An aerial photograph of a suburban neighborhood with numerous houses, streets, and green spaces. The houses have red-tiled roofs and are surrounded by trees and lawns. A road with a few cars is visible in the lower right. The overall scene is a typical suburban residential area.

Building a New Middle Class in the Knowledge Economy

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About the Author

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Executive Summary

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In this paper I argue for a new set of pathways to the middle class in the U.S. for those currently left behind in our economy.

First I analyze the levels of income and education needed to achieve middle-class status in America, why too few Americans obtain such education levels, and the trends in middle-wage occupational growth where such education would be valued. Then I outline a set of policy goals that would help millions more Americans enter the middle class, along with specific proposals to help get us there.

The key findings of my data analysis are:

- According to a reasonable benchmark for a middle-class family level of income (about \$50,000 on average), roughly 70 percent of Americans live in families with middle-class or higher incomes in any given year.
- The odds of attaining middle-class incomes in families where no adult has a bachelor's (BA) or higher degree often depend crucially on having two or more earners in a family.
- Only about half of Americans currently attain any postsecondary credentials, though these are increasingly needed for middle-class incomes — and even fewer have them in well-paying fields.
- America has experienced some job polarization since 2000, but the shrinkage of the middle share has been modest — from 41 to 39 percent between 2000-15 — while a “new middle” consisting of well-paying jobs that require postsecondary education or experience is growing.
- Advancements in digital technologies in the future will not result in the “end of work.” The real question is whether workers whose skills become obsolete will be able to retool and find well-compensated employment in other jobs or industries.

Based on the above analysis, we need a range of policies that form a comprehensive system to help more Americans without BAs enter the middle class. These policies should: 1) Improve the attainment of education and skills at the sub-BA level that the labor market values; 2) Create more good jobs in the private sector for skilled workers to fill; 3) Ensure access to

good education and jobs among those living in underserved or distressed communities, especially cities that have lost manufacturing jobs or rural areas; and 4) Keep less-educated Americans in the workforce and “make work pay” for them.

To accomplish this, I propose the following:

1. Set a national goal of adding one million new apprenticeships in America, on top of the 400,000 that already exist. Governments at all levels should use technical assistance and financial incentives to reach this goal.
2. Launch a \$10 billion new “Race to the Top” initiative to give states incentives to work with private employers and community colleges to create new, work-based learning systems.
3. Establish a “High-Road Jobs Fund” for states to encourage employers to upgrade their workers’ skills and pay them middle-class wages.
4. Create a “Community Stabilization Fund” for communities left behind by technological change and globalization.
5. Set up a competitive federal grant program to encourage states to “make work pay” and bring people back into the labor force.

If implemented together, these policies should help millions of American families, now excluded, join the middle class.

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Building a New Middle Class in the Knowledge Economy

I. INTRODUCTION

The election of Donald Trump to the presidency in 2016 has made policymakers and politicians in the U.S. much more aware of an important demographic group – the white working class – than before.

We have ignored their plight and their concerns for far too long, and have grown much too complacent about the extent to which they have fallen behind more-educated groups and shared insufficiently in the economic growth we've experienced in the past few decades.

Of course, even before the election, labor market analysts and demographers had been discovering that the economic and social outcomes we observe among a large group of less-educated Americans – particularly men with high school or less education – were stagnating or deteriorating. For instance:

- Employment and labor force participation among less-educated men of all racial groups have declined quite significantly;
- Their wages (adjusted for inflation) are below what they were in 1979;
- Their rates of marriage and custody of children have been declining;

- Their dependence on opioids and Disability Insurance has risen; and
- Their mortality rates have risen, often due to poor health or suicide.¹

The growth of substance abuse in this population — and especially the shortening life spans in the white working class — have been particularly shocking. But many analysts see these outcomes less as causes of the deteriorating economic position of the working class, and more as symptoms of their growing inability to participate successfully in the U.S. economy and society.

Therefore, policymakers must address the economic plight of the working class in America and help many more of them achieve the American Dream — which we define as entering and staying in the middle class. Anger and resentment in the working class, especially among whites, is very high. Yet, given the economic dislocations of the past few decades — particularly the dramatic changes in the labor market associated with the rapid rise of digital technologies and the forces of globalization — achieving this outcome is much easier said than done.

In this context, Donald Trump exploited the fears and resentments of America's white working class by blaming their plight on two particular aspects of globalization — namely, foreign trade and immigration — and by promising to restore their previous economic success by returning them to lost jobs in manufacturing. This makes sense in a very superficial way — because it was in manufacturing jobs that less-educated men

(i.e., those with high school or less education) were best able to achieve middle-class incomes and lifestyles in the 20th century.

Donald Trump exploited the fears and resentments of America's white working class by blaming their plight on two particular aspects of globalization — namely, foreign trade and immigration.

But, as many analysts have pointed out, this goal is highly misleading and ultimately unattainable. For one thing, the number of manufacturing jobs in America has fallen very dramatically; since 2000, we've lost five million such jobs, or nearly a third of those that existed then, leaving a total of 12 million — or just 8 percent of all jobs. Of these, less than two-thirds are in *durable* (as opposed to nondurable) manufacturing, where the well-paying jobs for workers with high school education are mostly found. And those that now pay well — such as machinists, precision welders, or engineers — require substantially more technical education or training than in the past.

In contrast, the service-producing sector of the U.S. economy now consists of more than 100 million private sector jobs. The lowest-wage sectors of the service economy — such as retail trade, amusement/hospitality, and personal services — account for 35 million jobs alone.²

Of course, manufacturing jobs still matter to many regional economies, and we should support policy efforts to prepare more workers for these jobs.³ But this cannot be the only or even primary focus on efforts to improve

1 For more information and analysis, see Case and Deaton (2015), Eberstadt (2016), Council of Economic Advisers (2016), and Krueger (2016).

2 See, for instance, Appelbaum (2017).

3 Examples of state-level programs designed to generate skilled workers for advanced manufacturing include the FAME apprenticeship program in Kentucky and Drive to 55 in Tennessee.

wages and benefits for U.S. workers. Even if Trump were able to restore the five million manufacturing jobs lost since 2000 – a highly dubious proposition – these would still constitute a very small fraction of the low-wage jobs in which so many less-educated Americans now work. In short, any effort to bolster middle-class employment for the millions of workers who have been left out of prosperity in the current U.S. economy must include manufacturing as well as construction, wholesale and retail trade, and the service industries to have any hope of being successful.

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Goals of This Paper

My main goal in this paper is to outline a bold policy agenda that would create many more *pathways to the middle class* for those now left out. This agenda would include a comprehensive and mutually reinforcing set of policies designed to:

- Improve the attainment of education and skills, especially below the bachelor's degree (BA) level, that good-paying employers value;
- Create more well-paying jobs among private sector employers for these skilled workers to fill;
- Ensure access to skill building and jobs in distressed and low-income communities; and
- Keep more unskilled workers in the labor force and “make work pay” more for them too.

These policy approaches should not be a lengthy laundry list, and needn't all be brand new; indeed, many states are implementing some parts of them. But they should fit together to form new and stronger *systems* of pathways, with sufficient scale to enable millions more Americans to join the middle class. In my proposals below, new federal resources would be available to states – and especially to economically distressed communities within them – to create such systems and bring them to appropriate scale.

But, before getting to the policy discussion, we must carefully look at the U.S. labor market since that is where workers attain the earnings that may or may not propel them into the middle class. More specifically, we need answers to the following questions: What levels of income and education are needed to join the middle class? Are enough U.S. workers obtaining those levels of education? And are enough jobs being created that skilled workers can fill in order to obtain middle-class wages? We turn to these issues next.

II. WHAT DO THE NUMBERS SHOW?

Below we use statistics from the Census Bureau and the Bureau of Labor Statistics to answer the following questions:

- What level of annual income is needed for most Americans to join the middle class?
- What levels of education have most American workers obtained, and how much education is generally needed to reach the middle class?
- Which occupations – covering what percentages of workers – pay wage levels sufficient to reach the middle class? How are

these trending over time? What levels of education, training or experience do they require?

These data will address both the *supply* of education and skills among U.S. workers and the ongoing *demand* for such skills in the workplace.

A. Income Thresholds for the Middle Class

How much income must a family have in order to join the middle class? Any such threshold will be quite arbitrary, but defining one can help us judge how attainable this goal is for workers (and their families) with varying levels of education and different occupations.

Accordingly, I consider families with prime-age adults (defined as ages 25-54) as part of the middle class if their *annual incomes are at least \$50,000* on a regular basis; though, for younger and smaller households, the corresponding threshold should be lower (and closer to \$40,000).⁴ The threshold is appropriate since it is roughly two-thirds of median income for family households in the U.S., and it is also over twice the official poverty line for a family of four.⁵ On the other hand, in regions where the cost of living is substantially above average (particularly the largest metropolitan areas on the two coasts), a higher threshold will be appropriate – as is a lower one in regions with lower-than-average living costs.

Of course, many families that have attained middle-class status are at risk of losing it, especially due to economic and employment dislocations (which may rise in frequency and

magnitude in the future, as we discuss below) that can eliminate well-paying jobs. Right now, we focus mostly on *opportunity* to join the middle class, though enhanced *security* for those trying to remain there matters as well.

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And we recognize that the \$50,000 threshold is only an average floor, and one that leaves families at the lower end of middle-class attainment. Most families will, and perhaps should, aspire to move well above that level. Still, family incomes at or above that level do indicate attainment of a level of prosperity to which most American families strive, but which is not currently attainable for large swaths of the lower-income and working-class (or non-college-educated) population in the U.S.

By this definition, roughly 70 percent of Americans live in families with middle-class or higher incomes in any given year. Of course, a large number of those experience lower incomes both earlier and later in the life cycle, as well as temporary fluctuations in and out of that range for a variety of reasons (such as unemployment, child rearing, temporary injuries, or poor health). These fluctuations do not change the analysis fundamentally.

Finally, we note the obvious but still important point that *the odds of any family attaining middle-*

⁴ We use median family income rather than household income as the basis for this definition, since the latter includes many unrelated individuals often early in the earnings life-cycle. We also focus on wage and salary income rather than compensation, where the latter also includes the value of fringe benefits. Adjusting income standards (such as the official poverty line) for household age or size is frequently done on the basis of “equivalence scales” in the economics literature.

⁵ Many studies use 150 percent (or occasionally 200 percent) of the official poverty line to define “low-income” households, especially given well-known weaknesses in the official definition of poverty in the US. In many European countries, poverty is defined as 50 percent (or occasionally 60 percent) of median income, so starting above those levels when defining middle-class incomes makes sense as well.

class incomes often depend crucially on the presence of two or more earners in the family – especially for those with adults who do not have BA or higher levels of education. It is clearly not impossible for a single parent to achieve middle-class status for his/her family – but quite challenging for those without BAs, given that median annual earnings of workers with lower education are in the \$20,000-40,000 range (as we note below).

It is clearly not impossible for a single parent to achieve middle-class status for his/her family – but quite challenging for those without BAs.

Unfortunately, single-parent families have grown more common in recent decades among all race/ethnic groups, at least partly as the earnings capacity and labor force participation of less-educated men have fallen over time.⁶ The same is true for two-parent families where one has left (or never joined) the workforce due to disability or other reasons – a phenomenon we know has also become more frequent as so many less-educated men have left the labor force.⁷

And, even for families with two earners, their ability to attain middle-class incomes will depend heavily on the number of hours each works during the year. The median hours worked by individual prime-age Americans is about 1800 per year, which is very close to year-round full-time effort; and, similarly, the median for two-parent households is 3600.⁸ Since the median hourly wage of Americans is now about \$18.40,

a two-adult household working at the median number of hours easily crosses the middle-class threshold (at \$66,240), while a single earner at the median (\$33,120) does not.

Therefore, when we consider policies to enhance the access of American families to middle-class livelihoods below, we will need to address those that encourage and support more work effort from Americans – such as paid family leave and even Disability Insurance reform – as well as those designed to improve the skills and raise the pay levels of Americans when they work.

B. The Education and Earnings of American Workers

More than ever before, the ability of Americans to attain middle-class incomes depends on their educational attainment – with very strong rewards in the labor market for more education. Given that fact, how much education do Americans actually attain, and how much earnings are associated with each level?

Table 1 in the Appendix presents Census data on the education levels attained by Americans (as of 2015), while Figure 1 presents the average annual employment rates and earnings at different levels of education. Separate data appear for young adults – in other words, those aged 25-34, whose achievements tell us more about ongoing trends in education and earnings – and for those in ages 25-64, which reflect the current state of the broader adult population and workforce.⁹

The first part of the table indicates the following facts about educational attainment in the U.S., even among the young:

6 For different perspectives on the extent to which declining marriage rates and the growth of single-parent families are based on labor market developments or changes in behavioral norms (often called “culture”) see Cherlin (2014) and Sawhill (2015).

7 See Krueger (2016) and the Council of Economic Advisers (2016).

8 Average hours worked in the US can be found at <https://data.oecd.org/emp/hours-worked.htm>

9 <https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-pinc/pinc-03.html>

- Approximately 90 percent of young Americans have attained high school diplomas (including GEDs);¹⁰
- Nearly two-thirds of all Americans (and nearly three-fourths of young high school graduates) attend some type of college;
- Only about 10 percent of all attain an associate's degree; and
- About a third of all Americans (and 36 percent of the young) attain BA degrees or higher.

Overall, this means that *fewer than half of U.S. workers have obtained a postsecondary degree* of some type, though some also attain certificates from either higher education institutions or private industry. As we note below, our relatively high college *enrollment* rates do not translate into high educational attainment, since so many students fail to *complete* programs and earn credentials – especially among lower-income or first-generation college students, and especially at community colleges.

Of course, the ability of those without BA degrees to attain middle-class incomes often depends not only on their total educational attainment, but also on their field of study. In fact, those earning associate degrees in a technical field – usually an Associate in Science or in Applied Science (AS or AAS) – or AAs in certain occupational categories fare much better in the labor market than those with AAs in the liberal arts as their final degree. And some workers with certificates in high-demand fields can often earn significant labor market rewards as well.¹²

But, too often, students at community colleges emerge with either no declared major or concentrations in fields like “general studies” or “liberal studies,” which have very little labor market value. Indeed, over 40 percent of community college students in some states (like Florida) have recently majored in these fields – both among those who complete the degree and those who don't. This would not be so harmful if most of these concentrators transferred to four-year colleges or universities and ultimately obtained BAs; but the vast majority do not, as we note below. Thus, the net rewards to college credential attainment short of a BA depend heavily on whether students emerge with credentials in fields the labor market values and rewards – and many do not.

Over 40 percent of community college students in some states (like Florida) have recently majored in these fields – both among those who complete the degree and those who don't.

The figures then shows us median earnings levels for Americans at every level of education. Clearly, those with BAs or more education have attained middle-class earnings or can do so with a small earnings supplement from a spouse. In contrast:

- Those with associate degrees earn about \$40,000 per year, on average, and the vast majority have at least some earnings;
- Those with some college but no degree earn about \$36,000 a year, and about three-quarters of them have earnings;

10 Trends in high school graduation rates in the US are analyzed in Murnane (2015), while the value of a GED degree is debated in Murnane et al. (2000) and Heckman and Rubinstein (2001).

11 See Holzer and Baum (2017).

12 See Backes et al. (2015) and Holzer and Baum, op. cit.

- The median high school graduate earns about \$31,000 per year, and almost 30 percent have no earnings at all; and
- The median earnings for high school dropouts are just over \$22,000 per year, and about 40 percent report no earnings.

Younger workers at each level of education earn considerably less and work a bit more than the older group. And, in either age group, there is a lot of variation in earnings and employment around the median. Those above the median in less-educated categories have an easier time joining the middle class, while those below are mostly excluded. Either way, the percentages of less-educated Americans with low earnings or not working at all is troubling.

What the data for both age categories imply is that an average associate degree — or even a certificate in a high-demand field — plus a modest supplement from a spouse's earnings can get most workers into at least the lowest rungs of the middle class. In contrast, *those with only a high school diploma need quite substantial earnings from a spouse to do the same, and large percentages of them have no earnings at all*; those with some college but no degree fare only a bit better. Clearly, those without high school diplomas have little chance of attaining middle-class income levels.

C. Occupations and Earnings over Time

The earnings of Americans over time depend not only on the supply of education and skills among workers, but also on employer demand for such skills across occupations and industries. What does such demand look like now at the occupational level, especially for well-paying jobs? How has it trended over time in recent years, and what might we infer about future trends? And what education skills are required of workers to obtain these jobs?¹³

This issue is important because economists and other analysts have noted a growing “polarization” of the labor market in the past few decades — or “hollowing out” of the middle — with middle-skill or middle-wage declining in number while those at the top and bottom of the wage and skill scales apparently growing. If such polarization continues, it will become harder over time for those workers with education below the BA level to attain sufficient income to enter and stay in the middle class.

On the other hand, most of the polarization to date has been driven by shrinkage in a few key occupational categories — namely, production and clerical jobs (and construction jobs in certain periods) — which enabled men and women with high school or less education in the previous century to attain middle-class incomes and lifestyles.¹⁴ These are also the job categories most heavily impacted by new digital technologies and globalization. If middle-wage employment is stable or growing as a share of all jobs outside these categories — and if

¹³ Economists believe that, when labor markets are in “equilibrium,” the amount of labor demanded (by employers) will equal the amount supplied (by workers). Nevertheless, imbalances between employer skill needs and those provided by workers can still be signaled by changes in job vacancy durations or wage premia for skilled workers, and can also result in workers who are over- or under-qualified for the jobs they obtain (at least in the short term).

¹⁴ Whether or not construction employment contributes to job polarization and the declining middle-wage sectors depends on the exact period considered. Construction employment rose substantially between 2000 and 2006, declined dramatically in the Great Recession, and then recovered (though not to its previous peak) after 2010.

workers can obtain sufficient skills to fill these jobs over time — then the shrinking of the middle needn't imply a shrinking middle class over time.¹⁵

Based on payroll occupational data from the Bureau of Labor Statistics (BLS), Table 2 presents the shares of jobs, measured at the detailed occupational level, that currently pay wages sufficient for entry into the middle class (at specified levels of annual work effort) and how they have trended over time.¹⁶

These data show the following:

- Over the period 2000-15, there has been some shrinkage in this middle share over time — from 41 to 39 percent of the workforce — which is consistent with modest ongoing labor market polarization (which began in the 1980s);
- But the shares of all jobs accounted for by those with middle wages, not including production, construction and clerical jobs, actually rose modestly during this period — from 26 to 29 percent.¹⁷

BLS projections until 2024 also show fairly constant shares of the labor market in the middle-wage categories, and substantial hiring in these areas — driven both by employment growth and the replacement of retiring Baby

Boomers.¹⁸ Data in the Appendix also show that many of the middle-wage, sub-BA job categories that have grown over time include a range of technician jobs — in health care, advanced manufacturing, mining and other sectors. Others have grown as well — like legal assistants, personal service supervisors, physical therapist assistants, graphic designers and meeting planners.¹⁹

The jobs that constitute the current middle generally require more education, as well as training or work experience, than those of the clerical and production jobs of the past.

Indeed, many of these are the jobs employers report difficulty filling — despite the broader shrinkage in middle-skill demand. Vacancy rates and durations in these sectors tend to be high as well.²⁰

Over the period 2000-15, there has been some shrinkage in this middle share over time — from 41 to 39 percent of the workforce — which is consistent with modest ongoing labor market polarization.

These data illustrate an important irony in the U.S. labor market: while middle-wage jobs broadly are shrinking, some of those remaining have become very hard for employers to fill.

15 See Autor (2010) and Holzer (2015) for more analysis of this issue. The job categories that have shrunk most rapidly in the era of digital technologies and globalization are those where fairly “routine” tasks had been performed, such as production and clerical work.

16 Occupational data are drawn from the Bureau of Labor Statistics’ Occupational Employment Surveys (OES): https://www.bls.gov/oes/current/oes_nat.htm#00-0000. The table shows the shares of jobs in 2015 that pay middle-class wages, measured at 3000 hours of work in the household per year, and using 150 percent of the median wage at the top of the range. The shares are presented both with and without the production, construction and clerical job categories included.

17 Alternatively, using 3600 hours, the shares of workers in middle-wage jobs changed from 52 to 46 percent when including construction, production and clerical categories, and from 28 to 29 without them. Using 200 percent of the median rather than 150 percent does not change the results qualitatively.

18 See the BLS employment projections for 2024 at <https://data.bls.gov/projections/occupationProj>.

19 We use the same definitions of middle-wage occupations here as in Table 2, as defined in Footnote 16.

20 The national vacancy rate for the end of 2016, as measured by the Job Openings and Labor Turnover Survey (JOLTS) data from the BLS, is 3.6 percent. But it is 5.4 percent in health care and 2.6 percent in manufacturing. Though the latter is below the national average, the vacancy rate in manufacturing is relatively high compared to the hiring rate in the industry (2.2 percent), indicating relatively long vacancy durations there.

There has been some debate about exactly how to interpret this contradiction, and whether or not skill shortages really exist in these sectors.²¹ Still, the tight labor markets we observe in these sectors create an opportunity for many workers now stuck in the working class to move into existing better-paying jobs, if they can obtain the required skills.

Yet, while some employers are creating such jobs and trying hard to fill them, others are rapidly shedding their well-paying jobs and creating “fractured workplaces” by outsourcing work and turning their employees into independent contractors with many fewer workplace rights and benefits.²² Thus, trends on both the supply and demand sides of the market can lead to both a shrinking middle and the greater difficulties workers have joining the middle class in America.

Trends on both the supply and demand sides of the market can lead to both a shrinking middle and the greater difficulties workers have joining the middle class in America.

One other dimension of the demand side of the market merits attention: too many high school graduate workers reside in rural areas or small-to medium-size metro areas that have suffered substantial job loss in the past few decades, especially in manufacturing.²³ These regions appear to have fewer good-paying jobs and less growth in these categories than major metro areas. Accordingly, “access” to well-paying jobs

and opportunities for skill enhancement depend quite importantly on where people live, as we discuss more below.

D. Summary of Data

To summarize what we learn from the Census and BLS data overall:

- The attainment of middle-class incomes, especially among those with BAs, usually requires some postsecondary educational attainment and significant hours of work in two-earner families;
- On the supply side of the job market, only about half of Americans attain the postsecondary credentials needed for middle-class incomes, and even fewer have them in well-paying fields;
- Too many Americans without postsecondary education earn low wages and increasingly do not work;
- On the demand side of the job market, the decline of well-paying clerical and production work has helped “polarize” the labor market and has eliminated important shares of jobs that lead to middle-class earnings; but
- Outside of production and clerical work the shares of middle-earning jobs are growing moderately, though most of these have significant education or training requirements.

Overall, the data have two implications for policy.

21 See, for instance, the reported “skills gap” and predicted worker shortages by the Manufacturing Institute, which is the workforce arm of the National Association of Manufacturers. But measuring actual shortages is quite difficult (Barnow et al., 2013), and some analysts remain skeptical of “mismatch” notions, given the fairly modest growth of real wages over the past decade, even in highly skilled occupations and industries (e.g., Holzer [2016] and Cappelli [2016]).

22 See Weil (2014) as well as evidence from Katz and Krueger (2016) showing dramatic growth in the share of workers describing themselves as independent contractors in the past decade.

23 See Holzer et al. (2011) for data on larger v. smaller metropolitan areas, and those that have lost substantial manufacturing employment among the latter. For a qualitative view see Vance (2016).

First, regarding the supply of skills among workers: if more workers who currently have only high school or less education want to join and remain in the middle class, they will need to increase their attainment of the postsecondary skills that are required by employers in good-paying jobs in high-demand sectors. Many of these jobs do not require BA degrees.

Second, on the demand side of the job market: since the growth of job categories paying middle-skill wages — even excluding the production and clerical categories — remains modest, we should stimulate more such job growth among employers. We discuss this possibility more fully below.

Accomplishing all of this will require that we build strong and comprehensive pathways to the middle class, especially in underserved communities. And we will need robust efforts to get more less-educated workers back into the labor market so we can raise the numbers of families who join the middle class by having two earners.

III. CREATING NEW PATHWAYS TO THE MIDDLE CLASS

The disappointing education and employment outcomes we note above for Americans without BA degrees or higher reflect major weaknesses in our current sub-BA education and training systems and in efforts more broadly to keep workers attached to the workforce. Below we analyze the weaknesses and even failures that now exist, and then outline a new and stronger system that could expand opportunity for those looking to join the middle class.

A. Failures of the Current Education and Employment System Below the BA Level

Why do so many Americans fail to obtain a postsecondary credential, especially below the BA level, which the labor market rewards? And why are their earnings so low?

First, many young Americans arrive in high school with weak academic preparation, which does not improve during their secondary school years; in such cases, many are not ready for any kind of college. But most also do not have access to alternative pathways to the labor market, like high-quality career and technical education (CTE). A long history of tracking minority and low-income students away from college in “vocational education,” and providing weak training for the labor market, has greatly stigmatized such programs in the U.S. and discouraged good students from taking such classes. Most U.S. high school students also receive virtually no labor market information or career counseling, which might motivate them to take more classes to prepare them for jobs in high-demand and well-paying fields like science, technology, engineering or math (STEM).

This is not true in many European countries, where CTE provides students not bound for college with strong technical and employability skills, often through apprenticeships or other forms of “work-based learning” that appeal more to many students than purely academic modes in the classroom. And, even in the U.S., the quality of CTE is slowly improving, especially through a number of model programs that are either promising or proven, and apprenticeship is expanding.²⁴ But, to date, most high school students face few such options.

24 See Hoffmann (2011) and Holzer et al. (2013).

Second, most young Americans enroll in some type of college (two-year or four-year, public or private, not-for-profit or for-profit) after high school. But completion rates are quite low, especially in community colleges;²⁵ and too many students who complete programs gain credentials with little market value. Partly, these outcomes reflect problems among the students themselves, such as their weak academic training, lack of liquid family wealth to pay for college, pressure to work part- or full-time to support their families, and lack of information (or “social capital”) about how to pick appropriate colleges or succeed there once they attend.

Even in the U.S., the quality of CTE is slowly improving, especially through a number of model programs that are either promising or proven, and apprenticeship is expanding.

But, partly, the weak outcomes also reflect *institutional* factors, such as too few resources for community colleges and too few incentives for them to spend their resources in ways that respond to labor market needs. Regarding resources, public community colleges get much lower subsidies per student hour than do any public four-year colleges in most states, while the lower-tier four-year colleges get much less than the flagship schools (even after accounting for research in the latter). This is true even though more of their student populations come from lower-income families and arrive with greater needs for supports and services.

Even serious academic or career counseling is unavailable in most community colleges due to financing constraints.²⁶

But strong performance incentives are also lacking. Despite a trend in recent years towards *outcome-based funding* of public colleges – where state subsidies are tied to some measures of their student performance – most colleges continue to be financed without regard to subsequent labor market earnings of their students. And courses in the technical fields, which the labor market rewards more strongly, are more expensive to provide – especially given the high costs of keeping instructors and equipment up to date.

Accordingly, many two-year colleges limit their offerings of occupational AS degrees or certificates, though the labor market rewards them highly. While sector-based partnerships and training programs are growing at community colleges – as we see quite strong evidence of their success in raising the earnings of low-income students – their scale remains too limited.²⁷ And, given the unstructured nature of most community colleges, students often make haphazard choices in very uninformed ways, which contribute to their low completion rates.²⁸

Finally, over 80 percent of younger students enter community college expecting to transfer to four-year institutions and receive BAs; in fact, only about a fourth transfer, and about 12 percent receive BAs. This enormous gap

25 As noted in Holzer and Baum (2017), completion rates after six years in four-year colleges and universities average about 60 percent, but much lower at our lower-tier schools; and completion rates at community colleges are 20-30 percent, depending on exactly who is included in the student population.

26 Holzer and Baum (op. cit.).

27 See Maguire et al. (2010) as well as Conway and Giloth (2014).

28 See Bailey et al. (2015).

between expectations and reality — again reflecting the lack of counseling they receive — leads many students to aimlessly take liberal arts classes and perhaps attain AAs in “general studies” or “liberal studies” with virtually no market value.

Third, many American employers are also reluctant to invest their limited resources in on-the-job training for their workers. Indeed, such expenditures are highly skewed towards professional and managerial employees in firms — perhaps because employers expect them to stay longer in their jobs or because their work history is better (indicating greater “job readiness and employability”), and their higher educational attainment suggests they will successfully complete such training.²⁹ Indeed, the low quality (as perceived by employers) of so many non-college job applicants — in terms of analytical and communication skills as well as job readiness — reinforces their tendency to forego efforts to invest in the skills of this population.³⁰

More broadly, too many American firms choose “low-road” compensation strategies. Economists have long argued that, even in the same industry and region, employers make choices about whether to pay low wages and benefits — competing on the basis of the lowest labor costs imaginable — or provide higher compensation by investing in training and promotion ladders for their workers, and competing on the basis of high worker skills and product quality rather than low labor costs.³¹ Indeed, employers making very different compensation choices often compete

directly with each other. But, as noted above, some evidence suggests that employers are shifting over time towards lower-road production methods, particularly when they outsource all of their human resource activities and turn employees into independent contractors.³²

Historically, various institutions like collective bargaining induced firms to take the “high road” in job quality and compensation. Unions can and do still play this role, but their presence in the private sector has been shrinking for six decades (and they now represent less than 7 percent of private workers). Also, state economic development plans have sometimes sought to encourage good job formation, though too often they end up creating bidding wars between states for large employers whose jobs might not even be very good.

Some firms choose higher-road human resource practices on their own, since they lower turnover costs and improve product or service quality. They can generate high profits to shareholders while, at the same time, generating better worker outcomes. Because of this, high-road employers generate “public goods” for American workers. Public goods are anything that benefits everyone but that private markets tend to undersupply. For example, many companies are reluctant to make significant investments in training their workers for fear those workers will leave before they can recoup the cost of those investments. Other examples of “market failure” include poor information about training options among employers, as well as high business start-up costs (and an inability for smaller firms to

29 See Becker (1996).

30 Low “job readiness” to employers can be inferred from low previous work experience or failure to pass drug tests, for example.

31 See Holzer et al. (2011) and Ton (2014).

32 As noted above, see Weil and also Katz and Krueger, op. cit.

share them with other employers).³³ These market failures imply that the private sector will generate a sub-optimal number of high-wage jobs, and that public assistance therefore is warranted to produce more of them.

Finally, workers in communities that have been left behind often have little access to both postsecondary education and good-paying jobs. Some of these communities are low-income and heavily minority neighborhoods within large and thriving metropolitan areas; others are smaller cities or metro areas, as well as rural areas – and often mostly white – that have been hard hit by loss of manufacturing jobs, especially in the Midwest.

There and elsewhere, labor force participation rates have declined a lot among less-educated men, as jobs are less available and wages are low. The opioid crisis is geographically widespread but concentrated in these areas. Indeed, recent research by Alan Krueger shows that very large fractions of prime-age men who have left the labor force take pain medication very regularly.³⁴

Labor force participation rates have declined a lot among less-educated men, as jobs are less available and wages are low.

And new evidence suggests that children raised in the communities left behind often suffer from lower education and earnings later in life.³⁵ Generating access to education and good-paying jobs in these geographic areas is therefore critical for new paths to the middle class to be effective in helping both parents and children enter the middle class in these areas.

B. New/Stronger Pathways to the Middle Class

One clear message of the 2016 election is that our country has been failing less-educated Americans – especially those who live in communities hit hardest by economic and technological change. They deserve a new and more extensive system of pathways to middle-class jobs.

Specifically, these new pathways must:

- Raise the acquisition of the postsecondary education and skills that the labor market rewards, especially below the BA level;
- Create more well-paying jobs among private-sector employers;
- Ensure access to skill building and jobs in underserved communities;
- Keep more unskilled workers in the labor force and “make work pay” more for them too.

Several elements of this approach to pathways are not new, and already exist in many states and localities. But they need greater attention and support and should be knitted together in a comprehensive system that helps less-educated workers raise their skills and incomes. Creating such a system will require the strong commitment and cooperation of leaders at all levels of government.

1. Raising Acquisition of Skills with Labor Market Value

Raising skill acquisition among our currently less-educated workers requires a set of complementary programs and practices that should begin in secondary school but continue

33 Historically, industry-wide unions ran apprenticeship programs, so individual employers did not need to set up and manage their own.

34 See Krueger (2016).

35 See Chetty et al. (2014).

into postsecondary education and places of employment.

a. High School

Starting in secondary school, students should face a range of high-quality pathways to postsecondary education and/or employment. It is not enough that students be “college and career ready”; the pathways should be well defined, with appropriate supports and services along the way, to move large numbers of individuals along them.

To begin with, all students should receive career counseling and labor market information, especially regarding local opportunities. High-quality CTE options such as Career Academies — or promising models like P-TECH or Linked Learning — should be expanded and made available to all students, regardless of whether or not they are bound to four-year colleges or universities. It should also be clear that such programs do nothing to deter participating students from four-year degree programs, but instead create more pathways to postsecondary institutions and the labor market.

If students have skill deficiencies that would limit their abilities to succeed in certificate or associate degree programs, these should be identified by grade 10 or 11 and remedied. One such example is the Florida College and Career Readiness Initiative (FCCRI), in which students indicating plans to attend college are tested in grade 11, and remediation provided for those with skill deficiencies.³⁶ Successful remediation there would reduce or eliminate the need for “developmental education” among so many community college students, which so often becomes an impediment to successful

completion of for-credit credentials at community colleges.

If students have skill deficiencies that would limit their abilities to succeed in certificate or associate degree programs, these should be identified by grade 10 or 11 and remedied.

b. Community/Technical Colleges

The primary focus of our efforts in higher education should be to improve the success rates of students enrolled in community colleges — either in certificate or associate programs, and especially those with strong labor market rewards. Some efforts should provide greater financial assistance and other supports and services to community college *students*, while others target the *institutions* themselves.

Students should receive much more counseling about potential postsecondary options and their costs before they enroll, as well as potential sources of funding. To relieve the financial burdens (real or perceived) of higher education on lower-income students, we should greatly expand their access to *income-based repayment* loans, in which interest and repayments in the future depend on earnings at any point in time. In addition, we should create *lifelong learning* accounts for each worker so they can more easily retrain at various points in life where earlier jobs have been lost or new opportunities arise for advancement.

In many ways, this approach is more sensible and efficient than the recent push for free community (or even four-year) college in Tennessee, Oregon and elsewhere. If the first two years of four-year colleges still require

36 See Mokher et al. (2015).

tuition payments, many students will flock from these to the two-year programs; but their own educational outcomes will worsen, on average, and teaching capacity in high-demand fields will also be even more constrained. Providing free tuition in *all* state colleges and universities would be very expensive and would be quite regressive, since the most expensive programs at flagship institutions are heavily attended by fairly high-income students.

Policies to address the institutional problems — especially at community colleges — require a combination of more *resources* for these institutions and more *incentives* to spend them effectively. The resources should be very carefully targeted on expanding teaching and training capacity in high-demand fields (often through sector partnerships and career pathways) and on important supports and services, like career counseling.³⁷ The incentives should tie state subsidies for community colleges (and perhaps four-year institutions) to the subsequent earnings of their students — especially those who are minority or disadvantaged.

Indeed, many states have already been expanding their use of *outcome-based funding* formulas, though too few have emphasized labor market as opposed to academic performance — especially among students from less-affluent families. It is also important to avoid unintended consequences, like encouraging the colleges to raise their admissions requirements or lower degree requirements to improve their numbers.³⁸

It is also important to avoid unintended consequences, like encouraging the colleges to raise their admissions requirements or lower degree requirements to improve their numbers.

Still, the combination of more resources and stronger incentives will hopefully enable community colleges to expand effective sector-based training and career pathway models, as well as occupational degree programs in high-demand fields that pay well. And a range of other reforms in these institutions should be encouraged that will likely improve student performance there as well — such as more effective remediation and counseling that would enable students to have clear goals and make clearer and more sensible choices of programs and courses.³⁹

c. Work-Based Learning

Opportunities for work-based learning, especially apprenticeships, should be greatly expanded both for secondary and postsecondary students. Currently, there are 400,000 registered apprentices in the U.S. at any point in time — which is much lower, on a per-capita basis, than we find in most European countries. Great Britain provides an example of a country that has dramatically raised its number of apprentices in the past decade.

Apprenticeships appeal to many employers because they can provide the specific on-the-job training for the skills they seek; and they

37 The strongest evidence on the importance of providing a comprehensive set of supports and services to disadvantaged community college students can be found in the MDRC evaluation of the ASAP program at City University of New York (Scrivener et al., 2015), which doubled the graduation rates among students in need of remediation, though they were required to attend school full-time.

38 See the National Conference of State Legislatures (2017) for information on which states are implementing outcome-based funding for higher education. See also Holzer (2014) and Deming and Figlio (2016) for a discussion of potential benefits and pitfalls from doing so.

39 Community colleges would have more incentive to adopt “guided pathways,” as advocated by Bailey et al. (2015), or institute reforms in developmental education along the lines advocated by Long (2014).

appeal to workers, who like getting paid while they train (Lerman, 2016). Wages are sometimes below market level, so employers don't bear the financial burden of training. But, since the training is often quite specific to employers and their sectors, it is important to provide a more general credential – like an associate's degree or certificate from a community college – to ensure portability of skills across firms and sectors.

Since a range of market failures – like imperfect information or a lack of coordination across smaller firms – likely lead to too few apprentices, this is another area where the states should provide financial incentives (like tax credits) and technical assistance, as well as strong marketing, to raise the numbers of apprenticeships generated by firms. A number of U.S. states, such as South Carolina and Georgia, have illustrated the range of options states could adopt in their efforts to expand apprenticeship development.⁴⁰

Proposal: Our goal should be the creation nationwide of at least one million new apprenticeships, above those that currently exist, for pathways that begin in either high school or community colleges, with appropriate academic plus employer engagement. Federal, state and local governments should use a range of tools, including technical assistance and financial incentives for employers, to help reach this goal.

A number of U.S. states, such as South Carolina and Georgia, have illustrated the range of options states could adopt in their efforts to expand apprenticeship development.

Proposal: The federal government should fund a new "Race to the Top" for states that would promote skill formation with high labor market value. The fund, at \$10B annually, would begin with a competitive grants program for 15-20 states, requiring them to provide matching funds. Grants would especially go to (but not be limited to) those states with large populations of workers with high school or less education in distressed communities. The fund would expand occupational or sector-based training in high-demand fields, as well as appropriate support services at community colleges. States would have to embrace outcomes-based funding formulas for community colleges that reward earnings improvements for their students. Funds could also be used to promote lifelong learning and other forms of financial aid, stronger pathways from CTE in high school into community colleges, and especially new apprenticeships. The grants to states would be renewable, based on state performance, and eventually could grow to include most states.

2. Creating Well-Paying Jobs in the Private Sector

Besides making it easier for employers to find skilled workers for their high-wage jobs, we also should encourage more companies to adopt high-road strategies. Several possibilities exist.

These include a set-aside on *infrastructure jobs*, plus appropriate training, for residents of lower-income, rural or small-town communities; and a broader commitment by public officials to promote "*high-road*," *well-paying jobs*.

It is clear that President Trump and Congress intend to launch an infrastructure initiative

40 See Lerman (op. cit.).

quite soon, though its method and quantity of financing are unclear. This should create an opportunity for good job creation and for training a wider range of workers for the skills needed to perform this work. There are models of major infrastructure projects, such as Boston's Big Dig, that created set-asides in jobs and training for residents of disadvantaged (or "left behind") areas. We should examine those cases and try to learn lessons of what to emulate and what to avoid.

More broadly, our political leaders at all levels – federal, state and local – should make a commitment to support high-wage (or "high-road") employment over lower-wage job development. Because of lower turnover costs and investments in worker performance, the high-road strategies can generate high profits to shareholders while, at the same time, generating better worker outcomes. But, since the worker outcomes are "public goods," public action to promote high-wage employment is justified.

Governments should experiment with a variety of approaches, including technical assistance to employers, grants to help firms transform themselves from low- to high-road, tax credits for apprenticeship or profit-sharing that are important attributes of some high-road firms, and perhaps preference in competitions for procurement contracts. Elected leaders should also use their "bully pulpit" to recognize and honor high-road employers and bring public pressure to bear on low-road companies to do better by their workers.

Proposal: The federal government should create a "High-Road Jobs Fund" for states to support good-job creation. States would provide matching funds and indicate how they would support and reward high-road job creation, and the federal

government would fund states with the most credible plans for the largest numbers of workers.

Elected leaders should also use their "bully pulpit" to recognize and honor high-road employers and bring public pressure to bear on low-road companies to do better by their workers.

3. Ensuring Access to Education and Good Jobs in Underserved Areas

For lower-income neighborhoods that have some proximity to booming cities and suburbs, it is critical to provide career counseling, access to labor market information (with One-Stop centers located nearby), transportation, and job placement assistance. These should help connect more students and workers to the colleges and jobs where their opportunities can be better realized.

But, for metro and rural areas not close to any such thriving places, tax credits for employers who choose to relocate there and provide other supports for their workers deserve some consideration as well. A growing body of evidence suggests that such place-based policies, for both workers and employers, can have more positive impacts than we used to think.⁴¹ Targeting more federal and state resources to community and technical colleges in these areas is warranted as well.

Proposal: The federal government should create a Community Stabilization Fund for distressed communities. Much like urban Empowerment Zones of the 1990s, these would fund important services and employment supports for workers and firms in distressed areas to stabilize them and begin to support new economic development there.

4. Increasing Work and Its Rewards for All

Under even the best of circumstances, we will continue to have many millions of less-educated, lower-wage workers in America who deserve some help as well. What can we do for them?

To encourage more labor force activity, students and workers have to face more attractive job opportunities than they have to date. All of our proposals above – to increase worker skills, good job creation, and pay rates for the unskilled – should help. A strong effort in middle and high schools to monitor at-risk youth and keep them from “disconnecting” from school and work is essential.

But more is needed in this regard. Additional efforts to keep workers in the labor force should include: more serious *opioid treatment options*; *Disability Insurance* reform; and the provision of *paid family leave*.⁴¹

Major new funding should be available to treat and prevent further opioid dependency, which has ravaged many working-class communities and driven many workers out of the labor force. Beyond that, efforts to reform the Disability Insurance program are probably necessary as well. The current program creates incentives for workers to permanently leave the workforce, and therefore to suffer quite low incomes for the rest of their lives. Instead, we need efforts to accommodate and retain moderately disabled workers in the workforce, where they will be much more productive and generate much greater support to their families. We should therefore experiment with some proposed

changes, testing whether these provide security to those who need it while encouraging more work attachment for those capable of doing so. On the other hand, given the current political attacks on and attempts to dismantle the Affordable Care Act, efforts to reform SSDI should currently be limited to experimentation and evaluation.

Additional efforts to keep workers in the labor force should include: more serious opioid treatment options; Disability Insurance reform; and the provision of paid family leave.

Finally, paid family leave policies would also support labor force participation – particularly among mothers with newborn children. Instead of having to leave their jobs, parents of newborns would remain attached to their current jobs and the labor market. They would not lose seniority and work experience, maintaining their wage level once they reenter the workforce. Such policies are also very good for the health of children and provide some benefits to employers as well – like lower turnover. But it is important to construct paid leave policies that are not too burdensome to employers, as we have already discussed regarding minimum wages.⁴²

And a variety of policies can be undertaken to “make work pay,” even for the unskilled, such as moderate *minimum wage* increases and expansions of federal or state earned income tax credits.

41 See Bartik (2010), who advocates for economic development funds for distressed regions, as well as Busso and Kline (2015) for evidence on the success of urban Empowerment Zones as improving resident outcomes in the 1990s.

42 A variety of approaches have been proposed to encourage more employers to provide paid family leave to their employees. For examples see Marshall (2016) and Holzer (2017).

43 The benefits of paid leave to female workers and their children, as well as the potential costs of generous paid leave in jurisdictions with very high minimum wages and other mandates on employers, like Washington D.C., are both described in Holzer (2017).

For instance, moderate increases in the federal or state minimum wage can help such workers. On the other hand, it is important that such minimum wages not be set so high that they discourage employers from hiring over time. At the state or local level, very high minimum wages – for example, at the level of \$15 an hour – might encourage their employers to gradually relocate elsewhere or to more rapidly implement labor-saving technologies, like robots. Embracing more moderate increases in the minimum wage makes a great deal more sense.

Somewhat smaller minimum wage increases can be supplemented with expansions of federal or state earned income tax credits. These well-targeted credits reward workers for accepting even lower-wage jobs, and thus reward them for staying in the labor force. Childless adults, including non-custodial fathers, currently qualify for very low earned income credits at the federal or state levels, even when they have low incomes; and many leave the workforce in response to low wages, especially when they also face high child support requirements that effectively impose large taxes on their earnings. Expansions of earned income credits are thus good for the workers themselves as well as their offspring. In addition, there is fairly strong bipartisan support in favor of expanding these credits, with House Speaker Paul Ryan among its supporters.

Efforts to encourage labor force activity among these workers are therefore essential to any efforts to build the middle class. At a minimum, we want to prevent more young people from

disengaging in the future, as well as reengage those older workers who have already left.

Expansions of earned income credits are thus good for the workers themselves as well as their offspring.

Proposal: The federal government should create a fund to support states that undertake new efforts to attach/reattach workers to the labor force and “make work pay.” These can include expansions of earned income credits to childless adults, paid family leave, and opioid treatments designed to bring dependent individuals back to work. States would also be rewarded for experimenting with and evaluating SSDI reforms.

IV. WHAT DOES THE FUTURE HOLD?

The BLS projections imply fairly little decline in the shares of middle-wage jobs in the labor market over the next several years. But these projections have two limitations: 1) They extend only until 2024, which is just seven years from now; and 2) They might well understate the extent of middle-wage job shrinkage in this time period or beyond.

As critics of the BLS projections point out, these are based only on strong assumptions that often prove to be unrealistic.⁴⁴ But many computer science and industry analysts predict that the development and diffusion, into the workplace, of sophisticated robots and sensors with ever-growing artificial intelligence capabilities will generate much greater changes in production technologies in the future – with potentially much larger displacements of workers at all skill levels – than we have seen in the past.⁴⁵

44 See Freeman (2007) for a critique of BLS projections of employment growth. For instance, they treat worker demands within occupations and industries as constant.

45 See Brynjolfsson and Macafee (2014) and Friedman (2016) for discussions of how these changes might accelerate over time.

The BLS projections imply fairly little decline in the shares of middle-wage jobs in the labor market over the next several years.

At this point, some caution is in order. First, we have seen little to date in the labor market that suggests a great acceleration in production technology adoption and worker displacement. Employment growth during the past few years has been quite strong, especially as the labor market continues to recover from the Great Recession. And measured productivity growth over the past several years has been remarkably weak – exactly the opposite of what we would expect if innovation in production techniques were accelerating. Of course, there are a number of potential explanations that might reconcile these apparently conflicting developments, though we simply do not know which are accurate at the present time.⁴⁶

Second, even if this acceleration occurs, economists frequently emphasize that fears of technological displacement have long existed – dating back at least to the Luddites in England, and likely much earlier – but that these fears are usually not realized because of a set of labor market adjustments that occur to prevent massive unemployment from developing.

For one thing, technological change in the workplace eliminates jobs for workers that are *substitutes* for new techniques, but those that are *complements* actually grow.⁴⁷ Thus, while

robots have replaced assembly-line workers doing fairly routine tasks, they raise demand for high-skilled technicians (like machinists, precision welders, etc.) and engineers, as well as product design specialists, marketers, and the like. Furthermore, the decline in the costs of production (and therefore in prices) tends to raise incomes among consumers, who spend more and create new demand in other sectors – like leisure and hospitality or other creative outlets.

Indeed, these adjustments explain why the Industrial Revolution and other large-scale changes in production techniques have never generated mass unemployment in any labor market. On the other hand, the workers specifically displaced by the machines will likely be hurt, suffering permanent earnings declines over time. The displacements might well rise further up the skill ladder than in the past, with medical, legal and financial specialists no longer protected from such change. And there is no guarantee that the new jobs created will pay particular groups of workers as well as those that have been eliminated – hence the major declines in earnings of less-educated men that we have described above.⁴⁸

Will this time be different, with displacements more severe than in the past?⁴⁹ Both the frequency and magnitude of the displacements could potentially be greater than in earlier eras of technological change – perhaps overwhelming the more gradual labor market adjustments we

46 See Baily and Bosworth (2015) for different interpretations of slow recent productivity growth, including the possibility that we are not measuring them accurately. Gordon (2015), on the other hand, argues that such measurements are accurate, and that productivity growth in the foreseeable future will remain low by historical standards.

47 See Levy and Murnane (2013).

48 For evidence on the permanent earnings losses of displaced workers, especially those who are older and have more seniority with their employers, see Farber (2015).

49 For two very different views of the extent to which automation will affect overall worker demand, see Kirby and Davenport (2016) as well as Avent (2016).

have just described. The results would likely not be mass unemployment, but an ongoing sluggishness in the labor market with even more stagnant wages and limited job growth for some or all workers. If correct, this would create greater difficulty for those hoping to receive some education or training that would enable their entry in the middle class — and especially, greater difficulty remaining there once they have entered it. In other words, workers' investments in high-demand occupational or industry skills might become riskier, since what is high-demand today may not remain so tomorrow.

Since so much remains uncertain about future trends, it is hard to develop policy implications for any of this. But this much we can say: when workers invest in relatively specific occupational or industry skills that are in high demand, we should make sure they also receive *general skills* training that might enhance their retraining and movement to other sectors and jobs if necessary.

When workers invest in relatively specific occupational or industry skills that are in high demand, we should make sure they also receive general skills training that might enhance their retraining and movement to other sectors and jobs if necessary.

As we noted earlier, rewarding apprenticeships that also provide students with a community college degree or certificate helps prevent the skills learned from being too narrow and potentially obsolete, and increases their portability. And greater opportunities for lifelong learning — both on the job and in institutions of higher education — will greatly help skilled workers whose more specific skills are made obsolete by rapid technological change.

V. CONCLUSION

Donald Trump has played on the frustrations of working-class Americans, whose incomes have been stagnant or declining for decades. He promises to return them to prosperity by recovering their former manufacturing jobs — especially through trade protection. But such protection will do great harm to our economy in a variety of ways, and will generate very small increases in manufacturing employment. Indeed, manufacturing has shrunk to just 8 percent of our workforce, and cannot possibly be an enormous vehicle for the restoration of prosperity to these workers and their communities.

Many millions of Americans aspire to join the middle class, but their education and skill levels are too low for them to earn wages sufficient for entry into that class. And ongoing polarization of jobs into high-wage and low-wage categories reduces the numbers of those jobs available to workers with moderate skill levels — such as postsecondary credentials below the level of a BA. On the other hand, there are large numbers of good-paying jobs right now in several high-demand sectors — such as health care, IT, retail trade as well as advanced manufacturing — that employers have difficulty filling because they cannot find sufficiently skilled workers to hire. And too many Americans have withdrawn from the labor market entirely, making it virtually impossible for their families to join or remain in the middle class when a single working parent has education below the BA level.

What we need is not a laundry list of small policies, but a top-priority effort to generate a system of new pathways to the middle class for less-educated workers, especially in underserved areas, and at sufficient scale to

provide substantial new opportunities to millions who now lack them. These pathways would require a comprehensive set of actions, such as much greater postsecondary education that leads to skills valued in the labor market; efforts to encourage private employers to create more good jobs for skilled workers to fill; and access to both in underserved communities. Making work pay more (even for unskilled workers) and bringing and keeping workers in the labor force (among those who have left) should be top priorities as well.

There are large numbers of good-paying jobs right now in several high-demand sectors – such as health care, IT, retail trade as well as advanced manufacturing – that employers have difficulty filling because they cannot find sufficiently skilled workers to hire.

I therefore propose a set of federally funded efforts to the states to promote skill building, good job creation, redevelopment of distressed areas, and labor force supports. While the

federal partners would set the overall goals and direction, each state would have a great deal of leeway in deciding how such funds are actually spent. And, if ongoing federal gridlock prevents any such action by Congress and the President in the near future (as seems likely), states could move ahead on their own and try to implement whatever parts of this agenda they can.

In the meantime, those of us who believe in this vision and the agenda to move it forward could continue efforts to build political support across the country for its enactment. And we should support efforts to rigorously evaluate the success of these initiatives so, over time, we can learn more about exactly what works and what doesn't in our agenda, while we update our policy efforts with whatever new knowledge is generated in the process.

A robust set of efforts on all these dimensions will not completely solve the problems of the American working class, but they will certainly enable millions more workers to join the middle class and share in our nation's prosperity.

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TABLE 1: Education and Earnings of Americans, 2015

AGES	HS OR MORE	SOME COLLEGE OR MORE	AA OR MORE	BA OR MORE	ADVANCED DEGREE
25-64	88.48	58.9	42.3	32.5	12.0
25-34	90.5	65.0	46.5	36.1	10.9

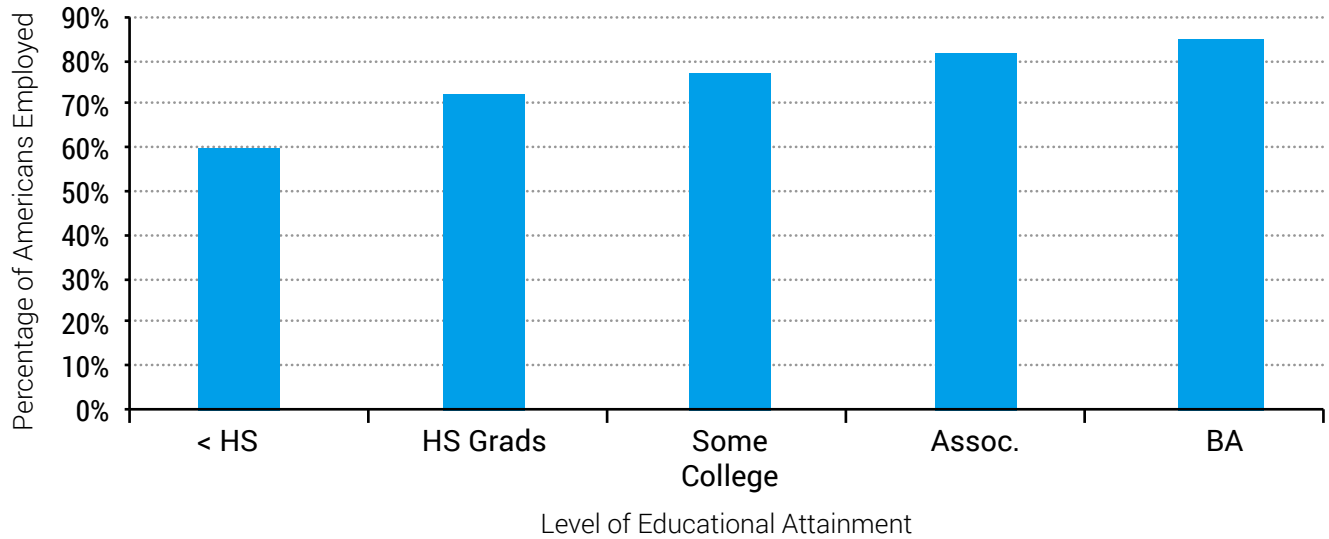
TABLE 2: Employment Shares in Middle-Wage Jobs, 2000-2015

JOBS	2000	2015
SHARES INCLUDING CONSTRUCTION, CLERICAL, PRODUCT JOBS		
Assuming 3600 household hours of work per year	0.52	0.46
Assuming 3000 household hours of work	0.47	0.39
SHARES EXCLUDING CONSTRUCTION, CLERICAL, PRODUCT JOBS		
Assuming 3600 household hours of work per year	0.28	0.29
Assuming 3000 household hours of work	0.26	0.29

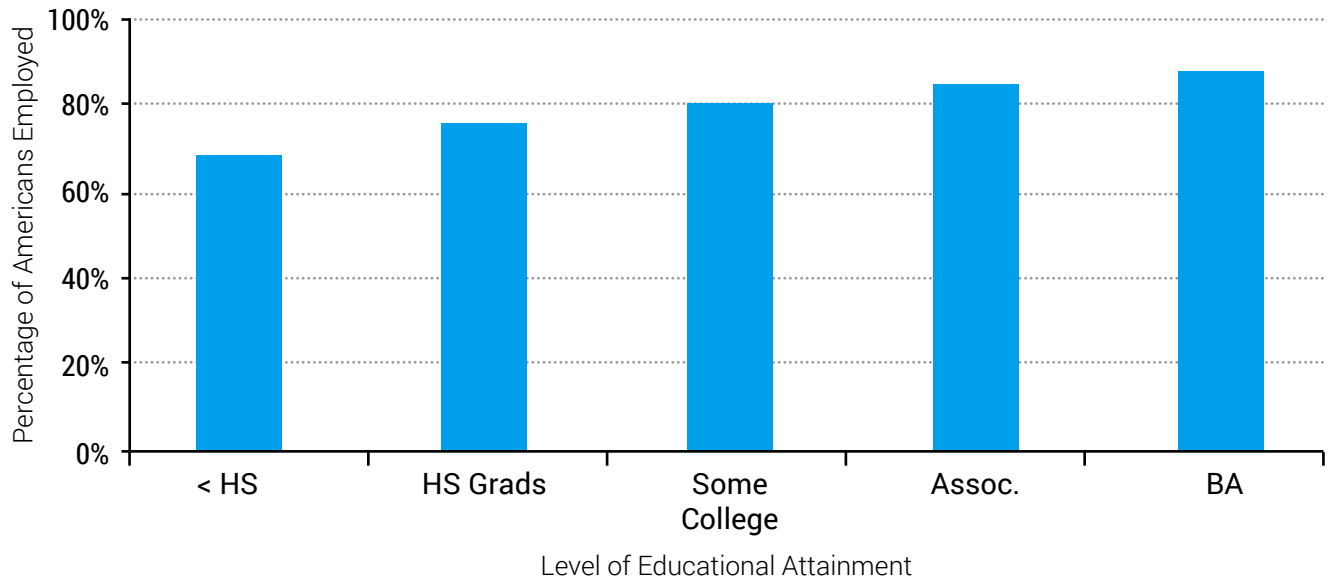
Note: the categories reflect the shares of total employment in jobs paying between two-third and 150 percent of median income in 2000 and 2015.

FIGURE 1: Employment Rates and Earnings of American Workers By Education and Age

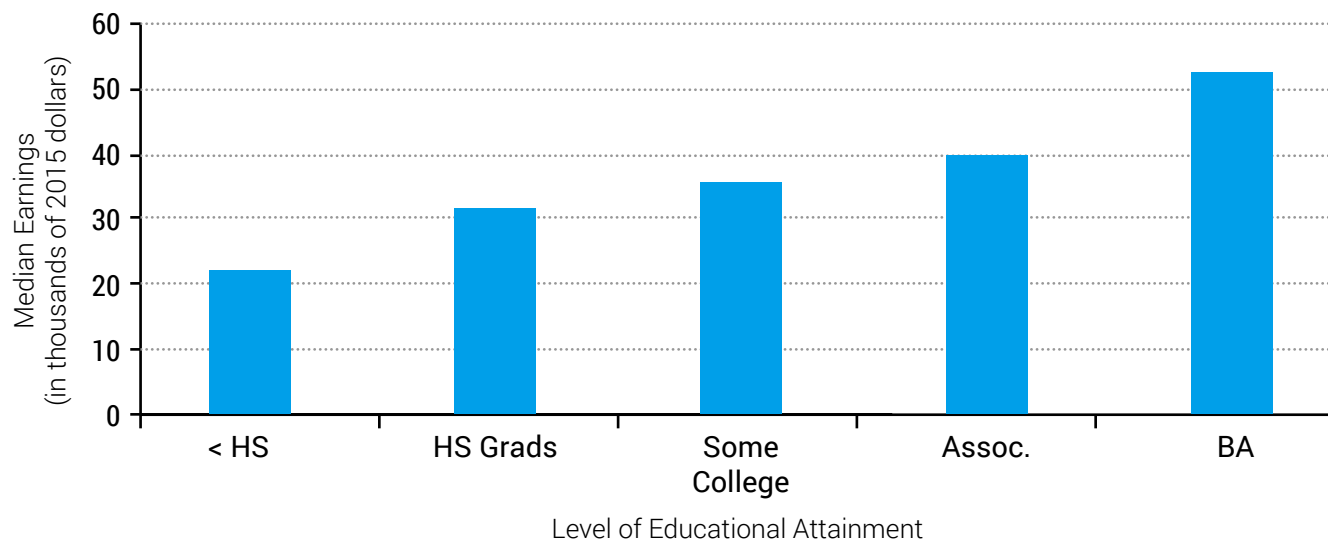
Percentage of Americans Employed (With Earnings) During the Year, Ages 25-64



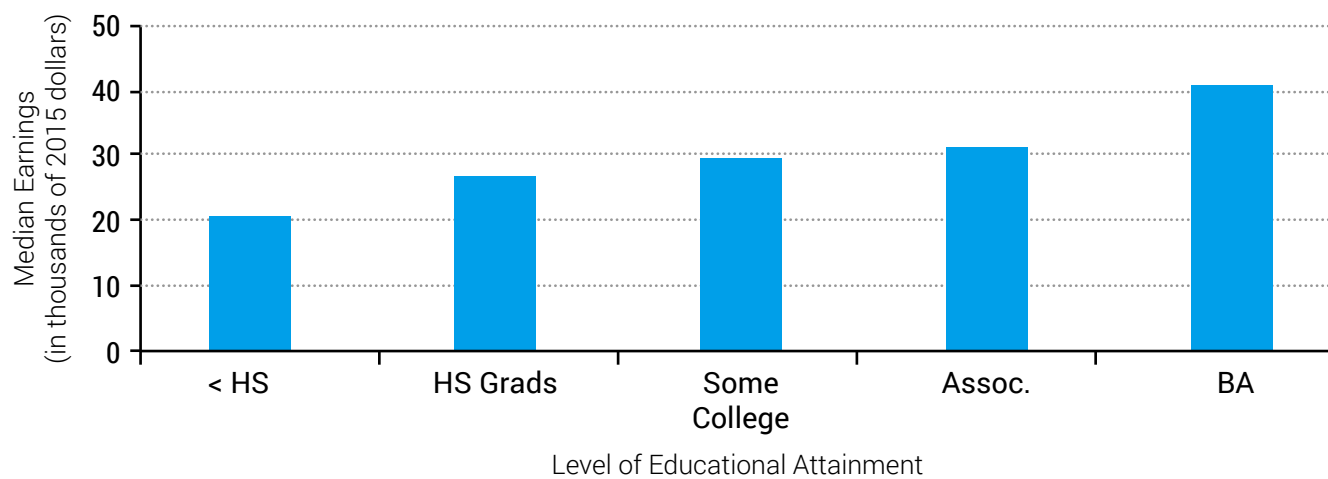
Percentage of Americans Employed (With Earnings) During the Year, Ages 25-34



Median Earnings of Americans, Ages 25-64



Median Earnings of Americans, Ages 25-34



Appendix

Major Sub-BA Middle-Wage Occupational Categories Experiencing 50 Percent or Higher Employment Growth, 2000-15

Broad Categories:

Geological or Petroleum Technicians
Paralegals and Legal Assistants
Archivists, Curators and Museum Technicians
Insurance Agents
Animal Control Workers
Biological Technicians
Roustabouts, Oil and Gas
First-Line Supervisors of Personal Service Workers
Occupational Health and Safety Specialists and Technicians
Meeting and Event Planners
Massage Therapists
Subway or Streetcar Operators

Detailed Categories:

Fitness Trainers and Aerobics Instructors
Rotary Drill Operators, Oil and Gas
Forest Fire Inspectors and Prevention Specialists
Cartographers and Photogrammetrists
Interior Designers
Security and Fire Alarm Systems Installers
Industrial Machinery Mechanics
Mechanical Door Repairers
Airfield Operations Specialists
First-Line Supervisors of Personal Service Workers
Audio and Video Equipment Technicians
Physical Therapist Assistants
Medical Equipment Repairers
Forest and Conservation Technicians
Diagnostic Medical Sonographers
Rail Car Repairers
Forensic Science Technicians
Film and Video Editors
Makeup Artists, Theatrical and Performance
Service Unit Operators, Oil and Gas Mining

Source: Occupational Employment Survey Data, Bureau of Labor Statistics, 2000 and 2015



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