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Arizona Criminal Justice Reform: Savings & Economic Benefits

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Executive Summary

Rounds Consulting Group, Inc. (RCG) was retained to quantify the economic impact of a key provision of Initiative I-32-2020: The Second Chances, Rehabilitation, and Public Safety Act. The Second Chances Act (SCA) focused on rehabilitation for incarcerated people in Arizona by shortening the time-served requirements for people convicted of non-dangerous offenses and increasing judicial discretion in sentencing in order to reduce recidivism and improve public safety.

Background

Arizona has the fifth-highest imprisonment rate in the nation, with 790 people in prison for every 100,000 adults.[1] As of July 2020, there were 39,340[2] incarcerated people in state prisons throughout Arizona; 45.7% are in prison for non-violent offenses, and 49.5% are serving sentences for their first felony conviction.[3]

In 2020, Initiative 1-32-2020: The Second Chances, Rehabilitation, and Public Safety Act was filed. One of the core policy proposals in the Second Chances Act, expanding earned release credits (Proposed ERC Policy), would have allowed eligible people convicted of non-dangerous crimes to receive additional credits toward early release by participating in educational, work, treatment, and other rehabilitative programs while incarcerated.

Participation in such programs has been shown to decrease recidivism and increase post-release outcomes (such as employment status and income level), safely reducing the prison population and boosting the economy.[4] Although the SCA did not make the ballot, the Proposed ERC Policy would create significant economic benefits and can be enacted in the 2021 legislative session.

FWD.us, a bipartisan immigration and criminal justice advocacy organization, extensively analyzed Arizona corrections data[5] and projected that the Proposed ERC Policy would lead to an 18% to 23% decline in Arizona's prison population over the next 10 years. Using estimated average and marginal costs per incarcerated person from state agency reports, RCG developed various scenarios to estimate the savings that would be generated by the Proposed ERC Policy and subsequent reductions in the prison population within the next decade.

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[1] U.S. Bureau of Justice Statistics

[2] Prior to the coronavirus pandemic, Arizona's prison population averaged around 42,000. We expect this reduced number to reflect a decrease in criminal trials and prison admissions and this number will likely increase as regular court operations and prison admissions resume.

[3] Arizona Department of Corrections

[4] According to study on the effects of education programs on post-release outcomes by the RAND Corporation

[5] See FWD.us' reports on AZ prison data at https://www.fwd.us/criminal-justice/arizona/

Key Findings

The projected decline in the prison population resulting from the Proposed ERC Policy, under the most likely scenario, is **estimated to reduce state prison expenditures by $1.4 billion over the first 10 years after it is enacted.**

Participation in educational and workforce training programs would also help individuals re-enter society, maintain a job, advance their workforce opportunities, and increase their annual earnings – which leads to increases in state tax revenues. This increase in positive post-release workforce outcomes can **generate an additional $107 million in estimated state tax revenues over the first 10 years.**

When combining the estimated state tax revenues with the estimated incarceration savings under the most likely scenario, **a total of $1.5 billion in fiscal benefits (i.e., savings and tax revenues) are generated in just the first 10 years** (see Figure 1 for year-by-year savings).
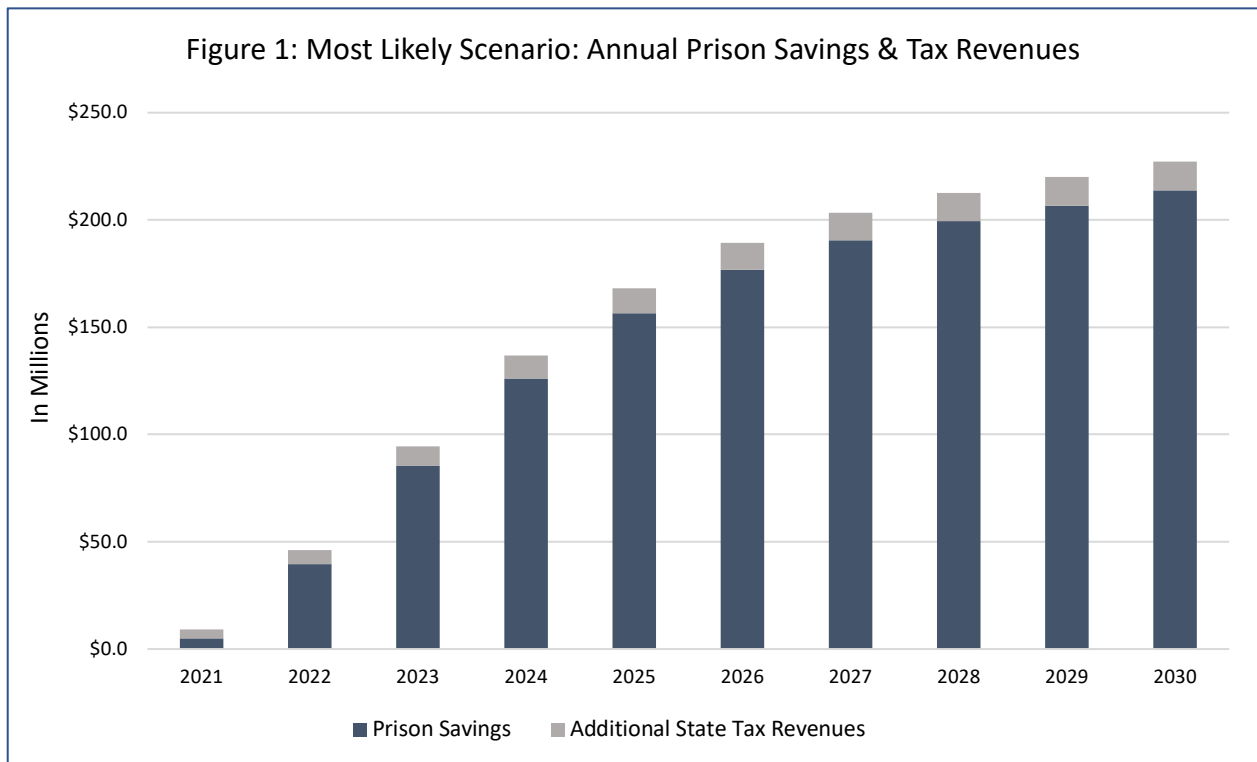
Figure 1: Most Likely Scenario: Annual Prison Savings & Tax Revenues

Source: FWD.us; Arizona Department of Corrections, Rehabilitation & Reentry; Arizona Joint Legislative Budget Committee; Rounds Consulting Group, Inc.

Note: FWD.us extensively analyzed Arizona corrections data to project changes in Arizona's prison population over the next 10 years. Using estimated average and marginal costs per incarcerated person from Arizona Department of Corrections, Rehabilitation & Reentry and Arizona Joint Legislative Budget Committee reports, Rounds Consulting Group, Inc. developed various scenarios to estimate the savings that would be generated by the Proposed ERC Policy and subsequent reductions in the prison population within the next decade.

Redeployment of Limited Resources

The $1.5B in savings and tax revenues (i.e., fiscal benefits) understates the true impact because it does not incorporate how these savings and additional tax revenues will improve all sectors of the economy with more efficient investments. For example, after the reform stabilizes generating more than $200M per year in state savings, the monies could be used to invest in economic development programs, tax policy reform, targeted workforce/education issues, tourism marketing, or for higher education, among other uses.

Analyses previously completed by this firm show that well-designed projects such as tourism marketing and university economic development projects (such as the New Economy Initiative) yield a positive return on investment within a short period of time. This means the more than $200M in savings, if redeployed properly, would have a multiplier effect, increasing the economic benefit to the state at a rate far beyond the $200M base projection.

Equivalent Impacts of Proposed ERC Policy

To put the estimated $1.5B in fiscal benefits into perspective, operations at a new high-tech manufacturing business with 500 high-wage workers generate approximately $50M in tax revenues over a 10-year period. Thus, the state would need the equivalent of 30 large-scale high-tech manufacturing businesses with a total of 15,000 new high-wage jobs over a 10-year period just to match the positive impact the Proposed ERC Policy would singlehandedly have on the state's fiscal status.

Enhancement in Economic Development

Criminal justice reform will have a profound impact on the state's economy, exceeding that of other economic shifts. Consider the following:

- If statewide economic development recruitment increased by a full 25% over the next decade, the state would gain an additional $900M in tax collections. This is less than the projected $1.5B in savings from the Proposed ERC Policy.

- If the wages of all new jobs across the state increased by $1,000 each for 10 years, the state would collect a total of $200M in new taxes. This is just a small percentage of the projected $1.5B in savings from the Proposed ERC Policy.

- If the rate of annual job growth improved by as little as one-tenth of a percentage point (i.e., from 1.7% to 1.8%), the state would collect $500M over 10 years. This is just one-third of the projected $1.5B in savings from the Proposed ERC Policy.

In every scenario that was analyzed in this review, the Arizona economy would significantly benefit from the Proposed ERC Policy. These benefits are unlikely to be reproduced by the implementation of any other single reform.

Table of Contents

Introduction

Rounds Consulting Group, Inc. (RCG) was retained to quantify the economic impact of a key provision of Initiative I-32-2020: The Second Chances, Rehabilitation, and Public Safety Act. The Second Chances Act (SCA) focused on rehabilitation for incarcerated people and fairer sentencing in Arizona by shortening the time-served requirements for people convicted of non-dangerous offenses, amending when a previous conviction can enhance a sentence, and increasing judicial discretion in sentencing in order to reduce recidivism and improve public safety.

The SCA had broad bipartisan support. While the proposed initiative did not make the final ballot, one of the core policy proposals was the expansion of earned release credits (Proposed ERC Policy) for people convicted of non-dangerous offenses. Significant social and economic improvements are associated with a reduced prison population, including greater public safety, more employment opportunities, higher wages, better education and increased productivity.

Using estimated average and marginal costs per incarcerated person from the Arizona Department of Corrections, Rehabilitation, and Reentry (ADCRR) and the Arizona Legislature's Joint Legislative Budget Committee (JLBC), among others, RCG developed an economic model to estimate the savings that would be generated by the Proposed ERC Policy and subsequent reductions in the prison population within the next decade under various scenarios. The modeled scenarios show that the Proposed ERC Policy would create significant economic benefits. These benefits can be realized by passing the policy during the 2021 legislative session.

Summary of the Proposed Earned Release Credit Policy

The Proposed ERC Policy in the SCA aimed to "develop a more balanced approach to public safety that emphasizes rehabilitation and treatment" by enhancing earned release credits for people convicted of non-dangerous offenses through participation in educational or workforce training programs. [6]

Arizona has the fifth-highest imprisonment rate in the nation, with 790 people in prison for every 100,000 adults.[7] As of July 2020, there were 39,340 incarcerated people in state prisons throughout Arizona; 45.7% are in prison for non-violent offenses, and 49.5% are serving time for first felony conviction.[8]

Under Arizona's current sentencing laws, nearly all incarcerated people are required to serve 85% of their court-imposed sentence.[9] Arizona is one of only three states that apply this requirement to almost every offense. This policy limits the ability of individuals to earn their way out of prison based on rehabilitation efforts, program participation, or good behavior.

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[6] https://apps.arizona.vote/info/assets/18/0/BallotMeasures/I-32-2020.pdf
[7] U.S. Bureau of Justice Statistics
[8] Arizona Department of Corrections
[9] https://www.azleg.gov/Briefs/Senate/TRUTH%20IN%20SENTENCING%202018.pdf

The Proposed ERC Policy would expand earned release credits, which incarcerated people convicted of non-dangerous crimes could use to earn early release. These credits encourage participation in treatment, education, job training, and other rehabilitative programs while incarcerated. Participation in such programs has been shown to decrease recidivism and increase post-release outcomes, such as employment and stable housing.[10]

The Proposed ERC Policy increases the availability of the earned release credits for people convicted of non-dangerous offenses. These incarcerated individuals could earn one day towards early release for each day served. All other incarcerated individuals would continue to earn one day towards release for every six days served. The Proposed ERC Policy also applies the change in available credits retroactively to people currently in prison.

Credits earned in the prior 12 months may be revoked should the incarcerated person show a continual unwillingness to participate in rehabilitation programs or fail to adhere to the rules set by the corrections department. The threat of having the credits revoked creates an incentive for good behavior and increased participation in rehabilitation programs.

The ultimate goal of the Proposed ERC Policy is to reduce the total prison population in Arizona and reduce recidivism by utilizing effective rehabilitation programs that help formerly incarcerated people successfully reintegrate into society.

Significant social and economic improvements are associated with a declining prison population, including more employment opportunities, higher wages, better education, and increased productivity.

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[10] RAND Corporation

Prison Population Projections

FWD.us, a bipartisan immigration and criminal justice advocacy organization, has worked extensively with correctional system data in several states, including Arizona.[11] Before economic impacts could be projected, a separate model was created by FWD.us to estimate the total change in Arizona's prison population upon implementation of the Proposed ERC Policy.

FWD.us found that the Proposed ERC Policy would reduce the total prison population in Arizona by 18% to 23% over a 10-year period. Those released early from prison would have more time and resources to enhance their economic productivity instead of remaining in the prison system. The model estimates the total Arizona prison population for the next 10 years under three different scenarios at varying levels of efficiency:

1. Baseline Scenario – The projected prison population without the Proposed ERC Policy (i.e., status quo).

2. Optimistic Scenario – Assuming optimal implementation of the Proposed ERC Policy.

3. Conservative Scenario – Assuming sub-optimal implementation of the objectives in the Proposed ERC Policy and accounting for changes in charging behavior by prosecutors that would offset the impact.

Estimating the change in the Arizona prison population is important in determining the potential economic benefit of the Proposed ERC Policy.

The Proposed ERC Policy provides incarcerated people with an incentive to participate in educational, job training, and rehabilitation programs through the distribution of enhanced earned release credits that can result in early release, thereby, reducing the overall prison population in Arizona. Additionally, those individuals that are released from prison as a result of the policy have more opportunities to become economically productive and to contribute to the local economy.

Baseline Projection Methodology

The baseline estimate is the projected Arizona prison population absent the Proposed ERC Policy or any other policy changes. The baseline estimate is determined from past and current trends in Arizona prison admissions, sentence lengths, and length of stay in prison.

Because of limited data availability, these projections rely primarily on data from 2016 and 2017, adjusted for recent trends in admissions and the overall prison population. This estimate also looks at the remaining sentence length for people currently in prison, as well as their age, to estimate how long they will remain incarcerated.

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[11] See FWD.us' reports on AZ prison data at https://www.fwd.us/criminal-justice/arizona/

The model assumes that incarcerated people will be released as soon as they are able (at their minimum release date), with the exception for those serving life sentences who are assumed to remain incarcerated for the duration of the model.

The minimum release date encompasses the earliest possible release that an incarcerated person might have from various mandatory, parole and temporary release options. It was assumed that incarcerated persons eligible for community supervision would be released after serving 85% of their sentence.[12]

New admissions were assumed to continue at the same rate as the previous 5-year average. This model does not include the large (and presumably temporary) drop in admissions during the COVID-19 pandemic and assumes that the prison population will return to what it looked like before the pandemic. The model then estimates the Arizona prison population on a monthly basis.

Optimistic Projection Methodology

The Proposed ERC Policy would have implemented an enhanced earned release credit policy, building on the policy that currently exists. These credits are currently distributed to incarcerated people based on the length of their sentence already served and whether they participate in various educational and rehabilitation programs while incarcerated.

Earning credits can result in a reduced sentence. This model predicts that the enhanced earned release credit policy will, on average, reduce the length of stay of someone currently earning credits and otherwise eligible for the enhanced credits (i.e., convicted of a non-dangerous offense) by an additional 41% (the change from serving 85% to serving 50% of an individual's sentence).[13]

Under the optimistic scenario, the model predicts the length of stay for individuals serving sentences for non-dangerous offenses, who under current policy are released after serving between 75% and 90% of their sentence (that is, individuals who are currently earning the credits available to them), will be further reduced when the Proposed ERC Policy goes into effect. It is also assumed those who have currently earned some credits will earn the new credits as well and be released at an earlier date.

In order to model how the Proposed ERC Policy would impact those currently incarcerated, the estimated release date for each incarcerated person under the proposal is calculated by adjusting the previous minimum release date by the appropriate amount, based on the number of enhanced earned release credits for which each person is eligible. This is the new adjusted minimum release date.

Individuals who are already past their new minimum release date (who would already have been released if enhanced credits had been available in the past), are projected to be released over the course of the first year, after implementation.

The optimistic scenario predicts that in 10 years, the Proposed ERC Policy would reduce the Arizona prison population by 22.6% (9,840 persons) compared to the baseline estimate.

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[12] Arizona Revised Statute § 41-1604.07
[13] According to FWD.us

Conservative Projection Methodology

In addition to an optimistic scenario, FWD.us developed a more conservative estimate. The conservative scenario accounts for practical inefficiencies that impact the distribution of enhanced earned release credits to those in prison when the Proposed ERC Policy takes effect, as well as those who will be convicted after the Proposed ERC Policy is implemented.

It is possible that there will be an inefficient distribution of the enhanced earned release credits when the policy first takes effect. This is likely to cause delays in the release of those eligible at their new adjusted minimum release date. To account for these delays, the adjusted minimum release date is applied to only 50% of eligible individuals.

Additionally, the conservative scenario assumes that a portion of those sentenced after the Proposed ERC Policy takes effect will receive an enhancement to their sentence for dangerous or violent behavior. To account for this, 20% of those incarcerated for violent offenses who do not currently have a dangerous offense enhancement had their sentence extended, instead of reduced, as a result of receiving an enhancement in this future scenario.

Under the conservative scenario, the model estimates that the Arizona prison population is reduced by 17.8% (7,774 people) in 10 years as a result of the Proposed ERC Policy.

Prison Population Projections by Model

Figure 2 displays the projected Arizona prison population levels for the next 10 years under each of the three aforementioned scenarios.

Figure 2: Projected Arizona Prison Population
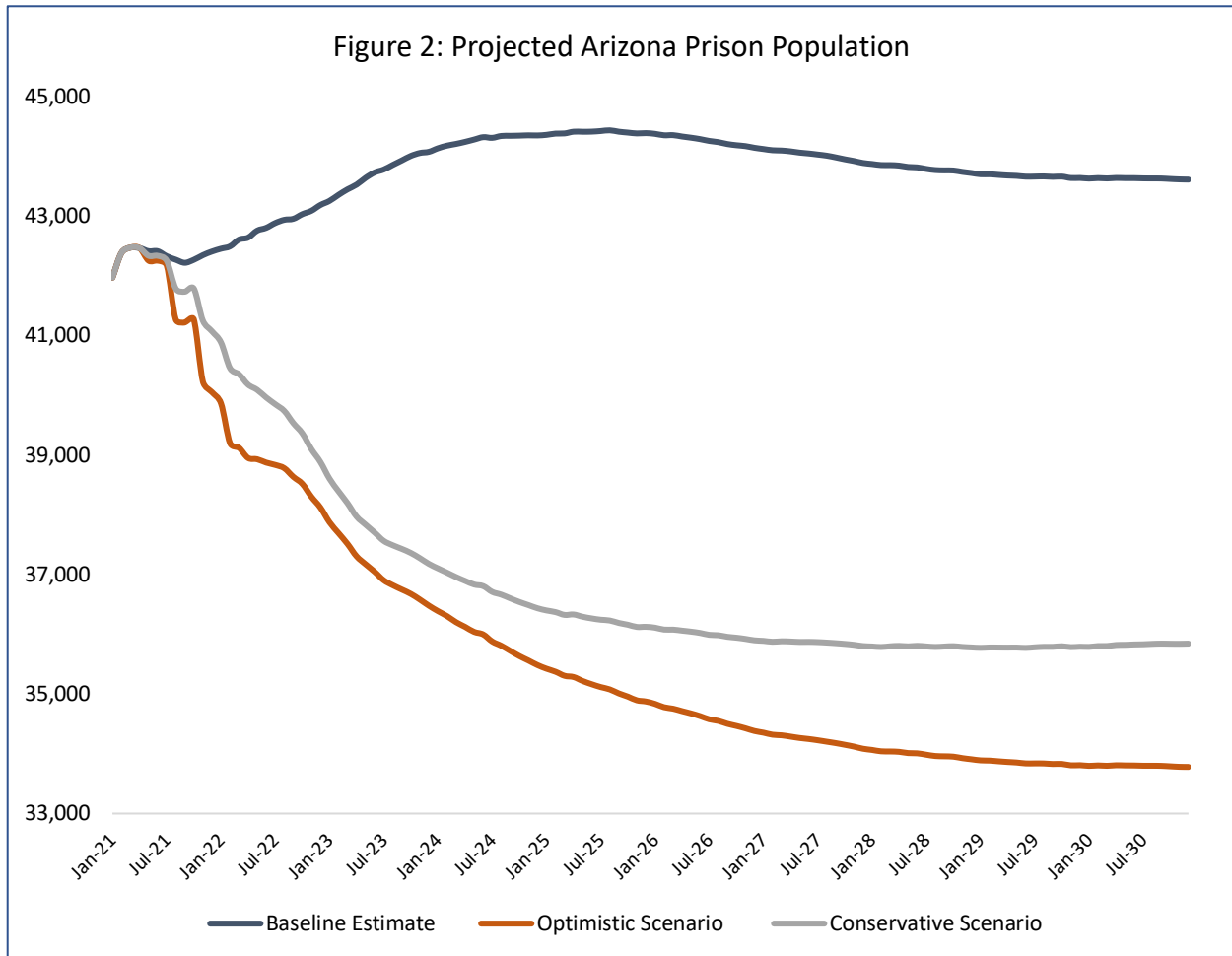
Source: FWD.us; Arizona Department of Corrections, Rehabilitation & Reentry

Prison System Savings & Revenues

Prison cost savings from reductions in the state's prison population are based on average and marginal cost estimates from ADCRR and JLBC. The estimated savings is then applied to the difference between the baseline and both the optimistic and conservative prison population scenarios developed by FWD.us.

According to ADCRR and JLBC, the average annual cost per incarcerated person in Arizona was $27,800 as of 2020.[14] The average cost per person is the full cost to incarcerate a person for a year, which includes prison staffing, facility costs, and other fixed costs. The marginal costs per person include the cost to provide food, transport, and/or provide medical care to an incarcerated person.

Marginal costs are the initial costs that are saved when a person is released, while average costs are saved in the long run as fewer people are incarcerated, and fixed costs can be reduced. According to research, initial marginal costs are approximately 10-15% (i.e., $2,780-$4,170) of the average cost per person.

After continued reductions in the prison population, the marginal cost savings as a percent of average cost begins to increase because the proportionate savings allow for reductions in fixed costs. After a 10-year period, the marginal cost savings per person is projected to reach approximately 85-90% (i.e., $23,630-$25,020) of the average cost.

However, the length of time it takes to increase the marginal cost savings from 10-15% to 85-90% depends on how efficiently the prison system implements the Proposed ERC Policy. Three levels of efficiency were modeled to represent the varying scales of savings that can be realized:

- An efficient level of cost savings is represented by a concave curve – where rapid increases in savings are realized in the early years of implementation followed by modest increases until they eventually plateau around 85-90%. This is the most likely scenario.

- The least efficient level of cost savings is represented by a convex curve – where savings linger around 10-15% in the early years, are followed by moderate increases, and then have a high rate of increase in the later years, only then reaching 85-90%.

- A linear increase lies between both the concave and convex curves representing a midpoint in the length and rate increase to which savings can be realized.

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[14] Arizona Department of Corrections and the Arizona Joint Budget Legislative Committee

The three scenarios related to marginal cost and average cost analysis are displayed in Figure 3 below.

Figure 3: Marginal Cost / Saving Scenarios
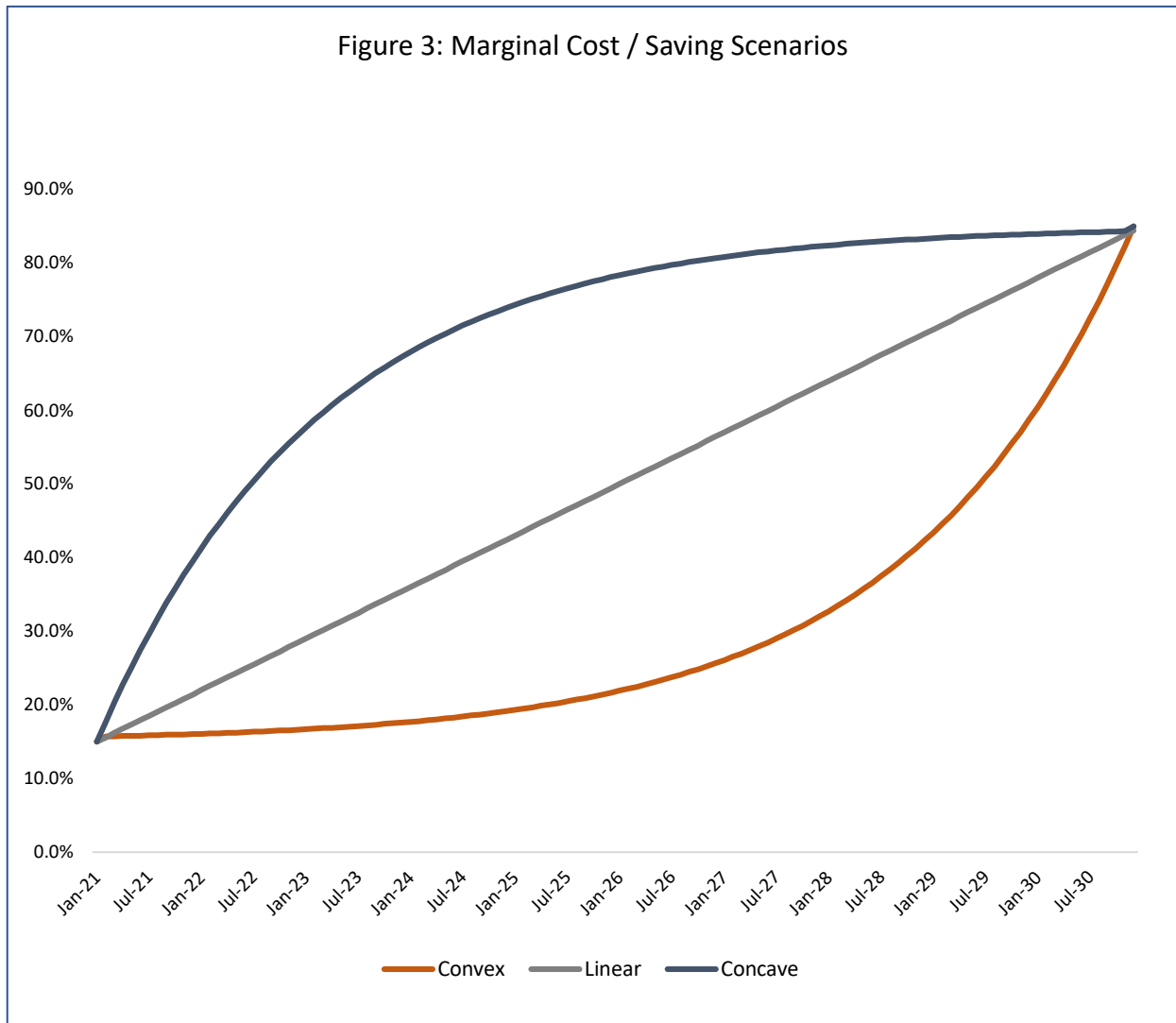
Prison Expenditure Savings

Based on the projected prison population and the estimated per incarcerated person savings, a range of total savings was calculated. To provide perspective on this range, three scenarios were modeled:

1. <u>Scenario A</u>: Is the most likely scenario and utilizes the optimistic prison population projections and the concave savings scenario.

2. <u>Scenario B</u>: Utilizes the conservative prison population projection and the linear savings scenario.

3. <u>Scenario C:</u> Is the most conservative scenario and utilizes the conservative prison population projections and the convex savings scenario.

Using the most likely approach, Scenario A yields annual prison expenditure savings equal to approximately $200M by the end of the first decade. Over the first 10 years, the cumulative prison expenditure savings is about $1.4B.


Under Scenario B, annual prison system savings approximate $176M by the end of the first decade. Over the first 10 years, the cumulative savings total $1.0B. This scenario can be considered the lower end estimate.

The most conservative approach, Scenario C (presented here for perspective only), shows the annual prison system savings reaching $170M per year by the end of the first decade. Over the first 10 years, the cumulative savings is estimated to be $830M. See Figures 4 and 5.
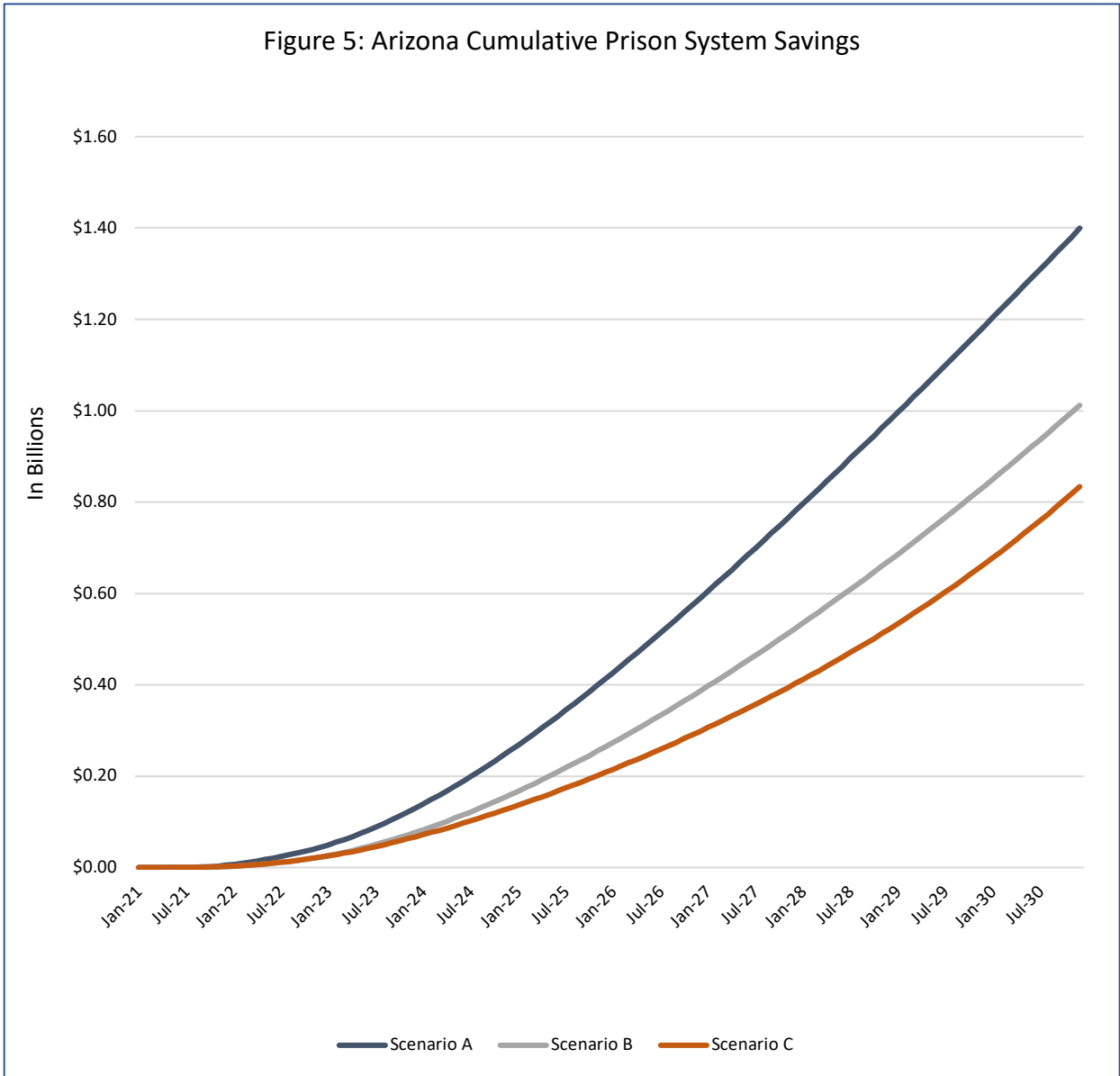
Figure 4: Arizona Annual Prison System Savings
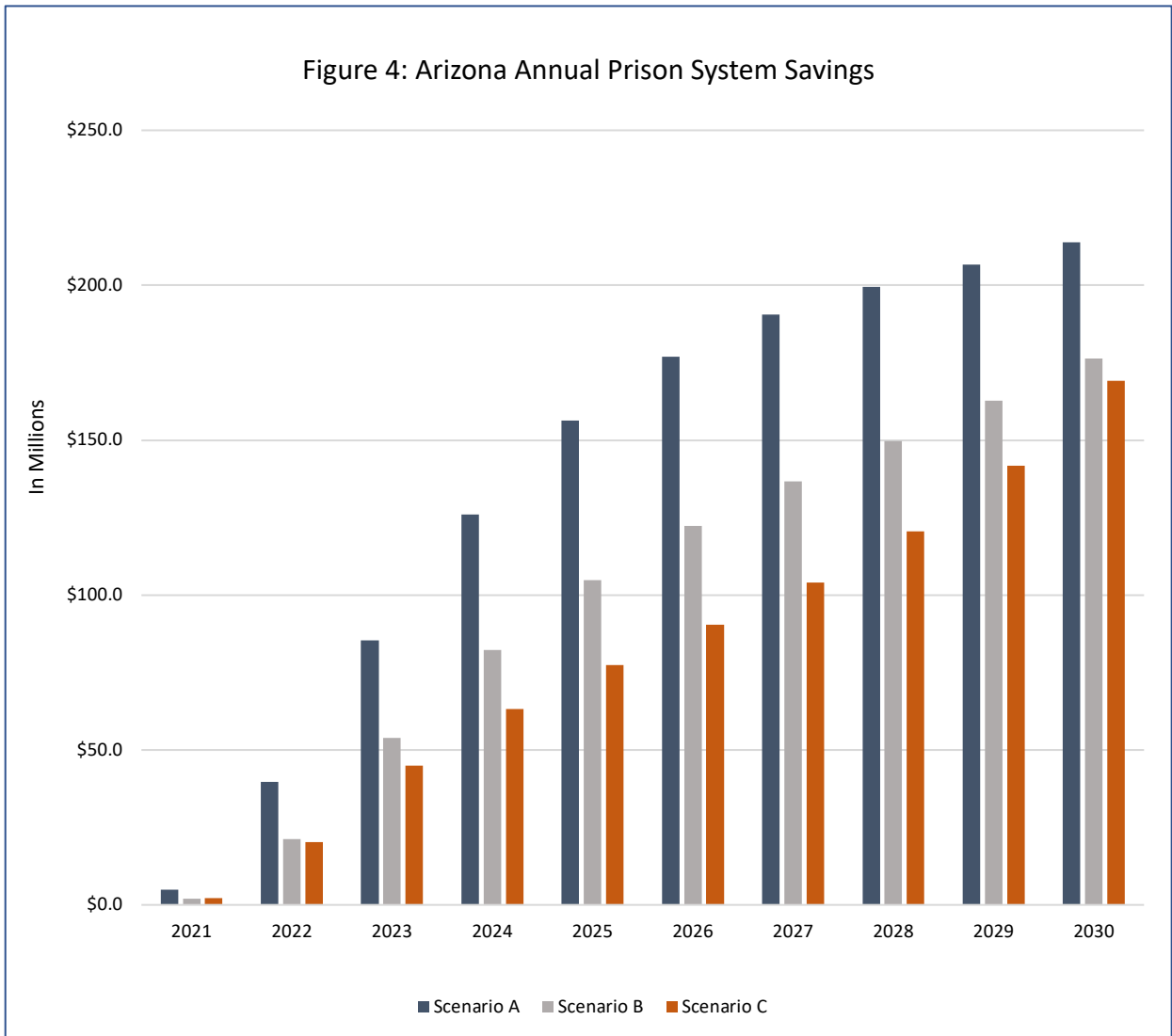
Source: FWD.us; Arizona Department of Corrections, Rehabilitation & Reentry; Arizona Joint Legislative Budget Committee; Rounds Consulting Group, Inc.

Figure 5: Arizona Cumulative Prison System Savings

Source: FWD.us; Arizona Department of Corrections, Rehabilitation & Reentry; Arizona Joint Legislative Budget Committee; Rounds Consulting Group, Inc.

Post-Release Earnings and Tax Revenue Contributions

In addition to prison expenditure savings, opportunities exist for the state to begin collecting additional tax revenues when released individuals re-enter society, maintain a job, enhance their income potential, and continue their workforce training and education.

There are two possible outcomes related to calculating the additional tax revenues generated by released individuals earning higher wages as a result of the Proposed ERC Policy. According to a comprehensive study on a person's earnings both before and after prison, the approximate average wage of a released individual one year after release is $9,100 per year.[15] That average increases each year marginally thereafter until reaching about $18,500 by the fourth year out of prison.

If the broader criminal justice reform effort includes job training while time is being served and encourages continued training after release, the post-prison average wage could potentially escalate to $29,500 per year by the fourth year out of prison.

For context, in Arizona, workers with less than a high school diploma earn about $22,000 and those with a high school diploma but no college degree earn approximately $29,500 a year.[16]

These two outcomes provide a range of additional tax revenue benefits to the state that are not included in the previous analyses (see Figure 6). If we assume that the prison population, upon release, will earn no more than $18,500 per year, the total state fiscal impact reaches $13M by the 10th year alone (or $114M over 10 years).

Alternatively, individuals will have an opportunity to participate in development programs while in prison and continue with their education post-prison. In this case, the average wage increases to $29,500 per year (which is equivalent to an individual with a high school degree but no college degree). This more likely outcome will yield a total state fiscal impact of approximately $26M each year by the 10th year (or $221M over 10 years).

However, utilizing these post-prison wages, *and adjusting for nominal wages even without the benefits of the Proposed ERC Policy*, the total bottom-line fiscal impact to the state over 10 years is reduced to $107M.

When combining the prison savings in Scenario A ($1.4B) with the additional state tax revenues ($107M) resulting from individuals re-entering society, maintaining a job, enhancing their income potential, and continue their workforce training and education, the fiscal benefits total approximately $1.5B within a 10-year period.
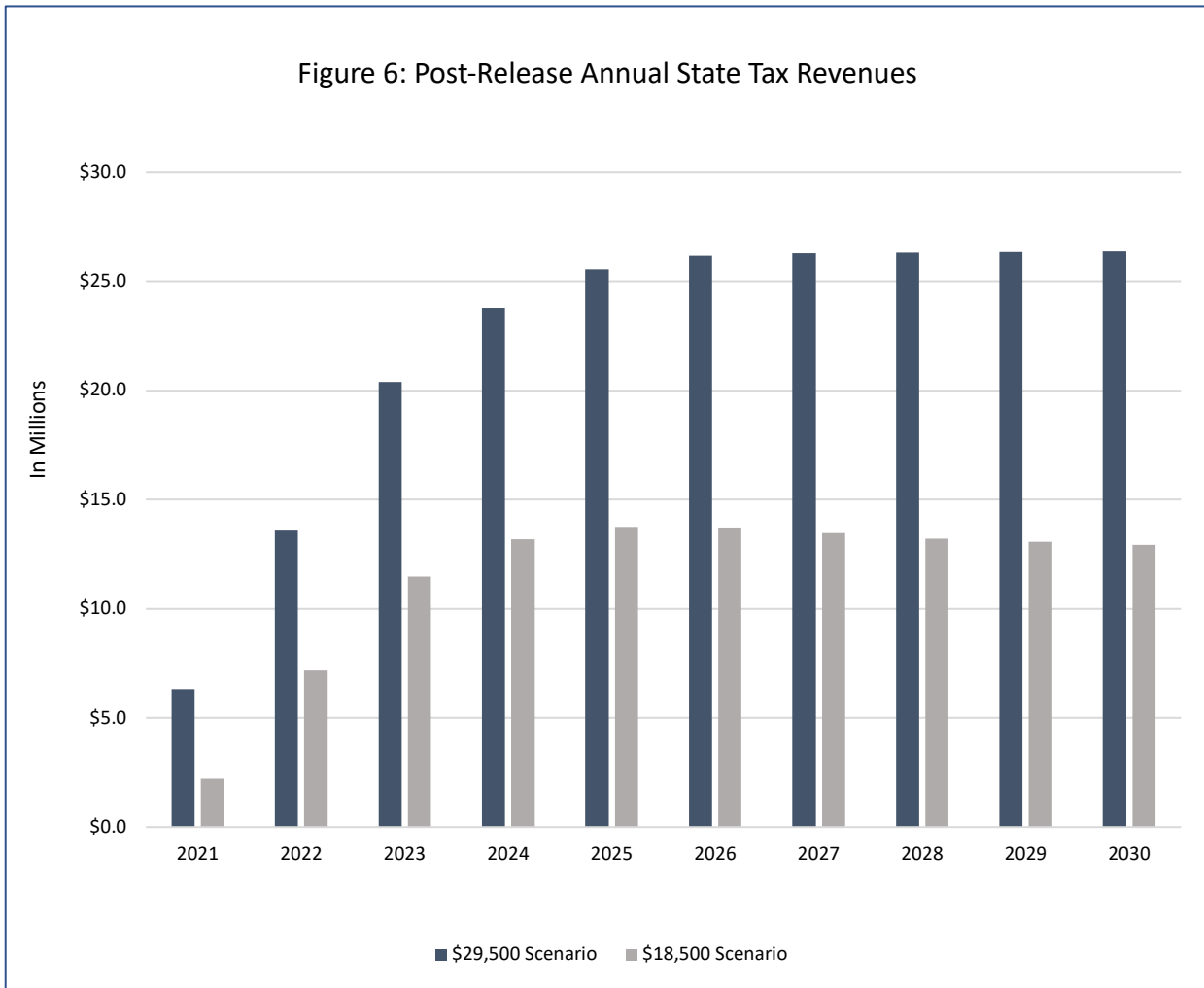
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[15] The Brookings Institute
[16] U.S. Census Bureau

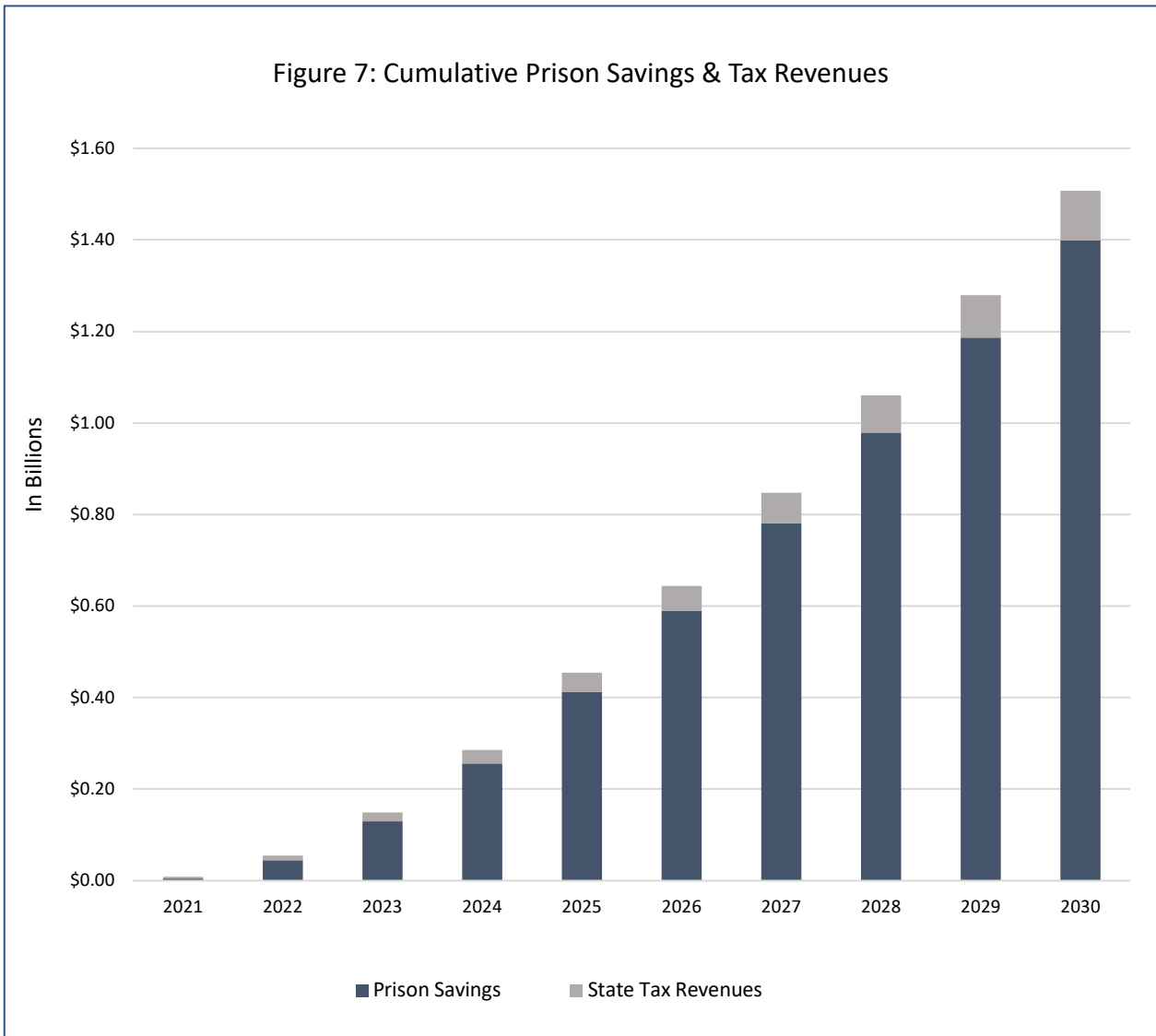Figure 6: Post-Release Annual State Tax Revenues

Source: FWD.us; Arizona Department of Corrections, Rehabilitation & Reentry; Arizona Joint Legislative Budget Committee; Rounds Consulting Group, Inc.

Figure 7: Cumulative Prison Savings & Tax Revenues

Source: FWD.us; Arizona Department of Corrections, Rehabilitation & Reentry; Arizona Joint Legislative Budget Committee; Rounds Consulting Group, Inc.

Additional Economic Considerations

The estimated $1.5B in state fiscal benefits needs to be put into perspective. For example, operations at a new high-tech manufacturing business with 500 high-wage workers generate approximately $50M in tax revenues over a 10-year period for the state. Thus, the state would need the equivalent of 30 new large-scale high-tech manufacturing businesses with a total of 15,000 new high-wage jobs over a 10-year period just to match the positive impact the Proposed ERC Policy would singlehandedly have on the state's fiscal status.

State Fiscal Impact of New High-Wage Jobs		
	500 High-Wage Jobs	15,000 High-Wage Jobs
1 Year Fiscal Impact	$5,000,000	$150,000,000
10 Year Fiscal Impact	$50,000,000	$1,500,000,000

Note: Methodology summarized in the Appendix. State fiscal impacts include all state tax revenues generated as a result of the new high-wage jobs created.

The aforementioned fiscal benefits understate true impact comparisons because it does not consider the impacts that occur as a result of a more efficient uses of the savings and tax revenues. For example, after stabilizing at more than $200M per year in state expenditure savings, the monies could instead be used for economic development programs, tax policy reform, targeted workforce/education issues, tourism marketing, or higher education, among others.

Using analyses previously completed by this firm, well-designed projects such as tourism marketing and university economic development projects (such as the New Economy Initiative) yield a positive return on investment within a short period of time. This means the $200M plus in annual savings if redeployed properly, would allow the state to benefit by an annual amount significantly more than the $200M in savings.

There are several statistics that provide further evidence that criminal justice reform will have a profound impact on the state's economy. Consider the following (as compared to the estimated $1.5B in state expenditure savings and economic benefits).

First, if statewide economic development recruitment increased by a full 25% over the next decade, the state would gain another $900M in tax revenues. This estimate is equal to the lower end scenario and far below the most likely scenario.

Furthermore, if the wages of all new jobs across the state increased by $1,000 each year for 10 years, the state would collect $200M in taxes by the 10th year. When combined, these economic development advances approach $1.1B (about $400M less than the $1.5B estimate from criminal justice reform) over a 10-year period.

State Fiscal Impact of Economic Development Advancements			
	25% Increase in Recruitment	$1,000 Increase in Wages	Total
10 Year Fiscal Impact	$900,000,000	$200,000,000	$1,100,000,000

Note: Methodology summarized in the Appendix. State fiscal impacts include all state tax revenues generated as a result of a full 25% increase in economic development recruitment and an increase in wages for all new jobs over a 10-year period.

Note: In every scenario that was analyzed in this review, Arizona's economy would significantly benefit from the Proposed ERC Policy.

Appendix: Modeling Methodology

Economic and fiscal impact models are an effective way to demonstrate regional implications of a particular project, policy, business, development or other activities in a given area. The study area can range from a single neighborhood or city to an entire state or country. Typically, the level of effects resulting from the activity is estimated in terms of output, earnings, employment, and tax revenues.

RCG created an economic and fiscal impact model to analyze the effects resulting from various projects, policies, developments, and activities in Arizona. The RCG proprietary model employs an input-output model methodology commonly used by economists to determine impacts. This method is used to estimate the "multiplier" or "ripple" effects caused by the activities being analyzed. Activity is then converted into tax revenues in each of the relevant categories.

Economic Impact Methodology

An economic impact model provides a quantifiable method to estimate the economic activity of a particular activity in a given area. Impacts can be used to measure existing activity and to measure potential expansions/contractions of an area's economy resulting from changes in economic activity. Typically, the level of economic effects resulting from the activity is estimated in terms of *output*, *earnings*, and *employment*. These are defined as:

- *Output* captures the broader level of economic activity, or the total value of goods and services produced in the region, similar to how statistics like gross domestic product (GDP) capture economic volume in individual states and across the country.

- *Earnings*, a component of output, represents income to employees. The earnings component is used to measure the total change in income throughout the economy due to economic or business activity.

- *Employment* is the total number of full-time (or equivalent) jobs created in the economy on an annualized basis.

The economic effects occurring as a direct consequence of the initial activity create additional activity in the regional economy. This relationship is known as the "multiplier" or "ripple" effect. The basis for multiplier effects is the interdependencies between industries, how one industry impacts other sectors, and the cycle of spending and re-spending within the regional economy.

An input-output model is used to generate these multipliers. These multipliers quantify relationships among industries and estimate the extent that the area being analyzed can capture sales, earnings, and job impacts within the region.

Input-output models measure impacts based on their source. *Direct* effects are the result of the initial activity being analyzed. The multiplier effects, or secondary effects, are measured as either *indirect* or *induced impacts*.

- *Direct effects, or impacts,* measure business activity at an individual site or the initial change in the economy attributed to the development under consideration.

- *Indirect impacts* capture additional output, earnings, and employment changes generated as a result of increased demand in the industries which supply services or products to the direct business or development under consideration.

- *Induced impacts* capture additional output, earnings, and employment changes generated as a result of increased spending in the local economy made by the households of both the direct and indirect employees. These induced companies respond by hiring, increasing payroll hours, and increasing wages. For example, the additional wages received by the direct employees and the indirect supplier employees induce spending at grocery stores, gas stations, clothing stores, etc.

A commonly used input-output model used to generate economic multipliers is IMPLAN (short for "impact analysis for planning"). Originally developed by the U.S. Forest Service in the 1970s, the responsibility for developing IMPLAN data sets shifted to the University of Minnesota as demand grew for regional models. Now, IMPLAN runs as a private organization and is the leading provider of nationwide economic impact data and analytical software.

The RCG custom economic impact model employs this input-output model methodology and uses Arizona-specific IMPLAN multipliers.

Fiscal Impact Methodology

Fiscal impact models provide estimates for the government revenues that are generated by a particular project, policy, business, development, or activity in a given area. Typically, fiscal impacts examine revenues that are likely to result from a project or activity and are determined by the study area's tax structure.

In general, the types of government taxes analyzed include sales taxes, excise taxes, lease taxes, income taxes, and property taxes. The type of activities subject to these taxes include payrolls, retail sales, utility use, leases, and construction, to name a few.

Fiscal impacts are categorized similar to economic impact studies and are broken down at the direct, indirect, and induced levels in which they are created.

In general, direct revenues can be estimated by definable sources such as sales taxes generated by utility use and direct employees' retail purchases. Indirect and induced revenues are generated by the wages, residency, and spending of those indirect and induced employees who are supported by the direct economic activity.

The RCG fiscal impact model employs this methodology. The model was designed to produce revenue information for the State of Arizona and local (city and county) governments.