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ABSTRACT

In social science research, household income is widely used as a stand-in for, or approximation to, the economic well-being of households. In a parallel way, income-inequality has been employed as a stand-in for inequality of economic well-being, or for brevity, "economic-inequality." But there is a force in market economies, ones with extensive amounts of monopoly, like the United States, which leads income-inequality to understate economic-inequality. This force has not been recognized before and derives from how monopolies behave. Monopolies, of course, raise prices. This reduces the purchasing power of households, or the value of their income. But monopolies, in fact, reduce the purchasing power of low-income households much more than high-income households. What has not been recognized is that, in many markets, as monopolies raise the prices for their goods, they simultaneously destroy substitutes for their products, low-cost substitutes that are purchased by low-income households. In these markets, then, while high-income households face higher prices, low-income households are shut out of markets, markets for goods and services that are extremely important for their economic well-being. It often leaves them with extremely poor alternatives, and sometimes none, for these products. Some of the markets we discuss include those for housing, financial services, and K-12 public education services. We also discuss markets for legal services, health care services, used durable equipment and repair services. Monopolies that infiltrate public institutions to enrich members, including those in foster care services, voting institutions and antitrust institutions, are also discussed.

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*The views expressed herein are those of the authors and not necessarily those of the Federal Reserve Bank of Minneapolis or the Federal Reserve System. The material in this essay is taken from James A. Schmitz, Jr., "Monopolies Inflict Great Harm on Low- and Middle-Income Americans," Federal Reserve Bank of Minneapolis Staff Report 601, May, 2020a. References to work cited in this essay, and more references and analysis related to this essay, can be found there. A few additional references are given at the end of this essay. I thank Mark Bils for many helpful discussions about monopoly over the last few decades.

In social science research, household-income is widely used as a stand-in for, or approximation to, the economic well-being of households (Sen, 1997). In a parallel way, income-inequality is employed as an approximation for inequality of economic well-being, or for brevity, "economic-inequality."

But there is a force in market economies, ones with extensive amounts of monopoly, like the United States, which leads income-inequality to understate economic-inequality. This force has not been recognized before, and derives from how monopolies behave.

Monopolies, of course, raise prices, reducing the purchasing power of households, or the value of their income. But monopolies, in fact, reduce the purchasing power of low-income households much more than high-income households. What has not been recognized is that, in many markets, as monopolies raise the prices for their goods, they simultaneously destroy substitutes for their products, low-cost substitutes that are purchased by low-income households. In these markets, then, while high-income households face higher prices, low-income households are shut out of markets, markets for goods and services that are important for their economic well-being. It often leaves them with poor alternatives, and sometimes none, for these products. The value of income for low-income households, what they can buy with their income, dramatically falls as compared to that of high income households.

It is this behavior of monopolies, then, which means income-inequality understates economic-inequality, perhaps seriously so.

The concept of economic well-being is meant to capture, in very broad terms, the economic situation of a household. Economic well-being depends on many factors, including the quality

of education that the household's children are receiving, the health of household members, the type of shelter where they live (including characteristics of the area, such as the extent of criminal activity and pollution in the area), the life expectancy of household members, and the types and amounts of goods the household consumes (like food and clothing).

Household income is widely used as a stand-in for economic well-being because: (1) Income is an important means by which families acquire many of those things that determine economic well-being; (2) Statistics on household income are readily available over time and across countries (and within countries, across regions); and (3) Constructing direct measures of household economic well-being is difficult.

Our analysis focuses on the United States. Below we discuss some of the many U.S. markets where monopolies, as they raise prices, kill low-cost substitutes that are purchased by low-income households. Some of the markets we discuss include housing, financial services and legal services. Also discussed are markets for health care services, used durable equipment and repair services. Another good discussed, one that approaches shelter in terms of its importance for well being, is education of children, in particular, K-12 public education. Monopolies that infiltrate public institutions to enrich members, including those in foster care services, voting institutions and antitrust institutions, are also discussed.

Our concept of monopoly is a broad one. Such a concept of monopoly was widely used during the first half of the 20th century, by historians, political scientists, economists, and the public more generally. A monopoly is a concentration of economic (and political) power. It is "built up" through the efforts of individuals, and groups of individuals, to pursue their goal of enriching themselves. The groups use methods to enrich themselves that are often

illegal. But since these groups often maneuver themselves into positions to "make" laws, a more general criteria is needed to judge the actions of these groups.

Historically, then, monopolies were known to take many forms. Today, the term "monopoly" typically conjures up a single type of organization — the giant corporation. Of the many monopolies we discuss below, only a small handful are giant organizations. Rather, the vast majority are organizations such as trade associations, professional associations and union-management organizations. In fact, some monopolies we discuss have no formal organization at all, though they are powerful ones, and inflict great harm on low-come Americans.

In this introduction, we briefly sketch a few of these markets where monopolies kill low-cost substitutes as they raise prices, providing more detail on them, and other such markets, below. The markets we sketch in the introduction are those for housing, legal services, oral health services and K-12 public education.[1]

Housing is, of course, an extremely important good for the well-being of families. But monopolies in the residential construction industry have thwarted the ability of markets to provide decent and affordable housing for low-income households. Monopolies in the traditional construction industry, sometimes called "stick-built" construction, where houses are constructed outside, have been sabotaging and destroying low-cost substitutes for their products for 100 years — low-cost substitutes produced with factory-methods of production.

There is a long list of monopolies in traditional construction that have participated in this sabotage but, over the last 50 years, those inflicting the greatest damage have been the Na-

[1] Again, after this introduction, we'll return to further discuss these four industries. At that point, we'll provide some statistics (and references) to support the discussion.

tional Association of Home Builders (NAHB) and groups within the Department of Housing and Urban Development (HUD), groups that have made alliances with the NAHB. The monopoly, the concentration of power, has been organized, then, through the trade association of the traditional builders.

Factory-built methods have a range of advantages over traditional methods. First, factory production methods can produce homes at one-third to one-half the square footage costs of traditional methods. Second, factory methods are able to "go small." That is, factory methods are able to "profitably" produce modular homes of small sizes. What matters for the "profitability" of a factory in producing homes is the extent of capacity utilization, not the size of house. In contrast, with traditional methods, making houses one-at-a-time, the "profitability" of the method requires that houses be above some size.

Figures 1 and 2 present pictures of small-modular homes made in factories. These homes are often referred to as *manufactured homes*, this being a name given to them by HUD. We prefer to call them *small-modular homes*. Monopolies in traditional construction have employed massive amounts of misinformation as part of their program to sabotage factory homes, including using terminology that plays on old prejudices. The term "manufactured home" is tied in with this deceit, so we use the terminology small-modular home instead.[2]

In a competitive residential construction industry, these small-modular homes would be widely available. But monopolies in the traditional construction sector have blocked these types of houses from most areas of the country – it's simply illegal for a household to purchase such a home, and place it on land owned by the household. In areas where they

[2] We discuss these issues in detail in Fettig and Schmitz (2020) and Schmitz (2020a, 2020b).

are "allowed," they are often zoned for areas like manufacturing districts and dumps. Even then, regulations mean higher production costs for these homes in factories. They also mean the homes are financed as automobiles, with personal loans, and not real estate loans.

While monopolies in traditional construction may raise the price of high-end homes built with traditional methods a bit, they leave low-income households with awful alternatives – and housing crises.[3] The case of housing, then, demonstrates how monopolies reduce the value of income for low-income households much more than they reduce it for high-income households. The case of monopoly sabotage of low-cost substitutes in housing alone, in fact, means that income-inequality "significantly" understates economic-inequality.[4]

Consider legal services. It's obvious that housing is an extremely important good for household well-being. Though not as widely recognized, so is legal advice. Paradoxically, perhaps, low-income households have a greater need for legal advice than high-income households. As a study of the legal needs of low-income New Yorkers points out: "Our society has evolved in a way that makes access to legal services increasingly crucial to handling the emergencies which routinely beset poor persons. Whereas people of means can regard the service of a lawyer as an optional convenience to be availed of only in certain relatively well defined circumstances, the poor paradoxically live in circumstances in which they need legal services more but can obtain them less. Typically, their needs for legal services are not in any sense optional but rather deal with access to essentials of life."[5]

[3] While traditional producers of homes have developed significant monopoly power (in their trade association, NAHB) to sabotage factory-homes, they still face competition among themselves, limiting price increases. Some industry observers "see" this competition among traditional producers and conclude the residential construction industry is competitive. It's anything but.

[4] Below we discuss what we mean by "significantly."

[5] As suggested in this quote from the New York State report, the consequences of having no legal protection

But lawyer-monopolies, including state bar associations, have blocked low-cost “mid-level” legal professionals from providing legal advice, substitutes that the low-income would purchase. These monopolies are instrumental in passing Unauthorized Practice of Law (UPL) statutes that prohibit a non-lawyer from giving legal advice of any kind, whether paid or not. A whole range of mid-level professionals including paralegals (who must be employed by lawyers) are blocked from providing advice to low-income households. Some professionals would offer free advice in the course of regular duties, such as advocates for victims of domestic violence when helping clients. But lawyer-monopolies, literally, ban all substitutes. The monopolies, the concentrations of power, have been organized through the professional associations of lawyers.

In the United States, legal aid for low-income households is only guaranteed for criminal matters, not civil ones. As a consequence of lawyer-monopolies, the vast majority of low-income households have no access to legal advice on civil matters. The impact of the lawyer-monopoly closely matches the consequences of monopoly laid out at the start. When mid-level professionals are blocked, those households that would see lawyers in any case, that is, high-income households, pay somewhat higher prices for lawyers. But low-income households are entirely shut out of markets for legal advice. The case of legal services, then, just as in housing, demonstrates how monopolies reduce the value of income for low-income households much more than they reduce it for high-income households.

Consider oral health services. A healthy mouth and teeth are obviously also an important

are severe. A hundred years ago, Reginald Heber Smith (1919) discussed the consequences of lack of legal protections, a description that remains accurate: “Because law is all-embracing, the denial of its protection means the destruction of homes through illegal foreclosures, the loss through trick or chicanery of a lifetime’s savings, the taking away of children from their parents by fraudulent guardianship proceedings ...”

part of household well-being. Tooth pain, of course, directly lowers well-being. But it also negatively impacts student attention and performance at school, as well as in job settings. In addition, poor oral health is increasingly being recognized as a factor in poor overall health.

As with lawyer-monopolies, dental-monopolies, such as state dental associations, have blocked mid-level professionals from providing oral health services. These professionals would provide low-cost substitutes that low-income households would purchase. The professionals include dental therapists, professionals trained to fill cavities; denturists, professionals that make and fit dentures; and dental hygienists, who are blocked from practicing independently of dentists, that provide education, teeth cleaning, and other preventive-type services.

Blocking these mid-level professionals means many areas of the country have few, if any, oral health professionals, as few dentists practice in the areas, and mid-level professionals are barred from doing so. In these areas, low-income households have limited access to oral health care.[6] These areas include rural and urban locations, and are officially called Health Professional Shortage Areas. In areas *with* dentists, many low-income households also have little access to oral health care. While these households may have public insurance, dentists often will not accept such insurance, one reason being low reimbursement rates.

The case of oral health services, then, just as in housing and legal services, demonstrates how monopolies reduce the value of income for low-income households much more than they reduce it for high-income households. Just as in legal services, when mid-level professionals are blocked, those households that would see dentists in any case, that is, high-income households, pay somewhat higher prices for dentists. But blocking these professionals means

[6] High-income households, by contrast, typically have better transportation options, and have greater access to oral health services.

low-income households must struggle to gain access to oral health care. Just as in legal services, the monopolies, the concentrations of power, in oral health services have been organized through the professional associations of dentists.

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There is another aspect of monopoly behavior, not recognized as well, that reduces the buying power of households. In particular, monopolies reduce the productivity of the monopolized industry itself. While this reduces the buying power of all groups, it often reduces the value of income for low-income households much more than for high-income households.

When monopolies kill substitutes, as described above, they are blocking competition from "outsiders." But to the extent the monopoly is successful, and leads to profits for "members," this naturally leads to competition among "insiders." Individuals and groups of individuals in the monopoly have incentives to capture greater shares of profits. In order to insure that monopolies don't collapse from this internal conflict, monopolies introduce mechanisms to limit competition among insiders.[7] The mechanisms limit the actions that insiders can take. The mechanisms typically lower innovation and productivity.

Consider oral health services again. Dentist-monopolies have imposed significant restrictions on the actions that dentists can take. The monopolies, for example, are instrumental in passing laws that limit the size of dental practices, thereby limiting competition. They limit the number of hygienists a dentist can hire. Other laws limiting expansion include

[7] There may be other conflicts in a monopoly other than those over profits. Some groups in the monopoly may even attempt to stop the monopoly from sabotaging low-income substitutes. Groups of audiologists, for example, have been attempting to roll back monopolies in the hearing aid industry (see below).

those prohibiting non-dentists from owning or managing a dental practice, thereby limiting financial and managerial inputs. These laws limit productivity and innovation.

An extremely important illustration of this phenomenon is the case of Sarrell Dentistry, an innovative dental group in Alabama. Sarrell saw a great need for oral health care among low-income children in Alabama. Though many low-income children had public insurance, many didn't live near dental practices. For those that could travel to a dentist office, many providers didn't accept public insurance. Given that access to care was so limited, Sarrell realized that by opening clinics in areas where dentists had not been available, by having many dental-chairs at each clinic, and by keeping chairs in use most of the day, it could achieve high volumes of patient care. That was its insight: Achieving high volumes of care, even at low reimbursement rates, could be a successful model.

But dentists at Sarrell ran afoul of other dentists in Alabama. The Alabama Dental Association argued that Sarrell broke laws on how a dental clinic could be operated, laws that limit competition among dentists. Fortunately, after a hard fight, Sarrell was not closed down in Alabama. Though Sarrell's patients are overwhelmingly children, with roughly 90% having public insurance, it has succeeded. As Thomas (2015) states: "Sarrell provides the poorest children in the poorest counties of a poor state with top-quality dental care."[8]

But when Sarrell was later moving into adjacent states, those state's dental associations kicked Sarrell out (see Thomas 2015). State dental associations successfully argued Sarrell was breaking laws. This meant that the benefits of Sarrell's care was taken from low-income children in these adjacent states.

[8] Much of what I know about Sarrell comes from June Thomas, "Disturbing Dentistry: How the Poorest Kids in Alabama are Getting the Best Care." Slate (Jan. 2015).

The Sarrell case shows how restrictions placed by members of a monopoly on their own actions, in order to limit competition among themselves, blocked innovation in the industry, which ultimately reduced the value of income for low-income families significantly more than high income households. The same phenomenon occurs in other industries that are of significant importance for economic well-being. Once such industry is K-12 public education.

The last industry we sketch in the introduction is K-12 public education. There are many sources of monopoly power in K-12 public education, ones that lower the performance of public schools. One source of monopoly power, as in legal services and oral health services, is a powerful professional association, here the National Education Association (NEA). The NEA is also a union-management organization. In general, a union consists of the rank-and-file and a management organization. In K-12 public education, the NEA is the dominant union-management organization. In many areas of the country, the NEA faces no competition from other professional associations or union-management organizations.

Union-management organizations with strong monopolies are found throughout industries, both private and public. They are found in private sector industries like construction, manufacturing and transportation, and public sector industries like K-12 public education and public safety (like police forces). And these monopoly union-management organizations, in both private and public industries, introduce mechanisms to limit competition among members. Some of the mechanisms are included in union contracts (and other documents). Clauses in union contracts define job "jurisdictions," or job "boundaries," which lay out what jobs are the "property of" what groups of workers. These contract clauses are sometimes referred to as "restrictive work practices" (RWPs). Their aim is to reduce competition

between different groups of workers in the union.[9]

One well known group of job jurisdictions in manufacturing and transportation industries (and others) are those separating repair–type jobs from production-type jobs. Within repair-type jobs, there are typically many fine divisions of jurisdictions. These job jurisdictions and boundaries often make some sense, if at all, for a given set of production practices and technologies. If technologies are changed, this leads to outdated jurisdictions, and increases in conflict. Hence, this increase in conflict is an additional cost to changing production practices. Sometimes RWPs are responsible for the failure of organizations to adopt new technology. In general, RWPs reduce flexibility and restrict change in the organizations.

There is extensive evidence, from the analysis of union-contracts throughout the private sector, that mechanisms to limit internal competition, like RWPs, significantly reduce productivity and innovation (see below). We expect NEA union contracts to also reduce productivity and innovation in K-12 public education (see below).

In fact, NEA leaders who have attempted to reform the organization, and improve K-12 public education performance, put union contracts front and center as obstacles to productivity gains. NEA president Robert Chase, in a remarkable speech discussing the need for school reform, highlighted that teacher contracts "reduce flexibility and restrict change."[10] He argued: "Our challenge is clear: Instead of relegating teachers to the role of production workers,

[9] While unionization rates have dramatically fallen in private sector industries, they have remained fairly steady in the public sector since 1980. Public sector unionization rates increased from 10% to 40% from 1960 until the late 1970s. Today, they are roughly 36%. Unionization rates in education and police forces are significantly higher. State and local government union representation rates by occupation (2013-2017) were 51.3% and 49.7% of the workforce for education and police forces, respectively. Such statistics, and others discussed below, can be found in Wolfe and Schmitt (2018).

[10] Robert Chase, President of the NEA, speech to National Press Club, Feb. 5, 1997: "The New NEA: Reinventing Teachers Unions for a New Era."

with no say in organizing their schools for excellence, we need to enlist teachers as full partners, indeed, as co-managers of their schools. Instead of contracts that reduce flexibility and restrict change, we, and our schools, need contracts that empower and enable."

When monopolies lower productivity and innovation in K-12 public education, this disproportionately hurts low-income households. They have far fewer alternatives when productivity in the local public school falls. High-income households have many options: (1) hire tutors; (2) send their children to private schools in the area and (3) consider moving to areas with public schools where these monopoly elements are not so large. In contrast, low-income families have far fewer options. Private tutors and private schools are likely not affordable. Moving may also be less of an option. Low-income households have few, if any, alternatives.

So, we see that in K-12 education, just as in oral health services, restrictions placed on members of a monopoly, that lower productivity and innovation, reduce the value of income for low income households much more than for high-income ones.[11]

Recall we argued that the case of monopoly sabotage in housing, alone, means that income-inequality "significantly" understates economic-inequality. Monopolies in public education, that reduce productivity in the sector, may reduce the value of income for low-income households as much as monopolies in housing.

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Schmitz (2020a) argues that monopolies inflict great harm on low-income households. This

[11] Households do not directly purchase K-12 public education. Local public schools don't send invoices to families with students in attendance. But in a real sense households use their incomes to buy public education. Households use their income to purchase housing or rent housing. The cost of shelter is determined in part by the quality of public schools, which is determined in part by how extensive monopoly power is in various organizations in the local school district.

does not imply, of course, that income-inequality generally understates economic-inequality. It didn't have to turn out that way but, as we've argued, it has.

It could have happened, for example, that monopolies inflicted great harm primarily through reducing incomes. Today, there is a great concern that large corporations, like Walmart, have significant power over local wages, depressing them below "competitive" levels. And the concern goes beyond wages: There is a view that large corporations, again like Walmart, have significant market power when they purchase merchandise from suppliers. If the primary way monopolies harmed households was through their power in purchasing inputs (sometimes called "monopsony" power), monopoly harm would be reflected in lower-incomes. Income-inequality might be a reasonable proxy for economic-inequality. That monopolies inflict great harm by destroying low-cost substitutes purchased by the poor, reducing the value of income for low-income households much more than for high-income households, is an important additional lesson of the research in Schmitz (2020a).

This lesson has implications for research studying U.S. *consumption-inequality* (see, e.g., Jorgenson and Slesnick (1984), Krueger and Perri (2006) and Meyer and Sullivan (2017)). This literature proposes using household-consumption inequality as a proxy for economic-inequality, asserting that it's a better stand-in than income inequality. It further argues that U.S. consumption inequality has not increased much, if at all, over the last few decades, concluding that concerns about increasing U.S. economic-inequality are perhaps overblown.[12] But our discussion in this essay, and the analysis in Schmitz (2020a), shows that the methods used in this literature to estimate household-consumption have significant shortcomings.

[12] It is Meyer and Sullivan, in particular, who have been arguing that concerns about increasing U.S. economic-inequality are perhaps overblown.

The literature is unaware of the extent of, and behaviors of, monopoly. In fact, there is no consideration of monopoly at all. In the literature, a household's estimated-consumption is determined by the amount it *spends* on consumption goods in *markets*. So, if a household spends little, or nothing, on a good, the interpretation is that the good has little value for improving household well-being. But, of course, a household may spend nothing on a good because it has been destroyed by a monopoly. As we've seen, in many markets, with goods and services very important for economic well-being, monopolies destroy low-cost substitutes. Monopolies destroy part of the "commodity space," in particular, commodities that the low-income would purchase.

In addition, households consume goods that they don't directly purchase. They consume many of these *non-market* goods, some of which are extremely important for household well-being — such as K-12 public education. We describe other such non-market goods below. As we already argued, what happens in the case of market-goods also happens with non-market goods: Monopoly intrusion in non-market goods lowers the buying power of low-income households more than high-income ones.

On both these accounts, that monopolies destroy market-goods and also sabotage non-market goods, the consumption of low-income households is badly impacted, yet none of this is accounted for in these studies. Because of these reasons, and others given below, the literature's estimates of household consumption, and hence U.S. consumption-inequality, are biased, perhaps seriously so.[13]

Unfortunately, these assertions that U.S. consumption-inequality has not increased much, if

[13] The results of this literature have faced push-back, even before our criticisms (see, e.g., Aguiar and Bils (2015) and Attanazio and Pistaferri (2016)).

at all, and that therefore concerns about increasing U.S. economic-inequality are overblown, have seeped into policy discussions. In the Wall Street Journal, Phil Gramm and John Early ("Government can't rescue the poor: Federal programs have reduced material poverty at the cost of promoting idleness and dependency," October 11, 2018) cite Meyer and Sullivan's research on consumption-inequality in support of their claim that concern over economic inequality is overblown. By their title, the authors are referring to the increase of welfare-type transfers to households since the 1960s, and their argument that this has gone far enough: Government cannot rescue the poor. We discuss Gramm and Early below.

To conclude this introductory section, let us address a widespread view in economics, one this research challenges, that if a given type of product or service "disappears," other fine alternatives for the product exist, or will soon be developed. There are always "good alternatives."[14] If there wasn't fine alternatives, the logic goes, there would be a great incentive to develop them, and effective alternatives would emerge. While this view is widely held, and strongly believed, it's nonetheless incorrect. This view is so widely held, again, because economists have not recognized the extent of monopolies, or how monopolies behave.

The logic doesn't recognize that the absence of alternatives often results from them having been sabotaged. While there are incentives, of course, to develop new alternatives for a product that has been sabotaged, the same powerful groups that sabotaged the initial product are actively engaged in making sure this absence of alternatives continues. The sabotaging-monopoly in question has already demonstrated it can destroy substitutes. "They

[14] The word "good" has been used as a noun up to this point, as in milk is a good. We have used it in the above quote as an adjective. In order to avoid confusion, we will use adjectives such as fine, effective and decent instead of using "good" as an adjective in the following discussion.

did it once, they can do it again."

The rest of the essay proceeds as follows. We briefly describe the Arnold-Simons model of monopoly. We next introduce some notation. We follow this with more evidence on monopoly sabotage in housing, oral health services, legal services and public education; Then we turn to evidence for a new set of industries. We finish with some assorted topics, including: What we mean by "significantly" understates.

— The Arnold-Simons Model of Monopoly

The research discussed in this essay is primarily the result of historical studies of monopolies. Though perhaps not immediately clear, the historical analysis has been strongly guided by economic theories of monopoly, in particular, the Arnold-Simons model of monopoly, named for Thurman Arnold, who served as Assistant Attorney General for Antitrust for FDR, and Henry Simons, a professor at the University of Chicago in the 1930s through the mid 1940s.[15] In this model, a central focus of monopolies is the sabotage and destruction of substitute products. Monopolies employ many weapons to achieve this end. As Thurman Arnold wrote, monopolies "consolidate their power by destroying existing independent enterprise."[16] This was the consensus model of economists before 1950. Holmes and Schmitz (1995, 2001a) have developed models in the spirit of the Arnold-Simons model.

—–Households With Different Incomes Consume Different Baskets of Goods

[15] See Schmitz (2020a) for an extended discussion of the Arnold-Simons model, and its power in studying monopoly harm.

[16] Today, the consensus model of economists is the Cournot-monopoly model. Many readers will have seen this model in introductory economics courses. This model is not useful in studying the great harm inflicted by monopolies. Monopolies destroying substitute products, for example, flies under the radar of the Cournot-model.

We begin by making an obvious point: Households of different income-levels consume very different baskets of goods. Think of automobiles. There are some households who, despite the need of a car, cannot afford one. So, they consume zero-cars. They travel by public transportation instead. Then there is a group of households that purchase used cars, very old ones. The next group purchases used cars of a more recent vintage. Next are households purchasing new cars under $25,000; and so on.

We divide all households into three groups, low-income, middle-income and high-income. Next, let $G$ denote the set of all goods in the economy. We assign each good $g \varepsilon G$ into one (or more) of three sets $L$, $M$, and $H$. If a good is primarily purchased by low-income households, we assign it to $L$. Again, very old, poorly running, used cars would be in $L$. If it's primarily purchased by high-income households, we assign it to $H$. A high-end Maserati is placed in $H$. Some goods are purchased by large percentages of all income-groups. Milk (non-organic) is perhaps an example. We assign such goods to all three sets.

Low-income households, then, choose baskets composed of goods from $L$, and so on.

As the discussion above demonstrated, the set of goods available in an economy depends on the *state of competition* in the economy. We denote the dependence of the sets of goods on the state of competition by $L(s)$, $M(s)$, and $H(s)$, where $s = c$ means the economy is competitive, and $s = m$ means there are significant elements of monopoly.

This essay, in terms of this notation, is about how monopolies destroy goods in the set $L(c)$. The set $L(m)$ is much "smaller" than $L(c)$. Through these actions, monopolies greatly reduce the value of income for low-income households.

—Evidence: Monopolies Sabotage Low-Cost Substitutes, Reducing Value of Income for Poor

1. Industry: Housing

We cast our discussion of housing in terms of this notation. In a competitive economy, factory-built homes belong to the sets $L(c)$, $M(c)$ and $H(c)$. The factory-built homes in Figures 1 and 2 lie in set $L(c)$. They are purchased by low-income households; the homes are small, often a single-module, and inexpensive (see below). Factory-built homes in $M(c)$ and $H(c)$ are larger; those in $H(c)$ can be extremely expensive. As for homes constructed with traditional methods, they lie in sets $M(c)$ and $H(c)$.

But the U.S. residential construction industry is not competitive: It's overrun with monopolies. As we mentioned, today the monopolies that wield the most power are NAHB and HUD. Factory-built homes in $L(c)$, like those in Figures 1 and 2, are sabotaged. They are blocked from most areas of the country. Factory-built homes only lie in $M(m)$ and $H(m)$. Traditional homes are in $M(m)$ and $H(m)$.[17]

Blocking factory-built homes, like those in Figures 1 and 2, has dramatically reduced the housing options available to low-income households. Consider that, in 2013, the U.S. Census Bureau reports the average price of a small-modular home of one-piece was $42,200. It also estimates that the average price of the *structure* for single family homes made with traditional methods was $249,429. So, the average price of the structure was more than $200,000 more for the stick-built house.[18]

[17] This notation, $M(m)$, is, of course, not pretty — but will do for now.

[18] For these statistics, and those in the next footnote, see https://www2.census.gov/programs-surveys/mhs/tables/time-series/sitebuiltvsmh.pdf

The average size of the structure was, of course, much larger — almost 2.5 times larger. Factory-built methods are able to manufacture structures of such low prices because of the method's combination of very small costs per square foot, and the ability to economically produce small-sized homes.[19]

When homes like those in Figures 1 and 2 are sabotaged, consider the impact on low-income households. The goal of buying and owning a home goes out the window for a large percentage of low-income households. Obviously, for a large percentage of low-income households, purchasing a traditionally-built home is no alternative at all.[20] It's well known that investing in housing is an important way households accumulate wealth. Three-fourths of wealth in this country is housing wealth. Monopolies in traditional construction have closed out this avenue of wealth accumulation for a large percentage of low-income households.

When low-income households are closed out of buying a home, they turn to renting. But renting a traditionally constructed home obviously will be much more expensive than renting factory-built homes. It's not surprising, then, that rental payments for low-income households are as much as 50% (and more) of household income. In it's study "The State of the Nation's Housing 2020," the Joint Center for Housing Studies at Harvard University reports that, of households that rented in 2019, and of those who had incomes under $25,000, 62% were severely rent burdened (i.e., paid over 50% of income on rent).[21] For those who had

[19] In 2013, the average size of the small modular home was 1,100 square feet, manufactured at an average square footage cost of $38.36, for the total average price of $42,200. For traditional methods, the average size of the structure was 2,662 square feet, constructed on-site at an average square footage cost of $93.70, for the total average price of $249,429.

[20] The low-income household could purchase a smaller stick-built home than the average size, but it's going to be significantly bigger than the factory-built house, as stick-built homes cannot be economically made to a small-size. And the square footage cost would be more than double.

[21] See Figure 1, https://www.jchs.harvard.edu/state-nations-housing-2020

incomes between \$25,000 and \$49,999, 18% were severely rent burdened. Roughly 37% of U.S. households had an annual income less than \$49,999 in 2019.

2. Industry: Oral health care

In a competitive industry, oral health care would be provided by dentists, as well as mid-level professionals. The services of these mid-level professionals lie in $L(c)$. As mentioned, these include dental therapists, denturists and hygienists (practicing independently of dentists).

Dental therapists are permitted to practice in many countries throughout the world. In these countries, we see the great benefits they bring to the poor. Two countries which provide among the most liberal practice opportunities are Australia and New Zealand. The share of therapists in the combined "dentist and therapist workforce" in these countries is 11.4% in Australia and 27.5% in New Zealand. Therapists, then, make up a not insignificant share of the oral health workforce in both countries.

In these countries, therapists disproportionately serve the poor and low-income. One proxy for low-income patients are those at public clinics. The share of therapists in the combined workforce in public clinics is 40.6% in Australia and 84.6% in New Zealand.

The U.S. oral health care industry is not competitive. Dental-monopolies are instrumental in passing laws that block the practice of mid-level professionals. In the United States, $L(m)$ is "empty": therapists and denturists are not permitted to practice.[22] Hygienists must work

[22] There are a few U.S. states that have passed laws allowing for limited practice opportunities of therapists and denturists. But the legislation is heavily influenced by, if perhaps not written by, dentists and their state associations. So, not surprisingly, the legislation includes large impediments to individuals hoping to train for these professions. For example, in New Zealand, the program in dental therapy is one-year. In the few U.S. states that "allow" dental therapy, the programs are two years. Perhaps even more of an impediment are the requirements on serving apprenticeships with dentists, as the vast majority of dentists oppose dental

under dentist supervision.[23]

As a consequence of monopoly sabotage, many low-income and middle-income Americans have very poor oral health. One measure of poor health is untreated caries (cavities). Over the period 2011 and 2012, and among those aged 45-64, the fraction of individuals with untreated caries was 51.6% for those at or below the poverty level. For those whose income was four times or greater than the poverty level, the fraction was 11.7%.[24]

Turning to a younger population, the Department of Defense conducts oral health surveys of new recruits at time of entry. Of the 2008 recruits, 72% required a dental restoration.[25] Of the same recruits, 54.9% required a tooth extraction. Fully 52.5% of the new recruits were considered not ready for a worldwide deployment. Their oral health was too poor.

As we discussed above, monopolies not only kill substitutes for their products, those purchased by low-income households. They also put restrictions on the actions of members to limit competition. Recall the case of Sarrell Dentistry: It pitted dentists vs. dentists, monopoly members against one another. That members of monopolies are in conflict with each other is the rule rather than the exception. In Thurman Arnold's (1943) words, monopolies "exploit members of their own group."

And that this conflict leads to lower productivity, and innovation, as it did with Sarrell, is also the rule rather than the exception. And, lastly, more often than not, the productivity

therapy. Given these impediments, very few individuals pursue these programs (in Maine, there were none the last time we checked). The dental-monopoly then plays tricks, arguing that there is no demand for such programs, and that they are not economical, disguising their outsize role in sabotaging the programs.

[23] An exception is Colorado, where hygienists are free to operate independently of dentists.

[24] Centers for Disease Control and Prevention (2017)table 60

[25] 2008 Department of Defense Recruit Oral Health Survey" 2011, 14.

losses disproportionately harm the low-income, reducing the value of income for low-income households much more than high-income households.

That monopolies reduce productivity in the monopolized industry is at odds with today's consensus view among economists that monopolies produce efficiently. This consensus was developed almost 75 years ago, when economists adopted the Cournot-monopoly model as its workhorse model to study monopoly. One cornerstone of the Cournot-monopoly model (though often implicitly assumed) is that monopolies produce efficiently. This consensus is based on logic, not evidence. The logic given to support the view that monopolies produce efficiently is typically posed as a question: Why wouldn't a monopolist produce efficiently?

Given this view is so widely held, we discuss where the current logic "goes wrong," and provide a few more details for the logic, already sketched above, for why monopolies reduce productivity.[26] The current logic implicitly assumes a single individual in the monopoly organization, or many individuals that agree on all matters. If this was the case, the organization may well produce efficiently. But monopolies are composed of many individuals and groups of individuals that don't agree on all matters. Logic tells us there is likely to be conflict among these groups as they vie for a bigger share of the monopoly profits.

The conflict may not be resolved, with the monopoly breaking-up entirely. Self-destruction of monopolies is, of course, not uncommon. If the conflict is "resolved" to the point where the monopoly survives, there are, of course, many different "cases" that can arise. The monopoly may "just barely" survive, with conflict among members *continually* flaring up, severely impacting the performance of the organization.

[26] By discussing these issues now, we can later refer to them as part of the argument for why monopolies reduce productivity in other industries, like K-12 public education.

Another case is one with a little less conflict, it flaring up *regularly.* Performance is harmed, but not as much. We can keep adding cases with less and less conflict, and less and less harm to organizational performance. We finally reach the opposite extreme to the monopoly breaking up: The monopoly bears "no scars" from the underlying conflict, and like the Cournot-monopoly assumes, the organization produces efficiently. The new logic, then, sees the Cournot assumption as a special case.

The new logic was, in fact, derived in conjunction with the historical study of many monopolies. These studies show that monopolies across very different industries behave very similarly, and through their actions, reduce productivity It's the rule rather than the exception.

We've already discussed professional associations. As mentioned above, union-management organizations with strong monopolies introduce RWPs to limit competition among members, and this also leads to lower productivity and innovation. This is demonstrated in a number of papers showing how RWPs, in many different private industries, led to lower productivity in the monopolized industry.[27]

Other monopolies we've studied include those composed of groups of firms (i.e., cartels). To limit competition among members, cartels use quotas to limit the amount of output any firm can produce. We expect cartel quotas, which lock production in place, thereby rendering the

[27] These historical studies have examined episodes where long entrenched monopolies have faced a dramatic increase in competition. Some of the industries we've studied showing union-management monopolies, and other monopolies, had lowered productivity, include: U.S. water freight transportation, that experienced a surge in competition with the development of railroads in the mid to late 19th century (Holmes and Schmitz (2001b)); U.S. iron ore manufacturing, which experienced foreign competition for the first time, in the 1980s, and from Brazil, in the Great Lake ports where steel was manufactured (e.g., Gary, Indiana, and Cleveland, Ohio) (Galdon-Sanchez and Schmitz (2002) and Schmitz (2005)); U.S. cement manufacturing which experienced surges in competition, also in the 1980s, from producers across the world (Dunne, Klimek and Schmitz (2010, 2014)); and U.S. tire manufacturing, that had an experience like that in cement (Schmitz, in preparation).

monopolized industry unable to adapt to changing conditions, will lead to lower productivity and innovation. That's because we've already encountered mechanisms like monopoly-quotas many times before. Both professional associations and union-management organizations employ mechanisms that are essentially the same as cartel quotas. The laws "passed" by dental-monopolies to limit the expansion of dental practices, such as limiting the number of hygienists per practice, act just like cartel quotas.[28] The job-jurisdictions given to groups of workers in a manufacturing plant act just like cartel quotas, the quotas now on the number of jobs per group of workers.

In our study of cartels, we've indeed found they are unable to adapt to changing conditions, this leading to lower productivity and innovation. Consider the cartel in U.S. sugar manufacturing that operated between 1934-74. During the depths of the Great Depression, producers in this industry were permitted to form a cartel.[29] To limit conflict, the rules governing cartel quotas locked production into 1934-locations. In particular, quotas could not be sold; and they could not be rented beyond the county.[30] The area producing the greatest amount of sugar in 1934 was California, with production organized along the coastal counties, including Los Angeles. Over the next four decades, as other areas became much more profitable

[28] Herkenhoff and Schmitz (in preparation) show, in the Lucas (1978) span of control model, how laws limiting the number of hygienists a dentist can hire are equivalent to quotas on dental practices. If the restriction is changed from two hygienists to one, for example, the distribution of production in the industry shifts away from the dentists with the largest span of control, and the largest practices.

[29] Cartel members included farmers (that grew the sugar crop), manufacturing firms (that processed the crops), and representatives of Federal and state governments. There were disputes between these groups, but also among members of each group. In fact, the cartel members nearly failed to reach a cartel agreement. For research on this cartel, see Bridgman, Qi and Schmitz (2009, 2015) and Bridgman, Qi, Schmitz and Teixeira (2019).

[30] Why were quotas tied to a location? In the conflict between farmers and manufacturers, farmers won the right to have quotas set on acres devoted to sugar crops in the year before 1934, and that they be grandfathered the rights to these quotas. Without the acre-quotas, firms could have introduced competition between farmers. Individual U.S. states feared other states would steal "their acre-quotas." They would attract acre-quotas to their states. To block this competition between states, U.S. states won the restriction that quotas could not be sold, and also could not be rented beyond initial county lines.

locations to manufacture sugar, cartel rules on quotas areas kept production in California, leading to large productivity losses.[31]

3. Industry: K-12 Education

A significant percentage of households in all three income groups send children to K-12 public schools. So, public schools lie an all three sets: $L(c)$, $M(c)$, and $H(c)$. As for private schools, there are schools with very high tuitions. Children in these schools are overwhelmingly from high-income households —the schools are in $H(c)$. There are also low-tuition private schools (often religious schools). While some low-income households can mange the tuition, a large percentage cannot. We put these schools in $M(c)$ and $H(c)$.

In this section, we consider how monopolies in K-12 public education reduce the performance of the schools. So, it's akin to our discussion of Sarrell dentistry.

Again, there are a number of sources of monopoly in public education. One is the lack of competition between union-management organizations that manage teacher-union locals. The vast majority of union locals, or local associations, are managed by one of two groups: the American Federation of Teachers (AFT) and the much larger National Education Association (NEA). The NEA has monopoly power in many areas of the country. As we said, the NEA acts like other monopolies in important senses. Union-contracts contain many RWPs that "reduce flexibility and restrict change."

Estimating the impact of RWPs in K-12 public education is a much more difficult exercise than in other industries. An important reason is that many factors outside the school "doors"

[31] When the cartel was broken up in 1934, and U.S. sugar manufacturing faced domestic competition, production quickly moved from California to North Dakota and Minnesota.

have extremely important impacts on the performance of public school students. In fact, many of the monopolies discussed in this essay have significant negative impacts on student performance. When monopolies in housing block small-modular homes, they relegate low-income households to much poorer housing conditions. This impacts school performance (and, of course, much more). When dentist-monopolies block innovations that would greatly benefit low-income households, they relegate these households to poorer oral health, also leading to poor school performance (see also the discussion below of monopolies in eyecare and eyeglasses).

While it's difficult to measure the negative impact of teacher's contracts that reduce change, there are a few reasons to think the impact is significant. The first two reasons are from our general study of monopoly — simply restatements from above. The second two are specific to education.

i). The logic sketched above for why contracts with RWPs lead to lower productivity suggest teacher contracts would lower productivity.

ii). The evidence from the study of other industries with union-contracts with RWPs, and other industries with similar mechanisms to reduce internal conflict, like professional associations and firm cartels, invariably shows the mechanisms lower productivity, suggesting the same is true with teacher contracts. K-12 public education would be the first industry where this didn't happen.

iii). The comparison of teacher union contracts with those in other industries with union-management monopolies suggest teacher contracts would lower productivity. That's because

the comparison shows that, in some dimensions, teacher contract-restrictions are more severe than in other industries.

One important dimension of union contracts is the determination of seniority. Workers are divided into "seniority-classes." Within a seniority-class, if a reduction in the workforce is needed, the employee with the least tenure is the first to leave. Seniority classes can be "narrow" or "wide." In a manufacturing plant, one seniority-class might be "the workers who operate machine-type-A." These workers might make up, say, five percent of the workforce. If there is to be a reduction in machine-type-A operators, the operator with the least tenure on the machine loses their job.

Another seniority-class might be "the entire plant." Such a system is called "plant-wide" seniority. Now if there needs to be a reduction in machine-type-A operators, the operator with lowest tenure on the machine keeps a job at the plant. The machine operator "boots" the person with least tenure in the plant, regardless of department. Whatever productivity reducing impacts seniority has, plant-wide seniority obviously magnifies them, as workers move to far flung jobs where they have no experience, bumping workers who may have extensive experience. Plant-wide seniority is not a common arrangement. In our research, we have studied one industry that has employed such contracts: The U.S. cement industry.[32]

Turning to teachers, suppose a local public school (school A) is to reduce its social studies

[32] In our examination of the U.S. cement industry, we studied a few arbitration cases that were related to provisions of the plant-wide seniority rules. One involved a machine operator in a limestone quarry at the plant who lost his job as a result of job reductions in the quarry. This person bumped a lab assistant in the chemistry department from their job. The question for the arbitrator was how long the machine operator was permitted to acquire the skills of a lab assistant. The machine operator was repeatedly given time to study for the math test that was part of the job requirement, but the individual continued to fail the exam. The union, the CLGW, argued the contract gave the operator even more time to pass test.

faculty by one teacher. One type of contract would have a seniority-class "social studies teachers in school A," meaning the social studies teacher with the least tenure would lose their job. A wider seniority-class would be "teachers in school A," this being similar to plant-wide seniority. This might mean a teacher in the English faculty would lose their job. But teachers contracts typically offer an even wider seniority class: "teachers in the school district." Contracts with district-wide seniority presumably further magnify harmful impacts of seniority on productivity, beyond those of plant-wide, or school-wide, seniority.

iv). That leaders of the NEA have argued, as mentioned above, that teacher contracts that reduce flexibility and change are the major obstacles to school productivity improvements suggest RWPs lower productivity.

Returning to the above-mentioned speech by NEA President Robert Chase, he described how the NEA had followed the industrial relations model of industrial unions, including the development of restrictive practices in teacher contracts: "When we reinvented our association [NEA] in the 1960s, we modeled it after traditional, industrial unions. Likewise, we accepted the industrial premise: Namely, that labor and management have distinct, conflicting roles and interests, that we are destined to clash, that the union-management relationship is inherently adversarial."

We've already mentioned his proposals for reform: "Our challenge is clear: Instead of relegating teachers to the role of production workers, with no say in organizing their schools for excellence, we need to enlist teachers as full partners, indeed, as co-managers of their schools. Instead of contracts that reduce flexibility and restrict change, we, and our schools,

need contracts that empower and enable."[33]

4. Industry: Legal services (for civil matters)

In a competitive industry, legal services for civil matters would be provided by lawyers, as well as mid-level professionals. These professionals would practice independently of lawyers. As mentioned, the set $L(c)$ would, in fact, be quite large. As also mentioned, the U.S. legal services industry is not competitive. In legal services, lawyer-monopolies, including state bar associations, have operated for nearly 100 years. These monopolies are instrumental in passing Unauthorized Practice of Law (UPL) statutes that prohibit a non-lawyer from giving legal advice of any kind, whether paid or not. All substitutes are banned.

While low-income households have a greater need for legal advice than high income households, and though the consequences of not having it are severe, the vast majority of low-income families have no access to legal advice on civil matters.

Consider their options. Legal aid programs insure legal advice for criminal cases only, not civil cases. Some states attempt to provide legal aid on civil matters, though those with the most generous programs provide very little. In states with civil programs, households must have an income below 125% of the federal poverty level to attempt to access these services. If they qualify and attempt to access legal aid, their chances of obtaining civil

[33]Given the controversy that often surrounds discussions of public policy as it relates to public education, let us emphasize we are discussing problems that emerge with a monopoly, in particular, a union-management monopoly. Concerns about such monopolies need not be related to one's views about unions. One can be a strong proponent of unions and collective bargaining, as was Thurman Arnold, and yet think that a union-management monopoly is not in labor's interest (as Thurman Arnold did). The argument is that teachers themselves would benefit if there was a choice among union-management teams to represent teachers in an area. Similarly, concern about union-management monopolies in education need not be related to one's view of vouchers and charter schools. One may oppose both vouchers and charter schools but still have concerns about union-management monopolies in public education.

legal advice are very slim, even in the states that provide the most help. The Boston Bar Association (2014) has collected evidence on measuring the "unmet" demand for the very few Civil Legal Aid attorneys (CLAs) in Massachusetts. They write: "In Massachusetts, civil legal aid programs turn away 64% of all eligible cases" though this number does not count "many eligible Massachusetts residents with critical legal needs [that] never even reach the turn-away stage because they give up when faced with long waits for service or fail to seek assistance because they do not know their problems may have a legal solution." There is the group, of course, that knows they have a legal need but don't bother attempting to gain access to the limited legal counsel offered free of charge. The Massachusetts CLA program is, not surprisingly, one of the best in the country.

So, the alternative is for households to represent themselves, so called pro-se representation, or to just be preyed upon.[34]

We now move to discuss some new industries, providing briefer discussions.

More Health-Care Industries

We briefly discuss hearing aids here. Below we sketch pharmaceuticals and eyecare.

5. Industry: Hearing Aids

In a competitive industry, there would be many types of devices to help those with hearing loss. The set $L(c)$ would contain personal amplification devices (PADs), which sell for as

[34] We mentioned above how dental-monopolies, under public pressure, have "permitted" dental therapy programs to begin in some states. But such programs are designed by dentists, who are overwhelmingly opposed to them. So, the programs are set up to fail. A similar dynamic has occurred in the legal services area. A program was established in Washington State for mid-level professionals but shortly closed down by the supreme court (see "How the Washington Supreme Court's LLLT program met its demise," Lyle Moran, July 9, 2020).

little as $150. It would also include hearing aids, some of which can sell for as little as PADs. As for the "fitting" of hearing aids, the set would contain mid-level professionals that sometimes go by the name "hearing instrument dispensers." These professionals typically require a high school degree, together with passing some licensing tests. The set $H(c)$ would contain hearing aids that were purchased with repair plans, with plans for free adjustments, and other services bundled with the hearing aids. As for the "fitting" of hearing aids, the set would contain mid-level professionals, and also audiologists, professionals with MAs and PhDs that also fit aids.

The U.S. hearing aid industry is not competitive. The hearing aid industry is overrun with monopolies, from top to bottom: manufacturers, audiologists, audiology associations, and various groups in the FDA, AARP and state legislatures, to name some of the monopolies. They work together, coordinating their efforts to limit, if not entirely block low-cost technology. Similarly, they attempt to limit low-cost professionals that fit hearing aids.

The prices of hearing aids are astronomical, putting them way beyond the budgets of low- and middle-income Americans. In a report to President Barack Obama, the President's Council of Advisors on Science and Technology (PCAST) (2015) quotes a survey where the average price for a pair of hearing aids was $4,726.18. That monopolies are able to sell a pair for this average price is an amazing, but despicable, feat. The set $L(m)$ is "empty."

According to PCAST, "While untreated hearing loss likely impairs physical and cognitive health, only a minority of Americans with hearing loss (perhaps 15-30 percent) seek out and use assistive hearing technologies. Adoption rates are even smaller for people with low income and for racial and ethnic minorities." As for the barriers to seeking help: "PCAST

believes that cost is the largest barrier to hearing-technology adoption."

Financial Services Industry

6. Industry: Financing residential houses (Small-modular homes)

In a competitive industry, households of all income levels would have access to a range of debt instruments to finance house purchases, including chattel loans (personal loans) and traditional real estate mortgages. The set $L(c)$, as well as the sets $M(c)$ and $H(c)$, would contain these debt instruments. The terms of the loans might differ across the sets.

But the market for financing residential homes, in particular, small-modular homes, is not competitive. Recall monopolies have blocked small-modular homes, like those in Figures 1 and 2, from most areas of the country. They are permitted in some areas of the South. However, in such areas, monopolies have blocked the use of traditional real estate mortgages for financing the homes. As the U.S. Census Bureau reports, in 2013, of the new manufactured homes (again, small-modular homes) placed, 70% were placed on private property. Yet only 14% were titled as real estate, meaning they were eligible for financing as real estate. Fully 78% were bought as personal property, and not eligible for real estate mortgage financing.[35]

The set $L(m)$, then, contains personal loans, but the use of real estate mortgages faces significant sabotage.

7. Industry: Credit Cards

There are considerable monopolistic elements in the credit card industry. Herkenhoff and

[35] For these statistics, see https://www2.census.gov/programs-surveys/mhs/tables/time-series/sitebuiltvsmh.pdf

Raveendranathan (2019) (HR) present a long list of antitrust cases brought against the credit card industry. The credit card industry invariably lost these cases. Here argue how credit card monopolies disproportionately hurt the poor.

For families with little or no savings, typically low-income households, having access to short term credit can significantly improve economic well-being. Such short-term credit, like credit cards, allow a family with little savings to cover a temporary excess of expenses over wages. For families with significant savings, access to such short-term credit is less important.

As a thought experiment, imagine credit cards were eliminated. Consider the impact on two families that had been using credit cards, one that had significant savings, the other with little savings. The latter family, we expect, would be harmed more than the former. The same is true in moving from a competitive credit card market to a monopolistic one.

8. Industry: Markets for Used Equipment

In a competitive market, the set $L(c)$ contains many types of used equipment. Two significant markets would be those for used cars and used computer equipment. The set $H(c)$ would contain markets for used luxury yachts, for used Lear jets, and so on.

But not all markets for used equipment are competitive. In particular, monopolies have been sabotaging markets that serve low-income households. One such market is that for used computer equipment. In this market, used computers are sold by refurbishers (and others). Refurbishers buy old computer equipment in bulk from recyclers. They then "save" some of the computers to refurbish, by hand, using the other computers for spare parts. Such refurbishers are able to sell used Apple computers for roughly $150. This market provides

great benefits for low-income Americans.

But, again, monopolies are sabotaging this market. Apple, for example, has mounted aggressive campaigns to crush this industry. Apple has employed many weapons against this market, like its recently formed alliance with Amazon to block refurbishers from selling over the Amazon network. In order to sell over Amazon in the future, a refurbisher needs to prove they've sold $2.5 million in Apple goods to major retailers over the last 90 days.[36]

The set $L(m)$, then, is much smaller than $L(c)$.[37]

9. Industry: Markets for Repair Services and Repair Parts

Repair services are provided by two broad groups. One group is original equipment manufacturers (OEMs), such as those in farm equipment (e.g., John Deere), autos (e.g., General Motors, Ford, ..) and computers (like Apple), through their franchised dealers. The second group consists of independent repair firms. In a competitive economy, the set $L(c)$ would contain independent repair shops. The sets $M(c)$ and $H(c)$ would contain dependent repair shops and OEM franchised dealers.

But the repair market is not competitive. The independent repair services industry is under attack from OEMs. The OEMs have formed monopolies, such as trade associations and lobbying groups, to sabotage independent repair firms. Many mechanisms are used. One mechanism is to make it difficult for independent repair shops to obtain repair parts. Others try to deny repair independent shops computer code needed to repair equipment.

[36] In a recent Los Angeles Times article, John Bumstead, a Minneapolis refurbisher, is quoted as saying: "The people who have been selling MacBooks or other Apple products are pretty much cut from the Amazon marketplace." Monopolies are successfully squashing these markets for used equipment.

[37] In some countries, at least in the past, imports of used cars were banned.

The set $L(m)$ is much smaller than $L(c)$. Note the double-bind in which monopolies place low-income households. They cannot buy used equipment. And if they turn to new equipment, they face difficulties repairing it at independent shops as it ages.

## 10. Other Goods, Both Market and Non-Market

We briefly mention a few more monopolies that kill low cost substitutes for their products and infiltrate public institutions to enrich themselves at the expense of low-income households.

*More Health Care Industries.*

Pharmaceuticals. Among other monopolistic practices, large pharmaceutical companies sabotage the market for generic drugs. One method, as described by Cramer and Berge (2004), is by employing tactics delaying the introduction of generic drugs.[38] Cramer and Berger's article is important not only for the evidence it provides on these tactics, but for its indictment of U.S. antitrust methods. As suggested in the title of their paper ("The Superiority of Direct Proof of Monopoly Power ...."), they faced resistance when they provided direct evidence of delaying tactics.[39] They discuss how defenders of the companies pushed for the court to employ indirect methods of assessing monopoly power: "[I]ndustry defenders have nevertheless attempted to use the indirect method as a means to negate (or at minimum blur) the undeniable implications of the direct proof in delayed generic entry cases."

The "indirect method" is that of using market-share analysis, which dominates U.S. antitrust

[38] EL Cramer, D Berger "The Superiority of Direct Proof of Monopoly Power and Anticompetitive Effects in Antitrust Cases Involving Delayed Entry of Generic Drugs," Univ of San Francisco LReview, 2004.

[39] By direct evidence, they meant "evidence showing that cessation of the alleged anticompetitive conduct (i.e., allowing generic competitors to enter the market) led directly to substantially lower prices or increased output (or both) ..."

cases.[40] Thoughtful observers of U.S. antitrust institutions have long argued that market share analysis introduces subjective analysis into antitrust proceedings, and is thus subject to abuse. Here is Louis Schwartz: "I submit that the [Merger] Guidelines will function principally as ideological support for whatever decision the Department [DOJ] wants to make in particular cases, and as propaganda to influence courts and other tribunals to follow the Department's line."[41] Schwartz understood how market definitions could be manipulated by the DOJ to support ideological positions. He could not foresee how they might be manipulated by those at DOJ with a financial interest in the outcome of merger-reviews (see discussion of antitrust consulting below).

Eyecare and Eyeglasses. The U.S. eyecare and eyeglasses industry is a lot like the U.S. hearing aid industry. The first similarity is high prices. While eyeglasses don't cost thousands of dollars, they do costs hundreds of dollars. Though eyeglasses are less expensive, it's still true that many low-income Americans cannot afford eyecare and eyeglasses. Second, the industry is overrun with monopolies, from top to bottom. The industry involves a multi-step process, from eyecare services (provided by professionals including opticians, optometrists and opthamologists), to manufacturers of medical equipment (both frames and lenses), to retail stores, and to "builders" of brand names. There are monopoly elements at each step. There are also monopolies that consist of alliances between the monopolies at various steps.

[40] As Cramer and Berger explain, "The indirect method involves proving monopoly power and anticompetitive effects using circumstantial evidence. For instance, in Section 2 cases generally, courts have traditionally permitted claimants to meet their burden of establishing maintenance or creation of monopoly power by first defining a "relevant product market" or "relevant market" and subsequently showing that the defendant firm possesses a dominant share of that market. Courts then permit factfinders to draw the inference that where a firm possesses a dominant share of a properly defined relevant market it has monopoly power, i.e., the power to inflate its price substantially above competitive levels."

[41] Louis Schwartz, "The New Merger Guidelines: Guide to Governmental Discretion and Private Counseling or Propaganda for Revision of the Antitrust Laws," 71 Calif. L. Rev. 575 (1983).

The arrangements, like Frank Knight said, are of "infinite complexity."

Recently, U.S. antitrust authorities allowed the merger between two giant corporations in the industry — Luxottica and Essilor. The FTC's primary justification for allowing the merger was based on market share analysis – the merged entity, based on the market definitions of the FTC, did not have large enough market shares to block the merger. The merger was allowed despite direct evidence that there was already extensive monopoly power in the industry. For one, prices greatly exceeded marginal costs of production.[42] Retired executives in the industry also argue that the merger destroyed competition in the industry.[43]

*Criminal Justice System.* Monopolies have infiltrated many parts of the U.S. criminal justice system, including the bail system. A large fraction of individuals confined in jails are not convicted of crimes. Rather, they cannot post bail. Many in this situation are charged with non-violent misdemeanors. The bail amounts are often just a few hundred dollars. For not being able to raise a few hundred dollars, an individual may spend a week, a few weeks, or longer, in jail. This results in lost jobs, challenges to parental rights, evictions and other household crises. Recent attempts to reform the U.S. bail system have been opposed by groups that form monopolies to block these reforms. Such groups include trade associations

[42] Rough information on prices and costs of eyeglasses is discussed by retired industry executives in "How Badly Are We Being Ripped-Off on Eyewear? Former Industry Executives Tell All," Los Angles Times, March 5, 2019, by David Lazarus. Prices for glasses range from Warby Parker's $125 to hundreds of dollars. Dean Butler, founder of LensCrafter, describes the cost structure of the industry this way: "You can get amazingly good frames, with a Warby Parker level of quality, for $4 to $8." .... "For $15, you can get designer-quality frames, like what you'd get from Prada." .... "You can buy absolutely first-rate lenses for $1.25 apiece." This puts the marginal costs of production, for the best glasses, at less than $20 (in fact, $15.00+$1.25=$16.25). And for those at Warby Parker, the marginal costs range between $5.25 and $9.25.

[43] The executives interviewed in Lazarus' article also commented on the merger. Here is Charles Dahan, the leading supplier of lenses to LensCrafters when it was owned by Butler: "There is no competition in the industry, not anymore." ... "Luxotticca bought everyone." .... He later says: "Federal officials fell asleep at the wheel." .... "They should never have allowed all these companies to roll into one. It destroyed competition." Then we have Dean Butler. In discussing the recent merger of Luxottica and Essilor, he says of the combined firm: "If that's not a monopoly, I don't know what is."

of bail bondsmen. Insurance companies and their trade associations are engaged in similar activity (see, e.g., "Selling Off Our Freedom: How Insurance Corporations Have Taken Over Our Bail System," ACLU, May 2017).

*Foster Care*. Hatcher (2016) provides a devastating critique of the current state of foster care institutions in some U.S. states. Monopolies sabotaging these institutions consist of groups within the foster care agencies that form alliances with private firms to illegally disperse money to the private firms. One way they accomplish this is by applying for the social security benefits of orphaned foster children in their care (without their knowledge) and then illegally dispersing a share of this money to the firms. The incentives that drive groups in these agencies to commit fraud include the usual ones, like the revolving door, with the possibility of individuals in the agency receiving lucrative jobs in the private companies.

*Voting Institutions*. Groups build monopolies along many dimensions. White Americans long developed monopolies in order to improve their economic position relative to Black Americans. A particularly venomous monopoly were those formed to sabotage black voting: "anti-voting" monopolies. By sabotaging voting rights, these "anti-voting" monopolies enabled countless other monopolies to develop, with the passage of laws in local legislatures, which harmed the economic prospects of black Americans (see, e.g., Stern (1941), Olsen (1983) and Roithmayr (2010)). Many individuals and groups belonged to these monopolies. Voting registrars would adopt rules making it difficult or impossible for blacks to register.[44] Blacks that did register would face roadblocks from those staffing the voting booths on elec-

[44] Martin Luther King, Jr. wrote that one of the groups "abridging Negro voting rights is the registrar himself, administering complex registration procedures designed specifically to slow up and frustrate Negro applicants." (M.L. King, Jr., "Civil Right No. 1–The Right to Vote").

tion day. Note, importantly, that these monopolies were informally organized. There was no trade association of those staffing the voting booths, or of registrars. The monopolies were composed of thousands of individuals, each knowing their role.

*Antitrust consulting.* A U.S. consulting industry offers services to (1) the FTC and DOJ when they bring antitrust cases against major organizations, like those attempting to merge and to (2) organizations that are being challenged by the FTC and DOJ. It works for both "sides" on many cases. The industry consists of economists at private consulting firms (many of whom have academic appointments as well). We call it the "Antitrust Consulting (from) Economists" industry (or "ACE"). Schmitz (2020a) discusses how the ACE-industry can be thought of as a monopoly. Again, a monopoly does not need a formal organization, and the ACE monopoly is not so organized. Yet it's held together by powerful forces. One force is that members of ACE, those from different consulting firms, have incentives to act cooperatively with each other.

ACE firms openly admit to cooperating with each other. After completing their merger, two of the largest ACE firms sent a letter to clients that began: "After a period of active and successful collaboration between COMPASS and Lexecon, our two firms merged on January 1, 2008, creating Compass Lexecon."[45]

Consider the strong incentives for cooperation when ACE members face each other in adversarial situations. Economists from ACE-firm-A (Economists-A) may represent the FTC as it challenges a merger between two very large corporations. Economists from ACE-firm-B

[45] The newsletter goes on to describe of how in a list of second request mergers, the combined firm accounted for a large share of the market: "A review of that list shows that Compass Lexecon experts are typically retained in close to 75 percent of these mergers." See (accessed March 1, 2021): https://www.compasslexecon.com/compass-lexecon-june-2008-client-newsletter/

(Economists-B) might represent the merging parties. Economists-A may have some information on conflicts of interest facing economists in the group Economists-B. But challenging the credentials of those in Economists-B hurts not only Economists-B. It tarnishes the reputation of the industry, thus hurting the entire industry, including Economists-A.

That potential conflicts of interest inevitably face ACE members arises from the fact that ACE-consultants hold important positions at the FTC and DOJ. It's common practice for an ACE-member to hold some of the key positions at U.S. antitrust institutions, like the deputy attorney general for antitrust. An individual member typically holds the position for two years (typically on leave from an academic appointment as well), being replaced by another ACE-member upon leaving. As for the inevitability of potential conflicts of interest, consider that in the year before the Compass Lexecon merger on January 1, 2008, when the merger was presumably being negotiated, there was at least one ACE member who held a significant position in U.S. antitrust institutions who had recently worked for one of these firms, and who joined the merged firm upon leaving government.

That ACE members sit in positions of significant authority at FTC and DOJ means they have important input into the direction of antitrust. This brings us to the question: How do monopolies in antitrust hurt the poor? We expect that ACE members will direct the agendas at antitrust institutions toward those making money for ACE. A very lucrative agenda for the ACE industry involves representing very large firms in merger challenges from the FTC and DOJ. An agenda that included a significant commitment to protecting low-income households from the monopolies discussed above would be a much less lucrative

agenda for ACE.[46]

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This, then, concludes our short review, as described in points 1 through 10 above, of some of the monopolies we're examining that sabotage low cost substitutes purchased by the poor. Others are discussed in Schmitz (2020a).

A natural question arises: *What is the extent of U.S. monopolies?* From the discussion in this essay, and in Schmitz (2020a), we know it's extensive — but we don't know how extensive. Monopolies hide themselves well. Consider the warnings of Wendell Berge, who followed Thurman Arnold as Assistant Attorney General for Antitrust: "The weapons of monopoly are as numerous as they are artful and varied. It is for this reason that monopoly conditions have often grown up almost unnoticed by the public until one day it is suddenly realized that an industry is no longer competitive but is governed by an economic oligarchy able to crush all competition" (Berge 1947, 362-3).[47]

[46] This brings us back to Louis Schwartz's (1983) concern that market share analysis could be manipulated by the DOJ for ideological purposes. We live in a different "antitrust era" than when Schwartz wrote his article. A large antitrust consulting industry has developed, with members holding key positions of authority in the FTC and DOJ. One suspects that his concerns about market share manipulation would extend to those in positions of power that have financial interests in merger-review outcomes. The ACE industry as a whole greatly benefits when there is a steady stream of proposed mega-mergers. Of course, such mega-mergers will only be proposed if the merging parties have some confidence that the antitrust authorities (which, again, include members of ACE in leadership roles at FTC and DOJ) will approve them. The ACE-industry, through its influence on FTC and DOJ actions, cannot challenge mega-mergers, have members of ACE earn extraordinary amounts of money representing the challenged parties, reject the mergers, and then expect more mega-mergers to be proposed. This, of course, leads to troubling incentives within U.S. antitrust institutions. This is a strong force for lax enforcement of laws dealing with mergers.

[47] A dramatic, and ongoing, case of what Berge discusses involves monopolies in the construction industry. We have studied monopolies in the construction industry for many decades. In particular, we have studied the very strict job jurisdictions employed by union-management monopolies in the industry. Concerns about these job jurisdictions go back more than 100 years. In 1925, the Secretary of Labor James Davis addressed these concerns in "Jurisdictional Disputes." Monthly Labor Review 21.5 (November 1925): 1-3. (See also Whitney, Nathaniel Ruggles. Jurisdiction in American Building-Trades Unions. Vol 32.1. Baltimore: The Johns Hopkins Press, 1914). But we had no idea, until a few years ago, that monopolies in residential construction have conspired to sabotage factory homes for 100 years. Today, the most significant monopolies

We close the essay with a few more related topics.

—Related Literature: Thurman Arnold and Henry Simons

Both Thurman Arnold and Henry Simons, as already mentioned, were well aware of the ideas we've been discussing. They both knew well that monopolies destroyed substitutes that low-income households purchased, and that they inflicted great harm on the poor.

Arnold frequently discussed how monopolies exploited the poor. Arnold opened his book on monopolies, *Bottlenecks of Business*, with a figure depicting the U.S. distribution of incomes. The figure shows the vast number of households living in extreme poverty. The figure also highlighted the vast disparities in incomes, the large inequality. Arnold's point was clear: monopolies were responsible for much of this poverty, and had greatly influenced inequality (as they disproportionately harmed the low income).

In Arnold's Robert La Follette Memorial Address of 1942, he discussed his experiences as the Assistant Attorney General for Antitrust, as he studied the Great Depression and monopolies. "We found that our [United States] only expansion had been in luxuries – following the fundamental axiom that in a monopoly economy luxuries expand while the necessities of life contract. We had to subsidize the distribution of food and housing and medical supplies, while even those on relief had automobile and radios. The exploitation by monopolies is always most dangerous in the things that people cannot do without."[48]

Note well that Arnold says the poor were able to purchase the luxuries of the day — like

sabotaging factory methods are NAHB and groups in HUD. Though the sabotage has led to great harm for low-income Americans, we have yet to reach the stage, as Berge describes, where the public realizes the "industry is no longer competitive but is governed by an economic oligarchy able to crush all competition."

[48] Arnold's memorial address (and notes on the address) can be found in Thurman Arnold's archives at the University of Wyoming, Box 4, Folder 1.

autos and radios — yet were unable to purchase some of the necessities of life. The same, of course, is true today. Low-income households purchase high end TVs for a few hundred dollars, though that would not buy an hour of lawyer's time. Some commentators point to low-income households purchases of "luxuries" as evidence that poverty is overstated.[49]

—Moving beyond income inequality to economic well being

Because monopolies are widespread in many countries, measures of income inequality will understate economic inequality. There is a big value, then, to directly examine the determinants of household well being. A recent series of innovative papers has been doing just that. Jones and Klenow (2016) model economic well being as depending on household consumption, life expectancy and leisure.[50] Falcettoni and Nygard (2020) add education to such a model. Pijoan-Mas and Rios-Rull (2016) develop a model of economic well being that includes consumption, mortality and health. They find health is a very significant determinant of lifetime well-being.

As this literature develops, other significant determinants of household economic well being will surely be added to the analysis. One important factor is the state of the criminal justice system, including the bail system. Is there cash-free bail for very minor crimes? Another is the state of the legal system. Do low-income households have access to legal advice on civil

[49] See, e.g., Robert Rector and Rachel Sheffield, "Air Conditioning, Cable TV, and an X-box: What is Poverty in the United States Today?," Heritage Foundation, July 2010 and John Early, "Reassessing the Facts About Inequality, Poverty, and Redistribution," Cato Institute, April, 2018. These authors need to read Thurman Arnold.

[50] Jones and Klenow calculate household consumption in a manner similar to the literature on consumption-inequality we've been discussing. But the issues we've been discussing on measuring consumption are, of course, mitigated in their framework as consumption is only one of the dimensions of well being they consider. I find the terminology they use a bit confusing. They use the word "inequality" to refer to consumption-inequality. However, it would seem the word "inequality," without a qualifier, is best used for inequality of well-being.

matters? Readers will notice how harm caused by monopolies compounds. If there is no cash-free bail, low-income households may spend weeks in jail for the lack of a few hundred dollars. This can lead to threats of evictions and worse, like the loss of parental rights, with the household having no access to legal advice on how to legally protect themselves.

Related to this literature, we are building models for counterfactual analysis. One model develops a residential construction industry with a factory-built sector and a stick-built sector. We ask: How much harm is inflicted on low-income Americans because monopolies block factory housing (or how much is their economic well being reduced)? The models are not at the point to provide quantitative answers. But we need many different types of quantitative analysis. The analysis in Schmitz (2020a) is surely an intermediate step. It's shown that as NAHB and HUD introduced mechanisms to sabotage factory-built homes in the 1970s, the factory production of single family homes fell dramatically. As a share of total single-family homes produced, it fell from roughly 60% to 20% in a few years in the 1970s, and stands at about 10% today. We've already mentioned how the average price of small modular homes is dramatically lower than the average price of structures built with stick-built methods. This "quantitative" analysis surely suggests that monopolies in residential construction are significantly harming low-income households.

This analysis also strongly suggests that income inequality significantly understates economic-inequality. When models developed for counterfactual analysis are further along, we can use them to ask how much income-inequality understates inequality in well being.

— Related literature: Inflation rates by income

There is a literature showing that rates of inflation for goods primarily purchased by low-income households is greater than rates of inflation for goods purchased by high-income households (see, e.g., Hobijn and Lagakos (2005) and Jaravel (2018)). This literature does not discuss monopoly per se, but clearly there are parallels that might be explored.

— Phil Gramm on Idleness

We return to our discussion of the recent research proposing household-consumption inequality be used as a proxy for economic-inequality. One of the literature's motivations for looking at household-consumption is that there are welfare-type transfers not included in official income statistics. Households receiving such transfers, low-income families, may be consuming more than income "suggests." For this, and other reasons, it's argued household-consumption is a better proxy than household-income for household economic well-being.

Such transfers are effective in numerous ways. They support those in deep poverty, as well as giving low-income households a "leg-up" in escaping poverty. But the transfers can also, if not designed well, discourage work effort. Gramm and Early point to the significant increases in welfare-type transfers to households since the 1960s as evidence that transfers are leading to idleness. This is the genesis of their subtitle "Federal programs have reduced material poverty at the cost of promoting idleness and dependency."

But there is another view for why transfers have increased. As we've said all along, monopolies block low cost substitutes, reducing the value of income for the poor. But there is more. Because the low cost substitute is eliminated, so is the innovation in the substitute-industry that would have occurred had it not been sabotaged. Hence, the reduction in value of income

continues over time. It grows. As a result, transfers have to increase just to maintain the same level of "support" for low-income households.

Monopolies are keenly aware of this. When a monopoly sabotages a low cost alternative, many low-income households, of course, are not able to afford the monopoly good. But the number that cannot afford the good will increase through time, unless, of course, government increases support for the poor, typically with subsidies for low income households to purchase the monopoly good. Because of this dynamic, monopolies invariably step up as champions of the poor, lobbying governmental and private groups to provide subsidies to the poor to purchase the monopoly good. These subsidies not only directly increase demand for the monopoly good. But they also deflect any political opposition that might emerge to monopoly practices. As problems of homelessness and eviction grow in the United States, one hopes that our nation will finally wake up to the monopolies that are responsible for the crisis.

Consider the housing industry. When NAHB and HUD sabotaged factory-home production in the 1970s, this was a significant blow to the purchasing power of low income households (and, of course, to their well being). But the blow to their purchasing power grows over time. Why? Manufacturing industries invariably experience robust productivity growth over time. Manufacturing of factory-houses would as well. As an estimate of what productivity growth would be in the factory-built sector, we can take the productivity growth of the U.S. durable goods manufacturing sector as a proxy, as these industries are most similar to factory-production of homes. Labor productivity growth in durable goods manufacturing has averaged 3.2% per year over the last several decades. In contrast, labor productivity

in the residential construction sector (the stick-built sector) has been flat, or even falling, over the last several decades. So, over time, the productivity differences between durable goods manufacturing (and factory-production if allowed) and stick-built construction grows. Hence, the blow to the buying power of low income households grows over time. Another way to say this is: The real price of residential homes increases over time. As we already said, as time moves on, more and more subsidy is needed to maintain the same level of housing support.

The logic we just traced was well known 75 years ago. Thurman Arnold and Henry Simons alerted the public to the purpose of subsidies to purchase stick-built homes, and that subsidies were destined to grow over time. The subsidies were to prop up inefficient and costly producers. Here is Arnold (1940, p. 45): "[Y]ou can't spend money in a relief market [housing] like that without subsidizing inefficiency and thus raising both prices and taxes."[51]

So, we return to Gramm's argument that "government cannot rescue the poor." We see that, in fact, some parts of government are attacking the poor for their own material benefits. Groups in government, like those in HUD, which form alliances with NAHB to sabotage low-cost factory-built housing, have not been rescuing the poor, but rather have been inflicting great harm on them. And the same is true for many of the monopolies we study: Groups in government, whether in regulatory agencies or legislatures, whether at the federal or state level, have formed alliances with monopolies, and have been inflicting great harm on low-income Americans. What we need is for those parts of government that are dedicated to

[51] Arnold (1939) made a related point in a speech to the New York Building Congress: "The building industries are unique in that they have frankly given up half of their job. They take for granted that it is impossible, as things are today, for them to build houses without public aid and sell them cheaply enough that the lowest paid half of the population can afford to live in them."

helping low income Americans to wrestle power from these groups attacking low income Americans. There is little doubt that doing so will greatly benefit low income Americans.

— When Monopolies Destroy Low-Income Substitutes, They Also Lower Incomes of Poor

When monopolies block low cost alternatives, they often block the career paths of the low-income. Take an individual in a low or middle income family considering pursuing a profession in oral health services. Given the financial investment to be a dentist greatly exceeds that of becoming a therapist, the individual might choose to be a therapist. But when therapists are banned, this career option is no longer available.

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# Figure 1

### A Small-Modular Home

### (Sometimes Called a Manufactured Home)

*Next Step: Affordable Housing Done Right, available at: https://nextstepus.org/smartmh/

## Figure 2

**A Group of Small-Modular Homes**

*Nevada Housing Division-Manufactured Housing, available at: www.mhd.nv.org