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Factors Constraining Iowa Labor Force Growth Through 2020

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Abstract
Iowa endured high outmigration rates among young adults during the 2000 to 2010 period. In light of accelerating exits from the labor force as the "baby boom" generation reaches retirement age and Iowa's somewhat smaller labor force ages 25 through 44 than the national average, the state's labor force is projected to contract.

This report uses age and sex specific mortality and migration rates from the 2000 to 2010 period to project Iowa's working age population by 2020. Overall, the projections indicate an expected contraction in the Iowa population ages 16 to 64 of 74,142 persons. If that is the case, Iowa's economy may have trouble expanding.

Keywords
labor force, migration, population projection, survival rates, economic growth

Disciplines
Growth and Development | Industrial Organization | Labor Economics | Public Economics | Regional Economics

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Introduction

Preliminary evaluations of the state's population growth prospects through 2020 suggest Iowa is entering a period of a stagnant, if not shrinking, labor force. One contributing factor is Iowa's historically high out-migration rate of young adults. But another reason has to do with the overall demographic make-up. Iowa's elderly composition, as a result of persistent young adult migration, is proportionately larger than most other states. In addition, like the rest of the nation, as baby-boom aged workers exit the work force over this decade, there will be a dwindling number of new labor force entrants to replace them.

Between 2000 and 2010, Iowa grew at a slower pace than the nation. The U.S. grew by 9.7 percent, while Iowa grew by 4.1 percent. Iowa's sluggish growth, however, was not its main demographic story. To realize any net growth at all, the state's eight metropolitan regions had to compensate for the widespread population losses posted in its nonmetropolitan areas, as illustrated in Figure 1. In all there were two very distinct economic and demographic outcomes that decade: relatively robust expansion among the metropolitan areas contrasted with widespread stagnation or decline in the more rural areas of the state.

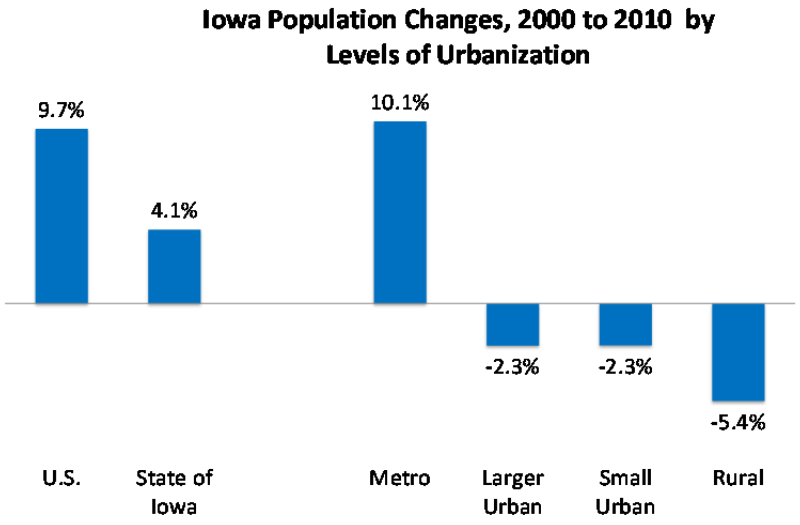

Figure 1

Contained within the state's population dynamics were strong implications for Iowa's longer term growth potential as measured by the changes in the state's potential work force. The most active participants in the labor force are between ages 16 and 64; however, a dynamic and growing economy needs two very distinct worker groups. It must have a ready supply of comparatively young workers possessing a very wide range of skills and abilities. That young adult work force further breaks into two distinct components: those ages 24 to 34 and those ages 35 to 44. The youngest group can be considered the skill-acquiring work force, and the latter, older group can be considered the skill-applying work force. Combined this component of the labor force contributes greatly to growth in regional and household incomes, and regional economies must have a stable supply of these workers to maintain stability.

As was the case with the overall population, change in these two subgroups of the state's work force over the past decade varied strongly by degree of urbanization, as demonstrated in Figure 2. Though the state posted stronger gains in its U.S. share of the younger adults ages 24 to 34, and most especially within its metropolitan centers, Iowa's rural areas posted declines in that population category. The larger story for the state's prospects, however, concerns the older young-adult cohort. Nationally the number of persons ages 35 to 44 contracted by 9 percent owing to a sharp decline in the national birth rate after 1969; consequentially, this group was much smaller in 2010 compared to years previous when it was populated by the baby boom cohort. The expected decline nationally was 9 percent, but Iowa contracted by more than twice that. More notably, Iowa's nonmetropolitan areas had erosions that were upwards of three times the national experience, and the erosions were greater as county size declined.

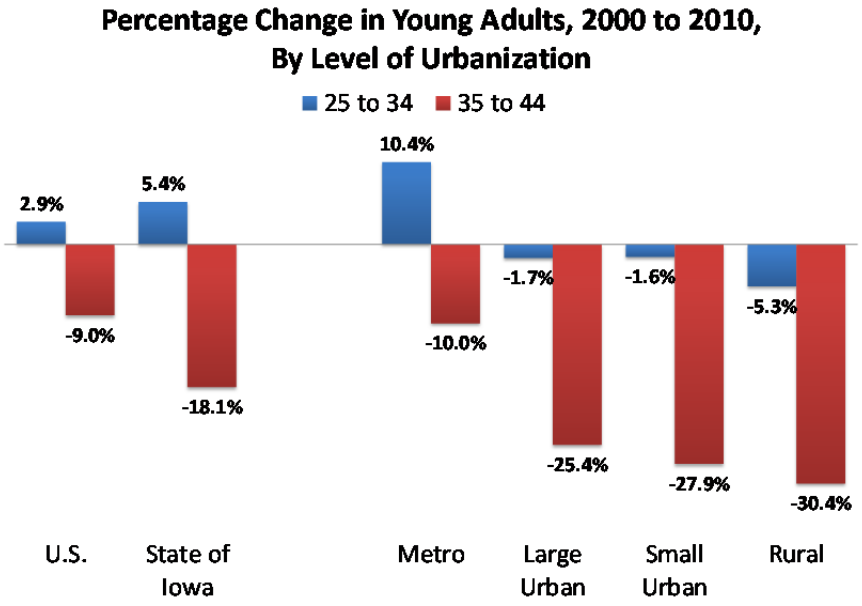

Figure 2

A nagging question for the state and for state policy makers at this juncture is what does this imply for Iowa's growth prospects through the remainder of this decade? It is important to evaluate just what this loss of working-age people represents. The older young-adult losses mean that workers who had gained the most skills, education, and productive capacity migrated elsewhere. Some, on net, moved to Iowa's metropolitan areas; but given the state's performance in this category, many migrated away from Iowa. There is another important aspect to this migration: most of these young adults would have been in families with children. The outmigration of those most productive workers meant that rural areas, and the state overall, will also lose the children of those workers. Consequently, there will be an inter-generational echo. Unlike the positive baby-boom echo that occurred roughly 20 years after the first baby-boomers emerged, this will be an echo of loss to come.

There is one more important social aspect to the loss in young adults, most especially concerning the erosion the last decade of those ages 35 to 44. Not only would this population of workers constitute the state's most productive component of the work force, this group was also the primary source for community social, cultural, and political leadership. Those losses are certainly tangible in many regards, but they are impossible to calculate.

Dominant Demographic Trends and Labor Force Growth Potential

While it has received scant attention as of yet, the national labor outlook is guarded at best.[1] The primary reason for that is a function of the historical pattern of births since World War II. Although there have been greater rates of participation among women, minorities, and among older workers in recent decades, there is an unarguably overwhelming factor that must be considered: the cusp of nation's baby boom generation reached age 65 in 2011, and the population of retirees will grow sharply annually through the middle of the next decade.

Figure 3 displays the expected population dynamics that are affecting the nation's current labor supply. As is clearly evident, the size of the cohort ages 65 and older is increasing at a very sharp angle. In stark contrast, the age group that would naturally replace those lost workers, those ages 16 to 24, is projected to decline. A substantial fraction of workers attaining age 65 in each of the projected years will be exiting the work force. Concomitantly, excluding in migration from other countries, the only resident demographics that can replace those workers are those ages 16 to 24, which will be a declining number, or from greater rates of work force participation among all remaining workers.

[1] An earlier exception is found in Brad Plummer, "The Incredible Shrinking Labor Force," Wonkblog, Washington Post, 4 May 2012. Found at: http://www.washingtonpost.com/blogs/wonkblog/post/the-incredible-shrinking-labor-force/2012/05/04/gIQANXAy1T_blog.html .

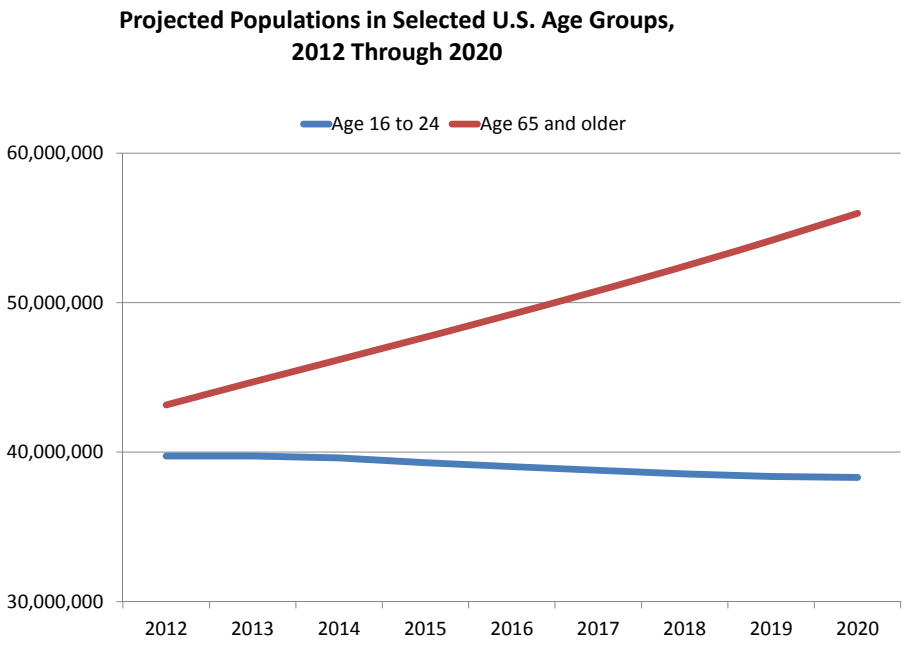

Figure 3

The consequences for U.S. labor force growth (a subset of population growth) are starkly projected using data from the U.S. Department of Labor.[2] Figure 4 displays the age group specific projections of labor force change between 2010 and 2020. Over the decade, the nation's labor force ages 55 and older will swell by 11.35 million. In contrast, the core of the work force, those in the 25 to 54 age group will only see their numbers increase 1.7 million compared to 2010. Disturbingly though, the number of labor force members ages 16 to 24, the nation's youngest workers and the source of large fractions of the nation's unskilled or skills-learning labor will contract by 2.6 million.

[2] Mitra Toossi, Labor Force Projections to 2020: A More Slowly Growing Labor Force. Employment Outlook: 2010-2020. Monthly Labor Review, U.S. Department of Labor. January 2012.

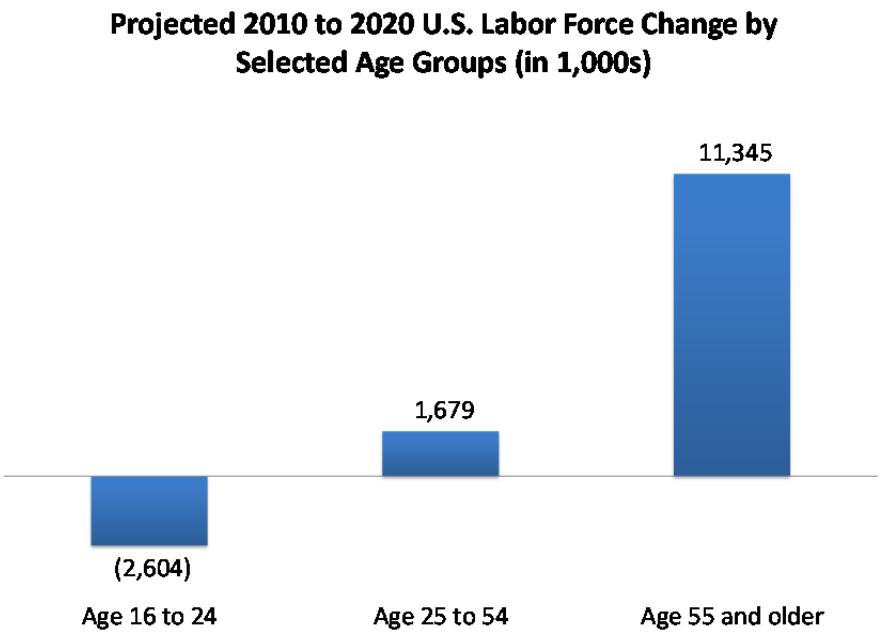

Figure 4

Given these pronounced intergenerational differences, this pattern of change is in fact extremely worrisome for the nation's overall prospects, most especially after 2020. After 2020, the nation's baby boom labor force will peak and then decline rapidly. There will be differential outcomes across the states. Most states diverge somewhat from the national average pace of change. Some are slow growing states with higher rates of outmigration, especially among younger workers, as has been the case in Iowa. Others have higher concentrations of elderly residents. And still others are migration magnets for young adults. So, each state's experiences will diverge from the national pattern to some degree, and that divergence will set the stage for economic and community growth potential for the rest of this decade and on into the next.

But there is another and much more immediate reason to fret over this pattern of expected change. Extremely rapid growth in the age 55 and older labor force will not result in concomitant increases in worker productivity. The majority of older workers, those 55 and older, will have already attained their peak productivity, they will have higher rates of workplace disabilities and limitations, and they will be less flexible to adapt to changing employer demands. In short, the labor force will burgeon in precisely the wrong end of the labor force to accommodate innovation and industrial change.

Implications for Iowa

The labor force at any given time is the sum of all persons working plus all persons actively seeking work, as measured by a monthly survey of households by the U.S. Bureau of Labor Statistics (BLS)[3]. While the state in general did not suffer the rate of unemployment the nation did, and it didn't begin to contract

[3] Current Population Survey (CPS), Bureau of Labor Statistics, U.S. Department of Labor

until nearly a year after the national contraction, it has nonetheless tracked the nation's overall pattern of recovery since.

There is an emerging recent signal that the state's capacity for economic growth is constrained. In Iowa, notwithstanding a generally widespread national economic recovery, the labor force is contracting. More importantly, it is diverging from the overall national experience. Figure 5 portrays the pattern. This displays Iowa's actual labor force trend as compared to what it would have been had it emulated the national rate of change since January of 2008, the practical beginning of the last recession.[4] Iowa's labor force experienced a decidedly downward trend and diverged from the national growth pattern beginning in the last quarter of 2011. It could be that this pattern of contraction is a function of the unemployment survey process and that an abrupt adjustment may be in the offing, as was obviously the case in late 2008 when the size of the state's labor force was sharply adjusted upward.[5] It is perhaps more likely, however, that lasting impacts from the last decade's contraction among key labor force groups coupled with the state's historical demographic make-up are impinging on the state's ability to grow. Though some Iowa leaders continue to claim the state weathered the recession better than the nation as a whole, the evidence suggests strongly the state is diverging from the national recovery pattern: the state's labor force has contracted significantly, and if this trend continues it will pose problems for the state's economic growth potential.

[4] The most recent economic recession lasted from December 2007 through June 2009. Those times would represent periods of productivity contraction as measured by Gross Domestic Product. The consequences of a recession, however, are much more long-lasting. Neither the state nor the nation is expected to recover pre-recession employment levels before 2015.

[5] This upward adjustment increased the number of unemployed persons in Iowa by nearly 29,000 persons and abruptly changed the state's unemployment rate estimate from 4.2 percent to 6.1 percent.

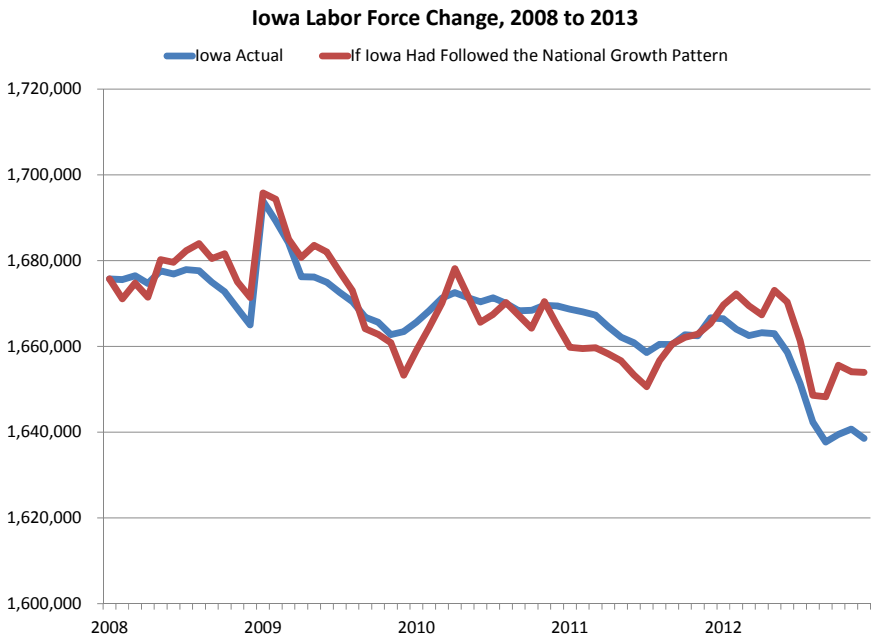

Figure 5

While this report is focused on potential labor force growth, Iowa's current employment recovery as compared to past recessions may help to place future labor force growth prospects into context. Figure 6 shows how many months it took for Iowa to recover all employment after the beginning of downturns affecting Iowa dating back to 1980. Iowa's most devastating and long-lasting contraction began in 1980. Employment levels declined sharply, and it took a full seven years before the state re-attained its previous peak employment level. The 1990 recession was relatively sharp in Iowa, but once recovery was underway, the previous peak was reached in about 36 months. The 2001 recession in Iowa was somewhat erratic. The state had stagnated a full year before the recession, but once it contracted fully and then began to recover, it took more than four years to reach the state's previous employment peak. This recession in Iowa, however, has yet to begin a clear path towards re-attaining lost jobs. The state's employment levels are still 50,000 below the previous peak five full years after the state began contracting.[6]

[6] Readers should note that this is a measure of actual employment contraction. Were these values expressed on a percentage reduction in employment basis, the 1980s contraction would have been much more pronounced. The unemployment rate in 1983 peaked at 8.5 percent, and did not drop below 6 percent until 1987. The point to be made here is that the economic stress of the 1980s was more severe in Iowa than the current recession. Nationally, though, this recession has been the worst since the Great Depression of the 1930s. For Iowa, though, the 1980s contraction was both numerically and on a percentage of employment lost basis worse.

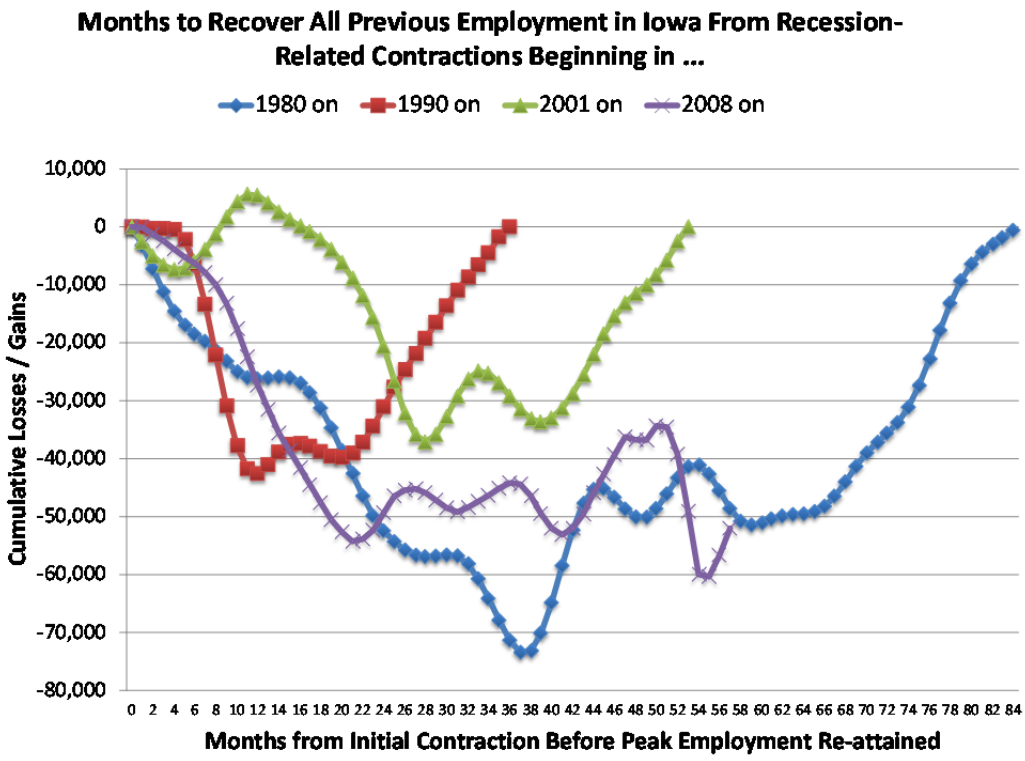

Figure 6

The current pattern of economic recovery has more in common with the devastating 1980 Iowa contraction than it does with the recessions that occurred in the intervening periods. In Iowa, the 1980 through 1987 period of lost employment resulted in the state's population contracting by 4.3 percent between 1980 and 1990. The state suffered widespread outmigration, most especially among young adults, as dislocated farm families, factory workers, and workers in the broader economy sought employment in states that had recovered sooner than Iowa.[7]

The question to be addressed, then, is whether Iowa is in a period of labor force contraction similar to what occurred during the 1980s. Preliminary evidence indicates an eroding Iowa labor force. More data can be analyzed, however, to try to project Iowa's prospects through the rest of this decade.

Projecting Iowa Population Change, 2010 through 2020

The U.S. Census Bureau no longer provides population projections for states. They only provide age-specific population projections for the total U.S. population. Expected population change can be projected, however, using age-specific and sex-specific survival and migration assumptions. Following are the procedures for projecting Iowa's 2020 population:

[7] The national economy was posting employment gains by mid-1984, and continued to grow comparatively well through 1989. This was the period of the greatest loss of Iowa's population.

- 2010 age-specific population counts for the state of Iowa were compiled by sex
- National period life tables (2007) from the U.S. Social Security Administration were then used to estimate expected survival of each population age through 2020. Separate estimates are made for males and females as they have distinctly different survival rates.
- The same process had been applied previously to the 2000 age-specific population in Iowa, and the difference between the "survived" population in 2010 and the actual census values for 2010 represented in-migration.
- Each age group's migration percentage was then estimated, and that 2000 to 2010 migration rate was applied to the iteratively "survived" population in each measured age group in 2020 to arrive at a final projection by specific age.

This method has two fundamental assumptions[8]:

- Age-specific survival in Iowa is not significantly different from national averages
- Last decade's migration patterns in Iowa for all age group will hold for the current decade

Table 1 illustrates this process as applied to Iowa's 2010 female population to project to 2020. The application of age-specific survival rates reduces the 2010 population under age 1 (age 0 in the table) of 19,229 each year until arriving a final value for 2020 of 19,081. The difference between the two numbers is the summed mortality of that group over the decade. Given the migration pattern of the previous decade, it was expected that population group would have 2,184 in-migrants (from anywhere in the U.S. or the rest of the world) for a total projected population by age 10 in 2020 of 21,935. This same process was repeated by sex for each age down to age 100+.

Table 1

All races Step-Down Survival of 2010 Female Population

Age	Female	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	With Migration
0	19229											
1	19338	19112										
2	20152	19330	19103									
3	20093	20147	19325	19099								
4	19910	20089	20143	19321	19095							
5	19682	19907	20086	20140	19318	19092						
6	19539	19679	19904	20083	20137	19315	19090					
7	19562	19536	19677	19902	20081	20135	19313	19087				
8	19492	19560	19534	19674	19899	20078	20132	19311	19085			
9	19702	19490	19557	19532	19672	19897	20076	20130	19308	19083		
10	19912	19700	19488	19555	19530	19670	19895	20074	20128	19306	19081	21,935

[8] Additionally, this method disregarded births that have occurred or will occur through the end of the decade; consequently, no projections have been made for the state's population under age 10.

Table 2 shows the results of this step-down population estimate procedure. While Iowa's total population age 16 and over is projected to increase by nearly 32,598 persons, there are significant differences among broad age group categories that need to be acknowledged. In the first instance, this method produced a welcomed recovery in the number of young adults ages 25 to 44 of nearly 57,000. This was the category of greatest loss during the last decade, and the group of workers upon which all economies rely to fuel productivity growth. Among our older work force, though, those ages 45 to 64, the projection estimated a sharp reduction of 117,203 persons, a loss more than twice the gain in the young adult category. Additionally Iowa's youngest potential work force entrants, those ages 16 to 24, are expected to decline by 13,900. Summed, the population of potential workers for Iowa's primary labor force, those 16 to 64, is projected to decline by 74,142 persons when comparing 2010 with 2010.

Table 2

Projected Iowa Population Change Ages 16 and Over, 2010 to 2020

	2010	2020 Projection	2010 to 2020 Difference
Age 16 to 24	389,705	375,805	-13,900
Age 25 to 44	747,131	804,092	56,961
Age 45 to 64	812,476	695,273	-117,203
Age 16 to 64	1,949,312	1,875,170	-74,142
Over Age 65	452,888	559,628	106,740
Total Age 16 and Over	2,402,200	2,434,798	32,598

Iowa Age-Specific Projections and the U.S.

Figure 7 displays Iowa and U.S. projections by individual age comparing 2020 with 2010. Nationally, the values in blue, the U.S. is expected to show moderate increases in its population ages 22 through 38, followed by contractions in its population in the ages of 40 through 54. Sharp increase of course will be realized among the baby-boom populations, those aged 55 through about 75. Strong increases, too, are expected in the national populations considered "old-old", those over age 85.

Iowa has both contrasting and aligning patterns (shown in red). For Iowa's labor force growth, there is, as has already been described, concern over the number of very young workers if these projections hold. The figure shows that unlike the nation, Iowa could suffer a contraction in the number of adults ages 24 through 30. It rebounds smartly and much higher than the nation among persons ages 31 to 44. Percentage declines, though, are much greater than the national experience among older workers, those ages 45 through 60. While Iowa could realize sharp increases in its baby-boom population by 2020, it notably could see comparative declines in its population in the 80 to 94 year range.

Projected Population Change by Age, Iowa and the U.S., 2010 to 2020

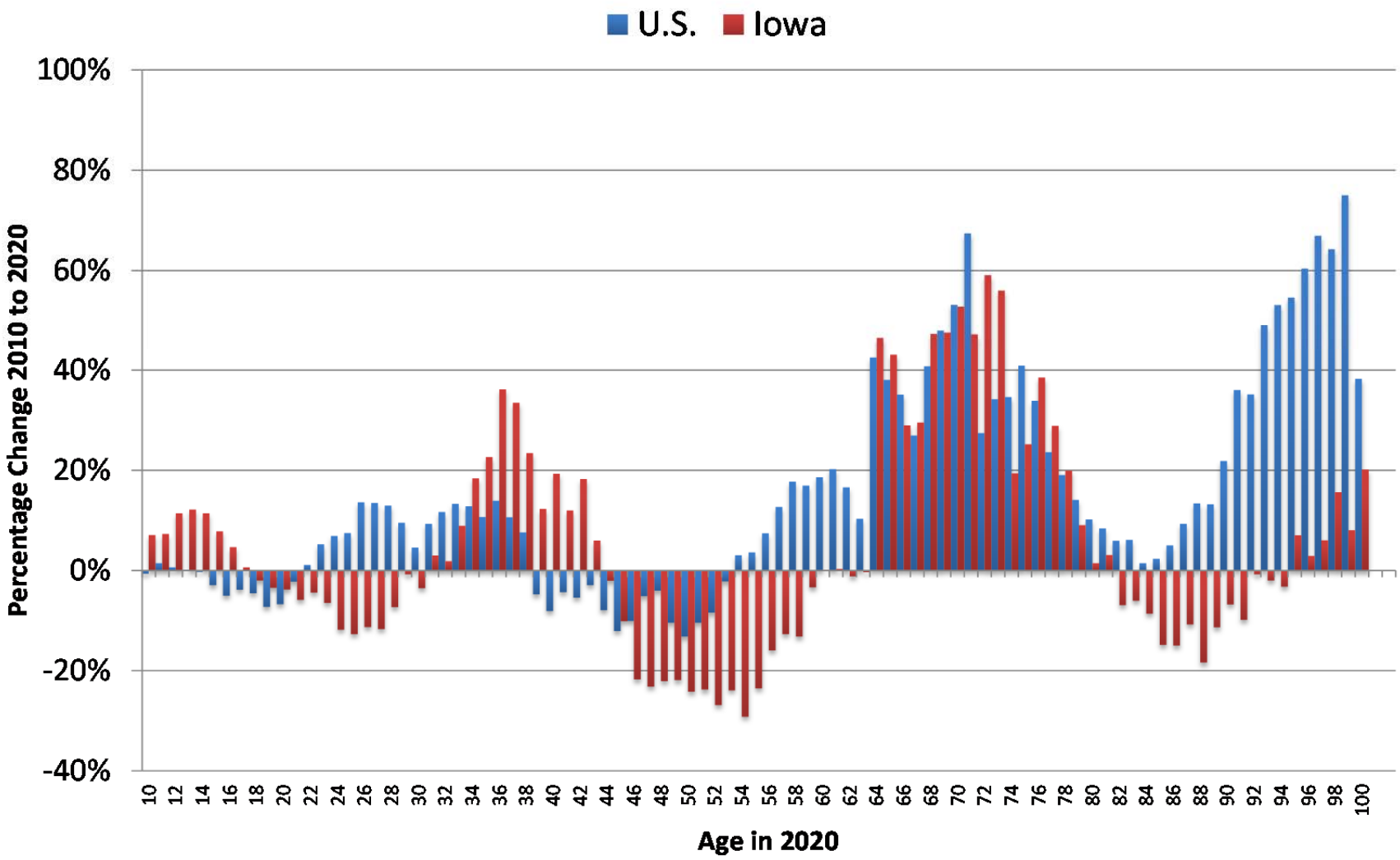

Figure 7

Conclusion

Contemporary data on sluggish labor force growth in Iowa and a slowed economic recovery, coupled with age-specific population projections, provide preliminary evidence that Iowa may be entering a period of economic stagnation due primarily to constraints on the size of its labor force. These forces may already be revealing themselves in shortages of young workers in specific occupational groups. If these projections are in fact occurring, these forces will be decidedly much more acute within the state's less urbanized areas. Expressed differently, the state's metropolitan areas very well may emulate national change patterns while the rest of the state will likely endure age-specific population changes over the remainder of this decade that are proportionately greater than those demonstrated in Figure 7 and Table 2. If that indeed is the case, nonmetropolitan Iowa will have even greater difficulty retaining labor force members, especially its younger members, than statewide average projections would indicate.

These conclusions have been drawn from projections that relied on national age-specific survival tables from 2007 and Iowa age-specific migration rates from the last decade to anticipate population changes through the end of this decade. While the pattern of mortality will not change markedly during this period, overall economic conditions may have affected both in-migration and out-migration rates. If outmigration wanes some, then the anticipated contraction in the labor force will be abated to a degree. Conversely, if national or regional growth exceeds Iowa's, which has been the case over the past year, there will be increased inducements to migrate, and the anticipated contraction will be worsened.

Regardless of the overall performance of the regional or U.S. economies, workforce analysts, government officials, and business leaders in Iowa should be made aware of the impending constraints on growth due to natural changes and migratory changes in the state's labor supply.