$ $R\text{-sq} = 0.5699$

union participation 2010. Thus, we can see at a glance that per capita productivity in the two sets of states has vastly different socioeconomic contexts.

Although both sets of states show association of median income 2014 with percent adults with college or higher degree, the other SE factors differ in the two sets. In the RTW set, per capita productivity and GINI2010 add to the explanation of median income. In the non-RTW set, union decline 1985–2010 and percent adults with high school diplomas associate with median income. Thus in the RTW set of states, we see interlocking of family economics (median income, poverty, index of unassisted poverty) with per capita productivity but not in the non-RTW set. Remember that per capita productivity and median income are higher on average

and median in the non-RTW set and poverty and index of unassisted poverty lower than in the RTW set. The linkage between the macroeconomic and microeconomic in the RTW system signals a hierarchical and rigid structure.

Poverty rate 2010 measures the impact of the Great Recession on households. Both RTW and non-RTW sets of states show negative associations of poverty rate 2010 with the three measures of educational achievement and with per capita productivity in bivariate regressions. During the Great Recession, per capita productivity linked to the household scale, even in the non-RTW system. However, the R-square for each system differed: in the RTW system, it was high (0.43) compared with that of the non-RTW system (0.27). Although the Recession imparted elevated tightness and rigidity to the non-RTW system, it locked in the RTW system to a perilously brittle, rigid structure. The multivariate regression for the RTW system also included per capita GDP as one of the three independent variables (% with college and higher degrees and % with high school diplomas being the other two) and yielded an R-square of 0.85. The non-RTW equation from multivariate regression included % with college or higher degrees, freeloading in 2010, and GINI10 with an R-square of 0.76.

The poverty rates of 2010 reflected the impact of the Recession on households. By 2015, the country had recovered somewhat, as shown in the lower unemployment rates and in the rising stock market. But, the RTW set of states showed strong association between poverty rate and four independent variables (percent adults with college or higher degree, percent adults with high school diploma, per capita productivity, and GINI10 with an R-square of 0.92 for poverty rate 2015). The macroeconomic processes continued to link strongly with the household level. In the non-RTW system, poverty rate 2015 associated with % with college or higher degrees, freeloading 2010, and GINI10, with an R-square of 0.80. The greater R-squares for both systems hint that both systems had taken a severe impact during the Great Recession and became more brittle and tight. The linkage between per capita GDP and household condition in the RTW system, however, indicates continuing rigid hierarchy and greater vulnerability to further impact.

In the RTW set of states, GINI 2010 swamped all other SE factors in the backward stepwise regression with the index of unassisted poverty as the dependent variable (R-sq = 0.34, P = 0.001). States with grossly unequal incomes also scored high in index of unassisted poverty. In the non-RTW system, the index negatively associated with median income and with union participation (R-sq = 0.5, P = 0.0003). Thus, the higher the median income and the greater the union participation, the lower the proportion of families in poverty who get no public assistance.

Let us briefly summarize the analyses we have conducted. The two sets of states differ significantly in socioeconomic factors. The non-RTW set of states has greater median income, per capita productivity, percent adults with high school diplomas, percent adults with college or higher degrees, union participation, and retention of union participation. The RTW states have higher rates of poverty, index of unassisted poverty, decline in union participation, and freeloading. The differences in means and medians can be large. On average and on median, the non-RTW states

have a median income about $9000 greater than the RTW states. On average and median, the RTW states have only about one-third adults with college or higher degrees whereas the non-RTW states have 41–42%.

The bivariate regressions show differences in relationships between the SE factors. Union participation in 2004, 2010, and 2015 shows strong positive associations with per capita productivity in the non-RTW system whereas the associations between per capita productivity and median income and between per capita productivity and poverty rate are the strongest in the RTW system with R-squares over 0.4. Even the three measures of educational attainment show R-squares of around 0.2 or less in association with per capita productivity in the RTW system. Per capita productivity in the RTW system has little support and not much positive effect. It has a moderately strong negative association with poverty.

Median income in the RTW system has several strong determinants: educational attainment, GINI 2010, per capita GDP, and social capital. Only one of the associations with median income in the non-RTW system reaches an R-square of 0.4, percent with college or higher degrees in 2000. Poverty rate is not considered truly independent of median income, with negative association over 0.75 R-square. Poverty 2010 shows a similar pattern to median income. Percent adults with high school diplomas explains the pattern of poverty across the RTW system (R-sq = 0.74, negative). GINI10 and social capital also show strong associations. None of the associations with poverty 2010 in the non-RTW system achieves an R-square above 0.4.

The associations and their R-squares imply a seeming paradox: the RTW system shows much tighter connections between the socioeconomic factors but worse performance at both macroeconomic and microeconomic levels than the non-RTW system. If median income depends so much on educational attainment in the RTW system, why are the educational attainment measures worse than in the non-RTW? Generating higher incomes seems like a rational motivation for a state to evangelize for educational attainment. If unions are so bad for business, why is union participation so strongly associated with per capita productivity in the non-RTW system, the only association with R-square above 0.4 for per capita GDP in that system? The multivariate regressions only confirmed the results of the bivariate regressions: educational attainment associated positively with median income in both systems and negatively with poverty rate. College and higher education associated positively with per capita GDP in the non-RTW system, along with union participation 2010.

Chapter 5
Measures of Death

Humans are so averse to the thought and threat of death that most religions dangle the carrot of an afterlife before our trembling gaze. One can go to heaven with the Christians and Islamics or get recycled in reincarnation with Buddhists, Hindus, and Jains. Jews have been contaminated with their long sojourn in Christian societies and have folk tradition of a hereafter, but the bedrock of Judaic theology differs from all the rest: "ashes to ashes and dust to dust." Your afterlife in Judaism is the long-term impact of your life, deeds, love, and hate in the community. The length of your life and your vitality in old age indicate your moral quality and strength, but you mustn't hang on much beyond "three score years and ten," or your life will be one "of sorrow and labor." These quotes came from the only psalm attributed to Moses.

Life expectancies and annual mortality rates per unit population attract analysis by epidemiologists looking at broad issues of public health. They ultimately measure well-being of populations. Populations with low life expectancies and high age-adjusted mortality rates generally experience adverse social, economic, political, and environmental influences that result in accelerated aging, high rates of violent deaths (murders and suicides), and high rates of fatal disease such as TB and AIDS and of chronic conditions (cancer, coronary heart disease, stroke, Alzheimer's disease, etc.). Like the epidemiologists, the general public keeps track of national life expectancy as a gauge of national well-being. This measure appears in newspapers and on news websites with each annual report by the National Center of Health Statistics.

We know that nutrition, exercise, sleep habits, risk behaviors (use of tobacco, alcohol, and drugs in particular), and environmental exposures to various chemical and physical agents influence mortality rates and, thereby, estimates of life expectancy. However, these factors also mediate between socioeconomic and political systems and public health and well-being. People under severe structural stresses often cannot sleep normally and revert to unwise eating, use of the unhealthy

substances, and violence. Later chapters will provide details on this chain between structural stresses and particular serious health problems.

Structural stress is the long-term imposition of powerlessness and deprivation on lower classes by upper classes and by government in the service of upper classes. It results in the inability of the targeted populations to either fight or flee. Anti-democratic power relations strip many American subpopulations of their control over their working conditions, their communities, and even their family life. Uncertainty forms a key element in the chronic fear and sense of threat under anti-democratic power relations. Material deprivation and insecurities for food, housing, medical, and other necessities are distributed according to class; but the gathering of ever-greater proportions of national wealth and income into an ever-smaller number of hands means that deprivation and insecurity become experiences of ever-more classes on the socioeconomic ladder.

Two statistics measure death in public health research: the annual mortality rate per 100,000 people and life expectancy. The mortality rate is simple to calculate and understand: the number of deaths divided by the population in hundreds of thousands. If 5,000 people died in a city of 1,000,000 during 2014, the crude mortality rate for 2014 is 500 per 100,000. Conventionally, mortality rate is age-adjusted. The average state age-adjusted mortality rate in 2013 was 751.23, and the median, 725.8. Major SE factors associated with mortality rate patterns over the 50 states are median income (negative), percent of adults with college or higher degrees (negative), poverty rate (positive), and GINI 1959 (positive). Union participation in 2010 associated negatively and percent decline in participation in 1964–2010 positively. Two models of similar R-squares emerged from multivariate regression:

First model: mortality rate $= 638.42 + 646.3$ (GINI59) $- 0.0043$ (median income) -22.64 (social capital) $+ 15.66$ (%union decline 64–15).
R-sq $= 0.68$
Second model: mortality rate $= 762.6 - 10.57$ (college2000) $+ 619.51$ (GINI59) -27.58 (social capital)
R-sq $= 0.73$

When the states were divided into RTW and non-RTW, these sets had significantly different averages, medians, and average ranks for mortality rate.

	RTW	Non-RTW	
Mean	788.05	711.33	$t = 3.42, P = 0.0013$
Median	763.75	710.50	
Ave. rank	31.5	19.0	$P = 0.0025$

In 2013, the mortality rates of the two sets of states differed with RTW states at higher numbers of deaths per population than the non-RTW.

SE factors influential on mortality rate in the RTW system differed from those in the non-RTW. percent of adults with high school diplomas, GINI 2010, social capital, voting participation, and U6 unemployment rate associated with

mortality rate in the RTW system, but not in the non-RTW. Union participation in 2010 and in 2015 and decline in union participation between 1964 and 2010 significantly associated with mortality rate in the non-RTW system but not the RTW. Furthermore, the R-squares of association in the RTW system dwarfed those of the non-RTW. In multivariate regression, median income swamped all other SE factors associated with mortality rate in the RTW system (R-sq $= 0.5646$), whereas percent of adults with college degree or higher (negative association) and percent decline in union participation (positive) determined pattern of mortality rate in the non-RTW system with R-sq of about 0.6. Thus, the RTW system's mortality rates are locked into the economic aspects, whereas those of the non-RTW include both higher educational attainment and the withdrawal of union power.

Nationally, 2014 white mortality rates of states were associated with the following SE factors with R-squares above 0.3, in order of their R-squares: median income, percent of adults with college or higher degree, poverty rate, GINI 1959, per capita productivity, and social capital 2000. The analogous list for black mortality rates is percent of adults with college or higher degree, per capita productivity, median income, poverty rate in 2010, and percent decline in union participation in 1964–2015. Some SE factors associated positively and others negatively, as would be expected.

The multivariate analyses for these two sets of mortality rates produced the following models:

White mortality rate $= 808.39 - 9.785\,(\%\text{college00}) + 434.32\,(\text{GINI59}) - 30.28\,(\text{social cap})$
R-sq $= 0.70$
Black mortality rate for states $= 997.2 - 15.53\,(\%\text{college00}) + 370.31\,(\%\text{union decline 1964–2015})$
R-sq $= 0.6412$

Although each model includes percent of adults with college or higher degrees, the other influential factors differed between black and white. GINI59 increased white mortality but had no role in black mortality. Social capital decreased white mortality rate, but the percent decline in union participation between 1964 and 2015 increased black mortality rate. Putnam of *Bowling Alone* fame (Putnam 2001) had demonstrated the importance of social capital to the health of the general population. When we look at European Americans and African-Americans, we see, however, that social capital does not play the same role in determining AA mortality rates at the state level. Strong labor unions and their socioeconomic leveling effect take pressure off AAs, and the decline of the unions left AAs under grave structural stress.

When we analyzed the 2014 RTW and non-RTW mortality rates separately for whites and blacks, we again found significantly higher average, median, and average ranks for the RTW than for the non-RTW states (Table 5.1).

National age-adjusted mortality rate in 2014 was 744.33 per 100,000 people. For whites in RTW states, it was 774 and in non-RTW states, 712. For African-Americans in RTW states, it was 909, and in non-RTW states, 792. Several states

Table 5.1 Mortality rates for black and white populations, 2014

	Black						
	RTW			Non-RTW			
Average	908.55			792.38	$t = 3.49$	$P = 0.0014$	
Median	933.28			787.46			
Average rank	22.50			12.00		$P = 0.0028$	
	Associations with SE factors						
SE variable	R-sq	P	Pos/neg		R-sq	P	Pos/neg
%college or higher 2000	0.1805	0.0352	Neg		0.6148	<0.0001	Neg
%college or higher 2010	0.2030	0.0265	Neg		0.5948	0.0005	Neg
GDP/pop	na				0.5593	0.0008	Neg
Median income 2014	0.1031	0.0912	Neg		0.2148	0.0467	Neg
Poverty 10	0.0950	0.1	Pos		0.1945	0.0565	Pos
Poverty 15	na				0.2107	0.4860	Pos
Union particip 2015	na				0.1115	0.1207	Neg
Union decline 64–15	na				0.2715	0.0269	Pos
	White						
Average	773.94			712.25	$t = 3.004$	$P = 0.0042$	
Median	753.51			703.78			
Average rank	31.12			19.42		$P = 0.0047$	
	Associations with SE factors						
%college or higher2000	0.4801	0.0001	Neg		0.6043	<0.0001	Neg
%college or higher 2010	0.3869	0.0004	Neg		0.4415	0.0002	Neg
%HS diploma	0.3658	0.0006	Neg		na		
GDP/pop	0.1961	0.0130	Neg		0.3534	0.0013	Neg
GINI10	0.1649	0.0226	Pos		na		
GINI59	0.2839	0.0030	Pos		0.1524	0.0336	Pos
Median income 2014	0.5387	<0.0001	Neg		0.3758	0.0009	Neg
Poverty 10	0.4100	0.0003	Pos		0.2582	0.0066	Pos
Poverty 15	0.4197	0.0002	Pos		0.2542	0.0066	Pos
Social capital	0.3862	0.0004	Neg		0.0865	0.0989	Neg
U6 unemploy	0.1266	0.0418	Pos		na		
Union particip 2010	na				0.2008	0.0162	Neg
Union particip 2015	na				0.1653	0.0277	Neg
Vote particip 2012	0.2315	0.0075	Neg		na		
Vote particip 2014	0.2056	0.0116	Neg		na		

did not have black populations large enough to generate reliable mortality rates, for example, Alaska, Hawaii, Idaho, Maine, and North Dakota. However, enough states in each category remained to allow basic statistical analyses.

Obviously, we have not achieved a post-racism society. The immense difference in both systems between black and white mortality rates proves the impact of much greater stresses and threats to the lives of African-Americans than to European Americans. What is astonishing is the lack of overlap of the averages. Even in the non-RTW states, the African-Americans suffer a higher average mortality rate than the whites in the RTW states. In the RTW states, the difference between black and white mortality rates dwarfs that in the non-RTW states and underlines the social hierarchy of the RTW system and its disparate impacts on public health, but the difference in the non-RTW system is no cause for celebration (80 per 100,000). Over a hundred more deaths per 100,000 occur on average in the RTW system among blacks than in the non-RTW system. About 60 more deaths per 100,000 occur on average in the RTW system among whites than in the non-RTW system.

Table 5.1 displays the results of regression analyses for these mortality rates and the SE factors. For whites, more SE factors show associations with mortality rate in the RTW system than in the non-RTW. Furthermore, the associations of the RTW generally have higher R-squares than those of the non-RTW system. The SE factors with higher R-squares in the non-RTW system than in the RTW buffer against death: higher educational attainment, per capita productivity, and union participation. The RTW system more tightly connects SE factors to mortality rate than the non-RTW. Larger changes in mortality rates in the RTW states should be expected when SE factors change.

For the African-American(AA) mortality rates, both systems featured fewer SE factors of influence than for whites. In fact, a single SE factor associated significantly (R-square = 0.2) with AA mortality rates in the RTW system, percent of adults with college or higher degrees. Two factors had trends to association with R-squares around 0.1: median income and poverty rate in 2010. In the RTW system, AAs appear to be segregated from the mainstream SE structure almost entirely. This segregation is not so severe in the non-RTW system, but the low number of significant associations compared with the white mortality rates hint of some removal from the mainstream structure. The multivariate analyses further point to distance from the mainstream in that the only SE factor that remains in the RTW analysis is percent of adults with college or higher degrees. Thus, the suite of SE factors can explain only 0.2 of the variability of AA mortality rates in the RTW system. In the non-RTW system, AA mortality rate depended on both percent of adults with college or higher degrees in 2000 and decline in union participation between 1964 and 2015.

Life expectancy, more complex to calculate than mortality rate, beguiles insurance actuaries who tweak life tables to estimate how long individuals will survive. Life tables are essentially survival charts that show birth cohorts, their annual deaths, and resulting numbers of survivors. Life insurance companies bet on life expectancy for each major sector of the population. Some, more sophisticated than others, segment these sectors according to geographic region. Where you

live, your socioeconomic class, your ethnicity, your gender, your year of birth, and your culture partially determine how long you will live. These determinants interact with the dynamics of the nation, region, and metropolitan statistical area to produce patterns of life expectancy at every geographic scale and in every major era, dynamics that include macro- and microeconomic trends and spikes, vacillations in social mobility and educational opportunity, and the whims of policies and practices in public assistance and civil rights. The life expectancy under consideration when headlines blare "Life Expectancy of White Women Without High School Degrees Declined!" is life expectancy as calculated by the National Institute of Health Statistics, a relatively unheralded agency within the Department of Health and Human Services. NIHS age-adjusts and averages the life expectancies of the birth cohorts to produce national, state, and other geographic life expectancies that can be compared by geography, race, gender, and other aspects.

In 2015, the average state life expectancy was 78.65 and the median, 78.89. The minimum was 74.96 and the maximum, 81.3. Thus, a difference of over 6 years spanned the states, a large population-level difference. As Table 5.2 shows, the SE factors with highest influence over national life expectancy include median income, percent of adults in 2000 with college or higher degree, poverty rate, percent of adults in 2011 with college or higher degrees, and GINI 1959.

The multivariate backward stepwise regression produces the following model:

Life expectancy 2015 = 80.12 + 0.177 (%college00) − 14.61 (GINI59) + 0.68 (social capital)
R-square = 0.80, $P < 0.0001$

We can see that higher educational attainment and social capital increase life expectancy and a deep history of income inequality decreases it at the national level.

Table 5.2 Socioeconomic associations with 2015 life expectancy over 50 states

SE variable	R-sq	P	Pos/neg
Median income 2014	0.6026	<0.0001	Pos
%college or higher 00	0.5835	<0.0001	Pos
Poverty 2015	0.5066	<0.0001	Neg
Poverty 2010	0.494	<0.0001	Neg
%college or higher11	0.4914	<0.0001	Pos
GINI 1959	0.4144	<0.0001	Neg
Social capital	0.3900	<0.0001	Pos
Unassisted poverty	0.3386	<0.0001	Neg
%HS diploma	0.2615	0.0001	Pos
GDP/pop	0.2435	0.0002	Pos
Union particip 2010	0.1934	0.0008	Pos
Union decline 64–10	0.1881	0.0010	Neg
Vote particip 2014	0.0908	0.0190	Pos
Freeload 2010	0.0893	0.0199	Neg
Vote particip 2012	0.0874	0.0210	Pos

Regression of male life expectancy with female yields an *R*-square of 0.91, showing that the two genders have similar patterns over the states.

When we divide the states into RTW and non-RTW sets, we see that life expectancy is significantly longer in the non-RTW set than in the RTW: 79.38 average vs 77.98 and median of 79.7 vs 78.28, differences of about 1.4 years. The difference between average male life expectancies is higher, 1.54 years (76.94 vs 75.4). The difference between average female life expectancies is lower, 1.25 years (81.77 vs 80.52), but still statistically significant ($P = 0.0031$). Women in RTW states live an average of 5.12 years longer than men while those in non-RTW an average of 4.83 years longer than men.

Nine SE factors associate with life expectancy of women in the RTW set of states with *R*-square above 0.3, but only four do so in the non-RTW set (Table 5.3).

Furthermore, five of the nine in the RTW system have *R*-squares above 0.45, whereas no SE factor in the non-RTW system associates with female life expectancy with an *R*-square above 0.35. The differences between SE associations with life expectancy in the two systems also hold true for the males, although even more extremely. Nine SE factors associate with male life expectancy at *R*-squares above 0.3 in the RTW system, five with *R*-squares above 0.5, whereas only three SE factors have *R*-squares above 0.3 in the non-RTW system with one over 0.5.

The pattern of life and death, thus, in the RTW system links tightly to the socioeconomic structure, whereas that in the non-RTW shows much looser and fewer linkages. This difference for both genders means that changes in SE factors in the RTW system, whether slow or sudden, will result in changes in patterns of life and death. The non-RTW system will experience small changes in patterns if at all when SE factors change. Life/death patterns for men in the RTW system show particular vulnerability to declines in median income and increases in poverty rates. Life/death patterns of men in the RTW system also show greater determination from the past, with GINI 1959 associating with life expectancy with an *R*-square of 0.54, whereas at the other end of the spectrum, women in the non-RTW system have life expectancy associated with GINI 1959 with an *R*-square of only 0.13!

The tightness of the RTW system also reflects its rigidity and rootedness in the past and its immutability. The previous chapter explored the interactions between SE factors and established that GINI 1959 exerted far more influence over such SE factors as median income, poverty rate, and percent of adults with college education than did GINI 2010, especially in the RTW set of states. Now we see that the post-WWII SE structure, as reflected in GINI 1959, influences patterns of life/death nationally and, especially, within the RTW set of states.

Table 5.3 SE associations with life expectancy for men and women: RTW and non-RTW

SE variable	RTW			Non-RTW		
	R-sq	P	Pos/neg	R-sq	P	Pos/neg
	Women					
%college or higher 2000	0.3993	0.0003	Pos	0.4239	0.0003	Pos
%college or higher 2010	0.3050	0.002	Pos	0.3219	0.0023	Pos
%HS diploma	0.4823	<0.0001	Pos	na		
GDP/pop	0.1670	0.0218	Pos	na		
GINI10	0.3091	0.0019	Neg	na		
GINI59	0.4179	0.0002	Neg	0.1325	0.0451	Neg
Median income 2014	0.5985	<0.0001	Pos	0.3306	0.0019	Pos
Poverty 2010	0.5028	<0.0001	Neg	0.1675	0.0268	Neg
Poverty 2015	0.5269	<0.0001	Neg	0.1842	0.0209	Neg
Social capital	0.4860	<0.0001	Pos	0.0963	0.0870	Pos
U6 unemploy	0.1968	0.0134	Neg	na		
Union particip 2010	na			0.1527	0.0335	Pos
Union particip 2015	na			0.1639	0.0283	Pos
Union decline 64–15	na			0.3442	0.0015	Neg
Vote particip 2012	0.2281	0.0079	Pos	na		
Vote particip 2014	0.2228	0.0087	Pos	na		
	Men					
%college or higher 2000	0.4783	0.0001	Pos	0.5914	<0.0001	Pos
%college or higher 2010	0.3614	0.0007	Pos	0.4306	0.0003	Pos
% HS diploma	0.5404	<0.0001	Pos	na		
GDP/pop	0.1726	0.0200	Pos	0.1590	0.0305	Pos
GINI10	0.4259	0.0002	Neg	na		
GINI59	0.5390	<0.0001	Neg	0.2390	0.0089	Neg
Median income 2014	0.7143	<0.0001	Pos	0.3565	0.0012	Pos
Poverty 2010	0.5937	<0.0001	Neg	0.2615	0.0062	Neg
Poverty 2015	0.623	<0.0001	Neg	0.2915	0.0038	Neg
Social capital	0.4576	0.0001	Pos	0.1945	0.0229	Pos
U6 unemploy	0.2203	0.0091	Neg	na		
Union particip 2010	na			0.1430	0.0387	Pos
Union particip 2015	na			0.1556	0.0320	Pos
Union decline 64–15	na			0.1333	0.0446	Neg
Vote particip 2012	0.1740	0.0195	Pos	na		
Vote particip 2014	0.1381	0.0348	Pos	na		

Results of multivariate regressions

RTW women Life Exp $= 95.76 - 32.5$ (GINI59) $+ 0.65$ (social capital) $- 0.08$ (union 64) R-sq $= 0.7771$

Non-RTW women Life Exp $= 79.14 + 0.191$ (college2000) $- 0.47$ (union decline 64–15) R-sq $= 0.6493$

RTW men Life Exp $= 78.82 + 0.25$ (college2000) $- 21$ (GINI59) $+ 0.71$ (social capital) R-sq $= 0.8359$

Non-RTW men Life Exp $= 69.35 + 0.21$ (college2000) $+ 0.8$ (social capital) $+ 0.127$ (union 10) R-sq $= 0.8304$

Chapter 6
Early Mortality from Ischemic Heart Disease (Coronary Heart Disease)

Coronary heart disease (CHD) results from the accumulation of fatty plaque in the arteries serving the heart itself. The plaque blocks these vital arteries and starves the heart muscles of both nutrients and oxygen. CHD is the leading cause of heart attacks. Heart attacks switch back and forth with cancer over the years as the leading cause of death, although they had been the leading cause for decades after WWII.

Buildup of plaque in coronary arteries can have many contributing factors: diet high in fat, salt, and sugar, lack of exercise, lack of dietary fiber, family history, low birthweight, certain air pollutants, smoking, and chronic stress. CHD deaths have declined over several decades. Wing et al. (1986) noted that CHD deaths of white males differed by national region in their timing of decline. The decline began first in the Northeast, then commenced on the West Coast, and finally reached the other regions. They theorized that industry ceased emitting high concentrations of heart-damaging pollutants in that regional sequence so that white men were no longer so heavily exposed. In any case, geographic differences in CHD mortality continue to this day.

The first paper to be published from the Whitehall II Study (Marmot et al. 1997) noted that CHD and mortality therefrom occurred in inverse proportion to the occupational levels of the civil servants in the study. Whitehall II followed 10,000 civil servants in Great Britain and was named after the huge government building in which they were employed. The highest ranked set of civil servants had the lowest incidences of CHD and mortality, whereas the lowest ranked had the highest. In the psychosocial part of the interview, one important differentiation among the occupational ranks was the complaint of having no control over one's work. The lower the rank, the more frequent and severe this complaint appeared. This study furthermore occurred during the Thatcher era when governmental employees were being fired (the British call it "made redundant") willy-nilly. Uncertainty within the job and about the job hung over civil servants in inverse proportion to their occupational rank.

CHD is one of the chronic conditions resulting from overweight and obesity. We shall discuss structural stress and its physiological outcomes at length in chapter on obesity. At this point, we need to note that the Whitehall Study II is one of several research projects that revealed the importance of structural stress and its neofeudal roots to the inequalities in public health.

We can class a death before age 75 as premature because life expectancy now exceeds 75. Average age at death also exceeds 75 now. Thus, we'll concentrate our analyses on ischemic heart deaths in the following age ranges: 45–54, 55–64, and 65–74. The following text table displays the minimum and maximum state mortality incidences per 100,000 for ischemic heart deaths in these age ranges.

Age range	45–54	55–64	65–74
Minimum	26.7	71.9	150.1
Maximum	89.0	202.4	389.5

The maximum incidence for each age range exceeds double the minimum incidence. This is a wide range and implies that the states at the upper end of each range suffer a huge number of potential years of life prematurely lost before age 75.

As Table 6.1 shows, the major SE factors associating with CHD mortality incidence in the youngest age range over the 50 states are percent adults with college or higher degrees (negative), GINI59 (positive), median income (negative), and poverty rate (positive).

In the multivariate regression, percent with college or higher degree, GINI59, and union participation 1964 explain about 70% of the variability of this mortality incidence over the 50 states.

The equations explaining patterns of CHD for each age group over the 50 states follow:

CHD mortality 45–54 $= 36.86 - 1.6\,(\text{college2000}) + 290.8\,(\text{GINI59}) + 0.45\,(\text{union particip64})$
R-sq $= 0.69$
CHD mortality 55–64 $= 198.36 - 3.06\,(\text{college2000}) + 3.75\,(\text{poverty15}) - 17.8\,(\text{social cap.}) - 6.07\,(\text{U6unemploy})$
R-sq $= 0.62$
CHD mortality 65–74 $= 52.09 - 8.5\,(\text{college2000}) + 897.39\,(\text{GINI10})$
R-sq $= 0.51$

The RTW system had significantly much higher mean and median CHD mortality incidences for this age range than the non-RTW system (Table 6.2).

Although median income had the highest R-square (0.50) of all the SE factors in bivariate regression with CHD mortality for this age range in the RTW set of states, the multivariate regression included only percent with college or higher degree in 2000 and GINI59, resulting in an R-square of 0.62. Nine SE factors associated significantly with RTW CHD mortality at 45–54 years of age, six with R-square over 0.3.

Table 6.1 Socioeconomic associations with coronary heart death incidence over 50 states

SE variable	R-sq	P	Pos/neg
CHD age range 45–54			
%college or higher 2000	0.5468	<0.0001	Neg
GINI59	0.4846	<0.0001	Pos
%college or higher 2011	0.4610	<0.0001	Neg
Median income 2014	0.4240	<0.0001	Neg
Poverty 2015	0.3506	<0.0001	Pos
Poverty 2010	0.3404	<0.0001	Pos
Social capital	0.2076	0.0007	Neg
Union decline 85–10	0.2038	0.0006	Pos
%HS diploma	0.1520	0.0030	Neg
GDP/pop	0.1433	0.0039	Neg
Vote particip 2012	0.1198	0.0087	Neg
Union particip 2010	0.1096	0.0105	Neg
Vote particip 2014	0.0692	0.0362	Neg
CHD age range 55–64			
%college or higher 2000	0.5031	<0.0001	Neg
Median income 2014	0.4587	<0.0001	Neg
Poverty 2015	0.4542	<0.0001	Pos
Poverty 2010	0.4345	<0.0001	Pos
%college or higher 2011	0.4062	<0.0001	Neg
GINI59	0.3336	<0.0001	Pos
Social capital	0.2687	0.0001	Neg
%HS diploma	0.2518	0.0001	Neg
Union decline 85–2010	0.2397	0.0002	Pos
GDP/pop	0.2119	0.0005	Neg
Vote particip 2014	0.1311	0.0057	Neg
Vote particip 2012	0.1218	0.0075	Neg
Union particip 2010	0.1176	0.0085	Neg
GINI10	0.0772	0.0285	Pos
Freeload 2010	0.0679	0.0377	Pos
CHD age range 65–74			
%college or higher 2000	0.431	<0.0001	Neg
Median income	0.3728	<0.0001	Neg
%college or higher 2011	0.3294	<0.0001	Neg
Poverty 2010	0.3042	<0.0001	Pos
Poverty 2015	0.3015	<0.0001	Pos
%HS diploma	0.1782	0.0013	Neg
Vote particip 2014	0.1709	0.0017	Neg
Union decline 85–10	0.1624	0.0022	Pos
Vote particip 2012	0.1528	0.0029	Neg
Social capital	0.1442	0.0045	Neg
GDP/pop	0.1064	0.0119	Neg

Table 6.2 Socioeconomic associations with CHD mortality 45–55 years old RTW and non-RTW

	RTW				Non-RTW		
SE variable	*R*-sq	*P*	Pos/neg		*R*-sq	*P*	Pos/neg
%college or higher 2000	0.4587	0.0001	Neg		0.555	<0.0001	Neg
%college or higher 2011	0.3744	0.0005	Neg		0.4194	0.0004	Neg
%HS diploma	0.2524	0.0052	Neg		na		
GINI10	0.2053	0.0117	Pos		na		
GINI59	0.3791	0.0005	Pos		0.3905	0.0007	Pos
Median income	0.5009	<0.0001	Neg		0.1477	0.036	Neg
Poverty 2010	0.3598	0.0007	Pos		0.1012	0.0713	Pos
Poverty 2015	0.3627	0.0007	Pos		0.1377	0.0418	Pos
Social capital	0.1461	0.03	Neg		0.1616	0.0361	Neg
Decline in union 85–10	na				0.1528	0.0334	Pos
Vote particip 2012	0.1216	0.0452	Neg		na		
Results of multivariate regressions							
RTW CHD mortality 45–54 $= 38.24 - 3\,(\text{college2000}) + 202.85\,(\text{GINI59})$							
$R\text{-sq} = 0.62$							
Non-RTW CHD mortality 45–54 $= 12.95 - 1.53\,(\text{college00}) + 194.14\,(\text{GINI59}) - 5.73\,(\text{social capital})$							
$R\text{-sq} = 0.72$							
	Comparison of RTW and non-RTW						
Average	57.17				44.18*		
Median	51.65				42.35		
Average rank	31.29				19.23**		
Minimum	26.7				30.4		
Maximum	89				77.7		

*$P = 0.0045$
**$P = 0.0036$

In the non-RTW system, only seven SE factors are associated significantly with CHD mortality in this age range and only three with *R*-square over 0.3. However, the multivariate regression yielded an *R*-square of 0.72 and included percent with college or higher degree in 2000, GINI59, and social capital as the significant independent variables.

Although both equations include higher educational attainment and GINI59, we must remember that the RTW states have a significantly lower mean and median percent of adults with college or higher degrees and significantly higher mean and median GINI59. Thus, even if we ignore the buffering effect of social capital in the non-RTW system, the differences in higher educational attainment and in GINI59 consign the RTW system to higher incidences of CHD mortality at the very young age range of 45–54. Most of us know of a guy under 50 years old—maybe a neighbor or a relative—who keeled over suddenly and died of heart attack. We shook our heads and ran down the individual risk factors that we thought responsible for this death: overweight/obesity, poor diet, little or no exercise, alcohol, smoking,

too much striving, and competing in both the workplace and in social milieus. These individual level risk factors can be traced back to such larger-scale factors as income inequality, educational attainment of whole communities, median income, poverty rate, social capital, etc.

Over the 50 states, the SE factors with R-square above 0.4 when regressed against CHD death incidence in the 55–64 age range are median income, poverty rate 2015, poverty rate 2010, and percent adults with college or higher degrees. Table 6.1 shows all bivariate associations. The multivariate regression yields the following equation:

CHD mortality incidence 55–64 $= 110.87 - 2.02(\%\text{college}) + 218.56(\text{GINI59}) - 13.7$ (social capital)
R-square $= 0.58, P < 0.0001$

Averages, medians, and average ranks of RTW and non-RTW sets of states for CHD mortality of the 55–64 age range are significantly different (Table 6.3).

On median, 25 more people per 100,000 in this age range die in the RTW states than in the non-RTW, a large difference in mortality rate that signifies a huge number of prematurely lost years of life. Although ten SE factors are associated with CHD 55–64 mortality in each set of states, only two of these associations had an R-square over 0.3 in the non-RTW system, whereas six did in the RTW. Thus, in the RTW system, CHD mortality in this age range more tightly connected with the SE system.

For results of the multivariate regressions for the two systems, see Table 6.3. In both systems, percent adults with college or higher degrees in 2000 negatively associated with CHD mortality 55–64. The other two independent variables differed between the two systems. This is one of the very few multivariate equations in which GINI10 is an independent variable (RTW). The non-RTW equation includes the index of unassisted poverty, also a rarely included independent variable. The income inequality indicated by GINI10 systematically reinforces the rigid hierarchy of the RTW socioeconomic structure and is extremely difficult to address without unraveling that hierarchy with public policy. Unassisted poverty, however, can be addressed with public policy that would not cause a rearrangement of socioeconomic structure. The non-RTW problem of CHD mortality in late middle age is open to improvement, but the RTW problem would require a socioeconomic and cultural revolution.

The "young elderly" fall in the 65–74 age range. Although they usually have some age-related health problems such as osteoarthritis, vision changes, hearing loss, etc., they are called "young" because they retain much mobility, mental acuity, and basic vital signs. However, this group spans a spectrum of health because of differences in risk behaviors, stresses, and environments. By age 65, decades of these differences imprint populations with differing types and degrees of age-related physical and mental conditions. Some "young elderly" seem like folks in their 40s fifty years ago; others seem as elderly as folks in their 80s. Aging is not a uniform process geographically at any scale. The range of CHD mortality rates over the states for this age group is huge: 239 deaths per 100,000 between the lowest and highest state mortality rate.

Table 6.3 Socioeconomic associations with CHD mortality 55–64 Years RTW and non-RTW

SE variable	RTW				Non-RTW		
	R-sq	P	Pos/neg		R-sq	P	Pos/neg
%college or higher 2000	0.4113	0.0002	Neg		0.4490	0.0002	Neg
%college or higher 2010	0.3361	0.0011	Neg		0.2734	0.0051	Neg
%HS diploma	0.3215	0.0015	Neg		na		
GDP/pop	0.1417	0.0328	Neg		0.0950	0.0781	Neg
GINI10	0.2617	0.0044	Pos		na		
GINI59	0.2441	0.0060	Pos		0.1387	0.0412	Pos
Median income	0.4555	0.0001	Neg		0.2585	0.0065	Neg
Poverty 2010	0.4161	0.0002	Pos		0.2475	0.0078	Pos
Poverty 2015	0.4418	0.0001	Pos		0.2905	0.0039	Pos
Pov15/pubasst	na				0.4453	0.0002	Pos
Public assistance	0.1886	0.0154	Pos		0.1261	0.0496	Neg
U6 unemploy	0.0866	0.0788	Pos		na		
Union decline 85–10	na				0.2348	0.0096	Pos
Vote particip 2012	0.0715	0.1001	Neg		na		
Vote particip 2014	na				0.1778	0.0230	Neg

Results of multivariate regressions

RTW CHD mortality
55–64 $= -221.85 - 5.11\,(\text{college2000}) + 926\,(\text{GINI10}) + 20.29\,(\text{publicasst.})\; R\text{-sq} = 0.6594$

Non-RTW CHD mortality
55–64 $= 198.04 - 3.19\,(\text{college2000}) + 6.94\,(\text{unassisted poverty}) - 0.88\,(\text{voting2014})$

R-sq=0.7184

		Comparison RTW and non-RTW. CHD mortality 55–64				
Average		133.6			106.6*	
Median		130.95			105.15	
Average rank		31.33			19.19**	
Minimum		72.2			71.9	
Maximum		202.4			171.1	

* $P = 0.0033$
** $P = 0.0034$

In this age group, CHD deaths become so prevalent that associations with SE factors over the 50 states show lower R-squares than those for the younger groups (Table 6.4).

Percent adults with college or higher degrees, median income, and poverty rate in 2010 and in 2015 show the highest R-squares of 0.30–0.43. For age range 55–64, these factors had R-squares of 0.41–0.50. Like the younger age groups, this age group has a multivariate equation featuring percent adults with college or higher degree in 2000:

CHD mortality 65–74 $= 52.09 - 8.5\,(\text{college2000}) + 897.39\,(\text{GINI10})$.
R-sq $= 0.51$.

Table 6.4 Socioeconomic associations with CHD mortality 65–74 years RTW and non-RTW

SE variable	RTW			Non-RTW		
	R-sq	P	Pos/neg	R-sq	P	Pos/neg
%college or higher 2000	0.4618	0.0001	Neg	0.2427	0.0084	Neg
%college or higher 2011	0.4009	0.0003	Neg	0.0955	0.0775	Neg
%HS diploma	0.1579	0.0253	Neg	na		
GINI10	0.1048	0.0590	Pos	na		
GINI59	0.1469	0.0303	Pos	na		
Median income	0.3287	0.0013	Neg	0.2188	0.0123	Neg
Poverty 2010	0.2314	0.0075	Pos	0.1772	0.0232	Pos
Poverty 2015	0.2334	0.0072	Pos	0.2004	0.0163	Pos
Public assistance	0.1843	0.0165	Pos	na		
Social capital	na			0.1834	0.0268	Neg
Union decline 85–10	0.0697	0.1030	Pos	na		
Vote particip 2012	0.0975	0.0664	Neg	0.1064	0.0662	Neg
Vote particip 2014	na			0.3135	0.0026	Neg

Results of multivariate regressions

RTW CHD mortality					R-sq = 0.5463	

65–74 = 481 − 12.12 (college2000) + 126.04 (union decline 85–10)

Non-RTW CHD mortality 65–74 = 507.84 − 5.52 (college   R-sq = 0.5280
2000)−3 (voting14)

	Comparison of RTW and non-RTW 65–74 CHD mortality				
Average		274.43		235.9*	
Median		268.2		240.8	
Average rank		30.3		20.3*	
Minimum		168.6		150.1	
Maximum		389.5		327.8	

*P = 0.0160
**P = 0.0162

Although the differences in mean, median, and average rank between RTW and non-RTW states for this age range remain highly significant, they are not as large as for the two younger age groups (Table 6.4). However, when the results of the bivariate regressions of the SE factors are displayed, major differences stand out. Only one SE factor associates with CHD 65–74 mortality rate in the non-RTW system with an R-square above 0.3 (voting participation 2014). In the RTW system, percent adults with college or higher degrees associate with CHD mortality rate with an R-square of 0.40. Median income also has an R-square of over 0.3 in its association with RTW CHD mortality rate. Multivariate equations show that both systems benefit from percent adults with college or higher degrees in 2000 but have different second independent variables:

RTW CHD 65–74 mortality rate $=481-12.12$ (college2000) $+126$ (union decline $85 - -10$)

R-sq $= 0.55$

Non-RTW CHD 65–74 mortality rate $= 507.84 - 5.52$ (college2000) $- 3$ (voting14)

R-sq $= 0.53$

Another observation worthy of mention is the different effect of public assistance in the two systems for the two older age groups. In the 55–64 age group, the percent of households with public assistance 2012 associates positively with CHD mortality rate in the RTW system with an R-square of 0.19 but negatively in the non-RTW system with an R-square of 0.13. For the 65–74 age range, public assistance associates positively with CHD mortality in the RTW system with an R-square of 0.18 and is a factor in the multivariate regression; in the non-RTW system, public assistance is not associated at all with CHD mortality in this age range.

Public assistance has no association in the RTW system with the other SE factors except per capita GDP with an R-square of 0.21 (negative). Per capita GDP has no association with CHD mortality in the 65–74 age range in the RTW system. At this stage of research, we can only speculate about the role of public assistance or of the factor(s) that it may indicate in fostering CHD mortality in the two older age ranges of the RTW states. Because the RTW states stingily grant public assistance, public assistance at relatively high proportions in these states may indicate wide-spread, severe deprivation.

The deaths within the three age ranges that we examined for CHD mortality rates represent premature deaths and lost years of life. We can compare two states with mortality rates not far from the medians of the two systems for differences in lost years of life per 100,000 age-specific populations. The states Texas (RTW) and California (non-RTW) also happen to be the largest states in their respective categories. The data are for 2 years, 2012 and 2013, to escape from the problem of a 1 year fluke.

We assigned age 50 as the death year for the 45–54 range, age 60 for the 55–64 range, and age 70 for the 65–74 range. Thus, a death in the youngest age range meant 25 years lost (25 years below the age of 75). A death in the 55–64 range meant 15 years lost and one in the 65–74 range, 5 years lost.

Thus, the differences are large, differences of centuries of life lost per 100,000, especially in the two younger age ranges. These differences arose during only two recent years when prevention and control of CHD had attained a high level of art and science, if the individuals had access to proper medical care and health education. The associations of CHD deaths with SE factors in each system imply that lost years from premature mortality cannot be totally explained by blocked access to medical care but also rest in the contexts of past and present income inequality, low educational attainment across the state population, poverty rate, social capital, voting participation, and even union participation and decline in that participation. SE factors in the multivariate regression can explain about 60% of patterns of CHD mortality within the RTW system for the 45–54 age range and about 70% within

TX	
45–54	3486 deaths = 1260.64 years lost/100,000
55–64	7547 deaths = 1990.81 years lost/100,000
65–74	9396 deaths = 1386.88 years lost/100,000
CA	
45–54	3735 deaths = 890.48 years lost/100,000
55–64	9375 deaths = 1610.14 years lost/100,000
65–74	12,585 deaths = 1199.66 years lost/100,000
Excess TX years of life lost over CA/100,000	
45–54	370.16
55–64	380.67
65–74	187.22

the non-RTW system. They can explain 65–72% in both systems for the 55–64 age range. For both systems and both age ranges, percent adults with college or higher degree formed an independent variable of influence in the multivariate regressions. This measure of higher educational attainment also entered into the equation for explaining CHD 65–74 mortality in the RTW system.

What a wonderful discovery! We can reduce the premature mortality from CHD, one of the largest contributors to total mortality, just by giving people higher education. We can salvage literally centuries of productive and high-quality life from sheer waste by increasing the percent of our adult population with college and higher degrees. We cannot go back into history and change the structure of GINI 1959, another major influence on patterns of CHD mortality, especially for the 45–54 age range in both systems. Although we can adjust public policies (if we have the will) to increase union participation in the future, we cannot go back into history and undo the damage of the Reagan and post-Reagan eras to labor unions. Present higher educational attainment will determine future CHD mortality rates in the two younger age ranges which account for the major portions of lost years of life. Future higher union participation will buffer new generations from early CHD mortality.

Chapter 7
Premature Unspecified Stroke Mortality

Strokes are the brain equivalent of heart attacks and have similar underlying causes such as blocking of brain arteries by fatty plaque or hardening of arteries into inelasticity. Thus, many of the same factors that contribute to heart attacks also contribute to stroke: overweight/obesity, smoking, alcohol, stress, and chronic striving. Although mortality from stroke is among the top ten causes of death, it is much less common than heart mortality. We would have analyzed nonspecified stroke deaths in the 45–54 age range, but 13 states had too few deaths to produce reliable incidences. It is interesting that eight of the thirteen are non-RTW states.

Average stroke mortality rate in the 55–64 age range across the 50 states is 11.51 and median, 10.3 per 100,000. GINI 1959 associates positively with this mortality rate with an R-square of 0.56 and median income negatively with R-square 0.50. Other strongly associated SE factors include poverty rate (positive), percent adults with college or higher degree (negative) and social capital (negative). The equation produced out of the multivariate regression includes three factors:

Stroke mortality 55–64 $= -7.54 - 0.36\,(\text{college2000}) + 70.32\,(\text{GINI59}) - 2.31\,(\text{social capital})$
R-square $= 0.75, P < 0.0001$.

The national pattern over the states of early mortality from stroke is rooted in post-WWII income inequality as well as in recent educational attainment and social ties.

The two systems (RTW and non-RTW) present wildly different socioeconomic associations with stroke mortality in the 55–64 age range. Seven SE factors associate with this mortality rate in the RTW system with R-squares above 0.4, indicating that this form of mortality is locked into the SE structure: percent adults with high school diplomas, GINI2010, GINI1959, median income, poverty2010, poverty2015, and social capital. None of the SE factors that associate in the non-RTW system with this mortality rate achieves an R-square above 0.35. Furthermore, the second highest R-square arises in the association with percent decline in union participation between

1985 and 2010. Every time the SE structure burps, the RTW mortality rate for stroke in this age group will react and is unstable.

The two different equations that arise in the two systems out of the multivariate regressions with 55–64 stroke mortality rate as the dependent variable underline the profound difference:

RTW stroke mortality 55–64 $= -7.8 - 0.553$ (college2000) $+ 81.18$ (GINI59) $- 2.05$ (social capital)
R-square $= 0.76, P < 0.0001$
Non-RTW stroke mortality 55–64 $=$ 12.89 $- 0.28$ (college2000) $- 1.88$ (social capital) $+ 11.97$ (union decline 1985–2010).
R-square $= 0.56, P = 0.0007$

The equation for the RTW system explains over three-quarters of the variability in stroke mortality 55–64, whereas that for the non-RTW system explains a shade over half that variability. Furthermore, RTW stroke mortality 55–64 is rooted in GINI59, the income structure of the post-WWII era before the eruptions of the 1960s–1970s and the Reagan Administration. Both systems, however, benefit from higher educational attainment of year 2000.

The average RTW mortality rate is 13.96 and the median, 12.1; those for the non-RTW are 8.74 and 8.4, respectively, significantly different. Thus, on average, each state in the RTW system suffers an excess of 78.3 lost years of life per 100,000 people in the 55–64 age range. On median, that loss is much lower, 25.5, but still a very large number of lost years of life. The 26 states have a total of 37,779,717 people in the age range of interest and suffered an excess of 9634 lost years more than they would have if their median mortality rate were the same as that of the non-RTW states. This many-centuries annual excess accrued just from 2013–2014, the 2 years of CDC stroke mortality data used in our analyses.

As with CHD mortality in the 65–74 age range, stroke mortality in the 65–74 age range became more ubiquitous than that of the younger age range. The associations with SE factors showed smaller R-squares, even at the national level. GINI 1959, percent adults with college or higher degrees, and median income ranked highest among the SE variables associated with 65–74 stroke mortality rate. The following equation comes from the multivariate regression of mortality rate with SE variables:

Stroke 65–74 mortality rate $=$ 17.76 $- 0.775$ (college2000) $+ 106.62$ (GINI59) $+ 23.5$ (union decline 1985–2010) $- 0.35$ (voting 2014)
R-square $= 0.755, P < 0.0001$

Like the equation for stroke 55–64 mortality rate, this one includes GINI59. However, the other independent variables differ and emphasize social measures rather than median household income. Even union decline contains a strong social component and indicates the weakening of social power to combat economic power.

Six SE factors achieve an R-square of 0.3 or more when regressed against stroke 65–74 mortality in the RTW system (Table 7.1).

Table 7.1 Socioeconomic associations with unspecified stroke mortality 65–74 RTW and non-RTW

SE variable	RTW			Non-RTW		
	R-sq	P	Pos/neg	R-sq	P	Pos/neg
%college or higher 2000	0.2591	0.0016	Neg	0.3661	0.0010	Neg
%college or higher 2011	0.2133	0.0102	Neg	0.2950	0.0035	Neg
% HS diploma	0.3767	0.0005	Neg	na		
GDP/pop	0.0820	0.0847	Neg	na		
GINI10	0.2541	0.0051	Pos	na		
GINI59	0.4546	0.0001	Pos	0.1649	0.0279	Pos
Median income	0.4545	0.0001	Neg	na		
Poverty 2010	0.3834	0.0004	Pos	na		
Poverty 2015	0.3932	0.0004	Pos	na		
Social capital	0.3229	0.0015	Neg	0.0918	0.0924	Neg
Union decline 85–10	0.0999	0.0638	Pos	0.3031	0.0031	Pos
Vote particip 2012	0.1755	0.0190	Neg	na		
Vote particip 2014	0.2173	0.0095	Neg	na		

Results of multivariate regressions

RTW stroke mortality 65–74 = 0.1445 + 128 (GINI59) + 5.6 (public asst.) − 9.6 (social capital) − 2.6 (U6unemploy) R-sq = 0.6950

Non-RTW stroke mortality
65–74 = 44.21 − 0.83 (college2000) + 22.64 (union decline 85–10)
R-sq = 0.4646

	Comparison of RTW and non-RTW				
Average	41.66			28.64*	
Median	40.0			27.8	
Average rank	34.04			16.25**	
Minimum	28.4			19.25	
Maximum	66.9			42.0	

*P = 0.000004
**P = 0.000017

Only two do in the non-RTW system, percent adults with college or higher degrees in 2000 and percent decline in union participation between 1985 and 2010. The equation explaining the greatest proportion of the variability of this mortality rate over the RTW states includes four SE factors:

Stroke 65–74 mortality (RTW) = 0.15 + 128 (GINI59) + 5.6 (public assistance) − 9.6 (social capital) − 2.6 (U6 unemploy).
R-square = 0.695, P < 0.0001

The analogous equation for the non-RTW system includes only percent decline in union participation and college 2000:

Stroke 65–74 mortality (non-RTW) = 44.21 − 0.83 (college2000) +22.64
(union decline 1985–2010).
R-square = 0.4646, P = 0.0005

Stroke mortality in the 65–74 age range in the RTW system is largely determined by the post-WWII social and economic structure, the present microeconomic structure, and interactions thereof. So it has one foot in the past and the other in the present. The influences determine about 70% of the variability of this mortality rate over the RTW states. In contrast, the variability of this mortality rate over the non-RTW states has much looser ties to the SE variables, whether past or present. The largest influence on this variability is a process from the past into the present, namely, the loss of union participation that began in earnest in the Reagan era and continues into the present.

Thus far, we have probed CHD mortality rates for age ranges 45–54, 55–64, and 65–74 and stroke mortality rates for age ranges 55–64 and 65–74. We looked at both the national patterns and at the patterns within the RTW and non-RTW systems. It is remarkable that GINI 1959, an influence that fosters mortality rates, appears in the multivariate regression equations for so many of these mortality patterns

National pattern: CHD 45–54, CHD 55–64, stroke 55–64, and stroke 65–74
RTW patterns: CHD 45–54, CHD 65–74, stroke 55–64, and stroke 65–74
Non-RTW patterns: CHD 45–54

The only other SE factor that appears in more equations generated out of the multivariate regressions is percent adults with college or higher degree, an influence that erodes mortality rates:

National pattern: CHD 45–54, CHD 55–64, CHD 65–74, stroke 55–64, and stroke 65–74
RTW patterns: CHD 45–55, CHD 55–64, CHD 65–74, and stroke 55–64,
Non-RTW patterns: CHD 45–54, CHD 55–64, stroke 55–64, and stroke 65–74.

The percent of adults with high educational attainment holds no surprise as a present influence on the patterns of these big killers over the states nationally and within the two systems. GINI 1959, however, raises questions of mechanism because it reflects the world of two generations ago. Present SE factors must channel the ghost of the past. Which ones? The multivariate backwards stepwise regressions can reveal hints of lingering structure in present factors.

Nationally, GINI 1959 works through poverty rate and union participation in 2010:

GINI59 = 0.3497 + 0.0057 (poverty rate2015) − 0.00407 (union2010).
R-square = 0.6521, P < 0.0001
In the RTW system, GINI 1959 works through median income and union participation in 2010:

GINI59 RTW $= 0.6032 - 0.000003$ (median income) -0.0053 (union participation 2010) R-square $= 0.6430, P < 0.0001$

In the non-RTW system, poverty rate and union participation 2010 remain in the multivariate regression after all other SE factors are eliminated but with a much smaller R-square than for the national and the RTW systems:

GINI59 non-RTW $= 0.357 + 0.0037$ (poverty rate2010) $- 0.0025$ (union2010) R-square $= 0.4311, P = 0.0017$

Our tentative conclusion in the absence of other data and evidence supports elements of the War on Poverty and the Great Society: poverty patterns are multigenerational; collective endeavors such as labor unions lift up those in poverty and low-wage jobs; higher educational attainment across large populations also breaks the generations-of-poverty; and the historical patterns of income inequality sentence generations to low-wage scrambling for survival. This conclusion has huge implications for today's dynamics such as present high costs of higher education as barriers to low-income youth. Today's dynamics sentence tomorrow's populations to high rates of early mortality from the big killers and, thereby, sentence the nation to losing/wasting millennia of years of productivity and social capital. Barriers to higher education, barriers to union organizing and maintenance, and failure of the so-called recovery from the Great Recession to minimize poverty rates and increase low wages form the big killers of the future when the present youth become middle-aged and "young elderly". They will die before age 75 in much larger numbers than necessary as surely as if they were mowed down with bullets (which they will also suffer under the failure of gun control but that issue belongs elsewhere).

Chapter 8
Obesity and Diabetes

Chocolate cake, a sizzling steak, sweet potato fries, bacon, and eggs: think of all the wonderful tasty foods that we enjoy and hanker after like a booze hound thirsts for drink. When you feel insecure, threatened, or depressed, the urge to eat sugary, fatty food may drive you to a megacalorie-eating binge. As a nation, we Americans turn to high-calorie food in large quantities and have done so for about 30 years. CDC began looking at state-level prevalence of obesity around 1999 when Mokdad et al. published an astonishing map of the states' percents of adult obesity and followed up the following year with a later map that showed spread of high prevalence from the original focus.

CDC's recent report, "Obesity Trends Among US Adults Between 1985 and 2010," contains annual maps of state obesity prevalence (CDC website obesity). High prevalence spread from the main foci in the Louisiana/Mississippi/Alabama area and West Virginia throughout the nation. All states in 2010 had a prevalence of over 20% of adults with body mass index over 30. The obesity epidemic pulled all the states into its deadly dynamic. This spread occurred rapidly. In 1993, 12 states had adult obesity prevalence of 15–19% and none as high as 20%. In 1995, 27 states had prevalence of 15–19%, more than double the number of only 2 years before. By 1997, 3 states had prevalence over 20%, and 32 had prevalence of 15–19%. By 2001, only one state had a prevalence below 15%, but one had a prevalence above 25%, and the majority had prevalence of 20–24%. By 2004, 2 states had prevalence over 30%, and no state had one below 15%; 20 states had prevalence of 25–29%. The maps of prevalence for 2014 and 2015 now online at the CDC website show a few states which now have prevalence over 35%. The extent and intensity of the epidemic keep growing.

Much of this time, health authorities and health-devoted foundations pumped out warnings about the risks for deadly diseases that obesity poses: coronary heart disease, stroke, many cancers, Alzheimer's disease, diabetes, joint deterioration, etc. The media put out story after story about how certain obese individuals lost weight and kept it off. Physicians pressured their patients to eat right and exercise. Fad diets

and debates about the best diets garnered lots of attention. Local health departments initiated programs for school children, for families, for workers at specific sites, and for senior citizens to eat right and engage in physical activity. Many employers established health programs with a vengeance (fines if the overweight/obese didn't become fit) because their insurance rates climbed as obesity-related health problems led to numerous expensive claims. So information about eating and exercising is readily available; and, for most people, opportunities have multiplied to do these simple things. But the epidemic continues because something is driving people to eating and to sitting around in front of a TV or a computer screen.

Research on individuals has linked obesity with food insecurity (Ryan-Ibarra et al. 2016). However, my own research on individuals indicated that all insecurities – food, housing, medical, clothing – are associated with overweight/obesity (Wallace et al. 2003). A later chapter will explore the deep roots of the obesity epidemic as well as its corollary public health outcomes. The reader should know at this point, however, that the people of the United States (and of the world in general) didn't suddenly and consciously decide, in the late 1980s, to overeat and sit motionless in a stupor for hours every day. They came to perceive a chronic threat to their lives and their families. Because they further decided that they could not escape this threat, they reverted to a highly evolved behavior pattern of energy storage in case of a famine. This perception of inescapability grew geographically in time. The obesity epidemic and its geography show this growth of helplessness.

We humans have evolved for both mundane, routine life and threat-based emergencies. We have biological daily cycles of sleeping, eating, and activity. Normal sleep pattern in temperate climates features 7–9 h of sleep per night; normal eating patterns feature three major meals and one to two supplements. Normally, our energy expenditure over long periods equals our caloric intake. We neither lose nor gain large numbers of pounds during young adulthood, and we gain only slowly during middle and old age. Threat-based emergencies should be relatively rare and not loom over our long-term security in our homes, communities, and work. Our bodies and minds change immensely under chronic threat.

Chapter 7 of *Gene Expression and Its Discontents: The Social Production of Chronic Disease* (Wallace and Wallace 2016) includes brief summaries of how chronic threat from structured stress (unequal power and economic relations) transforms us from healthy to unhealthy.

Indeed, experts in health disparities have long recognized that obesity is unevenly distributed geographically, ethnically, and by socioeconomic class. Urban people of color (Allan 1998), poor Southern states (Mokdad et al. 1999), and poor neighborhoods within cities (Ginsberg-Fellner 1981) have higher prevalences. The Southern states form the epicenter of the geographically spreading epidemic (Mokdad et al. 1999), a picture of contagion between populations.

The famous Whitehall Studies of British civil servants (Brunner et al. 1997) found that coronary heart disease and central abdominal fat deposition incidences were strongly associated with occupational hierarchy. Locus of work control was a major factor in both central abdominal fat deposition and coronary heart disease. Power relations in the workplace imposed a particular structure of stress.

Furthermore, stress which causes sleep deficits shifts metabolism toward fat accumulation and central abdominal deposition (Spiegel et al. 1999). The hypothalamus-pituitary-adrenal (HPA) axis is central to the mechanisms (Bjorntorp 2001; Chrousos 2000). So the stress involves adrenal reactions to serious threats. (pp. 67–68)

Chapter 1 has these observations:

Fat is stored in specialized cells, the adipocytes. One of the most important findings of the 1990s is the glandular nature of adipocytes; they secrete hormones that shape the physiological processes of the body, from influencing the biological clock (Antonijevic et al. 1998) to directing whether T1 or T2 helper cells dominate (Lord et al. 1998). The best studied of these hormones is leptin.
. . . Leptin is released by fat cells after a meal (Houseknecht et al. 1998) and signals to the alimentary biological clock that the person has eaten and needs to eat no more. Leptin also influences and is influenced by the sleep/wake biological clock, peaking during the night, whereas the adrenal hormone cortisol peaks during the day (Casaneuva and Dieguez 1999; Houseknecht et al. 1998). Leptin and cortisol maintain a dynamic balance; people with central abdominal obesity secrete cortisol faster than normal weighted people but clear it faster (Lottenberg et al. 1998). Cortisol is one of the adrenal hormones secreted in response to stress, especially to threatening stresses, a sign of the triggering of the generalized stress reaction of "fight or flight" (Newcomer et al. 1998). The complementary circadian cycles of leptin and cortisol balance the need for sleep and for alertness against threats to survival. Furthermore, cortisol is accepted as a general marker of the status of the HPA axis (Ahlborg et al. 2002). . . .
Recent work suggests links between stress, its attendant neurophysiological changes, and overweight/obesity. For example, people suffering from chronic stress-related sleep pattern disruption metabolize their food differently from non-sufferers. The calories are channeled more into fat storage, and the fat is particularly deposited in the central abdominal area (Spiegel et al. 1999). The second round of Whitehall Studies revealed that hierarchical stress (stress imposed by lack of control over one's circumstances) was associated with higher BMI, central abdominal fat deposition, and higher rates of coronary heart disease and associated mortality (Brunner et al. 1997). The lower the occupational grade of the civil servants within the Whitehall cohort, the higher the prevalence of overweight/obesity, central abdominal fat deposition, and CHD.
Researchers in several other nations replicated and extended the results of the Whitehall studies. Middle-aged Swedish men with markers of HPA axis activation were found to have higher prevalence of overweight/obesity and central abdominal fat deposition (Rosmond and Bjorntorp 1998). Occupational class was found to associate strongly with overweight/obesity and waist-to-hip ratio (a measure of central abdominal fat deposition) among adults in several countries, including the United States and Japan (Marmot et al. 1998; Nakamura et al. 1998). Laboratory animal studies showed that leptin receptors are part of the hypothalamus (Iqbal et al. 2000). This suggests that fat cells send signals to the HPA, especially to the hypothalamus which, among other functions, regulates both the independent but related sleep/wake and eating biological clocks. (pp. 16–17)

Chronic hierarchical stress (aka structural stress) leads to dysregulation of the HPA axis at first with extended high levels of cortisol and then finally with flat, low levels of cortisol, marked by depression and low activity (Bjorntorp 2001). Essentially, the HPA axis has "burned out." Well-defined cycles of eating and sleeping vanish. Furthermore, stressed individuals resort to "comfort food" (Wilkinson 1996). Men may indulge more in fatty foods and alcohol (Rosmond and Bjorntorp 1998) and women in sugary foods (Rosmond and Bjorntorp 1999).

Just as the HPA axis can be "burned out" by chronic stress so that circadian rhythms, metabolism, and mental health are disrupted, the insulin-regulated glucose metabolizing system also becomes "burned out" with the insulin receptors losing their sensitivity and requiring more and more insulin to react. Inability to metabolize glucose is the core of type 2 diabetes, and the process leading to this inability is called metabolic syndrome and has defined criteria (Nyirenda and Seckl 1998; Phillips et al. 1999).

Chronic stress from grossly unequal power relations shunts individuals and populations onto the route of obesity and diabetes. Labor unions and the ripples from critical densities of union membership offer a buffer against grossly unequal power relations in the workplace. They are part of a network of collectivist organizations that offer a general buffer against unequal power relations in the community at large. The rise of obesity and diabetes as national epidemics signals the impacts of such instruments as right-to-work laws that restore grossly unequal power relations to their pre-Great Reform status.

Although the obesity epidemic had gathered full steam by 2007–2009, the RTW and non-RTW states showed significant difference in obesity prevalence, whether these states are divided according to the 2007/2009 classes of law or those of 2016 (Table 8.1).

The 2016 classification of states actually shows a larger difference and hints that even in 2007–2009, those states that enacted RTW laws between 2007 and 2016 already had adopted socioeconomic systems more in line with RTW laws and had reduced their populations to learned helplessness by 2007–2009. The socioeconomic factors associated with obesity prevalence in 2007/2009 prominently featured GINI 1959, median income, and poverty in the RTW system according to 2007/2009 classification. The sole SE factor with high R-square in the non-RTW system was percent adults with college degrees or higher. This factor swamped all others in the multivariate regression and yielded the equation:

obesity $= 40.65 - 0.563$ (% college degree or higher).
R-sq $= 0.70$.

The analogous equation for the RTW states included both GINI59 and median income:

Obesity $= 20.55 + 41.35$ (GINI59) $- 0.00019$ (medinc).
R-sq $= 0.75$.

Dividing the states according to their 2016 RTW status yields a slightly different picture for the influence of SE factors on 2007/2009 obesity. For the RTW states, the major influence is median income 2008/2010, although poverty rate 2009 also has an R-square of over 0.6 in the bivariate regression with obesity. The multivariate regression ends with only median income in the equation:

obesity 2007/2009 $= 46.498 - 0.00037$ (median income)
R-sq $= 0.6439$, $P < 0.0001$.

Table 8.1 Socioeconomic associations with obesity prevalence 2007/2009 associations for 2007/2009 RTW configuration of states

SE variable	RTW			Non-RTW		
	R-sq	*P*	Pos/neg	*R*-sq	*P*	Pos/neg
% college or higher 2000	0.2963	0.0052	Neg	0.6976	<0.0001	Neg
GINI10	0.3449	0.0024	Pos	na		
GINI59	0.6813	<0.0001	Pos	0.0890	0.0676	Pos
Median income 05	0.5194	0.0001	Neg	0.2703	0.0027	Neg
Median income 08/10	0.6391	<0.0001	Neg	0.3415	0.0006	Neg
% no HS	0.3428	0.0025	Pos	0.1115	0.0461	Pos
Poverty 09	0.5960	<0.0001	Pos	0.2658	0.0029	Pos
Social capital	0.1071	0.0753	Neg	0.1596	0.0246	Neg
Union particip 2010	0.0867	0.0989	Neg	na		
Union particip 64	0.1170	0.0660	Neg	0.0846	0.0728	Neg
Union decline 85–04	na			0.2265	0.0061	Pos
Vote particip 02	na			0.1066	0.0501	Neg

Results of multivariate regressions

RTW obesity prevalence 07/09 = 20.54 + 41.35 (GINI59) − 0.00019 (median income 08/10)   *R*-sq = 0.7536

Non-RTW obesity prev 07/09 = 40.65 − 0.563 (% college or higher)   *R*-sq = 0.6976

	Comparison of RTW and Non-RTW for obesity 07/09					
Average		28.62			26.24	*P* = 0.0068
Median		28.70			25.75	
Average rank		31.59			20.71	*P* = 0.0091
	Association for 2016 RTW configuration of states					
% college or higher 2000	0.3381	0.0011	Neg	0.6043	<0.0001	Neg
GDP05/pop	0.4216	0.0002	Neg	na		
GINI10	0.3072	0.0020	Pos	na		
GINI59	0.4521	0.0001	Pos	0.0821	0.0943	Pos
Median income 05	0.4522	0.0001	Neg	0.1708	0.0255	Neg
Median income 08/10	0.6459	<0.0001	Neg	0.2173	0.0126	Neg
% no HS	0.3393	0.0011	Pos	na		
Poverty 09	0.6140	<0.0001	Pos	0.1298	0.0470	Pos
Social capital	0.1327	0.0379	Neg	0.0887	0.0964	Neg
Unemploy 03	0.1860	0.0152	Pos	na		
Union decline 85–04	na			0.1531	0.0333	Pos

Results of multivariate regressions

RTW obesity 07/09 = 46.498 − 0.000376 (median income 08/10)   *R*-sq = 0.6439

Non-RTW obesity 07/09 = 50.238 − 0.554 (% college or higher 2000)   *R*-sq = 0.6043

	Comparison of RTW and non-RTW for obesity 07/09					
Average		28.80			25.65	*P* = 0.0002
Median		28.85			25.50	
Average rank		32.54			17.88	*P* = 0.0004

For the 2016 non-RTW states, percent adults in 2000 with college or higher degrees continue to overpower all other SE factors in association with obesity 2007/2009:

Obesity $= 40.2377 - 0.554$ (% with college deg) R-sq $= 0.6043$.
$P < 0.0001$.

Nationally, average state prevalence of obesity in 2015 was 29.8% with a minimum of 20.1% and maximum of 36.1%. Percent adults with college or higher degrees, GINI 1959, and median income 2014 ranked highest among the SE factors for association with obesity in 2015. None had an R-square over 0.45, however. The equation produced by the multivariate regression explained over two-thirds half of the pattern over the states:

Obesity 2015 $= 39.84 - 0.475$ (college2000) $+ 24.8$ (GINI59) $- 2.1$(social capital) $- 0.91$ (U6 unemploy).
R-sq $= 0.68$

The division of states between RTW and non-RTW shows widening difference in obesity prevalence compared with the 2007/2009 and 2004 patterns (Table 8.2).

Table 8.2 Socioeconomic associations with obesity prevalence 2015 RTW and non-RTW

	RTW			Non-RTW		
SE variable	R-sq	P	Pos/neg	R-sq	P	Pos/neg
% college 2000	0.2598	0.0046	Neg	0.3803	0.0008	Neg
% college 2011	0.2114	0.0105	Neg	0.2212	0.0118	Neg
% HS diploma	0.1710	0.0203	Neg	na		
GINI10	0.1503	0.0286	Pos	na		
GINI59	0.3512	0.0008	Pos	0.1406	0.0400	Pos
Median income 14	0.3259	0.0014	Neg	0.1081	0.0646	Neg
Poverty 10	0.2544	0.0050	Pos	na		
Poverty 15	0.2622	0.0044	Pos	na		
Social capital	na			0.1872	0.0254	Neg

Results of multivariate regressions

RTW % obese 2015 $= 23.35 - 0.34$ (% college 2000) $+ 37.5$ (GINI59)	R-sq $= 0.4450$
Non-RTW % obese 2015 $= 40.91 - 0.51$ (% college 2000)-2.01 (social capital)	R-sq $= 0.4894$

	Comparison RTW and non-RTW			
	RTW		Non-RTW	
Average	31.37			26.90*
Median	31.25			26.20
Average rank	33.52			16.81**

*$P = 0.00002$
**$P = 0.00005$

The RTW states had an average and median a bit less than one-third (31.37% and 31.25%); the non-RTW states, an average and median a bit over one-quarter (26.9% and 26.2%). None of these statistics is anything to brag about, and all states now participate in this epidemic that shows no sign of peaking and entering decline.

Regressions yield weaker associations in both systems in 2015, compared with 2007/2009, a hint that obesity has become too ubiquitous for strong differentiations. For the RTW system, GINI59 continues to wield the greatest influence. The multivariate regression of SE factors renders up this equation:

Obesity 2015(RTW) $= -5.91 + 80.35$ (GINI59) $+ 0.2$ (union participation 64). R-sq $= 0.58$

The associations for the non-RTW system have always been fewer and weaker than for the RTW because the non-RTW system is much looser and resilient. Its analogous equation also has two influential SE factors:

Obesity 2015 (non-RTW) $= 40.91 - 0.51$ (college2000) $- 2.01$ (social capital). R-sq $= 0.49$

Why should we pay attention to obesity prevalence from years before our early mortality incidences from CHD and stroke? Two answers arise: (1) obesity prevalence of 2015 has consequences in the circulatory system years from now, and (2) our analyses yielded stronger associations between obesity prevalence of 2007/2009 and our measures of premature mortality than the associations of obesity prevalence of 2015. Our bodies (and minds) record our lives from far in the past. We even outdo Shirley McClain in channeling the past through genetic, epigenetic, and cultural evolution. The influence of the past 5 to 10 years on our arteries should not surprise us, if we consider that events from three or four generations ago imprint our literally visceral reactions and behavior.

Table 8.3 lists associations of obesity and stroke with CHD in the order of R-squares of the RTW system.

It also lists associations of obesity and CHD with stroke with the same organizing principle. For the three age ranges of CHD, obesity prevalence of 2007/2009 ranks first or second in the RTW system and first in the non-RTW system for the two younger age ranges. The associations in the RTW system have higher R-squares than those of the non-RTW system and indicate tighter connections. The associations with stroke, however, yield a different picture. CHD 45–54 ranks tops for association with stroke in both age ranges in the RTW system. Indeed, CHD 55–54 ranks second for stroke 55–64 in the RTW system. The three time slots of obesity prevalence (2007/2009, 2004, and 2015) rank first, second, and third for the stroke 55–64 prevalence pattern in the non-RTW system. Although CHD 45–54 ranks tops for the stroke 65–74 pattern in the non-RTW system, its R-square is not hugely different from the second-ranked obesity 2007/2009. The third-ranked variate in the non-RTW system is obesity 2004, whereas in the RTW system, it is CHD 55–64.

We can conclude that obesity of several years ago forms a major factor associated with both CHD and stroke mortality below age 75 in the non-RTW system but with a generally looser connection than found in the RTW system. The associations

Table 8.3 Associations between obesity and CHD and stroke mortality RTW and non-RTW

Other variable	RTW		Non-RTW	
	R-sq	*P*	*R*-sq	*P*
CHD mortality 45–54				
Obesity 07/09	0.7179	<0.0001	0.6045	<0.0001
Stroke mort 55–65	0.6508	<0.0001	0.4258	0.0004
Obesity 2015	0.6149	<0.0001	0.5735	<0.0001
Obesity 2004	0.6104	<0.0001	0.5479	<0.0001
Stroke mort 65–74	0.5630	<0.0001	0.5039	0.0001
CHD mortality 55–64				
Stroke mort 55–64	0.583	<0.0001	0.3229	0.0028
Obesity 07/09	0.5383	<0.0001	0.5119	0.0001
Stroke mort 65–74	0.5075	<0.0001	0.4439	0.0002
Obesity 2015	0.3959	0.0003	0.4022	0.0005
Obesity 2004	0.3894	0.0004	0.3468	0.0015
CHD mortality 65–74				
Obesity 07/09	0.4930	<0.0001	0.3420	0.0016
Stroke mort 55–64	0.3965	0.0003	0.2675	0.0067
Stroke mort 65–74	0.3938	0.0004	0.2186	0.0123
Obesity 2015	0.3809	0.0005	0.3104	0.0028
Obesity 2004	0.3611	0.0007	0.2081	0.0145
Stroke mortality 55–64				
CHD mort 45–54	0.6508	<0.0001	0.4258	0.0004
CHD mort 55–64	0.5830	<0.0001	0.3229	0.0028
Obesity 07/09	0.5705	<0.0001	0.5764	<0.0001
Obesity 2004	0.5295	<0.0001	0.5192	0.0001
Obesity 2015	0.4438	0.0001	0.5025	0.0001
CHD mort 65–74	0.3965	0.0003	0.2675	0.0067
Stroke mortality 65–74				
CHD mort 45–54	0.6530	<0.0001	0.5039	0.0001
Obesity 07/09	0.5110	<0.0001	0.4771	0.0001
CHD mort 55–64	0.5075	<0.0001	0.4439	0.0002
Obesity 2004	0.4713	0.0001	0.4636	0.0002
Obesity 2015	0.4206	0.0002	0.2171	0.0126
CHD mort 65–74	0.3938	0.0004	0.2186	0.0123

between CHD and stroke are also looser in the non-RTW system than in the RTW system. Finally, something in addition to obesity jointly drives patterns of both CHD and stroke so that stroke associates more tightly with CHD than with obesity in the RTW system. In particular, CHD mortality patterns in the very early age range of 45–54 show tight connection with early mortality from stroke. Thus, stress from unequal power relations may work directly in the RTW system as well as indirectly through obesity. This hypothesis will receive more attention and support in later chapters.

CHD and stroke have several potential contributing factors besides obesity such as smoking, drinking, and air pollution. Obesity contributes to type 2 diabetes much more than to CHD or stroke because of its metabolic dynamics. The great majority of cases of diabetes are classed as type 2 (or "adult") as opposed to type 1 ("childhood"), the genetic autoimmune form. Diabetes mortality rose nationally in an epidemic curve beginning in the late 1980s (Wallace and Wallace 2016). Diabetes itself contributes to risk for CHD and stroke as well as neuropathy, Alzheimer's disease, and amputations of feet and legs (American Diabetes Assn. website). It is also one of the major killers, but its murderous power may be underestimated because death certificates often list the immediate cause of death such as heart attack without noting diabetes as the underlying cause. This failure to identify the underlying cause of death as diabetes may differ in intensity from state to state (Cheng et al. 2012). Even with this caveat, we'll probe diabetes mortality in age ranges 45–54, 55–64, and 65–74. Whatever patterns we find will understate the reality.

Diabetes mortality per 100,000 people rises with the age range, not surprisingly:

The mortality rate range over the states shows a maximum of about three times the minimum for each age range: 7.2 and 25.9, 17.1 and 58.9, and 42.1 and 112.7, respectively, for minimum and maximum of the three age ranges. We can conclude that diabetes mortality rates can differ greatly over the 50 states. The SE factors with significant associations with diabetes mortality rates of the three age ranges appear in Table 8.4.

Age range	Median mortality rate
45–54	13.45
55–64	30.85
65–74	68.75

The oldest age range features weaker associations, probably because of greater ubiquity. The SE factors themselves shift a bit between the age ranges. For example, social capital and diabetes mortality associated with R-squares of 0.2–0.3 for the two younger age ranges but with an R-square of less than 0.1 for the oldest. The following equations came from the multivariate regressions for the three age ranges nationally:

Diabetes mort. 45–54 $= -3.95 - 0.139\,(\%\text{college}) + 32.13\,(\text{GINI59}) + 0.0718$ (poverty rate 15)
R-sq $= 0.7032$
Diabetes mort. 55–64 $= -19.715 + 57.147\,(\text{GINI59}) + 2\,(\text{poverty rate 15})$
R-sq $= 0.6508$
Diabetes mort. 65–74 $= 59.7405 - 0.638\,(\%\text{college}) + 2.254\,(\text{poverty rate 10})$
R-sq $= 0.531$.

GINI59 and 2015 poverty rate influence national patterns of diabetes mortality for the two younger age groups. Percent adults with college or higher degrees buffer against diabetes mortality for the youngest and oldest age group. These factors also

SE factor	R-sq	P	Pos/neg
	45–55 *years old*		
Poverty 2015	0.6224	<0.0001	Pos
Poverty 2010	0.6068	<0.0001	Pos
Median income	0.5589	<0.0001	Neg
College 2000	0.4942	<0.0001	Neg
GINI59	0.4492	<0.0001	Pos
College 2011	0.4461	<0.0001	Neg
GDP/pop	0.3577	<0.0001	Neg
%high school dip	0.3108	<0.0001	Neg
Social capital	0.2038	0.0008	Neg
Union particip 2010	0.1903	0.0009	Neg
Free load 2010	0.1751	0.0015	Pos
Union decline 85–10	0.1743	0.0015	Pos
Voting 2012	0.1706	0.0017	Neg
There are six other lesser assns.			
	55–64		
Poverty 2015	0.6224	<0.0001	Pos
Poverty 2010	0.5899	<0.0001	Pos
Median income	0.5277	<0.0001	Neg
College 2000	0.42	<0.0001	Neg
% high school dip	0.3763	<0.0001	Neg
GINI59	0.3635	<0.0001	Pos
College 2011	0.3625	<0.0001	Neg
GDP/pop	0.3263	<0.0001	Neg
Social capital	0.3136	<0.0001	Neg
Voting 2014	0.1582	0.0025	Neg
Union particip 2010	0.1537	0.0028	Neg
Free load 2010	0.1452	0.0037	Pos
Union decline 85–10	0.1419	0.0041	Pos
U6 unemploy	0.1311	0.0057	Pos
Voting 2012	0.1254	0.0067	Neg
Three other lesser assns			
	65–74		
Poverty 2010	0.4828	<0.0001	Pos
Poverty 2015	0.4559	<0.0001	Pos
Median income	0.4361	<0.0001	Neg
College 2000	0.4199	<0.0001	Neg
College 2011	0.4026	<0.0001	Neg
GDP/pop	0.3086	<0.0001	Neg
GINI59	0.2402	0.0002	Pos
% high school di	0.2047	0.0006	Neg
Union decline 64–10	0.1155	0.0091	Pos
Union decline 85–10	0.1116	0.0102	Pos
Free load 2010	0.1025	0.0134	Pos
Social capital	0.0942	0.0172	Neg
Union particip 2010	0.0941	0.0172	Neg
Three other lesser assns.			

Table 8.4 SE associations with diabetes mortality nationally, three age ranges

appear in the analogous equations to explain patterns of CHD, stroke, and obesity. This consistency indicates that these conditions create a chronic disease guild with common roots.

For each of the three age ranges, the RTW system has significantly higher means and medians:

	RTW median	Non-RTW median	%difference
45–54	14.55	11.6	25
55–64	36.05	29.35	23
65–74	73.50	63.65	15.5

As with CHD and stroke mortalities, these differences represent a vast number of years of lost life in the RTW system. CHD, stroke, and diabetes indicate aging processes. Markedly larger mortalities from these chronic conditions mean that the people in the RTW states age markedly more rapidly than those in the non-RTW, on average and median.

Diabetes mortality of the three age groups (Table 8.5) in the two systems differ from the mortality patterns of CHD and stroke mortality and of obesity prevalence because GINI 1959 does not appear in any final equation from the multivariate regression for each system.

For the youngest age group's mortality rates, SE variables generally show higher R-squares in the RTW system than in the non-RTW. However, the final equations from the multivariate regressions have similar R-squares and explain about two-thirds of the variability of diabetes mortality 45–54 over the systems.

Diabetes mort. 45–54 RTW $= 10.6 + 1.128$ (poverty10) -0.217 (voting participation 2012)
R-sq $= 0.67$
Diabetes mort. 45–54, non-RTW $= 14.35 - 0.24$ (%college) $+ 0.583$ (poverty15)
R-sq $= 0.68$

Diabetes mortality 55–64 also shows stronger associations with SE factors in the RTW system than in the non-RTW, with four R-squares above 0.5 in the RTW and none in the non-RTW. Poverty rates of 2015 were so strongly associated with mortality in the RTW set of states that all other SE factors dropped out of the multivariate regression: R-sq $= 0.68$. Together, percent adults with college or higher degrees and social capital emerged as the influential independent variables in the non-RTW multivariate regression:

Diabetes mort. 55–64 non-RTW $= 58.05 - 0.679$ (%college) -4.71 (social capital)
R-sq $= 0.65$

As with the younger age ranges, the SE factors in the RTW system showed higher R-squares than in the non-RTW for mortality of the 65–74 age range. Three factors had R-squares above 0.35 in the RTW system and only one in the non-RTW (% with college). However, poverty rates of 2010 swamped all other SE factors in the

Table 8.5 Socioeconomic associations with diabetes mortality, three age groups RTW and non-RTW

SE variable	RTW			Non-RTW		
	R-sq	*P*	Pos/neg	*R*-sq	*P*	Pos/neg
Age group 45–54						
%college 2000	0.2864	0.0029	Neg	0.6193	<0.0001	Neg
%college2011	0.2387	0.0066	Neg	0.5450	<0.0001	Neg
%HS diploma	0.4230	0.0002	Neg	na		
Freeload 05	na			0.1482	0.0358	Pos
Freeload 10	na			0.1222	0.0525	Pos
GDP/pop	0.3654	0.0006	Neg	0.1965	0.0173	Neg
GINI10	0.2524	0.0052	Pos	na		
GINI59	0.4484	0.0001	Pos	0.1526	0.0335	Pos
Median income 14	0.5488	<0.0001	Neg	0.4275	0.0003	Neg
Poverty 10	0.6097	<0.0001	Pos	0.4662	0.0001	Pos
Poverty 15	0.5656	<0.0001	Pos	0.5561	<0.0001	Pos
Social capital	0.1934	0.0142	Neg	na		
U6 unemploy	0.0961	0.0678	Pos	0.1317	0.0456	Pos
Union particip 15	na			0.1071	0.0655	Neg
Union decline 85–10	na			0.1441	0.0381	Pos
Vote particip 12	0.3081	0.0019	Neg	na		
Vote particip 14	0.160	0.0245	Neg	na		
Results of multivariate regressions						

RTW diabetes mort.   *R*-sq = 0.6703
45–54 = 10.696−0.00027 (GDP/pop15) + 69.22 (GINI59)

Non-RTW diabetes mort.   *R*-sq = 0.7336
45–54 = 27.94 − 0.66 (college00) + 19.29 (freeload05)

	RTW			Non-RTW		
Age group 55–64						
%college 2000	0.2318	0.0074	Neg	0.5069	0.0001	Neg
%college 2011	0.1588		Neg	0.4380	0.0003	Neg
%HS diploma	0.5232	<0.0001	Neg	na		
GDP/pop	0.4392	0.0001	Neg	na		
GINI10	0.3509	0.0009	Pos	na		
GINI59	0.3601	0.0007	Pos	na		
Median income 14	0.5915	<0.0001	Neg	0.3064	0.0030	Neg
Poverty 10	0.6801	<0.0001	Pos	0.3449	0.0015	Pos
Poverty 15	0.6823	<0.0001	Pos	0.4194	0.0004	Pos
Social capital	0.2957	0.0024	Neg	0.1831	0.0269	Neg
U6 unemploy	0.2151	0.0099	Pos	0.1718	0.0252	Pos
Union decline85–10	na			0.1429	0.0387	Pos
Vote particip 12	0.2162	0.0097	Neg	na		
Vote particip 14	0.1777	0.0184	Neg	na		
Results of multivariate regressions						

RTW diabetes mort. 55–64 = −8.419+2.8085 (poverty15)	*R*-sq = 0.6823
Non-RTW diabetes mort. 55–64 = 58.05−0.679 (%college 2011) −4.71 (social capital)	*R*-sq = 0.6498

Table 8.5 (continued)

SE variable	RTW			Non-RTW		
	R-sq	*P*	Pos/neg	*R*-sq	*P*	Pos/neg
	Age group 65–74					
%college2000	0.2218	0.0088	Neg	0.5147	<0.0001	Neg
%college2011	0.2020	0.0123	Neg	0.5012	0.0001	Neg
%HS diploma	0.2300	0.0077	Neg	na		
Freeload 05	na			0.1087	0.0640	Pos
GDP/pop	0.2515	0.0053	Neg	0.2136	0.0133	Neg
GINI10	0.0865	0.079	Pos	na		
GINI59	0.2224	0.0087	Pos	na		
Median income14	0.3843	0.0004	Neg	0.3207	0.0023	Neg
Poverty 10	0.4590	0.0001	Pos	0.3349	0.0014	Pos
Poverty 15	0.3943	0.0003	Pos	0.3784	0.0008	Pos
U6 unemploy	na			0.1290	0.0525	Pos
Vote particip 12	0.2167	0.0096	Neg	na		
Vote particip 14	0.1142	0.0509	Neg	na		
Results of multivariate regressions						
RTW diabetes mort 65–74 = 14.2313 + 3.74 (poverty10) *R*-sq = 0.4590						
Non-RTW diabetes mort 65–74 = 113.343 − 2.09 (%college *R*-sq = 0.5955 2000) + 58.66 (freeload05)						

multivariate regression for the RTW states: R-sq $= 0.46$. The equation from the non-RTW regression follows:

Diabetes mort. 65–74 non-RTW $= 113.34 − 2.09$ (college2000) $+58.66$ (freeload05).
R-sq $= 0.60$.

This is the sole time that freeloading has appeared in an equation from a multivariate regression that explains patterns of a condition or mortality rate over a set of states. College education or higher continued to protect against diabetes mortality in all three age groups in the non-RTW states, but the second variable in the equation differed from age range to age range: poverty 2015 for 45–54, social capital for 55–64, and freeloading 05 for 65–74.

Dying of diabetes before age 75 involves a long, complex process that begins with the roots of diabetes and ends with failure to manage it. Failing to manage it may also come from failure to get it diagnosed in the first place, possibly because of lack of access to medical care or pressing problems that pushed getting medical care onto the "back burner." So we'll look at diabetes prevalence, a set of data that does not suffer from the some of the complications of early diabetes mortality.

Nationally, the SE factors with strongest associations with 2014 state diabetes prevalence are poverty rate, social capital, and percent adults with high school diplomas. GINI 1959s R-square is much larger than that of GINI 2010, 0.40 vs 0.27.

National 2014 diabetes prevalence $= 7.146 + 11.956\,(\text{GINI59})$
$+\, 0.15\,(\text{poverty15}) - 0.644\,(\text{social capital})$
$-0.039\,(\text{voting participation2014}).$
$R\text{-sq} = 0.78.$

The means of the RTW and non-RTW states show significant difference, barely ($P = 0.0435$). The medians and average ranks trend toward difference ($P = 0.072$). By 2014, the diabetes epidemic had made the chronic condition so ubiquitous that the differences had begun to fade. However, the two systems show startling differences in the SE factors associated with diabetes prevalence. Percent adults with high school diplomas and poverty rates in 2010 and 2015 in the RTW states have R-squares two to three times those of the analogous regressions for the non-RTW states. GINI59 and GINI10 show strong associations with diabetes prevalence in the RTW system but no association at all in the non-RTW. The only R-square in the non-RTW set of associations that exceeds 0.5 is social capital, a protective factor. In contrast, the RTW system shows diabetes prevalence locked onto many SE factors, both positive (GINI10, GINI59, poverty10, poverty15) and negative (% adults with HS diplomas, median income, social capital).

Any of these strongly associated factors could increase or decrease diabetes prevalence in the RTW system with a large shift in values over many states, as would happen in an economic downturn or change in income inequality. The non-RTW system is resilient and not locked into a large number of related SE factors. Changes in median income, poverty rate, or unemployment over many states would not automatically lead to large changes in diabetes prevalence.

The equations arising from the multivariate regressions of SE factors with diabetes prevalence look completely different.

2014 diabetes prevalence RTW $= 30.1008 - 0.2152\,(\%\ \text{hs diplomas})$
$-\, 0.000063\,(\text{median income}) + 10.933\,(\text{GINI59}).$
$R\text{-sq} = 0.83.$
2014 diabetes prevalence non-RTW $= 11.775 - 1.03\,(\text{social capital})$
$-\, 0.0476\,(\text{voting 2014}) + 0.178\,(\text{poverty2015}).$
$R\text{-sq} = 0.75.$

Chapter 9
American Child Mortality, Low-Weight Births

In previous chapters, we have examined premature deaths due to CHD, diabetes, and stroke. Infant mortality and deaths of children below age 15 pose extreme examples of premature mortality. For each such death, 60–75 years of life are lost below age 75, our well-justified marker of not-too-short length of life. Historically, children, especially infants and children under age 5, had very high rates of death from childhood diseases, infections, and vulnerability to harsh conditions such as extreme cold. Older children (5–15) suffered simple brutality that included life- and health-threatening child labor and decisions to short-shrift the young when food supplies ran down. Besides deaths from measles, diphtheria, tetanus, and diarrhea from various microbes, children died in large numbers from tuberculosis, a disease that killed more people than any other cause in the early twentieth century. It was called the Captain of All the Men of Death (Dubose and Dubose 1953). Western society has come a long way in reducing death rates of infants and children.

Annual listings, however, from organizations such as the OECD, UNICEF, and WHO rank the United States low among the industrialized/wealthy nations for children's health measures such as infant mortality. American infant and child mortality rates exceed those of countries with much lower per capita incomes, higher poverty rates, and lower total wealth. Indeed, American life expectancy ranks much lower than its wealth would lead us to expect, and the high mortality rates of its children contribute disproportionately to that surprisingly low life expectancy. The infant mortality goal of Healthy People 2020 is 6 infant deaths per 1000 live births. This very goal exceeds the actual 2008 infant mortality rates of most countries listed by the OECD as "industrialized." Yet the Healthy People series, one for each decade, summarizes decadal goals for public health in the richest country in the world.

In 2015, infant mortality rates of the states ranged from 4.2 to 9.3 with the average over the states of 6.14 (median 6.15). SE factors associated with infant mortality over the 50 states with lower R-squares generally than they did with the life expectancy, and CHD and stroke mortalities that were reviewed in previous chapters. The largest R-square, 0.4455, arose from regression with percent adults

with college or higher degrees in 2000; median income had an *R*-square of 0.4438. Other SE factors with *R*-squares above 0.3 were 2011 percent with college or higher degrees, GINI59, and poverty. Percent decline in union participation between 1985 and 2010 associated positively with infant mortality with an *R*-square of 0.26. The two SE factors that "survived" in the multivariate regression with infant mortality were GINI59 and median income: *R*-square of only 0.5209. An alternative result with *R*-square of 0.5235 associated GINI59 and 2000 percent with college or higher degrees with infant mortality. Thus, the SE factors could explain only about half the pattern of infant mortality over the 50 states. And one SE factor requires focused public policy to overcome because it comes from the past: GINI59.

As a system, the non-RTW states more than met the policy goal of 6 infant deaths per 1000 live births: mean of 5.68 and median of 5.5. The RTW system did not meet this goal: mean of 6.56 and median of 6.5 infant deaths per 1000 live births. Both the averages (*t*-test) and the medians/average ranks (Mann–Whitney test) showed significant difference at probabilities well below 0.01. On median, one more infant death occurred in 2015 in the RTW system per thousand live births than in the non-RTW system. The total number of live births in the RTW system was 1,901,764, according to the CDC's preliminary 2015 report on births. Thus, in 2015, a total of 1902 infant deaths occurred within the RTW system over what would have occurred if that system's median had equaled that of the non-RTW system. This is a much higher number of deaths than would trigger a consumer product safety recall of a product. This excess of infant deaths is calculated for 2015. Cumulative excess over a decade would give us a better idea of the real toll of the RTW system on infants. If the difference in medians between the systems held stable in the previous decade (2005–2014), about 20,000 infants would have died needlessly in the RTW system over that decade in excess of the non-RTW system.

Furthermore, the RTW system tied infant mortality rates more tightly to SE factors so that GINI59, poverty rate, and median income all had *R*-squares above 0.4 in regressions with infant mortality rate (Table 9.1).

Three SE factors in the non-RTW system had *R*-squares that exceeded only 0.3 percent with college or higher degree in 2000 and 2011 and percent decline in union participation between 1985 and 2010. The equations that resulted from the multivariate regressions are:

Infant mortality rate RTW $= -1.51 + 11.49$ (GINI59) $+ 0.21$ (poverty rate 2010). *R*-sq $= 0.59$
Infant mortality rate non-RTW $= 8.759 - 0.146$ (college2000)
$+2.79$ (%union decline 1985–2010)
R-sq $= 0.57$

In the RTW system, patterns of infant mortality remain linked to the income inequality of the post-World War II era and its sociopolitical map. Both the rigidity of the social/political/economic structure of the RTW system and its high poverty rates reflect its conservatism in the root sense of the word and doom thousands of infants to unnecessary deaths. In contrast, both influential SE factors that sway the pattern of infant mortality rates in the non-RTW system can change with changes

Table 9.1 Infant mortality and its SE associations

SE factor	National					
	R-sq	P	Pos/Neg			
College 2000	0.4455	<0.0001	Neg			
Median income	0.4438	<0.0001	Neg			
Poverty 2015	0.3966	<0.0001	Pos			
Poverty 2010	0.3760	<0.0001	Pos			
GINI59	0.3712	<0.0001	Pos			
College 2011	0.3530	<0.0001	Neg			
Union decline 85–10	0.2605	0.0001	Pos			
GDP/pop	0.2429	0.0002	Neg			
% high school dip	0.1846	0.0011	Neg			
Union particip 2010	0.1672	0.0019	Neg			
	RTW			Non-RTW		
	R-sq	P	Pos/Neg	R-sq	P	Pos/Neg
Poverty 2010	0.5225	<0.0001	Pos	No assn		
Median income	0.5203	<0.0001	Neg	0.1863	0.0202	Neg
Poverty 2015	0.5191	<0.0001	Pos	0.1034	0.0691	Pos
GINI59	0.4622	0.0001	Pos	No assn		
GINI10	0.3984	0.0003	Pos	No assn		
% high school dip	0.3396	0.0011	Neg	No assn		
College 2000	0.2355	0.007	Neg	0.4995	0.0001	Neg
Social capital	0.1856	0.0161	Neg	0.1168	0.0661	Neg
GDP/pop	0.1609	0.0241	Neg	0.1411	0.0397	Neg
College 2011	0.1573	0.0256	Neg	0.3406	0.0016	Neg
Union decline 85–10	No assn			0.3032	0.0031	Pos
Infant mortality stats						
	RTW		Non-RTW			
Average	6.56		5.68	P = 0.0062		
Median	6.50		5.50			
Average rank	30.79		19.77	P = 0.0077		

in public policies, and the flexibility of the non-RTW system would adapt to these changes with little fuss. Although the decline in union participation occurred in the past, increases in union participation now would, no doubt, stoke further declines in infant mortality in the future in the non-RTW system after a lag to adjust for the system's elasticity. Ironically, changes in the RTW system would elicit a near-immediate response because of its lack of elasticity and its rigidity of relationships. It is an unstable system without resilience, in the ecosystem science sense of the term.

Infant mortality is measured in the deaths per 1000 live births. Mortality of all older age groups is measured in deaths per 100,000. Indeed, children above age 1 show much lower mortality rates:

The below are averages and medians of the 50 states for annual deaths per 100,000 for 2012–2014. The states vary by two-to-threefold between minimum and maximum mortality rates.

Age group	Mean	Median	Minimum	Maximum
1–4	26.9	26.0	14.4	43.9
5–9	12.1	11.0	7.2	19.9
10–14	14.7	14.4	9.1	23.0

Associations of the SE factors with 1–4 year old mortality rates over the states show that percent adults with college or higher degrees and GINI59 dominate the pattern (Table 9.2).

Union participation in 2010 has an R-square nearly as large as those of poverty 2010 and poverty 2015. The final equation to explain this mortality pattern that arises out of the multivariate regression retains only the two dominant SE factors:

National 1–4 mortality rate $= 5.17 - 0.43 \, (\%\text{college2011}) + 95.83 \, (\text{GINI59})$. R-sq $= 0.6693$.

Table 9.2 Child mortality 1–4 and associations

SE factor	National					
	R-sq	P	Pos/Neg			
GINI59	0.5431	<0.0001	Pos			
College 2011	0.4957	<0.0001	Neg			
College 2000	0.4654	<0.0001	Neg			
Median income	0.3777	<0.0001	Neg			
Poverty 2010	0.2715	0.0001	Pos			
Poverty 2015	0.2606	0.0001	Pos			
Union particip 2010	0.2484	0.0001	Neg			
Union decline 85–10	0.2099	0.0005	Pos			
Free-load 2005	0.2054	0.0006	Pos			
Free-load 2010	0.1753	0.0015	Pos			
	RTW			Non-RTW		
	R-sq	P	Pos/Neg	R-sq	P	Pos/Neg
Median income	0.4272	0.0002	Neg	No assn		
GINI59	0.4143	0.0002	Pos	0.4059	0.0005	Pos
College 2000	0.3596	0.0007	Neg	0.2054	0.0151	Neg
College 2011	0.3328	0.0012	Neg	0.2918	0.0038	Neg
Poverty 2015	0.2702	0.0038	Pos	No assn		
Poverty 2010	0.2486	0.0056	Pos	No assn		
Voting 2012	0.1764	0.0188	Neg	No assn		
% high school dip	0.1613	0.024	Neg	No assn		
Child mortality 1–4 stats						
	RTW			Non-RTW		
Average	30.64			22.88	P = 0.00003	
Median	29.3			21.65		
Average rank	33.5			16.83	P = 0.00006	

Thus, American preschoolers die in a pattern over the states rooted in present educational attainment and the post-World War II structures of inequality that continue into the present.

The RTW and non-RTW sets of states show significant differences in 1–4 mortality rates:

	RTW	Non-RTW	
Mean	30.64	22.88	$t = 4.585, \ P = 0.00003$
Median, av. rank	29.3, 33.5	21.65, 16.83	$P = 0.00006$

These are huge differences in central measures and signify huge differences in number of preschoolers dying in the two systems.

Only five SE factors correlate significantly with 1–4 mortality in the non-RTW system (Table 9.2). Four SE factors remain in the multivariate regression:

Non-RTW Mortality 1–4 $= -2.69 - 0.49$ (college2011) $+ 57.82$ (freeload15) $+0.0003$ (gdp/pop) $+ 63.82$ (GINI59).
R-sq $= 0.74$.

This equation may be unstable because of too many independent variables for the number of data points. It violates the rule of thumb of no more than one independent variable per ten data points.

For the RTW states, nine SE factors associate with this mortality rate, four with R-square above 0.3: percent adults with college or higher degree in 2000 and 2011, GINI59, and median income. The final equation includes two of them:

RTW 1–4 Mortality $= 15.43 - 0.89$ (college2000) $+ 83.66$ (GINI59).
R-sq $= 0.57$.

Like 1–4 mortality across the 50 states, 5–9 year age mortality rates associated most strongly with percent adults with college or higher degrees 2000 and 2011, GINI59, and median income. But the final equation also included gross domestic product per unit population:

5–9 mortality nationally $= 6.626 - 0.264$ (college2000) $- 15$ (gdp/pop) $+ 38.11$ (GINI59).
R-sq $= 0.67$.

About 3 more children 5–9 years old die per 100,000 on average and on median in the RTW system than in the non-RTW:

	RTW	Non-RTW	
Mean	13.53	10.61	$t = 3.69, P = 0.00057$
Median, av.rank	12.95, 31.96	10.3, 18.56	$P = 0.0013$

The same three SE factors that explain the national pattern of 5–9 mortality rates also explain the pattern across the RTW states:

5–9 mortality RTW $=$ 13.09 $-$ 0.27 (college11) $-$ 0.001 (GDP/pop) $+$ 36.84(GINI59)
R-sq $= 0.6353$

Far fewer SE factors significantly associate with the 5–9 mortality rates across the non-RTW states. GDP/pop and poverty rate 2010 show no association; poverty rate 2015 only trends to association (Table 9.3).

Table 9.3 Child mortality 5–9 and associations

	National					
SE factor	*R-sq*	*P*	*Pos/Neg*			
GINI59	0.5034	<0.0001	Pos			
College 2000	0.5009	<0.0001	Neg			
College 2011	0.4796	<0.0001	Neg			
Median income	0.4492	<0.0001	Neg			
Poverty 2015	0.346	<0.0001	Pos			
Poverty 2010	0.3419	<0.0001	Pos			
GDP/pop	0.2382	0.0002	Neg			
Union decline 85–10	0.216	0.0005	Pos			
Social capital	0.1367	0.0056	Neg			
Union particip 2010	0.1361	0.0049	Neg			
Voting 2012	0.1255	0.0067	Neg			
% high school dip	0.1207	0.0077	Neg			
	RTW			*Non-RTW*		
	R-sq	*P*	*Pos/Neg*	*R-sq*	*P*	*Pos/Neg*
Median income	0.5202	<0.0001	Neg	0.127	0.0489	Neg
College 2000	0.4001	0.0003	Neg	0.4007	0.0005	Neg
College 2011	0.3842	0.0004	Neg	0.3671	0.001	Neg
Poverty 2015	0.3741	0.0005	Pos	0.0917	0.087	Pos
GINI59	0.3668	0.0006	Pos	0.4138	0.0004	Pos
Poverty 2010	0.3623	0.0007	Pos	No assn		
GDP/pop	0.259	0.0046	Neg	No assn		
Voting 2012	0.2422	0.0062	Neg	No assn		
% high school dip	0.2184	0.0093	Neg	No assn		
GINI10	0.1274	0.0413	Pos	No assn		
Union decline 85–10	No assn			0.1805	0.0221	Pos
Child mortality 5–9 stats						
	RTW		*Non-RTW*			
Average	13.53		10.61	$P = 0.0006$		
Median	12.95		10.3			
Average rank	31.96		18.54	$P = 0.0013$		

The final equation includes only two factors:

5–9 mortality rate non-RTW = 3.02 − 0.23 (college00) + 36.5 (GINI59).
R-sq = 0.5497

The SE factor with highest R-square associating with 10–14 mortality nationally is percent adults with college education 2011 (negative, of course). Median income, college 2000, poverty rate, and GINI59 also show strong associations. Union participation 2010 and percent union decline 1985–2010 have higher R-squares than percent adults with high school diplomas but do not enter into the final equation:

10–14 mortality rate national = 13.25 − 0.14 (%college11) − 23.04 (GDP/pop) +29.23 (GINI59)
R-sq = 0.5952

As with the two younger age groups, RTW states have higher means, medians, and average ranks for 10–14 mortality rate than non-RTW:

	RTW	Non-RTW	
Mean	16.10	13.13	$t = 3.77, P = 0.0045$
Median, av.rank	15.55, 32.10	12.2, 18.35	$P = 0.00089$

Again, about 3 more children per 100,000 of this age group die in the RTW states on average and on median than in the non-RTW.

Unlike the younger age groups, percent adults with college or higher degree do not rank among the higher R-squares in bivariate regressions for the RTW states (Table 9.4).

Three factors belong in the final equation:

10–14 mortality rate RTW = 20.69 − 0.00026 (GDP/pop) + 32.71 (GINI59) − 0.54 (U6 unemploy).
R-sq = 0.51

The SE factors explain about half the pattern over the RTW states.

In contrast to the RTW system, percent adults with college or higher degrees show as high an R-square with 10–14 mortality rate in the non-RTW system as with 5–9 mortality rate. Of special interest, two union-related factors showed moderately high R-squares, freeloading 2010 and percent union decline 1985–2010, and both remain in the final equation:

10–14 mortality rate non-RTW = 16.71 − 0.169 (%college2011) + 15.2 (freeloading 2010) + 6.6 (%union decline 1985–2010).
R-sq = 0.5952.

Infant mortality rates for non-RTW states had a final equation that also included percent adults with college or higher degrees and percent union decline 1985–2010.

Over the 3 years of our data (2012–2014), the RTW states racked up the following annual excess deaths:

Table 9.4 Child mortality 10–14 and associations

SE factor	National					
	R-sq	P	Pos/Neg			
College 2011	0.4434	<0.0001	Neg			
Median income	0.4178	<0.0001	Neg			
Poverty 2010	0.4133	<0.0001	Pos			
College 2000	0.406	<0.0001	Neg			
Poverty 2015	0.3863	<0.0001	Pos			
GINI59	0.3801	<0.0001	Pos			
GDP/pop	0.2985	<0.0001	Neg			
Union decline 85–10	0.2677	0.0001	Pos			
Union particip 2010	0.2306	0.0002	Neg			
Free-load 2010	0.1815	0.0012	Pos			
Free-load 2005	0.112	0.0101	Pos			
% high school dip	0.1038	0.0129	neg			
	RTW			Non-RTW		
	R-sq	P	Pos/Neg	R-sq	P	Pos/Neg
GDP/pop	0.3217	0.0015	Neg	0.0804	0.0967	Neg
Median income	0.3212	0.0015	Neg	0.2289	0.0105	Neg
Poverty 2015	0.318	0.0016	Pos	0.2625	0.0061	Pos
Poverty 2010	0.3149	0.0017	Pos	0.2663	0.0058	Pos
College 2011	0.2256	0.0083	Neg	0.373	0.0009	Neg
College 2000	0.2186	0.0093	Neg	0.2863	0.0042	Neg
GINI59	0.2038	0.0119	Pos	0.3189	0.0024	Pos
% high school dip	0.1287	0.0404	Neg	No assn		
Free-load 2010	No assn			0.2315	0.0101	Pos
Union decline 85–10	No assn			0.2294	0.0104	Pos
Union particip 2010	No assn			0.1749	0.024	Neg
Child mortality 10–14 stats						
	RTW		Non-RTW			
Average	16.1		13.13	$P = 0.00045$		
Median	15.55		12.2			
Average rank	32.1		18.35	$P = 0.00089$		

Age group	Excess rate over non-RTW	Total excess
1–4	7.65 per 100,000	1818
5–9	2.65 per 100,000	814
10–14	3.35 per 100,000	1030
Total		3661

Thus, over 3600 families suffered the death of a child annually that would have been avoided if the RTW states had child mortality rates as low as those of the non-RTW states. These deaths were concentrated in the states with low

educational attainment, low gross domestic product per unit population, and high income inequality during the post-World War II era such as Alabama, Louisiana, Mississippi, West Virginia, and South Dakota.

At the other end of the spectrum are such non-RTW states as Connecticut, Massachusetts, Minnesota, New York, and Washington with child mortality rates well below the national median and even below the median for the non-RTW system in each age group.

Low-weight birth (LOB), a baby born weighing less than 2500 g (roughly 5.5 pounds), presents a major risk of infant mortality. Raising a low-weight neonate to age 1 often requires immense effort and expense. They are extremely fragile. Besides risk of infant mortality, low-weight newborns also have heightened risks of neurological conditions, infections, and, ironically, overweight/obesity at around age 7, a development called "catch-up" by the late David Barker (Erikkson et al. 1999). Barker and Finnish colleagues found effects of low-weight birth even into old age: Finns in the famous birth registry of Finland who had been born at less than 2500 g had heightened risk of anxiety at age 60 and older (Lahti et al. 2010).

The average incidence of LOB over the 50 states in 2015 was 7.98% of live births (median 8.05, minimum 5.8, and maximum 11.4). The goal in Healthy People 2010 was 5%. No state had met that goal by 2015. The major SE association of national pattern of LOB over the states was social capital (R-sq $= 0.64$); others were poverty rate, percent adults with high school diplomas, and GINI59. Union participation 2010 negatively associated with R-square of 0.11 and union decline 1985–2010 positively with R-square 0.13. However, the final equation from the multivariate regression of SE factors and LOB incidence had only two independent variables:

State LOB incidence nationally $= 4.007 + 10.26$ (GINI59) $- 1.05$ (social capital).
R-sq $= 0.73$.

RTW states trend toward higher average LOB incidence than non-RTW: 8.27 vs 7.67%. The standard deviation of the RTW distribution, however, is significantly different from that of the non-RTW with a probability of 0.0334. So we are dealing with different populations of states with respect to LOB incidence 2015. Many SE factors associate with LOB incidence in the RTW system with R-squares around 0.5 or more that have no association in the non-RTW: percent adults with high school diplomas, GINI10, median income, and poverty rate (Table 9.5).

On the other hand, two union-related factors associate significantly with LOB in the non-RTW system but not the RTW: participation in 2010 and decline 1985–2010. Thus, the final equations from the multivariate regressions differ between the two systems:

LOB RTW $= 11.687 - 0.00007$ (median income) $- 0.9126$ (social capital).
R-sq $= 0.73$
LOB non-RTW $= 10.38 - 0.44$ (public asst.) $- 0.09$ (social capital) $- 0.073$ (union particip 2010).
R-sq $= 0.81$

Table 9.5 Low-weight birth rate and associations

SE factor	National					
	R-sq	*P*	*Pos/Neg*			
Social capital	0.6435	<0.0001	Neg			
pov15/pubasst12	0.3598	<0.0001	Pos			
% high school dip	0.3388	<0.0001	Neg			
Poverty 2015	0.3344	<0.0001	Pos			
Poverty 2010	0.3039	<0.0001	Pos			
Median income	0.3037	<0.0001	Neg			
GINI59	0.2782	<0.0001	Pos			
GINI10	0.2396	0.0002	Pos			
Public asst.	0.1701	0.0017	Neg			
Voting 2014	0.1676	0.0018	Neg			
U6 unemploy	0.1449	0.0037	Pos			
College 2000	0.1409	0.0042	Neg			
Union decline 85–10	0.1316	0.0056	Pos			
Union particip 2010	0.1056	0.0122	Neg			
	RTW			*Non-RTW*		
	R-sq	*P*	*Pos/Neg*	*R-sq*	*P*	*Pos/Neg*
Social capital	0.6688	<0.0001	Neg	0.495	0.0002	Neg
Poverty 2015	0.5709	<0.0001	Pos	No assn		
Median income	0.5593	<0.0001	Neg	No assn		
% high school dip	0.5557	<0.0001	Neg	No assn		
Poverty 2010	0.5173	<0.0001	Pos	No assn		
GINI10	0.4867	<0.0001	Pos	0.0791	0.0985	Pos
U6 unemploy	0.4416	0.0001	Pos	No assn		
GINI59	0.4296	0.0002	Pos	No assn		
Pov15/pubasst12	0.3035	0.0021	Pos	0.412	0.0004	Pos
College 2000	0.237	0.0068	Neg	No assn		
College 2011	0.1426	0.0324	Neg	No assn		
GDP/pop	0.1278	0.0410	Neg	No assn		
Voting 2014	0.0971	0.0668	Neg	0.1673	0.0269	Neg
Union decline 85–10	No assn			0.3331	0.0019	Pos
Union particip 10	No assn			0.1577	0.0311	Neg
Public assistance	No assn			0.5430	<0.0001	Neg
Low-weight birth rate stats						
	RTW		*Non-RTW*			
Average	8.27		7.67	$P = 0.086$		
Median	8.35		7.85			
Average rank	28.52		22.23	$P = 0.1296$		
Standard deviation $P = 0.0334$						

Chapter 10
Taking Risks

Risky behavior causes or threatens death or injury to the perpetrator or to someone else. Homicide, suicide, violence, drunk driving, smoking, unsafe sex, use of "substances," and dangerous sports and hobbies exemplify risky behaviors. Many risky behaviors help perpetrators cope with structural stress. The women of Baltimore who lived in neighborhoods of high violence levels used tobacco, alcohol, and drugs to cope and gave birth to low-weight babies as a result (Schempf et al. 2009). We can understand these coping methods; the previous chapter on obesity described "comfort foods" as a coping method for structural stress.

We have already discussed obesity and its deep roots in structural stress. Obviously, eating patterns influence the origins of obesity. "Comfort food" rich in calories but poor in needed nutrients has already appeared in our discussion. Now we'll look at consumption of produce, foods at the other end of the calorie/nutrient spectrum. The authorities have advised Americans to eat their fruits and vegetables for decades. Even further back in history, parents and uncles and aunts have impressed on children the importance of eating fruits and vegetables. Popeye and his spinach entertained generations of children: if you eat your vegetables, you'll be able to commit massive acts of violence and destruction so dear to the hearts of many children. Be candid with yourself: didn't you love the mall wreckage scene in The Blues Brothers? Eat your spinach!

The CDC conducts a survey on nutrition every couple of years. It knows who is eating what. The data on eating produce probably has greater reliability across classes and ethnicities than the data on suicide, rape, and binge drinking because sin does not encompass failure to eat as your mother wants you to eat nor is it illegal to skip one's salad. Our national population does not yet include enough followers of vegetarian or vegan religions to affect public health at the state level. Table 10.1 displays the results of regressions of SE factors with percent of naughty adults who do not eat vegetables at least once a day.

Nationally, the multivariate regression explains less than half the pattern over the 50 states:

Table 10.1 Percent adults not eating vegetables daily and associations

	National					
SE factor	R-sq	P	Pos/Neg			
College 2000	0.3367	<0.0001	Neg			
College 2011	0.2694	0.0001	Neg			
Median income	0.2462	0.0001	Neg			
Union decline 85–10	0.2057	0.0006	Pos			
Public asst.	0.1936	0.0008	Neg			
Poverty 2010	0.1799	0.0013	Pos			
Poverty 2015	0.1663	0.0019	Pos			
	RTW			Non-RTW		
	R-sq	P	Pos/Neg	R-sq	P	Pos/Neg
College 2000	0.2432	0.0061	Neg	0.1306	0.0464	Neg
College 2011	0.2008	0.0125	Neg	No assn		
Poverty 2010	0.191	0.0148	Pos	No assn		
Median income	0.1891	0.0152	Neg	No assn		
Poverty 2015	0.1878	0.0156	Pos	No assn		
GINI59	0.1119	0.0528	Pos	No assn		
Union decline 85–10	No assn			0.2824	0.0044	Pos
Social capital	No assn			0.2242	0.0151	Neg
Public asst.	No assn			0.1675	0.0269	Neg
Voting 2014	No assn			0.1671	0.027	Neg
Percent adults not eating vegetables daily stats						
	RTW		Non-RTW			
Average	24.42		21.29	P = 0.0013		
Median	24.25		21.4			
Average rank	31.37		19.15	P = 0.0032		

Percent adults not eating vegetables once a day $= 37.02 - 0.436$ (college00) $- 1.31$ (public assistance).
R-sq $= 0.45$.

The difference between RTW and non-RTW sets of states is significant on average and on median/average rank. Almost one-quarter of adults in RTW states eschew to chew their veggies, whereas this naughtiness affects a bit over one-fifth of the adults in the non-RTW. Table 10.1 reveals an interesting difference in the SE factors associated with patterns of non-eating of veggies over these two systems. Higher educational attainment and individual/household finances associate with this eating pattern over the RTW states. The multivariate regression yields only percent adults with college or higher degrees in 2000 as the independent variable explaining the eating pattern with an R-sq of 0.24, a bit less than a quarter of the pattern.

In the non-RTW set of states, college 2000 barely reaches significant association. Instead, four SE factors that don't influence the pattern in the RTW system do in the non-RTW: union participation decline 1985–2010, social capital, public assistance,

and voting 2014. The multivariate regression yields an equation that explains 51% of this eating pattern:

Non-RTW non-veggie eating $= 24.59 - 0.205$ (voting 2014) $+ 18.67$ (%union decline 85–10).

One might expect that failure to eat fruit once a day would have a similar pattern to failure to eat vegetables, but more people eat veggies than fruit. The two patterns are different. As Table 10.2 shows, many more SE factors associate with percent adults not eating fruit over the 50 states than did with percent who didn't eat vegetables.

Although higher educational attainment offered the strongest negative associations with not eating fruit, GINI59 associated most strongly positively. There were many union-related associations from freeloading to participation and decline in participation. The multivariate regression results in this equation which explains nearly 80% (R-sq $= 0.79$) of the pattern over the 50 states:

Percent adults who don't eat fruit daily $= 22.2 - 0.43$ (college00) $+ 64.49$ (GINI59)
$+6.55$ (%union decline 1985–2010).

The difference between RTW and non-RTW systems is greater for failure to eat fruit than for failure to eat vegetables both on average and on median/average rank. The table of associations with SE factors (Table 10.2) looks more like that for obesity 2007/2009, CHD 45–54, and stroke 55–64: more associations and stronger associations in the RTW system. Only five SE factors associate in the non-RTW system but eleven do in the RTW, two having R-squares over 0.5. The multivariate equations follow:

RTW % adults not eating fruit daily $= 24.49 - 0.513$ (college00) $+ 69.64$ (GINI59).
R-sq $= 0.67$
Non-RTW % adults not eating fruit daily $= 15.72 - 0.29$ (college00)
$+67.65$ (GINI59) $+ 12.82$ (union decline 1985–2010).
R-sq $= 0.75$

The risk behaviors that fuel the obesity and diabetes epidemics obviously prevail more heavily in the RTW states than in the other system. These behaviors don't arouse traditional morality qualms as do many others such as smoking, drinking, promiscuity, and violence. The RTW core is also known as the Bible Belt and theoretically should enjoy low prevalence of risk behaviors labeled dubious by traditional morality.

Drug use in particular elicits revulsion among a high proportion of the population, a reaction that impedes acquisition of sound data. Drug use and OD rates will not appear in this book, although illegal drugs (and legally prescribed drugs) constitute a major public health problem and obviously constitute risk behavior. The CDC website stated that natural and synthetic opioids ("prescription drugs") were driving the overdose death patterns and rates. Yet, out of the 50 states, 22 by 2015

Table 10.2 Percent adults not eating fruit daily and associations

	National					
SE factor	R-sq	P	Pos/Neg			
GINI59	0.6228	<0.0001	Pos			
College 2000	0.5562	<0.0001	Neg			
College 2011	0.5397	<0.0001	Neg			
Median income	0.4696	<0.0001	Neg			
Poverty 2010	0.4045	<0.0001	Pos			
Poverty 2015	0.3636	<0.0001	Pos			
Union decline 85–10	0.3075	<0.0001	Pos			
Union particip 2010	0.2822	<0.0001	Neg			
Union particip 2015	0.2598	0.0001	Neg			
GDP/pop	0.1868	0.001	Neg			
Free-load 2010	0.2071	0.0005	Pos			
Social capital	0.1737	0.0019	Neg			
% high school dip	0.1481	0.0034	Neg			
Union particip 64	0.1334	0.0053	Neg			
Voting 2012	0.1278	0.0062	Neg			
Free-load 2005	0.1206	0.0078	Pos			
Public asst.	0.1163	0.0089	Neg			
	RTW			Non-RTW		
	R-sq	P	Pos/Neg	R-sq	P	Pos/Neg
GINI59	0.5546	<0.0001	Pos	0.4411	0.0002	Pos
Median income	0.5085	<0.0001	Neg	0.1404	0.0402	Neg
Poverty 2010	0.4678	0.0001	Pos	No assn		
Poverty 2015	0.4396	0.0001	Pos	No assn		
% high school dip	0.3419	0.001	Neg	No assn		
College 2000	0.3338	0.0012	Neg	0.4672	0.0001	Neg
College 20011	0.315	0.0017	Neg	0.4282	0.0003	Neg
Voting 2012	0.2417	0.0063	Neg	No assn		
GINI10	0.1649	0.0226	Pos	No assn		
Social capital	0.1513	0.0282	Neg	No assn		
Union particip 2010	0.1081	0.0561	Neg	No assn		
Union decline 85–10	No assn			0.3425	0.0016	Pos
Percent adults not eating fruit daily stats						
	RTW		Non-RTW			
Average	42.09		36.88	P = 0.00004		
Median	41.35		36.25			
Average rank	33.23		17.12	P = 0.00099		

had not established reporting procedures to yield data of a quality that CDC would accept (15 out of 26 RTW and 7 out of 24 non-RTW states). CDC further warned that comparisons cannot be made among the states because of variations in reporting these deaths. So the OD data specifically for natural and synthetic opioids can't be

used. If the overall OD rates and patterns are driven by the opioids, the overall rates of overdose deaths become suspect. Deaths are the gold standard for getting a handle on population burden of a condition that may cause death because you can't hide the bodies. All the stats that are paraded about drug use, drug addiction, and drug-related deaths for many of the 50 states may rest on feet of clay. See the Section on Data Sources for the CDC website address.

Similarly, suicide statistics proved highly suspect. A person who commits suicide is not supposed to receive a Christian burial in many major religions and is a serious sinner. The families of those who commit suicide may pressure for an accidental cause on the death certificate, especially in conservative states. As reported in the CDC compressed mortality files, the suicide rates make no sense.

The state-level rape statistics also make no sense. The news media illuminated the process of reporting and prosecuting potential rape cases and showed how the accuser becomes victimized by the system itself. From the first encounter with police (the initial reporting of the rape) through the trial and its aftermath, the victim often suffers a combination of disbelief and of leering accusation of causing the rape or of having had consensual sexual intercourse and regretting it. The pattern of reported rape incidence through the states indicates that local authorities in certain states hinder reporting and prosecuting of rapes and may even use narrow definitions of rape to preclude many actions that would constitute rape in most other states, although the Department of Justice defined rape several years ago for purposes of prosecution and reporting. Some police departments may even fail to prosecute rape cases if the accused is a prominent local athlete, politician, or celebrity. Educational and religious institutions continue to engage in internal trials and fail to report cases to law enforcement agencies.

So we are left with risk behavior consequences that are difficult to hide (fatal vehicle crashes, births to teenagers, gonorrhea, homicide) and behaviors that are legal and less prone to being hidden (cigarette smoking, binge drinking, obesity).

Cigarette smoking is legal for adults but many religions frown on it. On average over the 50 states, 17.84% of adults smoke. The minimum prevalence in 2015 was 9.1% and the maximum, 25.9%. For decades, public health authorities warned that smoking causes many premature deaths from cancer, heart disease, and emphysema. Many cities passed laws forbidding smoking in public places such as restaurants, movie theaters, and office buildings because secondhand smoke also poses a health hazard. The present prevalence of smoking is much lower than the one-third of adults of the 1970s.

Table 10.3 displays the SE factors associated with smoking prevalence over the 50 states and in the two systems of states.

As we would expect, percent adults with college or higher degrees, per capita productivity, and median income associate negatively with smoking prevalence over the 50 states. The multivariate regression yields the following equation:

Smoking prevalence $= 19.91 - 0.5$ (%college2000) $+ 25.25$ (GINI59)
R-sq $= 0.6174$.

Table 10.3 Adult smoking prevalence and associations

SE factor	National					
	R-sq	P	Pos/Neg			
College 2000	0.5747	<0.0001	Neg			
College 2011	0.4786	<0.0001	Neg			
Median income	0.436	<0.0001	Neg			
GINI59	0.36	<0.0001	Pos			
Poverty 2015	0.2677	0.0001	Pos			
Poverty 2010	0.264	0.0001	Pos			
Union decline 85–10	0.2013	0.0006	Pos			
	RTW			Non-RTW		
	R-sq	P	Pos/Neg	R-sq	P	Pos/Neg
College 2000	0.535	<0.0001	Neg	0.6436	<0.0001	Neg
Median income	0.4234	0.0002	Neg	0.3488	0.0014	Neg
College 2011	0.4005	0.0003	Neg	0.5589	<0.0001	Neg
GINI59	0.3049	0.002	Pos	0.2819	0.0045	Pos
Poverty 2015	0.2092	0.0109	Pos	0.1894	0.0193	Pos
Poverty 2010	0.1904	0.0149	Pos	0.187	0.0193	Pos
% high school dip	0.1215	0.0453	Neg	No assn		
Union decline 85–10	No assn			0.2957	0.0035	Pos
Union particip 2010	No assn			0.1261	0.0495	Neg
Adult smoking prevalence stats						
	RTW		Non-RTW			
Average	18.78		16.82	P = 0.0488		
Median	18.85		15.95			
Average rank	30.19		20.42	P = 0.0183		

For the RTW system, the multivariate regression yields an equation with the same variables:

RTW smoking prevalence $= 20.53 - 0.7\,(\%\text{college2000}) + 32.92\,(\text{GINI59})$. $R\text{-sq} = 0.6285$

The non-RTW system's equation also includes %college2000 but has a different second variable:

Non-RTW smoking prevalence $= 29.71 - 0.57\,(\%\text{college2000}) + 7.59\,(\%\text{union decline 1985–2010})$. $R\text{-sq} = 0.6944$.

In ten states in the RTW system, 1/5 of the adults smoked in 2015; the non-RTW set has three such states. The public health message about early death from tobacco either isn't reaching the public in many RTW states or that public is ignoring it. Risky behavior!

Another classic risk behavior is unsafe sex. One measure of this behavior is incidence of venereal disease. Gonorrhea reflects unsafe sex across age ranges and sexual orientations as opposed to chlamydia which gallops mainly through youth populations and syphilis which concentrates in men who have sex with men. The other measure is births to teenagers. For both these measures, the averages and medians of the RTW system exceed those of the non-RTW (Tables 10.4 and 10.5).

The difference between the RTW and non-RTW systems for gonorrhea is huge: median of 109 for the RTW versus 75 for the non-RTW in 2014. Nationally, the regressions produce at most moderate associations with maximal R-squares

Table 10.4 Gonorrhea incidence and associations

SE factor	National					
	R-sq	P	Pos/Neg			
Social capital	0.3443	<0.0001	Neg			
GINI59	0.3346	<0.0001	Pos			
Poverty 2015	0.2757	0.0001	Pos			
Poverty 2010	0.2383	0.0002	Pos			
Median income	0.1967	0.0007	Neg			
%high school dip	0.1849	0.0011	Neg			
College 2000	0.1567	0.0026	Neg			
College 2011	0.1215	0.0076	Neg			
GINI10	0.1074	0.0116	Pos			
Free-load 2010	0.0971	0.0187	Pos			
	RTW			Non-RTW		
	R-sq	P	Pos/Neg	R-sq	P	Pos/Neg
GINI10	0.6046	<0.0001	Pos	No assn		
Poverty 2015	0.5322	<0.0001	Pos	No assn		
% high school dip	0.5200	<0.0001	Neg	No assn		
Poverty 2010	0.4968	<0.0001	Pos	No assn		
GINI59	0.3476	0.0009	Pos	0.1308	0.0462	Pos
Median income	0.3234	0.0004	Neg	No assn		
Social capital	0.2899	0.0027	Neg	0.3181	0.0037	Neg
Union particip 1964	0.1973	0.0133	Neg	No assn		
Union particip 2010	0.1645	0.0228	Neg	No assn		
U6 unemploy	0.1223	0.0448	Pos	No assn		
Gonorrhea 2014 incidence stats						
	RTW		Non-RTW			
Average	109.14		80.84	P = 0.0332		
Median	108.95		74.85			
Average rank	29.63		21.02	P = 0.0377		

Table 10.5 Rates of births to teens and associations

SE factor	National					
	R-sq	P	Pos/Neg			
College 2011	0.6082	<0.0001	Neg			
Poverty 2010	0.5910	<0.0001	Pos			
College 2000	0.5857	<0.0001	Neg			
Median income	0.559	<0.0001	Neg			
Poverty 2015	0.5568	<0.0001	Pos			
GINI59	0.5449	<0.0001	Pos			
% high school dip	0.3045	<0.0001	Neg			
Voting 2012	0.2962	<0.0001	Neg			
Union particip 2010	0.2363	0.0002	Neg			
Free-load 2010	0.2184	0.0004	Pos			
Union decline 85–10	0.2159	0.0004	Pos			
GDP/pop	0.2073	0.0005	Neg			
Social capital	0.2040	0.0007	Neg			
Free-load 2005	0.1386	0.0045	Pos			
Voting 2014	0.1341	0.0052	Neg			
	RTW			Non-RTW		
	R-sq	P	Pos/Neg	R-sq	P	Pos/Neg
Voting 2012	0.5731	<0.0001	Neg	No assn		
Median income	0.5223	<0.0001	Neg	0.3434	0.0016	Neg
% high school dip	0.5104	<0.0001	Neg	No assn		
Poverty 2010	0.4820	0.0001	Pos	0.4971	0.0001	Pos
Poverty 2015	0.4736	0.0001	Pos	0.5162	<0.0001	Pos
GINI59	0.4229	0.0002	Pos	0.4727	0.0001	Pos
College 2011	0.3951	0.0003	Neg	0.5348	<0.0001	Neg
College 2000	0.3937	0.0004	Neg	0.4861	0.0001	Neg
Voting 2014	0.2584	0.0047	Neg	No assn		
Social capital	0.2355	0.007	Neg	No assn		
Free-load 2010	No assn			0.2385	0.0090	Pos
Union decline 85–10	No assn			0.1411	0.0398	Pos
Free-load 2005	No assn			0.1327	0.045	Pos
Teen-birth rates stats						
	RTW		Non-RTW			
Average	28.18		20.34	P = 0.0002		
Median	28.20		19.65			
Average rank	32.88		17.5	P = 0.0002		

around one-third. The multivariate regression yields an equation with independent variables on social capital and GINI59 and an R-square of less than 50%. With respect to gonorrhea incidence in 2014, the national unity shows weakness. The huge differences between the RTW and non-RTW systems for average and median incidence indicate different, relatively isolated systems.

The separate regressions for the two sets of states indeed show that different isolated processes produce these different patterns of gonorrhea incidence over the states. In the RTW set of states, many SE factors associate with gonorrhea incidence, some with high R-squares of about 50% or above: percent adults with high school diplomas, GINI10, and both poverty rates (2010 and 2015). In the non-RTW system, only two associations were found, only one of which had an R-square over 0.3 (social capital). Poverty rate 2015 and union participation 1964 together explain the pattern of gonorrhea incidence over the RTW states with an R-square of 0.63.

The multivariate regression for the non-RTW system yielded only social capital as an influential independent variable (R-sq $= 0.32$). Thus, gonorrhea incidence 2014 resembles the previous health problems such as the early mortality rates from CHD and stroke in that the higher rates of the RTW system show much tighter connections with SE factors than the rates of the non-RTW set of states. Gonorrhea incidence, however, illustrates this phenomenon more dramatically than any of the previous health problems heretofore analyzed. Chlamydia incidence associates with gonorrhea incidence with an R-sq of 0.71 nationally. Thus, much of what we see for gonorrhea probably holds true for chlamydia.

Births to teenagers (15–19 years of age) present another consequence of unsafe sex. However, over the 50 states, the association of incidence of teen births with gonorrhea has an R-square of only about 0.33, although the RTW states have significantly higher rates of teen births on average and on median than the non-RTW states. CDC measures incidence of teen births as births to teens per 1000 girls 15–19 years of age. The minimum for the states is 10.6 and the maximum, 39.5, almost four times the minimum.

Nationally, within the RTW and within the non-RTW systems, many socioeconomic factors drove the patterns of teen birth incidence. Higher educational attainment and high median income buffered against high incidence; high poverty rate and high GINI 1959 associated with high incidence. Even voting pattern, union participation, and decline in union participation showed significant associations with teen birth incidence. The multivariate regressions produced equations that explained over 80% of the patterns of teen birth incidence.

Incidence over the 50 states $= 23.81 - 0.355$ (college2011) $+ 51.19$ (GINI59)
$+0.66$ (poverty2010) $+ 7.74$ (union decline 1985–2010)
-0.32 (voting2012).
R-sq $= 0.85$
Incidence over the RTW states $= 44.5 - 0.4$ (college2011)
$+69.97$ (GINI59) $- 0.538$ (voting2012)

R-sq $= 0.84$
Incidence over the non-RTW states $= -2.62 + 1.89$ (poverty2015)
-0.54 (union particip2010) $+ 12.8$ (union decline 1985–2010).
R-sq $= 0.87$

Teen births have declined fairly steadily for many years (Dee et al. 2017), but new case incidence of the major sexually transmitted diseases rose and is at a recent high. In 2015, new diagnoses of chlamydia reached over 1.5 million and of gonorrhea about 400,000, major increases over 2014, the year of the data analyzed here. In fact, the only major STD not to increase in incidence between 2014 and 2015 was HIV/AIDS because of the antiretroviral drugs. See the appendix for the CDC website addresses on sexually transmitted diseases. The fall in teen births cannot, thus, have happened because of wider-spread practice of safe sex. We speculate that many girls used hormonal pregnancy-avoiding methods such as the Pill. Part of the greater incidence of teen births in RTW states than in non-RTW may fall at the door of the greater restrictions on and lack of access to birth control and abortion in those states. Thus, the RTW states, with their extreme hierarchy and control over women, minorities, and workers, could sentence children to have children and narrow the futures of thousands of young females.

RTW states impose more restrictions on abortions than do non-RTW. Out of the eight states that require a waiting period of 48 h or more, seven are RTW. Out of the 15 states that limit abortion to pregnancies of 20 weeks or less, 14 are RTW. A total of 26 states require parental consent for minors to have abortions, and 20 of these states are RTW. These data are from the website of the Guttmacher Institute. Thus, we can conclude that RTW states make getting abortions more difficult than non-RTW and impose more restriction on minors. It should not be unreasonable to conclude that more teenagers give birth in RTW states partly because of these restrictions.

The Guttmacher Institute posts information about birth control and abortion. Its report on teen pregnancies and abortions shows that both have declined. Many teenage girls, thus, may avoid pregnancy with the Pill, IUD, or other contraceptive method that does not protect them from STDs. However, they must get contraception in the first place. Seventeen out of the 26 RTW states do not explicitly have laws allowing minors to get contraceptive services (65%), whereas 12 of the non-RTW states do not have such explicit laws (50%). So the girls in the RTW system may be restricted with respect to both contraception and abortion more than in the non-RTW system. The higher rates of births to teenagers in the RTW states may rest partly on this control over women.

Less immediately understandable than comfort food, use of tobacco and "substances" and unsafe sex are the violence- and danger-related risk behaviors. The Institute of Medicine (2003) studied school violence and found that the context was a violent environment with little or no protection or order for the children. Many children carried weapons in order to survive. The neighborhoods of these high-violence schools had been disrupted by public policies of urban renewal, planned

shrinkage, and other methods of gentrification so that the normal social controls and supports had been destroyed.

Wyatt and Brown (2007) described the roots of violence and courting of danger among white men of the traditional South: to enforce self-esteem and standing in one's social circle. Male hierarchy rested partly on inherited family standing and partly on extreme individualism and status acquired and maintained by dueling, brawling, and showing courage, however unproductive. For good or ill, part of American culture descends from this vision of masculinity: drinking, smoking, wenching, fighting, and overpowering others. American violence exceeds even that of Canada and Australia, the other major colonies of Great Britain that also suffer from high rates of homicide, domestic violence, and hair-trigger brawling. The core of Right-to-Work states inherited this culture of violent and competitive masculinity; it reflects the individualistic ideology and pseudo-Darwinism of the Civil War era.

With Wyatt-Brown's analysis in mind, let us turn from unsafe sex to violence and consider homicide incidence in 2014. Over the 50 states, the two independent variables associated with homicide rate with highest R-squares were social capital (0.55, negative) and poverty 2015 (0.49, positive). The equation explaining the pattern of homicide incidence over the 50 states includes social capital and GINI59:

Homicide incidence $= -4.24 + 22.75$ (GINI59) $- 1.98$ (social capital).
R-sq $= 0.64$.

Average and median homicide incidence of the RTW set of states significantly exceed those of the non-RTW: 5.4 vs 3.8 average and 5.65 vs 3.35 median. Homicide is measured as murders per 100,000. Eleven SE factors associate with homicide incidence within the RTW system; only four in the non-RTW. Additionally, the associations in the RTW system tend to be strong with 6 of the 11 associations producing R-squares over 0.5. The highest R-square of the non-RTW system is less than 0.4. See Table 10.6 for the details.

Murder in the RTW system is commoner than in the non-RTW and tied strongly to the SE context. It is part of the tight, rigid RTW system like so many other of the health outcomes discussed already.

The equations that explain the patterns of homicide over the states of the two systems contain entirely different SE factors:

RTW homicide incidence $= 14.97 - 0.00019$ (median income) $- 1.26$ (social capital).
R-sq $= 0.74$
Non-RTW homicide incidence $= 7.11 + 12.27$ (union decline 1985–2010) $- 0.16$ (voting14)
R-sq $= 0.68$.

Killing another person in the RTW system hinges, statistically speaking, on household economics and social engagement. Killing another person in the non-RTW system depends on ebbing of power in the workplace and exercise of citizen power at the ballot box. People in areas of low-income loners or low-income isolated, small, intense social networks present the profile of killers in the RTW system, whereas people living in areas of increased imbalance of workplace power

Table 10.6 Homicide rates and associations

SE factor	National					
	R-sq	P	Pos/Neg			
Social capital	0.5532	<0.0001	Neg			
Poverty 2015	0.4939	<0.0001	Pos			
Poverty 2010	0.4234	<0.0001	Pos			
Median income	0.3896	<0.0001	Neg			
% high school dip	0.3293	<0.0001	Neg			
GINI59	0.3174	<0.0001	Pos			
College 2000	0.2766	0.0001	Neg			
U6 unemloy	0.2323	0.0002	Pos			
College 2011	0.2041	0.0006	Neg			
Voting 2014	0.1721	0.0016	Neg			
GINI10	0.1698	0.0017	Pos			
Union decline 85–10	0.1618	0.0022	Pos			
Union particip 2010	0.0973	0.0158	Neg			
	RTW			Non-RTW		
	R-sq	P	Pos/Neg	R-sq	P	Pos/Neg
Poverty 2015	0.7184	<0.0001	Pos	0.1281	0.0481	Pos
Median income	0.6541	<0.0001	Neg	No assn		
Poverty 2010	0.6209	<0.0001	Pos	0.1002	0.0724	Pos
% high school dip	0.5926	<0.0001	Neg	No assn		
Social capital	0.5913	<0.0001	Neg	0.3894	0.0011	Neg
GINI10	0.5553	<0.0001	Pos	No assn		
U6 unemploy	0.4296	0.0002	Pos	0.1064	0.0661	Pos
GINI59	0.3349	0.0012	Pos	No assn		
College 2000	0.2639	0.0043	Neg	0.1102	0.0625	Neg
GDP/pop	0.2139	0.0101	Neg	No assn		
College 2011	0.1692	0.0211	Neg	No assn		
Union decline 85–10	No assn			0.2428	0.0084	Pos
Voting 2014	0.0800	0.0800	Neg	0.1647	0.028	Neg
Homicide rate stats						
	RTW		Non-RTW			
Average	5.40		3.80	P = 0.0216		
Median	5.65		3.35			
Average rank	29.79		20.85	P = 0.0310		

relations and low political engagement present the context of killers in the non-RTW system. However, do not forget that the RTW system's average and median incidence of homicide significantly exceeds those of the non-RTW, and that such SE factors as high school graduation rate, GINI10, and poverty rate (as well as household median income and social capital) tightly connect with homicide rate in the rigid RTW system.

CDC also reports state prevalence of binge drinking, long considered a risk behavior. For men, binge drinking is having more than five drinks at a session; for women, more than four drinks. Binge drinking departs in its patterns from those of the risk behaviors and health outcomes we have considered thus far. No significant difference between RTW and non-RTW systems arose out of the comparisons of averages, medians, and average ranks. Binge drinking concentrates in the northern Midwest and Great Plains regions, not the South and Southwest. Nationally over the 50 states, the following SE factors associate positively with prevalence of binge drinking: percent with high school diplomas, per capita productivity, median household income, union participation, voting participation, and social capital – the strongest association. Negative associations include freeloading, both GINIs, poverty rate, and unemployment rate. Unemployment rate (negative), union participation (positive), and voting (positive) explain 57% of the pattern of prevalence of binge drinking over the 50 states. Prevalence of binge drinking is bleeping weird as a risk behavior.

As with the other risk behaviors and health outcomes, the RTW system shows stronger and more numerous associations of SE factors and binge drinking of which voting 2014 is the strongest with an R-square of 0.61. Voting 2014 and per capita productivity explain almost three-quarters of the pattern of binge drinking across the RTW states, both factors encouraging binge drinking. Social capital, the strongest association in the non-RTW system, attains an R-square in regression with prevalence of binge drinking of only 0.24. Freeloading 2010 and social capital explain about 40% of the pattern of binge drinking across the non-RTW states. In both systems and nationally, prevalence of binge drinking appears to indicate well-being and social and political engagement. But it is a risk behavior. For example: a disproportionate number of traffic fatalities involve a driver with a blood alcohol level above the legal limit. But reported binge drinking exhibits a completely different SE context from the other risk behaviors, indeed, an opposing SE context. Is the reporting reliable?

The past 2 years (2015 and 2016) witnessed increases in number of vehicle fatalities. We are interested in vehicles fatalities per unit population, however. The Insurance Institute of Highway Safety posted the 2015 state rates of vehicle fatalities per 100,000 people on its website, ranging from 4.5 in Massachusetts to 24.7 in Wyoming. Maps of vehicle fatalities in cities show clusters and indicate that artery design influences risk. However, we are looking at large areas and at the state level. Some states may, indeed, skimp on highway and street design, construction, and maintenance, but when we examine the two systems of states, we are likely looking at differences in the cultures of safety. Nationally, several SE factors associate with incidence of vehicular fatalities at R-squares of around 0.4 or more: college

education, GINI59, median income, and union participation. The equation arising from the multivariate regression includes three:

Rate of vehicular fatality over the 50 states $= 13.54 - 0.279$ (college11) $+ 30.58$ (GINI59) $- 0.28$ (union particip 2010).
R-sq $= 0.66$.

The RTW states significantly exceed the non-RTW in average and median rates of vehicular fatalities (Table 10.7).

On median, 5.15 more people per 100,000 die in the RTW system. In 2014, 149,287,825 people lived in the RTW states (1492.9 × 100,000). For each 100,000,

Table 10.7 Vehicle fatality incidence and associations

	National					
SE factor	*R-sq*	*P*	*Pos/Neg*			
College 2011	0.4732	<0.0001	Neg			
GINI59	0.4409	<0.0001	Pos			
College 2000	0.4305	<0.0001	Neg			
Median income	0.4181	<0.0001	Neg			
Union particip 2010	0.3915	<0.0001	Neg			
Free-load 2005	0.3167	<0.0001	Pos			
Poverty 2010	0.2951	<0.0001	Pos			
Poverty 2015	0.2300	0.0003	Pos			
GDP/pop	0.1851	0.0011	Neg			
Union decline 85–10	0.1562	0.0026	Pos			
Public asst.	0.1400	0.0043	Neg			
	RTW			*Non-RTW*		
	R-sq	*P*	*Pos/Neg*	*R-sq*	*P*	*Pos/Neg*
GINI59	0.4097	0.0003	Pos	0.1776	0.0231	Pos
Median income	0.2244	0.0084	Neg	0.2873	0.0041	Neg
College 2011	0.2259	0.0082	Neg	0.3539	0.0013	Neg
College 2000	0.1941	0.014	Neg	0.3015	0.0032	Neg
Union particip 1964	0.1635	0.0231	Neg	No assn		
Union particip 2010	0.1126	0.0523	Neg	0.2662	0.0058	Neg
Free-load 2005	0.1033	0.0605	Pos	0.2149	0.013	Pos
GDP/pop	No assn			0.2979	0.0034	Neg
Union particip 2015	No assn			0.2306	0.0102	Neg
Poverty 2015	No assn			0.2142	0.0139	Pos
Union decline 85–10	No assn			0.1937	0.0181	Pos
Vehicle fatality incidence stats						
	RTW		*Non-RTW*			
Average	14.39		9.74	$P = 0.00015$		
Median	13.85		8.7			
Average rank	33.48		16.85	$P = 0.00006$		

5.15 more people died in 2015: total of 7688 excess vehicular deaths. This is astonishing: the RTW vehicular fatality excess accounts for almost 20% of the total approximately 40,000 vehicular deaths in 2015!

Another astonishing observation involves the difference in the equations arising from the multivariate regression for each set of states:

RTW rate of vehicular fatalities $= 35.37 - 0.49$ (college11) $- 0.226$ (union particip 1964).
R-sq $= 0.52$
Non-RTW rate $= 30.31 - 0.35$ (college11) $- 0.42$ (union particip 2010).
R-sq $= 0.57$

For each system, current prevalence of higher education is a major influence on pattern of rates of vehicular fatalities. For each system, union participation also buffers against vehicular fatalities, but in the RTW system, it is union participation of the post-war era, of 1964! Vehicular safety in the RTW system depends on cultural remnants of union strength (and whatever else cohered with union strength) from half a century ago, a system fossilized.

The prevalence of binge drinking shows only a weak and negative trend to association with vehicular fatality rate over the 50 states: R-sq only around 4% and P=0.08. So something more is going on. In 2014, alcohol-impaired drivers were involved in crashes that killed 31% of the total vehicular fatalities. Now we have the possibility that the CDC survey on risk behavior is not really capturing the patterns of binge drinking. The highway statistics may tell us more about patterns of binge drinking than the survey does. However, we shall include the CDC binge drinking data in our index of risk behavior anyway.

Our index of risk behavior includes prevalence of binge drinking, obesity, and adult cigarette smoking and incidence of births to teenagers, of gonorrhea, of vehicular fatalities, and of homicide. These indicators are measured in various ways and cannot simply be added together. To make them comparable so that they can be added together into a single risk index, they can be normalized. I normalized them by dividing each indicator for each state by the indicator median for all 50 states. For example: the median over the 50 states for vehicular fatalities per 100,000 people in 2015 is 11.95. Each state's 2015 vehicular fatality incidence was divided by 11.95. All the indicators were normalized, and then the normalized data were summed across indicators for an integrated index of risk behavior (Table 10.8).

If a state had median prevalences and incidences across all seven indicators, its index of risk behavior would be seven.

Over the 50 states, the index associated with many SE factors from educational attainment to economic factors to GINI59 and to union-related factors. College degree prevalence, GINI59, median income, and poverty rate showed strong associations. The equation arising from the multivariate regression includes college 2000, GINI59, and social capital:

Risk indicator $= 3.05 - 0.156$ (college00) $+ 19.6$ (GINI59) $- 0.435$(social capital).
R-sq $= 0.76.$

Table 10.8 Index to risk
behavior by state

State	RTW status	Risk index
AL	1	9.32
AS	2	8.05
AZ	1	7.28
AR	1	9.87
CA	2	5.23
CO	2	5.66
CT	2	5.07
DE	2	7.74
FL	1	7.41
GA	1	8.18
HI	2	5.49
ID	1	5.51
IL	2	7.34
IN	1	7.79
IA	1	6.15
KS	1	7.01
KY	2	8.56
LA	1	10.85
ME	2	5.61
MD	2	6.66
MA	2	4.47
MI	1	7.46
MN	2	5.47
MS	1	11.10
MO	2	8.62
MT	2	7.14
NE	1	6.80
NV	1	7.42
NH	2	4.21
NJ	2	5.42
NM	2	8.14
NY	2	5.71
NC	1	7.90
ND	1	7.02
OH	2	7.80
OK	1	9.27
OR	2	5.60
PA	2	6.87
RI	2	4.90
SC	1	9.43
SD	1	7.38
TN	1	8.07

(continued)

Table 10.8 (continued)

State	RTW status	Risk index
TX	1	8.07
UT	1	4.55
VT	2	4.38
VA	1	6.36
WA	2	5.77
WV	1	7.88
WI	1	6.41
WY	1	7.57

rtw 1 = right-to-work
rtw 2 = non-right-to-work

Over the RTW states, the associations of the integrated risk indicator achieved higher R-squares generally than over the non-RTW states. High school diplomas meant more than college or higher degrees in the RTW system, but showed no association at all in the non-RTW. Median income and poverty showed much stronger associations in the RTW than in the non-RTW. Yet in the equations resulting from the multivariate regressions, prevalence in 2000 of college degrees or higher appears for the RTW system and poverty rate 2015 for the non-RTW:

RTW indicator $= -8.52 - 0.19$ (college00) $+ 33$ (GINI10) $+ 13.56$ (GINI59).
R-sq $= 0.74$
Non-RTW indicator $= 1.35 + 0.196$ (poverty15) $+ 7.45$ (%union decline 1985–2010).
R-sq $= 0.67$

The RTW states have significantly higher risk indicators on average and on median/average rank.

	Average	Median	Average rank
RTW	7.77	7.52	31.77
Non-RTW	6.25	5.69	18.71
P	0.0005		0.0016

From our results on the particular risk behaviors, these on the integrated risk behavior index are not surprising. The RTW states place great emphasis on individual responsibility, whereas the non-RTW states have a culture of empowering individuals through groups. We shall comment at length on this difference in later chapters, but here we see the impact of the two different ideologies on life/death, on health, and on life trajectories.

Chapter 11
Resilience

11.1 Introduction

"Resilience" has become a US policy goal in the context of disasters ranging from tornadoes to terrorist attacks, whether by domestic or by foreign agents. The meaning of the word, however, remains shrouded in public relations' wishful thinking with its reassuring sound. Most proponents imply a sociocultural and economic version of a simplistic "engineering resilience," whereby a system bounces back from a perturbation to something much like its original state. Ecological resilience, whereby a system absorbs a perturbation without much visible change – until it doesn't – may shape destinies more profoundly (Wallace and Wallace 2008). Ecological resilience depends on the tightness of the connections between system components. Systems with tight connections lack ecological resilience and actually amplify perturbations whereas systems with loose connections dampen perturbations (Holling 1973, 1992; Ives 1995). We here examine ecological resilience in the context of US states with and without right-to-work laws and their socioeconomic/public health systems.

An essential theme of ecological, as distinctly opposed to engineering, resilience is the inevitability of a permanent shift to a different quasi-stable regime once the boundaries of "recovery" are breached. That new – and often very stable – regime may be highly pathological.

The economist John Kenneth Galbraith put forth the concept of "countervailing forces" that prevent semi-monopolistic corporations from overpowering all other sectors in society and turning a republic into a plutocracy. He saw labor unions as the major countervailing force (Galbraith 2010, pp.5–6) and predicted that the rising economic globalization would wither labor unions along with the manufacturing facilities that could not compete with the lower costs of production in developing countries. He did not specifically address right-to-work laws as a factor in the withering of labor unions.

Enactment of right-to-work laws signals a broad realignment of the economic, social, and political structure of the state into steep hierarchy (Brennan 2016). The impact of RTW structure on public health has rarely been assessed, although one publication assessed state-level geography of early Alzheimer's disease (AD) mortality in this light (Wallace and Wallace 2016).

In this chapter, we reconsider a number of sources of mortality and morbidity from a resilience perspective. These include early AD mortality; early deaths from coronary heart disease (CHD), nonspecified stroke, and diabetes; and life expectancy in the context of the socioeconomic structure of the two different systems: 26 RTW states and 24 non-RTW states. We specifically focus on tightness of connections and on ecological resilience.

AD mortality incidence in particular gauges the rapidity of aging, age being the most influential risk of the disease (www.alz.org, 2017).

11.2 Methods

The Data Section on Data Sources lists the data sets and their sources.

The means (*t*-test) and medians and average ranks (Mann–Whitney test) of RTW (26 states) and non-RTW (24 states) systems are compared for each of the ten selected variables: AD mortality rate in age range 65–74, diabetes mortality 45–54, CHD mortality 45–54, nonspecified stroke 55–64, life expectancy, GINI 1959, percent adults with college or higher degree 2000, poverty rate 2010, median income 2014, and union participation 2010.

Bivariate linear regression yielded *R*-squares for each variable regressed against each other variable. The *R*-squares serve as indicators of the tightness of connection between the variables. *T*-tests, Mann–Whitney tests, and bivariate regressions were performed with Statgraphics for Windows, version V.

In addition, we apply the Ives (1995) resilience method to our ten health and socioeconomic variables (in alphabetical order), using the analytic techniques of Wallace and Wallace (2000) and Wallace et al. (2007). This is a nonequilibrium variant of the input/output formalism of Leontief (Leontief 1986; Kelly 2015; Miller and Blair 2009) in which a round robin of linear regression models is carried out, with each variate expressed as a function of the other nine, producing a ten-by-ten matrix relation of the form

$$X = \mathbf{B}X + b + \epsilon \tag{11.1}$$

X is the ten-dimensional column vector of variates, $\mathbf{B}$ a ten-by-ten matrix of regression coefficients *with zeros on the diagonal*, b is the vector of regression constants, and ϵ represents "errors" unaccounted for by the regression procedures.

It is important to note that, unlike input/output formalism, we do not assume equilibrium, hence the zero diagonal. We are interested in the effect of perturbations by "noise" ϵ across the system, writing

$$(\mathbf{I} - \mathbf{B})X = b + \epsilon$$
$$X = (\mathbf{I} - \mathbf{B})^{-1}b + (\mathbf{I} - \mathbf{B})^{-1}\epsilon \tag{11.2}$$

where $\mathbf{I}$ is the ten-by-ten identity matrix, so that

$$\delta X \equiv X - (\mathbf{I} - \mathbf{B})^{-1}b = (\mathbf{I} - \mathbf{B})^{-1}\epsilon$$
$$\delta X = (\mathbf{I} - \mathbf{B})^{-1}\epsilon \equiv \mathbf{C}\epsilon \tag{11.3}$$

where $\mathbf{C} = (\mathbf{I} - \mathbf{B})^{-1}$ is our adaptation of the Leontief inverse matrix containing all the "supply chain repercussions."

Notice that, since matrices form a ring and $\mathbf{I}$ is the ring identity, we have the relation

$$\mathbf{C} = (\mathbf{I} - \mathbf{B})^{-1} = \mathbf{I} + \mathbf{B} + \mathbf{B}^2 + \mathbf{B}^3 + \ldots \tag{11.4}$$

showing how the cyclic "repercussions" fill the diagonal of $\mathbf{C}$.

Since $\mathbf{B}$ has been constructed by linear regression, $\mathbf{C}$ has real eigenvectors and eigenvalues (Wallace and Wallace 2000), although the eigenvectors are not generally orthogonal. They represent the different modes excited by the vector of perturbations ϵ, and their eigenvalues indicate the degree to which ϵ factors are amplified across the system by the "supply chain repercussions." Ives (1995) characterizes systems with eigenvalues ≈ 1 as "resilient."

11.3   The Analysis

11.3.1   Ives Resilience Measure

The C-matrix for the RTW states is

3.028219	−2.944991	2.912393	348.3176	0.854831	−29.70122	−4.60827	12.75501	7.524681	−2.016171
−0.649285	4.5901	−1.449394	−130.3231	−0.585173	18.97477	3.710612	−6.223369	−3.943843	−0.743782
1.701469	−3.840692	3.851278	361.3003	0.906067	−31.29327	−5.324965	12.14869	7.892293	−1.233075
0.012239	−0.020769	0.021729	4.333091	0.006582	−0.23794	−0.036567	0.082208	0.062503	−0.021373
5.797681	−18.00141	10.51864	1270.459	4.777276	−131.5427	−19.36986	36.19472	30.25857	−2.23762
−0.582993	1.689328	−1.051395	−132.9242	−0.380699	14.36974	2.077767	−4.125503	−3.214808	0.223427
−2.297612	8.391403	−4.544458	−518.8913	−1.423943	52.77736	11.08534	−21.30162	−12.0061	0.729092
1.100033	−2.434446	1.793413	201.7831	0.460253	−18.12646	−3.684668	9.046728	4.438312	−0.627666
2.187403	−5.200062	3.927078	517.1196	1.296926	−47.61091	−7.000079	14.96006	12.35778	−1.911902
−0.8456	−1.415005	−0.885212	−255.1275	−0.138365	4.773703	0.613266	−3.052345	−2.7584	3.624905

The C-matrix for the non-RTW states is

1.633088	−2.071995	2.274321	−54.52842	0.299137	−11.00521	−1.827497	4.978096	0.666203	−0.896844
−0.262363	7.070971	−5.855044	−157.9303	−2.184091	23.27723	2.547489	−5.641339	−2.039056	0.196251
0.241893	−4.918003	6.404659	127.3172	1.480093	−20.22821	−2.114287	5.549693	1.847093	−0.444042
−0.000965	−0.022064	0.021176	2.222402	0.012331	−0.094955	−0.00389	0.015958	0.00759	−0.001226
0.287028	−16.54915	13.35171	668.7964	8.89991	−80.50848	−4.784035	10.51948	6.923997	−0.913862
−0.110734	1.849697	−1.913675	−54.00969	−0.844317	10.64422	0.781992	−1.610925	−0.867466	0.230918
−0.984382	10.83709	−10.70791	−118.451	−2.685875	41.8632	7.814197	−17.02569	−3.157264	1.019931
0.364458	−3.261816	3.820219	66.04593	0.802714	−11.72143	−2.314103	6.763178	0.798967	−0.350679
0.150186	−3.630212	3.915012	96.72629	1.626873	−19.43504	−1.321345	2.460152	2.777181	−0.236924
−0.608297	1.05122	−2.831771	−46.99595	−0.646042	15.56622	1.284294	−3.248824	−0.712843	1.858957

The principal eigenvalue for the RTW system is 53.74 and its corresponding unit-length eigenvector is

$$[.162, .252, −.121, .669, .173, .457, .169, .410, −.101, .047]$$

For the non-RTW system, the largest eigenvalue is 36.96, and the unit-length eigenvector is

$$[.081, .167, .383, .269, .621, .480, −.332, .073, −.121, .003]$$

The inner product between these two normalized eigenvectors is 0.5022 and represents the cosine of the angle between them. Identical eigenvectors would have an inner product of 1.0 and a zero angle.

11.3.2   Details of the Variables and Their Relationships

Life expectancy in the RTW states is, on average and median, more than a year shorter than that in the non-RTW states (Table 11.1). Mortality incidences of diabetes 45–54 years old, CHD 45–54 years old, unspecified stroke 55–64 years old, and AD 65–74 years old are much higher on average and median in the RTW states than in the non-RTW. The average ranks for each health variable differ greatly between the two sets of states.

The socioeconomic factors also show large differences in the averages, medians, and average ranks between RTW and non-RTW sets of states. The RTW set of states has higher 1959 GINI and 2010 poverty rate, and lower percent adults in 2000 with 4-year college or higher degrees, median 2014 household income, and 2010 union participation.

These differences in health and socioeconomic indicators are not small and marginal. For example, on median, ten more people per hundred thousand aged 45–54 died of diabetes in the RTW set of states than in the non-RTW. On median and average, the households in the non-RTW system had a median income of about $9000 greater than those in the RTW system. The probabilities of these comparisons also show that the differences are large: none approaches the 0.05 conventional

Table 11.1 Means, medians, and average ranks: RTW vs non-RTW

Health variables				Socioeconomic variables			
	RTW	Non-RTW	*P*		RTW	Non-RTW	*P*
Life expectancy, 2015				*GINI 1959*			
Mean	77.98	79.38	0.0022	Mean	0.4106	0.3756	0.0005
Median	78.28	79.70		Median	0.4160	0.3655	
Average rank	19.42	32.08	0.0022	Average rank	31.69	18.79	0.0018
Coronary heart mortality, 45–54				*Poverty rate 2010*			
Mean	57.17	44.18	0.0045	Mean	15.96	13.30	0.0018
Median	51.65	42.35		Median	16.65	13.40	
Average rank	31.29	19.23	0.0036	Average rank	31.19	19.33	0.0042
Unspecified stroke mortality, 55–64				*%adults with college or higher degree, 2000*			
Mean	13.96	8.74	0.0046	Mean	21.43	26.31	0.00001
Median	12.1	8.4		Median	21.65	26.15	
Average rank	31.56	17.59	0.00066	Average rank	17.23	24.46	0.00003
Diabetes mortality, 45–54				*Median income, 2014*			
Mean	73.93	64.02	0.0127	Mean	50566	59725	0.00017
Median	73.50	63.65		Median	49715	58972	
Average rank	31.06	19.48	0.0052	Average rank	18.46	33.12	0.00039
Alzheimer's disease mortality, 65–74				*Union participation, 2010*			
Mean	23.32	16.18	0.00002	Mean	7.68	14.51	<0.000001
Median	24.05	16.00		Median	6.45	14.60	
Average rank	30.31	17.04	0.00008	Average rank	16.48	35.27	0.0000055

dividing level between significance and trend. Some reach depths of a hundred thousandth or less, very low indeed.

The across-the-board differences between the two sets of states for these ten variables raise the question of whether the two systems function differently. Some light could be thrown on this question by examining the relationships between the variables in each system. Table 11.2 displays the adjusted R-squares of bivariate regressions between the variables. The bottom row of each matrix contains the sum of R-squares for each column, and the grand total of the sums lies at the extreme right on the bottom row. Because of the adjustments, some R-squares are negative, indicating essentially no relationship.

The grand total of the RTW matrix exceeds that of the non-RTW by 50% (45 vs 30). Nine of the sums of columns in the RTW matrix exceed those of their corresponding sums in the non-RTW matrix, the sole exception being that for college education in 2000 ("college00"). Five of these sums differ by more than 50% (taking the non-RTW sum as the basis of comparison): AD65 (184%), GINI59 (124%), stroke55 (88.3%), poverty 2010 (62.4%), and median income (53.7%). Looked at another way, the matrices show differing numbers of variables with five or more R-squares at the 0.3 level or above: RTW has nine of the ten and non-RTW, four of the ten.

Table 11.2 Matrices of adjusted R-sqs from bivariate regressions: RTW and non-RTW

RTW matrix

	AD65	Heart 45	Stroke 55	Diabm45	Life exp	GINI59	College00	Pov10	Medinc	Union10	Grand total
AD65	1	0.3152	0.4165	0.4009	0.3728	0.2967	0.1016	0.4918	0.2869	0.1201	
Heart 45	0.3152	1	0.6508	0.4979	0.7182	0.3791	0.4587	0.3598	0.5009	−0.0230	
Stroke55	0.4165	0.6508	1	0.6367	0.8562	0.5871	0.3349	0.5770	0.5974	0.0810	
Diabm45	0.4009	0.4979	0.6367	1	0.5776	0.4984	0.2864	0.6097	0.5488	0.0398	
Life exp	0.3728	0.7182	0.8562	0.5776	1	0.4875	0.4646	0.5575	0.6754	−0.0203	
GINI59	0.2967	0.3791	0.5871	0.4984	0.4875	1	0.1001	0.3991	0.3698	0.3200	
College00	0.1016	0.4587	0.3349	0.2864	0.4646	0.1001	1	0.3384	0.5958	0.0242	
Pov10	0.4918	0.3598	0.5770	0.6097	0.5575	0.3991	0.3384	1	0.7736	0.0192	
Medinc	0.2869	0.5009	0.5974	0.5488	0.6754	0.3698	0.5958	0.7736	1	−0.0301	
Union10	0.1201	−0.0230	0.0810	0.0398	−0.0203	0.3200	0.0242	0.0192	−0.0301	1	
Total	3.8025	4.8576	5.7376	5.0962	5.6895	4.4378	3.7047	5.1261	5.3185	1.5309	45.3014

Non-RTW matrix

	AD65	Heart 45	Stroke 55	Diabm45	Life exp	GINI59	College00	Pov10	Medinc	Union10	Grand total
AD65	1	−0.0393	−0.0017	0.0095	0.0278	−0.0303	0.0038	0.1263	0.1019	0.1424	
Heart 45	−0.0393	1	0.4258	0.317	0.7047	0.3905	0.555	0.1012	0.1477	−0.0081	
Stroke55	−0.0017	0.4258	1	0.3695	0.5493	0.1174	0.3315	0.0664	0.1744	0.0145	
Diabm45	0.0095	0.317	0.3695	1	0.5482	0.1526	0.6193	0.4662	0.4275	0.065	
Life exp	0.0278	0.7047	0.5493	0.5482	1	0.1812	0.5526	0.2288	0.366	0.1445	
GINI59	−0.0303	0.3905	0.1174	0.1526	0.1812	1	0.1864	0.0279	−0.0177	−0.0309	
College00	0.0038	0.555	0.3315	0.6193	0.5526	0.1864	1	0.3568	0.4769	−0.029	
Pov10	0.1263	0.1012	0.0664	0.4662	0.2288	0.0279	0.3568	1	0.7339	0.0493	
Medinc	0.1019	0.1477	0.1744	0.4275	0.366	−0.0177	0.4769	0.7339	1	0.0488	
Union10	0.1424	−0.0081	0.0145	0.065	0.1445	−0.0309	−0.029	0.0493	0.0488	1	
Total	1.3404	3.5945	3.0471	3.9748	4.3031	1.9771	4.0533	3.1568	3.4594	1.3965	30.303

GINI59 is the index of income inequality from year 1959, the post-war era before the movements of the 1960s. The sum of R-squares for GINI59 in the RTW matrix dwarfs that of the non-RTW by 124%. Stroke 55–64, diabetes mortality 45–54, and life expectancy associate with GINI59 with particularly high R-squares of 0.49–0.59 in the RTW matrix. In the non-RTW matrix, only CHD mortality 45–54 has an R-square with GINI59 above 0.3. Similar observations arise from inspection of the R-squares of poverty rate 2010 and median income 2014: many more variables in the RTW matrix have R-squares above 0.5 in regression with either of the two household economic indicators than in the non-RTW matrix.

One final set of observations on Table 11.3 involves union participation 2010. In the non-RTW matrix, union participation negatively associates with AD mortality 65–74 and positively with life expectancy. In the RTW matrix, two variables associate with union participation 2010: AD mortality 65–74 (also negative as in the non-RTW matrix) and GINI59 (negative with a moderately high R-square of nearly one-third). Thus, RTW states with a high GINI59 had low union participation in 2010, whereas in the non-RTW states, states with high union participation have high life expectancies.

Because of the large number and strength of the associations between GINI59 and other variables in the matrix, examining the present expressions of GINI59 is worthwhile. Backward stepwise multivariate regression for each system yields the following models of association between GINI59 and other socioeconomic factors:

RTW GINI59 = 0.8627 − 0.0036 (% with high school diploma) − 0.0044 (% with college deg 2000) − 0.0059 (union participation 2010)
R-sq = 0.66

non-RTW GINI59 = 0.469 − 0.00238 (% with college deg 2000) − 0.00251 (union participation 2010)
R-sq = 0.39

In both systems, the income inequalities of the post-WWII era shaped the recent educational attainment and union participation that associate with health outcomes, but the RTW system shows much stronger influence of that post-WWII structure on recent (and probably present) socioeconomic factors than the non-RTW system.

Table 11.3 displays the data for four large states: Texas (old RTW), Michigan (new RTW), California (non-RTW), and New York State (non-RTW). All ten variables for Texas fall into the bottom half of the 50 states' rankings, six variables out of ten do so for Michigan, and two each for the two non-RTW states. Let us focus first on life expectancy to understand how the two systems work. The two RTW states have similar life expectancies: 78.23 (MI) and 78.45 (TX). The two non-RTW states also have similar life expectancies: 80.77 (CA) and 80.48 (NYS).

In the RTW system, the two most powerful socioeconomic associations with life expectancy are poverty rate and median income; in the non-RTW system, the two most powerful socioeconomic associations with life expectancy are percent adults with college or higher degrees and median income, but the former has a much higher R-square than the latter. Although Michigan has only a somewhat higher poverty rate than California, it means more to life expectancy in the RTW system.

Table 11.3 Health and socioeconomic markers of four large states

Health outcome		States worse	Health outcome		States worse
Texas			**NYS**		
2015 Alzheimer's disease mortality 65–74	24.5	11	2015 AD 65–74	8.2	47
CHD mortality 45–54	50.4	20	CHD mort 45–54	42.6	32
Stroke mortality 55–64	13.5	12	Stroke mort 55–64	6.9	41
Diabetes mortality 45–54	13.6	23	Diabetes mort 45–54	9.6	42
Life expectancy	78.45	19	Life expectancy	80.48	44
Socioeconomic factor			*Socioeconomic*		
2014 median income	53,875	22	Median income	54,310	23
2010 poverty rate	17.9	8	Poverty rate	14.9	22
1959 GINI	0.429	11	GINI59	0.365	33
2000 percent adults with college or higher deg	23.2	24	College or higher	27.4	39
2010 union participation	5.4	7	Union 2010	24.2	49
Michigan			**California**		
AD mortality 65–74	22.0	19	2015 AD 65–74	22.4	16
CHD mortality 45–54	61.8	10	CHD mrt 45–54	35.6	39
Stroke mortality 55–64	8.8	30	Stroke mort 55–64	8.4	32
Diabetes mortality 45–54	13.3	26	Diabetes mort 45–54	11.2	36
Life expectancy	78.23	15	Life expectancy	80.77	47
Socioeconomic factor			*Socioeconomic*		
2014 median income	52,005	18	Median income	60,487	36
2010 poverty rate	16.8	14	Poverty rate	15.8	16
1959 GINI	0.355	41	GINI59	0.365	33
2000 percent adults with college or higher deg	21.8	17	College or higher	26.6	38
2010 union participation	16.5	42	Union 2010	17.5	45

Texas is an old RTW state; Michigan, a new one. NYS and California are non-RTW states

Although Michigan has a similar union participation to California, it means less to life expectancy in the RTW system, whereas union participation in the non-RTW system has a significant (although moderate-to-small) association with life expectancy.

The backward stepwise multiple regressions for life expectancy, if we rely on the entire database of socioeconomic factors, in the two systems yield the following equations:

RTW life expectancy= 80.224 + 0.22 (% adults with college or higher) −16.71 (GINI59) + 0.699 (social capital)
adjusted R-sq = 0.8039.

non-RTW life expectancy = 69.867 + 0.253 (% adults with college or higher) +0.538 (%public asst.) + 0.074 (union participation 2010)
adjusted R-sq = 0.8010.

Thus, in comparing the four states for life expectancy, we understand their differences by examining the roles of higher educational attainment, GINI59, and union participation in the two equations.

Life expectancy and mortality rates for diabetes, stroke, and CHD show similarities within each system with respect to socioeconomic associations and associations with each other. AD mortality, however, stands starkly different, especially in the non-RTW system. Only three variables show R-squares over 0.1 in association with AD mortality in the non-RTW system (poverty rate, median income, and union participation), whereas all nine variables show R-squares above 0.1 in regression with AD mortality in the RTW system. The equations from the backward stepwise multivariate regressions for each system follow:

RTW AD mortality 65–74 $= 0.8166 + 1.41$ (poverty rate 2010).
Adj R-sq $= 0.4918$

non-RTW AD mortality 65–74 $= 5.95 + 19$ ((union participation 1964 − union participation 2015)/union participation 1964)
Adj R-sq $= 0.2393$.

If only the variables in the matrix were used, the non-RTW AD mortality would associate solely (and negatively) with union participation in 2010 in the multivariate regression, with an R-sq of 0.1424. Poverty rate 2010 swamps the other socioeconomic variables in the RTW multivariate regression.

11.3.3 Policy Implications

Proponents of RTW laws excuse the lower earnings in RTW states by asserting that the after tax wage is higher in these states (nrtw faqs). Yet, union members all over the country earn higher wages, have much better benefits (paid vacation, health insurance, pensions), and enjoy greater employment security than workers in the same jobs who don't belong to unions (Long 2013). Furthermore, union members connect with each other and with their advocate organization. They become oriented toward collective enterprises in general. They don't "bowl alone," to use Putnam's phrase (Putnam 2002). States with higher than average or median union participation, thus, differ from other states both sociopolitically and economically. RTW states have on average and median much lower union participation than non-RTW.

The socioeconomic and mortality profiles of the RTW and non-RTW states reflect deep differences. Higher poverty rates, higher GINI59, lower median income, and lower educational attainment characterize the RTW system in comparison with the non-RTW. The much higher union participation in non-RTW states does not surprise, but the 50% excess median mortality in the RTW system from unspecified stroke (55–64 years) and from AD (64–74 years) does surprise. The other three

mortality-related markers also show greatly excessive deaths from CHD (45–54 years) and diabetes (45–54 years) as well as shortened life expectancy.

The two matrices of R-squares reveal further details about the two sets of states. Relationships between the variables differ greatly between the two systems. The two variables with the greatest differences between the systems in their pattern of R-squares are AD mortality and GINI59. AD mortality in the non-RTW system results in R-squares above 0.1 in regression with only three other variables, and those R-squares are well under 0.2, whereas in the RTW system, all nine other variables result in R-squares above 0.1 in regression with AD mortality. Five of these R-squares exceed 0.3. Thus, in the non-RTW system, AD mortality 65–74 hardly connects with other mortality rates or with socioeconomic factors. In the non-RTW system, AD mortality 65–74 is part of the overall mortality pattern and connects with the five socioeconomic factors.

If one goes to the website PubMed and searches on the term "job strain", numerous papers appear that link workplace stress with particular health outcomes such as diabetes, coronary heart disease, sleep abnormalities, and stroke. Job strain is a defined form of workplace stress: high responsibility and low authority and resources to carry out the responsibility. It is a form of perceived workplace injustice. Job strain in middle age has been linked to patterns of AD and dementia in old age (Wang et al. 2012). Both job strain (Elovainio et al. 2009) and perception of justice in the employing organization (Elovainio et al. 2012) were linked in the Whitehall II Study to cognitive function. These papers help partially explain the differing patterns of early AD mortality and the other markers of early aging between RTW and non-RTW systems. Union participation and decline over the years in union participation determine the strength of unions to protect workers from job strain and injustice in the workplace.

In the non-RTW system, GINI59 associates with only five other variables with R-square above 0.1, whereas in the RTW system, it associates with all nine other variables with R-square above 0.1. Because GINI59 characterizes past socioeconomic conditions, the other variables cannot be given a causative role as influences on GINI59. Rather, GINI59 influences the patterns of all the other variables. Thus, the RTW system may be viewed as functioning within an unchanging structure of post-WWII social, economic, and political relationships. The large number of high R-squares in the RTW matrix reflects the necessary tightness of connections to maintain an unchanging structure.

The tight connection of AD mortality for age 65–74 years with all the other variables in the RTW matrix contrasts with the lack of connection in the non-RTW matrix. The other mortality markers also show much tighter connections in the RTW matrix than in the non-RTW. Many more regressions in the RTW matrix yield R-squares above 0.4 than in the non-RTW. The difference extends to the qualitative as well. In the non-RTW matrix, higher educational attainment is the sole socioeconomic factor with tighter association with the mortality markers than in the RTW. Percent adults with college or higher degrees negatively and significantly associate with CHD mortality, stroke mortality, and diabetes mortality but positively with life expectancy. Three of these four R-squares exceed 0.5, whereas none of

the *R*-squares in the RTW matrix from regressions between higher educational attainment and mortality markers exceed 0.5.

The mortality markers in the RTW matrix show tight connections with the economic indicators of poverty rate and household median income. GINI59 reflects economic structure from the past and also social and power relationships. Past and present economic inequalities weigh heavily on patterns of mortality in the RTW system. Entry into that system is not solely the passing of a law about union membership but a regime change into a rigid hierarchy that yields higher mortality rates and massive loss of years of life. Enacting RTW laws marks the amputation of political and social power from democratic counter-vailing collectives in general and the concentration of that power into the highest economic stratum.

The Ives resilience method quantifies the difference between RTW and non-RTW systems with respect to amplification of external perturbation and principal excited modes. While both systems are sensitive to perturbation, having amplification factors for their principal eigenvectors greater than unity, the RTW system is much more highly excited by perturbations than the non-RTW system. In addition, the principal excited modes are distinct, with a large angle between them. Different combinations of variables will be differentially excited by an external perturbation. These systems, thus, respond quite differently quantitatively and qualitatively to external perturbations, with the RTW states being much more "resonant."

Kelly (2015) explores four other variants of the Leontief input/output model as tools for estimating economic loss from cascading infrastructure failure. Our method, different from those, and using empirical regression equations, has a particularly simple mathematical structure that is well-suited to comparing different systems at the same time, or the same system at different times. Kelly's specific interest lies in the economic impact of infrastructure perturbations, and he makes a prescient remark:

> There is strong evidence to suggest that as supply and demand curves shift due to shortages in different sectors of the economy, equilibrium positions will shift, prices will change and substitution between products will result in [permanent] changes in economic structure.

Holling (1973, 1992) has explored an ecosystem version of "resilience" in which, unlike Ives' perspective, permanent or long-term shifts in quasi-equilibria are central to the impacts of perturbation. That is, enough disruption can trigger a permanent structure change. The canonical model is of the eutrophication of an alpine lake by sewage runoff. Once sufficient nutrient levels are reached, there is a permanent shift in algal and microbial populations within the lake, leading to a cascade of other long-term changes. Holling's (1992) paper examines the role of "mesoscale" perturbations that are particularly effective in entraining dynamic processes at higher macro- and smaller microscales of organization in an ecosystem. These ideas are relevant to our analysis here: the implication is that the RTW system has undergone a process of "social eutrophication" that is spreading nationally as other states adopt RTW laws. Enactment of RTW laws is the regime change due to ever-tightening connections arising from perturbations.

The cheerleaders for resilience as a panacea not only define resilience in the engineering sense but focus on short-term events and processes that masquerade as "acts of God": hurricanes, blackouts, epidemics, earthquakes, and other such disasters (CARR 2017). The analyses here depend on the definition of resilience as an emergent ecological property of "swallowing" perturbation without a major change in system structure or function and imply that many events and processes can be system perturbations. Anything that impacts any of the major variables will ping-pong through the system, with outcomes dependent on the tightness of internal connections. Thus, such processes and events as changes in availability of manufacturing jobs, enactment of laws and governmental budgets, raising the cost of college education, and erosion of civil rights law enforcement will perturb the system, as well as conventional disasters such as hurricanes and the growing Zika birth defects outbreak.

Populations in the RTW system suffer greatly raised vulnerability to all these perturbations, compared with those in the non-RTW. The consequences of the perturbations will be suffered according to the socioeconomic hierarchy, with concentration of suffering at the bottom. However, studies in the past indicate that even elites in highly unequal societies don't do as well as those in more equal societies (Wilkinson 1996). Although the Victorian authors such as Poe (Masque of the Red Death) and Dickens (description of contagious disease outbreaks in Bleak House) portrayed a world of unexpected connection between classes, we are heading into a future of more extreme disconnect of elites from everyone else, thanks to technology. Neo-feudalism has evolved new aspects of the demarcation and separation of classes. Detailed data acquisition and analyses of the RTW system could illuminate the properties of these new aspects.

Chapter 12
RTW Laws and Public Health

Pluto was the god of both death and wealth. King Midas's wish that everything he touched should turn to gold killed his beloved daughter and almost killed him. Greek and Roman mythology starkly mapped a relationship between greed, wealth, and death. Carnivals in Latin America feature celebrants who dress as plutocrats and have skulls as heads. Isaiah lamented: "Woe to him who adds house to house and field to field until there is no more." The entire story of Joseph in Egypt depicts the relationship of life, amassing of wealth, and amassing of political power in the context of a monarchy: during the 7 lean years, Joseph amassed all the land in Egypt for Pharaoh by exchanging his stored grain for starving families' land. In nearly all cultures, untrammeled plutocracy and greed connect with death, illness, and deformed human relationships.

The granddaddy of plutocracy myths is the Nibelungenlied, especially as retold in Wagner's Ring Cycle. The relationship between gold, power, and renunciation of love is made explicit. Alberich renounced love in order to form the ring of power from the Rheingold that he stole from the Rhine maidens. Nothing good could come of that, and eventually even the gods fell. Alberich enslaved the Nibelungen and forced them to mine and smelt gold after he had the ring of power. The Anglo-Saxons were a Teutonic people, and England was colonized by the Vikings. The English agricultural feudalism that, according to Wyatt and Brown (2007), formed the core of Southern individualism and hierarchy may have deep roots partaking of the culture that spawned the Nibelungenlied and the German ideal of Heldenleben. The Nazis loved the Ring Cycle, misunderstanding its lessons about power, corruption, and societal dissolution.

Each previous chapter concerned with an aspect of public health descanted on the differences between the two systems of states differentiated by presence or absence of Right-to-Work laws. Analyses demonstrated the immense waste of years of life lost in the RTW system due to elevated rates of early deaths from chronic conditions such as stroke and CHD. Early deaths from CHD alone piled up an annual excess of nearly 10,000 years of life lost, the excess being fatality rates above those of

the non-RTW states. In the RTW system, the excess vehicular fatalities accounted for an astonishing nearly one-fifth of total vehicular fatalities in 2015. Furthermore, children 1–14 died at much higher rates in the RTW system than in the non-RTW. Infant mortality (birth to 1 year) in RTW states greatly exceeded that of the non-RTW system. Life expectancies and all-cause mortality rates support the conclusion that the residents of RTW states do not live out their lives in comparison with the residents of the non-RTW states. Death visits the RTW states more frequently at each stage of life. Even those who give life are not immune: the ratio of maternal deaths to 100,000 live births increased nationally between 2000 and the present, but states like Texas have doubled their ratio of maternal deaths (NY Times, Sept 16, 2016).

The first published work on how RTW laws may influence public health explored Alzheimer's Disease (AD) mortality rates (Wallace and Wallace 2016, chapter 16). Age forms the major risk of AD and the mortality patterns reflect incidence of diagnosis 8–10 years previous because AD has no cure or even a reliable retardant. Everyone who is diagnosed with it dies of it usually 8–10 years post-diagnosis. Because age is the major risk factor, patterns of AD mortality at the state level for the different age groups (65–74, 75–84, and 85+) shed light on the aging process. The gene for early AD is relatively rare, and data at the state level reflect the ordinary course of AD. For each age group, the RTW system suffers significantly higher rates of AD mortality than the non-RTW:

	Average	Median	Average rank
For age 65–74			
RTW	23.32	24.05	30.31
Non-RTW	16.18	16.0	17.04
P	0.00002	0.00008	
For age 75–84			
RTW	223.38	226.75	32.46
Non-RTW	167.55	162.55	17.96
P	0.0002	0.0005	
For age 85+			
RTW	1177.78	1162.1	36.38
Non-RTW	959.25	901.65	19.12
P	0.0058	0.0031	

These mortality rates are per 100,000. Thus, on median, residents of the RTW states of age 65–74 have a 50% higher risk of dying of AD than residents of the non-RTW states: 50% of $16/100,000 = 8$, the difference in mortality incidence between the two systems.

Table 12.1 displays the SE associations with AD mortality incidence in the three age ranges. If the major risk factor for AD is age per se, the number and strength of associations should be small. Age is the number of years one has lived. However, one's biological age may differ from the stereotype of the years one has lived.

Table 12.1 Alzheimer's disease mortality and associations

	Age 65–74					
	National					
SE factor	*R-sq*	*P*	*Pos/Neg*			
Poverty 2010	0.4298	<0.0001	Pos			
Median income	0.3678	<0.0001	Neg			
Union particip 2010	0.3660	<0.0001	Neg			
Poverty 2015	0.3473	<0.0001	Pos			
College 2011	0.2597	0.0001	Neg			
Union decline 64–15	0.2549	0.0001	Pos			
College 2000	0.2527	0.0001	Neg			
GDP/pop	0.2327	0.0002	Neg			
Free-load 2010	0.2255	0.0003	Pos			
GINI59	0.2243	0.0003	Pos			
% high school dip	0.1971	0.0007	Neg			

	RTW			Non-RTW		
	R-sq	*P*	*Pos/Neg*	*R*-sq	*P*	*Pos/Neg*
Poverty 2010	0.4918	<0.0001	Pos	0.1263	0.0494	Pos
Poverty 2015	0.4739	0.0001	Pos	No assn		
% high school dip	0.3551	0.0008	Neg	No assn		
GINI59	0.2967	0.0024	Pos	No assn		
Median income	0.2869	0.0028	Neg	0.1019	0.0706	Neg
GINI10	0.2799	0.0032	Pos	No assn		
Social capital	0.1541	0.0269	Neg	No assn		
Union particip 2010	0.1201	0.0464	Neg	0.1424	0.039	Neg
Voting 2014	0.1057	0.0582	Neg	No assn		
Union decline 64–15	No assn			0.2393	0.0089	Pos
Union particip 2004	No assn			0.2045	0.0153	Neg
Voting 2012	No assn			0.1265	0.0493	Pos

	Age 75–84					
	National					
Poverty 2010	0.3365	<0.0001	Pos			
Union particip 2010	0.2888	<0.0001	Neg			
Union particip 2004	0.2843	<0.0001	Neg			
College 2011	0.2768	0.0001	Neg			
College 2000	0.2455	0.0002	Neg			
Poverty 2015	0.2404	0.0002	Pos			
Union decline 64–15	0.2081	0.0005	Pos			
GINI59	0.1999	0.0007	Pos			
GDP/pop	0.1821	0.0012	Neg			
Free-load 2010	0.1634	0.0021	Pos			
% high school dip	0.0959	0.0163	Neg			

Table 12.1 (continued)

	RTW			Non-RTW		
	R-sq	P	Pos/Neg	R-sq	P	Pos/Neg
Poverty 2010	0.3568	0.0008	Pos	0.0907	0.0832	Pos
Poverty 2015	0.2957	0.0024	Pos	No assn		
GINI59	0.2493	0.0050	Pos	No assn		
Median income	0.1917	0.0146	Neg	No assn		
% high school dip	0.1828	0.0169	Neg	No assn		
College 2011	0.1545	0.0267	Neg	No assn		
Union particip 2010	0.1422	0.0326	Neg	No assn		
College 2000	0.1346	0.0368	Neg	No assn		
GDP/pop	No assn			0.1251	0.0503	Neg

	Age 85+					
	National					
Poverty 2010	0.2175	0.0004	Pos			
College 2011	0.1756	0.0014	Neg			
Union particip 2015	0.1653	0.0020	Neg			
Union particip 1995	0.1609	0.0023	Neg			
Union particip 2004	0.1464	0.0036	Neg			
Union particip 2010	0.1451	0.0037	Neg			
Poverty 2015	0.1445	0.0038	Pos			
College 2000	0.1440	0.0038	Neg			
GINI59	0.1237	0.0071	Pos			
Union decline 64–15	0.1043	0.0127	Pos			
Free-load 2005	0.0895	0.0198	Pos			

	RTW			Non-RTW		
	R-sq	P	Pos/Neg	R-sq	P	Pos/Neg
Poverty 2010	0.2192	0.0092	Pos	No assn		
GINI59	0.1881	0.0155	Pos	No assn		
Poverty 2015	0.1848	0.0164	Pos	No assn		
% high school dip	0.1231	0.0442	Neg	No assn		
Median income	0.1130	0.0519	Neg	No assn		
Union particip 2015	0.1110	0.0535	Neg	No assn		
College 2000	0.1099	0.0545	Neg	No assn		

AD mortality incidence in the three age ranges indicates the biological ages of the populations of the nation as a whole and of the two systems.

AD mortality rate 65–74 associates over the 50 states with 15 SE factors, 8 of which have R-squares above one-quarter. The equation arising from the multivariate regression explains nearly 60% of the pattern over the 50 states. Although poverty was one of the SE factors in the equation, the other two were union related (union participation 2010, negative) and percent decline in participation 1964–

2015 (positive). The national pattern of early AD mortality depended on union participation and decline in participation. Early aging, nationally, relates to unions.

AD mortality rate 75–84 associates over the 50 states with 17 SE factors, 5 of which have *R*-squares above one-quarter. The equation arising from the multivariate regression explains 44% of the pattern of AD mortality rate in this age group, and one of the two independent variables is percent union decline 1964–2015 (positive), poverty rate being the other.

AD mortality rate 85+ associates over the 50 states with 15 SE factors, none of which have an *R*-square over one-quarter. The equation from the multivariate regression itself explains only a bit over one-quarter of the pattern over the 50 states (26%). Again, the two independent variables in the equation are poverty rate and a union related one (participation 2015, negative). Thus, with increasing age, SE factors explain a decreasing percent of the variability of AD mortality rates over the 50 states, but never entirely lose their influence even in the oldest age range. Age per se increases its importance as a risk factor, but age is never the entire story. The younger age ranges show evidence that poverty, union participation, and decline in union participation determine the rapidity of the aging of the entire population of the country.

Table 12.1 also shows that the RTW states drive the national system of AD mortality for all three age ranges. The non-RTW system produces much fewer and weaker associations with SE factors than the RTW. The patterns of AD mortality within the RTW system show, thus, heavy influence of SE context. As age per se becomes a greater influence, the number and strength of associations wanes in both systems, but even in the 85+ age range, seven SE factors associate with AD mortality in the RTW system and none in the non-RTW.

The following text table sheds light on the difference in context between the systems.

	RTW	Non-RTW
65–74: highest *R*-sq	0.49 (poverty2010)	0.24 (union decline 64–15)
75–84: highest *R*-sq	0.36 (poverty2010)	0.13 (GDP/pop)
85+: highest *R*-sq	0.22 (poverty2010)	None

Union-related factors formed independent variables in many of the final equations that described patterns of health outcomes.

The following little text table summarizes this fact in detail:

Union-related factor	Number of health outcomes
Union participation	11
Union participation decline	20
Free-loading	4
Two union factors	3

Union-related factors have a strong influence on public health directly. They also have a strong indirect influence. For example, GINI59 appears in many, many final equations from multiple regressions and is one of the most frequent associates with health outcomes. But in the final equation for GINI59 as a dependent variable, one of

the two independent variables is union participation 2010. GINI59 expresses itself through present union participation negatively. States with high GINI59 have low union participation.

Table 12.2 displays the most startling data in this book: the stark illustration of early aging in the RTW system, indicated by AD mortality in the 65–74 age range, and its "species guild" of public health woes.

The non-RTW set of states produces no associations between AD 65–74 mortality rate and the other health indicators explored in this book. Even known risks for AD such as stroke and obesity showed no association in the non-RTW system with AD mortality rate in the 65–74 age range. Nationally and within the RTW system, associations abounded. Over the 50 states, stroke mortality incidence 55–64 showed an R-square of nearly 40%, as did obesity prevalence 2007/2009. Within the set of RTW states, stroke 55–64 also showed a high R-square (0.42). It was not the highest, however, that honor going to gonorrhea incidence (0.53).The following health indicators showed R-squares above one-quarter in the RTW system in association with AD mortality 65–74: obesity prevalence 2007/2009, homicide 2014, infant mortality rate 2015, mortality rate of children 1–4, rate of births to teenagers, and prevalence of not eating fruit daily. The RTW system costs society, families, and individuals immense pain, wealth, labor, and time. This table shoves these costs into your view.

Obviously, gonorrhea incidence in 2014 cannot cause AD mortality rate of 2013–2015. The following SE factors associate with both gonorrhea incidence and AD mortality rate 65–74 with R-squares of 0.3 or more: percent adults with high school diplomas (negative), GINI59 (positive), median income (negative), poverty 2010 (positive), and poverty 2015. Additionally, GINI10 associates with gonorrhea incidence with an R-square of 0.6 and with AD mortality 65–74 with an R-square of 0.28, just shy of our 0.3 cutoff.

These SE factors form the context of both unsafe sex and of early mortality from Alzheimer's Disease: educational attainment, inequality of the past and the present, and household economics and deprivation. High school education offers basic competence to state populations: literacy and numeracy. Income inequality reflects power relations as well as division of earnings across a population. Median income and poverty rate indicate household security/insecurity and actual deprivation/lack of deprivation for necessities.

Associations between AD mortality of age 75–84 show the same pattern as for AD mortality 65–74 but with slightly lower R-squares. Also, the non-RTW system had no associations between AD mortality 75–84 and other health outcomes. This result further emphasizes the tight connections within the RTW system, its brittle rigidity, and its high costs to the nation, the local communities, families, and individuals.

In a population with low competence (low educational attainment), extreme power relationships, and high insecurity and material deprivation, self-mastery over impulses may have low prevalence. A large proportion of such a population is not allowed to develop control and mastery over work or over community conditions. This is how helplessness is learned, by loss of control over basic conditions at the

Table 12.2 Associations of AD mortality 65–74 with other health outcomes

	National		
Health outcome	R-sq	P	
Stroke mortality 55–64	0.3898	<0.0001	
Obesity prevalence 2007–2009	0.3861	<0.0001	
Stroke mortality 65–74	0.3389	<0.0001	
Diabetes mortality 45–54	0.3309	<0.0001	
% eat no fruit daily	0.3222	<0.0001	
CHD mortality 55–64	0.2917	<0.0001	
Birth rate to teens	0.2580	0.0001	
CHD mortality 45–54	0.2528	0.0001	
Mortality rate 10–14	0.2493	0.0001	
Infant mortality rate	0.2455	0.0002	
Mortality rate 1–4	0.2237	0.0003	
Mortality rate 5–9	0.1990	0.0007	
CHD mortality 65–74	0.1875	0.0010	
Homicide rate	0.1758	0.0014	
Adult cigarette prevalence	0.1535	0.0029	
Gonorrhea incidence	0.1476	0.0034	
Low-weight birth rate	0.1141	0.0095	
		RTW	Non-RTW
Gonorrhea incidence	0.5258	<0.0001	No assn
Stroke mortality 55–64	0.4165	0.0002	No assn
Diabetes mortality 45–54	0.4009	0.0003	No assn
% eat no fruit daily	0.3998	0.0003	No assn
Infant mortality rate	0.3986	0.0003	No assn
Obesity prevalence 2007–2009	0.3718	0.0006	No assn
CHD mortality 55–64	0.3485	0.0009	No assn
CHD mortality 45–54	0.3152	0.0017	No assn
Homicide rate	0.3076	0.0019	No assn
Stroke mortality 65–74	0.3034	0.0021	No assn
Birth rate to teens	0.2865	0.0029	No assn
Mortality rate 1–4	0.2551	0.0050	No assn
Low-weight birth rate	0.2226	0.0087	No assn
CHD mortality 65–74	0.2091	0.0109	No assn
Mortality rate 5–9	0.2009	0.0125	No assn
Mortality rate 10–14	0.1672	0.0218	No assn
Adult cigarette prevalence	0.0937	0.0705	No assn

group, family, and individual levels. In the RTW system, the other health indicators associating with AD mortality 65–74 with R-squares above one-quarter are (in order of R-sq) percent adults who don't eat fruit daily, infant mortality rate, obesity 2007/2009, homicide incidence, rate of births to teens, and mortality rate 1–4 years old. Failure to exercise control or even to be allowed to exercise control underlay all

these health indicators. These health indicators form part of the tragedy of extreme hierarchy and population-level infantilization.

The ideology of individualism under these circumstances becomes a cynical and hypocritical posture: infants cannot be responsible for their own actions and their own fates.

Accelerated aging in the RTW system, compared with the non-RTW, means that diseases of old age kill earlier in the RTW system, many different diseases of old age, AD, and others such as CHD and stroke. What goes into accelerated aging? Separately and together, Geronimus and Blackburn identified structural stress as a major "weatherer" (Geronimus 1996; Geronimus et al. 2015; Steptoe et al. 2017).

McCord and Freeman (1990) taught the public health research community how to look at life expectancy difference and its context. McCord and Freeman found that men in Central Harlem had much lower life expectancy than men in middle-class neighborhoods of New York and defined the neighborhood context of this difference: housing, employment, education, violence, segregation, discrimination, and access to essential services (medical care, municipal services); residential stability for self, family, and friends; and the power to get necessities and services.

The low life expectancy in Central Harlem in 1980 arose out of linked public policies at the federal, state, and municipal levels that espoused segregation, discrimination, and persecution beyond discrimination (Wallace and Wallace 1998). In 2016/2017, we here examined recent patterns of life expectancy and early deaths from major killers over the 50 states and over the states within the two different systems, one that erects high barriers against union organizing and one that does not. The two systems are marked by presence/absence of Right-to-Work laws that reflect different cultures and ideologies, namely, collectivism and individualism.

The contexts of the large differences in life expectancies, mortality rates, and disease incidence include union participation, decline over the decades in participation, freeloading, as well as the general socioeconomic indicators such as median income, educational attainment, poverty, social capital, and income inequality. Besides conditions concurrent with or recent to the outcomes, certain historic elements continued to influence the outcomes such as GINI 1959, union participation in 1964, and percent adults with college or higher degrees in 2000. The past is channeled through present structure. Much of the post-war era social, economic, and political configurations find their way into the present, especially in the RTW system.

Nostalgia for the prosperous post-war era now endangers the progress made since that time in all aspects of American society. John Kenneth Galbraith described the economic and social life of the post-war era in *The Affluent Society* (reprinted 2010): good unionized jobs for the men, the ability to buy desired consumer goods and homes, educational opportunity for the children, and resultant social mobility. Chapter 1 of this book indulges in one author's own nostalgia and experience of that time, both good and bad.

Nostalgia and longing for a past golden age which may truly have been brass presents dangers to all sectors of society. Time's arrow flies only one way. You can't cross the same river twice. You can't go home again. Nostalgia and longing for a

mythical past by large portions of an infantilized individualistic population presents formidable dangers of return to a time of segregation, discrimination, misogyny, and loss of both workplace and community protections. The populations of the RTW states, by and large, reject the remedies that generated the good times and conditions of the post-war era. They support politicians who enact RTW laws. They, thus, won't unionize. They don't achieve higher educational attainment with college degrees or better and even scorn the educated. They reject science and prefer simplistic and demonizing religions. But, they howl about their own living conditions and job prospects. This is the ugly face of hierarchical individualism and the spoiled infants that it produces. Those of us who rose from poor families through hard work, union participation, and service to communities have a very hard time sympathizing with this dangerous lumpenproletariat.

Yet, this population arose out of the pressures of the hierarchical socioeconomic structure described by Wyatt-Brown as antebellum South. This is the population that learned helplessness because they had no freedom to exert power and nor the experience of witnessing the process and the dividends of exerting power. The only world they came to know imposed vastly unequal power relations and stasis so that any change is feared and hated. Leadership that opposes change, even change that equalizes power and increases equity, receives allegiance. Social mobility, immigration, greater education, and widening of political rights to all sectors evoke fear and hate. Avatars of change such as science and technology become targets of opprobrium. Stasis-supporting forms of religion gain allegiance also.

As the state and federal governments increase the national population that becomes deformed under this hierarchical, rigid system, the support for this system increases. However, the proportion of the national population that is marginalized under this system and not part of its support also increases. Thus, the makings of a new Civil War evolve without any present hint of whether either side can score a true victory.

There is also the question of whether important parts of either side can be swayed by "missionaries" from the other side. We now witness the present-day German government taking a stand against rabid anti-Moslem factions, whereas Germany had engaged in the Holocaust two generations previously. Some immense rehabilitation occurred over those two generations that can serve as a model for us. The allies occupied Germany for many years. Modern history texts describe the governance immediately after the war and leading up to the independence. Some may with justification note that East Germany never became completely independent of the USSR and that West Berlin itself continued under protection of the Western Allies. West Germany eventually became independent long before the fall of the Berlin wall that led to reunification. A reconstruction occurred, more thorough than that after the Civil War. War criminals were tried and punished.

A constitution was adopted with strong bans on genocide and on ethnic inflammatory rhetoric and actions. The political parties that arose embraced planks against the future rise of genocide and ethnic strife. Although a few states such as Bavaria retained religious preferences in their laws, this retention was reviewed carefully by

the national government so that it did not lead to persecution of the practitioners of "non-preferred" religions.

This is not to say that all is fine in Germany and that the populace uniformly treats guest workers and other immigrants well. However, the revulsion of the general public to Nazi policies and practices remains widespread and enforced.

The question of whether the methods that reconstructed Germany can reconstruct the United States assumes pressing importance in the light of the coming civil conflict. The post-Civil War Reconstruction did not last long enough to gain traction. Layers of culture underlay the waves of hierarchical individualism and egalitarian collectivism that seem to ripple consecutively through the United States. However, the latest apparent waves of egalitarian collectivism (the Clinton and Obama presidencies) may merely have been neoliberalism "with a human face." America may have been ruled by hierarchical individualism of different flavors since the election of Nixon, a triumph of Southern Strategy and Benign Neglect.

After all, financial regulations put into effect in the FDR presidency to prevent another Depression were undone by Bill Clinton. At this point, large numbers of Americans understand and are more comfortable with and practiced at navigating hierarchy and defined strata than equality and social mobility. They can answer the question: Who are you? Someone has already told them who they are, and they accept that label and those limitations of thought and action. They more than accept it; they positively snuggle up to it and feel great comfort in the certainty.

Yet, current conditions of rapid change steepen the hierarchical slope so that those who thought they should be secure and blessed with the American Dream (suburban house, cars, home entertainment center, restaurant meals a couple times a week, and a couple vacations a year) tread water desperately. The high school diploma no longer provides a meal ticket to a reasonable job. Because of the imposed identity, resistance to rigidity and change arises in the very context of social and economic changes. Change means becoming someone and something else. This demand for changes in job qualifications and in level of abilities is not supposed to happen. Certainty brings immense entitlement.

Change and resulting uncertainty arouse anger and fear. On top of imposed identity, the worker in the RTW system faces imposed social mobility: get educated and skilled or collect unemployment.

Anger and fear have to go somewhere. Someone or some institution has to bear the blame. Signifiers of change get that honor, even if they aren't the engines of change. Thus, ethnic and gender minorities that had stayed under the radar during the post-war era of prosperity but had become visible through civil rights movements get part of the blame. Of course, immigrants are accused of taking jobs. The entities with real power and real agency for change also have real ability to direct the attention of these angry, fearful workers to the flotsam and jetsam of change and not the true causes of change and the particular path of change. This blame game is like a person on a raft being swept downstream blaming the logs in the river for the current. In the mass blaming, there is a unity, a collectivity of anger and fear. Hierarchical, hypercapitalist individualism, thus, produces the mob, the collective of hate and violence.

No ideology will produce true individualism because humans are biologically and culturally social. In modern times, interaction among humans no longer entirely depends on proximity. We have the most connected global society in history. Paradoxically, those allergic to change withdraw from connection, and we have large pockets of isolation interrupting this global network of communication. The existence of isolated, small, intensely self-interacting social networks has no good outcome.

When the Nixon and Carter Administrations cooperated with local governments to withdraw essential services such as fire control from poor neighborhoods of color, the social structure of those communities slagged down as the physical basis of community was destroyed (Wallace and Wallace 1998). The young had neither social support nor social control for establishing identity and initiation into community. They formed gangs that established identity with violence and violation of norms. The spike in violent crime, HIV/AIDS, drug addiction, etc. in the 1980s– early 1990s came from the destruction of communities 1972–1978. A few cities such as Baltimore and Chicago continued these destructive policies and continue to suffer high rates of murder, drug addiction, and social disturbance.

The economic equivalent of community destruction occurred in the centers of industry and left the working class equivalent of angry youth gangs. The recent and current (early 2017) racial violence now has validation from those who benefit from it, the Trump presidency and the conservative legislature and their masters. But the roots of the new set of authority-encouraged gangs differ only a little from those of the ghetto youth gangs: public policies and private practices designed by the Permanent Neo-Liberal Government, whether the elected puppets pose as liberal Democrats or conservative Republicans.

Youth gangs and individual gang members have had "turnarounds." The Young Lords originally was a gang. Many former gang members reformed and mentored youth away from gang activity. Clergy have organized anti-gang programs with greater or less success. The advantage of these mentors depended on the ethos of mainstream society and of the gangs' neighborhoods: violence, theft, promiscuity, empty swaggering, and bullying were uniformly disapproved. The communities in the neighborhoods understood the reasons for the gangs but still disapproved and loathed the sense of constant threat. Once these communities were allowed to stabilize for about 15 years after the assault on them in the 1970s, they began building social support and control. Gang activity ebbed in many (but not all) neighborhoods. In cities where the officials continued to destabilize poor communities of color (notably Chicago and Baltimore), the violence continued and even grew. But most cities enjoyed greatly increased public health and safety, beginning in 1993.

A serious problem with respect to the spectrum of groups following the AltRight and the Trump appointees is that American society as a whole has not disapproved these groups or their actions. Additionally, the geographic fragmentation of ideology provides local support for these groups and their activities. Trump took a long time to voice disapproval of threats and vandalism directed at Jewish institutions, and that disapproval was weak. This sector of American policy aims to destroy much

of government and all institutions that service minorities, women, and the poor. The smoke screen is libertarianism, but the actions demonstrate virulent prejudices and goals of asserting power over the targeted sectors. Libertarianism supports individual liberties. The AltRight does not support liberties for any but itself. It does support a restructuring of the American hierarchy in a most reactionary fashion with society changing back to the antebellum Southern structure, as if that would bring back the post-war good times.

Union participation at high levels, innovations in manufacturing and in products, civil engagement, and governmental policies for economic stability, consumer protection, public health, and other vital aspects of national well-being souped up the post-war good times. One key to the good times was social mobility, anathema to Southern culture and the AltRight. Galbraith's economic and autobiographical writings describe how the Affluent Society came into being in detail. Rather than nostalgia and clinging to venerated economic theories, government and private agencies had to innovate and experiment with large and small projects and changes to stabilize employment, housing, and the currency (inflation prevention during and after the war, in particular).

Some policies masqueraded as innovation and improvement: redlining and urban renewal are prime examples. Far from innovation and improvement, these failed and destructive policies actually took America down nostalgia lane to keep people of color from gaining economic, political, and social capital.

Beware any policy that claims to be innovative and progressive but destroys local communities and disempowers lower classes. These post-war failed policies offer us important lessons in avoiding nostalgia. They were anti-adaptive and costly to society as a whole. They left gaping wounds in American economics and social stability that kept widening as the authorities kept re-victimizing the victims for the behaviors and community problems that arose consequent to the initial victimizations. In *White Jacket*, Melville described the traditional practice of flogging sailors for minor breaking of rules and noted that the rule breaking often occurred because of the impoverishment and debasement of the sailors. It was punishing the poor and disempowered for behavior that resulted from being poor and disempowered. It merely hardened the dysfunctional power relations on merchant marine ships. Likewise, the post-war failed policies hardened and normalized targeting of whole classes for disempowerment, debasement, and impoverishment.

The trajectory of adoption of failed post-war policies now broadens targeting to poor and middle-class whites. The slippery slope gets steeper with time, a steepening that accelerates in time. As technology advances to serve the ruling class (which gets smaller and smaller with time), the marginalized classes grow both quantitatively and qualitatively to the point where many citizens wonder if they live in a democratic republic at all. We know that marginalization spreads like a wine stain on a white tablecloth because the public health markers of marginalization spread: unsafe sex (indicated by chlamydia and gonorrhea), obesity and diabetes, violence, and chronic conditions of aging reaching down into younger age groups. Most convincing is the decline in life expectancy for middle-aged whites (Case and Deaton 2015).

The main contributing causes to this increase in mortality of middle-aged whites were "drug and alcohol poisoning, suicide, and chronic liver disease and cirrhosis." The increase in mortality distributed like a dose/response curve along the educational attainment spectrum, but all educational classes were affected. Furthermore, patterns of morbidity echoed those of mortality. Middle-aged non-Hispanic whites suffer chronic conditions that, in the past, had affected mainly elderly whites and elderly and middle-aged blacks and Hispanics.

The Republican legislators have begun an attack on all programs that acquire data on inequities in housing, finance, legal services, and public health. Thus, the truth of how widespread American suffering has developed would be hidden. Individuals, families, and communities would experience their suffering in apparent isolation under the defunding laws being proposed. Suffering would become a shameful condition, as it already somewhat is under the individualistic ideology of being responsible for one's own fate. If the truth shall make you free, freedom now collapses.

Yet, this country has risen to occasions of justice and mercy. The civil rights laws passed a divided legislature in the 1960s (the good times). Even of late, equal rights in marriage became constitutionally protected in a decision by a largely conservative Supreme Court. Certain states and cities maintain a tradition of egalitarianism, collectivism, adaption to changes, and creation of changes that enhance economic gains. The spread of high index of income inequality (GINI) to formerly fairer states bodes ill and must be reversed, but even high GINI does not mean the same thing in these egalitarian states because of social and political compensation and because of continued social mobility.

So the answer to the question of coping with the tide of ever deepening inequality and of the misdirecting of the resulting anger into hate for "outsiders" must consider the resources for coping as well as the forces for pseudo-individualism and feudal hierarchy. When a person habitually indulges in something that causes him/her problems but cannot stop, that person is classed as an addict. We know now that addiction covers not only the classical alcohol and drug abuse but also sex, computers, and computer-related activity like gaming, smartphone use, and other behaviors that become compulsive. It is no coincidence that the new wave of drug addiction arose at the same time as the addiction to social media and other technology-based intrusions. A huge proportion of the American population is addicted to something. Voting by the working class against its own economic and social interests signals the addiction to feudal hierarchy. Refusing unionization signals addiction to feudal hierarchy. The rise of feudal hierarchy also coincides with the new wave of drug addiction and of addiction to computer and smartphone technology. Mass addiction is a powerful force to combat.

In the American feudal hierarchy, "white trash males" occupy a place above people of color and all women. White women stand atop all people of color. Even the poorest white person ranks above someone in this hierarchy. Exercising power over the castes below addicts low-income whites to that power and lights up the reward centers of their brains. It resembles alcohol and drugs by allowing respites of triumph and euphoria from the long-term pain of powerlessness and treading

economic water. Saviano (2016) described the effects of a dose of cocaine and why cocaine use has become a tidal wave globally: the user feels powerful, competent, energetic, and effective. American feudalism lends these feelings to nearly all residents of European descent, no matter what their educational attainment, wealth, social connections, or talents. This exercise of crushing power delivers crippling blows to American economic development, democracy, international standing, and the future well-being of the major portion of the population. Because it is a national problem, it must be seen as a national destructive addiction like all the other troubling addictions – alcohol, drugs, sex, violence, smartphones, computers, and aimless adrenaline thrills. Indeed, this power addiction exists in comorbidity with the other addictions, all reinforcing each other.

Most addictions play out socially within a social network. The heroin epidemics of the 1970s and the AIDS epidemic spurred research into the social networks of addicts. Addictions become contagious in susceptible social networks, networks composed of people under stress and without the resources to cope with the pain. Alcoholics have long been known to drink together and to bond over the booze. In 1976, Hunt and Chambers wrote *The Heroin Epidemics* and demonstrated how heroin use and addiction spread along social networks. Since then, public health research on addictions searched for ways to stop this spread and even to infuse less risky behavior patterns along the paths of the networks. The Harm Reduction movement to minimize HIV transmission in networks of drug addicts exemplifies how knowledge of addicts' social networks translates into public health practice (Friedman et al. 2002). Frantz Fanon, however, believed that addictions cannot be cured, especially sociopathic ones like power abuse (Fanon 1966). So we are left with a prognosis of an incurable condition that is continually reinforced within social networks of the sufferers. Fanon's prescription was a shift of addiction to something less malevolent.

In late 2016/early2017, the American white working-class addiction to power abuse rose to new heights in response to the heightening economic and social losses of deindustrialization and deurbanization. These two destructive processes brought the density of susceptible individuals to levels above the epidemic threshold for rapid spread. Although power abuse addiction always seethed in the Southern states, it spread from this focus and can probably be tracked with the obesity epidemic, the marker of spread of structural stress. Spread of obesity from the Southern states began in the late 1980s and went into exponential phase by the mid-1990s (see the CDC maps and tables, if the Trump Administration hasn't removed them from the CDC website). Inability to cope with pain and desire to spread the pain to others form the basis of addiction. Structural stress arises out of dehumanizing power and economic relations and produces addiction to political and economic abuse of those on lower rungs of the socioeconomic ladder, even to the point of murderous violent outbreaks. Obesity is the overt and unhide-able marker of refusal to either fight or flee intolerable situations, a marker of bottled pain and anger/hate. Thus, we know the addiction and the foci of its spread. Do we know the preferable addiction to which it can be shifted?

Of course, we know the preferable addiction: labor and community activism, aka collectivity. The current addiction is to beat on those lower on the socioeconomic ladder. Beating on those higher on that ladder as a balance to abusive power relations at work and in the community can replace the feudalism that will destroy the country as a democratic republic. The Great Recession, like the Great Depression, arose out of economic and social abuse, out of unethical financial operations that transferred money from the poor, working, and middle classes to unsound financial institutions the leaders of which took massive salaries and perks while railroading the American economy into a cesspool.

The Great Recession and its offspring, the Foreclosure Crisis, formed the cherry on the American economic sundae of deindustrialization and deurbanization that was decades in the building. The poor suffered first and most intensely. Then the working class found itself floundering. Finally, the middle class could not make its car payments, its mortgage payments, its alimony, its child care, and its medical care. The Great Recession and the Foreclosure Crisis pushed the working and middle classes over the edge and into maddened reactionism/nostalgia, but the pressure increase had been accelerating for decades, since about 1965, according to the late Ullmann (1998). Actually, the first moves toward the current national disaster were redlining and urban renewal, frontal attacks on African-American communities all across the country. Attacks on poor communities of color meant nothing to white Americans except those who would profit from the constant selling and buying of houses and land. Of course, many white Americans, rabid with prejudice, rejoiced in the persecution of African-Americans, but for most with latent and unconscious prejudice, the process never turned up on their radar until the civil rights movement rubbed it in their faces.

Deurbanization preceded deindustrialization, but the two national erosions intertwined and reinforced each other as the housing crisis and the jobs crisis intertwined and reinforced each other over time further and further up the socioeconomic ladder.

The brief respite of the 1960s pushed back against parts of the deurbanization process, but since then, policies from Nixon forward accelerated the progression of the intertwined erosions: Southern Strategy, Benign Neglect, Reaganism, Welfare Reform, NAFTA, GATT, loosening of the very financial regulation put in place during the Depression to avoid another economic disaster, and spread of RTW laws. This toxic mix of policies aimed at crippling the power of lower classes and at seducing them into fighting each other.

Southern Strategy shifted federal funds to the South and to Northern suburbs and encouraged opening of new factories in the South and Southwest. The influx of money and large number of jobs destabilized these formerly sparsely populated areas with their largely agricultural social structure. Many Afro-Americans went back to the South to flee rising violent crime and drug epidemics. Many jobless white workers also migrated to the new concentrations of new jobs. Some returned back to the Rust Belt when they found that the new bosses treated workers badly and created bad working conditions (Pappas 1989). Economic and social instability in this boom for previously nonindustrial regions meant that social support and control were weak. Many migrants and natives acted out and indulged in risky behavior.

Boom towns were hot spots in the AIDS epidemic (Wallace et al. 1999). The bust towns of the Rust Belt also proved hot spots in the AIDS epidemic.

The international trade agreements, such as NAFTA and GATT with its World Trade Organization and Court, wrecked the South and Southwest, turning it rapidly into a bust by the late 1990s–early 2000s. Factories were closed, their places having been taken in northern Mexico, Honduras, India, China, Bangladesh, and other low-wage, low-regulated countries. Everything from cars to telephones to dresses was made largely out of the United States. Although American households sometimes paid an unexpectedly steep price for these bargains (dead pets from poisoned pet food, contaminated houses from sulfur-containing drywall, etc.), American consumers wanted cheap goods and got them. As workers, they wanted products to be made in the United States. As consumers, they wanted cheap goods and would buy foreign-made products.

So the heartland of feudal individualism, the South and Southwest, experienced boom and bust in about a mere quarter century. Neither the boom nor the bust was any bargain because the boom featured low levels of unionization with attendant low wages, lack of benefits, and unsafe worksites. The bust was unbuffered by union contracts with their provisions for severance pay and extended health insurance and by good unemployment benefits. Southern and Southwestern states have very low unemployment benefits in terms of both the weekly money and the number of weeks. This boom-and-bust scenario exacted a maximal dose of pain to the working class and to the local communities.

All along, since the Civil War, the white working class of the Southern and Southwestern states had been taught that people of color, Jews, uppity women, and welfare-recipients caused all their pain and that they were responsible for ending that pain, under the feudal individualistic world view. To end their pain, they had to put these sectors in their right place. If they still felt pain, they still had work to do to make things right. The presence of pain provided the evidence of disorder in their world and kinks in the class structure.

This addiction to ethnic, gender, and class hatred will bring eventual destruction to the addicts because the targets form the most rapidly increasing populations in the nation and even in the Southern and Southwestern states, a terrible reckoning looms in the near future, maybe 25–30 years from now. If unjust voting restrictions prevent resolution at the ballot box, it will be resolved in the streets like the anti-Communist revolution in Bucharest and other Romanian cities in 1989–1990 with street-by-street armed conflict. Because the armed forces increasingly employ minority men and women, the armed forces will not prove a bulwark against this reckoning. The events of the fall of the Communist Bloc should teach the pattern of how this revolution could play out. The white males who think of themselves as the real majority Americans will be in the minority and seen as un-American. Unjust white minority government cannot retain power forever. The historic trajectories of South Africa, Rhodesia, and the Belgian Congo demonstrate the varying outcomes of casting off unjust white minority rule, according to the means of the casting off.

The reckoning should not be avoided, and cannot be. The form it takes will determine whether this country can function as a whole society and political entity.

To shape this coming transfer of power and minimize its damage to the integrity and the future political health of the country, we must find the path to shifting the hate addiction. The Bible noted that the participants in the Exodus from Egypt and their descendants wandered in the wilderness for 40 years so that those of slavish spirit died out. Until a new generation that is not addicted to hate arises, we'll be wandering in an existential wilderness and need a secular Covenant to avoid hateful violence at every level of organization.

"Missionaries" have to grind into the brains of the addicted that you can't go back to the fleshpots of Egypt, i.e., indulge in the nostalgia for the good times, and that you must oppose Pharaoh and his chariots. Interventions to stop addiction can work only if the addict has reached a state where things are so bad that he/she knows something has to change. The "missionaries" have to get close to the addicts, bear witness to their sorrows and pain, and steadfastly promise that the addicts can themselves change the situation if they shift their addiction. They have to identify the Pharaoh in American hierarchy and acknowledge that Pharaoh's heart is very hard against most Americans. The "missionaries" have to lead the addicts in Socratic dialog to understand that their beating on those on lower socioeconomic rungs makes Pharaoh smile and grow more powerful. It only adds to their pain and their need to hate. Then, at least some addicts may shift their addiction to beating upward, a far less dangerous-to-society addiction than the other. The succeeding generations would have time to replace the addicts before massive damage occurs to the social and political fabric.

Who should these "missionaries" be? Intervention by a homogeneous team may not work. Labor unions, religious organizations, grassroots environmental groups, and working-class grassroots women's groups will have to form an alliance to tackle this national addiction. A combination of local and outside forces will be necessary because the addicts won't trust outsiders, but outsiders will see the dynamics and be able to compare them with those of other locales. This setup resembles organizing drives by unions and by religious missions. Local individuals get taken into an education and training program and then teamed with others from headquarters after completing the program successfully. The combination of locals and outsiders achieved massive voter registrations during the civil rights drives in the South, despite violence and even murders. Unions, civil rights and women's groups, religious organizations, and the other likely allies in this alliance will have histories of resilience in the face of violence and even murders. This conclusion does not come lightly or cavalierly. This country has far too many guns in far too many hands for anyone's safety, let alone the safety of organizers for causes on the ruling class's Forbidden List. Our history shows that open war can break out (the coalminers' unionization war in Harlan County, for example).

Epidemiologists understand that stemming an epidemic requires smothering the foci from which the disease spreads. Both political data and the maps of the obesity epidemic prove that the main focus of the frustrated anger epidemic lies in Mississippi, Alabama, and Louisiana. Although West Virginia also turned politically and has one of the highest prevalences of obesity, it is relatively isolated and showed

little or no direct spread. West Virginia will need attention, of course, but the first "missionary" effort must go to the major focus of spread.

Workers continue trying to unionize in these three states but face tremendous opposition from corporations (of course), government, some churches, and the hate addicts. Bernie Sanders visited a union rally in Mississippi in February 2017 to show support for this courageous attempt to better working conditions and workers' economics. To turn the tide, the network of worker-supporting organizations must mount an effort similar to the voting registration drives in the South in the 1960s, all the while aware that this effort would probably be met with threats of violence and with sporadic real violence. The voting drives moved forward with an alliance between local and national organizations, across ethnic, gender, and generational lines. Unionization, civil rights, and environmental campaigns will need that model of alliance in the major focus of this epidemic of hate addiction that the ideology of feudal pseudo-individualism has become.

These campaigns can also apply the research results on social networks, social media, community structure, linkages between levels of organization, and other sociopolitical dynamics gleaned during the AIDS epidemic, the elimination of small pox from the world, and commercial marketing of products and services. As the obesity maps from CDC demonstrate, addiction is a contagious behavior. Recent research hints that teenagers may shift from drug to iPhone addiction, another contagious behavior. Shifting from beating up the classes beneath one to beating upward could also diffuse along social networks, travel routes, through social media, and outward from centers of high density of hate addicts.

The campaign to shift addiction mode would be labor intensive, expensive, frustrating, and many years in the execution, especially with the powerful forces arrayed against such a shift. Nevertheless, it is a makeshift (excuse the pun) until the density of hate addiction drops below epidemic threshold across the whole country and, specifically, in the national and regional epidemic foci. If hatred addicts could be converted entirely from addiction, this epidemic would recede faster. In religious parlance, they would be "saved."

Drug addicts follow several trajectories. Some die young from drug-related illness or from overdose. Some use an alternative drug such as methadone but never change from addict status. Some gain remission through a behavior modification regime such as a 12-step program but must endlessly attend this regime and practice its rites daily; they may have relapses. Twelve-step programs shift dependence from the substance to the program itself. Some addicts simply walk away from the whole gestalt, not just the substance itself but also the substance-use social network and environment. This cold-turkey adieu comes with maturity and the assumption of social identity, often associated with marriage and parenthood (Martin et al. 2014). Social roles can minimize substance use and even shift addiction to family, work, and other aspects of adult responsibilities.

We are in a perilous time of widespread infantilization when the old marks of maturation such as marriage and parenthood no longer signal maturity. Shifting addiction becomes even more important in this context of adult infants without adult identities and authority.

Deurbanization and deindustrialization have threatened family, work, community, houses of worship, and local commerce for several decades now. This threat was realized first in poor neighborhoods of color and in rural areas where agriculture underwent industrialization and deindustrialization. The classes with power did not feel the pain of impoverishment and social disorder and ignored the problem. The unions felt it but did not develop either strategies or tactics to retard the processes. The unions also did not understand the relationship between deurbanization and deindustrialization. On the other hand, civil rights organizations also did not understand the relationship between deurbanization and deindustrialization. Now we face the consequences of addicts, who are addicted to family, work, and the social stasis of the nostalgic past, feeling the threat to their addiction and widening their addiction to include hatred of a perceived cause of the threat.

One important difference between the underlying cultures of RTW pseudo-individualistic states and the non-RTW states that experienced the Great Reform is whether or not the culture encourages rapid shifts in addiction. As mortals, we all have addictions because we all have a spiritual, psychological hole to fill and pain from our mortality and our often misguided ways to try to fill that hole. The rigidity, stasis, and hierarchy of the RTW ideology also freeze addictions just as it freezes social structure, power relations, and distribution of wealth. The hold that GINI 1959 and union participation in 1964 has over the socioeconomic functioning and public health status of the RTW states demonstrates the depth of the "freeze." The old targets of hatred can be easily revived for violence, injustice, and manipulation of the laws because the past is present for this culture, not as a source of experience and wisdom, but as a detailed pattern for living. This culture does not learn from past mistakes, but repeats them endlessly because they are past and, thus, models for the present.

The temporary triumphs of justice movements such as union organizing and civil rights laws took deep planning, persistence, courage, and alliance across many groups. Well, here we go again. We face perhaps a more serious foe because the wealth and power of America now lies in a smaller sector than during the 1960s. It can be used more quickly and more forcefully. But that concentration of wealth and power has left a large proportion of Americans marginalized and insecure. The question is how to organize in this new context with these deep divisions in modes of addiction.

The answer may lie in patient persistence as the truth of the social structure slowly seeps into the ken of the marginalized and insecure. The Grand Canyon is a product of long-term erosion. Even solid rock gives way under persistence. Successful missionaries have long relied on persistence. The Hebrew slaves in Pharaoh's Egypt waited for generations until they could organize the Exodus. Now the prophets of the lower and middle classes have to organize their exodus and to teach and preach patiently and persistently without condescension. These "missionaries" must respect their neighbors and co-workers, while they help these sufferers shift their addiction. Just as Alcoholics Anonymous shifts the alcoholic's addiction from booze to the 12-step program, the "missionaries" must shift the

nostalgic hater's addiction from the past to the present and future and from rigid hierarchy to economic equity, education, and social mobility.

Past movements achieved progress, however temporary. Analysis of how and why the achievement failed in time could help minimize the mistakes of the past in organizing. One mistake that popped up in both the labor and the civil rights organizing of the 1960s was reliance on a charismatic leader who made himself indispensable. Everyone dies or becomes feeble in old age and can no longer take on the leadership. A balance between central and decentral power within the organizing effort must overcome this easy slide into benevolent dictatorship that may turn non-benevolent and corrupt. To fight Pharaoh negates establishing a new Pharaoh, although decentralized operation and democracy are messy and slow moving. The deaths of Martin Luther King, Malcolm X, and Cesar Chavez greatly weakened their respective movements.

Refusing to rely on a single charismatic leader gives only one example of avoiding flaws of past movements that led to their weaknesses. Management science, the history of movements, social network analysis and theory, and many other sources of insight could help the organizers of the New Exodus to avoid weakness and build long-lasting strength, adaptability, and nimble response to change. These strategies and tactics rely on a culture of egalitarian adaptability which some may label evolutionary socialism. Spreading the culture into the foci and into the "heartland" would cause repeal of RTW laws, as hierarchical politicians would cease to be elected.

In view of the infusion of ever new addictions that isolate us from the people immediately around us, this prescription for a new movement based on egalitarian collectivism may appear utopian and unrealistic. Yet our survival as a democratic republic depends on it or something like it. Many of us who voted for Hillary Clinton in the 2016 presidential election went to the voting booth with a spiritual vomit bag handy. The Clintons had shored up neoliberalism for decades and ignored the pain from such pet projects as international trade agreements, abolishing of many financial regulations, and airy embrace of reindustrialization. They awarded Donna Shalala, an architect of deurbanization, with the leadership of Health and Human Services, giving her responsibility for dealing with the public health disaster that she herself caused. We have to do better and soon.

References

Allan J. 1998. Explanatory models of overweight among African merican, Euro-American, and Mexican American women. *West. J. Nurs. Res*., 20: 45–66.

Ahlborg A, Ljung T, Rosmond R, McEwen B, Holm G, Akesson H, Bjorntorp P. 2002. Depression and anxiety symptoms in relation to anthropometry and metabolism in men. Psychiatr Res, 112: 101–110.

American Diabetes Assn. website: www.diabetes.org/living-with-diabetes/complications.

Angelou M. 2009. The Heart of a Woman. Bantam Books: New York.

Antonijevic L, Murck H. Frieboes R, Horn R, Brabant G, Steiger A. 1998. Elevated nocturnal profiles of leptin in patients with depression. Psychiatr Res, 32: 403–410.

Barry D. 2016. The 'Boys' in the Bunkhouse: Servitude and salvation in the heartland, Harper, New York.

Bjorntorp P. 2001. Do stress reactions cause abdominal obesity and comorbidities? Obes. Res., 2: 73–86.

Bellah R, Madsen R, Sullivan W, Swidler A, Tipton S. 2007. Habits of the Heart: Inidividualism and Commitment in American Life. University of California Press: Oakland.

Brennan, J. 2016. United States income inequality: the concept of countervailing power revisited. Journal of Post Keynesian Economics, 39: 72–92. DOI: 10.1080/01603477.2016.114618.

Brunner E, Marmot M, Nanchahal K, Shipley M, Stansfeld S, Juneja M, Alberti K. 1997. Social inequality in coronary risk: central obesity and the metabolic syndrome. Evidence from the Whitehall II study. Diabetologia, 40: 1341–1349.

Bureau of Labor Statistics inflation: https://www.bls.gov/bls/inflation.htm

CARR. 2017. Community and Regional Resilience Institute. www.resilientus.org. Accessed May 30, 2017.

Casaneuva F, Dieguez C. 1999. Neuroendocrine regulation and actions of leptin. Front. Neuroendocrinol., 20: 317–363.

Case A, Deaton A. 2015. Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century.
www.pnas.org/cgi/doi/10.1073/pnas.1518393112.

CDC website obesity: https://www.cdc.gov/obesity/downloads/obesity_trends_2010.pdf.

Chadwick E. 1842. Report from the Poor Law Commission on an Inquiry into the Sanitary Condition of the Labouring Population of Great Britain.
www.victorianweb.org/history/chadwick2. Html.

Cheng T, Lin C, Lu T, Kawachi I. 2012. State differences in the reporting of diabetes-related incorrect cause-of-death causal sequences on death certifications. Diabetes Care, 35: 1572–1574.

Chrousos G. 2000. The role of stress and hypothalamic-pituitary-adrenal axis in the pathogenesis of the metabolic syndrome: neuro-endocrine and target tissue causes. Int. J. Obes. Relat. Metab. Disord., 24(suppl 2): S50-S55.

Cohen A. 2010. Nothing to Fear: FDR's Inner Circle and the Hundred Days That Created Modern America. Penguin Books: New York and London.

Dee D et al (16 authors). 2017. Trends in repeat births and use of postpartum contraception among teens - United States, 2004–2015. Morb Mortal Wkly Rep, 66: 422–426.

Dubose R, Dubose J. 1953. The White Plague: Tuberculosis, Man and Society. Little, Brown and Company: Boston.

Elovainio, M., Ferrie, J., Singh-Manoux, A., Gimeno, D., De Vogli, R., Shipley, M, Vahtera, J., Brunner, E., Marmot, M., Kivimaki, M. 2009. Cumulative exposure to high-strain and active jobs as predictors of cognitive function: the Whitehall II study. Occup. Environ. Med, 66: 32–37.

Elovainio, M., Singh-Mantoux, A., Ferrie, J., Shipley, M., Gimeno, d., De Vogli, R., Vahtera, J., Jokela, M, Marmot, M., Kivimaki, M. 2012. Organizational justice and cognitive function in middle-aged employees: the Whitehall II study. J. Epidemiol., Community Health, 66: 552–556.

Erikkson J, Forsen T, Tuomilehto J, Winter P, Ormond C, Barker D. 1999. Catch-up growth in childhood and death from coronary heart disease: longtudnal study. BMJ, 318: 427–435.

Fanon F. 1966. The Wretched of the Earth. Beacon Press: Boston.

Friedman S, Curtis R, Neaigus A, Jose B, Des Jarlais D. 2002. Social Networks, Drug Injectors' Lives, and HIV/AIDS (AIDS Prevention and Mental Health). Springer: New York.

Galbraith, J.K. 2010 reprinting. The Affluent Society and Other Writings 1952–1967. The Library of America: New York: pp 5–6.

Galbraith, JK. Reprinted 2010 (original latest edition 1998). The Affluent Society. The Library of America. Distributed by Penguin Books: New York and London.

Geronimus A. 1996. Black/white differences in the relationship of maternal age to birthweight: a population-based test of the weathering hypothesis. Soc.Sci.Med., 42: 589–597.

Geronimus A, Pearson J, Linnenbringer E. Schulz A, Reyes A, Epel E, Lin J, Blackburn E. 2015. Race-ethnicity, poverty, urban stressors, and telomere length in a Detroit community-based sample. J. Health. Soc. Behavior, 56: 199–224.

Ginsberg-Fellner F, Jagendorf L, Carmel H, Harris T. 1981. Overweight and obesity in preschool children in New York City. *Am. J. Nutr.*, 34: 2236–2241.

Granovetter M. 1973. The strength of weak ties. Am. J. Sociol., 78: 1360–1380.

Griscom J. 1844 (reprinted 1970). The Sanitary Condition of the Laboring Population of New York. Arnold Press: New York.

Haghrian P. 2010. Understanding Japanese Management Practices. Business Expert Press: New York.

Holling, C. 1973. Resilience and stability of ecological systems. Ann. Rev. Ecol. Syst., 4: 1–23.

Holling, C. 1992. Cross-scale morphology, geometry, and dynamics of ecosystems. Ecol. Monogr., 41: 1–50.

Houseknecht K, Baile C, Matteri R, Spurlock M. 1998. The bilogy of leptin: a review. J. Anim. Sci., 76: 1405–1420.
    https://nrtwc.org.
    https://www.nytimes.com/interactive/2014/03/09/us/the-boys-in-the-bunkhouse.html.

Hunt L, Chambers C. 1976. The Heroin Epidemics. Spectrum Publications (John Wiley and Sons): New York.

Institute of Medicine. 2003. Deadly Lessons: Understanding lethal School Violence. The National Academies Press: Washington DC.

Iqbal J, Pompolo S, Murakami R, Clarke I. 2000. Localization of long-form leptin in the somatostatin-containing neurons in the sheep hypothalamus. Brain Res, 887: 1–6.

Ives, A. 1995. Measuring resilience in stochastic systems. Ecol. Monogr., 65: 217–233.

Kelly, S., 2015, Estimating economic loss from cascading infrastructure failure: a perspective on modelling interdependency, Infrastructure Complexity 2:7 (Open access online).

Komarovsky M. 1987. Blue Collar Marriage. Yale University Press: New Haven.

Lahti J, Raikkonen K, Personen A, Heinonen K, Kajantie E, Forsen T, Ormond C, Barker D, Erikkson J. 2010. Prenatal growth, postnatal growth, and trait anxiety in late adulthood - the Helsinki Birth Cohort. Acta Psychiatr Scand, 121: 227–235.

Leontief, W., 1986, Input-Output Economics, Oxford University Press, New York.

Long G. 2013. Differences between union and nonunion compensation. Monthly Labor Review, April 2013: 16–23.

Loomis D, Schulman M, Bailer J, Stainback K, Wheeler M, Richardson D, Marshall S. 2009. Political economy of US states and rates of fatal occupational injury. Am J. Public Health, 99: 1400–1408.

Lord G, Matarese G, Howard J, Baker R, Bloom S, Lechler R. 1998. Leptn modulates the T-cell immune response and reverses starvation-induced immunosuppression. Nature, 394: 897–901.

Lottenberg S, Gianella-Neto D, Derendorf H, Rocha M, Bosco M, Bosco A, Carvalho S, Moretti A, Lerario A, Wajchenberg B. 1998. Effect of fat distribution on the pharmacokinetics of cortisol in obesity. Int. J. Clin., Pharmacol. Ther., 36: 501–505.

Marmot M, Bosma H, Hemingway H, Brunner E, Stansfeld S. 1997. Contribution of job control and other risk factors to social variations in coronary heart disease incidence. Lancet, 350: 235–239.

Marmot M, Fuhrer G, Ettner S, Marks N, Bumpass L, Ryff C. 1998. Contribution of psychosocial factors to socioeconomic differences in health. Milbank Quarterly, 76: 403–448.

Martin J, Schelb W, Snyder R, Sparling J. 1992. Comparing the practices of U.S. and Japanese Companies: the implications for management accounting. Management and Accounting Web. maaw.info/articleSummaries/ArtSumMartin92.htm.

Martin M, Blozis S, Boeninger D, Masarik A, Conger R. 2014. The timing of entry into adult roles and changes in trajectories of problem behaviors during the transition to adulthood. Dev. Psychol., 50: 2473–2484.

McCord C, Freeman H. 1990. Excess mortality in Harlem. N. Eng. J. Med., 322: 173–177.

Melman, S. 1971. The War Economy of the United States. St. Martin's Press: New York.

Miller, R., P. Blair, 2009, Input-Output Analysis: Foundations and Extensions, Second Edition, Cambridge University Press, New York.

Mokdad A, Serdula M, Dietz W, Bowman B, Marks J, Koplan J. 1999. The spread of the obesity epidemic in the United States, 1991–1998. J. Am. Med. Assoc., 282: 1519–1522.

Nakamura K, Shimai S, Kikuchi S, Takahashi H, Tanaka M, Nakano S, Motohashi Y, Nakadaira H, Yamamot M. 1998. Increases in body mass index and waist circumference as outcomes of working overtime. Occup Med (Lond.), 48: 169–173.

Newcomer J, Selke G, Melson H, Gross J, Vogler G, Dagogo-Jack S. 1998. Dose-dependent cortisol-nduced increases in plasm leptin concentrations in healthy humans. Arch. Gen. Psychiatry, 55: 995–1000.

Nrtw faqs: www.nrtw.org/right-to-work-frequently-asked-questions/ accessed May 31, 2017.

Nrtw states: www.nrtw.org/right-to-work-states/ accessed May 31, 2017.

Nyirenda M, Seckl J. 1998. Intrauterine event and the programming of adult disease: the role of fetal glucocorticoid exposure. Int. J. Mol. Med., 2: 607–614.

NY Times. 2016. WITW staff. Maternal mortality rates in Texas doubled after state cut funding to Planned Parenthood. Nytlive.nytimes.com/womenintheworld/2016/08/19/maternal-mortality-rates-in-Texas-doubled-after-state-cut-funding-to-Planned-Parenthood. Accessed Apr 1, 2017

Pappas G. 1989. The Magic City. Cornell University Press: Ithaca.

Phillips D, Fall C, Cooper C, Norman R, Robinson J, Owens P. 1999. Size at birth and plasma leptin concentrations in adult life. Int. J. Obes. Relat. Metab. Disord., 23: 1025–1029.

Putnam R. 2001. Bowling Alone: The Collapse and Revival of American Community. Touchstone Books (Simon & Schuster): New York.

Rosmond R, Bjorntorp P. 1998. Endorine and metabolic aberrations in men with abdominal obesity in relation to anxio-depressive infirmity. Metabolism, 47: 1187–1193.

Rosmond R, Bjorntorp P. 1999. Psychosocial and socio-economic factors in women and their relationship to obesity and regional body fat distribution. Int. J. Obes. Relat. Metab. Disord., 23: 138–145.

Rosner D. 1995. Hives of Sickness. Rutgers University Press: New Brunswick.

Ryan-Ibarra S, Sanchez-Vaznaugh E, Leung C, Induni M. 2016. The relationship between food insecurity and overweight/obesity differs by birthplace and length of US residence. Public Health Nutr., Nov 18: 1–7. DOI:10-1017/S1368480016002858. PMID: 27890021. E-pub ahead of print.

Saviano R. 2016. ZeroZeroZero. Look at Cocaine and All You See Is Powder. Look Through Cocaine and You See the World. Penguin History: New York.

Schempf A, Stobino D, O'Campo P. 2009. Neighborhood effects on birthweight: an exploration of psychosocial and behavioral pathways in Baltimore. Soc. Sci. Med., 68: 100–110.

Spiegel K, Leproult R, Van Cauter E. 1999. Impact of sleep debt on metabolic and endocrine function. Lancet, 354: 1435–1439.

Steptoe A, Hamer M, Lin J, Blackburn E, Erusalimsky J. 2017. The longtudnal relationship between cortisol responses to mental stress and leucocyte telomere attrition. J. Clin. Endocrinol. Metab., 102: 962–969.

Ullmann J. 1998. The Anatomy of Industrial Decline. Greenwood-Quorum Books: Westport.

US Census poverty
https://www.census.gov/topics/income-poverty/poverty/guidance/poverty-measures.html

Wallace D, Wallace R. 1998. A Plague on Your Houses: How New York City Was Burned Down and National Public Health Crumbled. Verso Publications: London.

Wallace, D., Wallace, R., 2000, Life and death in Upper Manhattan and the Bronx: toward an evolutionary perspective on catastrophic social change, Environment and Planning A, 32:1245–1266.

Wallace, D., Wallace, R. 2008. Urban systems during disasters: factors for resilience. Ecology and Society. https://www.ecologyandsociety.org/vol13/iss1/

Wallace R, Ullmann J, Wallace D, Andrews H. 1999. Deindustrialization, inner-city decay, and the diffusion of AIDS in the USA. Environ. Plan. A, 31: 113–139.

Wallace, R., Wallace, D., Ahern, J., Galea, S., 2007, A failure of resilience: Estimating response of New York City's public health ecosystem to sudden disaster, Health and Place, 13:545–550.

Wallace R, Wallace D. 2016. Gene Expression and Its Discontents: the Social Production of Chronic Disease, Second Edition, Cham, Switzerland: Springer International Publishing.

Wallace D, Wallace R, Rauh V. 2003. Community stress, demoralization, and body mass index: evidence for social signal transduction. Soc. Sci. Med., 56: 2467–2478.

Wang, H., Wahlberg, M., Karp, A., Winblad, B., Fratiglioni, L. 2012. Psychosocial stress at work is associated with increased dementia risk in late life. Alzheimers Dement., 8: 114–120.

Wilkinson R. 1996. Unhealthy Societies: the Afflictions of Inequality. Routledge: London.

Wing S, Hayes C, Heiss G, John E, Knowles M, Riggan W, Tyroler H. 1986. Geographic variation in the onset of decline in ischemic heart disease mortality in the United States. Am. J. Public Health, 71: 1404–1408.

Wyatt-Brown B. (2007 Kindle edition). 1982. Southern Honor: Ethics and Behavior in the Old South. Oxford University Press: Oxford.
www.lni.wa.gov/Tradeslicensing/Apprenticeship/About/History.
www.alz.org/alzheimers_disease_causes_risk_factors. Accessed May 30, 2017.
www/oecd.org/els/soc/C_2_child_Poverty.pdf

Data Sources

Economic

GINI 1959: Langer L. 1999. Measuring income distribution across space and time in the American states. Soc Sci Q, 80: 55–67.

GINI 2010: US Census Bureau. 2011. Household Income for States: 2009 and 2010. ACSBR/10-02.

Gross Domestic Product 2014: http://www.bea.gov

Median income 2014: http://www.advisorperspectives.com/dshort/updates/2015/09/18/median-household-income-medianhhincomes-by-state

Poverty rate 2010: Table 1. Bishaw, A. 2012. Poverty: 2010 and 2011. ACSBR/11-01.

Poverty rate 2015: Wikipedia.

Public assistance 2012: Table 1. Irving, S.K. 2014. Public Assistance Receipt: 2000 to 2012. ACSBR/13-13.

Unemployment, 2015: https://www.bls.gov/web/laus/laumstrk.htm. Accessed Sept 30, 2016

U6 Unemployment rate, 2015: https://www.bls.gov/opub/ted/2016/u-3-and-u-6-unemployment-by-state-2015.htm

Union participation 1964: stat.bls.gov/opub/m/r/2001/07/ressum2.pdf

Union participation 1985, 1995: www.allcountries.org/uscensus/714_labor_union_membership_by_state.html

Union participation 2004:www.bls.gov/news.release/archives/unions_01272005.pdf

Union participation 2010: table 5. www.bls.gov/news.release/union2.to5.html

Annual union participation and representation 2005–2015: DoL table 5. Also www.unionstats.com

Demographic

Population 2014: CDC WONDER compressed mortality files

Education/Social

Percent adults without high school diploma 1990, 2000, 2009, 2011
   Percent adults with college degree or higher 1990, 2000, 2009, 2011
   www.census.gov/compendia/statab/2012/tables/12so33.pdf
   Social Capital 2000: Putnam R. 2002. Bowling Alone, The Collapse and Revival
of American Community.Simon & Schuster: New York.
   Political Engagement
   Voting participation 2012: elections.gmu.edu/Turnout_2012G.html
   Voting participation 2014: elections.gmu.edu/Turnout_2014G.html

Health and Safety Data Sets and Their Sources

Life Expectancy and Death Rates
   Total life expectancy 2015
   Male life expectancy 2015
   Female Life expectancy 2015
   www.worldlifeexpectancy.com/usa
   All mortality rates (all-cause, coronary heart, non-specified stroke, diabetes,
mortality 1–4, mortality 5–9, mortality 10–14, Alzheimer's Disease mortality):
CDC WONDER compressed mortality files
   Obesity and Diabetes Prevalence
   Obesity prevalence 2004: F as in Fat 2005. Trust for America's Health.
Healthyamericans.org/reports/obesity2005
   Obesity 2007–2009:
   www.rwjf.org/en/about_rwjf/newsroom/newsroom-content/2011/new-report-
adult-obesity-increases-in-16-states-in-the-past-year.html
   Obesity prevalence 2015: stateofobesity.org/rates. Accessed Oct 14, 2016.
   Diabetes prevalence: gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html. Accessed
Oct 17, 2016.
   Child Health and Mortality
   Infant mortality 2015: Kaiser website
   Low-weight birth incidence 2015:
   https://www.cdc.gov/nchs/pressroom/sosmap/lbs_births/lbw.htm, accessed Nov
16, 2016

Risk Behaviors

traffic fatality incidence: www.iihs.org

homicide   incidence: https://www.cdc.gov/nchs/pressroom/sosmap/homicide.htm

% adults not eating vegetables daily

www.livescience.com/53074-maps-whos-eating-fruits-veg.html

Laws governing contraception and abortion: website of Guttmacher Institute

Information on drug overdoses and state reporting thereof:

http://www.cdc.gov/drugoverdose/data/statedeaths.html.

Births to teenagers: http://thenationalcampaign.org

Gonorrhea incidence 2014: www.cdc.gov/std/stats14/gonorrhea.htm

Chlamydia incidence 2014: www.cdc.gov/std/stats14/chlamydia.htm

Binge drinking prevalence: http://www.cdc/gov/alcohol (accessed Jan 20, 2017)

Adult cigarette smoking 2014:

https://www.tobaccofreekids.org/research/factsheets.pdf0176.pdf

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