Southwest Economy

Texas Sees Coverage Gains Under Health Care Act

PLUS

> ▶ *The headline unemployment rate and other measures of labor market utilization are at or below prerecession lows.*

As a member of the Federal Open Market Committee, I am particularly focused on monetary policy and achievement of the Fed's dual-mandate objectives of full employment and price stability. In the pursuit of these objectives, I voted in March and again in June of this year to increase the federal funds rate. I also supported the September decision to begin the process of gradually reducing the size of the Federal Reserve balance sheet.

The decision to remove monetary policy accommodation is, at least in part, based on my judgment that the U.S. economy is at or near full employment. The headline unemployment rate and other measures of labor market utilization are at or below prerecession lows. In addition, the Texas unemployment rate has now slipped below 4 percent, a level we have not experienced in several decades.

Cleanup and rebuilding after Hurricane Harvey is adding to job growth and tightening labor markets in Texas. As Jesse Thompson writes in this issue of *Southwest Economy*, the storm should not materially reduce the rate of Houston job growth, which is expected to reach 2 percent in 2018.

The economy can grow through increased employment and also by making the workforce more productive. While education is a key driver of worker productivity, a healthier workforce can also play an important role in increasing productivity. In this issue's cover article, Anil Kumar discusses Texas' experience with the Affordable Care Act. Although Texas opted out of the Medicaid expansion, the state's insured rate still jumped 6 percentage points from 2013 to 2016—a development that, if sustained, should have positive consequences for the productivity of the Texas workforce.

Federal Reserve Bank of Dallas economists are actively doing research that gives us greater insight into economic conditions in this district and the nation. We actively disseminate this research in publications such as *Southwest Economy* in order to inform policymakers and the public. The work of our economists suggests that, even though Harvey dealt a severe blow to the state, we will rebound from this storm and should resume strong growth in the years ahead. I am very optimistic about the future prospects for the region in 2018.

Robert S. Kaplan

Robert S. Kaplan
President and Chief Executive Officer
Federal Reserve Bank of Dallas
December 11, 2017

Texas Sees Coverage Gains Under Health Care Act

By Anil Kumar

ABSTRACT: While Texas was among the states choosing not to participate in the Medicaid expansion under the Affordable Care Act, it nonetheless has seen improvement in the share of the population with health insurance coverage. Gains are notable among the non-college-educated working-age population in Texas, a state that has long ranked near the bottom in health care coverage nationally.

Texas, with one of the nation's most vibrant economies, has historically ranked among the states with the highest uninsured populations.

The gap between Texas and other states had narrowed steadily until the Affordable Care Act (ACA) took effect in 2014. After the state decided to opt out of the ACA's far-reaching Medicaid expansion, the gap again widened (*Chart 1*).

A closer look at the data before and after ACA implementation reveals that the uninsured rate declined significantly in Texas due to an increase in private health insurance coverage. Nationally, however, the rate reduction was larger.

The Texas uninsured rate remains elevated among several key demographic groups, and increases in coverage could have been larger had the state opted to expand Medicaid.

Assessing the ACA's relative impact in Texas provides useful insights into the insurance market, even amid continuing attempts in Washington to repeal the health care law and roll back the Medicaid expansion.

Qualifying for Medicaid

Medicaid is a means-tested public health insurance program for low-income individuals—mainly families with children, pregnant women, the elderly and the disabled. The program is jointly funded by federal and state governments but administered by the states under federal rules.[1] It is the largest means-tested transfer program in the U.S. and has experienced rapid long-term expenditure and enrollment growth.

Medicaid expenditures account for about 10 percent of federal spending, up from 2.4 percent in 1980.[2] Following the program's inception in 1965, eligibility was traditionally tied to receipt of welfare assistance. The program covered mainly single women with children on cash assistance, and low-income elderly people receiving Supplemental Social Security Income.

Chart 1
Uninsured Rate Declines Under ACA; U.S.–Texas Gap Widens
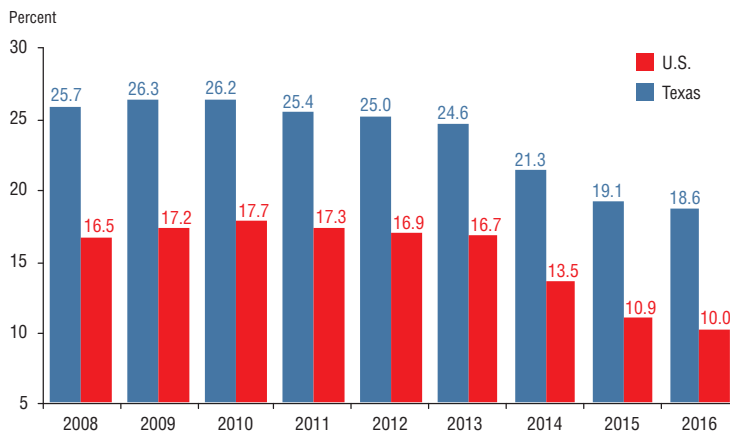
NOTES: Data reflect the percentage of the civilian noninstitutionalized population under 65 that is uninsured. ACA refers to the Affordable Care Act.

SOURCE: Census Bureau, American Community Survey one-year estimates.

A series of expansions in the late 1980s and the 1990s extended Medicaid to other low-income individuals who did not meet more stringent requirements for traditional cash assistance—pregnant women, and parents with children. But Medicaid eligibility remained strongly linked to family structure, with the program in most states out of reach for nondisabled, nonelderly adults without minor children, regardless of income.

Medicaid differs from Medicare—the health insurance program, financed by federal payroll taxes, for all senior (65 and older) and disabled people who are eligible for Social Security benefits. Medicare beneficiaries with low income are additionally eligible for Medicaid for some health care services not covered under Medicare—for example, long-term nursing home care beyond the 100 days covered by Medicare.[3]

Changes Under ACA

In the most sweeping Medicaid expansion since the program's inception, the ACA as signed into law in 2010 required states to extend Medicaid eligibility to all nonelderly adults—regardless of disability or family structure—whose incomes were up to 138 percent of the federal poverty line (FPL). (In 2017, the FPL for determining Medicaid eligibility was $20,420 for a family of three, increasing by about $4,200 for each additional family member.)

However, after a 2012 Supreme Court ruling made additional Medicaid coverage optional for states, only 32 states (and the District of Columbia) opted in.[4] Texas was one of the 18 states to opt out and, thereby, forego more generous federal matching of state costs to cover additional beneficiaries under the ACA expansion. The expansion called for a 100 percent match from 2014 to 2016, gradually declining to 90 percent in 2020 and beyond.[5]

The ACA also dramatically overhauled the private insurance market. The law instituted an "individual mandate" requiring that most Americans have health care coverage (or face a tax penalty). It also established an "employer mandate" stipulating that employers with 50 or more full-time-equivalent workers offer affordable health insurance to employees (or pay a fee).

The "dependent-care mandate," a provision that took effect in 2010, compelled health insurance companies to allow parents to obtain coverage for dependents up to age 26. Another provision enabled workers without access to qualified employer-provided health care coverage to purchase insurance through an ACA-sponsored marketplace. Consumers with incomes of 100 percent to 400 percent of the FPL are eligible for a tax credit on health insurance plan premiums (premium subsidy), and those with incomes of 100 percent to 250 percent of the FPL are additionally eligible for assistance with out-of-pocket costs (cost-sharing subsidy).

Lesser Benefits in Texas

Even before the ACA's arrival, Texas tightly limited Medicaid eligibility for most demographic groups. While income thresholds for children and pregnant women to qualify are close to the national average, the eligibility standards for nonelderly parents have lagged significantly behind the rest of the nation.

In 2013, before the ACA took full effect, a nonelderly parent with a family of three in Texas needed a family income less than 25 percent of the FPL to qualify for Medicaid. The national average was 87 percent.[6]

With the ACA's Medicaid provisions, the eligibility cutoff rose to 138 percent of the FPL. But the cutoff fell to just 18 percent of the FPL in Texas after the state opted out of the expansion. The national average rose to almost 100 percent of the FPL.[7]

Texas' eligibility qualifications for children and pregnant women are much more generous relative to those for parents and are closer to the national average.

Like other states, Texas is required to extend Medicaid coverage to low-income elderly people who also are eligible for the Supplemental Social Security Income program, which has an income eligibility limit of 74 percent of the FPL. Unlike 33 other states, Texas does not have a medically needy program for elderly people with incomes higher than the Medicaid eligibility limit. The medically needy program allows seniors with high medical expenses, but with income above Medicaid eligibility limits, to qualify for Medicaid by spending down their household resources on medical expenses.

Medicaid Changes Under ACA

The Medicaid coverage rate for the nonelderly population in Texas was relatively high prior to the ACA—17.6 percent in Texas versus 18.6 percent for the nation.

In addition to differences in demographics and income distribution, higher Medicaid coverage among Texas' children kept the gap with the U.S. small, despite Texas' near-bottom ranking among states in Medicaid generosity for key demographic groups. The share of children on Medicaid was 39 percent in Texas versus 37 percent for the U.S.

Enrollment in Medicaid and the Children's Health Insurance Program (CHIP) rose 38 percent in Medicaid-expanding states between July–September 2013 and July 2017. Nonexpanding states also experienced a 12 percent enrollment increase, partly due to the ACA raising awareness of the program among Medicaid-eligible households that hadn't previously participated. Enrollment rose 6.9 percent in Texas, compared with 29 percent nationally.[8]

Not surprisingly, a significant U.S.–Texas gap in Medicaid coverage of the nonelderly population emerged after the ACA. While coverage remained largely flat in Texas at about 18 percent of the nonelderly population, it rose 3 percentage points nationally. Roughly 22 percent of all nonelderly Americans had received health care coverage through Medicaid as of late 2016 (*Chart 2*).

More Private Coverage in Texas

As the U.S.–Texas gap in Medicaid coverage widened, the state and national gap narrowed for those with insurance, largely due to the ACA's overhaul of the private insurance market that applied to all states (*Chart 3*).

Individuals with employer-based coverage increased 3 percentage points from 2013 to 2016 in Texas—from 51 to 54 percent. By comparison, that share nationally rose about 1 percentage point, to 59 percent.

Employer-based insurance remains the mainstay of the U.S. health insurance system because the workplace provides an efficient mechanism to pool health insurance risk. If health insurance is optional, individuals with high health risks are more likely to purchase coverage.

When insurers are unable to determine the exact health status of individual prospective policyholders, they tend to charge high premiums for directly purchased insurance or may not cover preexisting conditions—an attempt to minimize potential losses. Thus, the cost of private, nongroup insurance is substantially higher than for employer-based group plans. Through the individual mandate and the health insurance marketplace, the ACA attempted to create a diversified risk pool for nongroup private insurance.

About 1.2 million Texans were enrolled in an ACA marketplace health insurance plan during 2017, with 83 percent eligible for premium tax credits and 61 percent qualifying for cost-sharing subsidies.[9] Insurance from all private sources (including employers) increased 7 percentage points in Texas—compared with a 4-percentage-point gain nationally.

Increases in both Medicaid and private insurance coverage at the national level suggest that the Medicaid expansion didn't simply crowd out private insurance. A substantial crowd-out can neutralize much of the gain from increased Medicaid coverage if beneficiaries drop private coverage in favor of Medicaid.

Significant declines in the uninsured rate among the nonelderly suggest that the crowd-out was small. The uninsured rate fell 7 percentage points to 10 percent nationally and 6 percentage points to 19 percent in Texas. The nonelderly population includes children and people below age 26 who benefited from the dependent care mandate of the ACA.

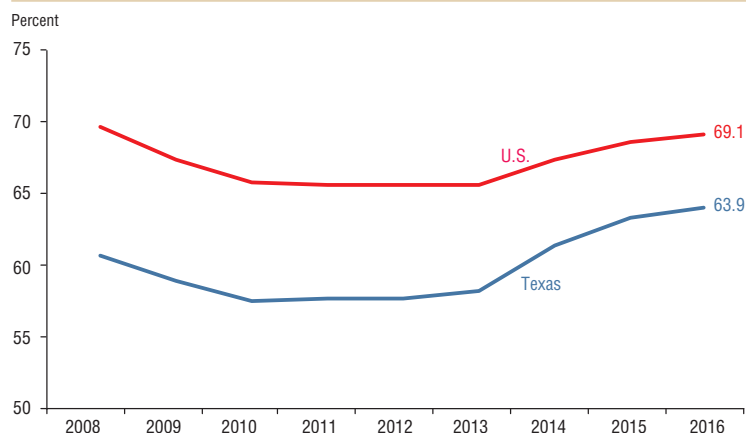**Chart 2** | Medicaid Coverage Jumps in U.S. as ACA Takes Effect
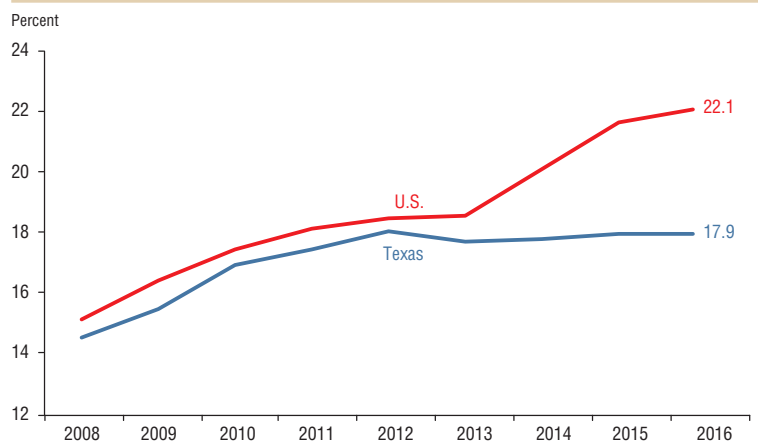
NOTES: Data reflect the percentage of the civilian noninstitutionalized population under 65 with Medicaid. ACA refers to the Affordable Care Act.
SOURCE: Census Bureau, American Community Survey one-year estimates.

Chart 3 | Private Health Insurance Coverage Climbs Under ACA

NOTES: Data reflect the percentage of the civilian noninstitutionalized population under 65 with private health insurance. ACA refers to the Affordable Care Act.
SOURCE: Census Bureau, American Community Survey one-year estimates.

Non-College-Educated Groups

Focusing on the nonelderly population over age 26 with no college education can provide more precise estimates of the effects of broadening Medicaid eligibility. The non-college-educated population would have been more intensely affected by the Medicaid expansions. Previously, the uninsured rate among this group was 43 percent in Texas and 29 percent elsewhere in the U.S.[10]

Comparing the states that expanded Medicaid and those that did not also helps in the analysis. Medicaid coverage among those without college increased 8 percentage points in states that expanded Medicaid but just 2 percentage points in states that did not expand (*Chart 4A*). Assuming other factors followed similar trends, the difference of 6 percentage points can be largely attributed to the expansion.
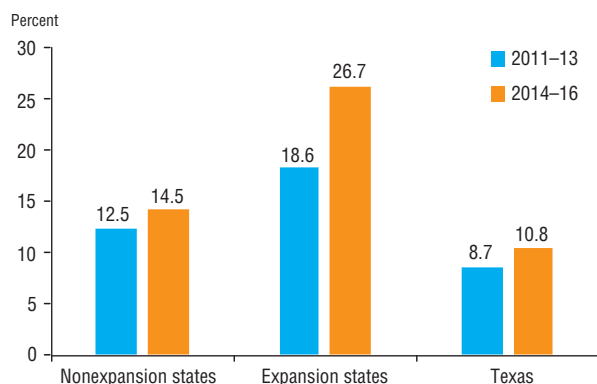
While employer-provided coverage remained virtually unchanged in both groups of states, private coverage increased almost 5 percentage points in expanding states and 6 percentage points in nonexpanding states.

Thanks to negligible crowd-out from Medicaid expansion, the uninsured rate for the non-college group
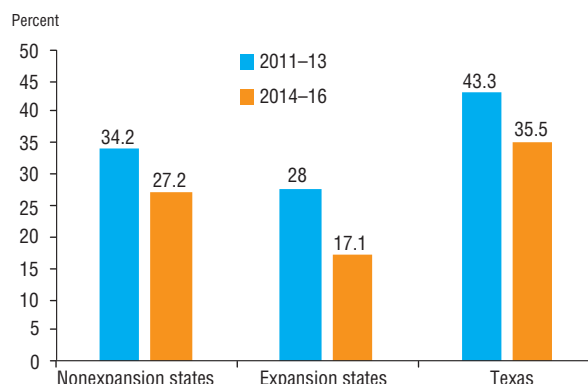
A. Medicaid Coverage Among Non-College Educated Increases More in Medicaid-Expanding States

Percent

2011–13
2014–16

	2011–13	2014–16
Nonexpansion states	12.5	14.5
Expansion states	18.6	26.7
Texas	8.7	10.8

B. Uninsured Rate Among Non-College Educated Drops More in Medicaid-Expanding States

Percent

2011–13
2014–16

	2011–13	2014–16
Nonexpansion states	34.2	27.2
Expansion states	28	17.1
Texas	43.3	35.5

NOTES: The sample was restricted to 27–64-year-olds with no college education. Expansion states include those that expanded Medicaid coverage effective Jan. 1, 2014.

SOURCES: Census Bureau, CPS-IPUMS, March supplement; author's calculations.

dropped 11 percentage points in expanding states, compared with 7 percentage points in nonexpanding states (*Chart 4B*). Thus, the additional decline of 4 percentage points in the uninsured rate in the expanding states could potentially be tied to the expansion.

Texas, without broader Medicaid coverage, benefited from changes in the private insurance markets through the ACA. While Medicaid among non-college-educated adults increased about 2 percentage points, private insurance coverage jumped 7 percentage points. The uninsured rate for this group fell 7 percentage points to 36 percent.

Despite improvements, the uninsured rate remains elevated across key demographic groups in Texas and elsewhere in the nation (*Table 1*). The gap is particularly wide among the non-college educated. Lower Medicaid coverage across the board in Texas is a primary reason.

Law's Economic Impact

Medicaid expansions and the ACA's subsidies, which led to increased health care coverage, came at a cost to taxpayers. The Congressional Budget Office (CBO) projected a net price tag of $1.4 trillion between 2017 and 2026.[11] An important component of that is the negative impact on work effort, namely employment and hours.

Researchers have understood that expanding entitlement programs such as Medicaid can have important implications for the labor market. The most basic effect on such outcomes—employment, work hours and earnings—is similar to increasing wealth or income. If eligible low-income individuals value Medicaid and think of it as more income, they tend to work less, just like anyone else who feels wealthier.

Besides income effects, the income eligibility cutoffs create other incentives for changing the employment and work hours of those who are close to benefit thresholds. Those just above the limit might reduce earnings to qualify for Medicaid; those below the new limit would be open to work more and increase earnings because they can still qualify for Medicaid.

Availability of ACA marketplace subsidies for nonelderly adults starting at 100 percent of the FPL and gradually phasing out at 400 percent of the FPL widens the scope of workers that might adjust their incomes to maintain eligibility for those subsidies. The reduction in subsidies with higher earnings acts as an effective tax on additional work. Also, the ACA's employer mandate may induce some employers to rely more on part-time workers.

Moreover, many low-income individuals may hold regular full-time jobs

simply to maintain employer-based health insurance. Medicaid eligibility may prompt these people to give up full-time jobs and opt for lighter and more flexible schedules with fewer hours. Some could retire early if Medicaid were available before age 65.

Such behavioral effects suggest that Medicaid expansion should lower labor force participation, employment and hours worked. The CBO estimates that various provisions of the ACA would lower total hours worked 1.7 percent and total earnings about 1 percent by 2025; there would be 2 million fewer full-time-equivalent workers in 2025 than would be the case without the ACA.[12]

At a time when labor force growth is already projected to slow due to an aging population and retiring baby boomers, ACA-related employment declines could be a further drag on growth. Nevertheless, some positive spillovers from increased health care coverage helped limit the CBO's estimate of reduced employment.

First, some individuals stay with their employers simply to maintain insurance even though they could be more productive elsewhere, and quitting could render them uninsured until they find another job. Availability of public insurance coverage through Medicaid should reduce such an

Table 1 — Health Insurance Coverage Lags in Texas, Especially Among the Non-College Educated

A. Percent with Medicaid Coverage Before and After the ACA, by Race and College

	White		Black		Hispanic		All	
	Pre-ACA	Post-ACA	Pre-ACA	Post-ACA	Pre-ACA	Post-ACA	Pre-ACA	Post-ACA
College								
U.S. (ex. Texas)	4.9	7.8	11.2	14.2	10.3	15.4	6.2	9.4
Texas	2.5	3.8	5.3	7.9	3.7	4.6	3.1	4.4
Non-college								
U.S. (ex. Texas)	13.2	17.8	24.6	29.1	18.8	26.6	16.5	22.1
Texas	7.0	8.9	17.4	21.0	8.3	9.9	8.7	10.8

B. Percent Uninsured Before and After the ACA, by Race and College

	White		Black		Hispanic		All	
	Pre-ACA	Post-ACA	Pre-ACA	Post-ACA	Pre-ACA	Post-ACA	Pre-ACA	Post-ACA
College								
U.S. (ex. Texas)	12.8	9.5	20.5	15.1	24.5	14.9	14.8	10.7
Texas	16.2	12.3	23.4	17.6	28.6	21.9	20.4	15.1
Non-college								
U.S. (ex. Texas)	22.1	15.6	30.2	19.6	44.3	29.2	28.7	19.6
Texas	28.2	24.2	34.3	27.2	53.7	44.2	43.3	35.5

NOTES: Sample restricted to those 27–64 years old. ACA refers to the Affordable Care Act.

SOURCES: Census Bureau, CPS-IPUMS, March Supplement; author's calculations.

"employment lock" and make the labor market more efficient.

Second, Medicaid expansion through increased income eligibility limits could lead to reduced welfare caseloads among individuals who maintained welfare eligibility simply to qualify for Medicaid. With enhanced limits, they may be drawn into the labor market because they could still qualify for Medicaid. Previous research has found compelling evidence of the positive effects of Medicaid expansions on the "welfare lock."

Employment, Consumer Spending

Employment data before and during the ACA that compares Medicaid-expanding and nonexpanding states suggests the employment rate was little changed even for the most-affected individuals—non-college-educated adults—in the two groups of states. Other detailed research has reached similar conclusions.[13] Except for select groups, such as childless adults and dependents who benefited from the dependent care mandate, the Medicaid expansions have largely been neutral with respect to key labor market outcomes.

Other ripple effects of more widely held insurance also help offset the cost to taxpayers. Lack of health insurance is a key driver of financial distress for those without coverage. Not surprisingly, increases in Medicaid coverage are strongly associated with lower personal bankruptcy rates.[14] The Medicaid expansions and ACA's marketplace subsidies should ease financial stress among low-income people who obtain health care coverage.

Without such coverage, the uninsured can't pay for their hospital stays and emergency room visits, shifting the cost to the insured through higher insurance premiums and to taxpayers through higher levies. Such uncompensated care costs have declined following ACA implementation.[15]

Expanded health care coverage also boosts consumer spending by limiting the need for precautionary saving to meet the out-of-pocket costs of unforeseen medical expenses among potentially eligible households.[16] Increased spending among those with health coverage could be partly offset by reduced consumption among those facing higher taxes to fund the ex-

panded coverage. Because low-income individuals spend a relatively larger share of additional income than higher-income households do, the net effect of the redistribution on consumer spending could be modestly positive.[17]

Remaining Challenges

Although Texas opted out of the Medicaid expansion, the uninsured rate in the state fell among major demographic groups because of sharply higher private insurance coverage. Challenges remain, however, as the uninsured rate for some groups remains elevated and the gap between Texas and the nation has increased.

Thus far, there appears little evidence of negative effects on the labor market in states that participated in Medicaid expansion. Whether the large gains in health coverage are worth the budgetary cost remains an open question.

Kumar is an economic policy advisor and senior economist in the Research Department at the Federal Reserve Bank of Dallas.

Notes

[1] The federal share of state Medicaid costs is governed by the federal matching assistance percentage—a formula based on a state's per-capita personal income relative to the nation—and ranges from 50 percent to 74 percent, with lower per-capita income states receiving a higher share.

[2] See "Trends in Medicaid Spending," Medicaid and CHIP Payment and Access Commission, June 2016, www.macpac.gov/wp-content/uploads/2016/06/Trends-in-Medicaid-Spending.pdf.

[3] See Centers for Medicare and Medicaid Services for more details on the Medicare-Medicaid relationship, www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/CMSProgramStatistics/index.html.

[4] See "Status of State Action on the Medicaid Expansion Decision," Kaiser Family Foundation, Nov. 8, 2017, www.kff.org/health-reform/state-indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act.

[5] For further details on the fiscal impact of the decision on Texas, see "Texas Health Coverage Lags as Medicaid Expands in U.S.," by Jason Saving and Sarah Greer, Federal Reserve Bank of Dallas *Southwest Economy*, Fourth Quarter, 2015.

A Conversation with Judge Ed Emmett

Harris County Faces Challenges Following Hurricane Harvey Deluge

Edward M. Emmett became Harris County judge in 2007. He is the chief administrative officer and director of emergency management in the county, which includes most of the city of Houston. He recently released a 15-point plan to prevent future flooding disasters. Harris County is the third-most populous U.S. county, accounting for two-thirds of the Houston metropolitan statistical area's population of 6.8 million people.

Q. How did Hurricane Harvey's aftermath compare to previous severe weather events in the region?

There is no comparison—Harvey is by far the worst storm to hit Harris County. Unlike past events such as Hurricane Ike, Harvey was a rain and flooding event that affected a much greater number of people and businesses.

Over 50 inches of rain fell in parts of the county; there is very little you can do to prepare for that amount of rain in a short period of time. With a hurricane, there is a storm surge that is localized and more predictable, which allows you to better prepare and evacuate people. What many people don't understand is that Harris County has good drainage—that's why most of the water was gone within a week. It was just too much rain in a very short period of time, and for homeowners, it has been a much more difficult event to deal with than businesses since homeowners don't have the resources to rebuild. Going forward, the biggest challenge is finding the money to rebuild and beef up infrastructure to reduce the impact of the next big flood.

Q. What do you see as key differences in the response to Harvey compared with Superstorm Sandy and Hurricane Katrina?

Katrina was a game changer in terms of how large a political event it was and how governmental entities reacted in the aftermath. There was a lot of criticism of federal, state and local governments. What a lot of people remember is the disjointed response.

By the time I had become county judge in 2007, the precedent had already been set in our region that during these kinds of crises, the city, county and state need to work together. We don't get caught up in who is in charge of what, we simply do what needs to be done to make sure everyone is safe.

Hurricanes didn't used to be political events. As an example, I was in the Houston area when Hurricane Alicia hit us in 1983, and it wasn't an event that came into the political realm. Nobody talked about the government's response or how FEMA (the Federal Emergency Management Agency) managed the aftermath. That first changed with the politicization of Hurricane Andrew [in South Florida] in 1992—an election year—when President [George H.W.] Bush was judged by how he responded. Since then, these storms have become political in the sense that the response to the event is judged and used as ammunition in the next election cycle.

Q. Businesses have told us that Harvey did not cause as much business disruption as it did residential disruption. How does this impact the recovery?

Businesses have the resources to start the repairs right away, and most were back on their feet relatively quickly. Even a small restaurant I know of in Meyerland, one of the hardest-hit areas in the county, took on five feet of water but was back in operation within three weeks. Once the water was gone, businesses had the wherewithal to begin rebuilding and get back into operation.

The issue with homeowners is that most people have a significant money shortage and don't have the funds to rebuild. Many homeowners were not insured, and even those who were are waiting a long time for FEMA to send them checks. Even then, often the amount received doesn't cover the cost to rebuild. So, many have been left waiting for additional aid or hoping for a buyout.

Q. What do you see as the most important points of your recently announced flood control proposal? What are the biggest challenges?

The most important element of the plan is the overall vision. We need to acknowledge that we live in a flood-prone area and take action to reduce the impacts of future floods. Rather than fighting with our watersheds, we need to use them as assets and turn as many of them as possible into recreational areas and green spaces. It is a different kind of mindset that we need to adopt.

Beyond that, we need to recognize that lakes Houston and Conroe need to be designated as flood-control lakes rather than water supplies. We need to change our thinking and think of everything as a flood-control effort.

If people have been allowed to build in flood-prone areas, where they really shouldn't have built, we need to buy them out so that we don't keep paying out insurance.

The biggest challenge is finding the money. The federal dollars will flow sooner or later, but they won't be enough. Everyone agrees we need a third reservoir on the west side, but the estimated cost is $500 million. With just 5 percent of the rainy-day fund [the Texas Economic Stabilization Fund] balance, the state could cover the cost and protect a huge number of Texas residents without waiting for federal funding.

An important use of funds would be to buy out homes in true flood plains. If people have been allowed to build in flood-prone areas, where they really shouldn't have built, we need to buy them out so that we don't keep paying out insurance.

Q. How does the governmental structure of the region impact its infrastructure planning to prevent damage during future severe weather?

We need a long-term revenue source that encompasses unincorporated Harris County to finance these infrastructure projects.

A huge number of people live outside of incorporated areas of Harris County. Compared with Dallas County, where there are about 6,000 people in unincorporated areas, there are almost 2 million in Harris County—nearly the same as the city of Houston's population. We have more than 1,000 different municipal utility districts in Harris County. Because of (state) legislation, the city of Houston can't annex these areas. So, we have an area with a growing urban population that expects the same services as the city but limited avenues for obtaining revenue to provide them.

At the county level, we only have access to property taxes and not sales taxes. There is a lot of pressure at the state level to not only keep property taxes from increasing but to reduce them. The county government is an arm of the state—we can only do what the state tells us to do. But this pressure to maintain services, including flood control to a large and growing population, while at the same time facing cuts to our revenues makes it a difficult balance.

A state Senate bill considered in the last legislative session proposed restricting county revenue to the pace of population growth and inflation. While this might sound good, this doesn't realistically work for a place like Harris County where most of the growth is in unincorporated areas. On top of that, the county government's responsibilities include indigent health care, criminal justice, roads and bridges, and flood control, which aren't well-tied to any measures of inflation that I know of.

Ultimately, we need some way to find a more sustainable source of revenue, such as sales taxes, to help fund some of these projects.

Q. What are the main issues impacting the region's future?

Transportation is key going forward. The Houston region is the gateway of North America for international trade. We need to find a way to move freight more efficiently throughout the state. The highways in and around Harris County are getting very congested, and improvements need to be made if we are to capitalize on our advantages in this arena.

In terms of Harris County, mass transit will come since simply adding more and more highways is not a viable long-term solution. However, the way the area has developed over time means that traditional fixed commuter rail isn't a very practical solution. Harris County is big but not nearly as dense as many of the other large cities in the U.S. This region is very large and as population has grown, people moved into the suburbs for schools and affordable housing. In general, rail is not flexible to move with the demand as workers and companies relocate and evolve in the region.

That said, I think whatever solution ultimately evolves will include some commuter rail, and there have been opportunities missed in the past. In particular, the old Missouri–Kansas–Texas Railroad included a rail line coming from Katy directly to downtown, which would have been a great piece to include in a broader mass transit solution.

Q. How do you see the aftermath of Harvey affecting the future regional economy? Has it been traumatic enough to hamper medium- to long-term growth?

I think it is too early to tell. There have been three 500-year floods in the past two years. Obviously, we have a problem with what our definition of a 500-year flood is, because we can't assume we'll go another 1,500 years without a significant flood. We need to start over and redefine our flood plains.

The bigger issue facing the economy here in terms of future growth is the national and global perception of Houston and Harris County. How do people outside of Houston perceive the area as a place to live? While only about 5 to 7 percent of Harris County homes were damaged, there is a narrative out there that the area was totally inundated and that homes and businesses are likely to flood. A lot of our conversations are about how to counteract that narrative and push the positives of the region.

Leading Indicators, Storm Data Guide Houston Economic Forecast

By Jesse Thompson

ABSTRACT: A forecasting model for Houston that incorporates storm damage data and leading economic indicators can help project post-Hurricane Harvey employment growth. The forecast indicates that Houston's economy will grow near its 2 percent historical average in 2018.

A surging energy sector helped Houston metropolitan employment expand at an annual rate of nearly 4 percent from 2011 through 2014—the equivalent of 325,000 jobs over the period. But in the subsequent two years, job growth stalled as rising crude production drove down oil prices.

A recovering energy industry helped propel Houston to above-trend growth in the first half of 2017 before Hurricane Harvey walloped the region in late August. The destructive storm disrupted economic activity, bringing with it a challenge for economic forecasters.

Businesses rely on job growth projections to plan for capital expenditures as well as more basic requirements such as office space, staffing and vehicle demand. Four economic models have been developed that rely on past job growth and leading indicators to forecast Houston employment growth, including a new experimental leading index.

Incorporating the dollar cost of direct storm damage improves model accuracy, and averaging the independent model forecasts tends to produce more accurate longer-term predictions. These models taken together anticipate that after three months of rapid recovery from Hurricane Harvey, Houston will grow near its historical average rate of 2 percent in 2018.

High Growth, Volatility

The Houston metro area was the second-fastest growing of the nation's 20 largest metros from 1990 to 2016, adding jobs at an annual rate of 2.2 percent, just behind Dallas–Fort Worth at 2.3 percent. That compared with a national average growth rate of 1 percent during the period.

Houston had more than 3 million jobs in 2016, accounting for 2 percent of all U.S. payroll jobs, and a gross domestic product of $478.6 billion, amounting to 2.6 percent of U.S. output. Houston is home to about one-fourth of all Texas jobs, nearly a third of the state's output and almost a quarter of the state's population.

Despite the metro area's heft, Houston's high growth comes with volatility. The area experienced the most volatile job growth of the eight largest U.S. metros from 1990 to 2016. It was also the nation's fifth-most-populous metro area in 2016, with 6.8 million inhabitants (*Table 1*).

Oil prices are responsible for much of Houston's volatility. They affect oil producers' revenues and future drilling activity. The supply chains for most U.S. oil and gas operations have connections to Houston—an industry headquarters city—although little oil is being produced in the immediate area. Houston retains the title "energy capital of the world," despite diversification and deepening connections to the broader U.S. economy over the past 30 years.[1]

Additionally, many local businesses and residents also own mineral rights and receive royalty payments from oil and gas production.[2] Industries not generally associated with the energy sector, such as business and professional services, have direct and indirect connections to energy. Thus, Houston's service sector employment (excluding government) is the second-most volatile among the largest U.S. metros.

Forecasts by their very nature assume that the behavior of data in the recent past will carry into the future. How can businesses plan ahead given recent volatility? Tools are needed that help capture the sources of that volatility and identify underlying trends.

Data and Leading Indicators

The Bureau of Labor Statistics (BLS) produces the most commonly used measure of regional employment growth. The Current Employment Statistics (CES) jobs data are generated from a national survey of 634,000 worksites, covering about one-third of total nonfarm civilian jobs. Smaller sample sizes at the metro level can result in significant changes when the BLS annually revises its estimates based on unemployment insurance data, which are comprehensive but have lagged availability.

The Federal Reserve Bank of Dallas works to improve the accuracy of recent employment data in Texas and its major metros through a quarterly early benchmarking process and a two-step seasonal adjustment.[3] These processes help make the Dallas Fed's local employment data more accurate in real time than unrevised CES estimates while taking into account seasonal variations (like more retail workers before Christmas) that can obscure trends.

Recent job growth numbers set the trend for most forecast models, so boosting the accuracy of those data should improve ensuing predictions. Leading economic indicators when combined with improved employment data presumably better capture the cyclicality and volatility of future job growth.

Among the useful indicators that contain information about Houston's near-future job growth and likely business-cycle changes are the Houston Purchasing Managers Index (HPMI) produced by the Institute for Supply Management (ISM) and the Texas Leading Index (TLI) from the Dallas Fed. Both are powerful barometers of impending changes in the local economy.

The HPMI is a monthly diffusion index that is similar to the ISM's national purchasing managers index. Supply managers from a broad group of industries, including health, manufacturing, oil and gas, and services answer questions seeking to ascertain whether business conditions are improving, worsening or unchanged relative to the prior month. Responses are compiled into eight component indexes—sales, production, employment, purchases, prices paid, lead times (from sellers), purchased inventory and finished goods in inventory. The responses are then combined into an index in which a value above 50 indicates an expanding economy and a value below 50 suggests contraction.
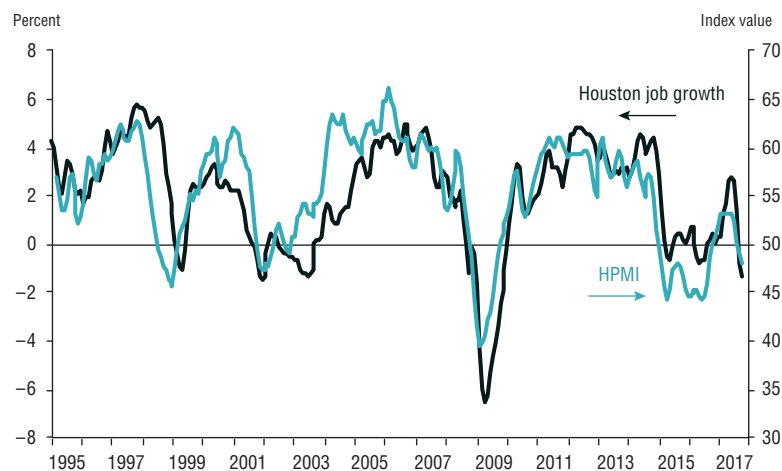
Since its inception in early 1995, the index has consistently provided an early indication of changes in employment growth rates and turning points in the broader regional economy. It is also very timely, typically available on the 10th day following the measured month. Whenever the HPMI strengthens or weakens, job growth over the next few months most likely follows (*Chart 1*).

The Dallas Fed's TLI is a different kind of leading index. It combines eight separate indicators associated with

Table 1 — Houston Job Growth Volatile Relative to Other Large Metros

	Total nonfarm jobs		Service-providing nonfarm jobs (ex. government)		Population in 2016
	Rank	Volatility	Rank	Volatility	Millions
United States		0.96		1.03	323.1
Houston-The Woodlands-Sugar Land	**1**	**1.45**	**2**	**1.43**	**6.8**
Miami-Fort Lauderdale-West Palm Beach	2	1.43	1	1.44	6.1
Los Angeles-Long Beach-Anaheim	3	1.31	5	1.14	13.3
Dallas-Fort Worth-Arlington	4	1.27	3	1.37	7.2
Washington-Arlington-Alexandria	5	1.05	4	1.24	6.1
New York-Newark-Jersey City	6	1.03	6	0.94	20.2
Chicago-Naperville-Elgin	7	1.02	7	0.92	9.5
Philadelphia-Camden-Wilmington	8	0.93	8	0.89	6.1

NOTES: Volatility is calculated as the standard deviation of the absolute 12-month log-change in employment from January 1991 through December 2016. A larger standard deviation means the 12-month growth rate is more variable.
SOURCES: Bureau of Labor Statistics; Census Bureau.

Chart 1 — Job Growth Tracks the Houston Purchasing Managers Index

NOTES: Employment growth is the three-month percent change in the centered moving average. The Houston Purchasing Managers Index (HPMI) is depicted as a centered three-month moving average where values >50 indicate expansion.
SOURCES: Institute for Supply Management; Bureau of Labor Statistics; adjustments by the Federal Reserve Bank of Dallas.

future business activity that typically change direction three to nine months before the rest of the economy does.

For example, rising initial claims for unemployment insurance suggest firms believe they may be unable to support staffing levels; individuals losing their jobs will likely scale back consumption in the months ahead. When help-wanted advertisements rise, employers are more confident about their outlook and plan to hire more staff. As those positions are filled, new employees are likely to increase consumption in future months.

Both indicators are included in the TLI. Other items are the Texas value of the dollar, a trade-weighted index that accounts for inflation; the U.S. leading index from the Conference Board; the real (inflation-adjusted) price of West Texas Intermediate crude oil; oil and natural gas well permits; a Texas stock index representing the 100 largest publicly traded companies based in the state, and average weekly hours worked in manufacturing.[4]

The TLI is the main component of the Dallas Fed's Texas forecasting model, which has consistently outperformed other state-level employment forecasts tracked by the Western Blue Chip Economic Forecast.[5]

An index constructed to help forecast the Texas economy should have predictive power for Houston. Analysis suggests that the TLI is significantly correlated with Houston job growth one to six months into the future (*Chart 2*).

Houston Leading Index

The TLI and the sales and production components of the Houston Purchasing Managers Index are subsequently combined with data covering additional metrics to produce an experimental index of leading indicators for Houston (HLI).

The additional data are: Help-Wanted OnLine advertising, single-family housing construction permits, existing-home sales, the American Chemistry Council's U.S. chemical production index, the Bloomberg Houston 150 stock market index, the average monthly price of West Texas intermediate crude oil, the U.S. rig count and the Conference Board's U.S. index of leading economic indicators.[6,7]

The new index's construction resembles the TLI and the U.S. leading index. Changes in each of the 11 components are divided by a measure of their own volatility to prevent the effects of inherently more noisy components—such as oil prices—from

overwhelming the effects of the others. These adjusted changes are then averaged to produce a Houston index of leading indicators.[8] Much like the TLI, the HLI is significantly correlated with Houston employment growth one to six months out (*Chart 3*).

Improving Accuracy

Four different employment forecasting models—three of them based on measures of ongoing activity in Texas and Houston—were developed for Houston. The HLI, the HPMI and the TLI were each incorporated in models using two simultaneous equations, where the first equation forecasts employment growth based on past changes in employment and the leading indexes, and the second equation forecasts growth in the leading index based largely on lagged values of itself.[9]

A fourth model produced a forecast by averaging the predictions of many ARIMA (autoregressive integrated moving average) forecasts. These ARIMA forecasts use only combinations of past job growth to predict future job growth.[10] The HLI-based model tended to be more accurate at charting the course of employment growth over the year ahead.[11] It did particularly well at forecasting four to 11 months out.[12]

Frequently, averaging predictions from different models can provide better forecasts than the individual models. An average of all four of the models tested tended to be the most accurate when forecasting 12 months ahead, reducing forecast error—the extent to which predicted job growth differed from actual job growth—by 15.6 percent relative to the ARIMA model (*Table 2*).

Including estimates of the direct cost of damage from major storms over the past 26 years in the forecast models improved the accuracy of the forecast predictions and, in the most recent instance, provided estimates of Hurricane Harvey's employment impact.[13]

Resurgent Economy Anticipated

The average of the four forecast models predicted a net drop of 30,000 Houston jobs from August to Septem-


Chart 2 Texas Leading Index Correlated with Houston Job Growth Up to Six Months into Future
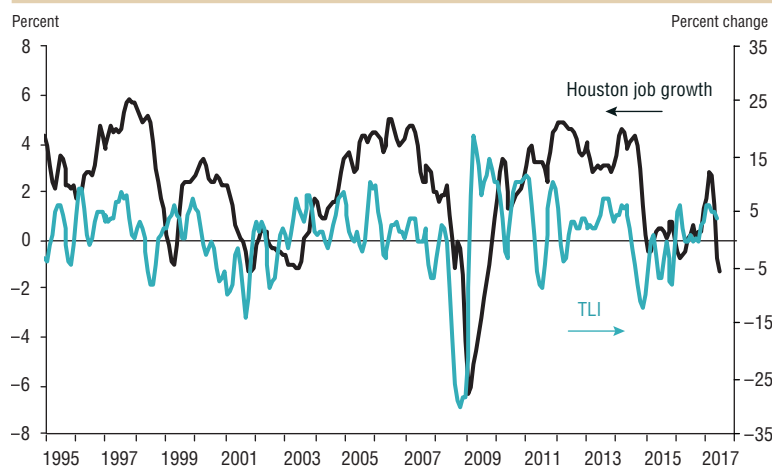
NOTE: Employment growth and the Texas Leading Index (TLI) are the three-month percent change in a centered moving average.
SOURCES: Bureau of Labor Statistics; Federal Reserve Bank of Dallas.

Chart 3

Houston Leading Index, Future Job Growth Significantly Correlated

Percent   Percent change
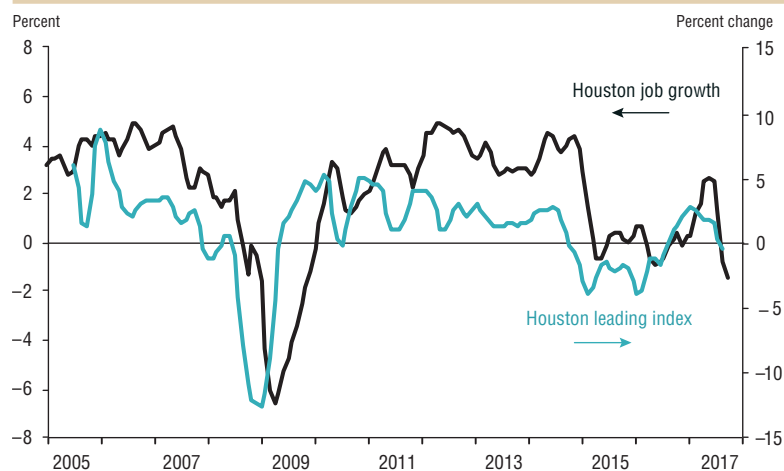
NOTES: The Houston leading index is experimental. Employment growth and the Houston leading index are depicted as three-month percent changes in a centered three-month moving average.

SOURCES: Bureau of Labor Statistics; adjustments by the Federal Reserve Bank of Dallas; author's calculations.

ber, assuming that Harvey caused $70 billion in direct damage. Initial estimates put the number at around 22,000 lost jobs. The impact was also likely to be short lived, corroborating an earlier Dallas Fed analysis that suggested the Texas Gulf Coast would recoup jobs lost due to the storm as recovery efforts boosted year-end growth.[14]

(*See "On the Record," a conversation with Harris County Judge Ed Emmett, page 8.*)

In short, a host of leading indicators suggest that Hurricane Harvey, while devastating to many homeowners and small businesses, likely caused only one month of net job losses in Houston. Despite slower growth in the second half of 2017, the region's long-run economic momentum is unlikely to be derailed.

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Notes

[1] "Diversified Houston Spared Recession … So Far," by Jesse Thompson, Federal Reserve Bank of Dallas, *Southwest Economy*, Third Quarter, 2015, www.dallasfed.org/assets/documents/research/swe/2015/swe1503f.pdf.
[2] "Asset Ownership, Windfalls, and Income: Evidence from Oil and Gas Royalties," by Jason P. Brown, Timothy Fitzgerald and Jeremy G. Weber, Federal Reserve Bank of Kansas City, Research Working Paper no. 16-12, November 2016, www.kansascityfed.org/publications/research/rwp/articles/2016/asset-ownership-windfalls-income-oil-gas-royalties.
[3] See definitions of early benchmarking at www.dallasfed.org/research/basics/benchmark.cfm and two-step seasonal adjustment at www.dallasfed.org/research/basics/twostep.aspx.
[4] Texas Employment Forecast, Federal Reserve Bank of Dallas, Nov. 17, 2017, www.dallasfed.org/research/forecast.aspx.
[5] "Revising the Texas Index of Leading Indicators," by Keith Phillips and José Joaquín López, Federal Reserve Bank of Dallas, *Southwest Economy*, November/December, 2007, http://dallasfed.org/assets/documents/research/swe/2007/swe0706b.pdf.
[6] The Houston 150 stock index is produced by Bloomberg. It is a price-weighted index composed of major companies based in Houston and significant employers in the area. The U.S. chemical production index is produced by the American Chemistry Council to track chemical production activity in the United States based on industrial production data from the Federal Reserve. Help-Wanted OnLine data are produced by the Conference Board from online job postings for employment in the Houston metropolitan area.
[7] Details of the Conference Board methodology can be found at www.conference-board.org/data/bci/index.cfm?id=2161.
[8] Component series are also seasonally adjusted where appropriate. Due to limitations in some of the component data, the Houston index begins in June 2005.
[9] Each system of two equations was estimated using seemingly unrelated regressions.
[10] The ARIMA forecast was a weighted average of many models automatically selected for each of the 84 iterations over the sample period and weighted based on goodness-of-fit measures.
[11] Each model was used to calculate 84 out-of-sample forecasts beginning in January 2010 and rolling forward to December 2016. The overall prediction error was tabulated for the 12-month forecasts, as well as the prediction error for each step-ahead.
[12] The HLI model was specified as follows:

(Equation No. 1) $\Delta \ln(emp) = \beta_{11} \Delta \ln(emp)_{t-3} + \beta_{12} \Delta \ln(emp)_{t-4} + \beta_{13} \Delta \ln(emp)_{t-6} + \beta_{14} \Delta \ln(HLI)_{t-1} + \beta_{15} \Delta \ln(HLI)_{t-3} + \beta_{16} \, storms + \beta_{17} \, storms_{t-1} + \beta_{18} \, storms_{t-2} + \beta_{19} \, recessions + \varepsilon.$

(Equation No. 2) $\Delta \ln(HLI) = \beta_{21} \Delta \ln(emp)_{t-1} + \beta_{22} \Delta \ln(HLI)_{t-1} + \beta_{23} \Delta \ln(HLI)_{t-2}) + \beta_{24} \, storms_{t-1} + \beta_{25} \, recessions + \beta_{26} + \varepsilon.$

[13] Tropical Storm Allison in 2001 and the 1994 floods occurred before the HLI model sample period.
[14] See "Short-Term Job Growth Impacts of Hurricane Harvey on the Gulf Coast and Texas," presentation by Keith Phillips and Christopher Slijk, Federal Reserve Bank of Dallas, San Antonio Branch, Sept. 5, 2017, http://files.constantcontact.com/668faa28001/d7cdfcae-b861-4bb2-9cb7-a1f8e361a878.pdf?ver=1505446495000.

Table 2

Forecast Averaging Produces Better Long-Term Predictions

	Percent improvement in accuracy over ARIMA
Average	15.6
Houston leading index	14.8
Houston Purchasing Managers Index	12.7
Texas Leading Index	6.7
ARIMA	–

NOTES: Data are the percent reduction in the 12-month-ahead root-mean-squared forecast error relative to the ARIMA (autoregressive integrated moving average) model.

SOURCE: Author's calculations.

Mexico's 'SOFOM' Finance Firms Attempt to Broaden Loan Availability

By Michael Perez and Kelsey Reichow

ABSTRACT: The market presence of Mexican finance companies known as *SOFOMES* has expanded rapidly since the global financial crisis. The firms largely operate as independent outlets and provide financing to small- and medium-sized companies as well as to consumers for larger purchases. Authorities see SOFOMES as a way to expand credit to Mexico's informal economy.

Mexicans increasingly rely on regulated nonbank finance companies for their credit needs. Assets at these firms—known by the Spanish shorthand as *SOFOM ER*—have more than doubled amid a regulatory effort to formalize and consolidate the industry or sector beginning in 2013.[1] Meanwhile, the finance companies' share of the lending market has grown, driven by new market entrants (*Chart 1*).

SOFOM ERs specialize in credit, lease financing and financial factoring services. They offer auto, personal and department store credit and commercial financing for small- and medium-sized enterprises. Some serve as captive finance companies—institutions providing customer credit for purchases of parent company products—at stores and dealerships.

Others operate as independent lenders or as off-balance sheet vehicles for larger banks. A total of 49 SOFOM ERs operated in Mexico as of August, with about 614 billion pesos ($33 billion) in loans outstanding.[2] Not all Mexican finance companies are SOFOM ERs. There are also more than 1,500 lesser-regulated companies (*SOFOM ENRs* in Spanish).

Mexico's regulated and lesser-regulated finance companies are collectively known as *SOFOMES*. As the country's financial system continues to develop and its commercial banks cater to more traditional established markets, regulators view SOFOMES as a means of addressing basic credit needs while providing an important source of liquidity to chronically underserved markets.

SOFOMES are not allowed to accept deposits. Instead, they raise capital from banks, government-sponsored financial corporations, venture capital entities or through debt issuance. To

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Chart 1
Mexican SOFOM ER Assets, Lending Grow

Index, December 2013 = 100 — Share as percent of commercial bank loans
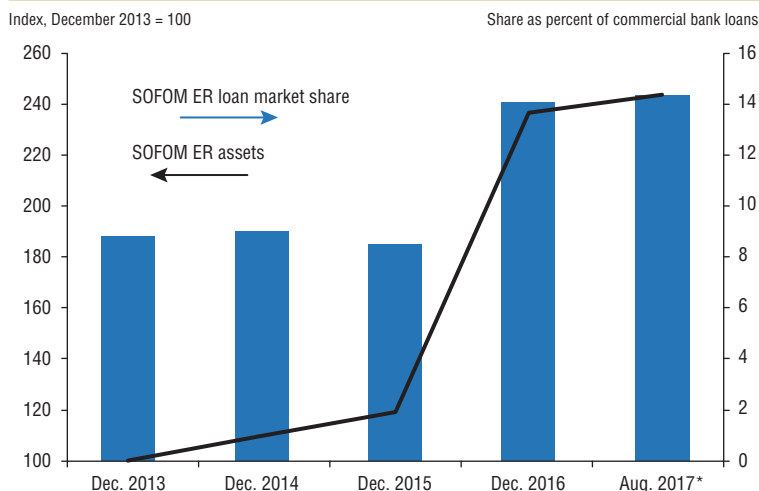
*Represents partial-year activity.
NOTE: Total loans are calculated net of loan loss reserves.
SOURCES: Mexican National Banking and Securities Commission (Comisión Nacional Bancaria y de Valores); authors' calculations.

comply with money laundering rules, SOFOMES must register with Mexico's banking and securities commission, the national financial consumer watchdog agency, the central bank and the finance ministry. They must comply with anti-money-laundering measures and report borrower credit profiles to a private credit bureau.

SOFOM ERs are subject to relatively light capital requirements and accounting standards.[3] Mexico's commercial banks must maintain a capital adequacy ratio (total capital to risk-weighted assets) of 10.5 percent, while SOFOM ERs must maintain an 8 percent ratio. Moreover, SOFOM ERs must follow additional regulatory requirements as a result of linkages with other regulated financial institutions, such as commercial banks' community financing firms.[4]

Filling Lending Gaps

Mexico is Latin America's second-largest economy, bolstered by strong fundamentals, reform initiatives and stable institutions.[5] Still, financial system development remains a challenge, especially financial inclusion. Credit to the private sector and households' use of deposit accounts are low, new loan origination by commercial banks has remained sluggish, and long-term financing is scarce (*Chart 2*). Instead of extending new lines of credit, com-

mercial banks often consolidate their financial service offerings, choosing to improve their existing infrastructure and make larger loans to existing customers. As a result, a majority of Mexican adults don't use the country's financial system. The unbanked proportion is greatest in rural areas, where 71 percent of working-age residents lack access to formal financial services, far exceeding Mexico's Latin American peers (*Chart 3*).[6]

Micro-, small- and medium-sized enterprises also struggle to obtain credit. A study by the National Statistics Institute found that only 11 percent of microenterprises (those with up to 10 employees) have access to financing, compared with 28 percent for small enterprises (11–49 employees) and 40 percent for medium-sized entities (50–250 employees).[7] Moreover, when receiving offers of formal financing, 67 percent of all these businesses turn them down primarily because of high borrowing costs, including lenders' fees, and minimum balance and collateral requirements.

Many of these businesses and individuals lack established credit histories and operate in Mexico's large informal sector—the part of the economy where activity is not reported to the government and whose participants do not pay employment taxes or receive government-mandated benefits and

pensions. The informal sector accounts for a quarter of Mexico's gross domestic product, according to the National Statistics Institute.[8]

The inability to access credit through a bank has considerable economic consequences. Credit-constrained individuals and firms often can't take advantage of growth opportunities or absorb financial shocks. Families are unable to invest in education and health; businesses struggle to expand and create jobs.

The SOFOMES offer an alternative borrowing channel. Specifically, because they do not face the same restrictions as banks, SOFOMES can more easily serve marginalized consumers without imposing credit, balance and collateral requirements. SOFOMES undertake higher-risk lending by charging higher loan interest rates. The average interest rate on a personal loan taken at a Mexican commercial bank in April 2017 was 31 percent while at a SOFOM ER, it was 39 percent. Nevertheless, the benefits of having access to high-interest financing often outweigh the costs of being denied credit by a commercial bank.
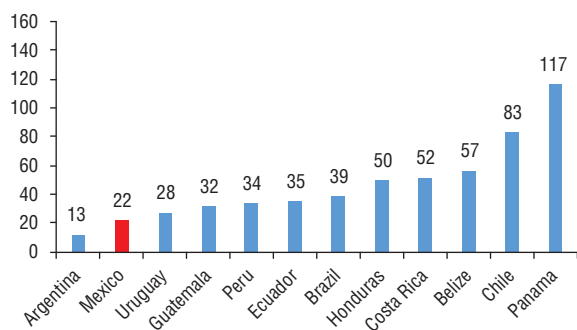
Mexico hopes that by striking a balance between formalization and innovation within the SOFOME sector, it can bolster credit, increase investor confidence and encourage new business formation while discouraging

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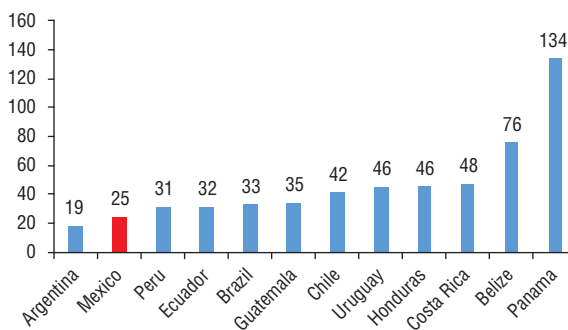**Chart 2** Loan Issuances and Deposit Volume in Mexico Lag Latin American Peers

Outstanding Loans with Commercial Banks

Percent of gross domestic product

Country	Value
Argentina	13
Mexico	22
Uruguay	28
Guatemala	32
Peru	34
Ecuador	35
Brazil	39
Honduras	50
Costa Rica	52
Belize	57
Chile	83
Panama	117

Outstanding Deposits with Commercial Banks

Percent of gross domestic product

Country	Value
Argentina	19
Mexico	25
Peru	31
Ecuador	32
Brazil	33
Guatemala	35
Chile	42
Uruguay	46
Honduras	46
Costa Rica	48
Belize	76
Panama	134

SOURCE: International Monetary Fund Financial Access Survey—2017 Edition.

Chart 3 | Financial Inclusion in Mexico Trails Latin America
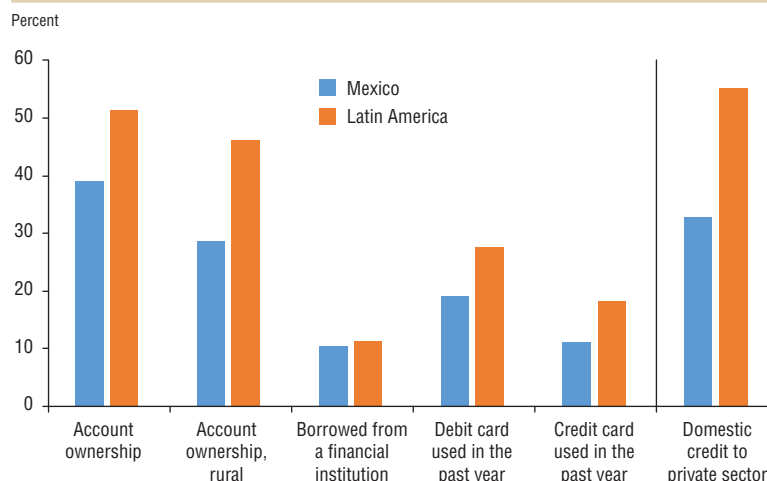
Percent

NOTE: Percent refers to share of respondents except for domestic credit, where it refers to share of gross domestic product.

SOURCES: World Bank Global Findex 2014 and International Monetary Fund; International Financial Statistics and data files; World Bank and Organization for Economic Cooperation and Development.

reliance on costlier and less reliable, unregulated alternatives.[9]

Balancing Regulation, Innovation

Mexico has struggled to strike an optimal regulatory balance. The predecessors to SOFOMES, known as *SO-FOLES*, first appeared in the mid-1990s after a sharp peso devaluation and political instability spawned the Tequila Crisis of 1994—both events disrupting banking activity. Banks struggled to rebuild their balance sheets, and the Mexican government sought to stimulate the credit market.

Nondeposit-taking finance company lending was authorized in the housing, consumer, small-business and automobile finance markets.[10] Initially, the finance companies, backed by the federal government, issued loans for low-income housing and real estate development.[11]

By the mid-2000s, nonbank lending was common, accounting for nearly half of Mexican mortgage loan originations. Commercial banks, operating in a less stringent regulatory environment before the 2007–08 global financial crisis, were drawn to the finance companies and their mortgage business with the informal workforce.

As the financial crisis unfolded,

delinquency rates soared and SOFOLES struggled to maintain operations. Total loans issued by SOFOLES fell 69 percent between their peak in September 2007 and December 2009, drying up credit available to individuals and small- and medium-sized enterprises (*Chart 4*).

The stress spread to banks that had purchased finance companies before the crisis. The downturn exposed fraudulent practices, loose lending standards and inadequate servicing procedures in the nonbank financial sector.[12]

The SOFOLES' struggles in the wake of the crisis prompted regulatory change. Registration of the finance companies was required under laws passed in 2013, under which SOFOLES were required to convert into SOFOM ERs or SOFOM ENRs or dissolve. This led to the consolidation in the SOFOMES sector. Regulators also adjusted their oversight strategy, boosting protection for consumers, mitigating SOFOMES' lending risks and scrutinizing the firms for fraud and money laundering.

SOFOMES in the Future

SOFOMES' future growth may come via financial technology (fintech) companies, which leverage online, mobile and information technologies to deliver financial services. Fintechs in

Chart 4 | SOFOLES' Lending Tumbles Following Global Financial Crisis
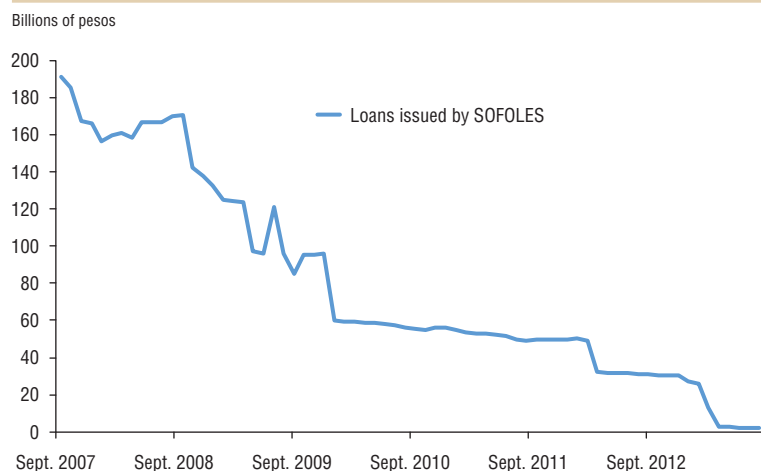
Billions of pesos

Loans issued by SOFOLES

SOURCES: Mexican National Banking and Securities Commission (Comisión Nacional Bancaria y de Valores); authors' calculations.

developing countries such as Mexico have objectives similar to SOFOMES, making financial products, including loans, available to underserved markets. To meet this goal, they rely on mobile device-based transactions and data analytics.

While regulatory constraints limit banks' adoption of these technologies, fintechs can register and become SOFOMES. Some existing SOFOMES have acquired equity stakes in fintech startups or have developed fintech business lines, technological tools, mobile apps and other electronic products; others are collaborating with fintech firms.[13]

The government's approach to fintechs appears in line with that of SOFOMES; regulators seek to balance innovation with oversight to allow growth and monitor for fraud.

Still, a large proportion of Mexico's population remains without access to credit, and the SOFOMES, perhaps with the fintech sector, may increase financial inclusion.

Perez and Reichow are financial industry analysts in the Financial Industry Studies Department at the Federal Reserve Bank of Dallas.

Notes

[1] SOFOM stands for sociedad financiera de objeto múltiple. ER stands for entidad regulada. ENR stands for entidad no regulada. SOFOLES stands for sociedad financiera de objeto limitado.

[2] Based on Comisión Nacional Bancaria y de Valores (Mexican National Banking and Securities Commission) data, authors' calculations.

[3] See "SOFOMES" by Comisión Nacional Bancaria y de Valores (Mexican National Banking and Securities Commission), www.cnbv.gob.mx/SECTORES-SUPERVISADOS/OTROS-SUPERVISADOS/Descripci%C3%B3n-del-Sector/Paginas/SOFOMES-Reguladas.aspx.

[4] See "Padrón de Entidades Supervisadas" (Census of Supervised Entities), Comisión Nacional Bancaria y de Valores (Mexican National Banking and Securities Commission), www.cnbv.gob.mx/Paginas/PADR%C3%93N-DE-ENTIDADES-SUPERVISADAS.aspx.

[5] See "Financial System Stability Assessment" by International Monetary Fund, November 2016.

[6] Working-age individuals are defined as those 15 years of age or older.

[7] See "Se Difunden Estadísticas Detalladas Sobre las Micro, Pequeñas y Medianas Empresas del País" ("Statistics on Micro-, Small- and Medium-Sized Businesses") by Instituto Nacional de Estadística y Geografía (National Statistics Institute), Instituto Nacional del Emprendedor (National Startup Institute) and Banco Nacional de Comercio Exterior (National Bank of Exterior Commerce), July 2016, www.inegi.org.mx/saladeprensa/boletines/2016/especiales/especiales2016_07_02.pdf.

[8] See "Actualización de la Medición de la Economía Informal" ("Actualization in Measuring the Informal Economy") Instituto Nacional de Estadística y Geografía (National Statistics Institute), December 2016, www.inegi.org.mx/saladeprensa/boletines/2016/especiales/especiales2016_12_08.pdf.

[9] See "A Study on the Effect of Financial Inclusion on the Relationship Between Income Inequality and Economic Growth," by Jong-Hee Kim, *Emerging Markets Finance &*

Trade, vol. 52, no. 2, 2016, pp. 498–512, www.tandfonline.com/doi/full/10.1080/154046X.2016.1110467.

[10] See "The SOFOLES: Niche Lending or New Leaders in the Mexican Mortgage Market?" by Natalie Pickering, Harvard University Joint Center for Housing Studies, May 2000, www.jchs.harvard.edu/sites/jchs.harvard.edu/files/pickering_w00-2.pdf.

[11] SOFOLES typically issued credit for properties between $14,000 and $22,000 (U.S.). See "The Home Truths About Non-Bank Mortgage Lending in Mexico," by Knowledge@Wharton, The Wharton School, University of Pennsylvania, Oct. 5, 2011, http://knowledge.wharton.upenn.edu/article/the-home-truths-about-non-bank-mortgage-lending-in-mexico/.

[12] See "The Non-Bank Credit Crunch in Mexico: Rise and Fall of an Industry," by José Berrospide, Renata Herrerías, Fabrizio López Gallo and Ana Mier y Terán, Instituto Tecnológico Autónomo de México (Autonomous Technical Institute of Mexico), December 2012, http://daac.itam.mx/sites/default/files/nonbank_credit_crunch_mexico_dec2012.pdf.

[13] See "Es Importante Que las SOFOMES se Sumen al Huracán Fintech: Banxico" ("It's Important Sofomes Join the Fintech Hurricane: Banxico"), by Fernando Gutiérrez, *El Economista*, Sept. 10, 2017, www.eleconomista.com.mx/sectorfinanciero/Es-importante-que-las-sofomes-se-sumen-al-huracan-fintech-Banxico-20170910-0043.html.

Rising Education Helps Explain Hispanic Household Income Growth in Texas

By Alexander T. Abraham and Amy Jordan

Hispanic household income has grown considerably in real (inflation-adjusted) terms in Texas and the U.S. during recent years. Household income is calculated by adding each household member's total income from all sources, including wages, public and private pension benefits, and financial assets.

Hispanics' real median household income grew 13 percent in Texas from 2011 to 2016, compared with 11 percent nationally and 7 percent for households overall in the state (*Chart 1*). Hispanic households make up almost one-third of all Texas households.

Despite rapid growth, the Texas Hispanic median household income of $44,579 in 2016 trails the state median income of $56,565. The gap is narrower nationally; the U.S. Hispanic median household income is $46,882 compared with $57,617 for the U.S. overall.

In Texas, the share of Hispanics who are college educated is lower than it is for the total adult population. Nearly 20 percent of all people age 25 and over hold college degrees; the attainment rate drops to 10 percent for Hispanics.

Moreover, many Hispanics are immigrants whose wages are lower due to factors such as limited English proficiency and lack of legal status. Median household income rises to $49,900 for Hispanic households headed by a U.S. native, from $38,580 when the head of household is foreign born.

Educational Attainment Gains

Greater education is likely driving the Hispanic income increases. The share of Hispanics age 25 and older with a high school diploma increased 1.6 percentage points to 28 percent from 2011 to 2016, while the share with bachelor's degrees rose 1.5 percentage points to 10 percent. The share without a high school diploma dropped 4.5 percentage points to 35 percent.

Chart 1 Hispanic Household Income Rapidly Rises in Texas, U.S.

Index, 2011 = 100
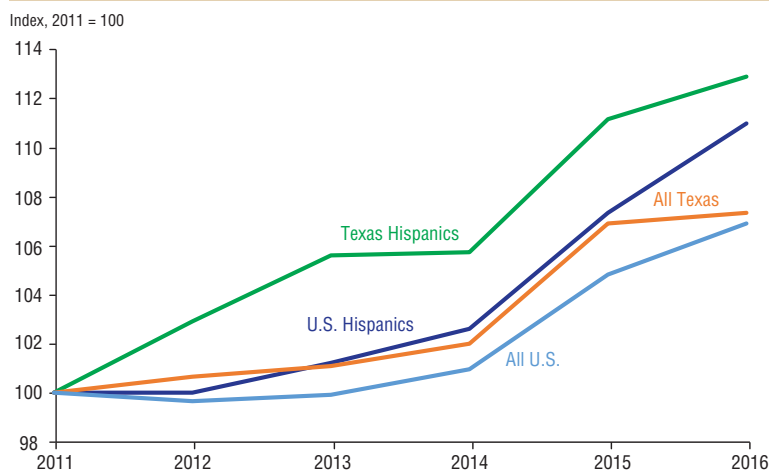
NOTE: Data are inflation adjusted to 2016 dollars.
SOURCE: Census Bureau, American Community Survey.

At the same time, the Hispanic dropout rate reached a national low. This development may partly reflect a shift in the composition of the population, with slowing immigration of Mexican citizens—individuals less likely to have a high school diploma than other Hispanic immigrants—and some emigration back to Mexico.[1]

Between 2005 and 2010, about 1.4 million Mexican immigrants and their children (including some from Texas) returned to Mexico. The U.S. Mexican-born population stopped growing in 2007 at the onset of the Great Recession and amid tighter immigration enforcement.[2]

At the same time, violence in northern Mexico likely contributed to an influx of relatively highly educated Mexicans into Texas, although the extent of that migration is unknown.

Economic Conditions Also Improve

The shale oil boom also supported improved economic conditions for Hispanics.[3] The Hispanic population in Texas, which stands at nearly 11 million, rose 11 percent in 2011–16. The oil boom resulted in more blue-collar jobs in high-paying energy and manufacturing sectors. Hispanic wages, which in Texas accounted for slightly more than 75 percent of average Hispanic household income in 2016, spiked 6.5 percent around the time of the boom.

While Hispanic households have made economic advances, income inequality remains a concern. A greater share of Hispanics live below the poverty line (22 percent) than the overall share of the state population in poverty (16 percent). Furthermore, 27 percent of Hispanics in Texas lack health insurance; the overall state uninsured rate is 17 percent.

Notes

[1] See "A Look at Immigrant Youth: Prospects and Promising Practices," by Ann Morse, National Conference of State Legislatures Children's Policy Initiative, March 2005.
[2] See "Net Migration from Mexico Falls to Zero—and Perhaps Less," by Jeffrey Passel, D'Vera Cohn and Ana Gonzalez-Barrera, Pew Hispanic Center, April 23, 2012.
[3] See "The Texas Energy Industry: From Boom to Gloom," by Michael D. Plante and Mine K. Yücel, *Federal Reserve Bank of Dallas Annual Report 2015*.

Remittances to Central America Soar

Design: Emily Rogers & Darcy Taj; Content: Stephanie Gullo & Jesus Cañas

Money Sent to Central America on the Rise

Total remittances received, index, 2000 = 100

Great Recession

'00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16
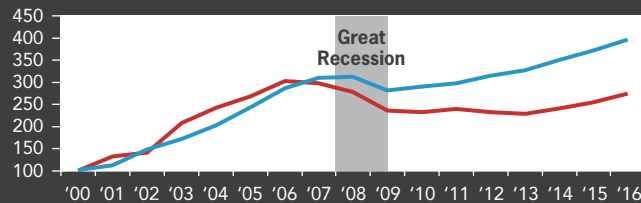
... but **1.6** times more remittances were sent to Mexico than Central America in 2016.

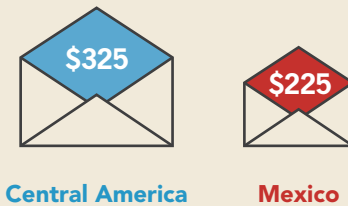**Central America** $18.3 billion   **Mexico** $28.7 billion

What's Behind the Change?

Central American immigrant population in U.S. increasing, while **Mexican immigrant population** in U.S. decreasing ...

Population in U.S., index, 2010 = 100

'10 '11 '12 '13 '14 '15 '16
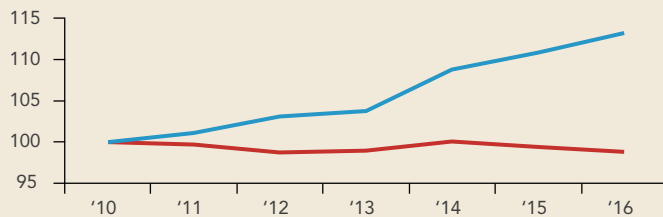
Central Americans in U.S. send more money home per person on average

$325 Central America

$225 Mexico

... but **Central American population** still far smaller than **Mexican immigrant population**

3.5 million

11.6 million

What Does This Mean for Receiving Countries?

Remittances provide relatively bigger boost to **Central American economies,** which are more dependent on them than Mexico.

Remittances Per Capita in Receiving Countries

El Salvador—$724	**Belize**—$238	**Panama**—$125
Guatemala—$450	**Mexico**—$225	**Costa Rica**—$113
Honduras—$422	**Nicaragua**—$206	

Remittances as Percent of GDP

Mexico 2.7%

Belize—4.9%
Honduras—17.9%
Guatemala—10.9%
Nicaragua—9.6%
El Salvador—17.1%
Costa Rica—1.0%

Central America 7.5%

Panama—0.9%

NOTES: Dollar values are inflation-adjusted 2016 dollars. Central America includes Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama. All data refer to 2016 unless otherwise noted.
SOURCES: Census Bureau, American Community Survey, 1-year estimates; World Bank.

Texas Sees Coverage Gains Under Health Care Act

[6] See "Medicare Income Eligibility Limits for Parents, 2002–2017," Kaiser Family Foundation, www.kff.org/medicaid/state-indicator/medicaid-income-eligibility-limits-for-parents.

[7] Part of this decline could be due to changes in how the eligibility limit is calculated post-ACA. The cutoff published by the Texas Health and Human Services Commission differs slightly—$230 in monthly income or 16 percent of the FPL.

[8] Enrollment numbers are based on Medicaid data for July 2017. See www.medicaid.gov/medicaid/program-information/medicaid-and-chip-enrollment-data/report-highlights/index.html. Medicaid caseload data from the Texas Health and Human Services Commission indicate that Texas' Medicaid enrollment rose 13.4 percent in 2014.

[9] See "2017 Marketplace Plan Selections with Finance Assistance," Henry J. Kaiser Family Foundation, 2017.

[10] The analysis of 27–64-year-olds with no college education is based on CPS-IPUMS data. See Integrated Public Use Microdata Series, Current Population Survey: Version 4.0 [dataset], by Sarah Flood, Miriam King, Steven Ruggles and J. Robert Warren, University of Minnesota, 2015, http://doi.org/10.18128/D030.V4.0.

[11] See Federal Subsidies for Health Insurance Coverage for People Under Age 65: Tables From CBO's March 2016 Baseline, Congressional Budget Office, www.cbo.gov/sites/default/files/recurringdata/51298-2016-03-healthinsurance.pdf.

[12] See "How CBO Estimates the Effects of the Affordable Care Act on the Labor Market," by Edward Harris and Shannon Mok, Congressional Budget Office, Working Paper no. 2015-09, December 2015.

[13] See "The Effects of the Affordable Care Act on Health Insurance Coverage and Labor Market Outcomes," by Mark Duggan, Gopi Shah Goda and Emilie Jackson, National Bureau of Economic Research, NBER Working Paper no. 23607, July 2017.

[14] See "Health Insurance and the Consumer Bankruptcy Decision: Evidence from Expansions of Medicaid," by Tal Gross and Matthew J. Notowidigdo, *Journal of Public Economics*, vol. 95, no. 7, 2011, pp. 767–78.

[15] See "The Impact of Medicaid Expansion on Uncompensated Care Costs," by Deborah Bachrach, Patricia Boozang and Mindy Lipson, Robert Wood Johnson Foundation, June 2015, www.rwjf.org/en/library/research/2015/06/the-impact-of-medicaid-expansion-on-uncompensated-care-costs.html.

[16] See, for example "Public Health Insurance and Private Savings," by Jonathan Gruber and Aaron Yelowitz, *Journal of Political Economy*, vol. 107, no. 6, 1999, pp. 1,249–74.

[17] See "The Stimulative Effect of Redistribution," by Bart Hobijn and Alexander Nussbacher, *FRBSF Economic Letter*, Federal Reserve Bank of San Francisco, no. 2015–21, June 2015.