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What Arizona Should Do to Improve Their Infrastructure

Introduction

It is well-known that throughout the United States, infrastructure is failing and in desperate need of repair. The American Society of Civil Engineers has given the infrastructure in the United States a D+¹ and the state of Arizona was given the grade of C. These grades are based on the subcategories of aviation, bridges, dams, drinking water, levees, rail, roads, transit, and wastewater each with their own grade based on “capacity, condition, funding, future need, operation and maintenance, public safety, resilience, and innovation.”²

Arizona is an interesting case study to focus on because it is the fastest growing state in the nation and has the fastest growing county in the country as well (based on the 2017-2018 population change).³

Explosive growth is difficult to manage, and intelligent government policies are often not considered as governments are treading water and going from crisis to crisis. Growth can also stretch budgets and revenue sources very thin. Thus, areas where budgets can be cut are. Infrastructure budgets are one of the first things to be slashed because problems with infrastructure won't generally appear for several years. Several states, like Oregon are trying implement policies that slow the spread of urban sprawl with policies like the urban growth boundary. While policies like this have the result of reducing redundant infrastructure, their main goal is to protect the environment, not to improve already existing infrastructure. Policies that focus specifically on improving infrastructure are few and far between because they aren't generally beneficial in the short term, nor do they often help politicians get re-elected.

In the last few decades, politicians in Washington have been more interesting in focusing on cutting spending and attempting to reduce the deficit. This is an admirable goal (even if it isn't working well in practice) but often results in slashing the budget in places like infrastructure and state aid because this is easier to do than reform entitlement programs and healthcare.⁴

Policy recommendation

The state of Arizona needs to follow the lead of Phoenix's mayor and invest in infrastructure. Mayor Gallego has campaigned to significantly expand transportation infrastructure. Because Phoenix is in the fastest growing county in the country, it would be easy to focus on crises and not check the growth that is occurring. But Mayor Gallego and Governor Ducey are trying really hard to ensure good government policies that are sustainable are enacted and become the standard in Phoenix and throughout the state. There is a lot to be done to improve infrastructure throughout the state and because of recent trends, it will be difficult for the state of Arizona to receive funding from the national government to move forward with these projects unless a

¹ (American Society of Civil Engineers 2020)

² (American Society of Civil Engineers 2015)

³ (Archer 2019)

⁴ (Reinhardt 2012)

major crisis happens (and maybe not even then). Therefore, the state should move forward by focusing on two specific areas that need immediate improvement in infrastructure and go from there. These two areas should be to fix roads and improve water systems.

Roads

Fixing roads is vital to a functioning economy because so many count on adequate roads to get to their jobs and to be able to consume goods and services. One way to maintain roads that focuses on the benefits principle is the gas tax. The gas tax was implemented by the federal government in 1932 and those revenues have been ear-marked for road building and maintenance since its conception. But the gas tax has not been raised since 1993 at the federal level and hasn't been raised since 1991 in Arizona. Neither were designed to increase with inflation so the revenues get smaller every year.⁵ Thus, the pool of money specifically created to help fix roads is not able to keep up with the demand.

Another option to raise the gas tax is actually to switch the gas tax system from a cents per gallon system to an ad valorem system.⁶ This means that taxes are based on a percentage of the purchase instead of relying on how many gallons are purchased. Ad valorem taxes are also naturally tied to inflation and thus decrease the complexity of the law considerably.

Congestion fees have been instituted in big cities around the world but have yet to be instituted within the United States (New York City/Manhattan is a pending exception). This would be a good way to raise revenue but is currently an unrealistic option for a city the size of Phoenix or for the state as a whole.⁷

According to the American Society of Civil Engineers, Arizona needs to invest a minimum of \$24 billion in the next 25 years just to maintain roads at current (D+) levels and will need to spend an additional \$49 billion minimum to bring these roads up to an acceptable standard. That doesn't even take into consideration the growth that Arizona is experiencing and the new road that will need to be built.⁸

Because of the recent trend of the federal government not giving aid to infrastructure in meaningful ways, state governments need to be creative in their policies to find the money to pay for these projects. In the last few years, many in the state legislature have proposed bills to increase the gas tax and tie it to inflation. This is a good starting point. Many other states are looking to use sales tax revenues to fix roads. One thing that is being done in Syracuse, NY is that a grading system is being put into place so that roads in the worst condition are being fixed first. Arizona could implement such a system based on citizen complaints, how old the road is, and how many potholes or cracks there are per square mile. This will stretch the limited funds in the best way but is only a temporary solution. Another solution could be to outsource the maintenance through a bidding process. Arizona should analyze how much it costs the government to upkeep one square mile of road, what the fixed and variable costs are, and then ask other construction companies to give proposals for how much it would cost them to maintain

⁵ (Schwartz 2013)

⁶ (Bishop-Henchman 2010)

⁷ (Hu 2019)

⁸ (American Society of Civil Engineers 2015)

the same road at the same standard. This can either help the government maintain the road more efficiently or give them the option of contracting out the work at a lower cost.

Water systems

The image most people have of Arizona is the heat and desert conditions of the state. For many, this is an asset and the reason that “snowbirds” flock to the state in the winter. But it can also be a disadvantage because of a lack of water sources.

In 2019, Phoenix experienced a “Presidential Disaster Declaration” because of flooding issues.⁹ The city of Phoenix gets an average of about 8 inches of rain each year. While the amount of rain that Phoenix received in 2019 was lower than that (almost 6 inches), it came during the monsoon season in the form of summer storms which caused flooding issues. Surrounding areas experienced wetter conditions than normal because of the monsoons. This makes water storage difficult because most of the water that the state receives comes quickly and in a short time frame.¹⁰

So far, Arizona has been able to keep up with the growth of the state and build new infrastructure to keep up with the demand. However, Arizona is not maintaining old infrastructure well. According to the American Society of Civil Engineers, a lot of Arizona’s water infrastructure is over 30 years old and in desperate need of rehabilitation and replacement. The ASCE estimates that over the next 20 years, \$5 billion will be needed to replace and rehabilitate water lines, \$1.4 billion will be needed to expand and better water treatment structures, and about \$1 billion will be needed to improve storage reservoirs and intake structures.¹¹

In order to conserve and use as much rainwater as possible, Arizona should follow the example of Syracuse, NY and Onondaga County. County Executive Mahoney started an initiative called Save the Rain. This initiative is a stormwater treatment and management plan that helps keep the waterways (like streams, rivers, and lakes) clean and makes the rain more usable. This would require substantial investment in new infrastructure but has been a huge success for Onondaga County.¹²

One thing that a lot of cities have done is enter into public-private partnerships to invest in water infrastructure. Private companies rebuild and restore the pipelines and waterways that are needed at a lower cost than state or municipal governments can but allowing them part ownership is common. This has turned out to be a mixed bag because of incomplete contracts. Private companies need to make a profit and because they have ownership of what they build and contracts are not written well enough, a major problem has been that residents have experienced sharp increases in their water bills, sometimes leading to foreclosure of houses because people can’t afford their water bills.¹³ Obviously, Arizona should learn from other city and state’s mistakes and not repeat them but there are also plenty of ways to have public-private partnerships that work for the citizens and the government. Working with foundations and non-profits instead of investors will help mitigate these issues. There is also still the possibility of

⁹ (Building America's Future Educational Fund 2020)

¹⁰ (Johnson 2020)

¹¹ (American Society of Civil Engineers 2015)

¹² (Save the Rain 2020)

¹³ (Ivory, Protess and Palmer 2016)

having a competitive bidding process where private construction companies bid for building and renewing projects that are more cost effective than the government doing construction.

Conclusion

Like much of the United States, Arizona has a lot of work to do in regard to infrastructure. Roads and water systems in particular have a lot of room for improvement. Arizona prides itself on good government policy and trying to have sustainable growth policies. Arizona will need to increase their focus and funding on infrastructure in order to maintain this claim.

New developments are getting a lot of attention and needed infrastructure at the expense of older and aging (and poor) parts of the state. The best ways to fix current and future problems with infrastructure is to invest more money now.

Increasing the state gas tax is a must; while it is not a politically popular option, it can be tied to inflation or changed to an ad valorem tax to help increase revenues. Creating and implementing a grading classification system (with a public hotline or reporting system) will also create a system of success to help the most ailing roads first.

Implementing a rain storage system throughout the state and imposing mild restrictions on water usage will help a multitude of problems, including the fact that Arizona is a very dry state and needs to implement strategies to save and reuse as much water as they can.

Current data and studies show that making public-private partnership contracts with private companies who then own part of the infrastructure is fraught with peril. However, creating a competitive bidding process where private construction companies bid to build the infrastructure while ownership is retained by the government is preferable because private companies will be much more cost efficient than the government in building roads and pipelines.

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Quality of Sources Cited

(American Society of Civil Engineers 2015)American Society of Civil Engineers

While this is not a peer reviewed article, it is still a very useful source of information. It is a very user-friendly website with a lot of information about each state's infrastructure status and ways to improve it.

(Schwartz 2013)This New York Times article is a more credible source than most because of the many sources and quotes used in the article. It pulls from many different key players and gives a big picture argument while pulling ideas from several different states. The author is also an expert in the field that has had first-hand experience working in the federal government.

(Summers 2014)This Boston Globe article is not a peer reviewed article but it makes the point that governments should invest in infrastructure while interest rates are low. It pulls information from the American Society of Civil Engineers as well.

(Wang, Duncombe and M. 2011)This is a peer reviewed paper that tries to fill a gap in the literature. It shows that urban school districts are unable/unwilling to invest in capital infrastructure even when almost all of the burden of cost falls on the state government. This is because they do not have enough money for day-to-day activities, and they don't feel as if they can justify spending money for something in the future.

(Reinhardt 2012)This New York Times article focuses a lot on personal experience which can be very persuasive in a political setting but can only be regarded as anecdotal at best and not founded on data.

(Malinovskaya and Wessel 2017)The Brookings Institute is one of the most well-known think tanks originating in Washington, D.C. and is a trusted source for many. While the articles aren't per-reviewed, they are written by experts in their fields and are well founded in research and data.

(Ivory, Protes and Palmer 2016)This New York Times article is an analysis of the pitfalls of privatizing water systems. The cities in this case study all experienced higher rates for water and cities have a hard time taking control back from investors.

(Building America's Future Educational Fund 2020)Building America's Future Educational Fund is a group of former politicians that are trying to create awareness about America's failing infrastructure systems. It has partnerships and resources that help to raise awareness but isn't focused on lobbying solutions to issues.

(LaHood 2015)While Time Magazine is not a peer reviewed journal, they do have a reputation to uphold. The analysis in this article seemed similar to the New York Times articles in quality and depth.

(Cohen and Rappeport 2018)The New York Times is a credible source and this article shows the fundamental shift that the Trump administration is trying to make. Infrastructure investments should come from state and private investors more than the national government.

(Unlocking the Private Sector: State Innovations in Financing Transportation

Infrastructure 2016)This is a hearing before the United States Senate. A panel of experts was invited to discuss how states can assess their needs and then create plans based on those needs.

(Walters 2018) This is a newspaper article and therefore not as reliable as a peer-reviewed journal, but The Guardian is a reputable source that strives for fact driven articles.

(Bishop-Henchman 2010) While the Tax Foundation does not have peer reviewed articles, they are a very respected think tank in Washington, D.C. and their contributors are always top-notch experts in their respective fields.

(Hu 2019)The New York Times is a very credible source and this one emphasizes the confusion surrounding a new law.