



*Principles For Lawmakers:*

# HOW TO THINK ABOUT EMERGING TECHNOLOGIES



# INTRODUCTION

Of all the successes of American domestic policy, technology policy stands out. Since the Clinton administration's bipartisan agreement with Congress, the federal government has consistently taken a light touch when regulating internet. But as important as federal policy has been, states also play an increasingly important role in fostering an environment of innovation.

Some of the most important battles over technology policy are happening at the state and local level. Home-sharing companies like Airbnb, HomeAway, and Vrbo face restrictions on where and how they can operate. Certain cities have banned such technologies outright.<sup>1</sup> Ride-sharing companies like Lyft and Uber are fighting with legislators, regulators and taxi companies around the world. Companies that are transforming urban transportation with micromobility options like, e-scooters and -bikes, such as Lime and Bird, face similar hurdles. San Francisco, the heart of several technological revolutions, may soon require permission slips to deploy innovative technologies in public spaces.<sup>2</sup> Meanwhile, the state of California recently passed sweeping privacy legislation which threatens to become the de facto law for the rest of the country, putting innovation across the nation in jeopardy.<sup>3</sup>

So far, the federal government continues to have a light regulatory touch for many emerging technologies, even with the current "techlash." But as states and localities make more decisions on technology policy, what kind of approaches will they take? Will the federal government's light touch be all for naught due to strong restrictions and regulations on the state and local level? Or will state and local policy look more like federal policy?



*This paper examines some ways the federal government and states currently think about regulating technology policy. It then lays out principles for state lawmakers to consider when regulating emerging technologies: Avoid pre-emptive regulations on emerging technology; examine whether current laws can be applied to new technologies; use emerging technology as an opportunity to reduce regulation in legacy industries; and create statewide frameworks to ensure regulatory certainty.*

The paper also highlights case studies in regulation, beginning with Arizona, which created a regulatory sandbox for autonomous vehicles and financial technology. The second case study looks at Austin, Texas and the perils of restricting innovative technologies like ride-sharing. Finally, this paper shows how states have successfully implemented soft law.

<sup>1</sup> McCorry, Chris. (2019, August 8). New Orleans council votes to restrict Airbnb-style rentals. Retrieved October 16, 2019, from <https://www.wvtv.com/article/news/local/orleans/new-orleans-council-votes-to-restrict-airbnb-style-rentals/289-471e9c5c-7dce-48be-9f0e-d46208387dd0>.

<sup>2</sup> Britschgi, C. (2019, October 10). San Francisco Wants to Require Companies To Get Permits Before Rolling Out 'Emerging Technology'. Retrieved October 16, 2019, from <https://reason.com/2019/10/10/san-francisco-wants-to-require-companies-to-get-permits-before-rolling-out-emerging-technology/>.

<sup>3</sup> Murphy, K. (2019, August 8). California privacy law sets national agenda as federal talks fizzle. Retrieved October 16, 2019, from <https://www.politico.com/states/california/story/2019/08/08/california-privacy-law-sets-national-agenda-as-federal-talks-fizzle-1126208>.

## THE IMPORTANCE OF TECHNOLOGY

The innovators who created the internet we know today changed our lives for the better. We can now summon a ride or a meal with a few taps on our phones. Gone are the days of getting lost when making a wrong turn. People can easily sell their homemade wares to customers across the globe. Technology entrepreneurs have improved nearly everyone's lives in one way or another.



***In 1995, a little less than one percent of the world's population (44.4 million people) had an internet connection. In 2018, less than 15 years later, roughly half of the world's 7.5 billion people were online. <sup>4</sup>***

Not only have these entrepreneurs improved the quality of life for people around the world, they have also grown the American economy by leaps and bounds. The American technology sector is directly or indirectly responsible for 18.2 million American jobs. <sup>5</sup> Moreover, the gross domestic product (GDP) added to the economy by the technology sector accounts for approximately \$2.3 trillion dollars, representing almost 12 percent of US GDP. <sup>6</sup> If this contribution to GDP were its own nation, it would have the 8th largest GDP of any country in the world, ahead of Italy. <sup>7</sup>

While much goes into the success of the technology sector, the relative freedom granted to American entrepreneurs and innovators has contributed to their success. As of May 2019, American businesses made up 42 percent of the 154 largest tech companies in the world. <sup>8</sup> Microsoft, Facebook, Apple, Amazon and Google are five of the six largest companies by market cap. <sup>9</sup>

American innovators have created many of the innovative technologies and services that make it valuable to be online. Search engines allow access to data previously unavailable at even the most well-stocked library. Those who had no access to traditional banking services can now get paid and send payments directly from their mobile devices. Farmers in rural areas have access to weather and crop data to improve yields, as well as greater access to global markets. No longer are people paying late fees to Blockbuster or haggling with a taxi driver over the quickest route. Instead, people have almost unlimited access to entertainment options and can see the cost of a ride before they order it.

It's hard to calculate the value of the technological services Americans use on a daily basis, but studies have estimated that every year, consumers get \$18,000 of value from search engines, \$8500 from email and \$3900 from online maps. <sup>10</sup> A study on online media, such as video streaming services, estimated that they provided \$970 of surplus value per consumer. <sup>11</sup> With such large economic benefits and consumer values, policymakers should take the time to carefully consider what (if anything) needs to be changed in the regulation of the technology sector.

<sup>4</sup> Roser, M., Ritchie, H., & Ortiz-Ospina, E. (2015, July 14). Internet. Retrieved October 16, 2019, from <https://ourworldindata.org/internet>.

<sup>5</sup> Tech Sector Supports 18 Million U.S. Jobs, Represents 12% of GDP, Says CTA. (2019, April 29). Retrieved October 16, 2019, from <https://www.cta.tech/News/Press-Releases/2019/April/Tech-Sector-Supports-18-Million-U-S-Jobs,-Represe.aspx>.

<sup>6</sup> Ibid

<sup>7</sup> GDP (constant 2010 US\$). (n.d.). Retrieved October 16, 2019, from [https://data.worldbank.org/indicator/NY.GDP.MKTP.KD?most\\_recent\\_value\\_desc=true&view=map](https://data.worldbank.org/indicator/NY.GDP.MKTP.KD?most_recent_value_desc=true&view=map).

<sup>8</sup> Ponciano, J. (2019, May 26). The Largest Technology Companies In 2019: Apple Reigns As Smartphones Slip And Cloud Services Thrive. Retrieved October 16, 2019, from <https://www.forbes.com/sites/jonathanponciano/2019/05/15/worlds-largest-tech-companies-2019/#5427013f734f>.

<sup>9</sup> Desjardins, J. (2019, June 22). A Visual History of the Largest Companies by Market Cap (1999-Today). Retrieved October 16, 2019, from <https://www.visualcapitalist.com/a-visual-history-of-the-largest-companies-by-market-cap-1999-today/>.

<sup>10</sup> Brynjolfsson, E., Collis, A., & Eggers, F. (2019, April 9). Using massive online choice experiments to measure changes in well-being. Retrieved December 12, 2019, from <https://www.pnas.org/content/116/15/7250>.

<sup>11</sup> Izaref, J.-M., Rose, J., Zuckerman, N., & Zwillenberg, P. (2013, February 11). Follow the Surplus: How U.S. Consumers Value Online Media. Retrieved October 16, 2019, from <https://www.bcg.com/en-us/publications/2013/technology-digital-globalization-follow-the-surplus-consumers-value-online-media.aspx>.

# CURRENT ROLES OF FEDERAL AND STATE REGULATION

Federal and state governments both have a role to play in regulation, but the scope of what is appropriate for them to regulate varies dramatically.

Traditionally the federal government has regulated the internet, due to its interstate nature. Many of the guidelines the federal government set form the bedrock for the internet we know today. Examples include important speech protections like Section 230 of the Communications Decency Act, which allows websites to moderate their content.<sup>12</sup> It may also pass important consumer protections, like the Children's Online Privacy Protection Act (COPPA), which was passed in 1998 to protect children under the age of 13 online. It contains provisions relating to privacy and how content can be marketed toward minors.<sup>13</sup>

Having federal laws govern these important issues ensures that California has the same internet as Florida. States would be wise to continue to leave these kinds of interstate questions up to Congress, and agencies such as the Federal Trade Commission and the Federal Communications Commission.

## ***Federal Trade Commission (FTC)***

The FTC oversees far more than technology policy, but plays an important role in the industry nonetheless. Some of its main functions include evaluating mergers of firms, anti-trust enforcement and oversight of unfair or deceptive acts and practices (known as Section 5 authority). One of the most famous cases was the FTC's lawsuit against Microsoft in the 1990s over concerns of anti-competitive behavior. Microsoft was eventually found to be operating in an anti-competitive manner and forced to change some of its business practices, such as some of their bundling of their programs, as a result of that government action.<sup>14</sup> Many of the concerns about Microsoft in the 1990s are again rearing their head around today's largest technology firms. How the FTC decides to move

forward on those issues will certainly have profound impacts on the technology space.

The FTC also plays an important role in consumer protection, dealing with everything from tele-marketing fraud to internet schemes. It recently handed down massive fines in two separate cases regarding data privacy. The first concerned a massive breach of consumer data at Equifax.<sup>15</sup> The second, a record-setting \$5 billion fine, involved Facebook and how it treated data in the Cambridge Analytica scandal.<sup>16</sup>

## ***Federal Communications Commission (FCC)***

The FCC is an independent federal agency with five members appointed by the President and confirmed by the Senate. It regulates interstate and international communications, including telephone, satellite and broadband, among others. The goal of the FCC is to ensure that Americans have reasonable and cost efficient national and worldwide communication services.

On a daily basis, the FCC deals with everything from broadband deployment (which connects houses and businesses to fast internet), to spectrum auctions (which allows our smartphones to do everything from make calls to surf the web). The FCC also oversees projects like the Universal Service Fund (which provides basic internet access to rural areas) and works with telecommunication companies to block spam calls to cell phones. The FCC's role is as varied as the technologies it regulates, but it plays an important role in ensuring our interstate communications technology faces consistent rules at the federal level.

While many regulatory questions are best left to the highest level of government, here are principles which state lawmakers can follow to help their state have friendly policies towards innovative technologies.

<sup>12</sup> 47 U.S. Code § 230 - Protection for private blocking and screening of offensive material. (n.d.). Retrieved October 16, 2019, from <https://www.law.cornell.edu/uscode/text/47/230>.

<sup>13</sup> 15 U.S. Code Chapter 91 - CHILDREN'S ONLINE PRIVACY PROTECTION. (n.d.). Retrieved October 16, 2019, from <https://www.law.cornell.edu/uscode/text/15/chapter-91>.

<sup>14</sup> Chan, S. P. (2011, May 12). Long antitrust saga ends for Microsoft. Retrieved October 16, 2019, from <https://www.seattletimes.com/business/microsoft/long-antitrust-saga-ends-for-microsoft/>.

<sup>15</sup> Equifax to Pay \$575 Million as Part of Settlement with FTC, CFPB, and States Related to 2017 Data Breach. (2019, July 31). Retrieved October 16, 2019, from <https://www.ftc.gov/news-events/press-releases/2019/07/equifax-pay-575-million-part-settlement-ftc-cfpb-states-related>.

<sup>16</sup> FairJul, L. (2019, July 24). FTC's \$5 billion Facebook settlement: Record-breaking and history-making. Retrieved October 16, 2019, from <https://www.ftc.gov/news-events/blogs/business-blog/2019/07/ftcs-5-billion-facebook-settlement-record-breaking-history>.

# PRINCIPLES FOR STATE LAWMAKERS ON EMERGING TECHNOLOGY

As more and more questions about regulating technology are being raised at the state level, policymakers will be faced with an increasing number of decisions about whether and how to regulate emerging innovations and technology. While all technologies come with their own sets of challenges, there are core principles that can be applied when making these determinations.

- 1** Avoid pre-emptive regulations on emerging technology.
- 2** Examine whether current laws can be applied to new technologies.
- 3** Use emerging technology as an opportunity to reduce regulation in legacy industries.
- 4** Create statewide frameworks to ensure regulatory certainty.

## AVOID PRE-EMPTIVE REGULATIONS ON EMERGING TECHNOLOGY

When new technologies enter the public consciousness, there is often an immediate call for government to step in and protect citizens from potential harm. While government regulation may indeed be appropriate, the rush to regulate can slow the development of a new technology or stop it altogether.

This principle is even more important for rapidly evolving technologies, such as autonomous vehicles. Today that technology is mostly limited to tools like driver assist, but it's evolving rapidly — fully driverless vehicles seem within reach. Overly strong regulations could potentially stifle the technology and prevent the testing needed to grow it.

For those looking for an example of this principle in practice, Arizona provides a great case study. Its “regulatory sandbox” for financial technologies and permissive regulations for autonomous vehicles provide a blueprint for other states to follow.



## ARIZONA CASE STUDY

In August 2018, Arizona became the first state to institute a “regulatory sandbox” for financial technologies, sometimes called “fintech,” with HB 2434. <sup>17</sup> ***A sandbox is simply a set of broad rules which allow for innovation within the barriers set out by the regulatory body.*** The Arizona sandbox specifically allowed companies to test innovative products with up to 10,000 customers for up to two years without additional licensing. Such products range from monetary transactions to cryptocurrencies. This regulatory structure allows companies to try a bevy of products and technologies without having to get every change and adjustment pre-approved by a regulatory agency. As a result, dozens of companies have flocked to Arizona to test out their new products.

By contrast to the ease with which Arizona companies can test their financial products, Facebook is already facing intense regulatory scrutiny with their proposed cryptocurrency Libra. Some of those expressing skepticism, if not downright opposition, include the U.S. Federal Reserve and Treasury Department, the House and Senate banking committees, EU antitrust officials, Indian and Chinese finance officials and the French government. <sup>18</sup> How is Facebook — or any company for that matter — supposed to innovate while navigating all these hostile actors?

***Arizona isn’t just leading the way with its sandbox of financial technologies, it’s also ahead of the curve on autonomous vehicle testing.***

Autonomous vehicles could revolutionize our lives. Every year, car crashes kill tens of thousands of people, injure millions more and cost billions of dollars in the United States alone. <sup>19</sup> Autonomous vehicles have the potential to reduce all of these numbers by orders of magnitude. But the companies working on these vehicles have often faced regulatory difficulties.

Companies such as Uber and Tesla first tested their autonomous vehicles in California, where both companies have headquarters. But after a short period of having their vehicles on the road, they began to face governmental roadblocks. California demanded that Uber stop testing

these vehicles until it completed significant regulatory hurdles even going as far as removing the registration of 16 Uber vehicles. <sup>20</sup>

In 2015, Arizona Governor Doug Ducey saw an opportunity to bring Uber and other vehicle testing companies to his state and released an executive order outlining the rules for autonomous vehicle testing in Arizona. <sup>21</sup> It set basic ground rules, such as making sure the vehicles were monitored by an operator and making sure the people who owned the vehicle took financial responsibility for it. These basic rules of the road were a light touch compared to the heavy handedness of California. As a result, autonomous vehicles have been tested for thousands of hours in Arizona.

This executive order was updated in 2018 to clarify many of the rules laid out in 2015. <sup>22</sup> But this was not the only update. Governor Ducey soon set out another executive order, creating the Institute for Automated Mobility (IAM). <sup>23</sup> This is a multi-stakeholder group comprised of government officials and representatives from the private sector and academia. Their goal is to develop the necessary policy and guidelines for safe implementation of autonomous vehicle technology. This group is an example of the multi-stakeholder groups discussed in the soft law section of this paper.

Of course, like all technologies, autonomous vehicles and their testing come with inherent risks. In March 2018, a woman died in an accident involving an autonomous vehicle — a tragic reminder of this fact. Rather than immediately reacting to this unfortunate incident by passing new laws however, authorities waited for all the facts come to light. This proved to be the correct decision.

As it turned out, rather than watching the road and monitoring the vehicle, the operator was watching “The Voice” on her cell phone. <sup>24</sup> Nonetheless, the nimble approach both Uber and Arizona have taken allow for standards and practices to evolve quickly and ensure such tragedies are avoided in the future.

<sup>17</sup> H.B. 2434, 2018 Second Reg. Sess. (AZ. 2018)

<sup>18</sup> McKay, T. (2019, October 2). Sure Sounds Like Things Aren't Going Well for Facebook's Libra Cryptocurrency Scheme. Retrieved October 16, 2019, from <https://gizmodo.com/sure-sounds-like-things-arent-going-well-for-facebooks-1838689041>.

<sup>19</sup> Road Safety Facts. (n.d.). Retrieved October 16, 2019, from <https://www.asirt.org/safe-travel/road-safety-facts/>.

<sup>20</sup> Hawkins, A. J. (2017, February 21). Uber's self-driving cars are now picking up passengers in Arizona. Retrieved October 16, 2019, from <https://www.theverge.com/2017/2/21/14687346/uber-self-driving-car-arizona-pilot-ducey-california>.

<sup>21</sup> Ducey, D. (2015, August 25). Executive Order 2015-09: Self-Driving Vehicle Testing and Piloting in the State of Arizona; Self-Driving Vehicle Oversight Committee. Retrieved October 16, 2019, from <https://azmemory.azlibrary.gov/digital/collection/execorders/id/752/>.

<sup>22</sup> (2018, March 1). Retrieved from <https://azgovernor.gov/governor/news/2018/03/governor-ducey-updates-autonomous-vehicle-executive-order>

<sup>23</sup> Arizona Taps Intel for Lead Role in Automated Vehicle Safety Institute. (2018, October 12). Retrieved October 16, 2019, from <https://www.businesswire.com/news/home/20181011005983/en/Arizona-Taps-Intel-Lead-Role-Automated-Vehicle>.

<sup>24</sup> Krisher, T. (2018, June 22). Police: Backup driver in fatal Uber crash was distracted. Retrieved October 24, 2019, from [https://apnews.com/44ab48ed026f46f99a16eb9fd9165736?utm\\_source=Twitter&utm\\_medium=APWestRegion&utm\\_campaign=SocialFlow](https://apnews.com/44ab48ed026f46f99a16eb9fd9165736?utm_source=Twitter&utm_medium=APWestRegion&utm_campaign=SocialFlow).

## EXAMINE WHETHER CURRENT LAWS CAN APPLY TO NEW TECHNOLOGIES

When deciding whether or not to impose new regulations on emerging technologies, it's important that lawmakers understand what laws and regulations currently exist. With thousands of pages of code, knowing what laws are on the books or how they apply to a new technology can be difficult, but it's a crucial process to avoid regulatory overlap. Alternatively, new technologies may face restrictions from regulations written to address legacy technologies.

***Legislative staff should therefore work with committees and legislators to review all relevant code before considering new regulations, to avoid passing unnecessary laws or regulatory contradictions.***

Take for example the expanding use of aerial drones. Once an expensive technology, drones have now become a hobby enjoyed by millions of people. Drones also have a variety of commercial uses, such as land surveying and photography. Companies are experimenting with the use of drones to deliver packages. It's likely that a significant number of packages will be delivered by drones in the not-too-distant future.

However, the widespread use of drones has understandably concerned individuals and lawmakers alike. Potential problems range from the nuisance of drones constantly buzzing overhead to issues of privacy, given that drones often carry or come equipped with cameras.

These concerns are not unreasonable and should be addressed. But rather than passing new laws to regulate drones, consider methods already in place to ensure people's privacy, peace and quiet. All 50 states have "Peeping Tom laws" which make it illegal to photograph people in their homes without permission.<sup>25</sup> There is no reason that these statutes shouldn't also apply to new technologies. While these laws may need to be amended for clarity, that solution is far less likely to restrict the continued development of drone technology than creating new and targeted rules.

Drones also illuminate the importance of federal vs state law. The Federal Aviation Administration has the authority to regulate airspace over 400 feet, known as controlled airspace.<sup>26</sup> Anything under 400 feet is known as uncontrolled airspace (Note this is not the same as unregulated airspace.) States have the potential to regulate this uncontrolled airspace. State lawmakers may easily overstep their regulatory authority in an attempt to create new laws regarding drones.

<sup>25</sup> "State Laws Addressing Use Cases Presented in UAS Voyeurism, Stalking, Data Security, Nuisance, Surveillance." National Telecommunications and Information Administration, National Association of Mutual Insurance Companies, [https://www.ntia.doc.gov/files/ntia/publications/10-21-2015\\_uas\\_mini\\_group.pdf](https://www.ntia.doc.gov/files/ntia/publications/10-21-2015_uas_mini_group.pdf).

<sup>26</sup> [https://www.faa.gov/uas/recreational\\_fliers/where\\_can\\_i\\_fly/airspace\\_101/](https://www.faa.gov/uas/recreational_fliers/where_can_i_fly/airspace_101/)

Another area where lawmakers should look for existing guidance (rather than creating a new one) is e-scooters. Companies such as Bird, Lime, Uber and others make e-scooters rentable through apps. Their usage has exploded in cities. This has caused concern, not only about the safety of e-scooters on roads and sidewalks, but also about e-scooters obstructing sidewalks.<sup>27</sup>

While e-scooters may seem new because of their sudden widespread use, many states and localities already have laws on the books governing the rules of the road for a variety of vehicles — including bicycles, skateboards and scooters. These regulations are sometimes general, such as restricting use to sidewalks or bike lanes, or specific to requirements the devices must have. Rather than looking for new regulations, lawmakers should apply current rules of the road to this emerging technology.

But e-scooters also show the limits of simply applying current laws to new technology. Some jurisdictions regulate e-scooters like motorcycles, essentially prohibiting them altogether. In these circumstances, legislators should work to properly understand and regulate new technologies to account for how they are used.



***As new technologies enter the public consciousness and questions about them reach lawmakers, it's crucial that lawmakers have a solid understanding of how the technologies are currently regulated before taking any additional actions.***

Legislators should identify or build the resources in their state to understand the regulations surrounding technologies at the state and federal level. Only after gaining that understanding can lawmakers take the correct steps. The following section explores what a correct next step might look like.



<sup>27</sup> Leefeldt, E. (2019, July 2). Electric scooters are igniting new laws, liability concerns and even "scooter rage". Retrieved October 16, 2019, from <https://www.cbsnews.com/news/electric-scooter-backlash-leads-to-new-laws-and-scooter-rage-july-2019/>.

## USE EMERGING TECHNOLOGY AS AN OPPORTUNITY TO REDUCE REGULATION IN LEGACY INDUSTRIES

When new technologies emerge, innovating around the limitations of previous technologies, legacy companies often complain that the new companies don't follow the same rules and regulations as they do. While it is reasonable to be skeptical of these claims given the desire of legacy firms to suppress competition, oftentimes the legacy companies are absolutely right: They face regulation that new entrants do not. ***The solution isn't to make the new entrants face the same regulations that legacy industries do. Instead, lawmakers should look for ways to reduce regulations on legacy sectors while allowing the new firms to operate under minimal regulations.***

One of the clearest examples of this phenomenon in practice is that of ride-sharing companies and taxis. Ride-sharing companies started off their service more similar to black car and limo services than taxi companies. But with the rollout of UberX, everyday people started giving rides to strangers in their personal vehicles at affordable prices.<sup>28</sup> This served as an effective substitute for traditional taxis and even expanded the industry, given that taxis were often unavailable in certain areas.

Many taxi companies believed that ride-sharing had effectively become a taxi service and should be regulated by the state in the same fashion. Most major cities required taxis to have a medallion, but they artificially limited the supply rather than allowing anyone who met the requirements and could pay the fee to purchase one. Because of this scarcity, medallions often sold for over a million dollars when the government made them available.<sup>29</sup> This made it extremely difficult to enter the market and drove up prices for taxi passengers.

These were not the only regulations which burdened those who wanted to enter the taxi industry. Cities often regulated everything from how the cars looked to the payment system.<sup>30</sup> While this provided a uniform experience for riders, that experience was often bad, expensive and inconvenient.

Ride-sharing got around those issues through a variety of innovative solutions. Rather than requiring customers to spot a taxicab to get a ride, the app allows them to summon a driver to their location. Thus, there was no need for a uniform appearance of vehicles. GPS allowed drivers to know where they were going and assured their passengers of an efficient route to their destination. The apps also displayed the price up front so government regulating it was unnecessary.

In the political fights that followed at both the state and local level, the taxi industry tried to impose the regulations they faced on ride-sharing services, arguing that ride-sharing was analogous to taxis.<sup>31</sup> The ride-sharing companies pushed back, saying they were transportation companies, not traditional taxis and therefore those regulations shouldn't apply.

Ultimately, most states and cities agreed with the ride-sharing companies' assessment and didn't put the traditional taxi regulations on this new service. This approach stops short of ideal policy. Rather than having two regulatory regimes, cities and states should take this opportunity to re-evaluate whether taxi regulations, which have been in place for decades, are best serving consumers. Allowing more innovation and competition in the taxi industry by removing some of the previously mentioned regulations would increase the quality of the service provided to consumers. This would almost certainly mean lower prices and new products, such as competing apps. It's no surprise that the innovations in the transportation industry didn't come from the legacy sector, as government regulations essentially prevented that from happening.

<sup>28</sup> Hartmans, A. (2019, May 18). The history of how Uber went from the most feared startup in the world to its massive IPO. Retrieved October 16, 2019, from <https://www.businessinsider.com/ubers-history#august-2012-lyft-which-is-considered-ubers-main-competitor-launches-in-san-francisco-the-stage-is-set-for-the-san-francisco-price-war-that-will-follow-14>.

<sup>29</sup> Salmon, F. (2011, October 21). Why taxi medallions cost \$1 million. Retrieved October 16, 2019, from <http://blogs.reuters.com/felix-salmon/2011/10/21/why-taxi-medallions-cost-1-million/>.

<sup>30</sup> National Academies of Sciences, Engineering, and Medicine. 2016. Between Public and Private Mobility: Examining the Rise of Technology-Enabled Transportation Services. Washington, DC: The National Academies Press. <https://doi.org/10.17226/21875>.

<sup>31</sup> Kemp, D. (2017, September 28). Don't regulate Uber, deregulate regular taxis. Retrieved October 16, 2019, from <https://www.newsweek.com/dont-regulate-uber-deregulate-regular-taxis-673548>.

A similar scenario to ride-sharing is that of home-sharing. While vacation home rentals have happened for years, platforms such as Airbnb, HomeAway and Vrbo have made it possible for almost anyone to rent out anything from a spare bedroom to a 15-room mansion. Travelers have different needs and these services have been a boon to those in search of accommodation options that traditional hotels don't provide.

Initially, home-sharing attracted little attention from the hotel industry or regulators. But as these services spiked in popularity, they received complaints, both from neighbors who were upset about travelers staying in their area and hotels that feared a loss of business from the new competition. These concerns led to a variety of regulations, including applying the hotel rental tax to home-sharing rentals and banning home-sharing altogether.<sup>32</sup>

These regulations are happening for two reasons: First, there is an element of nimbyism surrounding the home-sharing industry. Cities like New Orleans have banned home sharing unless it's the primary residence of the person renting the space due to concerns over neighborhood culture, among other reasons.<sup>33</sup>

Second, traditional hotels fear a loss of income from home-sharing even though data on the impact of short-term rentals on hotels is mixed.<sup>34</sup> Home-sharing often offers a fundamentally different experience from hotels. Implementation of hotel taxes or inspections from government bureaucrats don't serve to level the playing field. On the contrary, they exist to place additional burdens on home-sharing services as protections for traditional hotels.

Although there haven't been conclusive long-term studies on the effects of home-sharing bans on all properties that isn't a primary residence in New Orleans, anecdotal evidence paints a picture of what life post-ban looks like. First, home-sharing continues through traditional websites such as Airbnb and it's nearly impossible to tell if the properties comply with local code. Less traditional home-sharing websites such as Craigslist have similar listings. Not everyone is acting as scofflaws, however. New Orleans resident Charlene Griffith stopped renting out her second house, which she had fixed up specifically for home-sharing.<sup>35</sup>

The introduction of ride-sharing and home-sharing has benefited consumers. Not only do they have more options when looking for rides or places to stay, these new services can be offered efficiently and affordably. The benefits to consumers will only continue if regulations from legacy businesses are not added to these industries. At the same time, lawmakers should ask themselves if the regulations currently imposed on legacy businesses remain necessary.



***While state lawmakers may be working toward these ends, localities are often some of the most egregious offenders when it comes to additional regulations. The following section offers solutions to prevent these harmful regulations on the local level.***

<sup>32</sup> McCory, chris. (2019, August 8). New Orleans council votes to restrict Airbnb-style rentals. Retrieved October 16, 2019, from <https://www.wlwtv.com/article/news/local/orleans/new-orleans-council-votes-to-restrict-airbnb-style-rentals/289-471e9c5c-7dce-48be-9f0e-d46208387dd0>.

<sup>33</sup> Ibid

<sup>34</sup> Roach, J. (2018, May 1). How Airbnb has affected the hotel industry : Monthly Labor Review. Retrieved October 16, 2019, from <https://www.bls.gov/opub/mlr/2018/beyond-bls/how-airbnb-has-affected-the-hotel-industry.htm#targetText=cities with the largest hotel,by up to 3.7 percent.&targetText=Airbnb has increased room availability,more prominent in larger cities>.

<sup>35</sup> Wendland, T., & Goldmark, A. (2019, February 28). Episode 897: New Orleans Vs. Airbnb. Retrieved October 24, 2019, from <https://www.npr.org/sections/money/2019/02/28/698763891/episode-897-new-orleans-vs-airbnb>.

## AUSTIN CASE STUDY

Back in 2015, ride-sharing was still in its relative infancy. Uber was only 6 years old and UberX, the most popular service the company offers today, only launched in 2012.<sup>36</sup> Lyft was an even newer entrant to the market. In 2015, after three years in business, Lyft only operated in about 60 cities and had just started distancing itself from the giant pink mustache which had originally adorned the front of so many of its vehicles.

Despite the relative infancy of these firms, they quickly grew in scope and popularity. They developed sophisticated background checks to ensure that their passengers were safe when being picked up by drivers. Furthermore, due to the very nature of how ride-sharing technology works, these companies provided riders with information on their drivers before the pickup as well as the ability to provide feedback to drivers and the company afterward.

Nonetheless, the Austin City Council believed that Uber, Lyft and every other ride-sharing service didn't do enough to protect riders. As a result, the city passed an ordinance requiring fingerprinting for all drivers of ride-sharing services on December 18, 2015.<sup>37</sup> The drivers would then have to go through a background check facilitated by the city and run through an FBI database. The rule would have taken effect on February 1, 2017.<sup>38</sup>

The question of fingerprinting, as well as three other regulations, was put to the ballot as Proposal 1. In 2016, 56 percent voters in Austin decided in favor of the City Council regulations.<sup>39</sup> As a result, both Uber and Lyft left the city of Austin.<sup>40</sup>

What happened next was a natural experiment on how consumers who had previously had access to Uber and Lyft would react in their absence. It also gave insight into what alternatives would spring up in the new regulatory regime.

The most detailed report of the aftermath came

from a joint study from Texas A&M University, the University of Michigan and Columbia University. The study surveyed 1,840 former Lyft/Uber users about their behavior following Proposal 1. The results showed that the ban had a noticeable effect on consumer behavior and satisfaction.<sup>41</sup>

The largest effect was that 45 percent of those surveyed switched to personal transit, or personal vehicles, after the rules went into place. This includes almost 9 percent who purchased a vehicle as a result of the rules. Only 3 percent switched to public transit.<sup>42</sup>

These results make much more sense when you look at the satisfaction of consumers pre- and post-regulations. Prior to Proposal 1, 82 percent of those surveyed were satisfied with their ride-sharing trip. Afterward, that number dropped to only 38 percent.<sup>43</sup>

What were the ride-sharing options after Uber and Lyft left? Some options included Get Me, Fasten and Ride Austin. Ride Austin was of particular note, as it ran as a nonprofit and took \$2 dollars as a booking fee and \$1 as a processing fee. Other, less-than-legal options included Arcade City, a Facebook group that connected people looking for a ride with those willing to provide one.<sup>44</sup> While all of these companies gained some market share, they struggled during South by Southwest when they were unable to meet the demand from out-of-town riders.

Given the inferior results of Proposal 1, it was no surprise when Texas passed a state ride-sharing framework which prevented cities like Austin from imposing their own requirements. Following the passage of the framework, Uber and Lyft once again became the dominant players in the market.<sup>45</sup>

This case study shows that onerous regulations on evolving industry can decrease consumer welfare and push people back to less innovative options.

<sup>36</sup> Hartmans, A. (2019, May 18). The history of how Uber went from the most feared startup in the world to its massive IPO. Retrieved October 16, 2019, from <https://www.businessinsider.com/ubers-history#august-2012-lyft-which-is-considered-ubers-main-competitor-launches-in-san-francisco-the-stage-is-set-for-the-san-francisco-price-war-that-will-follow-14>.

<sup>37</sup> Denney, A. (2015, December 18). Austin City Council approves fingerprinting of drivers for ride-hailing companies. Retrieved October 16, 2019, from <https://communityimpact.com/austin/city-county/2015/12/18/austin-city-council-approves-fingerprinting-of-drivers-for-ride-hailing-companies/>.

<sup>38</sup> Ibid

<sup>39</sup> McGlinchy, A. (2016, April 14). Explaining Exactly What a 'Yes' and 'No' Vote on Prop 1 Means. Retrieved October 16, 2019, from <https://www.kut.org/post/explaining-exactly-what-yes-and-no-vote-prop-1-means>.

<sup>40</sup> Kelly, H. (2016, May 8). Uber and Lyft to leave Austin after losing fingerprinting vote. Retrieved October 16, 2019, from [https://money.cnn.com/2016/05/08/technology/uber-lyft-austin-vote-fingerprinting/index.html#targetText=The city will now go "pause operations" on Monday](https://money.cnn.com/2016/05/08/technology/uber-lyft-austin-vote-fingerprinting/index.html#targetText=The city will now go ).

<sup>41</sup> Hampshire, Robert and Simek, Chris and Fabusuyi, Tayo and Di, Xuan and Chen, Xi, Measuring the Impact of an Unanticipated Disruption of Uber/Lyft in Austin, TX (May 31, 2017). Available at SSRN: <https://ssrn.com/abstract=2977969> or <http://dx.doi.org/10.2139/ssrn.2977969>

<sup>42</sup> Ibid

<sup>43</sup> Ibid

<sup>44</sup> Perez, C. (2016, May 26). Arcade City Is the 'Black Market' Uber that Runs on Facebook. Retrieved October 16, 2019, from [https://www.vice.com/en\\_us/article/9a33g7/arcade-city-is-the-black-market-uber-that-runs-on-facebook-christopher-david](https://www.vice.com/en_us/article/9a33g7/arcade-city-is-the-black-market-uber-that-runs-on-facebook-christopher-david).

<sup>45</sup> Samuels, A. (2017, May 29). Uber, Lyft return to Austin as Texas Gov. Abbott signs ride-hailing measure into law. Retrieved October 16, 2019, from <https://www.texastribune.org/2017/05/29/texas-gov-greg-abbott-signs-measure-creating-statewide-regulations-rid/>.

## CREATE STATEWIDE FRAMEWORKS TO ENSURE REGULATORY CERTAINTY

Many of the previous examples in this paper have focused on issues with local components. Ride-sharing, home-sharing and micromobility often face their most stringent regulations at the local level. Here, nimbyism is a main cause of the regulations these emerging technologies face. Local lawmakers often face a small but vocal minority upset about how these innovations change their neighborhoods. As a result, they impose regulations that severely restrict or effectively ban these services.

These regulations prevent locals benefiting from new services, but they create less obvious issues as well. ***With different localities imposing different rules and restrictions, it can be impossible for companies to know how to legally operate in a state. It can also cause confusion for consumers.*** For example, before Louisiana created a statewide ride-sharing framework, you could order a ride to another parish only to be unable to order a ride back.<sup>46</sup>

Just as the previously discussed California privacy legislation threatens to become the de facto privacy law for the whole nation, local regulations can give large cities outside power in a state.<sup>47</sup> Additionally, a patchwork of local regulations can make it impossible for companies to know the rules they face in a geographic area.

This does not have to be the case, however. Unlike state governments, which are granted powers from the federal constitution, localities have no such inherent powers. They derive their power from the state. Keeping in mind which technologies are best regulated at which level of government, states can play an important role in promoting innovation by creating flexible statewide frameworks for these technologies.

Ride-sharing, home-sharing and micromobility are all examples of where state frameworks can be appropriate. States can prevent localities from over-regulating these technologies and create regulatory certainty for operators instead of a patchwork, as seen in the Austin case study. More than 40 states currently have statewide frameworks for ride-sharing, while five have passed statewide frameworks for home-sharing.<sup>48</sup>



***These are not the only areas where state action may be appropriate. Although communications technology is most appropriately regulated at the federal level (as discussed in the FCC section), states do have an important role to play, particularly as communications equipment continues to evolve.***

<sup>46</sup> Sentell, W. (2019, June 1). Bid to expand Uber, Lyft services across Louisiana nears final approval by lawmakers. Retrieved October 16, 2019, from [https://www.theadvocate.com/baton\\_rouge/news/politics/legislature/article\\_e8a44c6a-83b6-11e9-b42b-5f626b75ce08.html](https://www.theadvocate.com/baton_rouge/news/politics/legislature/article_e8a44c6a-83b6-11e9-b42b-5f626b75ce08.html).

<sup>47</sup> Murphy, K. (2019, August 8). California privacy law sets national agenda as federal talks fizzle. Retrieved October 16, 2019, from <https://www.politico.com/states/california/story/2019/08/08/california-privacy-law-sets-national-agenda-as-federal-talks-fizzle-1126208>.

<sup>48</sup> Holcomb, G. (2019, February 6). Three More States Propose Short-Term Rental Preemptions. Retrieved October 17, 2019, from <http://www.vrma.org/blog/three-more-states-propose-short-term-rental-preemptions>.

Traditionally, states and localities have regulated communications equipment when it comes to laying fiber lines. Smart regulations, such as “dig once” rules — which allowed companies to lay fiber lines when the ground was already dug up for other infrastructure improvements — helped connect America to the internet.<sup>49</sup>

As 5G wireless technology emerges, communications companies are relying on “small cell” communication towers to connect the American public to this revolutionary network. Unlike the traditional large towers which broadcast cell signals, these devices are much smaller — about the size of a pizza box. They have a very short range and therefore must be much closer to connect to a wireless device. This turns existing infrastructure, such as telephone poles, into important real estate to install these devices.<sup>50</sup>

While the FCC is developing broad rules for small cell deployment, local governments still have the power to establish rules for local deployment. This has caused headaches for communications companies, which often face sky high demands from these localities for the

right to deploy that equipment.<sup>51</sup> States can reduce these burdens by creating guidelines for how localities can deal with small cells. For example, they can create a regulatory “shot clock” that mandates localities make a decision about the deployment of these towers within a certain period of time after receiving an application permit. This prevents localities from dragging out the process indefinitely. Additionally, they can place price caps for the right to deploy microcells, so companies have reasonable, predictable costs when deploying their small cells. This would have enormous benefits for consumers and businesses alike.

As powerful as state frameworks can be, they are not without their downsides. As outlined in this paper, the pace of technological advancement continues unabated. Lawmakers may be hesitant to write state-wide laws for emerging technologies that may soon be obsolete, taking the laws with them. This doesn’t mean that state lawmakers should put their hands up however — other tools can grant a level of regulatory certainty with less risk of technological obsolescence.



***States can reduce these burdens by creating guidelines for how localities can deal with small cells.***

<sup>49</sup> Brodtkin, J. (2018, March 7). “Dig Once” rule requiring fiber deployment is finally set to become US law. Retrieved October 16, 2019, from <https://arstechnica.com/tech-policy/2018/03/dig-once-rule-requiring-fiber-deployment-is-finally-set-to-become-us-law/>.

<sup>50</sup> Small Cell Wireless Technology in Cities. (2018). National League of Cities . Retrieved from [https://www.nlc.org/sites/default/files/2018-08/CS\\_SmallCell\\_MAG\\_FINAL.pdf](https://www.nlc.org/sites/default/files/2018-08/CS_SmallCell_MAG_FINAL.pdf)

<sup>51</sup> Pegoraro, R. (2018, October 3). Why 5G Internet Is a Policy Minefield for Cities. Retrieved October 16, 2019, from <https://www.citylab.com/life/2018/10/fcc-5g-wireless-broadband-regulations-city-government/571921/>.

## CASE STUDY: SOFT LAW

Much of the discussion in this paper has so far centered on rules and regulations passed and implemented from the federal, state or local governments. These rules and regulations carry the traditional force of law. While not usually known by this term, these rules and regulations are sometimes called “hard law.” Alternatives to this more traditional and heavy-handed approach are known as “soft law.”

***Soft law is defined as “a variety of nonbinding norms and techniques,” which include “instruments or arrangements that create substantive expectations that are not directly enforceable, unlike ‘hard law’ requirements, such as treaties and statutes.”***<sup>52</sup> Soft law ranges from international non-binding agreements, to federal agency guidelines, to industry working groups.

Soft law may be more easily understood as what it is not: directly enforceable rules. Speed limits are one of the most basic examples of hard law. Despite protests to the contrary, citizens understand that driving faster than the posted speed limit is illegal and that they can be given fines for exceeding those limits.

There are a variety of reasons why legislators should look toward soft law solutions when regulating emerging technology. Soft law offers the flexibility that hard law cannot. Additionally, it brings stakeholders together to work on practical solutions to complicated, quickly evolving problems. This allows for the right mixture of experimentation and innovation while creating a norm of established guidelines.

An example of a state successfully implementing soft law is Pennsylvania. Like many states, Pennsylvania is preparing for the rise of autonomous vehicles. Unlike many states however, Pennsylvania didn’t look to the legislature to pass regulations regarding these vehicles. Instead, the Pennsylvania Department of Transportation is working on regulatory guidance with the makers of autonomous vehicles.<sup>53</sup> This guidance isn’t set in stone and it doesn’t have the teeth of laws passed by the legislature. As a result, companies can test their vehicles

in Pennsylvania by following guidelines on how to operate their vehicles in the state. California’s hard law, by contrast, has pushed autonomous vehicle testing outside of the state as discussed in the Arizona case study.



Why is soft law so successful at regulating technology? Technology changes at an even faster rate than the rest of the world. Cars, which once relied almost exclusively on human input, now run using complex software which dwarfs the processing power available on the even the most powerful commercial computers of 20 years ago. Smartphones now contain more processing power than supercomputers not so long ago.<sup>54</sup> Given this rapid change in technology and how it impacts our lives, rigid rules have trouble keeping pace. Soft law provides an alternative by offering guidelines which can be updated to keep up with technological progress.

Soft law takes many shapes and forms, but its flexibility and ability to take input from multiple groups often creates guidelines superior to laws passed through the usual processes. This allows for innovation, setting out guidelines for innovators to follow without running afoul of government’s heavy hand. Lawmakers should examine their current laws and regulations to look for areas that may be better served by soft law. Additionally, as new technologies arise, legislators should default to soft law alternatives before looking at passing hard law.

<sup>52</sup> Hagemann, R., Huddleston, J., & Thierer, A. (2018). Soft Law for Hard Problems: The Governance of Emerging Technologies in an Uncertain Future. Colorado Technology Law Journal. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3118539](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3118539)

<sup>53</sup> Huddleston, Jennifer, and Adam Thierer. “Pennsylvania’s Innovative Approach to Regulating Innovation.” Mercatus Center, 19 Aug. 2019, <https://www.mercatus.org/bridge/commentary/pennsylvanias-innovative-approach-regulating-innovation>.

<sup>54</sup> Processing Power Compared. (n.d.). Retrieved October 16, 2019, from <https://pages.experts-exchange.com/processing-power-compared>.

## CONCLUSION

States have an enormous impact on how technologies develop and influence the lives of their residents. As the federal government has been rightly slow to change its successful policy toward technology and innovation policy over the last few decades, calls for greater regulation have emerged in statehouses and city halls across the country. These are important debates, not only for the areas directly affected by these policies but for the nation as a whole.

With technologies impacting more and more industries and activities, implementing the right policies becomes even more crucial. Not only does better policy lead to better policy outcomes, it also serves as a signal to innovative people and companies that a location is open for business and will let them find ways to improve people's lives. A recent survey of 300 tech employees in Silicon Valley expects the next center of innovation to be far outside the Bay Area.<sup>55</sup> As San Francisco contemplates policies such as requiring permits for "emerging technology," while states like Arizona embrace it with open arms, it's not difficult to see why.<sup>56</sup>

By utilizing the principles outlined above, state policymakers can create a regulatory climate hospitable to innovation and the benefits it brings to the economy and citizens. As the American economy moves further into the 21st century, our ability to innovate remains central to our ability to remain a world leader. States have a larger and larger role to play in these issues.



***Technology has been an economic engine for America —  
it's up to lawmakers to keep it that way.***

<sup>55</sup> Leskin, P. (2019, April 5). Silicon Valley is facing an 'exodus of young employees' and recruiting tech talent is becoming harder, new survey reveals. Retrieved October 16, 2019, from <https://www.businessinsider.com/silicon-valley-exodus-of-young-employees-recruiting-getting-harder-brunswick-survey-2019-4>.

<sup>56</sup> Britschgi, C. (2019, October 10). San Francisco Wants to Require Companies To Get Permits Before Rolling Out 'Emerging Technology'. Retrieved October 16, 2019, from <https://reason.com/2019/10/10/san-francisco-wants-to-require-companies-to-get-permits-before-rolling-out-emerging-technology/>.